The Evaluation of Regional Water Balances Using Different Hydrometeorological Datasets

by

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Abstract

This study attempts to use available hydrometeorological datasets to compute water balances over various regions of North and South America. The NCEP Reanalysis-1 and NCEP Reanalysis-2 are used as the primary sources of data, in addition to secondary datasets of precipitation and runoff. Time series of precipitation, evaporation, moisture flux, runoff, change in precipitable water and change in surface storage are generated from these sources and used in equations for the atmospheric and surface water balances.

Several different schemes are studied in order to utilize the available hydrometeorological data most effectively. These include various methods of calculating moisture flux, runoff, and change in surface storage. For both the atmospheric and surface balances various sizes and shapes of control volumes are studied including control volumes which are boxes of 7.5 and 15 degrees on a side, and basin sized control volumes resolved at 1 degree resolution varying in size from 318,000 km^2 to 4,620,000 km^2. In between 60° N and 60° S the entire globe is broken into control volumes of 30, 15, and 7.5 degrees on a side, and the atmospheric water balance is evaluated for each control volume.

A general lack of ability to close regional water balances over land is found, specifically over a box of 7.5 degrees on a side. The integrity of the reanalysis data is simply not good enough to complete such a balance reliably on either the atmospheric or surface levels. Particularly unreliable are the moisture flux and runoff variables. There is some success in calculating the moisture flux by known methodologies, but this is largely in 15 and 30 degree control volumes. The runoff methodologies developed in this study were limited by the resolution of the data, and not terribly successful. A major recommendation of this work is that global hydrometeorological datasets such as the reanalysis should take into account the water balance at finer resolutions when deriving its product.

In addition, this work uses the Wang et al. (1999) methodology to compute global ground heat flux. This is part of a larger effort to create independent global energy flux maps that can refine our knowledge of the global energy balance. An original method for the calculation of the thermal inertia parameter necessary for this calculation is presented along with a new global ground heat flux product.

Thesis supervisor: Rafael L. Bras
Title: Bacardi and Stockholm Water Foundations Professor

Table of Contents

Figures Index

Tables Index

1. Introduction

Large-scale land changes have occurred all over the world in the last few centuries. One example is the deforestation of the South American continent, particularly in the Amazon River Basin where rain forest is being changed into pasture and grazing land. Such changes have large-scale environmental impacts, including impacts on the water environment. Key to understanding the water environment is the quantification of the water balance over areas of interest. For the purposes of this work, the water balance is defined as a time series of the different water fluxes in and out of a control volume, which make up the hydrological cycle for the control volume. These fluxes include precipitation, evaporation, atmospheric moisture flux, and runoff, as well as the changes in atmospheric and surface water storage.

All of these fluxes are or available or can be derived from the NCEP Reanalysis in order to compute the water balance (Kalnay et al., 1996). These datasets are based on most available historical data, and therefore are more reliable over areas with dense hydrometeorological monitoring (such as the United States and Europe), and not as accurate over remote areas like South America. Additional datasets pertaining to other water balance fluxes are also available.

This study attempts to use available hydrometeorological datasets to compute water balances over various regions of North and South America. The NCEP Reanalysis-1 and NCEP Reanalysis-2 are used as the primary sources of data, in addition to secondary datasets of precipitation and runoff. Several different schemes are studied in order to utilize the available hydrometeorological data most effectively.

The first chapter of this study will discuss the background and relevant previous studies. Chapter 2 will discuss the different types of data used and Chapter 3 will discuss the procedure followed in analyzing data in this study. Chapters 4, 5, and 6 will deal with the data analysis of water balance variables while Chapter 7 will deal with the data analysis of the ground heat flux. Concluding remarks will be made in Chapter 8.

1.1. Background on the Water Balance

The equations and the schematic of the water balance are given below:

$$\frac{dW}{dt} = -P + E + Q \qquad \text{Eq. (1-1)}$$

$$\frac{dS}{dt} = P - E - R \qquad \text{Eq. (1-2)}$$

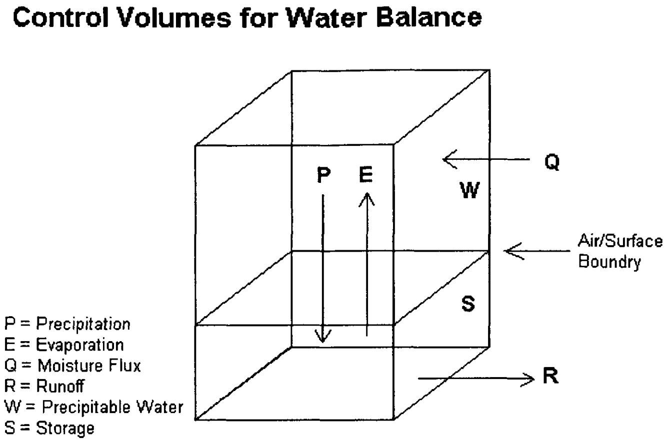


Figure 1-1: The Water Balance

For a given area of land, two control volumes are constructed. The atmospheric control volume contains all of the air above of a given area. The surface control volume contains everything below the air/surface boundary. The amount of water in each control volume at a given time is defined by the quantities W and S, which stand for atmospheric water vapor and surface storage respectively. The change of W and S with time must be equal to the net fluxes through the control volume. Equations 1-1 and 1-2 are the atmospheric and surface water balances respectively. The atmospheric water balance has inputs of Evaporation (E) and Moisture Flux (Q) and the output of Precipitation (P). Moisture flux is the moisture which moves into or out of an area of air over a land mass over a time period. In the surface water balance precipitation is an input while evaporation and runoff are outputs.

In this work we use a different time series of (P, E, Q, R, dW/dt, dS/dt) to evaluate the water balance over selected areas of the world. Monthly or yearly time periods are used. The time period (dt) over which we conduct these tests is either a month or a year. With six different variables in the water balance and a number of ways to arrive at several of the variables values, there are many alternative ways of computing the water balance.

1.2. Previous Relevant Studies

1.2.1. Rasmussen

One of the original and most complete water balance studies was undertaken by Eugene Rasmussen in the late 1960's in a series of three papers (Rasmussen 1967, 1968, 1971). These references will be mentioned extensively throughout our study, as they are our study's foundation. Rasmussen uses precipitation, evaporation, runoff, surface storage, and pressure level wind and specific humidity data. Pressure level, specific humidity and wind data are used to calculate moisture flux.

The purpose of Rasmussen's study was to compute the two water balance variables for which no measurements typically exist: evaporation, and change in surface storage. Large control volumes were created over major hydrological regions of North America (such as the Mississippi River Basin), and atmospheric sounding data and observational datasets from the early 1960's were used. The resolution of the 2.5 degree data in Rasmussen's study is the same used in the modern Reanalysis. Rasmussen's basins covered larger areas of North America than the areas used in our balances.

1.2.2. Model Based Studies

Model derived water balances have as much of a history as data based balances starting with Baumgertner and Reichel (1975) and Willmott (1985). More recently Nicholson et al. (1996) used a model to compute the surface water balance over Africa using precipitation as a data input and land based parameters applied to a model to derive evaporation, storage, and runoff at 1 degree resolution. This data product is similar to that generated by Willmott (1985), a product which provides a fifty-year dataset of surface water balance variables on a 0.5 degree grid. Betts (1998) also used a model to produce a climatology, inputting precipitation for control volumes which are each part of the Mississippi River basin. A set of reanalysis data is used which yields good results on monthly time scales.

Lenters et al. (2000) used the NCEP-Reanalysis model in order to create a surface water balance climatology over the continental United States. The climatology is based on data from 1963-1995. The study utilized precipitation as well as other near surface variables and inputs. The study mentioned that the reanalysis precipitation is unfortunately "weakly constrained" by physical data. The NCEP Reanalysis surface water balance is classified as poor and the seasonal cycles for all variables are not consistent.

Oki et al. (2001) used modeling to generate a limited climatology for the Amazon River Basin. He took precipitation and broke it down into its surface balance counterparts (runoff, evaporation, and deep drainage). Several interesting concepts are used here including the use of an original simplified one degree runoff routing model called the TRIP pathways. Biases were analyzed and monthly runoff peaks were found to be shifted on the order of two to four months from precipitation peaks.

1.2.3. Data Based Studies

Recent work on regional water balance studies includes Higgins et al. (1996). An early version of the Reanalysis dataset was used to compute a moisture budget climatology for the Central United States, using data from 1985-1989. The study used Rasmussen's techniques of calculating moisture flux, and found biases in the water balance that were on the same order of magnitude as moisture flux. These problems were attributed to the poor quality of the reanalysis over mountainous regions.

Mo et al. (1996) studied the atmospheric water balance on a regional basis using two preliminary reanalysis datasets, again to form a climatology for a number of years (1982-1994). Large discrepancies in tropical moisture transport were found, which are attributed to uncertainties in the divergence of winds.

Gutowaki et al. (1997) also used the Rasmussen moisture flux methodology, and as before used the Reanalysis for a number of years to create a water balance climatology of relevant variables. Here the surface water balance was integrated into the data analysis, while in the previous two studies only the atmospheric water balance was considered. This allows a comparison of the total water balance, or a comparison between moisture convergence and runoff, when storage terms can be reduced and eliminated over longer periods of time. Their study discussed the requirements for a control volume. Basin control volumes are used which must be large enough to have many grid points (23 to 25 in this case) and moisture convergence is found over these volumes. The Moisture convergence is then compared to runoff, for which there is only one point, the discharge of the river basin.

Also discussed in Gutowaki is the idea of lag time as there is an observed difference between the peak cycles in moisture convergence and runoff in the absence of storage adjustments (which are eliminated for the climatology). Lag times are observed on the order of 30 to 60 days. Variability of the moisture convergence was found to be lower in areas such as the United States where the data quality is better.

More recently, Chen et al (2001) used Rasmussen's methodology of moisture flux calculation to produce a time series of water balance variables over a rectangular control volume in South America (5 N 15 S, 70 W 50 W) in order to study the circulation patterns associated with Amazon deforestation. Specifically the moisture flux is calculated by Rasmussen's method and plotted along with precipitation and evaporation thus in effect yielding an atmospheric water balance. The study found an increasing trend in both moisture flux and precipitation over the control volume from 1948 to present.

Roads et al (2002) provided one of the most extensive water balance studies involving a reanalysis, in this case the new Reanalysis-2. Both surface and atmospheric water balances are computed as well as energy balances. A variety of different control volumes are investigated in different parts of the world each with unique land features. Like in many studies balance nudging terms are used to force the balance into compliance. In terms of magnitude the greatest residuals are found over the Amazon Basin, however the variables of the water balance (precipitation, evaporation, etc.) are highest here.

1.2.4. Precipitation Data Analysis Studies

Precipitation is a very unique quantity as it is, along with evaporation, a link between the two distinct atmospheric and surface water balances. Likely non-coincidently, precipitation datasets of the type used in our study are common and numerous. Although precipitation is only one variable in the water balance it is likely the most important because it is an exchange between the atmospheric and surface control volumes. Evaporation follows a fairly regular seasonal cycle and remains fairly even over a number of years, while precipitation varies.

Many of the existing precipitation datasets will be utilized in our study and discussed in detail in Chapter 2. Xie et al (1994) was one of the first studies involved in comparing globally resolved precipitation datasets on a monthly timescale. The study compared satellite and gauge based global precipitation datasets and observed many differences between different datasets. It is observed that gauges have a tendency to underestimate precipitation when aggregated over a larger area (gauges are point measurements), thus gauge datasets present a systematic bias. It was also determined that 5 gauges must be present in a 2.5 degree box in order to estimate precipitation within 10 % for that box.

Janowiak et al (1997), analyzed the Global Precipitation Climatology Project (GPCP), comparing it to the precipitation dataset derived from the NCEP Reanalysis. This task relies heavily on the data assimilation of the NCEP Reanalysis which contains a precipitation field. The Reanalysis precipitation shows a very regular pattern, while the GPCP shows a more realistic and random pattern. Observations made by Janowiak include very poor temporal agreement over South America and Africa (remote areas), but good over the United States, Europe, and Australia, a clear byproduct of poor data in remote areas with few observations. There is global precipitation agreement in these datasets, despite the regional differences.

Rudolf (2001) discussed a 1 degree precipitation global monthly precipitation dataset, derived from 2.5 degree information, and the importance of satellites in this process. Satellite studies such as the Tropical Rainfall Measuring Mission (current) and Global Precipitation Mission (proposed) are encouraged and satellite data is said to be especially important over the oceans.

1.3. Motivation for Study and Discussion

Although there have been many water balances studies using various hydrometeorological datasets, these studies have had various limitations. Some of these studies use a time series of data of multiple years, but condense this data into a climatology only yielding a water balance for a typical year. Other studies calculate one or several of the water balance variables by solving the balance for that variable or deriving the variable from a model. Thus, the balance is forced. Most recently, Roads (2002) uses data for all variables in the water balance equation, and then adds an additional nudging term as needed to correct for imbalance. None of these studies evaluate a mutli-year monthly or yearly water balance using only data for each variable, and evaluate the imbalance of the water balance instead of correcting it.

At first water balances were tested over remote control volumes in South America in which long term climatological changes in the water balance were suspected. The NCEP Reanalysis could provide all of the data fields necessary to produce such a balance, but the various balance tests themselves, on both the monthly and yearly time scales yielded results far from correct. Errors were on the order of magnitude of the variables going into the balance. These findings begged the question of whether it was possible to complete a regionally sized water balance over a remote location. The idea of creating a water balance study for any region on the planet, inhabited or not, requires using remote sensing technologies to obtain fields where land based measurements are not available.

The NCEP Reanalysis-1 and NCEP Reananlysis-2 are integral parts of our study because they contain all necessary water balance data for each grid point globally. These datasets are based on all available hydrometeorological information, which may not be plentiful in remote areas. Therefore, in addition to choosing study areas over remote areas of South America it is also important to include areas where land based measurements are more prevalent. The United States is such a place, and contains areas that are large enough so that regional water balances over the United States can be compared to those in South America.

The flaw in the design of the water balance is that it is a measure of consistency in data and not accuracy. As long as the data used in the water balance provides a balance at each time step, the water balance is solved. However, if two or more water balances variables are incorrect the equation may still yield good results, if the errors are equal and opposite. In the case of an imbalance, it is also difficult to determine which water balance variable is off in the equation, or which is off by the most. In some cases this is easy to detect by common sense. Attention must be paid to false balances, but one reassuring thought is that if it is so hard to compute a truly balanced water balance, it is likely harder to compute a falsely balanced water balance. The key is to complete the water balance so as to insure the integrity of the data used.

1.4. Relation of Energy Balance to Water Balance (Ground Heat Flux)

The energy balance and water balance are linked by the evaporation term and as shown in the Roads' (2002) study. Similar methodologies can be used to balance the energy and water balance.

Consider here the surface energy balance:

$R_{net} = G + SH + LH$

The NCEP-Reanalysis provides each of these fields. Traditional methods of obtaining energy fluxes are complex, as measurements at several levels are generally necessary to estimate fluxes at a point for a given time. Wang et al. (1998, 1999) have derived ways to obtain ground, sensible, and latent heat fluxes from a time series of the relevant variables (generally temperature) at a point. In the case of ground heat flux, only ground surface temperature or skin temperature is need. In the case of sensible heat flux, only air temperature is needed, and in the case of latent heat flux only air temperature and humidity are needed. Additional information based on land type, which is typically time invariant, is also utilized in these methods. The Net Radiation term can be computed or directly measured using well known methods.

This work uses the Wang et al. (1999) methodology to compute global ground heat flux. This is part of a larger effort to create independent global energy flux maps that can refine our knowledge of the global energy balance. Chapter 7 presents these results.

2. Datasets

The primary source of data for our study is the NCEP Reanalysis, which provides many useful hydrometeorological variables. All variables used in the water balance except precipitation and runoff, are provided or derived from the reanalysis. There are several large efforts to compile long term gridded and station oriented precipitation data sets. Precipitation is a very important component of the hydrological process, yet it is found that differing datasets provide very different estimates of mean monthly and mean annual precipitation for the study areas chosen. Independent precipitation estimates are all the more important because the reanalysis precipitation is solely model derived.

Our study considered monthly data through December 2002. Almost all of the datasets used are gridded for either part of or the entire globe. The size of the grid varies from 0.5 degree to 2.5 degree spacing depending on dataset. The distortion of the curvature of the earth is taken into consideration in all calculations. Its effect is very small in tropical regions.

2.1. NCEP Reanalysis

The NCEP Reanalysis is derived from a combination of land surface, ship, rawinsonde, aircraft, and satellite data, as well as other sources, and uses state of the art data assimilation and modeling techniques (Kalnay, 1996). The dataset is available monthly from January 1948 to present. Each variable is assigned a classification based on the methodology through which it is derived. A list of these classifications for relevant fields is given in Table 2-1.

Field	Class	Global Resolution	Application
U wind at 17 pressure levels	A	73 x 144	Q
V wind at 17 pressure levels	A	73 x 144	Q
Specific Humidity at 8 levels	B	73 x 144	Q
Precipitation	C	94 x 192	P
Evaporation (Latent Heat Flux)	C	94 x 192	E
Runoff	C	94 x 192	R
Precipitable Water	C	94 x 192	dW/dt
Snow Cover	C	94 x 192	dS/dt
Soil Moisture	C	94 x 192	dS/dt
Skin Temperature	B	94 x 192	Method GHF
Ground Heat Flux	C	94 x 192	Reanalysis GHF
Data Class	Comments		
A	Strongly influenced by observed data, most reliable class		
B	Influenced by both model and observed data		
C	Derived solely from the model		
D	Fixed from climatological models, does not depend on model		

Table 2-1: Reanalysis-1 Data Classification (Kalnay, 1996)

The humidity and wind fields, which are used to calculate the moisture flux, are classified as fairly reliable (Class A and B). It stands to reason that this analysis would be more accurate over the United States than over more remote areas where there is less observed data.

While alternative global precipitation datasets are easy to find, alternative evaporation data sets are generally unavailable. It is argued that for the purposes of our study the evaporation estimates for the reanalysis are fairly reliable because of the nature of evaporation. Evaporation data exhibits a fairly seasonal cycle with only small variations. Thus changes in the water balance are more likely to be the result of the other terms in the atmospheric water balance, like the precipitation for which there are many sources, and the moisture flux which is supposedly derived by fairly accurate data.

The data to be used for the surface water balance includes only variables derived from the model, class C, including precipitation, evaporation, runoff, soil moisture, and snow cover. The reliability of information on water balance data for water moving through and along the land surface is small. This work uses various alternatives to quantify runoff in order to improve the ability to close a surface water balance with reanalysis data.

The global resolution of the datasets refers to total amount of points provided by the dataset. The wind velocity and specific humidity fields are gridded every 2.5 degrees, while fields that are model derived are gridded approximately every 1.9 degrees in both latitude and longitude. The resolution of the data necessary for the moisture flux calculations is therefore very sparse. The reanalysis provides both wind and humidity data at 8 atmospheric levels over the entire globe, and this data is necessary for calculating moisture flux.

2.2. NCEP Reanalysis 2

Recently, a second reanalysis data set has been released entitled the NCEP/DOE Reanalysis-2. This dataset has all the features of the original reanalysis that are useful for the water balance. There are many improvements made to the data assimilation techniques including: fixing cloud tuning and snow properties, implementing new simpler rainfall assimilation for soil wetness, updating the precipitation parameterization, fixing of the snow cover analysis, and removing the nudging of deep layer soil moisture (Kanamitsu et al., 2002).

The altering of the soil moisture nudging term is of particular interest due to the problems that have been observed with change in surface storage. The Reanalysis-1 used a 60 day climatology nudging term which caused a very high seasonal cycle, and this is improved in the Reanalysis-2. Also actual observed precipitation measurements are used in this dataset when the ground is not frozen.

There were improvements in several important fields including the soil wetness fields, winter time precipitation and tropical precipitation, and equatorial divergent winds (used for calculation of moisture flux. The tropical precipitation is improved but still classified as problematic. This dataset is only available for 23 years from 1979 to 2001. However, because data collection over remote areas has been more common in recent years, the overall water balance using Reanalysis-

2 data should be much better. Future plans include extending this dataset back to the 1950's thus allowing for a full comparison with the first reanalysis.

2.3. The Global Precipitation Climatology Project (GPCP)

The Global Precipitation Climatology Project is one of the largest efforts directed at developing a global precipitation dataset. Data is incorporated from a variety of sources including low-orbit-satellite microwave data, geosynchronous-orbit satellite infrared data, and rain gauge observations. The original GPCP (version 1) was gridded on a 2.5 degree resolution thus its original component datasets are gridded at this resolution for consistency. The dataset originally spanned the time period of July 1987 through December 1995. The newer version of the GPCP has increased its resolution to 1 degree. The dataset now starts in January 1979 (around the time of the first remote sensing), and runs through the end of 2001. Since the dataset is on a 1-degree by 1-degree grid, each month of the dataset is composed of a 180 x 360 grid of the globe. This dataset classifies satellite data as useful, but it is improved a great deal using rain gauge data in its algorithms (Huffman et al., 1997).

2.3.1. Components

In the derivation of the global precipitation climatology project several different precipitation datasets were created from independent data sources. It was the hypothesis of the GPCP that the combination of these data sources would yield the most accurate global precipitation dataset. However, the use of these products independently for a water balance can highlight the usefulness of each dataset. The GPCP states that each dataset is useful in a unique way. For instance one dataset may accurately predict the month to month variations in a water balance, while another may be a very strong annual predictor but have seasonal deficiencies. As stated above there are three major components of the GPCP: gauge based data, geostationary IR data, and microwave data. Each of these sources has different temporal and spatial variations, but each result in a gridded monthly dataset. In the following we discuss the gauge component and the geostationary IR component. Because the microwave estimates are based on SSM/I data, an initially independent precipitation dataset, it is discussed in detail in later sections.

2.3.1.1. GPCC Gauge

The GPCC is the land based gauge component of GPCP. It is a gridded 2.5-degree dataset of precipitation based on the interpolation of 6700 gauge stations onto a lat-long grid using SPHEREMAP developed by Wilmott et al. (1985). Because it is based on rain gauges this dataset has the potential for high accuracy, however it uses point sources of data, which are highly variable from point to point. The time coverage of this dataset is currently Jan 1986 through December 1996, which allows it to be used in the water balances with both reanalysis products, for all land based control volumes. Quality control technique with the GPCC involves first comparing data to regional means, and pulling out anomalies, and then studying each of these anomalies considering known relief and catastrophic events. This dataset is as a very important component of the GPCP; however it is also important to consider this dataset as compared to other gauge based datasets, especially the precipitation reconstruction dataset discussed later (Huffman et al., 1997).

2.3.1.2. Global Precipitation Index

The global precipitation index is a subset dataset of the GPCP, which is derived almost exclusively from geostationary satellites specifically the Geostationary Operational Environmental Satellites (GOES) from the United States, the Geostationary Meteorological Satellite (GMS) from Japan, and the Meteosat from the European community. The satellites collect infrared imagery on a 3 hour basis which is integrated into a monthly time scale. When geostationary data is not available, NOAA polar orbiting satellites are used instead. The resolution is a 2.5 degree grid, consistent with GPCP, and the data is only available in the tropics from 40 degrees north to 40 degrees south. Thus, for some regions GPI data isn't available exclusively from geostationary satellites. The GPI is used in deriving one of the TRMM products discussed later. The time coverage of this dataset is January 1986 through the present. The major pitfall discussed pertaining to the GPI is that in cases where the satellite nadir point is far from the region of interest rainfall is overestimated (Huffman et al., 1997).

2.4. Precipitation Reconstruction (PREC)

The precipitation reconstruction dataset is likely the most complete gridded monthly precipitation dataset based completely on rain gauges. Two major gauge sources are included, the Global Historical Climatology Network (GHCN) and the Climate Anomaly Monitoring System (CAMS). The result is information from over 17,000 stations, far more than the GPCC. The dataset is gridded on a 2.5 degree grid and runs from January 1948 to November 2002 for all land points. As is the case with other gauge datasets, the gathering of data often takes a few months and therefore at the time of data gathering for our water balance study the last month of 2002 was not available. Several different data assimilation techniques are evaluated in the process of preparing this dataset. Also included with this dataset is the number of gauges used for each grid point. Thus, for each control volume the amount of gauges can be tracked using knowledge of how many gauges per unit area are available for a given control volume (Chen et al, 2002). A graph of the number of precipitation gauges per area in some of the selected control volumes used in this work is given in Figure 2-1. The big differences occur between points in Brazil and the United States especially early in the study period. Recent rain gauge data is severely reduced due to the amount of time required to process rain gauge data and the recent switching to remote sensing technologies.

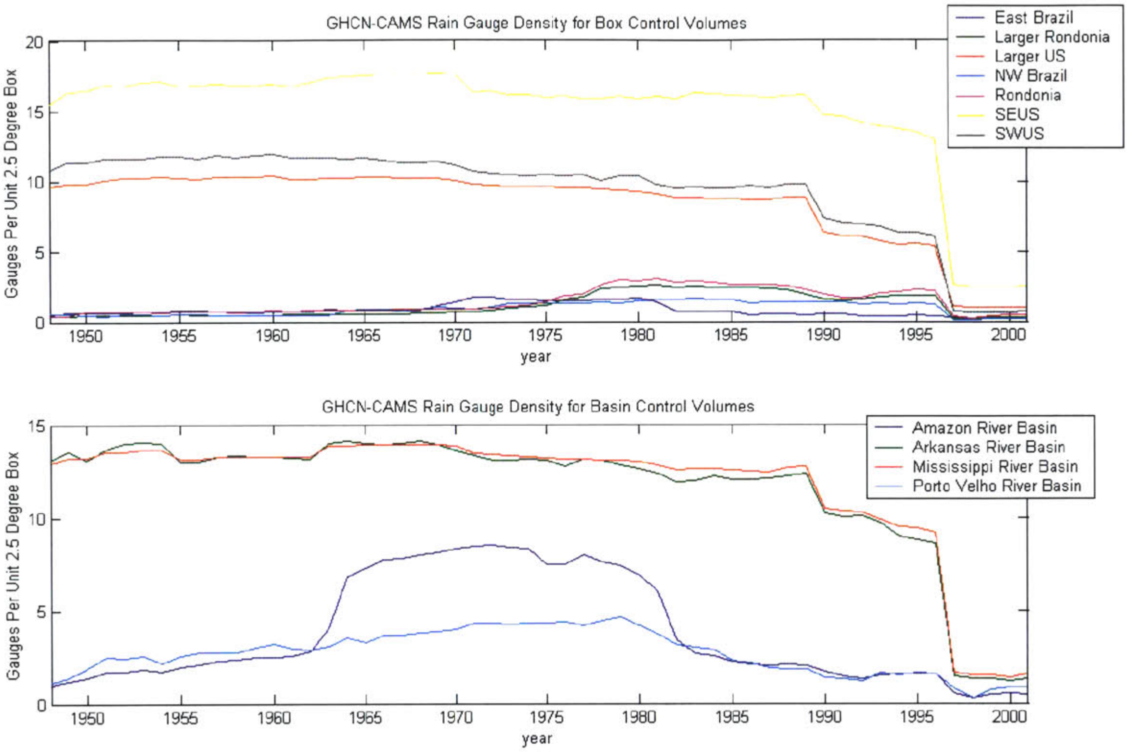


Figure 2-1: Rain Gauge Density in Selected Areas of Interest

2.5. CPC Merged Analysis of Precipitation (CMAP)

The CPC Merged Analysis of Precipitation combines multiple sources of data including gauge data and several different types of satellite data (the Global Precipitation index (GPI), the OLR Precipitation Index, two types of SSM/I, and a microwave sounding unit, MSU). All of these datasets with the exception of the microwave sounding data are analyzed as independent datasets, which are available individually. The CMAP dataset is similar to the GPCP in that it combines many sources of information. In addition, a second dataset is derived combining all sources and also using a model. The two products are referred to hereafter as CMAP and CMAP2 (model). Again the data is gridded on a 2.5 degree basis. An observation made in the documentation of the CMAP is that modeled precipitation is often calculated poorly in the tropical regions (Xie et al., 1997).

2.6. CAMS/OPI

CAMS/OPI is another global precipitation product gridded on a 2.5 degree basis. This dataset's goal is to produce a monthly precipitation that can be generated in real time. Products such as the GPCP and CMAP typically take a few months in order to collect the gauge data and combine it with other data sources to provide monthly means. This dataset combines a gauge and satellite dataset that are available shortly after the conclusion of a month. Rain gauge totals come from the Climate Anomaly Monitoring System (CAMS), and satellite estimates are included that are derived from outgoing longwave radiation (OLR) for the OLR Precipitation Index (OPI) (Janowiak et al., 1999).

Two data subsets from the CAMS/OPI product are used in this work, the independent OPI estimates (OPI2), and the combined CAMS-OPI dataset (OPI3). The combined CAMS-OPI dataset is based on a CMAP climatology from 1987 to 1995 and therefore may be biased towards the CMAP dataset. The actual CAMS dataset is a gauge dataset similar and probably less accurate than other gauge based datasets and therefore is not included. The producers of this dataset warn about its use in studies such as the water balance study being conducted here and recommend the use of the GPCP or CMAP datasets. However, this dataset is unique in that it can be derived in real time and its effectiveness in water balance studies should be evaluated.

2.7. SSM/I

The special sensor microwave imager is a satellite based remote sensing device. It has been used from July 1987 to the present and one of its products is a global precipitation dataset. The dataset is 1 degree, gridded globally. Two separate procedures are used to retrieve data over land and ocean. When processing the SSM/I time gaps were discovered. Some of the record prior to 1992 is incomplete which results in missing data in both the monthly and yearly resolutions of the water balances computed. There are several other sources of precipitation to apply during the time period of SSM/I. In addition one of the three products of the Tropical Rainfall Measuring Mission discussed in the next section is a 1 degree gridded SSM/I global dataset, which is likely more reliable than it's predecessor if for any reason, because it's data is more recent. The absolute magnitude of the SSM/I rainfall is found to be too high by the datasets producers, a hypothesis that can be tested by water balance analysis (Ferraro et al., 1996).

2.8. The Tropical Rainfall Measuring Mission (TRMM)

The Tropical Rainfall Measuring Mission, is a project undertaken by NASA, to measure precipitation in the tropical regions of the globe (between 40 degrees north and 40 degrees south), for use in hydrologic research projects such as this water balance study. The need for tropical precipitation measurements is considered important because of its magnitude and relative importance to the global water cycle. The mission also allows for a much closer look at precipitation in the Amazon rain forests where primary sources of data are not available. The TRMM products are available from January 1998 to present.

Our study does not attempt to discuss the actual process and retrieval algorithms of the TRMM satellite or any other precipitation satellite. It rather discusses the difference of processes used in producing datasets and evaluates these processes through the water balance methodologies. Unfortunately it is impossible to apply the TRMM precipitation datasets to a basin control volume because runoff data for the basins studied is only readily available through 1996. Many other precipitation sources such as those described earlier are included in the TRMM analysis, most of which are incorporated in dataset 3B43 which is of primary interest for application to water balances. The following three datasets were derived as products of the TRMM mission and are used in this work.

2.8.1. Data Product 3A46

The 3A46 TRMM data product is the SSM/I monthly tropical rainfall estimates from the TRMM project, gridded on a 1 degree by 1-degree basis providing a monthly grid of data 180 x 360. The record extends from January 1998 to August 2001, and is no longer being updated actively. The entire series of available monthly rainfall data is analyzed here.

2.8.2. GPCC_TRMM

An additional component of the TRMM precipitation dataset is the continuation of the gauge based analysis from the Global Precipitation Climate Center. This dataset is given as an independent product of TRMM and numbered 3A45B. It is in essence an extension of the GPCC Gauge precipitation dataset from January 1998 to the present, however the dataset at processing was only available (as PREC) until November 2002. The resolution of the data is increased to 1 degree to be consistent with other TRMM products.

2.8.3. Data Product 3B43

The 3B43 TRMM data product takes the rainfall information from the TRMM satellite and merges it with other satellite and gauge data to produce a TRMM data product on a 1 degree grid. This dataset uses the actual TRMM data in combination with 3A46 and additional gauge based data including 3A45B, and is likely the best estimate of precipitation of a monthly basis from the tropical rainfall measuring mission, and the best estimate for gridded monthly precipitation over it's time period (1998-2002), and it's spatial coverage (40 N to 40 S).

2.9. USGS Runoff

The USGS website contains extensive historical monthly runoff data for almost all of the significant rivers in the United States, especially those that would be useful in conducting water balances at a regional scale (http://www.usgs.gov). Two stations are used from this resource, one near the end of the Arkansas River and one near the end of the Mississippi River. The corresponding site numbers for these data sets are 0725800 and 0728600 respectively. Unfortunately from this source the runoff data isn't updated frequently, although a comprehensive dataset is available from (1948 to 1996) for the Mississippi River and from 1948 to 1993 for the Arkansas River. In order to better compare water balances, the Arkansas River runoff is extended to 1996 based on the given historical data.

2.10. RivDIS Runoff Data

A very useful dataset is the LBA-HydroNET version 2, (available at http://lba-hydronet.sr.unh.edu/database.html). This dataset includes a comprehensive river gauge network of South American Rivers, with good temporal resolution. This data allows for the study of basin water balance studies on two scales, specifically the Madeira River which flows through Rondonia, Brazil, and the Amazon River, (Oki 1998, Chen 2001). Recently this dataset has been updated over South America giving runoff data for major rivers on the continent for about thirty years in most cases, while the original extent for these two stations was ten years. This new data resource is very valuable in conducting a regional water balance analysis. The sites used are site id 13022 for the Madeira River and 13065 for the Amazon River. Data is available from 1970 to 1996 for both stations.

2.11. Total Runoff Integrating Pathways (TRIP)

This dataset is an ASCII grid of runoff directions for all land points on the globe on a 1 degree and .5 degree grid. It was derived through two major processes. The first involved the use of a digital elevation model converted to a coarser resolution in order to find the lowest neighbor and steepest slope between grid points. This methodology then had to be modified subjectively by adjusting the data with an atlas. Basins are eventually derived for major rivers across the globe (those with a significant enough drainage basins that can resolved on a 1 degree or 0.5 degree grid, thus the 0.5 degree grid picks up more rivers.

The primary purpose for creating this dataset is to help in global circulation models and water balances studies such as this one. The documentation states that other water balance variables such as precipitation, evaporation, and soil moisture are now becoming available on a global basis, thus necessitating an accurate way of routing runoff across land through such models. The dataset also provides a method of finding runoff per unit area of a control volume or a basin, which is the form in which runoff is evaluated at in our water balances. Both the 0.5 degree resolution and 1 degree resolution are used in separate applications. The 0.5 degree data is used with a gridded runoff database, while the 1 degree data is used to derive the shape of the basin control volume.

2.12. Missing Precipitation Data

One the major advantages of the reanalysis precipitation is it is seamless temporally and spatially. Unfortunately most of the precipitation datasets used are missing data either spatially or temporally. In most cases these missing values don't affect the ability to conduct water balances for the selected regions; however in some regions certain precipitation datasets can't be used. Table 2-2 outlines these errors in terms of the regions being studied. When the individual control volumes are analyzed separately in Sections 4.2, precipitation availability will be looked into in more detail.

It should be noted that although temporal gaps exist in the SSM/I dataset it is possible to use the SSM/I data for a monthly water balance. The Spatial coverage of SSM/I is flawless.

Precipitation Dataset	Start Year	Finish Year	Control Volume Errors	Basin Errors	Global Errors 60N-60S
Reanalysis – 1	1948	2002	None	None	None
Reanalysis – 2	1979	2001	None	None	None
GPCP	1979	2001	None	None	None
GHCN	1948	2001	East Coast	None	Not Applicable
GPCC	1986	1996	East Coast	None	Not Applicable
GPCC TRMM	1998	2001	East Coast	None	Not Applicable
GPI	86	2002	SWUS/Larger US/East Coast	Mississippi	Holes in Set early, good for global tropics, 30N/30S,
3A46	98	2002	SEUS/SWUS/Larger US/East Coast	Mississippi/Arkansas	Various errors in all but extreme tropical regions, useless for global evaluation
3B43	98	2002	SWUS/ Larger US/East Coast	Mississippi	Good for the 30 N/30 S
SSM/I	1988	1989	None	None	None
	1992	2002	None	None	None
OPI – Longwave	1979	2001	None	None	None
OPI – Combined	1979	2001	None	None	None
CMAP	1979	2001	None	None	None
CMAP + model	1979	2001	None	None	52.5 to 60 S contains

Table 2-2 Temporal Resolution of Precipitation Data

3. Procedure

The object of this study is applying the datasets described previously to a simple water balance model, and evaluating which datasets produce the best water balances. The exercise relies heavily on the NCEP Reanalysis, which contains all necessary fields. Only precipitation and runoff will be obtained from non reanalysis sources. Evaluating the water balance derived from the NCEP Reanalysis data, while using different methods and sources of precipitation and runoff will elucidate the value of information.

In this chapter the principles of a water balance are described and discussed in more detail than in Chapter 1, and the methodologies by which each variable in the water balance is obtained is discussed. Lastly, the data analysis tools used to evaluate the various water balances are described.

3.1. A Water Balance

The general principle of a water balance is very simple and was outlined by Rasmussen in the late 1960's (Rasmussen 1967, 1968). These early investigations came up with a methodology for the United States where data for such a balance was first available. Two storage equations can be set up, one for the storage of atmospheric water vapor (the precipitable water), and another for the storage of surface, soil moisture, and groundwater. These equations are given below:

$$\frac{dW}{dt} = -P + E + Q \qquad \text{Eq. (3-1)}$$

$$\frac{dS}{dt} = P - E - R \qquad \text{Eq. (3-2)}$$

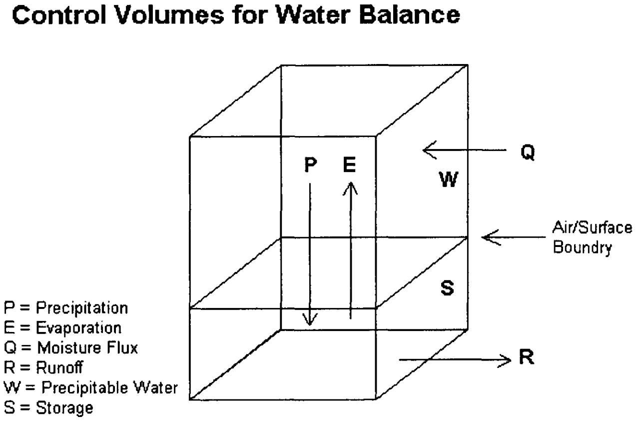


Figure 3-1: The Water Balance

A schematic of the control volume is given in Figure 3-1. The first equation, or the atmospheric water balance, equates the water coming in and out of the atmosphere, and refers to the top portion of the control volume drawn in Figure 3-1. The second equation, or the surface water balance, equates the water coming in and out of the ground surface, and refers to the bottom portion of the control volume drawn in Figure 3-1. All terms in these equations are time averaged values either monthly or yearly in this study.

In water balance calculations we use two types of data, spatially averaged data and boundary flux data. This has an effect on the manner which certain fields are calculated over the control volume. In this study the data is primarily gridded at a resolution less than that of the control volume. Spatially averaged terms include precipitation, evaporation, change in precipitable water, and change in storage. All these terms can be found by simply averaging the gridded data. Because the data is gridded by latitude and longitude, distortion effects are taken into account as a function of latitude.

Precipitation and evaporation can then be directly applied to the water balance equations. Change in surface and atmospheric storage can also be found by spatial averaging, with differences of values approximating time derivatives. Because runoff and moisture flux come and go through the actual boundaries of the control volume, different methodologies must be analyzed to determine the best way to utilize gridded datasets to obtain these values. Such methodologies are outlined later.

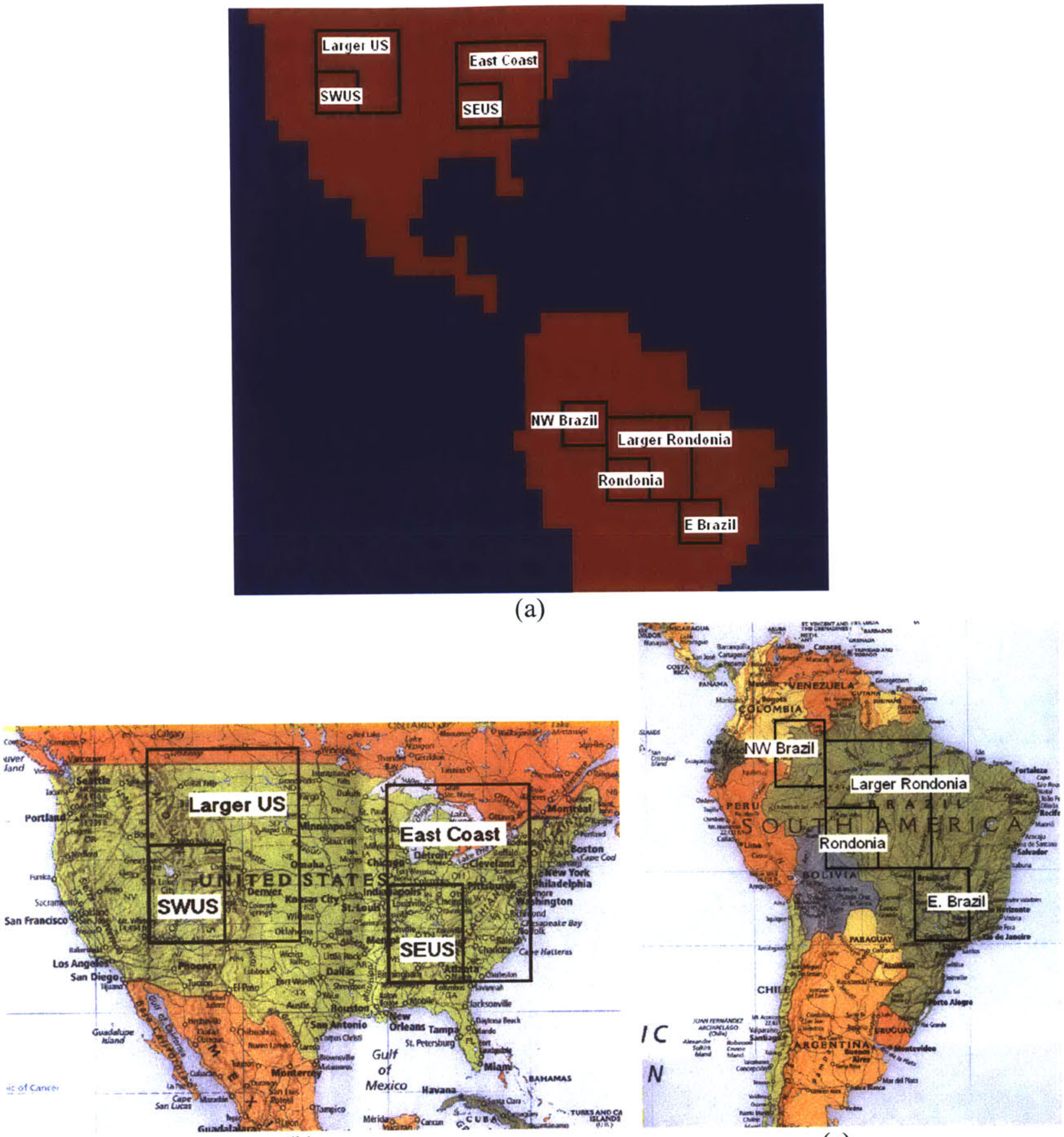
3.1.1. Box control volume

The reanalysis as well as a number of monthly global precipitation datasets are presented in gridded latitude longitude boxes of varying sizes. In order to utilize these datasets in a regional scale water balance, the datasets are spatially averaged over a control area, which in its basic form is a rectangle with four coordinates. The programming developed finds the average value for a variable inside the coordinates.

In the case of moisture flux calculations one point is used to estimate the flux through a boundary that is approximately 250 km wide. In order for the flux through the side of a control volume to be accurately computed it is important to use more than one data point. Taking three points on each side of the control volume as a minimum yields a box 7.5 degrees on a side. This allows for a meaningful average flux to be calculated across that boundary. It is also a small enough region over which significant land surface change can be observed in the past fifty years. Additional balances were performed for two cases using 15 degrees latitude and longitude on each side, as a comparison tool. Theoretically a better balance can be achieved over a larger control volume due to greater spatially averaging. It is also possible, however, that a larger control volume will cause already error prone data to become increasingly problematic.

Figure 3-2 shows specifically the eight box control volumes which were selected for this study. First, three control volumes were chosen of the 7.5 degree size. They represent three different stages of deforestation in the Amazon rain forest. The Eastern Brazil control volume is an example of already deforested land, the Rondonia control volume is an example of land currently being deforested, and the Norwest Brazil control volume is an example of land not yet deforested. In order to make comparisons, a control volume was chosen over the Southeast United States as a control. It is an area which in theory should have a good water balance since there is good observation data in this area. Also included at this smaller size is a control volume over the Southwest United States, a dry arid region, which we would like to contrast against the more tropical control volumes.

The Southwest United States and Rondonia control volumes are enlarged to form the Larger US and Larger Rondonia control volumes which are 15 degrees on a side. The comparison is again over an area in tropical remote South America, and a drier more detailed North America. Only two distinct control volumes can be formed over these continents as land masses of 15 degrees on a side are hard to find especially in the Western Hemisphere. An additional control volume over the East Coast of the Untied States was originally included to try and compute water balances over a land and sea area. This later proved to be an impossible task, so this control volume is included only in discussing the moisture flux methodology, nowhere else.



(b) (c)

Figure 3-2: (a) Selected Box Control Volumes of the Reanalysis Land/Sea Grid, (b) North American Box Control Volumes, (c) South American Box Control Volumes

Table 3-1 denotes the different land areas of the box control volumes selected. The total vertical dimension of the control volume is any height through which water passes horizontally assuming no water enters of exits the top or bottom of the control volume. The total control volume is then broken into two control volumes at the air surface boundary, creating the atmospheric and surface control volumes. Although two standard control volume sizes are used (7.5 and 15 degrees on a side), the land areas of these control volumes are slightly different because of latitude distortion. Rasmussen states that moisture flux calculations should be used only on a scale appropriate to the data given. In Rasmussen's last study in 1971 volumes were used between 500000 km^2 and 4200000 km^2 (similar to the scale used in this study). Specific dimensions of the box control volumes are not given here because there will be two slightly different versions of each of the box sized control volumes, as will be discussed in the Section 3.2.4, Moisture Flux Methodology Coordinates.

Control Volume	Land Area (km^2)	Control Volume	Land Area (km^2)
East Coast	2,106,000 km^2	Northwest Brazil	692,000 km^2
Eastern Brazil	655,000 km^2	Rondonia	678,000 km^2
Larger Rondonia	2,725,000 km^2	SEUS	558,000 km^2
Larger Untied States	2,027,000 km^2	SWUS	539,000 km^2

Table 3-1: Box Sized Control Volume Land Areas

3.1.2. Basin Control Volumes

In order to use an alternative source of runoff data for this study, a method was devised to create a control volume in the shape of a basin. An example of such a control volume is shown below for the Arkansas River Basin. The process by which these control volumes are derived and used is discussed in Section 3.3.2.2 Basin Type Control Volumes.

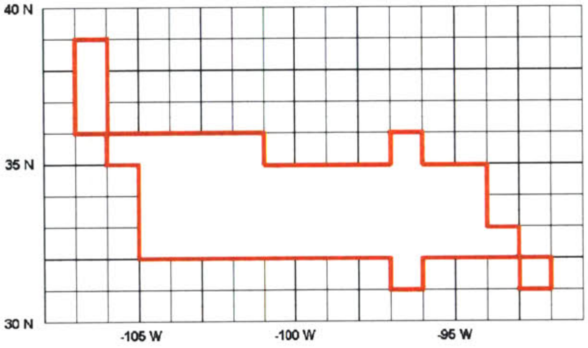


Figure 3-3: Arkansas Basin Sized Control Volume

3.1.3. Global Analysis

The programming devised for this study provides a time series of different water balance variables from different datasets based on four input boundaries: north, south, east, and west. Because datasets of a resolution applicable to this study are generally global in coverage, it is possible to input any four coordinates into the program and find the applicable water balance statistics. Although some precipitation and obviously all runoff datasets are limited only to land masses, full atmospheric water balances can be analyzed and calculated globally.

3.1.4. Units

The units that will be used for the remainder of this study are kg/m^2-month. Yearly data will therefore be presented as average monthly data, in order to make the magnitude of the monthly and yearly water balances comparable. Thus, water balance variables will be spatially averaged over the entire control volume. Normalized quantities will contain these units in both the numerator and denominator and therefore will be unitless.

3.2. Atmospheric Water Balance

The governing equation for the atmospheric water balance is:

$$\frac{dW}{dt} = -P + E + Q \qquad \text{Eq. (3-1)}$$

Spatially averaged precipitation from a variety of sources and evaporation from both reanalyzes are included in various analysis of the atmospheric water balance. The calculation of the time series of moisture flux and change in precipitable water require additional calculations of the reanalysis data.

3.2.1. Atmospheric Change in Storage

As described before, the NCEP Reanalysis contains monthly precipitable water. The control volume in an atmospheric water balance is the air mass above a designated plot of land. The amount of water stored in this control volume is called the precipitable water or the total amount of water vapor present which could potentially be rained out of the sky. The change in precipitable water (dW/dt) can generally be assumed to be zero on a year to year basis, although monthly changes may be significant.

The equation used in this research for change in precipitable water is the average change in precipitable water between a time period before and a time period after, where ΔT is a month or a year:

$$\frac{dW_t}{dt} = \frac{W_{t+1} - W_{t-1}}{2\Delta T} \qquad \text{Eq. (3-3)}$$

3.2.2. Moisture Flux Calculation

Rasmussen devised a method of calculating the moisture flux through the boundary of a control volume. This method requires wind and specific humidity data at different levels, which is provided on a 2.5-degree grid by the Reanalysis-1 and Reanalysis-2. The moisture flux can be divided into an x and y component by:

$$Q_u = \frac{1}{g}\int_{pu}^{ps} \overline{qu}\; dp = \frac{1}{9.8 m/s^2}\int_{300mb}^{1000mb} \overline{qu}\; dp \qquad \text{Eq. (3-4)}$$

$$Q_v = \frac{1}{g}\int_{pu}^{ps} \overline{qv}\; dp = \frac{1}{9.8 m/s^2}\int_{300mb}^{1000mb} \overline{qv}\; dp \qquad \text{Eq. (3-5)}$$

The moisture flux terms are given by the integral of specific humidity times wind velocity from ground level atmospheric pressure to an atmospheric pressure where water vapor transport is negligible. The NCEP Reanalysis provides specific humidity u-wind velocity, and v-wind velocity data points at 8 pressure levels: 1000, 925, 850, 700, 600, 500, 400, and 300 mb. Above 300 mb specific humidity is very low and therefore its horizontal movement through the atmosphere is negligible in these calculations.

The flux at each point that is relevant to the control volume is found by a numerical integration technique. The pressure difference between two points is multiplied by the average value of the wind multiplied by the specific humidity for the two points being considered. The result of this numerical integration is a mass flux of water vapor through a point in kg/s per m of length through which the flux passes.

Regardless of methodology, considering a rectangular control volume, the moisture flux will enter the cube on each of its four faces, north, south, east, and west. The north and south fluxes are found by the equation for Qv. Qu gives the east and west fluxes. The total moisture flux for the control volume is the sum of the contributing moisture fluxes of each border.

$$Q = QW - QE + QS - QN \qquad \text{Eq. (3-6)}$$

Q is positive when moisture is flowing into the control volume. The units of this calculation are then multiplied by the length of the perimeter to obtain the total kg flux per time, then converted to monthly units and divided by the area of the control volume. This results in the units of kg/m^2-month, the standard units used for the other aspects of the water balance.

3.2.3. Moisture Flux Methodologies

Two methods for defining the moisture flux of a box control volume are investigated in this study (see Figure 3-4). The data points given by the reanalysis are gridded at a resolution of every 2.5 degrees. One method chooses the border so it aligns with this grid and thus the control volume is aligned on points as shown on the right side of Figure 3-4. The accuracy of the measurement therefore is dependant on using actual points. However, using this method a border that is 7.5 degrees long (approximately 834 km) is represented by only 3 data points.

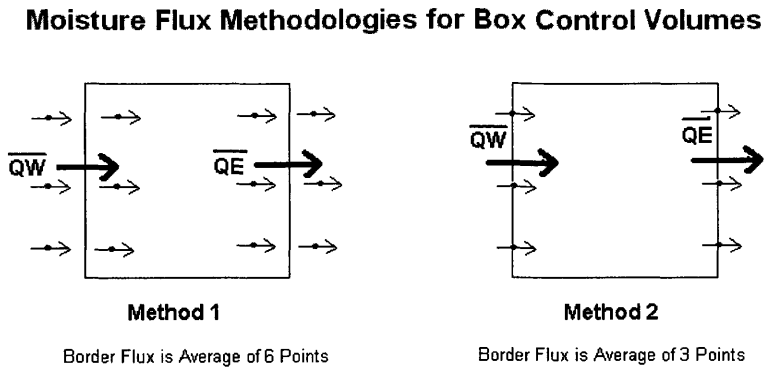


Figure 3-4: Moisture Flux Methodologies

Alternatively, if the control volume is selected between the points on the data grid, the flux can be calculated as the average of the two closest points to the border and for the same length of control volume border 6 data points are used, however each data point is a significant distance from the actual border. This method is shown on the left of Figure 3-4. Both methods are used for each control volume.

3.2.4. Moisture Flux Methodology Coordinates

The control volumes that were selected for this study coincided with the gridding of the pressure level specific humidity and wind velocity in one of two ways. Data points for the gridding scheme in the reanalysis followed a 2.5 degree grid stating at 0 degrees East longitude and 90 degrees North latitude. Table 3.2 provides the coordinates of each of the box control volumes used in this study. Each control volume has two sets of boundaries for moisture flux methods 1 and 2. The control volume is shifted slightly by 1.25 degrees between methods. In the interests of keeping these control volumes over land boundaries so as to be able to calculate a surface and an atmospheric water balance, it wasn't possible to move all control volumes in the same direction.

Control Volume	Method 1 Control Volumes				Method 2 Control Volumes			
Location	North	South	West	East	North	South	West	East
Rondonia, Brazil	6.25 S	13.75 S	66.25 W	58.75 W	7.5 S	15 S	65 W	57.5 W
Southeast US	38.75 N	31.25 N	88.75 W	81.25 W	40 N	32.5 N	90 W	82.5 W
Southwest US	33.75 N	41.25 N	116.25 W	108.75 W	42.5 N	35 N	115 W	107.5 W
Northwest Brazil	1.25 N	6.25 S	71.25 W	63.75 W	2.5 N	5 S	72.5 W	65 W
Eastern Brazil	13.75 S	21.25 S	51.25 W	43.75 W	15 S	22.5 S	52.5 W	45 W
Larger Rondonia	1.25 N	13.75 S	66.25 W	51.25 W	0	15 S	65 W	50 W
Larger US	48.75 N	33.75 N	116.25 W	101.25 W	50N	35 N	115 W	100 W
East Coast	46.25 N	31.25 N	88.75 W	73.75 W	47.5 N	32.5 N	90 W	75 W

Table 3-2: Coordinates of box control volumes for the two different moisture flux methodologies

3.3. Surface Water Balance

The general surface water balance equation is given as:

$$\frac{dS}{dt} = P - E - R \qquad \text{Eq. (3-2)}$$

Again, spatially averaged precipitation from a number of sources and evaporation from the reanalysis is used with this equation for each time step. For all control volumes both runoff and change in surface storage can be derived from the reanalysis, however in the case of a basin sized control volume there is a much more accurate alternative source of runoff, actual stream gauge data.

3.3.1. Surface Storage Term

Rasmussen (1967) defined the storage term as the change in surface water, soil moisture, and groundwater. It is also stated that in a land based control volume, with a land area of at least 15000 km^2, that the change in surface water will be minimal over a month or year unless there is the presence of a lake of similar scale, or part of the control volume is over the ocean. However, for all regional water balance analyzes in this study, change in surface water is seen as a factor, perhaps because in the reanalysis surface storage is such an important balancing term.

Soil moisture and change in snow cover are taken to be the primary cause in change of surface water storage, which is derived from the shallow soil moisture (0-10 cm) and deeper soil moisture (10-200 cm) data points of the NCEP Reanalysis, as well as snow cover. Soil moisture fields in the Reanalysis are given as a water level including the height of water in the soil. Water can only reside in the pores, which are assumed to be 30 % of the total space. Therefore the height of water in a "reservoir" (the surface and subsurface) is arrived at by multiplying the soil moisture by .3 and the snow height by .1. Snow is assumed to be 90 % air and 10 % water. The height of surface storage in cm can be converted to kg/m^2.

The change in storage for a month was found by using one unit future and one unit past data.

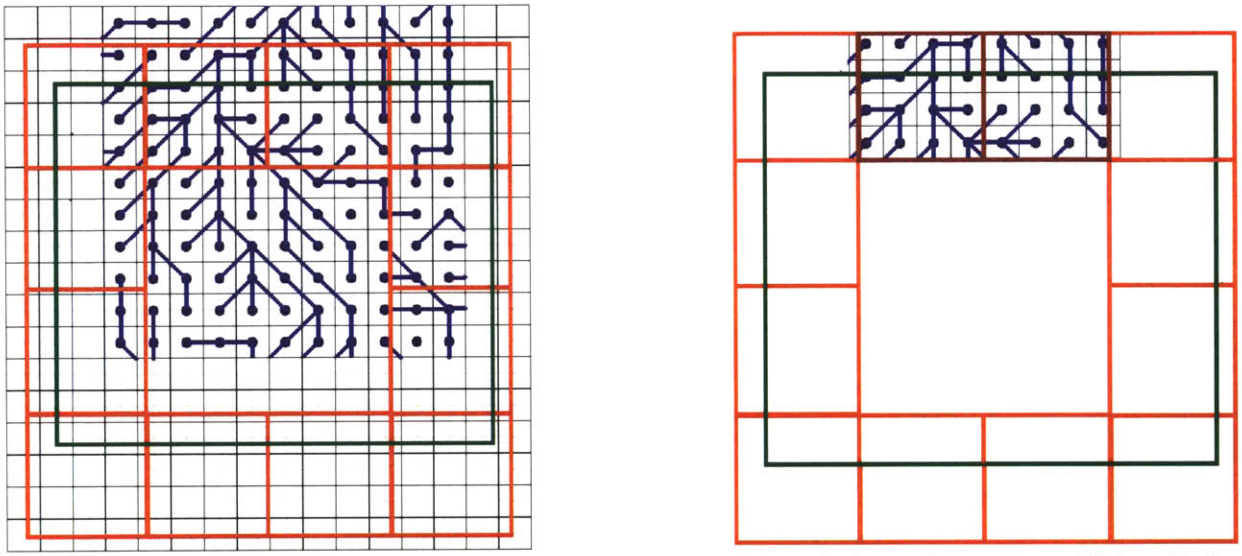
$$\frac{dS}{dt} = \frac{S_{t-1} - S_{t+1}}{2\Delta T} \qquad \text{Eq. (3-7)}$$

3.3.2. Runoff Methodologies

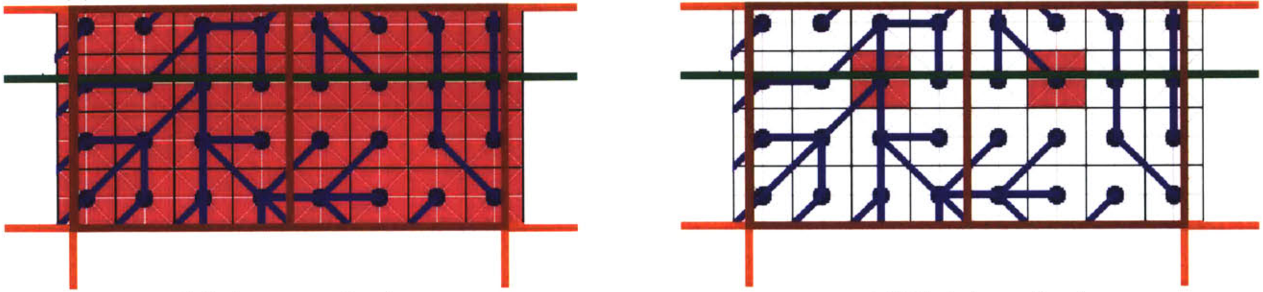
The NCEP Reanalysis provides a gridded runoff dataset with the same units as the precipitation and evaporation. A gridded runoff dataset is counterintuitive as runoff is typically measured at a point. A gridded runoff dataset will likely include many points of runoff leaving the grid point in many directions, if it is of any significant size. However, given the constraint of a box control volume it is impossible to identify all point runoff fluxes which flow through the control volume boundaries, as these points are numerous and for the most part not gauged. Therefore the gridded runoff dataset given by the reanalysis is useful, but methods must be devised to determine the routing of the runoff. These methods include the use of Oki's TRIP pathways.

3.3.2.1. Uses of TRIP Pathways in combination with Reanalysis Runoff

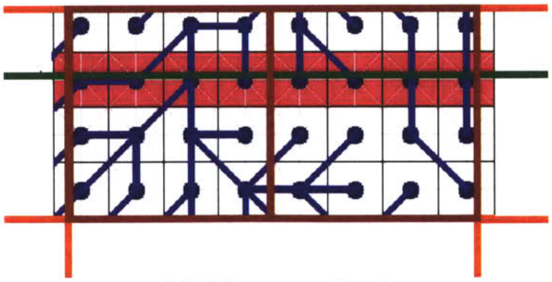
In order to determine the runoff flux through the selected control volumes the reanalysis runoff and the Oki TRIP pathways are combined. Figure 3-3 (a-e) shows a series of diagrams outlining this combination.



(a) Combination of Datasets (b) Isolation of Two Runoff Data Points



(c) Area method (d) Point method



(e) Linear method

Figure 3-5: Derivation of the Runoff Routing Methodology For the Boxed Control Volume

Figure 3-5 (a) shows the integration of the datasets involved. The larger green box indicates a hypothetical control volume for which the water balance is being taken. The red boxes indicate the gridded NCEP Reanalysis runoff values, which have a resolution of slightly less than 2 degrees on a side. Each red box through which the green control volume boundary passes through represents one runoff value in the Reanalysis. The center of the control volume is not gridded because these runoff values are unnecessary in finding the flux of runoff through the control volume's sides. The blue lines represent the TRIP pathways network at .5-degree resolution. In the dataset, each node represents a direction over which runoff flows from the node (as in a river network), and these directions are used to route the gridded Reanalysis runoff (red), through the boundary of the control volume (green).

To better illustrate the procedure used to apply the runoff data to the control volume, two reanalysis runoff grid boxes are isolated in Figure 3-5 (b). As can be seen here, each Reanalysis runoff grid has several TRIP directions in it, which can be used to determine in which direction this runoff value is traveling in the larger box. If all of these directions indicate that runoff is flowing out of the control volume for a certain box, then the full runoff mass is added to the runoff total of the control volume. If the runoff directions indicate half of the water in the area is flowing in and half is flowing out, then there is no mass of runoff through the control volume boundary. The reanalysis runoff value for the red gridded boxes is given as an average over an area, and with the grid area known, this value can be converted into kg/month. This mass can then be multiplied by the fraction of this runoff, which is traveling outwards from the control volume based on the TRIP pathways. This fraction may be negative if all directions point inward. Summing the masses of water exiting the control volume and subtracting the mass of the water entering the control volume yields the total runoff mass per month, which can then be spatially averaged over the control volume so that it's units are the same as the other properties in the water balance.

Because the runoff data available is gridded at a much coarser resolution than the routing data available, this study evaluates three separate methodologies for the use of the routing data, which are shown in Figure 3-5 (c-e). It is impossible to route runoff data at a coarser resolution than that which is used here because too many "rivers" are lost at such a coarse resolution. Each method involves using a certain number of the available routing directions within the runoff data grid in order to determine how much of the runoff runs through the control volume boundary. Runoff directions, which run perpendicular and outward from the control volume, are weighted with a value of 1. Runoff in the opposite direction is weighted with a value of –1. Runoff directions which are parallel to the control volume boundary are weighted by zeros, since they don't run through the control volume boundary, and directions which run diagonal to the boundary are weighted either .5 or -.5 depending on whether they are oriented partially outward or partially inward to the control volume respectively.

The difference between methodologies lies in the directions that are used to determine how much runoff is passing through the control volume boundary. Diagram (c) indicates the first method, the area method. By this method the directions of runoff at all of the nodes in the area of the gridded runoff piece of data are used to determine the routing of that runoff value. There are usually about sixteen directions in such cases. Diagram (d) indicates the second method the point method. In this method only one point, the point in the runoff data box which is closest to the center of the runoff grid in one direction and closest to the control volume boundary in the other direction. Diagram (e) indicates the third method the linear method. In this method only routing points through which the control volume boundary passes are used.

It is proposed that the linear method is the most accurate way to route the runoff through a control volume boundary. By this method the TRIP pathways which are used are the ones which are closest to the control volume boundary. This is really the only place we care how much runoff is passing through. Although the runoff data itself is coarse, the routing of the data can be accomplished in a more precise manner around the boundary of the control volume, and it is the directions around this boundary which we are most interested in. The point method doesn't use all the data available, and the area method uses runoff routing that can be up to 100 km away from the control volume boundary. The point and area method, however may be more effective in certain cases and therefore should at least be considered.

3.3.2.2. Basin type control volumes

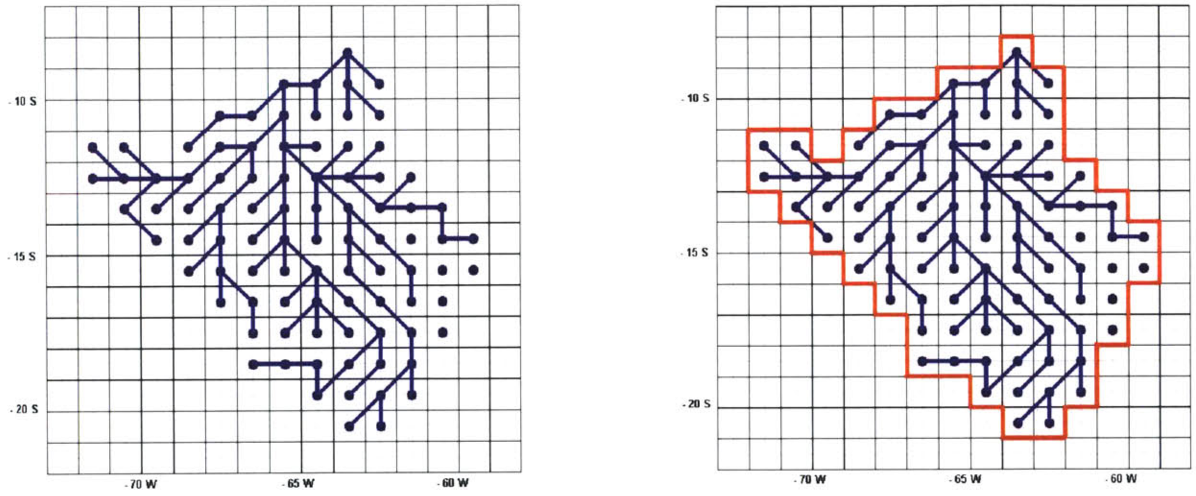
In order to better utilize the alternative source of runoff data an alternative method was derived for the creation of a control volume in the shape of a basin. Four of these control volumes were created for the Mississippi River Basin, the Arkansas River Basin, the Amazon River Basin, and the Madeira River Basin. The Madeira River Basin is gauged at, and from here on referred to, as the Porto Velho Basin. The Porto Velho and Arkansas River Basins were chosen because of their comparable sized to the 7.5 degree on a side box control volumes, and the Mississippi and Amazon River basins were chosen as being comparable in size to 15 degree on a side control volumes. Additionally we have a contrast of data rich and data poor areas as well as a contrast between tropical and non-tropical areas. Table 3-3 gives the approximate land areas of these control volumes based on the runoff data used. The basins are derived from a one degree grid and are drawn out in later Figures 3-6, 3-7, and 3-8, as their derivation is described.

Control Volume	Land Area (km^2)
Amazon River Basin	4,620,000 km^2
Arkansas River Basin	318,000 km^2
Mississippi River Basin	2,350,000 km^2
Porto Velho River Basin	954,000 km^2

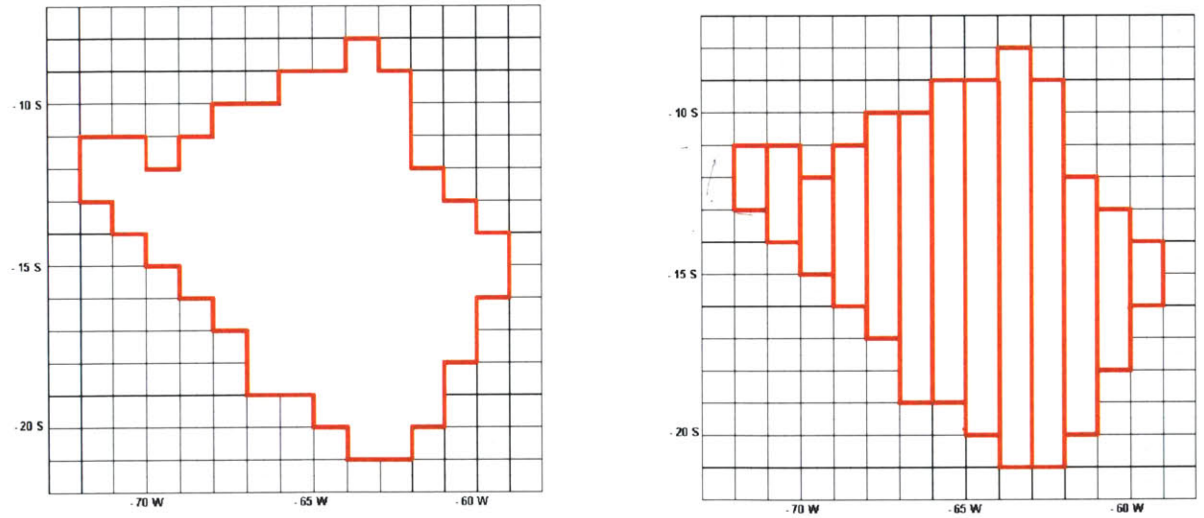
Table 3-3: Basin Sized Control Volume Land Areas

Figure 3-6 shows the evolution of the basin sized control volume. A number of different datasets are combined here to compute the water balance over an area that in theory has one runoff outlet, a gauged point on a large river. The reanalysis is used again for evaporation and moisture flux calculations as well as all relevant storage calculations. Precipitation is altered as before over a dozen alternative precipitation datasets. Runoff can also be calculated for this control volume by the reanalysis, however given the coarser resolution of the runoff grid and the finer resolution of the border of the basin, the reanalysis calculated runoff may not be as accurate.

The procedure for the derivation of a basin control volume is as follows. First a river basin must be selected that can be resolved reasonably well over the one-degree resolution TRIP pathways. The one-degree resolution of the TRIP pathways is used in this case in order to make the boundaries of the control volume a reasonable size for the gridded 2.5-degree moisture flux calculations, and is acceptable for river routing because the rivers which are being studied are large enough so that they can be resolved by a one degree grid. The TRIP pathways, which converge to this point, are then found. For the Madeira River basin, which is gauged at Porto Velho, Brazil in the RivDis dataset this layout is given in Figure 3-6(a). The basin is then drawn in Figure 3-6 (b) including all the grid points that lead to the outlet where runoff is known. The pathways are removed in the diagram so the actual shape of the control volume can be seen in Figure 3-6(c). In Figure 3-6 (d) the control volume is split into boxes, the coordinates of which can be input into the programming developed for this study, which receives four boundaries, a north, south, east, and west face.



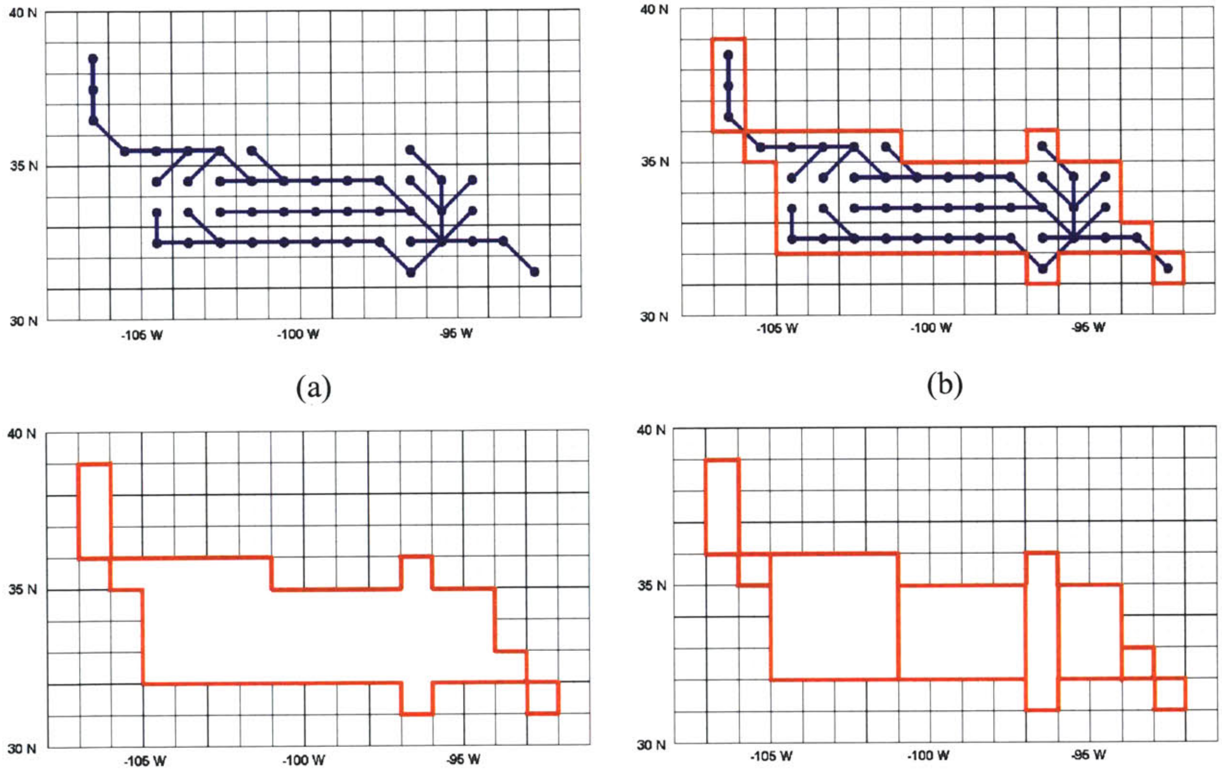
(a) One Degree Runoff Trip Grid (b) Runoff Grid Used to Outline Basin



(c) Outline of the Basin Control Volume (d) Component Rectangular Control Volumes

Figure 3-6: Derivation of the Basin Sized Control Volume for Water Balance Calculations Madeira River through Porto Velho, Brazil

The moisture flux and runoff in and out of each control volume is summed and then divided by the area of the basin. Moisture flux calculations for the smaller control volumes that make up basin control volumes often have coordinates that are not consistent with either Method 1 or Method 2 of the moisture flux methodologies outlined earlier. In other words the border of the control volume contains points neither on points of the 2.5 degree grid or directly between points of the 2.5 degree grid. In this case the nearest points to a control volume border are used to calculate the moisture flux across that border. Because the basin control volumes are gridded on a one-degree basis, a situation does not occur in which the boundary of such a control volume is equidistant between two points.



(a)

(b)

(c) Outline of the Basin Control Volume

(d) Component Rectangular Control Volumes

Figure 3-7: Derivation of the Basin Sized Control Volume For Water Balance Calculations Arkansas River

Figure 3-7 shows the same evolution for the Arkansas River Basin. This basin was chosen because it was similar in size to the Porto Velho River Basin. Similar control volumes were found for the Mississippi and Amazon River basins by using the trip pathways, however these basins are too large to draw out in such detail, and are presented from graphics available at the TRIP website (Figure 3-8). A more detailed coordinate schematic was derived by hand. Note that the actual basins used are smaller because the runoff data used for the balances comes from the point indicated by the black dot in Figure 3-8. In the case of the Amazon basin, the actual basin used does not include the drainage directions for much of the far eastern part of the basin.

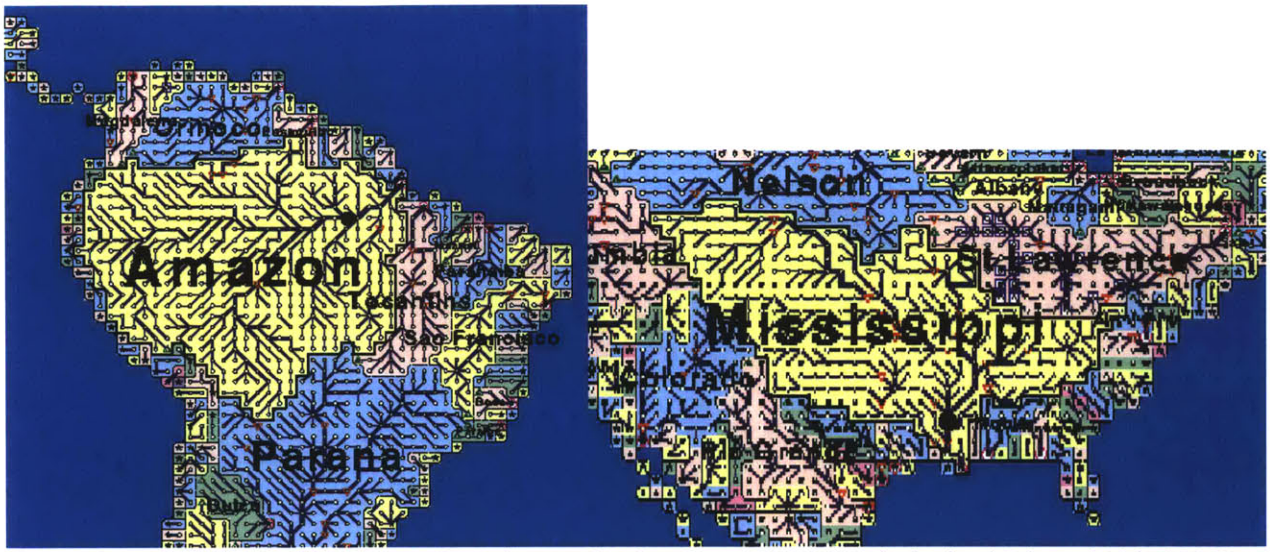


Figure 3-8: Basin Sized Control Volumes for the Amazon and Mississippi River (Oki, 1998)

3.3.2.3. Potential Adjustments in Storage and Lag Time

While water vapor moves through a regional control volume fairly quickly over the course of a month, water in the surface and subsurface likely moves more slowly. Therefore it is conceivable that in a month precipitation water does not completely travel through the control volume and produce corresponding runoff. The process is lagged by a number of days or months.

In an attempt to improve the surface water balance, the change in storage term was removed and instead lag times of 0, 1, 2, 3, and 4 months were tested to satisfy the surface water balance, in addition to the analysis with the change in storage term. Given L = lag time in months, and t as an arbitrary time the mass balance equation becomes:

$$-P_{t-L} + E_{t-L} + R_t = 0 \qquad \text{Eq. (3-8)}$$

3.4 Data Analysis

3.4.1. Residual Analysis

Residuals are the resultant of a water balance calculation that theoretically should be equal to zero. Solving the atmospheric and surface water balance:

$$P - E - Q + \frac{dW}{dt} = residual \qquad \text{Eq. (3-9)}$$

$$-P + E + R + \frac{dS}{dt} = residual \qquad \text{Eq. (3-10)}$$

Smaller residuals are desired for a better balance. Residuals are calculated for all surface and atmospheric water balances in this work and analyzed in two ways, bias and absolute error.

3.4.1.1. Absolute Error

For the atmospheric balance the mean absolute error is:

$$AE_{atmos.} = \frac{\sum_{t=1}^{n} \left| P_t - E_t - Q_t + \frac{dW_t}{dt} \right|}{n} \tag*{Eq. (3-11)}$$

For the surface balance the absolute error equation is:

$$AE_{surf.} = \frac{\sum_{t=1}^{n} \left| -P_t + E_t + R_t + \frac{dS_t}{dt} \right|}{n} \tag*{Eq. (3-12)}$$

The variable n stands for the length of the dataset, and t stands for the time index. The absolute error preserves the magnitude of the error calculation throughout the time period of the water balance. This is especially important on the monthly time scale where seasonal departures from the zero balance in opposite directions may give the illusion of a good balance in the bias calculation.

3.4.1.2. Bias

Bias refers to the long-term average of the residuals. The equation used for this term is as follows:

For the atmospheric balance:

$$Bias_{atmos.} = \frac{\sum_{t=1}^{n} (P_t - E_t - Q_t + \frac{dW_t}{dt})}{n} \tag*{Eq. (3-13)}$$

For the surface balance:

$$Bias_{surf.} = \frac{\sum_{t=1}^{n} (-P_t + E_t + Q_t + \frac{dS_t}{dt})}{n} \tag*{Eq. (3-14)}$$

The bias is a measure of the agreement of the water balance averaged over the entire time period. Because this study relies primarily on the length of precipitation and runoff datasets, the bias is a good evaluation of how these datasets fit into a water balance for the time period for which they are being collected.

3.4.1.3. Normalization

In this work residuals are found for a number of different datasets and a number of different hydrological conditions around the globe. In order to compare residuals for different water balances, the absolute error and bias statistics, as well as the root mean square error of the correlations terms are normalized by the average precipitation of the given water balance. Precipitation is taken as a normalization factor because it is the most basic component of the water balance. For this normalization the statistic is simply divided by the average precipitation of all points used for the particular balance. The equations for the normalized residual statistics are shown below.

For the atmospheric water balance:

$$Normalized\ AE_{atmos.} = \frac{\sum_{t=1}^{n}\left|P_t - E_t - Q_t + \frac{dW_t}{dt}\right|}{n \times \overline{P}} \qquad \text{Eq. (3-15)}$$

$$Normalized\ Bias_{atmos.} = \frac{\sum_{t=1}^{n}(P_t - E_t - Q_t + \frac{dW_t}{dt})}{n \times \overline{P}} \qquad \text{Eq. (3-16)}$$

For the surface water balance:

$$Normalized\ AE_{surf.} = \frac{\sum_{t=1}^{n}\left|-P_t + E_t + R_t + \frac{dS_t}{dt}\right|}{n \times \overline{P}} \qquad \text{Eq. (3-17)}$$

$$Normalized\ Bias_{surf.} = \frac{\sum_{t=1}^{n}(-P_t + E_t + \nabla Q_t + \frac{dS_t}{dt})}{n \times \overline{P}} \qquad \text{Eq. (3-18)}$$

In cases when only one control volume is being analyzed, the normalization is not necessary and regular bias and absolute error terms can be used.

3.4.2. Correlation Analysis

Solving for P-E in the atmosphere and land surface balances equations (3.1 and 3.2) results in the three elements of Eq. 3-19.

$$\underset{(1)}{P - E} = \underset{(2)}{Q - \frac{\partial W}{\partial t}} = \underset{(3)}{R + \frac{\partial S}{\partial t}} \qquad \text{Eq. (3-19)}$$

Although each of the three comparison terms are actually comprised of two terms each, the change in atmospheric storage and surface storage terms are known to be smaller in nearly all cases as compared to moisture flux and runoff respectively. Likewise, the evaporation term follows a more regular seasonal and yearly cycle than precipitation. In each of the comparison terms one variable is clearly more dependent (precipitation, moisture flux, and runoff) at the time index and particular data set used than the other variable (evaporation, change in precipitable water, and change in storage).

In theory each of the three quantities outlined above should equate to each other for each time step in the water balance. Taking any two time series and plotting the quantities against each other a 1:1 scatter plot should result. Of course, this theoretical plot is never obtained, and we must use comparative statistics in order to evaluate how well the theoretical relation is met. Three comparisons are possible, an atmospheric balance comparison (terms (1) and (2)), a surface balance comparison (terms (2) and (3)), and a total balance comparison (terms (1) and (3)). The comparison can be plugged into a linear regression, and additionally a correlation coefficient and the root mean square error can be calculated for all three comparisons. Such correlations can be hereafter referred to as the atmospheric regression or correlation, the surface regression or correlation, and the total regression or correlation.

3.4.2.1. Linear Regression

A linear regression of a two sided water balance can be conducted to produce a slope, intercept, R^2, and R^2 1:1. The lesser-known predictor is graphed on the y-axis and regressed against the actual value on the x-axis. Unfortunately, in this work there is no actual known value, and we can only assume one set of data is more reliable than the other. This study makes this classification based on the ease by which sides of the balance are calculated. This classification is altered based on whether a box sized control volume or a basin sized control volume is being used.

For the box control volume water balance the classification is as follows:
1) P-E
2) Q – dW/dt
3) R + dS/dt

Thus, P-E is always taken as the actual value, and the moisture flux term is taken as the actual value when the total regression is performed. Although precipitation and evaporation are considered class C data products in the reanalysis, they are derived by simple spatial averaging. The moisture flux is derived by a less direct method, which has been documented, and therefore its term is ranked second. The runoff is derived by a methodology original to this work, and therefore is likely the most experimental and variable term, thus is ranked last.

However, when the basin sized control volume is used the rankings are changed. In this case, runoff data is considered the most reliable because actual river runoff data is being used, with spatial averaging only in the change in storage term. Conversely, the moisture flux is considered to be the least accurate measure due to the fact that is derived from the combination of a number of smaller control volumes, where it is inferred that less points on the boundary of a control volume produce a higher probability of variability.

For the basin control volume water balance the classification is as follows:
1) R + dS/dt
2) P – E
3) Q – dW/dt

Linear regressions are performed for the three comparisons (atmospheric, surface, and total), and from these regressions, a slope, intercept and R^2 value corresponding to the slope and intercept are found as well as an R^2 1:1 value, which is an R^2 measure fitting the data to a 1:1 line. The slope of the regression is theoretically one and on the monthly scale. The slope should be a good indicator of the seasonal strength of signal of one side of the water balance compared to the other. The term signal refers to the amplitude of various peaks and troughs of the time series of each side of the water balance being considered. A slope greater than one indicates the y-axis property has a stronger signal, while a slope less than one indicates the y-axis property has a weaker signal. Signals also exist on the yearly scale, to a lesser degree.

The intercept of the regression is another check of bias, and is useful in checking regressions for large errors and inaccuracies. The R^2 value is a similar analysis tool. It measures the tightness of fit to the regressed line, but is a good measure only if the slope and intercept of the regression make sense. The perfect R^2 value is 1, and at zero it becomes meaningless. The R^2 1:1 value is in theory a very good metric for this study because it tests the fit of the regression to a 1:1 line. Unfortunately, the regressions in this study are rarely close to 1:1, causing this metric to become very largely negative in most cases. However, in some cases the statistic is still useful.

3.4.2.2. Correlation Coefficient

The correlation coefficient is a useful metric like the RMSE because it allows for the comparison of two independent variables, either of which may be faulty. The coefficient is the off diagonal term of the covariance matrix obtained by comparing a time series of two water balance variables (i.e. A, B) and is found by the formula:

$$CorrCoef = \frac{\sum_{t=1}^{n}\left((A_t - \overline{A}) \times (B_t - \overline{B})\right)}{\sqrt{\sum_{t=1}^{n}\left((A_t - \overline{A})^2 \times (B_t - \overline{B})^2\right)}} \qquad \text{Eq. (3-20)}$$

The correlation coefficient is a normalized relationship of the linear relationship strength between variables independent of slope or intercept. The correlation coefficient will vary from –1 to 1, with 1 representing a perfect linear correlation, 0 representing no correlation, and –1 representing a perfect inverse correlation. The linear regression analysis finds the slope and intercept of the relation to find the differences in the regression from the predicted 1 to 1 regression. Unfortunately in this study good linear correlations, and correlations to the 1:1 line are rare, and it is more useful to look for any correlation possible as evaluation tool for the potential faulty data. Because this coefficient is normalized between –1 and 1, the evaluation statistic is more under control for some of the potentially volatile data that will be looked at in this study. In some it is important to simply see if a correlation exists at all. The normalization in this case is performed based on the actual data rather than the precipitation magnitude, which is an added advantage for the use of this statistic.

3.4.2.3. RMSE

The root mean square error gives an error term to the two independent data sources:

$$RMSE = \sqrt{\frac{\sum_{t=1}^{n}(A_t - B_t)^2}{n}} \qquad \text{Eq. (3-21)}$$

The root mean square error is a standard comparative statistic that gives a good representation of the magnitude of the error between two sides of a water balance. Because the resulting statistic has the same units as the water balance variables themselves, the term can be normalized, so different control volumes may be compared. The measure is most like the absolute error and bias measurements used before in that it gives a magnitude of error, therefore it is normalized by precipitation.

$$Normalized\ RMSE = \frac{\sqrt{\frac{\sum_{t=1}^{n}(A_t - B_t)^2}{n}}}{\overline{P}} \qquad \text{Eq. (3-22)}$$

4. Data Analysis of Water Balance Methods

In this Chapter, differences in water balance methodology will be discussed for all of the control volumes. This initial analysis will indicate which methodologies are more effective when computing regional water balances. Therefore, where applicable, normalized data analysis tools will be utilized. In order to analyze which methods are best suited for the computing of water balances a set of default characteristics must be given, so that they may be held constant while other characteristics are altered. Table 4-1 lists the characteristics which will be studied, the possible alternatives, and the default conditions.

Water Balance Characteristics	Alternatives	Default
Moisture Flux Methodology	Method 1, Method 2	Method 2
Runoff Methodology	Point, Area, Line	Line
Surface Storage Method	dS/dt, 0-4 month lags	dS/dt
Reanalysis	1 and 2	Reanalysis 2
Precipitation	13 Types	Reanalysis 2

Table 4-1: Water Balance Methodologies

For moisture flux methodology Method 2 is assumed as the default method. This is the aligned method, which is also used for the global analysis, and is the more conventional method using the actual grid of the reanalysis. The default runoff methodology used is the line methodology. As discussed before, this is theoretically the best way to calculate runoff. The default surface storage methodology uses the dS/dt term in the equation and no time lag. The Reanalysis-2 is used as the default primary source of data for the water balances while studying methodology. Also used as the default precipitation dataset is the Reanalysis-2 precipitation. As will be shown in the precipitation analysis data section the Reanalysis-2 provides generally the best closure for water balances over its duration. Unfortunately, this precipitation dataset is known to have its problems. Alternative precipitation datasets will be looked at very closely to find their advantages.

There will be two additional sections to analyze the time scale used in the data analysis contrasting the monthly and yearly time steps with all default conditions in place and the size and shape of control volumes used. There are four distinct types of control volumes used: 7.5 degree box, 15 degree box, small basin, and large basin, and each of the types of control volume are represented in North and South America. The final section will give a sense of how the balances compare to each other and lead into the following Section 4.2, where each control volume will be studied independently.

4.1. Moisture Flux Methodology

As discussed in the procedure section two methods of obtaining moisture flux through a boundary are investigated for a box control volume. Because of the coarse resolution of the data it is hypothesized that it may be more effective to compute a water balance in between grid points (Method 1), as opposed to aligned with grid points (Method 2).

Figure 4-1 shows monthly and yearly normalized absolute error and bias contrasting the two moisture flux methods. A normalized error of one indicates error on the order of magnitude of precipitation and therefore a magnitude of error on the order of 6 or 7 would be completely useless. Problems develop in the atmospheric water balance computations of the Southwest US and in the Larger US control volumes, which contain similar areas. The mountainous nature of these control volumes may contribute to poor balance.

For the first three larger (15 degree) control volumes the aligned Method 2 has a larger absolute error over both time scales. The bias for Method 2 is also slightly larger (more non-zero) for these three control volumes. Mixed results are found for smaller control volumes in terms of absolute error. Bias calculations are consistent across monthly and yearly time scales as the bar graphs on the bottom left and the bottom right are almost identical. The bias of the water balance should be the same regardless of time scale because it is measure of the aggregate water balance, and the yearly time scale is simply the aggregate of the monthly time scale. Bias results are in general agreement with absolute error observations.

Figures 4-2 and 4-3 show the regression statistics and other statistics for the comparison of the flux through the bottom of the atmospheric control volume (P-E) with the flux through the sides of the control volumes (Q-dW/dt). All of the statistics computed in the study are shown for this analysis for both monthly and yearly time scales. For the majority of control volumes (excluding the SWUS and Larger US control volumes), the regressions are fairly good and therefore all regression statistics are useful. No clear conclusion can be made from these plots as to which flux computation methodology works better.

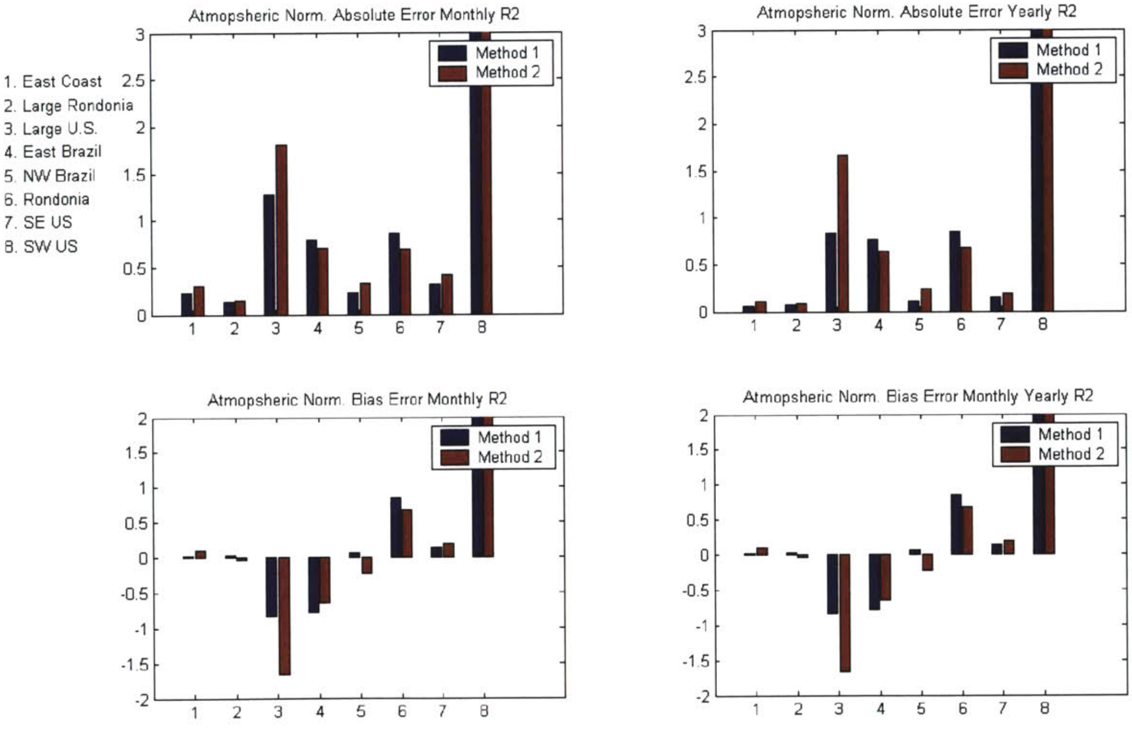


Figure 4-1: Moisture Flux Method Comparison: Absolute Error and Bias

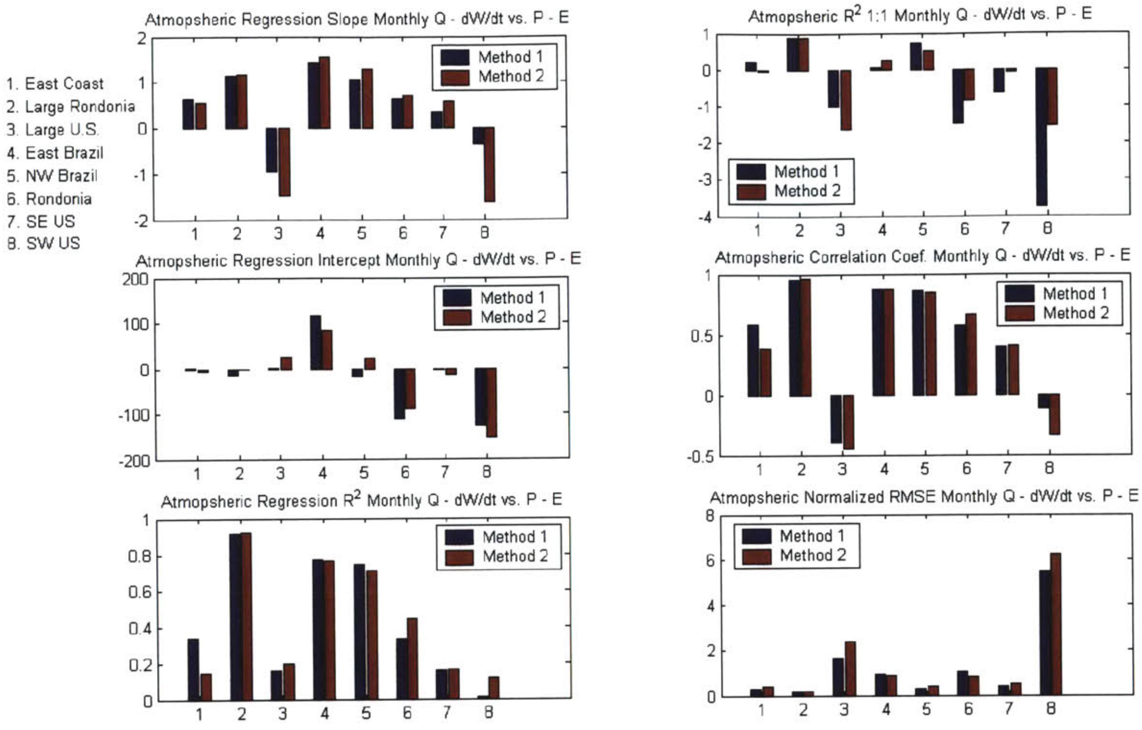


Figure 4-2: Moisture Flux Method Comparison: Monthly Correlation Statistics

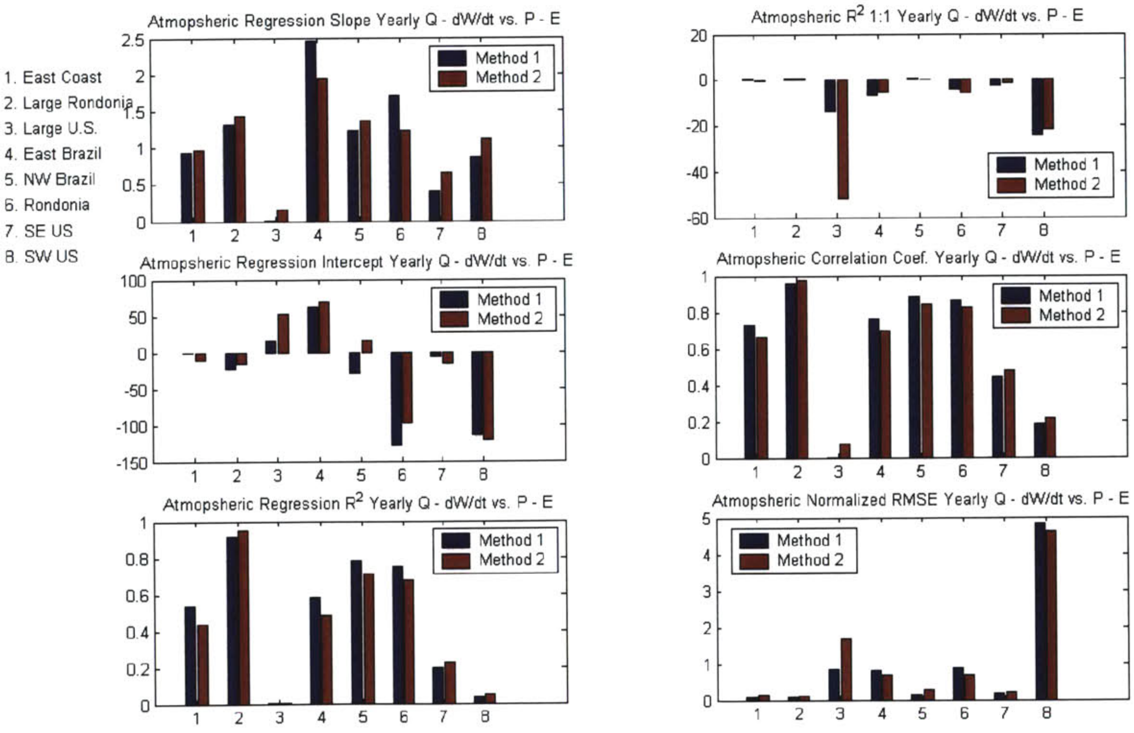


Figure 4-3: Moisture Flux Method Comparison: Yearly Correlation Statistics

Figure 4-4 shows the regression of monthly water balance data for Rondonia, the properties of which appear as the sixth column of each of the figures in 4-2. The bottom portion of Figure 4-4 shows an example time series of the two correlated properties plotted against each other. As is the case with most control volumes there is little difference between methods. A difference can be seen between time series plots of Q + dW/dt in the bottom portion of the Figure 4-4 for the given four year period. The P-E term will be the same for each case. These correlations are rather good in both cases. As shown in Figure 4-1, a positive bias can be seen for this control volume, as Q is in general underestimated and therefore the average residual is positive.

Figure 4-5 gives a yearly contrast of moisture flux methodology regressions for the Larger Rondonia control volume. The regression is better for a number of reasons. The control volume area is increased by a factor of 4, and balance is found each year not each month. There is again little contrast between methods. In general, the accuracy of this water balances are good by both methods in most cases, and it therefore could be said that both methods work. This is surprising considering the uncertainty of using only three data points on each side of the control volume.

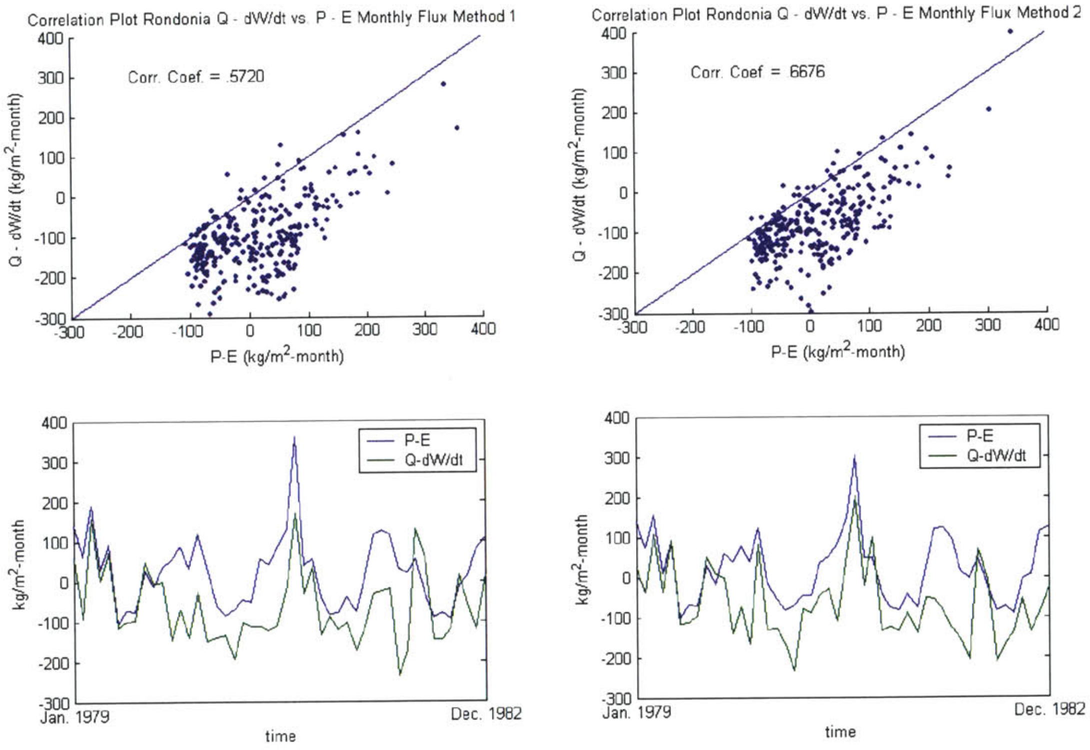


Figure 4-4: Correlation Plots for Rondonia – Different Moisture Flux Methods, Monthly

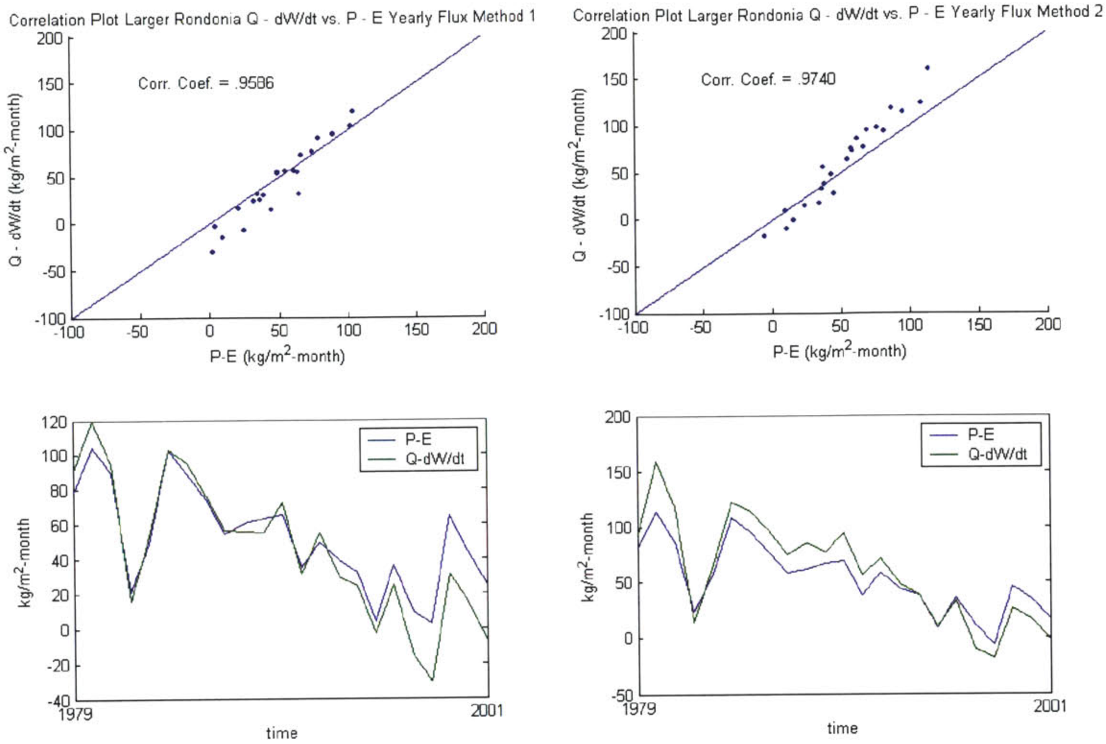


Figure 4-5: Correlation Plots for L. Rondonia – Different Moisture Flux Methods, Yearly

4.2. Runoff Methodology

Three methodologies have been presented for calculating the over ground runoff through the sides of a box control volume: point, area, and linear. Only the land surface water balance is relevant here. No discernable pattern is seen in the absolute error and bias calculations between these methods for calculating the surface balance, shown in Figure 4-6.

Figures 4-7 and 4-8 show the results of a regression of the surface balance for each scenario. In this case P-E is regressed against the runoff and the change in storage. As we look at methodologies to compute moisture flux in the previous section and runoff in this section we can get a sense of the ability to close the relevant atmospheric and surface balances respectively. While for the majority of the atmospheric balances relevant to moisture flux methodology we were able to find desirable regression properties, such properties may not be found for the surface water balance which is relevant to this section. Different runoff methodologies work the best over different control volumes with no systematic patter. Looking at the correlation coefficient the point methodology is consistently the best method. In general over all evaluation the point methodology shows consistently more desirable results.

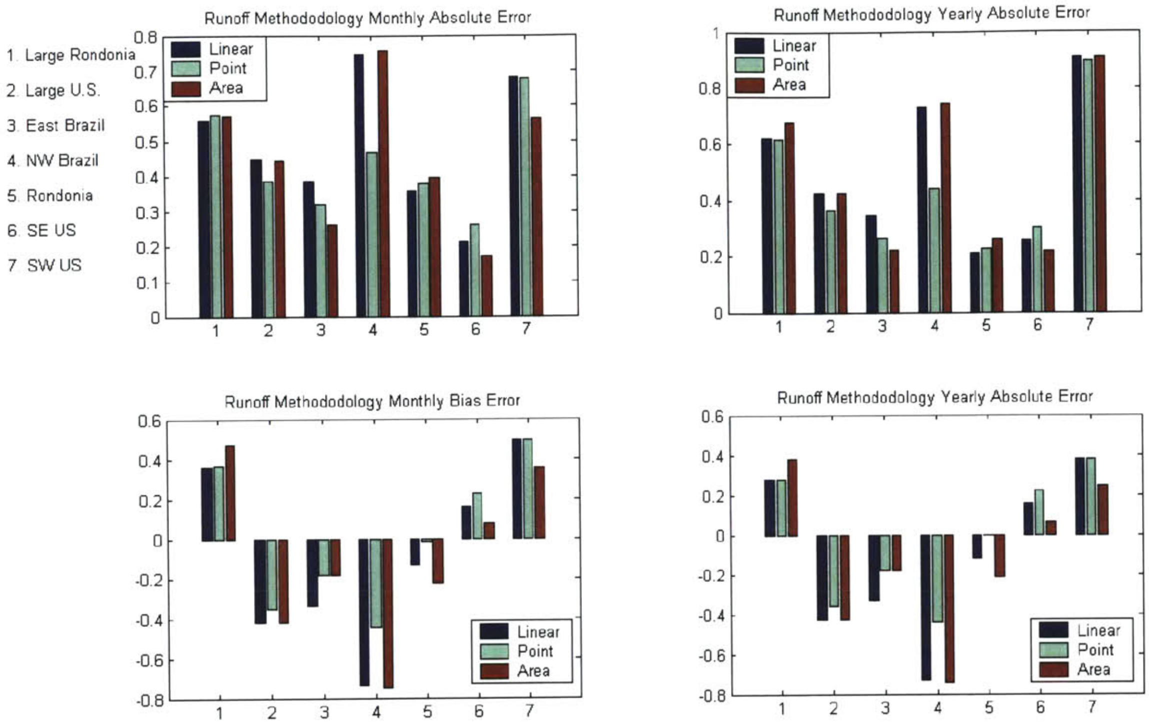


Figure 4-6: Runoff Method Comparison - Absolute Error and Bias

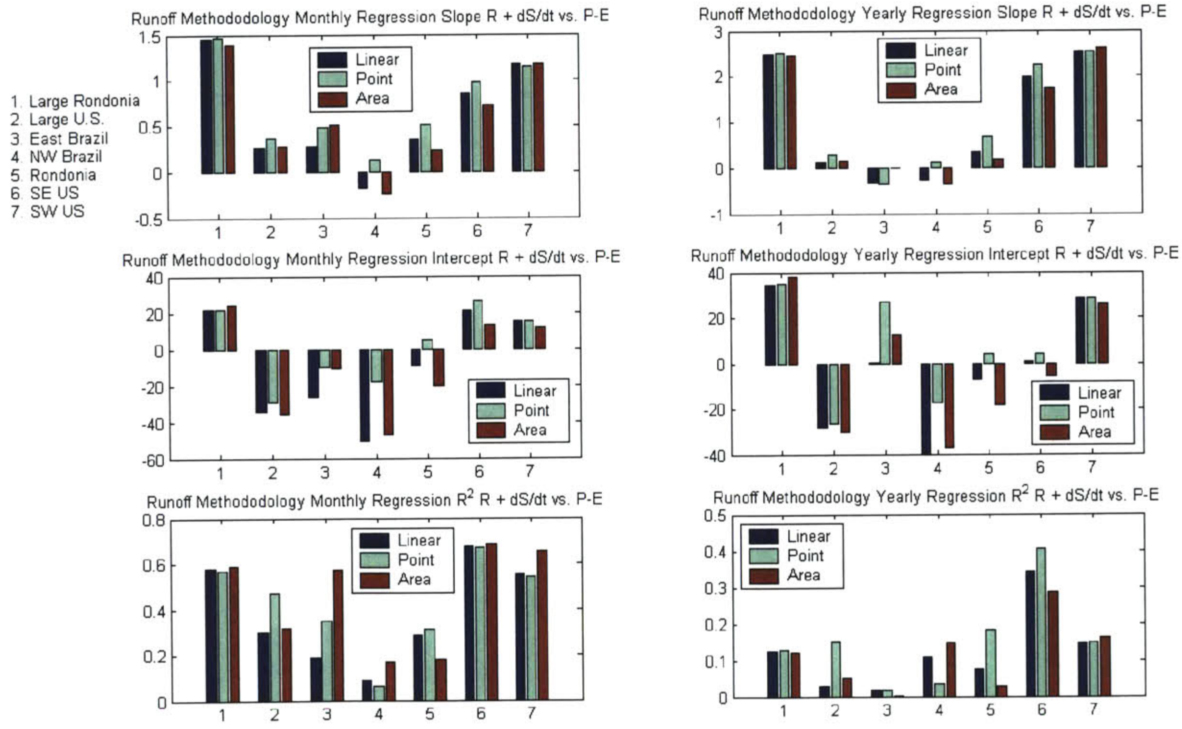


Figure 4-7: Runoff Method Comparison – Correlation Statistics 1

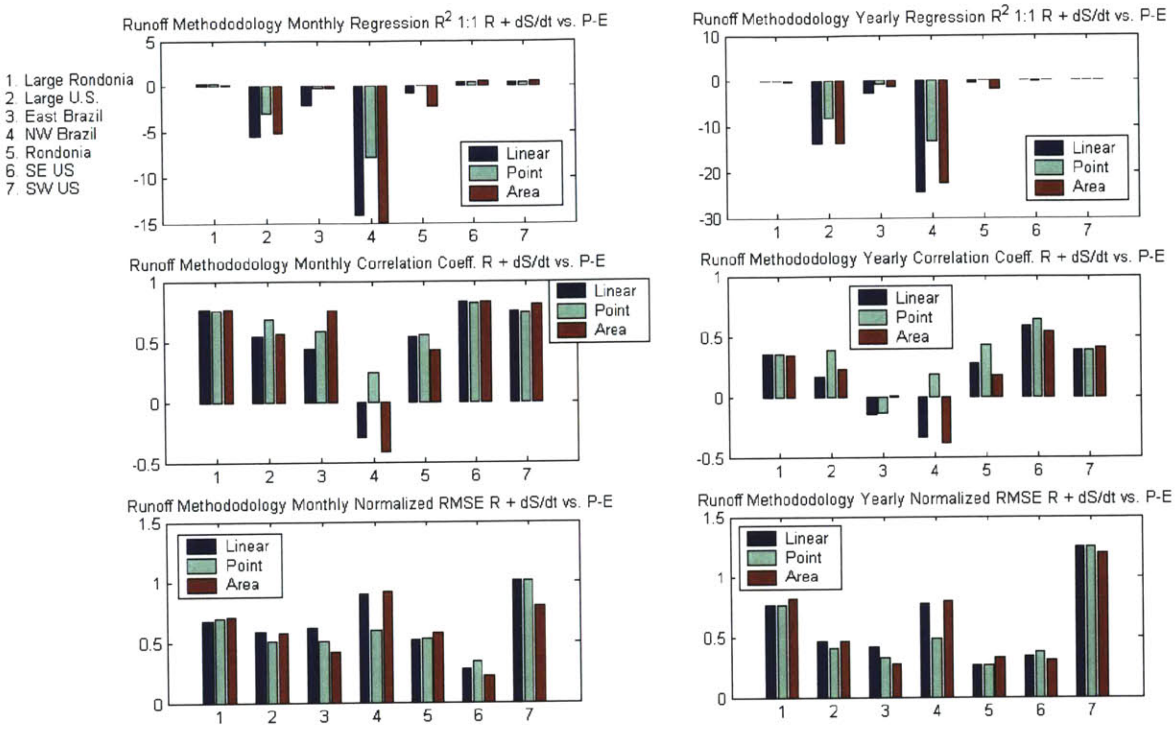


Figure 4-8: Runoff Method Comparison – Correlation Statistics 2

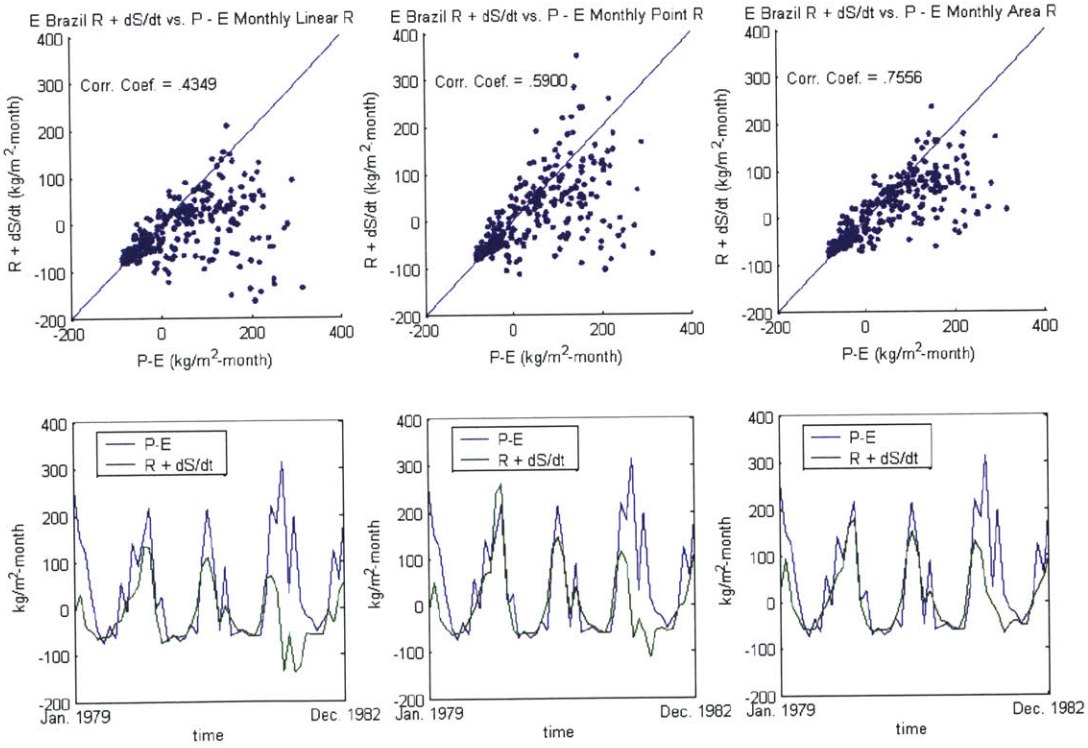
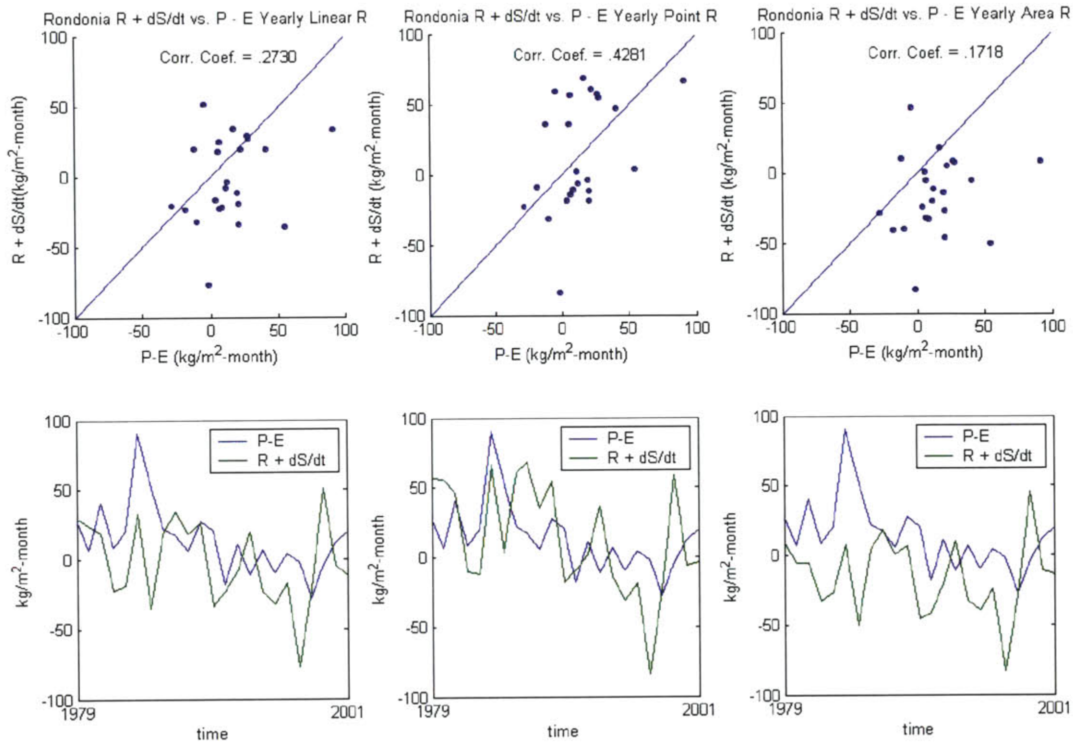


Figure 4-9: Correlation Plots for E Brazil – Different Runoff Methods, Monthly


Rondonia R + dS/dt vs. P - E Yearly Linear R

Rondonia R + dS/dt vs. P - E Yearly Point R

Rondonia R + dS/dt vs. P - E Yearly Area R

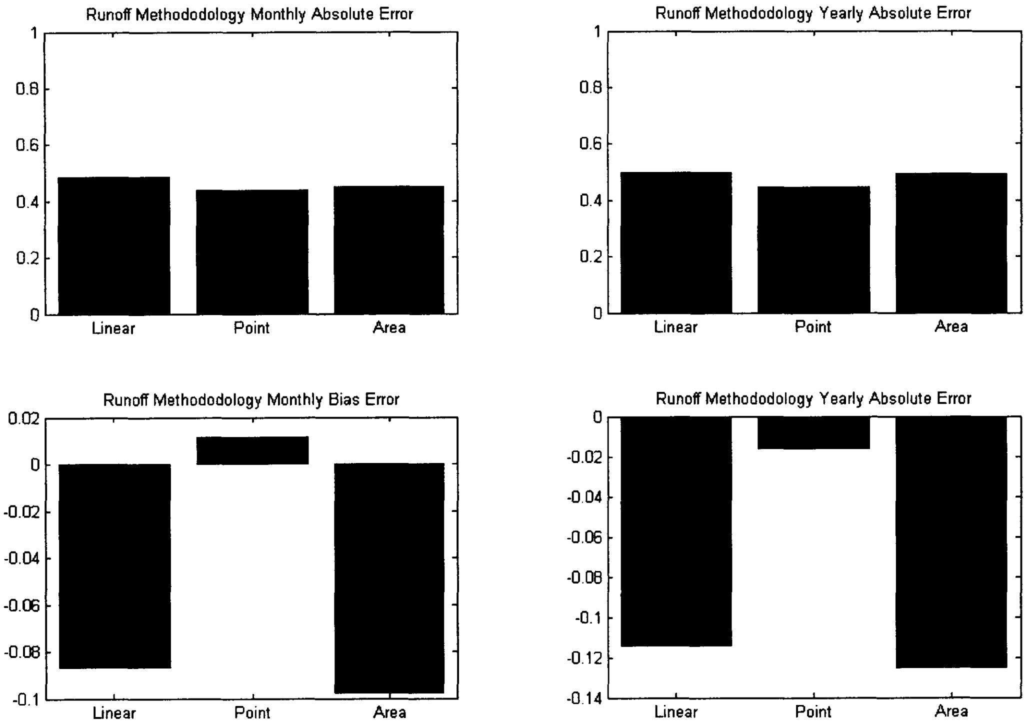
Figure 4-10: Correlation Plots for Rondonia – Different Runoff Methods, Yearly

Figures 4-9 and 4-10 give examples of the regressions whose statistics are tabulated in Figures 4-7 and 4-8. For the monthly case we refer to Figure 4-9 which shows the monthly correlation for the Eastern Brazil control volume for the three different runoff methodologies. While the P-E quantity remains constant, the runoff is altered and combined with the also constant change in storage. The overall trend of the seasonal cycle is preserved for each of the methods and the water balances well. The slopes of these regressions are all below one indicating the seasonal cycle of all of the runoff methods isn't as strong as the corresponding precipitation cycle. The yearly contrast is given as an example in Figure 4-10 for the Rondonia control volume. In this case there is no regular seasonal cycle therefore the slope statistic isn't as useful a tool, and what is more important is the correlation of the water balance as well as the bias and absolute error. Each of the three runoff methods provides a different level runoff that matches the precipitation signal reasonably well. It can be seen here that the point methodology for the Rondonia control volume, and in general, results in a more accurate overall magnitude of runoff.

In the analysis of runoff methodologies it is useful to combine the seven control volumes for the various statistics outlined, so that the methods can be contrasted directly. The seven control volumes represent a sample of the possible control volumes in the northern and southern hemisphere at varying resolutions (7.5 and 15 degrees), and have comparable statistics across the board. In other words there isn't one control volume with particularly large or small errors that would bias the averaging of the properties across each methodology.

Figure 4-11 shows the monthly and yearly atmospheric error and bias averaged over the seven control volumes. Both atmospheric error and bias error are shown on a monthly and yearly scale. The differences between the different runoff methodologies are very small for both statistics. The bias discrepancy looks misleadingly large, because the departure from zero of bias is very small for all methods. This result is encouraging because it indicates that given the sample of control volumes combined, the resulting bias is nearly zero. High and low biases cancel each other out over all control volumes selected.

Figures 4-12 and 4-13 show the regression and correlation statistics for the three runoff methodologies, averaged over all seven control volumes for both monthly and yearly time steps. Again the slopes and intercepts are consistent with what we are looking for with slopes around one and intercepts around zero. The point method is slightly better on the monthly time scale in terms of regression statistics, but not on the yearly time scale. The R^2 1:1 statistic in this case is uninformative as it is negative for both time scales and all methods. However the correlation coefficient indicates good agreement between the two sides of the water balance, with an advantage given to the point methodology. The NRMSE is just about the same across each method, with errors on the magnitude of 50 % of the precipitation values.


Runoff Methododology Monthly Absolute Error

Runoff Methododology Yearly Absolute Error

Runoff Methododology Monthly Bias Error

Runoff Methododology Yearly Absolute Error

Figure 4-11: Runoff Method Comparisons - Absolute Error and Bias Avg. Across All CV's

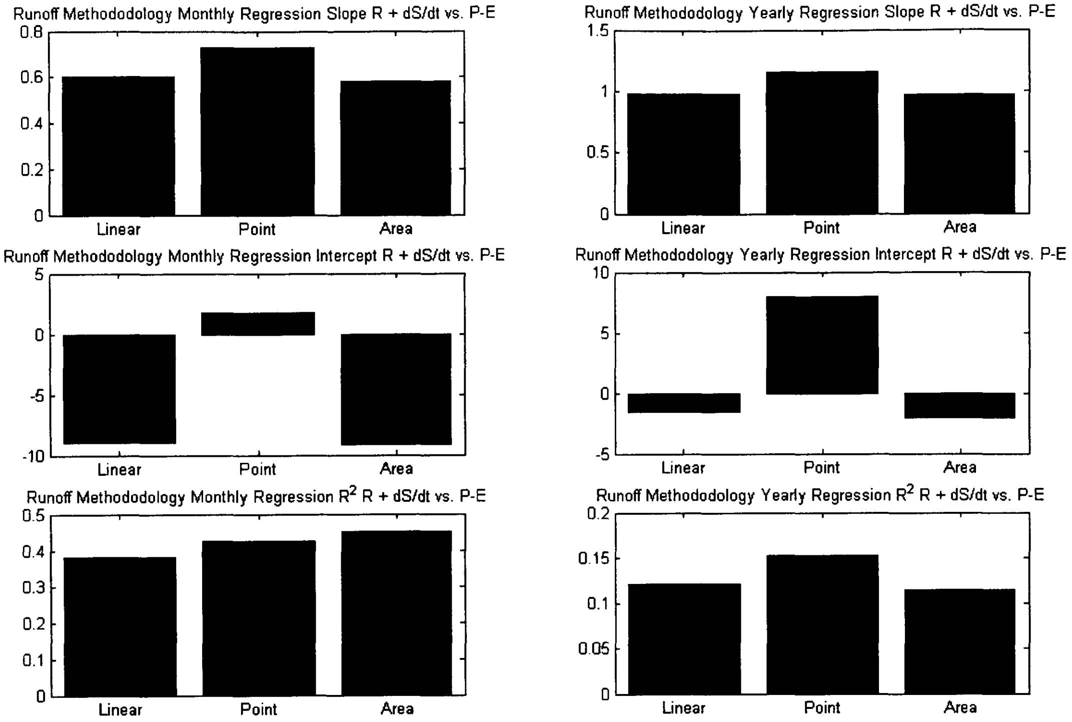


Figure 4-12: Runoff Method Comparison Regression Statistics Averaged Across All CV's

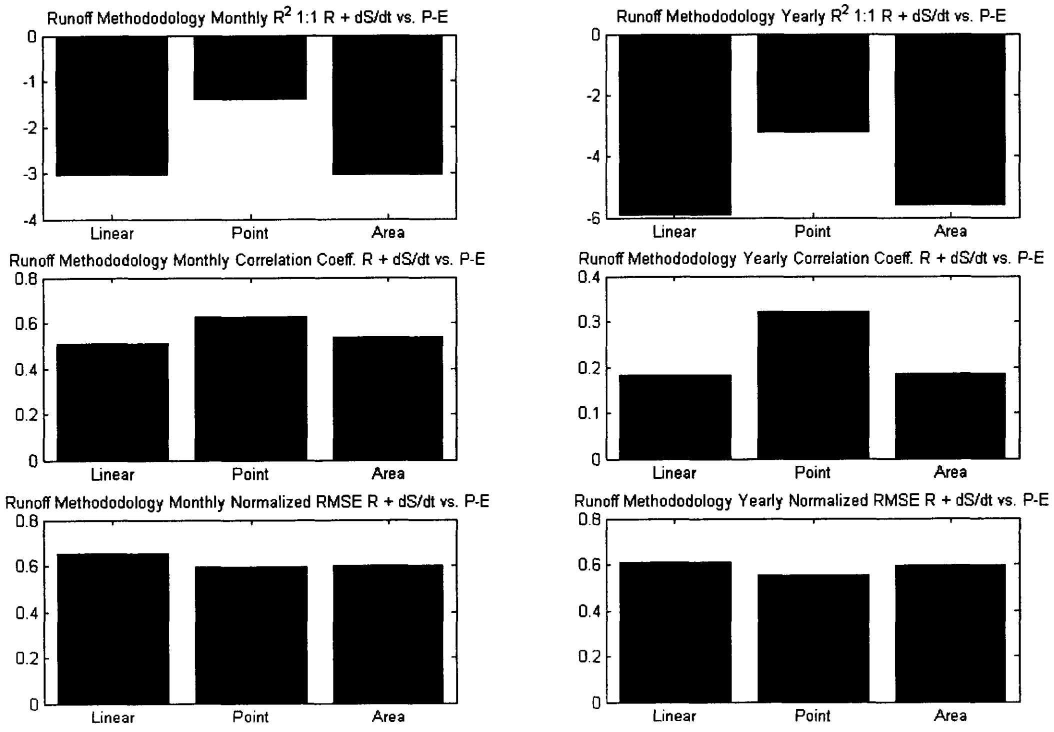


Figure 4-13: Runoff Method Comparison Correlation Statistics Averaged Across All CV's

No strong conclusion favoring a runoff estimation procedure can be reached that is applicable to all control volumes. The point methodology has a slight advantage based on this evaluation, but this conclusion does not have a strong theoretical backing. Hence, throughout the rest of this section the linear method will be used as a default because its theoretical basis is sounder.

4.3. Reanalysis

Alternative sources to the reanalysis are unfortunately limited to a number of precipitation and runoff datasets. However, there are two separate reanalyzes, whose differences are discussed in detail in the data section. While the Reanalysis-2 is used in most of the methodology studies because it is assumed (and by most evidence is) more accurate, the Reanalysis-1 covers a much larger period of time, which is more valuable in conducting climate studies. In this section the components of the water balance are extracted as a time series for each reanalysis, and the adherence to balance is compared between the reanalyzes. The duration of each dataset is tested in full, thus 55 years of the Reanalysis-1 are compared to 23 years of the Reanalysis–2.

Figure 4-14 shows the absolute error for the monthly and yearly time scales for both reanalysis datasets. For both time scales in the atmospheric balance about half of the control volumes favor each reanalysis. For the surface balance on the monthly time scale the Reanalysis-1 yields generally lower absolute error, but for the yearly time scale the Reanalysis-2 yields lower absolute error. The Reanalysis-2 has a consistently higher surface balance bias (see Figure 4-15) for most control volumes, indicating differences in the total amounts of surface water balance variables (runoff and change in storage) between the two reanalysis. The Larger US control volume is the only one which does not show the higher bias for the surface in the Reanalysis-2.

Examining Figures 4-16 and 4-17 for the monthly time scale, statistics tend to favor the Reanalysis-2. Correlations are clearly better for the Reanalysis-2, for both surface and atmospheric balances, as shown by the slope, R^2, and correlation coefficient statistics. The NRMSE looks very even for both atmospheric and surface balances. Yearly properties are presented in Figure 4-18 and 4-19. For both reanalysis products in both the atmospheric and surface balance the correction relationships are not found for the SWUS and the Larger US control volumes. Each of these control volumes contain high relief regions not present in any other control volume which may interfere with moisture flux calculations. Precipitation is also sparser and extreme over these regions, but it is odd these problems persist in the Reanalysis-2. There are no general statements for the reanalysis contrast based on the yearly atmospheric water balance. The correlations are better with the Reanalysis-2 for the yearly surface water balance but only for a limited number of control volumes.

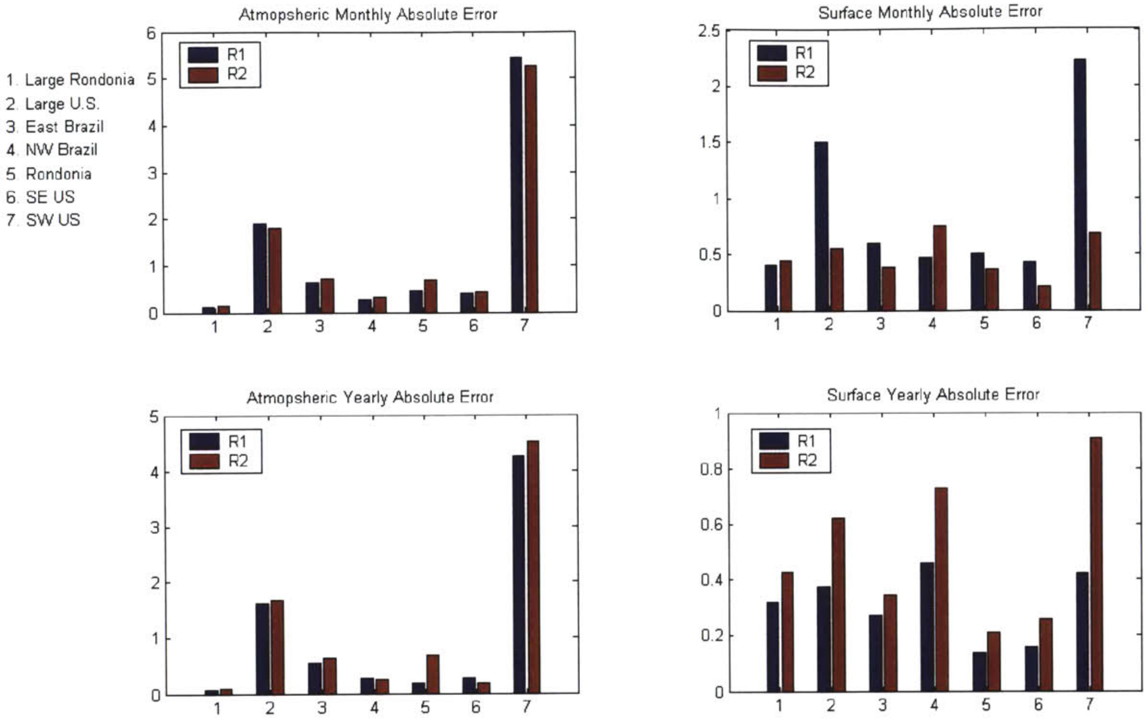


Figure 4-14: Reanalysis Comparison – Absolute Error Monthly and Yearly

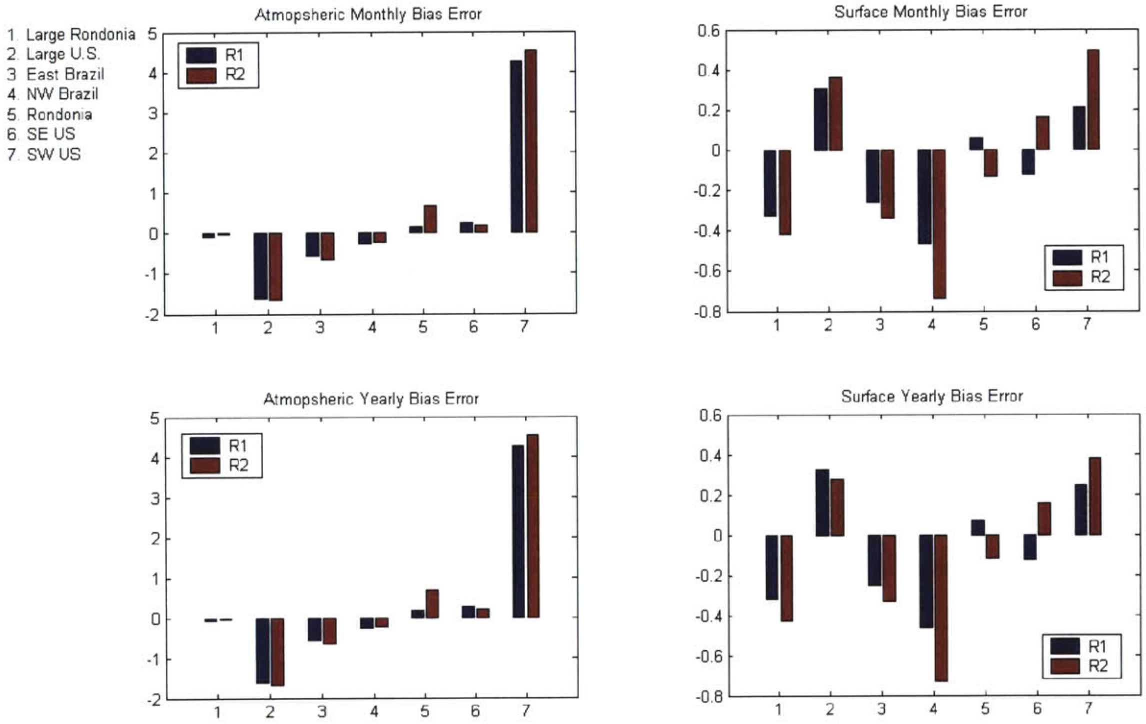


Figure 4-15: Reanalysis Comparison – Bias Error Monthly and Yearly

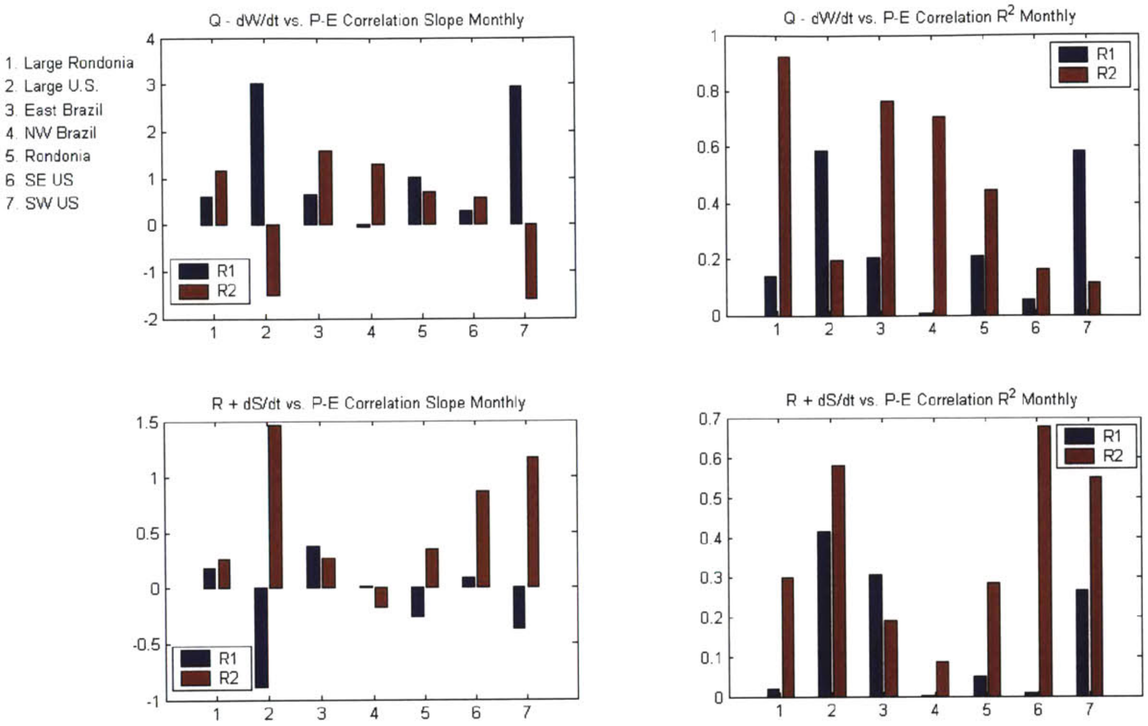


Figure 4-16: Reanalysis Comparison – Monthly Regression Statistics

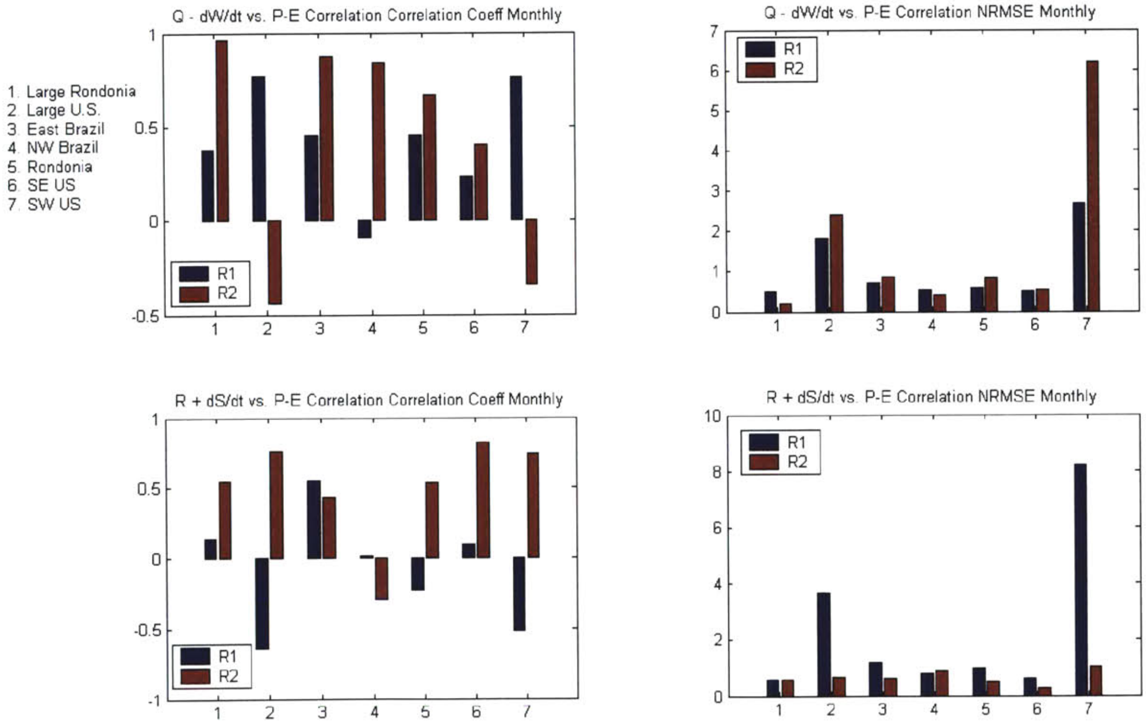


Figure 4-17: Reanalysis Comparison – Monthly Correlation Statistics

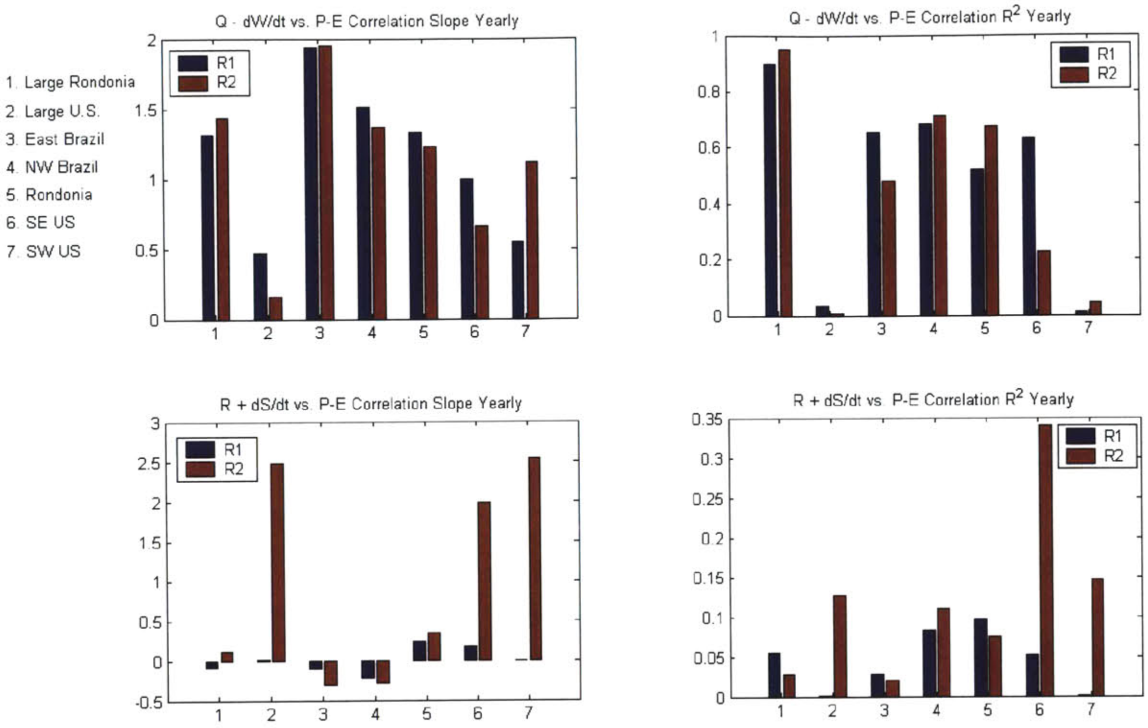


Figure 4-18: Reanalysis Comparison – Yearly Regression Statistics

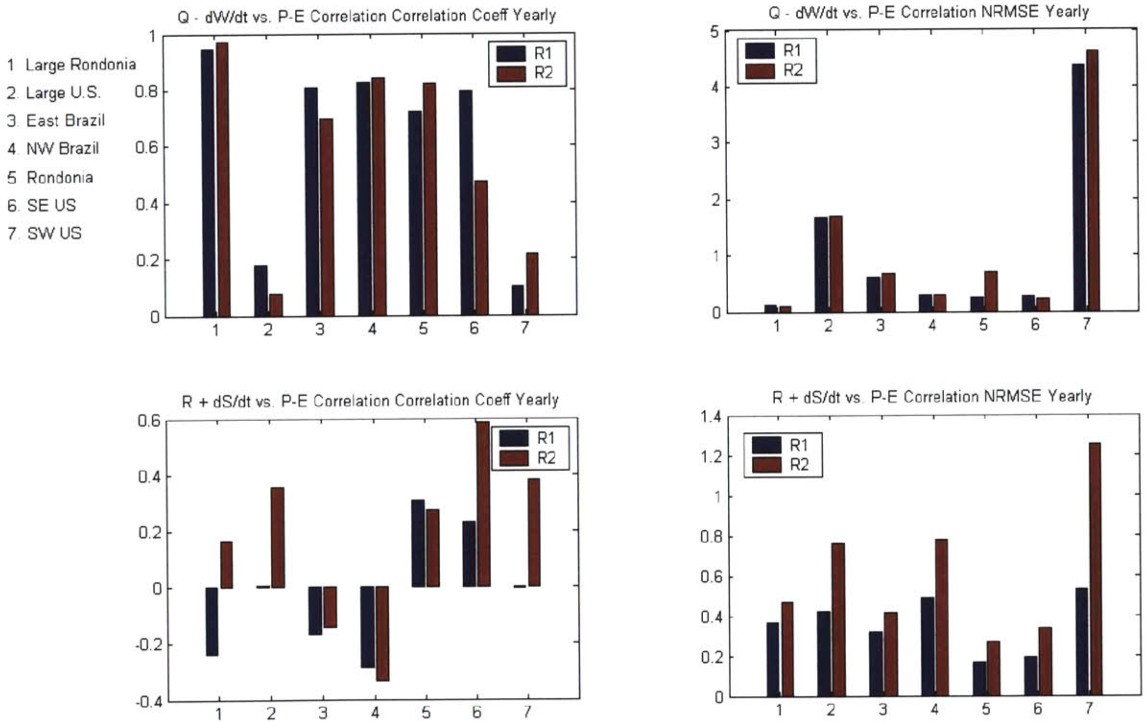


Figure 4-19: Reanalysis Comparison – Yearly Correlation Statistics

A more detailed look at the reanalysis contrast for specific control volumes is shown in Figures 4-20 through 4-23. In Figure 4-20 the East Brazil control volume is shown for the atmospheric and surface monthly time scale. For the atmospheric balance there is little change in the general shape of the regression. However, there is increased correlation and signal pick up in the case of the Reanalysis-2, as not just the yearly cycle is picked up, but smaller month to month peaks are reproduced in the time interval shown in the bottom portion of the figure. In the surface balance, the Reanalysis-2 appears to be a slightly worse balance as the seasonal signals are not as resolved.

Figure 4-21 shows the NW Brazil control volume's yearly atmospheric and surface balances. For the atmospheric balance, the yearly signals have good consistency, though a large portion of the Reanalysis-1 balance is off in the middle of the yearly time series, a time period not covered well by the Reanalyis-2. The Reanalysis-2 atmospheric balance looks better and is more tightly correlated. For the surface balance, both reanalyzes fail to close the water balance well. Since precipitation and evaporation lead to a well balanced atmospheric cycle, the conclusion is that the runoff and surface storage data is flawed. NW Brazil is a fairly remote area for which there is little hydrometeorological data, which may account for these problems.

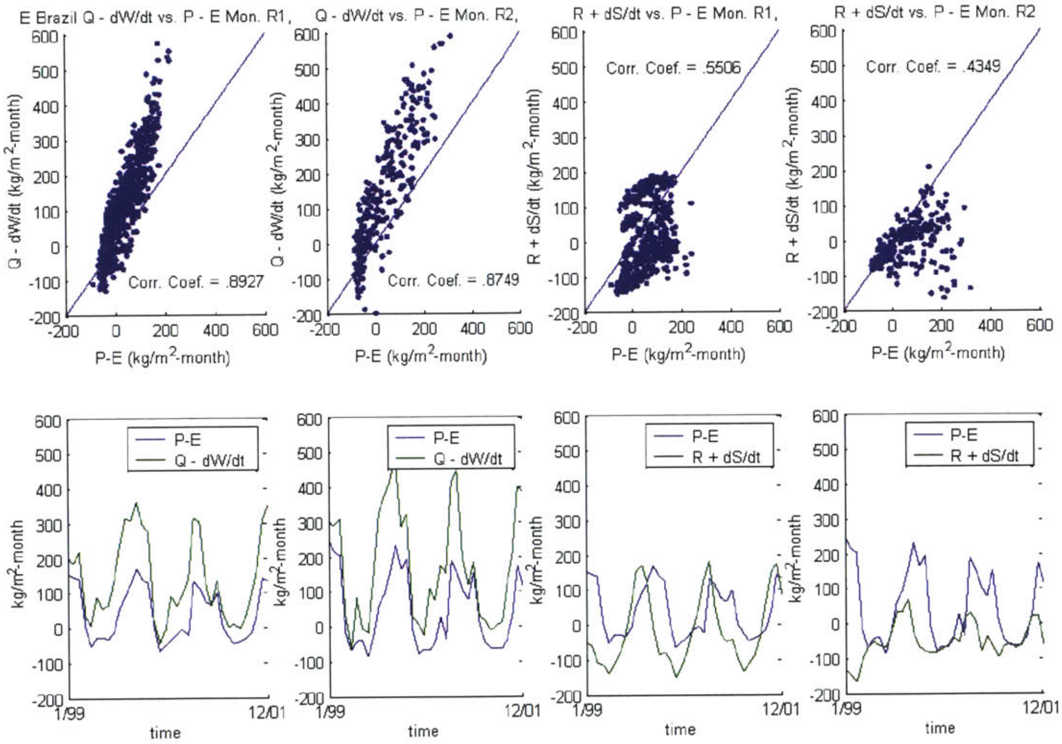


Figure 4-20: Correlation Plots for Eastern Brazil – Reanalysis Comparison Monthly

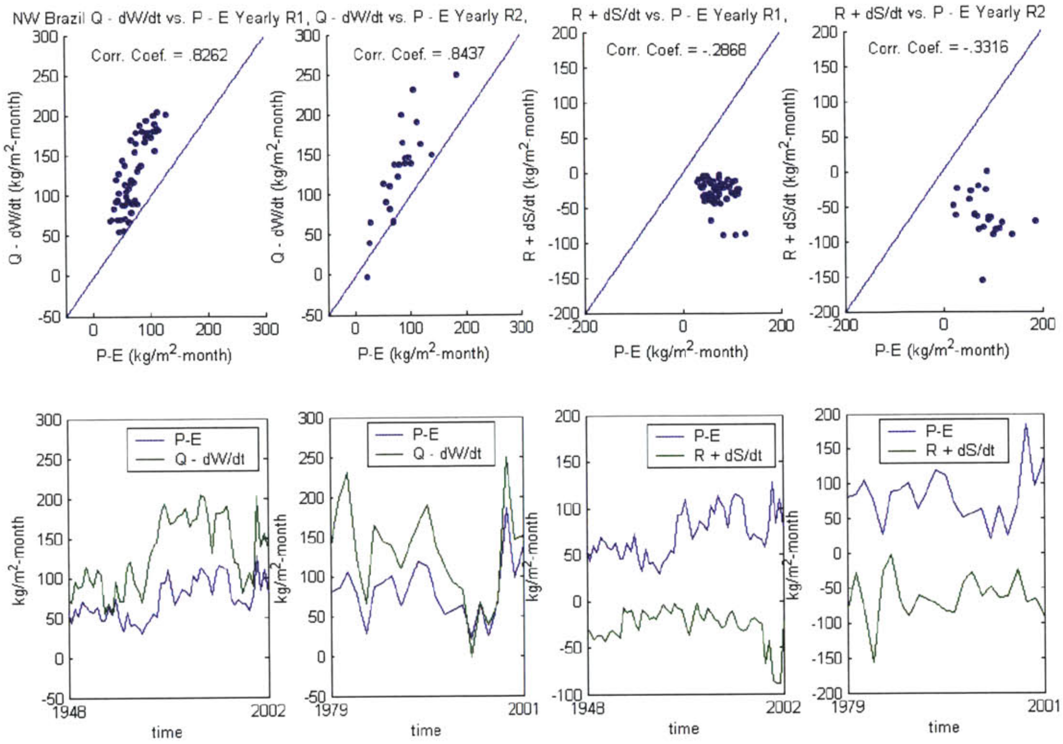


Figure 4-21: Correlation Plots for NW Brazil – Reanalysis Comparison Yearly

Figures 4-22 and 4-23 look closely at the Rondonia control volume on the monthly and yearly time scales, respectively. On the monthly time scale the observations made for the Eastern Brazil control volume still hold. The poor correlation seen in the Reanalysis-1 surface balance is due to points which aren't visible in the example plot. One important observation about the original Reanalysis-1 water balance over Rondonia is that the runoff data was vastly improved over the last five years of the balance, but wrong everywhere else. This leads to good behavior in the last five years as shown in the bottom panels of Figure 4-22, but a fairly bad regression overall.

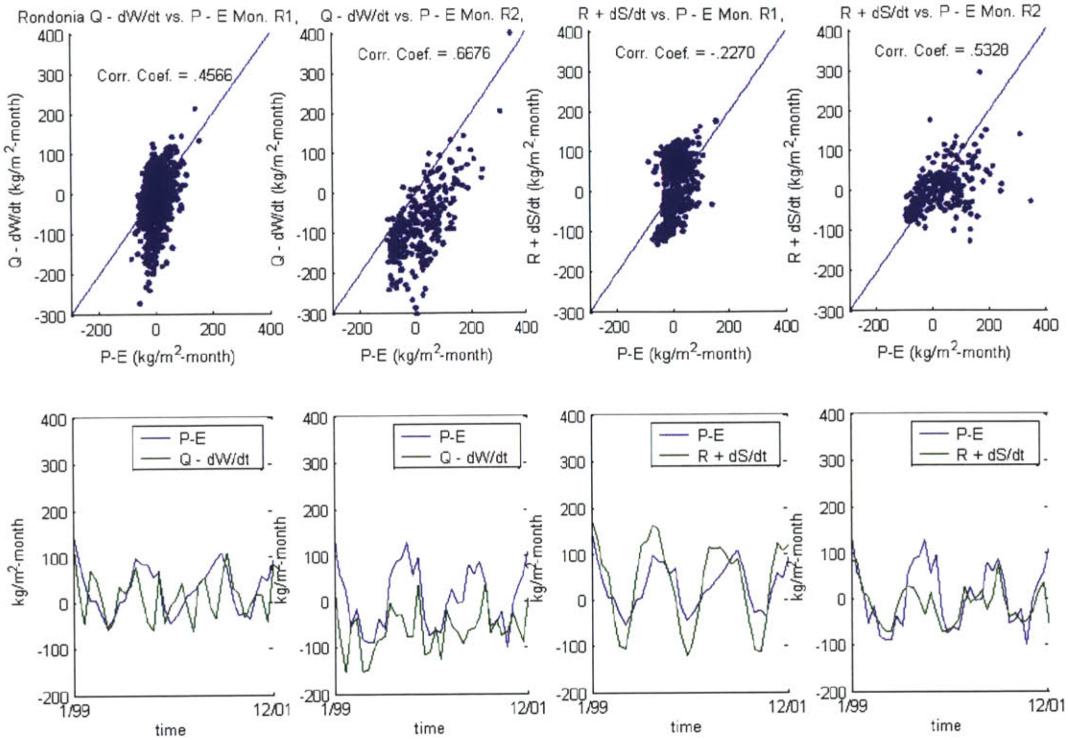


Figure 4-22: Correlation Plots for Rondonia – Reanalysis Comparison Monthly

Interestingly in Figure 4-23, on the left hand side, the atmospheric water balance for the Reanalysis-1 has a small overall bias when compared to the Reanalysis-2. However, though badly biased, the Reanalysis-2 water balance correlates better as the signals in the water balance are very well aligned (the peaks and troughs). In the surface balance a weaker overall correlation is found than in the atmospheric balance with smaller differences on the yearly scale than on the monthly scale.

As expected the Reanalysis-2 tends to close water balances slightly better than the Reanalysis-1 in general for the sample box control volumes. Imbalances arise in the surface balance for the default conditions in both reanalyzes much more than in the atmospheric balance. Many of these imbalances are control volume dependant and the usefulness of the reanalysis for each box control volume will be looked into in great detail in Chapter 5.

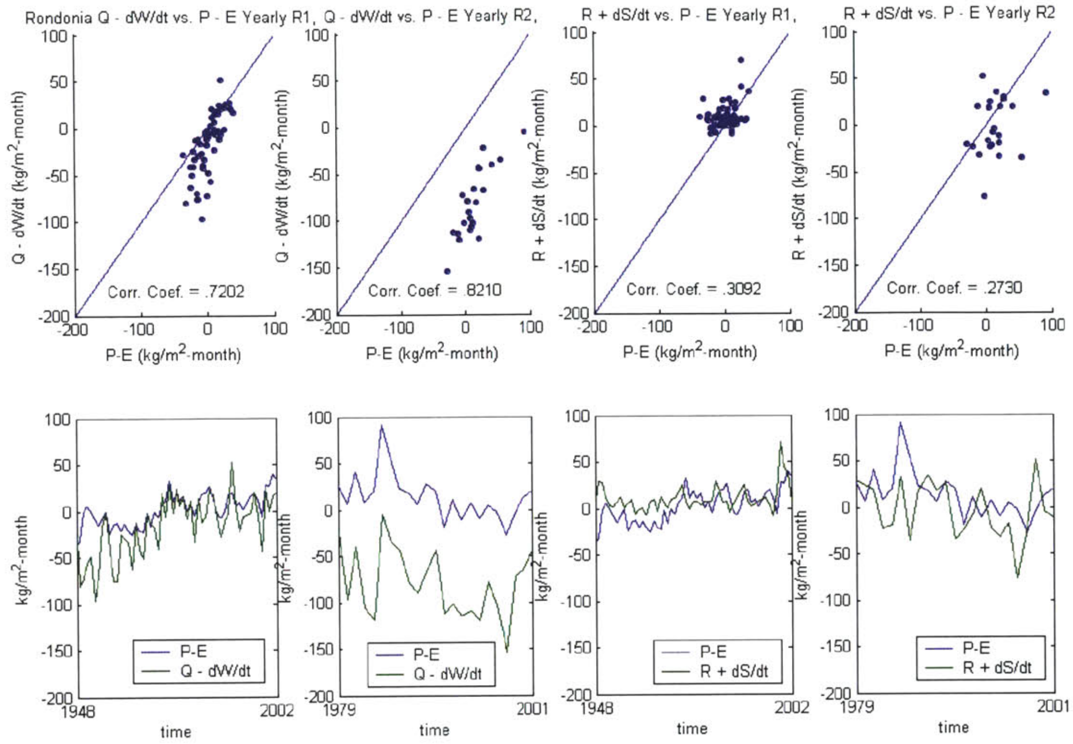


Figure 4-23: Correlation Plots for Rondonia – Reanalysis Comparison Yearly

4.4. Precipitation Datasets

The majority of the alternative data used in this study is in the form of various precipitation datasets. Twelve different precipitation datasets are used with the Reanalysis-2 water balance in this section, in addition to the given Reanalysis-2 precipitation. Both the atmospheric and surface water balances are computed. Each water balance is evaluated for the time period over which the precipitation dataset coincides with the Reanalysis-2, therefore this period varies by precipitation dataset.

We will first look at all of these datasets at the same time for the seven box control volumes. Unfortunately, it is difficult to derive meaningful conclusions about these datasets while looking at them all at once, therefore several important datasets will be pulled out and broken up into groups. Of special interest are datasets which cover the same historical period as the Reanalysis-2 (79-01). These datasets include the GPCP, the GHCN-CAMS gridded dataset, and the best estimates from the OPI and CMAP datasets, which all can replace every value of the Reanalysis-2 precipitation. Also of particular interest in this study are the TRMM datasets, which are only available since January of 1998. Because the Reanalysis-2 is only available through 2001, the Reanalysis-1, which runs through 2002, is used for this precipitation analysis.

4.4.1. All Precipitation Datasets

Figures 4-24 through 4-32 contrast precipitation datasets over all of the atmospheric and surface water balances on monthly and yearly time scales. Figures 4-24 through 4-26 deal with the residuals created by the water balances in terms of absolute error and bias. Figures 4-27 through 4-29 show the slope, correlation coefficient, and NRMSE for the atmospheric balance. Figures 4-30 through 4-32 show the same statistics for the surface water balance. As stated previously because of the large amounts of different precipitation data it is hard to make specific statements from this analysis. More particular observations can be made when a closer look is given to particular subsets of the data, and when some of these datasets are applied to a global type analysis in Section 4.3. For a few control volumes there are no results for certain precipitation datasets because they have errors or do not cover the region (see Section 2.12). They pertain mostly to tropical precipitation datasets which cannot be applied to control volumes which extend past 40 degrees north latitude.

Looking at the atmospheric absolute error in Figure 4-24 the differing precipitation datasets seem to yield very similar results over the monthly and yearly time scales for all precipitation datasets used in the Larger Rondonia, NW Brazil, Rondonia, and SEUS control volumes. Over East Brazil the reanalysis clearly yields the best balance, however, better balances are also seen with remotely sensed technologies. Again the situations for the Larger US and the SWUS control volumes for the atmospheric balance are not good. Because of the large errors in the SWUS atmospheric balance, regardless of precipitation dataset, the data can be disregarded. There are larger differences in surface absolute error shown in Figure 4-25 over precipitation datasets, specifically for the monthly case where the Larger Rondonia, NW Brazil, and SEUS control volumes show significant improvement with the OPI and CMAP precipitation datasets.

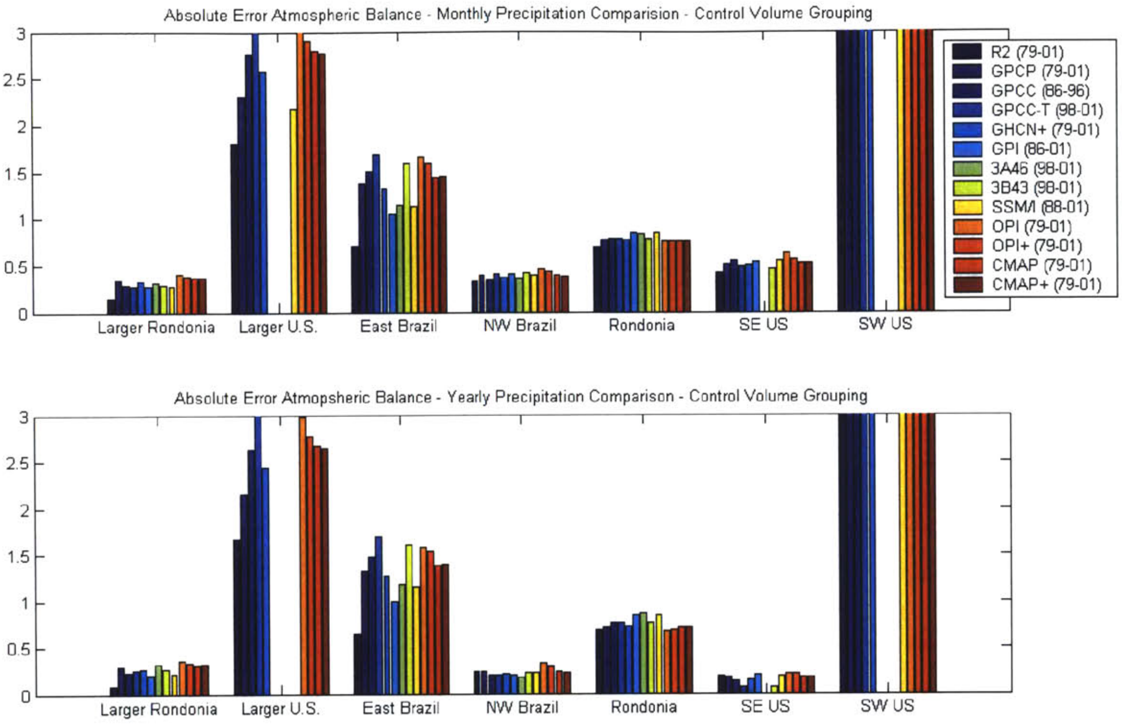


Figure 4-24: Precipitation Comparison – Atmospheric Absolute Error Monthly and Yearly

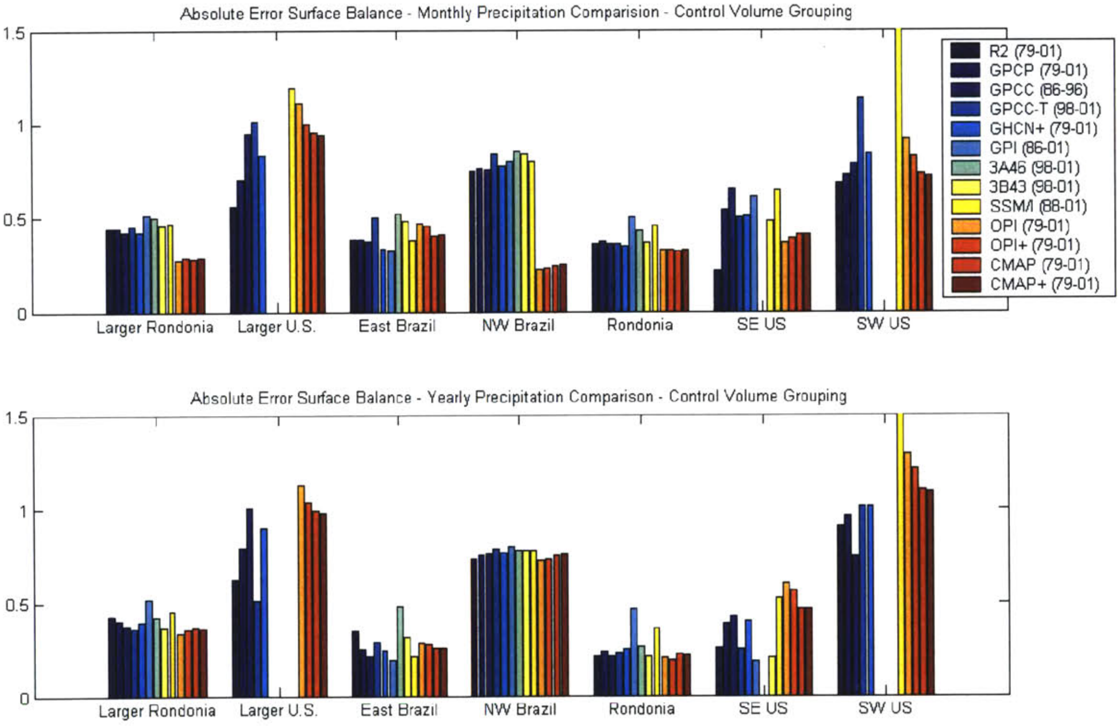


Figure 4-25: Precipitation Comparison – Surface Absolute Error Monthly aynd Yearly

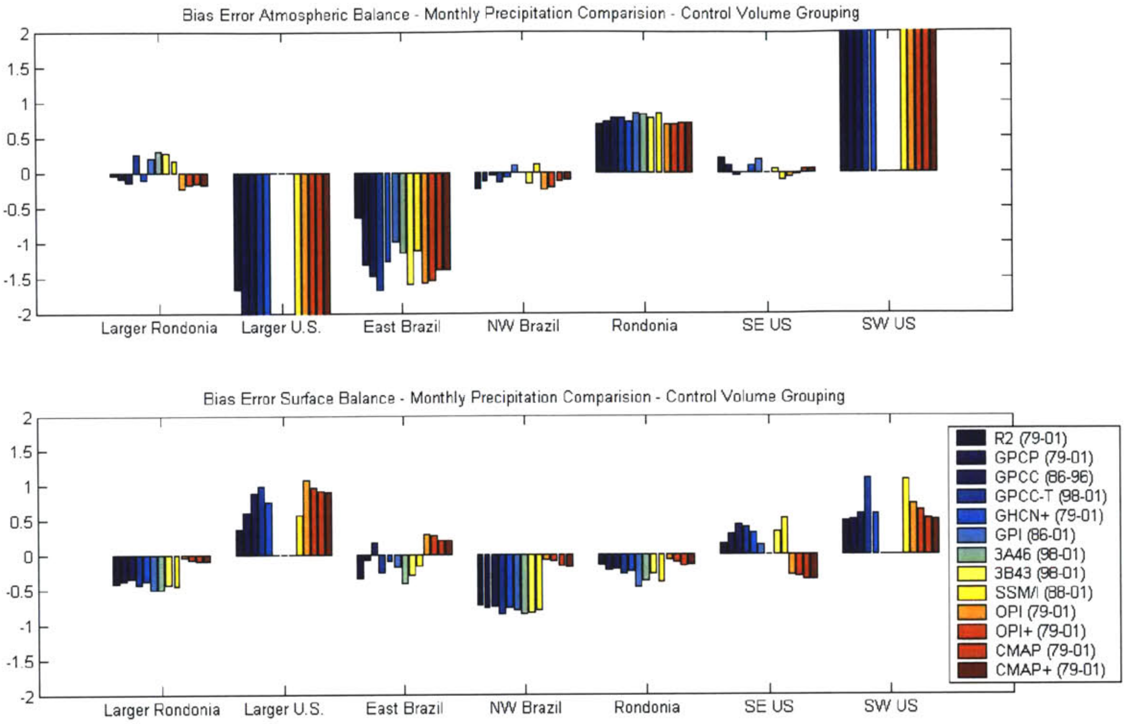


Figure 4-26: Precipitation Comparison – Atmospheric and Surface Bias Error Monthly

Monthly bias is shown for the atmospheric and surface balances in Figure 4-26.Yearly values are similar but not shown. The figure highlights the difference in total precipitation magnitude as applied to the different control volumes. The precipitation datasets can be evaluated for whether they are too low or too high relative to other components of the water balance. Biases are generally consistent with absolute errors in the atmospheric balance, but differ in the surface balance. The complete closure of the water balance does not seem to rely on precipitation datasets nearly as much as it depends on the control volume being considered.

Figures 4-27 through 4-29 show relevant regression and correlation statistics for the atmospheric monthly and yearly balances. As far as the monthly case goes the results are very consistent in terms of closure of the water balance to observations made for the residual statistics, with the exception of the NW Brazil control volume. For the atmospheric balance this control volume will be examined more closely later. For the yearly atmospheric balances, large discrepancies start to arise in terms of slope on the bottom of Figure 4-27. For all control volumes there are either very good correlations for a particular precipitation data set, or very bad correlations. The general problems with the Larger US and SWUS seem to be a problem with the monthly cycle across different precipitation datasets. These control volumes behave similarly to the other control volumes on a yearly basis. There is little consistency between control volumes on the yearly time scale based on precipitation dataset other than that the Reanalysis-2 consistently balances well in all cases, as it should.

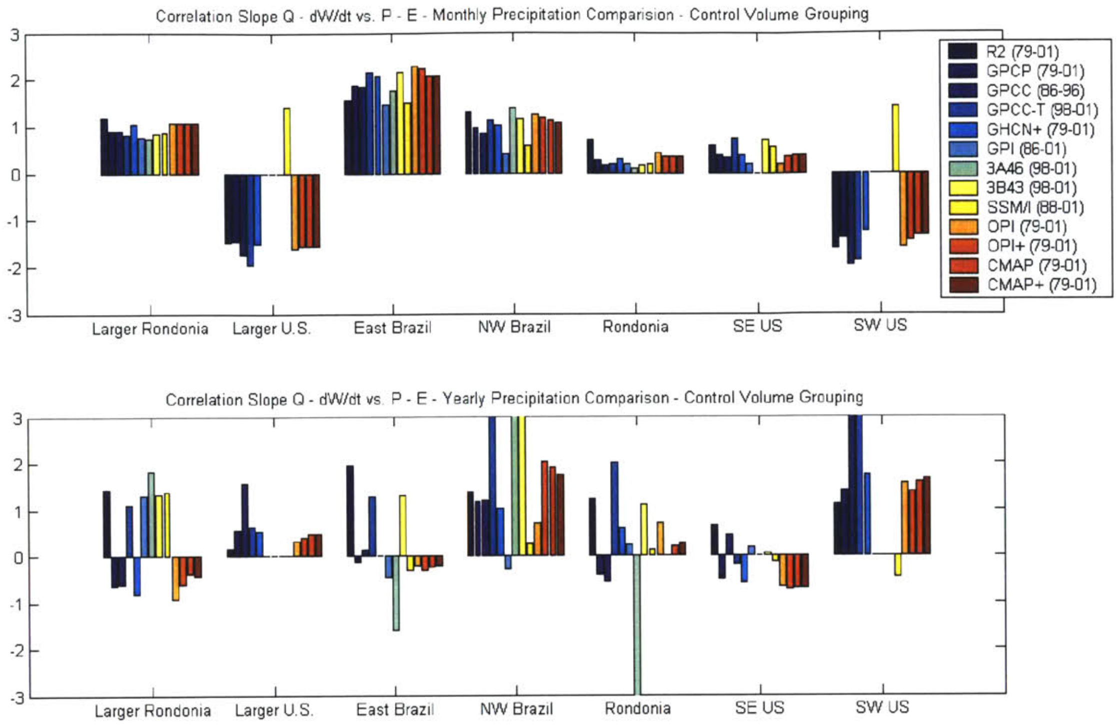


Figure 4-27: Precipitation Comparison – Atmospheric Regression Slope Monthly and Yearly

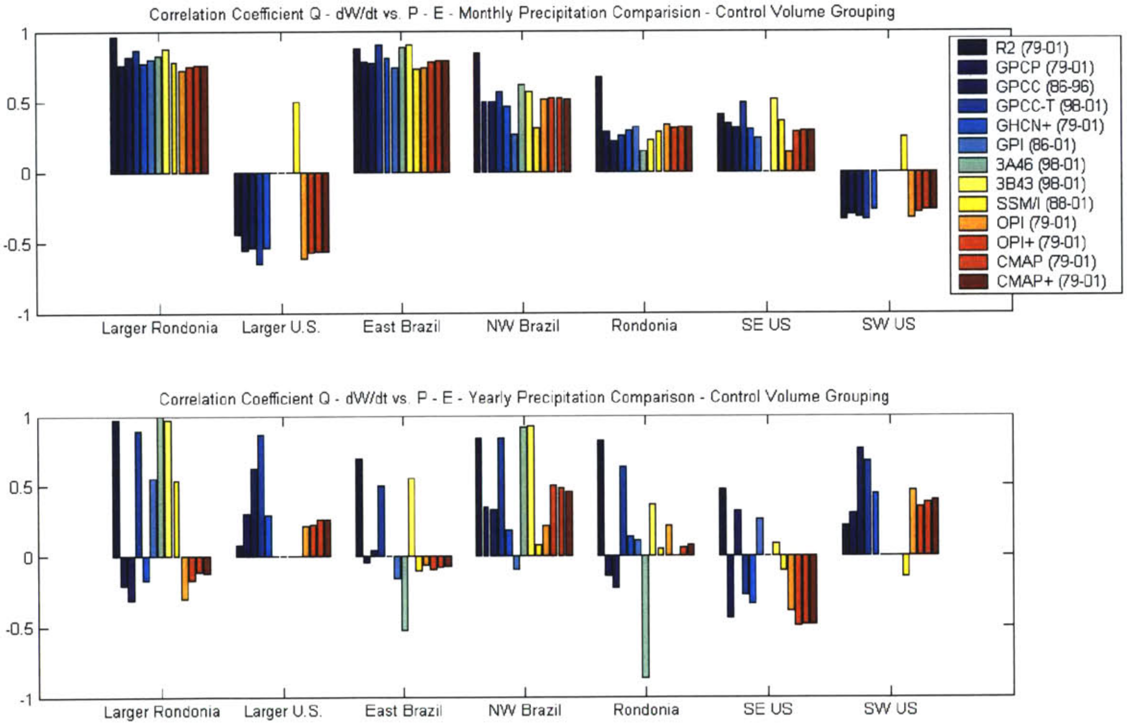


Figure 4-28: Precipitation Comparison – Atmospheric Correlation Coeff Monthly and Yearly

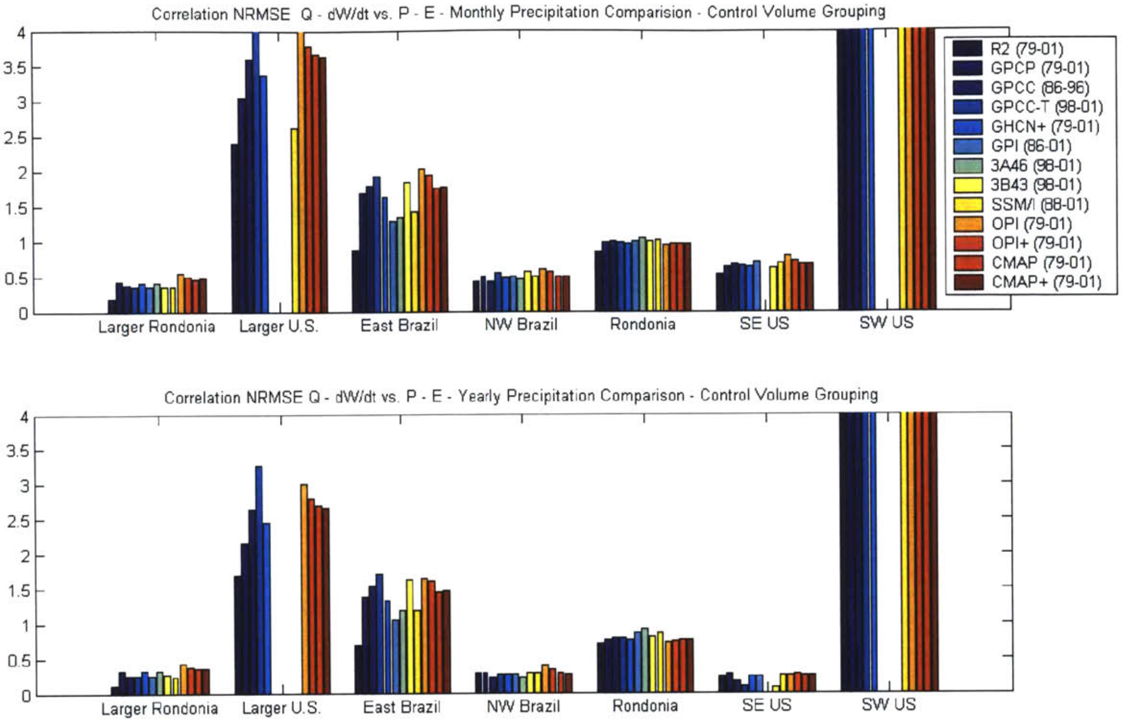


Figure 4-29: Precipitation Comparison – Atmospheric NRMSE Monthly and Yearly

Figures 4-30 through 4-32 show the relevant regression and correlation statistics for the surface balance contrasting precipitation sources. There are differences between the alternate precipitation datasets for most of the control volumes. Generally there is reasonable consistency in the seasonal cycle as the precipitation datasets allow for (P-E) to balance the surface runoff and change in storage. Slopes are consistently zero or negative for all precipitation datasets applied to the NW Brazil control volume indicating poor balances. Differences in slope are more evident on the yearly time scale, particularly in the case of the SEUS control volume.

The monthly surface correlation coefficients are good for most precipitation datasets over most control volumes. An interesting situation again arises over the SEUS where the reanalysis precipitation provides a strong surface correlation, while all other alternatives do not. Correlations tend to be not as great for the surface balance for the OPI and CMAP datasets. These precipitation datasets tend to consistently follow each other in most of these analyses as they are of similar origin. Consistency however is rarely seen for the gauge based precipitation datasets (Columns 3 through 5) and remotely sensed precipitation datasets (Columns 6 through 9). The GPI and SSM/I precipitation datasets have consistently high NRMSE for both the monthly and yearly time scales. Overestimation was a factor in the derivation of both of these datasets.

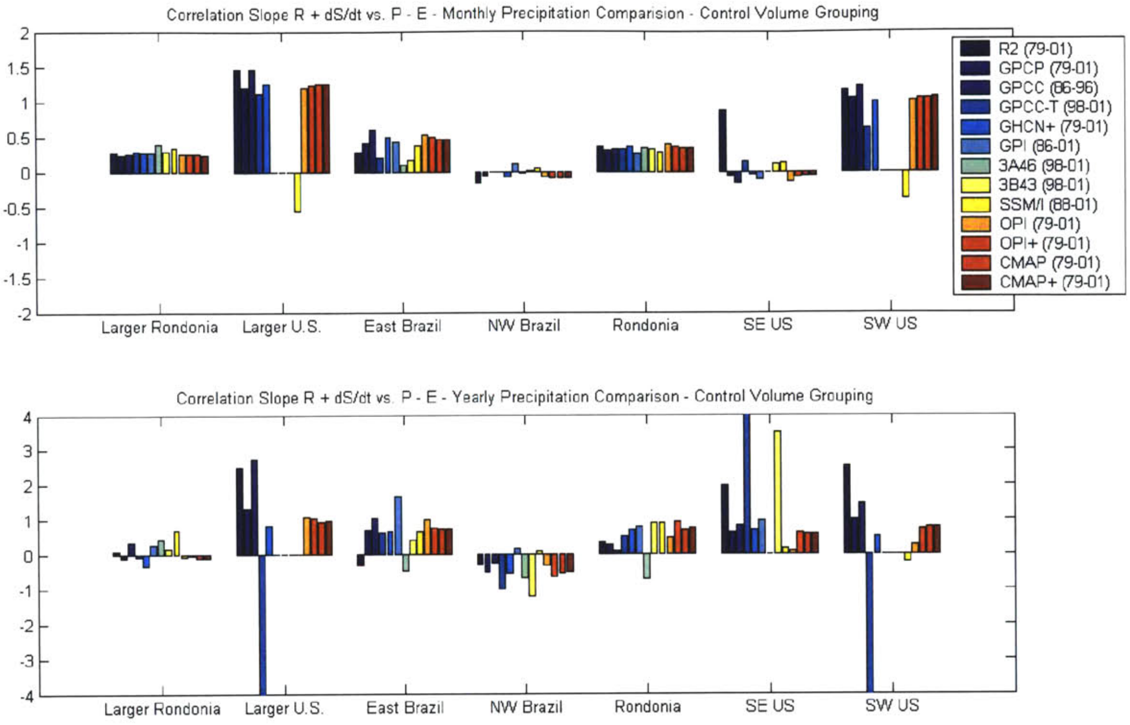


Figure 4-30: Precipitation Comparison – Surface Regression Slope Monthly and Yearly

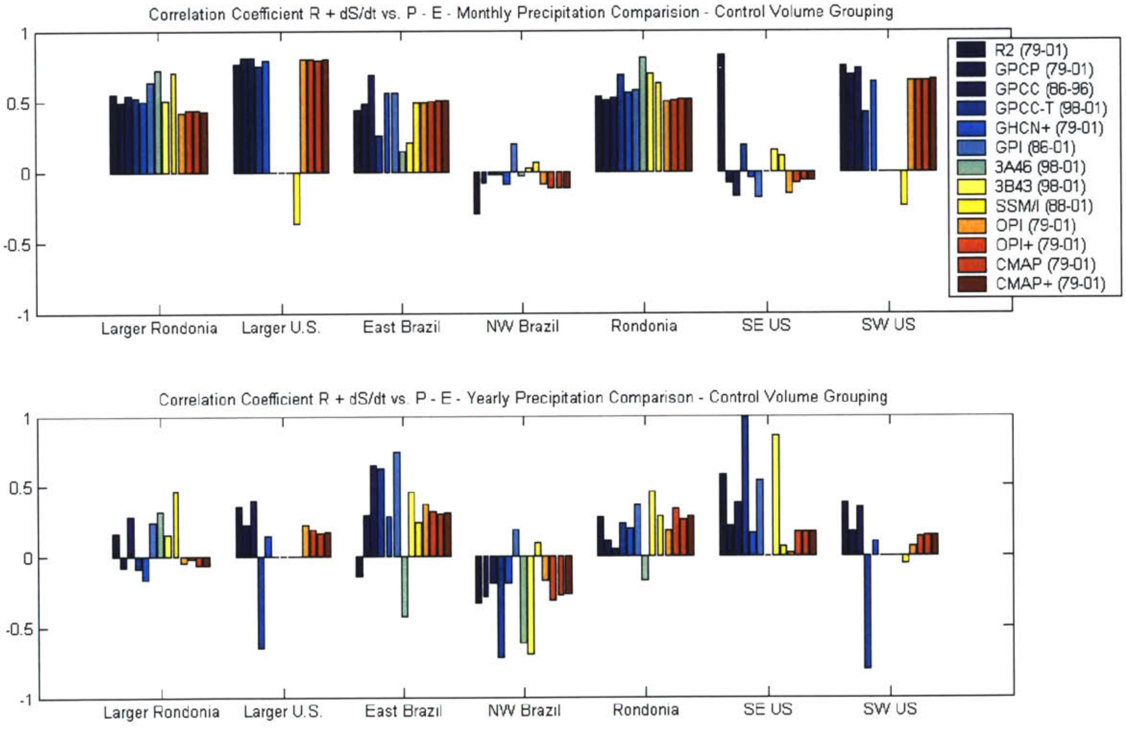


Figure 4-31: Precipitation Comparison – Surface Correlation Coefficient Monthly and Yearly

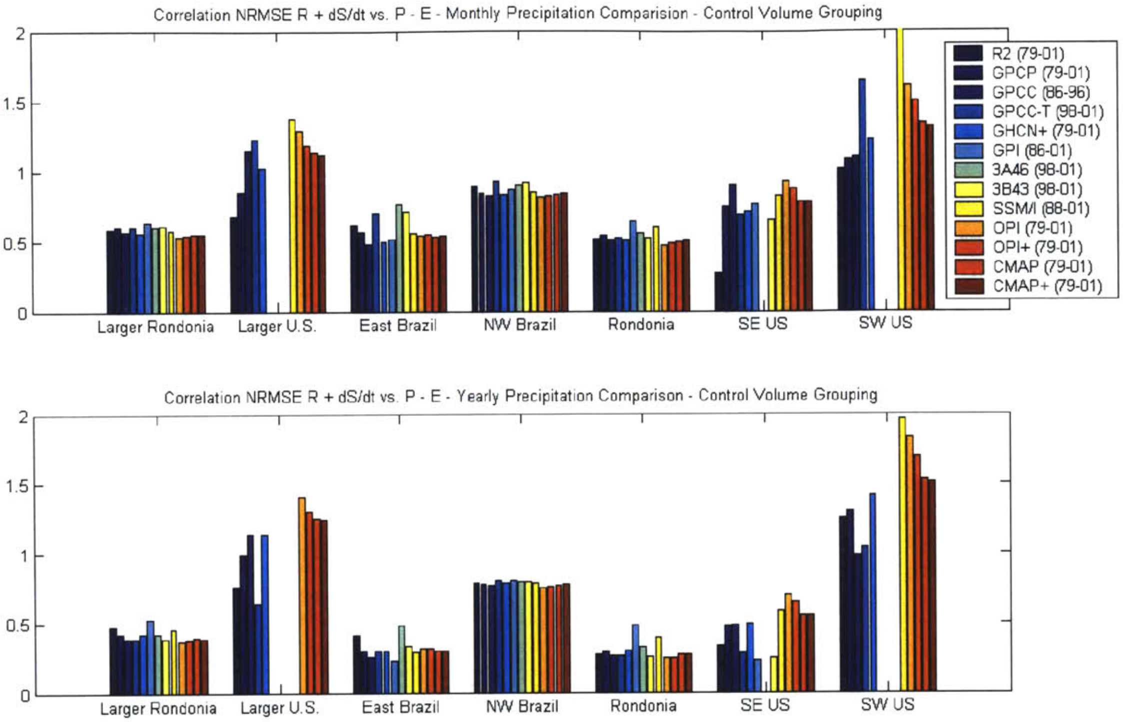


Figure 4-32: Precipitation Comparison – Surface NRMSE Monthly and Surface

As in previous sections we now select some sample precipitation regressions to elucidate the bar graphs above. Here we will select three precipitation datasets which represent the different types of precipitation data available. First shown is the reanalysis precipitation, which is the default precipitation set in this work and commonly provides the best balance. Next, shown is the GPI, a fairly long (1986-2001) tropical satellite based precipitation dataset, to represent satellite based data. Finally, the GHCN-CAMS dataset is used to represent the gauged datasets.

First shown is the NW Brazil control volume as an example for the atmospheric monthly and yearly water balances in Figures 4-33 and 4-34. For the monthly time scale the satellite precipitation is generally underestimated as can be seen by the positive slope of the regression line for this control volume. For the yearly case in Figure 4-34, the reanalysis balance looks good, while the addition of the GPI precipitation degrades the balance, especially in the 1990's. The gauge correlation is better than the GPI correlation, but shows a weak signal compared to the runoff flux term, which results in a larger positive slope. It is apparent from these figures that on the monthly time scale many of the precipitation datasets agree with the reanalysis balance. Nevertheless, the water balances exhibit differences between datasets.

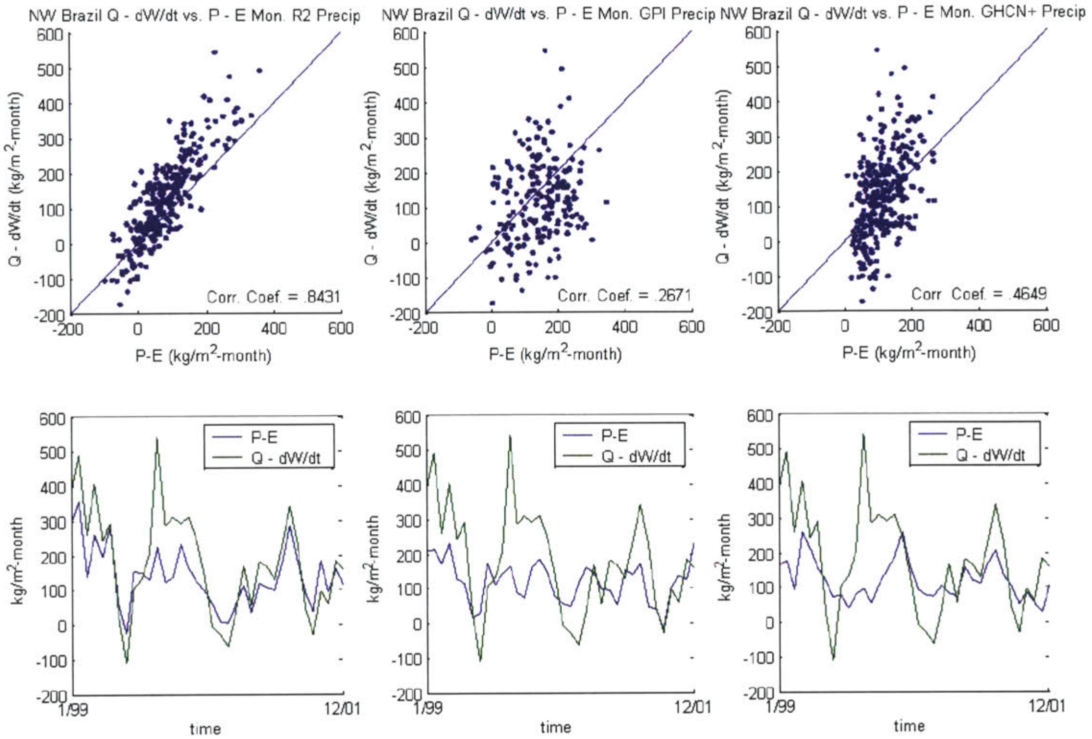


Figure 4-33: Correlation Plots for NW Brazil – Precipitation Comparison Monthly Atmospheric

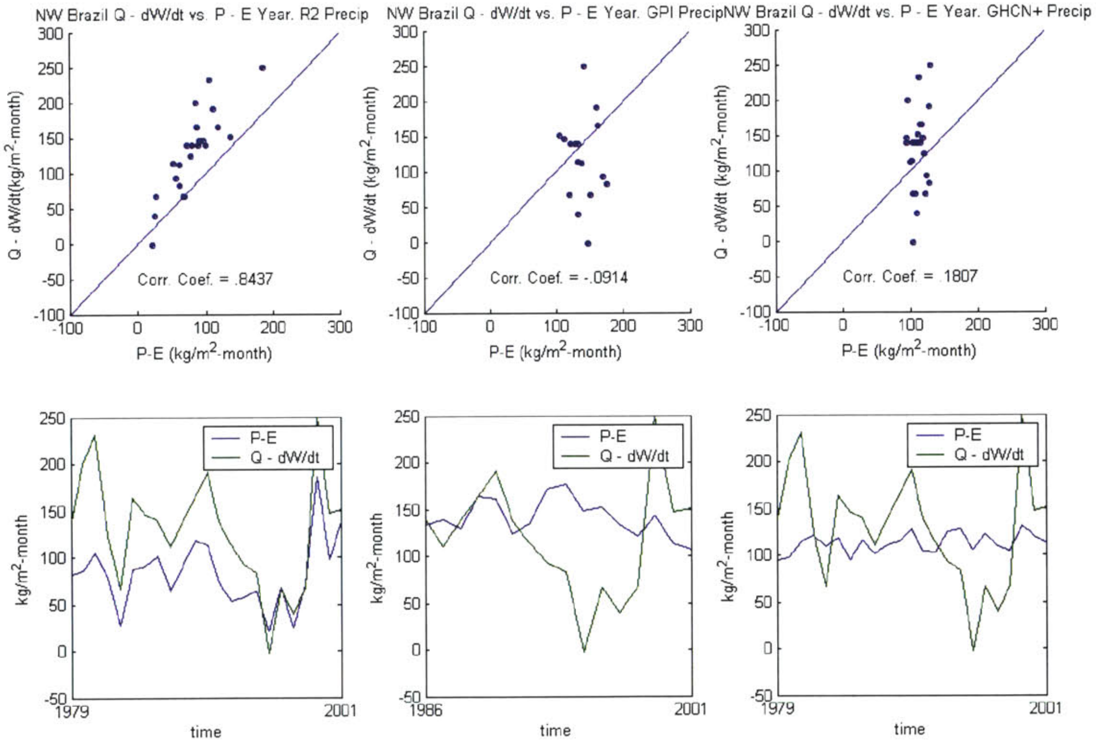


Figure 4-34: Correlation Plots for NW Brazil – Precipitation Comparison Yearly Atmospheric

Figures 4-35 and 4-36 show example correlation plots for the SEUS control volume. This control volume was selected for closer inspection as there are sharp contrasts between water balance properties between the precipitation datasets as they apply to the surface water balance. In Figure 4-35, the reanalysis surface monthly water balance shows a very strong correlation and is very well balanced. However, when reanalysis precipitation is replaced by gauge and satellite data some points correlate well while others correlate poorly. The runoff and change in storage data remains the same as can be seen by the green line represented in the bottom panels, however, the P-E quantity changes dramatically with precipitation dataset. One explanation is that that the model derived reanalysis precipitation for this region was made to fit the surface water balance of the reanalysis.

For the yearly time scale in Figure 4-36, the goodness of balance steadily decreases from left to right, with some signal pick up in the Reanalysis-2, but no signal pickup the when using gauge precipitation. This is interesting because the SEUS is a heavily gauged precipitation area, and therefore it would seem the reanalysis disregards the rain gauge data completely.

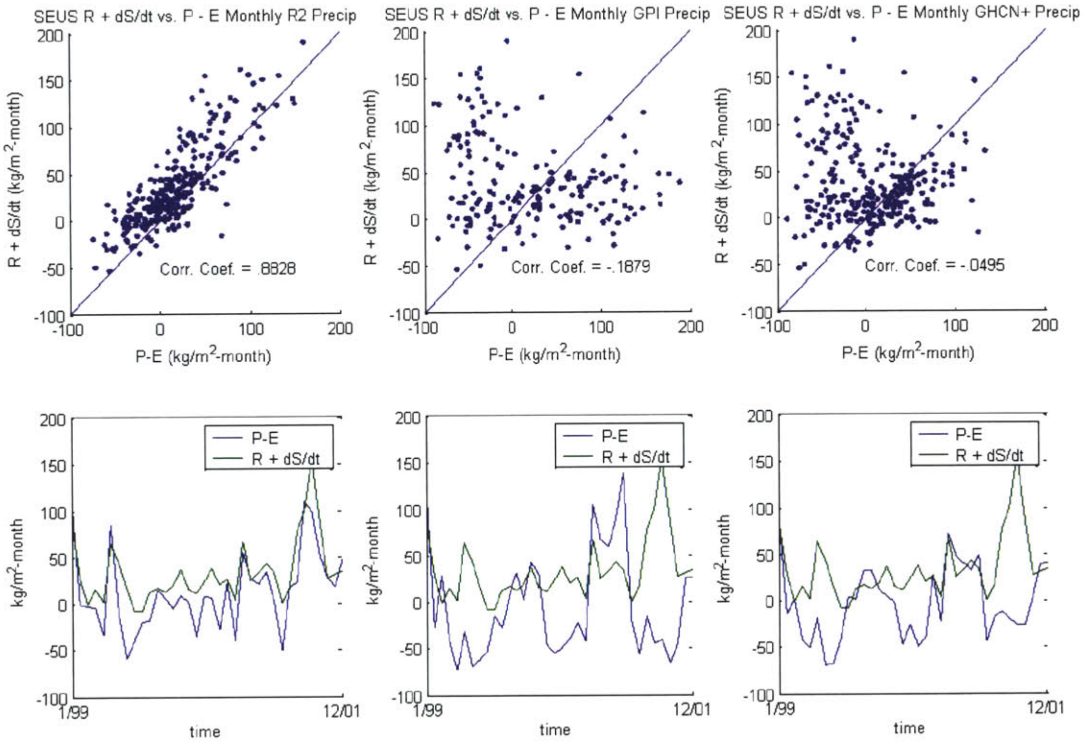


Figure 4-35: Correlation Plots for SEUS – Precipitation Comparison Monthly Surface

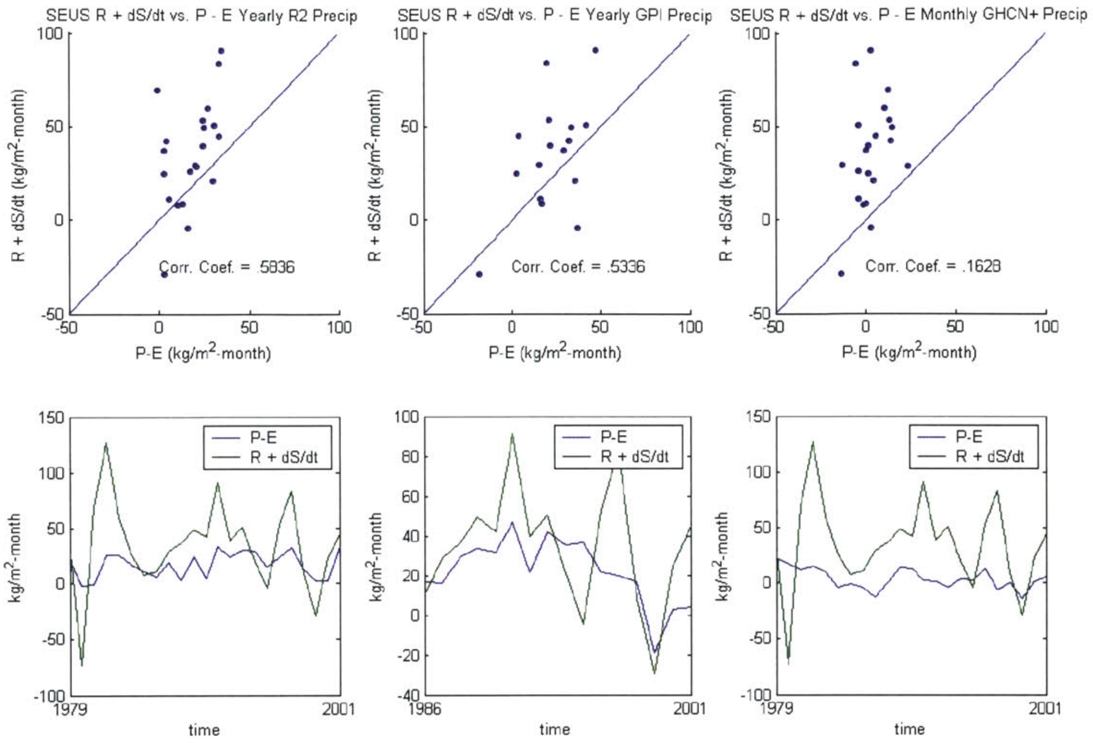


Figure 4-36: Correlation Plots for SEUS – Precipitation Comparison Yearly Surface

4.4.2. Longer Precipitation Datasets

We now look at precipitation datasets which can completely replace the Reanalysis-2 precipitation (1979-2001) in the water balance and thus determine if an alternative source of precipitation is better at closing the water balance using the reanalysis for all other fields. Datasets used are the GPCP, CMAP, OPI, and GHCN-CAMS products. For the first time here we will consider the basin sized control volumes. Because of the nature of these balances, the defaults will be considered slightly different. Surface runoff is considered default in basin sized control volumes. Thus for the surface balance of the basin sized control volumes, both precipitation and runoff may differ from the reanalysis.

Figures 4-37 through 4-40 display the effect of change in precipitation source on the absolute error and bias calculations for the monthly/yearly and atmospheric/surface conditions. In the atmospheric balance no matter what the precipitation is, the Mississippi and Arkansas water balances have higher errors, as was the case with the SWUS and Larger United States water balances before. The reanalysis consistently provides a better balance for all control volumes. Very few anomalies arise in the atmospheric balances, as all the alternate precipitation datasets do slightly worse in atmospheric absolute error and bias, and absolute errors decrease on the yearly basis. For the surface balance (Figures 4-39 and 4-40) the alternative precipitation datasets result in a better balance than the reanalysis for certain control volumes. In Rondonia, the OPI+ dataset works well, while over the Amazon the gauge network seems to work well.

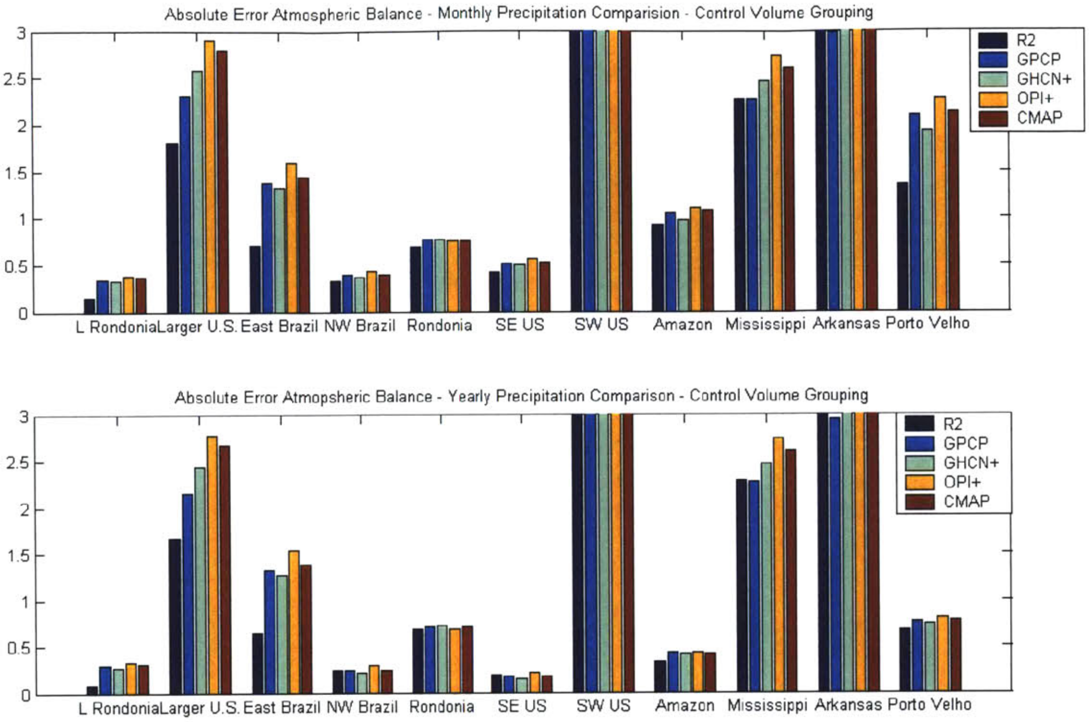


Figure 4-37: Large Precipitation Comparison – Atmospheric Absolute Error Monthly and Yearly

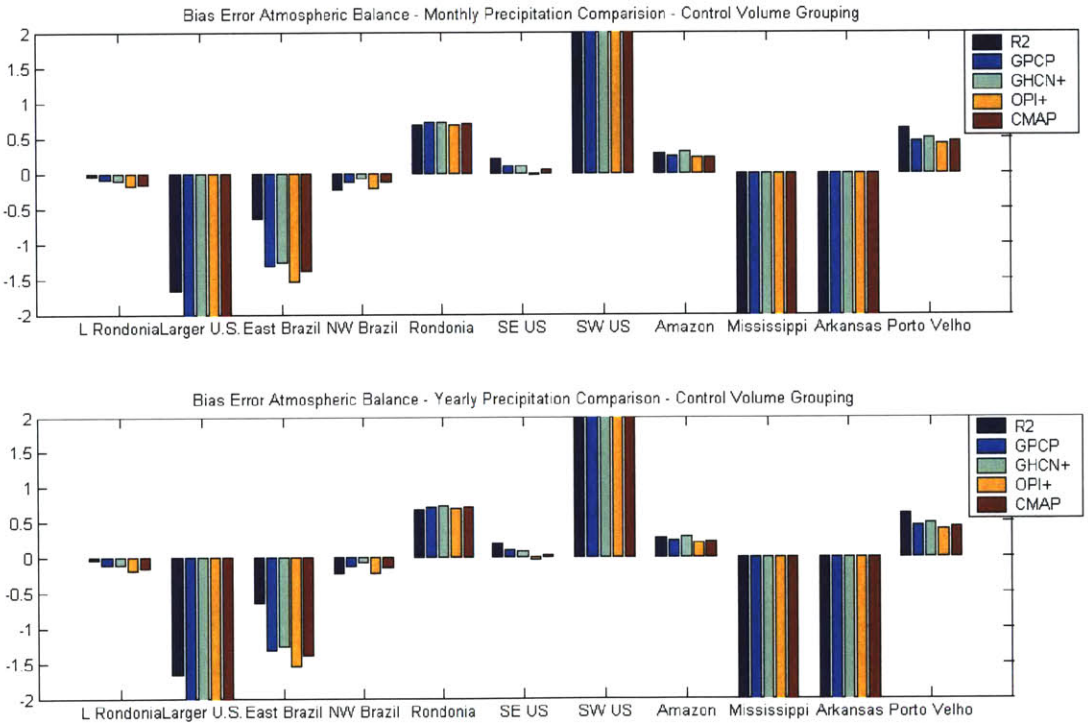


Figure 4-38: Large Precipitation Comparison - Atmospheric Bias Error Monthly and Yearly

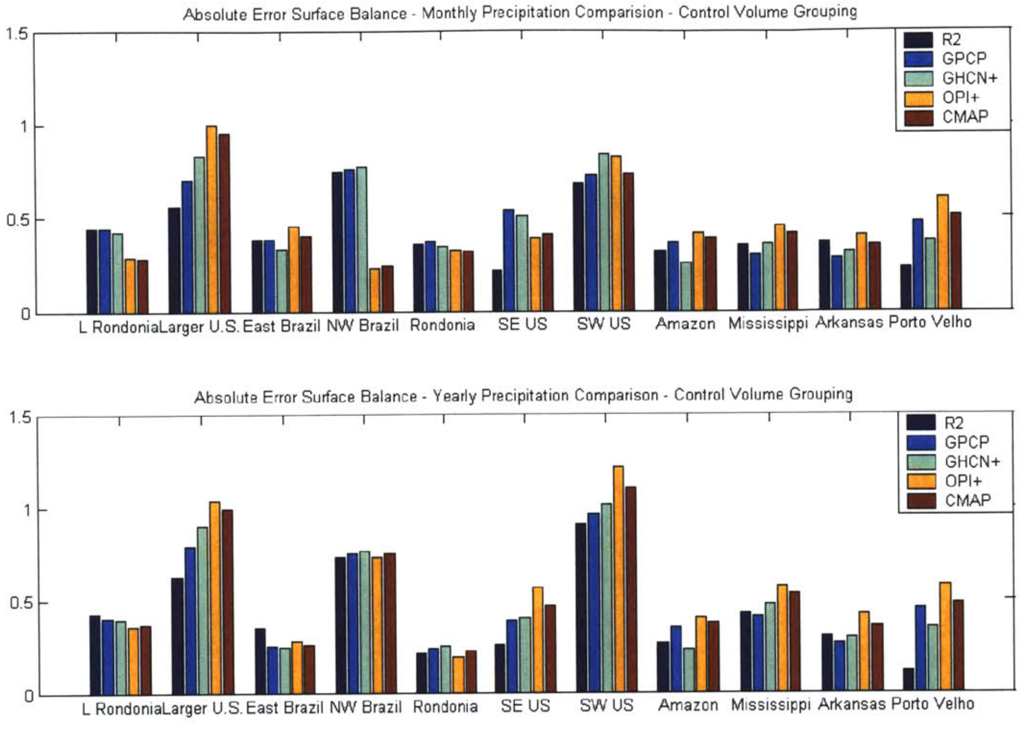


Figure 4-39: Large Precipitation Comparison – Atmospheric Absolute Error Monthly and Yearly

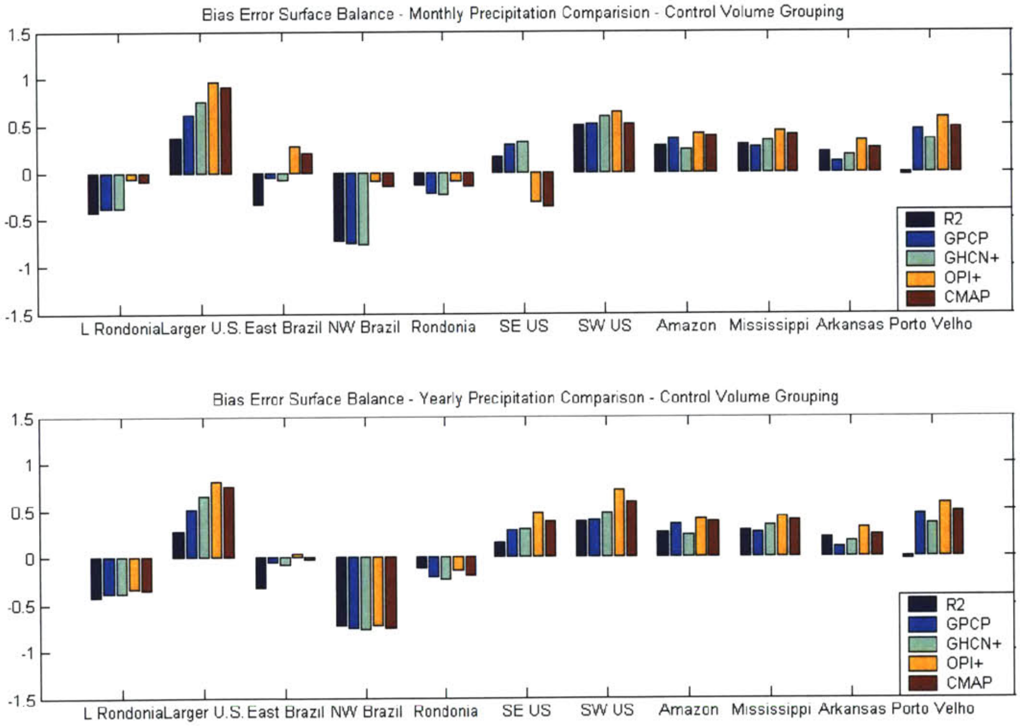


Figure 4-40: Large Precipitation Comparison – Atmospheric Bias Error Monthly and Yearly

Figures 4-41 through 4-43 explore the atmospheric balance correlation. In Figure 4-41, in almost all cases, the reanalysis has the closest slope to one. Some of the yearly problems are cleared up in the basin control volumes, specifically over the Mississippi and Arkansas basins. Figure 4-42 paints a similar picture of the atmospheric correlation, where on the yearly time scale sharply higher correlations are found using default reanalysis precipitation. Figure 4-43 shows the NRMSE for the atmospheric water balance. The reanalysis performs the best here, while the OPI+ dataset consistently has the worst NRMSE. This is consistent with what is known about the OPI+ dataset as it is not recommended for studies of this nature.

Figures 4-44 through 4-46 show the land surface balance correlation statistics for the larger precipitation datasets. In the surface correlation the reanalysis is not clearly the best precipitation dataset in terms of either slope or correlation coefficient. In fact for the Arkansas and Mississippi control volumes it is the worst. What we have done here is use a dataset which is not part of the reanalysis to close the surface balance (runoff). Over the United States alternative precipitation datasets likely match better with these runoff datasets. On the monthly time scale, looking at the SEUS, very poor correlations are found for all precipitation datasets but the reanalysis. This is a box control volume and not a basin control volume and the runoff is coming from an entirely different source. For the NRMSE in Figure 4-46, errors are found to be largest generally for the OPI+ dataset again and lowest for the reanalysis.

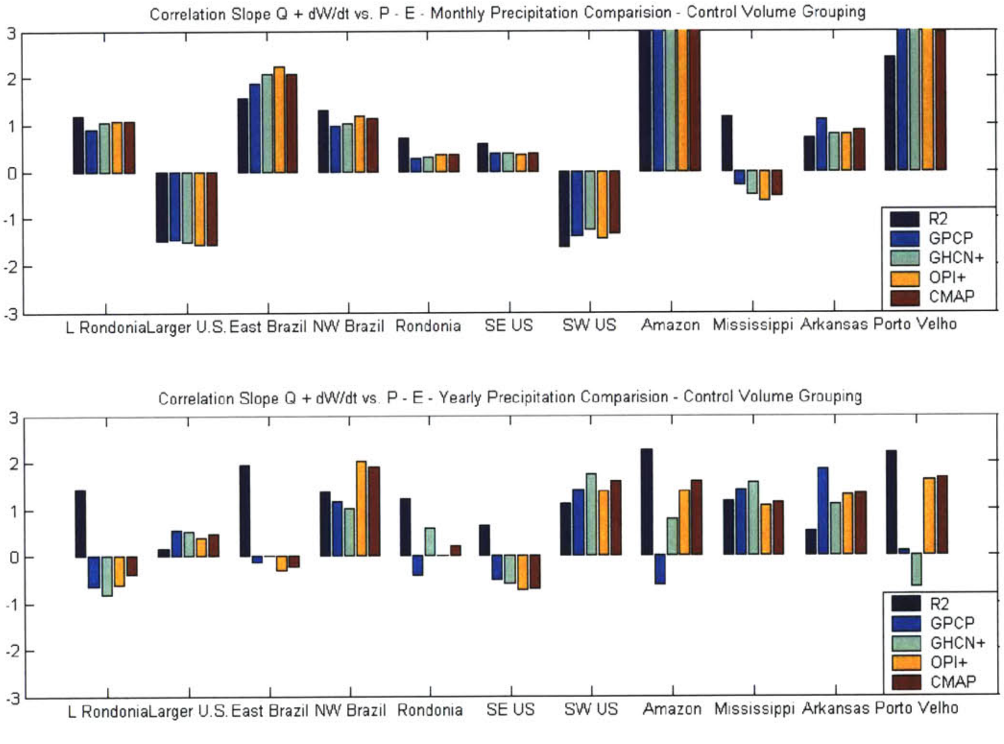


Figure 4-41: L. Precipitation Comparison – Atmospheric Regression Slope Monthly and Yearly

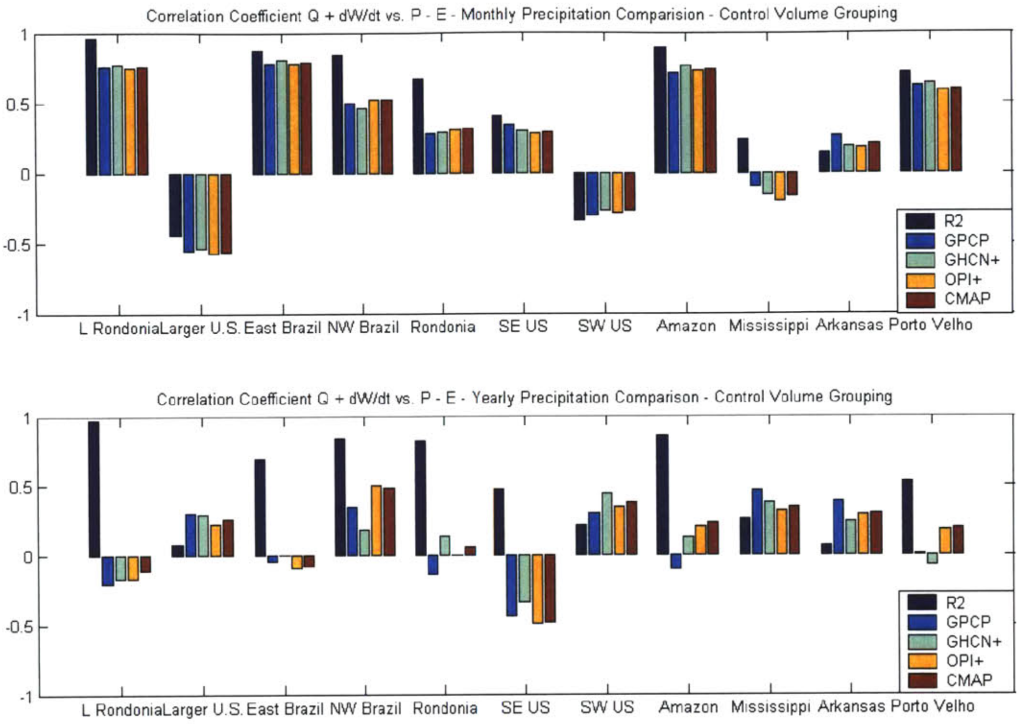


Figure 4-42: L. Precipitation Comparison – Atmospheric Correlation Coeff Monthly and Yearly

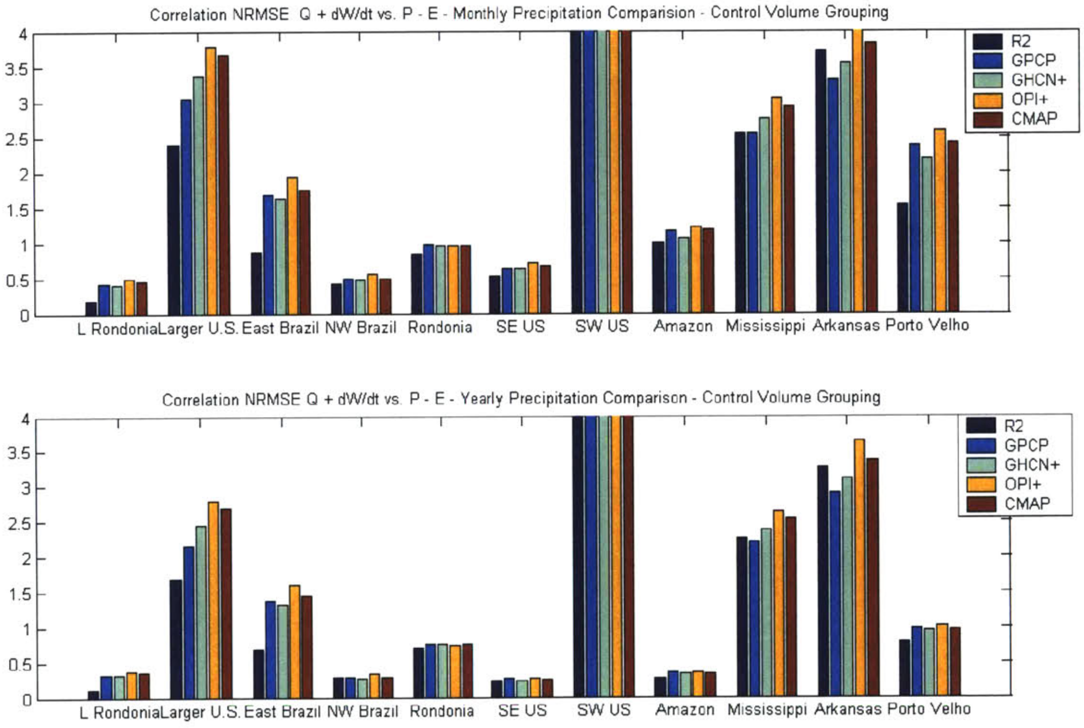


Figure 4-43: Large Precipitation Comparison – Atmospheric NRMSE Monthly and Yearly

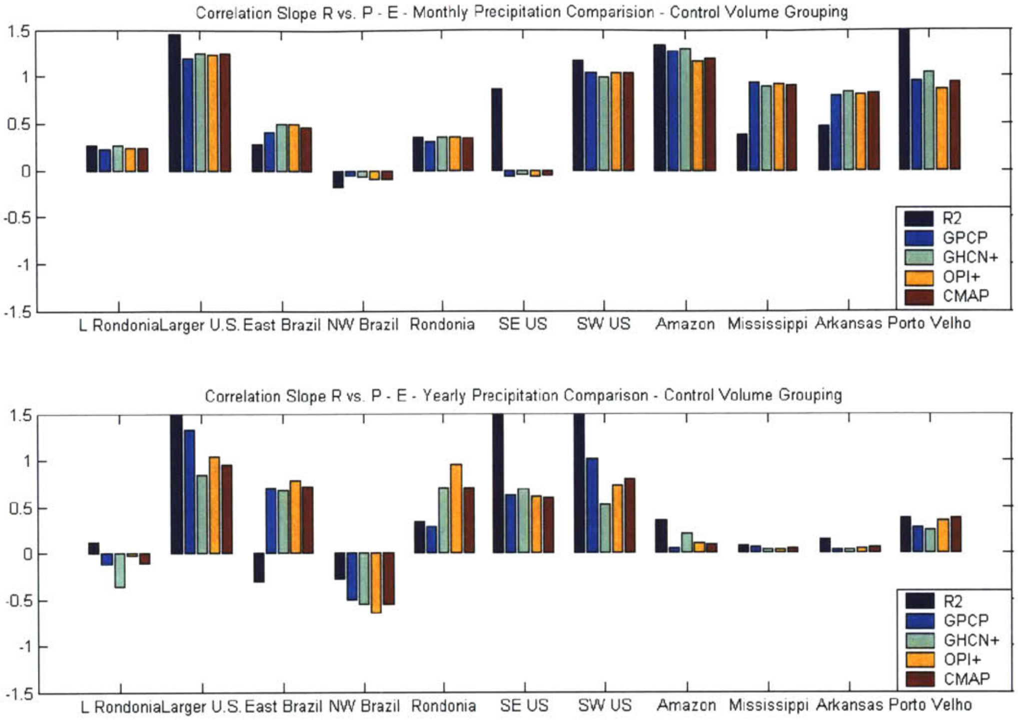


Figure 4-44: Large Precipitation Comparison – Surface Regression Slope Monthly and Yearly

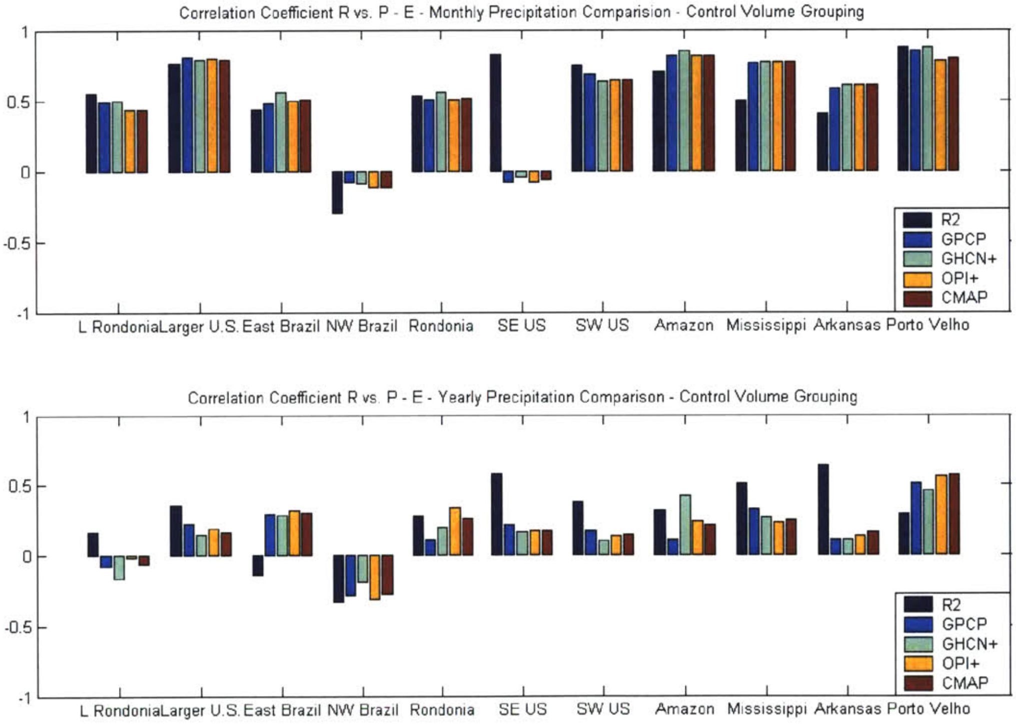


Figure 4-45: L. Precipitation Comparison – Surface Correlation Coefficient Monthly and Yearly

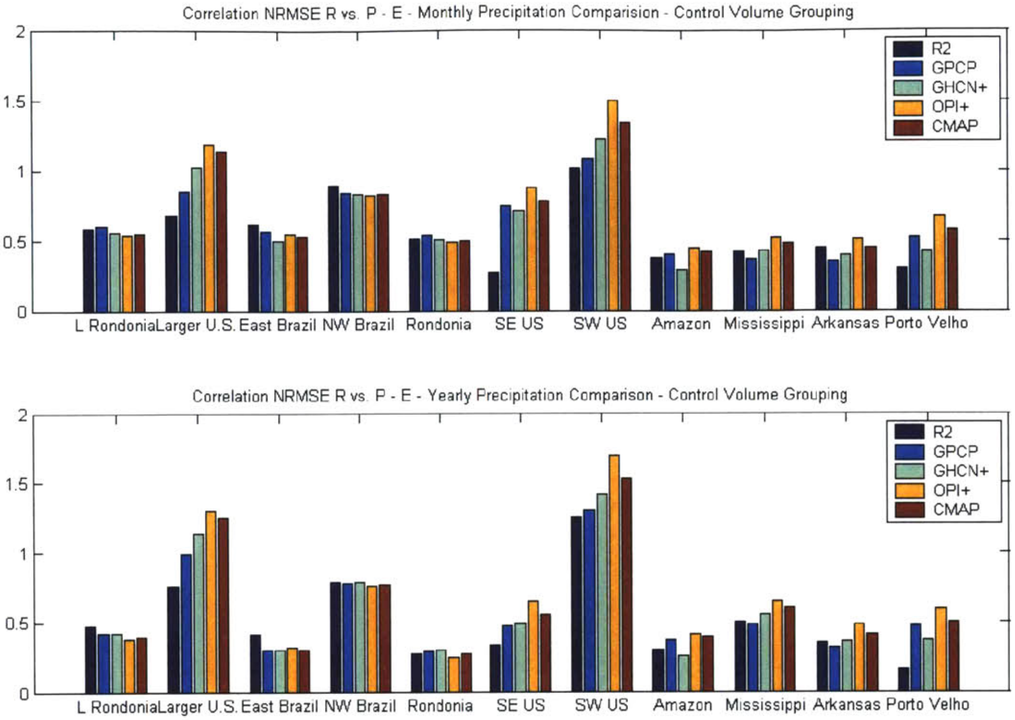


Figure 4-46: Large Precipitation Comparison – Surface NRMSE Monthly and Yearly

Example correlation plots for the above figures are provided in Figures 4-47 through 4-49. First we will look at the Northwest Brazil control volume for the atmospheric balance and yearly time scale. The three alternative precipitation data sets show very similar annual trends with P-E underestimating moisture flux. The reanalysis does far better than any other precipitation dataset.

Figures 4-48 and 4-49 explore the surface water balance on the yearly basis. These balances are of particular interest because alternative precipitation seemed to improve the water balances for the Arkansas and Mississippi control volumes. The amplitudes of the two sides of the surface balance don't match up very well, but the signals do. For the Mississippi Basin the same observations can be made. The Reanalysis correlation is strong, but the scatter plots seem to be better for the alternative precipitation datasets. The balances in general are not great in these two cases.

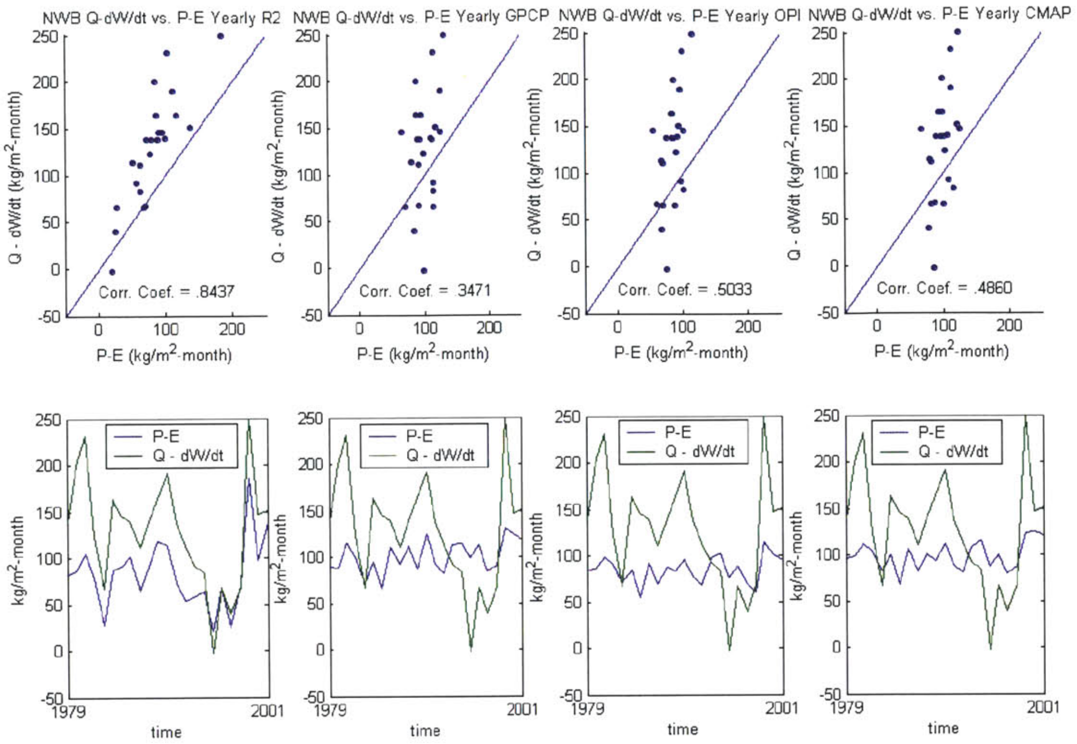


Figure 4-47: Correlation Plots for NW Brazil – Large Precip Comparison Yearly Atmospheric

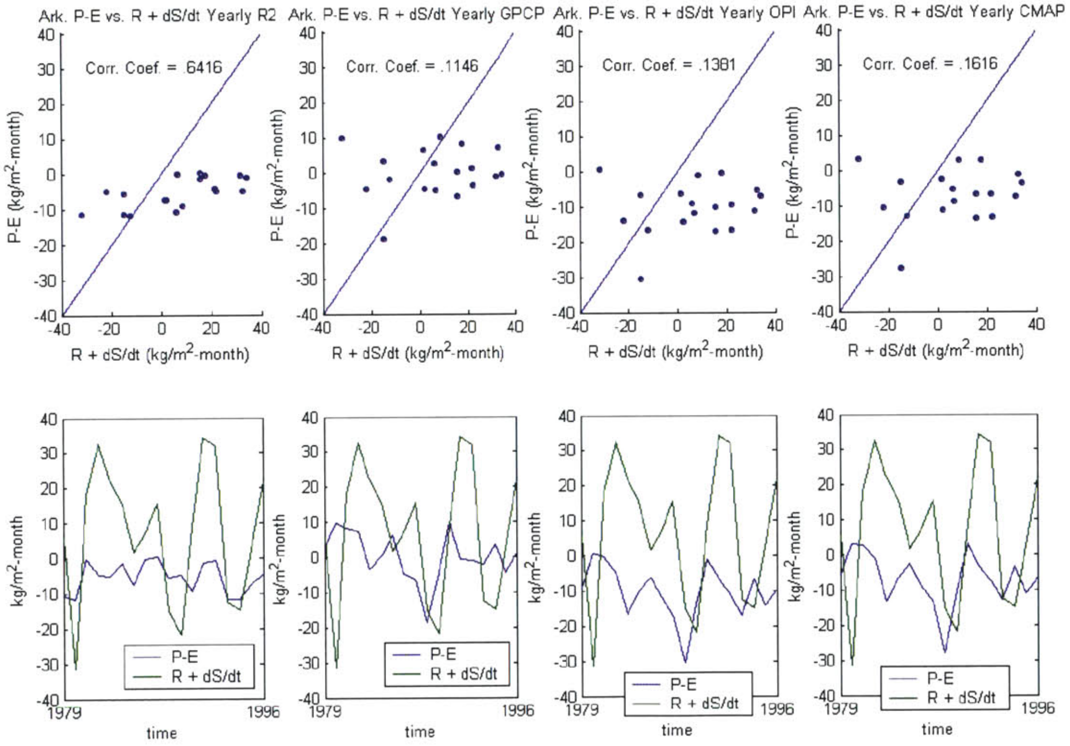


Figure 4-48: Correlation Plots for Arkansas Basin – Large Precip Comparison Yearly Surface

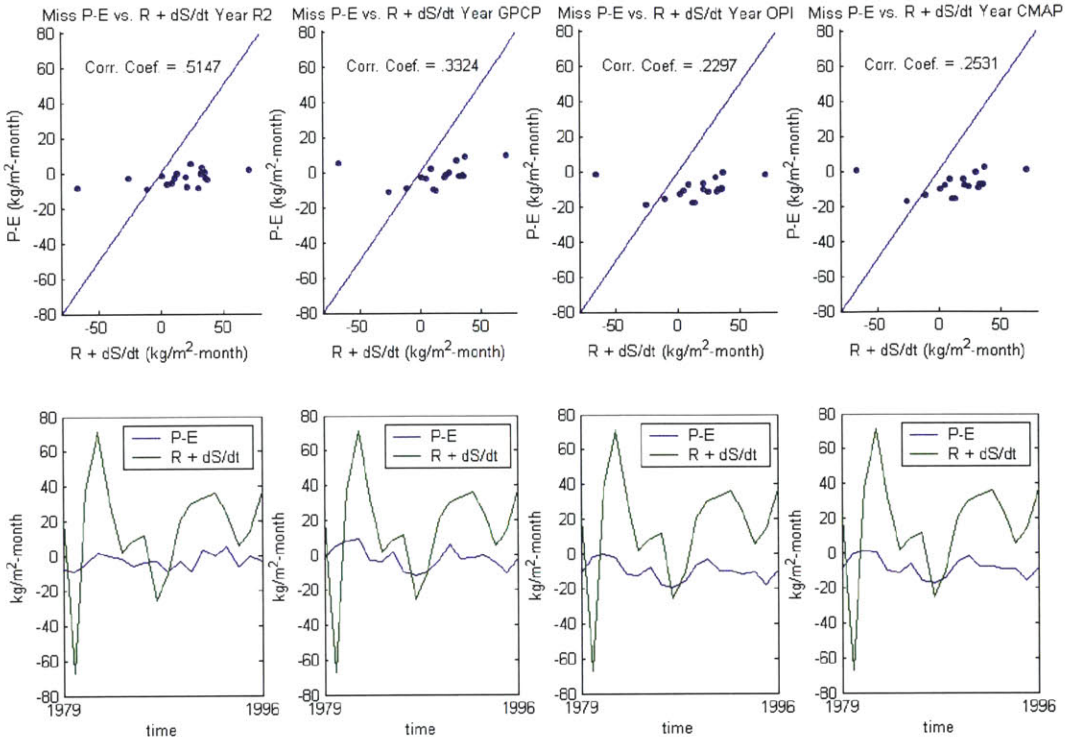


Figure 4-49: Correlation Plots for Mississippi Basin – Large Precip Comparison Yearly Surface

4.4.3. TRMM Precipitation Datasets

The TRMM precipitation datasets represent the latest of current precipitation sensing technologies. Three monthly precipitation products are provided which can be conveniently used in this study, the gauge based TRMM GPCC dataset, the SSM/I based TRMM 3A46 dataset, and the actual TRMM precipitation product the TRMM 3B43 dataset. Since TRMM focuses on tropical precipitation between 40 degrees north and 40 degrees south latitude, only some of the control volumes of this work can be used with the dataset. These control volumes are: Larger Rondonia, East Brazil, Northwest Brazil, Rondonia, Amazon Basin, and Port Velho Basin.

In Figure 4-50 the atmospheric residuals are analyzed for the TRMM products in terms of absolute error and bias. In general, the TRMM 3A46 dataset results in the lowest absolute error and bias in the different water balances. Figure 4-51 shows the residual statistics when using TRMM products to obtain the surface water balance. Here the errors are slightly higher for the TRMM 3A46 dataset. This is unfortunate because it is hard to determine whether the atmospheric or surface balance is a more reliable evaluation of the precipitation products. By the classifications developed earlier for the box control volume we would tend to believe the atmospheric balance is more reliable while for the basin sized volume we would tend to think the surface balances were more reliable.

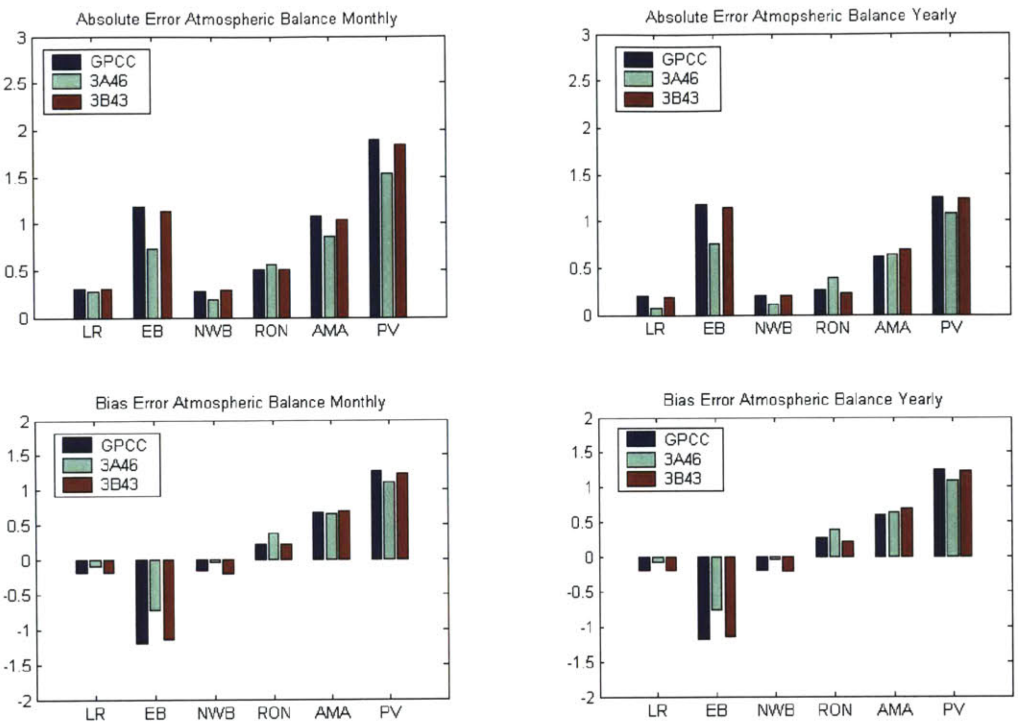


Figure 4-50: TRMM Precipitation Comparison – Atmospheric AE and Bias Monthly and Yearly

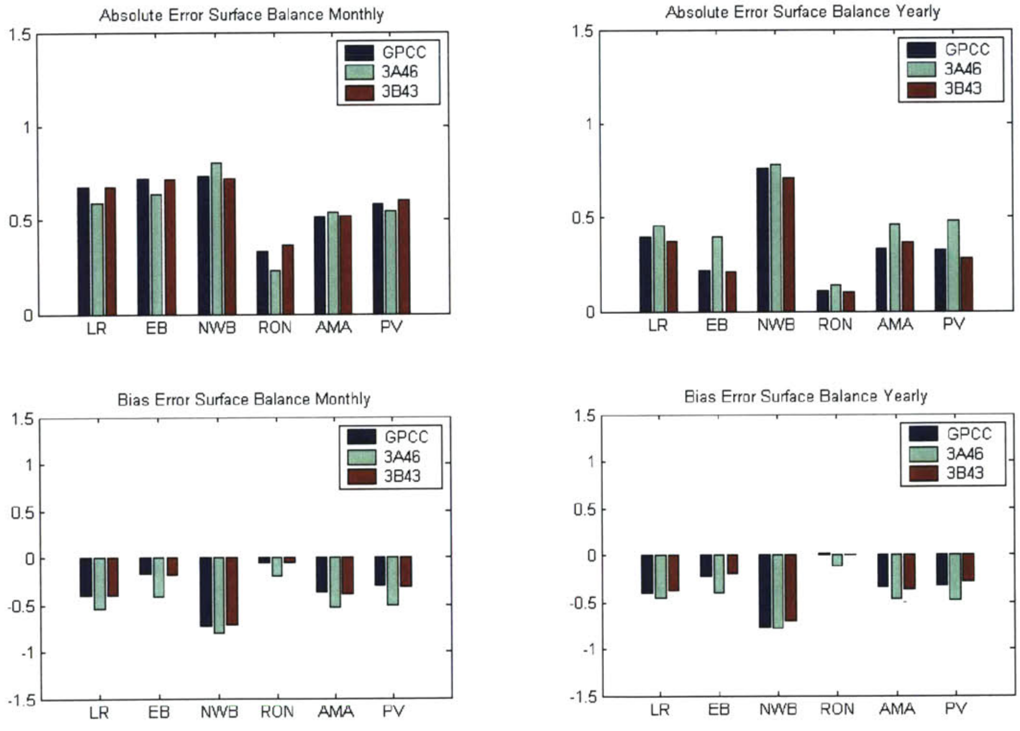


Figure 4-51: TRMM Precipitation Comparison – Surface AE and Bias Monthly and Yearly

Figures 4-52 and 4-53 show the relevant correlation statistics for the atmospheric and surface balances respectively. It should be noted here that these regressions are based on only 43 to 60 points on the monthly basis, and only 3 to 5 points on the yearly basis. For the monthly time scale the TRMM 3A46 in some cases has a slope closer to one, a correlation coefficient closer to one, and a lower NRMSE, but not as consistently as in the residual analysis.

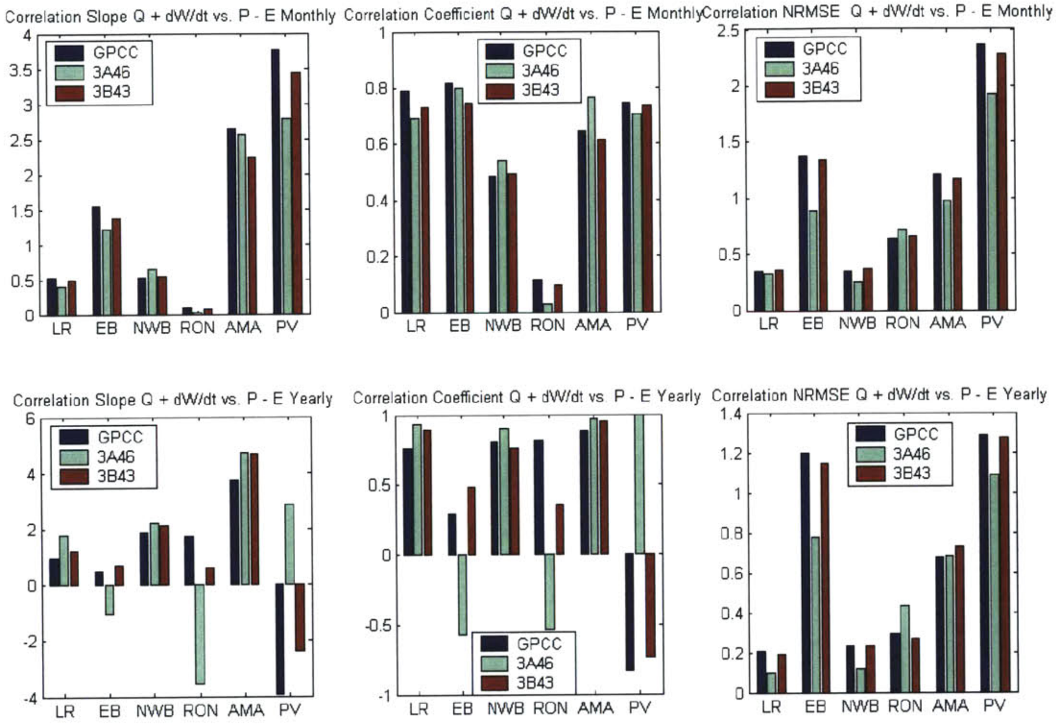


Figure 4-52: TRMM Precipitation Comparison – Atmos. Regression Stats Monthly and Yearly

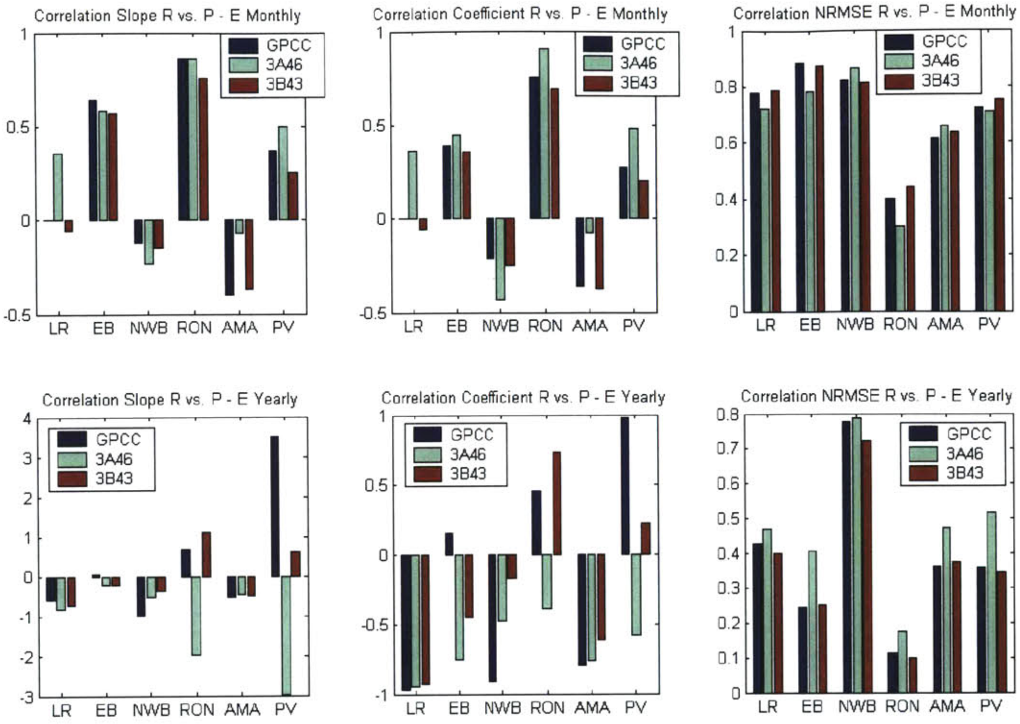


Figure 4-53: TRMM Precipitation Comparison – Surface Regression Stats Monthly and Yearly

Figures 4-54 and 4-55 give example correlation plots for the TRMM precipitation analysis. Of specific interest in this study is the application of these products to the Rondonia control volume. The monthly time step is looked at in detail as the yearly time scale would only contain a maximum of five points. In Figure 4-54 the atmospheric case is shown and though it seems poor correlations exist, looking at the bottom figures, the monthly and seasonal signals seem to be reproduced well by all three TRMM datasets, with the TRMM GPCC maybe having a slight edge. For the surface case the TRMM precipitation datasets form a tight correlation for the years they are available. The 3A46 dataset performs the best here, but it is clear that for these balances all of the TRMM datasets could be applied well and the TRMM datasets are valuable for the evaluation of the water balance in Rondonia over the last five years.

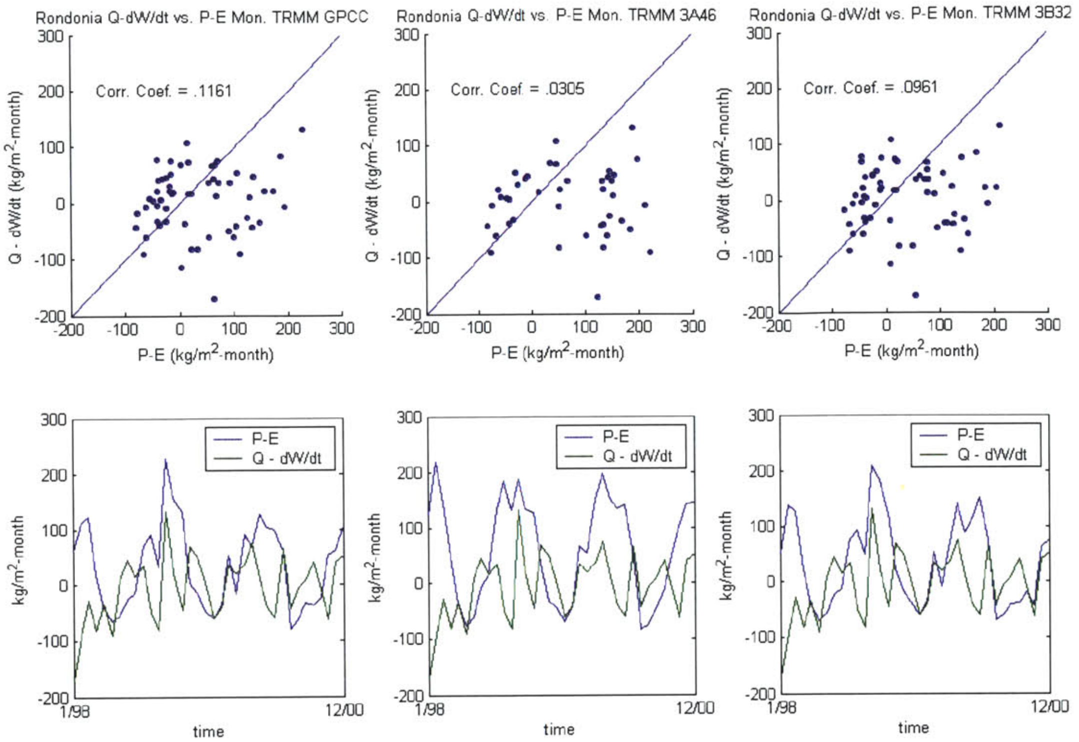


Figure 4-54: Correlation Plots for Rondonia – TRMM Precipitation Comparison Monthly Atmos.

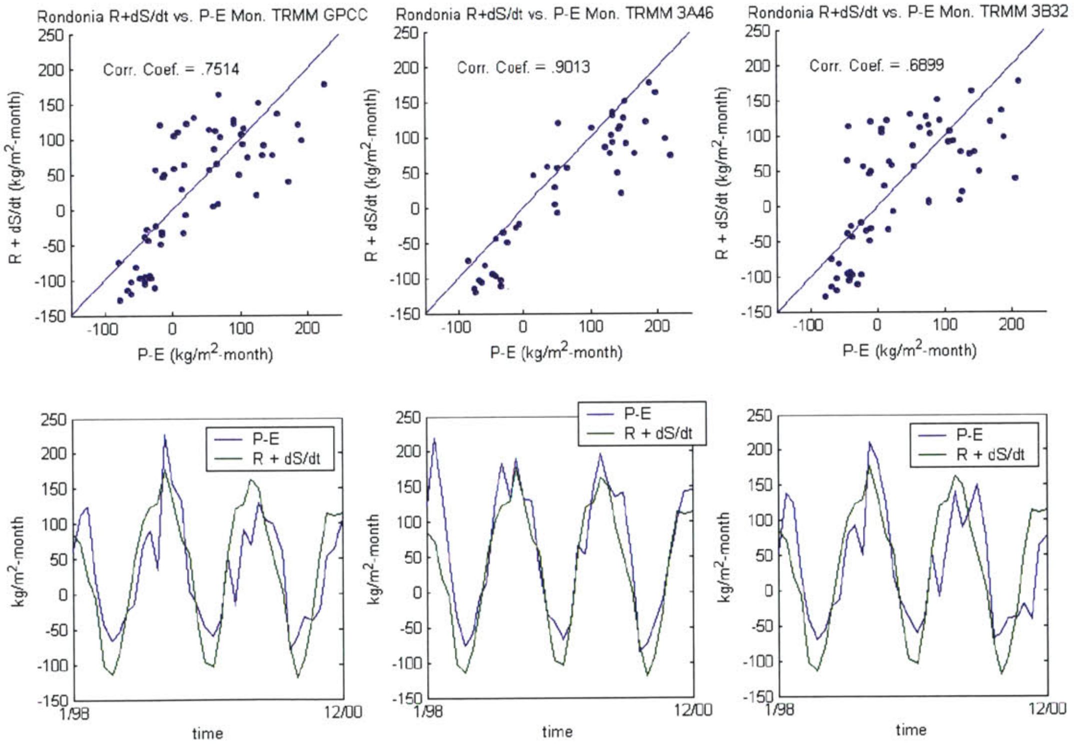


Figure 4-55: Correlation Plots for Rondonia – TRMM Precipitation Comparison Monthly Surf.

4.5. Time Scale

The time scale of the water balance has been taken into account in the study of each water balance situation presented. On a monthly basis a water balance typically follows a seasonal cycle, and thus even if error exists in some fields, a balance can still be established because the water balance variables are for example all high in the summer and low in the winter. There is, however, more potential for variability on a monthly time scale because the time averaging of the water balance is less than that of the yearly cycle. A yearly water balance alternatively contains no regular seasonal cycle, but likely is composed of less variable and better averaged data. These properties can be seen using our analysis tools and all default conditions.

Figure 4-56 shows the residual statistic analysis for the default conditions for each of the box control volumes, and contrasts the statistics by time scale of the water balance. For the monthly water balance, the absolute error is consistently slightly higher. However, for the surface balance there is no discernable pattern between the two time scales. There is barely any difference between the bias on the monthly and yearly time scales, and small differences in bias are likely due to rounding errors.

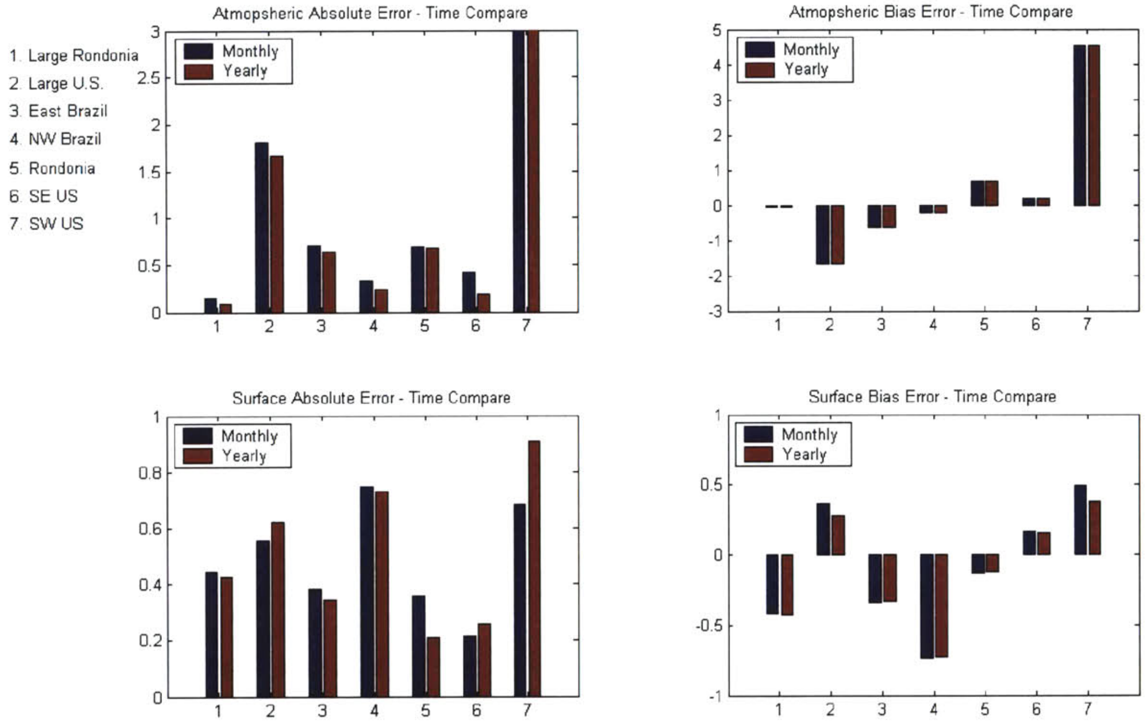


Figure 4-56: Time Scale Comparison – Atmospheric and Surface Absolute Error and Bias Error

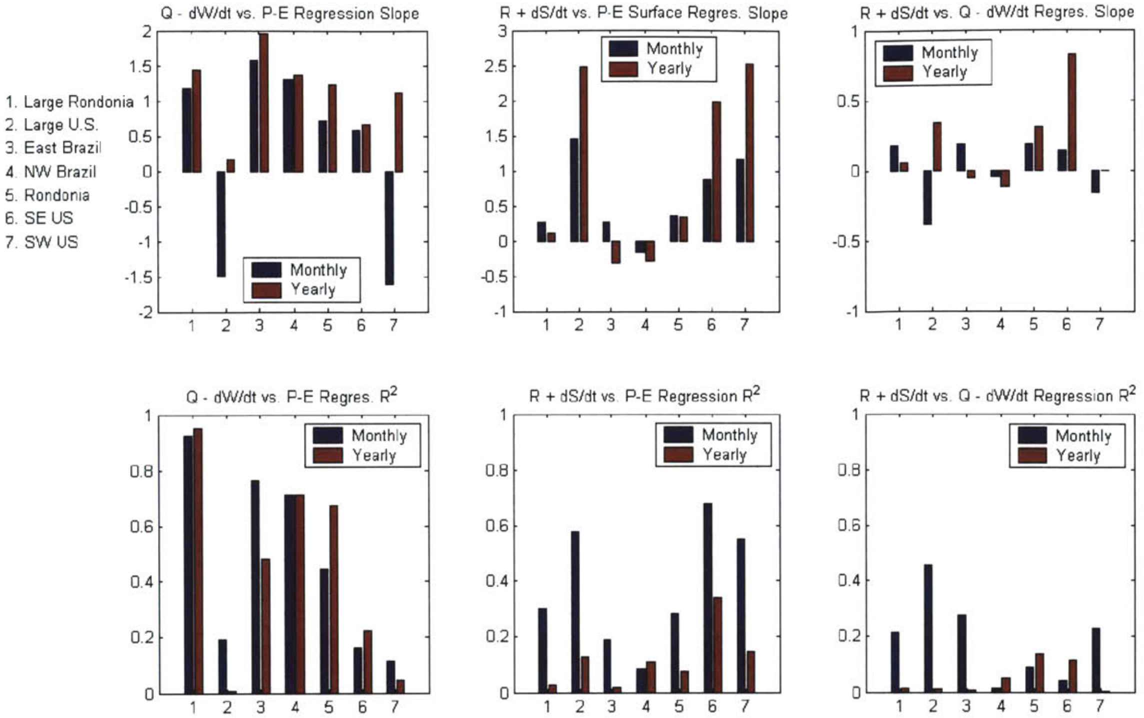


Figure 4-57: Time Scale Comparison – Atmospheric, Surface, and Total Regressed Slope and R^2

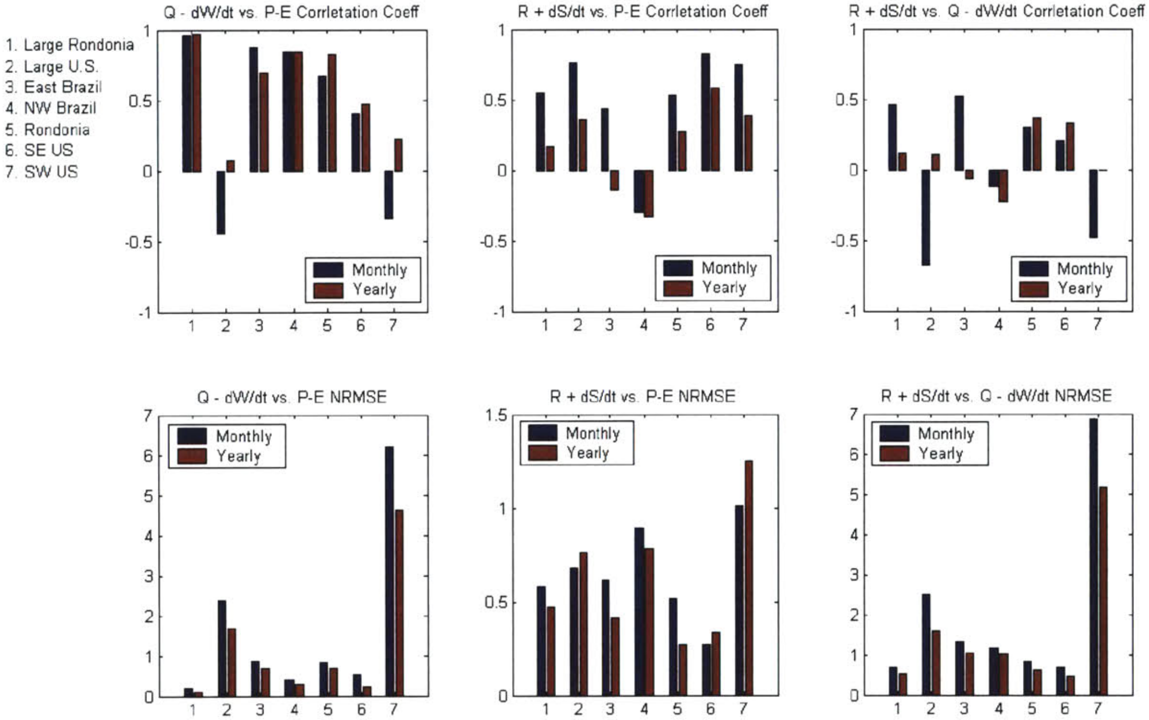


Figure 4-58: Time Scale Comparison – Atmos, Surface, and Total Corr. Coeff. and NRMSE

Figures 4-57 and 4-58 show the relevant correlation statistics for all three of the possible regressions, atmospheric, surface and total, so they can be contrasted by time. For the atmospheric regression the slopes are consistently closer to one on a monthly basis, while the R^2 and correlation coefficients are mostly a draw. The NRMSE is lower for the yearly balance on a consistent basis. However, the correlation between the two sides of the balance is not greatly improved on the monthly basis as shown by the R^2 and correlation statistics.

Three control volumes of interest are presented for the time scale analysis, as we explore all three types of correlations, atmospheric, surface, and total. In both of the first two examples, Figures 4-59 and 4-60, we see how differences can arise between the monthly and yearly time scales. For the atmospheric case in East Brazil, both the monthly and yearly time scales provide a well correlated atmospheric balance. On the monthly scale the peaks match up very well because of the seasonal cycle. However, when the yearly average is taken, the moisture flux values are clearly higher than the precipitation – evaporation term at all points. The same observation is made for the SWUS in Figure 4-60 to an even more extreme state (and replacing moisture flux with runoff). This proves that just because a monthly water balance is good, it doesn't mean when this data is averaged annually the balance will still be good, because the monthly water balance is highly dependent on a seasonal pattern.

In Figure 4-61 the total water balance correlation is observed for Rondonia. The signals are correlated well from month to month and year to year, however the balance is still flawed. There is a large bias that can be clearly seen by the residual analysis.

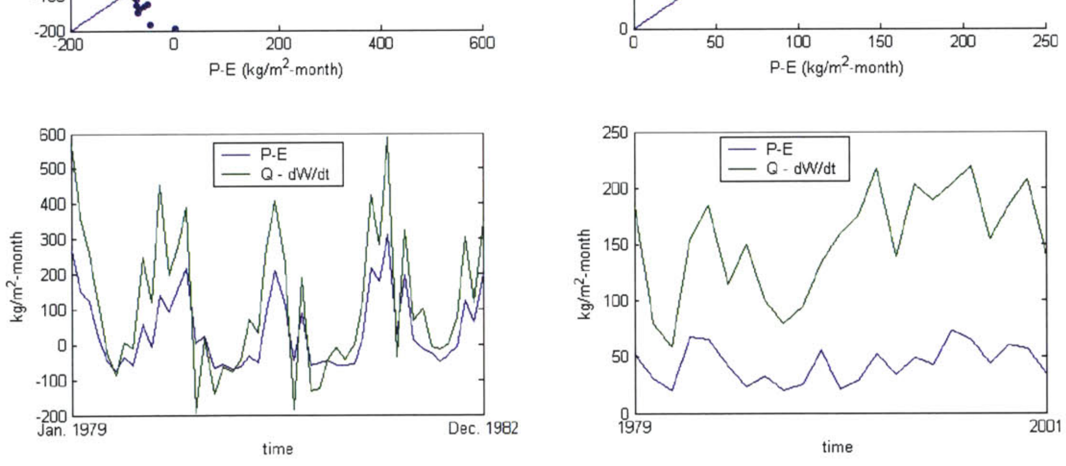


Figure 4-59: Correlation Plots for East Brazil – Time Scale Comparison Atmospheric

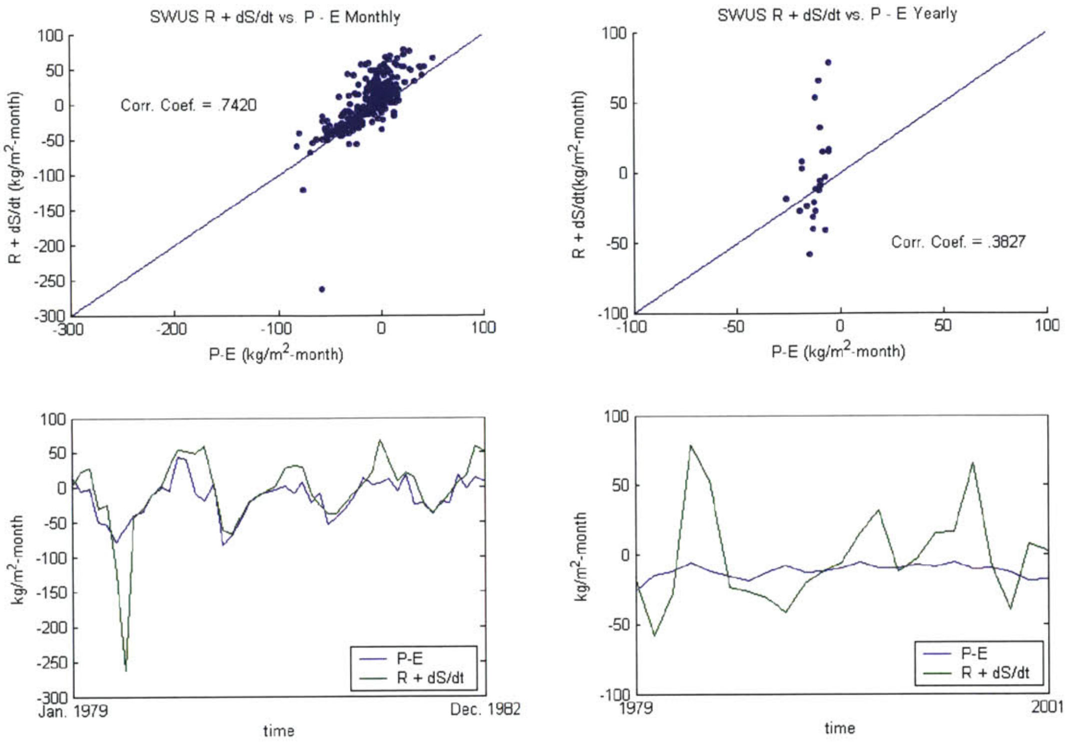


Figure 4-60: Correlation Plots for SWUS – Time Scale Comparison Surface

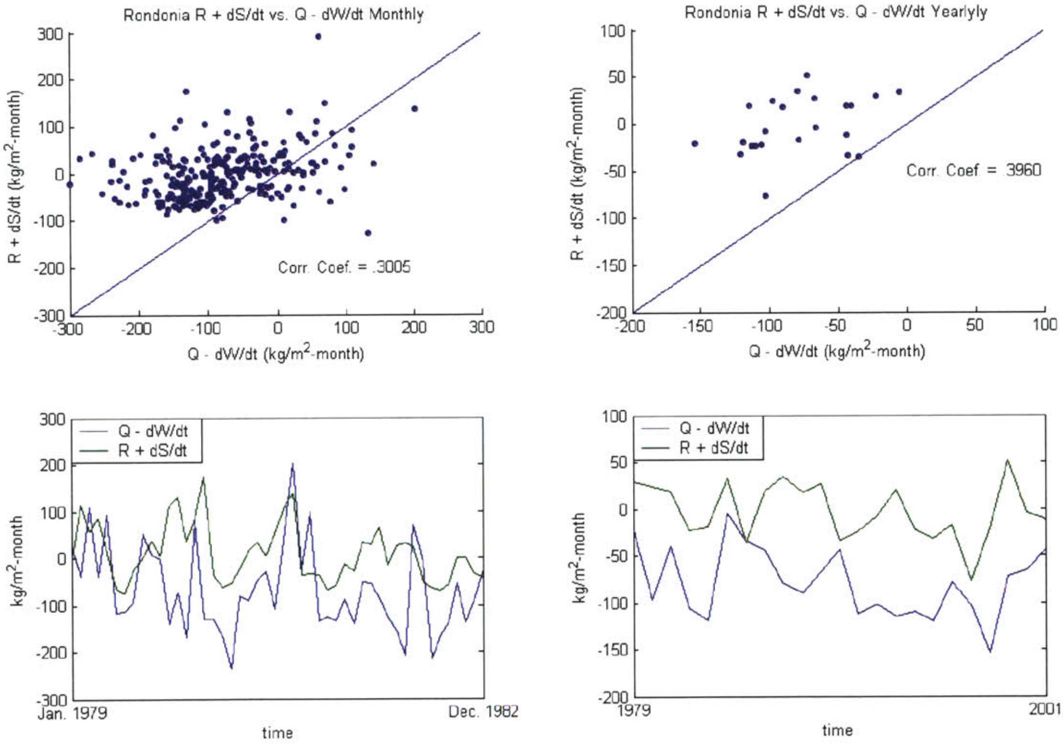


Figure 4-61: Correlation Plots for Rondonia – Time Scale Comparison Total Balance

4.6. Storage Considerations

Early data processing indicated poor surface water balances in most areas studied, which necessitated the search for an alternative method for closing the surface water balance. This, as discussed in Section 3.3.2.3 involves the removal of the storage term (dS/dt) in the surface balance, and compensating for this deletion by lagging the runoff time series by a period of months when applying it to the water balance. In this analysis only the surface water balance need be considered on the monthly time scale. First the box control volumes will be analyzed in this manner, followed by the basin control volumes. For the basin control volumes the reanalysis runoff will be used in addition to the surface runoff data, as the application of the lag time runoff methods may be useful to both sources of runoff.

In Figure 4-62 the residual statistics for the box control volumes are shown for all of the storage methodologies. In theory the absolute error should be lowest in the case where change in storage is included. Then, in the series of monthly lags, a minimum error should become prevalent for one of the months indicating the best correlation of precipitation and runoff signals without storage. In all but one case (Larger US) the change in surface storage scenario has the lowest absolute error, as it should have. No best lag can be identified. The bias should be about the same for all conditions including when change in storage is included, because the sum of all of the change in storage terms should be zero over the duration of the balance. This behavior is observed.

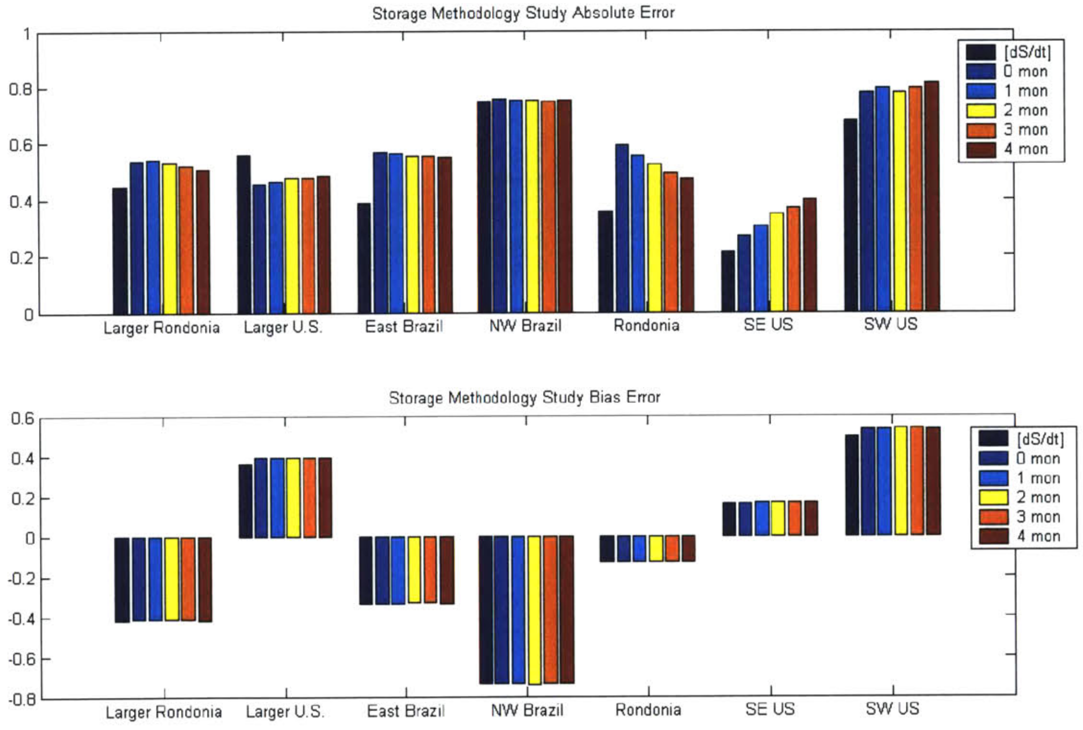


Figure 4-62: Storage Method Comparison – Absolute Error and Bias, Box Control Volumes

In Figures 4-63 through 4-66 the surface correlation is observed between our different surface flux term and both the precipitation – evaporation term and the moisture flux term. Here the total correlation is useful as in the case of the total water balance we are trying to match the storage methodology to the selected moisture flux methodology. Figure 4-63 shows the first attempt at regression with P – E. What is seen here are good correlations when the storage is included, but no regressions are found with near correct properties for any control volumes except the SEUS when looking at the lad time trials. The SEUS control volume displays a lag time of zero months, which is likely the case since it is a small control volume and fairly active in a hydrological sense. Regression and correlation statistics are consistently off for all other lag situations in Figure 4-63 and 4-64.

In Figures 4-65 and 4-66 we test the total correlation. Results are nearly the same. In both cases the correlation and R^2 in NW Brazil appear to get worse as lag time increases, however the slopes on these regressions are negative. The primary purpose of these figures is to show the impossibility of matching the moisture flux cycle to the runoff cycle without surface storage for the box control volume. This just simply can't be done given the coarseness of the data and the small size of these control volumes.

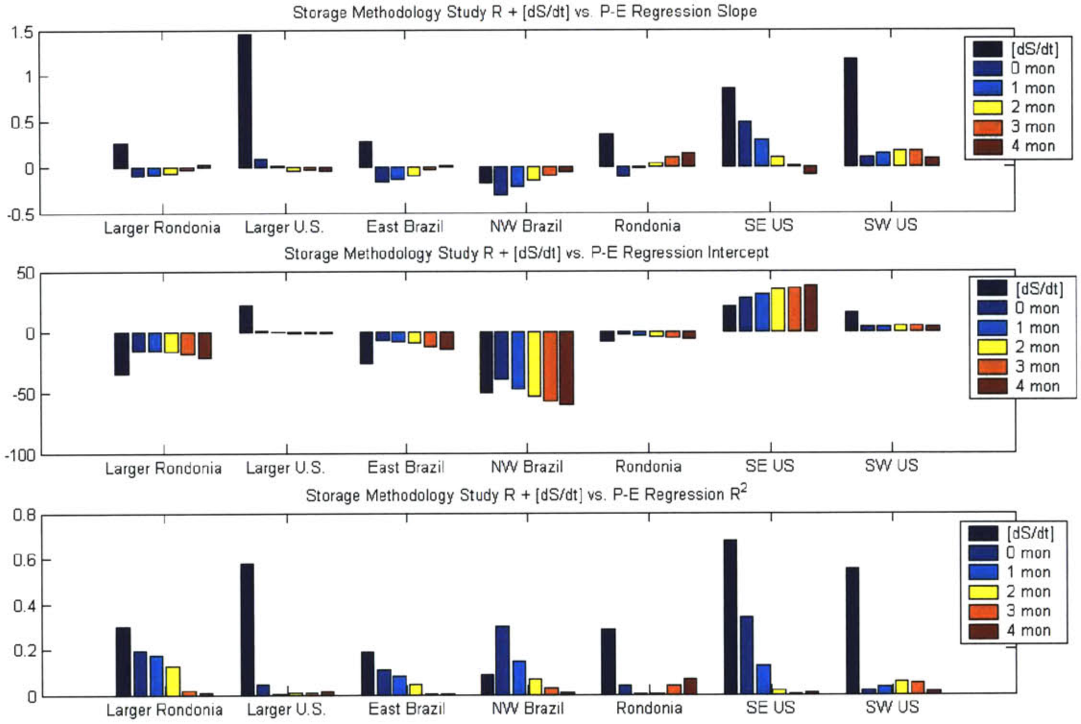


Figure 4-63: Storage Method Comparison – Surface Regression Stats, Box Control Volumes

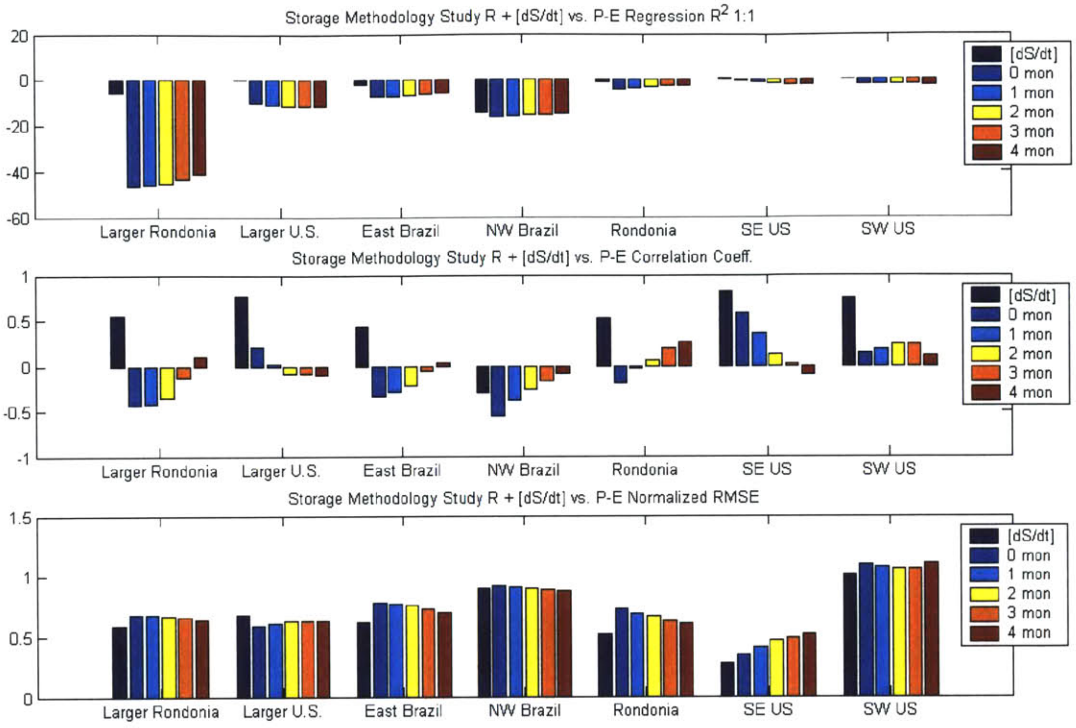


Figure 4-64: Storage Method Comparison – Surface Correlation Stats, Box Control Volumes

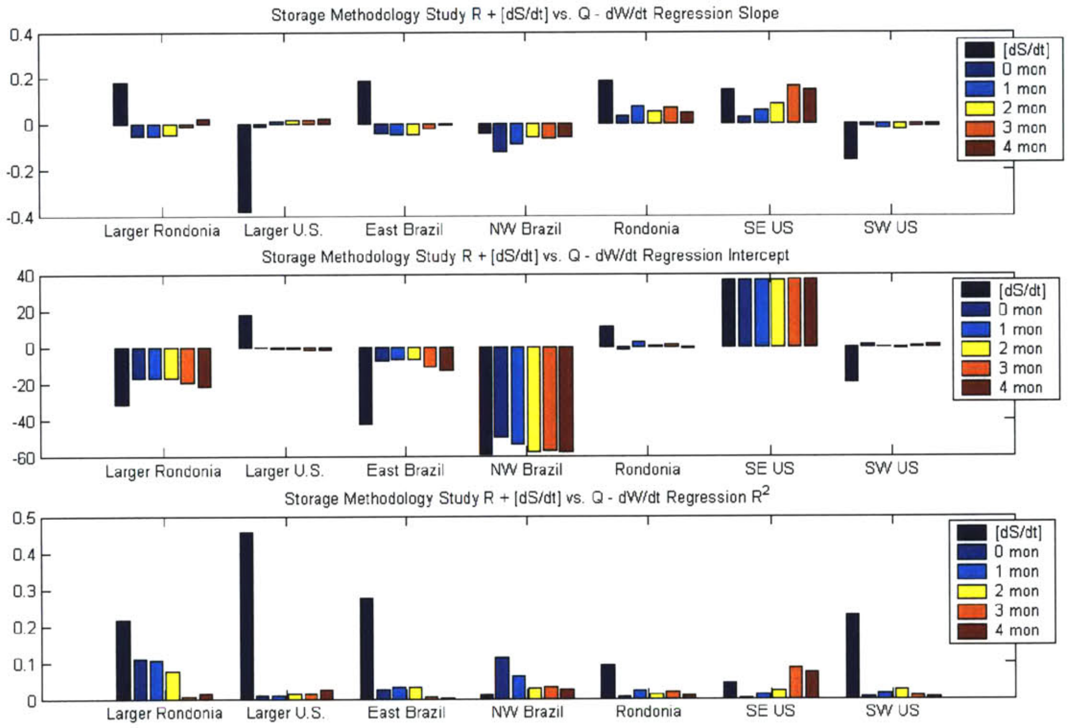


Figure 4-65: Storage Method Comparison – Total Regression Stats, Box Control Volumes

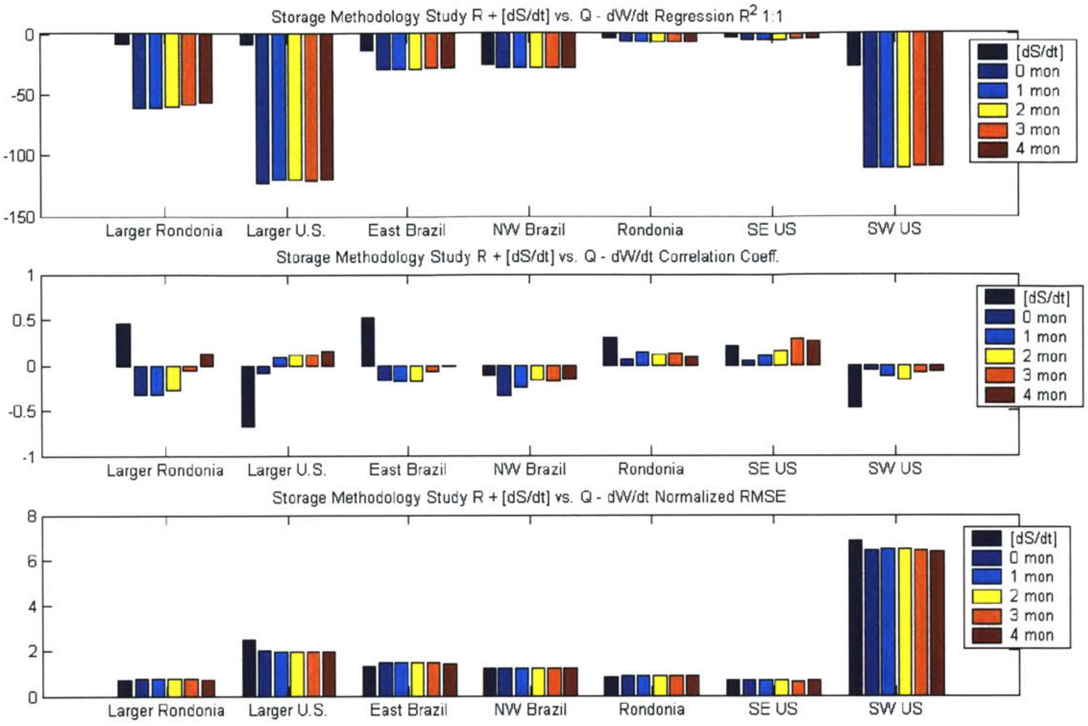


Figure 4-66: Storage Method Comparison – Total Correlation Stats, Box Control Volumes

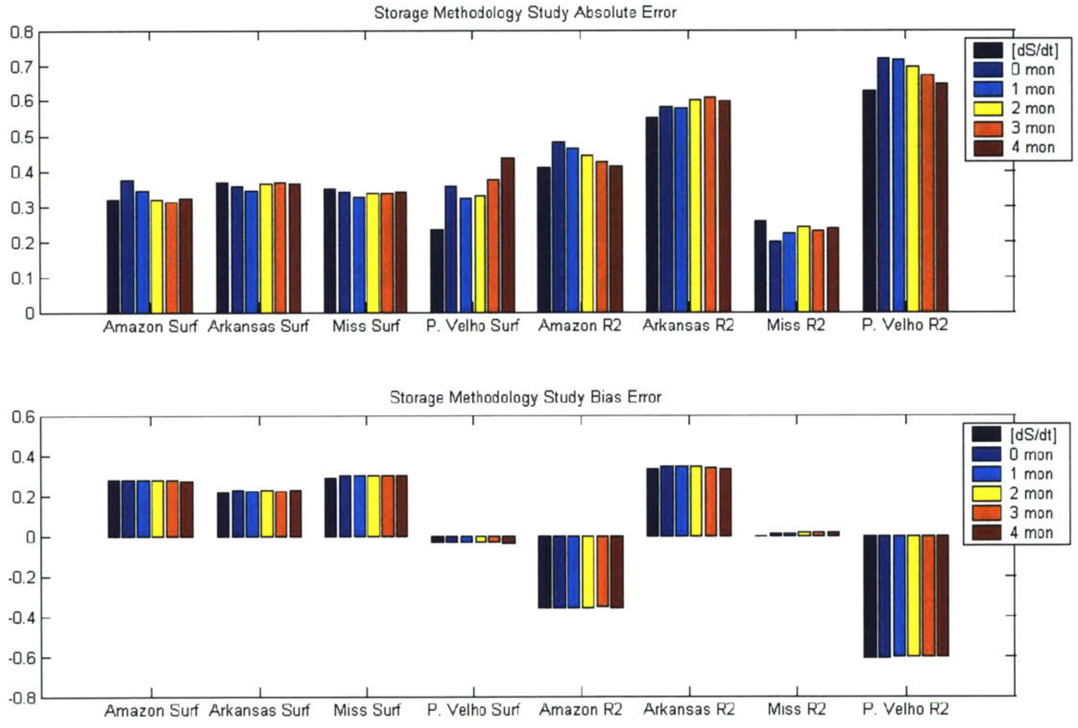
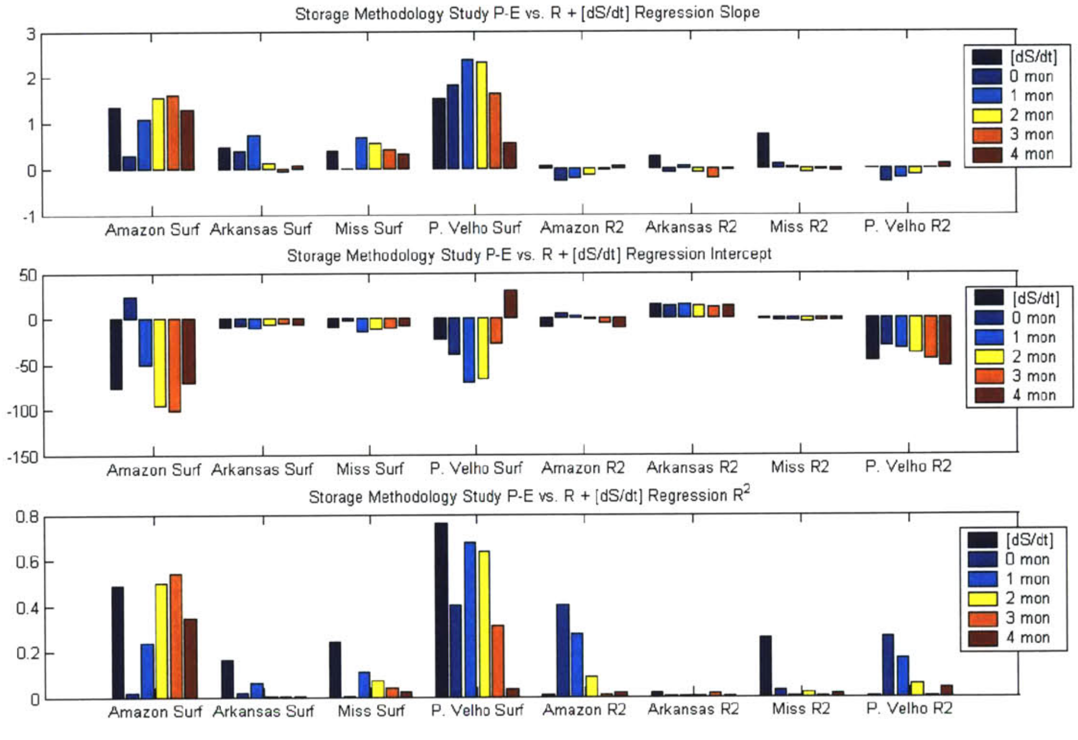


Figure 4-67: Storage Method Comparison – Absolute Error and Bias, Basin Control Volumes

In Figure 4-67 we apply the different storage conditions to the basin control volumes. All different storage and runoff combinations are analyzed for the default conditions. For the surface runoff we begin to see effective lag analysis in terms of absolute error. For the Amazon control volume we see a minimum absolute error at three months, and for the other three basin control volumes a lag time of one month is observed. We do not see these tendencies when using the reanalysis runoff, which is derived by the linear (default) method. In all cases but the Mississippi Basin control volume, the surface runoff improves the balance over the reanalysis runoff. The bias is an ineffective analysis tool for long term averages. What can be observed, however, is the bias of the long term balance. The Porto Velho surface balance is very good when surface runoff is used, while the Mississippi River basin is balanced very well when the reanalysis runoff is used over the long haul.

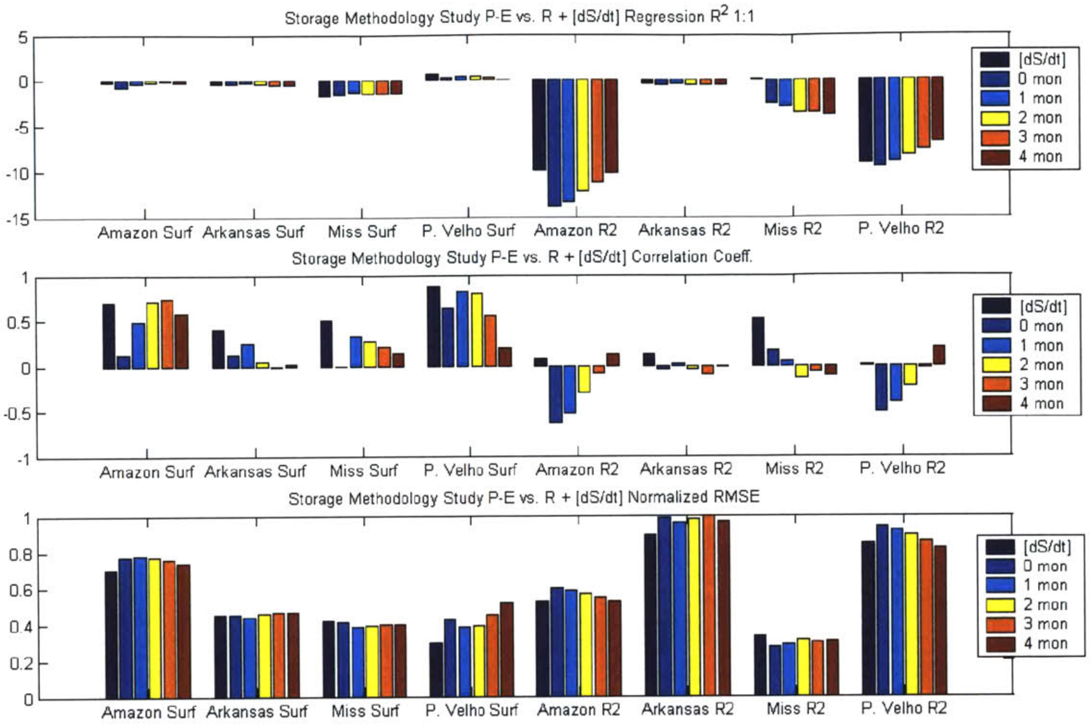
In Figures 4-68 through 4-71 we again look for a correlation between the various fluxes. Slopes are found to be the best for the lag conditions at one month for the Amazon, Arkansas, and Mississippi control volumes which is realistic. However, when the reanalysis runoff is applied to the basin sized control volume no correlation at all exists between the runoff and precipitation signals. Looking at the correlation statistics is more revealing because what we are looking for in the lag situation is not necessarily a balance, but a correlation between the two sides of the balance. In the bottom section of Figure 4-68, for the surface runoff, the R^2 of the regression is almost always highest for the inclusion of storage, and the lag times match those that we found in the absolute error analysis. The only balance to make any use of the reanalysis runoff is the Mississippi Basin control volume which for storage conditions shows a promising regression and correlation. We will explore this correlation further.


Storage Methodology Study P-E vs. R + [dS/dt] Regression Slope

Storage Methodology Study P-E vs. R + [dS/dt] Regression Intercept

Storage Methodology Study P-E vs. R + [dS/dt] Regression R^2

Figure 4-68: Storage Method Comparison – Surface Regression Stats, Basin Control Volumes


Storage Methodology Study P-E vs. R + [dS/dt] Regression R^2 1:1

Storage Methodology Study P-E vs. R + [dS/dt] Correlation Coeff.

Storage Methodology Study P-E vs. R + [dS/dt] Normalized RMSE

Figure 4-69: Storage Method Comparison – Surface Correlation Stats, Basin Control Volumes

Because of the success at using the surface balance to find lag times, we attempted to find the same patterns by performing the total water balance regression and correlation in Figures 4-70 and 4-71. Nevertheless, there are difficulties finding the moisture flux of a basin sized control volume, and the regression yields wild results, especially in the case of using the reanalysis runoff. Looking at the correlation coefficients in Figure 4-71, we see the same peaks for the lag times that were derived earlier for surface runoff. Being able to find these lag times for a basin is very important to a water balance study because it allows for precipitation and surface runoff to be compared directly without change in storage and thus allows for the completion of a rough water balance without knowledge of soil moisture in a basin.

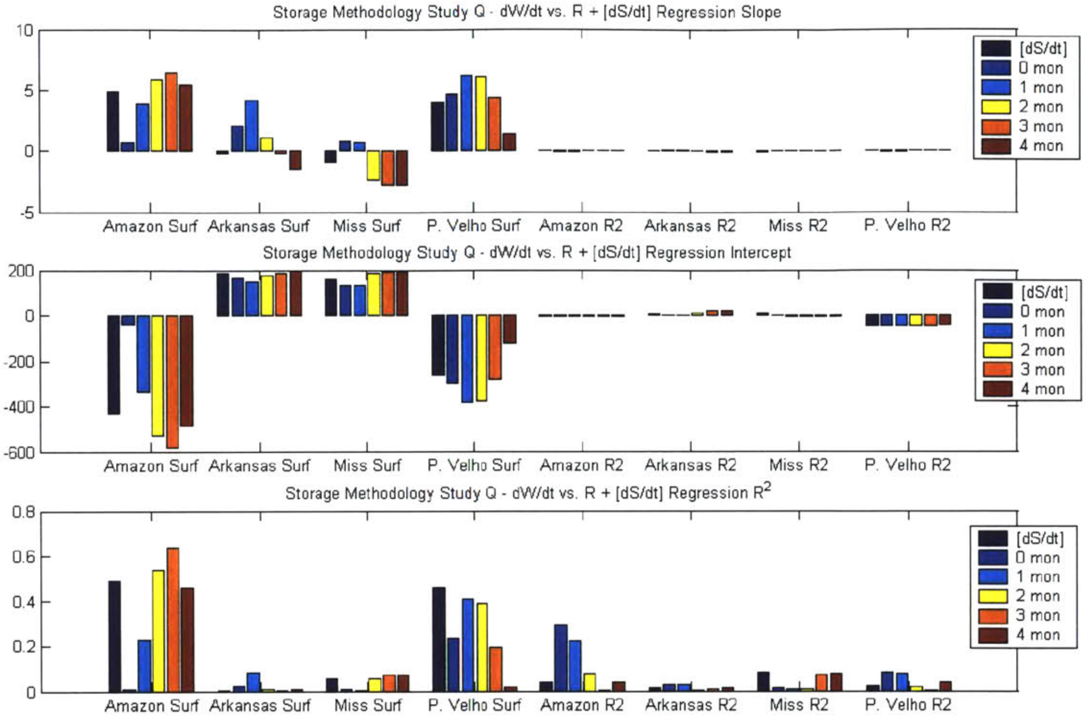


Figure 4-70: Storage Method Comparison – Total Regression Stats, Basin Control Volumes

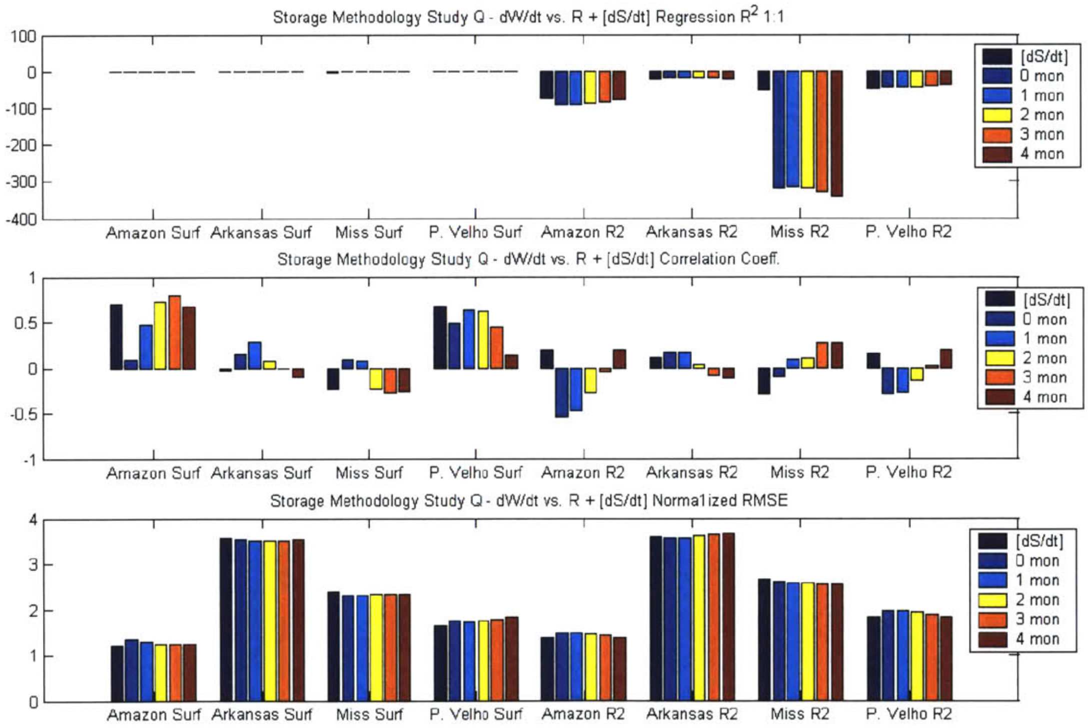


Figure 4-71: Storage Method Comparison – Total Correlation Stats, Basin Control Volumes

Returning to the box control volume, we present the example correlation plots for the SEUS control volume. On the leftmost side of Figure 4-72 a strong correlation and balance is observed for default conditions with change in storage. However, as storage change is removed and lag time is increased the balance and correlation breaks down rapidly. It can be concluded then rather definitively for this control volume, that there is no lag time on a monthly scale between the runoff and the precipitation cycles of the water balance. In Figure 4-73 an even less encouraging example of the storage analysis is provided with the Larger US control volume. With change in storage this water balance does well, however as soon as change in storage is removed the correlation of the two sided balance disappears.

In Figures 4-74 through 4-77 the basin sized control volumes of the Mississippi and Porto Velho basins are analyzed with example correlation plots. The first two figures use surface runoff data, while the second two use the reanalysis runoff. In Figure 4-74 and 4-75 the leftmost balances, the ones which include the surface storage, are the best. However, for the one month lag case in each figure (3rd from the left), the runoff is well correlated with the precipitation – evaporation term, which can be better seen in the lower panel snapshot of the data for a few selected years. The signal pickups are subtle in the Mississippi Basin, but not in the case of the Porto Velho Basin, where the pronounced seasonal cycle is picked up on a one month lag. It is interesting that in both of these cases the lag time between the runoff and the precipitation signals are one month, while the size of the basins is quite different.

In Figures 4-76 and 4-77 reanalysis runoff is applied to the same control volumes. The purpose of Figure 4-76 is to show the usefulness of the reanalysis runoff in closing the water balance for the Mississippi Basin control volume, which is balanced well when storage is included. Because of the size of the Mississippi Basin control volume, it could be possible that a consistent lag time can not be found for the control volume because there are such a wide variety of basin response times and hydrological features contained in the basin.

In Figure 4-77 the reanalysis runoff term does not complete the balance well for any of the scenarios presented. The runoff methodology seems to route the runoff in the wrong direction, meaning there is a problem applying the runoff methodology to the basin control volume. These results indicate the reanalysis storage is much more accurate than the runoff term for the basin control volumes. This makes sense because the basins are large control volumes, and the storage change is spatially averaged to fit the precipitation minus evaporation cycle.

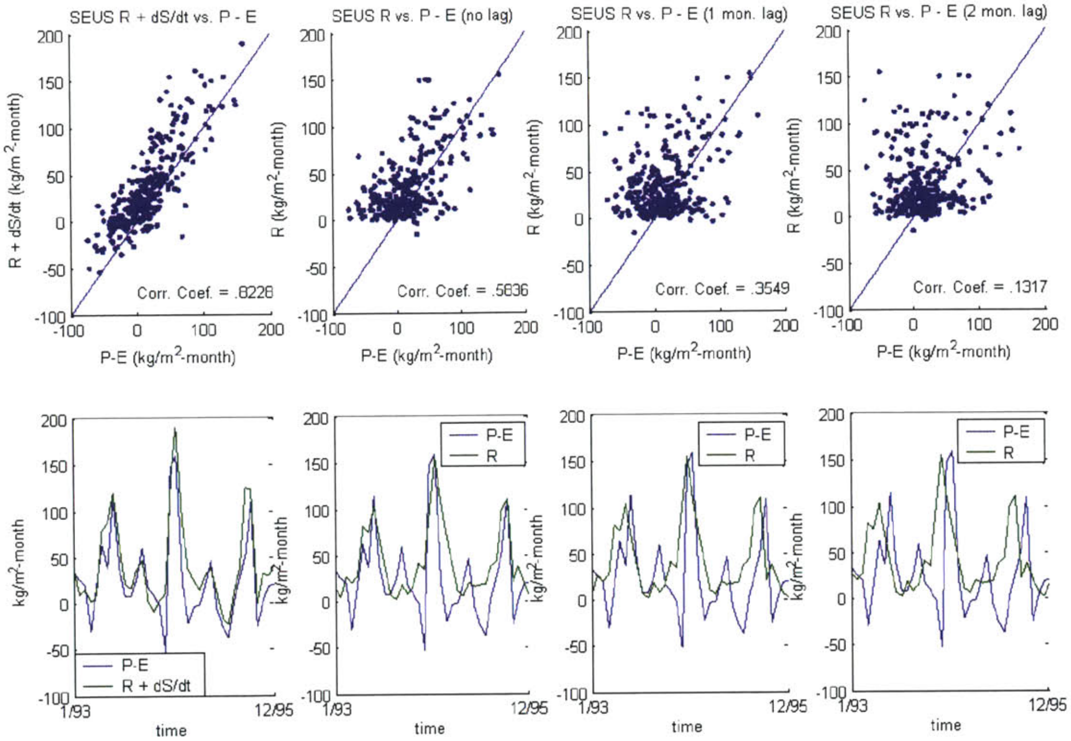


Figure 4-72: Correlation Plots for SEUS – Storage Method Comparison Surface

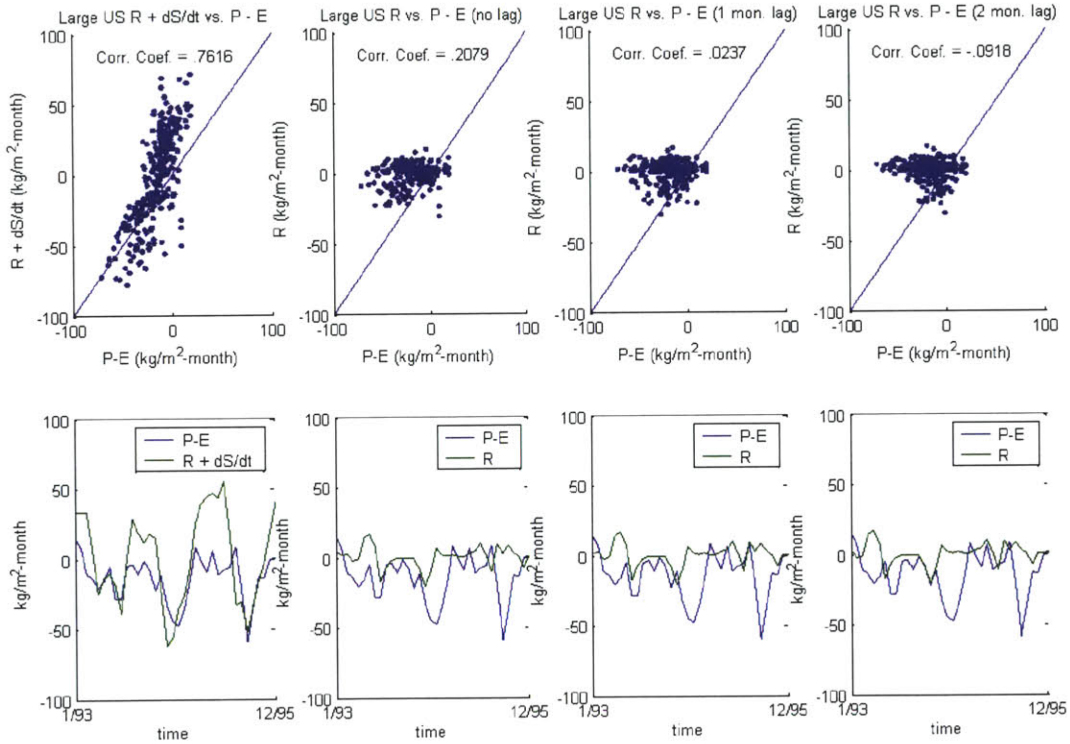


Figure 4-73: Correlation Plots for Larger US – Storage Method Comparison Surface

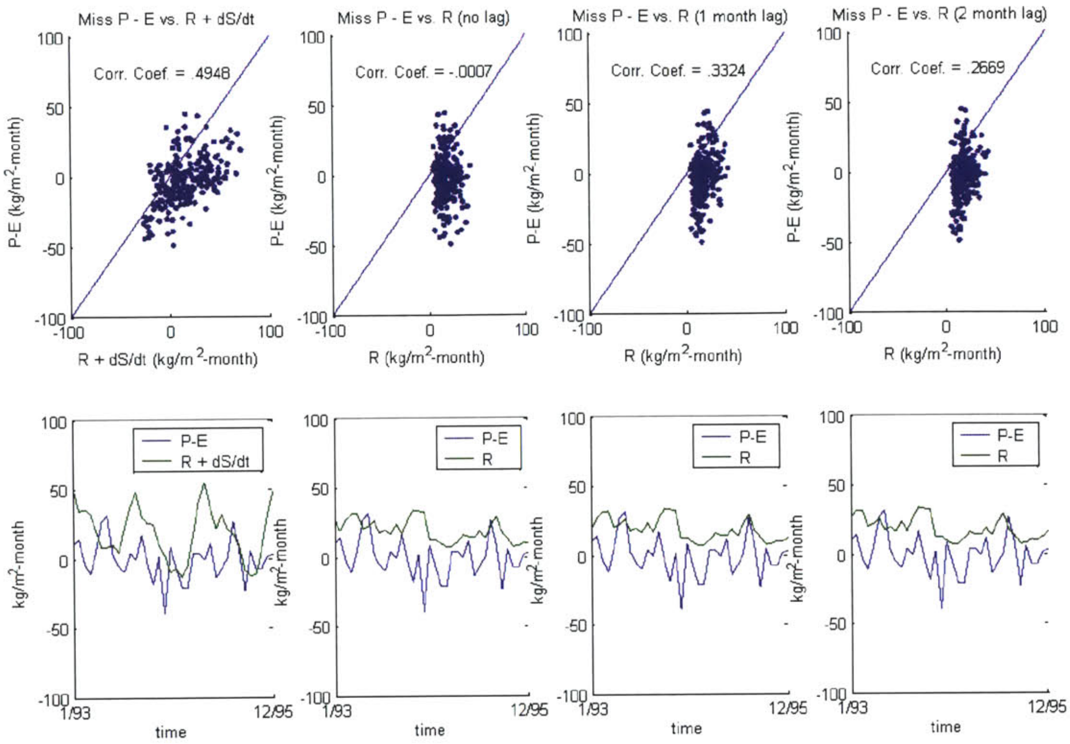


Figure 4-74: Correlation Plots for Miss. Basin – Storage Method Comparison Surface Runoff

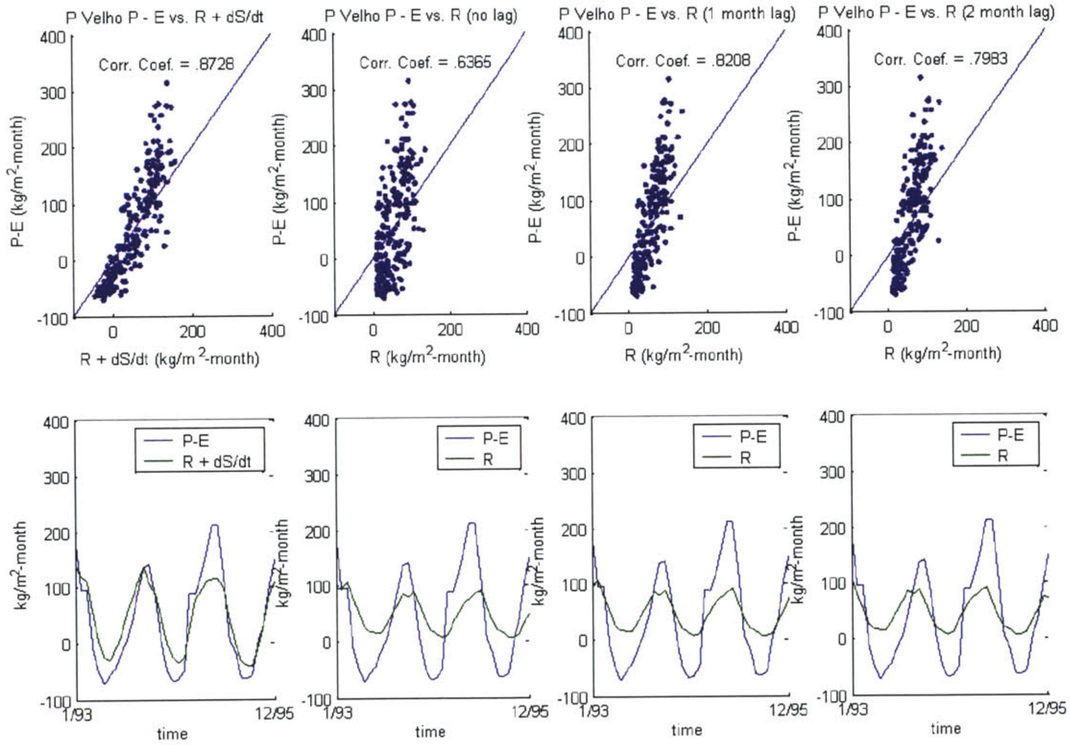


Figure 4-75: Correlation Plots for P. Velho Basin – Storage Method Comparison Surface Runoff

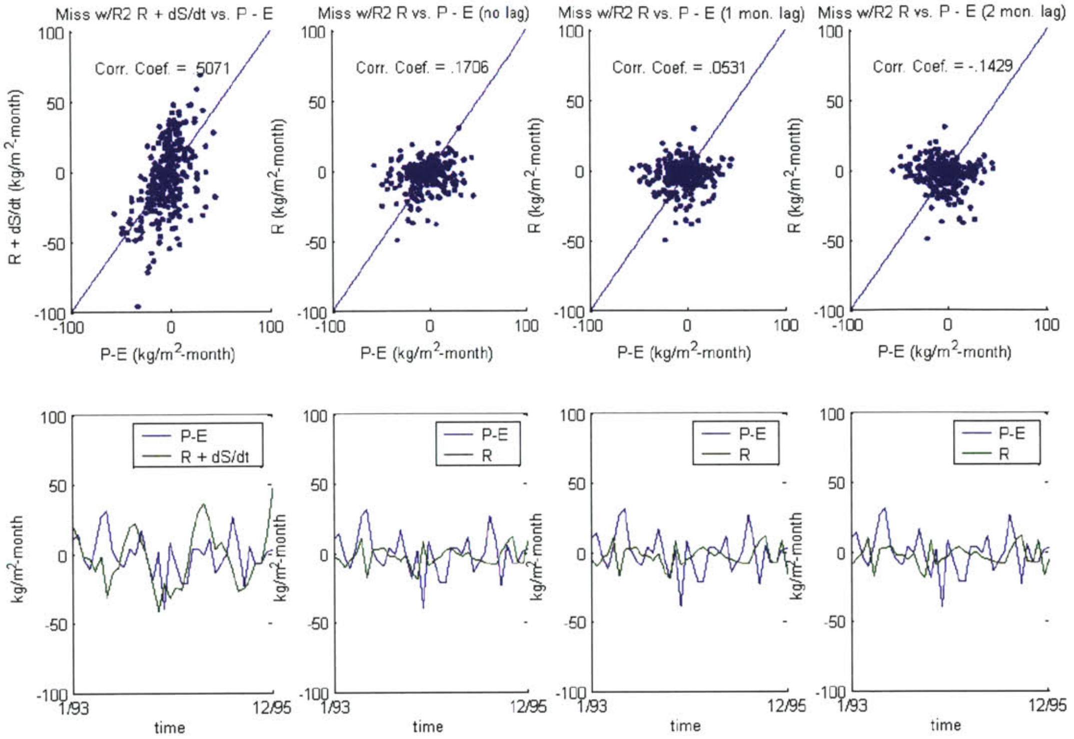


Figure 4-76: Correlation Plots for Miss. Basin – Storage Method Comparison Reanalysis Runoff

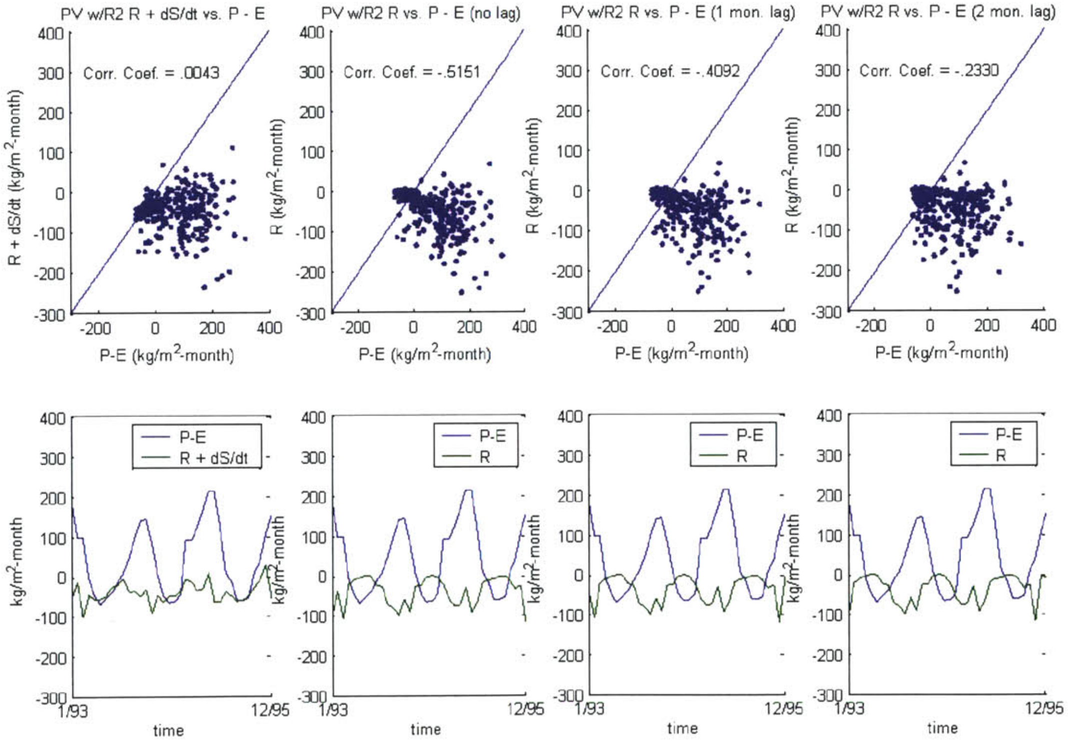


Figure 4-77: Correlation Plots for P. Velho Basin – Storage Method Comparison Re. Runoff

In summary, the lag time balance method is effective only for basin sized control volumes with surface runoff, where meaningful results can be obtained. This can be seen especially for the Port Velho Basin in Figure 4-75. In most other cases, the inclusion of the surface storage term in the water balance is paramount.

4.7. Control Volume Type

Although much of this information has been presented before, it is necessary to look here at all 11 control volumes at default conditions so as to directly look at the properties of these balances when compared to one another. By this analysis we can get a sense of how different control volumes of size and shape balance.

Figure 4-78 shows the residual statistics for all 11 of the control volumes for both the atmospheric and surface balances, default conditions. As has been observed before, the Larger US and SWUS control volumes for the atmospheric balance display larger absolute errors and biases. The closure of the box control volume atmospheric water balance relies not only on size, but also on the location of the control volume, with errors common over particularly arid or mountainous land. The Large Rondonia control volume has a better balance than the other four smaller tropical, control volumes. A more complete classification of different sized box control volumes for atmospheric water balances will be considered in the global water balance in Section 4.3. For the basin control volumes and the atmospheric balance the same general trends exist with size and location of control volume. The Amazon Basin and Mississippi Basin balances are better than their smaller sub basins. The tropical Amazon and Porto Velho basins are better balances than the Mississippi and Arkansas basins.

There are no normalized errors in the surface balance greater than one for any control volume. There is more variability associated with the moisture flux calculation as much more water is passing through the atmosphere than the surface in a given month. The trends that existed between groups of control volumes for the atmospheric balance can't be made for the surface balance. The errors are lower for the basin sized control volumes in terms of the absolute error, with comparable errors for the SEUS control volume.

Figures 4-79 and 4-80 show the regression and correlation statistics for all 11 control volumes under default conditions. For this comparison we will consider four statistics for all three of the correlation types, atmospheric, surface, and total. The total regression is appropriate for use here because we are using default conditions, but it is likely not very useful. This information has already been views in Section 4.5 for the box control volumes, but here the basin control volumes are added. In terms of slope of the atmospheric balances, the Larger Rondonia, Northwest Brazil, and Mississippi Basin control volumes show the best adherence to one for both monthly and yearly time scales. Good slopes are hard to come by on the yearly time scale for the surface balances, but a handful are good on the monthly basis, with the best in the SEUS. The total correlation only yields "decent" slopes for the SEUS and Amazon control volumes

The R^2 and correlation coefficient statistics tell very similar stories about the tightness of correlation between the different sides of the water balance, in Figures 4-79 and over to Figure 4-

80. For the atmospheric balance the best correlations are found for the Larger Rondonia and Amazon control volumes while the SWUS and Larger US control volumes are the worst. Monthly correlation for most water balances is stronger than yearly correlation for the surface water balance with strong correlations in the SEUS and the Porto Velho control volumes. A lot of the poor total correlations occur in the basins over the United States and over the smaller control volumes. The basins over the United States (Mississippi and Arkansas) have weak correlations for all three balances (atmospheric, surface, and total). The box control volumes have varying correlations over different geographic areas. The use of the surface runoff data seems to have a pronounced effect on the correlation of the basins being good or bad, and the USGS Runoff data seems to be substandard when plugged into these regressions. In general as we go from atmospheric to surface to total correlations, the coefficients go down.

Continuing on to the NRMSE for the different control volumes on the bottom of Figure 4-80 we see the same atmospheric weaknesses, all in control volumes over the United States (box and basin with the exception of the SEUS). The magnitude of precipitation is smaller over these control volumes decreasing the normalization factor which likely drives the NRMSE up, and these effects are more prominent in the atmospheric balance. For the surface balance we have good conditions for all of the basin control volumes and the SEUS. The total NRMSE is one in nearly all cases, but is smallest for Larger Rondonia, Rondonia, and SEUS, with the Amazon Basin.

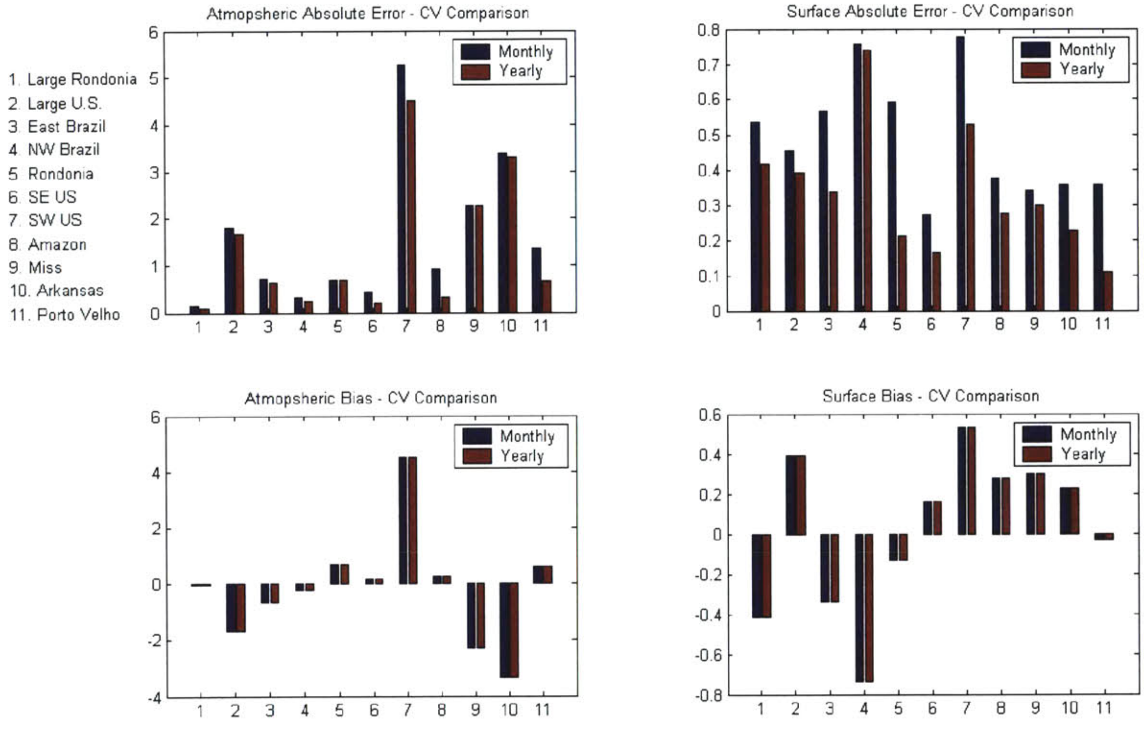


Figure 4-78: Control Volume Comparison – Atmos. and Surface Absolute Error and Bias Error

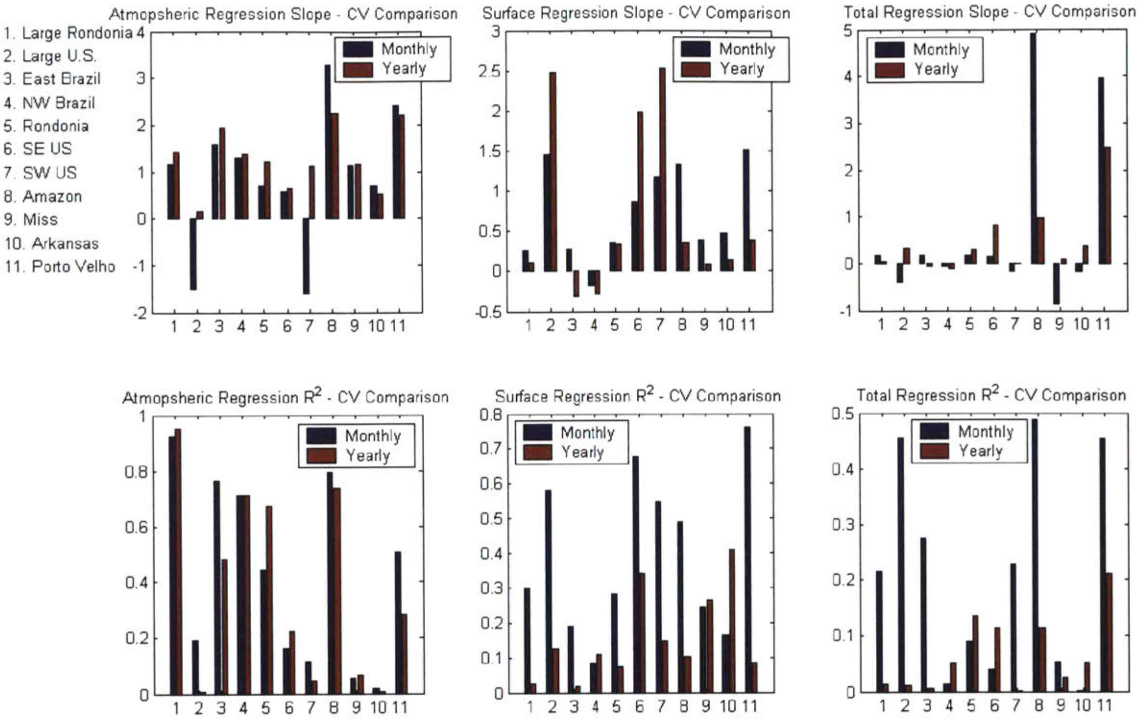


Figure 4-79: Control Volume Comparison - Atmos, Surface, and Total Regressed Slope and R^2

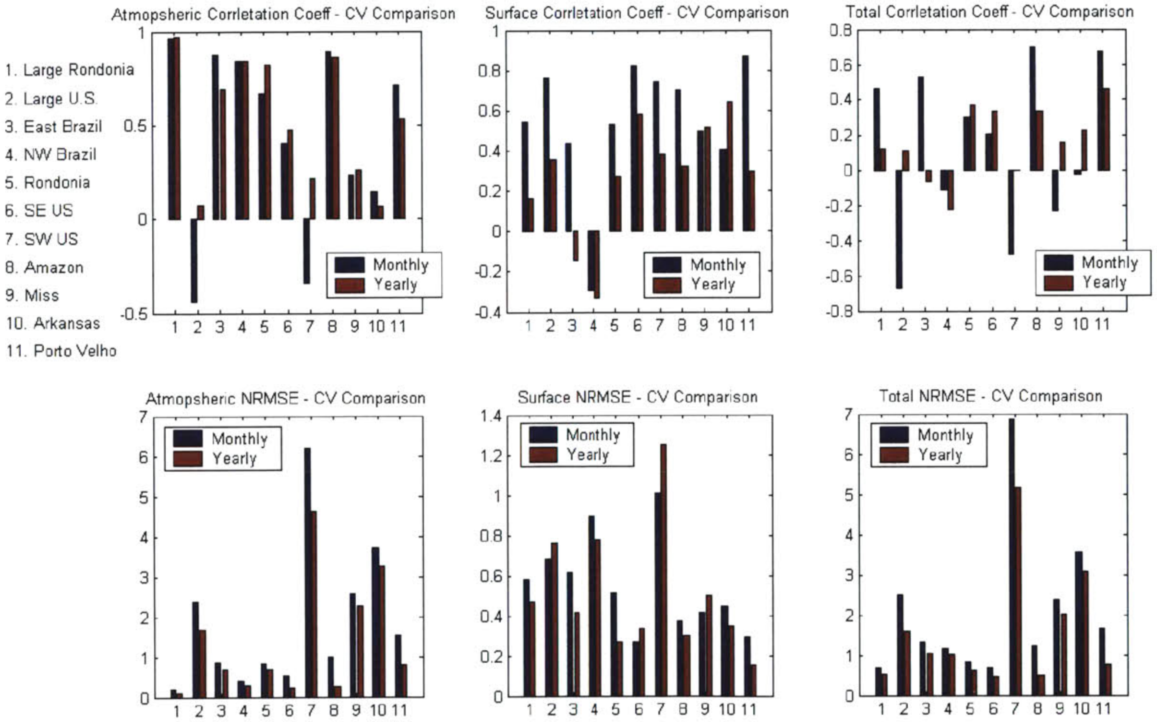


Figure 4-80: Control Volume Comparison - Atmos, Surface, and Total Corr. Coeff. and NRMSE

Four control volumes are selected for a more detailed look, each different in nature. The Rondonia and Larger Rondonia control volumes are selected as the small and large box control volumes, and the Amazon and Porto Velho control volumes are selected as the small and large basin control volumes. All of these control volumes overlap to some extent and represent the same general hydrological conditions. Figure 4-81 displays the residual statistics for only these four selected and different control volumes. The larger areas are better balanced on the atmospheric level, but only the Larger Rondonia control volume is well balanced. The surface balances are improved on the monthly scale for the basin control volumes, and biases are reduced.

In Figure 4-82 and 4-83 the regression and correlation statistics for all three types of correlation are considered. For the atmospheric balance the slope is much better aligned to one for the box control volumes. The Amazon basin slope is fairly high, which illustrates the difficulties of applying the moisture flux methodology to a basin control volume. The surface slopes are poor in all cases but the Porto Velho basin, and therefore because alignment does exist in the atmospheric balance it won't exist in the total balance. However, for the Amazon Basin control volume the alignment does occur for the total two sided balance because of the high slope of the atmospheric balance correlates to the low slope of the surface balance.

The atmospheric R^2 and correlation coefficients are again similar in terms of trends, and for the atmospheric balance shows little difference among types of control volumes, all being fairly good, with the Porto Velho lagging a little behind. The only good correlations in the surface balance are in Porto Velho basin. While the total Amazon slope looked good the correlation is clearly not that strong. For the NRMSE on the bottom of Figure 4-83, the atmospheric balance gets worse from left to right as expected.

In Figure 4-84 the atmospheric correlation plots for the four control volumes of interest are shown on the yearly time scale. The Larger Rondonia control volume has a very tight atmospheric correlation, while the Rondonia control volume has a good signal correlation, but a clear bias. In Figure 4-85 the surface balance is considered. In this case the Larger Rondonia control volume is very biased, while the Rondonia control volume is well balanced. However, neither balance is very well correlated. The surface correlations look better especially in the Porto Velho control volume, as the numbers are realistic with positive side surface flux and precipitation – evaporation. The total correlations are given in Figure 4-86. The Rondonia control volume clearly results in the best balance out of the four balances presented.

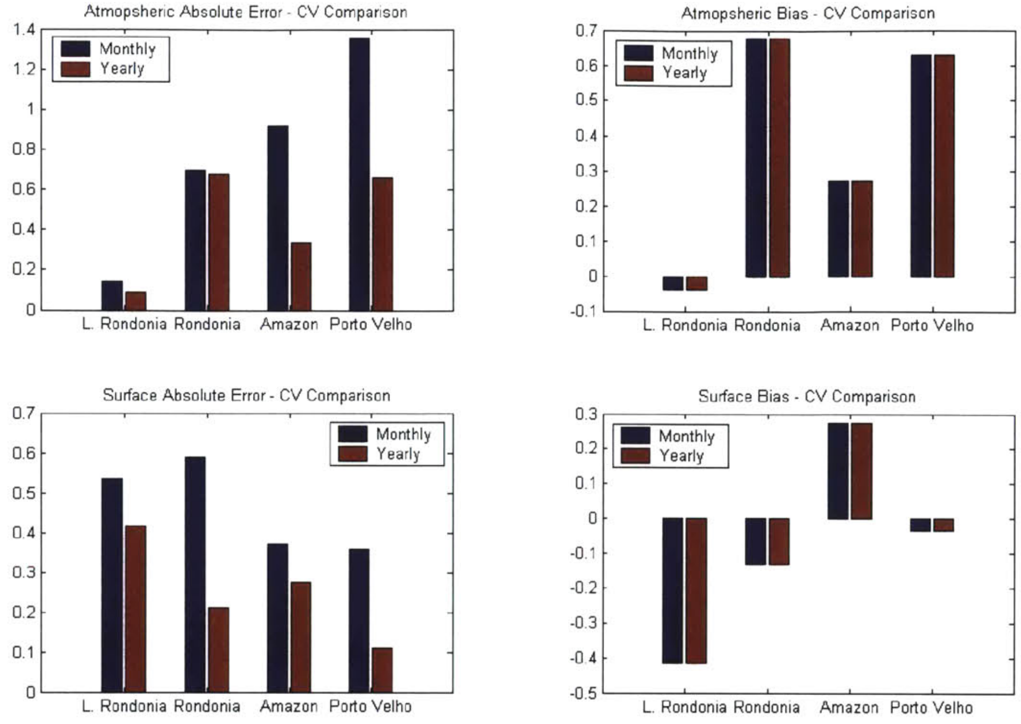


Figure 4-81: Tropical Volume Comparison – Atmos. and Surface Absolute Error and Bias Error

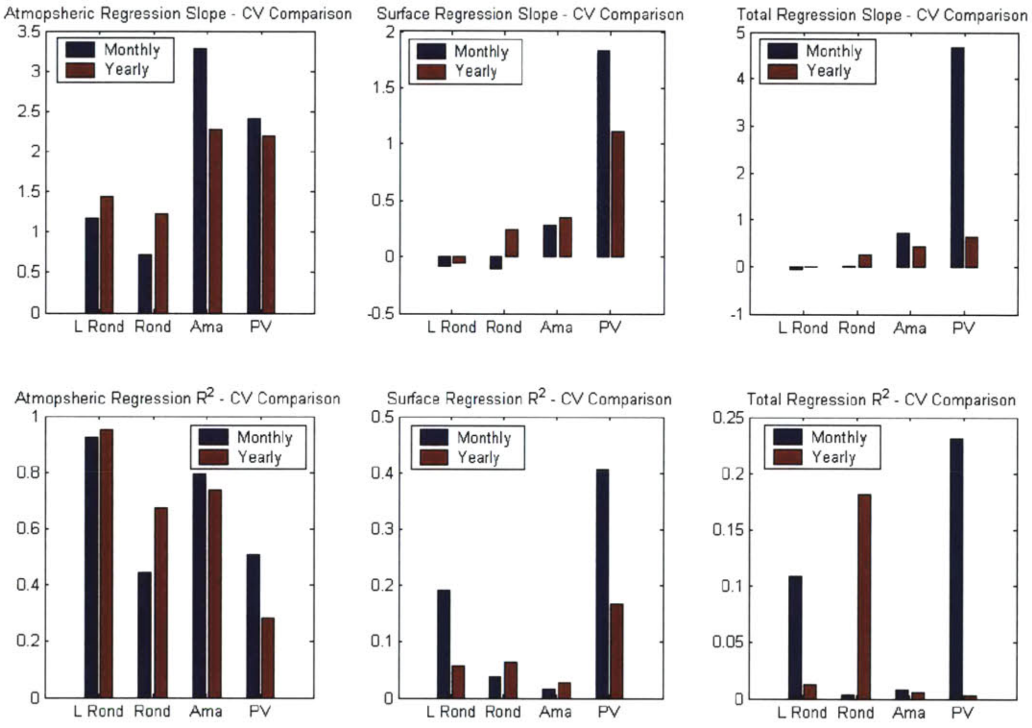


Figure 4-82: Tropical Volume Comparison - Atmos, Surface, and Total Regressed Slope and R^2

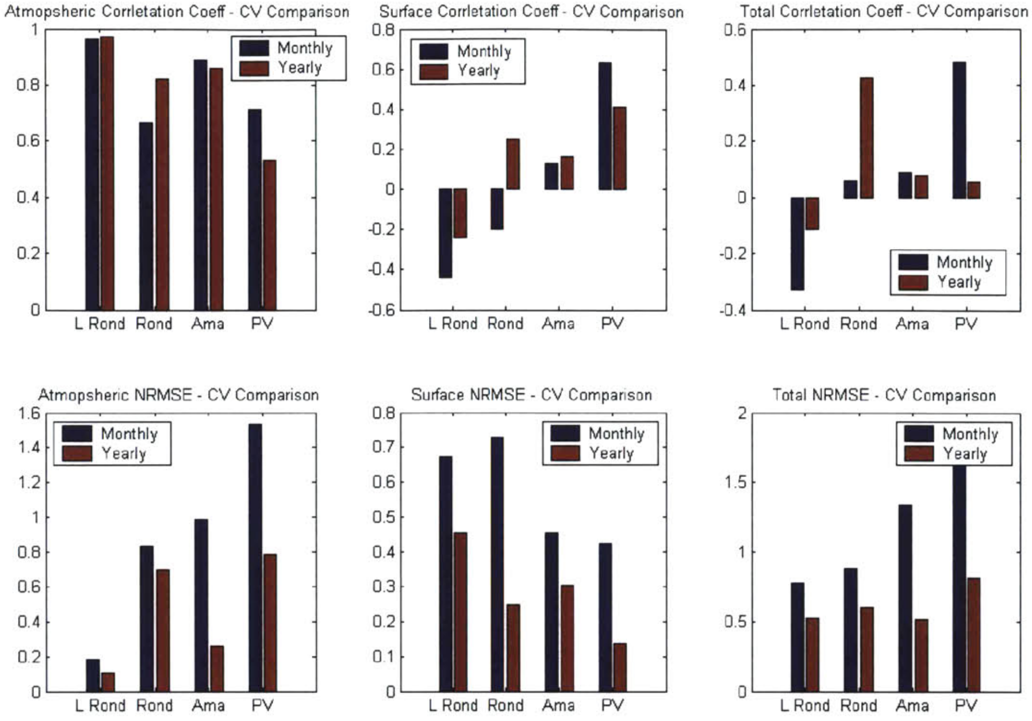


Figure 4-83: Tropical Volume Comparison - Atmos, Surf, and Total Corr. Coeff. and NRMSE

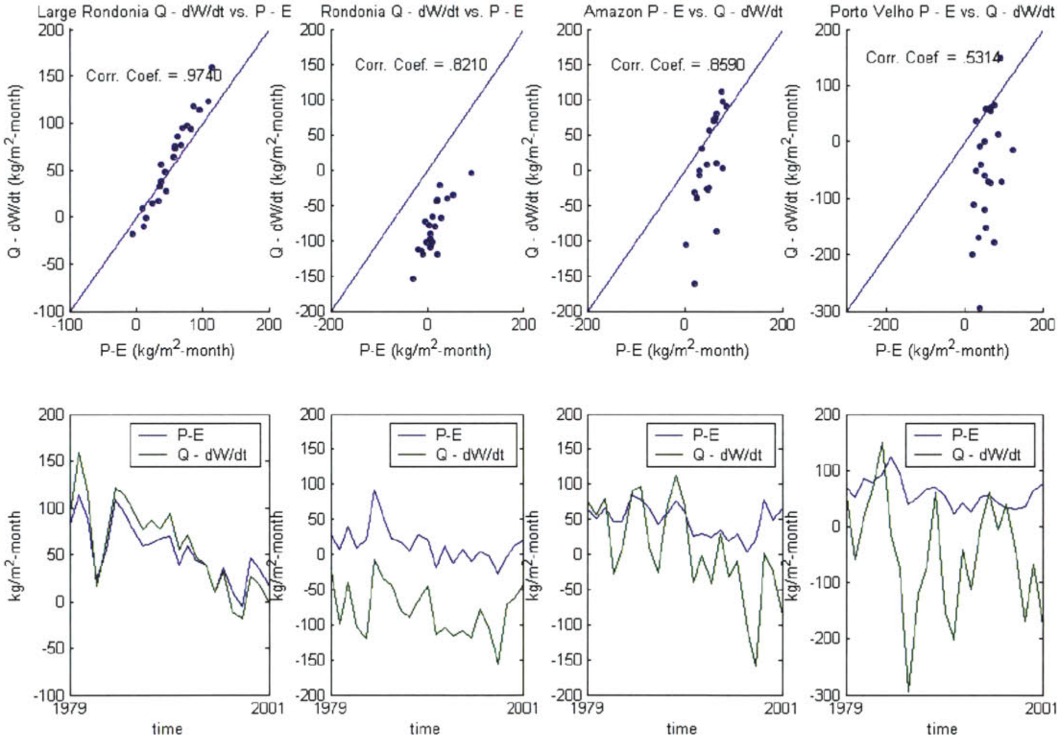


Figure 4-84: Tropical Correlation Plots – Atmospheric Regression

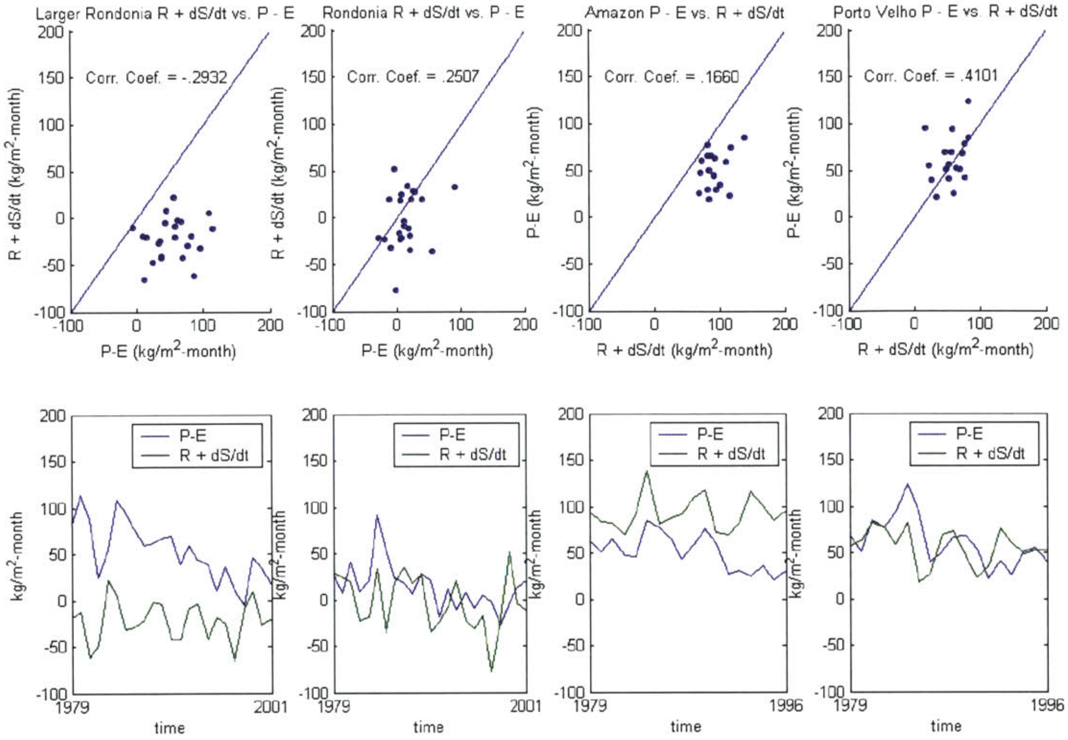


Figure 4-85: Tropical Correlation Plots – Surface Regression

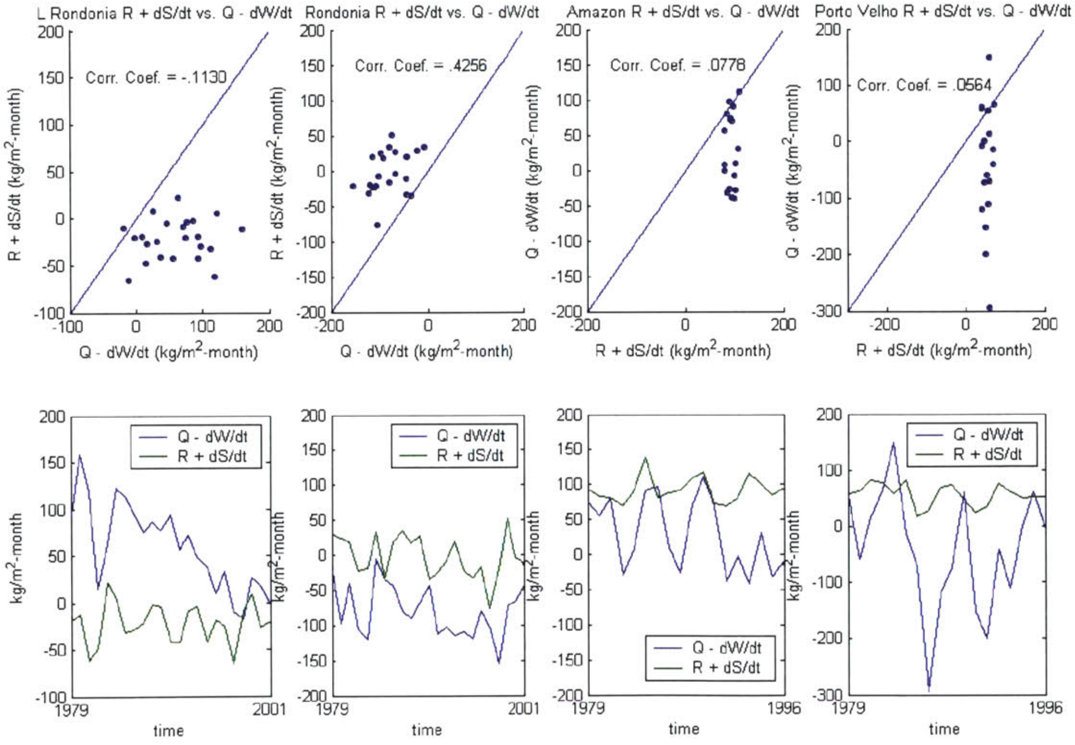


Figure 4-86: Tropical Correlation Plots – Total Regression

5. Data Analysis by Study Region

For each control volume there are four basic water balances that we wish to close for each study region: the monthly atmospheric water balance, the yearly atmospheric water balance, the monthly surface water balance, and the yearly surface water balance. Each of these water balances can be evaluated using the Reanalysis-1 and the Reanalysis-2 (55 years and 23 years) respectively. The primary purpose of this section will be to present the water balance over each region for both reanalyzes. These water balances are presented with default conditions which include: moisture flux method 2, non-zero change in storage, and the linear runoff methodology routing methodology.

For each control volume there are a large number of permutations of use of characteristics which can be used to perform the water balances. Tables 5.1-5.7 show the characteristics which can be changed in each water balance over each control volume. Five evaluation criteria were used to evaluate the water balances: absolute error, bias error, regression slope, correlation coefficient, and RMSE. All of the normalized statistics were not used because there is no comparison of different control volumes in this evaluation. The R^2 values were not used as most of the water balances yield very poor R^2 results and the adherence of the balance to a linear relationship is evaluated in the correlation coefficient. Intercept is disregarded as it is accounted for in the bias residual statistic.

All possible water scenarios for each control volume and balance are placed in a spreadsheet and with the five evaluation criteria. The different scenarios are sorted and ranked by performance in each criterion. In the case of ranking bias and slope the departure from zero and one are ranked based on a modification to the original properties. Once each of the criterions is ranked, the rankings are summed for each scenario, and the best balances are then sorted and ranked from the lowest sum of ranks to the highest sum of ranks. The spreadsheets which were used to carry out this evaluation are given in Appendix A for reference purpose as the water balance statistics for every balance conducted over all eleven control volumes are presented. Once the evaluation was completed the data for each control volume and water balance was analyzed carefully to pick the best possible water balance, which in some cases was not the balance ranked the highest by the evaluation criterion. These selections will be discussed and displayed further, along with the default reanalysis balances on an area-by-area basis. Also included in each section will be the annual time series of precipitation for all control volumes on a yearly basis.

Control Volume	Moisture Flux	Runoff Method	Storage	Runoff Data	Reanalysis	Time	Precipitation	Time	
Monthly Atmospheric	Method 1	1	N/A	N/A	1	1/1948-12/2002	Reanalysis	N/A	
	Method 2				2	1/1979-12/2001	GPCP	1/1979-12/2001	
							GPCC	1/1986-12/1996	
							GPCC TRMM	1/1998-12/2002	
							GHCN/CAMS	1/1948-11/2002	
							GPI	1/1986-12/2002	
							TRMM 3A46	1/1998-8/2001	
							TRMM 3B43	1/1998-12/2002	
							SSM/I	7/1987-11/1987	
								1/1988-6/1990	
								1/1992-12/2002	
							OPI2	1/1979-8/2002	
							OPI3	1/1979-8/2002	
							CMAP	1/1979-6/2002	
							CMAP2	1/1979-6/2002	**Total**
Sum Variables	**2**	**2**					**13**		**52**
Control Volume	Moisture Flux	Runoff Method	Storage	Runoff Data	Reanalysis	Time	Precipitation	Time	
Yearly Atmospheric	Method 1	1	N/A	N/A	1	1948-2002	Reanalysis	N/A	
	Method 2	2			2	1979-2001	GPCP	1979-2001	
							GPCC	1986-1996	
							GPCC TRMM	1998-2002	
							GHCN/CAMS	1948-2002	
							GPI	1986-2002	
							TRMM 3A46	1998-2000	
							TRMM 3B43	1998-2002	
							SSM/I	1988-1989	
								1992-2002	
							OPI2	1979-2001	
							OPI3	1979-2001	
							CMAP	1979-2001	
							CMAP2	1979-2001	**Total**
Sum Variables	**2**	**2**					**13**		**52**
Control Volume	Moisture Flux	Runoff Method	Storage	Runoff Data	Reanalysis	Time	Precipitation	Time	
Monthly Surface	Method 1	Linear	Yes	Reanalysis	1	1/1948-12/2002	Reanalysis	N/A	
		Point	No		2	1/1979-12/2001	GPCP	1/1979-12/2001	
		Area	1 mon				GPCC	1/1986-12/1996	
			2 mon				GPCC TRMM	1/1998-12/2002	
			3 mon				GHCN/CAMS	1/1948-11/2002	
			4 mon				GPI	1/1986-12/2002	
							TRMM 3A46	1/1998-8/2001	
							TRMM 3B43	1/1998-12/2002	
							SSM/I	7/1987-11/1987	
								1/1988-6/1990	
								1/1992-12/2002	
							OPI2	1/1979-8/2002	
							OPI3	1/1979-8/2002	
							CMAP	1/1979-6/2002	
							CMAP2	1/1979-6/2002	**Total**
Sum Variables	**1**	**3**	**6**	**1**	**2**		**13**		**468**
Control Volume	Moisture Flux	Runoff Method	Storage	Runoff Data	Reanalysis	Time	Precipitation	Time	
Yearly Surface	Method 1	Linear	Yes	Reanalysis	1	1948-2002	Reanalysis	N/A	
		Point	No		2	1979-2001	GPCP	1979-2001	
		Area					GPCC	1986-1996	
							GPCC TRMM	1998-2002	
							GHCN/CAMS	1948-2002	
							GPI	1986-2002	
							TRMM 3A46	1998-2000	
							TRMM 3B43	1998-2002	
							SSM/I	1988-1989	
								1992-2002	
							OPI2	1979-2001	
							OPI3	1979-2001	
							CMAP	1979-2001	
							CMAP2	1979-2001	**Total**
Sum Variables	**1**	**3**	**2**	**1**	**2**		**13**		**156**

Table 5-1: Water Balance Combinations for Eastern Brazil, Northwest Brazil, Larger Rondonia, Rondonia

Control Volume	Moisture Flux	Runoff Method	Storage	Runoff Data	Reanalysis	Time	Precipitation	Time	
Monthly Atmospheric	Method 1	1	N/A	N/A	1	1/1948-12/2002	Reanalysis	N/A	
	Method 2				2	1/1979-12/2001	GPCP	1/1979-12/2001	
							GPCC	1/1986-12/1996	
							GPCC TRMM	1/1998-12/2002	
							GHCN/CAMS	1/1948-11/2002	
							GPI	1/1986-12/2002	
							TRMM 3B43	1/1998-12/2002	
							SSM/I	7/1987-11/1987	
								1/1988-6/1990	
								1/1992-12/2002	
							OPI2	1/1979-8/2002	
							OPI3	1/1979-8/2002	
							CMAP	1/1979-6/2002	
							CMAP2	1/1979-6/2002	**Total**
Sum Variables	**2**	**2**					**12**		**48**
Control Volume	Moisture Flux	Runoff Method	Storage	Runoff Data	Reanalysis	Time	Precipitation	Time	
Yearly Atmospheric	Method 1	1	N/A	N/A	1	1948-2002	Reanalysis	N/A	
	Method 2	2			2	1979-2001	GPCP	1979-2001	
							GPCC	1986-1996	
							GPCC TRMM	1998-2002	
							GHCN/CAMS	1948-2002	
							GPI	1986-2002	
							TRMM 3B43	1998-2002	
							SSM/I	1988-1989	
								1992-2002	
							OPI2	1979-2001	
							OPI3	1979-2001	
							CMAP	1979-2001	
							CMAP2	1979-2001	**Total**
Sum Variables	**2**	**2**					**12**		**48**
Control Volume	Moisture Flux	Runoff Method	Storage	Runoff Data	Reanalysis	Time	Precipitation	Time	
Monthly Surface	Method 1	Linear	Yes	Reanalysis	1	1/1948-12/2002	Reanalysis	N/A	
		Point	No		2	1/1979-12/2001	GPCP	1/1979-12/2001	
		Area	1 mon				GPCC	1/1986-12/1996	
			2 mon				GPCC TRMM	1/1998-12/2002	
			3 mon				GHCN/CAMS	1/1948-11/2002	
			4 mon				GPI	1/1986-12/2002	
							TRMM 3B43	1/1998-12/2002	
							SSM/I	7/1987-11/1987	
								1/1988-6/1990	
								1/1992-12/2002	
							OPI2	1/1979-8/2002	
							OPI3	1/1979-8/2002	
							CMAP	1/1979-6/2002	
							CMAP2	1/1979-6/2002	**Total**
Sum Variables	**1**	**3**	**6**	**1**	**2**		**12**		**432**
Control Volume	Moisture Flux	Runoff Method	Storage	Runoff Data	Reanalysis	Time	Precipitation	Time	
Yearly Surface	Method 1	Linear	Yes	Reanalysis	1	1948-2002	Reanalysis	N/A	
		Point	No		2	1979-2001	GPCP	1979-2001	
		Area					GPCC	1986-1996	
							GPCC TRMM	1998-2002	
							GHCN/CAMS	1948-2002	
							GPI	1986-2002	
							TRMM 3B43	1998-2002	
							SSM/I	1988-1989	
								1992-2002	
							OPI2	1979-2001	
							OPI3	1979-2001	
							CMAP	1979-2001	
							CMAP2	1979-2001	**Total**
Sum Variables	**1**	**3**	**2**	**1**	**2**		**12**		**144**

Table 5-2: Water Balance Combinations for SEUS

Control Volume	Moisture Flux	Runoff Method	Storage	Runoff Data	Reanalysis	Time	Precipitation	Time	
Monthly Atmospheric	Method 1	1	N/A	N/A	1	1/1948-12/2002	Reanalysis	N/A	
	Method 2				2	1/1979-12/2001	GPCP	1/1979-12/2001	
							GPCC	1/1986-12/1996	
							GPCC TRMM	1/1998-12/2002	
							GHCN/CAMS	1/1948-11/2002	
							SSM/I	7/1987-11/1987	
								1/1988-6/1990	
								1/1992-12/2002	
							OPI2	1/1979-8/2002	
							OPI3	1/1979-8/2002	
							CMAP	1/1979-6/2002	
							CMAP2	1/1979-6/2002	**Total**
Sum Variables	**2**	**2**					**10**		**40**
Control Volume	Moisture Flux	Runoff Method	Storage	Runoff Data	Reanalysis	Time	Precipitation	Time	
Yearly Atmospheric	Method 1	1	N/A	N/A	1	1948-2002	Reanalysis	N/A	
	Method 2	2			2	1979-2001	GPCP	1979-2001	
							GPCC	1986-1996	
							GPCC TRMM	1998-2002	
							GHCN/CAMS	1948-2002	
							SSM/I	1988-1989	
								1992-2002	
							OPI2	1979-2001	
							OPI3	1979-2001	
							CMAP	1979-2001	
							CMAP2	1979-2001	**Total**
Sum Variables	**2**	**2**					**10**		**40**
Control Volume	Moisture Flux	Runoff Method	Storage	Runoff Data	Reanalysis	Time	Precipitation	Time	
Monthly Surface	Method 1	Linear	Yes	Reanalysis	1	1/1948-12/2002	Reanalysis	N/A	
		Point	No		2	1/1979-12/2001	GPCP	1/1979-12/2001	
		Area	1 mon				GPCC	1/1986-12/1996	
			2 mon				GPCC TRMM	1/1998-12/2002	
			3 mon				GHCN/CAMS	1/1948-11/2002	
			4 mon				SSM/I	7/1987-11/1987	
								1/1988-6/1990	
								1/1992-12/2002	
							OPI2	1/1979-8/2002	
							OPI3	1/1979-8/2002	
							CMAP	1/1979-6/2002	
							CMAP2	1/1979-6/2002	**Total**
Sum Variables	**1**	**3**	**6**	**1**	**2**		**10**		**360**
Control Volume	Moisture Flux	Runoff Method	Storage	Runoff Data	Reanalysis	Time	Precipitation	Time	
Yearly Surface	Method 1	Linear	Yes	Reanalysis	1	1948-2002	Reanalysis	N/A	
		Point	No		2	1979-2001	GPCP	1979-2001	
		Area					GPCC	1986-1996	
							GPCC TRMM	1998-2002	
							GHCN/CAMS	1948-2002	
							SSM/I	1988-1989	
								1992-2002	
							OPI2	1979-2001	
							OPI3	1979-2001	
							CMAP	1979-2001	
							CMAP2	1979-2001	**Total**
Sum Variables	**1**	**3**	**2**	**1**	**2**		**10**		**120**

Table 5-3: Water Balance Combinations for SWUS

Control Volume	Moisture Flux	Runoff Method	Storage	Runoff Data	Reanalysis	Time	Precipitation	Time	
Monthly Atmospheric	Method 1	1	N/A	N/A	1	1/1948-12/2002	Reanalysis	N/A	
	Method 2				2	1/1979-12/2001	GPCP	1/1979-12/2001	
							GPCC	1/1986-12/1996	
							GPCC TRMM	1/1998-12/2002	
							GHCN/CAMS	1/1948-11/2002	
							OPI2	1/1979-8/2002	
							OPI3	1/1979-8/2002	
							CMAP	1/1979-6/2002	
							CMAP2	1/1979-6/2002	**Total**
Sum Variables	**2**	**2**					**9**		**36**
Control Volume	Moisture Flux	Runoff Method	Storage	Runoff Data	Reanalysis	Time	Precipitation	Time	
Yearly Atmospheric	Method 1	1	N/A	N/A	1	1948-2002	Reanalysis	N/A	
	Method 2	2			2	1979-2001	GPCP	1979-2001	
							GPCC	1986-1996	
							GPCC TRMM	1998-2002	
							GHCN/CAMS	1948-2002	
							OPI2	1979-2001	
							OPI3	1979-2001	
							CMAP	1979-2001	
							CMAP2	1979-2001	**Total**
Sum Variables	**2**	**2**					**9**		**36**
Control Volume	Moisture Flux	Runoff Method	Storage	Runoff Data	Reanalysis	Time	Precipitation	Time	
Monthly Surface	Method 1	Linear	Yes	Reanalysis	1	1/1948-12/2002	Reanalysis	N/A	
		Point	No		2	1/1979-12/2001	GPCP	1/1979-12/2001	
		Area	1 mon				GPCC	1/1986-12/1996	
			2 mon				GPCC TRMM	1/1998-12/2002	
			3 mon				GHCN/CAMS	1/1948-11/2002	
			4 mon				OPI2	1/1979-8/2002	
							OPI3	1/1979-8/2002	
							CMAP	1/1979-6/2002	
							CMAP2	1/1979-6/2002	**Total**
Sum Variables	**1**	**3**	**6**	**1**	**2**		**9**		**324**
Control Volume	Moisture Flux	Runoff Method	Storage	Runoff Data	Reanalysis	Time	Precipitation	Time	
Yearly Surface	Method 1	Linear	Yes	Reanalysis	1	1948-2002	Reanalysis	N/A	
		Point	No		2	1979-2001	GPCP	1979-2001	
		Area					GPCC	1986-1996	
							GPCC TRMM	1998-2002	
							GHCN/CAMS	1948-2002	
							OPI2	1979-2001	
							OPI3	1979-2001	
							CMAP	1979-2001	
							CMAP2	1979-2001	**Total**
Sum Variables	**1**	**3**	**2**	**1**	**2**		**9**		**108**

Table 5-4: Water Balance Combinations for Larger US

Control Volume	Moisture Flux	Storage	Runoff Data	Runoff Time	Reanalysis	Time	Precipitation	Time	
Monthly Atmospheric	N/A	N/A	N/A	N/A	1	1/1948-12/2002	Reanalysis	N/A	
					2	1/1979-12/2001	GPCP	1/1979-12/2001	
							GPCC	1/1986-12/1996	
							GPCC TRMM	1/1998-12/2002	
							GHCN-CAMS	1/1948-11/2002	
							GPI	1/1986-12/2002	
							TRMM 3A46	1/1998-8/2001	
							TRMM 3B43	1/1998-12/2002	
							SSM/I	7/1987-11/1987	
								1/1988-6/1990	
								1/1992-12/2002	
							OPI2	1/1979-8/2002	
							OPI3	1/1979-8/2002	
							CMAP	1/1979-6/2002	
							CMAP2	1/1979-6/2002	**Total**
Sum Variables	**1**	**1**	**1**		**2**		**13**		**26**
Control Volume	Moisture Flux	Storage	Runoff Data	Time	Reanalysis	Time	Precipitation	Time	
Yearly Atmospheric	N/A	N/A	N/A	N/A	1	1948-2002	Reanalysis	N/A	
		N/A			2	1979-2001	GPCP	1979-2001	
							GPCC	1986-1996	
							GPCC TRMM	1998-2002	
							GHCN-CAMS	1948-2002	
							GPI	1986-2002	
							TRMM 3A46	1998-2000	
							TRMM 3B43	1998-2002	
							SSM/I	1988-1989	
								1992-2002	
							OPI2	1979-2001	
							OPI3	1979-2001	
							CMAP	1979-2001	
							CMAP2	1979-2001	**Total**
Sum Variables	**1**	**1**	**1**		**2**		**13**		**26**
Control Volume	Moisture Flux	Storage	Runoff Data	Runoff Time	Reanalysis	Time	Precipitation	Time	
Monthly Surface	N/A	Yes	Surface	1/1970-12/1996	1	1/1948-12/2002	Reanalysis	N/A	
		No	Reanalysis	N/A	2	1/1979-12/2001	GPCP	1/1979-12/2001	
		1 mon					GPCC	1/1986-12/1996	
		2 mon					GPCC TRMM	1/1998-12/2002	
		3 mon					GHCN-CAMS	1/1948-11/2002	
		4 mon					GPI	1/1986-12/2002	
							TRMM 3A46	1/1998-8/2001	
							TRMM 3B43	1/1998-12/2002	
							SSM/I	7/1987-11/1987	
								1/1988-6/1990	
								1/1992-12/2002	
							OPI2	1/1979-8/2002	
							OPI3	1/1979-8/2002	
							CMAP	1/1979-6/2002	
							CMAP2	1/1979-6/2002	**Total**
Sum Variables (SurfR)	**1**	**6**	**1**		**2**		**10**		**120**
Sum Variables (ReR)	**1**	**6**	**1**		**2**		**13**		**156**
Sum Variables									**276**
Control Volume	Moisture Flux	Storage	Runoff Data	Runoff Time	Reanalysis	Time	Precipitation	Time	
Yearly Surface	Method 1	Yes	Surface	1970-1996	1	1948-2002	Reanalysis	N/A	
		No	Reanalysis	N/A	2	1979-2001	GPCP	1979-2001	
							GPCC	1986-1996	
							GPCC TRMM	1998-2002	
							GHCN-CAMS	1948-2002	
							GPI	1986-2002	
							TRMM 3A46	1998-2000	
							TRMM 3B43	1998-2002	
							SSM/I	1988-1989	
								1992-2002	
							OPI2	1979-2001	
							OPI3	1979-2001	
							CMAP	1979-2001	
							CMAP2	1979-2001	**Total**
Sum Variables (SurfR)	**1**	**2**	**1**		**2**		**10**		**40**
Sum Variables (ReR)	**1**	**2**	**1**		**2**		**13**		**52**
Sum Variables									**92**

Table 5-5: Water Balance Combinations for Amazon and Port Velho Basins

Control Volume	Moisture Flux	Storage	Runoff Data	Runoff Time	Reanalysis	Time	Precipitation	Time	
Monthly Atmospheric	N/A	N/A	N/A	N/A	1	1/1948-12/2002	Reanalysis	N/A	
					2	1/1979-12/2001	GPCP	1/1979-12/2001	
							GPCC	1/1986-12/1996	
							GPCC TRMM	1/1998-12/2002	
							GHCN-CAMS	1/1948-11/2002	
							GPI	1/1986-12/2002	
							TRMM 3B43	1/1998-12/2002	
							SSM/I	7/1987-11/1987	
								1/1988-6/1990	
								1/1992-12/2002	
							OPI2	1/1979-8/2002	
							OPI3	1/1979-8/2002	
							CMAP	1/1979-6/2002	
							CMAP2	1/1979-6/2002	**Total**
Sum Variables	1	1	1		2		12		24
Control Volume	Moisture Flux	Storage	Runoff Data	Time	Reanalysis	Time	Precipitation	Time	
Yearly Atmospheric	N/A	N/A	N/A	N/A	1	1948-2002	Reanalysis	N/A	
		N/A			2	1979-2001	GPCP	1979-2001	
							GPCC	1986-1996	
							GPCC TRMM	1998-2002	
							GHCN-CAMS	1948-2002	
							GPI	1986-2002	
							TRMM 3B43	1998-2002	
							SSM/I	1988-1989	
								1992-2002	
							OPI2	1979-2001	
							OPI3	1979-2001	
							CMAP	1979-2001	
							CMAP2	1979-2001	**Total**
Sum Variables	1	1	1		2		12		24
Control Volume	Moisture Flux	Storage	Runoff Data	Runoff Time	Reanalysis	Time	Precipitation	Time	
Monthly Surface	N/A	Yes	Surface	1/1970-12/1996	1	1/1948-12/2002	Reanalysis	N/A	
		No	Reanalysis	N/A	2	1/1979-12/2001	GPCP	1/1979-12/2001	
		1 mon					GPCC	1/1986-12/1996	
		2 mon					GPCC TRMM	1/1998-12/2002	
		3 mon					GHCN-CAMS	1/1948-11/2002	
		4 mon					GPI	1/1986-12/2002	
							TRMM 3B43	1/1998-12/2002	
							SSM/I	7/1987-11/1987	
								1/1988-6/1990	
								1/1992-12/2002	
							OPI2	1/1979-8/2002	
							OPI3	1/1979-8/2002	
							CMAP	1/1979-6/2002	
							CMAP2	1/1979-6/2002	**Total**
Sum Variables (SurfR)	1	6	1		2		10		120
Sum Variables (ReR)	1	6	1		2		12		144
Sum Variables									264
Control Volume	Moisture Flux	Storage	Runoff Data	Runoff Time	Reanalysis	Time	Precipitation	Time	
Yearly Surface	Method 1	Yes	Surface	1970-1996	1	1948-2002	Reanalysis	N/A	
		No	Reanalysis	N/A	2	1979-2001	GPCP	1979-2001	
							GPCC	1986-1996	
							GPCC TRMM	1998-2002	
							GHCN-CAMS	1948-2002	
							GPI	1986-2002	
							TRMM 3B43	1998-2002	
							SSM/I	1988-1989	
								1992-2002	
							OPI2	1979-2001	
							OPI3	1979-2001	
							CMAP	1979-2001	
							CMAP2	1979-2001	**Total**
Sum Variables (SurfR)	1	2	1		2		10		40
Sum Variables (ReR)	1	2	1		2		12		48
Sum Variables									88

Table 5-6: Water Balance Combinations for Arkansas Basins

Control Volume	Moisture Flux	Storage	Runoff Data	Runoff Time	Reanalysis	Time	Precipitation	Time	
Monthly Atmospheric	N/A	N/A	N/A	N/A	1	1/1948-12/2002	Reanalysis	N/A	
					2	1/1948-12/2001	GPCP	1/1979-12/2001	
							GPCC	1/1986-12/1996	
							GPCC TRMM	1/1998-12/2002	
							GHCN-CAMS	1/1948-11/2002	
							SSM/I	7/1987-11/1987	
								1/1988-6/1990	
								1/1992-12/2002	
							OPI2	1/1979-8/2002	
							OPI3	1/1979-8/2002	
							CMAP	1/1979-6/2002	
							CMAP2	1/1979-6/2002	**Total**
Sum Variables	**1**	**1**	**1**		**2**		**10**		**20**
Control Volume	Moisture Flux	Storage	Runoff Data	Time	Reanalysis	Time	Precipitation	Time	
Yearly Atmospheric	N/A	N/A	N/A	N/A	1	1948-2002	Reanalysis	N/A	
		N/A			2	1948-2001	GPCP	1979-2001	
							GPCC	1986-1996	
							GPCC TRMM	1998-2002	
							GHCN-CAMS	1948-2002	
							SSM/I	1988-1989	
								1992-2002	
							OPI2	1979-2001	
							OPI3	1979-2001	
							CMAP	1979-2001	
							CMAP2	1979-2001	**Total**
Sum Variables	**1**	**1**	**1**		**2**		**10**		**20**
Control Volume	Moisture Flux	Storage	Runoff Data	Runoff Time	Reanalysis	Time	Precipitation	Time	
Monthly Surface	N/A	Yes	Surface	1/1948-12/1996	1	1/1948-12/2002	Reanalysis	N/A	
		No	Reanalysis	N/A	2	1/1948-12/2001	GPCP	1/1979-12/2001	
		1 mon					GPCC	1/1986-12/1996	
		2 mon					GPCC TRMM	1/1998-12/2002	
		3 mon					GHCN-CAMS	1/1948-11/2002	
		4 mon					SSM/I	7/1987-11/1987	
								1/1988-6/1990	
								1/1992-12/2002	
							OPI2	1/1979-8/2002	
							OPI3	1/1979-8/2002	
							CMAP	1/1979-6/2002	
							CMAP2	1/1979-6/2002	**Total**
Sum Variables (SurfR)	**1**	**6**	**1**		**2**		**9**		**108**
Sum Variables (ReR)	**1**	**6**	**1**		**2**		**10**		**120**
Sum Variables									**228**
Control Volume	Moisture Flux	Storage	Runoff Data	Runoff Time	Reanalysis	Time	Precipitation	Time	
Yearly Surface	Method 1	Yes	Surface	1948-1996	1	1948-2002	Reanalysis	N/A	
		No	Reanalysis	N/A	2	1948-2001	GPCP	1979-2001	
							GPCC	1986-1996	
							GPCC TRMM	1998-2002	
							GHCN-CAMS	1948-2002	
							SSM/I	1988-1989	
								1992-2002	
							OPI2	1979-2001	
							OPI3	1979-2001	
							CMAP	1979-2001	
							CMAP2	1979-2001	**Total**
Sum Variables (SurfR)	**1**	**2**	**1**		**2**		**9**		**36**
Sum Variables (ReR)	**1**	**2**	**1**		**2**		**10**		**40**
Sum Variables									**88**

Table 5-7: Water Balance Combinations for Mississippi Basins

5.1. East Brazil

The East Brazil control volume was selected for this study as one of three small control volumes over the tropical portion of the South American continent. This control volume represents the more populated and developed portions of Brazil, and thus likely is a better observed region. Figure 5-1 shows the yearly Reanalysis-1 water balances for Eastern Brazil. In the atmospheric balance precipitation exceeds evaporation for much of the second half of the balance. This should result in a slightly positive moisture flux, unfortunately a very negative moisture flux is found. The moisture flux does increase slightly from 1950-1955 and in the later half of the balance which is consistent with the P-E difference. The result in general is a very biased residual at the beginning and the end of the balance of similar magnitude to the other water balance variables. In the surface balance residual is consistently negative. Similarities in signals between the P-E and storage change exist, but the methodology fails to pick up much of the runoff. A balance is achieved in the first half on the time period, but not in the second half. The magnitudes of the errors are high for these water balances.

To see if the second half of these balances can be improved we refer to Figure 5-2 which shows the Reanalysis-2 yearly balances. For the atmospheric balance there are few differences from the Reanalysis-1. For the surface balance runoff has a little more amplitude here from year to year however this does not lead to much improvement. While the entire time series is unbalanced in the Reanalysis-1 a balance is achieved in the middle portion of the Reanalyis-2 surface balance. Both the absolute error and bias increase from the Reanalysis-1 to Reanalysis-2 for both the atmospheric and surface water balances. Virtually no correlation exists between elements of the atmospheric and surface water balances from either dataset.

Figure 5-3 displays alternative precipitation datasets on an annual basis for the Eastern Brazil control volume, which yields some interesting results. Up until 1979 the Reanalysis-1 seems to be consistent with the alternative sources of precipitation, however, in 1979 the Reanalysis-1 and Reanalysis-2 jump and are significantly higher for the rest of the time period. This behavior was observed in the atmospheric balance and compensated for in the moisture flux, but in the surface balance it isn't compensated for until the Reanalysis-2. The alternative precipitation datasets are very consistent with each other especially in the large dataset category. The larger datasets are probably the correct ones; however these datasets will not necessarily be able to close this balance.

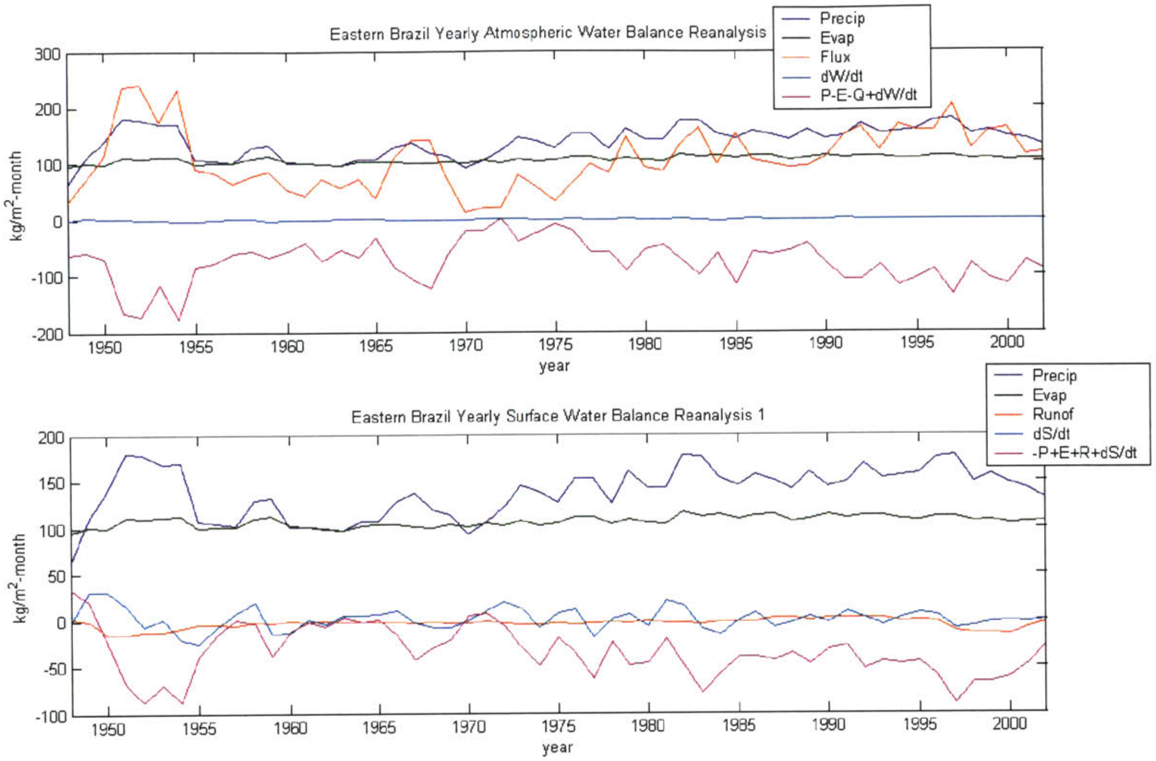


Figure 5-1: Eastern Brazil Reanalysis-1 Yearly Atmospheric and Surface Balances

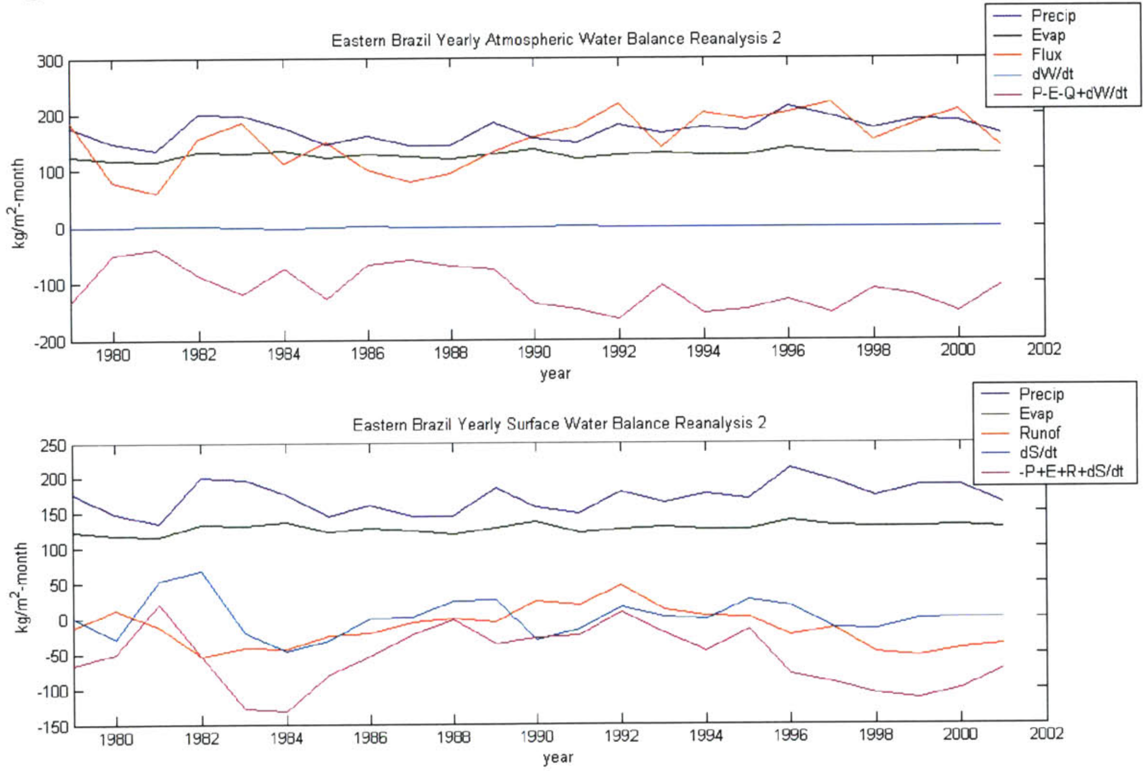


Figure 5-2: Eastern Brazil Reanalysis-2 Yearly Atmospheric and Surface Balances

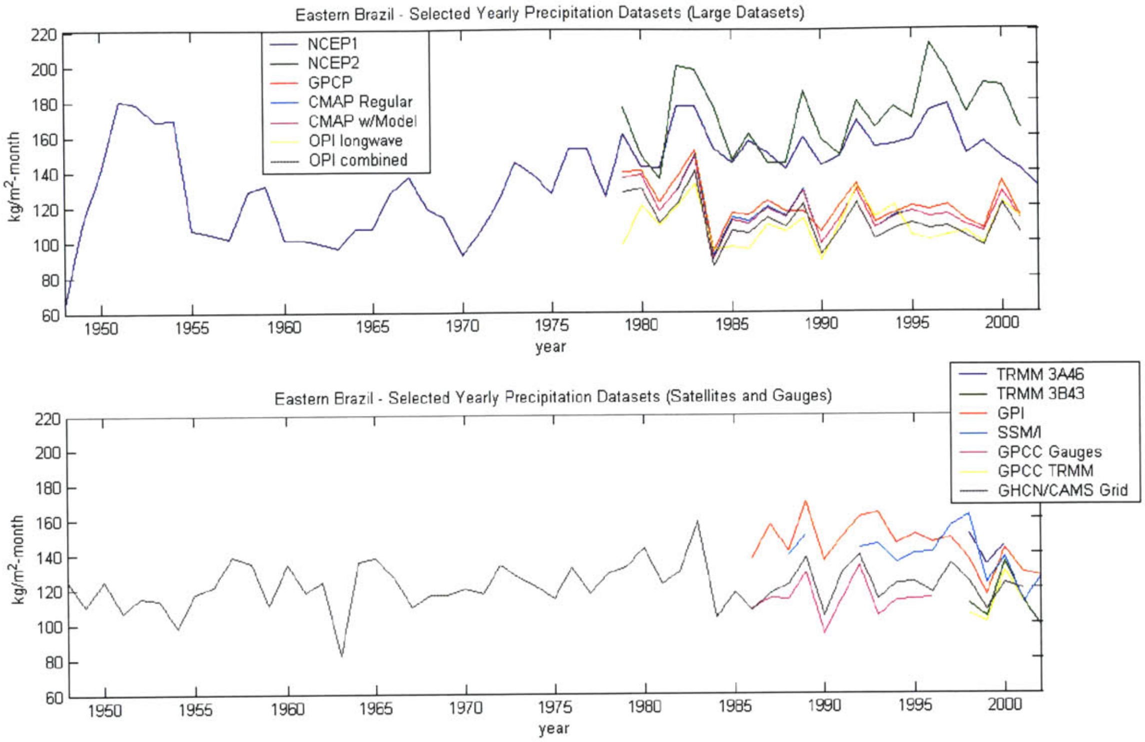


Figure 5-3: Eastern Brazil Different Sources of Yearly Precipitation

Turning to the monthly balance, we observe the Reanalysis-1 in Figure 5-4. For the atmospheric monthly balance we see a strong correlation between the two elements of the water balance. Moisture flux is clearly overestimated as was seen on the yearly time scale which results in a slope above one. But on a monthly basis there is a tight correlation, and the seasonal cycle can be seen well in the example plot. The correlation coefficient for this balance is .8927, while the slope of the regression is 1.83. For the surface balance we also see a good correlation between the two sides of the balance, however the runoff isn't well aligned with the precipitation which can be seen in the bottom right panel. Despite the fact that change in surface storage is included in the balance, there appears to be a lag time in the runoff. Unfortunately, lag time is only considered without storage in this study, because change in storage should account for any lag time. In the Reanalysis-1 for this control volume a one or two month lag time may be very useful. The correlation coefficient here is .4511 with a slope of .6511.

Turning to the Reanalysis-2 in Figure 5-5, we see a very similar atmospheric water balance. The slope of the regression is reduced to 1.57. The lag time problem is completely removed in the example plot of the Reanalysis-2 surface balance, however the balance here is deceptive as can be seen by the scatter plot. On the yearly basis for this control volume we observed a very good balance over the early 1990's. The monthly balance is very good here too, and the seasonal cycle is very well alligned. However, for other portions of the time series, there appears to be significant errors, so by our ranking system given in Appendix A, the Reanalysis-2 only provides for slight improvements in the surface water balance from the Reanalysis-1. The correlation coefficient for the Reanalysis-2, .4349, is almost exactly the same as in the Reanalysis-1.

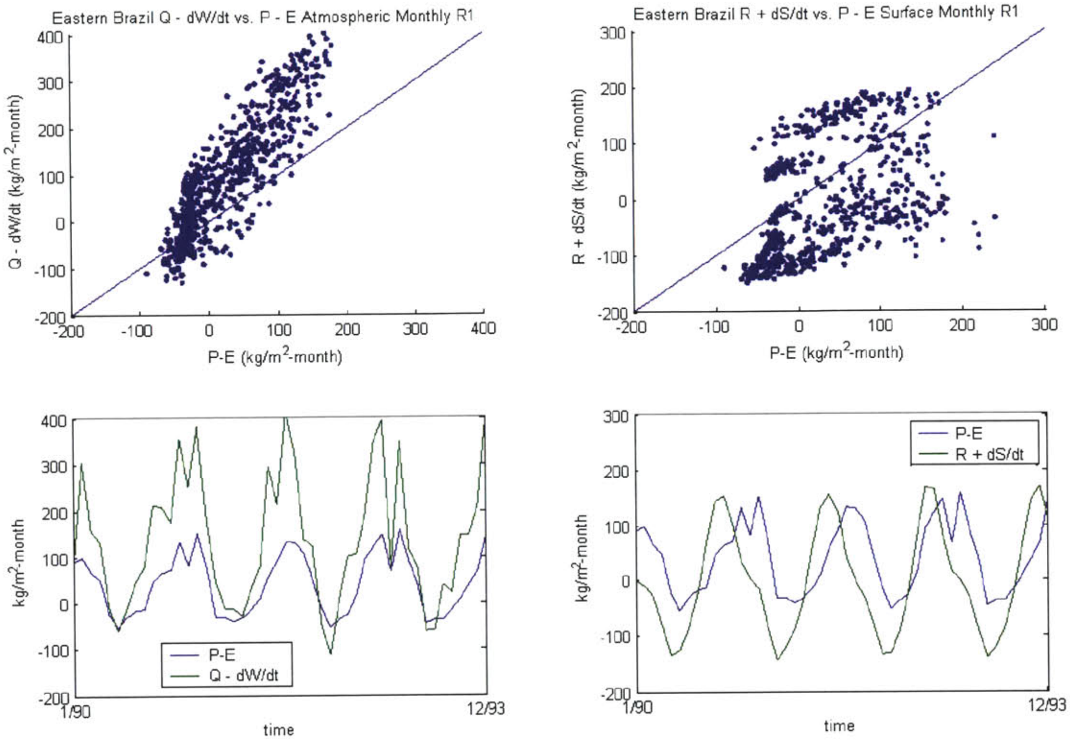


Figure 5-4: Eastern Brazil Reanalysis-1 Monthly Atmospheric and Surface Balances

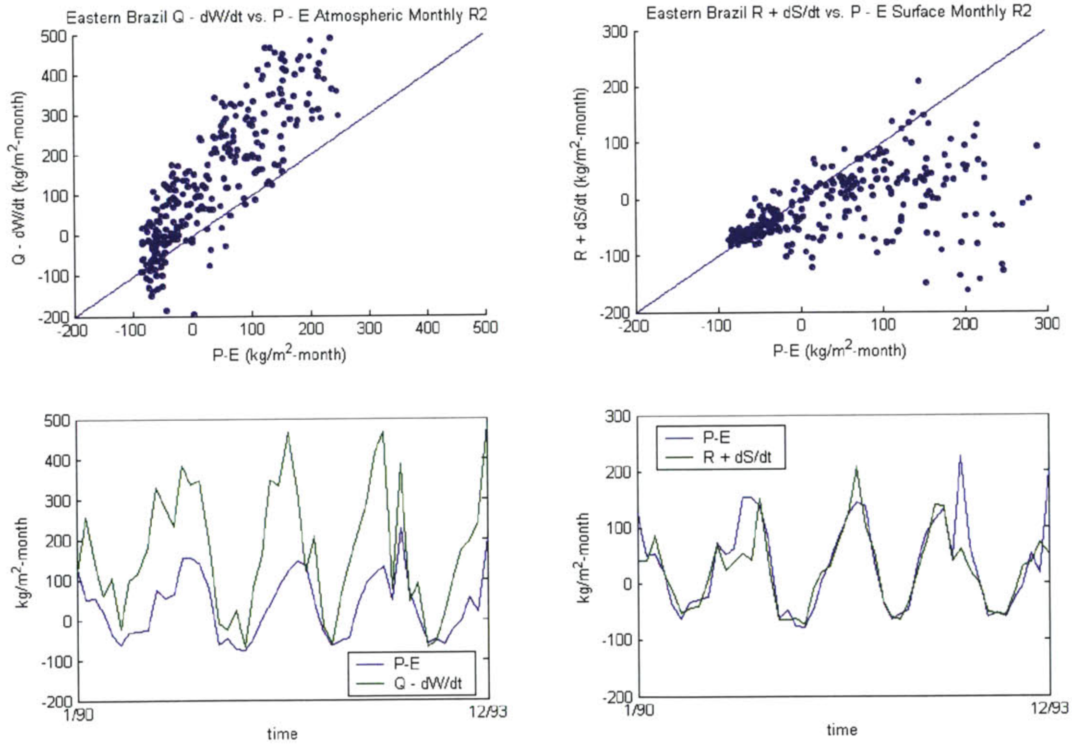


Figure 5-5: Eastern Brazil Reanalysis-2 Monthly Atmospheric and Surface Balances

Trying to improve on the Eastern Brazil water balance we refer to the ranking system devised and presented in Appendix A. Table 5-1 indicated that for this control volume, for the atmospheric yearly water balance, we can vary flux methodology (2), reanalysis (2), and precipitation dataset (13). For the yearly surface balance we can vary runoff methodology (2), reanalysis (2), storage method (2), and precipitation dataset (13).

For the East Brazil atmospheric yearly balance the default Reanalysis-1 and Reanalysis-2 balances are among the top 3 of all the balances evaluated. The Reanalysis-1 provides the best balance which is very encouraging in the context of use for climate studies. However, absolute errors and biases are high. Inputting the GPCP precipitation dataset into the later portion of the Renalysis-1 results in a comparable balance to that of the reanalysis (shown in Figure 5-6). The properties of this balance are very similar to the default reanalysis balances. Of special note here is the TRMM 3B43 dataset which under certain conditions ranks 5th, but the temporal resolution is only 5 years which isn't significant on the yearly basis.

In the yearly surface balance the reanalysis balances are not as good. We replace the precipitation with GPI precipitation, change the runoff method to area, and eliminate the storage term. This balance is ranked second. However the best balance contains GPCC TRMM, and contains only four years of data. When the change in storage is removed and the precipitation replaced the balance improves a lot especially in its second half. The correlation coefficient is .6303 and the bias is only 2 kg/m^2-month, indicating almost all water is accounted for over the duration of the balance.

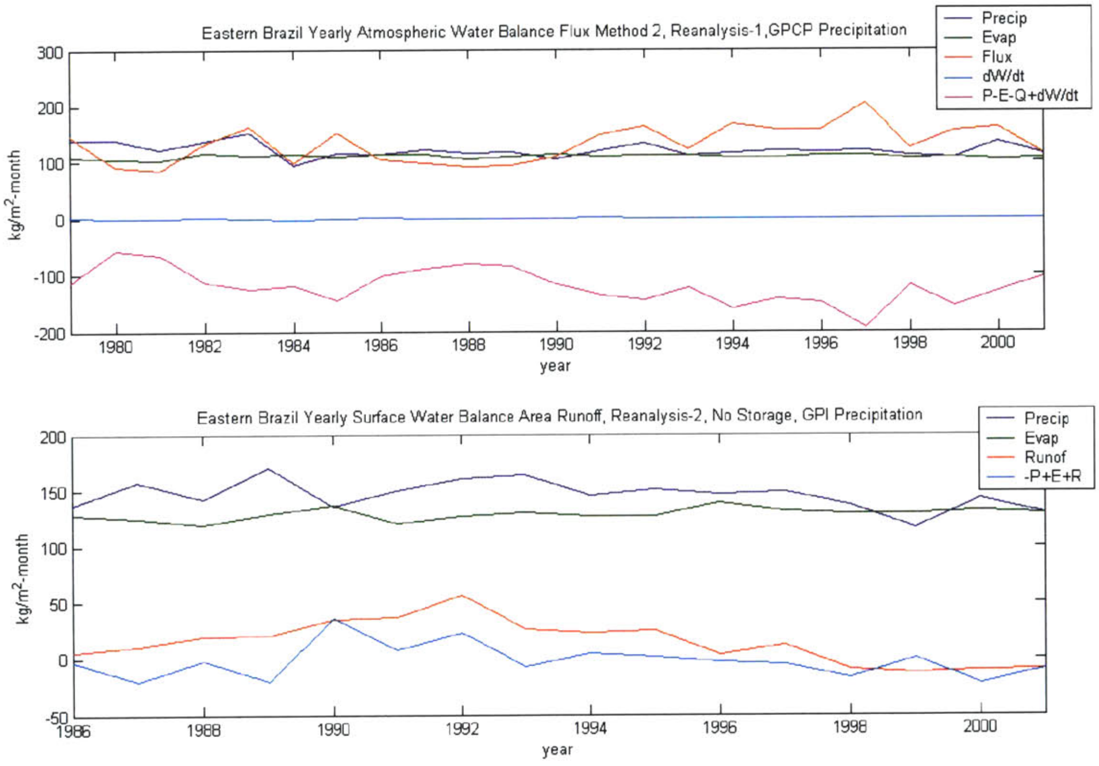


Figure 5-6: Eastern Brazil Selected Yearly Water Balances

For the monthly time scales the improved balances are shown in Figure 5-7. There are as many possibilities here as there were for the yearly time scale (52) for the atmospheric balance. Again for the atmospheric balance, not much improvement could be achieved from the reanalysis balance. The highest ranking balance is the TRMM 3A46 precipitation applied to the Reanalysis-1 with moisture flux Method 2. In general the Reanalysis-1 balances with various precipitation datasets tend to be better balanced than the Reanalysis-2 for the East Brazil control volume. There is little improvement though, and by this dataset moisture flux is too high for all data points.

For the monthly surface balance there are a great number of possible water balances which can be applied and improvement can be found. Alternatives are found in runoff method (3), reanalysis (2), storage method (6), and precipitation (13). Based on the evaluation criteria the GPI precipitation is again a good fit for the water balance with area runoff, and remaining default conditions. The balance ranks well among all evaluation criteria and the correlation factor is improved to nearly .8, almost double what it was before. Possible explanations include the elimination of data points early in the time series, and just a greater effectiveness of the GPI, combined with a better runoff model for this region. GPI precipitation is similar to the reanalysis, but slightly lower for this control volume as shown in Figure 5-3.

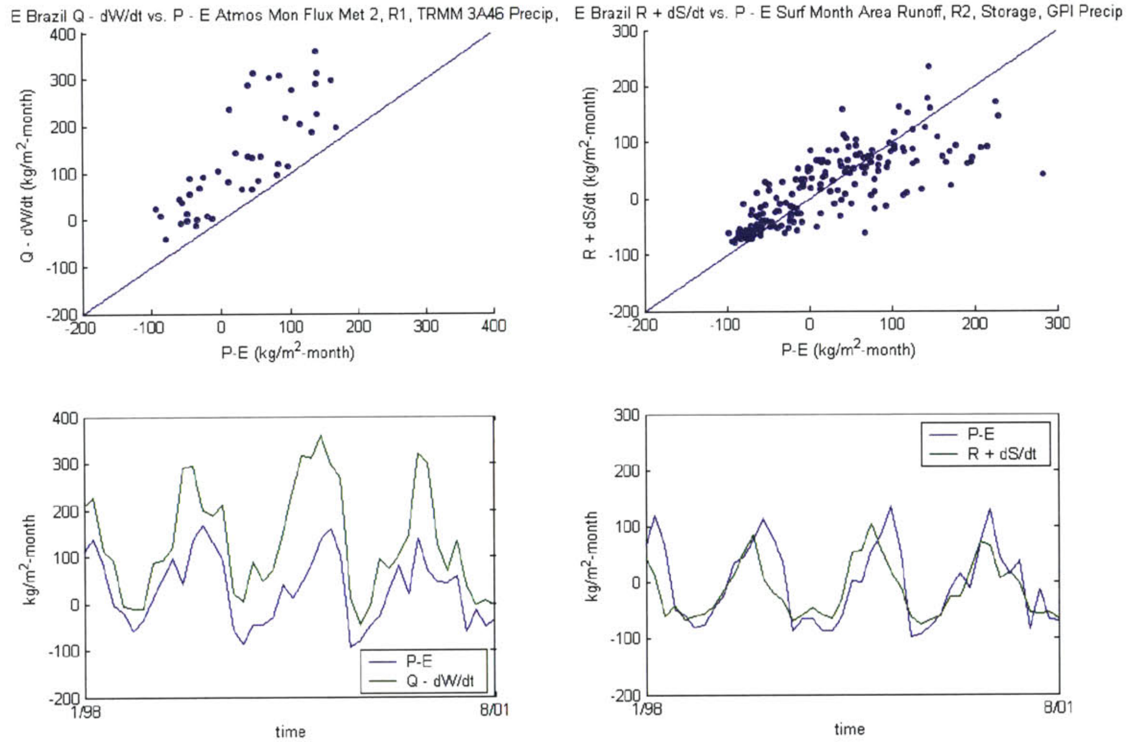


Figure 5-7: Eastern Brazil Selected Monthly Water Balances

5.2. Larger Rondonia

The Larger Rondonia control volume was selected for this work to compare to the smaller 7.5 degree box control volumes in the Amazon rain forest region, to see if there were substantial advantages to using a control volume with six moisture flux points on a side, and four times the area. The size of this water balance should allow for the anomalous flux and other fields to have a smaller affect on the balance, and should in general improve the balance because more data is being averaged. We have shown how this control volume clearly improves the ability to obtain a water balance in this region in the previous chapter, and we will now study it more closely.

Figure 5-8 shows the yearly water balance for the Reanalysis-1. The atmospheric water balance is very good and the results are very interesting. There is a marked increase in the magnitude of the precipitation and a corresponding increase in the magnitude of moisture flux over the second half of the water balance. The balance term dips slightly here with this increase. A similar situation was observed in the Eastern Brazil balance, and also by Chen (2001), as discussed in Chapter 1, whose control volume was near the same size and in the same area as this one. The atmospheric water balance closes well, with small absolute and bias error on the magnitude of 10 kg/m^2-month and a correlation of .9740. There is solid evidence of a change in the water balance over the Amazon Rain Forest here. We will continue to look for this pattern in other water balances in this geographic region. In the Reanalysis-1 surface balance the change in storage signal is weak and steady and the runoff is nearly flat. There is a -.2362 correlation in this balance with an absolute error and bias of about 75 kg/m^2-month.

In the Reanalysis-2 shown in Figure 5-9 the yearly atmospheric balance again is closed very well, though there are some differences in the data especially at the end of the time series. There are very small differences in evaluation criteria between reanalyzes, with the surface balance continuing to be a failure. The runoff is routed in the wrong direction and ends up negative, and the storage change follows a very regular pattern every few years. The correlation coefficient is at least above zero as positive changes in storage correspond to precipitation increases.

A look at the annual precipitation (Figure 5-10) for this control volume is very relevant, as there is a marked increase in precipitation in the second half of the Reanalysis-1 water balance and we wish to see if alternative precipitation datasets agree. The same trend is observed as in Eastern Brazil, the precipitation increases in the Reanalysis-1 over the second half of the 55 year period, but the alternative precipitation values are consistent with the reanalysis precipitation prior to this time. The Reanalysis-2 seems to improve the precipitation to make it more consistent with alternative sources.

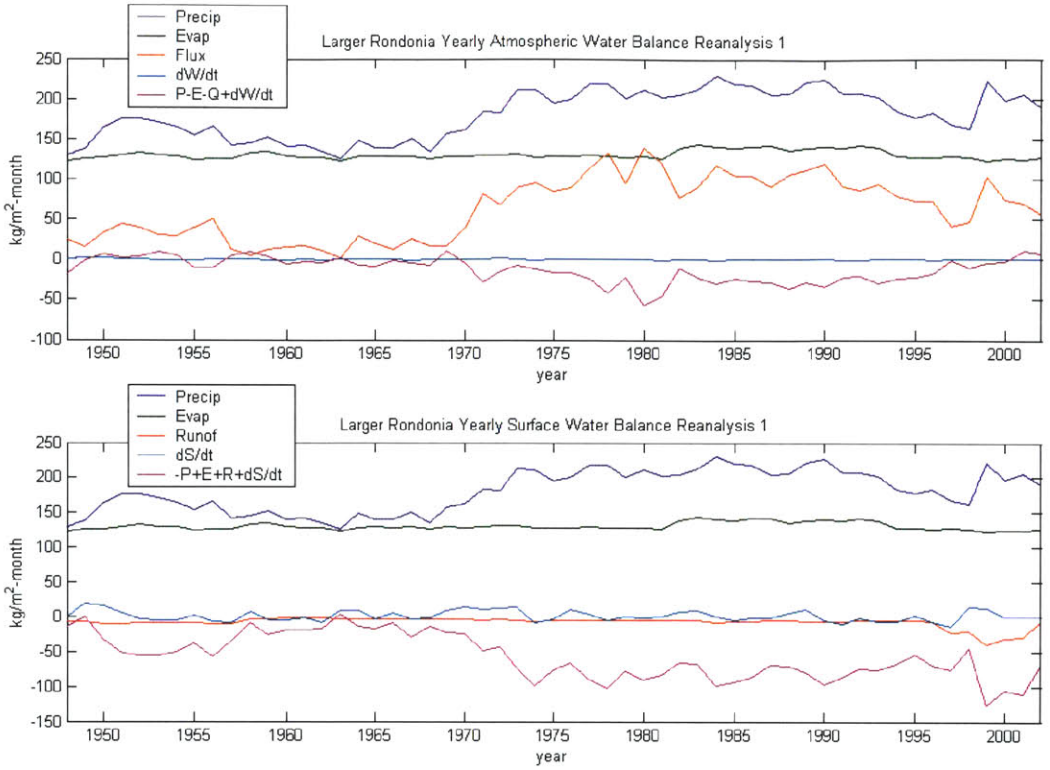


Figure 5-8: Larger Rondonia Reanalysis-1 Yearly Atmospheric and Surface Balances

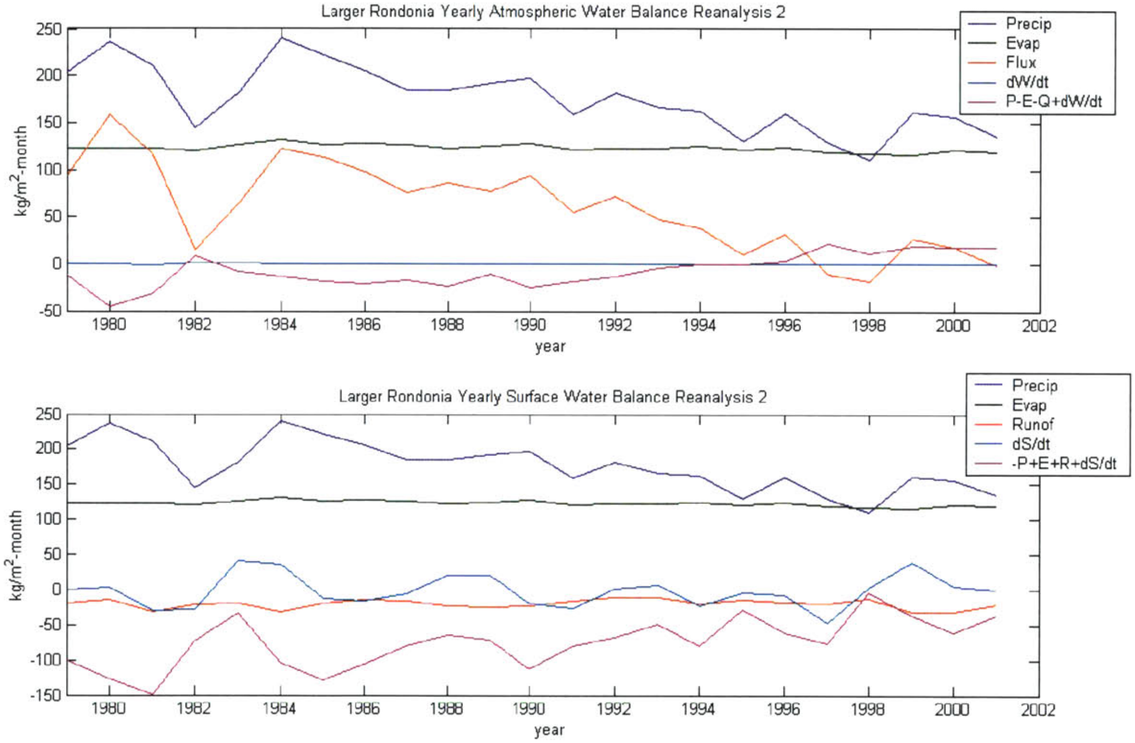


Figure 5-9: Larger Rondonia Reanalysis-2 Yearly Atmospheric and Surface Balances

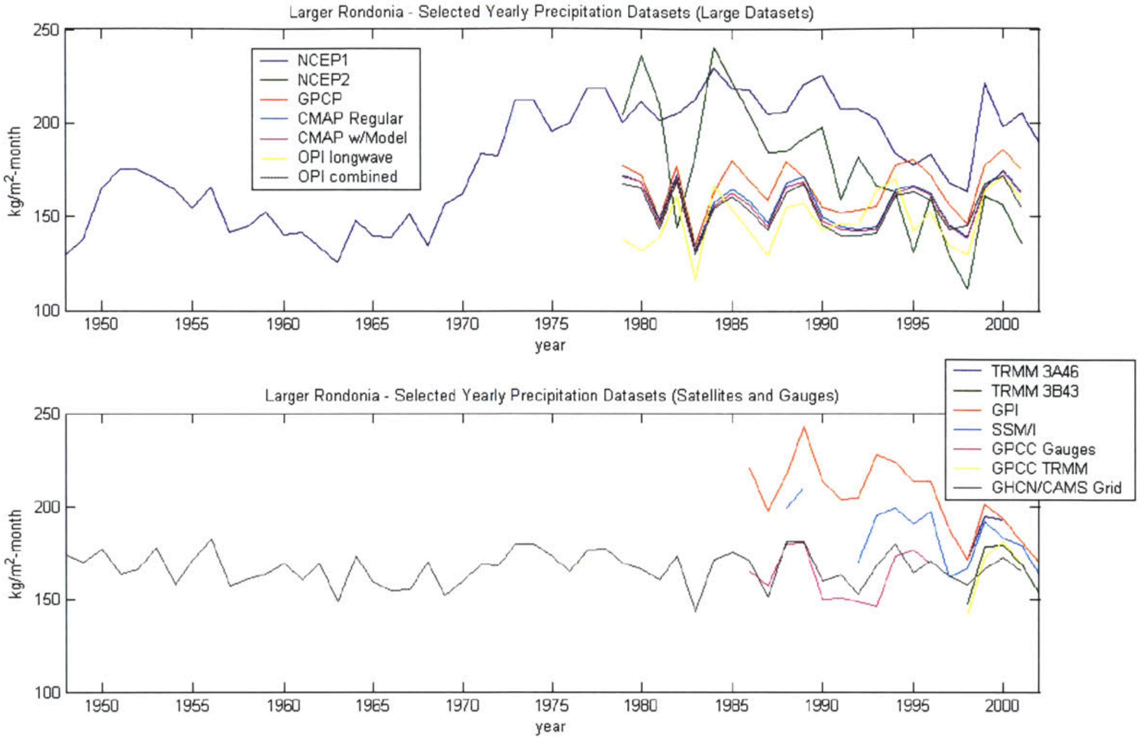


Figure 5-10: Larger Rondonia Different Sources of Yearly Precipitation

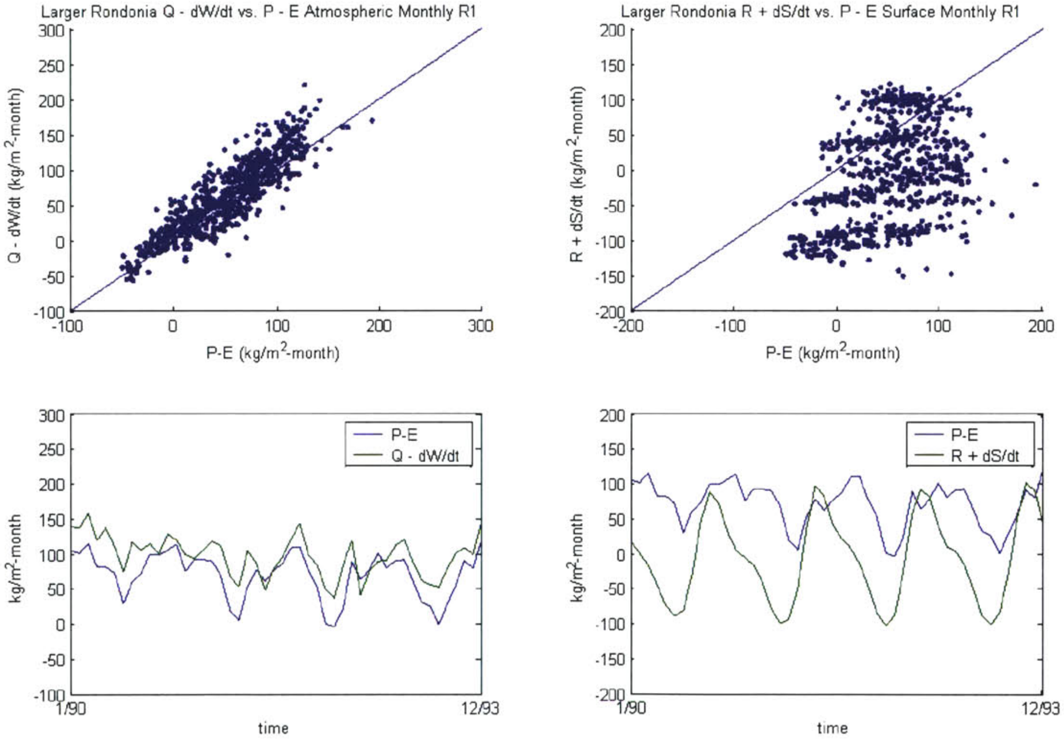


Figure 5-11: Larger Rondonia Reanalysis-1 Monthly Atmospheric and Surface Balances

Figure 5-11 shows the monthly balances for Larger Rondonia for the Reanalysis-1. The results look similar to those obtained in the Eastern Brazil control volume. Although these regions have similar hydrological properties it should be noted that they don't overlap (though they do share a partial boundary). The slope of the regression of the atmospheric balance is much improved (1.0332), almost exactly aligned with one. For the surface balance a very regular change in change in storage cycle seems to dominate the balance and it looks as if the runoff is missing or negative when it should be positive, as was sensed in the yearly results. The seasonal cycle and correlation looks poor for the surface balance. The surface balance has a correlation slope of .59 and a correlation coefficient of .3743.

The Reanalysis-2 is considered under the same circumstances in Figure 5-12. The atmospheric balance looks just as good as the Reanalysis-1 based on the evaluation criteria. The surface balance looks to be improved in terms of seasonal cycle. However the bias and absolute errors increase in this case because the negative runoff forces the runoff and change in storage term in the wrong direction. For this control volume the linear runoff method clearly fails to capture even the correct direction of the runoff as the change in storage is responsible for any type of correlation present (coefficient .5473). It is encouraging that these cycles do line up fairly well even with a complete failure in runoff. Perhaps a more sophisticated runoff routing system and better data could result in both a good surface balance for this control volume.

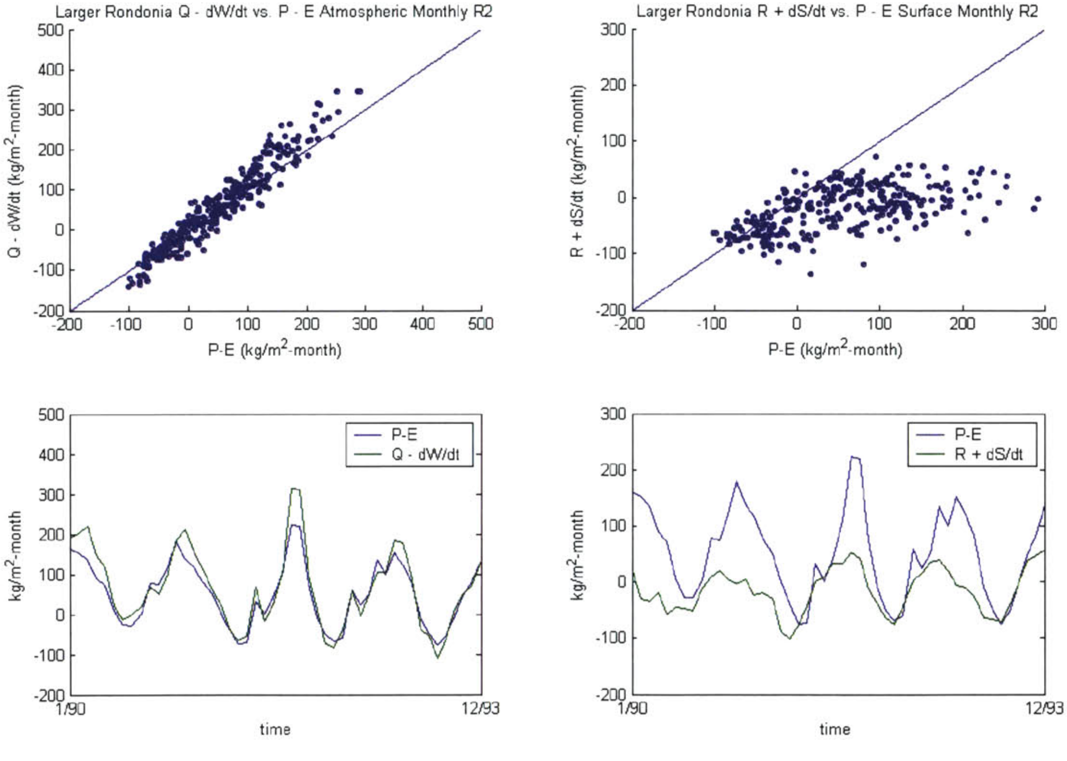


Figure 5-12: Larger Rondonia Reanalysis-2 Monthly Atmospheric and Surface Balances

The amount of scenarios for the Larger Rondonia control volume balances are the same as those for the Eastern Brazil control volume in Table 5-1-1, providing a large amount of possibilities for improvement. As was the case with the previous control volume, it is difficult to improve on any of the atmospheric balances because of the good job the Reanalysis does fitting its own precipitation to the moisture flux. On the yearly basis the balance is slightly improved by changing the moisture flux methodology to 1, or changing the precipitation dataset to TRMM 3A46. However, in this case we will use an alternative precipitation dataset, the GPI. This precipitation dataset is high like that provided by the reanalysis thus it helps make the atmospheric balance better, as shown in Figure 5-13. To improve the yearly surface balance, the evaluation criteria are used and the best balance is arrived at by changing to the point runoff method, applied to the Reanalysis-1, and using GPCC presentation. This provides an absolute error and bias of 34.63 kg/m^2-month, or in other words approximately the difference between the precipitation and evaporation. The application seems to simply lower the precipitation and nullify the negative pull of the runoff. Several scenarios with the GPCC precipitation work well for this control volume, likely because this precipitation provides for the lowest bias. It is of special note though that gauges may underestimate precipitation in this control volume (a general note about gauges). What we really need here is better surface flux data (especially runoff).

In Figure 5-14 improvements are made to the monthly water balances. There aren't any improvements for the atmospheric balance. For the Larger Rondonia control volume, the atmospheric water balance can be deemed a success, at least from the reanalysis standpoint. For the monthly surface balance we again turn to the best water balance as evaluated by the criteria in Appendix A. This is achieved with point runoff, applied to Reanalysis-2, and using the OPI2 precipitation dataset. A correlation coefficient of .4989 is achieved as the seasonal precipitation cycle is lowered and the runoff/change in storage cycle is heightened. The balance is still fairly poor with a regression slope of .3 and a bias of 34.8 kg/m^2-month, similar to that of the yearly case. A better method of obtaining runoff flux out of this control volume is necessary in order to compute the surface water balance, and such inconsistencies would make it impossible to conduct a total water balance for this control volume.

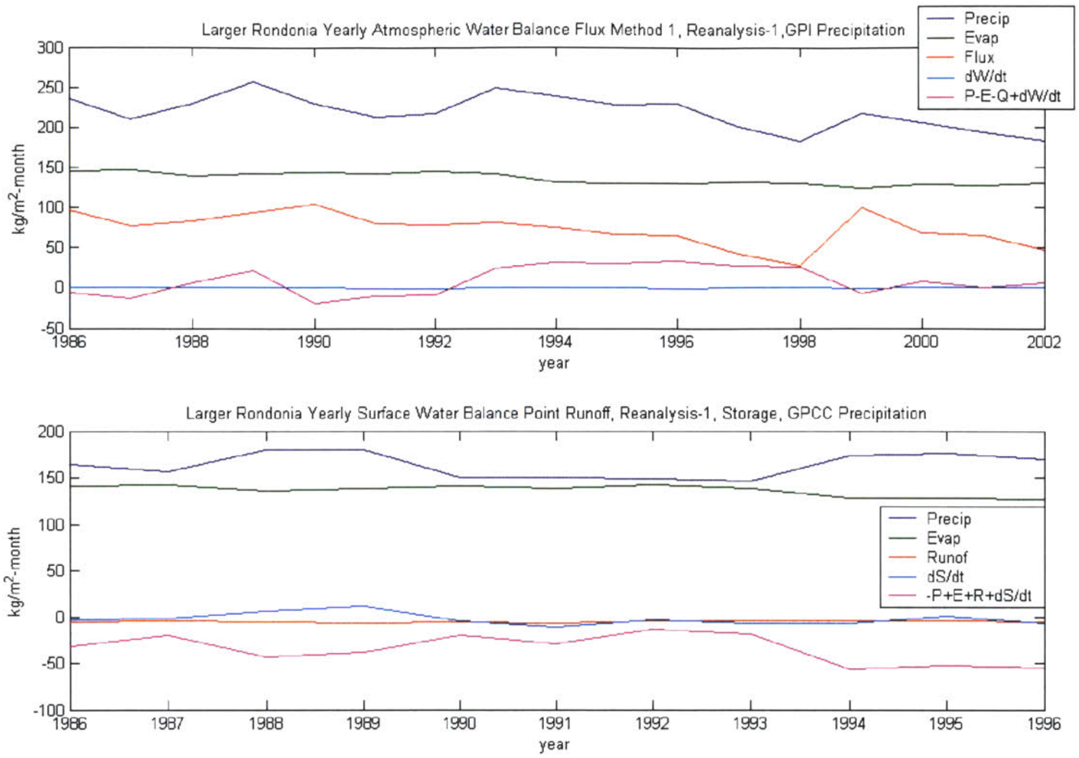


Figure 5-13: Larger Rondonia Selected Yearly Water Balances

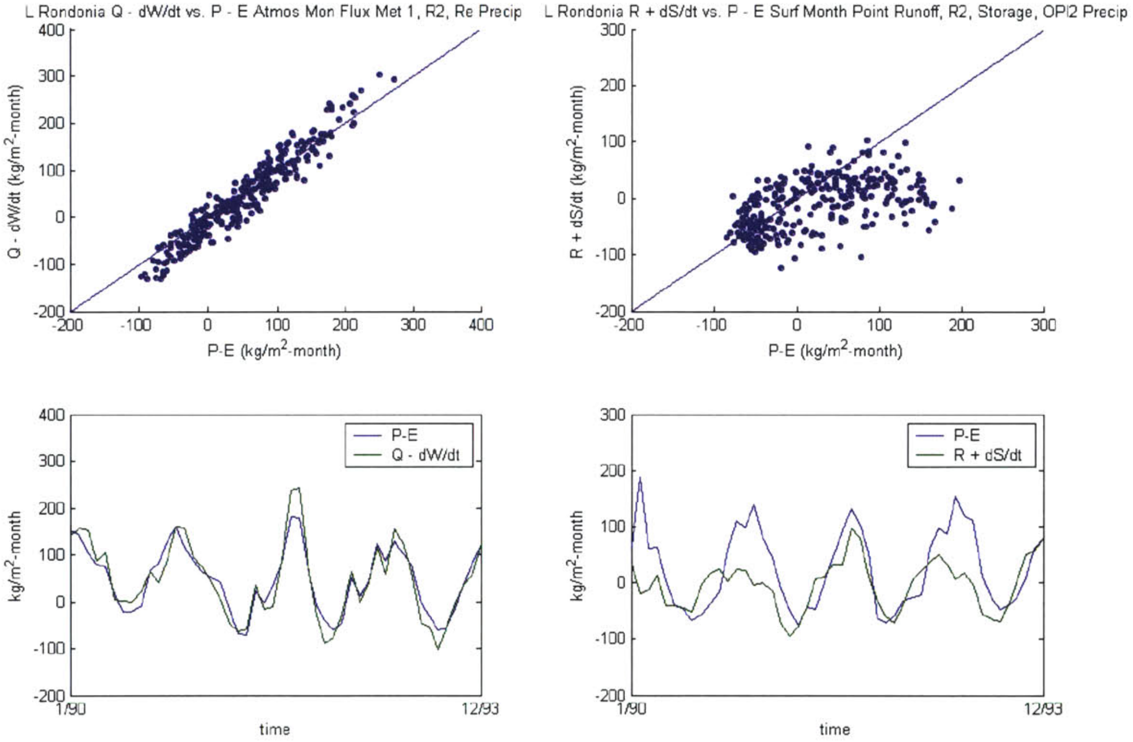


Figure 5-14: Larger Rondonia Selected Monthly Water Balances

5.3. Larger United States

In this section we continue to look at a large control volume, however we switch geographic regions to the United States. This region was selected as an alternative large control volume over a supposedly better observed area than the Larger Rondonia control volume. It is also a change from the tropical Larger Rondonia area to the varying climate features of the drier Western United States.

Figure 5-15 shows the yearly water balances obtained from the Reanalysis-1. The problems are almost too numerous to describe. The evaporation is higher than the precipitation over land, which is a highly unlikely phenomenon for a land mass of this size. Such a phenomenon corresponds to a slightly negative moisture flux, however the moisture flux is found to be of about the same magnitude as the precipitation and evaporation quantities. The runoff provided by the Reanlaysis-1 is again near zero without much of a signal and the change in surface storage fluctuates wildly dictating the behavior of the balance term. The correlation coefficients for both balances are near zero. In Figure 5-16, the Reanalysis-2 yearly balances are presented. The properties of the water balance are just about the same, and by the evaluation criteria the balance actually gets worse. For the surface balance the correlation coefficient improves, but the absolute error increases. Bias is relatively low for the surface balance, because storage change over the long run is zero, and runoff is non-existent, therefore the bias is just the precipitation – evaporation term.

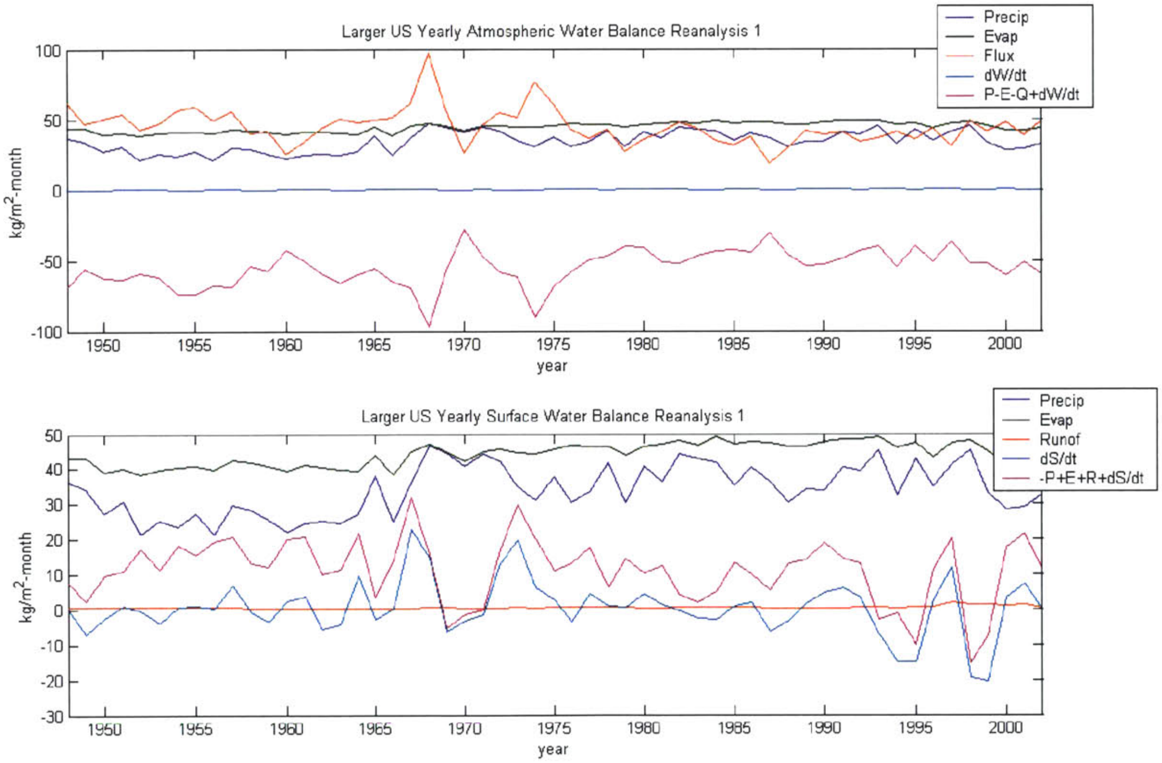


Figure 5-15: Larger US Reanalysis-1 Yearly Atmospheric and Surface Balances

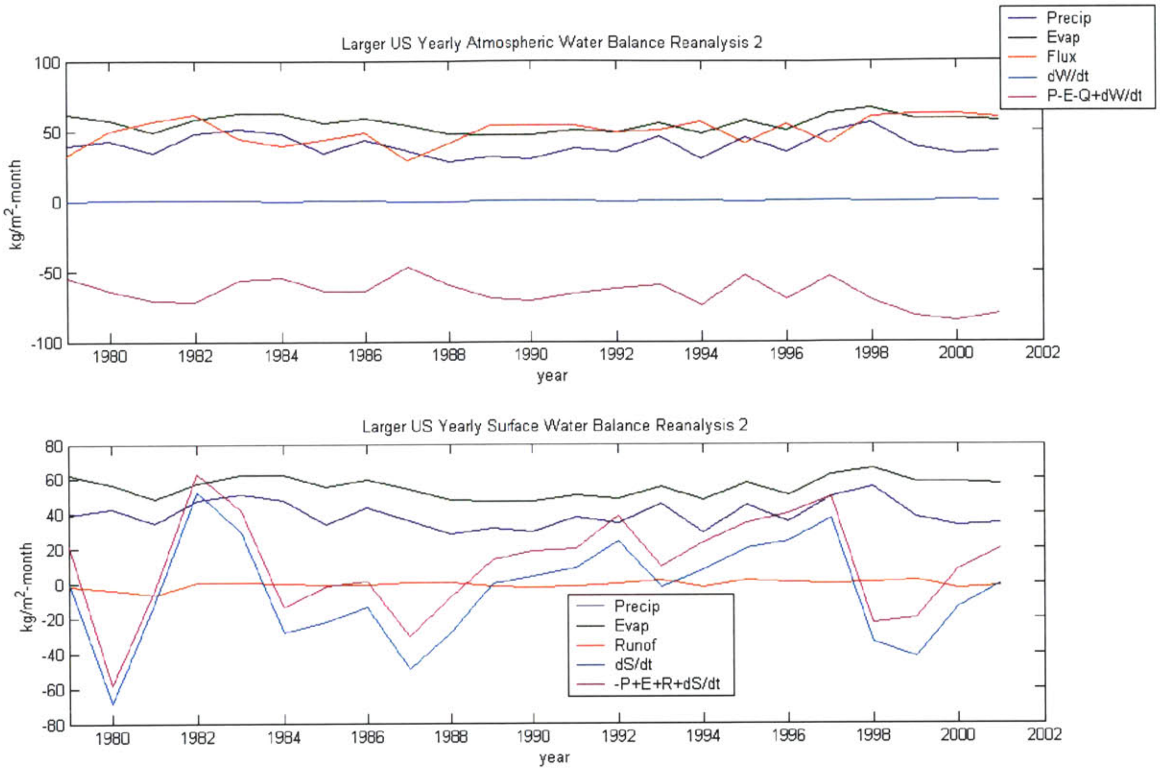


Figure 5-16: Larger US Reanalysis-2 Yearly Atmospheric and Surface Balances

In Figure 5-17 the annual precipitation time series are shown for the Larger United States control volume. The precipitation is largely consistent and appears to be a little higher in the second half of the entire time interval. This is encouraging because it appears by the water balances that the precipitation is too low, as it should be at least as large as the evaporation.

In Figure 5-18 the monthly water balances are considered for the Reanalysis-1. The seasonal cycle is not picked up at all, and instead there is a negative correlation between the side flux and the bottom flux of the atmospheric balance. The slope of the regression is -1.2973 and the correlation coefficient is -.4539. For the surface balance the seasonal cycle is picked up, but likely as a result of the change in storage cycle. We observed in the yearly case that the runoff term is nearly non-existent for the Reanalysis-1. There is a strong correlation of this cycle with a correlation coefficient of .7673; however the slope of the linear regression of this relationship is about 3. Both the moisture flux and runoff seasonal cycle are much stronger then the P – E seasonal cycle. In Figure 5-19 we see much of the same for the atmospheric balance in the Reanalysis-2. The balances are equally bad as can be discerned by the complete lack of correlation of the seasonal cycles. The surface balance however is greatly improved. Although there is a large bias, the signals are much better aligned. These observations are consistent with the results of the evaluation for this control volume in Appendix A which classifies the default monthly surface Reanalyis-2 balance as one of the best, with a correlation coefficient of .7616 and an absolute error of 21.90 kg/m^2-month compared to 51.27 kg/m^2-month for the Reanalysis-1.

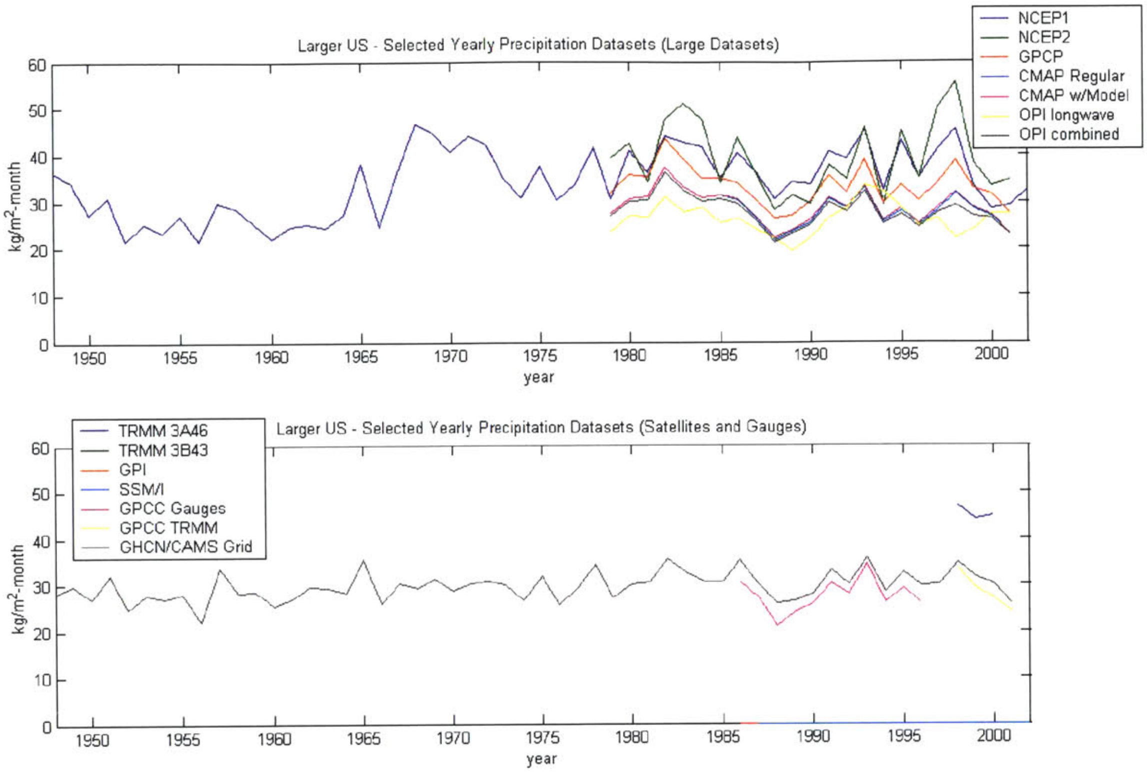


Figure 5-17: Larger US Different Sources of Yearly Precipitation

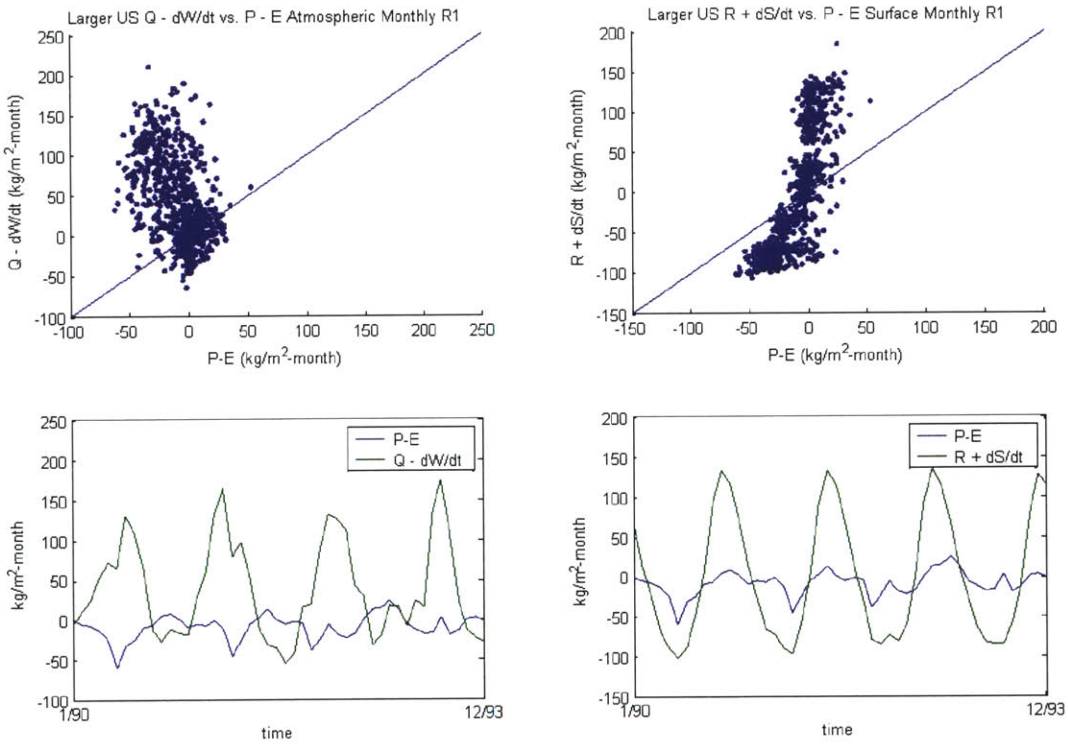


Figure 5-18: Larger US Reanalysis-1 Monthly Atmospheric and Surface Balances

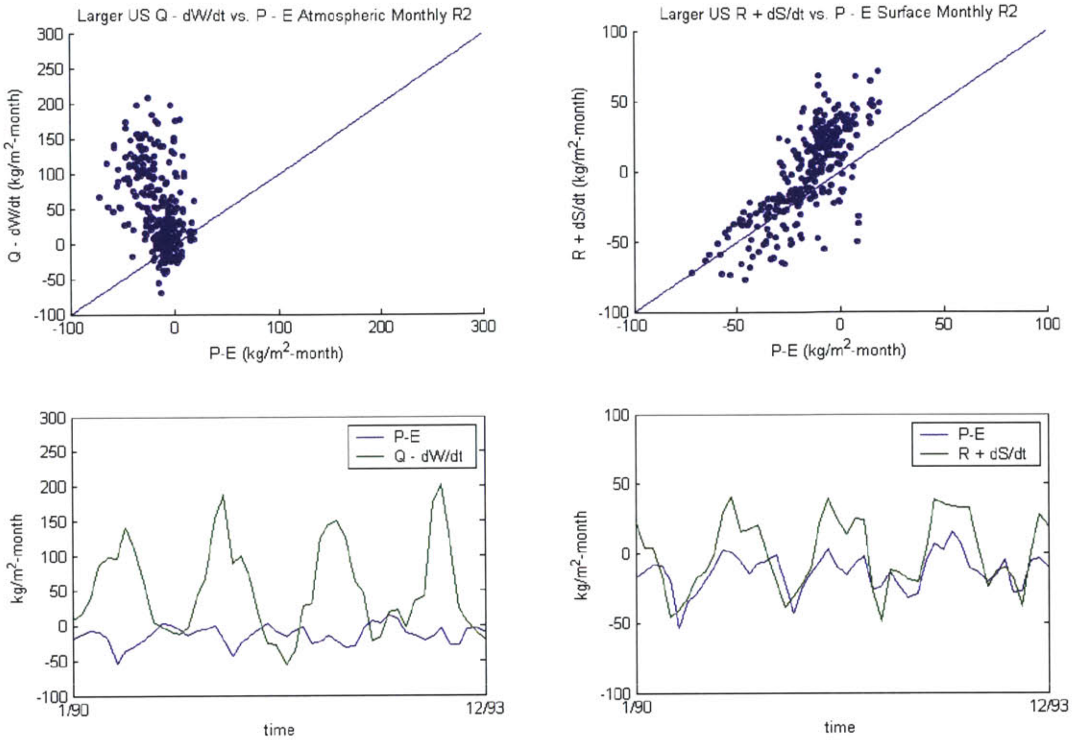


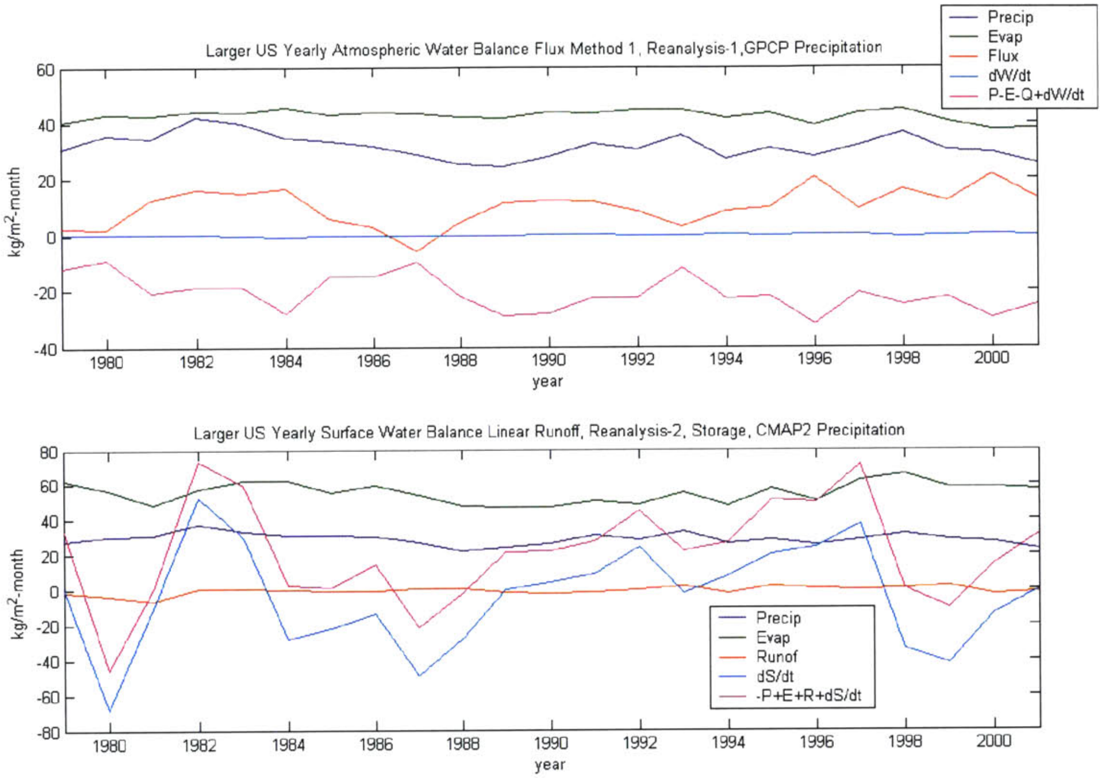
Figure 5-19: Larger US Reanalysis-2 Monthly Atmospheric and Surface Balances

Throughout this study we have observed problems with the atmospheric water balance of the Larger United States control volume. We see an unrealistically high seasonal cycle and unrealistically high annual values for the moisture flux. The most likely explanation for this is the mountainous terrain contained in this control volume. The moisture flux calculations depend on pressure level data, starting from sea level pressure, however these levels don't even exist in mountainous regions and this may lead to difficulties in the moisture flux calculation.

As a result of the location of the Larger United States control volume, several precipitation datasets are not used. Table 5-4 shows the variables which are considered for each control volume, which is similar to the previous two control volumes, however missing the 3 tropical precipitation datasets (GPI, TRMM 3B43, TRMM 3A46), and also missing the SSM/I precipitation which contained an anomalous error for this control volume. Precipitation is the only characteristic affected by the geography of the control volume.

Continuing, as we try to make corrections for the atmospheric yearly balance, we find the default reanalysis balances rank among the worst based on evaluation criterion. The top ranking balances have weak correlations and regressions. Selecting a balance with a good regression slope would mean doubling the various error statistics. Therefore we select the top ranked balance which includes a change to Method 1 and Reanalysis-1, applying the GPCP precipitation. Interestingly, for the Larger US control volume changing to Method 1 is very affective, as a regression slope of .5093 is obtained with an absolute error and bias of 21 kg/m^2-month, less than half of that for the default balance.

For the yearly surface balance it is difficult to improve the balance, as all scenarios have very similar errors and very poor correlations and regression results. The most highly rated balances aren't correlated well at all, so in an attempt to find balance that is more correlated to the one to one line, we take the most highly rated water balance with a good slope. A slope of .9855 is found for the default conditions and applying the CMAP2 precipitation. The regression can be improved without offsetting the residual errors, but as can be seen by the bottom of Figure 5-20 the balance isn't improved too much.


Larger US Yearly Atmospheric Water Balance Flux Method 1, Reanalysis-1,GPCP Precipitation

Larger US Yearly Surface Water Balance Linear Runoff, Reanalysis-2, Storage, CMAP2 Precipitation

Figure 5-20: Larger US Selected Yearly Water Balances

Trying to improve the monthly atmospheric water balance is nearly impossible. For every scenario a negative correlation coefficient and slope are found. However, the less negative regression statistics do tend to correlate with the smaller residual errors and therefore it is possible to arrive at the same conditions that helped the yearly atmospheric water balance, applying Method 1 to the Reanalysis-1 with the GPCP precipitation. It is encouraging that the GPCP precipitation improves these balances, as it is a more reliable precipitation than the reanalysis. Looking at this balance in Figure 5-21, at least the opposite seasonal cycles of the two terms are aligned, and the bias is reduced to 21.03 kg/m^2-month, same as in the case of the yearly balance.

In the monthly surface balance, improvement is gained with default conditions being applied to the Reanlaysis-2. A comparable balance with acceptable correlation statistics is also found by changing to the point runoff method and keeping everything else as the default conditions for the

Reanlaysis-2. All water balance statistics are almost exactly the same, as runoff is only slightly changed.

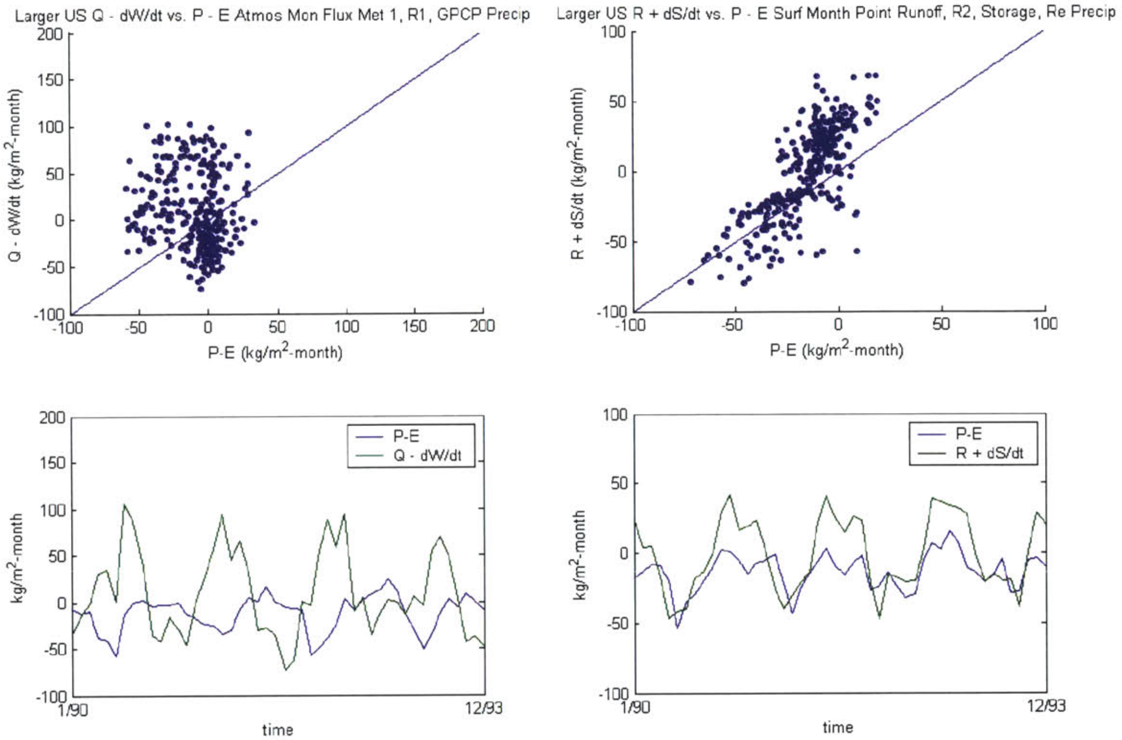


Figure 5-21: Larger US Selected Monthly Water Balances

The Larger United States water balance proves very hard to close for both the atmospheric and surface water balances. This is surprising considering the success in a remote area for the same size control volume. Problems in the closure of this balance were clearly affected by the inability of the moisture flux and runoff methodologies to compute realistic side fluxes for both water balances.

5.4. Northwest Brazil

The Northwest Brazil control volume was selected for this work because it is a very remote area of the Amazon rain forest which has neither good measurement nor land change. Figure 5-22 displays the Reanalysis-1 yearly water balances for this region. Again we see a jump in the precipitation, though slight, about halfway through the time series, and a much more dramatic raise in moisture flux, which increases the negative bias of the residual over the last twenty years of the balance. The bias for the atmospheric balance is -45.97 kg/m^2-month, however the correlation coefficient is a very high .8262, as the moisture flux signal matches up with the precipitation signal on a year by year basis. The results of the surface balance are less encouraging. While the change in storage cycle appears to correlate slightly with the precipitation signal, the runoff does not and is negative and constant throughout almost the entire time series indicating the methodology does a poor job routing the precipitation. The result is a large negative bias and a poor correlation coefficient.

In Figure 5-23 we again see a very strong correlation between precipitation and moisture flux peaks for the Reanalysis-2 yearly atmospheric balance. The evaporation term in this balance is nearly constant for the duration of the time series, and the moisture flux is clearly overestimated in most cases. The correlation coefficient for this balance is .8424 and the slope of regression is improved to 1.37 from 1.51 in the Reanaysis-1 yearly atmospheric balance. The surface balance appears to get worse. In the Reanalysis-1 the runoff was near zero for all but the last five years of the time series. In the Reanalysis-2 runoff has magnitude, but is negative. It is likely the runoff is routed in the wrong direction here, as there is an increase in bias in the Reanalysis-2.

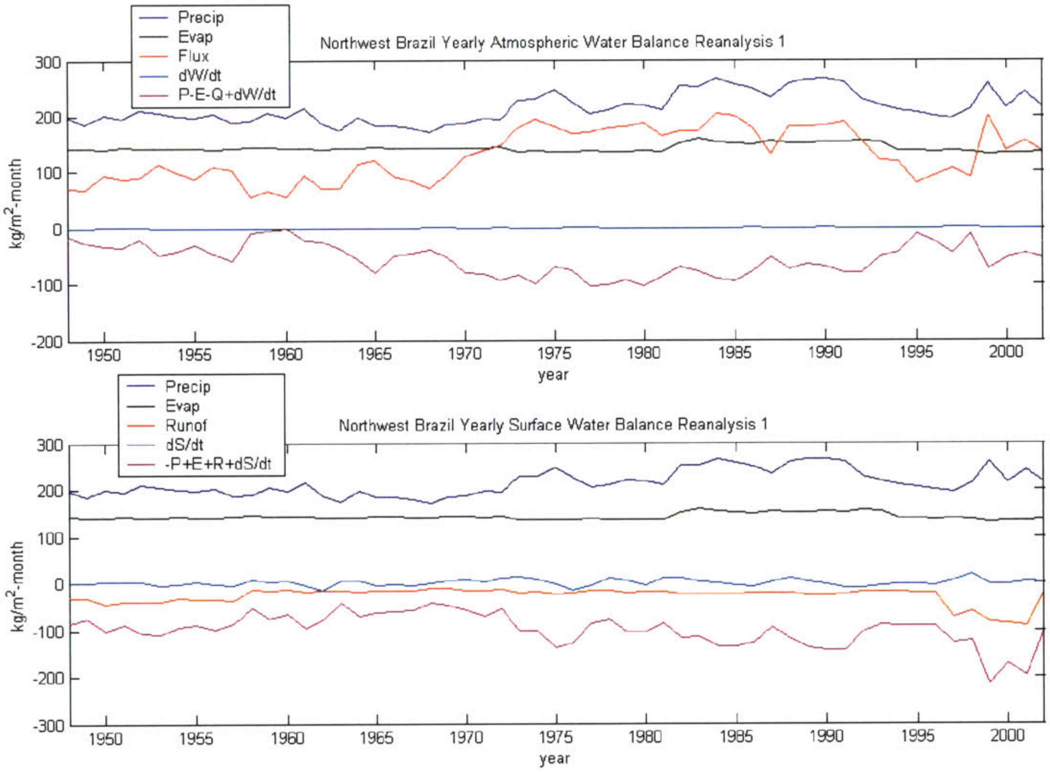


Figure 5-22: Northwest Brazil Reanalysis-1 Yearly Atmospheric and Surface Balances

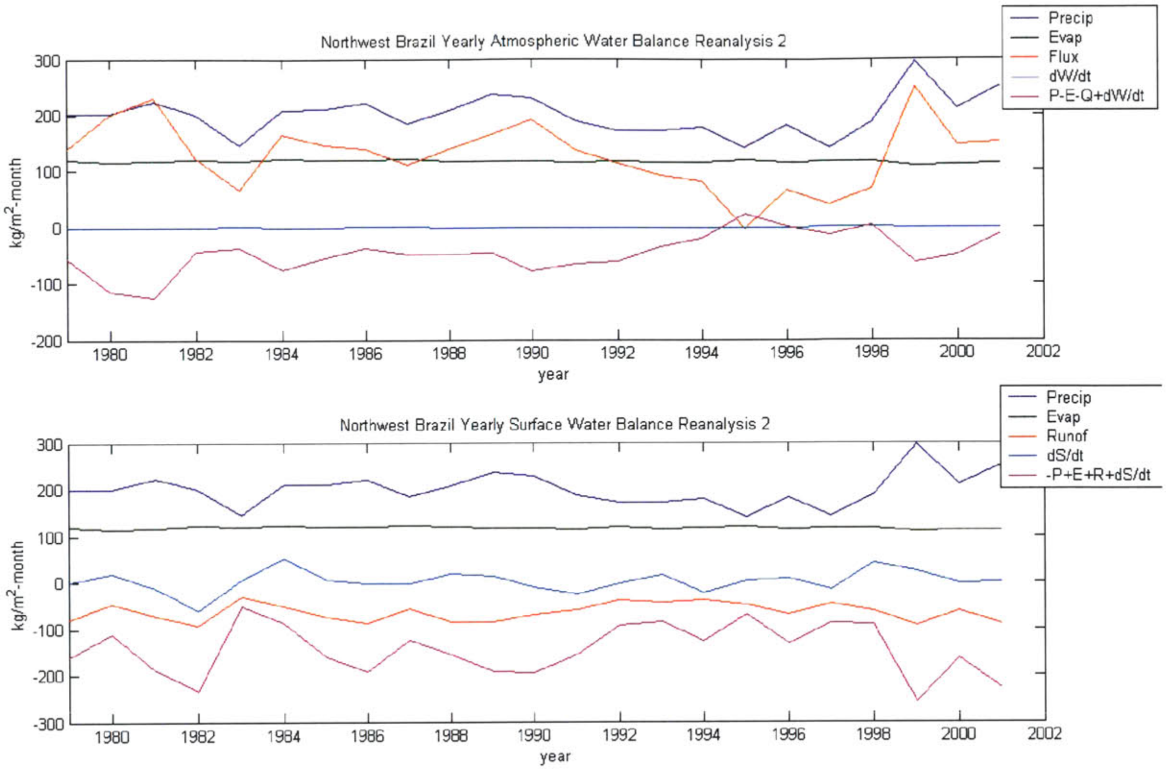


Figure 5-23: Northwest Brazil Reanalysis-2 Yearly Atmospheric and Surface Balances

The annual precipitation time series for the Northwest Brazil control volume are given in Figure 5-24. As with the other two control volumes in this region analyzed already, the Reanalysis-1 precipitation time series jumps during the second half of the time period, while more contemporary precipitation efforts are consistent with the early part of the Reanalysis-1. For this control volume however there is a sharp contrast between the Reanalysis-1 and Reanalysis-2 precipitation datasets. The Reanalysis-2 is closer to the observational precipitation data. The magnitude of precipitation for this control volume is fairly high, and there is a large amount of water flowing through this region every month. The GPI and SSM/I datasets are again higher than the other precipitation datasets; however their maximum signals do not coincide well with those from the Reanalysis-1.

Switching to the monthly time scale the Reanalysis-1 default balances are presented in Figure 5-25. In the atmospheric balance a good correlation is obtained, however the moisture flux signal is overestimated with a regression slope of 1.22 and a correlation coefficient of .8253. For all of the example points given in the bottom portion of the figure the moisture flux is higher, however signals are picked up on a point by point basis. The monthly surface balance is not very good. The runoff is routed in the wrong direction (negatively) and the seasonal cycle does not appear to be aligned.

Switching to the Reanalysis-2 in Figure 5-26, the atmospheric monthly balance is about the same, the slope of the regression is slightly increased to 1.29, but so is the correlation coefficient of .8431. The bias is reduced from -56.63kg/m^2-month to -45.93 kg/m^2-month, which can be seen by the example points. Although the evaluation criteria indicate the Reanalysis-1 is a better balance, the Reanalysis-2 is clearly comparable if not better for this control volume and the atmospheric monthly balance. The monthly surface balance for the Reanalysis-2 is interesting for this control volume. The side flux term for the surface balance appears to be greatly improved, as there is signal pick up for the example points shown in the bottom plot. However, the intensity of the water cycle in Northwest Brazil is very large and so is the scale on these graphs, thus the bias between the points is large. Examining the correlation plot, the correlation is poor, leading to a negative correlation coefficient and regression slope.

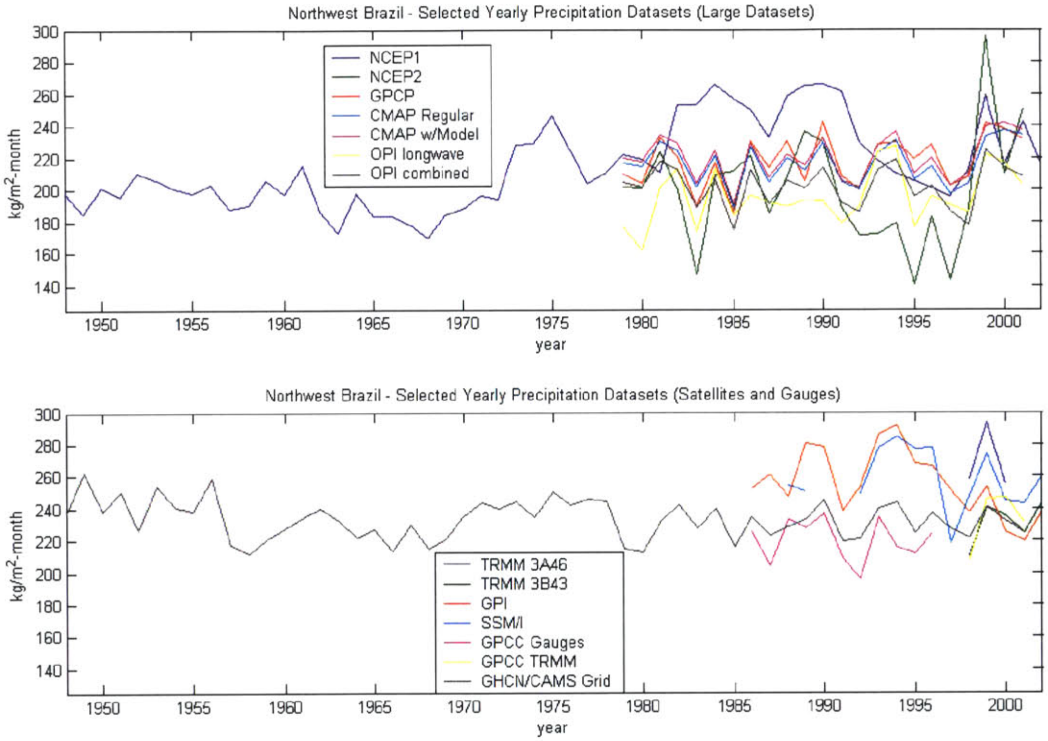


Figure 5-24: Northwest Brazil Different Sources of Yearly Precipitation

We now try to improve these water balances, especially the surface balance, by altering water balance characteristics. For the possible changes, Table 5-1 can again be used as this is one of the small tropical control volumes where all possibilities exist. The Northwest Brazil control volume is a very typical control volume in this work, as the atmospheric balance is easy to close to some to degree, while the surface balance is more difficult. In Figure 5-27 we try to improve the yearly water balances and we find by the criteria in Appendix A that for the yearly atmospheric balance, small improvements can be made. The best ranking method involves a slight shift of coordinates to the moisture flux Method 1 applied to the Reanalysis-1. This shift in coordinates lowers the moisture flux so it is almost perfectly aligned with the precipitation - evaporation and the bias is reduced to -4.33 kg/m^2-month in a water balance with quantities very high in magnitude. This is a very good balance, and for the atmospheric case this exercise can be deemed a success.

For the yearly surface balance on the bottom half of Figure 5-27, the default reanalysis balances rank poorly, but so do all cases. In the top ranked scenario the runoff methodology is changed to the point runoff method and change in storage is eliminated, applying the balance to Reanalysis-2 using OPI2 precipitation. Through these changes positive yet small slopes and correlation coefficients are obtained, and we see small correlation between the runoff and precipitation time series in the graph, as the annual evaporation is nearly constant. The balance still has a very negative bias.

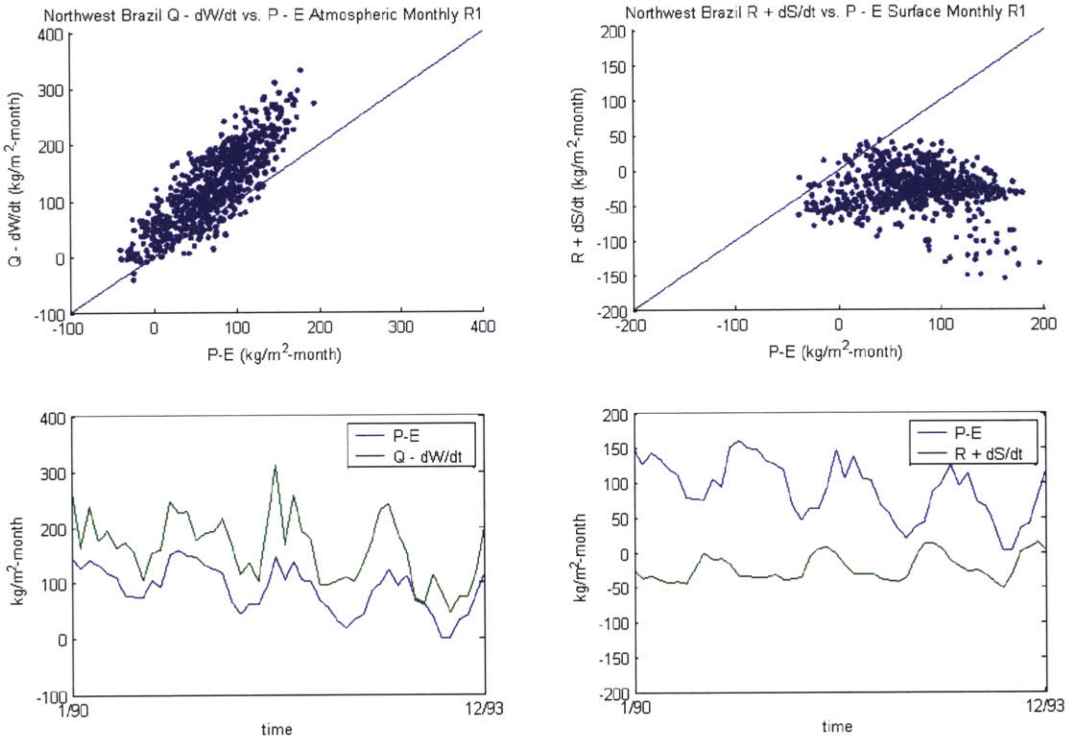


Figure 5-25: Northwest Brazil Reanalysis-1 Monthly Atmospheric and Surface Balances

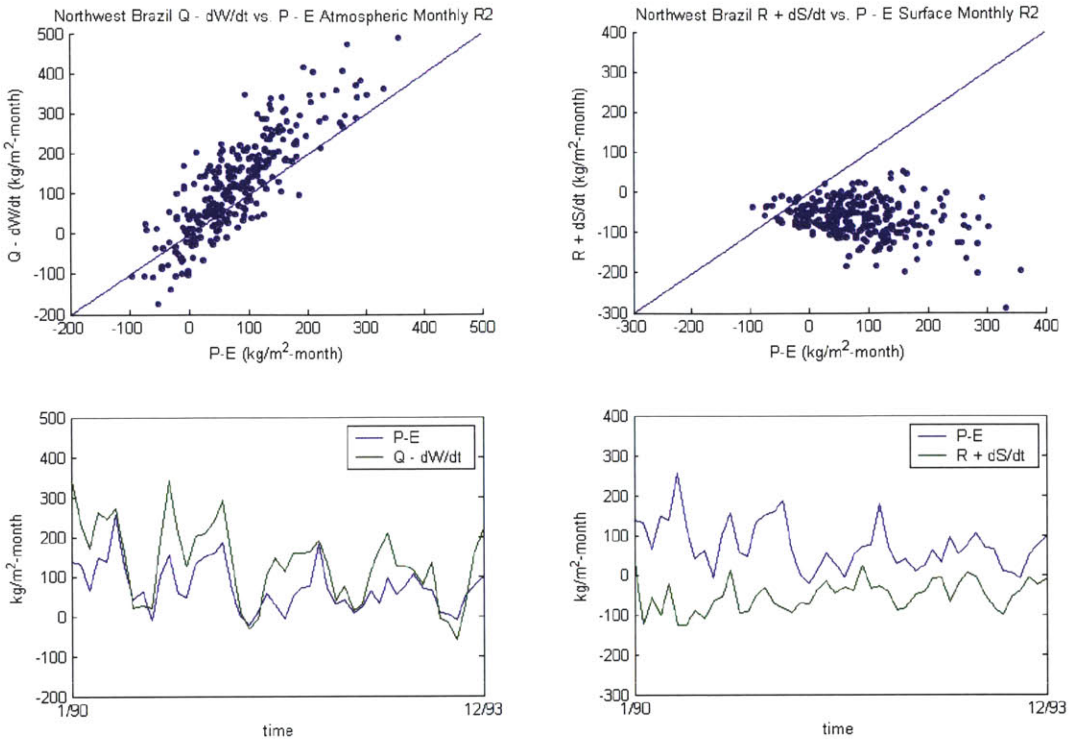


Figure 5-26: Northwest Brazil Reanalysis-2 Monthly Atmospheric and Surface Balances

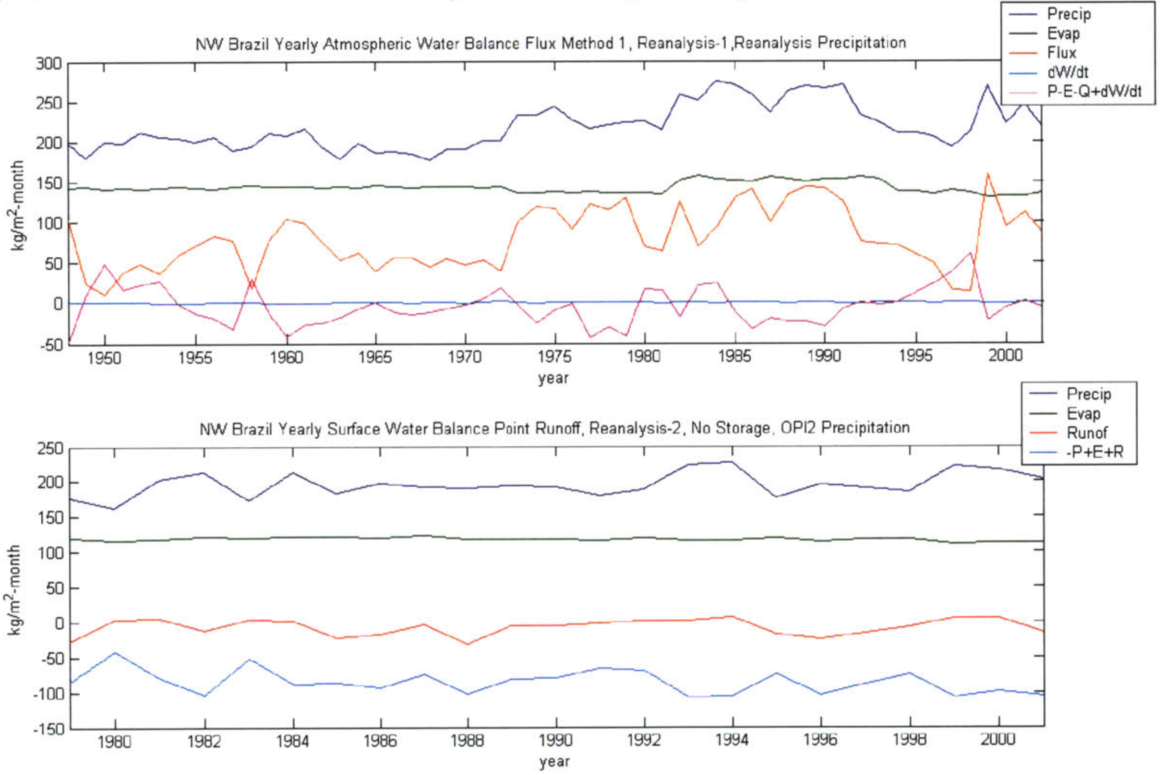


Figure 5-27: Northwest Brazil Selected Yearly Water Balances

In Figure 5-28 the monthly atmospheric water balance is improved in the same manner that the yearly water balance was improved, by applying the first moisture flux methodology to the Reanalysis-1. The bias is removed and is equivalent to that of the yearly balance. The slope of the regression is .9214. We select this set of conditions though it is ranked second by the evaluation criteria, because it is twice as long as the very similar balance achieved under the same conditions for the Reanalysis-2, which is ranked number 1. For the surface water balance there is a lot of room for improvement and correspondingly many different water balances which can be tried, however, there are still no good results. For this control volume the point runoff methodology is applied to Reanalysis-1 with change in storage, as this is the top ranked water balance based on the evaluation criteria. The point methodology allows for a much better seasonal correlation through the side flux of the surface balance is still grossly underestimated (Bias of -77.65 kg/m^2-month, regression slope of about .21).

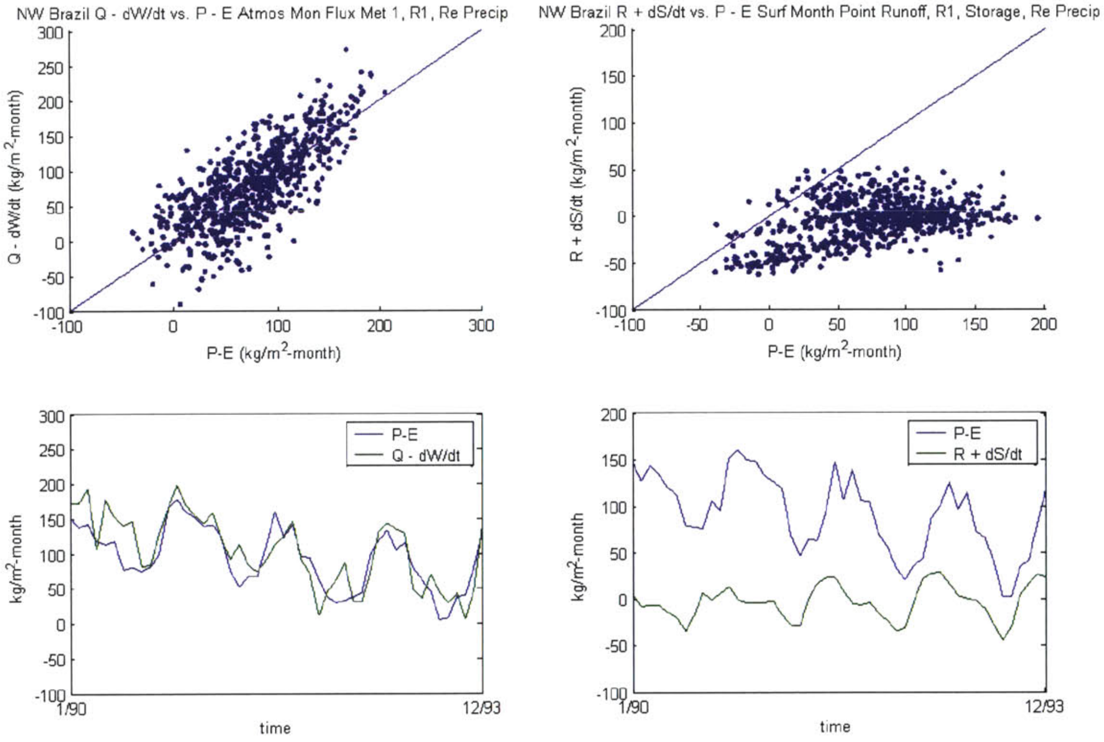


Figure 5-28: Northwest Brazil Selected Monthly Water Balances

For the Northwest Brazil control volume many of the same observations were made as for the other tropical control volumes in this region so far. A second half of the Reanalysis-1 rise in precipitation is again observed, but accounted for by the reanalysis moisture flux in the atmospheric balance. The surface balance is much harder to close than the atmospheric balance.

5.5. Rondonia

The Rondonia control volume was the first and original control volume selected for this work. It is an area of unique importance in the Amazon rain forest and is currently undergoing land change.

In Figure 5-29 the Reanalysis-1 yearly water balances are displayed. What is seen here is a clear jump in the precipitation between 1970 and 1975, and a corresponding jump in moisture flux. Following these shifts the balance is actually improved, thus in this case, the poor water balance and uncharacteristic negative moisture flux over the region could be explained away by unreliable data in the early half of the Reanalysis-1. However, we have consistently seen this trend over every region in the Amazon rain forest. It is unlikely that all of these observations are a coincidence. There is a distinct change in the water balance over these regions in the past fifty years. Such a discrepancy makes it even more important to continue collecting data for such studies to see if trends continue. Decent statistics are obtained for this balance with a bias of 18.67 kg/m^2-month and correlation coefficient of .7202. The question lies in the validity of the balance. For the yearly Reanalysis-1 surface balance, there is little adherence to the P-E cycle by either the runoff or storage change. Curiously in the last five years of the Reanalysis-1 the water balance is greatly improved, however this does not salvage a balance with a .3092 correlation coefficient and no slope. The error is low due to the closeness of the P-E quantity to zeros.

In Figure 5-30 the Reanalysis-2 yearly water balances are displayed. The Reanalysis-2 increases the bias for the atmospheric balance. The precipitation and evaporation cycle is improved as there is less of a difference from the first half of the Reanalysis-1. However, the moisture flux is very negative, resulting in a high positive residual and a bias of 93.50 kg/m^2-month. The correlation coefficient of the balance is still a high .8210. This is indicated by the residual line being fairly flat. For the surface balance the change in storage and runoff terms do not correlate properly with the rest of the balance, and instead alternate around zero. A positive regression slope of .3348 and weak R^2 of .0759 represent a faint linear relationship between the different sides of the water balance. Upon residual analysis, the water balance could be balanced about as well by eliminating the side flux of the surface balance entirely, as this flux provides no improvement to the balance. Closing the yearly surface balance with the reanalysis continues to be nearly impossible with the given data in remote areas, even with the Reanalysis-2, as the gridded runoff is not represented correctly by the methods used.

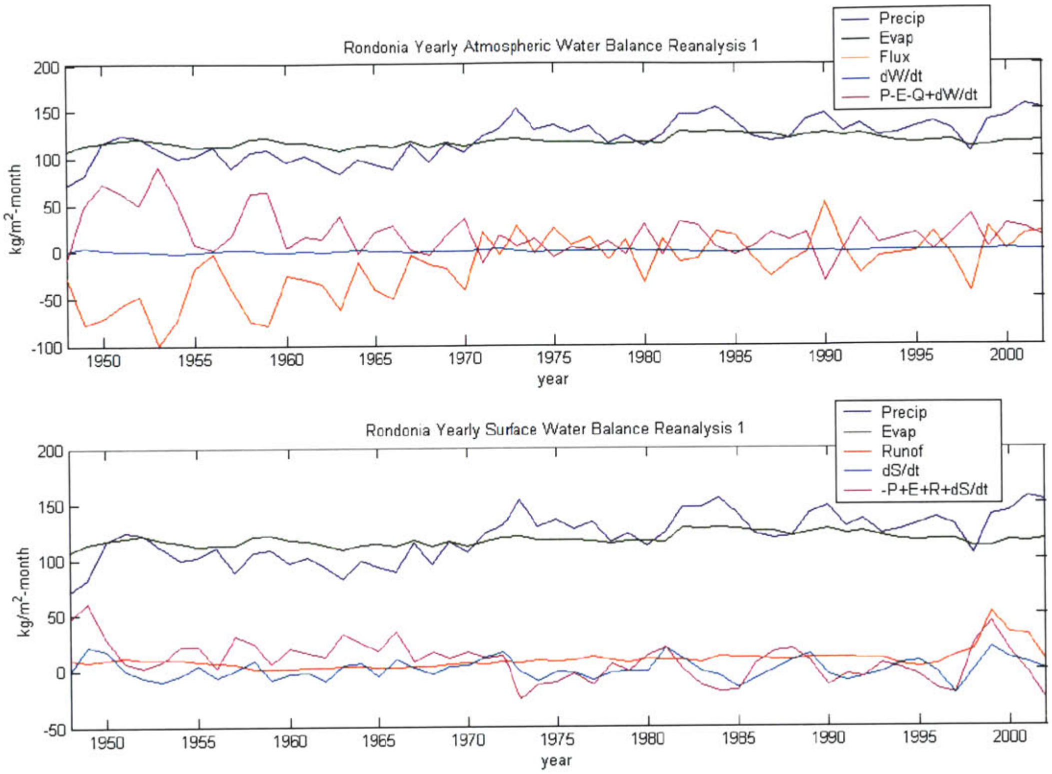


Figure 5-29: Rondonia Reanalysis-1 Yearly Atmospheric and Surface Balances

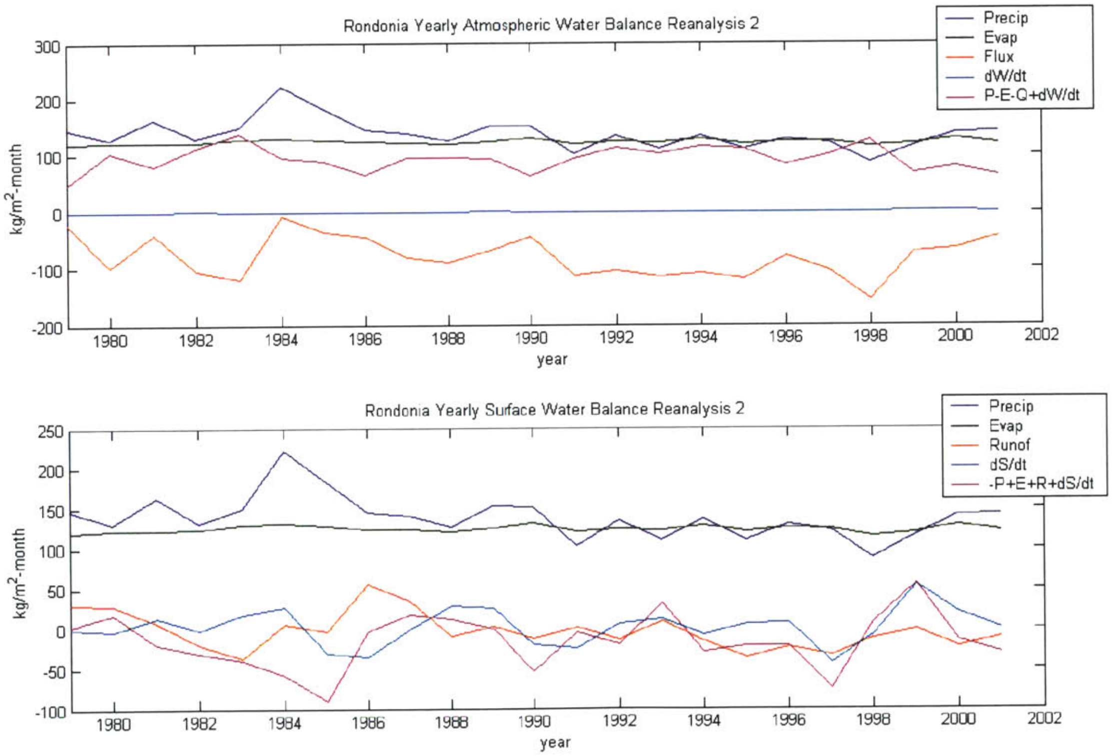


Figure 5-30: Rondonia Reanalysis-2 Yearly Atmospheric and Surface Balances

In Figure 5-31 the yearly precipitation time series are shown, and differences are seen in the Rondonia control volume compared to the other control volumes analyzed so far. The alternative precipitation datasets are not aligned with the precipitation from the first half of the analysis for this control volume, but rather with the second half of the Reanalysis-1 where the precipitation is higher. This is unusual because for other control volumes in South America alternative precipitation datasets do not agree with the second half of the Reanalysis-1.

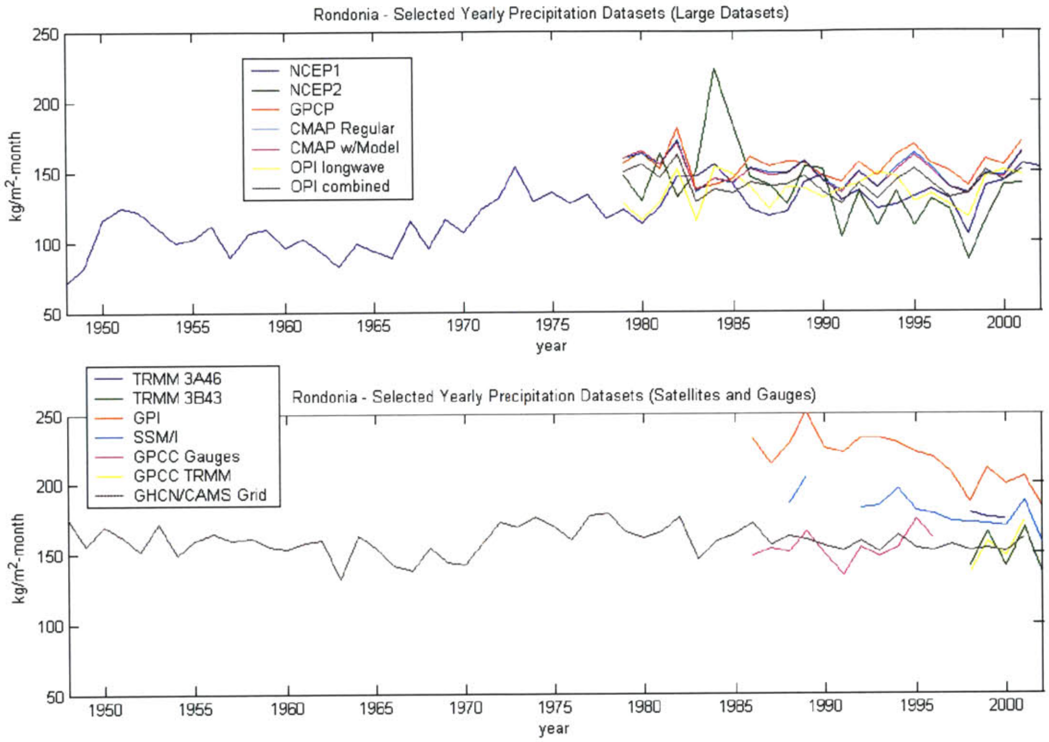


Figure 5-31: Rondonia Different Sources of Yearly Precipitation

In Figure 5-32 the monthly atmospheric and surface water balances are plotted for the Reanalysis-1. For the atmospheric balance we don't see as tight a correlation. It should be noted however, that over this control volume there is no strong seasonal cycle in the moisture flux time series as was the case with all control volumes to this point. As a result the signals presented are more like those of the yearly time scale, and so is the correlation. The correlation coefficient of this balance is only .3343. For the surface balance the seasonal cycle is uncovered with the removal of the moisture flux. There is a clear correlation of seasonal cycle shown by a correlation coefficient of .4566. This shows the effect of the seasonal cycle in improving the balance on the monthly time scale.

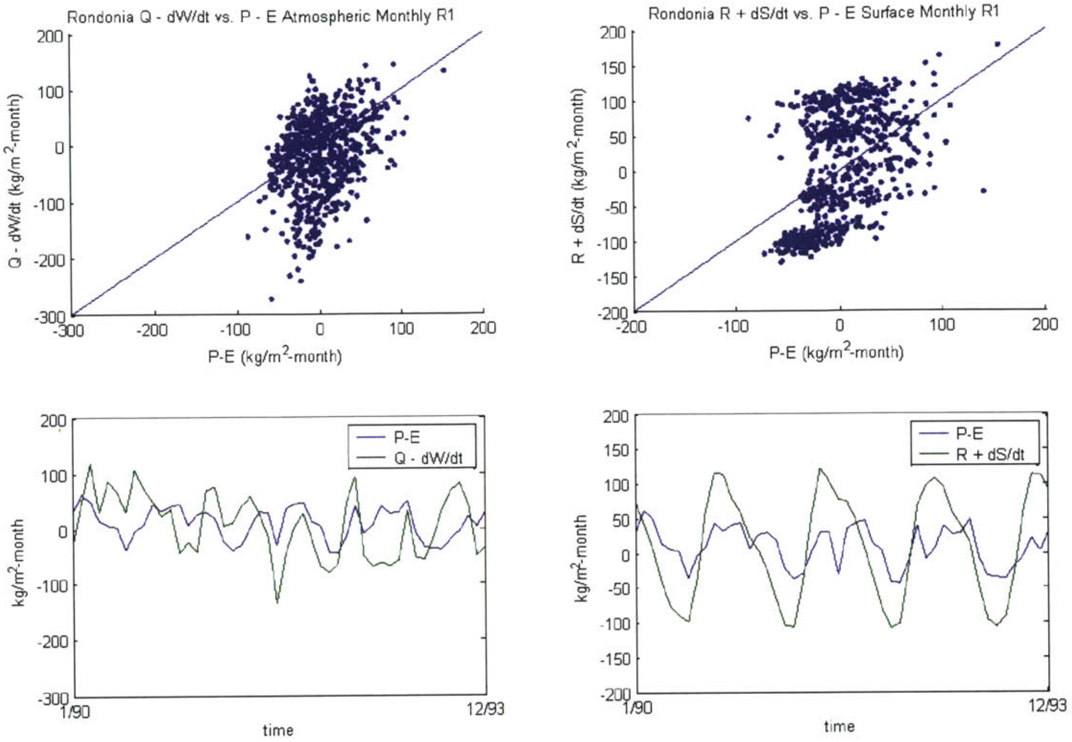


Figure 5-32: Rondonia Reanalysis-1 Monthly Atmospheric and Surface Balances

In Figure 5-33 we switch to the Reanalysis-2 on the monthly time scale. We see the negative bias in the moisture flux as observed on the yearly time scale. Although the bias is greatly increased, the correlation coefficient is also increased from the Reanalysis-1. The seasonal cycle is improved for the moisture flux, although it is way too low. The entire regression seems to be biased by an intercept as the slope of the regression is .7111 with a regression intercept of -89.44 kg/m^-month which is very close to the bias, meaning this balance could be corrected by a nudging term at each time step. The surface balance in this case looks very good, which is surprising given the condition of the yearly surface water balance in the Reanalysis-2. By the evaluation criteria this balance is slightly worse than that obtained by the Reanalysis-1 primarily due to the side flux of the surface balance not having a strong enough seasonal cycle. This is likely caused by an unsuccessful runoff calculation which may be improved by a change in methodology. A correlation coefficient of this balance is a fairly high .5428.

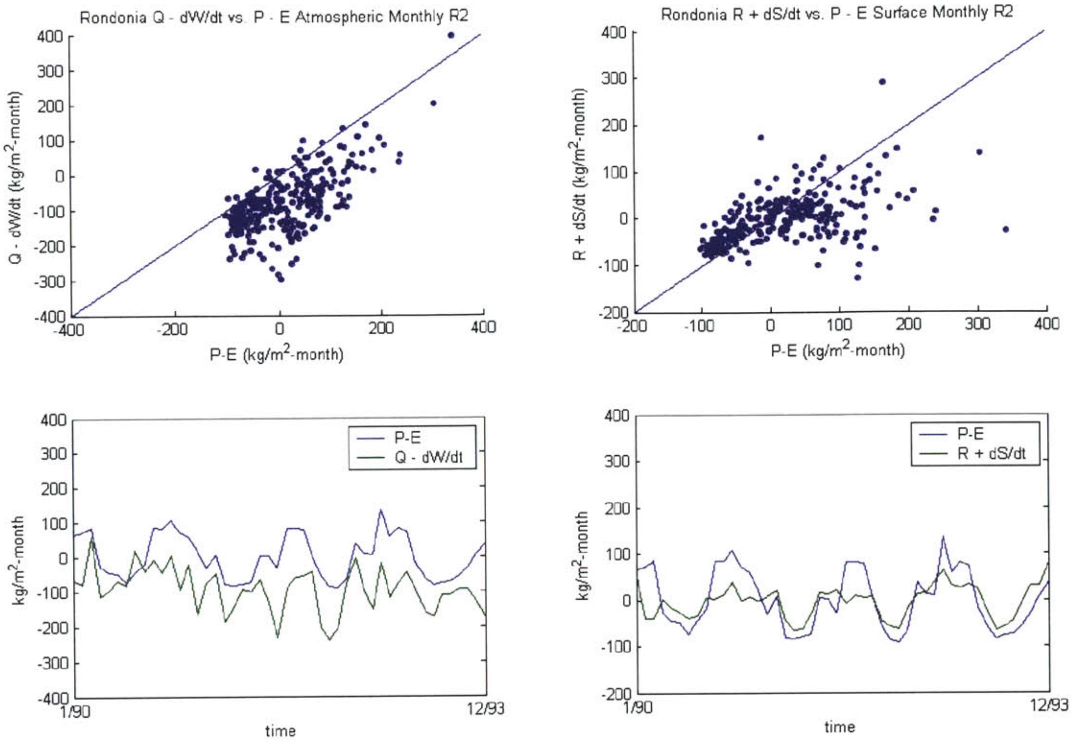


Figure 5-33: Rondonia Reanalysis-2 Monthly Atmospheric and Surface Balances

For the atmospheric yearly balance the best results by the evaluation criteria are clearly given by the default method used by the Reanalysis-1. The Reanalysis-2 balance is also one of the top balances in this scenario, but of great interest here is the success of the water balance applying the TRMM 3B43 dataset to both the atmospheric and surface balance on the yearly time scale. In the atmospheric balance this application is to the Reanalysis-1 with Method 2 moisture flux. The balances obtained are shown in the top portion of Figure 5-34. For the surface balance the TRMM 3B43 precipitation is applied to the Reanalysis-1 with the area runoff methodology. The figures indicate biases, but otherwise generally good water balances on the yearly basis with the TRMM precipitation product. The correlation coefficient for the yearly atmospheric balance is only .3551 while a strong correlation is observed in the surface balance with comparable errors and biases.

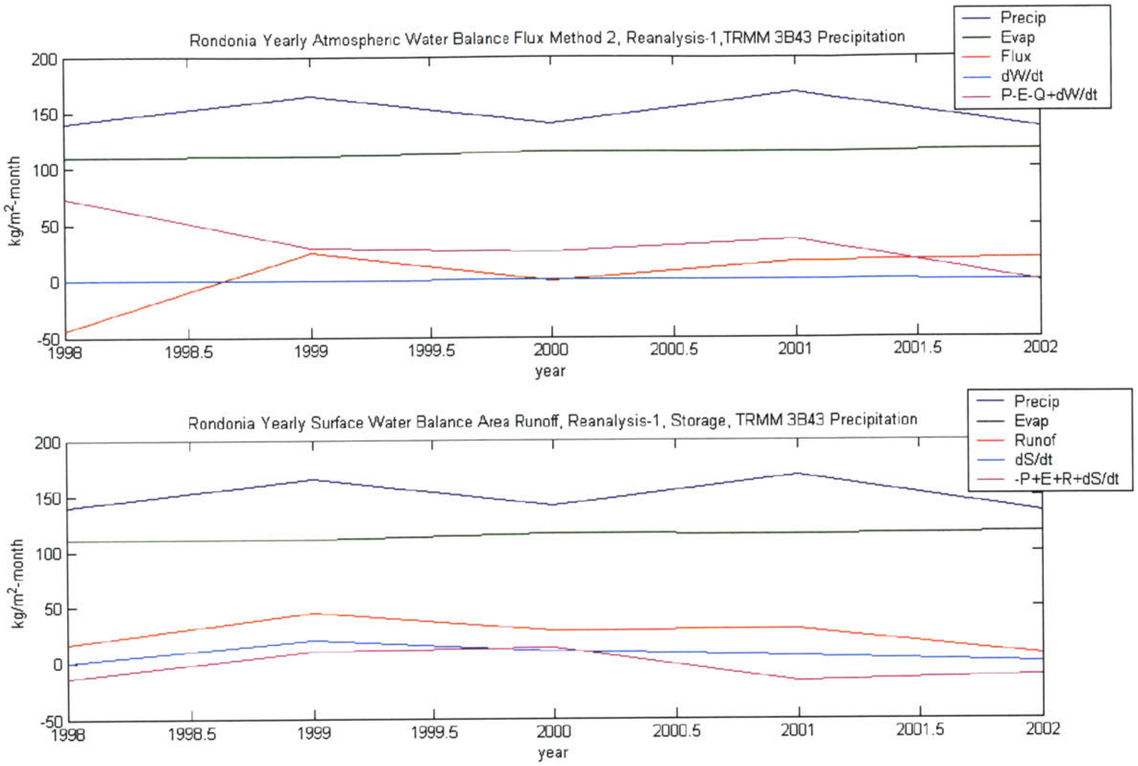


Figure 5-34: Rondonia Selected Yearly Water Balances

Next we attempt to improve the monthly water balances. For the atmospheric balance we again see the top ranked balances belong to the reanalysis under various conditions. Trying to keep with the application of TRMM products to this water balance the GPCC TRMM precipitation dataset is applied to the Reanlaysis-1 for the atmospheric monthly balance shown in Figure 5-35. The balance is not improved in this case, but a comparable balance is achieved with a weak correlation of .1161. It is curious here that by the evaluation criteria the reanalysis balances for the monthly atmospheric case are far better than those obtained with alternative precipitation applied. The validity of the reanalysis precipitation has been questioned throughout this work, and it is hard to classify this precipitation as reliable despite the fact it completes the water balance.

For the monthly surface balance significant improvements can be made on the monthly time scale by using the evaluation criteria and once again a TRMM dataset completes the balance the best, and again it is the GPCC TRMM dataset. The point runoff methodology is used along with the Reanalysis-1. The balance is very visually apparent by both the scatter plot, and the plot of the compared data points in the time series. The runoff signal is captured by this configuration. It is possible to show the entire monthly time series for both balances in the bottom portion of these plots as there are only 59 points in each time series. The slope of the surface correlation is almost exactly 1 with a high regression R^2 1:1 value of .6320, a quantity that is usually meaningless.

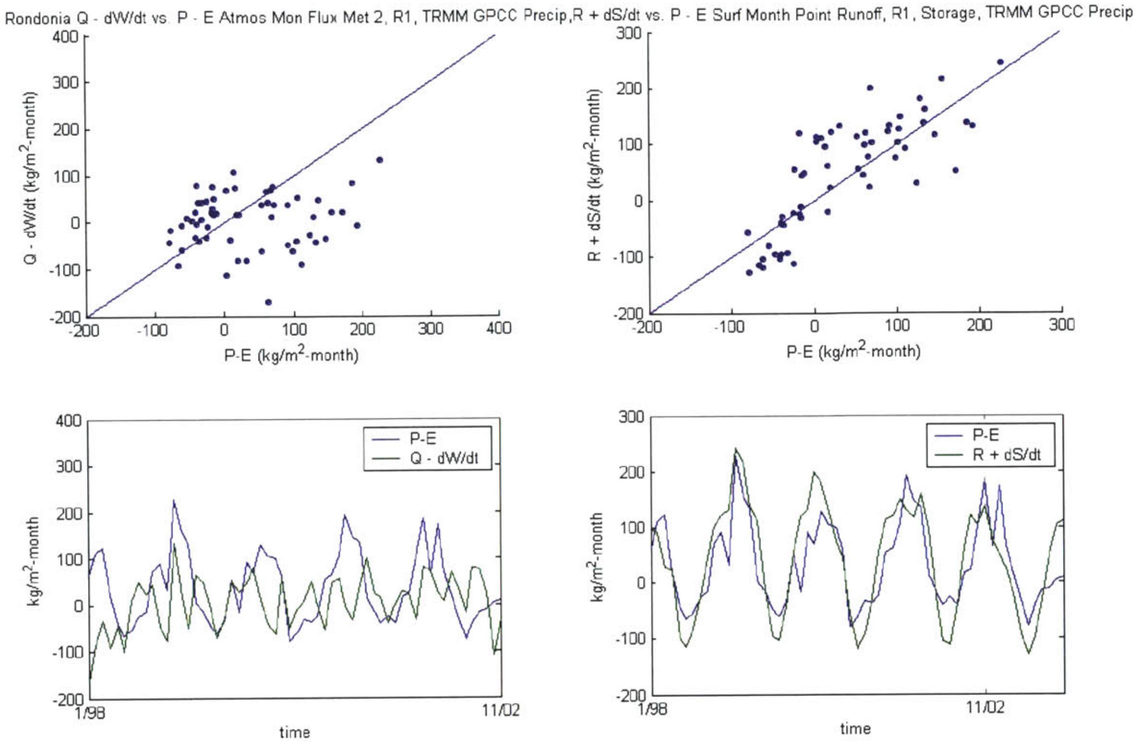


Figure 5-35: Rondonia Selected Monthly Water Balances

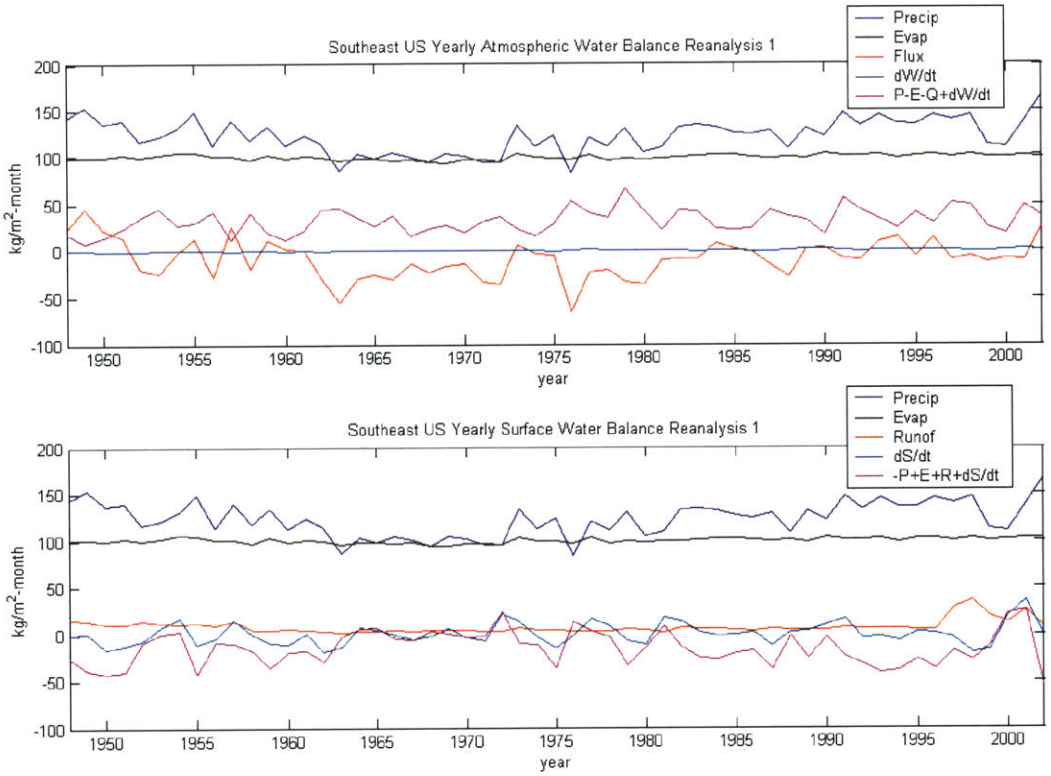
It is exciting to see the TRMM products be so helpful in refining the water balance for the Rondonia control volume. We do not know what to make of the water balance for this control volume based on the Reanalysis prior to 1970, as a climatic change is indicated by the best atmospheric water balance, the Reanalysis-1. It was also found that by trying many variations of the surface water balance, the balance could be greatly improved.

5.6. Southeast United States

The Southeast United States control volume was selected as a box control volume of the smaller 7.5 degree size, which could be used as a control in that it is in a geographic region where a lot of hydrometeorological data is known and recorded. It is also located in between 40 degree N and 40 degrees S latitude and therefore is included in the TRMM and GPI precipitation datasets. Unlike the other control volumes over the Untied States, this control volume contains no unusual features, and should thus prove good as a comparison to the smaller control volumes in South America.

Figure 5-36 displays the yearly water balances for the SEUS for the Reanlysis-1. For the atmospheric balance, the precipitation generally decreases in the 1960's, and a corresponding decrease is found in the moisture flux. However, the moisture flux is in general too low resulting in a positive bias of 31.90 kg/m^2-month. The correlation of the slope is exactly one with an intercept of the regression equaling the bias and a correlation coefficient of .7956. This balance is very good with the exception of the bias. For the surface balance we again find a poor runoff time series for the Reanalysis-1. A correlation coefficient of .2298 is found for the Reanalysis-1 surface balance.

Switching to the Reanalysis-2 in Figure 5-37 the bias is reduced for the yearly atmospheric control volume to 22.02 kg/m^2-month, but there is still significant error in the balance compared to the magnitude of the other water balance components, and the correlation coefficient is reduced to .4736. Still the reduction in bias and general errors is encouraging. For the Reanalysis-2 surface balance the runoff is improved, but the balance gets worse. The correlation coefficient here is high at .5836, but the bias of 17.40 kg/m^2-month is on par with the difference between precipitation and evaporation, meaning the surface side flux doesn't help to improve the balance. The absolute error of 29.43 kg/m^2-month is significantly higher than the bias.


Southeast US Yearly Atmospheric Water Balance Reanalysis 1

Southeast US Yearly Surface Water Balance Reanalysis 1

Figure 5-36: Southeast US Reanalysis-1 Yearly Atmospheric and Surface Balances

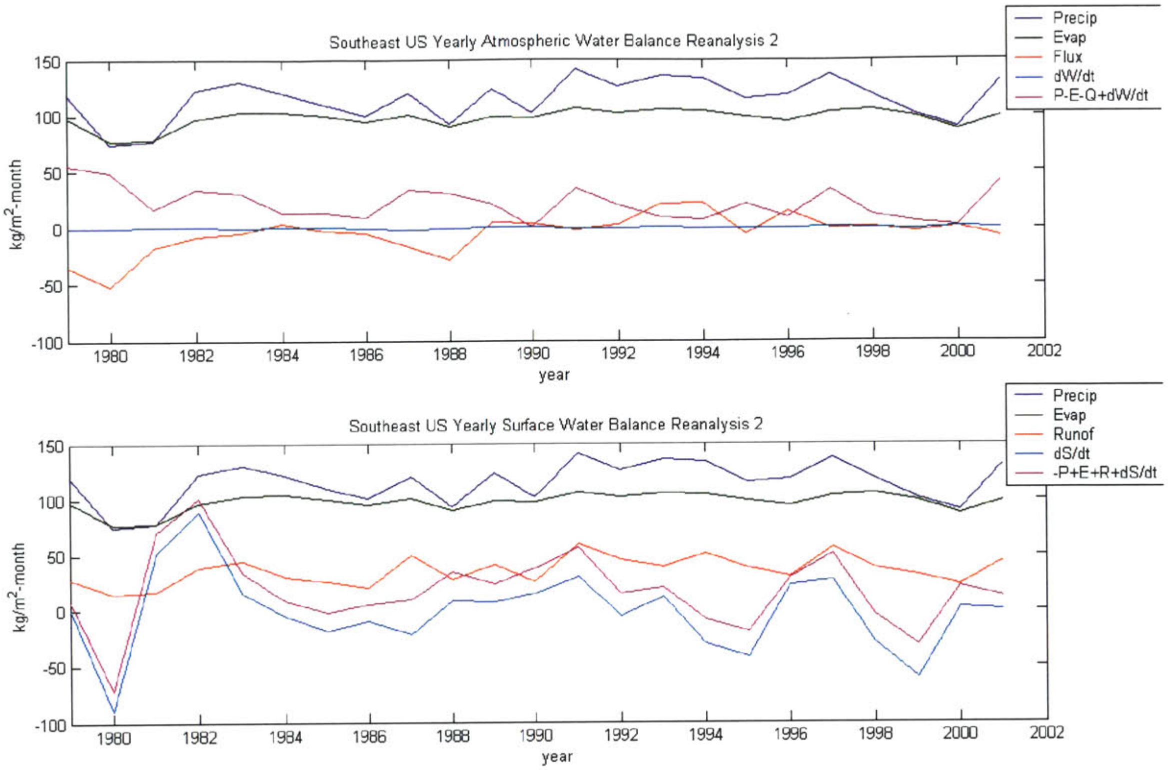


Figure 5-37: Southeast US Reanalysis-2 Yearly Atmospheric and Surface Balances

In Figure 5-38 the different annual precipitation time series for the SEUS control volume are plotted. The shift in precipitation observed in the tropical control volumes is not observed here as it wasn't observed in the Larger US control volume. Variation in the reanalysis precipitation is again observed, as there is a slight dip in the middle of the time series. Interestingly the gauge precipitation dataset does not show this dip, and this dip is consistent with the moisture flux dip in the Reanalysis-1. In this case the gauge precipitation is likely accurate because the Untied States has been densely gauged over the past 50 years, and most of these gauges are included in this dataset. So the precipitation trend in the reanalysis which is not backed by observational (gauges) data matches with the moisture flux of the reanalysis. The Reanlaysis-2 correlates well here to the Reanalysis-1 precipitation, but all other datasets consist of a much lower precipitation values especially recently. The GPI precipitation is again observed to be high. The TRMM precipitation datasets are aligned with all the other datasets. It should be noted that the TRMM 3A46 dataset contains errors for this control volume and is not considered.

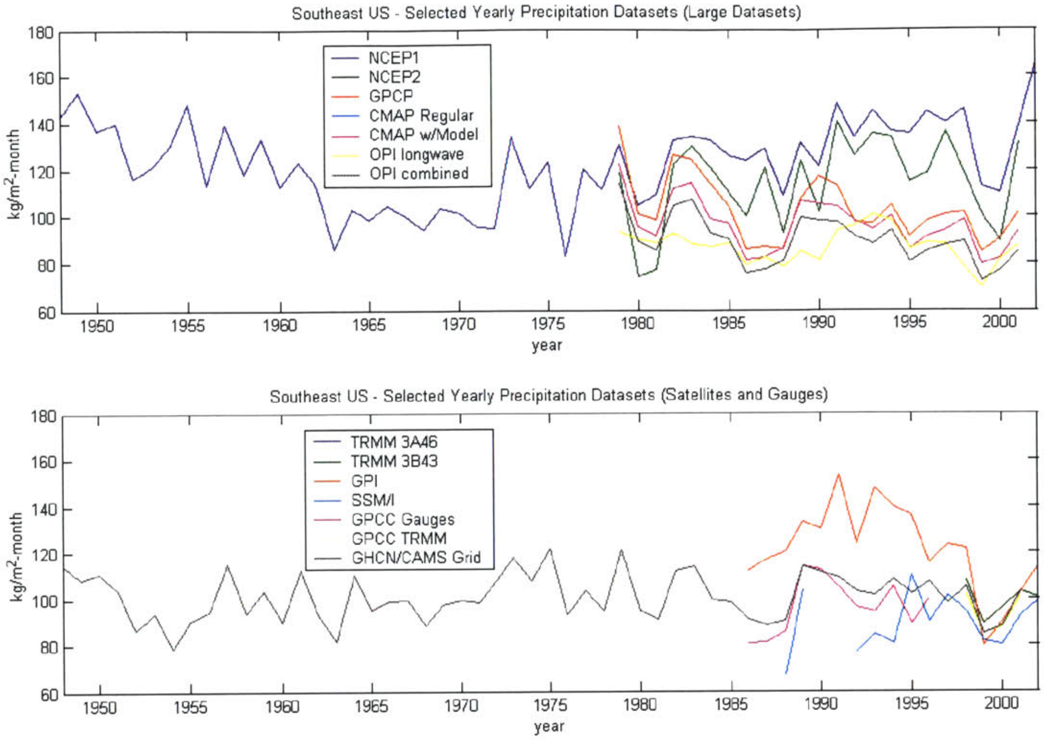


Figure 5-38: Southeast US Different Sources of Yearly Precipitation

Figure 5-39 shows the monthly water balances for the Reanalysis-1 in the Southeast United States control volume. In the monthly balance a generally good correlation is found between the two sides of both the atmospheric and surface the water balances. The seasonal cycles are not as strong for this control volume as they were in the control volumes of this size in South America. A correlation coefficient of .5553 is found for the atmospheric balance, with an equivalent bias to the yearly balance. The surface balance and the atmospheric balance seem to have similar regressions for the Reanalysis-1, as one balance is not clearly better than the other. This is encouraging because for most control volumes only one of the two balances can be computed well. A lower correlation coefficient of .2360 is found for the surface balance but signals are represented well. The correlation plot in this case does not indicate such a tight correlation.

The result for Reanalysis-2 in Figure 5-40 shows that the atmospheric balance is slightly more spread, with a smaller bias and a correlation coefficient of .4011. This water balance is inconsistent, as seen in bottom panel, where for some months there is no balance, while other months the balance is near perfect. For the surface balance, there is great improvement from Reanalysis-1 to Reanalysis-2. A good correlation is found between the two sides of the surface water balance, indicating the default linear runoff methodology works well for this control volume. This balance has a correlation coefficient here of .8228, and though there is a slight bias, the balance is well calculated and among the best by the evaluation criteria.

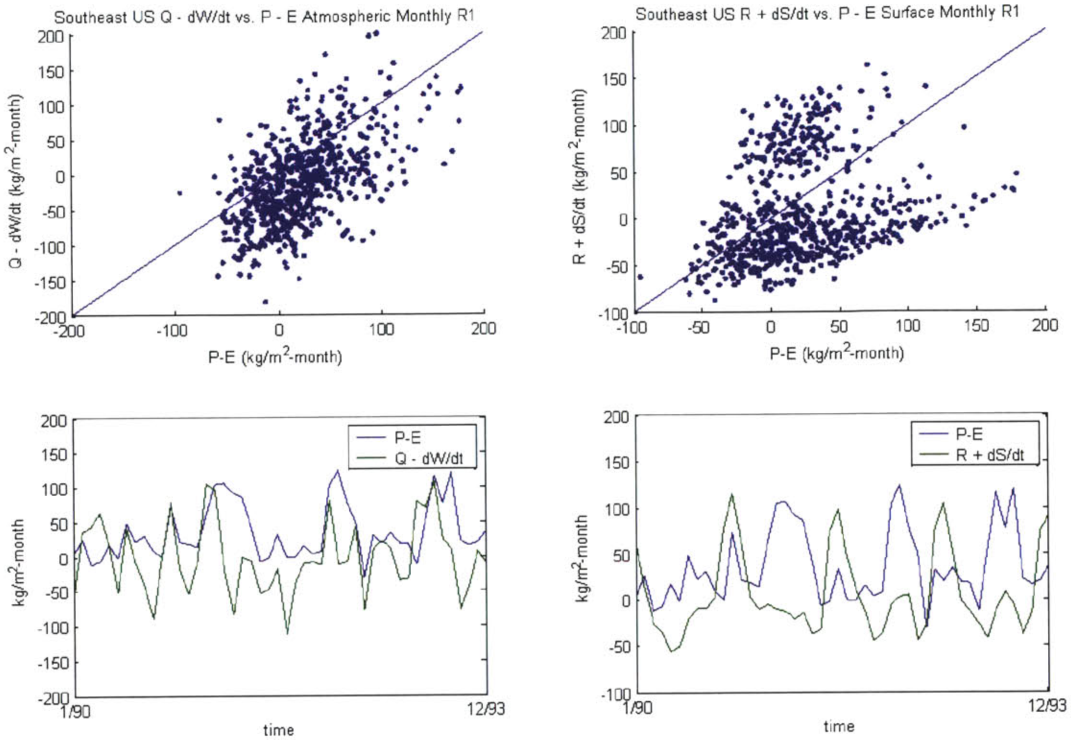


Figure 5-39: Southeast US Reanalysis-1 Monthly Atmospheric and Surface Balances

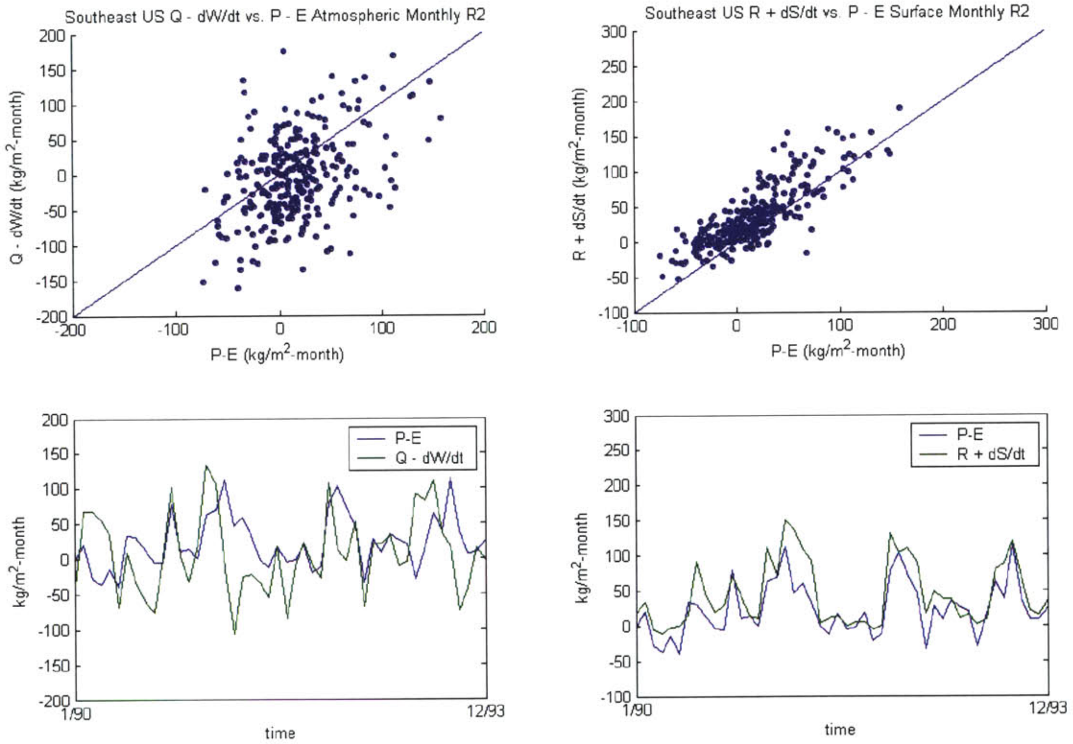


Figure 5-40: Southeast US Reanalysis-2 Monthly Atmospheric and Surface Balances

Table 5-2 shows the characteristics that can be changed in the different water balances of the SEUS control volume. The only difference between this control volume, and the control volumes represented in Table 5-1, is the elimination of the TRMM 3A46 precipitation dataset. For each of the yearly water balances there is significant room for improvement from the reanalysis. For the atmospheric balance, the bias can be completely eliminated by the use of a gauged precipitation dataset, the GPCC, to the Reanalysis-1 in Figure 5-41. This balance is taken over the GPCC TRMM dataset which is ranked highest by the criteria, because it contains more than the four years available in the GPCC TRMM product. A correlation coefficient of .4331 is found here, but the balance is unbiased (-1.65 kg/m^2-month) and the residual is fairly inactive. The surface balance can be improved by a change in methodology, rather than precipitation. Here storage is eliminated and the area runoff method is applied to the Reanalysis-2. This results in a very good yearly surface balance, which is rare in this study. The runoff correlates well with the P-E difference yielding a flat residual and a correlation coefficient of .8215. The bias is 8.68 kg/m^2-month with an absolute error of 9.51 kg/m^-month, indicating a fairly constant error for all points, thus good signal pick up. The storage change for the yearly balance is bad in this control volume, which is unusual as the storage usually is the only quantity holding the surface water balance together.

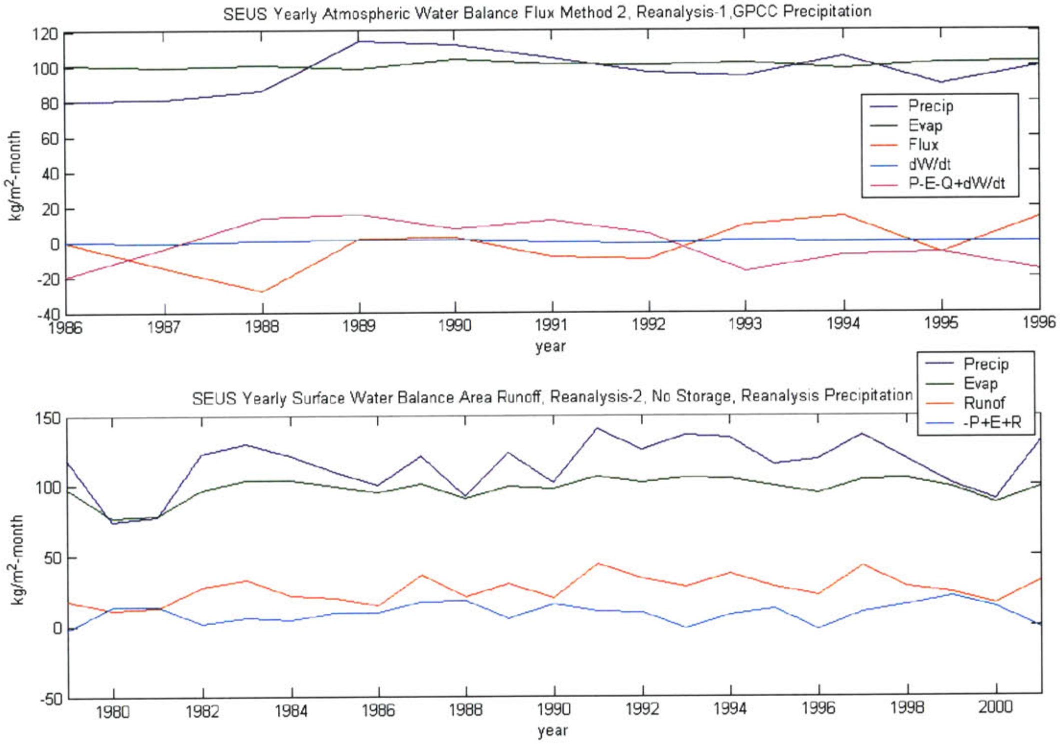


Figure 5-41: Southeast US Selected Yearly Water Balances

In Figure 5-42 improvements are made on the monthly time scale to the SEUS control volume. For the atmospheric balance the default reanalysis balances are among the best based on the evaluation criteria. Also among the best balances by the evaluation criteria are those resulting with TRMM 3B43 precipitation, among which the best of these uses the Reanalysis-2 and moisture flux Method 2. The big difference in this balance is that the bias is eliminated (down to 4.00 kg/m^2-month), while other water balance properties remain about the same with a correlation coefficient of .5098. The best suited water balance is passed over in this case as we are trying to use the TRMM 3B43 product as much as possible on the monthly time scale. The TRMM 3B43 precipitation dataset is consistent with the alternative precipitation datasets, and this may indicate a problem with the reanalysis.

In the case of the surface water balance we saw that the Reanalysis-2 provided a very good surface balance under default conditions. For this control volume, the balance can actually be improved by the evaluation criteria, applying the GHCN-CAMS gauge based dataset to the Reanalysis-1 and using the area runoff methodology, a 54 year and eleven month surface water balance is created which is almost as correlated and as accurate as the balance obtained previously for the Reanlaysis-2. The fact that such a good monthly surface water balance can be obtained using an alternative precipitation dataset means that the side flux of the surface balance does not correlate as well with the Reanalysis-1 precipitation. This monthly surface balance is a large improvement on the Reanlaysis-1 balance with a correlation of .7064 and a bias of only 4.40 kg/m^2-month.

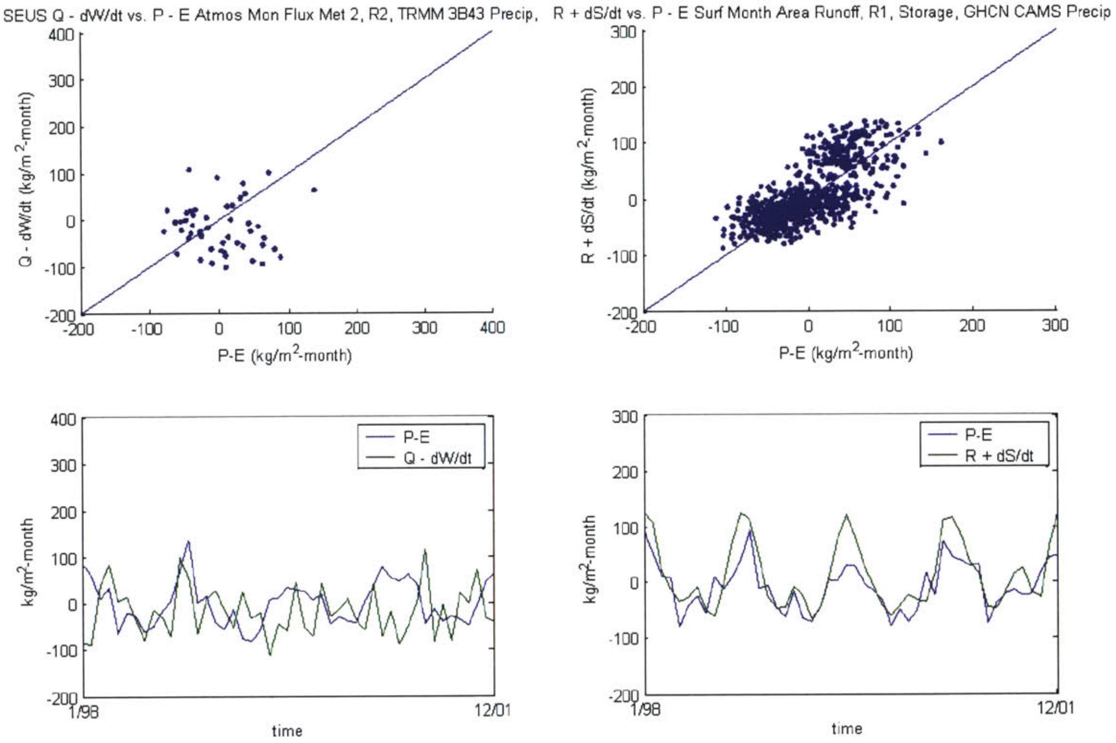


Figure 5-42: Southeast US Selected Monthly Water Balances

For the SEUS control volume the balancing of the monthly surface balance is a success. The atmospheric balance is less successful here and similar problems with the reanalysis data are found here that are found in all tropical control volumes thus far. There aren't many ways to deal with these problems as there are a limited amount of possibilities for variations of the atmospheric water balance.

5.7. Southwest United States

The Southwest United States control volume is the last box sized control volume analyzed in this work. It is selected as an alternative 7.5 degree control volume with different hydrological characteristics from the other smaller box control volumes looked at so far. The Southwest United Sates is an arid mountainous region. However it is in the United States where accurate measurements should exist over the reanalysis time period.

Figure 5-43 shows the yearly balances for the SWUS control volume using the Reanalysis-1. In both balances we see major problems. In the atmospheric balance there are annual precipitation and evaporation of around 20 to 30 kg/m^2-month. However, the moisture flux calculation is on the order of -100 kg/m^2-month for each point. It is hard to tell here but there is a faint linear correlation between the P-E difference and the side flux term (mostly moisture flux on the yearly time scale), with a correlation coefficient of .1026 and a regression slope of .5483. There is clearly no balance achieved here though, as results are similar to those obtained in the Larger US control volume. The surface balance is no better. The failure of the Reanalysis-1 to pick up any runoff variation on an annual basis still exists, although this result is not wholly unrealistic given the area under consideration being largely a desert. The annual storage changes clearly govern the behavior of the residual term. A low bias is found in this balance only because the change in storage over the length of the water balance is zero.

Moving to the Reanalysis-2 in Figure 5-44 the same properties are found for the atmospheric balance. Although by the P-E data the moisture flux should be slightly negative over this region, it shouldn't be as negative as it is and the moisture flux observed is unrealistic. Any land mass would not be such a source of moisture to the atmosphere. A decent regression slope of 1.11 and correlation coefficient of .2171 are found for this control volume showing there is some correlation between the two sides of this balance, more so than there was in the Reanalysis-1, however the bias is increased by an additional 30 kg/m^2-month.

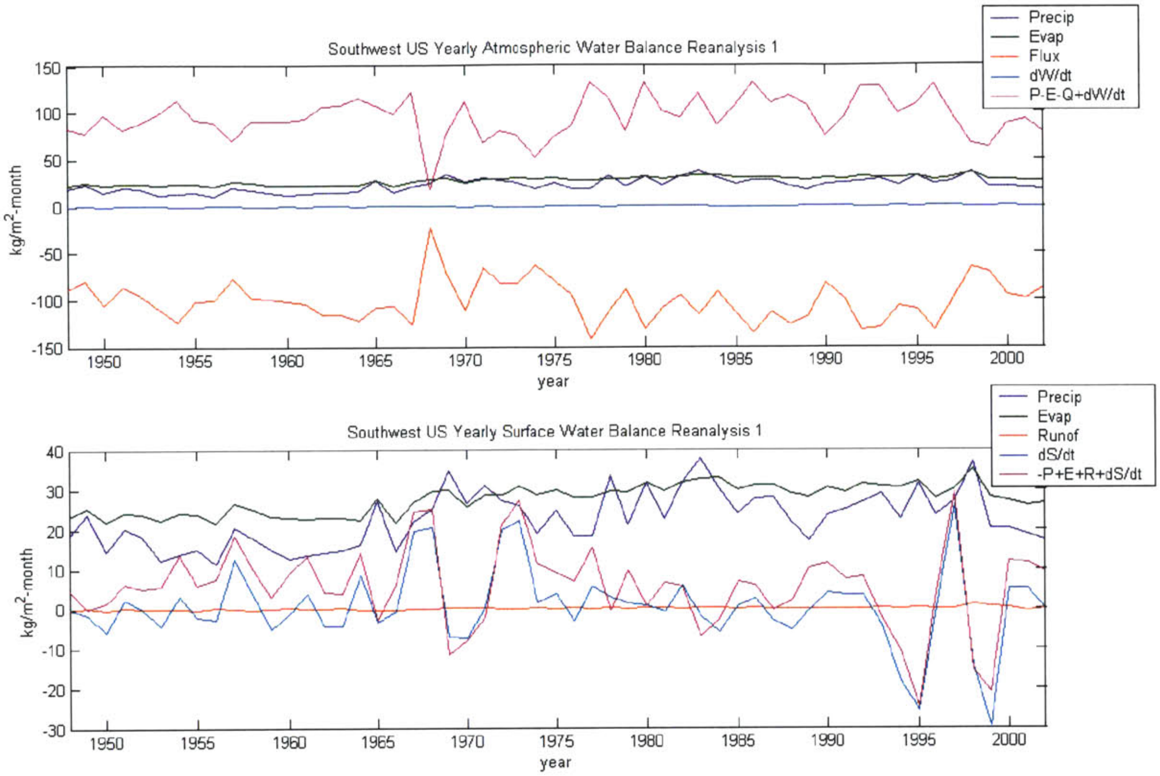


Figure 5-43: Southwest US Reanalysis-1 Yearly Atmospheric and Surface Balances

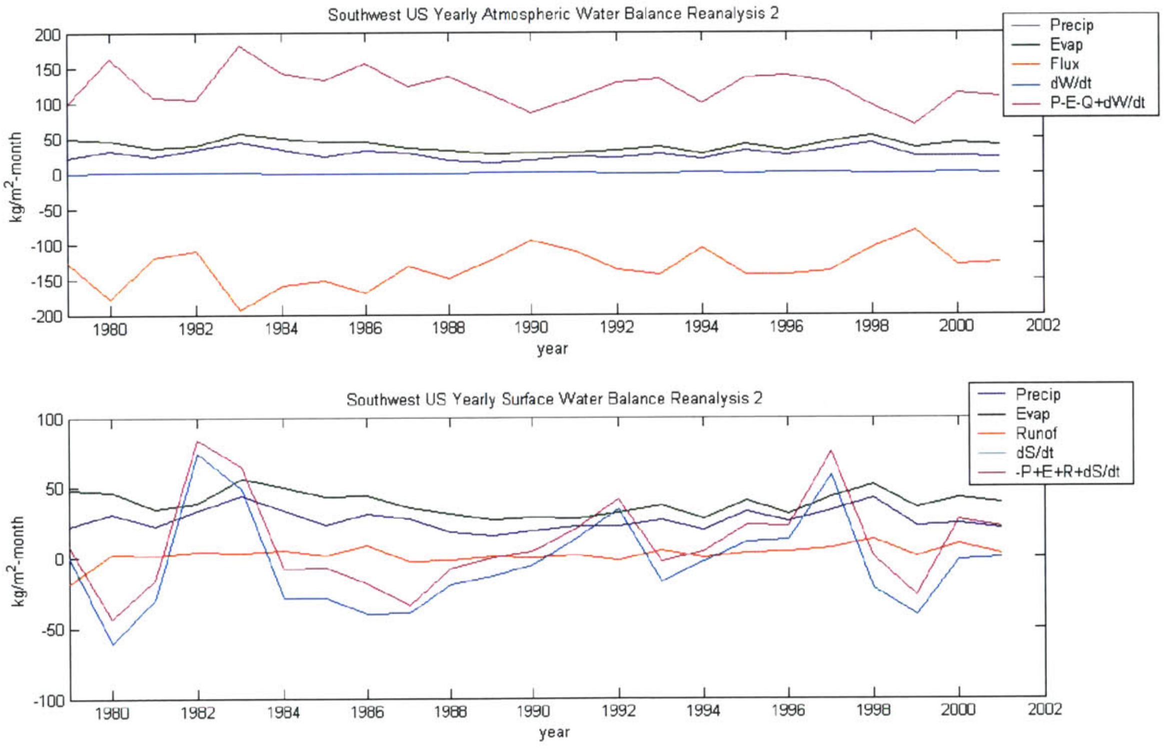
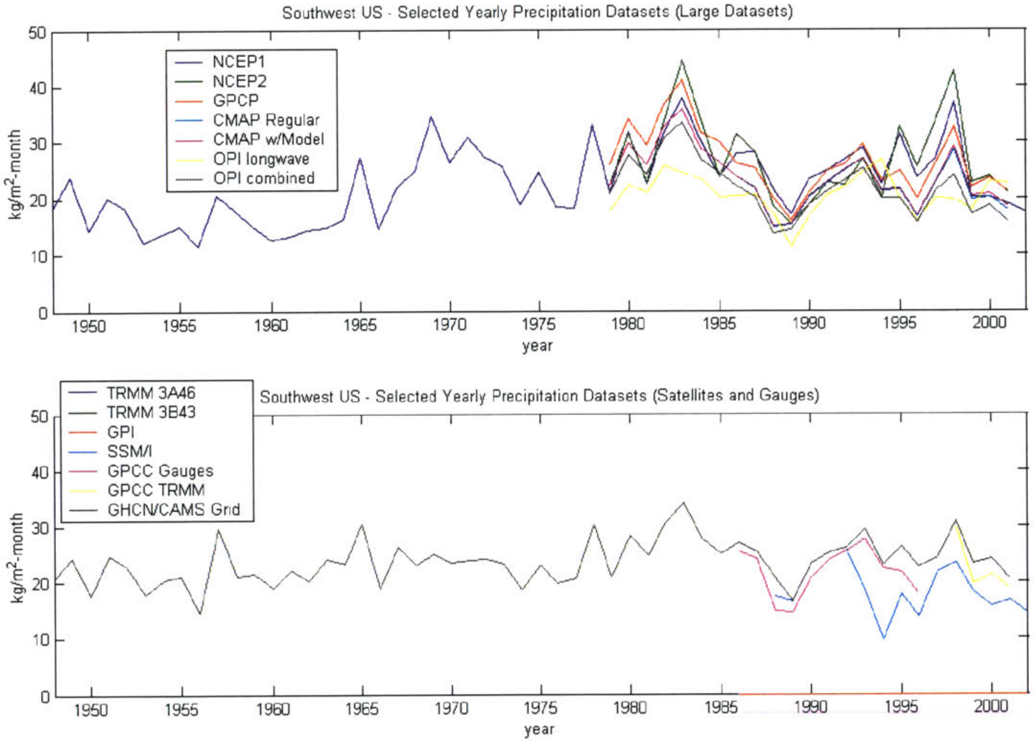


Figure 5-44: Southwest US Reanalysis-2 Yearly Atmospheric and Surface Balances

In Figure 5-45 the different sources of precipitation for the SWUS control volume are plotted as their yearly time series. The magnitude of the precipitation in the SWUS is much lower than in any other control volume looked at so far. In the top panel the larger precipitation datasets agree well on an annual basis, though variability exists which is fairly high compared to the low annual values. There again appears to be a slight shift in the Reanalysis-1 precipitation and an increase in precipitation from beginning to end. This trend can also be seen slightly in the gauge precipitation. In the annual atmospheric balance in Figure 4-129, precipitation starts out slightly below evaporation which stays constant for the time series, then gradually rises above the evaporation. Unlike in other control volumes though, there is no corresponding moisture flux trend (in other words the moisture flux matching its own reanalysis precipitation), and any trend observed would be of little meaning anyway, considering the error found in the atmospheric balance. No major differences appear in the second half of the precipitation record. It should be noted here that several precipitation datasets in the bottom portion of this graph are unavailable for this control volume. The GPI, TRMM 3B43, TRMM 3A46 do not apply here as the control volume contains points north of 40 degrees N latitude.


Southwest US - Selected Yearly Precipitation Datasets (Large Datasets)

Southwest US - Selected Yearly Precipitation Datasets (Satellites and Gauges)

Figure 5-45: Southwest US Different Sources of Yearly Precipitation

Now considering the default reanalysis monthly water balances, the Reanalysis-1 balances are plotted in Figure 5-46. The atmospheric balance presented on the left bears no resemblance to balance, as there is no correlation between the bottom flux and the atmospheric flux. The moisture flux cycle is wildly negative. An absolute error of 122 kg/m^2-month is observed, which is a significant imbalance given the magnitude of the precipitation and evaporation terms. Meaningless regression statistics and a negative correlation coefficient are also found. The surface balance shown on the right indicates more encouraging results. The seasonal cycle is picked up resulting in a correlation between the bottom and surface fluxes. The amplitude of the surface side flux is very high in this case, likely caused by the fluctuation in surface storage which was observed in the yearly balance. Such a large cycle is unrealistic in an arid region such as this one. Encouraging balance statistics are found here, a bias of just 4.75 kg/m^2-month and a correlation coefficient of .7649 with a regression slope of 2.96.

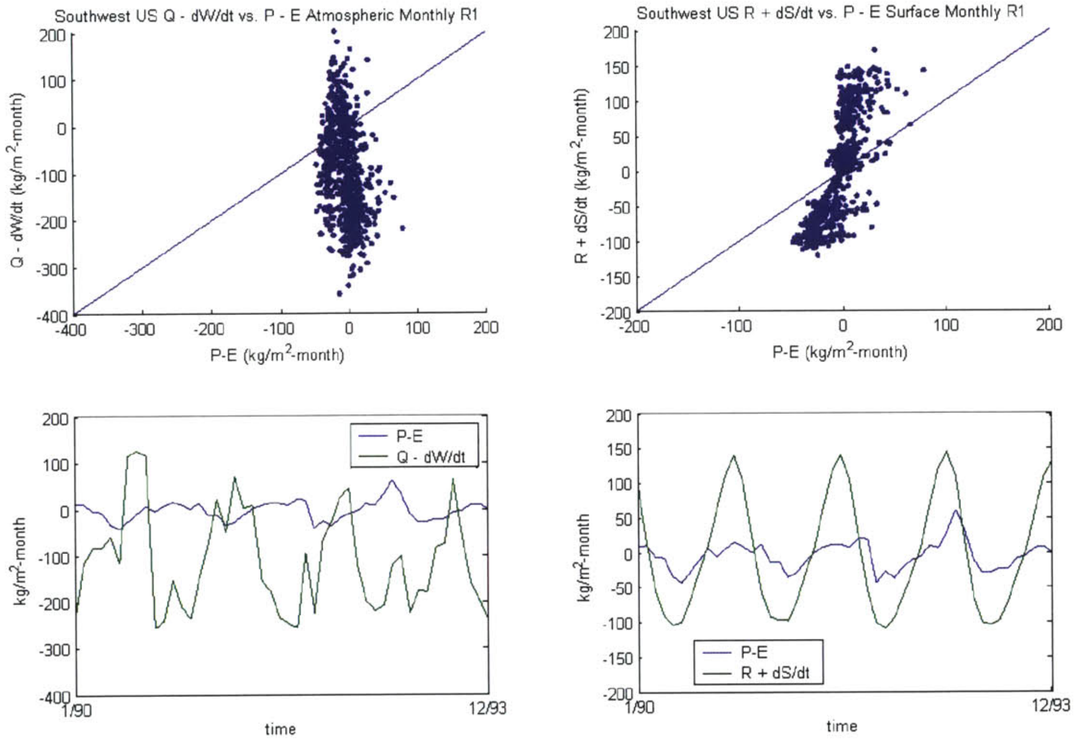


Figure 5-46: Southwest US Reanalysis-1 Monthly Atmospheric and Surface Balances

In Figure 5-47 the same balances are conducted with the Reanalysis-2 data under default conditions. Little change is observed in the atmospheric balance as the correlation presented and example plot below look nearly exactly the same as the Reanalysis-1. The absolute error in this case is increased to 141 kg/m^2-month, and again unrealistic regression and correlation statistics are obtained. The interest here is the sharp improvement of the monthly surface balance between the Reanalysis-1 and the Reanalysis-2. The surface flux seasonal cycle goes from having too great amplitude to an almost correlated amplitude with the bottom flux seasonal cycle. This bias is unfortunately increased to 13.23 kg/m^2-month, which is significant for the SWUS control volume, however we find a regression slope of 1.17 and a correlation coefficient of .7420.

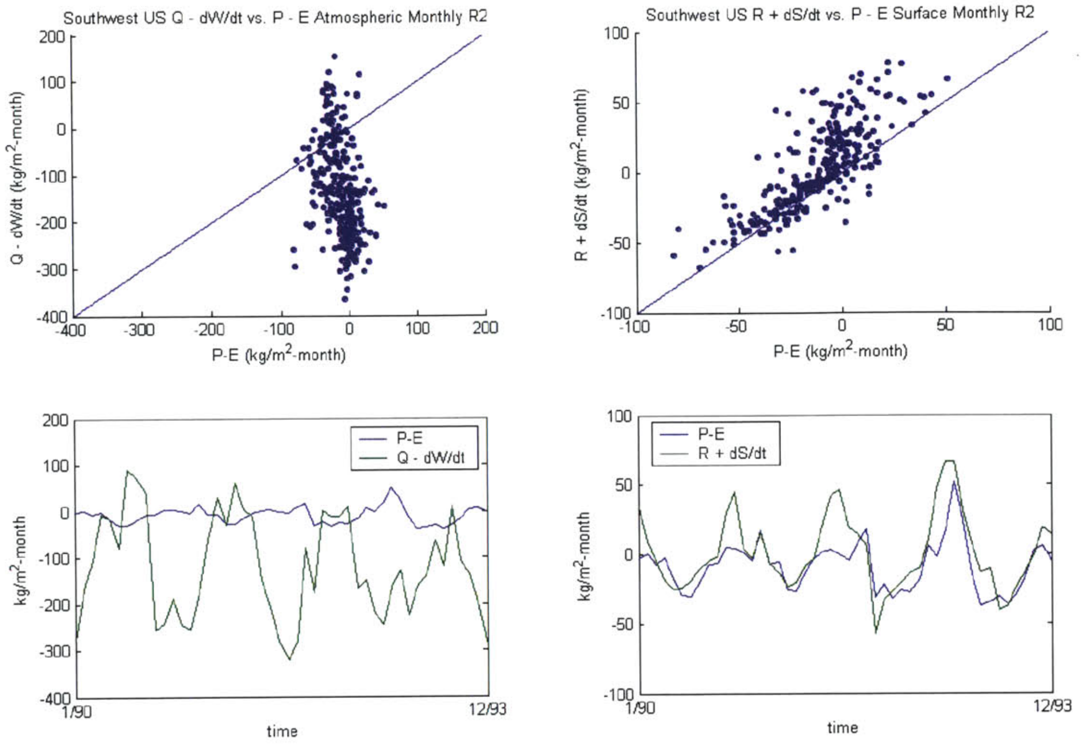


Figure 5-47: Southwest US Reanalysis-2 Monthly Atmospheric and Surface Balances

Improvements to this water balance derive from a unique amount of iterative changes in balance characteristics, as presented in Table 5-3. Three of the thirteen precipitation datasets are eliminated from consideration. No other characteristics are affected. Improving the atmospheric balance is likely an exercise in futility. Looking at the results of the evaluation, the top rated balances use the GPCC TRMM precipitation which is considered too short a time series (4 years), for a meaningful yearly balance. The next best ranked balance is unfortunately the Reanalysis-1. For comparison purposes we present the 4th highest ranked balance, applying SSM/I precipitation to the Reanalysis-1 balance, using moisture flux Method 1. A slight correlation can be visualized in the top panel (Figure 5-48) between the moisture flux and the P-E quantity as they increase slightly over the time series, but in summary the yearly atmospheric balance for this control volume can not be calculated accurately.

For the surface balance, the yearly reanalysis balances can be improved by using the evaluation criteria. Here we change to the area runoff method applied to the Reanalysis-1, with storage included, and the GPCC precipitation utilized. This scenario is selected as it is the highest ranked set of conditions which have reasonable results for each of the evaluation criteria. A bias of 3.34 kg/m^2-month is obtained, an improvement over previous default conditions, and a near closure in the long term. The correlation coefficient is a weak .1913, and the inconsistencies in this water balance can be seen in the bottom portion of Figure 5-48 as the residual is still controlled by the change in storage, but to a lesser extent.

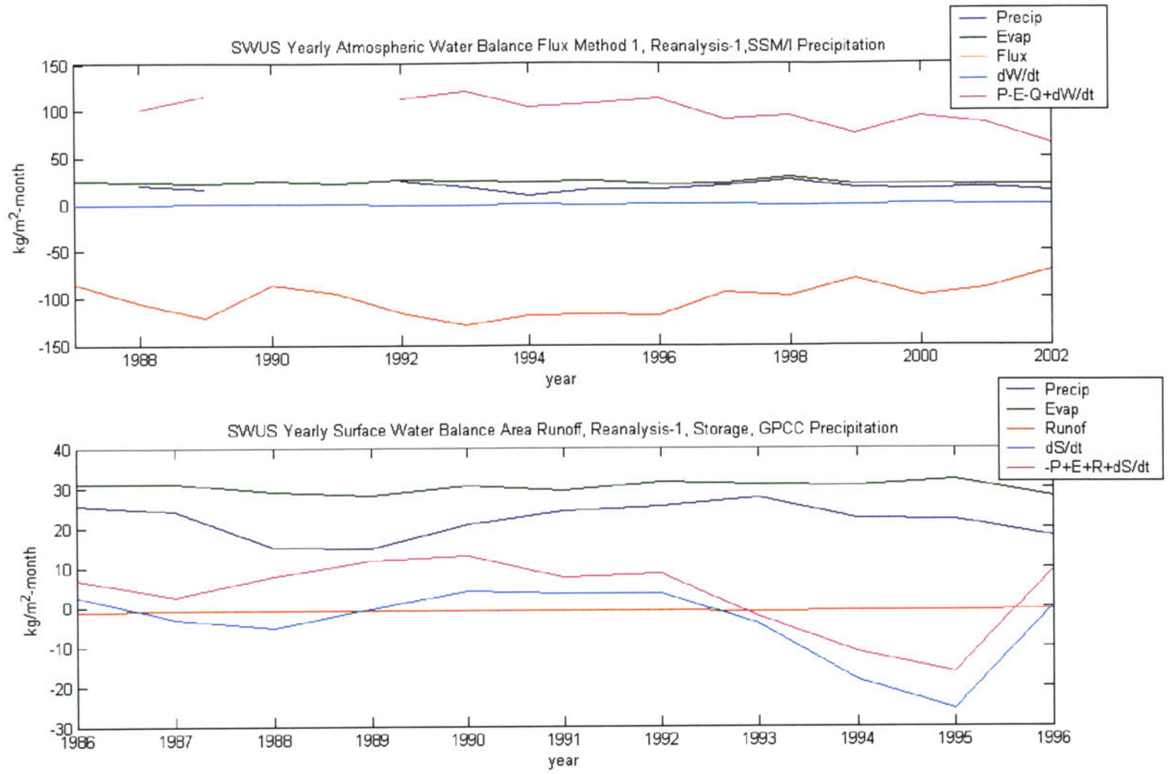


Figure 5-48: Southwest US Selected Yearly Water Balances

In Figure 5-49 improvements are presented for the monthly water balances for the SWUS control volume. For the atmospheric balance the reanalysis balances are ranked as some of the poorest by the evaluation criteria, and improvements can be made by changing to moisture flux Method 1, and using the recent gauged precipitation data set, the GPCC TRMM as applied to the Reanalysis-1. The bias of the water balance remains very high, however a regression slope of .9855 is found with a correlation of .3289. Using moisture flux methodology 2 a strong seasonal cycle was found which was out of phase and amplitude with the P-E seasonal cycle. The sample points shown on the bottom left of this plot do not have this cycle which helps make this balance better. However, with a bias of 82 kg/m^2-month being greater than either the precipitation or evaporation terms by a factor of two, we are unable to effectively close the atmospheric balance.

For the surface balance a good balance was found on the monthly time scale for the Reanalysis-2 default conditions, which ranks among the best balances by the evaluation criteria in Appendix A. This balance can be improved by changing from the linear method to area method of runoff, resulting in the top ranked monthly surface balance by the evaluation. The bias is improved to 9.61 kg/m^2-month with a lower absolute error and comparable regression statistics. The amplitude of the surface flux is reduced by the inclusion of routing data by this method, and a tight correlation results.

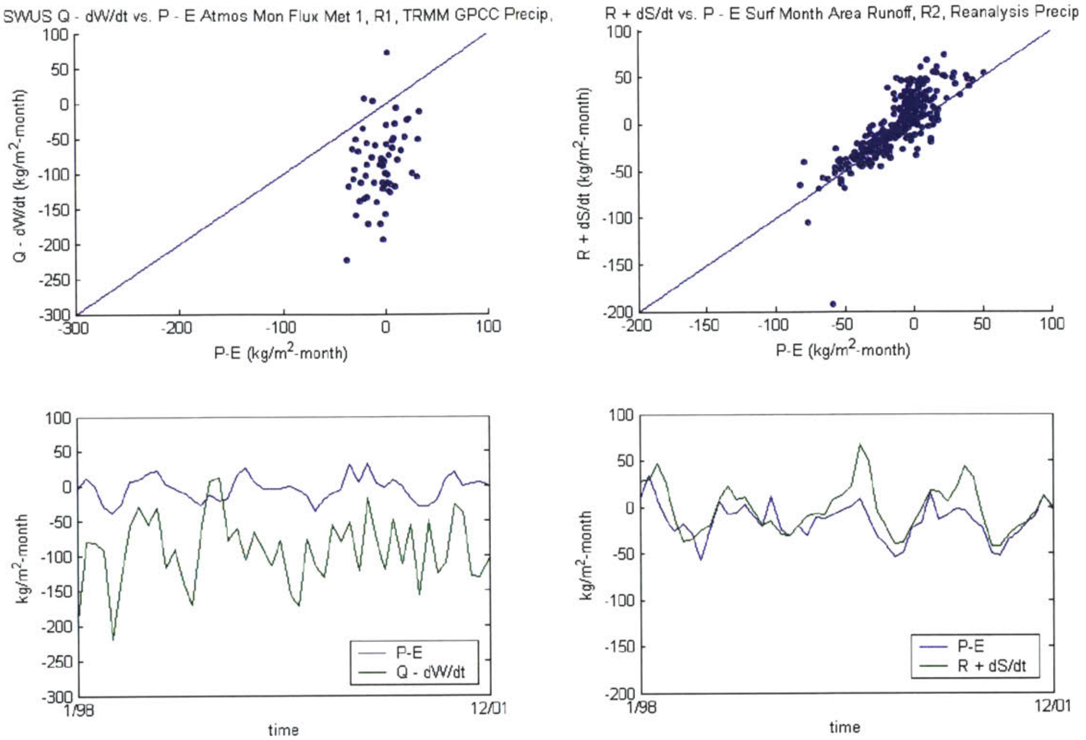


Figure 5-49: Southwest US Selected Monthly Water Balances

For the SWUS control volume, the only great success is computing the monthly surface balance. All other balances contain significant errors especially in the atmospheric balances, likely caused by the geographic features of the region. It is difficult to complete water balances in this region because of the relatively small magnitude of the side flux terms (moisture flux and runoff).

5.8. Amazon River Basin

The Amazon River Basin control volume is the first of four basin control volumes to be presented. This control volume is the largest considered in this study and includes several of the box control volumes which have already been discussed (Rondonia, Larger Rondonia, and Northwest Brazil). It contains very jagged edges which could present difficulties in calculating moisture flux. In the surface balance case, surface runoff data from the RIVDIS dataset is used as the default, while when improving the balance, the reanalysis runoff is used. The surface runoff limits the temporal length for the surface water balance, but not the atmospheric balance.

The default yearly balances for the Reanalysis-1 are shown in Figure 5-50. For the atmospheric balance we see signs of success. While evaporation stays constant for the most part, precipitation peaks in the early 1950's and in the second half of the balance. The peaks in the moisture flux match this behavior, but the amplitudes do not agree. The second half of the period, especially between 1975 and 1995, is relatively well balanced though year to year signals aren't picked up well. The bias of this balance is 46.43 kg/m^2-month, and a good correlation coefficient of .6485 is found with a regression slope of 2.05 indicating the amplitude of moisture flux is about double what it should be. For the surface balance we see a noticeable change from typical default balance results. Because of limitations in the surface runoff data, runoff is only available from 1970-1996, thus 27 years are represented here. The surface runoff here is much higher than was ever seen in box control volumes and the change in surface storage is no longer controlling of the balance which also was typical of the surface balance in box control volumes. As far as balance, the runoff is curiously high compared to the P-E cycle resulting in a bias of 54.96 kg/m^2-month, with an identical absolute error. There is virtually no regression slope for this balance.

Considering the Reanalysis-2 in Figure 5-51 the yearly atmospheric balance looks about the same as it did in the Reanalysis-1. By the evaluation criteria, the water balance is slightly better in the Reanalysis-2 with a bias of 42.47 kg/m^2-month and a greater correlation coefficient of .8590. The residual seems to be highly variable though, and the better balance is likely the result of eliminating the first half of the data. The surface balance is truncated at the beginning, by the start of the Reanalysis-2 (starts in 1979) and the end of the surface runoff data (ends in 1996). In this case the change in storage is a larger factor in the balance as the bias is reduced to 42.32 kg/m^2-month and a correlation coefficient of .3186 is found, both improvements on the Reanalysis-1. The change in storage fluctuations on a year to year basis seem to be necessary in order to show a relationship between runoff and the P-E difference.

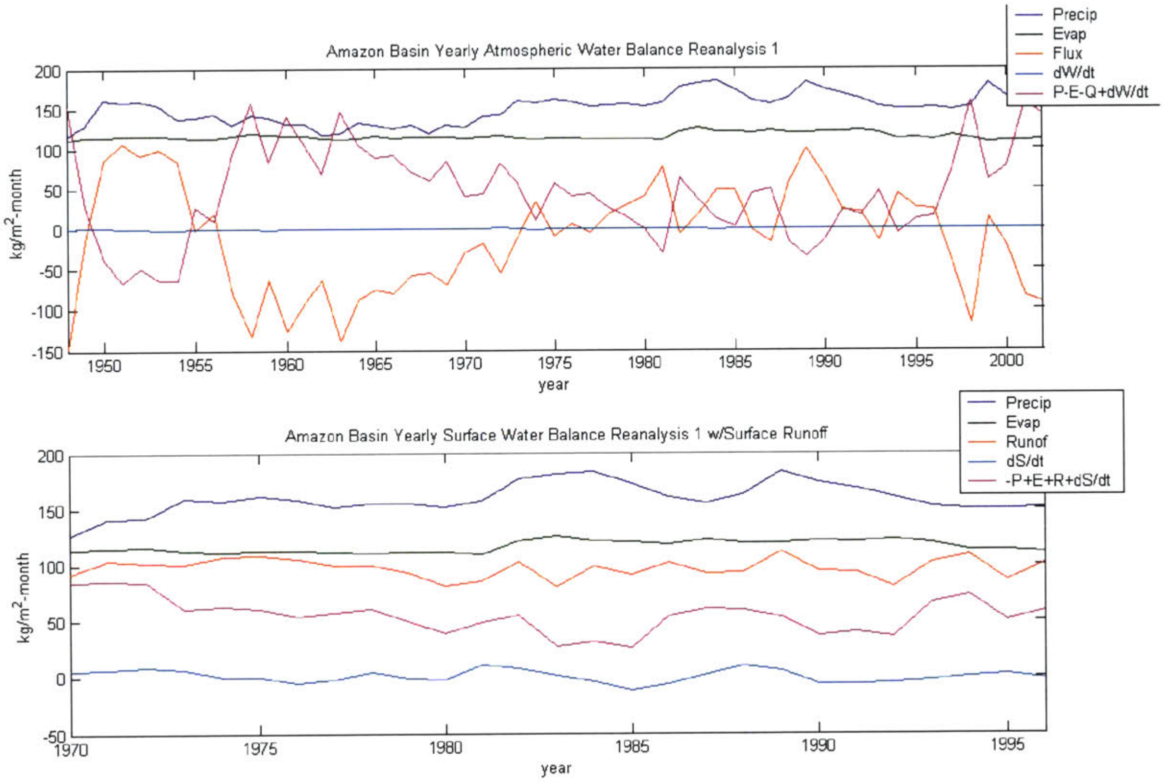


Figure 5-50: Amazon Basin Reanalysis-1 Yearly Atmospheric and Surface Balances

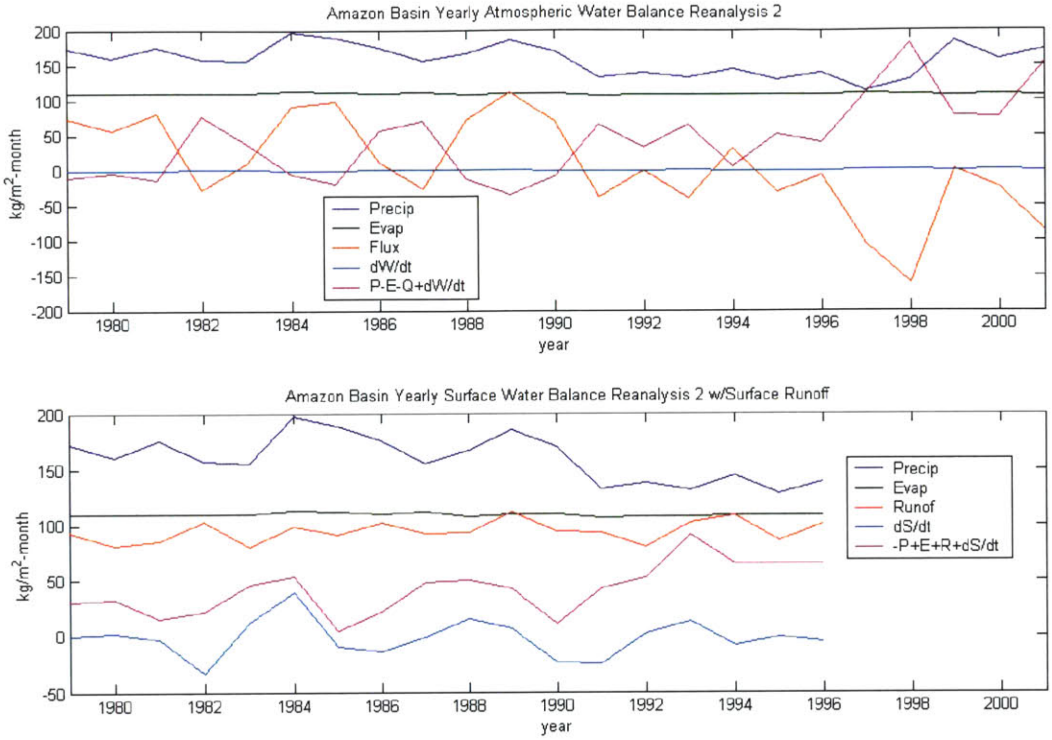


Figure 5-51: Amazon Basin Reanalysis-2 Yearly Atmospheric and Surface Balances

A closer look at the annual precipitation time series for various precipitation datasets over the Amazon Basin control volume are shown in Figure 5-52. We again see a trend repeated in all of the Amazon region control volumes. In the second half of the Reanalysis-1 time series there is an increase in annual precipitation, which is confirmed by the Reanalysis-2. Nevertheless, in the long gauge dataset and the smaller datasets no precipitation change is found. There is considerable variability among the satellite and gauge precipitation datasets which is notable. One would think such variability would be reduced in such a large control volume.

In Figure 5-53 the monthly water balances are shown for the Reanalysis-1. In both the atmospheric and surface balances, the seasonal cycle is picked up well between the P-E cycle and the side fluxes in each balance. However, other problems exist. In the atmospheric balance, a regression slope of 3.99 is found between the two sides of the balance with a correlation coefficient of .8113. This indicates the amplitude of the moisture flux seasonal cycle is way too strong. The absolute error is three times the bias indicating large errors at specific times which get averaged out over the duration of the balance. For the surface balance we see a good 1:1 correlation between the two sides of the balances, but a bias as in the yearly time scale. The absolute error and bias are nearly equal for this balance.

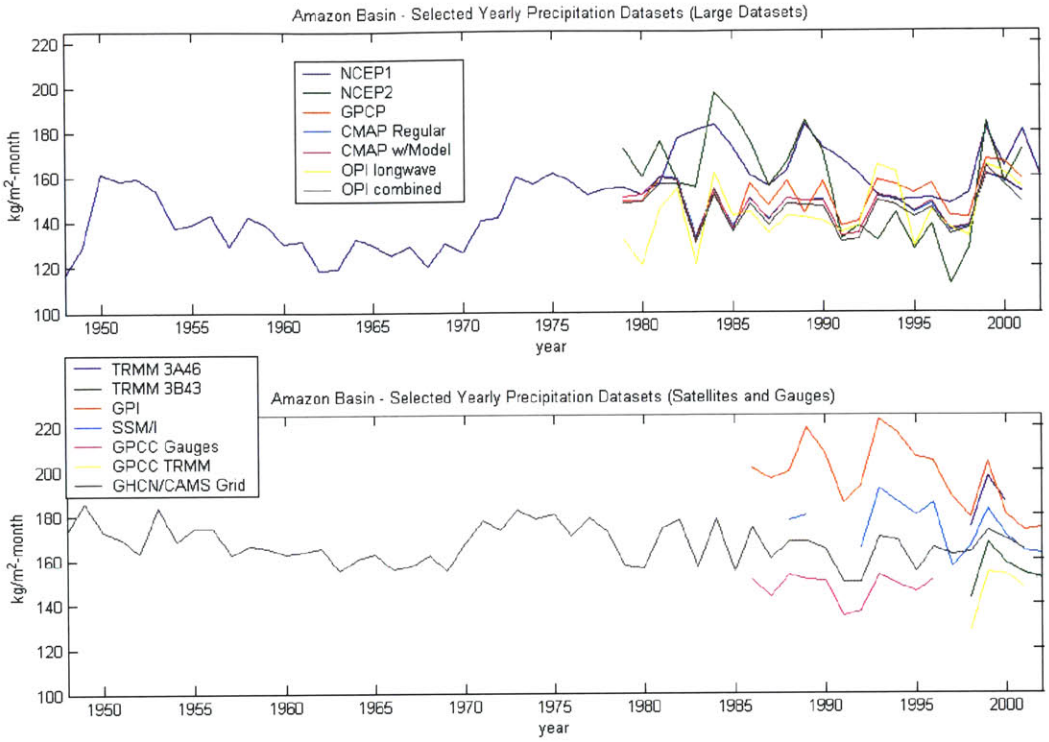


Figure 5-52: Amazon Basin Different Sources of Yearly Precipitation

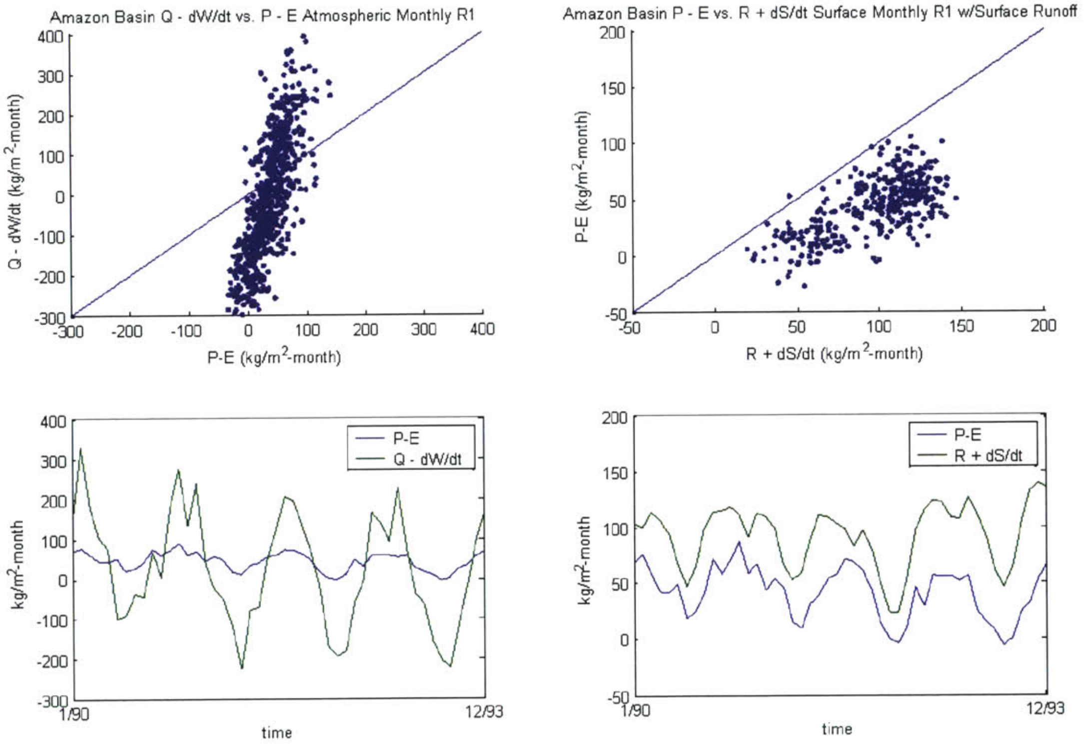


Figure 5-53: Amazon Basin Reanalysis-1 Monthly Atmospheric and Surface Balances

The Reanalysis-2 balances are shown in Figure 5-54, where many of the same observations can be made as in the Reanalysis-1 balances. In the atmospheric balance the regression slope and the correlation coefficient are improved (3.28 and .8907 respectively) as both reanalysis balances are ranked the same by the evaluation criteria. The surface balance is slightly improved in the Reanalysis-2 as the storage cycle is improved to match the surface runoff obtained with the bias being reduced by 10 kg/m^2-month, but still being a significant 44.0 kg/m^2-month, with an absolute error of 50.8 kg/m^2-month. The seasonal cycle is captured well by all of the reanalysis balances. However this cycle is particularly strong over the Amazon River Basin and therefore should be apparent in any monthly dataset of such variables.

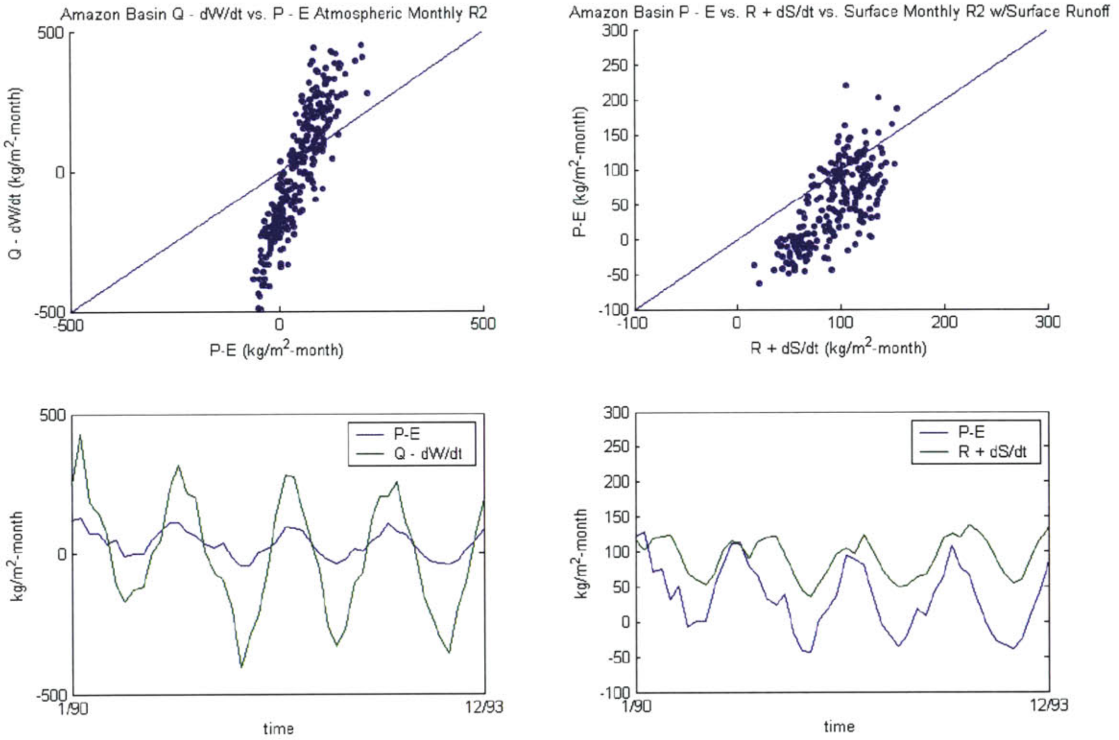


Figure 5-54: Amazon Basin Reanalysis-2 Monthly Atmospheric and Surface Balances

The Amazon and Porto Velho control volumes contain the maximum amount of scenarios for basins, with possibilities outlined in Table 5-5. For both the yearly and monthly atmospheric water balances the number of scenarios is the same as only two characteristics can be changed, the reanalysis (2) and the precipitation dataset (13). This results in 26 possibilities. For the surface balances a variety of possibilities still exist. For the monthly balance instead of three types of runoff methodologies, we in effect have two runoff methodologies, the surface runoff, or the reanalysis runoff which was derived using the linear runoff method. Because of the geometry involved with these control volumes it was deemed too computationally intensive to try every runoff methodology for each basin. There are still changes in reanalysis (2), and storage method (6), as in the case with the box control volumes. For the precipitation, we have different possibilities for each of the runoff methodologies. Using the reanalysis runoff all precipitation datasets are valid because the balance can be calculated through 2002. However, in the case of surface runoff the TRMM precipitation datasets are useless since runoff data is only available through 1996, thus only 10 precipitation possibilities exist in this case. The result then is 276 different scenarios for the monthly balance. For the yearly balance 92 possibilities are available once lags are not considered.

Improvements to the yearly water balances are presented in Figure 5-55. For the atmospheric balance the criteria indicate the most improvement to the balance can be made by applying the CMAP precipitation dataset to the Reanalysis-1. By this application the bias is reduced to 17.0 kg/m^2-month though the correlation coefficient stays low at .2676. Looking at the various scenarios for this balance good correlations tend to correspond to scenarios with high biases. The residual signal here has less amplitude than the moisture flux indicating some correlation which is impressive considering the difficulty hypothesized in calculating moisture flux through such a control volume. The surface balance is improved by eliminating change in storage and applying GPI precipitation to the Reanalysis-2 with surface runoff. The results of this water balance are very appealing. The higher GPI precipitation matches the surface runoff, which was deemed too large in the reanalysis. Change in storage over such a large basin should be zero over a number of years, and with a bias here of less the 1 kg/m^2-month we have successfully completed a water balance over the Amazon River Basin using this set of conditions. A good regression slope and correlation coefficient are also found.

For the monthly cases two new water balances are presented in Figure 5-56. For the atmospheric balance the CMAP precipitation dataset is applied to the Reanalysis-1. This balance was selected as the evaluation criteria fail to capture some of the differences in bias and slope, which were the weaknesses of the original balance. The regression slope is reduced in this balance to 1.95 and the bias reduced to 18.6 kg/m^2-month. All possibilities yield a slope greater than one, as the moisture flux seasonal cycle is set, and no P-E seasonal cycle can be fit to match it. It is very likely the moisture flux seasonal cycle is wrong in this balance and can't be determined by these means available in this work. The surface balance is again improved, as in the yearly balance, by the application of a satellite based precipitation dataset. In this case the SSM/I yields higher monthly precipitation numbers that match the surface runoff. A bias of 24.36 kg/m^2-month and a correlation coefficient of .7516 are obtained which improve the balance. Several points in the scatter plot of this balance are outliers. These points correspond to the holes in the SSM/I data and these points are removed when the data analysis is conducted.

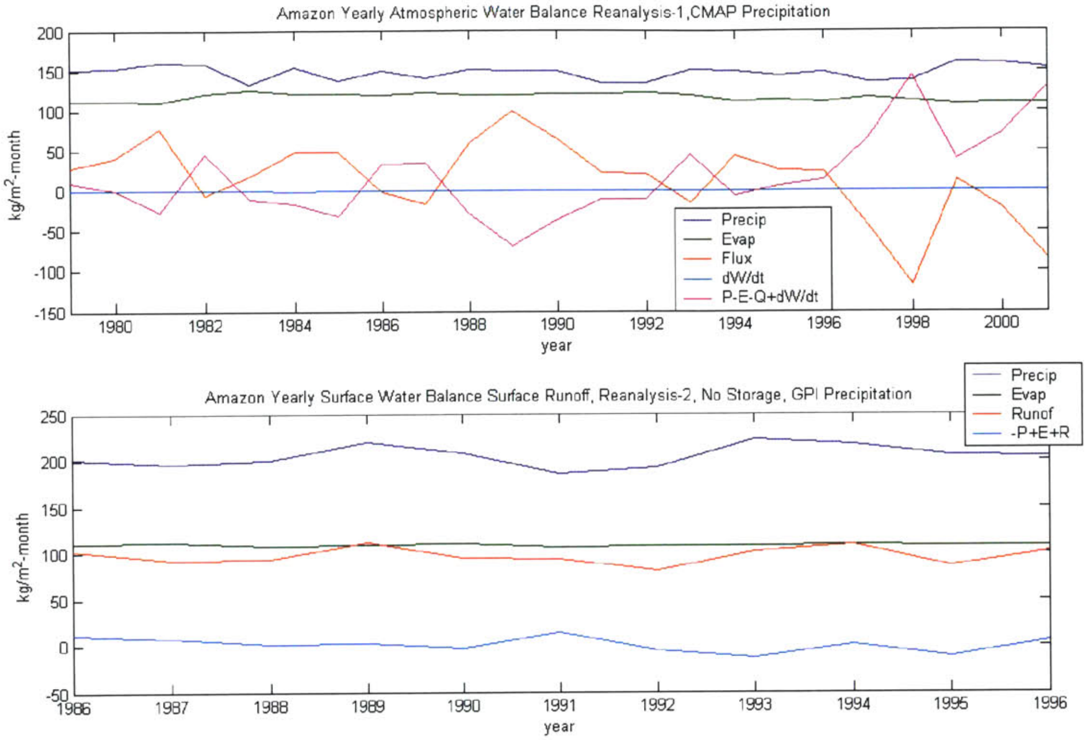


Figure 5-55: Amazon Basin Selected Yearly Water Balances

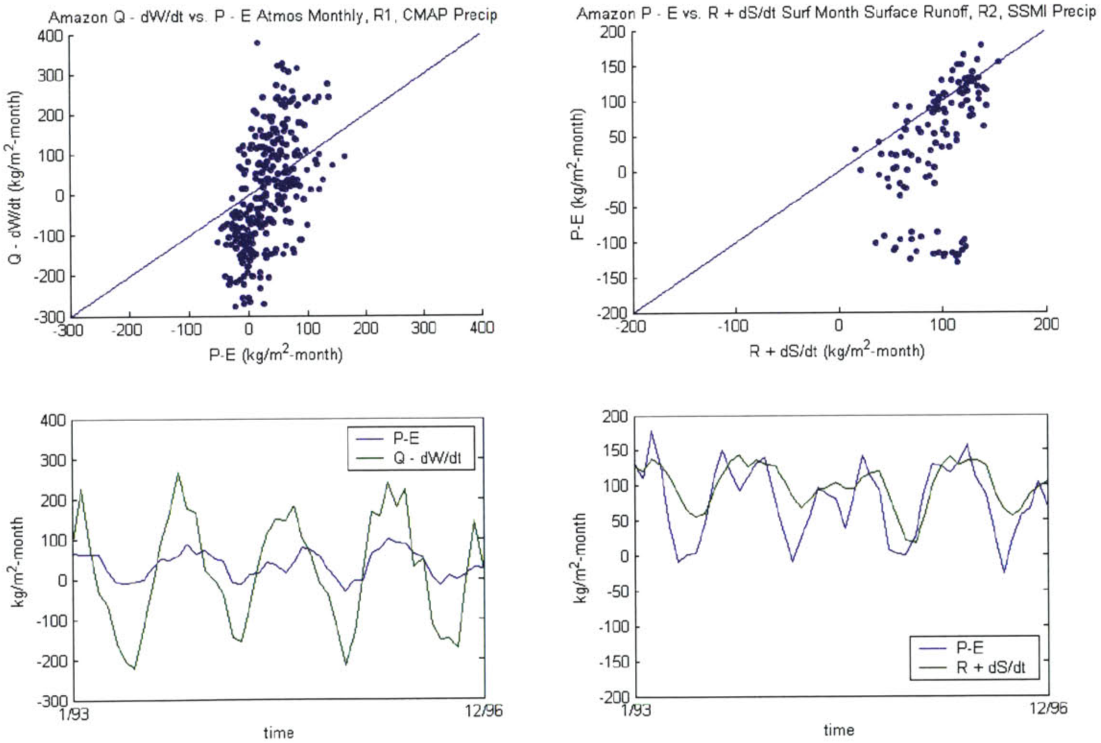


Figure 5-56: Amazon Basin Selected Monthly Water Balances

For the Amazon Basin it is difficult to close the atmospheric water balance on a consistent basis so the residuals do no change depending on the year or especially the month. It is unclear whether the relationships that do exist are based on the strong seasonal cycle of the data, or the actual correlation of the data. Biased surface balances are found in the reanalysis; however these balances can be improved especially in the yearly time scale with alternative precipitation sources. Such a surface balance utilizes only evaporation and change in storage from the reanalysis.

5.9. Porto Velho River Basin

The Porto Velho basin control volume is a sub basin of the Amazon Basin control volume comprised of the upper reaches of the Madeira River. A gauging station of this river is located in Porto Velho, Brazil in the northern portion of Rondonia. Therefore much of the Porto Velho control volume covers the same area as the Rondonia control volume. The Porto Velho control volume is only about a 4th of the size of the Amazon basin and extends into the Andes Mountains. The length of record constraints apply to the runoff data as in the Amazon River Basin, as the RIVDIS is again used.

The default Reanalysis-1 yearly balances are shown in Figure 5-57. In the atmospheric balance some of the same properties are found as in the Amazon basin. The moisture flux signal correlates well with the precipitation signal; however the amplitude of the moisture flux is much too strong on a year to year basis. This relationship breaks down in the second half of the balance. As in the rest of South America, precipitation seems to increase with time for this control volume. The signal in the two sides of this balance is picked up well as the correlation coefficient of this balance is .7538, however the regression slope is a high 3.73, with a RMSE of 118.2 kg/m^2-month. For the surface balance, the runoff is again high compared to differences in precipitation and evaporation, resulting in a significant residual. The surface balance seems a more accurate way to assess the water balance as errors are less significant. The surface runoff data should match the P-E cycle well in the long run; however this is not seen in either the Amazon or Porto Velho basins. A bias of 32.18 kg/m^2-month is observed in the Reanalysis-1 surface balance with a correlation coefficient of .3174.

Moving to the Reanalysis-2 in Figure 5-58 the moisture flux time series improves, but is still wildly amplified compared to the P-E difference. The regression slope is reduced to 2.20 with a weaker correlation coefficient of .5314 and an increased RMSE of 139.4 kg/m^2-month. Again, it is difficult to calculate the moisture flux for a basin sized control volume as the resolution of the boundary is finer than the resolution of the data used for the calculation. The Reanalysis-2 surface balance is a clear improvement from the Reanalysis-1. The bias is reduced to -5.71 kg/m^2-month which is low compared to magnitude of values of different quantities in the water balance of this control volume. The correlation is weak here at .2941, and the residual appears to be controlled by the change in storage. Perhaps this balance can be improved by removing this storage.

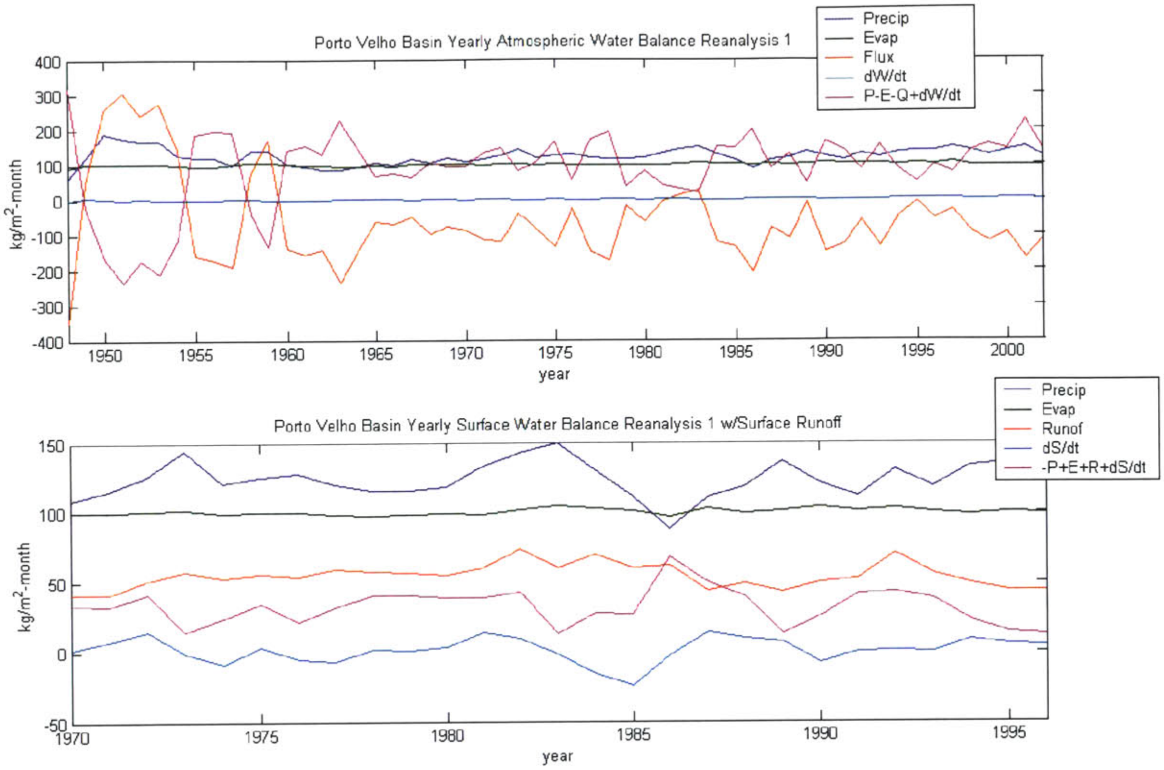


Figure 5-57: P. Velho Basin Reanalysis-1 Yearly Atmospheric and Surface Balances

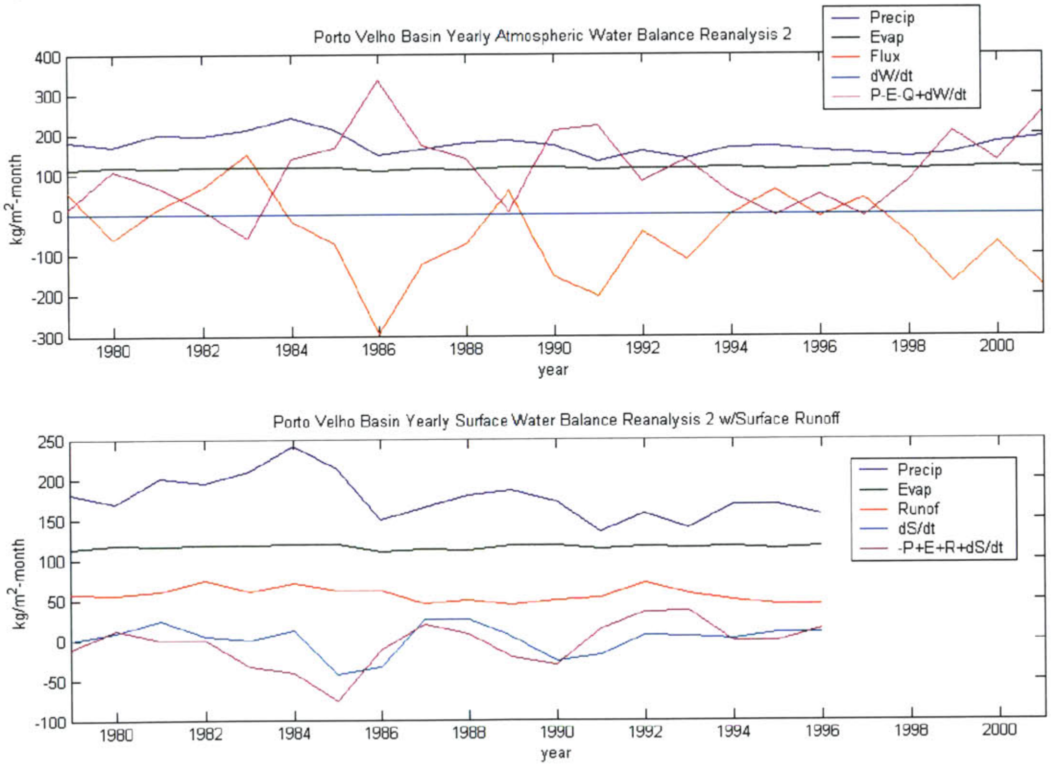


Figure 5-58: P. Velho Basin Reanalysis-2 Yearly Atmospheric and Surface Balances

The annual precipitation time series for the Porto Velho Basin are shown in Figure 5-59. As stated before we see the slight increase in the Reanalysis-1 precipitation. The trend is not observed in the GHCN-CAMS dataset, however in this case the gauge dataset is likely of not great quality given the remoteness of this control volume. Alternative large precipitation datasets continue to follow in line with the early Reanalysis. Large discrepancies are found with increased precipitation in the satellite precipitation datasets and in the Reanalysis-2. As in the case of the Amazon basin, these higher precipitation readings correspond well to the surface runoff data provided, which should be fairly accurate. There is discrepancy among satellite estimates. The GPI seems to fit the surface balance well, but the more modern TRMM 3B43 does not.

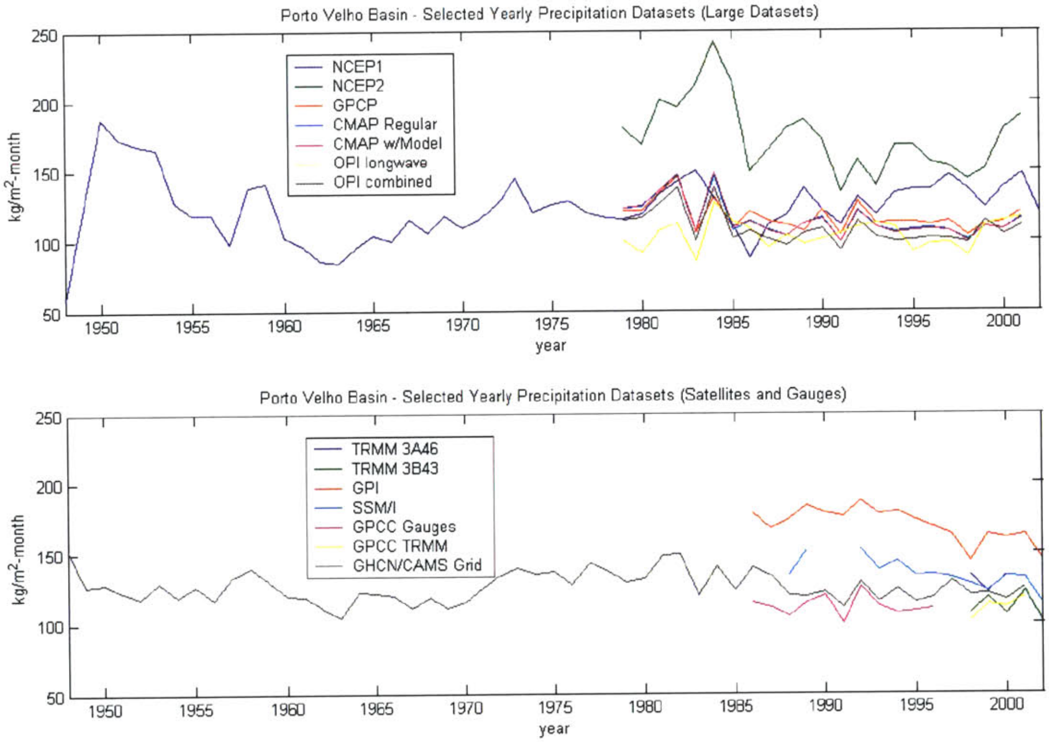


Figure 5-59: P. Velho Basin Different Sources of Yearly Precipitation

In Figure 5-60 the default monthly balances for the Reanalysis-1 are presented. In the example plot of the atmospheric balance a strong negative bias and exaggerated amplitude are seen. The regression slope of this balance is found to be 3.37 though a correlation coefficient of .6099 is found as there is good point to point correlation in this water balance. A very large RMSE is found, 205.5 kg/m^2-month, for this balance. For the surface balance a similar problem arises with the side flux having a higher amplitude that the P-E cycle. Because of the strength of the seasonal cycle the correlation coefficient is found to be .7634, but with a regression slope of only .38 and a bias of 31.21 kg/m^2-month.

In the Reanalysis-2 balances, shown in Figure 5-61 changes are observed in both balances. In the atmospheric balance point to point correlation is again seen with a regression slope of 2.41

(improved), but an RMSE of 270.9 kg/m^2-month with similar residual statistics. The moisture flux in the two reanalysis looks very similar, as the P-E cycle is changed in Reanalysis-2. Improvement is found in the monthly surface balance of the Reanalysis-2, it ranked highly out of the many subjected to the evaluation criteria. The bias and amplitude problems of the Reanalysis-1 are eliminated due to the amplification of the precipitation signal in Reanalysis-2, which indicates a large increase in rain during the peak rainy season in the basin. In addition the change in storage appears to help the balance on a point to point basis. Because there is improvement on both sides of the balance in this case it is hard to believe that the Reanalysis-2 precipitation is wrong, though it is very inconsistent with the larger precipitation datasets tested. A bias of -5.91 kg/m^2-month and a correlation coefficient of .8736 are observed. The absolute error found is 40.94 kg/m^2-month, which is comparable to that found in the Reanalysis-1.

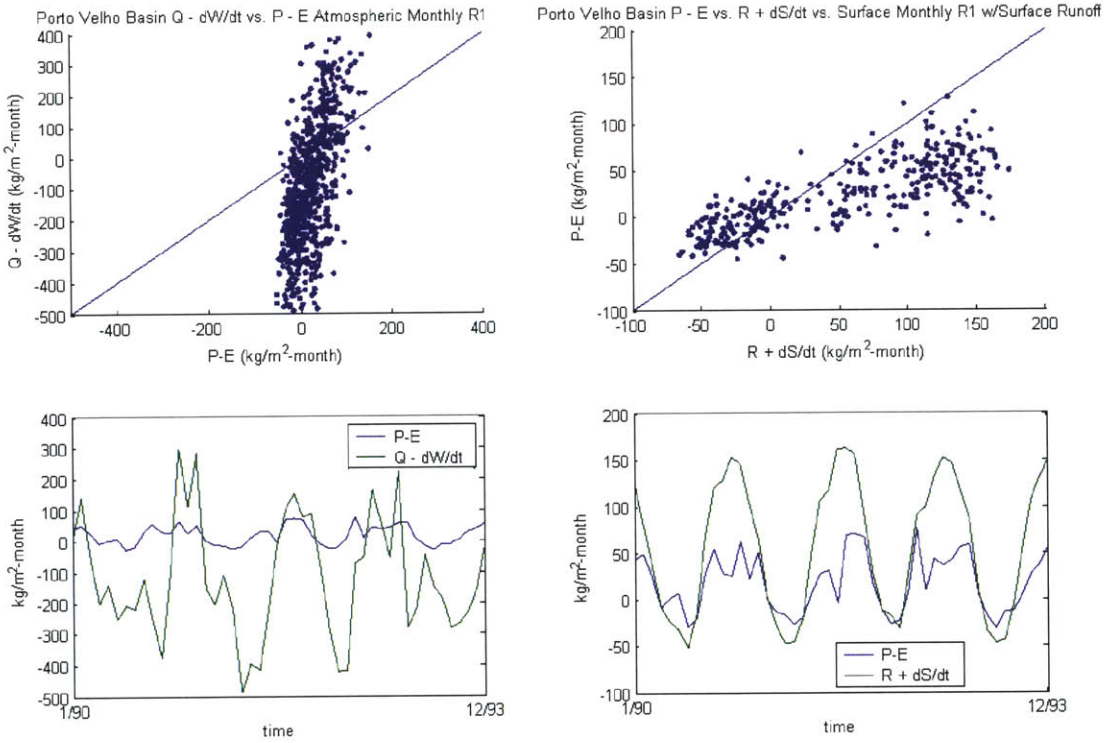


Figure 5-60: P. Velho Basin Reanalysis-1 Monthly Atmospheric and Surface Balances

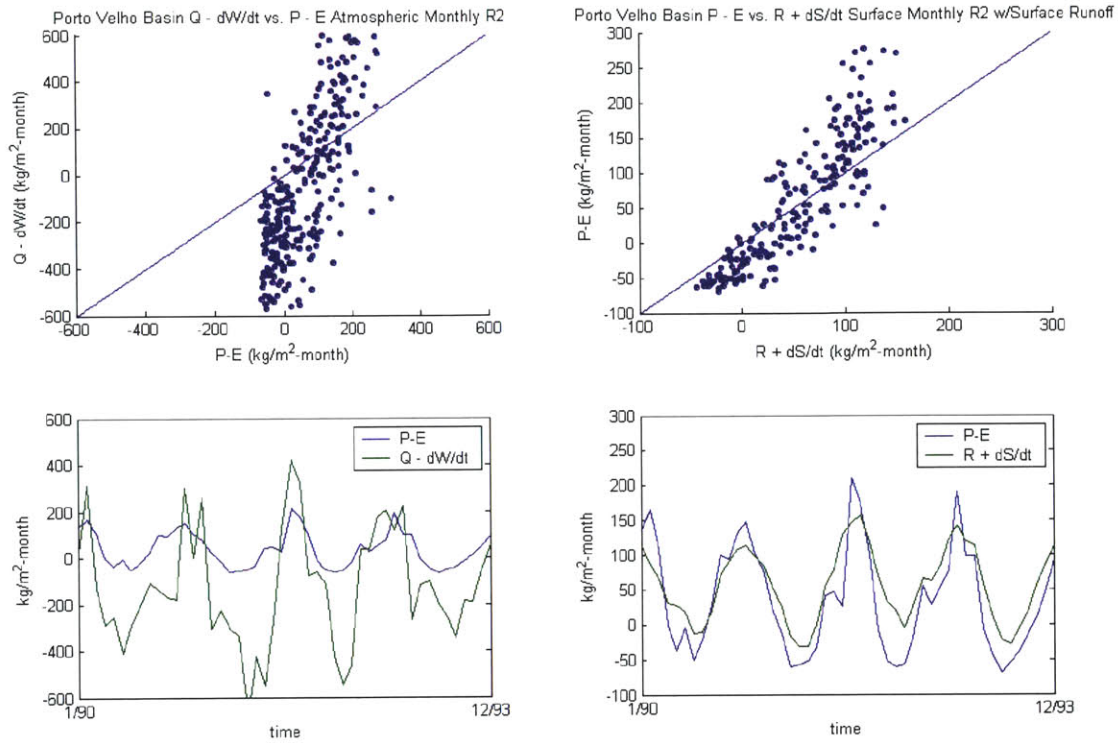


Figure 5-61: P. Velho Basin Reanalysis-2 Monthly Atmospheric and Surface Balances

The characteristics of the water balance that can be changed to improve the Porto Velho Basin control volume balance can be found in Table 5-5 and are the same as those used in the Amazon Basin control volume. In Figure 5-62 two new yearly balances are shown. In the yearly atmospheric balance, the default reanalysis balances ranked in the middle of the pack of the possible balances and the best balance was found by applying the SSM/I precipitation to the Reanalysis-2. This is unusual and a look at the plot can explain why. The SSM/I precipitation is low over this control volume and the moisture flux is biased negatively, therefore a better balance is found with the application of this precipitation, as the bias is shrunk to 66.18 kg/m^2-month. The correlation coefficient is found to be a low .1095 though the balance correlates to a 1:1 slope. As anticipated the surface balance can be improved by changing the precipitation dataset to the high GPI precipitation and removing the storage term, using the Reanalysis-2 for just evaporation, as P and R are now both being found by alternative means. A bias of -11.43 kg/m^2-month is found with a correlation coefficient of .7386 and an RMSE of just 12.73 kg/m^2-month. The error is low given the magnitude of the terms involved and there is good correlation in signal observed.

Turning to the monthly balance in Figure 5-63 the default reanalysis balances again rank in the middle of the pack. The top ranked balance is found by applying the GPCP precipitation to the Reanalysis-1. The GPCP has a much stronger seasonal cycle than the reanalysis precipitation datasets resulting in a regression slope of only 1.86 with a correlation coefficient still fairly high at .5107. Unfortunately the RMSE and absolute error are still over 200 kg/m^2-month with no significant improvement in bias. For the surface balance small improvements are seen especially in terms of absolute error (now 31.44 kg/m^2-month) and regression slope (.81) when the SSM/I precipitation is applied to the Reanalysis-1. The seasonal cycles match very well and more importantly the results look realistic. Again outliers exist on this correlation plot due to errors which were not considered in the statistical analysis.

The Porto Velho control volume balanced in a manner similar to the of the Amazon control volume. A much too strong amplitude was found on both time scales in the moisture flux calculations which generally offset the results. It will be tested in the next two sections whether the strong seasonal cycle is the only reason for water balance correlation in a basin as seasonal cycles are not as prevalent in the other two basin control volumes. The surface balances found over this control volume were impressive, however, the precipitation datasets used to obtain these balances are under scrutiny as the GPI, Reanalysis-2, and SSM/I precipitation datasets all indicate above average precipitation.

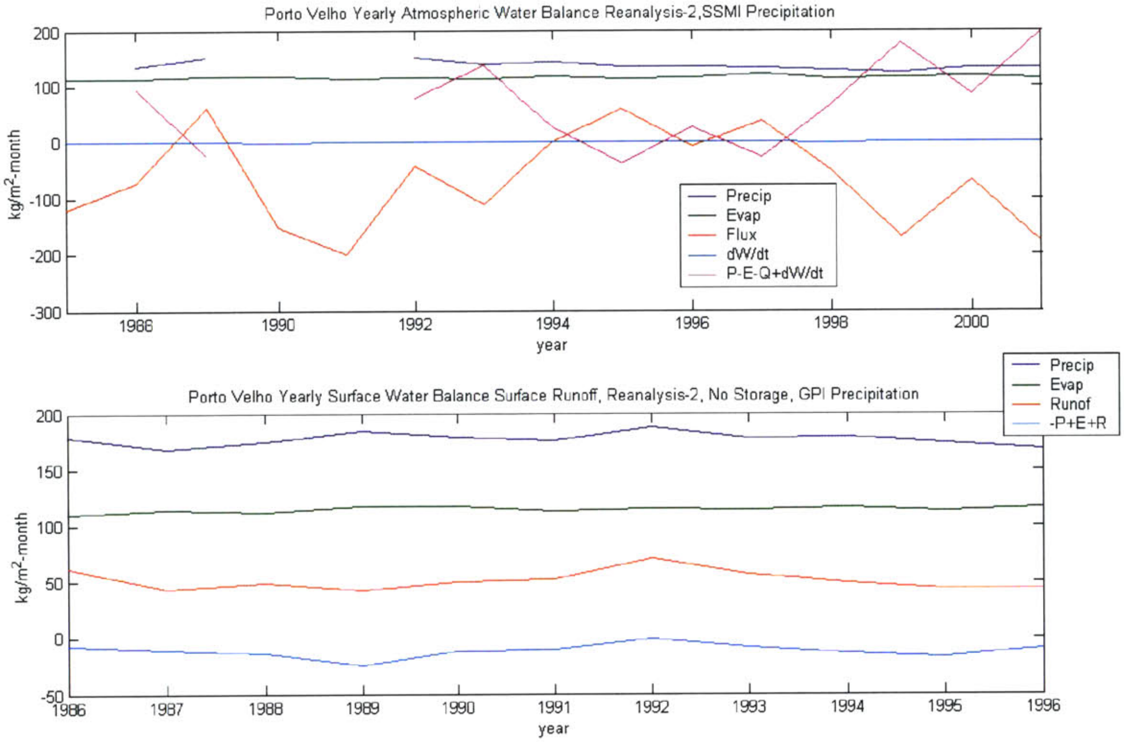


Figure 5-62: P. Velho Basin Selected Yearly Water Balances

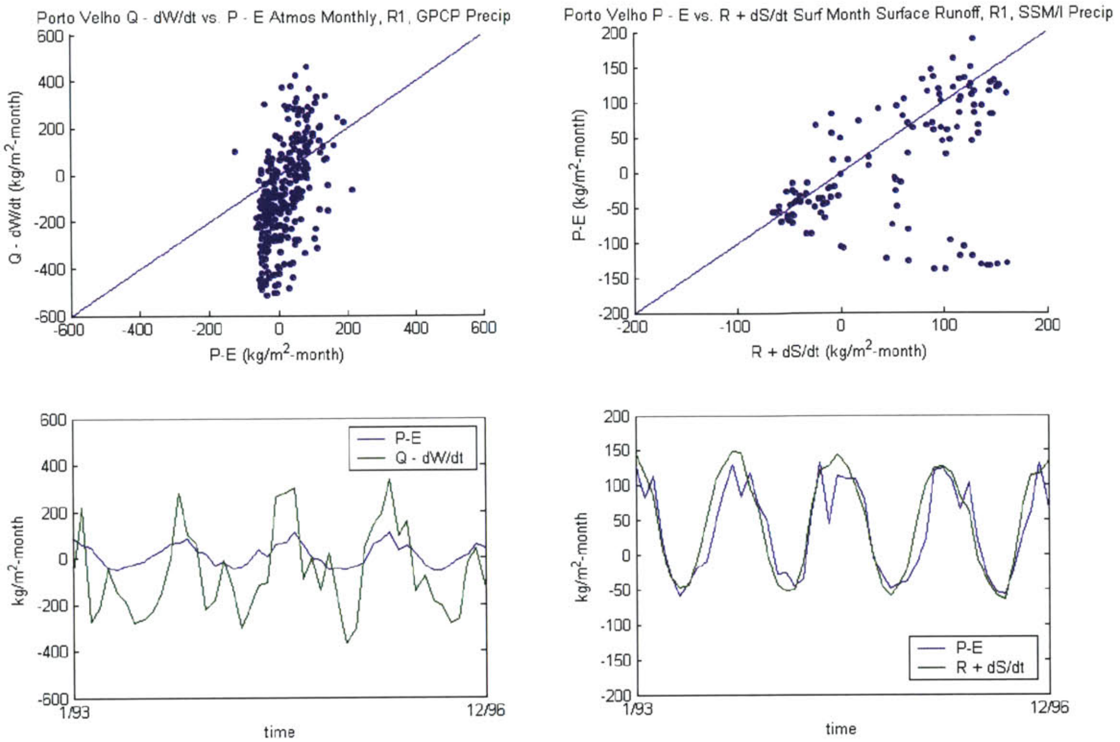


Figure 5-63: P. Velho Basin Selected Monthly Water Balances

5.10. Mississippi River Basin

The Mississippi River basin control volume was selected for this work as it is a large basin control volume in the general area and of comparable size to the Larger US control volume. It is located in the United States and Canada therefore more accurate data should be available for the balance in this control volume. It does not share the tropical properties of the balances in South America which have balanced better than control volumes in this region thus far. As with the previous two basins and in general throughout this work for the basin control volumes, surface runoff is used as the default although reanalysis data is added as an alternative to try and improve the balance. In this case and for the Mississippi River basin USGS runoff is used from 1948 to 1996.

In Figure 5-64 the yearly water balances are presented for the Reanalysis-1. The results of neither balance are encouraging. In both balances the annual evaporation typically exceeds the precipitation. This is unusual over a land mass over a long period of time. Furthermore, in the atmospheric balance, while the moisture flux for the scenario described should be near zero, the moisture flux is consistently larger than either the precipitation or evaporation. The result is a bias of -143 kg/m^2-month. Ironically, a regression slope of 1.03 and correlation coefficient of .3605 are found with a regression intercept approximately equal to the bias. This indicates there is a signal relation in this balance between the moisture flux and the P-E difference. The surface balance yields realistic numbers for all components of the water balance, but the anomaly of precipitation being less than evaporation on an annual basis throws the balance off. The bias of this balance is 22.91 kg/m^2-month with a correlation coefficient of .3159. The residual term in the balance appears to have as much variability as the terms, meaning a good balance is not achieved.

For the Reanalysis-2 similar results are found as shown in Figure 5-65. The precipitation and evaporation are nearly equal throughout the record. The moisture flux again doesn't correspond to the precipitation and evaporation series, and the balance would be much better off if this quantity was zero and just the change in precipitable water was considered. The bias is increased and the correlation coefficient decreases. For the surface balance the runoff alone seems to correlate well with the P-E cycle. The addition of the change in storage term from the Reanalysis-2 dictates the behavior of the entire balance, as the residual is almost completely dependent on the change in storage.

A look at the annual precipitation time series is interesting for the Mississippi Basin. Although we did not see a precipitation shift as has been the case for numerous reanalysis precipitation datasets, the precipitation for this control volume seemed lower than would be expected. Looking at Figure 5-66 most of the precipitation datasets available are consistent with the Reanalysis-1 and Reanalysis-2 precipitation datasets. In all cases 3 precipitation datasets: GPI, TRMM 3B43, and the TRMM 3A46 are not useful since they are for tropical regions. The TRMM GPCC product can be used for the atmospheric balance as it is not spatially restricted; however the duration of the record is out of the range of the surface balance.

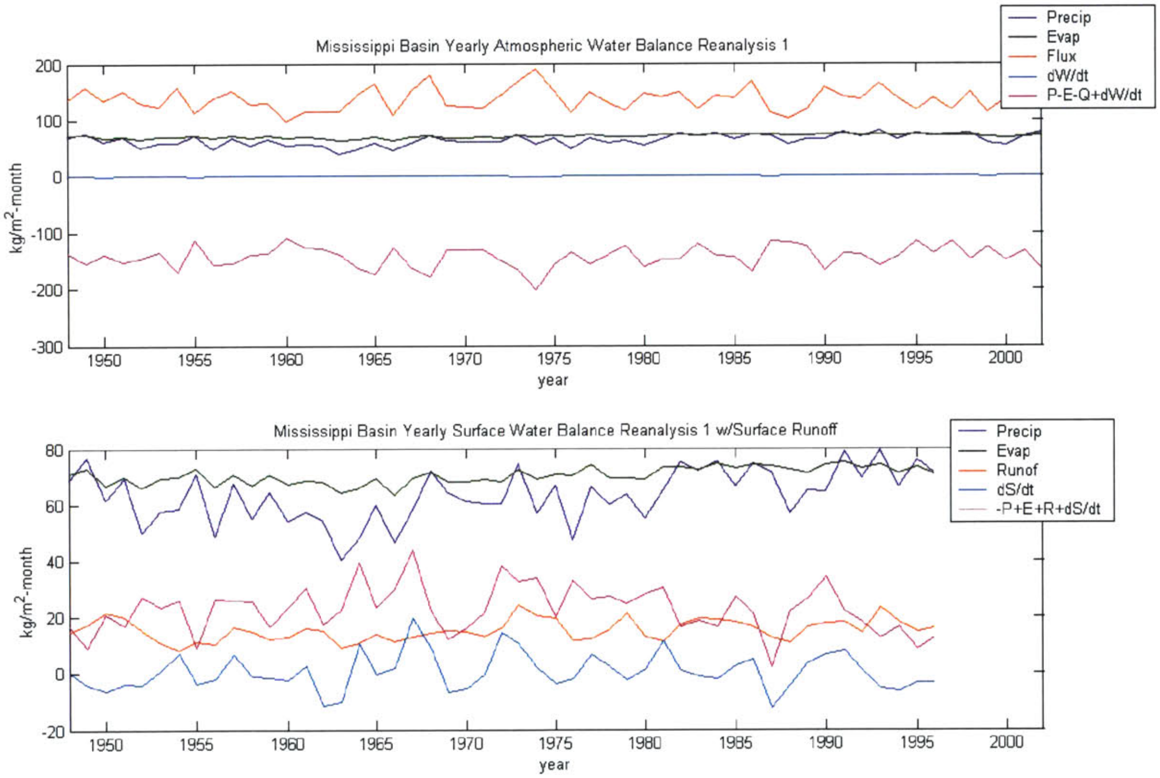


Figure 5-64: Miss. Basin Reanalysis-1 Yearly Atmospheric and Surface Balances

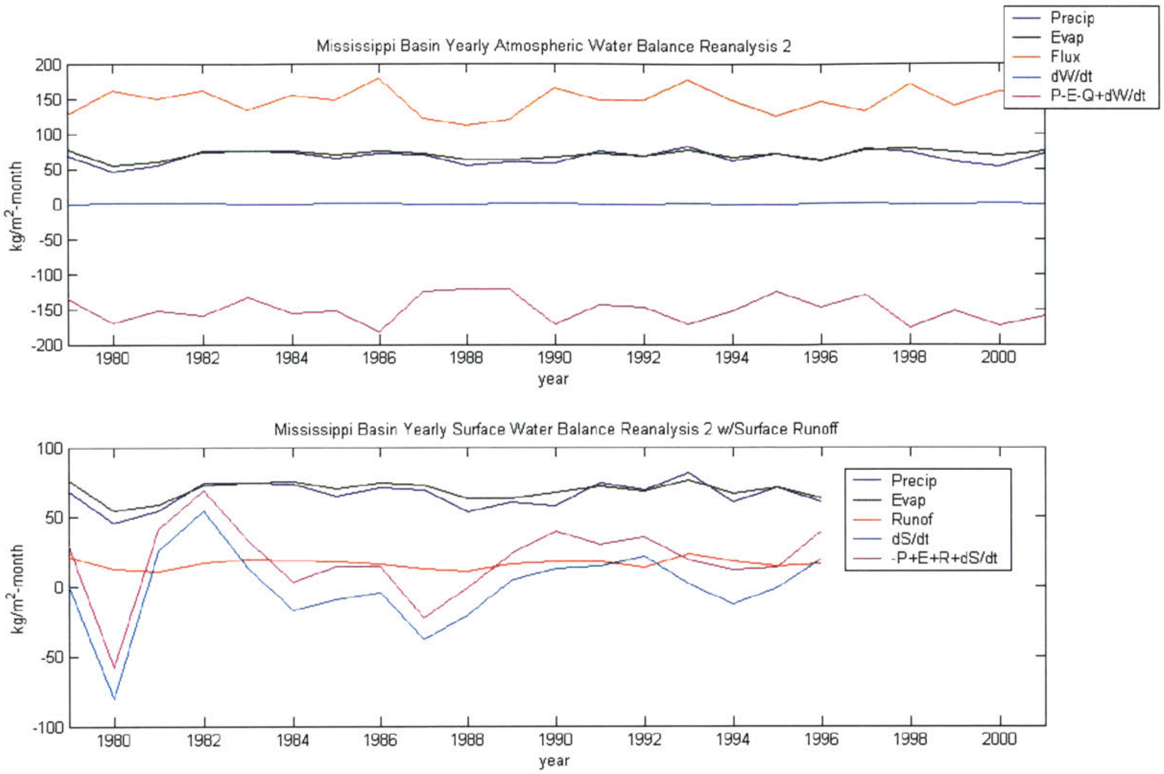


Figure 5-65: Miss. Basin Reanalysis-2 Yearly Atmospheric and Surface Balances

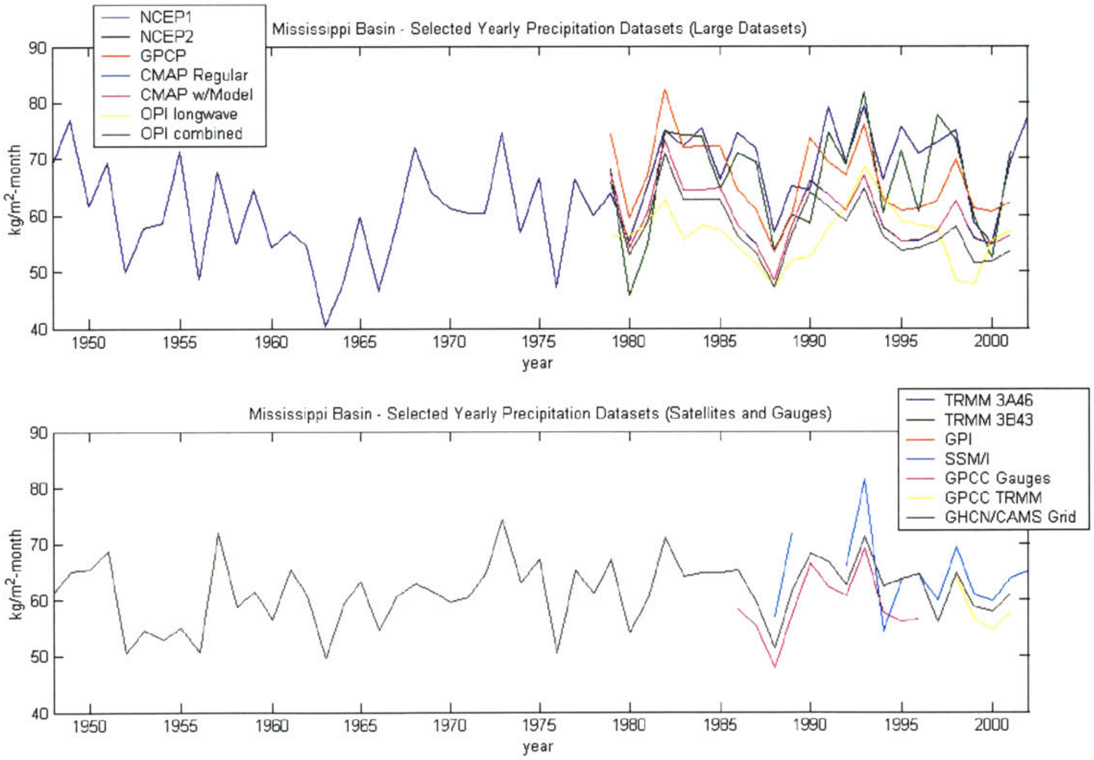


Figure 5-66: Miss. Basin Different Sources of Yearly Precipitation

Turning to the default monthly balance, the Reanalysis-1 balances are shown in Figure 5-67. As was predicted the Mississippi Basin control volume is different from the basin control volumes in the South American rain forest and thus there is no longer a strong seasonal cycle in the precipitation and evaporation cycle. As shown in the example plot, a weaker seasonal cycle still exists. There is a slight correlation between signals of the two terms of the atmospheric and surface balances which can not be seen in the upper correlation plots, but can be seen in the lower example plots. The peaks in each time series line up and a correlation coefficient of .1004 is found, but with an RMSE of 163 kg/m^2-month for the atmospheric balance. In the surface balance a very large and regular divergence flux exists, which is odd. It appears that the surface storage is not flattening the seasonal cycle of the runoff as it probably should, as the runoff data is known to be fairly accurate and have a strong seasonal cycle, stronger than that of the P-E seasonal cycle. It will be interesting to see if storage considerations or other datasets can help this balance. A correlation coefficient of .5621 is found, however with an RMSE of 53.63 kg/m^2-month which is on the order of magnitude of the actual quantities being balanced.

Switching to the Reanalysis-2 in Figure 5-68, the same general characteristics are observed as in the Reanalysis-1. There is slight correlation of peaks of the atmospheric balance which can only be seen on the bottom left and not in scatter plot. The RMSE is enlarged to 168 kg/m^2-month and the correlation coefficient rises to .2349. In the surface balance there is improvement. The correlation coefficient remains about the same at .4948, but the RMSE is reduced to 27.46 kg/m^2-month, still significant, but half of that found in the Reanalysis-1. What is odd is in the Reanalysis-2 the reanalysis change in surface storage makes the balance worse on the yearly time scale but on the monthly time scale it makes the balance better. It may be important to note that two datasets are being combined to arrive at the surface divergence flux in these balances, the surface runoff and the reanalysis change in storage term.

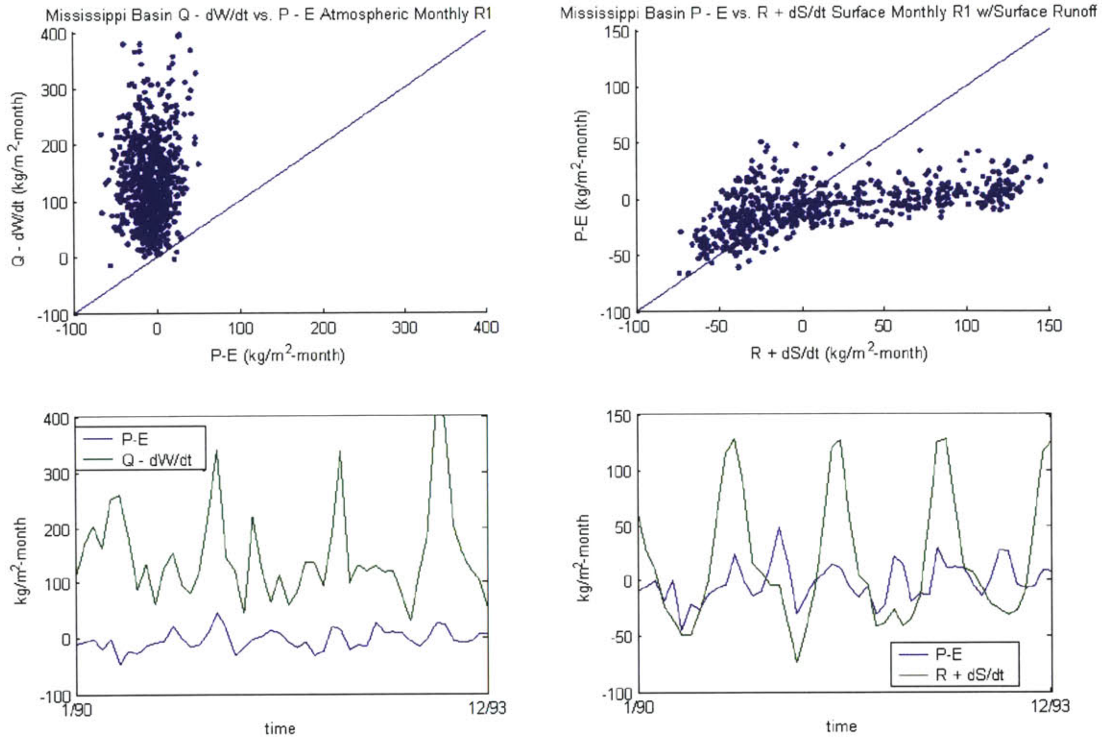


Figure 5-67: Miss. Basin Reanalysis-1 Monthly Atmospheric and Surface Balances

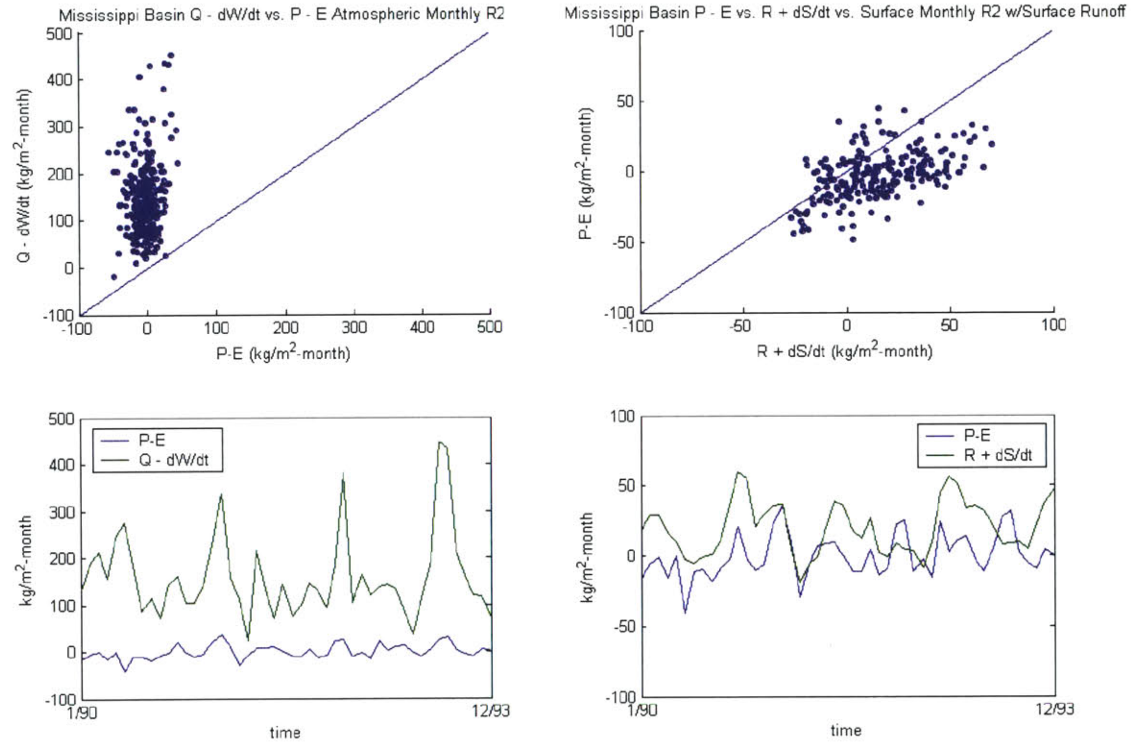


Figure 5-68: Miss. Basin Reanalysis-2 Monthly Atmospheric and Surface Balances

Possible improvement scenarios are outlined in Table 5-6. For the atmospheric balance, three precipitation datasets are eliminated, as part of this control volume extends past their bounds. The possibilities for each time scale are reduced to 20. The surface balance possibilities are again broken into two sections. Using surface runoff nine precipitation datasets are combined with six storage methods and two reanalysis. With the reanalysis runoff ten precipitation datasets can be used. The same conditions apply for the yearly time scale reducing the storage consideration from six to two.

Improvements in the yearly balances are shown in Figure 5-69. For the atmospheric balance, the Reanalysis-1 balance was highly ranked by the evaluation criteria, and the balance can be slightly improved by GPCP or SSM/I precipitation data. The GPCP precipitation application is presented here. The improvements are so minor they are almost not noteworthy as the residual statistics are reduced each by a mere 3 kg/m^2-month and the correlation is only slightly improved. The balance is still not very good. For the surface balance significant improvements can be made by utilizing the Reanalysis-2 runoff instead of the USGS surface runoff for this control volume. This is very interesting because is shows the reanalysis change in surface storage balances with the reanalysis runoff, and not the more accurate surface runoff. The conditions of including storage and using the SSM/I precipitation are chosen because all five of the evaluation criteria need to be accounted for. Higher ranked balances contain regression slopes that differ substantially from one. The bias is reduced to near zero in this balance proving the reanalysis surface data balances over the long term for this control volume, with no outside data being introduced.

Attempts to improve the monthly balance are shown in Figure 5-70. In the atmospheric balance the reanalysis contains some of the top ranked balances based on the evaluation criteria and there are no great improvements that can be made. The one balance ranked better than both of the reanalyzes involves applying the SSM/I precipitation to the Reanalysis-1. The bias and absolute error are again reduced just slightly though the correlation coefficient is greatly improved. The monthly surface balance is greatly improved by applying the GHCN-CAMS precipitation to the Reanalysis-2, and changing to reanalysis runoff. As shown on the right of Figure 4-156 excellent agreement is obtained between the two sides of the water balance with a bias of just 3.22 kg/m^2-month and a correlation coefficient of .7305.

For the Mississippi River Basin control volume, seasonal cycle correlation is observed between terms of the atmospheric water balance. However the balance is far too biased to be considered successful. For the surface balances a much better balance is obtained when the reanalysis derived runoff is applied to the water balance, as no bias is detected. It is disappointing though that for a control volume such as the Mississippi River basin, the use of actual observed data (gauges and surface runoff), can not be effectively combined to produce a water balance. Instead the best balance is derived by the reanalysis model.

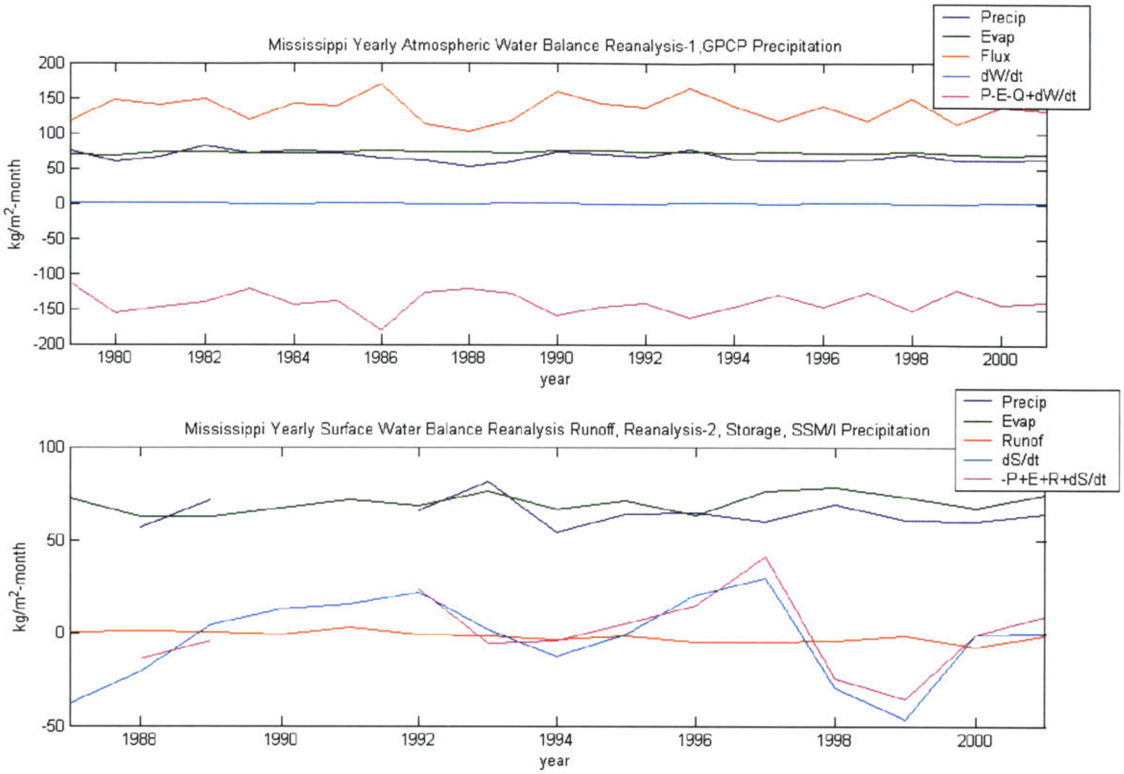


Figure 5-69: Miss. Basin Selected Yearly Water Balances

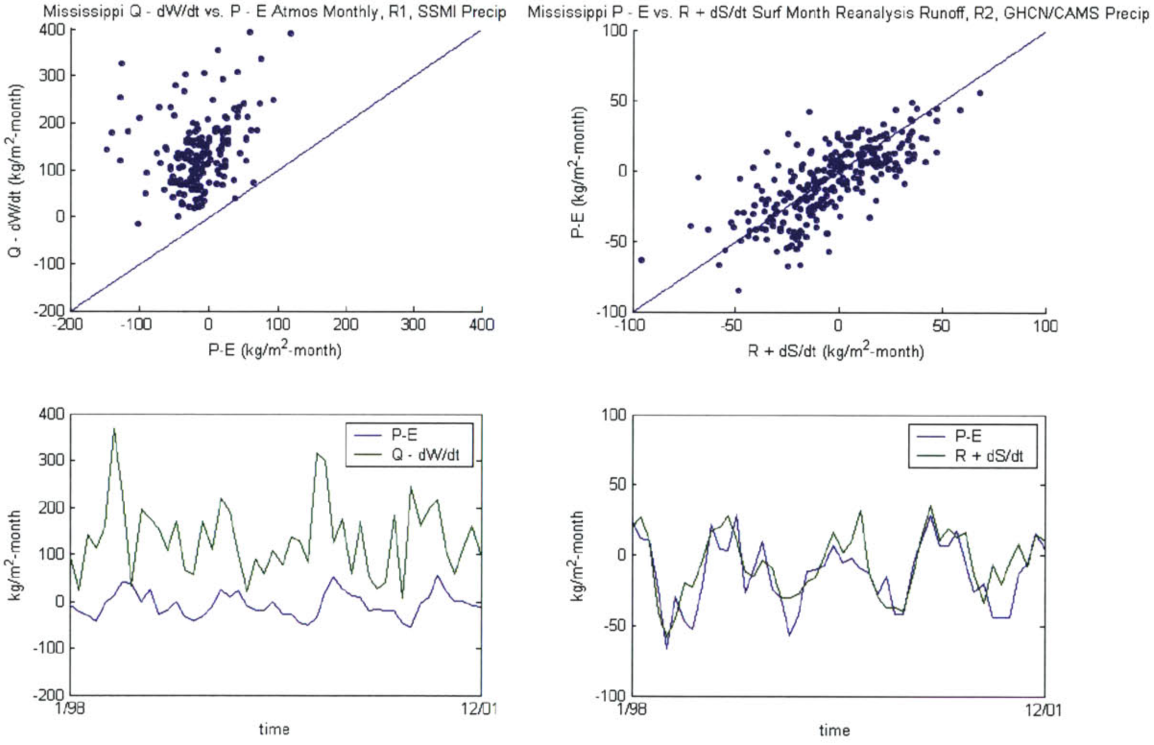


Figure 5-70: Miss. Basin Selected Monthly Water Balances

5.11. Arkansas River Basin

The Arkansas River Basin control volume was chosen as the smaller basin considered in North America. It is a sub basin of the Mississippi and has the advantage that it is entirely enclosed beneath 40 degree N latitude, thus it is entirely visible by the TRMM precipitation radar and the TRMM 3B43 and GPI datasets can be used. The size of this balance compared to the grid size of the datasets being applied to it makes it unlikely a balance will be obtained, however the exercise is still carried out to see the results, as for all control volumes considered so far encouraging results have been obtained for some portion of the water balance over each region.

The yearly water balances for the Arkansas Basin control volume found by the default conditions for the Reanalysis-1 are presented in Figure 5-71. The results of the atmospheric balance are very similar to those obtained in the Mississippi River balance. Annual evaporation is observed to be higher than annual precipitation for every year of the fifty five year time series. The moisture flux is large and positive not corresponding to the P-E. A bias of -144.6 kg/m^2-month is found, with no correlation between the two sides of the balance as the correlation coefficient is .0238. The results of the surface balance are also very similar to the Mississippi River basin. The indication of the P-E cycle is that the runoff of the basin should be negative, which on a yearly basis in unrealistic because the control volume in theory is a basin, and a river such as the Arkansas isn't going to go dry over a period of a year. Switching focus to the balance the discrepancy in sign of the runoff makes it impossible to obtain a balance, and the residual term is not flat indicating correlation. The RMSE of this balance is 22.86 kg/m^2-month, larger than the magnitude of the precipitation term, with a weak correlation coefficient of .2161.

In the Reanalysis-2 (Figure 5-72) we see similar adjustments to the Mississippi River Basin in the Arkansas River Basin. The difference between P-E is reduced to the point that it is almost eliminated. However, for the atmospheric balance the moisture flux remains about the same indicating continuity between the Reanalysis-1 and the Reanalysis-2. The moisture flux here is even higher, resulting in a bias of -193.42 kg/m^2-month and even less correlation. There is little hope to improve this balance as the moisture flux term is simply unrealistic. In the surface balance case the P-E quantity seems to match better in terms of magnitude to the runoff, but the surface storage term appears to throw the balance off on a point to point basis and the RMSE is increased to 32.92 kg/m^2-month. There is no correlation between the side fluxes of this control volume with the P-E quantity at each point as the reanalysis pretty much fails to compute a yearly water balance.

The annual precipitation time series for the Arkansas Basin control volume are presented in Figure 4-159. Again a slight increase is observed in the precipitation of the Reanalysis-1, which is matched by the larger precipitation datasets. This trend is not observed in the gauge precipitation dataset. The only precipitation datasets which can not be used at some point in this balance is the TRMM 3A46 because it contains errors.

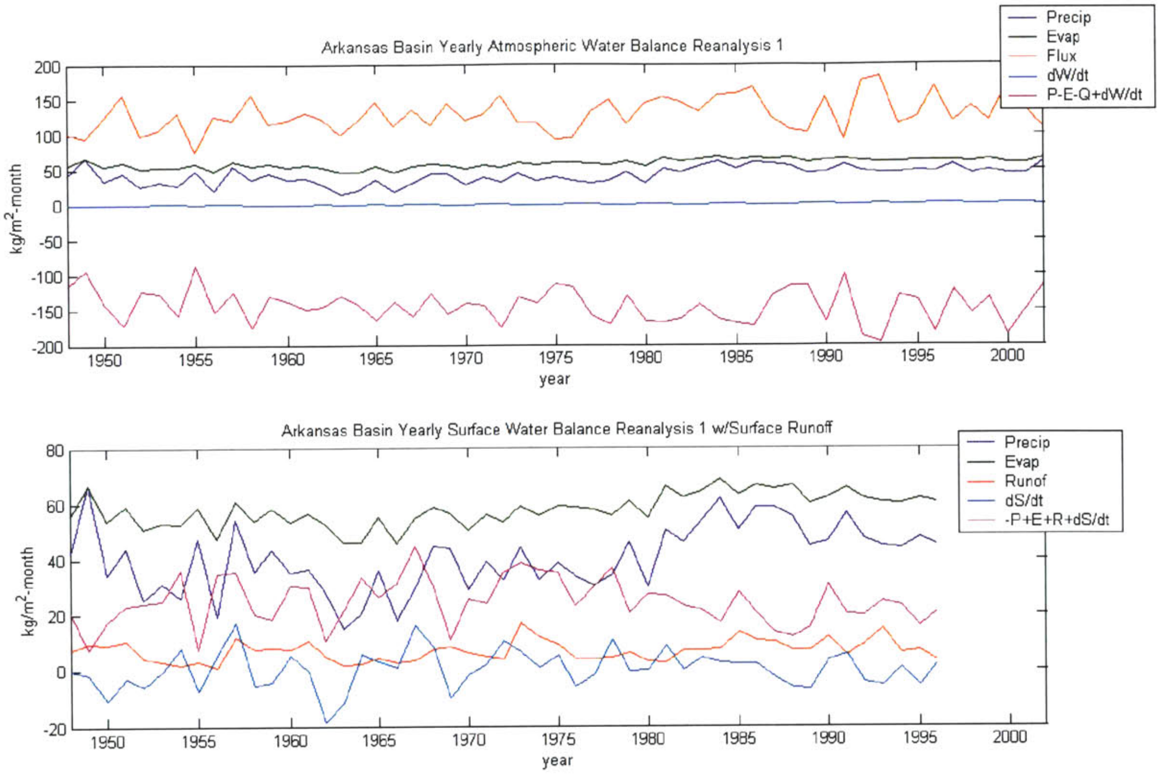


Figure 5-71: Arkansas Basin Reanalysis-1 Yearly Atmospheric and Surface Balances

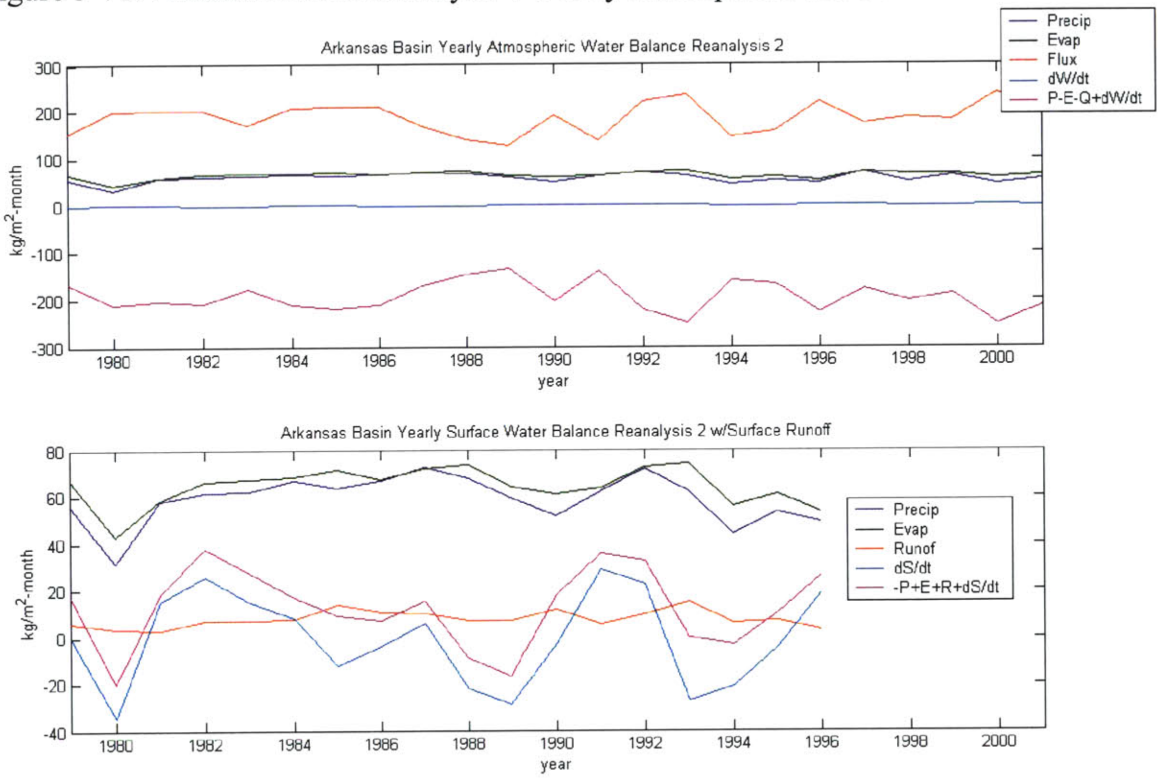


Figure 5-72: Arkansas Basin Reanalysis-2 Yearly Atmospheric and Surface Balances

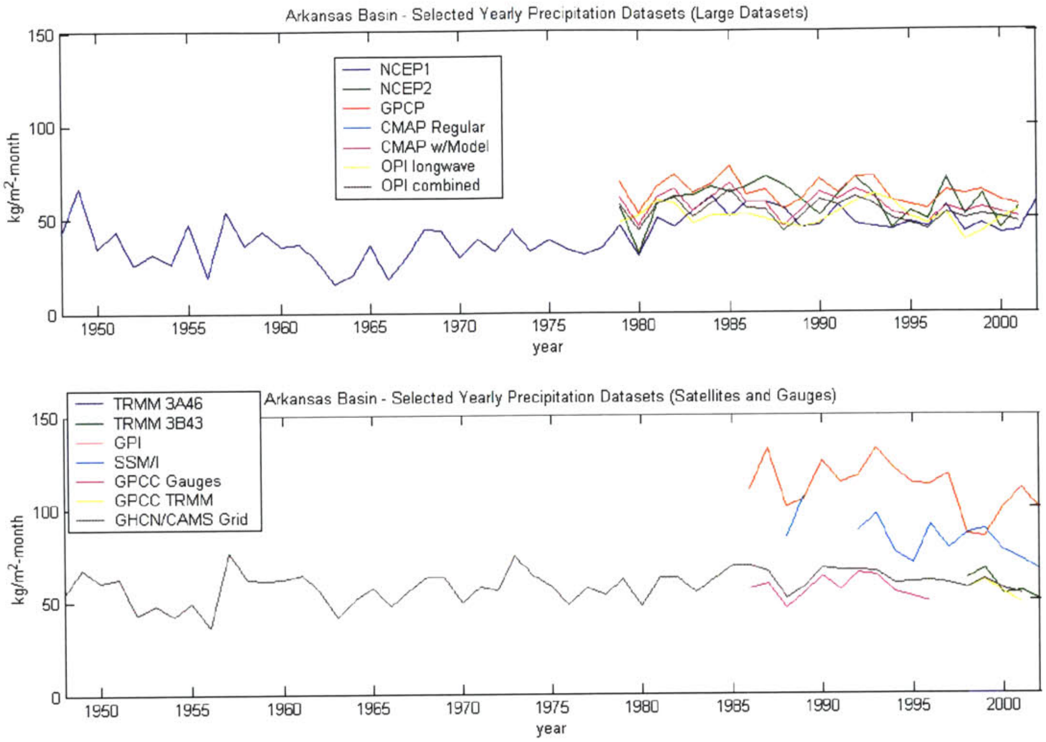


Figure 5-73: Arkansas Basin Different Sources of Yearly Precipitation

Turning to the monthly case the default Reanalysis-1 balances are presented in Figure 5-74. On the monthly time scale the atmospheric balance appears to be a little different than on the yearly time scale. The bias remains the same and there is virtually no correlation between the two quantities plotted on the top left. The surface balance is a different, as on the monthly time scale the balance looks much better as the seasonal cycle is picked up in both sides of the balance and correlation is observed, though also a bias in favor of the surface side flux is observed. A very strong correlation of .6663 is found, showing on a monthly basis the data consistently finds peaks and troughs in the data for both sides of the balance.

The Reanalysis-2 atmospheric balance shown in Figure 5-75 is even worse then the Reanalysis-1 balance. The atmospheric water balance over the Arkansas River basin is a failure. For the surface balance the correlation does decrease for the Reanalysis-2 to .4043 which is unusual, but the bias is also improved as was observed in the yearly time scale. A decent water balance can be obtained for the surface balance on a monthly basis, but this balance is shown to be less complete when aggregated to the yearly time scale, and the only property which can be extracted from these balance are strong monthly signal correlations between the two sides of the balance.

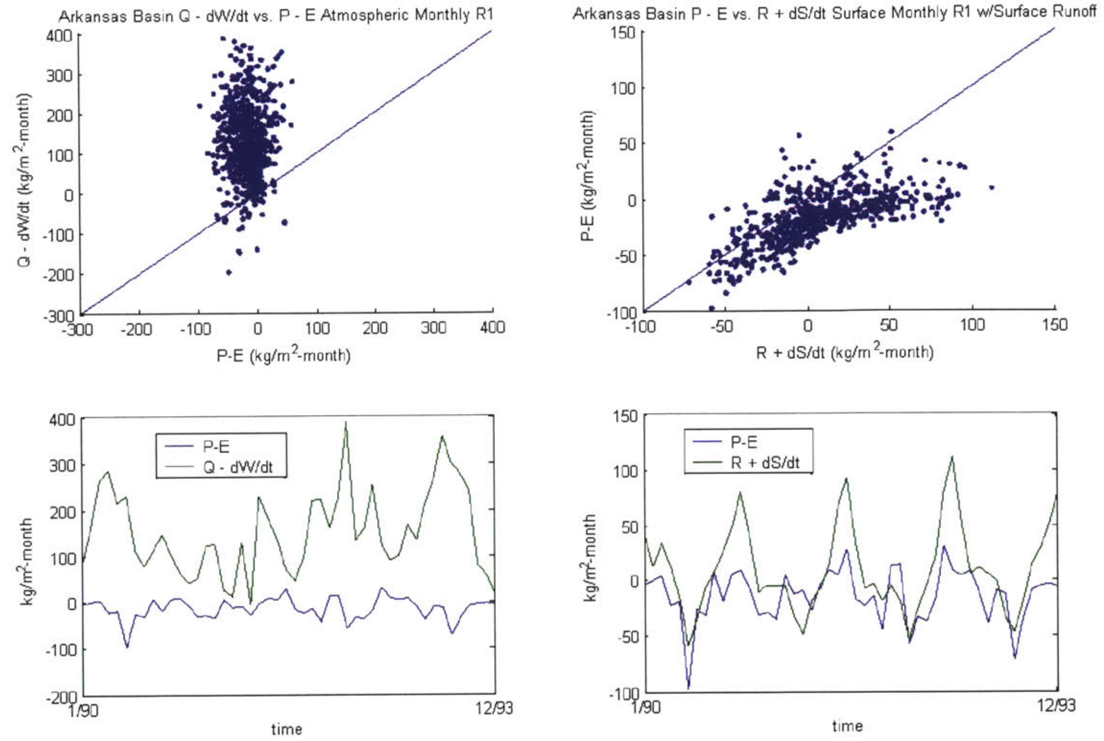


Figure 5-74: Arkansas Basin Reanalysis-1 Monthly Atmospheric and Surface Balances

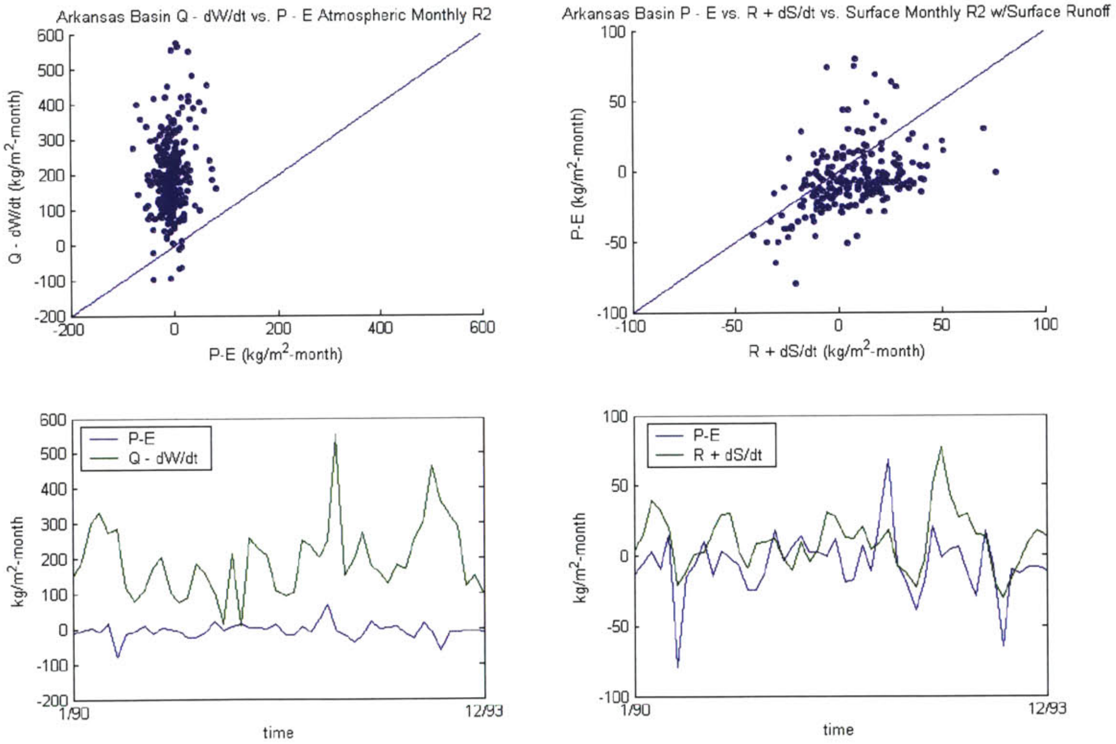


Figure 5-75: Arkansas Basin Reanalysis-2 Monthly Atmospheric and Surface Balances

The Arkansas Basin control volume is unique in the amount of water balance characteristics which can be altered to try and improve the balance. Although it is not a South American water balance, it can be classified as a tropical water balance in terms of the precipitation datasets. There are therefore 24 possible balances for the atmospheric balances outlined in Table 5-7. For the surface balance we can again change reanalysis (2), storage considerations (6, monthly/2, yearly), and runoff data source (2), in addition to precipitation dataset. None of the TRMM datasets can be used for the surface runoff case, and all but TRMM 3A46 can be used for the reanalysis runoff case.

The best yearly water balances for the Arkansas River Basin based on the evaluation criteria are presented in Figure 5-76. In the atmospheric balance the focus of the improvement is only on reducing the bias, which therefore results in the inclusion of the GPI precipitation. This precipitation is much larger in magnitude than any of the other precipitation datasets. The accuracy of this dataset is unknown, but it reduces the atmospheric bias -86.28 kg/m^2-month with a correlation coefficient of .4143 and a regression slope of 1.20. Thus, the balance is improved in terms of correlation greatly, but not balanced. For the surface balance the application of CMAP2 precipitation and the removal of storage improved the bias and the correlation of the balance. The correlation coefficient is improved to .5746. Such improvements are difficult to see on a yearly plot.

For the monthly time scale both balances are improved by the application of GPCP precipitation data. In the atmospheric balance this application is more important than reducing the bias as a higher correlation is obtained. In general this improvement is unsuccessful at actually obtaining a water balance. For the surface balance, surface runoff is applied to the Reanalysis-2 with the GPCP precipitation a good correlation and scatter plot is obtained in Figure 5-77 on the top right. A correlation coefficient of .5746 is obtained, with a bias of just 5.83 kg/m^2-month. There is some spread in the scatter plot, but a generally good balance from month to month. The change in precipitation dataset helps the balance.

For the Arkansas Basin control volume the limits appear to be reached in terms of water balance calculations. The atmospheric balances show traces of correlation, but terrible biases that make the balance unsuccessful. The results of the surface balance are better, but the correlations on the monthly time scale are still not as good as those observed in other balances.

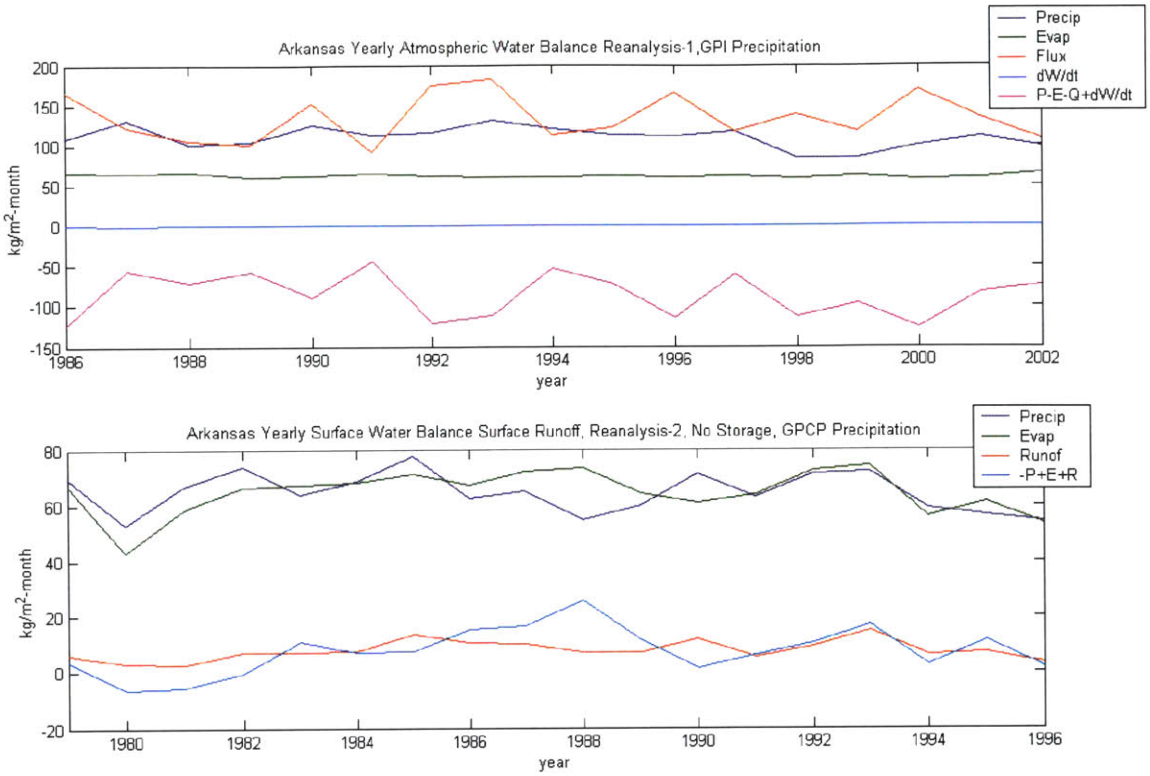


Figure 5-76: Arkansas Basin Selected Yearly Water Balances

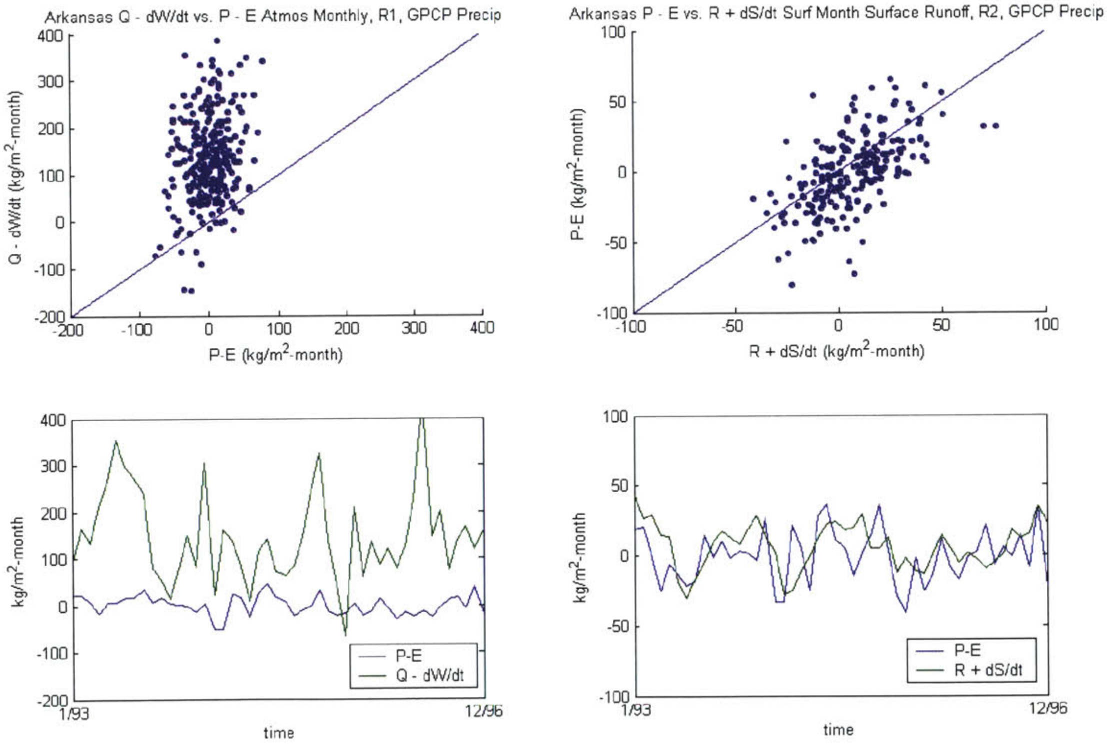


Figure 5-77: Arkansas Basin Selected Monthly Water Balances

6. Global Data Analysis

In this section the entire globe between the latitudes of 60 N and 60 S will be broken into equally sized regional boxes of 30, 15, and 7.5 degrees on a side and for each box the atmospheric water balance will be evaluated. Areas north and south of these latitudes are excluded due to a number of reasons. These reasons include the difficulty in computing water balances due to longitudinal geometries at high latitudes and the incompleteness of most precipitation datasets at these high latitudes. Such a comprehensive analysis is possible only for the atmospheric water balance and not the surface water balance. In order to compute a surface water balance change in storage and runoff must be calculated, however over oceans these calculations are not possible in the context of this work. Thus, in the global case we are simply looking at one atmospheric mass balance equation:

$$\frac{dW}{dt} = -P + E + Q \qquad \text{Eq. (6-1)}$$

Since only the atmospheric water balance is considered, only a couple of comparisons are possible.

$$P - E - Q + \frac{dW}{dt} = residual \qquad \text{Eq. (6-2)}$$

$$P - E = Q - \frac{dW}{dt} \qquad \text{Eq. (6-3)}$$

When doing the global analysis the statistics that have been created before can be plotted on a contour map and can be spatially analyzed. On a coarser resolution it is difficult to recognize this “map” as the world, however at finer resolutions continental features become much more prevalent, and the data is more useful in a geographical sense. It is likely though that finer resolution water balances will be less accurate, as errors are smoothed with increased spatial averaging. The hope of such an analysis is that there would be no large differences between the closure of the water balance between land and sea or between any set of regions. Unfortunately, this is rarely the case.

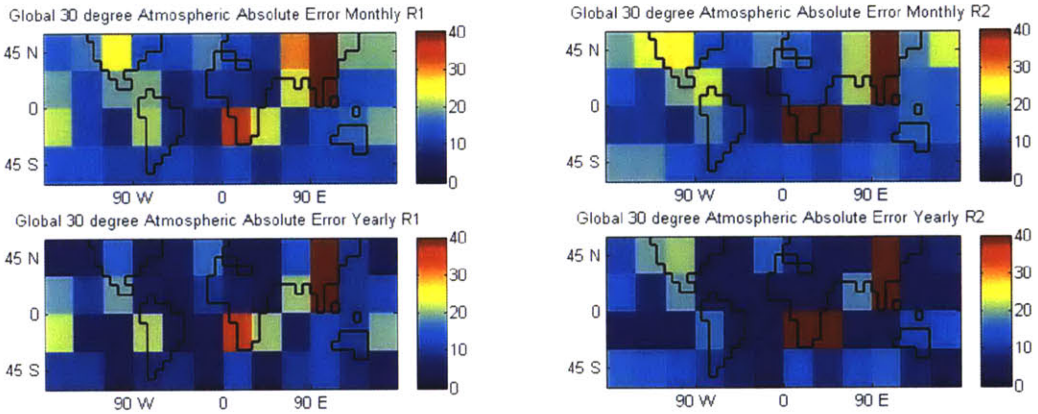
The global data analysis will be composed of 4 sections. In Section 6.1 the general water balance characteristics for the reanalysis, considering all water balance analysis tools which have been utilized and applied in this work, will be shown. In Section 6.2 alternative precipitation datasets which are available on a global scale will be used in the global atmospheric water balances. In Section 6.3 the global water balances will be analyzed on a seasonal and decadal basis, and finally, in Section 6.4 land and sea points will be contrasted against each other on a global basis.

6.1. Water Balance Property Data Analysis

The first look at global data in this work focuses completely on the reanalysis. Maps are made of all water balance properties for the Reanalysis-1 and Reanalysis-2 for the monthly and yearly time scales. The purpose of this section is to show errors in computation of the global atmospheric water balance spatially.

6.1.1. Global Atmospheric Absolute Error

Although water balances are being compared from different geographic regions, which before were analyzed by normalized residual statistics, it is useful to use non-normalized residual statistics because the actual magnitude of the imbalances are of interest. The first such analysis involves mapping the absolute error of the atmospheric water balance at three resolutions. Looking at the 30 degree case in Figure 6-1, improvements are found in absolute error when the time scale is changed from monthly to yearly. There is little improvement however in the Reanalysis-2 from the Reanalysis-1. Problem areas include Eastern Asia and Southern Africa for all cases. Increasing the resolution to 15 degrees in Figure 6-2 the general observations made for the 30 degree case are maintained. Note that the change in the colorbar in this figure has doubled, thus error increases in all regions by a factor of two. At the finer resolution there errors are more tightly constrained to land points. Reducing the resolution again to 7.5 degrees in Figure 6-3 we again double the colorbar to get approximately the same picture, though better resolved. Higher absolute errors are seen in points mostly over various land bodies specifically over Central Asia.


Global 30 degree Atmospheric Absolute Error Monthly R1

Global 30 degree Atmospheric Absolute Error Monthly R2

Global 30 degree Atmospheric Absolute Error Yearly R1

Global 30 degree Atmospheric Absolute Error Yearly R2

Figure 6-1: 30 degree Absolute Error Reanalysis Balances

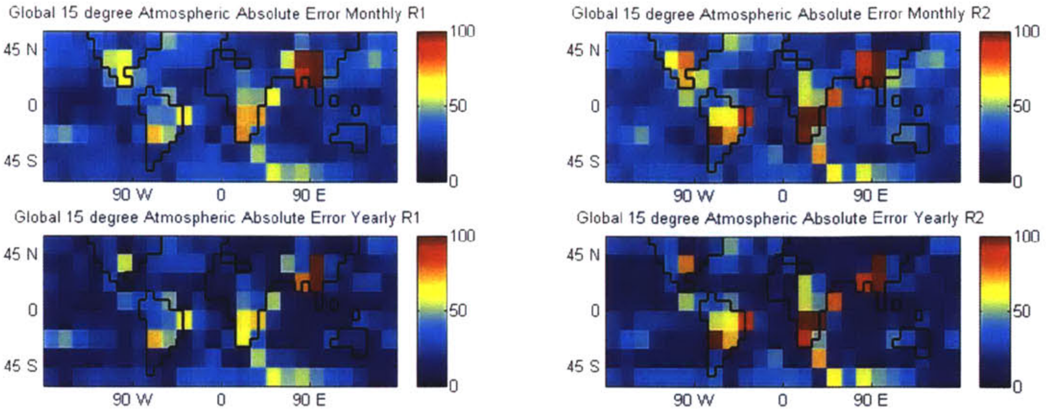


Figure 6-2: 15 degree Absolute Error Reanalysis Balances

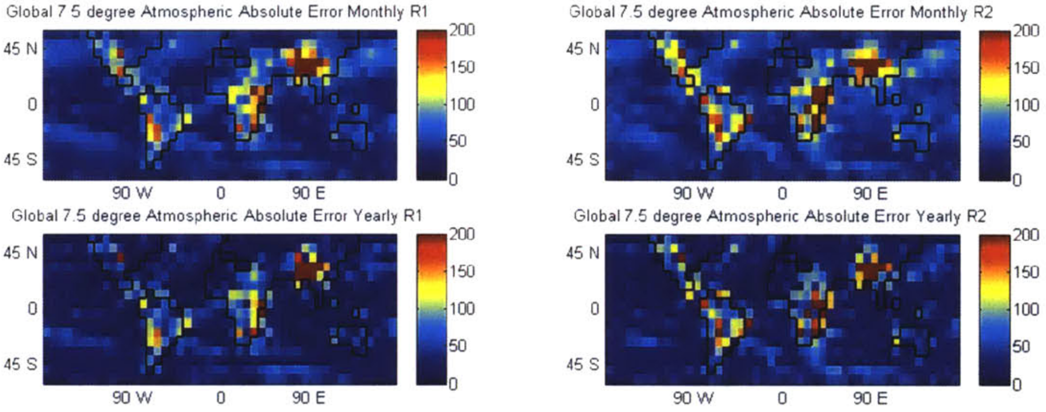


Figure 6-3: 7.5 degree Absolute Error Reanalysis Balances

6.1.2. Global Normalized Atmospheric Absolute Error

Normalizing the absolute error allows a better comparison of regions. The global atmospheric water balance is composed of many unique regions, some with a very active water cycle (i.e. rain forests) and some with very inactive water cycles (i.e. deserts). Errors in more inactive water cycles such as those over the desert are highlighted by this analysis. Figure 6-4 shows the 30 degree normalized absolute error. Again general improvements are seen with change in time scale, but there is little difference between reanalysis. Other problem areas are seen now at the 30 degree level over North and South America in more mountainous regions which in the case of North America are likely drier. The resolution is increased to 15 degree in Figure 6-5. Clear bands of absolute error greater than one, can be seen through Africa into Asia, and in the mountainous regions of North and South America. These errors are likely small in magnitude, but when normalized by the precipitation grow large. These errors are intensified and better resolved in Figure 6-6. Clear imbalances are seen over a large portion of Asia and the Western United States. Over the ocean, the balances seem to agree more in the tropical regions, which makes sense in that the normalization quantity is likely larger over the tropics.

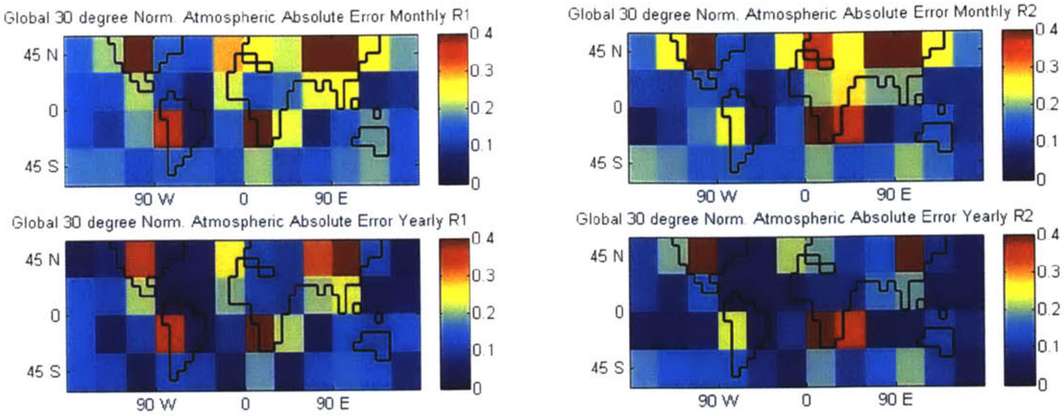


Figure 6-4: 30 degree Normalized Absolute Error Reanalysis Balances

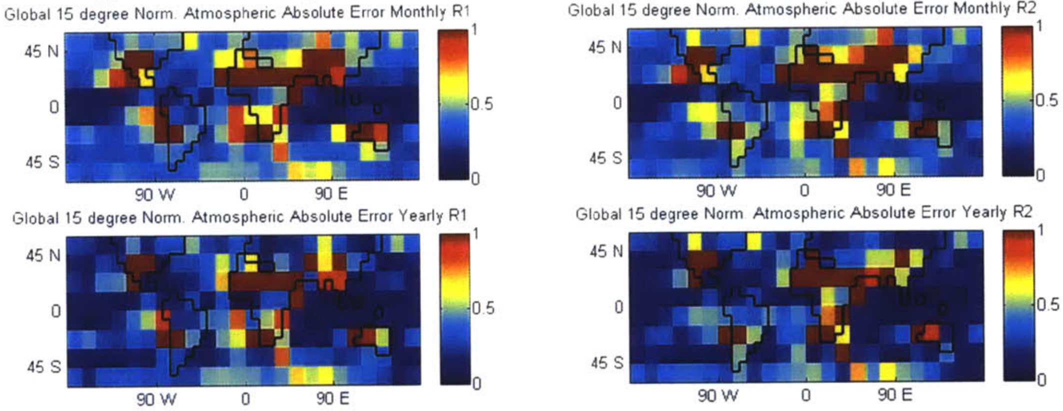


Figure 6-5: 15 degree Normalized Absolute Error Reanalysis Balances

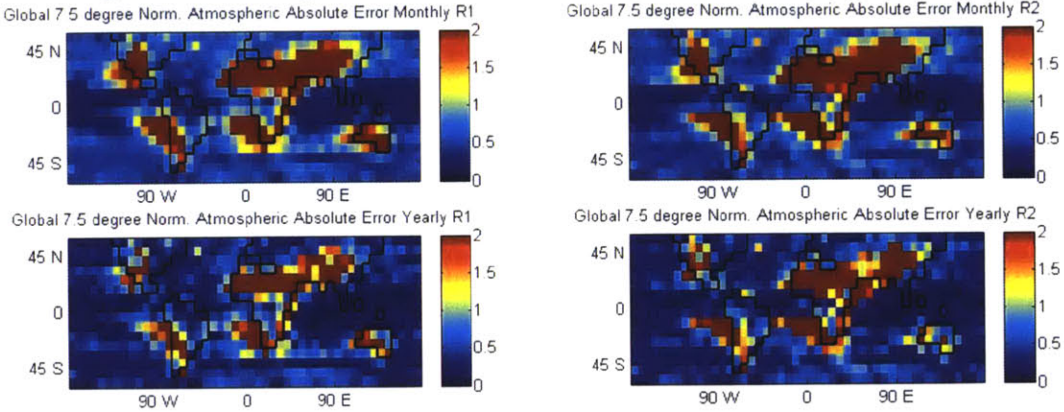


Figure 6-6: 7.5 degree Normalized Absolute Error Reanalysis Balances

6.1.3. Global Atmospheric Bias Error

Of particular importance in the global study is the bias. This is in essence the departure from balance for the entire time series of each control volume, and as before the monthly and yearly biases are the same. From this analysis we can find the areas of the world where there is a surplus (red) and where there is a deficit (blue) in the atmospheric water balance. In Figure 6-7 the 30 degree resolution is presented and relatively small biases are observed for all portions of the globe. Problem areas in both reanalyzes include Eastern Asia and Southern Africa, and in general equatorial regions look less biased. There are few noticeable differences between reanalyzes.

Increasing the resolution to 15 degrees in Figure 6-8, problem areas are again observed over Asia, and Africa, with additional significant errors over South America. Interestingly, there is no pattern to these errors, they are both positive and negative and scattered about the land masses randomly. These errors tend to be intensified in the Reanalysis-2 and both reanalyzes show breakdowns in the north most and south-most control volumes. Errors in general are much higher on the fifteen degree resolution as the bounds of the colorbar are more than doubled. Moving to the 7.5 degree resolution in Figure 6-9, the colorbar bounds remain the same. In general larger positive and negative biases are observed over land more than over water. There is a general surplus in the southern most control volumes but other geographic patterns are not observed. Only certain portions of the land masses are unbalanced. Northern land masses appear better balanced.

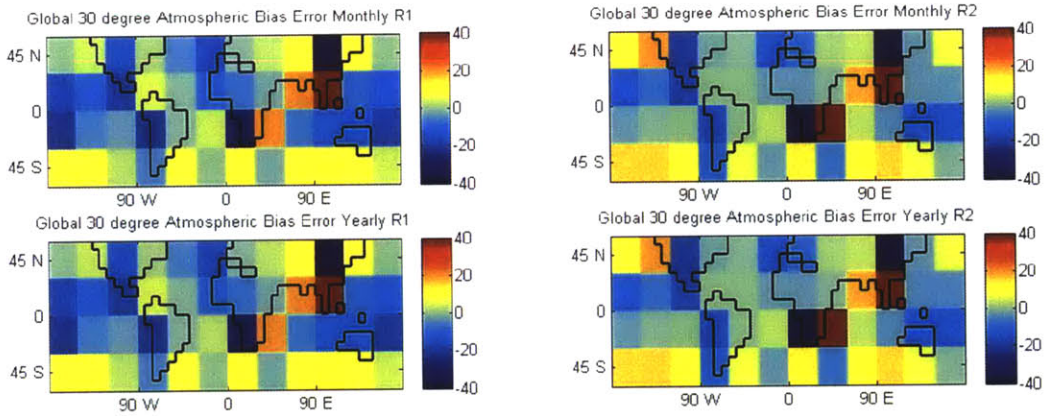


Figure 6-7: 30 degree Bias Error Reanalysis Balances

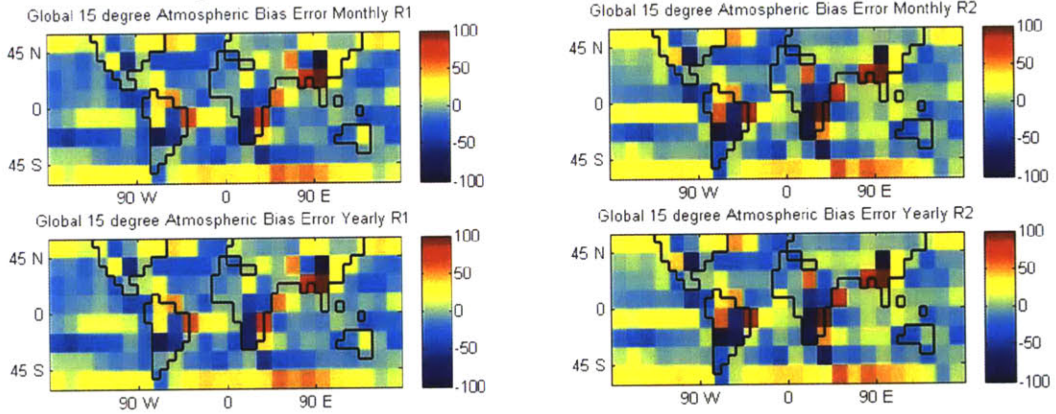


Figure 6-8: 15 degree Bias Error Reanalysis Balances

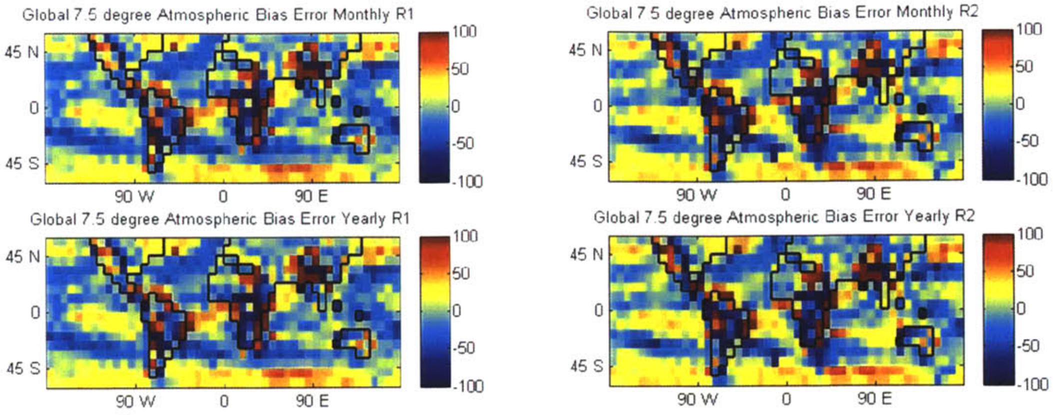


Figure 6-9: 7.5 degree Bias Error Reanalysis Balances

6.1.4. Global Normalized Atmospheric Bias Error

In this section the biases are normalized. In Figure 6-10 the normalized bias is presented at the 30 degree resolution. Here more dramatic imbalances are highlighted. Large normalized deficits occur in the same places as were observed in the last section; however the surpluses which were observed are no longer as bad, as the precipitation magnitude is high over these areas. Additional deficits are found over the mountainous regions of North America and South America.

In Figure 6-11 the resolution is reduced to 15 degrees and additional problem areas are discovered. The western portions of South America and North America, as well as parts of all other land masses contain normalized biases on the order of magnitude of the precipitation of that region. Again, there is no pattern to the sign of these biases; they are both positive and negative. The only real observation which can be made is that these biases all occur over land. There is also a larger difference in the normalized case between good and bad areas when looking at the normalized error and this observation is intensified in Figure 6-12 for the 7.5 degree resolution. Again, significant normalized biases greater than 1 occur mostly over land which show no pattern as surplus and deficit control volumes are scattered randomly over land. In North and South America, these biases tend to occur over the western parts of the continent on and off the land masses. The land stretching from Northern Africa into Central Asia also shows significant highs and lows for this property, but no pattern. These biases over the Eastern Hemisphere correspond to very arid regions, and are intensified by normalization.

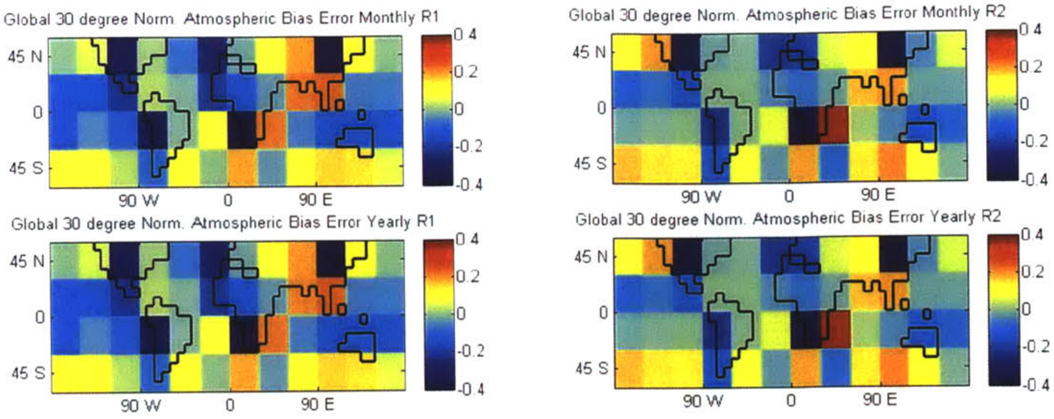


Figure 6-10: 30 degree Normalized Bias Error Reanalysis Balances

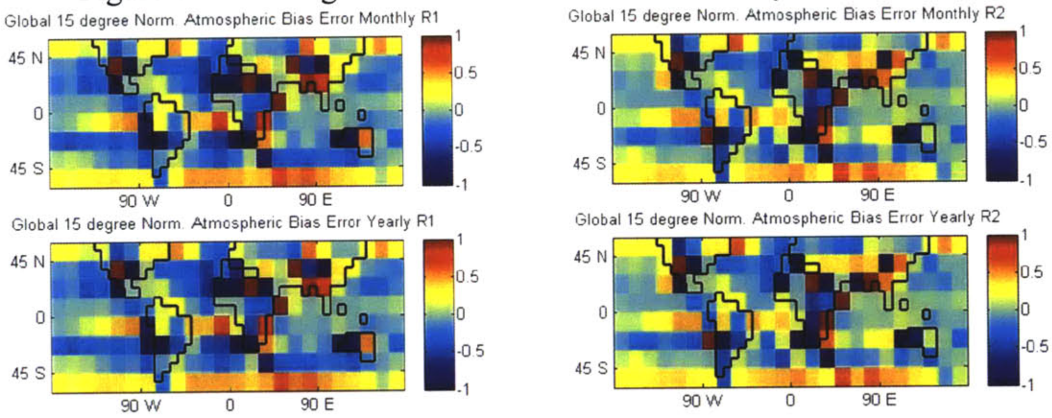


Figure 6-11: 15 degree Normalized Bias Error Reanalysis Balances

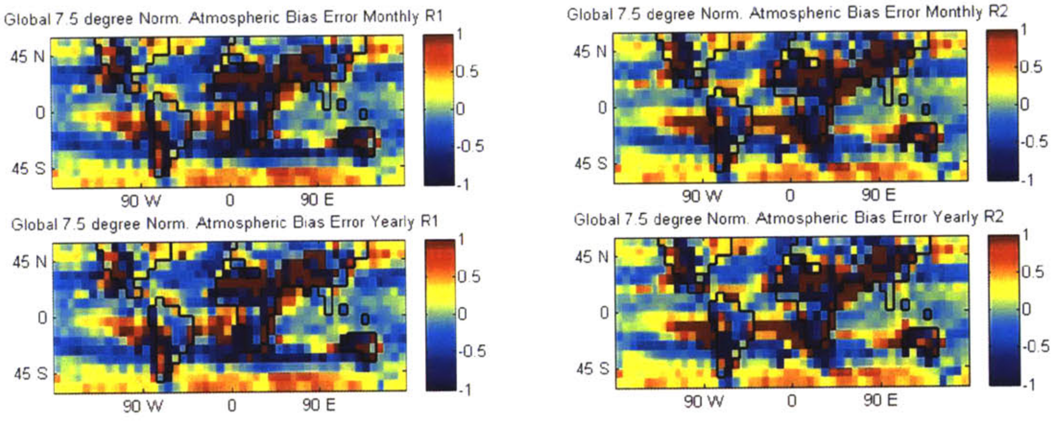


Figure 6-12: 7.5 degree Normalized Bias Error Reanalysis Balances

6.1.5. Global Atmospheric Regression Slope

In the next three sections results of the regression calculation for the atmospheric two sided water balance are presented. Of the most importance in the regression study is the evaluation of the slope. A slope above one results in a larger signal in moisture flux (given that change in precipitable water has little variation) than in the P-E quantity, and a slope below one means the reverse. In Figure 6-13 the regression slopes for the 30 degree resolution are shown. Several control volumes control volumes yield slopes which differ significantly from one. These points are more common over land than water and don't show much of a pattern as far as being either high or low. The 15 degree resolution of the regression slope is shown in Figure 6-14. There are many light blue and yellow points in both the 30 and 15 degree resolution indicating slope slightly below and slightly above one especially over the oceans. These results indicate fairly good regression slopes.

In Figure 6-15 a much more detailed picture of the different regression slopes is shown at the 7.5 degree resolution. The same scale is used at all resolutions in order to display the decay of the slope from the coarse resolution to fine resolution. For the 30 degree resolution only a few tiles show the maximum and minimum slope of the color bar provided. With the 7.5 degree resolution many more points are dark blue and dark red, indicating slopes at or over the color bar bounds.

Subtle differences can be detected between the monthly and yearly time scales and between the Reanalysis-1 and Reanalysis-2 across all resolutions, as the yearly balances tend to have slopes with a further departure from one especially over land in the 15 and 7.5 degree resolutions. Fewer points are present for these regressions, and there is no seasonal cycle. Such differences can be specifically seen over the South American continent for both reanalysis (where strong seasonal cycles have been observed previously) across the different time scales.

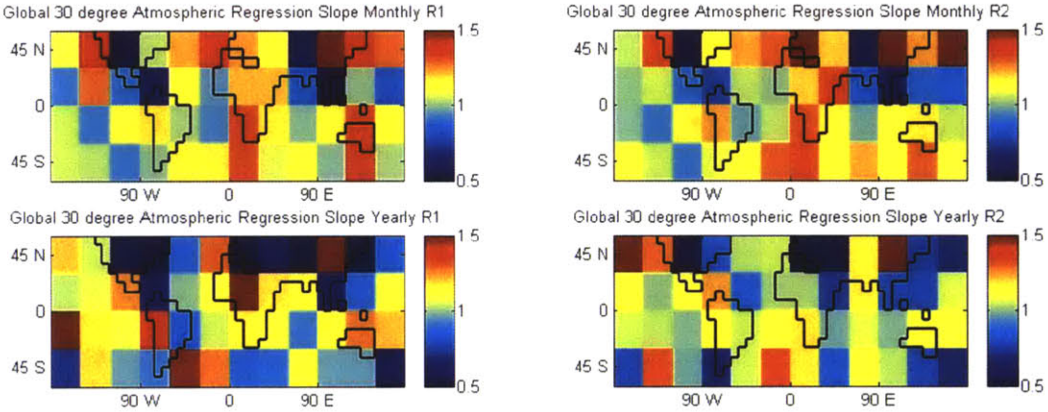


Figure 6-13: 30 degree Regression Slope Reanalysis Balances

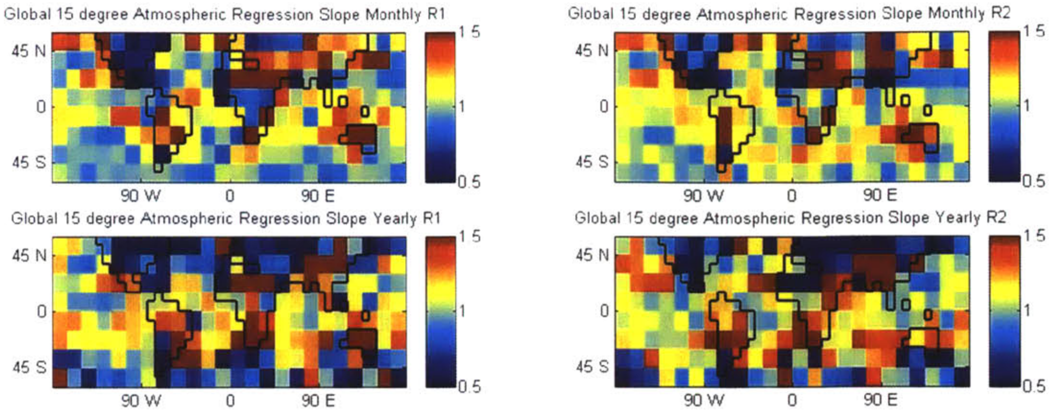


Figure 6-14: 15 degree Regression Slope Reanalysis Balances

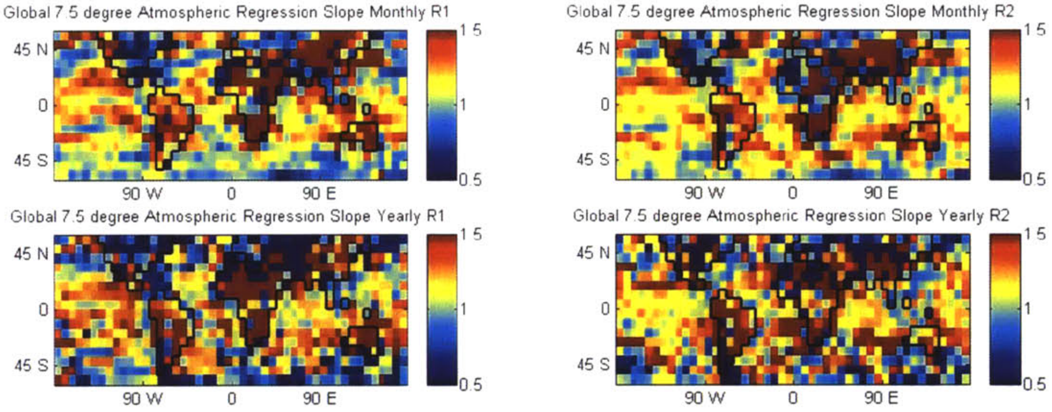


Figure 6-15: 7.5 degree Regression Slope Reanalysis Balances

6.1.6. Global Atmospheric Regression Intercept

The regression intercept is essentially a measure of bias in the regression, and since there is a better measure of bias in the residual statistics it is often bypassed. It is interesting though to look at this statistic for initial reanalysis conditions on a global map to observe trends and compare to with the other regression statistics. In Figure 6-16 the regression intercept is mapped for the 30 degree resolution. The desirable intercept of zero is represented by green blocks, while blue and red indicate strong negative and positive intercepts respectively. At this resolution there aren't many points which show regression intercepts over 10 kg/m^2-month. There is little difference between regression intercept across time scale or reanalysis. The distribution of errors appears totally random.

In Figure 6-17 the 15 degree regression intercepts are shown. The scale of the colorbar is doubled in order to obtain a similar picture as before, and again there are few obvious patterns in terms of regression intercepts. This is alarming over areas like the tropical ocean where water balances of this nature are suppose to be very successful. The same can be said for Figure 6-18 where the bounds of the colorbar are again doubled. Errors at the 7.5 degree resolution are more concentrated over land masses and to the north and south, but clear conclusions can not be drawn. Other water balance evaluation criteria are able to detect errors in the water balance more clearly, a further reason to disregard regression intercept in the global analysis.

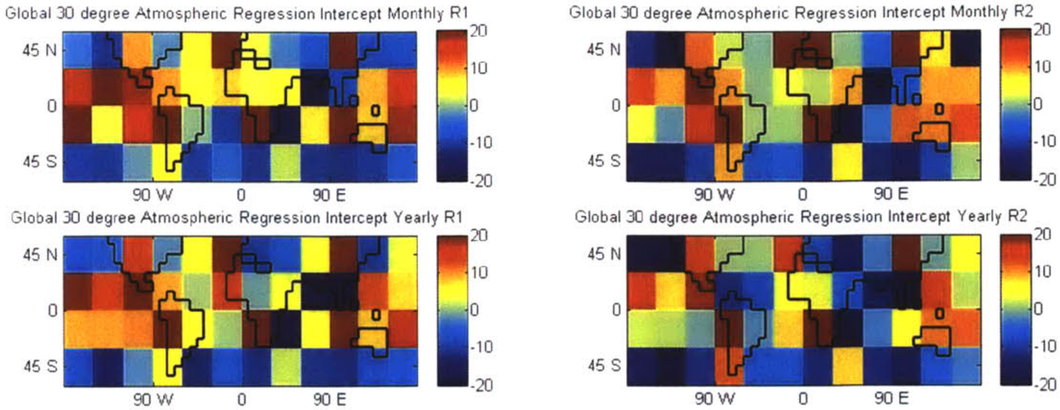


Figure 6-16: 30 degree Regression Intercept Reanalysis Balances

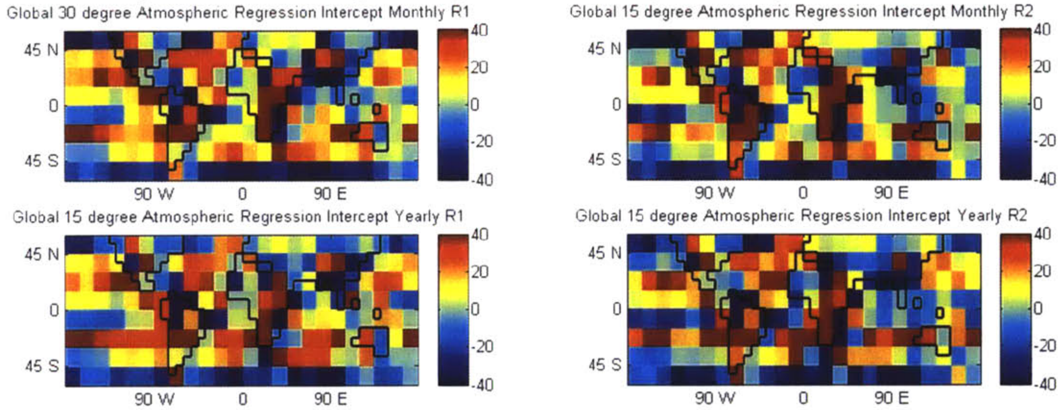


Figure 6-17: 15 degree Regression Intercept Reanalysis Balances

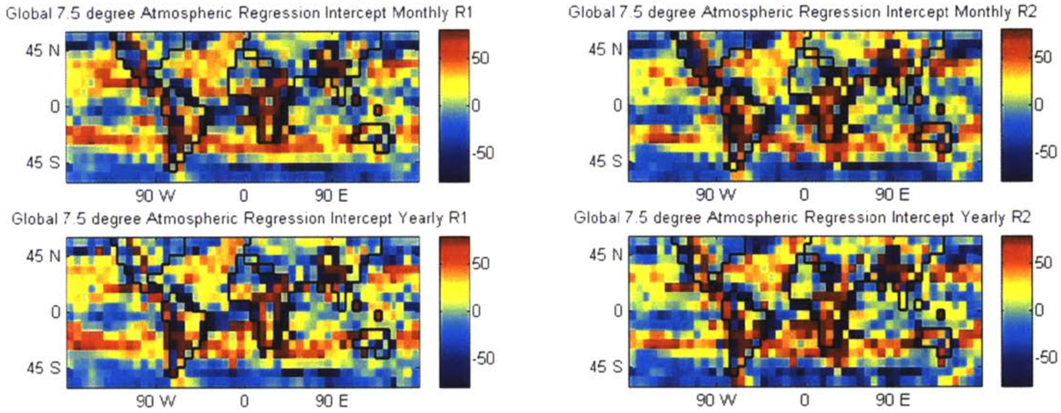


Figure 6-18: 7.5 degree Regression Intercept Reanalysis Balances

6.1.7. Global Atmospheric Regression R^2

In this section, the R^2 values corresponding to the atmospheric regression calculated for each point in the global water balance map are presented. Therefore, results in these plots are dependent on the regression slope and intercept which were obtained for each control volume in the previous two sections. Very high R^2 values are found almost exclusively in the tropical regions for the 30 degree resolution. This relationship is strongest in the monthly Reanalysis-2 case and weakest in the yearly Reanalysis-1 case. There is a major contrast between the middle two rows in each plot and the top and bottom row of Figure 6-19. The properties of these tropical regressions are varied, but they all correspond to good correlation even over the yearly time scale, an interesting observation which is unique to the 30 degree resolution.

When the resolution is increased to 15 and 7.5 degrees the strongest relationships are again seen clearly in the monthly Reanalysis-2, and the weakest in the yearly Reanalysis-1, shown in Figures 6-20 and 6-21. However, as resolution is increased, the strong R^2 values are more limited to the oceans than the land in the tropical regions. In the coarse 30 degree resolution all of the control volumes in the tropical regions have at least some ocean in them. At finer resolutions when points can be better classified as land or ocean, the land points don't perform as well.

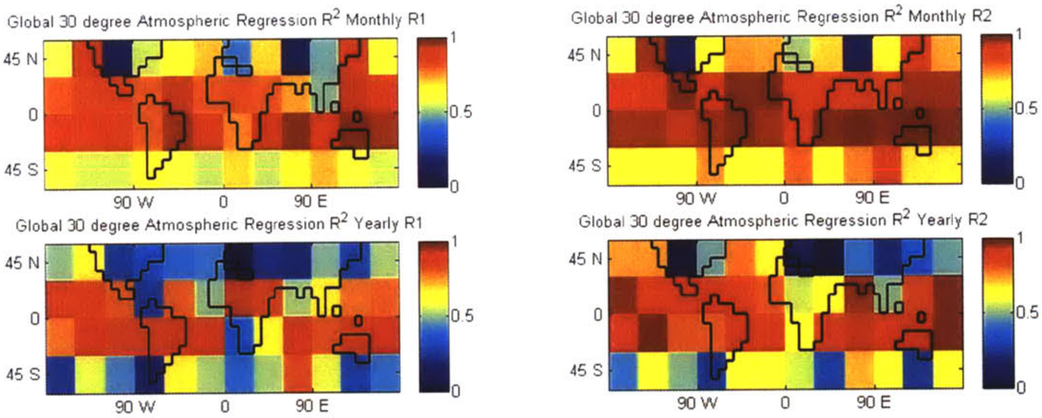


Figure 6-19: 30 degree Regression R^2 Reanalysis Balances

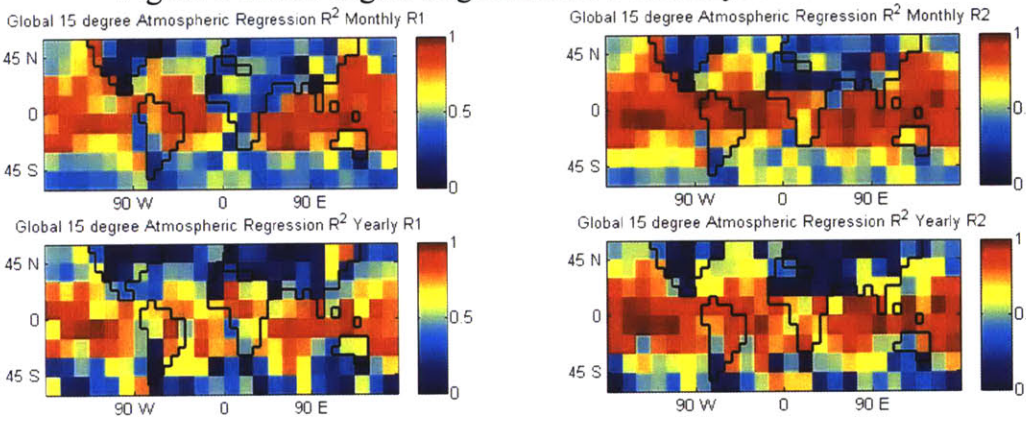


Figure 6-20: 15 degree Regression R^2 Reanalysis Balances

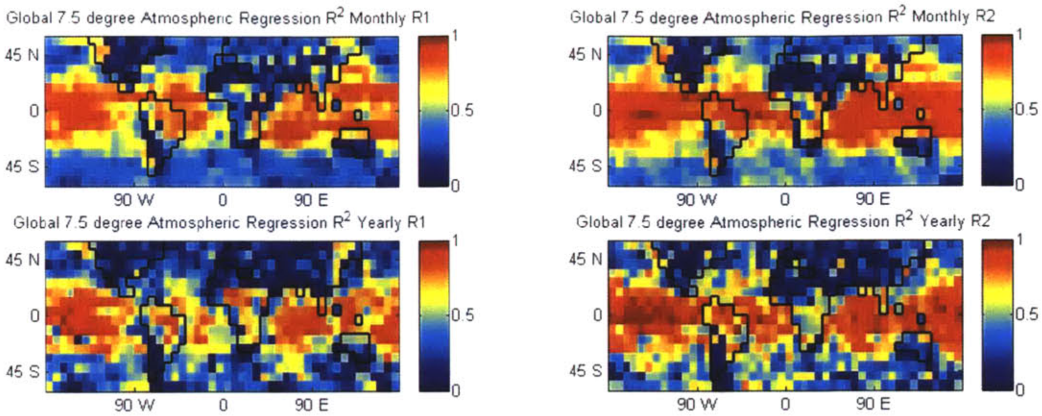


Figure 6-21: 7.5 degree Regression R^2 Reanalysis Balances

6.1.8. Global Atmospheric Regression R^2 1:1

In Figure 6-22 the R^2 1:1 values are shown for the 30 degree resolution control volumes. For the monthly time scale many tropical control volumes adhere well to the 1:1, with the Reanalysis-2 having more of these solid red areas. Few such points are found for the yearly time scale even at the 30 degree resolution. The strong seasonal cycle governs the R^2 1:1 term in tropical regions as it did for the regression line R^2 term. In Figure 6-23, showing the 15 degree resolution, fewer good areas exist on the monthly time scale and those that do exist are primarily over the tropical oceans. The locations of these good R^2 1:1 results extend north and south in the oceans in the Reanalysis-2. Some ocean points yield good results for the yearly times scale and more so in the Reanalysis-2, but the global map is dominated by blue and therefore significantly negative R^2 1:1 values. In Figure 6-24 the same observations can be made for the 7.5 degree resolution as for the 15 degree resolution. Over the oceans and over large tropical areas (30 degrees), the R^2 1:1 measure is an effective tool in evaluating the water balance.

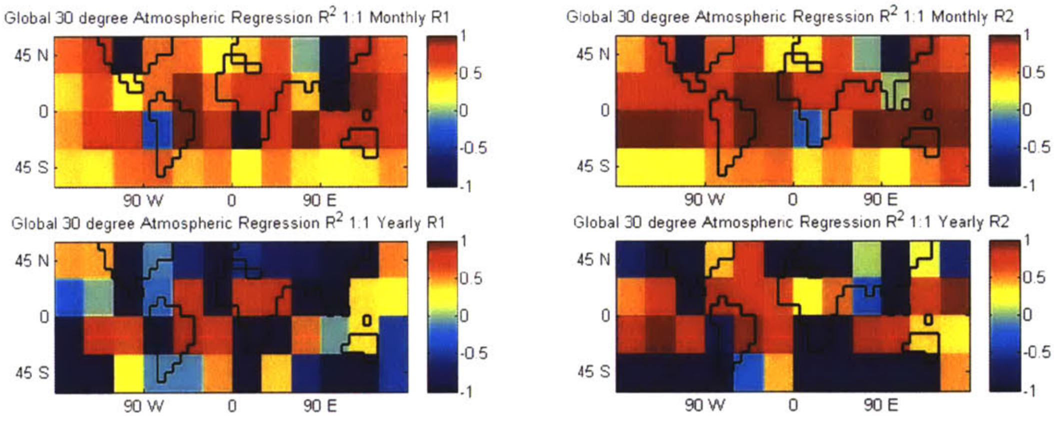


Figure 6-22: 30 degree Regression R^2 1:1Reanalysis Balances

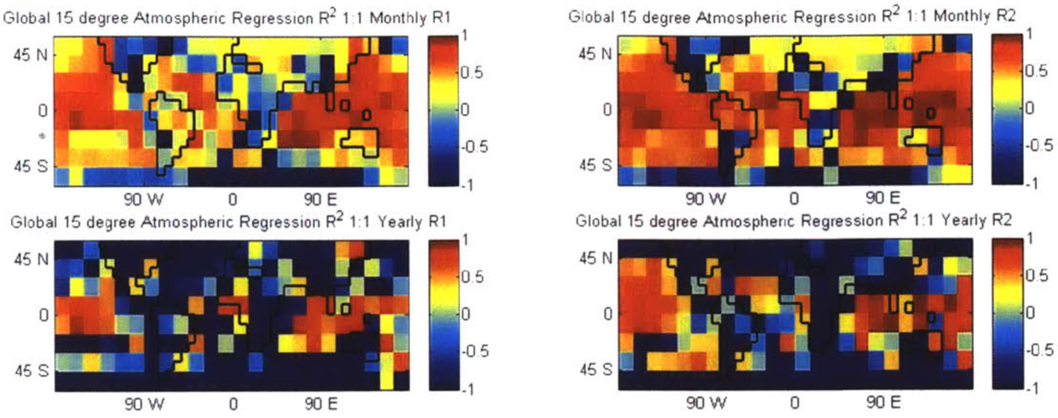


Figure 6-23: 15 degree Regression R^2 1:1 Reanalysis Balances

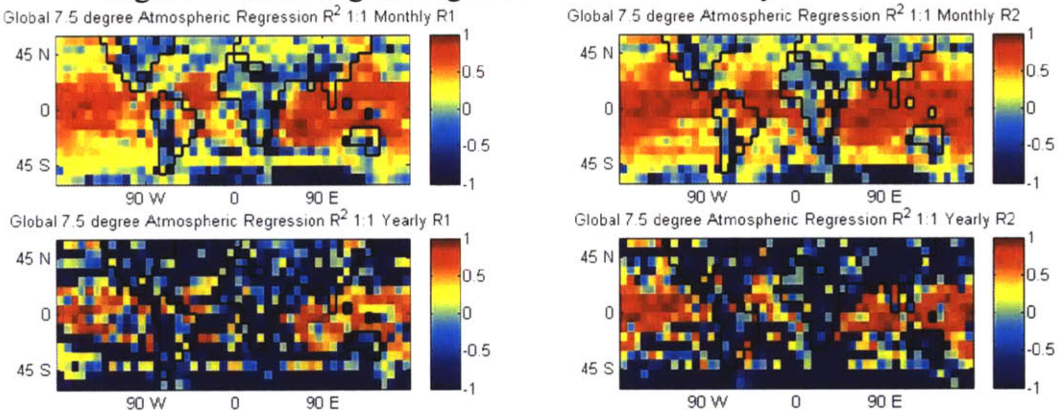


Figure 6-24: 7.5 degree Regression R^2 1:1 Reanalysis Balances

6.1.9. Global Atmospheric Correlation Coefficient

The correlation coefficient and R^2 metrics are very similar as they both measure the adherence of the two sided water balance to a linear relationship. Therefore the results of maps of the 30 degree correlation coefficient in Figure 6-25 are no surprise. Again the tropical regions show very good correlations while other points showing less correlation. For most balances the correlation coefficient is greater than .5 for all control volumes at the 30 degree resolution and monthly time scale, with the exception of two control volumes which are completely over land. Increasing the resolution to 15 degrees in Figure 6-26 all tropical regions still show a good correlation in the monthly Reanalysis-2 balance regardless of land or water. At the 7.5 degree scale in Figure 6-27 the correlations begin to break down in the tropical regions over land. Particularly weak correlations are found over northern landmasses at 15 and 7.5 degree resolution.

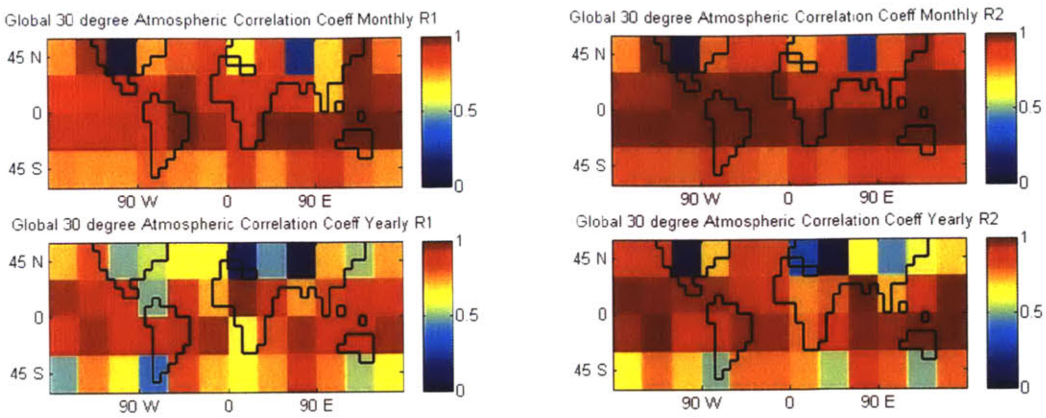


Figure 6-25: 30 degree Correlation Coefficient Reanalysis Balances

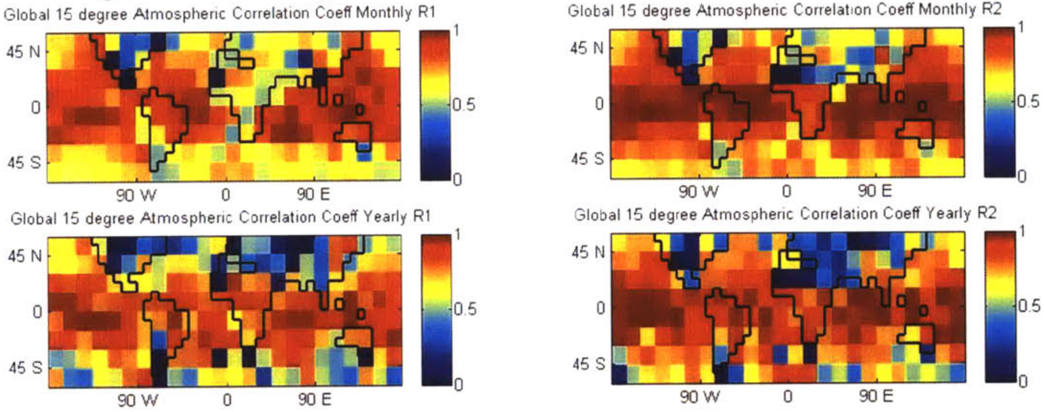


Figure 6-26: 15 degree Correlation Coefficient Reanalysis Balances

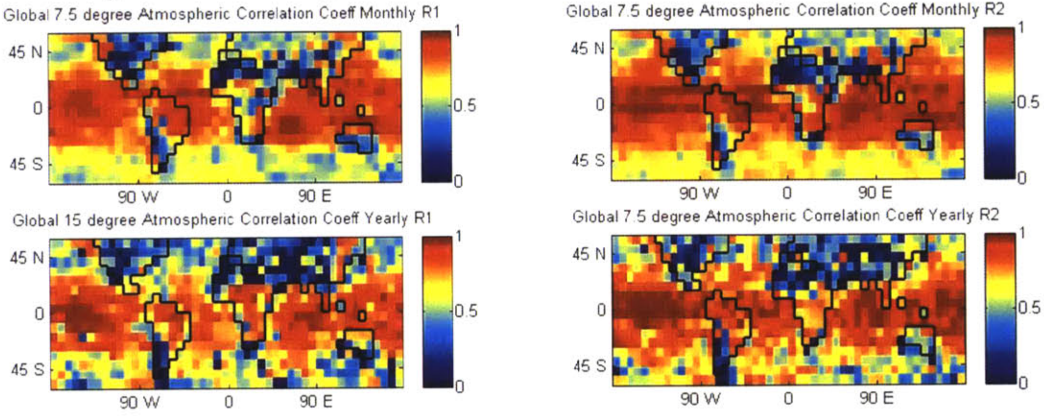
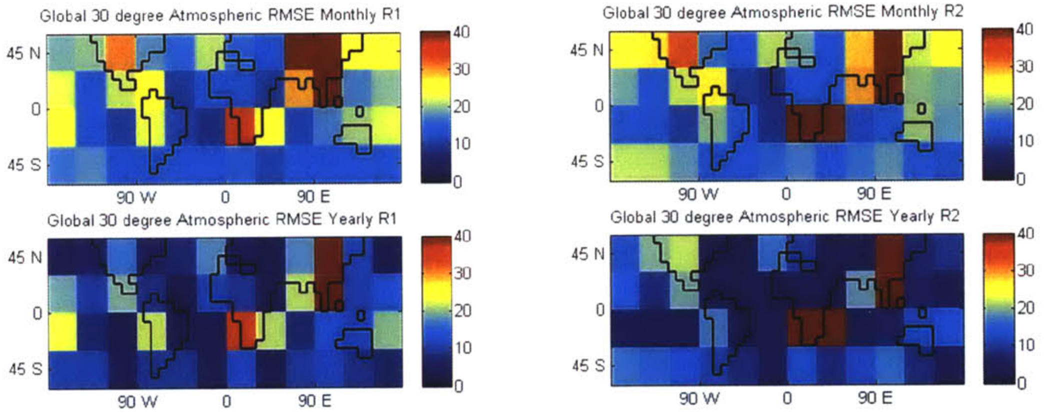


Figure 6-27: 7.5 degree Correlation Coefficient Reanalysis Balances

6.1.10. Global Atmospheric Root Mean Square Error

The root mean square error is an excellent tool for the analysis of the atmospheric balance. The RMSE is always positive thus the magnitudes of the error are easy to recognize on a global map. In Figures 6-28 through 6-30 the root mean square error is mapped for the global atmospheric water balance at 30, 15, and 7.5 degrees respectively. At the 30 degree resolution many regions yield RMSEs of less than 10 kg/m^2-month especially on the yearly time scale. This is a very low error. Problem areas arise where residual statistics indicated problems earlier, in Eastern Asia and Southern Africa. Errors are approximately doubled when resolution is increased from 30 degrees to 15 degrees as indicated by the change in colorbar. On the 7.5 degree resolution and monthly time scale, significant errors are found over almost all land masses. These large errors are indiscriminate to geographic features as they cover both mountainous and flat lands. Such errors are nowhere near as high or concentrated to land on the yearly time scale. On the yearly time scale many water balances over land have the same error as water balances over ocean. In the case of RMSE the best balances are found in the yearly Reanalysis-2 and the worst in the monthly Reanalysis-1 because of variability which exists in the monthly time scale.

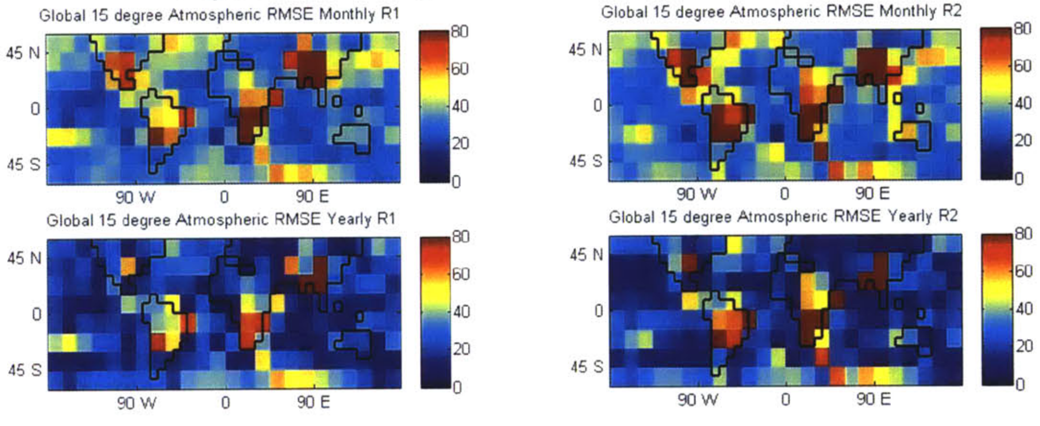

Global 30 degree Atmospheric RMSE Monthly R1

Global 30 degree Atmospheric RMSE Monthly R2

Global 30 degree Atmospheric RMSE Yearly R1

Global 30 degree Atmospheric RMSE Yearly R2

Figure 6-28: 30 degree RMSE Reanalysis Balances


Global 15 degree Atmospheric RMSE Monthly R1

Global 15 degree Atmospheric RMSE Monthly R2

Global 15 degree Atmospheric RMSE Yearly R1

Global 15 degree Atmospheric RMSE Yearly R2

Figure 6-29: 15 degree RMSE Reanalysis Balances

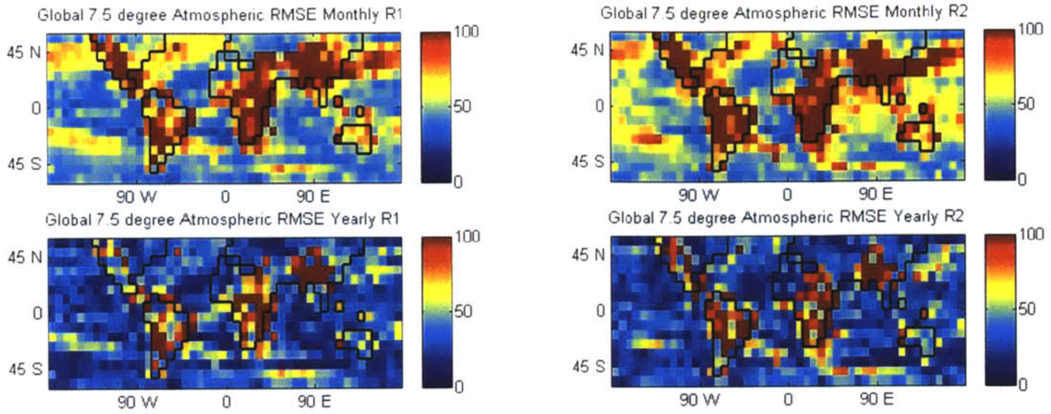


Figure 6-30: 7.5 RMSE Reanalysis Balances

6.1.11. Global Atmospheric Normalized Root Mean Square Error

The final analysis tool which can be applied to the global atmospheric water balance is the normalized version of the RMSE. This is displayed at various resolutions over Figures 6-31 through 6-33. For the 30 degree resolution higher normalized error exists generally over land, without much of a pattern, but at the 15 and 7.5 degree resolutions these errors become increasingly concentrated and localized. Specifically at the 7.5 degree resolution there is a large contrast between normalized errors greater than 2 (dark red) and normalized errors less than 1 (blue). These areas are not limited to land mass, although they persist over the African and Asian continents, they also exist in wake of continents specifically in the Southern Hemisphere. It is hard to ascertain the reason for the ocean errors in these locations as ocean water balances have behaved very regularly for most other properties. These areas of the ocean must be drier and clearly more error prone. The normalized absolute error and bias were a prior indicator.

Figure 6-31: 30 degree NRMSE Reanalysis Balances

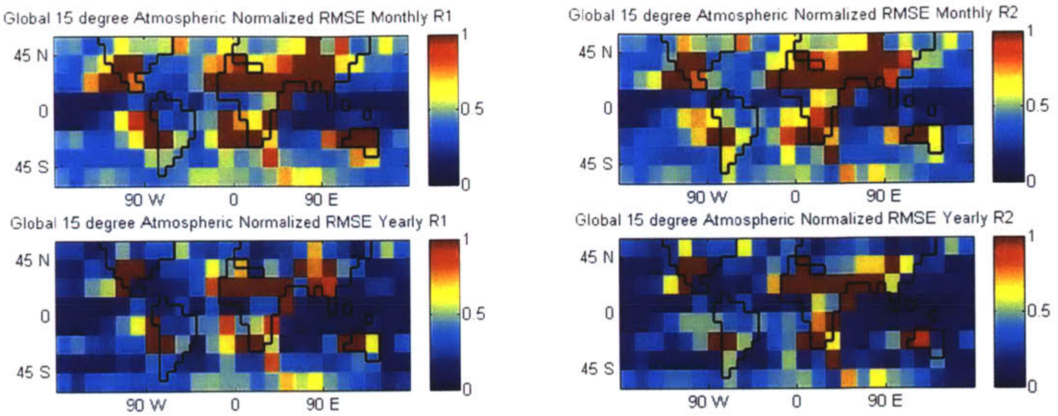


Figure 6-32: 15 degree NRMSE Reanalysis Balances

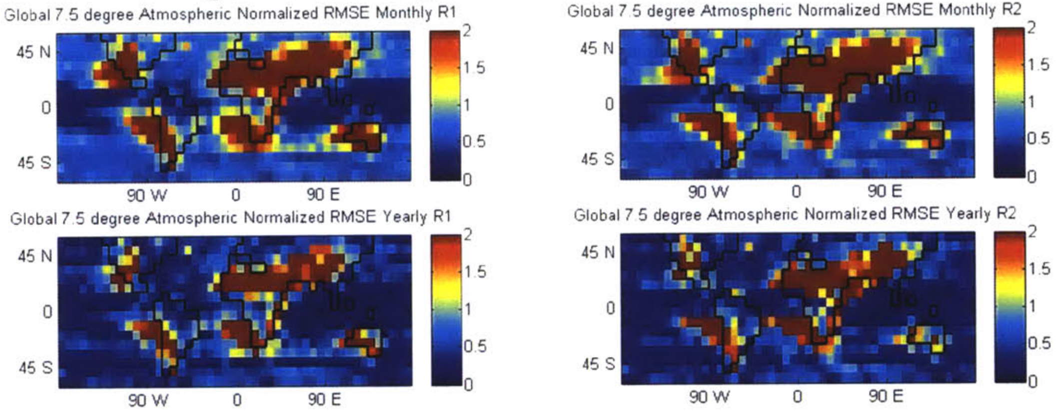


Figure 6-33: 7.5 degree NRMSE Reanalysis Balances

6.2. Precipitation Set Data Analysis

In the previous section the different properties of the global atmospheric water balance were looked at and evaluated by looking at spatial maps. The results on each spatial map can also be averaged over the control volumes in either the global (60 N to 60 S) or tropical (30 N to 30 S) regions to evaluate the general characteristics of all balances. This is a necessary simplification of analysis when different precipitation datasets are applied to each water balance.

An additional six precipitation datasets can be applied to each control volume in the global atmospheric water balance: the default reanalysis precipitation, the GPCP precipitation, the SSM/I precipitation, the OPI/Longwave-Radiation and OPI/Model precipitation datasets, and the CMAP precipitation dataset. The CMAP2 precipitation dataset contains errors globally and therefore is dropped from consideration. Additionally, the GPI and TRMM 3B43 precipitation datasets can be applied to the tropical region control volumes between 30 degrees N and 30 degree S.

Thus analyzing different characteristics as applied to the global atmospheric water balance eight basic balances are created varying reanalysis (2), time scale (2), and creating separate analyzes for global and tropical regions. The tropical region analysis allows for the inclusion of two additional precipitation datasets as mentioned before and is also of interest as since during the spatial analysis it was observed that the tropical water balances had much different characteristics, especially for the 30 degree resolution.

In Figure 6-34 the averaged absolute errors are displayed averaging over all control volumes for the different water balance characteristics. Resolution is decreased from the top row to the bottom row. In general, across each balance the reanalysis precipitation provides the lowest absolute error, particularly in the tropical regions. The precipitation errors for the global cases are generally the same for all datasets as the GPCP and SSM/I applications provide generally higher errors. The same can be said for only tropical control volumes on the right with even higher absolute error in the water balance found when the tropical specific 3B43 and GPI precipitation are applied. These effects are dampened as resolution decreases, but are generally universal.

In Figure 6-35 the normalized absolute error is displayed in the same way. Trends are generally the same with an even larger increase in SSM/I and GPI precipitation error. These precipitation datasets are both satellite based and their variability seems to increase the normalized absolute error. For the 7.5 degree resolution absolute errors for all precipitation datasets are on average of the same order of magnitude as the precipitation itself. It is known that over the oceans these errors are fairly low; therefore over land the errors must be even higher. This contrast between land and ocean points will also be analyzed in a later section.

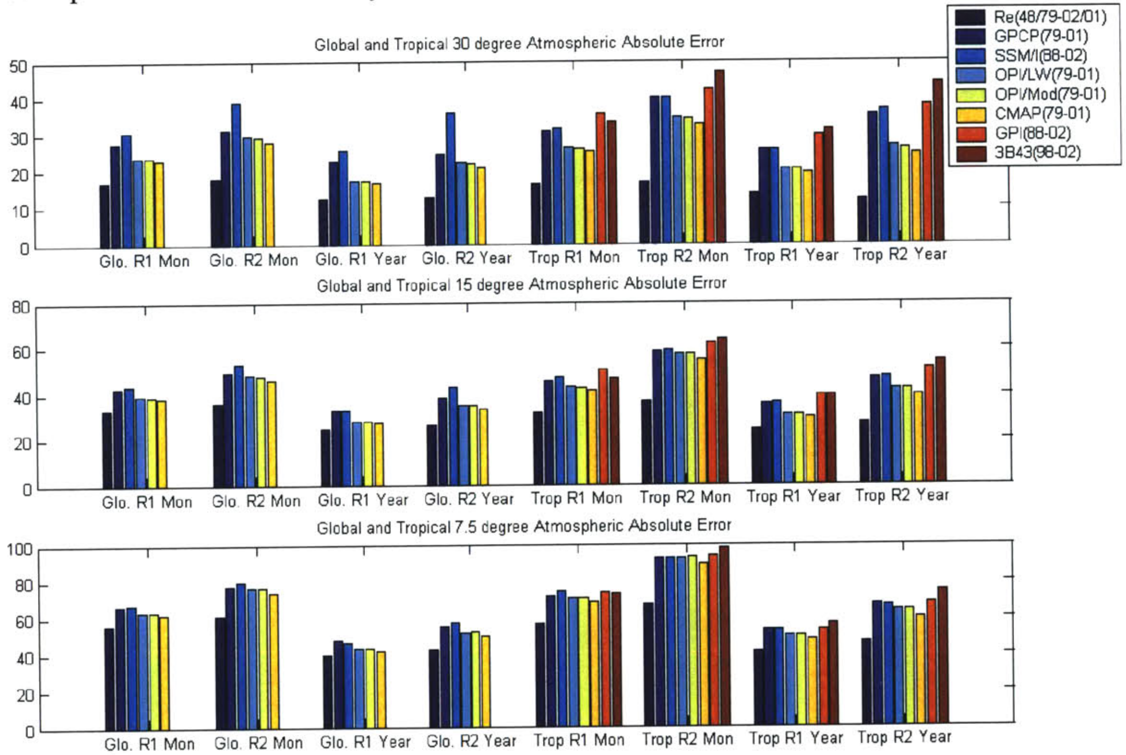


Figure 6-34: Global and Tropical Analysis of Different Precipitation Datasets – Absolute Error

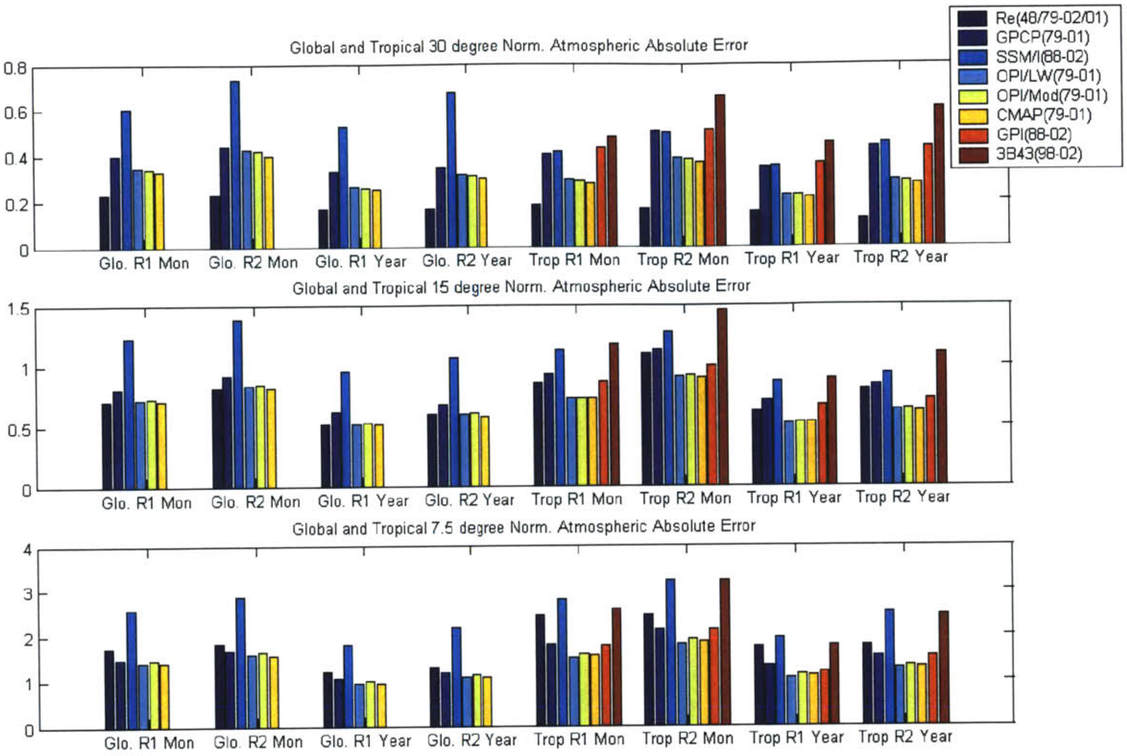


Figure 6-35: Global/Tropical Analysis of Different Precip. Datasets – Norm. Absolute Error

Of special interest in the global atmospheric balance is the averaged global bias of all water balances. If the reanalysis is truly a global product there should be little if any bias in the long term water balance, when all spatial areas are taken into account. When other precipitation datasets are introduced, biases are more likely as the water budget of the reanalysis was made to match its own precipitation data and not alternatives. The biases for different global atmospheric characteristics are given in Figure 6-36.

As suspected, the biases are lowest for the reanalysis precipitation for each situation, and across time scale bias remains constant. Bias residuals behave similarly to absolute error residuals as far as precipitation dataset, in terms of departure from zero. All biases are negative for every situation. Interestingly, bias is not only constant across time scale, but it also nearly constant across resolution. This proves that the integrity of the different datasets used in each case is maintained throughout the water balance process. The biases for the reanalysis are very low for all situations in the Reanalysis-1 and the Reanalysis-2 indicating that the water balance in the reanalysis is preserved in between both the 60 degree and 30 degree latitudes. All of the moisture flux terms which contain sizeable errors at some resolutions cancel out in the spatial averaging and the water balance nearly balance and simplifies to P=E.

This is an important observation in that the total moisture flux globally is approximately zero when complete spatial averaging is performed (as it should be), and any discrepancies are likely due to differences in moisture flux through the top and bottom boundaries (60 or 30 degrees latitude). Alternative precipitation datasets indicate much more precipitation globally within the bands being analyzed. It would seem then that a proper balance would include increased precipitation and evaporation. The reanalysis evaporation should be higher in order to match more accurate alternative precipitation datasets.

The normalization of the bias in Figure 6-37 yields consistent results at the 30 degree and 15 degree resolutions. However, as resolution increases, biases become less negative and even approach zero. This does not mean a balance is achieved. There are many tropical regions which are dry and mountainous and these normalized errors can be very high because of very low average precipitation being used as a normalization tool. This effect will increase with increased resolution because the precipitation data can be more specific at higher resolutions and therefore have greater extremes.

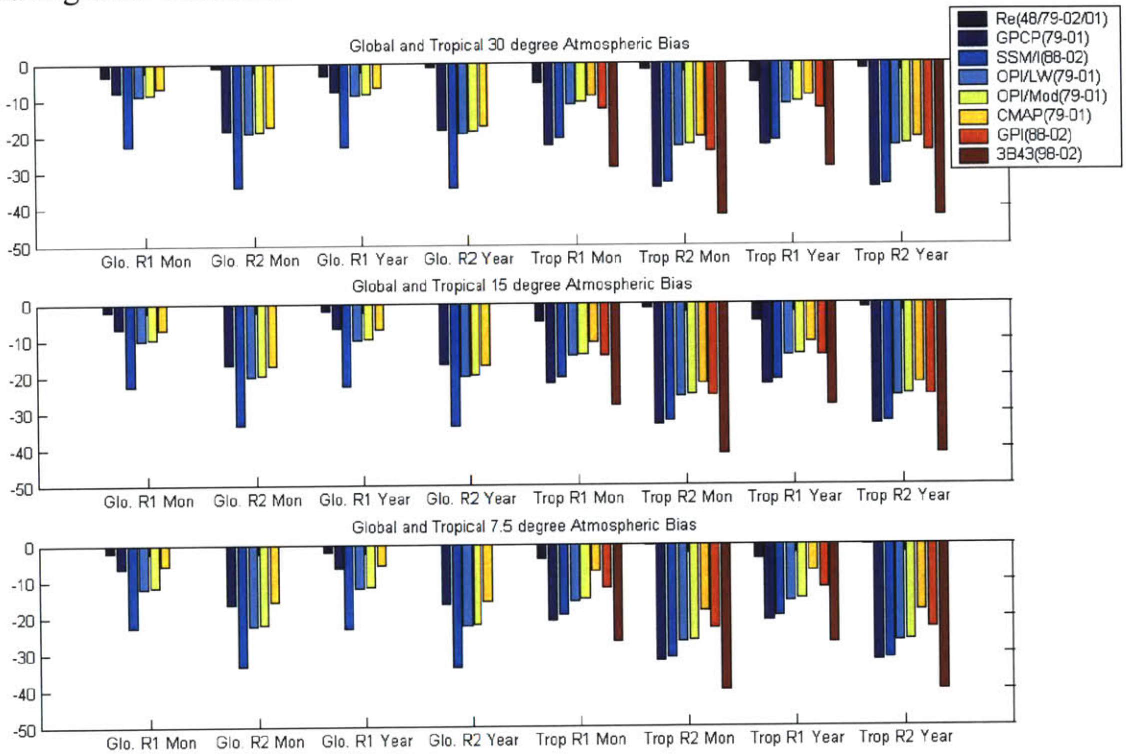


Figure 6-36: Global and Tropical Analysis of Different Precipitation Datasets – Bias Error

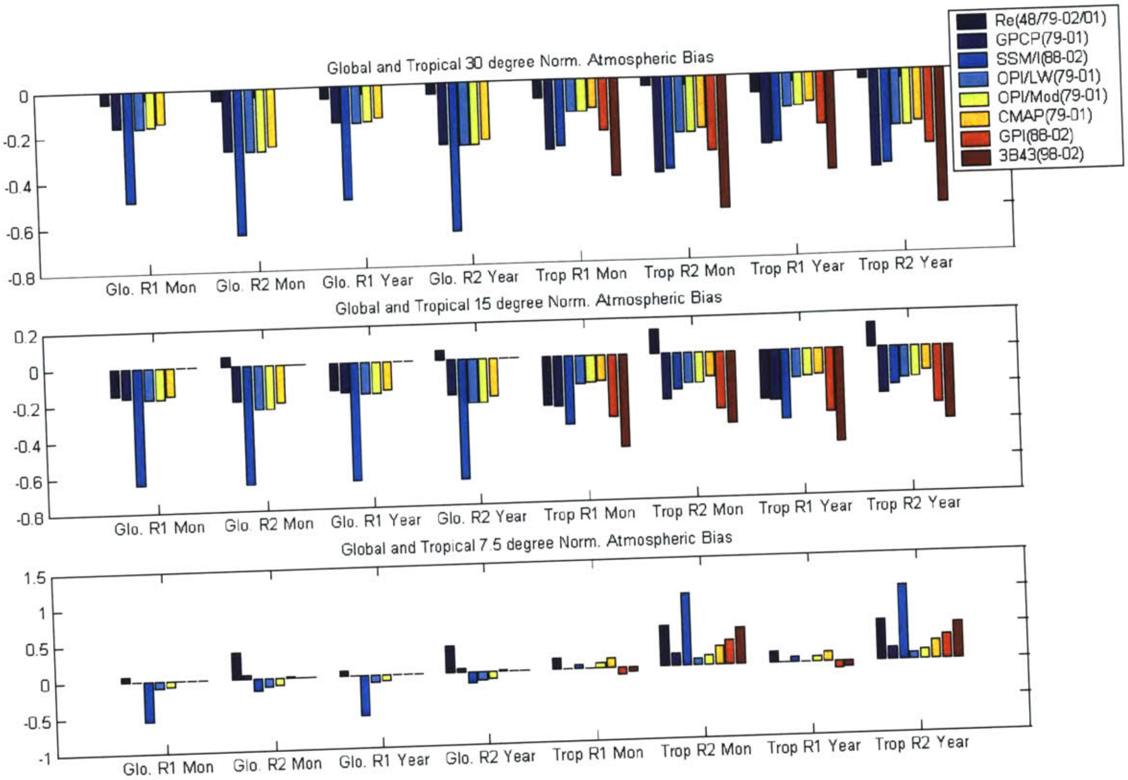


Figure 6-37: Global and Tropical Analysis of Different Precip. Datasets – Norm. Bias Error

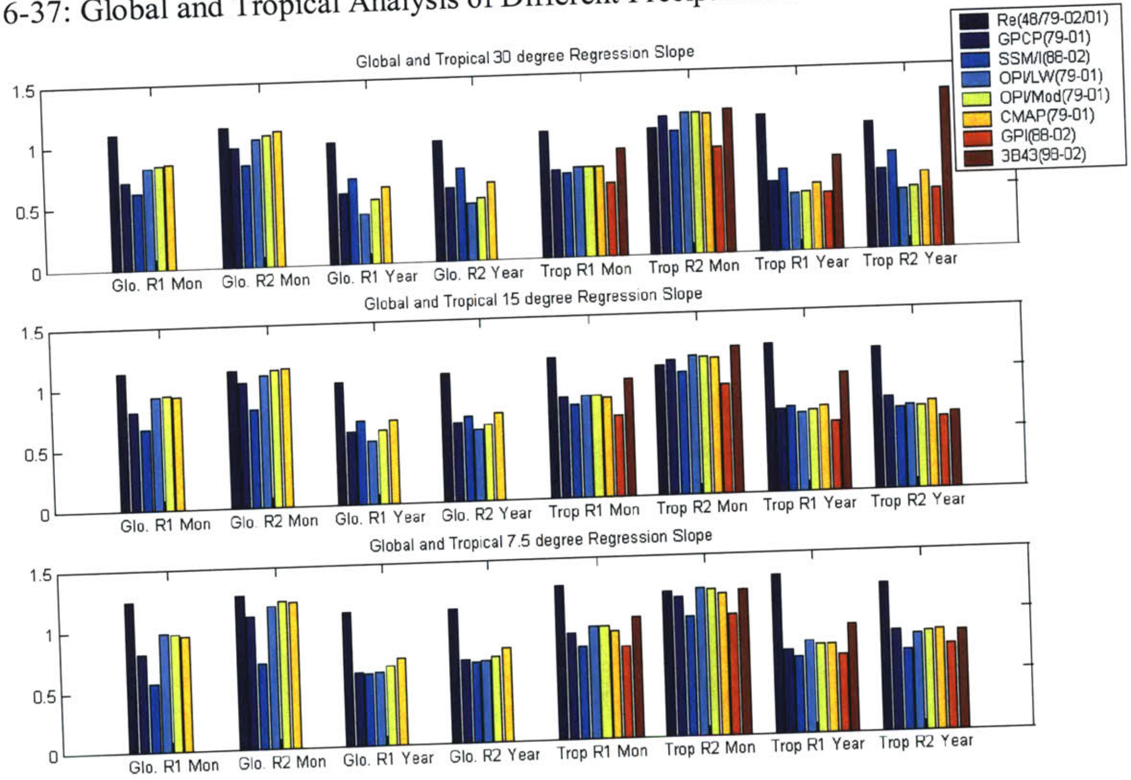


Figure 6-38: Global and Tropical Analysis of Different Precip. Datasets – Regression Slope

The regression intercept is bypassed here as it yields no new insight. The same is true for the R^2 and R^2 1:1 analyzes as they yield nothing that can not be evaluated by the correlation coefficient. The slope and correlation coefficient for these spatially averaged analyzes are displayed in Figure 6-38 and 6-39. Looking at the global results for slope in Figure 6-38 the reanalysis precipitation yields the slope closest to one clearly at every resolution. For all yearly cases the average slope is less than one indicating weaker signals in the moisture flux time series than the P-E time series. The distinction between precipitation datasets is clearer in the yearly time scale, and on the 7.5 and 15 degree resolutions. Slope results tend to depart more from one with increase in resolution. For the tropical cases the regression slope is generally closer to one. The tropical precipitation datasets yield comparable results to the other precipitation datasets over this area.

Turning to correlation coefficient, the reanalysis precipitation clearly provides for the best correlation of the two sides of the water balance for every situation and resolution presented. Correlation generally decreases with increased resolution which is expected. The other precipitation datasets vary in terms of effectiveness. However there is a general increase in average correlation coefficient for the tropical control volumes. A stronger seasonal cycle is more likely in tropical regions leading to higher correlation.

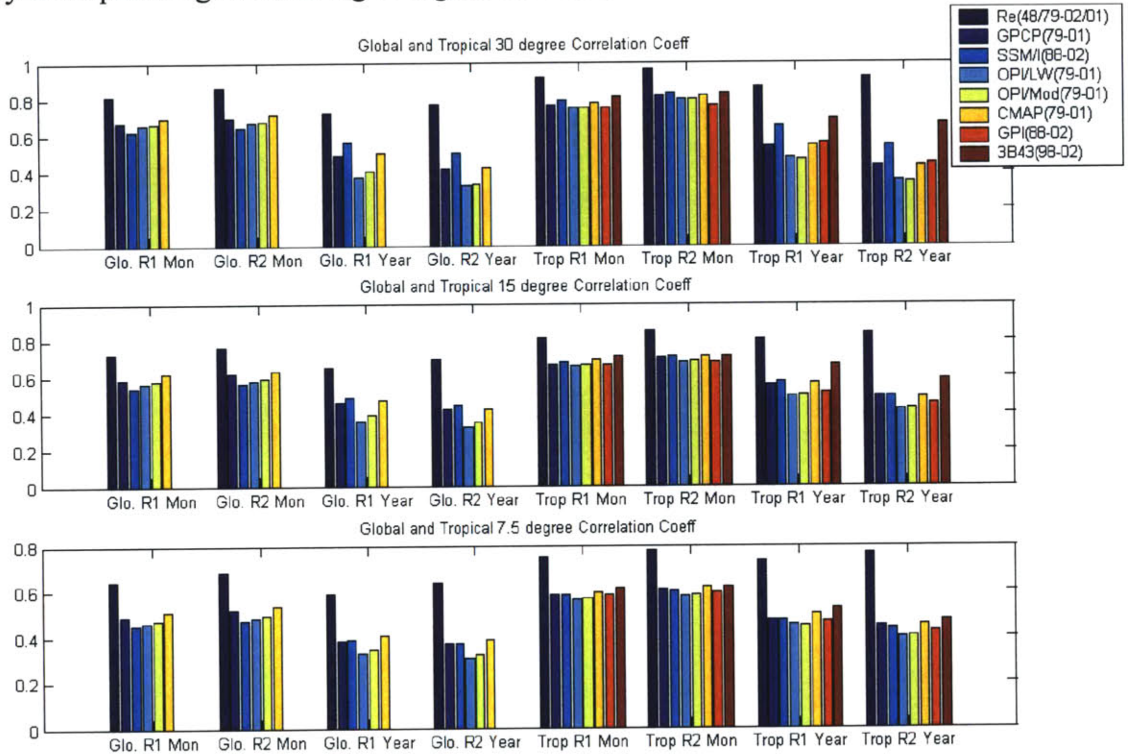


Figure 6-39: Global and Tropical Analysis of Different Precip. Datasets – Correlation Coeff

In Figures 6-40 and 6-41 the RMSE and Normalized RMSE are presented as the other water balance properties in this section. For every scenario evaluated by the RMSE the reanalysis precipitation again provides the best results. It has become clear that the reanalysis precipitation is best suited to close its own water balance, globally. In general, results of the RMSE property are similar to the residual evaluation of the different balances especially on the monthly basis. Error nearly doubles over each resolution for both the RMSE and NRMSE. Error increases, but so did correlation when only the tropical control volumes are considered. These findings are counterintuitive and must indicate there is much more water in the tropical water balances over which error can range. NRMSEs are especially high for the SSM/I precipitation dataset. The normalizing ability of this dataset over dry regions has a large affect on this property.

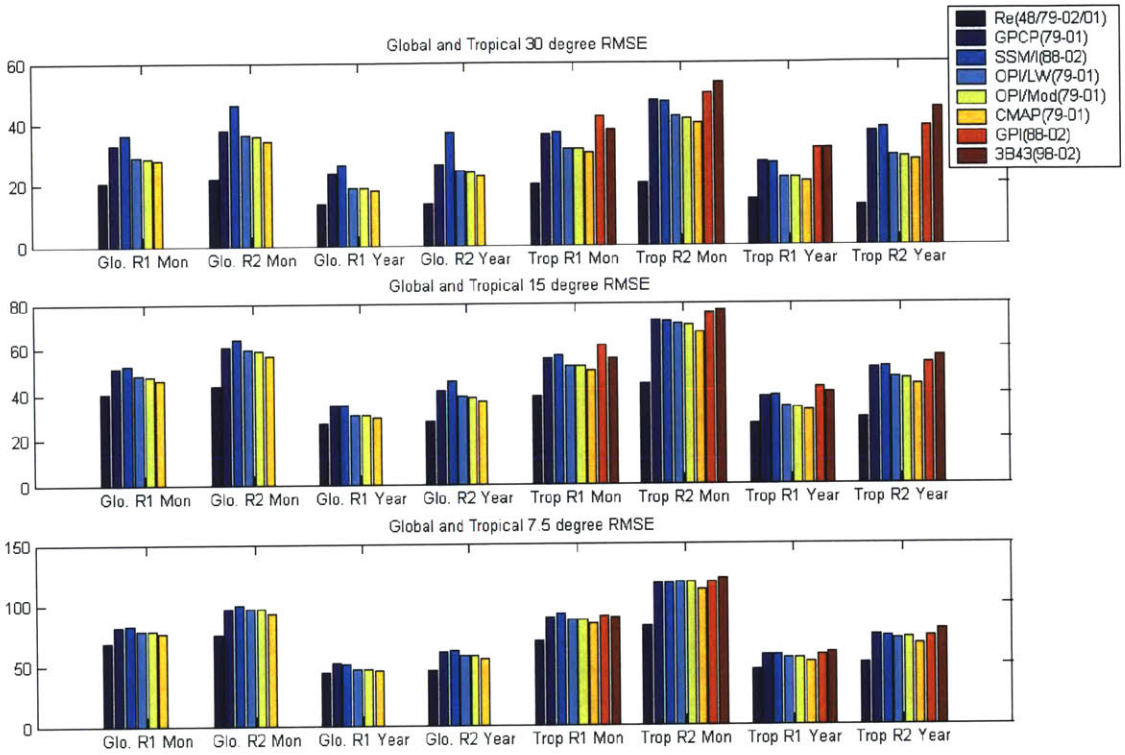


Figure 6-40: Global and Tropical Analysis of Different Precipitation Datasets - RMSE

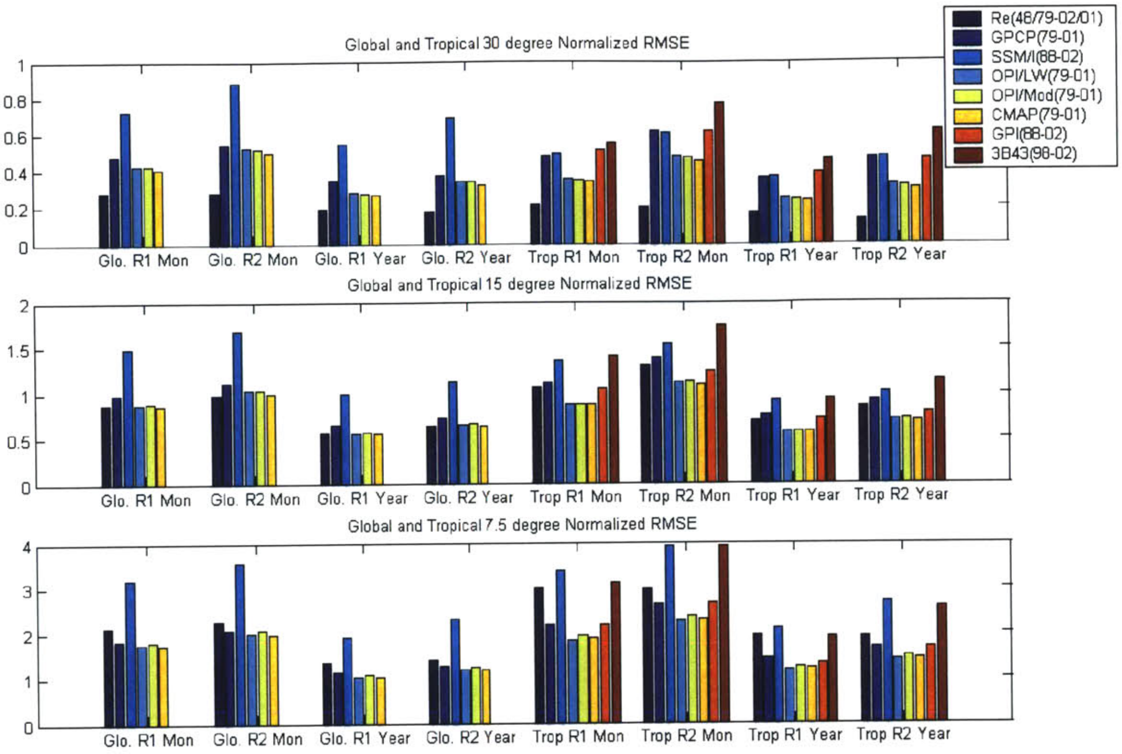


Figure 6-41: Global and Tropical Analysis of Different Precipitation Datasets – NRMSE

6.2.1. Spatial Precipitation Data Analysis

Each precipitation dataset can be applied to a global water balance map at each resolution to generate a unique spatial map. In other words every bar of each graph in the previous Section 6.2 represents the averaged value of the spatial mapping for that property. However, this results in an amount of maps too numerous to analyze in detail. Therefore, a number of these maps have been created varying precipitation over the Reanalysis-2 monthly and yearly time scales for the global and tropical areas and placed in Appendix B. For the Reanalysis-2 monthly and yearly time scale four precipitation datasets are applied to all of the control volumes on the global scale and plotted for each water balance property and resolution. Theses precipitation datasets are the Reanalysis, GPCP, SSM/I, and CMAP precipitation datasets. The GPCP and CMAP precipitation datasets are likely the best alternative precipitation datasets, while the SSM/I is a unique satellite based dataset. Additionally, the same plots are made for all precipitation datasets for the tropical region.

A few of these plots are selected for discussion. The yearly Reanalysis-2 is selected at the 7.5 degree resolution as these balances are most important to the main purpose of evaluating regional water balances at higher resolutions. Important water balance features of the global and tropical water balances are presented.

In Figures 6-42, 6-43, and 6-44 absolute error, bias, and RMSE for different precipitation datasets are presented. The figures look generally similar in terms of absolute error, with some problem areas over land which persist regardless of precipitation dataset. The tropical ocean absolute error is affected by all three of the alternative precipitation datasets, and appears to be the major difference in the figures. The reanalysis ocean water balances were observed to be very strong in Section 6.1, but are weakened by more reliable precipitation datasets (GPCP and CMAP) here. This indicates the reanalysis model is balancing itself. These trends are also seen in Figure 6-44 in terms of RMSE. The bias maps in Figure 6-43 indicate the signs of these imbalances. For the alternative precipitation datasets biases are both high and low over land and vary without a pattern. The ocean biases which correspond to higher absolute errors are primarily negative indicating a surplus in precipitation over the ocean. This is consistent with the overall results in the previous section, and is very interesting as with the reanalysis water balances all ocean balances showed great agreement, but supplying alternative precipitation that may be better than the reanalysis provides problems over the ocean.

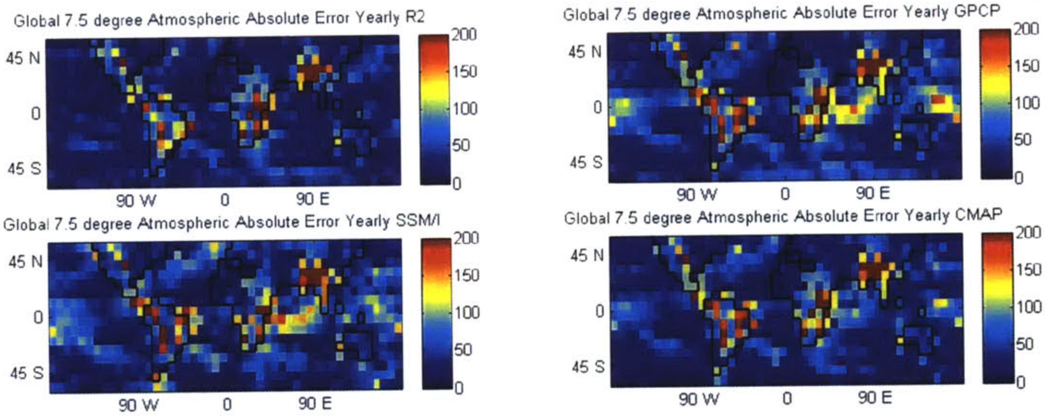


Figure 6-42: 7.5 degree Absolute Error Different Precipitation Global Yearly

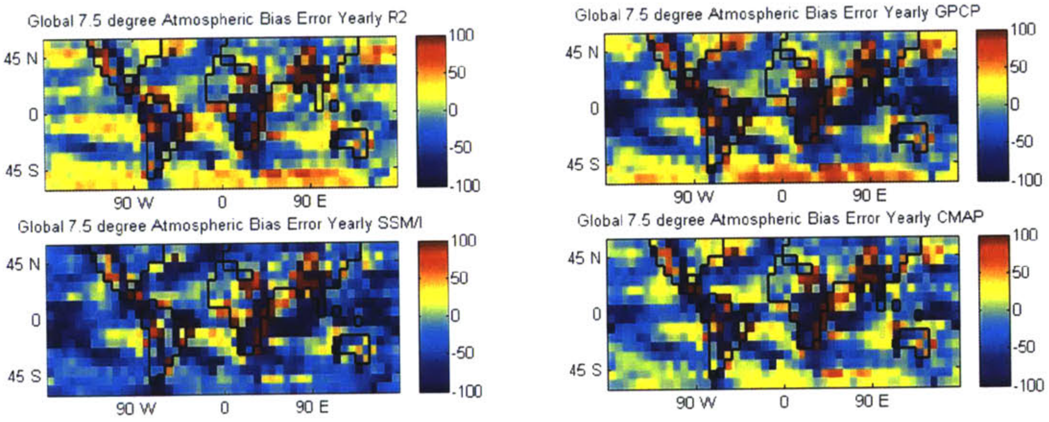


Figure 6-43: 7.5 degree Bias Error Different Precipitation Global Yearly

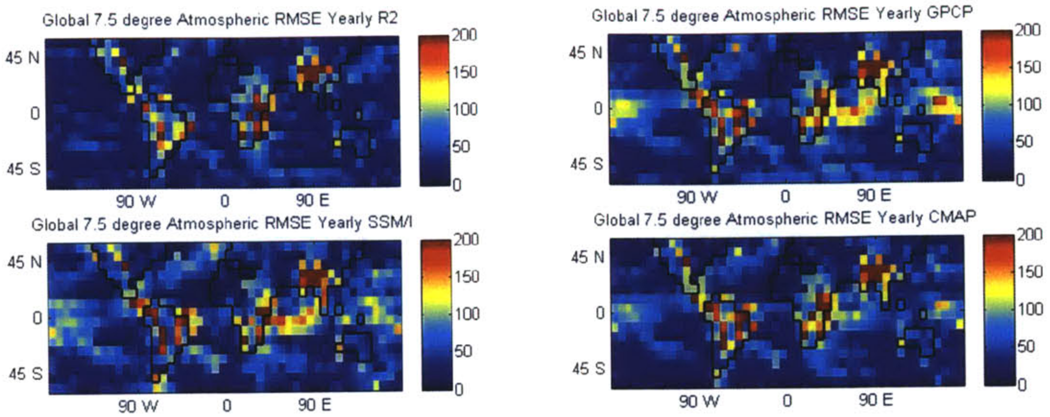


Figure 6-44: 7.5 degree RMSE Different Precipitation Global Yearly

In Figures 6-45 and 6-46 the two sided water balance is represented for different precipitation datasets. In terms of slope, there is a general departure of slope from one for all alternative precipitation datasets shown, and the effect is about the same for all three alternatives. The same can be said about the correlation coefficient. The relationship between the P-E and primarily the moisture flux term Q (as change in yearly precipitable water is nearly zero) is not represented as well when alternative precipitation datasets are applied.

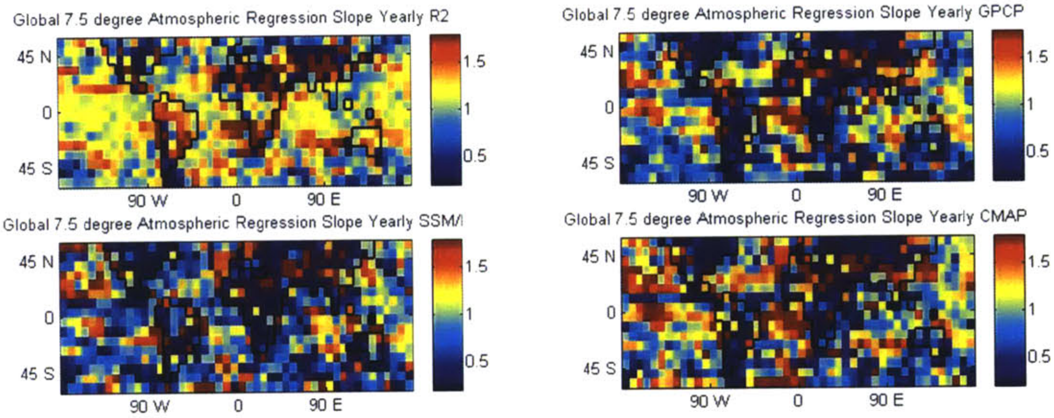


Figure 6-45: 7.5 degree Regression Slope Different Precipitation Global Yearly

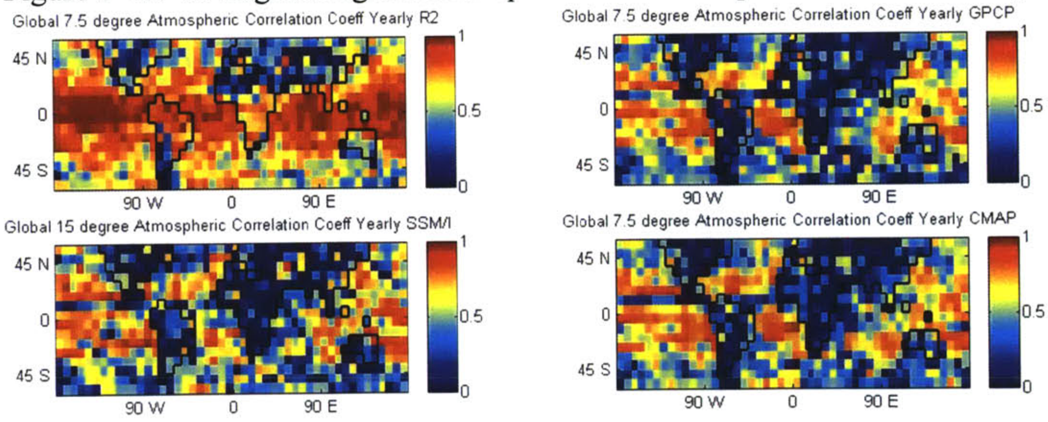


Figure 6-46: 7.5 degree Correlation Coefficient Different Precipitation Global Yearly

It would stand to reason that with so many alternatives, differences would be discernable between precipitation datasets when looking only at tropical control volumes. However, looking at the absolute error results in Figure 6-47, few differences are apparent besides the obvious deviation of all of the alternative precipitation datasets from that provided by the reanalysis. The absolute error of the water balances over tropical regions is very good for the reanalysis in most areas. The tropical precipitation datasets (3B43 and GPI) provide little additional insight to the water balance. If anything, increases in absolute error are seen over the ocean especially in the Indian and Pacific Oceans. These errors can be observed as negative biases over the Indian Ocean in Figure 6-48. The absolute errors and biases are strongest for the TRMM 3B43 dataset, perhaps due to the fact only five years of data is available for the TRMM 3B43 precipitation, and a point or two of bad data may throw the balance off. Similar spatial observations are supported by the RMSE in Figure 6-49.

Turning to the analysis of the two sided balance the regression slopes and correlation coefficients are presented for the tropical control volumes in Figures 6-50 and 6-51. Focusing on the added precipitation datasets in terms of slope, very poor regression slopes persist for specifically the TRMM 3B43 precipitation dataset. Again, these poor regressions are likely due to the fact only five points are being regressed, and a strong regression cannot be found with so few points. A similar finding is found in terms of correlation coefficient. This problem requires a look at these same figures except for the monthly time scale in Appendix B. A quick look to these figures indicates similar problems with the TRMM 3B43 on a monthly scale, where the times series consists of 60 months. The precipitation dataset is simply too short to compare with other precipitation datasets in this type of analysis.

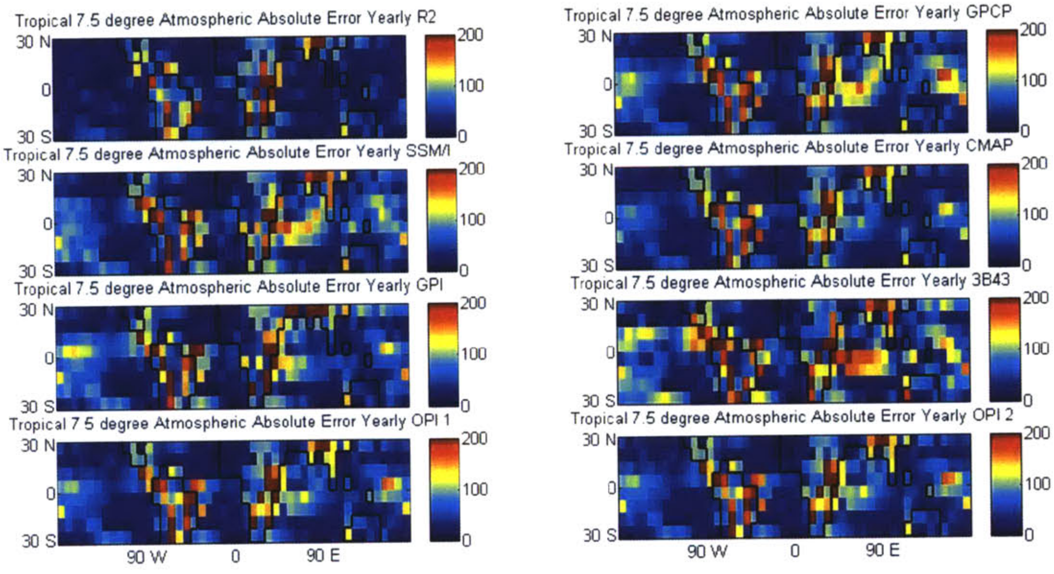


Figure 6-47: 7.5 degree Absolute Error Different Precipitation Global Yearly

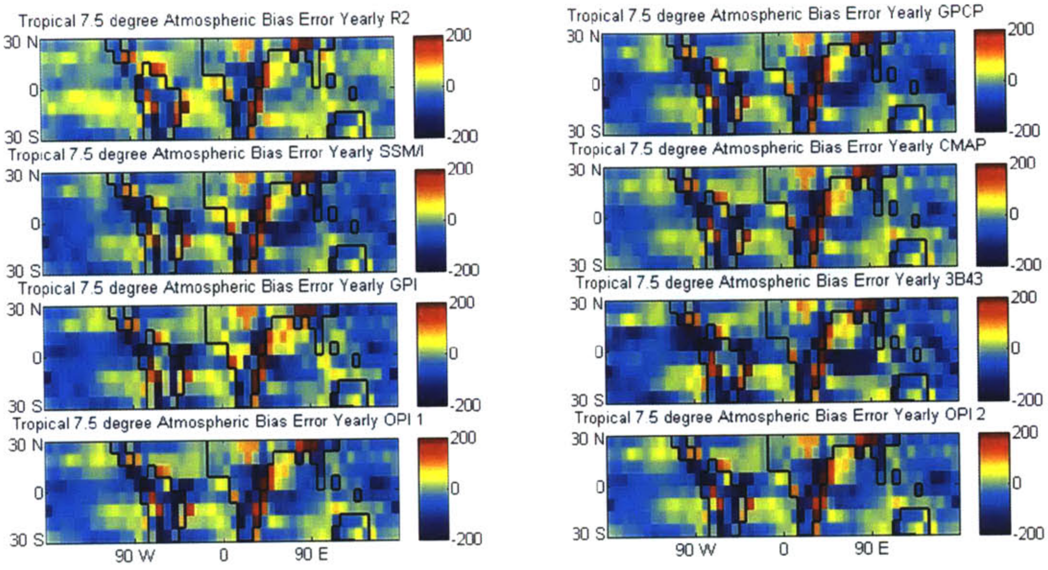


Figure 6-48: 7.5 degree Bias Error Different Precipitation Global Yearly

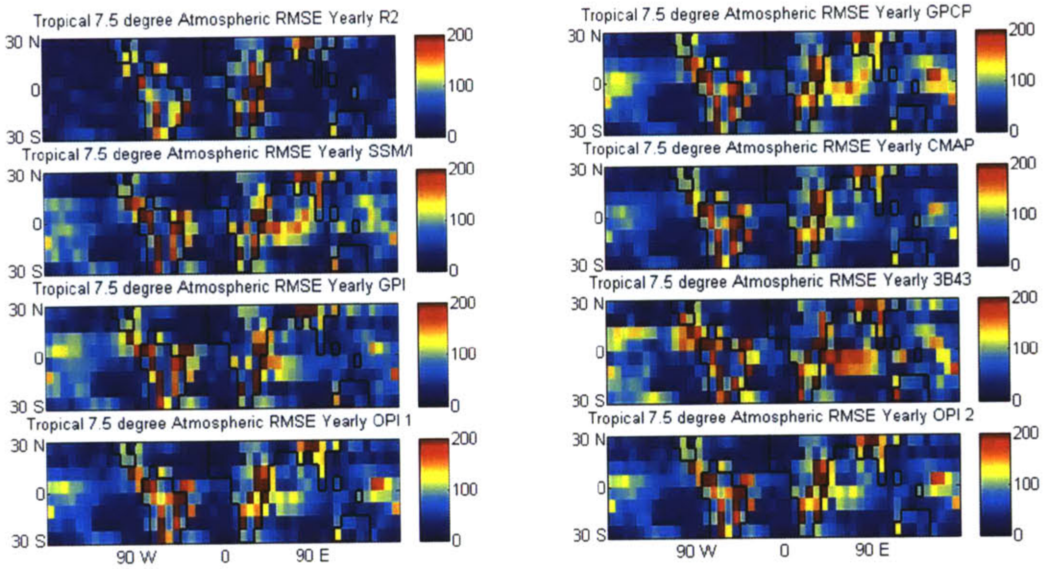


Figure 6-49: 7.5 degree RMSE Different Precipitation Global Yearly

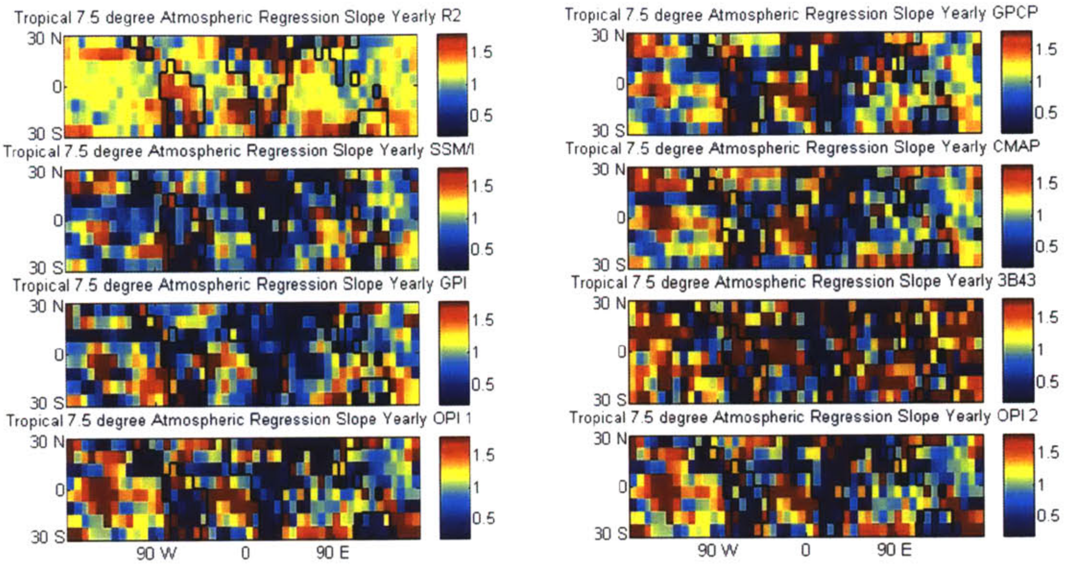


Figure 6-50: 7.5 degree Regression Slope Different Precipitation Global Yearly

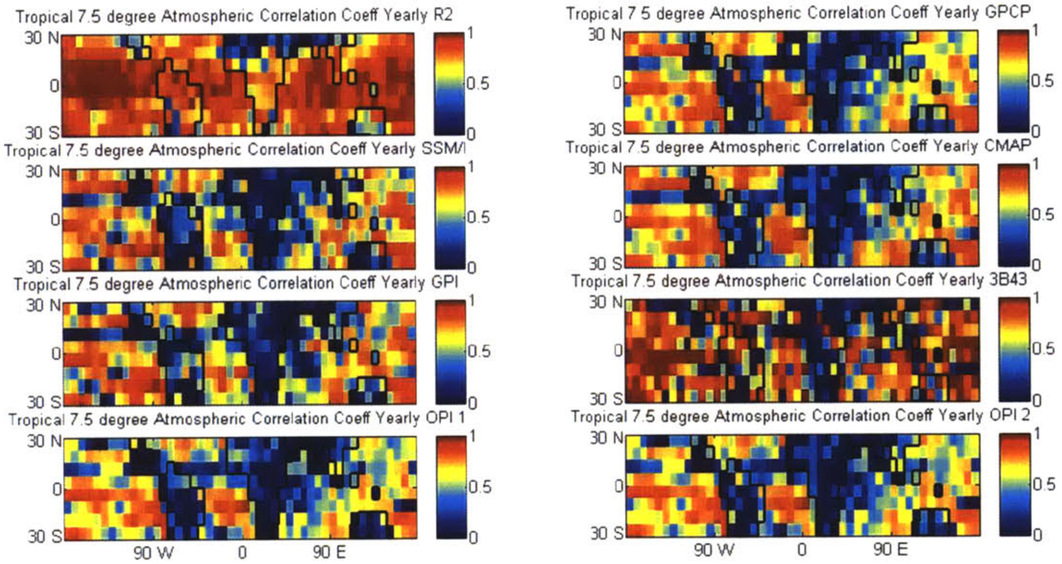


Figure 6-51: 7.5 degree Correlation Coefficient Different Precipitation Global Yearly

With the addition of alternative precipitation datasets, the reanalysis mapped water balance properties look generally better, with alternative precipitation datasets having strikingly similar properties. Key differences between the reanalysis and alternatives are found over the ocean and the errors in more reliable precipitation datasets on a global scale indicates errors in both precipitation and evaporation in the reanalysis, as on the global scale these water balance properties should equal each other. The bias analysis indicates P=E for the reanalysis, but the reanalysis evaporation is not consistent with alternative precipitation datasets.

6.3. Time Period Data Analysis

The water balance can be broken into different time periods. In the case of the Reanalysis-1, this breakdown is more useful for a multi year analysis as there are fifty five years of data. The water balance here can be considered on a decadal basis and a separate evaluation can be performed every ten years for both the monthly and yearly time scales. This is particularly useful because there is a likelihood that over the last fifty years the quality of information has improved in the reanalysis and this hypothesis can be tested in terms of the atmospheric water balance.

For the Reanalysis-2, such a long time period analysis isn't as meaningful. A different analysis can be performed on the monthly time scale. The data here can be separated by month, and thus the properties of this water balance can be observed for twelve different months. It was also deemed useful to perform this same analysis by substituting the Reanalysis-2 precipitation with the TRMM 3B43 precipitation and considering only the corresponding tropical points. The Reanalysis-1 is used with the TRMM 3B43 precipitation in order to increase the length of the balance by one year.

For both of these analyses spatial differences in water balance properties are extremely limited, specifically in the evaluation of the two sided balance. Therefore these differences will not be looked into in detail, only presented for a few properties to show there are few differences. Most of the analyzes in this section deal with the overall averaging of water balance properties across all of the control volumes in the different time periods and resolutions. The seasonal analysis is performed first followed by the decadal analysis.

6.3.1. Seasonal Variations in the Reanalysis-2

In this section several water balance properties are analyzed as global averages over the different months and different resolutions of the Reanalysis-2 monthly balance. The absolute errors for these balances are displayed in Figure 6-52. Across the three different resolutions there is an increase in absolute error over the summer months peaking in July. The pattern is very regular for the seasonal cycle with minimums in the winter months and maximums in the summer months. When normalization is performed, the difference between errors in resolutions is greatly increased. Minimum errors occur here in the spring and the fall with much larger maximum errors in the summer. When only points from one month are considered especially in the 7.5 degree case, regions arise particularly in the extreme winter and summer months over which monthly precipitation is very small. Any errors in the water balance over these regions caused by evaporation and moisture flux are therefore greatly amplified by normalization with low precipitation. For instance over desert regions it may never rain in the winter over a 7.5 degree grid space.

In terms of regular bias in Figure 6-53 a general increase in bias is observed over the summer months. What is remarkable here is the magnitude of the bias is on the order of 1 kg/m^2-month over all seasons. For all months the Reanalysis-2 provides a very good water balance with hardly any overall residual. In other word P=E for every month averaged over the twenty three years of the balance. A nearly perfect balance is achieved on the global basis. When bias is normalized however, trends are seen similar to that of normalized absolute error. There is clear interference as resolution decreases by outlier points resulting in a 12 month profile similar to the normalized absolute error at each resolution.

In Figures 6-54 and 6-55 the monthly regression and correlation statistics for this water balance analysis are given. The average regression slope for each month is very close to one and there are few differences between months. The regression slope is often most useful on the monthly time scale when all months are being analyzed. However, when only one month is analyzed, the signals on each side of the balance are unique to the month being analyzed. Interestingly this property does not degrade with resolution. What likely happens as resolution increases is that overestimates and underestimates cancel each other out. Equally impressive for the regression analysis is the regression intercept property which is on the order of magnitude and behaves like the bias, being nearly zero over all twelve months. The regression R^2 and correlation coefficients for this experiment are split between figures 6-54 and 6-55 with differences between months being very small. A slight decrease is seen for the summer months which corresponds to the higher residual errors found for these months, but the differences are small. The results of the RMSE and NRMSE statistics for this balance are very similar to the absolute error results for both the normalized and non-normalized cases.

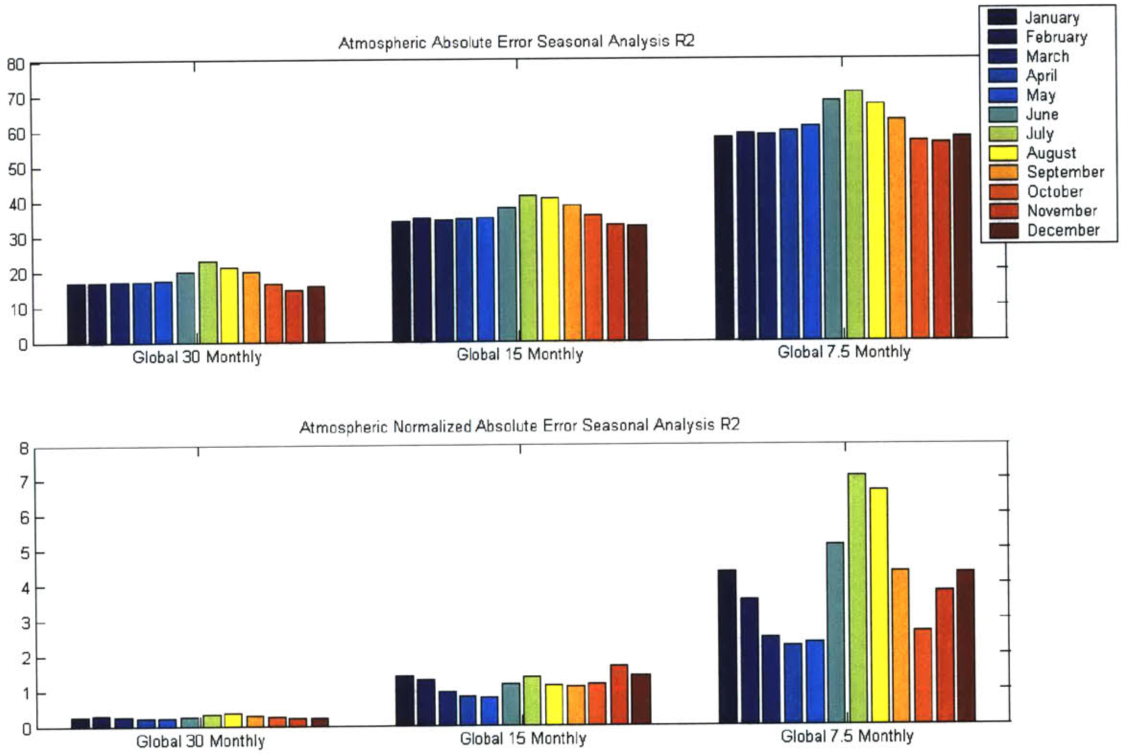


Figure 6-52: Global Analysis of Different Months – Absolute Error

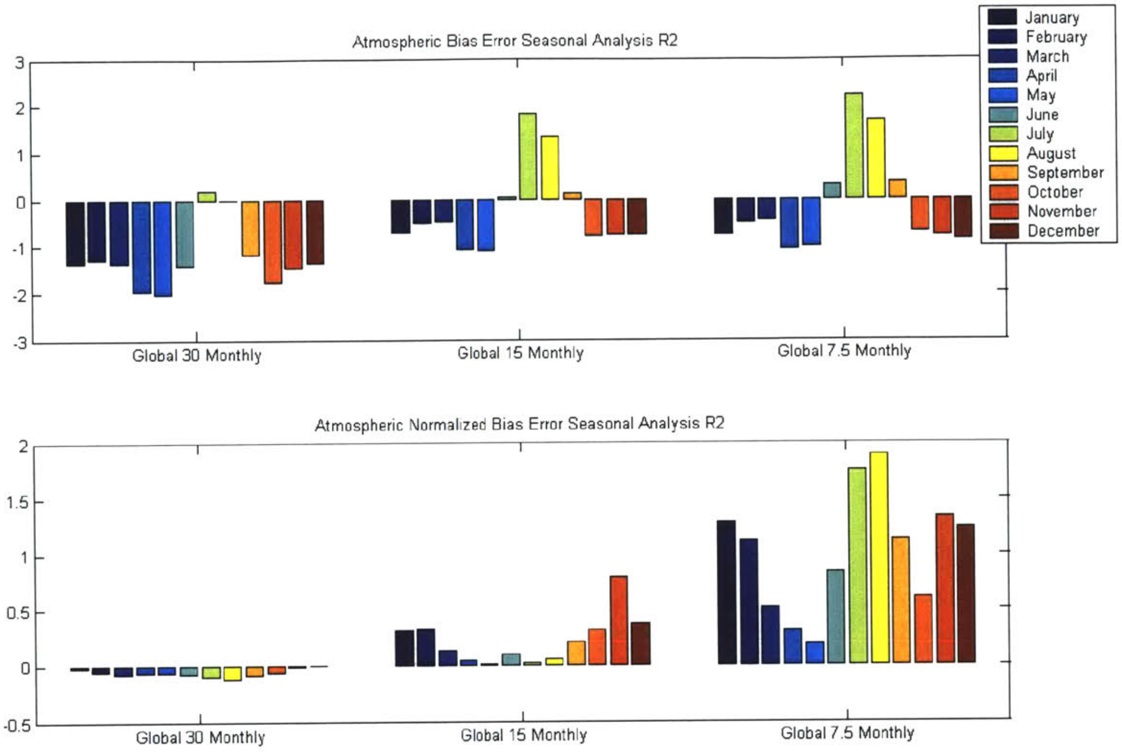


Figure 6-53: Global Analysis of Different Months – Bias Error

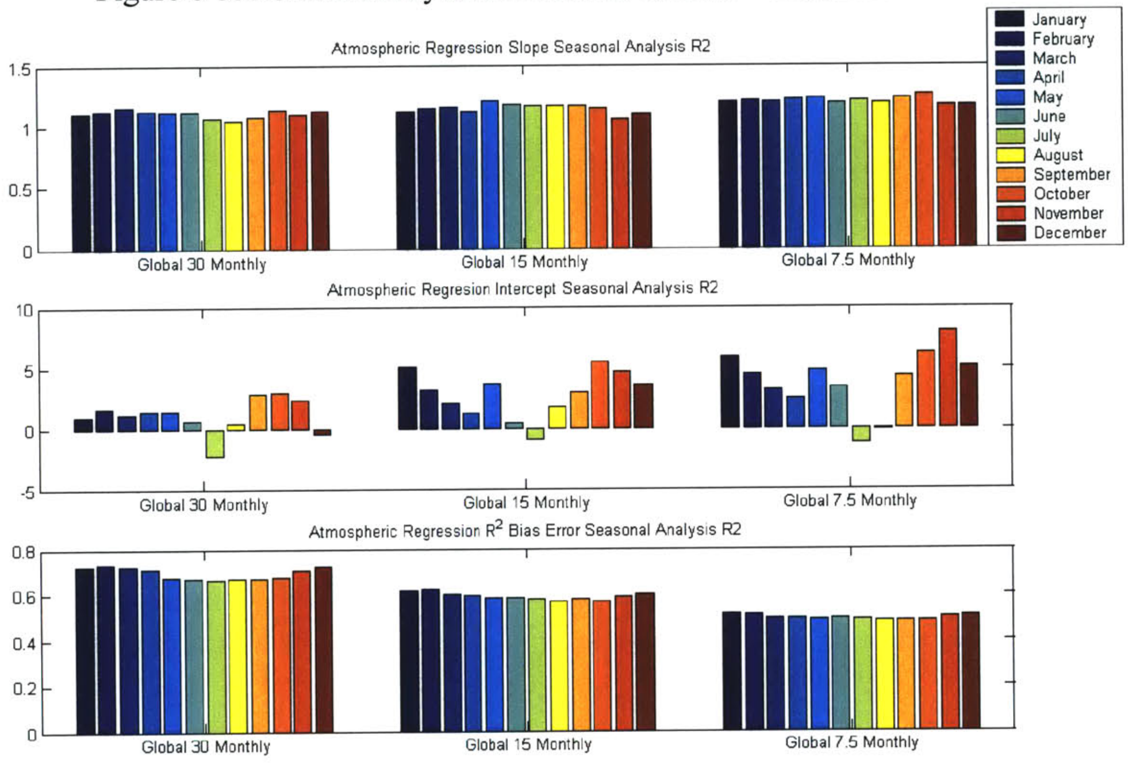


Figure 6-54: Global Analysis of Different Months – Regression Statistics

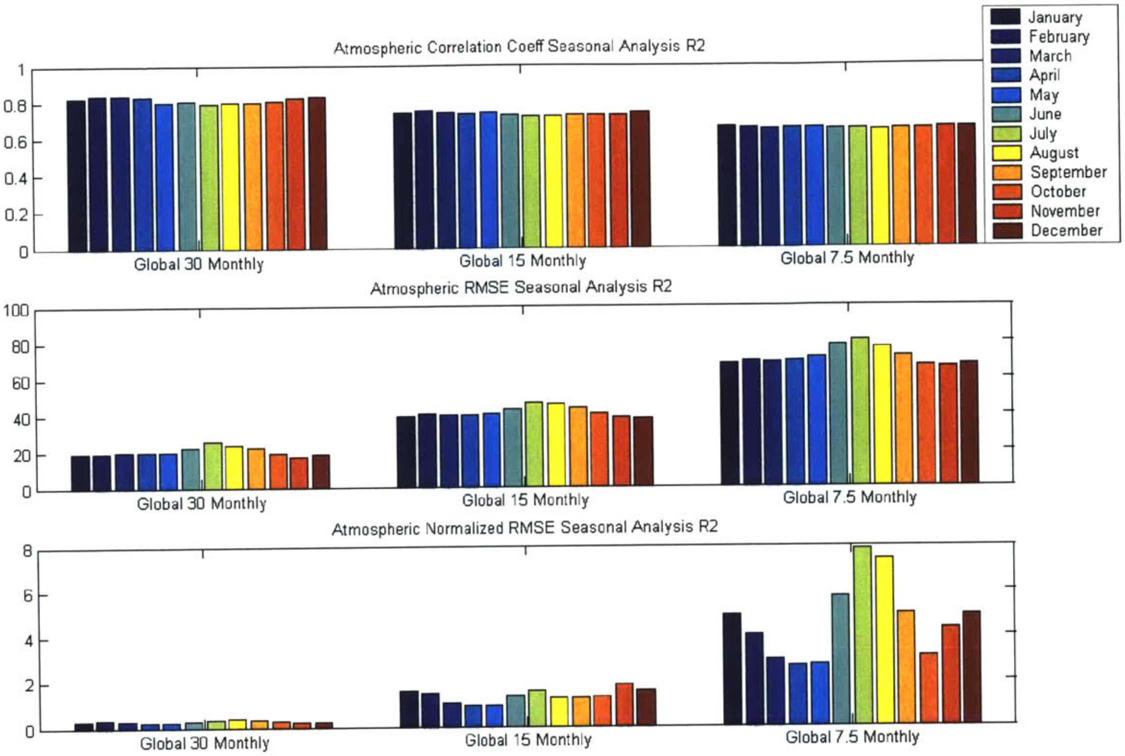


Figure 6-55: Global Analysis of Different Months – Correlation Statistics

In Figures 6-56 through 6-59 the average water balance properties of all control volumes in the tropics are presented applying the TRMM 3B43 precipitation dataset to the last five years of the Reanalysis-1 atmospheric water balance. In terms of absolute error and RMSE, which throughout the global analysis yield very similar results, errors are again very even throughout the months, increasing uniformly with resolution. Such consistency is surprising considering only five points (years) of data are available for each month analyzed. Problems again arise with normalization, but on a very random basis. Satellite precipitation can be particularly vulnerable as a normalization tool especially when only five points are being considered.

Unlike absolute error there is a clear bias trend with the application of TRMM 3B43 precipitation when points are sorted by month. Ideal conditions exist in the summer, and in general there is a surplus of precipitation being applied to each control volume. This surplus is lowered in the summertime with the TRMM 3B43 precipitation. These trends are destroyed by normalization. In terms of the regression analysis the regression slope, intercept, and R^2 values are highly variable throughout the 12 months. This is caused by the low number of points being used in each regression. The clearest two sided comparison analysis is provided by the correlation coefficient which is consistently lower over all resolutions during the summer months. These results are opposite of the bias results the only other property where there were strong monthly trends are seen. It is therefore hard to make any conclusion over what months the TRMM 3B43 dataset can be applied best to atmospheric water balances. It is unlikely the total tropical atmosphere control volume is a net source or sink of water for the rest of the globe, therefore P=E is best satisfied in the summer when bias is low.

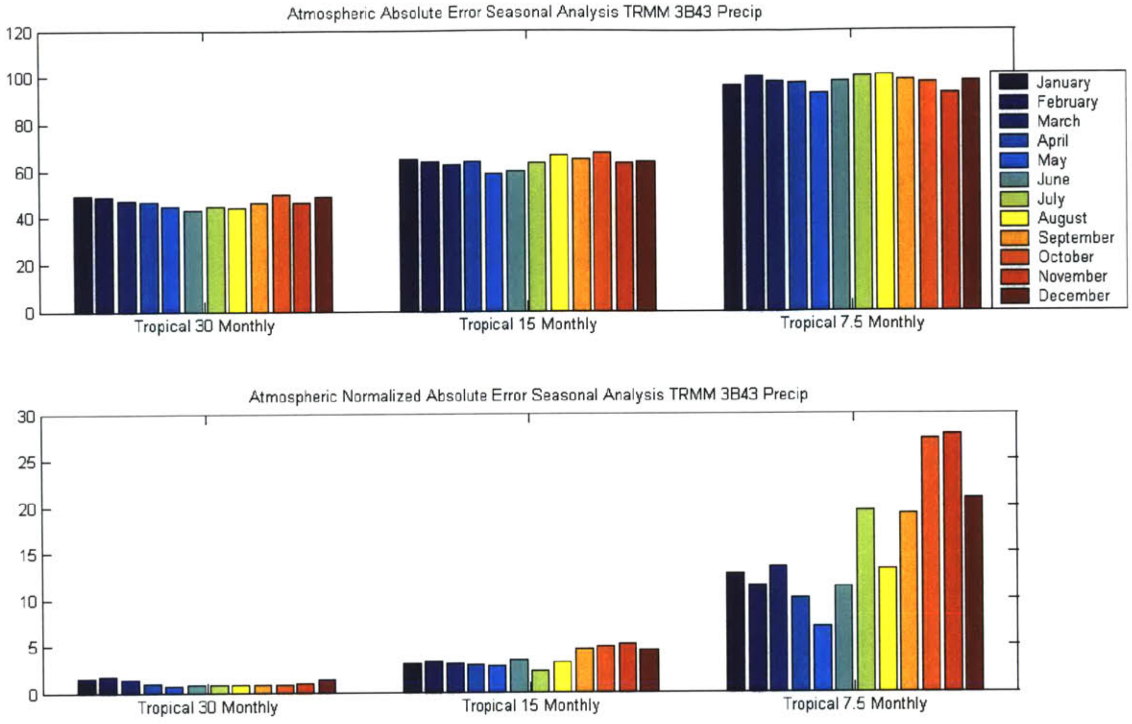


Figure 6-56: Tropical Analysis of Different Months w/ TRMM 3B43 – Absolute Error

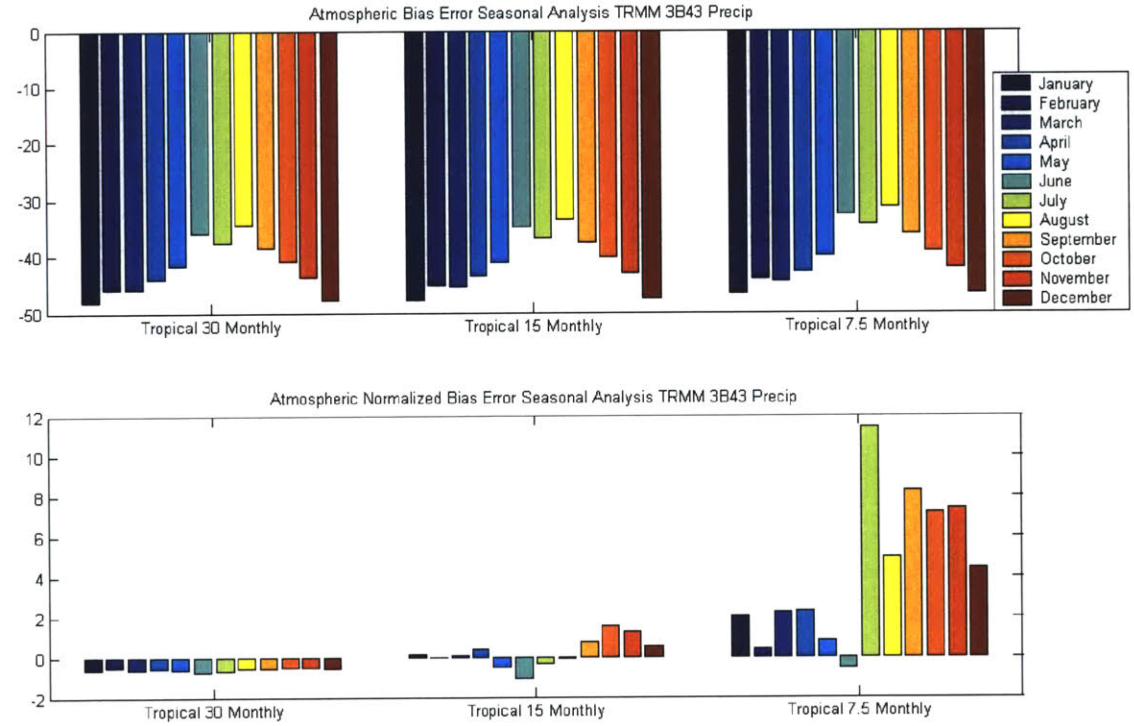


Figure 6-57: Tropical Analysis of Different Months w/ TRMM 3B43 – Bias Error

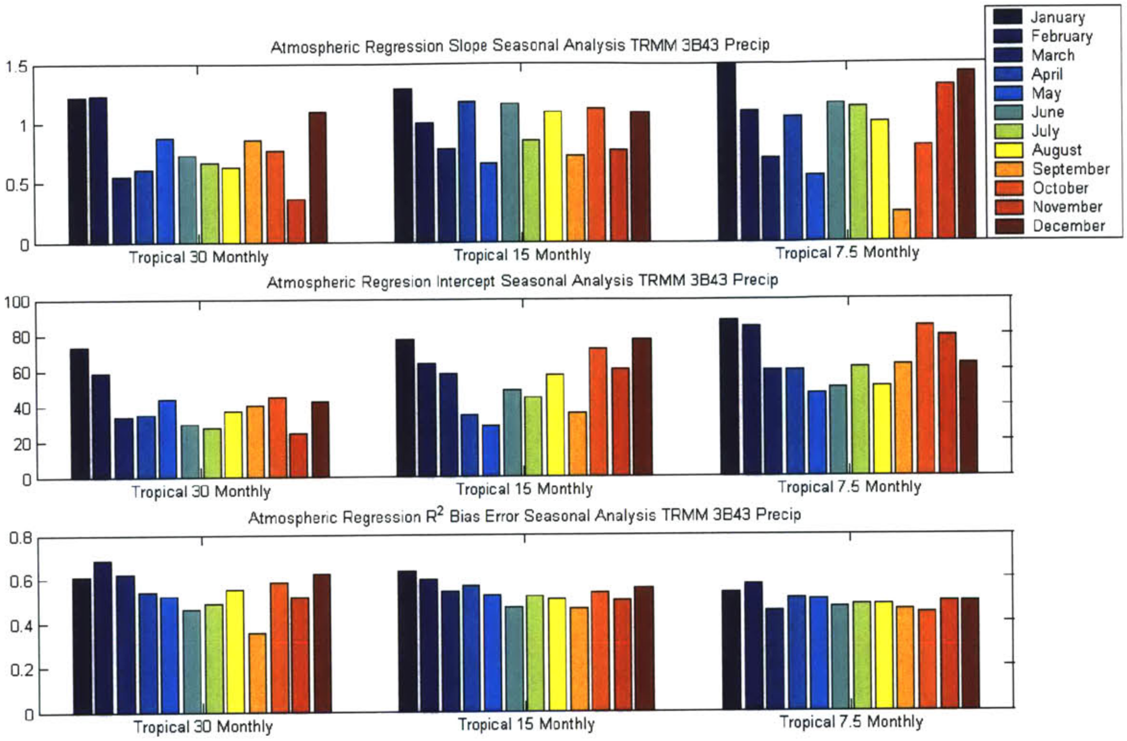


Figure 6-58: Tropical Analysis of Different Months w/ TRMM 3B43 – Regression Statistics

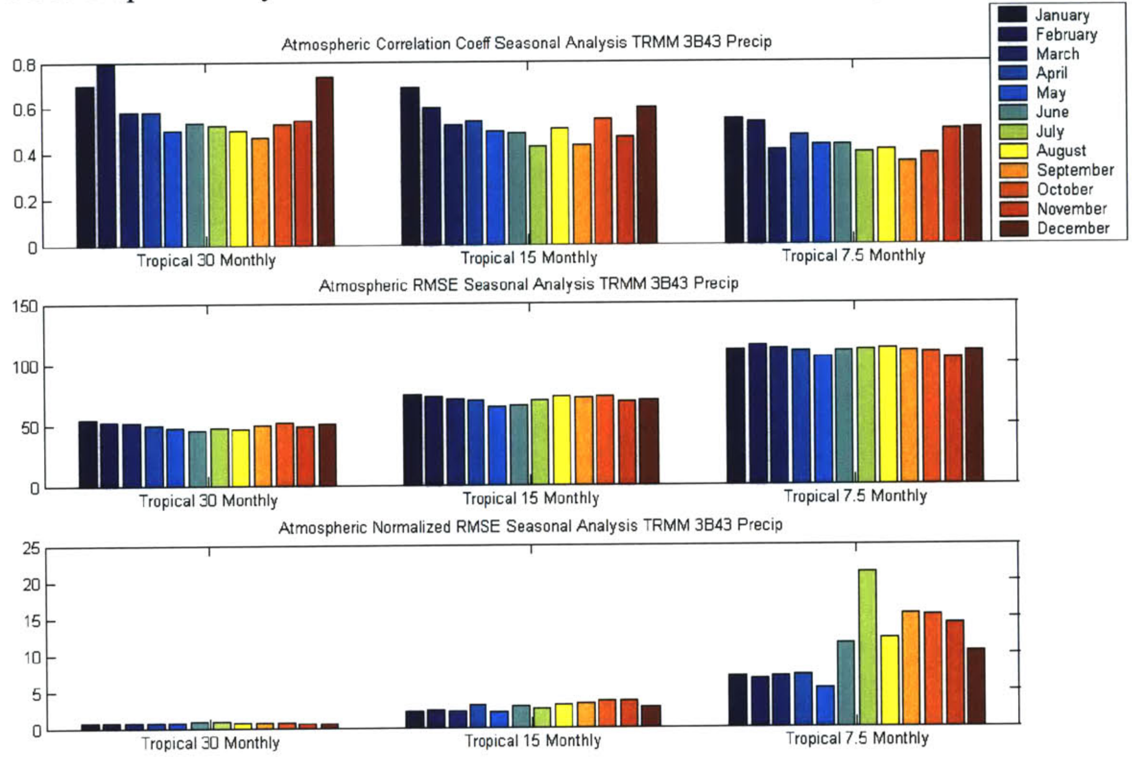


Figure 6-59: Tropical Analysis of Different Months w/ TRMM 3B43 – Regression Statistics

For the monthly analysis, getting back to the original Reanalysis-2 global conditions, spatial maps can be made of water balance properties for specific months. Differences in these maps on a monthly basis are minimal for most of the water balance properties studied. Therefore only the two non-normalized residual statistics are shown for the different resolutions. The absolute error is shown in Figures 6-60 through 6-62 and the bias is shown in Figure 6-63 through 6-65. Four months are selected to represent each season: January, April, July, and October. As displayed by these figures at each resolution there is little distinction between these properties for single months. Errors circulate throughout Asia on the 30 and 15 degree basis, and the balances are particularly bad over the southwest United States during the summertime for absolute error. Similar problems are also over Asia during the summertime on the 7.5 degree resolution. In terms of bias the same general observations apply as there is just little spatial change in the residuals generated by the water balances considering different months.

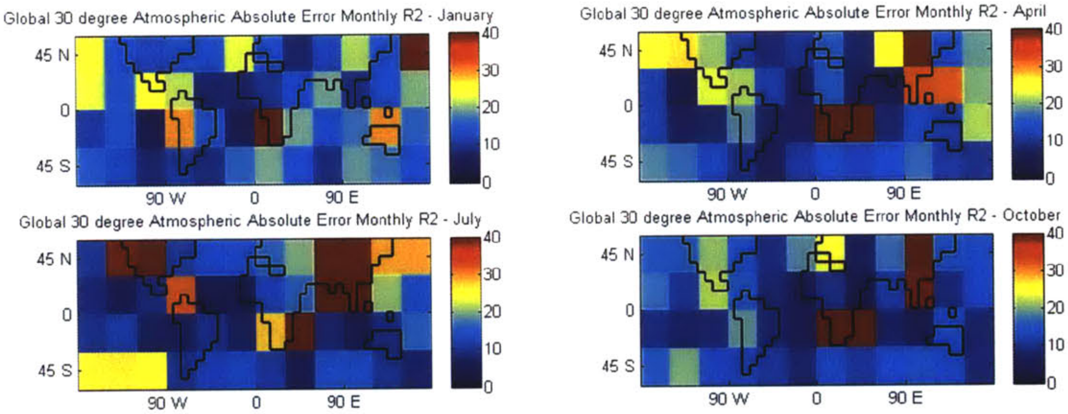


Figure 6-60: 30 Degree Absolute Errors Different Seasons Reanalysis-2, 4 Different Months

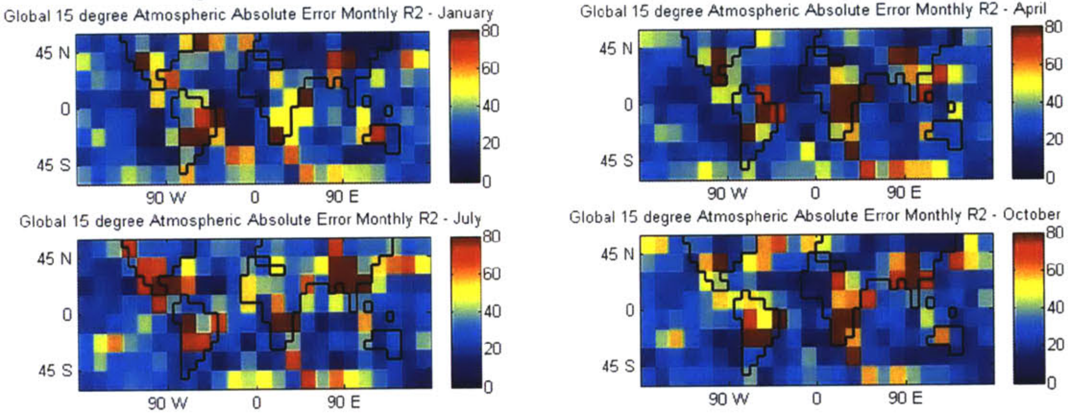


Figure 6-61: 15 Degree Absolute Errors Different Seasons Reanalysis-2, 4 Different Months

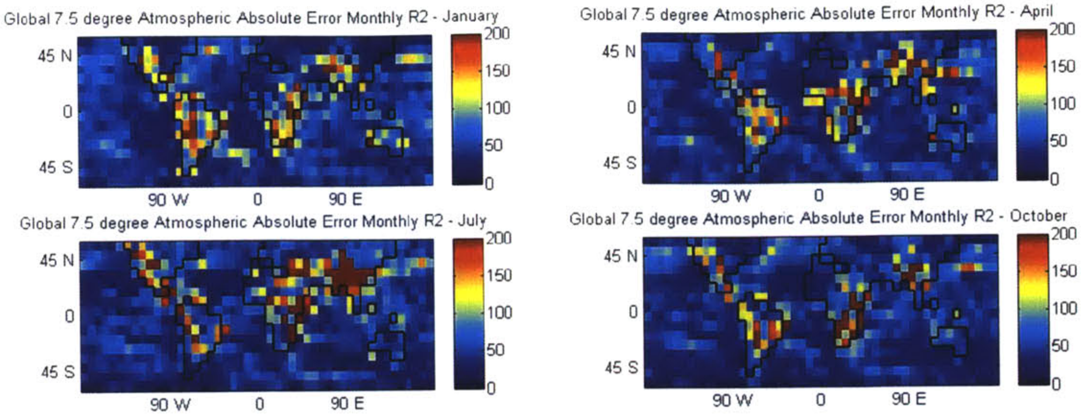


Figure 6-62: 7.5 Degree Absolute Errors Different Seasons Reanalysis-2 Monthly, 4 Different Months

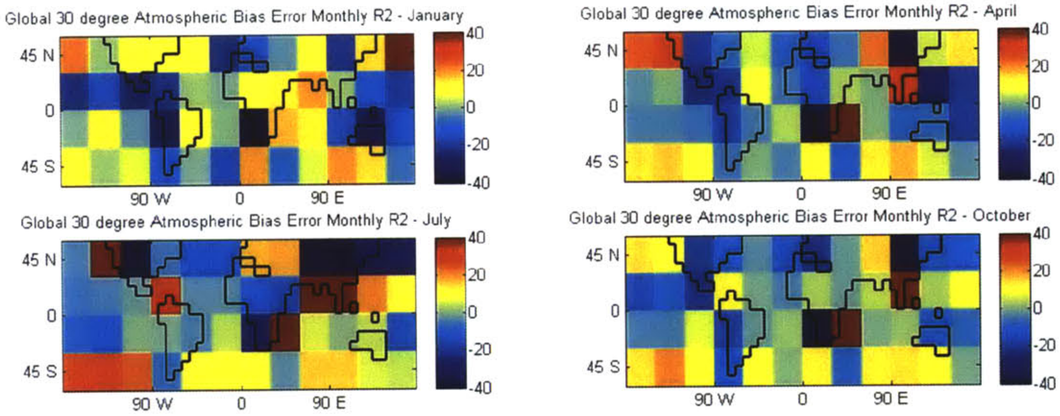


Figure 6-63: 30 Degree Bias Errors Different Seasons Reanalysis-2 Monthly, 4 Different Months

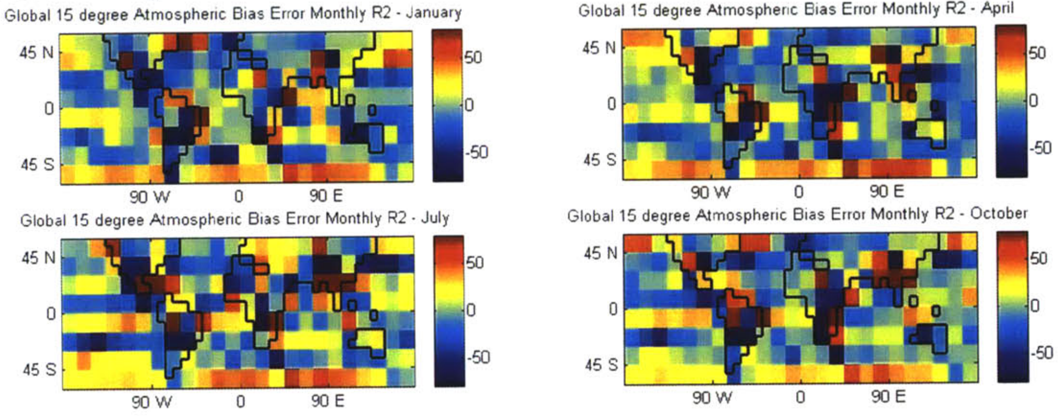


Figure 6-64: 15 Degree Bias Errors Different Seasons Reanalysis-2 Monthly, 4 Different Months

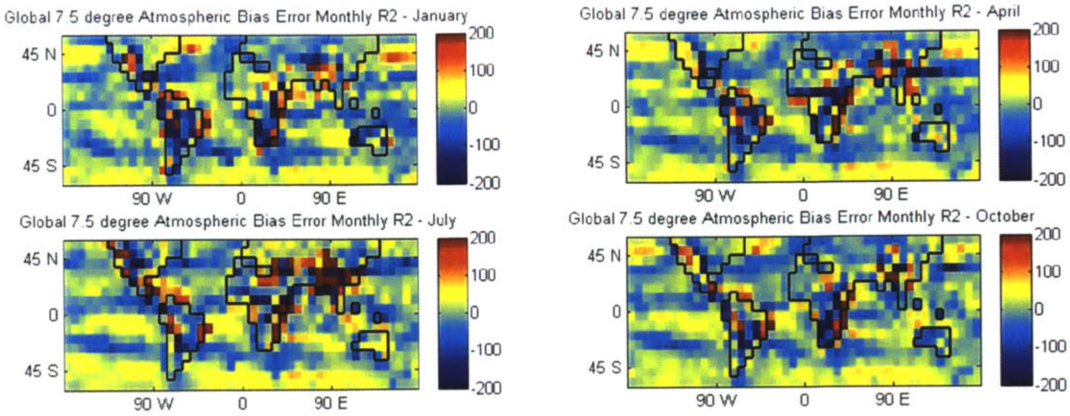


Figure 6-65: 7.5 Degree Bias Errors Different Seasons Reanalysis-2 Monthly, 4 Different Months

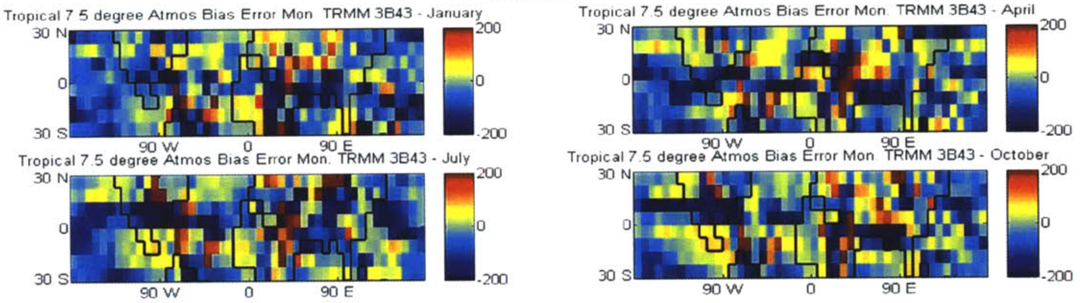


Figure 6-66: 7.5 Degree Bias Errors Different Seasons Reanalysis-2 w/ TRMM 3B43 Precipitation, Tropical

Changes in spatial properties are also not observed with the application of the TRMM 3B43 product to the tropical portions of this balance. An example spatial plot contrasting bias on the 7.5 degree resolution is presented in Figure 6-66. Bias was the property which showed the most spatial differentiation with change in month for these conditions. Subtle differences are observed between figures, but in general balances are very similar from month to month and season to season.

When the monthly Reanalysis-2 water balance is sorted by month, nearly identical water balance properties are found over each month, and spatially these properties do not change much either. Problems develop in the normalization of properties for certain months, and small conclusion can be drawn, as the balances are slightly worse on average during the summertime. Conducting the same study except considering only tropical points and using the TRMM 3B43 precipitation, bias is observed to be lowest in the summer months overall.

6.3.2 Decadal Variations in the Reanalysis-1

The length of the Reanalysis-1 allows for the dataset to be broken down by decade, and the water balance for each decade analyzed globally for the atmospheric case. The most useful way to view the results of this analysis is by the averaging of water balance properties over all control volumes considered. Both the yearly and monthly time scales can be analyzed in this manner at each resolution.

Four plots are made of the global spatial averages of water balances properties considering different resolutions and time scales averaging over all control volumes in Figures 6-67 through 6-70. Looking at the absolute error results in Figure 6-67, there is hardly any difference between the errors observed over different decades, while previously observed trends for time scale and resolution are preserved. Considering the normalized absolute error, on the finer resolutions the 1980's decade performs poorly. This is counterintuitive to the theory that the water balance gets better as time nears the present. In terms of bias, differences are apparent in the top of Figure 6-68. These biases are very small, as have been consistently found when averaging the global atmospheric water balance. All biases are below 5 kg/m^2-month, small in comparison to typical values of water balance variables. The 1960's is consistently the most biased decade, though by a very small amount. The normalized biases behave like the normalized absolute errors.

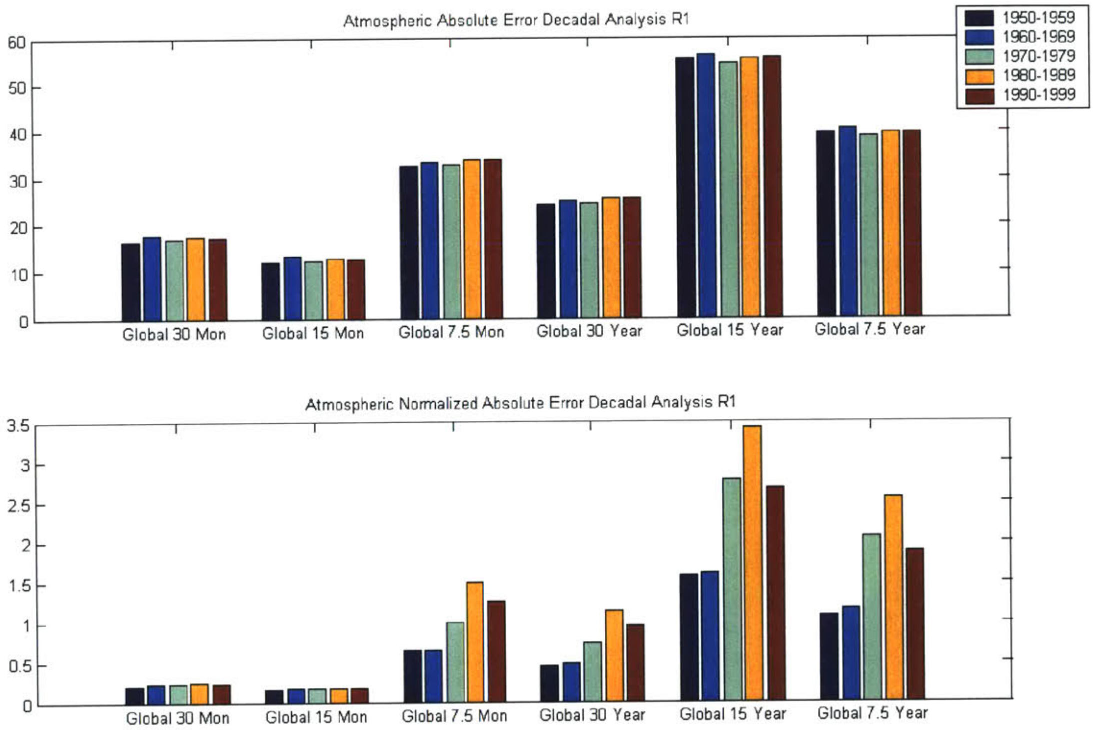


Figure 6-67: Global Analysis of Different Decades – Absolute Error

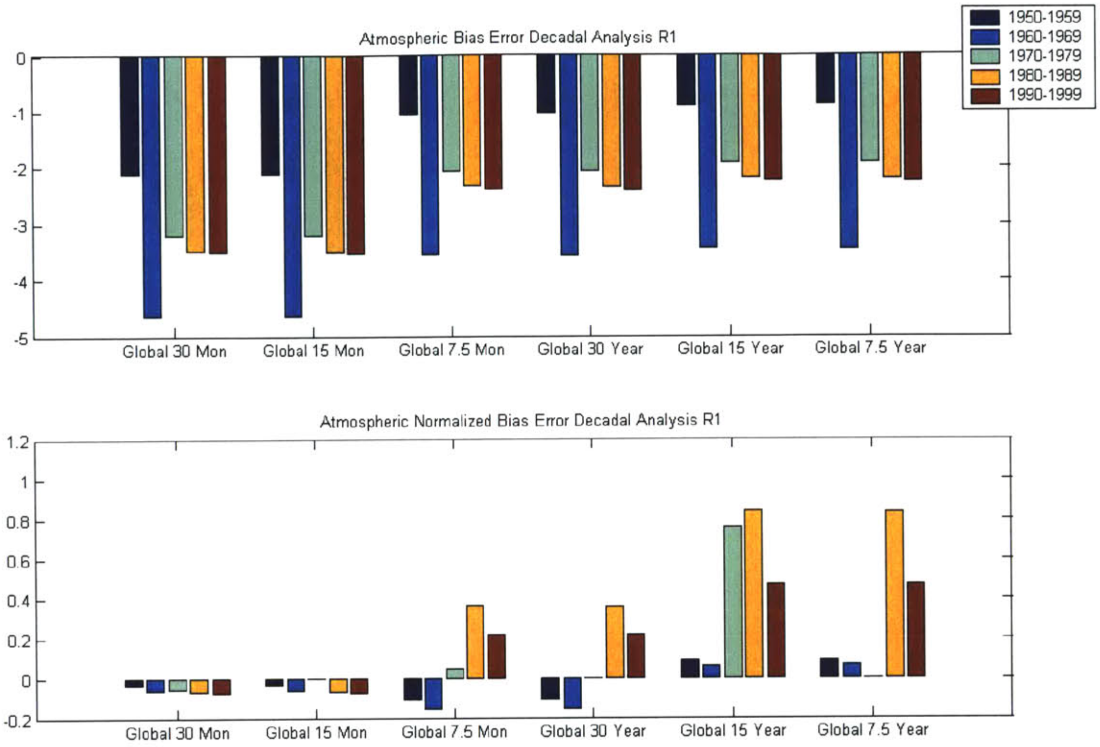


Figure 6-68: Global Analysis of Different Decades – Bias Error

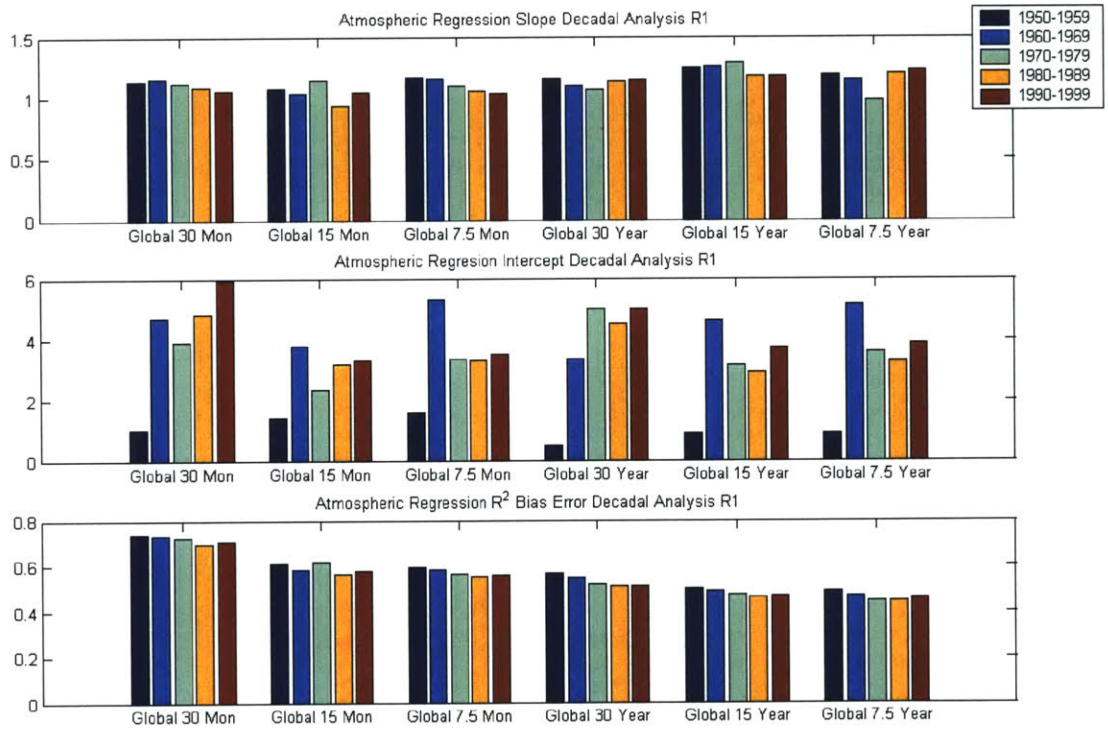


Figure 6-69: Global Analysis of Different Decades – Regression Statistics

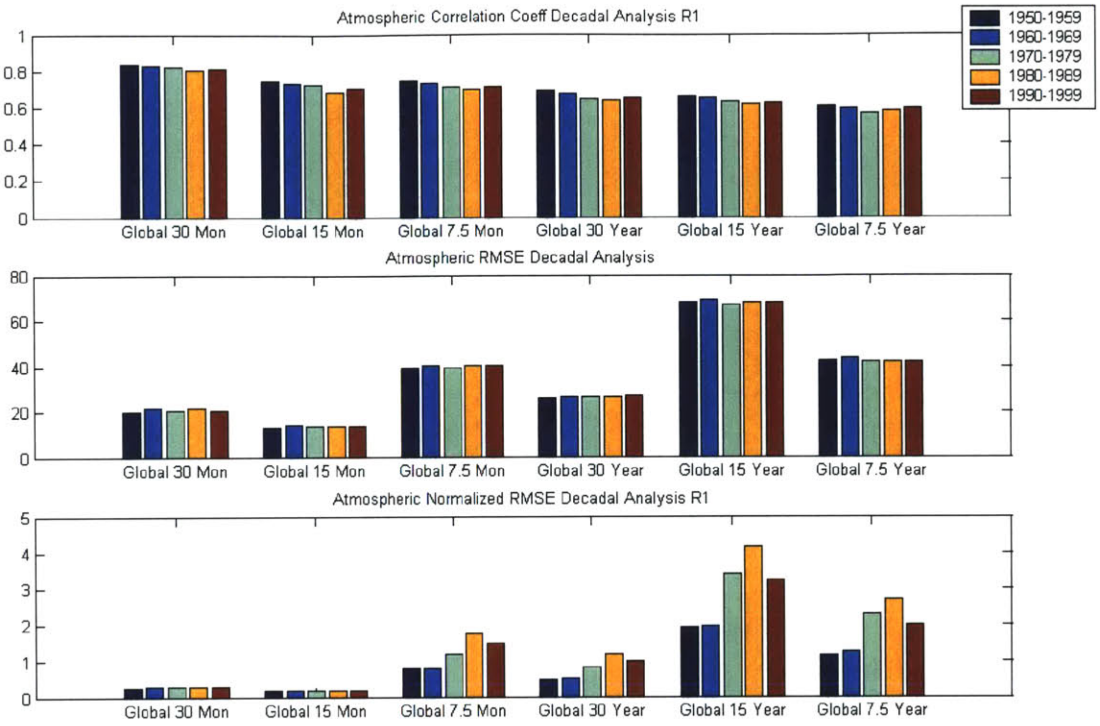


Figure 6-70: Global Analysis of Different Decades – Correlation Statistics

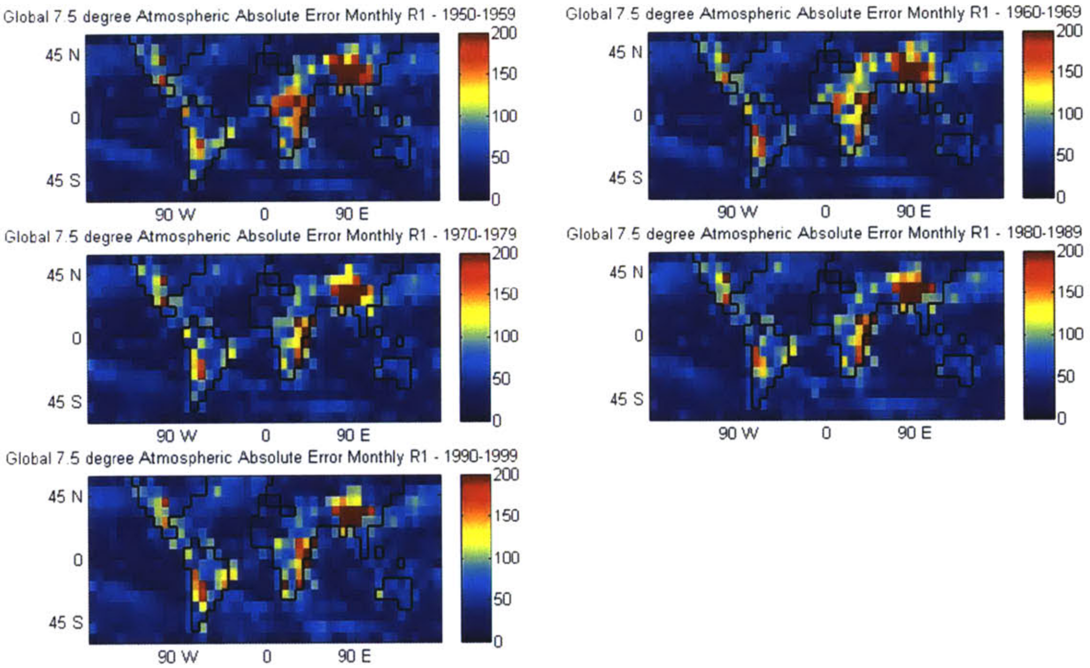


Figure 6-71: 7.5 Degree Absolute Errors Different Decades Reanalysis-1 Monthly

Similar observations apply for the regression slope and intercept. The average regression slope for each of the time scales and resolutions resides around one, and the intercept is highly governed by the bias. What is interesting in this analysis are the R^2 and correlation coefficients found. Both of these properties steadily degrade over the decades for each time scale and resolution. One would expect these quantities to increase as better available data helped to complete the water balance, but the opposite is true. It is hard to speculate the reasons for this, but the trend is likely not a coincidence.

Several of these decadal comparisons were mapped spatially for different water balance properties, with no noticeable differences between decades. In Figure 6-71 an example of these plots is presented to illustrate the lack of change by decade in the reanalysis water balance. Only slight changes in absolute error over land are detected from decade to decade. It is an important observation that the reanalysis water balance is consistent across decades.

6.4. Land Points vs. Sea Points

A common theme of the global water balance data shown so far is a contrast between the errors found over land and the errors found over water. Because of the large differences between the atmospheric water balance systems over land and ocean, it stands to reason that water balance properties may be different. For instance some precipitation datasets may be better over water than over land or vice versa.

The smallest available grid over which the atmospheric water balance can be reasonably calculated is 7.5 degrees. This is a fairly large area, and it is difficult to distinguish land points from sea points on a grid of 7.5 degrees. For the pressure level fields of the reanalysis data, a 2.5 degree land grid is provided, and this grid is used to generate Figure 6-72. The percentage of land for each point on a 7.5 degree grid of the globe is found from the finer resolution 2.5 degree dataset. Many points of the 7.5 degree resolution contain both land and sea, because of the coarseness of the resolution. Expanding such an analysis to a 15 or 30 degree resolution would be useless because only a very poor and probably inaccurate land grid could be generated. Grids are classified as land if they have more than 50%of their area covered land. Figure 6-73 is created this way, for 60 N to 60 S, and Figure 6-74 is created for the tropical precipitation cases.

In this analysis, global maps are not necessary because all land and sea points are being combined and we are looking for distinction simply between these two types of points. Variables that can be considered while looking at this distinction are reanalysis, time scale, and precipitation dataset. A separate analysis of only tropical points is also conducted.

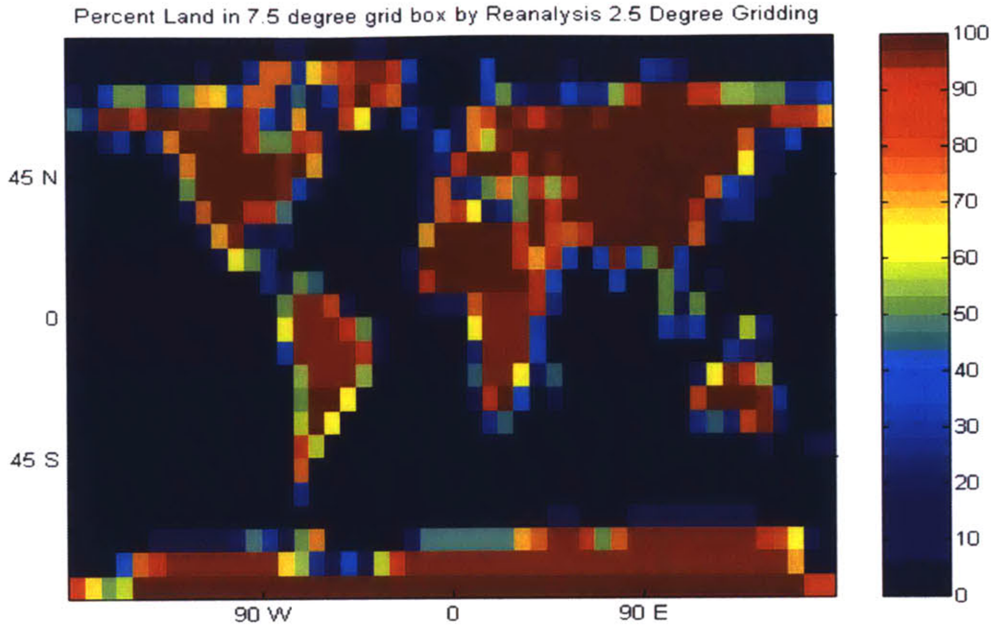


Figure 6-72 – Percentage of Land for a 7.5 Degree Resolution

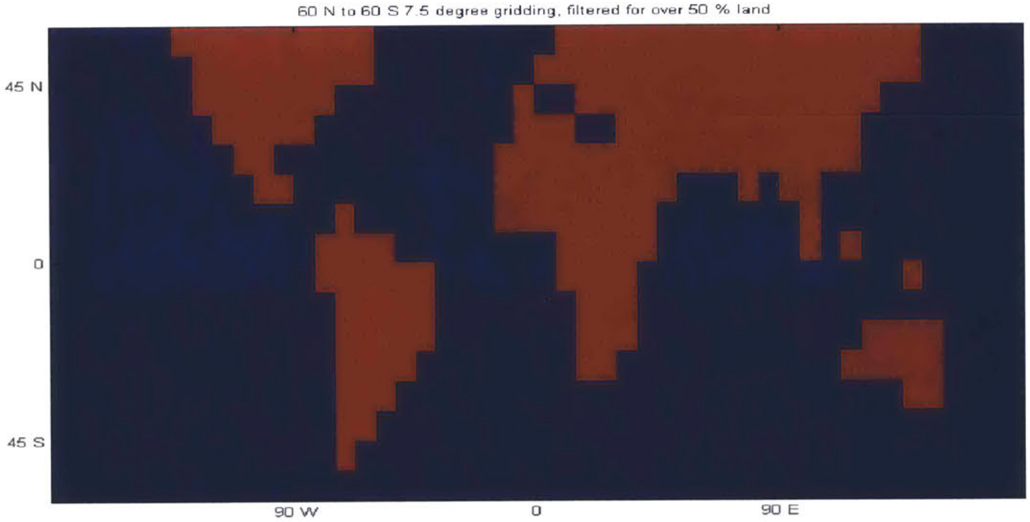


Figure 6-73: 7.5 Degree Land Grids for 60 N to 60 S

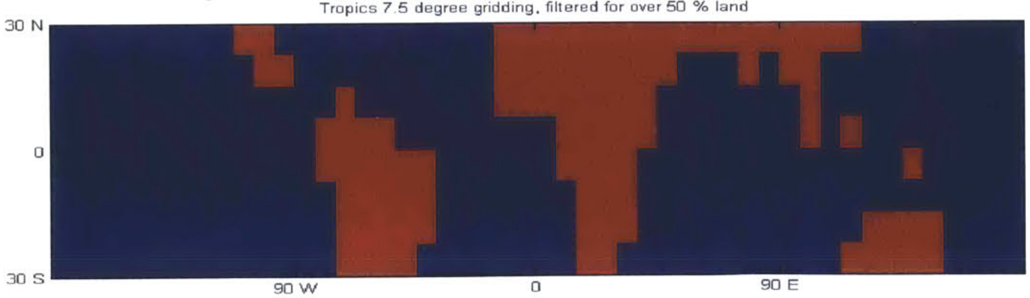


Figure 6-74: 7.5 Degree Land Grids for Tropical Datasets

In Figures 6-75 through 6-78 the water balance properties of land and sea control volumes are averaged and contrasted against each other for a variety of conditions. As expected in Figure 6-75 the absolute error for all land conditions is much higher than that for sea conditions. The difference is approximately a factor of two. At this resolution large atmospheric errors exist for both land and sea points. Based on the bias results the weakness of the SSM/I precipitation dataset is clearly an overestimation of precipitation over the ocean. A strong difference between this dataset's applicability to the land and sea balances is observed in the bias specifically. When the residual statistics are normalized in Figure 6-76, results are consistent for absolute error and most of the bias results are as well. The normalized bias for land is much higher and positive. This is probably caused by poor reanalysis normalization over sparsely precipitated land cells, likely in the desert. Such dry points are less likely over the ocean. More meaningful results when averaging over all global points are picked up by the actual residual statistics without normalization.

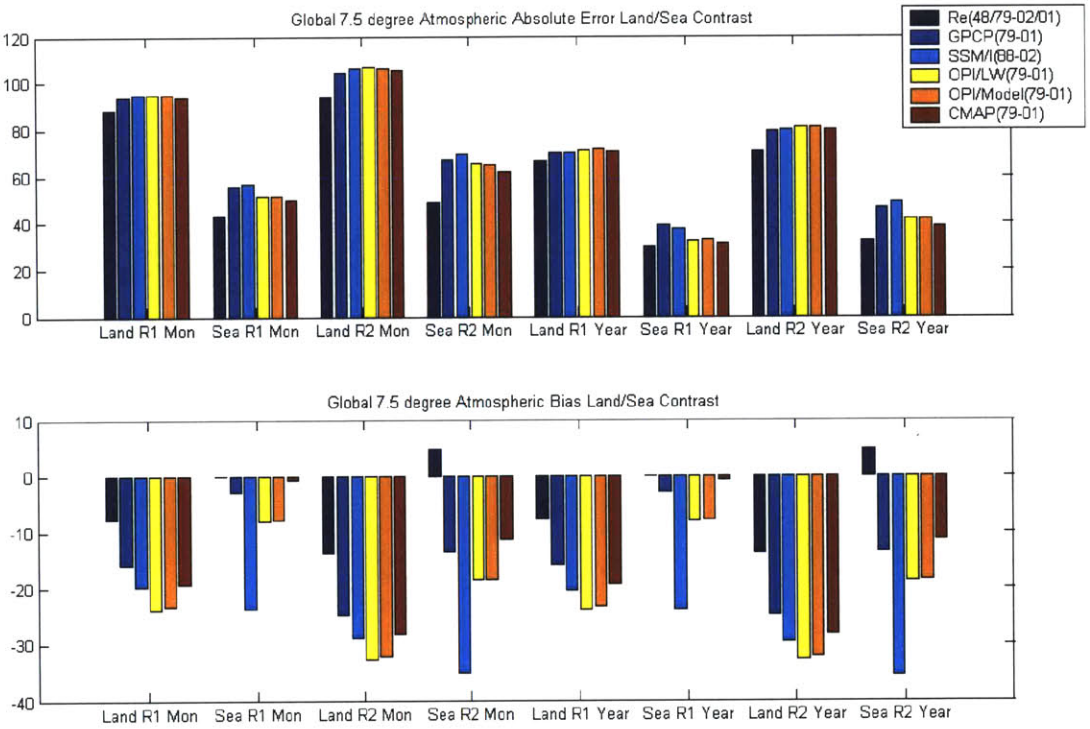


Figure 6-75: Global Analysis of the Land/Sea Contrast – Residual Statistics

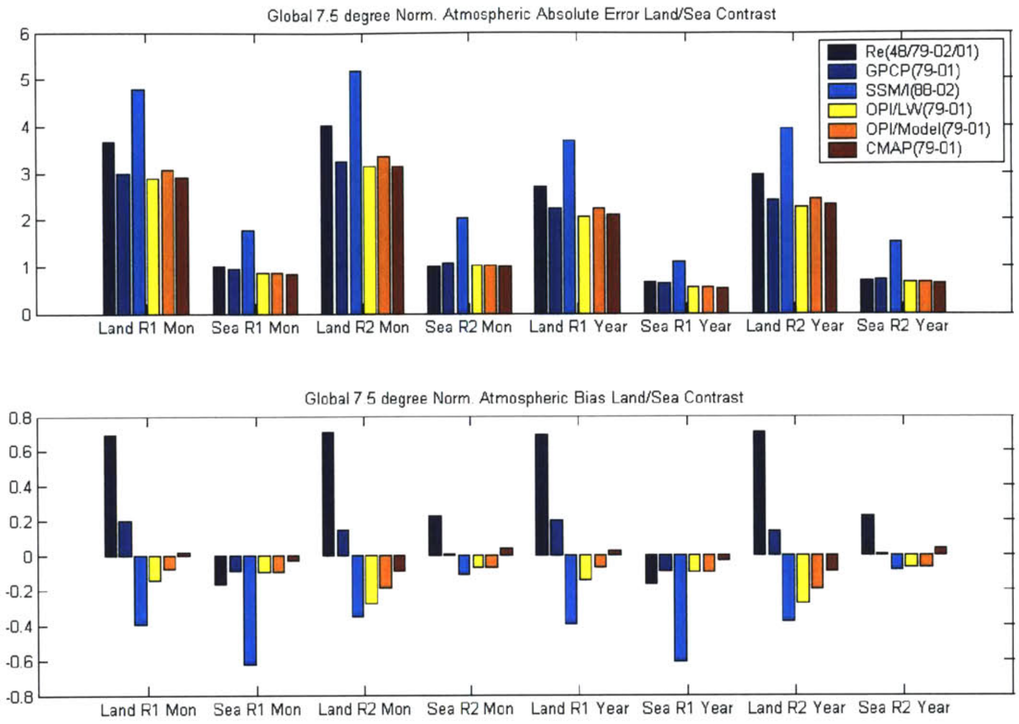


Figure 6-76: Global Analysis of the Land/Sea Contrast – Normalized Residual Statistics

In Figure 6-77 and 6-78 regression and correlation statistics are presented with the land and sea points being separated. Much better and consistent regression slopes are found for all balances with sea points, as regression slopes are very close to one on average for the ocean in all situations. Over land the reanalysis precipitation provides a good average slope, as the reanalysis precipitation matches its own water balances on average. However, there is complete disagreement in the slope property when alternative precipitation datasets are applied over land. As usual intercept results imitate balance results and RMSE results imitate absolute error results. In terms of R^2 and correlation coefficient values are consistently and significantly lower over land than over sea. Particularly poor correlation is found over land points for the yearly time scale and alternative precipitation datasets.

Separating the land and sea points, differences are seen in the yearly slope and correlation using the reanalysis precipitation, however using other precipitation datasets over land with the yearly time scale provides very low correlations, and deems these precipitation datasets nearly useless to the water balance over land.

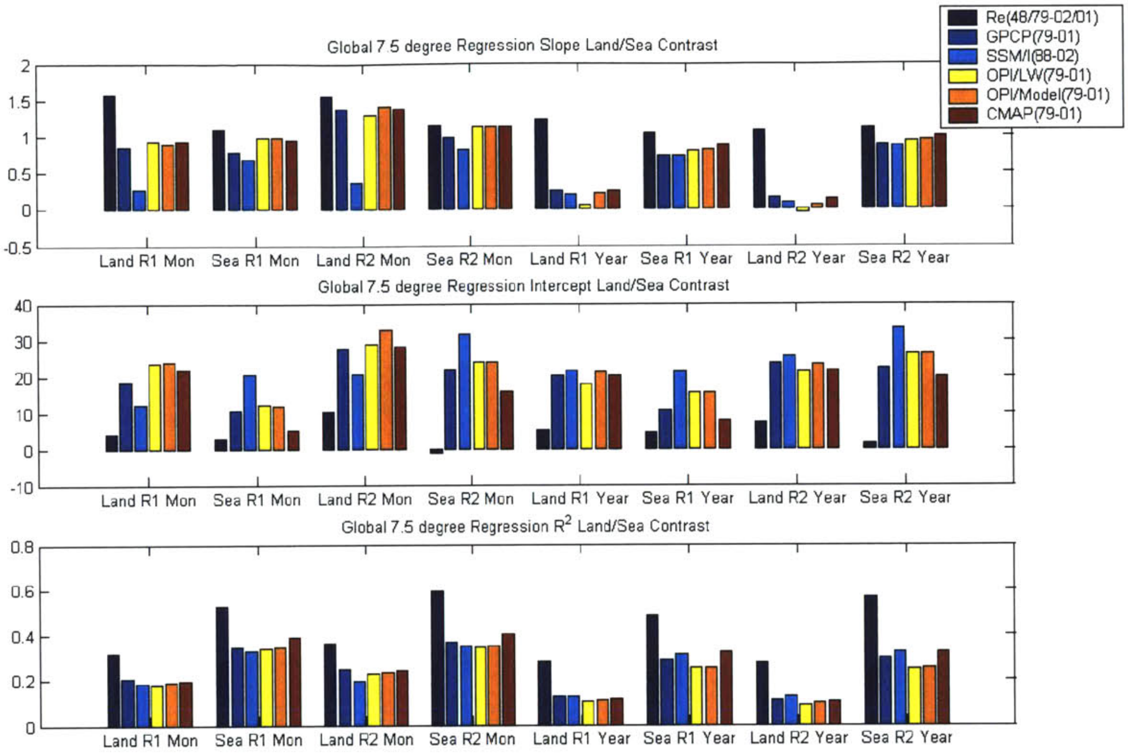


Figure 6-77: Global Analysis of the Land/Sea Contrast – Regression Statistics

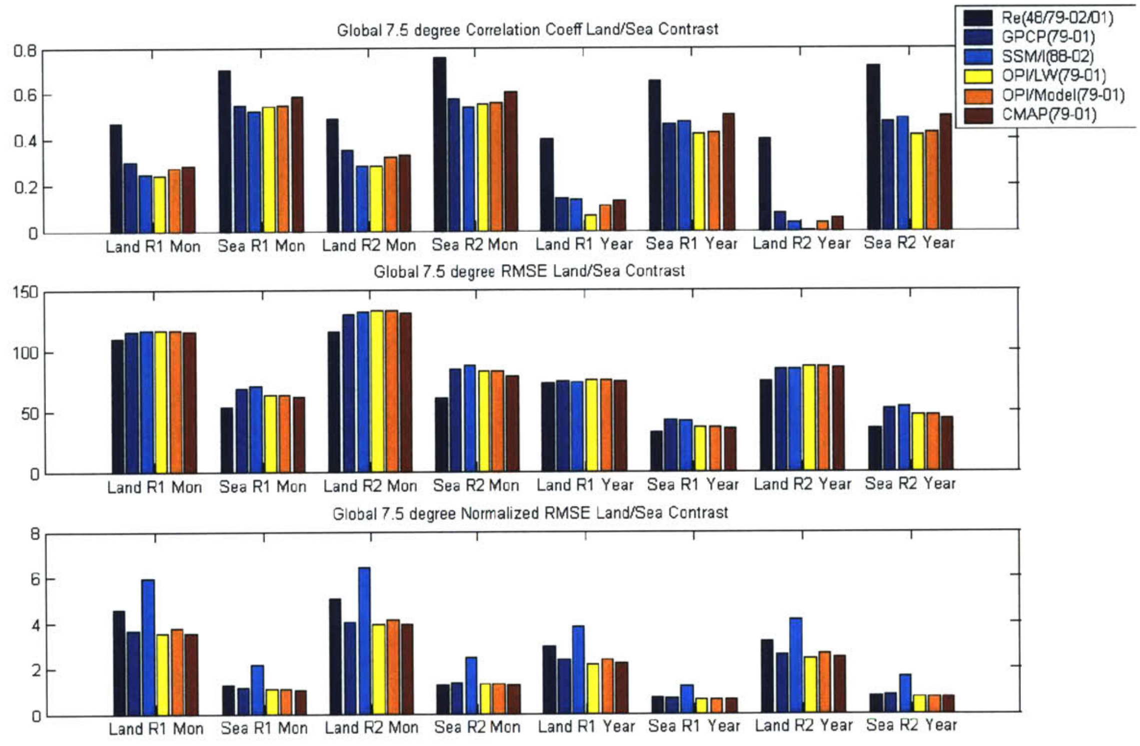


Figure 6-78: Global Analysis of the Land/Sea Contrast – Correlation Statistics

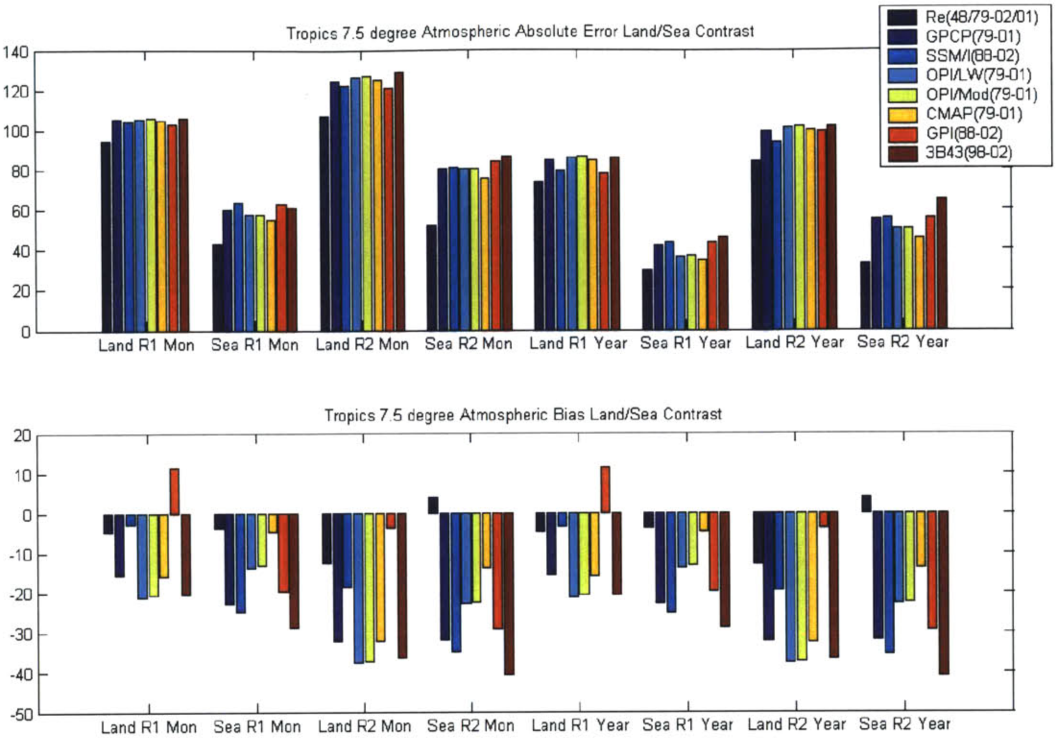


Figure 6-79: Tropical Analysis of the Land/Sea Contrast – Residual Statistics

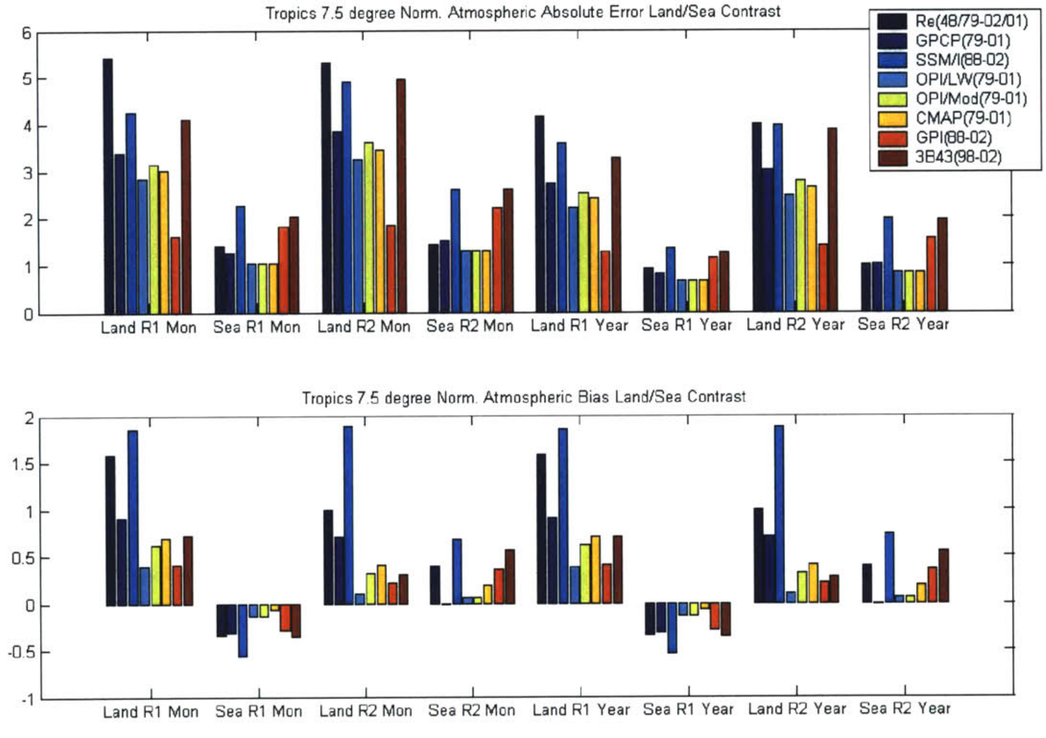


Figure 6-80: Tropical Analysis of the Land/Sea Contrast – Normalized Residual Statistics

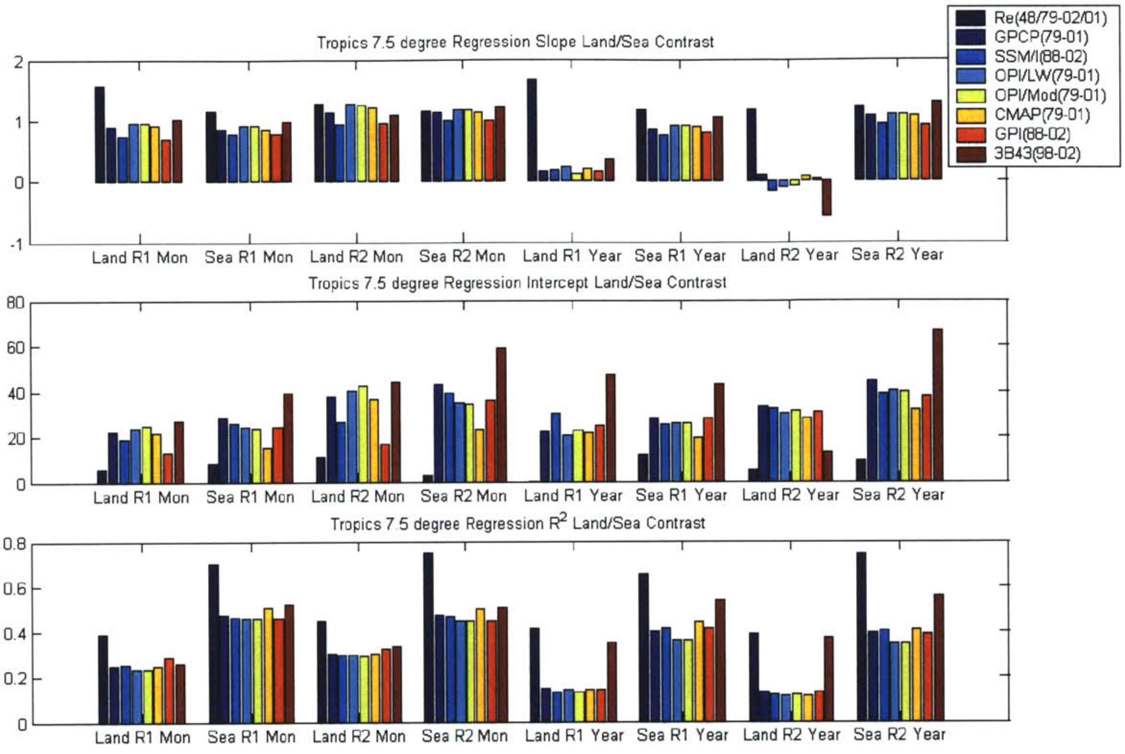


Figure 6-81: Tropical Analysis of the Land/Sea Contrast – Regression Statistics

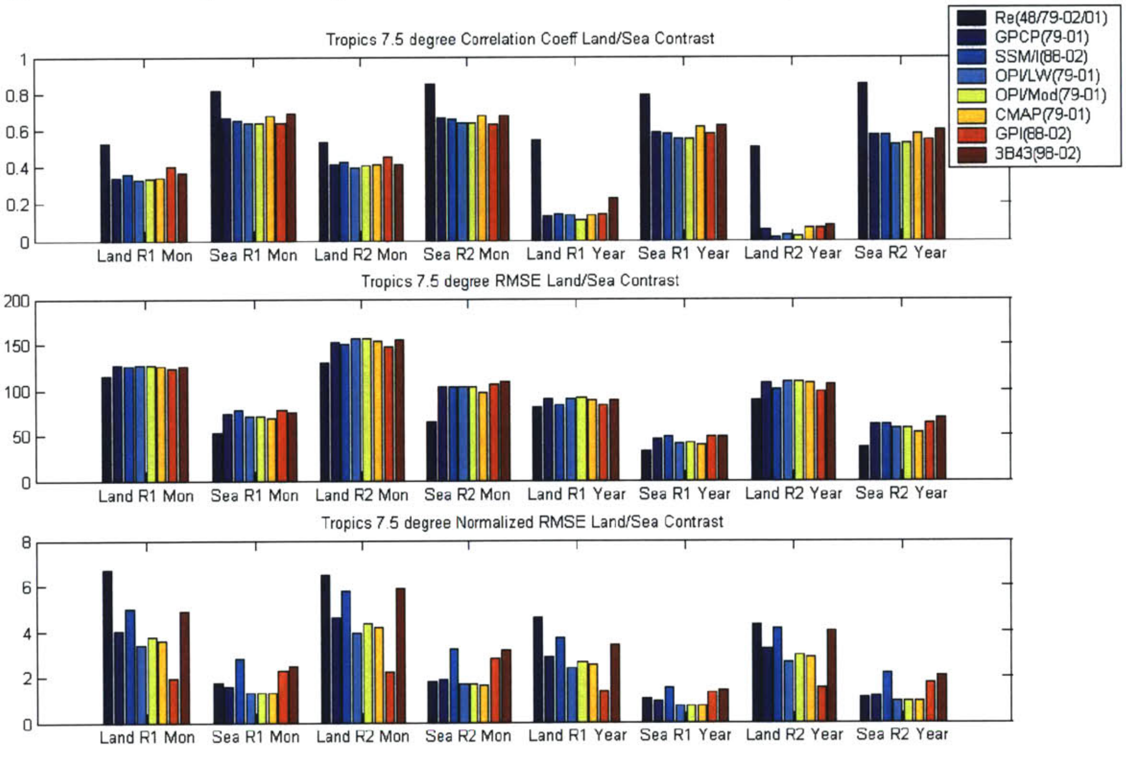


Figure 6-82: Tropical Analysis of the Land/Sea Contrast – Correlation Statistics

The same analysis applied to only the tropical points between 30 degrees north and 30 degrees south is displayed in Figure 6-79 through 6-82. The ratio of land to sea errors is about the same in terms of absolute error and RMSE, however the magnitude of errors are slightly higher in the tropical cases for all conditions. In terms of bias there is a large contrast between the GPI precipitation over land and sea, as over land biases are near zero and even positive. The normalization process again interferes with the normalized residual statistics and RMSE. Average regression slopes are again consistent with one for all conditions except for the use of alternate precipitation over land on the yearly basis. This property is not corrected in the tropical case.

The comparison of land and sea balances under different conditions in general validates what was seen in spatial plots earlier. The ocean balances are balanced much better than the land balances. About two times as well on average in terms of absolute error and regression correlation. Useful observations can be made pertaining to precipitation datasets over land and sea points especially in terms of overall bias, as certain precipitation datasets cater better to land or sea points or, in the case of the reanalysis, both.

7. Ground Heat Flux Research

Ground heat flux (GHF) over the land surface can be calculated using the half-order derivative method proposed by Wang and Bras (1999):

$$G(t) = \frac{I}{\sqrt{\pi}} \int_0^t \frac{dT_g(s)}{\sqrt{t-s}} \qquad \text{(Eq. 7-1)}$$

where G (t) is the ground heat flux at time t, T_g is the ground temperature, and s is the integration time of the temperature time series used to find the ground heat flux. s varies between 0 and t. I is the thermal inertia of the soil material:

$$I = \sqrt{K\rho C} \qquad \text{(Eq. 7-2)}$$

where K is the bulk thermal conductivity ($Wm^{-1}K^{-1}$), ρ is the bulk density ($kg\ m^{-3}$), and C is the specific heat capacity ($J\ kg^{-1}K^{-1}$). t=0 represents the time when G=0, which is typically at 6 am local time. The interested reader is referred to Wang and Bras (1999) for a detailed description of the half order derivative method.

In this study the Reanalysis-1 and Ranalysis-2 skin temperature (ground temperature) data at 6 hourly, daily, and monthly time resolutions will be used to compute the global 6-hourly, daily, an d monthly ground heat flux for the year 1988. A certain amount of data from the previous year 1987 is needed to calculate the ground heat flux at the beginning of 1988.

In Section 7.1, a first estimate of G will be derived with a constant $I = 1 \times 10^3\ J\ m^{-2}\ s^{-1/2}\ K^{-1}$ using the Reanalysis-1 dataset. In Section 7.2 the spatially varying I parameter will be estimated from field observations. Section 7.3 contains an original methodology for determining the global map of I, based on the findings of Section 7.2. In Section 7.4, a global ground heat flux product will be presented.

7.1. Initial Findings

The only global data set on ground heat flux comes from the NCEP Reanalysis product. We'll use the skin temperature to recalculate ground heat flux using Eq. (7-1). Ground heat flux in the NCEP Reanalysis dataset, like many other fields, is derived by a global model on a 6-hourly basis, and then aggregated into daily and monthly resolutions. In this section a universal thermal inertia of $1 \times 10^3\ J\ m^{-2}\ s^{-1/2}\ K^{-1}$ is applied to all land points to derive a ground heat flux time-series at three time scales. There are 5914 land pixels with a size of about 1.90° x 1.88° (lat x long).

Four measures are then utilized to compare the "estimated" ground heat flux and the "observed" ground heat flux (from the reanalysis output), namely root mean square error (RMSE), normalized root mean square error (NRMSE), regression slope and regression intercept. The root mean square error is a measure of the differences between two time series in a non biased fashion. The purpose of the initial estimates is to identify the locations where there are substantial differences between the estimated and observed ground heat flux. Differences may exist between the two reanalysis datasets with certain geographical and temporal features. The comparison will help in producing the improved global maps of ground heat flux

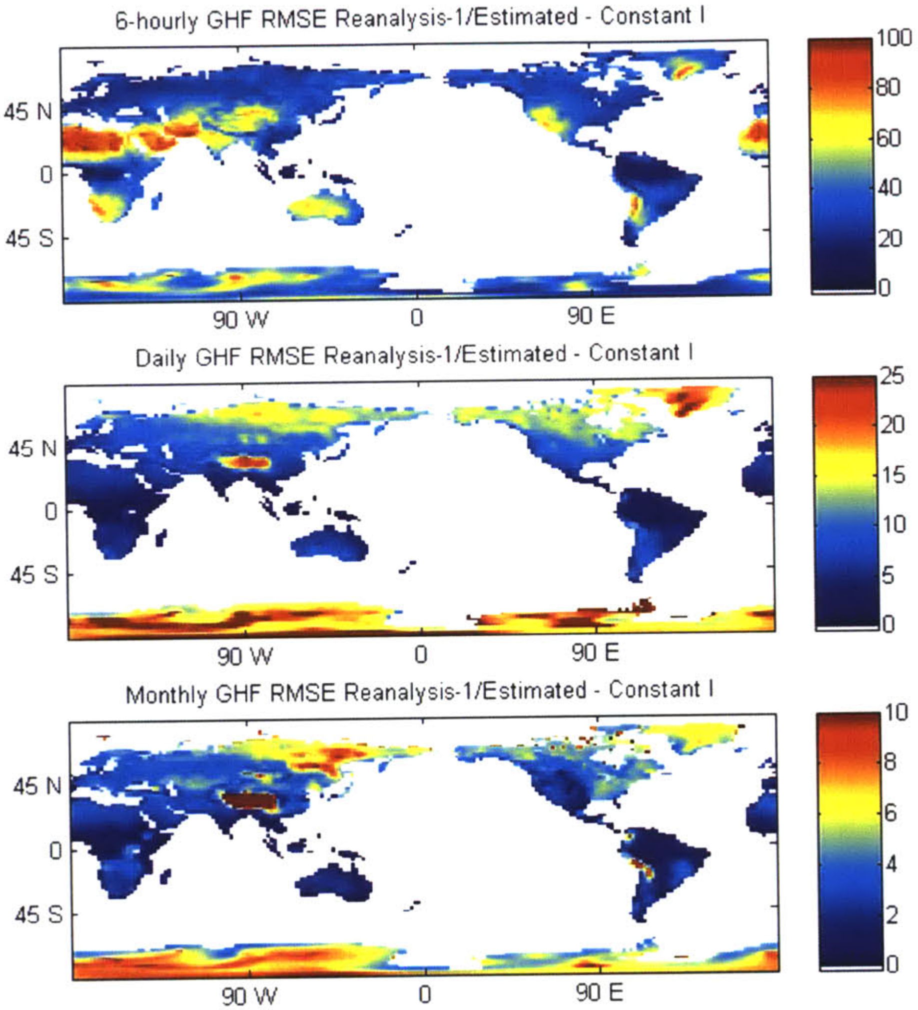
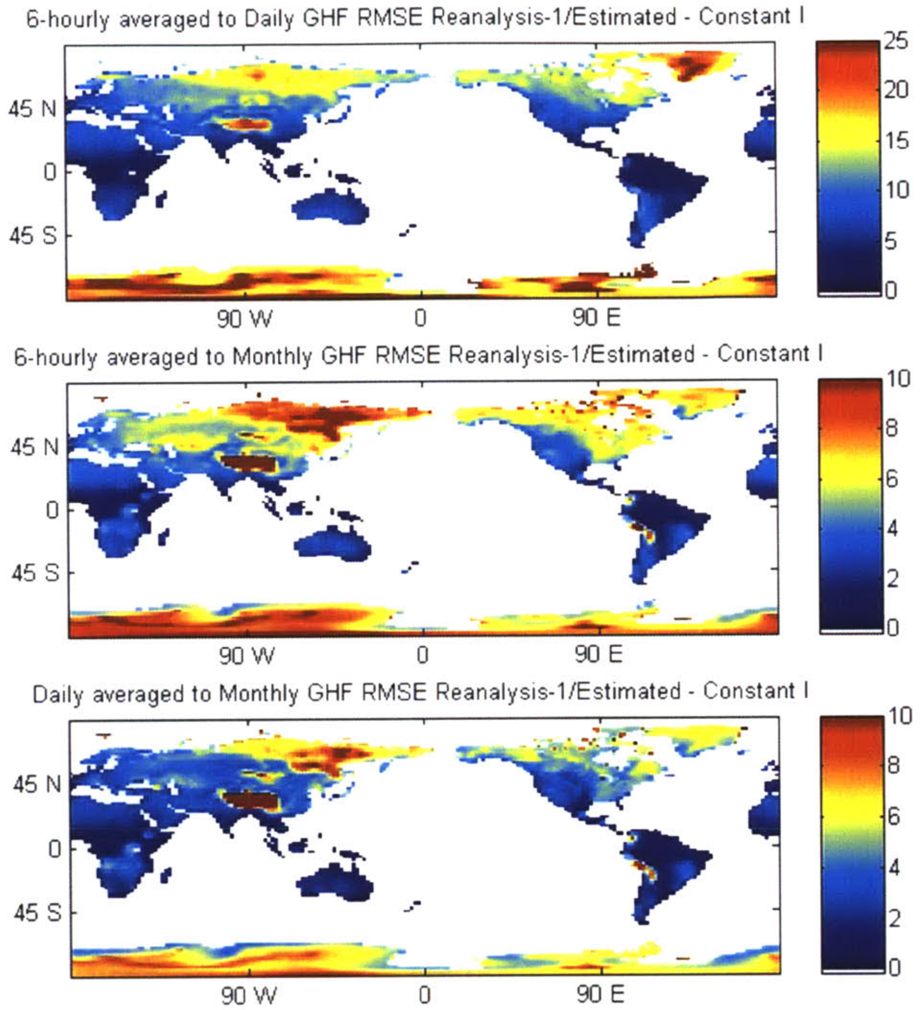


Figure 7-1: RMSE between the Estimated and Reanalysis-1 GHF – Non-Averaged Data

Figure 7-1 illustrates the RMSE between the Reanalysis-1 observed and the estimated ground heat flux at the three time resolutions using the skin temperature input. On the 6-hourly time scale, moderate differences are found throughout the globe, on the order of 20 Wm^{-2}. Large differences are found over desert regions around the world including Northern Africa, Central Asia, Australia, the Southwest United States, and the Andes mountains. On the daily and monthly time scales, these differences are reduced with significant errors over Central Asia, but predominantly over high latitude regions.



6-hourly averaged to Daily GHF RMSE Reanalysis-1/Estimated - Constant I

6-hourly averaged to Monthly GHF RMSE Reanalysis-1/Estimated - Constant I

Daily averaged to Monthly GHF RMSE Reanalysis-1/Estimated - Constant I

Figure 7-2: RMSE between the Estimated and Reanalysis-1 GHF – Aggregated Data

Like the reanalysis ground heat flux, 6-hourly estimated ground heat flux can be aggregated to daily and monthly time scales, resulting in three additional ground heat flux products which can be compared with the Reanalysis-1 products at the corresponding time scales. These comparisons are shown in Figure 7-2. Large differences persist for the same regions as in Figure 7-1 showing non-aggregated data. Of particular interest are the high latitude regions and Central Asia. The differences are the largest when the 6-hourly estimated ground heat flux is aggregated all the way to monthly data and then compared with the reanalysis monthly ground heat flux. In northern areas the aggregation leads to major difference between the two.

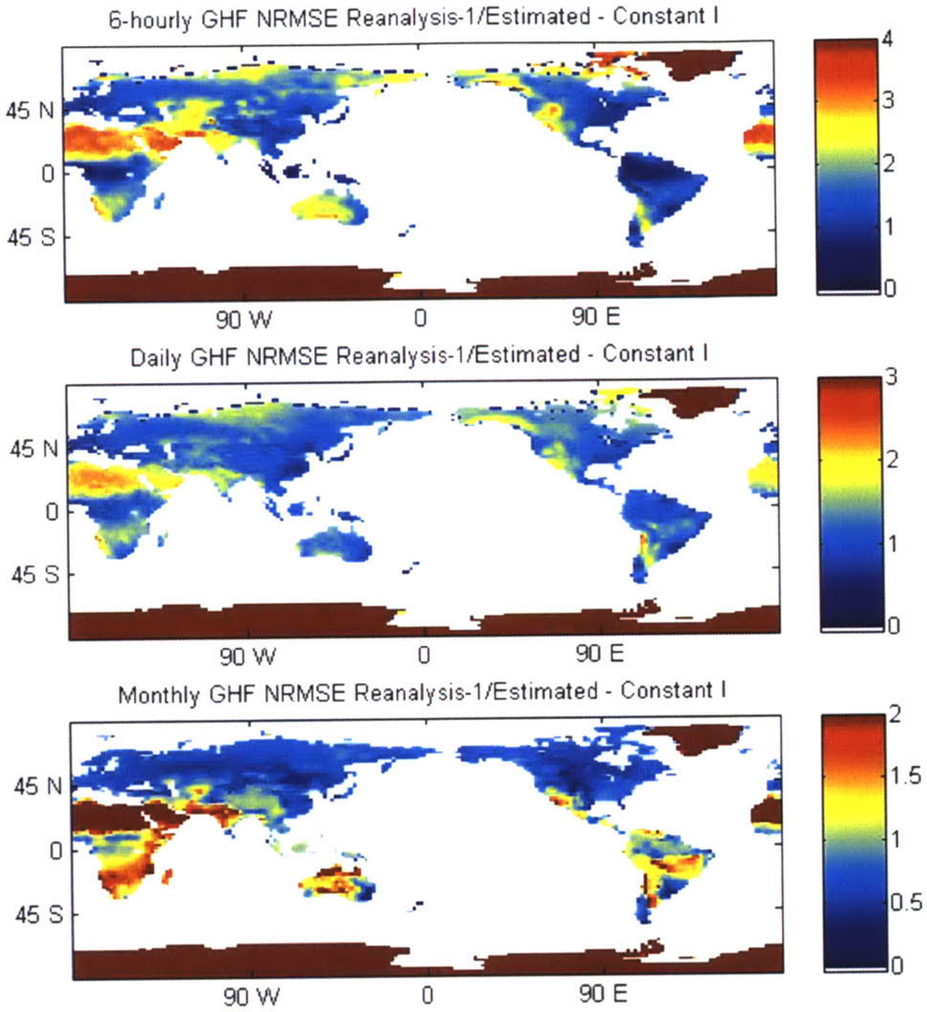
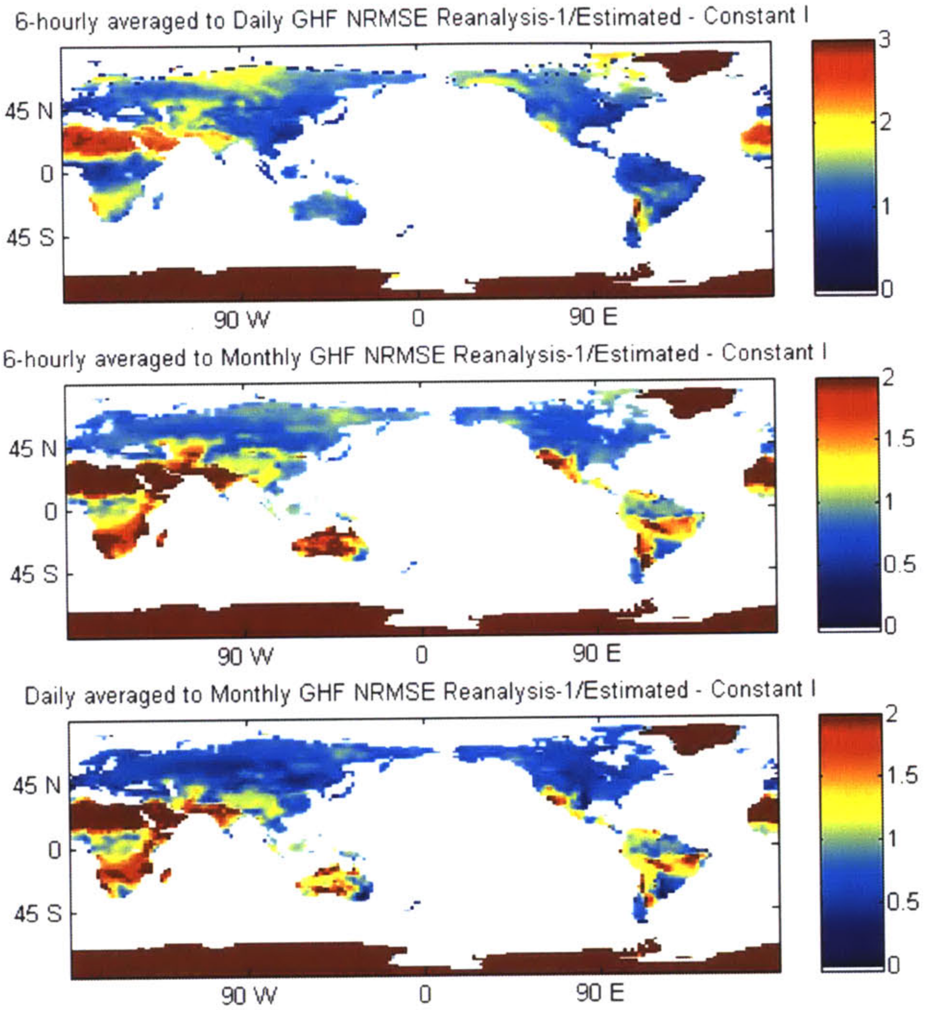


Figure 7-3: Normalized RMSE between the Estimated and Reanalysis-1 GHF – Non-Aggregated Data

Because of the variability in the magnitude of ground heat flux, normalized RMSE is used to quantify the relative error of the estimated ground heat flux to the observed ground heat flux. Normalization is performed for each dataset by dividing the RMSE by the average of the absolute value of Reanalysis-1 ground heat flux. Since the annual mean ground heat flux is close to zero it is necessary to normalize by the average of the absolute value of ground heat flux. Figure 7-3 shows that relatively large normalized differences are observed over Greenland and Antarctica. Significant errors also appear in dry desert regions as well as in the arctic regions to a lesser extent. The arctic errors do not appear to be very large on the monthly time scale, while the differences over the desert are greater. When comparing the aggregated estimated ground heat flux with the reanalysis shown in Figure 7-4, there are increased differences over Northern Africa and Australia when aggregating from the 6-hourly to the monthly time scale.


6-hourly averaged to Daily GHF NRMSE Reanalysis-1/Estimated - Constant I

6-hourly averaged to Monthly GHF NRMSE Reanalysis-1/Estimated - Constant I

Daily averaged to Monthly GHF NRMSE Reanalysis-1/Estimated - Constant I

Figure 7-4: Normalized RMSE between the Estimated and Reanalysis-1 GHF – Aggregated Data

Regression slope and intercept are two useful parameters in comparing the estimated ground heat flux with the Reanalysis-1 ground heat flux. They can be obtained from the scatter plot of the reanalysis ground heat flux as the y-axis vs. the estimated ground heat flux as the x-axis. Close correlation is found in all cases, but the regression slopes vary. When the estimated ground heat flux does not follow the 1:1 line we assume the reanalysis data is more accurate than the estimated ground heat flux using a constant I, since the thermal inertia parameter is expected to vary spatially. In the following analysis, the thermal inertia in Eq. (7-1) would be adjusted to force the regression slope to be unity.

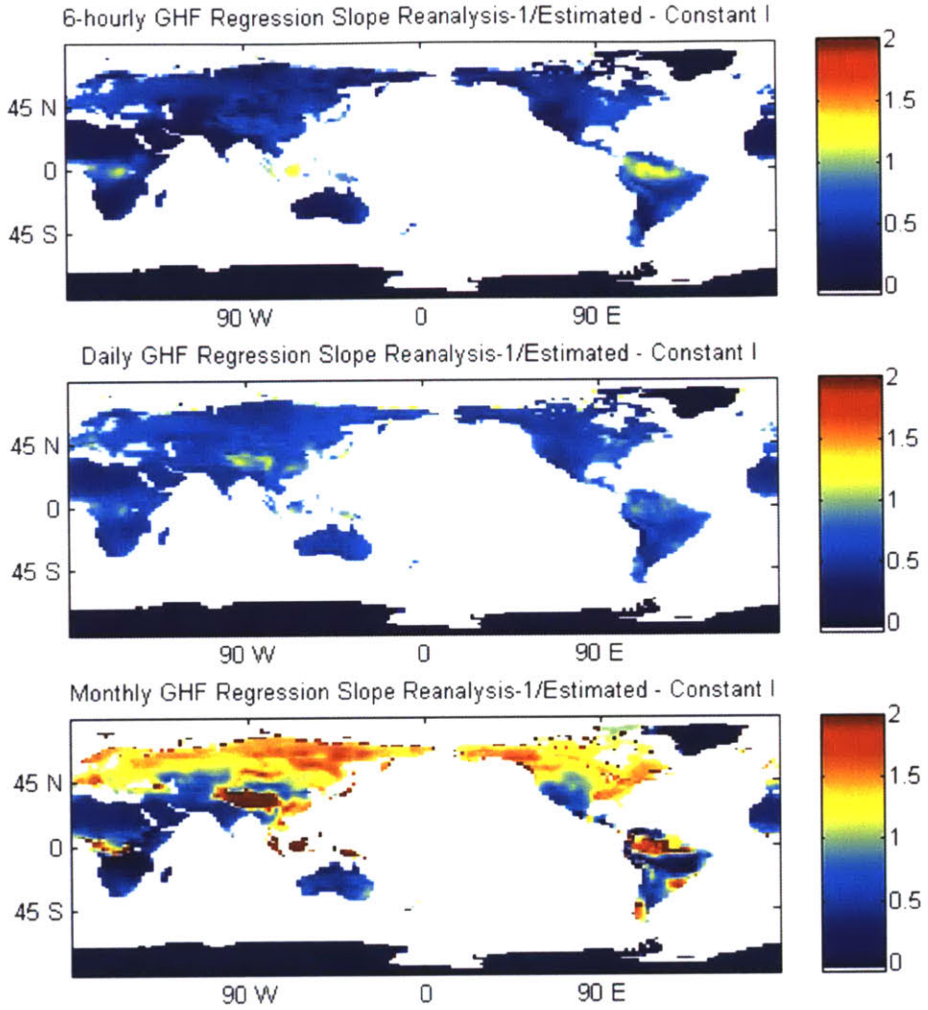
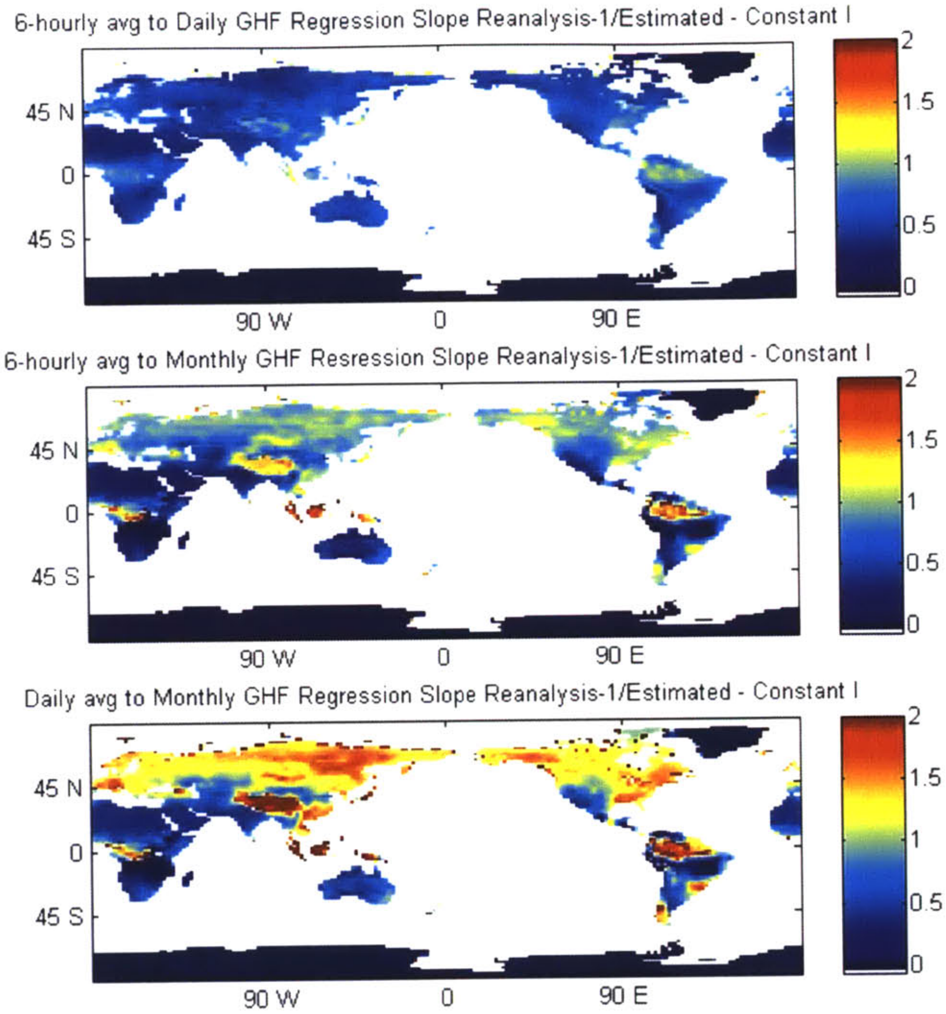


Figure 7-5: Regression Slope of Reanalysis-1 GHF vs. Estimated GHF – Non-Aggregated Data

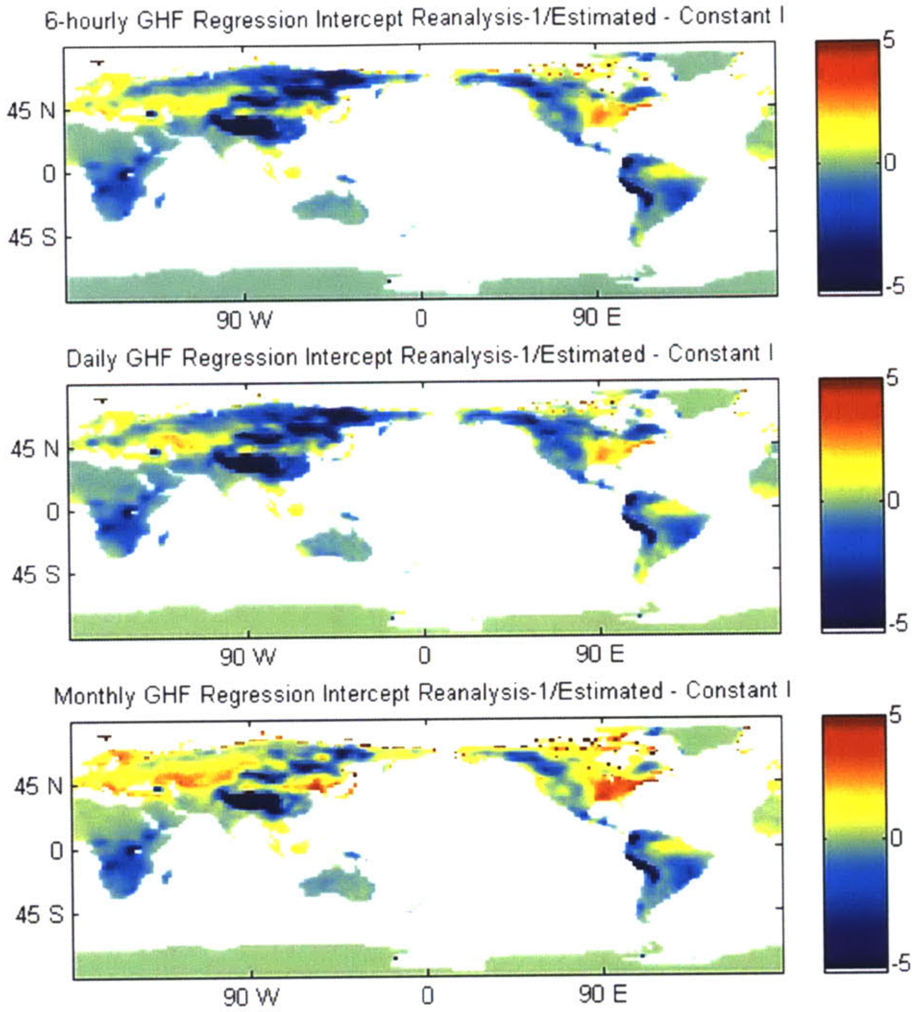
Figure 7-5 shows the global maps of regression slopes of non-aggregated estimated ground heat flux vs. the corresponding reanalysis data at the three time resolutions. In general the regression slopes of the 6-hourly and daily data are quite low. Note that the regression slopes vary with the time resolutions of the data, while the thermal inertia should be time-independent theoretically. For example the monthly map shows greater regression slopes globally relative to the 6-hourly and daily map with significant geographical variations. The global maps of regression slopes for aggregated data are shown in Figure 7-6.


6-hourly avg to Daily GHF Regression Slope Reanalysis-1/Estimated - Constant I

6-hourly avg to Monthly GHF Resression Slope Reanalysis-1/Estimated - Constant I

Daily avg to Monthly GHF Regression Slope Reanalysis-1/Estimated - Constant I

Figure 7-6: Regression Slope of Reanalysis-1 GHF vs. Estimated GHF – Aggregated Data


6-hourly GHF Regression Intercept Reanalysis-1/Estimated - Constant I

Daily GHF Regression Intercept Reanalysis-1/Estimated - Constant I

Monthly GHF Regression Intercept Reanalysis-1/Estimated - Constant I

Figure 7-7: Regression Intercept of Reanalysis-1 GHF vs. Estimated GHF – Non-Aggregated Data

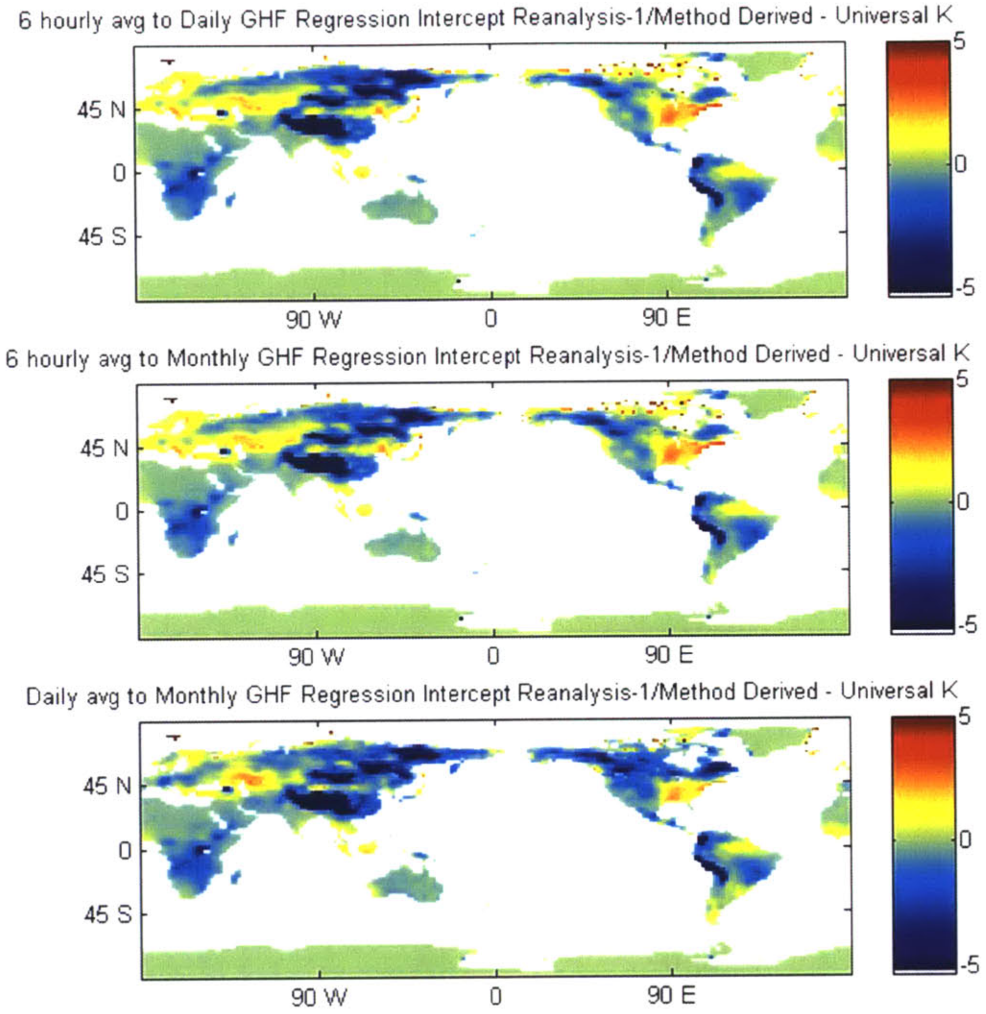


Figure 7-8: Regression Intercept of Reanalysis-1 GHF vs. Estimated GHF – Aggregated Data

Figures 7-7 and 7-8 show that the regression intercepts on the order of 5 Wm^{-2} are relatively small. Greater intercepts are observed in the Northern regions and in Central Asia, which will be regions of focus as we attempt to improve the estimated ground heat flux.

Problems associated with the thermal inertia parameter become more prevalent at certain locations. Theoretically, the thermal inertia could be estimated by regressing the estimated against measured ground heat flux for that region. Four points were selected over the globe to illustrate the differences between the estimated ground heat flux and the Reanalysis-1 ground heat flux using the uniform thermal inertia. These points are located in South America, Central Canada, Sahara Desert, and Tibet. At two locations (Central Canada and Sahara Desert), field experimental data are available and will be used in the following section to estimate an effective thermal inertia for the two biggest problem regions (deserts and high latitudes).

Over the South America point, estimated ground heat flux agrees well with the Reanalysis-1 ground heat flux on all time scales. The agreement is best for the 6-hourly time scale, as shown in Figure 7-9. There is a very little variation in the daily cycle. The regularity of this cycle can be seen in the correlation plot in the top left of Figure 7-15. The cycle is so regular that clusters of points are seen for different times during the daily cycle. Such features do not exist at the other two time scales. Daily and monthly time-series of the estimated and the observed ground heat flux are plotted in Figures 7-11 and 7-13. It is evident that the uniform thermal inertial leads to good estimates of ground heat flux compared with that from the reanalysis over the South America point.

Over the Sahara Desert, the estimated ground heat flux does not agree with the Reanalysis-1 ground heat flux. The bottom left panel of Figure 7-15 clearly shows the problem of the estimated ground heat flux over the Sahara Desert on the 6-hourly time scale. Later, observations from the HAPEX-SAHEL field experiment (3 degrees N latitude and 14 degrees E longitude) will be utilized to obtain an estimate of the thermal inertia parameter. Figure 7-9 indicates that there is a large difference between amplitude of the diurnal cycle in the estimated 6-hourly ground heat flux and the Reanalysis-1 ground heat flux. We found that the assumed value of the uniform thermal inertia is too large, causing an over estimate of the ground heat flux relative to the reanalysis data assumed to be reasonably accurate.

Time series of the ground heat fluxes at a location in Central Canada are shown in Figure 7-10, 7-12, 7-14 with the corresponding scatter plot in Figure 7-16. This location is near the BOREAS field experiment site (53 degrees N latitude and 106 degrees W longitude). On top of Figure 7-10 the 6-hourly data is presented over the period of mid March to mid June. Unlike the other points, ground heat flux at this location does not have a regular diurnal cycle. For the first half of this period (wintertime), estimated ground heat flux fluctuates wildly while the reanalysis flux is close to zero. For the middle portion of the year the reanalysis and estimated flux agree very well. It indicates that the diffusion coefficient varies seasonally. The same feature can be seen in the daily data over the entire year on the top portion of Figure 7-12. In Figure 7-16, the data points in the scatter plot are also grouped where the points at the beginning and the end of the 6-hourly and daily time series stay in one group with the data points in the middle of the time series in another. The monthly data does not show this pattern. Larger records are needed to ascertain if this behavior persists in the monthly data.

An additional location in Central Asia (Tibetan Plain, 34°N 86°E) is also studied. This location has already shown up on many of the early plots as a source of major difference between the estimated and reanalysis ground heat flux. Judging by the scatter plots in Figure 7-16, this location is similar to the South America with a strong seasonal cycle on the 6-hourly time scale using most of the year. The assumed uniform thermal inertia works well for most of the year across all time scales. Biases exist for this point as shown in Figure 7-12 at the daily time scale in the middle portion of the year. Such errors can not be fixed by altering the thermal inertia.

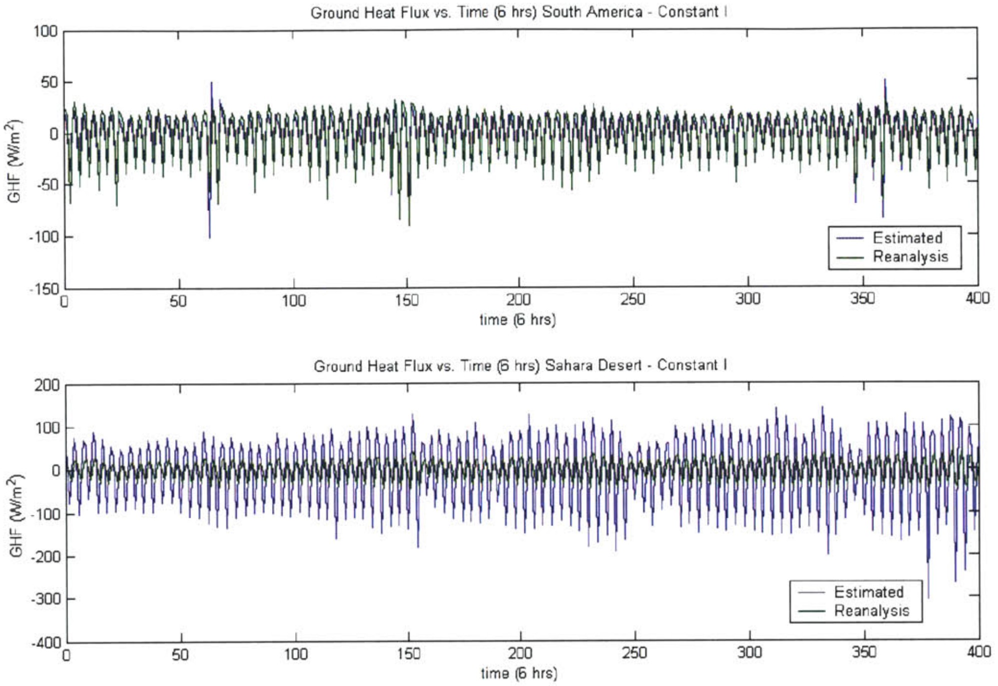


Figure 7-9: Comparison of Estimated and Reanalysis-1 Ground Heat Flux over South America and the Sahara Desert for the 6-hr time scale

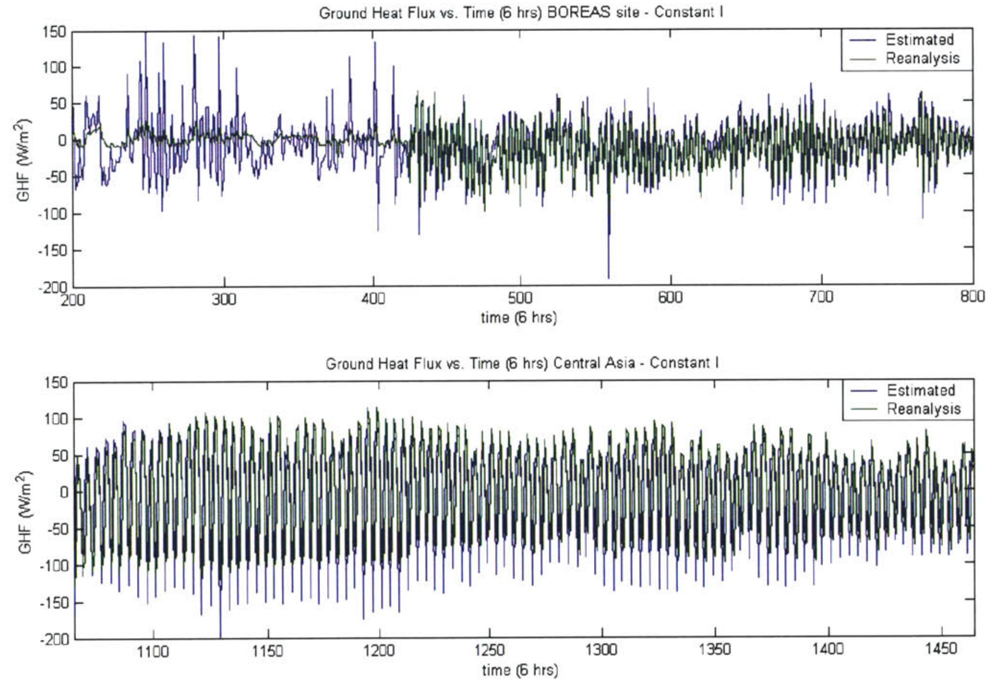


Figure 7-10: Comparison of Estimated and Reanalysis-1 Ground Heat Flux over the BOREAS site (Central Canada) and Central Asia for the 6-hr time scale

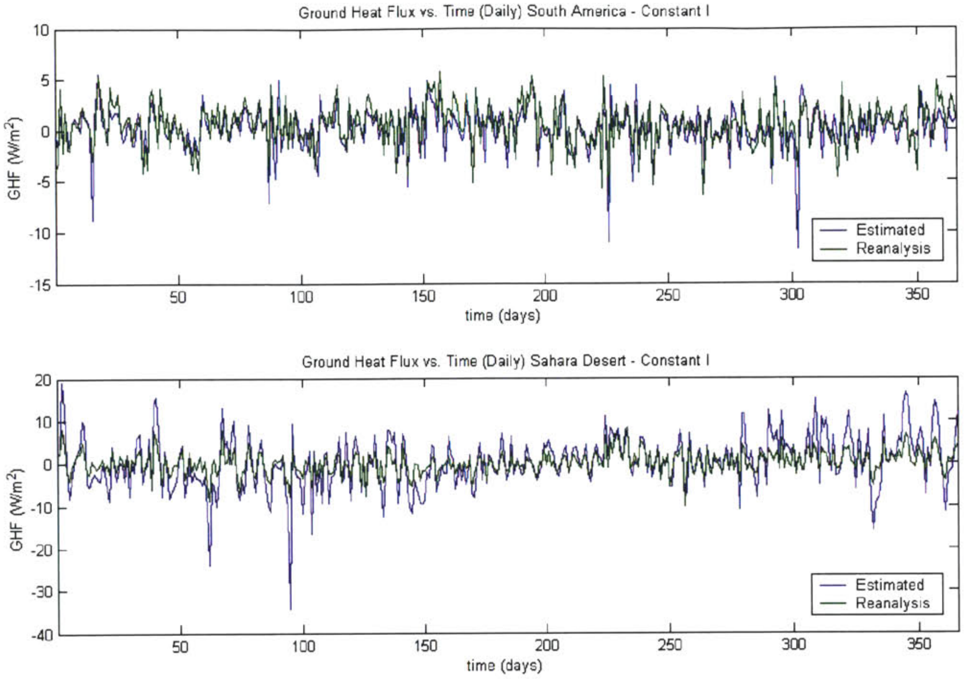


Figure 7-11: Comparison of Estimated and Reanalysis-1 Ground Heat Flux over South America and the Sahara Desert for the Daily time scale

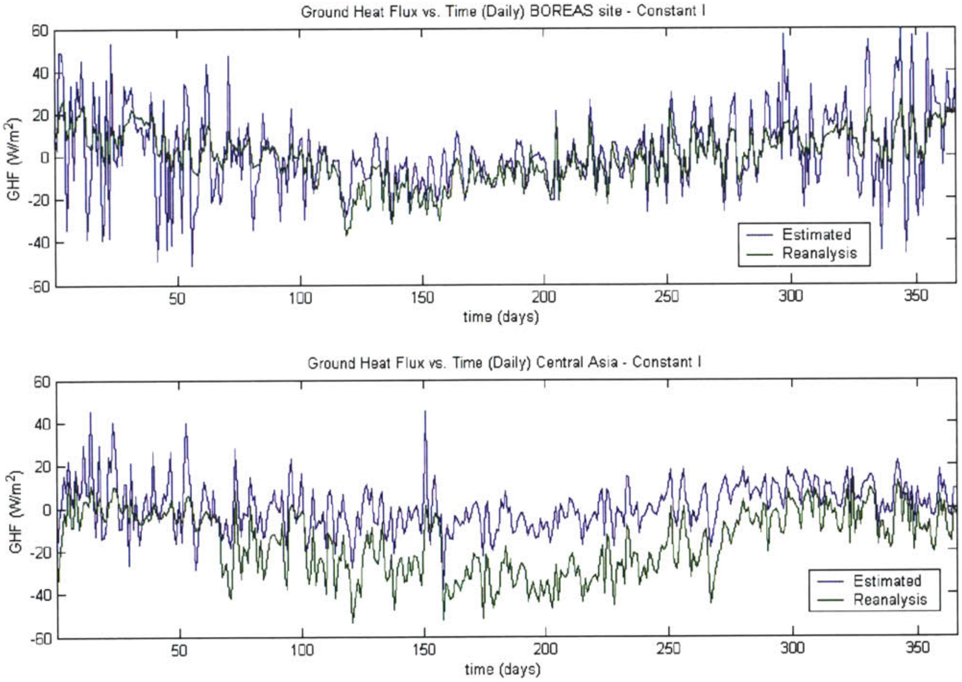
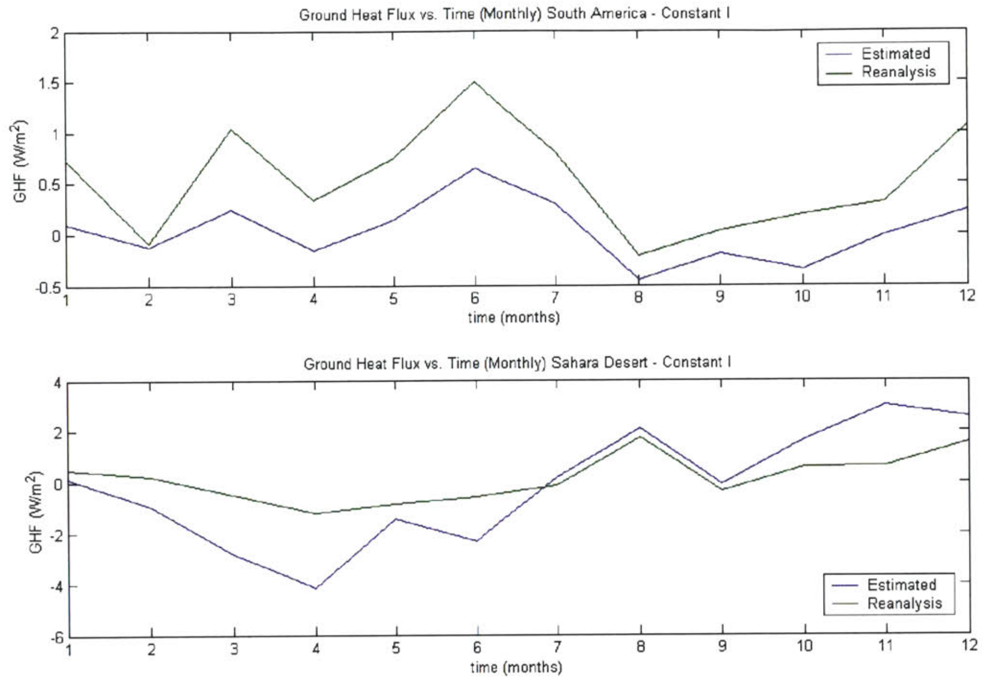
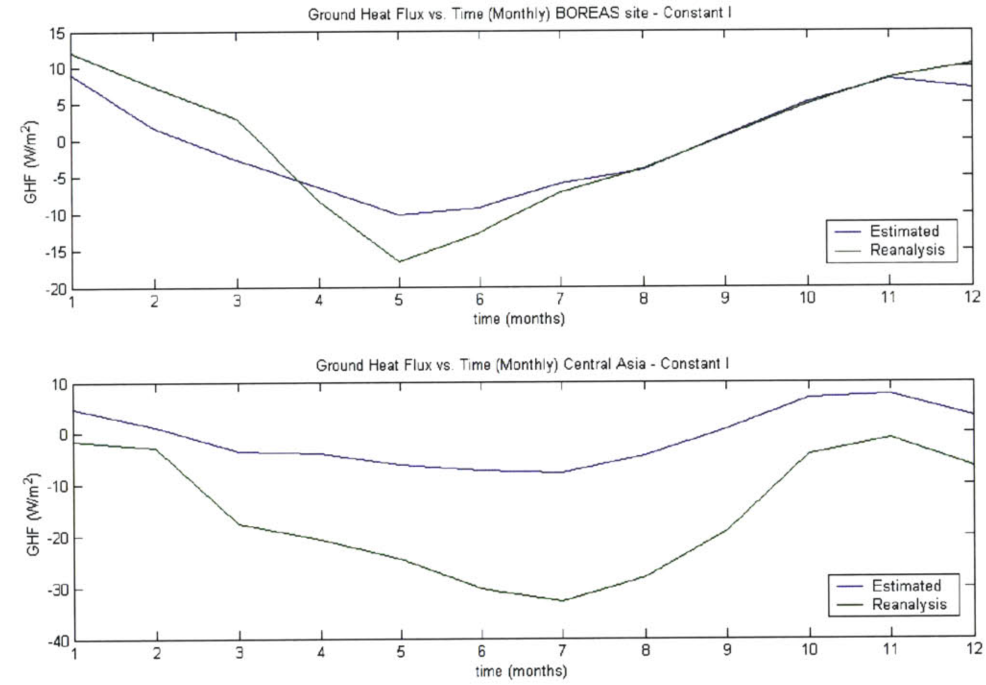


Figure 7-12: Comparison of Estimated and Reanalysis-1 Ground Heat Flux over the BOREAS site (Central Canada) and Central Asia for the Daily time scale


Ground Heat Flux vs. Time (Monthly) South America - Constant I

Ground Heat Flux vs. Time (Monthly) Sahara Desert - Constant I

Figure 7-13: Comparison of Estimated and Reanalysis-1 Ground Heat Flux over South America and the Sahara Desert for the Monthly time scale


Ground Heat Flux vs. Time (Monthly) BOREAS site - Constant I

Ground Heat Flux vs. Time (Monthly) Central Asia - Constant I

Figure 7-14: Comparison of Estimated and Reanalysis-1 Ground Heat Flux over the BOREAS site (Central Canada) and Central Asia for the Daily time scale

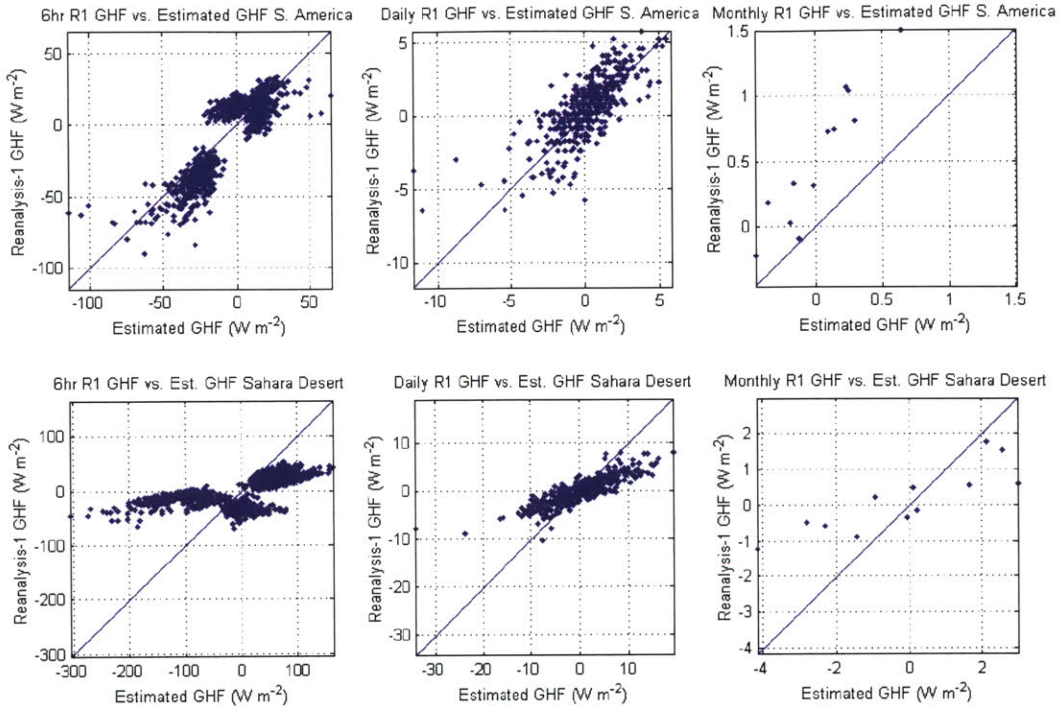


Figure 7-15: Comparison of Estimated and Reanalysis-1 Ground Heat Flux over South America and the Sahara Desert – Correlation Plots for All Time Scales

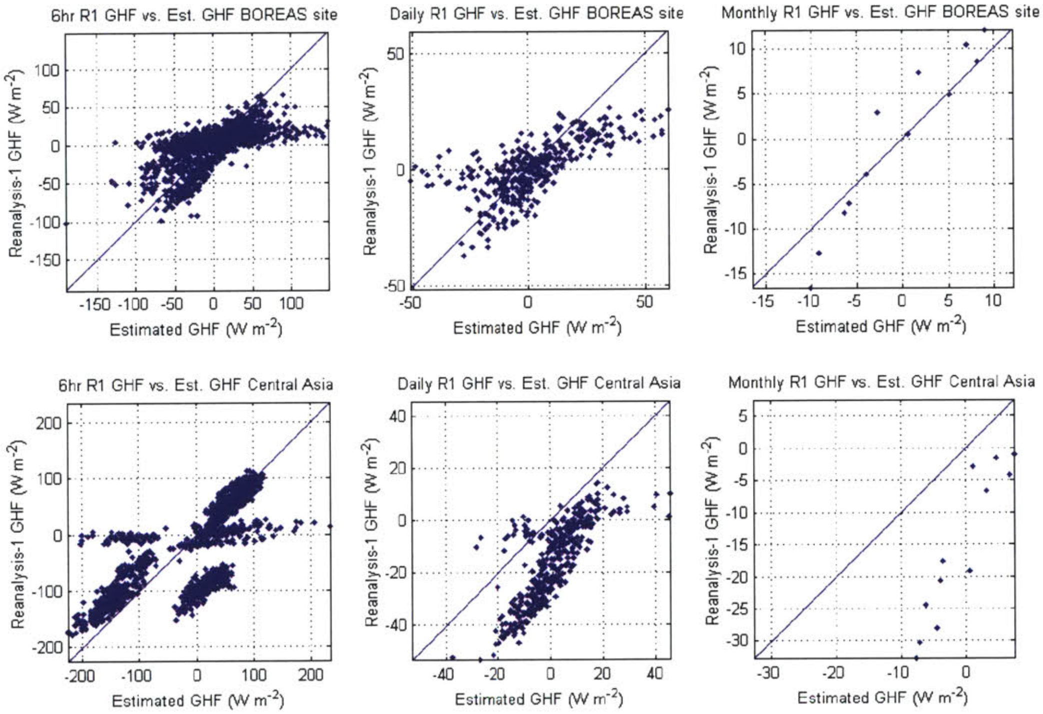


Figure 7-16: Comparison of Estimated and Reanalysis-1 Ground Heat Flux over the BOREAS site (Eastern Canada) and Central Asia – Correlation Plots for All Time Scales

7.2. Estimates of Thermal Inertia Parameter

For two of the most problematic regions, observed ground heat flux and skin temperature are available and will be used to obtain a realistic estimate of the thermal inertia parameter. The BOREAS field experiment is located in Central Canada. The HAPEX-SAHEL field experiment is located in the Sahara Desert.

7.2.1. BOREAS

It was first hypothesized that the larger differences between the reanalysis and the estimated ground heat flux are due to the frozen ground. Under this assumption the skin temperature could be used to indicate an alternative thermal inertia depending if the skin temperature were below freezing for a given time. The BOREAS field data used here consists of observations every thirty minutes from April 1 to December 30, 1996 when soil heat flux and was sampled at 3 cm depth. A soil temperature profile is also available, and can be used to extrapolate the soil surface skin temperature.

A reference ground heat flux was first calculated using Eq. (7-1) where the BOREAS derived 6-hourly skin temperature was used with the original default thermal inertia. Then, ten different thermal inertias are applied to frozen and non-frozen points separately to re-calculate the corresponding ground heat flux.

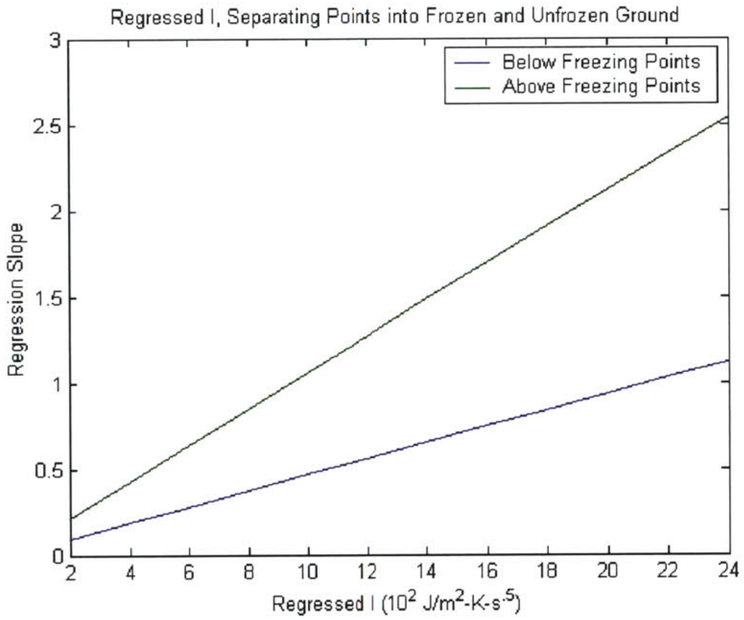


Figure 7-17: Regression Slope vs. Thermal Inertia Used to Obtain Slope For Two Different Types of Land

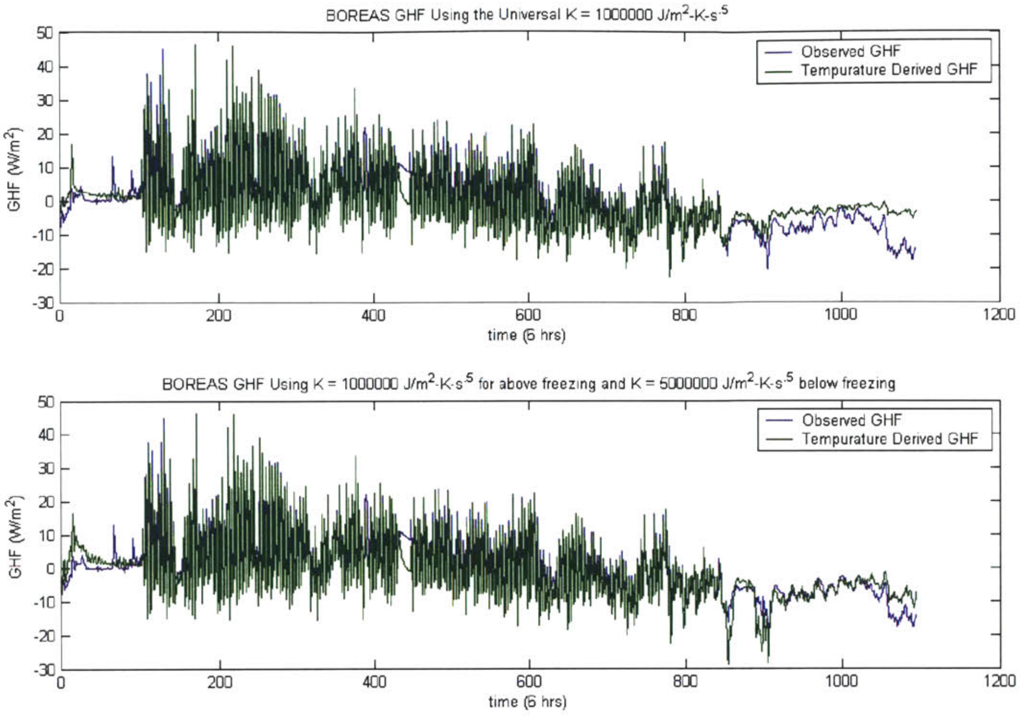


Figure 7-18: Estimated and Observed GHF vs. Time for 2 Sets of Scenarios for the Value of Thermal Inertia

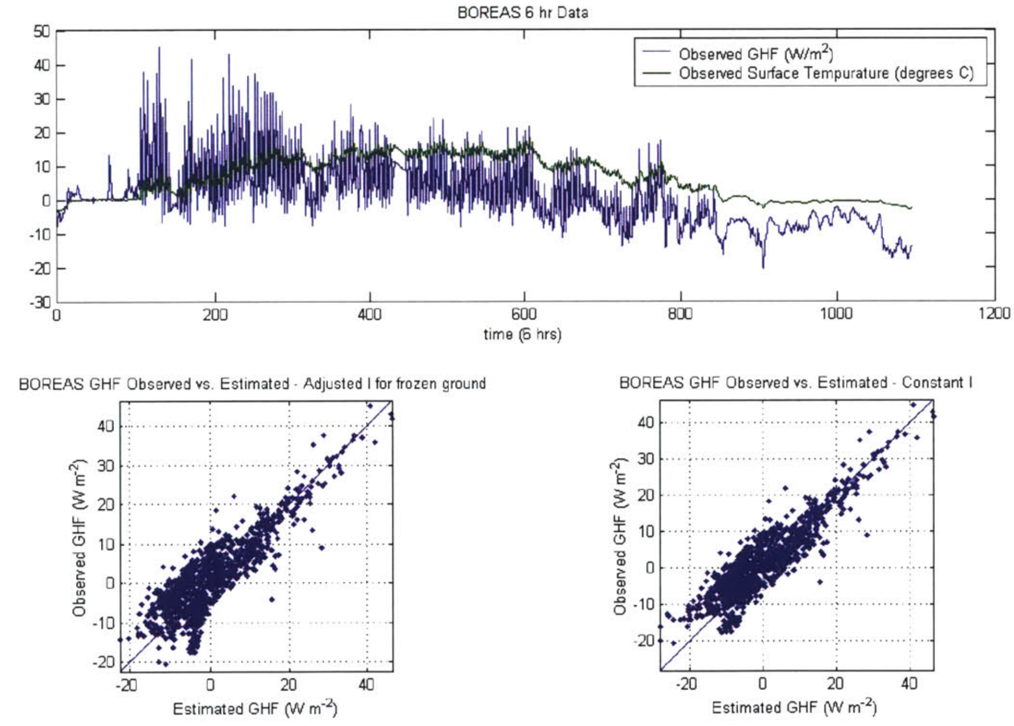


Figure 7-19: Top – Observed Data at the BOREAS site, Bottom – Scatter plots for 2 Sets of Scenarios for the Value of the Thermal Inertia

In Figure 7-17 the regression slopes are plotted for the comparison of the observed and the estimated ground heat flux with different thermal inertias applied to frozen and non-frozen points. The regression slope is closest to one for thermal inertia of 1 x 10^3 J m^{-2} $s^{-1/2}$ K^{-1} for the non-frozen points (default) and 2.2 x 10^3 J m^{-2} $s^{-1/2}$ K^{-1} for the frozen points. In Figure 7-18 the observed ground heat flux is compared to the estimated using the default thermal inertia and the newly estimated thermal inertia.

However, matching the reanalysis ground heat flux with that calculated using the BOREAS temperature record requires a very low thermal inertia under "frozen" conditions. This is not due to the frozen ground, and snow cover must be the cause.

Snow cover is an output parameter in the reanalysis data for each land point at every time scale, and can be used in place of temperature to separate points with different thermal inertias. For a full analysis of the impact of snow cover, the thermal inertia the Reanalysis-2 is introduced in addition to the Reanalysis-1 and BOREAS data. Relevant data and results using the default thermal inertia are presented in Figure 7-20 through 7-22.

Differences are evident between the surface temperature given by the Reanalysis-1 and Reanalysis-2 and the BOREAS field data. The middle panels of Figures 7-20, 7-21, and 7-22 illustrate the time series of skin temperature. The uniqueness of the BOREAS skin temperature record indicates that the skin temperature from both reanalysis datasets is not the same as the measured skin temperature at the BOREAS site. In fact, skin temperature from the BOREAS dataset is the surface soil temperature beneath the snow cover, and the reanalysis skin temperature is the surface snow temperature.

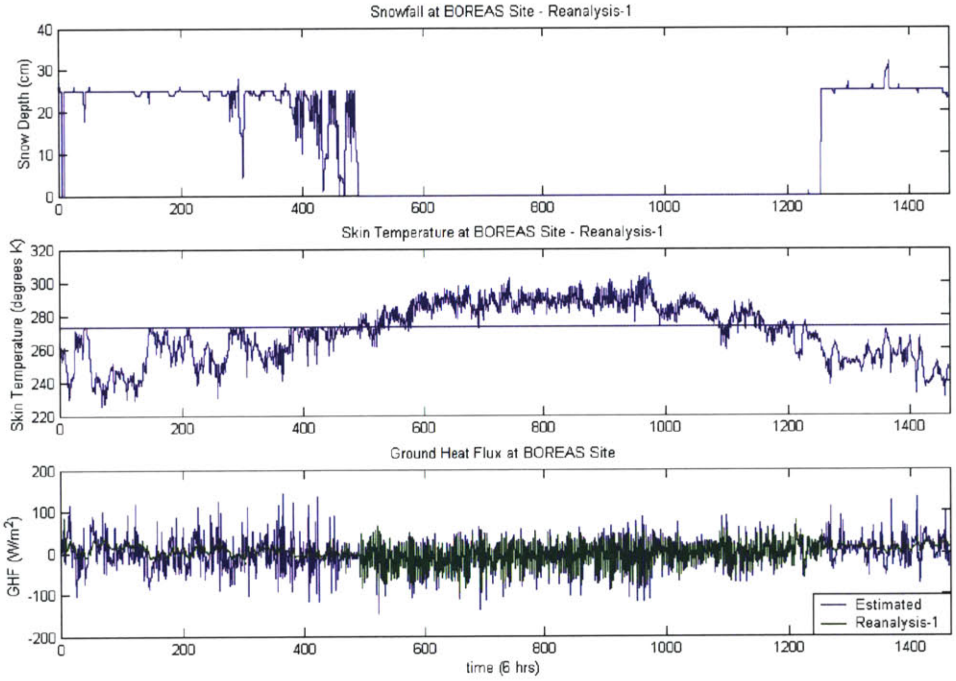


Figure 7-20: 6-hourly Time Series Data from the Reanalysis-1 for the BOREAS Site

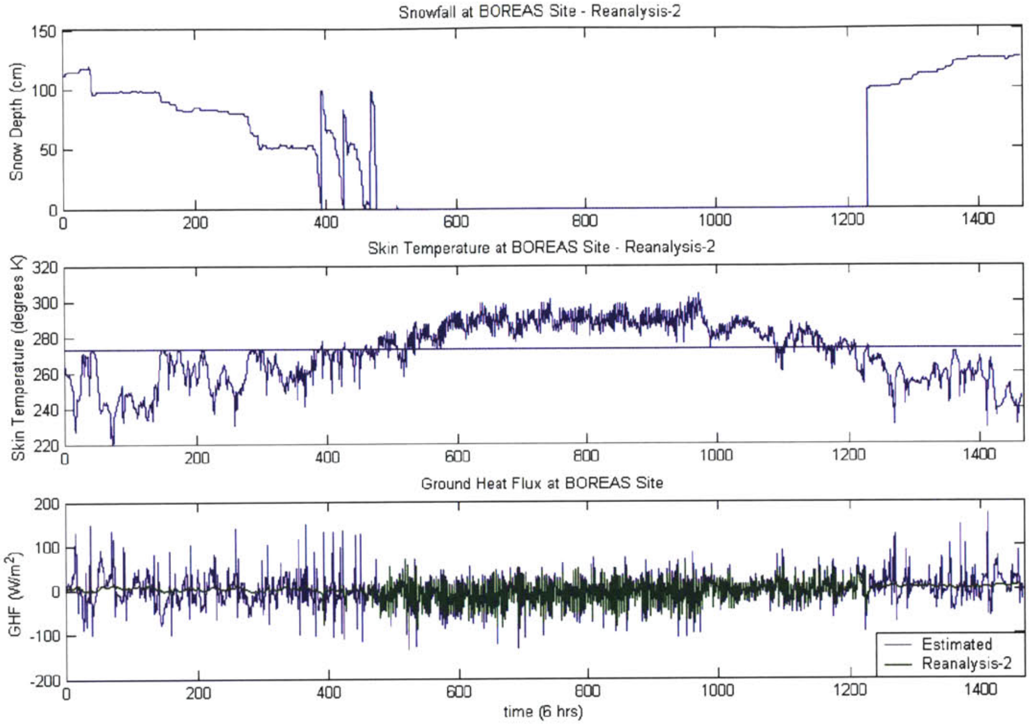


Figure 7-21: 6-hourly Time Series Data from the Reanalysis-2 for the BOREAS Site

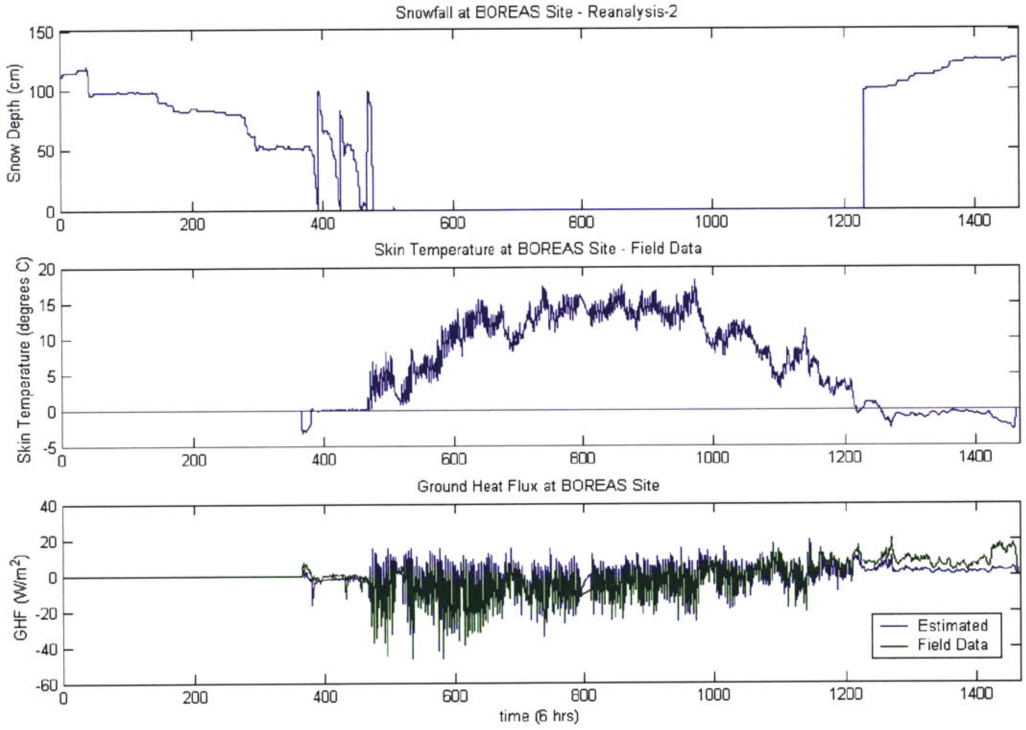


Figure 7-22: 6-hourly Time Series Data from the BOREAS experiment with the Reanalysis-2 snowfall for the BOREAS Site

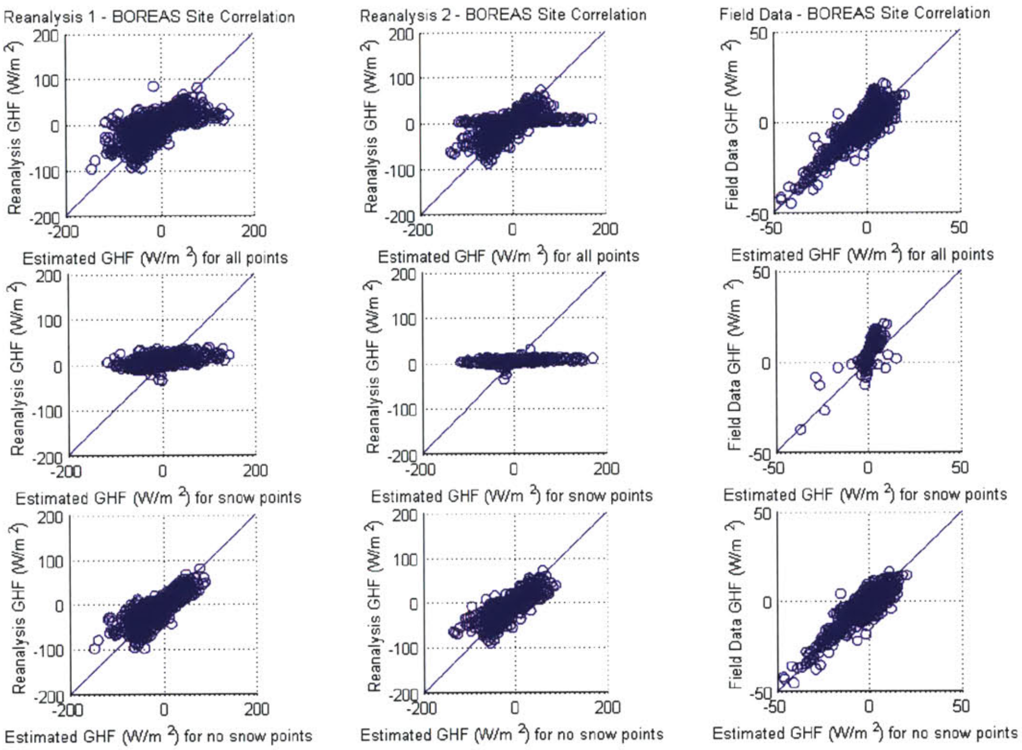


Figure 7-23: Correlation plots of Observed vs. Estimated Ground Heat Flux for the Reanalysis-1, Reanalysis-2, and BOREAS Experiment over the BOREAS site, distinguishing between snow points and non-snow points

In Figure 7-23 all three sources of data for this point are compared with the scatter plots of reanalysis vs. estimated ground heat flux with the default thermal inertia. The first row of graphs shows all data points. The second row shows the snow covered points only. The third row shows the snow free points only. As BOREAS data product does not have snow cover measurement, the Reanalysis-2 snow cover is used. In the case of both reanalyzes, there is a clear distinction between the scatter plots of snow points and non snow points. For snow points, the scatter plot reveals a linear regression with a very low slope, while non-snow points fit the 1:1 line well. In the scatter plot of BOREAS data, the snow points reveal a linear relationship with a slope of greater than 1. The reanalysis results correspond to substituting a thermal inertia much lower than the default thermal inertia into Equation 7-1 for all snow points in order to produce a regression between estimated and reanalysis ground heat flux which better fits the 1:1 line.

In the Reanalysis-1 and Reanalysis-2 datasets, sub-freezing temperature points are usual covered by snow or vice-versa. Therefore, it would be reasonable to assume that most points with sub-freezing temperature are covered with snow. In order to prove that snow is responsible for dampening the ground heat flux signal in the reanalysis due to a low thermal inertia, we examine two points where sub-freezing skin temperature persists without snow cover. In 1988, two locations in Central Asia and the Northern Reaches of Canada (much farther north than the BOREAS site) were experiencing sub-freezing temperatures and snow free.

In the top panel of Figure 7-24 the sub-freezing skin temperature is plotted for the duration of the data presented for the Tibetan Plain location. The middle panel of the figure shows the time series of the Reanalysis-1 ground heat flux and the estimated ground heat flux. It is clear from the scatter plot that the uniform thermal inertia is acceptable for this land type in terms of its magnitude although there is apparent bias. Nevertheless, the results are consistent with the reanalysis with a near 1:1 regression with temperatures below zero. Hence, it's the snow that causes the differences in the reanalysis and estimated ground heat flux. Further proof is provided for a point in the Northern Canadian Islands in Figure 7-25. The differences between the reanalysis and the estimated ground heat flux in northern land points are clearly corresponding to a much lower thermal inertia when snow is present.

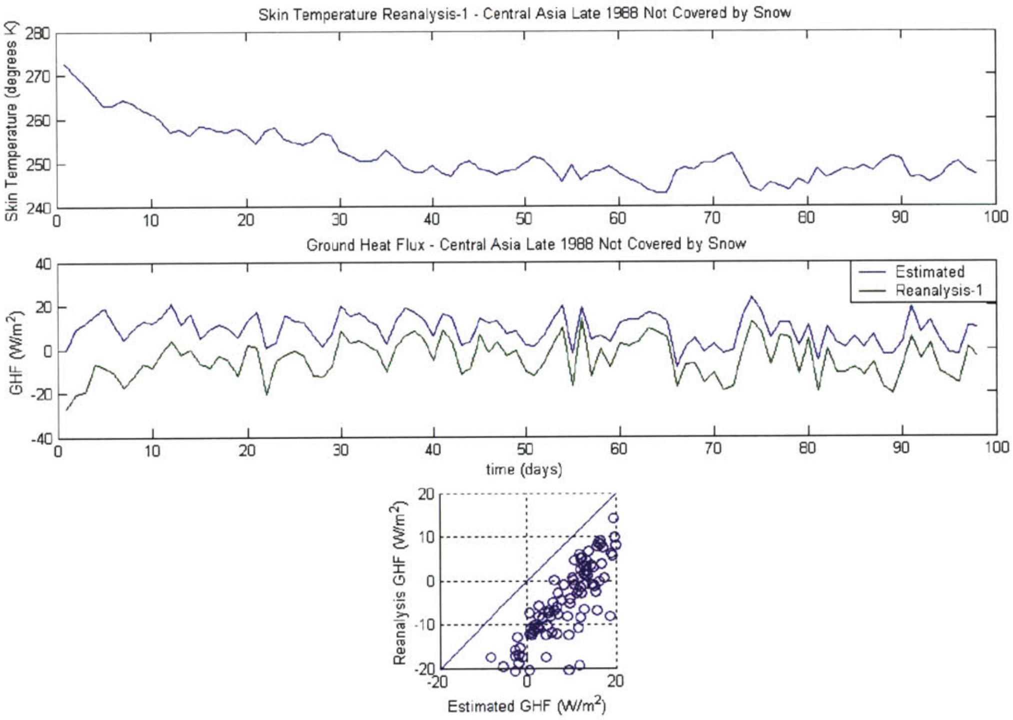
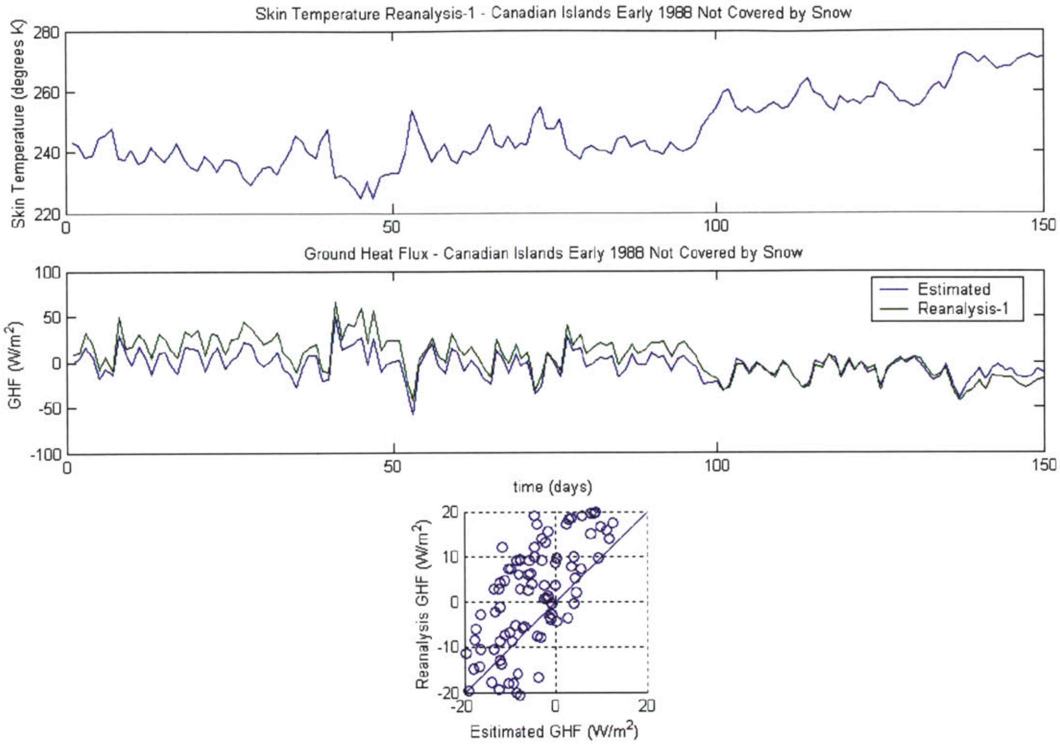


Figure 7-24: Plots for Central Asia in Late 1988 where skin temperature is below 0 degrees C and there is no snow cover, daily time step



Skin Temperature Reanalysis-1 - Canadian Islands Early 1988 Not Covered by Snow

Ground Heat Flux - Canadian Islands Early 1988 Not Covered by Snow

Figure 7-25: Plots for Canadian Islands in Late 1988 where skin temperature is below 0 degrees C and there is no snow cover, daily time step

7.2.2. HAPEX – SAHEL

Measurements of ground heat flux in a desert region are available from the HAPEX-SAHEL field experiment. Two datasets from this study are utilized, the ECSS_HERB_FLUX_DATA and ECSS_HERB_SOIL_1_DAT prepared by Bruno Monteny are available at http://www.ird.fr/hapex/. The first dataset contains various surface heat fluxes including the ground heat flux, while the second one contains the surface temperature. The longest continuous record covers the period of 9/21/92 to 10/18/02. The time step of this data is 20 minutes. The observed surface temperature and ground heat flux are shown in Figure 7-26.

The true thermal inertia can be estimated graphically by plotting regression slope vs. thermal inertia. In order to estimate the thermal inertia, different values of thermal inertia are applied to calculate the ground heat flux. The best estimate of thermal inertia will be that corresponding to unity slope of the regression between the estimated and observed ground heat flux. The bottom panel of Figure 7-26 plots the regression slope versus the thermal inertia. The slope of one corresponds to the thermal inertia of about 540 J m^{-2} $s^{-1/2}$ K^{-1}. In Figure 7-27 and 7-28 the estimated ground heat flux is compared to the observed ground heat flux for the default thermal inertia and the regression derived thermal inertia. Eq. (7-1) with the newly estimated thermal inertia can almost exactly duplicate the ground heat flux.

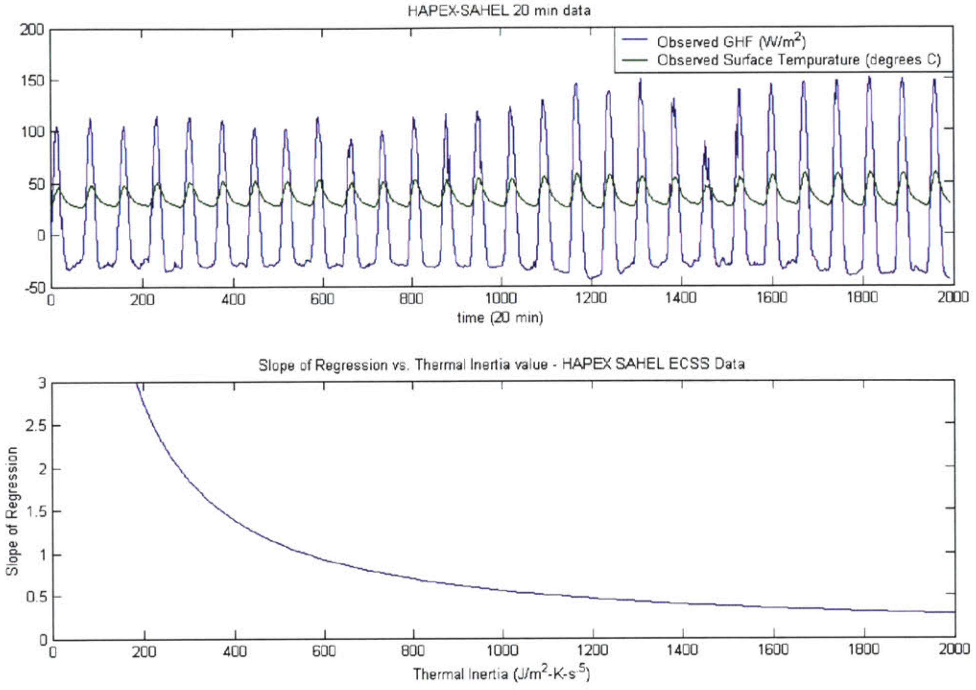


Figure 7-26: Top-HAPEX-SAHEL observed data, Bottom- Regression slope between the observed and method derived ground heat fluxes versus thermal inertia used

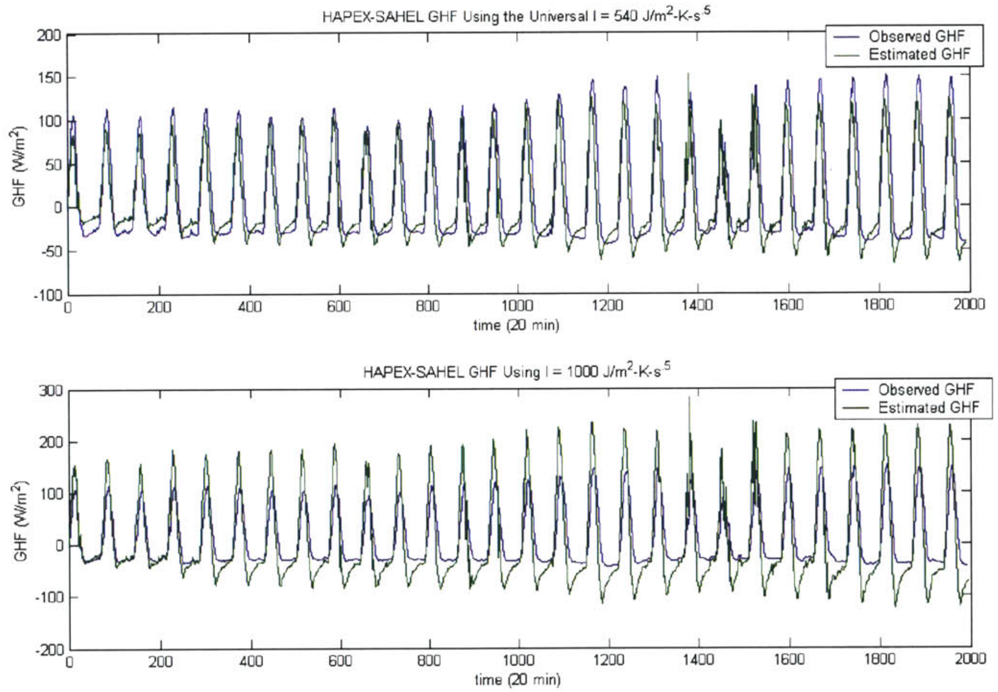


Figure 7-27: Time Series Plots of Observed Ground Heat Flux vs. Method Ground Heat Flux

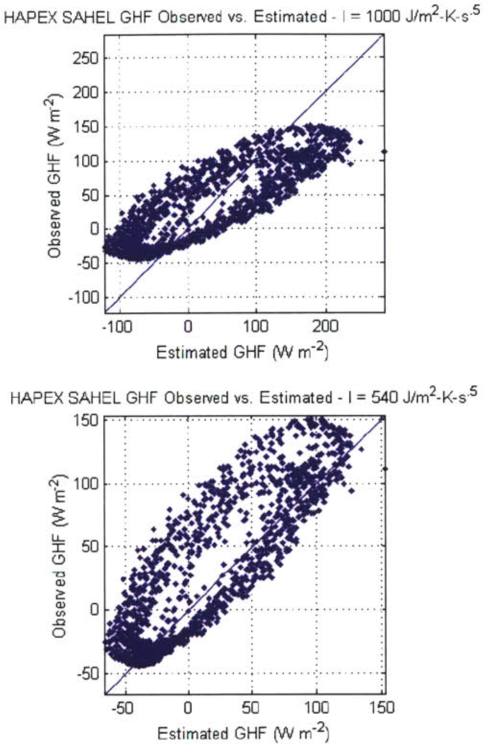


Figure 7-28: Scatter Plots of Observed Ground Heat Flux vs. Method Ground Heat Flux

7.3. Estimation of Thermal Inertia by Land Type

The thermal inertia is a function of land type which varies spatially. It would be unrealistic to estimate the thermal inertia at each of the 5914 land points over the entire globe by a regression approach as shown above. Such derived thermal inertia parameter would rely on the reanalysis ground heat flux data. Our objective is to create a unique ground heat flux dataset independent of existing model products. Each pixel of the reanalysis has an area of about 250 km x 250 km within which soil properties are rarely homogeneous. Thermal properties are known for individual soil materials, but an area-mean thermal inertia is difficult to calculate from the individual components. In addition, observations are only available at limited locations covering a small fraction of the earth's surface.

An alternative method is therefore suggested for the derivation of these thermal inertias. This method involves the use of a gridded land type dataset. The University of Maryland (UMD) Global Land Cover Classifications data set is a gridded dataset of broad land type classification available at three resolutions: 1-degree, .5-degree, and .25 degree. For this study, the 1-degree dataset is used to assign each reanalysis point with one of twelve basic land classifications. The 1 degree point nearest to the center of each reanalysis grid point is used. The results of this regridding are presented in Figure 7-29. The legend is given in Table 7-1, with the number 0 (blue) indicating water.

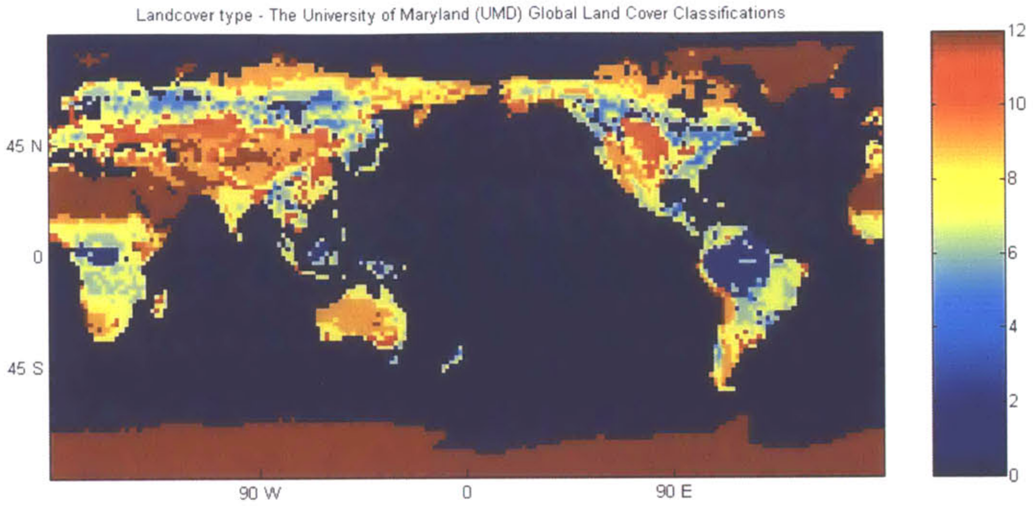


Figure 7-29: Land Type Classification

For all points pertaining to each land type across the globe, all estimated and reanalysis ground heat flux data are combined and plotted on one graph, and from this graph a regression slope is found. This slope is then used to find the thermal inertia for all the points of a given land type. By this methodology the reanalysis ground heat flux is used as a loose guideline to regress the thermal inertia for a large number of points, but is not used on a point by point basis. This approach keeps the ground heat flux methodology simple. The land classification is simple enough to be used globally.

Additionally, a separate classification is assigned to snow cover. It was shown in Section 7.2 that thermal inertia is highly sensitive to snow cover. Thus any point in each time series for each land point which contains snow is placed in a separate category. Thus, a representative thermal inertia for all snow points is obtained. This thermal inertia is applied to all data points where snow is present.

Now we use this methodology to derive the thermal inertia with the help of the Reanalysis-1 and Reanalysis-2 data at three resolutions. The results for each land type are given in Tables 7-1 through 7-6. Each table lists the regression slope and intercept for each land type. The regression intercept is included to check for biases. The correlation coefficient is provided in order to check the quality of correlation for a given land type. A good correlation assures the grouping of many different points into one land type, corresponds to one thermal inertia.

As observed in Section 7.1, the regression slopes vary with the time resolution of the input data for each land type. For example, the regression slope using monthly data is smaller than using daily data. The magnitude of this decrease is presented by an Increase Factor defined as the increase from daily to monthly in the monthly table, and increase from 6-hourly to daily in the daily table. There are improvements in the Increase Factor in the Reanlysis-2, but still for the Reanlysis-2 this factor is significantly greater than 1 across each time scale. In order to utilize this analysis to link the thermal inertias to these different land types, one set of thermal inertia coefficient must be chosen for each reanalysis.

Linear Regression of Ground Heat Flux Data By Land Type 1988 Monthly Time Scale - Reanalysis-1						
#	Land Type	Slope	Intercept	Correlation	Regressed I	Inc. Factor
0	Snow/water	0.4485	0.8134	0.4444	**449**	**4.32**
1	Evergreen Needleleaf Forests	1.5742	0.0514	0.8156	1574	1.73
2	Evergreen Broadleaf Forests	0.9316	-0.1625	0.3943	932	1.33
3	Deciduous Needleleaf Forests	2.2850	2.0035	0.8662	2285	2.14
4	Deciduous Broadleaf Forests	1.0697	-0.1565	0.7946	1070	1.34
5	Mixed Forest	1.4914	-0.4092	0.8362	1491	1.58
6	Woodlands	1.4160	-0.7832	0.8246	1416	1.59
7	Wooded Gasslands/Shrublands	1.2942	-0.6630	0.7905	1294	1.57
8	Closed Bushlands or Shrublands	1.3898	-0.9314	0.8328	1390	1.63
9	Open Shrublands	0.9639	-1.0933	0.6921	964	1.27
10	Grasslands	0.9918	-0.4550	0.7171	992	1.34
11	Croplands	1.0551	-0.0825	0.8294	1055	1.46
12	Barren	0.4905	-0.2419	0.6028	**491**	**0.85**

Table 7-1: Thermal Inertia Calculations Monthly Time Scale Reanalysis-1

Linear Regression of Ground Heat Flux Data By Land Type 1988 Daily Time Scale - Reanalysis-1							
#	Land Type	Slope	Intercept	Correlation	Regression K	Inc. Factor	Rounded Reg. K
0	Snow/water	0.1042	1.6341	0.3766	**104**	**3.03**	**100**
1	Evergreen Needleleaf Forests	0.9055	-4.2701	0.8495	906	1.30	**910**
2	Evergreen Broadleaf Forests	0.7028	-0.6177	0.6937	703	0.97	**700**
3	Deciduous Needleleaf Forests	1.0695	-9.6510	0.8613	1070	1.23	**1070**
4	Deciduous Broadleaf Forests	0.7955	0.4571	0.8164	796	1.27	**800**
5	Mixed Forest	0.9450	-3.2597	0.8516	945	1.31	**950**
6	Woodlands	0.8934	-2.2716	0.8131	893	1.63	**890**
7	Wooded Gasslands/Shrublands	0.8217	-1.7578	0.7953	822	1.89	**820**
8	Closed Bushlands or Shrublands	0.8521	-2.2885	0.7929	852	2.46	**850**
9	Open Shrublands	0.7575	-2.3280	0.7473	758	2.18	**760**
10	Grasslands	0.7417	-1.9820	0.7829	742	1.53	**740**
11	Croplands	0.7217	-0.8180	0.8329	722	1.48	**720**
12	Barren	0.5755	-0.5276	0.7559	**576**	**2.68**	**580**

Table 7-2: Thermal Inertia Calculations Daily Time Scale Reanalysis-1

Here, the daily time scale is used as a basis for finding the thermal inertia. The regressed thermal inertia in J m^{-2} $s^{-1/2}$ K^{-1} is rounded in Tables 7.2 and 7.5 to the nearest 10 J m^{-2} $s^{-1/2}$ K^{-1}. It is found that the daily time scale does not have the problem of inconsistency that exists in the 6-hourly and monthly time scale data. On problem with of 6-hourly data is that the diurnal cycle is represented by only four points, leading to a grouping of data points (see Figure 7-15, the South American point on a 6 hourly time scale). The monthly data only has twelve points to represent the seasonal cycle and ground heat flux changes little on a monthly basis. This behavior is reflected in the correlation coefficients which, on the daily time scale, are highest for most land types, indicating a fairly strong linear relationship.

Linear Regression of Ground Heat Flux Data By Land Type 1988 6-hourly Time Scale - Reanalysis-1					
#	Land Type	Slope	Intercept	Correlation	Regressed K
0	Snow	0.0333	1.6773	0.2273	**33**
1	Evergreen Needleleaf Forests	0.6954	-5.2290	0.7988	695
2	Evergreen Broadleaf Forests	0.7231	-0.6797	0.7598	723
3	Deciduous Needleleaf Forests	0.8668	-12.1303	0.8326	867
4	Deciduous Broadleaf Forests	0.6281	0.6021	0.7820	628
5	Mixed Forest	0.7212	-4.0725	0.7997	721
6	Woodlands	0.5476	-2.8203	0.7173	548
7	Wooded Gasslands/Shrublands	0.4344	-2.1582	0.6694	434
8	Closed Bushlands or Shrublands	0.3459	-3.1758	0.6335	346
9	Open Shrublands	0.3475	-2.9603	0.6314	348
10	Grasslands	0.4848	-2.4880	0.7078	485
11	Croplands	0.4870	-0.8715	0.7179	487
12	Barren	0.2151	-0.4904	0.5853	**215**

Table 7-3: Thermal Inertia Calculations 6-hourly Time Scale Reanalysis-1

Linear Regression of Ground Heat Flux Data By Land Type 1988 Monthly Time Scale - Reanalysis-2						
#	Land Type	Slope	Intercept	Correlation	Regressed K	Inc. Factor
0	snow	0.3225	0.1036	0.4929	**323**	**7.51**
1	Evergreen Needleleaf Forests	1.0450	-1.2629	0.7615	1045	1.40
2	Evergreen Broadleaf Forests	0.7420	-0.8708	0.3956	742	0.95
3	Deciduous Needleleaf Forests	1.4538	-1.6900	0.8683	1454	1.50
4	Deciduous Broadleaf Forests	1.1115	0.1068	0.8999	1112	1.72
5	Mixed Forest	1.1130	-0.5935	0.8637	1113	1.45
6	Woodlands	1.1911	-0.9912	0.8154	1191	1.49
7	Wooded Gasslands/Shrublands	1.2201	-0.8437	0.7948	1220	1.56
8	Closed Bushlands or Shrublands	1.4961	-1.4572	0.8331	1496	1.83
9	Open Shrublands	1.1159	-1.4005	0.7759	1116	1.51
10	Grasslands	0.9377	-0.7924	0.7464	938	1.36
11	Croplands	0.9593	0.1430	0.8779	959	1.38
12	Barren	0.7074	-0.3437	0.8300	**707**	**1.10**

Table 7-4: Thermal Inertia Calculations Monthly Time Scale Reanalysis-2

There is a problem in the Reanalysis-2 where the thermal inertia for snow seems unrealistically low. This thermal inertia is therefore replaced by that from the Reanalysis-1 in the final product. The thermal inertia derived using daily data agrees well with that from HAPEX-SAHEL observational data. A thermal inertia of 540 J m^{-2} $s^{-1/2}$ K^{-1} using the field data is well reproduced in the Reanalysis-1 and Reanalysis-2 over the barren land type. The thermal inertia found for snow points (at least in the Reanalysis-1) are also seems consistent with those observed in section 7.2.1, which indicated a nearly flat regression with a default value of thermal inertia.

Linear Regression of Ground Heat Flux Data By Land Type 1988 Daily Time Scale - Reanalysis-2							
#	Land Type	Slope	Intercept	Correlation	Regression I	Inc. Factor	Rounded Reg. I
0	Snow	0.0425	0.5042	0.2768	**43**	**2.69**	**40**
1	Evergreen Needleleaf Forests	0.7473	-3.0729	0.8490	747	1.26	**750**
2	Evergreen Broadleaf Forests	0.7801	-0.8525	0.7731	780	1.30	**780**
3	Deciduous Needleleaf Forests	0.9825	-8.4173	0.8652	983	1.31	**980**
4	Deciduous Broadleaf Forests	0.6481	-0.2584	0.8362	648	1.14	**650**
5	Mixed Forest	0.7689	-2.7090	0.8505	769	1.27	**770**
6	Woodlands	0.7993	-2.1442	0.8190	799	1.44	**800**
7	Wooded Gasslands/Shrublands	0.7802	-1.7803	0.8200	780	1.54	**780**
8	Closed Bushlands or Shrublands	0.8167	-2.8519	0.8163	817	1.75	**820**
9	Open Shrublands	0.7392	-2.5549	0.8139	739	1.63	**740**
10	Grasslands	0.6883	-2.0808	0.8204	688	1.36	**690**
11	Croplands	0.6959	-0.7033	0.8678	696	1.35	**700**
12	Barren	0.6399	-0.7676	0.8550	**640**	**1,67**	**640**

Table 7-5: Thermal Inertia Calculations Daily Time Scale Reanalysis-2

Linear Regression of Ground Heat Flux Data By Land Type 1988 6-hourly Time Scale - Reanalysis-2					
#	Land Type	Slope	Intercept	Correlation	Regressed I
0	snow	0.0158	0.6138	0.1827	**16**
1	Evergreen Needleleaf Forests	0.5947	-3.7037	0.7700	595
2	Evergreen Broadleaf Forests	0.6016	-0.7669	0.7178	602
3	Deciduous Needleleaf Forests	0.7493	-10.6310	0.7986	749
4	Deciduous Broadleaf Forests	0.5666	-0.1585	0.7606	567
5	Mixed Forest	0.6060	-3.3111	0.7675	606
6	Woodlands	0.5542	-2.4555	0.7235	554
7	Wooded Gasslands/Shrublands	0.5056	-1.9676	0.7032	506
8	Closed Bushlands or Shrublands	0.4657	-3.3991	0.6841	466
9	Open Shrublands	0.4521	-2.8283	0.6870	452
10	Grasslands	0.5064	-2.3047	0.7176	506
11	Croplands	0.5174	-0.6335	0.7305	517
12	Barren	0.3829	-0.6355	0.6558	**383**

Table 7-6: Thermal Inertia Calculations 6-hourly Time Scale Reanalysis-2

7.4. Presentation of the Ground Heat Flux Product

In this section the ground heat flux data products are presented. Example plots are shown for each season for the 6-hourly and daily time scales for both reanalyzes. All 12 months of monthly data are shown here. For each point in time, a plot of the ground heat flux product is accompanied by a plot of the ground heat flux at the same time from the reanalysis dataset, followed by the difference between these two. The difference is not meant as the accuracy of the product, but to indicate where the two data products differ. Lastly, each of the three time scales is aggregated to monthly data and presented for each month. A few general comments are provided.

The examples of the 6-hourly time data product are given in Figures 7-30 through 7-37. Ground heat fluxes are plotted every six hours starting from the indicated GMT. The diurnal cycles are shown in all 8 figures. As the day progresses, the negative (blue) ground heat flux propagates across the plot, corresponding to the sunrise and the increase in temperature, while the yellow/orange color represents sunset and a decrease in temperature. The main difference between the new product and the reanalysis in all cases is the amplitude of the maximum and minimum values. This could be predicted, as the thermal inertia from the daily time scale regression calculation is applied to the 6 hour method calculation, and these thermal inertias are larger for almost all land types than the thermal inertias found by regression the 6-hourly data. In terms of season, there are largest maximums and minimums occur during the summer (the location of these points shift during the time of day). Comparing the results of the Reanalysis-1 and the Reanalysis-2 for the 6-hourly time scale, there are smaller differences between the estimated and the reanalysis as shown the difference plots in Figures 7-34 and 7-37. As was seen earlier there were smaller Increase Factors in the regressed thermal inertia in the Reanalysis-2, and in general the Reanalysis-2 data are slightly better.

Examples of the daily data product are given in Figure 7-38 through 7-41. The first two days of the months of January, April, July, and October are shown for each reanalysis. The differences between the reanalysis and the new data are smaller here as the thermal inertia used for all products were derived from the daily reanalysis data. Overall, there is very good agreement between the reanalysis and the new estimates. The new data of daily ground heat flux is more negative in the northern regions than either reanalysis. Snow should not be a concern in July over these points and what causes the difference is unclear.

The monthly data are presented in Figures 7-42 to 7-47. In general the reanalysis ground heat flux has higher magnitude of minimums and maximums than the new estimates. The opposite was found for the 6-hourly datasets. This discrepancy is due to the use of the daily data to derive the thermal inertia. We believe that the new estimates of ground heat flux are more accurate than the reanalysis data. Differences between the estimated and reanalysis ground heat flux are reduced in the Reanalysis-2. Over all three time resolutions, the new data are better correlated to the Reanalysis-2 data. The seasonal cycle can clearly be seen in the new estimates. The signal is smoother in the new estimates of ground heat flux than in the reanalysis ground heat flux. In the final set of figures, all of the newly derived data are represented. The 6-hourly and daily products are aggregated to monthly data. Three plots are shown in sequence in Figures 7-48 to 7-53 for all months. All datasets are fairly consistent with one another, suggesting Eq. (7-1) is a promising tool in the estimation of ground heat flux using the skin temperature input.

Considerable differences are evident between the 6-hourly reanalysis and the new estimates of ground heat fluxes as shown in Figures 7-30 through 7-37. The difference is defined in all product figures as the estimated ground heat flux minus the reanalysis ground heat flux. Therefore a positive difference indicates estimated ground heat flux is exceeds reanalysis ground heat flux, and a negative difference indicates reanalysis ground heat flux exceeds estimated ground heat flux. There is a negative difference over Central Asia and a positive difference over North America at 00:00 GMT. At 06:00 GMT there is a positive difference over Africa and a negative difference over North and South America. At 12:00 GMT there is a positive difference over Africa and a negative difference over North and South America, and at 18:00 GMT there are no major differences between the two ground heat flux datasets. In general the estimated ground heat flux has greater diurnal variations. The positive and negative differences in ground heat flux propagate across the heat flux map as the day progresses and generally correspond to positive and negative peaks in the estimated ground heat flux.

The differences between the daily estimated and reanalysis ground heat flux are unique to the season being studied, but generally the same across reanalysis in Figures 7-38 through 7-41. In January there is a slight negative difference over the northern regions, and in July there is a slight positive difference over the northern regions. The reanalysis ground heat flux in northern regions is too high relative to the low estimates. In all four seasons there is a positive difference over Central Asia. This area was observed in Figure 7-24 where it is shown that the reanalysis ground heat flux is lower than the estimates at all times. Over a long period averaged ground heat flux should close, while the reanalysis ground heat flux does not have that feature for this region. Thus it appears that the reanalysis ground heat flux is underestimated.

There are noticeable positive differences between the monthly reanalysis and the new estimates of ground heat flux throughout the year over Central Asia. Again the reanalysis ground heat flux appears to be too small particularly during summer for this area. Differences between the estimated and reanalysis ground heat flux have similar features in the two reanalyzes in Figure 7-42 through 7-47. During the summer months there is a significant positive difference between the reanalysis and estimated ground heat fluxes in both the northern and southern regions of the globe. The reanalysis ground heat flux appears to be unrealistically small over the summer in these areas.

The purpose of this investigation is to offer an alternative dataset of ground heat flux. This new product is developed with the help of the reanalysis modeled ground heat flux, land cover data, and the reliable skin temperature input from the reanalysis data. The key parameter is the thermal inertia of the land. The thermal inertia is time invariant by theory. However, using a regression to obtain this parameter over different time scales of the reanalysis, we find different values of the parameter. These problems are less severe in the Reanalysis-2. This research suggests that the discrepancies are probably due to flaws in the reanalysis model used to produce the 6-hourly and monthly ground heat flux.

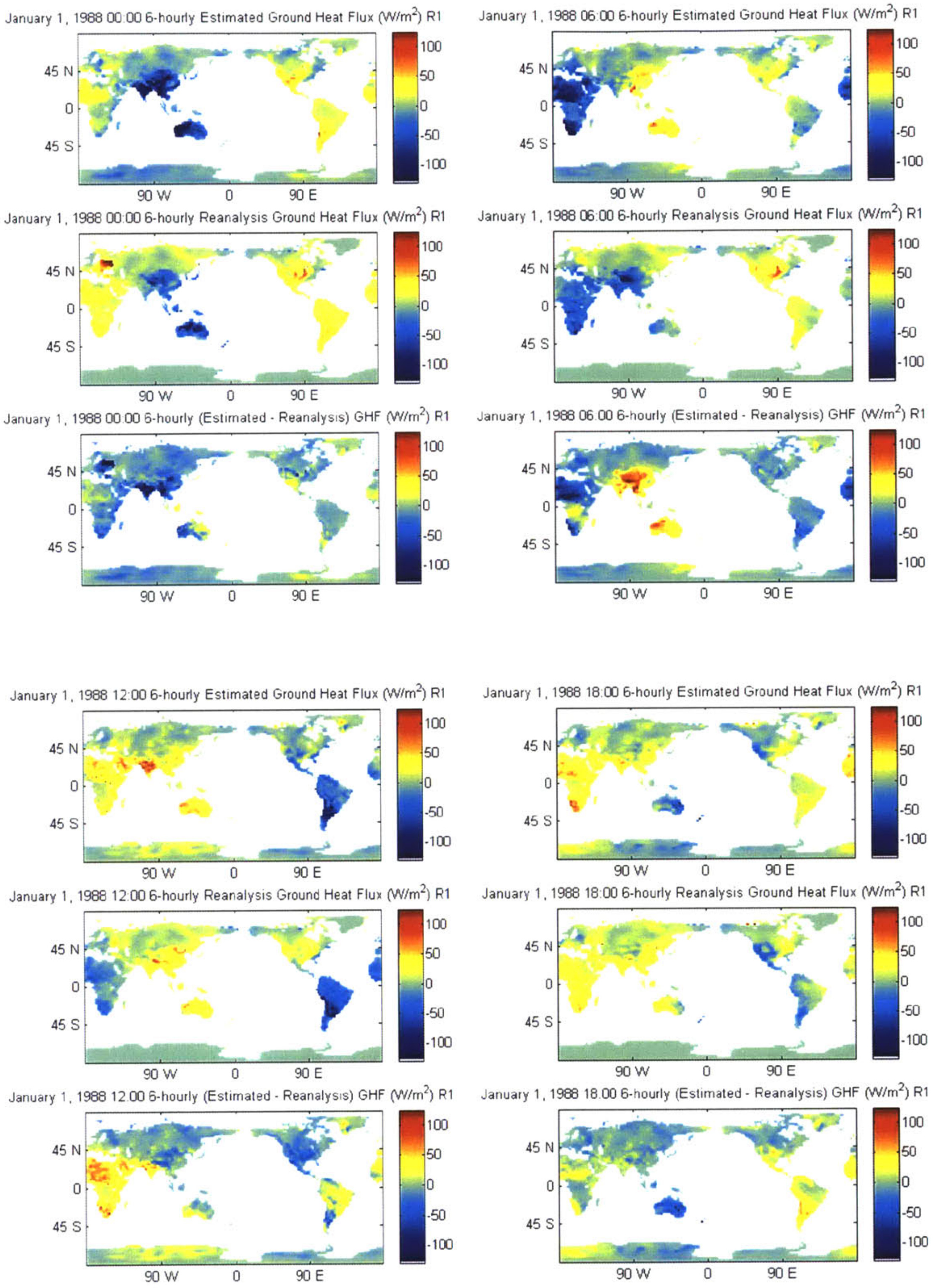
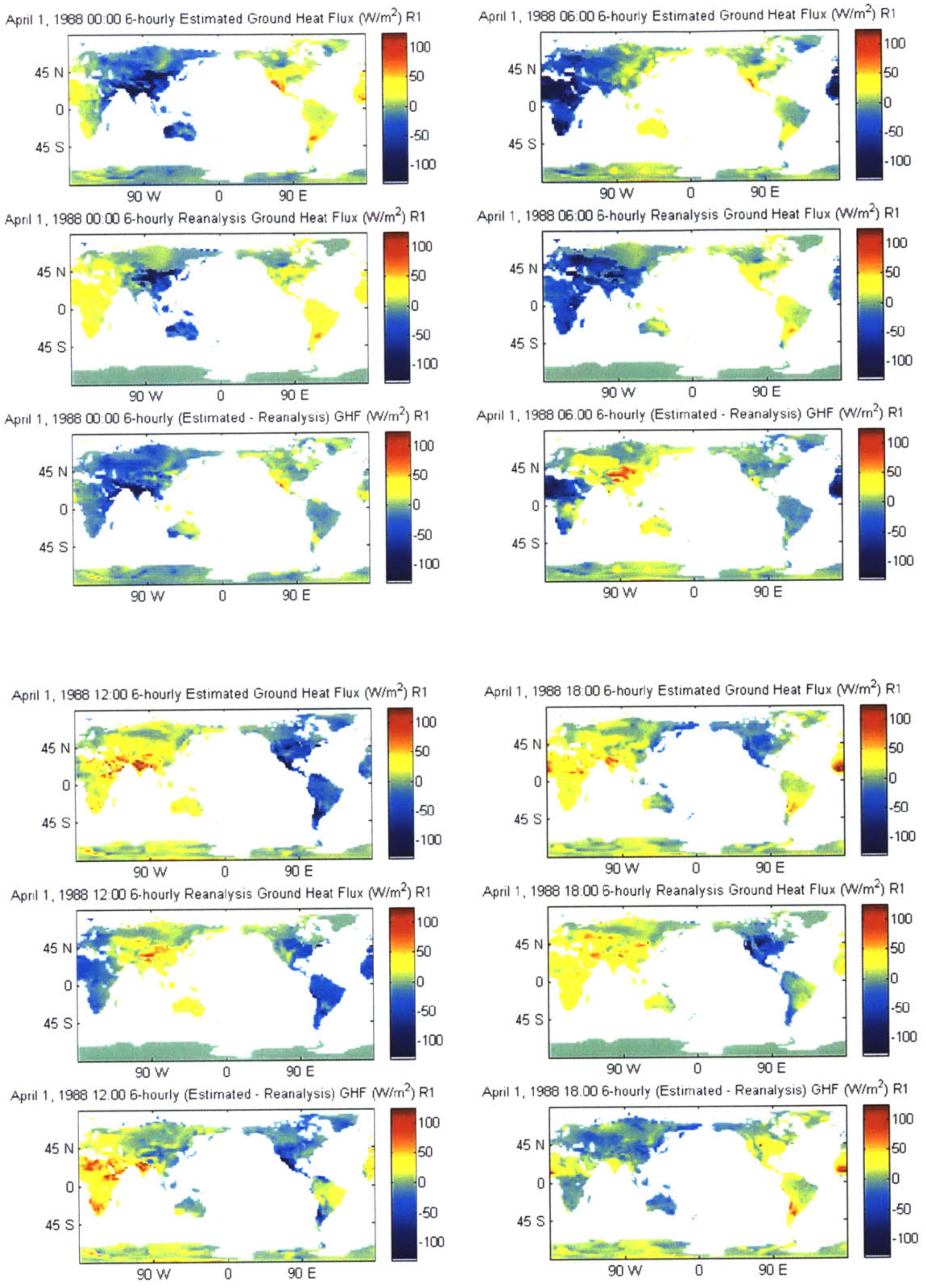


Figure 7-30: GHF Products Plots for 6-hourly time scale using the Reanalysis-1 – January 1, 1988 (winter)


April 1, 1988 00:00 6-hourly Estimated Ground Heat Flux (W/m²) R1

April 1, 1988 06:00 6-hourly Estimated Ground Heat Flux (W/m²) R1

April 1, 1988 00:00 6-hourly Reanalysis Ground Heat Flux (W/m²) R1

April 1, 1988 06:00 6-hourly Reanalysis Ground Heat Flux (W/m²) R1

April 1, 1988 00:00 6-hourly (Estimated - Reanalysis) GHF (W/m²) R1

April 1, 1988 06:00 6-hourly (Estimated - Reanalysis) GHF (W/m²) R1

April 1, 1988 12:00 6-hourly Estimated Ground Heat Flux (W/m²) R1

April 1, 1988 18:00 6-hourly Estimated Ground Heat Flux (W/m²) R1

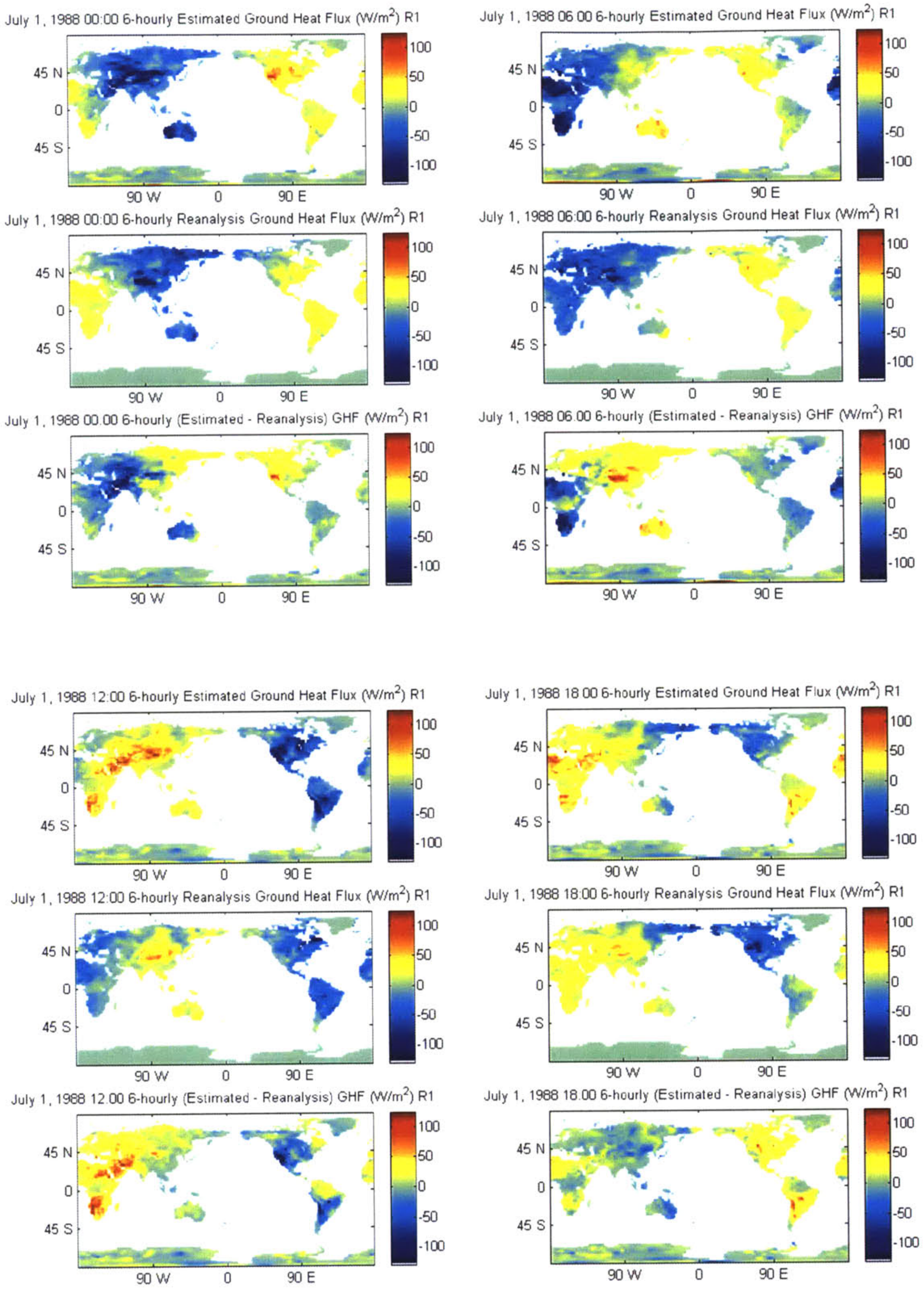
April 1, 1988 12:00 6-hourly Reanalysis Ground Heat Flux (W/m²) R1

April 1, 1988 18:00 6-hourly Reanalysis Ground Heat Flux (W/m²) R1

April 1, 1988 12:00 6-hourly (Estimated - Reanalysis) GHF (W/m²) R1

April 1, 1988 18:00 6-hourly (Estimated - Reanalysis) GHF (W/m²) R1

Figure 7-31: GHF Products Plots for 6-hourly time scale using the Reanalysis-1 – April 1, 1988 (spring)



July 1, 1988 00:00 6-hourly Estimated Ground Heat Flux (W/m²) R1

July 1, 1988 06:00 6-hourly Estimated Ground Heat Flux (W/m²) R1

July 1, 1988 00:00 6-hourly Reanalysis Ground Heat Flux (W/m²) R1

July 1, 1988 06:00 6-hourly Reanalysis Ground Heat Flux (W/m²) R1

July 1, 1988 00:00 6-hourly (Estimated - Reanalysis) GHF (W/m²) R1

July 1, 1988 06:00 6-hourly (Estimated - Reanalysis) GHF (W/m²) R1

July 1, 1988 12:00 6-hourly Estimated Ground Heat Flux (W/m²) R1

July 1, 1988 18:00 6-hourly Estimated Ground Heat Flux (W/m²) R1

July 1, 1988 12:00 6-hourly Reanalysis Ground Heat Flux (W/m²) R1

July 1, 1988 18:00 6-hourly Reanalysis Ground Heat Flux (W/m²) R1

July 1, 1988 12:00 6-hourly (Estimated - Reanalysis) GHF (W/m²) R1

July 1, 1988 18:00 6-hourly (Estimated - Reanalysis) GHF (W/m²) R1

Figure 7-32: GHF Products Plots for 6-hourly time scale using the Reanalysis-1 – July 1, 1988 (summer)

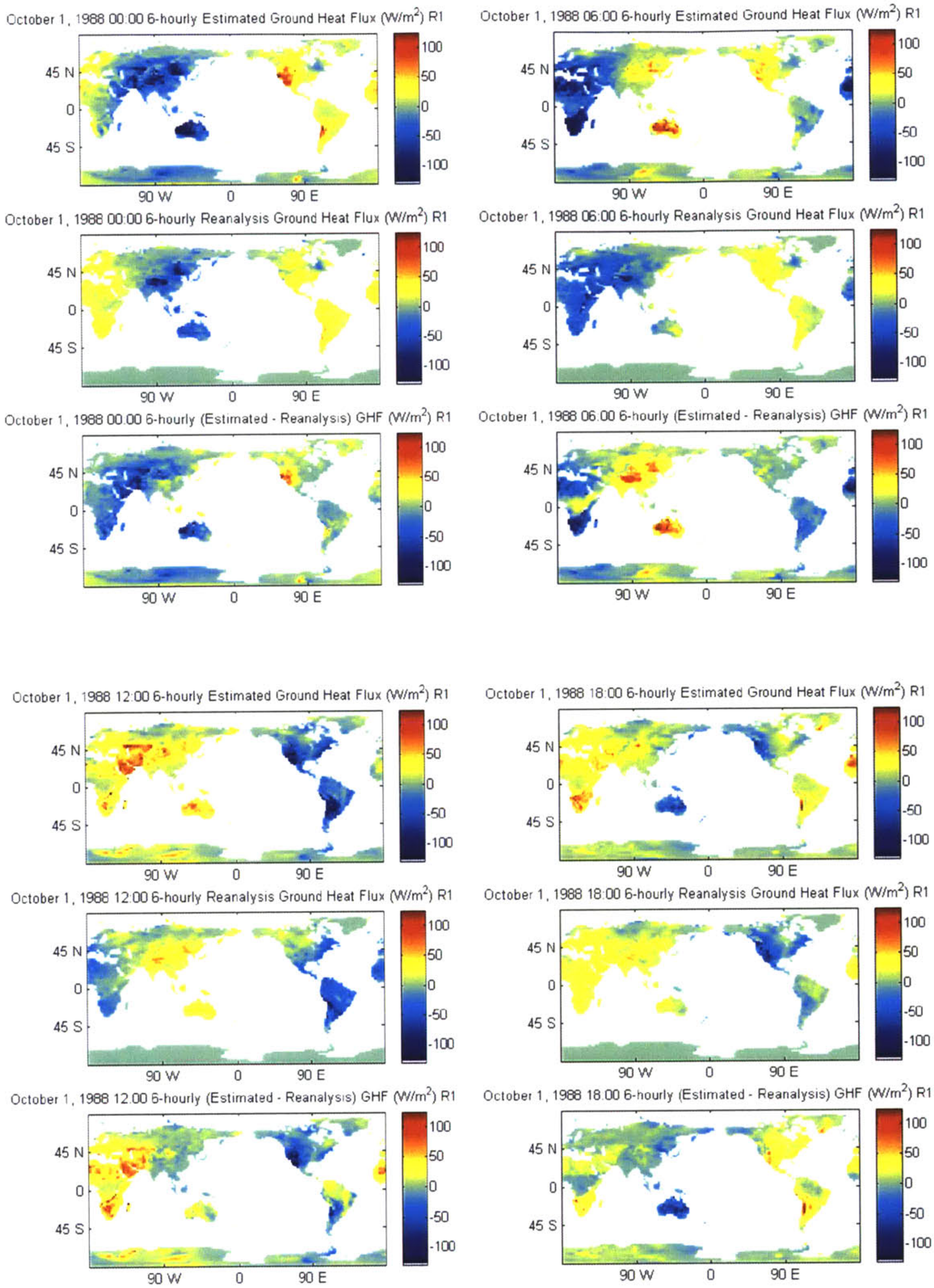
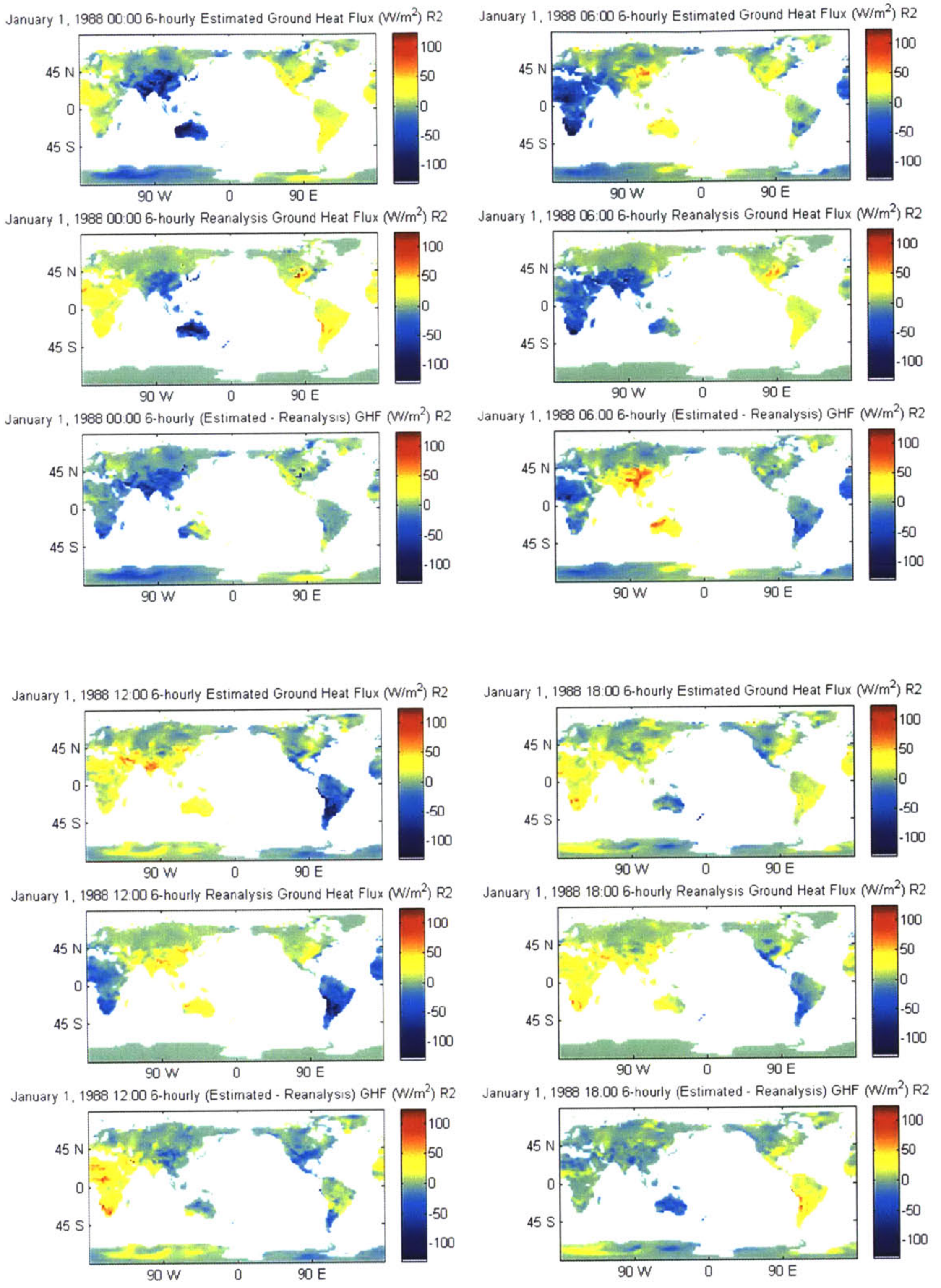


Figure 7-33: GHF Products Plots for 6-hourly time scale using the Reanalysis-1 – October 1, 1988 (fall)


January 1, 1988 00:00 6-hourly Estimated Ground Heat Flux (W/m^2) R2

January 1, 1988 06:00 6-hourly Estimated Ground Heat Flux (W/m^2) R2

January 1, 1988 00:00 6-hourly Reanalysis Ground Heat Flux (W/m^2) R2

January 1, 1988 06:00 6-hourly Reanalysis Ground Heat Flux (W/m^2) R2

January 1, 1988 00:00 6-hourly (Estimated - Reanalysis) GHF (W/m^2) R2

January 1, 1988 06:00 6-hourly (Estimated - Reanalysis) GHF (W/m^2) R2

January 1, 1988 12:00 6-hourly Estimated Ground Heat Flux (W/m^2) R2

January 1, 1988 18:00 6-hourly Estimated Ground Heat Flux (W/m^2) R2

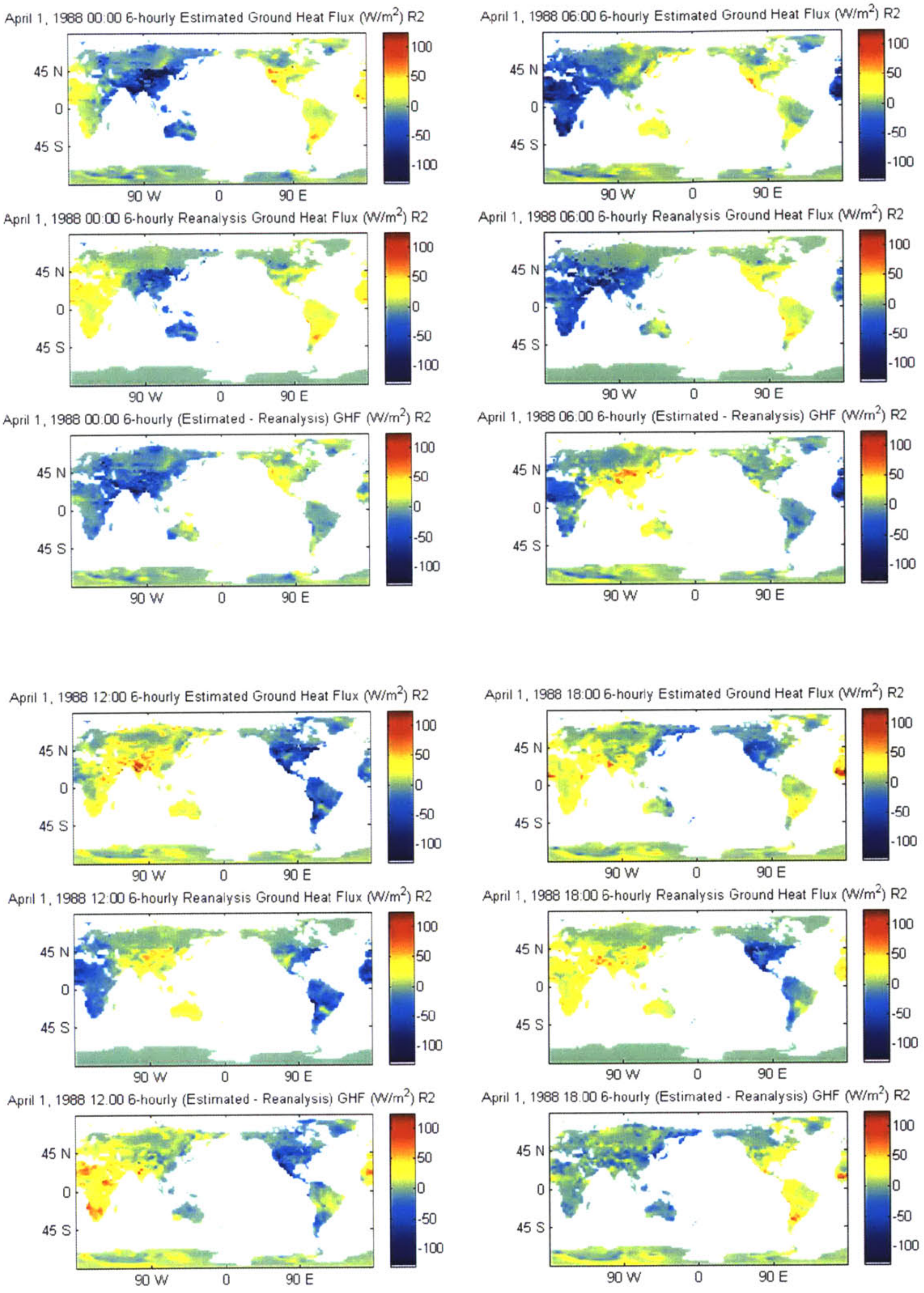
January 1, 1988 12:00 6-hourly Reanalysis Ground Heat Flux (W/m^2) R2

January 1, 1988 18:00 6-hourly Reanalysis Ground Heat Flux (W/m^2) R2

January 1, 1988 12:00 6-hourly (Estimated - Reanalysis) GHF (W/m^2) R2

January 1, 1988 18:00 6-hourly (Estimated - Reanalysis) GHF (W/m^2) R2

Figure 7-34: GHF Products Plots for 6-hourly time scale using the Reanalysis-2 – January 1, 1988 (winter)



April 1, 1988 00:00 6-hourly Estimated Ground Heat Flux (W/m^2) R2

April 1, 1988 06:00 6-hourly Estimated Ground Heat Flux (W/m^2) R2

April 1, 1988 00:00 6-hourly Reanalysis Ground Heat Flux (W/m^2) R2

April 1, 1988 06:00 6-hourly Reanalysis Ground Heat Flux (W/m^2) R2

April 1, 1988 00:00 6-hourly (Estimated - Reanalysis) GHF (W/m^2) R2

April 1, 1988 06:00 6-hourly (Estimated - Reanalysis) GHF (W/m^2) R2

April 1, 1988 12:00 6-hourly Estimated Ground Heat Flux (W/m^2) R2

April 1, 1988 18:00 6-hourly Estimated Ground Heat Flux (W/m^2) R2

April 1, 1988 12:00 6-hourly Reanalysis Ground Heat Flux (W/m^2) R2

April 1, 1988 18:00 6-hourly Reanalysis Ground Heat Flux (W/m^2) R2

April 1, 1988 12:00 6-hourly (Estimated - Reanalysis) GHF (W/m^2) R2

April 1, 1988 18:00 6-hourly (Estimated - Reanalysis) GHF (W/m^2) R2

Figure 7-35: GHF Products Plots for 6-hourly time scale using the Reanalysis-2 – April 1, 1988 (spring)

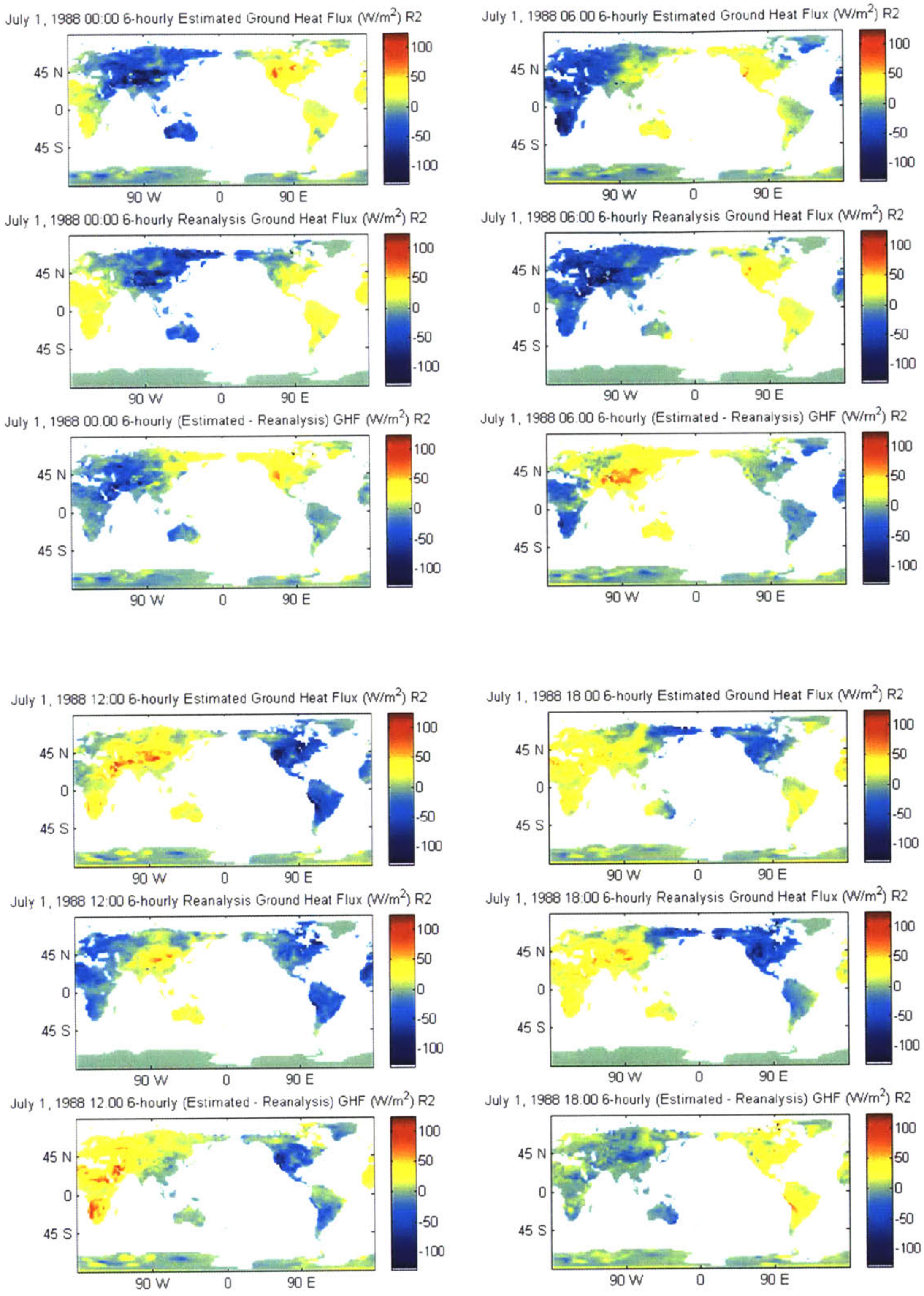
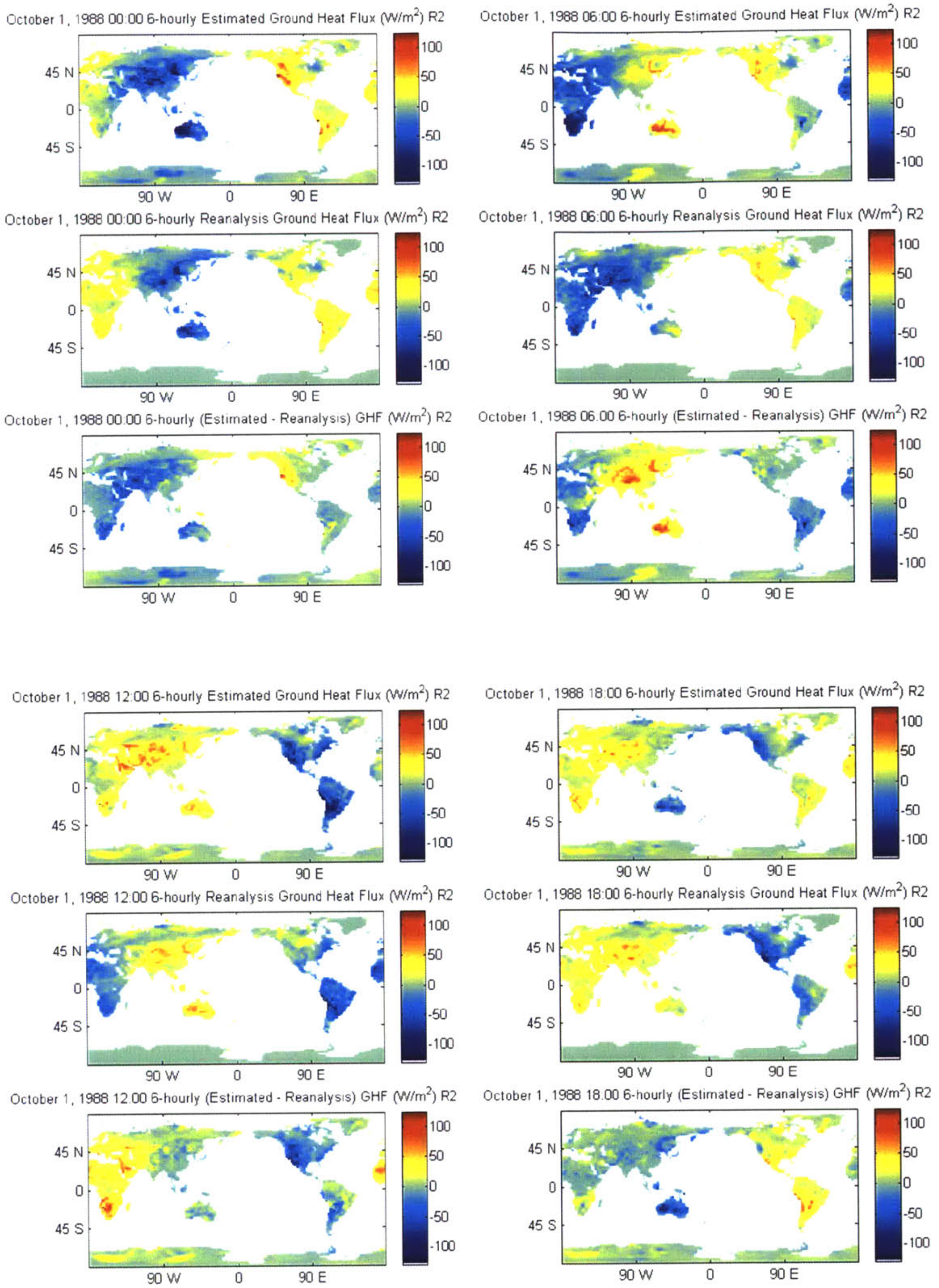


Figure 7-36: GHF Products Plots for 6-hourly time scale using the Reanalysis-2 – July 1, 1988 (summer)


October 1, 1988 00:00 6-hourly Estimated Ground Heat Flux (W/m²) R2

October 1, 1988 06:00 6-hourly Estimated Ground Heat Flux (W/m²) R2

October 1, 1988 00:00 6-hourly Reanalysis Ground Heat Flux (W/m²) R2

October 1, 1988 06:00 6-hourly Reanalysis Ground Heat Flux (W/m²) R2

October 1, 1988 00:00 6-hourly (Estimated - Reanalysis) GHF (W/m²) R2

October 1, 1988 06:00 6-hourly (Estimated - Reanalysis) GHF (W/m²) R2

October 1, 1988 12:00 6-hourly Estimated Ground Heat Flux (W/m²) R2

October 1, 1988 18:00 6-hourly Estimated Ground Heat Flux (W/m²) R2

October 1, 1988 12:00 6-hourly Reanalysis Ground Heat Flux (W/m²) R2

October 1, 1988 18:00 6-hourly Reanalysis Ground Heat Flux (W/m²) R2

October 1, 1988 12:00 6-hourly (Estimated - Reanalysis) GHF (W/m²) R2

October 1, 1988 18:00 6-hourly (Estimated - Reanalysis) GHF (W/m²) R2

Figure 7-37: GHF Products Plots for 6-hourly time scale using the Reanalysis-1 – October 1, 1988 (fall)

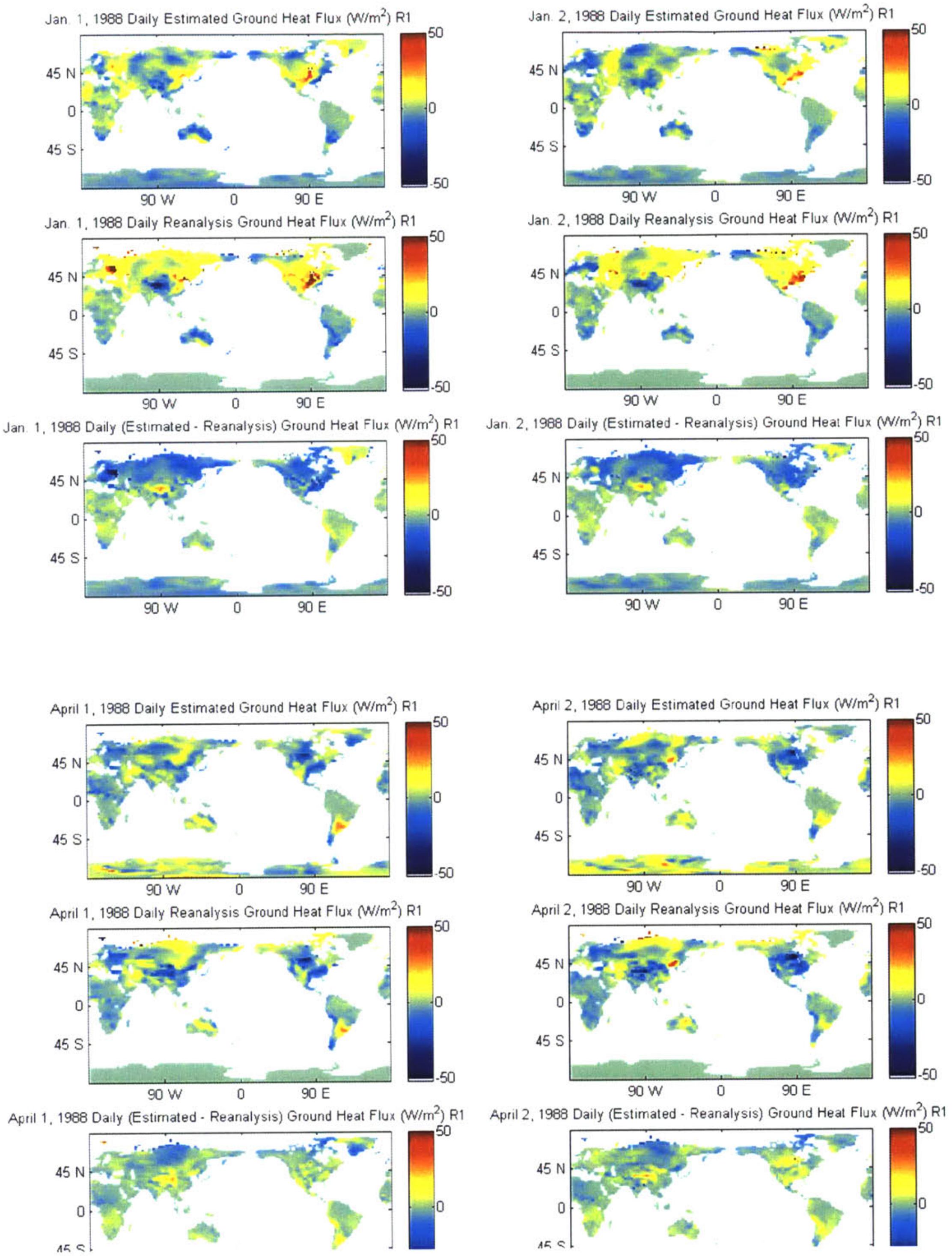


Figure 7-38: GHF Products Plots for Daily time scale using the Reanalysis-1 – January/April 1988 (winter/spring)

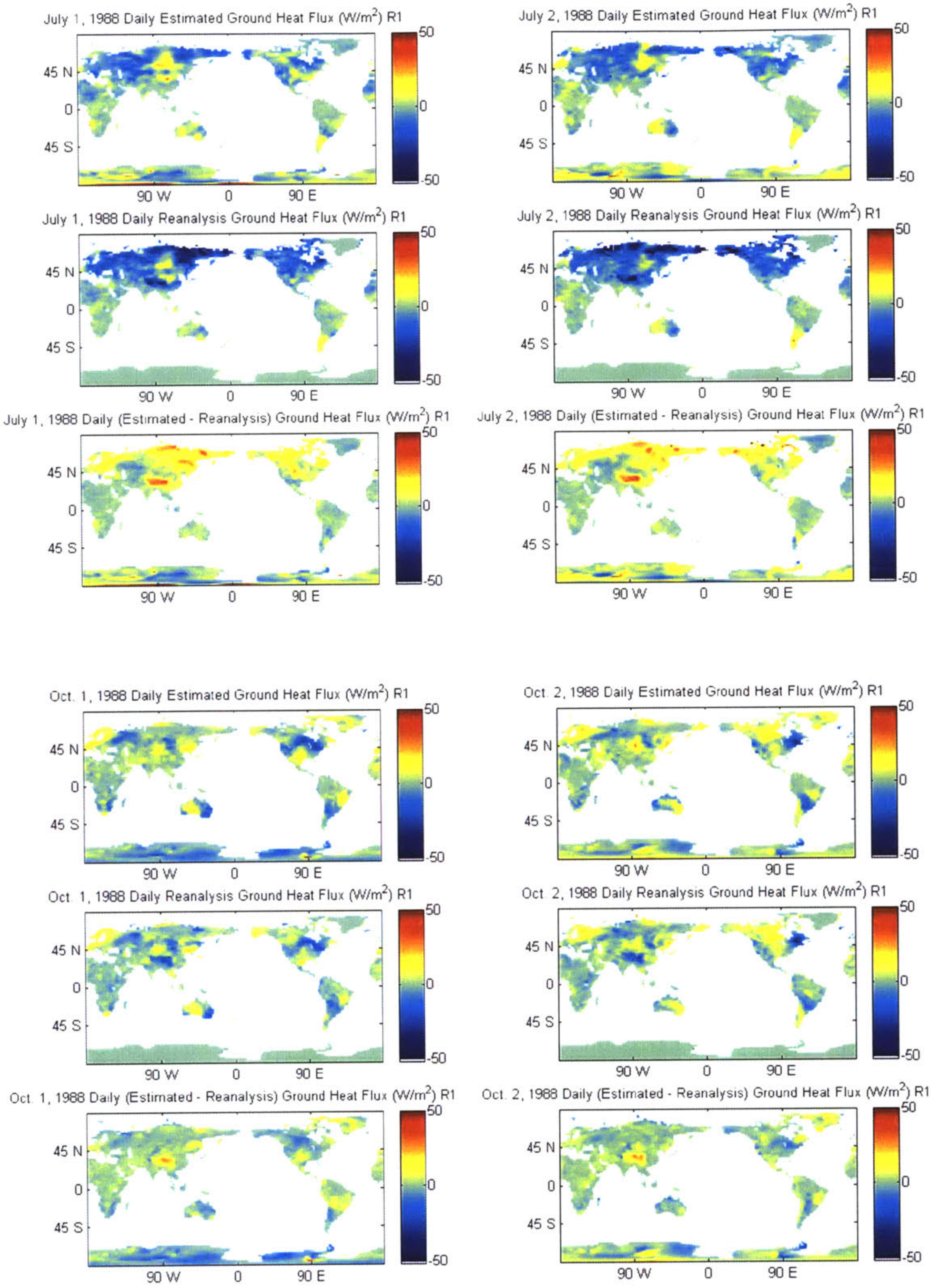


Figure 7-39: GHF Products Plots for Daily time scale using the Reanalysis-1 – July/October 1988 (summer/fall)

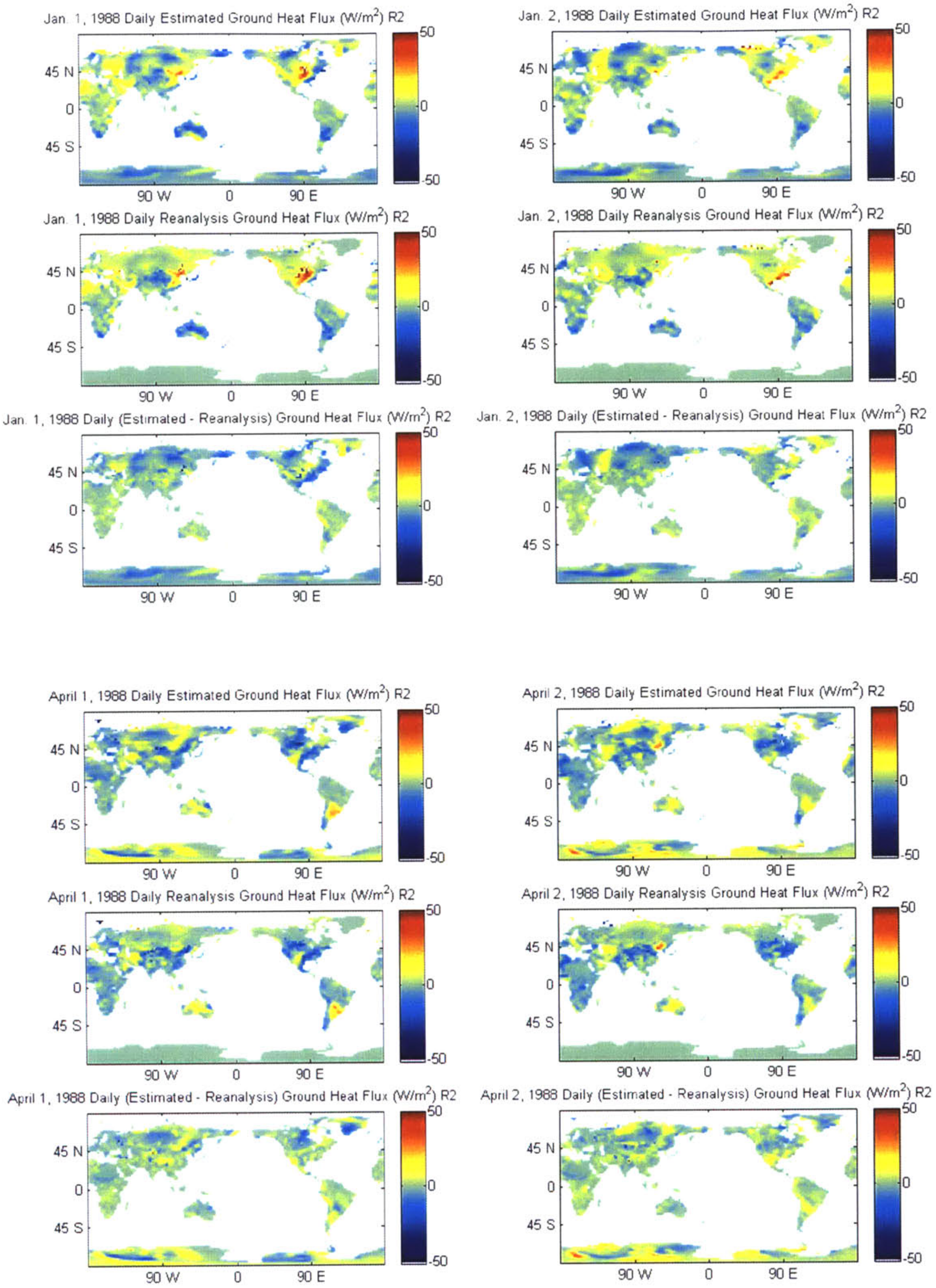
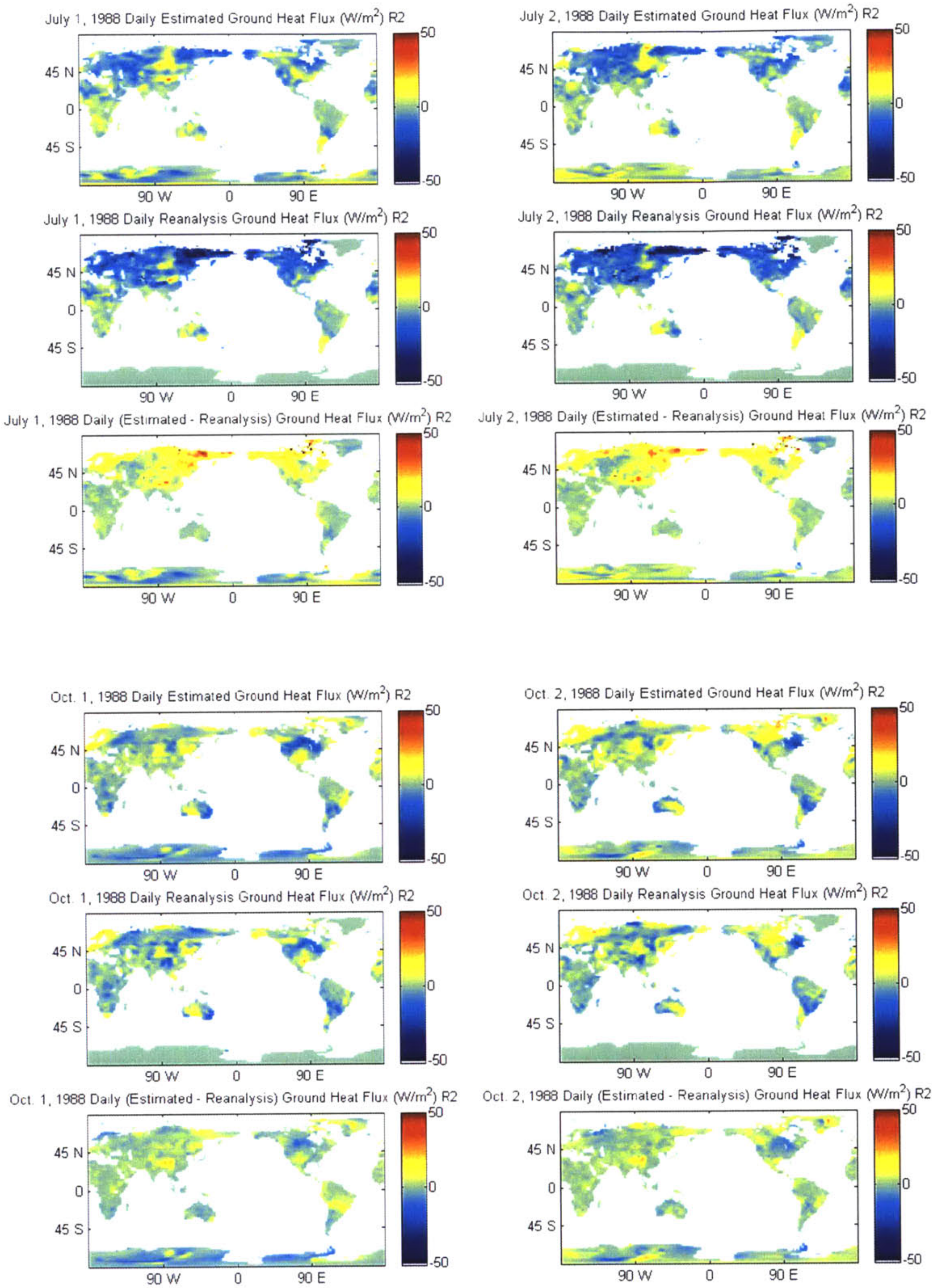


Figure 7-40: GHF Products Plots for Daily time scale using the Reanalysis-2 – January/April 1988 (winter/spring)


July 1, 1988 Daily Estimated Ground Heat Flux (W/m^2) R2

July 2, 1988 Daily Estimated Ground Heat Flux (W/m^2) R2

July 1, 1988 Daily Reanalysis Ground Heat Flux (W/m^2) R2

July 2, 1988 Daily Reanalysis Ground Heat Flux (W/m^2) R2

July 1, 1988 Daily (Estimated - Reanalysis) Ground Heat Flux (W/m^2) R2

July 2, 1988 Daily (Estimated - Reanalysis) Ground Heat Flux (W/m^2) R2

Oct. 1, 1988 Daily Estimated Ground Heat Flux (W/m^2) R2

Oct. 2, 1988 Daily Estimated Ground Heat Flux (W/m^2) R2

Oct. 1, 1988 Daily Reanalysis Ground Heat Flux (W/m^2) R2

Oct. 2, 1988 Daily Reanalysis Ground Heat Flux (W/m^2) R2

Oct. 1, 1988 Daily (Estimated - Reanalysis) Ground Heat Flux (W/m^2) R2

Oct. 2, 1988 Daily (Estimated - Reanalysis) Ground Heat Flux (W/m^2) R2

Figure 7-41: GHF Products Plots for Daily time scale using the Reanalysis-2 – July/October 1988 (summer/fall)

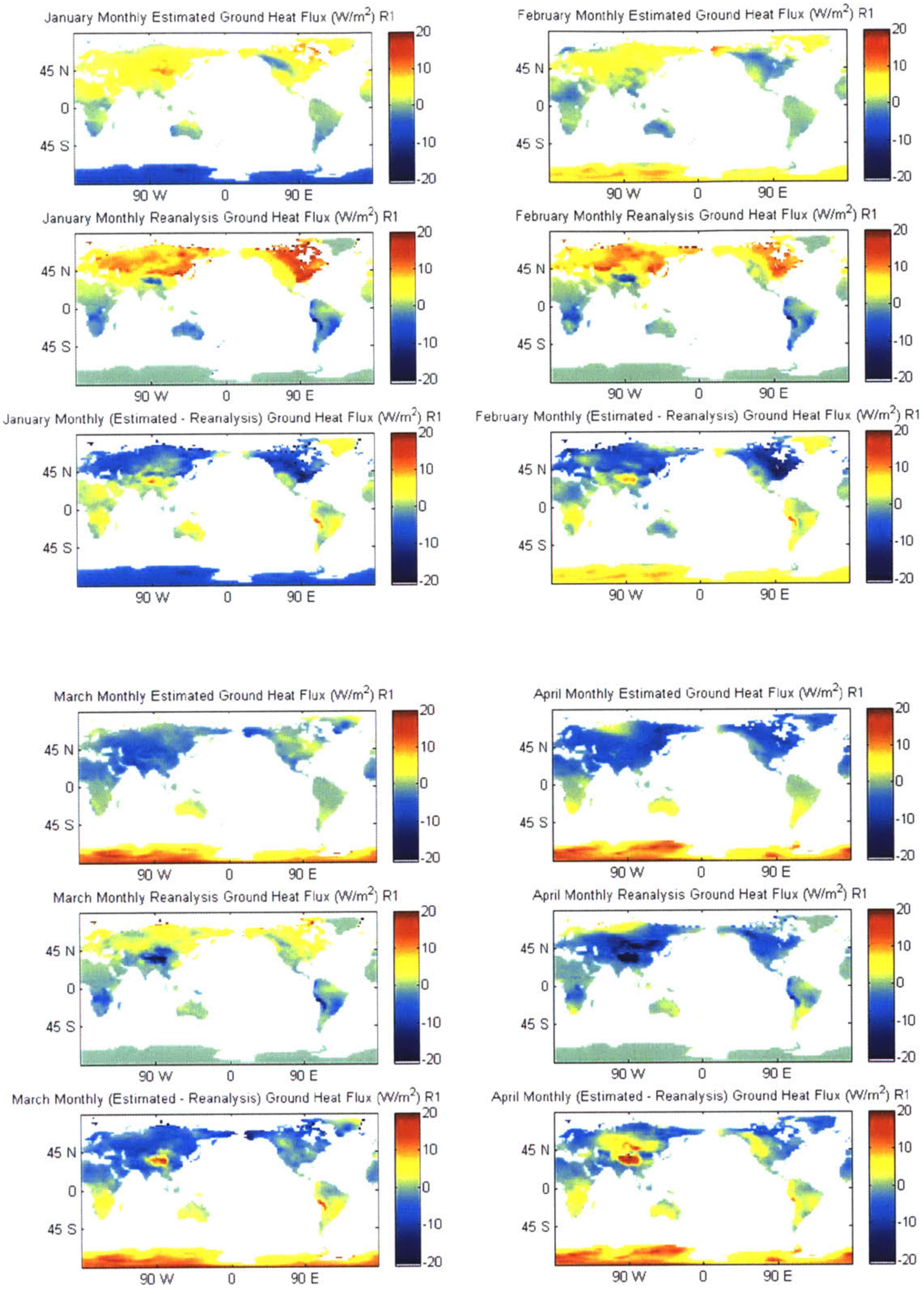
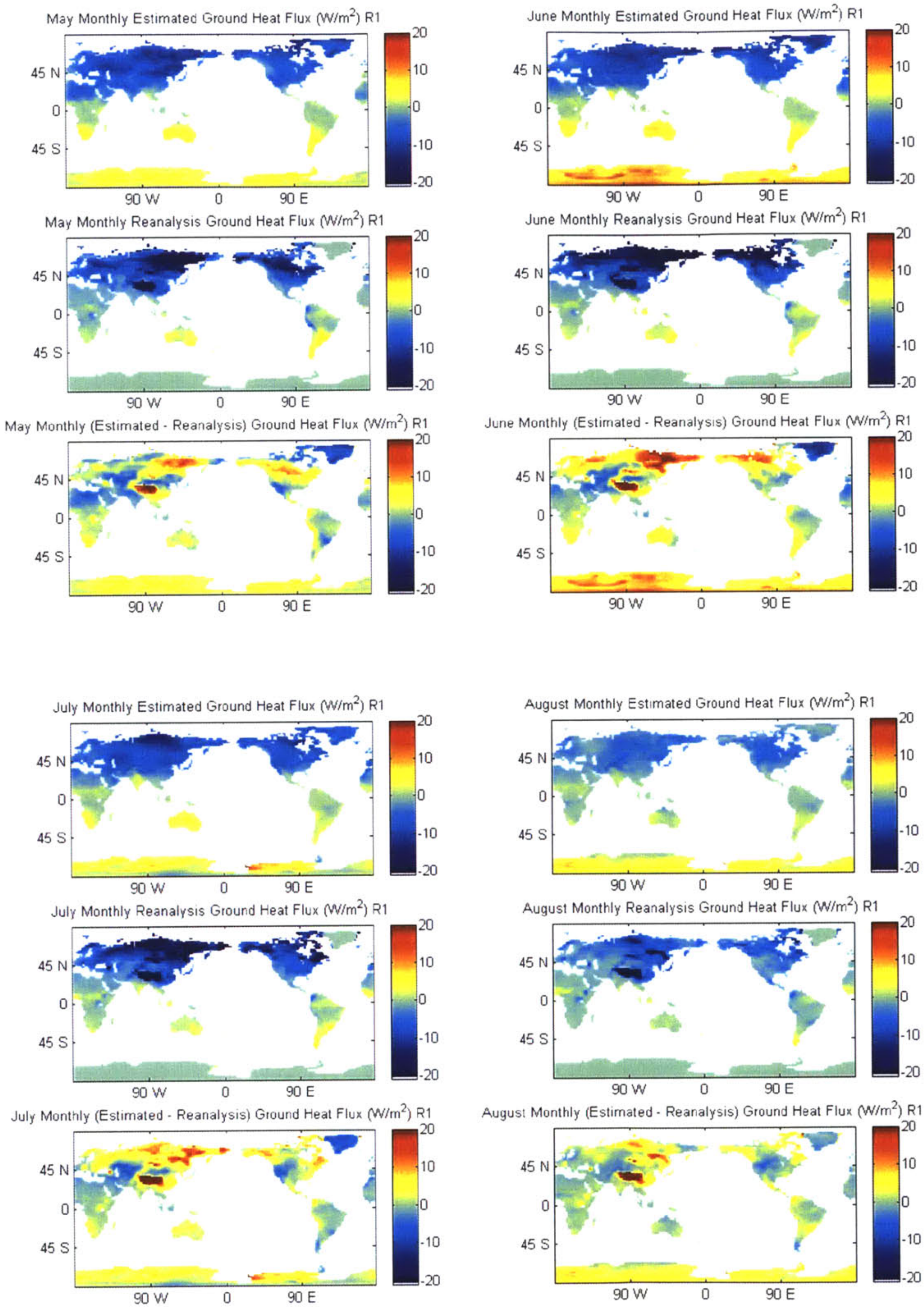


Figure 7-42: GHF Products Plots for Monthly time scale using the Reanalysis-1 – January, February, March, April 1988


May Monthly Estimated Ground Heat Flux (W/m^2) R1

May Monthly Reanalysis Ground Heat Flux (W/m^2) R1

May Monthly (Estimated - Reanalysis) Ground Heat Flux (W/m^2) R1

June Monthly Estimated Ground Heat Flux (W/m^2) R1

June Monthly Reanalysis Ground Heat Flux (W/m^2) R1

June Monthly (Estimated - Reanalysis) Ground Heat Flux (W/m^2) R1

July Monthly Estimated Ground Heat Flux (W/m^2) R1

July Monthly Reanalysis Ground Heat Flux (W/m^2) R1

July Monthly (Estimated - Reanalysis) Ground Heat Flux (W/m^2) R1

August Monthly Estimated Ground Heat Flux (W/m^2) R1

August Monthly Reanalysis Ground Heat Flux (W/m^2) R1

August Monthly (Estimated - Reanalysis) Ground Heat Flux (W/m^2) R1

Figure 7-43: GHF Products Plots for Monthly time scale using the Reanalysis-1 – May, June, July, August 1988

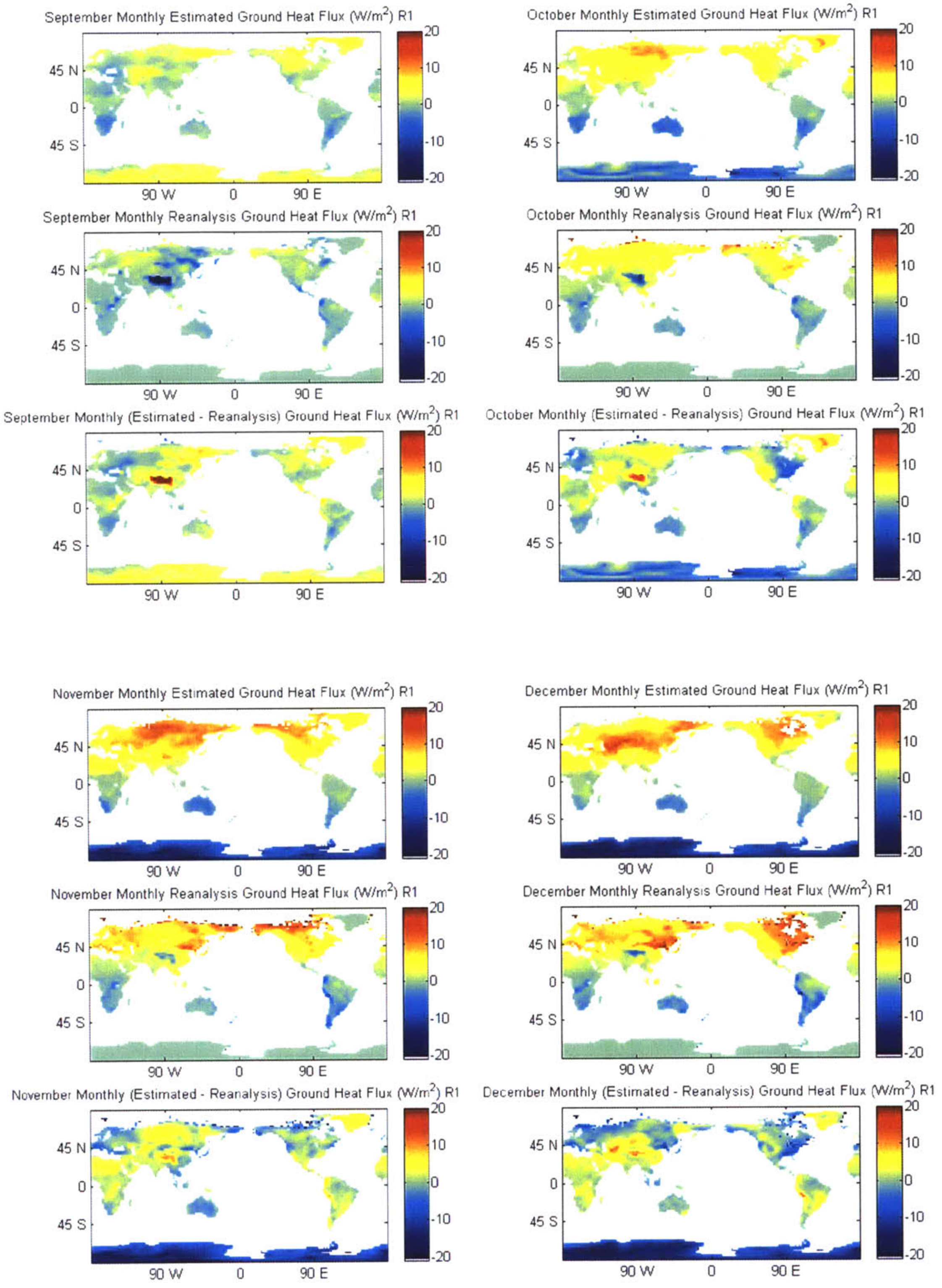


Figure 7-44: GHF Products Plots for Monthly time scale using the Reanalysis-1 – September, October, November, December 1988

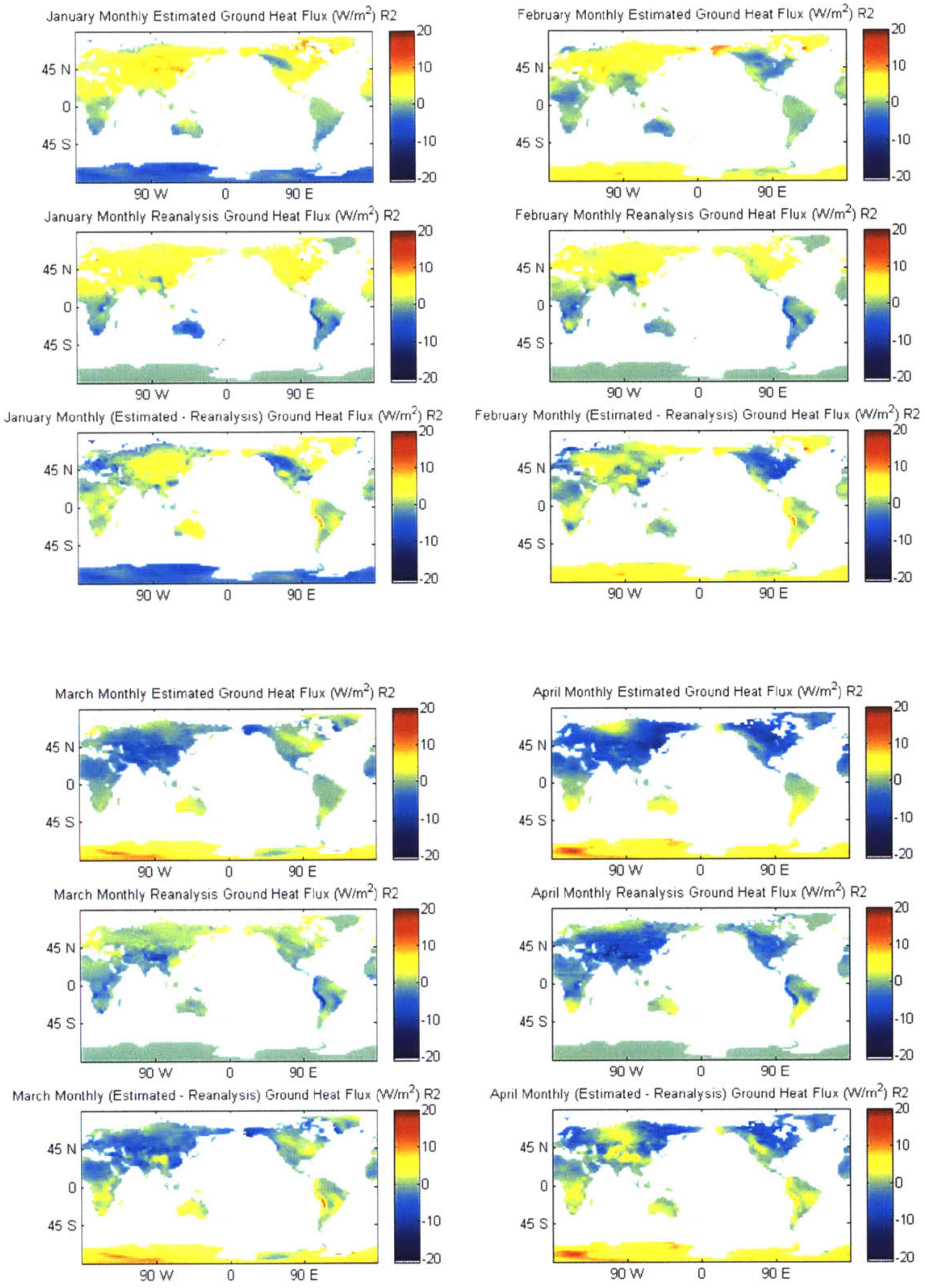


Figure 7-45: GHF Products Plots for Monthly time scale using the Reanalysis-2 – January, February, March, April 1988

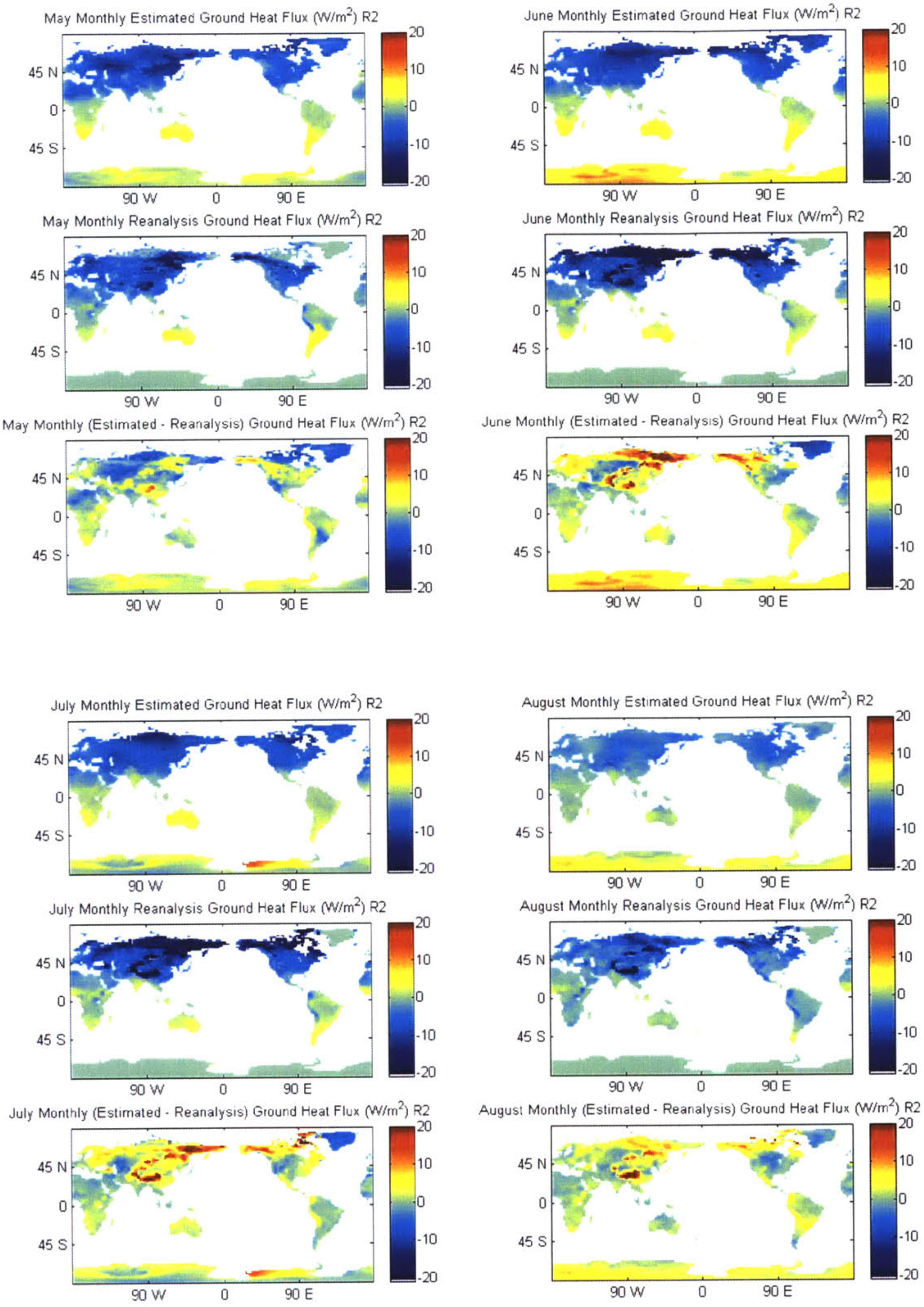


Figure 7-46: GHF Products Plots for Monthly time scale using the Reanalysis-2 – May, June, July, August 1988

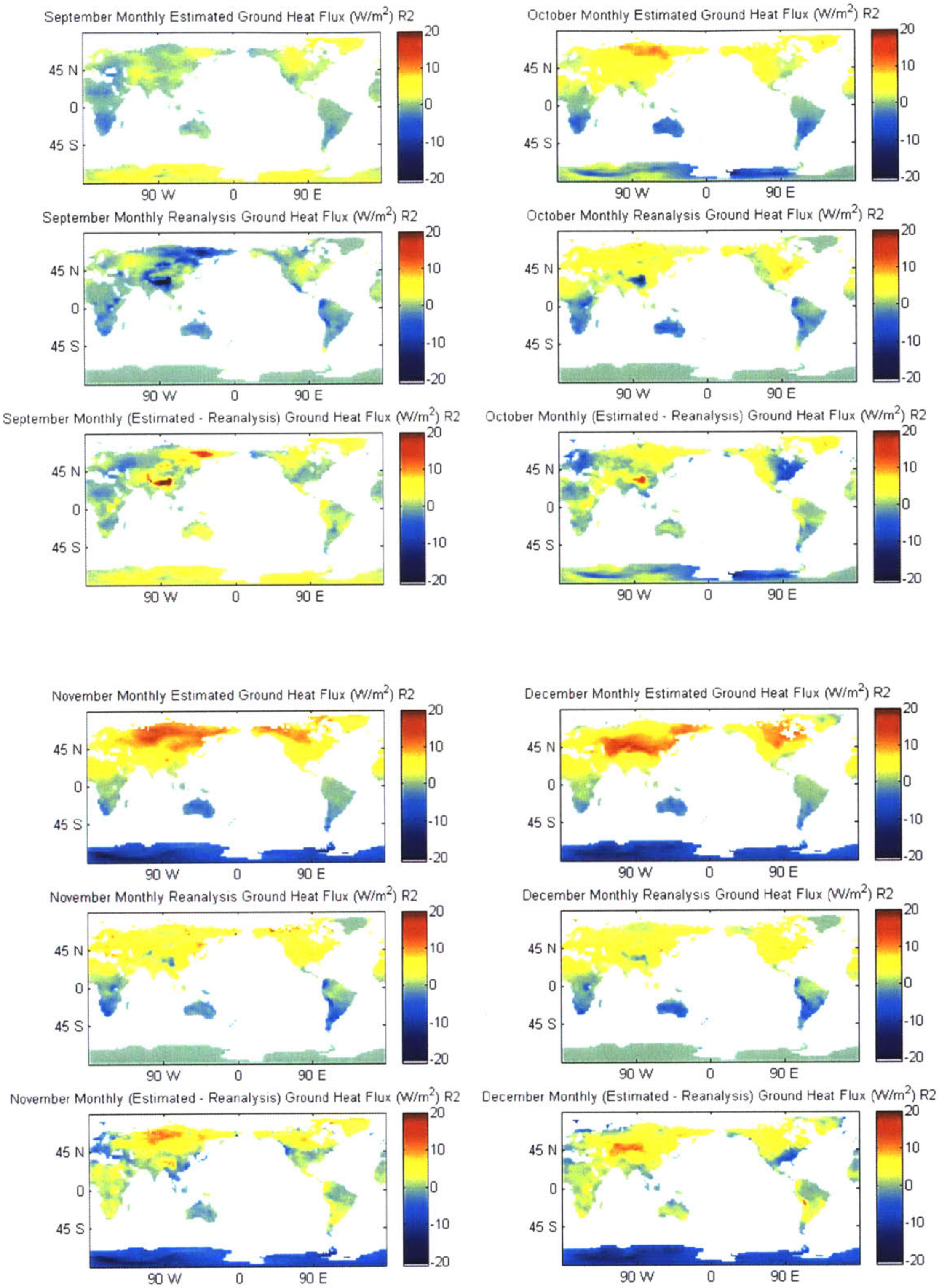
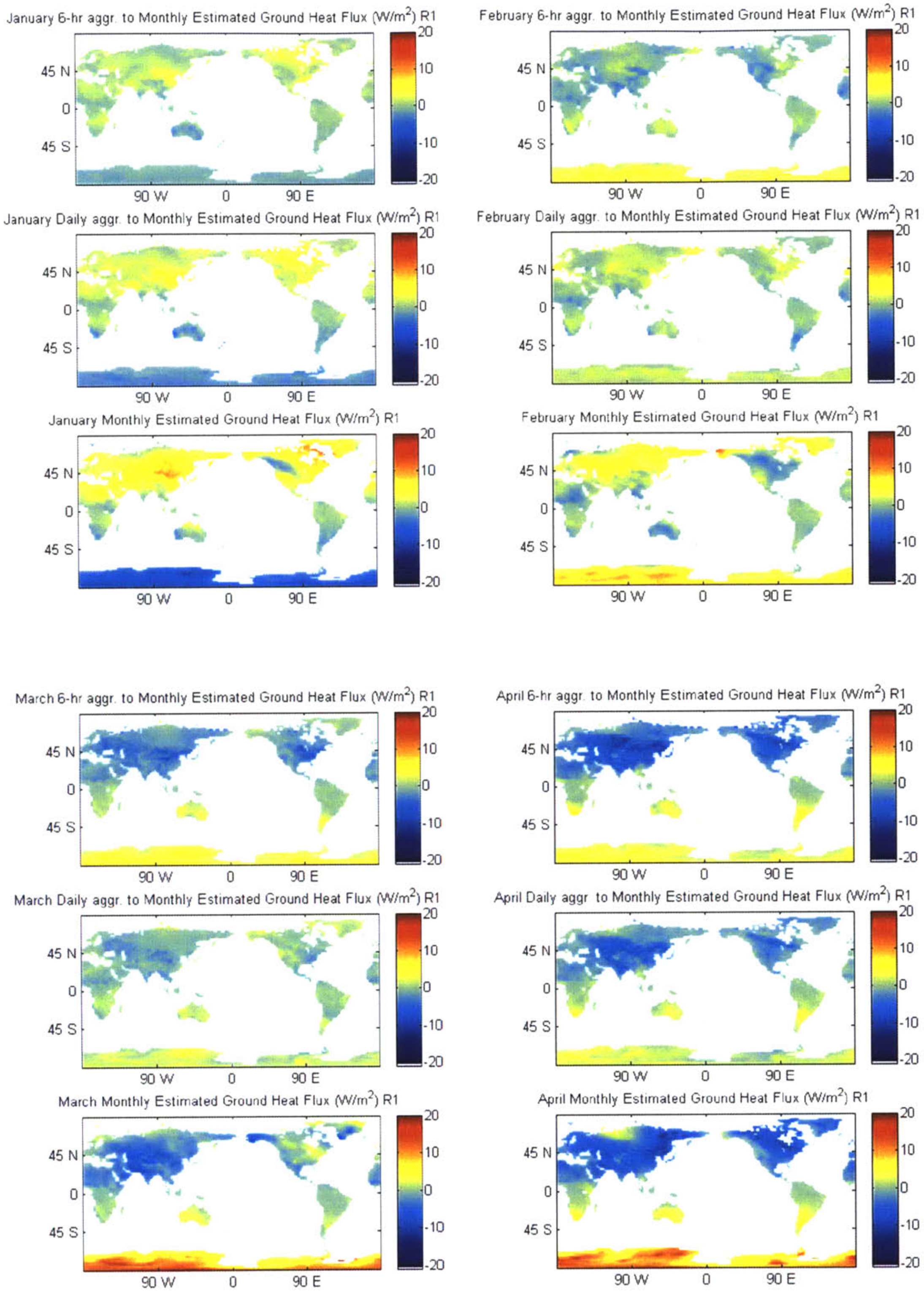


Figure 7-47: GHF Products Plots for Monthly time scale using the Reanalysis-2 – September, October, November, December 1988



January 6-hr aggr. to Monthly Estimated Ground Heat Flux (W/m^2) R1

January Daily aggr. to Monthly Estimated Ground Heat Flux (W/m^2) R1

January Monthly Estimated Ground Heat Flux (W/m^2) R1

February 6-hr aggr. to Monthly Estimated Ground Heat Flux (W/m^2) R1

February Daily aggr. to Monthly Estimated Ground Heat Flux (W/m^2) R1

February Monthly Estimated Ground Heat Flux (W/m^2) R1

March 6-hr aggr. to Monthly Estimated Ground Heat Flux (W/m^2) R1

March Daily aggr. to Monthly Estimated Ground Heat Flux (W/m^2) R1

March Monthly Estimated Ground Heat Flux (W/m^2) R1

April 6-hr aggr. to Monthly Estimated Ground Heat Flux (W/m^2) R1

April Daily aggr. to Monthly Estimated Ground Heat Flux (W/m^2) R1

April Monthly Estimated Ground Heat Flux (W/m^2) R1

Figure 7-48: GHF Products Plots Aggregated to the Monthly time scale using the Reanalysis-1 – January, February, March, and April 1988

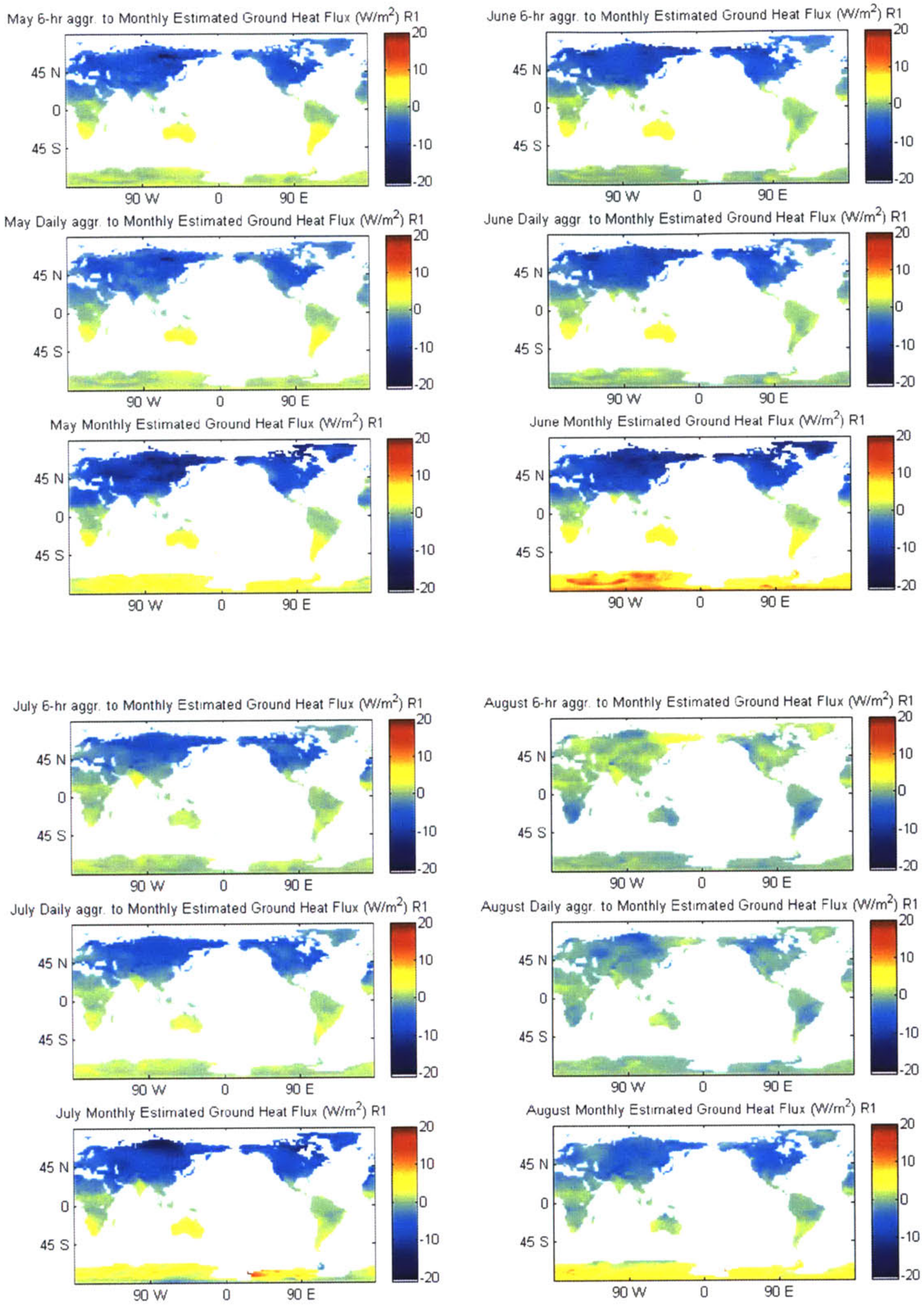


Figure 7-49: GHF Products Plots Aggregated to the Monthly time scale using the Reanalysis-1 – May, June, July, and August 1988

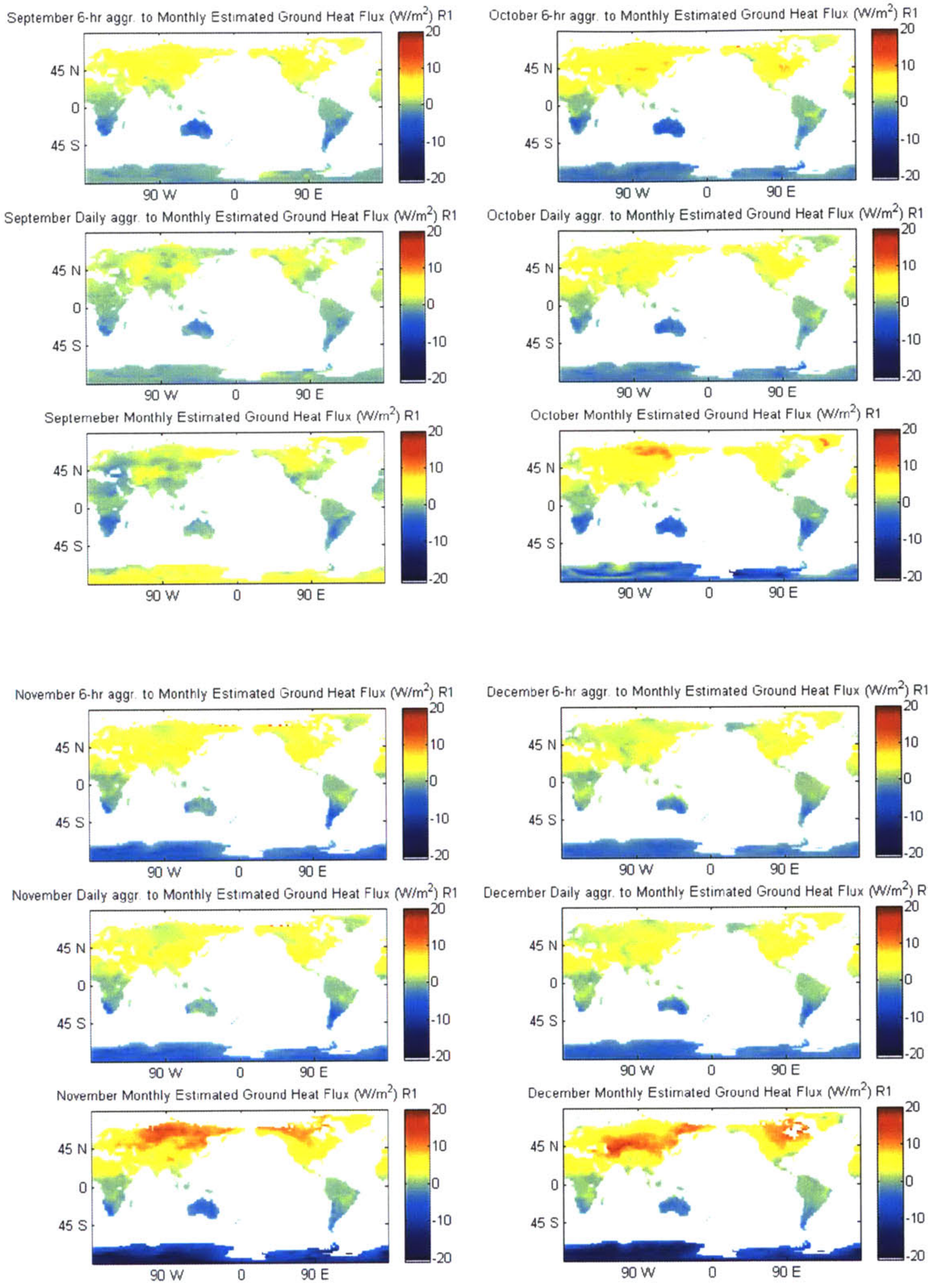


Figure 7-50: GHF Products Plots Aggregated to the Monthly time scale using the Reanalysis-1 – September, October, November, and December 1988

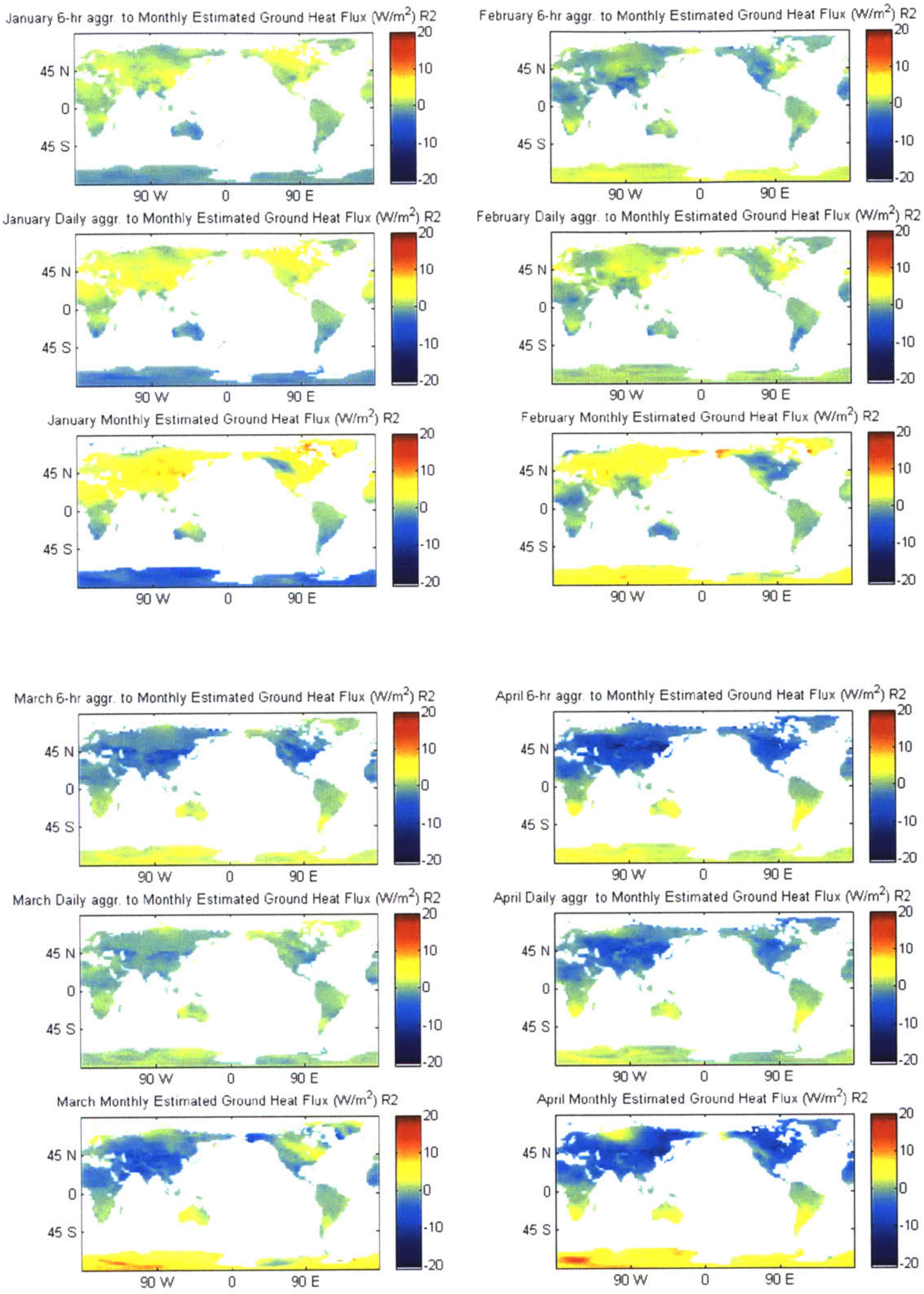


Figure 7-51: GHF Products Plots Aggregated to the Monthly time scale using the Reanalysis-2 – January, February, March, and April 1988

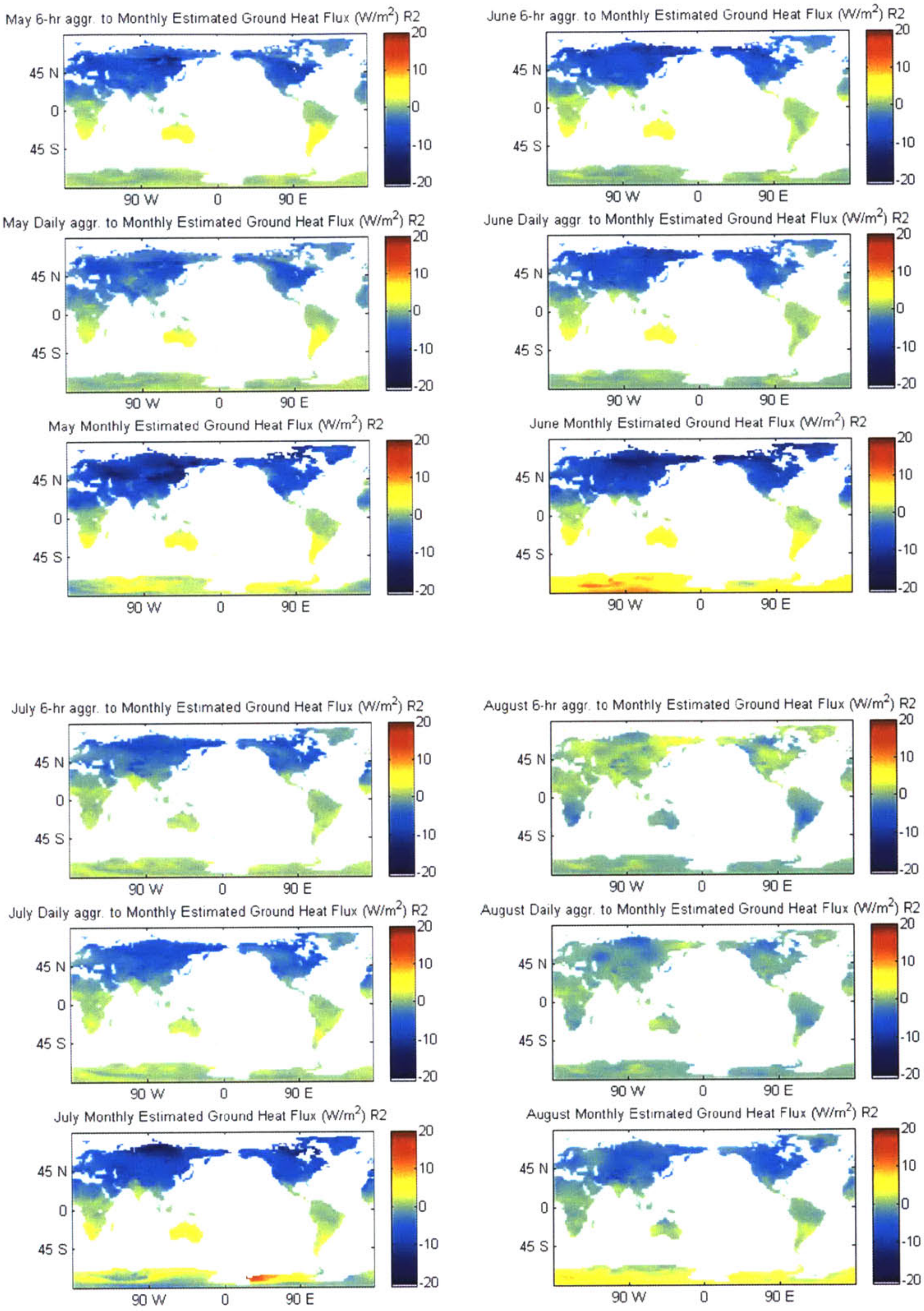
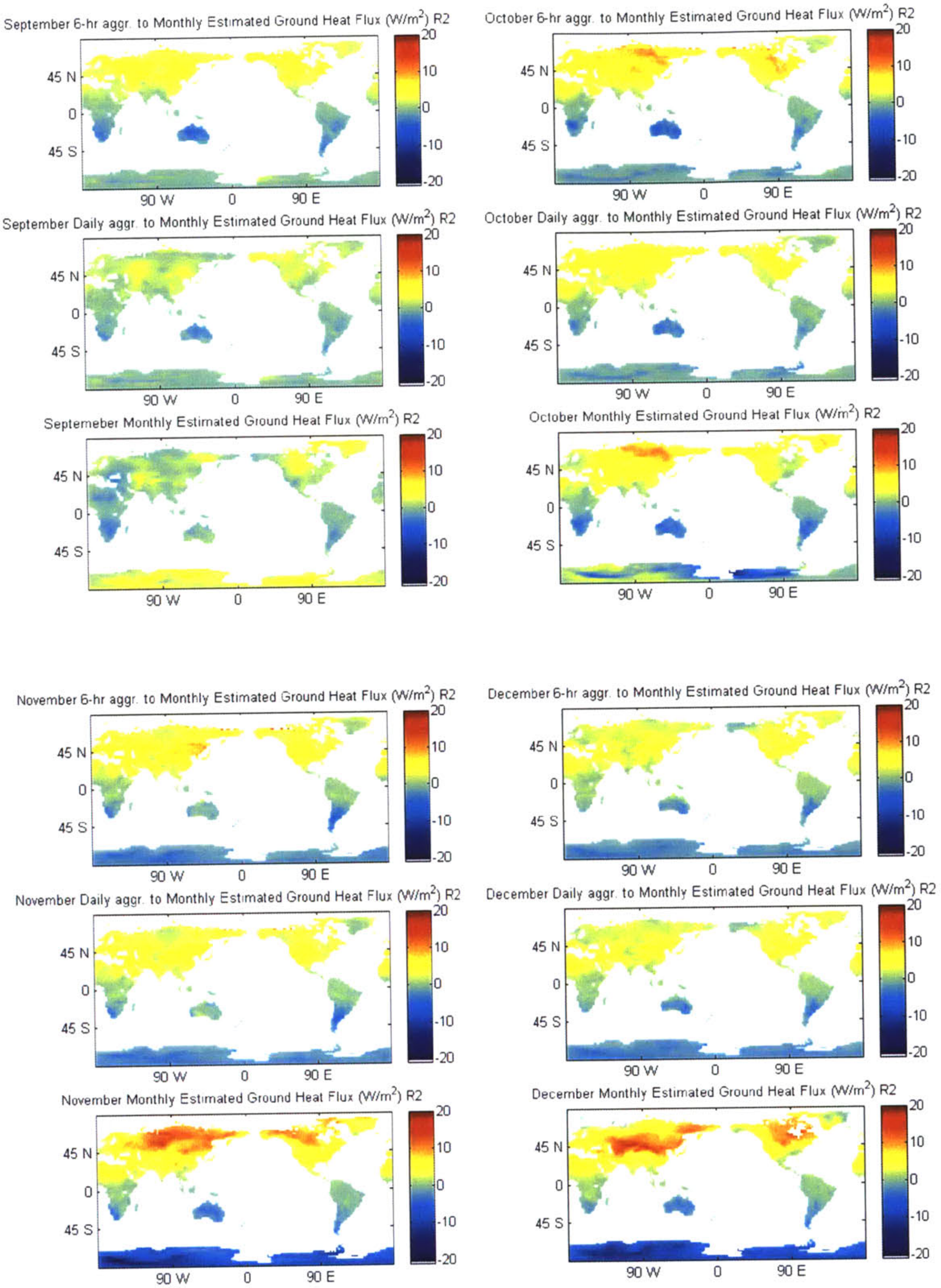


Figure 7-52: GHF Products Plots Aggregated to the Monthly time scale using the Reanalysis-2 – May, June, July, and August 1988


September 6-hr aggr. to Monthly Estimated Ground Heat Flux (W/m^2) R2

October 6-hr aggr. to Monthly Estimated Ground Heat Flux (W/m^2) R2

September Daily aggr. to Monthly Estimated Ground Heat Flux (W/m^2) R2

October Daily aggr. to Monthly Estimated Ground Heat Flux (W/m^2) R2

Septemeber Monthly Estimated Ground Heat Flux (W/m^2) R2

October Monthly Estimated Ground Heat Flux (W/m^2) R2

November 6-hr aggr. to Monthly Estimated Ground Heat Flux (W/m^2) R2

December 6-hr aggr. to Monthly Estimated Ground Heat Flux (W/m^2) R2

November Daily aggr. to Monthly Estimated Ground Heat Flux (W/m^2) R2

December Daily aggr. to Monthly Estimated Ground Heat Flux (W/m^2) R2

November Monthly Estimated Ground Heat Flux (W/m^2) R2

December Monthly Estimated Ground Heat Flux (W/m^2) R2

Figure 7-53: GHF Products Plots Aggregated to the Monthly time scale using the Reanalysis-2 – September, October, November, and December 1988

8. Conclusion

This work leads to a great deal of meaningful conclusions relative to the computation of water balances. The following is a brief summary of the major findings of this work.

8.1 Regional Water Balances

A number of evaluation methods are used in this work, and are outlined in Chapter 3. After the extensive use of these methodologies we get a general sense of which are most useful. The absolute error and bias are found to be very effective measures of the water balance residual. Also very useful is the regression slope on the monthly time scale where the adherence of different water balance variables to the seasonal cycle is evaluated.

The sensitivity of the water balance to different calculation methods, as well as domain scale and position is evaluated. The two moisture flux methodologies considered yield similar results for most control volumes. The three runoff methodologies evaluated also yield results which in general do not favor a specific method. The linear method is thought to have the best theoretical basis, but the point method produces slightly better results. The Reanalysis-2 gives slightly better results than the Reanalysis-1 for both atmospheric and surface balances.

A large amount of alternative precipitation datasets are used to compute both the atmospheric and surface water balances. The reanalysis precipitation completes both the atmospheric and surface balances consistently better than any other precipitation dataset. A specific look at TRMM precipitation datasets indicated these datasets are valuable in refining the water balance over the last five years (1998-2002). The use of the change in surface storage term derived from the reanalysis is the most effective method to account for change in surface storage. Nevertheless effective lag times can be found for all basin control volumes that eliminate the dependence on change in storage.

Control volumes which include a great deal of mountainous land (Mississippi, Arkansas, SWUS, and Larger US) yield poor atmospheric and surface balances. In the more successful South American balances the atmospheric balance is strengthened greatly by enlarging the control volume size, and the box control volumes compute a better atmospheric balance than the basin sized control volumes. The surface balance does not change much with basin size or shape.

The most important conclusion drawn from the evaluation of individual water balances is the general precipitation trend in all South American control volumes. The Reanalysis-1 precipitation in the NW Brazil, Larger Rondonia, East Brazil, Rondonia, Amazon, and Porto Velho control volumes increases in the second half of the yearly time series. This increase corresponds well with the moisture flux derived by the Reanalysis-1. However, the 55-year gauge-based precipitation dataset shows no precipitation increase for any of these control volumes. Other precipitation datasets over these regions are also inconsistent in their compliance to the reanalysis. Therefore, although some encouraging atmospheric water balances are computed for these control volumes it is difficult to decide whether these balances are the result of good data, or rather the reanalysis model forcing the data to balance.

8.2 Global Atmospheric Water Balance

In Chapter 6 the atmospheric water balance is computed over the entire globe between 60°N and 60°S. The balance is calculated over boxes of 30, 15, and 7.5 degrees on a side. As the resolution of the control volumes increases from 30 to 15 and 15 to 7.5 degrees on a side, the average residual of all control volumes across the globe increases by about a factor of two. Residuals are observed to visibly decrease from the monthly to yearly time scale. At the 30 degree resolution almost all control volumes perform well, and at all resolutions control volumes over the ocean perform. Biases over land at the 15 and 7.5 degree resolution are randomly largely positive and largely negative.

By varying precipitation in the global atmospheric water balance, it becomes apparent that the reanalysis precipitation is the most effective precipitation dataset at closing atmospheric water balances, as expected. Conducting separate balances for each month of the Reanalysis-2, a slightly better monthly balance is obtained in the winter months when all control volumes are taken into consideration in the Reanalysis-2.

By performing this analysis with the last five years of the Reanalysis-1, and replacing the precipitation with the TRMM 3B43 product for all control volumes inside of 30°N and 30°S latitude, results in biases that are closer to zero in the summertime. Breaking the Reanalysis-1 down and performing five decade long water balances, no large difference were found between the water balance properties calculated for the different decades.

When land and sea points are separated for various conditions, absolute errors are roughly twice as high over land. It is also observed that SSM/I precipitation is much more effective at closing the atmospheric water balance over land than over water.

8.3 Ground Heat Flux Research

A ground heat flux product is generated using the Wang and Bras (1999) method of estimation. The Reanalysis-1 and Reanalysis-2 skin temperatures at the 6-hourly, daily, and monthly time scales are used for this derivation for the year 1988. The key parameter in the derivation of ground heat flux is determined to be the thermal inertia of each land point. An original methodology is devised for obtaining the thermal inertia of all land points in the reanalysis, by dividing land points into twelve broad land cover classifications, including snow cover. Daily data is used to regress a thermal inertia for each of these twelve land classifications using all reanalysis ground heat flux data and estimated ground heat flux data for a given land type. These thermal inertias are then used to create a ground heat flux product at the 6-hourly, daily, and monthly time scales.

Samples of the finished product are provided in Chapter 7. There is a general increase in magnitude and sharpening of the diurnal cycle in the estimated 6-hourly ground heat flux when compared to the reanalysis ground heat flux. Significant areas of improvement include Central Asia and extreme northern and southern regions. The results of the new estimates are comparable to the reanalysis ground heat flux.

8.4 Concluding Remarks

This work includes an extensive evaluation of the Reanalysis-1, Reanalysis-2, and all other relevant and available datasets by application to various regional water balances. Of specific concern is the lack of ability to close regional water balances over land, specifically over a box of 7.5 degrees to a side. The integrity of the reanalysis data is simply not strong enough to complete such a balance reliably on either the atmospheric or surface levels.

The moisture flux and runoff variables are particularly uncertain. There is some success in calculating the moisture flux by known methodologies over regions of interest, but this is largely at the 15 and 30 degree resolutions. The runoff methodologies developed in this study were limited by the resolution of the data, and not terribly successful. Basin size control volumes were created as an alternative to box control volumes. Problems arose in the atmospheric balance of these control volumes, since in order to have a reasonably resolved basin a one-degree grid was necessary to form the boundaries of the control volume. However, the only data available to calculate moisture flux was gridded at a 2.5 degree resolution.

A major conclusion of this work is that global hydrometeorological datasets such as the reanalysis should take into account the water balance at finer resolutions when deriving its product. Current technologies are not adequate to close regional scale water balances over a number of years over North or South America at the 7.5 degree resolution. The theoretical framework for such a calculation is simple and well founded. It is the quality of available data that is lacking.

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Appendix A

Eastern Brazil - Monthly Atmospheric

OI	Moist Flux	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	Method 1	1	Yes	reanalysis	**92.49**	**-83.60**	1.6812	60.04	0.7556	0.2477	**0.8693**	**117.03**	2	2	27	10	2	43	2	
2	Method 1	1	Yes	gpcp	152.31	-151.86	1.4859	147.59	0.5801	-0.6984	0.7617	179.44	23	24	14	32	23	116	20	
3	Method 1	1	Yes	gpcc	164.60	-164.16	1.6419	163.15	0.5906	-0.9289	0.7685	190.71	31	35	24	28	30	148	28	
4	Method 1	1	Yes	gpcc trmm	149.36	-149.36	1.4653	148.47	0.6831	-1.2259	0.8265	164.27	22	23	13	12	16	86	13	
5	Method 1	1	Yes	ghcn cams grid	**115.28**	**-107.01**	**1.3097**	103.75	0.4204	-0.2322	0.6484	**149.76**	7	7	6	52	9	81	10	
6	Method 1	1	Yes	gpi	138.81	-135.92	**1.1634**	131.03	0.5296	-0.4988	0.7277	164.93	18	18	1	45	17	99	16	
7	Method 1	1	Yes	trmm 3a46	129.00	-129.00	**1.3000**	123.17	0.7065	-0.7544	0.8405	**143.23**	12	15	5	11	6	49	4	
8	Method 1	1	Yes	trmm 3b43	149.04	-149.04	**1.3338**	147.62	0.5967	-1.2667	0.7724	166.05	21	22	8	26	18	95	15	
9	Method 1	1	Yes	ssmi	146.77	-145.06	**1.3241**	138.04	0.4872	-0.6696	0.6980	176.52	20	20	7	48	22	117	21	
10	Method 1	1	Yes	opi2	156.32	-155.32	1.5373	153.18	0.4969	-0.8454	0.7049	186.38	28	28	20	47	29	152	31	
11	Method 1	1	Yes	opi3	154.96	-154.41	1.4872	152.02	0.5831	-0.7460	0.7636	181.29	25	25	15	31	24	120	22	
12	Method 1	1	Yes	cmap	155.39	-154.86	1.4972	152.29	0.5896	-0.7456	0.7678	181.55	26	26	17	29	25	123	23	
13	Method 1	1	Yes	cmap2	155.74	-155.20	1.4905	152.83	0.5868	-0.7525	0.7660	181.91	27	27	16	30	26	126	24	
14	Method 1	2	Yes	reanalysis	141.61	-137.73	1.4282	115.77	0.7702	0.0421	**0.8776**	166.08	19	19	11	8	19	76	8	
15	Method 1	2	Yes	gpcp	202.36	-200.48	1.6935	208.44	0.6128	-0.8859	0.7828	233.03	43	43	28	22	44	180	42	
16	Method 1	2	Yes	gpcc	216.98	-216.33	1.6484	228.71	0.5676	-1.3373	0.7534	245.35	50	50	26	34	52	212	51	
17	Method 1	2	Yes	gpcc trmm	222.75	-222.75	1.9508	240.61	0.8344	-1.5204	**0.9135**	240.81	52	52	43	3	51	201	49	
18	Method 1	2	Yes	ghcn cams grid	200.75	-199.47	1.7125	206.91	0.6495	-0.8447	0.8059	230.47	42	42	32	14	43	173	41	
19	Method 1	2	Yes	gpi	195.57	-192.68	**1.2556**	190.28	0.5326	-0.9308	0.7298	223.01	41	41	3	44	42	171	40	
20	Method 1	2	Yes	trmm 3a46	202.44	-202.44	1.8006	205.74	0.8469	-1.1037	**0.9203**	219.89	44	44	35	1	41	165	34	
21	Method 1	2	Yes	trmm 3b43	220.54	-220.54	1.9691	236.59	0.8353	-1.4809	**0.9140**	238.92	51	51	44	2	49	197	47	
22	Method 1	2	Yes	ssmi	208.96	-208.96	1.5198	208.81	0.5763	-1.1483	0.7591	237.92	49	49	19	33	48	198	48	
23	Method 1	2	Yes	opi2	207.62	-204.58	1.7856	216.81	0.5552	-1.0058	0.7451	240.32	48	48	34	37	50	217	52	
24	Method 1	2	Yes	opi3	205.59	-203.94	1.6994	214.37	0.6149	-0.9336	0.7842	235.96	46	46	29	21	46	188	45	
25	Method 1	2	Yes	cmap	205.44	-203.87	1.7107	214.42	0.6200	-0.9305	0.7874	235.77	45	45	31	19	45	185	43	
26	Method 1	2	Yes	cmap2	205.77	-204.21	1.7084	214.97	0.6199	-0.9350	0.7873	236.04	47	47	30	20	47	191	46	
27	***Method 2***	*1*	*Yes*	*reanalysis*	***88.08***	***-76.43***	*1.8384*	*50.19*	*0.7969*	*0.3263*	***0.8927***	***113.61***	*1*	*1*	*38*	*6*	*1*	*47*	*3*	Plot
28	Method 2	1	Yes	gpcp	**126.63**	**-120.61**	1.6426	113.16	0.5515	-0.2336	0.7426	160.03	9	9	25	39	12	94	14	
29	Method 2	1	Yes	gpcc	131.43	-125.01	1.8587	122.10	0.5907	-0.2974	0.7686	163.11	15	12	40	27	14	108	18	
30	Method 2	1	Yes	gpcc trmm	128.26	-128.26	1.5509	126.25	0.6680	-0.6766	0.8173	**147.94**	11	14	21	13	7	66	6	
31	Method 2	1	Yes	ghcn cams grid	**106.44**	**-91.82**	1.6189	82.26	0.4378	-0.0655	0.6616	**143.01**	4	3	23	50	5	85	12	
32	Method 2	1	Yes	gpi	**110.21**	**-98.85**	**1.3508**	86.37	0.5111	-0.0161	0.7149	**141.95**	5	4	9	46	4	68	7	
33	***Method 2***	*1*	*Yes*	*trmm 3a46*	***100.45***	***-100.45***	***1.2099***	*93.87*	*0.6386*	*-0.1841*	*0.7991*	***121.94***	*3*	*5*	*2*	*16*	*3*	*29*	*1*	Plot
34	Method 2	1	Yes	trmm 3b43	**127.23**	-127.23	**1.3751**	124.74	0.5524	-0.7277	0.7433	**150.24**	10	13	10	38	10	81	11	
35	Method 2	1	Yes	ssmi	**114.70**	**-106.28**	**1.2784**	97.62	0.4345	-0.1256	0.6592	153.50	6	6	4	51	11	78	9	
36	Method 2	1	Yes	opi2	138.43	-131.93	1.9851	133.04	0.4618	-0.4956	0.6795	175.66	17	17	45	49	21	149	29	
37	Method 2	1	Yes	opi3	135.85	-129.79	1.9437	128.83	0.5370	-0.4061	0.7328	170.32	16	16	42	42	20	136	27	
38	Method 2	1	Yes	cmap	129.52	**-123.05**	1.8382	115.98	0.5664	-0.2823	0.7526	162.98	13	10	37	35	13	108	17	
39	Method 2	1	Yes	cmap2	129.99	-123.49	1.8301	116.86	0.5633	-0.2889	0.7505	163.39	14	11	36	36	15	112	19	
40	***Method 2***	*2*	*Yes*	*reanalysis*	***119.51***	***-109.87***	*1.5746*	*85.05*	*0.7654*	*0.2577*	***0.8749***	***148.60***	*8*	*8*	*22*	*9*	*8*	*55*	*5*	Plot
41	Method 2	2	Yes	gpcp	167.06	-159.93	1.8747	165.94	0.6085	-0.3839	0.7800	202.89	33	32	41	23	33	162	33	
42	Method 2	2	Yes	gpcc	171.64	-168.09	1.8402	180.01	0.6018	-0.6325	0.7758	203.95	36	36	39	25	34	170	37	
43	Method 2	2	Yes	gpcc trmm	188.55	-188.55	2.1481	209.07	0.8088	-0.8471	**0.8993**	214.68	40	40	49	4	38	171	39	
44	Method 2	2	Yes	ghcn cams grid	164.82	-156.91	2.0750	161.04	0.6443	-0.3562	0.8027	200.86	32	30	46	15	32	155	32	
45	Method 2	2	Yes	gpi	153.11	-145.16	1.4568	137.40	0.5383	-0.3099	0.7337	186.31	24	21	12	41	28	126	25	
46	Method 2	2	Yes	trmm 3a46	157.24	-157.24	1.7646	151.88	0.7752	-0.3638	**0.8804**	184.23	29	31	33	7	27	127	26	
47	Method 2	2	Yes	trmm 3b43	184.74	-184.74	2.1513	200.93	0.8080	-0.7913	**0.8989**	211.41	39	39	50	5	37	170	38	
48	Method 2	2	Yes	ssmi	159.06	-156.54	1.5015	150.94	0.5342	-0.4018	0.7309	197.98	30	29	18	43	31	151	30	
49	Method 2	2	Yes	opi2	180.26	-172.01	2.2892	196.44	0.5410	-0.6252	0.7355	219.88	38	38	52	40	40	208	50	
50	Method 2	2	Yes	opi3	177.06	-170.16	2.2265	191.12	0.6072	-0.5503	0.7793	214.75	37	37	51	24	39	188	44	
51	Method 2	2	Yes	cmap	170.30	-162.94	2.0850	173.64	0.6221	-0.4388	0.7887	206.88	34	33	48	18	35	168	35	
52	Method 2	2	Yes	cmap2	170.71	-163.38	2.0850	174.57	0.6226	-0.4433	0.7891	207.20	35	34	47	17	36	169	36	

Eastern Brazil - Yearly Atmospheric

OI	Moist Flux	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	Method 1	1	Yes	reanalysis	**85.09**	**-83.56**	2.3669	2.3669	36.28	0.6833	-1.2476	**0.8266**	**95.99**	2	2	17	1	2	24	2	
2	Method 1	1	Yes	gpcp	151.91	-151.91	0.2785	3.5907	158.25	0.0150	-19.5640	0.1224	156.08	24	24	23	23	24	118	21	
3	Method 1	1	Yes	gpcc	164.04	-164.04	0.4885	2.0471	164.84	0.0342	-19.9624	0.1849	168.11	34	34	15	17	32	132	25	
4	Method 1	1	Yes	gpcc trmm	149.58	-149.58	**0.6612**	1.5124	151.13	0.3789	-129.5871	**0.6155**	150.00	23	23	7	6	21	80	14	
5	Method 1	1	Yes	ghcn cams grid	**108.24**	**-106.74**	-0.7556		125.68	0.0317	-2.8822	-0.1781	**127.00**	5	5	49	49	9	117	20	
6	Method 1	1	Yes	gpi	135.91	-135.91	**0.7444**	1.3434	143.56	0.0990	-15.3455	0.3147	139.87	18	18	5	12	18	71	8	
7	Method 1	1	Yes	trmm 3a46	132.26	-132.26	-0.2492		165.44	0.0120	-122.7783	-0.1096	132.95	16	16	41	43	14	130	23	
8	Method 1	1	Yes	trmm 3b43	149.30	-149.30	**0.5621**	1.7790	151.17	0.3579	-159.9959	**0.5983**	149.71	22	22	10	7	20	81	15	
9	Method 1	1	Yes	ssmi	147.55	-147.55	0.5157	1.9391	158.38	0.0248	-16.7985	0.1575	151.87	21	21	11	18	22	93	18	
10	Method 1	1	Yes	opi2	156.00	-156.00	0.2060	4.8544	159.74	0.0085	-20.6606	0.0922	160.19	28	28	25	24	28	133	26	
11	Method 1	1	Yes	opi3	155.36	-155.36	0.0629	15.8983	160.37	0.0010	-20.5898	0.0313	159.93	26	26	31	30	26	139	30	
12	Method 1	1	Yes	cmap	155.29	-155.29	0.0690	14.4928	160.33	0.0012	-20.5656	0.0340	159.84	25	25	30	29	25	134	28	
13	Method 1	1	Yes	cmap2	155.63	-155.63	0.0807	12.3916	160.29	0.0016	-20.6493	0.0399	160.15	27	27	29	28	27	138	29	
14	Method 1	2	Yes	reanalysis	137.81	-137.81	2.4636	2.4636	62.75	0.5834	-6.8154	**0.7638**	143.65	19	19	18	3	19	78	13	
15	Method 1	2	Yes	gpcp	200.57	-200.57	-0.3320		185.29	0.0121	-15.4178	-0.1101	208.21	43	43	44	44	43	217	48	
16	Method 1	2	Yes	gpcc	216.24	-216.24	0.0947	10.5597	198.96	0.0007	-14.0991	0.0264	224.28	50	50	28	31	52	211	46	
17	Method 1	2	Yes	gpcc trmm	223.22	-223.22	**0.8689**	1.1509	220.76	0.3450	-199.8318	**0.5874**	223.59	52	52	2	8	51	165	37	
18	Method 1	2	Yes	ghcn cams grid	199.55	-199.55	-0.1069		187.98	0.0015	-15.2416	-0.0389	207.09	42	42	34	34	42	194	44	
19	Method 1	2	Yes	gpi	192.72	-192.72	0.1521	6.5746	200.67	0.0025	-14.9489	0.0501	199.57	41	41	26	26	41	175	38	
20	Method 1	2	Yes	trmm 3a46	209.43	-209.43	**0.5892**	1.6972	210.55	0.0444	-465.0363	0.2108	209.65	48	48	9	16	44	165	36	
21	Method 1	2	Yes	trmm 3b43	221.01	-221.01	**0.9003**	1.1107	219.36	0.4088	-195.8171	**0.6394**	221.34	51	51	1	5	50	158	32	
22	Method 1	2	Yes	ssmi	214.51	-214.51	-0.1812		215.59	0.0024	-23.8250	-0.0492	219.43	49	49	37	37	49	221	49	
23	Method 1	2	Yes	opi2	204.66	-204.66	-0.1440		186.86	0.0023	-16.0059	-0.0479	211.90	47	47	36	36	47	213	47	
24	Method 1	2	Yes	opi3	204.02	-204.02	-0.3732		183.53	0.0190	-16.0016	-0.1378	211.88	45	45	47	47	46	230	51	
25	Method 1	2	Yes	cmap	203.95	-203.95	-0.3637		183.70	0.0178	-15.9851	-0.1333	211.77	44	44	46	46	45	225	50	
26	Method 1	2	Yes	cmap2	204.29	-204.29	-0.3434		183.88	0.0158	-16.0321	-0.1259	212.07	46	46	45	45	48	230	52	
27	*Method 2*	*1*	*Yes*	*reanalysis*	***76.41***	***-76.37***	*1.9392*	*1.9392*	*46.97*	*0.6525*	*-1.5009*	***0.8078***	***85.39***	*1*	*1*	*12*	*2*	*1*	*17*	*1*	Plot
28	*Method 2*	*1*	*Yes*	*gpcp*	***120.61***	***-120.61***	*0.5043*	*1.9829*	*126.35*	*0.0477*	*-14.8550*	*0.2185*	***124.60***	*9*	*9*	*14*	*15*	*8*	*55*	*4*	Plot
29	Method 2	1	Yes	gpcc	124.87	-124.87	**0.6113**	1.6359	126.19	0.0572	-18.7949	0.2391	128.03	12	12	8	14	11	57	6	
30	Method 2	1	Yes	gpcc trmm	131.91	-131.91	0.4775	2.0942	135.26	0.0878	-43.7273	0.2962	133.44	15	15	16	13	15	74	11	
31	Method 2	1	Yes	ghcn cams grid	**92.56**	**-91.81**	-1.2311		126.80	0.0950	-3.0568	-0.3082	**109.73**	3	3	51	50	4	111	19	
32	Method 2	1	Yes	gpi	**98.81**	**-98.81**	0.0396	25.2525	133.00	0.0003	-10.3574	0.0159	**104.22**	4	4	32	32	3	75	12	
33	Method 2	1	Yes	trmm 3a46	**109.10**	**-109.10**	-1.0402		186.14	0.3314	-50.7467	-0.5757	**111.21**	7	7	50	52	5	121	22	
34	Method 2	1	Yes	trmm 3b43	127.45	-127.45	**0.6913**	1.4465	129.50	0.2326	-41.5017	0.4823	128.68	13	13	6	11	13	56	5	
35	Method 2	1	Yes	ssmi	**109.00**	**-109.00**	0.2312	4.3253	133.20	0.0083	-12.1743	0.0909	**113.78**	6	6	24	25	6	67	7	
36	Method 2	1	Yes	opi2	132.69	-132.69	0.4047	2.4710	132.40	0.0245	-18.0103	0.1566	136.43	17	17	19	19	17	89	17	
37	Method 2	1	Yes	opi3	130.83	-130.83	0.3049	3.2798	131.78	0.0166	-17.5517	0.1289	134.78	14	14	22	22	16	88	16	
38	Method 2	1	Yes	cmap	**123.61**	**-123.61**	0.3125	3.2000	129.52	0.0190	-15.6785	0.1379	**127.79**	10	10	21	21	10	72	9	
39	Method 2	1	Yes	cmap2	124.05	-124.05	0.3297	3.0331	129.52	0.0214	-15.7846	0.1463	128.20	11	11	20	20	12	74	10	
40	*Method 2*	*2*	*Yes*	*reanalysis*	***109.92***	***-109.92***	*1.9487*	*1.9487*	*68.95*	*0.4825*	*-5.2871*	***0.6946***	***115.90***	*8*	*8*	*13*	*4*	*7*	*40*	*3*	Plot
41	Method 2	2	Yes	gpcp	159.98	-159.98	-0.1335		152.20	0.0020	-12.1195	-0.0445	167.43	30	30	35	35	31	161	35	
42	Method 2	2	Yes	gpcc	167.99	-167.99	0.1420	7.0423	155.81	0.0017	-13.5294	0.0410	174.47	35	35	27	27	36	160	34	
43	Method 2	2	Yes	gpcc trmm	188.94	-188.94	**1.2606**	1.2606	193.60	0.2495	-51.6613	**0.4995**	190.32	40	40	3	10	40	133	27	
44	Method 2	2	Yes	ghcn cams grid	156.96	-156.96	0.0062	161.2903	153.14	0.0000	-11.6418	0.0021	164.35	29	29	33	33	29	153	31	
45	Method 2	2	Yes	gpi	145.17	-145.17	-0.4733		170.23	0.0251	-11.4218	-0.1583	152.86	20	20	48	48	23	159	33	
46	Method 2	2	Yes	trmm 3a46	168.31	-168.31	-1.6084		203.05	0.2786	-60.5453	-0.5278	170.33	36	36	52	51	33	208	45	
47	Method 2	2	Yes	trmm 3b43	185.13	-185.13	**1.3055**	1.3055	189.43	0.3058	-49.5409	**0.5530**	186.45	39	39	4	9	39	130	24	
48	Method 2	2	Yes	ssmi	162.06	-162.06	-0.3087		177.03	0.0113	-17.9883	-0.1064	167.40	31	31	43	42	30	177	39	
49	Method 2	2	Yes	opi2	172.06	-172.06	-0.2207		148.93	0.0041	-13.9779	-0.0642	178.89	38	38	39	38	38	191	42	
50	Method 2	2	Yes	opi3	170.21	-170.21	-0.3010		147.97	0.0095	-13.7271	-0.0976	177.39	37	37	42	41	37	194	43	
51	Method 2	2	Yes	cmap	162.99	-162.99	-0.2433		150.71	0.0067	-12.6003	-0.0817	170.47	32	32	40	40	34	178	40	
52	Method 2	2	Yes	cmap2	163.43	-163.43	-0.2090		150.96	0.0049	-12.6608	-0.0703	170.85	33	33	38	39	35	178	41	

Eastern Brazil - Monthly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	*Linear*	*1*	*Yes*	*reanalysis*	*81.89*	*-35.38*	*35.38*	*0.6430*	*-24.20*	*0.2035*	*0.0045*	*0.4511*	*95.60*	*428*	*419*	*43*	*70*	*409*	*1369*	*314*	Plot
2	Linear	1	Yes	gpcp	80.34	-15.11	15.11	0.4925	-9.23	0.1080	-0.0306	0.3286	99.12	421	230	64	130	422	1267	270	
3	Linear	1	Yes	gpcc	73.39	-2.87	2.87	0.6768	-1.78	0.1698	0.1302	0.4120	90.71	375	61	37	89	377	939	161	
4	Linear	1	Yes	gpcc trmm	77.72	-17.73	17.73	0.6434	-16.42	0.1521	0.0736	0.3901	95.59	404	252	42	103	408	1209	250	
5	Linear	1	Yes	ghcn cams grid	75.58	-20.00	20.00	**0.7465**	-16.08	0.1954	0.1291	0.4420	89.24	389	277	24	73	364	1127	225	
6	Linear	1	Yes	gpi	86.62	-40.19	40.19	0.5682	-24.82	0.1874	-0.0897	0.4330	102.10	445	442	56	79	432	1454	343	
7	Linear	1	Yes	trmm 3a46	87.29	-56.97	56.97	0.5849	-43.97	0.2028	-0.2507	0.4504	107.49	447	464	52	71	445	1479	351	
8	Linear	1	Yes	trmm 3b43	80.08	-20.57	20.57	0.5708	-17.72	0.1282	0.0121	0.3580	97.90	420	282	54	113	418	1287	278	
9	Linear	1	Yes	ssmi	82.53	-37.34	37.34	0.5787	-24.24	0.1911	-0.0532	0.4372	101.34	433	426	53	75	429	1416	327	
10	Linear	1	Yes	opi2	76.81	-4.15	4.15	0.6348	-4.57	0.1033	0.0673	0.3214	93.79	398	110	45	132	399	1084	213	
11	Linear	1	Yes	opi3	76.56	-6.30	6.30	0.5930	-5.88	0.1094	0.0536	0.3307	94.47	397	160	51	128	406	1142	230	
12	Linear	1	Yes	cmap	78.68	-13.38	13.38	0.5701	-9.76	0.1191	0.0325	0.3451	95.75	411	217	55	119	410	1212	251	
13	Linear	1	Yes	cmap2	78.63	-12.94	12.94	0.5634	-9.45	0.1167	0.0290	0.3416	95.93	410	215	57	121	411	1214	252	
14	Linear	1	No	reanalysis	62.34	-35.21	35.21	-0.0861	-1.22	0.2432	-47.5000	-0.4932	81.69	239	417	400	440	300	1796	408	
15	Linear	1	No	gpcp	54.24	-15.23	15.23	-0.0872	-2.63	0.1604	-25.9472	-0.4005	73.59	160	234	401	431	206	1432	332	
16	Linear	1	No	gpcc	47.45	-3.11	3.11	-0.0204	0.35	0.0656	-164.7662	-0.2562	60.67	109	73	331	399	107	1019	192	
17	Linear	1	No	gpcc trmm	60.69	-15.30	15.30	-0.2197	-10.85	0.3274	-10.2039	-0.5722	77.37	220	235	444	451	248	1598	379	
18	Linear	1	No	ghcn cams grid	48.39	-19.37	19.37	-0.0797	-2.69	0.1474	-29.6191	-0.3839	65.04	125	268	392	426	138	1349	307	
19	Linear	1	No	gpi	67.51	-39.57	39.57	-0.0823	-1.04	0.1465	-31.3140	-0.3827	91.05	309	438	395	425	384	1951	431	
20	Linear	1	No	trmm 3a46	84.63	-46.14	46.14	-0.2563	-6.77	0.5269	-15.2441	-0.7259	105.35	443	445	450	465	440	2243	460	
21	Linear	1	No	trmm 3b43	61.94	-18.19	18.19	-0.2304	-10.00	0.3851	-11.2275	-0.6206	80.21	232	255	447	457	283	1674	392	
22	Linear	1	No	ssmi	71.80	-35.99	35.99	-0.1069	-1.58	0.2101	-26.5700	-0.4583	91.40	359	423	412	438	387	2019	443	
23	Linear	1	No	opi2	43.38	-2.50	2.50	-0.1180	-3.76	0.1713	-15.2383	-0.4138	56.49	53	53	424	434	58	1022	194	
24	Linear	1	No	opi3	46.57	-4.65	4.65	-0.0999	-3.53	0.1490	-18.0158	-0.3860	61.13	96	129	406	427	110	1168	236	
25	Linear	1	No	cmap	50.17	-12.09	12.09	-0.0935	-2.87	0.1533	-21.5736	-0.3916	66.82	143	202	403	429	150	1327	297	
26	Linear	1	No	cmap2	50.13	-11.64	11.64	-0.0932	-2.91	0.1530	-21.5811	-0.3912	66.83	141	198	402	428	151	1320	294	
27	Linear	1	1 mon	reanalysis	62.02	-35.11	35.11	-0.0654	-1.86	0.1406	-46.1437	-0.3749	80.60	234	415	379	424	287	1739	399	
28	Linear	1	1 mon	gpcp	53.42	-14.93	14.93	-0.0759	-2.75	0.1213	-25.3447	-0.3483	72.85	156	226	389	419	195	1385	319	
29	Linear	1	1 mon	gpcc	46.56	-2.28	2.28	-0.0138	0.38	0.0302	-162.8480	-0.1739	59.82	95	47	326	389	96	953	168	
30	Linear	1	1 mon	gpcc trmm	59.71	-14.95	14.95	-0.1991	-10.46	0.2751	-10.1194	-0.5245	76.88	209	227	443	446	239	1564	370	
31	Linear	1	1 mon	ghcn cams grid	48.09	-19.38	19.38	-0.0707	-2.85	0.1161	-29.2439	-0.3407	64.64	120	269	380	417	136	1322	295	
32	Linear	1	1 mon	gpi	66.34	-39.18	39.18	-0.0618	-1.78	0.0822	-30.1637	-0.2867	89.62	296	434	377	405	368	1880	422	
33	Linear	1	1 mon	trmm 3a46	83.05	-47.16	47.16	-0.2260	-6.82	0.4095	-14.8752	-0.6399	104.41	437	446	445	459	438	2225	457	
34	Linear	1	1 mon	trmm 3b43	59.50	-16.40	16.40	-0.1863	-10.10	0.2502	-10.4110	-0.5002	77.27	204	249	442	442	245	1582	376	
35	Linear	1	1 mon	ssmi	70.89	-35.62	35.62	-0.0964	-1.89	0.1697	-25.9476	-0.4120	90.74	349	420	404	432	379	1984	439	
36	Linear	1	1 mon	opi2	43.28	-2.54	2.54	-0.1012	-3.71	0.1262	-14.8389	-0.3552	55.85	51	56	408	422	52	989	179	
37	Linear	1	1 mon	opi3	46.11	-4.69	4.69	-0.0849	-3.51	0.1077	-17.5844	-0.3282	60.50	94	130	398	411	106	1139	229	
38	Linear	1	1 mon	cmap	49.30	-12.26	12.26	-0.0801	-2.93	0.1125	-21.0818	-0.3353	66.16	133	203	393	415	148	1292	282	
39	Linear	1	1 mon	cmap2	49.23	-11.82	11.82	-0.0802	-2.97	0.1131	-21.1007	-0.3364	66.19	131	200	394	416	149	1290	281	
40	Linear	1	2 mon	reanalysis	61.58	-35.06	35.06	-0.0356	-2.80	0.0415	-44.1897	-0.2037	78.96	228	414	349	393	271	1655	389	
41	Linear	1	2 mon	gpcp	52.37	-14.55	14.55	-0.0367	-3.14	0.0282	-23.5939	-0.1680	70.35	152	223	351	386	176	1288	279	
42	Linear	1	2 mon	gpcc	45.27	-1.58	1.58	0.0064	0.42	0.0067	-162.9739	0.0816	58.42	84	26	310	268	82	770	111	
43	Linear	1	2 mon	gpcc trmm	58.53	-14.63	14.63	-0.1251	-9.57	0.1227	-10.2527	-0.3503	73.06	197	224	428	421	200	1470	347	
44	Linear	1	2 mon	ghcn cams grid	47.73	-19.42	19.42	-0.0406	-3.32	0.0384	-27.8773	-0.1959	63.18	113	270	359	391	129	1262	268	
45	Linear	1	2 mon	gpi	65.75	-38.91	38.91	-0.0236	-3.09	0.0120	-28.4039	-0.1095	87.22	285	432	334	360	351	1762	405	
46	Linear	1	2 mon	trmm 3a46	82.05	-47.75	47.75	-0.1344	-8.15	0.1594	-14.8810	-0.3992	99.18	430	447	432	430	423	2162	452	
47	Linear	1	2 mon	trmm 3b43	59.78	-15.15	15.15	-0.1150	-9.45	0.1087	-10.6023	-0.3297	73.58	210	231	421	412	205	1479	350	
48	Linear	1	2 mon	ssmi	71.01	-35.67	35.67	-0.0600	-3.02	0.0657	-24.6063	-0.2564	88.71	351	421	376	400	359	1907	425	
49	Linear	1	2 mon	opi2	42.51	-2.50	2.50	-0.0474	-3.59	0.0278	-13.5745	-0.1666	53.54	37	52	368	384	28	869	136	
50	Linear	1	2 mon	opi3	45.42	-4.72	4.72	-0.0396	-3.49	0.0235	-16.2936	-0.1532	58.33	85	133	356	376	81	1031	198	
51	Linear	1	2 mon	cmap	48.50	-12.35	12.35	-0.0372	-3.24	0.0244	-19.6465	-0.1561	63.94	127	205	352	379	133	1196	245	
52	Linear	1	2 mon	cmap2	48.42	-11.91	11.91	-0.0375	-3.25	0.0248	-19.6653	-0.1573	63.97	126	201	353	381	134	1195	244	
53	Linear	1	3 mon	reanalysis	60.78	-35.12	35.12	0.0091	-4.21	0.0027	-41.2550	0.0523	76.41	221	416	303	289	233	1462	346	
54	Linear	1	3 mon	gpcp	51.39	-14.54	14.54	0.0047	-3.59	0.0005	-21.8540	0.0214	67.94	150	222	311	309	158	1150	231	
55	Linear	1	3 mon	gpcc	45.06	-1.76	1.76	0.0213	0.41	0.0750	-158.2970	0.2738	57.72	83	30	273	165	73	624	71	
56	Linear	1	3 mon	gpcc trmm	57.11	-14.14	14.14	-0.0439	-9.44	0.0155	-9.2075	-0.1246	69.18	182	219	364	365	168	1298	289	
57	Linear	1	3 mon	ghcn cams grid	46.83	-19.49	19.49	-0.0067	-3.86	0.0010	-26.3126	-0.0321	61.48	101	274	323	325	114	1137	226	
58	Linear	1	3 mon	gpi	66.01	-39.20	39.20	0.0022	-4.00	0.0001	-27.2906	0.0102	85.76	290	435	318	318	339	1700	395	
59	Linear	1	3 mon	trmm 3a46	82.66	-48.34	48.34	-0.0746	-9.52	0.0498	-14.0699	-0.2232	96.57	435	448	387	396	415	2081	448	
60	Linear	1	3 mon	trmm 3b43	58.39	-15.52	15.52	-0.0494	-9.25	0.0205	-9.7246	-0.1431	70.32	194	237	372	369	175	1347	303	
61	Linear	1	3 mon	ssmi	70.97	-35.97	35.97	-0.0312	-3.95	0.0178	-23.5975	-0.1333	87.15	350	422	343	368	350	1833	415	
62	Linear	1	3 mon	opi2	**41.06**	-2.65	2.65	0.0114	-3.52	0.0016	-12.0928	0.0401	**50.84**	24	58	296	294	17	689	86	
63	Linear	1	3 mon	opi3	43.89	-4.89	4.89	0.0098	-3.55	0.0014	-14.7785	0.0378	55.81	58	136	299	298	51	842	124	
64	Linear	1	3 mon	cmap	47.19	-12.75	12.75	0.0094	-3.65	0.0015	-17.8296	0.0391	61.17	106	212	300	297	112	1027	196	
65	Linear	1	3 mon	cmap2	47.07	-12.31	12.31	0.0094	-3.64	0.0015	-17.8293	0.0393	61.17	104	204	301	296	111	1016	189	
66	Linear	1	4 mon	reanalysis	59.34	-35.22	35.22	0.0395	-5.18	0.0510	-39.2028	0.2258	74.58	202	418	235	189	212	1256	267	
67	Linear	1	4 mon	gpcp	51.18	-14.53	14.53	0.0215	-3.80	0.0098	-21.1593	0.0987	66.99	148	221	272	257	153	1051	202	
68	Linear	1	4 mon	gpcc	46.06	-1.86	1.86	0.0164	0.40	0.0447	-160.2258	0.2114	58.23	92	33	290	198	79	692	88	
69	Linear	1	4 mon	gpcc trmm	56.84	-14.76	14.76	0.0399	-10.07	0.0129	-7.9243	0.1136	65.04	178	225	234	245	139	1021	193	
70	Linear	1	4 mon	ghcn cams grid	46.00	-19.60	19.60	0.0184	-4.26	0.0078	-25.1537	0.0885	60.18	91	276	280	267	99	1013	188	
71	Linear	1	4 mon	gpi	66.02	-39.24	39.24	0.0125	-4.39	0.0034	-26.8568	0.0579	85.28	291	436	294	284	330	1635	386	
72	Linear	1	4 mon	trmm 3a46	83.61	-51.21	51.21	-0.0043	-12.46	0.0002	-12.9171	-0.0127	93.49	439	455	321	321	396	1932	428	
73	Linear	1	4 mon	trmm 3b43	58.08	-15.55	15.55	0.0209	-9.91	0.0037	-8.5944	0.0605	66.87	191	238	276	281	152	1138	228	
74	Linear	1	4 mon	ssmi	71.01	-36.04	36.04	-0.0004	-5.04	0.0000	-22.6040	-0.0018	85.38	352	424	320	320	331	1747	400	
75	Linear	1	4 mon	opi2	**40.60**	-2.88	2.88	0.0294	-3.54	0.0106	-11.6097	0.1032	**49.96**	18	62	257	252	13	602	66	
76	Linear	1	4 mon	opi3	43.61	-5.05	5.05	0.0266	-3.60	0.0105	-14.2725	0.1026	54.98	55	139	262	254	38	748	106	
77	Linear	1	4 mon	cmap	47.10	-12.86	12.86	0.0271	-3.84	0.0128	-17.2322	0.1130	60.27	105	213	260	246	100	924	152	
78	Linear	1	4 mon	cmap2	47.00	-12.41	12.41	0.0268	-3.82	0.0125	-17.2424	0.1118	60.29	103	207	261	247	101	919	149	
79	*Linear*	*2*	*Yes*	*reanalysis*	*65.59*	*-57.76*	*57.76*	*0.2726*	*-26.34*	*0.1891*	*-2.0825*	*0.4349*	*105.46*	*282*	*467*	*79*	*77*	*441*	*1346*	*302*	Plot
80	Linear	2	Yes	gpcp	46.70	-7.70	7.70	0.4025	-11.81	0.2313	-0.2949	0.4809	68.35	97	177	71	62	164	571	59	
81	Linear	2	Yes	gpcc	42.63	20.46	20.46	0.6027	14.82	0.4668	0.1451	**0.6833**	54.88	39	279	48	16	36	418	22	
82	Linear	2	Yes	gpcc trmm	56.06	-29.93	29.93	0.1938	-44.33	0.0632	-1.3746	0.2514	78.57	172	384	87	177	266	1086	215	
83	Linear	2	Yes	ghcn cams grid	**41.09**	-10.73	10.73	0.4993	-12.65	0.3077	-0.0336	0.5547	61.06	25	194	62	31	109	421	25	
84	Linear	2	Yes	gpi	47.79	-25.95	25.95	0.4152	-16.01	0.3125	-0.4891	0.5590	74.30	116	340	70	30	209	765	110	
85	Linear	2	Yes	trmm 3a46	71.86	-58.23	58.23	0.0917	-51.87	0.0198	-3.2085	0.1406	105.28	360	468	140	235	439	1642	388	
86	Linear	2	Yes	trmm 3b43	55.82	-33.73	33.73	0.1592	-45.56	0.0425	-1.5798	0.2061	81.89	168	412	101	201	304	1186	243	
87	Linear	2	Yes	ssmi	52.67	-22.56	22.56	0.3741	-15.56	0.2376	-0.5579	0.4875	77.97	154	308	73	59	257	851	128	
88	Linear	2	Yes	opi2	42.15	4.38	4.38	0.5307	-4.51	0.2398	0.0470	0.4897	58.64	33	123	60	58	84	358	12	
89	Linear	2	Yes	opi3	42.27	2.52	2.52	0.4946	-6.12	0.2471	-0.0127	0.4971	60.44	34	55	63	52	105	309	6	
90	Linear	2	Yes	cmap	42.97	-4.70	4.70	0.4636	-9.99	0.2536	-0.0920	0.5036	62.77	47	131	67	48	125	418	24	
91	Linear	2	Yes	cmap2	43.03	-4.26	4.26	0.4614	-9.81	0.2514	-0.0963	0.5014	62.89	48	119	68	49	126	410	20	
92	Linear	2	No	reanalysis	97.17	-57.37	57.37	-0.1574	-7.38	0.1114	-7.5186	-0.3337	131.94	463	466	436	414	466	2245	461	
93	Linear	2	No	gpcp	72.81	-7.31	7.31	-0.1084	-14.92	0.0296	-3.0928	-0.1721	91.46	369	171	414	388	389	1731	398	
94	Linear	2	No	gpcc	66.51	18.84	18.84	0.0227	4.97	0.0018	-3.6669	0.0427	77.16	297	261	269	292	244	1363	312	
95	Linear	2	No	gpcc trmm	92.81	-28.26	28.26	-0.4630	-54.41	0.3049	-2.9994	-0.5522	110.89	452	360	463	450	447	2172	453	
96	Linear	2	No	ghcn cams grid	68.60	-10.34	10.34	-0.0840	-14.50	0.0154	-2.5968	-0.1240	85.74	332	187	396	364	338	1617	384	
97	Linear	2	No	gpi	78.91	-26.19	26.19	-0.0841	-7.75	0.0221	-3.9685	-0.1486	103.38	414	341	397	372	435	1959	434	
98	Linear	2	No	trmm 3a46	107.44	-55.31	55.31	-0.5205	-44.66	0.5056	-4.7312	-0.7111	137.92	467	458	465	462	467	2319	467	
99	Linear	2	No	trmm 3b43	93.05	-32.07	32.07	-0.5080	-53.28	0.3657	-3.1910	-0.6047	113.51	454	411	464	453	454	2236	459	
100	Linear	2	No	ssmi	83.90	-22.31	22.31	-0.1499	-9.46	0.0632	-3.8704	-0.2515	107.07	441	302	434	398	444	2019	444	
101	Linear	2	No	opi2	63.14	4.77	4.77	-0.1364	-16.76	0.0280	-1.9239	-0.1673	77.30	247	135	433	385	247	1447	340	

Eastern Brazil - Monthly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR
102	Linear	2	No	opi3	66.10	2.91	2.91	-0.1116	-16.09	0.0222	-2.1851	-0.1490	80.68	294	64	417	373	289	1437	334
103	Linear	2	No	cmap	68.66	-4.31	4.31	-0.1089	-15.25	0.0247	-2.5456	-0.1571	85.12	333	120	415	380	328	1576	374
104	Linear	2	No	cmap2	68.52	-3.86	3.86	-0.1079	-15.29	0.0243	-2.5419	-0.1558	85.08	326	99	413	378	327	1543	364
105	Linear	2	1 mon	reanalysis	95.84	-57.11	57.11	-0.1338	-8.45	0.0802	-7.2730	-0.2832	130.26	462	465	431	404	464	2226	458
106	Linear	2	1 mon	gpcp	71.40	-6.97	6.97	-0.1067	-14.97	0.0285	-3.0605	-0.1688	91.26	355	169	411	387	386	1708	396
107	Linear	2	1 mon	gpcc	63.95	19.50	19.50	0.0923	5.98	0.0298	-3.1489	0.1727	73.02	258	275	139	224	197	1093	218
108	Linear	2	1 mon	gpcc trmm	89.82	-23.85	23.85	-0.5993	-56.98	0.4847	-3.1551	-0.6962	112.06	449	325	467	461	450	2152	451
109	Linear	2	1 mon	ghcn cams grid	68.25	-10.01	10.01	-0.1041	-14.63	0.0234	-2.6625	-0.1531	86.67	318	185	410	375	347	1635	387
110	Linear	2	1 mon	gpi	77.95	-25.89	25.89	-0.0387	-8.65	0.0047	-3.6644	-0.0683	100.38	405	339	354	342	426	1866	420
111	Linear	2	1 mon	trmm 3a46	111.02	-55.64	55.64	-0.5721	-41.43	0.6164	-4.9841	-0.7851	139.96	468	459	466	468	468	2329	468
112	Linear	2	1 mon	trmm 3b43	91.69	-27.99	27.99	-0.6177	-54.80	0.5235	-3.3267	-0.7236	114.35	451	356	468	464	456	2195	456
113	Linear	2	1 mon	ssmi	82.52	-22.91	22.91	-0.1309	-9.93	0.0486	-3.8037	-0.2205	106.15	432	315	430	395	442	2014	442
114	Linear	2	1 mon	opi2	62.31	5.00	5.00	-0.1195	-16.49	0.0214	-1.8639	-0.1461	76.64	238	138	425	371	236	1408	322
115	Linear	2	1 mon	opi3	65.21	3.29	3.29	-0.1146	-16.20	0.0232	-2.1713	-0.1522	80.65	279	78	420	374	288	1439	337
116	Linear	2	1 mon	cmap	67.46	-3.92	3.92	-0.1130	-15.35	0.0263	-2.5346	-0.1622	85.14	308	100	419	383	329	1539	360
117	Linear	2	1 mon	cmap2	67.31	-3.48	3.48	-0.1114	-15.39	0.0256	-2.5285	-0.1600	85.07	306	85	416	382	326	1515	356
118	Linear	2	2 mon	reanalysis	94.33	-56.64	56.64	-0.1020	-9.88	0.0463	-6.9189	-0.2152	127.68	459	462	409	394	463	2187	455
119	Linear	2	2 mon	gpcp	68.59	-6.58	6.58	-0.0757	-14.78	0.0142	-2.8794	-0.1193	89.36	329	167	388	362	365	1611	383
120	Linear	2	2 mon	gpcc	60.01	20.51	20.51	0.1485	7.23	0.0768	-2.7781	0.2771	69.60	212	280	105	162	172	931	156
121	Linear	2	2 mon	gpcc trmm	82.58	-18.65	18.65	-0.4429	-52.20	0.2752	-2.7715	-0.5246	101.91	434	259	461	447	431	2032	445
122	Linear	2	2 mon	ghcn cams grid	65.58	-9.73	9.73	-0.0856	-14.59	0.0158	-2.5660	-0.1256	85.68	281	183	399	366	335	1564	371
123	Linear	2	2 mon	gpi	75.66	-25.34	25.34	0.0073	-9.26	0.0002	-3.3542	0.0128	97.15	390	337	307	316	416	1766	406
124	Linear	2	2 mon	trmm 3a46	106.47	-54.75	54.75	-0.4250	-38.95	0.3708	-4.8005	-0.6090	131.70	466	457	459	454	465	2301	466
125	Linear	2	2 mon	trmm 3b43	84.63	-22.92	22.92	-0.4240	-49.95	0.2588	-2.8508	-0.5087	102.98	442	316	458	443	434	2093	449
126	Linear	2	2 mon	ssmi	81.81	-23.47	23.47	-0.1118	-11.26	0.0384	-4.0127	-0.1959	104.26	427	324	418	392	437	1998	441
127	Linear	2	2 mon	opi2	61.27	5.22	5.22	-0.0970	-16.09	0.0140	-1.7894	-0.1184	75.78	225	140	405	361	224	1355	308
128	Linear	2	2 mon	opi3	62.54	3.57	3.57	-0.0768	-15.57	0.0103	-2.0260	-0.1017	78.92	243	91	391	353	268	1346	301
129	Linear	2	2 mon	cmap	64.52	-3.57	3.57	-0.0721	-14.97	0.0106	-2.3451	-0.1031	82.98	267	90	385	359	312	1413	325
130	Linear	2	2 mon	cmap2	64.36	-3.13	3.13	-0.0720	-15.00	0.0106	-2.3453	-0.1030	82.98	265	74	384	357	313	1393	320
131	Linear	2	3 mon	reanalysis	93.84	-56.58	56.58	-0.0298	-12.85	0.0039	-6.2738	-0.0628	122.52	457	461	342	341	462	2063	446
132	Linear	2	3 mon	gpcp	68.60	-6.45	6.45	-0.0440	-14.45	0.0048	-2.7241	-0.0694	87.66	331	165	365	343	353	1557	366
133	Linear	2	3 mon	gpcc	61.05	20.95	20.95	0.1143	7.37	0.0478	-3.1763	0.2185	71.66	223	286	126	194	189	1018	191
134	Linear	2	3 mon	gpcc trmm	75.82	-15.95	15.95	-0.2369	-45.17	0.0863	-2.3635	-0.2937	92.91	391	242	449	407	395	1884	423
135	Linear	2	3 mon	ghcn cams grid	65.05	-9.63	9.63	-0.0269	-14.23	0.0016	-2.3148	-0.0394	82.71	275	182	338	331	311	1437	336
136	Linear	2	3 mon	gpi	76.14	-24.87	24.87	0.0502	-9.56	0.0079	-3.1184	0.0891	94.08	394	330	213	266	402	1605	381
137	Linear	2	3 mon	trmm 3a46	101.30	-53.10	53.10	-0.2311	-38.32	0.1196	-4.2843	-0.3458	121.50	465	456	448	418	461	2248	462
138	Linear	2	3 mon	trmm 3b43	77.60	-20.19	20.19	-0.2291	-44.02	0.0827	-2.4572	-0.2876	94.19	403	278	446	406	405	1938	430
139	Linear	2	3 mon	ssmi	81.50	-24.06	24.06	-0.0714	-12.56	0.0160	-3.8587	-0.1265	101.80	426	326	382	367	430	1931	427
140	Linear	2	3 mon	opi2	59.37	5.33	5.33	-0.0289	-14.67	0.0012	-1.5890	-0.0353	73.09	203	143	340	327	202	1215	253
141	Linear	2	3 mon	opi3	61.36	3.72	3.72	-0.0312	-14.67	0.0017	-1.8684	-0.0413	76.94	226	95	344	332	241	1238	263
142	Linear	2	3 mon	cmap	63.72	-3.42	3.42	-0.0263	-14.39	0.0014	-2.1596	-0.0377	80.75	255	83	337	330	292	1297	288
143	Linear	2	3 mon	cmap2	63.62	-2.98	2.98	-0.0259	-14.40	0.0014	-2.1581	-0.0370	80.73	253	68	336	329	290	1276	272
144	Linear	2	4 mon	reanalysis	93.43	-56.85	56.85	0.0162	-14.79	0.0012	-5.8632	0.0342	119.23	456	463	291	300	460	1970	437
145	Linear	2	4 mon	gpcp	68.23	-6.55	6.55	-0.0103	-14.18	0.0003	-2.5553	-0.0163	85.81	317	166	325	322	340	1470	348
146	Linear	2	4 mon	gpcc	64.42	20.77	20.77	0.0310	6.31	0.0035	-3.7803	0.0593	76.74	266	284	255	283	237	1325	296
147	Linear	2	4 mon	gpcc trmm	67.65	-16.79	16.79	0.0236	-39.49	0.0009	-1.5746	0.0293	82.05	312	251	267	301	306	1437	335
148	Linear	2	4 mon	ghcn cams grid	64.34	-9.74	9.74	0.0116	-14.05	0.0003	-2.1480	0.0171	80.75	264	184	295	313	291	1347	304
149	Linear	2	4 mon	gpi	75.03	-24.97	24.97	0.0526	-9.52	0.0087	-3.1033	0.0933	94.13	385	331	203	283	403	1585	377
150	Linear	2	4 mon	trmm 3a46	95.59	-56.00	56.00	-0.0390	-41.09	0.0033	-3.4424	-0.0576	112.57	461	460	355	340	452	2068	447
151	Linear	2	4 mon	trmm 3b43	70.18	-21.23	21.23	0.0229	-39.61	0.0008	-1.6765	0.0288	83.66	341	289	268	303	316	1517	357
152	Linear	2	4 mon	ssmi	80.76	-24.69	24.69	-0.0249	-13.21	0.0019	-3.5906	-0.0441	98.90	425	328	335	335	421	1844	418
153	Linear	2	4 mon	opi2	58.07	5.27	5.27	0.0192	-13.73	0.0006	-1.4447	0.0235	71.16	190	142	279	306	186	1103	222
154	Linear	2	4 mon	opi3	60.67	3.60	3.60	0.0077	-13.96	0.0001	-1.7292	0.0102	75.18	219	93	305	317	217	1151	232
155	Linear	2	4 mon	cmap	63.39	-3.53	3.53	0.0105	-13.99	0.0002	-2.0076	0.0150	78.93	250	87	297	314	269	1217	257
156	Linear	2	4 mon	cmap2	63.26	-3.08	3.08	0.0103	-13.99	0.0002	-2.0085	0.0148	78.94	249	71	298	315	270	1203	246
157	Point	1	Yes	reanalysis	75.89	-28.44	28.44	**0.7582**	-20.87	0.2825	0.1658	0.5315	87.57	392	364	22	39	352	1169	238
158	Point	1	Yes	gpcp	74.90	-6.16	6.16	0.5967	-1.49	0.1584	0.0821	0.3980	93.56	384	156	50	98	397	1085	214
159	Point	1	Yes	gpcc	70.37	3.22	3.22	**0.7566**	4.05	0.2083	0.1857	0.4564	88.57	343	76	23	67	357	866	135
160	Point	1	Yes	gpcc trmm	66.12	**-1.20**	1.20	**0.8581**	-0.68	0.2778	0.2701	0.5271	83.74	295	16	6	40	317	674	84
161	Point	1	Yes	ghcn cams grid	70.76	-13.04	13.04	**0.8441**	-10.63	0.2493	0.2222	0.4993	84.43	348	216	9	50	320	943	164
162	Point	1	Yes	gpi	78.53	-30.21	30.21	0.6716	-18.52	0.2626	0.1041	0.5124	92.45	409	386	38	46	393	1272	271
163	Point	1	Yes	trmm 3a46	69.08	-36.25	36.25	**0.8335**	-31.03	0.4172	0.2565	**0.6459**	82.36	336	425	11	19	310	1101	221
164	Point	1	Yes	trmm 3b43	69.15	-4.25	4.25	**0.7783**	-2.78	0.2448	0.2230	0.4947	85.68	337	118	18	53	336	862	133
165	Point	1	Yes	ssmi	73.96	-26.52	26.52	0.6945	-17.03	0.2772	0.1509	0.5265	90.68	380	348	34	41	375	1178	240
166	Point	1	Yes	opi2	72.56	4.71	4.71	**0.7787**	4.46	0.1550	0.1401	0.3936	90.20	366	132	17	102	369	986	177
167	Point	1	Yes	opi3	72.88	2.57	2.57	0.7114	2.87	0.1569	0.1303	0.3961	90.71	371	57	32	101	376	937	160
168	Point	1	Yes	cmap	73.59	-4.45	4.45	0.6854	-1.80	0.1717	0.1334	0.4143	90.74	377	124	35	88	378	1002	184
169	Point	1	Yes	cmap2	73.56	-4.01	4.01	0.6780	-1.43	0.1686	0.1289	0.4106	90.97	376	104	36	90	382	988	178
170	Point	1	No	reanalysis	56.12	-28.27	28.27	0.0291	2.12	0.0502	-66.2859	0.2241	71.63	173	362	258	190	188	1171	239
171	Point	1	No	gpcp	48.65	-6.28	6.28	0.0170	5.12	0.0110	-36.8369	0.1047	65.19	128	159	288	250	140	965	170
172	Point	1	No	gpcc	44.87	2.98	2.98	0.0594	6.17	0.1776	-44.4565	0.4214	56.29	80	69	189	85	54	477	34
173	Point	1	No	gpcc trmm	48.28	**1.22**	1.22	-0.0050	4.90	0.0005	-19.1805	-0.0216	62.07	121	18	322	323	119	903	143
174	Point	1	No	ghcn cams grid	43.48	-12.40	12.40	0.0180	2.77	0.0135	-42.3935	0.1163	57.63	54	206	284	244	72	860	130
175	Point	1	No	gpi	59.61	-29.59	29.59	0.0211	5.26	0.0178	-44.5269	0.1333	79.59	206	379	275	238	277	1375	316
176	Point	1	No	trmm 3a46	67.22	-25.41	25.41	-0.0077	6.16	0.0013	-25.9243	-0.0367	80.29	305	338	324	328	285	1580	375
177	Point	1	No	trmm 3b43	50.01	-1.87	1.87	-0.0228	4.93	0.0106	-21.2191	-0.1028	64.68	139	35	333	355	137	999	182
178	Point	1	No	ssmi	64.04	-25.17	25.17	0.0089	5.64	0.0028	-39.3384	0.0530	79.09	261	333	304	288	272	1458	344
179	Point	1	No	opi2	**39.55**	6.36	6.36	0.0259	5.27	0.0147	-21.1441	0.1211	**49.43**	13	163	263	242	11	692	87
180	Point	1	No	opi3	42.35	4.22	4.22	0.0184	5.22	0.0090	-25.7587	0.0951	54.34	35	115	283	261	30	724	98
181	Point	1	No	cmap	44.78	-3.16	3.16	0.0218	5.09	0.0148	-30.0279	0.1218	58.67	75	75	271	241	85	747	105
182	Point	1	No	cmap2	44.80	-2.71	2.71	0.0213	5.11	0.0143	-30.1317	0.1196	58.76	77	59	274	243	87	740	101
183	Point	1	1 mon	reanalysis	55.39	-28.20	28.20	0.0075	2.80	0.0033	-68.8675	0.0574	73.03	165	358	306	285	199	1313	292
184	Point	1	1 mon	gpcp	47.56	-5.97	5.97	0.0449	4.84	0.0761	-34.6452	0.2759	63.29	112	154	225	163	130	784	113
185	Point	1	1 mon	gpcc	43.89	3.73	3.73	0.0750	6.16	0.2767	-42.0593	0.5261	54.97	59	96	154	43	37	389	19
186	Point	1	1 mon	gpcc trmm	47.46	**0.59**	0.59	0.0652	4.09	0.0887	-18.1343	0.2978	58.16	110	4	175	146	77	512	44
187	Point	1	1 mon	ghcn cams grid	42.54	-12.44	12.44	0.0413	2.36	0.0727	-41.2427	0.2696	56.36	38	208	231	169	56	702	92
188	Point	1	1 mon	gpi	57.33	-29.23	29.23	0.0612	3.84	0.1488	-40.9816	0.3858	76.60	184	372	187	105	235	1083	212
189	Point	1	1 mon	trmm 3a46	63.93	-27.71	27.71	0.0410	3.85	0.0415	-26.1500	0.2038	77.73	257	351	233	204	255	1300	290
190	Point	1	1 mon	trmm 3b43	47.51	**-1.06**	1.06	0.0657	3.90	0.0934	-18.8134	0.3056	58.76	111	12	171	142	86	522	48
191	Point	1	1 mon	ssmi	61.74	-24.86	24.86	0.0477	4.44	0.0814	-36.2435	0.2853	76.31	231	329	220	155	232	1167	235
192	Point	1	1 mon	opi2	**38.62**	6.34	6.34	0.0629	5.34	0.0869	-19.5682	0.2947	**47.65**	8	161	182	147	8	506	42
193	Point	1	1 mon	opi3	**41.05**	4.19	4.19	0.0523	5.22	0.0729	-24.0169	0.2700	**52.55**	23	113	207	168	23	534	51
194	Point	1	1 mon	cmap	43.62	-3.33	3.33	0.0524	4.86	0.0858	-28.1142	0.2928	56.84	56	80	205	149	63	553	54
195	Point	1	1 mon	cmap2	43.63	-2.88	2.88	0.0517	4.89	0.0838	-28.2271	0.2896	56.95	57	63	209	152	65	546	52
196	Point	1	2 mon	reanalysis	55.12	-28.18	28.18	-0.0188	3.63	0.0208	-71.9859	-0.1444	74.69	163	357	329	370	213	1432	333
197	Point	1	2 mon	gpcp	47.88	-5.61	5.61	0.0486	4.85	0.0889	-34.2288	0.2982	62.92	117	148	218	145	127	755	109
198	Point	1	2 mon	gpcc	44.26	4.34	4.34	0.0650	6.22	0.2052	-42.5154	0.4530	55.47	63	122	178	69	44	476	33
199	Point	1	2 mon	gpcc trmm	49.25	**-0.14**	0.14	0.0485	4.15	0.0486	-18.6700	0.2205	59.48	132	1	219	192	93	637	78
200	Point	1	2 mon	ghcn cams grid	42.90	-12.51	12.51	0.0411	2.32	0.0731	-41.8082	0.2703	56.41	46	209	232	167	57	711	96
201	Point	1	2 mon	gpi	57.44	-29.01	29.01	0.0676	3.63	0.1813	-40.2860	0.4258	76.16	187	369	166	82	228	1032	199
202	Point	1	2 mon	trmm 3a46	65.73	-29.65	29.65	0.0537	3.39	0.0693	-25.2843	0.2632	77.38	283	382	202	172	249	1288	280

Eastern Brazil - Monthly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR
203	Point	1	2 mon	trmm 3b43	50.71	**-0.84**	0.84	0.0493	4.02	0.0527	-19.5132	0.2296	60.29	144	8	215	188	103	658	82
204	Point	1	2 mon	ssmi	62.24	-24.99	24.99	0.0618	3.92	0.1375	-35.6032	0.3708	75.52	236	332	184	109	222	1083	211
205	Point	1	2 mon	opi2	**39.38**	6.35	6.35	0.0651	5.38	0.0936	-19.5389	0.3059	**47.61**	11	162	176	141	7	497	40
206	Point	1	2 mon	opi3	41.97	4.13	4.13	0.0541	5.25	0.0783	-23.9841	0.2797	**52.51**	30	108	200	161	22	521	47
207	Point	1	2 mon	cmap	44.46	-3.44	3.44	0.0524	4.89	0.0861	-28.1715	0.2934	56.89	69	84	204	148	64	569	58
208	Point	1	2 mon	cmap2	44.48	-2.99	2.99	0.0519	4.92	0.0846	-28.2762	0.2909	57.00	70	70	208	151	66	565	57
209	Point	1	3 mon	reanalysis	55.93	-28.25	28.25	-0.0347	4.14	0.0714	-73.8516	-0.2672	75.69	169	359	347	401	223	1499	355
210	Point	1	3 mon	gpcp	48.34	-5.61	5.61	0.0447	4.90	0.0753	-34.5201	0.2744	63.29	122	147	226	164	131	790	115
211	Point	1	3 mon	gpcc	45.45	4.09	4.09	0.0488	6.19	0.1159	-44.2212	0.3404	56.62	86	107	217	123	60	593	62
212	Point	1	3 mon	gpcc trmm	51.26	**-0.29**	0.29	0.0430	4.02	0.0386	-19.0280	0.1964	60.34	149	2	228	213	104	696	89
213	Point	1	3 mon	ghcn cams grid	43.27	-12.59	12.59	0.0351	2.39	0.0536	-42.4358	0.2314	56.79	50	210	246	186	62	754	108
214	Point	1	3 mon	gpi	58.51	-29.32	29.32	0.0507	4.17	0.1018	-41.7038	0.3191	77.57	196	373	211	136	252	1168	237
215	Point	1	3 mon	trmm 3a46	66.73	-31.05	31.05	0.0382	3.69	0.0349	-26.2200	0.1868	79.47	299	398	239	217	276	1429	331
216	Point	1	3 mon	trmm 3b43	50.95	-1.84	1.84	0.0379	3.90	0.0310	-19.9502	0.1759	61.24	146	32	240	221	113	752	107
217	Point	1	3 mon	ssmi	63.01	-25.31	25.31	0.0547	4.05	0.1084	-36.3382	0.3293	76.29	246	335	198	129	229	1137	227
218	Point	1	3 mon	opi2	**39.44**	6.20	6.20	0.0613	5.37	0.0825	-19.6413	0.2872	**47.82**	12	157	186	153	9	517	45
219	Point	1	3 mon	opi3	42.07	3.96	3.96	0.0495	5.25	0.0652	-24.1465	0.2553	**52.78**	32	102	214	175	24	547	53
220	Point	1	3 mon	cmap	44.57	-3.84	3.84	0.0467	4.92	0.0674	-28.1819	0.2596	57.01	72	98	223	174	67	634	77
221	Point	1	3 mon	cmap2	44.51	-3.39	3.39	0.0468	4.94	0.0679	-28.2423	0.2605	57.07	71	81	222	173	68	615	69
222	Point	1	4 mon	reanalysis	57.05	-28.34	28.34	-0.0426	4.40	0.1070	-74.5986	-0.3272	76.12	181	363	360	410	227	1541	362
223	Point	1	4 mon	gpcp	50.04	-5.58	5.58	0.0171	5.20	0.0109	-36.6020	0.1046	65.24	140	146	287	251	141	965	171
224	Point	1	4 mon	gpcc	47.96	3.98	3.98	0.0132	6.25	0.0085	-47.7118	0.0921	58.96	118	103	293	265	90	869	137
225	Point	1	4 mon	gpcc trmm	50.15	**-0.91**	0.91	0.0546	3.71	0.0631	-18.8417	0.2513	60.07	142	9	199	178	98	626	72
226	Point	1	4 mon	ghcn cams grid	44.16	-12.69	12.69	0.0148	2.70	0.0095	-44.1797	0.0972	57.94	62	211	292	259	76	900	141
227	Point	1	4 mon	gpi	60.38	-29.35	29.35	0.0168	5.35	0.0112	-44.3894	0.1057	80.16	216	374	289	248	282	1409	323
228	Point	1	4 mon	trmm 3a46	67.92	-33.83	33.83	0.0417	3.15	0.0405	-26.2168	0.2012	79.80	314	413	230	210	279	1446	339
229	Point	1	4 mon	trmm 3b43	49.65	-1.88	1.88	0.0491	3.61	0.0530	-19.8056	0.2301	61.03	135	36	216	187	108	682	85
230	Point	1	4 mon	ssmi	64.67	-25.31	25.31	0.0309	4.67	0.0350	-38.5790	0.1871	78.26	269	336	256	216	261	1338	299
231	Point	1	4 mon	opi2	41.13	5.99	5.99	0.0209	5.32	0.0096	-21.2944	0.0978	**49.78**	26	155	277	258	12	728	100
232	Point	1	4 mon	opi3	43.29	3.81	3.81	0.0203	5.28	0.0110	-25.6486	0.1047	54.42	52	97	278	249	32	708	94
233	Point	1	4 mon	cmap	45.90	-3.93	3.93	0.0184	5.18	0.0104	-29.9271	0.1021	58.79	90	101	281	255	88	815	119
234	Point	1	4 mon	cmap2	45.84	-3.48	3.48	0.0184	5.18	0.0105	-29.9940	0.1027	58.85	89	86	282	253	89	799	117
235	Point	2	Yes	reanalysis	54.40	-32.01	32.01	0.4841	-9.73	0.3480	-0.2132	0.5900	86.60	162	410	66	28	346	1012	187
236	Point	2	Yes	gpcp	49.74	18.05	18.05	0.6532	15.66	0.3555	0.2027	0.5962	70.21	137	254	40	26	174	631	75
237	Point	2	Yes	gpcc	59.69	51.05	51.05	**0.8919**	49.51	0.5074	0.1329	**0.7123**	78.47	208	454	4	14	265	945	166
238	Point	2	Yes	gpcc trmm	44.90	-12.91	12.91	0.3707	-24.16	0.2571	-0.5552	0.5071	60.29	82	214	74	47	102	519	46
239	Point	2	Yes	ghcn cams grid	43.18	15.02	15.02	**0.7925**	14.22	0.4523	0.3848	**0.6725**	61.67	49	228	15	17	115	424	26
240	Point	2	Yes	gpi	48.07	**0.92**	0.92	0.6393	7.05	0.4219	0.2875	**0.6496**	68.11	119	10	44	18	160	351	10
241	Point	2	Yes	trmm 3a46	56.51	-40.63	40.63	0.2942	-35.69	0.2298	-1.8001	0.4793	80.84	176	443	77	63	293	1052	203
242	Point	2	Yes	trmm 3b43	45.48	-16.72	16.72	0.3543	-25.80	0.2340	-0.6627	0.4837	62.34	87	250	75	61	122	595	63
243	Point	2	Yes	ssmi	53.38	4.33	4.33	0.5973	8.83	0.3544	0.1905	0.5954	73.48	155	121	49	27	204	556	55
244	Point	2	Yes	opi2	51.10	30.13	30.13	**0.8465**	27.22	0.3560	0.1975	**0.5966**	70.44	147	385	7	25	179	743	104
245	Point	2	Yes	opi3	49.67	28.27	28.27	**0.7935**	24.74	0.3712	0.2168	**0.6092**	69.58	136	361	14	22	171	704	93
246	Point	2	Yes	cmap	47.44	21.05	21.05	**0.7458**	18.54	0.3830	0.2669	**0.6189**	67.32	108	287	25	20	155	595	64
247	Point	2	Yes	cmap2	47.75	21.49	21.49	0.7417	18.83	0.3791	0.2585	**0.6157**	67.71	114	292	27	21	157	611	67
248	Point	2	No	reanalysis	82.29	-31.62	31.62	0.0540	9.23	0.0086	-2.9591	0.0929	110.89	431	408	201	264	448	1752	403
249	Point	2	No	gpcp	69.18	18.44	18.44	0.1423	12.55	0.0336	-1.2957	0.1833	84.44	338	257	110	218	321	1244	264
250	Point	2	No	gpcc	74.06	49.43	49.43	0.3120	39.67	0.1336	-1.2567	0.3655	86.29	381	449	76	112	344	1362	311
251	Point	2	No	gpcc trmm	80.60	-11.25	11.25	-0.2861	-34.23	0.2334	-4.5653	-0.4832	92.39	424	197	451	439	392	1903	424
252	Point	2	No	ghcn cams grid	63.43	15.41	15.41	0.2091	12.37	0.0627	-0.9104	0.2504	77.03	251	236	83	179	242	991	180
253	Point	2	No	gpi	74.81	**0.68**	0.68	0.1401	15.31	0.0380	-1.3958	0.1950	91.13	383	5	111	214	385	1098	220
254	Point	2	No	trmm 3a46	93.30	-37.71	37.71	-0.3179	-28.48	0.3751	-6.9235	-0.6125	115.00	455	427	456	455	457	2250	463
255	Point	2	No	trmm 3b43	80.35	-15.05	15.05	-0.3130	-33.52	0.2782	-4.7654	-0.5274	94.04	422	229	454	448	401	1954	432
256	Point	2	No	ssmi	79.74	4.58	4.58	0.0733	14.93	0.0099	-1.5738	0.0993	96.34	417	127	156	256	413	1369	315
257	Point	2	No	opi2	64.87	30.52	30.52	0.1793	14.97	0.0318	-0.9341	0.1783	77.50	271	388	91	219	251	1220	258
258	Point	2	No	opi3	65.17	28.66	28.66	0.1873	14.77	0.0412	-0.9982	0.2029	78.78	278	367	89	207	267	1208	248
259	Point	2	No	cmap	65.78	21.44	21.44	0.1733	13.28	0.0412	-1.0435	0.2029	79.67	286	291	93	208	278	1156	233
260	Point	2	No	cmap2	65.79	21.88	21.88	0.1725	13.35	0.0408	-1.0528	0.2020	79.85	287	295	95	209	280	1166	234
261	Point	2	1 mon	reanalysis	83.27	-31.27	31.27	0.0472	9.62	0.0066	-2.9868	0.0811	111.44	438	405	221	271	449	1784	407
262	Point	2	1 mon	gpcp	69.47	18.88	18.88	0.1264	12.56	0.0263	-1.3457	0.1622	85.48	340	262	121	226	332	1281	275
263	Point	2	1 mon	gpcc	68.80	49.78	49.78	0.4009	40.86	0.2185	-1.0187	0.4674	81.72	334	450	72	64	302	1222	260
264	Point	2	1 mon	gpcc trmm	79.80	-7.62	7.62	-0.4368	-37.38	0.5061	-5.0080	-0.7114	96.10	418	175	460	463	412	1928	426
265	Point	2	1 mon	ghcn cams grid	65.09	15.83	15.83	0.1711	12.37	0.0417	-1.0173	0.2042	79.27	276	240	96	203	274	1089	216
266	Point	2	1 mon	gpi	70.35	**0.74**	0.74	0.2088	13.88	0.0847	-1.1312	0.2910	85.91	342	7	84	150	341	924	153
267	Point	2	1 mon	trmm 3a46	97.29	-38.91	38.91	-0.3864	-26.38	0.5484	-7.4123	-0.7406	118.84	464	431	457	467	459	2278	465
268	Point	2	1 mon	trmm 3b43	80.41	-11.76	11.76	-0.4430	-35.68	0.5293	-5.1775	-0.7275	97.45	423	199	462	466	417	1967	436
269	Point	2	1 mon	ssmi	77.20	3.61	3.61	0.1092	13.83	0.0222	-1.4591	0.1490	93.75	400	94	129	228	398	1249	265
270	Point	2	1 mon	opi2	65.16	30.85	30.85	0.1948	15.39	0.0373	-0.9061	0.1932	77.06	277	395	86	215	243	1216	255
271	Point	2	1 mon	opi3	66.08	29.14	29.14	0.1643	14.52	0.0313	-1.0515	0.1769	79.94	293	370	100	220	281	1264	269
272	Point	2	1 mon	cmap	66.00	21.92	21.92	0.1499	13.19	0.0305	-1.1046	0.1746	80.97	289	296	104	223	294	1206	247
273	Point	2	1 mon	cmap2	66.04	22.37	22.37	0.1506	13.26	0.0308	-1.1099	0.1755	81.07	292	304	102	222	295	1215	254
274	Point	2	2 mon	reanalysis	85.55	-30.76	30.76	0.0350	10.19	0.0036	-3.0289	0.0599	112.23	444	391	247	282	451	1815	412
275	Point	2	2 mon	gpcp	71.88	19.30	19.30	0.1017	12.45	0.0169	-1.4210	0.1300	87.00	361	266	132	240	349	1348	305
276	Point	2	2 mon	gpcc	70.43	50.66	50.66	0.4191	41.60	0.2357	-0.9883	0.4855	81.35	345	451	69	60	296	1221	259
277	Point	2	2 mon	gpcc trmm	75.17	-3.41	3.41	-0.3142	-33.98	0.2649	-4.3767	-0.5147	87.99	386	82	455	444	354	1721	397
278	Point	2	2 mon	ghcn cams grid	67.63	16.15	16.15	0.1262	12.24	0.0226	-1.1425	0.1502	81.84	311	246	122	227	303	1209	249
279	Point	2	2 mon	gpi	70.42	**1.20**	1.20	0.2055	14.06	0.0816	-1.1389	0.2856	86.28	344	15	85	154	343	941	163
280	Point	2	2 mon	trmm 3a46	95.32	-39.12	39.12	-0.3109	-24.59	0.3758	-7.2763	-0.6130	114.31	460	433	453	456	455	2257	464
281	Point	2	2 mon	trmm 3b43	76.82	-7.69	7.69	-0.3009	-32.38	0.2493	-4.4510	-0.4993	88.60	399	176	452	441	358	1826	414
282	Point	2	2 mon	ssmi	77.37	2.24	2.24	0.0650	12.51	0.0092	-1.8916	0.0958	94.17	402	44	177	260	404	1287	277
283	Point	2	2 mon	opi2	66.91	31.10	31.10	0.1441	14.48	0.0203	-1.0065	0.1426	79.20	300	402	109	234	273	1318	293
284	Point	2	2 mon	opi3	68.30	29.45	29.45	0.1351	14.08	0.0211	-1.1187	0.1451	81.39	319	377	114	232	297	1339	300
285	Point	2	2 mon	cmap	68.43	22.31	22.31	0.1273	13.03	0.0218	-1.1624	0.1477	82.22	323	301	118	230	307	1279	273
286	Point	2	2 mon	cmap2	68.52	22.75	22.75	0.1274	13.09	0.0219	-1.1693	0.1479	82.35	327	311	117	229	309	1293	284
287	Point	2	3 mon	reanalysis	88.79	-30.65	30.65	0.0256	10.74	0.0019	-3.0866	0.0439	113.13	448	389	264	291	453	1845	419
288	Point	2	3 mon	gpcp	72.35	19.48	19.48	0.0350	12.09	0.0020	-1.6441	0.0448	91.00	364	272	248	290	383	1557	367
289	Point	2	3 mon	gpcc	71.76	50.93	50.93	0.2755	39.82	0.1027	-1.3895	0.3205	89.06	357	453	78	134	361	1383	318
290	Point	2	3 mon	gpcc trmm	71.36	-1.72	1.72	-0.1810	-29.62	0.0928	-3.8619	-0.3047	82.24	354	29	441	408	308	1540	361
291	Point	2	3 mon	ghcn cams grid	67.72	16.30	16.30	0.0790	12.18	0.0088	-1.2801	0.0941	84.50	313	248	151	262	322	1296	287
292	Point	2	3 mon	gpi	72.77	**1.52**	1.52	0.1708	14.89	0.0566	-1.2778	0.2379	89.11	368	23	97	182	362	1032	201
293	Point	2	3 mon	trmm 3a46	92.96	-38.59	38.59	-0.1731	-24.50	0.1224	-6.4744	-0.3499	106.98	453	429	438	420	443	2183	454
294	Point	2	3 mon	trmm 3b43	73.19	-5.96	5.96	-0.1802	-28.84	0.0944	-3.9808	-0.3072	83.24	374	153	440	409	315	1691	394
295	Point	2	3 mon	ssmi	78.74	**1.25**	1.25	0.0377	11.58	0.0033	-2.1269	0.0572	95.41	412	19	243	286	407	1367	313
296	Point	2	3 mon	opi2	67.15	31.26	31.26	0.0822	13.42	0.0066	-1.1321	0.0814	81.71	304	404	147	269	301	1425	329
297	Point	2	3 mon	opi3	68.50	29.66	29.66	0.0664	13.01	0.0051	-1.2821	0.0714	84.54	324	383	169	274	324	1474	349
298	Point	2	3 mon	cmap	68.50	22.51	22.51	0.0653	12.52	0.0058	-1.3339	0.0759	85.49	325	307	174	273	333	1412	324
299	Point	2	3 mon	cmap2	68.60	22.96	22.96	0.0654	12.55	0.0058	-1.3412	0.0760	85.63	330	318	173	272	334	1427	330
300	Point	2	4 mon	reanalysis	94.14	-30.81	30.81	-0.0183	12.72	0.0010	-3.3435	-0.0314	116.79	458	392	328	324	458	1960	435
301	Point	2	4 mon	gpcp	76.41	19.48	19.48	-0.0636	11.45	0.0066	-1.9672	-0.0814	96.53	396	271	378	348	414	1807	411
302	Point	2	4 mon	gpcc	82.02	50.90	50.90	0.0249	36.35	0.0008	-2.0668	0.0289	100.99	429	452	266	302	427	1876	421
303	Point	2	4 mon	gpcc trmm	65.88	-2.77	2.77	-0.0436	-27.03	0.0055	-3.1267	-0.0738	76.07	288	60	363	347	225	1283	276

Eastern Brazil - Monthly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
304	**Point**	2	4 mon	ghcn cams grid	71.69	16.29	16.29	-0.0364	11.77	0.0019	-1.6075	-0.0434	90.49	356	247	350	334	372	1659	391	
305	**Point**	2	4 mon	gpi	79.96	**1.51**	1.51	0.0503	17.00	0.0049	-1.7463	0.0701	98.03	419	22	212	276	419	1348	306	
306	**Point**	2	4 mon	trmm 3a46	90.21	-41.72	41.72	-0.0768	-26.27	0.0237	-5.7554	-0.1538	102.17	450	444	390	377	433	2094	450	
307	**Point**	2	4 mon	trmm 3b43	67.02	-7.21	7.21	-0.0405	-26.78	0.0048	-3.2151	-0.0695	76.88	303	170	358	344	240	1415	326	
308	**Point**	2	4 mon	ssmi	83.86	**0.69**	0.69	-0.0349	12.28	0.0028	-2.4798	-0.0532	100.35	440	6	348	339	425	1558	368	
309	**Point**	2	4 mon	opi2	68.59	31.30	31.30	-0.0346	11.26	0.0012	-1.3618	-0.0343	86.12	328	406	346	326	342	1748	402	
310	**Point**	2	4 mon	opi3	71.08	29.63	29.63	-0.0488	11.07	0.0027	-1.5464	-0.0524	89.42	353	381	369	338	366	1807	410	
311	**Point**	2	4 mon	cmap	72.14	22.50	22.50	-0.0430	11.48	0.0025	-1.6257	-0.0499	90.80	362	306	362	337	380	1747	401	
312	**Point**	2	4 mon	cmap2	72.23	22.95	22.95	-0.0427	11.46	0.0025	-1.6326	-0.0496	90.92	363	317	361	336	381	1758	404	
313	**Area**	1	Yes	reanalysis	75.37	-26.47	26.47	**0.7978**	-20.14	0.3032	0.2099	0.5507	86.56	387	347	13	34	345	1126	224	
314	**Area**	1	Yes	gpcp	74.67	-4.64	4.64	0.6438	-0.51	0.1791	0.1220	0.4232	92.86	382	128	41	83	394	1028	197	
315	**Area**	1	Yes	gpcc	70.74	2.51	2.51	**0.7689**	3.29	0.2132	0.1933	0.4618	88.56	347	54	20	66	356	843	125	
316	**Area**	1	Yes	gpcc trmm	65.75	**4.22**	4.22	**0.9733**	4.32	0.3327	0.3307	0.5768	83.12	284	114	1	29	314	742	103	
317	**Area**	1	Yes	ghcn cams grid	70.70	-11.07	11.07	**0.8860**	-9.31	0.2662	0.2488	0.5159	84.28	346	196	5	45	319	911	146	
318	**Area**	1	Yes	gpi	78.23	-28.60	28.60	0.7091	-18.24	0.2832	0.1526	0.5322	91.42	406	366	33	38	388	1231	261	
319	**Area**	1	Yes	trmm 3a46	65.45	-29.60	29.60	**0.9410**	-27.75	0.4843	0.3949	**0.6959**	77.85	280	380	2	15	256	933	157	
320	**Area**	1	Yes	trmm 3b43	68.34	**1.17**	1.17	**0.8939**	1.88	0.3005	0.2961	0.5482	84.52	321	14	3	36	323	697	90	
321	**Area**	1	Yes	ssmi	73.03	-24.44	24.44	0.7440	-16.48	0.3061	0.2105	0.5532	89.15	372	327	26	32	363	1120	223	
322	**Area**	1	Yes	opi2	72.57	6.21	6.21	**0.8394**	6.03	0.1748	0.1645	0.4181	90.22	367	158	10	87	370	992	181	
323	**Area**	1	Yes	opi3	73.04	4.07	4.07	**0.7640**	4.31	0.1757	0.1573	0.4192	90.61	373	106	21	86	374	960	169	
324	**Area**	1	Yes	cmap	73.64	-2.95	2.95	0.7342	-0.71	0.1913	0.1653	0.4374	90.36	379	65	30	74	371	919	150	
325	**Area**	1	Yes	cmap2	73.62	-2.50	2.50	0.7268	-0.32	0.1881	0.1609	0.4338	90.60	378	51	31	78	373	911	147	
326	**Area**	1	No	reanalysis	54.08	-26.30	26.30	0.0687	2.85	0.3030	-65.2616	0.5505	68.26	159	345	164	35	162	865	134	
327	**Area**	1	No	gpcp	46.72	-4.76	4.76	0.0641	6.09	0.1583	-33.7894	0.3979	61.90	98	134	181	100	118	631	74	
328	**Area**	1	No	gpcc	44.14	2.27	2.27	0.0717	5.42	0.3710	-61.8820	**0.6091**	55.29	61	45	159	23	42	330	7	
329	**Area**	1	No	gpcc trmm	44.36	6.64	6.64	0.1102	9.89	0.1850	-12.0701	0.4301	55.75	66	168	128	80	50	492	38	
330	**Area**	1	No	ghcn cams grid	41.49	-10.43	10.43	0.0598	4.09	0.1627	-41.5420	0.4033	54.79	27	188	188	95	35	533	50	
331	**Area**	1	No	gpi	57.05	-27.97	27.97	0.0587	5.53	0.1416	-42.1218	0.3763	76.29	180	355	190	106	230	1061	204	
332	**Area**	1	No	trmm 3a46	59.18	-18.77	18.77	0.0998	9.44	0.2004	-17.4080	0.4476	70.77	198	260	133	72	183	846	127	
333	**Area**	1	No	trmm 3b43	45.66	3.55	3.55	0.0927	9.59	0.1400	-13.3253	0.3742	57.93	88	88	138	108	75	497	41	
334	**Area**	1	No	ssmi	61.43	-23.09	23.09	0.0583	6.19	0.1242	-35.7394	0.3524	74.85	227	321	191	115	215	1069	208	
335	**Area**	1	No	opi2	**37.61**	7.86	7.86	0.0865	6.83	0.1677	-19.0946	0.4096	**46.57**	5	180	143	92	5	425	27	
336	**Area**	1	No	opi3	**40.65**	5.72	5.72	0.0711	6.66	0.1374	-23.6090	0.3707	**51.54**	19	150	160	110	20	459	31	
337	**Area**	1	No	cmap	**42.83**	-1.65	1.65	0.0706	6.19	0.1596	-27.5420	0.3994	55.62	**43**	28	162	97	47	377	17	
338	**Area**	1	No	cmap2	**42.84**	**-1.21**	1.21	0.0702	6.22	0.1583	-27.6479	0.3979	55.72	**44**	17	163	99	49	372	15	
339	**Area**	1	1 mon	reanalysis	53.58	-26.23	26.23	0.0374	3.82	0.0898	-69.2834	0.2996	70.35	157	343	244	144	177	1065	207	
340	**Area**	1	1 mon	gpcp	46.75	-4.49	4.49	0.0646	6.10	0.1599	-33.5753	0.3999	61.82	99	125	179	96	116	615	70	
341	**Area**	1	1 mon	gpcc	44.10	2.97	2.97	0.0655	5.43	0.3052	-62.0897	0.5524	55.32	60	66	172	33	43	374	16	
342	**Area**	1	1 mon	gpcc trmm	**44.88**	5.88	5.88	0.1273	9.15	0.2772	-12.9026	0.5265	54.75	81	152	119	42	34	428	28	
343	**Area**	1	1 mon	ghcn cams grid	**41.04**	-10.47	10.47	0.0669	3.93	0.2067	-41.6317	0.4547	54.41	22	189	168	68	31	478	35	
344	**Area**	1	1 mon	gpi	55.97	-27.63	27.63	0.0770	4.88	0.2432	-40.3166	0.4931	74.81	170	350	152	55	214	941	162	
345	**Area**	1	1 mon	trmm 3a46	57.98	-21.20	21.20	0.1265	7.54	0.3577	-18.5146	**0.5981**	69.32	189	288	120	24	169	790	116	
346	**Area**	1	1 mon	trmm 3b43	44.83	4.24	4.24	0.1289	8.87	0.2954	-13.2693	0.5435	55.05	79	116	116	37	39	387	18	
347	**Area**	1	1 mon	ssmi	59.93	-22.76	22.76	0.0819	5.49	0.2430	-33.6568	0.4930	73.08	211	312	149	56	201	929	154	
348	**Area**	1	1 mon	opi2	**37.87**	7.79	7.79	0.0892	6.83	0.1781	-18.9559	0.4220	**46.49**	6	179	141	84	4	414	21	
349	**Area**	1	1 mon	opi3	**40.41**	5.64	5.64	0.0741	6.65	0.1491	-23.4270	0.3862	**51.44**	16	149	155	104	19	443	30	
350	**Area**	1	1 mon	cmap	**42.79**	-1.86	1.86	0.0726	6.15	0.1684	-27.3237	0.4104	55.50	41	34	157	91	45	368	14	
351	**Area**	1	1 mon	cmap2	**42.81**	**-1.41**	1.41	0.0720	6.19	0.1659	-27.4453	0.4074	55.62	42	20	158	93	48	361	13	
352	**Area**	1	2 mon	reanalysis	53.95	-26.20	26.20	0.0034	4.90	0.0007	-73.6845	0.0270	72.56	158	342	315	305	191	1311	291	
353	**Area**	1	2 mon	gpcp	47.76	-4.16	4.16	0.0553	6.23	0.1167	-34.0377	0.3416	62.34	115	111	196	122	123	667	83	
354	**Area**	1	2 mon	gpcc	**44.79**	3.56	3.56	0.0509	5.48	0.1824	-63.4113	0.4271	56.08	76	89	210	81	53	509	43	
355	**Area**	1	2 mon	gpcc trmm	48.35	4.94	4.94	0.0828	9.07	0.1173	-14.3811	0.3425	57.83	123	137	146	120	74	600	65	
356	**Area**	1	2 mon	ghcn cams grid	41.85	-10.53	10.53	0.0548	4.09	0.1401	-43.1761	0.3743	55.16	29	190	197	107	40	563	56	
357	**Area**	1	2 mon	gpi	56.48	-27.41	27.41	0.0682	5.20	0.1904	-40.8579	0.4363	75.49	175	349	165	76	221	986	176	
358	**Area**	1	2 mon	trmm 3a46	60.16	-23.42	23.42	0.1066	7.77	0.2482	-19.3628	0.4982	71.42	214	323	130	51	187	905	144	
359	**Area**	1	2 mon	trmm 3b43	48.75	4.25	4.25	0.0833	8.94	0.1242	-15.0213	0.3525	58.56	130	117	145	114	83	589	61	
360	**Area**	1	2 mon	ssmi	60.41	-22.85	22.85	0.0819	5.44	0.2436	-33.7314	0.4936	73.30	217	314	148	54	203	936	159	
361	**Area**	1	2 mon	opi2	**39.24**	7.78	7.78	0.0711	6.81	0.1131	-19.7651	0.3363	**47.50**	10	178	161	125	6	480	36	
362	**Area**	1	2 mon	opi3	41.98	5.56	5.56	0.0580	6.67	0.0914	-24.2752	0.3023	**52.41**	31	145	192	143	21	532	49	
363	**Area**	1	2 mon	cmap	**44.34**	-2.00	2.00	0.0562	6.29	0.1008	-28.3299	0.3176	56.57	65	39	194	137	59	494	39	
364	**Area**	1	2 mon	cmap2	**44.34**	**-1.55**	1.55	0.0559	6.32	0.0998	-28.4372	0.3160	56.68	64	25	195	138	61	483	37	
365	**Area**	1	3 mon	reanalysis	56.05	-26.27	26.27	-0.0284	5.90	0.0517	-77.7574	-0.2274	74.55	171	344	339	397	210	1461	345	
366	**Area**	1	3 mon	gpcp	48.68	-4.17	4.17	0.0378	6.42	0.0546	-35.3738	0.2336	63.63	129	112	242	185	132	800	118	
367	**Area**	1	3 mon	gpcc	46.08	3.31	3.31	0.0338	5.45	0.0809	-66.1861	0.2843	57.28	93	79	250	157	69	648	80	
368	**Area**	1	3 mon	gpcc trmm	49.98	4.51	4.51	0.0642	8.72	0.0740	-15.7464	0.2721	59.41	138	126	180	166	91	701	91	
369	**Area**	1	3 mon	ghcn cams grid	**42.86**	-10.61	10.61	0.0352	4.37	0.0580	-45.2040	0.2407	56.33	45	192	245	181	55	718	97	
370	**Area**	1	3 mon	gpi	58.09	-27.71	27.71	0.0442	6.01	0.0797	-42.8515	0.2823	77.42	192	352	227	160	250	1181	241	
371	**Area**	1	3 mon	trmm 3a46	62.79	-25.18	25.18	0.0674	8.51	0.1032	-22.2259	0.3212	75.33	245	334	167	133	218	1097	219	
372	**Area**	1	3 mon	trmm 3b43	49.52	2.98	2.98	0.0624	8.57	0.0724	-16.3386	0.2691	59.96	134	67	183	170	97	651	81	
373	**Area**	1	3 mon	ssmi	62.21	-23.06	23.06	0.0563	6.19	0.1151	-35.6172	0.3393	75.47	235	320	193	124	219	1091	217	
374	**Area**	1	3 mon	opi2	**40.03**	7.62	7.62	0.0524	6.78	0.0614	-20.5243	0.2479	**48.45**	15	174	206	180	10	585	60	
375	**Area**	1	3 mon	opi3	42.65	5.37	5.37	0.0420	6.68	0.0477	-25.0537	0.2184	**53.30**	40	144	229	195	25	633	76	
376	**Area**	1	3 mon	cmap	**44.83**	-2.41	2.41	0.0389	6.42	0.0477	-29.0650	0.2183	57.38	78	48	237	196	70	629	73	
377	**Area**	1	3 mon	cmap2	44.77	-1.97	1.97	0.0391	6.44	0.0484	-29.1317	0.2199	57.44	74	38	236	193	71	612	68	
378	**Area**	1	4 mon	reanalysis	57.95	-26.36	26.36	-0.0551	6.76	0.1937	-80.9892	-0.4401	76.10	188	346	375	437	226	1572	373	
379	**Area**	1	4 mon	gpcp	50.81	-4.13	4.13	0.0045	6.79	0.0008	-37.9089	0.0279	65.93	145	109	313	304	146	1017	190	
380	**Area**	1	4 mon	gpcc	48.37	3.23	3.23	0.0012	5.52	0.0001	-70.7726	0.0102	59.43	124	77	319	319	92	931	155	
381	**Area**	1	4 mon	gpcc trmm	52.47	4.04	4.04	0.0329	8.76	0.0194	-16.8531	0.1392	61.83	153	105	251	236	117	862	132	
382	**Area**	1	4 mon	ghcn cams grid	44.58	-10.71	10.71	0.0027	4.87	0.0003	-48.1899	0.0182	58.17	73	193	317	312	78	973	174	
383	**Area**	1	4 mon	gpi	60.35	-27.72	27.72	0.0065	7.34	0.0017	-45.9047	0.0416	80.27	215	353	309	293	284	1454	341	
384	**Area**	1	4 mon	trmm 3a46	64.08	-27.72	27.72	0.0280	9.79	0.0171	-23.5932	0.1308	78.46	262	354	259	239	264	1378	317	
385	**Area**	1	4 mon	trmm 3b43	51.52	3.09	3.09	0.0342	8.66	0.0218	-17.4175	0.1477	62.28	151	72	249	231	121	824	120	
386	**Area**	1	4 mon	ssmi	64.68	-23.01	23.01	0.0227	7.23	0.0186	-38.0161	0.1365	78.16	270	319	270	237	259	1355	309	
387	**Area**	1	4 mon	opi2	42.39	7.42	7.42	0.0046	6.74	0.0005	-22.5262	0.0218	**50.74**	36	173	312	308	16	845	126	
388	**Area**	1	4 mon	opi3	44.43	5.24	5.24	0.0070	6.72	0.0013	-26.8864	0.0363	55.24	68	141	308	299	41	857	129	
389	**Area**	1	4 mon	cmap	46.88	-2.49	2.49	0.0033	6.75	0.0003	-31.2922	0.0186	59.57	102	50	316	311	94	873	138	
390	**Area**	1	4 mon	cmap2	46.81	-2.05	2.05	0.0037	6.75	0.0004	-31.3577	0.0206	59.63	100	42	314	310	95	861	131	
391	**Area**	2	Yes	reanalysis	**44.38**	-31.82	31.82	0.5067	-10.51	0.5709	-0.2154	**0.7556**	70.85	67	409	61	5	184	726	99	
392	**Area**	2	Yes	gpcp	**39.90**	18.24	18.24	0.6552	15.87	0.5353	0.3064	**0.7317**	53.52	14	256	39	12	27	348	9	
393	**Area**	2	Yes	gpcc	47.29	39.92	39.92	**0.8070**	37.19	0.6440	0.2592	**0.8025**	58.25	107	441	12	1	80	641	79	
394	**Area**	2	Yes	gpcc trmm	**35.50**	5.72	5.72	0.5562	-2.21	0.5600	0.1901	**0.7484**	**44.24**	2	151	58	7	2	220	4	
395	**Area**	2	Yes	ghcn cams grid	**33.25**	15.22	15.22	**0.7712**	14.34	0.6411	0.5286	**0.8007**	**44.12**	1	233	19	2	1	256	5	
396	***Area***	*2*	*Yes*	*gpi*	***36.29***	*-2.03*	*2.03*	*0.6223*	*4.39*	*0.6180*	*0.3895*	***0.7861***	***50.71***	***4***	*41*	*46*	*3*	*15*	*109*	*1*	Plot
397	**Area**	2	Yes	trmm 3a46	**40.75**	-20.77	20.77	0.4855	-17.16	0.5913	-0.2471	**0.7689**	55.50	20	283	65	4	46	418	23	
398	**Area**	2	Yes	trmm 3b43	**35.99**	1.91	1.91	0.5516	-4.39	0.5485	0.1844	**0.7406**	**44.39**	3	37	59	10	3	112	2	
399	**Area**	2	Yes	ssmi	**40.55**	2.21	2.21	0.6031	6.65	0.5563	0.3141	**0.7458**	54.51	17	43	47	9	33	149	3	
400	**Area**	2	Yes	opi2	41.78	30.32	30.32	**0.8463**	27.41	0.5326	0.2924	**0.7298**	54.06	28	387	8	13	29	465	32	
401	**Area**	2	Yes	opi3	**41.03**	28.46	28.46	**0.7857**	24.80	0.5447	0.3080	**0.7381**	53.46	21	365	16	11	26	439	29	
402	**Area**	2	Yes	cmap	**38.27**	21.24	21.24	0.7392	18.67	0.5633	0.3839	**0.7505**	**50.44**	7	290	28	6	14	345	8	
403	**Area**	2	Yes	cmap2	**38.64**	21.69	21.69	0.7356	18.96	0.5583	0.3723	**0.7472**	**50.91**	9	294	29	8	18	358	11	
404	**Area**	2	No	reanalysis	75.92	-31.43	31.43	0.0767	8.45	0.0563	-9.1316	0.2372	98.60	393	407	153	183	420	1556	365	

Eastern Brazil - Monthly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR
405	Area	2	No	gpcp	60.54	18.63	18.63	0.1442	12.75	0.1117	-4.1808	0.3342	70.51	218	258	108	126	180	890	140
406	Area	2	No	gpcc	63.20	38.31	38.31	0.2271	27.34	0.2157	-3.6395	0.4644	70.86	248	428	82	65	185	1008	186
407	Area	2	No	gpcc trmm	68.32	7.38	7.38	-0.1006	-12.28	0.1378	-16.5286	-0.3712	75.02	320	172	407	423	216	1538	359
408	Area	2	No	ghcn cams grid	54.38	15.61	15.61	0.1878	12.49	0.1636	-3.1507	0.4045	63.11	161	239	88	94	128	710	95
409	Area	2	No	gpi	64.59	-2.27	2.27	0.1231	12.64	0.0959	-4.7778	0.3097	78.31	268	46	124	139	262	839	123
410	Area	2	No	trmm 3a46	79.09	-17.85	17.85	-0.1266	-9.95	0.2806	-22.8490	-0.5297	91.85	415	253	429	449	391	1937	429
411	Area	2	No	trmm 3b43	68.01	3.58	3.58	-0.1157	-12.11	0.1815	-16.7441	-0.4261	75.48	315	92	423	435	220	1485	352
412	Area	2	No	ssmi	68.40	2.46	2.46	0.0791	12.75	0.0388	-5.2281	0.1969	81.56	322	49	150	212	299	1032	200
413	Area	2	No	opi2	55.32	30.71	30.71	0.1791	15.16	0.1026	-3.0373	0.3204	62.24	164	390	92	135	120	901	142
414	Area	2	No	opi3	56.19	28.86	28.86	0.1795	14.83	0.1224	-3.3017	0.3498	64.25	174	368	90	118	135	885	139
415	Area	2	No	cmap	56.81	21.63	21.63	0.1667	13.41	0.1233	-3.4451	0.3511	65.31	177	293	98	116	142	826	121
416	Area	2	No	cmap2	56.92	22.08	22.08	0.1664	13.48	0.1229	-3.4706	0.3506	65.50	179	298	99	117	144	837	122
417	Area	2	1 mon	reanalysis	76.17	-31.19	31.19	0.0657	8.91	0.0413	-9.3058	0.2031	99.61	395	403	170	206	424	1598	380
418	Area	2	1 mon	gpcp	60.90	18.96	18.96	0.1141	12.56	0.0695	-4.4881	0.2635	72.69	222	263	127	171	193	976	175
419	Area	2	1 mon	gpcc	61.08	38.85	38.85	0.2579	27.80	0.2752	-3.3908	0.5246	69.09	224	430	80	44	167	945	165
420	Area	2	1 mon	gpcc trmm	67.33	10.58	10.58	-0.1691	-13.64	0.3621	-17.2978	-0.6018	76.75	307	191	437	452	238	1625	385
421	Area	2	1 mon	ghcn cams grid	55.56	15.91	15.91	0.1504	12.36	0.1042	-3.4855	0.3228	65.71	167	241	103	131	145	787	114
422	Area	2	1 mon	gpi	63.63	-2.03	2.03	0.1465	12.14	0.1358	-4.4810	0.3685	76.30	254	40	106	111	231	742	102
423	Area	2	1 mon	trmm 3a46	79.53	-19.49	19.49	-0.1547	-9.05	0.4146	-23.7640	-0.6439	93.85	416	273	435	460	400	1984	440
424	Area	2	1 mon	trmm 3b43	66.92	6.44	6.44	-0.1764	-13.06	0.4010	-17.5541	-0.6332	77.29	301	164	439	458	246	1608	382
425	Area	2	1 mon	ssmi	67.62	1.76	1.76	0.0942	12.15	0.0560	-5.1321	0.2367	80.36	310	31	137	184	286	948	167
426	Area	2	1 mon	opi2	55.40	30.93	30.93	0.1729	15.05	0.0952	-3.0762	0.3086	62.64	166	396	94	140	124	920	151
427	Area	2	1 mon	opi3	57.15	29.22	29.22	0.1463	14.29	0.0803	-3.5423	0.2834	66.13	183	371	107	159	147	967	172
428	Area	2	1 mon	cmap	57.33	22.00	22.00	0.1356	13.12	0.0808	-3.7032	0.2842	67.29	185	297	113	158	154	907	145
429	Area	2	1 mon	cmap2	57.41	22.45	22.45	0.1356	13.18	0.0808	-3.7265	0.2843	67.46	186	305	112	156	156	915	148
430	Area	2	2 mon	reanalysis	78.39	-30.84	30.84	0.0464	9.63	0.0205	-9.6405	0.1431	101.13	408	394	224	233	428	1687	393
431	Area	2	2 mon	gpcp	63.43	19.21	19.21	0.0859	12.25	0.0393	-4.7864	0.1982	74.58	252	264	144	211	211	1082	210
432	Area	2	2 mon	gpcc	62.73	39.61	39.61	0.2440	27.82	0.2429	-3.5220	0.4928	70.37	244	440	81	57	178	1000	183
433	Area	2	2 mon	gpcc trmm	64.00	13.77	13.77	-0.1225	-12.34	0.1872	-16.1463	-0.4327	72.86	260	218	427	436	196	1537	358
434	Area	2	2 mon	ghcn cams grid	58.26	16.07	16.07	0.0990	12.04	0.0452	-3.9637	0.2126	69.07	193	244	134	197	166	934	158
435	Area	2	2 mon	gpi	63.95	-1.62	1.62	0.1318	12.44	0.1095	-4.6418	0.3309	77.61	259	27	115	127	253	781	112
436	Area	2	2 mon	trmm 3a46	78.76	-20.83	20.83	-0.1222	-8.39	0.2673	-23.5344	-0.5170	91.74	413	285	426	445	390	1959	433
437	Area	2	2 mon	trmm 3b43	64.28	9.49	9.49	-0.1156	-11.68	0.1710	-16.0545	-0.4135	72.66	263	181	422	433	192	1491	353
438	Area	2	2 mon	ssmi	68.91	**1.09**	1.09	0.0617	11.40	0.0291	-6.7218	0.1707	81.92	335	13	185	225	305	1063	206
439	Area	2	2 mon	opi2	58.50	31.02	31.02	0.1151	13.83	0.0422	-3.4536	0.2054	65.43	195	397	125	202	143	1062	205
440	Area	2	2 mon	opi3	59.29	29.37	29.37	0.1050	13.46	0.0413	-3.8596	0.2033	68.35	201	375	131	205	163	1075	209
441	Area	2	2 mon	cmap	59.56	22.23	22.23	0.0989	12.65	0.0428	-4.0261	0.2068	69.51	205	299	135	199	170	1008	185
442	Area	2	2 mon	cmap2	59.66	22.67	22.67	0.0988	12.69	0.0428	-4.0501	0.2068	69.67	207	309	136	200	173	1025	195
443	Area	2	3 mon	reanalysis	82.87	-30.82	30.82	0.0175	10.91	0.0029	-10.1960	0.0539	103.88	436	393	285	287	436	1837	416
444	Area	2	3 mon	gpcp	66.52	19.31	19.31	0.0171	11.78	0.0015	-5.5262	0.0394	79.31	298	267	286	295	275	1421	328
445	Area	2	3 mon	gpcc	66.97	39.60	39.60	0.1255	26.18	0.0645	-4.5015	0.2541	77.65	302	439	123	176	254	1294	286
446	Area	2	3 mon	gpcc trmm	62.35	15.19	15.19	-0.0722	-10.14	0.0774	-17.8632	-0.2783	70.77	240	232	386	403	182	1443	338
447	Area	2	3 mon	ghcn cams grid	61.62	16.13	16.13	0.0378	11.82	0.0066	-4.5336	0.0812	73.03	229	245	241	270	198	1183	242
448	Area	2	3 mon	gpi	68.12	**-1.44**	1.44	0.0883	13.26	0.0492	-5.2016	0.2218	81.49	316	21	142	191	298	968	173
449	Area	2	3 mon	trmm 3a46	78.30	-20.57	20.57	-0.0720	-7.70	0.1101	-25.7256	-0.3318	88.75	407	281	383	413	360	1844	417
450	Area	2	3 mon	trmm 3b43	62.52	10.95	10.95	-0.0708	-9.81	0.0763	-17.8421	-0.2762	70.73	242	195	381	402	181	1401	321
451	Area	2	3 mon	ssmi	71.78	**1.00**	1.00	0.0254	11.46	0.0051	-7.4756	0.0712	84.90	358	11	265	275	325	1234	262
452	Area	2	3 mon	opi2	60.11	31.09	31.09	0.0384	12.40	0.0047	-3.9470	0.0685	69.05	213	401	238	277	165	1294	285
453	Area	2	3 mon	opi3	61.70	29.49	29.49	0.0315	12.22	0.0037	-4.4175	0.0611	72.26	230	378	252	280	190	1330	298
454	Area	2	3 mon	cmap	62.28	22.34	22.34	0.0312	11.99	0.0043	-4.6258	0.0652	73.63	237	303	254	279	207	1280	274
455	Area	2	3 mon	cmap2	62.39	22.78	22.78	0.0313	12.00	0.0043	-4.6486	0.0656	73.78	241	313	253	278	208	1293	283
456	Area	2	4 mon	reanalysis	87.23	-31.05	31.05	-0.0293	12.94	0.0082	-11.0819	-0.0904	108.08	446	399	341	350	446	1982	438
457	Area	2	4 mon	gpcp	69.24	19.24	19.24	-0.0532	11.29	0.0151	-6.2690	-0.1228	83.84	339	265	374	363	318	1659	390
458	Area	2	4 mon	gpcc	72.37	39.39	39.39	-0.0206	24.16	0.0017	-5.6822	-0.0417	85.69	365	437	332	333	337	1804	409
459	Area	2	4 mon	gpcc trmm	59.25	14.46	14.46	-0.0189	-9.23	0.0054	-16.4968	-0.0734	68.21	199	220	330	346	161	1256	266
460	Area	2	4 mon	ghcn cams grid	64.88	16.05	16.05	-0.0473	11.49	0.0103	-5.3126	-0.1015	78.13	272	243	367	352	258	1492	354
461	Area	2	4 mon	gpi	72.83	**-1.53**	1.53	0.0091	14.63	0.0005	-6.2052	0.0229	88.00	370	24	302	307	355	1358	310
462	Area	2	4 mon	trmm 3a46	77.28	-23.31	23.31	-0.0401	-8.39	0.0337	-24.4760	-0.1836	86.81	401	322	357	390	348	1818	413
463	Area	2	4 mon	trmm 3b43	59.28	10.02	10.02	-0.0181	-9.13	0.0051	-16.4401	-0.0712	68.10	200	186	327	345	159	1217	256
464	Area	2	4 mon	ssmi	75.41	**0.55**	0.55	-0.0325	12.12	0.0083	-8.3816	-0.0913	89.42	388	3	345	351	367	1454	342
465	Area	2	4 mon	opi2	61.98	31.06	31.06	-0.0468	10.79	0.0070	-4.4848	-0.0835	72.82	233	400	366	349	194	1542	363
466	Area	2	4 mon	opi3	63.86	29.39	29.39	-0.0531	10.75	0.0106	-5.0395	-0.1028	76.42	256	376	373	356	234	1595	378
467	Area	2	4 mon	cmap	64.97	22.27	22.27	-0.0493	11.17	0.0106	-5.3236	-0.1031	78.19	273	300	371	358	260	1562	369
468	Area	2	4 mon	cmap2	65.04	22.71	22.71	-0.0490	11.15	0.0105	-5.3458	-0.1025	78.33	274	310	370	354	263	1571	372

Eastern Brazil - Yearly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	*Linear*	*1*	*Yes*	*reanalysis*	*37.02*	*-34.45*	*34.45*	*-0.0942*		*-0.20*	*0.0288*	*-11.4648*	*-0.1696*	*44.09*	*131*	*137*	*139*	*129*	*136*	*672*	*145*	Plot
2	Linear	1	Yes	gpcp	16.39	-15.48	15.48	0.0803	12.4533	-4.82	0.0098	-3.2482	0.0988	22.70	57	75	76	90	59	357	72	
3	Linear	1	Yes	gpcc	**8.60**	**-1.80**	1.80	0.1530	6.5359	1.08	0.1476	-4.5376	0.3841	**10.55**	3	12	69	23	2	109	4	
4	Linear	1	Yes	gpcc trmm	24.23	-24.23	24.23	0.0475	21.0526	-18.13	0.0237	-49.7161	0.1540	27.21	75	101	89	76	68	409	96	
5	Linear	1	Yes	ghcn cams grid	21.09	-18.85	18.85	0.2015	4.9628	-6.32	0.0475	-2.9353	0.2180	25.00	64	84	66	63	62	339	64	
6	Linear	1	Yes	gpi	40.24	-40.24	40.24	0.2790	3.5842	-14.58	0.1175	-16.6033	0.3427	42.30	142	145	54	31	130	502	127	
7	Linear	1	Yes	trmm 3a46	57.42	-57.42	57.42	-0.2150		-11.54	0.5676	-570.6146	-0.7534	58.38	152	154	144	151	151	752	154	
8	Linear	1	Yes	trmm 3b43	23.41	-21.45	21.45	-0.2295		-13.27	0.2061	-15.2074	-0.4540	28.02	74	92	146	146	71	529	133	
9	Linear	1	Yes	ssmi	37.97	-37.97	37.97	-0.1532		-1.67	0.0335	-15.4405	-0.1831	41.79	135	142	142	131	127	677	146	
10	Linear	1	Yes	opi2	13.85	-3.40	3.40	-0.0262		-3.90	0.0008	-1.3670	-0.0288	16.94	44	27	113	106	43	333	57	
11	Linear	1	Yes	opi3	13.27	-5.26	5.26	0.0762	13.1234	-3.99	0.0084	-1.4511	0.0915	17.24	41	46	78	92	44	301	40	
12	Linear	1	Yes	cmap	15.58	-12.48	12.48	0.0691	14.4718	-4.48	0.0075	-2.6391	0.0867	21.01	52	70	81	94	56	353	70	
13	Linear	1	Yes	cmap2	15.46	-12.03	12.03	0.0689	14.5138	-4.45	0.0075	-2.5655	0.0868	20.79	50	68	83	93	55	349	69	
14	Linear	1	No	reanalysis	36.63	-35.21	35.21	-0.0846		-1.26	0.1608	-81.3958	-0.4010	43.05	129	138	136	142	133	678	147	
15	Linear	1	No	gpcp	17.95	-15.23	15.23	-0.0496		-3.06	0.0140	-13.4617	-0.1184	21.59	58	73	124	119	57	431	102	
16	Linear	1	No	gpcc	**9.35**	-3.11	3.11	-0.0097		0.31	0.0047	-53.7817	-0.0682	**11.89**	7	24	107	111	9	258	23	
17	Linear	1	No	gpcc trmm	20.16	-20.16	20.16	-0.0367		-13.52	0.0225	-61.9974	-0.1498	24.08	63	90	121	126	61	461	114	
18	Linear	1	No	ghcn cams grid	21.18	-19.62	19.62	0.0411	24.3309	-4.58	0.0137	-24.2803	0.1171	24.05	65	89	91	88	60	393	89	
19	Linear	1	No	gpi	39.57	-39.57	39.57	0.2194	4.5579	-11.78	0.1724	-38.5907	0.4152	41.16	140	144	61	19	125	489	122	
20	Linear	1	No	trmm 3a46	53.23	-53.23	53.23	-0.0622		-13.12	0.6310	-999.0000	-0.7943	54.01	150	150	131	153	148	732	151	
21	Linear	1	No	trmm 3b43	20.15	-18.19	18.19	-0.2150		-10.10	0.3242	-22.2722	-0.5693	25.08	62	80	145	147	64	498	125	
22	Linear	1	No	ssmi	36.83	-36.83	36.83	-0.0649		-3.31	0.0136	-32.5815	-0.1167	39.68	130	140	133	118	121	642	142	
23	Linear	1	No	opi2	11.50	-3.15	3.15	-0.0535		-3.66	0.0130	-5.3405	-0.1140	14.29	26	25	125	117	17	310	43	
24	Linear	1	No	opi3	11.76	-5.00	5.00	-0.0344		-3.59	0.0064	-6.5806	-0.0802	15.63	31	42	116	112	36	337	60	
25	Linear	1	No	cmap	16.03	-12.22	12.22	-0.0363		-3.32	0.0078	-10.9838	-0.0883	19.65	54	69	119	113	53	408	95	
26	Linear	1	No	cmap2	15.77	-11.78	11.78	-0.0402		-3.31	0.0096	-10.7712	-0.0982	19.48	53	66	122	115	52	408	94	
27	*Linear*	*2*	*Yes*	*reanalysis*	*59.08*	*-56.53*	*56.53*	*-0.3148*		*0.26*	*0.0200*	*-2.6980*	*-0.1413*	*70.62*	*154*	*152*	*148*	*124*	*156*	*734*	*152*	Plot
28	Linear	2	Yes	gpcp	30.62	-6.47	6.47	0.7036	1.4213	-8.51	0.0871	0.0406	0.2952	35.97	109	53	21	44	110	337	61	
29	Linear	2	Yes	gpcc	24.33	24.30	24.30	**1.0412**	1.0412	24.89	0.4233	-0.8961	**0.6506**	29.14	78	103	4	7	79	271	27	
30	Linear	2	Yes	gpcc trmm	32.56	-32.56	32.56	0.6216	1.6088	-39.32	0.3911	-9.6895	**0.6254**	33.77	120	135	31	10	95	391	88	
31	Linear	2	Yes	ghcn cams grid	30.41	-9.50	9.50	0.6711	1.4901	-10.76	0.0807	-0.0055	0.2842	36.82	105	61	26	48	113	353	71	
32	Linear	2	Yes	gpi	28.24	-24.43	24.43	1.6460	1.6460	-35.42	0.5505	-0.1107	**0.7420**	33.92	89	105	32	3	97	326	54	
33	Linear	2	Yes	trmm 3a46	67.94	-67.94	67.94	-0.5003		-47.96	0.1767	-65.6011	-0.4203	69.21	156	156	153	144	155	764	156	
34	Linear	2	Yes	trmm 3b43	36.37	-36.37	36.37	0.4274	2.3397	-44.42	0.2113	-12.5626	0.4597	38.04	127	139	38	16	118	438	104	
35	Linear	2	Yes	ssmi	29.24	-19.06	19.06	0.6662	1.5011	-15.24	0.0573	-0.2249	0.2395	40.75	95	85	27	58	123	388	86	
36	Linear	2	Yes	opi2	30.47	5.61	5.61	**1.0186**	1.0186	5.96	0.1389	0.1155	0.3727	34.54	106	49	2	26	101	284	33	
37	Linear	2	Yes	opi3	30.85	3.75	3.75	**0.7768**	1.2873	-0.06	0.1005	0.0818	0.3171	35.19	111	34	13	35	103	296	38	
38	Linear	2	Yes	cmap	30.56	-3.47	3.47	0.7148	1.3990	-6.28	0.0913	0.0678	0.3022	35.45	108	28	20	42	106	304	42	
39	Linear	2	Yes	cmap2	30.50	-3.03	3.03	0.7320	1.3661	-5.79	0.0961	0.0764	0.3100	35.29	107	21	18	38	104	288	36	
40	Linear	2	No	reanalysis	57.68	-57.37	57.37	-0.6519		13.98	0.1635	-5.5504	-0.4044	67.99	153	153	154	143	154	757	155	
41	Linear	2	No	gpcp	22.83	-7.31	7.31	0.2511	3.9825	-12.45	0.0212	-0.2432	0.1457	29.62	70	58	57	80	82	347	67	
42	Linear	2	No	gpcc	20.04	18.84	18.84	0.2790	3.5842	8.61	0.0364	-1.1565	0.1908	28.39	61	83	53	69	73	339	65	
43	Linear	2	No	gpcc trmm	28.26	-28.26	28.26	0.3166	3.1586	-40.48	0.3127	-24.2105	**0.5592**	29.55	90	115	48	14	81	348	68	
44	Linear	2	No	ghcn cams grid	23.08	-10.34	10.34	0.3956	2.5278	-12.66	0.0536	-0.2229	0.2316	29.38	72	63	40	62	80	317	49	
45	Linear	2	No	gpi	30.90	-26.19	26.19	**1.1764**	1.1764	-29.19	0.3937	-0.5424	**0.6275**	33.78	112	110	8	9	96	335	59	
46	Linear	2	No	trmm 3a46	62.21	-62.21	62.21	0.3362	2.9744	-53.37	0.3663	-248.1002	**0.6053**	62.47	155	155	45	11	153	519	131	
47	Linear	2	No	trmm 3b43	32.07	-32.07	32.07	0.2399	4.1684	-42.76	0.2050	-31.5530	0.4528	33.58	119	134	59	17	94	423	98	
48	Linear	2	No	ssmi	30.21	-25.26	25.26	0.7003	1.4280	-21.84	0.1087	-0.7186	0.3297	36.86	102	106	22	33	114	377	81	
49	Linear	2	No	opi2	21.90	4.77	4.77	0.4708	2.1240	-5.26	0.0567	-0.0472	0.2382	27.18	67	40	37	59	67	270	25	
50	Linear	2	No	opi3	21.83	2.91	2.91	0.2909	3.4376	-9.21	0.0269	-0.1451	0.1642	28.43	66	19	49	75	74	283	31	
51	Linear	2	No	cmap	22.22	-4.31	4.31	0.2528	3.9557	-11.68	0.0218	-0.1951	0.1477	29.04	69	38	56	79	77	319	51	
52	Linear	2	No	cmap2	22.19	-3.86	3.86	0.2593	3.8565	-11.50	0.0230	-0.1862	0.1518	28.93	68	35	55	77	76	311	44	
53	Point	1	Yes	reanalysis	31.27	-27.51	27.51	0.0157	63.6943	3.30	0.0010	-10.2400	0.0320	37.00	114	113	99	100	115	541	134	
54	Point	1	Yes	gpcp	11.06	-6.53	6.53	0.0674	14.8368	4.28	0.0131	-3.1548	0.1143	16.29	18	54	84	89	42	287	35	
55	Point	1	Yes	gpcc	**9.08**	4.30	4.30	0.1641	6.0938	7.14	0.1626	-4.9356	0.4033	**11.16**	6	37	68	21	5	137	7	
56	Point	1	Yes	gpcc trmm	**10.46**	-4.92	4.92	-0.0032		1.50	0.0001	-13.7901	-0.0109	13.83	10	41	105	105	16	277	28	
57	Point	1	Yes	ghcn cams grid	16.05	-11.86	11.86	0.1395	7.1685	1.64	0.0292	-2.2169	0.1709	19.97	55	67	72	73	54	321	52	
58	Point	1	Yes	gpi	30.26	-30.26	30.26	0.0991	10.0908	1.81	0.0551	-38.0660	0.2348	32.65	103	124	74	61	92	454	113	
59	Point	1	Yes	trmm 3a46	37.43	-37.43	37.43	-0.3645		14.09	0.8164	-128.2444	-0.9035	39.24	133	141	151	154	120	699	149	
60	Point	1	Yes	trmm 3b43	12.23	-5.13	5.13	-0.0357		1.76	0.0233	-22.1532	-0.1527	15.49	36	44	117	128	35	360	75	
61	Point	1	Yes	ssmi	26.78	-26.78	26.78	-0.1172		8.38	0.0957	-41.5775	-0.3094	30.44	87	112	140	135	85	559	137	
62	Point	1	Yes	opi2	13.10	5.55	5.55	0.0144	69.4444	5.07	0.0005	-2.7095	0.0218	15.40	40	48	100	101	34	323	53	
63	Point	1	Yes	opi3	12.23	3.69	3.69	0.0508	19.6850	4.99	0.0071	-2.6737	0.0841	15.32	35	33	87	96	32	283	30	
64	Point	1	Yes	cmap	11.54	-3.53	3.53	0.0487	20.5339	4.64	0.0071	-2.8880	0.0841	15.76	28	29	88	95	39	279	29	
65	Point	1	Yes	cmap2	11.45	-3.08	3.08	0.0540	18.5185	4.62	0.0088	-2.8402	0.0939	15.66	25	22	86	91	37	261	24	
66	Point	1	No	reanalysis	30.21	-28.27	28.27	0.0253	39.5257	2.24	0.0376	-148.4767	0.1939	35.89	101	116	97	67	109	490	123	
67	Point	1	No	gpcp	11.43	-6.28	6.28	-0.0624		6.04	0.1194	-41.0568	-0.3456	15.88	23	52	132	141	40	388	85	
68	Point	1	No	gpcc	**8.67**	2.98	2.98	0.0014	714.2857	6.37	0.0001	-28.3761	0.0074	**11.83**	4	20	104	103	8	239	20	
69	Point	1	No	gpcc trmm	**10.66**	**-0.85**	0.85	-0.0874		6.12	0.1984	-30.6144	-0.4454	**13.66**	13	7	137	145	13	315	47	
70	Point	1	No	ghcn cams grid	16.29	-12.63	12.63	-0.0209		3.38	0.0093	-40.4143	-0.0962	19.03	56	71	111	114	49	401	93	
71	Point	1	No	gpi	29.59	-29.59	29.59	0.0394	25.3807	4.61	0.0399	-170.3576	0.1998	31.98	97	121	92	66	90	466	117	
72	Point	1	No	trmm 3a46	33.24	-33.24	33.24	-0.2117		12.51	0.9201	-339.1811	-0.9592	34.83	121	136	143	156	102	658	143	
73	Point	1	No	trmm 3b43	**10.61**	**-1.87**	1.87	-0.0212		4.92	0.0120	-28.2695	-0.1094	14.43	12	13	112	116	18	271	26	
74	Point	1	No	ssmi	25.90	-25.65	25.65	-0.0289		6.74	0.0192	-124.5177	-0.1387	28.72	84	108	114	123	75	504	128	
75	Point	1	No	opi2	11.63	5.80	5.80	-0.0129		5.31	0.0041	-30.7011	-0.0638	**13.78**	30	51	108	109	14	312	45	
76	Point	1	No	opi3	11.85	3.95	3.95	-0.0597		5.40	0.1042	-35.2862	-0.3228	14.75	32	36	130	139	21	358	73	
77	Point	1	No	cmap	11.10	-3.27	3.27	-0.0567		5.80	0.1023	-37.2125	-0.3199	15.13	19	26	129	138	27	339	63	
78	Point	1	No	cmap2	11.13	-2.83	2.83	-0.0550		5.76	0.0972	-37.0474	-0.3118	15.10	20	18	126	137	26	327	55	
79	Point	2	Yes	reanalysis	45.68	-30.78	30.78	-0.3424		27.20	0.0187	-0.8249	-0.1367	55.75	147	129	150	121	149	696	148	
80	Point	2	Yes	gpcp	37.84	19.27	19.27	0.7361	1.3585	17.46	0.0755	-0.1523	0.2748	44.30	134	86	17	52	137	426	100	
81	Point	2	Yes	gpcc	54.89	54.89	54.89	**1.1712**	1.1712	57.32	0.3170	-3.6721	**0.5630**	59.46	151	151	7	13	152	474	121	
82	Point	2	Yes	gpcc trmm	15.54	-15.54	15.54	0.2497	4.0048	-28.95	0.1837	-8.0672	0.4286	18.23	51	76	58	18	46	249	22	
83	Point	2	Yes	ghcn cams grid	37.12	16.25	16.25	**0.7936**	1.2601	15.46	0.0894	-0.0717	0.2989	42.73	132	78	12	43	132	397	91	
84	Point	2	Yes	gpi	24.41	2.44	2.44	1.9359	1.9359	-13.48	0.5024	0.3812	**0.7088**	31.17	79	17	36	6	87	225	17	
85	Point	2	Yes	trmm 3a46	49.36	-49.36	49.36	-0.4556		-29.97	0.4937	-118.6898	-0.7027	50.54	148	148	152	148	146	742	153	
86	Point	2	Yes	trmm 3b43	19.35	-19.35	19.35	0.1319	7.5815	-31.56	0.0586	-12.6954	0.2421	22.40	60	87	73	57	58	335	58	
87	Point	2	Yes	ssmi	36.43	6.95	6.95	**0.9855**	1.0147	7.11	0.0833	0.0597	0.2886	43.83	128	55	1	46	134	364	78	
88	Point	2	Yes	opi2	41.51	31.36	31.36	**1.1779**	1.1779	34.73	0.1471	-0.4335	0.3835	49.41	143	130	9	24	145	451	112	
89	Point	2	Yes	opi3	39.89	29.50	29.50	**0.8114**	1.2324	26.27	0.0868	-0.4287	0.2947	49.33	141	120	11	45	144	461	115	
90	Point	2	Yes	cmap	38.70	22.28	22.28	0.7449	1.3425	19.76	0.0785	-0.2220	0.2802	45.62	138	96	16	51	140	441	108	
91	Point	2	Yes	cmap2	38.77	22.72	22.72	**0.7615**	1.3132	20.26	0.0824	-0.2288	0.2870	45.75	139	98	15	47	141	440	107	
92	Point	2	No	reanalysis	42.65	-31.62	31.62	-0.6795		40.92	0.1152	-1.5069	-0.3394	52.24	144	133	155	140	147	719	150	
93	Point	2	No	gpcp	31.10	18.44	18.44	0.2837	3.5249	13.52	0.0176	-0.4065	0.1325	39.13	113	81	51	84	119	448	111	
94	Point	2	No	gpcc	49.43	49.43	49.43	0.4090	2.4450	41.05	0.0413	-3.4927	0.2032	56.43	149	149	39	64	150	551	135	
95	Point	2	No	gpcc trmm	11.25	-11.25	11.25	-0.0553		-30.10	0.0301	-22.4731	-0.1735	16.04	21	65	127	130	41	384	82	
96	Point	2	No	ghcn cams grid	28.09	15.41	15.41	0.5181	1.9301	13.56	0.0596	-0.2102	0.2441	36.30	88	74	35	56	112	365	79	
97	Point	2	No	gpi	22.89	**0.68**	0.68	1.4662	1.4662	-7.25	0.3615	0.3246	**0.6012**	29.08	71	3	24	12	78	188	10	
98	Point	2	No	trmm 3a46	43.63	-43.63	43.63	0.3809	2.6254	-35.38	0.8234	-214.0788	**0.9074**	43.87	145	146	41	2	135	469	119	
99	Point	2	No	trmm 3b43	15.05	-15.05	15.05	-0.0556		-29.90	0.0348	-33.1722	-0.1866	19.36	49	72	128	132	51	432	103	
100	Point	2	No	ssmi	26.36	**0.74**	0.74	**1.0196**	1.0196	0.51	0.1329	0.1324	0.3645	34.48	86	5	3	27	100	221	15	
101	Point	2	No	opi2	35.61	30.52	30.52	0.6302	1.5868	23.51	0.0659	-0.8123	0.2566	44.42	126	126	29	53	138	472	120	

Eastern Brazil - Yearly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
102	Point	2	No	opi3	34.19	28.66	28.66	0.3256	3.0713	17.13	0.0219	-0.8265	0.1479	44.59	123	118	47	78	139	505	129	
103	Point	2	No	cmap	31.72	21.44	21.44	0.2829	3.5348	14.36	0.0177	-0.5183	0.1331	40.66	117	91	52	83	122	465	116	
104	Point	2	No	cmap2	31.99	21.88	21.88	0.2888	3.4626	14.55	0.0185	-0.5337	0.1361	40.86	118	94	50	82	124	468	118	
105	Area	1	Yes	reanalysis	30.00	-25.54	25.54	0.0343	29.1545	4.68	0.0047	-8.9281	0.0687	35.35	99	107	94	97	105	502	126	
106	Area	1	Yes	gpcp	**9.85**	-5.01	5.01	0.0941	10.6270	5.49	0.0276	-2.9548	0.1660	15.27	8	43	75	74	31	231	18	
107	Area	1	Yes	gpcc	**8.99**	3.59	3.59	0.1762	5.6754	6.38	0.1697	-4.0923	0.4119	**10.87**	5	32	67	20	4	128	6	
108	Area	1	Yes	gpcc trmm	**10.68**	**1.63**	1.63	-0.0063		8.07	0.0009	-24.1308	-0.0305	**12.82**	14	10	106	107	11	248	21	
109	Area	1	Yes	ghcn cams grid	14.94	-9.87	9.87	0.1449	6.9013	3.54	0.0305	-1.7936	0.1747	18.91	47	62	71	72	48	300	39	
110	Area	1	Yes	gpi	28.88	-28.65	28.65	-0.0160		7.52	0.0022	-54.6015	-0.0467	31.57	93	117	110	108	89	517	130	
111	Area	1	Yes	trmm 3a46	30.33	-30.33	30.33	-0.2867		18.25	0.8280	-142.4420	-0.9099	32.29	104	125	147	155	91	622	141	
112	Area	1	Yes	trmm 3b43	**10.58**	**0.29**	0.29	0.0570	17.5439	6.57	0.0621	-16.9596	0.2491	**13.34**	11	1	85	54	12	163	9	
113	Area	1	Yes	ssmi	24.87	-24.43	24.43	-0.0720		9.31	0.0780	-76.4978	-0.2793	27.94	81	104	134	134	70	523	132	
114	Area	1	Yes	opi2	13.34	7.07	7.07	0.0324	30.8642	6.60	0.0026	-3.1710	0.0510	15.68	42	57	95	98	38	330	56	
115	Area	1	Yes	opi3	12.80	5.21	5.21	0.0699	14.3062	6.48	0.0145	-3.0126	0.1205	15.38	39	45	80	87	33	284	32	
116	Area	1	Yes	cmap	10.81	**-2.01**	2.01	0.0690	14.4928	5.99	0.0154	-2.8554	0.1240	15.08	16	14	82	86	25	223	16	
117	Area	1	Yes	cmap2	**10.75**	**-1.57**	1.57	0.0763	13.1062	5.96	0.0190	-2.8121	0.1379	14.99	15	9	77	81	24	206	12	
118	Area	1	No	reanalysis	28.80	-26.30	26.30	0.0439	22.7790	3.62	0.0984	-116.3603	0.3136	34.11	92	111	90	36	98	427	101	
119	Area	1	No	gpcp	11.63	-4.76	4.76	-0.0358		7.25	0.0189	-17.6465	-0.1375	15.23	29	39	118	122	30	338	62	
120	Area	1	No	gpcc	**8.23**	**2.27**	2.27	0.0135	74.0741	5.61	0.0174	-96.1297	0.1318	**11.39**	2	15	101	85	6	209	13	
121	Area	1	No	gpcc trmm	13.77	5.70	5.70	-0.0906		12.68	0.5488	-93.2181	-0.7408	14.69	43	50	138	150	20	401	92	
122	Area	1	No	ghcn cams grid	14.97	-10.65	10.65	-0.0155		5.28	0.0045	-30.5450	-0.0669	17.75	48	64	109	110	45	376	80	
123	Area	1	No	gpi	28.57	-27.97	27.97	-0.0756		10.32	0.0604	-66.0116	-0.2457	31.20	91	114	135	133	88	561	138	
124	Area	1	No	trmm 3a46	26.14	-26.14	26.14	-0.1339		16.67	0.6213	-367.4412	-0.7882	27.90	85	109	141	152	69	556	136	
125	Area	1	No	trmm 3b43	12.21	3.55	3.55	0.0715	13.9860	9.73	0.0598	-10.8028	0.2444	**13.83**	34	30	79	55	15	213	14	
126	Area	1	No	ssmi	24.31	-23.29	23.29	0.0163	61.3497	7.67	0.0023	-39.8234	0.0484	26.58	77	100	98	99	66	440	105	
127	Area	1	No	opi2	12.32	7.32	7.32	0.0051	196.0784	6.84	0.0003	-15.9698	0.0174	14.53	37	59	102	102	19	319	50	
128	Area	1	No	opi3	12.44	5.47	5.47	-0.0406		6.89	0.0232	-17.6118	-0.1524	15.22	38	47	123	127	29	364	77	
129	Area	1	No	cmap	11.44	**-1.76**	1.76	-0.0365		7.15	0.0204	-16.6936	-0.1427	14.84	24	11	120	125	23	303	41	
130	Area	1	No	cmap2	11.51	**-1.31**	1.31	-0.0328		7.10	0.0166	-16.6543	-0.1290	14.82	27	8	115	120	22	292	37	
131	Area	2	Yes	reanalysis	38.21	-30.59	30.59	0.0048	208.3333	12.39	0.0000	-1.2378	0.0026	46.67	136	127	103	104	143	613	139	
132	Area	2	Yes	gpcp	30.21	19.47	19.47	0.6576	1.5207	17.12	0.1055	-0.3127	0.3248	35.74	100	88	28	34	108	358	74	
133	Area	2	Yes	gpcc	43.77	43.77	43.77	**1.0956**	1.0956	45.12	0.5245	-4.2668	**0.7242**	45.91	146	147	6	5	142	446	109	
134	Area	2	Yes	gpcc trmm	**8.21**	3.09	3.09	0.3410	2.9326	-8.69	0.2737	-0.9567	**0.5232**	**9.47**	1	23	44	15	1	84	1	
135	Area	2	Yes	ghcn cams grid	28.88	16.45	16.45	0.6237	1.6033	15.00	0.0966	-0.2165	0.3108	34.41	94	79	30	37	99	339	66	
136	Area	2	Yes	gpi	14.66	**-0.51**	0.51	**1.2972**	1.2972	-5.57	0.5278	0.4997	**0.7265**	18.32	46	2	14	4	47	113	5	
137	Area	2	Yes	trmm 3a46	29.99	-29.99	29.99	-0.6912		-7.46	0.5170	-21.7497	-0.7191	32.67	98	123	156	149	93	619	140	
138	Area	2	Yes	trmm 3b43	**10.34**	**-0.72**	0.72	0.2181	4.5851	-11.71	0.1280	-1.5279	0.3578	**10.77**	9	4	62	28	3	106	3	
139	Area	2	Yes	ssmi	25.20	6.95	6.95	0.5279	1.8943	12.36	0.0564	-0.0445	0.2375	30.08	83	56	34	60	83	316	48	
140	Area	2	Yes	opi2	35.32	31.55	31.55	**0.9184**	1.0889	30.00	0.1565	-0.8677	0.3956	42.63	125	132	5	22	131	415	97	
141	Area	2	Yes	opi3	34.29	29.69	29.69	0.7243	1.3806	24.98	0.1211	-0.8025	0.3480	41.88	124	122	19	29	129	423	99	
142	Area	2	Yes	cmap	31.31	22.47	22.47	0.6771	1.4769	19.29	0.1135	-0.4313	0.3369	37.32	115	97	25	32	116	385	83	
143	Area	2	Yes	cmap2	31.40	22.92	22.92	0.6905	1.4482	19.72	0.1185	-0.4449	0.3443	37.50	116	99	23	30	117	385	84	
144	Area	2	No	reanalysis	33.78	-31.43	31.43	-0.3323		26.12	0.0958	-4.5991	-0.3095	41.86	122	131	149	136	128	666	144	
145	Area	2	No	gpcp	23.38	18.63	18.63	0.2052	4.8733	13.17	0.0319	-1.5562	0.1787	28.29	73	82	65	71	72	363	76	
146	Area	2	No	gpcc	38.31	38.31	38.31	0.3334	2.9994	28.85	0.0942	-7.3925	0.3068	41.62	137	143	46	40	126	492	124	
147	Area	2	No	gpcc trmm	11.98	7.38	7.38	0.0360	27.7778	-9.84	0.0958	-105.7981	0.3095	**12.50**	33	60	93	39	10	235	19	
148	Area	2	No	ghcn cams grid	19.08	15.61	15.61	0.3482	2.8719	13.10	0.0936	-1.0127	0.3060	25.10	59	77	43	41	65	285	34	
149	*Area*	*2*	*No*	*gpi*	*11.42*	*-2.27*	*2.27*	***0.8276***	*1.2083*	*0.66*	*0.3981*	*0.3666*	***0.6309***	*15.15*	*22*	*16*	*10*	*8*	*28*	*84*	*2*	Plot
150	Area	2	No	trmm 3a46	24.26	-24.26	24.26	0.1453	6.8823	-12.88	0.9583	-558.4187	**0.9789**	25.02	76	102	70	1	63	312	46	
151	Area	2	No	trmm 3b43	10.93	3.58	3.58	0.0306	32.6797	-10.06	0.0789	-87.9688	0.2809	**11.41**	17	31	96	50	7	201	11	
152	Area	2	No	ssmi	13.88	**0.75**	0.75	0.5620	1.7794	5.76	0.1409	0.0539	0.3754	19.28	45	6	33	25	50	159	8	
153	Area	2	No	opi2	30.78	30.71	30.71	0.3706	2.6983	18.79	0.0792	-3.1627	0.2815	36.10	110	128	42	49	111	440	106	
154	Area	2	No	opi3	29.41	28.86	28.86	0.2385	4.1929	15.84	0.0408	-3.0354	0.2020	35.54	96	119	60	65	107	447	110	
155	Area	2	No	cmap	24.67	21.63	21.63	0.2151	4.6490	13.89	0.0356	-1.9339	0.1887	30.30	80	93	64	70	84	391	87	
156	Area	2	No	cmap2	24.97	22.08	22.08	0.2178	4.5914	14.01	0.0367	-1.9932	0.1915	30.61	82	95	63	68	86	394	90	

Larger Rondonia - Monthly Atmospheric

OI	Moist Flux	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	Method 1	1	Yes	reanalysis	**18.07**	**-1.85**	1.85	**0.9826**	1.0177	2.81	0.7671	0.7654	**0.8758**	**23.20**	1	6	1	4	1	13	1	
2	Method 1	1	Yes	gpcp	69.42	-49.67	49.67	0.2509	3.9857	73.91	0.2197	-3.2437	0.4688	83.43	42	36	47	47	42	214	44	
3	Method 1	1	Yes	gpcc	76.04	-56.71	56.71	0.1546	6.4683	78.36	0.1626	-8.6425	0.4033	88.68	47	43	52	50	45	237	50	
4	Method 1	1	Yes	gpcc trmm	**44.81**	-19.77	19.77	0.5626	1.7775	38.09	0.5475	0.0879	0.7400	**52.65**	6	20	29	28	6	89	15	
5	Method 1	1	Yes	ghcn cams grid	61.44	-14.75	14.75	0.2263	4.4189	47.30	0.1229	-1.4093	0.3506	74.22	36	15	50	52	33	186	40	
6	Method 1	1	Yes	gpi	68.75	9.14	9.14	0.2474	4.0420	53.41	0.3229	-2.7111	0.5682	81.46	40	12	48	37	39	176	37	
7	Method 1	1	Yes	trmm 3a46	**46.34**	**-0.18**	0.18	0.4904	2.0392	34.04	0.4938	-0.0395	0.7027	**54.21**	7	1	32	32	7	79	10	
8	Method 1	1	Yes	trmm 3b43	**46.83**	-20.29	20.29	0.5124	1.9516	40.57	0.4652	-0.0938	0.6821	**57.20**	8	21	31	34	9	103	19	
9	Method 1	1	Yes	ssmi	50.20	-15.08	15.08	0.3654	2.7367	50.34	0.3589	-0.8363	0.5991	60.93	18	17	35	35	19	124	30	
10	Method 1	1	Yes	opi2	70.90	-57.92	57.92	0.2877	3.4758	74.76	0.2424	-3.2354	0.4924	84.45	44	44	41	39	44	212	43	
11	Method 1	1	Yes	opi3	69.12	-51.32	51.32	0.2667	3.7495	73.50	0.2312	-3.0813	0.4808	82.90	41	39	44	42	41	207	42	
12	Method 1	1	Yes	cmap	68.33	-50.99	50.99	0.2681	3.7300	73.76	0.2308	-3.0620	0.4805	81.94	39	38	43	43	40	203	41	
13	Method 1	1	Yes	cmap2	69.68	-52.50	52.50	0.2621	3.8153	74.35	0.2250	-3.2261	0.4743	83.57	43	41	45	45	43	217	46	
14	*Method 1*	*2*	*Yes*	*reanalysis*	***22.86***	***6.73***	*6.73*	***1.1380***	*1.1380*	*-13.91*	*0.9183*	*0.8992*	***0.9583***	***28.47***	*3*	*8*	*10*	*2*	*3*	*26*	*3*	Plot
15	Method 1	2	Yes	gpcp	48.38	**1.16**	1.16	0.8357	1.1966	6.48	0.5569	0.5352	0.7463	61.13	14	2	18	26	20	80	12	
16	Method 1	2	Yes	gpcc	**38.67**	**-1.65**	1.65	0.7779	1.2855	10.94	0.6419	0.5892	0.8012	**48.89**	5	4	25	14	5	53	5	Plot
17	Method 1	2	Yes	gpcc trmm	53.63	50.54	50.54	0.8321	1.2018	-41.71	0.7477	0.2558	**0.8647**	64.18	23	37	19	7	22	108	23	
18	Method 1	2	Yes	ghcn cams grid	**47.31**	**6.75**	6.75	0.8525	1.1730	0.94	0.5885	0.5652	0.7671	**59.12**	10	9	16	19	10	64	7	
19	Method 1	2	Yes	gpi	75.04	69.69	69.69	0.6351	1.5746	-33.52	0.6678	-0.3074	0.8172	91.71	45	50	28	12	49	184	38	
20	Method 1	2	Yes	trmm 3a46	68.04	67.53	67.53	0.7857	1.2728	-51.38	0.7391	-0.1389	**0.8597**	79.44	38	48	24	9	37	156	35	
21	Method 1	2	Yes	trmm 3b43	54.02	51.38	51.38	0.8318	1.2022	-42.39	0.7574	0.2495	**0.8703**	64.45	25	40	20	6	23	114	25	
22	Method 1	2	Yes	ssmi	53.82	47.55	47.55	0.8252	1.2118	-35.33	0.6762	0.2917	**0.8223**	67.25	24	35	22	10	25	116	26	
23	Method 1	2	Yes	opi2	50.22	-7.66	7.66	0.8699	1.1496	12.56	0.5268	0.5078	0.7258	62.91	20	11	12	30	21	94	17	
24	Method 1	2	Yes	opi3	48.52	**-1.65**	1.65	0.8547	1.1700	8.00	0.5564	0.5400	0.7459	60.82	15	5	15	27	18	80	11	
25	Method 1	2	Yes	cmap	47.70	**-1.40**	1.40	0.8737	1.1446	6.95	0.5636	0.5516	0.7508	60.04	12	3	11	23	15	64	6	
26	Method 1	2	Yes	cmap2	48.25	**-2.92**	2.92	0.8632	1.1585	8.72	0.5610	0.5459	0.7490	60.43	13	7	13	24	16	73	9	
27	*Method 2*	*1*	*Yes*	*reanalysis*	***21.59***	*-12.60*	*12.60*	***1.0332***	*1.0332*	*10.93*	*0.7804*	*0.7192*	***0.8834***	***27.17***	*2*	*14*	*2*	*3*	*2*	*23*	*2*	Plot
28	Method 2	1	Yes	gpcp	78.87	-58.97	58.97	0.2391	4.1824	83.92	0.2162	-3.9724	0.4650	92.99	50	45	49	48	50	242	51	
29	Method 2	1	Yes	gpcc	85.16	-66.97	66.97	0.1828	5.4705	88.81	0.2047	-8.1318	0.4524	98.21	52	47	51	49	52	251	52	
30	Method 2	1	Yes	gpcc trmm	49.58	-31.15	31.15	0.5302	1.8861	49.42	0.6240	-0.2454	0.7900	**56.44**	17	30	30	16	8	101	18	
31	Method 2	1	Yes	ghcn cams grid	59.69	-26.85	26.85	0.2739	3.6510	53.14	0.1311	-1.0649	0.3621	73.62	34	25	42	51	32	184	39	
32	Method 2	1	Yes	gpi	64.45	-11.52	11.52	0.2556	3.9124	65.22	0.3072	-2.3727	0.5543	77.03	37	13	46	38	36	170	36	
33	Method 2	1	Yes	trmm 3a46	52.35	-14.87	14.87	0.4034	2.4789	52.20	0.4773	-0.6673	0.6909	60.56	22	16	34	33	17	122	27	
34	Method 2	1	Yes	trmm 3b43	50.20	-30.21	30.21	0.4889	2.0454	50.64	0.5307	-0.4122	0.7285	59.61	19	29	33	29	13	123	28	
35	Method 2	1	Yes	ssmi	55.25	-25.72	25.72	0.3275	3.0534	62.30	0.3330	-1.4117	0.5770	68.39	27	23	36	36	27	149	34	
36	Method 2	1	Yes	opi2	82.12	-76.31	76.31	0.3119	3.2062	86.60	0.2204	-4.1207	0.4695	95.52	51	52	37	46	51	237	49	
37	Method 2	1	Yes	opi3	77.88	-69.76	69.76	0.3047	3.2819	84.72	0.2322	-3.7094	0.4819	91.60	49	51	38	41	48	227	47	
38	Method 2	1	Yes	cmap	75.62	-66.61	66.61	0.3027	3.3036	84.21	0.2367	-3.5601	0.4865	89.23	46	46	39	40	46	217	45	
39	Method 2	1	Yes	cmap2	76.98	-67.85	67.85	0.2949	3.3910	84.77	0.2296	-3.7199	0.4792	90.78	48	49	40	44	47	228	48	
40	*Method 2*	*2*	*Yes*	*reanalysis*	***25.20***	***-6.82***	*6.82*	*1.1745*	*1.1745*	*-2.50*	*0.9244*	*0.8996*	***0.9614***	***32.75***	*4*	*10*	*17*	*1*	*4*	*36*	*4*	Plot
41	Method 2	2	Yes	gpcp	56.42	-17.08	17.08	**0.8974**	1.1143	21.50	0.5646	0.5299	0.7514	70.87	28	18	8	22	28	104	20	
42	Method 2	2	Yes	gpcc	47.40	-23.66	23.66	**0.8918**	1.1213	27.85	0.6618	0.5880	0.8135	60.01	11	22	9	13	14	69	8	
43	Method 2	2	Yes	gpcc trmm	**47.00**	41.77	41.77	0.8205	1.2188	-33.18	0.7434	0.4173	**0.8622**	59.15	9	33	23	8	11	84	13	
44	Method 2	2	Yes	ghcn cams grid	54.63	-17.25	17.25	**1.0467**	1.0467	15.25	0.5941	0.5650	0.7708	68.17	26	19	3	18	26	92	16	
45	Method 2	2	Yes	gpi	58.23	40.71	40.71	0.7685	1.3012	-21.16	0.6408	0.3947	0.8005	73.05	31	32	26	15	30	134	31	
46	Method 2	2	Yes	trmm 3a46	59.22	55.22	55.22	0.7281	1.3734	-36.42	0.6726	0.0640	0.8201	74.46	33	42	27	11	34	147	33	
47	Method 2	2	Yes	trmm 3b43	49.15	43.82	43.82	0.8310	1.2034	-35.39	0.7598	0.4086	**0.8716**	59.59	16	34	21	5	12	88	14	
48	Method 2	2	Yes	ssmi	51.17	30.02	30.02	0.8568	1.1671	-20.68	0.6124	0.4909	0.7826	66.27	21	28	14	17	24	104	21	
49	Method 2	2	Yes	opi2	60.61	-34.94	34.94	**1.0850**	1.0850	32.80	0.5211	0.4036	0.7219	79.83	35	31	7	31	38	142	32	
50	Method 2	2	Yes	opi3	58.95	-28.98	28.98	**1.0767**	1.0767	26.58	0.5594	0.4779	0.7479	74.69	32	27	5	25	35	124	29	
51	Method 2	2	Yes	cmap	57.52	-25.79	25.79	**1.0815**	1.0815	22.98	0.5697	0.5042	0.7548	72.78	29	24	6	20	29	108	22	
52	Method 2	2	Yes	cmap2	58.02	-27.03	27.03	**1.0671**	1.0671	24.81	0.5664	0.4957	0.7526	73.40	30	26	4	21	31	112	24	

Larger Rondonia - Yearly Atmospheric

OI	Moist Flux	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	Method 1	1	Yes	reanalysis	11.54	-1.80	1.80	1.1224	1.1224	-4.90	0.8606	0.8475	0.9277	13.23	1	6	5	11	1	24	1	
2	Method 1	1	Yes	gpcp	49.73	-49.73	49.73	0.0016	625.0000	82.03	0.0000	-6.9490	0.0014	56.50	33	35	31	31	36	166	36	
3	Method 1	1	Yes	gpcc	56.65	-56.65	56.65	-0.2627		88.99	0.1529	-29.2595	-0.3911	61.26	42	42	37	52	42	215	42	
4	Method 1	1	Yes	gpcc trmm	21.54	-21.54	21.54	1.3233	1.3233	7.37	0.7372	0.0091	0.8586	25.93	11	21	11	15	11	69	11	
5	Method 1	1	Yes	ghcn cams grid	32.63	-14.85	14.85	0.1363	7.3368	51.03	0.0025	-0.2882	0.0504	38.78	16	17	25	25	16	99	16	
6	*Method 1*	*1*	*Yes*	*gpi*	*16.38*	*9.17*	*9.17*	*0.6527*	*1.5321*	*19.70*	*0.3647*	*0.0507*	*0.6039*	*19.46*	*8*	*12*	*18*	*18*	*6*	*62*	*6*	Plot
7	Method 1	1	Yes	trmm 3a46	14.34	-0.21	0.21	2.0580	2.0580	-68.79	0.9441	0.6945	0.9716	16.62	4	1	23	5	3	36	3	
8	Method 1	1	Yes	trmm 3b43	20.28	-20.28	20.28	1.5458	1.5458	-2.41	0.8980	0.0918	0.9476	23.20	10	20	19	9	10	68	10	
9	Method 1	1	Yes	ssmi	16.29	-13.06	13.06	0.7029	1.4227	29.73	0.3581	-0.1461	0.5985	21.07	7	15	15	19	8	64	8	
10	Method 1	1	Yes	opi2	58.55	-58.55	58.55	-0.0209		82.58	0.0004	-9.4937	-0.0201	64.92	43	43	33	33	44	196	44	
11	Method 1	1	Yes	opi3	52.54	-52.54	52.54	-0.0104		82.39	0.0001	-7.7088	-0.0094	59.14	40	40	32	32	39	183	39	
12	Method 1	1	Yes	cmap	52.29	-52.29	52.29	0.0433	23.0947	80.80	0.0015	-7.5269	0.0384	58.52	39	39	27	26	38	169	38	
13	Method 1	1	Yes	cmap2	53.81	-53.81	53.81	0.0192	52.0833	81.54	0.0003	-7.9851	0.0172	60.07	41	41	29	29	40	180	40	
14	Method 1	2	Yes	reanalysis	11.82	6.64	6.64	1.3092	1.3092	-22.74	0.9189	0.8395	0.9586	15.85	2	8	9	7	2	28	2	
15	Method 1	2	Yes	gpcp	38.75	1.07	1.07	-0.4026		64.15	0.0208	-0.2320	-0.1441	43.91	20	2	42	41	22	127	22	
16	Method 1	2	Yes	gpcc	23.17	-1.73	1.73	-0.6285		69.85	0.1197	-0.6895	-0.3459	29.84	12	4	47	51	13	127	13	
17	Method 1	2	Yes	gpcc trmm	50.58	50.58	50.58	1.4475	1.4475	-74.13	0.8439	-3.9743	0.9186	51.83	35	37	17	12	30	131	30	
18	Method 1	2	Yes	ghcn cams grid	39.54	6.66	6.66	-0.6236		77.91	0.0315	-0.2103	-0.1774	43.52	23	9	46	45	20	143	20	
19	Method 1	2	Yes	gpi	69.62	69.62	69.62	0.9360	1.0684	-63.28	0.2895	-4.8325	0.5381	74.30	50	50	3	22	49	174	49	
20	Method 1	2	Yes	trmm 3a46	69.15	69.15	69.15	2.1630	2.1630	-155.57	0.9977	-6.3132	0.9989	70.57	49	49	24	1	46	169	46	
21	Method 1	2	Yes	trmm 3b43	51.42	51.42	51.42	1.7340	1.7340	-90.65	0.9794	-4.0920	0.9897	52.44	36	38	20	3	31	128	31	
22	Method 1	2	Yes	ssmi	51.83	50.57	50.57	0.9959	1.0041	-50.28	0.2890	-3.0708	0.5376	55.67	37	36	1	23	34	131	34	
23	Method 1	2	Yes	opi2	42.65	-7.74	7.74	-0.6626		70.39	0.0811	-0.4680	-0.2849	47.93	26	11	50	47	26	160	26	
24	Method 1	2	Yes	opi3	38.81	-1.74	1.74	-0.4437		64.81	0.0262	-0.2530	-0.1618	44.28	21	5	44	42	25	137	25	
25	Method 1	2	Yes	cmap	37.97	-1.49	1.49	-0.2808		57.76	0.0101	-0.2013	-0.1004	43.35	18	3	39	37	19	116	19	
26	Method 1	2	Yes	cmap2	38.26	-3.01	3.01	-0.3481		60.19	0.0159	-0.2284	-0.1261	43.84	19	7	40	40	21	127	21	
27	*Method 2*	*1*	*Yes*	*reanalysis*	*15.17*	*-12.54*	*12.54*	*1.3156*	*1.3156*	*-3.32*	*0.8983*	*0.7406*	*0.9478*	*19.61*	*5*	*14*	*10*	*8*	*7*	*44*	*7*	Plot
28	Method 2	1	Yes	gpcp	59.02	-59.02	59.02	-0.1054		95.28	0.0062	-7.2351	-0.0790	66.16	44	44	35	35	45	203	45	
29	Method 2	1	Yes	gpcc	66.91	-66.91	66.91	-0.2723		100.90	0.0940	-22.3974	-0.3066	71.59	46	46	38	48	47	225	47	
30	Method 2	1	Yes	gpcc trmm	32.40	-32.40	32.40	0.9697	1.0312	33.65	0.5859	-1.9641	0.7654	34.93	15	29	2	16	15	77	15	
31	Method 2	1	Yes	ghcn cams grid	39.20	-26.87	26.87	0.0632	15.8228	60.66	0.0003	-0.5516	0.0183	48.39	22	25	26	28	27	128	27	
32	Method 2	1	Yes	gpi	18.66	-11.49	11.49	0.7281	1.3734	31.11	0.3211	0.0001	0.5667	21.87	9	13	14	20	9	65	9	
33	Method 2	1	Yes	trmm 3a46	13.37	-13.37	13.37	1.7801	1.7801	-34.66	0.8720	0.3757	0.9338	18.42	3	16	21	10	4	54	4	
34	Method 2	1	Yes	trmm 3b43	30.21	-30.21	30.21	1.2154	1.2154	21.60	0.8005	-1.6141	0.8947	31.59	14	28	7	13	14	76	14	
35	Method 2	1	Yes	ssmi	23.21	-23.21	23.21	0.8750	1.1429	30.08	0.3789	-0.8171	0.6155	28.70	13	22	6	17	12	70	12	
36	Method 2	1	Yes	opi2	76.89	-76.89	76.89	-0.1172		93.57	0.0076	-11.8088	-0.0874	82.51	52	52	36	36	52	228	52	
37	Method 2	1	Yes	opi3	70.92	-70.92	70.92	-0.0399		92.66	0.0008	-9.9798	-0.0276	76.40	51	51	34	34	51	221	51	
38	Method 2	1	Yes	cmap	67.73	-67.73	67.73	0.0276	36.2319	91.16	0.0004	-9.0882	0.0192	73.23	47	47	28	27	48	197	48	
39	Method 2	1	Yes	cmap2	68.98	-68.98	68.98	0.0072	138.8889	91.66	0.0000	-9.4436	0.0051	74.51	48	48	30	30	50	206	50	
40	*Method 2*	*2*	*Yes*	*reanalysis*	*15.64*	*-6.91*	*6.91*	*1.4361*	*1.4361*	*-16.36*	*0.9487*	*0.8387*	*0.9740*	*18.50*	*6*	*10*	*16*	*4*	*5*	*41*	*5*	Plot
41	Method 2	2	Yes	gpcp	48.31	-17.17	17.17	-0.6579		88.65	0.0421	-0.3642	-0.2052	53.80	30	18	49	46	32	175	32	
42	Method 2	2	Yes	gpcc	36.07	-23.73	23.73	-0.6337		86.92	0.0972	-1.3470	-0.3117	40.69	17	23	48	50	17	155	17	
43	Method 2	2	Yes	gpcc trmm	41.77	41.77	41.77	1.0820	1.0820	-45.69	0.7932	-5.1540	0.8906	42.50	25	33	4	14	18	94	18	
44	Method 2	2	Yes	ghcn cams grid	45.08	-17.35	17.35	-0.8331		96.06	0.0314	-0.2625	-0.1773	51.76	29	19	51	44	29	172	29	
45	Method 2	2	Yes	gpi	42.94	40.63	40.63	1.2903	1.2903	-65.13	0.3079	-0.9446	0.5549	50.94	27	32	8	21	28	116	28	
46	Method 2	2	Yes	trmm 3a46	59.67	59.67	59.67	1.8184	1.8184	-115.55	0.9927	-8.9503	0.9963	60.31	45	45	22	2	41	155	41	
47	Method 2	2	Yes	trmm 3b43	43.82	43.82	43.82	1.3359	1.3359	-60.57	0.9326	-5.6658	0.9657	44.24	28	34	12	6	24	104	24	
48	Method 2	2	Yes	ssmi	39.93	33.99	33.99	1.3659	1.3659	-57.94	0.2842	-0.8025	0.5331	44.19	24	30	13	24	23	114	23	
49	Method 2	2	Yes	opi2	52.27	-35.04	35.04	-0.9366		83.93	0.0944	-0.8877	-0.3072	63.29	38	31	52	49	43	213	43	
50	Method 2	2	Yes	opi3	50.31	-29.07	29.07	-0.6233		79.74	0.0303	-0.5732	-0.1739	57.78	34	27	45	43	37	186	37	
51	Method 2	2	Yes	cmap	48.70	-25.88	25.88	-0.3869		73.59	0.0119	-0.4568	-0.1092	55.60	31	24	41	38	33	167	33	
52	Method 2	2	Yes	cmap2	49.32	-27.12	27.12	-0.4358		74.74	0.0157	-0.5009	-0.1251	56.44	32	26	43	39	35	175	35	

Larger Rondonia - Monthly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	*Linear*	*1*	*Yes*	*reanalysis*	*73.38*	*-58.55*	***0.5956***	*-38.22*	*0.1401*	*-0.6290*	*0.3743*	*89.03*	*159*	*243*	*3*	*45*	*140*	*590*	*63*	Plot
2	Linear	1	Yes	gpcp	92.08	-44.13	0.0851	-14.12	0.0104	-1.6141	0.1019	109.51	345	130	60	83	295	913	176	
3	Linear	1	Yes	gpcc	85.32	-33.31	0.1336	-10.16	0.0291	-1.4720	0.1705	99.11	274	43	57	65	220	659	86	
4	Linear	1	Yes	gpcc trmm	110.38	-65.92	-0.0005	-27.02	0.0000	-1.6198	-0.0004	127.36	419	291	139	137	397	1383	305	
5	Linear	1	Yes	ghcn cams grid	88.94	-44.83	0.1531	-14.16	0.0222	-1.0702	0.1489	100.21	313	152	54	69	232	820	134	
6	Linear	1	Yes	gpi	102.38	-85.74	0.2568	-32.12	0.1140	-2.3762	0.3376	127.12	384	403	38	51	395	1271	282	
7	Linear	1	Yes	trmm 3a46	110.85	-100.87	**0.3539**	-60.44	0.1324	-1.9752	0.3638	134.78	420	444	14	48	426	1352	301	
8	Linear	1	Yes	trmm 3b43	111.17	-66.68	-0.0567	-24.44	0.0029	-1.7501	-0.0543	129.47	422	297	254	175	409	1557	341	
9	Linear	1	Yes	ssmi	84.53	-69.50	**0.4002**	-36.88	0.1919	-1.2007	0.4380	105.15	265	327	6	33	262	893	169	
10	Linear	1	Yes	opi2	81.64	**-27.39**	0.0276	-12.84	0.0007	-1.0017	0.0259	95.51	242	17	88	108	185	640	77	
11	Linear	1	Yes	opi3	86.57	-33.93	0.0133	-12.71	0.0002	-1.2049	0.0132	100.24	284	58	103	123	233	801	126	
12	Linear	1	Yes	cmap	88.36	-37.25	0.0108	-12.29	0.0001	-1.2717	0.0107	101.79	305	95	109	128	239	876	161	
13	Linear	1	Yes	cmap2	88.55	-36.01	0.0060	-12.16	0.0000	-1.2832	0.0060	102.04	309	83	114	134	242	882	163	
14	Linear	1	No	reanalysis	63.31	-58.42	-0.1030	-2.97	0.1684	-47.3344	-0.4104	76.50	39	239	367	326	30	1001	209	
15	Linear	1	No	gpcp	78.54	-44.17	-0.0847	-8.59	0.2087	-42.6131	-0.4569	99.34	215	132	326	367	224	1264	280	
16	Linear	1	No	gpcc	75.19	-33.18	-0.0391	-5.41	0.5345	-437.3965	-0.7311	89.96	179	38	218	455	151	1041	226	
17	Linear	1	No	gpcc trmm	87.50	-65.02	-0.2241	-17.41	0.4970	-21.6955	-0.7050	114.12	296	287	456	450	331	1820	400	
18	Linear	1	No	ghcn cams grid	68.05	-44.38	-0.0735	-5.51	0.2040	-59.5133	-0.4517	85.75	117	138	297	363	111	1026	217	
19	Linear	1	No	gpi	106.79	-85.28	-0.0608	-8.75	0.1061	-57.3677	-0.3257	129.76	399	400	268	269	411	1747	384	
20	Linear	1	No	trmm 3a46	111.22	-95.38	-0.1823	-21.40	0.3602	-30.0588	-0.6002	136.01	423	427	441	423	429	2143	452	
21	Linear	1	No	trmm 3b43	86.42	-65.79	-0.2286	-16.68	0.5122	-21.8735	-0.7157	114.19	282	290	459	451	334	1816	399	
22	Linear	1	No	ssmi	91.71	-68.91	-0.0762	-10.36	0.1036	-34.5811	-0.3218	109.65	341	320	301	268	296	1526	336	
23	Linear	1	No	opi2	62.91	**-26.24**	-0.1258	-9.39	0.2892	-25.9996	-0.5377	77.21	35	7	410	410	34	896	170	
24	Linear	1	No	opi3	66.38	-32.78	-0.1108	-8.89	0.2478	-29.5293	-0.4978	82.10	85	32	392	397	74	980	198	
25	Linear	1	No	cmap	67.43	-36.58	-0.1072	-8.64	0.2339	-30.7516	-0.4837	83.88	102	87	385	389	88	1051	230	
26	Linear	1	No	cmap2	67.64	-35.34	-0.1058	-8.81	0.2330	-30.8459	-0.4827	84.01	108	75	381	385	92	1041	225	
27	Linear	1	1 mon	reanalysis	63.74	-58.35	-0.0524	-5.52	0.0435	-45.7063	-0.2087	**75.25**	47	238	244	215	23	767	112	
28	Linear	1	1 mon	gpcp	79.33	-43.87	-0.0906	-8.44	0.2377	-42.6726	-0.4875	99.57	223	127	344	391	226	1311	292	
29	Linear	1	1 mon	gpcc	75.97	-32.99	-0.0456	-5.22	0.7310	-443.2172	-0.8550	90.64	190	35	229	465	156	1075	240	
30	Linear	1	1 mon	gpcc trmm	89.64	-65.93	-0.2318	-16.86	0.5267	-21.7967	-0.7257	115.35	321	292	460	454	343	1870	416	
31	Linear	1	1 mon	ghcn cams grid	68.78	-44.48	-0.0802	-5.25	0.2425	-60.0078	-0.4924	86.16	127	140	312	394	118	1091	246	
32	Linear	1	1 mon	gpi	108.17	-85.18	-0.0773	-7.58	0.1715	-58.1243	-0.4141	130.91	410	397	302	330	416	1855	411	
33	Linear	1	1 mon	trmm 3a46	117.26	-98.10	-0.2636	-15.74	0.7199	-31.6207	-0.8485	140.97	443	435	465	463	447	2253	463	
34	Linear	1	1 mon	trmm 3b43	86.24	-64.58	-0.2434	-16.33	0.5723	-21.5580	-0.7565	114.35	281	286	462	457	335	1821	401	
35	Linear	1	1 mon	ssmi	93.86	-68.77	-0.1056	-8.80	0.1986	-35.4807	-0.4457	111.35	360	319	380	361	313	1733	378	
36	Linear	1	1 mon	opi2	63.39	**-26.49**	-0.1278	-9.34	0.2973	-26.0362	-0.5452	77.39	41	8	413	415	37	914	177	
37	Linear	1	1 mon	opi3	66.81	-33.05	-0.1125	-8.84	0.2546	-29.5640	-0.5046	82.29	92	36	396	401	76	1001	210	
38	Linear	1	1 mon	cmap	68.03	-36.68	-0.1077	-8.63	0.2360	-30.7769	-0.4858	84.06	116	90	387	390	94	1077	241	
39	Linear	1	1 mon	cmap2	68.16	-35.44	-0.1060	-8.81	0.2339	-30.8607	-0.4837	84.17	119	77	382	388	98	1064	234	
40	Linear	1	2 mon	reanalysis	63.81	-58.31	-0.0033	-7.99	0.0002	-44.1204	-0.0130	**74.01**	49	236	147	147	16	595	65	
41	Linear	1	2 mon	gpcp	78.90	-43.85	-0.0807	-8.78	0.1885	-42.0678	-0.4342	99.05	219	126	313	353	219	1230	273	
42	Linear	1	2 mon	gpcc	75.36	-32.65	-0.0391	-5.36	0.5442	-441.4968	-0.7377	90.28	183	31	217	456	153	1040	223	
43	Linear	1	2 mon	gpcc trmm	89.79	-66.77	-0.2007	-17.79	0.3919	-21.1506	-0.6261	114.62	324	298	447	428	336	1833	409	
44	Linear	1	2 mon	ghcn cams grid	68.15	-44.58	-0.0679	-5.67	0.1737	-59.1044	-0.4168	85.54	118	143	282	336	108	987	204	
45	Linear	1	2 mon	gpi	108.67	-85.37	-0.0775	-7.56	0.1721	-58.0969	-0.4148	131.21	415	401	303	332	418	1869	415	
46	Linear	1	2 mon	trmm 3a46	120.02	-100.27	-0.2825	-13.90	0.8016	-31.8310	-0.8953	143.14	453	442	467	467	453	2282	466	
47	Linear	1	2 mon	trmm 3b43	85.56	-65.33	-0.2048	-17.53	0.4026	-20.7792	-0.6345	113.24	276	288	450	432	327	1773	388	
48	Linear	1	2 mon	ssmi	94.77	-68.92	-0.1140	-8.35	0.2315	-35.7507	-0.4811	112.10	368	322	397	383	319	1789	392	
49	Linear	1	2 mon	opi2	**62.05**	**-26.72**	-0.1078	-9.64	0.2108	-25.2823	-0.4592	76.44	23	10	389	368	29	819	132	
50	Linear	1	2 mon	opi3	65.59	-33.30	-0.0945	-9.22	0.1789	-28.8160	-0.4230	81.41	72	42	352	344	64	874	159	
51	Linear	1	2 mon	cmap	67.07	-36.65	-0.0893	-9.11	0.1624	-29.9988	-0.4029	83.16	96	89	342	317	83	927	183	
52	Linear	1	2 mon	cmap2	67.16	-35.40	-0.0879	-9.26	0.1606	-30.0745	-0.4008	83.26	97	76	339	314	84	910	173	
53	Linear	1	3 mon	reanalysis	63.51	-58.29	0.0341	-9.89	0.0185	-42.9366	0.1361	**73.07**	44	235	78	73	11	441	30	
54	Linear	1	3 mon	gpcp	77.33	-44.00	-0.0485	-9.81	0.0681	-40.2025	-0.2609	97.06	204	129	236	251	200	1020	214	
55	Linear	1	3 mon	gpcc	74.53	-32.80	-0.0212	-5.79	0.1611	-433.5681	-0.4014	89.29	169	33	195	315	142	854	152	
56	Linear	1	3 mon	gpcc trmm	86.97	-68.17	-0.1114	-21.19	0.1183	-19.3537	-0.3439	110.82	289	315	394	273	308	1579	343	
57	Linear	1	3 mon	ghcn cams grid	66.68	-44.70	-0.0373	-6.77	0.0524	-56.8506	-0.2289	83.91	90	149	215	226	89	769	116	
58	Linear	1	3 mon	gpi	107.74	-85.83	-0.0485	-9.64	0.0671	-56.4291	-0.2591	129.66	406	405	237	247	410	1705	373	
59	Linear	1	3 mon	trmm 3a46	119.69	-101.86	-0.2005	-19.18	0.3980	-30.0937	-0.6308	141.01	452	447	446	431	448	2224	458	
60	Linear	1	3 mon	trmm 3b43	83.69	-66.22	-0.1181	-20.77	0.1326	-19.0837	-0.3641	109.66	255	295	403	290	297	1540	339	
61	Linear	1	3 mon	ssmi	93.71	-68.97	-0.0871	-9.84	0.1351	-34.7354	-0.3676	110.86	357	323	334	294	309	1617	349	
62	Linear	1	3 mon	opi2	**60.23**	**-26.92**	-0.0592	-10.37	0.0636	-23.5007	-0.2521	**73.93**	11	12	265	242	15	545	48	
63	Linear	1	3 mon	opi3	63.83	-33.38	-0.0489	-10.22	0.0480	-26.9883	-0.2190	79.02	50	45	238	224	48	605	69	
64	Linear	1	3 mon	cmap	65.04	-36.39	-0.0464	-10.21	0.0437	-28.0622	-0.2090	80.67	64	85	233	217	58	657	84	
65	Linear	1	3 mon	cmap2	65.09	-35.14	-0.0459	-10.28	0.0436	-28.1315	-0.2088	80.76	65	73	231	216	59	644	79	
66	Linear	1	4 mon	reanalysis	63.04	-58.31	0.0527	-10.83	0.0441	-42.3708	0.2099	**72.62**	36	237	63	53	7	396	18	
67	Linear	1	4 mon	gpcp	74.85	-44.16	-0.0064	-11.19	0.0012	-37.7676	-0.0342	94.32	174	131	155	160	178	798	124	
68	Linear	1	4 mon	gpcc	73.04	-33.40	0.0019	-6.35	0.0013	-423.0492	0.0366	87.78	155	46	132	103	131	567	54	
69	Linear	1	4 mon	gpcc trmm	81.69	-69.78	0.0060	-25.99	0.0003	-17.1004	0.0181	105.31	243	333	115	112	265	1068	235	
70	Linear	1	4 mon	ghcn cams grid	64.80	-44.76	0.0016	-8.18	0.0001	-53.9588	0.0095	81.82	62	150	134	129	71	546	49	
71	Linear	1	4 mon	gpi	105.79	-86.20	-0.0086	-12.54	0.0021	-54.1518	-0.0460	127.38	394	410	162	167	398	1531	337	
72	Linear	1	4 mon	trmm 3a46	114.29	-101.50	-0.0778	-27.60	0.0599	-27.1450	-0.2447	135.85	434	445	304	234	428	1845	410	
73	Linear	1	4 mon	trmm 3b43	79.36	-67.40	-0.0009	-25.36	0.0000	-16.8603	-0.0027	104.18	224	306	142	142	256	1070	236	
74	Linear	1	4 mon	ssmi	91.66	-69.23	-0.0404	-12.39	0.0290	-33.0749	-0.1703	108.57	340	325	220	210	290	1385	306	
75	Linear	1	4 mon	opi2	**57.66**	**-26.94**	-0.0023	-11.27	0.0001	-21.4342	-0.0100	**70.87**	4	13	146	144	3	310	9	
76	Linear	1	4 mon	opi3	**61.35**	-33.32	0.0033	-11.38	0.0002	-24.8565	0.0146	76.08	17	44	127	121	28	337	11	
77	Linear	1	4 mon	cmap	62.37	-36.16	0.0042	-11.48	0.0004	-25.8450	0.0189	77.67	27	84	123	111	39	384	17	
78	Linear	1	4 mon	cmap2	62.44	-34.92	0.0037	-11.47	0.0003	-25.9196	0.0170	77.77	29	69	125	117	40	380	15	
79	*Linear*	*2*	*Yes*	*reanalysis*	*78.57*	*-74.01*	*0.2602*	*-34.53*	*0.2995*	*-5.5045*	***0.5473***	*102.61*	*216*	*362*	*36*	*16*	*246*	*876*	*162*	Plot
80	Linear	2	Yes	gpcp	73.38	-63.75	0.2261	-30.39	0.2365	-5.0446	0.4863	98.92	160	281	51	28	218	738	105	
81	Linear	2	Yes	gpcc	68.62	-56.20	0.2451	-27.01	0.2918	-4.5838	**0.5402**	91.45	126	226	43	17	163	575	56	
82	Linear	2	Yes	gpcc trmm	76.08	-71.63	0.2856	-37.47	0.2696	-3.9736	**0.5192**	99.91	193	345	27	23	229	817	131	
83	Linear	2	Yes	ghcn cams grid	69.90	-63.58	0.2618	-31.88	0.2452	-4.2019	0.4952	91.77	138	279	33	26	165	641	78	
84	Linear	2	Yes	gpi	105.79	-104.37	0.2607	-41.96	0.4009	-9.5393	**0.6332**	130.74	393	465	35	9	415	1317	293	
85	Linear	2	Yes	trmm 3a46	93.20	-93.06	**0.3840**	-50.47	0.5132	-4.8183	**0.7164**	112.09	353	418	9	3	318	1101	251	
86	Linear	2	Yes	trmm 3b43	77.94	-73.68	0.2760	-37.57	0.2508	-4.1796	**0.5008**	101.96	211	356	28	24	241	860	154	
87	Linear	2	Yes	ssmi	87.14	-85.27	**0.3339**	-41.84	0.4892	-5.8918	**0.6994**	106.31	294	399	16	5	270	984	202	
88	Linear	2	Yes	opi2	**59.11**	-45.88	0.2467	-26.87	0.1778	-2.7804	0.4217	78.23	8	167	42	41	43	301	7	
89	Linear	2	Yes	opi3	63.78	-51.85	0.2419	-28.19	0.1863	-3.3047	0.4317	83.48	48	183	46	36	85	398	19	
90	Linear	2	Yes	cmap	65.46	-55.04	0.2418	-28.96	0.1880	-3.5313	0.4336	85.65	71	215	47	35	109	477	37	
91	Linear	2	Yes	cmap2	65.18	-53.80	0.2368	-28.49	0.1841	-3.5160	0.4291	85.50	66	203	49	37	107	462	33	
92	Linear	2	No	reanalysis	94.35	-73.43	-0.0896	-15.28	0.1922	-46.2319	-0.4384	118.89	366	351	343	357	367	1784	391	
93	Linear	2	No	gpcp	89.70	-63.17	-0.0836	-16.46	0.1748	-42.5432	-0.4181	114.15	322	271	324	338	332	1587	346	
94	Linear	2	No	gpcc	88.00	-55.97	-0.0861	-13.96	0.2595	-56.0603	-0.5094	108.93	300	225	331	402	293	1551	340	
95	Linear	2	No	gpcc trmm	93.83	-71.91	-0.1372	-17.52	0.2794	-30.4878	-0.5286	118.62	359	346	419	407	365	1896	419	
96	Linear	2	No	ghcn cams grid	84.09	-63.00	-0.0989	-15.82	0.1892	-36.4466	-0.4350	105.86	261	264	358	354	266	1503	331	
97	Linear	2	No	gpi	123.00	-103.55	-0.0814	-12.27	0.2225	-76.6880	-0.4717	148.77	462	456	317	375	465	2075	447	
98	Linear	2	No	trmm 3a46	114.05	-94.30	-0.0990	-18.30	0.1540	-37.4325	-0.3925	135.55	432	421	360	307	427	1947	427	
99	Linear	2	No	trmm 3b43	93.79	-73.96	-0.1405	-17.08	0.2920	-31.1839	-0.5403	119.92	358	360	420	411	372	1921	424	
100	Linear	2	No	ssmi	107.56	-84.98	-0.1017	-13.14	0.2396	-51.1336	-0.4895	127.24	405	395	364	392	396	1952	428	
101	Linear	2	No	opi2	73.04	-45.31	-0.1258	-16.88	0.2502	-26.6391	-0.5002	90.95	154	161	411	398	160	1284	286	

Larger Rondonia - Monthly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR
102	Linear	2	No	opi3	76.10	-51.27	-0.1069	-16.72	0.1969	-29.6947	-0.4437	95.84	194	174	384	360	189	1301	291
103	Linear	2	No	cmap	77.62	-54.46	-0.1053	-16.44	0.1928	-30.9636	-0.4391	97.80	208	211	376	358	206	1359	302
104	Linear	2	No	cmap2	77.36	-53.22	-0.1036	-16.63	0.1905	-30.9011	-0.4364	97.71	205	199	370	355	205	1334	298
105	Linear	2	1 mon	reanalysis	95.46	-73.50	-0.0855	-15.50	0.1750	-46.0047	-0.4183	118.81	371	352	330	339	366	1758	385
106	Linear	2	1 mon	gpcp	89.35	-62.84	-0.0717	-17.00	0.1283	-41.6397	-0.3581	113.16	316	255	290	283	326	1470	327
107	Linear	2	1 mon	gpcc	88.15	-55.80	-0.0722	-14.44	0.1826	-55.0272	-0.4273	108.19	302	223	291	349	288	1453	318
108	Linear	2	1 mon	gpcc trmm	93.67	-70.50	-0.1682	-16.79	0.4182	-30.8762	-0.6467	119.37	356	337	432	437	370	1932	425
109	Linear	2	1 mon	ghcn cams grid	83.77	-62.81	-0.0834	-16.51	0.1344	-35.6813	-0.3667	104.96	256	253	323	293	261	1386	307
110	Linear	2	1 mon	gpi	123.80	-103.05	-0.0852	-11.95	0.2427	-76.2733	-0.4926	148.69	464	454	329	395	464	2106	449
111	Linear	2	1 mon	trmm 3a46	118.69	-97.81	-0.1639	-13.84	0.4109	-40.3278	-0.6410	140.53	449	434	429	434	446	2192	456
112	Linear	2	1 mon	trmm 3b43	93.24	-72.79	-0.1672	-16.46	0.4142	-31.6248	-0.6436	120.76	354	348	430	435	375	1942	426
113	Linear	2	1 mon	ssmi	108.57	-83.93	-0.1144	-12.07	0.3014	-50.9969	-0.5490	127.10	414	388	399	417	394	2012	437
114	Linear	2	1 mon	opi2	72.62	-45.10	-0.1039	-17.47	0.1701	-25.8094	-0.4125	89.73	150	156	372	327	147	1152	255
115	Linear	2	1 mon	opi3	75.33	-51.02	-0.0883	-17.34	0.1338	-28.8592	-0.3658	94.70	182	169	340	292	180	1163	257
116	Linear	2	1 mon	cmap	77.05	-54.20	-0.0872	-17.09	0.1319	-30.1258	-0.3631	96.69	200	205	335	288	196	1224	270
117	Linear	2	1 mon	cmap2	76.67	-52.96	-0.0848	-17.28	0.1273	-30.0292	-0.3568	96.53	197	193	327	281	194	1192	263
118	Linear	2	2 mon	reanalysis	94.08	-73.65	-0.0730	-16.20	0.1276	-45.4649	-0.3572	118.26	363	355	293	282	361	1654	360
119	Linear	2	2 mon	gpcp	87.65	-62.83	-0.0501	-17.97	0.0626	-40.5666	-0.2502	111.85	298	254	240	240	315	1347	299
120	Linear	2	2 mon	gpcc	86.00	-55.57	-0.0444	-15.49	0.0691	-52.8545	-0.2628	106.45	278	220	226	252	272	1248	277
121	Linear	2	2 mon	gpcc trmm	92.69	-70.58	-0.1486	-17.91	0.3276	-30.2024	-0.5723	119.14	351	338	425	419	369	1902	420
122	Linear	2	2 mon	ghcn cams grid	81.62	-62.80	-0.0548	-17.77	0.0580	-34.5720	-0.2409	103.47	241	252	248	233	253	1227	271
123	Linear	2	2 mon	gpi	122.77	-102.91	-0.0739	-12.90	0.1825	-75.2235	-0.4272	148.06	461	452	298	348	463	2022	438
124	Linear	2	2 mon	trmm 3a46	121.10	-100.30	-0.1780	-12.67	0.4735	-40.9205	-0.6881	142.88	456	443	439	446	452	2236	460
125	Linear	2	2 mon	trmm 3b43	92.22	-72.66	-0.1496	-17.55	0.3328	-30.9193	-0.5769	120.50	347	347	426	420	374	1914	423
126	Linear	2	2 mon	ssmi	107.84	-83.95	-0.1072	-12.68	0.2662	-50.8224	-0.5159	126.92	408	389	386	404	393	1980	433
127	Linear	2	2 mon	opi2	70.64	-45.15	-0.0621	-18.55	0.0609	-24.5197	-0.2468	87.64	142	157	272	237	129	937	186
128	Linear	2	2 mon	opi3	73.29	-51.04	-0.0580	-18.32	0.0577	-27.8338	-0.2403	93.16	157	170	260	232	169	988	205
129	Linear	2	2 mon	cmap	74.84	-54.24	-0.0568	-18.17	0.0560	-29.0918	-0.2367	95.17	173	206	255	231	182	1047	229
130	Linear	2	2 mon	cmap2	74.58	-52.99	-0.0545	-18.32	0.0526	-28.9753	-0.2294	94.98	171	194	247	227	181	1020	213
131	Linear	2	3 mon	reanalysis	91.85	-73.84	-0.0261	-18.66	0.0163	-43.2888	-0.1275	115.53	342	358	205	204	344	1453	319
132	Linear	2	3 mon	gpcp	84.81	-62.92	-0.0156	-19.39	0.0061	-38.9053	-0.0779	109.67	267	261	181	193	298	1200	265
133	Linear	2	3 mon	gpcc	83.44	-55.81	-0.0091	-16.82	0.0029	-50.3633	-0.0536	104.34	252	224	164	174	259	1073	239
134	Linear	2	3 mon	gpcc trmm	91.07	-71.61	-0.0878	-20.53	0.1136	-28.3486	-0.3371	116.80	335	344	337	271	353	1640	354
135	Linear	2	3 mon	ghcn cams grid	78.59	-62.90	-0.0115	-19.57	0.0026	-32.9454	-0.0506	101.15	217	259	171	170	236	1053	231
136	Linear	2	3 mon	gpi	120.48	-103.02	-0.0371	-15.97	0.0460	-72.6367	-0.2145	145.91	454	453	214	221	459	1801	396
137	Linear	2	3 mon	trmm 3a46	120.48	-101.90	-0.1293	-16.04	0.2460	-39.3352	-0.4960	141.88	455	449	414	396	449	2163	454
138	Linear	2	3 mon	trmm 3b43	90.64	-73.95	-0.0911	-20.16	0.1220	-29.1321	-0.3493	118.35	331	359	345	276	363	1674	364
139	Linear	2	3 mon	ssmi	105.44	-84.18	-0.0570	-16.13	0.0766	-49.2781	-0.2767	124.40	392	390	256	256	386	1680	365
140	Linear	2	3 mon	opi2	67.48	-45.30	-0.0132	-19.73	0.0027	-23.0104	-0.0523	85.07	104	160	174	173	105	716	99
141	Linear	2	3 mon	opi3	70.06	-51.17	-0.0114	-19.70	0.0022	-26.2772	-0.0474	90.67	140	173	169	169	157	808	128
142	Linear	2	3 mon	cmap	71.77	-54.33	-0.0097	-19.73	0.0016	-27.4989	-0.0404	92.68	146	208	165	163	168	850	149
143	Linear	2	3 mon	cmap2	71.45	-53.08	-0.0101	-19.73	0.0018	-27.4460	-0.0426	92.59	145	196	166	165	167	839	145
144	Linear	2	4 mon	reanalysis	89.63	-74.24	0.0195	-21.13	0.0091	-41.1136	0.0954	112.86	320	366	98	88	322	1194	264
145	Linear	2	4 mon	gpcp	81.92	-63.14	0.0290	-21.32	0.0210	-36.6916	0.1450	106.77	244	269	85	70	276	944	189
146	Linear	2	4 mon	gpcc	81.39	-56.42	0.0370	-18.56	0.0478	-47.2212	0.2186	101.35	238	228	73	52	237	828	138
147	Linear	2	4 mon	gpcc trmm	88.75	-73.33	-0.0153	-23.97	0.0034	-26.2317	-0.0582	113.76	311	350	178	179	330	1348	300
148	Linear	2	4 mon	ghcn cams grid	75.86	-63.17	0.0420	-21.88	0.0340	-30.8912	0.1845	98.21	188	270	66	57	213	794	122
149	Linear	2	4 mon	gpi	118.60	-103.30	0.0058	-19.54	0.0011	-69.7695	0.0336	143.35	448	455	116	104	454	1577	342
150	Linear	2	4 mon	trmm 3a46	116.74	-101.73	-0.0494	-22.22	0.0360	-36.4172	-0.1898	138.34	441	446	239	212	438	1776	389
151	Linear	2	4 mon	trmm 3b43	88.48	-75.61	-0.0134	-24.03	0.0026	-26.8709	-0.0511	115.09	307	371	175	171	340	1364	303
152	Linear	2	4 mon	ssmi	102.78	-84.66	-0.0033	-19.95	0.0003	-47.7752	-0.0163	121.74	387	393	148	149	378	1455	321
153	Linear	2	4 mon	opi2	64.20	-45.48	0.0444	-21.20	0.0311	-21.2031	0.1764	81.94	56	165	65	59	73	418	24
154	Linear	2	4 mon	opi3	67.42	-51.40	0.0419	-21.39	0.0301	-24.4571	0.1734	87.74	101	177	67	61	130	536	44
155	Linear	2	4 mon	cmap	69.23	-54.54	0.0415	-21.51	0.0299	-25.7326	0.1730	89.92	133	212	68	62	149	624	75
156	Linear	2	4 mon	cmap2	68.86	-53.29	0.0413	-21.45	0.0302	-25.6347	0.1738	89.75	131	200	70	60	148	609	70
157	Point	1	Yes	reanalysis	72.07	-57.21	**0.6191**	-38.06	0.1524	-0.5823	0.3904	87.46	147	234	1	44	127	553	52
158	Point	1	Yes	gpcp	90.39	-42.47	0.1065	-13.17	0.0165	-1.5395	0.1283	107.29	329	111	58	75	280	853	150
159	Point	1	Yes	gpcc	84.41	-32.33	0.1443	-9.46	0.0340	-1.4266	0.1845	98.01	264	29	55	56	211	615	72
160	Point	1	Yes	gpcc trmm	107.03	-63.41	0.0451	-26.28	0.0019	-1.5276	0.0438	123.30	401	277	64	99	382	1223	269
161	Point	1	Yes	ghcn cams grid	87.56	-43.48	0.1748	-13.60	0.0291	-1.0112	0.1705	98.46	297	124	52	64	215	752	110
162	Point	1	Yes	gpi	100.77	-84.20	0.2706	-31.57	0.1286	-2.3122	0.3586	124.86	382	391	30	49	388	1240	274
163	Point	1	Yes	trmm 3a46	107.39	-97.53	**0.3939**	-59.61	0.1679	-1.8249	0.4097	129.79	404	433	7	43	412	1299	290
164	Point	1	Yes	trmm 3b43	107.94	-64.21	-0.0109	-23.80	0.0001	-1.6610	-0.0106	125.50	409	284	168	145	390	1396	310
165	Point	1	Yes	ssmi	82.80	-67.89	**0.4174**	-36.20	0.2127	-1.1368	0.4612	102.64	250	313	4	31	247	845	148
166	Point	1	Yes	opi2	80.16	**-25.74**	0.0543	-11.59	0.0026	-0.9452	0.0514	93.64	231	6	61	96	173	567	55
167	Point	1	Yes	opi3	85.04	-32.28	0.0396	-11.62	0.0015	-1.1418	0.0394	98.26	270	28	72	101	214	685	92
168	Point	1	Yes	cmap	86.73	-35.59	0.0367	-11.28	0.0013	-1.2073	0.0367	99.78	285	79	74	102	227	767	115
169	Point	1	Yes	cmap2	86.94	-34.35	0.0316	-11.11	0.0010	-1.2192	0.0320	100.05	287	64	84	105	231	771	118
170	Point	1	No	reanalysis	**61.98**	-57.07	-0.0795	-2.81	0.1270	-57.3349	-0.3564	**74.70**	22	233	309	280	18	862	155
171	Point	1	No	gpcp	76.96	-42.51	-0.0633	-7.63	0.1437	-50.2343	-0.3790	96.95	199	112	275	299	197	1082	244
172	Point	1	No	gpcc	74.27	-32.19	-0.0284	-4.71	0.3960	-597.9554	-0.6293	88.80	168	27	206	430	139	970	195
173	Point	1	No	gpcc trmm	84.76	-62.51	-0.1786	-16.67	0.3924	-25.1635	-0.6264	109.88	266	250	440	429	300	1685	368
174	Point	1	No	ghcn cams grid	66.73	-43.03	-0.0518	-4.94	0.1284	-71.9907	-0.3583	83.73	91	115	243	284	86	819	133
175	Point	1	No	gpi	105.29	-83.74	-0.0471	-8.20	0.0794	-69.4765	-0.2818	127.65	391	386	234	259	399	1669	362
176	Point	1	No	trmm 3a46	107.79	-92.04	-0.1424	-20.56	0.2722	-34.8716	-0.5217	131.31	407	417	423	405	420	2072	446
177	Point	1	No	trmm 3b43	83.80	-63.31	-0.1828	-16.03	0.4076	-25.3953	-0.6384	109.99	257	276	442	433	304	1712	375
178	Point	1	No	ssmi	90.16	-67.29	-0.0591	-9.69	0.0778	-41.7001	-0.2788	107.38	327	302	264	257	282	1432	314
179	Point	1	No	opi2	**61.34**	**-24.59**	-0.0990	-8.14	0.2210	-30.4093	-0.4701	**74.96**	16	1	359	374	21	771	117
180	Point	1	No	opi3	64.79	**-31.13**	-0.0845	-7.81	0.1779	-34.5442	-0.4218	79.75	61	19	325	343	53	801	125
181	Point	1	No	cmap	65.83	-34.92	-0.0813	-7.63	0.1659	-35.9739	-0.4073	81.50	79	70	316	324	65	854	151
182	Point	1	No	cmap2	66.04	-33.68	-0.0802	-7.76	0.1650	-36.0983	-0.4063	81.63	82	52	311	323	68	836	143
183	Point	1	1 mon	reanalysis	62.40	-57.01	-0.0357	-5.01	0.0256	-55.5473	-0.1599	**73.61**	28	232	213	208	13	694	94
184	Point	1	1 mon	gpcp	77.75	-42.21	-0.0697	-7.46	0.1733	-50.3599	-0.4163	97.23	209	108	284	334	203	1138	254
185	Point	1	1 mon	gpcc	75.08	-32.02	-0.0349	-4.53	0.5977	-603.6035	-0.7731	89.49	177	26	212	459	144	1018	212
186	Point	1	1 mon	gpcc trmm	87.06	-63.53	-0.1847	-16.34	0.4162	-25.3085	-0.6451	111.10	291	278	443	436	311	1759	386
187	Point	1	1 mon	ghcn cams grid	67.42	-43.13	-0.0587	-4.68	0.1642	-72.6269	-0.4052	84.15	100	117	263	321	97	898	171
188	Point	1	1 mon	gpi	106.59	-83.64	-0.0627	-7.10	0.1405	-70.3841	-0.3749	128.76	398	385	274	298	406	1761	387
189	Point	1	1 mon	trmm 3a46	113.97	-94.90	-0.2182	-15.49	0.6138	-36.9148	-0.7835	136.24	431	426	452	461	430	2200	457
190	Point	1	1 mon	trmm 3b43	83.61	-62.21	-0.1970	-15.77	0.4666	-25.0685	-0.6831	110.19	254	247	445	444	306	1696	372
191	Point	1	1 mon	ssmi	92.24	-67.15	-0.0869	-8.20	0.1685	-42.7624	-0.4104	109.02	348	300	333	325	294	1600	348
192	Point	1	1 mon	opi2	**61.81**	**-24.84**	-0.1019	-8.09	0.2332	-30.4979	-0.4829	**75.19**	20	2	365	387	22	796	123
193	Point	1	1 mon	opi3	65.23	**-31.40**	-0.0879	-7.72	0.1917	-34.6722	-0.4378	80.02	67	20	338	356	56	837	144
194	Point	1	1 mon	cmap	66.47	-35.02	-0.0832	-7.59	0.1737	-36.0780	-0.4167	81.75	88	72	322	335	70	887	165
195	Point	1	1 mon	cmap2	66.61	-33.78	-0.0818	-7.73	0.1716	-36.1891	-0.4142	81.87	89	56	318	331	72	866	158
196	Point	1	2 mon	reanalysis	62.44	-56.97	0.0015	-6.88	0.0000	-54.0099	0.0067	**72.85**	30	230	136	133	8	537	45
197	Point	1	2 mon	gpcp	77.40	-42.20	-0.0673	-7.56	0.1618	-50.1782	-0.4022	97.21	206	107	280	316	202	1111	253
198	Point	1	2 mon	gpcc	74.54	**-31.70**	-0.0310	-4.62	0.4745	-598.9815	-0.6889	89.32	170	23	208	447	143	991	208
199	Point	1	2 mon	gpcc trmm	87.08	-64.50	-0.1699	-16.77	0.3487	-24.9061	-0.5905	111.20	292	285	433	422	312	1744	382
200	Point	1	2 mon	ghcn cams grid	66.85	-43.24	-0.0526	-4.89	0.1320	-72.0388	-0.3633	83.87	93	119	245	289	87	833	141
201	Point	1	2 mon	gpi	107.05	-83.84	-0.0656	-6.90	0.1541	-70.5796	-0.3925	129.23	402	387	277	306	408	1780	390
202	Point	1	2 mon	trmm 3a46	116.80	-97.21	-0.2450	-13.37	0.7518	-37.5441	-0.8671	138.90	442	431	463	466	440	2242	461

Larger Rondonia - Monthly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
203	Point	1	2 mon	trmm 3b43	83.23	-63.09	-0.1746	-16.48	0.3638	-24.4924	-0.6031	109.91	251	268	437	425	301	1682	366	
204	Point	1	2 mon	ssmi	93.06	-67.32	-0.0981	-7.62	0.2146	-43.2761	-0.4632	109.93	352	303	357	371	302	1685	369	
205	Point	1	2 mon	opi2	**60.74**	**-25.07**	-0.0914	-8.25	0.1872	-30.0080	-0.4326	**74.72**	12	3	347	352	19	733	102	
206	Point	1	2 mon	opi3	64.24	**-31.65**	-0.0795	-7.91	0.1564	-34.2433	-0.3954	79.66	57	21	308	311	52	749	108	
207	Point	1	2 mon	cmap	65.72	-34.99	-0.0746	-7.83	0.1398	-35.6291	-0.3739	81.37	76	71	299	297	63	806	127	
208	Point	1	2 mon	cmap2	65.84	-33.75	-0.0734	-7.95	0.1383	-35.7421	-0.3719	81.50	80	55	296	296	66	793	121	
209	Point	1	3 mon	reanalysis	62.14	-56.96	0.0244	-8.05	0.0120	-53.0836	0.1096	**72.07**	26	229	91	80	6	432	27	
210	Point	1	3 mon	gpcp	76.12	-42.36	-0.0435	-8.33	0.0677	-48.4918	-0.2601	95.76	195	110	224	248	188	965	194	
211	Point	1	3 mon	gpcc	73.99	**-31.88**	-0.0177	-4.95	0.1544	-587.5696	-0.3929	88.67	166	25	184	308	138	821	135	
212	Point	1	3 mon	gpcc trmm	84.14	-66.09	-0.0951	-19.80	0.1073	-23.1157	-0.3276	108.15	262	294	353	270	287	1466	325	
213	Point	1	3 mon	ghcn cams grid	65.66	-43.37	-0.0317	-5.64	0.0478	-70.0372	-0.2187	82.75	73	121	209	223	81	707	96	
214	Point	1	3 mon	gpi	106.08	-84.32	-0.0394	-8.79	0.0552	-68.7216	-0.2349	127.84	395	392	219	229	401	1636	353	
215	Point	1	3 mon	trmm 3a46	116.22	-99.07	-0.1704	-18.46	0.3612	-35.9824	-0.6010	137.15	438	440	434	424	434	2170	455	
216	Point	1	3 mon	trmm 3b43	80.96	-64.18	-0.1044	-19.28	0.1289	-22.8590	-0.3590	107.17	234	283	374	286	279	1456	322	
217	Point	1	3 mon	ssmi	91.97	-67.39	-0.0722	-9.07	0.1163	-42.0961	-0.3411	108.73	344	305	292	272	292	1505	332	
218	Point	1	3 mon	opi2	**59.20**	**-25.29**	-0.0542	-8.82	0.0658	-28.3238	-0.2564	**72.78**	9	4	246	245	9	513	40	
219	Point	1	3 mon	opi3	62.84	**-31.75**	-0.0447	-8.68	0.0495	-32.5294	-0.2224	77.83	33	24	227	225	41	550	51	
220	Point	1	3 mon	cmap	63.96	-34.75	-0.0428	-8.66	0.0457	-33.8107	-0.2139	79.46	52	67	223	219	50	611	71	
221	Point	1	3 mon	cmap2	64.07	-33.50	-0.0423	-8.72	0.0458	-33.9223	-0.2141	79.59	54	49	222	220	51	596	66	
222	Point	1	4 mon	reanalysis	**61.74**	-56.99	0.0318	-8.43	0.0204	-52.8094	0.1427	**71.92**	18	231	83	72	5	409	22	
223	Point	1	4 mon	gpcp	74.20	-42.52	-0.0116	-9.38	0.0048	-46.2233	-0.0696	93.71	167	113	172	186	174	812	130	
224	Point	1	4 mon	gpcc	72.92	-32.49	0.0000	-5.39	0.0000	-573.5738	-0.0011	87.56	153	30	137	138	128	586	60	
225	Point	1	4 mon	gpcc trmm	79.47	-67.87	-0.0006	-23.79	0.0000	-20.8355	-0.0020	103.84	225	312	141	141	254	1073	238	
226	Point	1	4 mon	ghcn cams grid	64.24	-43.43	-0.0035	-6.66	0.0006	-67.3798	-0.0243	81.23	58	123	149	151	62	543	47	
227	Point	1	4 mon	gpi	104.43	-84.69	-0.0066	-11.18	0.0015	-66.4002	-0.0393	126.00	390	394	158	162	391	1495	329	
228	Point	1	4 mon	trmm 3a46	111.10	-98.92	-0.0668	-25.77	0.0557	-32.9242	-0.2360	132.90	421	439	279	230	423	1792	394	
229	Point	1	4 mon	trmm 3b43	77.20	-65.52	-0.0089	-23.15	0.0009	-20.5883	-0.0303	102.85	201	289	163	158	249	1060	233	
230	Point	1	4 mon	ssmi	90.07	-67.66	-0.0333	-11.21	0.0248	-40.3806	-0.1574	106.84	325	310	210	207	277	1329	297	
231	Point	1	4 mon	opi2	**57.32**	**-25.31**	-0.0115	-9.49	0.0030	-26.4109	-0.0545	**70.49**	3	5	170	176	2	356	12	
232	Point	1	4 mon	opi3	**61.00**	**-31.69**	-0.0054	-9.55	0.0007	-30.5410	-0.0270	**75.62**	15	22	152	153	25	367	13	
233	Point	1	4 mon	cmap	**61.94**	-34.52	-0.0049	-9.61	0.0006	-31.7229	-0.0247	77.18	21	65	151	152	33	422	25	
234	Point	1	4 mon	cmap2	**62.07**	-33.27	-0.0054	-9.61	0.0007	-31.8462	-0.0272	77.32	24	41	153	154	36	408	21	
235	Point	2	Yes	reanalysis	67.90	-62.89	**0.3626**	-28.87	0.4696	-2.9555	**0.6853**	89.04	112	258	13	6	141	530	43	
236	Point	2	Yes	gpcp	65.42	-52.63	**0.2955**	-22.26	0.3262	-2.9108	**0.5712**	88.53	70	192	25	13	136	436	29	
237	Point	2	Yes	gpcc	**60.95**	-44.53	**0.3117**	-17.91	0.3990	-2.6664	**0.6316**	80.58	14	141	22	10	57	244	5	
238	Point	2	Yes	gpcc trmm	73.34	-68.75	**0.2987**	-35.20	0.3037	-3.7974	**0.5511**	96.66	158	318	24	15	195	710	97	
239	Point	2	Yes	ghcn cams grid	**61.77**	-52.46	**0.3443**	-24.31	0.3427	-2.2730	**0.5854**	80.99	19	191	15	12	61	298	6	
240	Point	2	Yes	gpi	97.31	-95.39	**0.3076**	-36.94	0.4917	-6.9419	**0.7012**	120.91	379	428	23	4	377	1211	267	
241	Point	2	Yes	trmm 3a46	90.09	-89.81	**0.3908**	-47.68	0.5470	-4.6266	**0.7396**	108.65	326	415	8	2	291	1042	227	
242	Point	2	Yes	trmm 3b43	75.26	-70.79	0.2891	-35.34	0.2836	-4.0036	**0.5325**	98.72	181	340	26	19	216	782	119	
243	Point	2	Yes	ssmi	79.63	-77.37	**0.3757**	-36.66	0.5532	-4.2345	**0.7438**	98.03	227	380	10	1	212	830	139	
244	*Point*	*2*	*Yes*	*opi2*	***52.46***	*-34.77*	***0.3248***	*-17.72*	*0.2489*	*-1.4302*	***0.4989***	***69.79***	*1*	*68*	*20*	*25*	*1*	*115*	*1*	Plot
245	Point	2	Yes	opi3	**56.49**	-40.73	**0.3267**	-19.72	0.2745	-1.7195	**0.5240**	**73.83**	2	102	19	21	14	158	2	
246	Point	2	Yes	cmap	**57.90**	-43.93	**0.3270**	-20.77	0.2777	-1.8610	**0.5270**	75.72	6	128	18	20	27	199	4	
247	Point	2	Yes	cmap2	**57.78**	-42.68	**0.3216**	-20.18	0.2742	-1.8552	**0.5236**	75.65	5	114	21	22	26	188	3	
248	Point	2	No	reanalysis	84.89	-62.32	0.0127	-9.62	0.0026	-23.9675	0.0505	106.37	268	248	104	97	271	988	206	
249	Point	2	No	gpcp	82.00	-52.05	-0.0142	-8.33	0.0033	-22.9768	-0.0578	104.24	245	188	176	177	257	1043	228	
250	Point	2	No	gpcc	80.34	-44.30	-0.0196	-4.87	0.0090	-30.8209	-0.0950	99.14	232	137	190	200	221	980	199	
251	Point	2	No	gpcc trmm	91.51	-69.03	-0.1242	-15.26	0.2145	-27.3676	-0.4631	116.27	339	324	407	370	349	1789	393	
252	Point	2	No	ghcn cams grid	75.91	-51.88	-0.0163	-8.24	0.0034	-19.1406	-0.0583	95.53	189	184	183	180	186	922	180	
253	Point	2	No	gpi	115.61	-94.57	-0.0345	-7.24	0.0290	-48.8128	-0.1703	139.87	435	424	211	209	445	1724	377	
254	Point	2	No	trmm 3a46	111.27	-91.05	-0.0922	-15.51	0.1237	-33.2775	-0.3518	133.07	424	416	348	277	424	1889	417	
255	Point	2	No	trmm 3b43	91.47	-71.07	-0.1274	-14.84	0.2251	-27.9953	-0.4744	117.55	338	341	412	378	357	1826	404	
256	Point	2	No	ssmi	101.21	-77.07	-0.0599	-7.96	0.0634	-34.3931	-0.2518	120.02	383	378	266	241	373	1641	355	
257	Point	2	No	opi2	65.96	-34.19	-0.0478	-7.74	0.0238	-14.0136	-0.1544	82.48	81	61	235	206	79	662	87	
258	Point	2	No	opi3	68.38	-40.16	-0.0221	-8.25	0.0056	-15.4383	-0.0746	86.31	123	99	197	190	119	728	100	
259	Point	2	No	cmap	69.71	-43.35	-0.0201	-8.25	0.0046	-16.0924	-0.0681	88.01	137	120	193	184	133	767	113	
260	Point	2	No	cmap2	69.58	-42.10	-0.0188	-8.32	0.0041	-16.0807	-0.0644	87.98	135	105	185	181	132	738	104	
261	Point	2	1 mon	reanalysis	86.08	-62.39	0.0122	-9.60	0.0024	-23.9697	0.0486	106.56	279	249	107	98	274	1007	211	
262	Point	2	1 mon	gpcp	81.55	-51.72	-0.0017	-8.88	0.0000	-22.3929	-0.0070	103.14	239	180	143	143	251	956	190	
263	Point	2	1 mon	gpcc	80.58	-44.30	0.0016	-5.79	0.0001	-29.8891	0.0080	97.85	233	136	133	131	208	841	147	
264	Point	2	1 mon	gpcc trmm	91.28	-67.59	-0.1352	-15.40	0.2524	-27.1036	-0.5024	115.94	337	308	418	400	347	1810	397	
265	Point	2	1 mon	ghcn cams grid	75.72	-51.69	-0.0006	-8.93	0.0000	-18.6495	-0.0020	94.53	187	179	140	140	179	825	136	
266	Point	2	1 mon	gpi	116.62	-94.19	-0.0293	-7.79	0.0209	-48.3395	-0.1446	139.28	439	419	207	205	443	1713	376	
267	Point	2	1 mon	trmm 3a46	115.81	-94.52	-0.1413	-12.18	0.2812	-35.2939	-0.5303	137.21	436	423	422	408	435	2124	450	
268	Point	2	1 mon	trmm 3b43	90.81	-69.88	-0.1316	-15.27	0.2399	-27.7028	-0.4898	117.17	332	334	415	393	356	1830	407	
269	Point	2	1 mon	ssmi	102.45	-76.02	-0.0585	-7.75	0.0607	-34.0840	-0.2464	119.09	385	372	261	235	368	1621	351	
270	Point	2	1 mon	opi2	65.77	-33.98	-0.0228	-8.38	0.0054	-13.4214	-0.0734	80.99	78	59	201	189	60	587	61	
271	Point	2	1 mon	opi3	68.00	-39.90	-0.0082	-8.70	0.0008	-15.0185	-0.0274	85.35	115	97	161	155	106	634	76	
272	Point	2	1 mon	cmap	69.35	-43.08	-0.0063	-8.73	0.0005	-15.6646	-0.0214	87.06	134	116	154	150	126	680	90	
273	Point	2	1 mon	cmap2	69.19	-41.84	-0.0045	-8.80	0.0002	-15.6371	-0.0155	86.98	132	103	150	148	125	658	85	
274	Point	2	2 mon	reanalysis	85.01	-62.62	0.0043	-9.31	0.0003	-24.4959	0.0172	107.33	269	251	122	116	281	1039	222	
275	Point	2	2 mon	gpcp	81.26	-51.80	0.0026	-9.19	0.0001	-22.4740	0.0108	102.98	237	182	128	127	250	924	181	
276	Point	2	2 mon	gpcc	79.67	-44.27	0.0122	-6.36	0.0036	-29.6840	0.0597	97.29	228	134	106	95	204	767	114	
277	Point	2	2 mon	gpcc trmm	90.27	-67.62	-0.1047	-16.95	0.1517	-26.1106	-0.3895	115.00	328	309	375	304	338	1654	359	
278	Point	2	2 mon	ghcn cams grid	74.71	-51.77	0.0067	-9.37	0.0006	-18.6514	0.0239	94.22	172	181	112	109	177	751	109	
279	Point	2	2 mon	gpi	116.12	-94.21	-0.0248	-8.31	0.0151	-48.4689	-0.1228	139.16	437	420	203	203	442	1705	374	
280	Point	2	2 mon	trmm 3a46	118.38	-96.93	-0.1475	-11.57	0.2987	-35.4980	-0.5465	139.10	446	429	424	416	441	2156	453	
281	Point	2	2 mon	trmm 3b43	89.73	-69.69	-0.1053	-16.71	0.1538	-26.7392	-0.3921	116.33	323	331	377	305	350	1686	370	
282	Point	2	2 mon	ssmi	102.49	-76.41	-0.0609	-8.12	0.0677	-35.2384	-0.2603	119.66	386	374	269	249	371	1649	357	
283	Point	2	2 mon	opi2	65.00	-34.13	-0.0005	-9.07	0.0000	-13.1048	-0.0018	79.83	63	60	138	139	54	454	31	
284	Point	2	2 mon	opi3	67.61	-40.01	0.0015	-9.13	0.0000	-14.9588	0.0051	84.91	106	98	135	135	103	577	57	
285	Point	2	2 mon	cmap	68.85	-43.21	0.0035	-9.20	0.0001	-15.6081	0.0119	86.62	130	118	126	126	122	622	74	
286	Point	2	2 mon	cmap2	68.81	-41.96	0.0048	-9.24	0.0003	-15.5871	0.0163	86.57	128	104	118	118	121	589	62	
287	Point	2	3 mon	reanalysis	84.21	-62.88	0.0259	-10.49	0.0107	-23.8219	0.1033	106.08	263	256	89	82	269	959	191	
288	Point	2	3 mon	gpcp	80.02	-51.96	0.0020	-9.19	0.0001	-22.5042	0.0083	103.22	230	187	131	130	252	930	184	
289	Point	2	3 mon	gpcc	78.77	-44.59	0.0206	-6.74	0.0101	-29.3263	0.1007	97.05	218	147	95	85	199	744	106	
290	Point	2	3 mon	gpcc trmm	88.71	-68.73	-0.0551	-19.19	0.0417	-24.7180	-0.2041	113.24	310	317	250	214	328	1419	313	
291	Point	2	3 mon	ghcn cams grid	73.52	-51.94	0.0113	-9.59	0.0016	-18.5417	0.0405	94.12	163	186	108	100	176	733	103	
292	Point	2	3 mon	gpi	114.12	-94.38	-0.0022	-10.26	0.0001	-47.3923	-0.0111	137.89	433	422	145	146	436	1582	345	
293	Point	2	3 mon	trmm 3a46	117.78	-98.63	-0.1007	-14.94	0.1372	-34.1515	-0.3704	138.20	445	437	362	295	437	1976	432	
294	Point	2	3 mon	trmm 3b43	88.39	-71.08	-0.0586	-18.89	0.0471	-25.4303	-0.2170	114.80	306	342	262	222	337	1469	326	
295	Point	2	3 mon	ssmi	100.48	-76.86	-0.0208	-11.14	0.0084	-36.0982	-0.0919	117.63	381	376	194	199	358	1508	333	
296	Point	2	3 mon	opi2	63.40	-34.34	0.0091	-9.33	0.0009	-12.9065	0.0295	79.40	42	62	110	106	49	369	14	
297	Point	2	3 mon	opi3	66.44	-40.21	0.0039	-9.22	0.0002	-14.9121	0.0131	84.93	87	100	124	124	104	539	46	
298	Point	2	3 mon	cmap	67.66	-43.37	0.0063	-9.32	0.0005	-15.5524	0.0213	86.62	110	122	113	110	123	578	58	
299	Point	2	3 mon	cmap2	67.65	-42.12	0.0046	-9.26	0.0003	-15.5989	0.0159	86.74	109	106	120	119	124	578	59	
300	Point	2	4 mon	reanalysis	82.09	-63.31	0.0414	-11.39	0.0271	-23.3592	0.1646	105.22	247	275	69	66	263	920	179	
301	Point	2	4 mon	gpcp	79.82	-52.21	0.0149	-9.79	0.0037	-22.1105	0.0608	102.49	229	189	102	94	245	859	153	
302	Point	2	4 mon	gpcc	78.29	-45.34	0.0363	-7.45	0.0314	-28.6470	0.1771	96.20	212	162	75	58	193	700	95	
303	Point	2	4 mon	gpcc trmm	85.99	-70.64	0.0047	-22.26	0.0003	-23.2699	0.0174	110.95	277	339	119	114	310	1159	256	

Larger Rondonia - Monthly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR
304	Point	2	4 mon	ghcn cams grid	73.07	-52.24	0.0281	-10.36	0.0102	-18.1371	0.1008	93.26	156	190	87	84	170	687	93
305	Point	2	4 mon	gpi	112.31	-94.78	0.0237	-12.52	0.0138	-46.2803	0.1175	136.45	427	425	92	79	431	1454	320
306	Point	2	4 mon	trmm 3a46	113.79	-98.66	-0.0199	-21.39	0.0054	-31.7246	-0.0734	134.61	430	438	192	188	425	1673	363
307	Point	2	4 mon	trmm 3b43	86.13	-72.92	0.0049	-22.27	0.0003	-23.8917	0.0179	112.36	280	349	117	113	320	1179	260
308	Point	2	4 mon	ssmi	97.79	-77.53	0.0189	-14.25	0.0074	-37.1124	0.0862	115.70	380	381	99	89	346	1295	289
309	Point	2	4 mon	opi2	62.62	-34.55	0.0248	-9.77	0.0064	-12.5979	0.0802	78.61	32	66	90	90	44	322	10
310	Point	2	4 mon	opi3	66.04	-40.47	0.0196	-9.76	0.0044	-14.5734	0.0663	84.13	83	101	96	91	96	467	34
311	Point	2	4 mon	cmap	67.38	-43.61	0.0195	-9.82	0.0044	-15.2716	0.0663	86.00	99	125	97	92	115	528	42
312	Point	2	4 mon	cmap2	67.27	-42.36	0.0187	-9.77	0.0041	-15.2902	0.0643	86.04	98	109	100	93	117	517	41
313	Area	1	Yes	reanalysis	73.66	-58.76	**0.5979**	-38.54	0.1390	-0.6223	0.3729	89.55	164	246	2	46	145	603	68
314	Area	1	Yes	gpcp	92.47	-44.55	0.0874	-14.61	0.0107	-1.5771	0.1033	110.05	349	142	59	81	305	936	185
315	Area	1	Yes	gpcc	85.52	-33.54	0.1353	-10.44	0.0295	-1.4552	0.1717	99.29	275	50	56	63	223	667	88
316	Area	1	Yes	gpcc trmm	111.56	-67.34	0.0022	-28.54	0.0000	-1.5753	0.0021	129.05	425	304	130	136	407	1402	311
317	Area	1	Yes	ghcn cams grid	89.15	-45.04	0.1568	-14.50	0.0229	-1.0505	0.1512	100.53	315	155	53	68	234	825	137
318	Area	1	Yes	gpi	102.89	-86.34	0.2602	-32.97	0.1139	-2.3235	0.3376	127.81	388	411	37	50	400	1286	287
319	Area	1	Yes	trmm 3a46	112.46	-102.73	**0.3649**	-63.00	0.1336	-1.9116	0.3655	136.85	429	451	12	47	432	1371	304
320	Area	1	Yes	trmm 3b43	112.36	-68.07	-0.0555	-25.88	0.0027	-1.7028	-0.0520	131.18	428	314	251	172	417	1582	344
321	Area	1	Yes	ssmi	85.13	-70.22	**0.4052**	-37.86	0.1912	-1.1745	0.4372	106.03	271	336	5	34	268	914	178
322	Area	1	Yes	opi2	82.16	**-27.81**	0.0285	-13.27	0.0007	-0.9815	0.0265	96.16	248	18	86	107	192	651	82
323	Area	1	Yes	opi3	87.06	-34.35	0.0149	-13.16	0.0002	-1.1796	0.0146	100.85	290	63	101	120	235	809	129
324	Area	1	Yes	cmap	88.80	-37.67	0.0126	-12.75	0.0002	-1.2449	0.0123	102.40	312	96	105	125	244	882	164
325	Area	1	Yes	cmap2	89.01	-36.43	0.0077	-12.62	0.0001	-1.2559	0.0077	102.65	314	86	111	132	248	891	167
326	Area	1	No	reanalysis	63.43	-58.62	-0.1007	-3.29	0.1487	-43.8777	-0.3857	76.66	43	245	361	303	31	983	200
327	Area	1	No	gpcp	78.50	-44.59	-0.0825	-9.08	0.1810	-39.0449	-0.4254	99.48	214	145	320	347	225	1251	278
328	Area	1	No	gpcc	75.09	-33.41	-0.0374	-5.69	0.4732	-422.1661	-0.6879	89.93	178	47	216	445	150	1036	221
329	Area	1	No	gpcc trmm	87.95	-66.43	-0.2215	-18.93	0.4454	-20.1620	-0.6674	115.03	299	296	454	440	339	1828	405
330	Area	1	No	ghcn cams grid	67.97	-44.59	-0.0699	-5.84	0.1705	-54.9087	-0.4130	85.72	114	146	285	328	110	983	201
331	Area	1	No	gpi	106.94	-85.89	-0.0574	-9.60	0.0868	-52.8102	-0.2947	130.04	400	406	259	264	413	1742	380
332	Area	1	No	trmm 3a46	112.02	-97.24	-0.1713	-23.95	0.2928	-28.0136	-0.5411	136.99	426	432	435	413	433	2139	451
333	Area	1	No	trmm 3b43	86.96	-67.17	-0.2275	-18.11	0.4651	-20.3384	-0.6820	115.17	288	301	458	442	341	1830	406
334	Area	1	No	ssmi	91.92	-69.62	-0.0712	-11.35	0.0831	-31.8993	-0.2883	109.96	343	328	287	260	303	1521	335
335	Area	1	No	opi2	62.87	**-26.66**	-0.1248	-9.82	0.2608	-23.8724	-0.5107	77.44	34	9	408	403	38	892	168
336	Area	1	No	opi3	66.39	-33.20	-0.1092	-9.34	0.2203	-27.1005	-0.4694	82.31	86	39	390	373	77	965	193
337	Area	1	No	cmap	67.45	-37.00	-0.1054	-9.10	0.2072	-28.2225	-0.4552	84.09	103	92	378	365	95	1033	220
338	Area	1	No	cmap2	67.66	-35.76	-0.1041	-9.27	0.2065	-28.3052	-0.4545	84.21	111	80	373	364	99	1027	218
339	Area	1	1 mon	reanalysis	63.89	-58.56	-0.0458	-6.05	0.0308	-42.2484	-0.1754	**75.31**	51	244	230	211	24	760	111
340	Area	1	1 mon	gpcp	79.49	-44.29	-0.0931	-8.78	0.2298	-39.3546	-0.4794	100.03	226	135	349	380	230	1320	295
341	Area	1	1 mon	gpcc	76.03	-33.24	-0.0464	-5.44	0.7289	-427.7367	-0.8538	90.79	192	40	232	464	159	1087	245
342	Area	1	1 mon	gpcc trmm	90.55	-67.42	-0.2415	-17.97	0.5248	-20.4972	-0.7245	116.92	330	307	461	453	355	1906	422
343	Area	1	1 mon	ghcn cams grid	68.83	-44.69	-0.0812	-5.43	0.2298	-55.6818	-0.4794	86.38	129	148	315	379	120	1091	247
344	Area	1	1 mon	gpi	108.52	-85.79	-0.0779	-8.16	0.1596	-53.7272	-0.3995	131.44	413	404	305	313	421	1856	413
345	Area	1	1 mon	trmm 3a46	118.47	-100.09	-0.2659	-17.58	0.6764	-29.8412	-0.8224	142.64	447	441	466	462	451	2267	464
346	Area	1	1 mon	trmm 3b43	87.14	-66.05	-0.2547	-17.36	0.5748	-20.2770	-0.7581	115.96	293	293	464	458	348	1856	412
347	Area	1	1 mon	ssmi	94.19	-69.48	-0.1062	-9.48	0.1845	-32.8916	-0.4295	111.96	364	326	383	350	316	1739	379
348	Area	1	1 mon	opi2	63.62	**-26.90**	-0.1324	-9.69	0.2926	-24.0968	-0.5409	77.91	45	11	416	412	42	926	182
349	Area	1	1 mon	opi3	67.04	-33.47	-0.1167	-9.17	0.2508	-27.3479	-0.5008	82.80	94	48	401	399	82	1024	215
350	Area	1	1 mon	cmap	68.25	-37.10	-0.1116	-8.95	0.2322	-28.4600	-0.4819	84.57	121	94	395	384	101	1095	248
351	Area	1	1 mon	cmap2	68.39	-35.86	-0.1100	-9.13	0.2303	-28.5351	-0.4799	84.68	124	82	391	381	102	1080	243
352	Area	1	2 mon	reanalysis	63.98	-58.52	0.0045	-8.59	0.0003	-40.7483	0.0172	**74.04**	53	241	121	115	17	547	50
353	Area	1	2 mon	gpcp	79.27	-44.27	-0.0873	-8.98	0.2023	-39.0204	-0.4498	99.79	222	133	336	362	228	1281	284
354	Area	1	2 mon	gpcc	75.57	-32.90	-0.0422	-5.53	0.6070	-426.4320	-0.7791	90.60	185	34	221	460	155	1055	232
355	Area	1	2 mon	gpcc trmm	91.00	-68.30	-0.2189	-18.57	0.4274	-20.0448	-0.6538	116.65	333	316	453	438	351	1891	418
356	Area	1	2 mon	ghcn cams grid	68.36	-44.80	-0.0731	-5.70	0.1860	-55.1165	-0.4313	85.99	122	151	294	351	114	1032	219
357	Area	1	2 mon	gpi	109.13	-85.98	-0.0818	-7.87	0.1760	-53.9046	-0.4195	131.98	416	408	319	340	422	1905	421
358	Area	1	2 mon	trmm 3a46	121.74	-102.31	-0.2983	-14.88	0.8254	-30.3034	-0.9085	145.44	459	450	468	468	458	2303	468
359	Area	1	2 mon	trmm 3b43	86.88	-66.83	-0.2247	-18.24	0.4442	-19.7044	-0.6665	115.32	286	299	457	439	342	1823	402
360	Area	1	2 mon	ssmi	95.26	-69.63	-0.1194	-8.77	0.2331	-33.2991	-0.4828	112.96	369	329	405	386	323	1812	398
361	Area	1	2 mon	opi2	62.53	**-27.13**	-0.1178	-9.90	0.2307	-23.5837	-0.4803	77.24	31	14	402	382	35	864	157
362	Area	1	2 mon	opi3	66.07	-33.72	-0.1035	-9.44	0.1968	-26.8421	-0.4436	82.20	84	53	369	359	75	940	188
363	Area	1	2 mon	cmap	67.55	-37.07	-0.0981	-9.31	0.1792	-27.9256	-0.4233	83.94	105	93	356	345	91	990	207
364	Area	1	2 mon	cmap2	67.64	-35.82	-0.0965	-9.47	0.1775	-27.9948	-0.4213	84.04	107	81	355	342	93	978	196
365	Area	1	3 mon	reanalysis	63.71	-58.50	0.0399	-10.38	0.0234	-39.7097	0.1531	**73.15**	46	240	71	67	12	436	28
366	Area	1	3 mon	gpcp	77.94	-44.43	-0.0572	-9.95	0.0868	-37.4234	-0.2946	97.95	210	139	257	263	210	1079	242
367	Area	1	3 mon	gpcc	74.87	-33.05	-0.0255	-5.92	0.2232	-418.8135	-0.4725	89.71	175	37	204	377	146	939	187
368	Area	1	3 mon	gpcc trmm	88.49	-69.70	-0.1330	-21.81	0.1546	-18.4505	-0.3932	113.11	308	332	417	310	325	1692	371
369	Area	1	3 mon	ghcn cams grid	67.07	-44.92	-0.0450	-6.70	0.0702	-53.1813	-0.2650	84.50	95	153	228	255	100	831	140
370	Area	1	3 mon	gpi	108.34	-86.45	-0.0548	-9.81	0.0784	-52.4775	-0.2801	130.57	412	412	249	258	414	1745	383
371	Area	1	3 mon	trmm 3a46	121.52	-103.93	-0.2230	-19.69	0.4549	-28.8268	-0.6745	143.69	457	461	455	441	455	2269	465
372	Area	1	3 mon	trmm 3b43	85.17	-67.73	-0.1409	-21.35	0.1730	-18.1953	-0.4159	111.99	272	311	421	333	317	1654	358
373	Area	1	3 mon	ssmi	94.36	-69.68	-0.0944	-10.15	0.1458	-32.4298	-0.3819	111.84	367	330	351	301	314	1663	361
374	Area	1	3 mon	opi2	**60.87**	**-27.34**	-0.0715	-10.60	0.0848	-22.0261	-0.2912	**74.89**	13	15	289	261	20	598	67
375	Area	1	3 mon	opi3	64.48	-33.80	-0.0601	-10.39	0.0663	-25.2464	-0.2574	79.95	59	57	267	246	55	684	91
376	Area	1	3 mon	cmap	65.67	-36.82	-0.0573	-10.36	0.0610	-26.2314	-0.2470	81.59	75	91	258	238	67	729	101
377	Area	1	3 mon	cmap2	65.73	-35.57	-0.0566	-10.45	0.0608	-26.2936	-0.2466	81.69	77	78	253	236	69	713	98
378	Area	1	4 mon	reanalysis	63.31	-58.53	0.0536	-11.08	0.0422	-39.3296	0.2053	**72.83**	40	242	62	54	10	408	20
379	Area	1	4 mon	gpcp	75.58	-44.58	-0.0154	-11.32	0.0063	-35.2085	-0.0791	95.26	186	144	179	194	184	887	166
380	Area	1	4 mon	gpcc	73.40	-33.65	-0.0022	-6.49	0.0017	-407.5879	-0.0407	88.19	161	51	144	164	134	654	83
381	Area	1	4 mon	gpcc trmm	83.50	-71.32	-0.0155	-26.59	0.0020	-16.3678	-0.0451	107.73	253	343	180	166	285	1227	272
382	Area	1	4 mon	ghcn cams grid	65.31	-44.98	-0.0065	-8.10	0.0015	-50.5316	-0.0382	82.45	68	154	156	161	78	617	73
383	Area	1	4 mon	gpi	106.59	-86.82	-0.0159	-12.63	0.0066	-50.4445	-0.0814	128.38	397	414	182	196	402	1591	347
384	Area	1	4 mon	trmm 3a46	116.62	-103.59	-0.1025	-27.99	0.0961	-26.1293	-0.3100	138.78	440	457	366	266	439	1968	430
385	Area	1	4 mon	trmm 3b43	81.07	-68.91	-0.0222	-25.98	0.0042	-16.1219	-0.0651	106.58	235	321	200	183	275	1214	268
386	Area	1	4 mon	ssmi	92.48	-69.95	-0.0503	-12.57	0.0413	-30.9887	-0.2032	109.72	350	335	241	213	299	1438	315
387	Area	1	4 mon	opi2	**58.40**	**-27.36**	-0.0143	-11.50	0.0034	-20.1230	-0.0582	**71.85**	7	16	177	178	4	382	16
388	Area	1	4 mon	opi3	**62.10**	-33.74	-0.0076	-11.56	0.0011	-23.2816	-0.0325	77.04	25	54	160	159	32	430	26
389	Area	1	4 mon	cmap	63.10	-36.59	-0.0066	-11.64	0.0008	-24.1930	-0.0283	78.62	37	88	157	156	45	483	38
390	Area	1	4 mon	cmap2	63.18	-35.34	-0.0069	-11.64	0.0009	-24.2598	-0.0299	78.72	38	74	159	157	46	474	35
391	Area	2	Yes	reanalysis	78.50	-74.09	0.2745	-35.37	0.3175	-5.1302	**0.5634**	102.07	213	363	29	14	243	862	156
392	Area	2	Yes	gpcp	73.47	-63.83	0.2290	-30.59	0.2311	-4.7859	0.4807	99.16	162	282	50	29	222	745	107
393	Area	2	Yes	gpcc	68.41	-55.78	0.2487	-26.73	0.2904	-4.3682	**0.5389**	91.19	125	222	39	18	162	566	53
394	Area	2	Yes	gpcc trmm	79.19	-75.28	0.2616	-39.97	0.2214	-4.3063	0.4706	104.30	221	368	34	30	258	911	175
395	Area	2	Yes	ghcn cams grid	70.14	-63.66	0.2655	-32.12	0.2402	-3.9833	0.4901	92.03	141	280	31	27	166	645	80
396	Area	2	Yes	gpi	106.29	-105.02	0.2632	-42.82	0.3943	-9.2551	**0.6279**	131.30	396	466	32	11	419	1324	296
397	Area	2	Yes	trmm 3a46	97.09	-97.09	**0.3664**	-53.28	0.4580	-5.1904	**0.6768**	116.78	378	430	11	8	352	1179	261
398	Area	2	Yes	trmm 3b43	81.10	-77.33	0.2487	-39.86	0.1994	-4.5361	0.4465	106.54	236	379	40	32	273	960	192
399	Area	2	Yes	ssmi	88.19	-86.47	**0.3321**	-42.92	0.4673	-5.8279	**0.6836**	107.67	303	413	17	7	284	1024	216
400	Area	2	Yes	opi2	**59.38**	-45.96	0.2469	-26.95	0.1696	-2.6521	0.4118	78.78	10	168	41	42	47	308	8
401	Area	2	Yes	opi3	64.08	-51.93	0.2433	-28.31	0.1795	-3.1445	0.4237	83.93	55	185	45	39	90	414	23
402	Area	2	Yes	cmap	65.67	-55.12	0.2440	-29.11	0.1823	-3.3558	0.4270	86.04	74	216	44	38	116	488	39
403	Area	2	Yes	cmap2	65.42	-53.88	0.2389	-28.64	0.1785	-3.3408	0.4225	85.89	69	204	48	40	113	474	36
404	Area	2	No	reanalysis	94.04	-73.51	-0.0754	-16.12	0.1212	-40.6626	-0.3481	118.23	362	353	300	275	359	1649	356

Larger Rondonia - Monthly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR
405	**Area**	2	No	gpcp	89.47	-63.25	-0.0807	-16.66	0.1453	-37.8480	-0.3812	114.17	317	273	314	300	333	1537	338
406	**Area**	2	No	gpcc	87.47	-55.55	-0.0826	-13.68	0.2186	-50.9797	-0.4676	108.56	295	219	321	372	289	1496	330
407	**Area**	2	No	gpcc trmm	96.84	-75.56	-0.1612	-20.03	0.3123	-26.2491	-0.5589	122.60	375	370	428	418	380	1971	431
408	**Area**	2	No	ghcn cams grid	83.96	-63.08	-0.0952	-16.05	0.1564	-32.4107	-0.3954	105.88	258	267	354	312	267	1458	324
409	**Area**	2	No	gpi	123.25	-104.20	-0.0789	-13.13	0.1761	-64.8954	-0.4196	149.23	463	463	307	341	467	2041	443
410	**Area**	2	No	trmm 3a46	117.30	-98.33	-0.1166	-21.11	0.1743	-32.3114	-0.4175	139.72	444	436	400	337	444	2061	445
411	**Area**	2	No	trmm 3b43	96.84	-77.61	-0.1678	-19.37	0.3373	-26.9172	-0.5808	124.09	376	382	431	421	385	1995	435
412	**Area**	2	No	ssmi	108.18	-86.18	-0.1036	-14.22	0.2076	-43.3594	-0.4557	128.39	411	409	371	366	403	1960	429
413	**Area**	2	No	opi2	72.85	-45.39	-0.1257	-16.97	0.2227	-23.7787	-0.4719	91.18	152	163	409	376	161	1261	279
414	**Area**	2	No	opi3	76.00	-51.35	-0.1055	-16.85	0.1711	-26.4686	-0.4137	96.00	191	176	379	329	191	1266	281
415	**Area**	2	No	cmap	77.54	-54.55	-0.1031	-16.59	0.1650	-27.5771	-0.4062	97.92	207	213	368	322	209	1319	294
416	**Area**	2	No	cmap2	77.28	-53.30	-0.1014	-16.78	0.1629	-27.5197	-0.4036	97.82	202	201	363	318	207	1291	288
417	**Area**	2	1 mon	reanalysis	95.55	-73.59	-0.0785	-15.96	0.1316	-40.7739	-0.3628	118.60	372	354	306	287	364	1683	367
418	**Area**	2	1 mon	gpcp	89.50	-62.92	-0.0733	-17.02	0.1193	-37.2413	-0.3454	113.47	318	262	295	274	329	1478	328
419	**Area**	2	1 mon	gpcc	88.26	-55.46	-0.0714	-14.13	0.1634	-50.1091	-0.4042	108.06	304	218	288	320	286	1416	312
420	**Area**	2	1 mon	gpcc trmm	96.90	-74.17	-0.2034	-18.85	0.4941	-26.7551	-0.7029	123.90	377	364	449	449	384	2023	439
421	**Area**	2	1 mon	ghcn cams grid	84.00	-62.89	-0.0850	-16.52	0.1247	-31.9152	-0.3531	105.27	259	257	328	279	264	1387	308
422	**Area**	2	1 mon	gpi	124.57	-103.75	-0.0866	-12.53	0.2116	-64.7631	-0.4600	149.45	467	459	332	369	468	2095	448
423	**Area**	2	1 mon	trmm 3a46	122.34	-101.87	-0.1934	-15.77	0.4658	-34.9531	-0.6825	145.26	460	448	444	443	457	2252	462
424	**Area**	2	1 mon	trmm 3b43	96.42	-76.46	-0.2024	-18.43	0.4908	-27.3944	-0.7006	125.32	374	375	448	448	389	2034	442
425	**Area**	2	1 mon	ssmi	109.75	-85.15	-0.1221	-12.79	0.2866	-43.3945	-0.5354	128.58	418	396	406	409	404	2033	441
426	**Area**	2	1 mon	opi2	72.84	-45.18	-0.1077	-17.46	0.1631	-23.1517	-0.4039	90.18	151	158	388	319	152	1168	258
427	**Area**	2	1 mon	opi3	75.56	-51.10	-0.0934	-17.26	0.1334	-25.9226	-0.3653	95.21	184	171	350	291	183	1179	259
428	**Area**	2	1 mon	cmap	77.32	-54.28	-0.0912	-17.04	0.1285	-27.0209	-0.3585	97.13	203	207	346	285	201	1242	275
429	**Area**	2	1 mon	cmap2	76.92	-53.04	-0.0887	-17.24	0.1242	-26.9354	-0.3525	96.98	198	195	341	278	198	1210	266
430	**Area**	2	2 mon	reanalysis	94.33	-73.76	-0.0693	-16.51	0.1029	-40.5402	-0.3208	118.26	365	357	283	267	360	1632	352
431	**Area**	2	2 mon	gpcp	88.02	-62.94	-0.0558	-17.84	0.0695	-36.5667	-0.2637	112.46	301	263	252	253	321	1390	309
432	**Area**	2	2 mon	gpcc	86.50	-55.32	-0.0515	-14.97	0.0852	-48.7486	-0.2918	106.90	283	217	242	262	278	1282	285
433	**Area**	2	2 mon	gpcc trmm	95.90	-74.24	-0.1743	-20.39	0.3641	-25.9397	-0.6034	123.21	373	365	436	426	381	1981	434
434	**Area**	2	2 mon	ghcn cams grid	82.08	-62.91	-0.0614	-17.60	0.0652	-31.1810	-0.2554	104.09	246	260	271	244	255	1276	283
435	**Area**	2	2 mon	gpi	123.86	-103.69	-0.0800	-13.16	0.1808	-64.2960	-0.4252	149.17	465	458	310	346	466	2045	444
436	**Area**	2	2 mon	trmm 3a46	124.70	-104.35	-0.2054	-14.69	0.5125	-35.3337	-0.7159	147.49	468	464	451	452	462	2297	467
437	**Area**	2	2 mon	trmm 3b43	95.43	-76.32	-0.1773	-19.88	0.3773	-26.5925	-0.6142	124.69	370	373	438	427	387	1995	436
438	**Area**	2	2 mon	ssmi	109.39	-85.26	-0.1193	-13.21	0.2760	-43.6105	-0.5254	128.71	417	398	404	406	405	2030	440
439	**Area**	2	2 mon	opi2	71.15	-45.27	-0.0703	-18.46	0.0698	-22.1834	-0.2641	88.34	144	159	286	254	135	978	197
440	**Area**	2	2 mon	opi3	73.67	-51.15	-0.0665	-18.17	0.0680	-25.1812	-0.2607	93.88	165	172	278	250	175	1040	224
441	**Area**	2	2 mon	cmap	75.23	-54.35	-0.0648	-18.01	0.0651	-26.2932	-0.2552	95.86	180	209	276	243	190	1098	249
442	**Area**	2	2 mon	cmap2	74.99	-53.10	-0.0624	-18.17	0.0617	-26.1919	-0.2484	95.68	176	197	273	239	187	1072	237
443	**Area**	2	3 mon	reanalysis	92.11	-73.96	-0.0232	-18.94	0.0115	-38.5940	-0.1072	115.59	346	361	202	202	345	1456	323
444	**Area**	2	3 mon	gpcp	85.21	-63.04	-0.0221	-19.24	0.0109	-35.0844	-0.1043	110.35	273	266	198	201	307	1245	276
445	**Area**	2	3 mon	gpcc	84.00	-55.60	-0.0126	-16.47	0.0051	-46.2500	-0.0716	104.58	260	221	173	187	260	1101	250
446	**Area**	2	3 mon	gpcc trmm	94.01	-75.30	-0.1113	-23.13	0.1473	-24.3781	-0.3838	120.90	361	369	393	302	376	1801	395
447	**Area**	2	3 mon	ghcn cams grid	79.03	-63.02	-0.0190	-19.37	0.0063	-29.7316	-0.0791	101.83	220	265	186	195	240	1106	252
448	**Area**	2	3 mon	gpi	121.66	-103.82	-0.0435	-16.24	0.0535	-62.1650	-0.2312	147.08	458	460	225	228	461	1832	408
449	**Area**	2	3 mon	trmm 3a46	123.99	-106.01	-0.1571	-18.03	0.2954	-34.0457	-0.5435	146.65	466	468	427	414	460	2235	459
450	**Area**	2	3 mon	trmm 3b43	93.63	-77.65	-0.1142	-22.72	0.1546	-25.0291	-0.3932	122.44	355	383	398	309	379	1824	403
451	**Area**	2	3 mon	ssmi	107.06	-85.44	-0.0677	-16.70	0.0902	-42.1718	-0.3003	126.11	403	402	281	265	392	1743	381
452	**Area**	2	3 mon	opi2	67.94	-45.42	-0.0222	-19.62	0.0069	-20.8394	-0.0833	85.85	113	164	199	197	112	785	120
453	**Area**	2	3 mon	opi3	70.68	-51.29	-0.0215	-19.51	0.0071	-23.8155	-0.0842	91.51	143	175	196	198	164	876	160
454	**Area**	2	3 mon	cmap	72.34	-54.45	-0.0192	-19.52	0.0057	-24.8967	-0.0758	93.48	149	210	188	191	172	910	174
455	**Area**	2	3 mon	cmap2	72.08	-53.20	-0.0195	-19.54	0.0060	-24.8487	-0.0775	93.39	148	198	189	192	171	898	172
456	**Area**	2	4 mon	reanalysis	89.52	-74.34	0.0214	-21.33	0.0098	-36.6792	0.0988	112.96	319	367	93	86	324	1189	262
457	**Area**	2	4 mon	gpcp	82.58	-63.24	0.0207	-21.07	0.0096	-33.1731	0.0979	107.58	249	272	94	87	283	985	203
458	**Area**	2	4 mon	gpcc	81.60	-56.29	0.0329	-18.27	0.0345	-43.3262	0.1857	101.68	240	227	79	55	238	839	146
459	**Area**	2	4 mon	gpcc trmm	91.20	-76.93	-0.0199	-27.35	0.0046	-22.1905	-0.0682	116.88	336	377	191	185	354	1443	316
460	**Area**	2	4 mon	ghcn cams grid	76.34	-63.27	0.0344	-21.66	0.0204	-27.8843	0.1430	98.90	196	274	77	71	217	835	142
461	**Area**	2	4 mon	gpi	119.52	-104.17	0.0025	-20.13	0.0002	-59.5765	0.0133	144.39	450	462	129	122	456	1619	350
462	**Area**	2	4 mon	trmm 3a46	119.67	-105.74	-0.0609	-25.36	0.0444	-31.1881	-0.2107	142.34	451	467	270	218	450	1856	414
463	**Area**	2	4 mon	trmm 3b43	91.02	-79.22	-0.0190	-27.35	0.0042	-22.7558	-0.0649	118.29	334	384	187	182	362	1449	317
464	**Area**	2	4 mon	ssmi	104.08	-85.96	-0.0105	-20.79	0.0022	-40.6966	-0.0468	123.32	389	407	167	168	383	1514	334
465	**Area**	2	4 mon	opi2	64.74	-45.58	0.0358	-21.08	0.0180	-19.2048	0.1343	82.72	60	166	76	74	80	456	32
466	**Area**	2	4 mon	opi3	68.22	-51.50	0.0323	-21.19	0.0160	-22.1642	0.1264	88.57	120	178	81	78	137	594	64
467	**Area**	2	4 mon	cmap	69.91	-54.64	0.0324	-21.29	0.0162	-23.2962	0.1274	90.71	139	214	80	77	158	668	89
468	**Area**	2	4 mon	cmap2	69.62	-53.39	0.0321	-21.24	0.0163	-23.2158	0.1276	90.56	136	202	82	76	154	650	81

Larger Rondonia - Yearly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	*Linear*	*1*	*Yes*	*reanalysis*	*57.60*	*-57.51*	*-0.0881*	*-2.81*	*0.0558*	*-39.3236*	*-0.2362*	*65.72*	*77*	*78*	*50*	*76*	*87*	*368*	*76*	Plot
2	Linear	1	Yes	gpcp	45.61	-44.68	-0.2074	-5.08	0.1120	-21.0760	-0.3347	50.34	50	49	92	97	49	337	63	
3	Linear	1	Yes	gpcc	35.61	-35.61	0.1745	-13.56	0.2375	-40.6846	**0.4874**	**38.53**	23	27	17	3	13	83	2	
4	Linear	1	Yes	gpcc trmm	66.30	-66.30	-0.5988	-0.11	0.9442	-50.9236	-0.9717	71.11	105	105	136	153	107	606	137	
5	Linear	1	Yes	ghcn cams grid	43.41	-43.32	-0.1079	-3.37	0.0135	-18.6128	-0.1161	46.26	39	40	58	59	36	232	16	
6	Linear	1	Yes	gpi	86.31	-86.31	0.1768	-26.92	0.0723	-60.9552	**0.2689**	88.10	142	142	16	14	141	455	114	
7	Linear	1	Yes	trmm 3a46	84.44	-84.44	-0.8250	27.92	0.8976	-66.3514	-0.9474	87.41	135	135	153	146	139	708	149	
8	Linear	1	Yes	trmm 3b43	61.16	-61.16	-0.7453	8.61	0.8638	-31.9756	-0.9294	66.25	87	87	149	141	91	555	129	
9	Linear	1	Yes	ssmi	69.80	-69.80	0.1300	-22.02	0.0242	-32.1652	0.1556	72.07	112	112	27	29	109	389	86	
10	Linear	1	Yes	opi2	**29.90**	**-26.82**	-0.2859	-7.61	0.2106	-10.3153	-0.4590	**36.04**	5	5	122	119	5	256	30	
11	Linear	1	Yes	opi3	**34.13**	**-32.78**	-0.1571	-8.60	0.0547	-12.2772	-0.2340	39.04	15	13	74	74	16	192	8	
12	Linear	1	Yes	cmap	37.12	-35.97	-0.1560	-8.12	0.0546	-14.2188	-0.2337	41.80	30	31	72	73	29	235	17	
13	Linear	1	Yes	cmap2	35.98	-34.73	-0.1616	-8.19	0.0605	-13.5745	-0.2460	40.90	27	24	76	79	25	231	15	
14	Linear	1	No	reanalysis	58.42	-58.42	-0.0824	-4.01	0.0985	-81.1961	-0.3139	66.05	80	80	48	89	90	387	85	
15	Linear	1	No	gpcp	44.36	-44.17	-0.2220	-4.09	0.1493	-24.1548	-0.3864	49.81	44	44	102	108	47	345	66	
16	Linear	1	No	gpcc	**33.18**	**-33.18**	0.0081	-6.68	0.0258	-999.0000	0.1607	**37.08**	11	15	35	28	8	97	4	
17	Linear	1	No	gpcc trmm	72.09	-72.09	-0.3410	-16.57	0.6712	-126.6829	-0.8193	75.32	118	118	127	130	118	611	138	
18	Linear	1	No	ghcn cams grid	44.25	-44.25	-0.1123	-4.13	0.0295	-39.1310	-0.1718	46.55	42	45	60	67	39	253	28	
19	Linear	1	No	gpi	85.28	-85.28	0.1700	-25.41	0.0693	-61.7092	0.2632	87.10	139	139	19	16	138	451	111	
20	Linear	1	No	trmm 3a46	92.50	-92.50	-0.6029	6.19	0.9216	-150.6182	-0.9600	94.58	147	147	137	150	147	728	152	
21	Linear	1	No	trmm 3b43	65.79	-65.79	-0.6607	0.59	0.6923	-36.8538	-0.8321	70.28	102	104	144	131	102	583	132	
22	Linear	1	No	ssmi	69.98	-69.98	0.0090	-15.55	0.0001	-35.9765	0.0112	72.53	113	113	34	36	111	407	94	
23	Linear	1	No	opi2	**28.82**	**-26.30**	-0.2751	-7.26	0.2270	-11.6643	-0.4764	**35.34**	3	3	120	122	3	251	24	
24	Linear	1	No	opi3	**32.89**	**-32.27**	-0.2485	-6.18	0.1594	-14.4221	-0.3992	**39.00**	10	10	113	112	15	260	32	
25	Linear	1	No	cmap	35.87	-35.46	-0.2141	-6.21	0.1197	-16.4803	-0.3460	41.52	26	26	96	100	28	276	40	
26	Linear	1	No	cmap2	34.73	-34.22	-0.2170	-6.41	0.1270	-15.7388	-0.3564	40.63	20	20	97	103	24	264	35	
27	*Linear*	*2*	*Yes*	*reanalysis*	*75.15*	*-75.15*	*0.1144*	*-27.89*	*0.0276*	*-13.8365*	*0.1662*	*82.85*	*124*	*124*	*30*	*26*	*130*	*434*	*107*	Plot
28	Linear	2	Yes	gpcp	66.07	-64.89	-0.1187	-16.66	0.0063	-9.6546	-0.0793	70.21	103	101	63	47	101	415	98	
29	Linear	2	Yes	gpcc	60.54	-60.54	**0.3305**	-34.65	0.0817	-16.3143	**0.2858**	62.86	86	86	9	13	78	272	37	
30	Linear	2	Yes	gpcc trmm	59.97	-59.97	-0.0851	-8.08	0.0081	-21.6381	-0.0902	63.29	84	84	49	49	79	345	67	
31	Linear	2	Yes	ghcn cams grid	65.19	-64.72	-0.3579	-6.41	0.0266	-9.4105	-0.1631	69.40	99	99	128	64	99	489	122	
32	Linear	2	Yes	gpi	106.60	-106.60	**0.2858**	-46.32	0.0582	-33.1441	0.2413	108.70	155	155	12	22	155	499	125	
33	Linear	2	Yes	trmm 3a46	77.63	-77.63	**0.4396**	-39.37	0.1035	-29.4812	**0.3217**	79.03	130	130	6	10	124	400	89	
34	Linear	2	Yes	trmm 3b43	62.02	-62.02	0.1658	-20.41	0.0238	-22.3136	0.1544	64.23	88	88	21	30	81	308	49	
35	Linear	2	Yes	ssmi	83.75	-83.75	**0.7058**	-64.49	0.2209	-18.6692	**0.4700**	85.55	134	134	2	5	133	408	96	
36	Linear	2	Yes	opi2	49.86	-47.03	-0.0592	-20.29	0.0017	-5.3327	-0.0416	54.13	55	54	44	42	56	251	26	
37	Linear	2	Yes	opi3	54.60	-52.99	-0.0287	-20.88	0.0003	-6.4484	-0.0172	58.70	65	61	42	40	67	275	39	
38	Linear	2	Yes	cmap	57.58	-56.18	-0.1052	-18.16	0.0040	-7.2658	-0.0636	61.84	76	74	57	44	75	326	57	
39	Linear	2	Yes	cmap2	56.45	-54.94	-0.1036	-18.35	0.0041	-6.9813	-0.0637	60.76	72	69	56	45	70	312	53	
40	Linear	2	No	reanalysis	73.43	-73.43	-0.0482	-17.49	0.0572	-162.8807	-0.2392	80.64	119	119	43	77	128	486	120	
41	Linear	2	No	gpcp	63.17	-63.17	-0.0948	-15.97	0.0468	-106.7629	-0.2163	65.39	93	93	53	71	86	396	88	
42	Linear	2	No	gpcc	55.97	-55.97	-0.1746	-10.54	0.2419	-156.3035	-0.4919	58.18	69	72	81	126	66	414	97	
43	Linear	2	No	gpcc trmm	71.91	-71.91	-0.5119	0.40	0.8576	-91.7030	-0.9261	75.06	117	117	133	139	117	623	141	
44	Linear	2	No	ghcn cams grid	63.00	-63.00	-0.1689	-12.81	0.0690	-103.2641	-0.2628	64.32	91	91	79	84	82	427	104	
45	Linear	2	No	gpi	103.55	-103.55	-0.0205	-17.41	0.0027	-285.4641	-0.0519	104.97	153	153	41	43	153	543	128	
46	Linear	2	No	trmm 3a46	93.56	-93.56	-0.7928	28.85	0.9154	-119.9281	-0.9567	95.45	148	148	151	148	148	743	154	
47	Linear	2	No	trmm 3b43	73.96	-73.96	-0.6033	6.00	0.9188	-95.5630	-0.9585	76.61	122	122	138	149	120	651	146	
48	Linear	2	No	ssmi	85.22	-85.22	-0.2061	-6.26	0.1530	-163.6364	-0.3911	86.84	138	138	91	109	137	613	139	
49	Linear	2	No	opi2	45.31	-45.31	-0.1642	-15.91	0.1553	-59.3806	-0.3940	48.95	48	52	78	111	45	334	60	
50	Linear	2	No	opi3	51.27	-51.27	-0.1575	-15.15	0.1032	-71.7336	-0.3213	53.72	57	57	75	91	55	335	61	
51	Linear	2	No	cmap	54.46	-54.46	-0.1569	-14.66	0.1049	-80.3554	-0.3238	56.82	63	67	73	93	63	359	72	
52	Linear	2	No	cmap2	53.22	-53.22	-0.1465	-15.20	0.0946	-77.0839	-0.3076	55.66	61	63	68	88	61	341	64	
53	Point	1	Yes	reanalysis	56.31	-56.17	-0.0754	-2.11	0.0435	-40.1680	-0.2085	64.35	71	73	46	70	83	343	65	
54	Point	1	Yes	gpcp	44.10	-43.02	-0.2035	-3.54	0.1162	-21.3217	-0.3410	48.76	41	39	90	98	44	312	52	
55	*Point*	*1*	*Yes*	*gpcc*	*34.63*	*-34.63*	*0.1664*	*-12.35*	*0.2112*	*-38.0095*	***0.4596***	***37.69***	*19*	*22*	*20*	*6*	*12*	*79*	*1*	Plot
56	Point	1	Yes	gpcc trmm	63.42	-63.42	-0.6196	3.63	0.9585	-44.7453	-0.9791	68.55	96	96	140	156	97	585	133	
57	Point	1	Yes	ghcn cams grid	42.13	-41.97	-0.0965	-2.42	0.0115	-18.6674	-0.1072	44.89	35	35	54	51	33	208	11	
58	Point	1	Yes	gpi	84.76	-84.76	0.1515	-23.55	0.0590	-65.5182	0.2428	86.60	136	136	24	21	135	452	112	
59	Point	1	Yes	trmm 3a46	81.73	-81.73	-0.8496	32.15	0.8765	-57.5043	-0.9362	84.90	131	131	154	144	132	692	148	
60	Point	1	Yes	trmm 3b43	58.68	-58.68	-0.7343	10.64	0.8859	-31.3942	-0.9412	63.88	82	82	148	145	80	537	127	
61	Point	1	Yes	ssmi	68.15	-68.15	0.1091	-19.22	0.0191	-34.4589	0.1382	70.42	108	108	31	32	103	382	83	
62	Point	1	Yes	opi2	**28.51**	**-25.16**	-0.2837	-5.98	0.2235	-10.2929	-0.4727	**34.68**	2	2	121	121	2	248	23	
63	Point	1	Yes	opi3	**32.63**	**-31.12**	-0.1491	-7.10	0.0532	-12.1951	-0.2306	**37.49**	9	8	69	72	11	169	7	
64	Point	1	Yes	cmap	35.61	-34.31	-0.1509	-6.58	0.0551	-14.2014	-0.2347	40.24	24	21	70	75	22	212	12	
65	Point	1	Yes	cmap2	34.48	**-33.07**	-0.1560	-6.66	0.0608	-13.5423	-0.2465	39.36	17	14	71	80	18	200	10	
66	Point	1	No	reanalysis	57.07	-57.07	-0.0697	-3.30	0.0812	-89.9503	-0.2850	64.65	74	76	45	85	85	365	75	
67	Point	1	No	gpcp	42.86	-42.51	-0.2181	-2.56	0.1625	-25.5511	-0.4031	48.21	36	37	99	114	43	329	58	
68	Point	1	No	gpcc	**32.19**	**-32.19**	0.0000	-5.47	0.0000	-999.0000	0.0005	**36.26**	8	9	38	38	6	99	5	
69	Point	1	No	gpcc trmm	69.21	-69.21	-0.3618	-12.83	0.7183	-111.9237	-0.8475	72.66	111	111	129	134	112	597	134	
70	Point	1	No	ghcn cams grid	42.90	-42.90	-0.1010	-3.19	0.0275	-42.5821	-0.1659	45.15	37	38	55	65	34	229	14	
71	Point	1	No	gpi	83.74	-83.74	0.1447	-22.03	0.0582	-69.2532	0.2412	85.57	133	133	26	23	134	449	110	
72	Point	1	No	trmm 3a46	89.79	-89.79	-0.6274	10.41	0.9554	-136.2574	-0.9774	91.99	145	145	141	154	145	730	153	
73	Point	1	No	trmm 3b43	63.31	-63.31	-0.6497	2.63	0.7454	-38.2714	-0.8634	67.83	95	95	143	135	96	564	130	
74	Point	1	No	ssmi	68.34	-68.34	-0.0119	-12.76	0.0003	-40.1972	-0.0162	70.86	109	109	40	39	105	402	91	
75	Point	1	No	opi2	**27.44**	**-24.65**	-0.2729	-5.63	0.2517	-12.1639	-0.5017	**33.94**	1	1	118	127	1	248	22	
76	Point	1	No	opi3	**31.38**	**-30.61**	-0.2405	-4.68	0.1683	-15.0141	-0.4102	**37.44**	7	7	111	116	10	251	25	
77	Point	1	No	cmap	34.37	-33.80	-0.2090	-4.67	0.1286	-17.2293	-0.3587	39.94	16	18	93	104	21	252	27	
78	Point	1	No	cmap2	**33.23**	**-32.56**	-0.2114	-4.88	0.1358	-16.4363	-0.3686	39.07	12	11	95	107	17	242	19	
79	Point	2	Yes	reanalysis	64.04	-64.04	**0.2903**	-26.16	0.1508	-8.2701	**0.3884**	71.10	98	98	10	8	106	320	55	
80	Point	2	Yes	gpcp	56.04	-53.77	-0.2181	-1.26	0.0180	-5.8460	-0.1342	61.10	70	66	100	61	73	370	78	
81	Point	2	Yes	gpcc	48.87	-48.87	**0.2807**	-21.06	0.0568	-10.4059	0.2384	51.96	54	56	13	24	52	199	9	
82	Point	2	Yes	gpcc trmm	57.08	-57.08	-0.1134	-3.84	0.0119	-16.2575	-0.1089	60.98	75	77	61	52	71	336	62	
83	Point	2	Yes	ghcn cams grid	55.16	-53.60	-0.4924	10.48	0.0427	-5.6180	-0.2067	60.08	67	65	132	69	69	402	90	
84	Point	2	Yes	gpi	97.62	-97.62	**0.4558**	-51.68	0.1363	-25.4038	**0.3692**	99.64	151	151	5	9	151	467	117	
85	Point	2	Yes	trmm 3a46	74.80	-74.80	**0.4580**	-37.79	0.0895	-21.7823	**0.2992**	76.56	123	123	4	11	119	380	81	
86	Point	2	Yes	trmm 3b43	59.13	-59.13	0.1590	-17.19	0.0180	-16.7149	0.1341	61.78	83	83	22	33	74	295	46	
87	Point	2	Yes	ssmi	76.13	-76.13	**0.8311**	-65.07	0.2640	-13.1719	**0.5138**	78.22	127	127	1	1	122	378	80	
88	Point	2	Yes	opi2	40.35	-35.91	-0.2219	-5.06	0.0206	-2.9691	-0.1436	46.52	33	30	101	62	38	264	36	
89	Point	2	Yes	opi3	44.67	-41.88	-0.1459	-6.11	0.0064	-3.6070	-0.0803	50.12	46	34	67	48	48	243	20	
90	Point	2	Yes	cmap	47.55	-45.07	-0.1974	-3.87	0.0121	-4.1564	-0.1098	53.03	53	50	88	54	54	299	47	
91	Point	2	Yes	cmap2	46.45	-43.82	-0.1985	-4.08	0.0126	-3.9695	-0.1124	52.06	52	43	89	57	53	294	44	
92	Point	2	No	reanalysis	62.32	-62.32	0.1276	-15.75	0.1681	-48.7545	**0.4100**	68.59	89	89	28	7	98	311	50	
93	Point	2	No	gpcp	52.05	-52.05	-0.1942	-0.57	0.0824	-31.6849	-0.2870	55.59	60	60	87	86	60	353	68	
94	Point	2	No	gpcc	44.30	-44.30	-0.2244	3.05	0.2305	-59.2954	-0.4801	47.40	43	46	103	123	42	357	70	
95	Point	2	No	gpcc trmm	69.03	-69.03	-0.5402	4.64	0.8576	-76.5014	-0.9261	72.43	110	110	134	140	110	604	136	
96	Point	2	No	ghcn cams grid	51.88	-51.88	-0.3033	4.08	0.0935	-30.0967	-0.3057	54.23	59	59	124	87	58	387	84	
97	Point	2	No	gpi	94.57	-94.57	0.1495	-22.77	0.0619	-102.2842	0.2487	95.95	150	150	25	20	149	494	123	
98	Point	2	No	trmm 3a46	90.72	-90.72	-0.7743	30.43	0.7825	-101.1916	-0.8846	92.70	146	146	150	137	146	725	150	
99	Point	2	No	trmm 3b43	71.07	-71.07	-0.6102	9.23	0.8439	-79.6576	-0.9186	73.89	116	116	139	138	116	625	143	
100	Point	2	No	ssmi	77.60	-77.60	-0.0808	-6.84	0.0119	-68.7486	-0.1091	79.40	128	128	47	53	125	481	118	
101	Point	2	No	opi2	34.83	-34.19	-0.3269	-0.69	0.2581	-16.3554	-0.5080	40.51	21	19	126	128	23	317	54	

Larger Rondonia - Yearly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
102	Point	2	No	opi3	40.16	-40.16	-0.2746	-0.37	0.1318	-19.7597	-0.3630	44.31	32	33	119	106	32	322	56	
103	Point	2	No	cmap	43.35	-43.35	-0.2491	-0.37	0.1108	-22.5467	-0.3329	47.19	38	41	114	96	41	330	59	
104	Point	2	No	cmap2	42.10	-42.10	-0.2414	-0.94	0.1078	-21.4883	-0.3283	46.11	34	36	112	95	35	312	51	
105	**Area**	1	Yes	reanalysis	57.81	-57.71	-0.0938	-2.73	0.0600	-37.6064	-0.2449	66.01	79	79	52	78	89	377	79	
106	**Area**	1	Yes	gpcp	46.01	-45.10	-0.2244	-4.94	0.1200	-19.6782	-0.3465	50.91	51	51	104	101	51	358	71	
107	**Area**	1	Yes	gpcc	35.84	-35.84	0.1743	-13.78	0.2393	-41.5838	**0.4892**	**38.74**	25	28	18	2	14	87	3	
108	**Area**	1	Yes	gpcc trmm	67.97	-67.97	-0.6381	-0.15	0.9570	-47.6885	-0.9782	72.89	107	107	142	155	113	624	142	
109	**Area**	1	Yes	ghcn cams grid	43.61	-43.53	-0.1105	-3.48	0.0134	-17.8245	-0.1159	46.52	40	42	59	58	37	236	18	
110	**Area**	1	Yes	gpi	86.91	-86.91	**0.1836**	-28.01	0.0714	-56.5427	**0.2672**	88.73	144	144	14	15	143	460	116	
111	**Area**	1	Yes	trmm 3a46	86.16	-86.16	-0.8873	30.04	0.9077	-60.4082	-0.9527	89.26	141	141	155	147	144	728	151	
112	**Area**	1	Yes	trmm 3b43	62.54	-62.54	-0.8002	9.41	0.8763	-29.4269	-0.9361	67.83	90	90	152	143	95	570	131	
113	**Area**	1	Yes	ssmi	70.54	-70.54	0.1247	-22.46	0.0204	-30.1435	0.1429	72.90	114	114	29	31	114	402	92	
114	**Area**	1	Yes	opi2	**30.28**	**-27.23**	-0.3067	-7.72	0.2220	-9.7237	-0.4712	**36.66**	6	6	125	120	7	264	34	
115	**Area**	1	Yes	opi3	34.54	-33.20	-0.1748	-8.64	0.0620	-11.5332	-0.2491	39.64	18	16	82	82	20	218	13	
116	**Area**	1	Yes	cmap	37.52	-36.39	-0.1720	-8.15	0.0608	-13.3262	-0.2465	42.38	31	32	80	81	31	255	29	
117	**Area**	1	Yes	cmap2	36.39	-35.15	-0.1777	-8.24	0.0671	-12.7308	-0.2589	41.49	29	25	83	83	27	247	21	
118	**Area**	1	No	reanalysis	58.62	-58.62	-0.0881	-3.93	0.1003	-72.9307	-0.3167	66.34	81	81	51	90	92	395	87	
119	**Area**	1	No	gpcp	44.77	-44.59	-0.2390	-3.95	0.1531	-21.7879	-0.3912	50.41	47	48	110	110	50	365	74	
120	**Area**	1	No	gpcc	**33.41**	-33.41	0.0079	-6.90	0.0267	-999.0000	0.1633	**37.28**	14	17	36	27	9	103	6	
121	**Area**	1	No	gpcc trmm	73.76	-73.76	-0.3803	-16.61	0.6974	-110.7851	-0.8351	77.11	121	121	130	132	121	625	144	
122	**Area**	1	No	ghcn cams grid	44.45	-44.45	-0.1150	-4.24	0.0276	-35.1874	-0.1660	46.82	45	47	62	66	40	260	33	
123	**Area**	1	No	gpi	85.89	-85.89	**0.1768**	-26.50	0.0667	-55.6743	0.2583	87.75	140	140	15	17	140	452	113	
124	**Area**	1	No	trmm 3a46	94.21	-94.21	-0.6651	8.31	0.9376	-130.6803	-0.9683	96.41	149	149	145	152	150	745	155	
125	**Area**	1	No	trmm 3b43	67.17	-67.17	-0.7156	1.40	0.7119	-33.6963	-0.8437	71.86	106	106	147	133	108	600	135	
126	**Area**	1	No	ssmi	70.72	-70.72	0.0036	-16.00	0.0000	-32.7757	0.0043	73.37	115	115	37	37	115	419	101	
127	**Area**	1	No	opi2	**29.21**	**-26.72**	-0.2960	-7.37	0.2323	-10.6261	-0.4820	**36.01**	4	4	123	124	4	259	31	
128	**Area**	1	No	opi3	**33.29**	**-32.69**	-0.2662	-6.22	0.1618	-13.0801	-0.4022	39.63	13	12	117	113	19	274	38	
129	**Area**	1	No	cmap	36.28	-35.88	-0.2301	-6.24	0.1223	-14.9177	-0.3497	42.13	28	29	106	102	30	295	45	
130	**Area**	1	No	cmap2	35.14	-34.64	-0.2332	-6.46	0.1297	-14.2556	-0.3602	41.25	22	23	107	105	26	283	42	
131	**Area**	2	Yes	reanalysis	75.23	-75.23	0.1560	-30.19	0.0514	-13.6909	0.2267	82.43	125	125	23	25	129	427	105	
132	**Area**	2	Yes	gpcp	66.28	-64.97	-0.1880	-13.76	0.0158	-9.7419	-0.1256	70.48	104	102	86	60	104	456	115	
133	**Area**	2	Yes	gpcc	60.12	-60.12	**0.2877**	-32.57	0.0634	-16.5441	0.2517	62.53	85	85	11	19	77	277	41	
134	**Area**	2	Yes	gpcc trmm	63.62	-63.62	-0.1343	-9.37	0.0225	-26.9463	-0.1500	66.78	97	97	66	63	93	416	99	
135	**Area**	2	Yes	ghcn cams grid	65.39	-64.80	-0.4452	-2.74	0.0412	-9.4720	-0.2029	69.59	100	100	131	68	100	499	124	
136	**Area**	2	Yes	gpi	107.25	-107.25	**0.3318**	-50.85	0.0837	-35.6661	**0.2892**	109.14	156	156	8	12	156	488	121	
137	**Area**	2	Yes	trmm 3a46	81.95	-81.95	**0.3394**	-36.84	0.0649	-34.6647	0.2548	83.34	132	132	7	18	131	420	102	
138	**Area**	2	Yes	trmm 3b43	65.67	-65.67	0.0932	-20.44	0.0084	-27.8058	0.0914	67.80	101	103	32	34	94	364	73	
139	**Area**	2	Yes	ssmi	85.06	-85.06	**0.7012**	-65.49	0.2279	-20.1364	**0.4773**	86.74	137	137	3	4	136	417	100	
140	**Area**	2	Yes	opi2	50.07	-47.11	-0.1303	-18.57	0.0084	-5.4208	-0.0915	54.49	56	55	65	50	59	285	43	
141	**Area**	2	Yes	opi3	54.81	-53.07	-0.1206	-18.10	0.0052	-6.5344	-0.0721	59.03	66	62	64	46	68	306	48	
142	**Area**	2	Yes	cmap	57.79	-56.27	-0.1822	-15.59	0.0121	-7.3437	-0.1101	62.12	78	75	85	55	76	369	77	
143	**Area**	2	Yes	cmap2	56.65	-55.02	-0.1815	-15.84	0.0125	-7.0613	-0.1116	61.06	73	70	84	56	72	355	69	
144	**Area**	2	No	reanalysis	73.51	-73.51	-0.0066	-19.79	0.0008	-118.8690	-0.0282	80.29	120	120	39	41	126	446	109	
145	**Area**	2	No	gpcp	63.25	-63.25	-0.1641	-13.07	0.1034	-79.4815	-0.3215	65.79	94	94	77	92	88	445	108	
146	**Area**	2	No	gpcc	55.55	-55.55	-0.2174	-8.47	0.2727	-112.6222	-0.5223	57.97	68	71	98	129	65	431	106	
147	**Area**	2	No	gpcc trmm	75.56	-75.56	-0.5612	-0.90	0.7776	-76.1253	-0.8818	78.82	126	126	135	136	123	646	145	
148	**Area**	2	No	ghcn cams grid	63.08	-63.08	-0.2562	-9.14	0.1172	-76.6799	-0.3424	64.64	92	92	116	99	84	483	119	
149	**Area**	2	No	gpi	104.20	-104.20	0.0255	-21.94	0.0026	-178.6276	0.0509	105.61	154	154	33	35	154	530	126	
150	**Area**	2	No	trmm 3a46	97.87	-97.87	-0.8930	31.38	0.9350	-105.6115	-0.9669	99.89	152	152	156	151	152	763	156	
151	**Area**	2	No	trmm 3b43	77.61	-77.61	-0.6759	5.98	0.8703	-79.2571	-0.9329	80.40	129	129	146	142	127	673	147	
152	**Area**	2	No	ssmi	86.53	-86.53	-0.2107	-7.26	0.1053	-111.0249	-0.3245	88.27	143	143	94	94	142	616	140	
153	**Area**	2	No	opi2	45.39	-45.39	-0.2353	-14.20	0.2351	-44.5449	-0.4848	49.49	49	53	109	125	46	382	82	
154	**Area**	2	No	opi3	51.35	-51.35	-0.2494	-12.36	0.1911	-53.6373	-0.4371	54.21	58	58	115	118	57	406	93	
155	**Area**	2	No	cmap	54.55	-54.55	-0.2340	-12.09	0.1719	-59.9261	-0.4146	57.24	64	68	108	117	64	421	103	
156	**Area**	2	No	cmap2	53.30	-53.30	-0.2244	-12.70	0.1638	-57.5318	-0.4047	56.11	62	64	105	115	62	408	95	

Larger United States - Monthly Atmospheric

OI	Moist Flux	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	Method 1	1	Yes	reanalysis	**43.78**	**-24.15**	-0.8554	9.35	0.1560	-0.9471	-0.3949	**55.45**	7	2	17	18	7	51	9	
2	*Method 1*	*1*	*Yes*	*gpcp*	***42.23***	***-21.03***	***-0.2820***	*6.95*	*0.0195*	*-0.6504*	***-0.1398***	***52.39***	*1*	*1*	*2*	*2*	*1*	*7*	*1*	Plot
3	Method 1	1	Yes	gpcc	**42.80**	**-25.51**	**-0.3384**	2.06	0.0264	-0.7828	**-0.1626**	**54.15**	3	3	7	8	2	23	5	
4	Method 1	1	Yes	gpcc trmm	**42.63**	**-31.98**	**-0.3129**	11.96	0.0225	-1.0446	**-0.1500**	**55.83**	2	10	6	6	8	32	7	
5	Method 1	1	Yes	ghcn cams grid	**43.00**	**-28.39**	**-0.2088**	13.83	0.0109	-0.8669	**-0.1045**	**54.20**	4	7	1	1	3	16	2	
6	Method 1	1	Yes	opi2	**45.39**	**-28.46**	**-0.5041**	1.68	0.0578	-0.9348	**-0.2404**	**57.24**	9	8	9	9	9	44	8	
7	Method 1	1	Yes	opi3	**44.03**	**-26.80**	**-0.3074**	5.69	0.0224	-0.8062	**-0.1495**	**55.30**	8	6	5	5	6	30	6	
8	Method 1	1	Yes	cmap	**43.42**	**-26.10**	**-0.2919**	5.42	0.0207	-0.7952	**-0.1438**	**54.56**	6	5	3	3	5	22	4	
9	Method 1	1	Yes	cmap2	**43.28**	**-25.90**	**-0.2953**	5.42	0.0208	-0.7845	**-0.1444**	**54.40**	5	4	4	4	4	21	3	
10	Method 1	2	Yes	reanalysis	**47.31**	**-30.74**	-0.9532	0.95	0.1541	-0.9961	-0.3926	**61.23**	10	9	19	17	10	65	10	
11	Method 1	2	Yes	gpcp	51.55	-36.27	-0.9326	-3.89	0.2114	-1.3969	-0.4598	67.09	12	11	18	22	12	75	11	
12	Method 1	2	Yes	gpcc	49.72	-37.52	-1.2112	-12.73	0.2183	-1.2669	-0.4673	64.90	11	12	25	23	11	82	13	
13	Method 1	2	Yes	gpcc trmm	59.15	-53.76	-1.2196	-13.29	0.3043	-2.1452	-0.5517	79.41	18	19	26	30	18	111	26	
14	Method 1	2	Yes	ghcn cams grid	52.01	-38.48	-0.9567	-6.50	0.2058	-1.4432	-0.4536	67.74	13	13	20	20	13	79	12	
15	Method 1	2	Yes	opi2	54.70	-42.79	-1.0443	-13.02	0.2696	-1.7384	-0.5192	71.72	17	17	24	27	17	102	23	
16	Method 1	2	Yes	opi3	53.26	-41.01	-0.9981	-9.98	0.2257	-1.5744	-0.4751	69.53	16	16	22	26	16	96	21	
17	Method 1	2	Yes	cmap	53.13	-40.89	-0.9965	-9.82	0.2235	-1.5639	-0.4728	69.39	15	15	21	25	15	91	19	
18	Method 1	2	Yes	cmap2	52.98	-40.68	-0.9986	-9.67	0.2231	-1.5518	-0.4724	69.23	14	14	23	24	14	89	16	
19	*Method 2*	*1*	*Yes*	*reanalysis*	*64.39*	*-55.16*	*-1.2973*	*31.93*	*0.2060*	*-1.4832*	*-0.4539*	*85.11*	*21*	*20*	*27*	*21*	*23*	*112*	*27*	Plot
20	Method 2	1	Yes	gpcp	61.87	-50.89	-0.6634	28.98	0.0688	-1.2402	-0.2623	81.35	19	18	13	13	19	82	14	
21	Method 2	1	Yes	gpcc	63.25	-55.91	-0.7868	20.83	0.0971	-1.5087	-0.3116	84.24	20	21	15	15	20	91	20	
22	Method 2	1	Yes	gpcc trmm	68.05	-63.46	-0.7706	32.67	0.0799	-1.7093	-0.2826	89.32	27	27	14	14	27	109	25	
23	Method 2	1	Yes	ghcn cams grid	66.62	-60.05	**-0.4015**	39.33	0.0261	-1.5288	**-0.1617**	85.88	25	26	8	7	24	90	18	
24	Method 2	1	Yes	opi2	67.12	-59.03	-0.8493	21.15	0.1117	-1.5751	-0.3343	88.06	26	25	16	16	26	109	24	
25	Method 2	1	Yes	opi3	66.00	-57.66	-0.6459	26.20	0.0668	-1.4709	-0.2585	86.26	24	24	12	12	25	97	22	
26	Method 2	1	Yes	cmap	64.76	-56.21	**-0.6125**	26.63	0.0607	-1.4252	-0.2464	84.82	23	23	10	11	22	89	17	
27	Method 2	1	Yes	cmap2	64.56	-55.98	-0.6160	26.70	0.0603	-1.4112	**-0.2456**	84.58	22	22	11	10	21	86	15	
28	*Method 2*	*2*	*Yes*	*reanalysis*	*71.00*	*-65.67*	*-1.4898*	*25.91*	*0.1947*	*-1.6407*	*-0.4412*	*93.90*	*28*	*28*	*29*	*19*	*28*	*132*	*28*	Plot
29	Method 2	2	Yes	gpcp	76.90	-71.67	-1.4685	17.44	0.3098	-2.1041	-0.5566	101.80	30	29	28	31	30	148	29	
30	Method 2	2	Yes	gpcc	75.68	-72.28	-1.7404	6.58	0.2945	-2.1019	-0.5427	98.62	29	30	35	29	29	152	31	
31	Method 2	2	Yes	gpcc trmm	93.73	-91.91	-1.9439	-0.58	0.4189	-2.7238	-0.6472	120.07	36	36	36	36	36	180	36	
32	Method 2	2	Yes	ghcn cams grid	78.64	-74.51	-1.5045	12.38	0.2886	-2.1737	-0.5372	102.94	31	31	30	28	31	151	30	
33	Method 2	2	Yes	opi2	82.15	-78.69	-1.6282	2.51	0.3780	-2.4614	-0.6148	107.50	35	35	34	35	35	174	35	
34	Method 2	2	Yes	opi3	80.87	-77.18	-1.5727	6.49	0.3277	-2.3333	-0.5724	105.49	34	34	33	34	34	169	34	
35	Method 2	2	Yes	cmap	80.19	-76.42	-1.5585	8.06	0.3163	-2.2855	-0.5624	104.74	33	33	31	33	33	163	33	
36	Method 2	2	Yes	cmap2	79.97	-76.19	-1.5646	8.25	0.3155	-2.2710	-0.5617	104.50	32	32	32	32	32	160	32	

Larger United States - Yearly Atmospheric

OI	Moist Flux	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	*Method 1*	*1*	*Yes*	*gpcp*	***21.00***	***-21.00***	*0.5093*	*1.9635*	*15.61*	*0.0853*	*-10.6368*	*0.2920*	***21.96***	*1*	*1*	*21*	*19*	*1*	*43*	*1*	Plot
2	Method 1	1	Yes	reanalysis	**24.15**	**-24.15**	0.2919	3.4258	18.50	0.0146	-4.8931	0.1207	**26.70**	2	2	33	33	6	76	16	
3	Method 1	1	Yes	cmap2	**25.42**	**-25.42**	0.5687	1.7584	18.78	0.0835	-15.5539	0.2889	**26.19**	3	3	15	20	2	43	2	
4	Method 1	1	Yes	gpcc	**25.49**	**-25.49**	-0.0739		6.67	0.0008	-16.2750	-0.0283	**26.40**	4	4	36	36	3	83	18	
5	Method 1	1	Yes	cmap	**25.62**	**-25.62**	0.5346	1.8706	18.36	0.0773	-15.8263	0.2780	**26.41**	5	5	17	21	4	52	4	
6	Method 1	1	Yes	opi3	**25.75**	**-25.75**	0.4832	2.0695	17.62	0.0614	-16.0032	0.2478	**26.54**	6	6	23	25	5	65	9	
7	Method 1	1	Yes	opi2	**27.53**	**-27.53**	0.3305	3.0257	15.81	0.0334	-18.3870	0.1827	**28.34**	7	7	30	31	7	82	17	
8	Method 1	1	Yes	ghcn cams grid	**28.05**	**-28.05**	**0.7508**	1.3319	25.09	0.0398	-6.3513	0.1995	**30.09**	8	8	7	30	9	62	7	
9	Method 1	1	Yes	gpcc trmm	**29.71**	**-29.71**	3.1600	3.1600	59.80	0.7486	-66.1957	**0.8652**	**29.85**	9	9	31	3	8	60	6	
10	Method 1	2	Yes	reanalysis	**30.72**	**-30.72**	0.0112	89.2857	15.65	0.0000	-13.4189	0.0055	**32.13**	10	10	35	35	10	100	22	
11	Method 1	2	Yes	gpcp	36.25	-36.25	0.5299	1.8871	26.48	0.0932	-18.3343	0.3052	37.21	11	11	18	15	11	66	10	
12	Method 1	2	Yes	gpcc	37.50	-37.50	**1.5160**	1.5160	49.22	0.3800	-20.2796	**0.6165**	38.10	12	12	8	6	12	50	3	
13	Method 1	2	Yes	ghcn cams grid	38.46	-38.46	**0.6548**	1.5272	30.53	0.1527	-20.5522	0.3908	39.28	13	13	9	11	13	59	5	
14	Method 1	2	Yes	cmap2	40.67	-40.67	0.6013	1.6631	30.62	0.1141	-23.0345	0.3378	41.48	14	14	12	13	14	67	12	
15	Method 1	2	Yes	cmap	40.87	-40.87	0.5767	1.7340	30.12	0.1068	-23.2855	0.3268	41.70	15	15	14	14	15	73	13	
16	Method 1	2	Yes	opi3	40.99	-40.99	0.5095	1.9627	28.48	0.0883	-23.4661	0.2972	41.85	16	16	20	17	16	85	19	
17	Method 1	2	Yes	opi2	42.77	-42.77	0.4850	2.0619	28.72	0.1243	-25.5718	0.3526	43.62	17	17	22	12	17	85	20	
18	Method 2	1	Yes	gpcp	50.86	-50.86	**0.9291**	1.0763	49.92	0.2273	-54.1704	**0.4767**	51.22	18	18	5	7	18	66	11	
19	Method 1	2	Yes	gpcc trmm	53.90	-53.90	**0.9882**	1.0119	53.54	0.4973	-401.4675	**0.7052**	53.93	19	19	2	4	19	63	8	
20	*Method 2*	*1*	*Yes*	*reanalysis*	*55.16*	*-55.16*	*0.4710*	*2.1231*	*49.81*	*0.0328*	*-19.1856*	*0.1810*	*56.59*	*20*	*20*	*24*	*32*	*23*	*119*	*27*	Plot
21	Method 2	1	Yes	cmap2	55.38	-55.38	**1.0750**	1.0750	56.70	0.2059	-64.2911	**0.4537**	55.72	21	21	4	8	20	74	14	
22	Method 2	1	Yes	cmap	55.61	-55.61	**1.0098**	1.0098	55.78	0.1934	-64.8411	**0.4398**	55.95	22	22	1	9	21	75	15	
23	Method 2	1	Yes	gpcc	55.89	-55.89	0.5808	1.7218	47.65	0.0648	-74.8986	0.2546	56.25	23	23	13	24	22	105	23	
24	Method 2	1	Yes	opi3	56.36	-56.36	**0.9370**	1.0672	55.19	0.1554	-66.6608	**0.3942**	56.72	24	24	3	10	24	85	21	
25	Method 2	1	Yes	opi2	57.87	-57.87	0.4381	2.2826	46.53	0.0495	-70.4690	0.2224	58.29	25	25	27	27	25	129	30	
26	Method 2	1	Yes	ghcn cams grid	59.60	-59.60	**0.8896**	1.1241	57.99	0.0419	-21.9769	0.2047	60.89	26	26	6	29	27	114	26	
27	Method 2	1	Yes	gpcc trmm	59.97	-59.97	2.7694	2.7694	88.02	0.7511	-176.8989	**0.8667**	60.06	27	27	29	1	26	110	25	
28	*Method 2*	*2*	*Yes*	*reanalysis*	*65.66*	*-65.66*	*0.1629*	*6.1387*	*52.29*	*0.0055*	*-51.7386*	*0.0744*	*66.38*	*28*	*28*	*34*	*34*	*28*	*152*	*34*	Plot
29	Method 2	2	Yes	gpcp	71.66	-71.66	0.5549	1.8021	61.88	0.0916	-61.4282	0.3027	72.22	29	29	16	16	29	119	28	
30	Method 2	2	Yes	gpcc	72.26	-72.26	**1.5655**	1.5655	85.81	0.3874	-83.3336	**0.6224**	72.54	30	30	10	5	30	105	24	
31	Method 2	2	Yes	ghcn cams grid	74.49	-74.49	0.5177	1.9316	62.53	0.0859	-66.4055	0.2932	75.05	31	31	19	18	31	130	31	
32	Method 2	2	Yes	cmap2	76.18	-76.18	0.4649	2.1510	62.01	0.0686	-69.4816	0.2619	76.74	32	32	25	22	32	143	32	
33	Method 2	2	Yes	cmap	76.41	-76.41	0.4582	2.1825	61.93	0.0667	-69.9072	0.2583	76.97	33	33	26	23	33	148	33	
34	Method 2	2	Yes	opi3	77.17	-77.17	0.3949	2.5323	60.54	0.0517	-71.3404	0.2273	77.74	34	34	28	26	34	156	35	
35	Method 2	2	Yes	opi2	78.68	-78.68	0.3120	3.2051	58.73	0.0454	-74.2576	0.2131	79.30	35	35	32	28	35	165	36	
36	Method 2	2	Yes	gpcc trmm	92.06	-92.06	0.6196	1.6139	80.11	0.7492	-999.0000	**0.8656**	92.07	36	36	11	2	36	121	29	

Larger United States - Monthly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	*Linear*	*1*	*Yes*	*reanalysis*	*51.27*	***10.42***	*3.0313*	*3.0313*	*30.96*	*0.5897*	*0.3054*	***0.7679***	*62.17*	*299*	*1*	*52*	*24*	*298*	*674*	*131*	Plot
2	Linear	1	Yes	gpcp	53.80	**13.54**	2.6130	2.6130	34.78	0.5254	0.2946	0.7248	65.05	322	19	43	42	307	733	152	
3	Linear	1	Yes	gpcc	53.52	19.90	2.7727	2.7727	54.71	0.5626	0.2673	0.7501	66.66	319	138	49	31	322	859	208	
4	Linear	1	Yes	gpcc trmm	51.26	16.05	2.4205	2.4205	40.75	0.4366	0.2377	0.6607	63.66	298	67	31	52	301	749	160	
5	Linear	1	Yes	ghcn cams grid	51.45	14.86	2.2996	2.2996	34.08	0.4490	0.2659	0.6700	63.94	303	39	28	49	302	721	145	
6	Linear	1	Yes	opi2	51.91	19.96	2.7321	2.7321	55.43	0.5843	0.2826	**0.7644**	65.38	307	141	46	25	310	829	199	
7	Linear	1	Yes	opi3	52.56	18.58	2.5789	2.5789	48.76	0.5382	0.2785	0.7336	65.57	310	84	37	35	311	777	174	
8	Linear	1	Yes	cmap	53.01	18.21	2.5574	2.5574	46.78	0.5256	0.2752	0.7250	65.81	313	72	34	40	315	774	171	
9	Linear	1	Yes	cmap2	53.15	17.99	2.5807	2.5807	46.63	0.5255	0.2742	0.7249	65.86	315	70	39	41	317	782	179	
10	Linear	1	No	reanalysis	**16.52**	**10.67**	0.0058	172.4138	0.62	0.0083	-320.9393	0.0912	**21.64**	15	4	213	196	3	431	33	
11	Linear	1	No	gpcp	18.60	**13.88**	0.0042	238.0952	0.76	0.0035	-273.7256	0.0592	25.55	31	22	216	210	38	517	59	
12	Linear	1	No	gpcc	21.57	20.13	0.0020	500.0000	0.54	0.0033	-999.0000	0.0570	29.12	94	149	226	211	112	792	182	
13	Linear	1	No	gpcc trmm	21.19	18.54	-0.0028		1.10	0.0005	-120.8500	-0.0226	27.35	74	79	320	244	72	789	181	
14	Linear	1	No	ghcn cams grid	19.79	15.35	-0.0053		0.48	0.0093	-489.1495	-0.0962	26.74	52	43	316	281	58	750	161	
15	Linear	1	No	opi2	22.39	21.18	0.0036	277.7778	0.77	0.0025	-392.0982	0.0504	30.23	145	173	221	212	157	908	220	
16	Linear	1	No	opi3	22.14	19.81	0.0010	1000.0000	0.72	0.0002	-375.7076	0.0144	29.60	135	135	233	228	139	870	210	
17	Linear	1	No	cmap	21.67	19.05	0.0010	1000.0000	0.72	0.0002	-360.3419	0.0141	29.06	101	109	232	229	110	781	176	
18	Linear	1	No	cmap2	21.45	18.82	0.0013	769.2308	0.73	0.0003	-352.8202	0.0181	28.76	87	97	230	226	102	742	155	
19	Linear	1	1 mon	reanalysis	**16.32**	**10.69**	-0.0089		0.47	0.0194	-328.5116	-0.1394	**21.90**	11	5	310	297	5	628	94	
20	Linear	1	1 mon	gpcp	18.55	**13.90**	0.0154	64.9351	0.91	0.0459	-269.4490	0.2143	25.39	28	23	189	164	35	439	36	
21	Linear	1	1 mon	gpcc	21.66	20.23	0.0094	106.3830	0.68	0.0692	-999.0000	0.2631	29.11	100	151	208	139	111	709	140	
22	Linear	1	1 mon	gpcc trmm	21.49	18.67	0.0235	42.5532	1.58	0.0357	-117.5548	0.1889	27.17	89	88	152	172	64	565	72	
23	Linear	1	1 mon	ghcn cams grid	19.72	15.39	0.0072	138.8889	0.67	0.0169	-480.9968	0.1301	26.53	50	47	211	186	56	550	68	
24	Linear	1	1 mon	opi2	22.33	21.21	0.0170	58.8235	1.05	0.0582	-386.6875	0.2413	30.07	143	175	183	151	152	804	190	
25	Linear	1	1 mon	opi3	22.16	19.85	0.0131	76.3359	0.95	0.0358	-370.7346	0.1893	29.44	138	136	194	171	136	775	172	
26	Linear	1	1 mon	cmap	21.54	18.93	0.0127	78.7402	0.93	0.0330	-351.7799	0.1816	28.76	92	103	197	176	101	669	129	
27	Linear	1	1 mon	cmap2	21.32	18.71	0.0129	77.5194	0.93	0.0332	-344.3914	0.1822	28.45	79	90	196	175	94	634	103	
28	Linear	1	2 mon	reanalysis	**16.15**	**10.70**	-0.0179		0.38	0.0785	-333.0149	-0.2801	**22.06**	6	6	297	318	7	634	101	
29	Linear	1	2 mon	gpcp	18.53	**13.95**	0.0190	52.6316	0.95	0.0701	-268.9983	0.2647	25.36	27	24	170	136	33	390	19	
30	Linear	1	2 mon	gpcc	21.70	20.40	0.0135	74.0741	0.75	0.1466	-999.0000	0.3828	29.15	103	158	191	89	117	658	123	
31	Linear	1	2 mon	gpcc trmm	21.63	18.96	0.0262	38.1679	1.55	0.0470	-126.1665	0.2167	27.30	97	105	137	161	69	569	73	
32	Linear	1	2 mon	ghcn cams grid	19.63	15.41	0.0126	79.3651	0.75	0.0517	-479.2107	0.2274	26.46	48	50	198	157	52	505	52	
33	Linear	1	2 mon	opi2	22.15	21.14	0.0225	44.4444	1.15	0.1014	-383.4315	0.3185	29.94	136	171	155	106	149	717	144	
34	Linear	1	2 mon	opi3	22.01	19.77	0.0178	56.1798	1.03	0.0655	-367.6680	0.2559	29.32	132	132	177	142	134	717	143	
35	Linear	1	2 mon	cmap	21.32	18.77	0.0172	58.1395	1.01	0.0596	-345.4282	0.2441	28.49	80	94	182	148	98	602	83	
36	Linear	1	2 mon	cmap2	21.10	18.55	0.0173	57.8035	1.01	0.0592	-338.0706	0.2434	28.19	69	80	179	149	86	563	71	
37	Linear	1	3 mon	reanalysis	**16.10**	**10.73**	-0.0261		0.30	0.1678	-337.1653	-0.4096	**22.21**	3	7	289	320	9	628	95	
38	Linear	1	3 mon	gpcp	**18.39**	**13.98**	0.0224	44.6429	0.99	0.0981	-268.0283	0.3131	25.34	24	25	156	109	32	346	13	
39	Linear	1	3 mon	gpcc	21.74	20.55	0.0163	61.3497	0.79	0.2196	-999.0000	0.4686	29.21	109	161	187	62	123	642	112	
40	Linear	1	3 mon	gpcc trmm	21.69	19.30	0.0341	29.3255	1.59	0.0877	-141.0767	0.2961	27.33	102	119	109	120	71	521	60	
41	Linear	1	3 mon	ghcn cams grid	19.48	15.37	0.0159	62.8931	0.79	0.0821	-479.6795	0.2866	26.37	44	44	188	124	49	449	37	
42	Linear	1	3 mon	opi2	21.94	21.02	0.0252	39.6825	1.20	0.1268	-378.3377	0.3560	29.77	128	169	142	96	145	680	134	
43	Linear	1	3 mon	opi3	21.76	19.65	0.0220	45.4545	1.10	0.0997	-362.5495	0.3158	29.14	110	130	158	108	114	620	87	
44	Linear	1	3 mon	cmap	21.11	18.66	0.0216	46.2963	1.08	0.0937	-340.6348	0.3062	28.32	70	87	162	115	92	526	63	
45	Linear	1	3 mon	cmap2	20.88	18.44	0.0219	45.6621	1.08	0.0942	-333.2392	0.3070	28.02	61	77	159	113	83	493	51	
46	Linear	1	4 mon	reanalysis	**16.22**	**10.74**	-0.0291		0.27	0.2077	-338.0029	-0.4558	**22.25**	7	8	284	322	11	632	97	
47	Linear	1	4 mon	gpcp	**18.23**	14.02	0.0268	37.3134	1.05	0.1397	-266.2978	0.3738	25.31	19	26	134	91	26	296	5	
48	Linear	1	4 mon	gpcc	21.78	20.82	0.0196	51.0204	0.87	0.3108	-999.0000	0.5575	29.25	114	165	167	58	128	632	98	
49	Linear	1	4 mon	gpcc trmm	21.37	19.45	0.0495	20.2020	1.83	0.1900	-143.2616	0.4359	27.29	81	122	87	71	68	429	31	
50	Linear	1	4 mon	ghcn cams grid	19.29	15.32	0.0197	50.7614	0.85	0.1262	-475.3185	0.3552	26.27	41	42	166	97	45	391	21	
51	Linear	1	4 mon	opi2	21.82	20.91	0.0265	37.7358	1.22	0.1388	-373.8530	0.3726	29.65	119	166	135	92	141	653	119	
52	Linear	1	4 mon	opi3	21.45	19.50	0.0271	36.9004	1.20	0.1498	-354.7888	0.3870	28.88	86	124	133	83	105	531	65	
53	Linear	1	4 mon	cmap	20.88	18.64	0.0272	36.7647	1.18	0.1482	-337.3164	0.3849	28.24	60	85	132	87	87	451	40	
54	Linear	1	4 mon	cmap2	20.65	18.41	0.0275	36.3636	1.18	0.1494	-329.9219	0.3865	27.93	56	76	131	85	79	427	30	
55	*Linear*	*2*	*Yes*	*reanalysis*	*21.90*	*14.29*	***1.4576***	*1.4576*	*21.60*	*0.5800*	*0.3324*	*0.7616*	*26.76*	*124*	*36*	*24*	*28*	*60*	*272*	*2*	Plot
56	Linear	2	Yes	gpcp	23.36	20.29	**1.2015**	1.2015	24.72	0.6455	0.2433	**0.8034**	28.49	154	154	10	2	96	416	27	
57	Linear	2	Yes	gpcc	26.02	24.18	**1.4595**	1.4595	35.20	0.6463	0.0002	**0.8039**	31.69	184	205	25	1	174	589	77	
58	Linear	2	Yes	gpcc trmm	28.61	28.01	**1.1188**	1.1188	31.75	0.5623	-0.2656	0.7499	34.77	237	269	3	32	230	771	170	
59	Linear	2	Yes	ghcn cams grid	25.46	23.13	**1.2496**	1.2496	29.32	0.6197	0.0963	**0.7872**	31.13	180	193	17	11	168	569	74	
60	Linear	2	Yes	opi2	28.74	27.31	**1.2016**	1.2016	33.15	0.6408	-0.0725	**0.8005**	33.92	244	260	11	3	210	728	148	
61	Linear	2	Yes	opi3	27.39	25.80	**1.2367**	1.2367	32.30	0.6307	-0.0130	**0.7942**	32.96	209	227	14	6	190	646	114	
62	Linear	2	Yes	cmap	26.84	25.04	**1.2446**	1.2446	31.58	0.6280	0.0189	**0.7925**	32.44	198	220	16	9	186	629	96	
63	Linear	2	Yes	cmap2	26.69	24.81	**1.2529**	1.2529	31.51	0.6298	0.0301	**0.7936**	32.25	193	218	20	7	183	621	88	
64	Linear	2	No	reanalysis	**17.90**	15.39	0.0848	11.7925	0.78	0.0432	-9.8411	0.2079	**23.00**	16	48	67	166	16	313	7	
65	Linear	2	No	gpcp	23.38	21.39	0.0756	13.2275	1.08	0.0562	-17.7274	0.2370	30.22	155	183	78	153	156	725	146	
66	Linear	2	No	gpcc	24.19	23.83	0.0610	16.3934	1.32	0.0261	-19.2698	0.1617	29.64	162	198	82	180	140	762	168	
67	Linear	2	No	gpcc trmm	31.51	31.02	0.0742	13.4771	1.93	0.0552	-30.9898	0.2349	37.02	277	302	79	154	260	1072	239	
68	Linear	2	No	ghcn cams grid	24.97	24.23	0.0994	10.0604	1.89	0.0862	-19.0235	0.2936	31.25	171	207	56	121	170	725	147	
69	Linear	2	No	opi2	28.66	28.41	0.0808	12.3762	1.77	0.0638	-24.7247	0.2525	35.42	240	274	73	143	240	970	227	
70	Linear	2	No	opi3	27.46	26.90	0.0881	11.3507	1.84	0.0704	-22.3050	0.2653	33.72	211	250	66	135	209	871	211	
71	Linear	2	No	cmap	26.80	26.14	0.0899	11.1235	1.83	0.0721	-21.3228	0.2685	33.00	196	241	64	134	192	827	198	
72	Linear	2	No	cmap2	26.58	25.91	0.0905	11.0497	1.82	0.0723	-20.9903	0.2689	32.75	190	231	63	133	188	805	191	
73	Linear	2	1 mon	reanalysis	**18.20**	15.38	0.0097	103.0928	-0.44	0.0006	-10.7298	0.0237	**23.95**	18	46	207	223	19	513	55	
74	Linear	2	1 mon	gpcp	23.81	21.38	-0.0106		-0.82	0.0011	-19.3919	-0.0331	31.58	158	182	309	246	173	1068	237	
75	Linear	2	1 mon	gpcc	24.33	23.89	-0.0440		-1.22	0.0136	-20.7098	-0.1165	30.78	163	200	257	288	164	1072	238	
76	Linear	2	1 mon	gpcc trmm	32.10	31.13	0.0028	357.1429	-0.33	0.0001	-32.1070	0.0090	38.05	281	307	224	232	279	1323	300	
77	Linear	2	1 mon	ghcn cams grid	25.14	24.22	0.0124	80.6452	-0.28	0.0013	-20.5092	0.0366	32.43	175	206	201	220	185	987	228	
78	Linear	2	1 mon	opi2	28.61	28.41	0.0035	285.7143	-0.49	0.0001	-26.2039	0.0110	36.48	239	275	222	231	256	1223	273	
79	Linear	2	1 mon	opi3	27.53	26.90	-0.0004		-0.60	0.0000	-23.8733	-0.0011	34.88	215	249	323	238	233	1258	289	
80	Linear	2	1 mon	cmap	26.93	26.14	0.0002	5000.0000	-0.59	0.0000	-22.8845	0.0006	34.18	201	240	236	236	217	1130	260	
81	Linear	2	1 mon	cmap2	26.71	25.90	0.0003	3333.3333	-0.58	0.0000	-22.5432	0.0010	33.93	194	230	235	235	213	1107	256	
82	Linear	2	2 mon	reanalysis	18.73	15.44	-0.0375		-1.20	0.0084	-11.2938	-0.0918	**24.56**	34	53	266	278	21	652	116	
83	Linear	2	2 mon	gpcp	24.60	21.43	-0.0584		-1.88	0.0335	-20.3262	-0.1829	32.35	164	185	242	311	184	1086	247	
84	Linear	2	2 mon	gpcc	24.95	23.99	-0.1021		-2.72	0.0737	-21.8714	-0.2714	31.38	169	203	237	316	171	1096	252	
85	Linear	2	2 mon	gpcc trmm	32.94	31.57	-0.0716		-2.75	0.0501	-33.5199	-0.2238	39.24	292	312	239	314	286	1443	319	
86	Linear	2	2 mon	ghcn cams grid	25.69	24.28	-0.0496		-1.83	0.0214	-21.5859	-0.1464	33.29	182	212	251	300	200	1145	262	
87	Linear	2	2 mon	opi2	29.06	28.45	-0.0497		-2.04	0.0241	-27.2186	-0.1553	37.22	251	278	250	306	269	1354	305	
88	Linear	2	2 mon	opi3	27.92	26.96	-0.0536		-2.07	0.0260	-24.8288	-0.1611	35.60	226	254	246	309	249	1284	294	
89	Linear	2	2 mon	cmap	27.32	26.19	-0.0539		-2.04	0.0259	-23.8402	-0.1608	34.92	208	244	245	308	236	1241	279	
90	Linear	2	2 mon	cmap2	27.11	25.96	-0.0539		-2.03	0.0256	-23.4910	-0.1600	34.67	206	234	244	307	228	1219	271	
91	Linear	2	3 mon	reanalysis	18.92	15.42	-0.0348		-1.18	0.0073	-11.2804	-0.0853	**24.54**	36	51	275	274	20	656	122	
92	Linear	2	3 mon	gpcp	24.73	21.41	-0.0448		-1.61	0.0198	-20.1018	-0.1407	32.17	166	184	256	298	178	1082	243	
93	Linear	2	3 mon	gpcc	24.95	24.06	-0.0472		-1.44	0.0157	-21.1404	-0.1254	30.92	170	204	255	291	166	1086	246	
94	Linear	2	3 mon	gpcc trmm	32.85	31.76	-0.0733		-2.89	0.0525	-33.3992	-0.2291	39.52	289	313	238	315	290	1445	320	
95	Linear	2	3 mon	ghcn cams grid	26.08	24.27	-0.0493		-1.85	0.0213	-21.6220	-0.1458	33.30	185	211	253	299	201	1149	265	
96	Linear	2	3 mon	opi2	29.73	28.47	-0.0586		-2.33	0.0336	-27.4702	-0.1833	37.36	255	280	241	312	273	1361	307	
97	Linear	2	3 mon	opi3	28.30	26.95	-0.0499		-2.00	0.0227	-24.8152	-0.1505	35.58	234	253	248	304	245	1284	293	
98	Linear	2	3 mon	cmap	27.67	26.18	-0.0497		-1.96	0.0220	-23.8094	-0.1485	34.88	218	243	249	302	232	1244	281	
99	Linear	2	3 mon	cmap2	27.47	25.95	-0.0494		-1.94	0.0216	-23.4547	-0.1469	34.63	212	233	252	301	223	1221	272	
100	Linear	2	4 mon	reanalysis	19.22	15.37	-0.0426		-1.34	0.0110	-11.3998	-0.1049	**24.62**	38	45	260	286	23	652	117	
101	Linear	2	4 mon	gpcp	25.04	21.35	-0.0381		-1.50	0.0144	-20.0098	-0.1200	32.05	173	179	265	290	176	1083	244	

Larger United States - Monthly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
102	Linear	2	4 mon	gpcc	25.30	24.24	-0.0026		-0.33	0.0000	-20.5632	-0.0068	30.61	177	209	321	239	161	1107	255	
103	Linear	2	4 mon	gpcc trmm	32.93	31.95	-0.0352		-1.53	0.0123	-32.9651	-0.1109	39.39	291	314	271	287	288	1451	321	
104	Linear	2	4 mon	ghcn cams grid	26.36	24.23	-0.0428		-1.72	0.0161	-21.5606	-0.1269	33.21	188	208	259	293	198	1146	263	
105	Linear	2	4 mon	opi2	30.18	28.44	-0.0520		-2.17	0.0266	-27.4172	-0.1631	37.28	258	277	247	310	270	1362	308	
106	Linear	2	4 mon	opi3	28.61	26.91	-0.0439		-1.87	0.0176	-24.7576	-0.1327	35.49	238	251	258	296	242	1285	295	
107	Linear	2	4 mon	cmap	27.96	26.13	-0.0426		-1.80	0.0163	-23.7327	-0.1278	34.78	228	239	261	294	231	1253	286	
108	Linear	2	4 mon	cmap2	27.75	25.90	-0.0422		-1.78	0.0158	-23.3739	-0.1258	34.52	221	229	263	292	222	1227	274	
109	Point	1	Yes	reanalysis	51.39	**10.54**	3.0378	3.0378	31.14	0.5897	0.3045	**0.7679**	62.34	300	2	53	23	299	677	133	
110	Point	1	Yes	gpcp	53.95	**13.70**	2.6158	2.6158	34.97	0.5244	0.2931	0.7241	65.25	324	20	45	45	308	742	157	
111	Point	1	Yes	gpcc	53.62	20.04	2.7744	2.7744	54.88	0.5619	0.2660	0.7496	66.80	321	144	51	33	323	872	213	
112	Point	1	Yes	gpcc trmm	51.40	16.09	2.4316	2.4316	40.98	0.4362	0.2368	0.6604	64.02	301	68	33	53	303	758	167	
113	Point	1	Yes	ghcn cams grid	51.59	14.98	2.3028	2.3028	34.24	0.4483	0.2647	0.6695	64.13	305	40	30	50	304	729	149	
114	Point	1	Yes	opi2	52.07	20.10	2.7359	2.7359	55.66	0.5836	0.2811	0.7639	65.58	309	147	48	26	312	842	203	
115	Point	1	Yes	opi3	52.73	18.73	2.5817	2.5817	48.96	0.5371	0.2769	0.7329	65.78	312	92	41	36	314	795	186	
116	Point	1	Yes	cmap	53.16	18.36	2.5601	2.5601	46.98	0.5246	0.2736	0.7243	66.02	316	74	36	43	318	787	180	
117	Point	1	Yes	cmap2	53.30	18.13	2.5834	2.5834	46.82	0.5244	0.2726	0.7242	66.07	318	71	42	44	319	794	184	
118	Point	1	No	reanalysis	**16.46**	**10.79**	0.0124	80.6452	0.80	0.0296	-252.0520	0.1721	**21.60**	13	9	200	178	1	401	23	
119	Point	1	No	gpcp	18.68	14.03	0.0070	142.8571	0.95	0.0072	-206.5089	0.0846	25.60	32	27	212	199	39	509	54	
120	Point	1	No	gpcc	21.70	20.27	0.0038	263.1579	0.71	0.0086	-999.0000	0.0926	29.19	104	153	219	195	121	792	183	
121	Point	1	No	gpcc trmm	21.25	18.57	0.0083	120.4819	1.33	0.0041	-109.8336	0.0637	27.23	77	82	209	206	66	640	109	
122	Point	1	No	ghcn cams grid	19.84	15.46	-0.0021		0.65	0.0012	-386.1253	-0.0340	26.75	54	54	322	247	59	736	153	
123	Point	1	No	opi2	22.50	21.33	0.0074	135.1351	1.00	0.0082	-296.1020	0.0904	30.29	149	178	210	197	158	892	216	
124	Point	1	No	opi3	22.27	19.96	0.0038	263.1579	0.92	0.0022	-283.9133	0.0471	29.66	142	142	218	215	142	859	207	
125	Point	1	No	cmap	21.80	19.20	0.0037	270.2703	0.92	0.0022	-272.3529	0.0465	29.13	117	116	220	216	113	782	177	
126	Point	1	No	cmap2	21.58	18.97	0.0040	250.0000	0.93	0.0024	-266.6974	0.0490	28.82	95	107	217	214	104	737	154	
127	Point	1	1 mon	reanalysis	**16.22**	**10.81**	-0.0032		0.64	0.0020	-258.2284	-0.0443	**21.87**	8	10	319	253	4	594	81	
128	Point	1	1 mon	gpcp	18.58	14.05	0.0218	45.8716	1.15	0.0696	-202.1927	0.2638	25.37	29	28	161	138	34	390	20	
129	Point	1	1 mon	gpcc	21.74	20.37	0.0133	75.1880	0.89	0.1053	-999.0000	0.3245	29.14	108	156	192	104	115	675	132	
130	Point	1	1 mon	gpcc trmm	21.39	18.65	0.0338	29.5858	1.75	0.0682	-107.2103	0.2611	27.01	84	86	110	140	62	482	48	
131	Point	1	1 mon	ghcn cams grid	19.74	15.50	0.0122	81.9672	0.86	0.0382	-378.8168	0.1955	26.52	51	58	202	169	55	535	66	
132	Point	1	1 mon	opi2	22.43	21.36	0.0236	42.3729	1.33	0.0842	-291.1622	0.2902	30.08	148	180	151	123	153	755	164	
133	Point	1	1 mon	opi3	22.25	19.99	0.0192	52.0833	1.21	0.0574	-279.1283	0.2395	29.46	141	143	169	152	137	742	156	
134	Point	1	1 mon	cmap	21.64	19.08	0.0187	53.4759	1.19	0.0540	-264.8640	0.2324	28.77	98	112	172	156	103	641	111	
135	Point	1	1 mon	cmap2	21.42	18.86	0.0189	52.9101	1.19	0.0541	-259.3045	0.2326	28.47	85	99	171	155	95	605	84	
136	Point	1	2 mon	reanalysis	**16.06**	**10.82**	-0.0159		0.51	0.0488	-263.2389	-0.2210	**22.09**	1	11	300	313	8	633	99	
137	Point	1	2 mon	gpcp	18.49	14.10	0.0263	38.0228	1.20	0.1014	-201.6620	0.3184	25.33	26	29	136	107	30	328	10	
138	Point	1	2 mon	gpcc	21.76	20.53	0.0180	55.5556	0.97	0.1994	-999.0000	0.4465	29.17	111	160	176	69	118	634	104	
139	Point	1	2 mon	gpcc trmm	21.48	18.89	0.0357	28.0112	1.65	0.0900	-128.3038	0.2999	27.11	88	101	106	117	63	475	47	
140	Point	1	2 mon	ghcn cams grid	19.61	15.52	0.0184	54.3478	0.95	0.0861	-376.5907	0.2935	26.43	47	60	173	122	50	452	41	
141	Point	1	2 mon	opi2	22.23	21.29	0.0295	33.8983	1.44	0.1313	-288.6823	0.3624	29.95	140	176	124	93	150	683	136	
142	Point	1	2 mon	opi3	22.06	19.91	0.0248	40.3226	1.31	0.0961	-276.5960	0.3100	29.32	134	139	144	110	133	660	125	
143	Point	1	2 mon	cmap	21.37	18.92	0.0243	41.1523	1.28	0.0898	-259.8522	0.2996	28.49	82	102	149	118	97	548	67	
144	Point	1	2 mon	cmap2	21.14	18.69	0.0245	40.8163	1.28	0.0896	-254.2987	0.2994	28.18	73	89	147	119	85	513	56	
145	Point	1	3 mon	reanalysis	**16.09**	**10.84**	-0.0265		0.41	0.1354	-267.4238	-0.3680	**22.28**	2	12	288	319	12	633	100	
146	Point	1	3 mon	gpcp	**18.35**	14.14	0.0291	34.3643	1.23	0.1240	-201.0620	0.3521	25.32	23	30	125	98	29	305	6	
147	Point	1	3 mon	gpcc	21.83	20.68	0.0219	45.6621	1.04	0.2992	-999.0000	0.5470	29.22	120	163	160	59	124	626	92	
148	Point	1	3 mon	gpcc trmm	21.37	19.16	0.0355	28.1690	1.48	0.1307	-192.8256	0.3615	27.19	83	115	107	94	65	464	43	
149	Point	1	3 mon	ghcn cams grid	19.45	15.48	0.0214	46.7290	0.99	0.1180	-376.6239	0.3434	26.35	43	56	163	101	47	410	25	
150	Point	1	3 mon	opi2	22.03	21.16	0.0316	31.6456	1.48	0.1497	-284.9352	0.3869	29.79	133	172	119	84	146	654	121	
151	Point	1	3 mon	opi3	21.81	19.80	0.0287	34.8432	1.38	0.1279	-272.7459	0.3576	29.14	118	133	128	95	116	590	78	
152	Point	1	3 mon	cmap	21.12	18.81	0.0284	35.2113	1.35	0.1220	-256.2468	0.3492	28.32	72	96	129	100	91	488	50	
153	Point	1	3 mon	cmap2	20.89	18.58	0.0287	34.8432	1.35	0.1225	-250.6734	0.3500	28.01	63	83	127	99	82	454	42	
154	Point	1	4 mon	reanalysis	**16.30**	**10.85**	-0.0337		0.34	0.2201	-269.7672	-0.4692	**22.39**	10	13	278	323	13	637	107	
155	Point	1	4 mon	gpcp	**18.27**	14.17	0.0320	31.2500	1.28	0.1503	-200.1764	0.3877	25.31	20	31	118	82	27	278	3	
156	Point	1	4 mon	gpcc	21.89	20.96	0.0245	40.8163	1.10	0.3661	-999.0000	0.6051	29.28	123	167	148	56	130	624	91	
157	Point	1	4 mon	gpcc trmm	21.19	19.23	0.0399	25.0627	1.43	0.2201	-255.0023	0.4692	27.24	75	117	99	61	67	419	29	
158	Point	1	4 mon	ghcn cams grid	19.28	15.43	0.0246	40.6504	1.03	0.1555	-373.3226	0.3944	26.25	40	52	145	81	44	362	15	
159	Point	1	4 mon	opi2	21.93	21.05	0.0314	31.8471	1.47	0.1473	-281.9829	0.3838	29.68	127	170	120	88	143	648	115	
160	Point	1	4 mon	opi3	21.54	19.65	0.0329	30.3951	1.45	0.1659	-267.2027	0.4074	28.90	91	129	114	74	106	514	57	
161	Point	1	4 mon	cmap	20.95	18.78	0.0330	30.3030	1.43	0.1643	-254.0498	0.4053	28.25	65	95	113	76	88	437	35	
162	Point	1	4 mon	cmap2	20.72	18.55	0.0334	29.9401	1.43	0.1655	-248.4722	0.4069	27.94	57	81	111	75	80	404	24	
163	*Point*	*2*	*Yes*	*reanalysis*	*22.55*	*14.38*	*1.4715*	*1.4715*	*21.91*	*0.5670*	*0.3238*	*0.7530*	*27.50*	*151*	*38*	*26*	*30*	*76*	*321*	*9*	Plot
164	Point	2	Yes	gpcp	24.11	20.38	**1.2084**	1.2084	24.96	0.6263	0.2361	**0.7914**	29.23	160	157	12	10	125	**464**	44	
165	Point	2	Yes	gpcc	26.59	23.97	1.4875	1.4875	35.66	0.6358	0.0257	**0.7974**	32.15	191	202	27	4	177	601	82	
166	Point	2	Yes	gpcc trmm	29.17	27.92	**1.1274**	1.1274	31.93	0.5324	-0.2353	0.7296	35.58	252	268	5	39	246	810	193	
167	Point	2	Yes	ghcn cams grid	26.24	23.22	**1.2523**	1.2523	29.47	0.5970	0.0907	**0.7727**	31.89	187	194	19	17	175	592	80	
168	Point	2	Yes	opi2	29.00	27.40	**1.2157**	1.2157	33.65	0.6292	-0.0619	**0.7932**	34.46	250	261	13	8	220	752	163	
169	Point	2	Yes	opi3	28.07	25.89	**1.2427**	1.2427	32.56	0.6109	-0.0119	**0.7816**	33.64	231	228	15	13	207	694	139	
170	Point	2	Yes	cmap	27.55	25.13	**1.2507**	1.2507	31.83	0.6083	0.0189	**0.7799**	33.12	216	221	18	15	196	666	127	
171	Point	2	Yes	cmap2	27.40	24.90	**1.2587**	1.2587	31.76	0.6097	0.0293	**0.7808**	32.95	210	219	21	14	189	653	120	
172	Point	2	No	reanalysis	**18.16**	15.48	0.0988	10.1215	1.09	0.0449	-7.4672	0.2120	**23.20**	17	57	57	165	17	313	8	
173	Point	2	No	gpcp	23.51	21.48	0.0825	12.1212	1.32	0.0513	-13.5599	0.2266	30.42	156	188	69	158	159	730	150	
174	Point	2	No	gpcc	23.92	23.62	0.0890	11.2360	1.78	0.0479	-16.0344	0.2188	29.31	159	195	65	160	132	711	142	
175	Point	2	No	gpcc trmm	31.85	30.92	0.0828	12.0773	2.11	0.0463	-20.6749	0.2152	37.12	279	299	68	162	266	1074	240	
176	Point	2	No	ghcn cams grid	25.06	24.32	0.1021	9.7943	2.05	0.0698	-14.6303	0.2643	31.52	174	214	55	137	172	752	162	
177	Point	2	No	opi2	28.69	28.50	0.0949	10.5374	2.26	0.0675	-18.8425	0.2598	35.52	241	281	61	141	243	967	226	
178	Point	2	No	opi3	27.48	26.99	0.0941	10.6270	2.10	0.0616	-17.1091	0.2482	33.93	214	256	62	146	212	890	215	
179	Point	2	No	cmap	26.85	26.23	0.0961	10.4058	2.08	0.0631	-16.3529	0.2513	33.21	199	246	59	144	197	845	204	
180	Point	2	No	cmap2	26.64	26.00	0.0963	10.3842	2.06	0.0628	-16.1029	0.2505	32.97	192	236	58	145	191	822	196	
181	Point	2	1 mon	reanalysis	**18.30**	15.47	0.0560	17.8571	0.39	0.0145	-7.8486	0.1203	**23.75**	22	55	84	188	18	367	16	
182	Point	2	1 mon	gpcp	23.75	21.47	0.0309	32.3625	0.18	0.0072	-14.3136	0.0848	31.24	157	187	122	198	169	833	200	
183	Point	2	1 mon	gpcc	24.13	23.68	0.0122	81.9672	-0.08	0.0009	-16.8319	0.0299	30.18	161	196	203	222	154	936	223	
184	Point	2	1 mon	gpcc trmm	31.68	31.02	0.0460	21.7391	0.92	0.0143	-20.9587	0.1195	37.74	278	303	89	189	277	1136	261	
185	Point	2	1 mon	ghcn cams grid	25.24	24.31	0.0544	18.3824	0.85	0.0199	-15.2402	0.1409	32.17	176	213	85	185	179	838	202	
186	Point	2	1 mon	opi2	28.73	28.50	0.0440	22.7273	0.77	0.0145	-19.5788	0.1204	36.22	243	282	93	187	254	1059	236	
187	Point	2	1 mon	opi3	27.69	26.98	0.0414	24.1546	0.64	0.0120	-17.8103	0.1094	34.63	219	255	98	193	224	989	229	
188	Point	2	1 mon	cmap	27.04	26.22	0.0430	23.2558	0.65	0.0126	-17.0467	0.1124	33.92	203	245	96	190	211	945	224	
189	Point	2	1 mon	cmap2	26.81	25.99	0.0430	23.2558	0.64	0.0125	-16.7911	0.1119	33.68	197	235	95	191	208	926	222	
190	Point	2	2 mon	reanalysis	19.10	15.53	-0.0077		-0.63	0.0003	-8.4344	-0.0166	**24.57**	37	61	311	241	22	672	130	
191	Point	2	2 mon	gpcp	24.69	21.51	-0.0275		-1.11	0.0057	-15.1903	-0.0756	32.18	165	191	287	268	180	1091	248	
192	Point	2	2 mon	gpcc	25.01	23.81	-0.0626		-1.94	0.0235	-17.9237	-0.1532	30.98	172	197	240	305	167	1081	242	
193	Point	2	2 mon	gpcc trmm	32.12	31.40	-0.0227		-1.36	0.0034	-21.9144	-0.0585	38.83	282	310	291	262	283	1428	318	
194	Point	2	2 mon	ghcn cams grid	25.70	24.37	-0.0135		-0.84	0.0012	-16.1470	-0.0349	33.12	183	216	305	248	195	1147	264	
195	Point	2	2 mon	opi2	29.20	28.54	-0.0157		-0.96	0.0018	-20.4533	-0.0429	37.04	253	283	301	250	263	1350	304	
196	Point	2	2 mon	opi3	28.10	27.05	-0.0181		-1.01	0.0023	-18.6330	-0.0478	35.44	232	258	296	257	241	1284	292	
197	Point	2	2 mon	cmap	27.47	26.28	-0.0178		-0.98	0.0022	-17.8711	-0.0465	34.74	213	248	298	255	229	1243	280	
198	Point	2	2 mon	cmap2	27.25	26.05	-0.0183		-0.99	0.0023	-17.6140	-0.0475	34.51	207	238	295	256	221	1217	270	
199	Point	2	3 mon	reanalysis	19.30	15.51	-0.0202		-0.86	0.0019	-8.5484	-0.0433	**24.73**	42	59	292	251	24	668	128	
200	Point	2	3 mon	gpcp	24.91	21.50	-0.0300		-1.19	0.0068	-15.2319	-0.0825	32.24	168	190	280	272	182	1092	249	
201	Point	2	3 mon	gpcc	24.84	23.86	-0.0355		-1.36	0.0076	-17.7153	-0.0872	30.76	167	199	270	276	163	1075	241	
202	Point	2	3 mon	gpcc trmm	32.39	31.38	-0.0564		-2.72	0.0220	-23.1292	-0.1485	39.26	283	309	243	303	287	1425	317	

Larger United States - Monthly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR
203	Point	2	3 mon	ghcn cams grid	26.21	24.36	-0.0278		-1.22	0.0052	-16.3393	-0.0719	33.32	186	215	286	265	203	1155	267
204	Point	2	3 mon	opi2	29.95	28.57	-0.0358		-1.57	0.0096	-20.7760	-0.0979	37.34	257	284	269	283	271	1364	309
205	Point	2	3 mon	opi3	28.48	27.04	-0.0293		-1.34	0.0060	-18.7938	-0.0774	35.60	235	257	283	271	248	1294	298
206	Point	2	3 mon	cmap	27.83	26.27	-0.0293		-1.32	0.0059	-18.0294	-0.0767	34.91	222	247	282	269	235	1255	287
207	Point	2	3 mon	cmap2	27.63	26.04	-0.0295		-1.32	0.0059	-17.7657	-0.0767	34.66	217	237	281	270	227	1232	276
208	Point	2	4 mon	reanalysis	19.61	15.39	-0.0395		-1.27	0.0075	-9.0433	-0.0866	**24.86**	46	49	264	275	25	659	124
209	Point	2	4 mon	gpcp	25.34	21.38	-0.0351		-1.41	0.0097	-15.8741	-0.0986	32.22	178	181	272	284	181	1096	253
210	Point	2	4 mon	gpcc	25.38	23.97	-0.0202		-1.03	0.0025	-17.5805	-0.0495	30.68	179	201	293	258	162	1093	250
211	Point	2	4 mon	gpcc trmm	32.56	31.19	-0.0489		-2.73	0.0173	-23.5414	-0.1317	39.15	284	308	254	295	284	1425	316
212	Point	2	4 mon	ghcn cams grid	26.47	24.25	-0.0346		-1.49	0.0084	-17.0412	-0.0914	33.32	189	210	276	277	202	1154	266
213	Point	2	4 mon	opi2	30.42	28.47	-0.0425		-1.87	0.0141	-21.6655	-0.1188	37.34	259	279	262	289	272	1361	306
214	Point	2	4 mon	opi3	28.71	26.93	-0.0363		-1.63	0.0096	-19.5888	-0.0978	35.59	242	252	268	282	247	1291	297
215	Point	2	4 mon	cmap	28.06	26.16	-0.0350		-1.57	0.0088	-18.7752	-0.0936	34.88	230	242	273	280	234	1259	290
216	Point	2	4 mon	cmap2	27.84	25.93	-0.0345		-1.55	0.0084	-18.4913	-0.0919	34.63	223	232	277	279	225	1236	277
217	Area	1	Yes	reanalysis	51.41	**10.66**	3.0394	3.0394	31.28	0.5900	0.3040	**0.7681**	62.38	302	3	54	22	300	681	135
218	Area	1	Yes	gpcp	53.93	**13.85**	2.6146	2.6146	35.11	0.5240	0.2923	0.7239	65.28	323	21	44	46	309	743	159
219	Area	1	Yes	gpcc	53.60	20.08	2.7731	2.7731	54.89	0.5615	0.2656	0.7493	66.81	320	146	50	34	324	874	214
220	Area	1	Yes	gpcc trmm	51.54	16.58	2.4232	2.4232	41.32	0.4331	0.2325	0.6581	64.20	304	69	32	54	306	765	169
221	Area	1	Yes	ghcn cams grid	51.61	15.10	2.3015	2.3015	34.34	0.4475	0.2637	0.6690	64.20	306	41	29	51	305	732	151
222	Area	1	Yes	opi2	52.05	20.26	2.7342	2.7342	55.78	0.5830	0.2798	0.7635	65.63	308	152	47	27	313	847	205
223	Area	1	Yes	opi3	52.70	18.89	2.5795	2.5795	49.07	0.5364	0.2756	0.7324	65.83	311	100	38	37	316	802	188
224	Area	1	Yes	cmap	53.15	18.52	2.5579	2.5579	47.09	0.5238	0.2724	0.7237	66.07	314	78	35	47	320	794	185
225	Area	1	Yes	cmap2	53.28	18.29	2.5812	2.5812	46.94	0.5236	0.2714	0.7236	66.11	317	73	40	48	321	799	187
226	Area	1	No	reanalysis	**16.49**	**10.91**	0.0140	71.4286	0.94	0.0363	-242.3876	0.1905	**21.63**	14	14	190	170	2	390	18
227	Area	1	No	gpcp	18.80	14.18	0.0058	172.4138	1.09	0.0048	-206.1455	0.0693	25.70	35	32	214	202	41	524	62
228	Area	1	No	gpcc	21.74	20.30	0.0025	400.0000	0.72	0.0039	-999.0000	0.0625	29.23	107	155	225	207	126	820	195
229	Area	1	No	gpcc trmm	21.73	19.06	-0.0001		1.68	0.0000	-101.1210	-0.0007	27.70	105	110	324	237	77	853	206
230	Area	1	No	ghcn cams grid	19.95	15.59	-0.0035		0.75	0.0030	-372.8159	-0.0543	26.85	55	63	318	261	61	758	166
231	Area	1	No	opi2	22.65	21.48	0.0057	175.4386	1.12	0.0048	-295.7219	0.0691	30.43	153	189	215	203	160	920	221
232	Area	1	No	opi3	22.42	20.11	0.0016	625.0000	1.03	0.0004	-283.6904	0.0196	29.81	147	148	228	225	147	895	217
233	Area	1	No	cmap	21.95	19.35	0.0015	666.6667	1.04	0.0003	-272.2596	0.0181	29.27	129	120	229	227	129	834	201
234	Area	1	No	cmap2	21.73	19.13	0.0018	555.5556	1.04	0.0005	-266.6060	0.0216	28.96	106	113	227	224	109	779	175
235	Area	1	1 mon	reanalysis	**16.26**	**10.93**	-0.0055		0.75	0.0056	-249.7511	-0.0745	**21.97**	9	15	315	267	6	612	85
236	Area	1	1 mon	gpcp	18.70	14.20	0.0202	49.5050	1.27	0.0592	-201.9471	0.2433	25.48	33	33	165	150	37	418	28
237	Area	1	1 mon	gpcc	21.78	20.40	0.0121	82.6446	0.90	0.0933	-999.0000	0.3055	29.19	113	159	204	116	119	711	141
238	Area	1	1 mon	gpcc trmm	21.85	19.14	0.0305	32.7869	2.18	0.0495	-98.2461	0.2225	27.42	121	114	123	159	75	592	79
239	Area	1	1 mon	ghcn cams grid	19.83	15.62	0.0116	86.2069	0.97	0.0332	-365.6730	0.1823	26.60	53	65	205	174	57	554	70
240	Area	1	1 mon	opi2	22.57	21.52	0.0229	43.6681	1.47	0.0783	-290.4950	0.2798	30.21	152	192	153	130	155	782	178
241	Area	1	1 mon	opi3	22.39	20.15	0.0173	57.8035	1.33	0.0462	-278.8115	0.2150	29.59	146	150	180	163	138	777	173
242	Area	1	1 mon	cmap	21.78	19.24	0.0167	59.8802	1.31	0.0426	-264.7079	0.2063	28.91	112	118	186	168	107	691	137
243	Area	1	1 mon	cmap2	21.56	19.01	0.0169	59.1716	1.31	0.0429	-259.1634	0.2070	28.60	93	108	185	167	100	653	118
244	Area	1	2 mon	reanalysis	**16.11**	**10.94**	-0.0201		0.60	0.0750	-255.2995	-0.2738	**22.22**	4	16	294	317	10	641	110
245	Area	1	2 mon	gpcp	18.58	14.25	0.0276	36.2319	1.37	0.1102	-200.3763	0.3320	25.39	30	34	130	102	36	332	11
246	Area	1	2 mon	gpcc	21.80	20.56	0.0181	55.2486	1.01	0.2154	-999.0000	0.4641	29.20	116	162	174	63	122	637	108
247	Area	1	2 mon	gpcc trmm	21.97	19.41	0.0435	22.9885	2.31	0.1082	-106.0556	0.3290	27.38	130	121	94	103	74	522	61
248	Area	1	2 mon	ghcn cams grid	19.67	15.64	0.0195	51.2821	1.09	0.0938	-363.3391	0.3063	26.48	49	66	168	114	54	451	39
249	Area	1	2 mon	opi2	22.37	21.44	0.0310	32.2581	1.63	0.1439	-287.0317	0.3793	30.03	144	186	121	90	151	692	138
250	Area	1	2 mon	opi3	22.19	20.07	0.0258	38.7597	1.49	0.1029	-275.1010	0.3207	29.41	139	145	138	105	135	662	126
251	Area	1	2 mon	cmap	21.50	19.08	0.0252	39.6825	1.46	0.0958	-258.5447	0.3094	28.58	90	111	141	112	99	553	69
252	Area	1	2 mon	cmap2	21.28	18.85	0.0255	39.2157	1.46	0.0958	-253.0269	0.3095	28.27	78	98	139	111	89	515	58
253	Area	1	3 mon	reanalysis	**16.12**	**10.96**	-0.0313		0.49	0.1819	-259.5717	-0.4264	**22.42**	5	17	279	321	14	636	105
254	Area	1	3 mon	gpcp	**18.41**	14.29	0.0330	30.3030	1.44	0.1583	-198.9440	0.3978	25.33	25	35	112	78	31	281	4
255	Area	1	3 mon	gpcc	21.86	20.72	0.0225	44.4444	1.09	0.3415	-999.0000	0.5844	29.24	122	164	154	57	127	624	90
256	Area	1	3 mon	gpcc trmm	21.78	19.73	0.0570	17.5439	2.45	0.2102	-120.7218	0.4585	27.32	115	131	83	67	70	466	45
257	Area	1	3 mon	ghcn cams grid	19.49	15.60	0.0246	40.6504	1.16	0.1491	-361.6214	0.3862	26.37	45	64	146	86	48	389	17
258	Area	1	3 mon	opi2	22.15	21.32	0.0351	28.4900	1.70	0.1832	-282.6301	0.4280	29.84	137	177	108	73	148	643	113
259	Area	1	3 mon	opi3	21.91	19.96	0.0326	30.6748	1.61	0.1628	-270.3177	0.4034	29.19	125	140	116	77	120	578	76
260	Area	1	3 mon	cmap	21.22	18.97	0.0323	30.9598	1.58	0.1565	-253.9846	0.3956	28.36	76	106	117	80	93	472	46
261	Area	1	3 mon	cmap2	20.99	18.74	0.0327	30.5810	1.58	0.1572	-248.4623	0.3964	28.05	66	93	115	79	84	437	34
262	Area	1	4 mon	reanalysis	**16.34**	**10.98**	-0.0374		0.43	0.2591	-261.4019	-0.5091	**22.51**	12	18	267	324	15	636	106
263	Area	1	4 mon	gpcp	**18.28**	14.32	0.0365	27.3973	1.49	0.1935	-197.9143	0.4399	25.31	21	37	104	70	28	260	1
264	Area	1	4 mon	gpcc	21.92	20.99	0.0251	39.8406	1.15	0.4143	-999.0000	0.6436	29.29	126	168	143	55	131	623	89
265	Area	1	4 mon	gpcc trmm	21.65	19.86	0.0661	15.1286	2.55	0.2963	-125.6546	0.5444	27.36	99	137	81	60	73	450	38
266	Area	1	4 mon	ghcn cams grid	19.27	15.56	0.0289	34.6021	1.22	0.2050	-357.9409	0.4528	26.25	39	62	126	68	43	338	12
267	Area	1	4 mon	opi2	22.00	21.21	0.0358	27.9330	1.72	0.1892	-279.4635	0.4350	29.73	131	174	105	72	144	626	93
268	Area	1	4 mon	opi3	21.61	19.81	0.0376	26.5957	1.70	0.2140	-264.5954	0.4626	28.93	96	134	103	65	108	506	53
269	Area	1	4 mon	cmap	21.02	18.94	0.0377	26.5252	1.68	0.2130	-251.5625	0.4616	28.28	67	104	102	68	90	429	32
270	Area	1	4 mon	cmap2	20.80	18.71	0.0382	26.1780	1.68	0.2142	-246.0460	0.4628	27.97	59	91	101	64	81	396	22
271	Area	2	Yes	reanalysis	22.54	18.41	**1.3908**	1.3908	24.65	0.5906	0.1907	**0.7685**	27.86	150	75	23	20	78	346	14
272	Area	2	Yes	gpcp	25.61	24.41	**1.1264**	1.1264	27.18	0.6346	0.0054	**0.7966**	30.88	181	217	4	5	165	572	75
273	Area	2	Yes	gpcc	28.51	27.78	**1.3739**	1.3739	36.75	0.6137	-0.2552	**0.7834**	34.30	236	267	22	12	219	756	165
274	Area	2	Yes	gpcc trmm	30.80	30.78	**1.0619**	1.0619	32.72	0.5345	-0.5134	0.7311	37.02	271	298	1	38	261	869	209
275	Area	2	Yes	ghcn cams grid	28.20	27.24	**1.1347**	1.1347	30.58	0.5716	-0.2103	0.7560	34.07	233	259	7	29	215	743	158
276	Area	2	Yes	opi2	31.97	31.42	**1.1039**	1.1039	34.43	0.6050	-0.4300	**0.7778**	37.03	280	311	2	16	262	871	212
277	Area	2	Yes	opi3	30.44	29.91	**1.1337**	1.1337	33.59	0.5929	-0.3485	**0.7700**	35.96	260	287	6	19	252	824	197
278	Area	2	Yes	cmap	29.79	29.16	**1.1412**	1.1412	32.93	0.5905	-0.3051	**0.7685**	35.38	256	286	8	21	239	810	192
279	Area	2	Yes	cmap2	29.60	28.93	**1.1497**	1.1497	32.89	0.5931	-0.2896	**0.7701**	35.16	254	285	9	18	237	803	189
280	Area	2	No	reanalysis	21.05	19.51	0.0180	55.5556	3.82	0.0025	-17.3627	0.0499	26.47	68	125	175	213	53	634	102
281	Area	2	No	gpcp	26.87	25.51	0.0005	2000.0000	3.55	0.0000	-29.5959	0.0018	34.17	200	224	234	234	216	1108	257
282	Area	2	No	gpcc	27.70	27.43	-0.0246		2.87	0.0054	-31.1720	-0.0733	33.27	220	262	290	266	199	1237	278
283	Area	2	No	gpcc trmm	34.07	33.78	0.0173	57.8035	2.90	0.0048	-58.4990	0.0695	39.77	293	320	181	201	292	1287	296
284	Area	2	No	ghcn cams grid	28.88	28.34	-0.0155		3.15	0.0027	-32.5381	-0.0516	35.78	245	271	302	260	251	1329	302
285	Area	2	No	opi2	32.67	32.52	-0.0168		3.05	0.0035	-40.6002	-0.0595	39.85	285	315	299	263	293	1455	322
286	Area	2	No	opi3	31.38	31.01	-0.0148		3.13	0.0026	-37.1330	-0.0505	38.15	272	301	304	259	281	1417	315
287	Area	2	No	cmap	30.69	30.26	-0.0135		3.18	0.0021	-35.6847	-0.0455	37.42	267	294	306	254	275	1396	313
288	Area	2	No	cmap2	30.47	30.03	-0.0127		3.20	0.0018	-35.1820	-0.0428	37.16	262	289	307	249	267	1374	310
289	Area	2	1 mon	reanalysis	21.11	19.51	0.0224	44.6429	3.90	0.0038	-17.2655	0.0620	26.45	71	126	157	208	51	613	86
290	Area	2	1 mon	gpcp	27.10	25.51	0.0011	909.0909	3.56	0.0000	-29.5192	0.0039	34.19	205	223	231	233	218	1110	258
291	Area	2	1 mon	gpcc	27.85	27.52	-0.0281		2.79	0.0070	-31.1911	-0.0836	33.40	224	263	285	273	204	1249	284
292	Area	2	1 mon	gpcc trmm	34.55	33.94	0.0170	58.8235	2.93	0.0047	-58.0937	0.0682	40.02	294	321	184	204	294	1297	299
293	Area	2	1 mon	ghcn cams grid	28.97	28.35	-0.0037		3.45	0.0001	-32.2086	-0.0122	35.67	248	272	317	240	250	1327	301
294	Area	2	1 mon	opi2	32.68	32.54	0.0035	285.7143	3.64	0.0002	-40.0263	0.0125	39.64	286	317	223	230	291	1347	303
295	Area	2	1 mon	opi3	31.46	31.02	-0.0071		3.34	0.0006	-36.8791	-0.0241	38.09	276	304	312	245	280	1417	314
296	Area	2	1 mon	cmap	30.80	30.26	-0.0066		3.36	0.0005	-35.4526	-0.0223	37.37	270	295	313	243	274	1395	312
297	Area	2	1 mon	cmap2	30.57	30.03	-0.0060		3.38	0.0004	-34.9532	-0.0200	37.11	265	290	314	242	265	1376	311
298	Area	2	2 mon	reanalysis	20.89	19.58	0.0396	25.2525	4.18	0.0120	-17.0178	0.1094	26.31	62	128	100	192	46	528	64
299	Area	2	2 mon	gpcp	26.94	25.57	0.0174	57.4713	3.93	0.0038	-29.1219	0.0615	34.02	202	226	178	209	214	1029	232
300	Area	2	2 mon	gpcc	27.98	27.65	-0.0350		2.57	0.0108	-31.5413	-0.1037	33.53	229	265	274	285	205	1258	288
301	Area	2	2 mon	gpcc trmm	35.37	34.41	-0.0153		1.89	0.0037	-58.9991	-0.0607	40.76	297	322	303	264	296	1482	324
302	Area	2	2 mon	ghcn cams grid	28.97	28.42	0.0109	91.7431	3.82	0.0013	-31.9019	0.0362	35.56	249	278	206	221	244	1196	269
303	Area	2	2 mon	opi2	32.69	32.59	0.0239	41.8410	4.24	0.0071	-39.5043	0.0843	39.45	287	318	150	200	289	1244	282

Larger United States - Monthly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
304	**Area**	2	2 mon	opi3	31.42	31.10	0.0133	75.1880	3.91	0.0020	-36.4198	0.0451	37.92	275	306	193	217	278	1269	291	
305	**Area**	2	2 mon	cmap	30.76	30.33	0.0126	79.3651	3.88	0.0018	-35.0263	0.0424	37.21	269	297	199	219	268	1252	285	
306	**Area**	2	2 mon	cmap2	30.54	30.10	0.0130	76.9231	3.89	0.0019	-34.5355	0.0437	36.95	264	292	195	218	259	1228	275	
307	**Area**	2	3 mon	reanalysis	20.94	19.55	0.0674	14.8368	4.59	0.0350	-16.6587	0.1871	25.99	64	127	80	173	42	486	49	
308	**Area**	2	3 mon	gpcp	27.06	25.54	0.0475	21.0526	4.56	0.0286	-28.4968	0.1690	33.60	204	225	88	179	206	902	219	
309	**Area**	2	3 mon	gpcc	27.88	27.65	0.0211	47.3934	3.81	0.0041	-31.9699	0.0641	33.01	225	264	164	205	193	1051	235	
310	**Area**	2	3 mon	gpcc trmm	35.16	34.55	-0.0110		1.91	0.0019	-59.4556	-0.0440	40.91	296	323	308	252	297	1476	323	
311	**Area**	2	3 mon	ghcn cams grid	28.94	28.41	0.0423	23.6407	4.56	0.0200	-31.3464	0.1415	35.18	247	273	97	184	238	1039	234	
312	**Area**	2	3 mon	opi2	32.78	32.61	0.0503	19.8807	4.98	0.0317	-39.0700	0.1781	39.16	288	319	86	177	285	1155	268	
313	**Area**	2	3 mon	opi3	31.39	31.09	0.0458	21.8341	4.78	0.0245	-35.8400	0.1564	37.55	274	305	90	181	276	1126	259	
314	**Area**	2	3 mon	cmap	30.72	30.32	0.0449	22.2717	4.72	0.0231	-34.4481	0.1520	36.83	268	296	92	183	258	1097	254	
315	**Area**	2	3 mon	cmap2	30.50	30.08	0.0452	22.1239	4.71	0.0231	-33.9656	0.1521	36.58	263	291	91	182	257	1084	245	
316	**Area**	2	4 mon	reanalysis	20.75	19.46	0.0954	10.4822	4.97	0.0731	-16.7809	0.2703	25.60	58	123	60	132	40	413	26	
317	**Area**	2	4 mon	gpcp	26.72	25.44	0.0787	12.7065	5.17	0.0817	-28.6724	0.2859	33.07	195	222	76	125	194	812	194	
318	**Area**	2	4 mon	gpcc	27.93	27.69	0.0801	12.4844	5.15	0.0616	-32.2251	0.2481	32.46	227	266	74	147	187	901	218	
319	**Area**	2	4 mon	gpcc trmm	35.15	34.55	0.0254	39.3701	3.02	0.0104	-57.7013	0.1018	40.64	295	324	140	194	295	1248	283	
320	**Area**	2	4 mon	ghcn cams grid	28.92	28.32	0.0795	12.5786	5.42	0.0739	-31.5917	0.2718	34.66	246	270	75	131	226	948	225	
321	**Area**	2	4 mon	opi2	32.86	32.54	0.0779	12.8370	5.70	0.0793	-39.7619	0.2816	38.76	290	316	77	129	282	1094	251	
322	**Area**	2	4 mon	opi3	31.39	31.00	0.0815	12.2699	5.68	0.0807	-36.2421	0.2841	37.05	273	300	72	126	264	1035	233	
323	**Area**	2	4 mon	cmap	30.67	30.23	0.0819	12.2100	5.63	0.0801	-34.7814	0.2830	36.31	266	293	71	128	255	1013	231	
324	**Area**	2	4 mon	cmap2	30.44	29.99	0.0825	12.1212	5.63	0.0804	-34.2815	0.2836	36.06	261	288	70	127	253	999	230	

Larger United States - Yearly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	Linear	1	Yes	reanalysis	12.74	11.14	0.0096	104.1667	1.13	0.0000	-2.3944	0.0059	14.44	5	11	55	58	5	134	10	Plot
2	Linear	1	Yes	gpcp	13.48	12.09	-0.1769		-3.41	0.0056	-2.3411	-0.0750	15.26	10	15	92	73	10	200	21	
3	Linear	1	Yes	gpcc	17.78	17.78	-0.3453		-8.63	0.0184	-6.3458	-0.1356	19.54	36	42	100	78	41	297	66	
4	Linear	1	Yes	gpcc trmm	13.11	9.85	-4.4754		-76.95	0.2494	-0.7322	-0.4994	16.62	9	3	105	102	19	238	41	
5	Linear	1	Yes	ghcn cams grid	16.05	15.67	-0.2940		-3.25	0.0118	-4.1397	-0.1086	17.94	23	27	97	75	25	247	48	
6	Linear	1	Yes	opi2	19.18	19.11	0.0573	17.4520	0.08	0.0006	-5.3937	0.0240	21.11	48	53	34	54	55	244	47	
7	Linear	1	Yes	opi3	17.67	17.60	0.2093	4.7778	2.83	0.0053	-4.5143	0.0727	19.60	35	40	28	47	43	193	19	
8	Linear	1	Yes	cmap	17.20	16.84	-0.0807		-2.52	0.0008	-4.2207	-0.0290	19.07	30	33	69	63	36	231	36	
9	Linear	1	Yes	cmap2	17.02	16.61	-0.1198		-3.19	0.0017	-4.1103	-0.0418	18.87	27	30	77	67	32	233	39	
10	Linear	1	No	reanalysis	10.67	10.67	0.0114	87.7193	0.68	0.0286	-999.0000	0.1690	11.70	1	6	53	32	1	93	3	
11	Linear	1	No	gpcp	13.88	13.88	0.0208	48.0769	0.98	0.0303	-999.0000	0.1740	14.31	13	18	43	29	4	107	6	
12	Linear	1	No	gpcc	20.13	20.13	0.0171	58.4795	0.83	0.4548	-999.0000	0.6744	20.32	55	62	46	1	52	216	29	
13	Linear	1	No	gpcc trmm	17.21	17.21	-0.0816		0.06	0.6015	-999.0000	-0.7755	17.27	31	38	70	108	21	268	55	
14	Linear	1	No	ghcn cams grid	15.19	15.19	-0.0062		0.48	0.0031	-999.0000	-0.0556	15.48	18	22	61	69	12	182	15	
15	Linear	1	No	opi2	20.89	20.89	0.0154	64.9351	1.02	0.0162	-999.0000	0.1273	21.18	58	65	50	41	56	270	57	
16	Linear	1	No	opi3	19.38	19.38	0.0083	120.4819	0.86	0.0032	-999.0000	0.0567	19.60	50	55	58	50	42	255	52	
17	Linear	1	No	cmap	18.63	18.63	0.0135	74.0741	0.95	0.0091	-999.0000	0.0956	18.87	44	49	52	44	31	220	31	
18	Linear	1	No	cmap2	18.40	18.40	0.0167	59.8802	1.00	0.0131	-999.0000	0.1146	18.62	42	47	48	42	29	208	25	
19	Linear	2	Yes	reanalysis	24.52	10.81	2.4800	2.4800	34.45	0.1260	-0.0565	0.3550	29.96	68	8	21	10	78	185	16	Plot
20	Linear	2	Yes	gpcp	26.42	16.82	1.3197	1.3197	23.84	0.0510	-0.2848	0.2257	33.04	75	32	18	19	88	232	37	
21	Linear	2	Yes	gpcc	27.47	23.45	2.7415	2.7415	65.21	0.1593	-1.0867	0.3991	31.17	81	78	25	6	85	275	60	
22	Linear	2	Yes	gpcc trmm	14.38	8.46	-6.6001		-230.33	0.4165	-0.4548	-0.6453	18.06	16	2	106	104	27	255	51	
23	Linear	2	Yes	ghcn cams grid	27.52	19.65	0.8465	1.1813	15.84	0.0226	-0.4325	0.1503	34.89	82	59	13	38	93	285	63	
24	Linear	2	Yes	opi2	29.79	23.83	1.0590	1.0590	25.54	0.0514	-0.6171	0.2268	37.07	94	82	9	18	102	305	73	
25	Linear	2	Yes	opi3	28.86	22.32	1.0349	1.0349	23.28	0.0349	-0.5516	0.1868	36.31	91	75	5	26	100	297	68	
26	Linear	2	Yes	cmap	28.40	21.57	0.9496	1.0531	20.22	0.0282	-0.5193	0.1679	35.93	86	73	8	33	97	297	67	
27	Linear	2	Yes	cmap2	28.25	21.34	0.9844	1.0158	20.92	0.0302	-0.5055	0.1739	35.77	84	69	3	31	96	283	61	Plot
28	Linear	2	No	reanalysis	15.39	15.39	0.1274	7.8493	1.46	0.0798	-70.4840	0.2824	15.92	20	24	32	15	16	107	7	
29	Linear	2	No	gpcp	21.39	21.39	-0.0862		-2.47	0.0521	-137.3065	-0.2282	22.14	61	70	72	82	61	346	87	
30	Linear	2	No	gpcc	23.83	23.83	-0.2167		-5.34	0.2225	-279.4668	-0.4717	24.17	64	81	94	99	64	402	94	
31	Linear	2	No	gpcc trmm	31.02	31.02	0.6468	1.5461	19.92	0.2643	-283.5390	0.5141	31.06	102	106	19	3	83	313	77	
32	Linear	2	No	ghcn cams grid	24.23	24.23	-0.0573		-2.00	0.0248	-173.9626	-0.1574	24.91	65	84	65	80	65	359	88	
33	Linear	2	No	opi2	28.41	28.41	-0.0799		-2.89	0.0701	-240.3610	-0.2647	29.25	87	100	68	83	76	414	98	
34	Linear	2	No	opi3	26.90	26.90	-0.1102		-3.61	0.0948	-213.6272	-0.3078	27.59	77	94	75	86	72	404	96	
35	Linear	2	No	cmap	26.14	26.14	-0.1052		-3.39	0.0828	-201.8532	-0.2878	26.82	72	91	74	85	70	392	93	
36	Linear	2	No	cmap2	25.91	25.91	-0.1012		-3.26	0.0766	-198.3911	-0.2768	26.59	70	89	73	84	68	384	90	
37	Point	1	Yes	reanalysis	12.79	11.26	0.0246	40.6504	1.39	0.0002	-2.4464	0.0153	14.49	6	13	41	56	7	123	9	
38	Point	1	Yes	gpcp	13.53	12.24	-0.1653		-3.10	0.0050	-2.4125	-0.0704	15.35	11	16	90	71	11	199	20	
39	Point	1	Yes	gpcc	17.92	17.92	-0.3412		-8.41	0.0180	-6.4447	-0.1340	19.66	39	45	99	77	44	304	71	
40	Point	1	Yes	gpcc trmm	12.65	9.90	-4.2233		-72.91	0.2378	-0.7837	-0.4876	16.30	4	4	103	100	18	229	35	
41	Point	1	Yes	ghcn cams grid	16.13	15.79	-0.2986		-3.20	0.0123	-4.2375	-0.1108	18.02	25	28	98	76	26	253	49	
42	Point	1	Yes	opi2	19.32	19.26	0.0091	109.8901	-0.74	0.0000	-5.5458	0.0038	21.26	49	54	56	59	57	275	59	
43	Point	1	Yes	opi3	17.86	17.75	0.1930	5.1813	2.68	0.0045	-4.6385	0.0674	19.73	38	41	29	48	46	202	23	
44	Point	1	Yes	cmap	17.26	17.00	-0.0842		-2.43	0.0009	-4.3357	-0.0304	19.19	33	36	71	64	39	243	46	
45	Point	1	Yes	cmap2	17.08	16.76	-0.1224		-3.09	0.0018	-4.2230	-0.0429	18.99	28	31	78	68	34	239	43	
46	Point	1	No	reanalysis	10.79	10.79	0.0263	38.0228	0.94	0.0829	-706.4602	0.2879	11.78	2	7	39	14	2	64	1	
47	Point	1	No	gpcp	14.03	14.03	0.0324	30.8642	1.29	0.0357	-565.1518	0.1890	14.45	14	19	37	25	6	101	4	
48	Point	1	No	gpcc	20.27	20.27	0.0213	46.9484	1.05	0.3842	-999.0000	0.6198	20.46	56	63	42	2	53	216	30	
49	Point	1	No	gpcc trmm	17.25	17.25	0.1705	5.8651	4.10	0.1009	-522.3576	0.3177	17.31	32	39	30	12	22	135	12	
50	Point	1	No	ghcn cams grid	15.30	15.30	-0.0108		0.53	0.0050	-999.0000	-0.0710	15.59	19	23	63	72	14	191	18	
51	Point	1	No	opi2	21.04	21.04	-0.0328		0.20	0.0357	-999.0000	-0.1889	21.36	59	67	64	81	58	329	80	
52	Point	1	No	opi3	19.54	19.54	-0.0080		0.71	0.0015	-999.0000	-0.0383	19.76	53	58	62	65	47	285	62	
53	Point	1	No	cmap	18.78	18.78	0.0101	99.0099	1.04	0.0025	-979.8507	0.0497	19.02	46	51	54	51	35	237	40	
54	Point	1	No	cmap2	18.55	18.55	0.0140	71.4286	1.11	0.0045	-954.8687	0.0673	18.78	43	48	51	49	30	221	32	
55	Point	2	Yes	reanalysis	24.43	10.90	2.5197	2.5197	35.17	0.1294	-0.0568	0.3597	30.05	67	9	22	9	79	186	17	
56	Point	2	Yes	gpcp	26.31	16.90	1.2632	1.2632	22.69	0.0464	-0.2900	0.2154	33.20	74	34	14	21	89	232	38	
57	Point	2	Yes	gpcc	27.36	23.25	2.6879	2.6879	63.71	0.1532	-1.0687	0.3914	31.02	79	77	24	7	82	269	56	
58	Point	2	Yes	gpcc trmm	14.76	8.36	-7.3133		-252.83	0.5700	-0.5145	-0.7550	17.45	17	1	108	107	23	256	53	
59	Point	2	Yes	ghcn cams grid	27.78	19.74	0.7663	1.3050	13.94	0.0184	-0.4392	0.1357	35.07	83	61	17	39	94	294	65	
60	Point	2	Yes	opi2	30.24	23.92	0.9705	1.0304	23.06	0.0429	-0.6266	0.2072	37.28	96	83	4	23	103	309	75	
61	Point	2	Yes	opi3	29.31	22.41	0.9662	1.0350	21.48	0.0302	-0.5576	0.1739	36.48	93	76	6	30	101	306	74	
62	Point	2	Yes	cmap	28.86	21.66	0.8908	1.1226	18.74	0.0247	-0.5245	0.1570	36.09	92	74	12	37	99	314	78	
63	Point	2	Yes	cmap2	28.71	21.43	0.9235	1.0828	19.40	0.0265	-0.5109	0.1626	35.93	90	71	10	35	98	304	72	
64	Point	2	No	reanalysis	15.48	15.48	0.1671	5.9844	2.18	0.0958	-49.4908	0.3095	16.01	22	26	31	13	17	109	8	
65	Point	2	No	gpcp	21.48	21.48	-0.1427		-3.62	0.0997	-97.1899	-0.3158	22.33	62	72	86	88	62	370	89	
66	Point	2	No	gpcc	23.62	23.62	-0.2704		-6.84	0.3849	-305.9907	-0.6204	23.98	63	79	95	103	63	403	95	
67	Point	2	No	gpcc trmm	30.92	30.92	-0.0664		-2.58	0.0008	-83.6914	-0.0287	31.15	100	104	66	62	84	416	99	
68	Point	2	No	ghcn cams grid	24.32	24.32	-0.1374		-3.90	0.0996	-123.1785	-0.3156	25.11	66	85	85	87	66	389	91	
69	Point	2	No	opi2	28.50	28.50	-0.1683		-5.37	0.2174	-170.2033	-0.4663	29.48	88	101	91	98	77	455	104	
70	Point	2	No	opi3	26.99	26.99	-0.1788		-5.40	0.1743	-150.8725	-0.4175	27.77	78	95	93	97	73	436	102	
71	Point	2	No	cmap	26.23	26.23	-0.1640		-4.87	0.1406	-142.4912	-0.3750	26.99	73	92	89	95	71	420	100	
72	Point	2	No	cmap2	26.00	26.00	-0.1621		-4.78	0.1372	-140.0862	-0.3704	26.77	71	90	87	94	69	411	97	
73	Area	1	Yes	reanalysis	12.89	11.38	0.0169	59.1716	1.44	0.0001	-2.4868	0.0105	14.61	7	14	47	57	9	134	11	
74	Area	1	Yes	gpcp	13.64	12.39	-0.1621		-2.91	0.0047	-2.4324	-0.0686	15.50	12	17	88	70	13	200	22	
75	Area	1	Yes	gpcc	17.96	17.96	-0.3466		-8.48	0.0185	-6.4568	-0.1360	19.70	41	46	101	79	45	312	76	
76	Area	1	Yes	gpcc trmm	12.99	10.44	-4.3630		-74.58	0.2416	-0.8201	-0.4915	16.88	8	5	104	101	20	238	42	
77	Area	1	Yes	ghcn cams grid	16.24	15.91	-0.2892		-2.94	0.0115	-4.2764	-0.1071	18.14	26	29	96	74	28	253	50	
78	Area	1	Yes	opi2	19.47	19.41	0.0483	20.7039	0.20	0.0004	-5.5423	0.0202	21.39	51	56	35	55	59	256	54	
79	Area	1	Yes	opi3	17.94	17.90	0.2099	4.7642	3.15	0.0053	-4.6500	0.0728	19.88	40	44	27	46	48	205	24	
80	Area	1	Yes	cmap	17.37	17.14	-0.0737		-2.10	0.0007	-4.3493	-0.0265	19.35	34	37	67	61	40	239	44	
81	Area	1	Yes	cmap2	17.20	16.91	-0.1111		-2.74	0.0015	-4.2370	-0.0386	19.14	29	35	76	66	37	243	45	
82	Area	1	No	reanalysis	10.91	10.91	0.0186	53.7634	0.99	0.0348	-603.9224	0.1864	11.91	3	10	45	27	3	88	2	
83	Area	1	No	gpcp	14.18	14.18	0.0357	28.0112	1.48	0.0361	-482.2962	0.1900	14.60	15	20	36	24	8	103	5	
84	Area	1	No	gpcc	20.30	20.30	0.0158	63.2911	0.98	0.2305	-999.0000	0.4801	20.49	57	64	49	4	54	228	34	
85	Area	1	No	gpcc trmm	17.80	17.80	0.0308	32.4675	2.43	0.0535	-999.0000	0.2312	17.85	37	43	38	16	24	158	13	
86	Area	1	No	ghcn cams grid	15.43	15.43	-0.0013		0.79	0.0001	-999.0000	-0.0081	15.71	21	25	60	60	15	181	14	
87	Area	1	No	opi2	21.19	21.19	0.0065	153.8462	1.14	0.0012	-999.0000	0.0343	21.49	60	68	59	53	60	300	70	
88	Area	1	No	opi3	19.69	19.69	0.0089	112.3596	1.18	0.0015	-897.6759	0.0389	19.91	54	60	57	52	49	272	58	
89	Area	1	No	cmap	18.93	18.93	0.0205	48.7805	1.38	0.0086	-832.3119	0.0927	19.17	47	52	44	45	38	226	33	
90	Area	1	No	cmap2	18.70	18.70	0.0254	39.3701	1.46	0.0124	-811.2399	0.1113	18.92	45	50	40	43	33	211	27	
91	Area	2	Yes	reanalysis	26.77	14.93	2.4596	2.4596	38.24	0.1213	-0.1780	0.3483	31.98	76	21	20	11	87	215	28	
92	Area	2	Yes	gpcp	28.64	20.93	1.2795	1.2795	27.07	0.0469	-0.4597	0.2165	35.60	89	66	15	20	95	285	64	
93	Area	2	Yes	gpcc	30.36	27.06	2.5440	2.5440	64.07	0.1359	-1.4719	0.3686	34.08	98	96	23	8	92	317	79	
94	Area	2	Yes	gpcc trmm	16.08	11.22	-6.9828		-239.59	0.4282	-0.6470	-0.6543	20.05	24	12	107	105	51	299	69	
95	Area	2	Yes	ghcn cams grid	30.43	23.76	0.7698	1.2990	18.05	0.0183	-0.6335	0.1352	37.66	99	80	16	40	104	339	85	
96	Area	2	Yes	opi2	32.95	27.94	1.0147	1.0147	28.37	0.0462	-0.8530	0.2149	40.11	107	98	2	22	108	337	83	
97	Area	2	Yes	opi3	32.10	26.44	1.0120	1.0120	26.77	0.0326	-0.7721	0.1807	39.23	105	93	1	28	107	334	81	
98	Area	2	Yes	cmap	31.59	25.68	0.9194	1.0877	23.52	0.0259	-0.7337	0.1608	38.80	104	88	11	36	106	345	86	
99	Area	2	Yes	cmap2	31.42	25.45	0.9500	1.0526	24.12	0.0276	-0.7183	0.1660	38.63	103	86	7	34	105	335	82	
100	Area	2	No	reanalysis	19.51	19.51	0.1070	9.3458	5.24	0.0530	-104.7753	0.2302	19.95	52	57	33	17	50	209	26	
101	Area	2	No	gpcp	25.51	25.51	-0.1264		0.76	0.1056	-181.2210	-0.3249	26.18	69	87	80	89	67	392	92	

Larger United States - Yearly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
102	**Area**	2	No	gpcc	27.43	27.43	-0.4142		-6.48	0.4481	-203.9594	-0.6694	27.83	80	97	102	106	74	459	106	
103	**Area**	2	No	gpcc trmm	33.78	33.78	0.2641	3.7864	10.66	0.1659	-999.0000	**0.4073**	33.81	108	108	26	5	91	338	84	
104	**Area**	2	No	ghcn cams grid	28.34	28.34	-0.1339		0.21	0.1277	-222.5245	-0.3573	29.00	85	99	82	90	75	431	101	
105	**Area**	2	No	opi2	32.52	32.52	-0.1242		-0.06	0.1597	-294.0751	-0.3996	33.32	106	107	79	96	90	478	108	
106	**Area**	2	No	opi3	31.01	31.01	-0.1330		-0.12	0.1302	-265.0007	-0.3609	31.63	101	105	81	93	86	466	107	
107	**Area**	2	No	cmap	30.26	30.26	-0.1354		-0.08	0.1294	-252.3407	-0.3598	30.87	97	103	83	91	81	455	105	
108	**Area**	2	No	cmap2	30.03	30.03	-0.1356		-0.06	0.1295	-248.6302	-0.3599	30.64	95	102	84	92	80	453	103	

Northwest Brazil - Monthly Atmospheric

OI	Moist Flux	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	***Method 1***	*1*	*Yes*	*reanalysis*	***31.53***	***-4.36***	*4.36*	***0.9214***	*1.0853*	*10.29*	*0.5495*	*0.5398*	***0.7413***	***39.13***	*1*	*4*	*10*	*4*	*1*	*20*	*2*	Plot
2	Method 1	1	Yes	gpcp	**58.89**	-30.64	30.64	0.4038	2.4765	69.31	0.1727	-0.4647	0.4156	72.61	9	20	37	37	11	114	23	
3	Method 1	1	Yes	gpcc	62.95	-46.09	46.09	0.3913	2.5556	79.80	0.1557	-0.9224	0.3945	76.30	14	37	41	38	13	143	31	
4	Method 1	1	Yes	gpcc trmm	**52.10**	**-0.40**	0.40	0.6124	1.6329	36.14	0.3799	0.2277	**0.6163**	**63.78**	5	1	27	10	3	46	3	
5	Method 1	1	Yes	ghcn cams grid	**50.09**	**4.77**	4.77	0.4018	2.4888	45.83	0.1827	-0.2289	0.4274	**64.00**	3	5	39	35	4	86	10	
6	Method 1	1	Yes	gpi	81.89	23.82	23.82	0.1294	7.7280	78.84	0.0306	-1.4937	0.1751	101.85	32	12	52	51	32	179	42	
7	Method 1	1	Yes	trmm 3a46	62.04	35.48	35.48	0.5359	1.8660	25.40	0.2521	-0.1528	0.5020	82.00	12	26	31	26	15	110	16	
8	Method 1	1	Yes	trmm 3b43	**54.17**	**-3.95**	3.95	0.5663	1.7658	42.78	0.3207	0.1296	0.5663	**67.41**	6	3	29	18	5	61	4	
9	Method 1	1	Yes	ssmi	69.38	25.65	25.65	0.2817	3.5499	54.80	0.0870	-0.6267	0.2949	85.04	24	13	43	41	23	144	33	
10	Method 1	1	Yes	opi2	62.12	-37.85	37.85	0.4019	2.4882	72.50	0.1453	-0.5760	0.3812	75.18	13	32	38	39	12	134	30	
11	Method 1	1	Yes	opi3	**58.72**	-31.43	31.43	0.4293	2.3294	68.16	0.1918	-0.4226	0.4380	**71.42**	8	24	35	33	9	109	15	
12	Method 1	1	Yes	cmap	**58.46**	-31.35	31.35	0.4326	2.3116	68.22	0.1924	-0.4139	0.4386	**71.07**	7	23	34	32	8	104	14	
13	Method 1	1	Yes	cmap2	**58.94**	-30.71	30.71	0.4168	2.3992	68.97	0.1825	-0.4389	0.4272	**71.69**	10	21	36	36	10	113	20	
14	Method 1	2	Yes	reanalysis	**40.91**	**13.83**	13.83	**1.0582**	1.0582	-17.64	0.7439	0.7204	**0.8625**	**50.13**	2	8	6	1	2	19	1	
15	Method 1	2	Yes	gpcp	69.47	38.32	38.32	0.8658	1.1550	-26.26	0.3454	0.1737	0.5877	86.17	25	33	18	14	26	116	24	
16	Method 1	2	Yes	gpcc	63.74	30.19	30.19	0.8659	1.1549	-18.95	0.3285	0.2063	0.5731	79.58	15	18	17	16	14	80	6	
17	Method 1	2	Yes	gpcc trmm	80.51	48.72	48.72	**0.9489**	1.0539	-43.30	0.4590	0.2569	**0.6775**	93.71	30	40	5	6	29	110	18	
18	Method 1	2	Yes	ghcn cams grid	73.82	51.59	51.59	0.9141	1.0940	-42.74	0.3841	0.0845	**0.6198**	90.70	27	42	13	8	27	117	25	
19	Method 1	2	Yes	gpi	115.59	95.94	95.94	0.4600	2.1739	-18.20	0.1830	-1.0322	0.4278	139.37	52	49	33	34	52	220	49	
20	Method 1	2	Yes	trmm 3a46	98.02	83.96	83.96	**1.0163**	1.0163	-86.39	0.4796	-0.0911	**0.6925**	116.11	46	48	1	5	43	143	32	
21	Method 1	2	Yes	trmm 3b43	81.68	48.00	48.00	**0.9537**	1.0485	-43.13	0.4521	0.2561	**0.6724**	93.76	31	39	4	7	30	111	19	
22	Method 1	2	Yes	ssmi	111.76	96.94	96.94	0.6911	1.4470	-55.12	0.2528	-0.7423	0.5028	131.65	51	51	25	25	51	203	45	
23	Method 1	2	Yes	opi2	67.69	30.63	30.63	**0.9219**	1.0847	-24.22	0.3361	0.2293	0.5797	83.22	21	19	9	15	18	82	7	
24	Method 1	2	Yes	opi3	67.69	36.61	36.61	0.9185	1.0887	-29.43	0.3768	0.2247	0.6139	83.47	20	27	11	12	20	90	11	
25	Method 1	2	Yes	cmap	67.67	37.05	37.05	**0.9334**	1.0714	-31.15	0.3809	0.2262	**0.6172**	83.39	19	28	7	9	19	82	8	
26	Method 1	2	Yes	cmap2	68.30	37.63	37.63	0.9177	1.0897	-30.29	0.3733	0.2127	0.6110	84.11	23	30	12	13	21	99	13	
27	***Method 2***	*1*	*Yes*	*reanalysis*	*58.96*	*-56.63*	*56.63*	*1.2221*	*1.2221*	*40.54*	*0.6811*	*-0.0362*	***0.8253***	***69.15***	*11*	*43*	*21*	*3*	*7*	*85*	*9*	Plot
28	Method 2	1	Yes	gpcp	91.85	-81.41	81.41	0.2255	4.4346	138.70	0.0482	-2.2701	0.2196	111.30	42	46	47	46	40	221	50	
29	Method 2	1	Yes	gpcc	86.58	-73.84	73.84	0.1978	5.0556	131.61	0.0367	-2.0851	0.1915	105.25	37	44	49	49	33	212	46	
30	Method 2	1	Yes	gpcc trmm	66.61	-37.51	37.51	0.5190	1.9268	88.13	0.2359	-0.2176	0.4857	82.64	17	29	32	30	16	124	28	
31	Method 2	1	Yes	ghcn cams grid	66.69	-37.80	37.80	0.2952	3.3875	102.01	0.0495	-0.5417	0.2225	84.45	18	31	42	44	22	157	37	
32	Method 2	1	Yes	gpi	79.28	-29.98	29.98	0.1560	6.4103	125.26	0.0339	-1.1703	0.1842	96.24	29	17	51	50	31	178	41	
33	Method 2	1	Yes	trmm 3a46	**51.68**	**-7.23**	7.23	0.6493	1.5401	56.12	0.2942	0.1994	0.5424	**68.39**	4	6	26	20	6	62	5	
34	Method 2	1	Yes	trmm 3b43	68.06	-46.54	46.54	0.5403	1.8508	91.25	0.2445	-0.3203	0.4945	85.87	22	38	30	29	25	144	34	
35	Method 2	1	Yes	ssmi	69.99	**-17.42**	17.42	0.1803	5.5463	114.70	0.0301	-0.6614	0.1736	85.70	26	10	50	52	24	162	38	
36	Method 2	1	Yes	opi2	107.45	-102.79	102.79	0.2651	3.7722	141.16	0.0421	-3.0462	0.2052	124.35	50	52	44	48	46	240	52	
37	Method 2	1	Yes	opi3	101.43	-96.12	96.12	0.2631	3.8008	139.51	0.0489	-2.7527	0.2212	119.76	47	50	45	45	44	231	51	
38	Method 2	1	Yes	cmap	91.17	-82.65	82.65	0.2580	3.8760	136.91	0.0531	-2.2024	0.2305	109.74	41	47	46	43	39	216	47	
39	Method 2	1	Yes	cmap2	89.57	-78.93	78.93	0.2253	4.4385	138.46	0.0435	-2.1276	0.2087	108.45	39	45	48	47	38	217	48	
40	***Method 2***	*2*	*Yes*	*reanalysis*	*65.20*	*-45.93*	*45.93*	*1.2939*	*1.2939*	*21.72*	*0.7109*	*0.5288*	***0.8431***	*82.68*	*16*	*36*	*23*	*2*	*17*	*94*	*12*	Plot
41	Method 2	2	Yes	gpcp	84.82	-27.70	27.70	**0.9646**	1.0367	31.26	0.2480	0.1947	0.4979	108.08	36	15	3	27	37	118	26	
42	Method 2	2	Yes	gpcc	74.49	**-9.79**	9.79	0.8479	1.1794	25.32	0.2458	0.2290	0.4958	91.15	28	7	19	28	28	110	17	
43	Method 2	2	Yes	gpcc trmm	95.67	-33.70	33.70	1.1227	1.1227	19.02	0.3143	0.2577	0.5606	126.29	43	25	14	19	49	150	35	
44	Method 2	2	Yes	ghcn cams grid	83.97	**-16.15**	16.15	**1.0344**	1.0344	12.29	0.2161	0.1979	0.4649	107.87	35	9	2	31	36	113	22	
45	Method 2	2	Yes	gpi	103.91	22.72	22.72	0.4001	2.4994	61.55	0.0713	-0.1256	0.2671	126.01	49	11	40	42	48	190	44	
46	Method 2	2	Yes	trmm 3a46	95.83	**-0.72**	0.72	1.3777	1.3777	-59.50	0.3769	0.3486	0.6139	122.09	44	2	24	11	45	126	29	
47	Method 2	2	Yes	trmm 3b43	96.24	-38.79	38.79	1.1548	1.1548	21.05	0.3221	0.2463	0.5676	127.25	45	34	16	17	50	162	39	
48	Method 2	2	Yes	ssmi	103.05	31.27	31.27	0.5806	1.7224	29.05	0.0923	-0.0190	0.3039	125.64	48	22	28	40	47	185	43	
49	Method 2	2	Yes	opi2	89.89	-50.21	50.21	1.2492	1.2492	30.74	0.2651	0.0808	0.5149	115.47	40	41	22	23	42	168	40	
50	Method 2	2	Yes	opi3	87.76	-43.72	43.72	1.1848	1.1848	28.10	0.2755	0.1370	0.5249	111.88	38	35	20	21	41	155	36	
51	Method 2	2	Yes	cmap	83.91	-29.52	29.52	1.1268	1.1268	17.00	0.2755	0.2119	0.5248	106.92	34	16	15	22	35	122	27	
52	Method 2	2	Yes	cmap2	83.78	-25.90	25.90	**1.0762**	1.0762	18.09	0.2652	0.2176	0.5149	106.53	33	14	8	24	34	113	21	

Northwest Brazil - Yearly Atmospheric																						
OI	Moist Flux	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	*Method 1*	*1*	*Yes*	*reanalysis*	***18.97***	***-4.33***	*4.33*	***1.1379***	*1.1379*	*-6.07*	*0.6224*	*0.5997*	*0.7889*	***23.59***	*1*	*3*	*4*	*15*	*1*	*24*	*1*	Plot
2	Method 1	1	Yes	gpcp	45.88	-30.68	30.68	0.1359	7.3584	86.72	0.0050	-0.7814	0.0706	53.53	21	20	37	37	12	127	29	
3	Method 1	1	Yes	gpcc	51.25	-46.05	46.05	-0.0449		103.93	0.0003	-1.9135	-0.0185	59.79	34	36	42	42	29	183	44	
4	Method 1	1	Yes	gpcc trmm	**32.64**	**-6.60**	6.60	2.3474	2.3474	-112.81	0.7786	0.5066	**0.8824**	**37.24**	5	5	22	10	5	47	5	
5	Method 1	1	Yes	ghcn cams grid	**32.94**	**4.66**	4.66	0.1175	8.5106	69.75	0.0029	-0.1742	0.0536	**40.76**	6	4	38	38	6	92	11	
6	Method 1	1	Yes	gpi	43.48	23.86	23.86	-0.2817		127.28	0.0173	-0.6483	-0.1317	55.33	13	12	47	47	17	136	31	
7	Method 1	1	Yes	trmm 3a46	**40.46**	38.29	38.29	2.6925	2.6925	-254.41	0.9065	0.1425	**0.9521**	55.65	7	31	27	2	19	86	8	
8	Method 1	1	Yes	trmm 3b43	**28.15**	**-4.04**	4.04	3.0500	3.0500	-179.47	0.8095	0.4366	**0.8997**	**35.68**	3	2	30	8	4	47	4	
9	Method 1	1	Yes	ssmi	46.82	28.33	28.33	0.1943	5.1467	62.07	0.0069	-0.5347	0.0833	54.02	24	15	36	35	13	123	27	
10	Method 1	1	Yes	opi2	51.22	-38.36	38.36	0.0490	20.4082	92.74	0.0008	-1.1979	0.0274	59.46	33	32	39	39	28	171	40	
11	Method 1	1	Yes	opi3	43.76	-32.39	32.39	0.3992	2.5050	70.33	0.0372	-0.6992	0.1928	**52.28**	15	23	24	30	9	101	15	
12	Method 1	1	Yes	cmap	43.95	-31.94	31.94	0.3350	2.9851	74.24	0.0262	-0.7116	0.1620	**52.47**	16	22	28	32	10	108	20	
13	Method 1	1	Yes	cmap2	44.22	-31.37	31.37	0.2730	3.6630	78.02	0.0186	-0.7252	0.1365	52.68	18	21	33	34	11	117	24	
14	Method 1	2	Yes	reanalysis	**21.48**	**13.77**	13.77	**1.2365**	1.2365	-29.24	0.7834	0.6698	**0.8851**	**27.15**	2	8	7	9	2	28	2	
15	Method 1	2	Yes	gpcp	44.91	38.26	38.26	**0.9157**	1.0921	-30.69	0.0970	-0.5595	0.3115	59.01	19	30	3	26	26	104	18	
16	Method 1	2	Yes	gpcc	**42.55**	30.11	30.11	**1.0377**	1.0377	-33.27	0.0799	-0.3340	0.2827	54.06	8	18	2	27	14	69	7	
17	Method 1	2	Yes	gpcc trmm	50.18	48.81	48.81	2.5720	2.5720	-215.27	0.8845	-0.2500	**0.9405**	60.85	30	40	25	3	33	131	30	
18	Method 1	2	Yes	ghcn cams grid	52.75	51.54	51.54	**1.3414**	1.3414	-86.75	0.1292	-1.0689	0.3594	67.96	38	42	8	23	40	151	35	
19	Method 1	2	Yes	gpi	95.95	95.95	95.95	0.0405	24.6914	42.19	0.0003	-3.3115	0.0159	111.91	49	49	40	40	50	228	48	
20	Method 1	2	Yes	trmm 3a46	89.39	89.39	89.39	2.5974	2.5974	-320.94	0.8311	-1.5106	**0.9116**	99.47	48	48	26	6	48	176	41	
21	Method 1	2	Yes	trmm 3b43	49.90	48.09	48.09	3.4833	3.4833	-309.27	0.9719	-0.3027	**0.9858**	62.13	29	39	32	1	36	137	32	
22	Method 1	2	Yes	ssmi	101.14	101.14	101.14	0.4239	2.3590	-23.46	0.0203	-3.6577	0.1424	114.40	51	51	23	33	52	210	45	
23	Method 1	2	Yes	opi2	**42.87**	30.58	30.58	0.4795	2.0855	12.20	0.0430	-0.4265	0.2073	56.43	10	19	19	29	22	99	13	
24	Method 1	2	Yes	opi3	43.11	36.55	36.55	1.5848	1.5848	-88.10	0.2562	-0.3771	0.5062	55.45	12	26	14	17	18	87	9	
25	Method 1	2	Yes	cmap	43.72	37.00	37.00	1.5583	1.5583	-86.46	0.2395	-0.4043	0.4894	55.99	14	27	13	19	21	94	12	
26	Method 1	2	Yes	cmap2	44.01	37.57	37.57	**1.3850**	1.3850	-71.91	0.2024	-0.4456	0.4498	56.81	17	28	10	22	23	100	14	
27	*Method 2*	*1*	*Yes*	*reanalysis*	*56.61*	*-56.61*	*56.61*	*1.5140*	*1.5140*	*19.38*	*0.6825*	*-0.9891*	*0.8262*	*63.26*	*40*	*43*	*12*	*13*	*37*	*145*	*33*	Plot
28	Method 2	1	Yes	gpcp	81.80	-81.44	81.44	-0.3824		183.69	0.0441	-5.1401	-0.2099	94.00	46	46	49	50	47	238	51	
29	Method 2	1	Yes	gpcc	73.79	-73.79	73.79	-0.4014		174.72	0.0246	-4.0230	-0.1567	85.42	44	44	51	48	44	231	49	
30	Method 2	1	Yes	gpcc trmm	46.27	-46.27	46.27	1.8637	1.8637	-39.97	0.6511	-0.8084	0.8069	54.17	22	37	16	14	15	104	17	
31	Method 2	1	Yes	ghcn cams grid	47.40	-38.08	38.08	-0.0214		130.87	0.0000	-0.8116	-0.0068	60.92	25	29	41	41	34	170	39	
32	Method 2	1	Yes	gpi	49.36	-29.94	29.94	-0.6254		213.44	0.0972	-1.1910	-0.3118	55.77	28	17	52	52	20	169	38	
33	Method 2	1	Yes	trmm 3a46	**29.30**	**-7.17**	7.17	2.2037	2.2037	-156.32	0.8163	0.5486	**0.9035**	**30.97**	4	6	21	7	3	41	3	
34	Method 2	1	Yes	trmm 3b43	46.66	-46.66	46.66	2.1369	2.1369	-63.93	0.5843	-1.2346	0.7644	54.25	23	38	20	16	16	113	22	
35	Method 2	1	Yes	ssmi	**42.72**	**-16.43**	16.43	-0.3679		177.79	0.0402	-0.7101	-0.2005	**48.71**	9	10	48	49	8	124	28	
36	Method 2	1	Yes	opi2	103.94	-103.94	103.94	-0.3952		175.75	0.0443	-8.0145	-0.2104	113.90	52	52	50	51	51	256	52	
37	Method 2	1	Yes	opi3	97.46	-97.46	97.46	-0.0489		158.24	0.0005	-6.8468	-0.0232	106.27	50	50	43	43	49	235	50	
38	Method 2	1	Yes	cmap	83.25	-83.25	83.25	-0.1352		165.16	0.0044	-5.1256	-0.0667	93.89	47	47	44	44	46	228	47	
39	Method 2	1	Yes	cmap2	79.63	-79.63	79.63	-0.1916		169.93	0.0096	-4.7697	-0.0982	91.12	45	45	45	46	45	226	46	
40	*Method 2*	*2*	*Yes*	*reanalysis*	*48.53*	*-45.97*	*45.97*	***1.3706***	*1.3706*	*15.44*	*0.7117*	*0.0462*	*0.8437*	*57.32*	*27*	*35*	*9*	*11*	*25*	*107*	*19*	Plot
41	Method 2	2	Yes	gpcp	51.82	-27.75	27.75	**1.1709**	1.1709	10.55	0.1205	-0.1056	0.3471	61.71	37	14	5	24	35	115	23	
42	Method 2	2	Yes	gpcc	43.10	**-9.83**	9.83	**1.2071**	1.2071	-11.32	0.1107	0.0689	0.3326	**48.31**	11	7	6	25	7	56	6	
43	Method 2	2	Yes	gpcc trmm	45.49	-33.68	33.68	2.9955	2.9955	-205.09	0.7055	0.1222	0.8399	60.71	20	25	29	12	31	117	25	
44	Method 2	2	Yes	ghcn cams grid	50.39	**-16.19**	16.19	**1.0112**	1.0112	14.94	0.0326	-0.0434	0.1807	59.95	31	9	1	31	30	102	16	
45	Method 2	2	Yes	gpi	53.28	22.75	22.75	-0.2743		156.27	0.0084	-0.3198	-0.0914	67.94	39	11	46	45	39	180	43	
46	Method 2	2	Yes	trmm 3a46	48.00	**1.20**	1.20	3.4430	3.4430	-381.09	0.8346	0.4141	**0.9135**	57.25	26	1	31	5	24	87	10	
47	Method 2	2	Yes	trmm 3b43	51.69	-38.77	38.77	4.2233	4.2233	-330.53	0.8535	-0.0017	**0.9239**	64.85	36	33	35	4	38	146	34	
48	Method 2	2	Yes	ssmi	59.21	33.46	33.46	0.2482	4.0290	73.50	0.0059	-0.3237	0.0770	73.37	42	24	34	36	42	178	42	
49	Method 2	2	Yes	opi2	63.74	-50.25	50.25	0.7023	1.4239	73.50	0.0473	-0.6942	0.2176	76.40	43	41	11	28	43	166	37	
50	Method 2	2	Yes	opi3	57.70	-43.77	43.77	2.0151	2.0151	-42.10	0.2534	-0.3670	0.5033	68.62	41	34	18	18	41	152	36	
51	Method 2	2	Yes	cmap	51.31	-29.57	29.57	1.8957	1.8957	-58.92	0.2362	-0.0703	0.4860	60.72	35	16	17	20	32	120	26	
52	Method 2	2	Yes	cmap2	50.41	-25.94	25.94	1.7370	1.7370	-49.54	0.2125	-0.0211	0.4610	59.31	32	13	15	21	27	108	21	

Northwest Brazil - Monthly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	*Linear*	*1*	*Yes*	*reanalysis*	*100.09*	*-99.59*	*-0.0578*	*-22.98*	*0.0078*	*-13.5744*	*-0.0882*	*114.76*	*102*	*108*	*310*	*304*	*89*	*913*	*162*	Plot
2	Linear	1	Yes	gpcp	110.68	-107.58	-0.1911	-19.47	0.1170	-14.7338	-0.3420	132.90	142	134	409	442	174	1301	269	
3	Linear	1	Yes	gpcc	96.09	-93.05	-0.0887	-14.64	0.0882	-41.9900	-0.2969	113.68	76	83	335	417	86	997	183	
4	Linear	1	Yes	gpcc trmm	174.84	-174.84	-0.1190	-57.10	0.0444	-23.4075	-0.2108	195.49	370	370	366	374	383	1863	416	
5	Linear	1	Yes	ghcn cams grid	118.66	-118.40	-0.1470	-13.91	0.0629	-19.2998	-0.2508	135.36	195	195	388	391	187	1356	290	
6	Linear	1	Yes	gpi	151.86	-151.09	0.0465	-43.45	0.0095	-20.7865	0.0974	172.01	269	274	137	143	270	1093	207	
7	Linear	1	Yes	trmm 3a46	219.05	-219.05	-0.2316	-47.34	0.1892	-46.7049	-0.4350	234.74	446	446	438	458	447	2235	461	
8	Linear	1	Yes	trmm 3b43	166.04	-166.04	-0.1457	-54.59	0.0627	-21.2354	-0.2504	187.59	326	331	386	390	360	1793	397	
9	Linear	1	Yes	ssmi	160.70	-160.63	-0.0086	-40.94	0.0002	-19.6704	-0.0142	177.47	301	303	227	224	289	1344	287	
10	Linear	1	Yes	opi2	88.44	-85.84	-0.2352	-21.36	0.1158	-9.8186	-0.3403	108.75	48	50	443	441	60	1042	195	
11	Linear	1	Yes	opi3	94.95	-92.51	-0.1938	-22.23	0.0929	-11.2596	-0.3047	115.77	73	76	410	421	93	1073	203	
12	Linear	1	Yes	cmap	108.00	-106.67	-0.2001	-18.90	0.1093	-14.1707	-0.3306	129.15	127	131	413	434	145	1250	255	
13	Linear	1	Yes	cmap2	111.50	-110.39	-0.1881	-19.08	0.1037	-15.1181	-0.3221	133.12	147	156	407	431	177	1318	274	
14	Linear	1	No	reanalysis	100.77	-99.57	-0.2674	-7.77	0.2493	-21.7687	-0.4993	117.26	108	107	451	463	99	1228	251	
15	Linear	1	No	gpcp	109.84	-107.64	-0.1809	-20.29	0.1108	-15.5356	-0.3329	132.44	139	136	405	436	172	1288	266	
16	Linear	1	No	gpcc	94.56	-92.93	-0.0524	-17.13	0.0918	-122.7102	-0.3030	111.61	71	81	299	420	71	942	171	
17	Linear	1	No	gpcc trmm	174.78	-174.78	-0.0965	-59.41	0.0229	-18.2454	-0.1513	195.97	369	369	347	341	386	1812	399	
18	Linear	1	No	ghcn cams grid	118.36	-118.27	-0.1093	-17.21	0.0517	-28.3483	-0.2275	133.41	191	192	356	380	178	1297	268	
19	Linear	1	No	gpi	153.50	-150.91	-0.1190	-24.58	0.0635	-22.7058	-0.2520	177.40	282	271	365	392	288	1598	350	
20	Linear	1	No	trmm 3a46	218.60	-218.60	-0.3027	-36.96	0.2373	-34.5041	-0.4871	236.44	445	445	458	461	449	2258	463	
21	Linear	1	No	trmm 3b43	165.98	-165.98	-0.1279	-56.27	0.0381	-16.6685	-0.1953	188.22	325	327	374	368	363	1757	391	
22	Linear	1	No	ssmi	160.56	-160.37	-0.1171	-27.80	0.0369	-20.1937	-0.1920	179.72	299	300	363	364	298	1624	363	
23	Linear	1	No	opi2	88.16	-85.53	-0.2274	-21.46	0.1141	-10.2647	-0.3378	108.09	47	45	435	438	54	1019	190	
24	Linear	1	No	opi3	93.62	-92.20	-0.1595	-23.94	0.0663	-11.6355	-0.2576	114.47	63	70	395	394	88	1010	188	
25	Linear	1	No	cmap	107.24	-106.64	-0.1782	-20.47	0.0916	-14.8467	-0.3027	128.38	124	130	403	419	142	1218	247	
26	Linear	1	No	cmap2	110.92	-110.35	-0.1685	-20.56	0.0880	-15.8529	-0.2966	132.40	144	155	399	416	171	1285	263	
27	Linear	1	1 mon	reanalysis	100.61	-99.49	-0.2274	-10.68	0.1802	-21.4799	-0.4245	116.59	106	106	436	457	96	1201	244	
28	Linear	1	1 mon	gpcp	109.25	-107.42	-0.0926	-26.90	0.0289	-14.8416	-0.1701	129.82	133	133	338	351	150	1105	213	
29	Linear	1	1 mon	gpcc	94.06	-92.79	0.0025	-21.08	0.0002	-118.1322	0.0147	109.93	66	80	210	202	68	626	89	
30	Linear	1	1 mon	gpcc trmm	174.96	-174.96	0.0741	-77.92	0.0136	-17.3501	0.1167	192.02	371	371	95	126	376	1339	286	
31	Linear	1	1 mon	ghcn cams grid	118.41	-118.32	-0.0258	-24.79	0.0029	-27.6239	-0.0537	131.80	193	193	259	266	166	1077	206	
32	Linear	1	1 mon	gpi	153.63	-150.95	-0.0957	-27.29	0.0411	-22.4436	-0.2028	176.77	285	272	345	372	283	1557	337	
33	Linear	1	1 mon	trmm 3a46	221.05	-221.05	-0.1754	-55.51	0.0804	-34.7488	-0.2835	236.54	449	449	402	409	450	2159	458	
34	Linear	1	1 mon	trmm 3b43	165.39	-165.39	0.0084	-70.09	0.0002	-15.8178	0.0128	184.31	320	322	202	204	337	1385	301	
35	Linear	1	1 mon	ssmi	160.97	-160.59	-0.0487	-36.10	0.0064	-19.8380	-0.0800	178.44	303	302	293	289	294	1481	326	
36	Linear	1	1 mon	opi2	87.84	-85.71	-0.1010	-28.09	0.0225	-9.7133	-0.1500	105.56	46	47	350	340	49	832	145	
37	Linear	1	1 mon	opi3	93.28	-92.41	-0.0562	-30.06	0.0082	-11.1054	-0.0907	112.20	58	75	308	306	78	825	143	
38	Linear	1	1 mon	cmap	106.97	-106.59	-0.0757	-28.03	0.0165	-14.2140	-0.1286	125.97	122	129	330	332	128	1041	194	
39	Linear	1	1 mon	cmap2	110.62	-110.28	-0.0685	-28.30	0.0146	-15.1830	-0.1206	129.92	141	154	322	326	151	1094	208	
40	Linear	1	2 mon	reanalysis	100.40	-99.45	-0.1516	-16.18	0.0801	-20.9140	-0.2830	115.20	105	105	390	407	91	1098	209	
41	Linear	1	2 mon	gpcp	109.00	-107.59	-0.0023	-33.59	0.0000	-14.2278	-0.0042	127.49	130	135	218	216	138	837	147	
42	Linear	1	2 mon	gpcc	93.64	-92.63	0.0476	-24.22	0.0764	-115.4377	0.2765	108.50	64	79	134	40	56	373	28	
43	Linear	1	2 mon	gpcc trmm	173.97	-173.97	0.1721	-87.87	0.0731	-16.4355	0.2704	188.71	367	367	26	43	364	1167	237	
44	Linear	1	2 mon	ghcn cams grid	118.41	-118.35	0.0548	-32.11	0.0130	-26.9232	0.1141	130.21	192	194	121	131	155	793	136	
45	Linear	1	2 mon	gpi	153.60	-151.04	-0.0324	-34.45	0.0047	-21.8127	-0.0687	174.80	284	273	269	280	279	1385	300	
46	Linear	1	2 mon	trmm 3a46	222.85	-222.85	0.0183	-82.81	0.0008	-33.4098	0.0290	234.88	450	450	189	194	448	1731	383	
47	Linear	1	2 mon	trmm 3b43	165.09	-165.09	0.1285	-81.42	0.0383	-15.0014	0.1956	181.22	318	319	48	77	311	1073	204	
48	Linear	1	2 mon	ssmi	161.28	-160.86	0.0140	-43.56	0.0005	-19.4276	0.0229	177.31	305	305	193	196	286	1285	264	
49	Linear	1	2 mon	opi2	87.32	-85.70	0.0039	-33.61	0.0000	-9.2265	0.0057	103.30	43	46	207	208	46	550	68	
50	Linear	1	2 mon	opi3	92.87	-92.24	0.0496	-36.33	0.0064	-10.4896	0.0799	109.49	56	71	131	156	66	480	53	
51	Linear	1	2 mon	cmap	106.38	-106.11	0.0244	-35.36	0.0017	-13.4356	0.0409	122.91	120	121	178	180	111	710	109	
52	Linear	1	2 mon	cmap2	110.00	-109.75	0.0267	-35.62	0.0021	-14.3632	0.0463	126.79	140	148	172	171	135	766	129	
53	Linear	1	3 mon	reanalysis	100.16	-99.39	-0.0504	-23.52	0.0089	-20.1747	-0.0941	113.32	104	103	295	310	82	894	158	
54	Linear	1	3 mon	gpcp	109.22	-107.79	0.0571	-38.01	0.0109	-13.8230	0.1046	126.01	132	138	118	136	129	653	95	
55	Linear	1	3 mon	gpcc	94.21	-93.00	0.0543	-24.56	0.1022	-119.0232	0.3197	108.55	67	82	125	31	57	362	26	
56	Linear	1	3 mon	gpcc trmm	174.69	-174.69	**0.2811**	-98.90	0.1931	-15.9468	**0.4394**	186.45	368	368	9	11	350	1106	214	
57	Linear	1	3 mon	ghcn cams grid	118.28	-118.23	0.0997	-36.15	0.0431	-26.5129	0.2077	129.19	190	191	72	75	146	674	101	
58	Linear	1	3 mon	gpi	153.13	-151.21	0.0366	-42.24	0.0060	-21.1437	0.0775	172.64	280	276	151	157	272	1136	228	
59	Linear	1	3 mon	trmm 3a46	220.49	-220.49	**0.2691**	-117.43	0.1804	-31.1212	**0.4248**	228.26	448	448	11	17	443	1367	291	
60	Linear	1	3 mon	trmm 3b43	163.88	-163.88	**0.2366**	-90.98	0.1311	-14.2706	**0.3621**	177.36	308	309	12	25	287	941	170	
61	Linear	1	3 mon	ssmi	161.08	-160.82	0.1016	-54.02	0.0278	-18.8514	0.1667	175.30	304	304	69	92	280	1049	197	
62	Linear	1	3 mon	opi2	87.46	-85.71	0.0628	-36.72	0.0087	-8.9450	0.0932	102.04	44	48	111	145	44	392	34	
63	Linear	1	3 mon	opi3	92.86	-92.14	0.1017	-39.41	0.0268	-10.1708	0.1637	108.14	55	66	68	94	55	338	22	
64	Linear	1	3 mon	cmap	106.16	-105.76	0.0795	-39.35	0.0176	-12.9886	0.1325	121.20	119	118	86	116	106	545	66	
65	Linear	1	3 mon	cmap2	109.74	-109.37	0.0778	-39.51	0.0180	-13.8988	0.1341	125.08	136	146	89	112	124	607	82	
66	Linear	1	4 mon	reanalysis	100.09	-99.44	0.0384	-29.97	0.0051	-19.5438	0.0716	111.64	103	104	145	159	72	583	77	
67	Linear	1	4 mon	gpcp	109.46	-107.90	0.0794	-39.68	0.0211	-13.6553	0.1454	125.52	134	139	87	104	127	591	79	
68	Linear	1	4 mon	gpcc	94.53	-93.43	0.0516	-24.34	0.0917	-119.3884	0.3027	108.99	70	84	128	35	62	379	29	
69	Linear	1	4 mon	gpcc trmm	176.38	-176.38	**0.2940**	-101.11	0.2093	-15.9913	**0.4574**	187.77	372	372	7	8	361	1120	220	
70	Linear	1	4 mon	ghcn cams grid	118.16	-118.10	0.0998	-36.10	0.0432	-26.4887	0.2079	129.07	189	190	71	74	144	668	98	
71	Linear	1	4 mon	gpi	152.93	-151.49	0.0773	-46.91	0.0268	-20.7600	0.1636	171.52	278	277	90	96	268	1009	187	
72	Linear	1	4 mon	trmm 3a46	220.39	-220.39	**0.3704**	-132.27	0.3456	-30.5068	**0.5879**	226.41	447	447	2	1	436	1333	281	
73	Linear	1	4 mon	trmm 3b43	165.97	-165.97	**0.2864**	-96.66	0.1873	-14.1915	**0.4328**	177.94	324	326	8	15	293	966	176	
74	Linear	1	4 mon	ssmi	161.46	-161.46	0.1501	-59.92	0.0598	-18.6048	0.2446	174.69	306	306	31	54	278	975	179	
75	Linear	1	4 mon	opi2	87.48	-85.41	0.0543	-36.27	0.0064	-8.8844	0.0801	101.90	45	44	124	154	43	410	42	
76	Linear	1	4 mon	opi3	92.47	-91.66	0.1107	-39.90	0.0309	-9.9611	0.1758	107.31	54	61	60	85	53	313	19	
77	Linear	1	4 mon	cmap	106.10	-105.77	0.0847	-39.74	0.0199	-12.9247	0.1412	121.13	118	119	84	109	105	535	63	
78	Linear	1	4 mon	cmap2	109.70	-109.36	0.0771	-39.47	0.0176	-13.8625	0.1328	125.14	135	145	91	115	125	611	85	
79	*Linear*	*2*	*Yes*	*reanalysis*	*149.02*	*-146.87*	*-0.1721*	*-50.31*	*0.0863*	*-14.1217*	*-0.2937*	*178.78*	*246*	*244*	*401*	*413*	*296*	*1600*	*353*	Plot
80	Linear	2	Yes	gpcp	165.79	-165.09	-0.0597	-58.48	0.0065	-14.9416	-0.0807	183.56	322	318	315	291	328	1574	341	
81	Linear	2	Yes	gpcc	164.86	-164.81	-0.0118	-61.51	0.0003	-19.1577	-0.0179	180.42	315	316	231	228	306	1396	303	
82	Linear	2	Yes	gpcc trmm	195.49	-195.49	-0.0131	-74.27	0.0003	-16.7133	-0.0187	215.25	404	404	235	232	408	1683	375	
83	Linear	2	Yes	ghcn cams grid	176.65	-176.65	-0.0749	-56.08	0.0078	-16.3571	-0.0882	191.54	373	373	329	305	374	1754	390	
84	Linear	2	Yes	gpi	205.96	-205.95	0.1055	-80.29	0.0368	-24.9112	0.1919	221.98	423	425	65	78	422	1413	309	
85	Linear	2	Yes	trmm 3a46	230.22	-230.22	-0.0250	-66.77	0.0012	-24.0006	-0.0344	245.32	451	451	255	242	452	1851	414	
86	Linear	2	Yes	trmm 3b43	190.41	-190.41	0.0145	-77.50	0.0004	-15.7876	0.0204	209.55	397	397	192	197	395	1578	343	
87	Linear	2	Yes	ssmi	207.61	-207.61	0.0462	-70.43	0.0043	-22.4173	0.0658	221.46	431	433	139	161	421	1585	346	
88	Linear	2	Yes	opi2	142.75	-142.59	-0.0845	-57.88	0.0083	-10.9818	-0.0913	159.14	229	229	333	308	235	1334	282	
89	Linear	2	Yes	opi3	149.34	-149.07	-0.1033	-55.75	0.0144	-12.1389	-0.1199	166.65	247	258	351	325	251	1432	311	
90	Linear	2	Yes	cmap	163.40	-163.27	-0.0945	-55.15	0.0133	-14.3826	-0.1153	180.32	307	307	341	322	302	1579	344	
91	Linear	2	Yes	cmap2	167.01	-166.89	-0.0944	-54.81	0.0140	-15.0458	-0.1184	184.16	342	343	340	324	334	1683	374	
92	Linear	2	No	reanalysis	151.35	-147.52	-0.3060	-39.93	0.2994	-16.4517	-0.5472	183.35	264	249	460	467	325	1765	393	
93	Linear	2	No	gpcp	166.47	-165.74	-0.2071	-44.30	0.0861	-17.0988	-0.2934	186.71	331	324	420	412	353	1840	409	
94	Linear	2	No	gpcc	164.93	-164.93	-0.1616	-46.33	0.0693	-23.1031	-0.2633	182.94	316	317	396	401	321	1751	389	
95	Linear	2	No	gpcc trmm	197.27	-197.27	-0.0722	-68.97	0.0123	-19.8956	-0.1111	217.51	407	407	326	320	412	1872	419	
96	Linear	2	No	ghcn cams grid	177.30	-177.30	-0.2329	-39.02	0.0825	-18.5486	-0.2872	194.05	374	374	441	410	381	1980	441	
97	Linear	2	No	gpi	206.50	-206.08	-0.0538	-58.04	0.0109	-29.6808	-0.1045	226.04	426	426	305	318	434	1909	427	
98	Linear	2	No	trmm 3a46	232.53	-232.53	-0.1556	-48.26	0.0567	-30.9565	-0.2382	248.93	453	453	393	385	457	2141	456	
99	Linear	2	No	trmm 3b43	192.18	-192.18	-0.0533	-71.51	0.0065	-18.8491	-0.0807	212.00	399	399	303	290	399	1790	396	
100	Linear	2	No	ssmi	208.14	-208.14	-0.1199	-47.08	0.0326	-25.9650	-0.1806	224.62	433	434	367	360	428	2022	446	
101	Linear	2	No	opi2	144.03	-143.24	-0.2712	-43.96	0.0941	-12.6244	-0.3067	162.00	233	230	453	422	242	1580	345	

Northwest Brazil - Monthly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
102	Linear	2	No	opi3	150.17	-149.72	-0.2659	-42.65	0.1045	-13.9016	-0.3232	169.42	258	263	450	432	259	1662	371	
103	Linear	2	No	cmap	164.08	-163.92	-0.2598	-39.47	0.1103	-16.4327	-0.3321	183.25	310	310	449	435	324	1828	406	
104	Linear	2	No	cmap2	167.65	-167.54	-0.2574	-38.78	0.1142	-17.1845	-0.3379	187.16	345	345	447	439	357	1933	431	
105	Linear	2	1 mon	reanalysis	149.93	-147.57	-0.2137	-47.73	0.1466	-15.8944	-0.3829	180.33	254	250	424	454	303	1685	376	
106	Linear	2	1 mon	gpcp	166.89	-165.67	-0.2075	-44.48	0.0864	-17.0980	-0.2940	186.65	340	323	421	414	351	1849	412	
107	Linear	2	1 mon	gpcc	165.04	-164.72	-0.2203	-40.27	0.1289	-23.2358	-0.3590	184.06	317	315	432	448	332	1844	410	
108	Linear	2	1 mon	gpcc trmm	197.35	-197.35	-0.0946	-67.62	0.0216	-20.2538	-0.1470	218.22	408	408	342	338	414	1910	428	
109	Linear	2	1 mon	ghcn cams grid	177.53	-177.49	-0.1555	-47.86	0.0370	-18.3679	-0.1923	193.08	375	375	392	366	379	1887	422	
110	Linear	2	1 mon	gpi	205.91	-205.56	-0.0851	-53.63	0.0271	-29.6356	-0.1648	226.43	422	424	334	349	437	1966	438	
111	Linear	2	1 mon	trmm 3a46	235.32	-235.32	-0.2853	-28.39	0.1933	-32.6160	-0.4396	253.85	456	456	455	459	463	2289	465	
112	Linear	2	1 mon	trmm 3b43	192.24	-192.24	-0.1146	-65.84	0.0307	-19.3662	-0.1751	213.62	400	400	361	355	401	1917	429	
113	Linear	2	1 mon	ssmi	208.62	-208.40	-0.1867	-38.16	0.0794	-26.4121	-0.2818	226.14	435	435	406	405	435	2116	454	
114	Linear	2	1 mon	opi2	143.67	-143.25	-0.2059	-49.26	0.0543	-12.4688	-0.2331	161.02	231	231	417	383	241	1503	328	
115	Linear	2	1 mon	opi3	150.03	-149.70	-0.2202	-46.73	0.0717	-13.7718	-0.2678	168.63	255	261	431	403	255	1605	355	
116	Linear	2	1 mon	cmap	164.01	-163.80	-0.2198	-43.66	0.0787	-16.2823	-0.2805	182.39	309	308	430	404	316	1767	394	
117	Linear	2	1 mon	cmap2	167.62	-167.42	-0.2161	-43.24	0.0803	-17.0217	-0.2833	186.25	344	344	429	408	347	1872	418	
118	Linear	2	2 mon	reanalysis	149.77	-147.44	-0.1437	-53.68	0.0663	-15.4179	-0.2574	177.81	251	248	384	393	291	1567	340	
119	Linear	2	2 mon	gpcp	167.15	-166.00	-0.1116	-54.24	0.0250	-16.7651	-0.1581	184.96	343	328	358	344	340	1713	380	
120	Linear	2	2 mon	gpcc	164.64	-164.56	-0.1054	-51.65	0.0298	-22.6594	-0.1725	181.66	314	314	353	353	313	1647	369	
121	Linear	2	2 mon	gpcc trmm	200.49	-200.49	-0.0437	-74.29	0.0044	-20.2862	-0.0666	219.49	415	415	283	276	416	1805	398	
122	Linear	2	2 mon	ghcn cams grid	177.94	-177.94	-0.0595	-58.76	0.0054	-18.1411	-0.0734	191.99	378	378	313	283	375	1727	382	
123	Linear	2	2 mon	gpi	206.19	-205.43	-0.0958	-51.92	0.0346	-29.6970	-0.1859	226.69	424	423	346	362	439	1994	442	
124	Linear	2	2 mon	trmm 3a46	237.64	-237.64	-0.1710	-47.26	0.0686	-32.2328	-0.2619	254.02	463	463	400	400	464	2190	460	
125	Linear	2	2 mon	trmm 3b43	195.13	-195.13	-0.0576	-72.92	0.0075	-19.3524	-0.0868	214.63	403	403	309	301	405	1821	403	
126	Linear	2	2 mon	ssmi	209.22	-208.82	-0.1467	-44.15	0.0492	-26.2683	-0.2218	225.85	437	437	387	378	433	2072	452	
127	Linear	2	2 mon	opi2	143.57	-143.57	-0.1229	-55.86	0.0193	-12.2990	-0.1391	160.03	230	233	370	335	238	1406	305	
128	Linear	2	2 mon	opi3	150.12	-150 07	-0.0952	-57.40	0.0134	-13.4518	-0.1157	166.83	256	267	343	323	252	1441	316	
129	Linear	2	2 mon	cmap	164.13	-164.13	-0.0997	-55.62	0.0162	-15.9419	-0.1273	180.63	312	313	349	331	308	1613	360	
130	Linear	2	2 mon	cmap2	167.75	-167.75	-0.0969	-55.55	0.0161	-16.6646	-0.1270	184.44	347	349	348	330	338	1712	379	
131	Linear	2	3 mon	reanalysis	149.40	-147.19	-0.0911	-57.79	0.0268	-15.0883	-0.1636	175.83	248	245	337	347	281	1458	321	
132	Linear	2	3 mon	gpcp	166.33	-166.00	-0.0706	-58.15	0.0100	-16.6375	-0.1001	184.11	328	329	324	316	333	1630	365	
133	Linear	2	3 mon	gpcc	165.23	-165.17	-0.0773	-54.36	0.0158	-22.4699	-0.1255	181.54	319	320	331	329	312	1611	358	
134	Linear	2	3 mon	gpcc trmm	202.86	-202.86	0.1258	-95.55	0.0359	-19.5891	0.1894	217.62	417	417	52	79	413	1378	296	
135	Linear	2	3 mon	ghcn cams grid	177.94	-177.94	-0.0147	-63.60	0.0003	-18.0432	-0.0181	191.30	379	379	239	230	371	1598	351	
136	Linear	2	3 mon	gpi	206.19	-205.40	-0.0441	-59.10	0.0073	-29.1762	-0.0856	225.32	425	422	285	299	431	1862	415	
137	Linear	2	3 mon	trmm 3a46	236.42	-236.42	-0.0648	-65.13	0.0096	-30.8201	-0.0982	251.02	459	459	320	315	458	2011	445	
138	Linear	2	3 mon	trmm 3b43	197.54	-197.36	0.0670	-87.97	0.0100	-18.8599	0.0999	213.74	409	409	106	139	402	1465	322	
139	Linear	2	3 mon	ssmi	210.08	-209.77	-0.0639	-56.88	0.0095	-26.3547	-0.0973	225.19	441	440	319	313	430	1943	434	
140	Linear	2	3 mon	opi2	143.95	-143.59	-0.0545	-60.99	0.0038	-12.1493	-0.0617	158.96	232	234	307	272	233	1278	262	
141	Linear	2	3 mon	opi3	150.33	-150.10	-0.0528	-60.78	0.0041	-13.3570	-0.0642	166.10	260	269	301	273	249	1352	289	
142	Linear	2	3 mon	cmap	164.09	-164.06	-0.0596	-59.37	0.0058	-15.8368	-0.0762	179.88	311	311	314	286	300	1522	332	
143	Linear	2	3 mon	cmap2	167.71	-167.69	-0.0528	-59.85	0.0048	-16.5403	-0.0694	183.60	346	347	302	281	329	1605	357	
144	Linear	2	4 mon	reanalysis	149.57	-146.71	-0.0521	-60.91	0.0087	-14.7219	-0.0933	174.01	250	243	298	309	277	1377	295	
145	Linear	2	4 mon	gpcp	166.89	-166.03	-0.0050	-64.65	0.0001	-16.3485	-0.0071	182.79	341	330	223	218	320	1432	312	
146	Linear	2	4 mon	gpcc	165.60	-165.31	0.0111	-63.01	0.0003	-22.2553	0.0180	179.78	321	321	197	199	299	1337	283	
147	Linear	2	4 mon	gpcc trmm	204.03	-203.26	0.0296	-83.22	0.0020	-19.7993	0.0446	220.54	418	418	166	173	419	1594	349	
148	Linear	2	4 mon	ghcn cams grid	177.93	-177.93	0.0465	-70.39	0.0033	-17.8216	0.0574	190.39	377	377	138	165	368	1425	310	
149	Linear	2	4 mon	gpi	205.87	-205.30	0.0154	-67.15	0.0009	-28.8329	0.0299	223.60	421	421	191	191	425	1649	370	
150	Linear	2	4 mon	trmm 3a46	234.57	-234.57	0.0200	-77.99	0.0009	-29.5995	0.0303	247.92	455	455	186	190	454	1740	384	
151	Linear	2	4 mon	trmm 3b43	198.72	-197.84	0.0376	-84.00	0.0031	-18.7881	0.0559	215.11	413	410	148	167	407	1545	336	
152	Linear	2	4 mon	ssmi	209.82	-209.79	0.0289	-70.13	0.0019	-25.8503	0.0441	223.50	440	441	167	174	424	1646	368	
153	Linear	2	4 mon	opi2	144.24	-143.50	0.0088	-65.84	0.0001	-11.9529	0.0100	157.94	234	232	201	206	231	1104	212	
154	Linear	2	4 mon	opi3	150.51	-150.16	0.0331	-67.96	0.0016	-13.0859	0.0402	164.70	261	270	157	181	246	1115	219	
155	Linear	2	4 mon	cmap	164.34	-164.10	0.0247	-67.60	0.0010	-15.5369	0.0316	178.46	313	312	177	188	295	1285	265	
156	Linear	2	4 mon	cmap2	167.87	-167.72	0.0341	-68.65	0.0020	-16.2148	0.0448	182.08	348	348	155	172	314	1337	285	
157	*Point*	*1*	*Yes*	*reanalysis*	***78.34***	*-77.65*	***0.2055***	*-20.10*	*0.1661*	*-13.5946*	***0.4076***	***88.34***	*13*	*27*	*15*	*19*	*13*	*87*	*1*	Plot
158	Point	1	Yes	gpcp	84.72	-79.04	0.0182	-6.42	0.0030	-24.1071	0.0545	100.56	41	33	190	168	41	473	52	
159	Point	1	Yes	gpcc	81.23	**-75.50**	-0.0250	-1.67	0.0069	-30.2409	-0.0829	97.67	29	16	254	295	30	624	88	
160	Point	1	Yes	gpcc trmm	115.66	-114.28	0.1403	-23.82	0.1408	-24.1687	**0.3752**	131.46	174	175	37	22	164	572	73	
161	Point	1	Yes	ghcn cams grid	97.19	-96.43	-0.0162	-3.85	0.0013	-22.4903	-0.0359	112.01	83	90	240	244	76	733	117	
162	Point	1	Yes	gpi	120.56	-119.00	0.1206	-19.73	0.1855	-40.0267	**0.4307**	138.37	197	200	56	16	200	669	99	
163	Point	1	Yes	trmm 3a46	146.28	-146.28	**0.1903**	-33.38	0.2084	-33.7735	**0.4566**	156.94	240	242	22	9	229	742	120	
164	Point	1	Yes	trmm 3b43	107.37	-106.16	0.1559	-24.05	0.1679	-21.4011	**0.4098**	123.15	125	123	30	18	113	409	40	
165	Point	1	Yes	ssmi	126.48	-125.69	0.1063	-19.63	0.0910	-37.4276	0.3017	139.76	221	225	63	37	203	749	124	
166	Point	1	Yes	opi2	**63.34**	**-57.56**	0.0256	-6.70	0.0037	-13.6495	0.0610	**76.73**	6	6	175	163	6	356	23	
167	Point	1	Yes	opi3	**69.89**	**-64.24**	0.0112	-6.02	0.0008	-16.8427	0.0291	**84.68**	12	12	196	193	12	425	45	
168	Point	1	Yes	cmap	81.75	-78.24	0.0101	-5.85	0.0008	-22.9070	0.0280	97.25	30	30	199	195	29	483	54	
169	Point	1	Yes	cmap2	85.33	-81.96	0.0103	-5.90	0.0009	-24.9627	0.0293	101.35	42	42	198	192	42	516	59	
170	Point	1	No	reanalysis	**79.24**	-77.64	-0.0042	-4.90	0.0003	-70.1777	-0.0180	**90.92**	20	26	222	229	14	511	57	
171	Point	1	No	gpcp	83.37	-79.10	0.0285	-7.24	0.0146	-48.3509	0.1209	99.23	36	34	168	122	37	397	35	
172	Point	1	No	gpcc	**78.98**	**-75.38**	0.0114	-4.17	0.0127	-260.9114	0.1126	**94.90**	17	15	195	132	24	383	30	
173	Point	1	No	gpcc trmm	114.85	-114.23	0.1628	-26.14	0.1883	-23.6532	**0.4339**	130.59	169	174	29	14	158	544	65	
174	Point	1	No	ghcn cams grid	96.62	-96.30	0.0215	-7.16	0.0105	-101.2594	0.1022	109.11	80	86	182	138	63	549	67	
175	Point	1	No	gpi	123.31	-118.82	-0.0449	-0.85	0.0472	-80.8545	-0.2172	144.43	212	197	286	375	222	1292	267	
176	Point	1	No	trmm 3a46	145.83	-145.83	0.1191	-23.01	0.0838	-35.3020	0.2895	158.31	236	238	57	38	232	801	138	
177	Point	1	No	trmm 3b43	106.58	-106.11	**0.1737**	-25.73	0.2070	-20.9839	**0.4550**	122.44	121	122	25	10	110	388	33	
178	Point	1	No	ssmi	126.69	-125.43	-0.0022	-6.50	0.0001	-66.2349	-0.0082	141.94	224	222	217	220	217	1100	210	
179	Point	1	No	opi2	**62.23**	**-57.25**	0.0334	-6.80	0.0131	-27.8737	0.1145	**74.89**	4	2	156	128	3	293	14	
180	Point	1	No	opi3	**67.94**	**-63.93**	0.0455	-7.73	0.0288	-33.6893	0.1697	**82.09**	10	10	140	89	9	258	8	
181	Point	1	No	cmap	80.40	-78.21	0.0321	-7.42	0.0158	-45.6453	0.1256	**95.50**	28	29	160	119	25	361	25	
182	Point	1	No	cmap2	84.13	-81.93	0.0299	-7.37	0.0147	-49.8293	0.1213	99.70	40	41	163	121	39	404	38	
183	Point	1	1 mon	reanalysis	**79.01**	**-77.58**	-0.0345	-2.72	0.0216	-71.2794	-0.1469	**91.66**	18	23	272	337	16	666	96	
184	Point	1	1 mon	gpcp	82.83	-78.86	0.0504	-8.88	0.0456	-47.2152	0.2135	98.20	31	31	130	72	33	297	15	
185	Point	1	1 mon	gpcc	**78.58**	**-75.32**	0.0261	-5.29	0.0677	-261.2591	0.2601	**94.45**	14	14	174	46	21	269	11	
186	Point	1	1 mon	gpcc trmm	114.36	-114.36	**0.1916**	-29.63	0.2667	-23.5281	**0.5165**	129.77	166	177	20	3	148	514	58	
187	Point	1	1 mon	ghcn cams grid	96.65	-96.37	0.0475	-9.53	0.0510	-100.0729	0.2257	108.55	81	88	136	65	58	428	46	
188	Point	1	1 mon	gpi	122.58	-118.84	-0.0031	-5.63	0.0002	-78.8607	-0.0149	142.83	206	198	220	225	220	1069	200	
189	Point	1	1 mon	trmm 3a46	147.91	-147.91	0.1668	-30.57	0.1657	-35.8169	**0.4070**	159.02	245	251	28	20	234	778	132	
190	Point	1	1 mon	trmm 3b43	105.47	-105.47	**0.1801**	-26.67	0.2241	-20.8512	**0.4734**	121.62	114	117	23	5	108	367	27	
191	Point	1	1 mon	ssmi	126.63	-125.62	0.0434	-12.05	0.0259	-65.2845	0.1611	140.87	223	223	142	97	214	899	159	
192	Point	1	1 mon	opi2	**61.56**	**-57.42**	0.0681	-8.64	0.0545	-27.0997	0.2335	**73.97**	2	5	103	59	2	171	4	
193	Point	1	1 mon	opi3	**67.52**	**-64.11**	0.0671	-9.05	0.0626	-33.1404	0.2503	**81.53**	8	11	105	50	8	182	5	
194	Point	1	1 mon	cmap	79.89	-78.14	0.0571	-9.27	0.0500	-44.7477	0.2236	**94.70**	26	28	117	67	22	260	9	
195	Point	1	1 mon	cmap2	83.63	-81.83	0.0548	-9.31	0.0495	-48.8429	0.2224	98.84	37	40	120	68	35	300	16	
196	Point	1	2 mon	reanalysis	**78.88**	**-77.55**	-0.0516	-1.47	0.0482	-71.8485	-0.2196	**92.03**	16	22	296	377	18	729	116	
197	Point	1	2 mon	gpcp	82.85	-79.00	0.0547	-9.21	0.0537	-47.0354	0.2317	98.19	32	32	122	61	32	279	13	
198	Point	1	2 mon	gpcc	**78.71**	**-75.25**	0.0200	-4.86	0.0399	-260.8583	0.1999	**94.74**	15	13	184	76	23	311	18	
199	Point	1	2 mon	gpcc trmm	113.72	-113.63	0.1356	-23.72	0.1326	-23.7503	**0.3641**	131.46	163	169	40	24	165	561	70	
200	Point	1	2 mon	ghcn cams grid	96.65	-96.41	0.0488	-9.63	0.0536	-100.0394	0.2316	108.57	82	89	132	62	59	424	44	
201	Point	1	2 mon	gpi	122.21	-118.92	0.0520	-11.86	0.0632	-76.0882	0.2515	140.66	205	199	127	49	211	791	135	
202	Point	1	2 mon	trmm 3a46	149.77	-149.77	**0.1913**	-34.42	0.2107	-35.4397	**0.4590**	160.11	252	264	21	7	239	783	133	

Northwest Brazil - Monthly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR
203	Point	1	2 mon	trmm 3b43	105.78	-105.45	0.1418	-23.05	0.1389	-21.1043	**0.3727**	123.35	117	116	36	23	116	408	39
204	Point	1	2 mon	ssmi	126.61	-125.82	0.0630	-14.35	0.0544	-64.4029	0.2333	140.53	222	227	110	60	208	827	144
205	Point	1	2 mon	opi2	**61.02**	**-57.37**	0.0743	-8.97	0.0649	-26.8669	0.2548	**73.79**	1	4	92	48	1	146	2
206	Point	1	2 mon	opi3	**67.04**	**-63.91**	0.0736	-9.41	0.0749	-32.7090	0.2737	**81.16**	7	9	96	42	7	161	3
207	Point	1	2 mon	cmap	**79.32**	**-77.63**	0.0638	-9.74	0.0610	-43.6897	0.2469	**93.76**	21	25	109	51	19	225	6
208	Point	1	2 mon	cmap2	82.87	-81.27	0.0612	-9.77	0.0600	-47.6426	0.2450	97.82	33	39	113	53	31	269	12
209	Point	1	3 mon	reanalysis	**79.04**	**-77.52**	-0.0454	-1.92	0.0373	-71.4750	-0.1932	**91.86**	19	21	287	367	17	711	110
210	Point	1	3 mon	gpcp	83.73	-79.17	0.0316	-7.51	0.0179	-47.8487	0.1337	99.20	38	35	162	113	36	384	31
211	Point	1	3 mon	gpcc	**79.56**	**-75.73**	-0.0004	-3.33	0.0000	-268.3331	-0.0044	95.79	23	17	213	217	27	497	56
212	Point	1	3 mon	gpcc trmm	115.56	-114.59	0.0906	-18.72	0.0589	-24.6615	0.2426	133.92	173	179	80	55	180	667	97
213	Point	1	3 mon	ghcn cams grid	96.59	-96.32	0.0200	-6.98	0.0090	-101.2247	0.0950	109.18	79	87	185	144	64	559	69
214	Point	1	3 mon	gpi	121.96	-119.09	0.0642	-13.23	0.0963	-75.4141	0.3104	140.36	202	201	108	32	206	749	125
215	Point	1	3 mon	trmm 3a46	147.43	-147.43	**0.2012**	-34.79	0.2333	-34.4524	**0.4830**	157.65	244	247	17	4	230	742	121
216	Point	1	3 mon	trmm 3b43	105.12	-104.48	0.1062	-19.12	0.0790	-21.3708	0.2810	124.11	112	112	64	39	120	447	50
217	Point	1	3 mon	ssmi	126.32	-125.69	0.0741	-15.64	0.0753	-63.7295	0.2745	140.19	220	224	94	41	205	784	134
218	Point	1	3 mon	opi2	**62.09**	**-57.36**	0.0388	-7.12	0.0177	-27.6356	0.1332	**74.94**	3	3	144	114	4	268	10
219	Point	1	3 mon	opi3	**68.00**	**-63.79**	0.0330	-7.02	0.0150	-33.6587	0.1226	**82.44**	11	8	158	120	10	307	17
220	Point	1	3 mon	cmap	**79.65**	**-77.26**	0.0298	-7.26	0.0131	-44.1299	0.1145	**94.39**	24	20	164	129	20	357	24
221	Point	1	3 mon	cmap2	83.14	-80.86	0.0279	-7.22	0.0123	-48.0387	0.1108	98.39	34	38	170	134	34	410	41
222	Point	1	4 mon	reanalysis	**79.42**	**-77.60**	-0.0202	-3.74	0.0074	-70.4241	-0.0861	**91.25**	22	24	247	300	15	608	83
223	Point	1	4 mon	gpcp	84.04	-79.26	0.0048	-5.52	0.0004	-48.7548	0.0201	100.30	39	36	205	198	40	518	60
224	Point	1	4 mon	gpcc	79.97	**-76.25**	-0.0142	-2.37	0.0202	-273.5651	-0.1421	96.68	27	18	237	336	28	646	94
225	Point	1	4 mon	gpcc trmm	117.07	-116.43	0.0366	-13.71	0.0098	-26.4560	0.0988	137.48	184	184	150	141	199	858	153
226	Point	1	4 mon	ghcn cams grid	96.56	-96.24	-0.0140	-3.87	0.0044	-102.5069	-0.0666	109.92	78	85	236	275	67	741	119
227	Point	1	4 mon	gpi	122.19	-119.35	0.0377	-10.28	0.0332	-76.6967	0.1822	141.78	204	203	147	83	216	853	151
228	Point	1	4 mon	trmm 3a46	147.21	-147.21	0.1272	-25.07	0.0960	-35.7867	0.3099	159.43	243	246	50	33	237	809	140
229	Point	1	4 mon	trmm 3b43	107.04	-106.73	0.0618	-15.61	0.0268	-22.9417	0.1637	127.44	123	132	112	95	137	599	80
230	Point	1	4 mon	ssmi	127.13	-126.31	0.0511	-12.91	0.0354	-64.2949	0.1881	141.28	225	228	129	80	215	877	154
231	Point	1	4 mon	opi2	**62.93**	**-57.04**	-0.0204	-4.02	0.0049	-28.6329	-0.0697	**76.36**	5	1	248	282	5	541	64
232	Point	1	4 mon	opi3	**67.87**	**-63.30**	-0.0022	-4.96	0.0001	-33.8804	-0.0080	**82.85**	9	7	216	219	11	462	51
233	Point	1	4 mon	cmap	**79.85**	**-77.25**	-0.0069	-4.61	0.0007	-45.0991	-0.0266	95.57	25	19	224	235	26	529	62
234	Point	1	4 mon	cmap2	83.15	-80.84	-0.0099	-4.36	0.0015	-49.0928	-0.0394	99.62	35	37	228	251	38	589	78
235	Point	2	Yes	reanalysis	93.51	-89.52	0.1269	-17.59	0.0608	-7.7286	0.2465	119.34	60	56	51	52	102	321	20
236	Point	2	Yes	gpcp	109.79	-107.74	0.1355	-20.77	0.0435	-8.8416	0.2086	126.72	137	137	41	73	134	522	61
237	Point	2	Yes	gpcc	112.59	-110.90	0.1310	-22.19	0.0487	-11.5527	0.2206	127.74	156	157	43	69	139	564	71
238	Point	2	Yes	gpcc trmm	122.93	-121.09	**0.1957**	-24.85	0.0920	-8.0414	0.3034	141.96	208	211	19	34	218	690	104
239	Point	2	Yes	ghcn cams grid	120.24	-119.30	0.1310	-21.83	0.0308	-10.0481	0.1756	134.26	196	202	44	86	184	712	111
240	Point	2	Yes	gpi	149.41	-148.30	0.1308	-26.19	0.0714	-17.6849	0.2672	167.74	249	253	45	45	254	846	150
241	Point	2	Yes	trmm 3a46	155.62	-155.62	**0.2211**	-31.43	0.1119	-13.4688	0.3345	169.52	289	289	13	28	261	880	155
242	Point	2	Yes	trmm 3b43	117.78	-116.00	**0.2114**	-25.65	0.1041	-7.3813	0.3226	136.68	187	182	14	30	190	603	81
243	Point	2	Yes	ssmi	152.01	-151.14	0.1439	-28.01	0.0567	-16.6900	0.2380	165.57	270	275	33	57	247	882	156
244	Point	2	Yes	opi2	88.63	-85.24	**0.1743**	-20.75	0.0459	-5.4370	0.2142	102.48	49	43	24	71	45	232	7
245	Point	2	Yes	opi3	94.48	-91.72	0.1302	-18.15	0.0296	-6.4468	0.1721	110.23	69	62	47	88	69	335	21
246	Point	2	Yes	cmap	107.52	-105.92	0.1303	-20.01	0.0328	-8.3029	0.1810	123.20	126	120	46	84	114	490	55
247	Point	2	Yes	cmap2	111.20	-109.54	0.1231	-19.74	0.0308	-8.8892	0.1756	127.02	146	147	55	87	136	571	72
248	Point	2	No	reanalysis	97.61	-90.17	-0.0071	-7.20	0.0002	-11.5961	-0.0158	124.96	86	60	225	226	123	720	114
249	Point	2	No	gpcp	110.83	-108.39	-0.0119	-6.59	0.0004	-12.6684	-0.0210	130.17	143	142	232	233	153	903	161
250	Point	2	No	gpcc	112.52	-111.02	-0.0188	-7.01	0.0014	-17.1561	-0.0371	130.73	154	158	242	247	159	960	174
251	Point	2	No	gpcc trmm	123.58	-122.87	0.1365	-19.54	0.0546	-10.3826	0.2336	144.29	216	213	39	58	221	747	123
252	Point	2	No	ghcn cams grid	120.94	-119.95	-0.0269	-4.77	0.0017	-14.0954	-0.0413	136.80	198	205	260	252	192	1107	215
253	Point	2	No	gpi	150.63	-148.42	-0.0285	-3.93	0.0045	-25.2368	-0.0671	172.65	262	257	262	277	273	1331	278
254	Point	2	No	trmm 3a46	157.93	-157.93	0.0906	-12.92	0.0252	-19.3516	0.1587	173.62	291	291	81	98	275	1036	193
255	Point	2	No	trmm 3b43	118.42	-117.78	0.1436	-19.66	0.0585	-9.6065	0.2419	139.29	194	189	35	56	202	676	102
256	Point	2	No	ssmi	152.94	-151.67	-0.0222	-4.66	0.0018	-23.2264	-0.0421	169.16	279	279	249	253	258	1318	275
257	Point	2	No	opi2	89.59	-85.89	-0.0124	-6.82	0.0003	-7.9868	-0.0174	105.55	50	52	233	227	48	610	84
258	Point	2	No	opi3	95.28	-92.37	-0.0323	-5.05	0.0024	-9.3274	-0.0490	113.15	74	73	267	260	79	753	126
259	Point	2	No	cmap	108.22	-106.57	-0.0350	-4.33	0.0031	-11.8774	-0.0557	126.35	128	128	275	268	132	931	167
260	Point	2	No	cmap2	111.86	-110.19	-0.0398	-3.71	0.0042	-12.6865	-0.0652	130.26	148	153	279	274	156	1010	189
261	Point	2	1 mon	reanalysis	97.74	-90.07	-0.0114	-6.87	0.0006	-11.5993	-0.0253	125.20	87	59	230	234	126	736	118
262	Point	2	1 mon	gpcp	112.35	-108.17	-0.0466	-3.13	0.0067	-12.7989	-0.0821	131.02	151	140	289	294	161	1035	191
263	Point	2	1 mon	gpcc	113.29	-111.11	-0.0525	-3.77	0.0109	-17.4424	-0.1042	131.87	160	159	300	317	167	1103	211
264	Point	2	1 mon	gpcc trmm	123.31	-121.59	0.0928	-14.07	0.0249	-10.2776	0.1579	145.11	211	212	79	99	223	824	142
265	Point	2	1 mon	ghcn cams grid	121.69	-119.99	-0.0255	-4.95	0.0015	-14.0559	-0.0392	136.86	201	206	258	250	193	1108	217
266	Point	2	1 mon	gpi	150.16	-148.09	-0.0324	-3.54	0.0058	-25.1294	-0.0761	172.48	257	252	268	285	271	1333	280
267	Point	2	1 mon	trmm 3a46	159.20	-159.20	-0.0190	4.84	0.0011	-19.8678	-0.0329	177.71	294	299	244	241	290	1368	292
268	Point	2	1 mon	trmm 3b43	118.10	-116.48	0.0856	-12.78	0.0206	-9.5902	0.1434	140.62	188	185	83	106	209	771	130
269	Point	2	1 mon	ssmi	154.21	-151.76	-0.0897	4.58	0.0290	-23.7403	-0.1702	170.96	288	280	336	352	266	1522	331
270	Point	2	1 mon	opi2	90.38	-85.75	-0.0192	-6.31	0.0007	-7.9682	-0.0271	105.63	52	49	245	236	50	632	92
271	Point	2	1 mon	opi3	96.39	-92.20	-0.0497	-3.62	0.0057	-9.3479	-0.0752	113.46	77	69	294	284	83	807	139
272	Point	2	1 mon	cmap	109.05	-106.30	-0.0517	-2.72	0.0067	-11.8618	-0.0820	126.50	131	124	297	292	133	977	180
273	Point	2	1 mon	cmap2	112.53	-109.92	-0.0540	-2.30	0.0077	-12.6564	-0.0880	130.35	155	149	306	303	157	1070	201
274	Point	2	2 mon	reanalysis	98.12	-89.75	0.0198	-9.39	0.0019	-11.2063	0.0441	123.43	90	58	187	175	117	627	90
275	Point	2	2 mon	gpcp	112.03	-108.31	0.0024	-8.01	0.0000	-12.4816	0.0043	129.72	149	141	211	210	147	858	152
276	Point	2	2 mon	gpcc	114.38	-111.48	-0.0142	-7.89	0.0008	-17.2203	-0.0281	131.21	168	160	238	237	163	966	175
277	Point	2	2 mon	gpcc trmm	125.63	-123.88	0.0715	-11.61	0.0141	-10.4082	0.1187	147.51	219	220	100	124	225	888	157
278	Point	2	2 mon	ghcn cams grid	121.38	-120.24	0.0281	-10.93	0.0019	-13.7966	0.0431	135.90	199	207	169	176	188	939	169
279	Point	2	2 mon	gpi	150.32	-148.30	-0.0013	-8.03	0.0000	-24.8135	-0.0031	171.63	259	254	215	214	269	1211	245
280	Point	2	2 mon	trmm 3a46	160.55	-160.55	0.0602	-7.74	0.0107	-19.2422	0.1032	177.00	297	301	115	137	284	1134	227
281	Point	2	2 mon	trmm 3b43	121.62	-118.51	0.0717	-11.25	0.0139	-9.6697	0.1177	142.65	200	196	99	125	219	839	148
282	Point	2	2 mon	ssmi	153.74	-152.07	-0.0183	-6.11	0.0010	-23.1375	-0.0310	169.51	286	281	241	239	260	1307	271
283	Point	2	2 mon	opi2	90.10	-85.88	0.0012	-7.86	0.0000	-7.8802	0.0017	105.28	51	51	212	212	47	573	74
284	Point	2	2 mon	opi3	95.81	-92.38	0.0250	-9.89	0.0014	-9.0009	0.0378	111.73	75	74	176	183	73	581	76
285	Point	2	2 mon	cmap	108.52	-106.44	0.0209	-9.83	0.0011	-11.4843	0.0332	124.83	129	125	183	187	122	746	122
286	Point	2	2 mon	cmap2	112.07	-110.06	0.0192	-9.73	0.0010	-12.2550	0.0313	128.63	150	150	188	189	143	820	141
287	Point	2	3 mon	reanalysis	98.46	-89.62	-0.0040	-7.35	0.0001	-11.4192	-0.0090	124.63	93	57	221	221	121	713	112
288	Point	2	3 mon	gpcp	113.35	-108.42	-0.0435	-3.30	0.0058	-12.7638	-0.0765	131.20	161	143	282	287	162	1035	192
289	Point	2	3 mon	gpcc	116.21	-112.20	-0.0462	-4.60	0.0083	-17.4674	-0.0910	132.60	179	161	288	307	173	1108	216
290	Point	2	3 mon	gpcc trmm	128.79	-125.31	0.0608	-10.03	0.0099	-10.4445	0.0997	149.10	226	221	114	140	227	928	165
291	Point	2	3 mon	ghcn cams grid	122.12	-120.36	-0.0317	-4.10	0.0024	-14.0717	-0.0485	137.29	203	209	265	259	195	1131	225
292	Point	2	3 mon	gpi	149.87	-148.32	0.0359	-13.25	0.0071	-24.3065	0.0845	170.38	253	255	153	151	264	1076	205
293	Point	2	3 mon	trmm 3a46	158.62	-158.26	-0.0230	6.30	0.0015	-18.9443	-0.0390	177.14	292	294	251	249	285	1371	294
294	Point	2	3 mon	trmm 3b43	124.96	-119.81	0.0319	-6.31	0.0027	-9.8556	0.0518	145.21	218	204	161	170	224	977	181
295	Point	2	3 mon	ssmi	153.58	-152.74	0.0079	-10.16	0.0002	-22.9835	0.0150	169.60	283	287	203	201	262	1236	252
296	Point	2	3 mon	opi2	91.70	-86.01	-0.0344	-4.99	0.0023	-8.0196	-0.0483	106.21	53	54	271	258	51	687	103
297	Point	2	3 mon	opi3	97.27	-92.52	-0.0400	-4.28	0.0036	-9.2967	-0.0603	113.48	84	77	281	271	84	797	137
298	Point	2	3 mon	cmap	109.83	-106.49	-0.0348	-4.24	0.0030	-11.7547	-0.0551	126.30	138	126	273	267	131	935	168
299	Point	2	3 mon	cmap2	113.13	-110.11	-0.0305	-4.56	0.0025	-12.5082	-0.0496	129.98	158	151	264	262	152	987	182
300	Point	2	4 mon	reanalysis	99.46	-89.15	-0.0013	-7.49	0.0000	-11.2895	-0.0028	124.10	98	55	214	213	119	699	106
301	Point	2	4 mon	gpcp	114.36	-108.47	-0.0318	-4.38	0.0031	-12.6822	-0.0560	130.94	167	144	266	269	160	1006	186
302	Point	2	4 mon	gpcc	116.52	-112.58	-0.0486	-4.11	0.0091	-17.5210	-0.0956	132.94	181	164	291	312	175	1123	222
303	Point	2	4 mon	gpcc trmm	133.56	-125.79	-0.0469	3.72	0.0059	-10.9399	-0.0768	153.60	228	226	290	288	228	1260	259

Northwest Brazil - Monthly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR
304	Point	2	4 mon	ghcn cams grid	122.85	-120.37	-0.0349	-3.65	0.0029	-14.0677	-0.0535	137.41	207	210	274	265	197	1153	234
305	Point	2	4 mon	gpi	150.84	-148.37	0.0238	-11.41	0.0031	-24.4296	0.0561	170.96	263	256	179	166	265	1129	224
306	Point	2	4 mon	trmm 3a46	156.48	-156.48	0.0484	-4.45	0.0068	-17.9661	0.0824	173.92	290	290	133	153	276	1142	232
307	Point	2	4 mon	trmm 3b43	129.43	-120.36	-0.0188	0.14	0.0009	-10.0538	-0.0304	147.79	227	208	243	238	226	1142	231
308	Point	2	4 mon	ssmi	153.24	-152.96	0.0476	-15.99	0.0081	-22.6422	0.0902	168.88	281	288	135	149	257	1110	218
309	Point	2	4 mon	opi2	93.14	-85.93	-0.0598	-2.91	0.0070	-8.1016	-0.0840	106.80	57	53	316	296	52	774	131
310	Point	2	4 mon	opi3	98.59	-92.59	-0.0252	5.45	0.0014	-9.2246	-0.0379	113.19	94	78	257	248	80	757	127
311	Point	2	4 mon	cmap	111.03	-106.53	-0.0276	-4.86	0.0019	-11.7095	-0.0438	126.20	145	127	261	255	130	918	164
312	Point	2	4 mon	cmap2	114.25	-110.16	-0.0196	-5.58	0.0010	-12.4403	-0.0319	129.78	165	152	246	240	149	952	173
313	Area	1	Yes	reanalysis	105.05	-104.62	-0.1243	-23.19	0.0301	-12.5610	-0.1735	121.05	110	115	371	354	104	1054	198
314	Area	1	Yes	gpcp	116.80	-114.10	-0.2326	-22.93	0.1296	-12.1900	-0.3600	140.66	182	171	439	449	210	1451	318
315	Area	1	Yes	gpcc	99.62	-97.14	-0.0956	-18.23	0.0994	-43.4317	-0.3152	117.29	100	95	344	428	100	1067	199
316	Area	1	Yes	gpcc trmm	188.82	-188.82	-0.1681	-65.91	0.0612	-18.6309	-0.2475	210.91	394	394	398	388	396	1970	440
317	Area	1	Yes	ghcn cams grid	123.65	-123.44	-0.1651	-17.29	0.0664	-17.3517	-0.2577	140.76	217	219	397	395	213	1441	315
318	Area	1	Yes	gpi	159.08	-158.38	0.0296	-48.83	0.0028	-16.7108	0.0533	180.34	293	296	165	169	304	1227	250
319	Area	1	Yes	trmm 3a46	236.23	-236.23	-0.3251	-51.48	0.2550	-37.0212	-0.5050	253.42	458	458	464	464	462	2306	466
320	Area	1	Yes	trmm 3b43	179.87	-179.87	-0.2062	-62.53	0.0870	-17.0322	-0.2949	203.09	386	386	418	415	391	1996	443
321	Area	1	Yes	ssmi	168.55	-168.55	-0.0333	-45.93	0.0022	-15.7822	-0.0468	186.71	351	357	270	257	352	1587	347
322	Area	1	Yes	opi2	94.58	-92.28	-0.2865	-25.12	0.1288	-8.3030	-0.3588	116.51	72	72	456	447	95	1142	230
323	Area	1	Yes	opi3	100.76	-98.95	-0.2307	-26.50	0.0986	-9.4172	-0.3140	123.29	107	102	437	427	115	1188	241
324	Area	1	Yes	cmap	114.24	-113.15	-0.2377	-22.63	0.1154	-11.7296	-0.3398	136.75	164	168	444	440	191	1407	306
325	Area	1	Yes	cmap2	117.72	-116.86	-0.2228	-22.89	0.1090	-12.4702	-0.3301	140.67	186	188	434	433	212	1453	319
326	Area	1	No	reanalysis	105.75	-104.60	-0.3340	-7.98	0.2758	-16.9791	-0.5252	123.71	116	114	465	465	118	1278	261
327	Area	1	No	gpcp	116.10	-114.16	-0.2223	-23.75	0.1191	-12.2180	-0.3451	140.42	178	173	433	443	207	1434	314
328	Area	1	No	gpcc	98.44	-97.02	-0.0593	-20.73	0.0853	-95.0491	-0.2920	115.40	92	94	312	411	92	1001	184
329	Area	1	No	gpcc trmm	188.76	-188.76	-0.1455	-68.23	0.0366	-14.7869	-0.1914	211.69	393	393	385	363	398	1932	430
330	Area	1	No	ghcn cams grid	123.39	-123.31	-0.1274	-20.59	0.0499	-21.6474	-0.2235	139.13	213	216	373	379	201	1382	298
331	Area	1	No	gpi	160.56	-158.20	-0.1360	-29.95	0.0589	-17.4393	-0.2426	185.65	298	292	379	387	344	1700	377
332	Area	1	No	trmm 3a46	235.78	-235.78	-0.3963	-41.10	0.2815	-27.6626	-0.5306	255.29	457	457	468	466	466	2314	467
333	Area	1	No	trmm 3b43	179.82	-179.82	-0.1884	-64.21	0.0582	-13.6027	-0.2413	204.02	384	384	408	386	393	1955	435
334	Area	1	No	ssmi	168.40	-168.29	-0.1418	-32.79	0.0383	-15.6212	-0.1958	189.03	350	352	382	369	366	1819	402
335	Area	1	No	opi2	94.30	-91.97	-0.2787	-25.22	0.1219	-8.2404	-0.3491	116.11	68	64	454	444	94	1124	223
336	Area	1	No	opi3	99.71	-98.64	-0.1964	-28.20	0.0715	-9.2494	-0.2674	122.29	101	99	411	402	109	1122	221
337	Area	1	No	cmap	113.52	-113.12	-0.2158	-24.20	0.0955	-11.6838	-0.3091	136.21	162	167	428	424	189	1370	293
338	Area	1	No	cmap2	117.18	-116.83	-0.2032	-24.37	0.0910	-12.4308	-0.3017	140.17	185	187	414	418	204	1408	307
339	Area	1	1 mon	reanalysis	105.55	-104.51	-0.2902	-11.16	0.2082	-16.7536	-0.4563	123.01	115	113	457	460	112	1257	256
340	Area	1	1 mon	gpcp	115.48	-113.94	-0.1147	-31.79	0.0315	-11.6229	-0.1776	137.43	172	170	362	357	198	1259	258
341	Area	1	1 mon	gpcc	97.95	-96.85	0.0036	-25.21	0.0003	-91.3707	0.0177	113.52	89	92	208	200	85	674	100
342	Area	1	1 mon	gpcc trmm	188.89	-188.89	0.0690	-91.32	0.0083	-13.9278	0.0910	207.00	395	395	101	148	394	1433	313
343	Area	1	1 mon	ghcn cams grid	123.43	-123.35	-0.0241	-29.97	0.0018	-21.0103	-0.0423	137.21	214	217	253	254	194	1132	226
344	Area	1	1 mon	gpi	160.69	-158.24	-0.1134	-32.58	0.0409	-17.2476	-0.2024	185.08	300	293	360	371	341	1665	372
345	Area	1	1 mon	trmm 3a46	238.23	-238.23	-0.2326	-64.64	0.0970	-27.5108	-0.3115	255.00	465	465	440	425	465	2260	464
346	Area	1	1 mon	trmm 3b43	179.17	-179.17	-0.0100	-82.09	0.0002	-12.7886	-0.0127	199.38	381	381	229	223	388	1602	354
347	Area	1	1 mon	ssmi	168.84	-168.51	-0.0610	-42.55	0.0071	-15.3077	-0.0844	187.56	353	355	317	297	359	1681	373
348	Area	1	1 mon	opi2	93.95	-92.15	-0.1267	-33.18	0.0252	-7.7654	-0.1586	113.26	65	67	372	345	81	930	166
349	Area	1	1 mon	opi3	99.47	-98.85	-0.0722	-35.56	0.0096	-8.7920	-0.0981	119.71	99	101	325	314	103	942	172
350	Area	1	1 mon	cmap	113.27	-113.07	-0.0934	-33.21	0.0179	-11.1463	-0.1338	133.50	159	166	339	334	179	1177	239
351	Area	1	1 mon	cmap2	116.90	-116.76	-0.0841	-33.58	0.0156	-11.8634	-0.1248	137.39	183	186	332	327	196	1224	248
352	Area	1	2 mon	reanalysis	105.33	-104.47	-0.1991	-17.77	0.0980	-16.2753	-0.3131	121.44	113	111	412	426	107	1169	238
353	Area	1	2 mon	gpcp	115.26	-114.12	-0.0079	-39.70	0.0001	-11.1057	-0.0122	134.81	170	172	226	222	185	975	178
354	Area	1	2 mon	gpcc	97.43	-96.67	0.0545	-28.75	0.0729	-89.2202	0.2701	111.93	85	91	123	44	75	418	43
355	Area	1	2 mon	gpcc trmm	187.87	-187.87	**0.1970**	-104.36	0.0670	-13.1416	0.2589	203.14	391	391	18	47	392	1239	253
356	Area	1	2 mon	ghcn cams grid	123.43	-123.37	0.0735	-38.84	0.0166	-20.4045	0.1288	135.35	215	218	97	117	186	833	146
357	Area	1	2 mon	gpi	160.72	-158.33	-0.0487	-39.91	0.0076	-16.7858	-0.0869	183.17	302	295	292	302	322	1513	330
358	Area	1	2 mon	trmm 3a46	240.08	-240.08	0.0040	-98.00	0.0000	-26.3888	0.0053	252.96	468	468	206	209	461	1812	400
359	Area	1	2 mon	trmm 3b43	178.84	-178.84	0.1439	-96.64	0.0336	-12.0736	0.1833	195.71	380	380	34	81	385	1260	260
360	Area	1	2 mon	ssmi	169.20	-168.81	0.0089	-50.91	0.0002	-14.9987	0.0123	186.36	358	359	200	205	349	1471	324
361	Area	1	2 mon	opi2	93.44	-92.14	-0.0028	-39.71	0.0000	-7.3572	-0.0035	110.77	59	65	219	215	70	628	91
362	Area	1	2 mon	opi3	99.11	-98.68	0.0532	-42.98	0.0052	-8.2782	0.0722	116.72	97	100	126	158	97	578	75
363	Area	1	2 mon	cmap	112.72	-112.59	0.0235	-41.77	0.0011	-10.5163	0.0333	130.21	157	165	180	186	154	842	149
364	Area	1	2 mon	cmap2	116.34	-116.23	0.0264	-42.08	0.0015	-11.2054	0.0386	134.05	180	183	173	182	182	900	160
365	Area	1	3 mon	reanalysis	105.05	-104.40	-0.0732	-26.91	0.0132	-15.6283	-0.1150	119.22	111	109	328	321	101	970	177
366	Area	1	3 mon	gpcp	115.45	-114.31	0.0689	-45.41	0.0113	-10.7327	0.1065	132.96	171	176	102	135	176	760	128
367	Area	1	3 mon	gpcc	97.91	-97.02	0.0681	-29.58	0.1170	-91.5094	0.3420	111.75	88	93	104	27	74	386	32
368	Area	1	3 mon	gpcc trmm	188.53	-188.53	**0.3360**	-118.53	0.1926	-12.6582	**0.4389**	200.32	392	392	5	12	389	1190	242
369	Area	1	3 mon	ghcn cams grid	123.29	-123.25	0.1284	-43.78	0.0507	-20.0453	0.2251	134.17	210	215	49	66	183	723	115
370	Area	1	3 mon	gpi	160.28	-158.50	0.0329	-49.10	0.0034	-16.2261	0.0587	180.71	296	297	159	164	309	1225	249
371	Area	1	3 mon	trmm 3a46	237.72	-237.72	**0.3019**	-139.29	0.1551	-24.4796	**0.3939**	245.94	464	464	6	21	453	1408	308
372	Area	1	3 mon	trmm 3b43	177.57	-177.57	**0.2769**	-108.52	0.1255	-11.4264	0.3542	191.39	376	376	10	26	372	1160	236
373	Area	1	3 mon	ssmi	169.03	-168.78	0.1097	-62.95	0.0229	-14.5376	0.1515	184.19	355	358	61	102	335	1211	246
374	Area	1	3 mon	opi2	93.54	-92.15	0.0742	-43.76	0.0086	-7.0976	0.0929	109.23	61	68	93	146	65	433	49
375	Area	1	3 mon	opi3	99.08	-98.58	0.1234	-47.12	0.0280	-7.9810	0.1674	115.03	96	98	54	90	90	428	47
376	Area	1	3 mon	cmap	112.50	-112.24	0.0970	-47.09	0.0186	-10.1192	0.1364	128.16	153	162	75	111	141	642	93
377	Area	1	3 mon	cmap2	116.09	-115.85	0.0945	-47.25	0.0188	-10.7968	0.1372	132.01	177	181	77	110	169	714	113
378	Area	1	4 mon	reanalysis	104.94	-104.44	0.0403	-35.16	0.0040	-15.0595	0.0634	117.19	109	110	143	162	98	622	87
379	Area	1	4 mon	gpcp	115.75	-114.43	0.0993	-47.69	0.0235	-10.5728	0.1534	132.28	175	178	73	101	170	697	105
380	Area	1	4 mon	gpcc	98.34	-97.43	0.0666	-29.45	0.1113	-91.7104	0.3336	112.15	91	96	107	29	77	400	37
381	Area	1	4 mon	gpcc trmm	190.11	-190.11	**0.3620**	-122.09	0.2207	-12.5792	**0.4698**	201.28	396	396	3	6	390	1191	243
382	Area	1	4 mon	ghcn cams grid	123.16	-123.11	0.1317	-44.02	0.0534	-20.0005	0.2310	133.98	209	214	42	63	181	709	108
383	Area	1	4 mon	gpi	160.10	-158.79	0.0878	-55.40	0.0245	-15.8616	0.1565	179.19	295	298	82	100	297	1072	202
384	Area	1	4 mon	trmm 3a46	237.54	-237.54	**0.4299**	-157.76	0.3152	-23.7153	**0.5614**	243.73	462	462	1	2	451	1378	297
385	Area	1	4 mon	trmm 3b43	179.54	-179.54	**0.3473**	-116.15	0.1918	-11.2544	**0.4380**	191.52	383	383	4	13	373	1156	235
386	Area	1	4 mon	ssmi	169.45	-169.45	0.1681	-70.05	0.0532	-14.3234	0.2308	183.42	360	361	27	64	326	1138	229
387	Area	1	4 mon	opi2	93.55	-91.85	0.0734	-43.71	0.0083	-7.0263	0.0913	108.94	62	63	98	147	61	431	48
388	Area	1	4 mon	opi3	98.66	-98.10	0.1369	-47.87	0.0336	-7.8110	0.1833	114.14	95	97	38	82	87	399	36
389	Area	1	4 mon	cmap	112.49	-112.25	0.1071	-47.84	0.0227	-10.0517	0.1505	128.00	152	163	62	103	140	620	86
390	Area	1	4 mon	cmap2	116.09	-115.85	0.0975	-47.50	0.0201	-10.7520	0.1417	131.99	176	180	74	108	168	706	107
391	Area	2	Yes	reanalysis	151.45	-149.40	-0.2411	-47.16	0.1701	-14.9478	-0.4125	183.17	265	260	445	455	323	1748	387
392	Area	2	Yes	gpcp	168.24	-167.62	-0.1122	-55.73	0.0231	-15.6045	-0.1521	186.91	349	346	359	342	354	1750	388
393	Area	2	Yes	gpcc	166.57	-166.57	-0.0534	-59.03	0.0067	-20.4119	-0.0820	182.71	335	338	304	293	319	1589	348
394	Area	2	Yes	gpcc trmm	196.55	-196.55	-0.0580	-69.96	0.0073	-18.0373	-0.0853	216.99	406	406	311	298	410	1831	407
395	Area	2	Yes	ghcn cams grid	179.18	-179.18	-0.1107	-54.60	0.0171	-16.9609	-0.1307	194.39	382	382	357	333	382	1836	408
396	Area	2	Yes	gpi	207.56	-207.42	0.0372	-72.16	0.0047	-26.5124	0.0687	225.13	429	431	149	160	429	1598	352
397	Area	2	Yes	trmm 3a46	232.09	-232.09	-0.1037	-56.09	0.0220	-26.6797	-0.1482	248.14	452	452	352	339	455	2050	448
398	Area	2	Yes	trmm 3b43	191.47	-191.47	-0.0396	-72.36	0.0033	-17.0866	-0.0573	211.50	398	398	278	270	397	1741	385
399	Area	2	Yes	ssmi	208.72	-208.72	-0.0129	-63.06	0.0003	-23.7821	-0.0187	223.46	436	436	234	231	423	1760	392
400	Area	2	Yes	opi2	145.24	-145.12	-0.1534	-55.04	0.0275	-11.5402	-0.1660	162.43	235	235	391	350	244	1455	320
401	Area	2	Yes	opi3	151.75	-151.60	-0.1578	-53.67	0.0337	-12.7045	-0.1836	169.80	268	278	394	361	263	1564	339
402	Area	2	Yes	cmap	165.81	-165.80	-0.1470	-52.50	0.0323	-15.0024	-0.1798	183.49	323	325	389	359	327	1723	381
403	Area	2	Yes	cmap2	169.43	-169.43	-0.1424	-52.44	0.0320	-15.6717	-0.1789	187.28	359	360	383	358	358	1818	401
404	Area	2	No	reanalysis	153.86	-150.05	-0.3750	-36.77	0.4069	-15.6369	-0.6379	188.21	287	266	467	468	362	1850	413

Northwest Brazil - Monthly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
405	**Area**	2	No	gpcp	168.92	-168.27	-0.2597	-41.55	0.1224	-16.0573	-0.3499	190.57	354	351	448	445	369	1967	439	
406	**Area**	2	No	gpcc	166.69	-166.69	-0.2032	-43.85	0.0995	-21.5753	-0.3155	185.73	337	340	415	430	345	1867	417	
407	**Area**	2	No	gpcc trmm	198.33	-198.33	-0.1171	-64.66	0.0312	-19.5123	-0.1767	219.78	410	411	364	356	418	1959	437	
408	**Area**	2	No	ghcn cams grid	179.83	-179.83	-0.2687	-37.53	0.0993	-17.3040	-0.3152	197.41	385	385	452	429	387	2038	447	
409	**Area**	2	No	gpi	208.26	-207.55	-0.1222	-49.90	0.0518	-28.0986	-0.2275	229.58	434	432	368	381	446	2061	450	
410	**Area**	2	No	trmm 3a46	234.40	-234.40	-0.2343	-37.58	0.1254	-30.9810	-0.3541	252.20	454	454	442	446	459	2255	462	
411	**Area**	2	No	trmm 3b43	193.24	-193.24	-0.1074	-66.37	0.0254	-18.5357	-0.1594	214 48	401	401	354	346	404	1906	426	
412	**Area**	2	No	ssmi	209.31	-209.26	-0.1790	-39.70	0.0677	-24.6769	-0.2602	227.06	438	438	404	398	441	2119	455	
413	**Area**	2	No	opi2	146.45	-145.77	-0.3400	-41.12	0.1338	-11.9242	-0.3658	165.88	242	236	466	450	248	1642	367	
414	**Area**	2	No	opi3	152.54	-152.25	-0.3203	-40.57	0.1372	-13.0814	-0.3705	173.15	273	283	462	451	274	1743	386	
415	**Area**	2	No	cmap	166.51	-166.45	-0.3123	-36.82	0.1441	-15.4145	-0.3797	186.95	332	335	461	452	356	1936	432	
416	**Area**	2	No	cmap2	170.08	-170.08	-0.3053	-36.40	0.1454	-16.0977	-0.3813	190.80	363	363	459	453	370	2008	444	
417	**Area**	2	1 mon	reanalysis	152.60	-150.10	-0.2457	-47.63	0.1752	-14.9101	-0.4185	184.04	274	268	446	456	331	1775	395	
418	**Area**	2	1 mon	gpcp	169.08	-168.20	-0.2098	-46.78	0.0799	-15.8640	-0.2826	189.48	357	350	422	406	367	1902	424	
419	**Area**	2	1 mon	gpcc	166.45	-166.43	-0.2151	-42.51	0.1118	-21.4779	-0.3343	185.86	330	334	427	437	346	1874	420	
420	**Area**	2	1 mon	gpcc trmm	198.45	-198.45	-0.1078	-67.16	0.0270	-19.7316	-0.1643	219.74	411	412	355	348	417	1943	433	
421	**Area**	2	1 mon	ghcn cams grid	180.01	-180.01	-0.1340	-52.80	0.0248	-16.9726	-0.1575	195.61	387	387	377	343	384	1878	421	
422	**Area**	2	1 mon	gpi	207.57	-206.99	-0.1404	-47.32	0.0680	-27.9675	-0.2607	229.56	430	430	381	399	445	2085	453	
423	**Area**	2	1 mon	trmm 3a46	237.25	-237.25	-0.3245	-24.02	0.2443	-32.5217	-0.4942	256.42	461	461	463	462	468	2315	468	
424	**Area**	2	1 mon	trmm 3b43	193.34	-193.34	-0.1325	-64.90	0.0395	-18.8925	-0.1987	215.25	402	402	376	370	409	1959	436	
425	**Area**	2	1 mon	ssmi	209.76	-209.53	-0.2115	-35.72	0.0951	-24.9621	-0.3083	227.94	439	439	423	423	442	2166	459	
426	**Area**	2	1 mon	opi2	146.09	-145.78	-0.2033	-51.99	0.0479	-11.6109	-0.2188	163.85	237	237	416	376	245	1511	329	
427	**Area**	2	1 mon	opi3	152.34	-152.22	-0.2145	-49.73	0.0616	-12.7953	-0.2481	171.38	272	282	426	389	267	1636	366	
428	**Area**	2	1 mon	cmap	166.39	-166.33	-0.2138	-46.78	0.0673	-15.0960	-0.2594	185.12	329	333	425	397	342	1826	405	
429	**Area**	2	1 mon	cmap2	170.00	-169.94	-0.2069	-46.71	0.0665	-15.7622	-0.2579	188.91	362	362	419	396	365	1904	425	
430	**Area**	2	2 mon	reanalysis	152.19	-149.97	-0.1399	-56.52	0.0568	-14.2684	-0.2382	180.35	271	265	380	384	305	1605	356	
431	**Area**	2	2 mon	gpcp	169.46	-168.53	-0.0698	-60.97	0.0088	-15.4009	-0.0941	186.92	361	356	323	311	355	1706	378	
432	**Area**	2	2 mon	gpcc	166.15	-166.15	-0.0676	-57.10	0.0112	-20.9089	-0.1059	182.68	327	332	321	319	318	1617	361	
433	**Area**	2	2 mon	gpcc trmm	201.63	-201.63	0.0234	-83.55	0.0012	-19.4266	0.0350	219.13	416	416	181	184	415	1612	359	
434	**Area**	2	2 mon	ghcn cams grid	180.47	-180.47	0.0117	-69.30	0.0002	-16.6291	0.0137	193.79	390	390	194	203	380	1557	338	
435	**Area**	2	2 mon	gpi	207.61	-206.78	-0.1224	-49.54	0.0521	-27.9140	-0.2282	228.96	432	429	369	382	444	2056	449	
436	**Area**	2	2 mon	trmm 3a46	239.64	-239.64	-0.1356	-55.01	0.0422	-31.8792	-0.2055	255.34	467	467	378	373	467	2152	457	
437	**Area**	2	2 mon	trmm 3b43	196.27	-196.27	0.0050	-81.30	0.0001	-18.5489	0.0074	214.37	405	405	204	207	403	1624	364	
438	**Area**	2	2 mon	ssmi	210.33	-209.87	-0.1316	-47.36	0.0369	-24.6042	-0.1920	226.84	442	442	375	365	440	2064	451	
439	**Area**	2	2 mon	opi2	146.10	-146.10	-0.0633	-63.04	0.0046	-11.3242	-0.0681	162.03	238	241	318	279	243	1319	276	
440	**Area**	2	2 mon	opi3	152.60	-152.60	-0.0389	-64.70	0.0020	-12.3692	-0.0449	168.76	275	284	277	256	256	1348	288	
441	**Area**	2	2 mon	cmap	166.66	-166.66	-0.0438	-63.67	0.0028	-14.6393	-0.0532	182.53	336	339	284	264	317	1540	335	
442	**Area**	2	2 mon	cmap2	170.28	-170.28	-0.0398	-63.92	0.0025	-15.2885	-0.0496	186.28	366	366	280	263	348	1623	362	
443	**Area**	2	3 mon	reanalysis	151.60	-149.70	-0.0731	-61.78	0.0156	-13.8939	-0.1249	177.88	267	262	327	328	292	1476	325	
444	**Area**	2	3 mon	gpcp	168.65	-168.51	0.0026	-68.03	0.0000	-15.1783	0.0035	185.39	352	354	209	211	343	1469	323	
445	**Area**	2	3 mon	gpcc	166.70	-166.70	-0.0223	-61.55	0.0012	-20.6673	-0.0346	182.17	338	341	250	243	315	1487	327	
446	**Area**	2	3 mon	gpcc trmm	204.08	-204.08	**0.2041**	-106.39	0.0912	-18.7582	0.3020	217.08	419	419	16	36	411	1301	270	
447	**Area**	2	3 mon	ghcn cams grid	180.45	-180.45	0.0831	-77.13	0.0095	-16.4753	0.0975	192.68	389	389	85	142	378	1383	299	
448	**Area**	2	3 mon	gpi	207.53	-206.70	-0.0360	-61.55	0.0045	-27.1980	-0.0671	226.59	428	428	276	278	438	1848	411	
449	**Area**	2	3 mon	trmm 3a46	238.53	-238.53	-0.0239	-73.81	0.0013	-30.5671	-0.0360	252.35	466	466	252	245	460	1889	423	
450	**Area**	2	3 mon	trmm 3b43	198.58	-198.58	0.1465	-98.52	0.0460	-18.0511	0.2146	213.16	412	413	32	70	400	1327	277	
451	**Area**	2	3 mon	ssmi	211.10	-210.79	-0.0251	-63.47	0.0014	-24.5587	-0.0369	225.72	444	444	256	246	432	1822	404	
452	**Area**	2	3 mon	opi2	146.18	-146.09	0.0384	-70.78	0.0017	-11.1166	0.0414	160.44	239	240	146	179	240	1044	196	
453	**Area**	2	3 mon	opi3	152.68	-152.61	0.0365	-70.87	0.0018	-12.2010	0.0422	167.47	277	285	152	178	253	1145	233	
454	**Area**	2	3 mon	cmap	166.57	-166.57	0.0279	-70.53	0.0012	-14.4570	0.0340	181.21	334	337	171	185	310	1337	284	
455	**Area**	2	3 mon	cmap2	170.20	-170.20	0.0343	-71.28	0.0018	-15.0889	0.0429	184.88	365	365	154	177	339	1400	304	
456	**Area**	2	4 mon	reanalysis	151.60	-149.17	-0.0291	-65.24	0.0025	-13.5446	-0.0496	175.85	266	259	263	261	282	1331	279	
457	**Area**	2	4 mon	gpcp	169.06	-168.49	0.0592	-73.58	0.0064	-14.9622	0.0799	184.22	356	353	116	155	336	1316	273	
458	**Area**	2	4 mon	gpcc	166.75	-166.75	0.0561	-69.12	0.0077	-20.6160	0.0878	180.52	339	342	119	150	307	1257	257	
459	**Area**	2	4 mon	gpcc trmm	204.88	-204.88	0.0965	-93.11	0.0202	-18.9711	0.1422	220.66	420	420	76	107	420	1443	317	
460	**Area**	2	4 mon	ghcn cams grid	180.39	-180.39	0.1236	-81.55	0.0211	-16.3456	0.1452	192.03	388	388	53	105	377	1311	272	
461	**Area**	2	4 mon	gpi	207.08	-206.55	0.0444	-72.48	0.0069	-26.8061	0.0834	224.21	427	427	141	152	427	1574	342	
462	**Area**	2	4 mon	trmm 3a46	237.15	-237.15	0.1117	-95.23	0.0279	-28.9580	0.1669	248.78	460	460	59	91	456	1526	333	
463	**Area**	2	4 mon	trmm 3b43	199.46	-199.46	0.1139	-94.65	0.0276	-17.9598	0.1661	215.00	414	414	58	93	406	1385	302	
464	**Area**	2	4 mon	ssmi	210.81	-210.77	0.0779	-78.15	0.0131	-24.0744	0.1147	223.78	443	443	88	127	426	1527	334	
465	**Area**	2	4 mon	opi2	146.32	-145.96	0.1043	-75.78	0.0126	-10.9406	0.1124	159.33	241	239	66	133	236	915	163	
466	**Area**	2	4 mon	opi3	152.62	-152.62	0.1040	-76.46	0.0145	-12.0146	0.1203	166.34	276	286	67	123	250	1002	185	
467	**Area**	2	4 mon	cmap	166.56	-166.56	0.0938	-76.90	0.0130	-14.2519	0.1142	180.07	333	336	78	130	301	1178	240	
468	**Area**	2	4 mon	cmap2	170.18	-170.18	0.1007	-77.95	0.0159	-14.8708	0.1260	183.69	364	364	70	118	330	1246	254	

Northwest Brazil - Yearly Surface

Ol	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	*Linear*	*1*	*Yes*	*reanalysis*	*99.08*	*-99.08*	*-0.2249*	*-10.36*	*0.0823*	*-29.0088*	*-0.2868*	*105.14*	*34*	*34*	*73*	*89*	*34*	*264*	*41*	Plot
2	Linear	1	Yes	gpcp	107.36	-107.36	-0.4908	2.91	0.1765	-20.9288	-0.4201	113.92	48	48	107	116	55	374	77	
3	Linear	1	Yes	gpcc	95.65	-95.65	0.0849	-29.74	0.0421	-246.4599	0.2052	96.80	29	29	38	23	22	141	12	
4	Linear	1	Yes	gpcc trmm	176.95	-176.95	-0.9969	22.42	0.8217	-87.6108	-0.9065	180.53	125	125	150	153	125	678	142	
5	Linear	1	Yes	ghcn cams grid	117.61	-117.61	-0.2912	-0.31	0.0461	-37.8001	-0.2147	120.54	65	65	80	77	63	350	72	
6	Linear	1	Yes	gpi	151.57	-151.57	**0.4707**	-91.81	0.1153	-33.9191	**0.3396**	153.86	96	96	4	10	91	297	53	
7	Linear	1	Yes	trmm 3a46	208.96	-208.96	-0.5175	-2.86	0.2237	-103.8516	-0.4730	211.71	150	150	110	126	149	685	143	
8	Linear	1	Yes	trmm 3b43	163.05	-163.05	-0.3727	-29.53	0.0290	-33.2766	-0.1702	166.40	104	104	93	63	104	468	100	
9	Linear	1	Yes	ssmi	160.34	-160.34	**0.2314**	-69.68	0.0270	-31.7848	0.1644	163.54	101	101	14	32	101	349	71	
10	Linear	1	Yes	opi2	84.86	-84.86	-0.5687	-4.12	0.2230	-13.6412	-0.4722	93.09	16	16	123	125	17	297	52	
11	Linear	1	Yes	opi3	91.34	-91.34	-0.4533	-7.12	0.1125	-15.1415	-0.3354	97.74	22	22	103	99	27	273	45	
12	Linear	1	Yes	cmap	105.54	-105.54	-0.5683	7.62	0.1912	-20.0878	-0.4373	111.71	42	42	122	118	49	373	76	
13	Linear	1	Yes	cmap2	109.17	-109.17	-0.5599	9.04	0.2003	-21.4911	-0.4475	115.37	53	53	119	121	57	403	89	
14	Linear	1	No	reanalysis	99.57	-99.57	-0.2214	-11.11	0.0868	-31.8546	-0.2946	105.44	35	35	71	91	36	268	43	
15	Linear	1	No	gpcp	107.64	-107.64	-0.5279	5.38	0.1992	-20.5609	-0.4463	114.39	49	49	111	120	56	385	81	
16	Linear	1	No	gpcc	92.93	-92.93	-0.0390	-18.10	0.0393	-999.0000	-0.1983	94.25	27	27	60	74	20	208	28	
17	Linear	1	No	gpcc trmm	180.61	-180.61	-0.5379	-27.06	0.6321	-238.8509	-0.7950	182.74	132	132	114	149	130	657	140	
18	Linear	1	No	ghcn cams grid	118.11	-118.11	-0.2959	-0.39	0.0518	-41.5185	-0.2277	120.91	67	67	82	79	65	360	75	
19	Linear	1	No	gpi	150.91	-150.91	**0.5077**	-95.32	0.1218	-30.4904	**0.3490**	153.34	95	95	3	8	90	291	50	
20	Linear	1	No	trmm 3a46	212.86	-212.86	-0.2675	-40.71	0.1967	-353.2092	-0.4436	214.44	152	152	76	119	151	650	138	
21	Linear	1	No	trmm 3b43	165.98	-165.98	0.1673	-84.98	0.0068	-39.8911	0.0825	168.39	111	111	24	41	108	395	85	
22	Linear	1	No	ssmi	160.79	-160.79	**0.3336**	-82.18	0.0524	-29.6978	0.2289	163.91	102	102	8	19	102	333	65	
23	Linear	1	No	opi2	85.14	-85.14	-0.6040	-2.58	0.2453	-13.4280	-0.4952	93.57	17	17	126	132	18	310	58	
24	Linear	1	No	opi3	91.62	-91.62	-0.4843	-5.60	0.1252	-14.8826	-0.3538	98.18	24	24	106	103	28	285	48	
25	Linear	1	No	cmap	105.82	-105.82	-0.6255	11.46	0.2259	-19.7520	-0.4753	112.22	43	43	130	127	51	394	84	
26	Linear	1	No	cmap2	109.44	-109.44	-0.6197	13.29	0.2393	-21.1323	-0.4891	115.89	54	54	129	131	58	426	91	
27	*Linear*	*2*	*Yes*	*reanalysis*	*145.71*	*-145.71*	*-0.2846*	*-39.89*	*0.1100*	*-24.2201*	*-0.3316*	*155.70*	*84*	*84*	*79*	*98*	*94*	*439*	*94*	Plot
28	Linear	2	Yes	gpcp	163.94	-163.94	-0.5094	-12.09	0.0817	-28.5960	-0.2859	168.66	106	106	108	87	110	517	115	
29	Linear	2	Yes	gpcc	166.07	-166.07	-0.2459	-38.87	0.0354	-85.7825	-0.1882	167.89	112	112	74	68	107	473	102	
30	Linear	2	Yes	gpcc trmm	182.14	-182.14	-1.0006	57.25	0.5187	-53.6166	-0.7202	186.56	133	133	152	145	133	696	146	
31	Linear	2	Yes	ghcn cams grid	175.49	-175.49	-0.5536	-1.24	0.0351	-32.2825	-0.1873	178.86	123	123	117	67	124	554	129	
32	Linear	2	Yes	gpi	203.97	-203.97	0.1890	-90.05	0.0362	-109.2188	0.1903	205.50	143	143	22	27	143	478	106	
33	Linear	2	Yes	trmm 3a46	208.49	-208.49	-0.6821	53.09	0.3750	-90.8658	-0.6124	211.87	149	149	138	141	150	727	152	
34	Linear	2	Yes	trmm 3b43	177.06	-177.06	-1.2271	78.11	0.4747	-50.2838	-0.6890	180.78	126	126	154	143	126	675	141	
35	Linear	2	Yes	ssmi	200.40	-200.40	0.0879	-70.63	0.0085	-113.5349	0.0920	202.09	141	141	37	38	141	498	109	
36	Linear	2	Yes	opi2	141.43	-141.43	-0.2996	-39.93	0.0309	-21.3608	-0.1757	146.60	79	79	83	65	82	388	82	
37	Linear	2	Yes	opi3	147.92	-147.92	-0.6502	-8.34	0.0945	-23.2769	-0.3075	152.76	88	88	134	95	89	494	108	
38	Linear	2	Yes	cmap	162.12	-162.12	-0.5637	-7.64	0.0748	-27.8445	-0.2736	166.51	103	103	120	83	105	514	113	
39	Linear	2	Yes	cmap2	165.74	-165.74	-0.5321	-8.84	0.0715	-29.1001	-0.2673	170.09	109	109	112	82	116	528	120	
40	Linear	2	No	reanalysis	147.52	-147.52	-0.3897	-33.03	0.5431	-65.9858	-0.7369	156.36	87	87	95	146	96	511	111	
41	Linear	2	No	gpcp	165.74	-165.74	-0.4282	-22.05	0.1521	-76.8036	-0.3900	168.51	110	110	99	114	109	542	123	
42	Linear	2	No	gpcc	164.93	-164.93	-0.6641	4.97	0.2570	-84.6282	-0.5069	167.25	108	108	137	135	106	594	135	
43	Linear	2	No	gpcc trmm	197.27	-197.27	-0.3334	-37.72	0.1670	-179.6623	-0.4087	199.21	139	139	87	115	138	618	137	
44	Linear	2	No	ghcn cams grid	177.30	-177.30	-0.3193	-29.32	0.0307	-86.6197	-0.1753	178.83	127	127	84	64	123	525	117	
45	Linear	2	No	gpi	206.08	-206.08	**0.2699**	-103.51	0.0830	-125.2622	**0.2882**	207.33	145	145	10	13	145	458	97	
46	Linear	2	No	trmm 3a46	228.66	-228.66	-0.7355	41.22	0.9983	-249.5580	-0.9992	231.24	154	154	144	156	155	763	155	
47	Linear	2	No	trmm 3b43	192.18	-192.18	-0.5366	-16.13	0.2633	-170.0357	-0.5132	193.83	135	135	113	136	135	654	139	
48	Linear	2	No	ssmi	206.75	-206.75	0.0313	-68.93	0.0010	-108.2371	0.0310	208.59	146	146	46	50	146	534	122	
49	Linear	2	No	opi2	143.24	-143.24	-0.1997	-49.54	0.0361	-57.4807	-0.1901	146.10	80	80	70	70	80	380	78	
50	Linear	2	No	opi3	149.72	-149.72	-0.4487	-27.19	0.1185	-62.5345	-0.3443	152.28	91	91	100	101	88	471	101	
51	Linear	2	No	cmap	163.92	-163.92	-0.4712	-18.58	0.1377	-74.8265	-0.3711	166.36	105	105	105	107	103	525	116	
52	Linear	2	No	cmap2	167.54	-167.54	-0.4518	-18.87	0.1357	-78.1769	-0.3684	169.99	116	116	101	106	115	554	128	
53	Point	1	Yes	reanalysis	**77.15**	**-77.15**	0.0151	-5.81	0.0024	-114.7806	0.0490	**81.18**	7	7	51	48	9	122	9	
54	Point	1	Yes	gpcp	**78.82**	**-78.82**	-0.0269	-2.86	0.0064	-136.1613	-0.0800	**81.97**	11	11	59	59	11	151	15	
55	Point	1	Yes	gpcc	**78.09**	**-78.09**	0.0793	-11.78	0.0434	-195.9986	0.2083	**79.48**	10	10	40	22	6	88	2	
56	Point	1	Yes	gpcc trmm	106.35	-106.35	-0.4092	34.35	0.6617	-154.1656	-0.8135	109.27	45	45	98	151	42	381	79	
57	Point	1	Yes	ghcn cams grid	95.58	-95.58	-0.0861	3.08	0.0261	-161.8060	-0.1614	97.12	28	28	68	61	24	209	29	
58	Point	1	Yes	gpi	119.48	-119.48	0.0199	-8.83	0.0031	-328.4046	0.0559	121.08	70	70	49	46	66	301	55	
59	Point	1	Yes	trmm 3a46	140.93	-140.93	-0.0041	-4.56	0.0001	-213.2685	-0.0079	142.53	78	78	54	54	78	342	68	
60	Point	1	Yes	trmm 3b43	103.18	-103.18	-0.3500	28.14	0.3276	-173.5189	-0.5723	104.86	38	38	91	139	33	339	66	
61	Point	1	Yes	ssmi	124.30	-124.30	0.0324	-10.16	0.0083	-303.6189	0.0909	126.05	75	75	45	39	73	307	56	
62	Point	1	Yes	opi2	**56.32**	**-56.32**	-0.0250	-3.57	0.0052	-73.4967	-0.0721	**60.41**	1	1	58	58	1	119	6	
63	Point	1	Yes	opi3	**62.80**	**-62.80**	-0.0121	-4.15	0.0010	-87.2892	-0.0311	**65.76**	3	3	55	55	3	119	7	
64	Point	1	Yes	cmap	**77.01**	**-77.01**	-0.0145	-3.81	0.0015	-128.4094	-0.0387	**79.62**	6	6	57	57	7	133	10	
65	Point	1	Yes	cmap2	**80.63**	**-80.63**	-0.0136	-3.82	0.0014	-140.6336	-0.0378	**83.30**	13	13	56	56	13	151	16	
66	Point	1	No	reanalysis	**77.64**	**-77.64**	0.0186	-6.55	0.0111	-354.3546	0.1053	**81.38**	9	9	50	36	10	114	4	
67	Point	1	No	gpcp	**79.10**	**-79.10**	-0.0640	-0.40	0.0787	-299.0052	-0.2806	**82.27**	12	12	65	84	12	185	22	
68	Point	1	No	gpcc	**75.38**	**-75.38**	-0.0446	-0.14	0.1379	-999.0000	-0.3713	**76.98**	5	5	63	108	5	186	23	
69	Point	1	No	gpcc trmm	110.01	-110.01	0.0497	-15.13	0.0334	-549.7564	0.1828	111.35	55	55	43	31	47	231	36	
70	Point	1	No	ghcn cams grid	96.08	-96.08	-0.0908	3.01	0.0886	-500.4576	-0.2977	97.42	30	30	69	92	26	247	38	
71	Point	1	No	gpi	118.82	-118.82	0.0568	-12.34	0.0417	-527.7544	0.2042	120.24	69	69	42	25	62	267	42	
72	Point	1	No	trmm 3a46	144.82	-144.82	**0.2460**	-42.41	0.8780	-859.8824	**0.9370**	145.53	83	83	12	1	79	258	39	
73	Point	1	No	trmm 3b43	106.11	-106.11	0.1900	-27.32	0.2422	-452.4068	**0.4921**	106.72	44	44	21	5	39	153	17	
74	Point	1	No	ssmi	124.75	-124.75	0.1346	-22.66	0.2416	-513.7695	**0.4916**	126.07	76	76	30	6	74	262	40	
75	Point	1	No	opi2	**56.60**	**-56.60**	-0.0603	-2.03	0.0658	-162.2446	-0.2565	**60.69**	2	2	64	81	2	151	14	
76	Point	1	No	opi3	**63.08**	**-63.08**	-0.0431	-2.64	0.0266	-191.9625	-0.1631	**65.98**	4	4	61	62	4	135	11	
77	Point	1	No	cmap	**77.28**	**-77.28**	-0.0716	0.04	0.0796	-282.4776	-0.2822	**79.97**	8	8	66	85	8	175	21	
78	Point	1	No	cmap2	**80.91**	**-80.91**	-0.0734	0.43	0.0904	-309.3374	-0.3006	**83.68**	14	14	67	93	14	202	27	
79	Point	2	Yes	reanalysis	88.36	-88.36	0.1353	-17.12	0.0360	-13.2127	0.1898	97.07	19	19	29	28	23	118	5	
80	Point	2	Yes	gpcp	106.59	-106.59	0.0112	-7.10	0.0001	-17.5815	0.0075	110.99	47	47	53	53	45	245	37	
81	Point	2	Yes	gpcc	112.16	-112.16	0.1647	-26.88	0.0353	-86.8956	0.1878	113.38	59	59	25	29	54	226	34	
82	Point	2	Yes	gpcc trmm	107.74	-107.74	-0.3967	59.38	0.1297	-30.4751	-0.3602	112.25	50	50	96	104	52	352	73	
83	Point	2	Yes	ghcn cams grid	118.14	-118.14	0.1300	-20.56	0.0028	-21.1752	0.0529	121.25	68	68	32	47	67	282	47	
84	Point	2	Yes	gpi	146.32	-146.32	0.0407	-11.56	0.0020	-66.1328	0.0442	148.64	86	86	44	49	83	348	70	
85	Point	2	Yes	trmm 3a46	134.44	-134.44	0.1907	-8.58	0.0720	-92.0909	0.2683	136.07	77	77	20	17	77	268	44	
86	Point	2	Yes	trmm 3b43	102.65	-102.65	-0.3312	49.86	0.0551	-27.1573	-0.2346	106.17	37	37	86	80	38	278	46	
87	Point	2	Yes	ssmi	144.16	-144.16	0.1966	-29.86	0.0420	-58.3811	0.2049	146.22	82	82	19	24	81	288	49	
88	Point	2	Yes	opi2	**84.08**	**-84.08**	0.1286	-16.03	0.0083	-11.0338	0.0908	89.32	15	15	33	40	16	119	8	
89	Point	2	Yes	opi3	90.57	-90.57	0.0225	-7.88	0.0002	-12.6809	0.0128	95.24	21	21	48	51	21	162	18	
90	Point	2	Yes	cmap	104.77	-104.77	0.1260	-18.43	0.0054	-16.8110	0.0737	108.67	41	41	34	43	41	200	26	
91	Point	2	Yes	cmap2	108.39	-108.39	0.1302	-19.31	0.0062	-17.9909	0.0788	112.21	51	51	31	42	50	225	33	
92	Point	2	No	reanalysis	90.17	-90.17	0.0302	-10.27	0.0091	-71.4640	0.0952	97.40	20	20	47	37	25	149	13	
93	Point	2	No	gpcp	108.39	-108.39	0.0923	-17.07	0.0197	-91.6190	0.1404	110.12	52	52	36	34	43	217	30	
94	Point	2	No	gpcc	111.02	-111.02	-0.2536	16.97	0.0980	-100.9758	-0.3130	112.86	57	57	75	97	53	339	67	
95	Point	2	No	gpcc trmm	122.87	-122.87	**0.2706**	-35.59	0.3391	-213.9324	**0.5823**	123.77	73	73	9	3	72	230	35	
96	Point	2	No	ghcn cams grid	119.95	-119.95	**0.3643**	-48.64	0.1115	-110.1173	**0.3339**	120.62	71	71	5	12	64	223	31	
97	Point	2	No	gpi	148.42	-148.42	0.1216	-25.02	0.0503	-195.7813	0.2244	149.79	90	90	35	20	86	321	61	
98	Point	2	No	trmm 3a46	154.61	-154.61	0.1373	-20.45	0.2692	-877.3009	**0.5188**	155.62	98	98	28	4	93	321	62	
99	Point	2	No	trmm 3b43	117.78	-117.78	**0.3593**	-44.37	0.3639	-195.4269	**0.6032**	118.32	66	66	6	2	59	199	25	
100	Point	2	No	ssmi	150.51	-150.51	0.1401	-28.17	0.0548	-163.7706	0.2341	151.91	94	94	27	18	87	320	60	
101	*Point*	*2*	*No*	*opi2*	*85.89*	*-85.89*	***0.2285***	*-25.64*	*0.1319*	*-57.7123*	***0.3631***	***87.68***	*18*	*18*	*15*	*7*	*15*	*73*	*1*	Plot

Northwest Brazil - Yearly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
102	Point	2	No	opi3	92.37	-92.37	0.2240	-26.73	0.0824	-66.0747	**0.2870**	93.71	26	26	16	15	19	102	3	
103	Point	2	No	cmap	106.57	-106.57	0.2185	-29.37	0.0826	-87.7221	**0.2874**	107.78	46	46	17	14	40	163	19	
104	Point	2	No	cmap2	110.19	-110.19	0.2105	-29.34	0.0821	-93.8192	0.2865	111.42	56	56	18	16	48	194	24	
105	Area	1	Yes	reanalysis	104.11	-104.11	-0.2819	-11.26	0.0946	-23.3825	-0.3075	110.81	39	39	78	94	44	294	51	
106	Area	1	Yes	gpcp	113.89	-113.89	-0.6067	4.96	0.1909	-16.6561	-0.4369	121.52	61	61	127	117	68	434	92	
107	Area	1	Yes	gpcc	99.74	-99.74	0.0797	-33.46	0.0351	-252.4498	0.1873	100.87	36	36	39	30	31	172	20	
108	Area	1	Yes	gpcc trmm	193.44	-193.44	-1.1186	18.08	0.8424	-85.0314	-0.9178	197.12	137	137	153	154	137	718	151	
109	Area	1	Yes	ghcn cams grid	122.68	-122.68	-0.3396	-0.98	0.0459	-30.0756	-0.2142	126.11	72	72	88	76	75	383	80	
110	Area	1	Yes	gpi	158.86	-158.86	**0.5625**	-109.47	0.1147	-25.8833	**0.3387**	161.76	100	100	2	11	100	313	59	
111	Area	1	Yes	trmm 3a46	225.35	-225.35	-0.6584	-0.10	0.2889	-96.2992	-0.5375	228.35	153	153	135	137	153	731	153	
112	Area	1	Yes	trmm 3b43	176.89	-176.89	-0.3619	-44.41	0.0193	-27.6096	-0.1389	180.90	124	124	92	60	127	527	119	
113	Area	1	Yes	ssmi	168.55	-168.55	**0.2500**	-80.09	0.0221	-24.5160	0.1485	172.58	120	120	11	33	119	403	90	
114	Area	1	Yes	opi2	91.38	-91.38	-0.6966	-4.06	0.2367	-11.1527	-0.4866	100.81	23	23	140	129	30	345	69	
115	Area	1	Yes	opi3	97.87	-97.87	-0.5647	-7.19	0.1235	-12.2770	-0.3515	105.37	32	32	121	102	35	322	63	
116	Area	1	Yes	cmap	112.07	-112.07	-0.7043	10.90	0.2078	-16.0263	-0.4559	119.33	58	58	141	122	60	439	93	
117	Area	1	Yes	cmap2	115.69	-115.69	-0.6939	12.67	0.2177	-17.0831	-0.4665	122.98	63	63	139	124	70	459	98	
118	Area	1	No	reanalysis	104.60	-104.60	-0.2785	-12.00	0.0974	-24.8999	-0.3121	111.14	40	40	77	96	46	299	54	
119	Area	1	No	gpcp	114.16	-114.16	-0.6438	7.43	0.2087	-16.2834	-0.4568	122.01	62	62	133	123	69	449	95	
120	Area	1	No	gpcc	97.02	-97.02	-0.0441	-21.82	0.0365	-817.5961	-0.1910	98.31	31	31	62	71	29	224	32	
121	Area	1	No	gpcc trmm	197.10	-197.10	-0.6596	-31.40	0.7024	-209.9839	-0.8381	199.36	138	138	136	152	139	703	149	
122	Area	1	No	ghcn cams grid	123.17	-123.17	-0.3442	-1.06	0.0498	-32.0342	-0.2232	126.49	74	74	89	78	76	391	83	
123	Area	1	No	gpi	158.20	-158.20	**0.5994**	-112.98	0.1193	-23.4802	**0.3454**	161.30	99	99	1	9	99	307	57	
124	Area	1	No	trmm 3a46	229.24	-229.24	-0.4084	-37.95	0.3098	-276.7720	-0.5566	231.07	155	155	97	138	154	699	147	
125	Area	1	No	trmm 3b43	179.82	-179.82	0.1780	-99.86	0.0053	-31.8926	0.0725	182.92	130	130	23	44	132	459	99	
126	Area	1	No	ssmi	169.00	-169.00	**0.3523**	-92.59	0.0410	-23.0115	0.2025	173.00	121	121	7	26	122	397	86	
127	Area	1	No	opi2	91.66	-91.66	-0.7319	-2.52	0.2538	-10.9214	-0.5038	101.33	25	25	143	134	32	359	74	
128	Area	1	No	opi3	98.14	-98.14	-0.5957	-5.67	0.1335	-12.0070	-0.3653	105.85	33	33	125	105	37	333	64	
129	Area	1	No	cmap	112.35	-112.35	-0.7614	14.74	0.2359	-15.6799	-0.4856	119.86	60	60	147	128	61	456	96	
130	Area	1	No	cmap2	115.97	-115.97	-0.7537	16.92	0.2493	-16.7143	-0.4993	123.52	64	64	145	133	71	477	105	
131	Area	2	Yes	reanalysis	148.24	-148.24	-0.3479	-37.20	0.1473	-22.5478	-0.3838	158.94	89	89	90	111	97	476	104	
132	Area	2	Yes	gpcp	166.47	-166.47	-0.5390	-11.63	0.0820	-26.4170	-0.2864	171.50	114	114	115	88	118	549	126	
133	Area	2	Yes	gpcc	167.83	-167.83	-0.2943	-35.68	0.0400	-69.0065	-0.1999	169.95	117	117	81	75	114	504	110	
134	Area	2	Yes	gpcc trmm	183.20	-183.20	-1.2969	91.63	0.6476	-40.5366	-0.8048	188.70	134	134	155	150	134	707	150	
135	Area	2	Yes	ghcn cams grid	178.02	-178.02	-0.6139	2.99	0.0386	-29.7701	-0.1966	181.69	128	128	128	73	129	586	134	
136	Area	2	Yes	gpi	205.44	-205.44	0.1526	-86.40	0.0181	-85.0590	0.1345	207.30	144	144	26	35	144	493	107	
137	Area	2	Yes	trmm 3a46	209.95	-209.95	-0.9464	92.72	0.4344	-55.6857	-0.6591	214.55	151	151	149	142	152	745	154	
138	Area	2	Yes	trmm 3b43	178.12	-178.12	-1.6263	122.78	0.6198	-38.0055	-0.7873	182.86	129	129	156	148	131	693	145	
139	Area	2	Yes	ssmi	201.31	-201.31	0.0692	-68.88	0.0039	-85.7705	0.0627	203.32	142	142	41	45	142	512	112	
140	Area	2	Yes	opi2	143.96	-143.96	-0.3242	-40.54	0.0324	-19.8269	-0.1800	149.48	81	81	85	66	85	398	88	
141	Area	2	Yes	opi3	150.45	-150.45	-0.7578	-1.77	0.1150	-21.6021	-0.3392	155.72	93	93	146	100	95	527	118	
142	Area	2	Yes	cmap	164.65	-164.65	-0.6343	-3.21	0.0849	-25.7482	-0.2914	169.40	107	107	132	90	113	549	125	
143	Area	2	Yes	cmap2	168.27	-168.27	-0.5942	-5.01	0.0799	-26.8886	-0.2826	172.97	118	118	124	86	121	567	131	
144	Area	2	No	reanalysis	150.05	-150.05	-0.4530	-30.35	0.6004	-56.0371	-0.7748	159.53	92	92	102	147	98	531	121	
145	Area	2	No	gpcp	168.27	-168.27	-0.4579	-21.60	0.1423	-64.7628	-0.3772	171.29	119	119	104	109	117	568	132	
146	Area	2	No	gpcc	166.69	-166.69	-0.7126	8.16	0.2386	-69.7401	-0.4885	169.27	115	115	142	130	112	614	136	
147	Area	2	No	gpcc trmm	198.33	-198.33	-0.6296	-3.34	0.3707	-113.5518	-0.6088	201.08	140	140	131	140	140	691	144	
148	Area	2	No	ghcn cams grid	179.83	-179.83	-0.3796	-25.09	0.0355	-72.9132	-0.1885	181.60	131	131	94	69	128	553	127	
149	Area	2	No	gpi	207.55	-207.55	**0.2335**	-99.87	0.0495	-101.1752	0.2224	209.07	147	147	13	21	147	475	103	
150	Area	2	No	trmm 3a46	230.12	-230.12	-0.9998	80.85	0.9722	-133.6987	-0.9860	233.55	156	156	151	155	156	774	156	
151	Area	2	No	trmm 3b43	193.24	-193.24	-0.9358	28.54	0.4984	-107.4307	-0.7060	195.64	136	136	148	144	136	700	148	
152	Area	2	No	ssmi	207.66	-207.66	0.0127	-67.19	0.0001	-87.2833	0.0112	209.77	148	148	52	52	148	548	124	
153	Area	2	No	opi2	145.77	-145.77	-0.2243	-50.15	0.0373	-48.6970	-0.1931	148.91	85	85	72	72	84	398	87	
154	Area	2	No	opi3	152.25	-152.25	-0.5562	-20.62	0.1490	-52.9719	-0.3861	155.18	97	97	118	113	92	517	114	
155	Area	2	No	cmap	166.45	-166.45	-0.5418	-14.15	0.1489	-63.1562	-0.3859	169.19	113	113	116	112	111	565	130	
156	Area	2	No	cmap2	170.08	-170.08	-0.5139	-15.04	0.1436	-65.9340	-0.3790	172.81	122	122	109	110	120	583	133	

Rondonia - Monthly Atmospheric

OI	Moist Flux	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	Method 1	1	Yes	reanalysis	60.95	49.77	0.6329	-45.96	0.1270	-0.5538	0.3564	77.66	2	10	4	3	2	21	2	
2	Method 1	1	Yes	gpcp	101.11	65.92	-0.1258	-25.91	0.0251	-3.0062	-0.1585	130.66	19	17	43	43	21	143	31	
3	Method 1	1	Yes	gpcc	104.81	78.61	-0.2134	-41.01	0.0919	-5.0020	-0.3031	132.17	23	21	48	50	22	164	38	
4	Method 1	1	Yes	gpcc trmm	89.15	78.28	0.1266	-40.19	0.0297	-3.0804	0.1725	121.50	9	20	22	18	13	82	7	
5	Method 1	1	Yes	ghcn cams grid	112.68	82.73	-0.1995	-30.39	0.0761	-4.4450	-0.2758	145.02	25	22	44	49	28	168	40	
6	Method 1	1	Yes	gpi	158.42	143.95	-0.0425	-39.12	0.0064	-9.3782	-0.0799	196.89	45	42	36	36	48	207	49	
7	Method 1	1	Yes	trmm 3a46	124.83	114.26	0.0236	-38.51	0.0017	-6.4520	0.0406	163.73	34	31	31	30	35	161	37	
8	Method 1	1	Yes	trmm 3b43	90.98	77.45	0.1122	-39.42	0.0253	-3.2451	0.1591	122.89	10	19	23	22	14	88	8	
9	Method 1	1	Yes	ssmi	130.77	115.31	-0.0373	-39.92	0.0034	-6.0829	-0.0584	165.32	36	32	34	34	36	172	43	
10	Method 1	1	Yes	opi2	94.92	57.16	-0.1035	-27.04	0.0151	-2.4819	-0.1229	120.67	12	11	40	38	12	113	18	
11	Method 1	1	Yes	opi3	100.03	64.47	-0.1017	-26.34	0.0169	-2.9569	-0.1299	128.63	17	15	39	39	19	129	24	
12	Method 1	1	Yes	cmap	99.29	64.73	-0.1061	-26.52	0.0176	-2.8919	-0.1326	127.74	16	16	41	40	17	130	27	
13	Method 1	1	Yes	cmap2	98.18	62.76	-0.1096	-26.62	0.0186	-2.8282	-0.1364	126.69	15	14	42	41	15	127	23	
14	Method 1	2	Yes	reanalysis	119.09	116.90	0.6341	-111.59	0.3272	-1.4635	0.5720	141.48	29	35	3	2	25	94	10	
15	Method 1	2	Yes	gpcp	147.84	140.77	0.1548	-108.32	0.0229	-3.0988	0.1513	182.50	42	41	21	23	41	168	41	
16	Method 1	2	Yes	gpcc	163.80	163.35	0.0243	-128.81	0.0008	-6.3792	0.0276	195.52	48	48	30	32	47	205	48	
17	Method 1	2	Yes	gpcc trmm	162.74	161.77	0.0707	-120.89	0.0110	-8.7065	0.1050	193.05	47	47	26	26	45	191	46	
18	Method 1	2	Yes	ghcn cams grid	150.34	144.04	0.1588	-108.99	0.0254	-3.2401	0.1593	185.62	43	43	19	21	44	170	42	
19	Method 1	2	Yes	gpi	231.69	230.90	0.0592	-132.37	0.0094	-11.8996	0.0967	268.46	52	52	29	28	52	213	50	
20	Method 1	2	Yes	trmm 3a46	198.13	195.40	-0.0381	-117.47	0.0046	-13.0592	-0.0679	235.91	50	50	35	35	50	220	52	
21	Method 1	2	Yes	trmm 3b43	162.40	161.03	0.0650	-120.59	0.0096	-8.7324	0.0980	193.31	46	46	28	27	46	193	47	
22	Method 1	2	Yes	ssmi	209.76	208.89	0.0180	-135.03	0.0007	-10.9047	0.0267	243.35	51	51	33	33	51	219	51	
23	Method 1	2	Yes	opi2	140.12	133.08	0.2004	-108.53	0.0338	-2.6840	0.1838	173.02	37	37	11	16	37	138	30	
24	Method 1	2	Yes	opi3	146.66	139.77	0.1755	-108.94	0.0293	-3.0223	0.1713	180.79	40	40	18	19	40	157	35	
25	Method 1	2	Yes	cmap	145.64	139.06	0.1827	-109.08	0.0306	-2.9616	0.1750	179.42	39	39	15	17	39	149	32	
26	Method 1	2	Yes	cmap2	144.30	137.12	0.1783	-108.57	0.0289	-2.8998	0.1701	178.01	38	38	17	20	38	151	33	
27	*Method 2*	*1*	*Yes*	*reanalysis*	*54.38*	*18.55*	*0.6653*	*-17.84*	*0.1120*	*0.0110*	*0.3346*	*68.47*	*1*	*2*	*2*	*4*	*1*	*10*	*1*	Plot
28	Method 2	1	Yes	gpcp	93.71	33.99	-0.2113	6.84	0.0701	-2.5180	-0.2648	119.85	11	9	47	48	11	126	22	
29	Method 2	1	Yes	gpcc	96.27	32.64	-0.2988	8.82	0.1525	-3.0367	-0.3905	118.38	14	8	51	52	10	135	29	
30	*Method 2*	*1*	*Yes*	*gpcc trmm*	*76.23*	*32.37*	*0.0870*	*0.15*	*0.0135*	*-1.7892*	*0.1161*	*95.93*	*3*	*6*	*25*	*25*	*3*	*62*	*4*	Plot
31	Method 2	1	Yes	ghcn cams grid	102.39	57.55	-0.3459	-2.03	0.1478	-2.7875	-0.3844	134.05	21	12	52	51	23	159	36	
32	Method 2	1	Yes	gpi	128.30	97.98	-0.0831	8.37	0.0206	-6.0232	-0.1436	162.90	35	26	38	42	34	175	44	
33	Method 2	1	Yes	trmm 3a46	100.13	66.11	0.0188	-3.46	0.0009	-3.7616	0.0302	127.57	18	18	32	31	16	115	19	
34	Method 2	1	Yes	trmm 3b43	77.33	32.49	0.0691	1.08	0.0092	-1.9905	0.0961	98.59	4	7	27	29	4	71	5	
35	Method 2	1	Yes	ssmi	104.24	62.17	-0.0584	4.26	0.0073	-3.3924	-0.0854	130.00	22	13	37	37	20	129	25	
36	Method 2	1	Yes	opi2	80.61	13.93	-0.2280	4.36	0.0487	-1.4131	-0.2207	98.89	5	1	50	44	5	105	13	
37	Method 2	1	Yes	opi3	82.81	19.98	-0.2258	5.69	0.0569	-1.7188	-0.2386	104.97	6	3	49	47	6	111	16	
38	Method 2	1	Yes	cmap	85.81	29.20	-0.2083	6.60	0.0547	-1.9946	-0.2338	110.00	7	5	45	45	7	109	15	
39	Method 2	1	Yes	cmap2	85.86	28.52	-0.2104	6.52	0.0562	-2.0056	-0.2371	110.20	8	4	46	46	8	112	17	
40	*Method 2*	*2*	*Yes*	*reanalysis*	*96.03*	*93.50*	*0.7111*	*-89.44*	*0.4457*	*-0.8331*	*0.6676*	*115.31*	*13*	*24*	*1*	*1*	*9*	*48*	*3*	Plot
41	Method 2	2	Yes	gpcp	118.83	109.84	0.2756	-87.81	0.0793	-2.1313	0.2815	150.71	28	29	10	11	30	108	14	
42	Method 2	2	Yes	gpcc	120.69	117.48	0.1791	-92.88	0.0464	-3.8131	0.2154	151.75	31	36	16	15	31	129	26	
43	Method 2	2	Yes	gpcc trmm	120.32	116.60	0.1840	-89.86	0.0654	-4.5874	0.2557	150.21	30	34	14	13	29	120	21	
44	Method 2	2	Yes	ghcn cams grid	121.31	114.23	0.2918	-89.58	0.0813	-2.1963	0.2851	152.27	33	30	9	10	33	115	20	
45	Method 2	2	Yes	gpi	185.20	184.17	0.1982	-106.75	0.0998	-8.0445	0.3159	217.04	49	49	13	6	49	166	39	
46	Method 2	2	Yes	trmm 3a46	147.70	144.82	0.0901	-93.33	0.0206	-7.0757	0.1435	184.14	41	44	24	24	42	175	45	
47	Method 2	2	Yes	trmm 3b43	120.85	116.53	0.1574	-88.98	0.0492	-4.7227	0.2217	152.02	32	33	20	14	32	131	28	
48	Method 2	2	Yes	ssmi	153.36	152.40	0.1994	-104.49	0.0773	-5.7580	0.2780	184.92	44	45	12	12	43	156	34	
49	Method 2	2	Yes	opi2	102.31	91.64	0.4151	-84.50	0.1118	-1.2679	0.3344	128.26	20	23	5	5	18	71	6	
50	Method 2	2	Yes	opi3	107.12	97.21	0.3567	-85.77	0.0960	-1.5189	0.3099	135.17	24	25	6	9	24	88	9	
51	Method 2	2	Yes	cmap	113.61	105.36	0.3447	-88.36	0.0997	-1.7910	0.3157	142.28	27	28	7	8	27	97	12	
52	Method 2	2	Yes	cmap2	113.16	104.72	0.3434	-88.11	0.0997	-1.7768	0.3158	141.92	26	27	8	7	26	94	11	

Rondonia - Yearly Atmospheric																						
OI	Moist Flux	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	Method 1	1	Yes	reanalysis	49.88	49.88	1.2411	1.2411	-52.39	0.5639	-2.0344	0.7509	54.13	10	10	3	4	10	37	3	
2	Method 1	1	Yes	gpcp	67.21	65.98	-0.1089		-26.56	0.0024	-4.6903	-0.0486	74.63	17	17	38	41	17	130	28	
3	Method 1	1	Yes	gpcc	78.72	78.72	0.7808	1.2807	-71.92	0.1843	-15.5971	0.4293	80.76	20	20	4	12	20	76	8	
4	Method 1	1	Yes	gpcc trmm	81.58	81.58	1.4889	1.4889	-104.59	0.5064	-6.0842	0.7116	84.94	21	21	9	7	21	79	9	
5	Method 1	1	Yes	ghcn cams grid	83.55	83.25	0.3535	2.8289	-55.01	0.0173	-7.0881	0.1313	89.18	22	22	19	20	22	105	20	
6	Method 1	1	Yes	gpi	144.08	144.08	0.2288	4.3706	-66.53	0.0244	-39.5724	0.1562	146.36	43	43	23	18	38	165	37	
7	Method 1	1	Yes	trmm 3a46	112.04	112.04	4.9325	4.9325	-409.52	0.3440	-9.2158	0.5865	117.17	30	30	24	10	30	124	24	
8	Method 1	1	Yes	trmm 3b43	77.72	77.72	1.3791	1.3791	-93.96	0.5105	-6.9373	0.7145	80.44	19	19	6	6	19	69	6	
9	Method 1	1	Yes	ssmi	116.37	116.37	0.5891	1.6975	-86.39	0.0652	-23.4986	0.2553	118.74	32	32	13	16	31	124	25	
10	Method 1	1	Yes	opi2	60.26	58.29	0.1420	7.0423	-34.39	0.0047	-3.6369	0.0683	67.37	12	11	28	26	11	88	10	
11	Method 1	1	Yes	opi3	66.48	64.98	0.1506	6.6401	-35.64	0.0055	-4.4852	0.0744	73.27	16	16	27	24	16	99	18	
12	Method 1	1	Yes	cmap	65.70	64.26	0.1531	6.5317	-35.61	0.0051	-4.3708	0.0714	72.50	15	15	26	25	15	96	16	
13	Method 1	1	Yes	cmap2	64.17	62.33	0.1048	9.5420	-33.78	0.0024	-4.1436	0.0491	70.95	14	13	31	29	14	101	19	
14	Method 1	2	Yes	reanalysis	116.89	116.89	1.7120	1.7120	-127.23	0.7470	-4.1004	0.8643	121.53	35	35	14	1	34	119	23	
15	Method 1	2	Yes	gpcp	140.76	140.76	-0.7418		-73.89	0.0273	-6.9649	-0.1651	151.87	41	41	49	48	42	221	48	
16	Method 1	2	Yes	gpcc	163.29	163.29	0.5999	1.6669	-149.13	0.0150	-14.2673	0.1225	168.87	48	48	12	21	48	177	39	
17	Method 1	2	Yes	gpcc trmm	162.13	162.13	1.7122	1.7122	-193.47	0.4905	-21.2962	0.7004	164.34	47	47	15	8	47	164	36	
18	Method 1	2	Yes	ghcn cams grid	144.03	144.03	0.3533	2.8305	-117.09	0.0035	-7.1714	0.0588	153.83	42	42	20	28	43	175	38	
19	Method 1	2	Yes	gpi	230.92	230.92	-0.0686		-119.01	0.0007	-33.1501	-0.0262	234.96	52	52	34	35	52	225	49	
20	Method 1	2	Yes	trmm 3a46	196.65	196.65	-1.7488		2.63	0.0828	-26.4286	-0.2878	200.80	50	50	50	50	50	250	52	
21	Method 1	2	Yes	trmm 3b43	161.39	161.39	1.3955	1.3955	-178.50	0.3300	-21.2003	0.5745	163.98	46	46	7	11	46	156	35	
22	Method 1	2	Yes	ssmi	209.23	209.23	-0.1179		-125.18	0.0010	-37.8513	-0.0322	212.24	51	51	40	36	51	229	50	
23	Method 1	2	Yes	opi2	133.07	133.07	-0.1339		-98.26	0.0012	-6.1968	-0.0340	144.37	37	37	41	37	37	189	42	
24	Method 1	2	Yes	opi3	139.77	139.77	-0.1901		-95.26	0.0021	-6.8254	-0.0457	150.54	40	40	44	39	41	204	47	
25	Method 1	2	Yes	cmap	139.05	139.05	-0.0841		-99.29	0.0004	-6.7389	-0.0194	149.70	39	39	36	34	40	188	41	
26	Method 1	2	Yes	cmap2	137.25	137.12	-0.1566		-96.93	0.0013	-6.5632	-0.0364	147.99	38	38	43	38	39	196	45	
27	*Method 2*	*1*	*Yes*	*reanalysis*	*21.42*	*18.67*	*1.3362*	*1.3362*	*-19.39*	*0.5186*	*0.1477*	*0.7202*	*29.65*	*2*	*2*	*5*	*5*	*2*	*16*	*1*	Plot
28	Method 2	1	Yes	gpcp	37.79	34.07	-0.2200		7.06	0.0176	-3.2265	-0.1328	42.61	7	8	45	45	8	113	21	
29	Method 2	1	Yes	gpcc	38.15	32.80	-0.0829		1.77	0.0023	-2.9356	-0.0484	40.83	8	7	35	40	7	97	17	
30	Method 2	1	Yes	gpcc trmm	41.31	41.31	1.7266	1.7266	-70.70	0.6642	-1.9098	0.8150	44.96	9	9	16	3	9	46	5	
31	Method 2	1	Yes	ghcn cams grid	59.46	58.57	0.1191	8.3963	-22.15	0.0015	-3.4283	0.0393	67.39	11	12	30	31	12	96	15	
32	Method 2	1	Yes	gpi	98.14	98.14	0.0212	47.1698	-2.04	0.0002	-21.1965	0.0142	101.46	26	26	32	32	25	141	32	
33	Method 2	1	Yes	trmm 3a46	70.24	70.24	-3.5400		218.86	0.2880	-6.3758	-0.5366	76.67	18	18	51	51	18	156	34	
34	*Method 2*	*1*	*Yes*	*trmm 3b43*	*33.23*	*32.76*	*0.6141*	*1.6284*	*-18.85*	*0.1261*	*-1.6413*	*0.3551*	*40.63*	*5*	*6*	*10*	*14*	*6*	*41*	*4*	Plot
35	Method 2	1	Yes	ssmi	63.84	63.84	-0.2349		13.11	0.0177	-12.7146	-0.1331	67.57	13	14	46	46	13	132	30	
36	Method 2	1	Yes	opi2	20.86	15.87	0.5508	1.8155	-8.90	0.1011	-0.5523	0.3180	25.82	1	1	17	15	1	35	2	
37	Method 2	1	Yes	opi3	27.34	21.44	-0.1525		2.86	0.0074	-1.4826	-0.0858	32.66	3	3	42	44	3	95	12	
38	Method 2	1	Yes	cmap	33.45	29.59	-0.0923		2.34	0.0028	-2.4250	-0.0528	38.36	6	5	37	42	5	95	13	
39	Method 2	1	Yes	cmap2	32.83	28.95	-0.1125		2.86	0.0042	-2.3546	-0.0645	37.96	4	4	39	43	4	94	11	
40	*Method 2*	*2*	*Yes*	*reanalysis*	*93.50*	*93.50*	*1.2293*	*1.2293*	*-96.73*	*0.6740*	*-5.8607*	*0.8210*	*95.98*	*24*	*24*	*2*	*2*	*23*	*75*	*7*	Plot
41	Method 2	2	Yes	gpcp	109.83	109.83	-0.4150		-66.81	0.0187	-9.1832	-0.1366	116.93	29	29	47	47	29	181	40	
42	Method 2	2	Yes	gpcc	117.48	117.48	-0.5731		-70.34	0.0510	-20.3989	-0.2258	121.32	36	36	48	49	33	202	46	
43	Method 2	2	Yes	gpcc trmm	116.87	116.87	2.0084	2.0084	-149.91	0.4027	-7.5263	0.6346	121.98	34	34	18	9	35	130	29	
44	Method 2	2	Yes	ghcn cams grid	114.22	114.22	0.6012	1.6633	-100.35	0.0190	-9.7072	0.1379	119.90	31	31	11	19	32	124	26	
45	Method 2	2	Yes	gpi	184.20	184.20	0.2440	4.0984	-111.20	0.0130	-36.7129	0.1140	186.98	49	49	22	22	49	191	44	
46	Method 2	2	Yes	trmm 3a46	152.96	152.96	-4.7880		167.60	0.7551	-14.9680	-0.8690	159.86	45	45	52	52	45	239	51	
47	Method 2	2	Yes	trmm 3b43	116.80	116.80	1.0786	1.0786	-119.37	0.1339	-7.6854	0.3660	123.11	33	33	1	13	36	116	22	
48	Method 2	2	Yes	ssmi	152.67	152.67	0.1414	7.0721	-101.91	0.0023	-28.5187	0.0480	155.55	44	44	29	30	44	191	43	
49	Method 2	2	Yes	opi2	91.64	91.64	0.6965	1.4358	-87.93	0.0469	-6.2164	0.2166	98.43	23	23	8	17	24	95	14	
50	Method 2	2	Yes	opi3	97.21	97.21	0.0032	312.5000	-79.48	0.0000	-7.1223	0.0009	104.43	25	25	33	33	26	142	33	
51	Method 2	2	Yes	cmap	105.35	105.35	0.1948	5.1335	-84.48	0.0036	-8.3250	0.0600	111.89	28	28	25	27	28	136	31	
52	Method 2	2	Yes	cmap2	104.72	104.72	0.2602	3.8432	-86.01	0.0065	-8.2143	0.0807	111.23	27	27	21	23	27	125	27	

Rondonia - Monthly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	*Linear*	*1*	*Yes*	*reanalysis*	*60.22*	*7.01*	*7.01*	***1.0155***	*1.0155*	*6.98*	*0.2085*	*0.2001*	*0.4566*	*68.88*	*152*	*55*	*2*	*151*	*95*	*455*	*57*	Plot
2	Linear	1	Yes	gpcp	62.07	-20.36	20.36	0.5554	1.8005	-5.37	0.3209	0.0481	0.5665	76.62	171	203	36	72	164	646	103	
3	Linear	1	Yes	gpcc	63.13	-23.22	23.22	0.5688	1.7581	-9.46	0.3358	0.0484	0.5795	73.75	187	228	33	65	137	650	105	
4	Linear	1	Yes	gpcc trmm	49.37	-7.82	7.82	**0.8596**	1.1633	-2.82	0.5646	0.5416	**0.7514**	59.38	48	70	8	12	42	180	3	
5	Linear	1	Yes	ghcn cams grid	65.74	-32.41	32.41	0.5882	1.7001	-15.42	0.3419	-0.0028	0.5847	77.11	214	275	30	62	170	751	123	
6	Linear	1	Yes	gpi	90.86	-83.98	83.98	0.5219	1.9161	-37.04	0.4798	-1.0239	0.6926	113.86	389	443	41	30	391	1294	279	
7	Linear	1	Yes	trmm 3a46	**40.84**	-34.03	34.03	**0.8633**	1.1583	-25.30	0.8156	0.6514	**0.9031**	**53.00**	17	289	7	1	20	334	30	
8	Linear	1	Yes	trmm 3b43	55.22	-8.60	8.60	**0.7572**	1.3207	0.16	0.4760	0.4173	0.6899	66.42	102	82	12	31	76	303	26	
9	Linear	1	Yes	ssmi	60.47	-47.82	47.82	**0.6751**	1.4813	-27.43	0.5675	0.0899	**0.7534**	77.54	153	380	19	11	176	739	121	
10	Linear	1	Yes	opi2	54.25	**-2.89**	2.89	**0.7557**	1.3233	0.75	0.3515	0.3134	0.5929	65.11	86	24	13	60	68	251	14	
11	Linear	1	Yes	opi3	57.93	-8.95	8.95	**0.6517**	1.5344	-1.65	0.3111	0.2093	0.5578	69.87	131	87	22	76	107	423	50	
12	Linear	1	Yes	cmap	60.99	-17.09	17.09	0.6039	1.6559	-5.36	0.3007	0.1241	0.5484	73.51	159	164	27	79	136	565	85	
13	Linear	1	Yes	cmap2	61.01	-16.41	16.41	0.5962	1.6773	-4.72	0.2957	0.1164	0.5438	73.83	160	157	28	82	140	567	87	
14	Linear	1	No	reanalysis	**25.39**	7.14	7.14	0.1952	5.1230	8.86	0.1928	-3.2976	0.4391	**31.92**	5	57	147	162	2	373	38	
15	Linear	1	No	gpcp	62.77	-20.51	20.51	0.0998	10.0200	9.84	0.1464	-12.7389	0.3827	77.41	181	204	270	200	174	1029	204	
16	Linear	1	No	gpcc	64.30	-23.36	23.36	0.0611	16.3666	6.61	0.2836	-73.6704	0.5326	76.37	199	229	319	96	162	1005	198	
17	Linear	1	No	gpcc trmm	54.60	-7.34	7.34	0.2496	4.0064	19.39	0.2608	-2.1360	0.5107	66.34	94	63	101	110	75	443	56	
18	Linear	1	No	ghcn cams grid	64.03	-31.94	31.94	0.0798	12.5313	6.02	0.1571	-25.0015	0.3963	78.63	196	270	297	195	189	1147	235	
19	Linear	1	No	gpi	107.67	-83.71	83.71	0.0625	16.0000	8.34	0.0794	-30.3864	0.2817	132.04	423	441	318	250	429	1861	391	
20	Linear	1	No	trmm 3a46	78.56	-27.67	27.67	0.1656	6.0386	25.60	0.1484	-4.0889	0.3853	91.06	316	241	174	199	277	1207	256	
21	Linear	1	No	trmm 3b43	56.87	-8.12	8.12	0.2406	4.1563	19.26	0.2623	-2.3978	0.5122	68.65	115	74	104	108	93	494	67	
22	Linear	1	No	ssmi	84.92	-47.44	47.44	0.0648	15.4321	11.25	0.0525	-14.3237	0.2291	100.34	366	375	314	292	349	1696	356	
23	Linear	1	No	opi2	**47.34**	**-1.74**	1.74	0.1573	6.3573	10.80	0.2206	-6.1177	0.4697	55.08	34	14	180	147	27	402	46	
24	Linear	1	No	opi3	50.96	-7.80	7.80	0.1298	7.7042	10.43	0.1787	-8.0008	0.4227	61.94	61	69	220	179	54	583	89	
25	Linear	1	No	cmap	54.52	-16.39	16.39	0.1155	8.6580	9.82	0.1584	-9.7676	0.3981	67.89	89	156	240	193	87	765	129	
26	Linear	1	No	cmap2	54.63	-15.71	15.71	0.1138	8.7873	9.94	0.1553	-9.8358	0.3941	68.10	95	146	245	197	89	772	132	
27	Linear	1	1 mon	reanalysis	**24.55**	7.22	7.22	0.1065	9.3897	9.04	0.0573	-4.1895	0.2393	**35.10**	1	60	258	283	5	607	92	
28	Linear	1	1 mon	gpcp	59.01	-20.01	20.01	0.1346	7.4294	8.74	0.2640	-11.5565	0.5138	74.13	142	201	211	107	141	802	141	
29	Linear	1	1 mon	gpcc	62.47	-22.95	22.95	0.0805	12.4224	5.93	0.4980	-71.2023	0.7057	74.77	176	225	296	27	150	874	160	
30	Linear	1	1 mon	gpcc trmm	47.38	-7.73	7.73	0.3464	2.8868	15.84	0.5016	-1.3261	**0.7082**	57.62	35	67	64	25	32	223	11	
31	Linear	1	1 mon	ghcn cams grid	61.69	-32.03	32.03	0.1066	9.3809	4.89	0.2798	-23.7051	0.5290	76.68	170	271	257	101	165	964	184	
32	Linear	1	1 mon	gpi	105.22	-83.27	83.27	0.0976	10.2459	4.90	0.1927	-28.7093	0.4390	128.76	414	438	276	164	420	1712	361	
33	Linear	1	1 mon	trmm 3a46	64.75	-29.78	29.78	0.3059	3.2690	16.19	0.4938	-2.5800	0.7027	77.21	208	258	78	28	171	743	122	
34	Linear	1	1 mon	trmm 3b43	46.10	-6.61	6.61	0.3444	2.9036	16.07	0.5267	-1.4124	**0.7258**	58.33	29	52	65	20	36	202	7	
35	Linear	1	1 mon	ssmi	79.37	-46.87	46.87	0.1198	8.3472	7.82	0.1784	-12.7730	0.4224	95.39	324	366	231	180	314	1415	310	
36	Linear	1	1 mon	opi2	**44.47**	**-1.91**	1.91	0.1947	5.1361	10.23	0.3370	-5.4395	0.5806	**52.48**	23	17	149	63	19	271	19	
37	Linear	1	1 mon	opi3	47.66	-7.99	7.99	0.1668	5.9952	9.63	0.2944	-7.2034	0.5426	59.23	37	72	172	83	41	405	47	
38	Linear	1	1 mon	cmap	51.85	-16.70	16.70	0.1474	6.7843	8.84	0.2569	-8.9814	0.5068	65.48	67	160	189	115	70	601	91	
39	Linear	1	1 mon	cmap2	51.91	-16.02	16.02	0.1460	6.8493	8.98	0.2543	-9.0362	0.5042	65.66	69	149	192	118	71	599	90	
40	Linear	1	2 mon	reanalysis	**25.36**	7.23	7.23	0.0142	70.4225	9.26	0.0010	-5.1288	0.0318	**38.16**	4	61	363	370	7	805	143	
41	Linear	1	2 mon	gpcp	59.93	-19.79	19.79	0.1284	7.7882	8.99	0.2397	-11.6949	0.4896	74.67	148	198	223	131	148	848	151	
42	Linear	1	2 mon	gpcc	62.93	-22.33	22.33	0.0750	13.3333	6.04	0.4366	-72.5886	0.6607	74.87	183	218	299	43	151	894	168	
43	Linear	1	2 mon	gpcc trmm	48.18	-8.40	8.40	0.3366	2.9709	15.90	0.4725	-1.4108	0.6874	59.16	40	78	68	32	39	257	15	
44	Linear	1	2 mon	ghcn cams grid	62.50	-32.14	32.14	0.0980	10.2041	5.22	0.2365	-24.1393	0.4863	77.39	177	272	274	133	173	1029	203	
45	Linear	1	2 mon	gpi	105.49	-83.37	83.37	0.0980	10.2041	4.81	0.1946	-28.6831	0.4412	128.97	416	440	275	161	421	1713	362	
46	Linear	1	2 mon	trmm 3a46	63.28	-32.91	32.91	0.3565	2.8050	11.76	0.6388	-2.0777	**0.7992**	72.45	189	278	60	6	129	662	108	
47	Linear	1	2 mon	trmm 3b43	49.87	-7.19	7.19	0.3237	3.0893	16.52	0.4645	-1.5990	0.6816	61.04	51	58	71	37	49	266	18	
48	Linear	1	2 mon	ssmi	79.41	-47.00	47.00	0.1347	7.4239	6.90	0.2253	-12.4000	0.4746	94.37	325	368	209	143	304	1349	289	
49	Linear	1	2 mon	opi2	45.92	**-2.07**	2.07	0.1742	5.7405	10.52	0.2695	-5.7927	0.5191	**53.99**	28	18	164	104	24	338	31	
50	Linear	1	2 mon	opi3	48.92	-8.24	8.24	0.1522	6.5703	9.91	0.2442	-7.4898	0.4942	60.36	46	75	185	129	47	482	62	
51	Linear	1	2 mon	cmap	53.60	-16.83	16.83	0.1321	7.5700	9.29	0.2059	-9.3436	0.4537	66.77	81	162	215	152	79	689	114	
52	Linear	1	2 mon	cmap2	53.60	-16.16	16.16	0.1310	7.6336	9.41	0.2042	-9.3934	0.4519	66.93	82	152	217	153	80	684	113	
53	Linear	1	3 mon	reanalysis	**27.11**	7.24	7.24	-0.0664		9.45	0.0223	-5.9469	-0.1493	**40.64**	11	62	412	409	11	905	171	
54	Linear	1	3 mon	gpcp	63.41	-19.82	19.82	0.0890	11.2360	10.28	0.1152	-12.8395	0.3394	78.10	191	199	284	216	186	1076	215	
55	Linear	1	3 mon	gpcc	65.43	-22.19	22.19	0.0499	20.0401	6.75	0.1953	-76.9373	0.4419	77.01	211	217	333	160	168	1089	218	
56	Linear	1	3 mon	gpcc trmm	53.75	-9.32	9.32	0.2605	3.8388	18.39	0.2811	-2.0433	0.5301	67.05	84	92	99	100	81	456	58	
57	Linear	1	3 mon	ghcn cams grid	64.71	-32.32	32.32	0.0641	15.6006	6.60	0.1011	-25.8243	0.3179	79.95	207	273	315	230	201	1226	265	
58	Linear	1	3 mon	gpi	107.08	-83.81	83.81	0.0734	13.6240	7.17	0.1089	-29.6961	0.3300	131.47	421	442	302	223	425	1813	385	
59	Linear	1	3 mon	trmm 3a46	67.11	-35.20	35.20	0.2979	3.3568	15.21	0.4344	-2.6864	0.6591	80.27	224	302	83	44	203	856	156	
60	Linear	1	3 mon	trmm 3b43	56.62	-7.75	7.75	0.2357	4.2427	19.42	0.2457	-2.3806	0.4957	70.22	112	68	110	127	110	527	75	
61	Linear	1	3 mon	ssmi	80.62	-47.19	47.19	0.1224	8.1699	7.61	0.1861	-12.7080	0.4314	95.73	332	372	228	175	316	1423	314	
62	Linear	1	3 mon	opi2	50.20	**-2.44**	2.44	0.1154	8.6655	11.37	0.1171	-6.7724	0.3422	57.86	54	21	242	214	33	564	84	
63	Linear	1	3 mon	opi3	53.06	-8.55	8.55	0.0999	10.0100	11.00	0.1047	-8.5550	0.3235	64.15	78	79	269	226	62	714	117	
64	Linear	1	3 mon	cmap	57.41	-16.85	16.85	0.0857	11.6686	10.68	0.0867	-10.4380	0.2944	70.34	122	163	289	238	111	923	176	
65	Linear	1	3 mon	cmap2	57.46	-16.19	16.19	0.0845	11.8343	10.77	0.0850	-10.4996	0.2916	70.53	125	153	291	243	112	924	178	
66	Linear	1	4 mon	reanalysis	**29.61**	7.21	7.21	-0.1069		9.56	0.0578	-6.3549	-0.2405	**41.84**	14	59	419	427	12	931	181	
67	Linear	1	4 mon	gpcp	68.11	-19.87	19.87	0.0221	45.2489	12.46	0.0071	-14.7941	0.0842	83.57	235	200	351	345	227	1358	291	
68	Linear	1	4 mon	gpcc	68.49	-22.78	22.78	0.0099	101.0101	7.80	0.0080	-87.0245	0.0892	80.34	241	222	368	342	205	1378	294	
69	Linear	1	4 mon	gpcc trmm	66.20	-11.17	11.17	0.0957	10.4493	23.59	0.0388	-3.5057	0.1969	81.12	217	111	279	306	210	1123	228	
70	Linear	1	4 mon	ghcn cams grid	67.83	-32.52	32.52	0.0152	65.7895	8.59	0.0057	-28.3372	0.0755	83.49	232	277	362	348	226	1445	317	
71	Linear	1	4 mon	gpi	111.38	-84.17	84.17	0.0292	34.2466	11.43	0.0172	-31.5592	0.1313	135.61	432	444	347	330	438	1991	419	
72	Linear	1	4 mon	trmm 3a46	81.00	-36.87	36.87	0.1587	6.3012	24.08	0.1259	-4.1913	0.3548	95.32	336	308	179	208	312	1343	287	
73	Linear	1	4 mon	trmm 3b43	68.28	-9.44	9.44	0.0873	11.4548	23.75	0.0345	-3.8024	0.1858	83.19	237	97	287	310	223	1154	237	
74	Linear	1	4 mon	ssmi	85.99	-47.44	47.44	0.0759	13.1752	10.45	0.0715	-13.8764	0.2673	100.01	370	374	298	259	345	1646	352	
75	Linear	1	4 mon	opi2	54.57	**-2.62**	2.62	0.0305	32.7869	12.66	0.0082	-8.2564	0.0905	63.24	90	22	345	341	58	856	155	
76	Linear	1	4 mon	opi3	57.40	-8.72	8.72	0.0255	39.2157	12.58	0.0068	-10.1144	0.0824	69.30	121	84	349	346	102	1002	195	
77	Linear	1	4 mon	cmap	61.61	-16.74	16.74	0.0164	60.9756	12.74	0.0032	-12.0540	0.0565	75.26	164	161	360	362	154	1201	252	
78	Linear	1	4 mon	cmap2	61.65	-16.09	16.09	0.0165	60.6061	12.75	0.0032	-12.1044	0.0570	75.41	168	151	359	361	157	1196	250	
79	*Linear*	*2*	*Yes*	*reanalysis*	*49.21*	*-18.10*	*18.10*	*0.3511*	*2.8482*	*-8.97*	*0.2839*	*-0.8040*	*0.5328*	*70.77*	*47*	*182*	*63*	*95*	*114*	*501*	*69*	Plot
80	Linear	2	Yes	gpcp	57.29	-34.44	34.44	0.3035	3.2949	-13.26	0.2512	-1.4983	0.5012	83.28	118	295	79	123	225	840	149	
81	Linear	2	Yes	gpcc	55.64	-30.75	30.75	0.3256	3.0713	-10.54	0.2703	-1.2379	0.5199	77.94	107	261	70	103	184	725	119	
82	Linear	2	Yes	gpcc trmm	55.33	-43.04	43.04	0.3195	3.1299	-20.74	0.4717	-2.7665	0.6868	79.73	105	349	73	33	199	759	126	
83	Linear	2	Yes	ghcn cams grid	55.18	-38.83	38.83	0.3517	2.8433	-16.27	0.3086	-1.2829	0.5555	79.61	101	317	62	77	196	753	124	
84	Linear	2	Yes	gpi	109.52	-102.56	102.56	0.2499	4.0016	-30.12	0.3270	-6.7830	0.5718	140.20	429	457	100	70	445	1501	328	
85	Linear	2	Yes	trmm 3a46	76.41	-66.16	66.16	0.3281	3.0479	-28.14	0.6557	-4.5971	**0.8098**	98.95	299	404	69	4	338	1114	226	
86	Linear	2	Yes	trmm 3b43	56.10	-42.98	42.98	0.3180	3.1447	-20.67	0.4802	-2.8229	0.6930	80.33	109	348	74	29	204	764	128	
87	Linear	2	Yes	ssmi	83.26	-73.54	73.54	0.2629	3.8037	-29.43	0.3928	-5.8238	0.6268	108.63	355	418	96	50	380	1299	281	
88	Linear	2	Yes	opi2	45.50	-16.24	16.24	0.3838	2.6055	-8.72	0.2498	-0.4890	0.4998	64.29	27	155	58	124	64	428	54	
89	Linear	2	Yes	opi3	47.40	-21.81	21.81	0.3617	2.7647	-10.46	0.2578	-0.7168	0.5078	69.04	36	214	59	114	98	521	72	
90	Linear	2	Yes	cmap	51.05	-29.96	29.96	0.3440	2.9070	-12.95	0.2595	-1.0073	0.5095	74.65	62	259	66	112	147	646	102	
91	Linear	2	Yes	cmap2	50.70	-29.33	29.33	0.3436	2.9104	-12.72	0.2608	-1.0011	0.5107	74.54	58	250	67	111	145	631	99	
92	Linear	2	No	reanalysis	81.35	-17.90	17.90	-0.1087		-2.30	0.0385	-4.1303	-0.1962	100.33	339	180	421	415	348	1703	358	
93	Linear	2	No	gpcp	90.32	-34.24	34.24	-0.1200		-0.18	0.0555	-5.3801	-0.2356	111.88	387	291	431	425	386	1920	409	
94	Linear	2	No	gpcc	90.79	-31.06	31.06	-0.1555		3.57	0.0780	-4.6818	-0.2793	110.37	388	265	447	435	383	1918	408	
95	Linear	2	No	gpcc trmm	92.66	-45.46	45.46	-0.1424		-8.03	0.2227	-17.0163	-0.4719	113.14	396	364	442	459	390	2051	433	
96	Linear	2	No	ghcn cams grid	88.25	-38.63	38.63	-0.1127		0.09	0.0449	-5.0863	-0.2118	109.28	379	314	423	417	381	1914	406	
97	Linear	2	No	gpi	137.85	-102.58	102.58	-0.1061		4.23	0.0792	-14.1399	-0.2815	168.61	465	458	418	436	465	2242	463	
98	Linear	2	No	trmm 3a46	114.14	-68.05	68.05	-0.1286		-4.18	0.2369	-24.2318	-0.4867	137.01	438	407	437	463	440	2185	456	
99	Linear	2	No	trmm 3b43	92.41	-45.40	45.40	-0.1409		-8.09	0.2239	-17.3615	-0.4731	114.22	395	363	440	460	393	2051	434	
100	Linear	2	No	ssmi	119.16	-74.01	74.01	-0.1702		-3.98	0.2268	-14.8516	-0.4762	141.11	448	419	454	462	447	2230	461	
101	Linear	2	No	opi2	74.93	-16.04	16.04	-0.1623		-1.85	0.0632	-3.3096	-0.2515	91.95	285	150	450	431	284	1600	344	

Rondonia - Monthly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Oslope	Intercpt	R^2	R^2 1.1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
102	Linear	2	No	opi3	77.71	-21.61	21.61	-0.1293		-1.53	0.0467	-3.7488	-0.2160	96.53	309	212	438	421	323	1703	357	
103	Linear	2	No	cmap	81.80	-29.76	29.76	-0.1218		-0.67	0.0460	-4.3097	-0.2145	102.07	342	257	432	420	358	1809	383	
104	Linear	2	No	cmap2	81.67	-29.12	29.12	-0.1182		-0.84	0.0437	-4.2980	-0.2091	101.95	341	247	428	416	356	1788	378	
105	Linear	2	1 mon	reanalysis	76.24	-17.58	17.58	-0.0189		-3.58	0.0012	-3.5225	-0.0341	94.37	297	170	392	391	303	1553	335	
106	Linear	2	1 mon	gpcp	84.87	-33.71	33.71	-0.0236		-3.14	0.0021	-4.5732	-0.0460	104.76	365	286	394	395	363	1803	382	
107	Linear	2	1 mon	gpcc	81.96	-32.37	32.37	-0.0666		-0.91	0.0177	-5.1269	-0.1331	103.23	343	274	413	406	361	1797	380	
108	Linear	2	1 mon	gpcc trmm	87.98	-41.87	41.87	-0.0817		-10.24	0.0678	-14.2361	-0.2603	105.13	378	335	416	432	365	1926	410	
109	Linear	2	1 mon	ghcn cams grid	83.04	-38.37	38.37	-0.0119		-3.43	0.0005	-4.3516	-0.0223	102.65	353	311	388	386	360	1798	381	
110	Linear	2	1 mon	gpi	135.84	-103.01	103.01	-0.0631		-1.23	0.0330	-16.0211	-0.1816	164.37	463	459	408	413	463	2206	459	
111	Linear	2	1 mon	trmm 3a46	117.12	-70.66	70.66	-0.1150		-4.53	0.1841	-23.6755	-0.4290	137.05	445	411	424	451	441	2172	452	
112	Linear	2	1 mon	trmm 3b43	88.99	-42.19	42.19	-0.0805		-10.25	0.0689	-14.8000	-0.2624	107.05	382	339	415	433	373	1942	416	
113	Linear	2	1 mon	ssmi	115.00	-72.20	72.20	-0.1155		-6.84	0.1039	-13.8049	-0.3224	135.41	439	415	425	440	437	2156	451	
114	Linear	2	1 mon	opi2	69.99	-15.71	15.71	-0.0386		-3.39	0.0035	-2.6924	-0.0595	85.27	252	147	399	398	242	1438	316	
115	Linear	2	1 mon	opi3	72.42	-21.16	21.16	-0.0092		-3.68	0.0002	-3.0366	-0.0153	89.15	272	205	384	383	264	1508	329	
116	Linear	2	1 mon	cmap	76.34	-29.29	29.29	-0.0107		-3.57	0.0004	-3.5717	-0.0188	94.88	298	248	387	384	308	1625	348	
117	Linear	2	1 mon	cmap2	76.13	-28.66	28.66	-0.0058		-3.70	0.0001	-3.5482	-0.0103	94.63	296	242	381	381	306	1606	345	
118	Linear	2	2 mon	reanalysis	72.02	-17.69	17.69	0.0322	31.0559	-4.55	0.0034	-3.2225	0.0582	90.88	269	174	344	359	276	1422	313	
119	Linear	2	2 mon	gpcp	79.61	-33.77	33.77	0.0655	15.2672	-6.06	0.0165	-3.9285	0.1285	98.18	328	287	312	333	332	1592	341	
120	Linear	2	2 mon	gpcc	75.27	-32.48	32.48	0.0635	15.7480	-5.47	0.0167	-4.2441	0.1292	93.77	289	276	316	332	301	1514	332	
121	Linear	2	2 mon	gpcc trmm	83.39	-39.55	39.55	-0.0065		-11.65	0.0004	-12.7706	-0.0210	98.96	358	328	382	385	339	1792	379	
122	Linear	2	2 mon	ghcn cams grid	78.51	-38.41	38.41	0.0726	13.7741	-6.61	0.0187	-3.7879	0.1367	96.77	315	312	303	327	325	1582	339	
123	Linear	2	2 mon	gpi	132.00	-103.21	103.21	-0.0084		-7.01	0.0006	-15.6467	-0.0245	160.06	460	460	383	387	461	2151	449	
124	Linear	2	2 mon	trmm 3a46	115.09	-72.98	72.98	-0.0663		-6.28	0.0615	-23.0154	-0.2481	133.64	440	417	411	429	434	2131	448	
125	Linear	2	2 mon	trmm 3b43	85.04	-39.75	39.75	-0.0143		-11.43	0.0022	-13.4390	-0.0473	101.33	367	329	390	396	353	1835	387	
126	Linear	2	2 mon	ssmi	111.22	-72.00	72.00	-0.0616		-10.10	0.0299	-13.0202	-0.1728	131.60	431	414	407	412	426	2090	440	
127	Linear	2	2 mon	opi2	65.58	-15.91	15.91	0.0548	18.2482	-4.76	0.0072	-2.2728	0.0850	80.01	213	148	330	344	202	1237	269	
128	Linear	2	2 mon	opi3	67.10	-21.24	21.24	0.0879	11.3766	-5.62	0.0215	-2.5235	0.1465	83.02	223	208	285	325	217	1258	274	
129	Linear	2	2 mon	cmap	71.41	-29.36	29.36	0.0806	12.4069	-6.15	0.0201	-3.0379	0.1419	88.87	262	252	295	326	261	1396	303	
130	Linear	2	2 mon	cmap2	71.17	-28.74	28.74	0.0868	11.5207	-6.25	0.0235	-3.0017	0.1533	88.47	260	243	288	323	258	1372	293	
131	Linear	2	3 mon	reanalysis	67.87	-17.80	17.80	0.1074	9.3110	-5.74	0.0379	-2.7414	0.1947	85.53	233	175	254	308	243	1213	260	
132	Linear	2	3 mon	gpcp	76.89	-33.99	33.99	0.1248	8.0128	-7.99	0.0602	-3.4908	0.2453	93.71	306	288	226	279	300	1399	304	
133	Linear	2	3 mon	gpcc	73.08	-33.10	33.10	0.1563	6.3980	-8.84	0.1052	-3.6366	0.3243	86.77	273	281	182	224	250	1210	257	
134	Linear	2	3 mon	gpcc trmm	79.81	-39.02	39.02	0.0473	21.1416	-12.31	0.0245	-12.0878	0.1564	95.29	330	320	336	320	310	1616	347	
135	Linear	2	3 mon	ghcn cams grid	76.53	-38.68	38.68	0.1360	7.3529	-8.96	0.0659	-3.3577	0.2567	92.31	301	315	208	269	290	1383	300	
136	Linear	2	3 mon	gpi	128.70	-103.67	103.67	0.0546	18.3150	-13.52	0.0264	-15.0695	0.1624	155.15	459	461	331	316	458	2025	423	
137	Linear	2	3 mon	trmm 3a46	112.71	-74.35	74.35	0.0015	666.6667	-9.53	0.0000	-22.0727	0.0056	129.07	435	421	375	374	422	2027	426	
138	Linear	2	3 mon	trmm 3b43	79.78	-39.38	39.38	0.0578	17.3010	-12.62	0.0381	-12.3265	0.1953	96.15	329	326	324	307	320	1606	346	
139	Linear	2	3 mon	ssmi	106.68	-71.13	71.13	0.0259	38.6100	-14.52	0.0053	-11.6405	0.0730	124.68	418	412	348	350	412	1940	415	
140	Linear	2	3 mon	opi2	63.10	-16.22	16.22	0.1381	7.2411	-5.93	0.0460	-1.8818	0.2146	75.07	185	154	202	298	153	992	192	
141	Linear	2	3 mon	opi3	65.48	-21.52	21.52	0.1448	6.9061	-6.78	0.0585	-2.2193	0.2419	79.34	212	211	193	282	194	1092	221	
142	Linear	2	3 mon	cmap	69.80	-29.62	29.62	0.1385	7.2202	-7.79	0.0596	-2.6951	0.2442	85.00	250	255	201	281	240	1227	266	
143	Linear	2	3 mon	cmap2	69.60	-28.99	28.99	0.1397	7.1582	-7.74	0.0612	-2.6869	0.2473	84.91	249	244	197	276	239	1205	254	
144	Linear	2	4 mon	reanalysis	64.45	-18.22	18.22	0.1399	7.1480	-6.55	0.0656	-2.5827	0.2560	83.07	202	185	196	270	220	1073	214	
145	Linear	2	4 mon	gpcp	74.85	-34.44	34.44	0.1415	7.0671	-8.86	0.0788	-3.4385	0.2808	92.46	283	294	195	252	291	1315	284	
146	Linear	2	4 mon	gpcc	68.69	-34.43	34.43	0.2029	4.9285	-11.14	0.1876	-3.4788	0.4332	83.06	244	293	138	171	219	1065	212	
147	Linear	2	4 mon	gpcc trmm	73.43	-39.77	39.77	0.1003	9.9701	-13.90	0.1096	-10.9406	0.3310	92.04	274	330	268	222	286	1380	295	
148	Linear	2	4 mon	ghcn cams grid	75.00	-39.25	39.25	0.1591	6.2854	-10.15	0.0917	-3.2704	0.3027	90.69	286	323	178	236	274	1297	280	
149	Linear	2	4 mon	gpi	126.40	-104.44	104.44	0.1028	9.7276	-18.75	0.0983	-14.9770	0.3135	151.47	457	462	263	231	455	1868	396	
150	Linear	2	4 mon	trmm 3a46	109.48	-74.96	74.96	0.0628	15.9236	-13.56	0.0570	-20.2128	0.2387	125.34	428	422	317	284	413	1864	394	
151	Linear	2	4 mon	trmm 3b43	74.16	-40.11	40.11	0.1033	9.6805	-14.03	0.1216	-11.2966	0.3487	93.40	281	332	262	211	296	1382	296	
152	Linear	2	4 mon	ssmi	101.99	-71.92	71.92	0.0988	10.1215	-19.73	0.0775	-10.5441	0.2784	119.54	410	413	273	254	403	1753	377	
153	Linear	2	4 mon	opi2	59.94	-16.66	16.66	0.1820	5.4945	-6.84	0.0815	-1.7080	0.2854	72.22	149	159	160	247	127	842	150	
154	Linear	2	4 mon	opi3	62.58	-22.03	22.03	0.1702	5.8754	-7.61	0.0823	-2.1258	0.2869	77.59	178	216	171	245	177	987	189	
155	Linear	2	4 mon	cmap	67.33	-30.12	30.12	0.1646	6.0753	-8.84	0.0857	-2.5936	0.2927	83.19	226	260	176	242	224	1128	230	
156	Linear	2	4 mon	cmap2	66.96	-29.49	29.49	0.1644	6.0827	-8.73	0.0862	-2.5922	0.2936	83.18	222	253	177	239	222	1113	225	
157	Point	1	Yes	reanalysis	60.72	12.37	12.37	**1.1433**	1.1433	12.07	0.2516	0.2231	0.5016	69.56	156	116	6	122	104	504	71	
158	Point	1	Yes	gpcp	59.01	-12.98	12.98	**0.6262**	1.5969	-0.38	0.3724	0.2148	0.6102	72.83	143	128	25	54	132	482	63	
159	Point	1	Yes	gpcc	59.38	-18.61	18.61	0.6100	1.6393	-6.16	0.3783	0.1643	0.6151	69.83	146	195	26	53	105	525	74	
160	*Point*	*1*	*Yes*	*gpcc trmm*	*47.94*	*7.53*	*7.53*	***1.0174***	*1.0174*	*6.91*	*0.6382*	*0.6320*	***0.7988***	*59.23*	*39*	*65*	*3*	*7*	*40*	*154*	*1*	Plot
161	Point	1	Yes	ghcn cams grid	62.16	-27.03	27.03	**0.6429**	1.5555	-12.30	0.3888	0.1516	0.6235	72.70	172	239	23	52	131	617	96	
162	Point	1	Yes	gpi	84.69	-76.06	76.06	0.5647	1.7709	-33.32	0.5037	-0.6054	**0.7097**	107.09	363	427	34	24	375	1223	264	
163	Point	1	Yes	trmm 3a46	**36.59**	-14.73	14.73	**0.9732**	1.0275	-13.01	0.8020	0.7806	**0.8955**	**47.80**	16	144	4	3	15	182	5	
164	Point	1	Yes	trmm 3b43	54.25	6.56	6.56	**0.9060**	1.1038	9.95	0.5492	0.5387	**0.7411**	65.81	85	51	5	14	72	227	12	
165	Point	1	Yes	ssmi	57.45	-39.52	39.52	**0.7214**	1.3862	-22.03	0.5740	0.2790	**0.7576**	73.33	124	327	17	10	134	612	95	
166	Point	1	Yes	opi2	52.54	4.49	4.49	**0.8591**	1.1640	6.59	0.4146	0.4005	0.6439	63.69	71	32	9	48	59	219	9	
167	Point	1	Yes	opi3	56.05	**-1.57**	1.57	**0.7389**	1.3534	3.90	0.3651	0.3192	0.6042	67.87	108	13	14	56	86	277	20	
168	Point	1	Yes	cmap	58.56	-9.66	9.66	**0.6834**	1.4633	-0.28	0.3516	0.2623	0.5930	70.60	138	99	18	59	113	427	52	
169	Point	1	Yes	cmap2	58.69	-8.98	8.98	**0.6749**	1.4817	0.43	0.3459	0.2537	0.5882	71.01	140	89	20	61	117	427	53	
170	Point	1	No	reanalysis	**26.48**	12.50	12.50	0.3231	3.0950	13.95	0.2228	-1.0338	0.4721	**33.80**	8	119	72	146	3	348	33	
171	Point	1	No	gpcp	60.22	-13.13	13.13	0.1706	5.8617	14.83	0.1792	-4.2219	0.4233	73.76	151	130	170	178	138	767	130	
172	Point	1	No	gpcc	61.11	-18.75	18.75	0.1023	9.7752	9.90	0.3291	-26.8497	0.5737	72.52	161	196	264	69	130	820	147	
173	Point	1	No	gpcc trmm	54.37	8.01	8.01	0.4074	2.4546	29.12	0.2911	-0.3441	0.5396	67.11	88	73	54	86	83	384	42	
174	Point	1	No	ghcn cams grid	61.12	-26.56	26.56	0.1346	7.4294	9.13	0.1884	-8.8528	0.4341	74.51	162	235	212	170	144	923	177	
175	Point	1	No	gpi	102.60	-75.79	75.79	0.1053	9.4967	12.06	0.0950	-11.1167	0.3082	126.36	412	425	260	232	416	1745	374	
176	Point	1	No	trmm 3a46	77.28	-8.37	8.37	0.2755	3.6298	37.89	0.1703	-1.0251	0.4126	89.22	308	77	90	185	265	925	179	
177	Point	1	No	trmm 3b43	56.30	7.03	7.03	0.3894	2.5681	29.05	0.2877	-0.4347	0.5364	68.93	110	56	57	88	96	407	48	
178	Point	1	No	ssmi	82.67	-39.14	39.14	0.1110	9.0090	16.65	0.0653	-5.1082	0.2556	97.38	349	321	251	271	326	1518	333	
179	Point	1	No	opi2	46.11	5.64	5.64	0.2607	3.8358	16.64	0.2533	-1.8160	0.5033	**53.57**	30	41	98	120	22	311	28	
180	Point	1	No	opi3	49.40	**-0.42**	0.42	0.2170	4.6083	15.98	0.2090	-2.5121	0.4572	59.83	49	5	124	150	44	372	37	
181	Point	1	No	cmap	52.70	-8.96	8.96	0.1949	5.1308	14.90	0.1888	-3.1115	0.4345	64.87	75	88	148	169	67	547	77	
182	Point	1	No	cmap2	52.91	-8.28	8.28	0.1925	5.1948	15.10	0.1857	-3.1510	0.4310	65.18	76	76	150	176	69	547	78	
183	Point	1	1 mon	reanalysis	**25.62**	12.57	12.57	0.1822	5.4885	14.24	0.0708	-1.6322	0.2661	**38.48**	7	123	159	261	8	558	81	
184	Point	1	1 mon	gpcp	54.64	-12.62	12.62	0.2193	4.5600	13.32	0.2933	-3.5742	0.5415	69.15	96	125	120	84	99	524	73	
185	Point	1	1 mon	gpcc	58.68	-18.43	18.43	0.1295	7.7220	8.91	0.5375	-25.5722	**0.7331**	70.21	139	190	221	15	109	674	111	
186	Point	1	1 mon	gpcc trmm	**42.06**	7.66	7.66	0.5497	1.8192	23.90	0.5290	0.1567	**0.7273**	**53.61**	18	66	37	19	23	163	2	
187	Point	1	1 mon	ghcn cams grid	57.76	-26.66	26.66	0.1749	5.7176	7.44	0.3180	-8.0239	0.5640	71.34	128	236	163	73	121	721	118	
188	Point	1	1 mon	gpi	98.42	-75.38	75.38	0.1540	6.4935	7.28	0.2023	-10.2007	0.4498	121.74	407	423	183	155	408	1576	338	
189	Point	1	1 mon	trmm 3a46	55.23	-10.34	10.34	0.4785	2.0899	24.20	0.5007	-0.1207	0.7076	67.09	103	105	48	26	82	364	35	
190	Point	1	1 mon	trmm 3b43	**42.68**	8.58	8.58	0.5363	1.8646	24.62	0.5348	0.1130	**0.7313**	**54.65**	20	80	40	16	25	181	4	
191	Point	1	1 mon	ssmi	74.86	-38.59	38.59	0.1902	5.2576	11.73	0.1903	-4.2107	0.4362	90.20	284	313	152	167	270	1186	245	
192	Point	1	1 mon	opi2	**42.20**	5.47	5.47	0.3135	3.1898	15.82	0.3655	-1.4167	0.6046	**49.71**	19	38	75	55	17	204	8	
193	Point	1	1 mon	opi3	**45.16**	**-0.61**	0.61	0.2695	3.7106	14.84	0.3215	-2.0410	0.5670	55.77	24	6	91	71	29	221	10	
194	Point	1	1 mon	cmap	48.56	-9.26	9.26	0.2403	4.1615	13.49	0.2855	-2.6502	0.5343	61.23	43	91	105	93	50	382	40	
195	Point	1	1 mon	cmap2	48.70	-8.58	8.58	0.2382	4.1982	13.72	0.2829	-2.6820	0.5319	61.49	44	81	109	98	52	384	41	
196	Point	1	2 mon	reanalysis	**26.79**	12.58	12.58	0.0252	39.6825	14.61	0.0014	-2.3044	0.0369	**43.13**	9	124	350	367	13	863	158	
197	Point	1	2 mon	gpcp	56.46	-12.41	12.41	0.2016	4.9603	13.95	0.2474	-3.7775	0.4973	70.80	111	117	140	126	115	609	93	
198	Point	1	2 mon	gpcc	60.04	-17.90	17.90	0.1160	8.6207	9.21	0.4397	-26.8519	0.6631	71.03	150	179	239	42	118	728	120	
199	Point	1	2 mon	gpcc trmm	**45.19**	6.94	6.94	0.5177	1.9316	24.61	0.4680	0.0478	0.6841	57.45	25	54	42	36	31	188	6	
200	Point	1	2 mon	ghcn cams grid	58.91	-26.78	26.78	0.1566	6.3857	8.15	0.2548	-8.4114	0.5048	72.89	141	237	181	117	133	809	144	
201	Point	1	2 mon	gpi	99.01	-75.53	75.53	0.1520	6.5789	7.37	0.1974	-10.2418	0.4443	122.19	408	424	186	158	410	1586	340	
202	Point	1	2 mon	trmm 3a46	51.38	-13.43	13.43	0.5480	1.8248	17.94	0.6257	0.1562	**0.7910**	58.92	65	133	38	8	38	282	21	

Rondonia - Monthly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR
203	Point	1	2 mon	trmm 3b43	46.42	7.95	7.95	0.4912	2.0358	25.79	0.4479	-0.0512	0.6692	59.99	31	71	46	40	45	233	13
204	Point	1	2 mon	ssmi	73.94	-38.74	38.74	0.2076	4.8170	10.62	0.2265	-4.0297	0.4759	88.88	277	316	133	142	262	1130	231
205	Point	1	2 mon	opi2	**44.26**	5.31	5.31	0.2771	3.6088	16.32	0.2850	-1.6820	0.5339	**52.47**	22	36	89	94	18	259	16
206	Point	1	2 mon	opi3	46.89	**-0.87**	0.87	0.2396	4.1736	15.41	0.2531	-2.2960	0.5031	58.16	33	8	107	121	34	303	24
207	Point	1	2 mon	cmap	50.80	-9.40	9.40	0.2085	4.7962	14.42	0.2145	-2.9643	0.4631	63.92	59	94	132	148	61	494	66
208	Point	1	2 mon	cmap2	50.91	-8.73	8.73	0.2067	4.8379	14.61	0.2128	-2.9946	0.4613	64.16	60	85	135	149	63	492	65
209	Point	1	3 mon	reanalysis	**29.28**	12.57	12.57	-0.1124		14.93	0.0270	-2.8938	-0.1643	**46.84**	13	122	422	410	14	981	188
210	Point	1	3 mon	gpcp	62.75	-12.46	12.46	0.1365	7.3260	16.08	0.1133	-4.5712	0.3366	76.60	180	118	207	219	163	887	165
211	Point	1	3 mon	gpcc	63.92	-17.84	17.84	0.0741	13.4953	10.36	0.1823	-30.0238	0.4270	74.65	195	177	301	177	146	996	194
212	Point	1	3 mon	gpcc trmm	57.08	6.14	6.14	0.3984	2.5100	28.68	0.2753	-0.3633	0.5247	69.35	116	46	56	102	103	423	49
213	Point	1	3 mon	ghcn cams grid	62.78	-26.97	26.97	0.0995	10.0503	10.47	0.1028	-9.6082	0.3207	77.38	182	238	271	229	172	1092	220
214	Point	1	3 mon	gpi	101.72	-76.00	76.00	0.1140	8.7719	10.99	0.1107	-10.9073	0.3327	126.04	409	426	244	220	415	1714	363
215	Point	1	3 mon	trmm 3a46	58.52	-15.46	15.46	0.4583	2.1820	23.43	0.4266	-0.2259	0.6531	71.86	137	145	52	45	124	503	70
216	Point	1	3 mon	trmm 3b43	61.63	7.50	7.50	0.3527	2.8353	30.51	0.2305	-0.5618	0.4801	73.76	167	64	61	138	139	569	88
217	Point	1	3 mon	ssmi	76.10	-38.97	38.97	0.1904	5.2521	11.59	0.1907	-4.2150	0.4367	90.75	295	319	151	166	275	1206	255
218	Point	1	3 mon	opi2	50.50	4.92	4.92	0.1809	5.5279	17.70	0.1202	-2.3690	0.3468	58.90	55	34	161	212	37	499	68
219	Point	1	3 mon	opi3	53.51	**-1.19**	1.19	0.1534	6.5189	17.19	0.1032	-3.0393	0.3212	64.50	80	9	184	228	65	566	86
220	Point	1	3 mon	cmap	57.36	-9.44	9.44	0.1321	7.5700	16.70	0.0861	-3.7190	0.2935	69.86	120	96	216	240	106	778	133
221	Point	1	3 mon	cmap2	57.47	-8.78	8.78	0.1302	7.6805	16.84	0.0844	-3.7570	0.2906	70.14	126	86	219	244	108	783	137
222	Point	1	4 mon	reanalysis	**32.60**	12.52	12.52	-0.1817		15.11	0.0705	-3.1886	-0.2655	**48.60**	15	120	456	434	16	1041	209
223	Point	1	4 mon	gpcp	70.22	-12.52	12.52	0.0300	33.3333	19.56	0.0055	-5.8706	0.0739	85.20	255	121	346	349	241	1312	283
224	Point	1	4 mon	gpcc	68.66	-18.52	18.52	0.0121	82.6446	12.00	0.0051	-35.6480	0.0712	79.69	243	193	365	352	198	1351	290
225	Point	1	4 mon	gpcc trmm	75.89	4.02	4.02	0.1329	7.5245	37.36	0.0310	-1.2937	0.1761	89.84	294	29	214	312	269	1118	227
226	Point	1	4 mon	ghcn cams grid	67.82	-27.20	27.20	0.0203	49.2611	13.69	0.0043	-11.2929	0.0655	83.18	231	240	354	354	221	1400	305
227	Point	1	4 mon	gpi	108.85	-76.40	76.40	0.0462	21.6450	17.53	0.0182	-12.0967	0.1347	132.40	426	428	337	328	430	1949	417
228	Point	1	4 mon	trmm 3a46	82.28	-17.39	17.39	0.2356	4.2445	37.99	0.1143	-1.1593	0.3380	95.84	346	167	111	217	317	1158	239
229	Point	1	4 mon	trmm 3b43	77.73	5.55	5.55	0.1173	8.5251	37.65	0.0259	-1.4484	0.1608	92.21	310	39	236	317	288	1190	247
230	Point	1	4 mon	ssmi	84.73	-39.26	39.26	0.1163	8.5985	16.10	0.0711	-5.0019	0.2667	97.64	364	324	237	260	328	1513	331
231	Point	1	4 mon	opi2	57.42	4.73	4.73	0.0446	22.4215	19.79	0.0073	-3.3645	0.0854	67.15	123	33	339	343	84	922	175
232	Point	1	4 mon	opi3	60.63	**-1.38**	1.38	0.0347	28.8184	19.73	0.0053	-4.0764	0.0727	72.42	155	11	343	351	128	988	191
233	Point	1	4 mon	cmap	64.40	-9.33	9.33	0.0212	47.1698	20.00	0.0022	-4.8081	0.0471	77.63	200	93	352	366	178	1189	246
234	Point	1	4 mon	cmap2	64.52	-8.69	8.69	0.0212	47.1698	20.01	0.0022	-4.8387	0.0473	77.83	203	83	353	365	180	1184	243
235	Point	2	Yes	reanalysis	51.88	**-2.10**	2.10	0.5081	1.9681	4.82	0.3130	0.0188	0.5594	71.94	68	19	45	75	125	332	29
236	Point	2	Yes	gpcp	58.38	-18.43	18.43	0.3988	2.5075	-0.15	0.2282	-0.3549	0.4777	84.53	136	191	55	141	233	756	125
237	Point	2	Yes	gpcc	57.78	-13.97	13.97	0.4166	2.4004	3.51	0.2248	-0.2527	0.4741	81.81	129	139	53	144	212	677	112
238	Point	2	Yes	gpcc trmm	56.78	-40.14	40.14	0.3074	3.2531	-17.44	0.3524	-2.2058	0.5936	81.90	113	333	77	57	213	793	139
239	Point	2	Yes	ghcn cams grid	54.69	-22.83	22.83	0.4680	2.1368	-4.32	0.2877	-0.1827	0.5364	78.98	97	223	49	89	190	648	104
240	Point	2	Yes	gpi	103.01	-90.76	90.76	0.3006	3.3267	-23.22	0.2538	-2.8707	0.5037	134.98	413	451	81	119	436	1500	327
241	Point	2	Yes	trmm 3a46	75.78	-62.67	62.67	0.3078	3.2489	-23.49	0.4601	-3.6576	0.6783	101.09	293	397	76	38	352	1156	238
242	Point	2	Yes	trmm 3b43	57.34	-40.07	40.07	0.3030	3.3003	-17.28	0.3518	-2.2765	0.5931	82.80	119	331	80	58	215	803	142
243	Point	2	Yes	ssmi	79.47	-66.15	66.15	0.2826	3.5386	-23.22	0.2909	-3.2042	0.5394	106.54	326	403	87	87	372	1275	277
244	Point	2	Yes	opi2	50.52	**-0.24**	0.24	0.5081	1.9681	5.77	0.2305	0.0145	0.4801	72.09	56	3	44	139	126	368	36
245	Point	2	Yes	opi3	51.37	-5.81	5.81	0.4812	2.0781	3.42	0.2402	-0.0455	0.4901	74.25	64	42	47	130	142	425	51
246	Point	2	Yes	cmap	52.96	-13.96	13.96	0.4609	2.1697	0.02	0.2452	-0.1272	0.4952	77.10	77	138	51	128	169	563	83
247	Point	2	Yes	cmap2	52.65	-13.32	13.32	0.4621	2.1640	0.28	0.2483	-0.1219	0.4983	76.92	73	132	50	125	167	547	80
248	Point	2	No	reanalysis	80.93	**-1.90**	1.90	0.0483	20.7039	11.49	0.0037	-1.4184	0.0606	99.27	335	16	334	356	341	1382	299
249	Point	2	No	gpcp	88.73	-18.23	18.23	-0.0247		12.93	0.0011	-2.0309	-0.0337	111.13	381	186	395	390	384	1736	372
250	Point	2	No	gpcc	91.78	-14.28	14.28	-0.0644		17.62	0.0064	-1.7889	-0.0801	111.80	392	142	409	399	385	1727	369
251	Point	2	No	gpcc trmm	95.40	-42.56	42.56	-0.1544		-4.73	0.1341	-8.6659	-0.3662	115.79	400	344	446	444	398	2032	427
252	Point	2	No	ghcn cams grid	86.20	-22.62	22.62	0.0036	277.7778	12.05	0.0000	-1.8132	0.0047	107.06	371	221	374	375	374	1715	364
253	Point	2	No	gpi	132.55	-90.79	90.79	-0.0554		11.13	0.0103	-5.8278	-0.1016	163.91	461	452	405	402	462	2182	455
254	Point	2	No	trmm 3a46	115.53	-64.55	64.55	-0.1489		0.46	0.1598	-12.1721	-0.3998	139.56	442	399	444	446	444	2175	453
255	Point	2	No	trmm 3b43	94.90	-42.49	42.49	-0.1558		-4.69	0.1403	-8.8805	-0.3746	117.07	399	341	448	445	400	2033	428
256	Point	2	No	ssmi	117.04	-66.62	66.62	-0.1505		2.23	0.1004	-7.7728	-0.3169	139.45	444	405	445	439	443	2176	454
257	Point	2	No	opi2	78.27	**-0.04**	0.04	-0.0380		12.64	0.0017	-1.2433	-0.0409	95.61	313	1	398	393	315	1420	312
258	Point	2	No	opi3	79.15	-5.61	5.61	-0.0098		12.35	0.0001	-1.3773	-0.0114	98.42	321	40	385	382	335	1463	321
259	Point	2	No	cmap	81.49	-13.75	13.75	-0.0049		12.30	0.0000	-1.5552	-0.0060	102.03	340	136	380	380	357	1593	343
260	Point	2	No	cmap2	81.30	-13.12	13.12	0.0003	3333.3333	12.17	0.0000	-1.5469	0.0003	101.87	338	129	376	376	355	1574	337
261	Point	2	1 mon	reanalysis	75.38	**-1.55**	1.55	0.1386	7.2150	10.28	0.0300	-1.1292	0.1732	93.31	291	12	200	313	294	1110	224
262	Point	2	1 mon	gpcp	81.20	-17.68	17.68	0.0973	10.2775	9.28	0.0174	-1.5565	0.1319	102.25	337	173	277	329	359	1475	323
263	Point	2	1 mon	gpcc	79.20	-16.46	16.46	0.0567	17.6367	11.36	0.0062	-1.7929	0.0789	100.07	322	158	326	347	346	1499	326
264	Point	2	1 mon	gpcc trmm	87.00	-38.90	38.90	-0.0526		-8.12	0.0144	-6.8215	-0.1201	105.24	372	318	402	403	367	1862	392
265	Point	2	1 mon	ghcn cams grid	78.62	-22.35	22.35	0.1379	7.2516	7.42	0.0322	-1.3495	0.1796	98.02	317	219	204	311	331	1382	298
266	Point	2	1 mon	gpi	128.53	-91.84	91.84	-0.0012		4.02	0.0000	-6.5892	-0.0024	157.82	458	453	378	378	459	2126	447
267	Point	2	1 mon	trmm 3a46	115.30	-67.09	67.09	-0.1160		-0.90	0.0943	-11.6054	-0.3071	138.08	441	406	426	437	442	2152	450
268	Point	2	1 mon	trmm 3b43	87.71	-39.23	39.23	-0.0570		-7.98	0.0177	-7.1558	-0.1331	107.46	377	322	406	405	378	1888	401
269	Point	2	1 mon	ssmi	110.19	-64.90	64.90	-0.0704		-2.18	0.0217	-6.9104	-0.1474	132.02	430	402	414	408	428	2082	438
270	Point	2	1 mon	opi2	71.28	**0.31**	0.31	0.1218	8.2102	10.74	0.0170	-0.8680	0.1305	87.40	261	4	229	331	252	1077	216
271	Point	2	1 mon	opi3	71.73	-5.13	5.13	0.1389	7.1994	9.78	0.0256	-0.9658	0.1600	89.66	264	35	199	318	266	1082	217
272	Point	2	1 mon	cmap	74.09	-13.26	13.26	0.1306	7.6570	8.86	0.0252	-1.1354	0.1588	93.45	280	131	218	319	297	1245	272
273	Point	2	1 mon	cmap2	73.77	-12.64	12.64	0.1381	7.2411	8.75	0.0284	-1.1176	0.1686	93.06	276	126	203	314	292	1211	258
274	Point	2	2 mon	reanalysis	70.99	**-1.85**	1.85	0.1874	5.3362	9.18	0.0556	-0.9899	0.2357	89.73	259	15	157	288	268	987	190
275	Point	2	2 mon	gpcp	76.69	-17.93	17.93	0.1739	5.7504	6.57	0.0563	-1.2930	0.2372	96.33	303	181	165	286	321	1256	273
276	Point	2	2 mon	gpcc	70.85	-17.14	17.14	0.1851	5.4025	6.36	0.0704	-1.3799	0.2653	89.71	258	165	158	262	267	1110	223
277	Point	2	2 mon	gpcc trmm	82.10	-36.32	36.32	0.0555	18.0180	-10.14	0.0164	-5.6785	0.1280	96.49	344	306	329	334	322	1635	351
278	Point	2	2 mon	ghcn cams grid	73.63	-22.57	22.57	0.2001	4.9975	4.86	0.0687	-1.1547	0.2621	93.38	275	220	141	264	295	1195	249
279	Point	2	2 mon	gpi	124.64	-92.45	92.45	0.0587	17.0358	-2.65	0.0145	-6.4675	0.1206	152.74	455	454	322	338	457	2026	425
280	Point	2	2 mon	trmm 3a46	112.10	-69.10	69.10	-0.0344		-4.39	0.0083	-10.7042	-0.0912	131.86	433	408	397	400	427	2065	436
281	Point	2	2 mon	trmm 3b43	82.92	-36.53	36.53	0.0456	21.9298	-9.88	0.0115	-6.0120	0.1075	98.87	352	307	338	339	337	1673	355
282	Point	2	2 mon	ssmi	105.98	-64.75	64.75	-0.0123		-5.74	0.0007	-6.4868	-0.0260	127.73	417	400	389	388	418	2012	420
283	Point	2	2 mon	opi2	65.95	**-0.07**	0.07	0.1984	5.0403	9.38	0.0458	-0.7019	0.2140	82.99	216	2	144	300	216	878	162
284	Point	2	2 mon	opi3	66.83	-5.39	5.39	0.2172	4.6041	8.01	0.0634	-0.7677	0.2518	84.58	220	37	123	274	234	888	167
285	Point	2	2 mon	cmap	69.60	-13.52	13.52	0.2045	4.8900	6.56	0.0626	-0.9298	0.2501	88.37	248	135	136	275	257	1051	211
286	Point	2	2 mon	cmap2	69.19	-12.89	12.89	0.2124	4.7081	6.49	0.0681	-0.9088	0.2609	87.89	247	127	127	266	256	1023	202
287	Point	2	3 mon	reanalysis	68.89	**-2.25**	2.25	0.2209	4.5269	8.28	0.0783	-0.8971	0.2798	87.15	245	20	118	253	251	887	166
288	Point	2	3 mon	gpcp	76.61	-18.44	18.44	0.1901	5.2604	5.62	0.0682	-1.2549	0.2612	95.01	302	192	153	265	309	1221	263
289	Point	2	3 mon	gpcc	68.91	-18.31	18.31	0.2463	4.0601	3.36	0.1326	-1.2144	0.3642	84.17	246	189	102	204	231	972	186
290	Point	2	3 mon	gpcc trmm	76.78	-34.91	34.91	0.1067	9.3721	-9.86	0.0671	-5.5825	0.2589	92.03	304	298	256	268	285	1411	309
291	Point	2	3 mon	ghcn cams grid	74.64	-23.13	23.13	0.2147	4.6577	3.88	0.0802	-1.1263	0.2831	92.26	282	227	125	249	289	1172	242
292	Point	2	3 mon	gpi	122.13	-93.31	93.31	0.1069	9.3545	-8.15	0.0508	-6.4180	0.2254	148.76	453	455	255	293	453	1909	404
293	Point	2	3 mon	trmm 3a46	109.09	-69.46	69.46	0.0436	22.9358	-7.37	0.0146	-10.5711	0.1208	125.35	427	409	340	337	414	1927	411
294	Point	2	3 mon	trmm 3b43	76.83	-35.27	35.27	0.1119	8.9366	-10.05	0.0770	-5.7428	0.2776	93.14	305	303	249	256	293	1406	307
295	Point	2	3 mon	ssmi	102.03	-63.96	63.96	0.0742	13.4771	-10.16	0.0242	-5.5968	0.1557	120.92	411	398	300	321	406	1836	388
296	Point	2	3 mon	opi2	64.70	**-0.67**	0.67	0.2268	4.4092	8.56	0.0607	-0.6443	0.2463	81.13	206	7	115	278	211	817	146
297	Point	2	3 mon	opi3	67.69	-5.97	5.97	0.2188	4.5704	7.49	0.0653	-0.7756	0.2554	84.31	229	43	122	272	232	898	169
298	Point	2	3 mon	cmap	70.39	-14.07	14.07	0.2107	4.7461	5.93	0.0674	-0.9276	0.2596	87.85	257	140	131	267	255	1050	210
299	Point	2	3 mon	cmap2	70.21	-13.45	13.45	0.2125	4.7059	6.01	0.0691	-0.9248	0.2629	87.78	253	134	126	263	254	1030	205
300	Point	2	4 mon	reanalysis	67.96	**-2.81**	2.81	0.1978	5.0556	8.08	0.0639	-0.9886	0.2527	88.62	234	23	145	273	259	934	182
301	Point	2	4 mon	gpcp	78.76	-19.02	19.02	0.1468	6.8120	6.39	0.0414	-1.4480	0.2034	98.32	318	197	190	305	333	1343	288
302	Point	2	4 mon	gpcc	67.80	-20.12	20.12	0.2389	4.1859	2.11	0.1340	-1.3615	0.3660	84.04	230	202	108	202	230	972	185
303	Point	2	4 mon	gpcc trmm	71.75	-35.75	35.75	0.1391	7.1891	-11.00	0.1138	-5.2148	0.3373	90.40	265	304	198	218	273	1258	275

Rondonia - Monthly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR
304	Point	2	4 mon	ghcn cams grid	77.10	-23.84	23.84	0.1731	5.7770	4.77	0.0529	-1.2992	0.2301	95.29	307	232	166	290	311	1306	282
305	Point	2	4 mon	gpi	121.27	-94.44	94.44	0.1347	7.4239	-11.78	0.0857	-6.6088	0.2927	146.60	451	456	210	241	452	1810	384
306	Point	2	4 mon	trmm 3a46	105.34	-70.15	70.15	0.1016	9.8425	-11.29	0.0793	-9.6530	0.2816	121.80	415	410	265	251	409	1750	376
307	Point	2	4 mon	trmm 3b43	72.19	-36.09	36.09	0.1371	7.2939	-10.99	0.1154	-5.4470	0.3397	92.08	271	305	206	215	287	1284	278
308	Point	2	4 mon	ssmi	97.97	-64.81	64.81	0.1340	7.4627	-14.67	0.0810	-5.2305	0.2847	116.48	405	401	213	248	399	1666	354
309	Point	2	4 mon	opi2	65.28	**-1.25**	1.25	0.1969	5.0787	8.40	0.0465	-0.7274	0.2156	82.60	209	10	146	296	214	875	161
310	Point	2	4 mon	opi3	68.42	-6.62	6.62	0.1772	5.6433	7.68	0.0435	-0.9056	0.2086	86.75	240	53	162	304	249	1008	199
311	Point	2	4 mon	cmap	71.85	-14.71	14.71	0.1723	5.8038	6.37	0.0458	-1.0661	0.2140	90.33	268	143	168	299	271	1149	236
312	Point	2	4 mon	cmap2	71.63	-14.08	14.08	0.1728	5.7870	6.47	0.0465	-1.0680	0.2155	90.37	263	141	167	297	272	1140	232
313	Area	1	Yes	reanalysis	60.61	6.00	6.00	**0.9852**	1.0150	6.03	0.1963	0.1902	0.4431	69.28	154	44	1	159	100	458	60
314	Area	1	Yes	gpcp	63.38	-21.77	21.77	0.5430	1.8416	-6.36	0.3077	0.0126	0.5547	77.91	190	213	39	78	183	703	115
315	Area	1	Yes	gpcc	63.88	-23.94	23.94	0.5644	1.7718	-10.04	0.3292	0.0332	0.5738	74.49	194	233	35	68	143	673	110
316	Area	1	Yes	gpcc trmm	52.37	-10.69	10.69	**0.8289**	1.2064	-4.59	0.5297	0.4921	**0.7278**	62.23	70	109	11	18	55	263	17
317	Area	1	Yes	ghcn cams grid	66.86	-33.43	33.43	0.5773	1.7322	-15.99	0.3297	-0.0356	0.5742	78.33	221	284	32	67	187	791	138
318	Area	1	Yes	gpi	92.34	-85.52	85.52	0.5159	1.9384	-37.99	0.4708	-1.0908	0.6862	115.47	394	449	43	34	396	1316	285
319	Area	1	Yes	trmm 3a46	**44.18**	-38.15	38.15	**0.8475**	1.1799	-28.41	0.8041	0.5932	**0.8967**	56.60	21	310	10	2	30	373	39
320	Area	1	Yes	trmm 3b43	58.01	-11.41	11.41	**0.7287**	1.3723	-1.62	0.4447	0.3657	0.6669	68.98	132	113	16	41	97	399	45
321	Area	1	Yes	ssmi	61.62	-49.54	49.54	**0.6692**	1.4943	-28.78	0.5607	0.0502	**0.7488**	79.00	166	388	21	13	191	779	136
322	Area	1	Yes	opi2	55.30	-4.31	4.31	**0.7360**	1.3587	-0.38	0.3347	0.2886	0.5785	66.15	104	31	15	66	73	289	23
323	Area	1	Yes	opi3	59.06	-10.37	10.37	**0.6353**	1.5741	-2.73	0.2968	0.1815	0.5448	70.95	144	106	24	81	116	471	61
324	Area	1	Yes	cmap	62.31	-18.52	18.52	0.5891	1.6975	-6.35	0.2872	0.0917	0.5359	74.72	174	194	29	91	149	637	101
325	Area	1	Yes	cmap2	62.30	-17.85	17.85	0.5816	1.7194	-5.74	0.2824	0.0845	0.5314	75.02	173	178	31	99	152	633	100
326	Area	1	No	reanalysis	**25.40**	6.13	6.13	0.1650	6.0606	7.91	0.1909	-4.9198	0.4369	**31.81**	6	45	175	165	1	392	44
327	Area	1	No	gpcp	63.24	-21.92	21.92	0.0873	11.4548	8.85	0.1538	-18.1482	0.3922	78.06	188	215	286	198	185	1072	213
328	Area	1	No	gpcc	64.64	-24.08	24.08	0.0567	17.6367	6.03	0.3154	-96.5099	0.5616	76.81	205	234	325	74	166	1004	197
329	Area	1	No	gpcc trmm	54.97	-10.21	10.21	0.2189	4.5683	17.61	0.2869	-3.4726	0.5356	66.26	99	104	121	92	74	490	64
330	Area	1	No	ghcn cams grid	64.53	-32.97	32.97	0.0690	14.4928	5.44	0.1627	-35.7935	0.4034	79.43	204	279	306	188	195	1172	240
331	Area	1	No	gpi	108.67	-85.26	85.26	0.0565	17.6991	7.39	0.0891	-42.7598	0.2985	132.97	424	447	328	237	431	1867	395
332	Area	1	No	trmm 3a46	79.32	-31.80	31.80	0.1498	6.6756	22.49	0.1753	-6.3702	0.4187	91.19	323	269	187	182	279	1240	270
333	Area	1	No	trmm 3b43	56.79	-10.93	10.93	0.2121	4.7148	17.48	0.2913	-3.8538	0.5397	68.61	114	110	128	85	92	529	76
334	Area	1	No	ssmi	85.27	-49.16	49.16	0.0588	17.0068	9.91	0.0598	-20.3250	0.2446	100.75	368	387	321	280	351	1707	359
335	Area	1	No	opi2	47.70	**-3.16**	3.16	0.1376	7.2674	9.67	0.2314	-8.8906	0.4811	55.46	38	25	205	137	28	433	55
336	Area	1	No	opi3	51.12	-9.22	9.22	0.1133	8.8261	9.35	0.1869	-11.5234	0.4323	62.40	63	90	246	174	56	629	98
337	Area	1	No	cmap	54.90	-17.82	17.82	0.1007	9.9305	8.82	0.1651	-14.0330	0.4063	68.50	98	176	266	186	90	816	145
338	Area	1	No	cmap2	54.98	-17.14	17.14	0.0992	10.0806	8.93	0.1619	-14.1173	0.4024	68.70	100	166	272	190	94	822	148
339	Area	1	1 mon	reanalysis	**24.72**	6.21	6.21	0.0931	10.7411	8.06	0.0608	-5.9194	0.2465	**34.42**	2	48	281	277	4	612	94
340	Area	1	1 mon	gpcp	59.87	-21.42	21.42	0.1160	8.6207	7.95	0.2684	-16.7668	0.5181	75.32	147	210	238	105	155	855	154
341	Area	1	1 mon	gpcc	63.04	-23.67	23.67	0.0721	13.8696	5.47	0.5181	-94.6119	**0.7198**	75.54	184	231	305	22	159	901	170
342	Area	1	1 mon	gpcc trmm	48.83	-10.68	10.68	0.2934	3.4083	14.80	0.5146	-2.5831	**0.7173**	59.81	45	108	84	23	43	303	25
343	Area	1	1 mon	ghcn cams grid	62.66	-33.05	33.05	0.0910	10.9890	4.51	0.2830	-34.3259	0.5320	77.86	179	280	282	97	182	1020	200
344	Area	1	1 mon	gpi	106.73	-84.81	84.81	0.0855	11.6959	4.54	0.2034	-40.7995	0.4510	130.23	419	445	290	154	423	1731	370
345	Area	1	1 mon	trmm 3a46	68.35	-34.06	34.06	0.2630	3.8023	14.76	0.5261	-4.6115	**0.7253**	80.49	239	290	95	21	206	851	152
346	Area	1	1 mon	trmm 3b43	48.28	-9.50	9.50	0.2897	3.4518	15.07	0.5329	-2.7612	**0.7300**	60.91	41	98	85	17	48	289	22
347	Area	1	1 mon	ssmi	80.78	-48.58	48.58	0.1044	9.5785	7.07	0.1871	-18.5078	0.4325	96.61	333	383	261	173	324	1474	322
348	Area	1	1 mon	opi2	45.35	-3.34	3.34	0.1660	6.0241	9.23	0.3358	-8.1807	0.5795	**53.52**	26	26	173	64	21	310	27
349	Area	1	1 mon	opi3	48.38	-9.42	9.42	0.1432	6.9832	8.70	0.2977	-10.6376	0.5456	60.26	42	95	194	80	46	457	59
350	Area	1	1 mon	cmap	52.64	-18.13	18.13	0.1265	7.9051	8.03	0.2593	-13.1537	0.5092	66.58	72	183	224	113	77	669	109
351	Area	1	1 mon	cmap2	52.69	-17.46	17.46	0.1253	7.9808	8.15	0.2565	-13.2227	0.5065	66.75	74	168	225	116	78	661	107
352	Area	1	2 mon	reanalysis	**25.28**	6.22	6.22	0.0183	54.6448	8.23	0.0024	-6.9744	0.0485	**36.96**	3	49	357	364	6	779	134
353	Area	1	2 mon	gpcp	60.95	-21.20	21.20	0.1087	9.1996	8.23	0.2354	-16.9949	0.4852	75.94	158	206	253	135	161	913	173
354	Area	1	2 mon	gpcc	63.60	-23.04	23.04	0.0649	15.4083	5.63	0.4261	-97.1856	0.6527	75.76	193	226	313	46	160	938	183
355	Area	1	2 mon	gpcc trmm	49.89	-11.36	11.36	0.2804	3.5663	15.00	0.4688	-2.7451	0.6847	61.66	52	112	88	35	53	340	32
356	Area	1	2 mon	ghcn cams grid	63.43	-33.16	33.16	0.0825	12.1212	4.84	0.2327	-34.9237	0.4824	78.55	192	282	293	136	188	1091	219
357	Area	1	2 mon	gpi	107.06	-84.92	84.92	0.0832	12.0192	4.71	0.1927	-40.9293	0.4390	130.68	420	446	292	163	424	1745	375
358	Area	1	2 mon	trmm 3a46	67.66	-37.22	37.22	0.2999	3.3344	11.37	0.6519	-4.0726	**0.8074**	77.45	228	309	82	5	175	799	140
359	Area	1	2 mon	trmm 3b43	51.75	-10.09	10.09	0.2677	3.7355	15.59	0.4542	-3.0472	0.6739	63.70	66	102	93	39	60	360	34
360	Area	1	2 mon	ssmi	80.90	-48.70	48.70	0.1155	8.6580	6.39	0.2290	-18.1152	0.4785	95.92	334	384	241	140	318	1417	311
361	Area	1	2 mon	opi2	46.80	-3.49	3.49	0.1465	6.8259	9.51	0.2613	-8.6410	0.5112	54.94	32	27	191	109	26	385	43
362	Area	1	2 mon	opi3	49.90	-9.67	9.67	0.1284	7.7882	9.00	0.2382	-11.0381	0.4881	61.39	53	100	222	132	51	558	82
363	Area	1	2 mon	cmap	54.59	-18.26	18.26	0.1112	8.9928	8.48	0.2003	-13.6471	0.4476	67.85	91	187	250	156	85	769	131
364	Area	1	2 mon	cmap2	54.59	-17.60	17.60	0.1103	9.0662	8.58	0.1987	-13.7093	0.4458	67.99	93	171	252	157	88	761	127
365	Area	1	3 mon	reanalysis	**27.00**	6.23	6.23	-0.0490		8.39	0.0168	-7.9224	-0.1297	**39.12**	10	50	401	404	9	874	159
366	Area	1	3 mon	gpcp	64.26	-21.23	21.23	0.0725	13.7931	9.42	0.1049	-18.4344	0.3238	79.06	197	207	304	225	192	1125	229
367	Area	1	3 mon	gpcc	65.94	-22.91	22.91	0.0412	24.2718	6.30	0.1734	-102.8711	0.4164	77.78	215	224	341	184	179	1143	233
368	Area	1	3 mon	gpcc trmm	55.57	-12.15	12.15	0.2119	4.7192	17.38	0.2660	-3.5556	0.5157	68.61	106	115	129	106	91	547	79
369	Area	1	3 mon	ghcn cams grid	65.41	-33.34	33.34	0.0528	18.9394	6.05	0.0950	-36.9865	0.3081	80.79	210	283	332	233	208	1266	276
370	Area	1	3 mon	gpi	108.75	-85.36	85.36	0.0583	17.1527	7.10	0.0943	-42.3437	0.3071	133.18	425	448	323	234	432	1862	393
371	Area	1	3 mon	trmm 3a46	71.84	-39.37	39.37	0.2428	4.1186	15.00	0.4169	-4.9174	0.6457	84.61	267	325	103	47	235	977	187
372	Area	1	3 mon	trmm 3b43	57.50	-10.52	10.52	0.1880	5.3191	18.34	0.2237	-4.0562	0.4730	71.82	127	107	156	145	123	658	106
373	Area	1	3 mon	ssmi	82.63	-48.86	48.86	0.1007	9.9305	7.28	0.1740	-18.6202	0.4172	97.47	348	385	267	183	327	1510	330
374	Area	1	3 mon	opi2	50.56	-3.86	3.86	0.0954	10.4822	10.26	0.1096	-9.7967	0.3310	58.24	57	28	280	221	35	621	97
375	Area	1	3 mon	opi3	53.62	-9.98	9.98	0.0808	12.3762	9.99	0.0937	-12.3629	0.3062	64.79	83	101	294	235	66	779	135
376	Area	1	3 mon	cmap	58.11	-18.29	18.29	0.0689	14.5138	9.75	0.0769	-15.0157	0.2773	71.08	133	188	307	257	119	1004	196
377	Area	1	3 mon	cmap2	58.16	-17.62	17.62	0.0680	14.7059	9.83	0.0755	-15.0905	0.2748	71.24	134	172	309	258	120	993	193
378	Area	1	4 mon	reanalysis	**29.24**	6.21	6.21	-0.0827		8.48	0.0480	-8.3928	-0.2190	**40.15**	12	47	417	422	10	908	172
379	Area	1	4 mon	gpcp	68.33	-21.28	21.28	0.0136	73.5294	11.34	0.0037	-20.7940	0.0608	83.85	238	209	364	355	228	1394	302
380	Area	1	4 mon	gpcc	68.65	-23.48	23.48	0.0058	172.4138	7.24	0.0035	-114.8282	0.0596	80.73	242	230	372	357	207	1408	308
381	Area	1	4 mon	gpcc trmm	66.29	-13.79	13.79	0.0663	15.0830	22.11	0.0265	-5.4036	0.1627	81.09	219	137	311	315	209	1191	248
382	Area	1	4 mon	ghcn cams grid	68.18	-33.53	33.53	0.0099	101.0101	7.79	0.0034	-40.0792	0.0579	83.86	236	285	367	360	229	1477	324
383	Area	1	4 mon	gpi	112.93	-85.71	85.71	0.0177	56.4972	11.02	0.0087	-44.6981	0.0933	136.97	436	450	358	340	439	2023	422
384	Area	1	4 mon	trmm 3a46	83.99	-40.77	40.77	0.1200	8.3333	22.98	0.1036	-6.8307	0.3218	97.64	360	334	230	227	329	1480	325
385	Area	1	4 mon	trmm 3b43	67.55	-12.00	12.00	0.0605	16.5289	22.16	0.0236	-5.8076	0.1537	83.05	227	114	320	322	218	1201	253
386	Area	1	4 mon	ssmi	87.66	-49.12	49.12	0.0567	17.6367	9.98	0.0550	-20.1443	0.2346	101.48	376	386	327	289	354	1732	371
387	Area	1	4 mon	opi2	54.28	-4.04	4.04	0.0202	49.5050	11.40	0.0049	-11.5976	0.0702	63.01	87	30	355	353	57	882	163
388	Area	1	4 mon	opi3	57.21	-10.14	10.14	0.0155	64.5161	11.38	0.0035	-14.2371	0.0588	69.29	117	103	361	358	101	1040	208
389	Area	1	4 mon	cmap	61.62	-18.17	18.17	0.0082	121.9512	11.56	0.0011	-16.9554	0.0329	75.37	165	184	371	369	156	1245	271
390	Area	1	4 mon	cmap2	61.66	-17.52	17.52	0.0084	119.0476	11.56	0.0011	-17.0174	0.0338	75.50	169	169	370	368	158	1234	268
391	Area	2	Yes	reanalysis	54.59	-31.43	31.43	0.2343	4.2680	-20.65	0.1770	-2.2121	0.4207	79.80	92	268	112	181	200	853	153
392	Area	2	Yes	gpcp	64.27	-47.76	47.76	0.2023	4.9432	-23.50	0.1562	-3.4235	0.3952	93.65	198	379	139	196	299	1211	259
393	Area	2	Yes	gpcc	62.45	-43.83	43.83	0.2238	4.4683	-20.57	0.1643	-2.7215	0.4054	88.62	175	353	117	187	260	1092	222
394	Area	2	Yes	gpcc trmm	59.31	-48.52	48.52	0.2678	3.7341	-24.53	0.3927	-4.1930	0.6266	86.03	145	382	92	51	247	917	174
395	Area	2	Yes	ghcn cams grid	63.12	-52.15	52.15	0.2326	4.2992	-25.45	0.1890	-3.2402	0.4347	91.69	186	395	113	168	283	1145	234
396	Area	2	Yes	gpi	118.48	-113.32	113.32	0.1890	5.2910	-35.00	0.2361	-10.5274	0.4859	151.87	446	463	154	134	456	1653	353
397	Area	2	Yes	trmm 3a46	82.39	-72.26	72.26	0.2851	3.5075	-31.81	0.6031	-6.8275	**0.7766**	106.02	347	416	86	9	370	1228	267
398	Area	2	Yes	trmm 3b43	60.91	-48.45	48.45	0.2668	3.7481	-24.47	0.4003	-4.2705	0.6327	86.67	157	381	94	49	248	929	180
399	Area	2	Yes	ssmi	91.48	-82.88	82.88	0.2045	4.8900	-35.28	0.2872	-8.8535	0.5359	118.79	390	437	137	90	401	1455	319
400	Area	2	Yes	opi2	49.74	-29.56	29.56	0.2614	3.8256	-20.54	0.1622	-1.5742	0.4028	71.44	50	254	97	189	122	712	116
401	Area	2	Yes	opi3	53.32	-35.14	35.14	0.2401	4.1649	-21.62	0.1591	-2.0576	0.3989	77.86	79	301	106	191	181	858	157
402	Area	2	Yes	cmap	58.33	-43.28	43.28	0.2273	4.3995	-23.25	0.1586	-2.6194	0.3983	84.71	135	352	114	192	238	1031	206
403	Area	2	Yes	cmap2	57.92	-42.65	42.65	0.2262	4.4209	-23.08	0.1584	-2.6114	0.3980	84.62	130	346	116	194	236	1022	201
404	Area	2	No	reanalysis	88.29	-31.22	31.22	-0.2255		-13.98	0.1747	-5.5104	-0.4180	110.06	380	266	461	448	382	1937	414

Rondonia - Monthly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR
405	Area	2	No	gpcp	98.17	-47.56	47.56	-0.2212		-10.42	0.1991	-7.0833	-0.4462	122.63	406	377	460	454	411	2108	442
406	Area	2	No	gpcc	97.89	-44.14	44.14	-0.2572		-6.46	0.2186	-5.9352	-0.4675	120.51	404	355	467	458	404	2088	439
407	Area	2	No	gpcc trmm	97.18	-50.94	50.94	-0.1940		-11.81	0.3477	-15.8899	-0.5896	119.44	403	390	459	465	402	2119	444
408	Area	2	No	ghcn cams grid	96.53	-51.95	51.95	-0.2319		-9.08	0.2001	-6.8995	-0.4474	121.23	401	394	463	456	407	2121	446
409	Area	2	No	gpi	146.23	-113.34	113.34	-0.1670		-0.65	0.1998	-16.5223	-0.4469	179.80	468	464	452	455	468	2307	468
410	Area	2	No	trmm 3a46	119.69	-74.15	74.15	-0.1716		-7.85	0.3522	-22.2327	-0.5935	143.89	450	420	455	468	449	2242	462
411	Area	2	No	trmm 3b43	96.74	-50.87	50.87	-0.1921		-11.89	0.3501	-16.1983	-0.5917	120.53	402	389	458	467	405	2121	445
412	Area	2	No	ssmi	126.35	-83.34	83.34	-0.2286		-9.82	0.3494	-14.4692	-0.5911	150.81	456	439	462	466	454	2277	466
413	Area	2	No	opi2	82.13	-29.36	29.36	-0.2848		-13.67	0.2052	-4.4351	-0.4530	100.56	345	251	468	457	350	1871	397
414	Area	2	No	opi3	85.36	-34.93	34.93	-0.2509		-12.69	0.1852	-5.0735	-0.4303	106.30	369	299	466	452	371	1957	418
415	Area	2	No	cmap	89.81	-43.08	43.08	-0.2385		-10.97	0.1862	-5.8303	-0.4315	112.73	385	350	465	453	389	2042	431
416	Area	2	No	cmap2	89.68	-42.45	42.45	-0.2355		-11.19	0.1829	-5.8185	-0.4277	112.63	384	340	464	450	388	2026	424
417	Area	2	1 mon	reanalysis	83.26	-30.90	30.90	-0.1319		-15.36	0.0595	-4.8337	-0.2440	104.37	356	264	439	428	362	1849	390
418	Area	2	1 mon	gpcp	92.79	-47.04	47.04	-0.1192		-13.61	0.0572	-6.1694	-0.2392	115.70	397	370	429	426	397	2019	421
419	Area	2	1 mon	gpcc	90.20	-45.09	45.09	-0.1671		-10.67	0.1053	-6.1384	-0.3245	114.63	386	360	453	441	394	2034	429
420	Area	2	1 mon	gpcc trmm	92.07	-47.32	47.32	-0.1426		-13.91	0.1737	-13.5802	-0.4168	112.12	393	373	443	447	387	2043	432
421	Area	2	1 mon	ghcn cams grid	91.72	-51.70	51.70	-0.1221		-12.96	0.0553	-6.0499	-0.2352	114.73	391	392	434	424	395	2036	430
422	Area	2	1 mon	gpi	144.68	-113.51	113.51	-0.1275		-5.56	0.1285	-17.6565	-0.3585	176.25	467	465	436	442	467	2277	467
423	Area	2	1 mon	trmm 3a46	121.96	-76.75	76.75	-0.1658		-7.61	0.3193	-21.9305	-0.5651	144.59	452	429	451	464	450	2246	464
424	Area	2	1 mon	trmm 3b43	93.14	-47.64	47.64	-0.1420		-13.88	0.1804	-14.1188	-0.4248	114.18	398	378	441	449	392	2058	435
425	Area	2	1 mon	ssmi	122.75	-81.35	81.35	-0.1836		-11.99	0.2267	-13.8021	-0.4761	145.78	454	436	457	461	451	2259	465
426	Area	2	1 mon	opi2	76.45	-29.04	29.04	-0.1576		-15.30	0.0624	-3.7568	-0.2498	94.24	300	245	449	430	302	1726	368
427	Area	2	1 mon	opi3	79.56	-34.48	34.48	-0.1252		-15.00	0.0456	-4.2743	-0.2135	99.24	327	296	435	419	340	1817	386
428	Area	2	1 mon	cmap	84.27	-42.62	42.62	-0.1220		-14.07	0.0482	-5.0004	-0.2195	105.85	362	345	433	423	369	1932	412
429	Area	2	1 mon	cmap2	84.02	-41.99	41.99	-0.1176		-14.25	0.0451	-4.9754	-0.2124	105.63	361	337	427	418	368	1911	405
430	Area	2	2 mon	reanalysis	78.47	-30.85	30.85	-0.0532		-16.55	0.0097	-4.2940	-0.0984	99.53	314	262	403	401	343	1723	366
431	Area	2	2 mon	gpcp	87.26	-46.93	46.93	-0.0011		-17.24	0.0000	-5.2098	-0.0021	107.79	373	367	377	377	379	1873	399
432	Area	2	2 mon	gpcc	83.70	-45.16	45.16	-0.0205		-15.73	0.0016	-5.1875	-0.0403	105.13	359	361	393	392	366	1871	398
433	Area	2	2 mon	gpcc trmm	87.47	-44.97	44.97	-0.0484		-15.91	0.0204	-11.9715	-0.1430	104.92	375	359	400	407	364	1905	403
434	Area	2	2 mon	ghcn cams grid	87.29	-51.57	51.57	-0.0031		-17.16	0.0000	-5.1542	-0.0060	107.31	374	391	379	379	377	1900	402
435	Area	2	2 mon	gpi	140.92	-113.68	113.68	-0.0649		-12.09	0.0342	-17.1341	-0.1849	171.66	466	466	410	414	466	2222	460
436	Area	2	2 mon	trmm 3a46	119.65	-79.05	79.05	-0.1073		-9.78	0.1337	-21.0733	-0.3656	140.67	449	430	420	443	446	2188	457
437	Area	2	2 mon	trmm 3b43	89.07	-45.17	45.17	-0.0549		-15.71	0.0276	-12.5447	-0.1661	107.22	383	362	404	411	376	1936	413
438	Area	2	2 mon	ssmi	118.74	-80.98	80.98	-0.1200		-15.68	0.0971	-12.9264	-0.3117	141.52	447	435	430	438	448	2198	458
439	Area	2	2 mon	opi2	71.80	-29.07	29.07	-0.0260		-16.96	0.0017	-3.0991	-0.0413	87.58	266	246	396	394	253	1555	336
440	Area	2	2 mon	opi3	73.97	-34.39	34.39	0.0093	107.5269	-17.43	0.0003	-3.4859	0.0159	91.62	278	292	369	372	282	1593	342
441	Area	2	2 mon	cmap	79.12	-42.52	42.52	0.0050	200.0000	-17.40	0.0001	-4.1710	0.0089	98.36	320	343	373	373	334	1743	373
442	Area	2	2 mon	cmap2	78.91	-41.89	41.89	0.0107	93.4579	-17.53	0.0004	-4.1311	0.0193	97.98	319	336	366	371	330	1722	365
443	Area	2	3 mon	reanalysis	72.11	-30.87	30.87	0.0687	14.5560	-18.29	0.0162	-3.4622	0.1271	91.49	270	263	308	335	281	1457	320
444	Area	2	3 mon	gpcp	82.83	-47.06	47.06	0.1060	9.4340	-20.51	0.0453	-4.3546	0.2128	100.22	350	371	259	301	347	1628	349
445	Area	2	3 mon	gpcc	79.84	-45.69	45.69	0.1148	8.7108	-20.25	0.0527	-4.2746	0.2296	96.05	331	365	243	291	319	1549	334
446	Area	2	3 mon	gpcc trmm	83.27	-43.96	43.96	0.0395	25.3165	-17.03	0.0150	-11.3380	0.1226	98.49	357	354	342	336	336	1725	367
447	Area	2	3 mon	ghcn cams grid	82.89	-51.75	51.75	0.1125	8.8889	-21.23	0.0470	-4.3050	0.2167	99.76	351	393	248	294	344	1630	350
448	Area	2	3 mon	gpi	136.64	-114.06	114.06	0.0193	51.8135	-20.55	0.0031	-16.1380	0.0555	165.44	464	467	356	363	464	2114	443
449	Area	2	3 mon	trmm 3a46	116.36	-79.89	79.89	-0.0154		-13.98	0.0030	-20.7873	-0.0549	134.05	443	431	391	397	435	2097	441
450	Area	2	3 mon	trmm 3b43	83.23	-44.32	44.32	0.0482	20.7469	-17.29	0.0234	-11.5956	0.1529	99.52	354	356	335	324	342	1711	360
451	Area	2	3 mon	ssmi	113.08	-80.08	80.08	-0.0105		-21.36	0.0008	-11.7341	-0.0279	133.33	437	432	386	389	433	2077	437
452	Area	2	3 mon	opi2	67.22	-29.29	29.29	0.1173	8.5251	-18.76	0.0346	-2.3836	0.1860	79.67	225	249	235	309	197	1215	262
453	Area	2	3 mon	opi3	70.25	-34.59	34.59	0.1244	8.0386	-19.50	0.0450	-2.8235	0.2121	84.69	256	297	227	303	237	1320	286
454	Area	2	3 mon	cmap	75.37	-42.69	42.69	0.1180	8.4746	-20.35	0.0451	-3.4462	0.2124	91.33	290	347	233	302	280	1452	318
455	Area	2	3 mon	cmap2	75.12	-42.07	42.07	0.1193	8.3822	-20.31	0.0465	-3.4291	0.2157	91.15	287	338	232	295	278	1430	315
456	Area	2	4 mon	reanalysis	66.27	-31.23	31.23	0.1494	6.6934	-19.69	0.0775	-2.9589	0.2784	85.75	218	267	188	255	244	1172	241
457	Area	2	4 mon	gpcp	77.94	-47.45	47.45	0.1712	5.8411	-22.76	0.1197	-3.8970	0.3459	95.37	311	376	169	213	313	1382	297
458	Area	2	4 mon	gpcc	74.08	-47.01	47.01	0.2112	4.7348	-23.96	0.1875	-3.7509	0.4330	89.09	279	369	130	172	263	1213	261
459	Area	2	4 mon	gpcc trmm	75.27	-44.44	44.44	0.1128	8.8652	-18.94	0.1228	-9.9283	0.3504	93.61	288	357	247	210	298	1400	306
460	Area	2	4 mon	ghcn cams grid	78.01	-52.26	52.26	0.1887	5.2994	-24.19	0.1338	-3.8096	0.3658	94.51	312	396	155	203	305	1371	292
461	Area	2	4 mon	gpi	133.04	-114.81	114.81	0.0971	10.2987	-28.57	0.0816	-15.5333	0.2856	159.61	462	468	278	246	460	1914	407
462	Area	2	4 mon	trmm 3a46	112.57	-80.22	80.22	0.0667	14.9925	-19.07	0.0565	-18.6288	0.2377	128.63	434	433	310	285	419	1881	400
463	Area	2	4 mon	trmm 3b43	75.41	-44.78	44.78	0.1175	8.5106	-19.11	0.1392	-10.2034	0.3730	94.78	292	358	234	201	307	1392	301
464	Area	2	4 mon	ssmi	107.60	-80.84	80.84	0.0905	11.0497	-28.17	0.0559	-10.1361	0.2365	126.56	422	434	283	287	417	1843	389
465	Area	2	4 mon	opi2	61.56	-29.67	29.67	0.2206	4.5331	-20.31	0.1241	-1.8990	0.3523	73.38	163	256	119	209	135	882	164
466	Area	2	4 mon	opi3	64.44	-35.04	35.04	0.2070	4.8309	-21.26	0.1262	-2.3876	0.3553	79.32	201	300	134	207	193	1035	207
467	Area	2	4 mon	cmap	70.22	-43.13	43.13	0.1988	5.0302	-22.73	0.1296	-2.9785	0.3600	85.96	254	351	142	206	246	1199	251
468	Area	2	4 mon	cmap2	69.84	-42.50	42.50	0.1987	5.0327	-22.60	0.1305	-2.9661	0.3613	85.83	251	342	143	205	245	1186	244

Rondonia - Yearly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	*Linear*	*1*	*Yes*	*reanalysis*	*16.11*	*8.33*	*8.33*	*0.2365*	*4.2283*	*9.96*	*0.0956*	*-1.2971*	*0.3092*	*20.06*	*151*	*32*	*98*	*67*	*27*	*375*	*64*	Plot
2	Linear	1	Yes	gpcp	21.73	-19.27	19.27	0.6516	1.5347	-7.53	0.2281	-1.1111	0.4776	24.81	90	66	47	36	45	284	27	
3	Linear	1	Yes	gpcc	22.74	-22.74	22.74	0.2268	4.4092	1.94	0.1580	-12.7054	0.3975	25.36	81	76	102	54	48	361	60	
4	Linear	1	Yes	gpcc trmm	16.07	**1.70**	1.70	0.6931	1.4428	14.12	0.2073	0.1585	0.4553	17.38	144	9	39	42	21	255	19	
5	Linear	1	Yes	ghcn cams grid	32.16	-30.84	30.84	0.1188	8.4175	5.60	0.0088	-5.8107	0.0940	34.85	62	95	123	118	69	467	112	
6	Linear	1	Yes	gpi	82.38	-82.38	82.38	-0.0540		21.12	0.0018	-20.3290	-0.0419	85.80	11	146	155	133	147	592	153	
7	Linear	1	Yes	trmm 3a46	24.21	-19.85	19.85	-1.9806		169.95	0.1538	-1.0380	-0.3922	30.85	89	68	133	152	57	499	127	
8	Linear	1	Yes	trmm 3b43	14.67	**-0.78**	0.78	**1.1089**	1.1089	-4.71	0.5397	0.5332	**0.7346**	**14.91**	138	5	13	10	8	174	2	
9	Linear	1	Yes	ssmi	45.01	-43.28	43.28	0.2339	4.2753	4.46	0.0145	-4.7741	0.1203	48.32	38	119	100	114	119	490	124	
10	Linear	1	Yes	opi2	**12.65**	**-1.08**	1.08	0.7442	1.3437	2.89	0.2720	0.2359	0.5215	**14.93**	137	6	29	25	9	206	8	
11	Linear	1	Yes	opi3	**11.46**	-6.65	6.65	**0.8750**	1.1429	-4.01	0.3564	0.1975	**0.5970**	**15.30**	127	21	15	15	15	193	4	
12	Linear	1	Yes	cmap	18.76	-14.80	14.80	0.6430	1.5552	-4.36	0.1991	-0.6130	0.4462	21.69	105	51	48	46	32	282	25	
13	Linear	1	Yes	cmap2	18.31	-14.16	14.16	0.6216	1.6088	-3.34	0.1873	-0.5700	0.4328	21.40	108	47	54	48	31	288	29	
14	Linear	1	No	reanalysis	13.41	7.14	7.14	0.2263	4.4189	8.79	0.2365	-3.3121	0.4863	16.73	149	24	103	34	20	330	46	
15	Linear	1	No	gpcp	20.86	-20.51	20.51	0.2201	4.5434	5.78	0.0668	-4.4711	0.2584	24.94	87	70	107	83	46	393	81	
16	Linear	1	No	gpcc	23.36	-23.36	23.36	-0.1976		14.86	0.6316	-83.7939	-0.7947	27.49	80	77	147	154	52	510	137	
17	Linear	1	No	gpcc trmm	**10.20**	-7.47	7.47	0.4955	2.0182	12.93	0.2611	-0.3933	0.5110	**14.24**	124	27	68	28	6	253	17	
18	Linear	1	No	ghcn cams grid	32.37	-32.05	32.05	0.0589	16.9779	6.86	0.0059	-17.0382	0.0766	34.52	57	100	127	122	67	473	115	
19	Linear	1	No	gpi	83.71	-83.71	83.71	-0.1827		32.41	0.0474	-49.9031	-0.2177	86.24	9	148	148	143	148	596	155	
20	Linear	1	No	trmm 3a46	30.05	-30.05	30.05	-1.1646		107.79	0.1291	-5.0103	-0.3594	34.00	63	94	137	146	65	505	136	
21	Linear	1	No	trmm 3b43	**11.05**	-8.12	8.12	0.7936	1.2601	-0.68	0.6035	0.2600	**0.7768**	**12.70**	120	31	23	7	3	184	3	
22	Linear	1	No	ssmi	46.61	-46.61	46.61	-0.1147		22.85	0.0076	-12.5025	-0.0874	49.88	30	127	153	137	123	570	145	
23	Linear	1	No	opi2	**9.29**	**-2.31**	2.31	0.4808	2.0799	5.74	0.2911	-0.0955	0.5395	**11.16**	134	11	71	24	2	242	15	
24	Linear	1	No	opi3	**11.60**	-7.89	7.89	0.3165	3.1596	6.53	0.1196	-0.9850	0.3459	**15.02**	123	28	92	64	10	317	40	
25	Linear	1	No	cmap	17.38	-16.03	16.03	0.1381	7.2411	9.17	0.0235	-3.1542	0.1534	21.73	101	55	116	107	35	414	94	
26	Linear	1	No	cmap2	16.93	-15.40	15.40	0.1325	7.5472	9.41	0.0218	-2.9991	0.1478	21.32	103	53	120	110	30	416	96	
27	*Linear*	*2*	*Yes*	*reanalysis*	*28.76*	*-16.42*	*16.42*	*0.3348*	*2.9869*	*-7.06*	*0.0745*	*-0.5189*	*0.2730*	*36.99*	*98*	*58*	*89*	*76*	*77*	*398*	*86*	Plot
28	Linear	2	Yes	gpcp	36.24	-32.76	32.76	0.2894	3.4554	-11.15	0.0135	-1.2589	0.1163	45.12	56	101	95	115	113	480	118	
29	Linear	2	Yes	gpcc	32.49	-31.82	31.82	0.1197	8.3542	-5.44	0.0025	-1.8222	0.0505	41.15	59	98	122	127	96	502	131	
30	Linear	2	Yes	gpcc trmm	35.83	-29.23	29.23	0.5050	1.9802	-13.01	0.0553	-1.0620	0.2352	40.69	67	90	66	87	95	405	89	
31	Linear	2	Yes	ghcn cams grid	39.30	-37.15	37.15	0.7030	1.4225	-26.81	0.0387	-1.4997	0.1968	47.46	47	110	35	93	117	402	87	
32	Linear	2	Yes	gpi	101.77	-101.77	101.77	0.7882	1.2687	-81.31	0.1308	-10.6493	0.3616	105.84	4	153	24	60	154	395	82	
33	Linear	2	Yes	trmm 3a46	46.71	-46.71	46.71	-0.7265		48.91	0.0288	-2.3951	-0.1698	57.24	29	128	141	141	132	571	147	
34	Linear	2	Yes	trmm 3b43	32.03	-29.16	29.16	**0.9172**	1.0903	-26.45	0.2105	-0.8505	0.4588	38.54	68	89	9	40	84	290	32	
35	Linear	2	Yes	ssmi	65.70	-65.68	65.68	**0.9165**	1.0911	-60.74	0.0792	-4.2221	0.2814	72.38	20	137	10	71	140	378	68	
36	Linear	2	Yes	opi2	28.15	-14.56	14.56	0.4712	2.1222	-8.10	0.0320	-0.2436	0.1788	33.48	106	50	74	98	63	391	80	
37	Linear	2	Yes	opi3	27.46	-20.13	20.13	**0.9436**	1.0598	-19.13	0.1123	-0.3379	0.3352	34.72	88	69	8	66	68	299	34	
38	Linear	2	Yes	cmap	33.03	-28.28	28.28	0.7002	1.4282	-20.50	0.0693	-0.8309	0.2632	40.62	70	87	36	79	94	366	62	
39	Linear	2	Yes	cmap2	32.65	-27.65	27.65	0.7520	1.3298	-21.37	0.0812	-0.7758	0.2849	40.00	72	85	28	70	89	344	51	
40	Linear	2	No	reanalysis	29.10	-17.90	17.90	0.2348	4.2589	-7.13	0.0629	-1.2153	0.2507	34.11	94	62	99	85	66	406	90	
41	Linear	2	No	gpcp	36.22	-34.24	34.24	0.1358	7.3638	-7.96	0.0051	-2.4340	0.0715	42.46	52	105	119	123	100	499	128	
42	Linear	2	No	gpcc	37.34	-31.06	31.06	-0.9588		27.64	0.1549	-2.0134	-0.3935	43.70	61	96	138	153	105	553	143	
43	Linear	2	No	gpcc trmm	45.46	-45.46	45.46	0.3218	3.1075	-23.24	0.3149	-37.1627	0.5612	46.76	33	124	91	18	115	381	70	
44	Linear	2	No	ghcn cams grid	39.39	-38.63	38.63	1.1934	1.1934	-45.36	0.1915	-2.6552	0.4376	43.81	45	112	19	47	106	329	45	
45	Linear	2	No	gpi	102.58	-102.58	102.58	0.5574	1.7940	-59.84	0.1198	-20.0062	0.3461	105.00	3	154	64	63	153	437	102	
46	Linear	2	No	trmm 3a46	68.36	-68.36	68.36	0.6091	1.6418	-46.71	0.2571	-61.2817	0.5071	68.83	17	140	58	29	138	382	71	
47	Linear	2	No	trmm 3b43	45.40	-45.40	45.40	0.4564	2.1911	-27.62	0.7305	-36.2786	**0.8547**	46.21	34	123	76	3	114	350	55	
48	Linear	2	No	ssmi	73.60	-73.60	73.60	0.6517	1.5344	-53.01	0.2371	-31.8118	0.4870	74.55	16	141	46	33	141	377	66	
49	Linear	2	No	opi2	27.51	-16.04	16.04	0.0145	68.9655	-4.01	0.0001	-0.7300	0.0072	30.14	100	56	129	129	56	470	113	
50	Linear	2	No	opi3	26.53	-21.61	21.61	0.3823	2.6157	-10.63	0.0316	-0.9405	0.1779	31.92	84	73	80	99	60	396	83	
51	Linear	2	No	cmap	32.86	-29.76	29.76	0.3794	2.6357	-13.67	0.0349	-1.7449	0.1868	37.96	64	93	82	96	81	416	97	
52	Linear	2	No	cmap2	32.34	-29.12	29.12	0.4399	2.2732	-14.96	0.0477	-1.6450	0.2183	37.27	69	88	77	90	79	403	88	
53	Point	1	Yes	reanalysis	18.56	13.69	13.69	0.3565	2.8050	15.06	0.1395	-1.0023	0.3735	23.37	154	45	84	58	43	384	74	
54	Point	1	Yes	gpcp	18.53	-11.89	11.89	0.7857	1.2728	-4.67	0.1997	-0.1072	0.4469	23.16	114	39	25	45	42	265	20	
55	Point	1	Yes	gpcc	18.13	-18.13	18.13	0.1360	7.3529	9.45	0.0562	-9.1402	0.2371	21.94	93	63	118	86	38	398	85	
56	Point	1	Yes	gpcc trmm	20.21	19.32	19.32	1.1674	1.1674	12.55	0.3083	-0.2436	0.5552	29.17	156	67	17	19	55	314	38	
57	Point	1	Yes	ghcn cams grid	28.84	-25.48	25.48	0.1424	7.0225	9.98	0.0081	-2.6246	0.0902	31.73	76	81	115	120	59	451	104	
58	Point	1	Yes	gpi	74.45	-74.45	74.45	-0.1575		39.20	0.0086	-9.6617	-0.0925	80.11	15	142	152	138	143	590	151	
59	Point	1	Yes	trmm 3a46	26.28	**-3.33**	3.33	-2.7196		233.52	0.1486	-0.1416	-0.3855	32.25	132	13	132	151	62	490	123	
60	Point	1	Yes	trmm 3b43	19.01	14.38	14.38	1.6137	1.6137	-7.75	0.6071	0.2887	**0.7792**	25.25	155	49	56	6	47	313	37	
61	Point	1	Yes	ssmi	41.53	-34.73	34.73	0.1857	5.3850	16.01	0.0051	-1.7631	0.0714	44.67	49	108	112	124	110	503	133	
62	Point	1	Yes	opi2	14.64	6.30	6.30	**1.0069**	1.0069	6.20	0.2998	0.2177	0.5475	19.46	147	20	1	22	24	214	9	
63	Point	1	Yes	opi3	**13.16**	**0.73**	0.73	**1.0456**	1.0456	-0.23	0.3065	0.3048	0.5536	18.35	142	4	6	20	23	195	5	
64	Point	1	Yes	cmap	16.16	-7.41	7.41	0.7348	1.3609	0.34	0.1565	0.0226	0.3957	21.76	125	26	32	55	36	274	23	
65	Point	1	Yes	cmap2	15.83	-6.78	6.78	0.7106	1.4073	1.50	0.1474	0.0280	0.3839	21.70	126	22	34	56	33	271	21	
66	Point	1	No	reanalysis	16.01	12.50	12.50	0.3463	2.8877	13.90	0.2407	-1.6639	0.4906	19.94	153	41	86	32	26	338	49	
67	Point	1	No	gpcp	17.66	-13.13	13.13	0.3542	2.8233	8.64	0.0728	-0.8078	0.2699	22.09	111	43	85	77	40	356	57	
68	Point	1	No	gpcc	19.79	-18.75	18.75	-0.2884		22.37	0.6466	-31.2248	-0.8041	24.44	91	65	144	155	44	499	126	
69	Point	1	No	gpcc trmm	14.17	10.15	10.15	**0.9698**	1.0311	11.36	0.3848	0.1124	**0.6203**	18.33	152	35	3	13	22	225	12	
70	Point	1	No	ghcn cams grid	28.71	-26.69	26.69	0.0825	12.1212	11.25	0.0050	-5.2981	0.0706	30.94	73	84	126	125	58	466	111	
71	Point	1	No	gpi	75.79	-75.79	75.79	-0.2861		50.49	0.0488	-17.4190	-0.2208	80.12	12	145	145	144	144	590	152	
72	Point	1	No	trmm 3a46	23.10	-13.53	13.53	-1.9037		171.37	0.1317	-0.5382	-0.3629	27.84	110	44	134	147	53	488	122	
73	Point	1	No	trmm 3b43	**12.09**	7.03	7.03	1.2984	1.2984	-3.72	0.6674	0.5384	**0.8169**	15.61	148	23	27	4	17	219	11	
74	Point	1	No	ssmi	40.99	-38.06	38.06	-0.1629		34.41	0.0064	-3.6113	-0.0803	45.06	46	111	150	136	112	555	144	
75	Point	1	No	opi2	**11.46**	5.07	5.07	0.7434	1.3452	9.05	0.2932	0.1631	0.5415	**15.03**	145	17	30	23	11	226	13	
76	Point	1	No	opi3	13.33	**-0.50**	0.50	0.4871	2.0530	10.31	0.1194	-0.0139	0.3455	16.54	139	3	69	65	19	295	33	
77	Point	1	No	cmap	15.49	-8.65	8.65	0.2299	4.3497	13.86	0.0275	-0.5582	0.1658	20.51	119	33	101	103	29	385	75	
78	Point	1	No	cmap2	15.38	-8.02	8.02	0.2216	4.5126	14.24	0.0257	-0.5297	0.1604	20.32	122	29	106	105	28	390	77	
79	Point	2	Yes	reanalysis	31.41	**-0.42**	0.42	0.6940	1.4409	3.89	0.1833	0.1475	0.4281	36.62	140	2	38	50	75	305	35	
80	Point	2	Yes	gpcp	36.73	-16.75	16.75	0.1660	6.0241	8.60	0.0025	-0.2401	0.0505	44.17	97	59	113	128	107	504	135	
81	Point	2	Yes	gpcc	33.78	-15.04	15.04	-0.2328		21.90	0.0047	-0.3140	-0.0689	40.02	104	52	146	135	90	527	141	
82	Point	2	Yes	gpcc trmm	36.74	-26.32	26.32	0.8594	1.1636	-21.71	0.1316	-0.5801	0.3627	39.32	74	83	16	59	86	318	41	
83	Point	2	Yes	ghcn cams grid	36.10	-21.15	21.15	1.2940	1.2940	-31.37	0.0751	-0.2129	0.2741	43.69	85	72	26	73	104	360	59	
84	Point	2	Yes	gpi	89.97	-89.97	89.97	1.3526	1.3526	-124.02	0.2247	-4.7031	0.4740	96.94	6	151	31	37	152	377	67	
85	Point	2	Yes	trmm 3a46	47.57	-45.53	45.53	-0.6503		45.87	0.0177	-1.7446	-0.1331	58.76	32	125	143	139	134	573	148	
86	Point	2	Yes	trmm 3b43	32.94	-26.25	26.25	1.2551	1.2551	-34.59	0.3235	-0.3945	0.5688	36.93	75	82	21	17	76	271	22	
87	Point	2	Yes	ssmi	60.02	-58.73	58.73	1.7251	1.7251	-101.59	0.1848	-2.1121	0.4299	68.85	21	136	62	49	139	407	91	
88	Point	2	Yes	opi2	34.83	**1.44**	1.44	0.4698	2.1286	7.92	0.0182	-0.0063	0.1349	39.79	143	7	75	112	87	424	100	
89	Point	2	Yes	opi3	33.29	-4.13	4.13	**0.9663**	1.0349	-3.53	0.0675	0.0565	0.2597	38.53	129	16	4	82	83	314	39	
90	Point	2	Yes	cmap	34.53	-12.28	12.28	0.7991	1.2514	-7.07	0.0517	-0.0474	0.2273	40.59	113	40	20	88	93	354	56	
91	Point	2	Yes	cmap2	34.10	-11.64	11.64	**0.9068**	1.1028	-9.28	0.0676	-0.0193	0.2600	40.05	115	38	12	81	91	337	48	
92	Point	2	No	reanalysis	28.37	**-1.90**	1.90	0.5939	1.6838	3.82	0.1685	0.0869	0.4105	33.84	135	10	60	53	64	322	43	
93	Point	2	No	gpcp	34.98	-18.23	18.23	0.0125	80.0000	11.79	0.0000	-0.3782	0.0043	41.57	92	64	131	130	97	514	138	
94	Point	2	No	gpcc	34.58	-14.28	14.28	-1.3113		54.98	0.1327	-0.4268	-0.3643	44.43	107	48	136	148	109	548	142	
95	Point	2	No	gpcc trmm	42.56	-42.56	42.56	0.6762	1.4789	-31.95	0.5704	-12.5248	**0.7552**	43.47	40	117	42	9	103	311	36	
96	Point	2	No	ghcn cams grid	33.82	-22.62	22.62	1.7844	1.7844	-49.92	0.1793	-0.2636	0.4234	39.80	82	75	63	52	88	360	58	
97	Point	2	No	gpi	90.79	-90.79	90.79	**1.1218**	1.1218	-102.56	0.2037	-6.3894	0.4513	96.14	5	152	14	44	151	366	63	
98	Point	2	No	trmm 3a46	67.18	-67.18	67.18	0.6853	1.4592	-49.75	0.1456	-26.4224	0.3815	68.29	18	139	40	57	136	390	79	
99	Point	2	No	trmm 3b43	42.49	-42.49	42.49	0.7943	1.2590	-35.76	0.9073	-12.0773	**0.9525**	42.74	41	116	22	1	101	281	24	
100	Point	2	No	ssmi	66.65	-66.65	66.65	1.4602	1.4602	-93.85	0.4372	-9.2347	**0.6612**	68.71	19	138	41	12	137	347	54	
101	Point	2	No	opi2	30.27	**-0.04**	0.04	0.0131	76.3359	12.02	0.0000	-0.1008	0.0042	37.15	141	1	130	131	78	481	121	

Rondonia - Yearly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
102	Point	2	No	opi3	31.01	-5.61	5.61	0.4049	2.4697	4.97	0.0149	-0.0423	0.1219	36.15	128	18	79	113	72	410	92	
103	Point	2	No	cmap	31.65	-13.75	13.75	0.4784	2.0903	-0.23	0.0232	-0.1553	0.1524	38.06	109	46	72	109	82	418	99	
104	Point	2	No	cmap2	31.09	-13.12	13.12	0.5946	1.6818	-2.87	0.0365	-0.1178	0.1910	37.44	112	42	59	94	80	387	76	
105	Area	1	Yes	reanalysis	15.85	7.32	7.32	0.2023	4.9432	9.02	0.0774	-1.4646	0.2782	19.76	150	25	109	72	25	381	69	
106	Area	1	Yes	gpcp	22.23	-20.68	20.68	0.6379	1.5676	-8.48	0.2426	-1.4633	0.4925	25.44	86	71	51	30	49	287	28	
107	Area	1	Yes	gpcc	23.46	-23.46	23.46	0.2575	3.8835	0.24	0.2089	-13.5585	0.4571	25.81	79	78	97	41	51	346	52	
108	Area	1	Yes	gpcc trmm	14.11	**-1.56**	1.56	0.6705	1.4914	11.77	0.2421	0.1752	0.4921	15.40	136	8	43	31	16	234	14	
109	Area	1	Yes	ghcn cams grid	32.79	-31.86	31.86	0.1061	9.4251	5.11	0.0078	-6.8419	0.0883	35.55	58	99	124	121	71	473	116	
110	Area	1	Yes	gpi	83.92	-83.92	83.92	-0.0306		17.27	0.0006	-23.5804	-0.0251	87.01	8	149	156	132	149	594	154	
111	Area	1	Yes	trmm 3a46	23.79	-23.68	23.68	-1.7329		150.34	0.1454	-1.6988	-0.3813	31.95	78	79	135	150	61	503	132	
112	*Area*	*1*	*Yes*	*trmm 3b43*	*13.30*	***-3.59***	*3.59*	***1.0408***	*1.0408*	*-5.06*	*0.5734*	*0.5398*	***0.7572***	***13.48***	*131*	*14*	*5*	*8*	*4*	*162*	*1*	Plot
113	Area	1	Yes	ssmi	45.75	-45.01	45.01	0.2876	3.4771	-0.61	0.0245	-5.7437	0.1566	49.31	35	122	96	106	121	480	119	
114	Area	1	Yes	opi2	**12.25**	**-2.49**	2.49	0.6989	1.4308	2.18	0.2661	0.1932	0.5159	**14.56**	133	12	37	27	7	216	10	
115	Area	1	Yes	opi3	**11.72**	-8.06	8.06	0.8490	1.1779	-4.88	0.3723	0.1134	**0.6102**	**15.26**	121	30	18	14	14	197	7	
116	Area	1	Yes	cmap	19.27	-16.20	16.20	0.6419	1.5579	-5.74	0.2201	-0.8475	0.4692	22.04	99	57	50	39	39	284	26	
117	Area	1	Yes	cmap2	18.81	-15.57	15.57	0.6204	1.6119	-4.72	0.2071	-0.7930	0.4550	21.71	102	54	55	43	34	288	30	
118	Area	1	No	reanalysis	13.32	6.13	6.13	0.1921	5.2056	7.85	0.2218	-4.4526	0.4709	16.49	146	19	110	38	18	331	47	
119	Area	1	No	gpcp	21.92	-21.92	21.92	0.2065	4.8426	4.83	0.0748	-6.4084	0.2734	25.72	83	74	108	75	50	390	78	
120	Area	1	No	gpcc	24.08	-24.08	24.08	-0.1669		13.16	0.6689	-128.7033	-0.8179	27.90	77	80	149	156	54	516	140	
121	Area	1	No	gpcc trmm	**10.74**	-10.74	10.74	0.4729	2.1146	10.58	0.3360	-1.2008	0.5797	**15.06**	117	36	73	16	12	254	18	
122	Area	1	No	ghcn cams grid	33.15	-33.07	33.07	0.0463	21.5983	6.37	0.0047	-23.5369	0.0686	35.29	55	102	128	126	70	481	120	
123	Area	1	No	gpi	85.26	-85.26	85.26	-0.1592		28.57	0.0459	-65.7131	-0.2141	87.50	7	150	151	142	150	600	156	
124	Area	1	No	trmm 3a46	33.88	-33.88	33.88	-0.9169		88.18	0.1121	-8.7361	-0.3348	36.57	53	104	139	145	74	515	139	
125	Area	1	No	trmm 3b43	**12.24**	-10.93	10.93	0.7255	1.3784	-1.03	0.6606	-0.1520	**0.8128**	**13.85**	116	37	33	5	5	196	6	
126	Area	1	No	ssmi	48.34	-48.34	48.34	-0.0610		17.78	0.0027	-16.9110	-0.0523	51.01	27	130	154	134	125	570	146	
127	Area	1	No	opi2	**9.34**	**-3.72**	3.72	0.4355	2.2962	5.04	0.3039	-0.3620	0.5513	**11.03**	130	15	78	21	1	245	16	
128	Area	1	No	opi3	**11.55**	-9.30	9.30	0.2906	3.4412	5.66	0.1283	-1.6038	0.3582	**15.25**	118	34	94	61	13	320	42	
129	Area	1	No	cmap	18.13	-17.44	17.44	0.1370	7.2993	7.79	0.0295	-4.5463	0.1718	22.26	95	61	117	100	41	414	95	
130	Area	1	No	cmap2	17.55	-16.81	16.81	0.1314	7.6104	8.03	0.0273	-4.3291	0.1653	21.82	96	60	121	104	37	418	98	
131	Area	2	Yes	reanalysis	36.08	-29.75	29.75	0.1915	5.2219	-18.37	0.0295	-1.6843	0.1718	44.71	65	92	111	101	111	480	117	
132	Area	2	Yes	gpcp	46.69	-46.08	46.08	0.3798	2.6330	-27.22	0.0282	-2.8983	0.1679	53.88	31	126	81	102	130	470	114	
133	Area	2	Yes	gpcc	44.90	-44.90	44.90	0.2262	4.4209	-21.71	0.0109	-4.1224	0.1042	50.77	36	121	105	117	124	503	134	
134	Area	2	Yes	gpcc trmm	38.71	-34.70	34.70	0.6692	1.4943	-23.86	0.0956	-1.4033	0.3092	44.29	50	107	44	68	108	377	65	
135	Area	2	Yes	ghcn cams grid	51.50	-50.47	50.47	0.4959	2.0165	-32.93	0.0233	-3.4215	0.1527	57.38	26	131	67	108	133	465	110	
136	Area	2	Yes	gpi	112.53	-112.53	112.53	0.5563	1.7976	-69.68	0.0709	-14.3072	0.2663	118.29	2	155	65	78	156	456	107	
137	Area	2	Yes	trmm 3a46	53.35	-53.35	53.35	-0.6929		40.41	0.0247	-2.8989	-0.1571	63.22	22	135	142	140	135	574	149	
138	Area	2	Yes	trmm 3b43	34.91	-34.63	34.63	**1.0486**	1.0486	-36.22	0.2707	-1.1998	0.5203	42.37	51	106	7	26	99	289	31	
139	Area	2	Yes	ssmi	74.97	-74.97	74.97	0.6237	1.6033	-52.73	0.0401	-6.1018	0.2003	80.72	14	143	53	91	145	446	103	
140	Area	2	Yes	opi2	31.36	-27.88	27.88	0.6118	1.6345	-23.14	0.0652	-1.0050	0.2554	38.64	71	86	57	84	85	383	72	
141	Area	2	Yes	opi3	35.36	-33.46	33.46	**0.9070**	1.1025	-31.80	0.1256	-1.3788	0.3544	42.09	54	103	11	62	98	328	44	
142	Area	2	Yes	cmap	43.12	-41.60	41.60	0.6325	1.5810	-32.07	0.0684	-2.2787	0.2616	49.41	43	114	52	80	122	411	93	
143	Area	2	Yes	cmap2	42.55	-40.97	40.97	0.6563	1.5237	-32.27	0.0748	-2.1996	0.2735	48.81	44	113	45	74	120	396	84	
144	Area	2	No	reanalysis	34.64	-31.22	31.22	0.0915	10.9290	-18.44	0.0131	-3.8295	0.1145	42.97	60	97	125	116	102	500	129	
145	Area	2	No	gpcp	47.95	-47.56	47.56	0.2263	4.4189	-24.03	0.0195	-6.1236	0.1396	52.19	28	129	104	111	128	500	130	
146	Area	2	No	gpcc	47.11	-44.14	44.14	-0.8523		11.37	0.1410	-4.0663	-0.3755	52.79	37	120	140	149	129	575	150	
147	Area	2	No	gpcc trmm	50.94	-50.94	50.94	0.4860	2.0576	-34.10	0.5343	-33.7457	**0.7310**	51.74	24	133	70	11	127	365	61	
148	Area	2	No	ghcn cams grid	51.95	-51.95	51.95	**0.9863**	1.0139	-51.47	0.1796	-6.8787	0.4238	54.89	23	134	2	51	131	341	50	
149	Area	2	No	gpi	113.34	-113.34	113.34	0.3256	3.0713	-48.21	0.0492	-29.6397	0.2219	115.56	1	156	90	89	155	491	125	
150	Area	2	No	trmm 3a46	75.00	-75.00	75.00	0.6427	1.5559	-55.21	0.2307	-59.4203	0.4803	75.52	13	144	49	35	142	383	73	
151	Area	2	No	trmm 3b43	50.87	-50.87	50.87	0.5878	1.7013	-37.39	0.9012	-33.1362	**0.9493**	51.28	25	132	61	2	126	346	53	
152	Area	2	No	ssmi	82.89	-82.89	82.89	0.3589	2.7863	-45.00	0.0829	-46.9551	0.2880	83.93	10	147	83	69	146	455	106	
153	Area	2	No	opi2	33.74	-29.36	29.36	0.1551	6.4475	-19.04	0.0082	-2.4888	0.0903	36.52	66	91	114	119	73	463	108	
154	Area	2	No	opi3	37.02	-34.93	34.93	0.3457	2.8927	-23.30	0.0355	-3.2835	0.1885	40.47	48	109	87	95	92	431	101	
155	Area	2	No	cmap	44.16	-43.08	43.08	0.3118	3.2072	-25.23	0.0324	-4.9791	0.1799	47.81	39	118	93	97	118	465	109	
156	Area	2	No	cmap2	43.54	-42.45	42.45	0.3442	2.9053	-25.86	0.0401	-4.8175	0.2002	47.16	42	115	88	92	116	453	105	

Southeast United States - Monthly Atmospheric																					
OI	Moist Flux	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	Method 1	1	Yes	reanalysis	**43.14**	31.18	31.18	**0.4861**	-17.63	0.2843	-0.5319	**0.5332**	**54.66**	6	47	7	2	6	68	7	
2	Method 1	1	Yes	gpcp	54.09	**2.91**	2.91	0.0453	-2.06	0.0035	-1.5395	0.0589	65.23	33	10	41	41	35	160	37	
3	Method 1	1	Yes	gpcc	54.87	-3.03	3.03	0.0234	-2.49	0.0009	-1.5233	0.0295	64.77	37	12	44	44	32	169	39	
4	Method 1	1	Yes	gpcc trmm	47.16	-15.40	15.40	0.1661	6.86	0.0387	-1.0877	0.1968	57.49	15	41	30	30	13	129	28	
5	Method 1	1	Yes	ghcn cams grid	52.17	6.67	6.67	0.1104	-5.03	0.0159	-1.0398	0.1262	63.07	28	25	36	34	23	146	30	
6	Method 1	1	Yes	gpi	69.77	16.71	16.71	-0.0143	0.11	0.0006	-3.3647	-0.0252	84.06	47	42	46	46	46	227	48	
7	Method 1	1	Yes	trmm 3b43	47.95	-10.20	10.20	0.1660	6.43	0.0445	-1.1457	0.2110	58.09	17	36	31	28	14	126	27	
8	Method 1	1	Yes	ssmi	**38.16**	-7.35	7.35	0.2599	1.51	0.0691	-0.5237	0.2629	**50.35**	2	28	21	20	5	76	11	
9	Method 1	1	Yes	opi2	54.47	-6.77	6.77	-0.0895	-2.19	0.0104	-1.5649	-0.1022	65.14	35	26	48	48	34	191	44	
10	Method 1	1	Yes	opi3	54.26	-3.69	3.69	0.0200	-1.35	0.0006	-1.5617	0.0254	65.10	34	15	45	45	33	172	40	
11	Method 1	1	Yes	cmap	53.86	**-2.83**	2.83	0.0281	-1.62	0.0013	-1.5329	0.0358	64.69	31	8	43	43	30	155	31	
12	Method 1	1	Yes	cmap2	53.86	**-2.83**	2.83	0.0281	-1.62	0.0013	-1.5330	0.0358	64.70	32	9	42	42	31	156	34	
13	Method 1	2	Yes	reanalysis	**38.46**	17.15	17.15	0.3380	-4.30	0.1557	-0.6358	**0.3947**	**49.81**	3	43	15	6	3	70	8	
14	Method 1	2	Yes	gpcp	45.82	**1.37**	1.37	0.1841	1.59	0.0602	-1.1239	0.2454	56.76	13	3	24	21	12	73	9	
15	Method 1	2	Yes	gpcc	46.07	-8.15	8.15	0.1755	3.82	0.0518	-1.1374	0.2275	**55.23**	14	31	26	24	8	103	23	
16	Method 1	2	Yes	gpcc trmm	**38.68**	-11.92	11.92	0.2879	7.59	0.1068	-0.6419	0.3267	**49.46**	4	39	18	13	2	76	10	
17	Method 1	2	Yes	ghcn cams grid	**44.91**	**1.85**	1.85	0.1919	1.47	0.0594	-0.9967	0.2437	**55.04**	8	5	23	22	7	65	5	
18	Method 1	2	Yes	gpi	62.68	14.09	14.09	0.0910	2.44	0.0296	-3.0566	0.1719	75.94	45	40	38	31	45	199	45	
19	Method 1	2	Yes	trmm 3b43	**39.86**	-6.45	6.45	0.2723	6.00	0.1078	-0.6899	0.3284	**50.17**	5	24	19	12	4	64	3	
20	Method 1	2	Yes	ssmi	**36.58**	-10.17	10.17	0.2886	5.36	0.0953	-0.5554	0.3088	**47.52**	1	35	17	14	1	68	6	
21	Method 1	2	Yes	opi2	47.23	-7.10	7.10	0.0590	2.55	0.0048	-1.2440	0.0692	58.34	16	27	40	40	15	138	29	
22	Method 1	2	Yes	opi3	45.81	-3.88	3.88	0.1719	2.54	0.0489	-1.0973	0.2212	56.41	12	19	29	27	11	98	20	
23	Method 1	2	Yes	cmap	**45.70**	-3.66	3.66	0.1746	2.51	0.0504	-1.0853	0.2245	**56.24**	10	13	27	26	9	85	14	
24	Method 1	2	Yes	cmap2	45.70	-3.66	3.66	0.1745	2.51	0.0504	-1.0854	0.2245	**56.25**	11	14	28	25	10	88	16	
25	*Method 2*	*1*	*Yes*	*reanalysis*	*48.45*	*31.91*	*31.91*	***0.7598***	*-26.40*	*0.3091*	*-0.0101*	***0.5559***	*59.73*	*18*	*48*	*1*	*1*	*18*	*86*	*15*	Plot
26	Method 2	1	Yes	gpcp	58.79	9.88	9.88	0.1660	-7.57	0.0260	-0.6626	0.1613	72.11	42	34	32	32	42	182	42	
27	Method 2	1	Yes	gpcc	62.11	**-1.53**	1.53	0.1116	-2.12	0.0114	-0.7097	0.1066	73.15	44	4	35	35	43	161	38	
28	Method 2	1	Yes	gpcc trmm	49.87	-3.84	3.84	**0.4766**	0.28	0.1362	-0.0318	**0.3690**	62.96	22	18	8	8	22	78	12	
29	Method 2	1	Yes	ghcn cams grid	55.97	9.71	9.71	0.2601	-9.24	0.0437	-0.3367	0.2091	68.66	38	33	20	29	37	157	35	
30	Method 2	1	Yes	gpi	71.86	23.11	23.11	0.0596	-4.13	0.0053	-1.4833	0.0731	91.11	48	46	39	39	48	220	47	
31	Method 2	1	Yes	trmm 3b43	50.21	**0.08**	0.08	**0.4679**	-1.21	0.1497	-0.0439	**0.3870**	63.08	23	1	9	7	24	64	4	
32	Method 2	1	Yes	ssmi	48.78	-7.73	7.73	**0.5190**	2.77	0.1315	0.0017	**0.3626**	59.47	19	30	6	9	16	80	13	
33	Method 2	1	Yes	opi2	60.85	-7.58	7.58	-0.0546	-7.05	0.0020	-0.7496	-0.0443	73.86	43	29	47	47	44	210	46	
34	Method 2	1	Yes	opi3	58.15	-5.23	5.23	0.1028	-5.11	0.0078	-0.5966	0.0884	70.56	41	22	37	38	39	177	41	
35	Method 2	1	Yes	cmap	57.89	**1.88**	1.88	0.1176	-5.88	0.0106	-0.5864	0.1029	70.56	39	7	33	36	40	155	33	
36	Method 2	1	Yes	cmap2	57.90	**1.88**	1.88	0.1176	-5.88	0.0106	-0.5864	0.1029	70.56	40	6	34	37	41	158	36	
37	*Method 2*	*2*	*Yes*	*reanalysis*	*48.79*	*22.00*	*22.00*	***0.5807***	*-14.80*	*0.1609*	*-0.0618*	***0.4011***	*60.84*	*20*	*44*	*4*	*5*	*20*	*93*	*17*	Plot
38	Method 2	2	Yes	gpcp	52.54	10.58	10.58	0.3805	-7.02	0.1165	-0.2244	0.3413	65.33	29	38	11	11	36	125	26	
39	Method 2	2	Yes	gpcc	52.73	-4.13	4.13	0.3360	2.18	0.0933	-0.2764	0.3054	63.73	30	21	16	15	25	107	24	
40	Method 2	2	Yes	gpcc trmm	**45.12**	**-1.17**	1.17	**0.7427**	0.25	0.2400	0.2109	**0.4899**	59.86	9	2	2	4	19	36	1	
41	Method 2	2	Yes	ghcn cams grid	50.87	8.74	8.74	**0.3810**	-6.32	0.0903	-0.1700	0.3004	63.86	25	32	10	16	26	109	25	
42	Method 2	2	Yes	gpi	64.87	22.09	22.09	0.2012	-4.29	0.0566	-0.9706	0.2378	84.24	46	45	22	23	47	183	43	
43	*Method 2*	*2*	*Yes*	*trmm 3b43*	***44.91***	*4.00*	*4.00*	***0.7223***	*-3.55*	*0.2599*	*0.2179*	***0.5098***	*59.60*	*7*	*20*	*3*	*3*	*17*	*50*	*2*	Plot
44	Method 2	2	Yes	ssmi	49.19	-10.36	10.36	**0.5444**	6.14	0.1306	0.0105	**0.3614**	60.90	21	37	5	10	21	94	18	
45	Method 2	2	Yes	opi2	54.65	-5.47	5.47	0.1821	-2.96	0.0188	-0.3694	0.1372	69.09	36	23	25	33	38	155	32	
46	Method 2	2	Yes	opi3	50.66	-2.97	2.97	0.3560	-2.05	0.0780	-0.1799	0.2794	64.13	24	11	14	19	29	97	19	
47	Method 2	2	Yes	cmap	50.92	3.70	3.70	0.3650	-4.42	0.0854	-0.1769	0.2922	64.05	26	17	12	17	27	99	21	
48	Method 2	2	Yes	cmap2	50.92	3.70	3.70	0.3650	-4.42	0.0853	-0.1770	0.2921	64.05	27	16	13	18	28	102	22	

Southeast United States - Yearly Atmospheric

OI	Moist Flux	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	Method 1	1	Yes	reanalysis	31.17	31.17	31.17	**0.6356**	1.5733	-21.55	0.5440	-4.9137	**0.7376**	32.99	47	47	6	4	47	151	34	
2	Method 1	1	Yes	gpcp	12.19	2.98	2.98	0.0983	10.1729	-2.18	0.0225	-1.9837	0.1499	15.19	15	11	21	18	14	79	11	
3	Method 1	1	Yes	gpcc	**10.98**	-3.15	3.15	-0.0993		-3.06	0.0231	-2.9852	-0.1519	14.69	7	14	30	37	13	101	18	
4	Method 1	1	Yes	gpcc trmm	**11.45**	-11.45	11.45	**1.5610**	1.5610	17.19	0.8439	-0.2678	**0.9186**	**12.88**	10	37	5	1	7	60	6	
5	Method 1	1	Yes	ghcn cams grid	13.17	7.40	7.40	0.2769	3.6114	-5.89	0.0554	-0.6403	0.2353	16.81	19	28	14	15	20	96	17	
6	Method 1	1	Yes	gpi	21.74	16.68	16.68	0.0634	15.7729	-1.15	0.0122	-5.3605	0.1107	25.60	43	42	26	22	42	175	42	
7	Method 1	1	Yes	trmm 3b43	**10.20**	-10.20	10.20	**1.7516**	1.7516	13.59	0.6207	-0.0590	**0.7878**	**13.95**	6	34	7	3	8	58	5	
8	Method 1	1	Yes	ssmi	14.48	-8.94	8.94	0.0854	11.7096	1.12	0.0073	-1.5076	0.0856	17.23	26	31	22	26	21	126	22	
9	Method 1	1	Yes	opi2	**9.15**	-5.50	5.50	0.0995	10.0503	-1.33	0.0080	-1.0378	0.0895	**12.55**	5	24	20	25	6	80	12	
10	Method 1	1	Yes	opi3	11.90	**-2.28**	2.28	0.0712	14.0449	-1.78	0.0102	-1.7882	0.1008	14.69	14	9	25	23	12	83	13	
11	Method 1	1	Yes	cmap	11.68	**-2.06**	2.06	0.0824	12.1359	-1.75	0.0134	-1.7013	0.1157	**14.46**	11	7	23	21	9	71	7	
12	Method 1	1	Yes	cmap2	11.68	**-2.06**	2.06	0.0824	12.1359	-1.75	0.0134	-1.7014	0.1157	**14.46**	12	8	24	20	10	74	8	
13	Method 1	2	Yes	reanalysis	18.33	17.16	17.16	0.4051	2.4685	-5.61	0.1945	-2.5373	**0.4411**	21.22	39	43	11	9	32	134	24	
14	Method 1	2	Yes	gpcp	14.60	**1.38**	1.38	-0.0854		2.57	0.0109	-1.7684	-0.1045	18.78	27	2	29	30	30	118	21	
15	Method 1	2	Yes	gpcc	13.75	-8.27	8.27	-0.1456		2.26	0.0227	-2.2278	-0.1508	16.20	22	29	37	36	19	143	30	
16	Method 1	2	Yes	gpcc trmm	12.32	-12.32	12.32	**1.4542**	1.4542	15.08	0.3178	-0.7973	**0.5638**	15.86	16	40	3	6	18	83	14	
17	Method 1	2	Yes	ghcn cams grid	11.72	**1.86**	1.86	-0.0287		2.37	0.0007	-0.9371	-0.0266	15.71	13	5	28	28	17	91	16	
18	Method 1	2	Yes	gpi	17.81	13.96	13.96	0.1408	7.1023	1.67	0.0498	-3.8643	0.2233	21.45	37	41	17	16	33	144	32	
19	Method 1	2	Yes	trmm 3b43	**7.86**	-6.84	6.84	**1.0852**	1.0852	6.90	0.3204	-0.0162	**0.5661**	**11.92**	4	26	2	5	4	41	3	
20	Method 1	2	Yes	ssmi	15.00	-11.56	11.56	-0.1192		3.52	0.0128	-2.3941	-0.1132	18.84	29	38	32	31	31	161	37	
21	Method 1	2	Yes	opi2	13.86	-7.09	7.09	-0.3062		0.78	0.0723	-1.6397	-0.2690	18.33	23	27	42	41	26	159	36	
22	Method 1	2	Yes	opi3	15.23	-3.88	3.88	-0.1373		2.03	0.0236	-1.7166	-0.1537	18.60	32	21	35	40	29	157	35	
23	Method 1	2	Yes	cmap	15.00	-3.66	3.66	-0.1300		2.07	0.0207	-1.6488	-0.1439	18.37	28	16	33	32	27	136	26	
24	Method 1	2	Yes	cmap2	15.00	-3.66	3.66	-0.1301		2.07	0.0207	-1.6492	-0.1440	18.37	30	17	34	33	28	142	29	
25	*Method 2*	*1*	*Yes*	*reanalysis*	*31.90*	*31.90*	*31.90*	***0.9997***	*1.0003*	*-31.89*	*0.6329*	*-1.7766*	***0.7956***	*34.24*	*48*	*48*	*1*	*2*	*48*	*147*	*33*	Plot
26	Method 2	1	Yes	gpcp	15.30	9.96	9.96	-0.1377		-6.81	0.0220	-2.0985	-0.1484	22.34	33	33	36	34	35	171	40	
27	*Method 2*	*1*	*Yes*	*gpcc*	***11.22***	***-1.65***	*1.65*	***0.4645***	*2.1529*	*-0.55*	*0.1876*	*-0.0809*	***0.4331***	***12.35***	*8*	*4*	*9*	*10*	*5*	*36*	*2*	Plot
28	Method 2	1	Yes	gpcc trmm	**5.35**	**1.96**	1.96	0.1777	5.6275	-7.97	0.2211	-5.1465	**0.4702**	**6.10**	1	6	16	8	1	32	1	
29	Method 2	1	Yes	ghcn cams grid	18.35	10.46	10.46	**0.5063**	1.9751	-10.04	0.0628	-0.2659	0.2506	22.70	40	35	8	14	37	134	25	
30	Method 2	1	Yes	gpi	26.11	23.08	23.08	0.1362	7.3421	-5.64	0.0405	-5.0192	0.2013	30.57	46	46	18	17	46	173	41	
31	Method 2	1	Yes	trmm 3b43	**11.30**	**0.10**	0.10	0.3448	2.9002	-1.49	0.0161	-0.0419	0.1267	14.57	9	1	13	19	11	53	4	
32	Method 2	1	Yes	ssmi	14.47	-9.29	9.29	0.3538	2.8265	1.88	0.0887	-0.6620	0.2977	17.75	25	32	12	12	22	103	19	
33	Method 2	1	Yes	opi2	12.52	-6.09	6.09	0.1053	9.4967	-5.79	0.0037	-0.4958	0.0611	15.52	17	25	19	27	16	104	20	
34	Method 2	1	Yes	opi3	13.98	-3.59	3.59	-0.1828		-9.16	0.0223	-0.9920	-0.1493	17.91	24	15	41	35	23	138	28	
35	Method 2	1	Yes	cmap	13.33	3.08	3.08	-0.1792		-7.93	0.0236	-1.0561	-0.1536	18.20	21	13	39	39	25	137	27	
36	Method 2	1	Yes	cmap2	13.33	3.08	3.08	-0.1792		-7.93	0.0236	-1.0560	-0.1535	18.20	20	12	40	38	24	134	23	
37	*Method 2*	*2*	*Yes*	*reanalysis*	*22.02*	*22.02*	*22.02*	***0.6581***	*1.5195*	*-16.15*	*0.2243*	*-1.6498*	***0.4736***	*26.62*	*44*	*45*	*4*	*7*	*43*	*143*	*31*	Plot
38	Method 2	2	Yes	gpcp	18.73	10.60	10.60	-0.5120		-1.91	0.1959	-1.9331	-0.4426	28.00	41	36	43	45	44	209	48	
39	Method 2	2	Yes	gpcc	12.66	-4.25	4.25	**0.4355**	2.2962	2.59	0.1053	-0.1596	0.3244	15.42	18	22	10	11	15	76	10	
40	Method 2	2	Yes	gpcc trmm	**6.88**	**-1.50**	1.50	-0.1728		-2.68	0.0753	-3.5448	-0.2743	**8.18**	2	3	38	42	2	87	15	
41	Method 2	2	Yes	ghcn cams grid	15.17	8.76	8.76	-0.5907		-2.55	0.1165	-1.0152	-0.3413	23.21	31	30	44	43	38	186	44	
42	Method 2	2	Yes	gpi	24.07	21.98	21.98	0.1908	5.2411	-3.94	0.0654	-4.4019	0.2558	28.16	45	44	15	13	45	162	38	
43	Method 2	2	Yes	trmm 3b43	**7.15**	3.67	3.67	0.0517	19.3424	-2.15	0.0080	-3.5973	0.0895	**8.23**	3	18	27	24	3	75	9	
44	Method 2	2	Yes	ssmi	16.33	-12.13	12.13	-0.1190		0.54	0.0104	-1.7643	-0.1022	21.85	34	39	31	29	34	167	39	
45	Method 2	2	Yes	opi2	18.13	-5.44	5.44	-0.6686		-11.74	0.1503	-0.8964	-0.3876	22.52	38	23	45	44	36	186	43	
46	Method 2	2	Yes	opi3	18.94	**-2.95**	2.95	-0.7314		-10.56	0.2468	-1.1691	-0.4968	24.08	42	10	48	48	39	187	45	
47	Method 2	2	Yes	cmap	16.88	3.72	3.72	-0.6982		-5.64	0.2360	-1.2123	-0.4858	24.32	35	20	47	47	40	189	47	
48	Method 2	2	Yes	cmap2	16.89	3.72	3.72	-0.6980		-5.64	0.2360	-1.2125	-0.4858	24.32	36	19	46	46	41	188	46	

Southeast United States - Monthly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	*Linear*	*1*	*Yes*	*reanalysis*	*52.52*	*-15.23*	*15.23*	*0.2896*	*1.07*	*0.0557*	*-0.3607*	*0.2360*	*62.25*	*259*	*135*	*51*	*147*	*238*	*830*	*183*	Plot
2	Linear	1	Yes	gpcp	34.89	**6.44**	6.44	0.6438	7.42	0.4475	0.2954	0.6690	43.92	38	20	26	29	27	140	9	
3	Linear	1	Yes	gpcc	**32.21**	9.50	9.50	0.6256	7.96	0.5085	0.2853	**0.7131**	**39.63**	14	67	28	16	10	135	7	
4	Linear	1	Yes	gpcc trmm	38.25	25.66	25.66	**0.9705**	25.46	0.5986	0.4164	**0.7737**	45.98	69	256	3	5	51	384	41	
5	Linear	1	Yes	ghcn cams grid	**31.14**	7.02	7.02	**0.8027**	7.15	0.5139	0.4656	**0.7169**	**39.08**	9	31	13	15	6	74	2	
6	Linear	1	Yes	gpi	47.85	-9.57	9.57	0.3988	2.57	0.2973	-0.4127	0.5453	61.61	222	68	36	49	235	610	98	
7	Linear	1	Yes	trmm 3b43	36.60	20.93	20.93	**0.8922**	20.70	0.5825	0.4511	**0.7632**	44.22	51	197	5	8	29	290	29	
8	Linear	1	Yes	ssmi	46.44	20.81	20.81	0.3668	14.28	0.0826	-0.3175	0.2875	60.90	207	196	39	121	228	791	173	
9	Linear	1	Yes	opi2	**33.48**	22.82	22.82	**0.8533**	20.79	0.5580	0.3473	**0.7470**	**41.84**	23	226	9	11	21	290	27	
10	Linear	1	Yes	opi3	34.87	20.47	20.47	**0.7641**	17.75	0.5022	0.2981	**0.7087**	**43.39**	37	192	18	18	25	290	28	
11	Linear	1	Yes	cmap	**33.30**	13.46	13.46	**0.7457**	12.31	0.4945	0.3699	**0.7032**	**41.25**	18	105	20	24	18	185	16	
12	Linear	1	Yes	cmap2	**33.30**	13.46	13.46	**0.7457**	12.31	0.4945	0.3699	**0.7032**	**41.25**	19	106	19	23	19	186	17	
13	Linear	1	No	reanalysis	**33.34**	-15.11	15.11	0.0702	6.23	0.0525	-10.4388	0.2290	45.07	20	130	164	154	40	508	70	
14	Linear	1	No	gpcp	44.17	**6.41**	6.41	0.0736	8.97	0.0546	-8.7306	0.2337	53.43	176	19	158	151	182	686	127	
15	Linear	1	No	gpcc	44.46	9.36	9.36	0.0320	5.38	0.1127	-106.3622	0.3357	52.79	183	65	222	93	169	732	141	
16	Linear	1	No	gpcc trmm	44.59	26.60	26.60	0.2764	21.68	0.1939	-1.9137	0.4403	51.43	187	263	52	59	146	707	134	
17	Linear	1	No	ghcn cams grid	38.21	7.21	7.21	0.0797	7.79	0.0812	-11.0443	0.2849	46.33	67	33	146	123	54	423	48	
18	Linear	1	No	gpi	55.69	-9.37	9.37	0.0898	9.00	0.1078	-11.2144	0.3284	67.71	295	66	134	98	275	868	188	
19	Linear	1	No	trmm 3b43	43.39	21.85	21.85	0.2702	20.30	0.2131	-1.8764	0.4617	50.68	161	202	53	57	133	606	96	
20	Linear	1	No	ssmi	38.59	22.31	22.31	0.0573	12.59	0.0128	-4.5647	0.1130	49.73	72	214	185	202	117	790	172	
21	Linear	1	No	opi2	42.95	23.01	23.01	0.0903	10.38	0.0587	-7.7446	0.2423	49.99	151	228	131	142	122	774	157	
22	Linear	1	No	opi3	43.19	20.66	20.66	0.0841	10.10	0.0571	-8.2072	0.2390	51.30	158	195	142	146	142	783	163	
23	Linear	1	No	cmap	41.76	13.67	13.67	0.0857	9.53	0.0613	-7.5631	0.2476	49.65	125	111	139	139	113	627	105	
24	Linear	1	No	cmap2	41.76	13.68	13.68	0.0857	9.53	0.0613	-7.5637	0.2475	49.65	126	112	138	140	114	630	108	
25	Linear	1	1 mon	reanalysis	**33.05**	-15.01	15.01	-0.0012	7.85	0.0000	-11.9662	-0.0038	48.01	16	125	279	279	82	781	160	
26	Linear	1	1 mon	gpcp	42.70	**6.58**	6.58	0.1027	8.87	0.1059	-8.1313	0.3254	51.81	145	23	118	101	151	538	79	
27	Linear	1	1 mon	gpcc	43.85	9.65	9.65	0.0514	5.44	0.2909	-102.2625	0.5394	51.85	168	69	195	50	152	634	111	
28	Linear	1	1 mon	gpcc trmm	39.45	25.48	25.48	0.3343	20.56	0.3463	-1.8948	0.5885	46.56	81	254	46	39	60	480	60	
29	Linear	1	1 mon	ghcn cams grid	37.00	7.24	7.24	0.1067	7.76	0.1458	-10.3632	0.3818	44.99	56	34	117	65	38	310	32	
30	Linear	1	1 mon	gpi	54.04	-8.79	8.79	0.1023	8.81	0.1380	-10.7067	0.3715	66.45	277	59	121	68	264	789	171	
31	Linear	1	1 mon	trmm 3b43	36.55	21.81	21.81	0.3364	19.31	0.3822	-1.7518	0.6182	45.01	50	201	45	32	39	367	38	
32	Linear	1	1 mon	ssmi	38.08	22.21	22.21	0.0898	12.84	0.0313	-4.2881	0.1770	48.67	66	211	133	175	101	686	125	
33	Linear	1	1 mon	opi2	41.36	22.79	22.79	0.1334	10.92	0.1277	-7.0699	0.3573	48.08	120	225	85	79	84	593	93	
34	Linear	1	1 mon	opi3	41.74	20.41	20.41	0.1186	10.43	0.1131	-7.5873	0.3363	49.59	124	190	98	92	112	616	101	
35	Linear	1	1 mon	cmap	40.20	13.35	13.35	0.1181	9.60	0.1154	-6.9426	0.3397	47.86	92	103	102	91	79	467	57	
36	Linear	1	1 mon	cmap2	40.20	13.36	13.36	0.1181	9.60	0.1154	-6.9429	0.3397	47.86	93	104	101	90	80	468	58	
37	Linear	1	2 mon	reanalysis	34.10	-15.09	15.09	-0.0248	8.40	0.0065	-12.4484	-0.0809	48.92	30	129	294	302	107	862	186	
38	Linear	1	2 mon	gpcp	43.16	**6.71**	6.71	0.0933	8.88	0.0874	-8.3116	0.2956	52.40	157	25	126	118	161	587	92	
39	Linear	1	2 mon	gpcc	43.56	10.17	10.17	0.0498	5.41	0.2730	-102.9453	0.5225	51.85	163	78	196	52	153	642	114	
40	Linear	1	2 mon	gpcc trmm	39.50	23.83	23.83	0.2432	17.62	0.3345	-4.2886	0.5784	46.61	82	233	55	41	61	472	59	
41	Linear	1	2 mon	ghcn cams grid	37.32	7.06	7.06	0.0949	7.67	0.1178	-10.8929	0.3433	45.48	59	32	123	87	44	345	35	
42	Linear	1	2 mon	gpi	56.33	-8.80	8.80	0.0678	9.48	0.0606	-11.6170	0.2462	69.16	302	60	169	141	290	962	204	
43	Linear	1	2 mon	trmm 3b43	38.60	19.96	19.96	0.2293	16.62	0.3270	-4.3543	0.5719	46.49	73	184	56	43	58	414	46	
44	Linear	1	2 mon	ssmi	39.17	22.19	22.19	0.0607	12.49	0.0143	-4.5017	0.1195	49.81	77	209	180	197	118	781	161	
45	Linear	1	2 mon	opi2	40.95	22.63	22.63	0.1379	10.93	0.1361	-6.9650	0.3689	47.83	109	223	82	69	78	561	83	
46	Linear	1	2 mon	opi3	41.83	20.20	20.20	0.1141	10.34	0.1044	-7.6047	0.3230	49.71	128	188	108	103	115	642	113	
47	Linear	1	2 mon	cmap	40.50	13.16	13.16	0.1106	9.53	0.1010	-7.0317	0.3177	48.20	97	101	112	109	88	507	69	
48	Linear	1	2 mon	cmap2	40.50	13.16	13.16	0.1106	9.53	0.1009	-7.0319	0.3177	48.20	98	102	111	108	89	508	72	
49	Linear	1	3 mon	reanalysis	36.21	-15.14	15.14	0.0138	7.53	0.0020	-11.5632	0.0449	47.31	46	131	252	237	67	733	142	
50	Linear	1	3 mon	gpcp	45.30	6.76	6.76	0.0517	8.98	0.0268	-9.1458	0.1638	54.79	196	28	193	183	199	799	176	
51	Linear	1	3 mon	gpcc	44.86	10.03	10.03	0.0284	5.30	0.0885	-107.4327	0.2974	53.16	189	72	229	116	179	785	168	
52	Linear	1	3 mon	gpcc trmm	44.07	23.79	23.79	0.1217	15.87	0.0915	-6.1763	0.3025	52.00	172	231	93	112	155	763	154	
53	Linear	1	3 mon	ghcn cams grid	39.22	6.91	6.91	0.0540	7.62	0.0389	-12.1812	0.1973	47.42	78	30	191	163	69	531	76	
54	Linear	1	3 mon	gpi	58.55	-8.58	8.58	0.0262	10.33	0.0091	-12.6896	0.0953	72.20	327	55	230	212	315	1139	240	
55	Linear	1	3 mon	trmm 3b43	42.73	19.77	19.77	0.1340	15.45	0.1228	-6.0597	0.3504	51.12	149	177	84	81	140	631	109	
56	Linear	1	3 mon	ssmi	39.90	22.16	22.16	0.0199	12.10	0.0015	-4.8022	0.0392	51.30	87	207	237	244	143	918	199	
57	Linear	1	3 mon	opi2	43.13	22.43	22.43	0.0901	10.27	0.0578	-7.5781	0.2405	49.72	155	220	132	143	116	766	156	
58	Linear	1	3 mon	opi3	43.38	19.93	19.93	0.0699	9.82	0.0388	-8.2125	0.1970	51.53	159	183	165	164	148	819	180	
59	Linear	1	3 mon	cmap	42.13	12.95	12.95	0.0650	9.33	0.0347	-7.7229	0.1864	50.32	136	95	176	170	129	706	131	
60	Linear	1	3 mon	cmap2	42.14	12.95	12.95	0.0650	9.33	0.0347	-7.7232	0.1864	50.32	137	96	175	169	130	707	133	
61	Linear	1	4 mon	reanalysis	36.82	-15.05	15.05	0.0814	5.99	0.0702	-10.1299	0.2649	44.56	52	126	144	134	32	488	66	
62	Linear	1	4 mon	gpcp	47.33	**6.61**	6.61	0.0029	9.10	0.0001	-10.0970	0.0091	57.41	218	24	274	274	210	1000	215	
63	Linear	1	4 mon	gpcc	46.49	10.19	10.19	0.0068	5.23	0.0051	-112.8782	0.0715	54.53	208	79	268	225	194	974	208	
64	Linear	1	4 mon	gpcc trmm	46.40	22.20	22.20	0.0169	14.53	0.0017	-7.1853	0.0416	55.48	206	210	244	241	200	1101	238	
65	Linear	1	4 mon	ghcn cams grid	41.01	6.79	6.79	0.0116	7.64	0.0018	-13.2697	0.0422	49.37	112	29	255	240	110	746	149	
66	Linear	1	4 mon	gpi	61.54	-8.55	8.55	-0.0140	11.16	0.0026	-13.7673	-0.0509	75.12	359	54	286	293	334	1326	269	
67	Linear	1	4 mon	trmm 3b43	46.66	20.07	20.07	0.0430	14.66	0.0128	-7.4023	0.1131	55.71	211	186	205	201	202	1005	216	
68	Linear	1	4 mon	ssmi	40.65	22.39	22.39	-0.0189	11.80	0.0014	-5.1207	-0.0371	52.80	104	217	291	290	170	1072	231	
69	Linear	1	4 mon	opi2	45.48	22.28	22.28	0.0147	9.26	0.0015	-8.6023	0.0391	52.70	198	213	247	245	167	1070	230	
70	Linear	1	4 mon	opi3	45.14	19.80	19.80	0.0124	9.20	0.0012	-9.0838	0.0350	54.01	193	180	254	251	188	1066	229	
71	Linear	1	4 mon	cmap	44.18	13.05	13.05	0.0106	9.12	0.0009	-8.6155	0.0302	52.93	177	98	258	261	173	967	206	
72	Linear	1	4 mon	cmap2	44.18	13.05	13.05	0.0105	9.12	0.0009	-8.6161	0.0302	52.93	178	99	260	262	174	973	207	
73	*Linear*	*2*	*Yes*	*reanalysis*	***24.49***	*18.54*	*18.54*	***0.8642***	*20.87*	*0.6769*	*0.4729*	***0.8228***	***31.10***	*2*	*165*	*8*	*2*	*2*	*179*	*15*	Plot
74	Linear	2	Yes	gpcp	55.80	29.96	29.96	-0.0680	36.10	0.0071	-2.2253	-0.0841	76.94	298	288	307	305	347	1545	319	
75	Linear	2	Yes	gpcc	62.59	41.83	41.83	-0.1678	38.39	0.0324	-2.3000	-0.1799	86.88	368	367	358	334	404	1831	387	
76	Linear	2	Yes	gpcc trmm	46.97	37.30	37.30	0.1513	34.27	0.0335	-2.0510	0.1831	64.18	216	332	75	174	252	1049	225	
77	Linear	2	Yes	ghcn cams grid	51.58	31.80	31.80	-0.0455	35.89	0.0025	-1.8401	-0.0495	72.20	254	297	299	292	314	1456	298	
78	Linear	2	Yes	gpi	74.16	16.62	16.62	-0.1204	41.59	0.0353	-3.1570	-0.1879	92.65	424	139	336	336	422	1657	346	
79	Linear	2	Yes	trmm 3b43	47.54	32.13	32.13	0.1173	33.54	0.0231	-2.0470	0.1518	64.14	219	300	103	185	250	1057	227	
80	Linear	2	Yes	ssmi	58.11	47.53	47.53	0.1207	39.38	0.0117	-1.7065	0.1082	74.63	323	403	96	206	332	1360	278	
81	Linear	2	Yes	opi2	59.68	46.01	46.01	-0.1497	34.17	0.0241	-2.5539	-0.1554	80.76	340	394	350	327	373	1784	372	
82	Linear	2	Yes	opi3	55.51	43.51	43.51	-0.0757	35.12	0.0067	-2.3783	-0.0819	78.74	294	370	310	303	360	1637	338	
83	Linear	2	Yes	cmap	53.38	36.84	36.84	-0.0572	35.64	0.0040	-2.0955	-0.0631	75.37	269	326	302	298	336	1531	313	
84	Linear	2	Yes	cmap2	53.38	36.84	36.84	-0.0571	35.64	0.0040	-2.0955	-0.0630	75.37	270	327	301	297	337	1532	314	
85	Linear	2	No	reanalysis	**31.11**	18.75	18.75	0.4840	27.60	0.3406	-0.3535	0.5836	**39.36**	8	167	32	40	9	256	24	
86	Linear	2	No	gpcp	64.27	30.17	30.17	-0.2837	37.54	0.1973	-4.6372	-0.4442	80.32	382	289	393	400	366	1830	386	
87	Linear	2	No	gpcc	70.46	42.08	42.08	-0.3719	38.05	0.2497	-4.3655	-0.4997	88.38	415	368	419	421	410	2033	421	
88	Linear	2	No	gpcc trmm	57.01	37.81	37.81	-0.2057	33.51	0.1120	-5.6498	-0.3347	70.47	309	346	362	360	296	1673	348	
89	Linear	2	No	ghcn cams grid	59.29	32.01	32.01	-0.3076	37.12	0.1793	-3.9556	-0.4234	75.31	338	299	399	388	335	1759	364	
90	Linear	2	No	gpi	78.66	16.72	16.72	-0.2243	44.01	0.1900	-5.6797	-0.4359	94.35	430	140	373	396	424	1763	365	
91	Linear	2	No	trmm 3b43	57.62	32.64	32.64	-0.2100	34.58	0.1336	-5.7289	-0.3655	70.89	317	305	365	366	302	1655	342	
92	Linear	2	No	ssmi	57.49	48.64	48.64	-0.0175	39.21	0.0004	-3.2317	-0.0201	73.05	314	408	288	285	324	1619	334	
93	Linear	2	No	opi2	66.54	46.21	46.21	-0.4026	31.77	0.2802	-4.9870	-0.5294	82.77	399	395	426	432	384	2036	423	
94	Linear	2	No	opi3	62.83	43.72	43.72	-0.3322	33.32	0.2070	-4.7923	-0.4550	81.41	370	372	408	405	375	1930	405	
95	Linear	2	No	cmap	61.23	37.04	37.04	-0.3104	35.56	0.1881	-4.3626	-0.4337	78.34	354	328	401	394	358	1835	388	
96	Linear	2	No	cmap2	61.23	37.04	37.04	-0.3104	35.56	0.1881	-4.3626	-0.4337	78.34	355	329	400	393	359	1836	389	
97	Linear	2	1 mon	reanalysis	34.84	18.92	18.92	0.2945	30.96	0.1259	-0.9093	0.3549	46.80	36	168	49	80	62	395	42	
98	Linear	2	1 mon	gpcp	63.72	30.41	30.41	-0.2958	37.63	0.2140	-4.6997	-0.4627	80.86	378	290	396	407	374	1845	392	
99	Linear	2	1 mon	gpcc	71.04	42.66	42.66	-0.3863	38.18	0.2704	-4.4626	-0.5200	89.18	416	369	422	428	413	2048	424	
100	Linear	2	1 mon	gpcc trmm	54.64	39.26	39.26	-0.1308	33.75	0.0435	-5.2302	-0.2085	68.89	281	354	344	344	286	1609	333	
101	Linear	2	1 mon	ghcn cams grid	60.18	32.21	32.21	-0.3506	37.31	0.2326	-4.1239	-0.4823	76.67	345	301	413	413	344	1816	382	

Southeast United States - Monthly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR
102	Linear	2	1 mon	gpi	78.14	16.93	16.93	-0.1923	43.49	0.1404	-5.4731	-0.3747	92.86	428	145	361	371	423	1728	357
103	Linear	2	1 mon	trmm 3b43	53.31	34.10	34.10	-0.1180	34.42	0.0408	-5.1415	-0.2019	68.40	267	318	334	342	282	1543	318
104	Linear	2	1 mon	ssmi	57.94	48.27	48.27	-0.0184	38.80	0.0005	-3.2783	-0.0213	72.74	319	407	290	286	319	1621	335
105	Linear	2	1 mon	opi2	66.51	46.34	46.34	-0.4013	31.82	0.2786	-4.9902	-0.5278	82.90	398	397	423	431	385	2034	422
106	Linear	2	1 mon	opi3	63.92	43.91	43.91	-0.3666	33.08	0.2518	-4.9289	-0.5018	82.47	380	374	418	423	380	1975	413
107	Linear	2	1 mon	cmap	61.94	37.23	37.23	-0.3469	35.55	0.2347	-4.5117	-0.4844	79.52	360	330	412	418	362	1882	397
108	Linear	2	1 mon	cmap2	61.94	37.24	37.24	-0.3469	35.55	0.2347	-4.5119	-0.4844	79.52	361	331	411	417	363	1883	398
109	Linear	2	2 mon	reanalysis	39.72	19.03	19.03	0.1092	34.22	0.0174	-1.4536	0.1317	53.08	85	170	114	193	177	739	144
110	Linear	2	2 mon	gpcp	61.49	30.64	30.64	-0.2177	37.27	0.1161	-4.3326	-0.3407	78.26	357	293	369	361	356	1736	360
111	Linear	2	2 mon	gpcc	68.65	43.63	43.63	-0.3145	38.66	0.1794	-4.2734	-0.4236	87.26	408	371	404	389	405	1977	415
112	Linear	2	2 mon	gpcc trmm	54.67	39.13	39.13	-0.1257	32.54	0.0425	-5.4866	-0.2060	68.34	282	353	338	343	281	1597	329
113	Linear	2	2 mon	ghcn cams grid	58.06	32.44	32.44	-0.2813	37.11	0.1498	-3.8751	-0.3871	74.83	321	303	392	376	333	1725	354
114	Linear	2	2 mon	gpi	74.06	17.24	17.24	-0.1288	42.36	0.0638	-5.0571	-0.2525	89.53	422	149	342	355	414	1682	349
115	Linear	2	2 mon	trmm 3b43	55.48	33.94	33.94	-0.1370	33.18	0.0583	-5.5522	-0.2414	68.68	293	315	345	354	283	1590	327
116	Linear	2	2 mon	ssmi	57.36	48.24	48.24	0.0399	39.21	0.0023	-3.2997	0.0477	70.97	312	406	210	232	303	1463	299
117	Linear	2	2 mon	opi2	63.92	46.45	46.45	-0.3385	32.58	0.1987	-4.7870	-0.4458	81.52	381	400	409	402	376	1968	411
118	Linear	2	2 mon	opi3	62.40	44.11	44.11	-0.2894	33.76	0.1572	-4.6571	-0.3964	80.60	364	376	395	380	370	1885	399
119	Linear	2	2 mon	cmap	60.33	37.43	37.43	-0.2765	35.71	0.1494	-4.2534	-0.3865	77.67	349	336	389	374	352	1800	376
120	Linear	2	2 mon	cmap2	60.33	37.44	37.44	-0.2766	35.71	0.1494	-4.2536	-0.3865	77.68	350	337	390	375	353	1805	377
121	Linear	2	3 mon	reanalysis	42.25	19.13	19.13	0.0114	35.95	0.0002	-1.7415	0.0138	56.19	139	171	257	270	207	1044	223
122	Linear	2	3 mon	gpcp	59.18	30.70	30.70	-0.0715	36.54	0.0125	-3.6196	-0.1119	72.94	336	294	308	314	323	1575	324
123	Linear	2	3 mon	gpcc	66.31	43.74	43.74	-0.1306	39.60	0.0311	-3.6174	-0.1762	81.78	397	373	343	333	377	1823	383
124	Linear	2	3 mon	gpcc trmm	53.35	38.88	38.88	0.0184	32.97	0.0009	-4.6895	0.0302	64.36	268	352	240	260	255	1375	281
125	Linear	2	3 mon	ghcn cams grid	55.20	32.51	32.51	-0.1099	36.55	0.0229	-3.2292	-0.1513	69.79	290	304	330	324	292	1540	317
126	Linear	2	3 mon	gpi	66.14	17.04	17.04	0.0320	38.92	0.0039	-3.8106	0.0627	79.87	396	146	221	229	365	1357	277
127	Linear	2	3 mon	trmm 3b43	53.10	33.47	33.47	0.0027	32.86	0.0000	-4.6579	0.0047	64.18	263	311	275	276	251	1376	282
128	Linear	2	3 mon	ssmi	56.49	48.22	48.22	0.0304	39.16	0.0013	-3.3365	0.0365	71.25	305	405	226	250	306	1492	306
129	Linear	2	3 mon	opi2	60.42	46.38	46.38	-0.1611	34.50	0.0449	-4.1572	-0.2120	77.07	351	398	354	345	349	1797	375
130	Linear	2	3 mon	opi3	59.99	44.14	44.14	-0.1189	35.20	0.0266	-4.0166	-0.1630	76.01	344	377	335	328	342	1726	355
131	Linear	2	3 mon	cmap	57.50	37.49	37.49	-0.1095	36.00	0.0234	-3.6029	-0.1531	72.81	315	341	328	326	321	1631	336
132	Linear	2	3 mon	cmap2	57.50	37.49	37.49	-0.1095	36.00	0.0234	-3.6032	-0.1531	72.81	316	342	327	325	322	1632	337
133	Linear	2	4 mon	reanalysis	45.57	19.27	19.27	-0.0851	37.60	0.0105	-2.0220	-0.1025	59.10	199	172	313	312	217	1213	252
134	Linear	2	4 mon	gpcp	54.03	30.53	30.53	0.0858	35.68	0.0180	-2.8300	0.1342	66.53	276	292	137	191	266	1162	245
135	Linear	2	4 mon	gpcc	61.11	44.19	44.19	0.1117	40.80	0.0229	-2.7716	0.1512	73.91	353	378	110	186	327	1354	276
136	Linear	2	4 mon	gpcc trmm	50.12	38.43	38.43	0.1165	33.90	0.0366	-4.0760	0.1913	61.10	243	351	106	166	230	1096	235
137	Linear	2	4 mon	ghcn cams grid	51.27	32.41	32.41	0.0773	35.87	0.0113	-2.5089	0.1063	63.68	249	302	152	207	248	1158	244
138	Linear	2	4 mon	gpi	57.38	16.77	16.77	0.1687	35.95	0.1089	-2.7485	0.3301	70.49	313	141	67	97	297	915	198
139	Linear	2	4 mon	trmm 3b43	48.63	32.86	32.86	0.1092	33.26	0.0370	-3.8957	0.1924	60.00	236	308	113	165	222	1044	224
140	Linear	2	4 mon	ssmi	59.39	48.16	48.16	-0.0545	38.51	0.0043	-3.5673	-0.0653	73.25	339	404	300	299	325	1667	347
141	Linear	2	4 mon	opi2	58.06	46.30	46.30	0.0517	36.69	0.0046	-3.4053	0.0680	71.36	322	396	192	227	309	1446	295
142	Linear	2	4 mon	opi3	57.08	44.01	44.01	0.0646	36.67	0.0078	-3.3077	0.0884	70.56	310	375	177	217	298	1377	283
143	Linear	2	4 mon	cmap	54.07	37.37	37.37	0.0659	36.24	0.0085	-2.9021	0.0920	67.16	278	334	173	214	270	1269	264
144	Linear	2	4 mon	cmap2	54.07	37.37	37.37	0.0658	36.24	0.0084	-2.9026	0.0919	67.16	279	335	174	215	271	1274	265
145	Point	1	Yes	reanalysis	53.02	-13.78	13.78	0.2971	2.35	0.0556	-0.3191	0.2359	62.90	262	114	48	148	243	815	179
146	Point	1	Yes	gpcp	35.27	8.19	8.19	**0.6726**	9.10	0.4530	0.3230	0.6731	44.70	39	41	25	28	33	166	13
147	Point	1	Yes	gpcc	**31.91**	10.30	10.30	0.6412	8.82	0.5231	0.3120	**0.7233**	**39.29**	10	80	27	14	7	138	8
148	Point	1	Yes	gpcc trmm	40.81	29.55	29.55	**1.0542**	29.91	0.6049	0.3970	**0.7778**	50.51	106	287	4	4	132	533	77
149	Point	1	Yes	ghcn cams grid	**31.10**	8.46	8.46	**0.8364**	8.57	0.5298	0.4857	**0.7278**	**39.34**	7	48	10	13	8	86	4
150	Point	1	Yes	gpi	47.21	-7.52	7.52	0.4306	3.97	0.3150	-0.2551	0.5612	60.92	217	36	33	46	229	561	84
151	Point	1	Yes	trmm 3b43	39.11	24.85	24.85	**0.9738**	24.80	0.5943	0.4454	**0.7709**	48.03	76	248	2	6	83	415	47
152	Point	1	Yes	ssmi	48.31	23.13	23.13	0.3845	16.78	0.0815	-0.2977	0.2855	63.81	231	230	37	122	249	869	190
153	Point	1	Yes	opi2	34.29	24.56	24.56	**0.8878**	23.01	0.5601	0.3426	**0.7484**	43.61	32	243	6	10	26	317	33
154	Point	1	Yes	opi3	35.66	22.21	22.21	**0.7969**	19.87	0.5066	0.3032	**0.7118**	44.89	42	212	14	17	36	321	34
155	Point	1	Yes	cmap	33.99	15.21	15.21	**0.7781**	14.21	0.4993	0.3792	**0.7066**	**42.52**	27	133	16	20	22	218	19
156	Point	1	Yes	cmap2	34.00	15.22	15.22	**0.7781**	14.21	0.4993	0.3792	**0.7066**	**42.52**	28	134	15	19	23	219	20
157	Point	1	No	reanalysis	**33.46**	-13.66	13.66	0.0777	7.50	0.0419	-6.5591	0.2048	45.34	22	109	151	160	41	483	63
158	Point	1	No	gpcp	44.32	8.16	8.16	0.1024	10.64	0.0691	-5.3828	0.2628	53.53	181	40	119	136	183	659	116
159	Point	1	No	gpcc	43.78	10.16	10.16	0.0476	6.24	0.1541	-64.0054	0.3925	52.24	167	77	201	63	158	666	119
160	Point	1	No	gpcc trmm	46.89	30.49	30.49	0.3601	26.14	0.2172	-1.1447	0.4660	54.30	214	291	40	56	191	792	174
161	Point	1	No	ghcn cams grid	37.72	8.65	8.65	0.1134	9.21	0.1074	-6.7338	0.3278	45.93	64	56	109	99	49	377	40
162	Point	1	No	gpi	54.76	-7.33	7.33	0.1216	10.40	0.1292	-6.7123	0.3595	66.56	285	35	94	75	267	756	151
163	Point	1	No	trmm 3b43	45.61	25.78	25.78	0.3518	24.40	0.2386	-1.0631	0.4884	52.81	200	258	42	54	172	726	140
164	Point	1	No	ssmi	40.55	24.62	24.62	0.0750	15.08	0.0143	-3.0539	0.1197	52.50	100	244	154	196	165	859	185
165	Point	1	No	opi2	43.38	24.75	24.75	0.1248	12.60	0.0732	-4.9240	0.2706	50.92	160	247	91	128	134	760	153
166	Point	1	No	opi3	43.57	22.40	22.40	0.1170	12.22	0.0722	-5.1851	0.2686	52.03	164	218	105	130	157	774	158
167	Point	1	No	cmap	41.97	15.43	15.43	0.1181	11.43	0.0761	-4.7023	0.2758	50.13	130	136	100	126	125	617	102
168	Point	1	No	cmap2	41.97	15.43	15.43	0.1181	11.43	0.0760	-4.7029	0.2757	50.13	131	137	99	127	126	620	103
169	Point	1	1 mon	reanalysis	**33.25**	-13.57	13.57	-0.0028	9.33	0.0001	-7.6872	-0.0075	48.62	17	107	280	281	100	785	166
170	Point	1	1 mon	gpcp	42.65	8.31	8.31	0.1342	10.53	0.1183	-4.9597	0.3440	51.76	144	44	83	85	150	506	68
171	Point	1	1 mon	gpcc	42.92	10.44	10.44	0.0723	6.33	0.3559	-60.7932	0.5965	51.00	150	85	161	38	138	572	88
172	Point	1	1 mon	gpcc trmm	41.14	28.73	28.73	0.4072	24.35	0.3592	-1.1728	0.5993	48.25	115	283	35	35	91	559	81
173	Point	1	1 mon	ghcn cams grid	36.43	8.68	8.68	0.1455	9.17	0.1771	-6.2053	0.4209	44.32	49	57	80	61	30	277	26
174	Point	1	1 mon	gpi	53.21	-6.74	6.74	0.1318	10.28	0.1499	-6.4314	0.3871	65.50	266	26	87	64	260	703	130
175	Point	1	1 mon	trmm 3b43	37.83	25.12	25.12	0.4116	22.90	0.4001	-1.0163	0.6325	46.08	65	251	34	31	52	433	49
176	Point	1	1 mon	ssmi	40.16	24.50	24.50	0.1073	15.31	0.0292	-2.8715	0.1710	51.49	90	241	116	181	147	775	159
177	Point	1	1 mon	opi2	41.58	24.52	24.52	0.1763	13.23	0.1456	-4.4050	0.3816	48.67	122	242	65	66	102	597	95
178	Point	1	1 mon	opi3	42.09	22.13	22.13	0.1561	12.58	0.1281	-4.7314	0.3579	50.12	135	206	70	77	124	612	100
179	Point	1	1 mon	cmap	40.38	15.09	15.09	0.1545	11.49	0.1292	-4.2545	0.3595	48.15	95	127	72	74	86	454	53
180	Point	1	1 mon	cmap2	40.38	15.09	15.09	0.1545	11.49	0.1292	-4.2547	0.3595	48.15	96	128	71	73	87	455	54
181	Point	1	2 mon	reanalysis	34.53	-13.67	13.67	-0.0263	9.88	0.0048	-8.0000	-0.0693	49.52	34	110	295	300	111	850	184
182	Point	1	2 mon	gpcp	43.05	8.44	8.44	0.1243	10.54	0.1013	-5.0864	0.3183	52.39	154	47	92	106	160	559	82
183	Point	1	2 mon	gpcc	42.71	10.96	10.96	0.0695	6.30	0.3271	-61.2199	0.5719	51.09	148	89	166	44	139	586	91
184	Point	1	2 mon	gpcc trmm	40.26	26.68	26.68	0.3083	21.01	0.3578	-2.5966	0.5982	47.12	94	265	47	36	66	508	71
185	Point	1	2 mon	ghcn cams grid	36.87	8.48	8.48	0.1300	9.07	0.1442	-6.5864	0.3798	44.98	54	49	89	67	37	296	30
186	Point	1	2 mon	gpi	56.19	-6.75	6.75	0.0906	11.08	0.0708	-7.1417	0.2662	68.72	301	27	130	131	285	874	191
187	Point	1	2 mon	trmm 3b43	38.80	22.88	22.88	0.2935	19.81	0.3564	-2.5708	0.5970	46.55	74	227	50	37	59	447	51
188	Point	1	2 mon	ssmi	41.04	24.48	24.48	0.0780	14.97	0.0154	-3.0110	0.1242	52.59	114	240	150	194	166	864	187
189	Point	1	2 mon	opi2	41.22	24.34	24.34	0.1831	13.27	0.1568	-4.3120	0.3960	48.32	116	238	64	62	92	572	87
190	Point	1	2 mon	opi3	42.06	21.91	21.91	0.1520	12.47	0.1210	-4.7375	0.3478	50.22	134	203	74	84	127	622	104
191	Point	1	2 mon	cmap	40.55	14.89	14.89	0.1471	11.40	0.1169	-4.3102	0.3418	48.48	101	122	79	89	95	486	64
192	Point	1	2 mon	cmap2	40.55	14.89	14.89	0.1471	11.40	0.1169	-4.3104	0.3418	48.48	102	123	78	88	96	487	65
193	Point	1	3 mon	reanalysis	36.83	-13.74	13.74	0.0199	8.83	0.0027	-7.3179	0.0523	47.64	53	113	238	231	73	708	135
194	Point	1	3 mon	gpcp	45.69	8.49	8.49	0.0672	10.68	0.0296	-5.8354	0.1720	55.62	201	51	171	179	201	803	177
195	Point	1	3 mon	gpcc	44.42	10.82	10.82	0.0407	6.15	0.1123	-64.9841	0.3352	52.81	182	88	209	94	171	744	147
196	Point	1	3 mon	gpcc trmm	45.25	26.43	26.43	0.1485	18.75	0.0911	-4.1432	0.3019	53.84	195	261	76	113	185	830	182
197	Point	1	3 mon	ghcn cams grid	39.30	8.31	8.31	0.0731	9.01	0.0465	-7.6924	0.2157	47.69	79	43	159	158	75	514	73
198	Point	1	3 mon	gpi	58.96	**-6.52**	6.52	0.0360	12.20	0.0112	-8.0703	0.1058	72.70	333	22	215	209	318	1097	236
199	Point	1	3 mon	trmm 3b43	43.55	22.47	22.47	0.1675	18.32	0.1281	-3.9499	0.3579	52.37	162	221	68	76	159	686	126
200	Point	1	3 mon	ssmi	41.98	24.47	24.47	0.0260	14.46	0.0017	-3.2633	0.0414	54.38	132	239	231	242	192	1036	220
201	Point	1	3 mon	opi2	43.90	24.14	24.14	0.1170	12.34	0.0637	-4.8835	0.2523	50.94	170	237	104	138	135	784	164
202	Point	1	3 mon	opi3	44.14	21.65	21.65	0.0918	11.78	0.0438	-5.3010	0.2092	52.72	175	199	128	159	168	829	181

Southeast United States - Monthly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
203	Point	1	3 mon	cmap	42.70	14.67	14.67	0.0853	11.13	0.0391	-4.9370	0.1976	51.35	146	118	141	162	144	711	137	
204	Point	1	3 mon	cmap2	42.70	14.67	14.67	0.0853	11.13	0.0390	-4.9373	0.1976	51.35	147	119	140	161	145	712	138	
205	Point	1	4 mon	reanalysis	37.38	-13.64	13.64	0.1011	6.98	0.0708	-6.1926	0.2660	44.33	61	108	122	132	31	454	52	
206	Point	1	4 mon	gpcp	48.10	8.34	8.34	0.0046	10.82	0.0001	-6.6355	0.0119	58.89	226	45	272	271	216	1030	219	
207	Point	1	4 mon	gpcc	46.65	10.99	10.99	0.0097	6.05	0.0064	-69.5924	0.0802	54.68	210	90	261	220	198	979	210	
208	Point	1	4 mon	gpcc trmm	48.14	24.65	24.65	0.0155	16.98	0.0010	-5.0736	0.0313	58.14	227	245	246	258	213	1189	247	
209	Point	1	4 mon	ghcn cams grid	41.69	8.19	8.19	0.0146	9.04	0.0019	-8.6795	0.0430	50.35	123	42	250	239	131	785	167	
210	Point	1	4 mon	gpi	62.90	**-6.48**	6.48	-0.0203	13.35	0.0035	-9.0518	-0.0596	76.67	372	21	293	295	345	1326	270	
211	Point	1	4 mon	trmm 3b43	48.48	22.60	22.60	0.0449	17.20	0.0094	-5.1781	0.0969	58.13	233	222	202	211	212	1080	232	
212	Point	1	4 mon	ssmi	42.64	24.71	24.71	-0.0179	14.12	0.0008	-3.4994	-0.0285	55.99	143	246	289	288	206	1172	246	
213	Point	1	4 mon	opi2	46.57	23.99	23.99	0.0208	11.05	0.0020	-5.7436	0.0448	54.63	209	234	234	238	197	1112	239	
214	Point	1	4 mon	opi3	46.23	21.51	21.51	0.0170	10.96	0.0015	-6.0480	0.0388	55.85	203	198	243	247	205	1096	234	
215	Point	1	4 mon	cmap	45.08	14.77	14.77	0.0146	10.86	0.0011	-5.6943	0.0339	54.63	191	120	249	253	195	1008	217	
216	Point	1	4 mon	cmap2	45.08	14.77	14.77	0.0146	10.86	0.0011	-5.6947	0.0338	54.63	192	121	248	254	196	1011	218	
217	Point	2	Yes	reanalysis	**29.96**	26.18	26.18	**0.9819**	26.49	0.6706	0.3838	**0.8189**	**38.39**	4	259	1	3	4	271	25	
218	Point	2	Yes	gpcp	60.29	37.60	37.60	-0.1073	43.96	0.0135	-2.0157	-0.1162	84.92	348	343	326	315	395	1727	356	
219	Point	2	Yes	gpcc	68.44	50.14	50.14	-0.2273	46.53	0.0450	-2.0980	-0.2120	96.75	407	409	374	346	427	1963	410	
220	Point	2	Yes	gpcc trmm	52.32	44.74	44.74	0.1023	41.54	0.0122	-2.1082	0.1105	72.58	258	383	120	203	317	1281	266	
221	Point	2	Yes	ghcn cams grid	56.42	39.44	39.44	-0.0909	43.70	0.0075	-1.7220	-0.0865	80.68	304	355	318	306	372	1655	343	
222	Point	2	Yes	gpi	78.58	24.95	24.95	-0.1582	50.77	0.0465	-2.6737	-0.2156	99.79	429	249	352	347	431	1808	379	
223	Point	2	Yes	trmm 3b43	52.27	39.57	39.57	0.0670	41.07	0.0060	-2.0796	0.0774	72.25	257	356	172	222	316	1323	268	
224	Point	2	Yes	ssmi	65.10	56.07	56.07	0.1187	47.91	0.0086	-1.6284	0.0928	84.31	385	427	97	213	391	1513	311	
225	Point	2	Yes	opi2	65.86	53.64	53.64	-0.2193	41.09	0.0398	-2.3936	-0.1995	90.08	393	421	370	340	417	1941	406	
226	Point	2	Yes	opi3	61.32	51.15	51.15	-0.1253	42.37	0.0141	-2.2166	-0.1187	87.70	356	412	337	317	406	1828	385	
227	Point	2	Yes	cmap	58.69	44.47	44.47	-0.1020	43.23	0.0097	-1.9517	-0.0986	84.02	329	379	324	310	389	1731	358	
228	Point	2	Yes	cmap2	58.69	44.48	44.48	-0.1020	43.23	0.0097	-1.9518	-0.0986	84.02	330	380	323	309	390	1732	359	
229	Point	2	No	reanalysis	35.37	26.38	26.38	0.6017	33.22	0.3659	-0.2173	0.6049	44.76	40	260	31	33	35	399	44	
230	Point	2	No	gpcp	68.43	37.80	37.80	-0.3230	45.41	0.1778	-3.6730	-0.4216	87.70	406	345	406	387	407	1951	409	
231	Point	2	No	gpcc	75.79	50.40	50.40	-0.4313	46.18	0.2341	-3.5587	-0.4838	97.61	425	410	429	414	428	2106	429	
232	Point	2	No	gpcc trmm	62.11	45.25	45.25	-0.2547	40.78	0.1178	-4.6233	-0.3433	78.22	362	392	381	362	355	1852	394	
233	Point	2	No	ghcn cams grid	63.82	39.64	39.64	-0.3529	44.93	0.1641	-3.2019	-0.4051	83.17	379	357	414	383	387	1920	404	
234	Point	2	No	gpi	82.96	25.06	25.06	-0.2622	53.19	0.1811	-4.3452	-0.4256	101.04	432	250	387	390	432	1891	401	
235	Point	2	No	trmm 3b43	62.70	40.09	40.09	-0.2603	42.10	0.1408	-4.6380	-0.3753	78.33	369	361	386	372	357	1845	391	
236	Point	2	No	ssmi	64.70	57.19	57.19	-0.0196	47.74	0.0003	-2.7319	-0.0186	82.54	384	432	292	284	381	1773	368	
237	Point	2	No	opi2	72.16	53.85	53.85	-0.4723	38.69	0.2681	-4.0988	-0.5178	91.61	418	422	432	427	420	2119	431	
238	Point	2	No	opi3	68.10	51.35	51.35	-0.3818	40.57	0.1901	-3.9021	-0.4360	89.83	405	413	421	397	415	2051	425	
239	Point	2	No	cmap	65.89	44.68	44.68	-0.3553	43.15	0.1713	-3.5339	-0.4139	86.39	394	381	416	385	401	1977	414	
240	Point	2	No	cmap2	65.89	44.68	44.68	-0.3553	43.15	0.1713	-3.5340	-0.4139	86.39	395	382	415	384	402	1978	416	
241	Point	2	1 mon	reanalysis	39.82	26.57	26.57	0.3561	37.55	0.1280	-0.7183	0.3578	53.25	86	262	41	78	180	647	115	
242	Point	2	1 mon	gpcp	68.71	38.06	38.06	-0.3413	45.53	0.1981	-3.7387	-0.4450	88.44	410	347	410	401	411	1979	417	
243	Point	2	1 mon	gpcc	76.32	51.04	51.04	-0.4420	46.38	0.2467	-3.6257	-0.4967	98.31	426	411	430	420	429	2116	430	
244	Point	2	1 mon	gpcc trmm	60.61	46.80	46.80	-0.1797	41.05	0.0564	-4.3496	-0.2375	77.01	352	402	360	353	348	1815	381	
245	Point	2	1 mon	ghcn cams grid	65.23	39.85	39.85	-0.4058	45.16	0.2167	-3.3458	-0.4655	84.69	386	358	427	409	394	1974	412	
246	Point	2	1 mon	gpi	82.73	25.32	25.32	-0.2222	52.54	0.1308	-4.1638	-0.3617	99.28	431	253	372	365	430	1851	393	
247	Point	2	1 mon	trmm 3b43	58.78	41.64	41.64	-0.1604	41.97	0.0517	-4.2178	-0.2274	76.06	331	366	353	350	343	1743	362	
248	Point	2	1 mon	ssmi	65.57	56.77	56.77	-0.0268	47.22	0.0007	-2.7633	-0.0257	82.31	390	431	296	287	379	1783	371	
249	Point	2	1 mon	opi2	72.21	53.99	53.99	-0.4689	38.77	0.2644	-4.0961	-0.5142	91.71	419	424	431	425	421	2120	432	
250	Point	2	1 mon	opi3	69.65	51.56	51.56	-0.4256	40.25	0.2360	-4.0221	-0.4857	91.04	413	414	428	419	419	2093	428	
251	Point	2	1 mon	cmap	67.38	44.88	44.88	-0.4021	43.12	0.2192	-3.6663	-0.4682	87.76	402	384	425	411	408	2030	419	
252	Point	2	1 mon	cmap2	67.39	44.88	44.88	-0.4021	43.12	0.2192	-3.6665	-0.4682	87.76	403	385	424	410	409	2031	420	
253	Point	2	2 mon	reanalysis	44.06	26.66	26.66	0.1317	41.47	0.0175	-1.1740	0.1324	59.97	171	264	88	192	221	936	202	
254	Point	2	2 mon	gpcp	65.83	38.27	38.27	-0.2442	45.04	0.1014	-3.4151	-0.3184	85.47	392	349	379	358	398	1876	396	
255	Point	2	2 mon	gpcc	74.08	52.11	52.11	-0.3575	46.97	0.1617	-3.4811	-0.4021	96.32	423	418	417	382	426	2066	427	
256	Point	2	2 mon	gpcc trmm	59.84	46.64	46.64	-0.1466	39.93	0.0388	-4.3610	-0.1969	75.81	342	401	348	339	341	1771	366	
257	Point	2	2 mon	ghcn cams grid	63.00	40.07	40.07	-0.3200	44.88	0.1346	-3.1258	-0.3668	82.62	373	360	405	369	382	1889	400	
258	Point	2	2 mon	gpi	78.01	25.69	25.69	-0.1414	51.09	0.0536	-3.7909	-0.2316	95.28	427	257	346	351	425	1806	378	
259	Point	2	2 mon	trmm 3b43	60.24	41.45	41.45	-0.1614	40.68	0.0542	-4.3583	-0.2329	75.79	346	365	355	352	340	1758	363	
260	Point	2	2 mon	ssmi	64.69	56.74	56.74	0.0328	47.66	0.0010	-2.7899	0.0324	80.60	383	430	219	256	369	1657	345	
261	Point	2	2 mon	opi2	69.31	54.08	54.08	-0.3808	39.76	0.1746	-3.8862	-0.4178	89.93	411	426	420	386	416	2059	426	
262	Point	2	2 mon	opi3	68.03	51.73	51.73	-0.3289	41.07	0.1409	-3.7775	-0.3754	88.91	404	416	407	373	412	2012	418	
263	Point	2	2 mon	cmap	65.44	45.06	45.06	-0.3140	43.29	0.1337	-3.4343	-0.3656	85.65	388	388	403	368	399	1946	407	
264	Point	2	2 mon	cmap2	65.44	45.06	45.06	-0.3140	43.29	0.1337	-3.4345	-0.3656	85.66	389	389	402	367	400	1947	408	
265	Point	2	3 mon	reanalysis	46.95	26.77	26.77	0.0115	43.59	0.0001	-1.4204	0.0115	63.37	215	267	256	272	245	1255	259	
266	Point	2	3 mon	gpcp	63.33	38.34	38.34	-0.0719	44.18	0.0088	-2.8323	-0.0938	79.73	374	350	309	308	364	1705	352	
267	Point	2	3 mon	gpcc	71.67	52.29	52.29	-0.1282	48.15	0.0209	-2.9152	-0.1446	90.13	417	419	341	322	418	1917	403	
268	Point	2	3 mon	gpcc trmm	58.03	46.39	46.39	0.0341	40.57	0.0021	-3.6705	0.0459	71.27	320	399	216	234	307	1476	303	
269	Point	2	3 mon	ghcn cams grid	59.84	40.15	40.15	-0.1156	44.21	0.0176	-2.5914	-0.1326	77.19	341	362	331	319	350	1703	351	
270	Point	2	3 mon	gpi	69.70	25.54	25.54	0.0478	47.06	0.0061	-2.7695	0.0783	84.56	414	255	199	221	393	1482	304	
271	Point	2	3 mon	trmm 3b43	57.63	40.97	40.97	0.0141	40.37	0.0004	-3.5838	0.0204	70.60	318	364	251	267	301	1501	309	
272	Point	2	3 mon	ssmi	63.64	56.71	56.71	0.0319	47.66	0.0010	-2.7901	0.0316	80.67	377	428	223	257	371	1656	344	
273	Point	2	3 mon	opi2	65.72	54.02	54.02	-0.1742	42.01	0.0365	-3.3799	-0.1910	85.24	391	425	359	337	396	1908	402	
274	Point	2	3 mon	opi3	65.35	51.78	51.78	-0.1268	42.77	0.0210	-3.2507	-0.1448	83.97	387	417	340	323	388	1855	395	
275	Point	2	3 mon	cmap	62.56	45.13	45.13	-0.1162	43.63	0.0183	-2.9001	-0.1354	80.44	366	390	332	320	367	1775	369	
276	Point	2	3 mon	cmap2	62.56	45.13	45.13	-0.1163	43.63	0.0184	-2.9004	-0.1355	80.44	367	391	333	321	368	1780	370	
277	Point	2	4 mon	reanalysis	50.46	26.88	26.88	-0.0887	45.27	0.0079	-1.6219	-0.0891	66.07	246	269	317	307	261	1400	288	
278	Point	2	4 mon	gpcp	58.30	38.14	38.14	0.1153	43.12	0.0225	-2.1786	0.1501	72.75	326	348	107	187	320	1288	267	
279	Point	2	4 mon	gpcc	66.79	52.80	52.80	0.1527	49.56	0.0298	-2.2328	0.1727	81.90	400	420	73	178	378	1449	297	
280	Point	2	4 mon	gpcc trmm	55.05	45.95	45.95	0.1398	41.55	0.0351	-3.2119	0.1875	68.13	289	393	81	168	280	1211	251	
281	Point	2	4 mon	ghcn cams grid	55.72	40.02	40.02	0.1083	43.37	0.0154	-1.9913	0.1241	70.57	296	359	115	195	300	1265	263	
282	Point	2	4 mon	gpi	59.86	25.31	25.31	0.2132	43.47	0.1216	-1.8727	0.3487	73.81	343	252	60	83	326	1064	228	
283	Point	2	4 mon	trmm 3b43	53.15	40.38	40.38	0.1323	40.77	0.0362	-3.0035	0.1904	66.43	264	363	86	167	263	1143	241	
284	Point	2	4 mon	ssmi	66.83	56.73	56.73	-0.0633	47.01	0.0039	-2.9757	-0.0627	82.71	401	429	305	296	383	1814	380	
285	Point	2	4 mon	opi2	63.61	53.91	53.91	0.0799	44.58	0.0077	-2.7544	0.0876	79.06	376	423	145	219	361	1524	312	
286	Point	2	4 mon	opi3	62.32	51.62	51.62	0.0928	44.50	0.0112	-2.6599	0.1058	78.06	363	415	127	208	354	1467	301	
287	Point	2	4 mon	cmap	59.02	44.98	44.98	0.0938	43.89	0.0119	-2.3154	0.1092	74.30	334	386	124	204	329	1377	284	
288	Point	2	4 mon	cmap2	59.02	44.98	44.98	0.0937	43.89	0.0119	-2.3158	0.1091	74.30	335	387	125	205	330	1382	285	
289	Area	1	Yes	reanalysis	52.78	-17.85	17.85	0.2687	-1.07	0.0500	-0.4367	0.2235	62.65	260	158	54	156	241	869	189	
290	Area	1	Yes	gpcp	34.23	**3.39**	3.39	0.6182	4.45	0.4418	0.2689	0.6647	**43.23**	31	2	29	30	24	116	5	
291	Area	1	Yes	gpcc	**32.46**	7.82	7.82	0.6127	6.23	0.4941	0.2685	**0.7029**	**39.84**	15	38	30	25	12	120	6	
292	Area	1	Yes	gpcc trmm	34.04	18.99	18.99	**0.8826**	18.19	0.5841	0.4563	**0.7643**	**40.86**	29	169	7	7	17	229	22	
293	*Area*	*1*	*Yes*	*ghcn cams grid*	***31.01***	***4.40***	*4.40*	***0.7746***	*4.54*	*0.4990*	*0.4496*	***0.7064***	***38.83***	*6*	*9*	*17*	*21*	*5*	*58*	*1*	Plot
294	Area	1	Yes	gpi	48.40	-13.15	13.15	0.3689	-0.41	0.2779	-0.6054	0.5271	62.85	232	100	38	51	242	663	118	
295	Area	1	Yes	trmm 3b43	**33.69**	14.27	14.27	**0.8060**	13.86	0.5608	0.4609	**0.7489**	**40.35**	25	115	12	9	15	176	14	
296	Area	1	Yes	ssmi	44.12	16.81	16.81	0.3492	10.10	0.0830	-0.3166	0.2881	57.83	174	143	43	120	211	691	128	
297	Area	1	Yes	opi2	**32.18**	19.79	19.79	**0.8225**	17.33	0.5552	0.3729	**0.7451**	**39.63**	11	179	11	12	11	224	21	
298	Area	1	Yes	opi3	**33.38**	17.44	17.44	**0.7355**	14.39	0.4983	0.3124	**0.7059**	**41.50**	21	151	21	22	20	235	23	
299	Area	1	Yes	cmap	**32.21**	10.43	10.43	**0.7167**	9.14	0.4892	0.3696	0.6995	**39.87**	13	83	24	27	14	161	12	
300	Area	1	Yes	cmap2	**32.21**	10.43	10.43	**0.7167**	9.15	0.4892	0.3696	**0.6995**	**39.87**	12	84	23	26	13	158	11	
301	Area	1	No	reanalysis	33.78	-17.73	17.73	0.0493	4.08	0.0555	-24.4187	0.2357	45.84	26	157	197	149	48	577	89	
302	Area	1	No	gpcp	43.74	**3.36**	3.36	0.0480	6.00	0.0497	-19.5742	0.2230	53.10	165	1	198	157	178	699	129	
303	Area	1	No	gpcc	44.88	7.68	7.68	0.0192	3.65	0.0883	-236.0440	0.2972	53.08	190	37	239	117	176	759	152	

Southeast United States - Monthly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR
304	Area	1	No	gpcc trmm	41.03	19.93	19.93	0.1885	14.41	0.1861	-4.1661	0.4314	47.66	113	182	62	60	74	491	67
305	Area	1	No	ghcn cams grid	38.31	**4.59**	4.59	0.0516	5.19	0.0730	-24.8896	0.2703	46.35	70	11	194	129	55	459	55
306	Area	1	No	gpi	56.49	-12.96	12.96	0.0599	6.02	0.1026	-26.0869	0.3203	69.03	306	97	182	104	289	978	209
307	Area	1	No	trmm 3b43	40.95	15.20	15.20	0.1840	13.47	0.2039	-4.3433	0.4516	48.08	108	132	63	58	85	446	50
308	Area	1	No	ssmi	35.77	18.31	18.31	0.0397	8.40	0.0131	-9.2308	0.1143	46.22	43	162	211	200	53	669	120
309	Area	1	No	opi2	41.87	19.98	19.98	0.0596	6.93	0.0546	-16.5487	0.2337	48.41	129	185	183	152	94	743	146
310	Area	1	No	opi3	42.14	17.63	17.63	0.0555	6.74	0.0533	-17.6869	0.2308	49.95	138	154	188	153	121	754	150
311	Area	1	No	cmap	40.95	10.64	10.64	0.0567	6.36	0.0575	-16.6738	0.2398	48.75	110	86	187	144	103	630	107
312	Area	1	No	cmap2	40.95	10.64	10.64	0.0567	6.36	0.0575	-16.6748	0.2397	48.75	111	87	186	145	104	633	110
313	Area	1	1 mon	reanalysis	**33.59**	-17.62	17.62	-0.0002	5.21	0.0000	-26.6967	-0.0011	47.88	24	153	278	278	81	814	178
314	Area	1	1 mon	gpcp	42.57	**3.55**	3.55	0.0678	5.93	0.0989	-18.6749	0.3145	51.99	141	3	170	110	154	578	90
315	Area	1	1 mon	gpcc	44.54	7.99	7.99	0.0321	3.69	0.2477	-229.8484	0.4977	52.49	186	39	220	53	164	662	117
316	Area	1	1 mon	gpcc trmm	37.03	19.33	19.33	0.2279	13.62	0.3329	-4.5204	0.5769	44.71	57	174	58	42	34	365	37
317	Area	1	1 mon	ghcn cams grid	37.38	**4.63**	4.63	0.0694	5.17	0.1325	-23.9293	0.3640	45.48	60	12	167	71	43	353	36
318	Area	1	1 mon	gpi	55.25	-12.37	12.37	0.0691	5.88	0.1344	-25.1443	0.3666	67.98	291	93	168	70	277	899	195
319	Area	1	1 mon	trmm 3b43	36.17	15.67	15.67	0.2289	12.76	0.3659	-4.4771	0.6049	44.16	45	138	57	34	28	302	31
320	Area	1	1 mon	ssmi	35.55	18.24	18.24	0.0638	8.60	0.0337	-8.7959	0.1835	45.39	41	161	178	172	42	594	94
321	Area	1	1 mon	opi2	40.70	19.78	19.78	0.0878	7.28	0.1182	-15.5706	0.3439	47.09	105	178	136	86	64	569	86
322	Area	1	1 mon	opi3	40.92	17.39	17.39	0.0786	6.97	0.1063	-16.7611	0.3260	48.76	107	150	147	100	105	609	97
323	Area	1	1 mon	cmap	39.69	10.33	10.33	0.0784	6.42	0.1090	-15.7285	0.3302	47.49	83	81	149	96	71	480	61
324	Area	1	1 mon	cmap2	39.69	10.34	10.34	0.0784	6.42	0.1090	-15.7289	0.3302	47.49	84	82	148	95	72	481	62
325	Area	1	2 mon	reanalysis	34.32	-17.68	17.68	-0.0174	5.61	0.0069	-27.4330	-0.0831	48.54	33	155	287	304	97	876	192
326	Area	1	2 mon	gpcp	43.13	**3.69**	3.69	0.0603	5.94	0.0780	-18.9769	0.2793	52.46	156	5	181	124	163	629	106
327	Area	1	2 mon	gpcc	44.30	8.52	8.52	0.0309	3.67	0.2280	-230.7097	0.4775	52.46	180	52	224	55	162	673	122
328	Area	1	2 mon	gpcc trmm	38.21	18.36	18.36	0.1584	11.45	0.3144	-10.3803	0.5608	45.94	68	163	69	47	50	397	43
329	Area	1	2 mon	ghcn cams grid	37.60	**4.46**	4.46	0.0609	5.10	0.1046	-25.0430	0.3234	45.83	63	10	179	102	47	401	45
330	Area	1	2 mon	gpi	56.51	-12.38	12.38	0.0441	6.36	0.0548	-26.5470	0.2342	69.96	307	94	204	150	294	1049	226
331	Area	1	2 mon	trmm 3b43	38.45	14.49	14.49	0.1484	10.79	0.3035	-10.8396	0.5509	46.45	71	116	77	48	57	369	39
332	Area	1	2 mon	ssmi	36.26	18.23	18.23	0.0408	8.33	0.0138	-9.1582	0.1173	46.38	48	160	208	198	56	670	121
333	Area	1	2 mon	opi2	40.56	19.62	19.62	0.0892	7.27	0.1218	-15.4489	0.3491	46.99	103	176	135	82	63	559	80
334	Area	1	2 mon	opi3	41.23	17.19	17.19	0.0740	6.88	0.0938	-16.8122	0.3063	48.90	117	148	157	111	106	639	112
335	Area	1	2 mon	cmap	40.06	10.15	10.15	0.0718	6.36	0.0910	-15.8985	0.3016	47.79	88	75	163	115	76	517	74
336	Area	1	2 mon	cmap2	40.06	10.15	10.15	0.0718	6.36	0.0910	-15.8989	0.3016	47.79	89	76	162	114	77	518	75
337	Area	1	3 mon	reanalysis	35.84	-17.72	17.72	0.0094	5.00	0.0020	-26.0595	0.0451	47.38	44	156	262	236	68	766	155
338	Area	1	3 mon	gpcp	44.72	**3.74**	3.74	0.0330	6.01	0.0233	-20.1472	0.1527	54.08	188	6	218	184	189	785	169
339	Area	1	3 mon	gpcc	45.15	8.39	8.39	0.0172	3.60	0.0708	-236.8187	0.2660	53.35	194	46	242	133	181	796	175
340	Area	1	3 mon	gpcc trmm	42.57	18.58	18.58	0.0746	10.23	0.0770	-13.8045	0.2774	49.94	142	166	156	125	119	708	136
341	Area	1	3 mon	ghcn cams grid	38.97	**4.33**	4.33	0.0341	5.06	0.0336	-27.1673	0.1833	47.11	75	8	217	173	65	538	78
342	Area	1	3 mon	gpi	58.13	-12.17	12.17	0.0168	6.92	0.0079	-28.0258	0.0891	71.97	325	92	245	216	313	1191	249
343	Area	1	3 mon	trmm 3b43	41.78	14.55	14.55	0.0818	9.97	0.1022	-14.0696	0.3197	49.94	127	117	143	105	120	612	99
344	Area	1	3 mon	ssmi	36.87	18.17	18.17	0.0133	8.06	0.0015	-9.5852	0.0381	47.48	55	159	253	248	70	785	165
345	Area	1	3 mon	opi2	42.01	19.42	19.42	0.0584	6.84	0.0519	-16.2485	0.2279	48.20	133	175	184	155	90	737	143
346	Area	1	3 mon	opi3	42.37	16.93	16.93	0.0448	6.54	0.0340	-17.6060	0.1845	50.06	140	144	203	171	123	781	162
347	Area	1	3 mon	cmap	41.35	9.93	9.93	0.0416	6.22	0.0304	-16.8407	0.1744	49.20	118	70	207	177	108	680	123
348	Area	1	3 mon	cmap2	41.36	9.93	9.93	0.0416	6.22	0.0304	-16.8412	0.1744	49.20	119	71	206	176	109	681	124
349	Area	1	4 mon	reanalysis	36.25	-17.62	17.62	0.0553	3.96	0.0695	-23.9746	0.2636	45.55	47	152	189	135	45	568	85
350	Area	1	4 mon	gpcp	46.28	**3.59**	3.59	0.0014	6.08	0.0000	-21.4476	0.0066	55.82	204	4	277	275	204	964	205
351	Area	1	4 mon	gpcc	46.29	8.54	8.54	0.0043	3.56	0.0044	-244.6269	0.0663	54.25	205	53	273	228	190	949	203
352	Area	1	4 mon	gpcc trmm	44.19	17.12	17.12	0.0093	9.39	0.0012	-15.0662	0.0344	52.01	179	147	263	252	156	997	214
353	Area	1	4 mon	ghcn cams grid	40.18	**4.22**	4.22	0.0070	5.07	0.0014	-28.6459	0.0377	48.35	91	7	267	249	93	707	132
354	Area	1	4 mon	gpi	60.28	-12.16	12.16	-0.0089	7.46	0.0022	-29.5054	-0.0472	73.92	347	91	283	291	328	1340	272
355	Area	1	4 mon	trmm 3b43	44.48	14.98	14.98	0.0260	9.48	0.0104	-15.9800	0.1020	52.99	184	124	232	210	175	925	201
356	Area	1	4 mon	ssmi	37.47	18.39	18.39	-0.0127	7.86	0.0013	-10.0381	-0.0365	48.60	62	164	285	289	99	899	194
357	Area	1	4 mon	opi2	44.08	19.27	19.27	0.0084	6.17	0.0011	-17.6728	0.0329	50.24	173	173	264	255	128	993	213
358	Area	1	4 mon	opi3	43.77	16.79	16.79	0.0074	6.14	0.0009	-18.7946	0.0305	51.73	166	142	266	259	149	982	211
359	Area	1	4 mon	cmap	42.98	10.04	10.04	0.0062	6.09	0.0007	-18.0767	0.0261	50.96	152	73	271	265	136	897	193
360	Area	1	4 mon	cmap2	42.98	10.04	10.04	0.0062	6.09	0.0007	-18.0776	0.0260	50.96	153	74	270	266	137	900	196
361	Area	2	Yes	reanalysis	**19.52**	8.48	8.48	**0.7273**	13.16	0.6873	0.5346	**0.8290**	**24.41**	1	50	22	1	1	75	3
362	Area	2	Yes	gpcp	50.04	19.90	19.90	0.0021	25.63	0.0000	-2.4909	0.0031	66.85	242	181	276	277	269	1245	257
363	Area	2	Yes	gpcc	54.97	31.12	31.12	-0.0763	27.95	0.0099	-2.5798	-0.0993	74.49	288	295	311	311	331	1536	315
364	Area	2	Yes	gpcc trmm	40.51	27.33	27.33	0.2088	24.51	0.0848	-1.8675	0.2912	53.99	99	276	61	119	187	742	145
365	Area	2	Yes	ghcn cams grid	45.42	21.74	21.74	0.0308	25.52	0.0016	-1.9582	0.0401	61.54	197	200	225	243	233	1098	237
366	Area	2	Yes	gpi	68.68	**5.85**	5.85	-0.0628	29.54	0.0140	-4.0217	-0.1184	84.35	409	14	304	316	392	1435	294
367	Area	2	Yes	trmm 3b43	41.49	22.17	22.17	0.1761	23.49	0.0690	-1.9255	0.2627	54.53	121	208	66	137	193	725	139
368	Area	2	Yes	ssmi	49.43	36.64	36.64	0.1288	28.57	0.0192	-1.8015	0.1387	63.21	240	325	90	189	244	1088	233
369	Area	2	Yes	opi2	51.66	35.94	35.94	-0.0435	25.19	0.0029	-2.6886	-0.0541	68.72	255	319	297	294	284	1449	296
370	Area	2	Yes	opi3	48.04	33.45	33.45	0.0074	25.70	0.0001	-2.5255	0.0096	67.18	224	310	265	273	272	1344	275
371	Area	2	Yes	cmap	46.72	26.77	26.77	0.0200	25.66	0.0007	-2.2346	0.0264	64.35	212	266	236	264	253	1231	254
372	Area	2	Yes	cmap2	46.72	26.77	26.77	0.0200	25.66	0.0007	-2.2346	0.0264	64.35	213	268	235	263	254	1233	255
373	Area	2	No	reanalysis	**27.46**	8.68	8.68	0.3472	19.89	0.3174	-0.9243	0.5634	**34.86**	3	58	44	45	3	153	10
374	Area	2	No	gpcp	58.12	20.10	20.10	-0.2137	27.08	0.2027	-6.9772	-0.4502	70.99	324	187	367	403	304	1585	325
375	Area	2	No	gpcc	62.84	31.37	31.37	-0.2803	27.60	0.2555	-6.2921	-0.5055	76.79	371	296	391	424	346	1828	384
376	Area	2	No	gpcc trmm	50.23	27.85	27.85	-0.1482	23.75	0.1044	-8.0196	-0.3230	61.27	244	281	349	359	231	1464	300
377	Area	2	No	ghcn cams grid	52.98	21.94	21.94	-0.2312	26.75	0.1835	-5.7820	-0.4284	65.45	261	204	375	391	259	1490	305
378	Area	2	No	gpi	72.96	**5.96**	5.96	-0.1668	31.96	0.1882	-9.0746	-0.4339	86.54	421	15	357	395	403	1591	328
379	Area	2	No	trmm 3b43	51.38	22.68	22.68	-0.1512	24.52	0.1243	-8.3160	-0.3526	62.27	251	224	351	364	239	1429	293
380	Area	2	No	ssmi	48.09	37.76	37.76	-0.0094	28.40	0.0002	-4.4236	-0.0145	61.74	225	344	284	283	236	1372	280
381	Area	2	No	opi2	58.85	36.15	36.15	-0.2964	22.80	0.2752	-7.0569	-0.5246	71.34	332	320	397	429	308	1786	373
382	Area	2	No	opi3	55.93	33.65	33.65	-0.2491	23.90	0.2108	-6.8838	-0.4592	70.57	300	312	380	406	299	1697	350
383	Area	2	No	cmap	54.70	26.98	26.98	-0.2333	25.59	0.1924	-6.3373	-0.4386	68.08	283	270	377	399	278	1607	331
384	Area	2	No	cmap2	54.70	26.98	26.98	-0.2333	25.58	0.1924	-6.3374	-0.4386	68.08	284	271	376	398	279	1608	332
385	Area	2	1 mon	reanalysis	**30.33**	8.84	8.84	0.2243	22.08	0.1324	-1.5747	0.3638	**40.38**	5	61	59	72	16	213	18
386	Area	2	1 mon	gpcp	57.36	20.33	20.33	-0.2207	27.13	0.2160	-7.0421	-0.4647	71.36	311	189	371	408	310	1589	326
387	Area	2	1 mon	gpcc	63.37	31.87	31.87	-0.2855	27.72	0.2659	-6.3798	-0.5157	77.26	375	298	394	426	351	1844	390
388	Area	2	1 mon	gpcc trmm	48.31	29.19	29.19	-0.0938	23.86	0.0401	-7.4154	-0.2003	59.80	230	284	319	341	219	1393	286
389	Area	2	1 mon	ghcn cams grid	53.41	22.13	22.13	-0.2598	26.88	0.2315	-5.9844	-0.4811	66.50	271	205	385	412	265	1538	316
390	Area	2	1 mon	gpi	72.27	**6.12**	6.12	-0.1428	31.57	0.1388	-8.7990	-0.3726	85.35	420	16	347	370	397	1550	320
391	Area	2	1 mon	trmm 3b43	48.52	24.03	24.03	-0.0848	24.34	0.0377	-7.4899	-0.1942	60.07	234	235	312	338	223	1342	273
392	Area	2	1 mon	ssmi	48.72	37.46	37.46	-0.0038	28.12	0.0000	-4.4606	-0.0059	61.39	237	340	281	280	232	1370	279
393	Area	2	1 mon	opi2	58.57	36.26	36.26	-0.2980	22.82	0.2783	-7.0786	-0.5275	71.52	328	322	398	430	312	1790	374
394	Area	2	1 mon	opi3	56.38	33.83	33.83	-0.2721	23.75	0.2513	-7.0509	-0.5013	71.40	303	313	388	422	311	1737	361
395	Area	2	1 mon	cmap	54.95	27.15	27.15	-0.2575	25.58	0.2344	-6.5182	-0.4841	69.00	286	272	384	416	287	1645	339
396	Area	2	1 mon	cmap2	54.95	27.16	27.16	-0.2575	25.58	0.2344	-6.5184	-0.4841	69.00	287	273	383	415	288	1646	340
397	Area	2	2 mon	reanalysis	34.79	8.94	8.94	0.0912	24.43	0.0220	-2.2848	0.1483	45.61	35	62	129	188	46	460	56
398	Area	2	2 mon	gpcp	55.87	20.55	20.55	-0.1647	26.89	0.1205	-6.5699	-0.3471	69.24	299	193	356	363	291	1502	310
399	Area	2	2 mon	gpcc	61.51	32.77	32.77	-0.2370	28.09	0.1840	-6.1741	-0.4290	75.72	358	306	378	392	339	1773	367
400	Area	2	2 mon	gpcc trmm	48.91	29.32	29.32	-0.1020	22.87	0.0503	-7.9680	-0.2242	59.89	238	286	325	349	220	1418	289
401	Area	2	2 mon	ghcn cams grid	51.94	22.35	22.35	-0.2115	26.76	0.1536	-5.6746	-0.3919	65.02	256	216	366	379	258	1475	302
402	Area	2	2 mon	gpi	69.49	**6.37**	6.37	-0.0995	30.84	0.0683	-8.3334	-0.2614	82.91	412	18	321	357	386	1494	307
403	Area	2	2 mon	trmm 3b43	50.39	24.13	24.13	-0.1095	23.39	0.0670	-8.2630	-0.2588	60.87	245	236	329	356	227	1393	287
404	Area	2	2 mon	ssmi	48.55	37.46	37.46	0.0284	28.33	0.0021	-4.5609	0.0454	60.28	235	339	228	235	224	1261	260

Southeast United States - Monthly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
405	**Area**	2	2 mon	opi2	56.96	36.36	36.36	-0.2552	23.35	0.2048	-6.8367	-0.4525	70.45	308	324	382	404	295	1713	353	
406	**Area**	2	2 mon	opi3	55.38	34.01	34.01	-0.2176	24.25	0.1611	-6.7112	-0.4014	69.88	292	316	368	381	293	1650	341	
407	**Area**	2	2 mon	cmap	53.69	27.34	27.34	-0.2079	25.71	0.1531	-6.1945	-0.3913	67.50	273	277	364	378	273	1565	322	
408	**Area**	2	2 mon	cmap2	53.70	27.34	27.34	-0.2079	25.71	0.1531	-6.1948	-0.3913	67.50	274	278	363	377	274	1566	323	
409	**Area**	2	3 mon	reanalysis	37.09	9.04	9.04	0.0106	25.88	0.0003	-2.7177	0.0172	48.57	58	63	259	268	98	746	148	
410	**Area**	2	3 mon	gpcp	53.55	20.61	20.61	-0.0588	26.38	0.0154	-5.6415	-0.1241	64.91	272	194	303	318	257	1344	274	
411	**Area**	2	3 mon	gpcc	59.27	32.81	32.81	-0.1015	28.77	0.0339	-5.2969	-0.1841	71.07	337	307	322	335	305	1606	330	
412	**Area**	2	3 mon	gpcc trmm	47.60	29.22	29.22	0.0067	23.23	0.0002	-6.9111	0.0147	56.63	221	285	269	269	208	1252	258	
413	**Area**	2	3 mon	ghcn cams grid	49.62	22.42	22.42	-0.0881	26.38	0.0267	-4.8378	-0.1633	60.86	241	219	316	329	226	1331	271	
414	**Area**	2	3 mon	gpi	62.42	**6.12**	6.12	0.0179	28.33	0.0022	-6.6955	0.0471	75.38	365	17	241	233	338	1194	250	
415	**Area**	2	3 mon	trmm 3b43	47.59	23.80	23.80	-0.0052	23.19	0.0002	-7.0867	-0.0123	57.26	220	232	282	282	209	1225	253	
416	**Area**	2	3 mon	ssmi	47.92	37.45	37.45	0.0242	28.34	0.0015	-4.5973	0.0389	60.48	223	338	233	246	225	1265	261	
417	**Area**	2	3 mon	opi2	53.86	36.29	36.29	-0.1263	24.76	0.0501	-6.0123	-0.2239	66.70	275	323	339	348	268	1553	321	
418	**Area**	2	3 mon	opi3	53.17	34.05	34.05	-0.0948	25.30	0.0306	-5.8825	-0.1750	66.08	265	317	320	332	262	1496	308	
419	**Area**	2	3 mon	cmap	51.47	27.40	27.40	-0.0877	25.94	0.0273	-5.3532	-0.1651	63.49	252	279	315	330	246	1422	291	
420	**Area**	2	3 mon	cmap2	51.47	27.40	27.40	-0.0877	25.94	0.0273	-5.3536	-0.1652	63.49	253	280	314	331	247	1425	292	
421	**Area**	2	4 mon	reanalysis	39.45	9.18	9.18	-0.0653	27.18	0.0112	-3.1152	-0.1060	51.19	80	64	306	313	141	904	197	
422	**Area**	2	4 mon	gpcp	49.34	20.44	20.44	0.0550	25.76	0.0134	-4.6030	0.1159	59.73	239	191	190	199	218	1037	221	
423	**Area**	2	4 mon	gpcc	54.55	33.18	33.18	0.0746	29.64	0.0184	-4.1850	0.1356	64.52	280	309	155	190	256	1190	248	
424	**Area**	2	4 mon	gpcc trmm	44.51	28.65	28.65	0.0761	23.92	0.0280	-6.1109	0.1675	53.96	185	282	153	182	186	988	212	
425	**Area**	2	4 mon	ghcn cams grid	45.96	22.32	22.32	0.0476	25.89	0.0078	-3.8906	0.0883	55.80	202	215	200	218	203	1038	222	
426	**Area**	2	4 mon	gpi	55.73	**5.80**	5.80	0.1214	26.07	0.1012	-5.2491	0.3182	67.93	297	13	95	107	276	788	170	
427	**Area**	2	4 mon	trmm 3b43	43.89	23.08	23.08	0.0724	23.50	0.0293	-6.0716	0.1711	53.81	169	229	160	180	184	922	200	
428	**Area**	2	4 mon	ssmi	50.60	37.36	37.36	-0.0436	27.82	0.0049	-4.9275	-0.0700	62.34	248	333	298	301	240	1420	290	
429	**Area**	2	4 mon	opi2	51.29	36.21	36.21	0.0295	26.37	0.0027	-5.0138	0.0523	61.88	250	321	227	230	237	1265	262	
430	**Area**	2	4 mon	opi3	50.47	33.92	33.92	0.0380	26.37	0.0049	-4.9501	0.0702	61.55	247	314	214	226	234	1235	256	
431	**Area**	2	4 mon	cmap	48.19	27.28	27.28	0.0392	26.12	0.0054	-4.4325	0.0738	58.81	228	274	213	223	214	1152	242	
432	**Area**	2	4 mon	cmap2	48.20	27.29	27.29	0.0392	26.12	0.0054	-4.4332	0.0737	58.82	229	275	212	224	215	1155	243	

Southeast United States - Yearly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	*Linear*	*1*	*Yes*	*reanalysis*	*19.18*	*-14.99*	*14.99*	*0.1810*	*5.5249*	*3.80*	*0.0528*	*-2.3821*	*0.2298*	*23.69*	*43*	*43*	*62*	*44*	*43*	*235*	*35*	Plot
2	Linear	1	Yes	gpcp	15.80	7.88	7.88	0.0089	112.3596	10.63	0.0001	-1.1716	0.0084	21.36	23	16	79	79	32	229	31	
3	Linear	1	Yes	gpcc	**12.91**	10.15	10.15	0.2667	3.7495	7.13	0.1635	-3.0031	0.4043	**14.61**	12	26	47	32	7	124	6	
4	Linear	1	Yes	gpcc trmm	34.47	34.47	34.47	1.9651	1.9651	41.53	0.3144	-2.0465	0.5608	39.80	102	108	35	19	102	366	76	
5	Linear	1	Yes	ghcn cams grid	**12.41**	**7.11**	7.11	0.0564	17.7305	7.92	0.0019	-0.8226	0.0433	17.55	9	12	74	77	17	189	19	
6	Linear	1	Yes	gpi	22.61	-8.13	8.13	-0.2005		16.10	0.0563	-2.2342	-0.2373	27.98	61	17	119	119	70	386	84	
7	Linear	1	Yes	trmm 3b43	25.27	25.27	25.27	1.7122	1.7122	26.78	0.1678	-1.1912	0.4096	32.44	78	84	29	31	86	308	54	
8	Linear	1	Yes	ssmi	24.59	24.43	24.43	0.2038	4.9068	15.31	0.0201	-2.4416	0.1419	30.88	74	81	58	65	81	359	75	
9	Linear	1	Yes	opi2	23.94	23.93	23.93	-0.1862		8.18	0.0089	-3.0805	-0.0946	29.27	69	79	118	98	76	440	98	
10	Linear	1	Yes	opi3	22.84	21.43	21.43	-0.1283		9.27	0.0084	-2.8311	-0.0918	28.37	64	69	108	97	71	409	93	
11	Linear	1	Yes	cmap	18.00	14.76	14.76	-0.0771		10.34	0.0033	-1.6869	-0.0578	23.75	35	41	96	89	45	306	53	
12	Linear	1	Yes	cmap2	18.00	14.76	14.76	-0.0773		10.33	0.0034	-1.6874	-0.0580	23.76	36	42	97	90	46	311	57	
13	Linear	1	No	reanalysis	16.96	-15.11	15.11	0.1790	5.5866	3.73	0.1992	-9.2975	0.4463	21.05	29	46	64	27	30	196	23	
14	Linear	1	No	gpcp	14.91	**6.41**	6.41	-0.0947		9.43	0.0224	-3.5224	-0.1498	18.40	19	10	100	112	18	259	42	
15	Linear	1	No	gpcc	**12.20**	9.36	9.36	0.0125	80.0000	5.30	0.0175	-188.3857	0.1324	**14.43**	8	23	78	67	6	182	17	
16	Linear	1	No	gpcc trmm	30.20	30.20	30.20	**1.1544**	1.1544	31.33	0.7177	-10.8927	**0.8472**	30.58	92	99	7	9	79	286	49	
17	Linear	1	No	ghcn cams grid	**10.72**	**6.98**	6.98	-0.0554		7.90	0.0070	-3.6413	-0.0835	**14.26**	3	11	90	96	5	205	25	
18	Linear	1	No	gpi	21.87	-9.37	9.37	-0.1754		14.35	0.1151	-6.0232	-0.3392	25.22	56	24	115	137	52	384	82	
19	Linear	1	No	trmm 3b43	21.85	21.85	21.85	**1.2077**	1.2077	22.29	0.3907	-4.2743	0.6250	23.26	55	71	12	17	40	195	22	
20	Linear	1	No	ssmi	24.60	23.91	23.91	0.1669	5.9916	14.36	0.0351	-6.2058	0.1874	27.70	75	78	65	52	69	339	67	
21	Linear	1	No	opi2	22.45	22.45	22.45	-0.4158		3.65	0.1251	-8.0568	-0.3537	26.04	59	73	139	141	58	470	108	
22	Linear	1	No	opi3	20.77	19.96	19.96	-0.1798		7.23	0.0464	-7.2715	-0.2155	24.89	50	63	117	118	49	397	87	
23	Linear	1	No	cmap	16.31	13.28	13.28	-0.1224		8.67	0.0236	-4.3209	-0.1538	19.96	26	37	106	113	22	304	51	
24	Linear	1	No	cmap2	16.31	13.28	13.28	-0.1226		8.67	0.0237	-4.3225	-0.1541	19.96	27	38	107	114	23	309	55	
25	*Linear*	*2*	*Yes*	*reanalysis*	*29.43*	*17.40*	*17.40*	*1.9797*	*1.9797*	*0.59*	*0.3406*	*0.0671*	*0.5836*	*38.55*	*91*	*53*	*36*	*18*	*99*	*297*	*50*	Plot
26	Linear	2	Yes	gpcp	39.83	28.82	28.82	0.6174	1.6197	31.02	0.0478	-0.4920	0.2187	48.76	115	96	23	45	120	399	89	
27	Linear	2	Yes	gpcc	40.99	40.99	40.99	**0.8455**	1.1827	40.53	0.1434	-2.8241	0.3787	46.57	118	124	10	34	118	404	90	
28	Linear	2	Yes	gpcc trmm	23.58	15.69	15.69	4.4020	4.4020	27.82	0.9761	0.0590	**0.9880**	26.32	67	48	53	2	59	229	32	
29	Linear	2	Yes	ghcn cams grid	40.56	30.66	30.66	0.6878	1.4539	31.88	0.0265	-0.5691	0.1628	50.00	117	101	16	61	125	420	96	
30	Linear	2	Yes	gpi	22.11	12.10	12.10	**0.9614**	1.0401	12.96	0.2847	0.1133	0.5336	27.56	57	35	2	21	65	180	16	
31	Linear	2	Yes	trmm 3b43	20.50	10.52	10.52	3.5018	3.5018	6.51	0.7335	0.2089	**0.8565**	24.14	48	30	45	6	47	176	15	
32	Linear	2	Yes	ssmi	46.36	41.82	41.82	0.1830	5.4645	33.36	0.0052	-2.2464	0.0724	51.42	130	125	61	71	127	514	119	
33	Linear	2	Yes	opi2	52.47	44.87	44.87	0.1075	9.3023	35.68	0.0007	-1.3079	0.0255	60.64	139	133	71	78	142	563	128	
34	Linear	2	Yes	opi3	50.11	42.37	42.37	0.6105	1.6380	39.33	0.0289	-1.1099	0.1699	57.98	134	127	25	59	137	482	112	
35	Linear	2	Yes	cmap	44.63	35.70	35.70	0.6038	1.6562	35.25	0.0296	-0.7831	0.1721	53.30	123	111	27	56	129	446	100	
36	Linear	2	Yes	cmap2	44.63	35.70	35.70	0.6030	1.6584	35.25	0.0296	-0.7833	0.1719	53.30	124	112	28	57	130	451	103	
37	Linear	2	No	reanalysis	18.75	18.75	18.75	**0.8632**	1.1585	21.09	0.7211	-1.7533	**0.8492**	19.85	40	59	8	8	21	136	10	
38	Linear	2	No	gpcp	32.33	30.17	30.17	-0.2475		37.34	0.0855	-8.4484	-0.2925	36.77	96	98	124	126	97	541	123	
39	Linear	2	No	gpcc	42.08	42.08	42.08	-0.1084		38.82	0.0101	-14.5005	-0.1007	45.18	120	126	103	100	114	563	127	
40	Linear	2	No	gpcc trmm	37.81	37.81	37.81	0.3129	3.1959	35.36	0.0531	-21.1024	0.2304	38.89	109	118	41	43	100	411	94	
41	Linear	2	No	ghcn cams grid	32.19	32.01	32.01	-0.3630		37.33	0.0822	-8.2365	-0.2867	36.35	95	104	136	123	95	553	124	
42	Linear	2	No	gpi	17.92	16.72	16.72	0.2434	4.1085	33.58	0.1178	-3.1267	0.3432	23.40	33	51	50	37	42	213	27	
43	Linear	2	No	trmm 3b43	32.64	32.64	32.64	-0.1294		34.45	0.0108	-16.3871	-0.1039	34.49	97	106	109	102	92	506	118	
44	Linear	2	No	ssmi	49.25	49.25	49.25	0.0041	243.9024	38.93	0.0000	-29.2687	0.0050	51.37	132	136	82	81	126	557	125	
45	Linear	2	No	opi2	46.21	46.21	46.21	-0.4698		31.08	0.1386	-16.1435	-0.3723	49.53	129	135	142	144	121	671	142	
46	Linear	2	No	opi3	43.72	43.72	43.72	-0.3604		33.10	0.1120	-14.8413	-0.3347	47.61	122	130	135	136	119	642	140	
47	Linear	2	No	cmap	37.30	37.04	37.04	-0.3233		35.55	0.0946	-11.0800	-0.3075	41.57	107	115	132	127	104	585	131	
48	Linear	2	No	cmap2	37.31	37.04	37.04	-0.3235		35.55	0.0947	-11.0817	-0.3078	41.58	108	116	133	128	105	590	133	
49	Point	1	Yes	reanalysis	18.25	-13.54	13.54	0.2156	4.6382	4.46	0.0690	-1.8602	0.2626	22.71	39	39	55	40	36	209	26	
50	Point	1	Yes	gpcp	16.84	9.64	9.64	-0.0014		12.41	0.0000	-1.1848	-0.0013	22.75	28	25	83	83	37	256	40	
51	Point	1	Yes	gpcc	**13.34**	10.95	10.95	0.2770	3.6101	7.98	0.1781	-3.3058	0.4221	**15.08**	15	31	46	29	9	130	9	
52	Point	1	Yes	gpcc trmm	38.98	38.98	38.98	2.2368	2.2368	48.03	0.4152	-2.6898	**0.6444**	43.39	113	121	38	14	111	397	88	
53	Point	1	Yes	ghcn cams grid	**13.19**	8.55	8.55	0.0604	16.5563	9.36	0.0020	-0.8755	0.0445	18.56	13	21	73	76	19	202	24	
54	Point	1	Yes	gpi	22.91	**-6.09**	6.09	-0.2308		18.75	0.0655	-1.9308	-0.2558	28.43	65	9	123	120	73	390	85	
55	Point	1	Yes	trmm 3b43	29.20	29.20	29.20	2.0396	2.0396	31.40	0.2322	-1.5594	0.4819	35.50	90	97	37	24	94	342	69	
56	Point	1	Yes	ssmi	26.89	26.86	26.86	0.2506	3.9904	18.27	0.0266	-2.4856	0.1631	33.25	85	92	49	60	88	374	80	
57	Point	1	Yes	opi2	25.68	25.68	25.68	-0.2665		8.87	0.0162	-3.1352	-0.1274	31.30	80	87	127	104	82	480	110	
58	Point	1	Yes	opi3	24.48	23.19	23.19	-0.1536		10.75	0.0107	-2.8634	-0.1035	30.25	73	77	114	101	77	442	99	
59	Point	1	Yes	cmap	19.24	16.52	16.52	-0.0908		12.03	0.0041	-1.7409	-0.0642	25.48	44	49	98	91	53	335	66	
60	Point	1	Yes	cmap2	19.25	16.52	16.52	-0.0911		12.03	0.0041	-1.7415	-0.0643	25.48	45	50	99	93	54	341	68	
61	Point	1	No	reanalysis	15.95	-13.66	13.66	0.2136	4.6816	4.38	0.1957	-5.4500	0.4423	20.05	24	40	57	28	24	173	13	
62	Point	1	No	gpcp	16.02	8.16	8.16	-0.1050		11.22	0.0184	-2.6114	-0.1356	20.13	25	18	102	105	25	275	46	
63	Point	1	No	gpcc	**12.71**	10.16	10.16	0.0229	43.6681	6.14	0.0348	-119.5341	0.1865	**14.90**	11	27	76	53	8	175	14	
64	Point	1	No	gpcc trmm	34.71	34.71	34.71	**1.4261**	1.4261	37.82	0.6847	-8.9535	**0.8275**	35.38	103	109	15	10	93	330	63	
65	Point	1	No	ghcn cams grid	**11.63**	8.43	8.43	-0.0513		9.34	0.0041	-2.8492	-0.0643	**15.63**	6	19	89	92	10	216	29	
66	Point	1	No	gpi	22.69	**-7.33**	7.33	-0.2056		17.00	0.1045	-3.8806	-0.3233	25.87	63	13	121	132	56	385	83	
67	Point	1	No	trmm 3b43	25.78	25.78	25.78	1.5351	1.5351	26.91	0.4141	-3.8847	**0.6435**	27.64	81	88	21	15	66	271	45	
68	Point	1	No	ssmi	26.84	26.33	26.33	0.2137	4.6795	17.32	0.0380	-4.7806	0.1951	30.52	84	89	56	49	78	356	74	
69	Point	1	No	opi2	24.21	24.21	24.21	-0.4961		4.34	0.1188	-6.1804	-0.3446	28.39	70	80	143	138	72	503	116	
70	Point	1	No	opi3	22.42	21.71	21.71	-0.2051		8.72	0.0403	-5.5495	-0.2008	27.12	58	70	120	116	62	426	97	
71	Point	1	No	cmap	17.69	15.04	15.04	-0.1361		10.37	0.0195	-3.3534	-0.1397	22.11	31	44	112	106	33	326	62	
72	Point	1	No	cmap2	17.69	15.04	15.04	-0.1365		10.37	0.0196	-3.3547	-0.1400	22.11	32	45	113	107	34	331	64	
73	Point	2	Yes	reanalysis	34.25	25.04	25.04	2.2394	2.2394	3.76	0.4047	-0.0848	0.6362	43.14	101	82	39	16	110	348	72	
74	Point	2	Yes	gpcp	46.07	36.46	36.46	0.5656	1.7680	38.96	0.0373	-0.7596	0.1930	54.95	128	114	31	50	133	456	104	
75	Point	2	Yes	gpcc	49.30	49.30	49.30	**0.8550**	1.1696	48.87	0.1283	-3.6258	0.3582	54.75	133	137	9	35	132	446	101	
76	Point	2	Yes	gpcc trmm	27.38	23.13	23.13	4.4841	4.4841	35.55	0.9518	-0.3054	**0.9756**	31.98	86	76	54	3	85	304	52	
77	Point	2	Yes	ghcn cams grid	46.75	38.30	38.30	0.6105	1.6380	39.82	0.0194	-0.8435	0.1392	56.24	131	119	24	66	135	475	109	
78	Point	2	Yes	gpi	25.64	20.44	20.44	**1.0257**	1.0257	19.87	0.2896	-0.1463	0.5381	33.16	79	66	1	20	87	253	38	
79	Point	2	Yes	trmm 3b43	24.30	17.96	17.96	3.4554	3.4554	14.02	0.6712	-0.0793	**0.8193**	29.08	72	56	43	12	75	258	41	
80	Point	2	Yes	ssmi	52.77	50.54	50.54	0.1319	7.5815	41.55	0.0025	-2.9903	0.0500	59.44	140	140	67	74	138	559	126	
81	Point	2	Yes	opi2	59.84	52.51	52.51	0.0176	56.8182	42.39	0.0000	-1.6573	0.0040	67.52	144	142	77	82	144	589	132	
82	Point	2	Yes	opi3	57.24	50.01	50.01	0.5338	1.8734	46.37	0.0205	-1.4529	0.1431	64.87	142	138	34	64	143	521	120	
83	Point	2	Yes	cmap	51.39	43.34	43.34	0.5380	1.8587	42.82	0.0218	-1.0889	0.1478	59.87	137	128	32	62	139	498	115	
84	Point	2	Yes	cmap2	51.39	43.34	43.34	0.5371	1.8619	42.82	0.0218	-1.0891	0.1476	59.87	138	129	33	63	140	503	117	
85	Point	2	No	reanalysis	26.38	26.38	26.38	**1.1230**	1.1230	24.27	0.7489	-2.2460	**0.8654**	27.51	82	90	4	5	64	245	36	
86	Point	2	No	gpcp	38.98	37.80	37.80	-0.2992		45.27	0.0768	-7.5004	-0.2770	44.52	112	117	131	122	113	595	135	
87	Point	2	No	gpcc	50.40	50.40	50.40	-0.0989		47.16	0.0049	-11.8136	-0.0701	53.88	135	139	101	94	131	600	136	
88	Point	2	No	gpcc trmm	45.25	45.25	45.25	0.3950	2.5316	43.10	0.0556	-19.7510	0.2358	46.47	127	134	40	42	117	460	107	
89	Point	2	No	ghcn cams grid	39.64	39.64	39.64	-0.4404		45.27	0.0743	-7.4614	-0.2725	44.42	114	122	141	121	112	610	138	
90	Point	2	No	gpi	25.26	25.06	25.06	0.3077	3.2499	40.49	0.1143	-3.3358	0.3381	30.79	77	83	42	39	80	321	59	
91	Point	2	No	trmm 3b43	40.09	40.09	40.09	-0.1758		41.97	0.0131	-16.0102	-0.1144	42.08	116	123	116	103	107	565	129	
92	Point	2	No	ssmi	57.96	57.96	57.96	-0.0470		47.12	0.0019	-23.1011	-0.0431	60.42	143	144	88	87	141	603	137	
93	Point	2	No	opi2	53.85	53.85	53.85	-0.5598		37.79	0.1208	-13.2549	-0.3475	57.65	141	143	144	140	136	704	144	
94	Point	2	No	opi3	51.35	51.35	51.35	-0.4372		40.14	0.1011	-12.3041	-0.3180	55.69	136	141	140	131	134	682	143	
95	Point	2	No	cmap	44.70	44.68	44.68	-0.3892		43.11	0.0841	-9.5505	-0.2900	49.60	125	131	137	124	122	639	139	
96	Point	2	No	cmap2	44.70	44.68	44.68	-0.3894		43.11	0.0842	-9.5517	-0.2902	49.60	126	132	138	125	123	644	141	
97	Area	1	Yes	reanalysis	20.89	-17.61	17.61	0.1255	7.9681	2.46	0.0292	-3.5413	0.1710	25.58	51	54	68	58	55	286	48	
98	Area	1	Yes	gpcp	13.97	**4.84**	4.84	0.0434	23.0415	7.49	0.0020	-1.1120	0.0450	19.22	18	6	75	75	20	194	21	
99	Area	1	Yes	gpcc	**11.84**	8.47	8.47	0.2601	3.8447	5.43	0.1569	-2.4690	0.3961	**13.54**	7	20	48	33	4	112	5	
100	Area	1	Yes	gpcc trmm	26.75	26.75	26.75	1.6436	1.6436	31.46	0.2187	-1.1835	0.4677	33.79	83	91	26	25	89	314	58	
101	Area	1	Yes	ghcn cams grid	**11.03**	**4.48**	4.48	0.0786	12.7226	5.28	0.0042	-0.7095	0.0648	**15.84**	4	5	72	72	11	164	11	

Southwest United States - Monthly Atmospheric

OI	Moist Flux	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	**Method 1**	1	Yes	reanalysis	109.91	107.83	-0.2400		-112.64	0.0044	-4.0513	-0.0662	122.11	12	21	25	26	12	96	18	
2	**Method 1**	1	Yes	gpcp	109.34	107.47	0.4399	2.2732	-107.12	0.0218	-3.8049	0.1475	**120.98**	11	20	12	12	10	65	12	
3	**Method 1**	1	Yes	gpcc	108.29	106.66	**0.9374**	1.0668	-106.95	0.0804	-3.5034	**0.2835**	**119.57**	10	19	2	4	9	**44**	9	
4	***Method 1***	*1*	*Yes*	*gpcc trmm*	***86.76***	***82.89***	***0.9855***	*1.0147*	*-82.95*	*0.1082*	*-2.4091*	***0.3289***	***96.46***	*1*	*2*	*1*	*3*	*1*	*8*	*1*	Plot
5	**Method 1**	1	Yes	ghcn cams grid	112.99	111.74	0.5490	1.8215	-111.81	0.0310	-4.2247	**0.1761**	124.12	16	28	11	10	13	78	13	
6	**Method 1**	1	Yes	ssmi	**100.90**	**99.36**	**0.8481**	1.1791	-100.09	0.1676	-3.3447	**0.4094**	**110.59**	4	10	3	2	2	21	2	
7	**Method 1**	1	Yes	opi2	**104.66**	101.85	**0.5500**	1.8182	-103.57	0.0261	-3.3311	0.1615	**115.98**	5	13	10	11	4	43	7	
8	**Method 1**	1	Yes	opi3	**105.34**	102.94	**0.6120**	1.6340	-104.00	0.0393	-3.3880	**0.1981**	**116.74**	6	14	8	9	5	42	5	
9	**Method 1**	1	Yes	cmap	**105.69**	103.79	**0.6146**	1.6271	-104.82	0.0413	-3.5579	**0.2032**	**117.06**	7	16	7	8	6	**44**	8	
10	**Method 1**	1	Yes	cmap2	**106.15**	104.32	**0.6374**	1.5689	-105.10	0.0421	-3.5912	**0.2051**	**117.48**	9	17	6	7	8	47	10	
11	**Method 1**	2	Yes	reanalysis	115.69	113.27	-0.3346		-127.04	0.0133	-3.7657	-0.1154	130.93	21	31	29	30	20	131	28	
12	**Method 1**	2	Yes	gpcp	116.12	114.19	-0.2850		-126.26	0.0096	-3.8105	-0.0979	131.54	22	32	28	28	21	131	29	
13	**Method 1**	2	Yes	gpcc	111.86	110.14	-0.2849		-122.46	0.0055	-3.7366	-0.0744	125.82	14	25	27	27	14	107	24	
14	**Method 1**	2	Yes	gpcc trmm	**95.96**	**93.23**	0.1867	5.3562	-107.63	0.0030	-2.6118	0.0546	**110.77**	2	4	14	14	3	37	3	
15	**Method 1**	2	Yes	ghcn cams grid	114.18	112.21	-0.1358		-125.13	0.0020	-3.6389	-0.0447	129.17	20	30	20	22	19	111	25	
16	**Method 1**	2	Yes	ssmi	**105.72**	104.43	**0.7471**	1.3385	-107.72	0.0687	-3.5958	**0.2582**	**117.10**	8	18	4	5	7	42	6	
17	**Method 1**	2	Yes	opi2	112.38	110.02	-0.1446		-125.55	0.0023	-3.5066	-0.0479	127.32	15	24	22	24	15	100	19	
18	**Method 1**	2	Yes	opi3	113.27	111.26	-0.1481		-125.41	0.0023	-3.5764	-0.0478	128.30	17	26	23	23	16	105	23	
19	**Method 1**	2	Yes	cmap	113.33	111.33	-0.1364		-125.26	0.0019	-3.5777	-0.0439	128.32	18	27	21	21	17	104	21	
20	**Method 1**	2	Yes	cmap2	113.81	111.87	-0.1151		-124.93	0.0013	-3.6045	-0.0367	128.69	19	29	19	19	18	104	22	
21	***Method 2***	*1*	*Yes*	*reanalysis*	*122.29*	***95.68***	*-1.7972*		*-109.81*	*0.1091*	*-1.0212*	*-0.3304*	*146.18*	*28*	*6*	*38*	*37*	*28*	*137*	*30*	Plot
22	**Method 2**	1	Yes	gpcp	124.66	103.48	-0.1925		-107.77	0.0016	-1.0653	-0.0403	148.38	30	15	24	20	29	118	27	
23	**Method 2**	1	Yes	gpcc	130.30	108.81	-0.2789		-119.49	0.0030	-1.1264	-0.0548	153.66	32	23	26	25	32	138	31	
24	**Method 2**	1	Yes	gpcc trmm	**99.73**	**73.67**	0.4242	2.3574	-78.23	0.0080	-0.5913	0.0894	121.54	3	1	13	13	11	41	4	
25	**Method 2**	1	Yes	ghcn cams grid	117.98	**96.47**	0.1246	8.0257	-100.03	0.0006	-0.9124	0.0254	142.13	23	8	15	15	23	84	14	
26	**Method 2**	1	Yes	ssmi	110.25	**94.61**	**1.7477**	1.7477	-86.22	0.1867	-0.7398	**0.4321**	132.10	13	5	9	1	22	50	11	
27	**Method 2**	1	Yes	opi2	120.69	**96.09**	-0.5362		-111.23	0.0104	-0.9373	-0.1018	144.00	25	7	30	29	25	116	26	
28	**Method 2**	1	Yes	opi3	120.03	**97.03**	-0.0253		-106.17	0.0000	-0.9224	-0.0051	143.45	24	9	18	18	24	93	15	
29	**Method 2**	1	Yes	cmap	121.10	99.86	0.0473	21.1416	-106.72	0.0001	-0.9841	0.0098	144.70	26	11	16	16	26	95	17	
30	**Method 2**	1	Yes	cmap2	121.27	100.06	0.0448	22.3214	-106.75	0.0001	-0.9873	0.0092	144.81	27	12	17	17	27	100	20	
31	***Method 2***	*2*	*Yes*	*reanalysis*	*141.88*	*121.65*	*-1.6077*		*-152.85*	*0.1147*	*-1.5301*	*-0.3386*	*166.97*	*40*	*40*	*37*	*40*	*40*	*197*	*40*	Plot
32	**Method 2**	2	Yes	gpcp	140.67	121.35	-1.3854		-150.61	0.0918	-1.5167	-0.3029	166.52	39	39	34	35	39	186	38	
33	**Method 2**	2	Yes	gpcc	137.50	120.77	-1.9738		-154.28	0.1040	-1.4277	-0.3224	165.31	35	38	40	36	38	187	39	
34	**Method 2**	2	Yes	gpcc trmm	124.42	**90.81**	-1.8823		-148.81	0.1133	-0.8282	-0.3366	149.36	29	3	39	39	31	141	32	
35	**Method 2**	2	Yes	ghcn cams grid	138.93	119.94	-1.2597		-150.85	0.0716	-1.4645	-0.2677	164.79	38	37	31	31	37	174	37	
36	**Method 2**	2	Yes	ssmi	125.05	108.71	**1.4128**	1.4128	-101.40	0.0591	-1.0219	**0.2431**	149.02	31	22	5	6	30	94	16	
37	**Method 2**	2	Yes	opi2	137.02	115.36	-1.5931		-162.70	0.1116	-1.3920	-0.3341	162.35	33	33	36	38	34	174	35	
38	**Method 2**	2	Yes	opi3	137.04	116.47	-1.4329		-158.19	0.0850	-1.3911	-0.2915	162.32	34	34	35	34	33	170	33	
39	**Method 2**	2	Yes	cmap	137.91	118.25	-1.3355		-154.14	0.0750	-1.4235	-0.2739	163.41	36	35	32	33	35	171	34	
40	**Method 2**	2	Yes	cmap2	138.06	118.45	-1.3413		-153.95	0.0749	-1.4268	-0.2737	163.52	37	36	33	32	36	174	36	

Southwest United States - Yearly Atmospheric

OI	Moist Flux	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	Method 1	1	Yes	reanalysis	107.83	107.83	-0.4656		-113.52	0.0082	-37.3528	-0.0907	109.37	21	21	30	31	21	124	28	
2	Method 1	1	Yes	gpcp	107.49	107.49	-0.8810		-106.30	0.0565	-34.3443	-0.2377	109.36	20	20	34	38	20	132	32	
3	Method 1	1	Yes	gpcc	106.69	106.69	-0.3989		-113.06	0.0066	-47.8695	-0.0814	107.88	19	19	27	30	19	114	23	
4	Method 1	1	Yes	gpcc trmm	**88.23**	**88.23**	-5.1026		-105.67	0.9748	-131.2197	-0.9873	**88.71**	2	2	40	40	2	86	11	
5	Method 1	1	Yes	ghcn cams grid	112.48	112.48	-1.2732		-112.47	0.0643	-44.3854	-0.2537	113.92	30	30	39	39	28	166	40	
6	*Method 1*	*1*	*Yes*	*ssmi*	***98.58***	***98.58***	*1.9696*	*1.9696*	*-93.22*	*0.1320*	*-34.1942*	*0.3633*	***99.86***	*9*	*9*	*15*	*11*	*9*	*53*	*4*	Plot
7	Method 1	1	Yes	opi2	103.32	103.32	-0.1569		-107.41	0.0010	-31.5970	-0.0314	105.02	13	13	26	26	14	92	15	
8	Method 1	1	Yes	opi3	104.56	104.56	-0.9983		-109.15	0.0511	-32.4612	-0.2260	106.41	16	16	38	37	16	123	26	
9	Method 1	1	Yes	cmap	104.62	104.62	-0.8867		-108.84	0.0406	-32.4919	-0.2014	106.46	17	17	36	36	17	123	27	
10	Method 1	1	Yes	cmap2	105.17	105.17	-0.9055		-108.39	0.0375	-32.8128	-0.1936	106.97	18	18	37	35	18	126	30	
11	Method 1	2	Yes	reanalysis	113.30	113.30	**0.8677**	1.1525	-114.67	0.0337	-24.2445	0.1836	115.54	31	31	4	19	31	116	24	
12	Method 1	2	Yes	gpcp	114.22	114.22	0.3433	2.9129	-120.39	0.0058	-24.6886	0.0764	116.55	32	32	18	21	32	135	37	
13	Method 1	2	Yes	gpcc	110.16	110.16	2.6608	2.6608	-94.23	0.4265	-34.1639	**0.6531**	111.33	25	25	17	4	24	95	17	
14	Method 1	2	Yes	gpcc trmm	**93.12**	**93.12**	8.7952	8.7952	44.96	0.8408	-38.0845	**0.9170**	**94.11**	4	4	24	1	4	37	2	
15	Method 1	2	Yes	ghcn cams grid	112.25	112.25	1.6961	1.6961	-104.33	0.1605	-23.6939	**0.4006**	114.27	29	29	12	8	30	108	21	
16	Method 1	2	Yes	ssmi	103.51	103.51	0.4786	2.0894	-110.90	0.0410	-72.3145	0.2025	104.23	15	15	16	17	13	76	7	
17	Method 1	2	Yes	opi2	110.05	110.05	**1.4313**	1.4313	-104.20	0.1937	-22.7277	**0.4401**	112.01	24	24	8	6	25	87	13	
18	Method 1	2	Yes	opi3	111.29	111.29	**0.8388**	1.1922	-113.28	0.0394	-23.3859	0.1985	113.56	26	26	5	18	26	101	20	
19	Method 1	2	Yes	cmap	111.36	111.36	**0.9128**	1.0955	-112.43	0.0446	-23.4076	0.2112	113.61	27	27	2	16	27	99	18	
20	Method 1	2	Yes	cmap2	111.90	111.90	**1.0473**	1.0473	-111.35	0.0576	-23.6228	0.2399	114.11	28	28	1	14	29	100	19	
21	*Method 2*	*1*	*Yes*	*reanalysis*	***95.69***	***95.69***	*0.5438*	*1.8389*	*-97.99*	*0.0105*	*-19.1790*	*0.1026*	***98.14***	*6*	*6*	*14*	*20*	*6*	*52*	*3*	Plot
22	Method 2	1	Yes	gpcp	103.50	103.50	-0.0009		-107.10	0.0000	-28.3123	-0.0002	105.42	14	14	25	25	15	93	16	
23	Method 2	1	Yes	gpcc	108.84	108.84	-0.5453		-121.74	0.0129	-47.4137	-0.1134	110.08	23	23	32	32	22	132	33	
24	Method 2	1	Yes	gpcc trmm	**75.72**	**75.72**	-0.6002		-86.55	0.0023	-26.7286	-0.0478	**77.14**	1	1	33	27	1	63	6	
25	Method 2	1	Yes	ghcn cams grid	**97.09**	**97.09**	-0.8838		-104.43	0.0158	-19.5782	-0.1256	**99.68**	7	7	35	33	8	90	14	
26	Method 2	1	Yes	ssmi	**94.07**	**94.07**	0.2488	4.0193	-102.87	0.0015	-18.9426	0.0389	**96.56**	5	5	20	23	5	58	5	
27	Method 2	1	Yes	opi2	**97.52**	**97.52**	-0.4430		-111.35	0.0058	-25.1376	-0.0759	**99.55**	8	8	29	28	7	80	9	
28	Method 2	1	Yes	opi3	**98.63**	**98.63**	-0.4139		-110.61	0.0066	-25.7256	-0.0809	**100.66**	10	10	28	29	10	87	12	
29	Method 2	1	Yes	cmap	100.41	100.41	0.1205	8.2988	-106.29	0.0006	-26.6231	0.0252	102.34	11	11	23	24	11	80	10	
30	Method 2	1	Yes	cmap2	100.61	100.61	0.2287	4.3725	-105.62	0.0022	-26.7209	0.0468	102.52	12	12	21	22	12	79	8	
31	*Method 2*	*2*	*Yes*	*reanalysis*	*121.68*	*121.68*	***1.1189***	*1.1189*	*-120.25*	*0.0471*	*-21.5104*	*0.2171*	*124.34*	*40*	*40*	*3*	*15*	*40*	*138*	*39*	Plot
32	Method 2	2	Yes	gpcp	121.37	121.37	**1.3936**	1.3936	-116.54	0.0940	-21.3621	0.3066	123.93	39	39	7	13	39	137	38	
33	Method 2	2	Yes	gpcc	120.79	120.79	3.0877	3.0877	-97.26	0.5800	-33.7380	**0.7616**	121.99	38	38	19	2	37	134	36	
34	Method 2	2	Yes	gpcc trmm	**90.69**	**90.69**	5.2120	5.2120	-5.93	0.4552	-21.0596	**0.6747**	**92.47**	3	3	22	3	3	34	1	
35	Method 2	2	Yes	ghcn cams grid	119.96	119.96	1.7307	1.7307	-109.97	0.1928	-20.7958	**0.4391**	122.35	37	37	13	7	38	132	35	
36	Method 2	2	Yes	ssmi	108.67	108.67	-0.4707		-136.20	0.0222	-30.6286	-0.1488	110.79	22	22	31	34	23	132	34	
37	Method 2	2	Yes	opi2	115.39	115.39	**1.5524**	1.5524	-105.30	0.2180	-19.1949	**0.4669**	117.77	33	33	9	5	33	113	22	
38	Method 2	2	Yes	opi3	116.49	116.49	**1.3883**	1.3883	-109.84	0.1195	-19.6494	0.3457	119.09	34	34	6	12	34	120	25	
39	Method 2	2	Yes	cmap	118.27	118.27	**1.5833**	1.5833	-109.31	0.1436	-20.2439	**0.3789**	120.79	35	35	10	10	35	125	29	
40	Method 2	2	Yes	cmap2	118.48	118.48	1.6716	1.6716	-108.30	0.1572	-20.3065	**0.3965**	120.97	36	36	11	9	36	128	31	

Southwest United States - Monthly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	*Linear*	*1*	*Yes*	*reanalysis*	*49.89*	*4.75*	*2.9576*	*2.9576*	*14.63*	*0.5850*	*0.3245*	***0.7649***	*60.07*	*331*	*45*	*53*	*7*	*334*	*770*	*111*	Plot
2	Linear	1	Yes	gpcp	56.93	**3.35**	2.6489	2.6489	9.28	0.5195	0.3164	**0.7208**	65.74	346	13	40	24	342	765	106	
3	Linear	1	Yes	gpcc	57.46	8.00	2.9292	2.9292	24.10	0.5630	0.3090	**0.7503**	67.17	352	114	49	16	356	887	185	
4	Linear	1	Yes	gpcc trmm	49.93	5.24	2.1780	2.1780	14.58	0.4105	0.2847	0.6407	58.39	333	60	31	45	331	800	125	
5	Linear	1	Yes	ghcn cams grid	52.37	**3.59**	2.3758	2.3758	9.17	0.4632	0.3055	0.6806	60.99	337	16	34	37	338	762	101	
6	Linear	1	Yes	ssmi	64.35	9.17	0.5359	1.8660	3.97	0.0310	-0.0071	0.1760	75.65	359	151	30	114	359	1013	254	
7	Linear	1	Yes	opi2	55.78	8.67	3.1191	3.1191	29.55	0.5990	0.3105	**0.7740**	65.72	341	136	55	5	341	878	179	
8	Linear	1	Yes	opi3	56.67	7.73	2.7365	2.7365	23.20	0.5217	0.3021	**0.7223**	66.12	343	110	46	22	347	868	172	
9	Linear	1	Yes	cmap	57.28	6.22	2.6366	2.6366	18.00	0.5024	0.3027	0.7088	66.29	349	72	37	29	349	836	149	
10	Linear	1	Yes	cmap2	57.48	6.02	2.6578	2.6578	17.62	0.4994	0.2993	0.7067	66.45	353	70	43	32	352	850	158	
11	Linear	1	No	reanalysis	**15.25**	5.00	-0.0077		-0.09	0.0222	-411.0841	-0.1492	**19.71**	9	48	257	283	13	610	43	
12	Linear	1	No	gpcp	17.17	**3.62**	-0.0129		-0.03	0.0506	-322.4739	-0.2249	22.24	102	18	288	318	71	797	122	
13	Linear	1	No	gpcc	16.89	8.33	-0.0032		-0.05	0.0146	-999.0000	-0.1210	22.38	56	121	229	272	86	764	104	
14	Linear	1	No	gpcc trmm	16.72	8.07	-0.0394		-0.18	0.1290	-102.6784	-0.3591	22.69	44	118	329	346	120	957	219	
15	Linear	1	No	ghcn cams grid	16.87	4.01	-0.0079		-0.09	0.0293	-488.2283	-0.1711	21.53	54	29	259	298	31	671	66	
16	Linear	1	No	ssmi	22.60	11.24	-0.0075		-0.06	0.0143	-306.0153	-0.1194	27.41	261	191	256	271	195	1174	311	
17	Linear	1	No	opi2	16.11	9.86	-0.0173		-0.16	0.0764	-328.5881	-0.2764	22.31	27	165	294	326	79	891	186	
18	Linear	1	No	opi3	17.14	8.92	-0.0129		-0.10	0.0479	-349.0483	-0.2189	23.00	96	144	287	316	147	990	241	
19	Linear	1	No	cmap	17.32	7.21	-0.0122		-0.08	0.0447	-340.8598	-0.2115	22.81	124	97	284	311	129	945	212	
20	Linear	1	No	cmap2	17.12	7.01	-0.0120		-0.07	0.0423	-332.1884	-0.2057	22.51	87	92	282	306	101	868	171	
21	Linear	1	1 mon	reanalysis	**15.31**	5.02	-0.0022		-0.07	0.0019	-407.0055	-0.0436	**19.63**	12	49	224	226	11	522	19	
22	Linear	1	1 mon	gpcp	17.29	**3.65**	-0.0091		-0.01	0.0252	-320.2105	-0.1588	22.20	119	20	265	286	65	755	94	
23	Linear	1	1 mon	gpcc	17.10	8.38	-0.0038		-0.05	0.0220	-999.0000	-0.1482	22.48	83	124	238	282	95	822	137	
24	Linear	1	1 mon	gpcc trmm	17.22	8.27	-0.0298		-0.09	0.0737	-101.7288	-0.2715	22.71	109	119	311	324	122	985	238	
25	Linear	1	1 mon	ghcn cams grid	16.96	4.05	-0.0078		-0.08	0.0281	-487.7550	-0.1677	21.52	64	32	258	296	30	680	70	
26	Linear	1	1 mon	ssmi	22.66	11.23	-0.0104		-0.09	0.0272	-307.2559	-0.1649	27.54	263	189	271	292	200	1215	327	
27	Linear	1	1 mon	opi2	16.34	9.90	-0.0136		-0.12	0.0473	-326.8067	-0.2175	22.29	31	167	289	314	73	874	176	
28	Linear	1	1 mon	opi3	17.30	8.95	-0.0097		-0.07	0.0270	-347.2758	-0.1642	22.97	120	146	269	291	144	970	225	
29	Linear	1	1 mon	cmap	17.36	7.12	-0.0093		-0.05	0.0256	-336.5193	-0.1599	22.70	130	94	268	288	121	901	190	
30	Linear	1	1 mon	cmap2	17.15	6.92	-0.0089		-0.05	0.0229	-327.7729	-0.1514	22.40	97	87	263	285	90	822	136	
31	Linear	1	2 mon	reanalysis	**15.25**	5.04	0.0018	555.5556	-0.05	0.0012	-403.7474	0.0345	**19.57**	8	51	188	175	9	431	13	
32	Linear	1	2 mon	gpcp	17.15	**3.69**	-0.0011		0.02	0.0004	-315.2060	-0.0190	22.07	99	22	206	209	57	593	38	
33	Linear	1	2 mon	gpcc	17.10	8.51	-0.0020		-0.05	0.0064	-999.0000	-0.0798	22.51	81	129	219	246	99	774	113	
34	Linear	1	2 mon	gpcc trmm	17.22	8.55	-0.0100		0.03	0.0083	-99.8571	-0.0910	22.48	110	132	270	259	93	864	167	
35	Linear	1	2 mon	ghcn cams grid	16.96	4.07	-0.0039		-0.06	0.0072	-490.5439	-0.0847	21.46	67	34	239	252	28	620	50	
36	Linear	1	2 mon	ssmi	22.74	11.24	-0.0081		-0.07	0.0164	-305.8762	-0.1280	27.56	267	190	260	277	201	1195	318	
37	Linear	1	2 mon	opi2	16.28	9.93	-0.0033		-0.02	0.0028	-321.6128	-0.0532	22.15	30	170	231	229	60	720	81	
38	Linear	1	2 mon	opi3	17.28	8.96	-0.0040		-0.02	0.0046	-344.0146	-0.0678	22.90	118	148	240	241	138	885	183	
39	Linear	1	2 mon	cmap	17.20	6.98	-0.0033		-0.01	0.0031	-328.2521	-0.0561	22.45	106	89	232	232	92	751	91	
40	Linear	1	2 mon	cmap2	16.99	6.78	-0.0031		-0.01	0.0028	-319.7405	-0.0534	22.16	69	82	226	230	63	670	65	
41	Linear	1	3 mon	reanalysis	**15.19**	5.06	0.0065	153.8462	-0.02	0.0158	-400.1978	0.1257	**19.50**	7	54	180	140	7	388	9	
42	Linear	1	3 mon	gpcp	17.11	**3.72**	0.0013	769.2308	0.03	0.0006	-314.0496	0.0235	22.05	84	24	190	184	53	535	24	
43	Linear	1	3 mon	gpcc	17.07	8.65	-0.0007		-0.04	0.0008	-999.0000	-0.0274	22.55	78	135	197	217	108	735	87	
44	Linear	1	3 mon	gpcc trmm	16.74	9.27	-0.0034		0.13	0.0009	-98.6267	-0.0301	22.24	45	154	234	219	70	722	82	
45	Linear	1	3 mon	ghcn cams grid	16.92	4.08	-0.0019		-0.05	0.0017	-490.9125	-0.0409	**21.43**	62	35	217	225	25	564	31	
46	Linear	1	3 mon	ssmi	22.99	11.29	-0.0065		-0.04	0.0105	-305.7687	-0.1025	27.61	277	195	250	264	205	1191	317	
47	Linear	1	3 mon	opi2	**16.09**	9.85	-0.0009		0.00	0.0002	-318.0832	-0.0141	22.05	25	163	198	205	54	645	58	
48	Linear	1	3 mon	opi3	17.27	8.88	-0.0015		0.00	0.0007	-340.4558	-0.0258	22.81	116	142	213	214	131	816	133	
49	Linear	1	3 mon	cmap	17.10	6.86	-0.0012		0.01	0.0004	-323.1967	-0.0201	22.31	82	85	208	210	76	661	63	
50	Linear	1	3 mon	cmap2	16.89	6.66	-0.0012		0.01	0.0004	-314.8114	-0.0210	22.02	58	79	209	211	46	603	40	
51	Linear	1	4 mon	reanalysis	**15.17**	5.08	0.0092	108.6957	-0.01	0.0320	-397.1494	0.1789	**19.44**	5	56	173	112	5	351	7	
52	Linear	1	4 mon	gpcp	17.22	**3.73**	-0.0011		0.02	0.0004	-315.7857	-0.0189	22.15	112	25	205	208	59	609	42	
53	Linear	1	4 mon	gpcc	17.12	8.81	-0.0007		-0.04	0.0007	-999.0000	-0.0265	22.61	85	141	196	215	115	752	92	
54	Linear	1	4 mon	gpcc trmm	17.40	9.34	-0.0151		-0.07	0.0202	-110.3023	-0.1420	22.60	132	155	290	280	114	971	226	
55	Linear	1	4 mon	ghcn cams grid	16.90	4.03	-0.0031		-0.06	0.0047	-493.0501	-0.0683	21.44	60	30	227	243	27	587	35	
56	Linear	1	4 mon	ssmi	23.08	11.47	-0.0065		-0.04	0.0104	-305.9593	-0.1021	27.64	284	198	249	263	206	1200	322	
57	Linear	1	4 mon	opi2	**16.01**	9.73	-0.0010		0.00	0.0003	-314.1493	-0.0164	21.95	23	157	200	206	43	629	53	
58	Linear	1	4 mon	opi3	17.17	8.74	-0.0032		-0.02	0.0029	-336.8067	-0.0535	22.72	101	138	228	231	124	822	138	
59	Linear	1	4 mon	cmap	17.05	6.77	-0.0033		-0.01	0.0032	-322.6596	-0.0565	22.32	74	81	233	233	81	702	79	
60	Linear	1	4 mon	cmap2	16.85	6.57	-0.0035		-0.01	0.0034	-314.2805	-0.0582	22.03	49	77	236	235	49	646	59	
61	*Linear*	*2*	*Yes*	*reanalysis*	*18.31*	*13.23*	***1.1723***	*1.1723*	*15.29*	*0.5506*	*0.3952*	***0.7420***	*27.16*	*159*	*218*	*23*	*18*	*192*	*610*	*44*	Plot
62	Linear	2	Yes	gpcp	19.42	13.54	**1.0447**	1.0447	14.09	0.4713	0.3202	0.6865	28.80	174	221	9	34	221	659	62	
63	Linear	2	Yes	gpcc	17.06	12.89	**1.2081**	1.2081	15.24	0.5287	0.3126	**0.7271**	23.88	75	208	24	20	155	482	18	
64	Linear	2	Yes	gpcc trmm	25.21	24.24	0.6091	1.6418	16.37	0.1748	-0.6068	0.4181	36.48	315	350	27	56	323	1071	273	
65	Linear	2	Yes	ghcn cams grid	21.07	14.95	**0.9955**	1.0045	14.88	0.4040	0.2209	0.6356	30.83	205	254	1	49	266	775	114	
66	Linear	2	Yes	ssmi	33.24	20.03	-0.3815		-4.43	0.0604	-1.2440	-0.2458	41.93	330	323	359	322	330	1664	357	
67	Linear	2	Yes	opi2	23.67	19.52	**1.0164**	1.0164	19.82	0.4104	0.0978	0.6406	33.18	298	315	3	46	312	974	232	
68	Linear	2	Yes	opi3	22.88	18.42	**1.0474**	1.0474	19.23	0.4100	0.1311	0.6403	32.56	273	307	11	47	305	943	210	
69	Linear	2	Yes	cmap	21.84	16.64	**1.0462**	1.0462	17.35	0.4159	0.1882	0.6449	31.47	238	275	10	41	284	848	156	
70	Linear	2	Yes	cmap2	21.71	16.43	**1.0601**	1.0601	17.34	0.4226	0.1999	0.6501	31.24	229	272	12	40	279	832	147	
71	Linear	2	No	reanalysis	20.95	14.27	0.1016	9.8425	3.52	0.0188	-2.2140	0.1372	29.35	198	232	110	132	231	903	191	
72	Linear	2	No	gpcp	21.03	14.58	0.0479	20.8768	2.90	0.0045	-2.5712	0.0671	30.93	203	243	150	164	271	1031	261	
73	Linear	2	No	gpcc	16.35	12.95	0.0556	17.9856	2.31	0.0144	-6.7256	0.1198	22.35	32	210	146	145	82	615	48	
74	Linear	2	No	gpcc trmm	27.89	26.74	-0.4033		-1.50	0.2627	-5.8768	-0.5126	40.76	323	356	360	358	328	1725	360	
75	Linear	2	No	ghcn cams grid	21.36	15.99	0.0258	38.7597	2.66	0.0012	-2.7144	0.0352	31.55	212	261	162	174	286	1095	287	
76	Linear	2	No	ssmi	25.25	21.15	-0.2346		-0.71	0.1475	-7.6253	-0.3841	32.35	317	341	356	354	301	1669	358	
77	Linear	2	No	opi2	23.21	20.56	0.0301	33.2226	2.86	0.0016	-3.2783	0.0405	33.86	287	324	161	171	317	1260	336	
78	Linear	2	No	opi3	22.93	19.46	0.0254	39.3701	2.75	0.0011	-3.0281	0.0331	32.85	275	310	163	177	307	1232	332	
79	Linear	2	No	cmap	21.94	17.68	0.0319	31.3480	2.80	0.0018	-2.7857	0.0420	31.85	245	295	160	170	291	1161	309	
80	Linear	2	No	cmap2	21.72	17.47	0.0353	28.3286	2.84	0.0021	-2.7307	0.0462	31.62	230	282	158	167	288	1125	297	
81	Linear	2	1 mon	reanalysis	21.38	14.30	0.1370	7.2993	3.95	0.0342	-2.0845	0.1849	28.80	214	233	92	110	222	871	175	
82	Linear	2	1 mon	gpcp	21.39	14.59	0.1144	8.7413	3.71	0.0257	-2.3081	0.1604	29.83	215	244	95	119	242	915	197	
83	Linear	2	1 mon	gpcc	17.12	13.02	0.0228	43.8596	1.95	0.0024	-7.0317	0.0491	22.87	88	213	165	166	136	768	109	
84	Linear	2	1 mon	gpcc trmm	27.99	27.06	-0.1071		4.52	0.0184	-4.9244	-0.1358	38.20	324	358	348	278	326	1634	353	
85	Linear	2	1 mon	ghcn cams grid	21.45	16.00	0.1054	9.4877	3.75	0.0206	-2.4166	0.1436	30.31	218	262	107	129	255	971	228	
86	Linear	2	1 mon	ssmi	25.10	21.14	-0.1979		-0.01	0.1052	-7.4192	-0.3243	32.02	312	340	354	340	294	1640	355	
87	Linear	2	1 mon	opi2	23.36	20.60	0.1077	9.2851	4.28	0.0210	-2.9959	0.1447	32.78	290	325	105	127	306	1153	306	
88	Linear	2	1 mon	opi3	23.05	19.47	0.1089	9.1827	4.17	0.0202	-2.7402	0.1420	31.71	282	311	103	131	289	1116	292	
89	Linear	2	1 mon	cmap	22.03	17.68	0.1122	8.9127	4.03	0.0218	-2.5048	0.1476	30.70	249	296	97	126	261	1029	260	
90	Linear	2	1 mon	cmap2	21.79	17.48	0.1185	8.4388	4.10	0.0240	-2.4427	0.1550	30.43	234	283	94	122	256	989	240	
91	Linear	2	2 mon	reanalysis	20.86	14.40	0.1731	5.7770	4.41	0.0544	-1.9559	0.2332	28.24	195	239	68	76	213	791	121	
92	Linear	2	2 mon	gpcp	20.91	14.65	0.1693	5.9067	4.41	0.0563	-2.0943	0.2373	28.90	197	248	74	73	223	815	132	
93	Linear	2	2 mon	gpcc	16.96	12.95	0.0609	16.4204	2.18	0.0187	-7.2166	0.1367	22.20	66	209	140	133	64	612	45	
94	Linear	2	2 mon	gpcc trmm	28.54	27.61	0.2424	4.1254	11.88	0.0929	-3.8550	0.3048	34.89	326	359	61	62	322	1130	302	
95	Linear	2	2 mon	ghcn cams grid	21.17	16.07	0.1738	5.7537	4.71	0.0560	-2.1657	0.2366	29.23	207	265	66	74	229	841	152	
96	Linear	2	2 mon	ssmi	25.20	21.11	-0.1258		1.26	0.0426	-7.0067	-0.2064	31.30	314	339	351	307	280	1591	350	
97	Linear	2	2 mon	opi2	23.49	20.63	0.1659	6.0277	5.36	0.0497	-2.7854	0.2230	31.96	293	327	80	86	293	1079	278	
98	Linear	2	2 mon	opi3	23.24	19.52	0.1680	5.9524	5.21	0.0480	-2.5404	0.2191	30.91	288	314	78	93	270	1043	264	
99	Linear	2	2 mon	cmap	22.14	17.73	0.1716	5.8275	4.96	0.0509	-2.3009	0.2256	29.85	255	300	69	84	244	952	214	
100	Linear	2	2 mon	cmap2	21.92	17.53	0.1753	5.7045	4.98	0.0526	-2.2499	0.2293	29.61	244	286	64	80	238	912	194	
101	Linear	2	3 mon	reanalysis	21.47	14.38	0.1696	5.8962	4.34	0.0523	-1.9649	0.2286	28.33	220	237	73	81	216	827	141	

Southwest United States - Monthly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR
102	Linear	2	3 mon	gpcp	21.64	14.65	0.1620	6.1728	4.29	0.0515	-2.1215	0.2270	29.06	228	247	86	82	226	869	173
103	Linear	2	3 mon	gpcc	16.84	12.85	0.0739	13.5318	2.15	0.0297	-7.5960	0.1724	21.89	48	207	135	117	41	548	27
104	Linear	2	3 mon	gpcc trmm	28.78	27.78	0.3129	3.1959	13.26	0.1536	-3.6155	0.3919	34.29	327	360	58	57	319	1121	296
105	Linear	2	3 mon	ghcn cams grid	21.86	16.08	0.1615	6.1920	4.52	0.0483	-2.2097	0.2198	29.47	240	266	87	92	235	920	201
106	Linear	2	3 mon	ssmi	25.25	21.18	-0.0719		2.24	0.0139	-6.7229	-0.1178	30.83	316	343	346	270	265	1540	346
107	Linear	2	3 mon	opi2	24.22	20.68	0.1473	6.7889	5.00	0.0391	-2.8521	0.1978	32.29	303	330	91	106	300	1130	300
108	Linear	2	3 mon	opi3	23.61	19.53	0.1600	6.2500	5.05	0.0436	-2.5650	0.2087	31.06	297	316	89	102	274	1078	277
109	Linear	2	3 mon	cmap	22.59	17.74	0.1607	6.2228	4.77	0.0446	-2.3364	0.2113	30.05	260	301	88	101	249	999	247
110	Linear	2	3 mon	cmap2	22.36	17.53	0.1621	6.1690	4.76	0.0450	-2.2926	0.2120	29.85	257	287	85	100	245	974	231
111	Linear	2	4 mon	reanalysis	21.99	14.40	0.0856	11.6822	3.36	0.0133	-2.2713	0.1154	29.79	248	238	125	149	240	1000	249
112	Linear	2	4 mon	gpcp	22.12	14.66	0.0704	14.2045	3.19	0.0097	-2.4824	0.0987	30.74	254	249	137	161	263	1064	271
113	Linear	2	4 mon	gpcc	17.03	12.67	0.0595	16.8067	1.71	0.0231	-9.1795	0.1520	21.81	71	204	141	123	38	577	33
114	Linear	2	4 mon	gpcc trmm	28.17	27.01	0.2490	4.0161	11.11	0.1101	-4.0603	0.3318	34.13	325	357	60	61	318	1121	295
115	Linear	2	4 mon	ghcn cams grid	22.48	16.12	0.0812	12.3153	3.44	0.0122	-2.5113	0.1106	30.86	259	269	127	152	268	1075	274
116	Linear	2	4 mon	ssmi	25.17	21.52	0.0018	555.5556	3.87	0.0000	-7.0922	0.0032	30.11	313	345	189	191	252	1290	337
117	Linear	2	4 mon	opi2	24.75	20.71	0.0869	11.5075	3.92	0.0136	-3.0733	0.1168	33.24	306	331	124	147	313	1221	330
118	Linear	2	4 mon	opi3	24.25	19.55	0.0801	12.4844	3.70	0.0109	-2.8388	0.1045	32.27	304	318	129	156	299	1206	324
119	Linear	2	4 mon	cmap	23.15	17.76	0.0776	12.8866	3.52	0.0104	-2.6253	0.1021	31.36	285	302	132	159	282	1160	308
120	Linear	2	4 mon	cmap2	22.91	17.56	0.0785	12.7389	3.52	0.0105	-2.5805	0.1027	31.17	274	288	131	158	278	1129	298
121	Point	1	Yes	reanalysis	49.91	4.78	2.9580	2.9580	14.66	0.5847	0.3243	**0.7647**	60.11	332	46	54	8	335	775	115
122	Point	1	Yes	gpcp	57.01	**3.36**	2.6500	2.6500	9.30	0.5192	0.3161	0.7206	65.80	347	14	41	26	344	772	112
123	Point	1	Yes	gpcc	57.51	8.01	2.9298	2.9298	24.12	0.5627	0.3087	**0.7501**	67.22	355	115	50	17	357	894	188
124	Point	1	Yes	gpcc trmm	50.34	5.06	2.1898	2.1898	14.49	0.4114	0.2846	0.6414	58.65	336	53	32	44	333	798	124
125	Point	1	Yes	ghcn cams grid	52.40	**3.61**	2.3763	2.3763	9.20	0.4631	0.3053	0.6805	61.02	338	17	35	38	339	767	108
126	Point	1	Yes	ssmi	64.37	9.21	0.5368	1.8629	4.01	0.0311	-0.0070	0.1763	75.68	360	152	29	113	360	1014	256
127	Point	1	Yes	opi2	55.86	8.68	3.1210	3.1210	29.58	0.5989	0.3103	**0.7739**	65.78	342	137	56	6	343	884	182
128	Point	1	Yes	opi3	56.76	7.74	2.7379	2.7379	23.23	0.5215	0.3018	**0.7222**	66.18	345	111	47	23	348	874	177
129	Point	1	Yes	cmap	57.37	6.23	2.6376	2.6376	18.02	0.5021	0.3024	0.7086	66.35	351	73	38	30	351	843	155
130	Point	1	Yes	cmap2	57.57	6.03	2.6585	2.6585	17.64	0.4990	0.2990	0.7064	66.51	357	71	44	33	354	859	164
131	Point	1	No	reanalysis	**15.26**	5.02	-0.0072		-0.06	0.0147	-305.5142	-0.1214	**19.72**	11	50	254	273	14	602	39
132	Point	1	No	gpcp	17.17	**3.63**	-0.0118		-0.01	0.0304	-230.1909	-0.1745	22.24	103	19	278	301	69	770	110
133	Point	1	No	gpcc	16.90	8.34	-0.0025		-0.03	0.0056	-999.0000	-0.0751	22.37	59	123	225	245	85	737	88
134	Point	1	No	gpcc trmm	16.59	7.88	-0.0276		-0.27	0.0692	-109.6985	-0.2630	22.40	37	112	308	323	91	871	174
135	Point	1	No	ghcn cams grid	16.89	4.04	-0.0074		-0.06	0.0190	-362.6621	-0.1377	21.53	57	31	255	279	32	654	60
136	Point	1	No	ssmi	22.63	11.27	-0.0066		-0.02	0.0082	-226.5685	-0.0906	27.42	262	193	251	258	196	1160	307
137	Point	1	No	opi2	16.10	9.88	-0.0154		-0.13	0.0438	-236.3873	-0.2094	22.30	26	166	291	310	74	867	169
138	Point	1	No	opi3	17.14	8.94	-0.0115		-0.08	0.0275	-251.2406	-0.1660	22.99	93	145	276	294	145	953	216
139	Point	1	No	cmap	17.33	7.23	-0.0112		-0.06	0.0273	-245.4680	-0.1653	22.80	125	98	274	293	127	917	199
140	Point	1	No	cmap2	17.13	7.03	-0.0113		-0.05	0.0268	-239.3119	-0.1636	22.52	89	93	275	290	102	849	157
141	Point	1	1 mon	reanalysis	**15.34**	5.04	-0.0021		-0.04	0.0013	-302.6579	-0.0360	**19.64**	13	52	223	223	12	523	20
142	Point	1	1 mon	gpcp	17.37	**3.66**	-0.0123		-0.01	0.0330	-230.3740	-0.1816	22.28	131	21	286	303	72	813	130
143	Point	1	1 mon	gpcc	17.14	8.39	-0.0056		-0.06	0.0280	-999.0000	-0.1672	22.52	92	125	244	295	103	859	163
144	Point	1	1 mon	gpcc trmm	17.27	8.06	-0.0305		-0.30	0.0845	-110.2167	-0.2906	22.65	117	117	312	332	117	995	244
145	Point	1	1 mon	ghcn cams grid	17.00	4.08	-0.0091		-0.06	0.0283	-363.4154	-0.1681	21.56	70	37	264	297	33	701	78
146	Point	1	1 mon	ssmi	22.69	11.26	-0.0108		-0.07	0.0218	-227.8223	-0.1478	27.58	266	192	272	281	202	1213	325
147	Point	1	1 mon	opi2	16.39	9.91	-0.0161		-0.13	0.0476	-236.6278	-0.2181	22.35	34	168	292	315	83	892	187
148	Point	1	1 mon	opi3	17.35	8.96	-0.0120		-0.08	0.0301	-251.4530	-0.1736	23.04	128	147	281	300	149	1005	250
149	Point	1	1 mon	cmap	17.41	7.13	-0.0122		-0.06	0.0318	-243.9346	-0.1782	22.77	133	95	285	302	125	940	208
150	Point	1	1 mon	cmap2	17.21	6.93	-0.0119		-0.06	0.0296	-237.6439	-0.1721	22.48	108	88	279	299	94	868	170
151	Point	1	2 mon	reanalysis	**15.26**	5.07	0.0023	434.7826	-0.01	0.0015	-299.9664	0.0393	**19.57**	10	55	186	172	10	433	14
152	Point	1	2 mon	gpcp	17.23	**3.70**	-0.0043		0.02	0.0040	-226.8461	-0.0633	22.15	113	23	241	239	61	677	69
153	Point	1	2 mon	gpcc	17.12	8.50	-0.0037		-0.07	0.0152	-999.0000	-0.1233	22.54	86	127	237	274	106	830	146
154	Point	1	2 mon	gpcc trmm	17.34	8.33	-0.0165		-0.25	0.0255	-111.9457	-0.1597	22.50	127	122	293	287	98	927	205
155	Point	1	2 mon	ghcn cams grid	16.98	4.10	-0.0050		-0.04	0.0089	-367.0796	-0.0945	21.49	68	39	242	260	29	638	55
156	Point	1	2 mon	ssmi	22.78	11.28	-0.0085		-0.03	0.0135	-227.2325	-0.1162	27.60	269	194	262	269	204	1198	320
157	Point	1	2 mon	opi2	16.37	9.94	-0.0055		-0.03	0.0056	-232.8297	-0.0748	22.20	33	171	243	244	66	757	95
158	Point	1	2 mon	opi3	17.35	8.97	-0.0063		-0.03	0.0082	-249.1256	-0.0906	22.97	129	149	248	257	143	926	204
159	Point	1	2 mon	cmap	17.26	6.99	-0.0060		-0.02	0.0076	-237.9410	-0.0874	22.53	115	91	245	254	105	810	129
160	Point	1	2 mon	cmap2	17.05	6.79	-0.0060		-0.02	0.0074	-231.8148	-0.0860	22.24	72	84	246	253	68	723	84
161	Point	1	3 mon	reanalysis	**15.18**	5.09	0.0062	161.2903	0.01	0.0110	-297.7710	0.1047	**19.52**	6	57	182	155	8	408	12
162	Point	1	3 mon	gpcp	17.14	3.73	0.0022	454.5455	0.04	0.0011	-224.3103	0.0332	22.05	95	26	187	176	52	536	25
163	Point	1	3 mon	gpcc	17.09	8.64	-0.0014		-0.05	0.0021	-999.0000	-0.0462	22.57	80	134	211	228	109	762	100
164	Point	1	3 mon	gpcc trmm	16.67	9.09	-0.0082		-0.10	0.0066	-118.7033	-0.0811	22.23	41	150	261	247	67	766	107
165	Point	1	3 mon	ghcn cams grid	16.91	4.10	-0.0013		-0.02	0.0006	-364.7504	-0.0248	21.43	61	40	210	213	26	550	28
166	Point	1	3 mon	ssmi	23.03	11.33	-0.0072		-0.01	0.0098	-227.9335	-0.0991	27.66	280	197	253	262	207	1199	321
167	Point	1	3 mon	opi2	16.11	9.86	0.0001	10000.0000	0.03	0.0000	-229.1964	0.0019	22.06	28	164	193	192	55	632	54
168	Point	1	3 mon	opi3	17.24	8.89	-0.0012		0.01	0.0003	-245.5655	-0.0173	22.83	114	143	207	207	132	803	127
169	Point	1	3 mon	cmap	17.07	6.87	-0.0009		0.02	0.0002	-233.1199	-0.0134	22.32	76	86	199	202	80	643	57
170	Point	1	3 mon	cmap2	16.86	6.67	-0.0010		0.02	0.0002	-227.0602	-0.0138	22.03	52	80	203	203	50	588	37
171	Point	1	4 mon	reanalysis	**15.15**	5.11	0.0090	111.1111	0.02	0.0229	-295.4820	0.1512	**19.46**	3	58	174	124	6	365	8
172	Point	1	4 mon	gpcp	17.20	3.74	0.0013	769.2308	0.04	0.0004	-224.7283	0.0193	22.11	107	27	191	186	58	569	32
173	Point	1	4 mon	gpcc	17.16	8.81	-0.0010		-0.05	0.0010	-999.0000	-0.0320	22.62	100	140	201	221	116	778	116
174	Point	1	4 mon	gpcc trmm	17.30	9.26	-0.0117		-0.12	0.0132	-119.5635	-0.1149	22.50	121	153	277	267	96	914	195
175	Point	1	4 mon	ghcn cams grid	16.87	4.06	-0.0020		-0.03	0.0014	-365.4696	-0.0368	**21.43**	53	33	220	224	24	554	29
176	Point	1	4 mon	ssmi	23.08	11.52	-0.0062		0.00	0.0070	-227.2701	-0.0839	27.67	283	199	247	250	208	1187	316
177	Point	1	4 mon	opi2	**16.07**	9.74	-0.0004		0.02	0.0000	-226.3431	-0.0058	21.96	24	159	195	197	44	619	49
178	Point	1	4 mon	opi3	17.19	8.76	-0.0019		0.01	0.0007	-242.3375	-0.0266	22.72	105	139	215	216	123	798	123
179	Point	1	4 mon	cmap	17.09	6.79	-0.0019		0.01	0.0008	-232.0765	-0.0279	22.31	79	83	216	218	78	674	67
180	Point	1	4 mon	cmap2	16.88	6.58	-0.0021		0.01	0.0009	-226.0763	-0.0306	22.02	55	78	222	220	47	622	51
181	Point	2	Yes	reanalysis	18.20	13.27	**1.1468**	1.1468	15.03	0.5408	0.3837	**0.7354**	27.07	157	220	20	19	189	605	41
182	Point	2	Yes	gpcp	19.22	13.58	**1.0206**	1.0206	13.83	0.4617	0.3063	0.6795	28.72	169	222	5	39	219	654	61
183	Point	2	Yes	gpcc	16.76	13.07	**1.1552**	1.1552	14.82	0.5196	0.2888	**0.7208**	23.43	47	214	21	25	154	461	17
184	Point	2	Yes	gpcc trmm	23.82	22.86	0.6653	1.5031	16.13	0.2181	-0.4972	0.4671	34.43	300	349	26	54	321	1050	268
185	Point	2	Yes	ghcn cams grid	20.97	14.99	**0.9676**	1.0335	14.55	0.3918	0.2024	0.6259	30.79	201	255	7	52	264	779	117
186	Point	2	Yes	ssmi	32.91	19.81	-0.3564		-4.21	0.0550	-1.2638	-0.2345	41.24	329	322	358	320	329	1658	356
187	Point	2	Yes	opi2	23.57	19.57	**0.9927**	1.0074	19.43	0.4018	0.0798	0.6339	33.07	296	319	2	50	309	976	235
188	Point	2	Yes	opi3	22.79	18.46	**1.0227**	1.0227	18.85	0.4012	0.1144	0.6334	32.45	271	308	6	51	304	940	209
189	Point	2	Yes	cmap	21.74	16.68	**1.0204**	1.0204	16.99	0.4060	0.1719	0.6372	31.38	232	276	4	48	283	843	154
190	Point	2	Yes	cmap2	21.60	16.47	**1.0335**	1.0335	16.98	0.4122	0.1835	0.6420	31.15	225	273	8	43	275	824	140
191	Point	2	No	reanalysis	21.07	14.31	0.0761	13.1406	3.26	0.0103	-2.2459	0.1013	29.92	204	234	133	160	246	977	236
192	Point	2	No	gpcp	21.27	14.62	0.0238	42.0168	2.64	0.0011	-2.5949	0.0329	31.48	210	245	164	178	285	1082	280
193	Point	2	No	gpcc	16.66	13.13	0.0028	357.1429	1.89	0.0000	-9.3453	0.0067	22.84	40	215	185	190	133	763	102
194	Point	2	No	gpcc trmm	26.51	25.36	-0.3471		-1.75	0.2283	-6.3337	-0.4778	38.86	318	351	357	356	327	1709	359
195	Point	2	No	ghcn cams grid	21.59	16.03	-0.0020		2.32	0.0000	-2.7429	-0.0027	32.13	224	263	218	195	296	1196	319
196	Point	2	No	ssmi	24.90	20.92	-0.2095		-0.49	0.1283	-8.0839	-0.3582	31.79	310	337	355	345	290	1637	354
197	Point	2	No	opi2	23.29	20.61	0.0065	153.8462	2.47	0.0001	-3.2748	0.0086	34.33	289	326	181	188	320	1304	340
198	Point	2	No	opi3	23.02	19.50	0.0007	1428.5714	2.36	0.0000	-3.0299	0.0009	33.33	278	312	192	193	315	1290	338
199	Point	2	No	cmap	22.04	17.72	0.0061	163.9344	2.45	0.0001	-2.7989	0.0080	32.37	251	298	183	189	303	1224	331
200	Point	2	No	cmap2	21.81	17.51	0.0087	114.9425	2.48	0.0001	-2.7474	0.0112	32.14	236	284	176	187	297	1180	313
201	Point	2	1 mon	reanalysis	21.41	14.34	0.1307	7.6511	3.92	0.0303	-2.0518	0.1740	29.06	217	236	93	116	225	887	184
202	Point	2	1 mon	gpcp	21.45	14.64	0.1086	9.2081	3.68	0.0225	-2.2693	0.1501	30.08	219	246	104	125	251	945	213

Southwest United States - Monthly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
203	Point	2	1 mon	gpcc	17.13	13.20	-0.0033		1.83	0.0001	-9.4208	-0.0080	23.00	91	217	230	198	148	884	181	
204	Point	2	1 mon	gpcc trmm	26.58	25.66	-0.0927		3.41	0.0162	-5.3679	-0.1273	36.57	319	353	347	276	324	1619	352	
205	Point	2	1 mon	ghcn cams grid	21.49	16.04	0.0964	10.3734	3.67	0.0168	-2.3856	0.1295	30.61	221	264	113	138	259	995	245	
206	Point	2	1 mon	ssmi	24.70	20.88	-0.1847		-0.03	0.0998	-7.9050	-0.3159	31.56	305	335	353	337	287	1617	351	
207	Point	2	1 mon	opi2	23.43	20.64	0.0998	10.0200	4.17	0.0175	-2.9450	0.1323	33.04	291	328	111	136	308	1174	312	
208	Point	2	1 mon	opi3	23.05	19.51	0.1029	9.7182	4.11	0.0175	-2.6883	0.1324	31.95	281	313	108	135	292	1129	299	
209	Point	2	1 mon	cmap	22.04	17.73	0.1055	9.4787	3.97	0.0187	-2.4619	0.1367	30.95	252	299	106	134	272	1063	270	
210	Point	2	1 mon	cmap2	21.80	17.52	0.1115	8.9686	4.04	0.0207	-2.4021	0.1438	30.68	235	285	100	128	260	1008	252	
211	Point	2	2 mon	reanalysis	20.98	14.44	0.1735	5.7637	4.45	0.0531	-1.9026	0.2304	28.39	202	241	67	78	217	805	128	
212	Point	2	2 mon	gpcp	20.96	14.68	0.1690	5.9172	4.44	0.0545	-2.0401	0.2334	29.06	200	250	75	75	224	824	139	
213	Point	2	2 mon	gpcc	17.05	13.26	0.0472	21.1864	2.33	0.0134	-8.9254	0.1156	22.35	73	219	152	148	84	676	68	
214	Point	2	2 mon	gpcc trmm	27.32	26.15	0.2154	4.6425	9.85	0.0858	-4.2438	0.2929	33.52	321	354	62	63	316	1116	293	
215	Point	2	2 mon	ghcn cams grid	21.20	16.11	0.1715	5.8309	4.71	0.0530	-2.1167	0.2301	29.42	209	267	70	79	233	858	162	
216	Point	2	2 mon	ssmi	24.86	20.87	-0.1184		1.14	0.0411	-7.5002	-0.2027	30.90	308	334	350	305	269	1566	348	
217	Point	2	2 mon	opi2	23.48	20.67	0.1681	5.9488	5.43	0.0496	-2.7039	0.2227	32.07	292	329	77	87	295	1080	279	
218	Point	2	2 mon	opi3	23.18	19.55	0.1681	5.9488	5.25	0.0467	-2.4731	0.2161	31.06	286	317	76	94	273	1046	267	
219	Point	2	2 mon	cmap	22.10	17.77	0.1705	5.8651	4.98	0.0488	-2.2440	0.2209	30.02	253	303	71	91	248	966	223	
220	Point	2	2 mon	cmap2	21.87	17.57	0.1740	5.7471	5.00	0.0503	-2.1949	0.2243	29.79	243	289	65	85	239	921	202	
221	Point	2	3 mon	reanalysis	21.37	14.45	0.1700	5.8824	4.42	0.0510	-1.9141	0.2257	28.50	213	242	72	83	218	828	142	
222	Point	2	3 mon	gpcp	21.62	14.72	0.1672	5.9809	4.43	0.0533	-2.0476	0.2309	29.15	226	252	79	77	228	862	166	
223	Point	2	3 mon	gpcc	16.86	13.15	0.0832	12.0192	2.56	0.0458	-9.3065	0.2141	21.72	50	216	126	95	36	523	21	
224	Point	2	3 mon	gpcc trmm	27.50	26.39	0.2716	3.6819	11.00	0.1349	-4.0221	0.3673	33.13	322	355	59	58	310	1104	289	
225	Point	2	3 mon	ghcn cams grid	21.87	16.15	0.1650	6.0606	4.64	0.0490	-2.1413	0.2213	29.59	242	271	83	90	237	923	203	
226	Point	2	3 mon	ssmi	24.91	20.92	-0.0673		2.06	0.0132	-7.1957	-0.1151	30.43	311	336	345	268	257	1517	344	
227	Point	2	3 mon	opi2	24.15	20.75	0.1542	6.4851	5.20	0.0416	-2.7558	0.2040	32.36	302	333	90	103	302	1130	301	
228	Point	2	3 mon	opi3	23.71	19.60	0.1651	6.0569	5.21	0.0450	-2.4840	0.2121	31.16	299	321	82	99	276	1077	276	
229	Point	2	3 mon	cmap	22.67	17.81	0.1645	6.0790	4.90	0.0454	-2.2649	0.2131	30.17	265	305	84	98	253	1005	251	
230	Point	2	3 mon	cmap2	22.43	17.61	0.1658	6.0314	4.89	0.0457	-2.2227	0.2138	29.97	258	291	81	96	247	973	230	
231	Point	2	4 mon	reanalysis	21.86	14.42	0.0939	10.6496	3.48	0.0156	-2.1767	0.1247	29.81	239	240	114	141	241	975	234	
232	Point	2	4 mon	gpcp	22.04	14.69	0.0797	12.5471	3.33	0.0121	-2.3752	0.1101	30.73	250	251	130	153	262	1046	266	
233	Point	2	4 mon	gpcc	16.86	12.99	0.0749	13.3511	2.21	0.0454	-11.3808	0.2132	21.57	51	211	134	97	34	527	22	
234	Point	2	4 mon	gpcc trmm	27.09	25.60	0.1922	5.2029	8.50	0.0789	-4.7349	0.2808	33.14	320	352	63	64	311	1110	291	
235	Point	2	4 mon	ghcn cams grid	22.35	16.15	0.0918	10.8932	3.62	0.0151	-2.4012	0.1231	30.84	256	270	115	143	267	1051	269	
236	Point	2	4 mon	ssmi	24.90	21.18	-0.0021		3.46	0.0000	-7.3358	-0.0038	29.83	309	342	221	196	243	1311	342	
237	Point	2	4 mon	opi2	24.76	20.74	0.0914	10.9409	4.03	0.0146	-2.9695	0.1210	33.32	307	332	117	144	314	1214	326	
238	Point	2	4 mon	opi3	24.05	19.58	0.0916	10.9170	3.93	0.0139	-2.7194	0.1177	32.25	301	320	116	146	298	1181	315	
239	Point	2	4 mon	cmap	23.03	17.79	0.0881	11.3507	3.71	0.0130	-2.5147	0.1142	31.35	279	304	122	151	281	1137	304	
240	Point	2	4 mon	cmap2	22.78	17.59	0.0887	11.2740	3.70	0.0131	-2.4727	0.1143	31.17	270	290	120	150	277	1107	290	
241	Area	1	Yes	reanalysis	50.11	3.83	2.9388	2.9388	13.62	0.5760	0.3226	**0.7589**	60.24	334	28	52	11	336	761	99	
242	Area	1	Yes	gpcp	57.04	**1.97**	2.6507	2.6507	7.90	0.5179	0.3165	0.7197	65.88	348	1	42	27	345	763	103	
243	Area	1	Yes	gpcc	57.49	6.98	2.9313	2.9313	23.10	0.5631	0.3112	**0.7504**	67.10	354	90	51	15	355	865	168	
244	Area	1	Yes	gpcc trmm	50.19	**3.46**	2.2055	2.2055	13.02	0.4155	0.2889	0.6446	58.60	335	15	33	42	332	757	96	
245	Area	1	Yes	ghcn cams grid	52.43	**2.67**	2.3867	2.3867	8.30	0.4662	0.3075	0.6828	60.98	339	7	36	35	337	754	93	
246	Area	1	Yes	ssmi	64.25	7.67	0.5871	1.7033	3.04	0.0369	0.0084	0.1920	75.39	358	108	28	109	358	961	220	
247	Area	1	Yes	opi2	55.76	7.31	3.1272	3.1272	28.27	0.5996	0.3137	**0.7744**	65.70	340	100	57	4	340	841	153	
248	Area	1	Yes	opi3	56.74	6.37	2.7493	2.7493	21.96	0.5244	0.3057	**0.7242**	66.09	344	75	48	21	346	834	148	
249	Area	1	Yes	cmap	57.36	4.85	2.6477	2.6477	16.71	0.5045	0.3054	0.7103	66.30	350	47	39	28	350	814	131	
250	Area	1	Yes	cmap2	57.57	4.65	2.6680	2.6680	16.33	0.5011	0.3018	0.7079	66.47	356	44	45	31	353	829	145	
251	Area	1	No	reanalysis	**15.39**	4.08	-0.0265		-1.10	0.0581	-91.2143	-0.2410	**19.93**	14	36	303	321	16	690	73	
252	Area	1	No	gpcp	17.14	**2.24**	-0.0110		-1.40	0.0078	-66.2391	-0.0884	22.15	94	2	273	255	62	686	71	
253	Area	1	No	gpcc	16.59	7.31	-0.0010		-1.04	0.0002	-189.7625	-0.0132	22.03	38	99	202	201	48	588	36	
254	Area	1	No	gpcc trmm	16.56	6.29	-0.0119		-1.74	0.0039	-30.4434	-0.0622	21.84	36	74	280	238	39	667	64	
255	Area	1	No	ghcn cams grid	16.64	**3.09**	0.0030	333.3333	-0.96	0.0009	-103.2925	0.0298	**21.23**	39	8	184	180	22	433	15	
256	Area	1	No	ssmi	21.09	9.74	0.0437	22.8833	-0.99	0.1162	-64.9340	0.3408	25.78	206	158	155	59	168	746	89	
257	Area	1	No	opi2	**15.90**	8.51	-0.0093		-1.44	0.0046	-65.0919	-0.0680	21.73	20	128	267	242	37	694	77	
258	Area	1	No	opi3	16.69	7.57	-0.0001		-1.35	0.0000	-69.0851	-0.0011	22.38	42	105	194	194	87	622	52	
259	Area	1	No	cmap	16.96	5.84	-0.0011		-1.36	0.0001	-68.2774	-0.0087	22.31	65	69	204	199	77	614	47	
260	Area	1	No	cmap2	16.76	5.65	-0.0017		-1.37	0.0002	-66.6542	-0.0138	22.05	46	67	214	204	51	582	34	
261	Area	1	1 mon	reanalysis	**15.80**	4.10	0.0086	116.2791	-0.93	0.0062	-85.4174	0.0788	**19.30**	18	38	177	163	4	400	10	
262	Area	1	1 mon	gpcp	17.84	**2.27**	-0.0347		-1.48	0.0773	-69.3616	-0.2781	22.68	151	3	317	327	119	917	198	
263	Area	1	1 mon	gpcc	17.22	7.38	-0.0232		-1.21	0.0919	-200.2298	-0.3032	22.55	111	101	299	335	107	953	215	
264	Area	1	1 mon	gpcc trmm	17.56	6.56	-0.0417		-1.89	0.0488	-33.2956	-0.2210	22.59	136	76	334	317	112	975	233	
265	Area	1	1 mon	ghcn cams grid	17.19	**3.13**	-0.0201		-1.06	0.0408	-107.7279	-0.2020	21.69	104	10	297	304	35	750	90	
266	Area	1	1 mon	ssmi	21.17	9.75	0.0224	44.6429	-1.21	0.0305	-67.6002	0.1746	26.35	208	160	166	115	180	829	143	
267	Area	1	1 mon	opi2	16.71	8.55	-0.0392		-1.73	0.0832	-68.4430	-0.2884	22.30	43	131	327	331	75	907	192	
268	Area	1	1 mon	opi3	17.32	7.59	-0.0274		-1.58	0.0458	-72.5306	-0.2139	22.95	123	106	307	313	139	988	239	
269	Area	1	1 mon	cmap	17.53	5.76	-0.0266		-1.54	0.0448	-71.0982	-0.2117	22.78	135	68	304	312	126	945	211	
270	Area	1	1 mon	cmap2	17.31	5.56	-0.0266		-1.53	0.0437	-69.3149	-0.2090	22.50	122	65	305	309	97	898	189	
271	Area	1	2 mon	reanalysis	**15.97**	4.13	0.0369	27.1003	-0.79	0.1126	-80.7113	0.3356	**18.78**	22	41	157	60	3	283	6	
272	Area	1	2 mon	gpcp	18.16	**2.33**	-0.0394		-1.49	0.0998	-70.1998	-0.3159	22.81	156	4	330	336	130	956	217	
273	Area	1	2 mon	gpcc	17.57	7.56	-0.0328		-1.26	0.2003	-223.2723	-0.4476	22.80	137	104	313	355	128	1037	262	
274	Area	1	2 mon	gpcc trmm	17.72	7.13	-0.0350		-1.60	0.0434	-42.2743	-0.2082	22.60	145	96	318	308	113	980	237	
275	Area	1	2 mon	ghcn cams grid	17.52	**3.16**	-0.0277		-1.08	0.0788	-110.8847	-0.2808	21.86	134	11	309	328	40	822	135	
276	Area	1	2 mon	ssmi	21.40	9.78	0.0080	125.0000	-1.35	0.0040	-69.9553	0.0630	26.77	216	161	179	165	186	907	193	
277	Area	1	2 mon	opi2	17.15	8.59	-0.0490		-1.82	0.1302	-69.8052	-0.3608	22.51	98	133	339	347	100	1017	257	
278	Area	1	2 mon	opi3	17.84	7.62	-0.0380		-1.67	0.0888	-74.1569	-0.2980	23.19	149	107	325	334	151	1066	272	
279	Area	1	2 mon	cmap	17.84	5.63	-0.0360		-1.59	0.0810	-71.5888	-0.2847	22.85	150	66	319	330	134	999	246	
280	Area	1	2 mon	cmap2	17.62	5.43	-0.0360		-1.58	0.0796	-69.7850	-0.2821	22.57	140	63	320	329	110	962	221	
281	Area	1	3 mon	reanalysis	**15.93**	4.16	0.0528	18.9394	-0.71	0.2312	-78.0904	0.4808	**18.49**	21	42	148	53	1	265	4	
282	Area	1	3 mon	gpcp	18.26	**2.36**	-0.0408		-1.49	0.1074	-70.5440	-0.3277	22.88	158	5	331	341	137	972	229	
283	Area	1	3 mon	gpcc	17.71	7.73	-0.0370		-1.27	0.2654	-235.4518	-0.5152	22.96	143	109	324	359	141	1076	275	
284	Area	1	3 mon	gpcc trmm	17.34	8.05	-0.0339		-1.37	0.0543	-58.0092	-0.2331	22.39	126	116	316	319	88	965	222	
285	Area	1	3 mon	ghcn cams grid	17.65	**3.17**	-0.0290		-1.08	0.0875	-112.1354	-0.2958	21.91	141	12	310	333	42	838	150	
286	Area	1	3 mon	ssmi	21.94	9.83	-0.0015		-1.44	0.0001	-71.4547	-0.0116	27.07	246	162	212	200	190	1010	253	
287	Area	1	3 mon	opi2	17.13	8.51	-0.0521		-1.83	0.1469	-69.7833	-0.3832	22.52	90	130	342	353	104	1019	258	
288	Area	1	3 mon	opi3	18.03	7.54	-0.0432		-1.70	0.1141	-74.4667	-0.3378	23.25	154	103	335	343	153	1088	282	
289	Area	1	3 mon	cmap	17.99	5.51	-0.0410		-1.61	0.1047	-71.5222	-0.3235	22.86	152	64	332	338	135	1021	259	
290	Area	1	3 mon	cmap2	17.79	5.31	-0.0416		-1.61	0.1052	-69.7601	-0.3243	22.58	147	61	333	339	111	991	242	
291	Area	1	4 mon	reanalysis	**15.76**	4.17	0.0504	19.8413	-0.72	0.2102	-78.3283	0.4585	**18.53**	17	43	149	55	2	266	5	
292	Area	1	4 mon	gpcp	18.34	**2.37**	-0.0441		-1.50	0.1255	-70.9837	-0.3543	22.99	160	6	336	344	146	992	243	
293	Area	1	4 mon	gpcc	17.71	7.90	-0.0387		-1.29	0.2890	-235.3451	-0.5376	23.04	144	113	326	360	150	1093	285	
294	Area	1	4 mon	gpcc trmm	17.59	8.31	-0.0526		-1.45	0.1386	-63.8540	-0.3722	22.95	138	120	343	349	140	1090	283	
295	Area	1	4 mon	ghcn cams grid	17.67	**3.12**	-0.0330		-1.09	0.1131	-112.6721	-0.3362	21.97	142	9	314	342	45	852	159	
296	Area	1	4 mon	ssmi	22.75	10.00	-0.0191		-1.65	0.0223	-73.2136	-0.1492	27.50	268	172	296	284	198	1218	328	
297	Area	1	4 mon	opi2	16.93	8.39	-0.0508		-1.82	0.1379	-68.7425	-0.3714	22.39	63	126	341	348	89	967	224	
298	Area	1	4 mon	opi3	18.05	7.41	-0.0492		-1.75	0.1469	-74.1834	-0.3832	23.25	155	102	340	352	152	1101	288	
299	Area	1	4 mon	cmap	18.02	5.43	-0.0475		-1.66	0.1400	-71.9249	-0.3742	22.96	153	62	337	350	142	1044	265	
300	Area	1	4 mon	cmap2	17.82	5.23	-0.0481		-1.65	0.1403	-70.1470	-0.3746	22.68	148	59	338	351	118	1014	255	
301	*Area*	*2*	*Yes*	*reanalysis*	***15.17***	*9.61*	***1.1694***	*1.1694*	*11.64*	*0.6559*	*0.5515*	***0.8099***	***21.38***	*4*	*156*	*22*	*1*	*23*	*206*	*1*	Plot
302	Area	2	Yes	gpcp	**15.60**	9.92	**1.0985**	1.0985	11.13	0.6238	0.5223	**0.7898**	22.06	15	169	15	2	56	257	3	
303	Area	2	Yes	gpcc	**14.63**	10.67	**1.2109**	1.2109	13.05	0.6015	0.4278	**0.7756**	**20.47**	1	174	25	3	17	220	2	

Southwest United States - Monthly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
304	Area	2	Yes	gpcc trmm	19.74	18.49	**0.9035**	1.1068	16.55	0.4637	-0.0393	0.6810	26.72	182	309	16	36	185	728	86	
305	Area	2	Yes	ghcn cams grid	17.07	11.32	**1.0795**	1.0795	12.41	0.5689	0.4399	**0.7542**	23.89	77	196	13	14	156	456	16	
306	Area	2	Yes	ssmi	30.26	16.56	-0.1807		-4.35	0.0153	-1.0318	-0.1236	37.58	328	274	352	275	325	1554	347	
307	Area	2	Yes	opi2	19.54	15.90	**1.0965**	1.0965	17.66	0.5719	0.3193	**0.7562**	26.34	177	259	14	13	179	642	56	
308	Area	2	Yes	opi3	18.70	14.79	**1.1335**	1.1335	17.08	0.5749	0.3522	**0.7582**	25.69	165	253	18	12	165	613	46	
309	Area	2	Yes	cmap	17.76	13.01	**1.1263**	1.1263	14.96	0.5771	0.4036	**0.7597**	24.65	146	212	17	10	159	544	26	
310	Area	2	Yes	cmap2	17.62	12.81	**1.1375**	1.1375	14.90	0.5825	0.4130	**0.7632**	24.46	139	206	19	9	157	530	23	
311	Area	2	No	reanalysis	18.42	10.65	0.0986	10.1420	-0.13	0.0494	-5.2555	0.2222	24.54	162	173	112	88	158	693	76	
312	Area	2	No	gpcp	18.44	10.96	0.1016	9.8425	-0.06	0.0565	-5.6083	0.2378	25.22	163	182	109	72	161	687	72	
313	Area	2	No	gpcc	**14.88**	10.73	0.0584	17.1233	0.12	0.0765	-28.3939	0.2766	**19.85**	2	176	143	65	15	401	11	
314	Area	2	No	gpcc trmm	22.83	20.99	-0.1089		-1.33	0.2627	-51.9985	-0.5126	30.55	272	338	349	357	258	1574	349	
315	Area	2	No	ghcn cams grid	18.40	12.36	0.1099	9.0992	0.19	0.0625	-5.6203	0.2499	25.24	161	200	102	67	162	692	75	
316	Area	2	No	ssmi	21.82	17.67	-0.0338		-0.63	0.0267	-47.3743	-0.1634	25.95	237	294	315	289	175	1310	341	
317	Area	2	No	opi2	19.67	16.94	0.1103	9.0662	0.70	0.0612	-6.9075	0.2475	27.59	180	277	101	68	203	829	144	
318	Area	2	No	opi3	19.60	15.83	0.1116	8.9606	0.60	0.0590	-6.2852	0.2429	26.48	179	256	99	71	182	787	120	
319	Area	2	No	cmap	18.79	14.05	0.1121	8.9206	0.41	0.0605	-5.7887	0.2460	25.56	166	227	98	69	164	724	85	
320	Area	2	No	cmap2	18.56	13.85	0.1127	8.8731	0.40	0.0605	-5.6853	0.2460	25.37	164	223	96	70	163	716	80	
321	Area	2	1 mon	reanalysis	19.23	10.68	0.0689	14.5138	-0.49	0.0241	-5.5572	0.1553	25.17	170	175	138	121	160	764	105	
322	Area	2	1 mon	gpcp	19.32	10.98	0.0728	13.7363	-0.42	0.0290	-5.9231	0.1703	25.86	173	184	136	118	173	784	119	
323	Area	2	1 mon	gpcc	**15.65**	10.78	0.0090	111.1111	-0.44	0.0018	-30.6040	0.0424	**20.65**	16	178	175	169	18	556	30	
324	Area	2	1 mon	gpcc trmm	22.66	21.23	-0.0584		-0.31	0.0752	-49.6782	-0.2742	30.18	264	344	344	325	254	1531	345	
325	Area	2	1 mon	ghcn cams grid	18.83	12.38	0.0880	11.3636	-0.11	0.0400	-5.8444	0.2001	25.71	167	201	123	104	166	761	98	
326	Area	2	1 mon	ssmi	21.57	17.66	-0.0234		-0.41	0.0129	-47.0278	-0.1134	25.85	223	293	300	266	172	1254	335	
327	Area	2	1 mon	opi2	20.21	16.98	0.0811	12.3305	0.17	0.0331	-7.1997	0.1820	28.14	188	278	128	111	212	917	200	
328	Area	2	1 mon	opi3	20.00	15.85	0.0885	11.2994	0.21	0.0371	-6.4985	0.1926	26.91	184	257	121	108	187	857	160	
329	Area	2	1 mon	cmap	19.26	14.07	0.0887	11.2740	0.05	0.0379	-6.0095	0.1947	26.02	171	228	119	107	176	801	126	
330	Area	2	1 mon	cmap2	19.02	13.86	0.0907	11.0254	0.06	0.0392	-5.8904	0.1981	25.80	168	224	118	105	169	784	118	
331	Area	2	2 mon	reanalysis	19.46	10.78	0.0415	24.0964	-0.80	0.0087	-5.8342	0.0933	25.74	176	177	156	162	167	838	151	
332	Area	2	2 mon	gpcp	19.54	11.03	0.0439	22.7790	-0.76	0.0105	-6.2428	0.1027	26.50	178	186	154	157	183	858	161	
333	Area	2	2 mon	gpcc	**15.83**	10.87	-0.0067		-0.67	0.0010	-31.9781	-0.0320	**20.92**	19	180	252	222	19	692	74	
334	Area	2	2 mon	gpcc trmm	22.96	21.72	0.0338	29.5858	1.65	0.0250	-46.5218	0.1582	29.32	276	346	159	120	230	1131	303	
335	Area	2	2 mon	ghcn cams grid	19.26	12.45	0.0631	15.8479	-0.44	0.0205	-6.1065	0.1432	26.25	172	202	139	130	177	820	134	
336	Area	2	2 mon	ssmi	21.63	17.63	-0.0214		-0.38	0.0108	-46.8501	-0.1038	25.84	227	292	298	265	171	1253	333	
337	Area	2	2 mon	opi2	20.88	17.01	0.0479	20.8768	-0.43	0.0116	-7.5346	0.1075	28.76	196	279	151	154	220	1000	248	
338	Area	2	2 mon	opi3	20.50	15.89	0.0568	17.6056	-0.33	0.0153	-6.8026	0.1236	27.50	190	258	145	142	199	934	207	
339	Area	2	2 mon	cmap	19.68	14.11	0.0579	17.2712	-0.41	0.0161	-6.3105	0.1269	26.62	181	229	144	139	184	877	178	
340	Area	2	2 mon	cmap2	19.44	13.91	0.0595	16.8067	-0.40	0.0169	-6.1918	0.1299	26.40	175	225	142	137	181	860	165	
341	Area	2	3 mon	reanalysis	19.83	10.82	0.0167	59.8802	-1.07	0.0014	-6.1009	0.0375	26.26	183	179	168	173	178	881	180	
342	Area	2	3 mon	gpcp	20.08	11.08	0.0086	116.2791	-1.17	0.0004	-6.6491	0.0200	27.25	186	187	178	185	194	930	206	
343	Area	2	3 mon	gpcc	16.16	10.93	-0.0093		-0.74	0.0020	-32.4511	-0.0444	**21.01**	29	181	266	227	20	723	83	
344	Area	2	3 mon	gpcc trmm	23.50	22.13	0.0543	18.4162	2.16	0.0644	-46.1515	0.2537	29.40	294	348	147	66	232	1087	281	
345	Area	2	3 mon	ghcn cams grid	20.08	12.51	0.0196	51.0204	-1.01	0.0020	-6.5753	0.0446	27.12	185	203	167	168	191	914	196	
346	Area	2	3 mon	ssmi	21.73	17.69	-0.0183		-0.31	0.0079	-46.8504	-0.0891	25.88	231	297	295	256	174	1253	334	
347	Area	2	3 mon	opi2	21.52	17.11	0.0106	94.3396	-1.08	0.0006	-7.9367	0.0238	29.45	222	280	172	183	234	1091	284	
348	Area	2	3 mon	opi3	21.35	15.96	0.0128	78.1250	-1.06	0.0008	-7.2419	0.0279	28.29	211	260	171	182	215	1039	263	
349	Area	2	3 mon	cmap	20.54	14.17	0.0135	74.0741	-1.07	0.0009	-6.7583	0.0297	27.44	192	231	170	181	197	971	227	
350	Area	2	3 mon	cmap2	20.30	13.97	0.0146	68.4932	-1.05	0.0010	-6.6408	0.0318	27.24	189	226	169	179	193	956	218	
351	Area	2	4 mon	reanalysis	20.17	10.96	-0.0253		-1.42	0.0035	-7.0665	-0.0592	27.00	187	183	301	236	188	1095	286	
352	Area	2	4 mon	gpcp	20.57	11.22	-0.0394		-1.60	0.0092	-7.7652	-0.0958	28.14	193	188	328	261	211	1181	314	
353	Area	2	4 mon	gpcc	16.41	11.01	-0.0121		-0.78	0.0034	-32.5793	-0.0580	**21.13**	35	185	283	234	21	758	97	
354	Area	2	4 mon	gpcc trmm	23.56	21.96	0.0446	22.4215	1.74	0.0490	-51.5124	0.2213	29.52	295	347	153	89	236	1120	294	
355	Area	2	4 mon	ghcn cams grid	20.52	12.68	-0.0272		-1.49	0.0041	-7.6521	-0.0641	27.96	191	205	306	240	209	1151	305	
356	Area	2	4 mon	ssmi	21.86	17.92	-0.0035		0.17	0.0004	-71.2849	-0.0212	25.80	241	306	235	212	170	1164	310	
357	Area	2	4 mon	opi2	21.97	17.28	-0.0257		-1.59	0.0036	-9.0037	-0.0599	30.07	247	281	302	237	250	1317	343	
358	Area	2	4 mon	opi3	21.77	16.12	-0.0370		-1.75	0.0070	-8.3634	-0.0837	29.09	233	268	323	249	227	1300	339	
359	Area	2	4 mon	cmap	20.95	14.33	-0.0369		-1.69	0.0071	-7.8521	-0.0842	28.28	199	235	322	251	214	1221	329	
360	Area	2	4 mon	cmap2	20.70	14.12	-0.0364		-1.67	0.0068	-7.7243	-0.0825	28.08	194	230	321	248	210	1203	323	

Southwest United States - Yearly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	*Linear*	*1*	*Yes*	*reanalysis*	*9.48*	*5.45*	*5.45*	*-0.0087*		*0.35*	*0.0000*	*-0.4982*	*-0.0037*	*11.88*	*38*	*35*	*85*	*75*	*44*	*277*	*56*	Plot
2	Linear	1	Yes	gpcp	8.68	**1.39**	1.39	0.4471	2.2366	-0.59	0.0351	-0.0345	0.1874	11.24	30	2	36	38	36	142	6	
3	Linear	1	Yes	gpcc	9.25	4.36	4.36	0.5681	1.7603	0.76	0.0419	-0.2101	0.2047	10.05	35	22	20	29	28	134	4	
4	Linear	1	Yes	gpcc trmm	12.68	**-1.57**	1.57	6.6387	6.6387	36.58	0.3045	0.0723	**0.5518**	13.51	62	4	61	2	58	187	22	
5	Linear	1	Yes	ghcn cams grid	7.97	4.31	4.31	0.1762	5.6754	1.10	0.0032	-0.2589	0.0562	10.99	22	20	57	69	33	201	29	
6	Linear	1	Yes	ssmi	12.23	7.24	7.24	1.9307	1.9307	18.14	0.2179	-0.1011	**0.4668**	14.66	59	51	27	5	63	205	33	
7	Linear	1	Yes	opi2	11.46	7.38	7.38	0.3333	3.0003	0.99	0.0101	-0.4766	0.1007	13.43	55	55	45	60	56	271	53	
8	Linear	1	Yes	opi3	10.18	6.27	6.27	**0.7512**	1.3312	4.16	0.0670	-0.2626	0.2589	12.41	47	39	14	26	52	178	17	
9	Linear	1	Yes	cmap	9.68	4.49	4.49	0.5230	1.9120	1.30	0.0371	-0.1590	0.1925	11.89	44	24	26	35	45	174	16	
10	Linear	1	Yes	cmap2	9.62	4.29	4.29	0.5150	1.9417	1.14	0.0345	-0.1467	0.1857	11.83	42	18	28	40	43	171	14	
11	Linear	1	No	reanalysis	**5.65**	5.00	5.00	0.0220	45.4545	0.06	0.1244	-623.0347	0.3527	**6.42**	9	31	66	17	9	132	3	
12	Linear	1	No	gpcp	**5.06**	**3.62**	3.62	0.0049	204.0816	0.04	0.0053	-354.8611	0.0731	**5.87**	6	12	74	64	6	162	13	
13	Linear	1	No	gpcc	8.33	8.33	8.33	0.0099	101.0101	0.06	0.0853	-999.0000	0.2921	8.94	25	59	71	23	22	200	27	
14	Linear	1	No	gpcc trmm	6.99	6.99	6.99	0.1182	8.4602	1.02	0.0409	-107.3393	0.2021	**7.09**	16	48	62	32	14	172	15	
15	Linear	1	No	ghcn cams grid	**4.27**	**3.85**	3.85	-0.0076		-0.08	0.0085	-369.2077	-0.0921	**4.98**	2	15	82	99	2	200	26	
16	Linear	1	No	ssmi	11.74	11.74	11.74	-0.0017		0.01	0.0002	-886.3537	-0.0140	12.23	56	77	77	80	50	340	81	
17	Linear	1	No	opi2	9.60	9.60	9.60	-0.0423		-0.38	0.2056	-999.0000	-0.4534	10.22	40	64	95	108	29	336	78	
18	Linear	1	No	opi3	8.58	8.50	8.50	-0.0045		-0.02	0.0030	-897.6289	-0.0545	9.32	27	61	80	93	24	285	59	
19	Linear	1	No	cmap	7.12	6.72	6.72	0.0050	200.0000	0.05	0.0043	-635.6632	0.0657	7.85	17	44	73	67	17	218	37	
20	Linear	1	No	cmap2	**6.91**	6.51	6.51	0.0060	166.6667	0.06	0.0058	-600.7277	0.0764	**7.63**	14	41	72	63	15	205	31	
21	*Linear*	*2*	*Yes*	*reanalysis*	*24.38*	*10.21*	*10.21*	*2.5305*	*2.5305*	*28.52*	*0.1465*	*0.0007*	***0.3827***	*33.60*	*97*	*69*	*42*	*13*	*101*	*322*	*74*	Plot
22	Linear	2	Yes	gpcp	25.53	10.51	10.51	**1.0126**	1.0126	10.67	0.0302	-0.0677	0.1737	34.73	111	71	1	47	107	337	79	
23	Linear	2	Yes	gpcc	16.12	7.12	7.12	1.4591	1.4591	12.29	0.1212	-0.0015	0.3481	21.41	77	50	17	18	87	249	48	
24	Linear	2	Yes	gpcc trmm	22.51	10.57	10.57	-5.8554		-127.38	0.6495	-0.5667	-0.8059	23.18	94	73	120	117	92	496	112	
25	Linear	2	Yes	ghcn cams grid	25.45	11.92	11.92	0.5145	1.9436	5.28	0.0104	-0.1246	0.1018	35.65	108	80	30	59	112	389	91	
26	Linear	2	Yes	ssmi	27.53	22.41	22.41	-0.2222		-0.47	0.0028	-0.8194	-0.0530	35.20	120	117	109	92	109	547	118	
27	Linear	2	Yes	opi2	26.60	16.50	16.50	0.2783	3.5932	3.33	0.0043	-0.2653	0.0653	37.81	117	101	49	68	120	455	105	
28	Linear	2	Yes	opi3	26.29	15.39	15.39	0.7330	1.3643	10.81	0.0202	-0.1921	0.1423	36.70	115	96	16	54	118	399	94	
29	Linear	2	Yes	cmap	25.88	13.61	13.61	**0.7911**	1.2641	10.40	0.0218	-0.1437	0.1476	35.95	113	88	9	52	116	378	88	
30	Linear	2	Yes	cmap2	25.80	13.41	13.41	**0.7966**	1.2553	10.32	0.0217	-0.1388	0.1473	35.87	112	86	8	53	115	374	86	
31	Linear	2	No	reanalysis	14.27	14.27	14.27	0.4222	2.3685	7.36	0.1407	-6.3450	**0.3751**	15.51	69	92	40	14	70	285	60	
32	Linear	2	No	gpcp	14.58	14.58	14.58	-0.0454		1.75	0.0021	-7.5994	-0.0457	16.78	71	94	97	89	72	423	97	
33	Linear	2	No	gpcc	12.95	12.95	12.95	-0.2784		-1.46	0.1997	-20.5909	-0.4468	14.78	64	84	111	107	64	430	99	
34	Linear	2	No	gpcc trmm	26.74	26.74	26.74	-1.6318		-26.23	0.7353	-31.5643	-0.8575	27.68	118	120	117	120	96	571	120	
35	Linear	2	No	ghcn cams grid	15.99	15.99	15.99	0.0111	90.0901	2.46	0.0002	-9.1257	0.0129	18.21	74	99	69	74	75	391	93	
36	Linear	2	No	ssmi	22.42	22.42	22.42	-0.5813		-7.18	0.7292	-32.6134	-0.8539	24.58	93	118	115	119	94	539	117	
37	Linear	2	No	opi2	20.56	20.56	20.56	-0.0678		1.07	0.0087	-15.0716	-0.0934	22.94	88	112	103	100	91	494	111	
38	Linear	2	No	opi3	19.46	19.46	19.46	-0.0881		0.80	0.0101	-13.0916	-0.1005	21.48	86	110	105	101	88	490	109	
39	Linear	2	No	cmap	17.68	17.68	17.68	-0.0526		1.50	0.0033	-10.8711	-0.0576	19.71	83	106	99	94	81	463	106	
40	Linear	2	No	cmap2	17.47	17.47	17.47	-0.0431		1.66	0.0022	-10.6060	-0.0468	19.49	81	104	96	90	79	450	103	
41	Point	1	Yes	reanalysis	9.52	5.47	5.47	-0.0094		0.38	0.0000	-0.4968	-0.0040	11.93	39	36	86	76	46	283	58	
42	Point	1	Yes	gpcp	8.73	**1.41**	1.41	0.4411	2.2671	-0.60	0.0334	-0.0360	0.1827	11.38	31	3	37	42	39	152	9	
43	Point	1	Yes	gpcc	9.24	4.37	4.37	0.5579	1.7924	0.68	0.0409	-0.2160	0.2021	10.02	34	23	21	33	27	138	5	
44	Point	1	Yes	gpcc trmm	12.70	**-1.81**	1.81	6.4625	6.4625	35.15	0.2917	0.0664	**0.5401**	13.48	63	5	60	3	57	188	24	
45	Point	1	Yes	ghcn cams grid	7.98	4.33	4.33	0.1684	5.9382	1.09	0.0029	-0.2604	0.0534	11.05	23	21	58	70	35	207	34	
46	Point	1	Yes	ssmi	12.30	7.28	7.28	1.9466	1.9466	18.36	0.2157	-0.0994	**0.4644**	14.85	60	52	31	6	66	215	36	
47	Point	1	Yes	opi2	11.45	7.39	7.39	0.3263	3.0647	0.94	0.0095	-0.4683	0.0974	13.54	54	56	46	61	59	276	55	
48	Point	1	Yes	opi3	10.22	6.28	6.28	**0.7484**	1.3362	4.15	0.0650	-0.2584	0.2549	12.54	49	40	15	27	55	186	21	
49	Point	1	Yes	cmap	9.73	4.50	4.50	0.5147	1.9429	1.26	0.0351	-0.1585	0.1872	12.03	46	25	29	39	49	188	23	
50	Point	1	Yes	cmap2	9.67	4.30	4.30	0.5055	1.9782	1.09	0.0325	-0.1466	0.1802	11.97	43	19	33	46	48	189	25	
51	Point	1	No	reanalysis	**5.69**	5.02	5.02	0.0213	46.9484	0.08	0.0711	-383.2985	0.2666	**6.45**	10	32	67	25	10	144	7	
52	Point	1	No	gpcp	**5.09**	**3.63**	3.63	-0.0011		0.03	0.0002	-210.6377	-0.0123	**5.90**	7	13	76	79	7	182	19	
53	Point	1	No	gpcc	8.34	8.34	8.34	-0.0003		-0.01	0.0000	-999.0000	-0.0048	8.96	26	60	75	77	23	261	51	
54	Point	1	No	gpcc trmm	**6.75**	6.75	6.75	-0.0580		-0.41	0.0102	-104.6804	-0.1008	**6.89**	13	46	101	102	13	275	54	
55	Point	1	No	ghcn cams grid	**4.30**	3.87	3.87	-0.0155		-0.08	0.0212	-227.9501	-0.1456	**5.02**	3	16	90	103	3	215	35	
56	Point	1	No	ssmi	11.78	11.78	11.78	0.0143	69.9301	0.23	0.0085	-551.1304	0.0923	12.25	57	79	68	62	51	317	70	
57	Point	1	No	opi2	9.62	9.62	9.62	-0.0493		-0.44	0.1644	-636.2789	-0.4054	10.24	41	65	98	106	30	340	80	
58	Point	1	No	opi3	8.59	8.51	8.51	-0.0072		-0.03	0.0045	-529.2534	-0.0674	9.34	29	62	81	96	25	293	64	
59	Point	1	No	cmap	7.13	6.73	6.73	-0.0033		0.01	0.0011	-376.2352	-0.0333	7.88	18	45	78	85	18	244	46	
60	Point	1	No	cmap2	**6.93**	6.52	6.52	-0.0035		0.01	0.0012	-355.8320	-0.0348	7.66	15	42	79	86	16	238	44	
61	Point	2	Yes	reanalysis	24.05	10.25	10.25	2.5446	2.5446	28.73	0.1496	0.0006	**0.3868**	33.43	95	70	43	12	100	320	72	
62	Point	2	Yes	gpcp	25.13	10.56	10.56	**1.0477**	1.0477	11.14	0.0326	-0.0671	0.1806	34.55	104	72	3	45	106	330	76	
63	Point	2	Yes	gpcc	16.00	7.30	7.30	1.4803	1.4803	12.71	0.1257	-0.0048	0.3545	21.37	75	53	18	16	86	248	47	
64	Point	2	Yes	gpcc trmm	21.01	9.19	9.19	-5.5444		-122.50	0.6476	-0.5288	-0.8047	21.71	91	63	119	116	89	478	108	
65	Point	2	Yes	ghcn cams grid	25.09	11.96	11.96	0.5305	1.8850	5.54	0.0111	-0.1255	0.1055	35.48	103	81	24	57	110	375	87	
66	Point	2	Yes	ssmi	27.13	22.13	22.13	-0.1097		1.36	0.0007	-0.7685	-0.0259	35.15	119	115	106	83	108	531	116	
67	Point	2	Yes	opi2	26.40	16.54	16.54	0.2842	3.5186	3.47	0.0045	-0.2686	0.0670	37.67	116	102	47	66	119	450	104	
68	Point	2	Yes	opi3	25.99	15.43	15.43	**0.7676**	1.3028	11.45	0.0224	-0.1926	0.1498	36.52	114	97	11	51	117	390	92	
69	Point	2	Yes	cmap	25.48	13.65	13.65	**0.8220**	1.2165	10.92	0.0238	-0.1440	0.1542	35.77	110	89	7	49	114	369	85	
70	Point	2	Yes	cmap2	25.40	13.45	13.45	**0.8248**	1.2124	10.79	0.0235	-0.1393	0.1533	35.70	107	87	6	50	113	363	84	
71	Point	2	No	reanalysis	14.31	14.31	14.31	0.4363	2.2920	7.57	0.1736	-7.3444	**0.4167**	15.38	70	93	38	9	69	279	57	
72	Point	2	No	gpcp	14.62	14.62	14.62	-0.0103		2.23	0.0001	-8.7374	-0.0111	16.61	72	95	87	78	71	403	95	
73	Point	2	No	gpcc	13.13	13.13	13.13	-0.2572		-1.04	0.2348	-28.8561	-0.4846	14.81	65	85	110	110	65	435	100	
74	Point	2	No	gpcc trmm	25.36	25.36	25.36	-1.3208		-21.35	0.5526	-32.5108	-0.7434	26.21	105	119	116	113	95	548	119	
75	Point	2	No	ghcn cams grid	16.03	16.03	16.03	0.0271	36.9004	2.72	0.0011	-10.5371	0.0338	18.08	76	100	65	73	74	388	90	
76	Point	2	No	ssmi	22.14	22.14	22.14	-0.4688		-5.35	0.5835	-38.6750	-0.7639	24.08	92	116	113	114	93	528	115	
77	Point	2	No	opi2	20.61	20.61	20.61	-0.0619		1.22	0.0084	-17.4417	-0.0916	22.86	89	113	102	98	90	492	110	
78	Point	2	No	opi3	19.50	19.50	19.50	-0.0535		1.43	0.0043	-15.0735	-0.0656	21.35	87	111	100	95	85	478	107	
79	Point	2	No	cmap	17.72	17.72	17.72	-0.0216		2.02	0.0007	-12.5218	-0.0255	19.58	84	107	92	82	80	445	102	
80	Point	2	No	cmap2	17.51	17.51	17.51	-0.0148		2.13	0.0003	-12.2239	-0.0173	19.36	82	105	89	81	78	435	101	
81	Area	1	Yes	reanalysis	9.22	4.53	4.53	-0.0723		-0.88	0.0009	-0.4220	-0.0306	11.61	33	26	104	84	41	288	62	
82	Area	1	Yes	gpcp	8.59	**0.01**	0.01	0.4256	2.3496	-2.05	0.0327	-0.0268	0.1807	11.05	28	1	39	44	34	146	8	
83	*Area*	*1*	*Yes*	*gpcc*	*8.86*	***3.34***	*3.34*	*0.5332*	*1.8755*	*-0.55*	*0.0366*	*-0.1243*	*0.1913*	*9.73*	*32*	*10*	*23*	*36*	*26*	*127*	*2*	Plot
84	Area	1	Yes	gpcc trmm	13.57	**-3.68**	3.68	5.9927	5.9927	30.11	0.2326	0.0067	**0.4823**	14.43	66	14	59	4	62	205	32	
85	Area	1	Yes	ghcn cams grid	7.67	**3.38**	3.38	0.2247	4.4504	0.36	0.0051	-0.1740	0.0714	10.64	21	11	53	65	31	181	18	
86	Area	1	Yes	ssmi	11.80	5.69	5.69	1.8212	1.8212	15.31	0.2016	-0.0121	**0.4490**	13.78	58	37	22	7	60	184	20	
87	Area	1	Yes	opi2	10.64	6.00	6.00	0.4032	2.4802	0.28	0.0152	-0.3208	0.1234	12.53	50	38	41	56	54	239	45	
88	Area	1	Yes	opi3	9.70	4.89	4.89	**0.7662**	1.3051	2.91	0.0716	-0.1362	0.2676	11.62	45	29	13	24	42	153	11	
89	Area	1	Yes	cmap	9.32	**3.11**	3.11	0.5102	1.9600	-0.17	0.0362	-0.0785	0.1903	11.32	37	9	32	37	38	153	10	
90	Area	1	Yes	cmap2	9.26	**2.91**	2.91	0.4973	2.0109	-0.36	0.0330	-0.0717	0.1818	11.29	36	7	35	43	37	158	12	
91	Area	1	No	reanalysis	**5.23**	4.08	4.08	-0.0415		-1.18	0.0619	-74.0112	-0.2488	**5.96**	8	17	94	104	8	231	41	
92	Area	1	No	gpcp	**4.33**	**2.24**	2.24	-0.0166		-1.42	0.0074	-34.2472	-0.0862	**5.29**	4	6	91	97	5	203	30	
93	Area	1	No	gpcc	7.31	7.31	7.31	-0.0250		-1.24	0.2345	-999.0000	-0.4842	8.05	19	54	93	109	19	294	65	
94	Area	1	No	gpcc trmm	**4.88**	4.88	4.88	-0.5279		-5.46	0.3254	-22.8746	-0.5704	**5.27**	5	28	114	111	4	262	52	
95	Area	1	No	ghcn cams grid	**3.51**	**2.92**	2.92	0.0408	24.5098	-0.82	0.0339	-36.5007	0.1842	**4.24**	1	8	63	41	1	114	1	
96	Area	1	No	ssmi	10.20	10.20	10.20	-0.1112		-2.82	0.1033	-86.3497	-0.3213	10.92	48	68	107	105	32	360	83	
97	Area	1	No	opi2	8.22	8.22	8.22	0.0276	36.2319	-1.10	0.0107	-98.5492	0.1036	8.88	24	57	64	58	21	224	39	
98	Area	1	No	opi3	7.32	7.11	7.11	0.0106	94.3396	-1.27	0.0021	-81.7401	0.0454	8.10	20	49	70	72	20	231	42	
99	Area	1	No	cmap	**5.94**	5.33	5.33	-0.0079		-1.41	0.0013	-57.0773	-0.0359	**6.78**	12	34	83	88	12	229	40	
100	Area	1	No	cmap2	**5.73**	5.13	5.13	-0.0117		-1.44	0.0027	-53.6954	-0.0522	**6.58**	11	33	88	91	11	234	43	
101	Area	2	Yes	reanalysis	24.38	6.59	6.59	2.6093	2.6093	25.84	0.1602	0.0598	**0.4002**	32.14	98	43	44	11	98	294	66	

Southwest United States - Yearly Surface

OI	Runoff Meth	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
102	**Area**	2	Yes	gpcp	24.70	6.89	6.89	**1.3042**	1.3042	10.62	0.0514	0.0054	0.2268	33.06	100	47	12	28	99	286	61	
103	**Area**	2	Yes	gpcc	16.35	4.90	4.90	1.7295	1.7295	13.12	0.1626	0.0836	**0.4033**	20.96	78	30	19	10	83	220	38	
104	**Area**	2	Yes	gpcc trmm	17.45	4.82	4.82	-4.5942		-107.75	0.4837	-0.3155	-0.6955	19.31	80	27	118	112	77	414	96	
105	**Area**	2	Yes	ghcn cams grid	24.64	8.30	8.30	**0.7825**	1.2780	5.32	0.0246	-0.0400	0.1569	33.80	99	58	10	48	102	317	71	
106	**Area**	2	Yes	ssmi	24.27	18.70	18.70	0.2041	4.8996	3.81	0.0025	-0.5802	0.0502	31.86	96	108	54	71	97	426	98	
107	**Area**	2	Yes	opi2	25.46	12.88	12.88	0.5271	1.8972	4.25	0.0157	-0.1478	0.1253	35.51	109	83	25	55	111	383	89	
108	**Area**	2	Yes	opi3	25.36	11.77	11.77	**1.0191**	1.0191	12.10	0.0402	-0.0858	0.2006	34.54	106	78	2	34	105	325	75	
109	**Area**	2	Yes	cmap	25.03	9.99	9.99	**1.0715**	1.0715	11.09	0.0411	-0.0499	0.2027	33.97	102	67	4	30	104	307	69	
110	**Area**	2	Yes	cmap2	24.96	9.79	9.79	**1.0792**	1.0792	10.99	0.0409	-0.0464	0.2024	33.91	101	66	5	31	103	306	68	
111	**Area**	2	No	reanalysis	10.65	10.65	10.65	0.5010	1.9960	4.68	0.3691	-6.4494	**0.6075**	11.44	51	74	34	1	40	200	28	
112	**Area**	2	No	gpcp	10.96	10.96	10.96	0.2462	4.0617	1.71	0.1146	-7.7884	0.3385	12.43	53	76	50	21	53	253	49	
113	**Area**	2	No	gpcc	10.73	10.73	10.73	-0.0080		-0.63	0.0013	-107.0151	-0.0356	11.96	52	75	84	87	47	345	82	
114	**Area**	2	No	gpcc trmm	20.99	20.99	20.99	-0.3706		-6.60	0.6602	-334.2063	-0.8125	21.28	90	114	112	118	84	518	114	
115	**Area**	2	No	ghcn cams grid	12.36	12.36	12.36	0.2791	3.5829	2.50	0.1958	-9.8062	**0.4425**	13.78	61	82	48	8	61	260	50	
116	**Area**	2	No	ssmi	18.71	18.71	18.71	-0.1550		-2.90	0.6226	-267.6742	-0.7890	20.06	85	109	108	115	82	499	113	
117	**Area**	2	No	opi2	16.94	16.94	16.94	0.1810	5.5249	1.99	0.1158	-18.5811	0.3403	18.55	79	103	56	20	76	334	77	
118	**Area**	2	No	opi3	15.83	15.83	15.83	0.1980	5.0505	2.08	0.0949	-15.7232	0.3081	17.15	73	98	55	22	73	321	73	
119	**Area**	2	No	cmap	14.05	14.05	14.05	0.2279	4.3879	2.19	0.1162	-12.4523	0.3409	15.38	68	91	52	19	68	298	67	
120	**Area**	2	No	cmap2	13.85	13.85	13.85	0.2395	4.1754	2.32	0.1261	-12.0557	**0.3551**	15.15	67	90	51	15	67	290	63	

Amazon Basin - Monthly Atmospheric																				
OI	Runoff	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	***Surface***	*1*	*Yes*	*reanalysis*	*111.99*	*46.36*	*3.9939*	*-151.99*	*0.6583*	*0.2531*	***0.8113***	***109.17***	*7*	*14*	*26*	*4*	*2*	*53*	*8*	Plot
2	**Surface**	1	Yes	gpcp	**105.31**	20.71	**1.7158**	-22.96	0.3042	0.2513	0.5516	111.48	2	6	2	25	6	41	5	
3	**Surface**	1	Yes	gpcc	**95.51**	**-1.23**	2.4461	-40.30	0.4130	0.2686	0.6426	115.90	1	1	11	18	9	40	4	
4	**Surface**	1	Yes	gpcc trmm	157.61	98.69	2.4789	-57.27	0.2684	0.1692	0.5181	166.67	13	20	12	26	13	84	20	
5	**Surface**	1	Yes	ghcn cams grid	119.66	62.93	**1.8153**	-74.18	0.3382	0.2047	0.5815	112.66	9	16	3	21	8	57	10	
6	**Surface**	1	Yes	gpi	114.81	82.56	**1.4802**	-98.07	0.6376	0.3964	**0.7985**	**105.28**	8	18	1	5	1	33	1	
7	**Surface**	1	Yes	trmm 3a46	160.43	123.19	2.5675	-244.08	0.5882	-0.1704	0.7669	181.48	17	25	13	7	23	85	21	
8	**Surface**	1	Yes	trmm 3b43	160.43	105.77	2.2315	-161.54	0.3791	-0.1254	0.6157	179.90	18	22	10	19	21	90	23	
9	**Surface**	1	Yes	ssmi	127.26	63.78	1.9732	-87.85	0.4561	0.3131	0.6753	117.48	10	17	7	17	10	61	11	
10	**Surface**	1	Yes	opi2	**106.50**	**16.41**	2.1791	-20.17	0.3747	0.2608	0.6121	**110.76**	3	2	9	20	3	37	2	
11	***Surface***	*1*	*Yes*	*opi3*	*108.22*	***18.03***	*1.9602*	*-19.97*	*0.3270*	*0.2465*	*0.5718*	*111.83*	*6*	*3*	*6*	*24*	*7*	*46*	*7*	
12	***Surface***	*1*	*Yes*	*cmap*	***106.86***	***18.56***	***1.9498***	*-24.74*	*0.3371*	*0.2565*	*0.5806*	***111.08***	*4*	*4*	*5*	*22*	*4*	*39*	*3*	Plot
13	**Surface**	1	Yes	cmap2	**107.27**	**18.66**	**1.9053**	-23.22	0.3276	0.2530	0.5724	**111.35**	5	5	4	23	5	42	6	
14	***Surface***	*2*	*Yes*	*reanalysis*	*145.51*	*42.49*	*3.2774*	*-136.06*	*0.7933*	*0.3993*	***0.8907***	*157.70*	*12*	*13*	*16*	*1*	*11*	*53*	*9*	Plot
15	**Surface**	2	Yes	gpcp	160.08	36.05	3.1746	-100.87	0.5049	0.2646	0.7105	174.49	14	12	15	15	16	72	15	
16	**Surface**	2	Yes	gpcc	143.68	24.91	3.3965	-75.59	0.4792	0.2367	0.6923	176.54	11	7	17	16	20	71	14	
17	**Surface**	2	Yes	gpcc trmm	198.12	106.02	3.9897	-220.40	0.5743	0.0594	0.7578	234.41	25	23	25	10	24	107	26	
18	**Surface**	2	Yes	ghcn cams grid	161.11	49.05	3.5078	-162.08	0.5844	0.2701	0.7644	173.83	21	15	19	8	14	77	17	
19	**Surface**	2	Yes	gpi	161.59	104.49	2.1525	-193.24	0.6886	0.3207	**0.8298**	164.93	22	21	8	3	12	66	12	
20	**Surface**	2	Yes	trmm 3a46	206.57	135.70	3.7977	-357.56	0.7171	0.0092	**0.8468**	239.25	26	26	24	2	26	104	25	
21	**Surface**	2	Yes	trmm 3b43	197.95	115.90	3.6997	-245.86	0.6067	0.0537	0.7789	235.12	24	24	22	6	25	101	24	
22	**Surface**	2	Yes	ssmi	177.81	84.71	2.9241	-193.15	0.5466	0.2462	0.7394	180.33	23	19	14	11	22	89	22	
23	**Surface**	2	Yes	opi2	160.24	28.61	3.7808	-94.89	0.5779	0.2649	0.7602	174.44	16	8	23	9	15	71	13	
24	**Surface**	2	Yes	opi3	160.44	30.10	3.5740	-97.38	0.5356	0.2568	0.7318	175.40	19	9	21	13	19	81	19	
25	**Surface**	2	Yes	cmap	160.23	32.33	3.5313	-105.00	0.5437	0.2624	0.7373	174.74	15	10	20	12	17	74	16	
26	**Surface**	2	Yes	cmap2	160.58	32.39	3.4770	-102.55	0.5342	0.2612	0.7309	174.88	20	11	18	14	18	81	18	

Amazon Basin - Yearly Atmospheric

OI	Runoff	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	*Surface*	*1*	*Yes*	*reanalysis*	*60.15*	*46.43*	*2.0482*	*2.0482*	*-68.69*	*0.4205*	*-0.1661*	*0.6485*	*37.20*	*9*	*14*	*12*	*8*	*8*	*51*	*6*	Plot
2	Surface	1	Yes	gpcp	**40.71**	20.74	0.2247	4.4504	25.23	0.0073	-0.0798	0.0855	**31.78**	5	6	16	21	4	52	8	
3	Surface	1	Yes	gpcc	**26.93**	**-1.15**	**0.8523**	1.1733	5.39	0.0445	0.0420	0.2109	**32.80**	1	1	1	17	5	25	2	
4	Surface	1	Yes	gpcc trmm	89.11	89.11	3.7474	3.7474	-189.16	0.7875	-2.5682	0.8874	98.29	19	20	15	6	21	81	17	
5	Surface	1	Yes	ghcn cams grid	72.81	61.63	0.5344	1.8713	7.97	0.0341	-0.1833	0.1846	33.27	16	16	11	19	6	68	13	
6	Surface	1	Yes	gpi	82.67	82.67	0.6316	1.5833	-24.76	0.0589	-2.8154	0.2428	65.46	18	18	10	14	18	78	16	
7	Surface	1	Yes	trmm 3a46	118.36	118.36	4.7411	4.7411	-404.47	0.9408	-4.1024	**0.9699**	126.63	25	25	18	1	24	93	22	
8	Surface	1	Yes	trmm 3b43	105.85	105.85	4.6786	4.6786	-272.46	0.9088	-4.2945	**0.9533**	113.05	22	22	17	4	22	87	19	
9	Surface	1	Yes	ssmi	73.69	67.64	-0.7057		82.17	0.0501	-0.9311	-0.2238	45.80	17	17	25	25	10	94	23	
10	Surface	1	Yes	opi2	41.39	**13.30**	0.1181	8.4674	29.63	0.0027	-0.2199	0.0516	33.78	6	2	22	22	7	59	12	
11	Surface	1	Yes	opi3	**38.81**	**14.79**	0.6890	1.4514	14.05	0.0609	0.0134	0.2467	**30.38**	4	3	7	13	3	30	4	
12	*Surface*	*1*	*Yes*	*cmap*	***38.38***	***17.02***	***0.7358***	*1.3591*	*10.89*	*0.0700*	*0.0504*	*0.2646*	***29.80***	*2*	*4*	*3*	*11*	*1*	*21*	*1*	Plot
13	Surface	1	Yes	cmap2	**38.71**	**17.08**	0.6882	1.4531	12.37	0.0637	0.0393	0.2523	**29.98**	3	5	8	12	2	30	3	
14	*Surface*	*2*	*Yes*	*reanalysis*	*52.38*	*42.47*	*2.2662*	*2.2662*	*-85.02*	*0.7378*	*0.3346*	*0.8590*	*41.60*	*8*	*13*	*13*	*7*	*9*	*50*	*5*	Plot
15	Surface	2	Yes	gpcp	64.28	36.03	-0.6133		54.29	0.0112	-0.1194	-0.1058	53.96	14	12	24	24	16	90	20	
16	Surface	2	Yes	gpcc	47.84	24.84	3.5079	3.5079	-120.56	0.1744	-0.1717	0.4176	53.03	7	7	14	9	14	51	7	
17	Surface	2	Yes	gpcc trmm	106.23	106.23	5.5012	5.5012	-278.44	0.9163	-2.5706	**0.9572**	118.42	23	23	19	3	23	91	21	
18	Surface	2	Yes	ghcn cams grid	67.26	49.03	**0.7844**	1.2749	-13.56	0.0177	-0.2301	0.1329	56.56	15	15	2	20	17	69	14	
19	Surface	2	Yes	gpi	104.75	104.52	**1.3662**	1.3662	-117.74	0.0916	-2.7580	0.3026	94.97	21	21	4	10	20	76	15	
20	Surface	2	Yes	trmm 3a46	139.77	139.77	6.3735	6.3735	-559.98	0.8171	-3.6149	**0.9040**	153.00	26	26	21	5	26	104	25	
21	Surface	2	Yes	trmm 3b43	116.11	116.11	6.2428	6.2428	-368.51	0.9226	-3.1610	**0.9605**	127.84	24	24	20	2	25	95	24	
22	Surface	2	Yes	ssmi	95.17	88.12	-1.8134		150.55	0.0737	-1.1891	-0.2715	76.52	20	19	26	26	19	110	26	
23	Surface	2	Yes	opi2	63.67	28.59	-0.1934		35.53	0.0022	-0.0879	-0.0473	53.19	13	8	23	23	15	82	18	
24	Surface	2	Yes	opi3	60.40	30.09	**1.3797**	1.3797	-19.64	0.0429	0.0248	0.2070	50.36	10	9	5	18	11	53	9	
25	Surface	2	Yes	cmap	60.63	32.32	1.5731	1.5731	-30.55	0.0560	0.0189	0.2366	50.52	11	10	9	15	12	57	10	
26	Surface	2	Yes	cmap2	60.86	32.38	1.3806	1.3806	-23.09	0.0454	0.0130	0.2130	50.67	12	11	6	16	13	58	11	

Amazon Basin - Monthly Surface

OI	Runoff	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	*Surface*	*1*	*Yes*	*reanalysis*	*54.25*	*54.21*	*54.21*	*0.5913*	*1.6912*	*-14.54*	*0.4211*	*-4.2415*	*0.6489*	*58.75*	*92*	*136*	*100*	*66*	*48*	*442*	*61*	Plot
2	Surface	1	Yes	gpcp	63.04	62.08	62.08	0.7346	1.3613	-37.03	0.2553	-2.0250	0.5052	72.03	175	196	65	80	161	677	147	
3	Surface	1	Yes	gpcc	68.25	68.20	68.20	0.6864	1.4569	-37.81	0.2870	-3.4424	0.5358	75.04	210	226	78	77	190	781	176	
4	Surface	1	Yes	ghcn cams grid	48.08	45.65	45.65	0.7839	1.2757	-24.68	0.2976	-0.9974	0.5456	57.20	55	102	44	75	40	316	28	
5	Surface	1	Yes	gpi	45.86	**10.43**	10.43	2.1766	2.1766	-124.46	0.6846	0.4642	**0.8274**	53.51	34	7	110	9	27	187	14	
6	Surface	1	Yes	ssmi	**37.26**	**32.81**	32.81	1.3623	1.3623	-67.97	0.6732	0.1681	**0.8205**	**44.25**	4	25	66	12	4	111	2	
7	Surface	1	Yes	opi2	70.30	70.23	70.23	0.6818	1.4667	-40.20	0.2880	-3.5407	0.5367	77.12	224	242	79	76	202	823	186	
8	Surface	1	Yes	opi3	68.58	67.64	67.64	0.6536	1.5300	-34.94	0.2454	-3.0626	0.4954	75.75	214	222	90	83	194	803	179	
9	Surface	1	Yes	cmap	66.24	65.05	65.05	0.6766	1.4780	-34.53	0.2524	-2.6803	0.5024	73.60	195	212	82	81	176	746	166	
10	Surface	1	Yes	cmap2	66.40	65.16	65.16	0.6809	1.4686	-35.04	0.2511	-2.6385	0.5011	73.82	199	216	80	82	178	755	170	
11	Surface	1	No	reanalysis	54.98	54.14	54.14	-0.0401		46.74	0.0016	-5.5136	-0.0398	65.50	105	134	187	186	105	717	157	
12	Surface	1	No	gpcp	63.36	62.08	62.08	0.6935	1.4420	-33.14	0.1774	-2.1038	0.4212	72.97	176	195	77	108	170	726	158	
13	Surface	1	No	gpcc	68.68	68.21	68.21	0.6057	1.6510	-29.99	0.2002	-3.5552	0.4474	75.99	216	227	99	95	195	832	190	
14	Surface	1	No	ghcn cams grid	49.69	45.58	45.58	0.6490	1.5408	-11.54	0.1668	-1.1505	0.4084	59.35	68	100	92	111	53	424	52	
15	Surface	1	No	gpi	65.97	**10.44**	10.44	0.0372	26.8817	82.87	0.0002	-0.1402	0.0134	78.06	194	8	165	180	205	752	167	
16	Surface	1	No	ssmi	47.15	32.91	32.91	0.2649	3.7750	38.49	0.0218	-0.6063	0.1476	61.49	48	26	118	149	72	413	50	
17	Surface	1	No	opi2	70.43	70.23	70.23	0.6792	1.4723	-39.94	0.2229	-3.5923	0.4721	77.55	226	241	81	90	204	842	193	
18	Surface	1	No	opi3	68.65	67.63	67.63	0.6449	1.5506	-34.11	0.1863	-3.1088	0.4317	76.18	215	221	94	100	196	826	188	
19	Surface	1	No	cmap	66.26	65.04	65.04	0.6461	1.5477	-31.64	0.1795	-2.7490	0.4237	74.28	196	210	93	106	181	786	177	
20	Surface	1	No	cmap2	66.42	65.15	65.15	0.6691	1.4945	-33.92	0.1891	-2.6911	0.4349	74.36	200	214	84	99	182	779	175	
21	Surface	1	1 mon	reanalysis	54.41	54.20	54.20	0.3261	3.0665	11.19	0.1046	-4.7901	0.3234	61.84	98	135	116	126	73	548	95	
22	Surface	1	1 mon	gpcp	62.52	62.08	62.08	**1.1579**	1.1579	-76.98	0.4945	-1.7513	0.7032	68.86	171	197	21	52	135	576	104	
23	Surface	1	1 mon	gpcc	68.49	68.26	68.26	**0.9754**	1.0252	-65.88	0.5188	-3.1299	0.7203	72.63	213	228	3	48	165	657	134	
24	Surface	1	1 mon	ghcn cams grid	47.36	45.57	45.57	**1.1615**	1.1615	-61.25	0.5339	-0.7413	0.7307	53.47	50	99	22	41	26	238	20	
25	Surface	1	1 mon	gpi	55.21	**10.65**	10.65	1.3021	1.3021	-39.95	0.2195	0.1866	0.4685	66.16	106	9	52	91	114	372	40	
26	Surface	1	1 mon	ssmi	**41.95**	33.13	33.13	**0.9384**	1.0656	-27.14	0.2731	-0.1896	0.5226	**53.19**	14	27	10	78	24	153	9	
27	Surface	1	1 mon	opi2	70.29	70.29	70.29	**1.0850**	1.0850	-78.31	0.5691	-3.1918	0.7544	74.24	223	243	13	34	180	693	153	
28	Surface	1	1 mon	opi3	68.22	67.62	67.62	**1.0424**	1.0424	-71.62	0.4869	-2.7366	0.6978	72.81	208	220	8	55	167	658	136	
29	Surface	1	1 mon	cmap	65.73	65.03	65.03	**1.0601**	1.0601	-70.70	0.4832	-2.3787	0.6951	70.68	189	209	9	56	149	612	119	
30	Surface	1	1 mon	cmap2	65.86	65.14	65.14	**1.0818**	1.0818	-72.86	0.4944	-2.3281	0.7031	70.77	191	213	12	53	150	619	122	
31	Surface	1	2 mon	reanalysis	54.39	54.29	54.29	0.5839	1.7126	-13.90	0.3356	-4.2879	0.5793	59.16	97	138	102	71	50	458	70	
32	Surface	1	2 mon	gpcp	62.33	62.16	62.16	1.3023	1.3023	-90.69	0.6258	-1.6406	**0.7911**	67.60	168	198	53	23	124	566	100	
33	Surface	1	2 mon	gpcc	68.30	68.30	68.30	**1.1159**	1.1159	-79.54	0.6790	-2.9531	**0.8240**	71.33	212	229	16	11	156	624	125	
34	Surface	1	2 mon	ghcn cams grid	46.45	45.60	45.60	1.3533	1.3533	-79.90	0.7244	-0.5877	**0.8511**	**51.14**	41	101	64	4	17	227	17	
35	Surface	1	2 mon	gpi	48.10	**11.29**	11.29	2.0984	2.0984	-117.82	0.5752	0.3939	0.7584	57.07	56	11	109	32	39	247	22	
36	Surface	1	2 mon	ssmi	**38.66**	33.91	33.91	1.3640	1.3640	-69.46	0.5765	0.0525	0.7592	**47.50**	6	30	67	31	8	142	7	
37	Surface	1	2 mon	opi2	70.36	70.36	70.36	1.2333	1.2333	-92.38	0.7356	-3.0400	**0.8577**	73.04	225	244	37	3	171	680	148	
38	Surface	1	2 mon	opi3	68.26	67.64	67.64	**1.1558**	1.1558	-82.34	0.5985	-2.6218	0.7736	71.85	211	223	20	28	159	641	130	
39	Surface	1	2 mon	cmap	65.74	65.04	65.04	1.1831	1.1831	-82.33	0.6018	-2.2608	0.7758	69.60	190	211	28	27	140	596	114	
40	Surface	1	2 mon	cmap2	65.89	65.15	65.15	1.1968	1.1968	-83.73	0.6050	-2.2193	0.7778	69.76	192	215	31	26	141	605	117	
41	Surface	1	3 mon	reanalysis	54.28	54.26	54.26	0.6578	1.5202	-21.06	0.4255	-4.1258	0.6523	58.33	**94**	137	88	65	47	431	55	
42	Surface	1	3 mon	gpcp	62.48	61.97	61.97	**1.0970**	1.0970	-71.12	0.4422	-1.7714	0.6650	69.40	170	194	15	64	139	582	107	
43	Surface	1	3 mon	gpcc	67.97	67.97	67.97	**0.9618**	1.0397	-64.27	0.5016	-3.0674	0.7082	72.57	205	225	5	50	163	648	132	
44	Surface	1	3 mon	ghcn cams grid	46.91	45.53	45.53	1.2144	1.2144	-66.33	0.5826	-0.6905	0.7633	**52.85**	46	98	34	30	23	231	18	
45	Surface	1	3 mon	gpi	46.36	**11.37**	11.37	2.2486	2.2486	-132.21	0.6568	0.4304	**0.8104**	55.48	40	12	111	20	34	217	16	
46	Surface	1	3 mon	ssmi	**40.22**	33.79	33.79	1.3492	1.3492	-67.83	0.5604	0.0483	0.7486	**47.85**	9	29	62	38	10	148	8	
47	Surface	1	3 mon	opi2	70.14	70.14	70.14	**1.0416**	1.0416	-74.07	0.5230	-3.1922	0.7232	74.52	222	240	6	46	187	701	155	
48	Surface	1	3 mon	opi3	68.16	67.43	67.43	**0.9595**	1.0422	-63.61	0.4108	-2.7684	0.6410	73.42	207	218	7	68	175	675	146	
49	Surface	1	3 mon	cmap	65.72	64.84	64.84	**0.9849**	1.0153	-63.41	0.4154	-2.4045	0.6445	71.25	188	207	2	67	155	619	123	
50	Surface	1	3 mon	cmap2	65.91	64.96	64.96	**0.9864**	1.0138	-63.68	0.4093	-2.3711	0.6398	71.53	193	208	1	69	157	628	126	
51	Surface	1	4 mon	reanalysis	54.33	54.12	54.12	0.5701	1.7541	-12.45	0.3189	-4.2682	0.5647	59.18	95	133	105	73	51	457	69	
52	Surface	1	4 mon	gpcp	64.00	61.63	61.63	0.6551	1.5265	-29.18	0.1564	-2.0693	0.3955	73.09	177	189	89	112	172	739	162	
53	Surface	1	4 mon	gpcc	68.25	67.45	67.45	0.6317	1.5830	-31.90	0.2153	-3.3689	0.4640	75.24	209	219	97	93	191	809	181	
54	Surface	1	4 mon	ghcn cams grid	49.44	45.30	45.30	0.8062	1.2404	-26.51	0.2569	-1.0014	0.5068	57.47	67	97	39	79	41	323	30	
55	Surface	1	4 mon	gpi	49.29	**10.77**	10.77	1.8856	1.8856	-96.27	0.4578	0.3354	0.6766	60.08	63	10	107	62	62	304	26	
56	Surface	1	4 mon	ssmi	44.62	33.55	33.55	**1.0299**	1.0299	-36.45	0.3262	-0.1368	0.5712	**52.58**	30	28	4	72	22	156	10	
57	Surface	1	4 mon	opi2	70.05	69.78	69.78	0.6626	1.5092	-38.03	0.2104	-3.5221	0.4587	77.38	221	234	86	94	203	838	192	
58	Surface	1	4 mon	opi3	68.83	67.12	67.12	0.5714	1.7501	-26.78	0.1445	-3.0791	0.3801	76.47	217	217	104	115	199	852	194	
59	Surface	1	4 mon	cmap	66.66	64.51	64.51	0.5897	1.6958	-25.90	0.1477	-2.7105	0.3843	74.44	201	205	101	113	186	806	180	
60	Surface	1	4 mon	cmap2	66.94	64.64	64.64	0.5800	1.7241	-25.12	0.1403	-2.6806	0.3746	74.82	202	206	103	117	188	816	184	
61	*Surface*	*2*	*Yes*	*reanalysis*	*50.76*	*44.04*	*44.04*	*1.3354*	*1.3354*	*-75.71*	*0.4889*	*-0.1762*	*0.6992*	*59.97*	*77*	*89*	*61*	*54*	*60*	*341*	*32*	Plot
62	Surface	2	Yes	gpcp	54.42	53.49	53.49	1.2752	1.2752	-79.48	0.6573	-0.7530	**0.8107**	60.30	99	132	43	19	63	356	37	
63	Surface	2	Yes	gpcc	58.74	58.47	58.47	**1.1495**	1.1495	-74.88	0.6515	-1.5069	**0.8072**	65.21	131	167	19	21	102	440	60	
64	Surface	2	Yes	ghcn cams grid	**41.66**	39.93	39.93	1.3017	1.3017	-68.42	0.7224	-0.1273	**0.8499**	**47.08**	13	60	51	6	6	136	4	
65	Surface	2	Yes	gpi	52.08	**0.71**	0.71	1.8096	1.8096	-78.95	0.4771	0.3815	0.6907	59.84	83	1	106	59	57	306	27	
66	*Surface*	*2*	*Yes*	*ssmi*	***33.00***	***24.36***	*24.36*	*1.2725*	*1.2725*	*-50.92*	*0.5649*	*0.3238*	*0.7516*	***43.18***	*1*	*16*	*42*	*37*	*2*	*98*	*1*	Plot
67	Surface	2	Yes	opi2	61.75	61.64	61.64	1.1925	1.1925	-79.82	0.7123	-1.5764	**0.8440**	65.67	164	190	29	7	108	498	81	
68	Surface	2	Yes	opi3	60.23	59.04	59.04	**1.1719**	1.1719	-75.28	0.6632	-1.3594	**0.8144**	64.00	151	176	23	18	93	461	72	
69	Surface	2	Yes	cmap	57.86	56.46	56.46	1.1950	1.1950	-74.87	0.6633	-1.1204	**0.8144**	61.86	119	150	30	17	74	390	46	
70	Surface	2	Yes	cmap2	57.98	56.57	56.57	1.2083	1.2083	-76.24	0.6691	-1.1001	**0.8180**	61.98	121	154	33	14	76	398	48	
71	Surface	2	No	reanalysis	59.46	43.99	43.99	0.2803	3.5676	23.94	0.0163	-0.7239	0.1275	72.60	140	88	117	155	164	664	138	
72	Surface	2	No	gpcp	56.43	53.44	53.44	0.7759	1.2888	-32.29	0.1837	-1.2089	0.4286	67.68	113	129	48	105	125	520	88	
73	Surface	2	No	gpcc	60.26	58.75	58.75	0.6725	1.4870	-28.32	0.1843	-1.9868	0.4294	71.18	152	170	83	104	154	663	137	
74	Surface	2	No	ghcn cams grid	46.84	39.88	39.88	0.7733	1.2932	-18.48	0.1924	-0.6331	0.4387	56.67	45	59	50	98	38	290	24	
75	Surface	2	No	gpi	70.61	**0.99**	0.99	0.0910	10.9890	87.11	0.0010	-0.0951	0.0310	80.78	227	3	151	174	210	765	172	
76	Surface	2	No	ssmi	46.46	**24.00**	24.00	0.3290	3.0395	41.17	0.0287	-0.2995	0.1694	59.87	42	13	115	147	58	375	43	
77	Surface	2	No	opi2	62.69	61.59	61.59	0.7616	1.3130	-39.09	0.2193	-2.0688	0.4683	71.67	173	188	54	92	158	665	139	
78	Surface	2	No	opi3	61.25	59.00	59.00	0.7273	1.3749	-33.26	0.1928	-1.8393	0.4391	70.20	158	175	69	97	146	645	131	
79	Surface	2	No	cmap	58.96	56.41	56.41	0.7285	1.3727	-30.79	0.1861	-1.6028	0.4314	68.54	133	148	68	101	130	580	106	
80	Surface	2	No	cmap2	59.11	56.52	56.52	0.7515	1.3307	-33.07	0.1954	-1.5723	0.4420	68.60	134	152	59	96	132	573	102	
81	Surface	2	1 mon	reanalysis	54.62	44.08	44.08	**1.0732**	1.0732	-50.99	0.2385	-0.3956	0.4884	65.46	100	90	11	86	104	391	47	
82	Surface	2	1 mon	gpcp	54.98	53.45	53.45	1.3163	1.3163	-83.31	0.5287	-0.8728	0.7271	62.47	104	130	56	43	80	413	51	
83	Surface	2	1 mon	gpcc	59.43	58.79	58.79	**1.1380**	1.1380	-73.46	0.5278	-1.5921	0.7265	66.56	139	171	17	44	116	487	79	
84	Surface	2	1 mon	ghcn cams grid	**43.89**	39.83	39.83	1.3251	1.3251	-70.51	0.5653	-0.2721	0.7519	**50.12**	24	58	57	35	15	189	15	
85	Surface	2	1 mon	gpi	59.55	**1.19**	1.19	**1.4414**	1.4414	-43.99	0.2411	0.2183	0.4910	68.50	142	4	76	85	129	436	58	
86	Surface	2	1 mon	ssmi	**39.00**	**24.21**	24.21	**1.0864**	1.0864	-32.61	0.3123	0.1001	0.5588	**50.08**	7	15	14	74	14	124	3	
87	Surface	2	1 mon	opi2	62.11	61.65	61.65	1.2435	1.2435	-84.63	0.5848	-1.6991	0.7647	67.35	167	191	40	29	122	549	97	
88	Surface	2	1 mon	opi3	60.34	58.98	58.98	1.2009	1.2009	-77.94	0.5257	-1.4838	0.7251	65.81	154	174	32	45	111	516	87	
89	Surface	2	1 mon	cmap	58.04	56.39	56.39	1.2186	1.2186	-77.03	0.5206	-1.2500	0.7216	63.87	122	147	35	47	91	442	62	
90	Surface	2	1 mon	cmap2	58.19	56.50	56.50	1.2403	1.2403	-79.18	0.5322	-1.2249	0.7295	63.94	124	151	38	42	92	447	65	
91	Surface	2	2 mon	reanalysis	50.72	43.99	43.99	1.5549	1.5549	-96.38	0.5010	-0.1906	0.7078	60.57	76	87	95	51	64	373	41	
92	Surface	2	2 mon	gpcp	54.26	53.45	53.45	1.4988	1.4988	-100.54	0.6853	-0.7556	**0.8278**	60.62	93	131	85	8	65	382	44	
93	Surface	2	2 mon	gpcc	58.71	58.71	58.71	1.3310	1.3310	-92.12	0.7224	-1.4151	**0.8499**	64.47	130	169	60	5	98	462	73	
94	Surface	2	2 mon	ghcn cams grid	**42.20**	39.80	39.80	1.5177	1.5177	-88.67	0.7417	-0.1431	**0.8612**	**47.62**	16	57	87	2	9	171	12	
95	Surface	2	2 mon	gpi	51.58	**1.70**	1.70	2.2834	2.2834	-126.18	0.6083	0.4156	0.7799	59.29	79	6	112	25	52	274	23	
96	Surface	2	2 mon	ssmi	**34.02**	**24.82**	24.82	1.5584	1.5584	-79.36	0.6384	0.3369	**0.7990**	**43.14**	2	18	96	22	1	139	6	
97	Surface	2	2 mon	opi2	61.74	61.65	61.65	1.4298	1.4298	-102.23	0.7732	-1.5479	**0.8793**	65.59	163	192	75	1	107	538	90	
98	Surface	2	2 mon	opi3	60.00	58.93	58.93	1.3523	1.3523	-92.19	0.6669	-1.3615	**0.8167**	64.31	147	173	63	16	96	495	80	
99	Surface	2	2 mon	cmap	57.59	56.34	56.34	1.3796	1.3796	-92.18	0.6677	-1.1262	**0.8171**	62.22	117	146	70	15	78	426	54	
100	Surface	2	2 mon	cmap2	57.73	56.45	56.45	1.3933	1.3933	-93.58	0.6718	-1.1085	**0.8197**	62.38	118	149	72	13	79	431	56	
101	Surface	2	3 mon	reanalysis	49.93	43.78	43.78	1.6174	1.6174	-101.98	0.5397	-0.1582	0.7347	59.87	71	86	98	40	59	354	36	

Amazon Basin - Monthly Surface

OI	Runoff	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR
102	Surface	2	3 mon	gpcp	54.88	53.19	53.19	1.2844	1.2844	-80.01	0.5018	-0.8709	0.7084	62.67	102	128	46	49	81	406	49
103	Surface	2	3 mon	gpcc	58.66	58.26	58.26	1.1742	1.1742	-76.45	0.5603	-1.5072	0.7485	65.82	128	165	26	39	112	470	75
104	Surface	2	3 mon	ghcn cams grid	**43.10**	39.60	39.60	1.3274	1.3274	-70.46	0.5650	-0.2567	0.7516	**50.03**	19	56	58	36	13	182	13
105	Surface	2	3 mon	gpi	49.29	**1.66**	1.66	2.4295	2.4295	-140.02	0.6839	0.4466	**0.8270**	57.90	62	5	113	10	46	236	19
106	Surface	2	3 mon	ssmi	**35.30**	**24.54**	24.54	1.5360	1.5360	-76.77	0.6161	0.3288	**0.7849**	**43.63**	3	17	91	24	3	138	5
107	Surface	2	3 mon	opi2	61.60	61.37	61.37	1.2291	1.2291	-82.96	0.5706	-1.6769	0.7554	67.27	162	187	36	33	120	538	91
108	Surface	2	3 mon	opi3	60.13	58.66	58.66	**1.1469**	1.1469	-72.51	0.4788	-1.4903	0.6919	66.10	150	168	18	58	113	507	82
109	Surface	2	3 mon	cmap	57.86	56.06	56.06	**1.1723**	1.1723	-72.31	0.4811	-1.2524	0.6936	64.10	120	141	24	57	95	437	59
110	Surface	2	3 mon	cmap2	58.05	56.18	56.18	**1.1739**	1.1739	-72.58	0.4757	-1.2414	0.6897	64.39	123	142	25	60	97	447	66
111	Surface	2	4 mon	reanalysis	51.72	43.24	43.24	1.2915	1.2915	-70.67	0.3433	-0.2807	0.5860	62.83	80	85	49	70	82	366	38
112	Surface	2	4 mon	gpcp	57.36	52.81	52.81	0.7832	1.2768	-32.41	0.1853	-1.1569	0.4304	67.31	116	127	45	102	121	511	84
113	Surface	2	4 mon	gpcc	59.53	57.66	57.66	0.7763	1.2882	-37.36	0.2446	-1.7933	0.4946	69.37	141	163	47	84	138	573	103
114	Surface	2	4 mon	ghcn cams grid	46.54	39.18	39.18	0.8500	1.1765	-25.06	0.2305	-0.5484	0.4801	55.49	43	51	27	89	35	245	21
115	Surface	2	4 mon	gpi	52.52	**0.98**	0.98	2.0125	2.0125	-98.72	0.4655	0.3476	0.6823	63.00	87	2	108	61	87	345	33
116	Surface	2	4 mon	ssmi	**43.88**	**24.10**	24.10	1.3150	1.3150	-55.00	0.4518	0.2194	0.6722	**47.29**	23	14	55	63	7	162	11
117	Surface	2	4 mon	opi2	61.80	60.96	60.96	0.7907	1.2647	-41.27	0.2350	-1.9833	0.4848	70.96	166	186	41	87	152	632	127
118	Surface	2	4 mon	opi3	61.76	58.30	58.30	0.6995	1.4296	-30.02	0.1768	-1.7913	0.4204	70.01	165	166	74	109	144	658	135
119	Surface	2	4 mon	cmap	59.77	55.69	55.69	0.7178	1.3931	-29.13	0.1791	-1.5480	0.4232	68.19	144	139	71	107	127	588	110
120	Surface	2	4 mon	cmap2	60.04	55.82	55.82	0.7081	1.4122	-28.36	0.1718	-1.5405	0.4145	68.58	148	140	73	110	131	602	116
121	Reanalysis	1	Yes	reanalysis	48.66	-40.58	40.58	0.3812	2.6233	-18.86	0.0814	-1.1219	0.2853	59.44	58	69	114	131	54	426	53
122	Reanalysis	1	Yes	gpcp	62.53	-42.00	42.00	-0.1298		-2.39	0.0190	-2.4711	-0.1379	76.35	172	76	218	199	197	862	197
123	Reanalysis	1	Yes	gpcc	54.85	**-32.71**	32.71	-0.0456		-2.68	0.0017	-1.6052	-0.0415	63.09	101	23	191	187	89	591	111
124	Reanalysis	1	Yes	gpcc trmm	74.83	-52.29	52.29	-0.4012		-0.72	0.1293	-2.7141	-0.3596	89.56	239	124	273	232	233	1101	242
125	Reanalysis	1	Yes	ghcn cams grid	69.39	-57.56	57.56	-0.0608		-2.52	0.0037	-3.1132	-0.0607	82.62	219	162	201	188	218	988	219
126	Reanalysis	1	Yes	gpi	92.02	-89.72	89.72	0.1979	5.0531	-24.30	0.1132	-6.3027	0.3364	113.58	253	257	124	124	255	1013	227
127	Reanalysis	1	Yes	trmm 3a46	100.87	-99.41	99.41	-0.0712		-16.79	0.0059	-5.9178	-0.0768	122.08	266	273	203	189	269	1200	261
128	Reanalysis	1	Yes	trmm 3b43	80.72	-60.65	60.65	-0.3697		1.38	0.1408	-3.5237	-0.3753	98.04	249	184	272	234	249	1188	258
129	Reanalysis	1	Yes	ssmi	72.30	-70.08	70.08	0.2075	4.8193	-21.74	0.0523	-3.3854	0.2287	89.73	231	238	121	138	234	962	213
130	Reanalysis	1	Yes	opi2	58.44	-35.50	35.50	-0.1614		-3.07	0.0237	-1.9621	-0.1539	70.09	126	36	231	203	145	741	163
131	Reanalysis	1	Yes	opi3	59.39	-37.12	37.12	-0.1579		-2.92	0.0243	-2.1159	-0.1560	71.89	138	42	229	204	160	773	173
132	Reanalysis	1	Yes	cmap	60.51	-39.41	39.41	-0.1436		-2.71	0.0203	-2.2016	-0.1424	72.89	155	54	225	200	168	802	178
133	Reanalysis	1	Yes	cmap2	60.67	-39.51	39.51	-0.1495		-2.51	0.0223	-2.2350	-0.1493	73.27	157	55	227	202	173	814	182
134	Reanalysis	1	No	reanalysis	44.63	-40.51	40.51	-0.2372		2.91	0.3614	-20.7739	-0.6012	56.22	31	68	255	264	37	655	133
135	Reanalysis	1	No	gpcp	52.54	-42.08	42.08	-0.2243		0.84	0.3878	-18.3658	-0.6227	69.00	88	78	252	268	137	823	185
136	Reanalysis	1	No	gpcc	**41.96**	**-32.70**	32.70	-0.1333		-0.15	0.5321	-63.1398	-0.7294	**52.12**	15	22	221	275	21	554	99
137	Reanalysis	1	No	gpcc trmm	60.59	-52.09	52.09	-0.4350		0.71	0.4603	-8.3543	-0.6785	81.68	156	122	275	273	214	1040	231
138	Reanalysis	1	No	ghcn cams grid	60.32	-57.31	57.31	-0.1877		4.32	0.3996	-38.1308	-0.6322	75.52	153	157	239	270	192	1011	226
139	Reanalysis	1	No	gpi	100.78	-89.53	89.53	-0.1205		1.86	0.2390	-46.2382	-0.4888	121.09	264	255	216	253	264	1252	269
140	Reanalysis	1	No	trmm 3a46	99.45	-96.69	96.69	-0.4660		16.37	0.6139	-15.9892	-0.7835	122.84	257	263	276	276	271	1343	276
141	Reanalysis	1	No	trmm 3b43	67.28	-60.46	60.46	-0.4030		3.08	0.5064	-10.8361	-0.7116	91.17	204	183	274	274	240	1175	255
142	Reanalysis	1	No	ssmi	75.37	-69.80	69.80	-0.1970		3.20	0.2370	-21.8449	-0.4868	91.37	241	235	244	252	241	1213	263
143	Reanalysis	1	No	opi2	46.13	-34.88	34.88	-0.2591		0.28	0.4213	-14.5900	-0.6491	61.20	38	31	259	272	69	669	140
144	Reanalysis	1	No	opi3	47.35	-36.50	36.50	-0.2394		0.12	0.3864	-15.5162	-0.6216	62.99	49	37	256	267	86	695	154
145	Reanalysis	1	No	cmap	49.11	-39.11	39.11	-0.2340		0.49	0.3702	-16.2607	-0.6084	64.55	61	49	254	266	99	729	159
146	Reanalysis	1	No	cmap2	49.33	-39.20	39.20	-0.2305		0.40	0.3640	-16.3775	-0.6033	64.77	64	52	253	265	100	734	160
147	Reanalysis	1	1 mon	reanalysis	44.26	-40.43	40.43	-0.1866		1.14	0.2236	-20.1131	-0.4728	55.40	28	67	238	250	33	616	120
148	Reanalysis	1	1 mon	gpcp	51.77	-41.84	41.84	-0.1632		-1.33	0.2036	-17.2362	-0.4512	67.07	81	73	233	247	119	753	168
149	Reanalysis	1	1 mon	gpcc	**41.57**	**-32.60**	32.60	-0.1009		-1.00	0.3116	-62.2050	-0.5582	**51.38**	12	21	212	262	18	525	89
150	Reanalysis	1	1 mon	gpcc trmm	59.62	-52.10	52.10	-0.2829		-4.56	0.1953	-7.5801	-0.4419	78.70	143	123	264	245	208	983	216
151	Reanalysis	1	1 mon	ghcn cams grid	60.12	-57.35	57.35	-0.1368		1.71	0.2126	-37.0658	-0.4611	74.43	149	158	223	248	185	963	214
152	Reanalysis	1	1 mon	gpi	99.97	-89.27	89.27	-0.1110		1.09	0.2026	-45.6458	-0.4501	120.58	262	253	214	246	263	1238	268
153	Reanalysis	1	1 mon	trmm 3a46	99.75	-97.90	97.90	-0.3457		7.83	0.3269	-15.1962	-0.5718	121.19	261	269	271	263	266	1330	275
154	Reanalysis	1	1 mon	trmm 3b43	65.28	-59.46	59.46	-0.2729		-2.78	0.2297	-9.7433	-0.4792	87.37	186	179	263	251	227	1106	243
155	Reanalysis	1	1 mon	ssmi	74.78	-69.54	69.54	-0.1408		-0.19	0.1207	-20.9607	-0.3474	89.85	238	231	224	227	235	1155	253
156	Reanalysis	1	1 mon	opi2	45.55	-35.05	35.05	-0.2001		-1.33	0.2499	-13.8302	-0.4999	59.79	33	32	246	254	56	621	124
157	Reanalysis	1	1 mon	opi3	46.76	-36.68	36.68	-0.1688		-1.93	0.1911	-14.5465	-0.4371	61.22	44	39	235	244	71	633	128
158	Reanalysis	1	1 mon	cmap	48.62	-39.15	39.15	-0.1675		-1.63	0.1897	-15.3504	-0.4355	62.93	57	50	234	243	85	669	141
159	Reanalysis	1	1 mon	cmap2	48.81	-39.24	39.24	-0.1624		-1.78	0.1806	-15.4311	-0.4249	63.09	60	53	232	240	88	673	144
160	Reanalysis	1	2 mon	reanalysis	43.97	-40.39	40.39	-0.0958		-2.05	0.0590	-18.9294	-0.2429	53.86	26	66	210	218	29	549	96
161	Reanalysis	1	2 mon	gpcp	51.04	-41.85	41.85	-0.0840		-4.08	0.0540	-16.0048	-0.2323	64.89	78	74	207	215	101	675	145
162	Reanalysis	1	2 mon	gpcc	**40.71**	**-32.49**	32.49	-0.0504		-2.35	0.0801	-60.4496	-0.2830	**50.13**	10	19	195	221	16	461	71
163	Reanalysis	1	2 mon	gpcc trmm	58.80	-51.80	51.80	-0.1458		-9.16	0.0527	-6.9167	-0.2296	75.62	132	121	226	214	193	886	204
164	Reanalysis	1	2 mon	ghcn cams grid	59.86	-57.41	57.41	-0.0614		-2.18	0.0428	-35.4328	-0.2070	72.76	146	159	202	210	166	883	202
165	Reanalysis	1	2 mon	gpi	99.70	-89.27	89.27	-0.0858		-0.92	0.1210	-44.7389	-0.3478	119.63	260	254	209	228	262	1213	264
166	Reanalysis	1	2 mon	trmm 3a46	100.40	-98.93	98.93	-0.2224		-0.98	0.1315	-14.5148	-0.3627	119.28	263	272	250	233	261	1279	271
167	Reanalysis	1	2 mon	trmm 3b43	64.97	-59.26	59.26	-0.1324		-8.54	0.0549	-8.9028	-0.2344	83.89	183	177	219	216	222	1017	228
168	Reanalysis	1	2 mon	ssmi	74.61	-69.70	69.70	-0.0988		-2.70	0.0593	-20.4179	-0.2435	88.98	237	232	211	219	231	1130	246
169	Reanalysis	1	2 mon	opi2	44.70	-35.15	35.15	-0.1121		-3.78	0.0782	-12.7271	-0.2797	57.63	32	33	215	220	43	543	93
170	Reanalysis	1	2 mon	opi3	45.89	-36.75	36.75	-0.0831		-4.47	0.0462	-13.3908	-0.2149	59.00	35	40	206	212	49	542	92
171	Reanalysis	1	2 mon	cmap	47.63	-38.98	38.98	-0.0856		-4.27	0.0493	-14.1309	-0.2220	60.65	51	47	208	213	67	586	109
172	Reanalysis	1	2 mon	cmap2	47.82	-39.06	39.06	-0.0808		-4.42	0.0445	-14.1927	-0.2109	60.77	53	48	205	211	68	585	108
173	Reanalysis	1	3 mon	reanalysis	**43.50**	-40.33	40.33	0.0297	33.6700	-6.47	0.0057	-17.3146	0.0754	**51.67**	21	64	167	164	20	436	57
174	Reanalysis	1	3 mon	gpcp	49.74	-41.95	41.95	0.0103	97.0874	-7.36	0.0008	-14.5587	0.0284	62.18	69	75	180	176	77	577	105
175	Reanalysis	1	3 mon	gpcc	**39.51**	**-32.53**	32.53	0.0104	96.1538	-4.01	0.0035	-57.9666	0.0589	**48.64**	8	20	179	166	11	384	45
176	Reanalysis	1	3 mon	gpcc trmm	56.70	-52.30	52.30	0.0560	17.8571	-16.06	0.0077	-6.0415	0.0879	70.66	114	125	160	160	148	707	156
177	Reanalysis	1	3 mon	ghcn cams grid	59.31	-57.43	57.43	0.0255	39.2157	-6.67	0.0074	-33.5261	0.0859	70.78	137	160	168	161	151	777	174
178	Reanalysis	1	3 mon	gpi	99.60	-89.63	89.63	-0.0486		-3.89	0.0386	-43.5229	-0.1964	118.27	259	256	194	209	260	1178	257
179	Reanalysis	1	3 mon	trmm 3a46	99.60	-98.20	98.20	-0.0471		-14.17	0.0061	-13.5903	-0.0780	115.28	258	270	193	190	256	1167	254
180	Reanalysis	1	3 mon	trmm 3b43	62.98	-58.85	58.85	0.0569	17.5747	-16.37	0.0105	-7.8409	0.1024	78.52	174	172	159	159	207	871	198
181	Reanalysis	1	3 mon	ssmi	74.38	-69.71	69.71	-0.0581		-5.15	0.0205	-19.8499	-0.1433	88.05	235	233	199	201	228	1096	241
182	Reanalysis	1	3 mon	opi2	**43.48**	-35.25	35.25	0.0002	5000.0000	-6.94	0.0000	-11.3272	0.0005	54.70	20	35	182	182	30	449	67
183	Reanalysis	1	3 mon	opi3	44.44	-36.78	36.78	0.0202	49.5050	-7.54	0.0027	-11.9981	0.0523	56.17	29	41	171	169	36	446	64
184	Reanalysis	1	3 mon	cmap	45.99	-38.76	38.76	0.0147	68.0272	-7.46	0.0014	-12.6407	0.0380	57.68	37	45	175	172	44	473	77
185	Reanalysis	1	3 mon	cmap2	46.14	-38.82	38.82	0.0167	59.8802	-7.53	0.0019	-12.7113	0.0435	57.83	39	46	173	170	45	473	78
186	Reanalysis	1	4 mon	reanalysis	**42.85**	-40.36	40.36	0.1305	7.6628	-10.02	0.1094	-16.0273	0.3308	**49.85**	18	65	134	125	12	354	35
187	Reanalysis	1	4 mon	gpcp	48.01	-42.06	42.06	0.0986	10.1420	-10.46	0.0741	-13.2106	0.2723	59.53	54	77	146	135	55	467	74
188	Reanalysis	1	4 mon	gpcc	**38.19**	**-32.75**	32.75	0.0757	13.2100	-5.87	0.1844	-54.0075	0.4295	**47.04**	5	24	155	103	5	292	25
189	Reanalysis	1	4 mon	gpcc trmm	54.38	-52.79	52.79	0.2447	4.0866	-23.09	0.1454	-5.1575	0.3814	66.19	96	126	119	114	115	570	101
190	Reanalysis	1	4 mon	ghcn cams grid	58.66	-57.46	57.46	0.1053	9.4967	-10.84	0.1263	-31.6939	0.3554	68.93	129	161	141	119	136	686	151
191	Reanalysis	1	4 mon	gpi	98.47	-89.97	89.97	0.0000		-7.86	0.0000	-41.9234	0.0002	116.41	256	258	183	183	258	1138	250
192	Reanalysis	1	4 mon	trmm 3a46	97.79	-97.06	97.06	0.0839	11.9190	-24.12	0.0194	-12.4951	0.1393	111.65	255	266	154	153	254	1082	237
193	Reanalysis	1	4 mon	trmm 3b43	61.43	-59.50	59.50	0.2104	4.7529	-23.08	0.1415	-6.9142	0.3762	74.39	160	180	120	116	184	760	171
194	Reanalysis	1	4 mon	ssmi	73.80	-70.09	70.09	-0.0042		-8.45	0.0001	-19.1806	-0.0102	86.93	234	239	185	185	225	1068	235
195	Reanalysis	1	4 mon	opi2	**41.26**	-35.16	35.16	0.1077	9.2851	-9.97	0.0719	-9.9405	0.2681	**51.63**	11	34	140	136	19	340	31
196	Reanalysis	1	4 mon	opi3	**42.25**	-36.59	36.59	0.1122	8.9127	-10.26	0.0837	-10.6547	0.2893	**53.28**	17	38	137	130	25	347	34
197	Reanalysis	1	4 mon	cmap	**43.91**	-38.66	38.66	0.1104	9.0580	-10.49	0.0812	-11.3023	0.2850	54.88	25	43	138	132	31	369	39
198	Reanalysis	1	4 mon	cmap2	44.08	-38.72	38.72	0.1091	9.1659	-10.46	0.0803	-11.3988	0.2834	55.09	27	44	139	133	32	375	42
199	Reanalysis	2	Yes	reanalysis	64.26	-56.65	56.65	0.0343	29.1545	-9.46	0.0061	-9.8940	0.0780	82.98	178	155	166	163	220	882	201
200	Reanalysis	2	Yes	gpcp	56.10	-50.22	50.22	0.0158	63.2911	-8.45	0.0009	-7.4094	0.0296	72.91	110	118	174	175	169	746	165
201	Reanalysis	2	Yes	gpcc	47.10	-41.54	41.54	0.0464	21.5517	-5.14	0.0071	-6.5336	0.0843	60.63	47	72	163	162	66	510	83
202	Reanalysis	2	Yes	gpcc trmm	64.67	-57.90	57.90	0.0602	16.6113	-21.94	0.0053	-3.6360	0.0731	81.47	181	164	158	165	213	881	200

Amazon Basin - Monthly Surface

OI	Runoff	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
203	**Reanalysis**	2	Yes	ghcn cams grid	65.13	-63.22	63.22	0.0222	45.0450	-9.01	0.0016	-9.3977	0.0399	81.07	184	200	170	171	212	937	209	
204	**Reanalysis**	2	Yes	gpi	101.94	-97.87	97.87	0.1053	9.4967	-17.30	0.0838	-18.6016	0.2894	121.87	267	268	142	129	268	1074	236	
205	**Reanalysis**	2	Yes	trmm 3a46	95.40	-94.44	94.44	0.1216	8.2237	-24.77	0.0318	-8.3134	0.1784	111.48	254	259	135	143	253	1044	232	
206	**Reanalysis**	2	Yes	trmm 3b43	72.06	-67.78	67.78	0.1038	9.6339	-24.64	0.0195	-4.6416	0.1396	89.88	230	224	143	152	236	985	217	
207	**Reanalysis**	2	Yes	ssmi	76.31	-74.74	74.74	0.1648	6.0680	-17.77	0.0911	-9.4101	0.3019	90.12	244	247	130	128	237	986	218	
208	**Reanalysis**	2	Yes	opi2	49.43	-42.78	42.78	0.0064	156.2500	-8.01	0.0001	-5.7413	0.0109	65.28	65	81	181	181	103	611	118	
209	**Reanalysis**	2	Yes	opi3	50.54	-44.27	44.27	0.0133	75.1880	-8.27	0.0005	-6.0648	0.0232	66.82	73	94	177	178	117	639	129	
210	**Reanalysis**	2	Yes	cmap	52.06	-46.50	46.50	0.0137	72.9927	-8.31	0.0006	-6.4011	0.0241	68.40	82	109	176	177	128	672	143	
211	**Reanalysis**	2	Yes	cmap2	52.14	-46.56	46.56	0.0107	93.4579	-8.20	0.0004	-6.4538	0.0189	68.64	84	111	178	179	133	685	150	
212	**Reanalysis**	2	No	reanalysis	75.90	-56.77	56.77	-0.2703		5.32	0.4026	-13.9196	-0.6345	94.08	243	156	262	271	246	1178	256	
213	**Reanalysis**	2	No	gpcp	65.25	-50.33	50.33	-0.2692		3.53	0.2727	-10.0577	-0.5222	80.99	185	120	260	257	211	1033	229	
214	**Reanalysis**	2	No	gpcc	55.86	-41.26	41.26	-0.3114		8.79	0.3884	-10.7283	-0.6232	68.71	109	71	270	269	134	853	195	
215	**Reanalysis**	2	No	gpcc trmm	72.51	-60.01	60.01	-0.2523		-12.10	0.1092	-5.5158	-0.3305	89.45	232	182	258	225	232	1129	245	
216	**Reanalysis**	2	No	ghcn cams grid	71.21	-63.33	63.33	-0.2959		8.51	0.3002	-12.2183	-0.5479	88.55	229	203	268	261	229	1190	259	
217	**Reanalysis**	2	No	gpi	113.49	-97.79	97.79	-0.1588		6.56	0.2155	-25.5584	-0.4642	133.31	276	267	230	249	276	1298	272	
218	**Reanalysis**	2	No	trmm 3a46	106.23	-97.04	97.04	-0.2703		3.70	0.1862	-12.2829	-0.4315	122.35	272	265	261	241	270	1309	273	
219	**Reanalysis**	2	No	trmm 3b43	80.26	-69.90	69.90	-0.1953		-12.35	0.0804	-6.9114	-0.2836	98.56	248	236	242	222	251	1199	260	
220	**Reanalysis**	2	No	ssmi	85.33	-75.10	75.10	-0.1988		6.67	0.1573	-14.1403	-0.3966	99.79	252	250	245	238	252	1237	267	
221	**Reanalysis**	2	No	opi2	59.24	-42.89	42.89	-0.3061		2.82	0.2878	-8.0537	-0.5365	73.29	135	84	269	260	174	922	208	
222	**Reanalysis**	2	No	opi3	59.80	-44.38	44.38	-0.2890		2.65	0.2709	-8.4397	-0.5205	74.83	145	95	265	255	189	949	210	
223	**Reanalysis**	2	No	cmap	61.35	-46.61	46.61	-0.2935		3.47	0.2812	-8.8438	-0.5302	76.42	159	113	267	259	198	996	221	
224	**Reanalysis**	2	No	cmap2	61.50	-46.67	46.67	-0.2909		3.38	0.2786	-8.8800	-0.5278	76.56	161	114	266	258	201	1000	222	
225	**Reanalysis**	2	1 mon	reanalysis	73.23	-56.55	56.55	-0.2227		2.95	0.2723	-13.3049	-0.5218	92.29	233	153	251	256	243	1136	249	
226	**Reanalysis**	2	1 mon	gpcp	62.39	-50.10	50.10	-0.1803		-0.28	0.1216	-9.3046	-0.3487	78.33	169	117	236	230	206	958	212	
227	**Reanalysis**	2	1 mon	gpcc	52.89	-40.65	40.65	-0.2028		5.27	0.1884	-11.0960	-0.4340	65.50	90	70	247	242	106	755	169	
228	**Reanalysis**	2	1 mon	gpcc trmm	70.63	-59.29	59.29	-0.1817		-15.34	0.0555	-5.1062	-0.2355	87.31	228	178	237	217	226	1086	238	
229	**Reanalysis**	2	1 mon	ghcn cams grid	68.91	-63.26	63.26	-0.2040		3.41	0.1426	-11.5463	-0.3776	86.43	218	202	248	235	224	1127	244	
230	**Reanalysis**	2	1 mon	gpi	112.07	-97.03	97.03	-0.1330		4.60	0.1579	-25.9723	-0.3974	131.55	275	264	220	239	275	1273	270	
231	**Reanalysis**	2	1 mon	trmm 3a46	107.45	-98.92	98.92	-0.2409		1.47	0.1429	-12.1539	-0.3780	123.01	273	271	257	236	272	1309	274	
232	**Reanalysis**	2	1 mon	trmm 3b43	78.99	-69.36	69.36	-0.1345		-15.74	0.0378	-6.5033	-0.1944	96.79	246	230	222	208	248	1154	252	
233	**Reanalysis**	2	1 mon	ssmi	84.38	-74.85	74.85	-0.1533		3.32	0.0940	-13.8258	-0.3066	98.29	251	248	228	224	250	1201	262	
234	**Reanalysis**	2	1 mon	opi2	56.34	-42.76	42.76	-0.2174		-0.31	0.1449	-7.4697	-0.3807	71.01	112	80	249	237	153	831	189	
235	**Reanalysis**	2	1 mon	opi3	56.85	-44.23	44.23	-0.1913		-0.94	0.1183	-7.7564	-0.3440	72.20	115	92	240	226	162	835	191	
236	**Reanalysis**	2	1 mon	cmap	58.39	-46.41	46.41	-0.1967		-0.31	0.1257	-8.1428	-0.3545	73.78	125	105	243	231	177	881	199	
237	**Reanalysis**	2	1 mon	cmap2	58.55	-46.47	46.47	-0.1924		-0.46	0.1213	-8.1623	-0.3483	73.86	127	108	241	229	179	884	203	
238	**Reanalysis**	2	2 mon	reanalysis	69.81	-56.24	56.24	-0.1277		-1.61	0.0895	-12.1997	-0.2992	88.65	220	144	217	223	230	1034	230	
239	**Reanalysis**	2	2 mon	gpcp	59.26	-50.06	50.06	-0.0441		-5.93	0.0073	-8.2928	-0.0854	74.38	136	115	189	193	183	816	183	
240	**Reanalysis**	2	2 mon	gpcc	49.86	-40.27	40.27	-0.0751		0.88	0.0282	-10.6934	-0.1679	61.89	70	63	204	206	75	618	121	
241	**Reanalysis**	2	2 mon	gpcc trmm	67.99	-59.96	59.96	-0.0039		-22.15	0.0000	-4.5099	-0.0050	83.78	206	181	184	184	221	976	215	
242	**Reanalysis**	2	2 mon	ghcn cams grid	66.32	-63.21	63.21	-0.0518		-4.93	0.0092	-10.5076	-0.0961	82.77	197	199	197	197	219	1009	225	
243	**Reanalysis**	2	2 mon	gpi	108.76	-96.64	96.64	-0.0574		-1.89	0.0302	-25.0992	-0.1737	127.99	274	262	198	207	274	1215	265	
244	**Reanalysis**	2	2 mon	trmm 3a46	105.34	-100.51	100.51	-0.1031		-9.65	0.0253	-11.4550	-0.1592	121.12	271	275	213	205	265	1229	266	
245	**Reanalysis**	2	2 mon	trmm 3b43	75.25	-70.05	70.05	0.0240	41.6667	-23.44	0.0012	-5.8343	0.0347	93.30	240	237	169	173	245	1064	234	
246	**Reanalysis**	2	2 mon	ssmi	82.40	-74.95	74.95	-0.0459		-3.86	0.0085	-13.0019	-0.0920	95.55	250	249	192	196	247	1134	247	
247	**Reanalysis**	2	2 mon	opi2	52.88	-42.75	42.75	-0.0587		-5.75	0.0106	-6.5046	-0.1029	66.84	89	79	200	198	118	684	149	
248	**Reanalysis**	2	2 mon	opi3	53.74	-44.20	44.20	-0.0434		-6.22	0.0061	-6.8079	-0.0782	68.18	91	91	188	191	126	687	152	
249	**Reanalysis**	2	2 mon	cmap	55.39	-46.37	46.37	-0.0507		-5.84	0.0084	-7.1999	-0.0915	69.87	107	103	196	195	142	743	164	
250	**Reanalysis**	2	2 mon	cmap2	55.41	-46.43	46.43	-0.0451		-6.06	0.0067	-7.2032	-0.0818	69.88	108	106	190	192	143	739	161	
251	**Reanalysis**	2	3 mon	reanalysis	67.01	-56.20	56.20	-0.0390		-5.82	0.0084	-11.2411	-0.0915	85.36	203	143	186	194	223	949	211	
252	**Reanalysis**	2	3 mon	gpcp	56.20	-50.10	50.10	0.0879	11.3766	-11.43	0.0291	-7.3146	0.1705	70.35	111	116	152	145	147	671	142	
253	**Reanalysis**	2	3 mon	gpcc	45.94	-40.08	40.08	0.0717	13.9470	-4.32	0.0277	-9.8747	0.1663	57.59	36	61	156	148	42	443	63	
254	**Reanalysis**	2	3 mon	gpcc trmm	65.36	-60.93	60.93	0.1037	9.6432	-26.37	0.0177	-4.1572	0.1331	81.94	187	185	144	154	216	886	206	
255	**Reanalysis**	2	3 mon	ghcn cams grid	64.67	-63.25	63.25	0.0924	10.8225	-12.84	0.0294	-9.5287	0.1715	79.17	182	201	150	144	209	886	205	
256	**Reanalysis**	2	3 mon	gpi	105.27	-96.40	96.40	0.0192	52.0833	-8.48	0.0035	-24.0848	0.0589	124.39	270	260	172	167	273	1142	251	
257	**Reanalysis**	2	3 mon	trmm 3a46	102.49	-100.52	100.52	0.0380	26.3158	-21.26	0.0034	-10.5743	0.0587	118.21	268	276	164	168	259	1135	248	
258	**Reanalysis**	2	3 mon	trmm 3b43	74.43	-71.11	71.11	0.1435	6.9686	-29.37	0.0422	-5.3450	0.2055	90.88	236	245	132	140	238	991	220	
259	**Reanalysis**	2	3 mon	ssmi	80.02	-75.27	75.27	0.0550	18.1818	-10.88	0.0121	-12.1369	0.1098	93.10	247	251	161	158	244	1061	233	
260	**Reanalysis**	2	3 mon	opi2	49.44	-42.82	42.82	0.0669	14.9477	-10.05	0.0137	-5.7431	0.1172	63.35	66	82	157	157	90	552	98	
261	**Reanalysis**	2	3 mon	opi3	50.47	-44.26	44.26	0.1009	9.9108	-11.39	0.0331	-5.8822	0.1818	64.00	72	93	145	141	94	545	94	
262	**Reanalysis**	2	3 mon	cmap	52.19	-46.40	46.40	0.0940	10.6383	-11.34	0.0289	-6.2672	0.1699	65.77	85	104	149	146	109	593	113	
263	**Reanalysis**	2	3 mon	cmap2	52.23	-46.46	46.46	0.0984	10.1626	-11.52	0.0319	-6.2704	0.1785	65.78	86	107	147	142	110	592	112	
264	**Reanalysis**	2	4 mon	reanalysis	64.64	-56.28	56.28	0.0543	18.4162	-10.33	0.0162	-10.2070	0.1274	81.82	180	145	162	156	215	858	196	
265	**Reanalysis**	2	4 mon	gpcp	54.91	-50.24	50.24	0.1791	5.5835	-15.31	0.1202	-6.6310	0.3467	67.52	103	119	129	123	123	597	115	
266	**Reanalysis**	2	4 mon	gpcc	**43.84**	-40.19	40.19	0.2064	4.8450	-9.34	0.2325	-8.5877	0.4822	53.64	22	62	122	88	28	322	29	
267	**Reanalysis**	2	4 mon	gpcc trmm	66.35	-61.93	61.93	0.1149	8.7032	-26.81	0.0212	-4.1187	0.1455	82.53	198	193	136	151	217	895	207	
268	**Reanalysis**	2	4 mon	ghcn cams grid	64.34	-63.42	63.42	0.1985	5.0378	-18.75	0.1351	-8.8013	0.3675	76.52	179	204	123	118	200	824	187	
269	**Reanalysis**	2	4 mon	gpi	103.59	-96.48	96.48	0.0857	11.6686	-14.32	0.0691	-22.8996	0.2629	121.40	269	261	153	137	267	1087	239	
270	**Reanalysis**	2	4 mon	trmm 3a46	100.80	-99.55	99.55	0.0955	10.4712	-25.68	0.0216	-9.9398	0.1471	116.27	265	274	148	150	257	1094	240	
271	**Reanalysis**	2	4 mon	trmm 3b43	75.68	-72.25	72.25	0.1612	6.2035	-30.31	0.0519	-5.2752	0.2278	91.38	242	246	131	139	242	1000	223	
272	**Reanalysis**	2	4 mon	ssmi	78.82	-75.37	75.37	0.1378	7.2569	-16.54	0.0757	-11.4452	0.2752	90.90	245	252	133	134	239	1003	224	
273	**Reanalysis**	2	4 mon	opi2	47.67	-42.88	42.88	0.1805	5.5402	-14.04	0.1000	-5.0405	0.3163	60.07	52	83	128	127	61	451	68	
274	**Reanalysis**	2	4 mon	opi3	48.80	-44.42	44.42	0.1954	5.1177	-14.86	0.1234	-5.2725	0.3513	61.21	59	96	126	121	70	472	76	
275	**Reanalysis**	2	4 mon	cmap	50.64	-46.55	46.55	0.1940	5.1546	-15.23	0.1224	-5.6173	0.3498	62.87	74	110	127	122	83	516	85	
276	**Reanalysis**	2	4 mon	cmap2	50.70	-46.60	46.60	0.1962	5.0968	-15.33	0.1263	-5.6285	0.3554	62.92	75	112	125	120	84	516	86	

Amazon Basin - Yearly Surface

OI	Runoff	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	*Surface*	*1*	*Yes*	*reanalysis*	*54.96*	*54.96*	*54.96*	*-0.0407*		*46.82*	*0.0017*	*-26.4887*	*-0.0409*	*57.18*	*50*	*50*	*65*	*65*	*48*	*278*	*67*	Plot
2	Surface	1	Yes	gpcp	61.85	61.85	61.85	0.5034	1.9865	-15.09	0.2369	-28.2185	0.4867	62.93	67	67	19	23	62	238	44	
3	Surface	1	Yes	gpcc	67.48	67.48	67.48	0.4912	2.0358	-18.53	0.4307	-66.2576	**0.6563**	68.01	76	76	22	9	75	258	56	
4	Surface	1	Yes	ghcn cams grid	46.41	46.41	46.41	**0.6522**	1.5333	-15.54	0.4827	-20.5386	**0.6948**	49.04	36	37	9	2	31	115	11	
5	Surface	1	Yes	gpi	**11.46**	**9.72**	9.72	**0.7762**	1.2883	11.81	0.4458	-0.1604	**0.6677**	**13.87**	3	3	7	7	3	23	3	
6	Surface	1	Yes	ssmi	34.43	34.43	34.43	0.4186	2.3889	22.92	0.2710	-11.1009	0.5206	**36.36**	11	11	26	19	10	77	8	
7	Surface	1	Yes	opi2	69.99	69.99	69.99	**0.7145**	1.3996	-43.11	0.3624	-27.1473	0.6020	70.88	83	83	8	15	80	269	62	
8	Surface	1	Yes	opi3	67.40	67.40	67.40	0.5128	1.9501	-21.53	0.2778	-37.8521	0.5270	68.26	75	75	17	18	76	261	58	
9	Surface	1	Yes	cmap	64.81	64.81	64.81	0.4986	2.0056	-17.60	0.2604	-34.7413	0.5103	65.74	71	71	20	21	68	251	51	
10	Surface	1	Yes	cmap2	64.92	64.92	64.92	0.5122	1.9524	-18.99	0.2643	-33.5051	0.5141	65.86	72	72	18	20	69	251	52	
11	Surface	1	No	reanalysis	54.14	54.14	54.14	0.0966	10.3520	33.48	0.0061	-25.1626	0.0779	55.79	46	46	52	53	44	241	46	
12	Surface	1	No	gpcp	62.08	62.08	62.08	0.4395	2.2753	-9.18	0.1213	-28.5117	0.3483	63.24	69	69	25	35	63	261	57	
13	Surface	1	No	gpcc	68.21	68.21	68.21	0.5558	1.7992	-25.16	0.3659	-67.5274	0.6049	68.64	80	80	16	13	78	267	59	
14	Surface	1	No	ghcn cams grid	45.58	45.58	45.58	0.6330	1.5798	-13.88	0.3055	-20.8812	0.5527	49.43	33	36	12	16	33	130	13	
15	Surface	1	No	gpi	**11.96**	**10.44**	10.44	**0.9635**	1.0379	-6.91	0.4558	-0.2023	**0.6751**	**14.12**	4	4	2	5	4	19	2	
16	Surface	1	No	ssmi	**33.39**	**33.39**	33.39	0.5886	1.6989	6.76	0.3733	-10.0131	0.6109	**34.69**	8	8	14	12	9	51	6	
17	Surface	1	No	opi2	70.23	70.23	70.23	**0.9748**	1.0259	-67.85	0.4531	-27.1801	**0.6731**	70.92	84	84	1	6	81	256	55	
18	Surface	1	No	opi3	67.63	67.63	67.63	0.4166	2.4004	-12.56	0.1231	-38.2571	0.3509	68.61	77	77	27	34	77	292	71	
19	Surface	1	No	cmap	65.04	65.04	65.04	0.3911	2.5569	-7.58	0.1077	-35.1391	0.3281	66.11	73	73	30	38	70	284	69	
20	Surface	1	No	cmap2	65.15	65.15	65.15	0.4163	2.4021	-10.06	0.1173	-33.8814	0.3425	66.22	74	74	28	36	71	283	68	
21	*Surface*	*2*	*Yes*	*reanalysis*	*42.32*	*42.32*	*42.32*	*0.3485*	*2.8694*	*18.08*	*0.1015*	*-5.0462*	*0.3186*	*47.53*	*26*	*28*	*35*	*39*	*27*	*155*	*17*	Plot
22	Surface	2	Yes	gpcp	51.77	51.77	51.77	0.0568	17.6056	35.67	0.0130	-38.2222	0.1141	55.09	44	44	56	51	42	237	42	
23	Surface	2	Yes	gpcc	55.23	55.23	55.23	0.2546	3.9277	14.39	0.4672	-93.2144	**0.6836**	56.61	51	51	42	4	45	193	26	
24	Surface	2	Yes	ghcn cams grid	38.21	38.21	38.21	0.2069	4.8333	35.31	0.1792	-22.0159	0.4233	41.45	17	17	44	28	19	125	12	
25	Surface	2	Yes	gpi	**8.70**	**-2.54**	2.54	0.4920	2.0325	49.98	0.5042	-0.0879	**0.7100**	**11.32**	2	2	21	1	2	28	4	
26	Surface	2	Yes	ssmi	**32.26**	**32.26**	32.26	0.3179	3.1456	40.59	0.2949	-14.3702	0.5430	**30.36**	6	6	38	17	6	73	7	
27	Surface	2	Yes	opi2	59.92	59.92	59.92	0.3022	3.3091	4.77	0.1835	-23.9010	0.4284	62.20	63	63	40	27	59	252	53	
28	Surface	2	Yes	opi3	57.32	57.32	57.32	0.1039	9.6246	25.76	0.0575	-60.3438	0.2398	59.93	59	59	51	42	57	268	60	
29	Surface	2	Yes	cmap	54.74	54.74	54.74	0.0945	10.5820	29.22	0.0473	-55.2140	0.2176	57.52	48	48	53	44	50	243	47	
30	Surface	2	Yes	cmap2	54.85	54.85	54.85	0.1047	9.5511	28.16	0.0552	-52.5762	0.2350	57.60	49	49	50	43	52	243	48	
31	Surface	2	No	reanalysis	43.99	43.99	43.99	0.3478	2.8752	17.56	0.0276	-5.2483	0.1660	48.32	30	31	36	47	30	174	20	
32	Surface	2	No	gpcp	53.44	53.44	53.44	0.3985	2.5094	3.33	0.1747	-37.1406	0.4180	54.32	45	45	29	30	41	190	24	
33	Surface	2	No	gpcc	58.75	58.75	58.75	0.3896	2.5667	0.41	0.3634	-102.0142	0.6028	59.20	60	60	31	14	55	220	36	
34	Surface	2	No	ghcn cams grid	39.88	39.88	39.88	0.5921	1.6889	-1.38	0.3997	-21.1023	**0.6322**	40.61	21	22	13	10	17	83	9	
35	*Surface*	*2*	*No*	*gpi*	***6.82***	***0.99***	*0.99*	***0.7973***	*1.2542*	*18.66*	*0.4397*	*0.4029*	***0.6631***	***8.38***	*1*	*1*	*6*	*8*	*1*	*17*	*1*	Plot
36	Surface	2	No	ssmi	**24.93**	**24.93**	24.93	0.4509	2.2178	28.65	0.3993	-10.5629	0.6319	**26.33**	5	5	24	11	5	50	5	
37	Surface	2	No	opi2	61.59	61.59	61.59	**0.9338**	1.0709	-55.34	0.4776	-23.9375	**0.6911**	62.25	66	66	3	3	60	198	29	
38	Surface	2	No	opi3	59.00	59.00	59.00	0.3756	2.6624	-0.06	0.2050	-59.8000	0.4528	59.67	61	61	32	24	56	234	40	
39	Surface	2	No	cmap	56.41	56.41	56.41	0.3502	2.8555	4.92	0.1773	-54.5000	0.4211	57.15	53	54	34	29	47	217	34	
40	Surface	2	No	cmap2	56.52	56.52	56.52	0.3754	2.6638	2.44	0.1937	-51.9369	0.4401	57.25	55	56	33	25	49	218	35	
41	Reanalysis	1	Yes	reanalysis	39.73	-39.73	39.73	-0.1017		-1.06	0.0700	-43.4950	-0.2646	44.57	20	21	69	77	23	210	32	
42	Reanalysis	1	Yes	gpcp	41.39	-41.39	41.39	-0.0149		-5.81	0.0007	-32.9295	-0.0263	44.21	24	25	64	63	22	198	28	
43	Reanalysis	1	Yes	gpcc	**33.42**	**-33.42**	33.42	0.2165	4.6189	-10.92	0.1326	-47.5344	0.3641	**34.36**	9	9	43	31	8	100	10	
44	Reanalysis	1	Yes	gpcc trmm	48.77	-48.77	48.77	-0.5159		6.43	0.6294	-41.8542	-0.7933	52.45	40	40	90	90	39	299	74	
45	Reanalysis	1	Yes	ghcn cams grid	56.44	-56.44	56.44	0.1172	8.5324	-10.72	0.0327	-71.8754	0.1807	57.56	54	55	47	46	51	253	54	
46	Reanalysis	1	Yes	gpi	88.82	-88.82	88.82	0.1425	7.0175	-18.89	0.0819	-163.7118	0.2862	89.89	88	88	46	40	88	350	83	
47	Reanalysis	1	Yes	trmm 3a46	85.93	-85.93	85.93	-0.4760		26.95	0.5739	-147.1636	-0.7576	87.71	86	86	88	89	86	435	91	
48	Reanalysis	1	Yes	trmm 3b43	55.96	-55.96	55.96	-0.4857		11.33	0.3773	-53.1304	-0.6142	58.24	52	53	89	87	53	334	81	
49	Reanalysis	1	Yes	ssmi	67.82	-67.82	67.82	0.1425	7.0175	-15.72	0.0428	-78.2881	0.2069	68.92	78	78	45	45	79	325	80	
50	Reanalysis	1	Yes	opi2	**34.07**	**-33.95**	33.95	-0.1206		-3.00	0.0601	-25.1286	-0.2451	38.80	10	10	71	76	12	179	21	
51	Reanalysis	1	Yes	opi3	35.44	-35.44	35.44	0.0284	35.2113	-7.16	0.0022	-24.4140	0.0472	38.26	13	13	59	57	11	153	16	
52	Reanalysis	1	Yes	cmap	37.67	-37.67	37.67	0.0370	27.0270	-7.49	0.0036	-27.0391	0.0597	40.19	15	15	58	55	15	158	18	
53	Reanalysis	1	Yes	cmap2	37.73	-37.73	37.73	0.0262	38.1679	-7.15	0.0019	-27.2770	0.0431	40.36	16	16	60	58	16	166	19	
54	Reanalysis	1	No	reanalysis	40.51	-40.51	40.51	-0.1203		-1.19	0.2452	-112.9467	-0.4952	45.10	22	23	70	85	24	224	39	
55	Reanalysis	1	No	gpcp	42.08	-42.08	42.08	-0.1931		-0.25	0.1887	-57.2183	-0.4344	45.32	25	27	76	83	25	236	41	
56	Reanalysis	1	No	gpcc	**32.70**	**-32.70**	32.70	-0.0021		-3.92	0.0010	-999.0000	-0.0308	**33.74**	7	7	62	64	7	147	15	
57	Reanalysis	1	No	gpcc trmm	54.39	-54.39	54.39	-0.3313		-5.91	0.8068	-155.4871	-0.8982	56.85	47	47	83	91	46	314	78	
58	Reanalysis	1	No	ghcn cams grid	57.24	-57.24	57.24	-0.0838		-1.10	0.0418	-187.5480	-0.2045	58.48	58	58	68	72	54	310	76	
59	Reanalysis	1	No	gpi	89.53	-89.53	89.53	0.1165	8.5837	-17.48	0.0616	-187.3727	0.2482	90.61	89	89	48	41	89	356	86	
60	Reanalysis	1	No	trmm 3a46	93.12	-93.12	93.12	-0.3689		11.58	0.8788	-436.8279	-0.9375	94.44	90	90	85	92	90	447	92	
61	Reanalysis	1	No	trmm 3b43	60.46	-60.46	60.46	-0.4272		4.18	0.3809	-80.0065	-0.6172	62.36	65	65	87	88	61	366	87	
62	Reanalysis	1	No	ssmi	69.92	-69.92	69.92	0.0660	15.1515	-13.18	0.0108	-98.0713	0.1039	71.06	82	82	55	52	82	353	84	
63	Reanalysis	1	No	opi2	34.64	-34.64	34.64	-0.2005		-1.48	0.2711	-43.4605	-0.5207	39.60	12	12	77	86	14	201	30	
64	Reanalysis	1	No	opi3	36.13	-36.13	36.13	-0.1915		-1.45	0.1656	-43.2612	-0.4070	39.51	14	14	75	82	13	198	27	
65	Reanalysis	1	No	cmap	38.36	-38.36	38.36	-0.1805		-1.36	0.1382	-47.4943	-0.3717	41.36	18	18	73	80	18	207	31	
66	Reanalysis	1	No	cmap2	38.42	-38.42	38.42	-0.1841		-1.24	0.1497	-47.8978	-0.3869	41.53	19	19	74	81	20	213	33	
67	Reanalysis	2	Yes	reanalysis	56.82	-55.39	55.39	-0.0453		-4.30	0.0017	-6.3262	-0.0413	64.41	57	52	66	66	64	305	75	
68	Reanalysis	2	Yes	gpcp	49.19	-48.95	48.95	0.0177	56.4972	-7.26	0.0001	-4.4031	0.0075	55.31	41	41	61	61	43	247	49	
69	Reanalysis	2	Yes	gpcc	44.79	-44.79	44.79	**0.8969**	1.1150	-40.85	0.1114	-8.0572	0.3338	47.16	32	33	5	37	26	133	14	
70	Reanalysis	2	Yes	gpcc trmm	47.64	-39.41	39.41	-1.0965		40.80	0.0785	-1.0613	-0.2802	61.27	39	20	92	78	58	287	70	
71	Reanalysis	2	Yes	ghcn cams grid	61.95	-61.95	61.95	0.3425	2.9197	-25.50	0.0138	-6.8143	0.1175	66.52	68	68	37	50	72	295	72	
72	Reanalysis	2	Yes	gpi	96.35	-96.35	96.35	**0.6456**	1.5489	-64.43	0.1252	-14.2220	0.3539	99.37	91	91	10	33	92	317	79	
73	Reanalysis	2	Yes	trmm 3a46	59.89	-59.89	59.89	0.4791	2.0872	-19.15	0.0257	-3.9338	0.1602	67.11	62	62	23	48	73	268	61	
74	Reanalysis	2	Yes	trmm 3b43	50.35	-49.29	49.29	0.2617	3.8212	-13.75	0.0035	-1.3585	0.0591	65.54	43	42	41	56	66	248	50	
75	Reanalysis	2	Yes	ssmi	67.83	-67.83	67.83	**1.0864**	1.0864	-73.66	0.1846	-6.4049	0.4297	71.91	79	79	4	26	83	271	65	
76	Reanalysis	2	Yes	opi2	42.43	-41.51	41.51	0.1076	9.2937	-10.28	0.0037	-3.2920	0.0606	49.30	27	26	49	54	32	188	23	
77	Reanalysis	2	Yes	opi3	43.68	-43.00	43.00	0.3093	3.2331	-17.80	0.0140	-3.3214	0.1182	49.47	29	30	39	49	34	181	22	
78	Reanalysis	2	Yes	cmap	45.87	-45.23	45.23	0.0407	24.5700	-8.09	0.0002	-3.7366	0.0149	51.79	34	34	57	60	37	222	38	
79	Reanalysis	2	Yes	cmap2	45.88	-45.29	45.29	0.0752	13.2979	-9.43	0.0008	-3.7420	0.0282	51.82	35	35	54	59	38	221	37	
80	Reanalysis	2	No	reanalysis	56.77	-56.77	56.77	-0.2916		6.36	0.1994	-19.7310	-0.4465	64.58	56	57	82	84	65	344	82	
81	Reanalysis	2	No	gpcp	50.33	-50.33	50.33	-0.2529		2.84	0.0320	-13.3456	-0.1789	53.72	42	43	81	71	40	277	66	
82	Reanalysis	2	No	gpcc	41.26	-41.26	41.26	-0.0057		-2.88	0.0000	-29.2982	-0.0043	42.38	23	24	63	62	21	193	25	
83	Reanalysis	2	No	gpcc trmm	60.01	-60.01	60.01	-0.8904		12.31	0.1375	-5.7362	-0.3708	67.96	64	64	91	79	74	372	88	
84	Reanalysis	2	No	ghcn cams grid	63.33	-63.33	63.33	-0.2190		4.24	0.0159	-20.4121	-0.1261	65.63	70	70	78	69	67	354	85	
85	Reanalysis	2	No	gpi	97.79	-97.79	97.79	0.5849	1.7097	-60.41	0.2402	-34.3176	0.4901	99.03	92	92	15	22	91	312	77	
86	Reanalysis	2	No	trmm 3a46	87.36	-87.36	87.36	-0.0796		-2.94	0.0023	-27.7212	-0.0481	89.61	87	87	67	67	87	395	90	
87	Reanalysis	2	No	trmm 3b43	69.90	-69.90	69.90	-0.1375		-15.14	0.0026	-7.2995	-0.0506	75.43	81	81	72	68	84	386	89	
88	Reanalysis	2	No	ssmi	74.91	-74.91	74.91	0.6415	1.5588	-50.69	0.1292	-16.0417	0.3594	77.00	85	85	11	32	85	298	73	
89	Reanalysis	2	No	opi2	42.89	-42.89	42.89	-0.2284		0.10	0.0467	-10.4461	-0.2160	47.99	28	29	79	73	29	238	43	
90	Reanalysis	2	No	opi3	44.38	-44.38	44.38	-0.2463		1.09	0.0250	-10.4056	-0.1580	47.90	31	32	80	70	28	241	45	
91	Reanalysis	2	No	cmap	46.61	-46.61	46.61	-0.3820		6.90	0.0552	-11.4676	-0.2349	50.08	37	38	86	75	35	271	63	
92	Reanalysis	2	No	cmap2	46.67	-46.67	46.67	-0.3639		6.22	0.0523	-11.5110	-0.2287	50.17	38	39	84	74	36	271	64	

Arkansas Basin - Monthly Atmopsheric

OI	Runoff	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	*Surface*	*1*	*Yes*	*reanalysis*	*148.13*	*-144.56*	*0.0955*	*10.4712*	*129.10*	*0.0006*	*-2.5537*	*0.0238*	*172.41*	*11*	*11*	*19*	*20*	*9*	*70*	*16*	Plot
2	*Surface*	*1*	*Yes*	*gpcp*	***140.51***	***-136.57***	*0.8278*	*1.2080*	*137.58*	*0.0565*	*-2.0375*	***0.2378***	***165.40***	***4***	*4*	*6*	*4*	*4*	*22*	*1*	Plot
3	Surface	1	Yes	gpcc	145.75	-143.04	0.5672	1.7630	140.20	0.0242	-2.2943	0.1556	171.03	6	7	14	15	6	48	7	
4	Surface	1	Yes	gpcc trmm	147.12	-143.75	-0.8505		111.51	0.0660	-1.5520	-0.2570	**168.38**	7	8	24	24	5	68	15	
5	Surface	1	Yes	ghcn cams grid	**132.83**	**-128.57**	0.5721	1.7479	133.95	0.0305	-2.2194	0.1748	**161.18**	3	3	13	14	3	36	3	
6	Surface	1	Yes	gpi	**107.46**	**-86.27**	0.0481	20.7900	133.91	0.0006	-0.9920	0.0236	**132.99**	1	1	21	21	1	45	5	
7	Surface	1	Yes	trmm 3b43	**141.27**	**-137.20**	0.6941	1.4407	136.15	0.0346	-1.5232	0.1861	174.99	5	5	10	10	11	41	4	
8	Surface	1	Yes	ssmi	**127.97**	**-114.09**	0.3970	2.5189	131.75	0.0586	-1.4687	**0.2421**	**151.97**	2	2	17	3	2	26	2	
9	Surface	1	Yes	opi2	152.38	-149.03	-0.1756		137.32	0.0020	-2.5723	-0.0446	179.37	13	13	23	23	13	85	22	
10	Surface	1	Yes	opi3	150.56	-147.36	0.5354	1.8678	143.77	0.0223	-2.4188	0.1494	175.48	12	12	15	16	12	67	12	
11	Surface	1	Yes	cmap	147.54	-144.18	0.6123	1.6332	142.33	0.0307	-2.2949	0.1751	172.27	9	10	12	13	8	52	9	
12	Surface	1	Yes	cmap2	147.51	-144.15	0.6132	1.6308	142.32	0.0308	-2.2941	0.1754	172.25	8	9	11	12	7	47	6	
13	*Surface*	*2*	*Yes*	*reanalysis*	*197.36*	*-193.47*	*0.6991*	*1.4304*	*188.22*	*0.0207*	*-2.9581*	*0.1438*	*219.02*	*18*	*18*	*9*	*17*	*17*	*79*	*20*	Plot
14	Surface	2	Yes	gpcp	190.43	-188.12	**1.1044**	1.1044	184.24	0.0689	-2.7329	**0.2625**	212.70	15	16	1	2	15	49	8	
15	Surface	2	Yes	gpcc	191.06	-188.12	0.2339	4.2753	184.19	0.0034	-2.8941	0.0584	223.20	16	15	18	18	21	88	23	
16	Surface	2	Yes	gpcc trmm	213.18	-213.18	**1.1371**	1.1371	214.50	0.0706	-2.8177	**0.2657**	245.13	24	24	2	1	24	75	18	
17	Surface	2	Yes	ghcn cams grid	194.12	-191.76	0.7831	1.2770	186.94	0.0356	-2.8729	0.1886	216.65	17	17	8	9	16	67	13	
18	Surface	2	Yes	gpi	147.86	-139.24	0.0775	12.9032	174.92	0.0012	-1.5479	0.0351	174.27	10	6	20	19	10	65	11	
19	Surface	2	Yes	trmm 3b43	208.49	-208.49	**0.8607**	1.1618	207.80	0.0437	-2.7192	0.2090	241.95	23	23	3	6	23	78	19	
20	Surface	2	Yes	ssmi	179.18	-169.71	0.4540	2.2026	174.95	0.0525	-2.0232	**0.2291**	198.11	14	14	16	5	14	63	10	
21	Surface	2	Yes	opi2	202.83	-200.81	-0.0448		183.82	0.0001	-3.2424	-0.0099	226.75	22	22	22	22	22	110	24	
22	Surface	2	Yes	opi3	200.83	-198.77	0.7835	1.2763	192.51	0.0328	-3.0998	0.1810	222.90	21	21	7	11	20	80	21	
23	Surface	2	Yes	cmap	197.51	-195.38	**0.8563**	1.1678	190.34	0.0413	-2.9808	0.2033	219.64	20	20	5	8	19	72	17	
24	Surface	2	Yes	cmap2	197.48	-195.35	**0.8569**	1.1670	190.33	0.0414	-2.9801	0.2035	219.62	19	19	4	7	18	67	14	

Arkansas Basin - Yearly Atmospheric																					
OI	Runoff	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	***Surface***	*1*	***Yes***	*reanalysis*	*144.57*	*-144.57*	*0.2966*	*3.3715*	*132.58*	*0.0067*	*-36.1719*	*0.0816*	*146.76*	*10*	*10*	*21*	*20*	*11*	*72*	*14*	Plot
2	**Surface**	1	**Yes**	gpcp	**136.50**	**-136.50**	1.6393	1.6393	135.95	0.1980	-27.4977	**0.4450**	**139.21**	4	4	15	2	5	30	3	
3	**Surface**	1	**Yes**	gpcc	143.07	-143.07	2.5599	2.5599	153.29	0.3047	-20.8552	**0.5520**	145.79	7	7	20	1	7	42	7	
4	**Surface**	1	**Yes**	gpcc trmm	145.33	-145.33	0.1485	6.7340	140.98	0.0008	-63.6695	0.0275	146.49	11	11	23	23	10	78	17	
5	**Surface**	1	**Yes**	ghcn cams grid	**128.41**	**-128.41**	1.9892	1.9892	142.06	0.1755	-28.9239	**0.4189**	142.65	3	3	19	3	6	34	5	
6	***Surface***	*1*	***Yes***	*gpi*	***86.28***	***-86.28***	***1.2049***	*1.2049*	*72.00*	*0.1717*	*-6.9124*	***0.4143***	***87.72***	*1*	*1*	*3*	*4*	*1*	*10*	*1*	Plot
7	**Surface**	1	**Yes**	trmm 3b43	**137.19**	**-137.19**	**0.8225**	1.2158	136.58	0.0758	-43.4882	0.2752	**138.65**	5	5	4	15	4	33	4	
8	**Surface**	1	**Yes**	ssmi	**113.17**	**-113.17**	0.6347	1.5755	121.87	0.0551	-11.9140	0.2347	**116.88**	2	2	14	18	2	38	6	
9	**Surface**	1	**Yes**	opi2	149.19	-149.19	1.5410	1.5410	155.17	0.1356	-32.7549	0.3682	151.51	13	13	12	9	13	60	11	
10	**Surface**	1	**Yes**	opi3	147.15	-147.15	1.6478	1.6478	153.26	0.1585	-31.9357	**0.3981**	149.66	12	12	16	5	12	57	10	
11	**Surface**	1	**Yes**	cmap	143.77	-143.77	1.5388	1.5388	147.05	0.1561	-30.4629	0.3951	146.28	9	9	11	7	9	45	9	
12	**Surface**	1	**Yes**	cmap2	143.73	-143.73	1.5456	1.5456	147.06	0.1564	-30.4541	0.3955	146.26	8	8	13	6	8	43	8	
13	***Surface***	*2*	***Yes***	*reanalysis*	*193.42*	*-193.42*	*0.5178*	*1.9312*	*187.13*	*0.0045*	*-34.7521*	*0.0669*	*192.49*	*18*	*18*	*18*	*21*	*18*	*93*	*23*	Plot
14	**Surface**	2	**Yes**	gpcp	188.07	-188.07	1.8358	1.8358	184.06	0.1543	-32.6000	0.3928	186.61	15	15	17	8	15	70	13	
15	**Surface**	2	**Yes**	gpcc	188.15	-188.15	1.3584	1.3584	191.47	0.0696	-25.5812	0.2638	191.55	16	16	9	16	17	74	15	
16	**Surface**	2	**Yes**	gpcc trmm	213.33	-213.33	1.4515	1.4515	217.89	0.0996	-95.8695	0.3156	214.34	24	24	10	10	24	92	22	
17	**Surface**	2	**Yes**	ghcn cams grid	191.70	-191.70	**1.0780**	1.0780	187.82	0.0573	-33.8864	0.2393	190.15	17	17	2	17	16	69	12	
18	**Surface**	2	**Yes**	gpi	139.30	-139.30	**0.9448**	1.0584	130.86	0.0804	-11.7998	0.2835	**132.92**	6	6	1	14	3	30	2	
19	**Surface**	2	**Yes**	trmm 3b43	208.64	-208.64	-1.7598		194.92	0.0855	-91.9160	-0.2925	209.92	23	23	24	24	23	117	24	
20	**Surface**	2	**Yes**	ssmi	168.04	-168.04	0.1614	6.1958	175.75	0.0021	-14.2258	0.0454	162.76	14	14	22	22	14	86	20	
21	**Surface**	2	**Yes**	opi2	200.76	-200.76	0.7666	1.3045	193.66	0.0467	-37.2177	0.2162	199.02	22	22	6	19	22	91	21	
22	**Surface**	2	**Yes**	opi3	198.72	-198.72	**1.2967**	1.2967	197.76	0.0843	-36.4858	0.2904	197.11	21	21	5	13	21	81	19	
23	**Surface**	2	**Yes**	cmap	195.33	-195.33	1.3158	1.3158	193.45	0.0908	-35.2051	0.3014	193.71	20	20	8	11	20	79	18	
24	**Surface**	2	**Yes**	cmap2	195.30	-195.30	1.3157	1.3157	193.42	0.0905	-35.1977	0.3009	193.69	19	19	7	12	19	76	16	

Arkansas Basin - Monthly Surface

OI	Runoff	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	*Surface*	*1*	*Yes*	*reanalysis*	*28.17*	*24.14*	*24.14*	*0.4639*	*2.1556*	*-20.45*	*0.4400*	*-1.2662*	***0.6633***	*34.36*	*160*	*213*	*97*	*5*	*156*	*631*	*132*	Plot
2	Surface	1	Yes	gpcp	24.53	**5.71**	5.71	0.4258	2.3485	-1.34	0.3215	-0.3070	**0.5670**	31.16	136	13	102	21	123	395	66	
3	Surface	1	Yes	gpcc	25.37	14.62	14.62	0.4433	2.2558	-10.13	0.3749	-0.5362	**0.6123**	32.05	149	115	100	13	144	521	112	
4	Surface	1	Yes	ghcn cams grid	24.46	8.35	8.35	0.4465	2.2396	-4.09	0.3522	-0.2818	**0.5935**	31.07	132	29	99	18	122	400	67	
5	Surface	1	Yes	gpi	49.43	-45.47	45.47	0.6165	1.6221	48.57	0.2273	-0.8304	0.4768	62.48	237	264	72	31	222	826	167	
6	Surface	1	Yes	ssmi	63.80	-22.92	22.92	-0.7707		34.11	0.2049	-1.0277	-0.4527	83.99	264	210	257	263	264	1258	264	
7	Surface	1	Yes	opi2	24.31	18.07	18.07	0.4936	2.0259	-14.21	0.5523	-0.5905	**0.7431**	30.41	128	152	87	2	111	480	96	
8	Surface	1	Yes	opi3	25.29	16.23	16.23	0.4879	2.0496	-12.33	0.4473	-0.4210	**0.6688**	31.57	148	133	88	4	135	508	108	
9	Surface	1	Yes	cmap	24.43	12.81	12.81	0.4838	2.0670	-8.87	0.4187	-0.2806	**0.6471**	30.71	131	83	92	7	118	431	79	
10	Surface	1	Yes	cmap2	24.42	12.78	12.78	0.4839	2.0665	-8.85	0.4187	-0.2796	**0.6471**	30.70	130	81	91	8	117	427	77	
11	Surface	1	No	reanalysis	26.82	24.11	24.11	0.4723	2.1173	-20.49	0.0212	-1.1206	0.1458	33.24	154	212	96	140	154	756	153	
12	Surface	1	No	gpcp	21.42	**5.83**	5.83	0.8048	1.2425	-4.32	0.0504	0.0017	0.2245	27.24	37	15	39	107	34	232	14	
13	Surface	1	No	gpcc	22.46	14.91	14.91	0.6276	1.5934	-11.80	0.0405	-0.3062	0.2012	29.55	72	129	71	119	89	480	95	
14	Surface	1	No	ghcn cams grid	22.94	8.24	8.24	0.3288	3.0414	-3.15	0.0080	-0.1155	0.0894	28.98	82	28	116	173	72	471	94	
15	Surface	1	No	gpi	49.55	-45.19	45.19	1.8960	1.8960	37.70	0.1158	-0.8675	0.3403	63.11	240	262	80	59	231	872	182	
16	Surface	1	No	ssmi	45.33	-20.88	20.88	1.5270	1.5270	16.47	0.0463	-0.0845	0.2152	61.42	216	190	65	110	213	794	161	
17	Surface	1	No	opi2	24.08	18.18	18.18	-0.2614		-8.43	0.0068	-0.7201	-0.0824	31.62	122	155	251	227	140	895	192	
18	Surface	1	No	opi3	24.02	16.34	16.34	0.3846	2.6001	-11.59	0.0122	-0.3999	0.1104	31.33	118	135	108	161	129	651	137	
19	Surface	1	No	cmap	23.10	12.92	12.92	0.4846	2.0636	-8.93	0.0184	-0.2290	0.1358	30.09	89	87	89	147	101	513	110	
20	Surface	1	No	cmap2	23.10	12.90	12.90	0.4845	2.0640	-8.91	0.0184	-0.2283	0.1357	30.08	87	86	90	148	100	511	109	
21	Surface	1	1 mon	reanalysis	26.34	24.10	24.10	**0.9713**	1.0295	-23.90	0.0899	-1.0232	0.2998	32.49	152	211	3	70	147	583	123	
22	Surface	1	1 mon	gpcp	**20.36**	**5.75**	5.75	1.3040	1.3040	-8.11	0.1324	0.0807	0.3638	**26.16**	13	14	50	49	15	141	4	
23	Surface	1	1 mon	gpcc	21.71	14.82	14.82	**1.0906**	1.0906	-15.58	0.1224	-0.2054	0.3498	28.46	48	128	9	55	61	301	38	
24	Surface	1	1 mon	ghcn cams grid	21.83	8.21	8.21	**1.0655**	1.0655	-8.71	0.0838	-0.0059	0.2895	27.55	52	27	6	74	45	204	8	
25	Surface	1	1 mon	gpi	48.48	-44.75	44.75	2.8724	2.8724	29.06	0.2681	-0.7874	**0.5177**	61.66	230	258	113	25	216	842	171	
26	Surface	1	1 mon	ssmi	47.27	-21.55	21.55	-0.2627		32.04	0.0014	-0.1640	-0.0372	63.64	224	200	252	219	236	1131	245	
27	Surface	1	1 mon	opi2	23.89	18.25	18.25	0.3982	2.5113	-13.59	0.0157	-0.5911	0.1255	30.47	116	162	106	155	113	652	138	
28	Surface	1	1 mon	opi3	23.34	16.30	16.30	**1.0414**	1.0414	-16.62	0.0893	-0.2886	0.2989	30.11	101	134	5	71	103	414	71	
29	Surface	1	1 mon	cmap	22.25	12.87	12.87	**1.1413**	1.1413	-13.96	0.1022	-0.1235	0.3196	28.81	68	85	20	63	69	305	41	
30	Surface	1	1 mon	cmap2	22.25	12.85	12.85	**1.1411**	1.1411	-13.94	0.1021	-0.1228	0.3196	28.80	67	84	19	64	68	302	40	
31	Surface	1	2 mon	reanalysis	27.11	24.17	24.17	0.6868	1.4560	-22.02	0.0451	-1.0873	0.2124	32.95	155	214	60	115	150	694	143	
32	Surface	1	2 mon	gpcp	21.43	**5.95**	5.95	0.8282	1.2074	-4.61	0.0538	0.0037	0.2319	27.18	38	18	34	104	32	226	11	
33	Surface	1	2 mon	gpcc	22.71	15.11	15.11	0.8491	1.1777	-13.85	0.0752	-0.2695	0.2743	29.10	75	130	27	77	73	382	63	
34	Surface	1	2 mon	ghcn cams grid	22.18	8.40	8.40	**0.9187**	1.0885	-7.78	0.0630	-0.0319	0.2510	27.78	61	30	8	87	51	237	15	
35	Surface	1	2 mon	gpi	48.18	-44.33	44.33	2.1100	2.1100	35.01	0.1460	-0.8204	0.3821	62.15	228	254	94	44	219	839	170	
36	Surface	1	2 mon	ssmi	49.42	-21.20	21.20	-1.6256		43.46	0.0539	-0.2145	-0.2321	65.33	236	193	261	252	242	1184	254	
37	Surface	1	2 mon	opi2	24.14	18.42	18.42	0.6739	1.4839	-15.89	0.0454	-0.5490	0.2131	30.01	124	167	62	114	96	563	121	
38	Surface	1	2 mon	opi3	24.04	16.48	16.48	**0.8644**	1.1569	-15.42	0.0619	-0.3266	0.2488	30.51	120	138	23	90	114	485	97	
39	Surface	1	2 mon	cmap	22.96	13.05	13.05	**0.8812**	1.1348	-12.13	0.0613	-0.1710	0.2476	29.37	84	93	17	92	76	362	57	
40	Surface	1	2 mon	cmap2	22.95	13.03	13.03	**0.8808**	1.1353	-12.10	0.0612	-0.1703	0.2475	29.36	83	91	18	93	75	360	55	
41	Surface	1	3 mon	reanalysis	27.25	24.17	24.17	0.6547	1.5274	-21.80	0.0410	-1.0918	0.2024	33.01	156	215	66	117	152	706	149	
42	Surface	1	3 mon	gpcp	21.75	**5.89**	5.89	0.7267	1.3761	-3.77	0.0414	-0.0111	0.2035	27.44	49	16	55	116	39	275	28	
43	Surface	1	3 mon	gpcc	23.13	15.16	15.16	0.6656	1.5024	-12.34	0.0461	-0.3074	0.2148	29.65	94	131	64	111	90	490	99	
44	Surface	1	3 mon	ghcn cams grid	22.14	8.40	8.40	**0.9926**	1.0075	-8.35	0.0735	-0.0207	0.2711	27.67	58	31	1	80	48	218	10	
45	Surface	1	3 mon	gpi	49.13	-44.58	44.58	1.4982	1.4982	40.38	0.0738	-0.8678	0.2717	63.05	234	256	63	79	230	862	181	
46	Surface	1	3 mon	ssmi	49.71	-21.79	21.79	-1.9601		46.67	0.0780	-0.2346	-0.2794	65.99	242	201	262	256	245	1206	258	
47	Surface	1	3 mon	opi2	23.34	18.39	18.39	0.8434	1.1857	-17.17	0.0711	-0.5103	0.2666	29.70	100	165	28	81	93	467	92	
48	Surface	1	3 mon	opi3	24.04	16.46	16.46	**0.8541**	1.1708	-15.33	0.0604	-0.3257	0.2458	30.57	121	136	24	95	116	492	101	
49	Surface	1	3 mon	cmap	23.07	13.03	13.03	0.8314	1.2028	-11.72	0.0545	-0.1771	0.2335	29.51	85	90	32	98	86	391	64	
50	Surface	1	3 mon	cmap2	23.07	13.01	13.01	0.8307	1.2038	-11.69	0.0544	-0.1765	0.2333	29.51	86	89	33	101	84	393	65	
51	Surface	1	4 mon	reanalysis	27.32	24.22	24.22	0.6932	1.4426	-22.12	0.0461	-1.0901	0.2146	32.99	157	216	59	112	151	695	144	
52	Surface	1	4 mon	gpcp	21.49	**5.94**	5.94	0.7080	1.4124	-3.68	0.0393	-0.0147	0.1983	27.53	40	17	57	120	44	278	31	
53	Surface	1	4 mon	gpcc	22.84	15.27	15.27	0.7638	1.3092	-13.29	0.0609	-0.2904	0.2467	29.51	77	132	51	94	85	439	82	
54	Surface	1	4 mon	ghcn cams grid	21.97	8.49	8.49	**0.9352**	1.0693	-8.00	0.0654	-0.0312	0.2558	27.79	54	32	7	84	52	229	13	
55	Surface	1	4 mon	gpi	49.36	-44.78	44.78	**1.0392**	1.0392	44.45	0.0355	-0.9009	0.1884	63.80	235	259	4	125	238	861	179	
56	Surface	1	4 mon	ssmi	48.83	-21.44	21.44	-1.4082		41.51	0.0392	-0.2048	-0.1979	65.39	231	198	259	247	243	1178	251	
57	Surface	1	4 mon	opi2	23.12	18.41	18.41	**0.8697**	1.1498	-17.40	0.0755	-0.5038	0.2748	29.70	93	166	22	76	92	449	86	
58	Surface	1	4 mon	opi3	24.02	16.48	16.48	**0.9132**	1.0951	-15.81	0.0690	-0.3151	0.2626	30.52	119	137	10	82	115	463	90	
59	Surface	1	4 mon	cmap	23.13	13.05	13.05	**0.8886**	1.1254	-12.19	0.0622	-0.1680	0.2495	29.46	95	94	14	88	79	370	59	
60	Surface	1	4 mon	cmap2	23.13	13.03	13.03	**0.8874**	1.1269	-12.16	0.0621	-0.1675	0.2491	29.46	96	92	16	89	77	370	60	
61	*Surface*	*2*	*Yes*	*reanalysis*	*21.60*	*12.79*	*12.79*	*0.4757*	*2.1022*	*-8.97*	*0.1635*	*-0.3542*	*0.4043*	***26.35***	*43*	*82*	*93*	*41*	*18*	*277*	*29*	Plot
62	*Surface*	*2*	*Yes*	*gpcp*	***18.19***	*7.16*	*7.16*	*0.7939*	*1.2596*	*-5.66*	*0.3410*	*0.2431*	***0.5840***	***22.76***	*1*	*20*	*44*	*20*	*1*	*86*	*1*	Plot
63	Surface	2	Yes	gpcc	21.01	17.52	17.52	0.6091	1.6418	-13.77	0.1738	-0.2455	0.4169	31.51	30	142	73	37	133	415	73	
64	Surface	2	Yes	ghcn cams grid	**19.11**	10.57	10.57	0.8352	1.1973	-9.37	0.3677	0.1945	**0.6064**	**23.79**	2	58	29	15	2	106	2	
65	Surface	2	Yes	gpi	46.81	-42.57	42.57	1.5606	1.5606	37.93	0.3452	-0.4424	**0.5875**	59.31	222	252	69	19	200	762	154	
66	Surface	2	Yes	ssmi	50.40	-18.84	18.84	-0.7831		31.09	0.0611	-0.3632	-0.2471	67.04	249	168	258	254	249	1178	252	
67	Surface	2	Yes	opi2	23.22	19.52	19.52	0.7065	1.4154	-17.38	0.3144	-0.3876	**0.5607**	28.57	99	176	58	23	64	420	75	
68	Surface	2	Yes	opi3	21.93	17.68	17.68	0.8031	1.2452	-16.24	0.3695	-0.1360	**0.6079**	27.10	53	144	40	14	31	282	32	
69	Surface	2	Yes	cmap	**20.39**	14.25	14.25	0.8200	1.2195	-12.94	0.3647	0.0497	**0.6039**	**25.48**	19	108	36	16	5	184	7	
70	Surface	2	Yes	cmap2	**20.39**	14.23	14.23	0.8203	1.2191	-12.92	0.3647	0.0508	**0.6039**	**25.47**	18	107	35	17	4	181	6	
71	Surface	2	No	reanalysis	20.99	13.24	13.24	0.3875	2.5806	-8.51	0.0169	-0.3673	0.1301	**26.48**	29	96	107	150	21	403	68	
72	Surface	2	No	gpcp	**20.73**	7.61	7.61	**0.8925**	1.1204	-6.78	0.0672	-0.0184	0.2593	**26.40**	23	22	13	83	20	161	5	
73	Surface	2	No	gpcc	22.21	17.60	17.60	1.2264	1.2264	-19.53	0.1296	-0.2652	0.3600	31.76	62	143	38	51	141	435	80	
74	Surface	2	No	ghcn cams grid	22.21	11.02	11.02	0.5182	1.9298	-7.29	0.0221	-0.1698	0.1486	28.67	64	65	81	137	67	414	72	
75	Surface	2	No	gpi	50.05	-42.49	42.49	1.9883	1.9883	34.24	0.1114	-0.6565	0.3337	63.56	244	251	85	60	234	874	184	
76	Surface	2	No	ssmi	42.52	-17.35	17.35	1.6423	1.6423	11.98	0.0565	-0.0434	0.2378	58.65	207	139	74	97	188	705	148	
77	Surface	2	No	opi2	25.29	19.97	19.97	-0.1737		-10.89	0.0030	-0.8103	-0.0545	32.63	147	181	240	224	148	940	201	
78	Surface	2	No	opi3	24.11	18.13	18.13	0.4723	2.1173	-14.05	0.0199	-0.5132	0.1412	31.28	123	154	95	142	126	640	135	
79	Surface	2	No	cmap	22.85	14.70	14.70	0.5723	1.7473	-11.40	0.0277	-0.3043	0.1665	29.85	79	121	77	129	95	501	105	
80	Surface	2	No	cmap2	22.84	14.68	14.68	0.5722	1.7476	-11.38	0.0277	-0.3032	0.1664	29.85	78	120	78	130	94	500	104	
81	Surface	2	1 mon	reanalysis	**20.28**	13.16	13.16	0.7270	1.3755	-11.04	0.0598	-0.2864	0.2444	**25.68**	11	95	54	96	8	264	23	
82	Surface	2	1 mon	gpcp	**19.72**	7.53	7.53	1.3636	1.3636	-10.35	0.1573	0.0634	0.3966	**25.33**	4	21	53	42	3	123	3	
83	Surface	2	1 mon	gpcc	21.51	17.50	17.50	1.7346	1.7346	-23.79	0.2589	-0.1746	0.5088	30.72	41	141	76	28	119	405	69	
84	Surface	2	1 mon	ghcn cams grid	**20.89**	10.97	10.97	1.2230	1.2230	-12.70	0.1230	-0.0518	0.3507	27.23	24	64	37	54	33	212	9	
85	Surface	2	1 mon	gpi	48.97	-42.07	42.07	2.8997	2.8997	26.15	0.2384	-0.5901	0.4883	62.26	233	249	114	30	220	846	173	
86	Surface	2	1 mon	ssmi	44.63	-18.03	18.03	-0.1823		27.85	0.0007	-0.1276	-0.0265	60.95	211	151	243	215	209	1029	225	
87	Surface	2	1 mon	opi2	24.98	20.03	20.03	0.4579	2.1839	-15.82	0.0206	-0.6873	0.1434	31.57	143	183	98	141	136	701	146	
88	Surface	2	1 mon	opi3	23.58	18.08	18.08	**1.1010**	1.1010	-18.86	0.1083	-0.3966	0.3292	30.09	109	153	11	62	102	437	81	
89	Surface	2	1 mon	cmap	22.04	14.64	14.64	1.2009	1.2009	-16.20	0.1221	-0.1944	0.3494	28.60	57	118	31	56	66	328	46	
90	Surface	2	1 mon	cmap2	22.03	14.62	14.62	1.2008	1.2008	-16.18	0.1220	-0.1935	0.3492	28.59	55	116	30	57	65	323	44	
91	Surface	2	2 mon	reanalysis	21.47	13.31	13.31	0.1311	7.6278	-6.55	0.0020	-0.4300	0.0442	27.04	39	100	136	188	27	490	100	
92	Surface	2	2 mon	gpcp	21.29	7.71	7.71	0.7426	1.3466	-5.71	0.0470	-0.0457	0.2167	**26.72**	36	25	52	109	23	245	17	
93	Surface	2	2 mon	gpcc	23.11	17.78	17.78	**0.9831**	1.0172	-17.84	0.0846	-0.3219	0.2908	32.42	91	147	2	73	146	459	88	
94	Surface	2	2 mon	ghcn cams grid	22.21	11.23	11.23	0.7872	1.2703	-9.58	0.0518	-0.1335	0.2276	28.07	65	68	45	106	56	340	50	
95	Surface	2	2 mon	gpi	48.83	-41.66	41.66	2.0207	2.0207	33.09	0.1166	-0.6256	0.3415	62.93	232	247	86	58	228	851	174	
96	Surface	2	2 mon	ssmi	46.90	-17.69	17.69	-1.5895		39.65	0.0544	-0.1840	-0.2332	62.77	223	146	260	253	227	1109	241	
97	Surface	2	2 mon	opi2	25.24	20.18	20.18	0.5883	1.6998	-16.98	0.0341	-0.6738	0.1848	31.41	146	187	75	128	130	666	139	
98	Surface	2	2 mon	opi3	24.65	18.24	18.24	0.7788	1.2840	-16.52	0.0545	-0.4640	0.2334	30.78	137	158	47	100	120	562	120	
99	Surface	2	2 mon	cmap	23.35	14.81	14.81	0.7956	1.2569	-13.22	0.0539	-0.2707	0.2321	29.46	103	126	41	102	80	452	87	
100	Surface	2	2 mon	cmap2	23.34	14.79	14.79	0.7953	1.2574	-13.20	0.0538	-0.2698	0.2319	29.46	102	123	42	103	78	448	85	
101	Surface	2	3 mon	reanalysis	21.67	13.27	13.27	-0.0524		-5.10	0.0003	-0.4684	-0.0177	27.47	47	97	224	208	40	616	129	

Arkansas Basin - Monthly Surface

OI	Runoff	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR
102	Surface	2	3 mon	gpcp	21.78	7.66	7.66	0.4006	2.4963	-3.00	0.0137	-0.1024	0.1169	27.49	50	23	105	159	41	378	62
103	Surface	2	3 mon	gpcc	23.59	17.84	17.84	0.6369	1.5701	-15.01	0.0355	-0.3836	0.1883	33.29	111	148	70	126	155	610	125
104	Surface	2	3 mon	ghcn cams grid	22.61	11.22	11.22	0.4398	2.2738	-6.87	0.0162	-0.1903	0.1271	28.83	74	67	101	154	70	466	91
105	Surface	2	3 mon	gpi	50.19	-41.90	41.90	1.2595	1.2595	39.71	0.0454	-0.6742	0.2131	63.99	247	248	43	113	239	890	189
106	Surface	2	3 mon	ssmi	47.52	-18.26	18.26	-2.1560		44.79	0.0997	-0.2137	-0.3157	63.68	225	163	264	260	237	1149	247
107	Surface	2	3 mon	opi2	24.89	20.15	20.15	0.5173	1.9331	-16.40	0.0264	-0.6824	0.1624	31.56	142	185	82	131	134	674	140
108	Surface	2	3 mon	opi3	24.65	18.22	18.22	0.5280	1.8939	-14.56	0.0250	-0.5058	0.1582	31.29	138	157	79	135	127	636	134
109	Surface	2	3 mon	cmap	23.49	14.79	14.79	0.5053	1.9790	-10.95	0.0217	-0.3178	0.1474	30.07	105	124	83	138	99	549	117
110	Surface	2	3 mon	cmap2	23.48	14.77	14.77	0.5046	1.9818	-10.93	0.0216	-0.3170	0.1471	30.07	104	122	84	139	98	547	116
111	Surface	2	4 mon	reanalysis	21.53	13.29	13.29	0.0699	14.3062	-6.09	0.0006	-0.4401	0.0236	27.26	42	99	164	192	35	532	114
112	Surface	2	4 mon	gpcp	22.04	7.71	7.71	0.1979	5.0531	-1.50	0.0033	-0.1378	0.0578	27.97	56	24	126	183	53	442	83
113	Surface	2	4 mon	gpcc	23.54	17.95	17.95	0.7813	1.2799	-16.28	0.0533	-0.3580	0.2309	33.09	107	150	46	105	153	561	119
114	Surface	2	4 mon	ghcn cams grid	22.29	11.36	11.36	0.4189	2.3872	-6.87	0.0148	-0.1992	0.1215	28.89	69	70	103	157	71	470	93
115	Surface	2	4 mon	gpi	51.06	-42.10	42.10	0.6430	1.5552	45.09	0.0118	-0.7118	0.1088	64.91	252	250	67	165	241	975	209
116	Surface	2	4 mon	ssmi	52.16	-17.44	17.44	-2.0799		43.77	0.0931	-0.2053	-0.3052	63.63	253	140	263	259	235	1150	248
117	Surface	2	4 mon	opi2	24.84	20.17	20.17	0.3596	2.7809	-15.21	0.0127	-0.7118	0.1129	31.90	140	186	112	160	142	740	151
118	Surface	2	4 mon	opi3	24.72	18.24	18.24	0.4032	2.4802	-13.62	0.0146	-0.5269	0.1208	31.57	139	159	104	158	137	697	145
119	Surface	2	4 mon	cmap	23.58	14.81	14.81	0.3785	2.6420	-10.00	0.0122	-0.3391	0.1103	30.38	110	127	109	162	109	617	130
120	Surface	2	4 mon	cmap2	23.58	14.80	14.80	0.3773	2.6504	-9.97	0.0121	-0.3383	0.1100	30.38	108	125	110	163	108	614	127
121	Reanalysis	1	Yes	reanalysis	26.14	18.91	18.91	0.8953	1.1169	17.16	0.3948	0.0661	0.6283	32.14	151	169	12	11	145	488	98
122	Reanalysis	1	Yes	gpcp	24.85	1.42	1.42	0.7264	1.3767	1.92	0.2925	0.2494	0.5408	31.60	141	1	56	24	139	361	56
123	Reanalysis	1	Yes	gpcc	24.47	8.74	8.74	0.7785	1.2845	7.29	0.3152	0.2303	0.5615	31.45	133	35	48	22	132	370	61
124	Reanalysis	1	Yes	gpcc trmm	22.86	11.62	11.62	0.7731	1.2935	9.80	0.4509	0.2867	0.6715	27.72	80	73	49	3	49	254	20
125	Reanalysis	1	Yes	ghcn cams grid	24.16	2.66	2.66	0.6411	1.5598	2.47	0.2649	0.1755	0.5147	30.24	125	10	68	27	106	336	49
126	Reanalysis	1	Yes	gpi	50.60	-44.97	44.97	0.3354	2.9815	-12.88	0.1959	-2.2061	0.4426	63.01	250	261	115	33	229	888	188
127	Reanalysis	1	Yes	trmm 3b43	22.86	6.95	6.95	0.6855	1.4588	5.87	0.3868	0.2598	0.6219	28.01	81	19	61	12	55	228	12
128	Reanalysis	1	Yes	ssmi	63.23	-21.39	21.39	-0.3279		10.40	0.2628	-4.4178	-0.5127	81.85	263	196	255	264	263	1241	263
129	Reanalysis	1	Yes	opi2	22.72	14.28	14.28	1.1425	1.1425	15.88	0.5596	0.3951	0.7481	28.14	76	109	21	1	57	264	21
130	Reanalysis	1	Yes	opi3	23.87	12.61	12.61	0.8886	1.1254	11.54	0.4387	0.3103	0.6623	30.04	114	78	15	6	97	310	42
131	Reanalysis	1	Yes	cmap	23.19	8.98	8.98	0.8498	1.1767	8.11	0.4108	0.3367	0.6410	29.54	98	45	25	9	88	265	24
132	Reanalysis	1	Yes	cmap2	23.18	8.95	8.95	0.8493	1.1774	8.08	0.4108	0.3369	0.6409	29.54	97	44	26	10	87	264	22
133	Reanalysis	1	No	reanalysis	24.34	18.93	18.93	0.0098	102.0408	2.37	0.0021	-35.0573	0.0454	30.30	129	170	191	187	107	784	160
134	Reanalysis	1	No	gpcp	22.23	1.61	1.61	-0.0008		3.43	0.0000	-17.7499	-0.0036	27.98	66	2	202	203	54	527	113
135	Reanalysis	1	No	gpcc	21.64	9.03	9.03	-0.0028		2.45	0.0004	-50.5117	-0.0188	27.73	46	48	204	210	50	558	118
136	Reanalysis	1	No	gpcc trmm	25.62	13.49	13.49	0.0155	64.5161	5.57	0.0019	-9.3168	0.0435	32.77	150	101	188	189	149	777	157
137	Reanalysis	1	No	ghcn cams grid	21.60	2.75	2.75	-0.0115		2.21	0.0037	-28.9247	-0.0610	27.65	44	12	206	226	47	535	115
138	Reanalysis	1	No	gpi	50.21	-44.63	44.63	0.0452	22.1239	1.47	0.0875	-78.5855	0.2957	63.28	248	257	179	72	232	988	213
139	Reanalysis	1	No	trmm 3b43	24.99	8.78	8.78	0.0453	22.0751	5.51	0.0174	-8.4632	0.1320	31.19	145	36	178	149	124	632	133
140	Reanalysis	1	No	ssmi	45.27	-20.04	20.04	-0.0407		4.87	0.0871	-63.7693	-0.2952	61.06	215	184	219	258	212	1088	236
141	Reanalysis	1	No	opi2	22.21	14.63	14.63	0.0141	70.9220	3.53	0.0027	-18.5899	0.0521	28.29	63	117	189	185	59	613	126
142	Reanalysis	1	No	opi3	23.88	12.96	12.96	0.0057	175.4386	3.43	0.0006	-21.7094	0.0241	30.45	115	88	196	191	112	702	147
143	Reanalysis	1	No	cmap	23.11	9.24	9.24	0.0030	333.3333	3.42	0.0002	-20.2463	0.0127	29.50	90	54	198	195	83	620	131
144	Reanalysis	1	No	cmap2	23.10	9.21	9.21	0.0032	312.5000	3.42	0.0002	-20.2390	0.0138	29.50	88	53	197	194	82	614	128
145	Reanalysis	1	1 mon	reanalysis	24.23	18.97	18.97	-0.0181		1.90	0.0070	-36.2659	-0.0837	30.82	127	172	209	228	121	857	177
146	Reanalysis	1	1 mon	gpcp	21.63	1.67	1.67	0.0240	41.6667	3.38	0.0102	-16.8568	0.1010	27.36	45	6	186	168	37	442	84
147	Reanalysis	1	1 mon	gpcc	21.02	8.88	8.88	0.0237	42.1941	2.59	0.0255	-48.3997	0.1596	27.08	31	41	187	133	30	422	76
148	Reanalysis	1	1 mon	gpcc trmm	24.48	13.28	13.28	0.0543	18.4162	5.81	0.0231	-8.6374	0.1519	31.91	134	98	176	136	143	687	142
149	Reanalysis	1	1 mon	ghcn cams grid	20.94	2.72	2.72	0.0134	74.6269	2.22	0.0050	-27.4908	0.0709	27.00	26	11	190	177	26	430	78
150	Reanalysis	1	1 mon	gpi	49.57	-44.30	44.30	0.0555	18.0180	0.97	0.1309	-76.6097	0.3618	62.60	241	253	173	50	224	941	202
151	Reanalysis	1	1 mon	trmm 3b43	23.83	9.16	9.16	0.0879	11.3766	5.63	0.0649	-7.7169	0.2547	30.16	112	52	153	85	104	506	107
152	Reanalysis	1	1 mon	ssmi	46.02	-20.33	20.33	-0.0543		5.17	0.1540	-65.0601	-0.3924	61.90	221	188	225	262	217	1113	242
153	Reanalysis	1	1 mon	opi2	21.25	14.51	14.51	0.0607	16.4745	4.05	0.0503	-17.1369	0.2244	27.26	35	111	169	108	36	459	89
154	Reanalysis	1	1 mon	opi3	23.11	12.76	12.76	0.0381	26.2467	3.73	0.0254	-20.1920	0.1594	29.47	92	80	181	134	81	568	122
155	Reanalysis	1	1 mon	cmap	22.15	9.04	9.04	0.0329	30.3951	3.59	0.0195	-18.8222	0.1397	28.55	59	49	185	146	63	502	106
156	Reanalysis	1	1 mon	cmap2	22.15	9.01	9.01	0.0330	30.3030	3.59	0.0196	-18.8209	0.1400	28.55	60	46	184	143	62	495	103
157	Reanalysis	1	2 mon	reanalysis	24.00	18.95	18.95	-0.0420		1.50	0.0375	-37.2566	-0.1936	31.25	117	171	220	245	125	876	186
158	Reanalysis	1	2 mon	gpcp	20.98	1.67	1.67	0.0555	18.0180	3.30	0.0545	-15.8047	0.2335	26.64	28	5	174	99	22	328	48
159	Reanalysis	1	2 mon	gpcc	20.15	9.07	9.07	0.0544	18.3824	2.72	0.1393	-47.7375	0.3732	26.29	10	50	175	46	17	298	37
160	Reanalysis	1	2 mon	gpcc trmm	24.49	13.49	13,49	0.0694	14.4092	5.54	0.0409	-9.1893	0.2022	31.32	135	102	165	118	128	648	136
161	Reanalysis	1	2 mon	ghcn cams grid	20.34	2.65	2.65	0.0362	27.6243	2.21	0.0370	-26.4335	0.1923	26.36	12	9	183	122	19	345	52
162	Reanalysis	1	2 mon	gpi	49.46	-44.50	44.50	0.0625	16.0000	0.59	0.1666	-76.6792	0.4081	62.54	238	255	168	40	223	924	198
163	Reanalysis	1	2 mon	trmm 3b43	24.21	8.55	8.55	0.0810	12.3457	5.16	0.0613	-8.6046	0.2476	30.21	126	33	158	91	105	513	111
164	Reanalysis	1	2 mon	ssmi	45.96	-20.67	20.67	-0.0456		4.90	0.1096	-64.8026	-0.3310	61.64	219	189	222	261	215	1106	240
165	Reanalysis	1	2 mon	opi2	19.86	14.35	14.35	0.1174	8.5179	4.64	0.1872	-15.4149	0.4327	25.93	7	110	138	35	11	301	39
166	Reanalysis	1	2 mon	opi3	21.82	12.53	12.53	0.0792	12.6263	4.07	0.1085	-18.3983	0.3294	28.19	51	77	159	61	58	406	70
167	Reanalysis	1	2 mon	cmap	21.11	8.95	8.95	0.0711	14.0647	3.77	0.0911	-17.4357	0.3019	27.53	33	43	162	67	42	347	53
168	Reanalysis	1	2 mon	cmap2	21.12	8.91	8.91	0.0710	14.0845	3.77	0.0910	-17.4387	0.3017	27.53	34	42	163	68	43	350	54
169	Reanalysis	1	3 mon	reanalysis	23.85	19.01	19.01	-0.0500		1.37	0.0533	-37.6210	-0.2308	31.41	113	173	223	251	131	891	190
170	Reanalysis	1	3 mon	gpcp	20.48	1.64	1.64	0.0719	13.9082	3.25	0.0918	-15.2669	0.3030	26.12	22	3	161	66	14	266	25
171	Reanalysis	1	3 mon	gpcc	19.78	9.02	9.02	0.0738	13.5501	2.79	0.2673	-47.8431	0.5170	25.85	6	47	160	26	10	249	18
172	Reanalysis	1	3 mon	gpcc trmm	22.56	12.65	12.65	0.0873	11.4548	5.17	0.0747	-10.0055	0.2733	30.40	73	79	154	78	110	494	102
173	Reanalysis	1	3 mon	ghcn cams grid	19.93	2.53	2.53	0.0480	20.8333	2.19	0.0648	-25.7013	0.2546	25.94	8	8	177	86	12	291	36
174	Reanalysis	1	3 mon	gpi	50.06	-44.86	44.86	0.0442	22.6244	1.41	0.0829	-78.7521	0.2879	63.34	245	260	180	75	233	993	215
175	Reanalysis	1	3 mon	trmm 3b43	22.34	8.61	8.61	0.0921	10.8578	4.76	0.0907	-9.6281	0.3012	29.67	71	34	152	69	91	417	74
176	Reanalysis	1	3 mon	ssmi	45.64	-20.92	20.92	-0.0384		4.69	0.0776	-64.3763	-0.2786	61.47	218	191	217	255	214	1095	238
177	Reanalysis	1	3 mon	opi2	19.48	14.15	14.15	0.1252	7.9872	4.68	0.2100	-14.9357	0.4582	25.56	3	105	137	32	7	284	33
178	Reanalysis	1	3 mon	opi3	20.93	12.32	12.32	0.0950	10.5263	4.18	0.1544	-17.5648	0.3929	27.58	25	76	150	43	46	340	51
179	Reanalysis	1	3 mon	cmap	20.37	8.82	8.82	0.0866	11.5473	3.83	0.1352	-16.8055	0.3677	27.06	15	40	155	47	28	285	34
180	Reanalysis	1	3 mon	cmap2	20.38	8.79	8.79	0.0865	11.5607	3.83	0.1350	-16.8089	0.3674	27.06	17	38	156	48	29	288	35
181	Reanalysis	1	4 mon	reanalysis	23.54	19.04	19.04	-0.0637		1.15	0.0860	-38.0269	-0.2933	31.59	106	174	227	257	138	902	195
182	Reanalysis	1	4 mon	gpcp	20.37	1.65	1.65	0.0835	11.9760	3.23	0.1238	-14.8563	0.3518	25.83	14	4	157	53	9	237	16
183	Reanalysis	1	4 mon	gpcc	20.02	9.12	9.12	0.0626	15.9744	2.68	0.1947	-49.5933	0.4413	26.22	9	51	167	34	16	277	30
184	Reanalysis	1	4 mon	gpcc trmm	21.11	11.73	11.73	0.1422	7.0323	5.02	0.2428	-10.5858	0.4928	28.31	32	74	133	29	60	328	47
185	Reanalysis	1	4 mon	ghcn cams grid	19.78	2.45	2.45	0.0604	16.5563	2.19	0.1019	-24.8335	0.3193	25.63	5	7	170	65	6	253	19
186	Reanalysis	1	4 mon	gpi	50.81	-45.32	45.32	0.0096	104.1667	3.06	0.0039	-81.6657	0.0623	64.60	251	263	192	181	240	1127	244
187	Reanalysis	1	4 mon	trmm 3b43	22.33	7.77	7.77	0.0992	10.0806	4.23	0.1295	-11.4263	0.3599	29.11	70	26	146	52	74	366	58
188	Reanalysis	1	4 mon	ssmi	44.65	-21.09	21.09	-0.0218		4.29	0.0249	-62.4454	-0.1579	60.82	212	192	211	242	207	1064	232
189	Reanalysis	1	4 mon	opi2	20.38	14.19	14.19	0.1021	9.7943	4.43	0.1397	-15.5528	0.3737	26.09	16	106	144	45	13	324	45
190	Reanalysis	1	4 mon	opi3	20.94	12.25	12.25	0.1025	9.7561	4.24	0.1794	-17.2293	0.4235	27.38	27	75	143	36	38	319	43
191	Reanalysis	1	4 mon	cmap	20.47	8.82	8.82	0.0965	10.3627	3.88	0.1678	-16.4407	0.4097	26.83	20	39	149	39	25	272	27
192	Reanalysis	1	4 mon	cmap2	20.47	8.79	8.79	0.0965	10.3627	3.88	0.1681	-16.4385	0.4100	26.83	21	37	148	38	24	268	26
193	Reanalysis	2	Yes	reanalysis	32.16	19.40	19.40	0.2520	3.9683	14.80	0.0167	-0.3117	0.1291	52.17	164	175	120	151	164	774	156
194	Reanalysis	2	Yes	gpcp	32.05	14.05	14.05	0.2768	3.6127	13.47	0.0260	-0.2465	0.1612	50.85	163	103	117	132	163	678	141
195	Reanalysis	2	Yes	gpcc	24.99	10.81	10.81	0.2613	3.8270	3.98	0.0391	-0.3903	0.1977	37.27	144	62	119	121	157	603	124
196	Reanalysis	2	Yes	gpcc trmm	40.13	30.63	30.63	0.0968	10.3306	21.90	0.0043	-0.8789	0.0659	59.05	204	235	147	179	197	962	206
197	Reanalysis	2	Yes	ghcn cams grid	32.90	17.69	17.69	0.1824	5.4825	14.06	0.0121	-0.3809	0.1098	53.53	165	145	128	164	165	767	155
198	Reanalysis	2	Yes	gpi	55.00	-37.85	37.85	0.0687	14.5560	4.60	0.0086	-2.6313	0.0928	70.09	258	246	166	172	255	1097	239
199	Reanalysis	2	Yes	trmm 3b43	37.71	25.94	25.94	0.0996	10.0402	21.46	0.0050	-0.7631	0.0704	57.20	182	223	145	178	182	910	196
200	Reanalysis	2	Yes	ssmi	50.04	-11.51	11.51	-0.0170		10.26	0.0006	-2.3719	-0.0252	67.66	243	71	208	213	251	986	212
201	Reanalysis	2	Yes	opi2	34.40	26.74	26.74	0.1576	6.3452	15.38	0.0069	-0.5336	0.0828	56.41	170	224	131	175	176	876	185
202	Reanalysis	2	Yes	opi3	34.69	24.70	24.70	0.2147	4.6577	15.71	0.0151	-0.4812	0.1229	55.43	171	217	123	156	170	837	169

Arkansas Basin - Monthly Surface

OI	Runoff	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR
203	Reanalysis	2	Yes	cmap	33.73	21.32	21.32	0.2180	4.5872	15.01	0.0166	-0.4155	0.1287	54.19	167	195	122	153	168	805	163
204	Reanalysis	2	Yes	cmap2	33.72	21.28	21.28	0.2185	4.5767	15.00	0.0167	-0.4148	0.1290	54.18	166	194	121	152	167	800	162
205	Reanalysis	2	No	reanalysis	33.97	19.93	19.93	-0.0855		13.25	0.0018	-0.4606	-0.0421	57.29	169	180	229	221	163	962	211
206	Reanalysis	2	No	gpcp	37.47	14.58	14.58	-0.0967		13.70	0.0029	-0.4680	-0.0541	57.44	178	113	231	223	184	929	199
207	Reanalysis	2	No	gpcc	28.03	10.89	10.89	-0.1070		0.65	0.0082	-1.0162	-0.0905	40.17	159	63	234	229	160	845	172
208	Reanalysis	2	No	gpcc trmm	44.99	33.00	33.00	-0.3460		20.00	0.0491	-1.2147	-0.2217	68.09	214	237	256	250	252	1209	259
209	Reanalysis	2	No	ghcn cams grid	38.78	18.22	18.22	-0.2236		12.79	0.0167	-0.6317	-0.1293	60.56	190	156	248	237	206	1037	228
210	Reanalysis	2	No	gpi	59.73	-37.54	37.54	-0.1056		12.85	0.0208	-3.3280	-0.1443	75.62	262	245	233	238	262	1240	262
211	Reanalysis	2	No	trmm 3b43	42.77	28.31	28.31	-0.2953		21.87	0.0387	-1.0881	-0.1967	66.12	206	231	253	246	246	1184	255
212	Reanalysis	2	No	ssmi	44.22	-10.28	10.28	0.0945	10.5820	9.10	0.0196	-1.8526	0.1399	62.38	210	55	151	144	221	781	158
213	Reanalysis	2	No	opi2	38.76	27.27	27.27	-0.3164		9.51	0.0255	-0.7467	-0.1597	62.66	189	226	254	243	225	1137	246
214	Reanalysis	2	No	opi3	39.62	25.23	25.23	-0.2185		11.28	0.0144	-0.7181	-0.1202	62.14	197	219	247	235	218	1116	243
215	Reanalysis	2	No	cmap	39.15	21.85	21.85	-0.1919		12.23	0.0118	-0.6574	-0.1088	61.03	193	203	245	233	211	1085	235
216	Reanalysis	2	No	cmap2	39.15	21.81	21.81	-0.1910		12.25	0.0117	-0.6568	-0.1084	61.02	192	202	244	232	210	1080	234
217	Reanalysis	2	1 mon	reanalysis	33.92	19.93	19.93	0.0368	27.1739	14.01	0.0003	-0.4005	0.0181	56.20	168	179	182	193	174	896	194
218	Reanalysis	2	1 mon	gpcp	36.43	14.61	14.61	0.1080	9.2593	13.88	0.0037	-0.3399	0.0604	54.98	176	114	141	182	169	782	159
219	Reanalysis	2	1 mon	gpcc	26.70	10.78	10.78	0.0564	17.7305	2.18	0.0023	-0.7762	0.0476	37.84	153	61	172	186	158	730	150
220	Reanalysis	2	1 mon	gpcc trmm	45.53	33.65	33.65	0.1155	8.6580	24.94	0.0055	-0.8488	0.0741	62.72	217	238	139	176	226	996	216
221	Reanalysis	2	1 mon	ghcn cams grid	38.42	18.25	18.25	-0.0440		13.59	0.0006	-0.5114	-0.0254	58.39	185	161	221	214	187	968	207
222	Reanalysis	2	1 mon	gpi	56.86	-37.47	37.47	-0.0145		8.75	0.0004	-2.9791	-0.0199	72.68	260	243	207	212	258	1180	253
223	Reanalysis	2	1 mon	trmm 3b43	44.93	26.96	26.96	0.1394	7.1736	24.52	0.0086	-0.7149	0.0930	60.40	213	232	134	171	205	955	204
224	Reanalysis	2	1 mon	ssmi	47.83	-10.40	10.40	0.0060	166.6667	11.03	0.0001	-2.2389	0.0089	66.68	226	56	195	196	248	921	197
225	Reanalysis	2	1 mon	opi2	39.76	27.32	27.32	-0.1117		12.28	0.0032	-0.6422	-0.0563	60.86	199	227	235	225	208	1094	237
226	Reanalysis	2	1 mon	opi3	39.23	25.29	25.29	-0.0182		13.56	0.0001	-0.5969	-0.0100	60.02	194	220	210	205	203	1032	226
227	Reanalysis	2	1 mon	cmap	38.63	21.90	21.90	0.0068	147.0588	13.84	0.0000	-0.5296	0.0038	58.74	187	206	194	198	191	976	210
228	Reanalysis	2	1 mon	cmap2	38.61	21.86	21.86	0.0091	109.8901	13.86	0.0000	-0.5280	0.0051	58.71	186	204	193	197	190	970	208
229	Reanalysis	2	2 mon	reanalysis	35.42	19.99	19.99	-0.0869		13.30	0.0018	-0.4609	-0.0428	57.50	173	182	230	222	185	992	214
230	Reanalysis	2	2 mon	gpcp	37.16	14.67	14.67	0.0592	16.8919	13.88	0.0011	-0.3710	0.0331	55.70	177	119	171	190	171	828	168
231	Reanalysis	2	2 mon	gpcc	28.79	11.07	11.07	-0.1182		0.58	0.0098	-1.0183	-0.0990	40.49	161	66	236	230	161	854	175
232	Reanalysis	2	2 mon	gpcc trmm	49.49	34.42	34.42	-0.2360		21.96	0.0230	-1.1565	-0.1517	68.26	239	239	249	240	253	1220	260
233	Reanalysis	2	2 mon	ghcn cams grid	39.72	18.36	18.36	-0.0625		13.55	0.0013	-0.5247	-0.0361	58.74	198	164	226	218	192	998	218
234	Reanalysis	2	2 mon	gpi	57.94	-37.39	37.39	-0.0240		9.24	0.0011	-3.0059	-0.0329	73.10	261	242	214	217	259	1193	257
235	Reanalysis	2	2 mon	trmm 3b43	48.16	29.69	29.69	-0.1709		23.42	0.0130	-1.0075	-0.1142	65.86	227	233	239	234	244	1177	250
236	Reanalysis	2	2 mon	ssmi	54.26	-10.69	10.69	-0.1474		14.38	0.0471	-2.8926	-0.2171	73.45	257	60	238	249	261	1065	233
237	Reanalysis	2	2 mon	opi2	39.55	27.42	27.42	0.1080	9.2593	15.30	0.0030	-0.5314	0.0545	58.87	195	229	142	184	194	944	203
238	Reanalysis	2	2 mon	opi3	40.50	25.40	25.40	-0.0065		13.76	0.0000	-0.5909	-0.0036	60.01	206	222	205	204	202	1039	229
239	Reanalysis	2	2 mon	cmap	39.91	22.00	22.00	-0.0003		13.83	0.0000	-0.5352	-0.0002	58.94	203	209	201	201	196	1010	221
240	Reanalysis	2	2 mon	cmap2	39.90	21.97	21.97	0.0006	1666.6667	13.84	0.0000	-0.5344	0.0003	58.93	202	208	199	200	195	1004	219
241	Reanalysis	2	3 mon	reanalysis	35.82	19.85	19.85	-0.2109		12.46	0.0108	-0.5182	-0.1038	58.70	174	178	246	231	189	1018	222
242	Reanalysis	2	3 mon	gpcp	37.49	14.55	14.55	-0.0318		13.72	0.0003	-0.4263	-0.0178	56.90	179	112	215	209	179	894	191
243	Reanalysis	2	3 mon	gpcc	29.53	11.31	11.31	-0.1774		0.24	0.0222	-1.1150	-0.1492	41.46	162	69	241	239	162	873	183
244	Reanalysis	2	3 mon	gpcc trmm	50.16	35.15	35.15	-0.2546		22.60	0.0271	-1.1987	-0.1647	69.21	246	240	250	244	254	1234	261
245	Reanalysis	2	3 mon	ghcn cams grid	39.61	18.24	18.24	-0.0656		13.46	0.0014	-0.5247	-0.0379	58.83	196	160	228	220	193	997	217
246	Reanalysis	2	3 mon	gpi	55.83	-37.29	37.29	0.0005	2000.0000	8.30	0.0000	-2.9159	0.0007	72.30	259	241	200	199	257	1156	249
247	Reanalysis	2	3 mon	trmm 3b43	48.24	30.30	30.30	-0.1805		24.22	0.0147	-1.0366	-0.1214	66.61	229	234	242	236	247	1188	256
248	Reanalysis	2	3 mon	ssmi	54.21	-10.61	10.61	-0.1380		14.54	0.0416	-2.8703	-0.2040	73.11	256	59	237	248	260	1060	231
249	Reanalysis	2	3 mon	opi2	38.81	27.32	27.32	0.2078	4.8123	16.57	0.0110	-0.4776	0.1048	57.91	191	228	124	167	186	896	193
250	Reanalysis	2	3 mon	opi3	40.35	25.30	25.30	-0.0025		13.72	0.0000	-0.5856	-0.0014	59.99	205	221	203	202	201	1032	227
251	Reanalysis	2	3 mon	cmap	39.84	21.90	21.90	-0.0226		13.57	0.0002	-0.5472	-0.0128	59.26	200	207	212	206	198	1023	223
252	Reanalysis	2	3 mon	cmap2	39.85	21.87	21.87	-0.0235		13.56	0.0002	-0.5476	-0.0133	59.26	201	205	213	207	199	1025	224
253	Reanalysis	2	4 mon	reanalysis	35.18	19.53	19.53	-0.0395		13.06	0.0004	-0.4371	-0.0196	56.59	172	177	218	211	178	956	205
254	Reanalysis	2	4 mon	gpcp	35.96	14.11	14.11	0.1537	6.5062	13.44	0.0076	-0.3111	0.0870	54.05	175	104	132	174	166	751	152
255	Reanalysis	2	4 mon	gpcc	27.96	11.62	11.62	-0.0366		1.71	0.0009	-0.9227	-0.0307	39.61	158	72	216	216	159	821	165
256	Reanalysis	2	4 mon	gpcc trmm	46.00	32.83	32.83	0.2058	4.8591	25.00	0.0196	-0.8062	0.1399	60.35	220	236	125	145	204	930	200
257	Reanalysis	2	4 mon	ghcn cams grid	37.54	17.84	17.84	0.1128	8.8652	13.83	0.0043	-0.4074	0.0659	56.00	180	149	140	180	173	822	166
258	Reanalysis	2	4 mon	gpi	52.79	-37.47	37.47	0.1391	7.1891	2.07	0.0361	-2.3966	0.1900	67.42	254	244	135	123	250	1006	220
259	Reanalysis	2	4 mon	trmm 3b43	43.25	27.96	27.96	0.2687	3.7216	24.32	0.0360	-0.6184	0.1898	57.12	209	230	118	124	180	861	180
260	Reanalysis	2	4 mon	ssmi	54.07	-10.44	10.44	-0.1055		14.06	0.0244	-2.7356	-0.1562	71.92	255	57	232	241	256	1041	230
261	Reanalysis	2	4 mon	opi2	37.67	26.90	26.90	0.3673	2.7226	18.31	0.0351	-0.3939	0.1873	55.73	181	225	111	127	172	816	164
262	Reanalysis	2	4 mon	opi3	38.68	24.84	24.84	0.1930	5.1813	15.55	0.0115	-0.4665	0.1073	57.16	188	218	127	166	181	880	187
263	Reanalysis	2	4 mon	cmap	37.91	21.45	21.45	0.1629	6.1387	14.65	0.0087	-0.4279	0.0934	56.41	183	199	129	169	175	855	176
264	Reanalysis	2	4 mon	cmap2	37.91	21.42	21.42	0.1622	6.1652	14.64	0.0087	-0.4280	0.0930	56.41	184	197	130	170	177	858	178

Arkansas Basin - Yearly Surface

OI	Runoff	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	*Surface*	*1*	*Yes*	*reanalysis*	*24.58*	*24.58*	*24.58*	*0.2652*	*3.7707*	*-19.20*	*0.0942*	*-14.3923*	*0.3069*	*25.99*	*64*	*75*	*29*	*21*	*60*	*249*	*51*	Plot
2	Surface	1	Yes	gpcp	**7.54**	**5.94**	5.94	0.6951	1.4386	-3.55	0.2060	-0.5376	0.4539	**8.78**	4	6	13	16	4	43	3	
3	Surface	1	Yes	gpcc	13.48	13.48	13.48	0.5868	1.7042	-10.62	0.1754	-3.9281	0.4188	14.93	28	35	19	18	25	125	14	
4	Surface	1	Yes	ghcn cams grid	9.37	9.37	9.37	0.5487	1.8225	-5.80	0.2133	-2.8264	0.4619	**10.74**	13	21	21	15	9	79	5	
5	Surface	1	Yes	gpi	46.62	-46.62	46.62	0.9516	**1.0509**	46.95	0.1815	-18.7167	0.4260	47.62	88	88	4	17	86	283	66	
6	Surface	1	Yes	ssmi	21.65	-21.65	21.65	0.4091	2.4444	24.11	0.0120	-3.2521	0.1097	24.80	58	69	24	41	57	249	52	
7	Surface	1	Yes	opi2	18.29	18.29	18.29	-0.0157		-10.33	0.0001	-9.1861	-0.0117	19.89	47	59	61	58	40	265	59	
8	Surface	1	Yes	opi3	16.45	16.45	16.45	0.6723	1.4874	-13.88	0.2433	-6.6352	0.4933	17.41	38	49	14	13	36	150	21	
9	Surface	1	Yes	cmap	13.03	13.03	13.03	0.7270	1.3755	-10.89	0.2519	-3.5709	**0.5019**	14.32	25	33	11	10	23	102	10	
10	Surface	1	Yes	cmap2	13.01	13.01	13.01	0.7235	1.3822	-10.84	0.2512	-3.5867	0.5012	14.29	24	32	12	11	22	101	9	
11	Surface	1	No	reanalysis	24.11	24.11	24.11	1.0102	**1.0102**	-24.18	0.2983	-12.9439	**0.5462**	24.74	63	74	1	6	56	200	33	
12	*Surface*	*1*	*No*	*gpcp*	***6.79***	***5.83***	*5.83*	*1.2258*	***1.2258***	*-7.57*	*0.3302*	*-0.3589*	***0.5746***	***8.25***	*3*	*5*	*8*	*4*	*3*	*23*	*1*	Plot
13	Surface	1	No	gpcc	14.91	14.91	14.91	1.3505	**1.3505**	-17.84	0.4042	-4.5374	**0.6358**	15.82	35	47	10	3	27	122	13	
14	Surface	1	No	ghcn cams grid	**8.24**	8.24	8.24	0.9321	**1.0728**	-8.71	0.3173	-2.5114	**0.5633**	**10.29**	6	13	7	5	8	39	2	
15	Surface	1	No	gpi	45.19	-45.19	45.19	1.8345	1.8345	38.22	0.2933	-17.5231	**0.5416**	46.15	85	85	22	7	83	282	65	
16	Surface	1	No	ssmi	18.08	-18.08	18.08	0.9349	**1.0696**	18.58	0.0698	-2.1891	0.2642	21.48	44	54	6	23	47	174	30	
17	Surface	1	No	opi2	18.18	18.18	18.18	0.1004	9.9602	-11.23	0.0029	-8.7409	0.0535	19.45	46	56	42	54	38	236	49	
18	Surface	1	No	opi3	16.34	16.34	16.34	0.9425	**1.0610**	-15.90	0.2464	-6.4835	0.4964	17.24	36	48	5	12	35	136	15	
19	Surface	1	No	cmap	12.92	12.92	12.92	1.0183	**1.0183**	-13.06	0.2547	-3.4684	**0.5047**	14.15	23	31	3	9	21	87	7	
20	Surface	1	No	cmap2	12.90	12.90	12.90	1.0150	**1.0150**	-13.01	0.2548	-3.4819	**0.5048**	14.13	22	30	2	8	20	82	6	
21	*Surface*	*2*	*Yes*	*reanalysis*	*17.85*	*12.29*	*12.29*	*0.1410*	*7.0922*	*-6.47*	*0.4117*	*-23.5762*	***0.6416***	*20.64*	*42*	*27*	*37*	*2*	*45*	*153*	*24*	Plot
22	Surface	2	Yes	gpcp	17.04	**6.66**	6.66	0.0417	23.9808	-0.17	0.0131	-7.8633	0.1146	20.51	39	7	52	40	44	182	31	
23	Surface	2	Yes	gpcc	19.34	14.49	14.49	0.1095	9.1324	-9.82	0.0800	-9.2401	0.2828	23.09	50	41	40	22	52	205	36	
24	Surface	2	Yes	ghcn cams grid	18.00	10.07	10.07	0.0440	22.7273	-3.59	0.0136	-8.3854	0.1165	21.90	43	22	51	38	49	203	35	
25	Surface	2	Yes	gpi	45.60	-45.60	45.60	0.1112	8.9928	50.26	0.0346	-18.9094	0.1859	49.74	87	87	39	27	88	328	76	
26	Surface	2	Yes	ssmi	28.21	-23.44	23.44	-0.0604		22.25	0.0097	-6.9800	-0.0986	33.16	72	72	66	65	73	348	81	
27	Surface	2	Yes	opi2	25.90	19.02	19.02	-0.0759		-11.72	0.0251	-9.3975	-0.1584	29.28	67	61	68	69	65	330	77	
28	Surface	2	Yes	opi3	22.59	17.18	17.18	0.0526	19.0114	-10.75	0.0191	-11.8523	0.1381	25.84	62	51	50	34	59	256	55	
29	Surface	2	Yes	cmap	20.20	13.76	13.76	0.0629	15.8983	-7.40	0.0261	-9.2422	0.1616	23.60	54	37	46	29	54	220	42	
30	Surface	2	Yes	cmap2	20.19	13.73	13.73	0.0627	15.9490	-7.38	0.0260	-9.2672	0.1612	23.59	53	36	47	30	53	219	40	
31	Surface	2	No	reanalysis	13.24	13.24	13.24	-0.1435		-4.40	0.0131	-10.9376	-0.1144	14.38	26	34	69	67	24	220	41	
32	Surface	2	No	gpcp	**8.96**	7.61	7.61	-0.2349		1.93	0.0128	-1.5631	-0.1132	11.03	9	11	71	66	13	170	29	
33	Surface	2	No	gpcc	17.60	17.60	17.60	0.0048	208.3333	-9.29	0.0000	-6.1405	0.0021	19.28	40	52	57	57	37	243	50	
34	Surface	2	No	ghcn cams grid	11.55	11.02	11.02	-0.5285		0.80	0.0602	-2.8200	-0.2454	13.97	18	24	78	75	19	214	37	
35	Surface	2	No	gpi	42.49	-42.49	42.49	0.4888	2.0458	46.76	0.0193	-14.5323	0.1388	43.93	83	83	23	33	81	303	72	
36	Surface	2	No	ssmi	14.59	-14.59	14.59	-0.9115		29.37	0.0697	-1.7811	-0.2639	19.58	30	44	81	76	39	270	61	
37	Surface	2	No	opi2	20.56	19.97	19.97	-1.3603		-1.72	0.2472	-5.3339	-0.4971	22.85	56	66	83	84	50	339	79	
38	Surface	2	No	opi3	18.13	18.13	18.13	-0.5182		-6.39	0.0569	-6.7554	-0.2385	20.08	45	55	77	73	42	292	69	
39	Surface	2	No	cmap	14.73	14.70	14.70	-0.4424		-3.55	0.0396	-4.3578	-0.1991	17.07	33	46	75	71	34	259	57	
40	Surface	2	No	cmap2	14.70	14.68	14.68	-0.4457		-3.51	0.0404	-4.3629	-0.2009	17.05	32	45	76	72	32	257	56	
41	Reanalysis	1	Yes	reanalysis	19.42	19.36	19.36	0.1481	6.7522	5.11	0.0170	-7.1655	0.1305	21.50	51	63	36	36	48	234	47	
42	Reanalysis	1	Yes	gpcp	**8.37**	**1.74**	1.74	-0.0270		3.60	0.0006	-0.9741	-0.0250	**9.58**	7	2	62	62	5	138	16	
43	Reanalysis	1	Yes	gpcc	9.52	**7.60**	7.60	0.0360	27.7778	1.28	0.0031	-5.2398	0.0555	10.90	14	10	54	52	11	141	18	
44	Reanalysis	1	Yes	gpcc trmm	13.24	9.34	9.34	-2.9075		-10.62	0.7584	-1.3014	-0.8709	17.05	27	20	87	87	33	254	54	
45	Reanalysis	1	Yes	ghcn cams grid	**7.58**	**2.86**	2.86	0.1006	9.9404	2.69	0.0068	-0.6813	0.0826	**9.84**	5	4	41	44	6	100	8	
46	Reanalysis	1	Yes	gpi	45.50	-45.50	45.50	0.1811	5.5218	-5.97	0.1014	-37.5042	0.3184	47.37	86	86	32	19	85	308	74	
47	Reanalysis	1	Yes	trmm 3b43	14.67	**6.99**	6.99	-0.5335		1.73	0.1339	-1.4467	-0.3659	15.87	31	8	79	81	28	227	44	
48	Reanalysis	1	Yes	ssmi	20.89	-19.61	19.61	-0.2572		7.70	0.1236	-8.2348	-0.3515	25.63	57	64	72	80	58	331	78	
49	Reanalysis	1	Yes	opi2	14.83	14.43	14.43	0.3353	2.9824	7.20	0.0993	-4.7744	0.3152	16.38	34	40	27	20	30	151	22	
50	Reanalysis	1	Yes	opi3	12.51	12.39	12.39	0.1299	7.6982	4.70	0.0115	-3.8114	0.1072	14.95	21	28	38	43	26	156	27	
51	Reanalysis	1	Yes	cmap	10.22	9.01	9.01	0.0787	12.7065	3.98	0.0048	-2.3928	0.0689	12.55	16	18	44	48	17	143	20	
52	Reanalysis	1	Yes	cmap2	10.19	8.97	8.97	0.0775	12.9032	3.97	0.0046	-2.3767	0.0677	12.52	15	17	45	49	16	142	19	
53	Reanalysis	1	No	reanalysis	18.93	18.93	18.93	0.0535	18.6916	3.10	0.0395	-124.7595	0.1987	20.02	49	60	48	26	41	224	43	
54	Reanalysis	1	No	gpcp	**5.95**	**1.61**	1.61	0.0178	56.1798	3.40	0.0029	-9.4885	0.0540	**6.75**	2	1	55	53	1	112	12	
55	Reanalysis	1	No	gpcc	**9.18**	9.03	9.03	0.0364	27.4725	2.71	0.2163	-445.7478	0.4651	11.12	10	19	53	14	14	110	11	
56	Reanalysis	1	No	gpcc trmm	11.58	11.58	11.58	0.0531	18.8324	6.74	0.0060	-26.9364	0.0773	12.23	19	25	49	47	15	155	25	
57	Reanalysis	1	No	ghcn cams grid	**5.66**	**2.42**	2.42	-0.0468		2.22	0.0265	-15.0597	-0.1629	**7.18**	1	3	63	70	2	139	17	
58	Reanalysis	1	No	gpi	44.63	-44.63	44.63	-0.0537		6.24	0.0889	-375.7288	-0.2982	46.87	84	84	65	77	84	394	85	
59	Reanalysis	1	No	trmm 3b43	**8.78**	8.78	8.78	0.3411	2.9317	6.52	0.6074	-9.9773	**0.7793**	**10.09**	8	14	26	1	7	56	4	
60	Reanalysis	1	No	ssmi	17.77	-17.76	17.76	0.0112	89.2857	3.72	0.0023	-62.4054	0.0483	21.27	41	53	56	55	46	251	53	
61	Reanalysis	1	No	opi2	14.31	14.31	14.31	-0.0477		2.91	0.0214	-57.4259	-0.1464	15.94	29	39	64	68	29	229	45	
62	Reanalysis	1	No	opi3	12.27	12.27	12.27	-0.0087		3.35	0.0005	-42.0395	-0.0234	13.68	20	26	60	60	18	184	32	
63	Reanalysis	1	No	cmap	9.36	8.88	8.88	-0.0083		3.38	0.0006	-26.4834	-0.0239	10.93	12	16	59	61	12	160	28	
64	Reanalysis	1	No	cmap2	9.32	8.85	8.85	-0.0071		3.39	0.0004	-26.2641	-0.0203	**10.89**	11	15	58	59	10	153	23	
65	Reanalysis	2	Yes	reanalysis	26.65	18.23	18.23	1.2301	**1.2301**	19.64	0.0429	-0.3896	0.2070	32.73	68	58	9	25	71	231	46	
66	Reanalysis	2	Yes	gpcp	25.83	12.87	12.87	0.5660	1.7668	12.53	0.0178	-0.2076	0.1333	30.51	66	29	20	35	67	217	39	
67	Reanalysis	2	Yes	gpcc	19.90	7.78	7.78	0.6549	1.5270	4.59	0.0467	-0.0929	0.2161	22.86	52	12	16	24	51	155	26	
68	Reanalysis	2	Yes	gpcc trmm	28.45	19.25	19.25	-1.9411		-9.16	0.1527	-0.8673	-0.3907	32.15	76	62	85	83	70	376	84	
69	Reanalysis	2	Yes	ghcn cams grid	26.69	16.51	16.51	0.0839	11.9190	12.44	0.0004	-0.4058	0.0210	32.92	69	50	43	56	72	290	68	
70	Reanalysis	2	Yes	gpi	41.53	-41.06	41.06	0.2044	4.8924	-4.80	0.0133	-2.8739	0.1154	49.32	82	82	31	39	87	321	75	
71	Reanalysis	2	Yes	trmm 3b43	27.13	14.57	14.57	-5.5704		-18.12	0.7344	-0.6707	-0.8570	30.41	70	42	88	86	66	352	82	
72	Reanalysis	2	Yes	ssmi	28.45	-14.18	14.18	-0.9003		22.12	0.1148	-0.6489	-0.3388	36.25	77	38	80	78	79	352	83	
73	Reanalysis	2	Yes	opi2	31.47	25.56	25.56	0.3635	2.7510	16.98	0.0144	-0.8774	0.1201	38.05	79	77	25	37	80	298	70	
74	Reanalysis	2	Yes	opi3	29.44	23.53	23.53	0.6723	1.4874	19.77	0.0283	-0.6965	0.1681	36.17	78	73	15	28	78	272	62	
75	Reanalysis	2	Yes	cmap	28.27	20.14	20.14	0.5977	1.6731	16.89	0.0232	-0.5134	0.1523	34.16	74	68	18	31	76	267	60	
76	Reanalysis	2	Yes	cmap2	28.25	20.11	20.11	0.5985	1.6708	16.88	0.0231	-0.5116	0.1521	34.14	73	67	17	32	75	264	58	
77	Reanalysis	2	No	reanalysis	22.25	19.93	19.93	-1.3243		5.63	0.1151	-1.4335	-0.3392	28.46	59	65	82	79	62	347	80	
78	Reanalysis	2	No	gpcp	18.65	14.58	14.58	0.3024	3.3069	14.02	0.0118	-0.6894	0.1084	23.71	48	43	28	42	55	216	38	
79	Reanalysis	2	No	gpcc	11.14	10.89	10.89	-0.0745		0.95	0.0026	-1.6045	-0.0510	17.02	17	23	67	63	31	201	34	
80	Reanalysis	2	No	gpcc trmm	33.00	33.00	33.00	-1.6261		7.63	0.5695	-11.3740	-0.7547	35.89	80	80	84	85	77	406	88	
81	Reanalysis	2	No	ghcn cams grid	20.45	18.22	18.22	-0.2217		12.79	0.0071	-1.2072	-0.0846	27.10	55	57	70	64	61	307	73	
82	Reanalysis	2	No	gpi	38.91	-37.54	37.54	-0.3791		25.32	0.1479	-9.0570	-0.3846	44.22	81	81	74	82	82	400	87	
83	Reanalysis	2	No	trmm 3b43	28.31	28.31	28.31	-2.6725		10.04	0.8987	-8.4979	-0.9480	31.45	75	79	86	88	68	396	86	
84	Reanalysis	2	No	ssmi	16.42	**-7.17**	7.17	-0.3050		17.76	0.0583	-1.2930	-0.2414	20.33	37	9	73	74	43	236	48	
85	Reanalysis	2	No	opi2	27.56	27.27	27.27	0.1589	6.2933	15.92	0.0064	-2.4072	0.0799	33.67	71	78	33	46	74	302	71	
86	Reanalysis	2	No	opi3	25.28	25.23	25.23	0.2146	4.6598	16.24	0.0067	-1.9961	0.0817	31.58	65	76	30	45	69	285	67	
87	Reanalysis	2	No	cmap	22.41	21.85	21.85	0.1517	6.5920	15.00	0.0035	-1.5388	0.0588	29.07	61	71	35	51	64	282	64	
88	Reanalysis	2	No	cmap2	22.38	21.81	21.81	0.1542	6.4851	15.02	0.0036	-1.5331	0.0596	29.03	60	70	34	50	63	277	63	

Mississippi Basin - Monthly Atmospheric

OI	Runoff	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	*Surface*	*1*	*Yes*	*reanalysis*	***143.54***	***-143.43***	***0.3880***	*2.5773*	*139.64*	*0.0101*	*-3.5379*	***0.1004***	***163.33***	*3*	*3*	*4*	*4*	*3*	*17*	*2*	Plot
2	Surface	1	Yes	gpcp	**141.18**	**-140.86**	**-0.3428**		134.50	0.0176	-3.5910	-0.1327	**166.31**	1	1	8	8	4	22	3	
3	Surface	1	Yes	gpcc	150.47	-150.47	-0.2613		132.60	0.0081	-3.6418	**-0.0898**	174.24	7	9	5	5	10	36	8	
4	Surface	1	Yes	gpcc trmm	154.53	-154.53	-1.2044		128.50	0.1326	-3.8174	-0.3641	182.66	15	15	19	17	18	84	18	
5	Surface	1	Yes	ghcn cams grid	**146.25**	**-146.06**	-0.3403		135.67	0.0167	-3.9399	-0.1291	169.94	4	4	7	7	6	28	6	
6	*Surface*	*1*	*Yes*	*ssmi*	***141.39***	***-141.39***	***1.2393***	*1.2393*	*140.10*	*0.3484*	*-2.8111*	***0.5902***	***153.09***	*2*	*2*	*2*	*2*	*1*	*9*	*1*	Plot
7	Surface	1	Yes	opi2	152.94	-152.64	-0.9916		121.10	0.1442	-4.2605	-0.3797	178.02	12	12	16	19	15	74	15	
8	Surface	1	Yes	opi3	151.51	-151.33	-0.5778		128.51	0.0480	-4.0435	-0.2192	174.31	11	11	14	15	11	62	12	
9	Surface	1	Yes	cmap	149.02	-148.83	-0.5162		130.27	0.0378	-3.9328	-0.1943	172.39	6	6	11	13	9	45	10	
10	Surface	1	Yes	cmap2	**148.97**	**-148.78**	-0.5158		130.30	0.0376	-3.9293	-0.1939	172.33	5	5	10	12	8	40	9	
11	*Surface*	*2*	*Yes*	*reanalysis*	*150.51*	*-150.51*	***1.1389***	*1.1389*	*148.83*	*0.0552*	*-3.2849*	***0.2349***	***168.12***	*9*	*10*	*1*	*3*	*5*	*28*	*5*	Plot
12	Surface	2	Yes	gpcp	150.49	-150.29	-0.3019		144.92	0.0100	-3.4560	-0.0998	171.44	8	7	6	6	7	34	7	
13	Surface	2	Yes	gpcc	154.03	-154.03	-1.4381		128.17	0.2253	-4.0958	-0.4747	178.95	13	14	20	20	16	83	17	
14	Surface	2	Yes	gpcc trmm	171.12	-171.12	-1.1073		139.28	0.0917	-4.5821	-0.3028	194.03	20	20	17	16	20	93	20	
15	Surface	2	Yes	ghcn cams grid	154.06	-153.94	-0.5013		142.76	0.0248	-3.6430	-0.1575	175.00	14	13	9	9	12	57	11	
16	Surface	2	Yes	ssmi	150.56	-150.35	**1.4799**	1.4799	142.41	0.4134	-2.6636	**0.6429**	**156.86**	10	8	3	1	2	24	4	
17	Surface	2	Yes	opi2	160.34	-160.25	-1.1224		132.38	0.1398	-4.0994	-0.3740	183.40	19	19	18	18	19	93	19	
18	Surface	2	Yes	opi3	158.77	-158.67	-0.6219		139.31	0.0398	-3.8851	-0.1995	179.50	18	18	15	14	17	82	16	
19	Surface	2	Yes	cmap	156.67	-156.56	-0.5406		141.08	0.0296	-3.7812	-0.1720	177.59	17	17	13	11	14	72	14	
20	Surface	2	Yes	cmap2	156.62	-156.51	-0.5398		141.11	0.0294	-3.7780	-0.1715	177.53	16	16	12	10	13	67	13	

Mississippi Basin - Monthly Atmospheric

OI	Runoff	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	Surface	1	Yes	reanalysis	143.54	-143.43	0.3880	2.5773	139.64	0.0101	-3.5379	0.1004	163.33	3	3	4	4	3	17	2	Plot
2	Surface	1	Yes	gpcp	141.18	-140.86	-0.3428		134.50	0.0176	-3.5910	-0.1327	166.31	1	1	8	8	4	22	3	
3	Surface	1	Yes	gpcc	150.47	-150.47	-0.2613		132.60	0.0081	-3.6418	-0.0898	174.24	7	9	5	5	10	36	8	
4	Surface	1	Yes	gpcc trmm	154.53	-154.53	-1.2044		128.50	0.1326	-3.8174	-0.3641	182.66	15	15	19	17	18	84	18	
5	Surface	1	Yes	ghcn cams grid	146.25	-146.06	-0.3403		135.67	0.0167	-3.9399	-0.1291	169.94	4	4	7	7	6	28	6	
6	Surface	1	Yes	ssmi	141.39	-141.39	1.2393	1.2393	140.10	0.3484	-2.8111	0.5902	153.09	2	2	2	2	1	9	1	Plot
7	Surface	1	Yes	opi2	152.94	-152.64	-0.9916		121.10	0.1442	-4.2605	-0.3797	178.02	12	12	16	19	15	74	15	
8	Surface	1	Yes	opi3	151.51	-151.33	-0.5778		128.51	0.0480	-4.0435	-0.2192	174.31	11	11	14	15	11	62	12	
9	Surface	1	Yes	cmap	149.02	-148.83	-0.5162		130.27	0.0378	-3.9328	-0.1943	172.39	6	6	11	13	9	45	10	
10	Surface	1	Yes	cmap2	148.97	-148.78	-0.5158		130.30	0.0376	-3.9293	-0.1939	172.33	5	5	10	12	8	40	9	
11	Surface	2	Yes	reanalysis	150.51	-150.51	1.1389	1.1389	148.83	0.0552	-3.2849	0.2349	168.12	9	10	1	3	5	28	5	Plot
12	Surface	2	Yes	gpcp	150.49	-150.29	-0.3019		144.92	0.0100	-3.4560	-0.0998	171.44	8	7	6	6	7	34	7	
13	Surface	2	Yes	gpcc	154.03	-154.03	-1.4381		128.17	0.2253	-4.0958	-0.4747	178.95	13	14	20	20	16	83	17	
14	Surface	2	Yes	gpcc trmm	171.12	-171.12	-1.1073		139.28	0.0917	-4.5821	-0.3028	194.03	20	20	17	16	20	93	20	
15	Surface	2	Yes	ghcn cams grid	154.06	-153.94	-0.5013		142.76	0.0248	-3.6430	-0.1575	175.00	14	13	9	9	12	57	11	
16	Surface	2	Yes	ssmi	150.56	-150.35	1.4799	1.4799	142.41	0.4134	-2.6636	0.6429	156.86	10	8	3	1	2	24	4	
17	Surface	2	Yes	opi2	160.34	-160.25	-1.1224		132.38	0.1398	-4.0994	-0.3740	183.40	19	19	18	18	19	93	19	
18	Surface	2	Yes	opi3	158.77	-158.67	-0.6219		139.31	0.0398	-3.8851	-0.1995	179.50	18	18	15	14	17	82	16	
19	Surface	2	Yes	cmap	156.67	-156.56	-0.5406		141.08	0.0296	-3.7812	-0.1720	177.59	17	17	13	11	14	72	14	
20	Surface	2	Yes	cmap2	156.62	-156.51	-0.5398		141.11	0.0294	-3.7780	-0.1715	177.53	16	16	12	10	13	67	13	

Mississippi Basin - Yearly Atmospheric

OI	Runoff	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Oslope	Intercpet	R^2	R^2 1.1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	***Surface***	*1*	***Yes***	*reanalysis*	***143.43***	***-143.43***	***1.0370***	*1.0370*	***144.18***	*0.1300*	*-50.7855*	*0.3605*	***145.15***	*3*	*3*	*1*	*12*	*4*	*23*	*3*	Plot
2	***Surface***	*1*	***Yes***	*gpcp*	***140.80***	***-140.80***	***1.0905***	*1.0905*	*142.26*	*0.1762*	*-63.2803*	*0.4198*	***142.69***	*2*	*2*	*3*	*7*	*3*	*17*	*2*	Plot
3	**Surface**	1	**Yes**	gpcc	150.51	-150.51	3.1172	3.1172	180.51	0.5548	-51.8012	**0.7449**	151.52	12	12	18	2	12	56	10	
4	**Surface**	1	**Yes**	gpcc trmm	**145.34**	**-145.34**	5.1827	5.1827	196.61	0.6514	-129.4422	**0.8071**	**145.77**	5	5	20	1	5	36	5	
5	**Surface**	1	**Yes**	ghcn cams grid	**145.23**	**-145.23**	1.8170	1.8170	152.86	0.2186	-66.5916	**0.4676**	146.32	4	4	16	5	6	35	4	
6	**Surface**	1	**Yes**	ssmi	**140.73**	**-140.73**	1.2996	1.2996	139.62	0.3095	-54.0739	**0.5563**	**138.53**	1	1	11	3	1	17	1	
7	**Surface**	1	**Yes**	opi2	150.76	-150.76	1.4180	1.4180	158.15	0.1590	-72.5261	0.3988	152.60	13	13	13	8	14	61	13	
8	**Surface**	1	**Yes**	opi3	149.18	-149.18	**1.1302**	1.1302	151.69	0.1232	-70.8409	0.3510	150.84	8	8	4	13	11	44	8	
9	**Surface**	1	**Yes**	cmap	147.08	-147.08	1.1496	1.1496	149.90	0.1357	-69.1495	0.3683	149.06	7	7	7	11	9	41	7	
10	**Surface**	1	**Yes**	cmap2	147.03	-147.03	1.1612	1.1612	149.97	0.1373	-69.0957	0.3706	149.00	6	6	8	10	8	38	6	
11	***Surface***	*2*	***Yes***	*reanalysis*	*150.48*	*-150.48*	*1.1643*	*1.1643*	*148.85*	*0.0684*	*-63.7606*	*0.2616*	*149.44*	*11*	*11*	*9*	*19*	*10*	*60*	*12*	Plot
12	**Surface**	2	**Yes**	gpcp	150.26	-150.26	1.4112	1.4112	147.74	0.2147	-62.5083	0.4634	147.99	10	10	12	6	7	45	9	
13	**Surface**	2	**Yes**	gpcc	154.07	-154.07	1.4901	1.4901	158.99	0.1159	-51.0626	0.3404	155.41	15	15	14	16	17	77	18	
14	**Surface**	2	**Yes**	gpcc trmm	171.32	-171.32	3.4597	3.4597	208.47	0.2418	-225.0908	**0.4917**	171.65	20	20	19	4	20	83	19	
15	**Surface**	2	**Yes**	ghcn cams grid	153.91	-153.91	1.5599	1.5599	153.69	0.1443	-65.7318	0.3798	151.70	14	14	15	9	13	65	14	
16	**Surface**	2	**Yes**	ssmi	149.88	-149.88	0.4805	2.0812	140.00	0.0270	-48.0726	0.1643	**142.45**	9	9	17	20	2	57	11	
17	**Surface**	2	**Yes**	opi2	160.22	-160.22	0.7837	1.2760	154.48	0.0797	-71.4003	0.2823	158.01	19	19	10	18	19	85	20	
18	**Surface**	2	**Yes**	opi3	158.64	-158.64	**1.0537**	1.0537	155.73	0.1000	-69.7498	0.3162	156.20	18	18	2	17	18	73	17	
19	**Surface**	2	**Yes**	cmap	156.54	-156.54	**1.1316**	1.1316	154.48	0.1174	-68.1363	0.3426	154.41	17	17	5	15	16	70	16	
20	**Surface**	2	**Yes**	cmap2	156.49	-156.49	1.1402	1.1402	154.48	0.1183	-68.0858	0.3440	154.35	16	16	6	14	15	67	15	

Mississippi Basin - Monthly Surface

OI	Runoff	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	*Surface*	*1*	*Yes*	*reanalysis*	*40.06*	*22.41*	*22.41*	*0.1955*	*5.1151*	*-10.00*	*0.3159*	*-6.3083*	*0.5621*	*53.63*	*221*	*158*	*100*	*37*	*226*	*742*	*191*	Plot
2	Surface	1	Yes	gpcp	31.88	22.08	22.08	0.4055	2.4661	-12.19	0.6003	-1.2302	**0.7748**	44.87	180	148	94	13	214	649	141	
3	Surface	1	Yes	gpcc	35.21	30.39	30.39	0.3950	2.5316	-20.58	0.6395	-2.0561	**0.7997**	48.59	211	214	95	6	222	748	197	
4	Surface	1	Yes	ghcn cams grid	33.73	25.30	25.30	0.3873	2.5820	-15.00	0.6254	-1.6997	**0.7908**	47.66	203	177	96	8	220	704	167	
5	Surface	1	Yes	ssmi	64.32	18.74	18.74	-0.1487		-2.02	0.0475	-3.0399	-0.2180	75.07	228	133	214	167	228	970	223	
6	Surface	1	Yes	opi2	35.51	32.02	32.02	0.4283	2.3348	-22.52	0.6843	-1.6961	**0.8273**	48.80	214	223	88	1	223	749	199	
7	Surface	1	Yes	opi3	34.00	30.23	30.23	0.4207	2.3770	-20.60	0.6726	-1.6568	**0.8201**	48.00	205	211	90	2	221	729	184	
8	Surface	1	Yes	cmap	33.29	28.44	28.44	0.4130	2.4213	-18.68	0.6585	-1.6197	**0.8115**	47.29	196	197	91	4	219	707	170	
9	Surface	1	Yes	cmap2	33.24	28.39	28.39	0.4128	2.4225	-18.63	0.6595	-1.6211	**0.8121**	47.24	195	195	92	3	218	703	164	
10	Surface	1	No	reanalysis	24.72	22.41	22.41	0.1941	5.1520	-9.98	0.0064	-1.3792	0.0799	30.60	64	157	101	121	63	506	83	
11	Surface	1	No	gpcp	30.31	22.15	22.15	-0.1194		-3.46	0.0010	-0.6324	-0.0320	38.39	168	149	221	132	170	840	209	
12	Surface	1	No	gpcc	33.81	30.56	30.56	-0.1667		-11.44	0.0021	-1.3074	-0.0454	42.22	204	218	227	133	203	985	226	
13	Surface	1	No	ghcn cams grid	31.52	25.11	25.11	-0.3141		-3.26	0.0079	-0.8803	-0.0891	39.78	176	175	222	146	182	901	212	
14	Surface	1	No	ssmi	38.06	20.60	20.60	-0.6955		7.24	0.0206	-0.4060	-0.1435	44.29	218	143	219	159	211	950	217	
15	Surface	1	No	opi2	35.26	32.09	32.09	-0.4514		-7.86	0.0150	-1.3058	-0.1223	45.13	212	224	228	154	215	1033	228	
16	Surface	1	No	opi3	34.66	30.30	30.30	-0.2921		-8.73	0.0064	-1.1772	-0.0799	43.45	209	212	226	143	210	1000	227	
17	Surface	1	No	cmap	33.54	28.52	28.52	-0.2807		-7.13	0.0060	-1.0711	-0.0774	42.05	198	202	225	140	202	967	221	
18	Surface	1	No	cmap2	33.50	28.46	28.46	-0.2805		-7.08	0.0060	-1.0699	-0.0774	41.98	197	198	224	141	200	960	220	
19	Surface	1	1 mon	reanalysis	23.93	22.44	22.44	**0.9730**	1.0277	-22.02	0.1602	-1.1182	0.4003	28.88	51	159	2	78	41	331	27	
20	Surface	1	1 mon	gpcp	28.35	22.18	22.18	1.4931	1.4931	-30.39	0.1598	-0.4003	0.3998	35.62	145	150	33	79	154	561	107	
21	Surface	1	1 mon	gpcc	32.43	30.70	30.70	1.4455	1.4455	-38.01	0.1546	-1.0735	0.3931	40.13	188	219	29	80	187	703	163	
22	Surface	1	1 mon	ghcn cams grid	29.68	25.17	25.17	**1.1708**	1.1708	-28.01	0.1105	-0.6435	0.3324	37.22	164	176	13	94	166	613	133	
23	Surface	1	1 mon	ssmi	38.53	20.38	20.38	-0.8500		9.89	0.0305	-0.4092	-0.1747	44.53	219	140	216	166	212	953	218	
24	Surface	1	1 mon	opi2	34.36	32.20	32.20	**1.0125**	1.0125	-32.41	0.0754	-1.0986	0.2746	43.06	207	225	1	97	208	738	188	
25	Surface	1	1 mon	opi3	33.18	30.33	30.33	**1.2683**	1.2683	-34.81	0.1201	-0.9425	0.3465	41.12	193	213	19	90	196	711	176	
26	Surface	1	1 mon	cmap	31.95	28.54	28.54	1.2723	1.2723	-33.08	0.1227	-0.8335	0.3503	39.64	182	203	21	88	180	674	151	
27	Surface	1	1 mon	cmap2	31.91	28.49	28.49	**1.2709**	1.2709	-33.00	0.1227	-0.8320	0.3503	39.57	181	200	20	89	178	668	150	
28	Surface	1	2 mon	reanalysis	24.54	22.51	22.51	**0.9469**	1.0561	-21.69	0.1528	-1.1406	0.3909	28.96	61	162	4	81	43	351	32	
29	Surface	1	2 mon	gpcp	28.23	22.39	22.39	1.7310	1.7310	-34.57	0.2170	-0.3779	0.4659	35.24	143	156	64	71	149	583	118	
30	Surface	1	2 mon	gpcc	32.87	31.04	31.04	1.8145	1.8145	-44.41	0.2487	-1.0594	0.4987	39.72	190	220	71	58	181	720	182	
31	Surface	1	2 mon	ghcn cams grid	29.61	25.33	25.33	1.6561	1.6561	-36.25	0.2230	-0.5777	0.4722	36.36	163	178	56	69	160	626	136	
32	Surface	1	2 mon	ssmi	40.16	20.57	20.57	-1.5415		21.38	0.0992	-0.4679	-0.3149	45.69	222	141	217	179	217	976	225	
33	Surface	1	2 mon	opi2	34.52	32.44	32.44	1.7471	1.7471	-44.89	0.2275	-1.0161	0.4770	42.01	208	228	67	66	201	770	201	
34	Surface	1	2 mon	opi3	33.60	30.54	30.54	1.6974	1.6974	-42.16	0.2172	-0.8970	0.4661	40.52	199	217	62	70	189	737	187	
35	Surface	1	2 mon	cmap	32.21	28.75	28.75	1.6712	1.6712	-39.94	0.2139	-0.7905	0.4625	39.06	185	210	60	72	176	703	162	
36	Surface	1	2 mon	cmap2	32.17	28.69	28.69	1.6689	1.6689	-39.84	0.2139	-0.7892	0.4625	38.99	184	207	59	73	175	698	160	
37	Surface	1	3 mon	reanalysis	24.78	22.49	22.49	**0.9476**	1.0553	-21.68	0.1522	-1.1368	0.3901	28.96	66	160	3	82	42	353	34	
38	Surface	1	3 mon	gpcp	28.23	22.33	22.33	1.9731	1.9731	-38.47	0.2751	-0.3428	0.5245	34.86	142	154	75	47	144	562	108	
39	Surface	1	3 mon	gpcc	33.03	31.13	31.13	2.0961	2.0961	-49.08	0.3322	-1.0159	0.5763	39.41	192	221	85	33	177	708	171	
40	Surface	1	3 mon	ghcn cams grid	29.39	25.36	25.36	2.0041	2.0041	-42.06	0.3266	-0.5208	0.5715	35.75	162	179	81	35	156	613	132	
41	Surface	1	3 mon	ssmi	40.34	20.58	20.58	-1.2630		16.79	0.0660	-0.4402	-0.2568	45.50	223	142	218	168	216	967	222	
42	Surface	1	3 mon	opi2	34.23	32.37	32.37	2.1825	2.1825	-51.98	0.3463	-0.9465	0.5885	41.38	206	227	87	31	197	748	196	
43	Surface	1	3 mon	opi3	33.62	30.50	30.50	2.0284	2.0284	-47.55	0.3028	-0.8454	0.5503	40.05	200	215	82	38	184	719	181	
44	Surface	1	3 mon	cmap	32.31	28.71	28.71	1.9841	1.9841	-45.03	0.2943	-0.7414	0.5425	38.60	187	208	77	41	172	685	156	
45	Surface	1	3 mon	cmap2	32.27	28.65	28.65	1.9804	1.9804	-44.91	0.2939	-0.7403	0.5422	38.54	186	205	76	42	171	680	154	
46	Surface	1	4 mon	reanalysis	25.00	22.50	22.50	**0.8239**	1.2137	-19.79	0.1144	-1.1815	0.3383	29.25	70	161	15	91	51	388	47	
47	Surface	1	4 mon	gpcp	27.81	22.34	22.34	1.9215	1.9215	-37.52	0.2522	-0.3560	0.5022	35.07	133	155	74	57	146	565	109	
48	Surface	1	4 mon	gpcc	32.73	31.35	31.35	2.0844	2.0844	-49.12	0.3312	-1.0349	0.5755	39.59	189	222	84	34	179	708	172	
49	Surface	1	4 mon	ghcn cams grid	29.06	25.45	25.45	1.9975	1.9975	-42.03	0.3256	-0.5277	0.5706	35.81	157	180	79	36	157	609	130	
50	Surface	1	4 mon	ssmi	39.62	20.75	20.75	-0.3833		2.12	0.0060	-0.3688	-0.0775	44.57	220	144	220	142	213	939	214	
51	Surface	1	4 mon	opi2	33.68	32.33	32.33	2.1800	2.1800	-51.78	0.3335	-0.9486	0.5775	41.47	202	226	86	32	198	744	193	
52	Surface	1	4 mon	opi3	33.02	30.51	30.51	2.0492	2.0492	-47.80	0.2988	-0.8488	0.5467	40.12	191	216	83	40	186	716	180	
53	Surface	1	4 mon	cmap	31.71	28.72	28.72	1.9990	1.9990	-45.18	0.2889	-0.7457	0.5375	38.68	178	209	80	43	174	684	155	
54	Surface	1	4 mon	cmap2	31.67	28.66	28.66	1.9965	1.9965	-45.08	0.2889	-0.7444	0.5375	38.61	177	206	78	44	173	678	153	
55	*Surface*	*2*	*Yes*	*reanalysis*	*23.05*	*18.90*	*18.90*	*0.3787*	*2.6406*	*-9.01*	*0.2448*	*-1.6867*	*0.4948*	*27.46*	*40*	*134*	*97*	*59*	*36*	*366*	*41*	Plot
56	Surface	2	Yes	gpcp	20.38	17.59	17.59	**0.9350**	1.0695	-16.55	0.5806	0.1490	**0.7620**	**24.78**	22	127	5	19	20	193	10	
57	Surface	2	Yes	gpcc	26.80	26.51	26.51	0.7176	1.3935	-20.34	0.3824	-0.5539	0.6184	32.62	109	183	25	30	109	456	64	
58	Surface	2	Yes	ghcn cams grid	22.93	21.24	21.24	**0.8966**	1.1153	-19.59	0.5918	-0.1092	**0.7693**	26.87	38	145	10	16	30	239	12	
59	Surface	2	Yes	ssmi	42.65	15.22	15.22	-0.6459		10.58	0.1280	-0.8861	-0.3578	48.86	225	121	208	196	224	974	224	
60	Surface	2	Yes	opi2	28.47	27.53	27.53	**0.9307**	1.0745	-26.43	0.5668	-0.4717	**0.7529**	32.83	147	193	6	20	111	477	71	
61	Surface	2	Yes	opi3	26.80	25.74	25.74	**0.9224**	1.0841	-24.50	0.6005	-0.3798	**0.7749**	30.60	110	181	7	12	64	374	43	
62	Surface	2	Yes	cmap	25.31	23.95	23.95	**0.9086**	1.1006	-22.50	0.5926	-0.2732	**0.7698**	29.15	81	164	8	15	49	317	24	
63	Surface	2	Yes	cmap2	25.25	23.90	23.90	**0.9083**	1.1010	-22.44	0.5937	-0.2703	**0.7705**	29.08	77	163	9	14	47	310	22	
64	Surface	2	No	reanalysis	22.35	19.68	19.68	-0.0016		-2.96	0.0000	-1.6119	-0.0008	27.08	35	136	215	129	33	548	97	
65	Surface	2	No	gpcp	26.13	18.37	18.37	0.3156	3.1686	-6.94	0.0090	-0.5010	0.0946	32.91	99	129	98	120	112	558	106	
66	Surface	2	No	gpcc	28.81	26.44	26.44	0.4069	2.4576	-16.42	0.0138	-1.0129	0.1176	37.13	152	182	93	117	163	707	169	
67	Surface	2	No	ghcn cams grid	27.45	22.02	22.02	0.1141	8.7642	-7.23	0.0013	-0.8221	0.0360	34.44	123	146	106	127	138	640	139	
68	Surface	2	No	ssmi	35.03	15.97	15.97	-0.2242		4.14	0.0024	-0.2693	-0.0486	40.08	210	125	212	135	185	867	210	
69	Surface	2	No	opi2	31.71	28.32	28.32	-0.0165		-11.35	0.0000	-1.1865	-0.0049	40.01	179	194	223	130	183	909	213	
70	Surface	2	No	opi3	30.20	26.52	26.52	0.1428	7.0028	-12.21	0.0019	-1.1046	0.0441	37.80	166	186	104	126	167	749	198	
71	Surface	2	No	cmap	29.03	24.74	24.74	0.1543	6.4809	-10.62	0.0023	-0.9841	0.0481	36.39	156	168	103	125	161	713	179	
72	Surface	2	No	cmap2	28.98	24.68	24.68	0.1544	6.4767	-10.56	0.0023	-0.9824	0.0482	36.33	155	166	102	124	159	706	168	
73	Surface	2	1 mon	reanalysis	21.51	19.67	19.67	0.6925	1.4440	-14.55	0.1105	-1.2846	0.3324	25.38	28	135	28	93	21	305	20	
74	Surface	2	1 mon	gpcp	23.62	18.36	18.36	1.7722	1.7722	-31.23	0.2815	-0.2372	0.5306	29.94	49	128	70	45	54	346	31	
75	Surface	2	1 mon	gpcc	27.61	26.52	26.52	1.8930	1.8930	-40.96	0.2995	-0.7733	0.5472	34.92	128	185	73	39	145	570	110	
76	Surface	2	1 mon	ghcn cams grid	25.52	22.05	22.05	1.4988	1.4988	-30.36	0.2234	-0.5454	0.4727	31.77	87	147	34	68	94	430	55	
77	Surface	2	1 mon	ssmi	35.41	15.65	15.65	-0.5977		10.49	0.0167	-0.2950	-0.1292	40.60	213	122	209	156	190	890	211	
78	Surface	2	1 mon	opi2	30.52	28.39	28.39	1.2915	1.2915	-33.25	0.1477	-0.9586	0.3844	37.90	172	196	22	83	169	642	140	
79	Surface	2	1 mon	opi3	28.62	26.52	26.52	1.5474	1.5474	-35.64	0.2281	-0.8319	0.4776	35.34	150	184	43	63	151	591	120	
80	Surface	2	1 mon	cmap	27.25	24.73	24.73	1.5514	1.5514	-33.92	0.2332	-0.7083	0.4829	33.84	120	167	46	62	132	527	87	
81	Surface	2	1 mon	cmap2	27.21	24.67	24.67	1.5500	1.5500	-33.84	0.2334	-0.7062	0.4831	33.78	119	165	45	61	131	521	85	
82	Surface	2	2 mon	reanalysis	22.19	19.84	19.84	0.5500	1.8182	-12.34	0.0712	-1.3966	0.2669	25.78	32	139	72	99	23	365	40	
83	Surface	2	2 mon	gpcp	24.05	18.56	18.56	1.7286	1.7286	-30.70	0.2708	-0.2554	0.5203	30.07	53	132	63	51	55	354	35	
84	Surface	2	2 mon	gpcc	27.94	26.83	26.83	1.7624	1.7624	-39.09	0.2639	-0.8228	0.5137	35.24	139	190	69	55	150	603	126	
85	Surface	2	2 mon	ghcn cams grid	25.83	22.26	22.26	1.6348	1.6348	-32.85	0.2699	-0.5378	0.5195	31.53	95	153	55	53	90	446	62	
86	Surface	2	2 mon	ssmi	37.24	15.79	15.79	-1.6578		28.07	0.1268	-0.3929	-0.3560	42.34	216	124	211	195	204	950	216	
87	Surface	2	2 mon	opi2	30.51	28.61	28.61	1.7447	1.7447	-41.02	0.2734	-0.9028	0.5229	37.18	171	204	66	48	164	653	145	
88	Surface	2	2 mon	opi3	29.22	26.71	26.71	1.6950	1.6950	-38.29	0.2767	-0.8225	0.5260	35.14	159	189	61	46	148	603	125	
89	Surface	2	2 mon	cmap	27.84	24.92	24.92	1.6687	1.6687	-36.06	0.2728	-0.7030	0.5223	33.68	134	174	58	49	128	543	94	
90	Surface	2	2 mon	cmap2	27.79	24.86	24.86	1.6665	1.6665	-35.97	0.2728	-0.7012	0.5223	33.62	132	173	57	50	127	539	91	
91	Surface	2	3 mon	reanalysis	22.31	19.77	19.77	0.4229	2.3646	-10.20	0.0411	-1.4385	0.2027	26.06	34	138	89	104	25	390	48	
92	Surface	2	3 mon	gpcp	24.31	18.48	18.48	1.5338	1.5338	-27.33	0.2079	-0.2890	0.4560	30.54	55	131	39	74	62	361	39	
93	Surface	2	3 mon	gpcc	28.16	26.87	26.87	1.5488	1.5488	-35.64	0.2038	-0.8581	0.4515	35.69	140	191	44	75	155	605	128	
94	Surface	2	3 mon	ghcn cams grid	26.02	22.21	22.21	1.5155	1.5155	-30.76	0.2263	-0.5597	0.4757	31.82	97	151	35	67	95	445	60	
95	Surface	2	3 mon	ssmi	37.71	15.73	15.73	-1.7659		29.94	0.1426	-0.3974	-0.3776	42.63	217	123	210	199	207	956	219	
96	Surface	2	3 mon	opi2	30.41	28.51	28.51	1.7432	1.7432	-40.84	0.2662	-0.8958	0.5160	37.20	170	201	65	54	165	655	146	
97	Surface	2	3 mon	opi3	29.24	26.64	26.64	1.5892	1.5892	-36.41	0.2373	-0.8382	0.4871	35.37	160	188	48	60	152	608	129	
98	Surface	2	3 mon	cmap	27.91	24.85	24.85	1.5449	1.5449	-33.89	0.2281	-0.7233	0.4776	33.96	138	172	42	64	135	551	102	
99	Surface	2	3 mon	cmap2	27.86	24.80	24.80	1.5411	1.5411	-33.77	0.2276	-0.7219	0.4771	33.90	136	170	41	65	134	546	95	
100	Surface	2	4 mon	reanalysis	22.43	19.74	19.74	0.3099	3.2268	-8.37	0.0213	-1.4828	0.1461	26.30	36	137	99	112	27	411	52	
101	Surface	2	4 mon	gpcp	24.35	18.47	18.47	**1.1399**	1.1399	-20.77	0.1110	-0.3609	0.3332	31.41	56	130	12	92	86	376	45	

Mississippi Basin - Monthly Surface

OI	Runoff	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
102	Surface	2	4 mon	gpcc	28.17	27.07	27.07	**1.1283**	1.1283	-28.90	0.1086	-0.9359	0.3295	36.50	141	192	11	96	162	602	124	
103	Surface	2	4 mon	ghcn cams grid	25.58	22.25	22.25	**1.2077**	1.2077	-25.68	0.1396	-0.6296	0.3736	32.48	90	152	14	85	104	445	61	
104	Surface	2	4 mon	ssmi	42.77	16.23	16.23	-1.4525		24.66	0.0965	-0.3697	-0.3107	42.42	226	126	213	176	206	947	215	
105	Surface	2	4 mon	opi2	30.18	28.46	28.46	1.3984	1.3984	-35.03	0.1653	-0.9536	0.4066	37.84	165	199	26	77	168	635	137	
106	Surface	2	4 mon	opi3	28.86	26.64	26.64	**1.2676**	1.2676	-31.05	0.1460	-0.9012	0.3821	36.00	153	187	18	84	158	600	122	
107	Surface	2	4 mon	cmap	27.54	24.85	24.85	**1.2174**	1.2174	-28.43	0.1370	-0.7885	0.3701	34.62	125	171	17	86	141	540	92	
108	Surface	2	4 mon	cmap2	27.49	24.79	24.79	**1.2149**	1.2149	-28.33	0.1368	-0.7870	0.3699	34.56	124	169	16	87	140	536	90	
109	Reanalysis	1	Yes	reanalysis	41.66	2.84	2.84	1.5314	1.5314	6.32	0.2700	0.2351	0.5197	50.62	224	31	38	52	225	570	111	
110	Reanalysis	1	Yes	gpcp	33.67	**1.44**	1.44	1.5241	1.5241	4.53	0.5643	0.4970	0.7512	41.66	201	20	37	21	199	478	73	
111	Reanalysis	1	Yes	gpcc	30.82	11.45	11.45	1.6135	1.6135	20.15	0.6181	0.4884	**0.7862**	40.80	173	105	52	11	194	535	89	
112	Reanalysis	1	Yes	gpcc trmm	33.19	3.61	3.61	1.7484	1.7484	14.09	0.5546	0.4490	0.7447	42.38	194	38	68	22	205	527	88	
113	Reanalysis	1	Yes	ghcn cams grid	31.95	5.29	5.29	1.6198	1.6198	10.97	0.5910	0.4961	**0.7688**	41.11	183	44	54	17	195	493	76	
114	Reanalysis	1	Yes	ssmi	56.82	**-1.24**	1.24	-0.2495		-8.52	0.0214	-0.5160	-0.1463	69.53	227	19	138	161	227	772	202	
115	Reanalysis	1	Yes	opi2	30.32	11.32	11.32	1.6129	1.6129	21.30	0.6436	0.5130	**0.8022**	40.71	169	104	51	5	193	522	86	
116	Reanalysis	1	Yes	opi3	30.28	10.02	10.02	1.6106	1.6106	19.16	0.6388	0.5175	**0.7992**	40.52	167	93	49	7	188	504	81	
117	Reanalysis	1	Yes	cmap	31.02	7.90	7.90	1.6120	1.6120	15.62	0.6243	0.5161	**0.7901**	40.67	175	70	50	10	192	497	78	
118	Reanalysis	1	Yes	cmap2	31.01	7.85	7.85	1.6145	1.6145	15.58	0.6251	0.5165	**0.7906**	40.65	174	67	53	9	191	494	77	
119	Reanalysis	1	No	reanalysis	**16.72**	3.01	3.01	-0.0328		-3.76	0.0123	-12.4728	-0.1111	**21.30**	13	32	144	150	17	356	37	
120	Reanalysis	1	No	gpcp	24.92	1.66	1.66	-0.0271		-4.40	0.0117	-16.7769	-0.1080	30.64	67	24	139	148	66	444	58	
121	Reanalysis	1	No	gpcc	24.03	11.62	11.62	-0.0179		-2.80	0.0269	-101.7734	-0.1640	30.73	52	107	194	163	67	583	117	
122	Reanalysis	1	No	gpcc trmm	24.50	5.41	5.41	-0.0783		-9.69	0.0279	-5.4955	-0.1671	29.03	60	45	149	164	45	463	65	
123	Reanalysis	1	No	ghcn cams grid	24.06	5.61	5.61	-0.0227		-3.77	0.0115	-24.3059	-0.1073	29.24	54	48	152	147	50	451	63	
124	Reanalysis	1	No	ssmi	23.58	**0.50**	0.50	0.1147	8.7184	-4.65	0.1850	-10.8445	0.4301	30.39	47	8	105	76	59	295	16	
125	Reanalysis	1	No	opi2	26.74	12.06	12.06	-0.0396		-4.86	0.0255	-20.3958	-0.1597	33.25	108	114	201	162	118	703	161	
126	Reanalysis	1	No	opi3	26.08	10.76	10.76	-0.0294		-4.66	0.0140	-19.4078	-0.1182	32.47	98	103	193	153	103	650	143	
127	Reanalysis	1	No	cmap	25.33	8.38	8.38	-0.0290		-4.62	0.0133	-18.0999	-0.1153	31.48	82	79	176	152	89	578	115	
128	Reanalysis	1	No	cmap2	25.31	8.33	8.33	-0.0289		-4.61	0.0132	-18.0493	-0.1147	31.44	80	78	175	151	87	571	113	
129	Reanalysis	1	1 mon	reanalysis	**17.58**	3.06	3.06	0.0167	59.8802	-3.44	0.0032	-11.3392	0.0565	**20.40**	17	33	127	122	15	314	23	
130	Reanalysis	1	1 mon	gpcp	26.22	1.75	1.75	-0.0794		-4.71	0.0999	-18.4109	-0.3161	32.07	102	26	140	180	99	547	96	
131	Reanalysis	1	1 mon	gpcc	25.14	11.76	11.76	-0.0532		-3.29	0.2389	-108.4129	-0.4887	31.73	72	110	197	218	92	689	157	
132	Reanalysis	1	1 mon	gpcc trmm	27.18	5.70	5.70	-0.2010		-11.21	0.1878	-6.7676	-0.4333	31.70	117	51	155	207	91	621	134	
133	Reanalysis	1	1 mon	ghcn cams grid	25.37	5.63	5.63	-0.0760		-4.25	0.1292	-26.7160	-0.3594	30.61	83	50	154	197	65	549	100	
134	Reanalysis	1	1 mon	ssmi	24.38	**0.46**	0.46	0.0885	11.2994	-4.80	0.1101	-11.5683	0.3318	31.40	57	7	108	95	85	352	33	
135	Reanalysis	1	1 mon	opi2	28.30	12.01	12.01	-0.0992		-5.82	0.1602	-22.2821	-0.4002	34.74	144	113	200	202	142	801	206	
136	Reanalysis	1	1 mon	opi3	27.56	10.68	10.68	-0.0849		-5.48	0.1167	-21.1249	-0.3416	33.86	126	101	191	191	133	742	190	
137	Reanalysis	1	1 mon	cmap	26.64	8.15	8.15	-0.0850		-5.30	0.1125	-19.4731	-0.3354	32.64	106	77	174	189	110	656	148	
138	Reanalysis	1	1 mon	cmap2	26.62	8.10	8.10	-0.0851		-5.29	0.1124	-19.4244	-0.3352	32.60	105	76	173	188	108	650	144	
139	Reanalysis	1	2 mon	reanalysis	**18.13**	3.07	3.07	0.0413	24.2131	-3.28	0.0195	-10.7644	0.1396	**19.93**	19	34	123	113	11	300	17	
140	Reanalysis	1	2 mon	gpcp	27.08	1.85	1.85	-0.1110		-4.90	0.1948	-19.3733	-0.4414	32.91	116	27	141	208	113	605	127	
141	Reanalysis	1	2 mon	gpcc	25.76	12.16	12.16	-0.0739		-3.56	0.4667	-114.5817	-0.6832	32.19	93	116	203	226	101	739	189	
142	Reanalysis	1	2 mon	gpcc trmm	29.20	6.71	6.71	-0.2994		-12.44	0.4224	-7.8957	-0.6500	33.28	158	55	156	225	119	713	178	
143	Reanalysis	1	2 mon	ghcn cams grid	26.16	5.62	5.62	-0.1021		-4.48	0.2337	-27.9407	-0.4834	31.27	100	49	153	215	81	598	121	
144	Reanalysis	1	2 mon	ssmi	25.50	**0.38**	0.38	0.0560	17.8571	-4.97	0.0440	-12.4713	0.2099	32.60	86	4	116	102	107	415	53	
145	Reanalysis	1	2 mon	opi2	28.97	11.86	11.86	-0.1310		-6.31	0.2773	-23.0989	-0.5266	35.39	154	112	199	222	153	840	208	
146	Reanalysis	1	2 mon	opi3	28.50	10.49	10.49	-0.1182		-5.94	0.2230	-21.8592	-0.4722	34.47	148	98	188	212	139	785	205	
147	Reanalysis	1	2 mon	cmap	27.63	8.02	8.02	-0.1190		-5.69	0.2187	-20.3614	-0.4677	33.40	130	75	172	210	122	709	173	
148	Reanalysis	1	2 mon	cmap2	27.61	7.97	7.97	-0.1191		-5.69	0.2189	-20.3143	-0.4679	33.36	127	74	171	211	121	704	165	
149	Reanalysis	1	3 mon	reanalysis	**17.94**	3.12	3.12	0.0518	19.3050	-3.22	0.0307	-10.5190	0.1751	**19.73**	18	35	118	106	8	285	15	
150	Reanalysis	1	3 mon	gpcp	27.20	1.93	1.93	-0.1133		-4.91	0.2026	-19.4385	-0.4501	33.01	118	29	142	209	115	613	131	
151	Reanalysis	1	3 mon	gpcc	25.95	12.31	12.31	-0.0755		-3.55	0.5000	-118.1342	-0.7071	32.36	96	117	204	228	102	747	195	
152	Reanalysis	1	3 mon	gpcc trmm	29.33	7.24	7.24	-0.3022		-12.02	0.4805	-8.9025	-0.6932	33.53	161	65	165	227	126	744	192	
153	Reanalysis	1	3 mon	ghcn cams grid	26.21	5.56	5.56	-0.1064		-4.49	0.2549	-28.2311	-0.5048	31.31	101	47	151	220	83	602	123	
154	Reanalysis	1	3 mon	ssmi	26.81	**0.33**	0.33	0.0325	30.7692	-5.08	0.0149	-13.1340	0.1219	33.48	111	3	124	115	125	478	72	
155	Reanalysis	1	3 mon	opi2	28.71	11.69	11.69	-0.1264		-6.20	0.2553	-22.6490	-0.5052	35.11	151	109	196	221	147	824	207	
156	Reanalysis	1	3 mon	opi3	28.39	10.28	10.28	-0.1238		-5.98	0.2408	-21.6312	-0.4907	34.35	146	95	186	219	136	782	204	
157	Reanalysis	1	3 mon	cmap	27.63	7.91	7.91	-0.1244		-5.73	0.2380	-20.3931	-0.4879	33.47	131	71	169	216	124	711	175	
158	Reanalysis	1	3 mon	cmap2	27.62	7.86	7.86	-0.1247		-5.73	0.2385	-20.3477	-0.4883	33.43	129	68	167	217	123	704	166	
159	Reanalysis	1	4 mon	reanalysis	**17.15**	3.16	3.16	0.0661	15.1286	-3.13	0.0498	-10.1671	0.2232	**19.44**	16	36	111	100	6	269	14	
160	Reanalysis	1	4 mon	gpcp	26.48	1.95	1.95	-0.0920		-4.76	0.1337	-18.7810	-0.3657	32.52	103	30	143	198	106	580	116	
161	Reanalysis	1	4 mon	gpcc	25.38	12.55	12.55	-0.0591		-3.30	0.3054	-115.6664	-0.5526	32.06	84	119	206	224	98	731	185	
162	Reanalysis	1	4 mon	gpcc trmm	27.87	7.28	7.28	-0.2362		-10.73	0.3018	-8.4373	-0.5494	32.50	137	66	166	223	105	697	159	
163	Reanalysis	1	4 mon	ghcn cams grid	25.52	5.50	5.50	-0.0877		-4.29	0.1735	-27.4099	-0.4166	30.79	88	46	150	206	68	558	105	
164	Reanalysis	1	4 mon	ssmi	28.56	**0.30**	0.30	-0.0054		-5.31	0.0004	-14.1952	-0.0203	34.82	149	2	129	131	143	554	103	
165	Reanalysis	1	4 mon	opi2	27.85	11.62	11.62	-0.0971		-5.71	0.1506	-21.6512	-0.3881	34.41	135	108	195	200	137	775	203	
166	Reanalysis	1	4 mon	opi3	27.42	10.16	10.16	-0.1017		-5.64	0.1618	-20.7905	-0.4023	33.75	122	94	185	203	129	733	186	
167	Reanalysis	1	4 mon	cmap	26.90	7.94	7.94	-0.1034		-5.47	0.1644	-19.7631	-0.4054	33.02	113	72	170	204	116	675	152	
168	Reanalysis	1	4 mon	cmap2	26.88	7.89	7.89	-0.1036		-5.46	0.1647	-19.7173	-0.4058	32.98	112	69	168	205	114	668	149	
169	Reanalysis	2	Yes	reanalysis	**16.89**	**-0.21**	0.21	0.7472	1.3383	-1.18	0.2572	0.2277	0.5071	**21.70**	14	1	24	56	19	114	3	
170	Reanalysis	2	Yes	gpcp	**15.65**	**-0.42**	0.42	0.6407	1.5608	-1.72	0.4729	0.3239	0.6877	**20.30**	9	5	47	29	13	103	2	
171	Reanalysis	2	Yes	gpcc	**14.70**	8.84	8.84	0.6514	1.5352	5.34	0.5099	0.1885	0.7141	**19.02**	5	82	40	28	5	160	8	
172	Reanalysis	2	Yes	gpcc trmm	**14.17**	9.48	9.48	0.7725	1.2945	6.05	0.5848	0.3594	**0.7647**	**18.16**	2	90	23	18	2	135	6	
173	*Reanalysis*	*2*	*Yes*	*ghcn cams grid*	***14.49***	*3.22*	*3.22*	*0.7064*	*1.4156*	*1.09*	*0.5336*	*0.4244*	*0.7305*	***18.73***	*3*	*37*	*27*	*23*	*3*	*93*	*1*	Plot
174	Reanalysis	2	Yes	ssmi	35.74	**1.00**	1.00	-0.2144		-3.90	0.0965	-3.0007	-0.3106	43.34	215	17	136	175	209	752	200	
175	Reanalysis	2	Yes	opi2	**16.95**	9.54	9.54	0.6590	1.5175	4.91	0.5211	0.2323	0.7219	**21.63**	15	91	36	27	18	187	9	
176	Reanalysis	2	Yes	opi3	**16.00**	7.96	7.96	0.6898	1.4497	4.23	0.5334	0.3217	0.7303	**20.34**	12	73	31	24	14	154	7	
177	Reanalysis	2	Yes	cmap	**15.32**	5.85	5.85	0.6895	1.4503	2.78	0.5232	0.3609	0.7233	**19.74**	8	53	32	26	9	128	5	
178	Reanalysis	2	Yes	cmap2	**15.28**	5.80	5.80	0.6907	1.4478	2.76	0.5241	0.3638	0.7240	**19.69**	7	52	30	25	7	121	4	
179	Reanalysis	2	No	reanalysis	**13.17**	**0.66**	0.66	0.0975	10.2564	-2.80	0.0291	-2.4662	0.1706	**17.84**	1	11	107	108	1	228	11	
180	Reanalysis	2	No	gpcp	21.60	**0.44**	0.44	0.0425	23.5294	-3.02	0.0138	-6.9995	0.1176	27.10	30	6	122	116	35	309	21	
181	Reanalysis	2	No	gpcc	20.07	8.77	8.77	0.0020	500.0000	-1.26	0.0000	-11.4095	0.0064	25.77	21	80	128	128	22	379	46	
182	Reanalysis	2	No	gpcc trmm	**19.82**	11.49	11.49	0.0459	21.7865	-2.92	0.0108	-6.0113	0.1041	26.24	20	106	120	118	26	390	49	
183	Reanalysis	2	No	ghcn cams grid	20.48	4.09	4.09	0.0665	15.0376	-2.70	0.0314	-6.3360	0.1771	25.96	23	39	110	105	24	301	18	
184	Reanalysis	2	No	ssmi	24.74	1.90	1.90	0.0261	38.3142	-2.02	0.0095	-13.2461	0.0974	31.76	65	28	126	119	93	431	56	
185	Reanalysis	2	No	opi2	23.34	10.40	10.40	0.0489	20.4499	-2.51	0.0190	-8.3640	0.1380	29.32	45	96	119	114	52	426	54	
186	Reanalysis	2	No	opi3	21.49	8.82	8.82	0.0577	17.3310	-2.49	0.0247	-7.4293	0.1573	27.82	27	81	112	109	38	367	42	
187	Reanalysis	2	No	cmap	21.02	6.71	6.71	0.0567	17.6367	-2.62	0.0235	-6.9675	0.1533	27.05	25	56	115	111	32	339	30	
188	Reanalysis	2	No	cmap2	20.99	6.66	6.66	0.0571	17.5131	-2.62	0.0238	-6.9440	0.1541	27.01	24	54	114	110	31	333	29	
189	Reanalysis	2	1 mon	reanalysis	**14.64**	**0.72**	0.72	0.0303	33.0033	-3.02	0.0028	-2.8912	0.0531	**18.89**	4	12	125	123	4	268	13	
190	Reanalysis	2	1 mon	gpcp	23.60	**0.52**	0.52	-0.0316		-3.25	0.0077	-8.1687	-0.0875	29.00	48	9	130	145	44	376	44	
191	Reanalysis	2	1 mon	gpcc	21.56	8.85	8.85	-0.0429		-1.68	0.0185	-12.3485	-0.1359	26.79	29	83	177	157	29	475	68	
192	Reanalysis	2	1 mon	gpcc trmm	22.94	11.79	11.79	-0.0647		-4.71	0.0213	-7.1374	-0.1458	28.50	39	111	198	160	40	548	98	
193	Reanalysis	2	1 mon	ghcn cams grid	22.62	4.17	4.17	-0.0179		-3.27	0.0023	-7.5710	-0.0477	28.04	37	40	145	134	39	395	50	
194	Reanalysis	2	1 mon	ssmi	23.46	1.74	1.74	0.0574	17.4216	-1.96	0.0456	-12.2993	0.2136	30.84	46	25	113	101	69	354	36	
195	Reanalysis	2	1 mon	opi2	25.28	10.46	10.46	-0.0294		-3.54	0.0069	-9.6668	-0.0833	31.28	79	97	187	144	82	589	119	
196	Reanalysis	2	1 mon	opi3	23.76	8.91	8.91	-0.0264		-3.46	0.0052	-8.7290	-0.0721	29.87	50	84	178	137	53	502	80	
197	Reanalysis	2	1 mon	cmap	23.26	6.81	6.81	-0.0270		-3.41	0.0054	-8.2348	-0.0732	29.10	43	58	158	138	48	445	59	
198	Reanalysis	2	1 mon	cmap2	23.25	6.75	6.75	-0.0271		-3.41	0.0054	-8.2153	-0.0734	29.07	42	57	157	139	46	441	57	
199	Reanalysis	2	2 mon	reanalysis	**15.90**	**0.82**	0.82	-0.0812		-3.40	0.0204	-3.6092	-0.1429	**20.49**	11	14	133	158	16	332	28	
200	Reanalysis	2	2 mon	gpcp	25.72	**0.64**	0.64	-0.1139		-3.50	0.1006	-9.5195	-0.3172	30.96	92	10	131	182	72	487	75	
201	Reanalysis	2	2 mon	gpcc	22.27	9.28	9.28	-0.0984		-2.17	0.0974	-13.6752	-0.3122	27.80	33	88	182	177	37	517	84	
202	Reanalysis	2	2 mon	gpcc trmm	26.60	12.13	12.13	-0.2137		-7.36	0.2308	-8.6905	-0.4804	31.08	104	115	202	214	75	710	174	

Mississippi Basin - Monthly Surface

OI	Runoff	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
203	**Reanalysis**	2	2 mon	ghcn cams grid	24.61	4.31	4.31	-0.1081		-3.88	0.0839	-8.9367	-0.2897	30.09	63	41	146	169	56	475	69	
204	**Reanalysis**	2	2 mon	ssmi	23.32	1.63	1.63	0.0548	18.2482	-2.00	0.0418	-12.4529	0.2045	31.00	44	23	117	103	73	360	38	
205	**Reanalysis**	2	2 mon	opi2	26.94	10.53	10.53	-0.1081		-4.55	0.0945	-11.0511	-0.3074	33.14	114	99	189	171	117	690	158	
206	**Reanalysis**	2	2 mon	opi3	25.64	9.03	9.03	-0.1124		-4.44	0.0952	-10.1246	-0.3086	31.84	91	85	179	172	96	623	135	
207	**Reanalysis**	2	2 mon	cmap	25.27	6.94	6.94	-0.1142		-4.22	0.0964	-9.6095	-0.3105	31.09	78	60	160	174	76	548	99	
208	**Reanalysis**	2	2 mon	cmap2	25.24	6.89	6.89	-0.1141		-4.22	0.0960	-9.5846	-0.3099	31.05	76	59	159	173	74	541	93	
209	**Reanalysis**	2	3 mon	reanalysis	**15.24**	**0.95**	0.95	-0.0372		-3.11	0.0045	-3.4878	-0.0669	**19.82**	6	16	135	136	10	303	19	
210	**Reanalysis**	2	3 mon	gpcp	25.13	**0.77**	0.77	-0.1113		-3.37	0.1002	-9.9030	-0.3165	30.89	71	13	132	181	71	468	66	
211	**Reanalysis**	2	3 mon	gpcc	21.23	9.39	9.39	-0.0395		-1.51	0.0158	-12.5664	-0.1256	26.77	26	89	183	155	28	481	74	
212	**Reanalysis**	2	3 mon	gpcc trmm	26.66	12.37	12.37	-0.2121		-7.35	0.2266	-8.6760	-0.4761	31.40	107	118	205	213	84	727	183	
213	**Reanalysis**	2	3 mon	ghcn cams grid	24.45	4.44	4.44	-0.1115		-3.78	0.0933	-9.3986	-0.3054	30.17	58	42	147	170	57	474	67	
214	**Reanalysis**	2	3 mon	ssmi	23.18	1.52	1.52	0.0725	13.7931	-1.99	0.0738	-12.0585	0.2717	30.50	41	21	109	98	61	330	26	
215	**Reanalysis**	2	3 mon	opi2	26.95	10.63	10.63	-0.1146		-4.52	0.1109	-11.6693	-0.3330	33.30	115	100	190	187	120	712	177	
216	**Reanalysis**	2	3 mon	opi3	25.53	9.14	9.14	-0.1174		-4.38	0.1084	-10.6722	-0.3293	31.96	89	86	180	186	97	638	138	
217	**Reanalysis**	2	3 mon	cmap	24.97	7.06	7.06	-0.1178		-4.14	0.1071	-10.1112	-0.3272	31.19	69	62	162	185	78	556	104	
218	**Reanalysis**	2	3 mon	cmap2	24.96	7.01	7.01	-0.1177		-4.13	0.1068	-10.0857	-0.3268	31.15	68	61	161	184	77	551	101	
219	**Reanalysis**	2	4 mon	reanalysis	**15.65**	**1.11**	1.11	-0.0590		-3.07	0.0118	-3.7925	-0.1085	**20.06**	10	18	137	149	12	326	25	
220	**Reanalysis**	2	4 mon	gpcp	25.24	**0.84**	0.84	-0.1115		-3.25	0.1052	-10.3563	-0.3244	30.89	75	15	134	183	70	477	70	
221	**Reanalysis**	2	4 mon	gpcc	21.78	9.71	9.71	-0.0524		-1.54	0.0284	-13.2803	-0.1686	27.09	31	92	184	165	34	506	82	
222	**Reanalysis**	2	4 mon	gpcc trmm	25.43	12.69	12.69	-0.1348		-5.67	0.0987	-8.5621	-0.3141	30.39	85	120	207	178	60	650	142	
223	**Reanalysis**	2	4 mon	ghcn cams grid	24.47	4.54	4.54	-0.1210		-3.73	0.1149	-9.9876	-0.3390	30.38	59	43	148	190	58	498	79	
224	**Reanalysis**	2	4 mon	ssmi	24.60	1.61	1.61	0.0453	22.0751	-1.95	0.0297	-13.2104	0.1723	31.45	62	22	121	107	88	400	51	
225	**Reanalysis**	2	4 mon	opi2	27.32	10.72	10.72	-0.1346		-4.67	0.1600	-12.5740	-0.4001	33.77	121	102	192	201	130	746	194	
226	**Reanalysis**	2	4 mon	opi3	25.80	9.21	9.21	-0.1231		-4.32	0.1246	-11.2616	-0.3530	32.09	94	87	181	194	100	656	147	
227	**Reanalysis**	2	4 mon	cmap	25.19	7.14	7.14	-0.1211		-4.05	0.1183	-10.6333	-0.3439	31.26	74	64	164	192	80	574	114	
228	**Reanalysis**	2	4 mon	cmap2	25.17	7.09	7.09	-0.1211		-4.04	0.1182	-10.6087	-0.3439	31.23	73	63	163	193	79	571	112	

Mississippi Basin - Yearly Surface

OI	Runoff	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	***Surface***	*1*	*Yes*	*reanalysis*	*22.91*	*22.91*	*22.91*	*0.3042*	*3.2873*	*-11.83*	*0.0998*	*-11.0926*	*0.3159*	*24.38*	*50*	*53*	*32*	*30*	*44*	*209*	*51*	Plot
2	**Surface**	1	Yes	gpcp	22.17	22.17	22.17	0.5950	1.6807	-15.40	0.2925	-10.3119	0.5409	23.04	48	51	19	18	40	176	37	
3	**Surface**	1	Yes	gpcc	29.56	29.56	29.56	0.4122	2.4260	-20.51	0.3802	-35.5859	0.6166	30.14	66	71	26	11	63	237	60	
4	**Surface**	1	Yes	ghcn cams grid	26.02	26.02	26.02	0.3673	2.7226	-15.24	0.2494	-32.2674	0.4994	26.42	55	61	28	21	49	214	53	
5	**Surface**	1	Yes	ssmi	20.40	20.40	20.40	1.6210	1.6210	-28.94	0.7114	-5.9080	**0.8435**	21.00	40	47	18	2	37	144	15	
6	**Surface**	1	Yes	opi2	32.11	32.11	32.11	0.1031	9.6993	-17.12	0.0164	-42.3928	0.1282	32.97	72	76	44	49	71	312	74	
7	**Surface**	1	Yes	opi3	30.32	30.32	30.32	0.5094	1.9631	-22.12	0.3295	-30.0676	0.5741	30.80	69	73	24	15	67	248	64	
8	**Surface**	1	Yes	cmap	28.53	28.53	28.53	0.5316	1.8811	-20.70	0.3371	-24.9618	0.5806	29.05	65	70	22	14	60	231	59	
9	**Surface**	1	Yes	cmap2	28.48	28.48	28.48	0.5305	1.8850	-20.63	0.3383	-25.0609	0.5816	29.00	63	68	23	13	59	226	57	
10	**Surface**	1	No	reanalysis	22.41	22.41	22.41	**1.1403**	1.1403	-24.57	0.3562	-9.8592	0.5968	23.11	49	52	7	12	41	161	31	
11	**Surface**	1	No	gpcp	22.15	22.15	22.15	1.4615	1.4615	-29.85	0.4887	-10.0126	**0.6991**	22.73	47	50	16	8	38	159	28	
12	**Surface**	1	No	gpcc	30.56	30.56	30.56	1.3701	1.3701	-36.62	0.7678	-36.8983	**0.8762**	30.67	70	74	14	1	66	225	56	
13	**Surface**	1	No	ghcn cams grid	25.11	25.11	25.11	**1.1396**	1.1396	-28.13	0.6649	-31.0791	**0.8154**	25.94	54	59	6	3	48	170	35	
14	**Surface**	1	No	ssmi	23.03	23.03	23.03	1.5218	1.5218	-31.59	0.4689	-7.8952	**0.6848**	23.83	51	54	17	10	42	174	36	
15	**Surface**	1	No	opi2	32.09	32.09	32.09	0.6906	1.4480	-26.93	0.2044	-40.9560	0.4521	32.42	71	75	15	22	68	251	65	
16	**Surface**	1	No	opi3	30.30	30.30	30.30	**1.1932**	1.1932	-33.52	0.5004	-29.5699	**0.7074**	30.56	68	72	10	7	64	221	55	
17	**Surface**	1	No	cmap	28.52	28.52	28.52	1.2343	1.2343	-32.43	0.5031	-24.5220	**0.7093**	28.81	64	69	11	6	58	208	50	
18	**Surface**	1	No	cmap2	28.46	28.46	28.46	1.2346	1.2346	-32.38	0.5073	-24.6148	**0.7123**	28.75	62	67	12	5	57	203	48	
19	***Surface***	*2*	*Yes*	*reanalysis*	*27.83*	*18.79*	*18.79*	*0.0746*	*13.4048*	*-4.16*	*0.2650*	*-60.8418*	*0.5147*	*32.81*	*60*	*44*	*47*	*20*	*70*	*241*	*62*	Plot
20	**Surface**	2	Yes	gpcp	27.11	17.48	17.48	0.0704	14.2045	-2.79	0.1105	-27.3966	0.3324	32.50	58	41	48	28	69	244	63	
21	**Surface**	2	Yes	gpcc	27.75	26.23	26.23	0.1892	5.2854	-13.11	0.5358	-37.7253	**0.7320**	30.62	59	62	40	4	65	230	58	
22	**Surface**	2	Yes	ghcn cams grid	29.96	21.13	21.13	0.0422	23.6967	-5.99	0.0724	-59.0042	0.2691	35.03	67	48	57	33	72	277	68	
23	**Surface**	2	Yes	ssmi	21.25	20.09	20.09	0.2340	4.2735	-6.16	0.2723	-10.9947	0.5219	24.08	45	46	37	19	43	190	42	
24	**Surface**	2	Yes	opi2	35.57	27.43	27.43	-0.0159		-11.37	0.0047	-35.9437	-0.0686	40.66	76	65	74	69	76	360	76	
25	**Surface**	2	Yes	opi3	33.61	25.63	25.63	0.0444	22.5225	-10.53	0.0528	-45.5217	0.2297	38.00	75	60	56	40	75	306	72	
26	**Surface**	2	Yes	cmap	32.17	23.85	23.85	0.0494	20.2429	-8.82	0.0641	-41.6480	0.2531	36.72	74	56	55	36	74	295	71	
27	**Surface**	2	Yes	cmap2	32.12	23.79	23.79	0.0496	20.1613	-8.77	0.0649	-41.8603	0.2548	36.68	73	55	54	35	73	290	70	
28	**Surface**	2	No	reanalysis	19.68	19.68	19.68	0.4709	2.1236	-10.85	0.1368	-22.2824	0.3698	20.13	38	45	25	24	36	168	33	
29	**Surface**	2	No	gpcp	18.37	18.37	18.37	0.2606	3.8373	-6.03	0.0196	-9.2136	0.1400	19.49	35	43	35	47	33	193	43	
30	**Surface**	2	No	gpcc	26.44	26.44	26.44	**0.8703**	1.1490	-24.31	0.3176	-28.5547	0.5636	26.75	56	63	8	16	50	193	44	
31	**Surface**	2	No	ghcn cams grid	22.02	22.02	22.02	-0.0613		-4.30	0.0020	-24.3076	-0.0444	22.75	46	49	66	64	39	264	66	
32	**Surface**	2	No	ssmi	18.30	18.30	18.30	0.7473	1.3382	-14.16	0.1494	-6.7957	0.3865	19.41	34	42	13	23	32	144	14	
33	**Surface**	2	No	opi2	28.32	28.32	28.32	-0.5104		-3.10	0.0625	-18.4002	-0.2500	29.47	61	66	64	72	62	325	75	
34	**Surface**	2	No	opi3	26.52	26.52	26.52	-0.0078		-9.70	0.0000	-23.0081	-0.0046	27.30	57	64	75	62	51	309	73	
35	**Surface**	2	No	cmap	24.74	24.74	24.74	0.0334	29.9401	-8.60	0.0004	-19.6724	0.0194	25.56	53	58	60	61	46	278	69	
36	**Surface**	2	No	cmap2	24.68	24.68	24.68	0.0337	29.6736	-8.55	0.0004	-19.7281	0.0197	25.51	52	57	59	60	45	273	67	
37	**Reanalysis**	1	Yes	reanalysis	9.41	3.40	3.40	-0.0550		-3.51	0.0024	-1.0682	-0.0492	11.45	18	15	67	66	19	185	40	
38	**Reanalysis**	1	Yes	gpcp	8.52	**1.56**	1.56	0.1315	7.6046	-3.57	0.0084	-0.3880	0.0916	10.52	12	7	42	56	16	133	9	
39	**Reanalysis**	1	Yes	gpcc	11.24	10.63	10.63	0.3334	2.9994	1.18	0.0777	-3.4086	0.2787	12.52	23	36	30	32	24	145	16	
40	**Reanalysis**	1	Yes	gpcc trmm	16.65	**1.28**	1.28	-3.4033		-52.70	0.1798	-0.1276	-0.4241	16.94	32	5	62	73	31	203	47	
41	**Reanalysis**	1	Yes	ghcn cams grid	8.55	5.78	5.78	0.2878	3.4746	-0.59	0.0316	-0.6796	0.1778	10.42	13	20	33	44	15	125	6	
42	**Reanalysis**	1	Yes	ssmi	8.81	**0.12**	0.12	0.0825	12.1212	-6.54	0.0028	-0.3400	0.0526	11.21	16	1	46	57	17	137	10	
43	**Reanalysis**	1	Yes	opi2	12.46	11.52	11.52	0.5670	1.7637	4.65	0.1044	-1.6194	0.3231	14.45	29	38	20	29	29	145	17	
44	**Reanalysis**	1	Yes	opi3	11.80	9.93	9.93	0.3667	2.7270	0.89	0.0437	-1.3239	0.2091	13.61	28	33	29	43	28	161	30	
45	**Reanalysis**	1	Yes	cmap	10.85	7.83	7.83	0.2107	4.7461	-1.78	0.0147	-0.9605	0.1214	12.50	22	27	39	50	23	161	29	
46	**Reanalysis**	1	Yes	cmap2	10.81	7.78	7.78	0.2109	4.7416	-1.79	0.0147	-0.9493	0.1211	12.47	21	26	38	51	22	158	27	
47	**Reanalysis**	1	No	reanalysis	**6.81**	3.01	3.01	-0.0474		-3.86	0.0210	-11.9119	-0.1450	**8.36**	8	13	69	71	9	170	34	
48	**Reanalysis**	1	No	gpcp	**5.52**	**1.66**	1.66	0.0565	17.6991	-3.91	0.0120	-3.6079	0.1096	**6.88**	3	8	53	52	3	119	4	
49	**Reanalysis**	1	No	gpcc	11.62	11.62	11.62	-0.0285		-2.95	0.3264	-999.0000	-0.5713	12.70	27	40	73	74	25	239	61	
50	**Reanalysis**	1	No	gpcc trmm	**3.22**	2.29	2.29	-0.2465		-12.99	0.9834	-45.6759	-0.9916	**3.38**	1	11	65	75	1	153	22	
51	**Reanalysis**	1	No	ghcn cams grid	**6.22**	5.38	5.38	0.0617	16.2075	-3.01	0.0171	-9.2050	0.1307	**7.49**	5	19	52	48	5	129	8	
52	**Reanalysis**	1	No	ssmi	**5.60**	**1.74**	1.74	0.0645	15.5039	-5.05	0.0110	-2.5222	0.1051	**7.12**	4	9	51	54	4	122	5	
53	**Reanalysis**	1	No	opi2	11.62	11.62	11.62	0.0910	10.9890	-2.80	0.0209	-15.1928	0.1445	12.90	26	39	45	46	26	182	38	
54	**Reanalysis**	1	No	opi3	10.06	10.03	10.03	0.1382	7.2359	-2.27	0.0482	-11.6229	0.2195	11.39	19	34	41	41	18	153	23	
55	**Reanalysis**	1	No	cmap	8.26	7.93	7.93	0.0649	15.4083	-3.45	0.0108	-8.3600	0.1041	9.81	11	29	50	55	11	156	26	
56	**Reanalysis**	1	No	cmap2	**8.21**	7.88	7.88	0.0666	15.0150	-3.43	0.0113	-8.2587	0.1065	**9.76**	10	28	49	53	10	150	19	
57	**Reanalysis**	2	Yes	reanalysis	19.41	**-2.08**	2.08	3.2024	3.2024	6.36	0.3173	0.1618	0.5633	25.85	36	10	31	17	47	141	12	
58	**Reanalysis**	2	Yes	gpcp	19.63	-2.29	2.29	**1.1373**	1.1373	-1.80	0.0717	0.0640	0.2677	27.31	37	12	5	34	52	140	11	
59	**Reanalysis**	2	Yes	gpcc	14.55	8.57	8.57	2.4636	2.4636	23.28	0.4833	0.0714	**0.6952**	16.80	30	30	27	9	30	126	7	
60	**Reanalysis**	2	Yes	gpcc trmm	17.18	-7.64	7.64	4.2421	4.2421	41.33	0.1359	-0.1110	0.3686	19.68	33	24	36	25	34	152	20	
61	**Reanalysis**	2	Yes	ghcn cams grid	19.76	**1.35**	1.35	**1.0465**	1.0465	1.69	0.0444	0.0420	0.2106	27.63	39	6	1	42	53	141	13	
62	***Reanalysis***	*2*	*Yes*	*ssmi*	*15.21*	***0.38***	*0.38*	***0.8427***	*1.1867*	*-0.52*	*0.0878*	*0.0844*	*0.2963*	*19.77*	*31*	*2*	*9*	*31*	*35*	*108*	*3*	Plot
63	**Reanalysis**	2	Yes	opi2	20.88	7.67	7.67	0.5496	1.8195	1.55	0.0221	-0.0665	0.1485	29.16	43	25	21	45	61	195	45	
64	**Reanalysis**	2	Yes	opi3	21.18	6.08	6.08	**1.0702**	1.0702	6.92	0.0608	0.0141	0.2466	28.03	44	21	4	37	56	162	32	
65	**Reanalysis**	2	Yes	cmap	20.85	3.98	3.98	**1.0545**	1.0545	4.52	0.0533	0.0333	0.2308	27.76	42	17	2	39	55	155	25	
66	**Reanalysis**	2	Yes	cmap2	20.83	3.93	3.93	**1.0632**	1.0632	4.55	0.0540	0.0345	0.2324	27.74	41	16	3	38	54	152	21	
67	**Reanalysis**	2	No	reanalysis	**3.94**	**0.66**	0.66	0.2828	3.5361	-2.09	0.1267	-0.7156	0.3560	**5.17**	2	4	34	26	2	68	1	
68	**Reanalysis**	2	No	gpcp	**6.56**	**0.44**	0.44	-0.0475		-3.35	0.0064	-3.1197	-0.0800	**8.01**	6	3	68	70	8	155	24	
69	**Reanalysis**	2	No	gpcc	8.82	8.77	8.77	-0.0036		-1.32	0.0001	-18.7658	-0.0076	10.33	17	31	76	63	14	201	46	
70	**Reanalysis**	2	No	gpcc trmm	11.49	11.49	11.49	-1.5626		-27.22	0.9942	-22.1092	-0.9971	12.22	24	37	63	76	21	221	54	
71	**Reanalysis**	2	No	ghcn cams grid	**6.62**	4.09	4.09	0.0358	27.9330	-2.92	0.0027	-2.9999	0.0515	**7.89**	7	18	58	58	7	148	18	
72	**Reanalysis**	2	No	ssmi	**6.85**	3.25	3.25	0.1078	9.2764	-1.87	0.1116	-9.4583	0.3340	**7.58**	9	14	43	27	6	99	2	
73	**Reanalysis**	2	No	opi2	11.54	10.40	10.40	0.0143	69.9301	-2.98	0.0008	-10.5837	0.0277	13.43	25	35	61	59	27	207	49	
74	**Reanalysis**	2	No	opi3	10.21	8.82	8.82	-0.0305		-3.54	0.0025	-7.8814	-0.0503	11.76	20	32	72	67	20	211	52	
75	**Reanalysis**	2	No	cmap	8.62	6.71	6.71	-0.0323		-3.50	0.0026	-5.5091	-0.0506	10.07	15	23	70	68	13	189	41	
76	**Reanalysis**	2	No	cmap2	8.57	6.66	6.66	-0.0305		-3.48	0.0023	-5.4495	-0.0477	10.02	14	22	71	65	12	184	39	

Porto Velho Basin - Monthly Atmospheric

OI	Runoff	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	*Surface*	*1*	*Yes*	*reanalysis*	*189.41*	*85.67*	*3.3707*	*-161.69*	*0.3720*	*-0.1077*	*0.6099*	*205.51*	*8*	*10*	*19*	*14*	*7*	*58*	*10*	Plot
2	*Surface*	*1*	*Yes*	*gpcp*	***173.39***	*95.89*	*1.8630*	*-103.97*	*0.2608*	*0.0130*	*0.5107*	***202.63***	*1*	*15*	*6*	*20*	*2*	*44*	*1*	Plot
3	Surface	1	Yes	gpcc	**173.94**	101.77	2.9347	-123.36	0.4110	0.0009	0.6411	211.41	2	16	13	10	9	50	6	
4	Surface	1	Yes	gpcc trmm	205.04	137.09	4.0232	55.13	0.2305	0.0561	0.4801	385.42	12	23	23	21	26	105	26	
5	Surface	1	Yes	ghcn cams grid	194.81	87.89	**1.4941**	-125.39	0.2051	-0.1422	0.4528	208.69	9	11	2	25	8	55	9	
6	Surface	1	Yes	gpi	205.10	166.58	**1.4684**	-202.66	0.3862	-0.2759	0.6215	238.90	13	26	1	12	10	62	11	
7	Surface	1	Yes	trmm 3a46	199.92	144.41	2.7812	-207.15	0.4937	-0.0621	0.7026	250.39	10	25	11	7	12	65	13	
8	Surface	1	Yes	trmm 3b43	204.51	136.76	3.4340	-174.44	0.5399	-0.0357	**0.7348**	252.28	11	22	20	5	13	71	15	
9	Surface	1	Yes	ssmi	185.97	119.78	2.1374	-154.99	0.4751	0.0833	0.6893	**202.64**	7	21	8	9	3	48	3	
10	Surface	1	Yes	opi2	176.39	83.90	2.1139	-77.94	0.2040	0.0121	0.4516	**202.73**	6	9	7	26	4	52	7	
11	Surface	1	Yes	opi3	**174.48**	88.19	**1.7328**	-86.18	0.2168	0.0228	0.4656	**201.62**	3	12	5	24	1	45	2	
12	Surface	1	Yes	cmap	**175.09**	93.73	**1.6574**	-97.75	0.2283	0.0076	0.4778	**203.19**	5	13	4	22	5	49	4	
13	Surface	1	Yes	cmap2	**175.03**	93.76	**1.6204**	-97.48	0.2252	0.0066	0.4746	203.29	4	14	3	23	6	50	5	
14	*Surface*	*2*	*Yes*	*reanalysis*	*235.12*	*109.20*	*2.4066*	*-189.23*	*0.5078*	*0.2226*	*0.7126*	*270.91*	*16*	*17*	*10*	*6*	*14*	*63*	*12*	Plot
15	Surface	2	Yes	gpcp	242.70	**52.01**	3.2474	-49.16	0.3849	0.1804	0.6204	278.17	19	5	18	13	17	72	18	
16	Surface	2	Yes	gpcc	217.26	77.44	3.6454	-12.81	0.3136	0.1438	0.5600	303.93	14	8	21	19	22	84	21	
17	Surface	2	Yes	gpcc trmm	291.13	113.48	5.8176	-99.08	0.6612	0.1087	**0.8132**	340.33	26	18	26	2	25	97	25	
18	Surface	2	Yes	ghcn cams grid	241.66	61.61	3.1174	-78.29	0.3972	0.1841	0.6302	277.54	18	6	16	11	16	67	14	
19	Surface	2	Yes	gpi	237.75	138.21	2.1692	-215.82	0.4786	0.0940	0.6918	273.94	17	24	9	8	15	73	19	
20	Surface	2	Yes	trmm 3a46	281.49	118.18	4.7628	-181.73	0.6775	0.1438	**0.8231**	328.44	24	20	24	1	23	92	23	
21	Surface	2	Yes	trmm 3b43	290.27	115.62	5.4896	-111.84	0.6535	0.1135	**0.8084**	339.41	25	19	25	3	24	96	24	
22	Surface	2	Yes	ssmi	230.24	72.66	3.1548	-116.13	0.5750	0.2703	**0.7583**	250.26	15	7	17	4	11	54	8	
23	Surface	2	Yes	opi2	245.66	**39.30**	3.7757	3.64	0.3241	0.1398	0.5693	284.96	23	1	22	18	21	85	22	
24	Surface	2	Yes	opi3	244.41	**43.45**	3.1020	-20.90	0.3362	0.1691	0.5798	280.07	22	2	15	17	20	76	20	
25	Surface	2	Yes	cmap	243.52	**49.75**	2.9555	-43.55	0.3493	0.1777	0.5911	278.62	20	3	14	15	19	71	17	
26	Surface	2	Yes	cmap2	243.53	**49.79**	2.8937	-44.03	0.3452	0.1785	0.5875	278.49	21	4	12	16	18	71	16	

Porto Velho Basin - Yearly Atmospheric

OI	Runoff	Re	Storage	Precipitation	Absolute Error	Bias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	***Surface***	*1*	*Yes*	*reanalysis*	*126.02*	*85.80*	*3.7370*	*3.7370*	*-170.35*	*0.5682*	*-2.8395*	***0.7538***	*118.20*	*20*	*10*	*13*	*3*	*15*	*61*	*11*	Plot
2	**Surface**	1	Yes	gpcp	98.28	96.03	**0.8789**	1.1378	-87.37	0.0226	-1.9532	0.1503	109.34	12	15	5	12	7	51	8	
3	**Surface**	1	Yes	gpcc	102.02	102.02	-0.7183		-82.83	0.0055	-3.0226	-0.0741	118.19	13	16	18	18	14	79	18	
4	**Surface**	1	Yes	gpcc trmm	138.53	138.53	-3.9510		-59.75	0.6850	-20.7386	-0.8277	143.18	24	24	23	24	24	119	26	
5	**Surface**	1	Yes	ghcn cams grid	136.51	87.38	0.4935	2.0263	-85.50	0.0078	-2.4153	0.0885	117.58	21	11	9	14	13	68	16	
6	**Surface**	1	Yes	gpi	166.83	166.83	-0.3926		-60.89	0.0014	-8.0632	-0.0378	177.41	26	26	16	16	25	109	24	
7	**Surface**	1	Yes	trmm 3a46	140.61	140.61	2.8747	2.8747	-205.47	0.9905	-127.8034	**0.9952**	140.84	25	25	12	1	22	85	20	
8	**Surface**	1	Yes	trmm 3b43	137.00	137.00	-2.3932		-84.46	0.5445	-25.2690	-0.7379	141.23	22	22	19	23	23	109	23	
9	**Surface**	1	Yes	ssmi	118.37	118.37	2.1264	2.1264	-148.94	0.1047	-5.3380	**0.3236**	111.31	19	21	10	5	8	63	12	
10	**Surface**	1	Yes	opi2	**87.68**	83.32	-2.9889		-64.62	0.2195	-1.5646	-0.4685	**101.89**	4	9	21	22	3	59	10	
11	**Surface**	1	Yes	opi3	90.26	87.47	**1.0037**	1.0037	-80.46	0.0411	-1.5569	0.2028	**101.74**	8	12	1	8	2	31	3	
12	**Surface**	1	Yes	cmap	95.95	93.77	**1.0611**	1.0611	-88.70	0.0509	-1.8522	0.2256	**107.45**	10	13	4	6	4	37	6	
13	**Surface**	1	Yes	cmap2	95.98	93.81	**0.9501**	1.0525	-87.18	0.0437	-1.8673	0.2092	**107.74**	11	14	3	7	5	40	7	
14	***Surface***	*2*	*Yes*	*reanalysis*	*115.11*	*109.24*	*2.2023*	*2.2023*	*-176.66*	*0.2823*	*-0.7540*	***0.5314***	*139.39*	*17*	*17*	*11*	*4*	*21*	*70*	*17*	Plot
15	**Surface**	2	Yes	gpcp	88.89	**52.05**	0.1163	8.5985	-41.47	0.0001	-0.1795	0.0116	114.30	6	5	15	15	12	53	9	
16	**Surface**	2	Yes	gpcc	102.28	77.50	-2.9808		-87.52	0.0312	-0.5703	-0.1767	131.45	14	8	20	20	19	81	19	
17	**Surface**	2	Yes	gpcc trmm	113.72	113.72	-8.7258		-142.77	0.7753	-4.1176	-0.8805	129.77	16	19	26	25	18	104	21	
18	**Surface**	2	Yes	ghcn cams grid	93.19	61.65	-0.6688		-33.23	0.0047	-0.2792	-0.0689	119.04	9	6	17	17	16	65	14	
19	**Surface**	2	Yes	gpi	138.32	138.32	-3.0573		111.47	0.0250	-1.8685	-0.1581	177.65	23	23	22	19	26	113	25	
20	**Surface**	2	Yes	trmm 3a46	111.41	111.41	8.2320	8.2320	-221.19	0.9721	-4.3578	**0.9859**	120.50	15	18	14	2	17	66	15	
21	**Surface**	2	Yes	trmm 3b43	115.86	115.86	-6.6985		-122.35	0.7801	-4.3297	-0.8832	132.43	18	20	25	26	20	109	22	
22	***Surface***	*2*	*Yes*	*ssmi*	***81.44***	*66.18*	***1.0308***	*1.0308*	*-43.31*	*0.0120*	*-0.4955*	*0.1095*	***72.94***	*1*	*7*	*2*	*13*	*1*	*24*	*1*	Plot
23	**Surface**	2	Yes	opi2	90.19	**39.35**	-4.4774		-94.36	0.1679	-0.1610	-0.4098	113.40	7	1	24	21	11	64	13	
24	**Surface**	2	Yes	opi3	**86.69**	**43.49**	1.6188	1.6188	-30.60	0.0346	-0.0788	0.1859	109.32	2	2	7	11	6	28	2	
25	**Surface**	2	Yes	cmap	**87.55**	**49.79**	1.6711	1.6711	-42.52	0.0410	-0.1248	0.2024	111.62	3	3	8	9	9	32	4	
26	**Surface**	2	Yes	cmap2	**87.72**	**49.83**	1.6047	1.6047	-42.76	0.0406	-0.1257	0.2014	111.67	5	4	6	10	10	35	5	

Porto Velho Basin - Monthly Surface

OI	Runoff	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Oslope	Intercept	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	Surface	1	Yes	reanalysis	46.37	31.21	31.21	0.3832	2.6096	2.48	0.5829	-1.7068	0.7634	58.13	40	88	107	42	44	321	32	Plot
2	Surface	1	Yes	gpcp	47.90	38.72	38.72	0.5703	1.7535	-14.80	0.4993	-0.2638	0.7066	62.86	51	120	82	59	72	384	53	
3	Surface	1	Yes	gpcc	47.15	40.33	40.33	0.5064	1.9747	-14.91	0.6080	-0.7316	0.7797	60.80	44	143	92	34	59	372	49	
4	Surface	1	Yes	ghcn cams grid	40.59	26.09	26.09	0.6375	1.5686	-6.29	0.5747	0.1945	0.7581	53.12	13	63	70	44	27	217	16	
5	Surface	1	Yes	gpi	41.96	-24.82	24.82	1.0783	1.0783	20.79	0.7343	0.6535	0.8569	52.69	18	45	7	14	24	108	5	
6	Surface	1	Yes	ssmi	31.44	7.89	7.89	0.8114	1.2324	1.49	0.7100	0.6583	0.8426	39.90	1	10	22	18	2	53	1	Plot
7	Surface	1	Yes	opi2	56.72	53.05	53.05	0.4709	2.1236	-23.59	0.5603	-1.6292	0.7485	70.66	118	192	98	47	122	577	116	
8	Surface	1	Yes	opi3	55.95	47.72	47.72	0.5004	1.9984	-19.90	0.4001	-0.7566	0.6325	72.64	111	170	93	77	139	590	121	
9	Surface	1	Yes	cmap	50.82	40.38	40.38	0.5511	1.8146	-15.38	0.4215	-0.3297	0.6492	67.81	73	144	85	70	101	473	79	
10	Surface	1	Yes	cmap2	50.97	40.19	40.19	0.5537	1.8060	-15.35	0.4123	-0.3083	0.6421	68.32	74	141	84	72	104	475	80	
11	Surface	1	No	reanalysis	38.78	31.18	31.18	0.5366	1.8636	-5.88	0.2231	-0.7220	0.4723	46.36	9	86	87	90	7	279	24	
12	Surface	1	No	gpcp	47.19	38.63	38.63	1.2891	1.2891	-54.70	0.5318	0.0277	0.7292	55.13	45	119	30	56	32	282	25	
13	Surface	1	No	gpcc	43.51	39.98	39.98	1.1438	1.1438	-47.33	0.5540	-0.2035	0.7443	50.69	27	136	13	49	19	244	20	
14	Surface	1	No	ghcn cams grid	40.39	26.06	26.06	1.4581	1.4581	-51.07	0.5870	0.3351	0.7661	48.26	11	62	55	41	13	182	9	
15	Surface	1	No	gpi	64.00	-25.17	25.17	2.1437	2.1437	-33.32	0.5183	0.2917	0.7199	75.34	168	49	99	57	157	530	98	
16	Surface	1	No	ssmi	46.03	8.00	8.00	1.4364	1.4364	-29.77	0.4047	0.3536	0.6361	54.88	38	12	51	75	30	206	14	
17	Surface	1	No	opi2	53.81	52.95	52.95	1.0123	1.0123	-53.64	0.5399	-0.9368	0.7348	60.65	93	189	1	53	58	394	58	
18	Surface	1	No	opi3	53.38	47.62	47.62	1.1954	1.1954	-58.48	0.4759	-0.2918	0.6899	62.29	87	169	18	65	70	409	60	
19	Surface	1	No	cmap	49.26	40.28	40.28	1.3009	1.3009	-57.01	0.4897	-0.0058	0.6998	58.97	62	142	33	62	47	346	35	
20	Surface	1	No	cmap2	49.51	40.10	40.10	1.3231	1.3231	-58.06	0.4908	0.0109	0.7006	59.41	64	138	36	61	51	350	36	
21	Surface	1	1 mon	reanalysis	34.93	31.19	31.19	0.7723	1.2948	-18.77	0.4621	-0.3553	0.6798	41.19	4	87	31	66	4	192	11	
22	Surface	1	1 mon	gpcp	45.67	38.52	38.52	1.4490	1.4490	-63.37	0.6651	0.1284	0.8155	52.30	37	118	54	23	22	254	22	
23	Surface	1	1 mon	gpcc	42.24	39.92	39.92	1.3247	1.3247	-56.42	0.7348	-0.0536	0.8572	47.50	20	135	37	13	11	216	15	
24	Surface	1	1 mon	ghcn cams grid	38.03	26.15	26.15	1.6540	1.6540	-61.84	0.7560	0.4430	0.8695	44.21	7	65	75	9	5	161	8	
25	Surface	1	1 mon	gpi	59.47	-24.86	24.86	2.6491	2.6491	-58.94	0.7845	0.4035	0.8857	69.17	138	46	109	5	112	410	61	
26	Surface	1	1 mon	ssmi	40.70	7.73	7.73	1.9156	1.9156	-52.91	0.6928	0.5218	0.8323	47.41	14	9	89	19	10	141	6	
27	Surface	1	1 mon	opi2	53.62	52.96	52.96	1.1700	1.1700	-62.37	0.7177	-0.7767	0.8472	58.04	90	190	16	16	43	355	39	
28	Surface	1	1 mon	opi3	53.39	47.50	47.50	1.3180	1.3180	-65.10	0.5726	-0.2090	0.7567	60.38	88	166	35	45	56	390	55	
29	Surface	1	1 mon	cmap	48.32	40.18	40.18	1.4424	1.4424	-64.67	0.5959	0.0747	0.7719	56.67	54	140	53	38	37	322	33	
30	Surface	1	1 mon	cmap2	48.50	39.99	39.99	1.4624	1.4624	-65.58	0.5935	0.0877	0.7704	57.16	57	137	56	39	40	329	34	
31	Surface	1	2 mon	reanalysis	34.12	31.24	31.24	0.7901	1.2657	-19.80	0.4845	-0.3287	0.6960	40.80	3	89	28	64	3	187	10	
32	Surface	1	2 mon	gpcp	48.52	38.50	38.50	1.2458	1.2458	-52.06	0.4885	-0.0018	0.6989	56.13	58	117	23	63	35	296	28	
33	Surface	1	2 mon	gpcc	43.75	39.83	39.83	1.1632	1.1632	-48.06	0.5573	-0.1926	0.7465	50.60	28	133	15	48	18	242	19	
34	Surface	1	2 mon	ghcn cams grid	42.57	26.22	26.22	1.3960	1.3960	-47.80	0.5387	0.2999	0.7340	49.61	22	66	45	54	15	202	12	
35	Surface	1	2 mon	gpi	61.89	-24.39	24.39	2.4558	2.4558	-49.02	0.6675	0.3585	0.8170	71.58	151	43	105	22	127	448	71	
36	Surface	1	2 mon	ssmi	42.09	7.92	7.92	1.8991	1.8991	-51.60	0.6421	0.4847	0.8013	49.03	19	11	88	26	14	158	7	
37	Surface	1	2 mon	opi2	53.98	52.91	52.91	1.0526	1.0526	-55.82	0.5774	-0.8978	0.7599	60.05	96	187	3	43	53	382	51	
38	Surface	1	2 mon	opi3	54.39	47.43	47.43	1.1117	1.1117	-53.59	0.4043	-0.3431	0.6358	63.75	100	165	10	76	77	428	66	
39	Surface	1	2 mon	cmap	50.37	40.12	40.12	1.2208	1.2208	-52.29	0.4236	-0.0523	0.6509	60.54	69	139	20	69	57	354	38	
40	Surface	1	2 mon	cmap2	50.56	39.92	39.92	1.2322	1.2322	-52.72	0.4181	-0.0400	0.6466	61.14	72	134	21	71	62	360	42	
41	Surface	1	3 mon	reanalysis	37.82	31.32	31.32	0.6008	1.6644	-9.58	0.2813	-0.6287	0.5304	45.09	5	91	78	83	6	263	23	
42	Surface	1	3 mon	gpcp	54.80	38.19	38.19	0.7359	1.3589	-23.69	0.1675	-0.3156	0.4092	64.48	102	116	42	95	80	435	69	
43	Surface	1	3 mon	gpcc	48.99	39.22	39.22	0.7214	1.3862	-25.32	0.2057	-0.5363	0.4535	57.64	60	125	44	92	42	363	46	
44	Surface	1	3 mon	ghcn cams grid	52.03	26.11	26.11	0.8000	1.2500	-15.22	0.1766	-0.0277	0.4203	60.20	79	64	25	93	54	315	31	
45	Surface	1	3 mon	gpi	71.35	-24.63	24.63	1.6607	1.6607	-8.34	0.2933	0.1714	0.5415	81.61	204	44	76	82	181	587	119	
46	Surface	1	3 mon	ssmi	51.38	7.28	7.28	1.3662	1.3662	-24.75	0.3052	0.2720	0.5524	58.56	75	8	43	81	46	253	21	
47	Surface	1	3 mon	opi2	57.04	52.50	52.50	0.6495	1.5396	-33.27	0.2164	-1.2933	0.4652	66.10	121	184	63	91	88	547	102	
48	Surface	1	3 mon	opi3	58.63	47.06	47.06	0.6331	1.5795	-26.93	0.1289	-0.6431	0.3590	70.66	128	164	71	105	123	591	122	
49	Surface	1	3 mon	cmap	55.91	39.74	39.74	0.6997	1.4292	-23.26	0.1368	-0.3399	0.3698	68.45	110	132	49	101	105	497	89	
50	Surface	1	3 mon	cmap2	56.10	39.53	39.53	0.7022	1.4241	-23.19	0.1335	-0.3235	0.3654	69.12	114	129	48	103	110	504	93	
51	Surface	1	4 mon	reanalysis	43.41	31.31	31.31	0.2645	3.7807	8.71	0.0545	-1.1502	0.2335	51.89	25	90	123	133	20	391	57	
52	Surface	1	4 mon	gpcp	63.21	37.89	37.89	0.0472	21.1864	14.21	0.0007	-0.7305	0.0262	74.09	162	115	160	171	150	758	169	
53	Surface	1	4 mon	gpcc	55.98	38.79	38.79	0.0656	15.2439	7.56	0.0017	-1.0301	0.0410	66.48	112	121	155	167	92	647	140	
54	Surface	1	4 mon	ghcn cams grid	62.68	25.99	25.99	0.0289	34.6021	26.86	0.0002	-0.4511	0.0152	71.62	154	61	167	173	128	683	149	
55	Surface	1	4 mon	gpi	83.33	-25.43	25.43	0.3816	2.6205	56.10	0.0153	-0.1051	0.1238	94.43	231	56	108	149	218	762	170	
56	Surface	1	4 mon	ssmi	63.43	7.04	7.04	0.3584	2.7902	23.51	0.0209	-0.0566	0.1446	70.92	164	7	113	145	125	554	107	
57	Surface	1	4 mon	opi2	63.20	52.12	52.12	0.0932	10.7296	-2.54	0.0044	-1.8403	0.0666	73.59	161	181	148	162	146	798	177	
58	Surface	1	4 mon	opi3	64.53	46.77	46.77	0.0162	61.7284	7.02	0.0001	-1.0257	0.0092	78.62	170	163	173	176	169	851	190	
59	Surface	1	4 mon	cmap	63.62	39.43	39.43	0.0205	48.7805	14.13	0.0001	-0.7088	0.0108	77.46	166	128	172	175	163	804	179	
60	Surface	1	4 mon	cmap2	63.91	39.22	39.22	0.0157	63.6943	14.60	0.0001	-0.6848	0.0081	78.13	167	124	174	178	166	809	180	
61	Surface	2	Yes	reanalysis	40.94	-5.91	5.91	1.5178	1.5178	-22.88	0.7618	0.6689	0.8728	52.35	16	1	60	7	23	107	3	Plot
62	Surface	2	Yes	gpcp	55.70	53.15	53.15	0.9493	1.0534	-50.33	0.7158	-0.1061	0.8461	61.73	109	194	4	17	66	390	56	
63	Surface	2	Yes	gpcc	53.83	53.83	53.83	0.9085	1.1007	-50.13	0.7910	-0.3966	0.8894	59.63	94	200	9	4	52	359	40	
64	Surface	2	Yes	ghcn cams grid	47.28	43.70	43.70	1.0402	1.0402	-45.93	0.7676	0.2715	0.8761	53.02	46	150	2	6	26	230	17	
65	Surface	2	Yes	gpi	40.05	-11.32	11.32	1.6010	1.6010	-19.52	0.8688	0.7312	0.9321	47.37	10	16	72	1	9	108	4	
66	Surface	2	Yes	ssmi	33.32	22.64	22.64	1.1420	1.1420	-29.82	0.8056	0.6898	0.8976	39.22	2	42	12	2	1	59	2	
67	Surface	2	Yes	opi2	67.54	67.47	67.47	0.7634	1.3099	-54.32	0.7432	-1.4492	0.8621	72.51	188	234	34	10	138	604	131	
68	Surface	2	Yes	opi3	65.41	62.14	62.14	0.8546	1.1701	-54.06	0.6060	-0.5822	0.7785	72.24	173	227	17	35	133	585	118	
69	Surface	2	Yes	cmap	59.09	54.80	54.80	0.9316	1.0734	-51.00	0.6292	-0.1697	0.7932	66.45	132	210	6	29	91	468	74	
70	Surface	2	Yes	cmap2	59.22	54.62	54.62	0.9395	1.0644	-51.25	0.6208	-0.1484	0.7879	66.85	134	207	5	30	94	470	76	
71	Surface	2	No	reanalysis	63.33	-5.93	5.93	1.8310	1.8310	-40.25	0.4052	0.3175	0.6365	75.16	163	2	86	73	156	480	83	
72	Surface	2	No	gpcp	58.80	53.13	53.13	1.4298	1.4298	-77.02	0.5936	-0.2793	0.7704	66.39	130	193	50	40	90	503	91	
73	Surface	2	No	gpcc	55.36	53.66	53.66	1.3511	1.3511	-72.77	0.6479	-0.5756	0.8049	63.34	106	198	41	25	75	445	70	
74	Surface	2	No	ghcn cams grid	52.15	43.68	43.68	1.5272	1.5272	-72.98	0.6048	0.0382	0.7777	60.92	81	149	61	36	60	387	54	
75	Surface	2	No	gpi	64.20	-11.49	11.49	2.2868	2.2868	-54.31	0.5611	0.3677	0.7491	72.98	169	17	102	46	141	475	81	
76	Surface	2	No	ssmi	49.00	21.96	21.96	1.5651	1.5651	-50.15	0.4514	0.2953	0.6719	59.11	61	41	69	68	50	289	26	
77	Surface	2	No	opi2	67.63	67.45	67.45	1.1531	1.1531	-75.96	0.6197	-1.5111	0.7872	73.42	189	233	14	32	144	612	133	
78	Surface	2	No	opi3	66.48	62.12	62.12	1.3361	1.3361	-80.81	0.5414	-0.6628	0.7358	74.06	179	226	39	52	149	645	138	
79	Surface	2	No	cmap	61.29	54.78	54.78	1.4417	1.4417	-79.33	0.5507	-0.2959	0.7421	69.95	144	209	52	51	117	573	113	
80	Surface	2	No	cmap2	61.50	54.60	54.60	1.4638	1.4638	-80.38	0.5509	-0.2705	0.7422	70.31	149	206	57	50	118	580	117	
81	Surface	2	1 mon	reanalysis	56.96	-5.97	5.97	2.3731	2.3731	-70.03	0.6738	0.4439	0.8208	67.97	120	3	104	21	102	350	37	
82	Surface	2	1 mon	gpcp	58.26	53.00	53.00	1.5443	1.5443	-83.13	0.6853	-0.2118	0.8278	64.75	126	191	64	20	83	484	86	
83	Surface	2	1 mon	gpcc	54.95	53.57	53.57	1.4716	1.4716	-78.65	0.7583	-0.4874	0.8708	61.71	104	196	59	8	65	432	67	
84	Surface	2	1 mon	ghcn cams grid	51.81	43.61	43.61	1.6995	1.6995	-82.33	0.7417	0.1247	0.8612	58.21	78	148	80	11	45	362	44	
85	Surface	2	1 mon	gpi	59.45	-11.21	11.21	2.7509	2.7509	-77.76	0.8040	0.4634	0.8967	67.29	137	15	111	3	96	362	45	
86	Surface	2	1 mon	ssmi	44.29	21.63	21.63	2.0138	2.0138	-71.66	0.7190	0.4433	0.8479	52.79	29	39	95	15	25	203	13	
87	Surface	2	1 mon	opi2	67.73	67.44	67.44	1.2654	1.2654	-82.13	0.7415	-1.4101	0.8611	71.93	191	232	27	12	132	594	123	
88	Surface	2	1 mon	opi3	66.85	61.98	61.98	1.4133	1.4133	-84.86	0.5994	-0.6118	0.7742	73.07	180	225	46	37	142	630	135	
89	Surface	2	1 mon	cmap	61.29	54.66	54.66	1.5378	1.5378	-84.43	0.6201	-0.2439	0.7874	68.67	145	208	62	31	106	552	105	
90	Surface	2	1 mon	cmap2	61.44	54.47	54.47	1.5577	1.5577	-85.34	0.6172	-0.2212	0.7856	69.08	148	204	67	33	109	561	109	
91	Surface	2	2 mon	reanalysis	58.13	-6.03	6.03	2.3175	2.3175	-66.63	0.6373	0.4270	0.7983	69.14	125	4	103	27	111	370	48	
92	Surface	2	2 mon	gpcp	60.16	52.94	52.94	1.2729	1.2729	-67.99	0.4620	-0.3665	0.6797	68.88	139	188	29	67	107	530	97	
93	Surface	2	2 mon	gpcc	55.56	53.39	53.39	1.2053	1.2053	-64.87	0.4990	-0.6703	0.7064	65.57	108	195	19	60	87	469	75	
94	Surface	2	2 mon	ghcn cams grid	54.91	43.55	43.55	1.4236	1.4236	-66.91	0.5164	-0.0175	0.7186	62.87	103	147	47	58	73	428	65	
95	Surface	2	2 mon	gpi	62.95	-10.83	10.83	2.4939	2.4939	-64.51	0.6526	0.4045	0.8078	70.83	157	13	106	24	124	424	63	
96	Surface	2	2 mon	ssmi	47.56	21.72	21.72	1.9469	1.9469	-67.72	0.6307	0.3870	0.7942	55.32	49	40	91	28	33	241	18	
97	Surface	2	2 mon	opi2	68.01	67.35	67.35	1.0797	1.0797	-71.75	0.5358	-1.5732	0.7320	74.45	192	231	8	55	153	639	137	
98	Surface	2	2 mon	opi3	67.49	61.87	61.87	1.1388	1.1388	-69.52	0.3859	-0.7704	0.6212	76.74	186	224	11	79	160	660	145	
99	Surface	2	2 mon	cmap	62.68	54.56	54.56	1.2479	1.2479	-68.23	0.4050	-0.3928	0.6364	72.82	155	205	24	74	140	598	127	
100	Surface	2	2 mon	cmap2	62.85	54.36	54.36	1.2593	1.2593	-68.66	0.4001	-0.3698	0.6325	73.32	156	203	26	78	143	606	132	
101	Surface	2	3 mon	reanalysis	66.15	-6.25	6.25	1.6316	1.6316	-28.40	0.3104	0.2592	0.5571	78.80	177	5	74	80	170	506	94	

Porto Velho Basin - Monthly Surface

OI	Runoff	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Oslope	Intercept	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR
102	Surface	2	3 mon	gpcp	65.67	52.57	52.57	0.6808	1.4689	-35.06	0.1299	-0.6915	0.3604	76.79	175	185	58	104	162	684	150
103	Surface	2	3 mon	gpcc	59.22	52.70	52.70	0.6392	1.5645	-35.86	0.1347	-1.0277	0.3671	72.49	135	186	68	102	137	628	134
104	Surface	2	3 mon	ghcn cams grid	62.57	43.18	43.18	0.7720	1.2953	-30.67	0.1493	-0.3416	0.3864	72.35	153	146	32	98	134	563	110
105	Surface	2	3 mon	gpi	72.99	-11.15	11.15	1.6205	1.6205	-19.82	0.2645	0.2111	0.5143	81.82	209	14	73	85	182	563	111
106	Surface	2	3 mon	ssmi	56.35	20.96	20.96	1.3438	1.3438	-37.36	0.2757	0.1706	0.5251	64.68	117	38	40	84	81	360	43
107	Surface	2	3 mon	opi2	69.70	66.89	66.89	0.5944	1.6824	-44.63	0.1601	-1.9885	0.4001	80.29	194	230	79	96	174	773	171
108	Surface	2	3 mon	opi3	70.72	61.44	61.44	0.5780	1.7301	-38.29	0.0978	-1.0854	0.3127	83.43	200	223	81	111	188	803	178
109	Surface	2	3 mon	cmap	67.24	54.12	54.12	0.6445	1.5516	-34.62	0.1063	-0.6929	0.3260	80.42	183	202	66	109	176	736	163
110	Surface	2	3 mon	cmap2	67.42	53.92	53.92	0.6471	1.5454	-34.56	0.1039	-0.6653	0.3224	80.98	184	201	65	110	179	739	164
111	Surface	2	4 mon	reanalysis	76.84	-6.83	6.83	0.5549	1.8021	31.17	0.0357	0.0072	0.1890	91.27	222	6	83	140	207	658	143
112	Surface	2	4 mon	gpcp	72.87	52.25	52.25	-0.0760		6.58	0.0016	-1.1009	-0.0401	85.74	208	183	201	187	191	970	207
113	Surface	2	4 mon	gpcc	65.00	52.22	52.22	-0.1230		2.31	0.0049	-1.4989	-0.0702	80.73	172	182	225	197	178	954	206
114	Surface	2	4 mon	ghcn cams grid	71.68	42.83	42.83	-0.0531		14.74	0.0007	-0.7438	-0.0265	82.62	205	145	197	184	185	916	200
115	Surface	2	4 mon	gpi	84.65	-12.00	12.00	0.2753	3.6324	47.95	0.0076	-0.0618	0.0870	95.08	233	18	121	159	220	751	167
116	Surface	2	4 mon	ssmi	70.69	20.27	20.27	0.7543	1.3257	-8.63	0.0842	-0.0050	0.2901	71.56	199	37	38	119	126	519	95
117	Surface	2	4 mon	opi2	74.17	66.48	66.48	-0.0300		-10.17	0.0004	-2.5269	-0.0202	87.24	214	229	188	182	198	1011	219
118	Surface	2	4 mon	opi3	75.71	61.13	61.13	-0.1070		-0.61	0.0033	-1.4682	-0.0577	90.94	219	222	216	193	206	1056	227
119	Surface	2	4 mon	cmap	73.50	53.79	53.79	-0.1027		6.50	0.0027	-1.0609	-0.0518	88.89	212	199	214	189	204	1018	221
120	Surface	2	4 mon	cmap2	73.76	53.58	53.58	-0.1075		6.97	0.0028	-1.0260	-0.0534	89.48	213	197	217	190	205	1022	222
121	Reanalysis	1	Yes	reanalysis	53.80	-34.87	34.87	0.5191	1.9264	-23.52	0.1482	-0.3353	0.3850	67.50	92	102	90	99	98	481	85
122	Reanalysis	1	Yes	gpcp	57.18	-27.27	27.27	0.3610	2.7701	-16.73	0.1098	-0.4429	0.3314	71.73	123	72	112	108	129	544	101
123	Reanalysis	1	Yes	gpcc	49.37	-17.52	17.52	0.6013	1.6631	-13.07	0.2260	0.0368	0.4754	57.35	63	27	77	89	41	297	29
124	Reanalysis	1	Yes	gpcc trmm	62.96	-32.13	32.13	0.3674	2.7218	-23.97	0.0729	-0.3757	0.2699	78.17	158	92	110	123	167	650	142
125	Reanalysis	1	Yes	ghcn cams grid	62.20	-37.62	37.62	0.3512	2.8474	-20.71	0.1216	-0.7089	0.3487	76.28	152	114	114	106	159	645	139
126	Reanalysis	1	Yes	gpi	90.42	-82.38	82.38	0.3355	2.9806	-35.65	0.2316	-2.4784	0.4812	114.48	239	246	115	87	244	931	204
127	Reanalysis	1	Yes	trmm 3a46	70.86	-66.31	66.31	0.4982	2.0072	-48.64	0.2275	-1.0730	0.4769	92.31	201	228	94	88	210	821	184
128	Reanalysis	1	Yes	trmm 3b43	66.91	-34.34	34.34	0.2504	3.9936	-22.74	0.0403	-0.5905	0.2008	83.42	181	96	126	137	187	727	159
129	Reanalysis	1	Yes	ssmi	64.79	-50.93	50.93	0.4739	2.1101	-31.69	0.2506	-0.7380	0.5006	81.44	171	180	97	86	180	714	154
130	Reanalysis	1	Yes	opi2	51.67	-14.83	14.83	0.4470	2.2371	-12.90	0.1139	-0.1226	0.3374	63.00	77	24	101	107	74	383	52
131	Reanalysis	1	Yes	opi3	54.28	-19.12	19.12	0.3106	3.2196	-13.75	0.0778	-0.4088	0.2790	70.57	99	36	116	121	120	492	88
132	Reanalysis	1	Yes	cmap	56.92	-25.49	25.49	0.3091	3.2352	-15.53	0.0870	-0.5306	0.2950	73.70	119	59	117	118	147	560	108
133	Reanalysis	1	Yes	cmap2	57.24	-25.52	25.52	0.2988	3.3467	-15.39	0.0833	-0.5592	0.2887	74.39	124	60	119	120	152	575	114
134	Reanalysis	1	No	reanalysis	47.40	-34.70	34.70	-0.2443		-5.34	0.2955	-10.5427	-0.5436	66.16	48	101	250	270	89	758	168
135	Reanalysis	1	No	gpcp	55.17	-27.45	27.45	-0.1451		-8.54	0.1218	-8.9193	-0.3490	71.76	105	75	232	244	130	786	174
136	Reanalysis	1	No	gpcc	45.41	-17.87	17.87	-0.1150		-5.43	0.3985	-41.5915	-0.6313	54.92	36	30	222	276	31	595	124
137	Reanalysis	1	No	gpcc trmm	58.77	-30.85	30.85	-0.3041		-14.01	0.1472	-3.1900	-0.3836	79.47	129	84	260	253	171	897	195
138	Reanalysis	1	No	ghcn cams grid	59.36	-37.22	37.22	-0.1546		-7.13	0.2110	-15.1984	-0.4594	78.49	136	109	234	262	168	909	197
139	Reanalysis	1	No	gpi	102.13	-82.17	82.17	-0.1105		-4.09	0.1402	-24.0167	-0.3744	129.98	259	244	220	251	259	1233	261
140	Reanalysis	1	No	trmm 3a46	86.42	-60.83	60.83	-0.3471		-13.38	0.2485	-5.5222	-0.4985	109.13	236	221	264	267	239	1227	260
141	Reanalysis	1	No	trmm 3b43	61.41	-33.08	33.08	-0.2710		-13.40	0.1387	-3.6484	-0.3725	83.20	147	95	253	250	186	931	203
142	Reanalysis	1	No	ssmi	76.30	-50.33	50.33	-0.1610		-7.88	0.1380	-10.2079	-0.3715	94.67	220	179	236	248	219	1102	237
143	Reanalysis	1	No	opi2	46.89	-13.97	13.97	-0.1900		-9.82	0.1418	-5.8031	-0.3766	59.06	42	19	240	252	49	602	129
144	Reanalysis	1	No	opi3	49.85	-18.26	18.26	-0.1390		-9.40	0.1074	-7.7571	-0.3278	67.01	65	31	230	239	95	660	144
145	Reanalysis	1	No	cmap	53.37	-24.96	24.96	-0.1223		-8.79	0.0937	-9.0087	-0.3061	71.84	86	47	224	234	131	722	157
146	Reanalysis	1	No	cmap2	53.56	-24.99	24.99	-0.1183		-8.84	0.0900	-9.1589	-0.2999	72.37	89	48	223	233	135	728	160
147	Reanalysis	1	1 mon	reanalysis	47.31	-34.65	34.65	-0.2117		-6.12	0.2218	-10.2293	-0.4709	65.28	47	99	247	265	86	744	166
148	Reanalysis	1	1 mon	gpcp	54.17	-27.24	27.24	-0.0985		-9.35	0.0559	-8.3219	-0.2365	69.69	98	71	213	220	115	717	156
149	Reanalysis	1	1 mon	gpcc	44.31	-17.56	17.56	-0.0794		-5.80	0.1899	-39.2376	-0.4358	53.49	30	28	203	259	28	548	103
150	Reanalysis	1	1 mon	gpcc trmm	55.50	-29.12	29.12	-0.1849		-13.25	0.0666	-3.3518	-0.2582	73.58	107	79	239	228	145	798	176
151	Reanalysis	1	1 mon	ghcn cams grid	58.88	-37.26	37.26	-0.1139		-8.14	0.1147	-14.5111	-0.3386	76.75	131	110	221	243	161	866	191
152	Reanalysis	1	1 mon	gpi	101.58	-81.62	81.62	-0.0962		-5.15	0.1053	-23.3984	-0.3245	128.68	258	242	210	237	257	1204	256
153	Reanalysis	1	1 mon	trmm 3a46	83.65	-59.31	59.31	-0.2932		-12.01	0.2145	-6.2818	-0.4632	105.01	232	220	257	264	233	1206	257
154	Reanalysis	1	1 mon	trmm 3b43	56.16	-29.72	29.72	-0.1674		-13.02	0.0633	-3.7358	-0.2517	76.28	115	80	238	227	158	818	183
155	Reanalysis	1	1 mon	ssmi	75.13	-49.60	49.60	-0.1441		-8.60	0.1083	-9.7767	-0.3290	93.11	218	175	231	240	213	1077	234
156	Reanalysis	1	1 mon	opi2	45.41	-14.12	14.12	-0.1317		-10.01	0.0680	-5.3393	-0.2608	57.11	35	20	228	229	39	551	104
157	Reanalysis	1	1 mon	opi3	48.40	-18.43	18.43	-0.0880		-9.79	0.0430	-7.1849	-0.2073	64.89	55	32	206	217	85	595	125
158	Reanalysis	1	1 mon	cmap	52.08	-25.20	25.20	-0.0756		-9.46	0.0357	-8.4123	-0.1889	69.78	80	50	200	216	116	662	146
159	Reanalysis	1	1 mon	cmap2	52.25	-25.23	25.23	-0.0727		-9.50	0.0338	-8.5610	-0.1839	70.33	82	51	199	215	119	666	147
160	Reanalysis	1	2 mon	reanalysis	46.60	-34.64	34.64	-0.1471		-7.66	0.1071	-9.5922	-0.3272	63.43	41	97	233	238	76	685	151
161	Reanalysis	1	2 mon	gpcp	52.57	-27.13	27.13	-0.0440		-10.28	0.0111	-7.6711	-0.1055	67.30	84	69	194	204	97	648	141
162	Reanalysis	1	2 mon	gpcc	42.43	-17.33	17.33	-0.0431		-6.27	0.0561	-36.9920	-0.2369	51.99	21	25	193	221	21	481	84
163	Reanalysis	1	2 mon	gpcc trmm	52.50	-27.89	27.89	-0.0967		-12.67	0.0210	-3.3851	-0.1448	69.29	83	77	212	211	113	696	152
164	Reanalysis	1	2 mon	ghcn cams grid	57.06	-37.29	37.29	-0.0471		-9.85	0.0196	-13.3431	-0.1402	73.80	122	111	195	210	148	786	175
165	Reanalysis	1	2 mon	gpi	100.87	-81.65	81.65	-0.0628		-7.54	0.0450	-22.6246	-0.2122	126.86	255	243	198	218	255	1169	253
166	Reanalysis	1	2 mon	trmm 3a46	80.22	-59.05	59.05	-0.1929		-13.08	0.1027	-6.4161	-0.3204	99.87	229	219	242	235	228	1151	247
167	Reanalysis	1	2 mon	trmm 3b43	54.15	-28.44	28.44	-0.0955		-12.32	0.0237	-3.8503	-0.1541	72.40	97	78	208	213	136	732	162
168	Reanalysis	1	2 mon	ssmi	74.47	-49.80	49.80	-0.1083		-9.88	0.0611	-9.4047	-0.2471	91.75	215	176	218	224	208	1041	225
169	Reanalysis	1	2 mon	opi2	43.24	-14.24	14.24	-0.0525		-10.33	0.0108	-4.7231	-0.1040	54.34	24	21	196	203	29	473	78
170	Reanalysis	1	2 mon	opi3	46.35	-18.64	18.64	-0.0296		-10.29	0.0049	-6.5368	-0.0697	62.36	39	33	187	196	71	526	96
171	Reanalysis	1	2 mon	cmap	50.38	-25.32	25.32	-0.0254		-10.23	0.0040	-7.7951	-0.0635	67.55	70	52	185	194	100	601	128
172	Reanalysis	1	2 mon	cmap2	50.51	-25.35	25.35	-0.0228		-10.27	0.0033	-7.9316	-0.0577	68.07	71	53	184	192	103	603	130
173	Reanalysis	1	3 mon	reanalysis	45.16	-34.64	34.64	-0.0431		-10.13	0.0092	-8.5683	-0.0958	60.32	32	98	192	199	55	576	115
174	Reanalysis	1	3 mon	gpcp	49.97	-27.21	27.21	0.0343	29.1545	-11.58	0.0068	-6.7755	0.0823	63.83	66	70	165	160	78	539	100
175	Reanalysis	1	3 mon	gpcc	40.50	-17.47	17.47	0.0106	94.3396	-6.90	0.0034	-33.9800	0.0583	49.93	12	26	176	165	16	395	59
176	Reanalysis	1	3 mon	gpcc trmm	48.57	-27.40	27.40	0.0883	11.3250	-13.93	0.0190	-2.7572	0.1379	61.43	59	74	150	146	63	492	87
177	Reanalysis	1	3 mon	ghcn cams grid	54.43	-37.40	37.40	0.0223	44.8430	-11.68	0.0044	-12.1143	0.0663	70.62	101	112	169	163	121	666	148
178	Reanalysis	1	3 mon	gpi	99.21	-82.20	82.20	-0.0078		-11.44	0.0007	-21.4062	-0.0263	123.78	249	245	181	183	253	1111	239
179	Reanalysis	1	3 mon	trmm 3a46	77.00	-58.41	58.41	-0.0291		-17.58	0.0025	-5.9121	-0.0504	92.88	223	218	186	188	212	1027	223
180	Reanalysis	1	3 mon	trmm 3b43	50.03	-27.50	27.50	0.0707	14.1443	-13.43	0.0144	-3.2358	0.1200	64.78	67	76	153	151	84	531	99
181	Reanalysis	1	3 mon	ssmi	72.29	-49.99	49.99	-0.0421		-12.27	0.0092	-8.7075	-0.0961	88.89	206	177	191	200	203	977	211
182	Reanalysis	1	3 mon	opi2	40.88	-14.48	14.48	0.0502	19.9203	-10.76	0.0098	-3.9099	0.0991	50.41	15	22	158	158	17	370	47
183	Reanalysis	1	3 mon	opi3	43.49	-18.87	18.87	0.0434	23.0415	-10.92	0.0104	-5.7248	0.1019	58.99	26	34	163	157	48	428	64
184	Reanalysis	1	3 mon	cmap	47.83	-25.41	25.41	0.0459	21.7865	-11.31	0.0132	-6.9102	0.1148	64.16	50	55	162	153	79	499	90
185	Reanalysis	1	3 mon	cmap2	47.96	-25.44	25.44	0.0468	21.3675	-11.33	0.0140	-7.0469	0.1184	64.71	52	57	161	152	82	504	92
186	Reanalysis	1	4 mon	reanalysis	43.19	-34.68	34.68	0.0653	15.3139	-12.73	0.0210	-7.4988	0.1448	56.88	23	100	156	144	38	461	73
187	Reanalysis	1	4 mon	gpcp	47.08	-27.35	27.35	0.0961	10.4058	-12.63	0.0532	-6.0728	0.2306	60.97	43	73	147	134	61	458	72
188	Reanalysis	1	4 mon	gpcc	38.34	-17.66	17.66	0.0676	14.7929	-7.58	0.1395	-30.8011	0.3735	47.61	8	29	154	100	12	303	30
189	Reanalysis	1	4 mon	gpcc trmm	44.52	-26.39	26.39	0.1852	5.3996	-13.92	0.0956	-2.5367	0.3092	56.11	31	67	131	112	34	375	50
190	Reanalysis	1	4 mon	ghcn cams grid	51.43	-37.52	37.52	0.0870	11.4943	-13.41	0.0667	-10.9783	0.2584	67.53	76	113	152	126	99	566	112
191	Reanalysis	1	4 mon	gpi	95.95	-82.65	82.65	0.0535	18.6916	-15.83	0.0325	-20.0619	0.1801	120.23	245	248	157	141	248	1039	224
192	Reanalysis	1	4 mon	trmm 3a46	70.65	-57.08	57.08	0.1267	7.8927	-21.84	0.0550	-5.4692	0.2345	85.05	198	211	136	132	190	867	192
193	Reanalysis	1	4 mon	trmm 3b43	48.46	-26.84	26.84	0.1080	9.2593	-12.57	0.0380	-3.3789	0.1950	61.99	56	68	141	138	68	471	77
194	Reanalysis	1	4 mon	ssmi	68.35	-50.33	50.33	0.0489	20.4499	-15.73	0.0124	-7.7858	0.1114	84.79	193	178	159	155	189	874	193
195	Reanalysis	1	4 mon	opi2	37.83	-14.64	14.64	0.1343	7.4460	-11.14	0.0702	-3.2578	0.2649	47.01	6	23	133	125	8	295	27
196	Reanalysis	1	4 mon	opi3	40.98	-18.99	18.99	0.1023	9.7752	-11.45	0.0577	-5.0817	0.2402	56.18	17	35	143	129	36	360	41
197	Reanalysis	1	4 mon	cmap	45.19	-25.40	25.40	0.0985	10.1523	-12.12	0.0606	-6.2521	0.2462	61.53	33	54	145	128	64	424	62
198	Reanalysis	1	4 mon	cmap2	45.37	-25.44	25.44	0.0976	10.2459	-12.11	0.0610	-6.3957	0.2470	62.13	34	58	146	127	69	434	68
199	Reanalysis	2	Yes	reanalysis	108.59	-105.37	105.37	0.0022	454.5455	-47.14	0.0000	-9.0679	0.0043	146.06	260	273	180	180	269	1162	249
200	Reanalysis	2	Yes	gpcp	61.64	-48.17	48.17	0.0070	142.8571	-47.02	0.0001	-2.6313	0.0087	87.72	150	173	178	177	201	879	194
201	Reanalysis	2	Yes	gpcc	48.19	-32.73	32.73	0.0258	38.7597	-35.18	0.0011	-2.2168	0.0325	69.49	53	93	168	168	114	596	126
202	Reanalysis	2	Yes	gpcc trmm	86.08	-81.18	81.18	-0.1586		-84.65	0.0263	-4.0837	-0.1621	111.21	235	241	235	214	240	1165	250

Porto Velho Basin - Monthly Surface

OI	Runoff	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Oslope	Intercept	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR
203	Reanalysis	2	Yes	ghcn cams grid	67.44	-57.77	57.77	-0.0132		-46.87	0.0003	-3.3624	-0.0175	96.14	185	216	182	181	221	985	213
204	Reanalysis	2	Yes	gpi	110.45	-105.46	105.46	0.0339	29.4985	-50.88	0.0043	-8.6288	0.0657	144.53	261	275	166	164	266	1132	244
205	Reanalysis	2	Yes	trmm 3a46	98.59	-96.23	96.23	0.0050	200.0000	-79.42	0.0000	-6.0870	0.0067	122.96	248	259	179	179	251	1116	240
206	Reanalysis	2	Yes	trmm 3b43	88.40	-83.33	83.33	-0.1255		-84.28	0.0182	-4.3032	-0.1350	113.59	238	251	226	209	243	1167	251
207	Reanalysis	2	Yes	ssmi	78.40	-71.92	71.92	0.1100	9.0909	-52.02	0.0268	-4.2231	0.1636	103.99	226	235	138	143	232	974	210
208	Reanalysis	2	Yes	opi2	53.70	-35.47	35.47	-0.0964		-48.12	0.0098	-1.8474	-0.0989	77.67	91	107	211	201	165	775	172
209	Reanalysis	2	Yes	opi3	56.02	-39.61	39.61	0.0097	103.0928	-46.94	0.0001	-2.1821	0.0118	82.11	113	130	177	174	184	778	173
210	Reanalysis	2	Yes	cmap	60.30	-45.91	45.91	0.0207	48.3092	-46.99	0.0007	-2.5868	0.0267	87.18	140	159	171	170	197	837	186
211	Reanalysis	2	Yes	cmap2	60.55	-45.96	45.96	0.0209	47.8469	-46.99	0.0007	-2.6284	0.0273	87.68	141	160	170	169	200	840	187
212	Reanalysis	2	No	reanalysis	124.78	-105.45	105.45	-0.2867		-30.36	0.2653	-9.4844	-0.5151	162.67	274	274	256	269	275	1348	275
213	Reanalysis	2	No	gpcp	78.93	-48.26	48.26	-0.3639		-46.67	0.1732	-3.1822	-0.4162	102.74	228	174	266	258	230	1156	248
214	Reanalysis	2	No	gpcc	66.18	-32.90	32.90	-0.4809		-36.63	0.3272	-3.4188	-0.5720	86.21	178	94	271	274	193	1010	218
215	Reanalysis	2	No	gpcc trmm	99.86	-83.65	83.65	-0.6916		-88.71	0.3619	-3.8884	-0.6016	128.08	254	252	276	275	256	1313	268
216	Reanalysis	2	No	ghcn cams grid	84.81	-57.85	57.85	-0.3817		-42.99	0.2130	-3.9037	-0.4615	111.25	234	217	268	263	241	1223	259
217	Reanalysis	2	No	gpi	128.67	-105.68	105.68	-0.2765		-33.57	0.2349	-8.9793	-0.4846	162.73	276	276	254	266	276	1348	276
218	Reanalysis	2	No	trmm 3a46	114.81	-98.14	98.14	-0.5279		-72.33	0.3226	-5.3438	-0.5680	143.59	265	260	273	273	264	1335	273
219	Reanalysis	2	No	trmm 3b43	101.11	-85.80	85.80	-0.6150		-87.16	0.3176	-4.0664	-0.5636	130.39	257	257	275	272	260	1321	270
220	Reanalysis	2	No	ssmi	99.30	-72.47	72.47	-0.3238		-42.85	0.1939	-5.1681	-0.4403	123.57	250	238	262	260	252	1262	265
221	Reanalysis	2	No	opi2	70.59	-35.55	35.55	-0.5480		-53.42	0.2649	-2.3500	-0.5147	91.95	197	108	274	268	209	1056	228
222	Reanalysis	2	No	opi3	73.32	-39.70	39.70	-0.3336		-49.56	0.1373	-2.6820	-0.3706	96.40	210	131	263	247	222	1073	232
223	Reanalysis	2	No	cmap	77.22	-46.00	46.00	-0.3085		-47.43	0.1327	-3.0925	-0.3643	101.63	224	161	261	246	228	1120	241
224	Reanalysis	2	No	cmap2	77.35	-46.04	46.04	-0.2994		-47.41	0.1281	-3.1252	-0.3579	102.04	225	162	259	245	229	1120	242
225	Reanalysis	2	1 mon	reanalysis	123.49	-104.64	104.64	-0.2282		-33.66	0.1674	-9.0309	-0.4092	158.88	272	272	249	257	274	1324	271
226	Reanalysis	2	1 mon	gpcp	76.44	-47.77	47.77	-0.2507		-46.62	0.0823	-2.8734	-0.2869	98.73	221	171	251	232	225	1100	236
227	Reanalysis	2	1 mon	gpcc	63.15	-31.02	31.02	-0.2784		-34.54	0.1385	-3.5021	-0.3722	77.60	159	85	255	249	164	912	198
228	Reanalysis	2	1 mon	gpcc trmm	99.59	-83.06	83.06	-0.4638		-89.61	0.1578	-3.4498	-0.3973	122.80	253	249	270	255	250	1277	267
229	Reanalysis	2	1 mon	ghcn cams grid	82.27	-57.46	57.46	-0.2652		-44.03	0.1033	-3.5602	-0.3214	107.13	230	215	252	236	236	1169	252
230	Reanalysis	2	1 mon	gpi	127.09	-104.17	104.17	-0.2116		-36.27	0.1489	-9.1538	-0.3858	157.82	275	269	246	254	273	1317	269
231	Reanalysis	2	1 mon	trmm 3a46	119.20	-100.47	100.47	-0.5108		-72.75	0.2980	-5.3720	-0.5459	144.89	269	261	272	271	267	1340	274
232	Reanalysis	2	1 mon	trmm 3b43	101.03	-85.25	85.25	-0.3649		-88.37	0.1091	-3.5625	-0.3303	124.34	256	256	267	241	254	1274	266
233	Reanalysis	2	1 mon	ssmi	99.56	-72.20	72.20	-0.2962		-44.00	0.1597	-4.9849	-0.3997	122.31	252	237	258	256	249	1252	262
234	Reanalysis	2	1 mon	opi2	67.67	-35.15	35.15	-0.3515		-50.96	0.1094	-1.9985	-0.3307	86.87	190	105	265	242	196	998	216
235	Reanalysis	2	1 mon	opi3	70.45	-39.25	39.25	-0.2240		-48.55	0.0621	-2.4046	-0.2492	92.56	196	126	248	226	211	1007	217
236	Reanalysis	2	1 mon	cmap	74.63	-45.56	45.56	-0.2107		-47.12	0.0621	-2.8140	-0.2492	97.97	216	155	245	225	223	1064	230
237	Reanalysis	2	1 mon	cmap2	74.76	-45.61	45.61	-0.2037		-47.10	0.0596	-2.8469	-0.2441	98.39	217	157	244	223	224	1065	231
238	Reanalysis	2	2 mon	reanalysis	119.89	-104.28	104.28	-0.1301		-39.27	0.0543	-8.3532	-0.2330	153.63	270	270	227	219	272	1258	263
239	Reanalysis	2	2 mon	gpcp	72.75	-47.55	47.55	-0.1029		-46.67	0.0139	-2.4753	-0.1178	93.64	207	167	215	208	215	1012	220
240	Reanalysis	2	2 mon	gpcc	59.15	-30.16	30.16	-0.1915		-33.70	0.0682	-3.2729	-0.2611	74.34	133	81	241	230	151	836	185
241	Reanalysis	2	2 mon	gpcc trmm	98.01	-82.60	82.60	-0.0812		-88.34	0.0048	-2.8175	-0.0692	114.86	247	247	204	195	245	1138	245
242	Reanalysis	2	2 mon	ghcn cams grid	78.63	-57.20	57.20	-0.0884		-45.83	0.0115	-3.0229	-0.1070	100.75	227	212	207	206	227	1079	235
243	Reanalysis	2	2 mon	gpi	123.52	-103.57	103.57	-0.1323		-40.39	0.0587	-8.6358	-0.2422	153.35	273	264	229	222	271	1259	264
244	Reanalysis	2	2 mon	trmm 3a46	121.03	-102.55	102.55	-0.4226		-73.89	0.1968	-5.1532	-0.4437	144.03	271	262	269	261	265	1328	272
245	Reanalysis	2	2 mon	trmm 3b43	99.46	-84.55	84.55	-0.0405		-88.04	0.0013	-2.9393	-0.0364	116.68	251	254	190	186	246	1127	243
246	Reanalysis	2	2 mon	ssmi	96.77	-71.95	71.95	-0.2002		-45.85	0.0740	-4.6750	-0.2721	118.62	246	238	243	231	247	1203	255
247	Reanalysis	2	2 mon	opi2	63.44	-35.05	35.05	-0.1630		-48.66	0.0235	-1.6619	-0.1535	81.96	165	103	237	212	183	900	196
248	Reanalysis	2	2 mon	opi3	66.92	-39.03	39.03	-0.0957		-47.49	0.0113	-2.0780	-0.1064	88.13	182	122	209	205	202	920	201
249	Reanalysis	2	2 mon	cmap	71.13	-45.37	45.37	-0.0837		-46.87	0.0098	-2.4494	-0.0990	93.30	202	151	205	202	214	974	209
250	Reanalysis	2	2 mon	cmap2	71.24	-45.42	45.42	-0.0793		-46.86	0.0090	-2.4809	-0.0950	93.72	203	152	202	198	216	971	208
251	Reanalysis	2	3 mon	reanalysis	115.61	-104.15	104.15	-0.0197		-45.60	0.0012	-7.6176	-0.0353	147.73	266	268	183	185	270	1172	254
252	Reanalysis	2	3 mon	gpcp	67.51	-47.60	47.60	0.0987	10.1317	-46.81	0.0128	-1.9454	0.1129	86.36	187	168	144	154	195	848	189
253	Reanalysis	2	3 mon	gpcc	53.34	-30.32	30.32	0.0413	24.2131	-33.00	0.0032	-2.4070	0.0562	66.64	85	82	164	166	93	590	120
254	Reanalysis	2	3 mon	gpcc trmm	93.78	-83.06	83.06	0.2415	4.1408	-86.87	0.0423	-2.3285	0.2056	108.42	243	250	129	136	237	995	215
255	Reanalysis	2	3 mon	ghcn cams grid	73.49	-57.23	57.23	0.0901	11.0988	-47.67	0.0119	-2.4956	0.1092	94.09	211	213	149	156	217	946	205
256	Reanalysis	2	3 mon	gpi	117.93	-103.58	103.58	0.0115	86.9565	-48.47	0.0004	-7.6517	0.0210	145.67	268	265	175	172	268	1148	246
257	Reanalysis	2	3 mon	trmm 3a46	116.76	-103.48	103.48	-0.1088		-80.18	0.0130	-4.4301	-0.1138	136.98	267	263	219	207	261	1217	258
258	Reanalysis	2	3 mon	trmm 3b43	95.03	-85.02	85.02	0.3063	3.2648	-87.14	0.0755	-2.3586	0.2748	108.91	244	255	118	122	238	977	212
259	Reanalysis	2	3 mon	ssmi	92.57	-72.74	72.74	-0.0397		-50.07	0.0029	-4.1032	-0.0539	113.00	242	239	189	191	242	1103	238
260	Reanalysis	2	3 mon	opi2	58.52	-35.15	35.15	0.0875	11.4286	-45.71	0.0068	-1.2175	0.0823	74.94	127	104	151	161	155	698	153
261	Reanalysis	2	3 mon	opi3	61.14	-39.09	39.09	0.1110	9.0090	-45.88	0.0152	-1.5657	0.1234	80.61	142	123	137	150	177	729	161
262	Reanalysis	2	3 mon	cmap	65.56	-45.43	45.43	0.1078	9.2764	-46.59	0.0162	-1.9123	0.1275	85.88	174	153	142	148	192	809	181
263	Reanalysis	2	3 mon	cmap2	65.67	-45.49	45.49	0.1085	9.2166	-46.59	0.0169	-1.9405	0.1300	86.29	176	154	139	147	194	810	182
264	Reanalysis	2	4 mon	reanalysis	111.49	-104.32	104.32	0.1084	9.2251	-52.99	0.0377	-6.7923	0.1941	140.73	263	271	140	139	263	1076	233
265	Reanalysis	2	4 mon	gpcp	63.19	-47.79	47.79	0.2616	3.8226	-47.02	0.0894	-1.5213	0.2990	80.05	160	172	124	114	173	743	165
266	Reanalysis	2	4 mon	gpcc	50.28	-30.70	30.70	0.1750	5.7143	-32.86	0.0569	-1.9292	0.2386	61.90	68	83	132	130	67	480	82
267	Reanalysis	2	4 mon	gpcc trmm	90.86	-84.17	84.17	0.4849	2.0623	-86.29	0.1682	-1.9840	0.4101	103.79	240	253	96	94	231	914	199
268	Reanalysis	2	4 mon	ghcn cams grid	69.77	-57.43	57.43	0.2526	3.9588	-49.45	0.0934	-2.0217	0.3055	87.64	195	214	125	113	199	846	188
269	Reanalysis	2	4 mon	gpi	114.58	-104.04	104.04	0.1296	7.7160	-55.31	0.0565	-6.8968	0.2377	139.28	264	267	135	131	262	1059	229
270	Reanalysis	2	4 mon	trmm 3a46	111.05	-103.94	103.94	0.2080	4.8077	-87.00	0.0472	-3.6861	0.2174	128.87	262	266	130	135	258	1051	226
271	Reanalysis	2	4 mon	trmm 3b43	92.00	-86.08	86.08	0.4476	2.2341	-87.30	0.1595	-2.1362	0.3994	106.40	241	258	100	97	234	930	202
272	Reanalysis	2	4 mon	ssmi	88.00	-73.93	73.93	0.1313	7.6161	-54.75	0.0320	-3.5568	0.1788	106.66	237	240	134	142	235	988	214
273	Reanalysis	2	4 mon	opi2	53.84	-35.24	35.24	0.2853	3.5051	-43.47	0.0719	-0.8683	0.2682	68.91	95	106	120	124	108	553	106
274	Reanalysis	2	4 mon	opi3	56.33	-39.26	39.26	0.2664	3.7538	-44.75	0.0876	-1.1833	0.2960	74.49	116	127	122	116	154	635	136
275	Reanalysis	2	4 mon	cmap	61.26	-45.61	45.61	0.2504	3.9936	-46.46	0.0876	-1.5152	0.2959	79.95	143	156	127	117	172	715	155
276	Reanalysis	2	4 mon	cmap2	61.36	-45.67	45.67	0.2481	4.0306	-46.48	0.0881	-1.5422	0.2969	80.38	146	158	128	115	175	722	158

Porto Velho - Yearly Surface

Ol	Runoff	Re	Storage	Precipitation	Absolute Error	Bias	Abias	Slope	Oslope	Intercpet	R^2	R^2 1:1	Corr Coef	RMSE	AER	BR	SR	CCR	RMR	TR	BR	
1	Surface	1	Yes	reanalysis	32.18	32.18	32.18	0.3940	2.5381	1.51	0.1007	-7.1327	0.3174	34.70	27	27	40	40	26	160	26	Plot
2	Surface	1	Yes	gpcp	39.75	39.75	39.75	0.7323	1.3656	-24.58	0.5204	-12.9044	0.7214	40.56	41	42	16	4	34	137	15	
3	Surface	1	Yes	gpcc	43.29	43.29	43.29	0.2604	3.8402	-3.01	0.0994	-51.4138	0.3152	44.01	48	48	63	41	42	242	51	
4	Surface	1	Yes	ghcn cams grid	27.07	27.07	27.07	0.7035	1.4215	-13.49	0.4368	-6.7000	0.6609	31.65	23	23	19	11	23	99	5	
5	Surface	1	Yes	gpi	21.87	-21.87	21.87	0.3034	3.2960	59.80	0.1550	-15.5277	0.3937	23.06	14	14	52	37	9	126	10	
6	Surface	1	Yes	ssmi	15.00	14.58	14.58	0.3875	2.5806	19.40	0.1837	-4.9685	0.4286	16.44	5	9	42	34	3	93	3	
7	Surface	1	Yes	opi2	54.08	54.08	54.08	0.1403	7.1276	-5.33	0.0227	-30.2290	0.1507	55.74	66	66	70	64	65	331	78	
8	Surface	1	Yes	opi3	48.75	48.75	48.75	0.7046	1.4192	-32.00	0.3449	-14.0934	0.5873	49.95	59	59	18	17	52	205	41	
9	Surface	1	Yes	cmap	41.41	41.41	41.41	0.7580	1.3193	-27.68	0.3605	-9.0455	0.6004	42.88	47	47	13	15	40	162	29	
10	Surface	1	Yes	cmap2	41.22	41.22	41.22	0.7584	1.3186	-27.52	0.3366	-8.3607	0.5802	42.85	46	46	12	18	39	161	28	
11	Surface	1	No	reanalysis	31.18	31.18	31.18	0.1955	5.1151	12.74	0.0195	-6.8765	0.1396	34.15	26	26	66	66	24	208	42	
12	Surface	1	No	gpcp	38.63	38.63	38.63	0.7397	1.3519	-24.16	0.4083	-12.2525	0.6390	39.60	39	39	14	14	30	136	14	
13	Surface	1	No	gpcc	39.98	39.98	39.98	0.4135	2.4184	-9.99	0.3164	-43.5767	0.5625	40.58	42	43	38	24	35	182	35	
14	Surface	1	No	ghcn cams grid	26.06	26.06	26.06	0.6814	1.4676	-11.47	0.3151	-6.2987	0.5614	30.81	21	21	22	25	22	111	8	
15	Surface	1	No	gpi	25.17	-25.17	25.17	0.4109	2.4337	55.30	0.3588	-20.0819	0.5990	26.04	18	18	39	16	14	105	6	
16	Surface	1	No	ssmi	11.97	9.74	9.74	0.2911	3.4352	26.16	0.1569	-2.8684	0.3961	13.23	3	3	53	36	2	97	4	
17	Surface	1	No	opi2	52.95	52.95	52.95	0.5441	1.8379	-27.61	0.2627	-28.1102	0.5126	53.81	61	61	27	28	58	235	49	
18	Surface	1	No	opi3	47.62	47.62	47.62	0.9248	1.0813	-43.44	0.4569	-13.2680	0.6759	48.56	57	57	5	9	49	177	34	
19	Surface	1	No	cmap	40.28	40.28	40.28	0.9536	1.0487	-37.71	0.4388	-8.4294	0.6624	41.54	45	45	3	10	38	141	16	
20	Surface	1	No	cmap2	40.10	40.10	40.10	1.0160	1.0160	-40.99	0.4646	-7.7324	0.6816	41.39	43	44	2	8	37	134	12	
21	Surface	2	Yes	reanalysis	20.40	-5.71	5.71	0.3809	2.6254	40.26	0.0865	-0.1925	0.2941	27.73	13	1	43	42	15	114	9	Plot
22	Surface	2	Yes	gpcp	53.35	53.35	53.35	0.2742	3.6470	-12.85	0.2641	-27.5967	0.5139	55.94	63	63	57	27	66	276	63	
23	Surface	2	Yes	gpcc	53.84	53.84	53.84	0.0240	41.6667	-3.75	0.0044	-82.2493	0.0665	56.75	65	65	75	74	68	347	81	
24	Surface	2	Yes	ghcn cams grid	44.20	43.90	43.90	0.2515	3.9761	-2.13	0.2068	-18.0245	0.4548	47.29	52	52	64	33	47	248	52	
25	Surface	2	Yes	gpi	17.02	-11.31	11.31	-0.0217		63.75	0.0048	-14.8839	-0.0691	21.62	8	4	92	77	7	188	37	
26	Surface	2	Yes	ssmi	11.47	11.47	11.47	0.1170	8.5470	19.59	0.0421	-28.3117	0.2052	34.29	1	5	71	58	25	160	25	
27	Surface	2	Yes	opi2	67.68	67.68	67.68	0.0391	25.5754	-14.06	0.0063	-53.1847	0.0797	70.90	82	82	74	73	79	390	83	
28	Surface	2	Yes	opi3	62.35	62.35	62.35	0.3487	2.8678	-26.00	0.3198	-27.3936	0.5655	64.42	74	74	48	21	73	290	70	
29	Surface	2	Yes	cmap	55.01	55.01	55.01	0.3732	2.6795	-20.03	0.3294	-19.2164	0.5739	57.32	70	70	45	19	70	274	62	
30	Surface	2	Yes	cmap2	54.82	54.82	54.82	0.3803	2.6295	-20.24	0.3185	-17.7492	0.5644	57.20	69	69	44	22	69	273	61	
31	Surface	2	No	reanalysis	19.37	-5.93	5.93	1.1082	1.1082	-0.08	0.1682	0.1120	0.4101	23.93	11	2	7	35	10	65	2	
32	Surface	2	No	gpcp	53.13	53.13	53.13	0.7178	1.3931	-37.44	0.4157	-25.4419	0.6447	53.79	62	62	17	13	57	211	43	
33	Surface	2	No	gpcc	53.66	53.66	53.66	0.4871	2.0530	-27.43	0.4193	-74.4767	0.6475	54.04	64	64	33	12	61	234	48	
34	Surface	2	No	ghcn cams grid	43.68	43.68	43.68	0.6595	1.5163	-24.76	0.3267	-15.9932	0.5716	44.69	49	51	23	20	45	188	38	
35	Surface	2	No	gpi	11.49	-11.49	11.49	0.4845	2.0640	37.86	0.5455	-4.5624	0.7386	12.79	2	6	34	3	1	46	1	Plot
36	Surface	2	No	ssmi	24.18	24.18	24.18	0.3901	2.5634	6.71	0.3178	-15.0274	0.5638	25.36	15	17	41	23	13	109	7	
37	Surface	2	No	opi2	67.45	67.45	67.45	0.5221	1.9153	-40.90	0.2594	-48.9989	0.5094	68.11	79	79	29	29	76	292	72	
38	Surface	2	No	opi3	62.12	62.12	62.12	0.9029	1.1075	-56.73	0.4925	-25.9208	0.7018	62.72	73	73	6	6	71	229	47	
39	Surface	2	No	cmap	54.78	54.78	54.78	0.9317	1.0733	-50.99	0.4716	-17.9969	0.6867	55.57	68	68	4	7	64	211	44	
40	Surface	2	No	cmap2	54.60	54.60	54.60	0.9941	1.0059	-54.27	0.4999	-16.5820	0.7070	55.39	67	67	1	5	63	203	40	
41	Reanalysis	1	Yes	reanalysis	35.43	-33.78	33.78	-0.1997		-5.48	0.0922	-9.1032	-0.3037	44.33	32	32	89	83	44	280	66	
42	Reanalysis	1	Yes	gpcp	26.34	-26.34	26.34	0.5114	1.9554	-18.28	0.1147	-2.9784	0.3387	30.40	22	22	31	39	20	134	11	
43	Reanalysis	1	Yes	gpcc	14.61	-14.56	14.56	-0.2983		-0.07	0.1216	-10.0276	-0.3488	17.27	4	8	87	86	4	189	39	
44	Reanalysis	1	Yes	gpcc trmm	36.27	-36.27	36.27	3.5048	3.5048	-76.13	0.9488	-1.9915	0.9740	40.04	35	35	55	2	31	158	21	
45	Reanalysis	1	Yes	ghcn cams grid	36.64	-36.64	36.64	0.1673	5.9773	-14.83	0.0169	-7.3047	0.1300	40.19	36	36	69	68	33	242	50	
46	Reanalysis	1	Yes	gpi	79.73	-79.73	79.73	0.7862	1.2719	-64.70	0.2484	-22.5453	0.4984	81.07	84	84	9	30	84	291	71	
47	Reanalysis	1	Yes	trmm 3a46	62.45	-62.45	62.45	-2.9977		75.86	0.3387	-8.2280	-0.5820	67.23	75	75	78	89	75	392	84	
48	Reanalysis	1	Yes	trmm 3b43	31.05	-31.05	31.05	0.6090	1.6420	-25.00	0.0514	-1.8220	0.2268	38.33	25	25	26	53	28	157	20	
49	Reanalysis	1	Yes	ssmi	47.26	-47.26	47.26	0.4594	2.1768	-27.98	0.0477	-6.8075	0.2184	50.68	56	56	35	56	53	256	56	
50	Reanalysis	1	Yes	opi2	16.76	-13.64	13.64	0.1900	5.2632	-10.56	0.0182	-1.1145	0.1351	22.16	7	7	67	67	8	156	18	
51	Reanalysis	1	Yes	opi3	19.46	-17.78	17.78	0.2357	4.2427	-11.71	0.0347	-1.6915	0.1862	25.00	12	11	65	60	12	160	24	
52	Reanalysis	1	Yes	cmap	24.46	-24.09	24.09	0.3187	3.1377	-14.38	0.0686	-2.7428	0.2619	29.48	16	15	50	49	18	148	17	
53	Reanalysis	1	Yes	cmap2	24.53	-24.13	24.13	0.2903	3.4447	-13.99	0.0612	-2.8118	0.2474	29.75	17	16	54	51	19	157	19	
54	Reanalysis	1	No	reanalysis	36.08	-34.70	34.70	-0.2249		-5.80	0.2365	-19.2996	-0.4863	44.18	34	33	88	87	43	285	67	
55	Reanalysis	1	No	gpcp	27.45	-27.45	27.45	0.3141	3.1837	-16.12	0.0681	-5.3619	0.2610	30.64	24	24	51	50	21	170	32	
56	Reanalysis	1	No	gpcc	17.87	-17.87	17.87	0.0850	11.7647	-7.66	0.0253	-33.2118	0.1591	18.99	9	12	72	62	5	160	23	
57	Reanalysis	1	No	gpcc trmm	38.81	-38.81	38.81	2.9186	2.9186	-69.34	0.9499	-3.5192	0.9746	40.96	40	40	49	1	36	166	31	
58	Reanalysis	1	No	ghcn cams grid	37.57	-37.57	37.57	0.0495	20.2020	-12.67	0.0031	-16.1701	0.0553	40.14	37	38	73	75	32	255	54	
59	Reanalysis	1	No	gpi	82.17	-82.17	82.17	0.6398	1.5630	-56.84	0.2295	-33.5857	0.4790	83.19	85	85	24	32	85	311	75	
60	Reanalysis	1	No	trmm 3a46	66.34	-66.34	66.34	-2.1680		43.26	0.4768	-24.7297	-0.6905	68.42	78	78	80	91	77	404	86	
61	Reanalysis	1	No	trmm 3b43	33.08	-33.08	33.08	0.5241	1.9080	-25.71	0.0484	-2.6651	0.2201	38.73	30	30	28	54	29	171	33	
62	Reanalysis	1	No	ssmi	50.25	-50.25	50.25	0.2691	3.7161	-24.19	0.0235	-11.1585	0.1532	52.81	60	60	59	63	56	298	73	
63	Reanalysis	1	No	opi2	16.09	-14.74	14.74	0.2618	3.8197	-11.93	0.0545	-1.8520	0.2335	20.51	6	10	62	52	6	136	13	
64	Reanalysis	1	No	opi3	19.36	-18.89	18.89	0.1771	5.6465	-12.35	0.0308	-3.0512	0.1755	24.45	10	13	68	61	11	163	30	
65	Reanalysis	1	No	cmap	25.19	-25.19	25.19	0.2645	3.7807	-14.71	0.0744	-4.8002	0.2727	29.26	19	19	60	45	16	159	22	
66	Reanalysis	1	No	cmap2	25.23	-25.23	25.23	0.2640	3.7879	-14.71	0.0796	-4.8544	0.2822	29.39	20	20	61	43	17	161	27	
67	Reanalysis	2	Yes	reanalysis	103.07	-103.07	103.07	-0.0897		-39.47	0.0046	-10.6053	-0.0680	111.43	90	90	91	76	91	438	91	
68	Reanalysis	2	Yes	gpcp	45.87	-45.87	45.87	0.6148	1.6265	-45.42	0.0348	-1.9454	0.1866	56.14	53	53	25	59	67	257	58	
69	Reanalysis	2	Yes	gpcc	32.95	-32.71	32.71	-1.4057		-38.77	0.1105	-1.7598	-0.3324	43.70	29	28	81	84	41	263	60	
70	Reanalysis	2	Yes	gpcc trmm	65.35	-65.35	65.35	-3.4835		-78.74	0.3022	-3.3729	-0.5498	76.70	77	77	76	88	81	399	85	
71	Reanalysis	2	Yes	ghcn cams grid	55.47	-55.47	55.47	0.3682	2.7159	-48.67	0.0127	-2.9004	0.1128	64.60	71	71	47	71	74	334	79	
72	Reanalysis	2	Yes	gpi	102.38	-102.38	102.38	0.8395	1.1912	-93.31	0.0763	-9.7885	0.2763	107.08	89	89	8	44	89	319	77	
73	Reanalysis	2	Yes	trmm 3a46	67.52	-67.52	67.52	-2.7272		-10.93	0.3758	-6.2498	-0.6130	74.69	81	81	79	90	80	411	88	
74	Reanalysis	2	Yes	trmm 3b43	67.49	-67.49	67.49	-0.8090		-69.02	0.0278	-3.4976	-0.1668	77.78	80	80	82	79	83	404	87	
75	Reanalysis	2	Yes	ssmi	63.62	-63.62	63.62	1.4367	1.4367	-72.83	0.1374	-3.7271	0.3706	70.48	76	76	20	38	78	288	68	
76	Reanalysis	2	Yes	opi2	33.93	-33.17	33.17	-0.5879		-51.49	0.0321	-1.2302	-0.1791	48.85	31	31	86	81	50	279	65	
77	Reanalysis	2	Yes	opi3	38.26	-37.31	37.31	0.7702	1.2984	-39.01	0.0706	-1.2368	0.2657	48.92	38	37	11	48	51	185	36	
78	Reanalysis	2	Yes	cmap	43.90	-43.61	43.61	0.7339	1.3626	-43.90	0.0741	-1.7132	0.2723	53.88	50	49	15	46	59	219	45	
79	Reanalysis	2	Yes	cmap2	43.95	-43.66	43.66	0.6923	1.4445	-43.98	0.0711	-1.7243	0.2667	53.99	51	50	21	47	60	229	46	
80	Reanalysis	2	No	reanalysis	105.45	-105.45	105.45	-0.1174		-40.24	0.0130	-18.3195	-0.1142	111.92	91	91	90	78	92	442	92	
81	Reanalysis	2	No	gpcp	48.26	-48.26	48.26	0.3696	2.7056	-47.52	0.0208	-3.6310	0.1441	54.80	58	58	46	65	62	289	69	
82	Reanalysis	2	No	gpcc	32.90	-32.90	32.90	-0.7294		-37.25	0.1130	-6.4618	-0.3361	36.87	28	29	83	85	27	252	53	
83	Reanalysis	2	No	gpcc trmm	83.65	-83.65	83.65	-3.3225		-96.57	0.4954	-9.7158	-0.7038	89.45	86	86	77	92	86	427	90	
84	Reanalysis	2	No	ghcn cams grid	57.85	-57.85	57.85	0.2713	3.6860	-50.01	0.0114	-5.2330	0.1068	63.57	72	72	58	72	72	346	80	
85	Reanalysis	2	No	gpi	105.68	-105.68	105.68	1.2785	1.2785	-121.41	0.2372	-13.8550	0.4870	108.55	92	92	10	31	90	315	76	
86	Reanalysis	2	No	trmm 3a46	91.92	-91.92	91.92	0.5067	1.9736	-84.43	0.0165	-13.9997	0.1286	95.15	88	88	32	69	88	365	82	
87	Reanalysis	2	No	trmm 3b43	85.80	-85.80	85.80	-0.6414		-87.18	0.0315	-10.0345	-0.1775	90.77	87	87	85	80	87	426	89	
88	Reanalysis	2	No	ssmi	72.58	-72.58	72.58	1.9185	1.9185	-91.94	0.2757	-5.4300	0.5251	77.47	83	83	30	26	82	304	74	
89	Reanalysis	2	No	opi2	35.55	-35.55	35.55	-0.6963		-55.13	0.0743	-2.3160	-0.2726	46.37	33	34	84	82	46	279	64	
90	Reanalysis	2	No	opi3	40.16	-39.70	39.70	0.2810	3.5587	-45.01	0.0155	-2.5163	0.1245	47.75	44	41	56	70	48	259	59	
91	Reanalysis	2	No	cmap	46.00	-46.00	46.00	0.4495	2.2247	-46.60	0.0459	-3.2859	0.2142	52.72	54	54	36	57	54	255	55	
92	Reanalysis	2	No	cmap2	46.04	-46.04	46.04	0.4419	2.2630	-46.63	0.0478	-3.2979	0.2186	52.79	55	55	37	55	55	257	57	

Appendix B

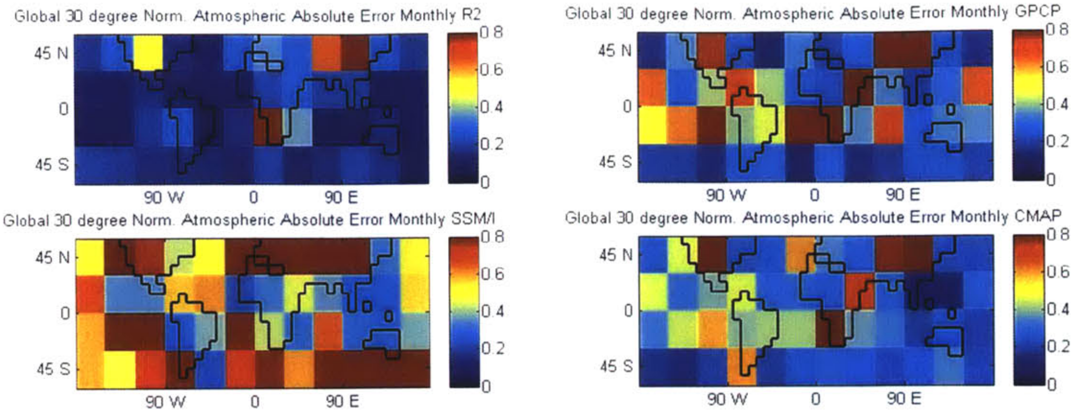


Figure B-1: 30 degree Normalized Absolute Error Different Precipitation Global Monthly

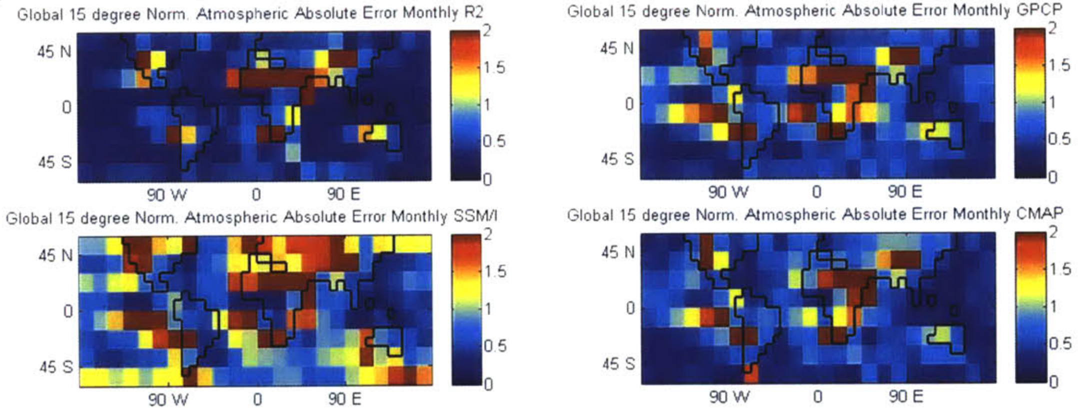


Figure B-2: 15 degree Normalized Absolute Error Different Precipitation Global Monthly

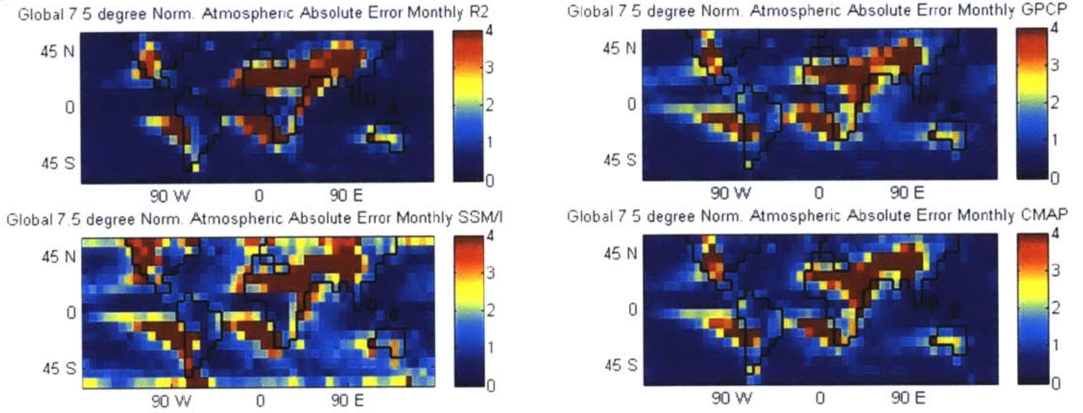


Figure B-3: 7.5 degree Normalized Absolute Error Different Precipitation Global Monthly

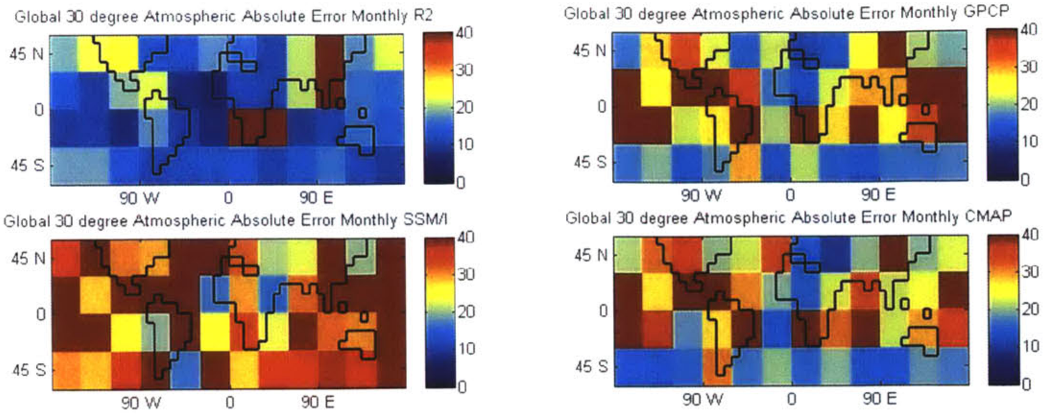


Figure B-4: 30 degree Absolute Error Different Precipitation Global Monthly

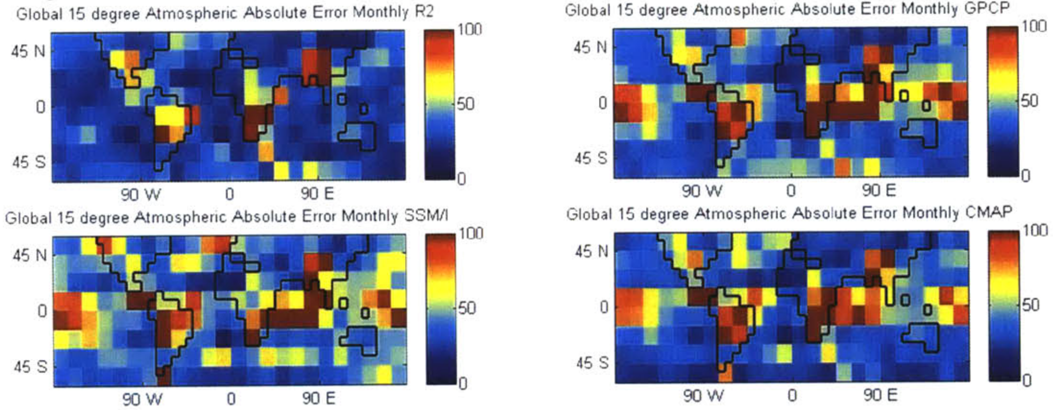


Figure B-5: 15 degree Absolute Error Different Precipitation Global Monthly

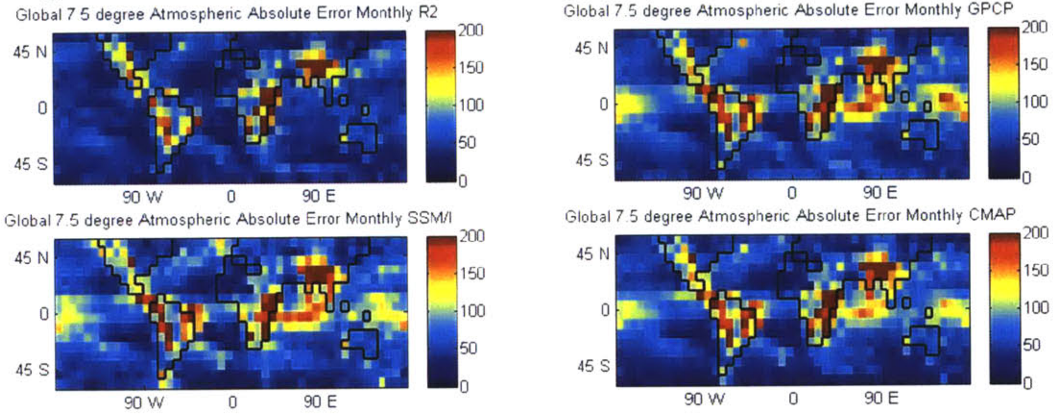


Figure B-6: 7.5 degree Absolute Error Different Precipitation Global Monthly

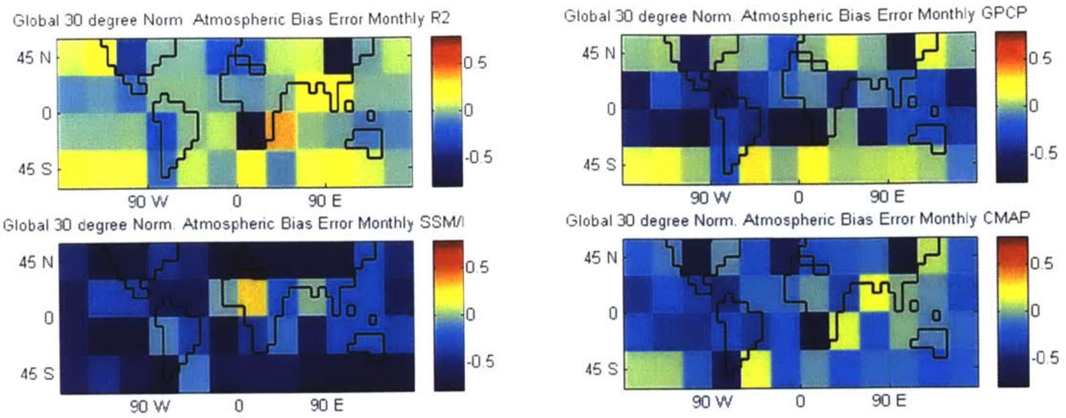

Global 30 degree Norm. Atmospheric Bias Error Monthly R2
Global 30 degree Norm. Atmospheric Bias Error Monthly GPCP
Global 30 degree Norm. Atmospheric Bias Error Monthly SSM/I
Global 30 degree Norm. Atmospheric Bias Error Monthly CMAP

Figure B-7: 30 degree Normalized Bias Error Different Precipitation Global Monthly

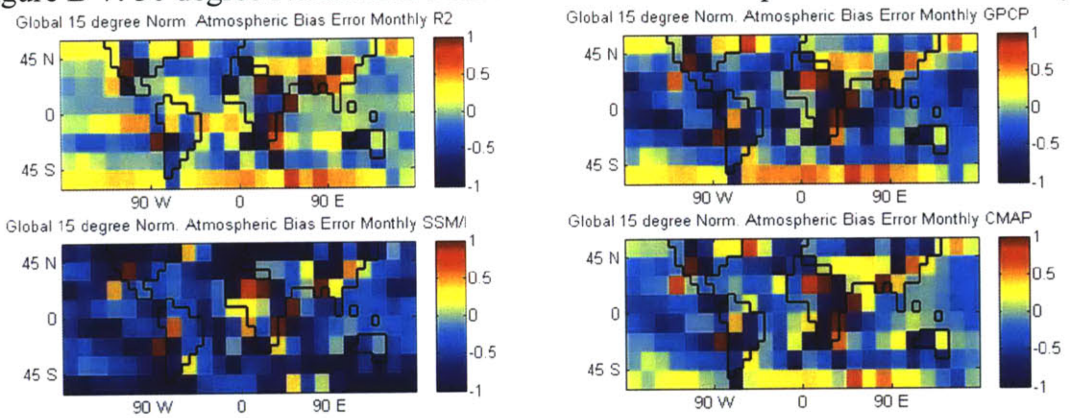

Global 15 degree Norm. Atmospheric Bias Error Monthly R2
Global 15 degree Norm. Atmospheric Bias Error Monthly GPCP
Global 15 degree Norm. Atmospheric Bias Error Monthly SSM/I
Global 15 degree Norm. Atmospheric Bias Error Monthly CMAP

Figure B-8: 15 degree Normalized Bias Error Different Precipitation Global Monthly

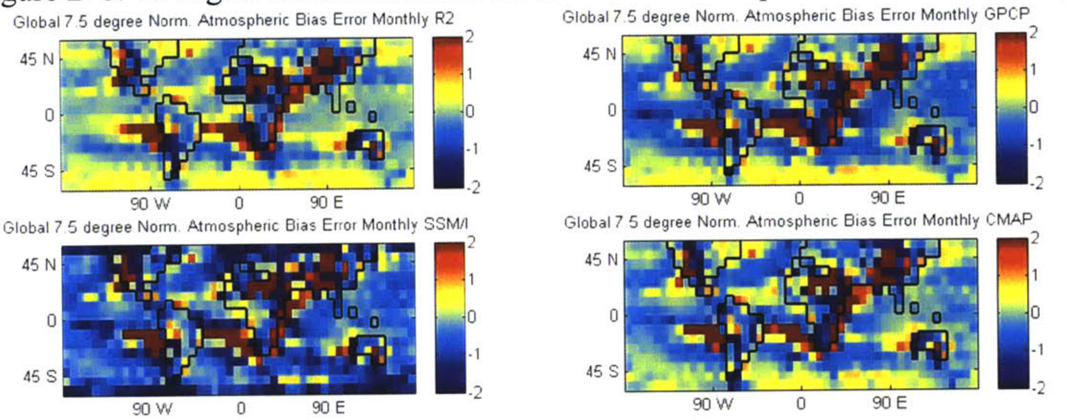

Global 7.5 degree Norm. Atmospheric Bias Error Monthly R2
Global 7.5 degree Norm. Atmospheric Bias Error Monthly GPCP
Global 7.5 degree Norm. Atmospheric Bias Error Monthly SSM/I
Global 7.5 degree Norm. Atmospheric Bias Error Monthly CMAP

Figure B-9: 7.5 degree Normalized Bias Error Different Precipitation Global Monthly

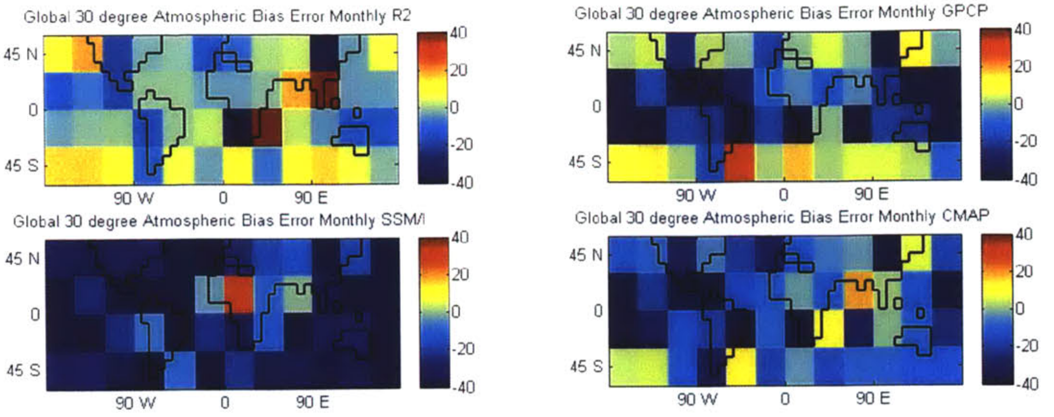


Figure B-10: 30 degree Bias Error Different Precipitation Global Monthly

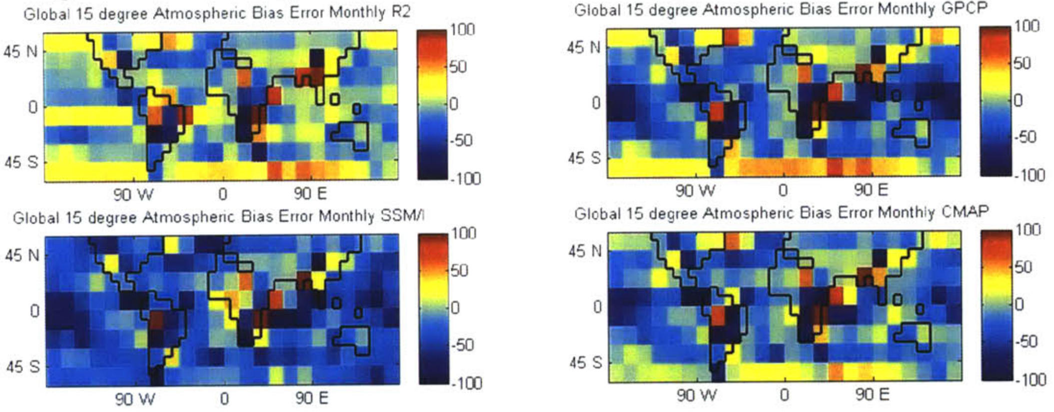


Figure B-11: 15 degree Bias Error Different Precipitation Global Monthly

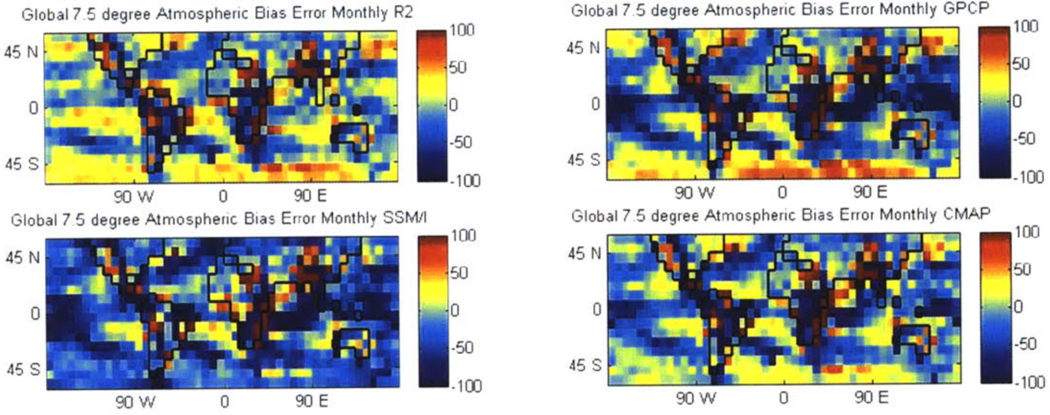
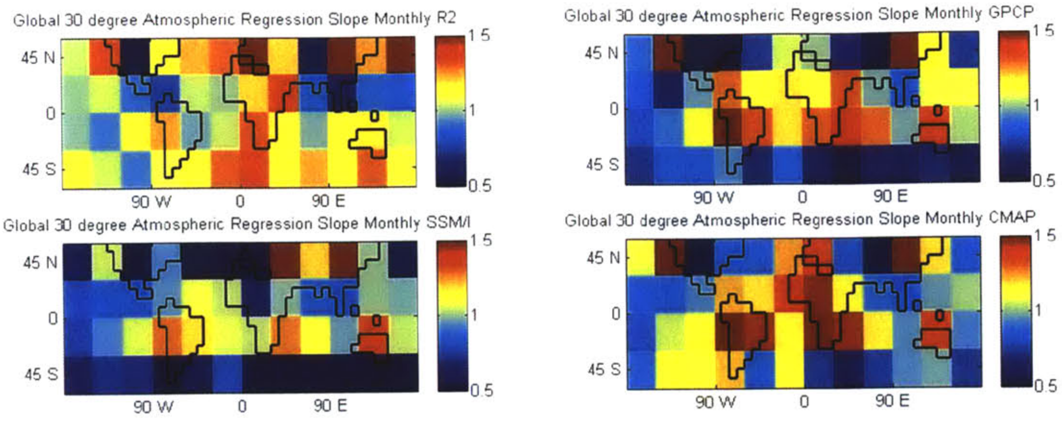


Figure B-12: 7.5 degree Bias Error Different Precipitation Global Monthly

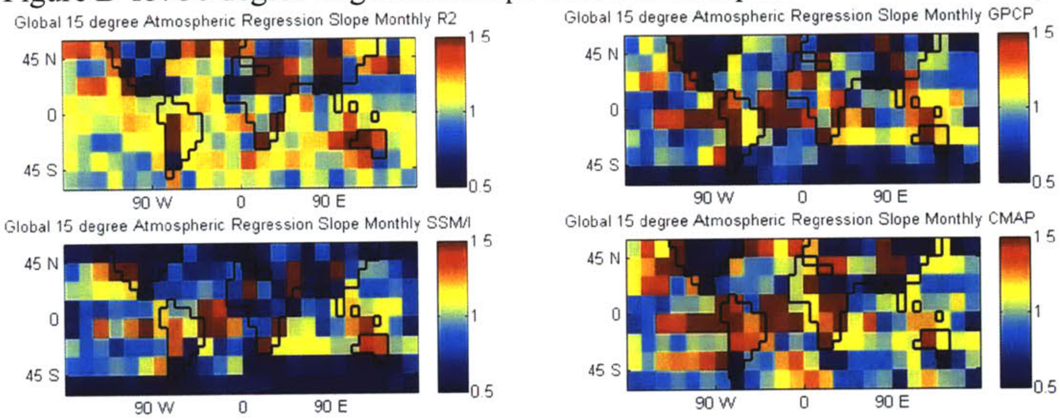

Global 30 degree Atmospheric Regression Slope Monthly R2

Global 30 degree Atmospheric Regression Slope Monthly GPCP

Global 30 degree Atmospheric Regression Slope Monthly SSM/I

Global 30 degree Atmospheric Regression Slope Monthly CMAP

Figure B-13: 30 degree Regression Slope Different Precipitation Global Monthly

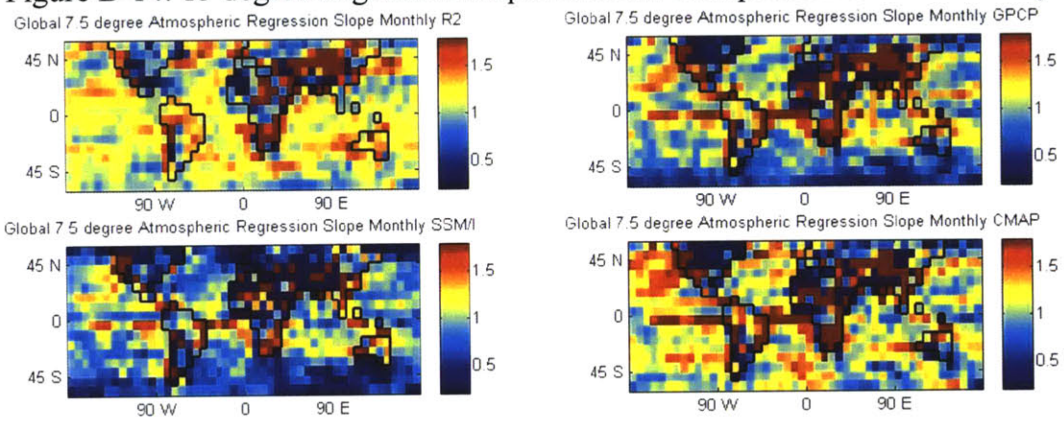

Global 15 degree Atmospheric Regression Slope Monthly R2

Global 15 degree Atmospheric Regression Slope Monthly GPCP

Global 15 degree Atmospheric Regression Slope Monthly SSM/I

Global 15 degree Atmospheric Regression Slope Monthly CMAP

Figure B-14: 15 degree Regression Slope Different Precipitation Global Monthly


Global 7.5 degree Atmospheric Regression Slope Monthly R2

Global 7.5 degree Atmospheric Regression Slope Monthly GPCP

Global 7.5 degree Atmospheric Regression Slope Monthly SSM/I

Global 7.5 degree Atmospheric Regression Slope Monthly CMAP

Figure B-15: 7.5 degree Regression Slope Different Precipitation Global Monthly

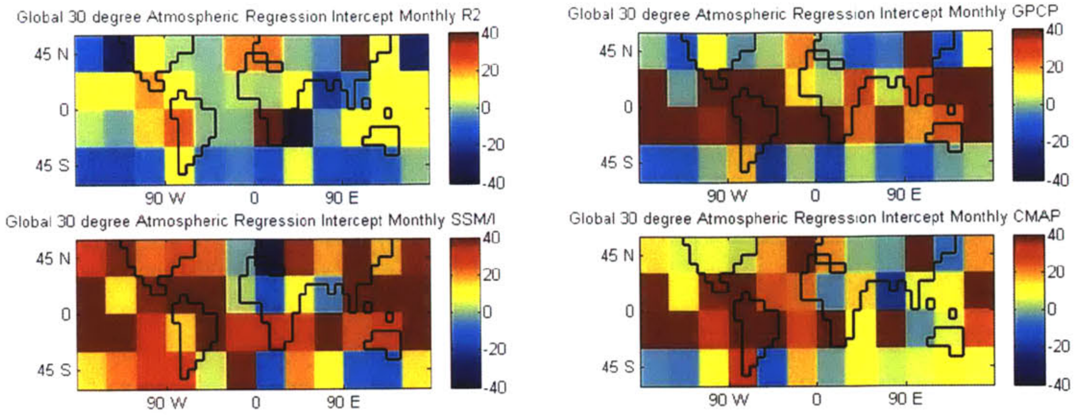


Figure B-16: 30 degree Regression Intercept Different Precipitation Global Monthly

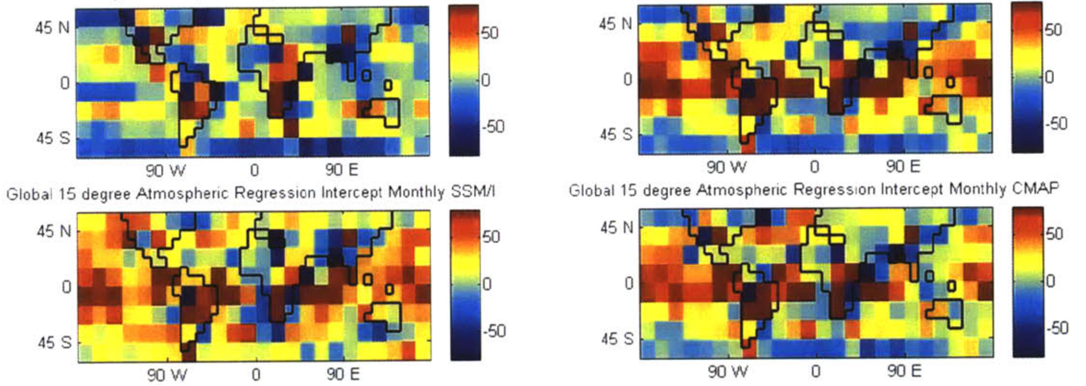


Figure B-17: 15 degree Regression Intercept Different Precipitation Global Monthly

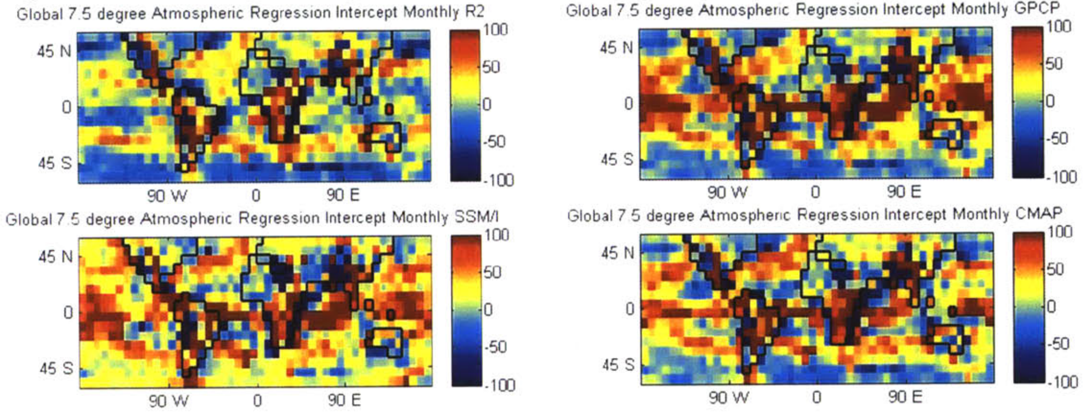


Figure B-18: 7.5 degree Regression Intercept Different Precipitation Global Monthly

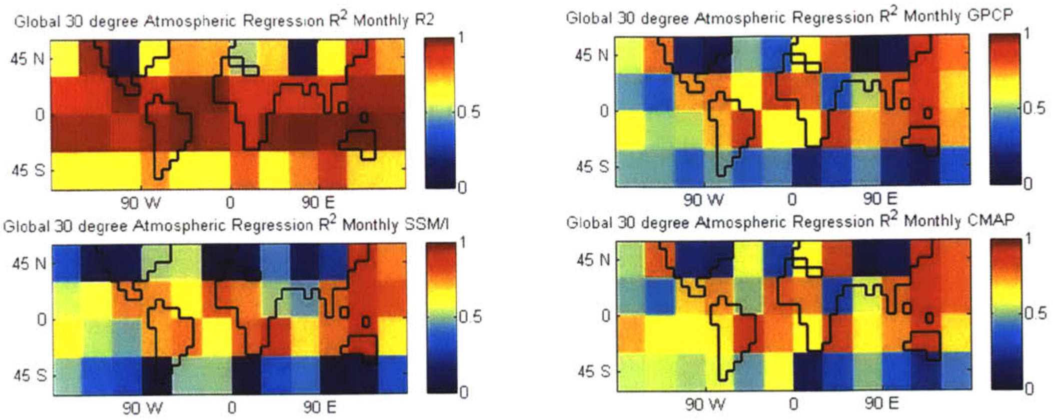


Figure B-19: 30 degree Regression R^2 Different Precipitation Global Monthly

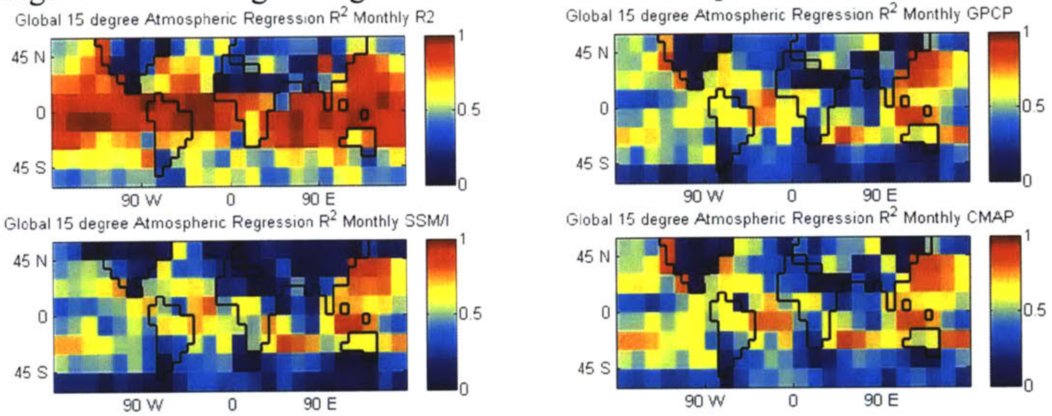


Figure B-20: 15 degree Regression R^2 Different Precipitation Global Monthly

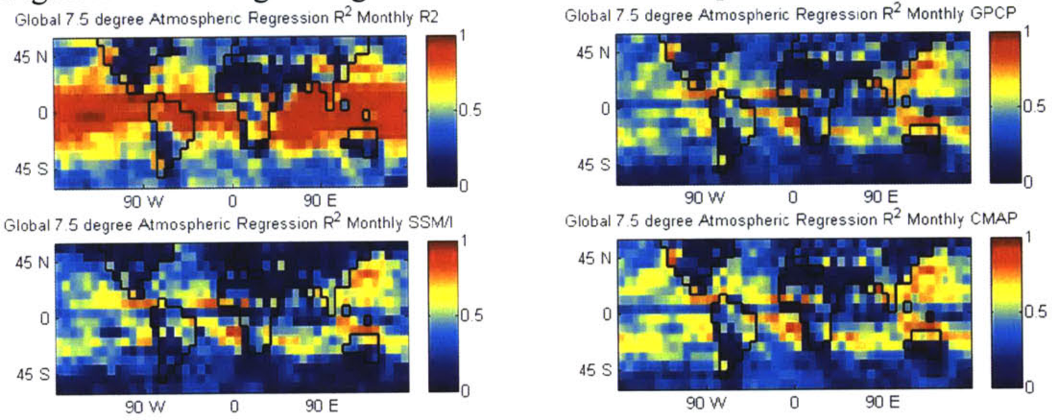


Figure B-21: 7.5 degree Regression R^2 Different Precipitation Global Monthly

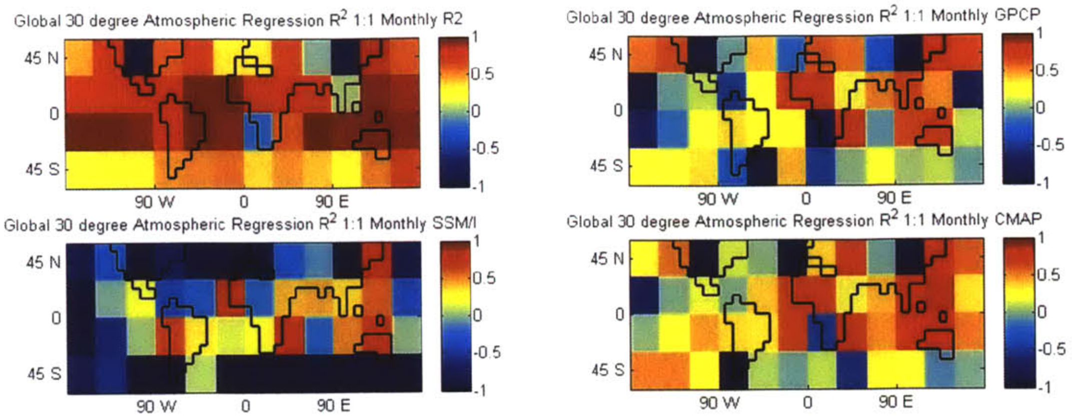


Figure B-22: 30 degree Regression R^2 1:1 Different Precipitation Global Monthly

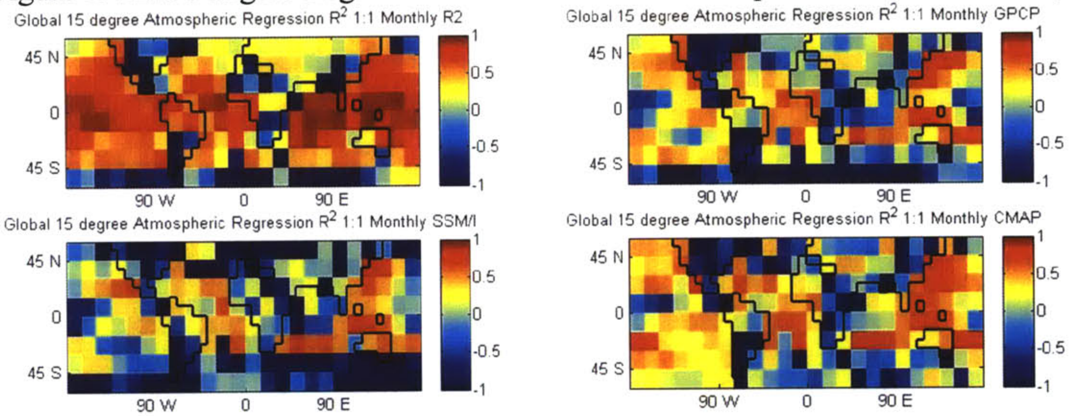


Figure B-23: 15 degree Regression R^2 1:1 Different Precipitation Global Monthly

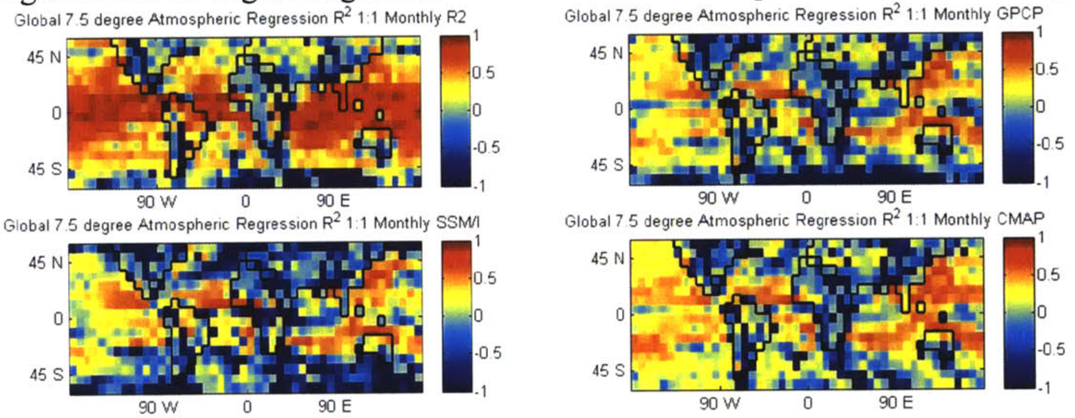


Figure B-24: 7.5 degree Regression R^2 1:1 Different Precipitation Global Monthly

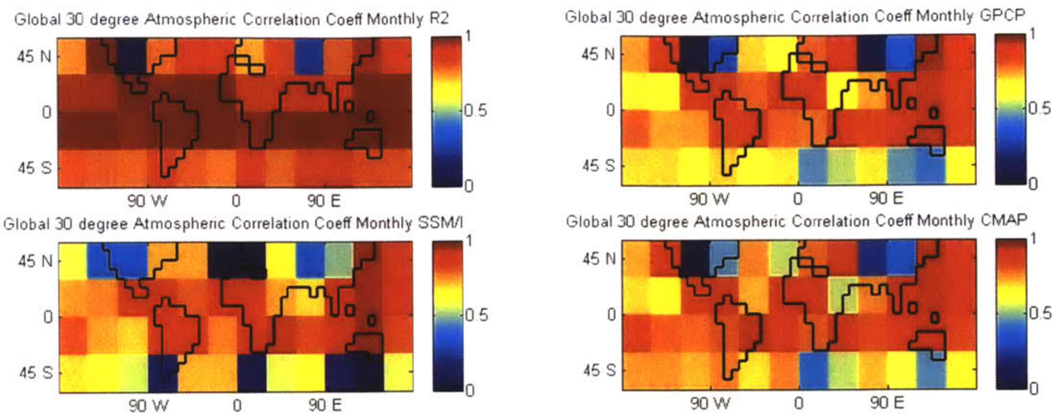


Figure B-25: 30 degree Correlation Coefficient Different Precipitation Global Monthly

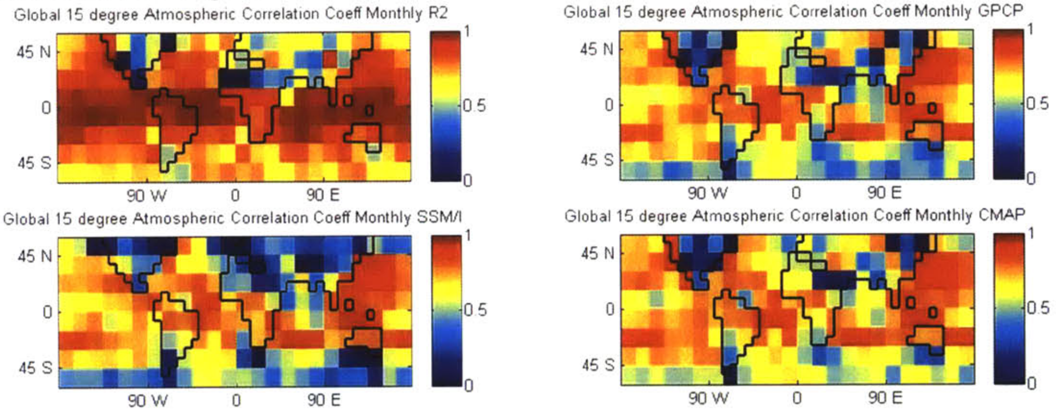


Figure B-26: 15 degree Correlation Coefficient Different Precipitation Global Monthly

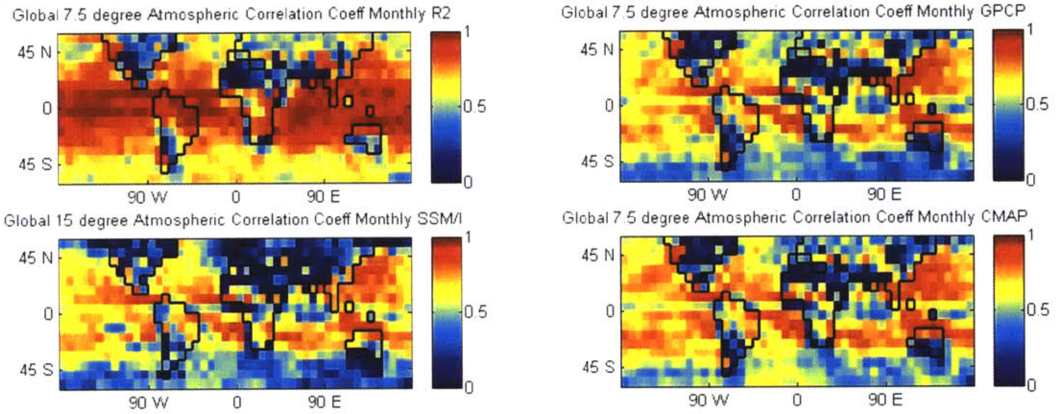


Figure B-27: 7.5 degree Correlation Coefficient Different Precipitation Global Monthly

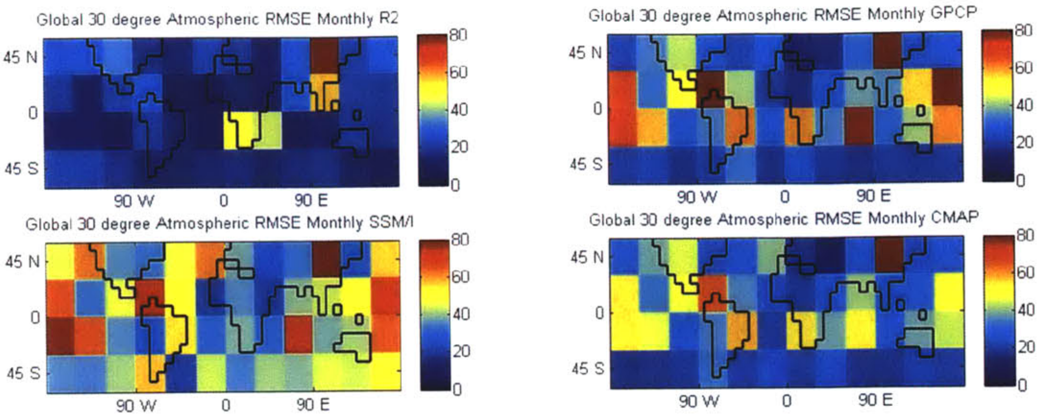


Figure B-28: 30 degree RMSE Different Precipitation Global Monthly

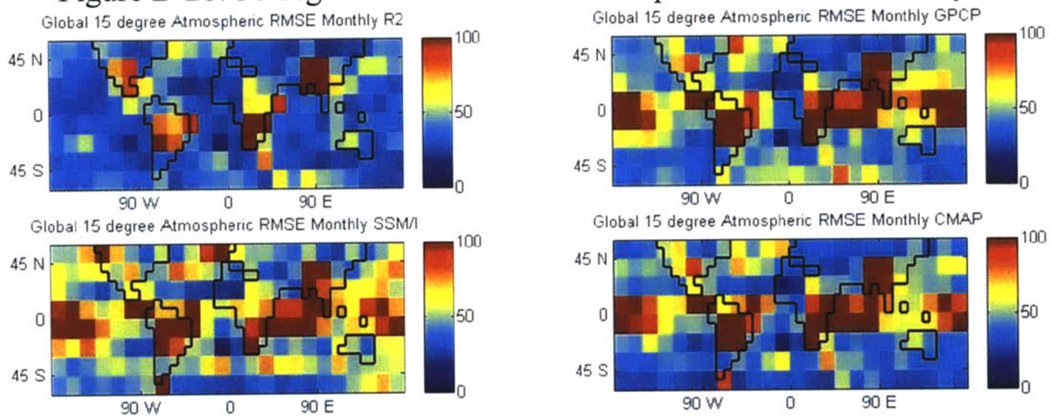


Figure B-29: 15 degree RMSE Different Precipitation Global Monthly

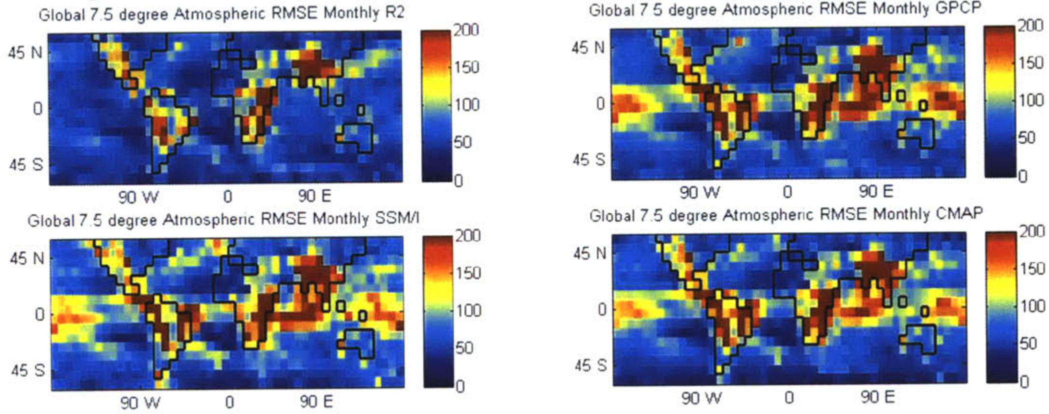


Figure B-30: 7.5 degree RMSE Different Precipitation Global Monthly

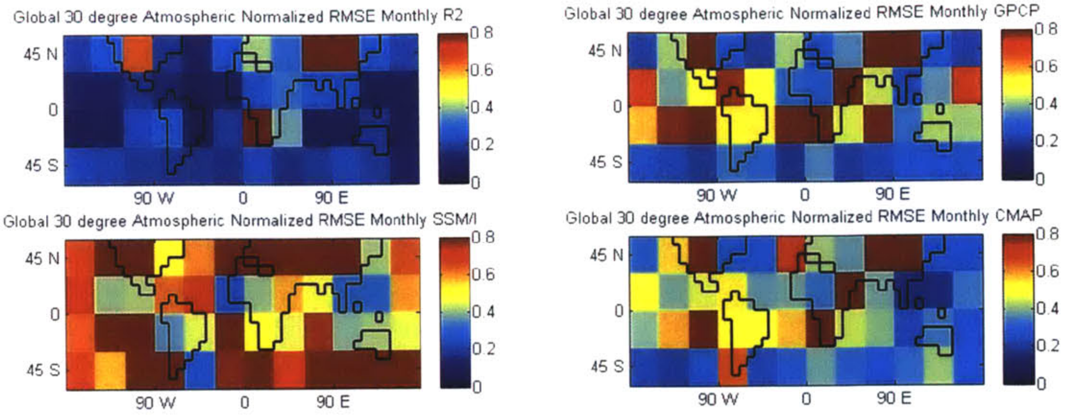


Figure B-31: 30 degree Normalized RMSE Different Precipitation Global Monthly

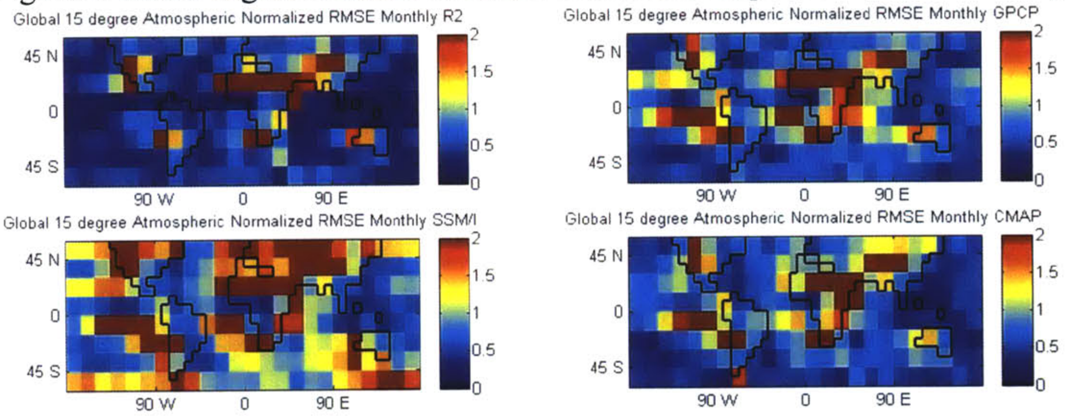


Figure B-32: 15 degree Normalized RMSE Different Precipitation Global Monthly

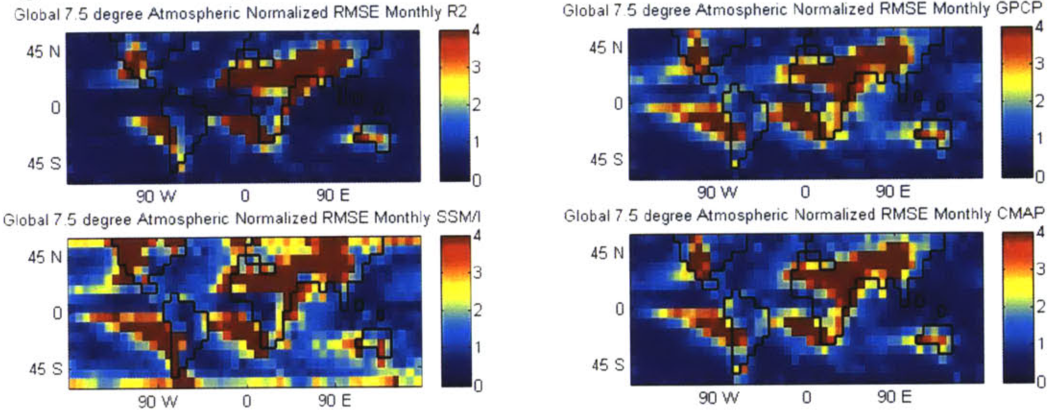


Figure B-33: 7.5 degree Normalized RMSE Different Precipitation Global Monthly

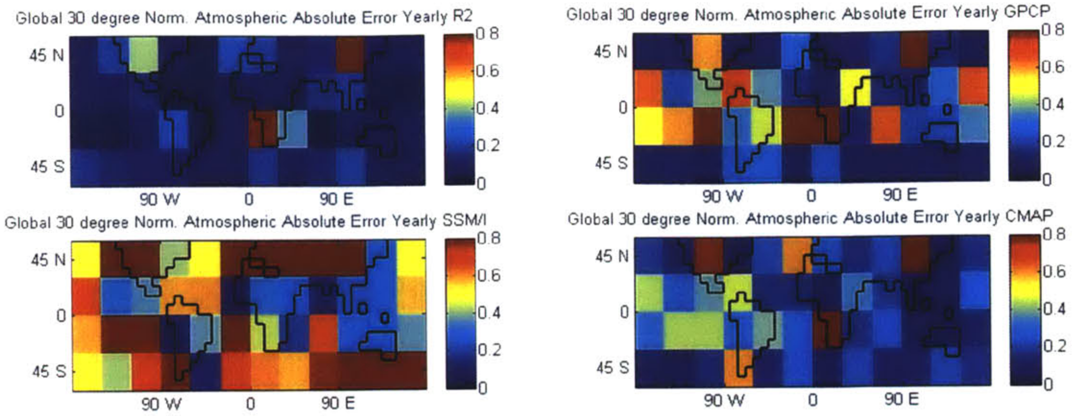


Figure B-34: 30 degree Normalized Absolute Error Different Precipitation Global Yearly

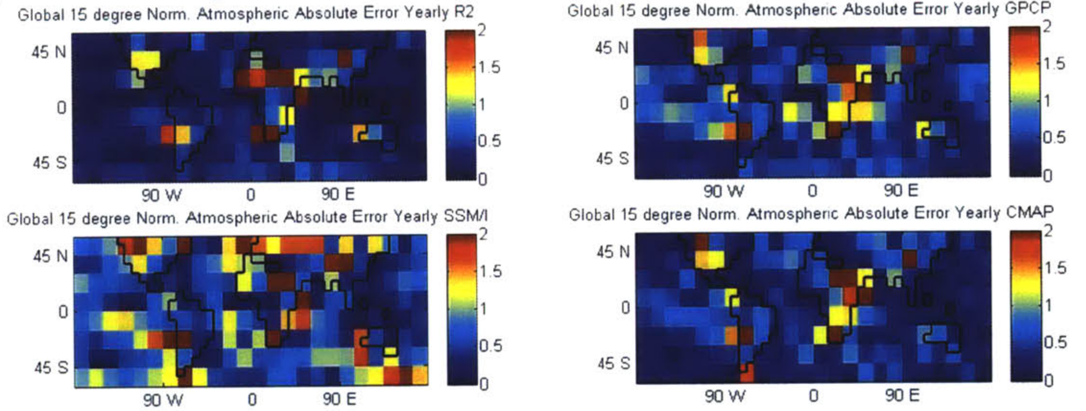


Figure B-35: 15 degree Normalized Absolute Error Different Precipitation Global Yearly

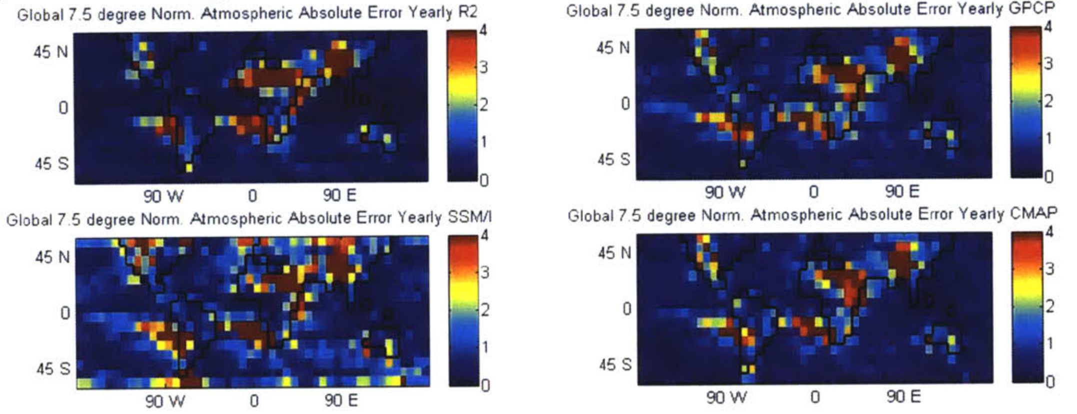


Figure B-36: 7.5 degree Normalized Absolute Error Different Precipitation Global Yearly

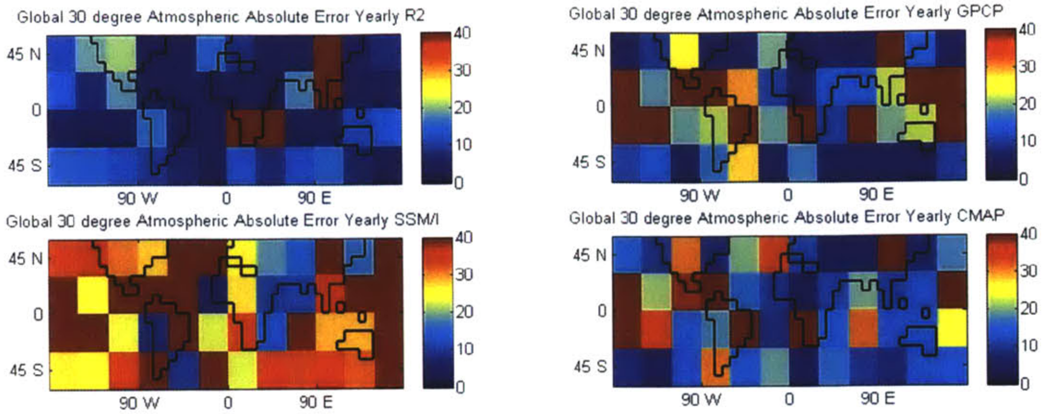


Figure B-37: 30 degree Absolute Error Different Precipitation Global Yearly

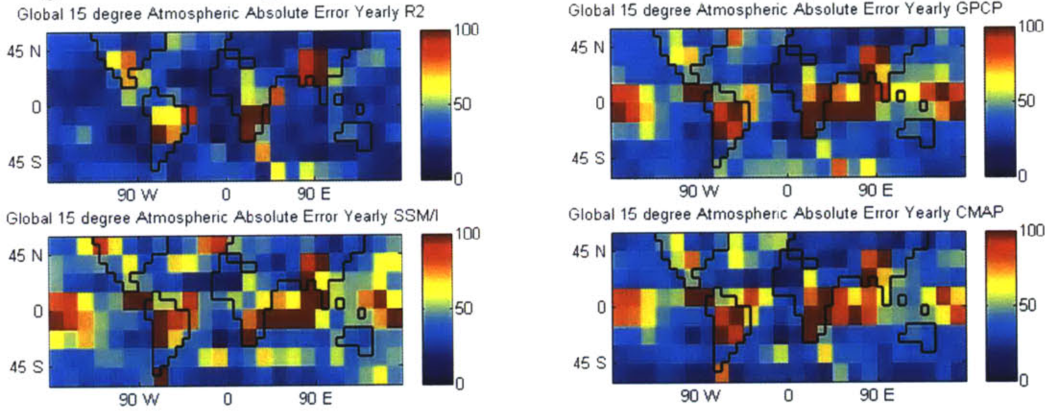


Figure B-38: 15 degree Absolute Error Different Precipitation Global Yearly

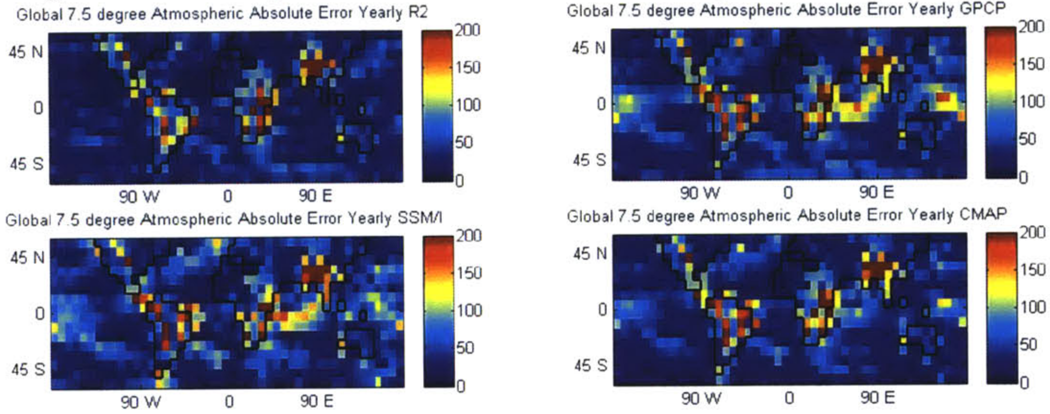


Figure B-39: 7.5 degree Absolute Error Different Precipitation Global Yearly

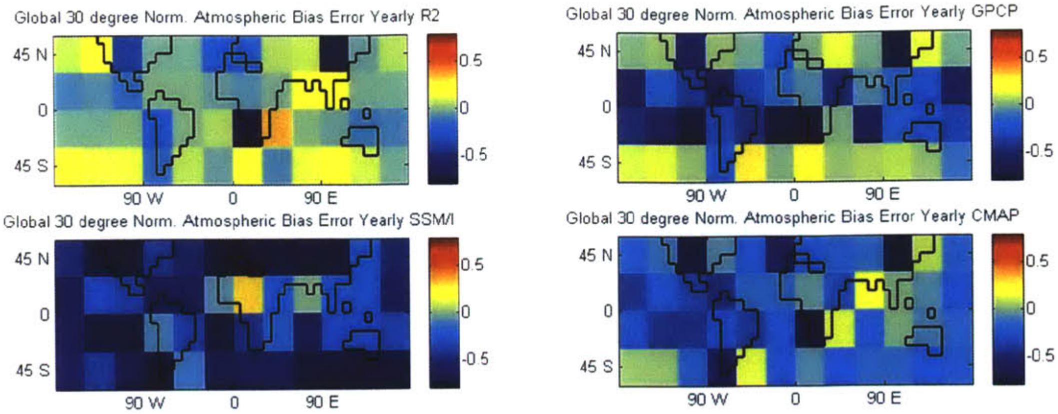


Figure B-40: 30 degree Normalized Bias Error Different Precipitation Global Yearly

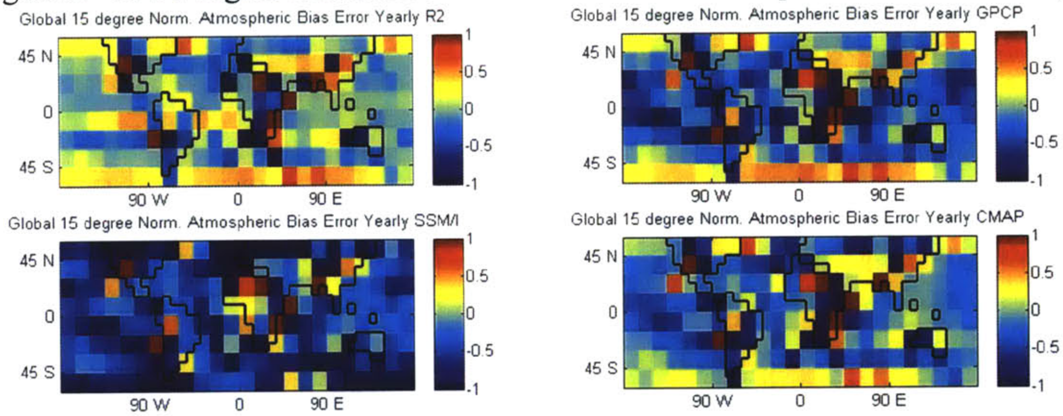


Figure B-41: 15 degree Normalized Bias Error Different Precipitation Global Yearly

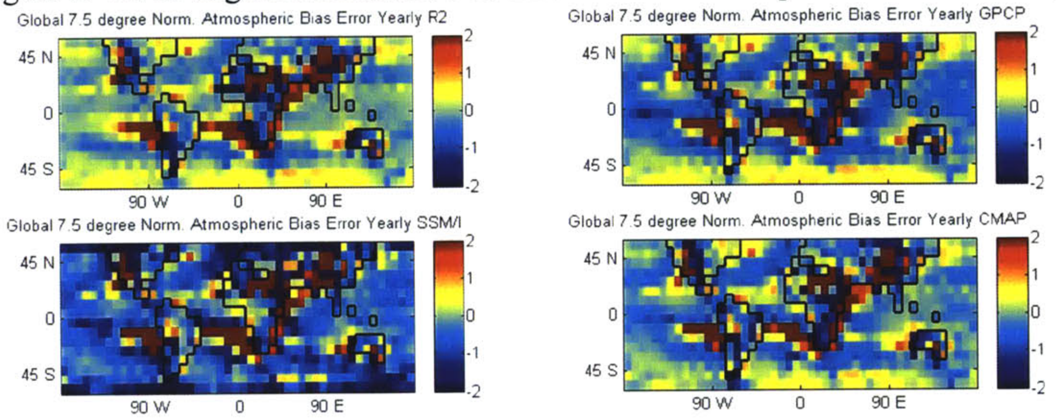


Figure B-42: 7.5 degree Normalized Bias Error Different Precipitation Global Yearly

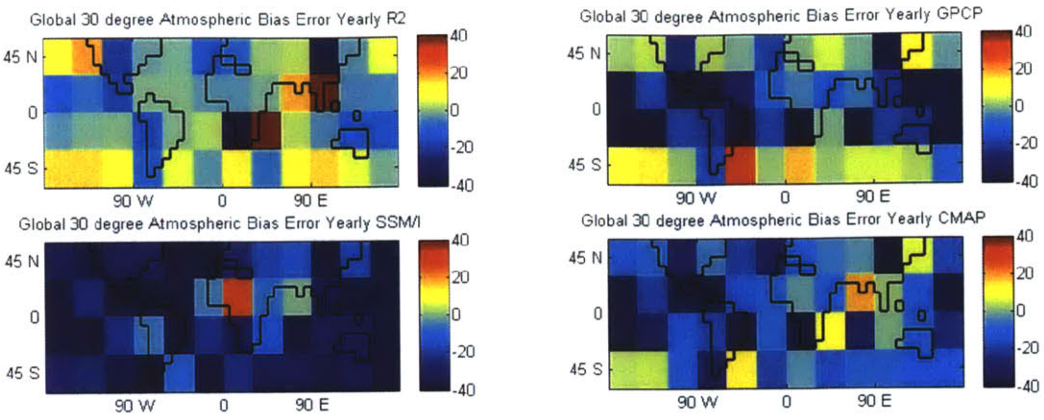


Figure B-43: 30 degree Bias Error Different Precipitation Global Yearly

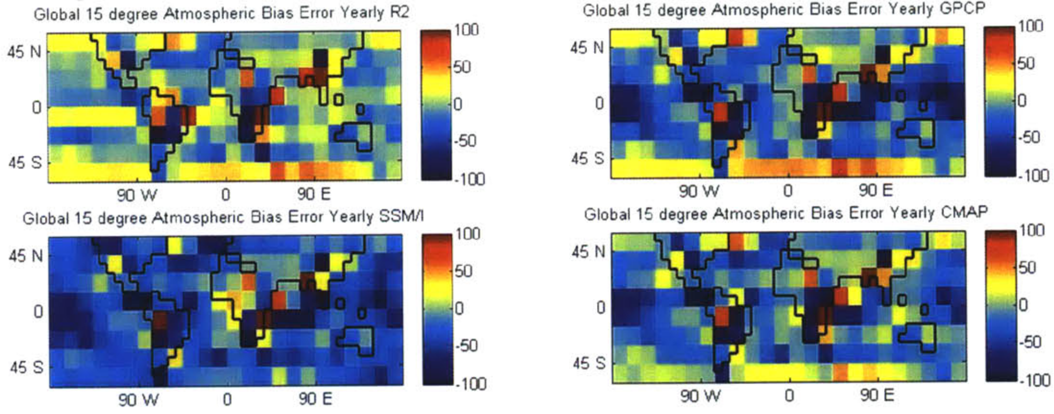


Figure B-44: 15 degree Bias Error Different Precipitation Global Yearly

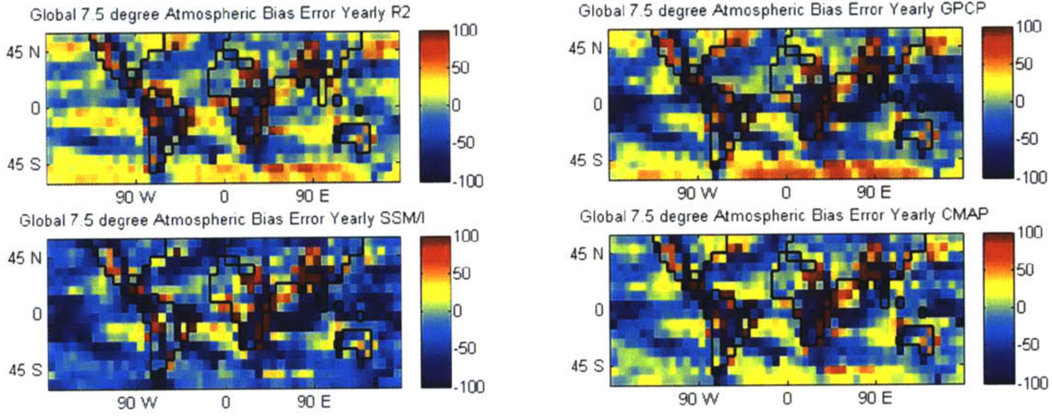


Figure B-45: 7.5 degree Bias Error Different Precipitation Global Yearly

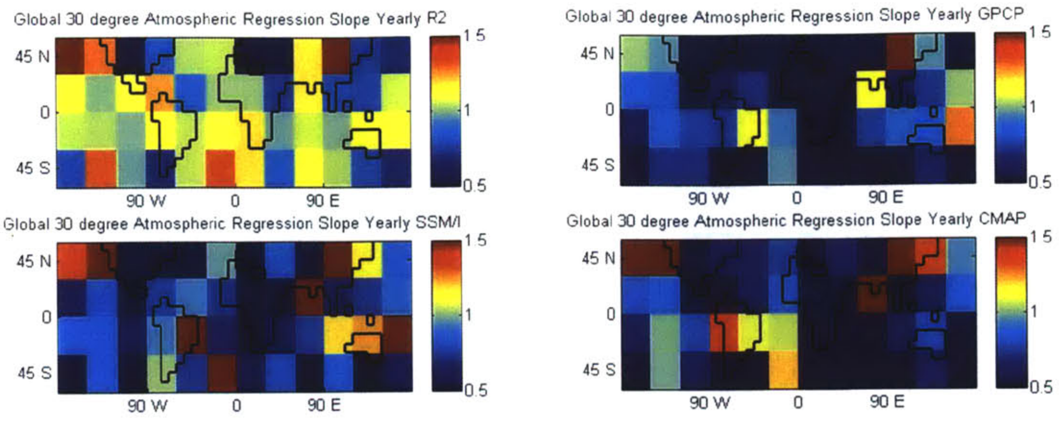


Figure B-46: 30 degree Regression Slope Different Precipitation Global Yearly

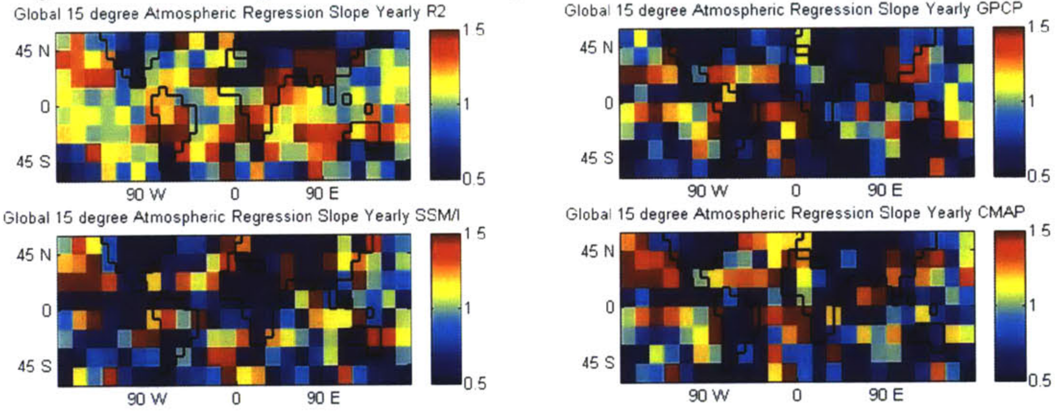


Figure B-47: 15 degree Regression Slope Different Precipitation Global Yearly

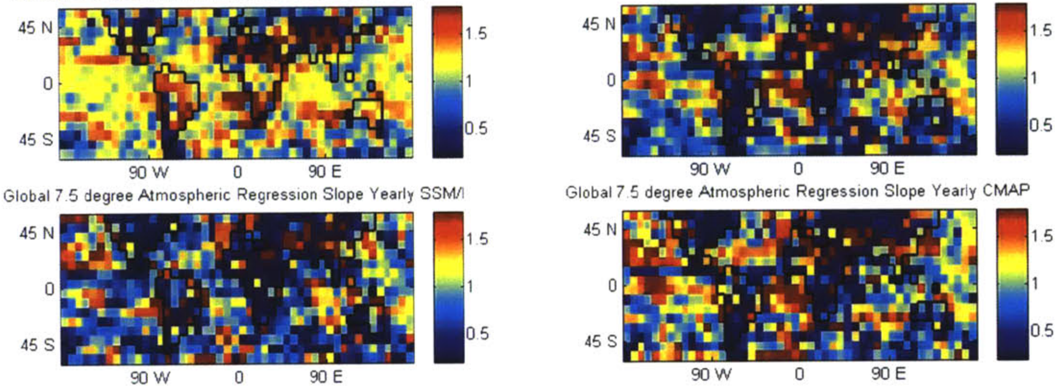
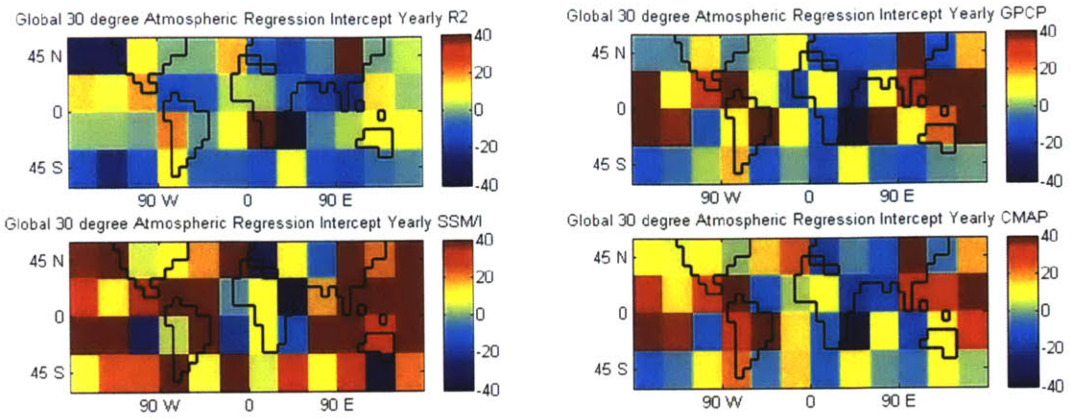


Figure B-48: 7.5 degree Regression Slope Different Precipitation Global Yearly

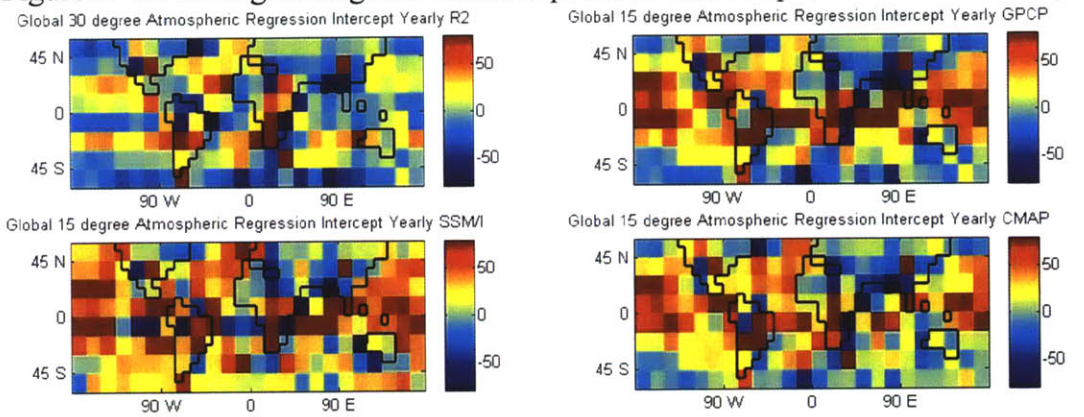

Global 30 degree Atmospheric Regression Intercept Yearly R2

Global 30 degree Atmospheric Regression Intercept Yearly GPCP

Global 30 degree Atmospheric Regression Intercept Yearly SSM/I

Global 30 degree Atmospheric Regression Intercept Yearly CMAP

Figure B-49: 30 degree Regression Intercept Different Precipitation Global Yearly

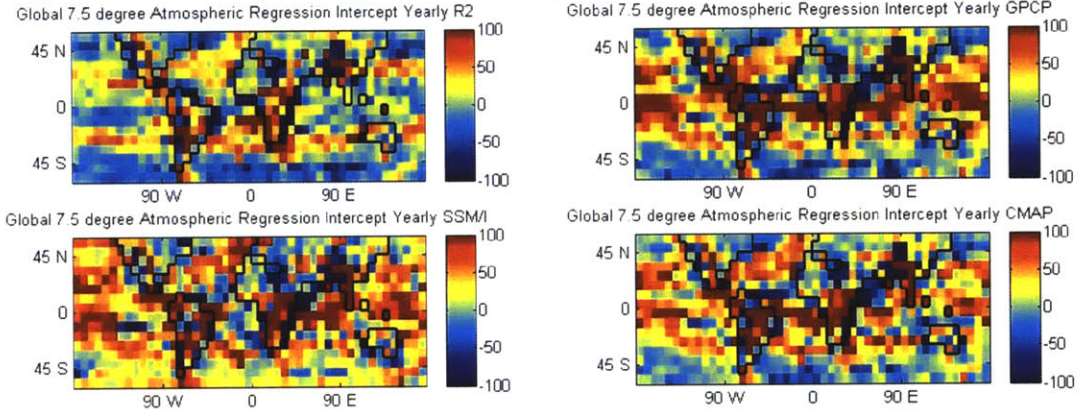

Global 30 degree Atmospheric Regression Intercept Yearly R2

Global 15 degree Atmospheric Regression Intercept Yearly GPCP

Global 15 degree Atmospheric Regression Intercept Yearly SSM/I

Global 15 degree Atmospheric Regression Intercept Yearly CMAP

Figure B-50: 15 degree Regression Intercept Different Precipitation Global Yearly


Global 7.5 degree Atmospheric Regression Intercept Yearly R2

Global 7.5 degree Atmospheric Regression Intercept Yearly GPCP

Global 7.5 degree Atmospheric Regression Intercept Yearly SSM/I

Global 7.5 degree Atmospheric Regression Intercept Yearly CMAP

Figure B-51: 7.5 degree Regression Intercept Different Precipitation Global Yearly

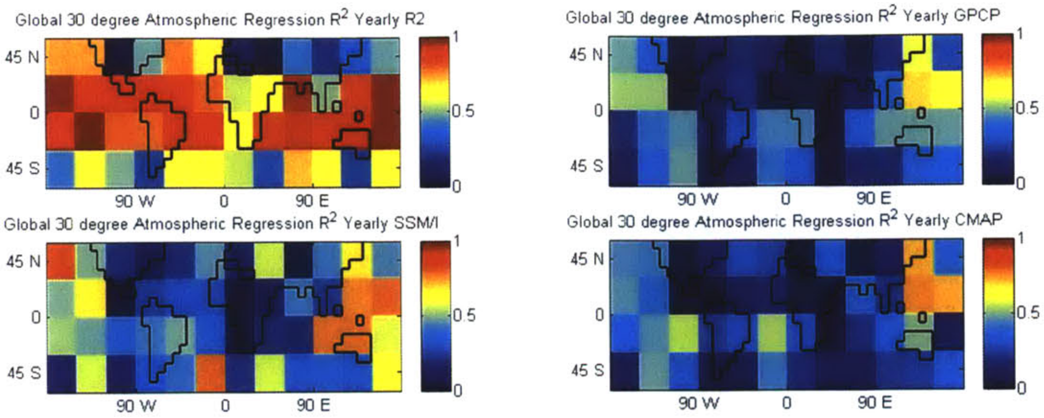


Figure B-52: 30 degree Regression R^2 Different Precipitation Global Yearly

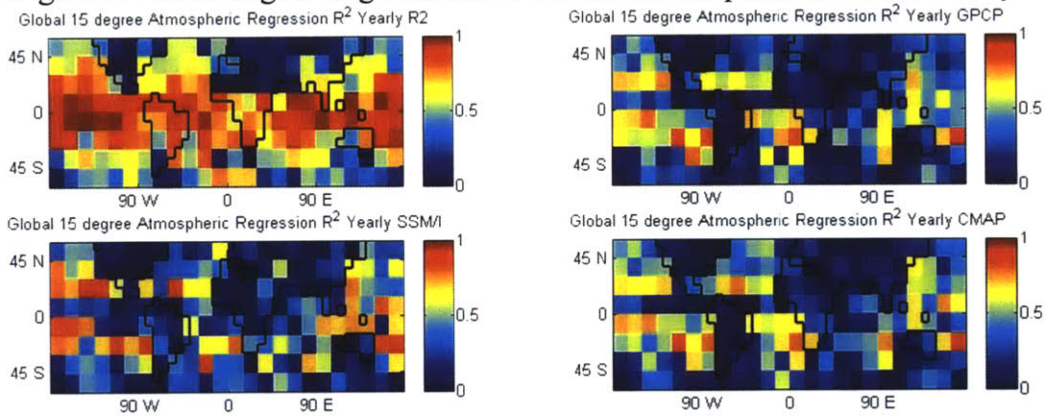


Figure B-53: 15 degree Regression R^2 Different Precipitation Global Yearly

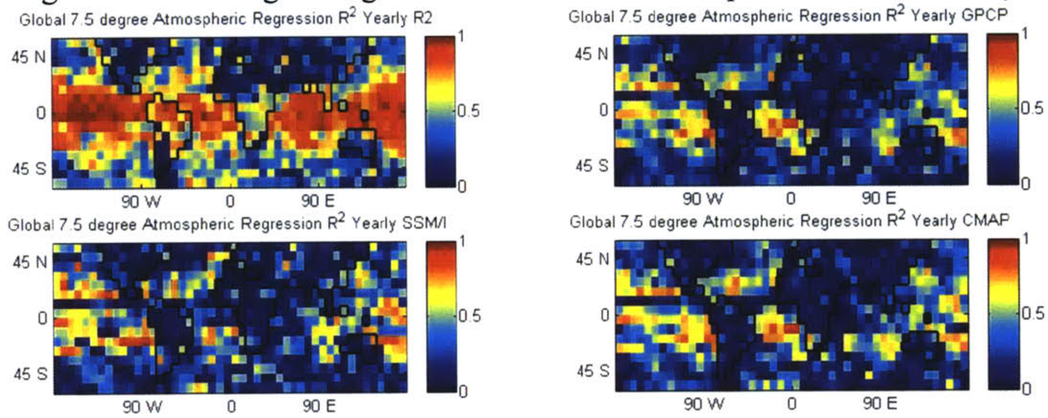


Figure B-54: 7.5 degree Regression R^2 Different Precipitation Global Yearly

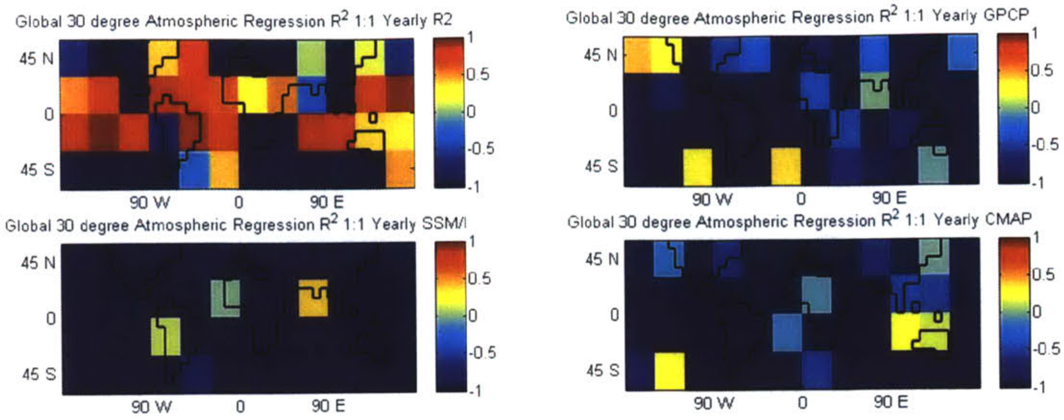


Figure B-55: 30 degree Regression R^2 1:1 Different Precipitation Global Yearly

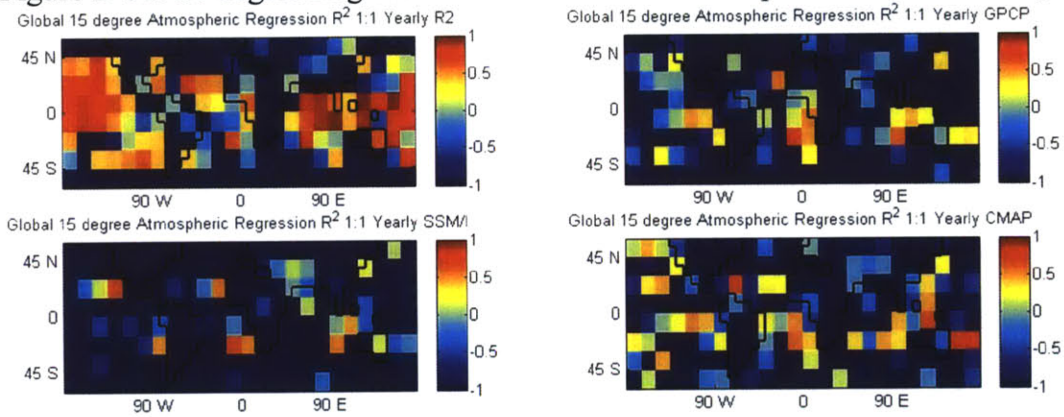


Figure B-56: 15 degree Regression R^2 1:1 Different Precipitation Global Yearly

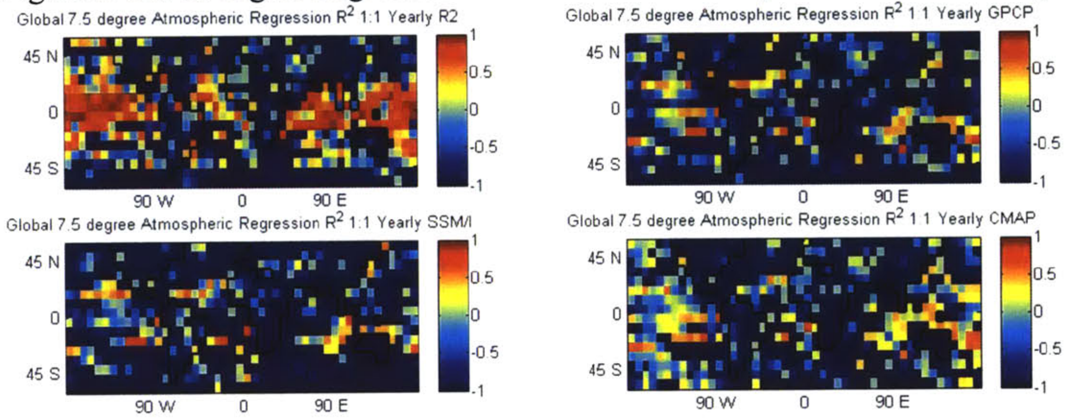


Figure B-57: 7.5 degree Regression R^2 1:1 Different Precipitation Global Yearly

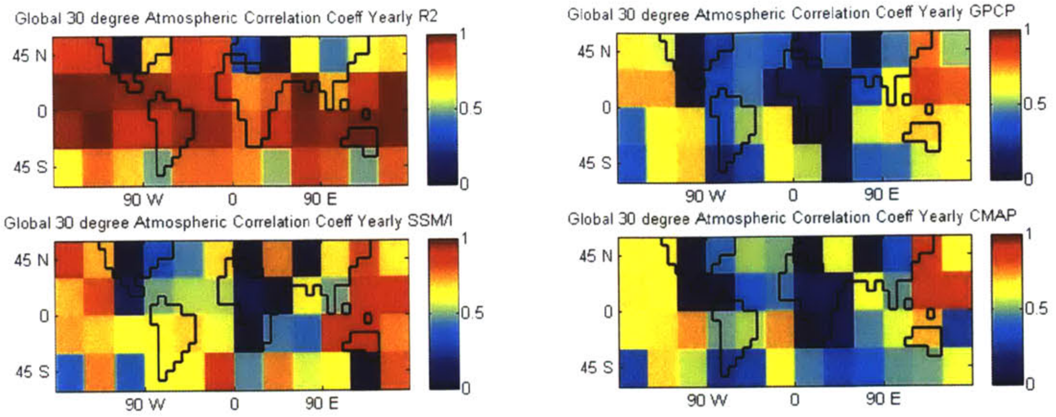


Figure B-58: 30 degree Correlation Coefficient Different Precipitation Global Yearly

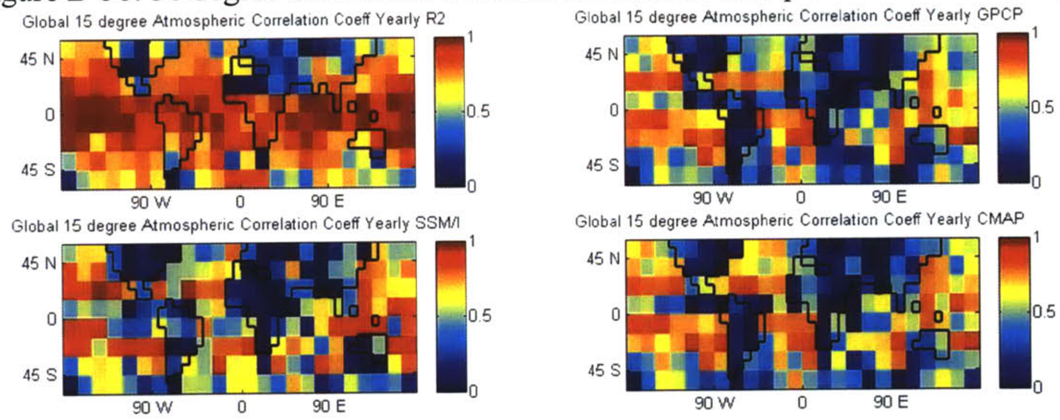


Figure B-59: 15 degree Correlation Coefficient Different Precipitation Global Yearly

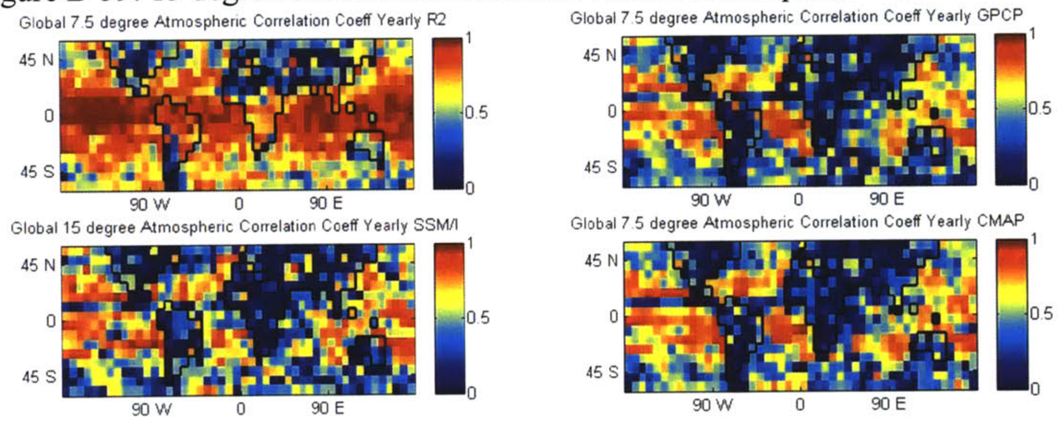


Figure B-60: 7.5 degree Correlation Coefficient Different Precipitation Global Yearly

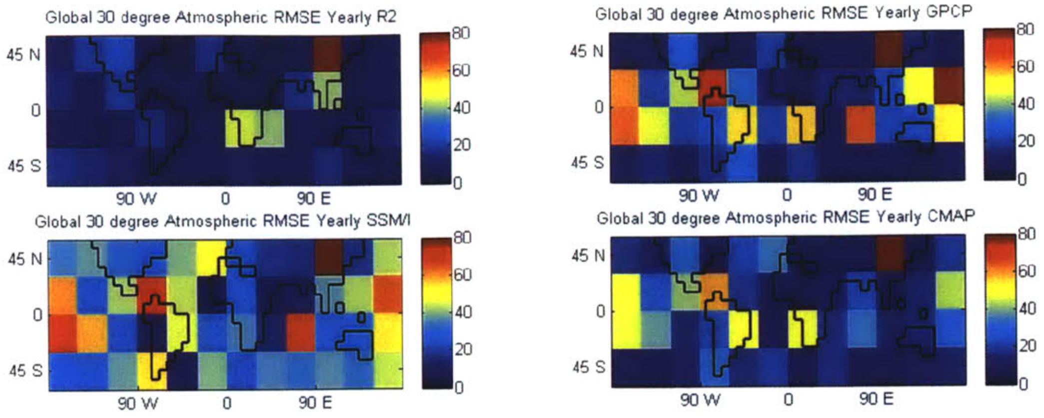


Figure B-61: 30 degree RMSE Different Precipitation Global Yearly

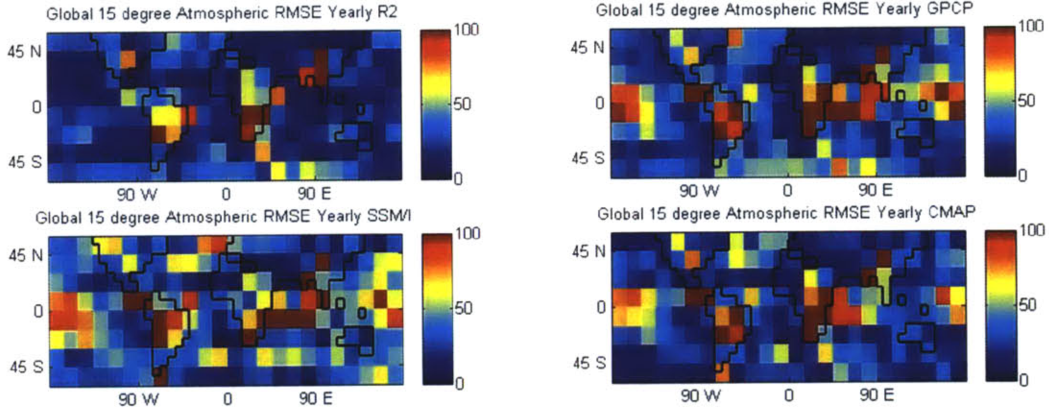


Figure B-62: 15 degree RMSE Different Precipitation Global Yearly

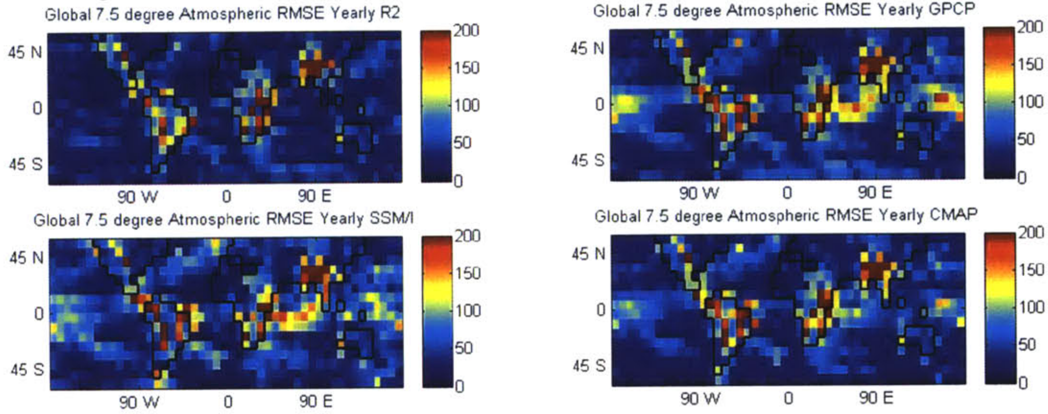


Figure B-63: 7.5 degree RMSE Different Precipitation Global Yearly

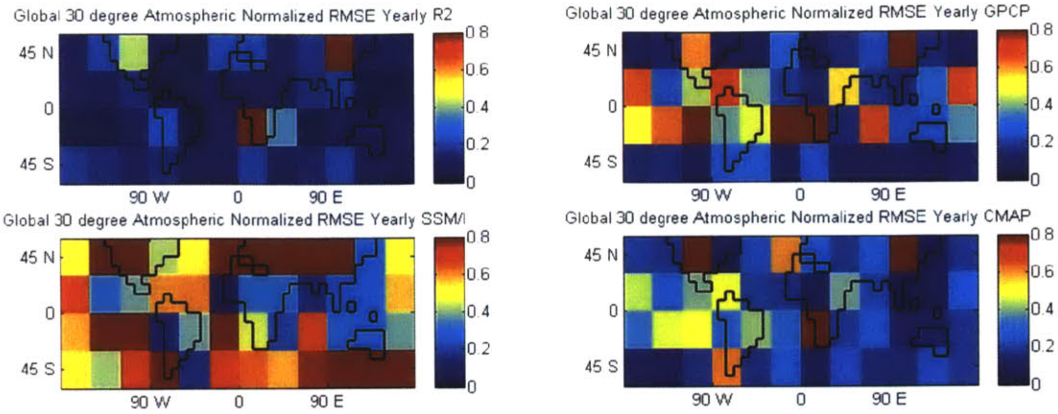


Figure B-64: 30 degree Normalized RMSE Different Precipitation Global Yearly

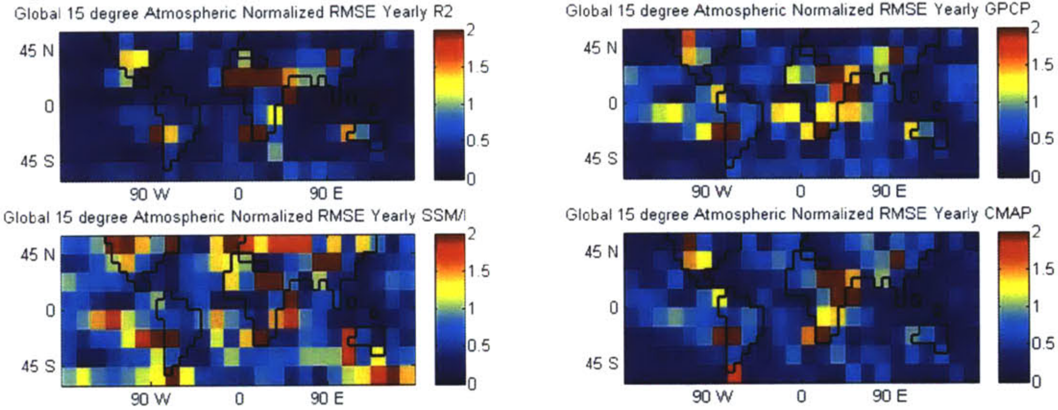


Figure B-65: 15 degree Normalized RMSE Different Precipitation Global Yearly

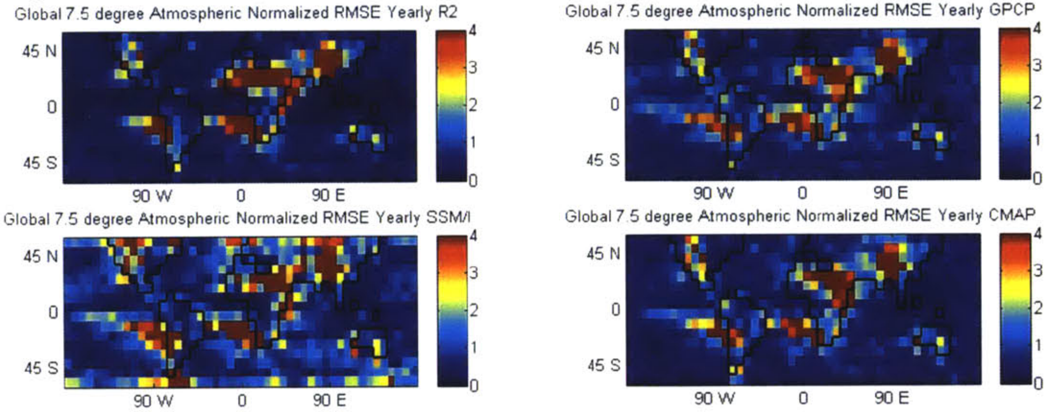


Figure B-66: 7.5 degree Normalized RMSE Different Precipitation Global Yearly

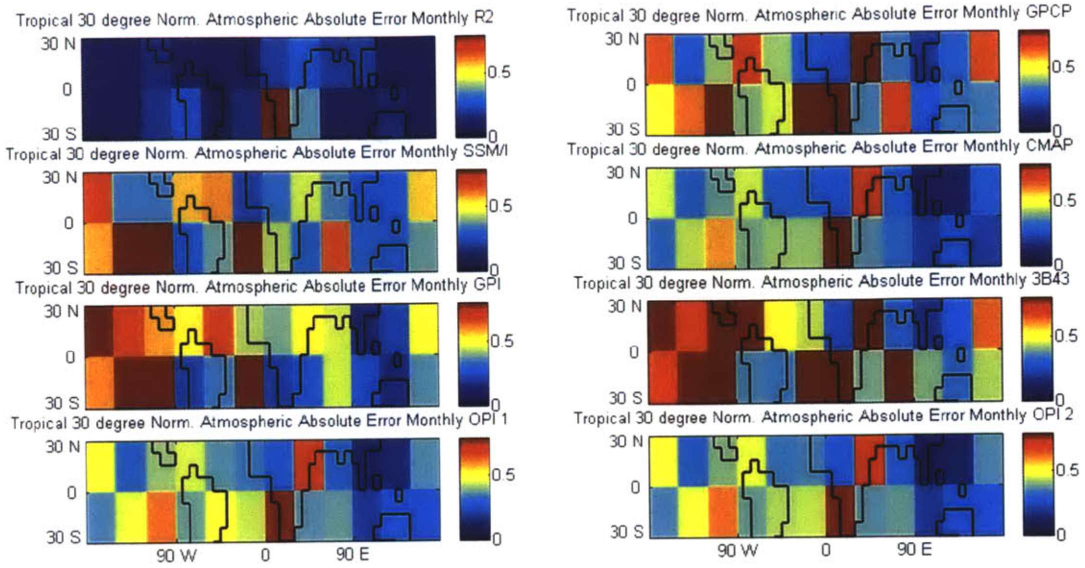


Figure B-67: 30 degree Normalized Absolute Error Different Precipitation Tropical Monthly

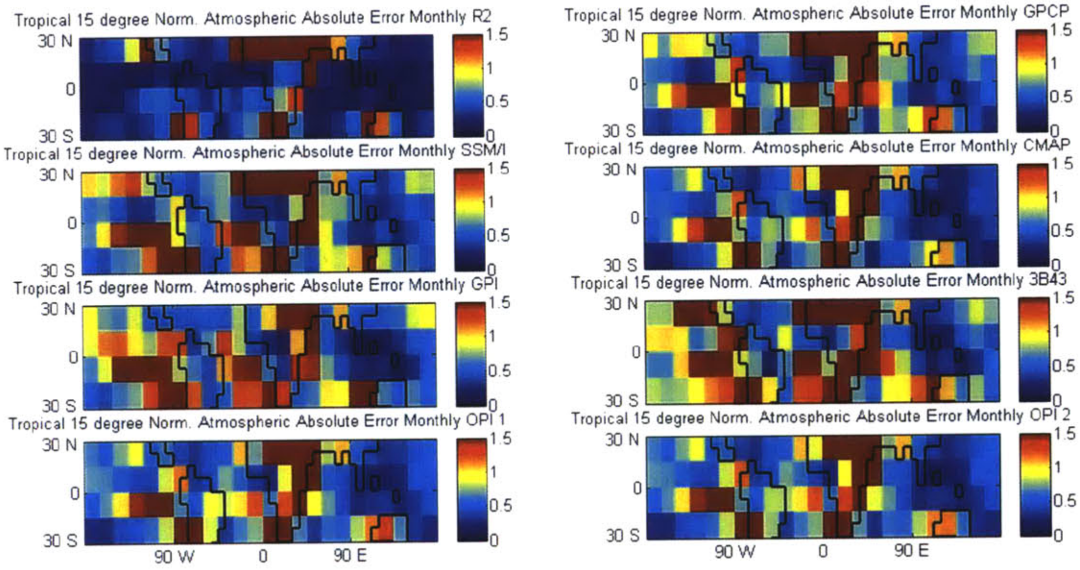


Figure B-68: 15 degree Normalized Absolute Error Different Precipitation Tropical Monthly

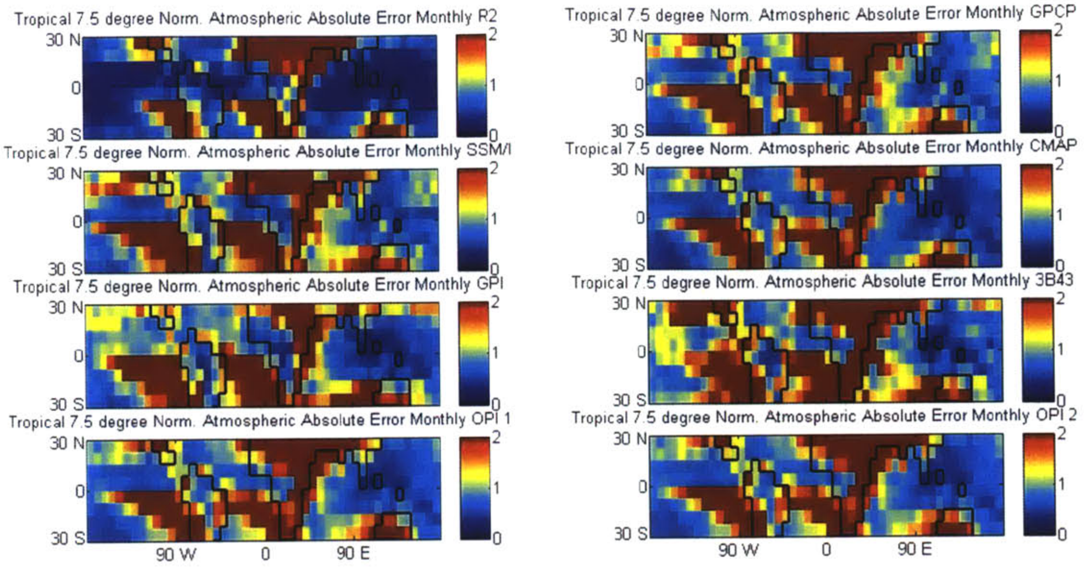


Figure B-69: 7.5 degree Normalized Absolute Error Different Precipitation Tropical Monthly

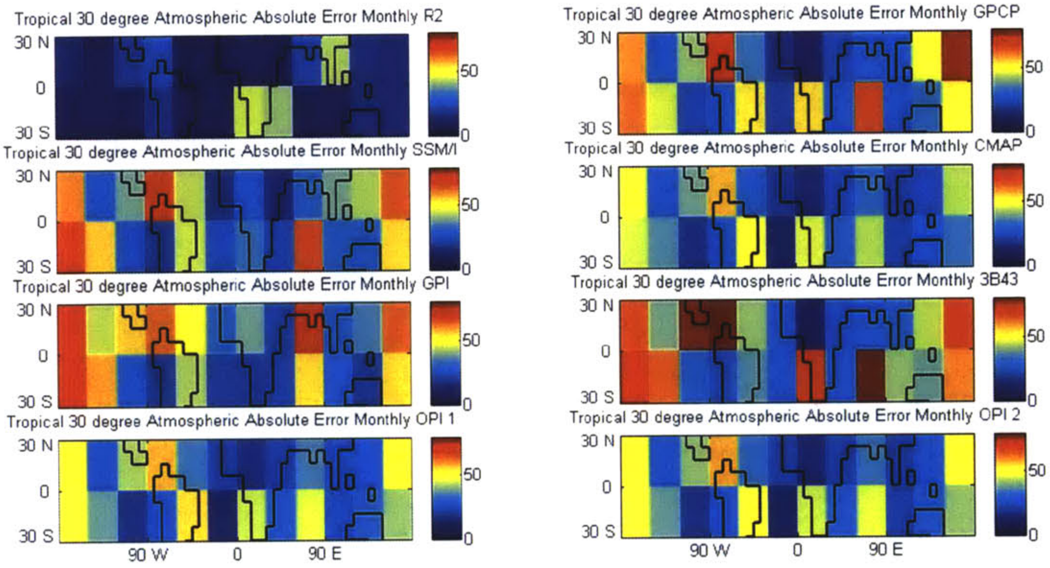


Figure B-70: 30 degree Absolute Error Different Precipitation Tropical Monthly

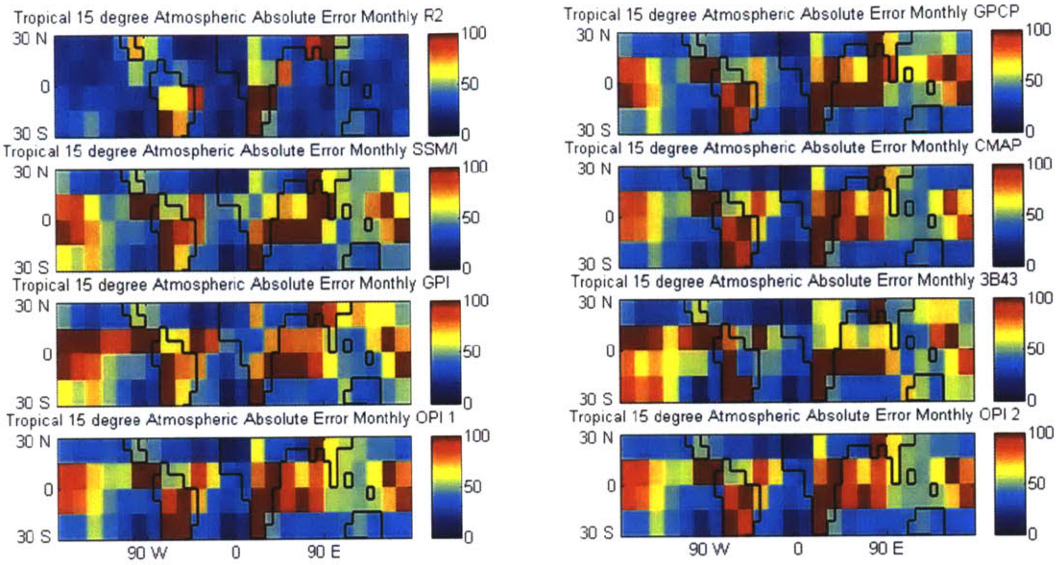


Figure B-71: 15 degree Absolute Error Different Precipitation Tropical Monthly

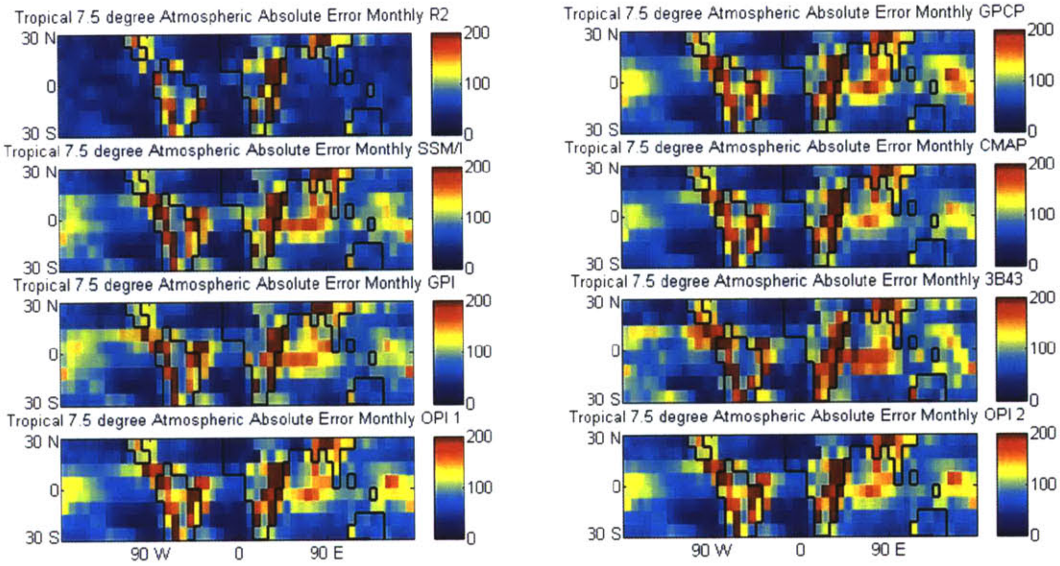
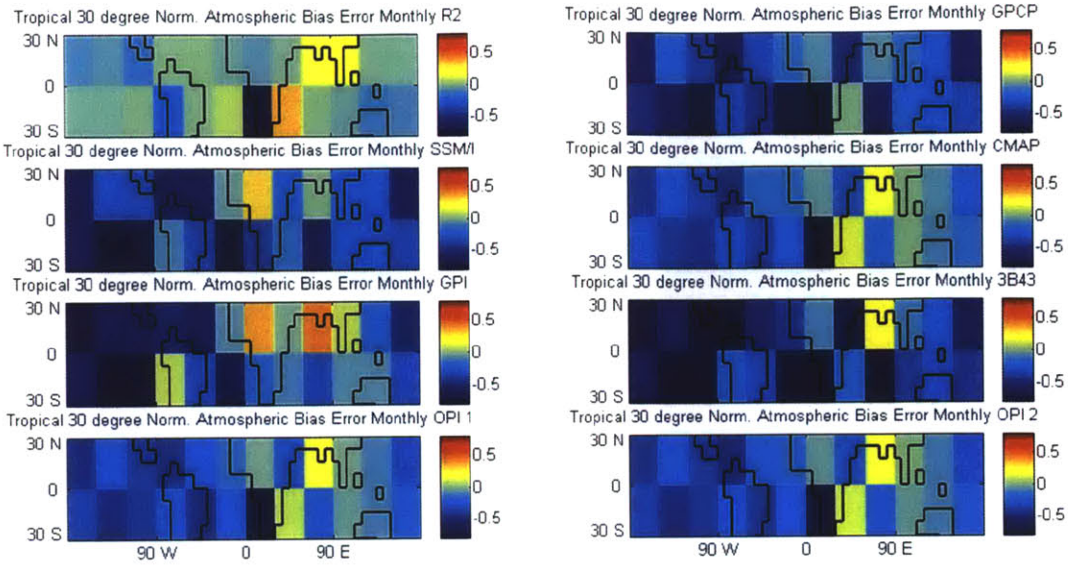


Figure B-72: 7.5 degree Absolute Error Different Precipitation Tropical Monthly


Tropical 30 degree Norm. Atmospheric Bias Error Monthly R2

Tropical 30 degree Norm. Atmospheric Bias Error Monthly GPCP

Tropical 30 degree Norm. Atmospheric Bias Error Monthly SSM/I

Tropical 30 degree Norm. Atmospheric Bias Error Monthly CMAP

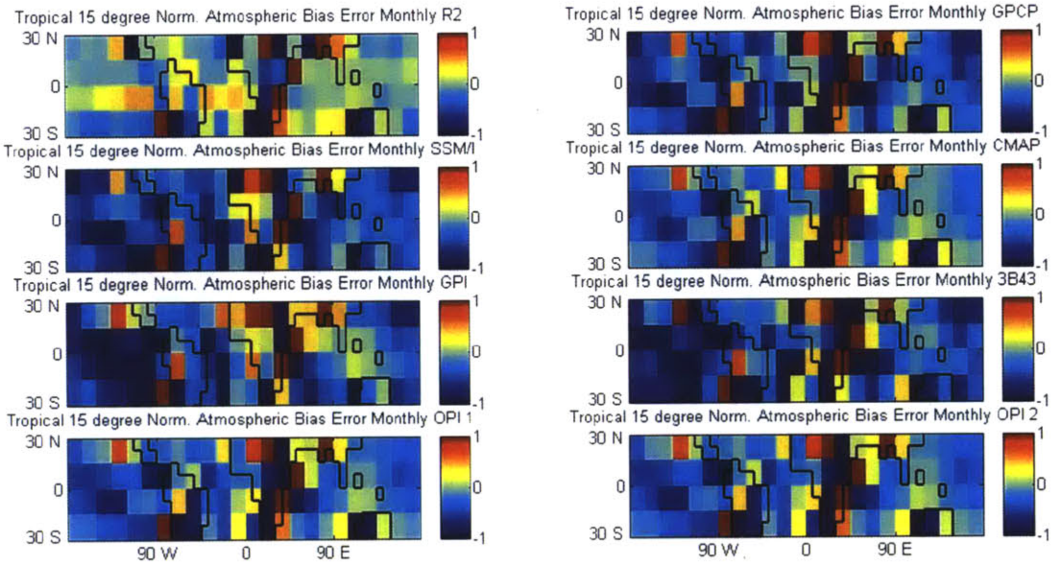
Tropical 30 degree Norm. Atmospheric Bias Error Monthly GPI

Tropical 30 degree Norm. Atmospheric Bias Error Monthly 3B43

Tropical 30 degree Norm. Atmospheric Bias Error Monthly OPI 1

Tropical 30 degree Norm. Atmospheric Bias Error Monthly OPI 2

Figure B-73: 30 degree Normalized Bias Error Different Precipitation Tropical Monthly


Tropical 15 degree Norm. Atmospheric Bias Error Monthly R2

Tropical 15 degree Norm. Atmospheric Bias Error Monthly GPCP

Tropical 15 degree Norm. Atmospheric Bias Error Monthly SSM/I

Tropical 15 degree Norm. Atmospheric Bias Error Monthly CMAP

Tropical 15 degree Norm. Atmospheric Bias Error Monthly GPI

Tropical 15 degree Norm. Atmospheric Bias Error Monthly 3B43

Tropical 15 degree Norm. Atmospheric Bias Error Monthly OPI 1

Tropical 15 degree Norm. Atmospheric Bias Error Monthly OPI 2

Figure B-73: 30 degree Normalized Bias Error Different Precipitation Tropical Monthly

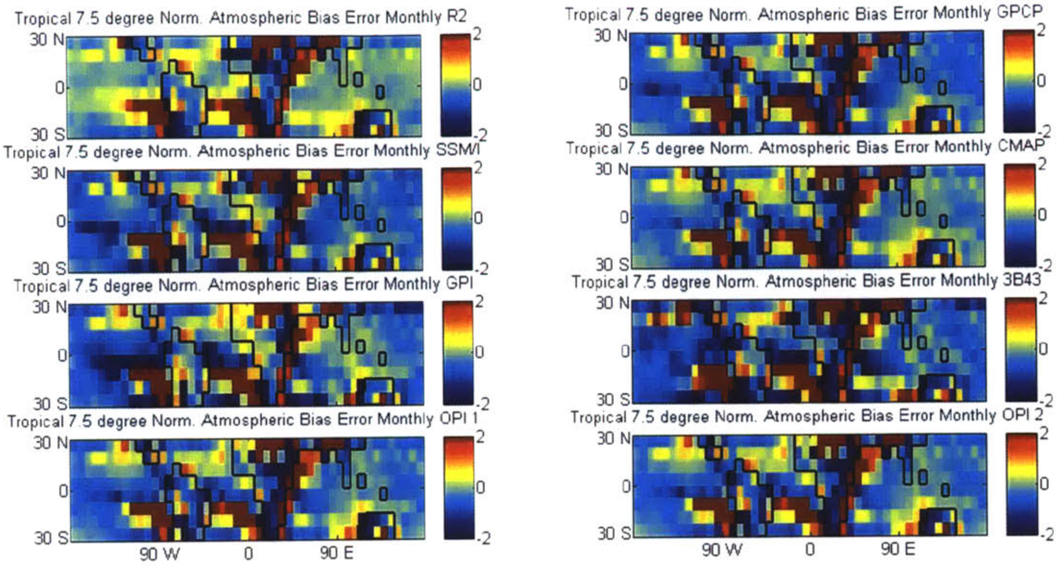


Figure B-75: 7.5 degree Normalized Bias Error Different Precipitation Tropical Monthly

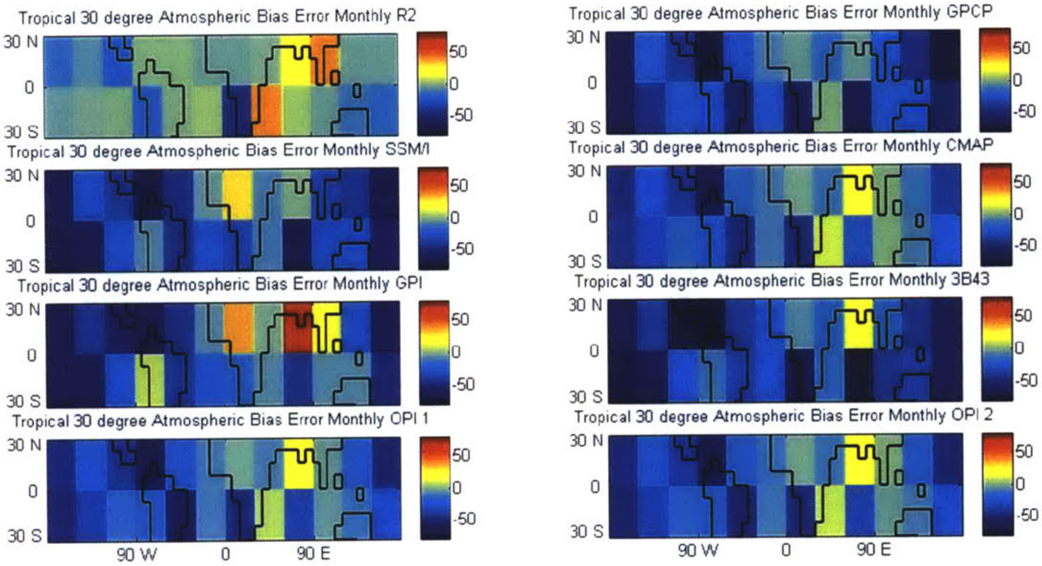


Figure B-76: 30 degree Bias Error Different Precipitation Tropical Monthly

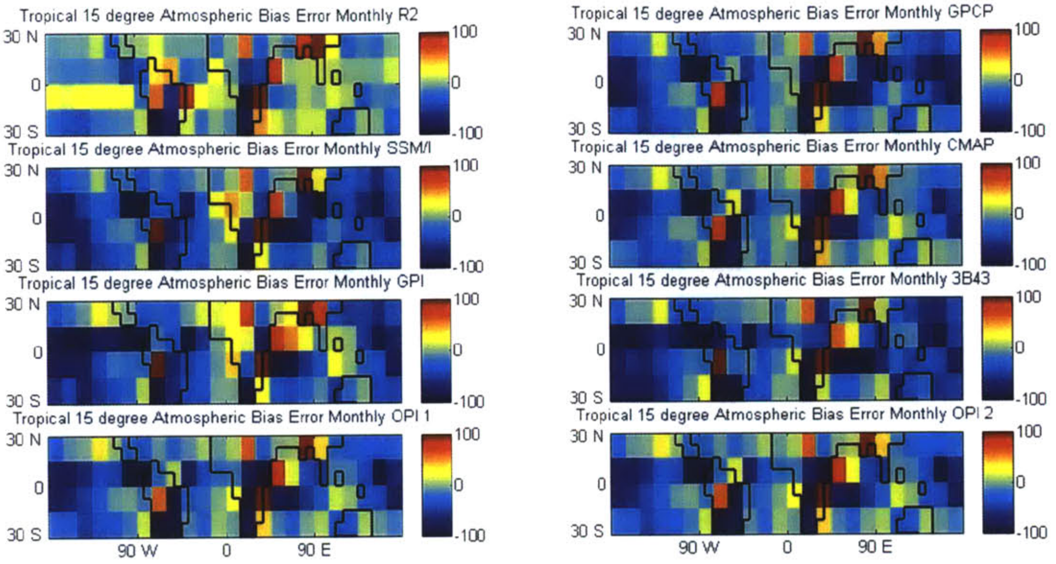


Figure B-77: 15 degree Bias Error Different Precipitation Tropical Monthly

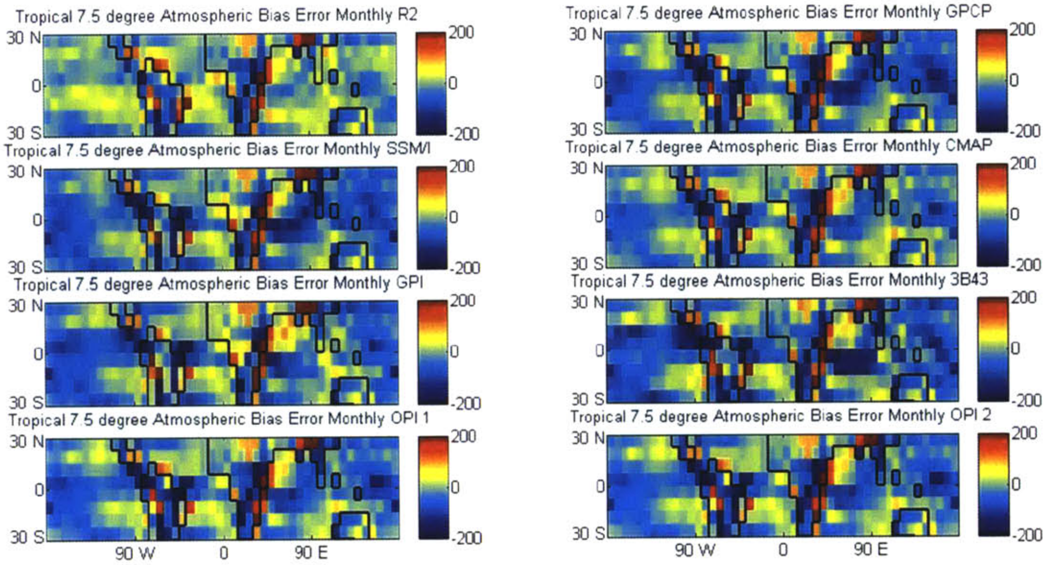


Figure B-78: 7.5 degree Bias Error Different Precipitation Tropical Monthly

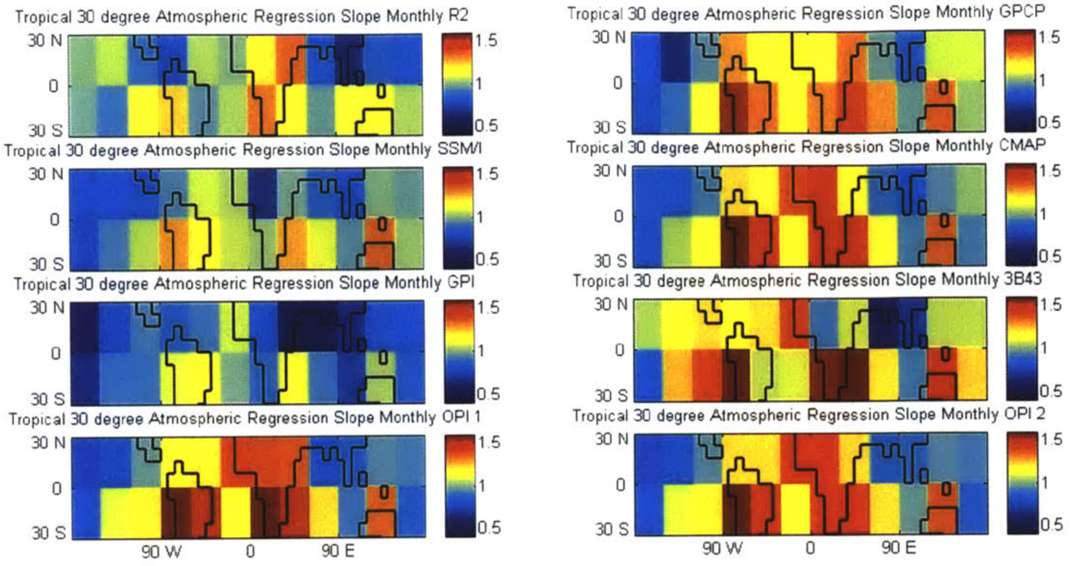


Figure B-79: 30 degree Regression Slope Different Precipitation Tropical Monthly

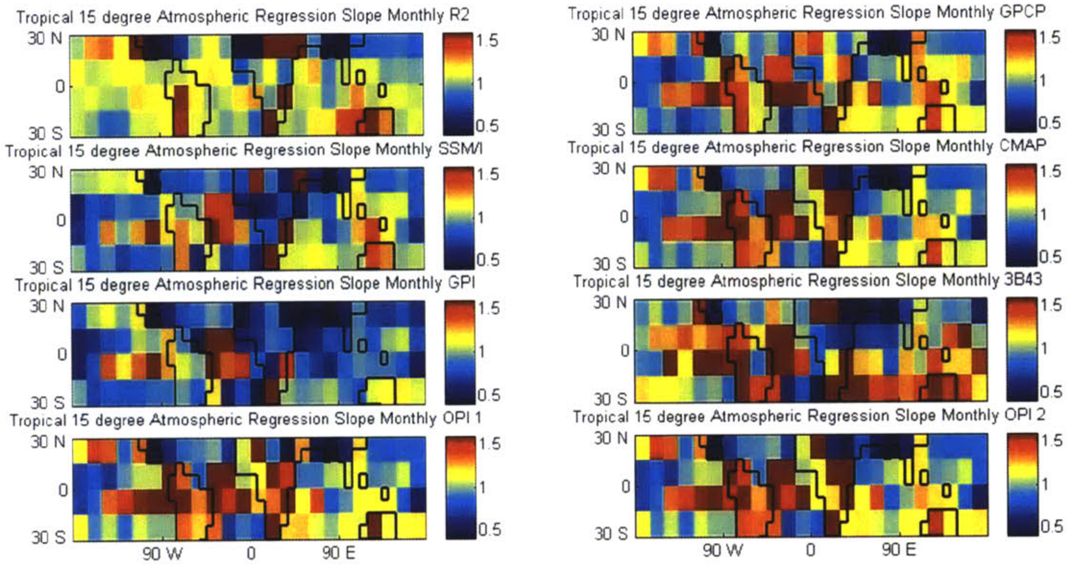


Figure B-80: 15 degree Regression Slope Different Precipitation Tropical Monthly

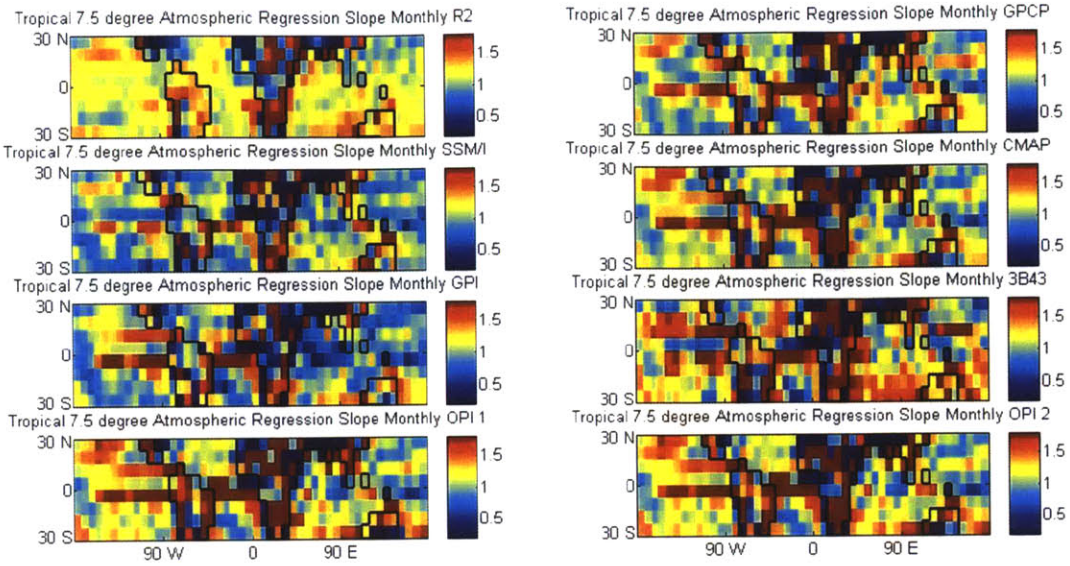


Figure B-81: 7.5 degree Regression Slope Different Precipitation Tropical Monthly

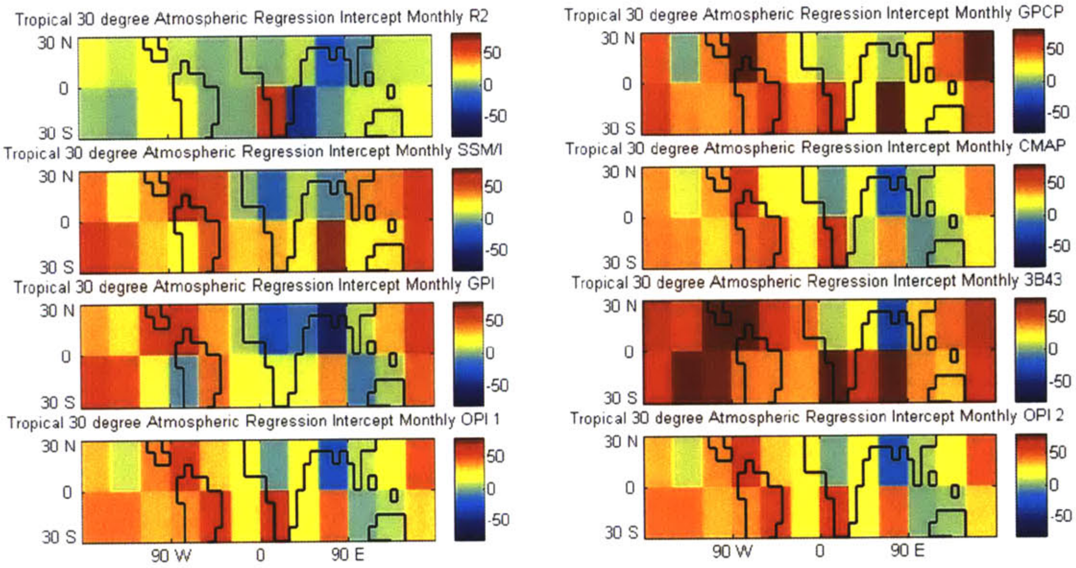


Figure B-82: 30 degree Regression Intercept Different Precipitation Tropical Monthly

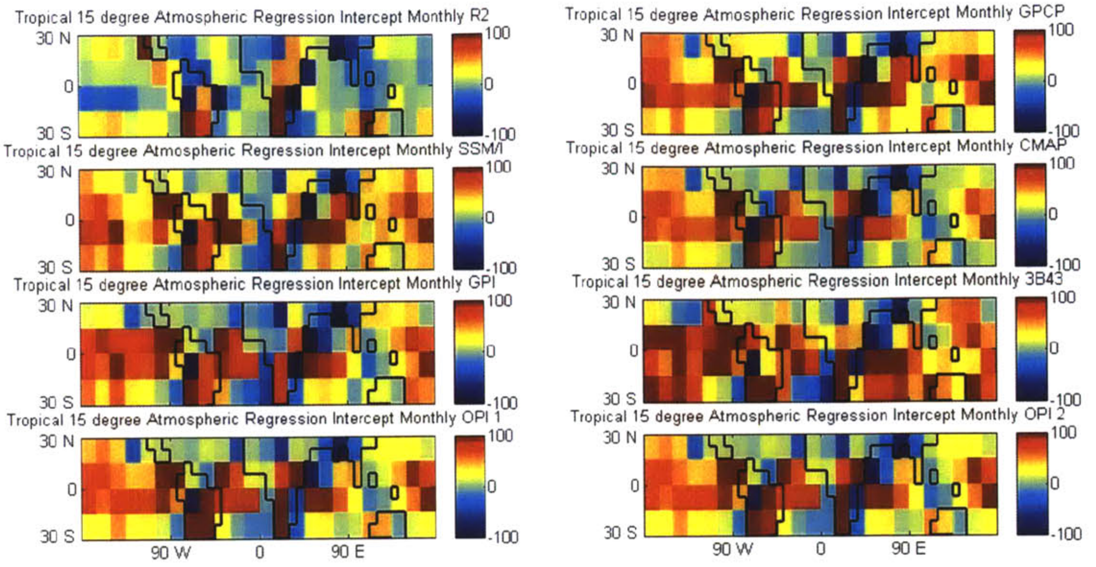


Figure B-83: 15 degree Regression Intercept Different Precipitation Tropical Monthly

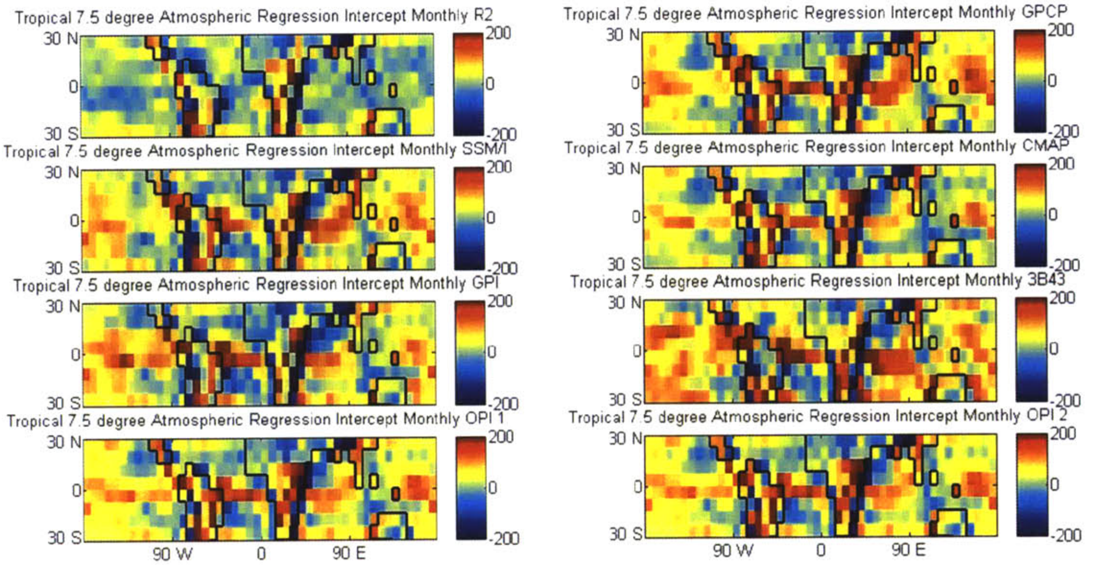


Figure B-84: 7.5 degree Regression Intercept Different Precipitation Tropical Monthly

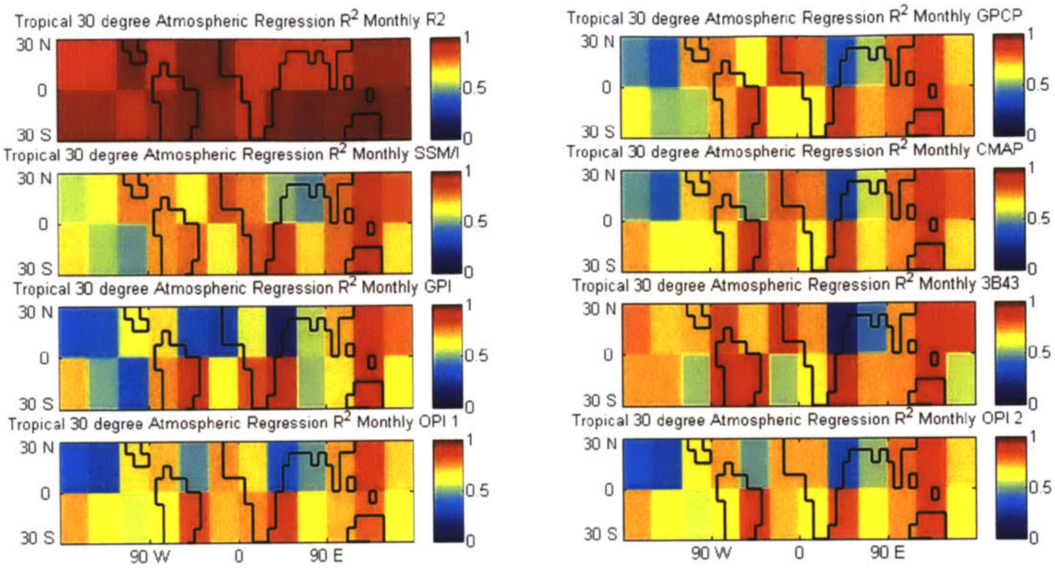


Figure B-85: 30 degree Regression R^2 Different Precipitation Tropical Monthly

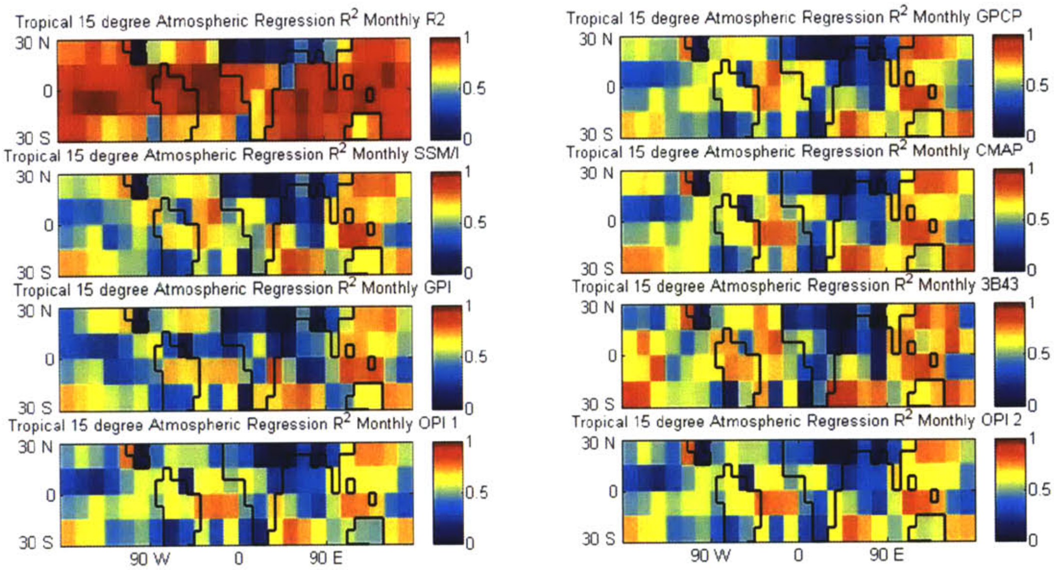


Figure B-86: 15 degree Regression R^2 Different Precipitation Tropical Monthly

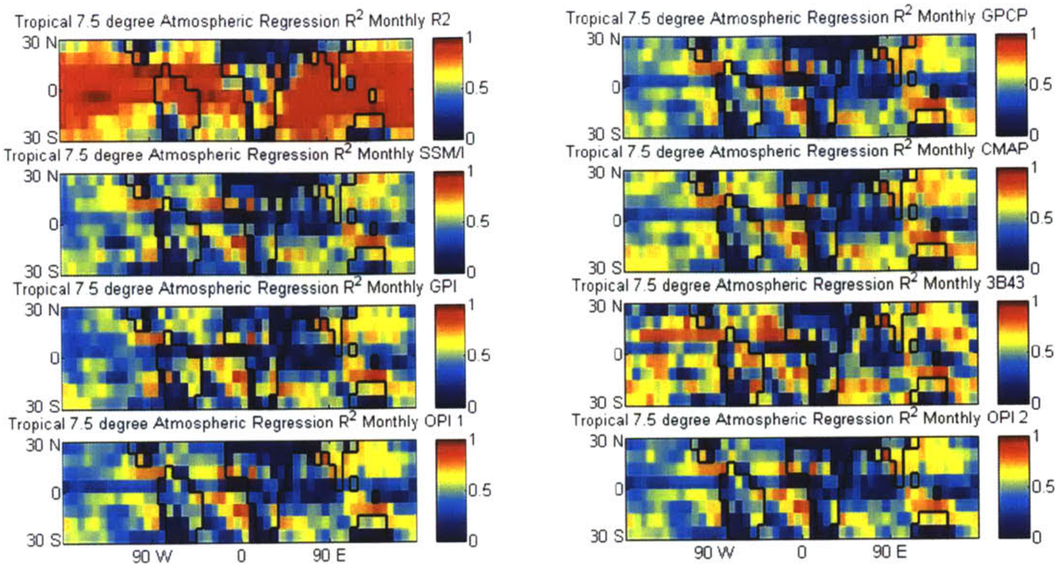


Figure B-87: 7.5 degree Regression R^2 Different Precipitation Tropical Monthly

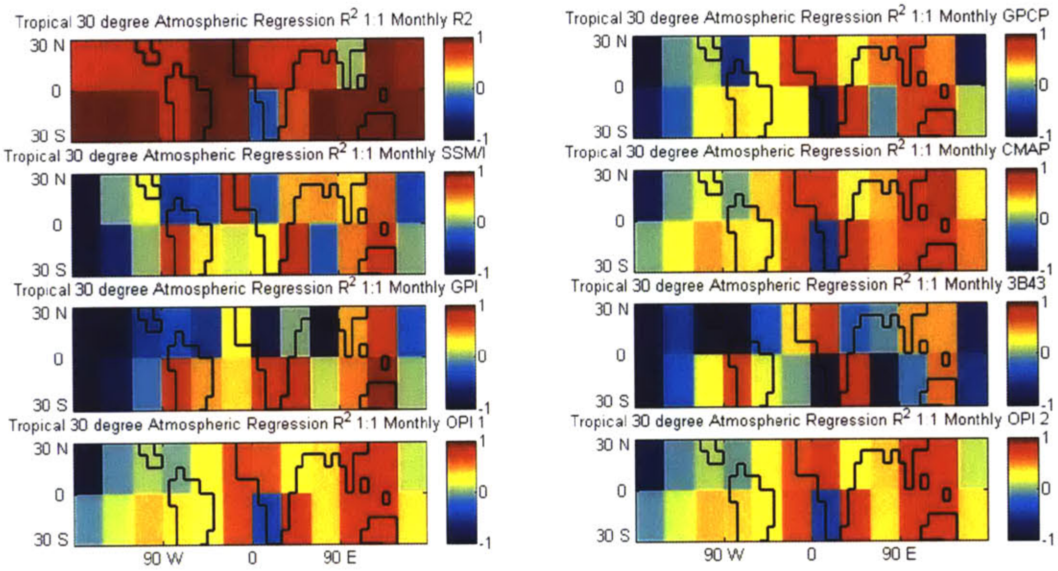


Figure B-88: 30 degree Regression R^2 1:1 Different Precipitation Tropical Monthly

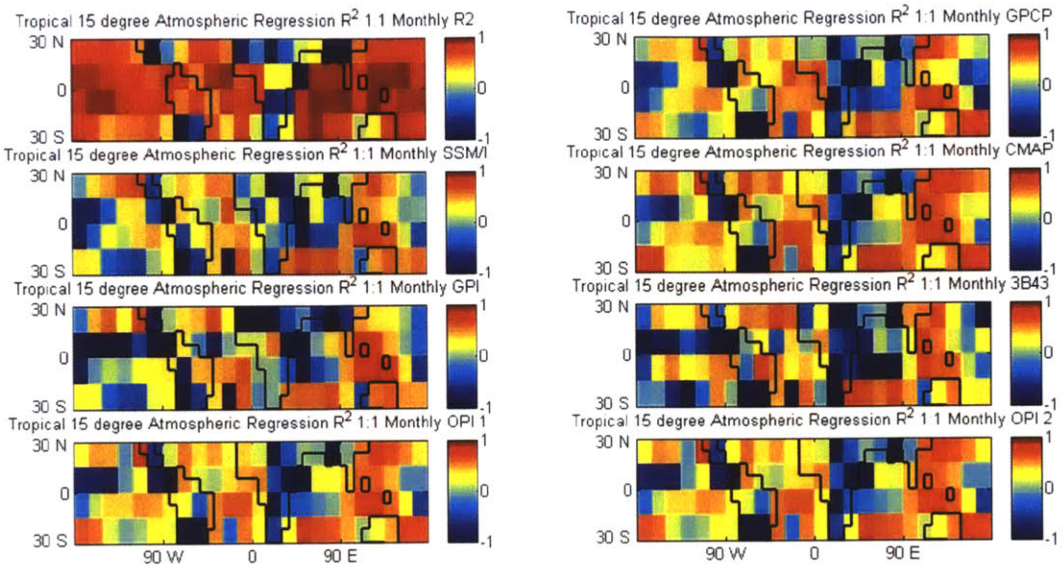


Figure B-89: 15 degree Regression R^2 1:1 Different Precipitation Tropical Monthly

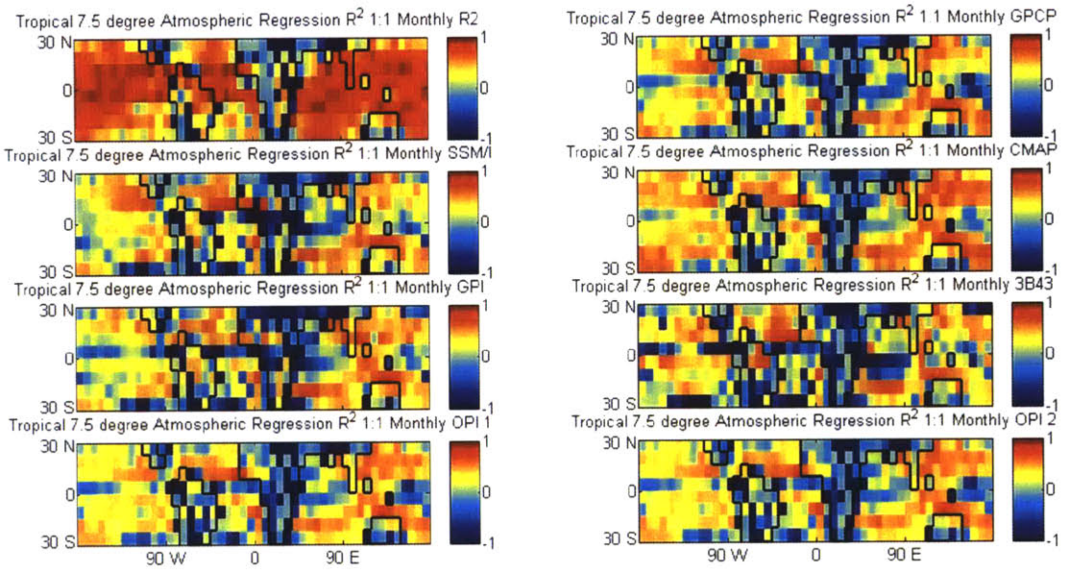


Figure B-90: 7.5 degree Regression R^2 1:1 Different Precipitation Tropical Monthly

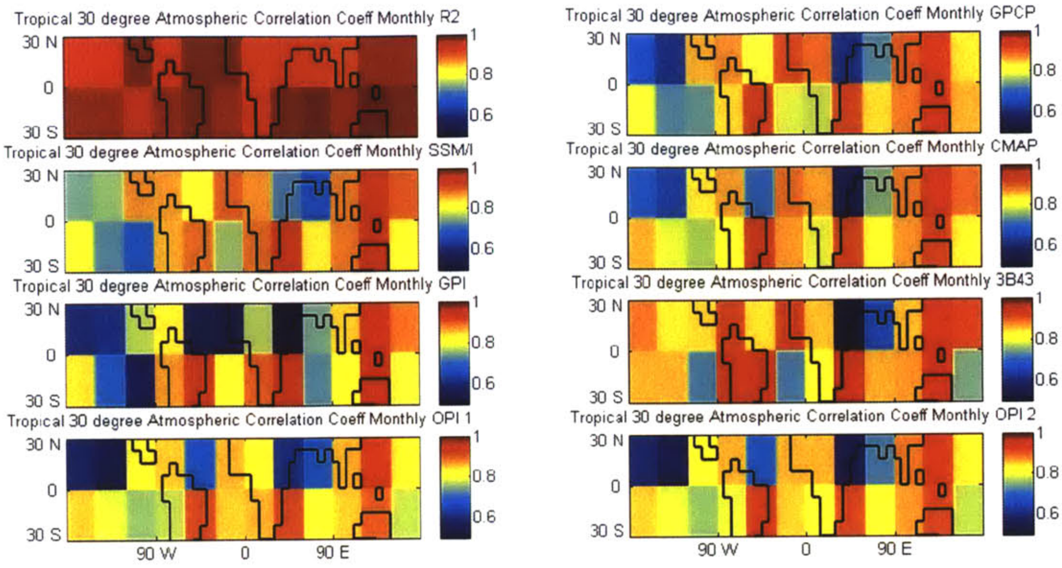


Figure B-91: 30 degree Correlation Coefficient Different Precipitation Tropical Monthly

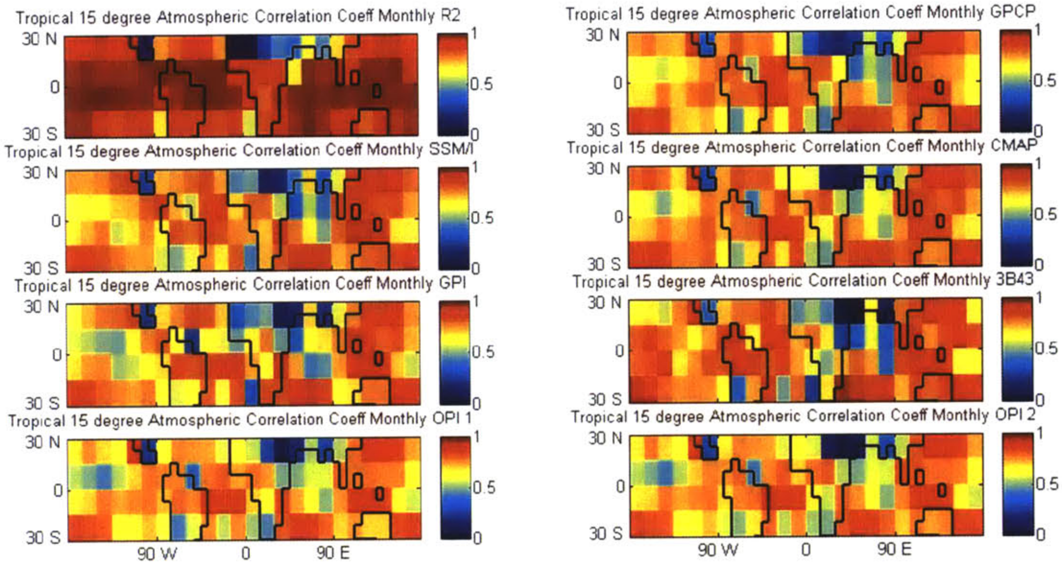


Figure B-92: 15 degree Correlation Coefficient Different Precipitation Tropical Monthly

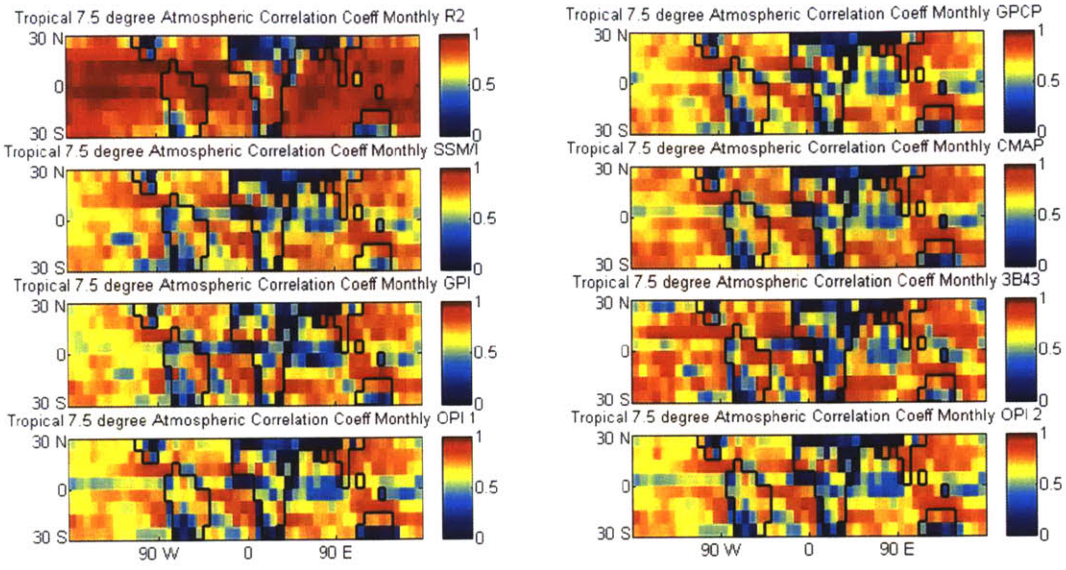


Figure B-93: 7.5 degree Correlation Coefficient Different Precipitation Tropical Monthly

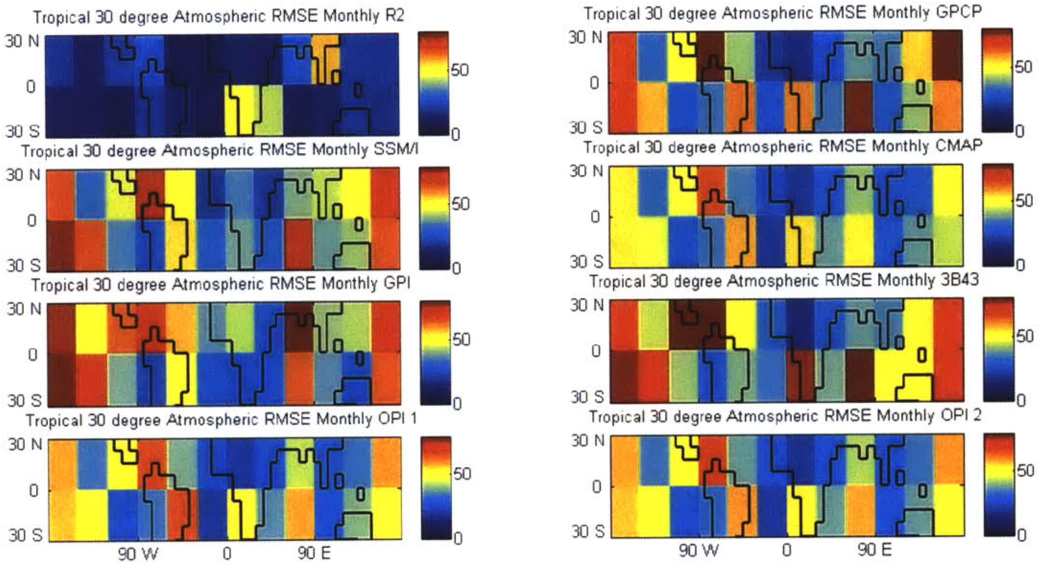


Figure B-94: 30 degree RMSE Different Precipitation Tropical Monthly

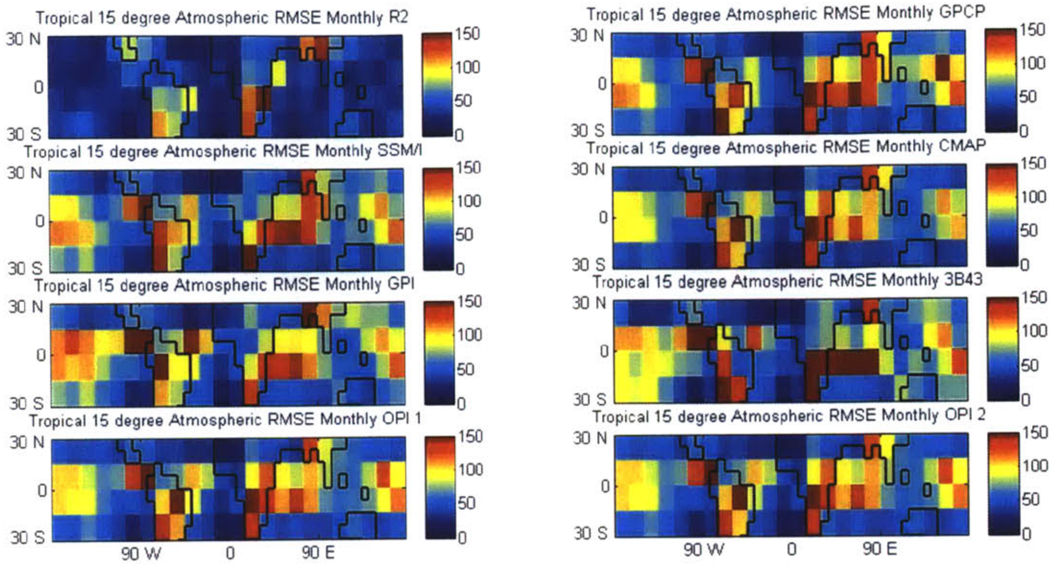


Figure B-95: 15 degree RMSE Different Precipitation Tropical Monthly

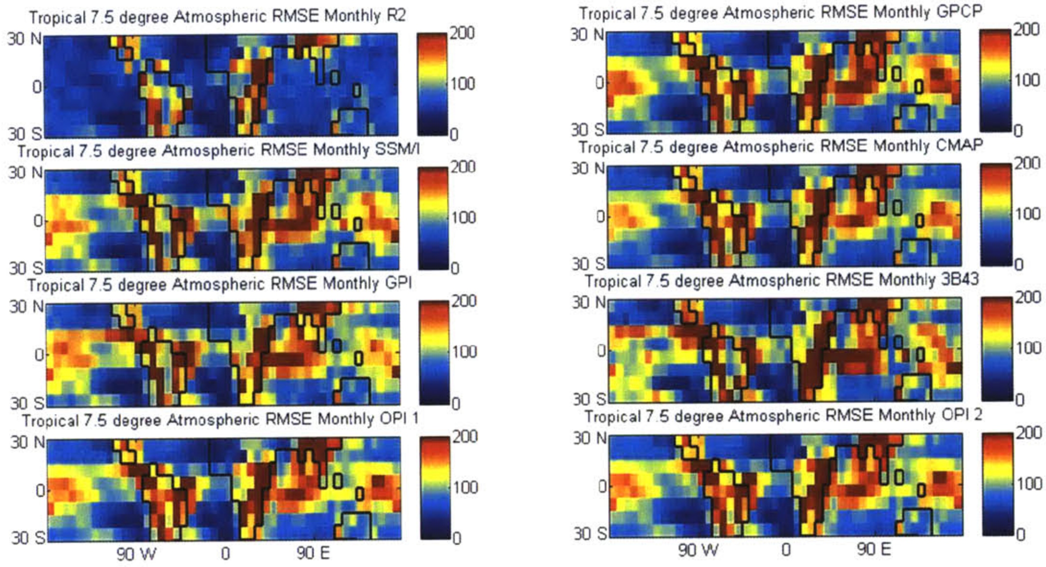


Figure B-96: 7.5 degree RMSE Different Precipitation Tropical Monthly

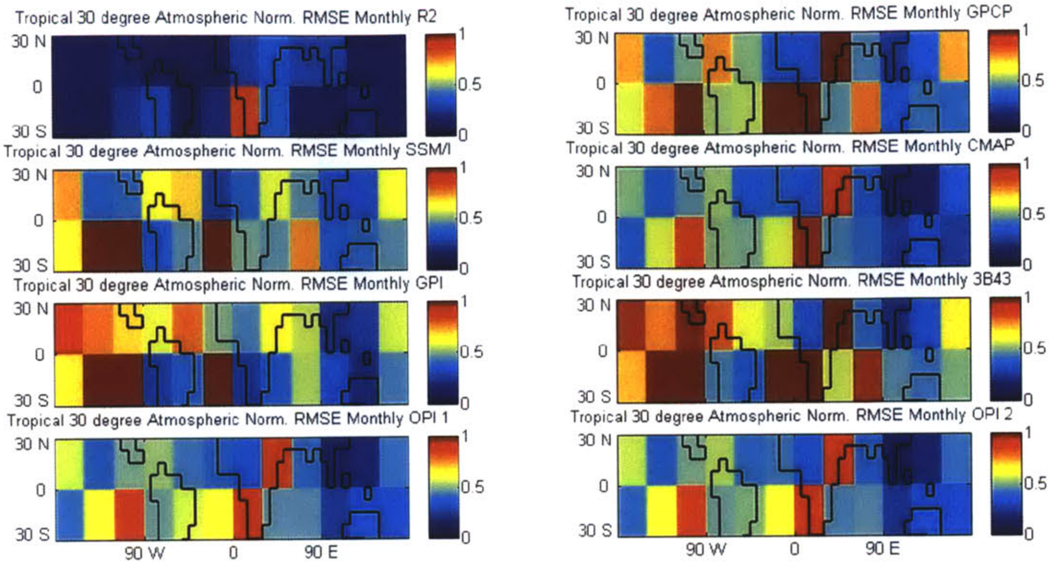


Figure B-97: 30 degree Normalized RMSE Different Precipitation Tropical Monthly

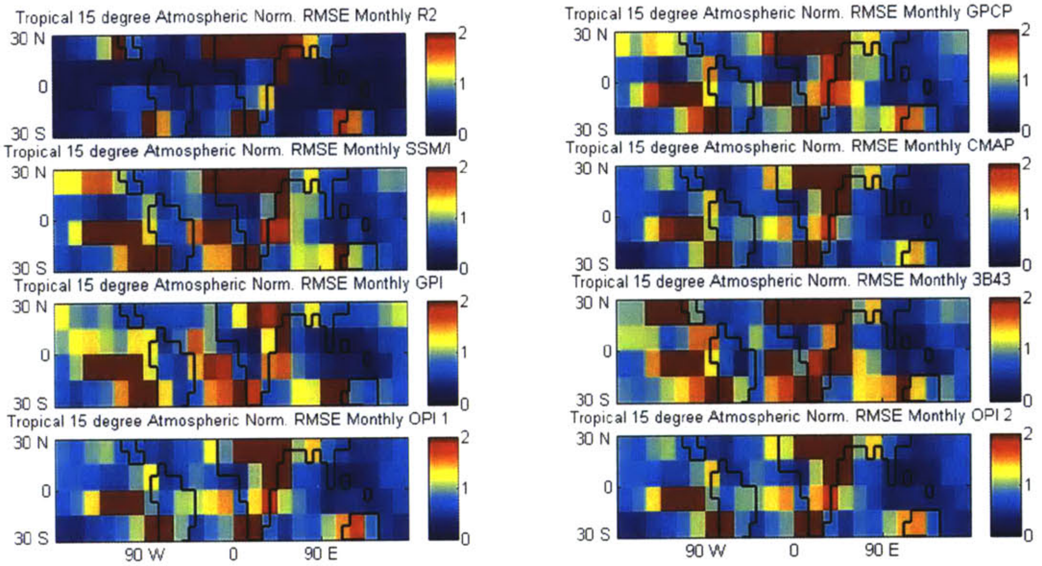


Figure B-98: 15 degree Normalized RMSE Different Precipitation Tropical Monthly

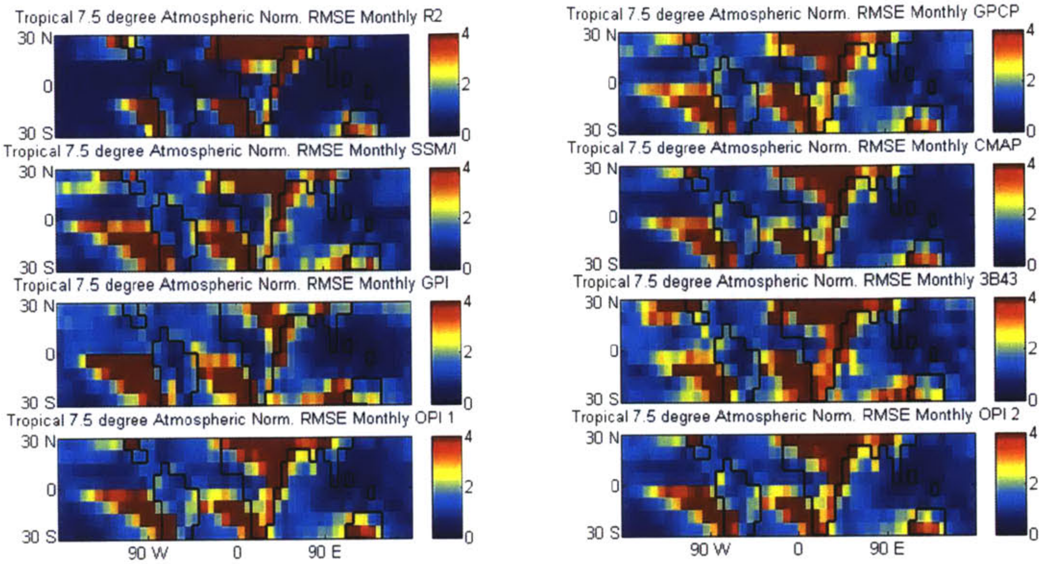


Figure B-99: 7.5 degree Normalized RMSE Different Precipitation Tropical Monthly

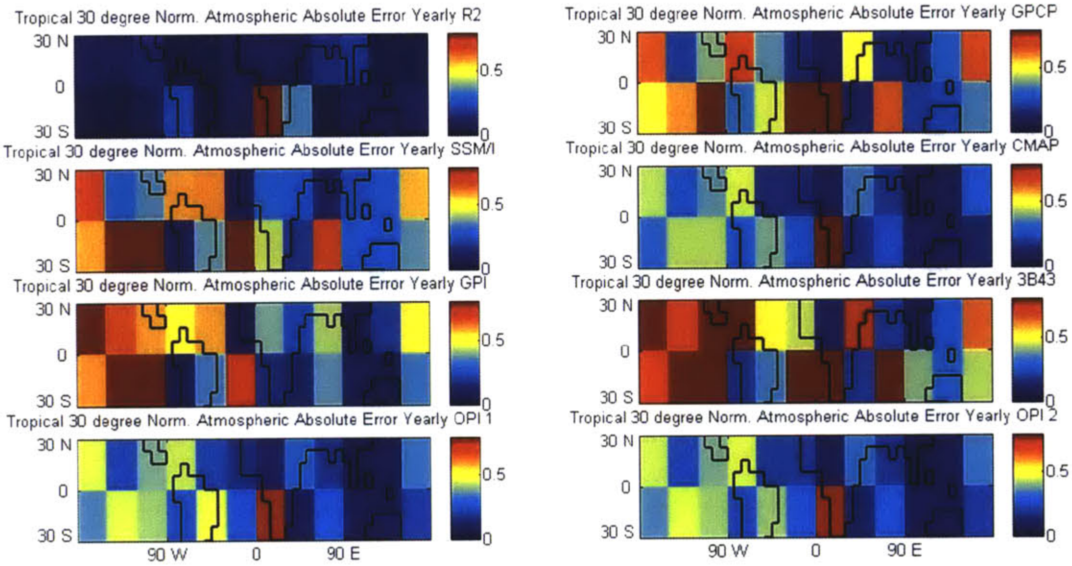


Figure B-100: 30 degree Normalized Absolute Error Different Precipitation Tropical Yearly

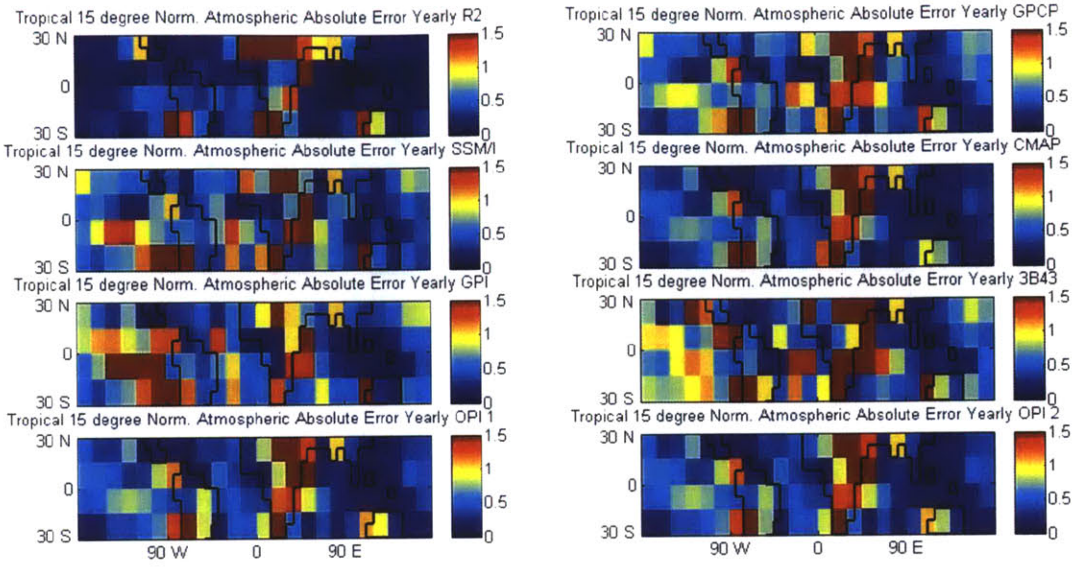


Figure B-101: 15 degree Normalized Absolute Error Different Precipitation Tropical Yearly

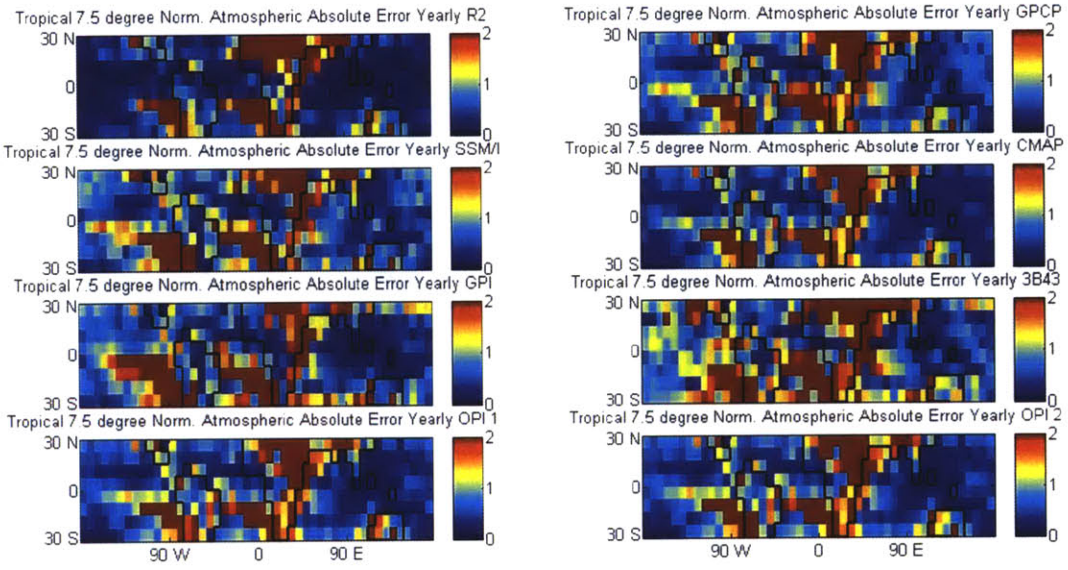


Figure B-102: 7.5 degree Normalized Absolute Error Different Precipitation Tropical Yearly

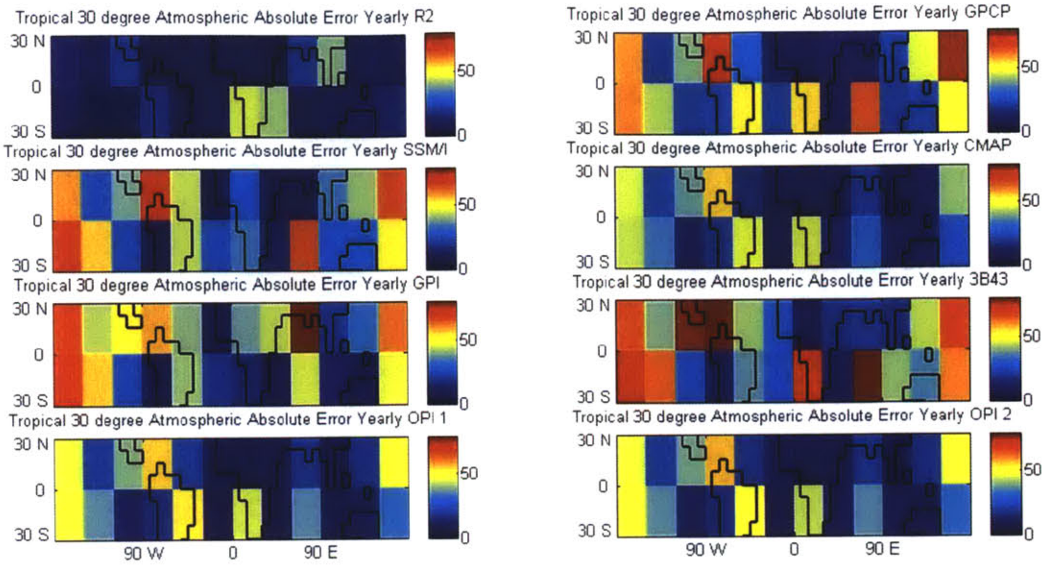


Figure B-103: 30 degree Absolute Error Different Precipitation Tropical Yearly

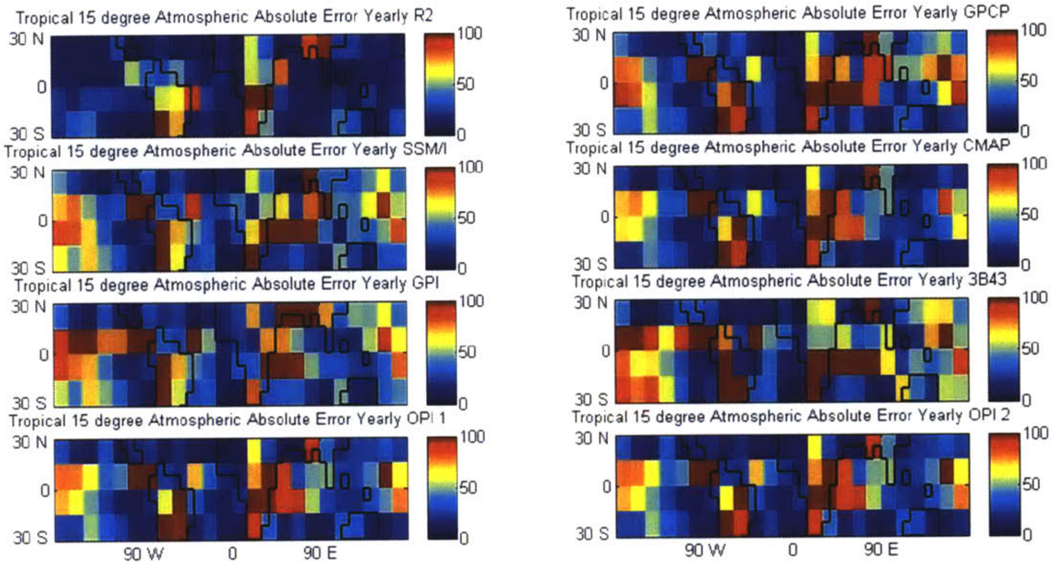


Figure B-104: 15 degree Absolute Error Different Precipitation Tropical Yearly

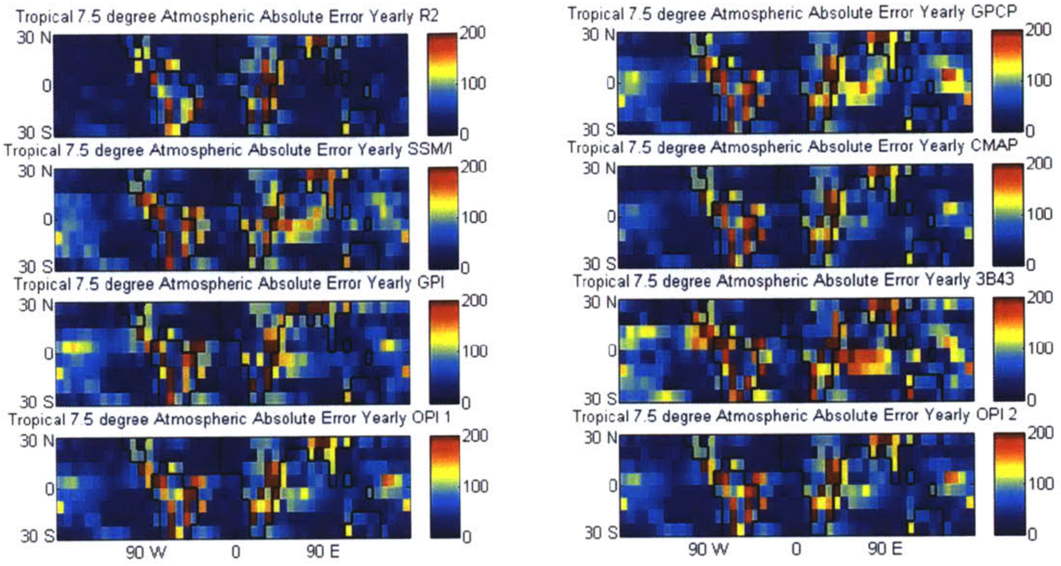


Figure B-105: 7.5 degree Absolute Error Different Precipitation Tropical Yearly

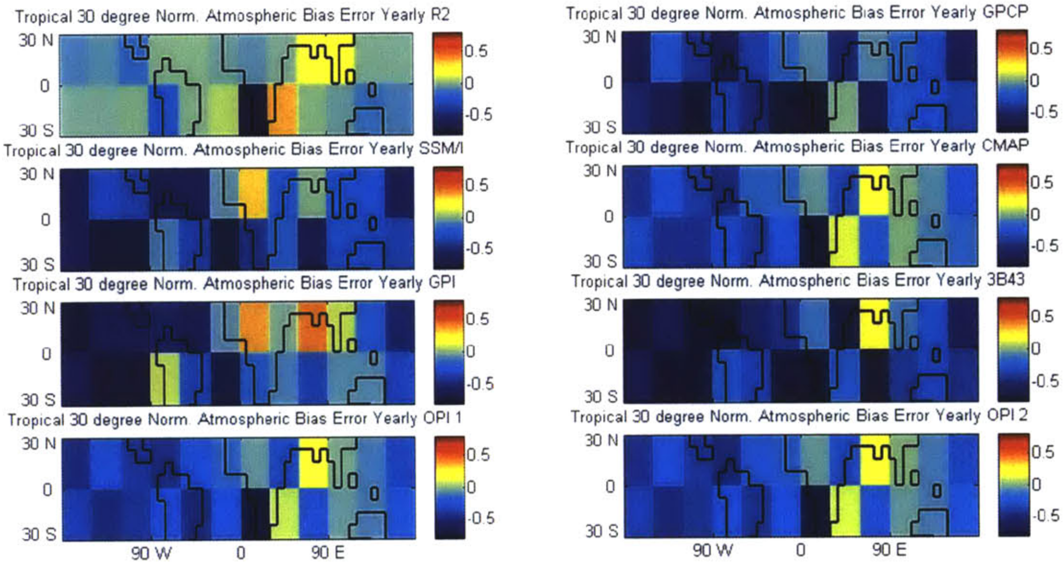


Figure B-106: 30 degree Normalized Bias Error Different Precipitation Tropical Yearly

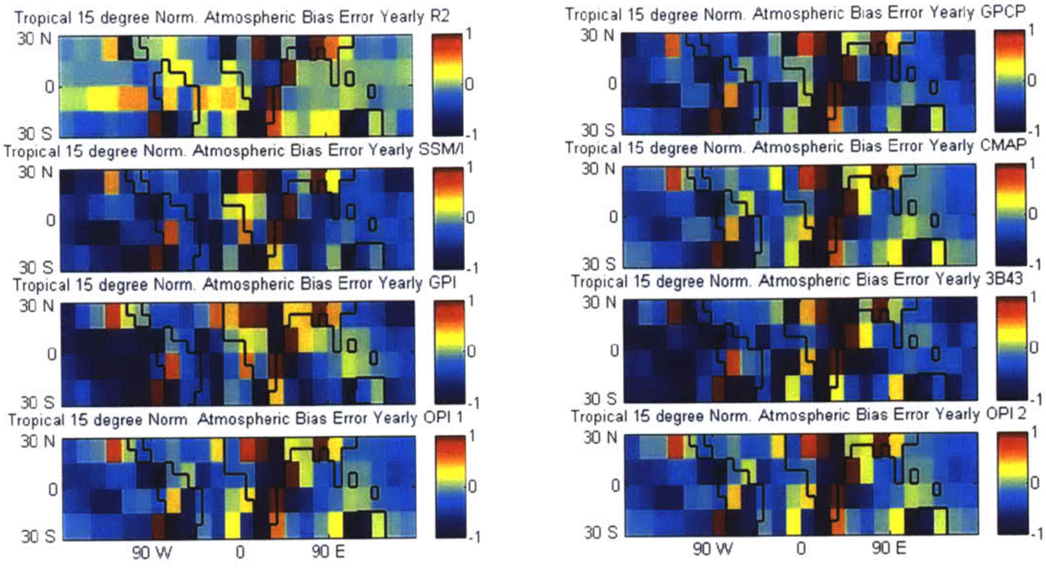


Figure B-107: 15 degree Normalized Bias Error Different Precipitation Tropical Yearly

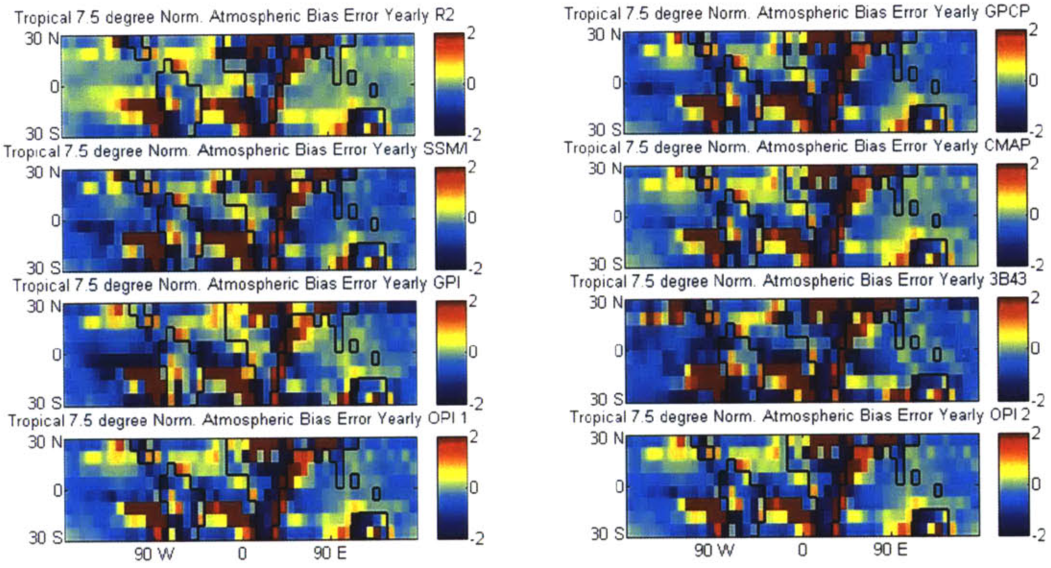
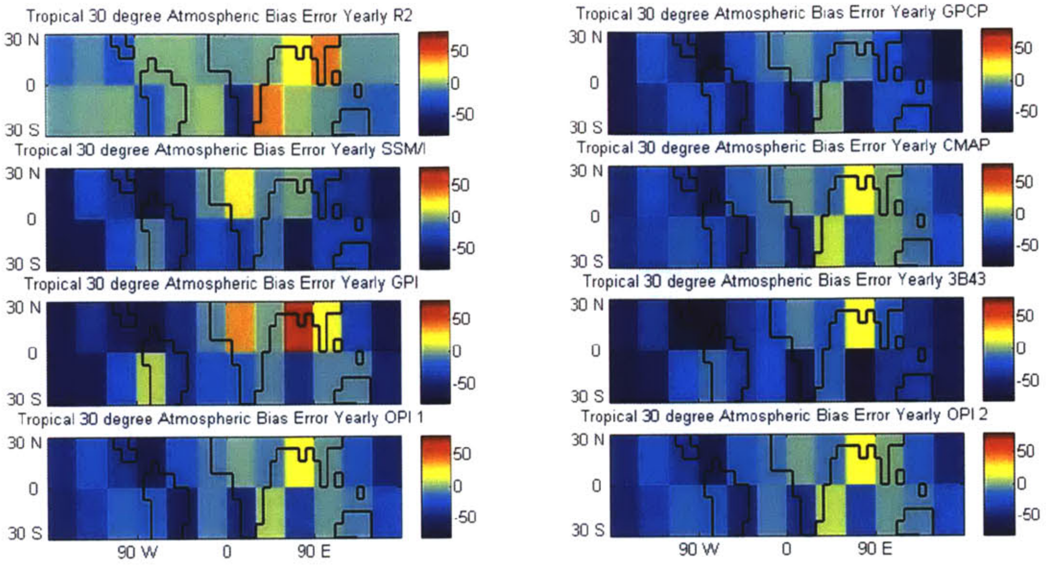


Figure B-108: 7.5 degree Normalized Bias Error Different Precipitation Tropical Yearly


Tropical 30 degree Atmospheric Bias Error Yearly R2

Tropical 30 degree Atmospheric Bias Error Yearly GPCP

Tropical 30 degree Atmospheric Bias Error Yearly SSM/I

Tropical 30 degree Atmospheric Bias Error Yearly CMAP

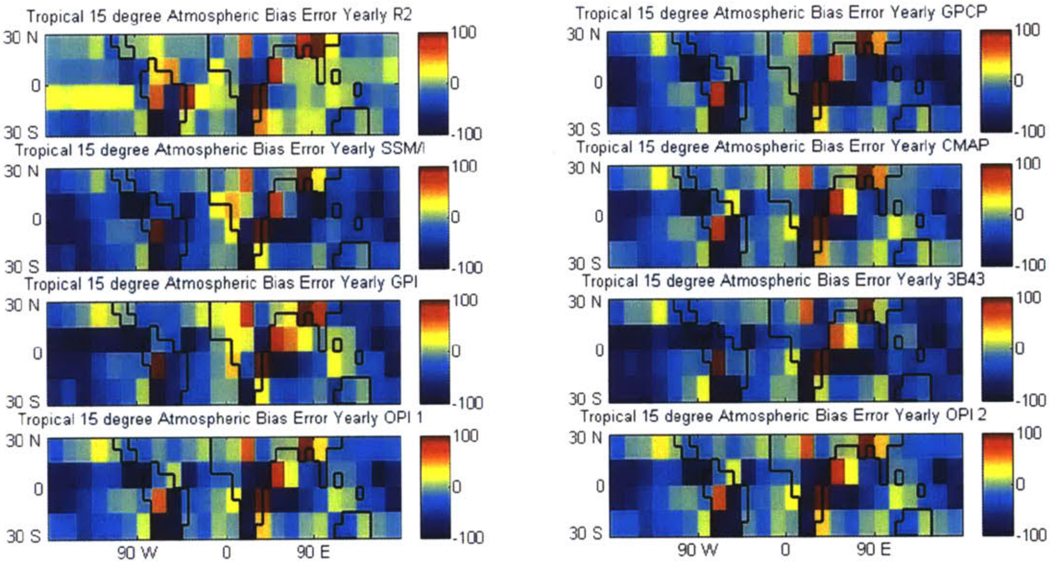
Tropical 30 degree Atmospheric Bias Error Yearly GPI

Tropical 30 degree Atmospheric Bias Error Yearly 3B43

Tropical 30 degree Atmospheric Bias Error Yearly OPI 1

Tropical 30 degree Atmospheric Bias Error Yearly OPI 2

Figure B-109: 30 degree Bias Error Different Precipitation Tropical Yearly


Tropical 15 degree Atmospheric Bias Error Yearly R2

Tropical 15 degree Atmospheric Bias Error Yearly GPCP

Tropical 15 degree Atmospheric Bias Error Yearly SSM/I

Tropical 15 degree Atmospheric Bias Error Yearly CMAP

Tropical 15 degree Atmospheric Bias Error Yearly GPI

Tropical 15 degree Atmospheric Bias Error Yearly 3B43

Tropical 15 degree Atmospheric Bias Error Yearly OPI 1

Tropical 15 degree Atmospheric Bias Error Yearly OPI 2

Figure B-110: 15 degree Bias Error Different Precipitation Tropical Yearly

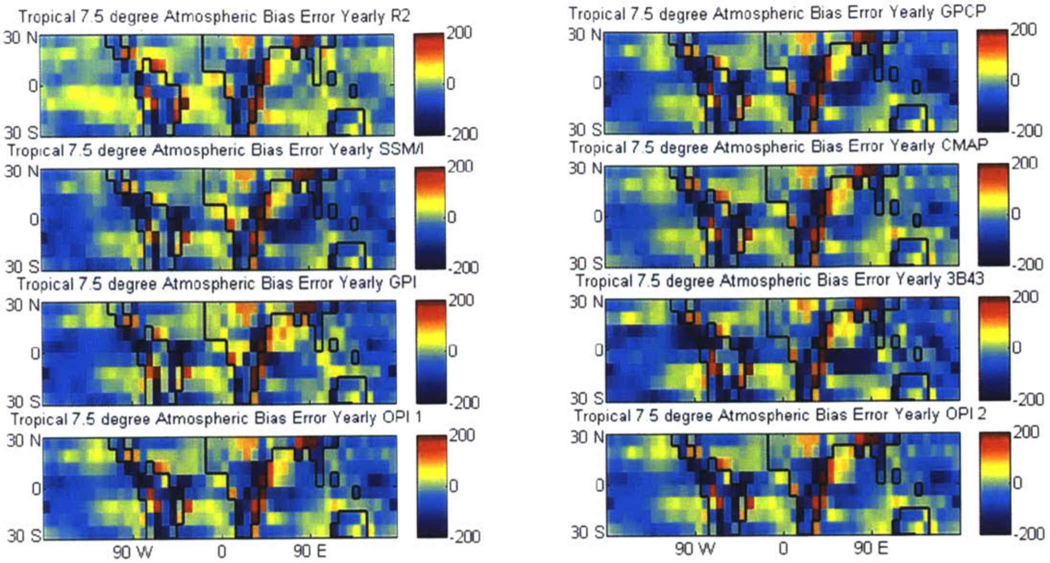


Figure B-111: 7.5 degree Bias Error Different Precipitation Tropical Yearly

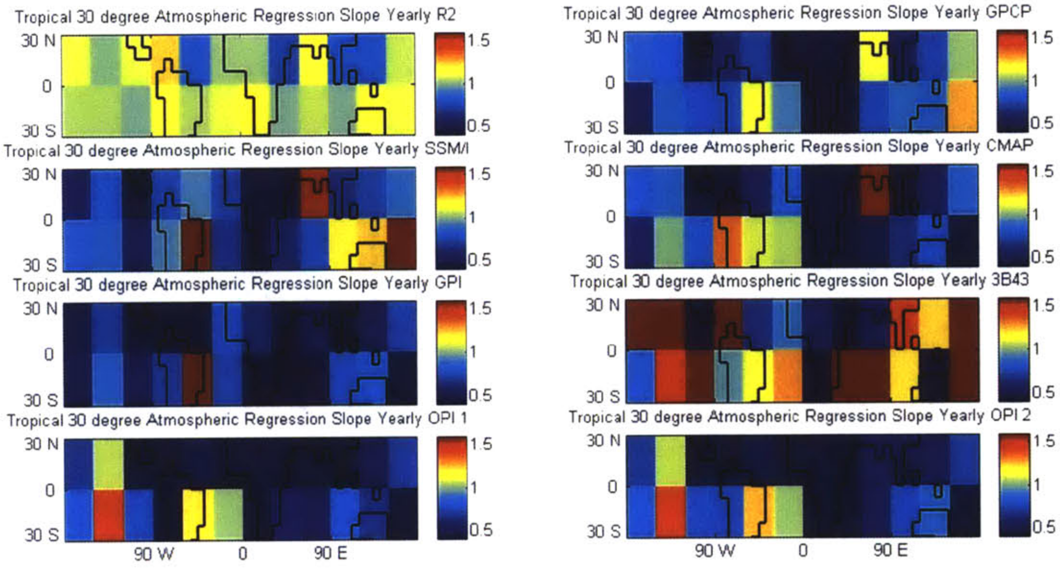


Figure B-112: 30 degree Regression Slope Different Precipitation Tropical Yearly

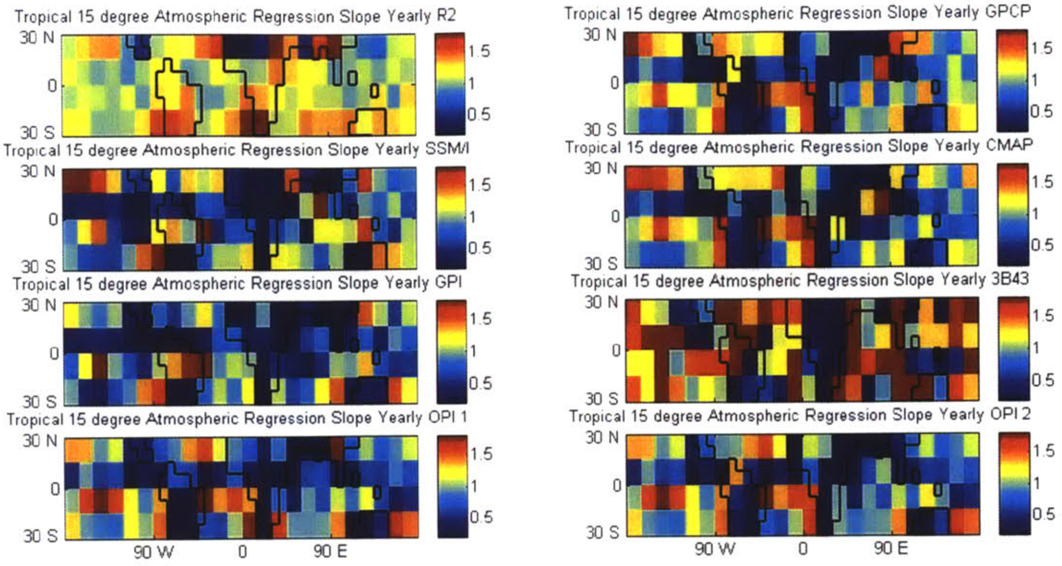


Figure B-113: 15 degree Regression Slope Different Precipitation Tropical Yearly

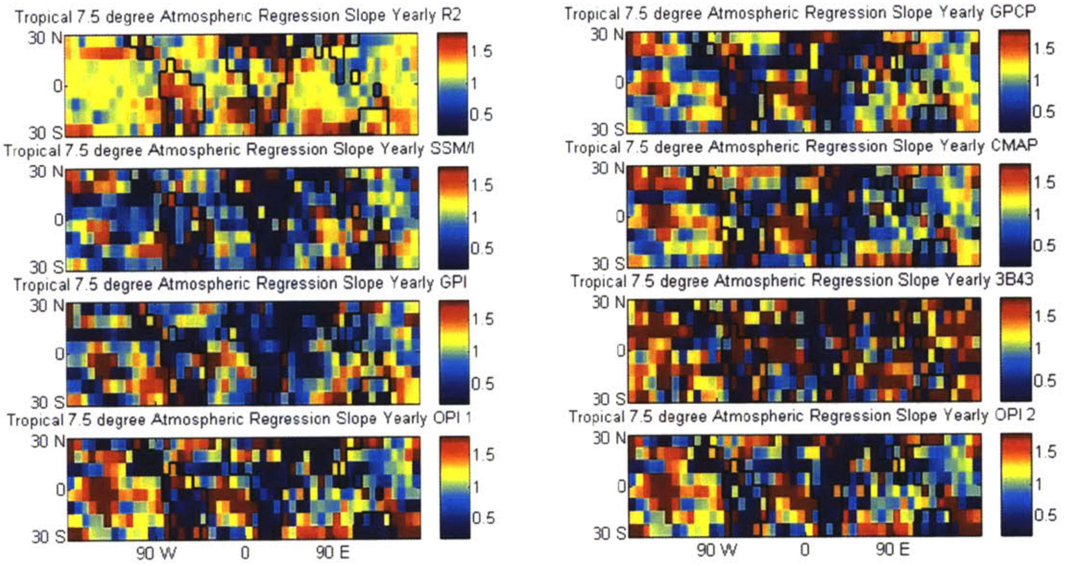


Figure B-114: 7.5 degree Regression Slope Different Precipitation Tropical Yearly

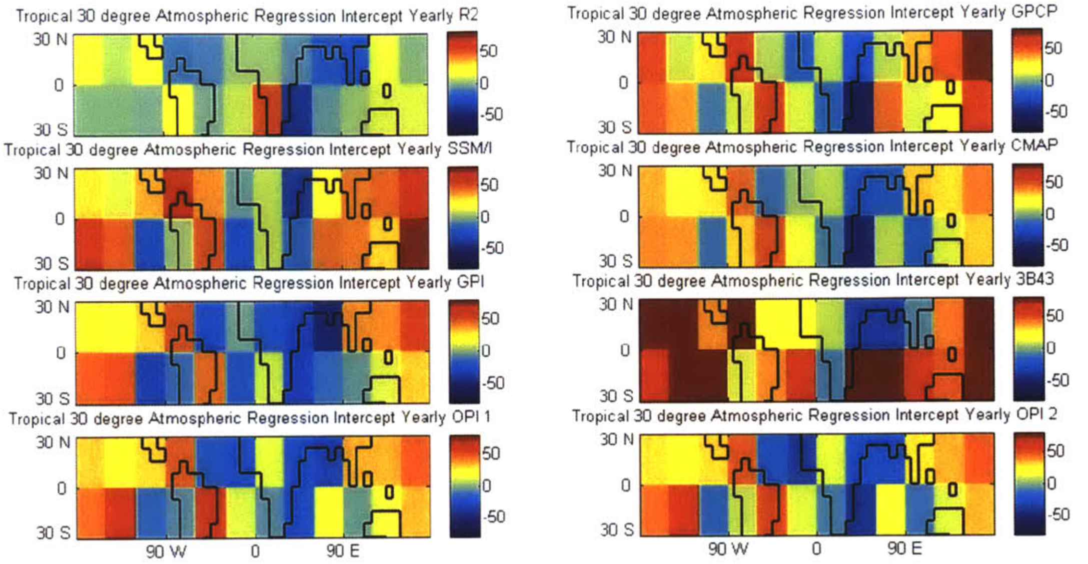


Figure B-115: 30 degree Regression Intercept Different Precipitation Tropical Yearly

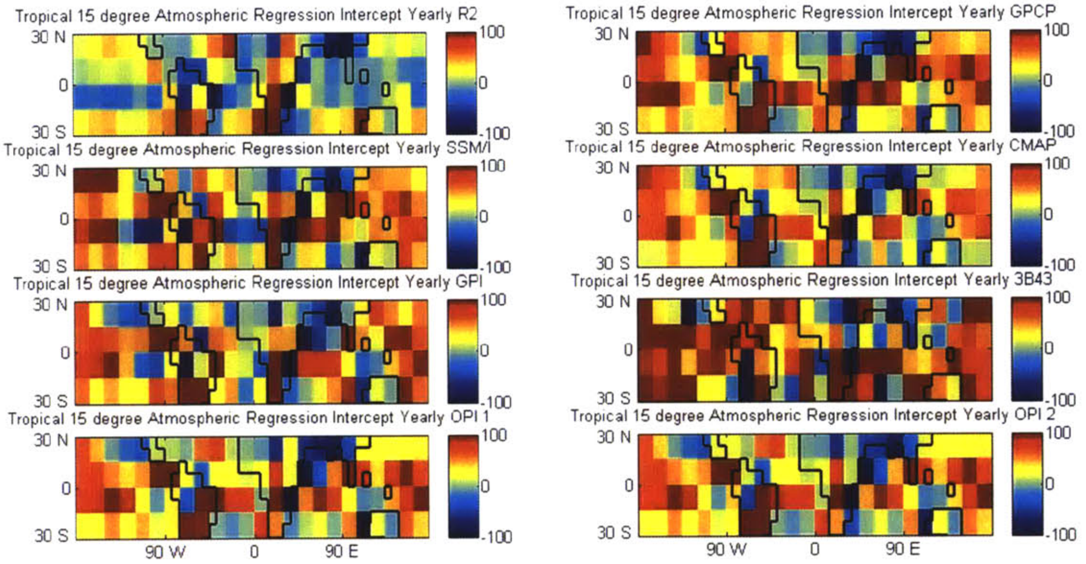


Figure B-116: 15 degree Regression Intercept Different Precipitation Tropical Yearly

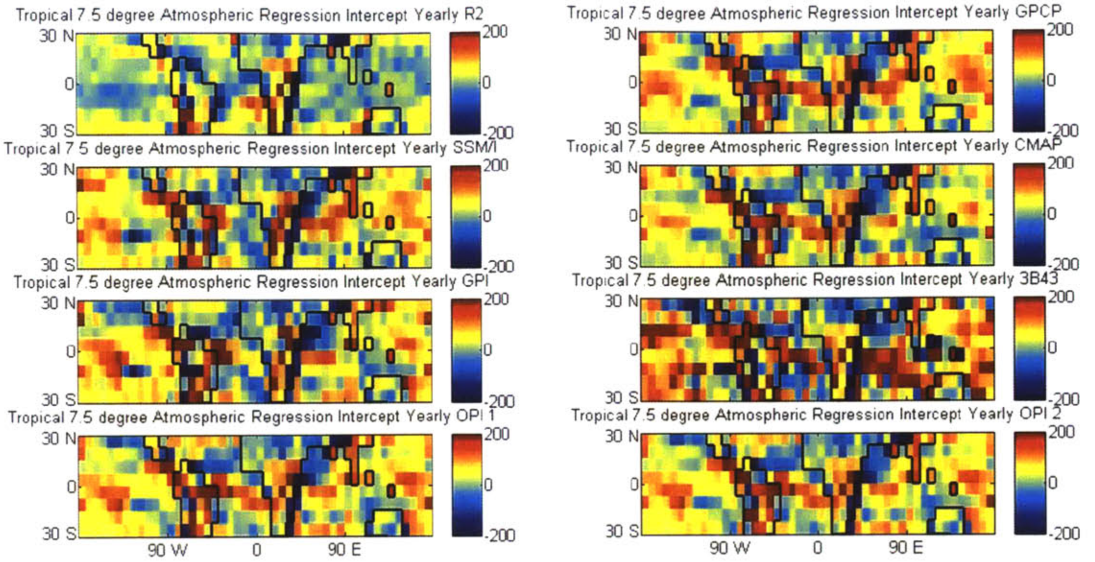


Figure B-117: 7.5 degree Regression Intercept Different Precipitation Tropical Yearly

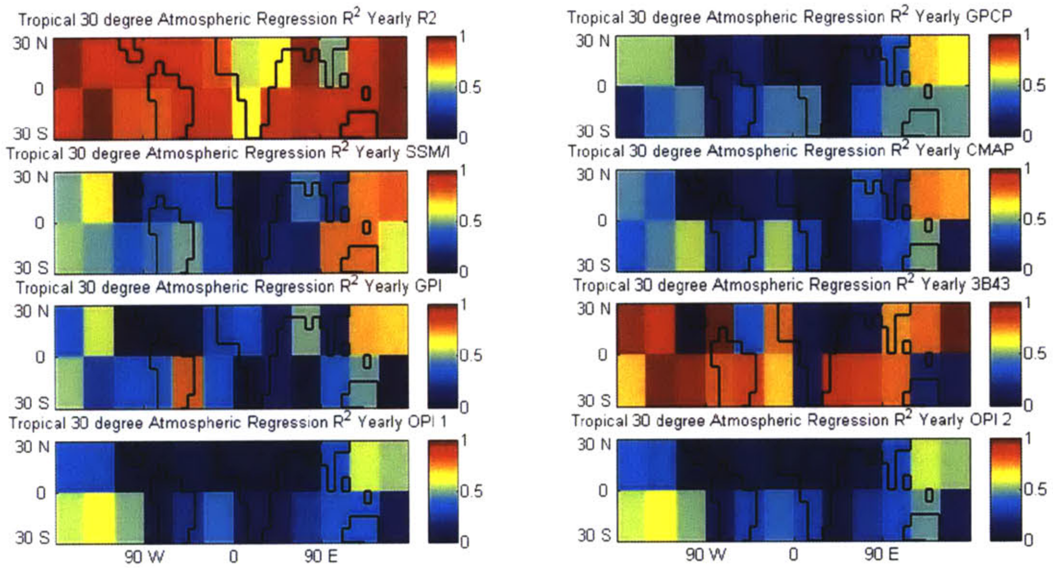


Figure B-118: 30 degree Regression R^2 Different Precipitation Tropical Yearly

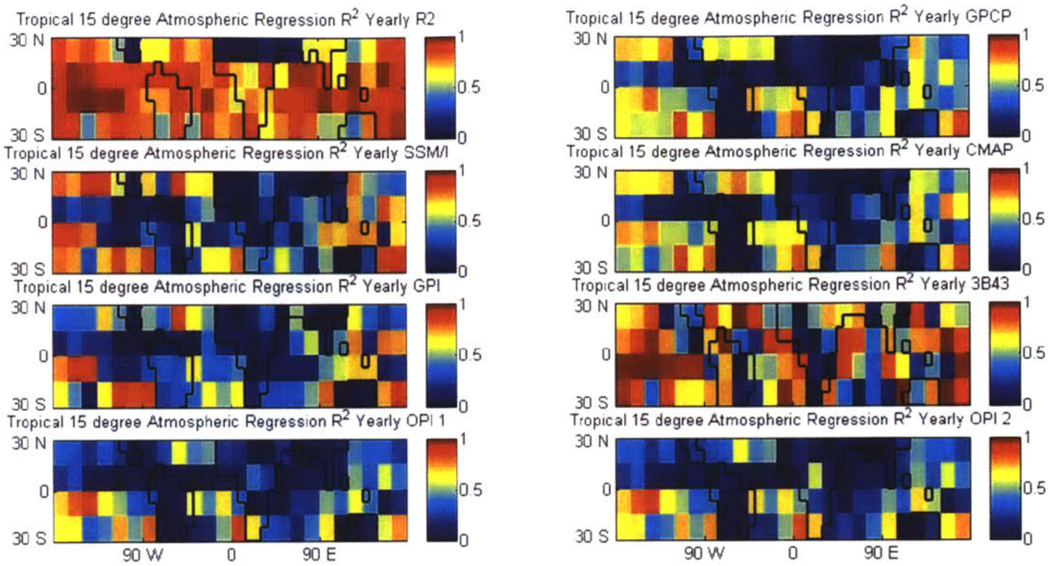


Figure B-119: 15 degree Regression R^2 Different Precipitation Tropical Yearly

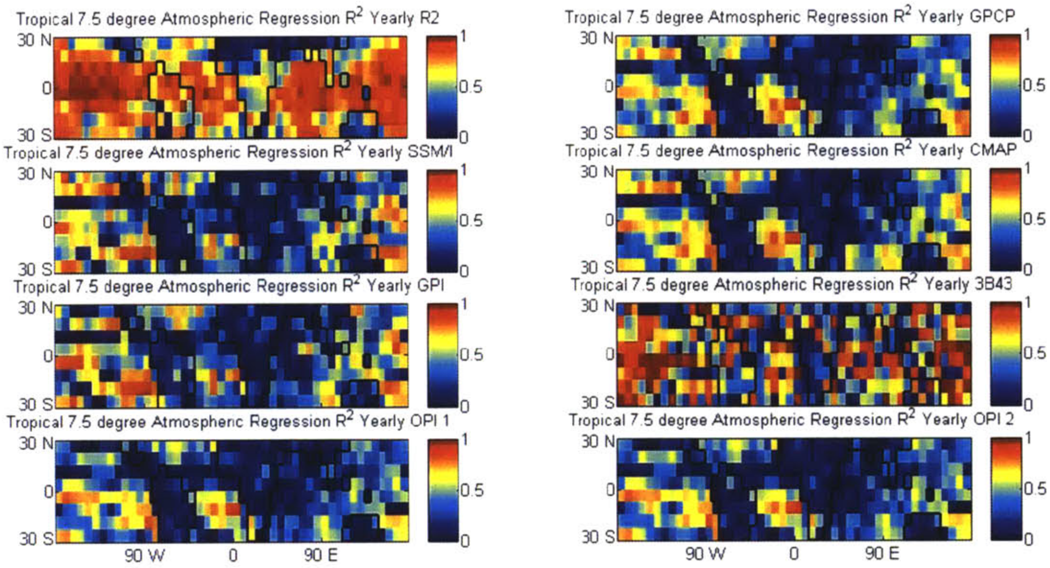


Figure B-120: 7.5 degree Regression R^2 Different Precipitation Tropical Yearly

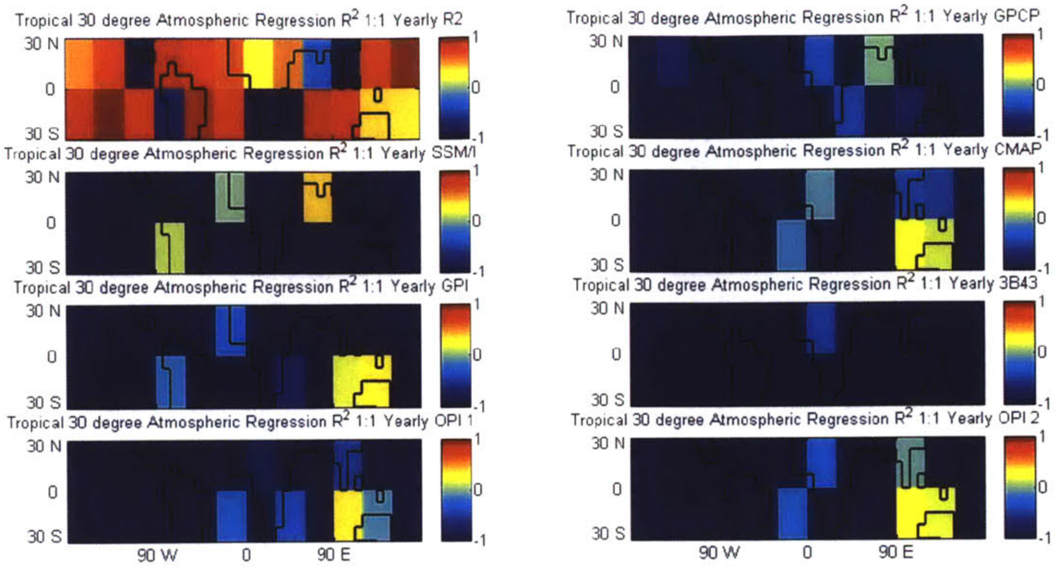


Figure B-121: 30 degree Regression R^2 1:1 Different Precipitation Tropical Yearly

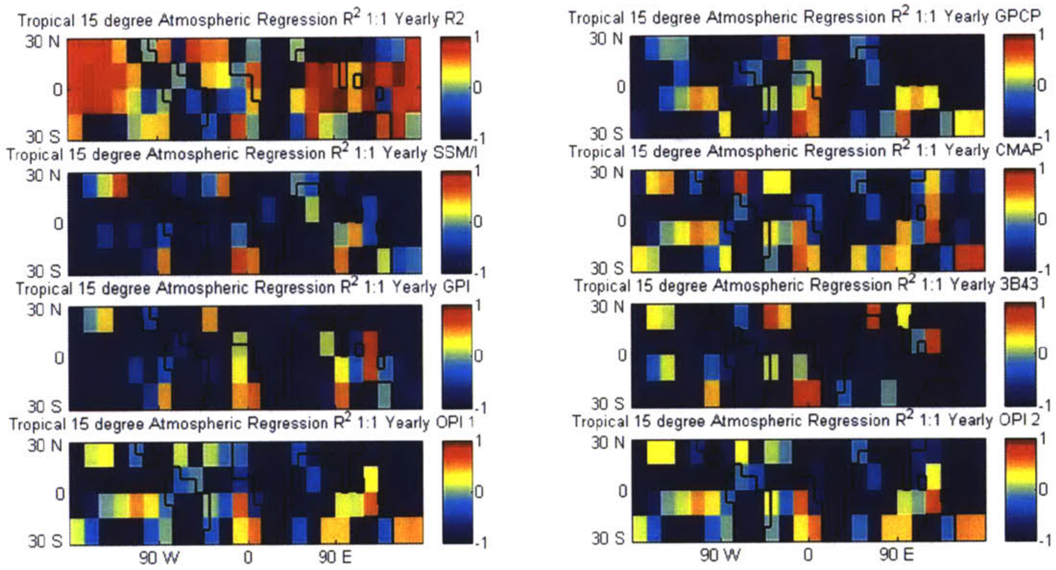


Figure B-122: 15 degree Regression R^2 1:1 Different Precipitation Tropical Yearly

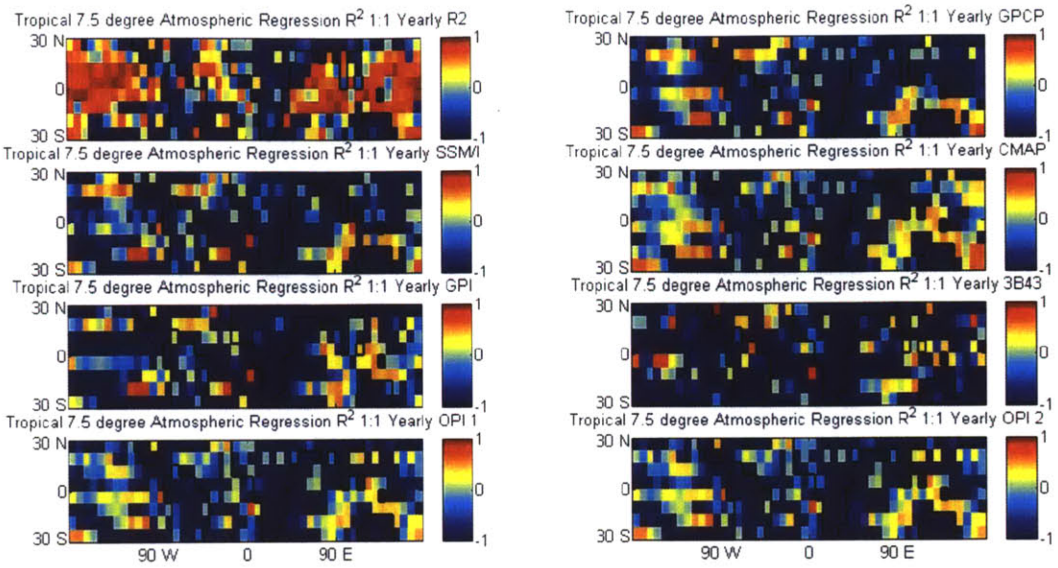


Figure B-123: 7.5 degree Regression R^2 1:1 Different Precipitation Tropical Yearly

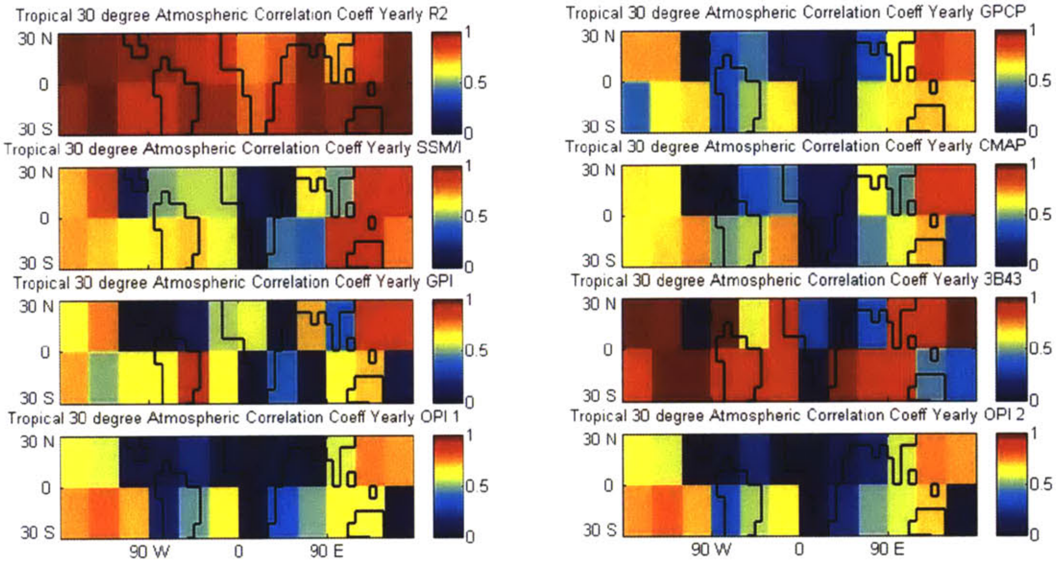


Figure B-124: 30 degree Correlation Coefficient Different Precipitation Tropical Yearly

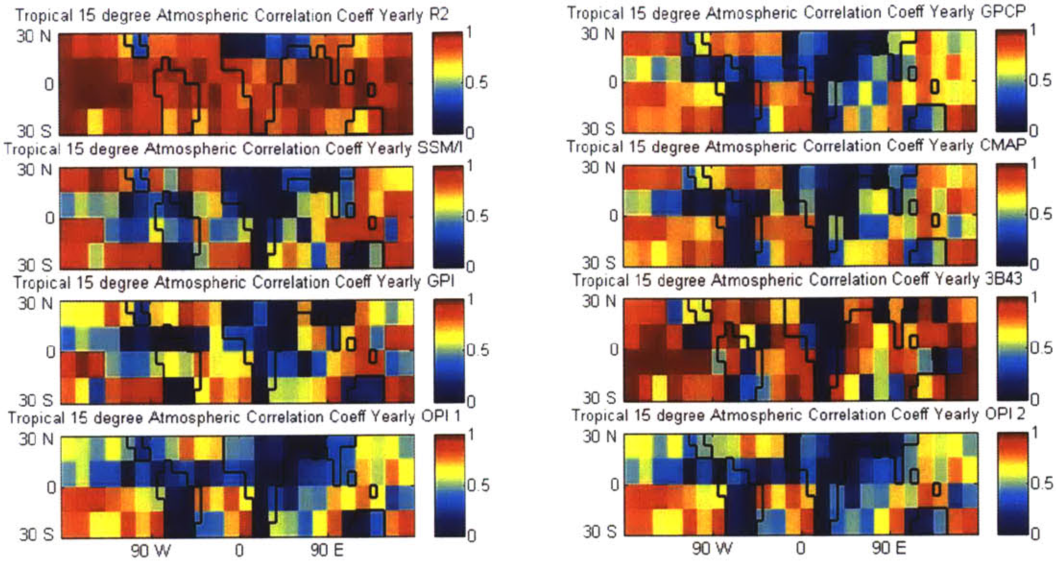

Tropical 15 degree Atmospheric Correlation Coeff Yearly R2
Tropical 15 degree Atmospheric Correlation Coeff Yearly GPCP
Tropical 15 degree Atmospheric Correlation Coeff Yearly SSM/I
Tropical 15 degree Atmospheric Correlation Coeff Yearly CMAP
Tropical 15 degree Atmospheric Correlation Coeff Yearly GPI
Tropical 15 degree Atmospheric Correlation Coeff Yearly 3B43
Tropical 15 degree Atmospheric Correlation Coeff Yearly OPI 1
Tropical 15 degree Atmospheric Correlation Coeff Yearly OPI 2

Figure B-125: 15 degree Correlation Coefficient Different Precipitation Tropical Yearly

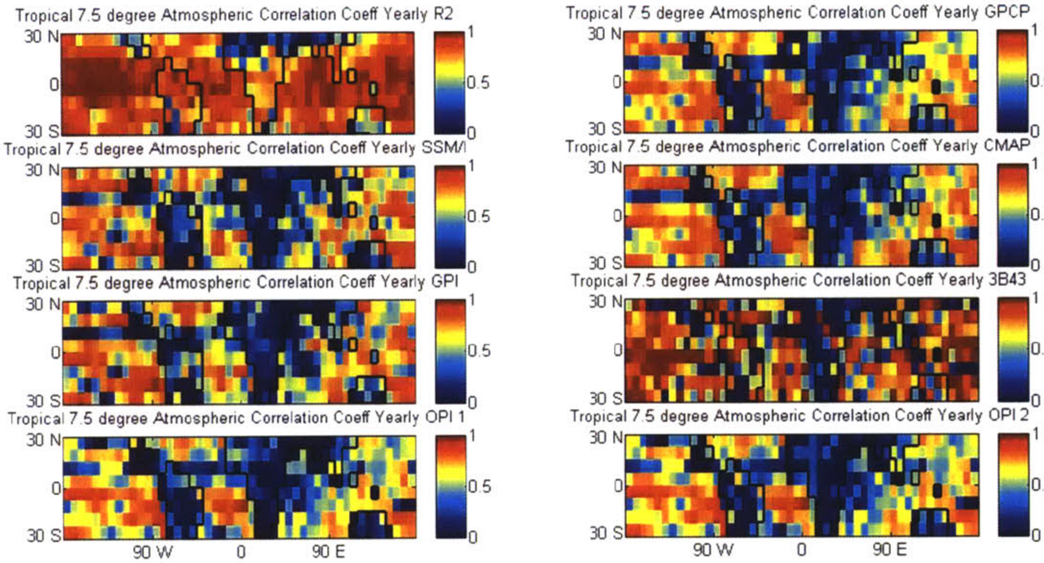
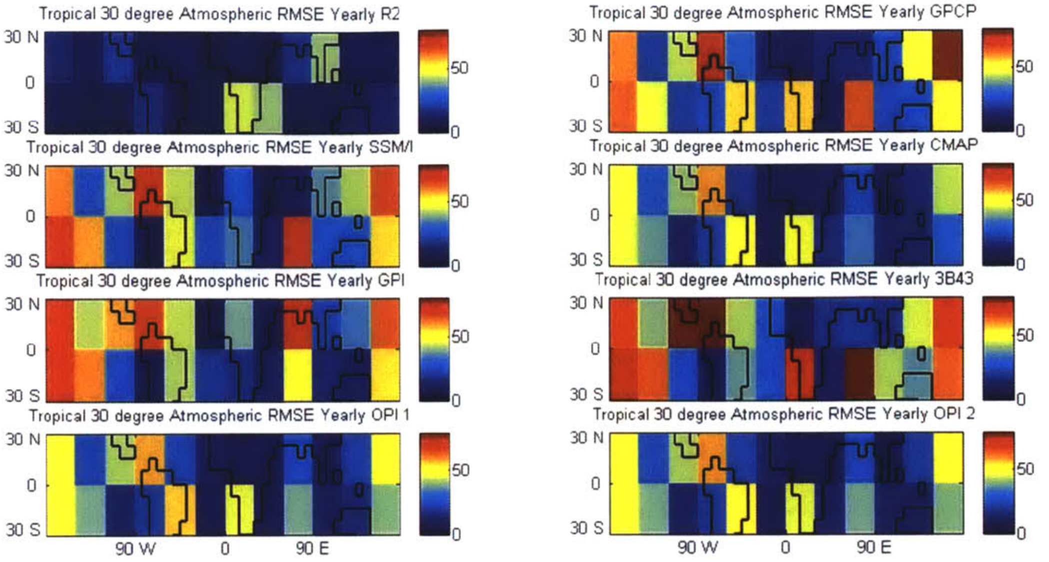

Tropical 7.5 degree Atmospheric Correlation Coeff Yearly R2
Tropical 7.5 degree Atmospheric Correlation Coeff Yearly GPCP
Tropical 7.5 degree Atmospheric Correlation Coeff Yearly SSM/I
Tropical 7.5 degree Atmospheric Correlation Coeff Yearly CMAP
Tropical 7.5 degree Atmospheric Correlation Coeff Yearly GPI
Tropical 7.5 degree Atmospheric Correlation Coeff Yearly 3B43
Tropical 7.5 degree Atmospheric Correlation Coeff Yearly OPI 1
Tropical 7.5 degree Atmospheric Correlation Coeff Yearly OPI 2

Figure B-126: 7.5 degree Correlation Coefficient Different Precipitation Tropical Yearly



Tropical 30 degree Atmospheric RMSE Yearly R2

Tropical 30 degree Atmospheric RMSE Yearly GPCP

Tropical 30 degree Atmospheric RMSE Yearly SSM/I

Tropical 30 degree Atmospheric RMSE Yearly CMAP

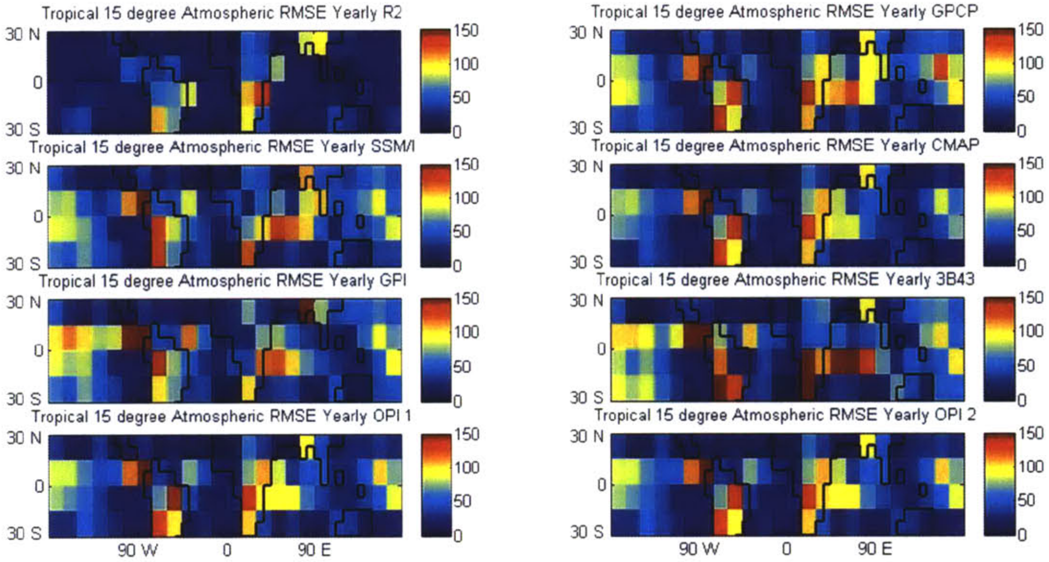
Tropical 30 degree Atmospheric RMSE Yearly GPI

Tropical 30 degree Atmospheric RMSE Yearly 3B43

Tropical 30 degree Atmospheric RMSE Yearly OPI 1

Tropical 30 degree Atmospheric RMSE Yearly OPI 2

Figure B-127: 30 degree RMSE Different Precipitation Tropical Yearly



Tropical 15 degree Atmospheric RMSE Yearly R2

Tropical 15 degree Atmospheric RMSE Yearly GPCP

Tropical 15 degree Atmospheric RMSE Yearly SSM/I

Tropical 15 degree Atmospheric RMSE Yearly CMAP

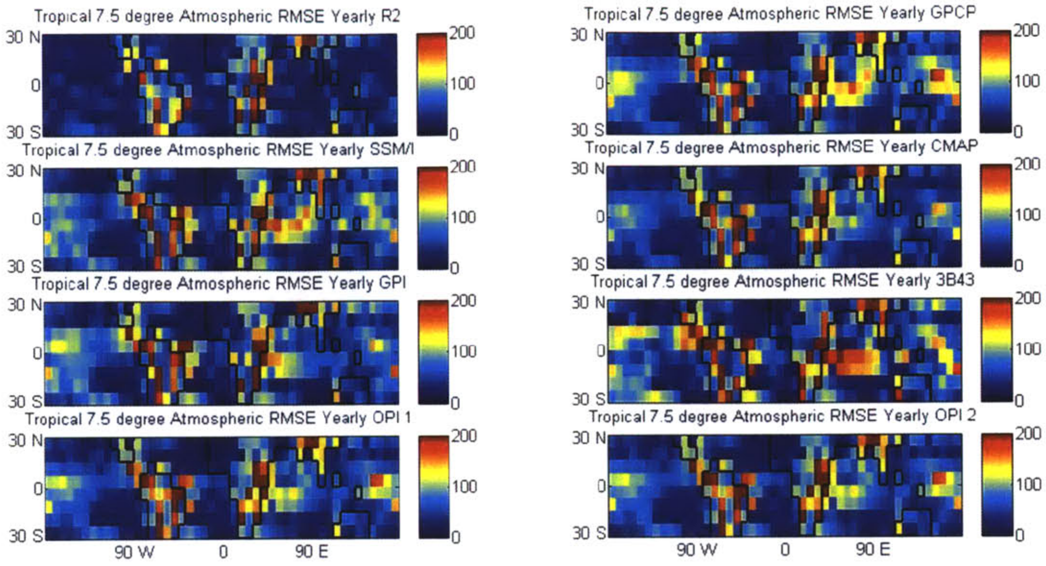
Tropical 15 degree Atmospheric RMSE Yearly GPI

Tropical 15 degree Atmospheric RMSE Yearly 3B43

Tropical 15 degree Atmospheric RMSE Yearly OPI 1

Tropical 15 degree Atmospheric RMSE Yearly OPI 2

Figure B-128: 15 degree RMSE Different Precipitation Tropical Yearly



Tropical 7.5 degree Atmospheric RMSE Yearly R2

Tropical 7.5 degree Atmospheric RMSE Yearly GPCP

Tropical 7.5 degree Atmospheric RMSE Yearly SSM/I

Tropical 7.5 degree Atmospheric RMSE Yearly CMAP

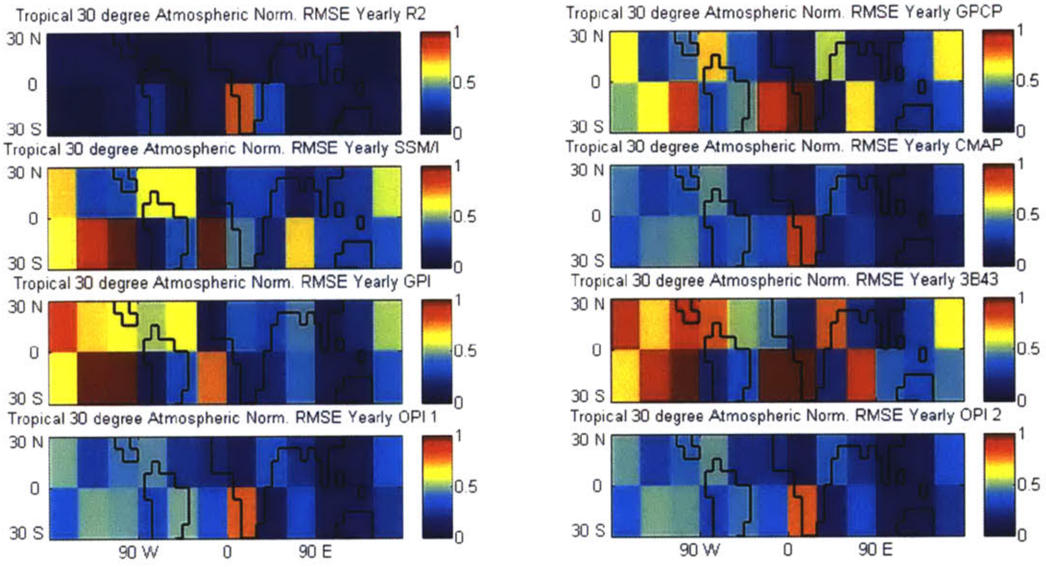
Tropical 7.5 degree Atmospheric RMSE Yearly GPI

Tropical 7.5 degree Atmospheric RMSE Yearly 3B43

Tropical 7.5 degree Atmospheric RMSE Yearly OPI 1

Tropical 7.5 degree Atmospheric RMSE Yearly OPI 2

Figure B-129: 7.5 degree RMSE Different Precipitation Tropical Yearly



Tropical 30 degree Atmospheric Norm. RMSE Yearly R2

Tropical 30 degree Atmospheric Norm. RMSE Yearly GPCP

Tropical 30 degree Atmospheric Norm. RMSE Yearly SSM/I

Tropical 30 degree Atmospheric Norm. RMSE Yearly CMAP

Tropical 30 degree Atmospheric Norm. RMSE Yearly GPI

Tropical 30 degree Atmospheric Norm. RMSE Yearly 3B43

Tropical 30 degree Atmospheric Norm. RMSE Yearly OPI 1

Tropical 30 degree Atmospheric Norm. RMSE Yearly OPI 2

Figure B-130: 30 degree Normalized RMSE Different Precipitation Tropical Yearly

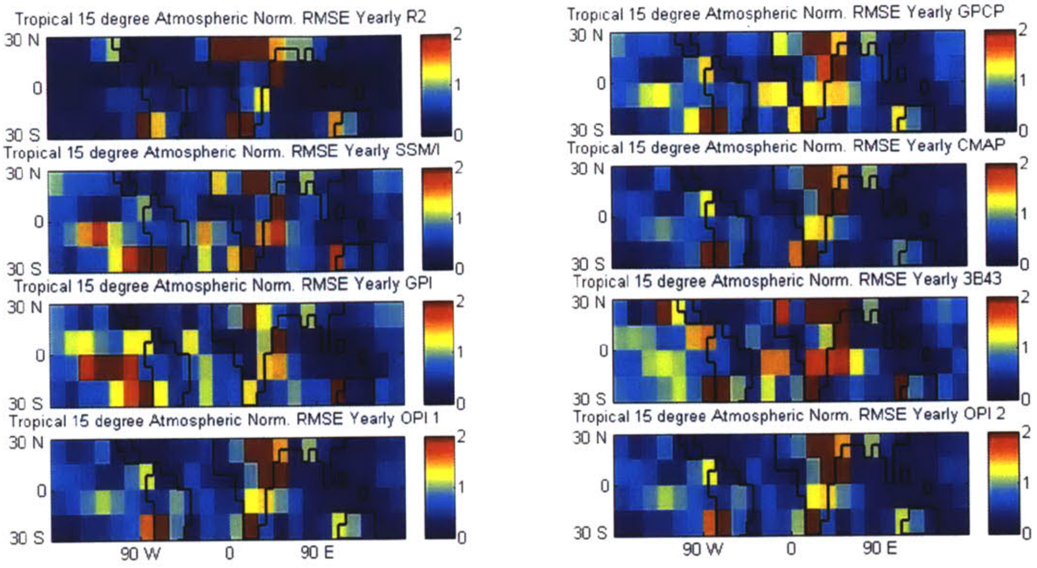


Figure B-131: 15 degree Normalized RMSE Different Precipitation Tropical Yearly

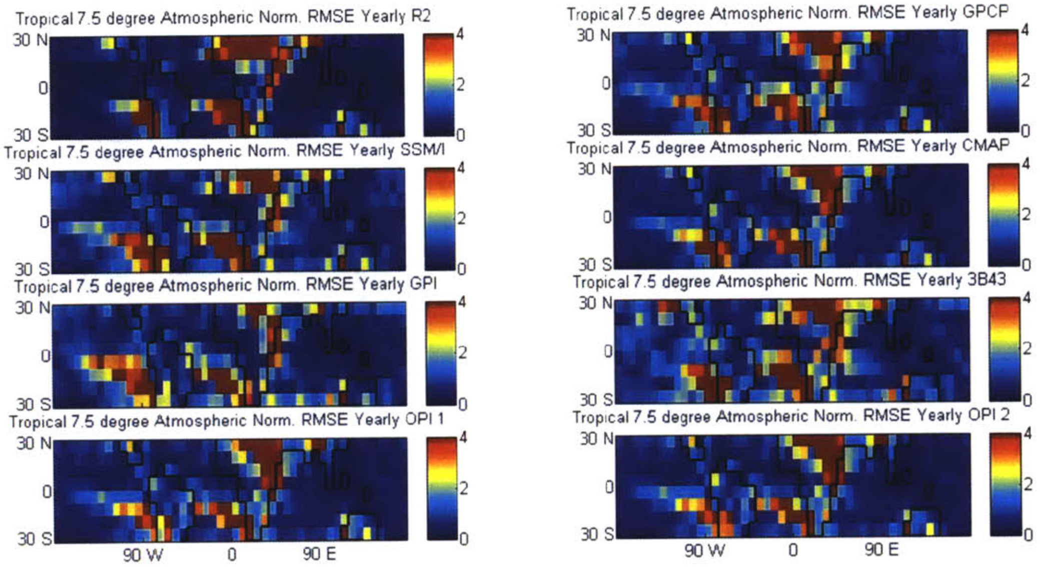


Figure B-132: 7.5 degree Normalized RMSE Different Precipitation Tropical Yearly

Acknowledgements

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