

12.540 Principles of the Global Positioning System Lecture 21

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05/05/03

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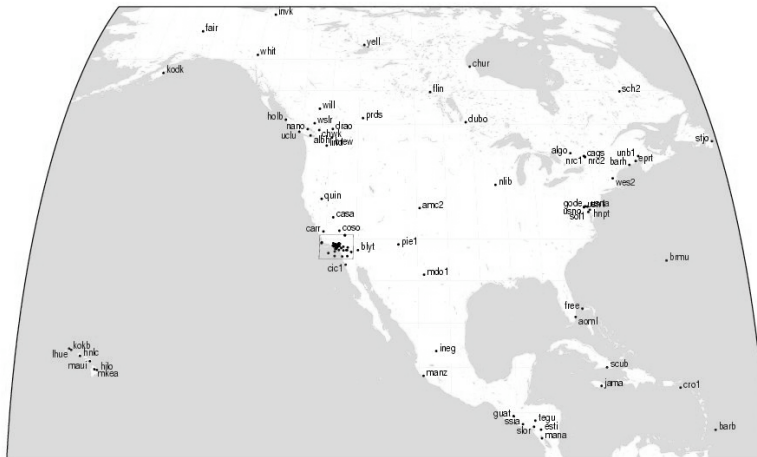
Summary

- Sources of GPS data and results
 - Major international organizations involved in GPS
 - Examine access to GPS data
 - Examine access to GPS results

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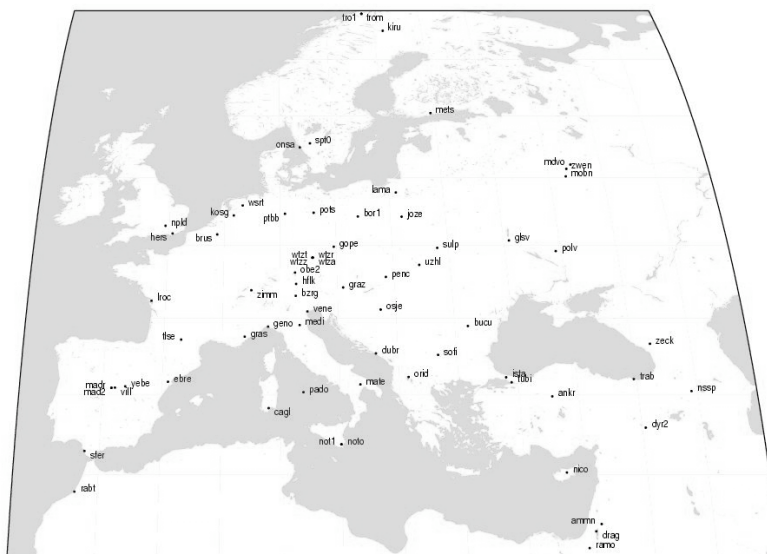
GMT Per 30 16:11:02 2002

North American Portion of network

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GMT Per 30 16:10:42 2002

European part of network

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IGS

- Data for each IGS station is openly available usually within <1 day of collection. Some sites are available hourly.
- The central bureau of the IGS is located at: <http://igscb.jpl.nasa.gov/>
- Explore site for structure: Web site index gives an overview of page content.

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US Groups

- There are a number of large US groups that run GPS networks.
- Largest array is the Southern California Integrated array (SCIGN) with 250 stations <http://www.scign.org/>
- Other groups in the Western United States have networks of 20-50 stations. In all over 400 geophysical class stations in Western US.

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National Geodetic Survey CORS

- Main reference frame of the United States.
- Continuously Operating Reference Stations (CORS)
- <http://www.ngs.noaa.gov/CORS/>
- Serves the geodetic control needs of the US.
- About 300 GPS sites currently in the network many of them shared with other institutions.

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Western US Groups

- Networks in the Western United States
 - BARD (Bay Area Regional Network)
<http://quake.geo.berkeley.edu/bard/>
 - PANGA (Pacific Northwest Geodetic Array)
<http://www.panga.cwu.edu/>
<http://www.geophys.washington.edu/GPS/gps.html>
 - WCDA Western Canada Deformation Array
<http://www.pgc.nrcan.gc.ca/geodyn/wcda.htm>
 - BARGEN (Basin and Range Geodetic Network)
http://cfa-www.harvard.edu/space_geodesy/BARGEN/
 - For list of arrays see:
<http://sopac.ucsd.edu/cgi-bin/dbShowArraySitesMap.cgi>
- Explore these web sites.

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Availability of processed GPS data

- Many of the network groups put analyzed results on their web pages as well as access to data.
- IGS also sponsors 7 global analysis groups (funding comes from other sources).
- SCIGN uses three analysis groups:
<http://milhouse.jpl.nasa.gov/scign/analysis/>
<http://sopac.ucsd.edu/cgi-bin/dbShowArraySitesMap.cgi?array=SCIGN>
<http://pasadena.wr.usgs.gov/scign/Analysis/>

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Other important groups

- University Navstar Consortium (UNAVCO) facility and corporation
<http://www.unavco.ucar.edu/>
<http://www.unavco.org>
- Supports a variety of applications of GPS. Initially tectonic deformation but now Antarctic Research and low-precision GIS applications
- Supports US Universities in installing GPS through out the world for geophysical studies.

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Summary

- Data from thousands of GPS stations are collected and processed each data
- Largest single array is in Japan (>1000 stations)
- GPS developments are like the internet development: Many active contributors but often quality is debatable.