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To: EDGES Group
From: Alan E.E. Rogers
Subject: Satellite signals in the 100 to 200 MHz band

The frequency range 100 to 200 MHz includes satellite downlink signals from the LEO Orbcomm 136 to 138 MHz band and signals from old satellites (space junk) from 149.9 to 150.1 MHz. Figure 1 shows a “waterfall” plot of these signals scan by EDGES at Mileura from 10 to 22 UT on day 340 2006. From this plot we see that the Orbcomm activity is somewhat variable. In figure 2 we zoom in to a time span from 10:45 to 11:30 UT to show that the typical duration of the LEO passes is about 15 minutes. The peak power in the signal is close to -80 dBm or about a factor of 10 over the integrated sky noise in the 100 to 200 MHz band. These peak signals (shown in figure 3) can result in chipping of the 8-bit ADC and need to be avoided.

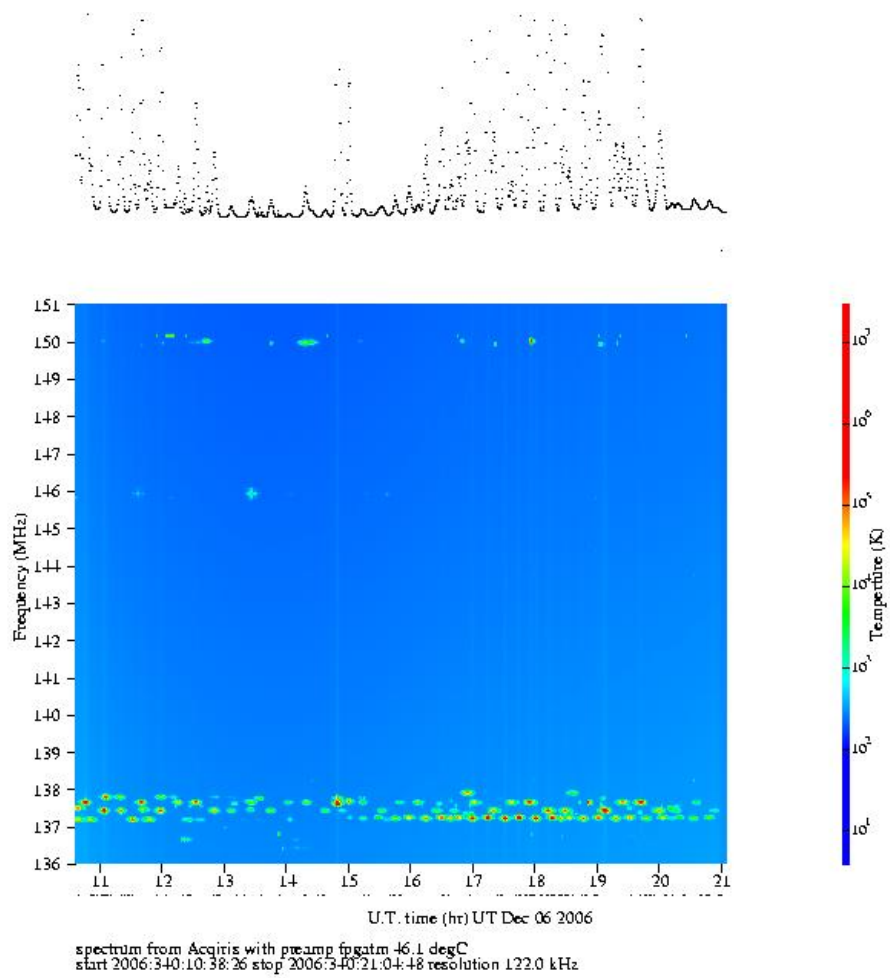


Figure 1. Spectrum from 136 to 151 MHz taken at Mileura. The variable signals from 137 to 138 MHz are from the LEO Orbcomm satellites.

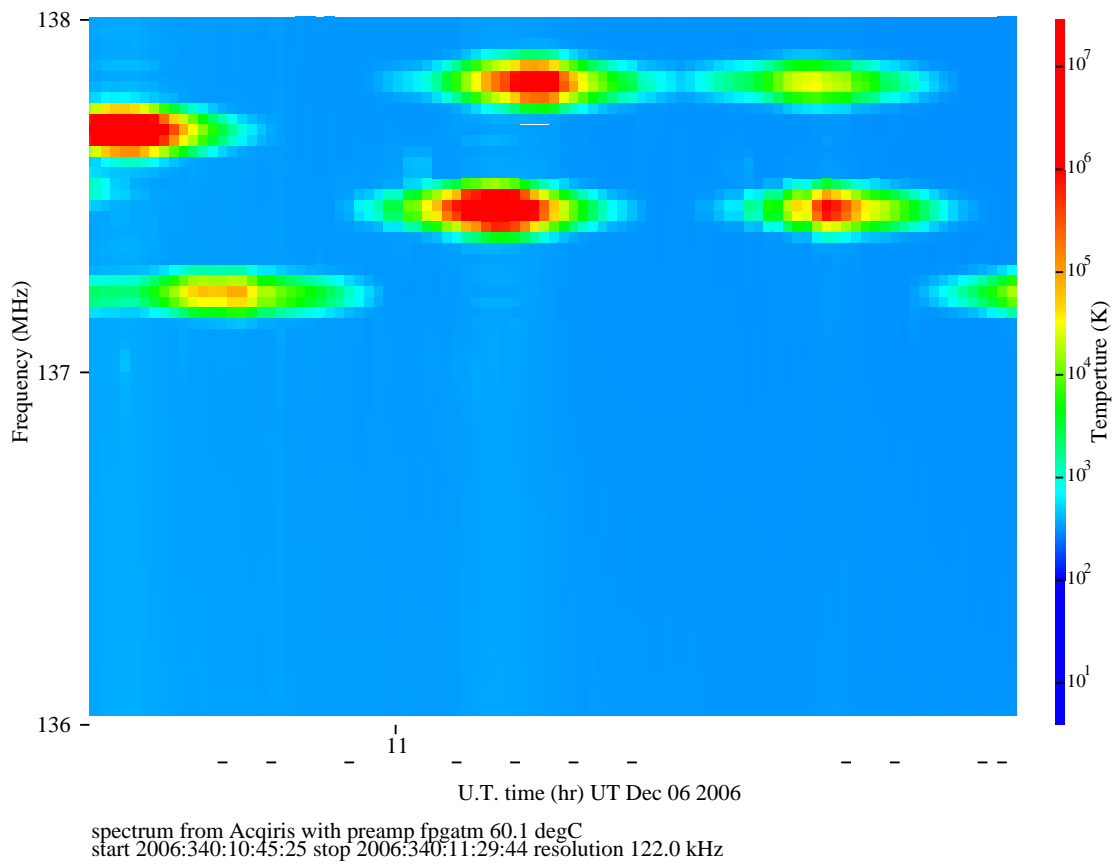
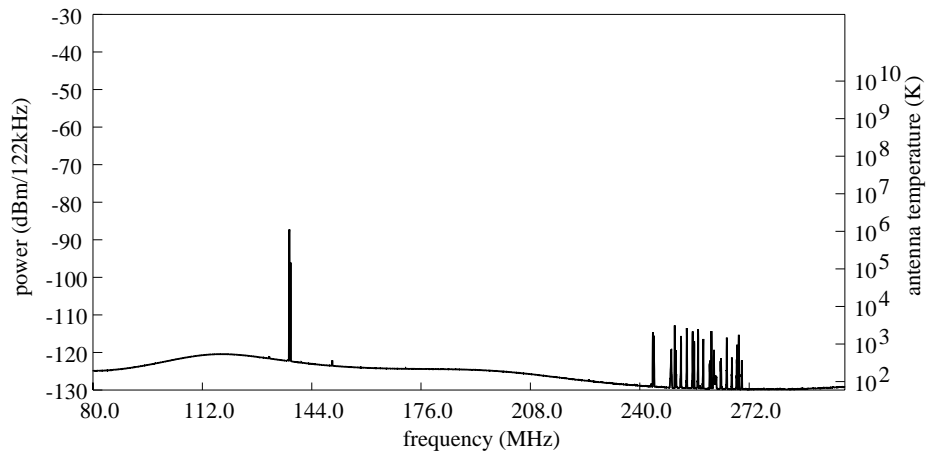


Figure 2. Zoomed version of figure 1.



cor 1 npoly 0 dtyp 99 smooth 0 mdl 0.00 t150MHz 256 tr 57 tc 443 file: 2006_340_10.acq
 Acqiris fpgatm 59.8 degC adc 1 accum 0 fsv 0.50 pwr 2.9e+11 6.8e+11 5.6e+11 nav 3 srate 1000
 start 2006:340:11:05:01 stop 2006:340:11:05:57 res. 122.0 kHz cable 0.0 rfi 0 ref 0 avm 0 adcf 0 crr 0

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Figure 3. Spectrum at peak of Orbcomm signal.