

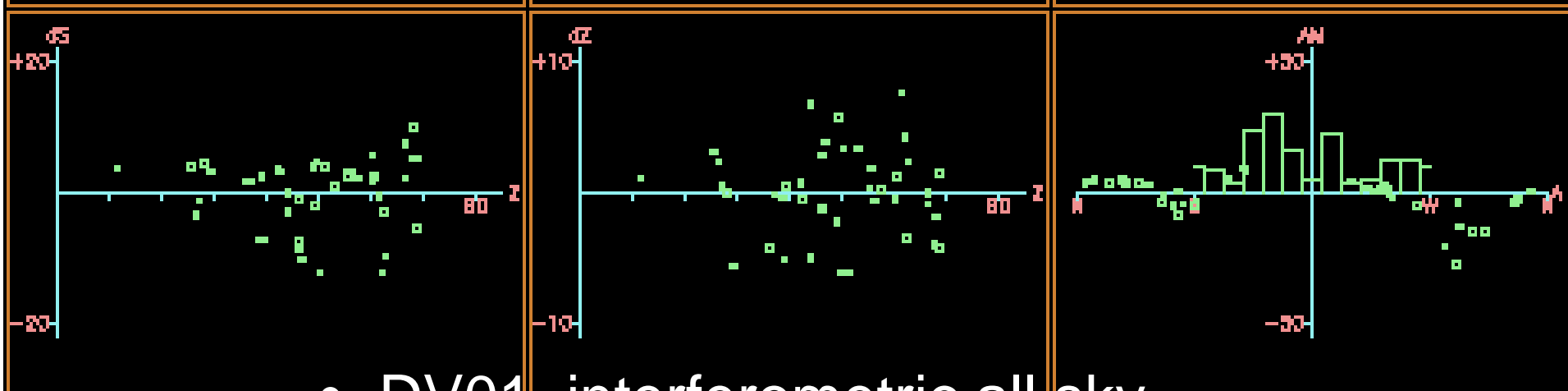
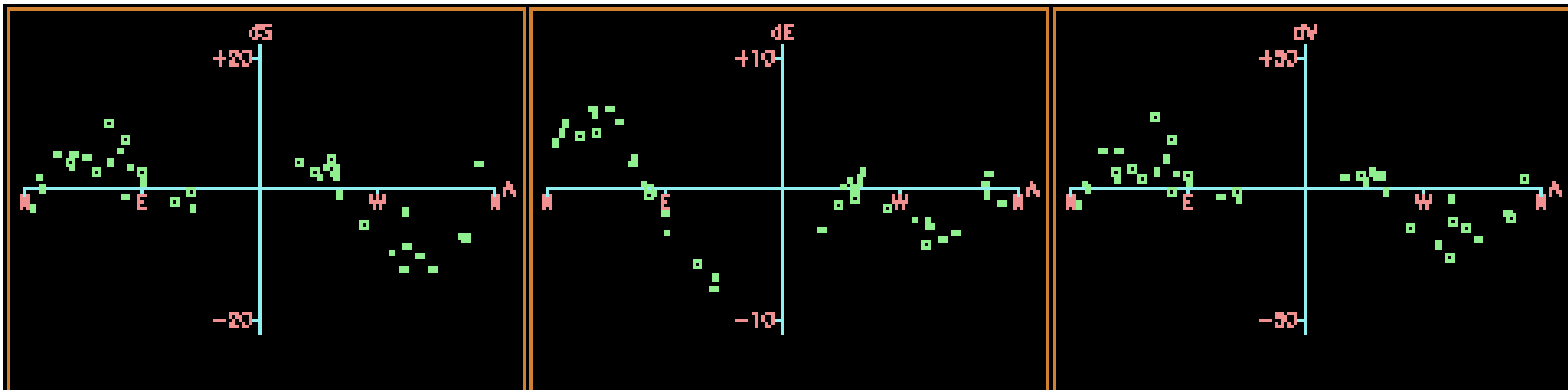
Commissioning Progress

Summary

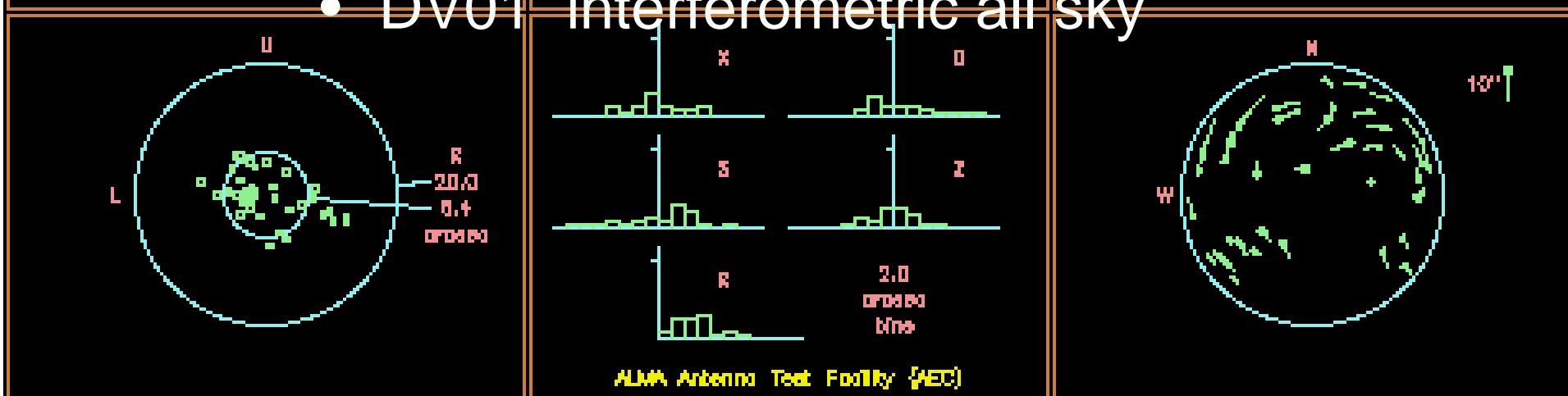
- Official start date was 22nd Jan but we had been in a pre-commissioning phase for a few weeks before that.
- The weather continued to be very poor during this whole period right up to the earthquake typically in cloud for the first part of the night and often over 5mm of water.
- This exacerbated the problems with antenna reliability – at one point we only had 1 of 5 working. There were also some power problems in the AOS building.
- There were major limitations on what we could do because of software problems – the most important of these being associated with the correlator and the archive.
- We have nevertheless made a good deal of progress.

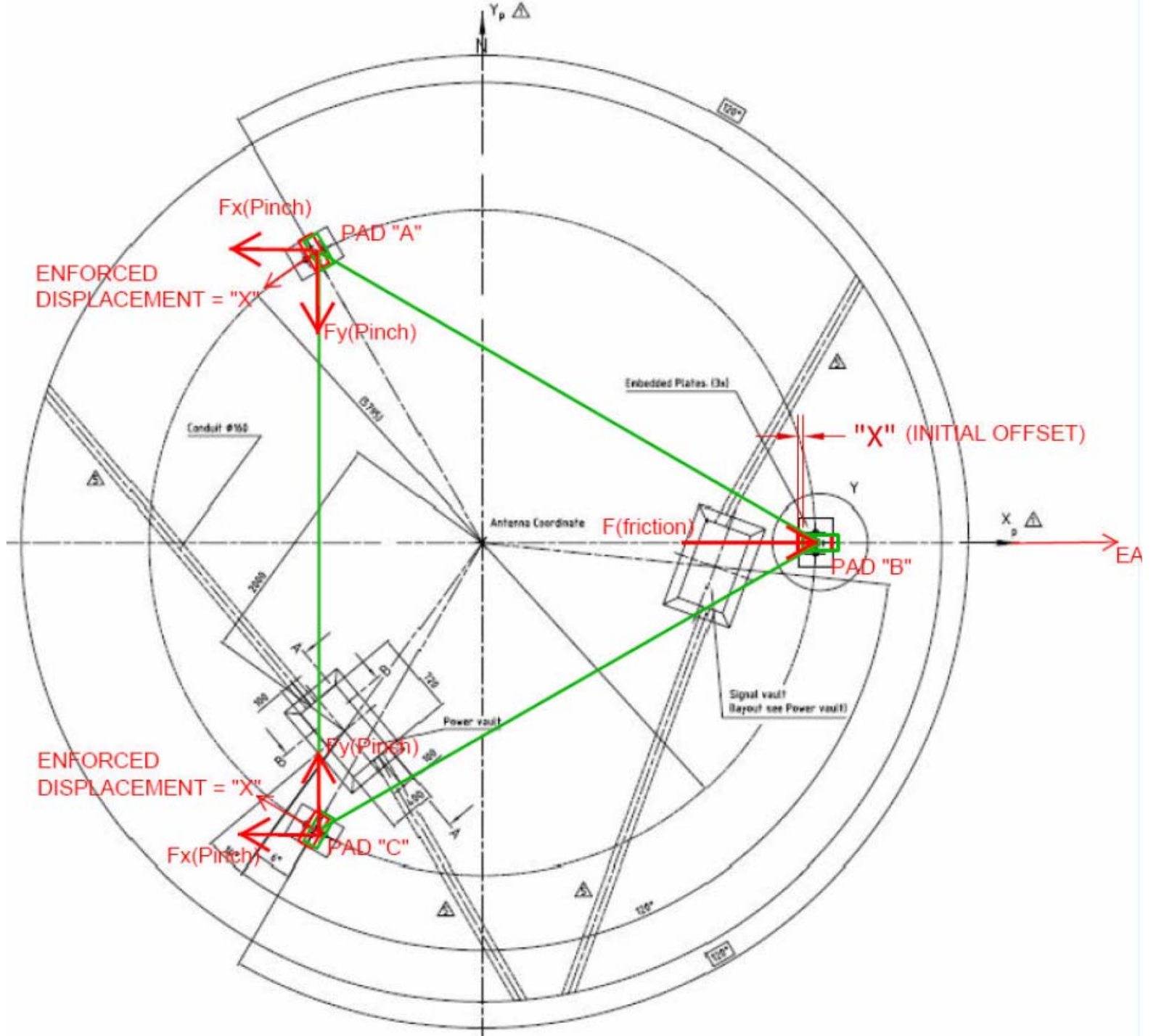
Topics (1)

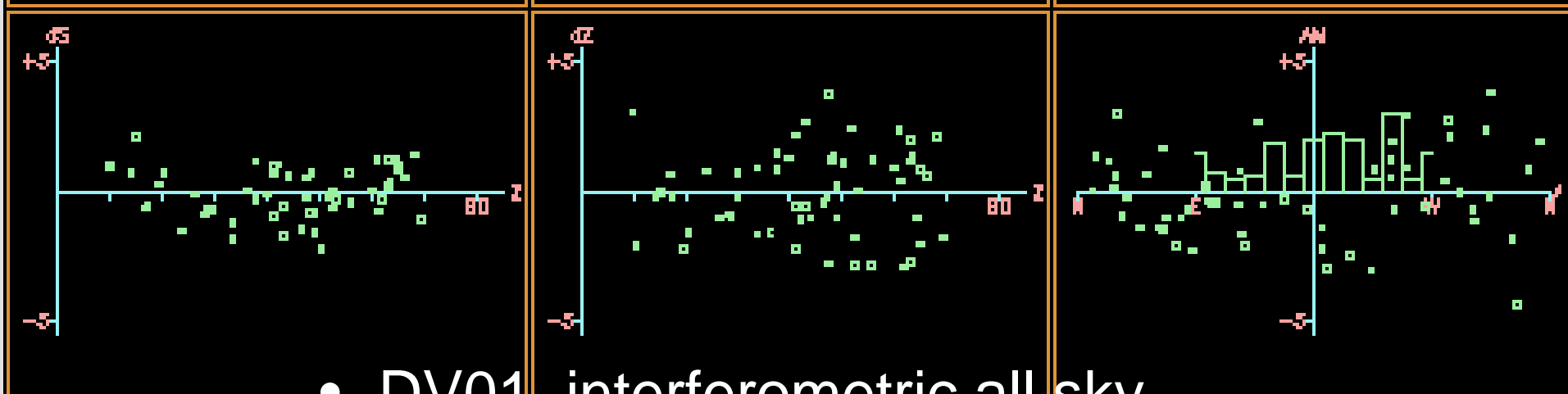
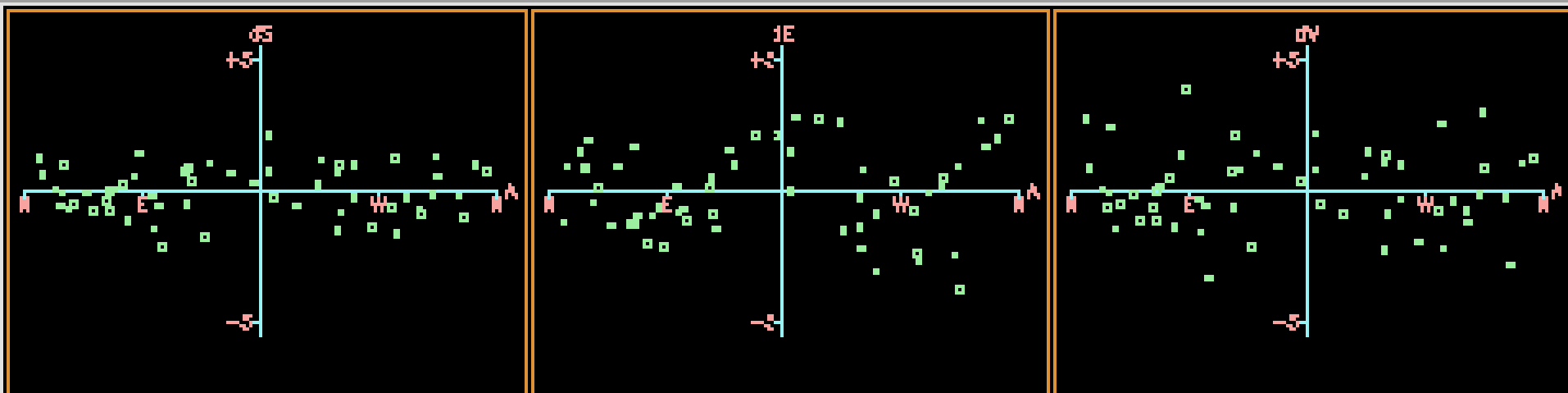
- Antenna Pointing. The main anomalies seen in both the Vertex and Melco antennas have been understood and we think we know how to deal with these issues in future. A further concern on the Melco has shown up recently.
- We have tried out methods for testing tracking and switching motions but need to be at short baselines to do this better.
- Antenna surfaces. No new results but the techniques need to measure both large and small scale errors have been developed and tested.



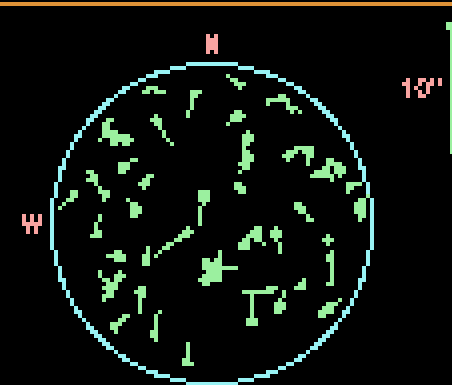
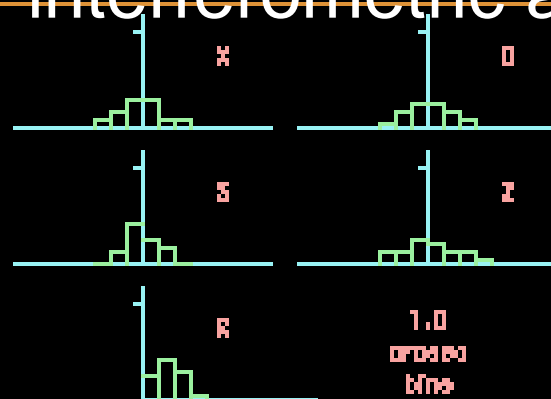
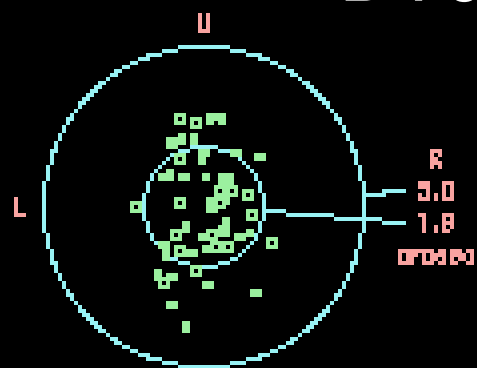
- DV01 interferometric all sky







- DV01 interferometric all sky

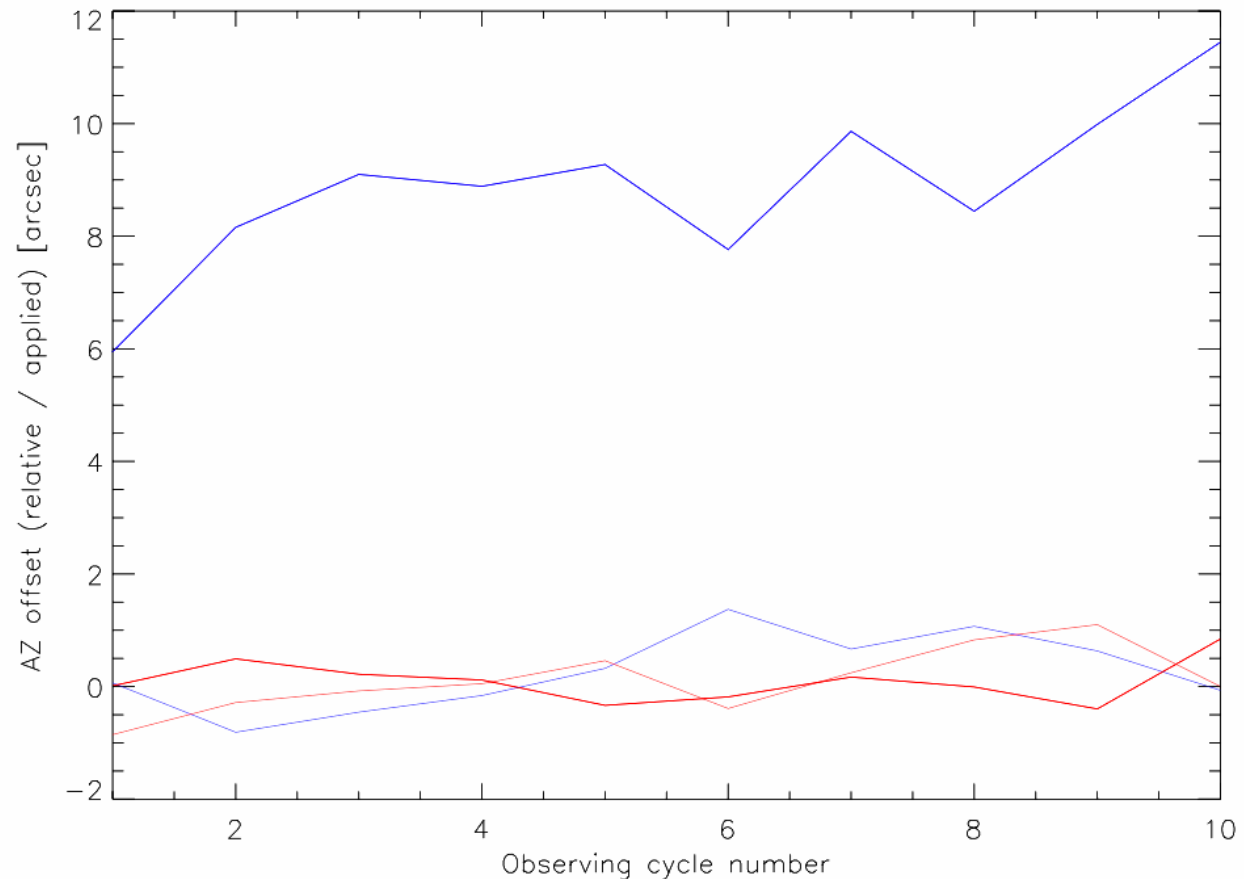


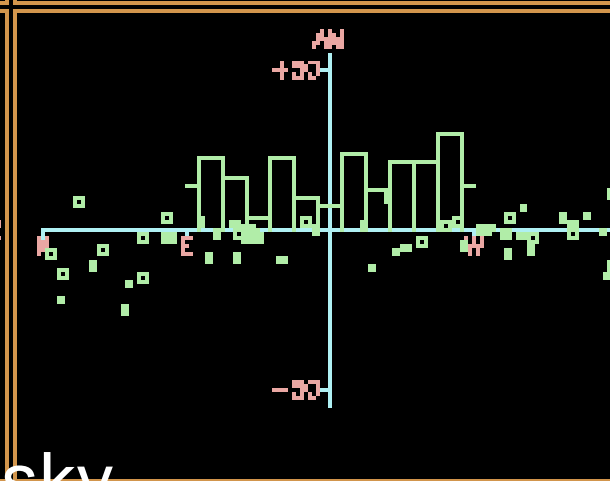
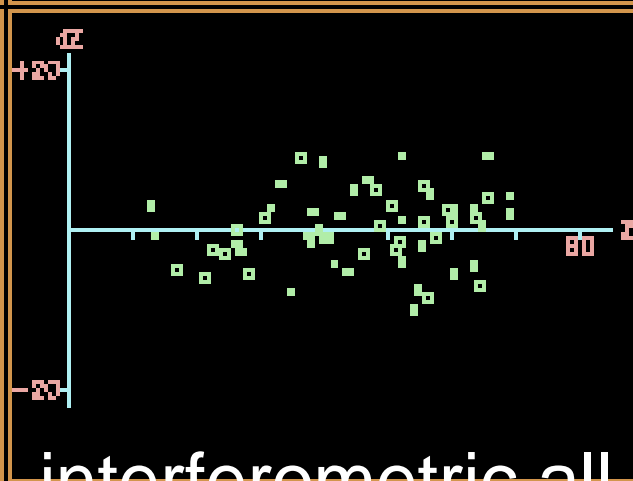
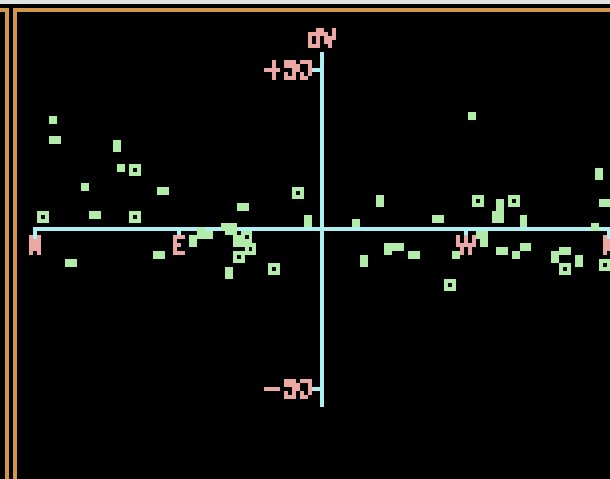
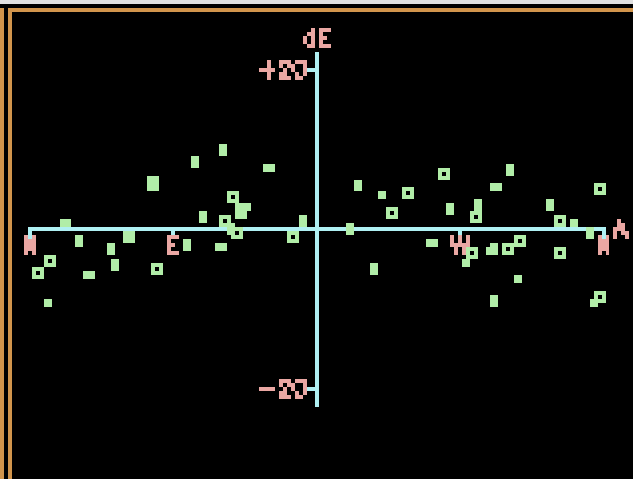
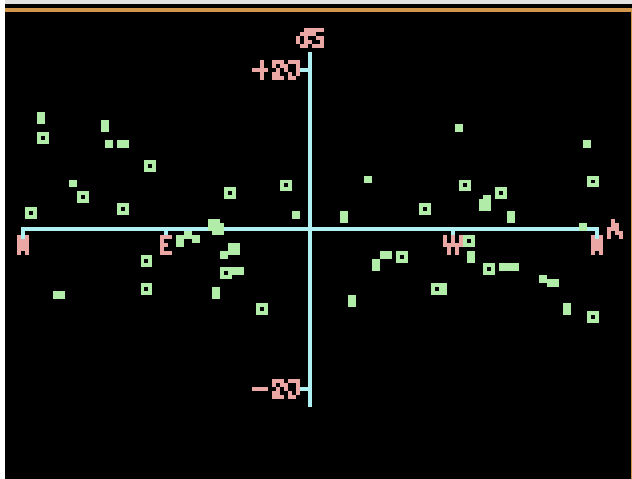
DV01/A10B UM / >02/%2d44/f/x1



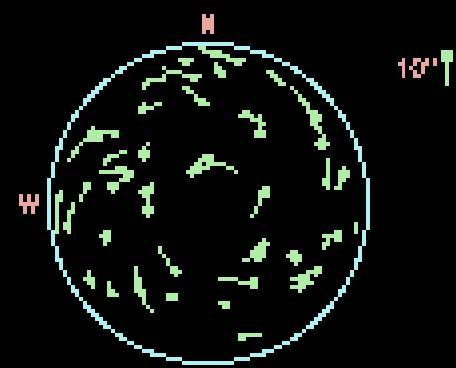
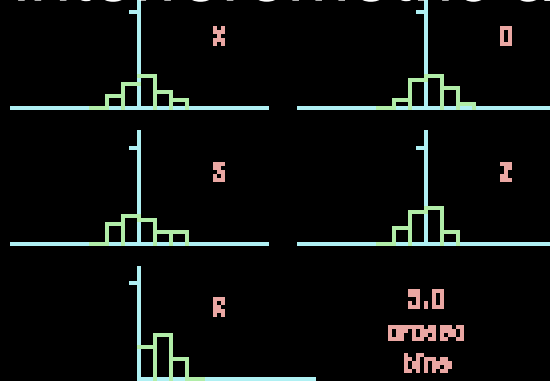
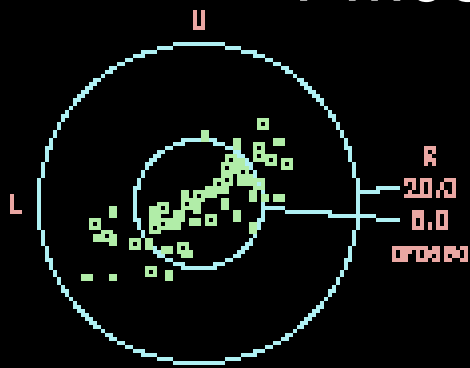
PM03 cumulative Az offset

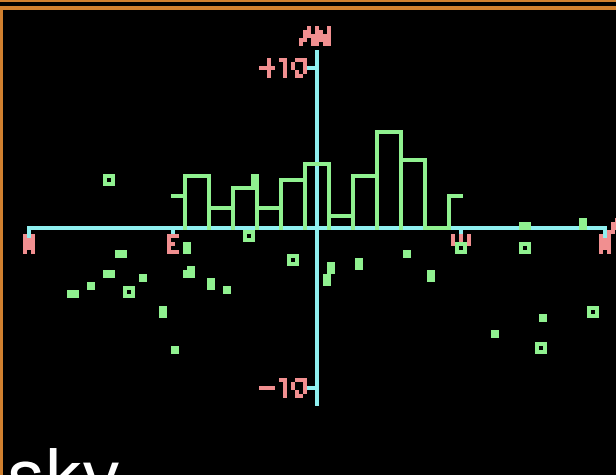
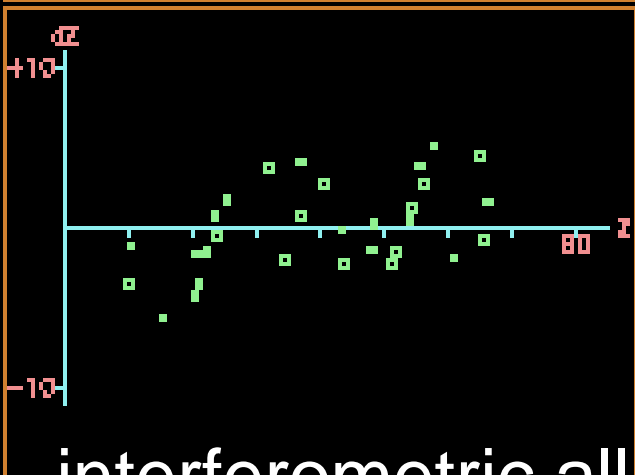
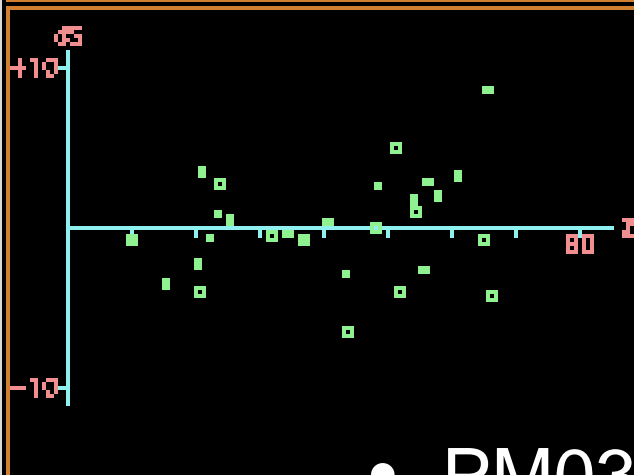
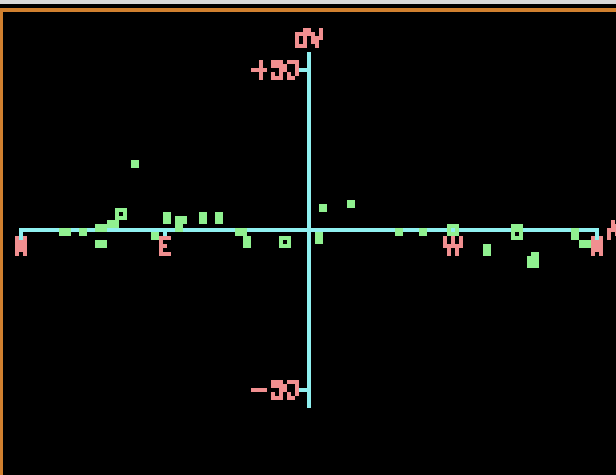
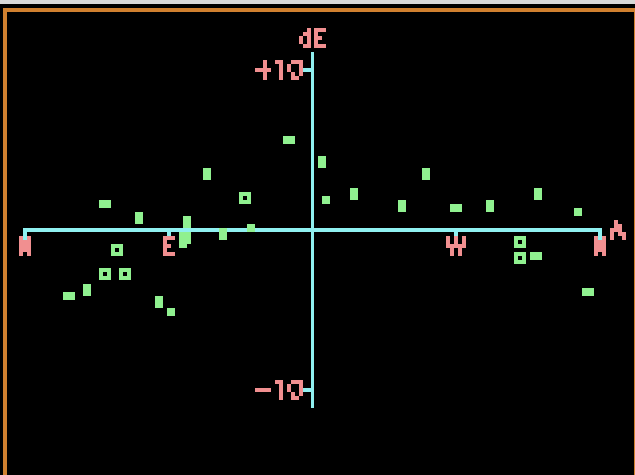
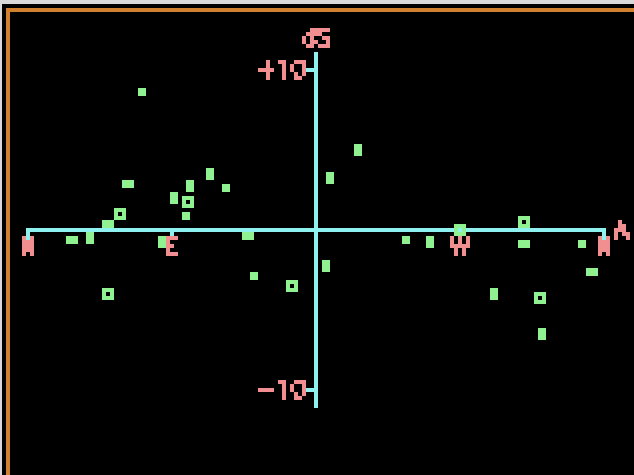
- Turned out to be a result of how we were using the metrology system.
- We will have to do a “reset” of the metrology each time we do a pointing measurement



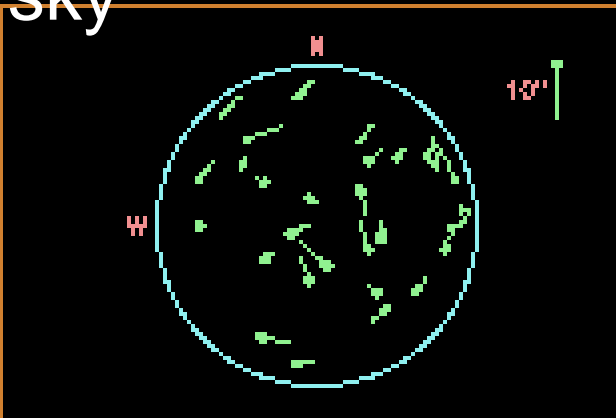
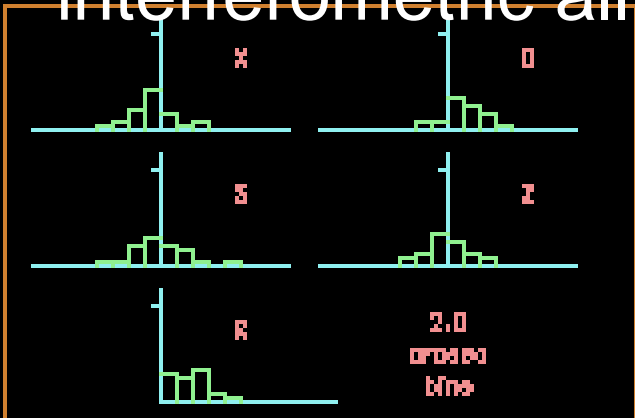
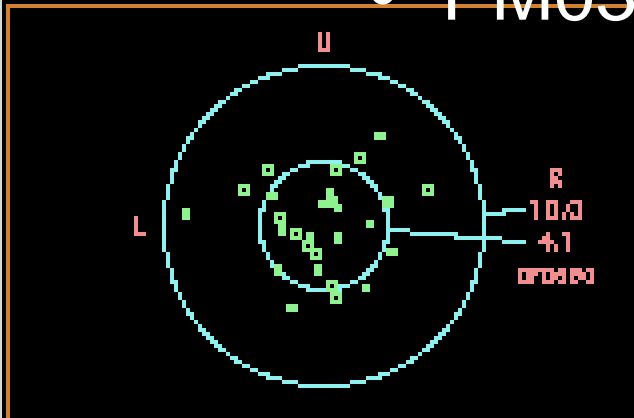


• PM03 interferometric all sky



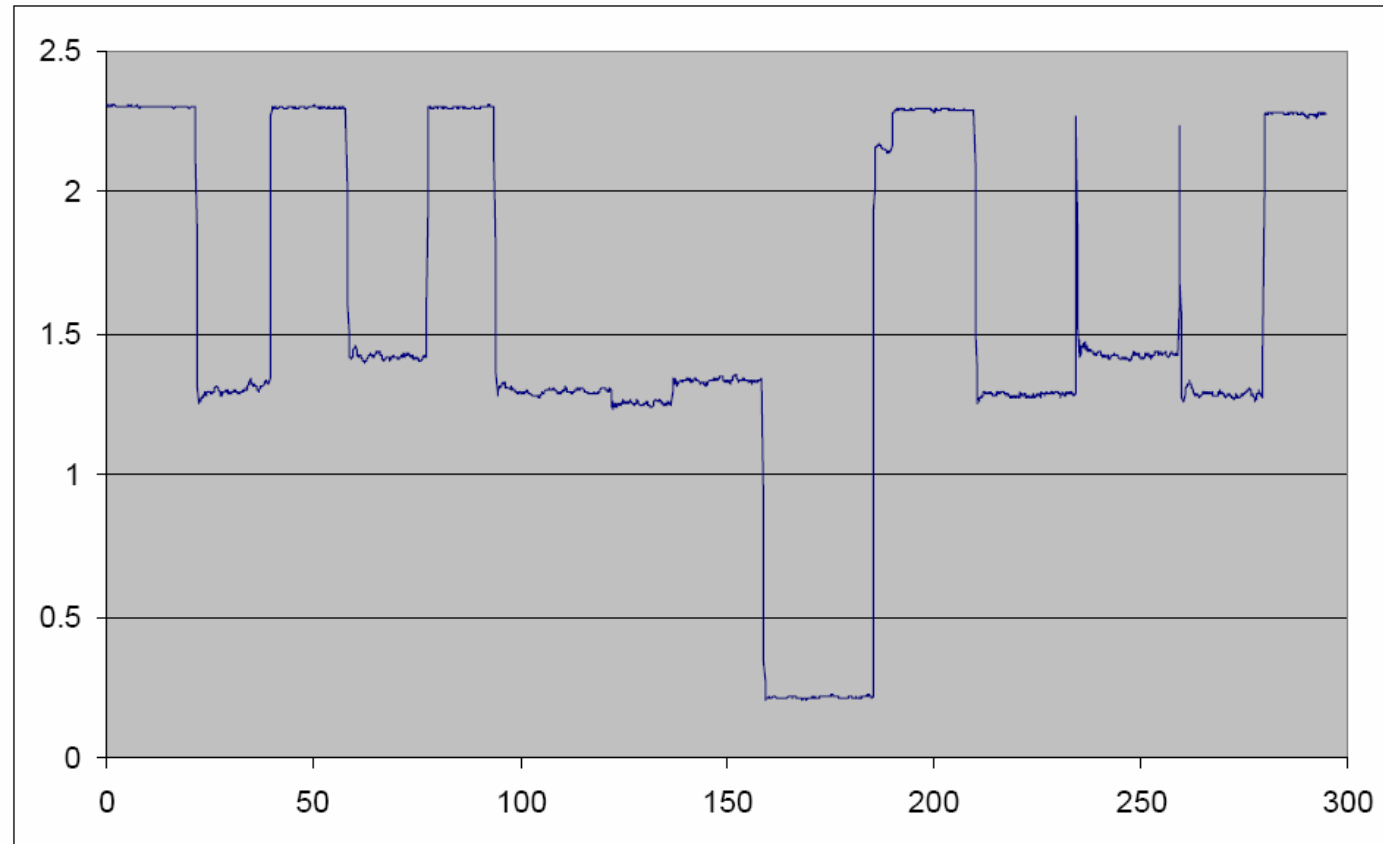


• PM03 interferometric all sky



Tracking – single dish

Az track Peak



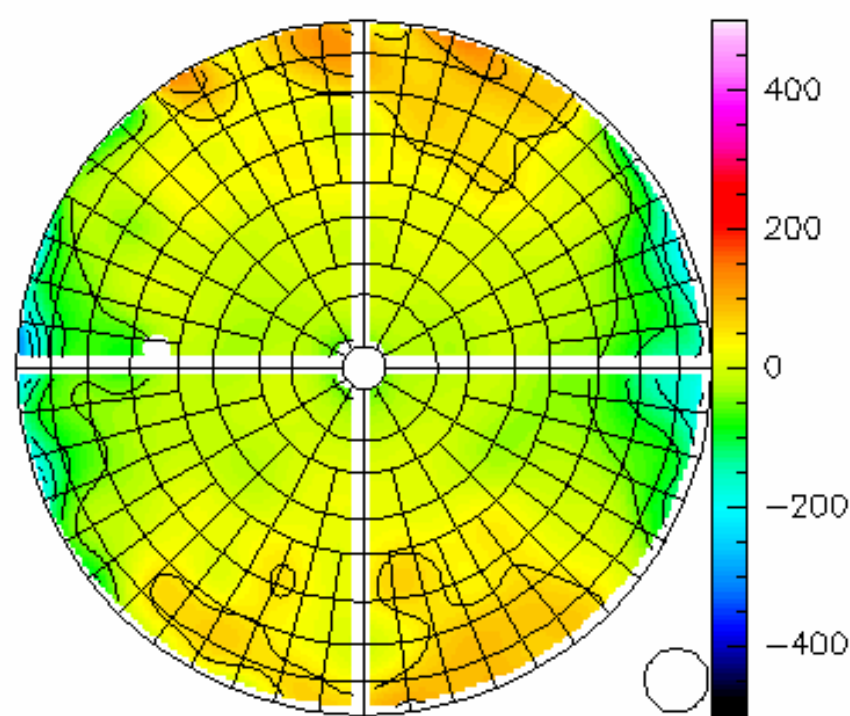
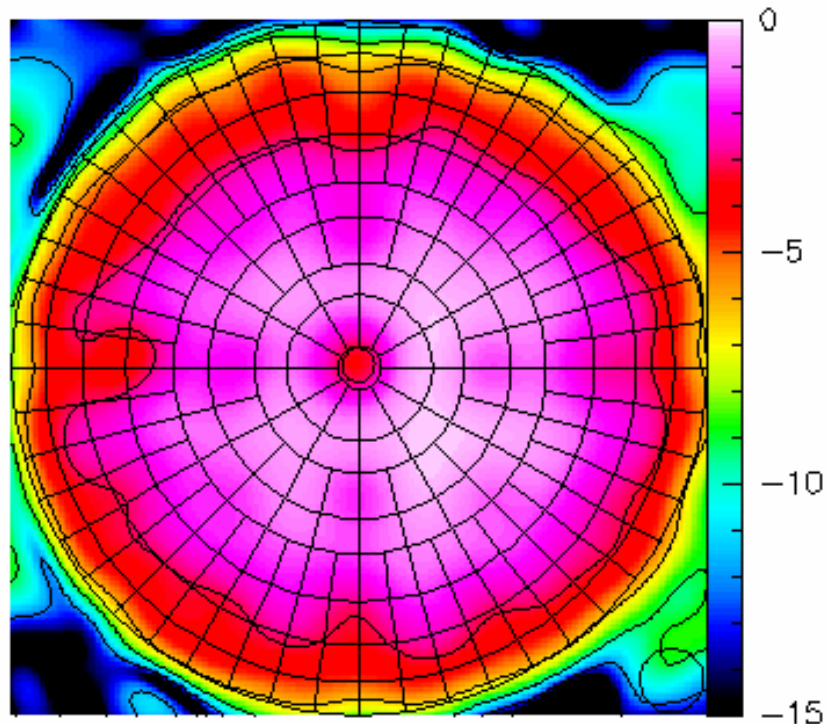
	arcsec
on peak	0.05
+37 Az	0.31
on peak	0.06
-37 Az	0.19
on peak	0.05
+37 Az	0.34
on peak	0.19
+38 Az	0.17
+36 Az	0.20
+72 Az	0.09
+12 Az	
on peak	0.08
+37 Az	0.15
-36.98 Az	0.22
+37	0.20
on peak	0.13

Astronomical Holography on a Quasar

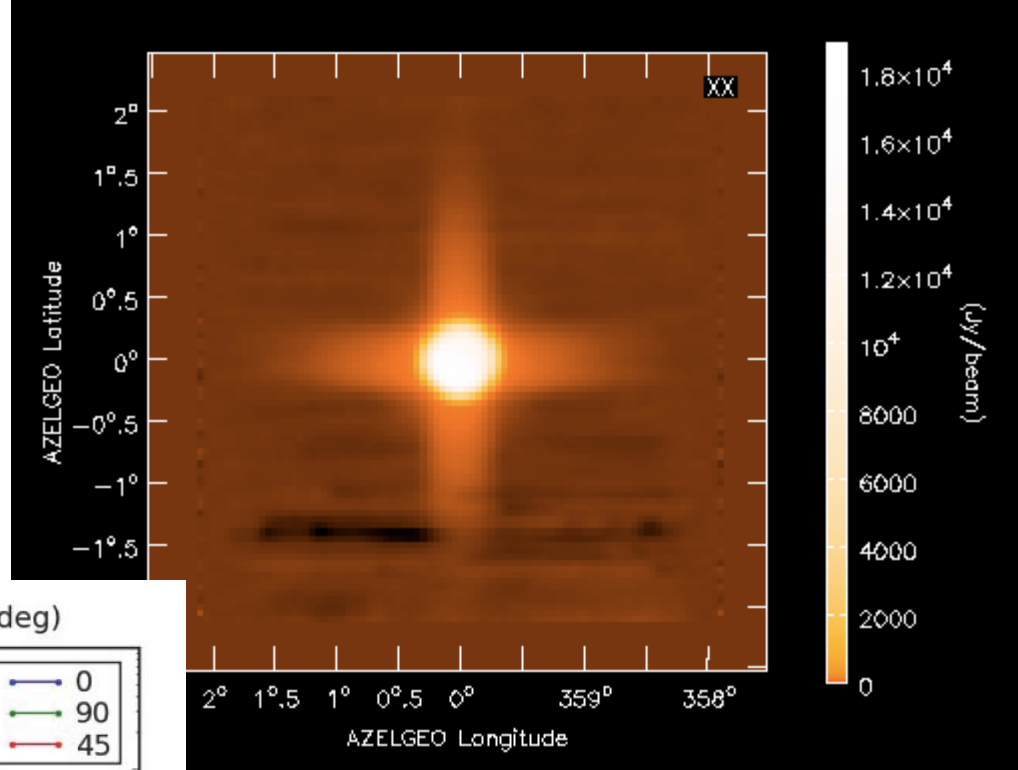
technique only - do NOT take any notice of the results

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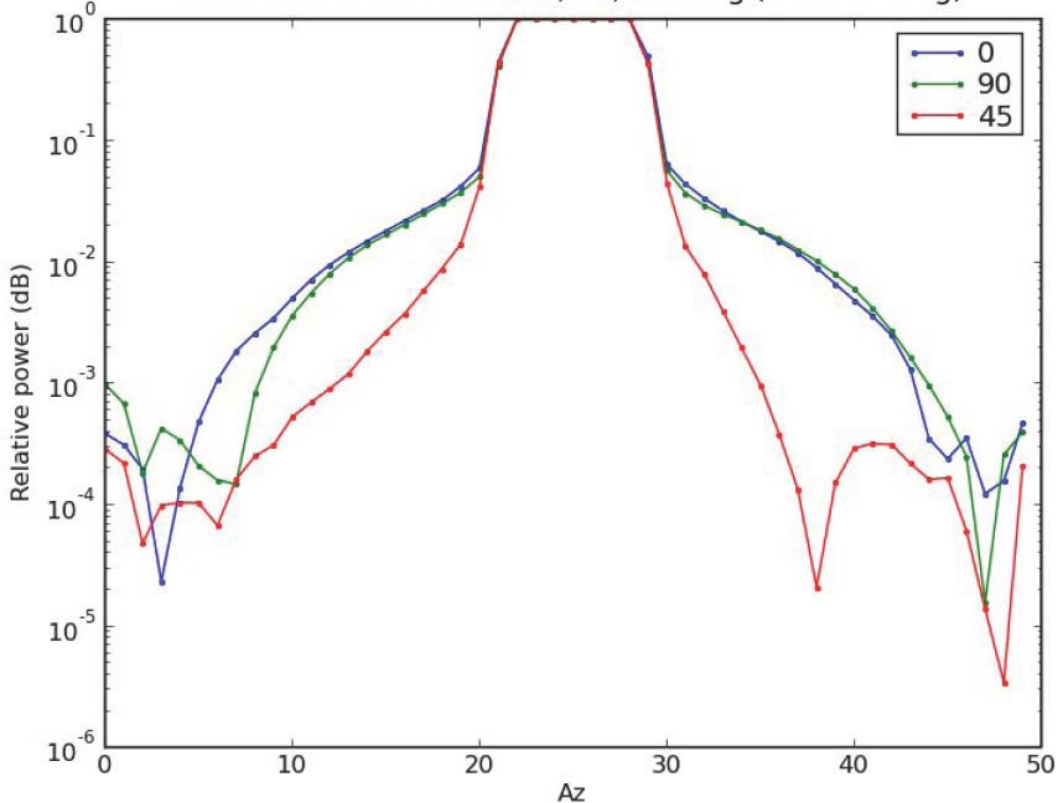
uid X02 X32a27 X1 - uid X02 X32a27 X1 Far Field No Grav No Temp
RF: Uncal. CLIC - 14-FEB-2010 02:06:26 - tsawada@gns - PM03 - ALMA/Vertex 12-m Prototype
Am: Rel.(B)
Ph: Rel.(B) 3c279 OSF scans 1 to 1 13-FEB-2010 05:51UT El: 55.46
rms Pha. Edge taper = 10.59x 14.14 dB - offset X= -0.31 Y= -0.53 m
13 8.46 Focus offsets (X,Y,Z) = 0.50 0.46 0.55 mm; Astigmatism = 0.00 mm
Phase rms (unweighted)= 0.166 (weighted)= 0.138 radians
Surface rms (unweighted)= 47.05 - (weighted)= 39.21 μm
ηA(84.272 GHz) = 0.796; ηA(230.0 GHz) = 0.705; ηA(345.0 GHz) = 0.598
S/T(84.272 GHz) = 30.677 Jy/K; S/T(230GHz) = 34.594 Jy/K; S/T(345 GHz) = 40.782 Jy/K
ηI = 0.811 -ηS = 0.736 -ηP(84.272 GHz) = 0.981 -ηP(230 GHz) = 0.870 -ηP(345 GHz) = 0.738
Rms/ring: 12.4 9.75 12.8 17.8 27.1 37.0 55.4 81.4
Amplitude (front view) Normal errors (front view)
-15.000 to 0.000 by 3.000 -500.000 to 500.000 by 50.000
    
```



Measurement of small-scale surface errors



3 cuts across the sun at 0, 90, +45deg (radius=2deg)



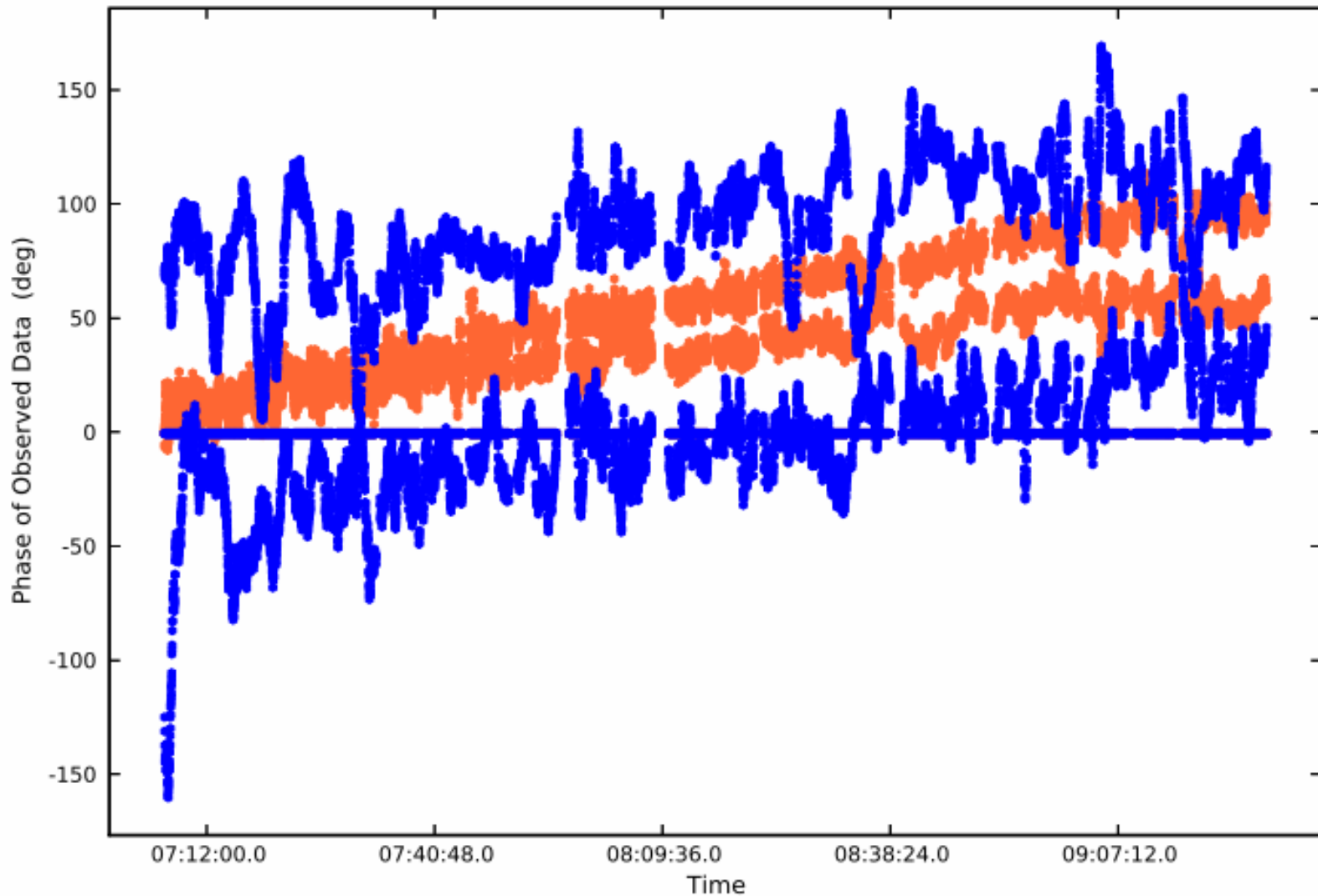
Do high frequencies and fit to a model.

At 1mm 50mm scale gives 1 degree structure

Topics (2)

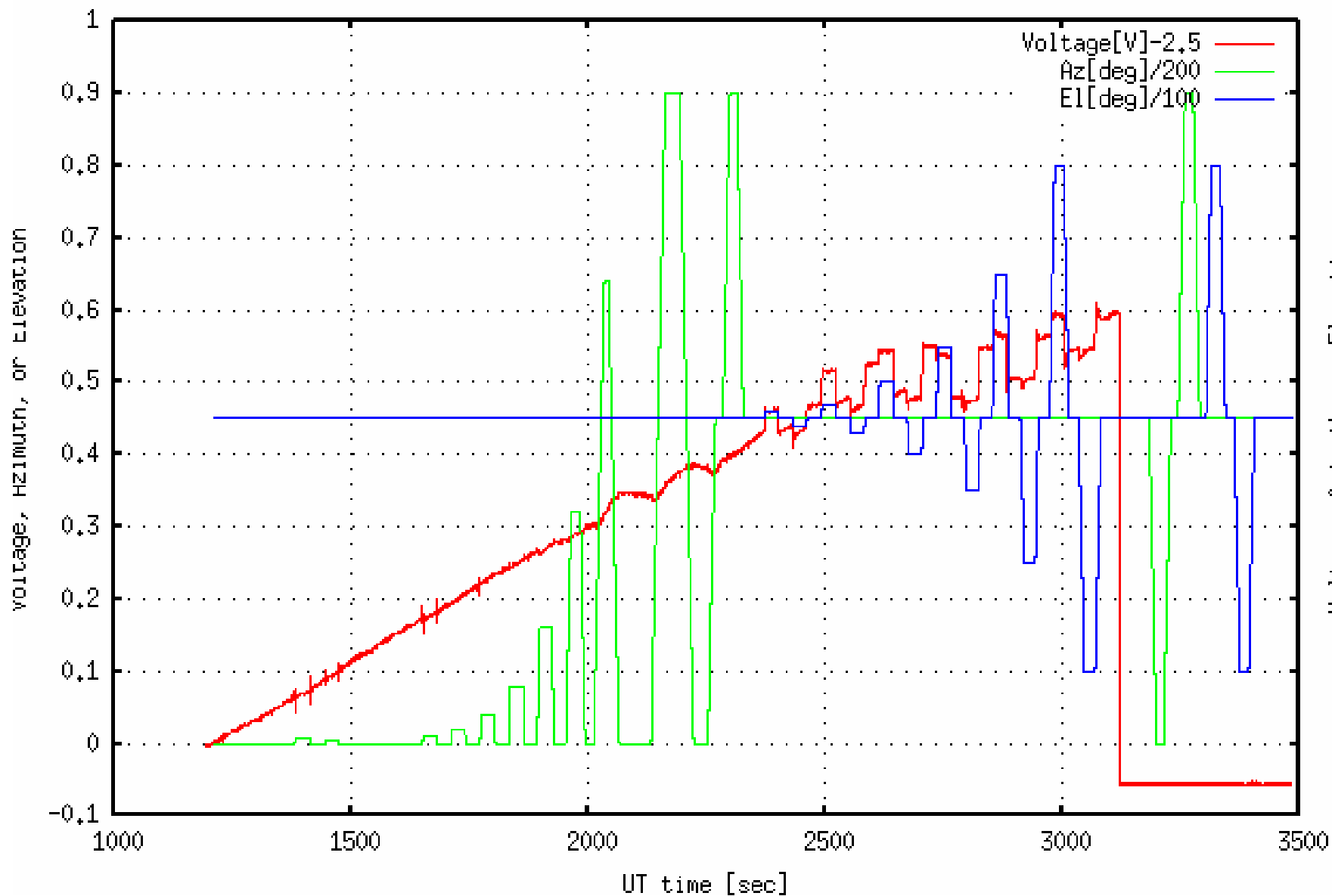
- Amplitude calibration
 - Problems with moving the loads
 - Receiver non-linearity issue
- Phase stability and calibration
 - WVR correction working at basic level
 - Some curious phase glitches seen recently – software?
- Tunability and correlator setups
 - Across bands
 - Full polarization
- Standard observing modes
 - Start with Observing Tool, run Scheduling Block, retrieve data from Archive, Reduce in CASA

WVR phase correction in CASA– Blue raw (2 baselines) Orange Corrected

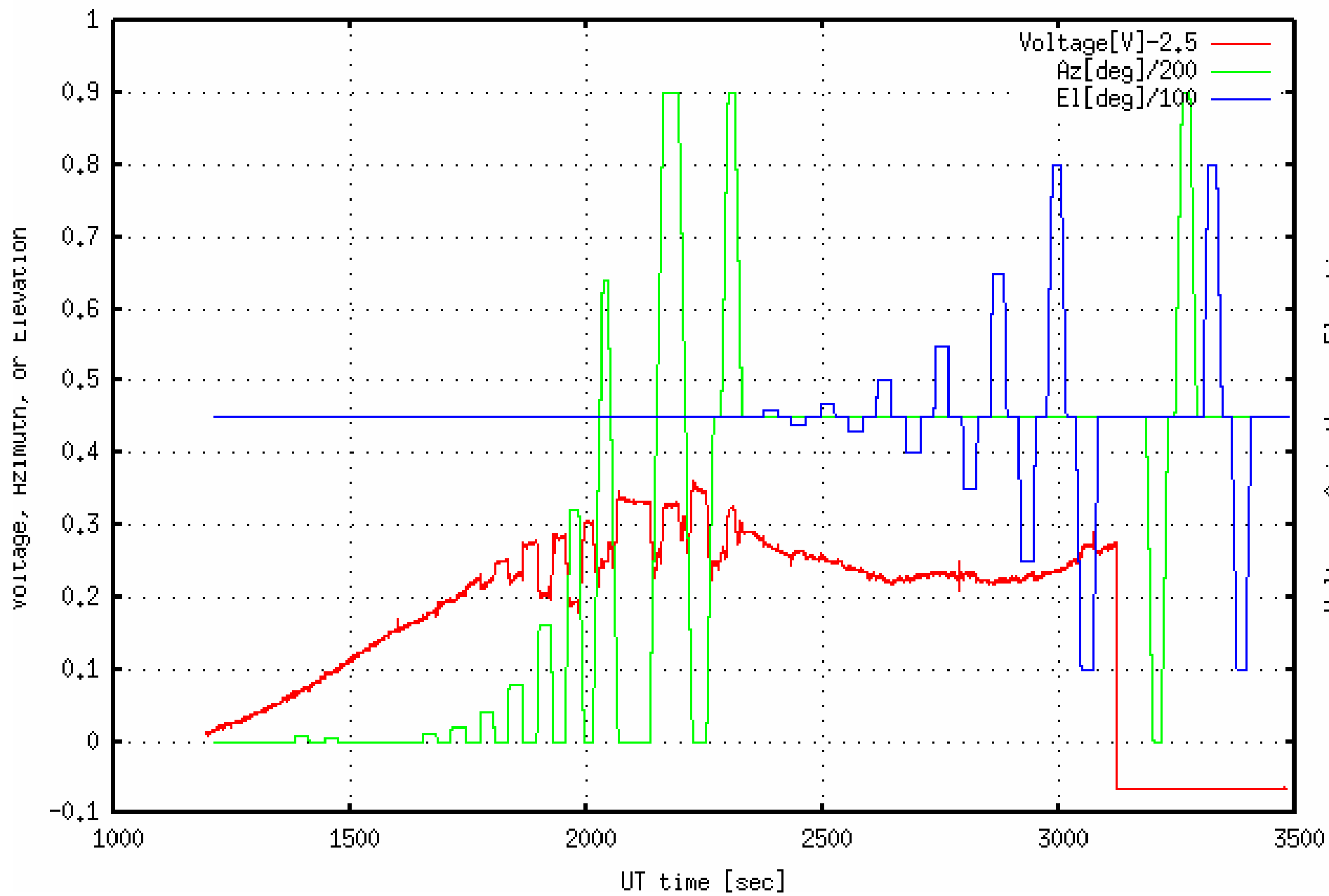


Line Length Correction being applied

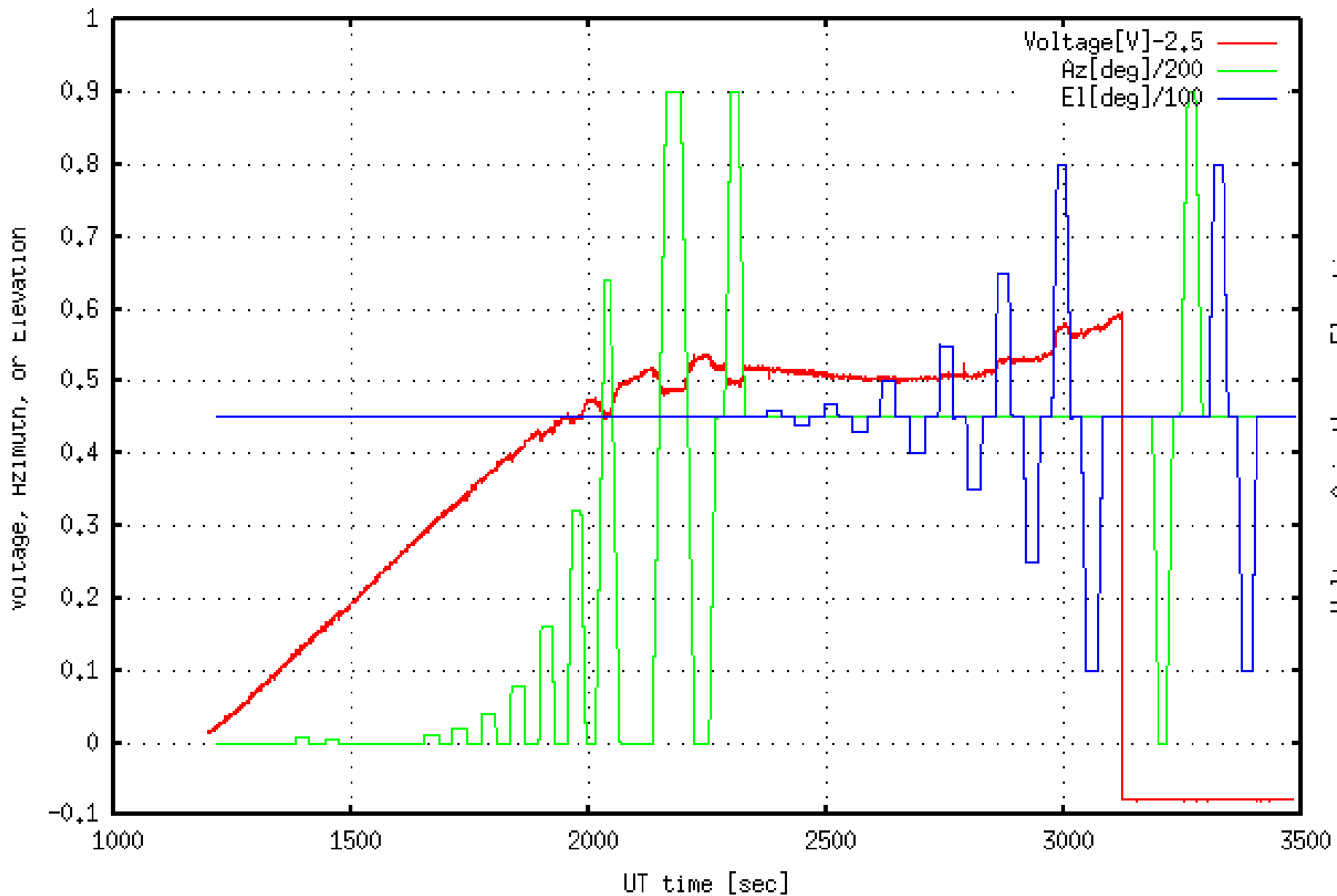
DV01



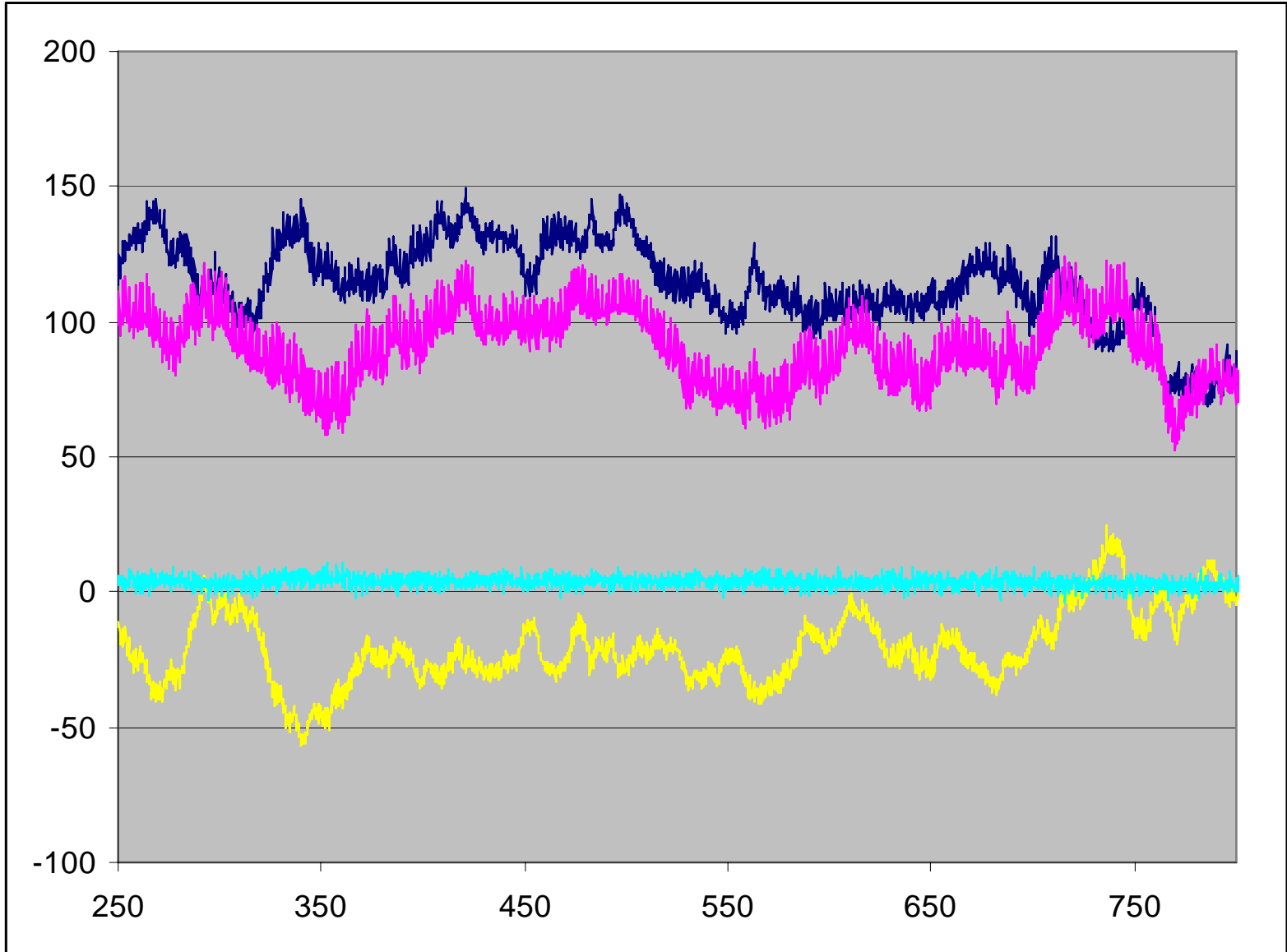
DV02



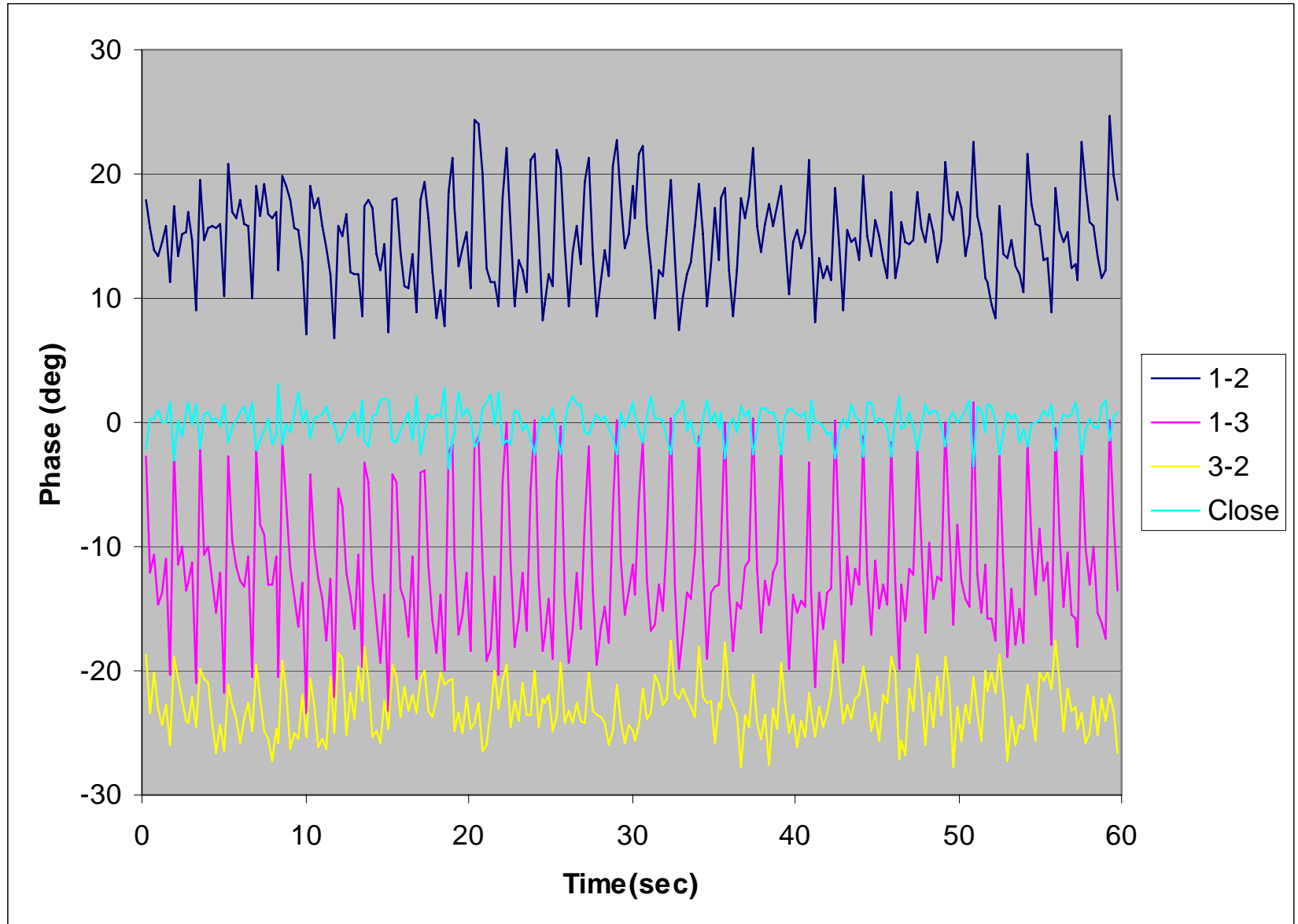
PM03



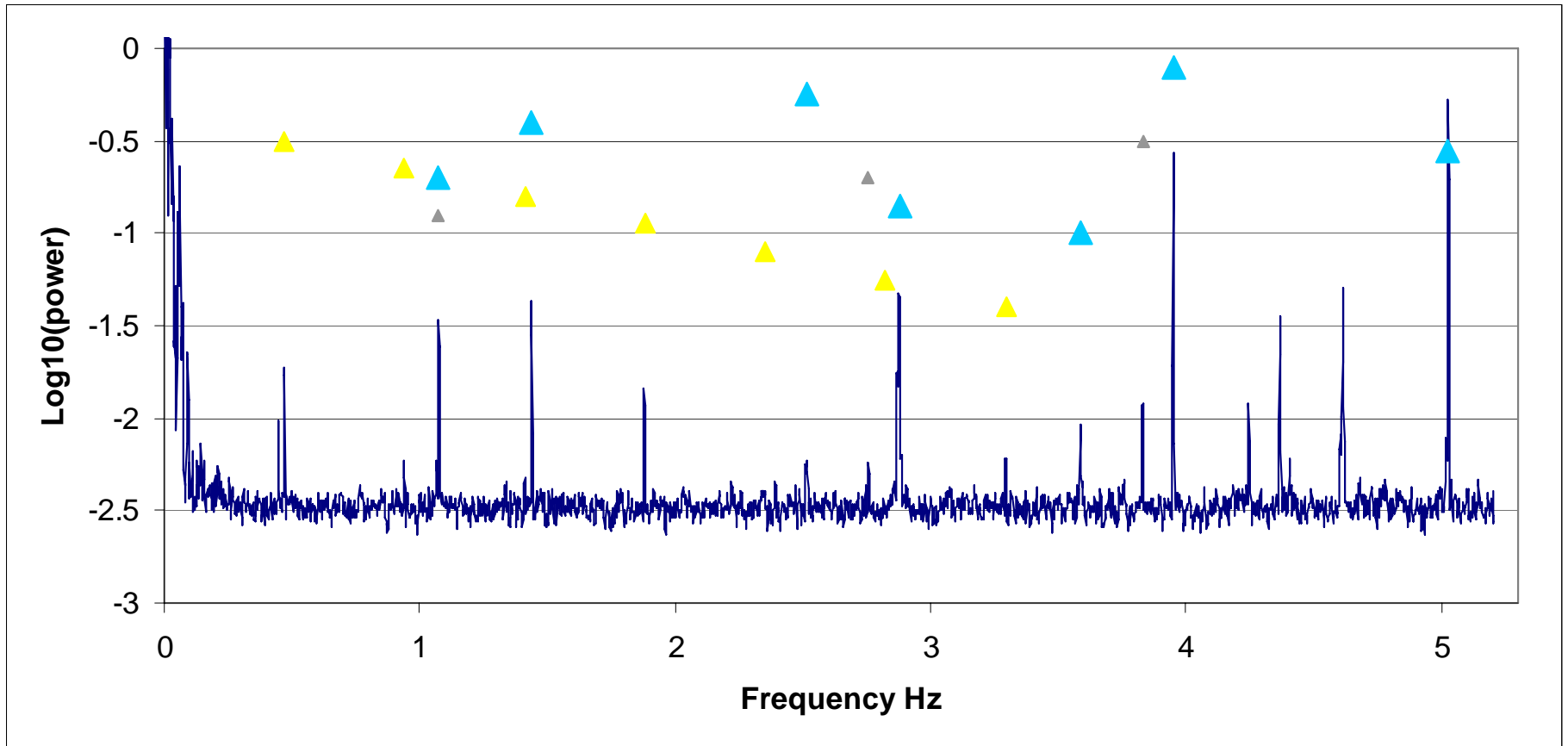
Phase Glitch problem – 3 baselines plus closure



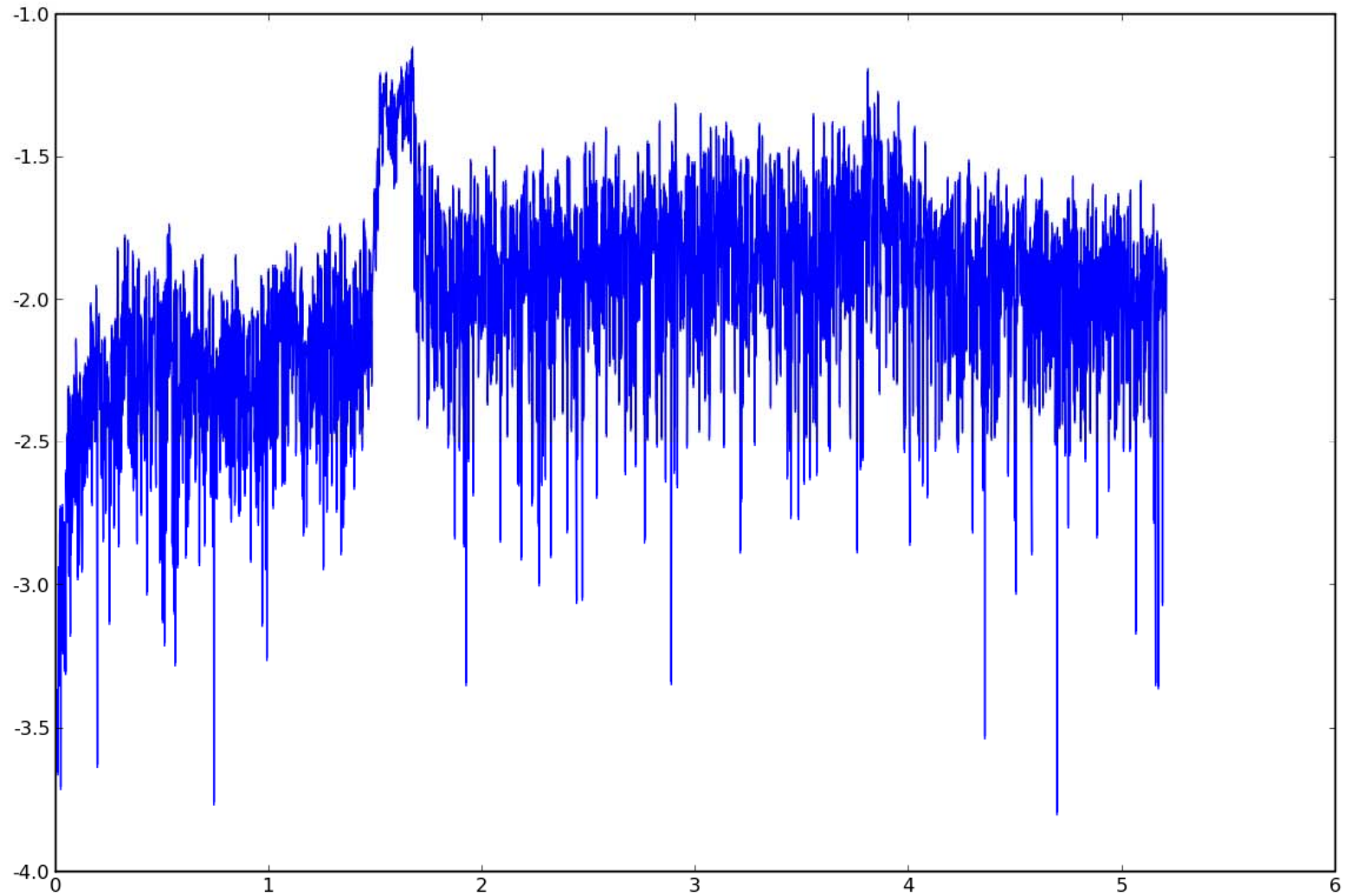
Close up



Spectrum

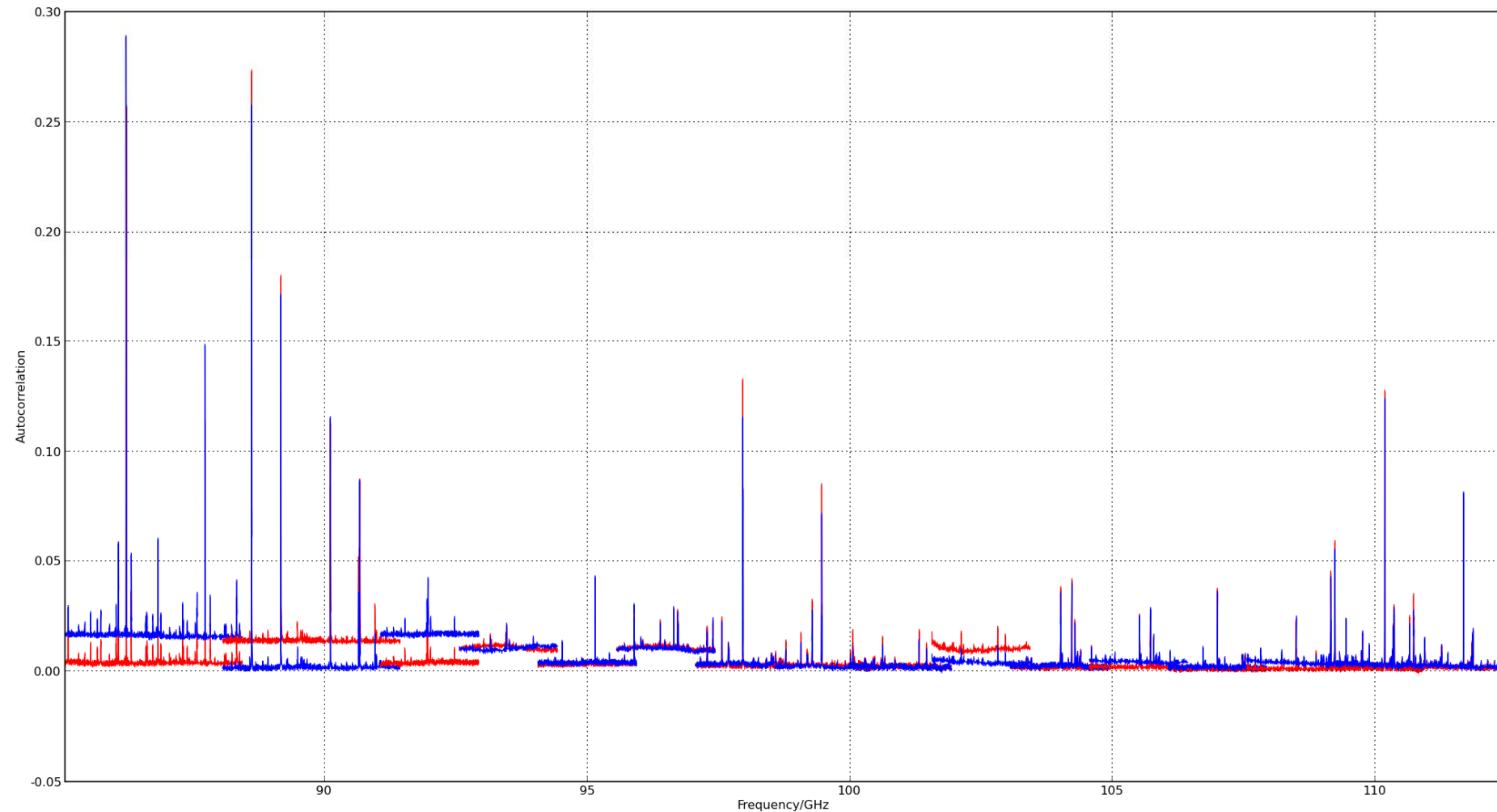


Most recent data !

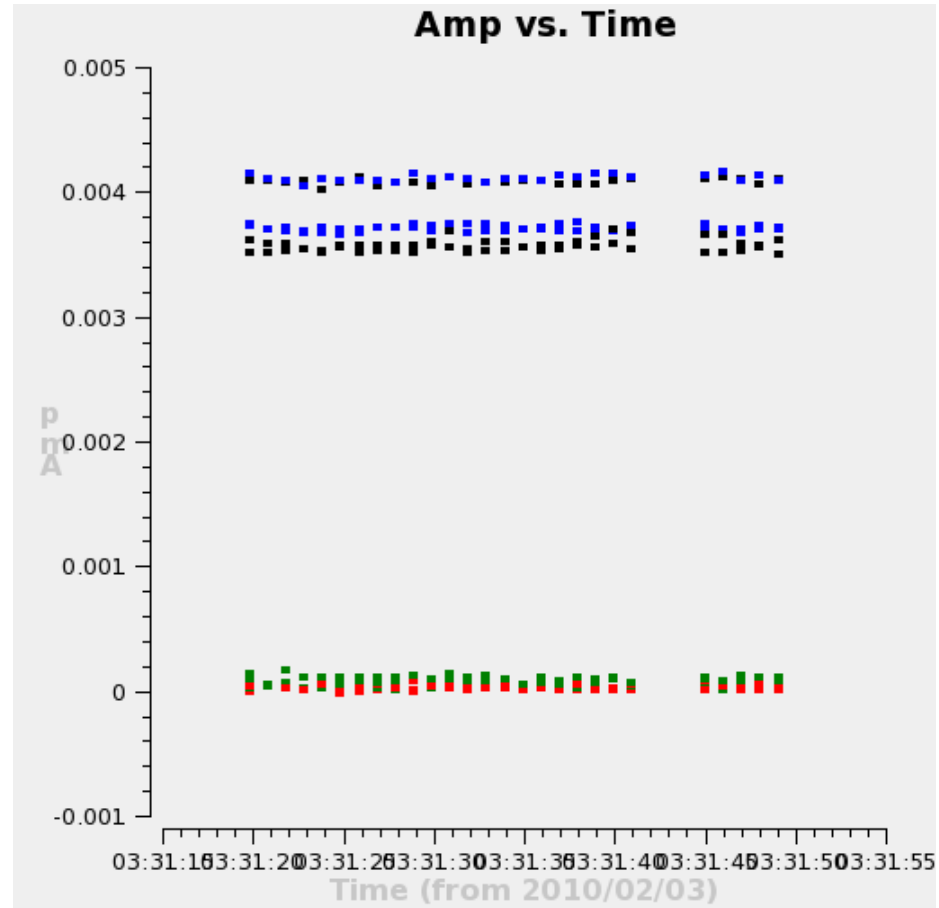
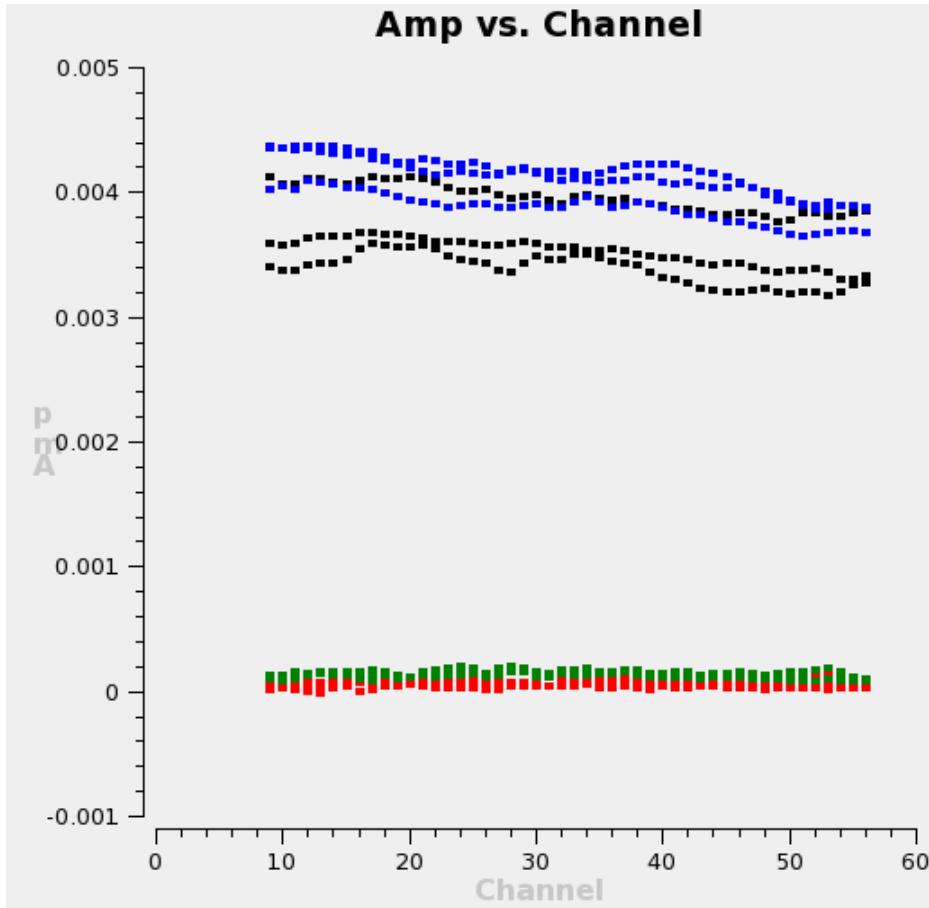


Tuning – encouraging results

Orion spectrum showing some calibration problems

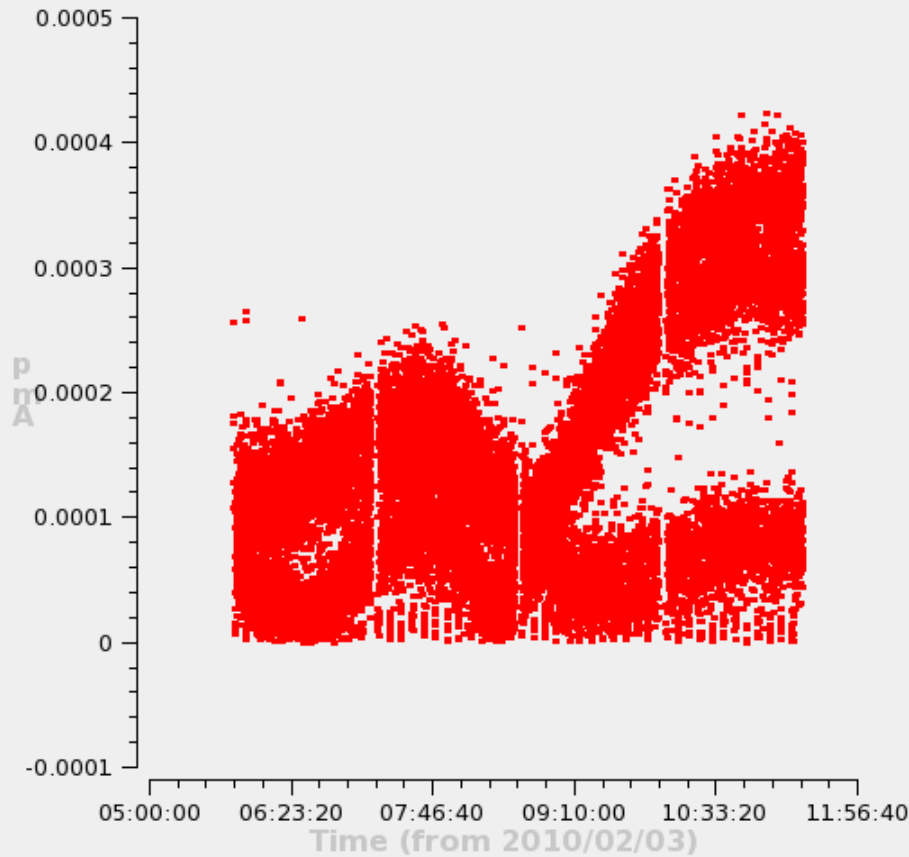


Full Polarization Data on a Quasar

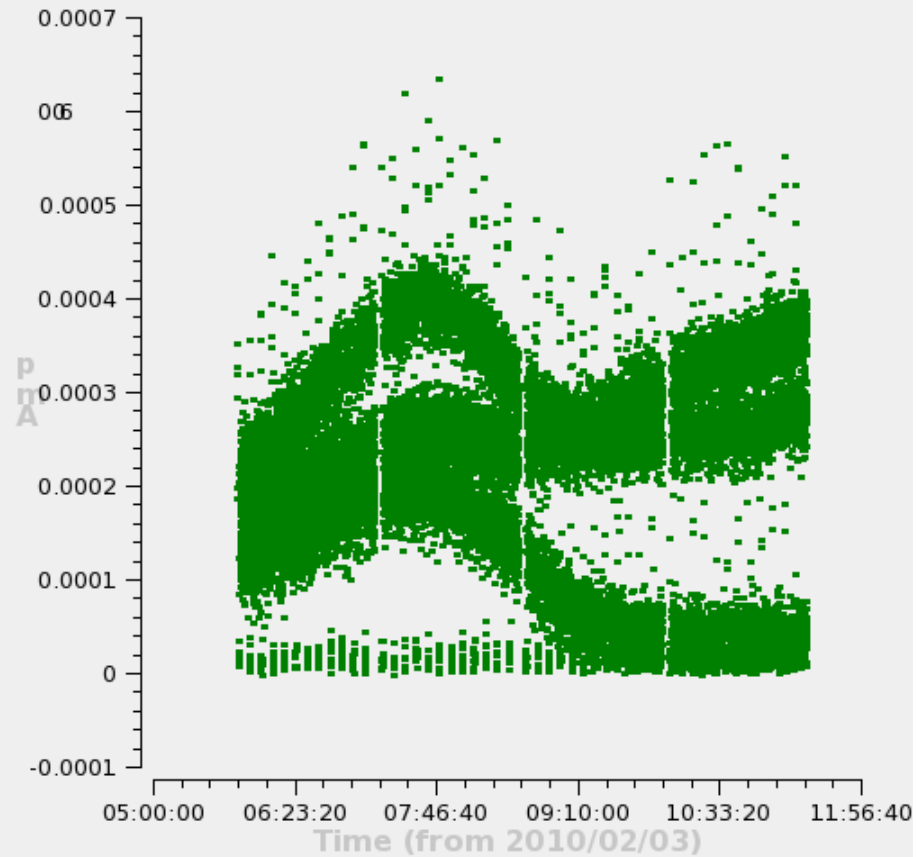


Cross-pol terms - source going through transit

Amp vs. Time



Amp vs. Time



Some Problems with Normalization of data have shown up

