ASTRON

Netherlands Institute for Radio Astronomy

MSSS Update

George Heald (MSSS Project Leader)

on behalf of the MSSS Army

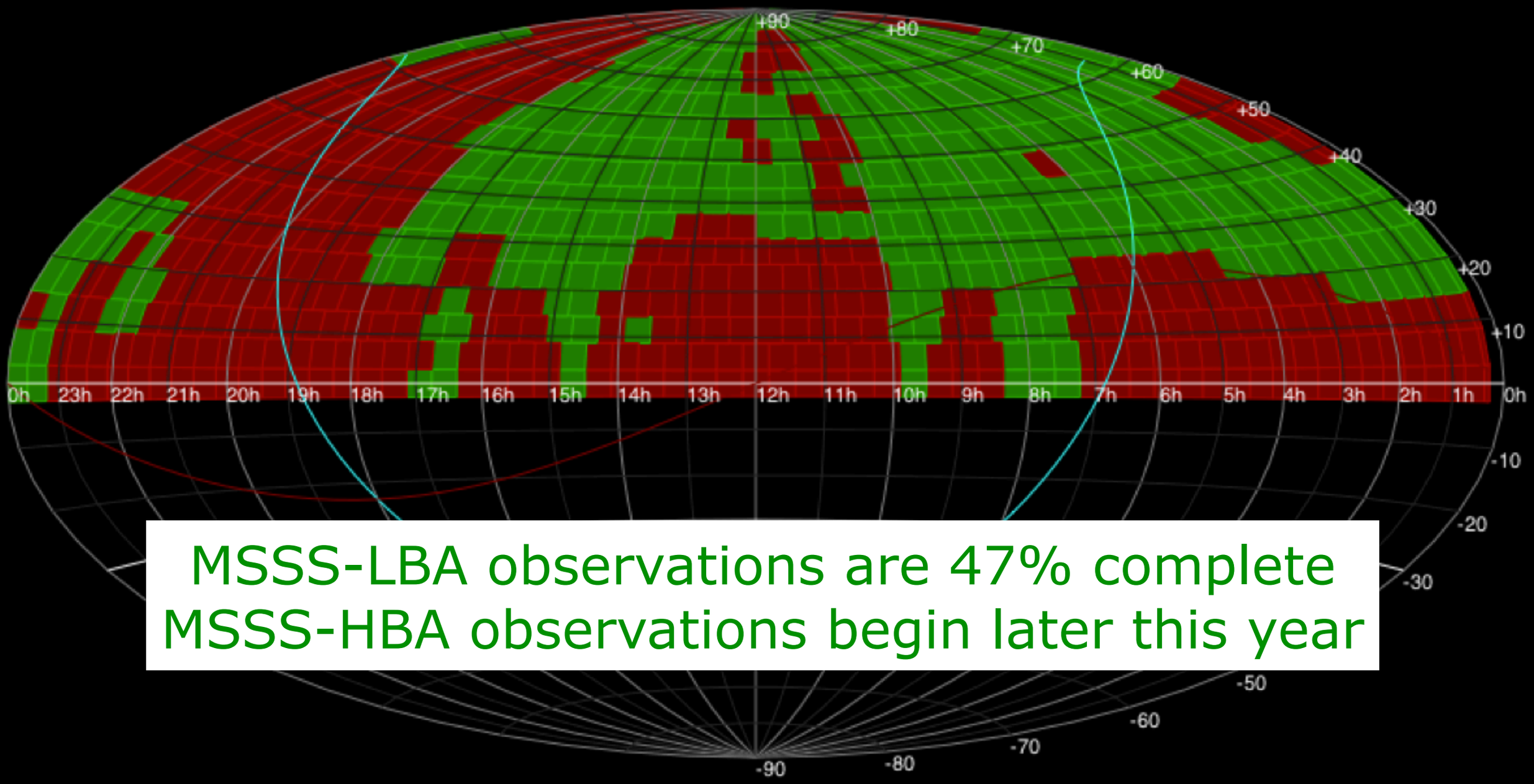
8 February 2012
LOFAR Status Meeting

LOFAR

MSSS observations are underway

LOFAR ASTRON

See http://www.astron.nl/~heald/msss/msssmap_lba_obs.html

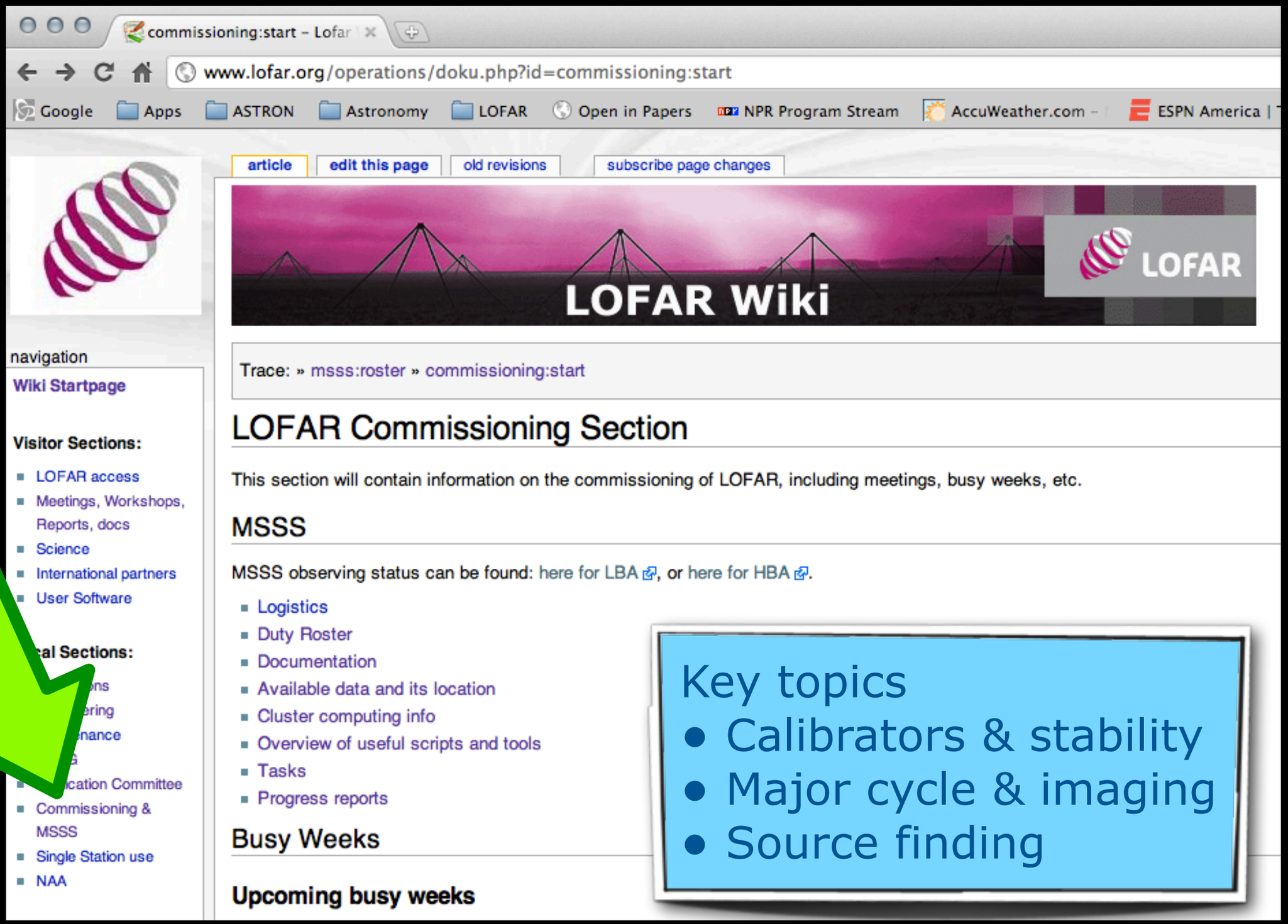


MSSS-LBA observations are 47% complete
MSSS-HBA observations begin later this year

Note that observations of low-dec (<~20deg) fields have begun

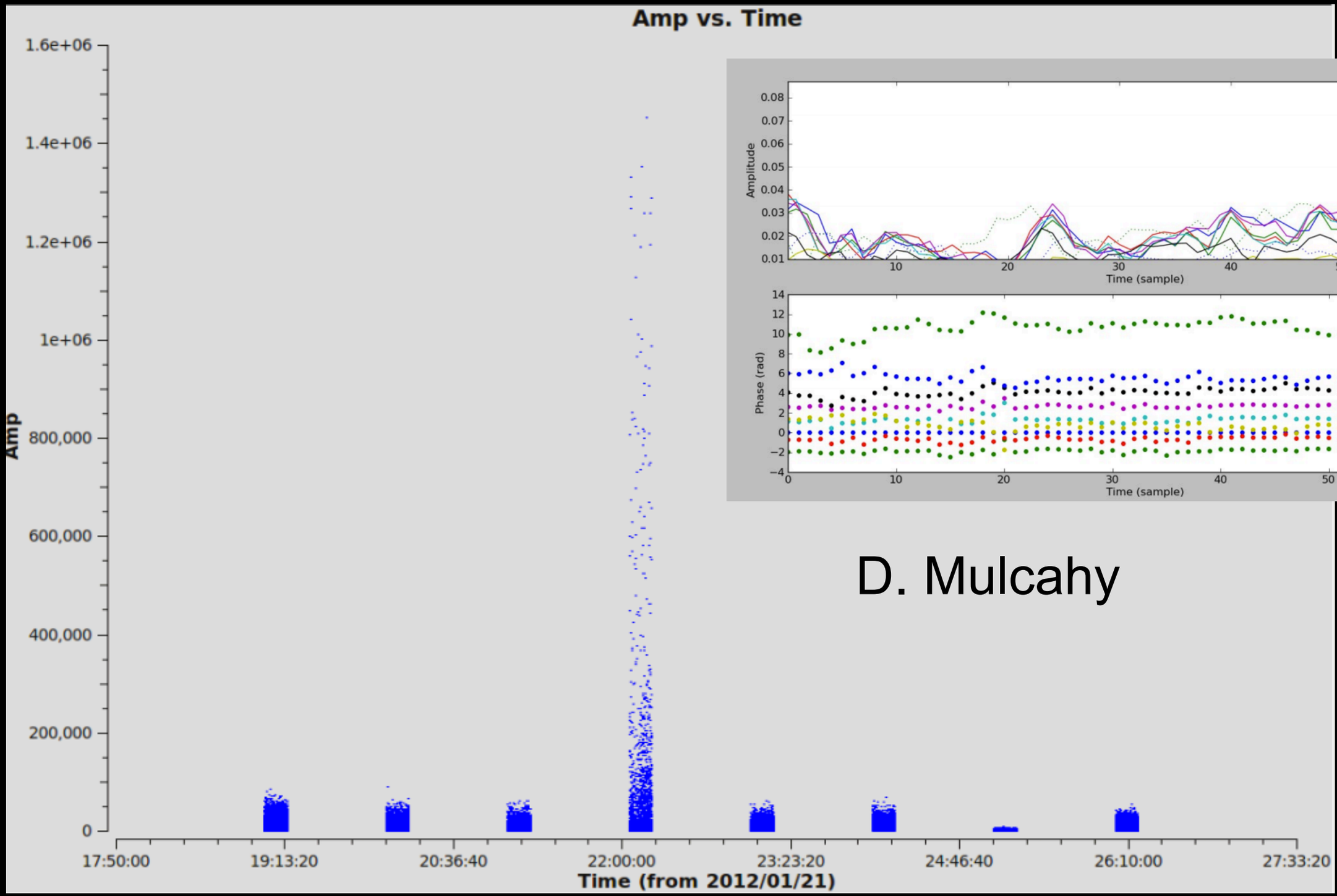
MSSS processing is underway

- MSSS army pushing forward with data analysis & processing



Status: Calibrator scans

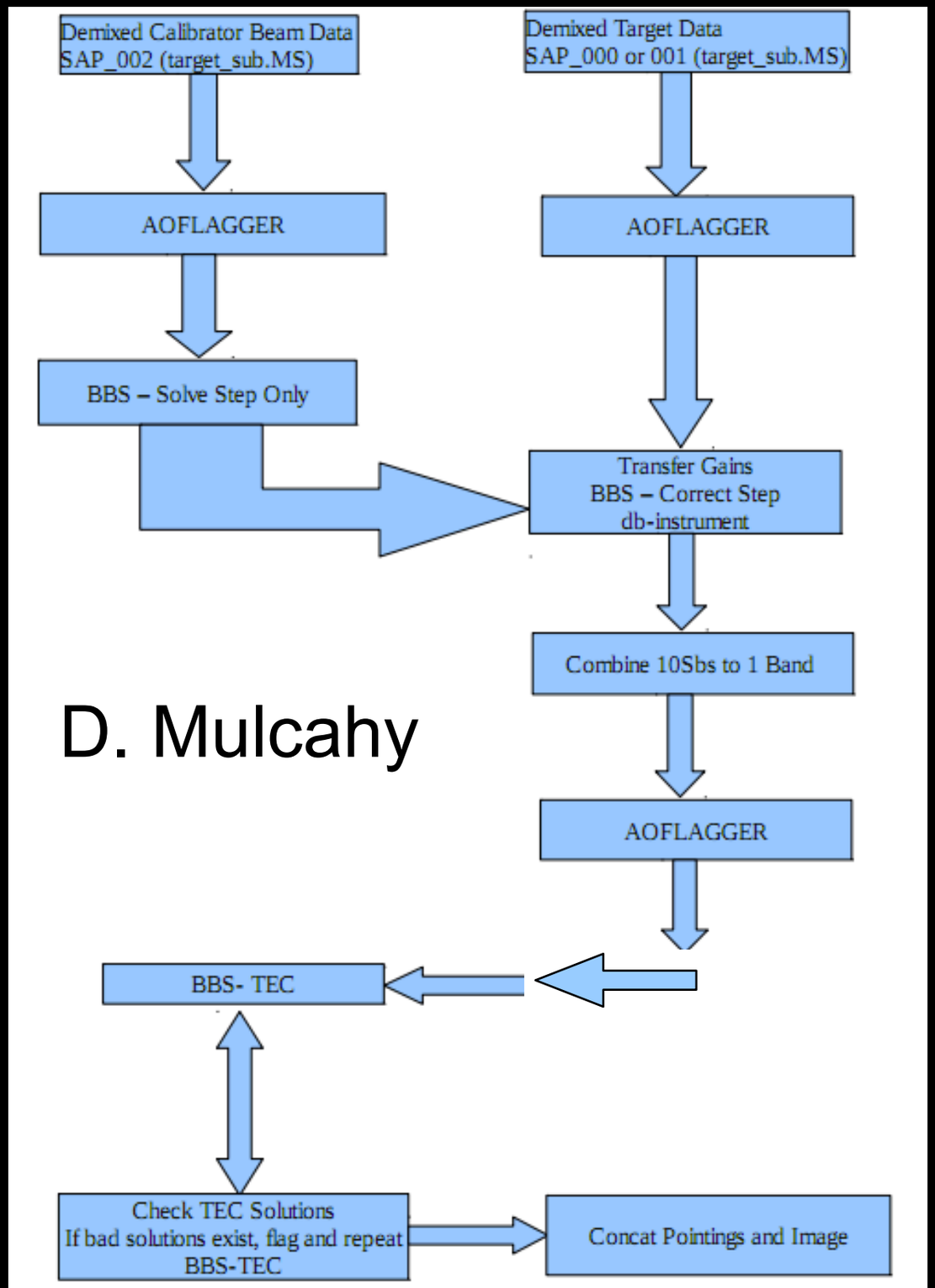
- Calibrator gain instabilities lead to bad corrected amplitudes



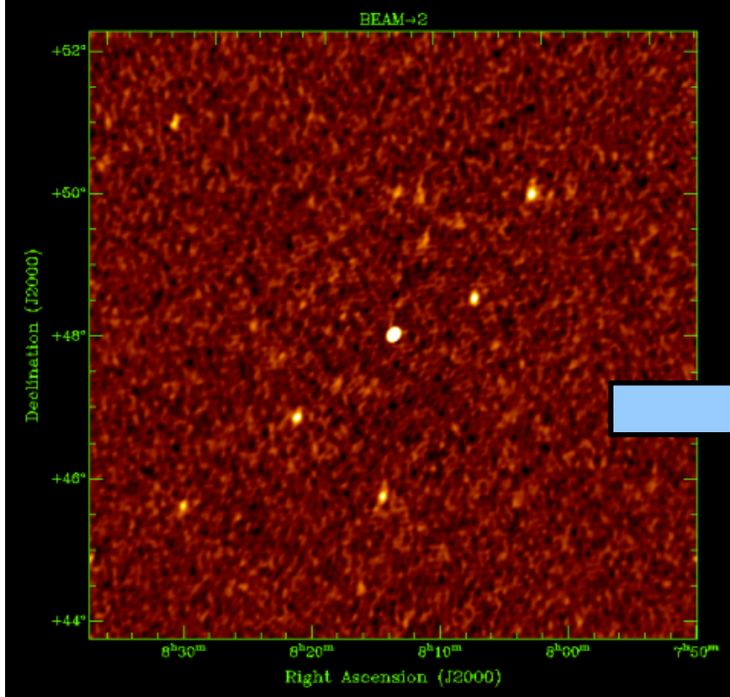
D. Mulcahy

Status: Calibrator scans

- Best strategy so far: use 3rd beam on calibrator source

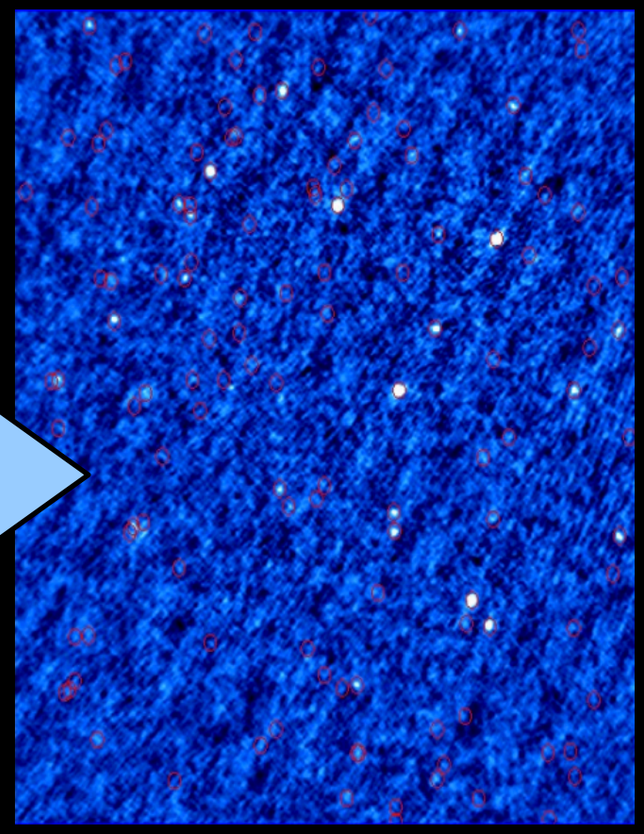


D. Mulcahy



V. Jelic

CS only
2MHz BW
88 min
350 mJy/beam



D. Mulcahy

BL<6km
2MHz BW
88 min
377 mJy/beam

Status: Calibrator scans

- Best strategy so far: use 3rd beam on calibrator source

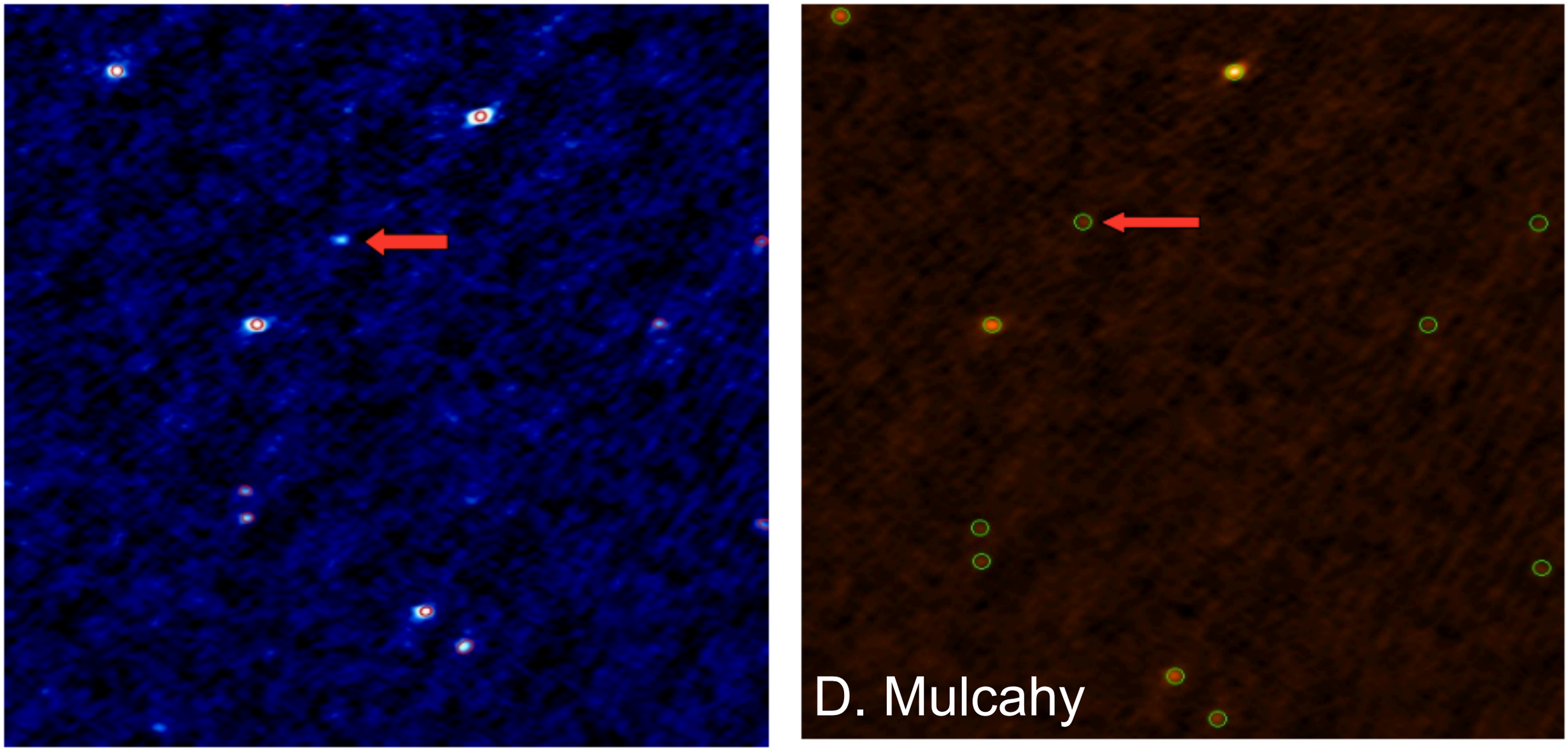
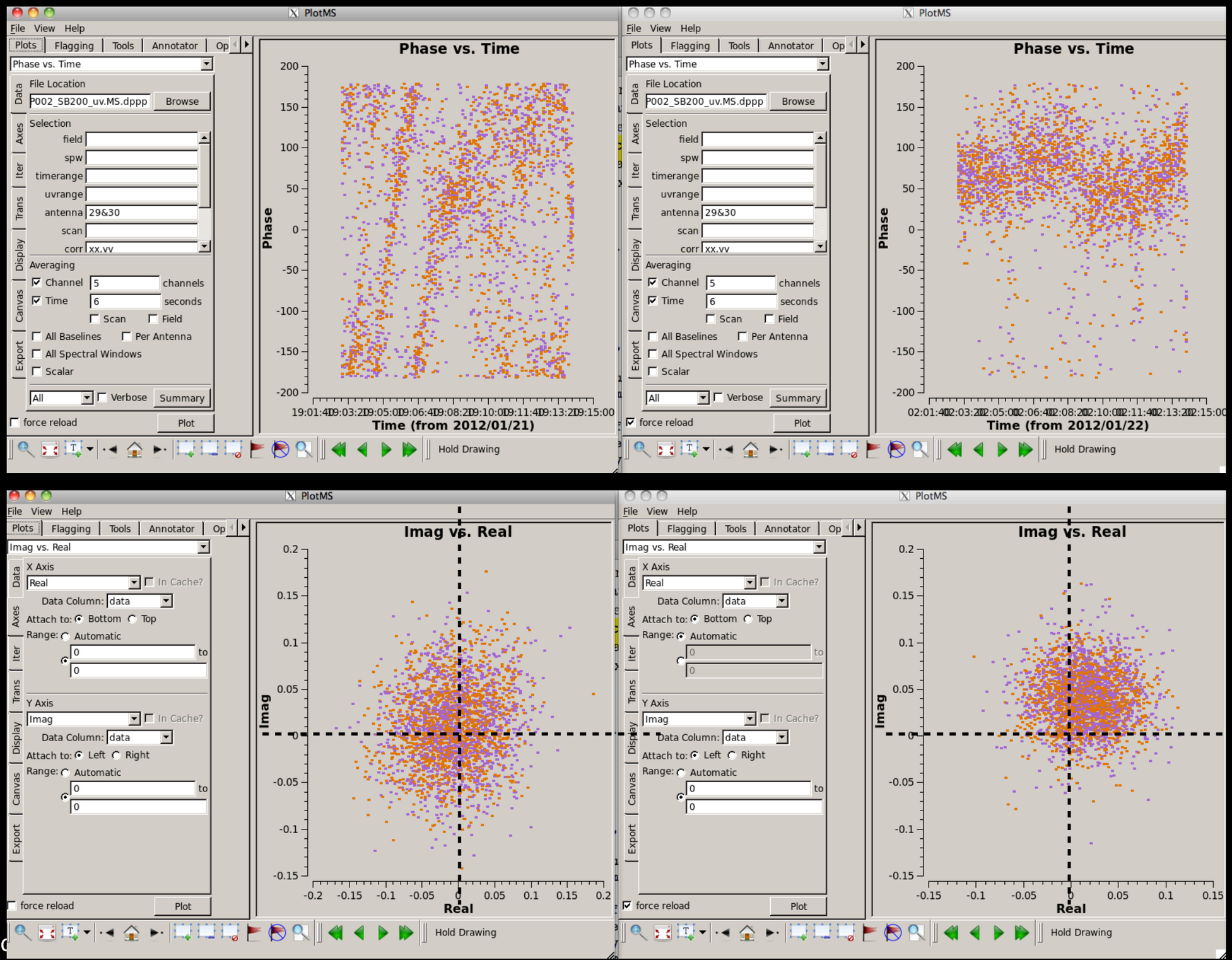


Fig 4 ; Left figure shows a region of the image with the red circles showing the skymodel used for the BBS TEC calibration (used bbs2ann.py found in /home/heald/bin) . Right figure shows the same area with the green circles showing VLSS sources. The red arrow shows a source that is detected by LOFAR that was not in skymodel but is indeed a real source as shown in the figure to the right. This is not the only case with several more real sources appearing than were not included in the skymodel.

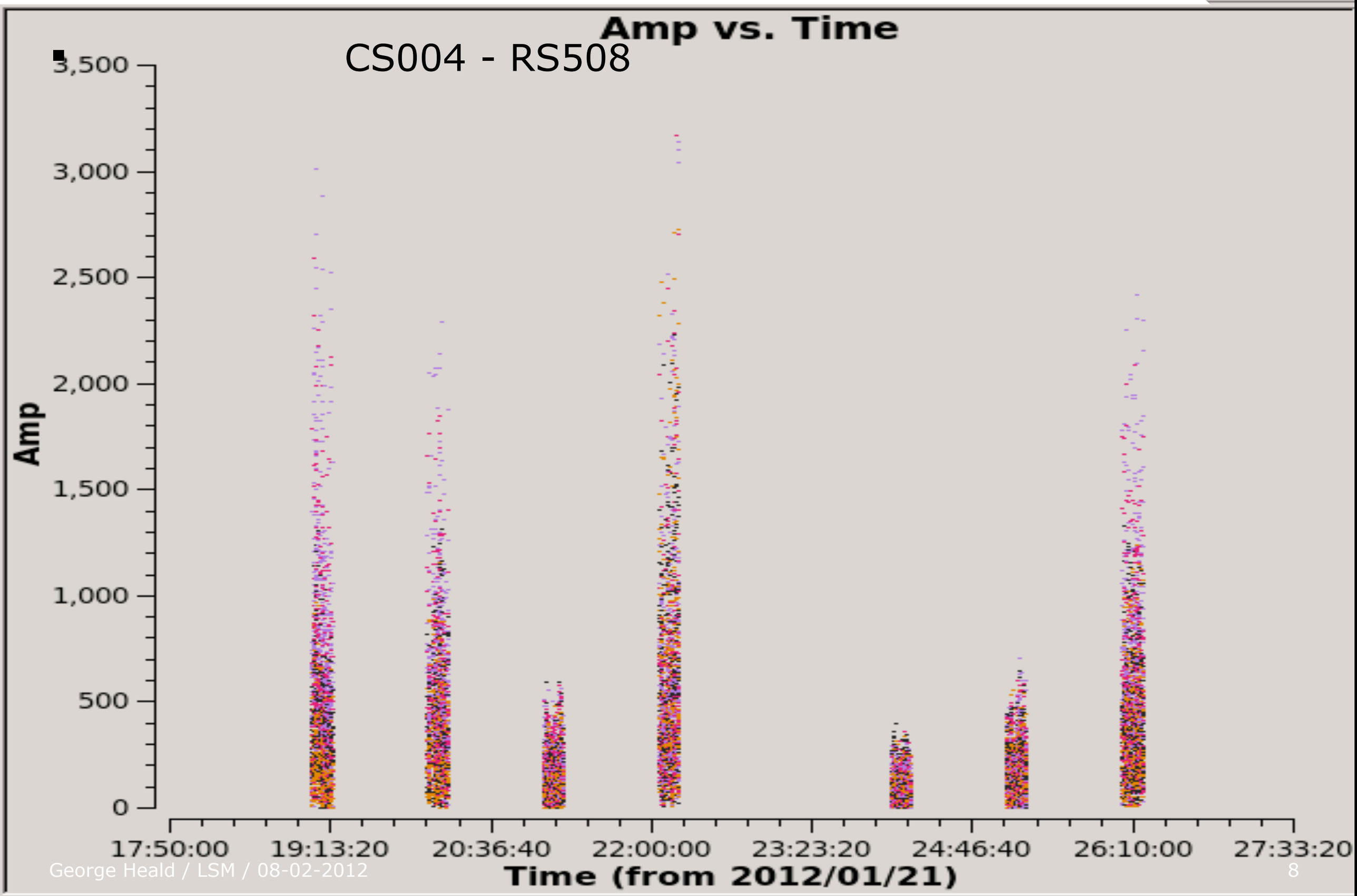
Open questions remain

- Why are 3C196 solutions so unstable? Decorrelation??



R. van Weeren

Open questions remain



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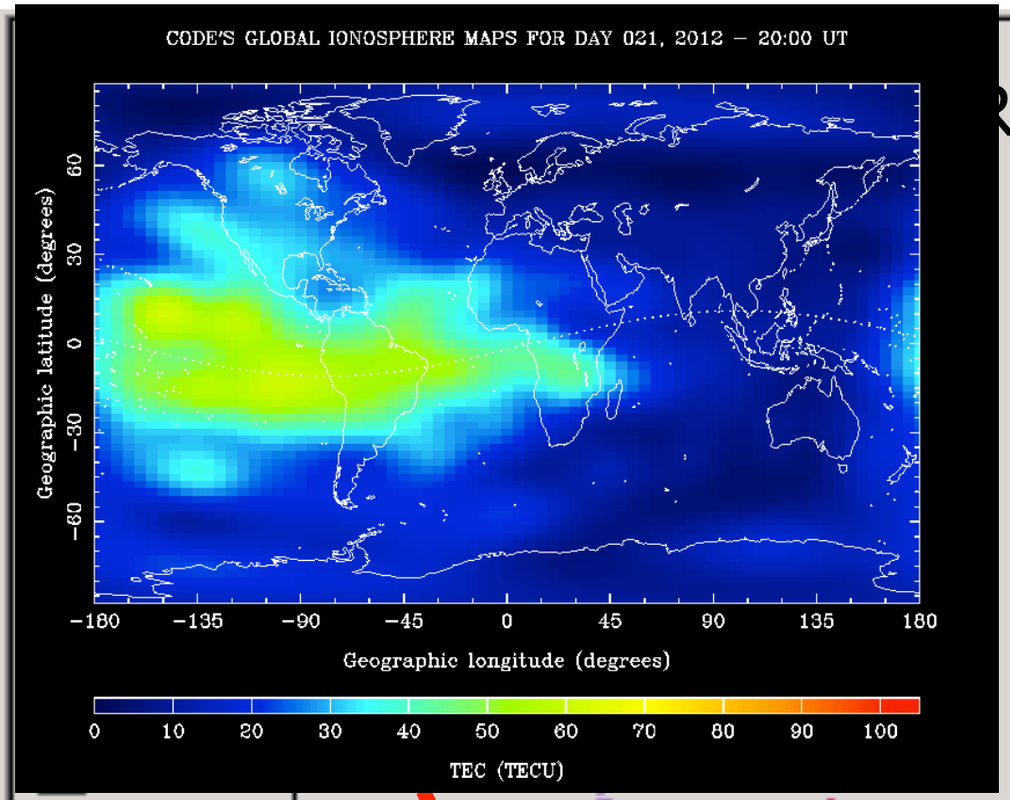
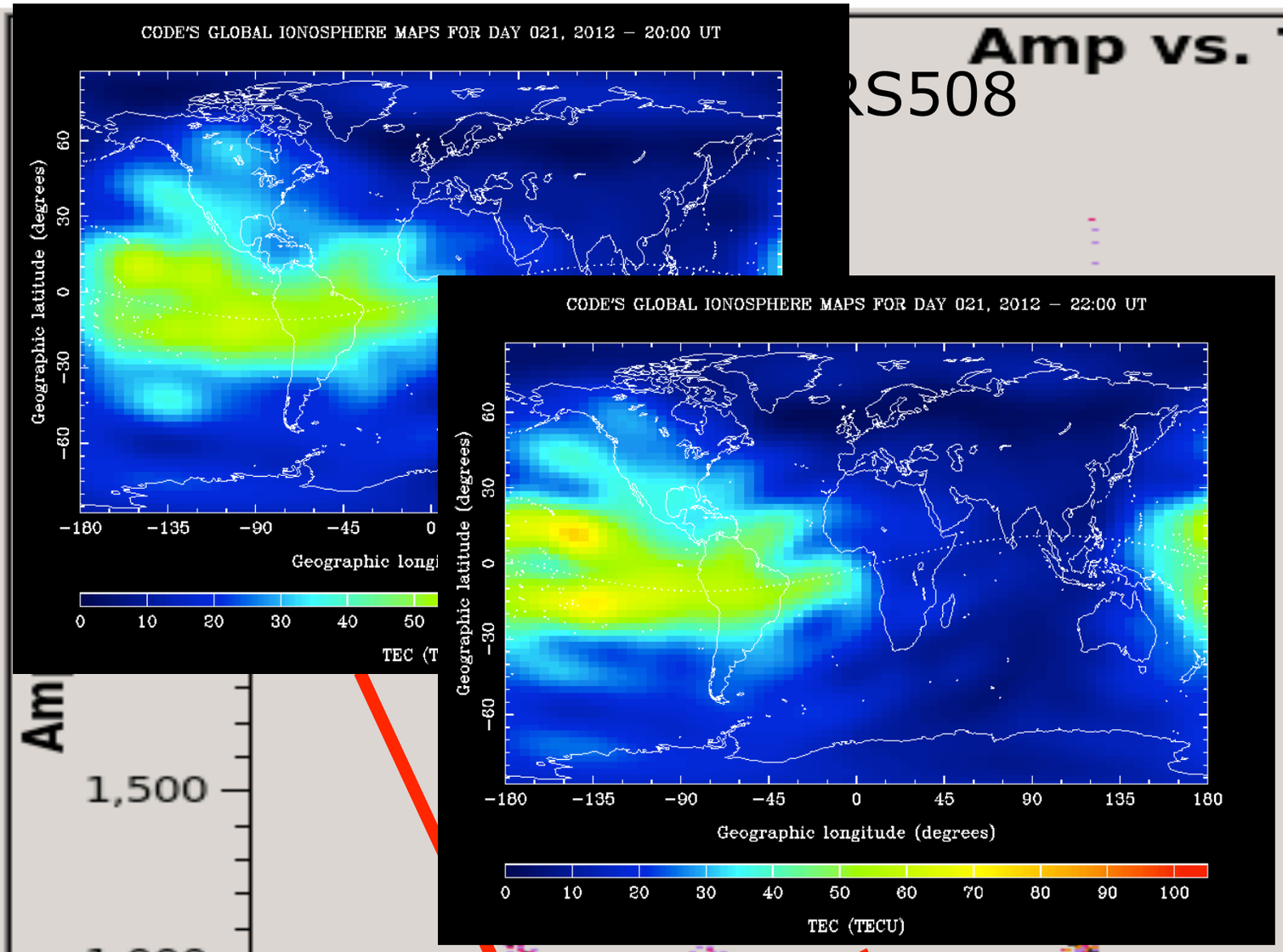


TEC maps c/o CODE (Bern)

Open questions remain



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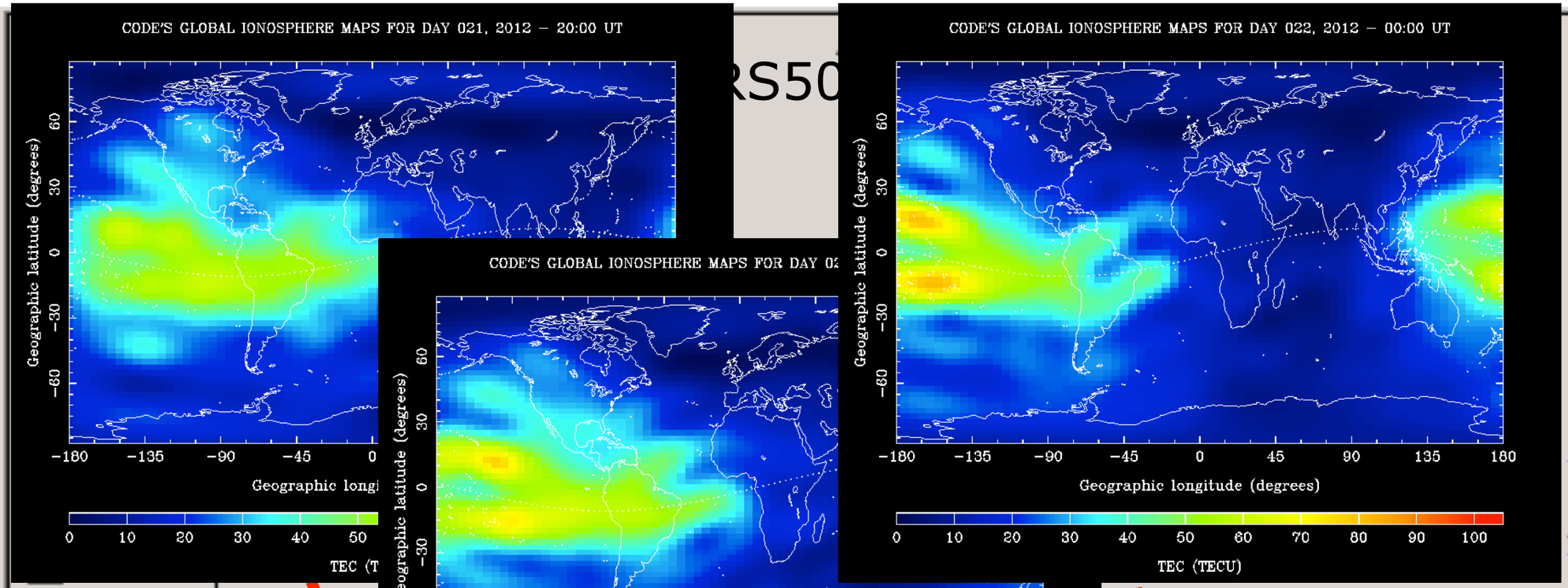

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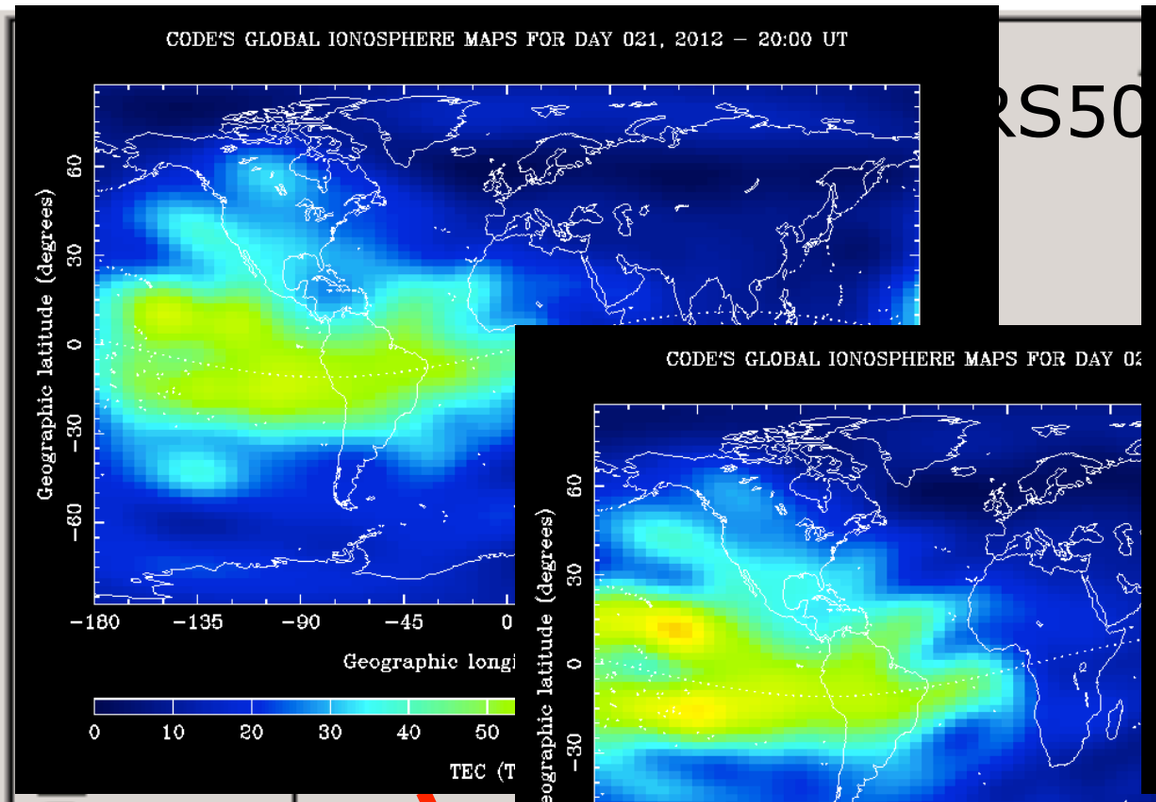
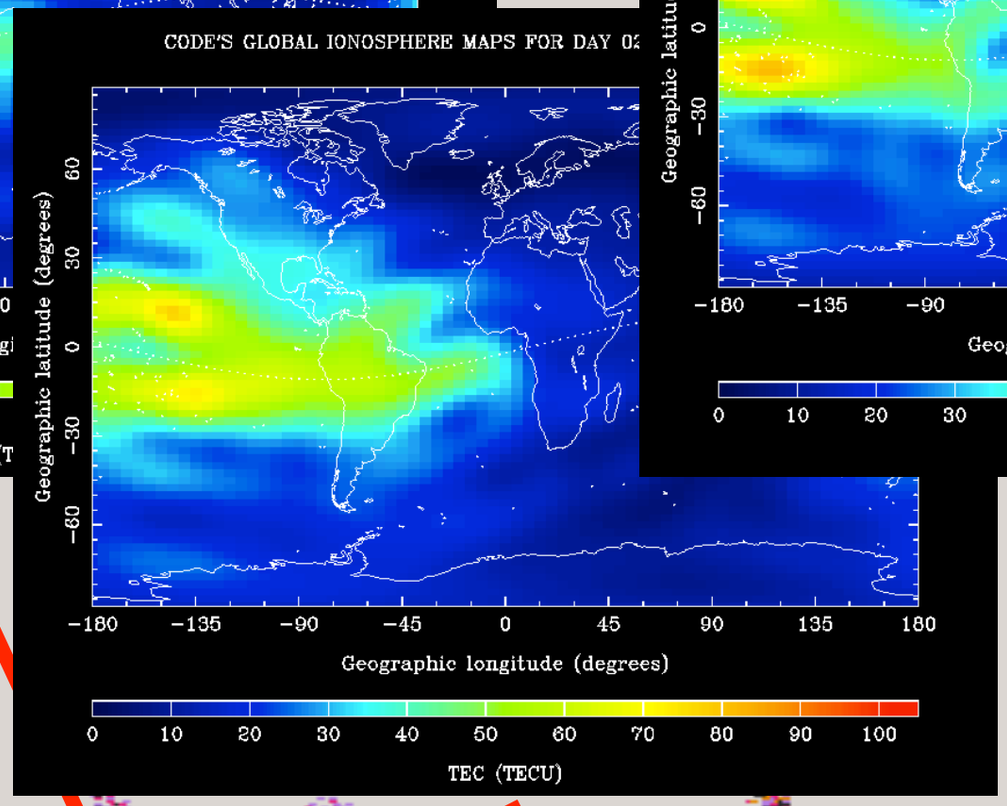
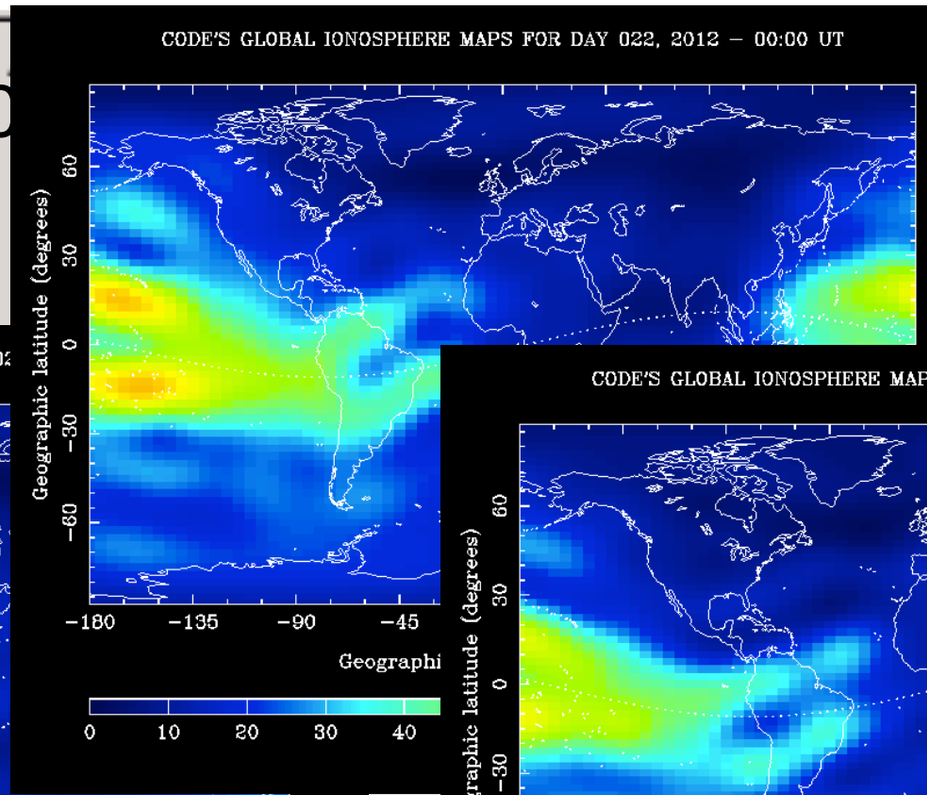
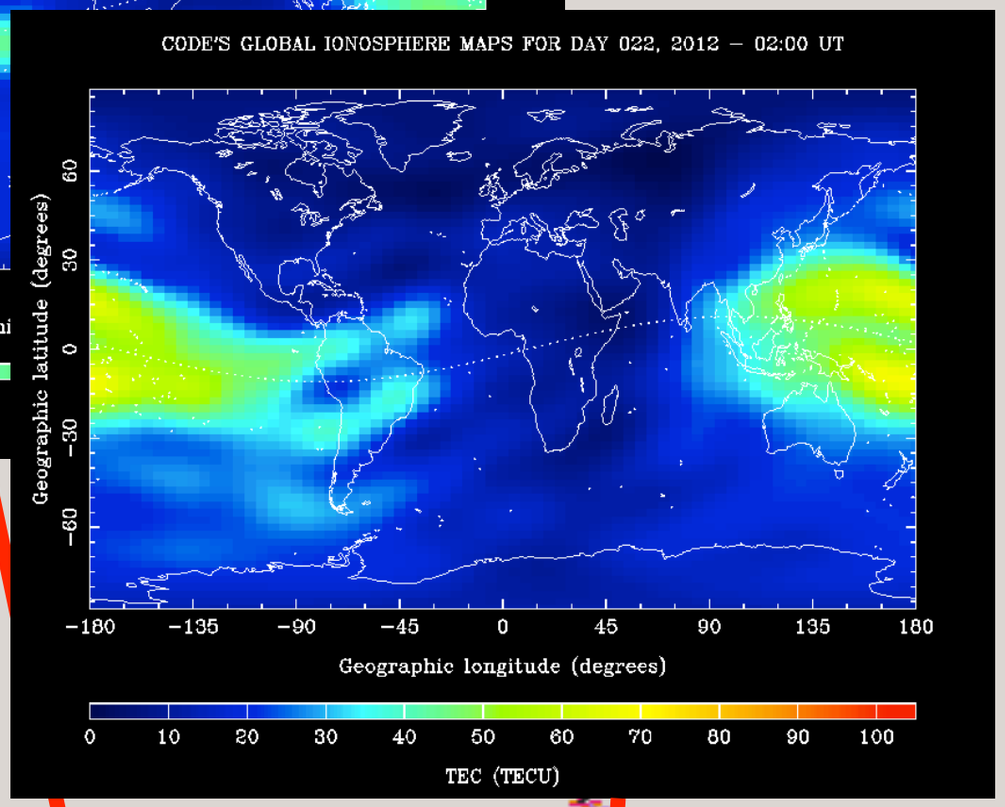
Open questions remain









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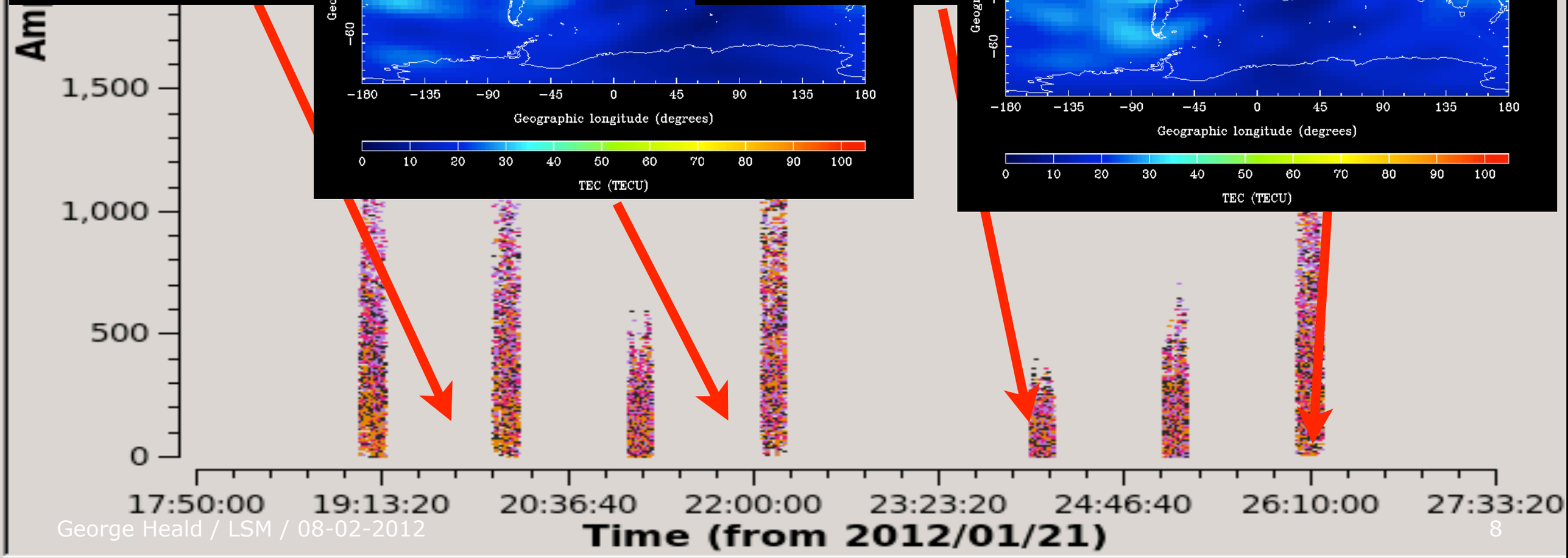
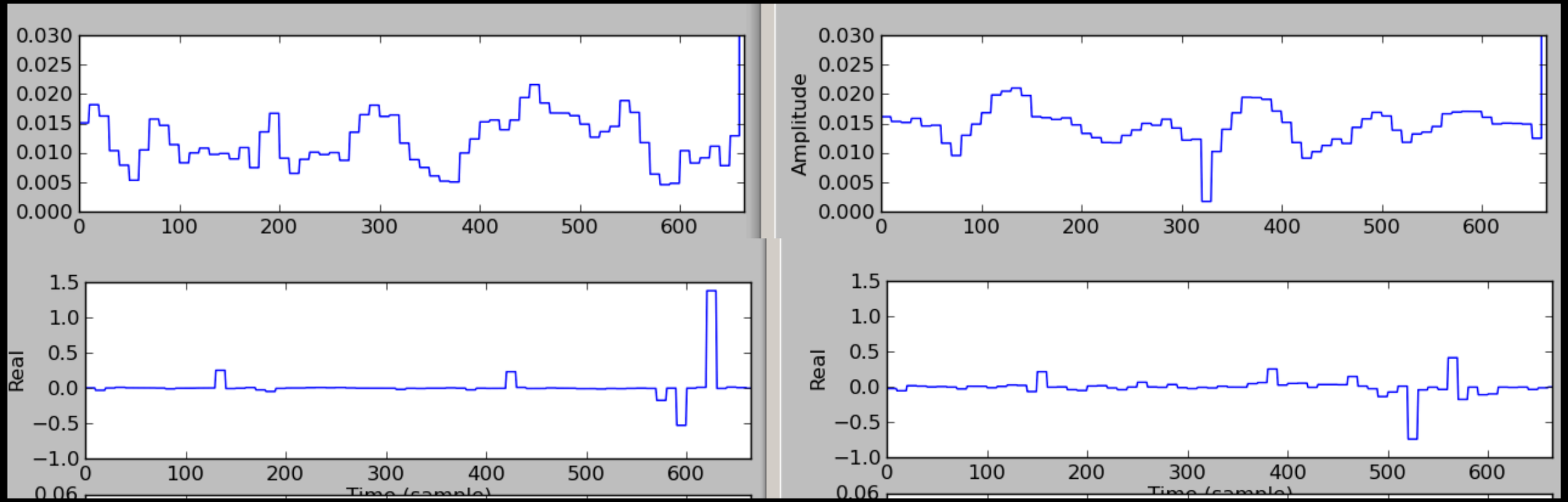


Initial TEC calibrator solutions

- Attempted solution for TEC together with gain amplitude
  - used only mid-long (10km<BL<100km) baselines
  - 10sec solution interval
  - 60 channels (raw data with BP ends removed & flagging)
  - Note BBS implementation time dominated by trial & error



R. van Weeren

Next steps for the MSSS Army

- Further pursuit of quality solutions on the calibrators - attempt to gain confidence in calibrator amplitude stability
  - How does calibrator stability track with GPS TEC data? (If at all!) - is it scintillation? Must we redo some scans?
  - Effect of other sources in the field ...
  - Effect of pulse sync? (need updates from RO!)
  - Finalize calibration strategy
- Major cycle tests on calibrated MSSS data
  - Deconvolution and source finding tests
  - Tests of awimager on MSSS data
  - Self-calibration cycles to expand to longer baselines
  - Initial setup of imaging pipeline loop