

CS-1 developments: 25 July - 29 Aug 2007

- **General**

LOFAR descopeing discussions going on over the summer.

2) Hardware-Rollout :

a) Now 16 WHAT-HBA dipoles deployed on stations CS001,CS008, CS010 and CS016

Coming up:

a) rotation of the 3 'unused' LBA dipoles on the 12 microstations

b) additional LCU's in CS010 to go from 16 to 24 microstations by September

Outstanding / new / **solved** 'technical' issues:

3) Stations

- 200 MHz mode problems: **gone away**
- 'autocorrelation' dips in LBA/160 data: **quantization problems in beamformer**
- Y-polarization RFI problem at very low frequencies (May 9 meeting) : **no progress**
- 8ch-periodicity in RFI signals at low frequencies (intermodulation or part of RFI spectrum?): **no progress**

- LBA S/N problems in 48h observation in 3/4 Aug weekend ? **Gone away**
- HBA 'switch' issues (solution being worked on)
-

4) CEP (SAS/MAC/OLAP)

- succesful observations with new CEP software (bypassing input cluster)
- attempt to run 48h, 10s observations stopped after ~ 30h (memory leak?)
(about 0.7 Tbyte total !!)
- wrong HBA positions for 4 HBA dipoles on CS010 (should be ~70m east)

Progress reports on observations and data analysis (1)

- **New observations (see 'Lofar operations wiki' for Catalog)**
 - Fri/Sun 27/28 Jul 2x24h NCP LBA 38-58 MHz L3463/ L3464
 - Fri/Sun 3/4 Aug 2x24h NCP LBA 38-58 MHz L3565 / L3566
 - Mon/Tue 5 Aug 1x14h near CygA LBA 38-58 MHz L3567
 - Fri/Sun 13 Aug 30m 'Perseids' LBA 45-77 MHz L3678 (3707/3710/3736)
 - Fri/Sat 17 Aug 1x16h CasA HBA 114-180 MHz L3733 (10s integration!)
 - Mon/Tue 20 Aug 1x16h NCP HBA 114-180 MHz L3736
 - Fri/Sun 24/26 Aug 2x24h NCP HBA 114-180 MHz L3740 / L3741
 - Tue/Wed 27/29 Aug 2x24h NCP HBA 210-250 MHz L3742 / L3743

6) Calibration of CS-1 data in MeqTrees and BBS

- Sarod: testing dipole/station beams and 'full' polarization in MeqTrees(see later)
- Sarod: first HBA imaging results
- Joris/Pandey: BBS ready to run batches, parallelized BBS (Pandey talk)
- Casey: analysis Perseids data

Progress reports on observations and data analysis (2)

7) Imaging issues

- still deeper field on NCP with LBA (36 subbands, 38-59 MHz, 3x24h) (Sarods talk)
Fluxes to be compared with Nick Rees' 38 MHz (8C-) survey ...

8) Noise / RFI analysis

Ongoing:

- analysis HBA 1s-1kHz data (presentation Stefan de Koning).

Outstanding / still to be done

- peculiar very low frequency (<20 MHz) RFI patterns (8ch periodicity and Y-polarization)
- S/N analysis and $T_{\text{sys}}/A_{\text{eff}}$ for HBA dipole:

Progress reports on modeling/simulation activities (1)

§ **Beam modeling:** Sarod, Johan

10) Ionospheric modeling: Maaijke, Jim, Jan

- **Source models (LSM, GSM, fluxscale):**

Flux scale issues still pending: requires incorporation of proper beam model (Sarod)

Progress reports on modeling/simulation activities (2)

- **Processing issues (convergence, speed):**

- no progress to report

13) Data quality & image DR:

- analysis of redundant baselines after relative calibration

Requires a corrected MS, conversion to HDF5 and further analysis. Still to be started.

14) RFI issues:

- Overviews from the 1s-1 kHz monitoring being prepared by Stefan de Koning (HBA data monitoring campaign)
- Monitoring meteor/airplane reflections with CS-1 (Casey,

Observing schedule and planning (29 Aug -1 Sep 2007)

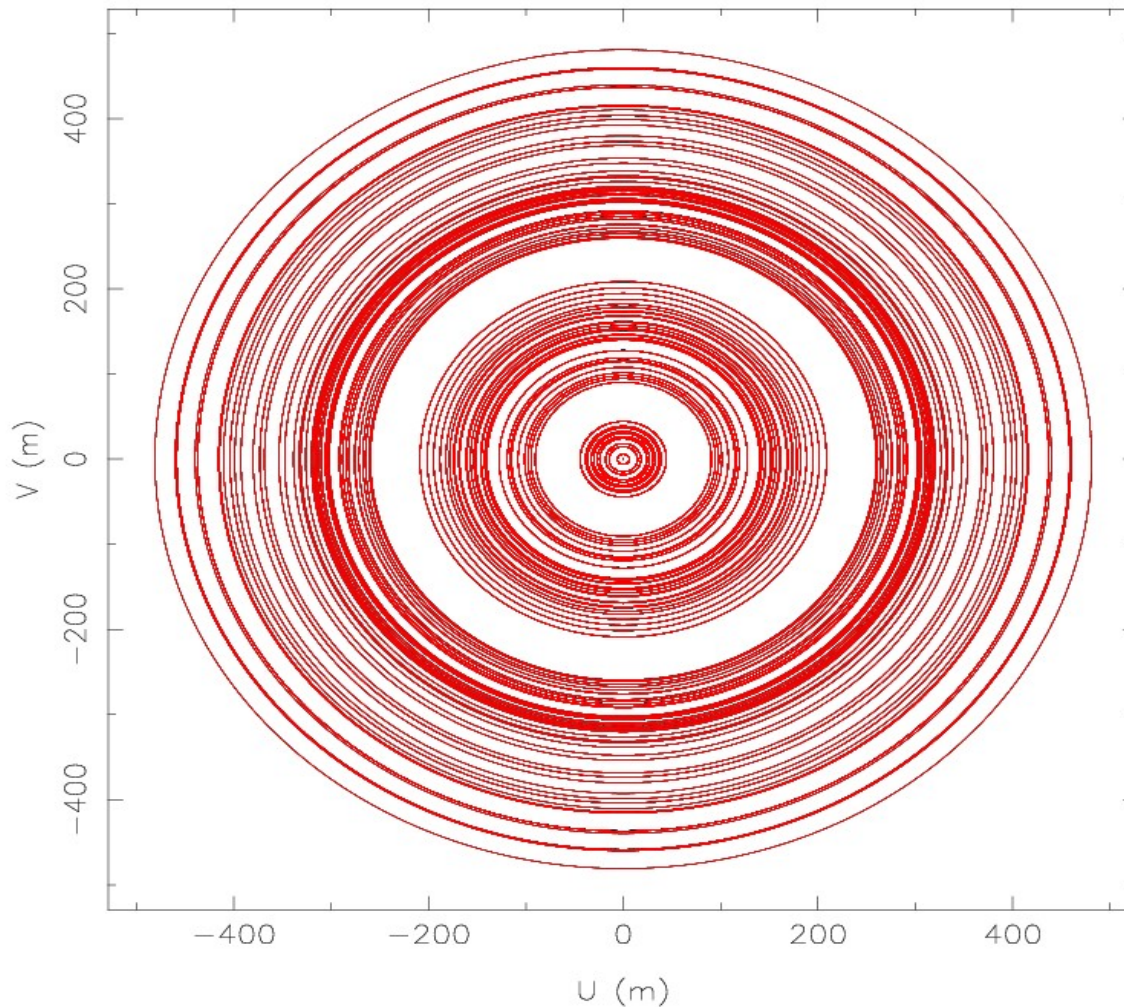
Some more HBA experiments

Activities coming up:

- 3-7 September: CEP down (IP renumbering etc)
- > 10 Sep : selfcal experiments with heterogeneous LBA dipole arrays
- > 7 Sep: better uv-coverages once we go from 16-24 microstations
(12+4+4+4)
- > 24 Sep: New HBA switches available (on CS010: 6 tiles +30 dipoles)

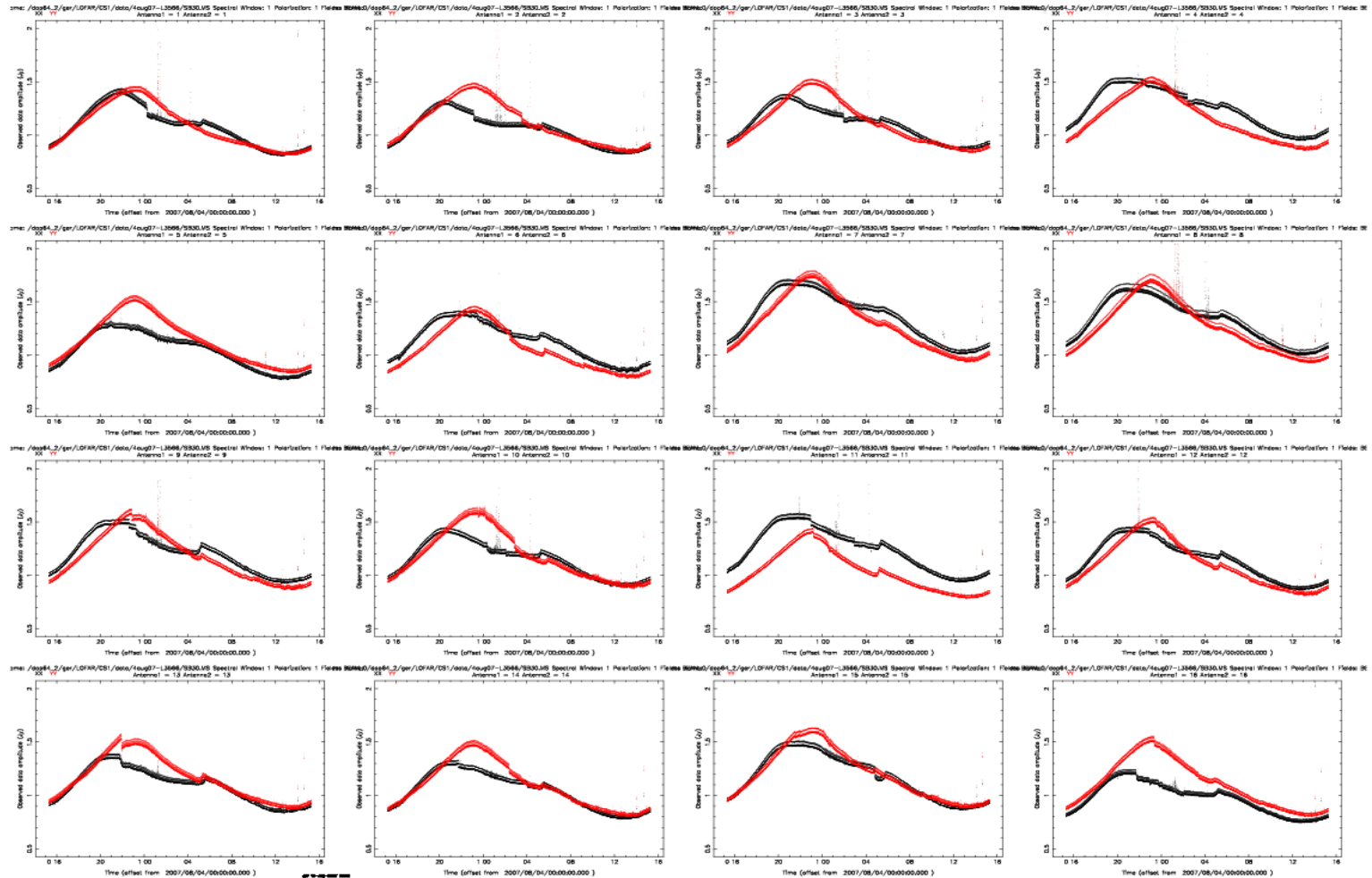
NCP UV-coverage with 16 microstations
note the large (monochromatic) gaps around 50 and 200m,
these should be filled in with 24 microstations

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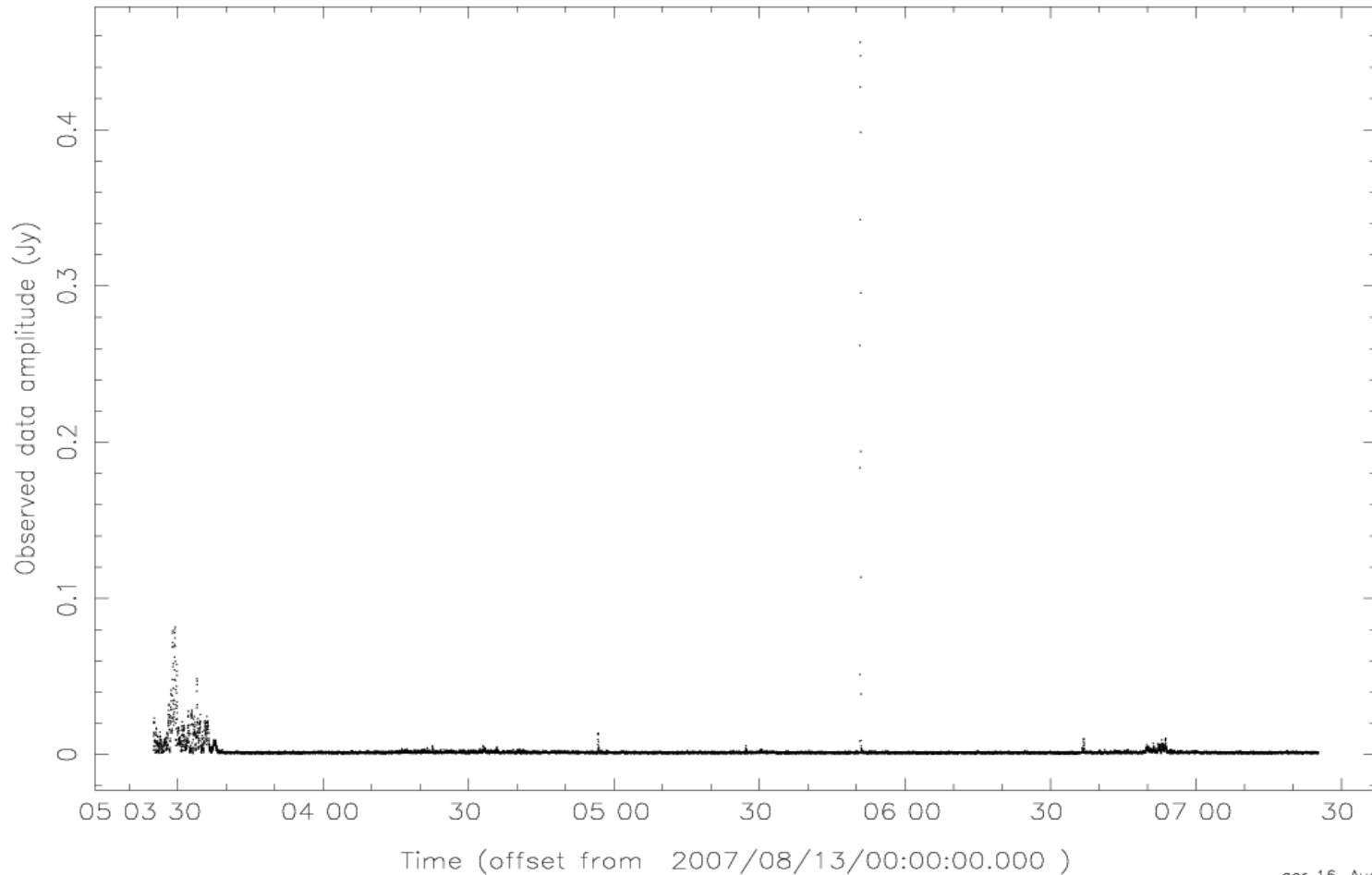
L3556 13Aug07

16 dipole autocorrelations LBA problems ?



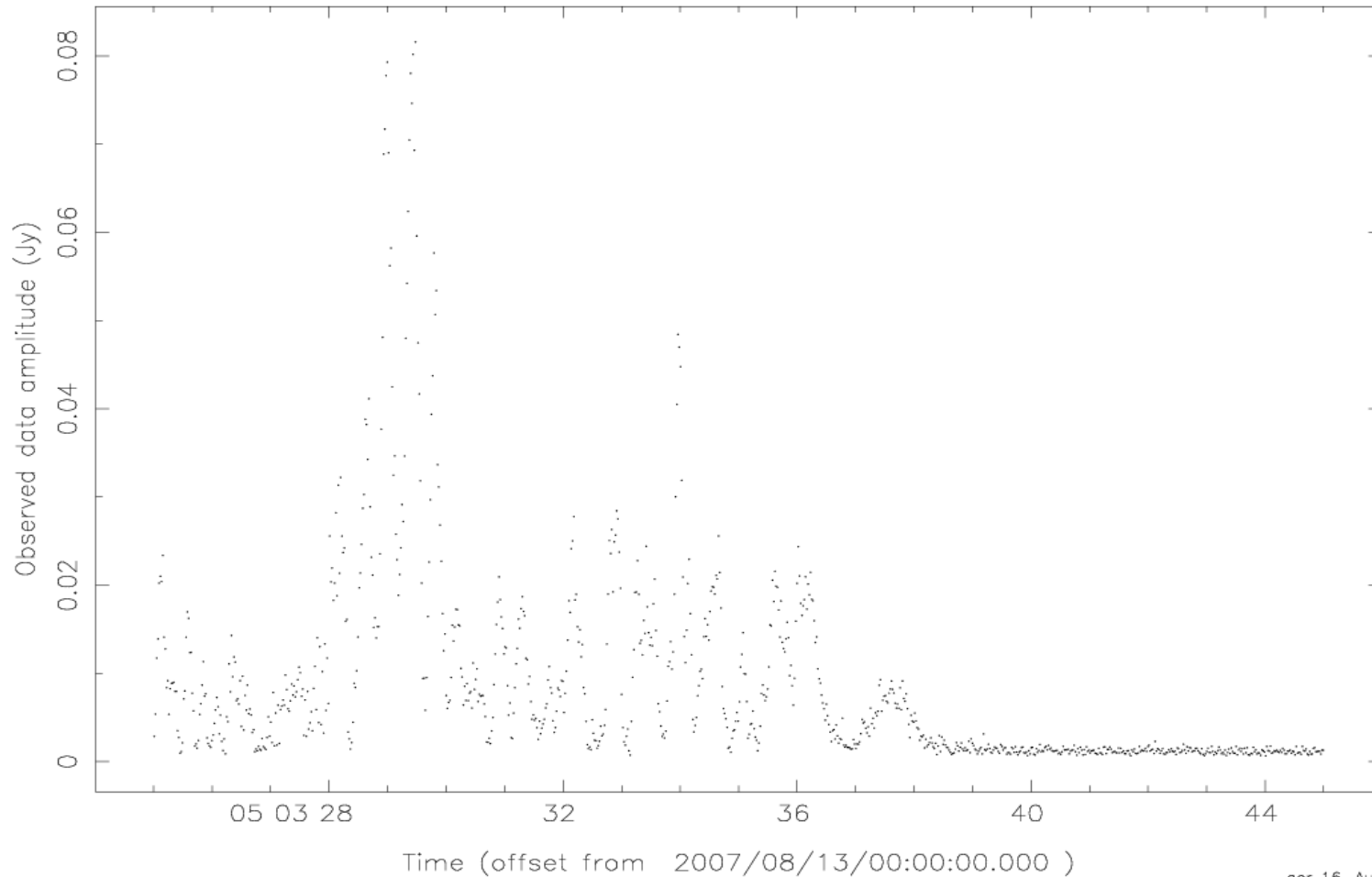
Perseids: 4m of correlated data at 21 ms (13 Aug: SB8 77.257 MHz)

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XX
Antenna1 = 1 Antenna2 = 1



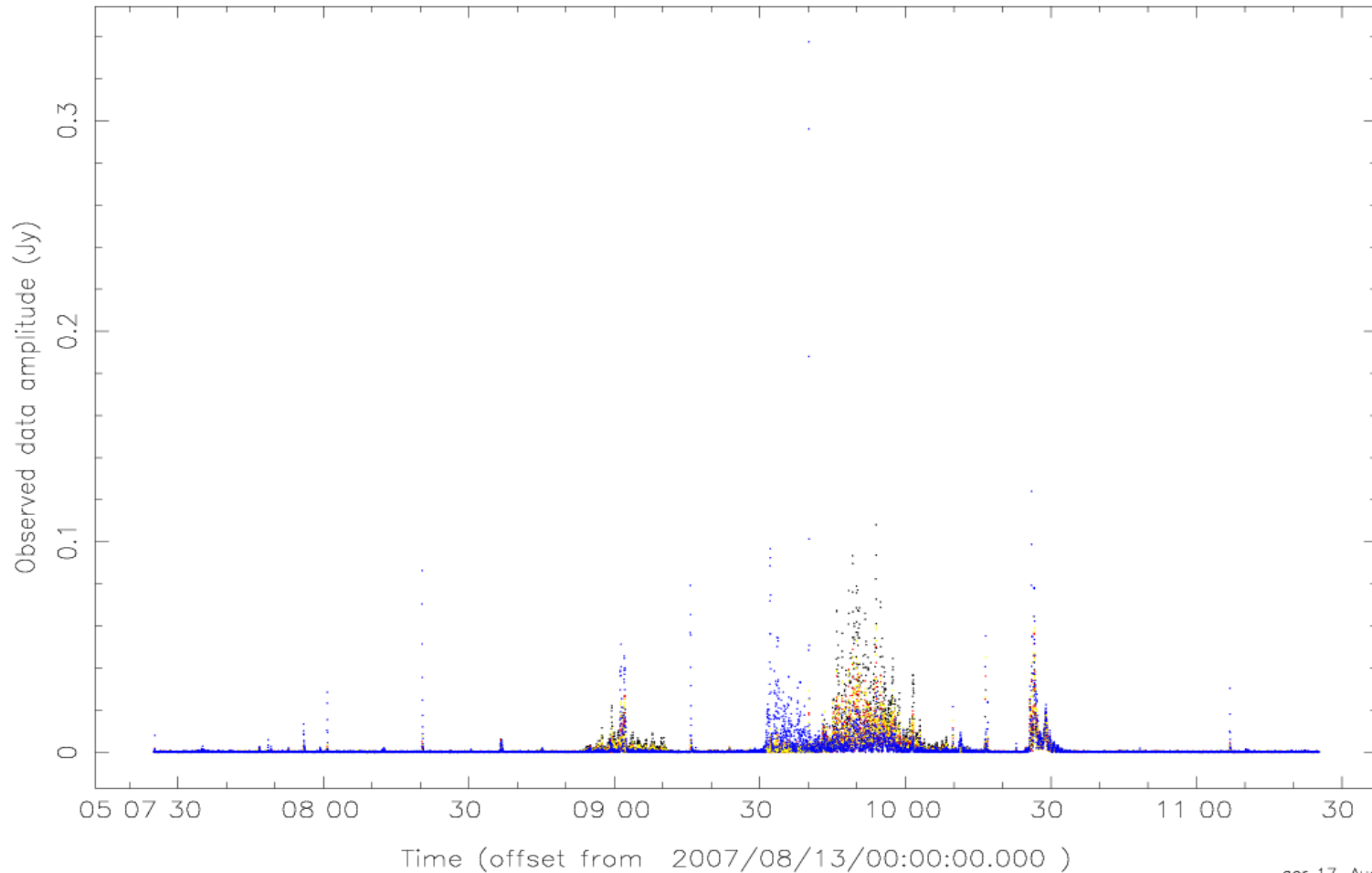
Perseids: 10s of correlated data at 21 ms

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XX
Antenna1 = 1 Antenna2 = 1

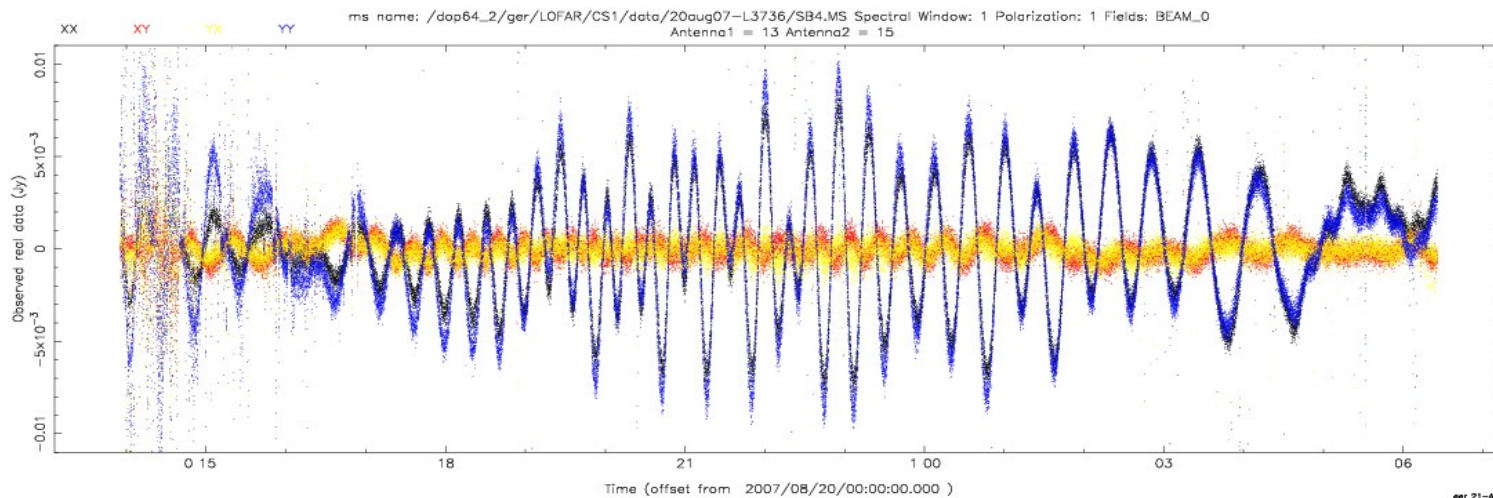
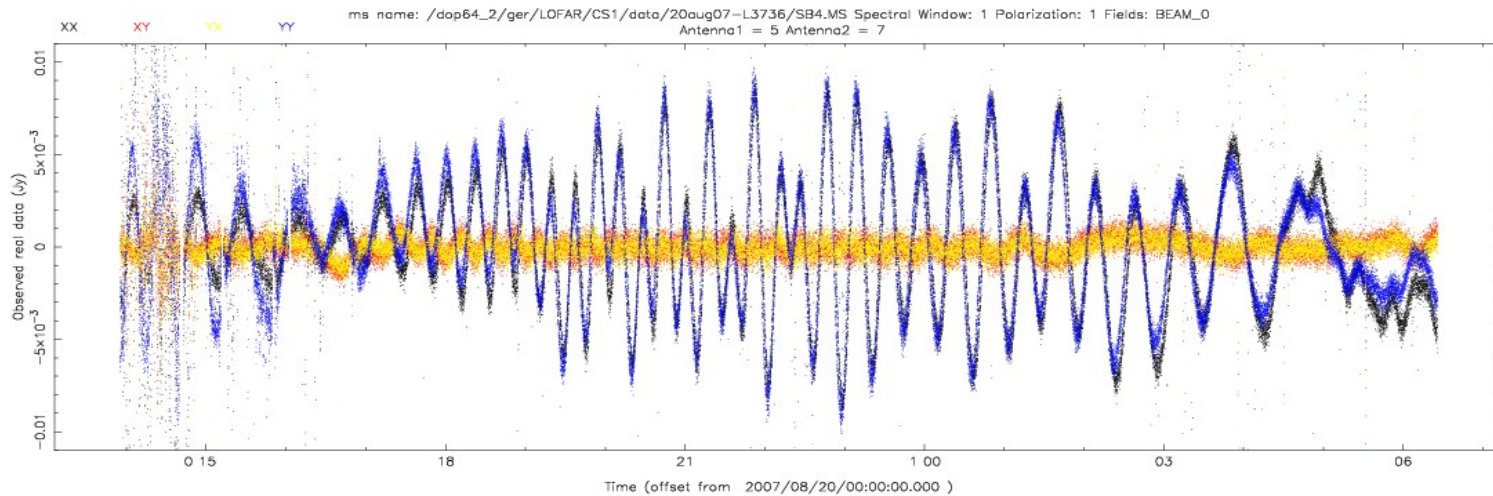


Perseids: 13 Aug : 4m 77 MHz

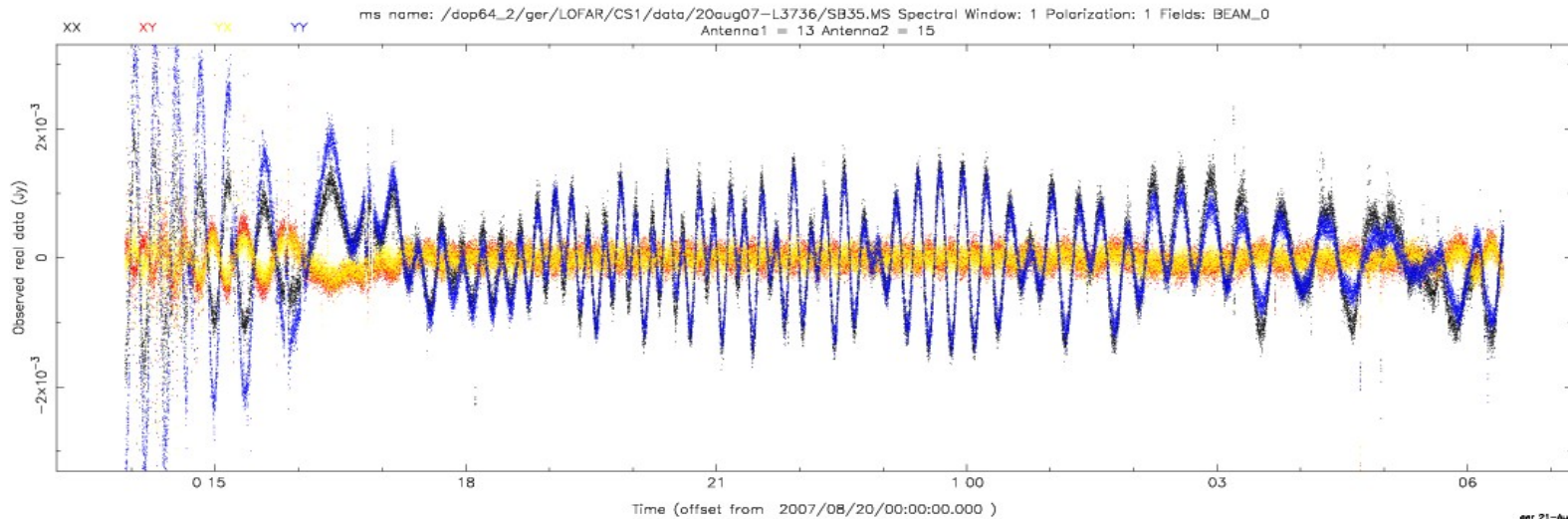
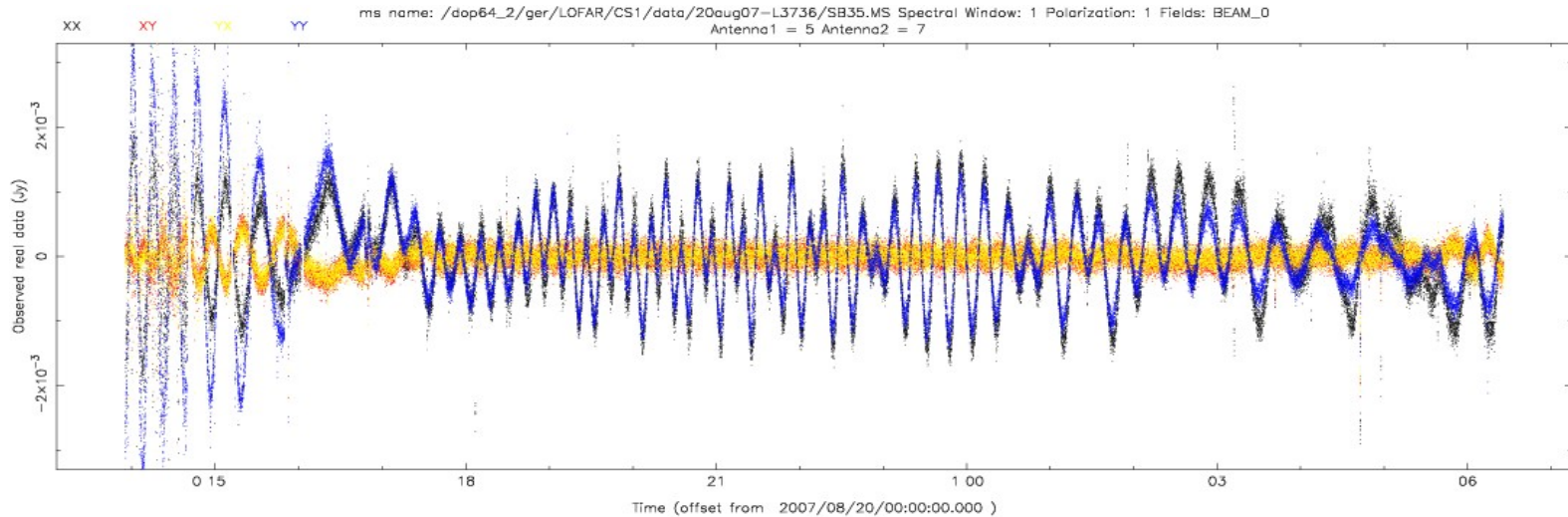
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XX XY YX YY Antenna1 = 5 Antenna2 = 9



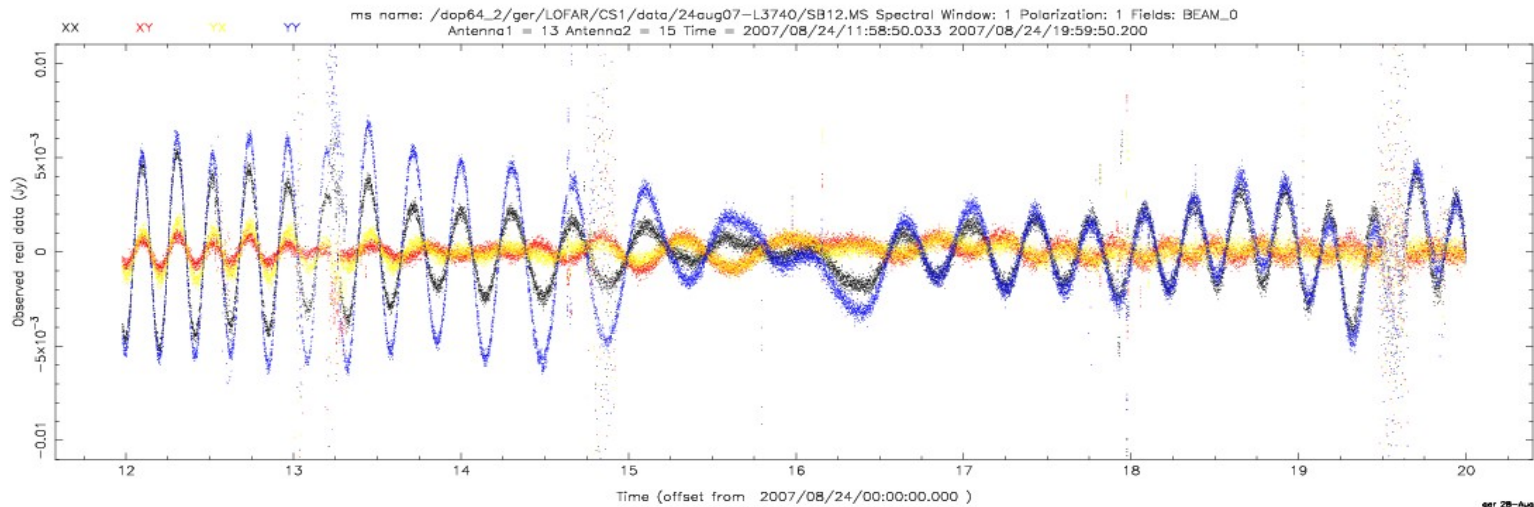
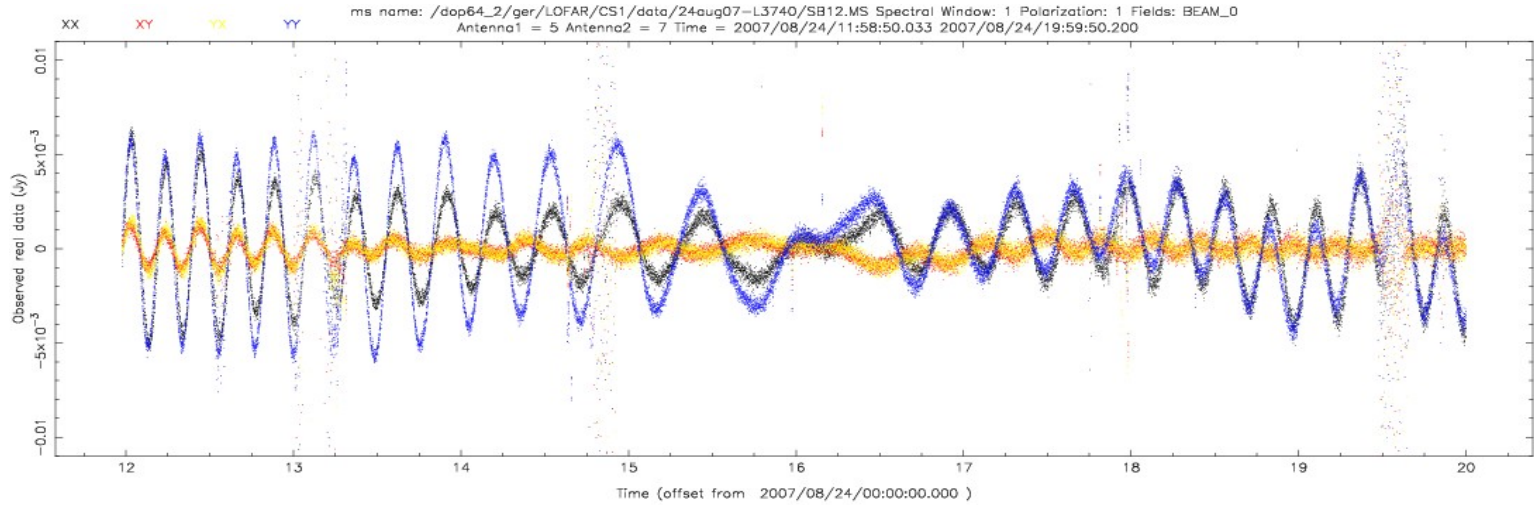
20 August: HBA: 121 MHz



20 August: HBA: 182 MHz



24 August: HBA: 137 MHz



Polarisation work on CS-1 in HBA and LBA ?

Use PR1937+21 as done with WSRT (AGdB, aug07)

