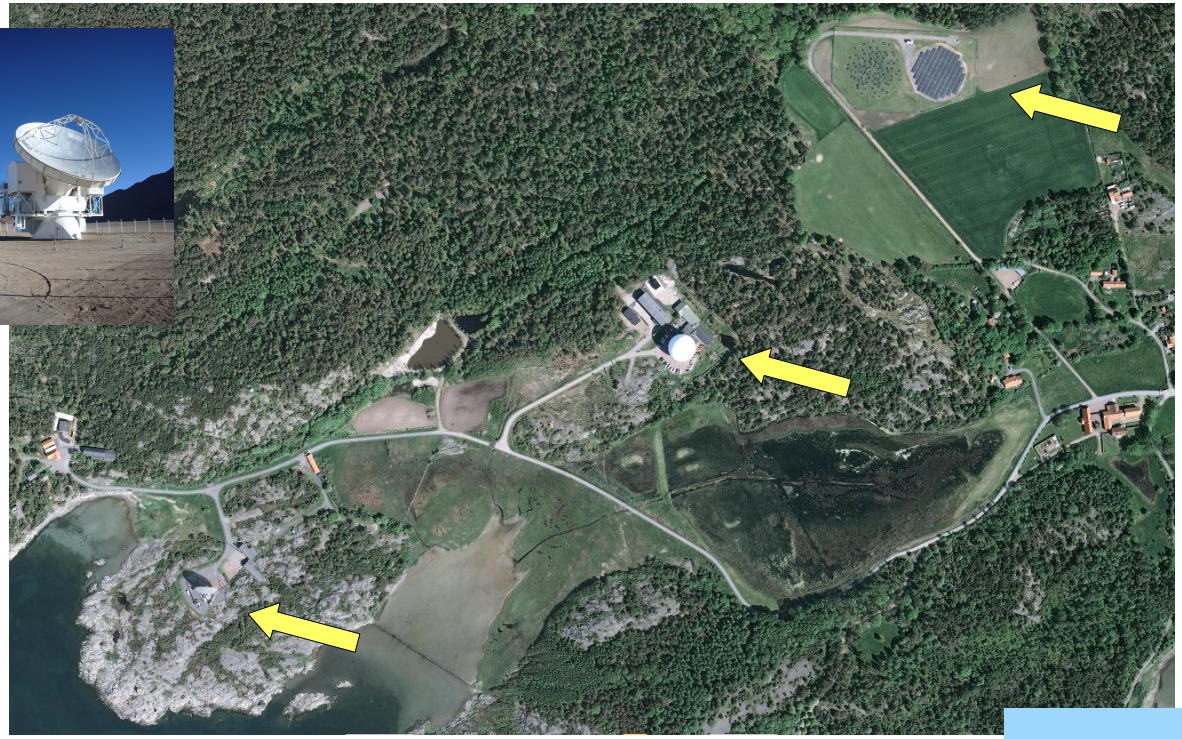
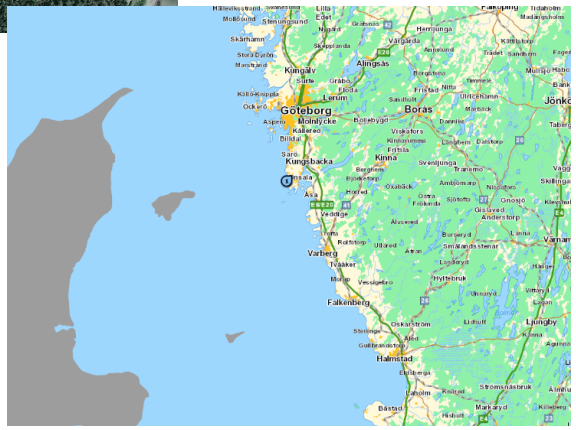
SE607 – the Swedish LOFAR station in Onsala





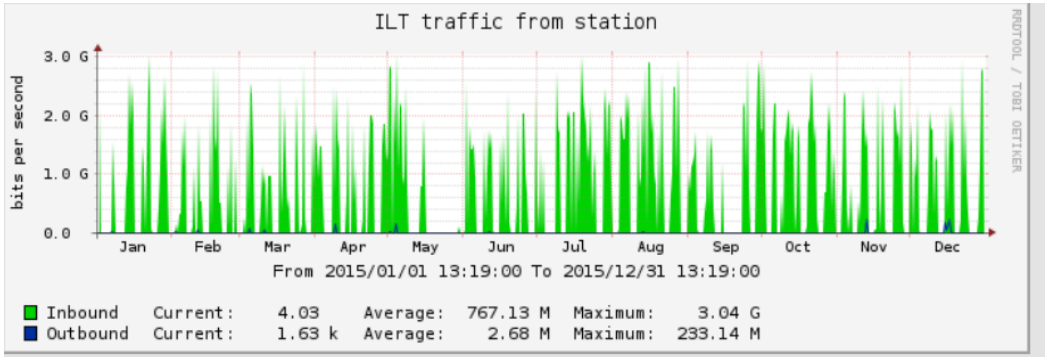
- Onsala Space Observatory (sometimes “Råö”)
- Founded 1949 (5x Würzburg), inaugurated 1955,
  25.6m for UHF→C-band in 1964, 20m/3mm/radome in 1976
  Submm in Chile: SEST 1987-2003, APEX 2005-
- Astro-VLBI: sp.line & continuum L-band → 3mm
  Geo-VLBI: continuum S/X-band, Twin Telescopes
  Astro-SingleDish: spectral line 18-50,**67-87**,84-116 GHz

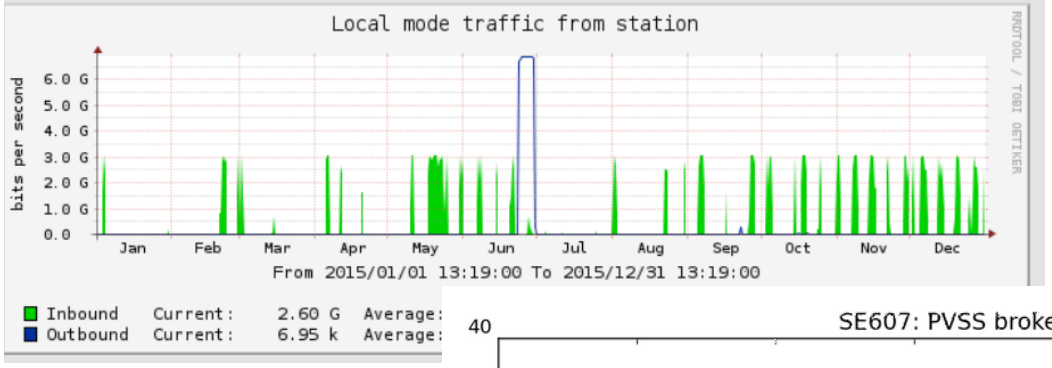
- Station inaugurated 25 Sept. 2011 by Minister of Education.
- Coordinates 57.40 N 11.93 E, outside of observatory premises by ~400 m
- Plastic mesh fence with wooden pole supports
- Entrance gate with card reader and IR-laser trespass alarm
- 60 cm iron anchors for LBA reinforced ground plane attachment
- Information sign for the public

- The LOFAR team taking care of groundskeeping, hardware, software, network, planning, and daily operations. Typically a very small share per person.

Leif Helldner (with Lars E's body!), Miroslav Pantaleev, John Conway, Simon Casey, Henrik Olofsson, Jan Karaskuru, Tobia Carozzi, Lars Pettersson, Ronny Wingdén, Lars Eriksson

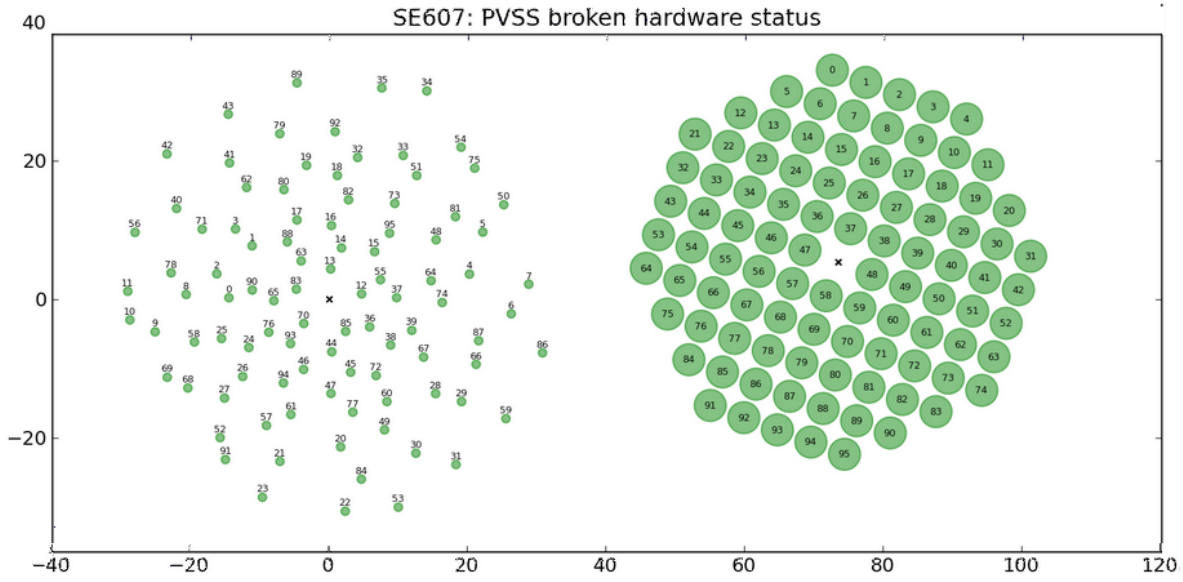
Recent additions:
Michael Lindqvist and
Stephen Bourke





Mostly smooth operations since last meeting

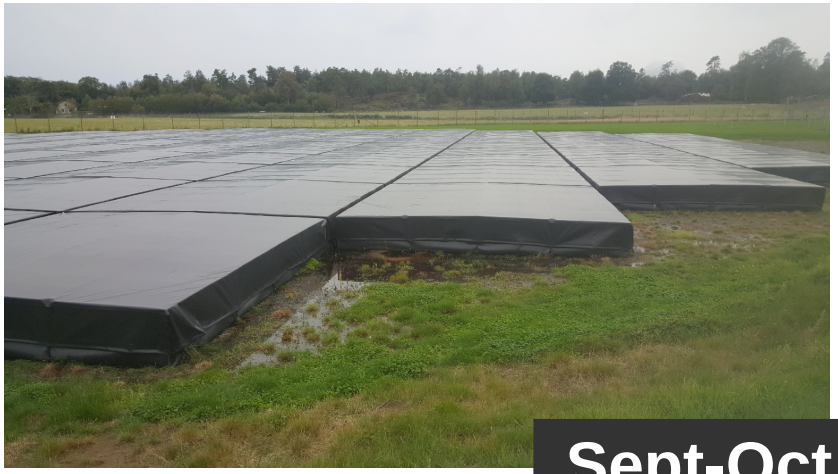
Clean bill of health as of 2016-01-26



Summary of events

- ASTRON maintenance visit April 2015
- UPS installed 24/4 2015 – model Liebert UPS GXT3-3000RT230 3000VA – but it does not cover frontends/backend. Lasts about an hour during a persistent power cut.
- Logging activity in the area from early spring until September
- Rubidium clock failure 2015-09-16, replaced and station returns operational on 2015-09-22
- Drainage problems near HBA that are not yet fully solved
- Stand-alone observations have increased and we are regularly running two projects by independent external “expert” observers.

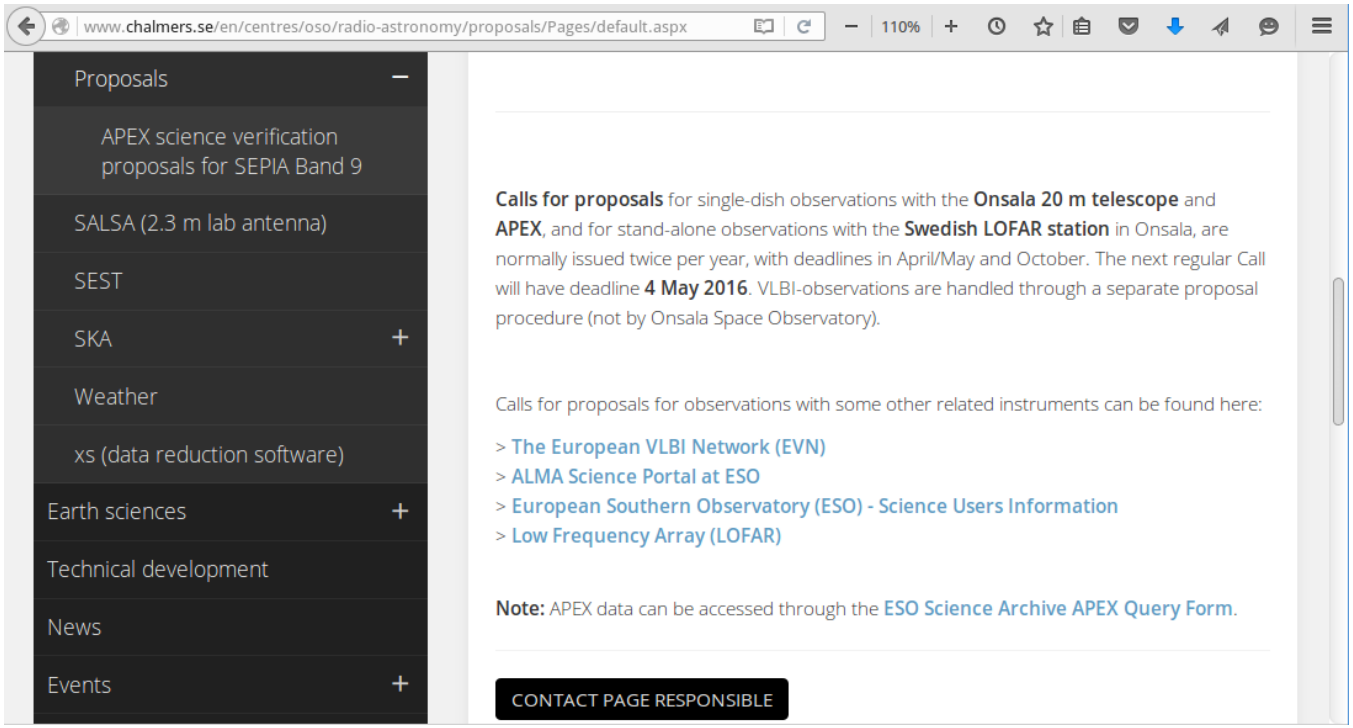

Välkommen till LOFAR:
världens största radioteleskop



Sept-Oct 2015

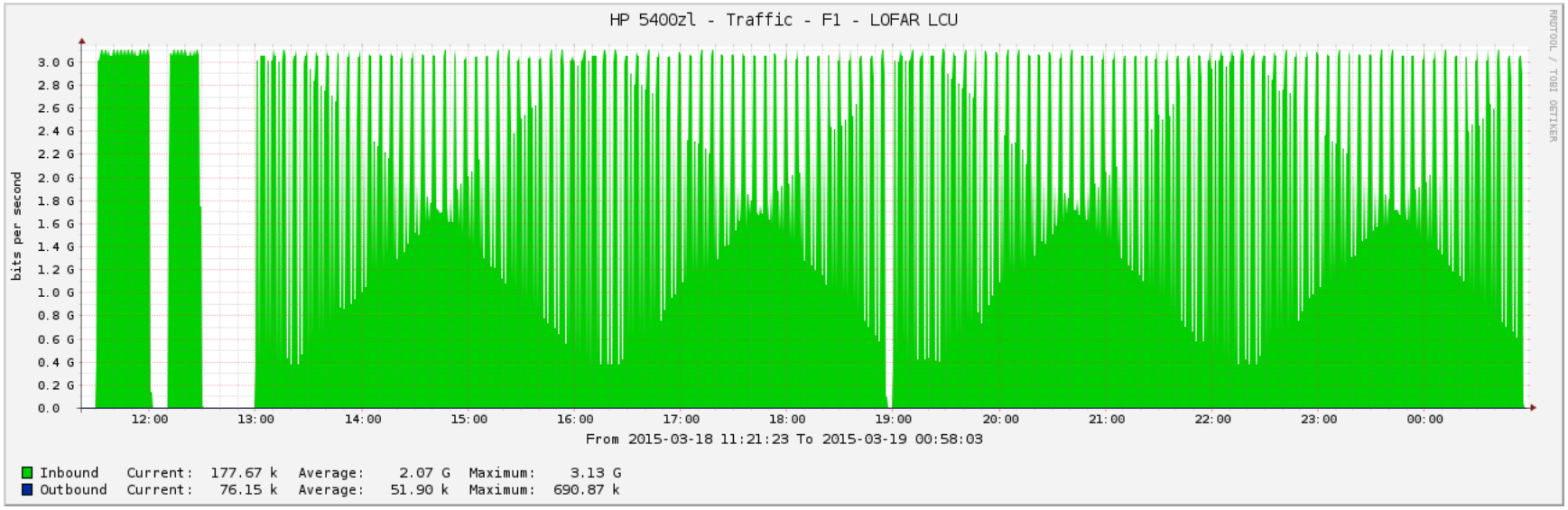
March 2016

Lastly...



- Can record all 4 lanes for ca 48h
- Has GPU but it is currently not used
- Expert users can observe remotely
- Data cloning possible but not used yet

THE END



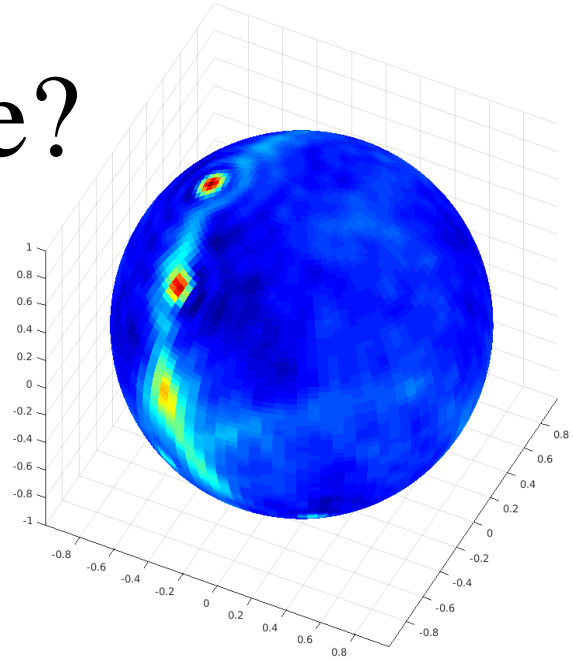
Funny-looking data stream imprint 2015-03-18

Became Daily Image at ASTRON 2015-03-24:
http://www.astron.nl/dailyimage/index.html?main.php?date=20150324

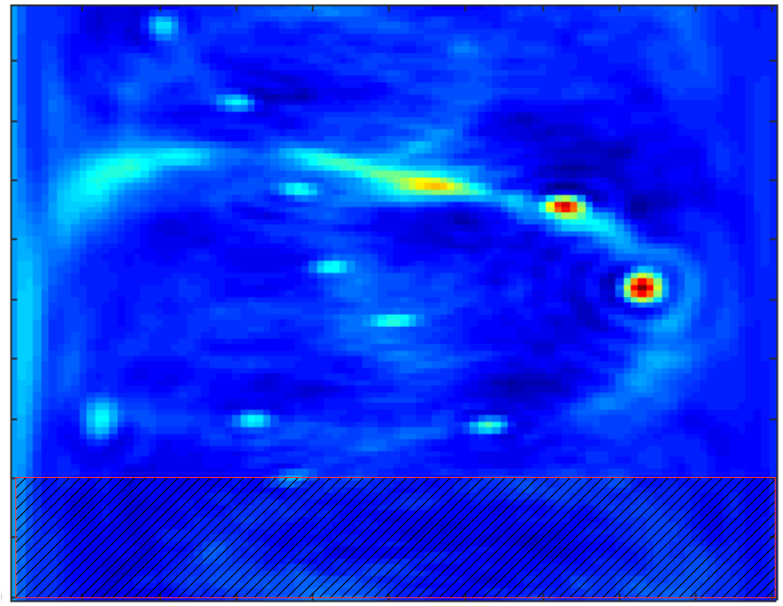
LOFAR projects: Calibration & Imaging

Tobia Carozzi

World record image?

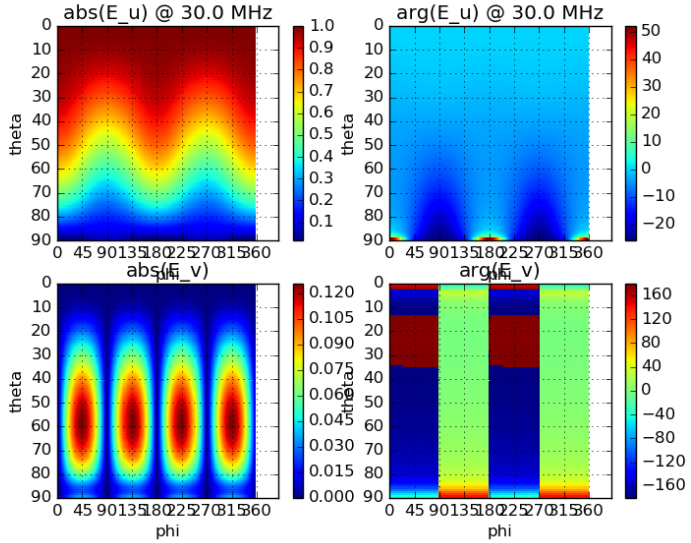


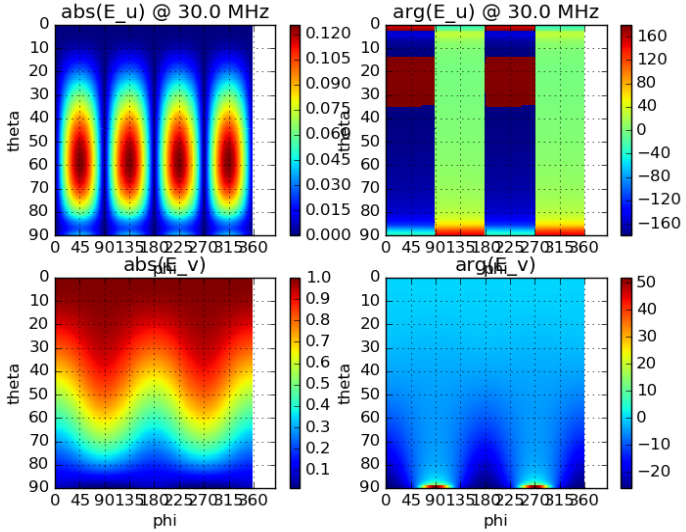
- Widest, single-synthesis (i.e. no faceting) image
  - 37100 sq.deg. > hemisphere
  - Based on 24h of xst data from SE607
  - Using spherical interferometry, see *Carozzi "Imaging on a Sphere with Interferometers..." MNRAS 2015*

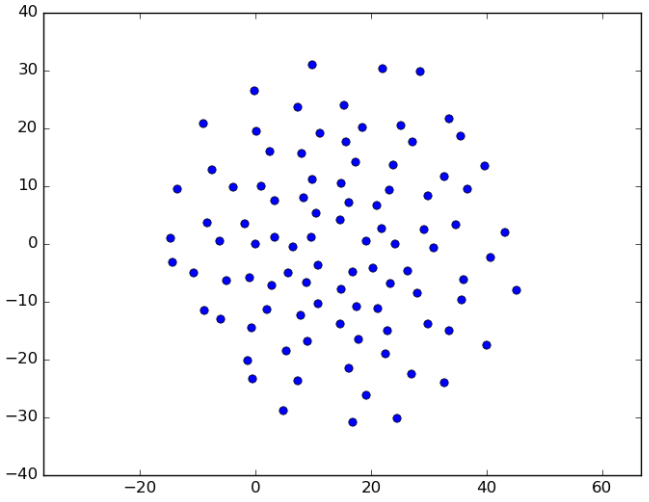


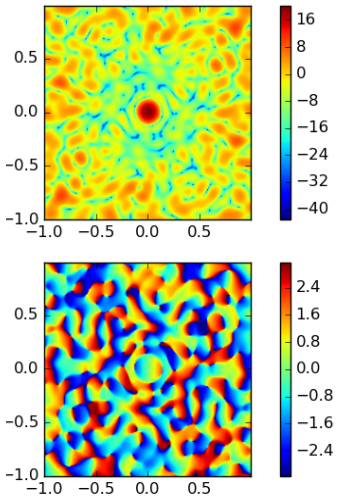
Myra & AntPat: next generation beam modelling

Example AntPat output of LOFAR LBA element & array beamform



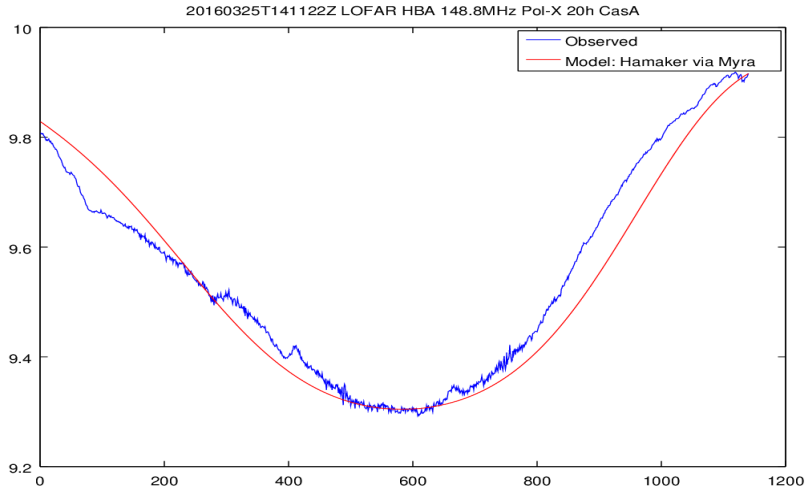


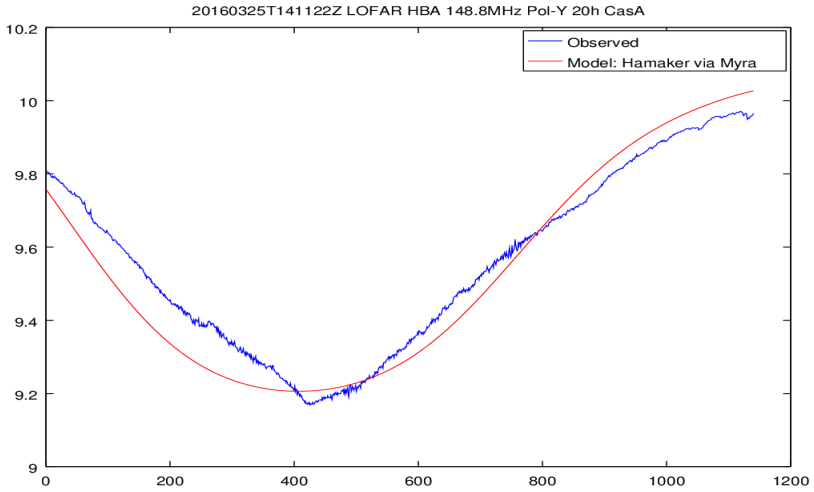




`dreamBeam`: beam modeling framework for radio telescopes

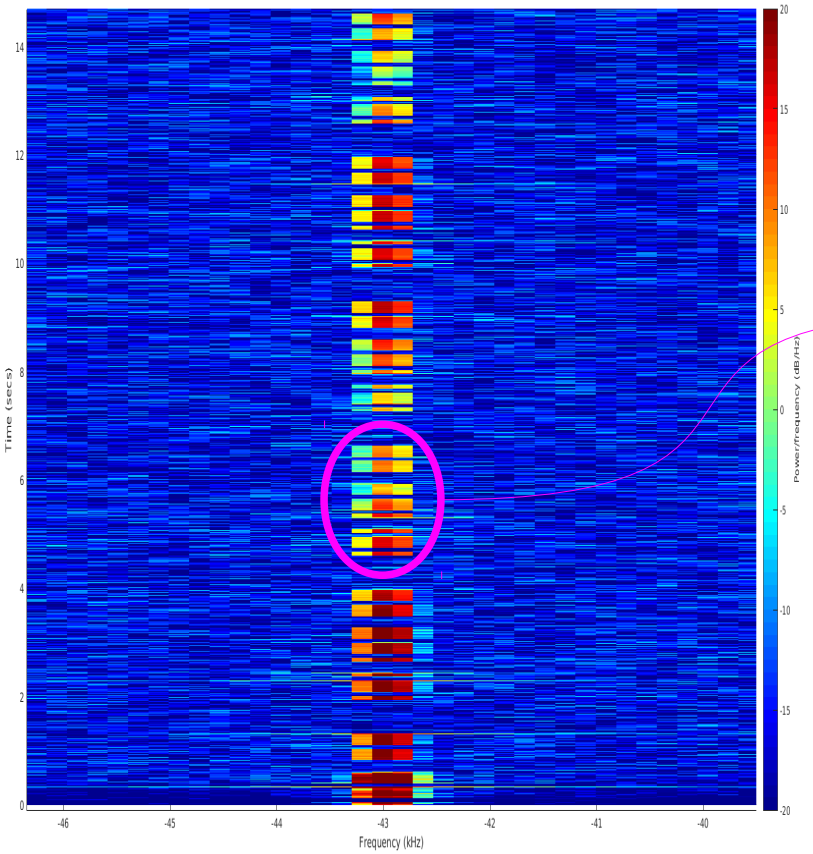
- Allows full simulation of radio interferometers together with AntPat (antenna pattern framework)
- Currently includes LOFAR using pipeline Hamaker model (improved alternatives in the works)
- First release due soon
- Developed on GitHub: https://github.com/2baOrNot2ba/dreamBeam





Radio clock standard for LOFAR?

Example: Russian Radio Clock observed with SE607 @ 14.996 MHz.



.-. .-- --
=RWM
=standard frequency and time signal radio station in Moscow, Russia

Subsequently it sends on UT coded pulses. Could be exploited for time-frequency calibration “in” LOFAR data (includes ionosphere)