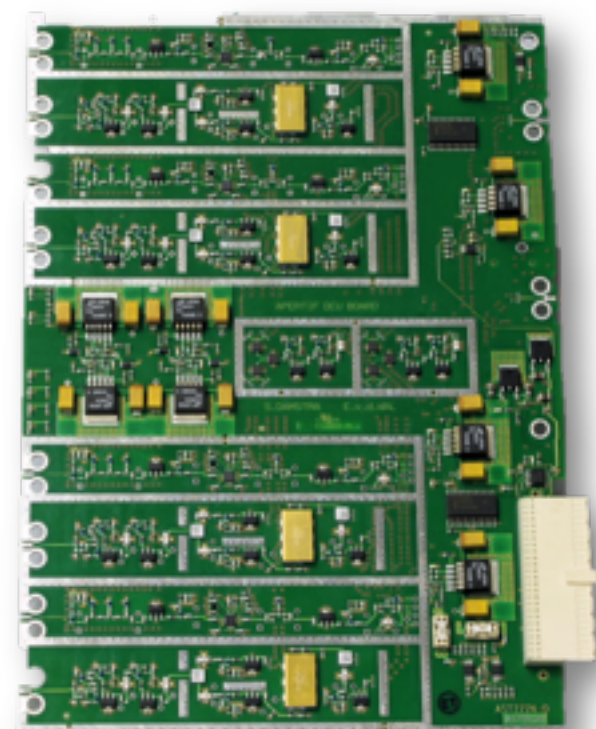




- Have not produced nice images lately, but have been working on details of final hardware
- Have prototypes for a complete receiver chain, now tender out for production



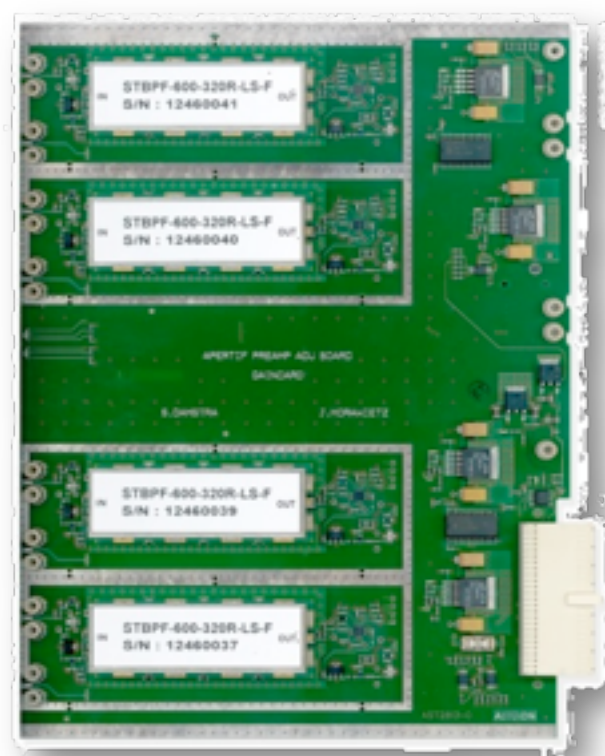
Vivaldi antenna,  
filter and LNA



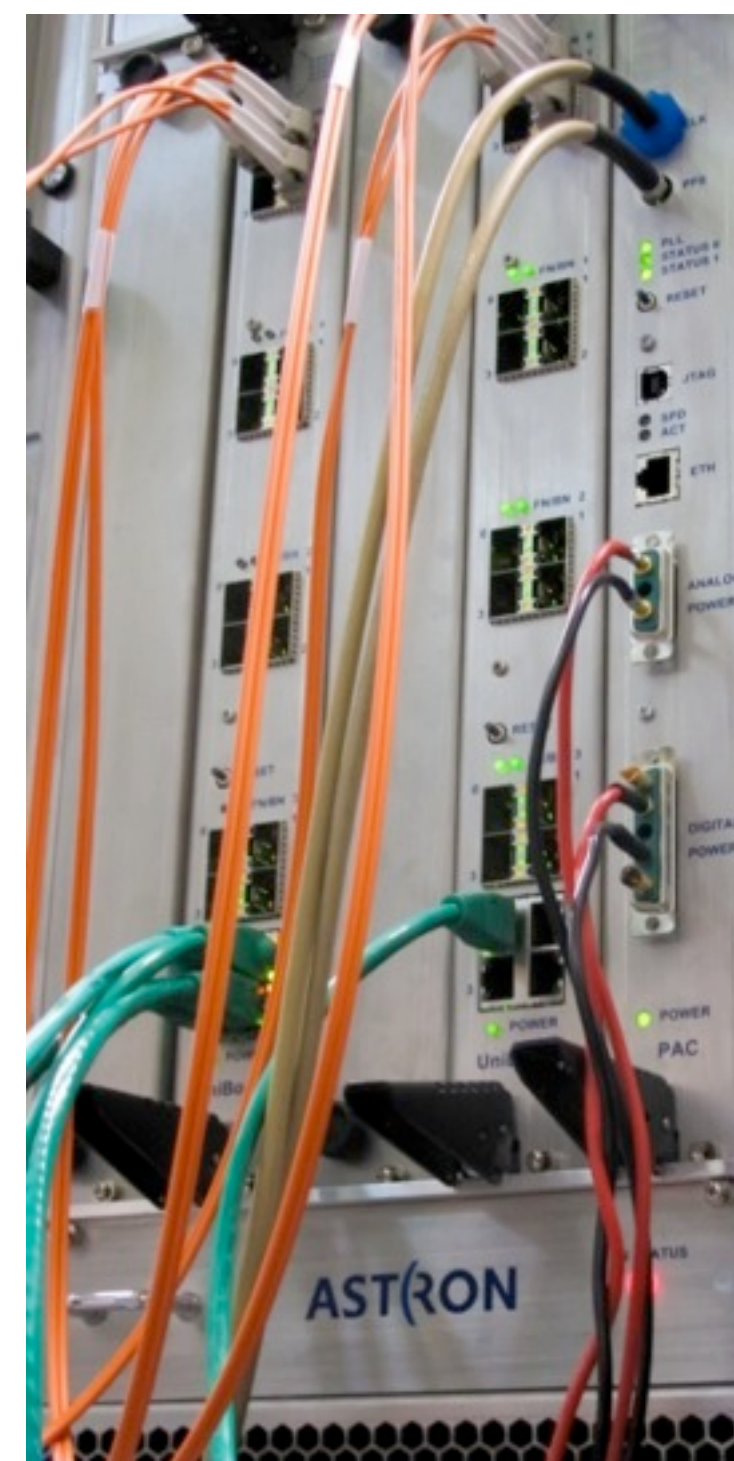
4-Channel downconverter board



Rack for 8 downconverter boards

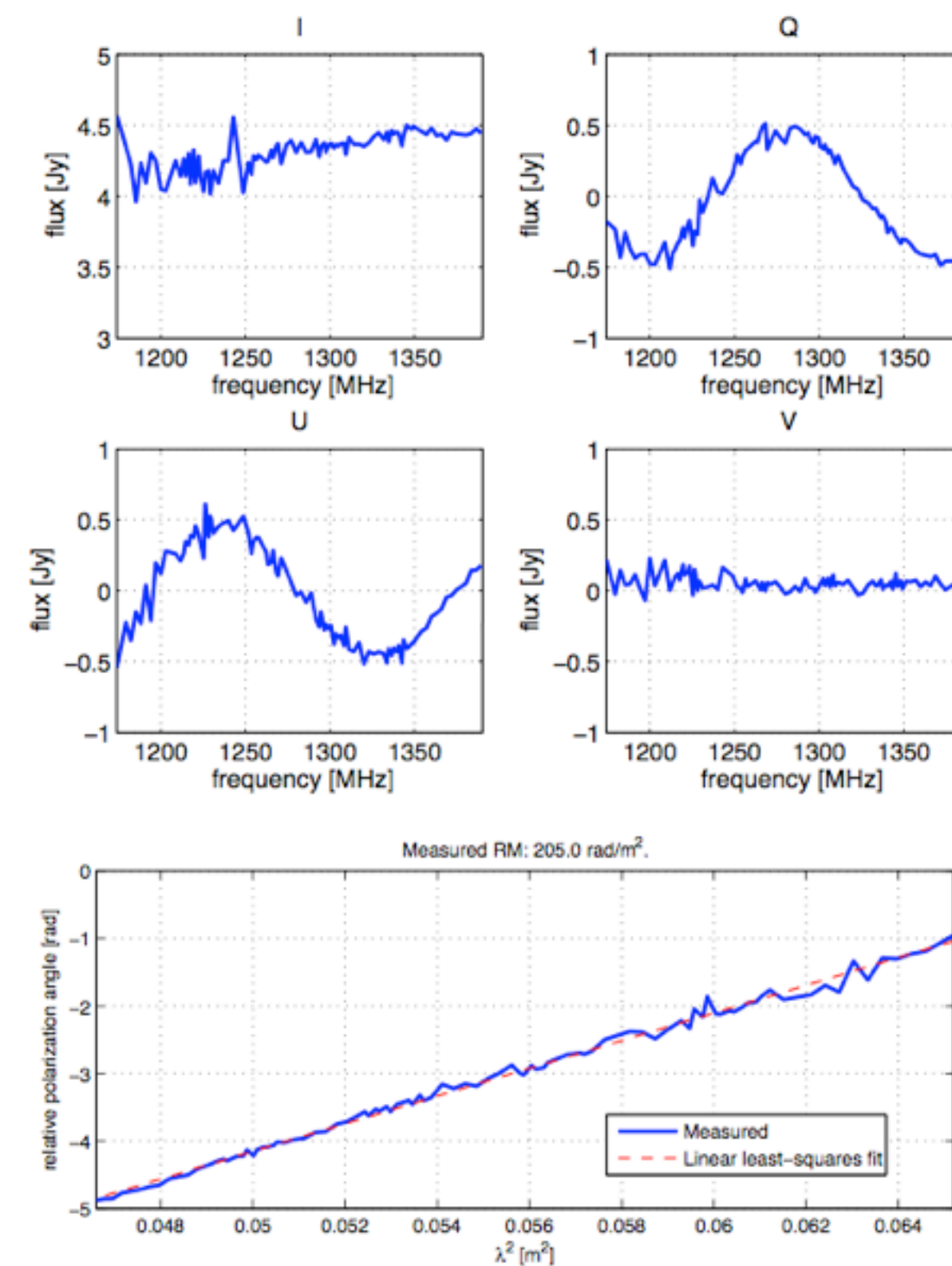


GainCard



Digitisation  
and beamforming

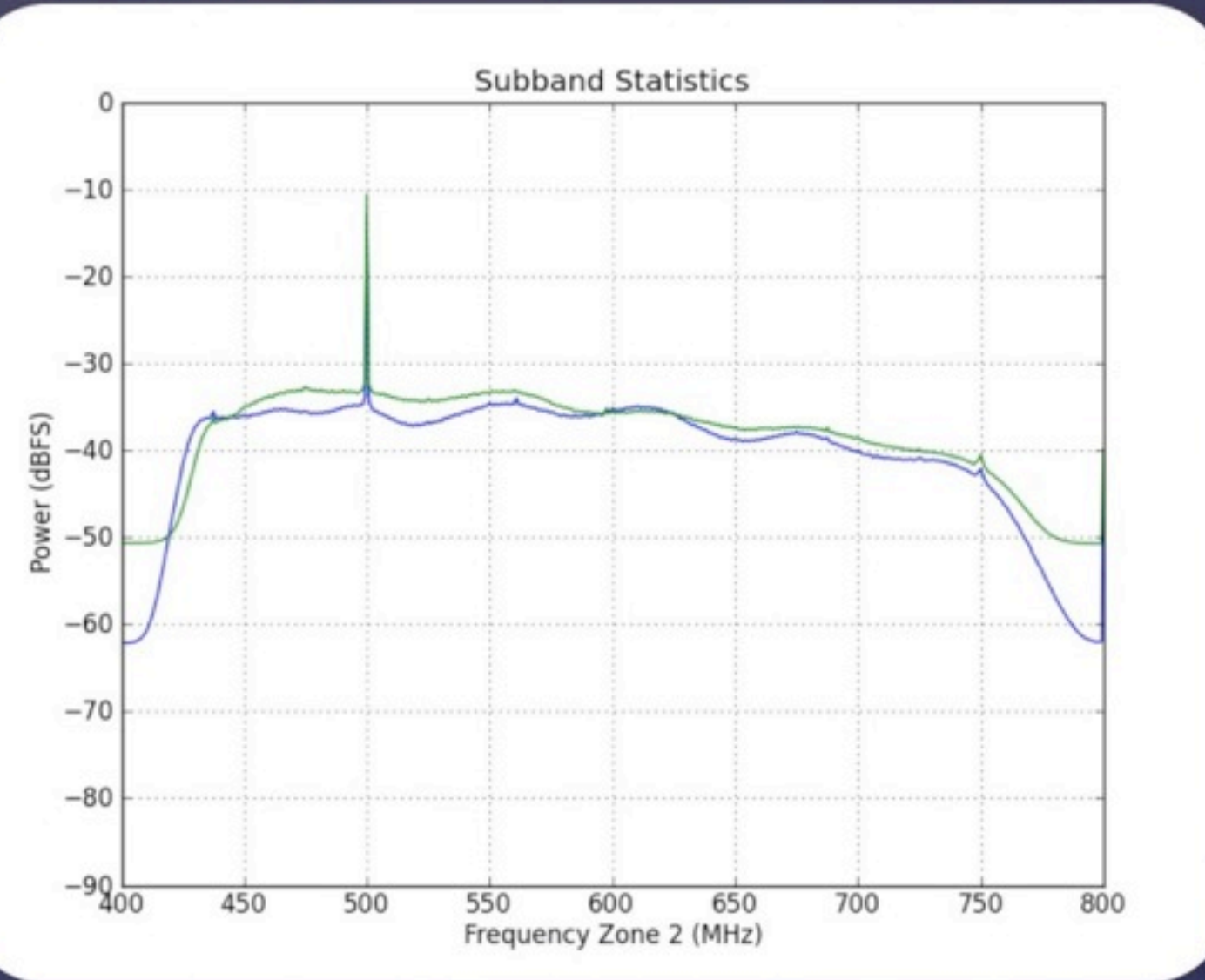
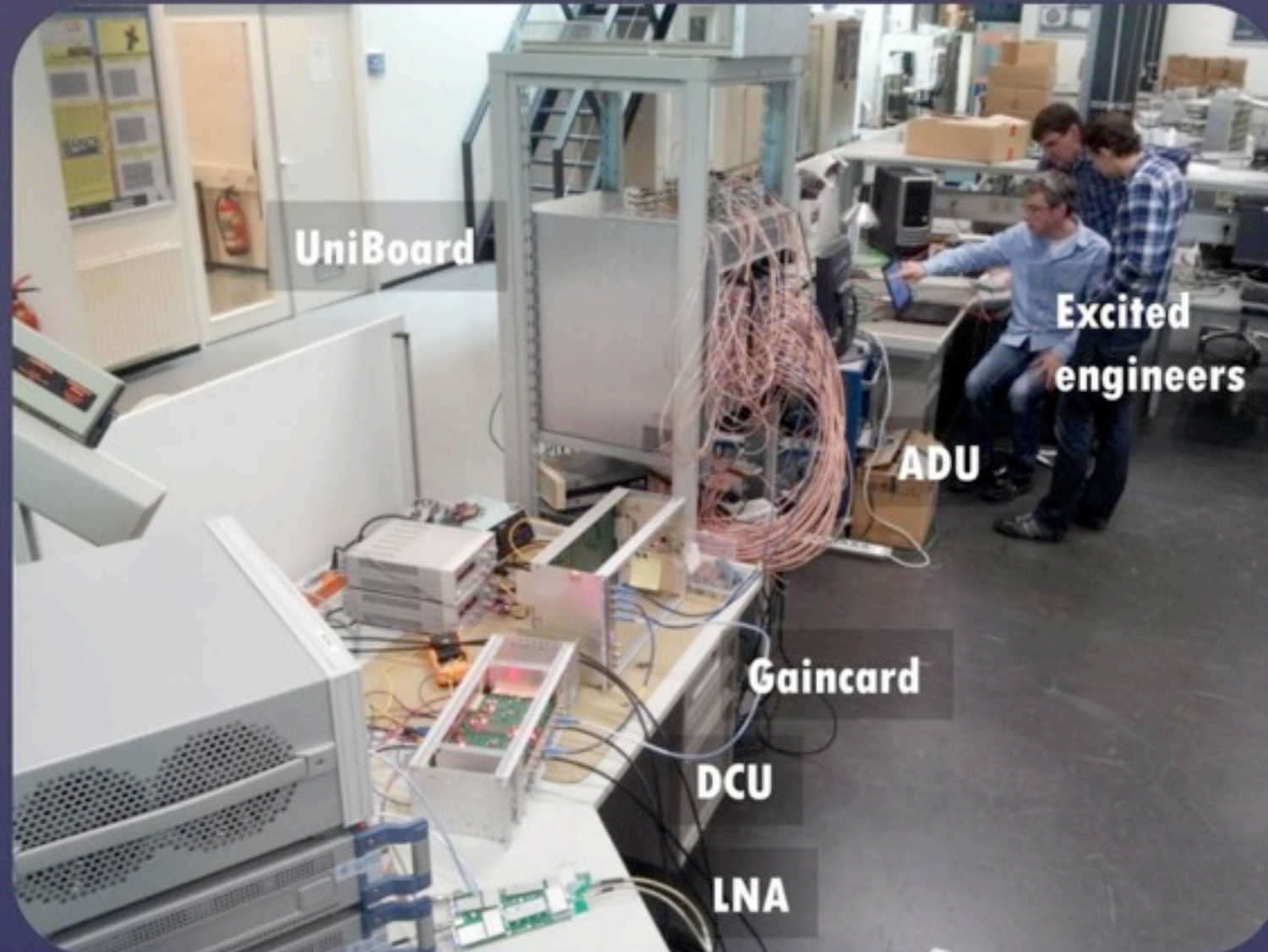
Scanned beam (1.06 deg in diagonal plane), course flux-scale calibration



# Highlights

# First spectrum

LNA – DCU – Gaincard – ADU - UniBoard



18 April 2013

# Infrastructure at WSRT in place

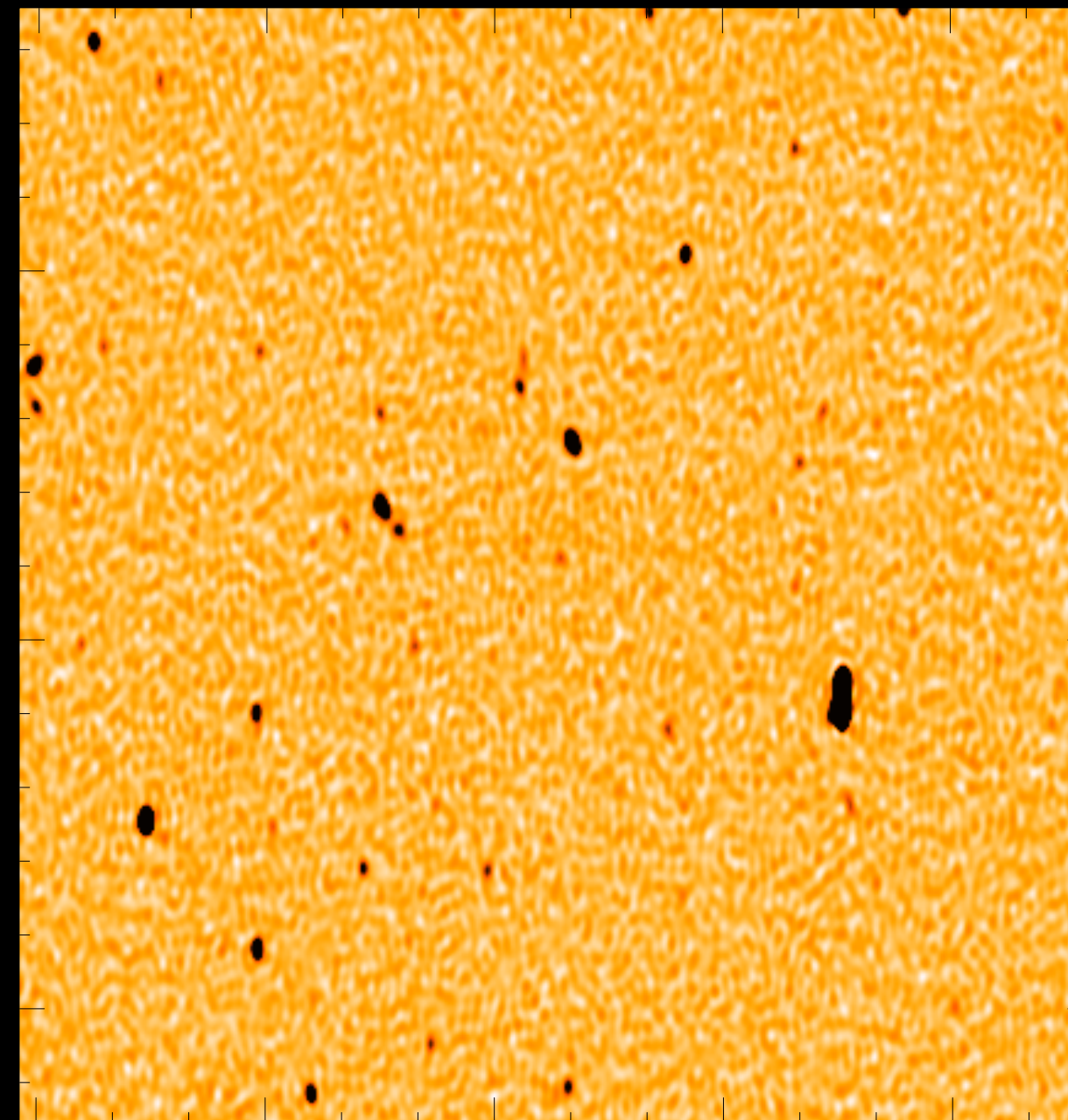


- ▶ Use NVSS as sky model for first selfcal cycle (Neeraj Gupta).  
produces 'identical' images as made by hand starting with cross-calibration using standard calibrator.

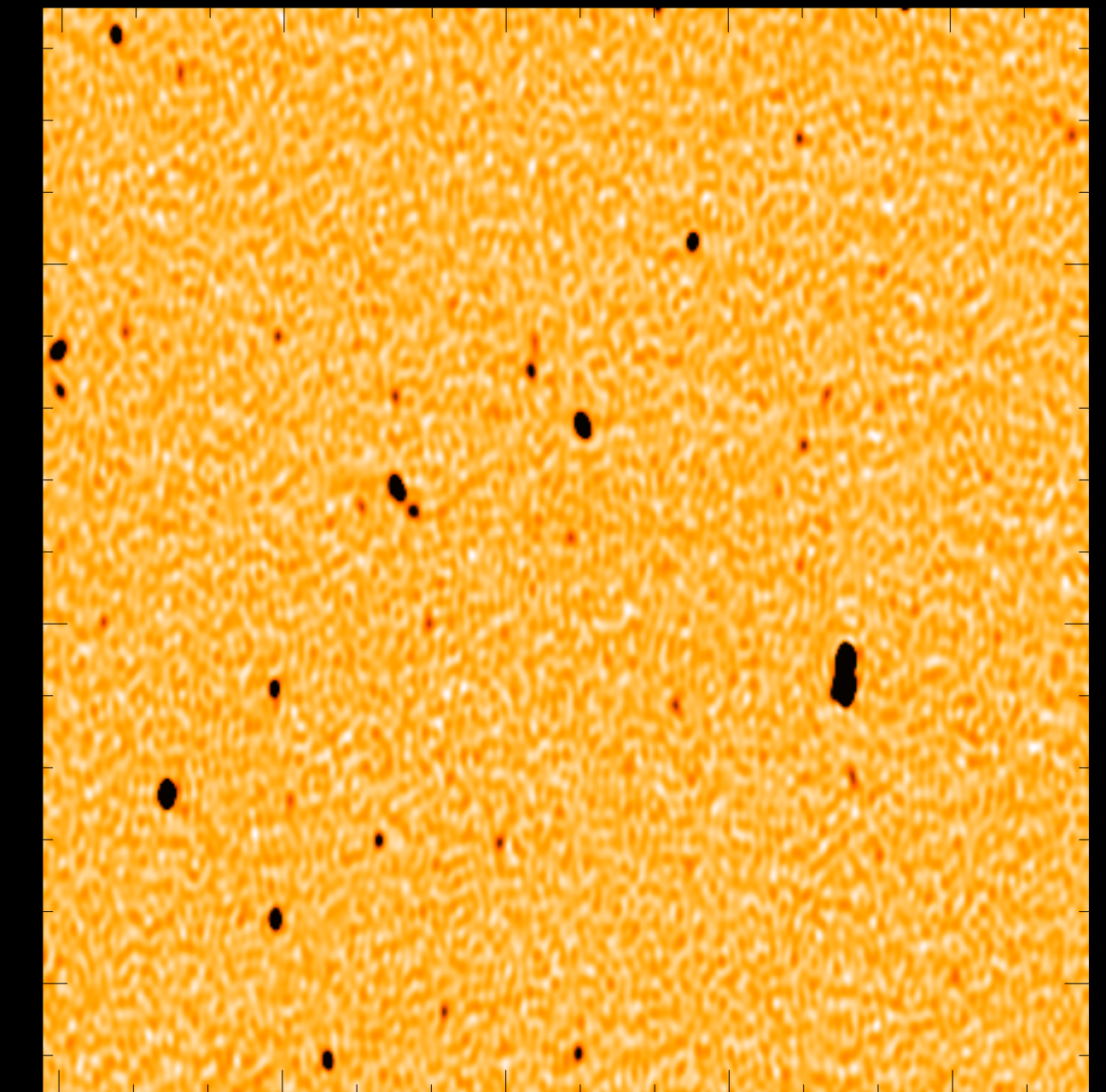
- ▶ Able to fit PB parameters

- ▶ Worries:

- Software is slower than what we are used to
- Will not work well on some fields
- Did not get Sagecal working

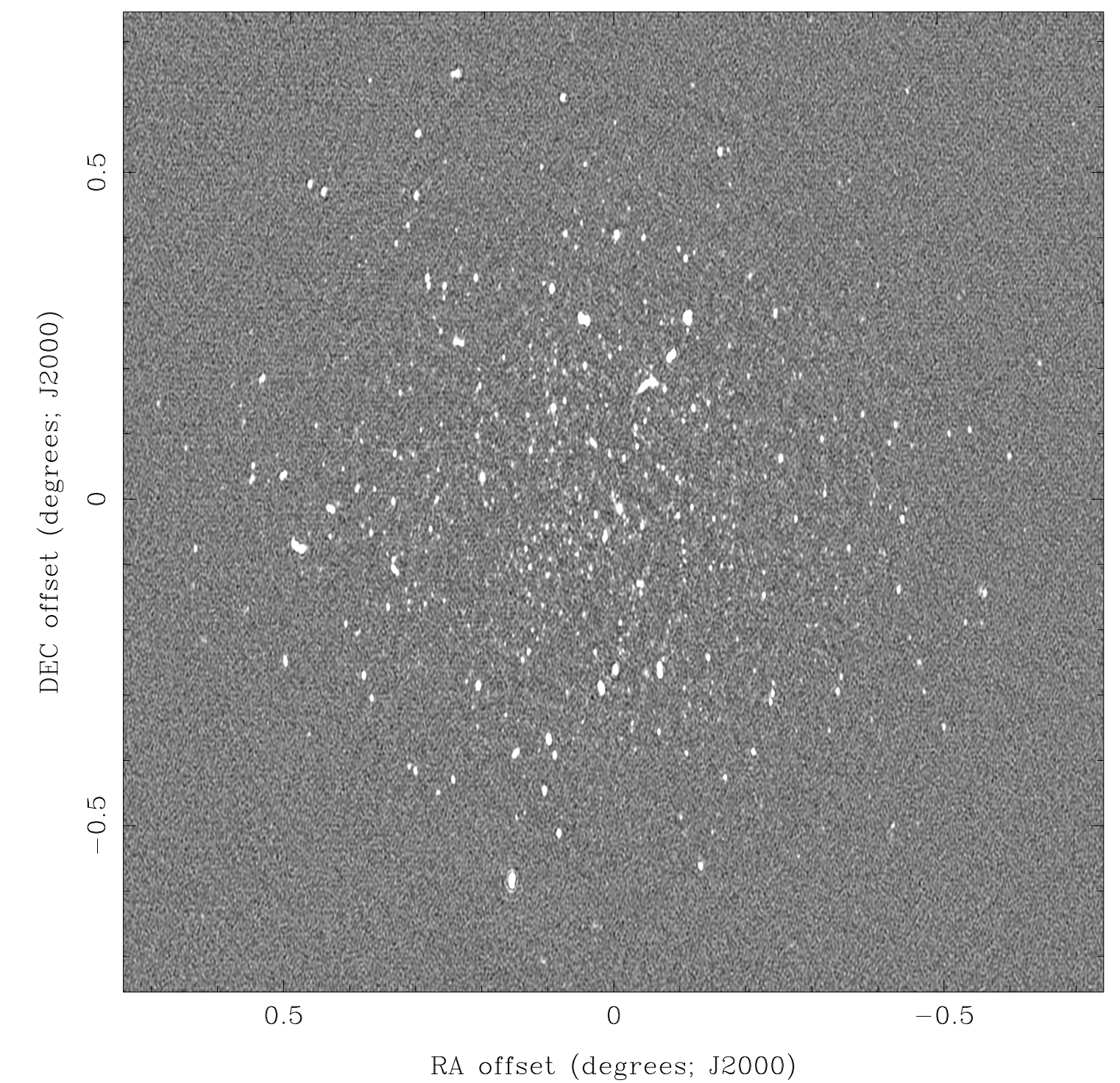
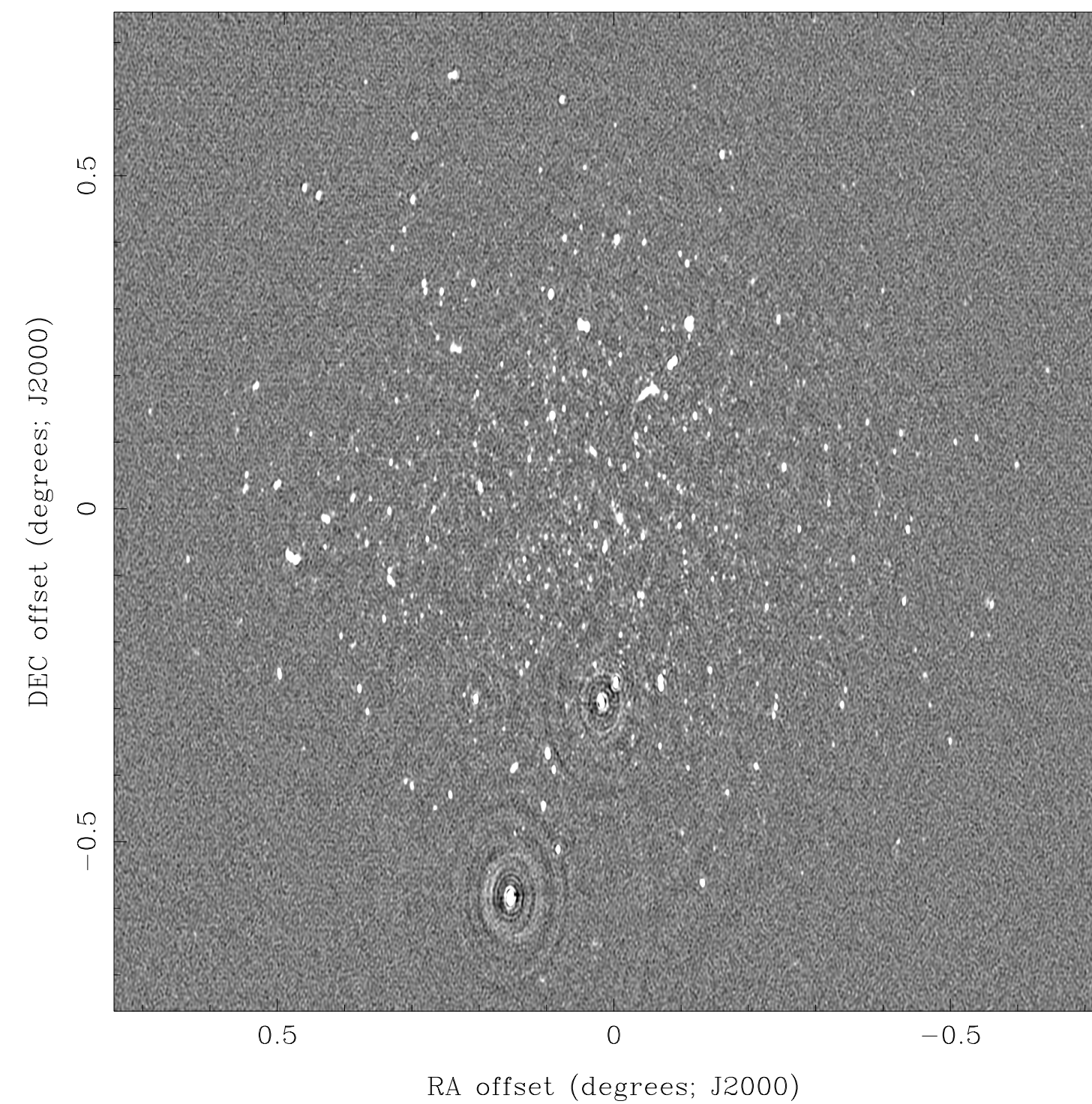


By hand, start with cross calibration



Automatic, initial model from NVSS

- ▶ Can now handle DDE's due to PB offsets (Serra).
- ▶ Use peeling initially, better techniques later



# Next steps

- Tendering process
- ALPHA-3 (starting now)
  - Main objectives: Stability, spurious,  $T_{sys}, \dots$
  - Interferometer: 3 PAF's; software correlator
  - Limited field-of-view and/or polarimetry
  - WSRT still available
- Frontend + beamformer CDR (winter 2014)
- ALPHA-6 (spring 2014)
  - Main objectives: initial calibration and imaging
  - 6 PAF's
  - Full field-of-view, full-pol
  - Hardware correlator, but limited bandwidth/beams
- APERTIF-12 (end 2014)
  - 12 PAF's
  - Full correlator
- Tied array modes (2015)



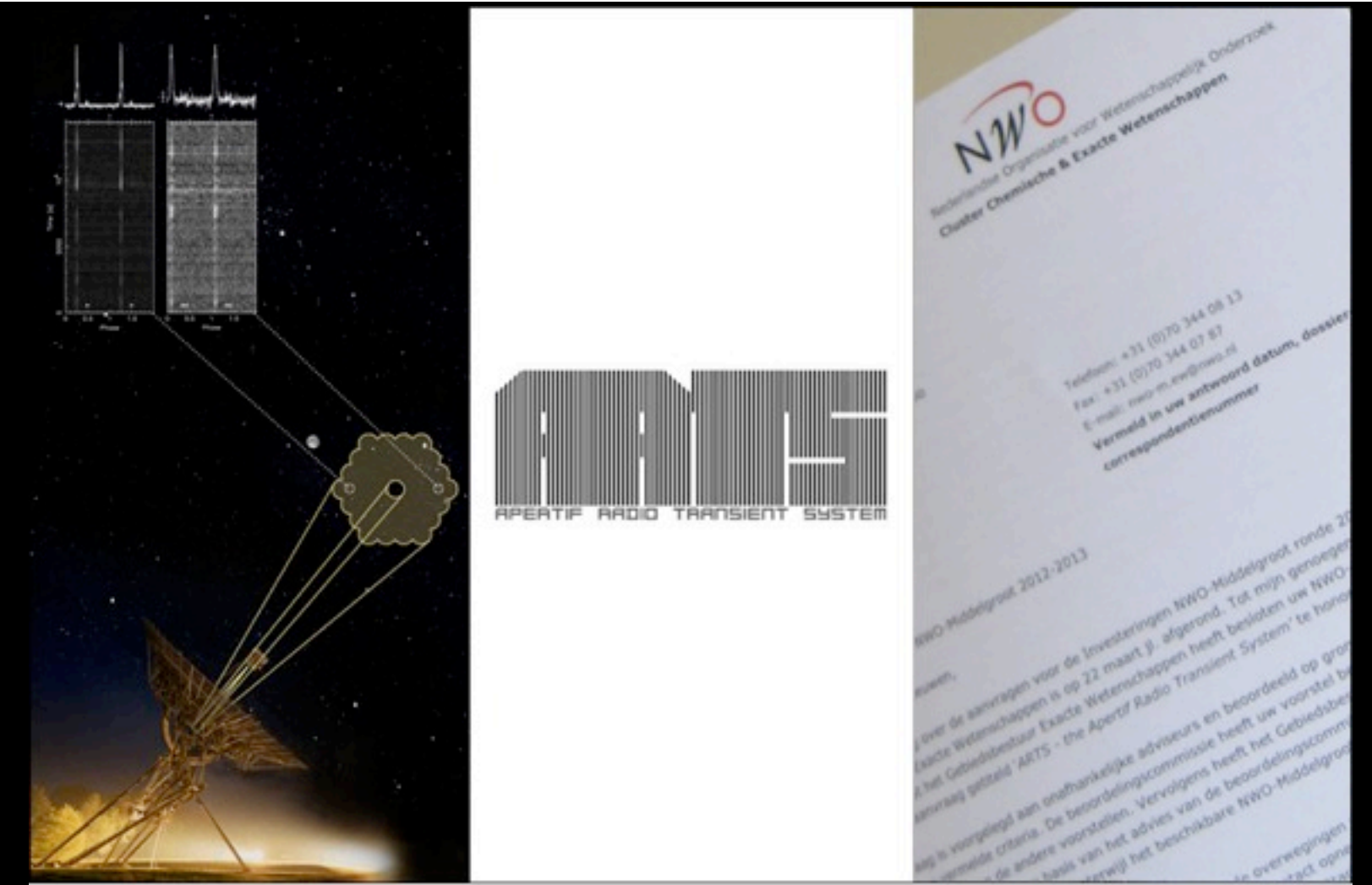
# Upgrading more telescopes

- Starting in June, 2 more telescopes will be upgraded
- Combined with painting, fixing and new cabling
- RT5 is being finalized as an example for all other dishes



# Ramping up for Apertif science

- ▶ Second ERC Advanced Grant for Apertif science (Morganti 2.5 M€)
- ▶ Nova & NWO-M grants for ARTS (van Leeuwen) (tied-array beams, transients, VLBI, 1.5 M€)

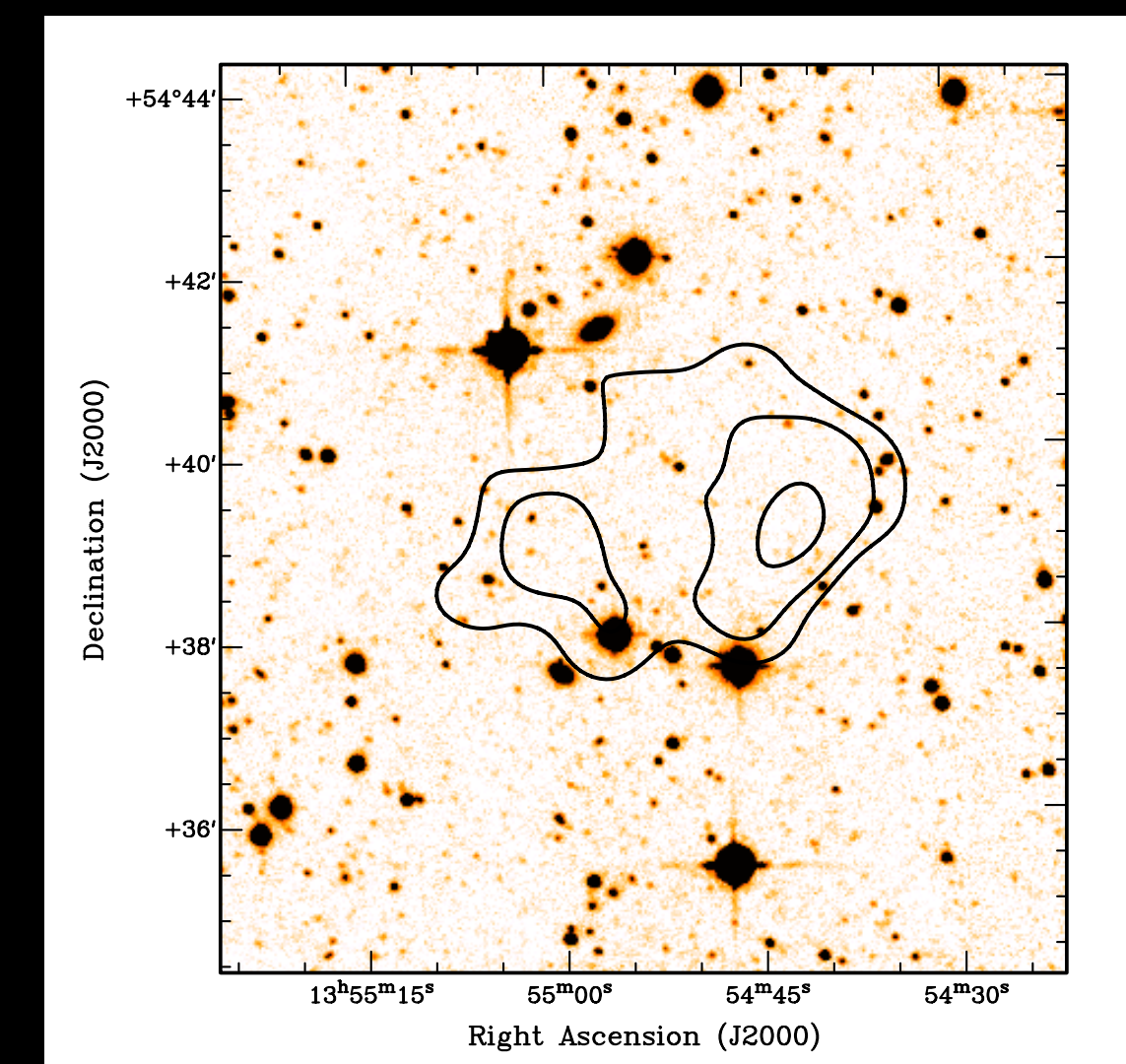
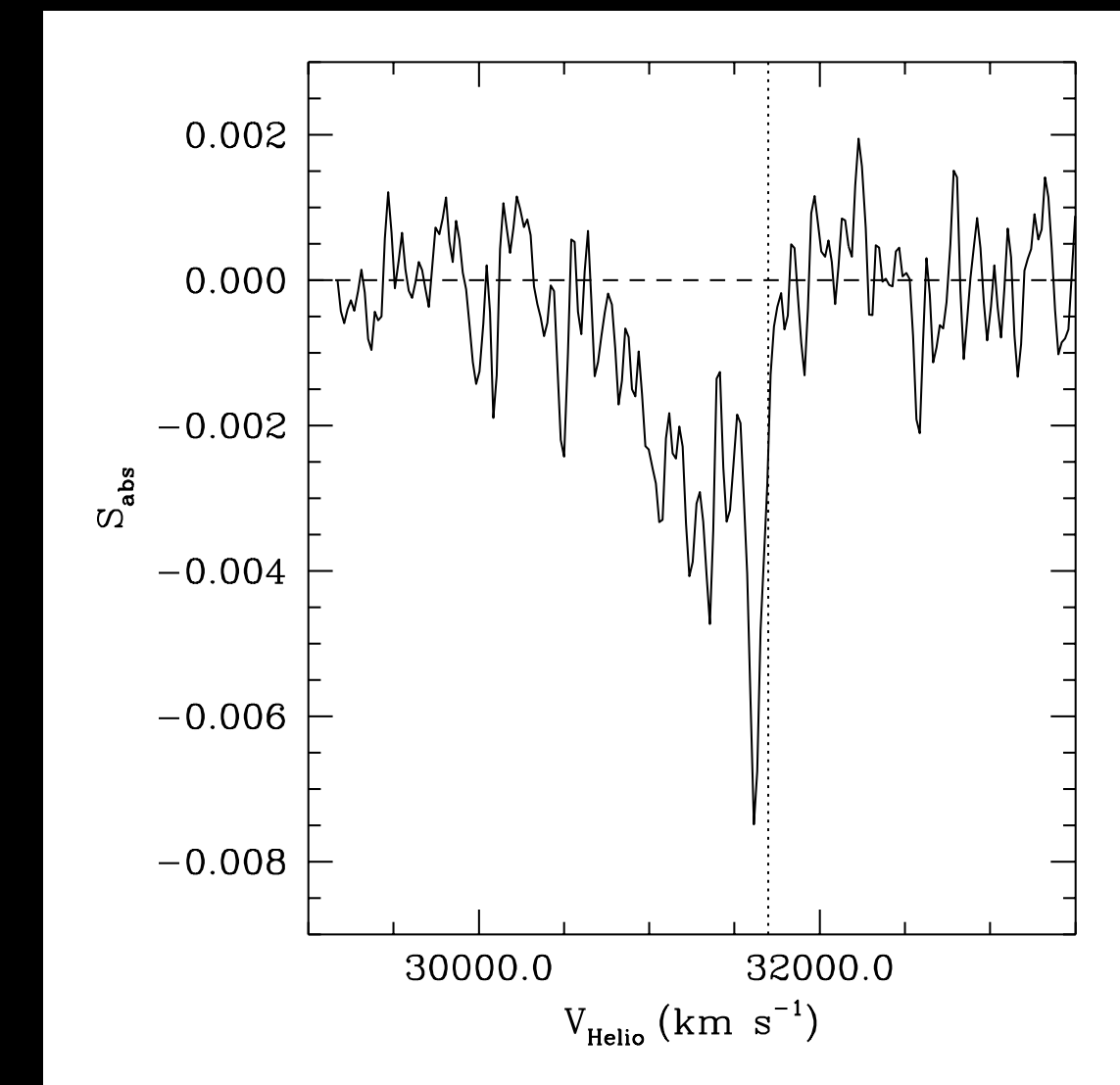


- ▶ Building up Astron Apertif Science group (de Blok, Morganti, Oosterloo, van Leeuwen)
  - Hired 2 new post docs 'for Apertif' (Adams & Frank), more to come
  - Groningen post doc (Marasco)
  - 5 PhD students now working on Apertif related things
  - 2 Software engineers for science related software

# Ramping up for Apertif science

► Several projects now ongoing that have importance for Apertif, either scientifically and/or technically. Groups are preparing.

- BlueDisk (Kauffmann): involves SDSS user community
- Absorption survey (Morganti)
- Stacking (Gereb & Perth): understand the technical issues
- The Smallest Galaxies (Adams, Oosterloo): 'walking the course' for Apertif
- Deep EVLA field (van Gorkom; 1000 hr...): HI evolution; manage large datasets, medium deep survey. Also relevant for ASKAP & MeerKat surveys



- ▶ EoI meeting: Science Teams more open to Astron involvement in survey design.  
Define a number of Strawman Surveys (all-sky, medium deep, transients, Galactic, ...)
  - Focus on where impact of Apertif is largest, do not try to do everything
  - Commensality & collaboration
  - Archival use (Apertif is unique in northern sky)
  - Staged execution
    - demonstration phase (6-12 months)
    - core science (1.5-3 years)
    - extended/full science (2-3 years)
- ▶ Iterations with community on Strawman Surveys
- ▶ A number of options will be proposed to committee of wise men & women. Survey definition ~March 2014
- ▶ Survey teams decide on their level of involvement, trading off against privileges;  
Independent proposals possible

