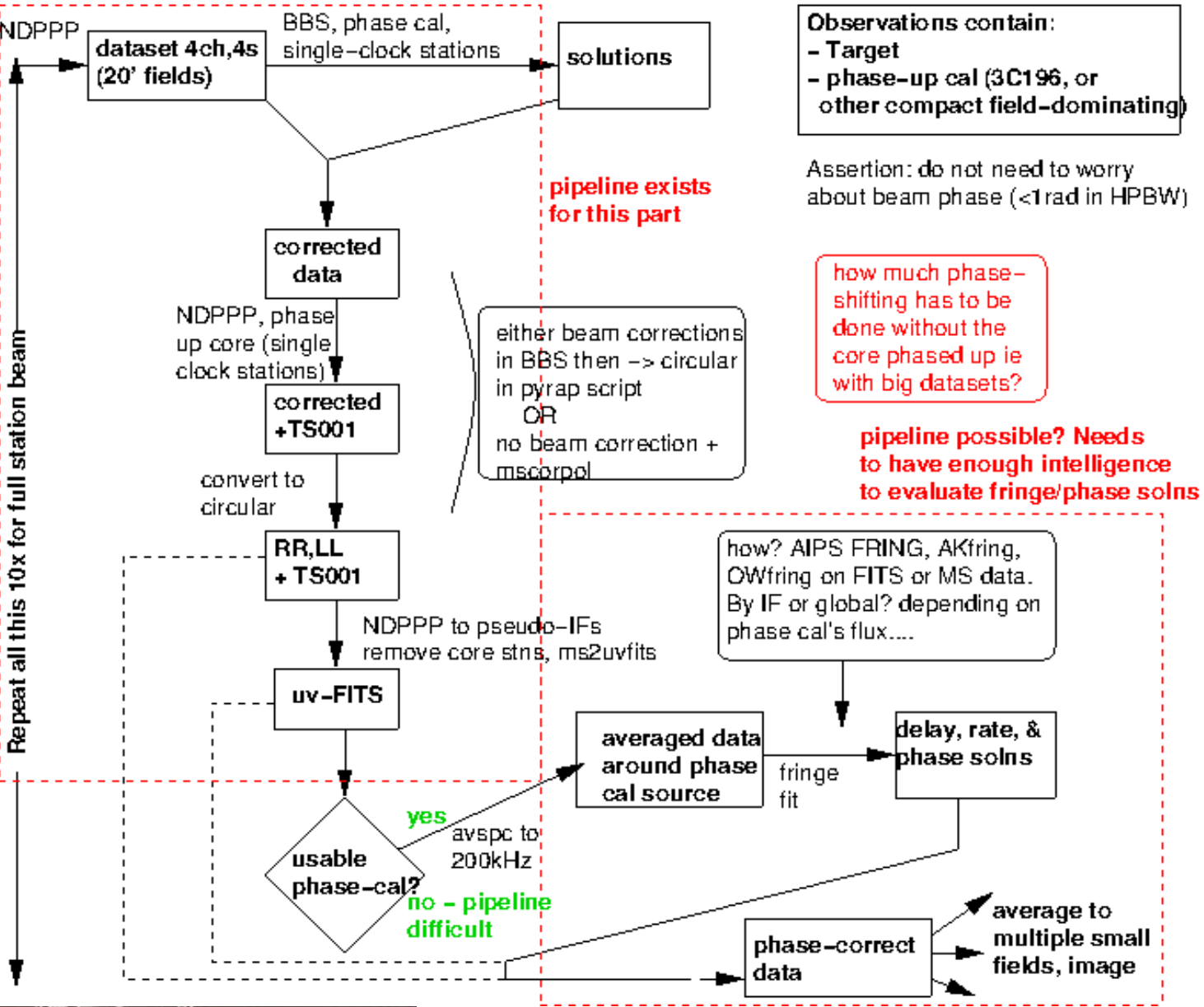
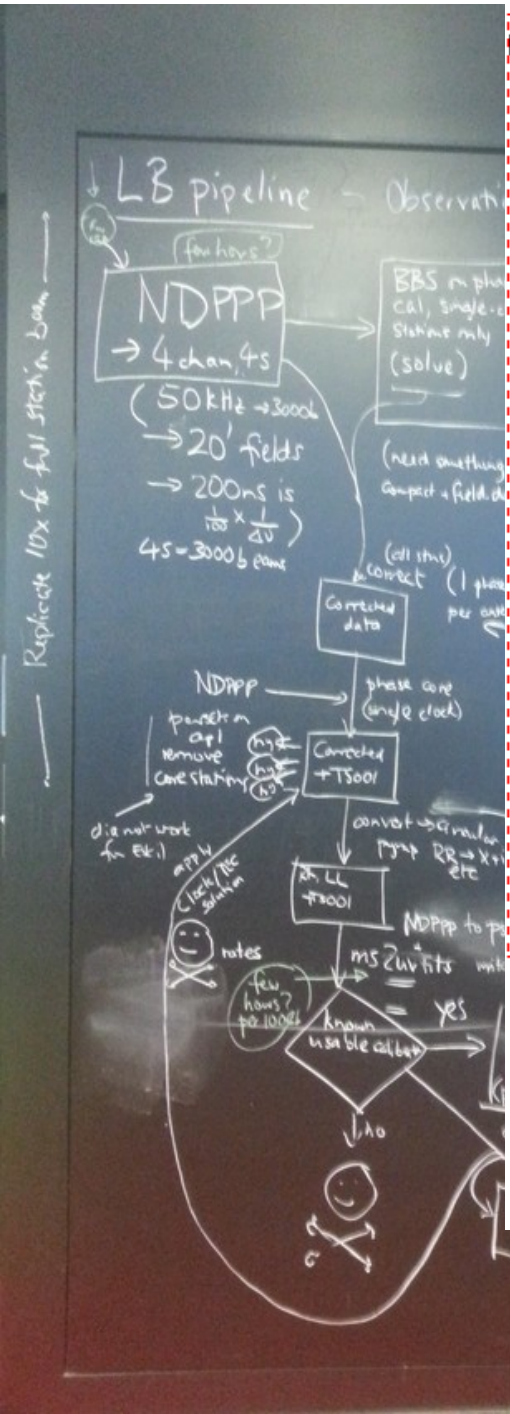


Gravitational lenses

- 3 lenses awarded for cycle 0, 1 for cycle 1
- Data taken
- Analysis status: first one analysed (0957+561), 30 subband image produced
- Trying to install Loflm in Manchester

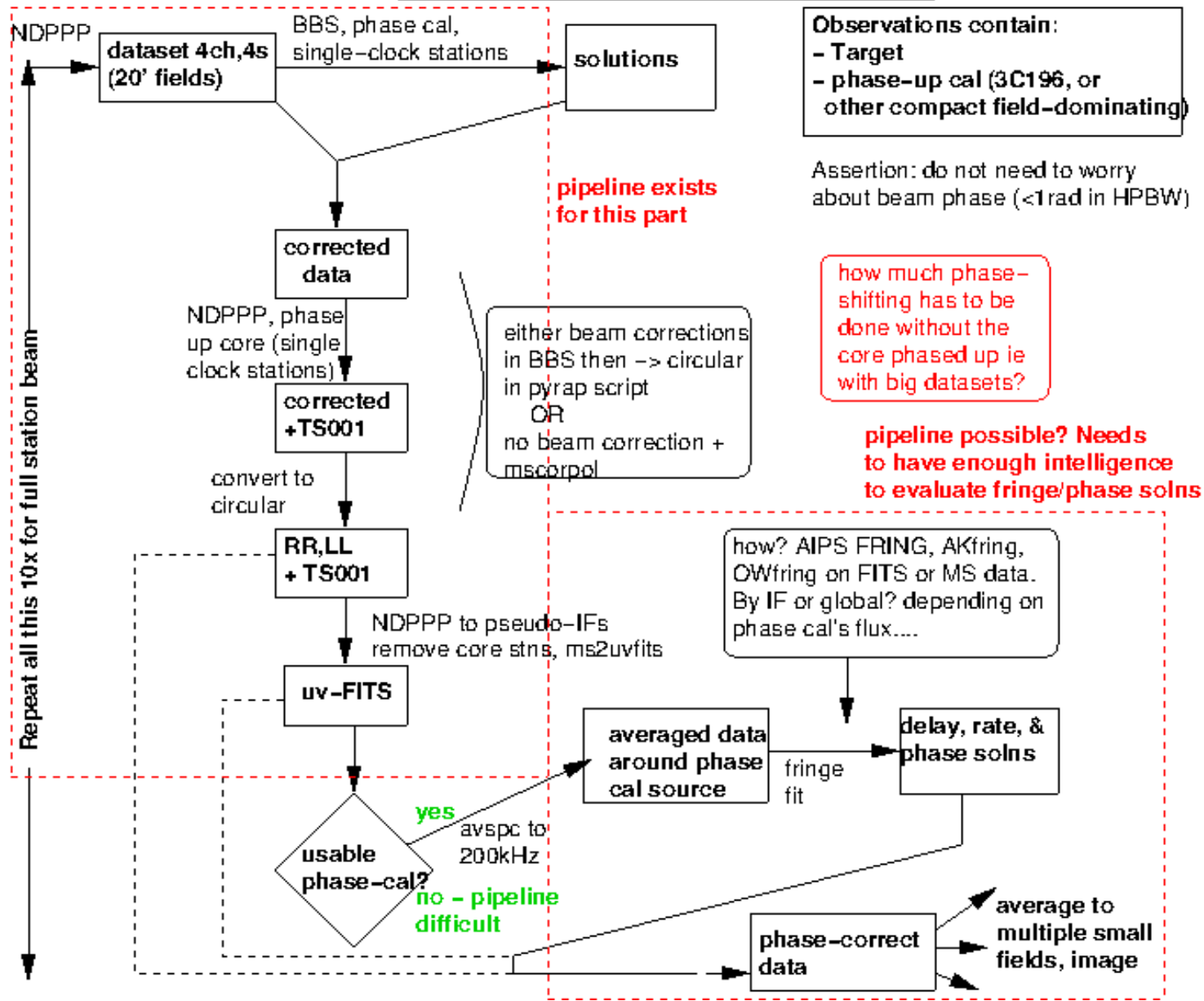
- Long baseline data analysis- general status
- Analysis process for 0957+561
- General remarks and intended progress

LONG BASELINE PIPELINE STRUCTURE v1



Algorithms/scripts by OW,TC,ADe; pipeline implemented with two metascripts (locapi.py and lofipi.py, available on LBWG wiki; NJ/ADr)

LONG BASELINE PIPELINE STRUCTURE v1

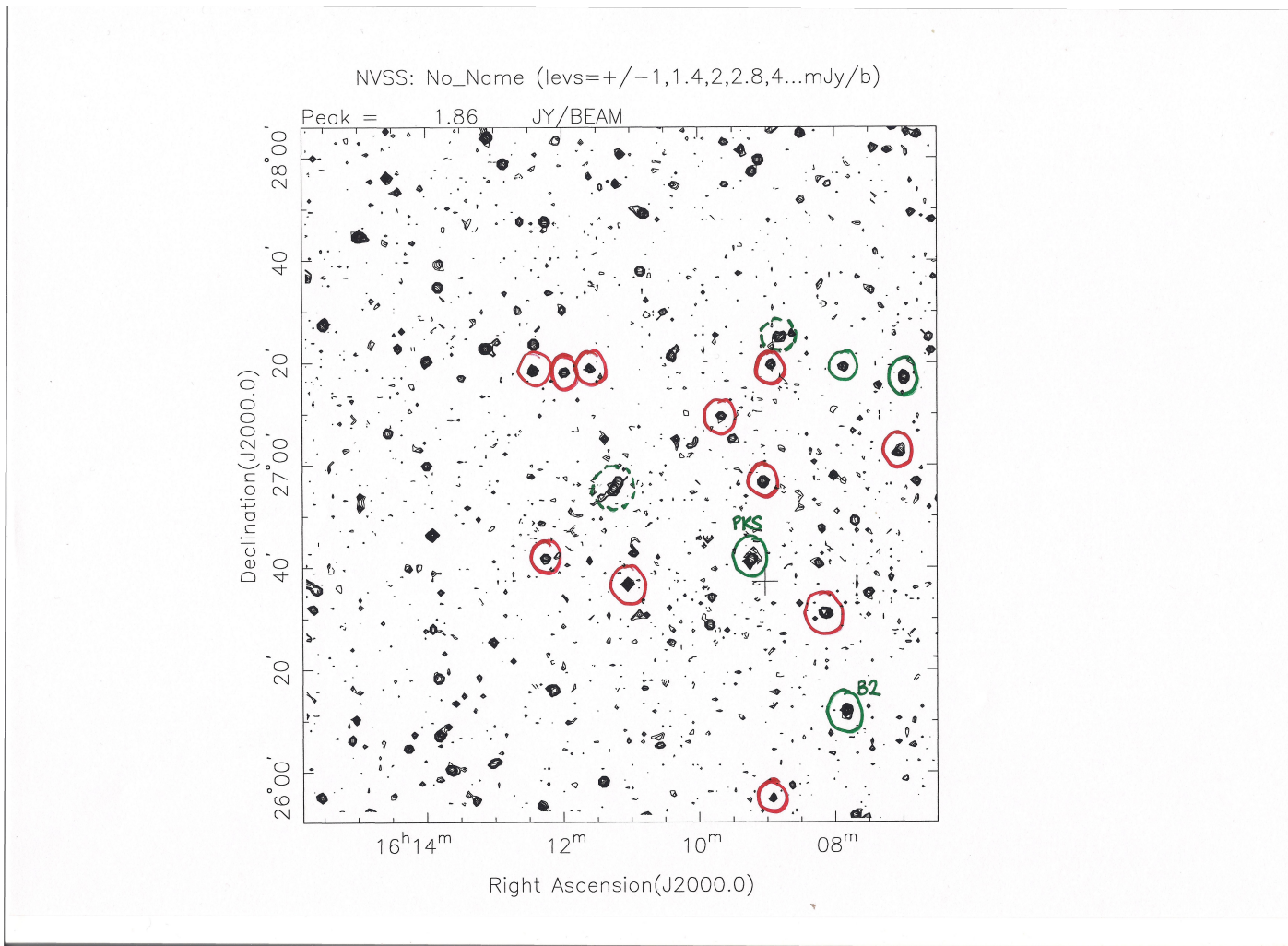


- 1) It works
- 2) User discretion still advised
- check superterp phase calibration
- for all but very simple sources, need to interact with the phase cal/ imaging at end
- phase transfer is not straightforward
- consult LB wiki for updates

Algorithms by OW,TC,ADe; pipeline implemented with two metascripts (locapi.py and lofipi.py, available on LBWG wiki; NJ/ADr)

General remarks on the functioning of the pipeline

Tested on MSSS data of H242+27 field (has bright calibrator in the middle)



Bottom line: reasonable number of sources per field found, but transferring phase from one to another is hard (could not transfer PKS -> B2 source and map it)

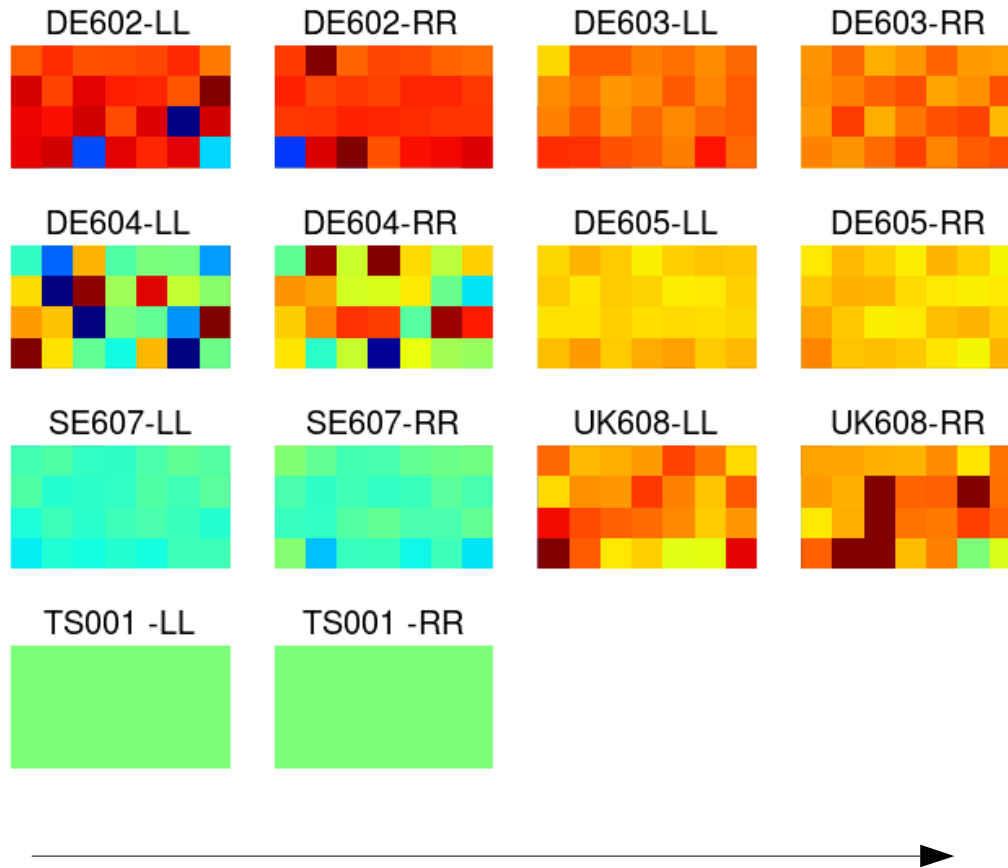


General remarks on the functioning of the pipeline

Tested (

middle)

frequency



time

Fringe solutions give a good idea of which stations are working and which aren't; fair amount of trouble with DE604

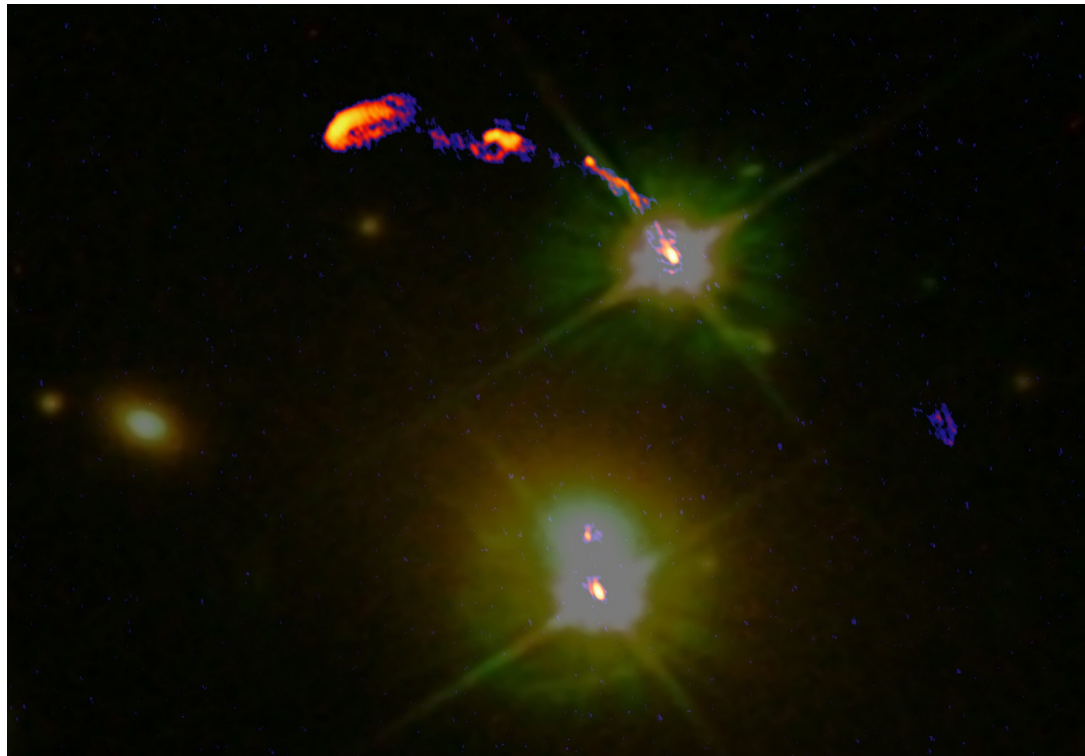


Analysis of the 0957+561 data

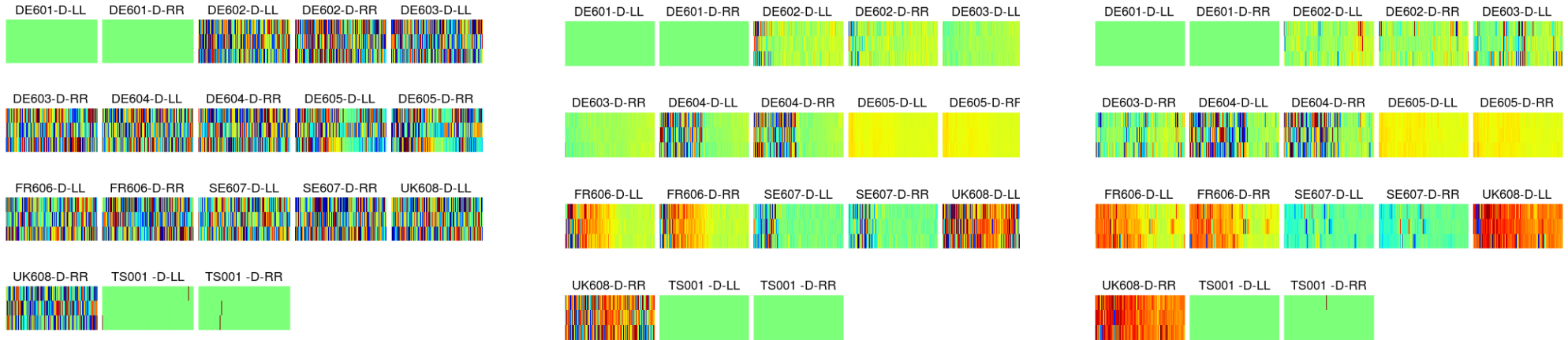
- 30 subbands used
- Core stations phased into TS001 superterp station using locapi.py script
- Conversion to circular using MSCORPOL
- Formed into 3 Ifs of 10 channels each and read into AIPS
- Fringe fitted and calibrated/imaged by hand, either
 - * without using a model
 - * using a model from e-MERLIN:

Analysis of the 0957+561 data

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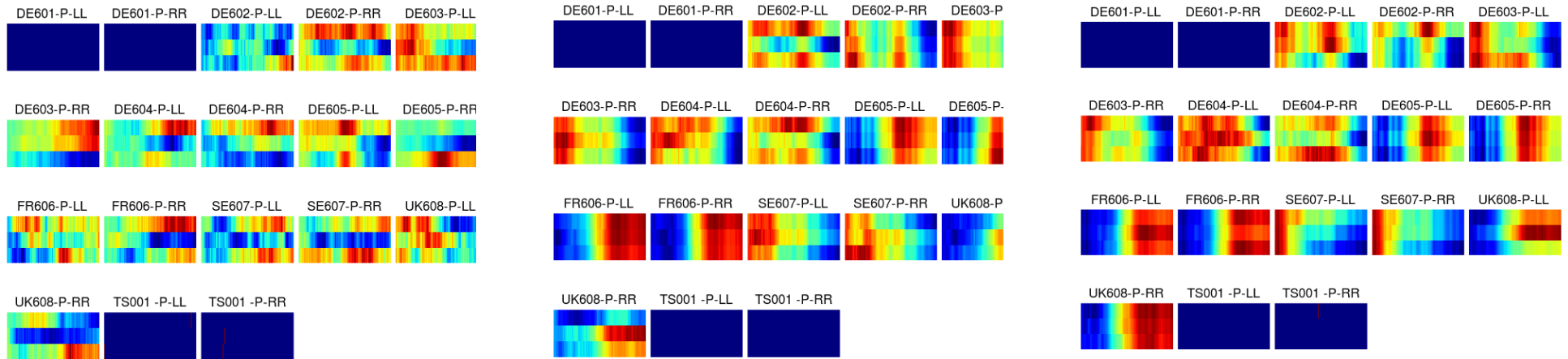
Collapse data around three points: Q0957+561, nearby calibrator (0954+556) and a piece of blank sky:



Left to right: blank sky, phase calibrator, target

Comments; 1) obviously working!; 2) UK608 very intermittent;

3) coherence seems to come and go on longest baselines (may need to edit a little)



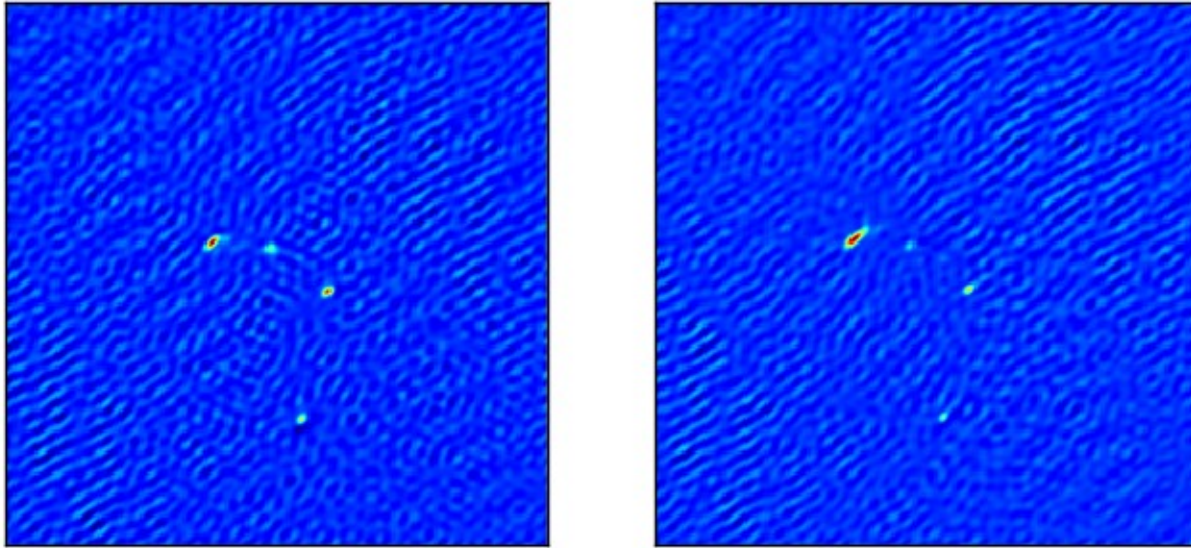
Phase plots harder to interpret (phase wrapping) but seem to confirm impression from delay solutions

Calibration needs a lot of care – similar to e-MERLIN commissioning phase

- **crucial not to overfit starting model** (you can do anything you like if you leave the data weights alone and give it a model – if you put in a point, Q0957 comes out as a point)
- have to play carefully with the **data weights** in the first pass
- currently multiply TS001 by some appropriate factor first
- **L1 solution is very important** (CASA/BBS do not [?] do this yet)
- crucial to be **very careful about windowing** on initial passes
- crucial to **get the phases right first**, then switch on amplitude selfcal

The good news: maps made successfully by

- e-MERLIN starting model (but need to be **very careful**, see above)
- transferring initial phase from 0954+556 to Q0957+561 (about 0.7 degrees) and improving map thereafter with selfcal



Left: e-MERLIN starting model. Right: transferring phases from 0954+556.

Comments:

- 1) Will get better: only 1/8 data so far, and needs editing/tweaking of calibration
- 2) Second method to be preferred if possible
- 3) Shows that successful transfer of calibration is possible; more work needed to see whether this is universally possible
- 4) Needs care in the post-pipeline calibration/imaging – likely a permanent feature