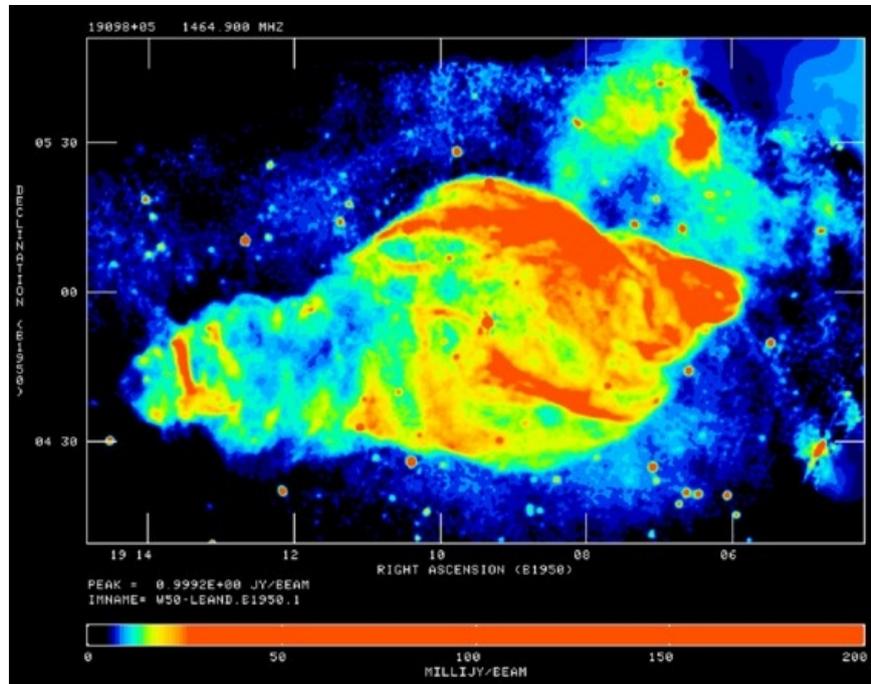


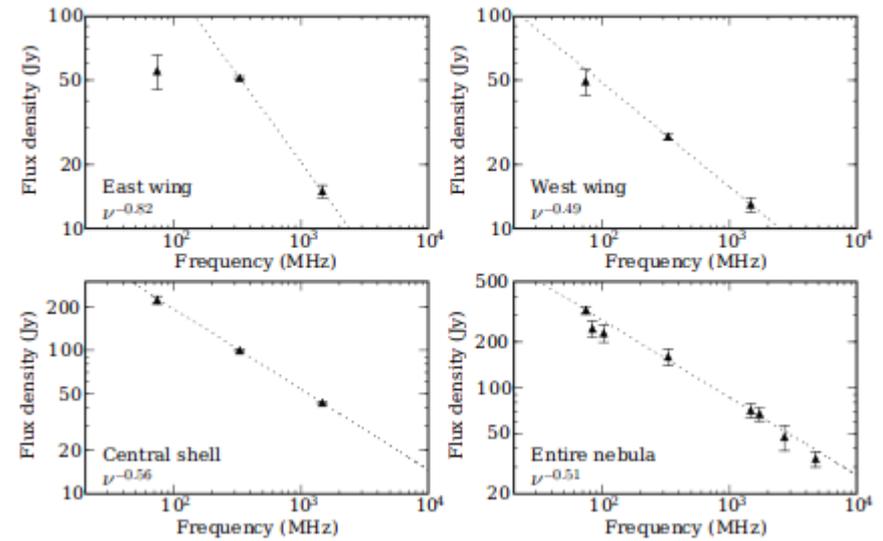
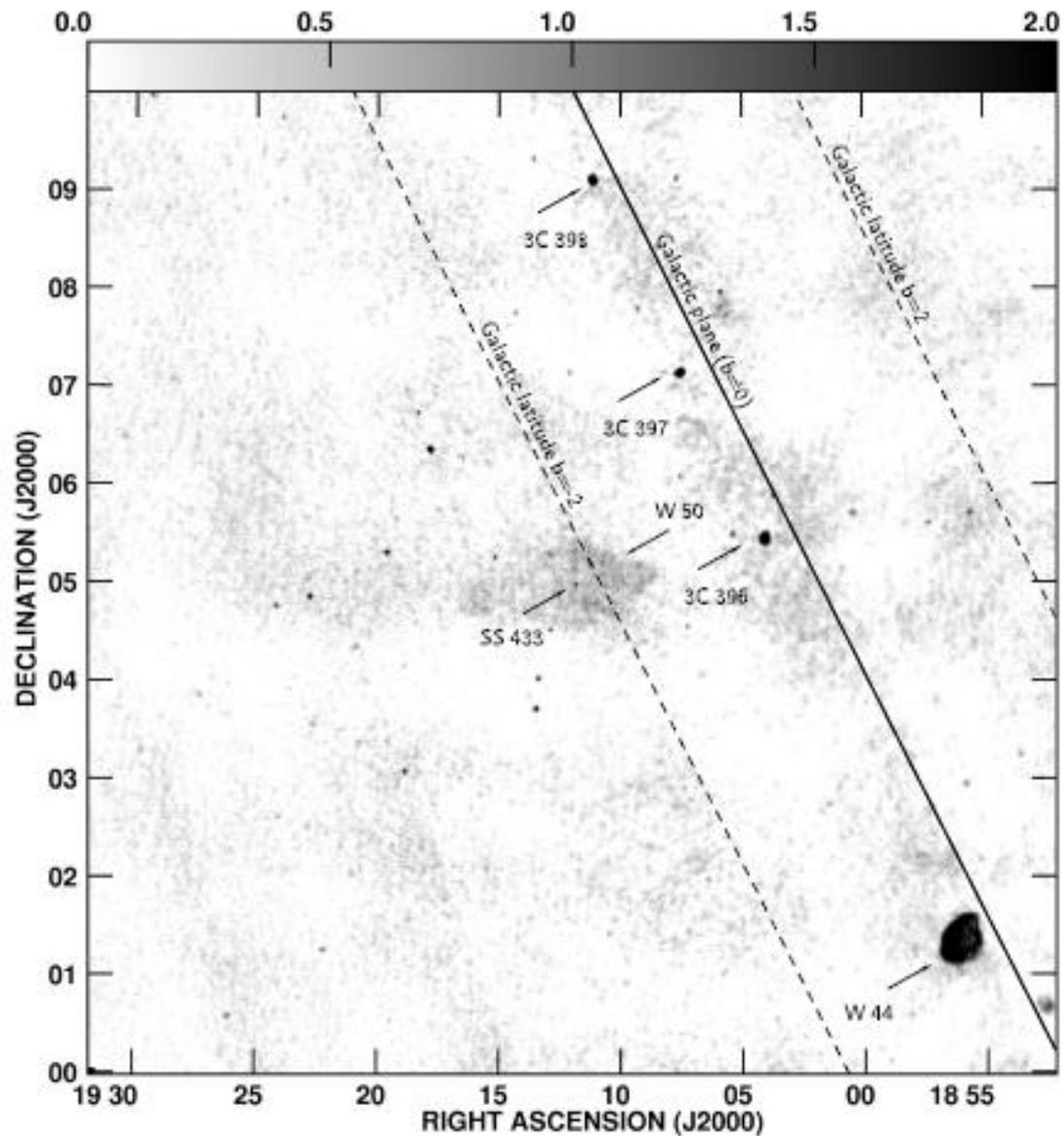
Variable jet sources in the LOFAR band - recent results on SS433

(Jess Broderick, James Miller-Jones, and the LOFAR TKP)

- * Several commissioning observations with the HBA and LBA from August 2010 - January 2012.
- * Cycle 0 observations (LC0_039; PI Miller-Jones):
 - 1 x 4h HBA, 1 x 3.5h LBA to get a good sky model
 - 5 x 30 min HBA, 5 x 30 min LBA to monitor SS433 ~monthly
 - **All observations complete apart from 1 x 30 min LBA**



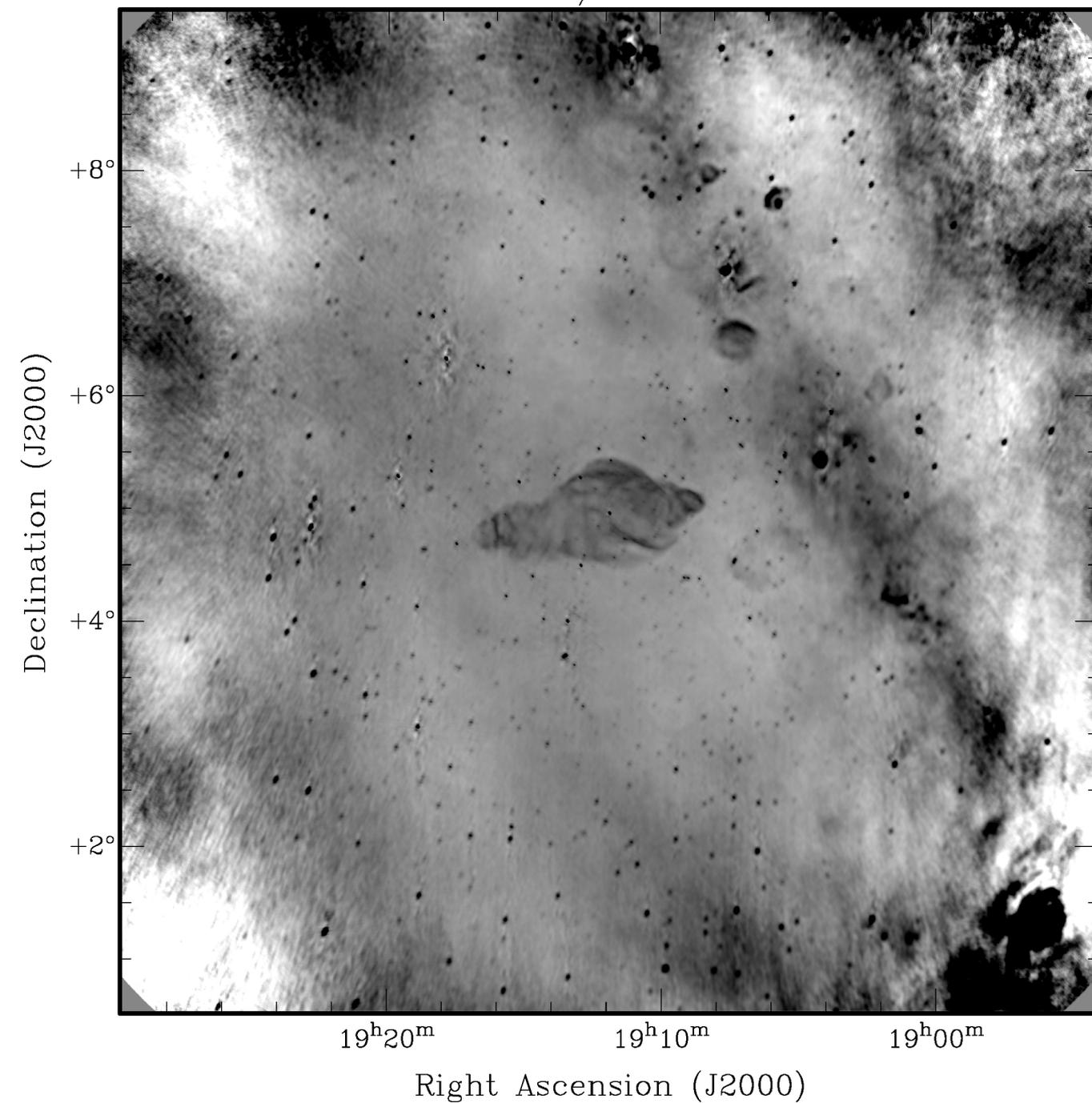
- * VLA 1465 MHz map (Dubner et al., 1998)
- * Resolution 56 arcsec x 54 arcsec
- * rms 0.5 mJy/beam



* VLA 74 MHz map (Miller-Jones et al., 2007)

* Resolution 108 arcsec x 93 arcsec, rms 192 mJy/beam

SS433/W50 HBA



* **Preliminary HBA map
from Cycle 0**

* **4h run on 2013 Feb. 18**

* **48 MHz bandwidth;
115-163 MHz.**

* **Observations of
a calibrator every
~15 min**

* **Baselines < 12 km
for imaging**

* **Robust=0**

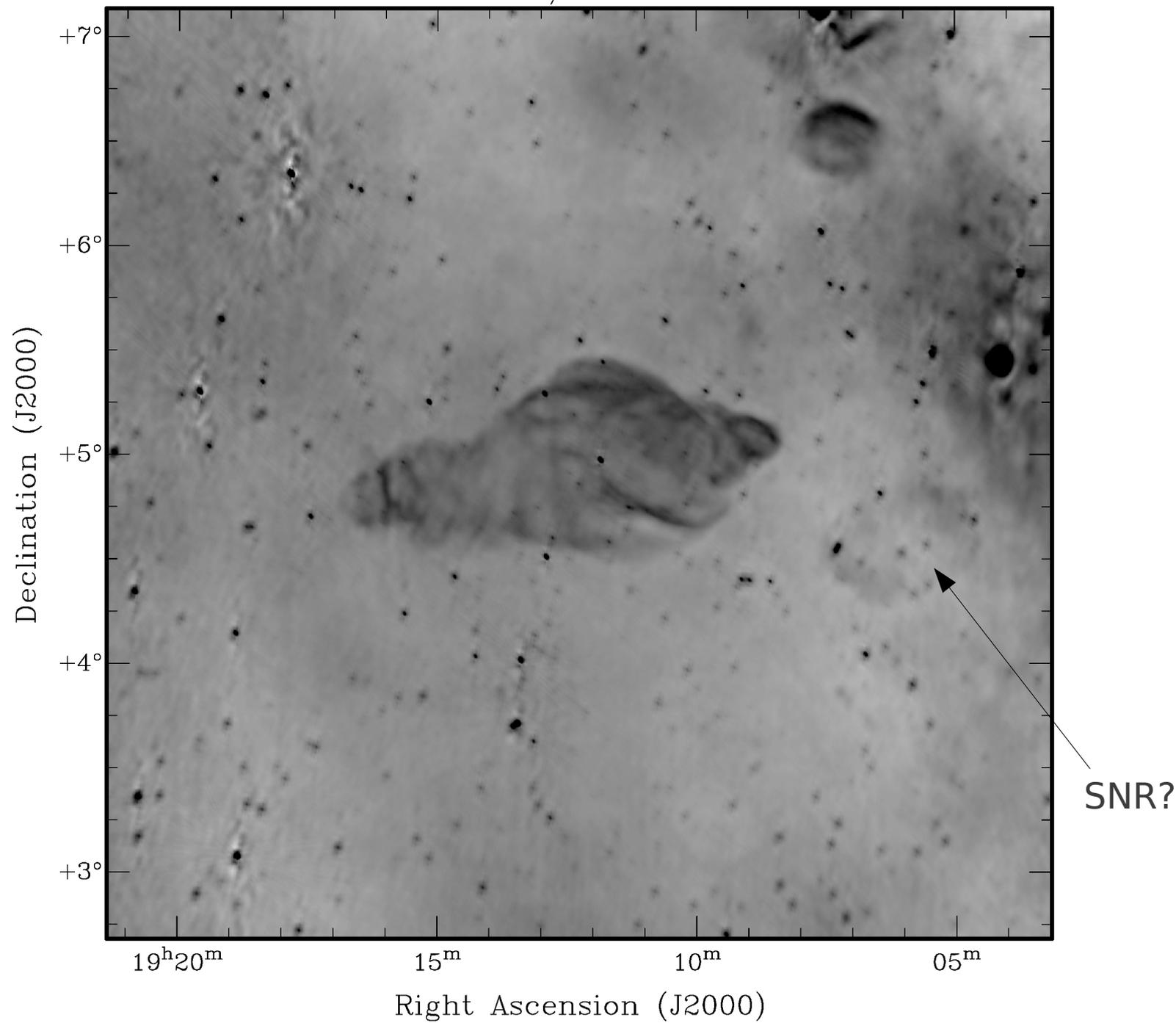
* **Resolution
62 arcsec x 42 arcsec
(PA 33 deg)**

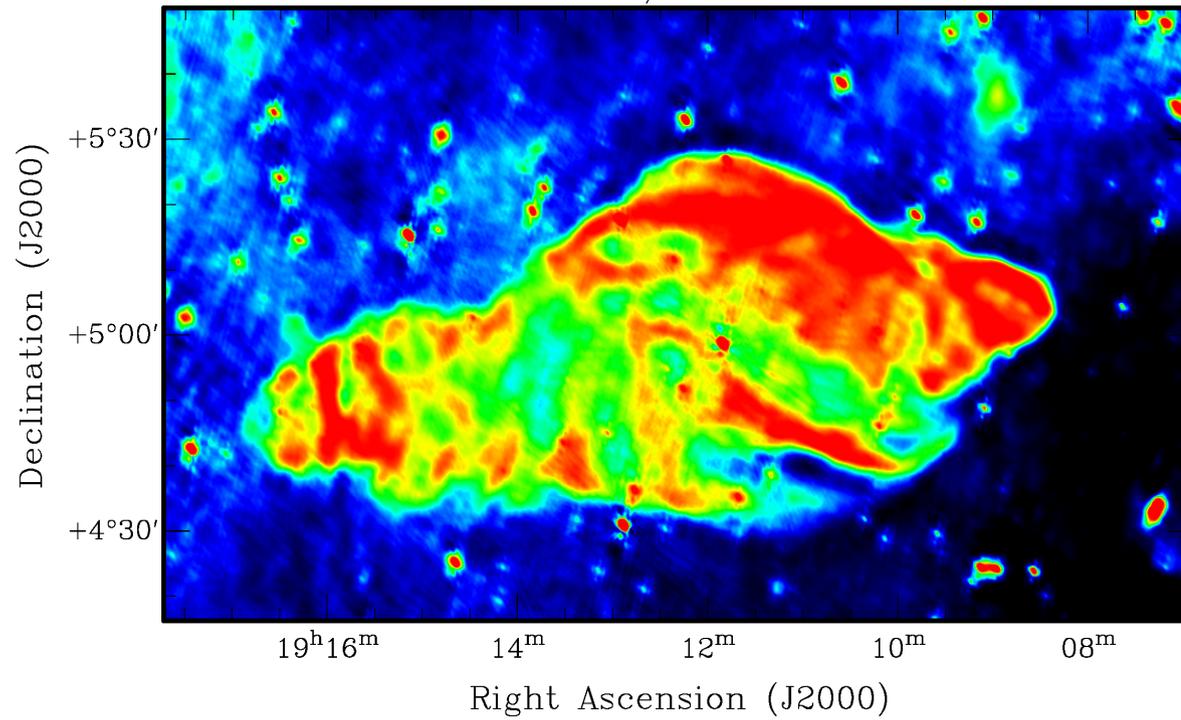
* **Noise ~8 mJy/beam**

* **SS433 peak flux
1.8 Jy/beam**

* **SS433 integrated flux
2.5 Jy**

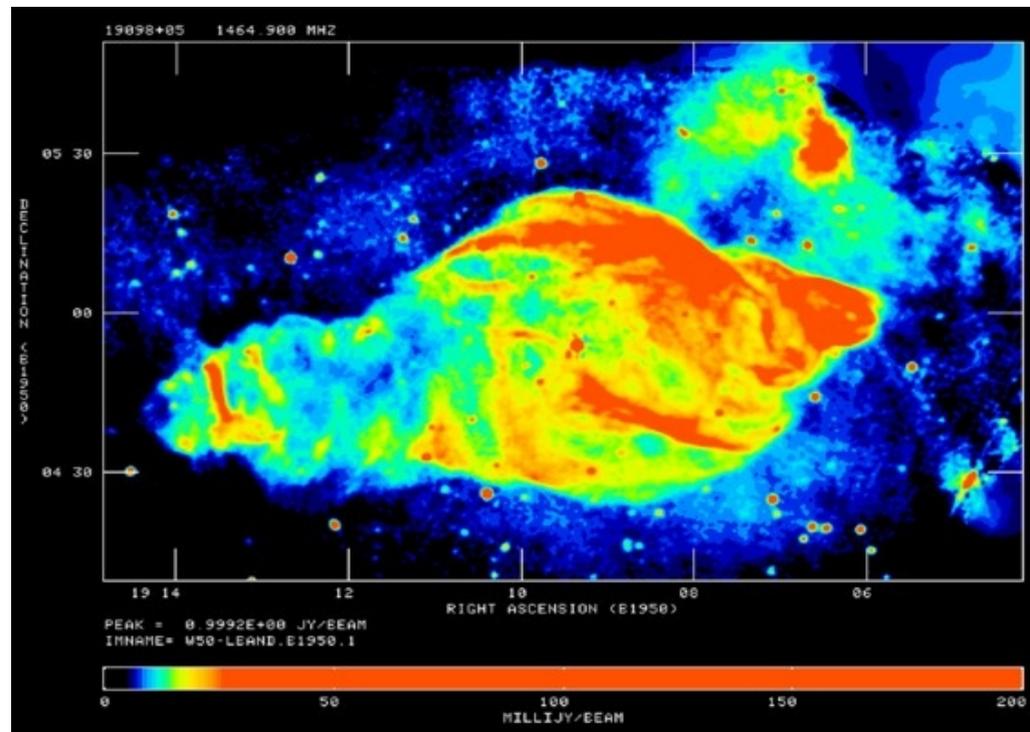
SS433/W50 HBA





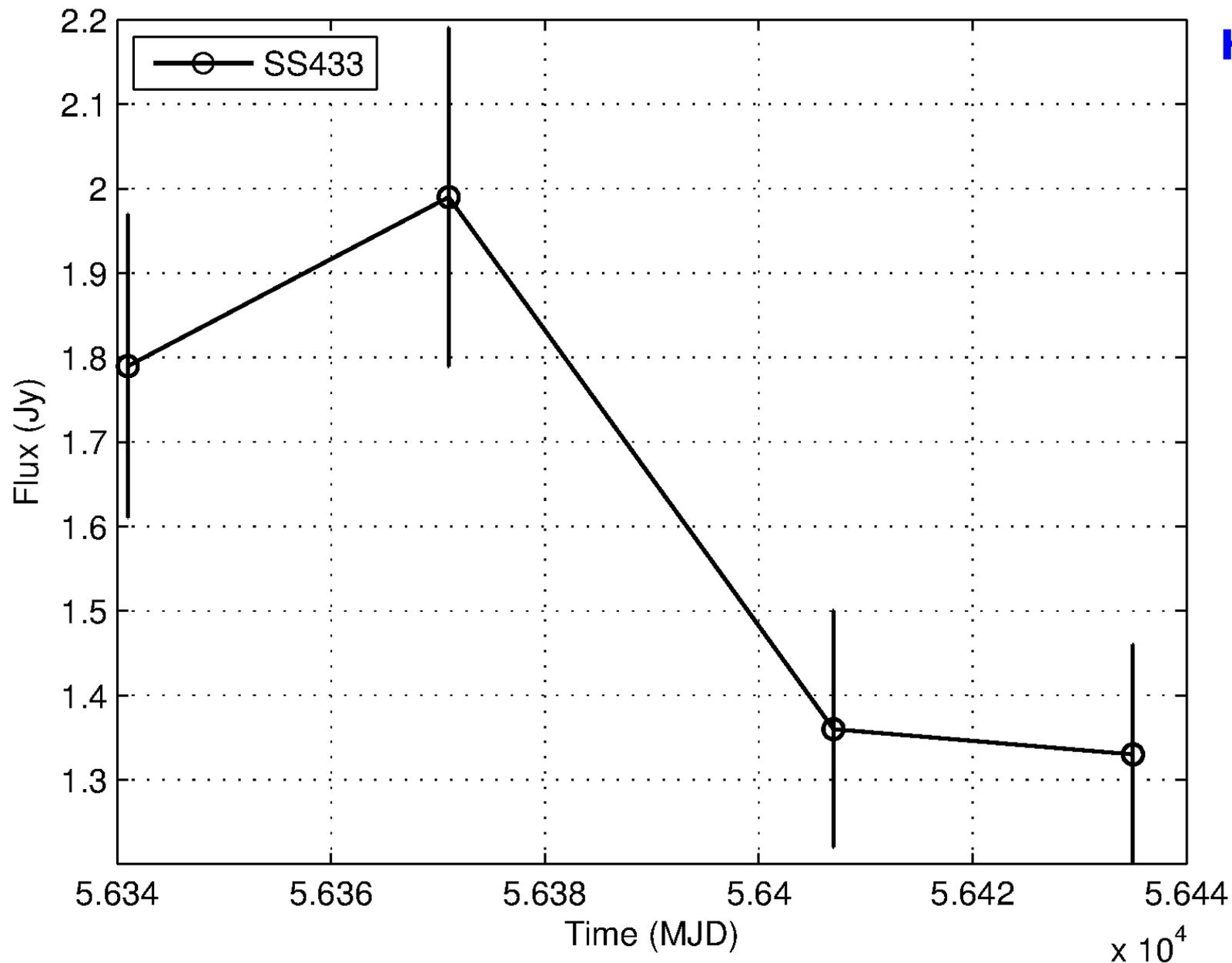
LOFAR HBA

- * Resolution
62 arcsec x
42 arcsec



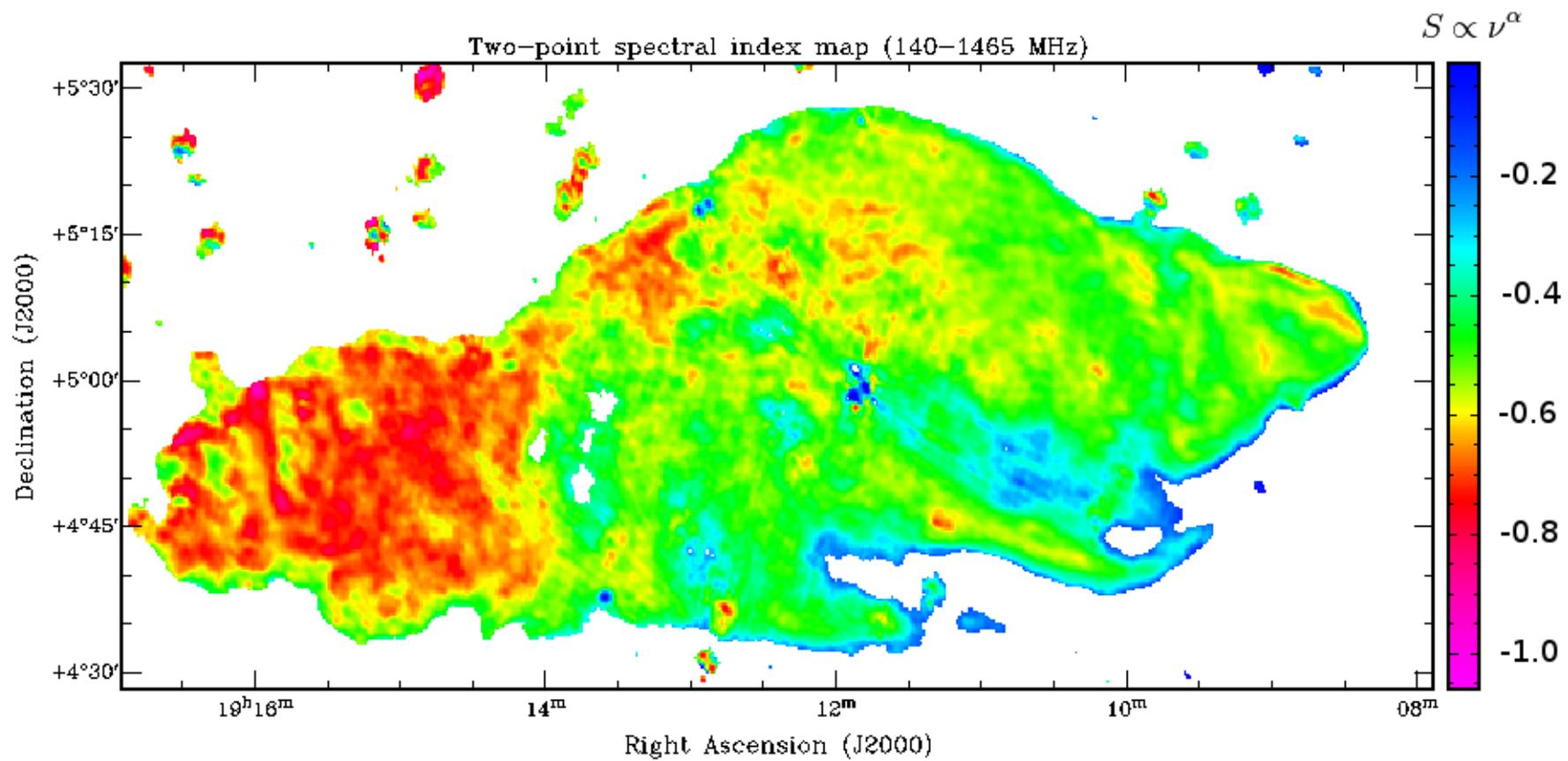
VLA 20 cm

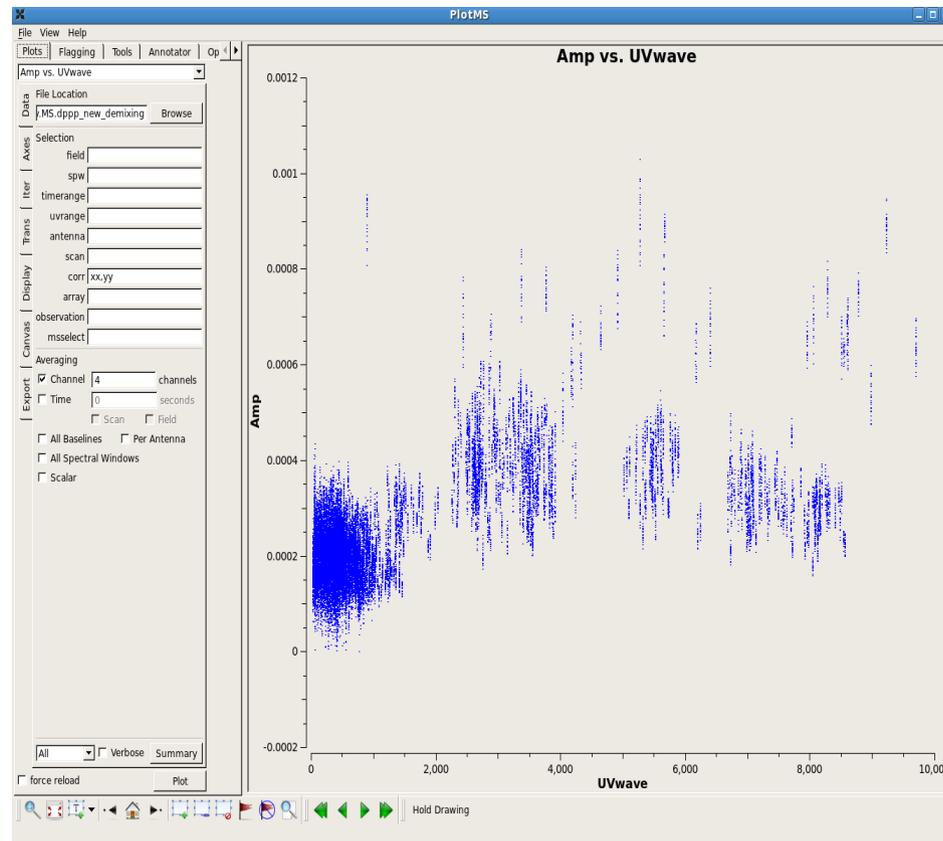
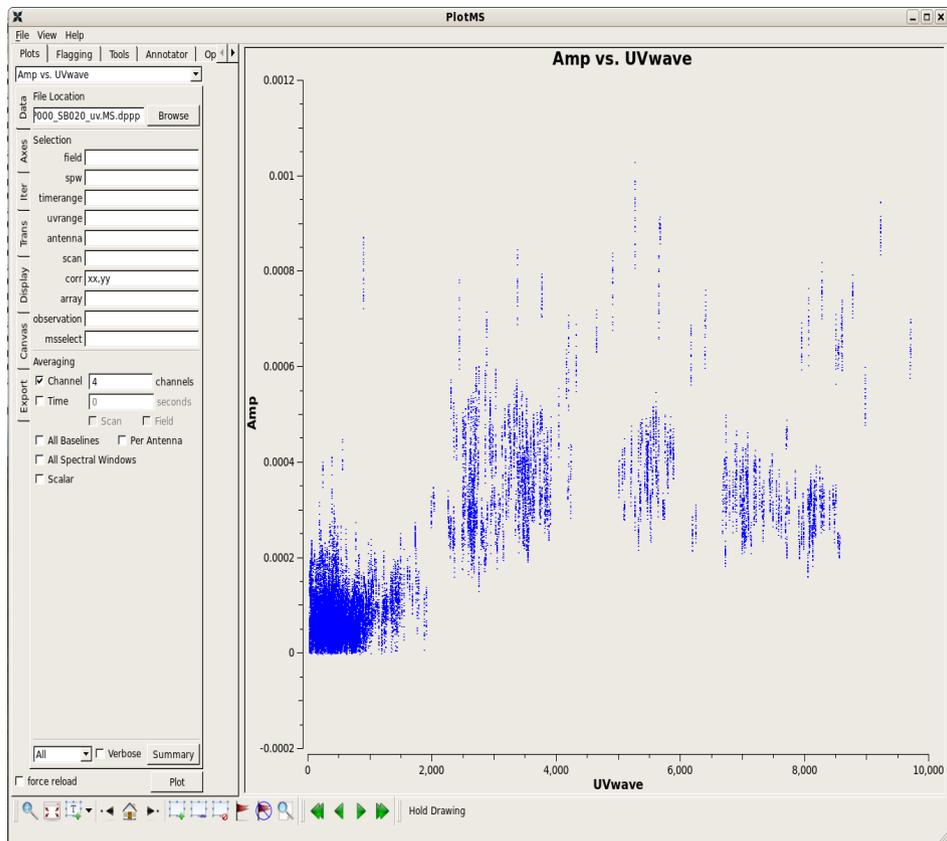
- * Resolution
56 arcsec x
54 arcsec



* February - May 2013. Calibration uncertainty ~10%.

* Each run convolved to a common resolution (75 x 50 arcsec).



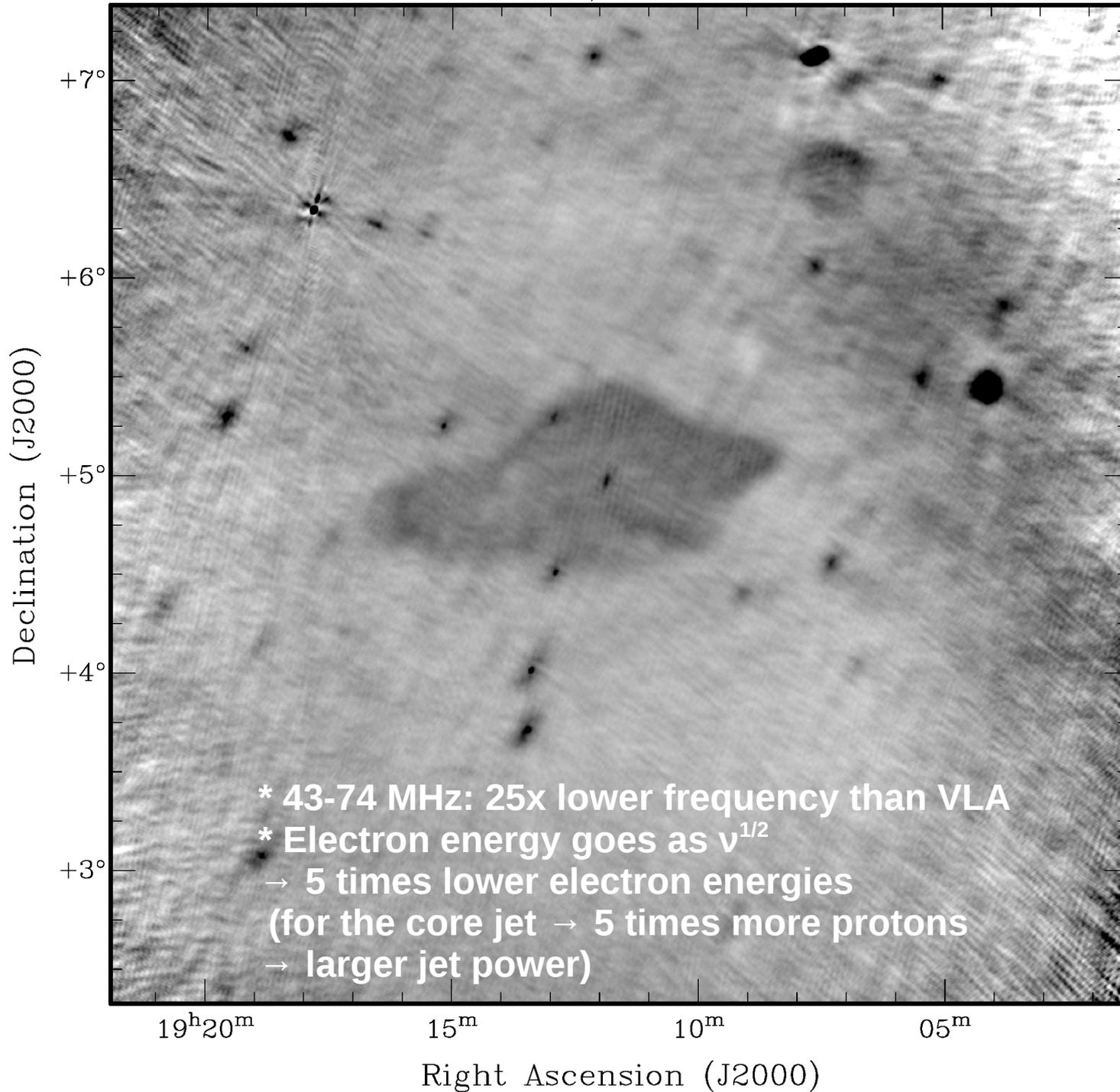


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3C380 calibrator data from 4h HBA Feb. observation

SS433/W50 LBA



*** Very preliminary
43-74 MHz
averaged map
from Cycle 0
(LBA_OUTER)**

*** 3.5h run 2013
February 13**

*** Simultaneous
observations of
target and calibrator**

*** Baselines < 12 km
for imaging**

*** Robust=0**

*** Resolution
70 arcsec x
61 arcsec
(PA 35 deg)**

*** Noise 35 mJy/beam**

*** SS433 peak flux
0.6 Jy/beam (?)**

*** 43-74 MHz: 25x lower frequency than VLA**

*** Electron energy goes as $\nu^{1/2}$**

→ 5 times lower electron energies

(for the core jet → 5 times more protons

→ larger jet power)

Summary and future work

- * High quality SS433/W50 data from Cycle 0.
- * Variability detected for SS433 in the high band.
- * Some monitoring observations still to be processed.
- * Spectral index map between HBA and LBA.
- * Higher-resolution, deep HBA map using more of the remote stations.
- * International station data for one HBA monitoring run.
- * Cycle 1 proposal.