

Recent NCP EoR observations

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+EoR/RO members

Summary

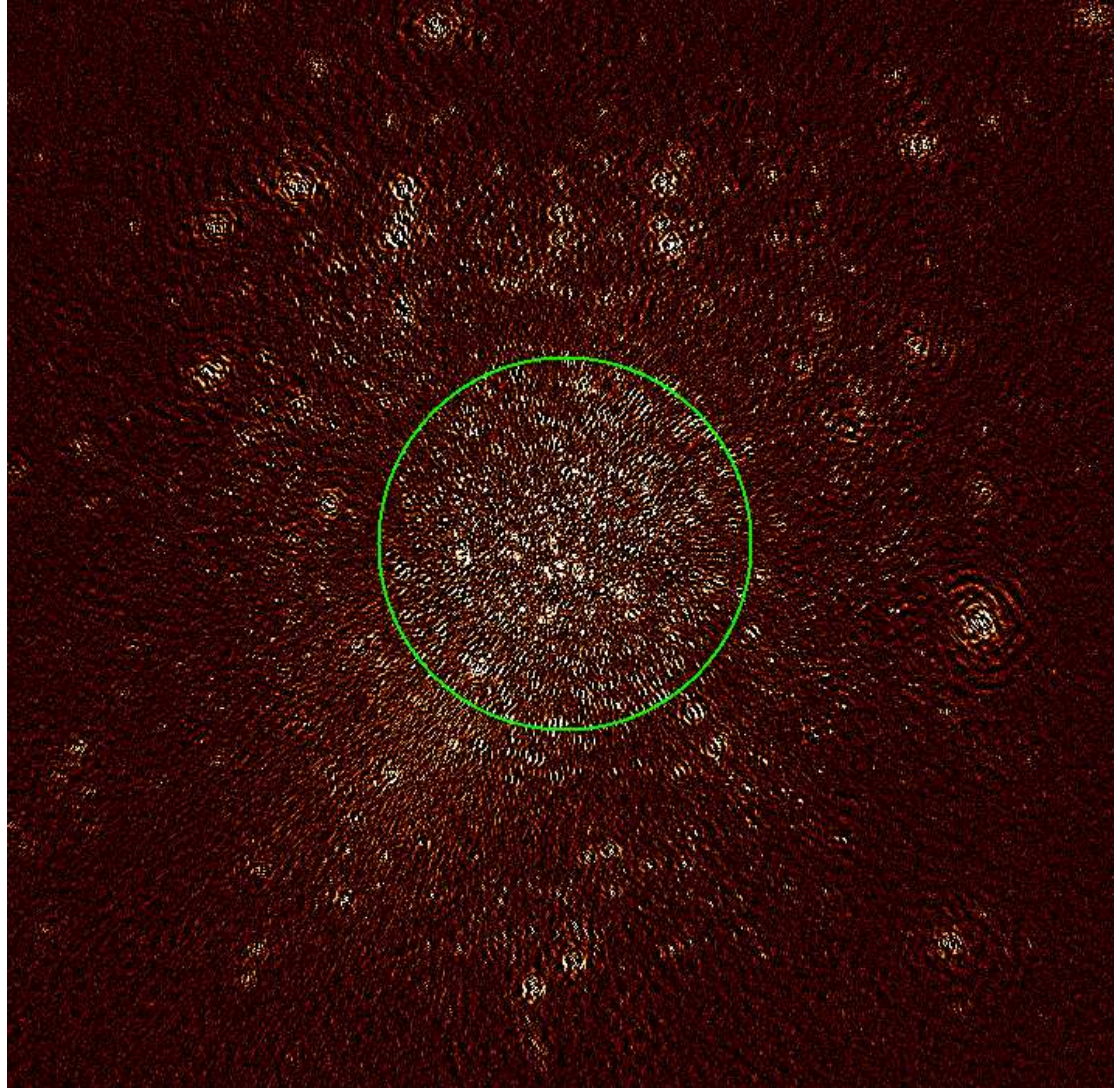
Id	Highlights
L69540	115-185 MHz, 244 SB, 8 bit firmware
L73471	115-185 MHz, 488 SB (380 on NCP), 8 bit firmware

Processing time (380 SB, 48 compute nodes + 8 cores + 2 GPUs):

- NDPP+aoflagger+BBS, 64 channels → 3 channels, 2 s (30 hours)
- NDPP+SAGECal 200 directions (1100 sources), 3 channels → 1 channel, 10 s (48 hours)
- casapy imaging 2'' 12500×12500 pixels, uniform weights (8 hours)

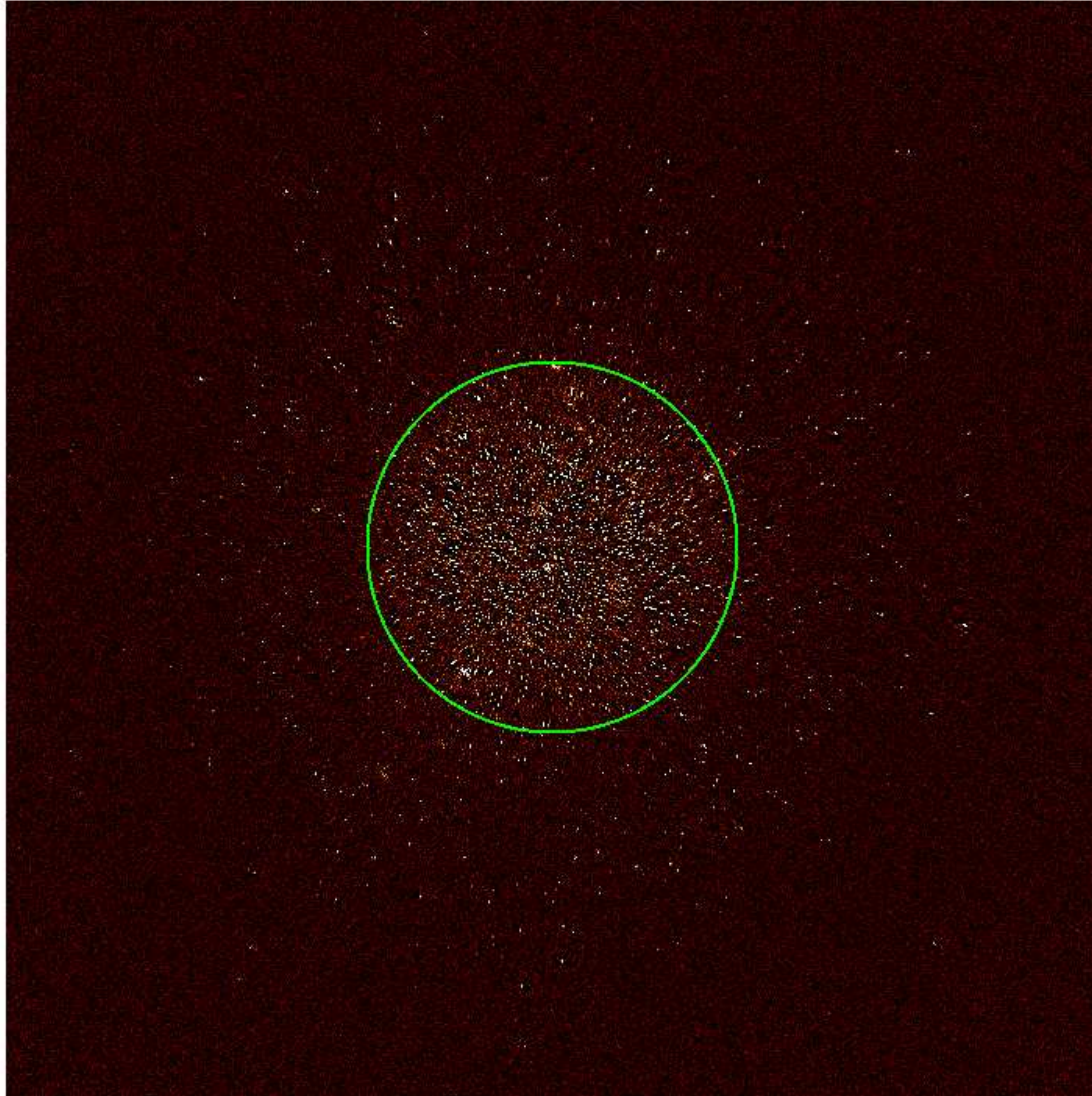
Noise: 100 μ Jy, 6'' PSF, about 1.3 from the theoretical limit with good data. Better sky model (\approx 3000 sources) will get this down further.


Focused Beams



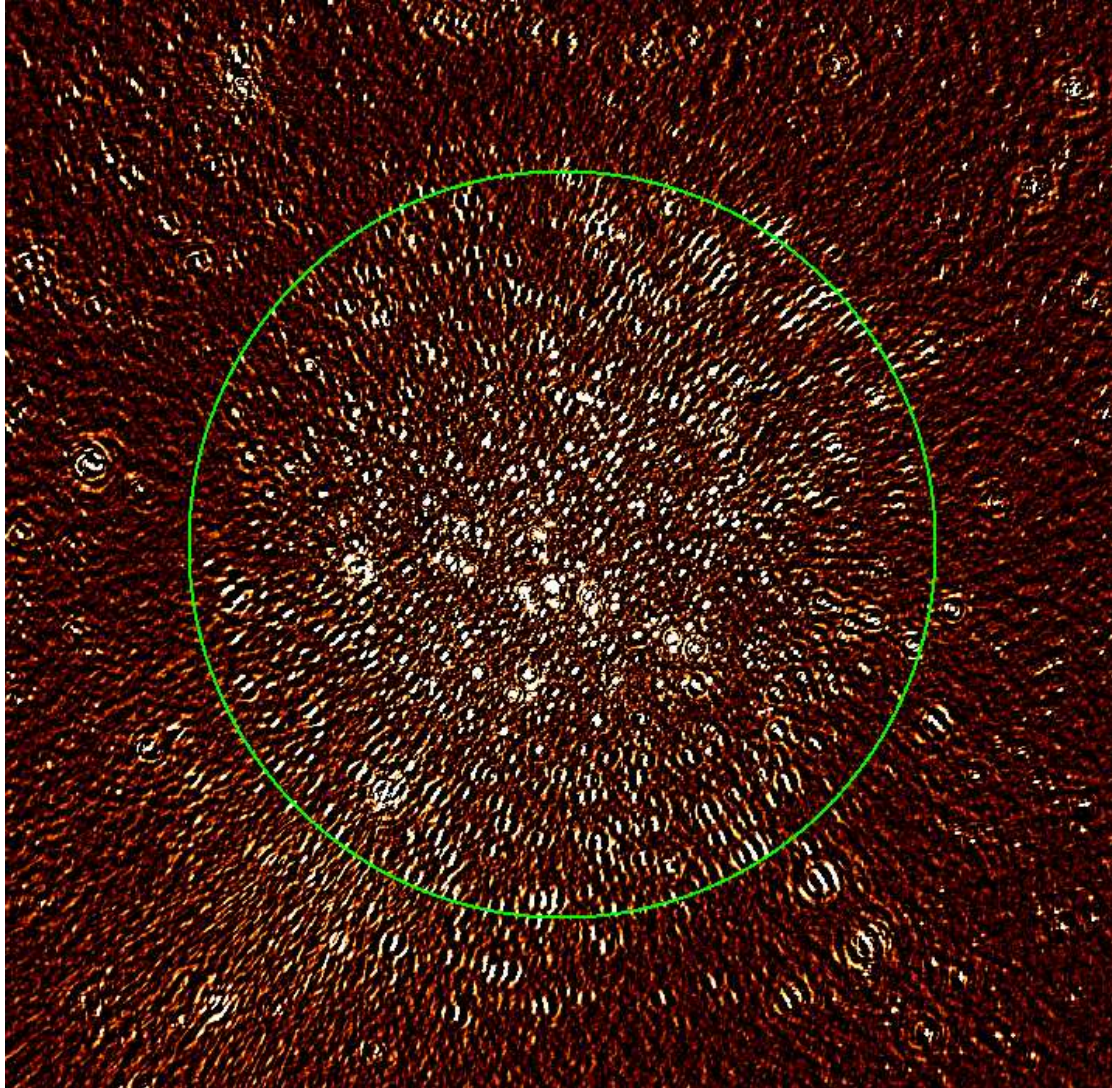
Data from 2011: baselines $< 1200\lambda$ PSF $\approx 150''$ ○ 9 deg. diameter

Focused Beams



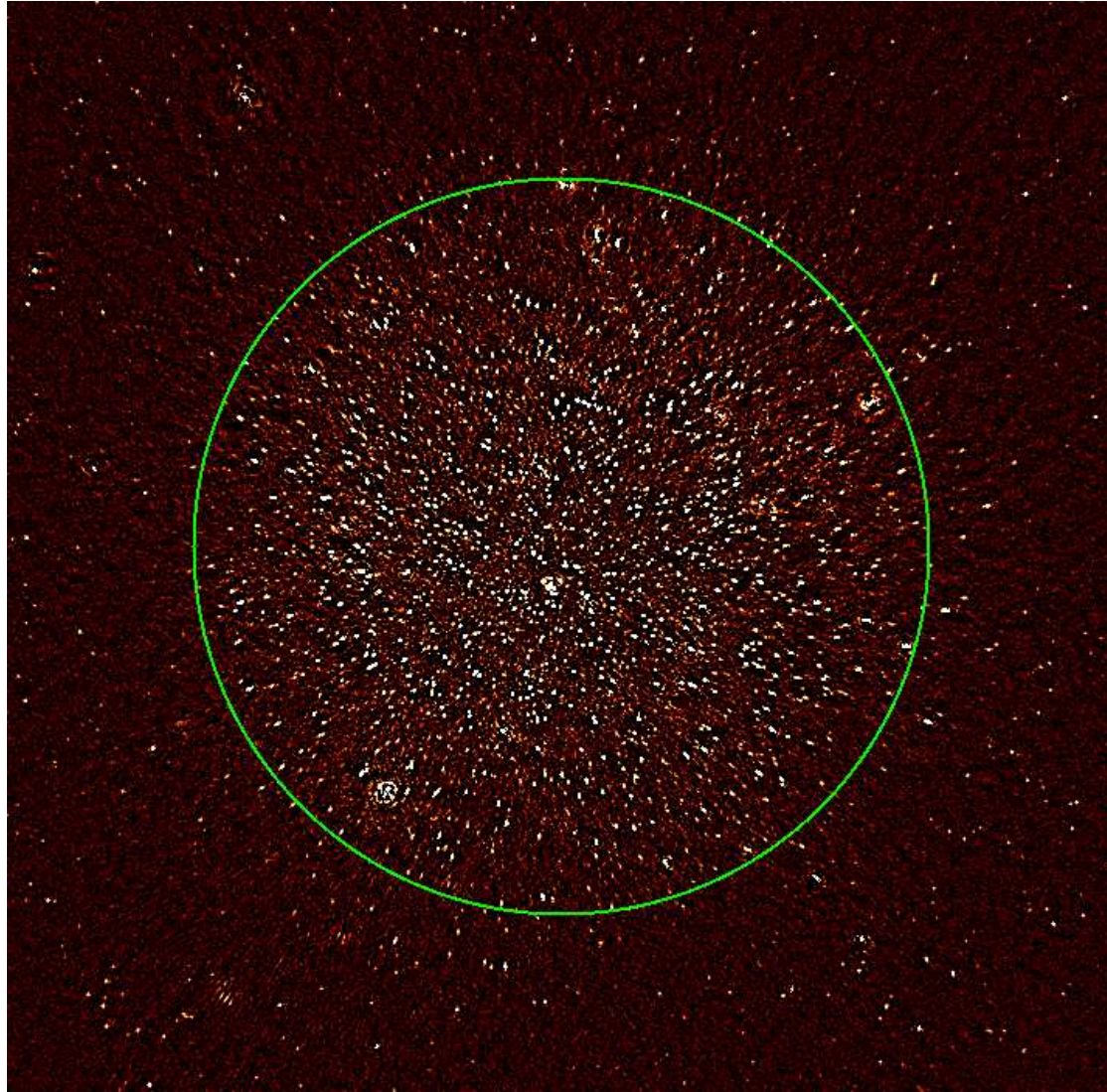
Data from L73471: baselines $< 3000\lambda$ PSF $\approx 100''$  9 deg. diameter

Better looking outlier



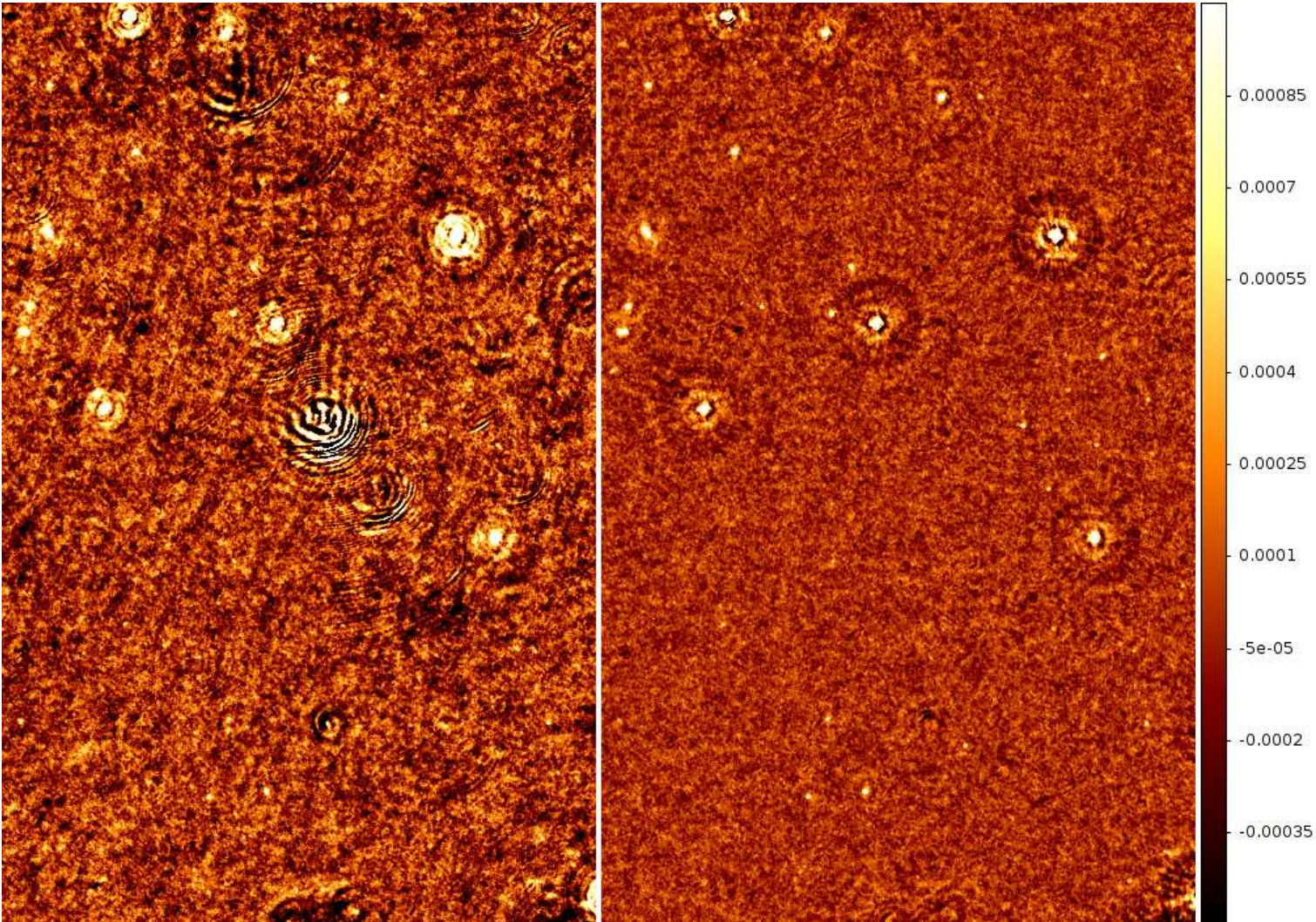
Data from 2011: baselines $< 1200\lambda$ PSF $\approx 150''$ \bigcirc 9 deg. diameter

Better looking outlier



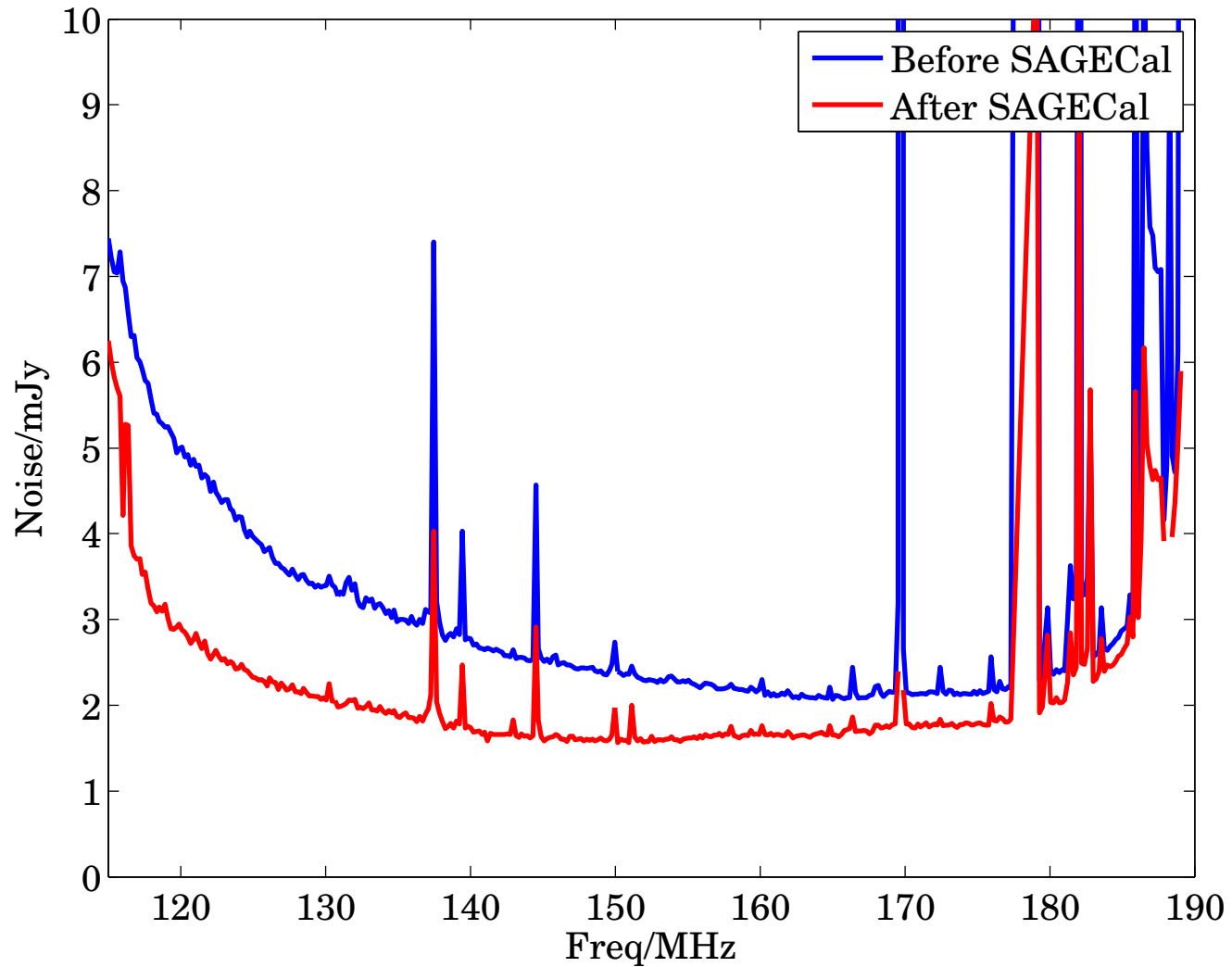
Data from L73471: baselines $< 3000\lambda$ PSF $\approx 100''$ ○ 9 deg. diameter

Aliasing Artefacts



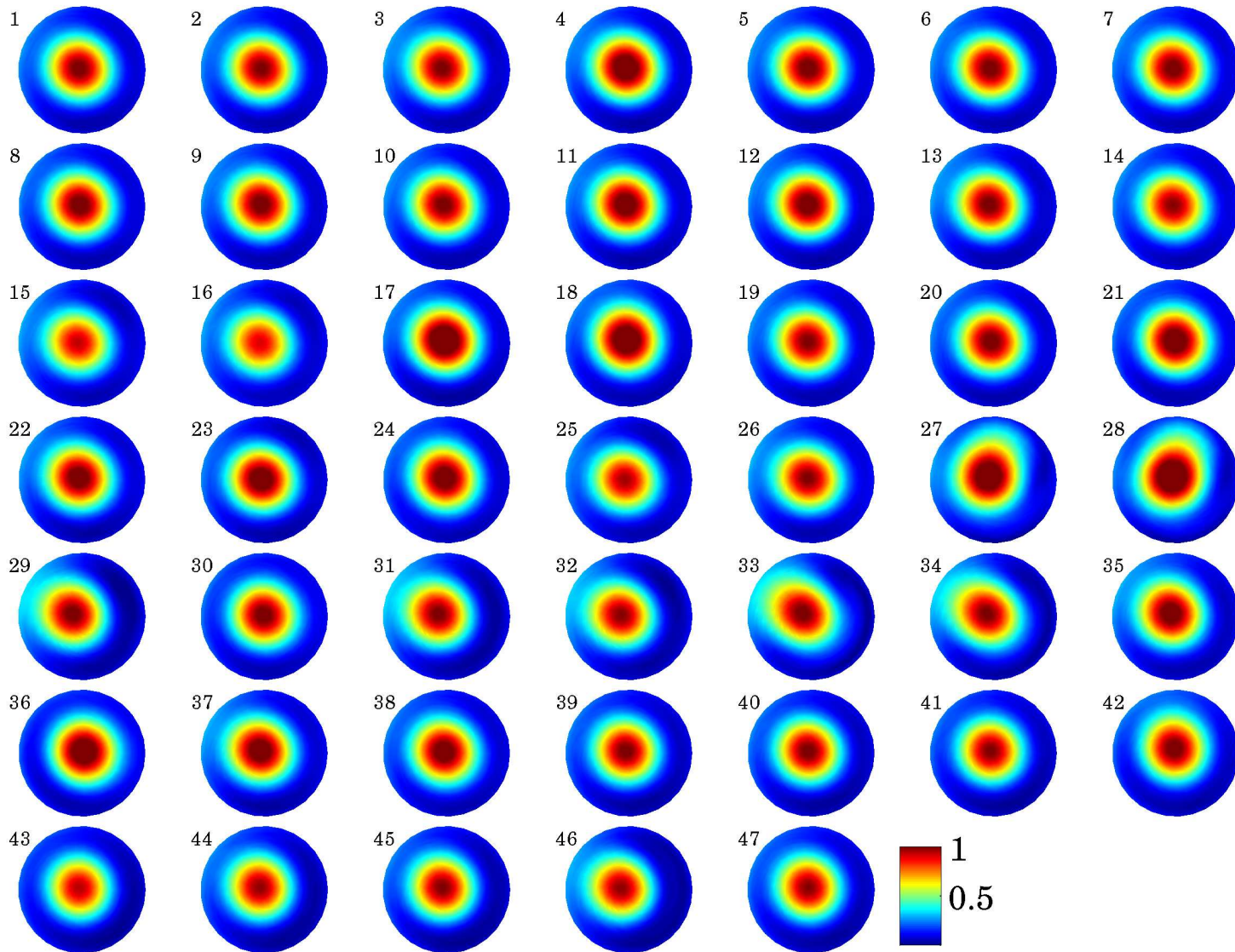
(left) L69540 (right) L73471: Artefacts disappear by improved sky model and subtracting more sources

Noise



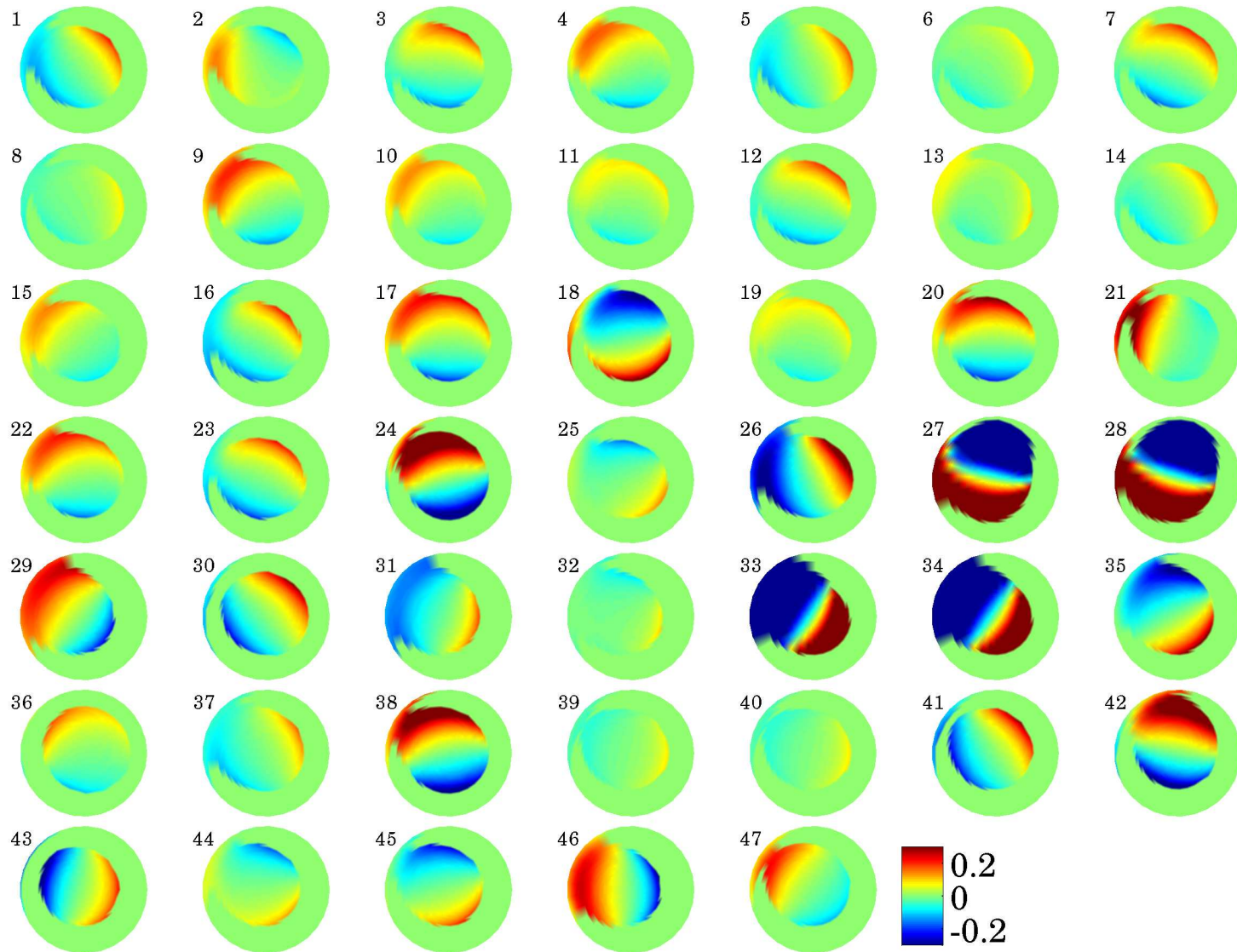
SAGECal with 200 directions, 1100 sources

Beam Estimation



Data from 2011: beam amplitude 139 MHz 10 deg. FOV

Beam Estimation



Data from 2011: beam phase (rad) 139 MHz 10 deg. FOV