

REH asked Remy: Here is a proposed compact configuration for Early Science. This is the result of an optimization by Frederic Boone to see what was the best he could do with 16 antennas on the northern half of the central cluster.

Could you please run some quick checks to see that everything is in agreement? Frederic used sources at declinations of +10, -20 and -50 and tracks of ± 3 hours around the meridian. I am not sure whether shadowing was taken into account, but it probably is an issue in some cases. If you can please do runs with and without shadowing taken into account.

Obviously the main thing is to check that the dirty beams are decent but I also want to check what the beam widths really are. Could you do this for 1 mm wavelength and make sure you define the quantities you are reporting – I think everyone calls them b_{maj} and b_{min} but are these FWHM, Gaussian radius or what?

We will also want to work out some sensitivity numbers – brightness temperatures and the like – but we still aren't quite in a position to fix on this configuration – we are still waiting to hear about pad availability and we also have to think about the progression to the next size up.

Remy's reply:

The first glance doesn't look all that encouraging to me – 15% sidelobes even after 6h earth synthesis, and over 40% in a snapshot, similar to the sidelobes in the 250m configuration (this test was 245GHz with no noise). Were the sidelobe strengths included in the optimization metric, or just the main beam?

(Please see Boone writeup, attached)

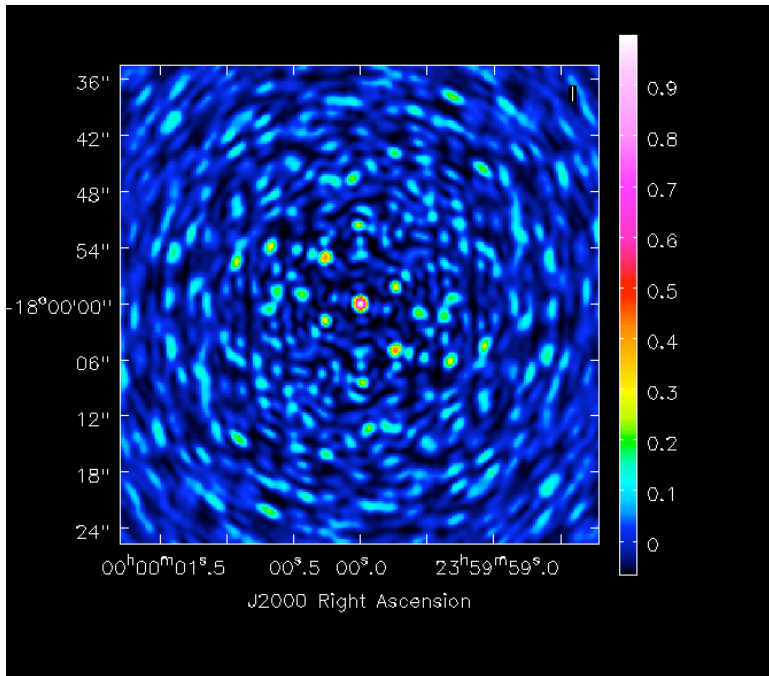


Figure 1 1 hr, source at elevation 80 deg.

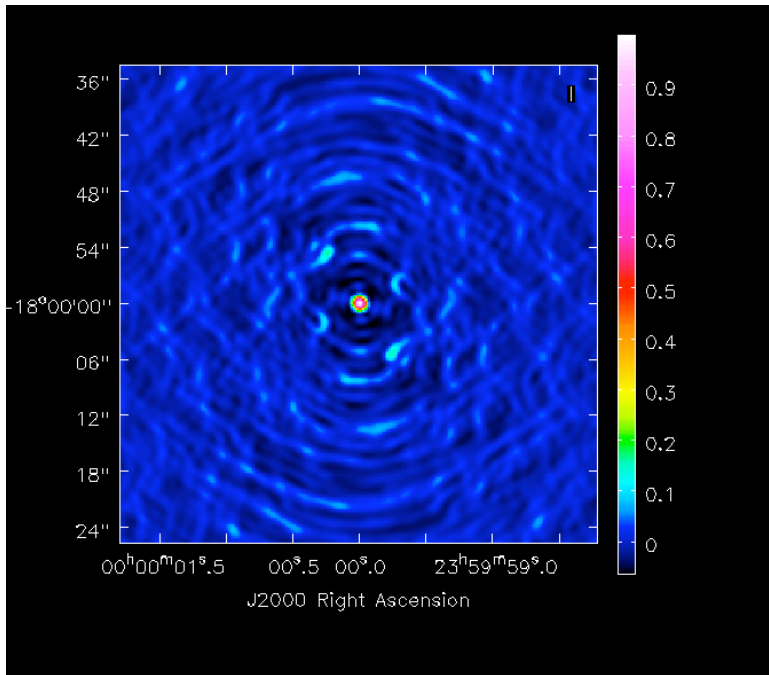


Figure 2 Source 80 deg el, 6 hr track.