CARMA

CARMA provides 2 VLBI stations:

- 8 antennas are phased together in a set of beamformers and recorded on one Mk6 recorder.
- a separate 'reference' antenna is connected to a standard BDC and R2DBE and is recorded on a separate Mk6 recorder.

For a diagram of the LO system and recorders, see Overview diagram. For a more complete diagram of the IF system and description of the channelization for the beamformed antennas, see Frequency setup. For coherence tests, see Coherence test.

Calibration information is on the non-public wiki.

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In the CARMA correlator room, March 2015. Left to right, Dick Plambeck, Dan Werthimer, Karto Keating, Thomas Bronzwaer, Christiaan Brinkerink, Dave MacMahon, Jason SooHoo. Another key person, not in this photo, is Matt Dexter.

Flux calibration

Uranus, Mars, and Callisto were used as primary flux calibrators for the VLBI sources. Uranus and Mars were daytime objects, observable only at the end of the VLBI schedules, whereas Callisto was up at night and could be interleaved into the middle of the schedule. The flux calibrator parameters are given in the table below:

flux calibrator properties

source	diam	Tb	S
Uranus	3.32"	97.3 K	28.1 Jy

source	diam	Tb	S
Mars (3/26, 20:26 UT)	3.98"	214.5 K	91.8 Jy
Callisto	1.43"	114 K	6.2 Jy

For Uranus and Mars, the diameters and brightness temperatures are inserted into the Miriad header by the realtime CARMA system; program bootflux uses these values for calibration. For Callisto, we computed the flux density ourselves assuming a brightness temperature of 114 K (from Figure 10 in ALMA memo 594) and used program uvflux to return the measured value (restricting the uvrange to 0-30 klambda). Any antennas with anomalous gains on the flux calibrator (often, C1 and C2) or other obvious problems (often, C14 because its receiver gains were unstable) were omitted. A summary of the derived source fluxes is given in CARMA_fluxes_2015.pdf. For calibrating the SEFDs, we will adopt the average values shown in the shaded column. We note that CARMA fluxes are typically about 7% lower than SMA fluxes.