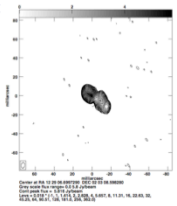
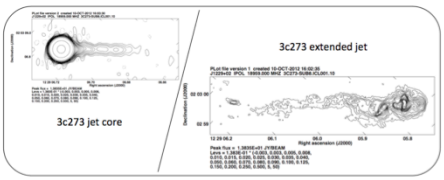
Observatory Telescope Operations
- *EVLA Commissioning*

- ***Commissioning milestones for Q4***
  - **Phased array observing commissioned (not complete Q3):**
    - *Completion delayed to Q1 FY13. Significant progress made in Q4 but some work still remains before the mode can be offered to end users.*
    - *Figure shows 3c273 in C-band continuum observed with the phased VLA and VLBA. The image was reduced and imaged in a standard way with AIPS software.*



  - **3-bit samplers commissioned for RSRO observing (not complete Q3):**
    - *Complete & demonstrated.*
    - *Figure shows 3c273 in K-band continuum observed with the 3-bit sampler system. The image dynamic range is 250,000:1.*



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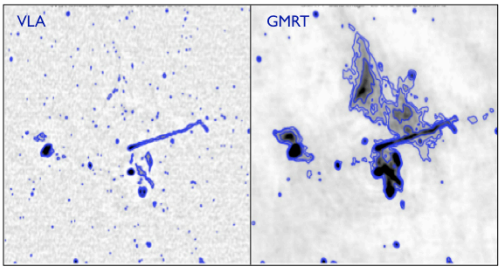
Phased array observing commissioned: Q3 saw the ability to phase the VLA in a single observing mode and record the data (but not correlate it with the VLBA) and obtain fringes between a single VLA antenna and the VLBA. In Q4, fringes can now be reliably obtained between the phased VLA (all 27 antennas) and the VLBA and images can be obtained (see above). Despite the significant progress in the commissioning of this capability, some work is still required before it is ready for end-users. The most serious problem is that the digital downconverter has a delay wobble of a few nanoseconds that is limiting the ability to do accurate astrometry. This is being trouble-shooted at high priority. In addition, other minor issues still need to be finished. In particular: projects requesting the phased array can be mostly set up with in a single user interface (SCHED) although some hand editing of the script generated to control the phased VLA must still be done; additional compatibility modes between the phased VLA and the VLBA must still be tested; and various delay and automatic gain control issues still must still be resolved.

3-bit samplers commissioned for RSRO observing: The 3-bit samplers can now be used by RSROs in a standard way. Observers can now generate their SBs in the OPT and the SBs are submitted for observing without further editing. This has substantially improved the usability of the 3-bit samplers. RSROs are currently using the 3-bit system and helping commissioning staff to uncover additional issues. The system still is not as robust as it needs to be for general observing although it has improved significantly in the past quarter. Continued issues remain relating to missing data (likely due to software issues in the correlator backend and configuration mapper when large fractions of the correlator are in use), failures in a small fraction of the samplers themselves (especially when powered off or when the antennas are moved) and time-variable issues that degrade the dynamic range in the final image. Current RSRO/ECSO programs are helping to evaluate the 3-bit sampler bandpass stability (looks very good with day-to-day agreement of about 0.1%), imaging quality (see image above), flux scale accuracy as a function of elevation, and appropriate data weighting schemes in CASA.

Observatory Telescope Operations
- *EVLA Commissioning*

- ***Commissioning milestones for Q4***
  - **First shared risk observations with low-band system:**
    - *Complete & demonstrated.*
    - *Figure shows one of the 1st VLA P-band observations of the Galaxy cluster Abel 2256.*



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D. Frail

First shared risk observations with low-band system: The first science observations with the Low-band system were made on 13 & 14 September 2012 in the BnA configuration. 10 antennas were outfitted with working P-band receivers at that time. The VLA sensitivity achieved was about 0.5 mJy/beam (using ~30% of the bandwidth at P-band to avoid RFI in a 3 hour observation). Comparison with deep images made with the GMRT shows good agreement with the compact features (see figure above). Large-scale emission is not detectable with the VLA due to lack of short baselines in this single observation.