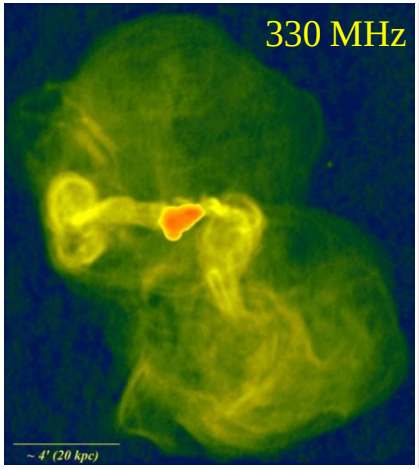
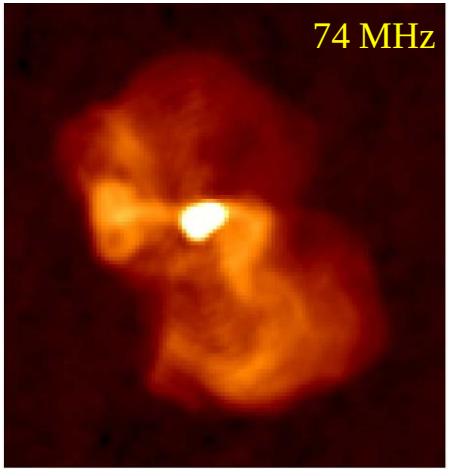
Galaxy Clusters with the EVLA: Enabling Low Frequencies

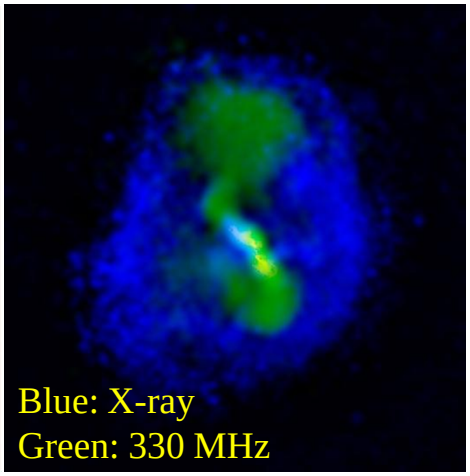
N. Kassim[1], F. Owen[2], S. Durand[2], C. Kutz[2], R. Perley[2], T. Clarke[1], J. Lazio[1], P. Ray[1], M. Perley[2], R. Dickman[2], K. Weiler[1]
[1]Naval Research Laboratory, [2]National Radio Astronomy Observatory

- Low frequency radio studies of clusters:
  - Probe of the oldest particle populations
  - Tracers of merger induced particle acceleration & past AGN activity
- Early, important radio cluster work driven by the VLA
  - Significant contribution to ongoing renaissance in low frequency radio astronomy
- Unfortunately, low frequencies lost in the VLA to EVLA conversion!

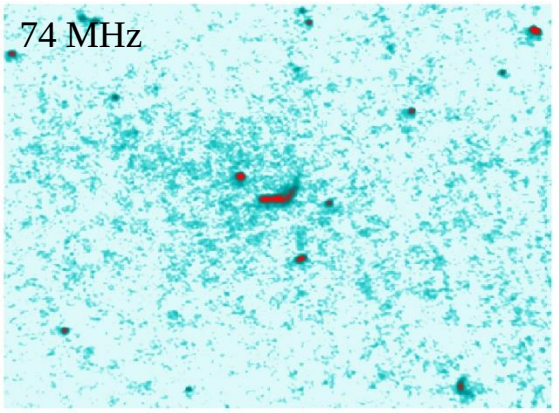




Virgo A – Owen et al. 2000 (left), Kassim et al. 2007 (right)



Hydra A – Wise et al. 2007

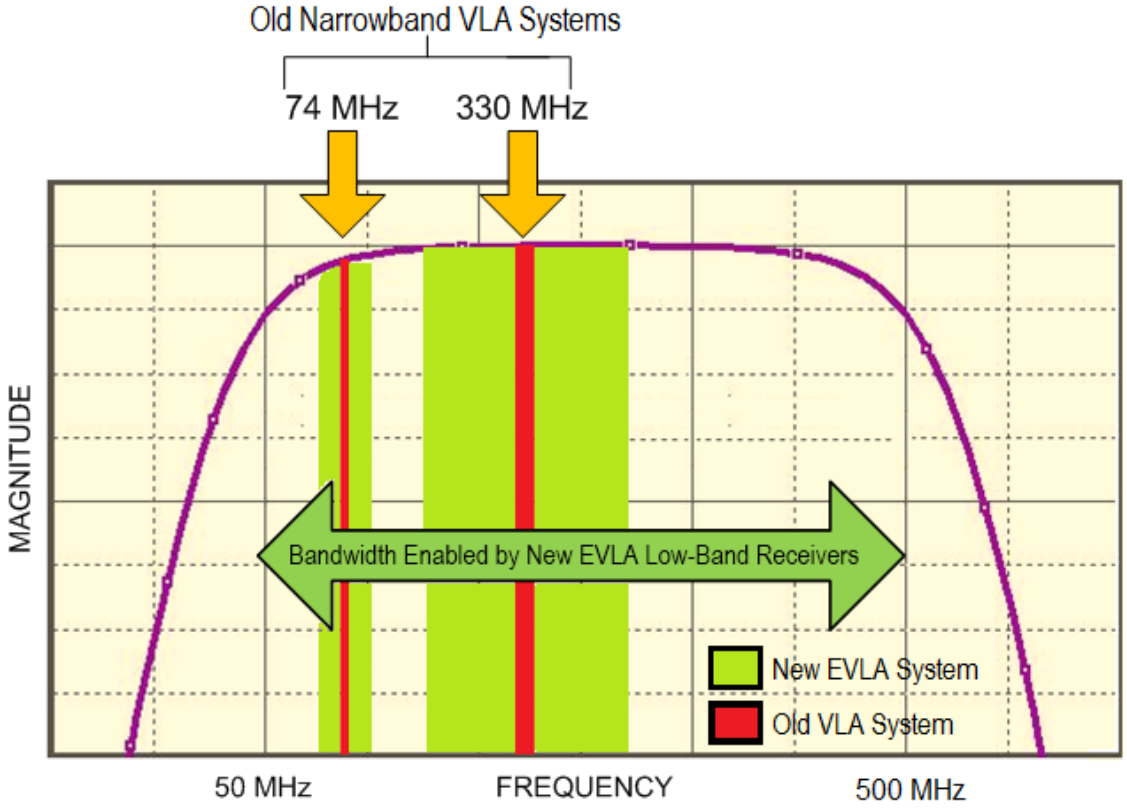


Coma – Enßlin et al. 1999

Enabling Low Frequencies on the EVLA

Joint NRL & NRAO project

- New broad-band (~50-500 MHz), low-noise EVLA "Low Band" receivers currently under development
  - Will replace separate, narrow-band VLA "legacy" 74 & 330 MHz receivers
- Increased bandwidth, improved receiver performance
  - Coupled with EVLA correlator, evolving RFI mitigation & ionospheric calibration, ***expect significant improvements over past VLA systems***



- First sky tests later this year – full EVLA deployment by 2012
- EVLA to re-join exciting suite of low frequency radio instruments!