

Virgo Cluster Status

Coverage and interesting detections

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ALFALFA: Brief Overview

- The extragalactic HI survey will cover 7000 square degrees of the high galactic latitude sky out to a distance of ~ 250 Mpc.
- Spring 2005 Observations have covered ~ 105 deg² towards Virgo region at 12^h 12^m 30^s to the supergalactic plane.
- An extragalactic HI survey affords advantages over optical surveys, namely *detection of gas-rich extragalactic systems that may not have initiated star formation, as well as blind tidal interactions traced by HI.*

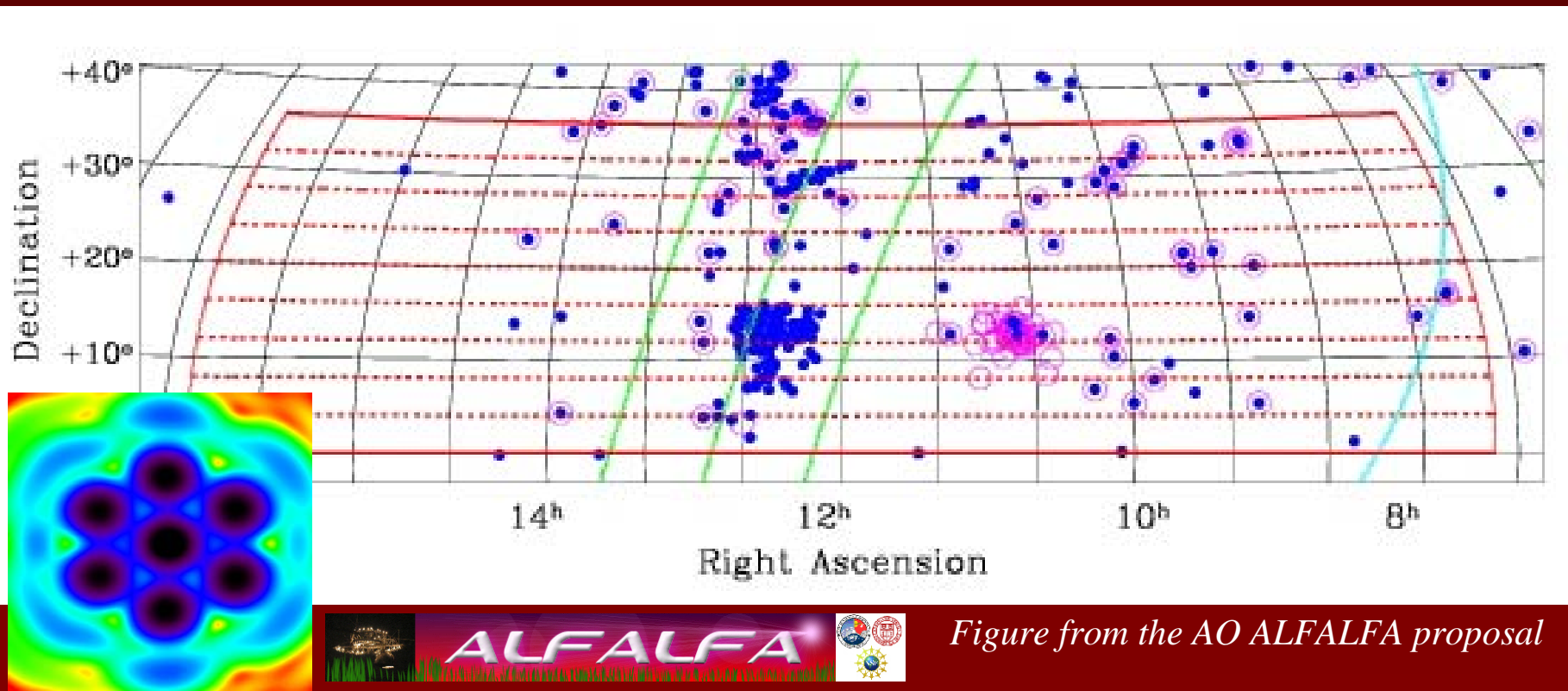
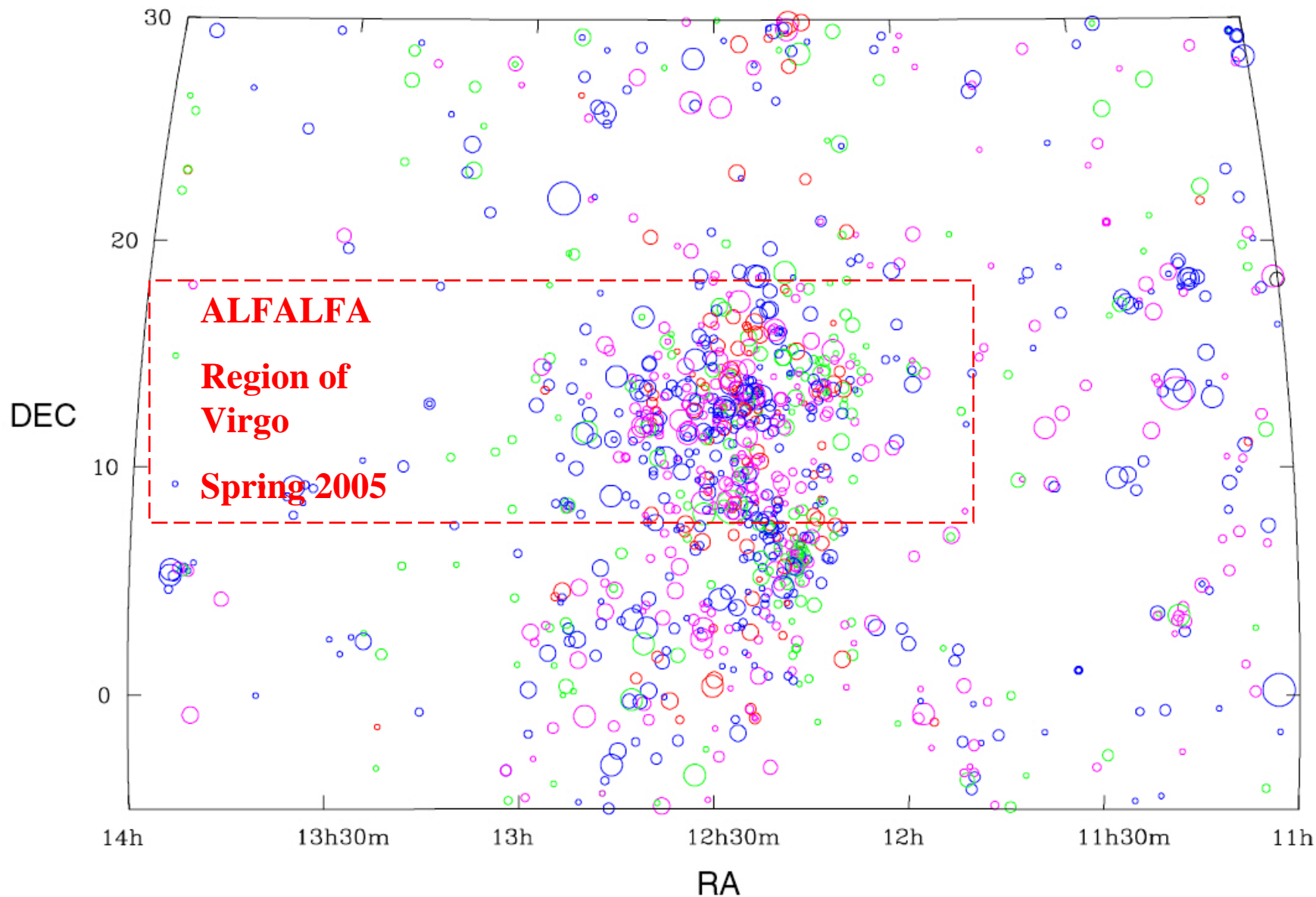


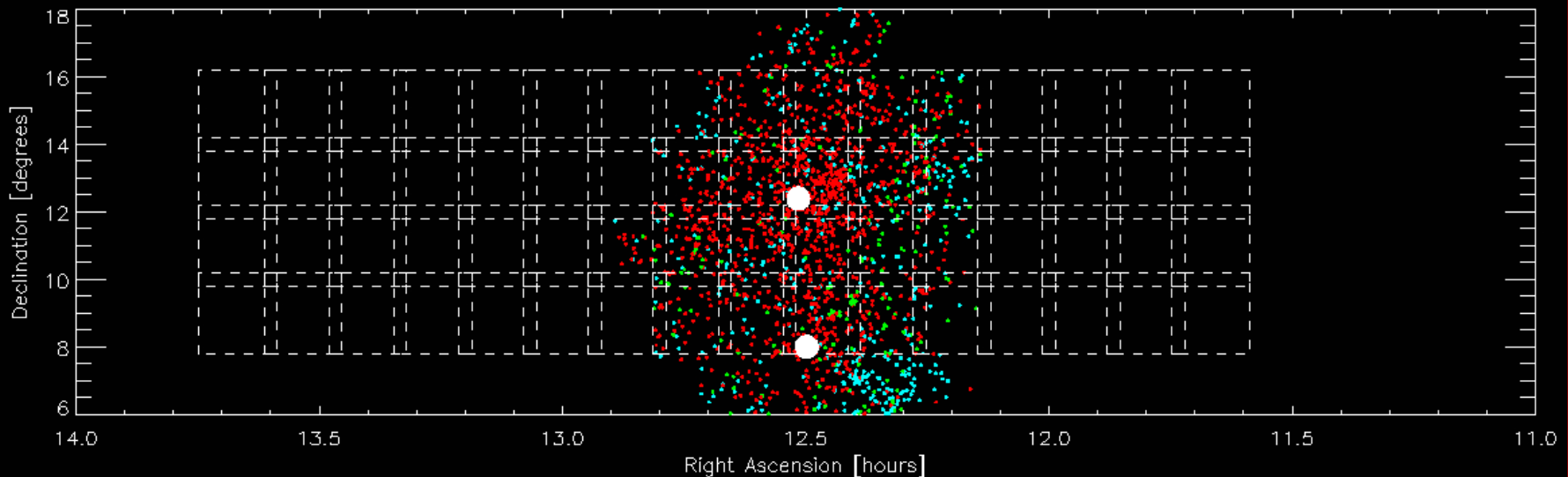
Figure from the AO ALFALFA proposal



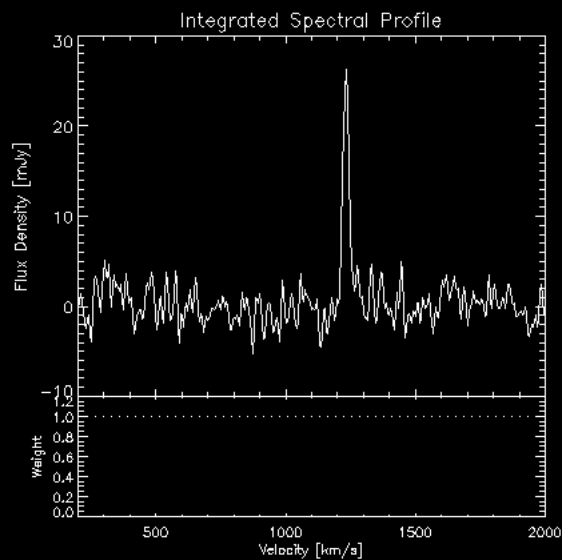
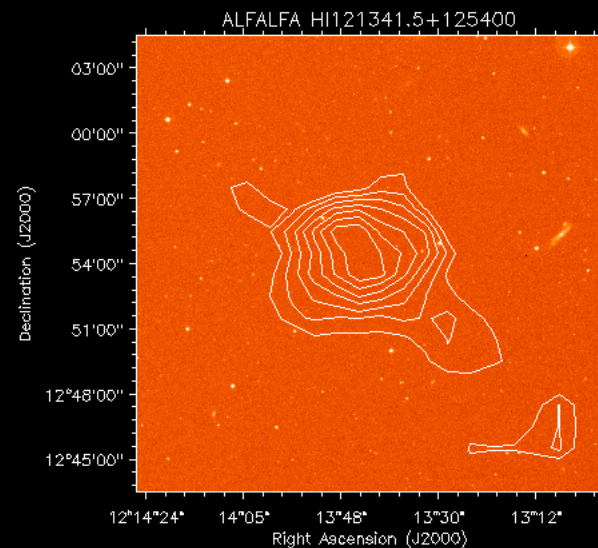
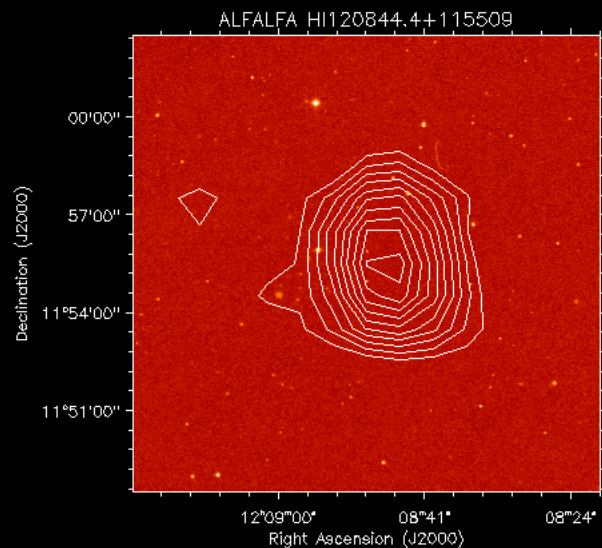
Binggeli & Huchra 2001

ALFALFA: Virgo Cluster coverage

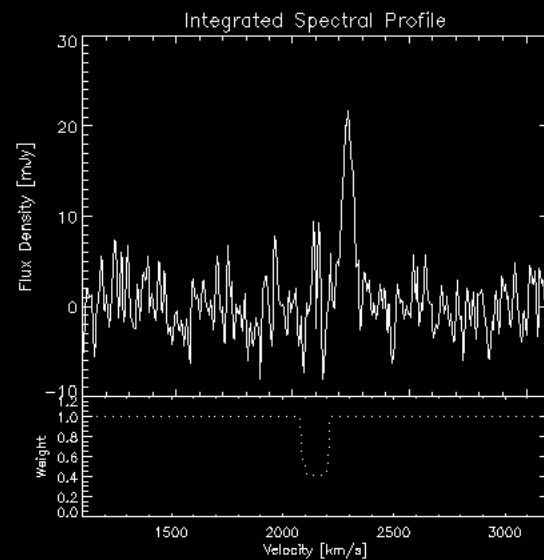
- Priority coverage of the Virgo cluster due to:
- Close proximity at $\langle cz_{\odot} \rangle \sim 1035$ km/s
- 64 grids, 4 cz quadrants, 2.4×2.4 degrees, covering ~ 5000 km/s each
- Total dataset of final grids will entail 400 GB of data
- Counterpart to the Anti-Virgo region for HIMF studies
- Expect ~ 400 galaxies in the Virgo Cluster sample (< 2700 km/s)
- Catalog extraction is in progress
- R. Giovanelli and B. Kent working on this region



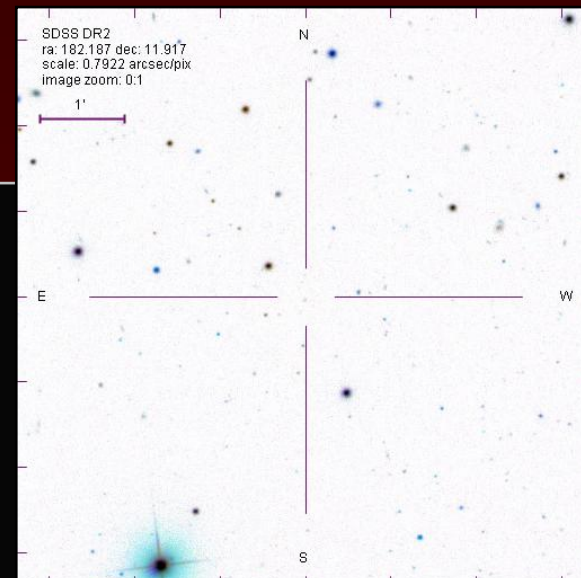
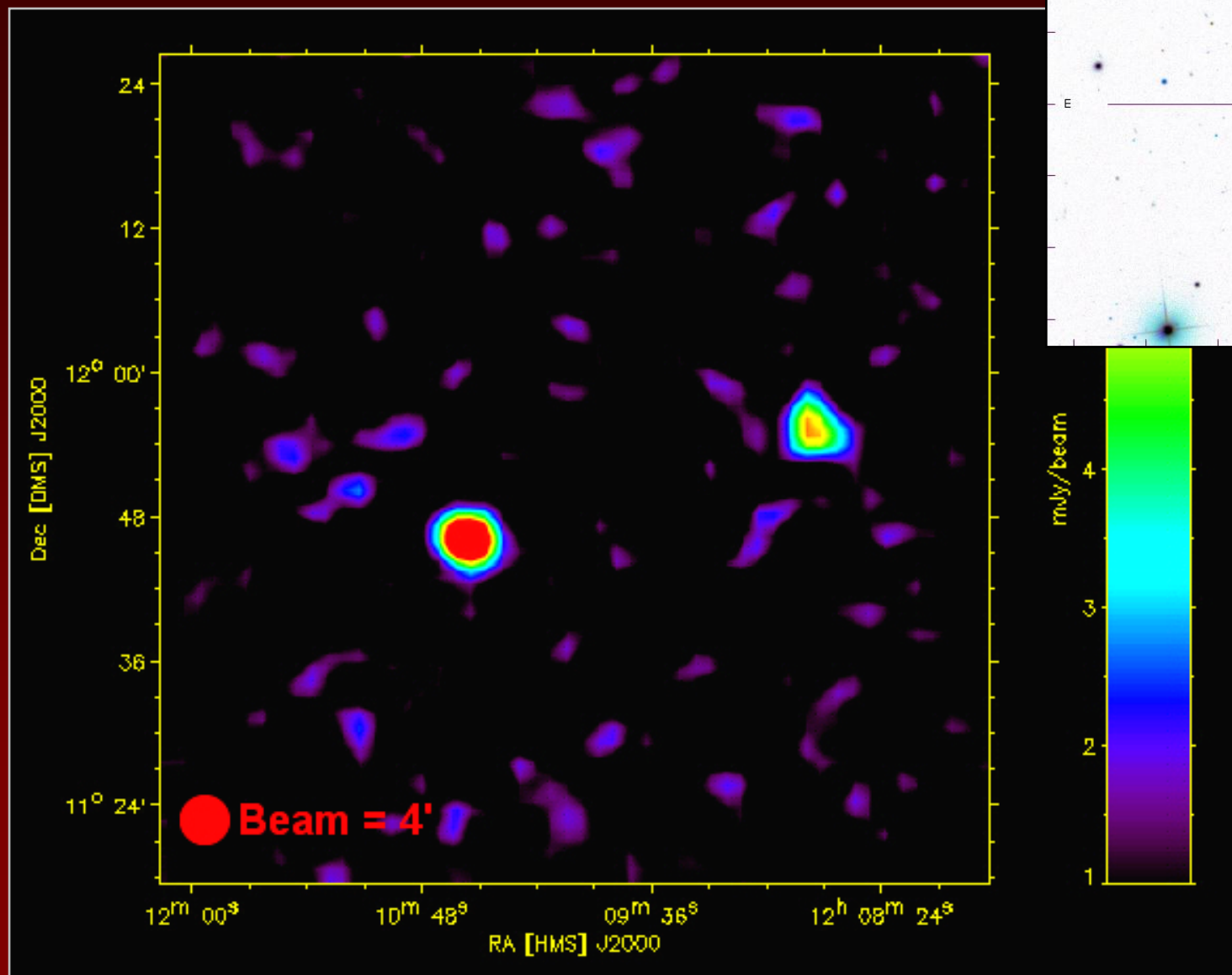
- Detected independently by two ALFALFA team members
- Double pass strategy has paid off! – detection exists in multiple scans.



$$4.76 \times 10^7 M_{\odot}$$

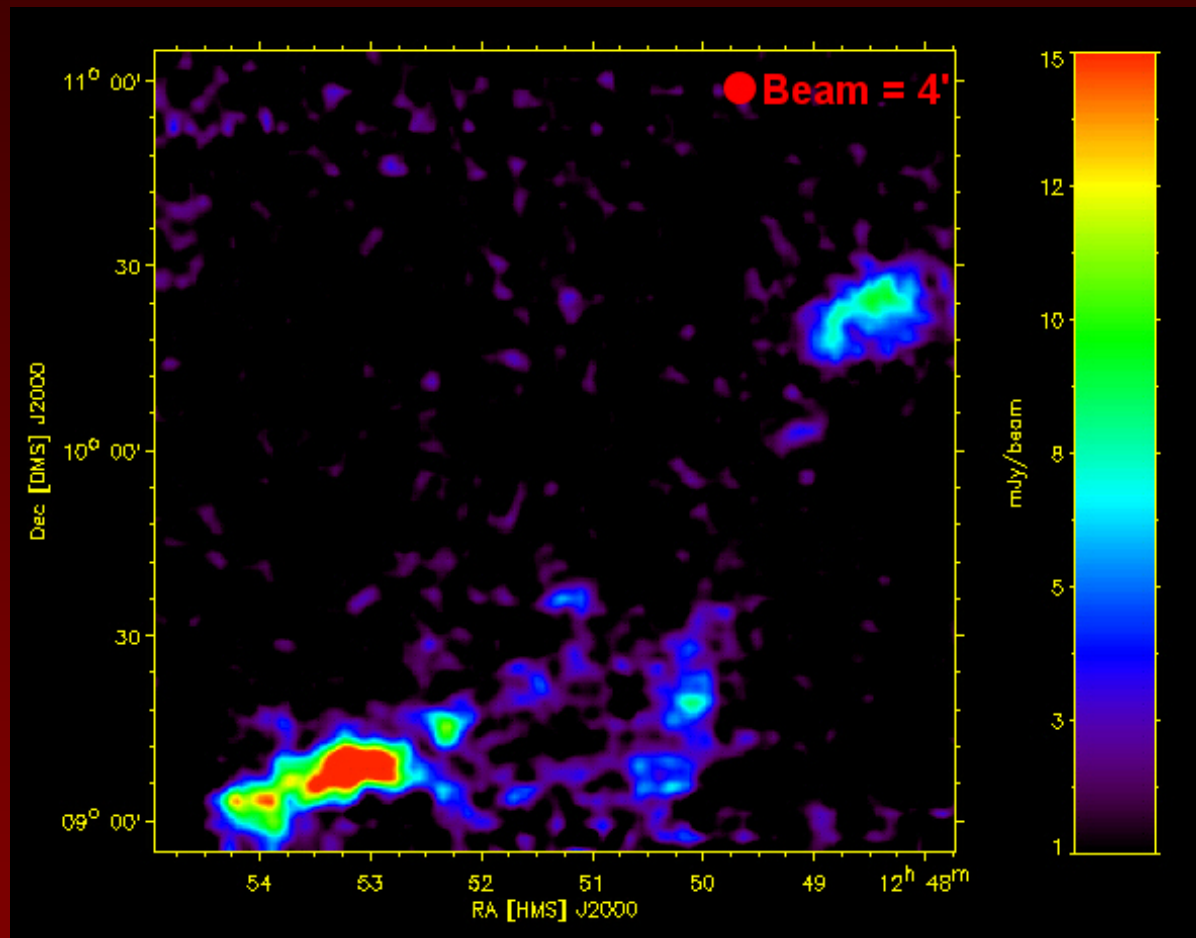


$$7.29 \times 10^7 M_{\odot}$$

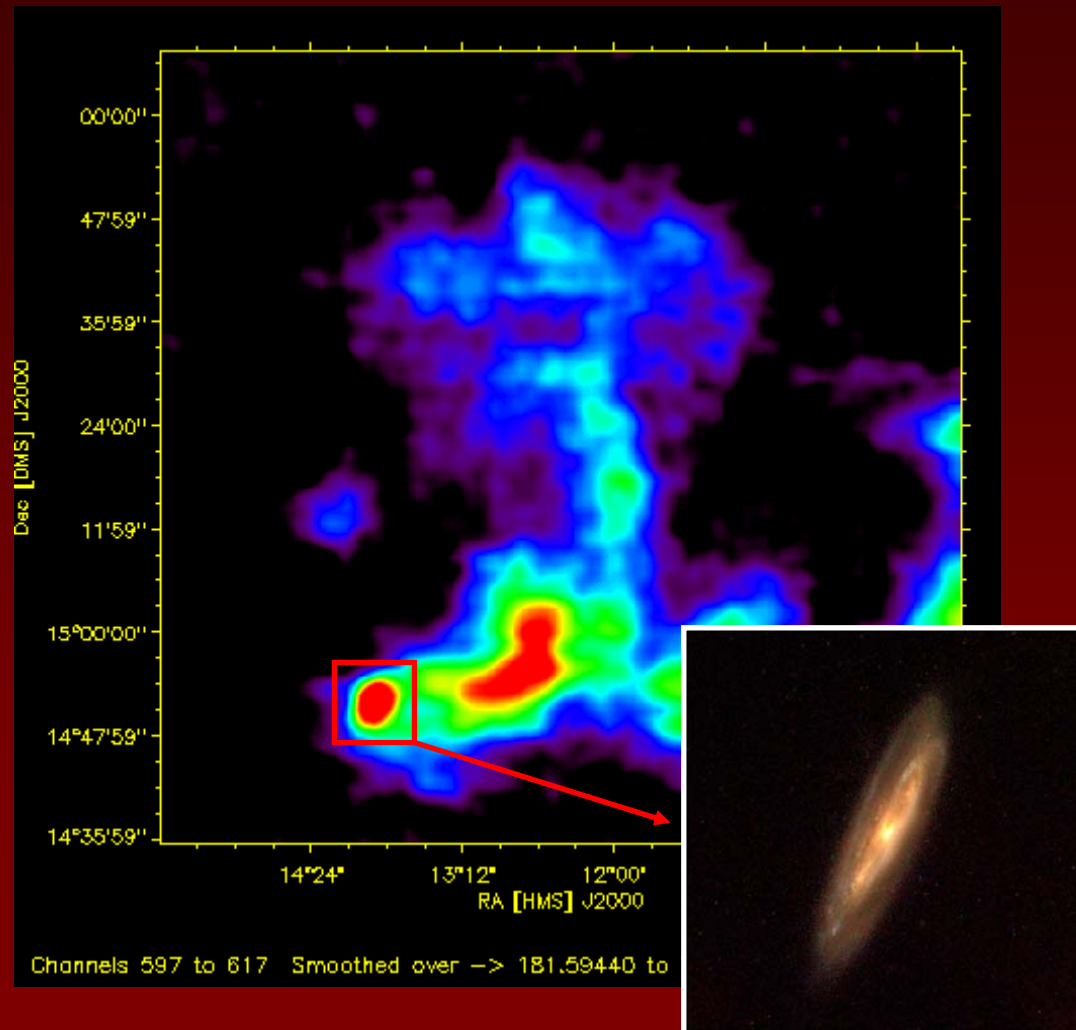


New HVC candidates

- Detected in Spring 2005 ALFALFA dataset



HVC detection towards NGC 4192?



VIRGO HI 21



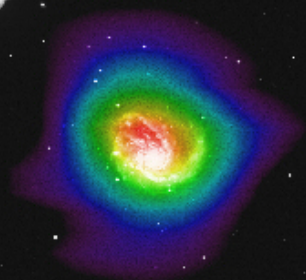
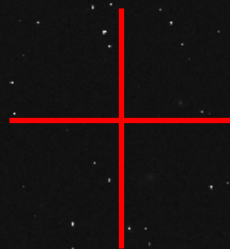
DSS2
Blue

NGC 4254

10'
45 kpc

Combined ALFALFA data
*around **NGC 4254***

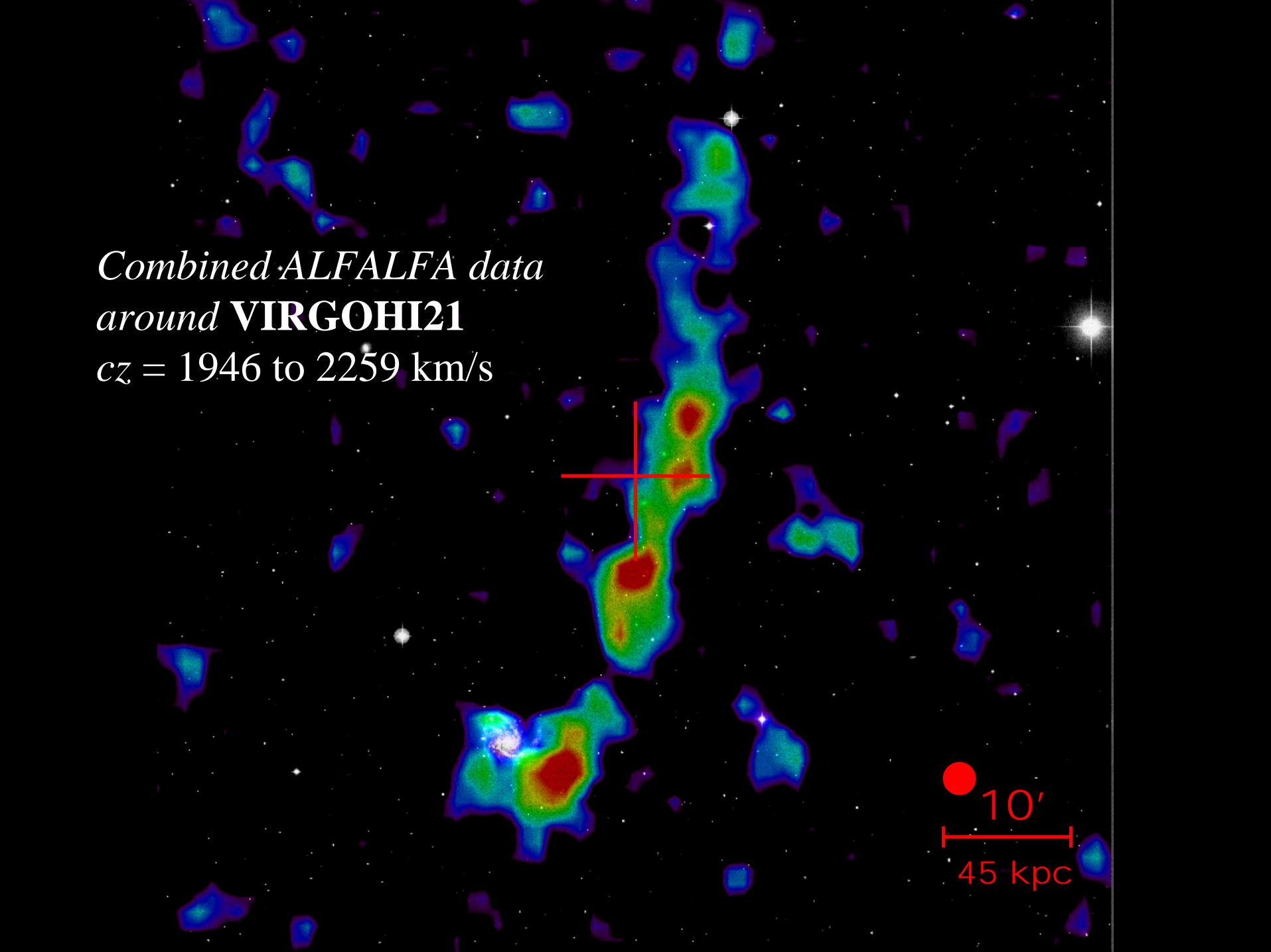
$cz = 2243$ to 2557 km/s



10'
45 kpc

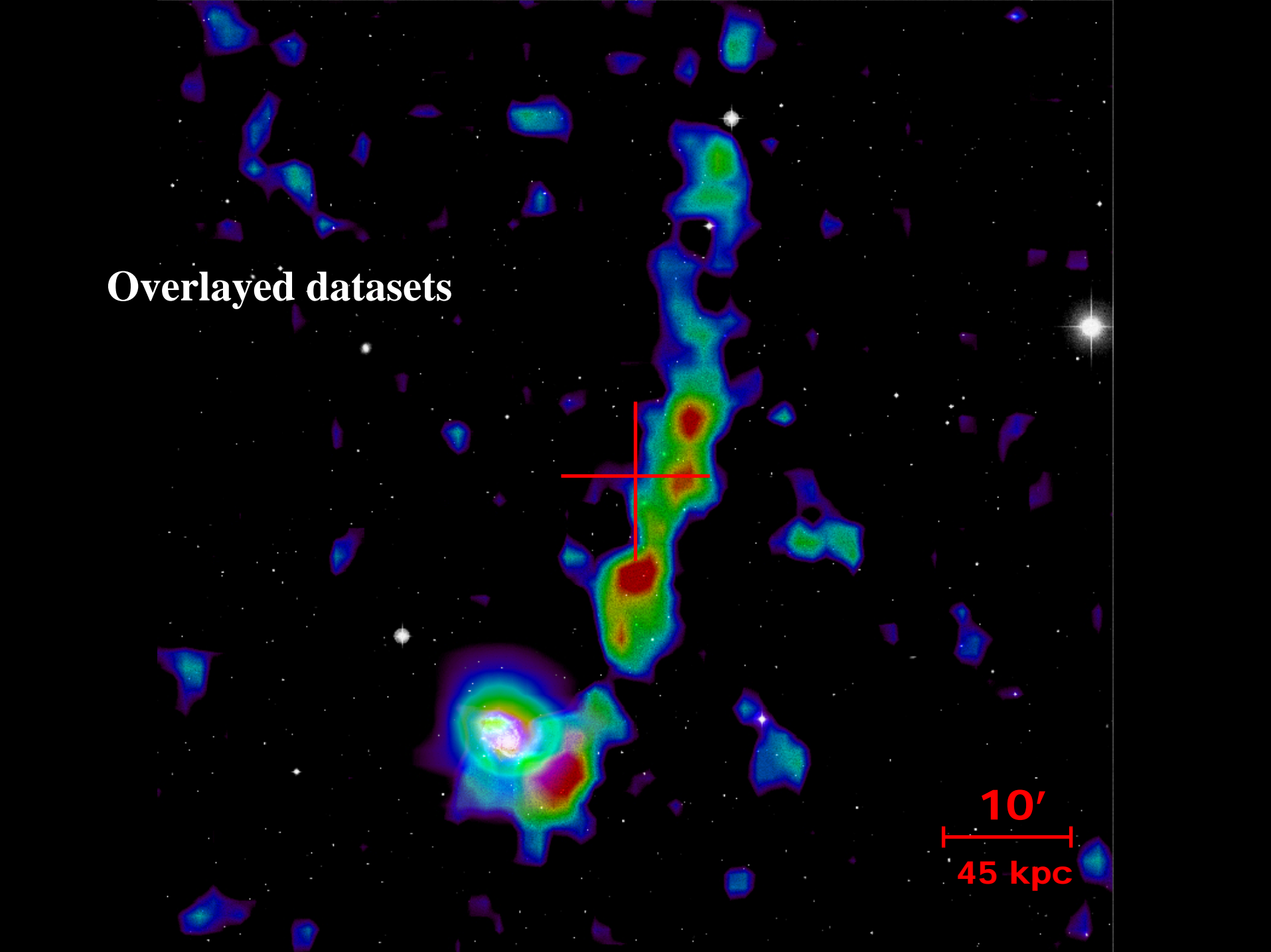
*Combined ALFALFA data
around **VIRGOHI21**
 $cz = 1946$ to 2259 km/s*

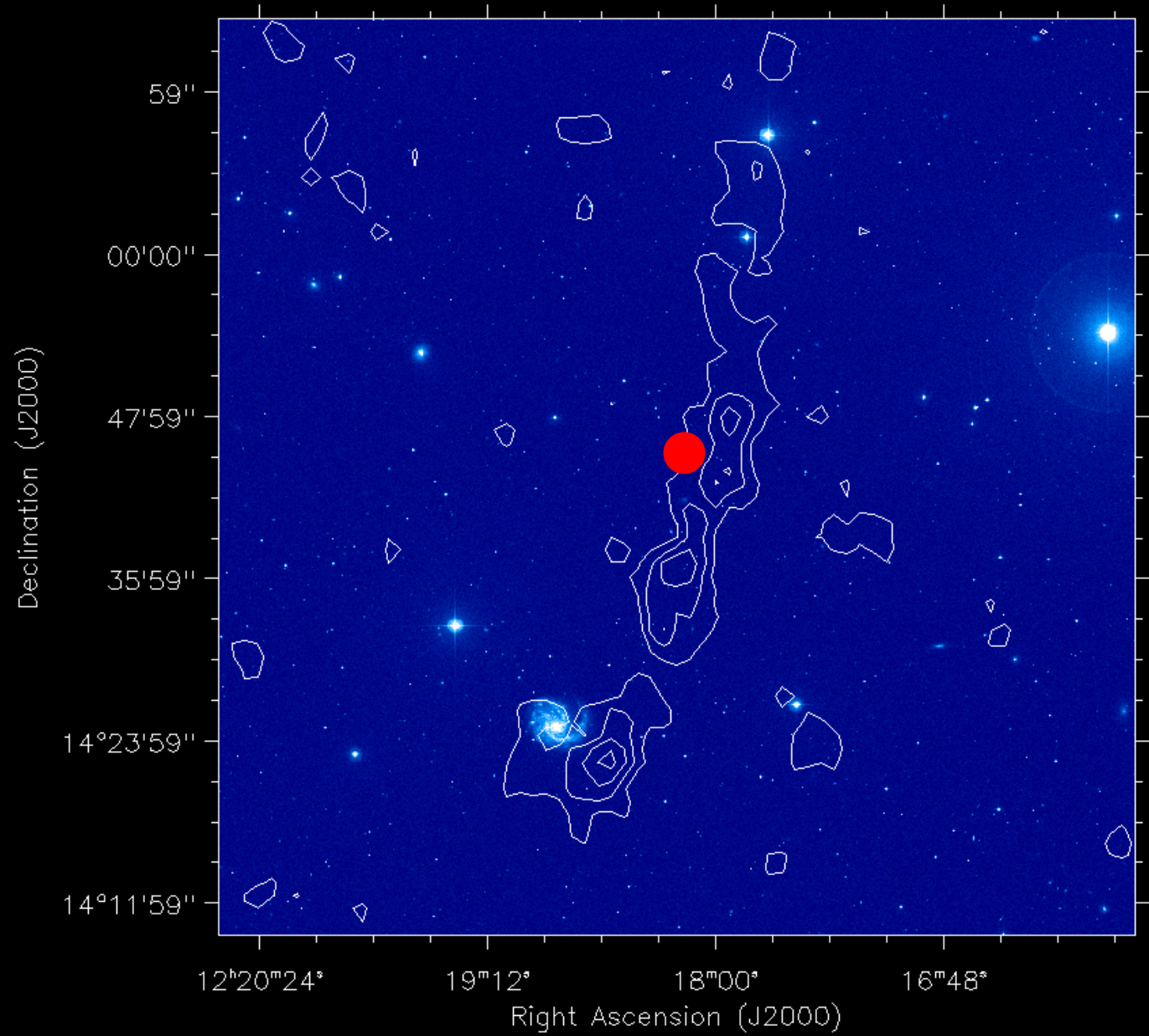
10'
45 kpc



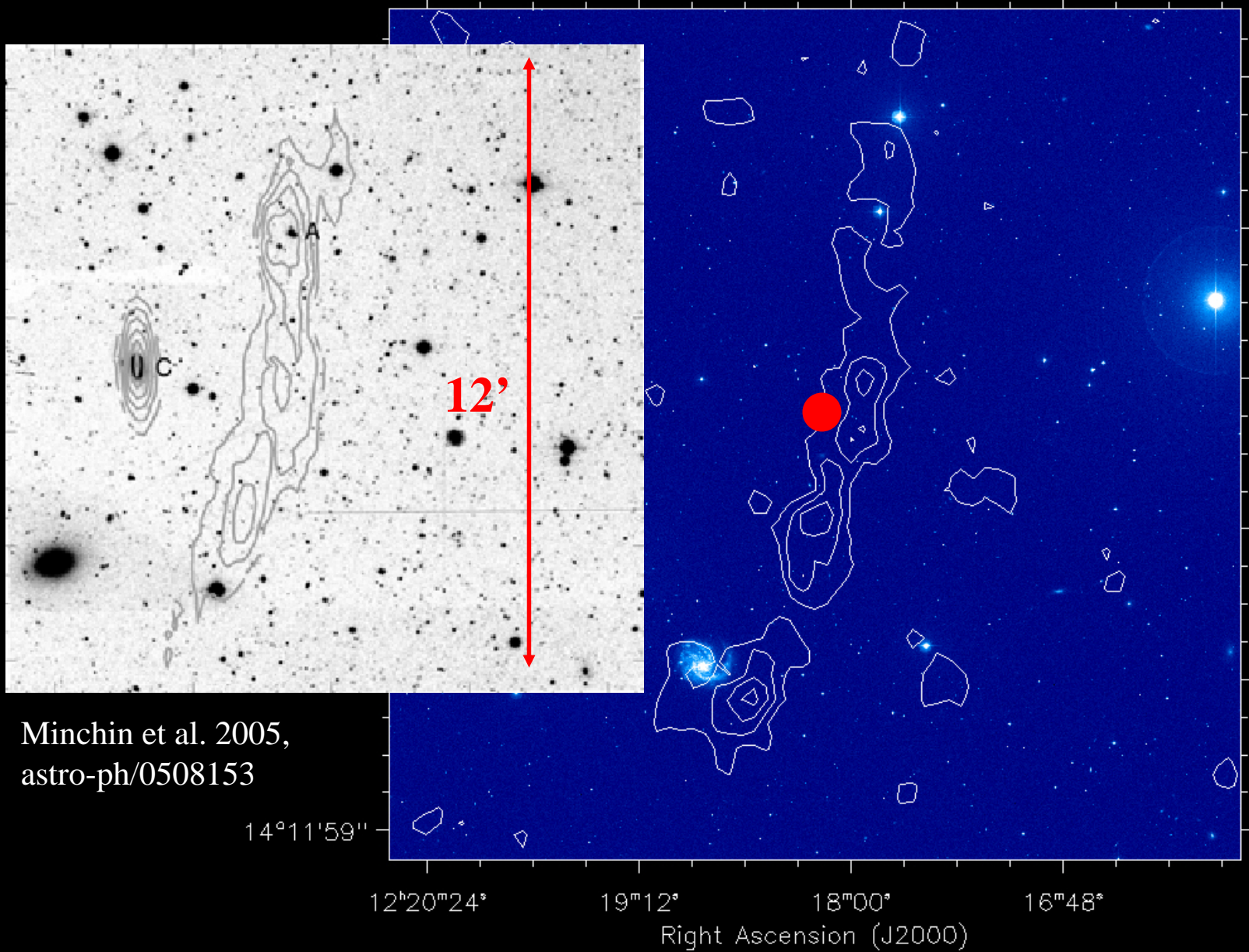
Overlaid datasets

10'
45 kpc

The image is a deep-field astronomical observation showing a galaxy cluster. The background is black, filled with numerous small, distant stars. The primary feature is a large, elongated, and irregularly shaped structure, likely a galaxy or a cluster of galaxies, rendered in a color map. The colors range from dark blue/purple at the edges to bright green, yellow, and red in the central regions, indicating varying intensities or physical properties like surface brightness. A prominent red crosshair is overlaid on the central part of this structure. In the bottom right corner, there is a red horizontal scale bar with vertical end caps, labeled '10'' and '45 kpc' in red text. The text 'Overlaid datasets' is in the top left.



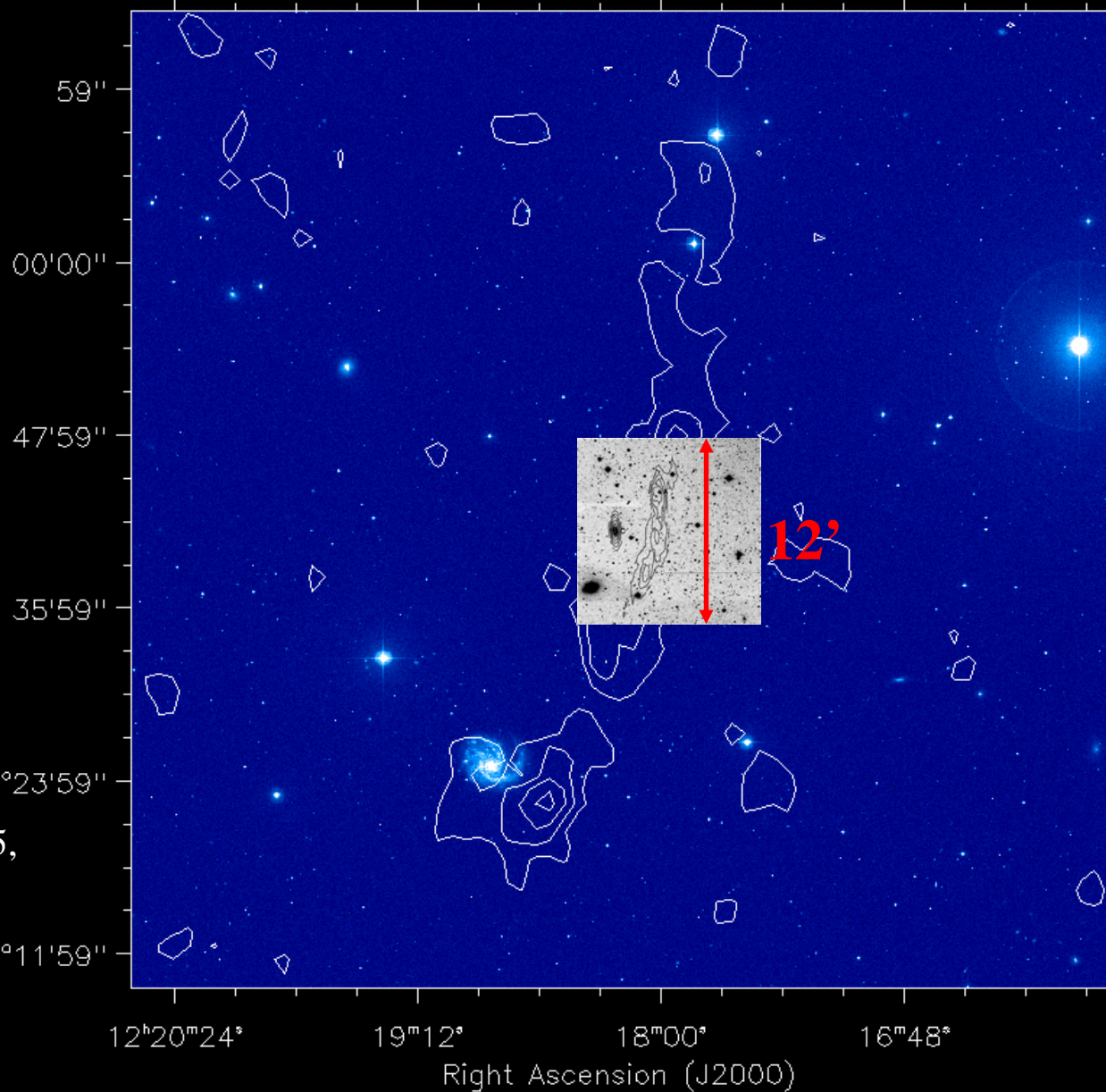
Contours at the 1,2,3,4,5,6 mJy/beam level



Minchin et al. 2005,
astro-ph/0508153

Contours at the 1,2,3,4,5,6 mJy/beam level

Declination (J2000)

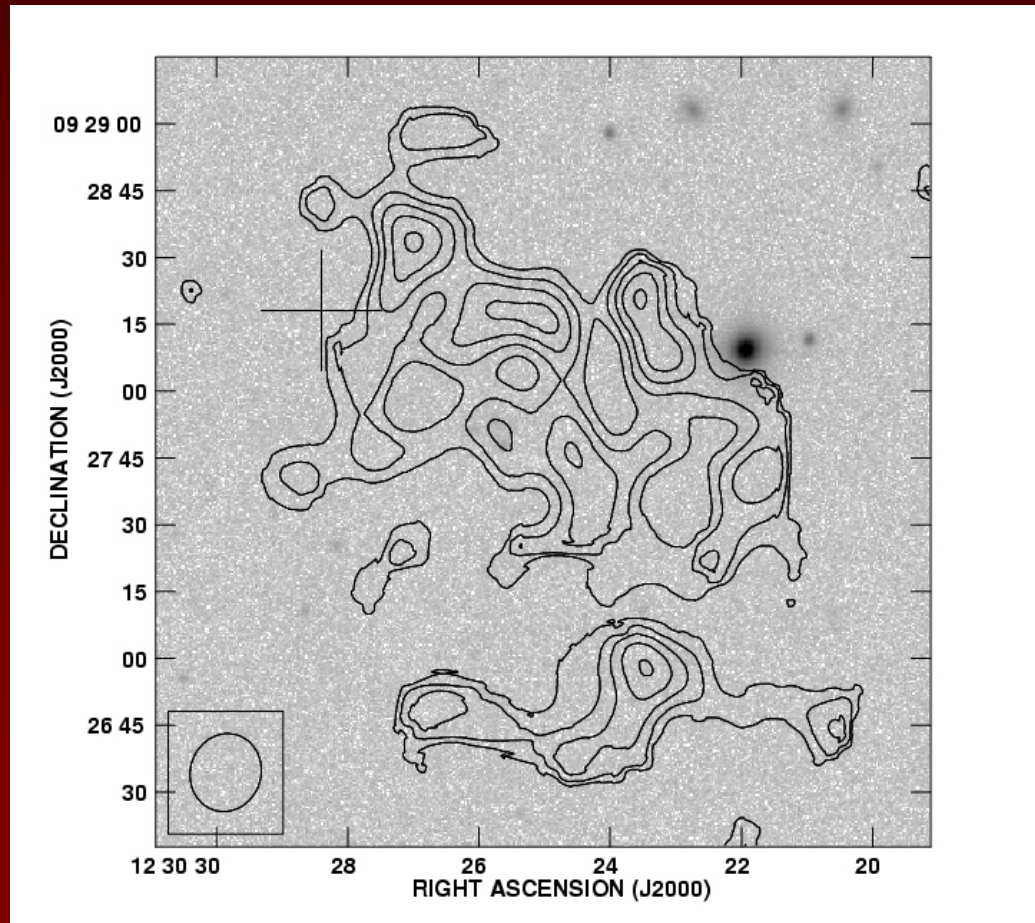


Minchin et al. 2005,
astro-ph/0508153

Contours at the 1,2,3,4,5,6 mJy/beam level

Various Virgo detections

- Virgo Cloud with AO (discussion with R. Giovanelli) – details of ALFALFA detection and processing
- Virgo Cloud with VLA (discussion with K. Spekkens)



K. Spekkens