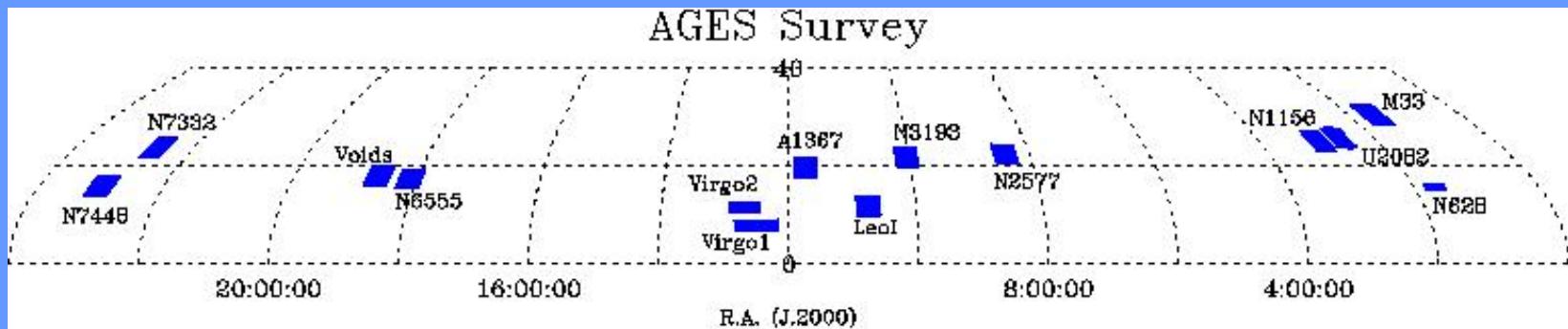


The Arecibo Galaxy Environments Survey (AGES)

Jonathan Davies



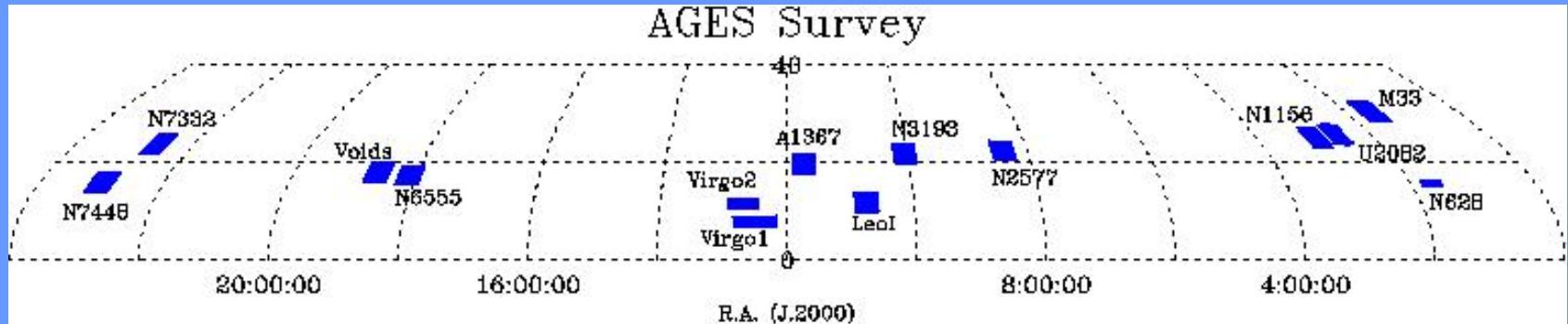
AGES information

Homepage: www.naic.edu/~ages
Jon Davies email jid@astro.cf.ac.uk

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Survey regions



Field	Survey area (sq deg)	Status
M74 (Precursor)	5x1	Observed Nov 04
M33	5x4	
UGC2082	2.5x2	
NGC1156	2.5x2	Observed Jan 06
NGC2577	5x4	
NGC3193	5x4	
LeoI	5x4	
Abel1367	5x4	Observed May 06
Virgo South	10x2	
Virgo central	5x2	
NGC6555	5x4	
Voids	5x4	
NGC7332	2.5x2	July 06
NGC7448	5x4	

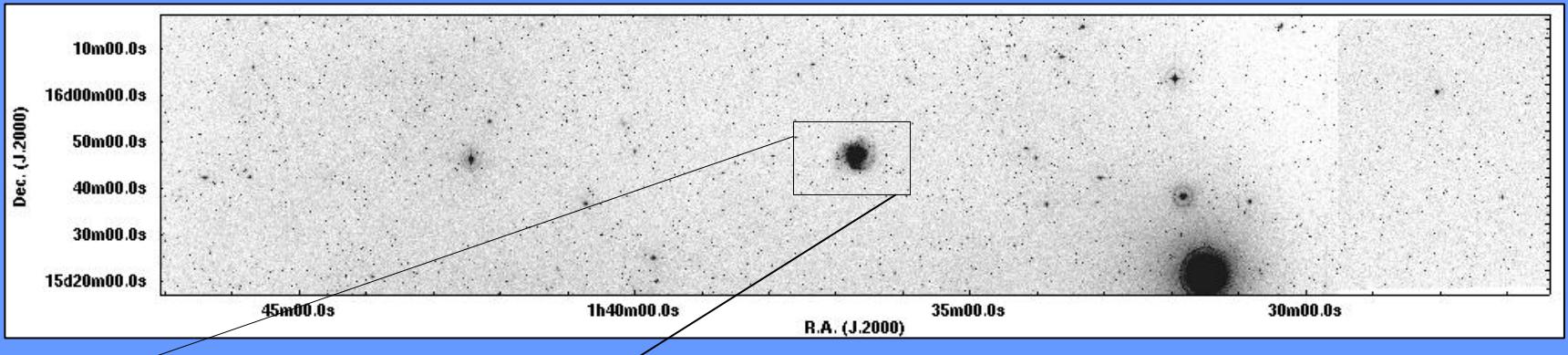
Survey Parameters
200 sq deg at 0.5-1 mJy rms
(25 scans, 300 sec per point).

Science Objectives

1. The HI mass function in different environments.
2. Baryonic mass density.
3. HVCs, dwarf galaxies etc.
4. Tidal features.
5. Dynamical masses.
6. Low column density HI.
7. Isolated HI clouds - dark galaxies.
8. HI and QSO absorption features.
9. Spatial distribution of HI selected galaxies.

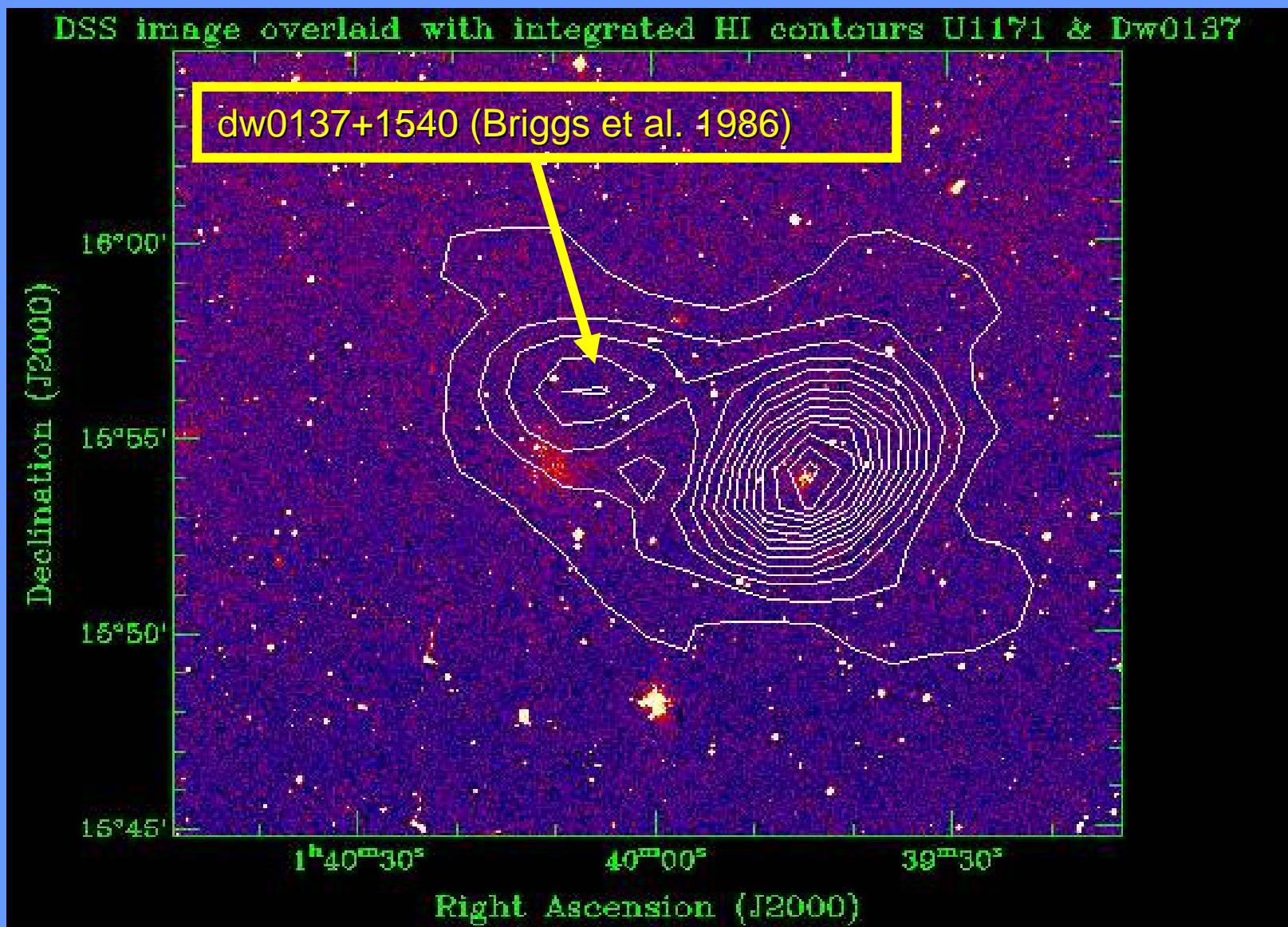
Results - M74 (Precursor)

Data - 5x1 sq deg area made up of 16 scans to give ~1 mJy rms noise



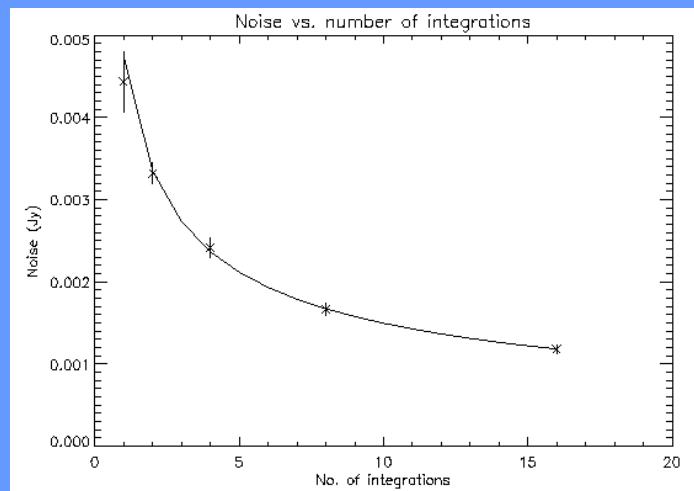
- Gas rich group similar to Local Group
- Only 10 Mpc away (3 σ Mass limit $\sim 2 \times 10^6 M_{\odot}$)
- Narrow Velocity width: $v_{50} \sim 50$ km/s (HVCs?)

DSS: UGC1171, UGC1176 & Dark Companion



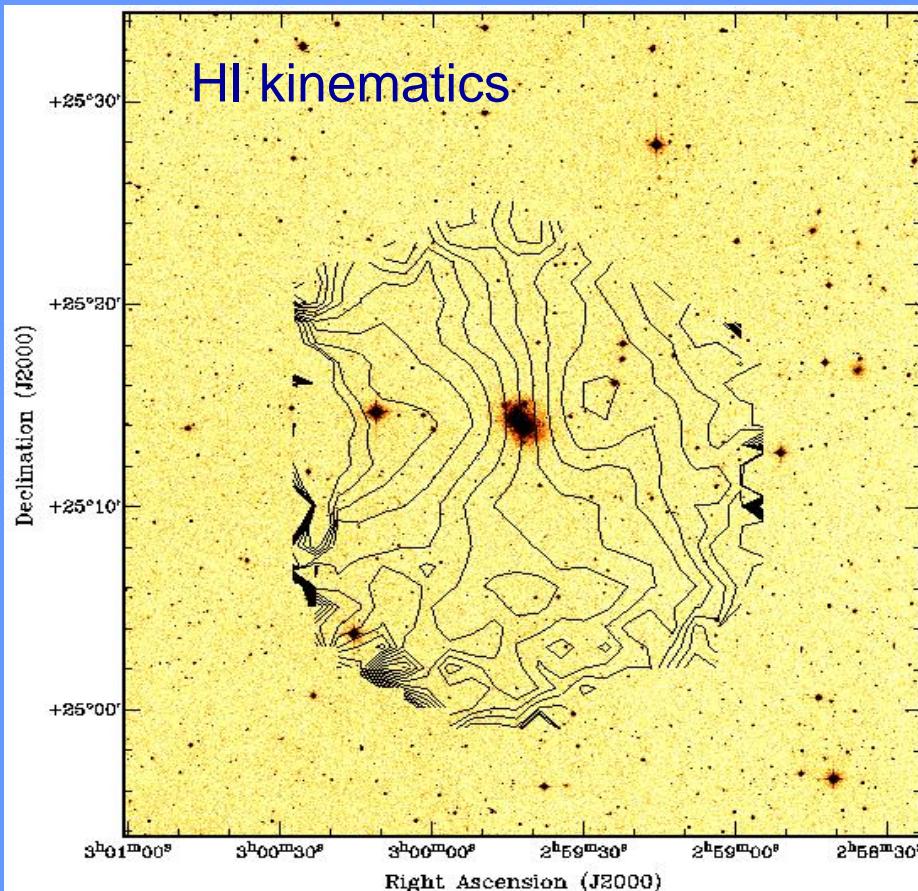
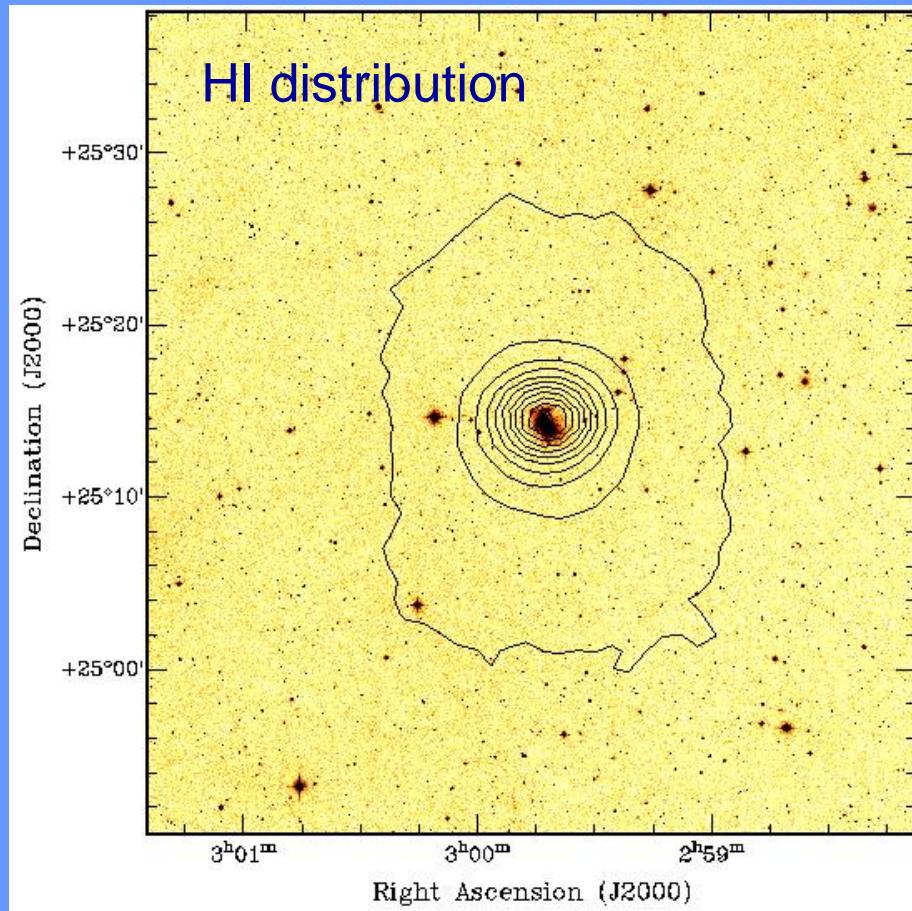
Summary - M74

1. Detected all known group members including the low mass galaxy dw0137+1541 ($10^7 M_\odot$).
2. Calibration checked against previous observations.
3. No intra-group gas down to $2 \times 10^{18} \text{ cm}^{-2}$.
4. 22 background galaxies consistent with our models (4.4 per sq deg). Nine new detections.
5. There is some ambiguity between HI sources and optical identifications.
6. Noise decreases as expected as $t^{1/2}$.



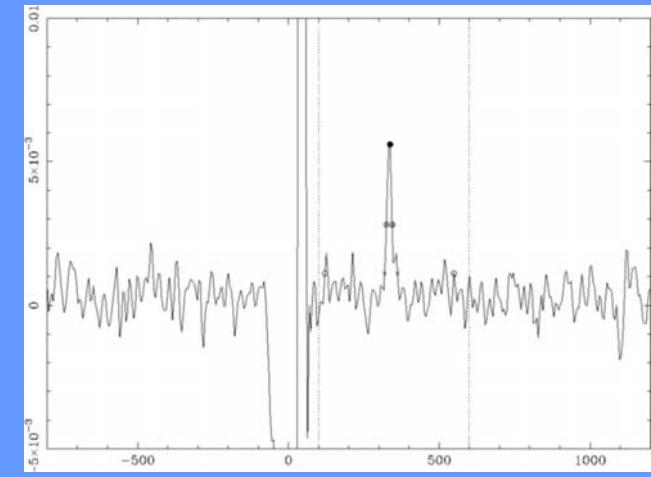
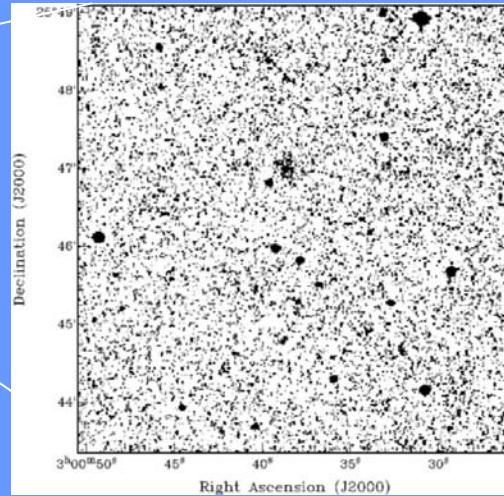
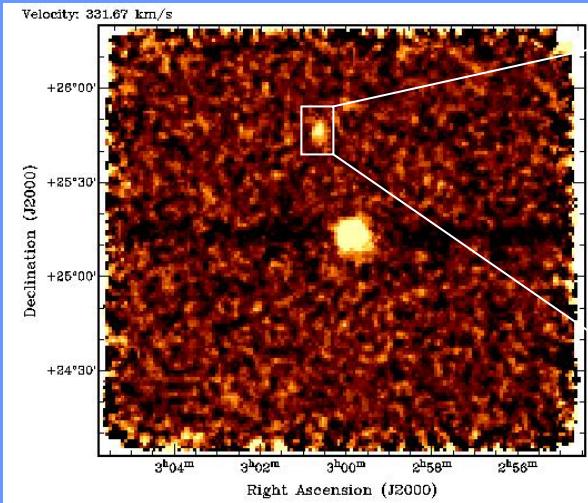
The NGC1156 data (January 2006)

An isolated irregular galaxy at a velocity of 375 km/s and distance of 5.2 Mpc

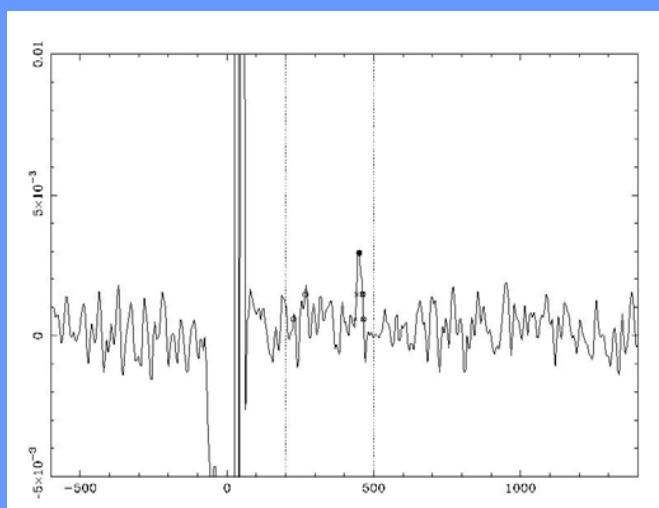
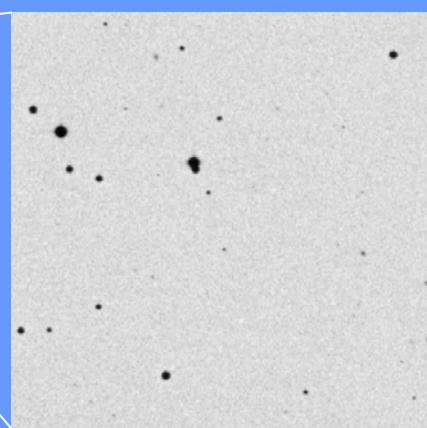
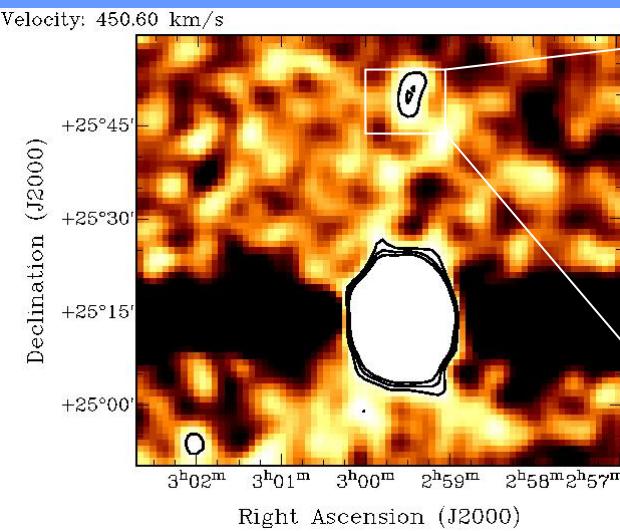


NGC1156 companions

J030035+254600

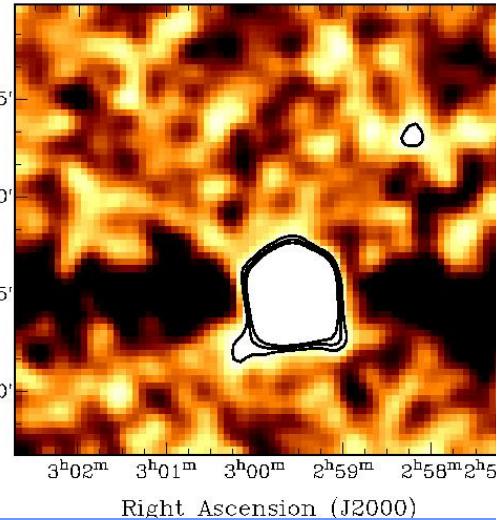


J025925+255000

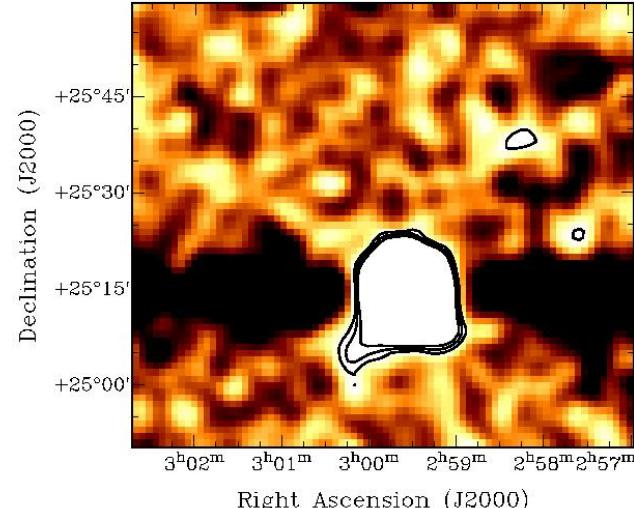


NGC1156: HI stream?

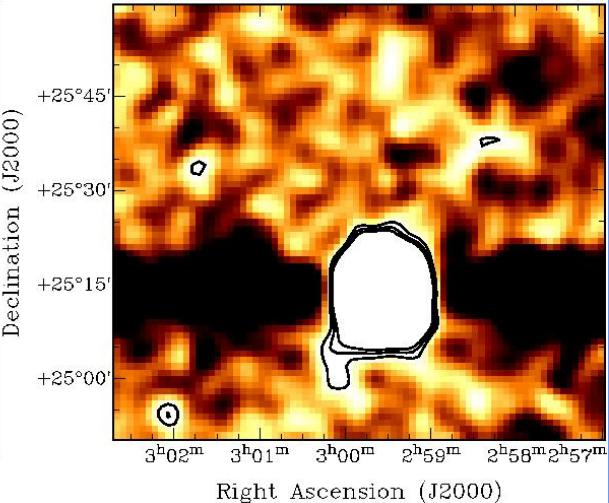
Velocity: 466.11 km/s



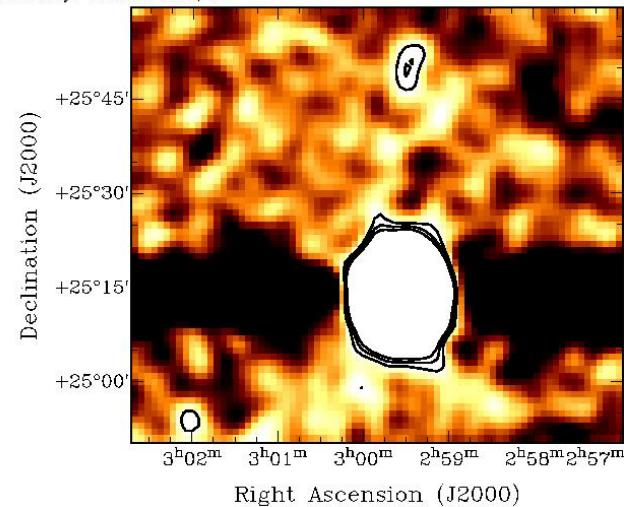
Velocity: 460.94 km/s



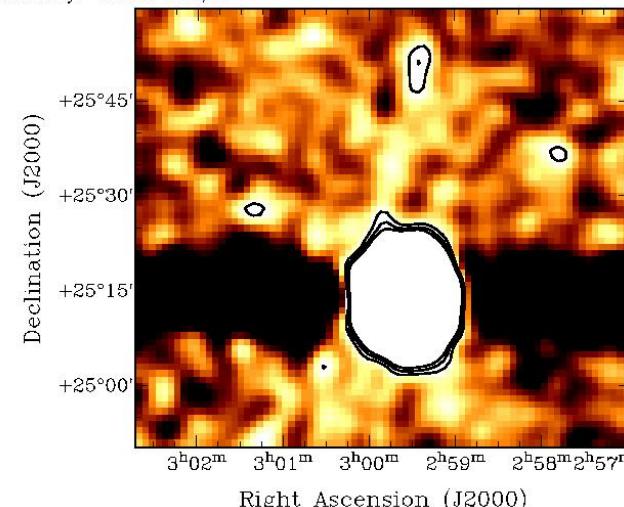
Velocity: 455.77 km/s



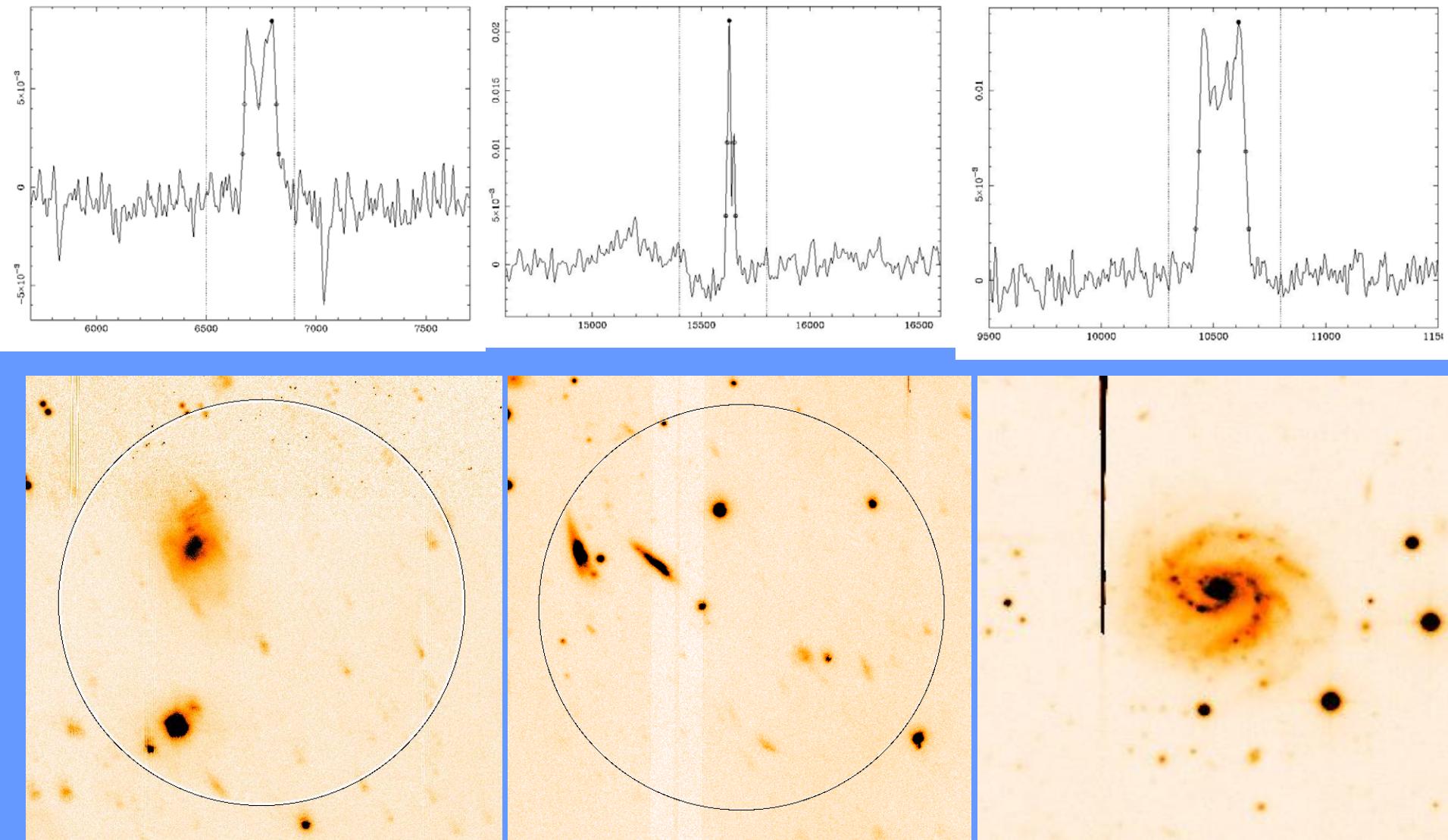
Velocity: 450.60 km/s



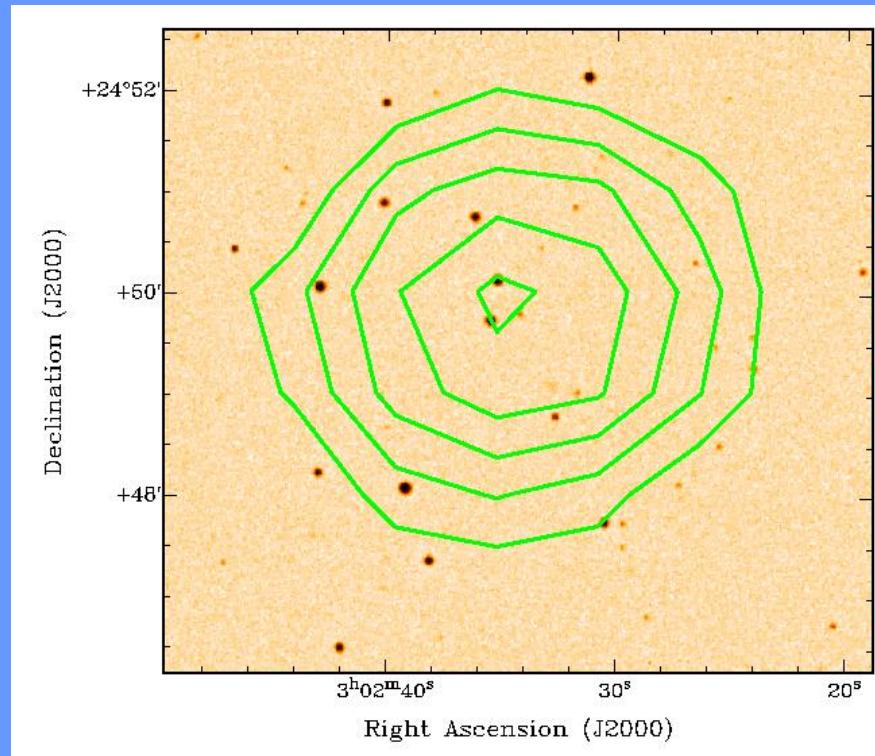
Velocity: 445.44 km/s



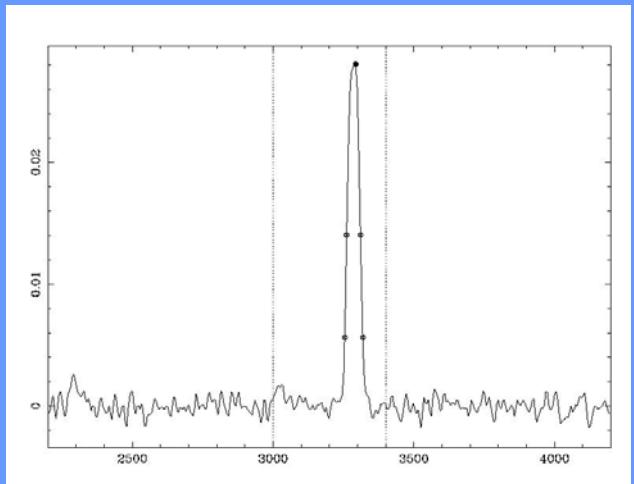
Objects beyond NGC1156



J030243+244947: a dark galaxy candidate



HI contours: 3, 5, 10, 15, 20 σ



$$cz = 3280 \text{ km/s}$$

$$\text{Distance} \sim 47 \text{ Mpc} \quad (H_0 = 70 \text{ km/s/Mpc})$$

$$F_{\text{HI}} = 1.1 \text{ Jy km/s}$$

$$\text{HI mass} = 5.8 \times 10^8 M_{\odot}$$

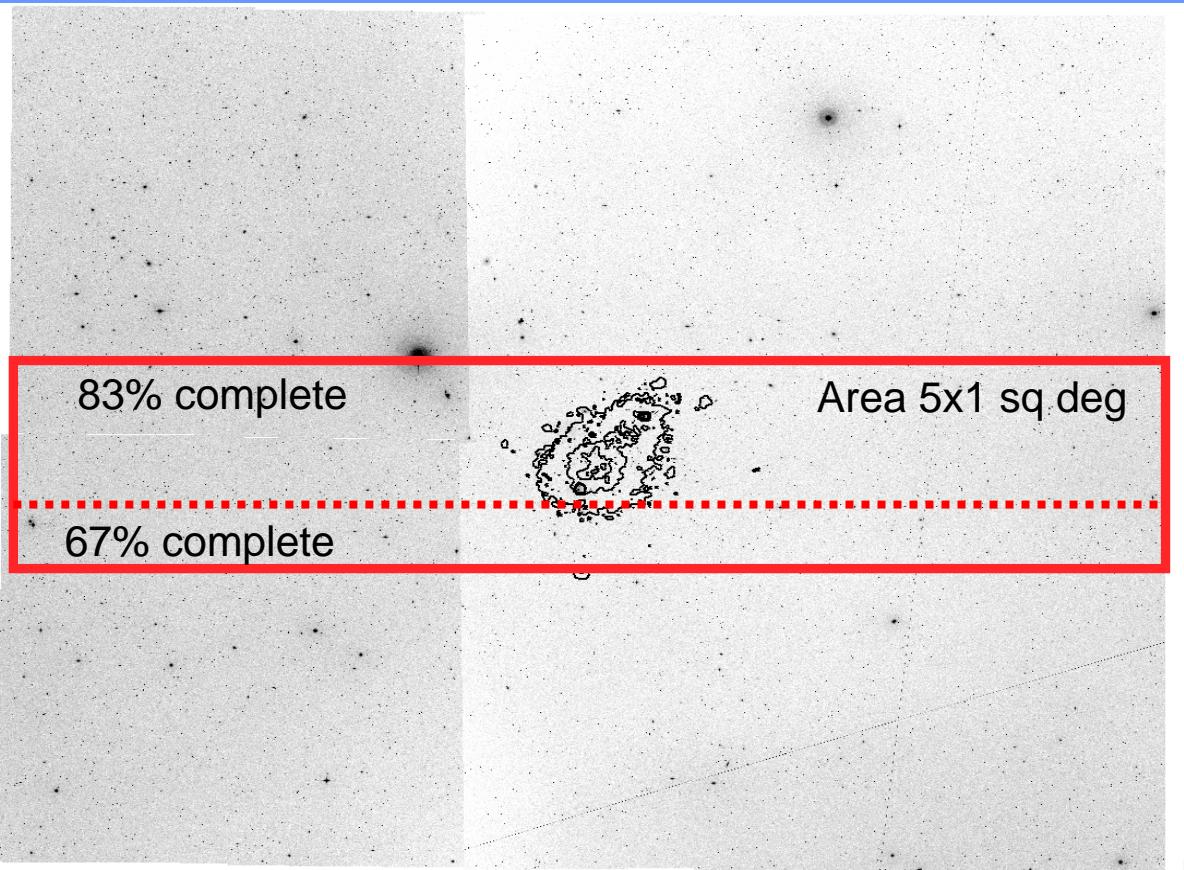
$$W_{50} = 46 \text{ km/s}$$

NGC1156 Summary

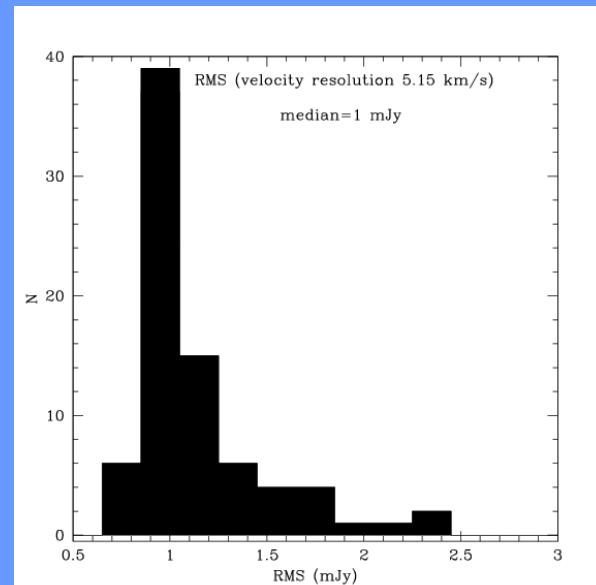
1. NGC1156 is not as isolated as first thought with at least two new companions and possibly a tidal feature.
2. 82 objects have been detected beyond NGC1156
3. 1 object, J030243+244947 has no optical counterpart down to surface brightness limit $\mu_B \sim 24.5$ (but A_B high).
4. More follow-up observations needed to confirm other companions and optical counterpart to J030243+244947

Abell 1367 - May 2006

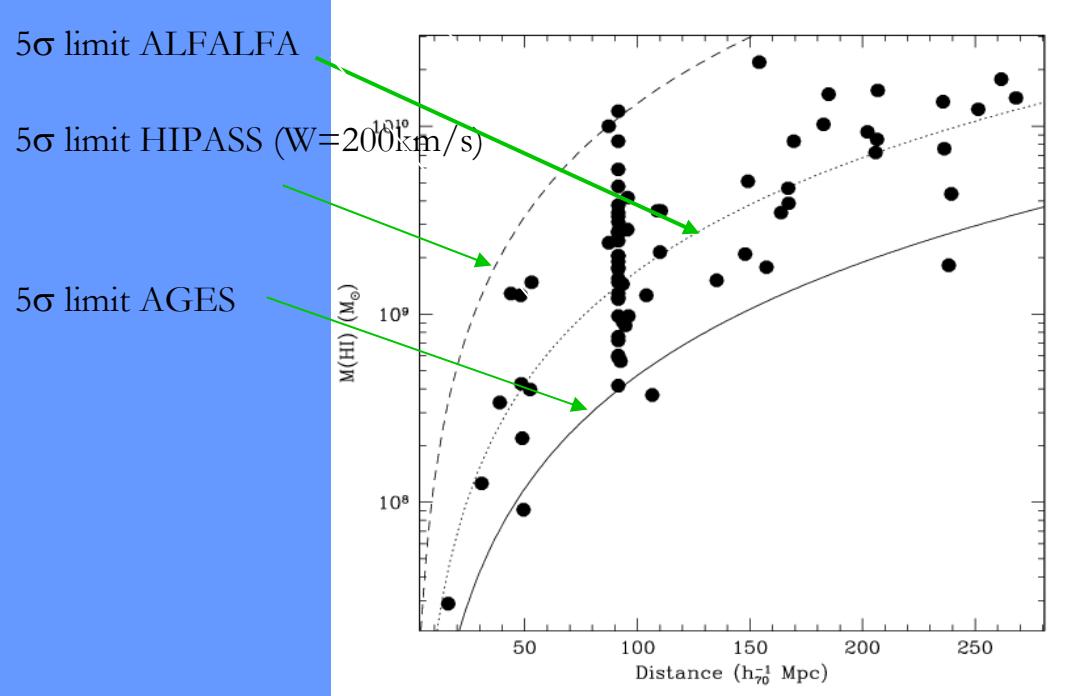
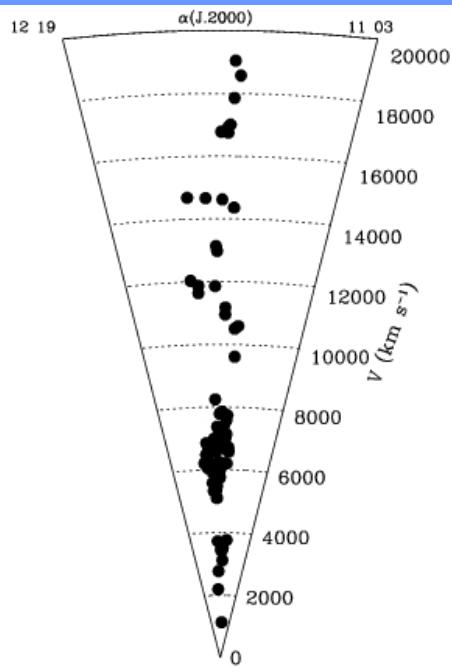
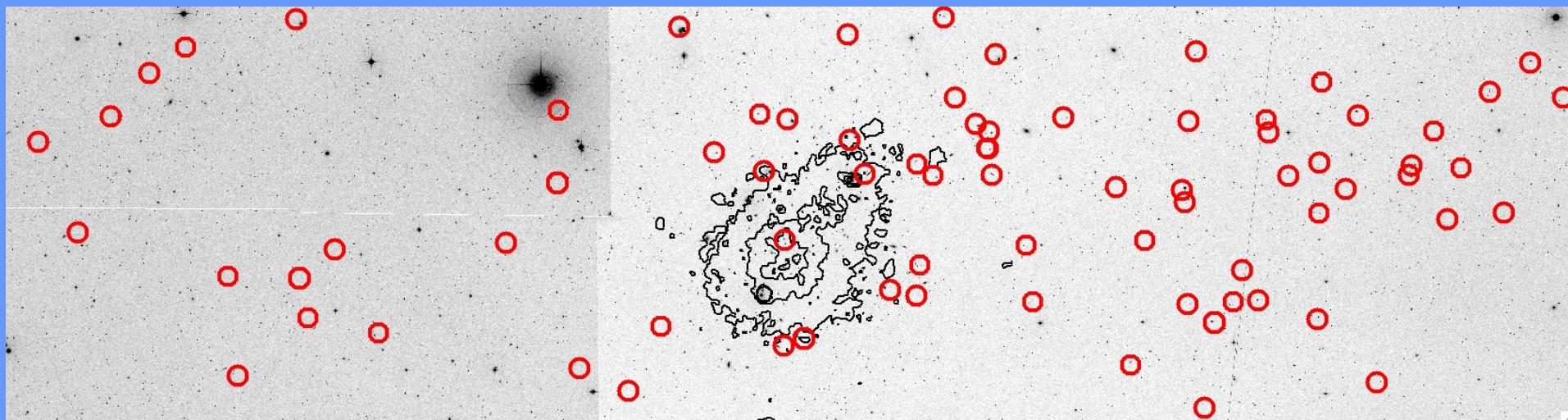
Abel 1367 seems to sit at the junction of two filaments one extending towards Virgo the other towards Coma. It lies at about 6000 km/s, has an irregular x-ray distribution and a high fraction of late type galaxies. It is probably dynamically young and is probably the result of two merging Sub-clusters.



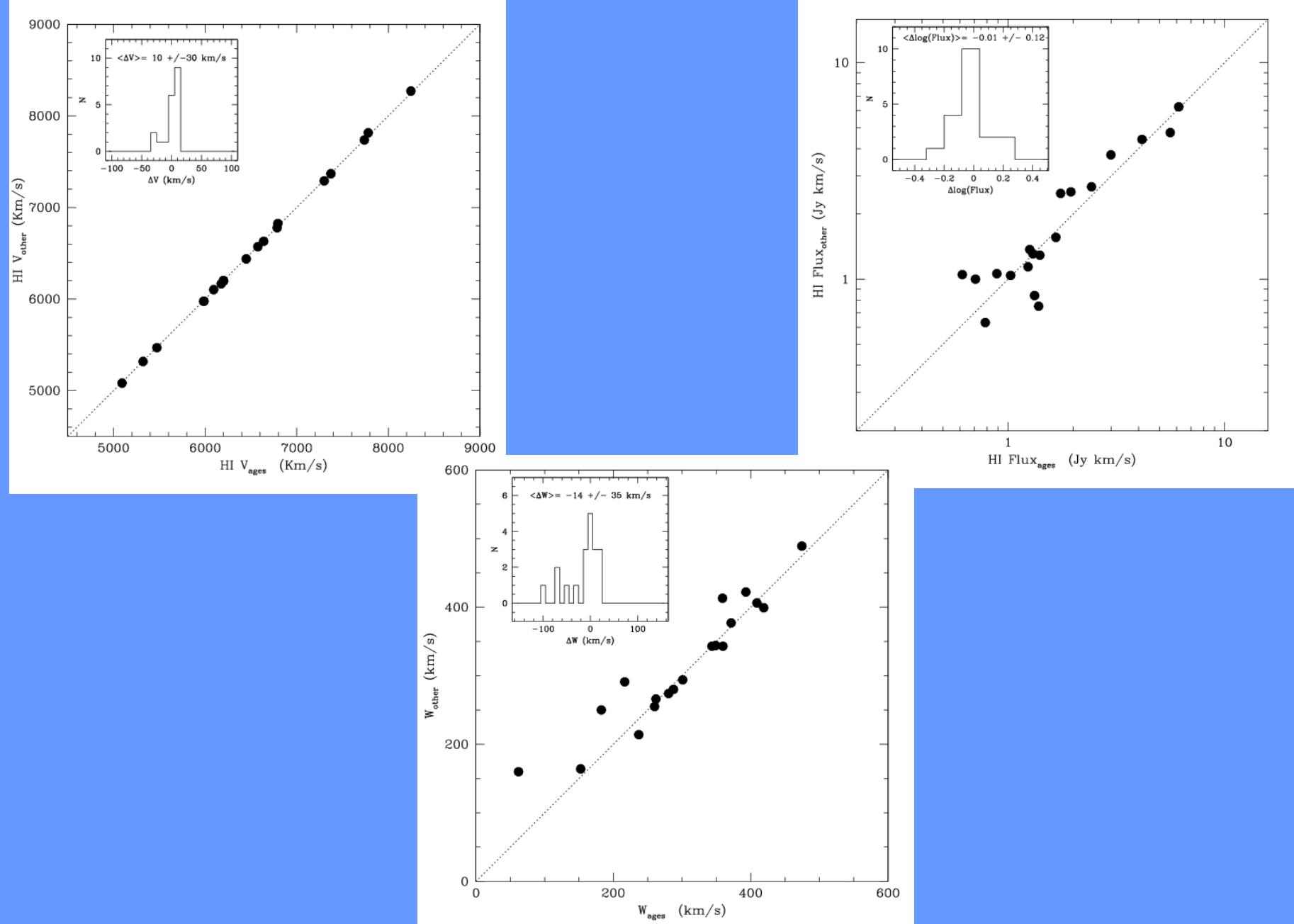
- 79 sources have been detected so far.
- 55 new HI measures.
- 31 new redshifts.



Preliminary results

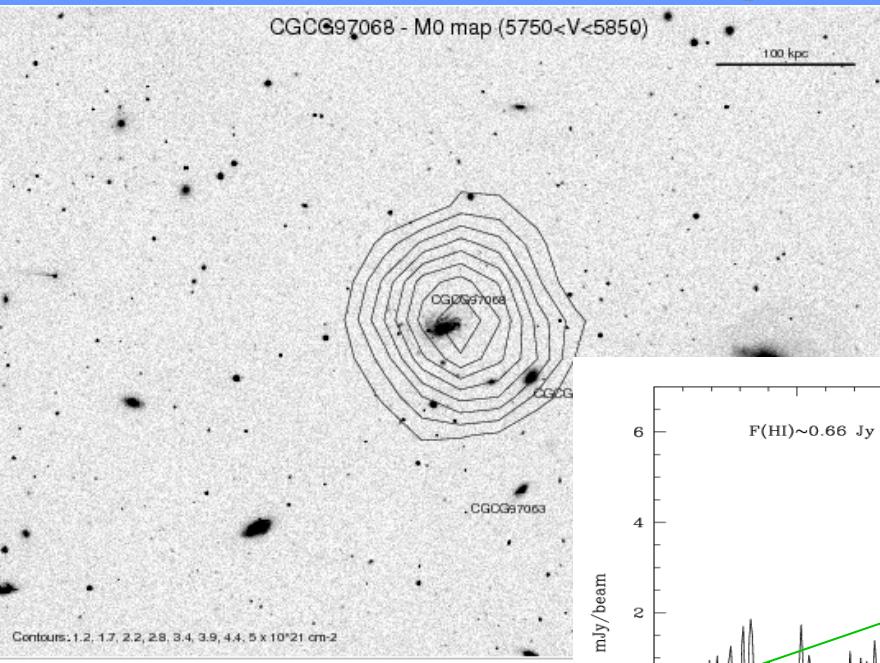


Comparison with previous works

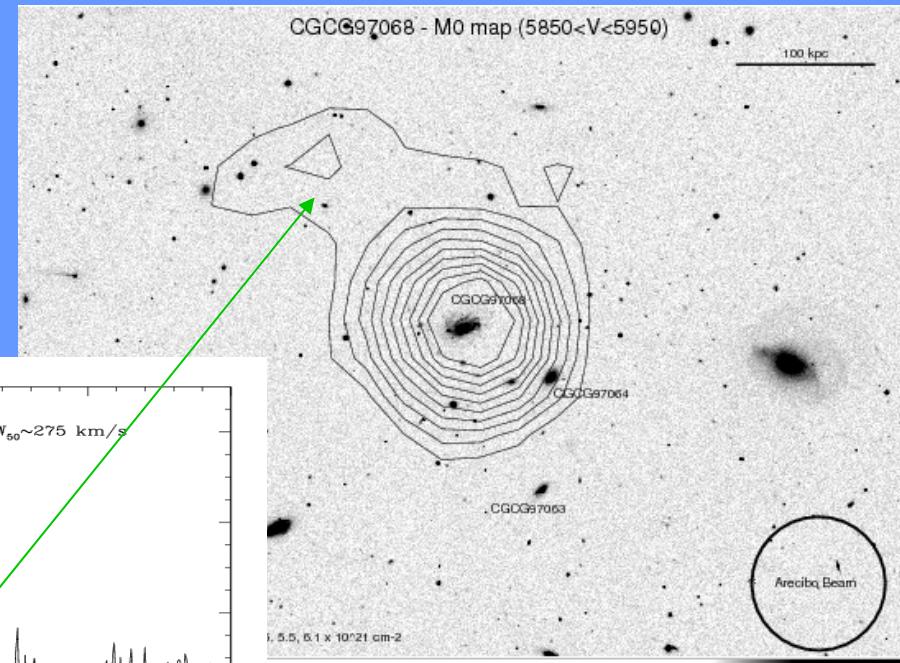


Interesting objects: CGCG97068

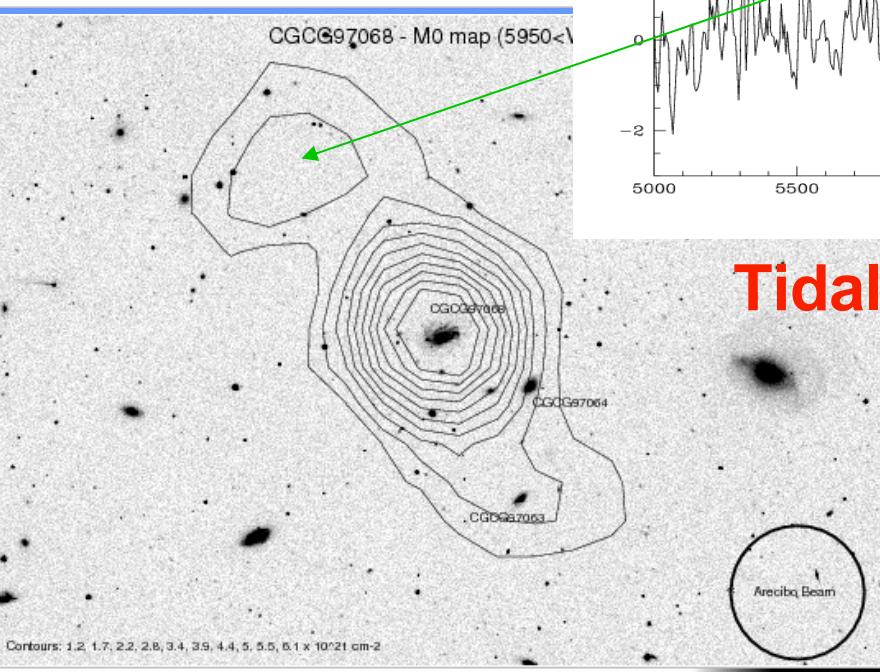
CGCG97068 - M0 map ($5750 < V < 5850$)



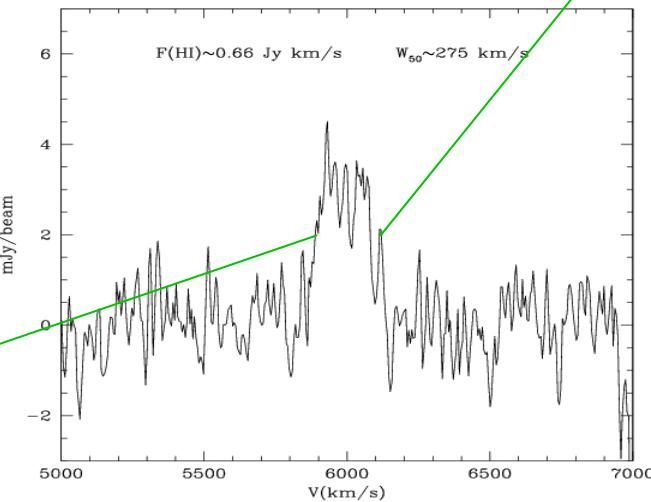
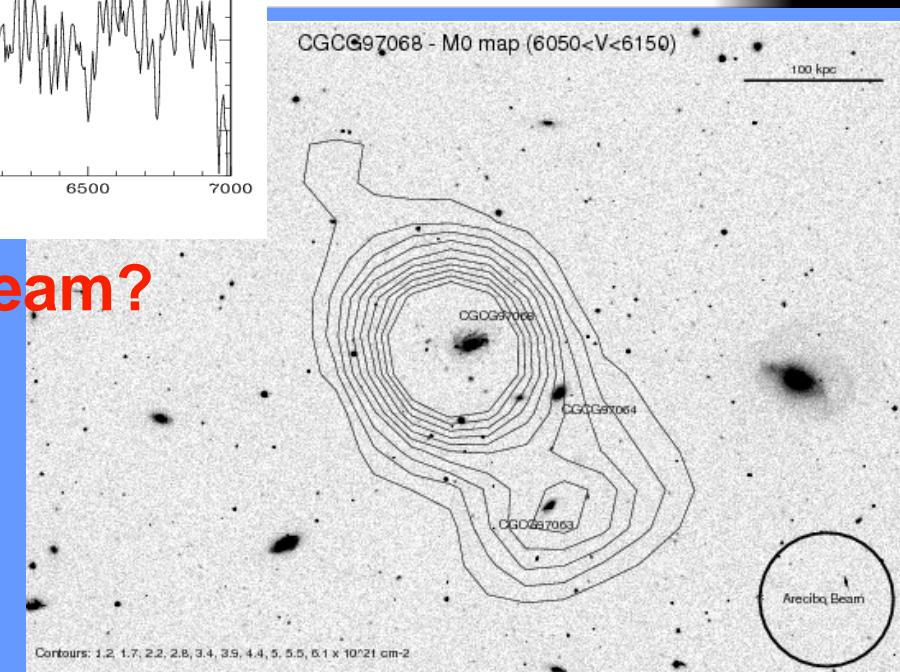
CGCG97068 - M0 map ($5850 < V < 5950$)



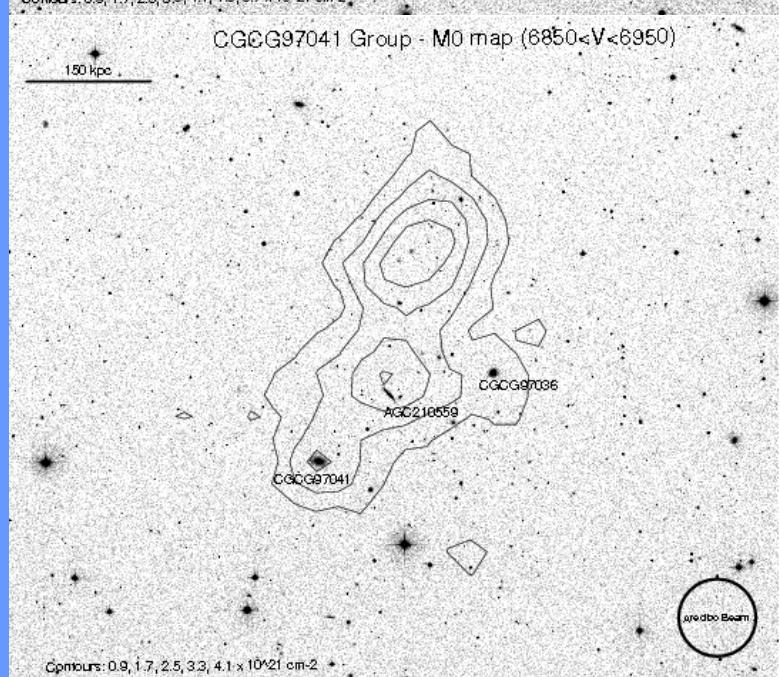
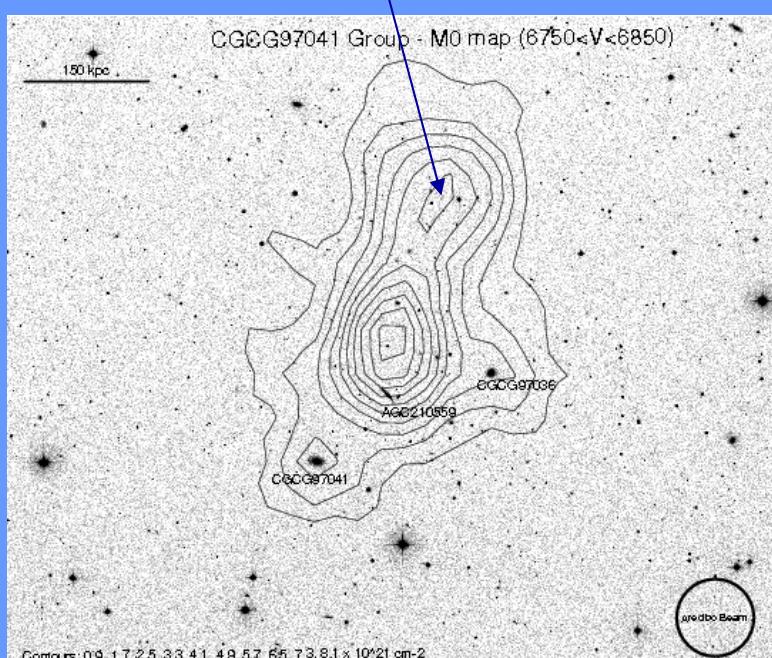
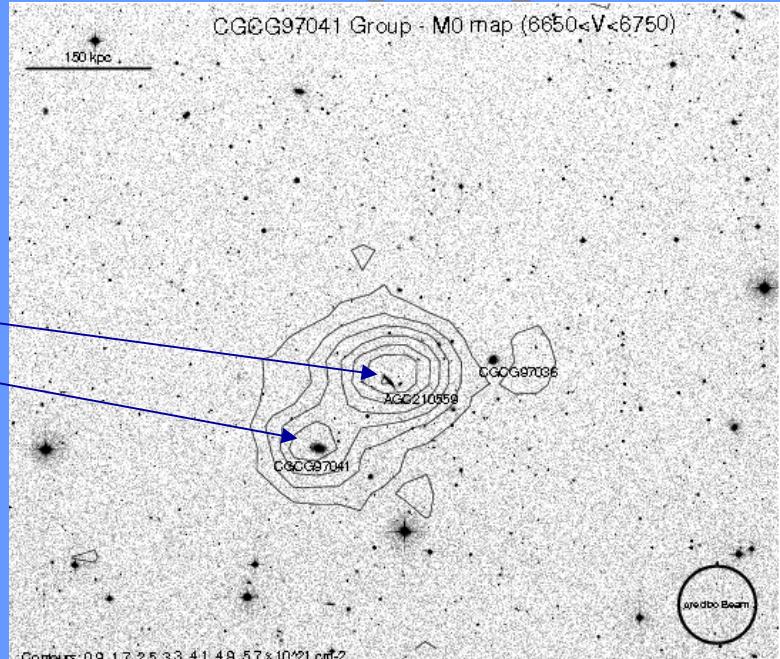
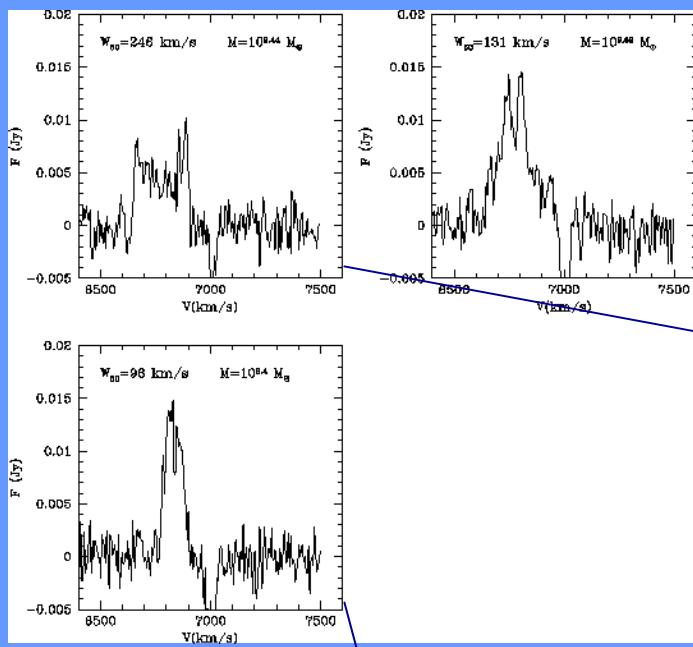
CGCG97068 - M0 map ($5950 < V <$)



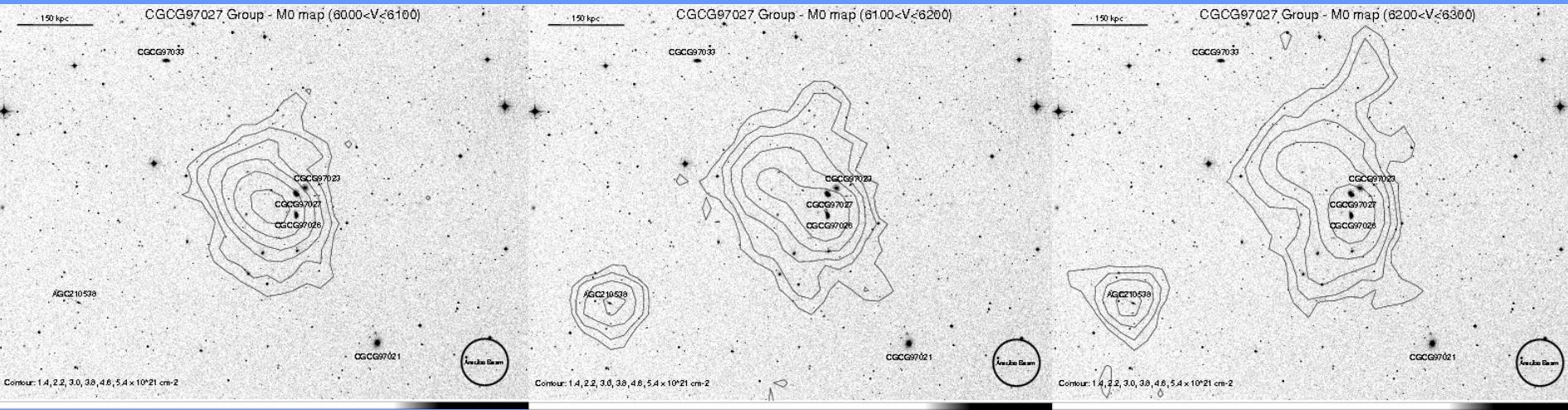
Tidal stream?



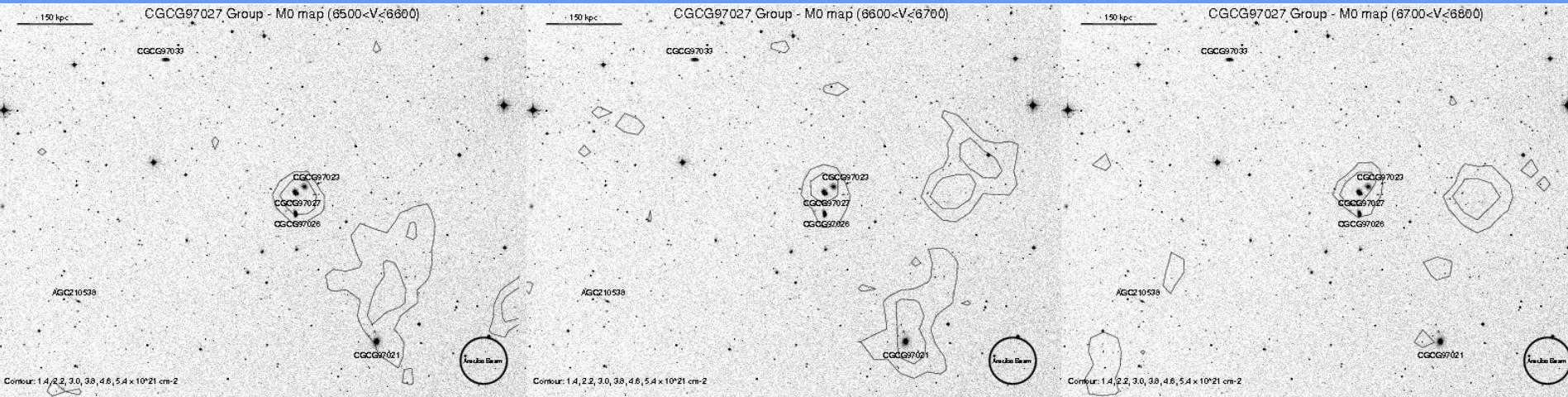
Interesting objects: CGCG97041 group



Interesting objects: CGCG97027 group

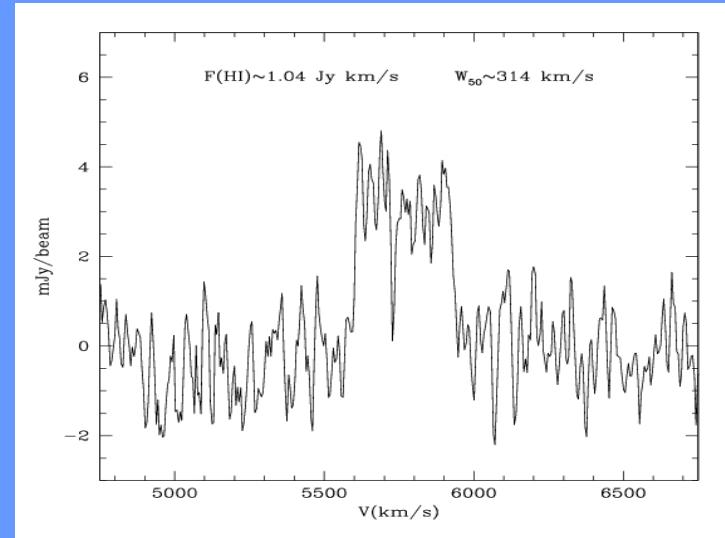
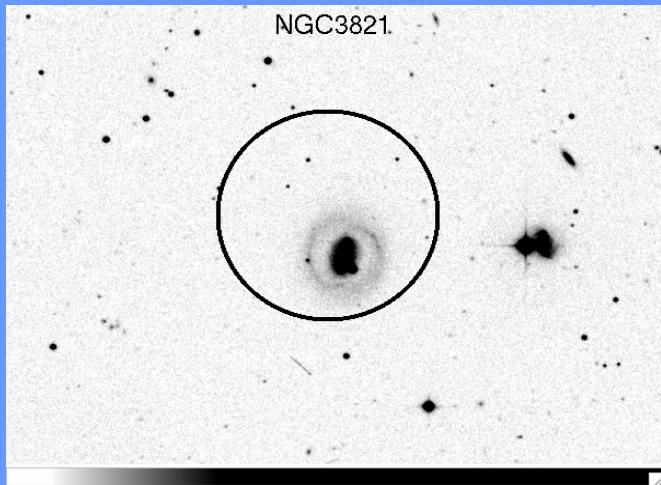


Diffuse HI?

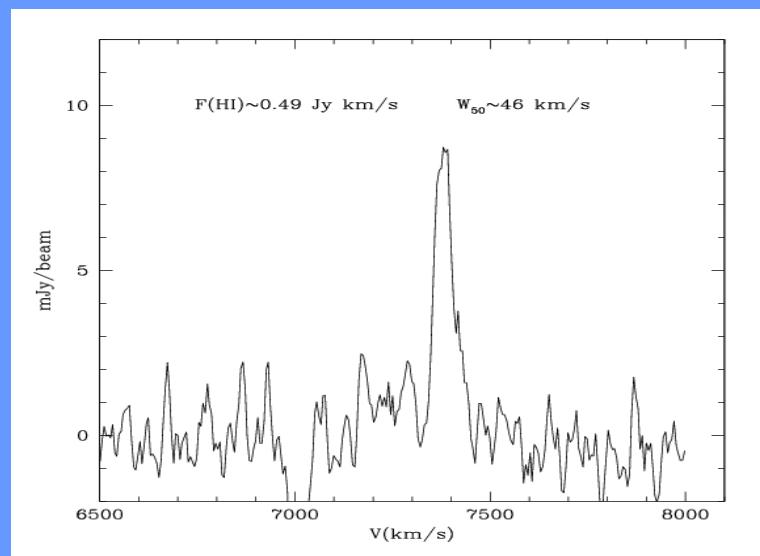
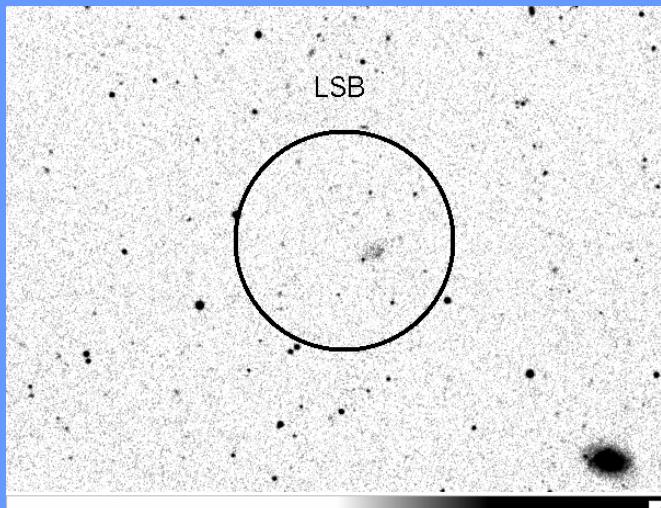


Examples of new HI detections

Giant S0 galaxy not detected before



Dwarf gas-rich galaxies marginally detected on the DSS



Other observations

Field	Observation Summary
M74 (Precursor)	Kitt Peak?, Greenbank follow up
M33	Application INT
UGC2082	Kitt Peak?
NGC1156	B band CFHT approved
NGC2577	5x4
NGC3193	5x4
LeoI	5x4
Abel1367	B band and H α data, GALEX
Virgo South	INT data, UKIRT data, GALEX data
Virgo central	INT data, UKIRT data, GALEX data
NGC6555	Application INT
Voids	B band at Kitt Peak approved
NGC7332	B band at Kitt Peak approved
NGC7448	Kitt Peak?

We will also use SLOAN, 2MASS, UKIDSS and VISTA data