CORNISH Workshop

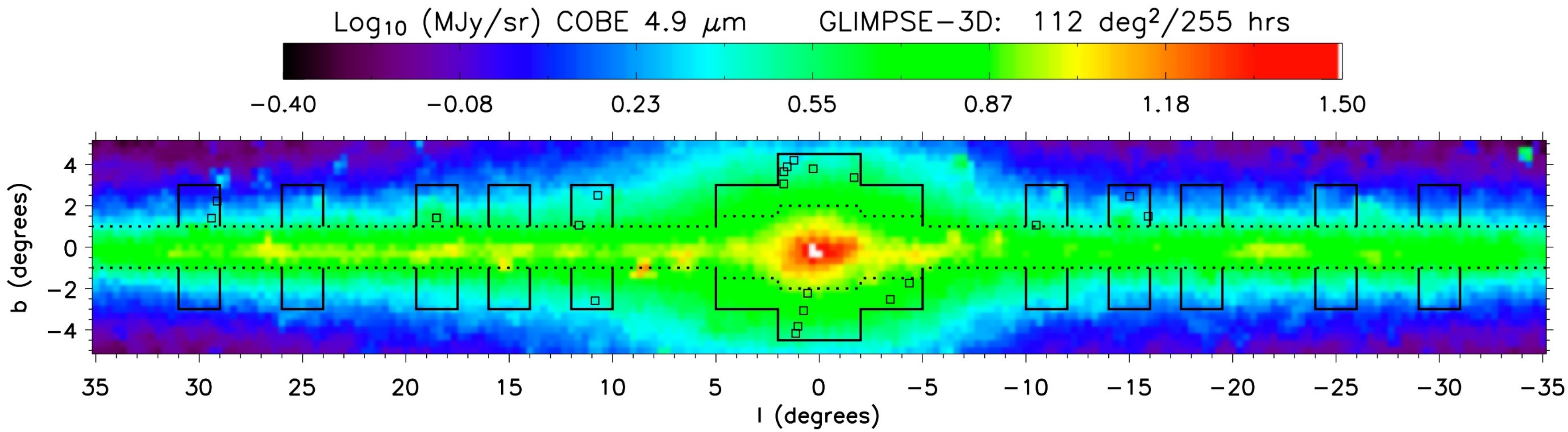
Leeds

11-13 April

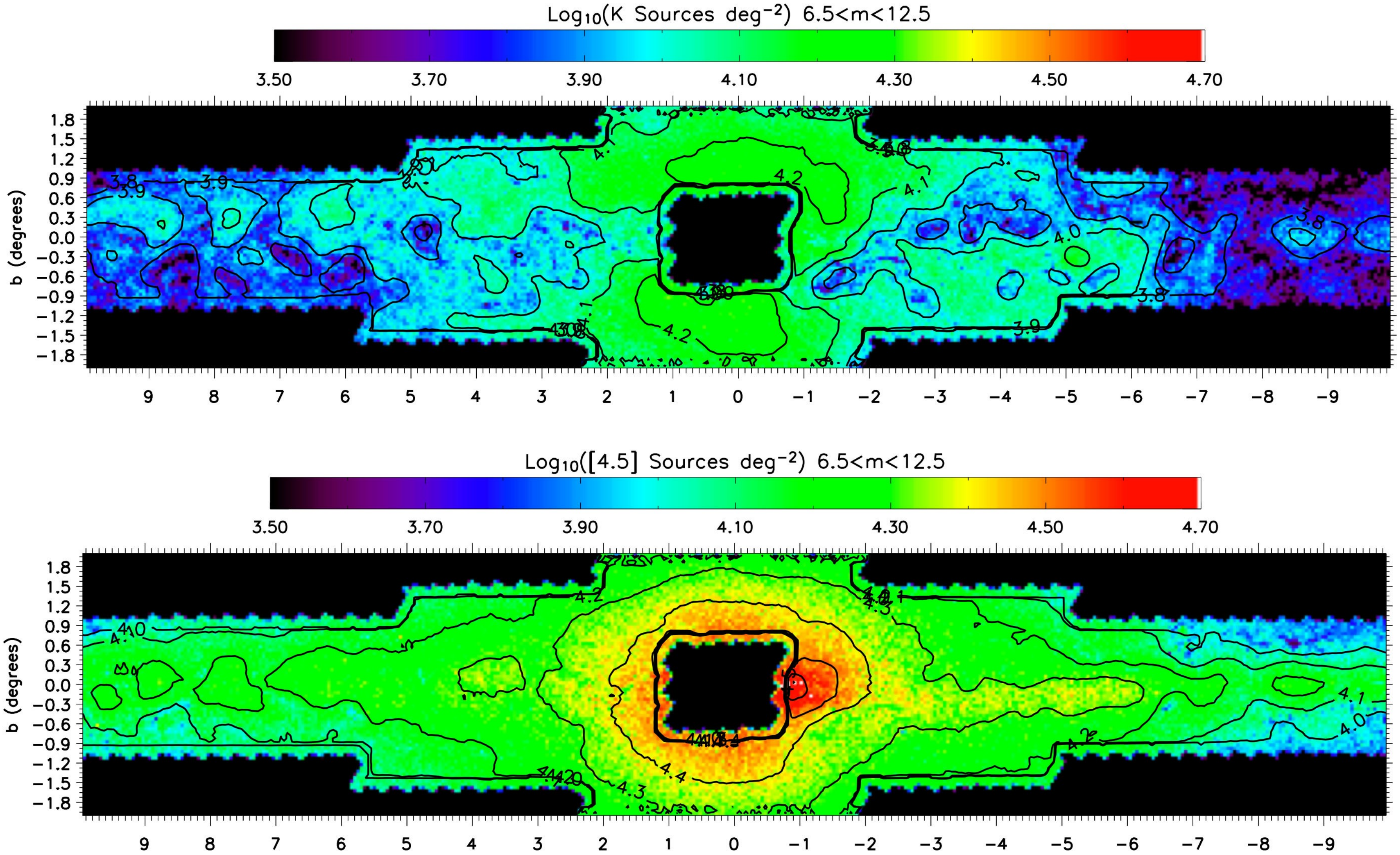
Ed Churchwell U. Wisconsin

GLIMPSE I, II, and 3D Survey Areas

Superimposed on the COBE 4.9 μm Image



2MASS K vs GLIMPSE II 4.5 μm



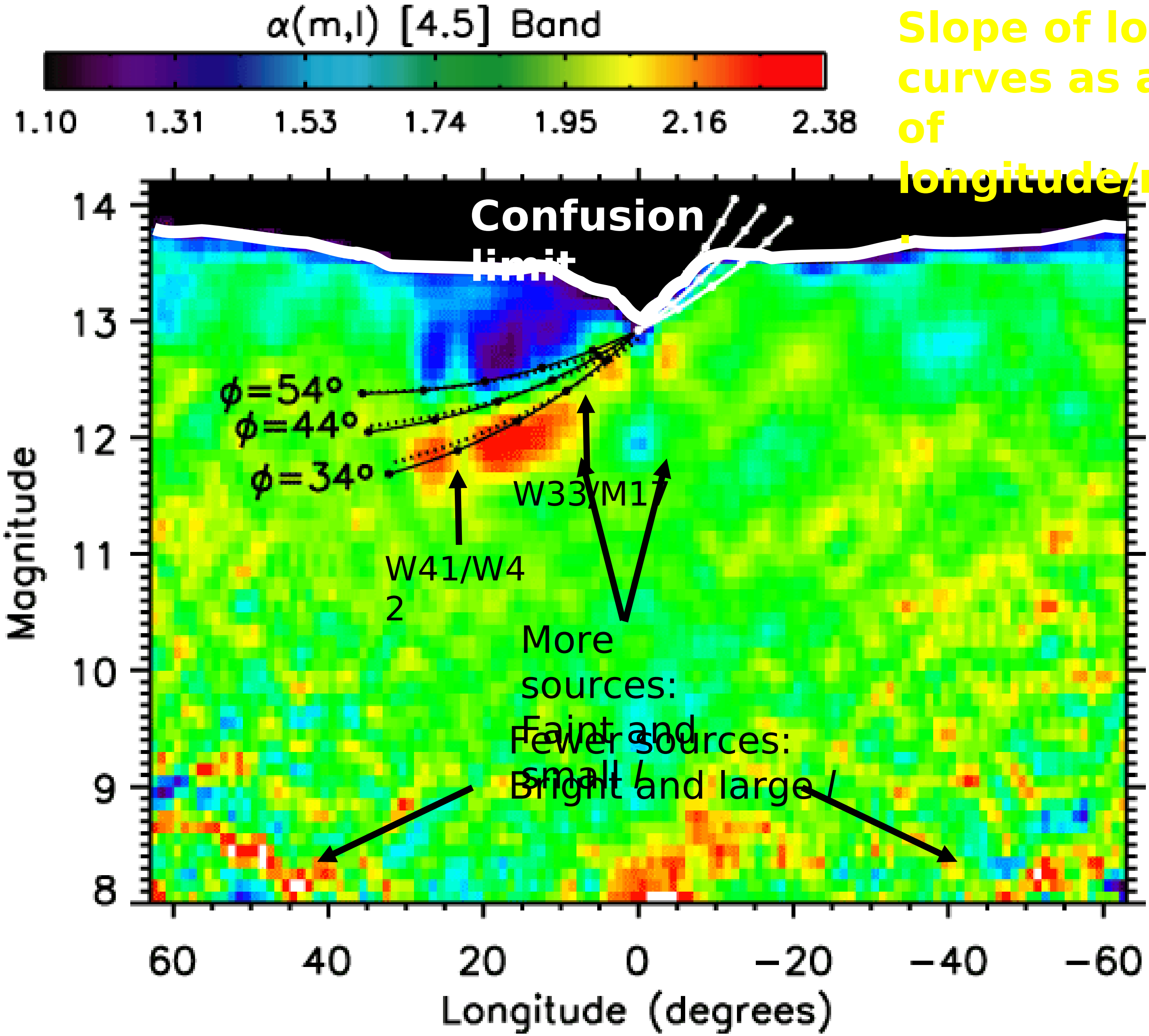
GLIMPSE I Status

- All data have been taken.
- Point source catalogs released to SSC in Feb. 2007
- Enhanced mosaicked images mostly released to SSC as of Feb. 2007. Final images will be released in June 2007
- For all practical purposes, GLIMPSE I will be complete by June 2007
- Catalog: >31 million sources (Reliability >99.5%)
- Archive: >49 million sources (>5σ)
- Full list: >70 million sources (>3σ)
- Images: FITS files of 3.1^0x2.4^0 mosaicked images in each band and 3-band jpeg 3.1^0x2.4^0 mosaicked images
- Residual images can be provided upon request. This is not a promised product and can only be done as time permits.

GLIMPSE II Status

- Version 1.0 of epoch one data merged with 2MASS has been delivered to SSC and is public.
- Mosaicked images (3.1x2.4 deg with 1.2” pixels and 1.1x0.8 deg regridded to 0.6” pixels) have been released for 350-353 deg and 6-9 deg
- Catalog (>99.5% reliability) contains >15.6 million point sources
- Archive (>5σ) contains >20.6 million point sources
- Full list (>3σ) contains >28.3 million sources
- Work is continuing using the latest SSC and GLIMPSE versions of both pipelines. Data taken in Apr. 2006 has been processed through source extraction but image artifacts are still being worked on.
- GLIMPSE II is mostly confusion limited so adding frames or exposure times will not help.

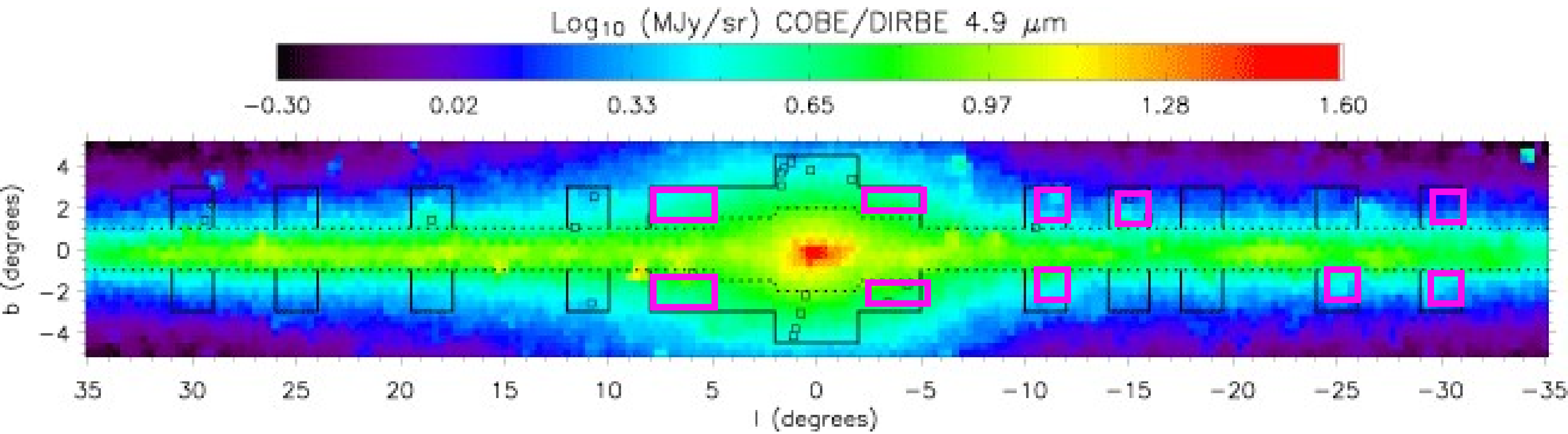
Slope of log N-log S curves as a function of longitude/magnitude.



GLIMPSE-3D Status

- Source lists for the 10 areas observed in Sept. 2006, have been made.
- Source lists and mosaicks will be delivered to SSC by June 2007 of 3 of the 10 areas where image artifacts have been corrected.

GLIMPSE I, II, 3D Surveys



MIPSGAL Status

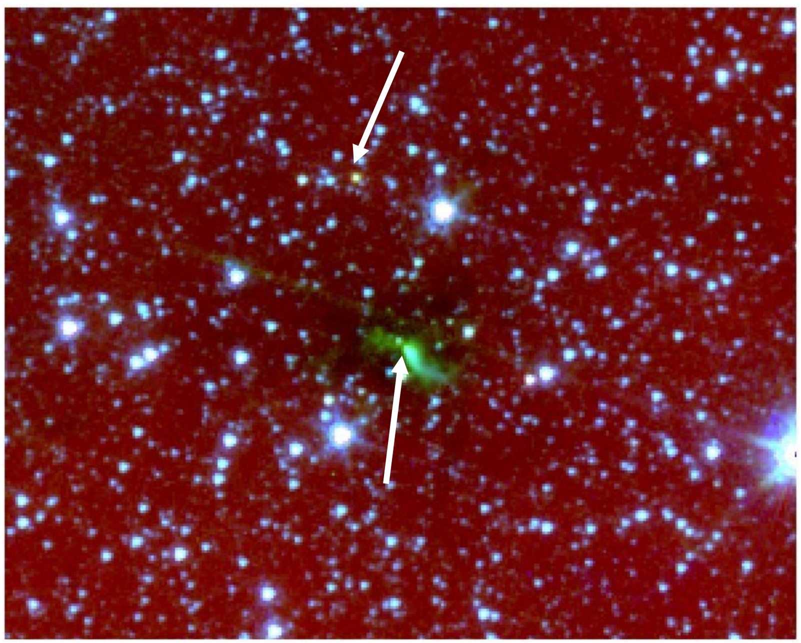
- MIPSGAL +MIPSGAL II have observed the GLIMPSE I, II, and part of -3D regions at 24 and 70 μm.
- The data from all the north (0^0 -65^0) and 295^0 through ~336^0 are available in the SSC Archive. 336^0 - 350^0 have been observed but are not yet in the SSC archive.
- The GLIMPSE team has made 3.1^0 x 2.4^0 mosaicks of the SSC data in the GLIMPSE I region.
- The combination of GLIMPSE/IRAC data with MIPSGAL 24μm, and MAGPIS radio data have proven extremely useful in identifying protostars, analyzing the structure and energetics of bubbles, understanding the emission properties of dust in the MIR, and determining the destruction of PAHs near hot O & B stares.

MAGPIS Status

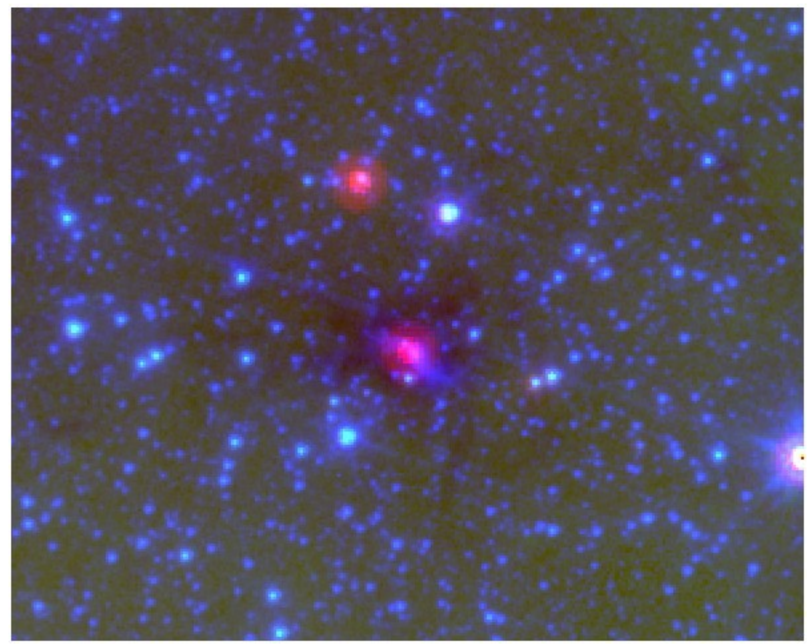
- Goal: l = 5^0 - 65^0; b = $\pm 0.8^0$ Will extend to both larger and smaller longitudes if they can get telescope time. VLA B, C, and D configs plus 100m single disk data (no zero spacing problem) at 20 cm.
- Resolution ~ 6.2" x 5.4", BW=50 MHz in 3 MHz channels, rms ~ 0.3 mJy
- Done and published data for l = 5^0 to 32^0 Helfand et al. 2006, AJ, 131, 2525
- 90 cm data: Resol ~ 70", pix =15" for l=20^0 -33^0 ; |b|<2^0
  - Brogan et al. (2005) data for 3.6^0 - 20^0; |b|<2^0; Resol~25", pix=6"
- Web site: http://third.ucllnl.org/gps
- Data have been obtained for l=33^0 to 45^0, but are not reduced yet.
- Getting telescope time has been such a struggle that they probably will not ask for more time. A pity!

G324.72+0.34

[3.6]-[4.5]-[8.0]

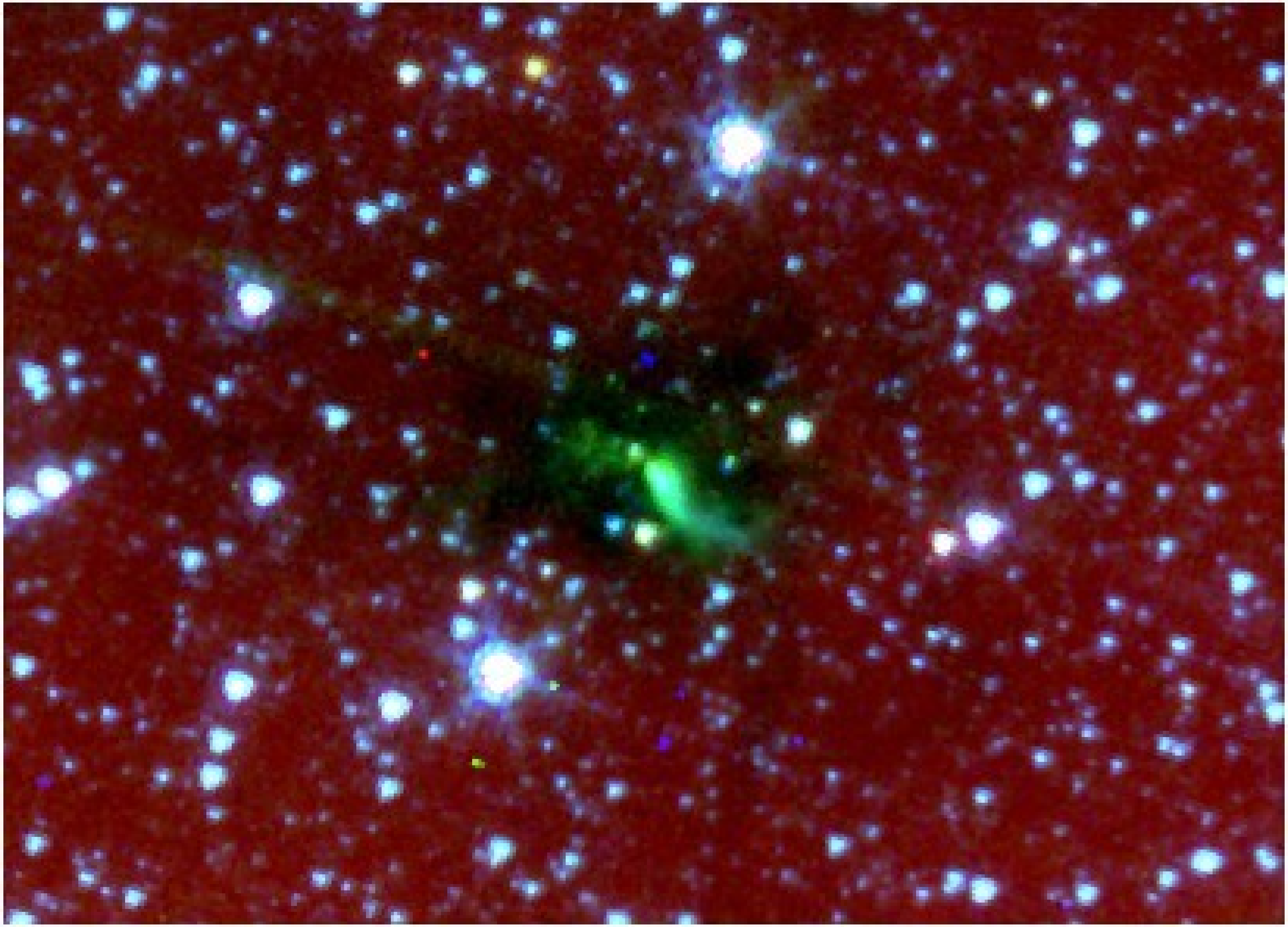


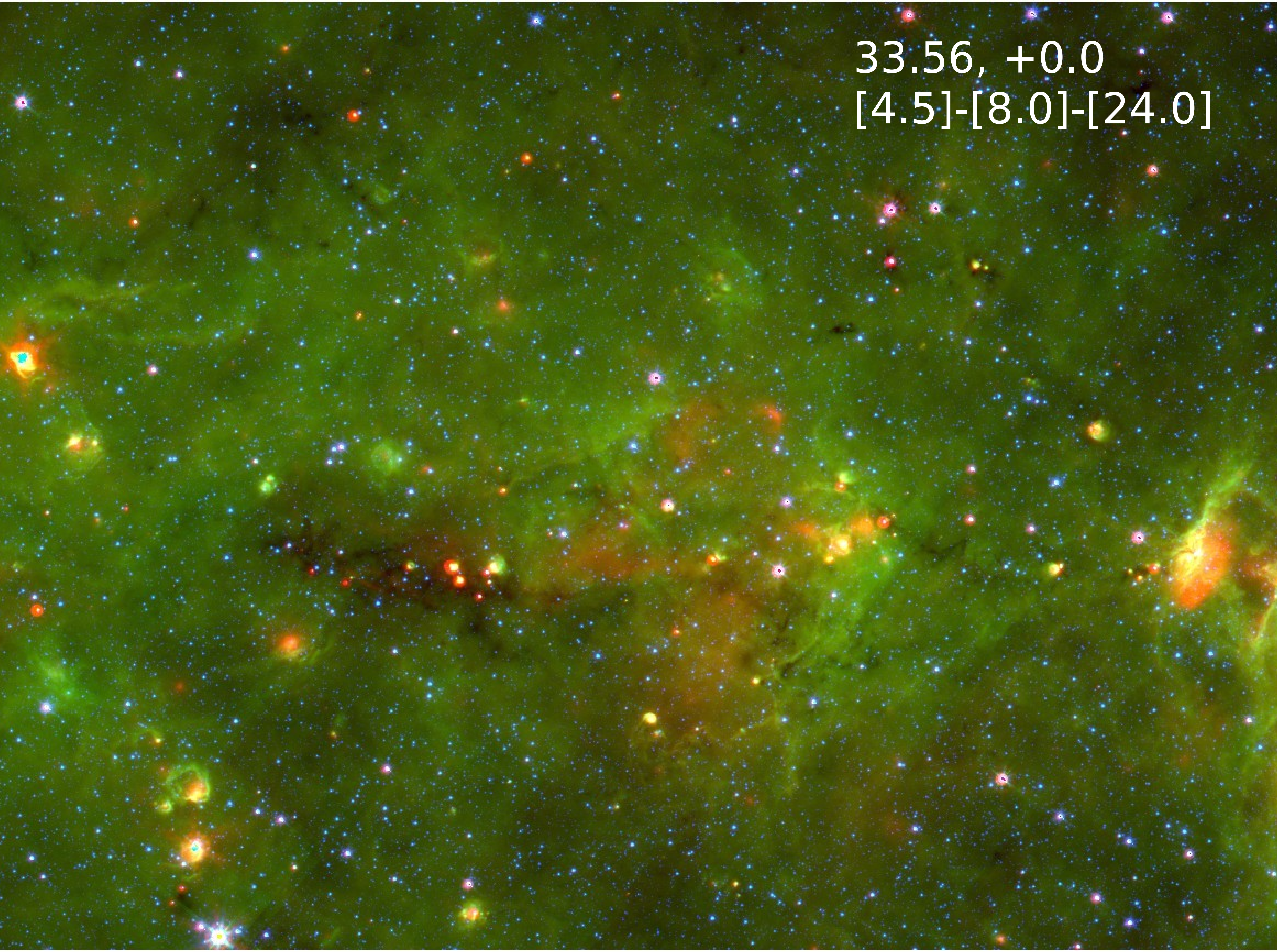
[4.5]-[8.0]-[24.0]

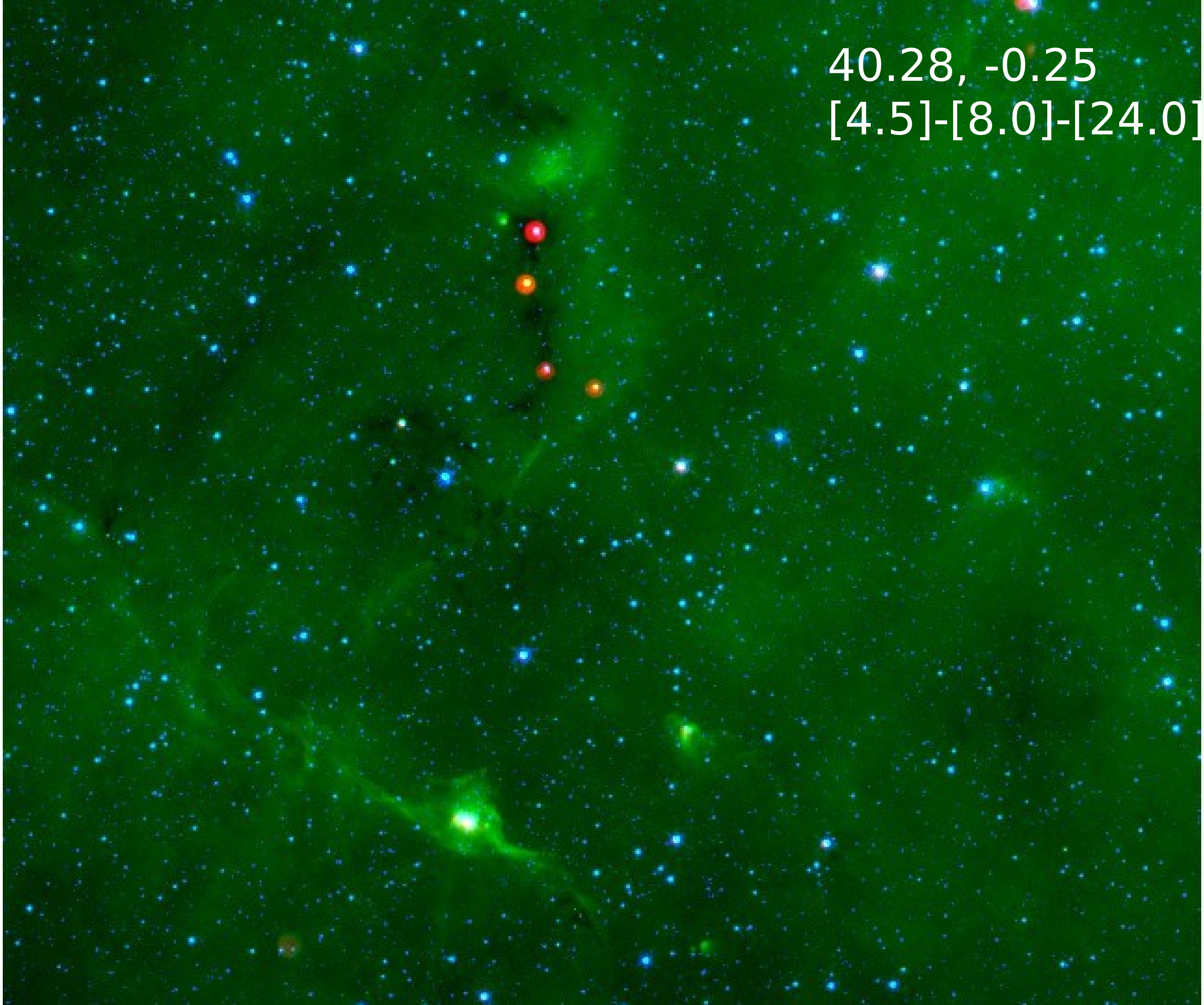


Isolated early protostar (intermediate mass)

Protostellar Jet
Seen only in the 4.5μm band (green here)



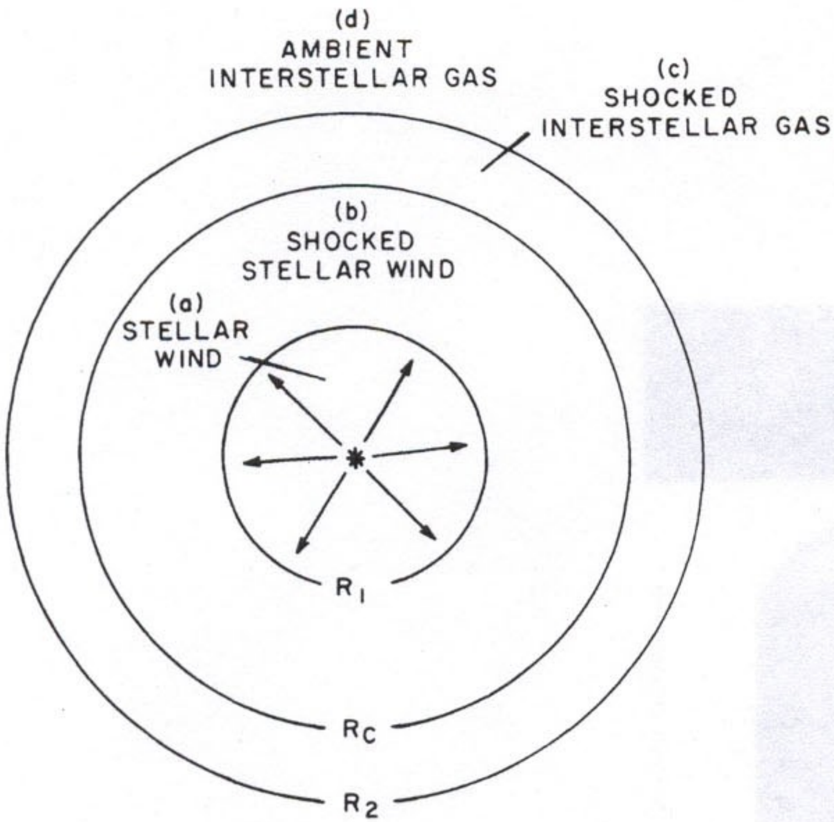

33.56, +0.0
[4.5]-[8.0]-[24.0]


40.28, -0.25
[4.5]-[8.0]-[24.0]

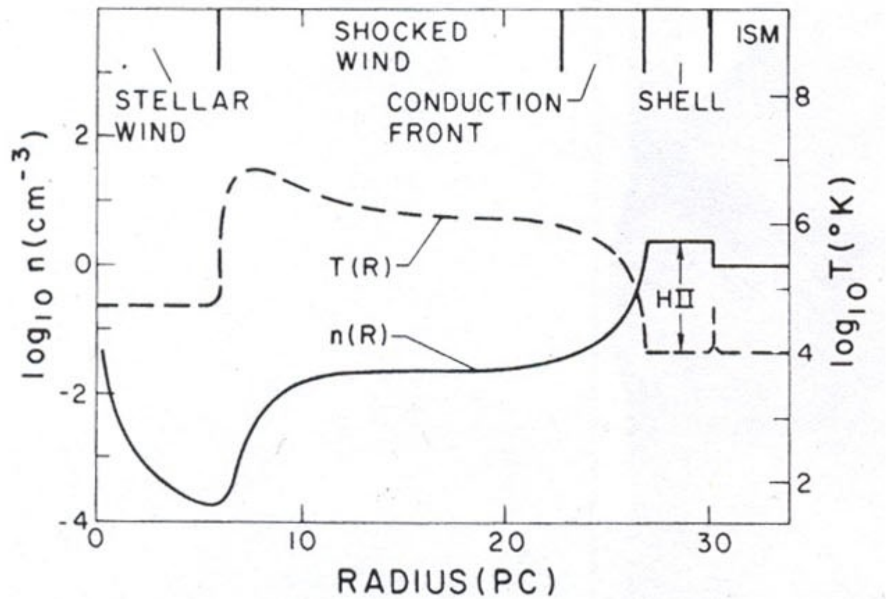
Another Protostellar Jet: G28.83-0.25

G311.485+0.397 (S133) Triggered Star Formation

Weaver et al. (1977)

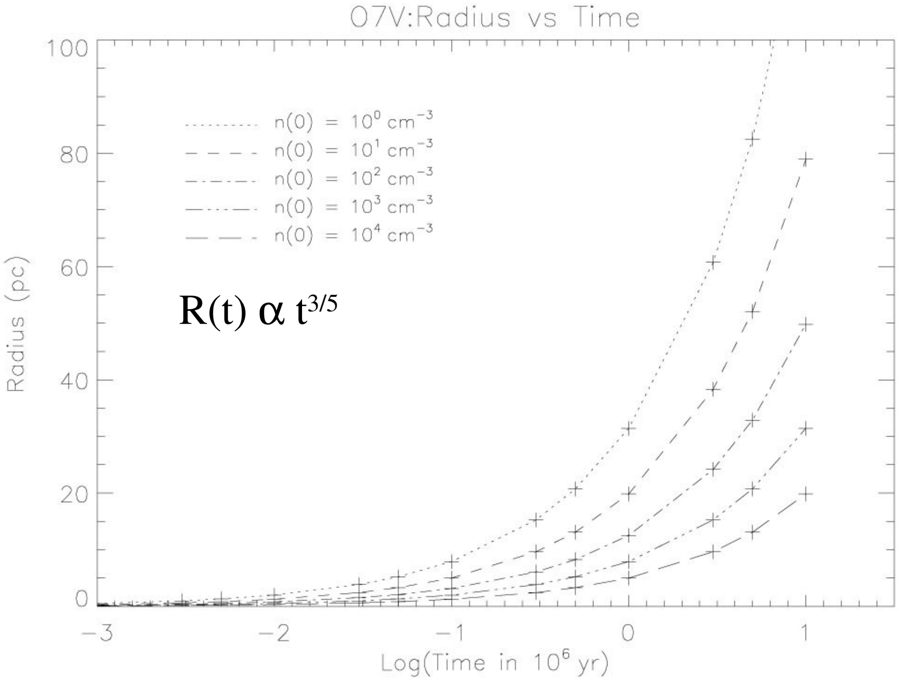


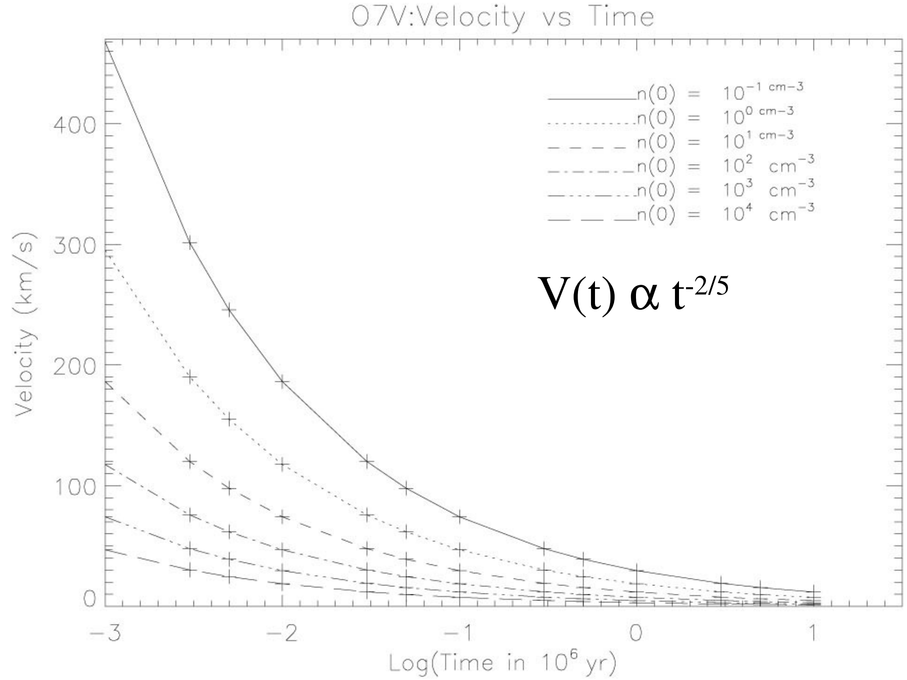
—Schematic sketch indicating the regions and boundaries of the flow.



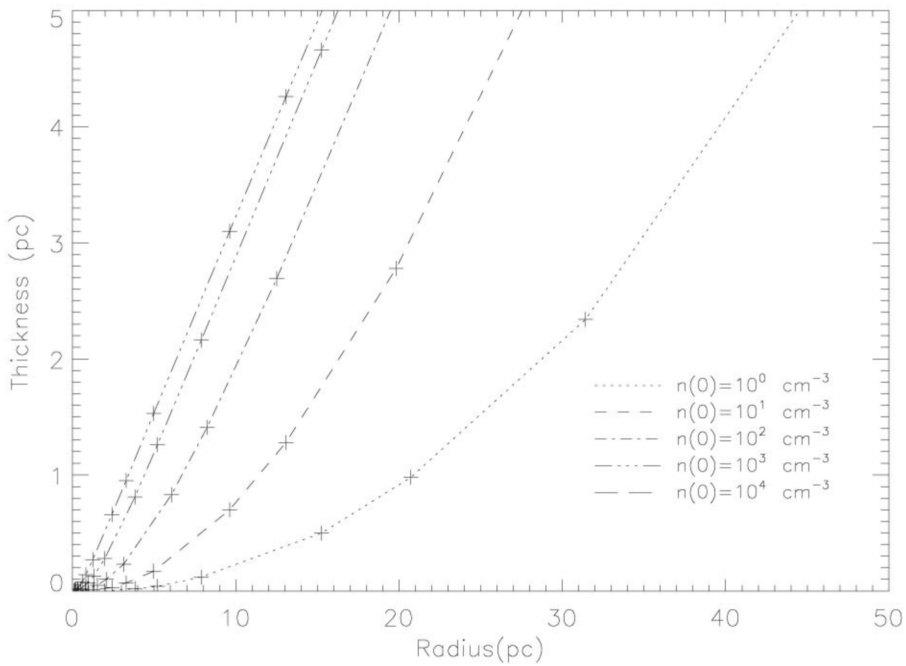
—The large-scale features of the temperature and density structure of an interstellar bubble for which $L_w = 1.27 \times 10^{36}$ ergs s^{-1}, $n_0 = 1$ cm^{-3}, and $t = 10^6$ yr. ISM means ambient interstellar medium. For a typical O7 I star, the H II region would extend to $\sim 3\ R_2$.

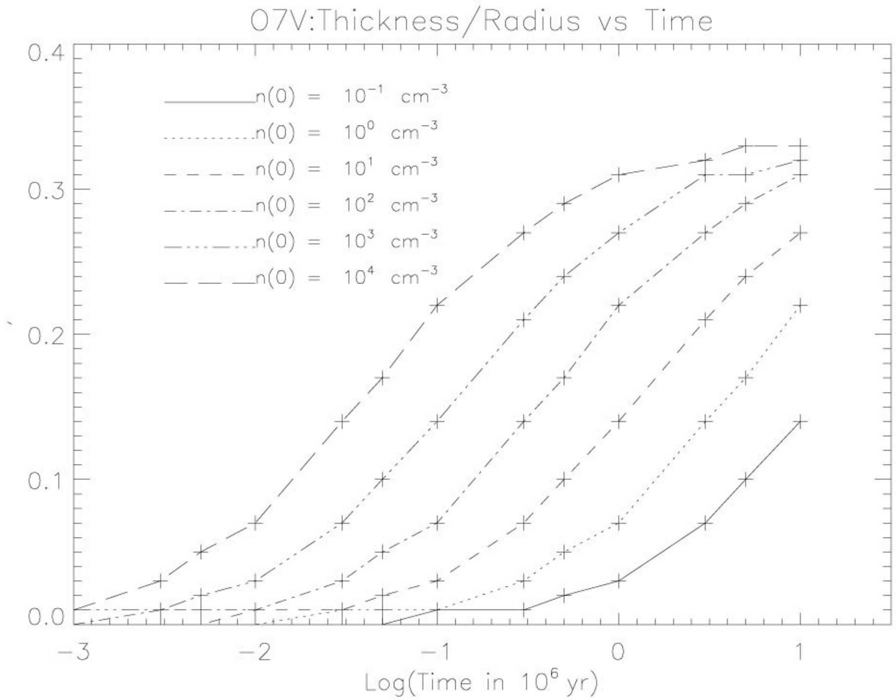
Evolution of an O7V Stellar Bubble





O7V Star Evolution

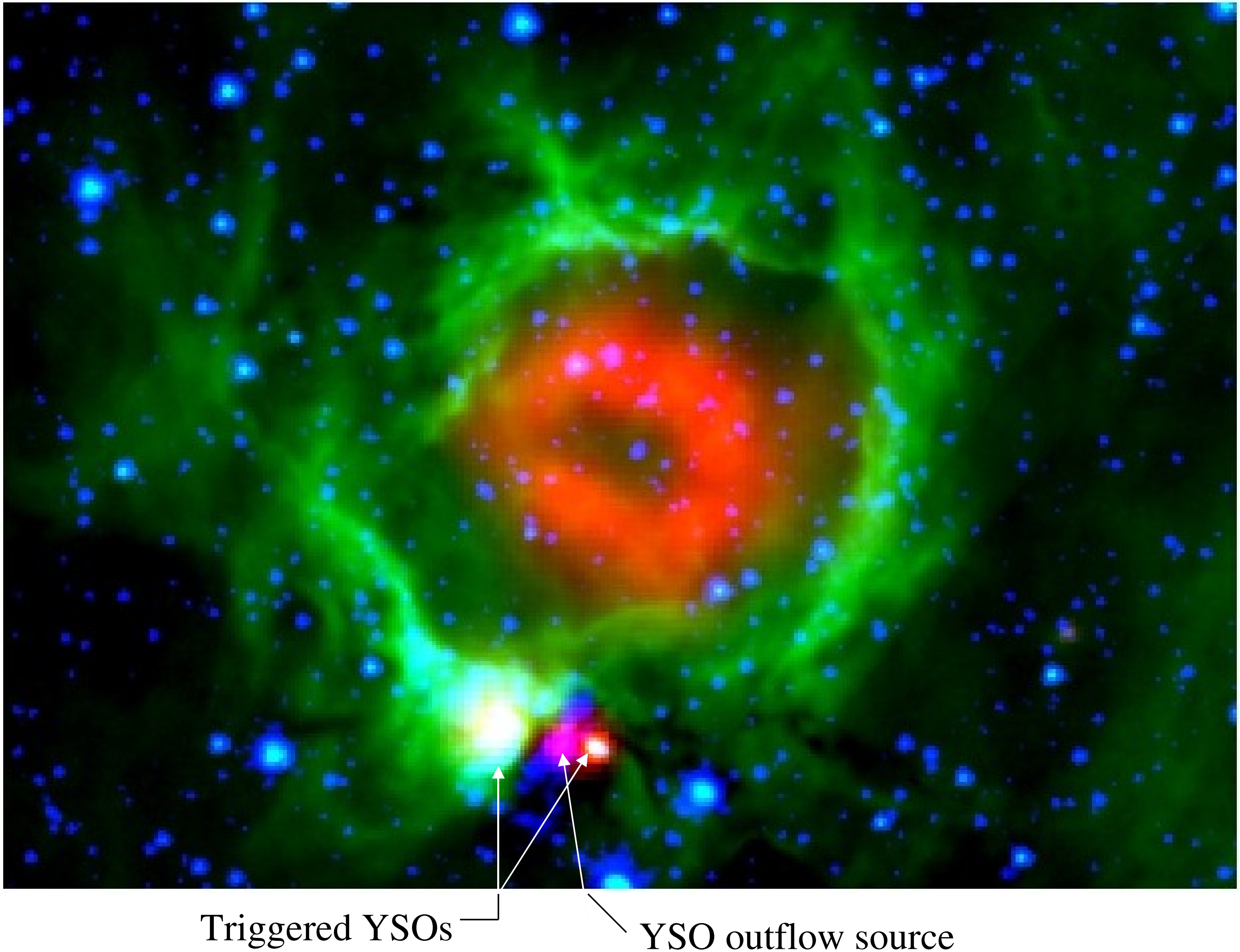


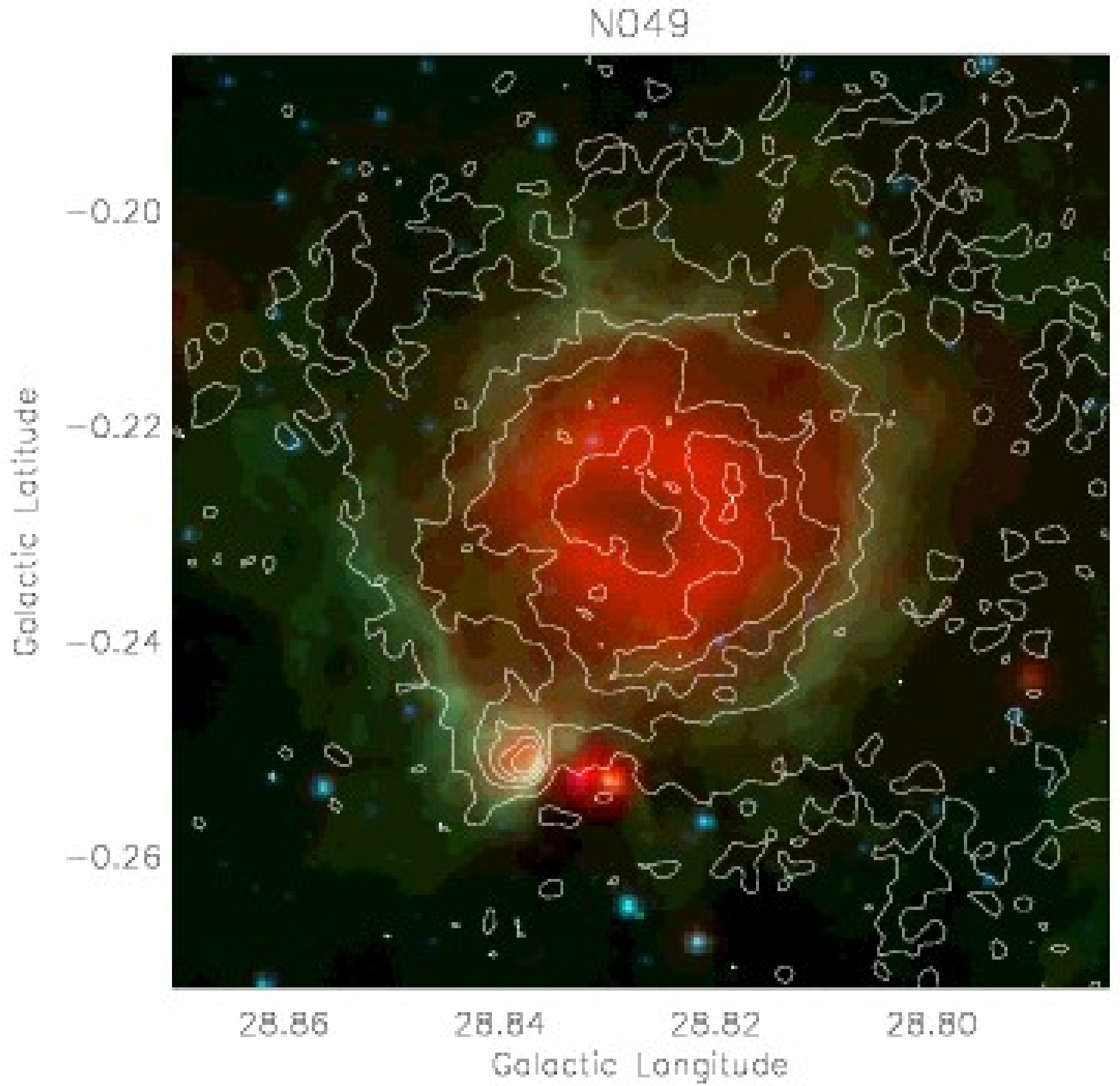


Asymptotic T/R ~ 0.33

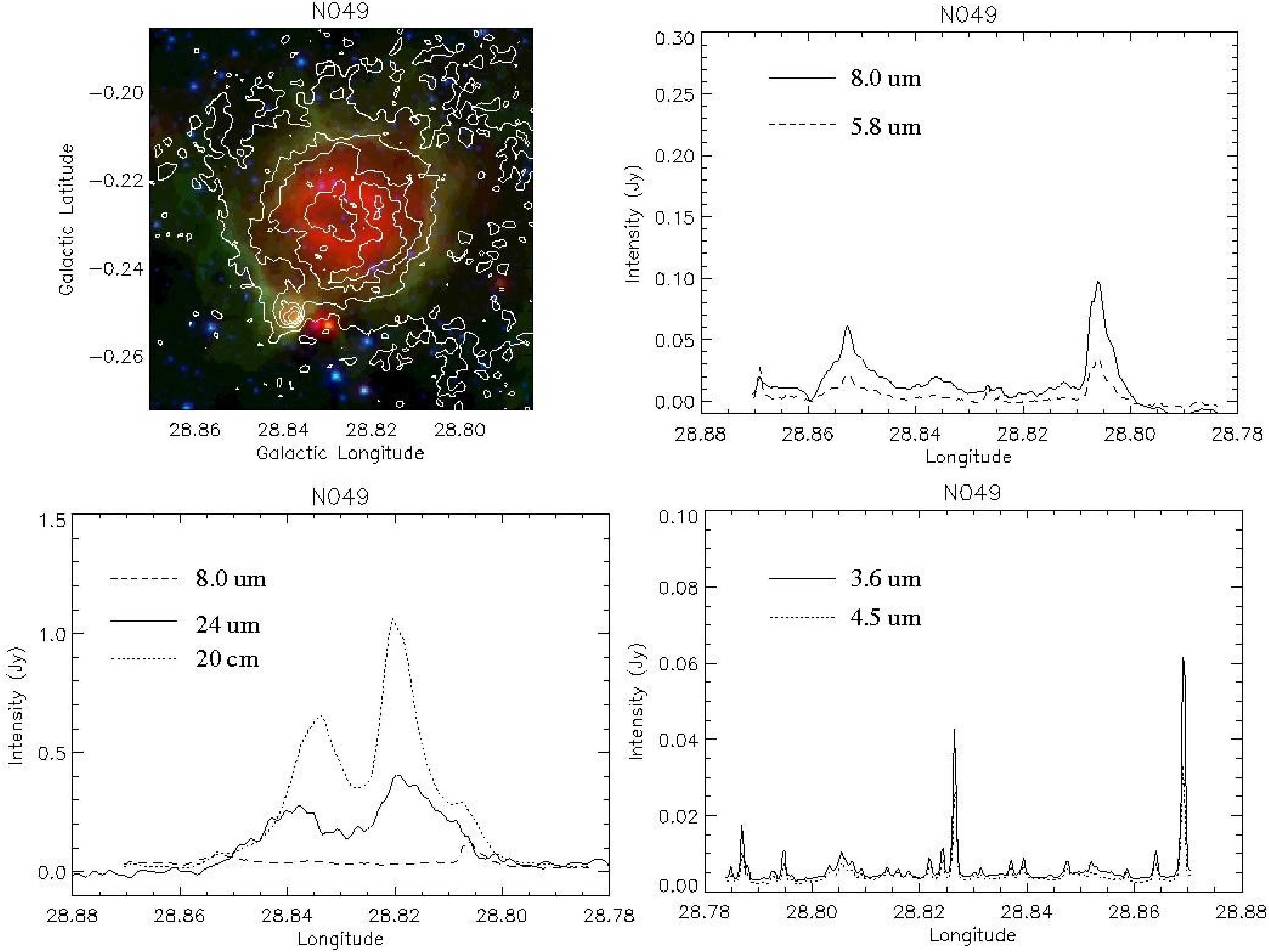
N49a (4.5, 8.0, 24μm)

Enhanced 4.5μm to show outflow more clearly



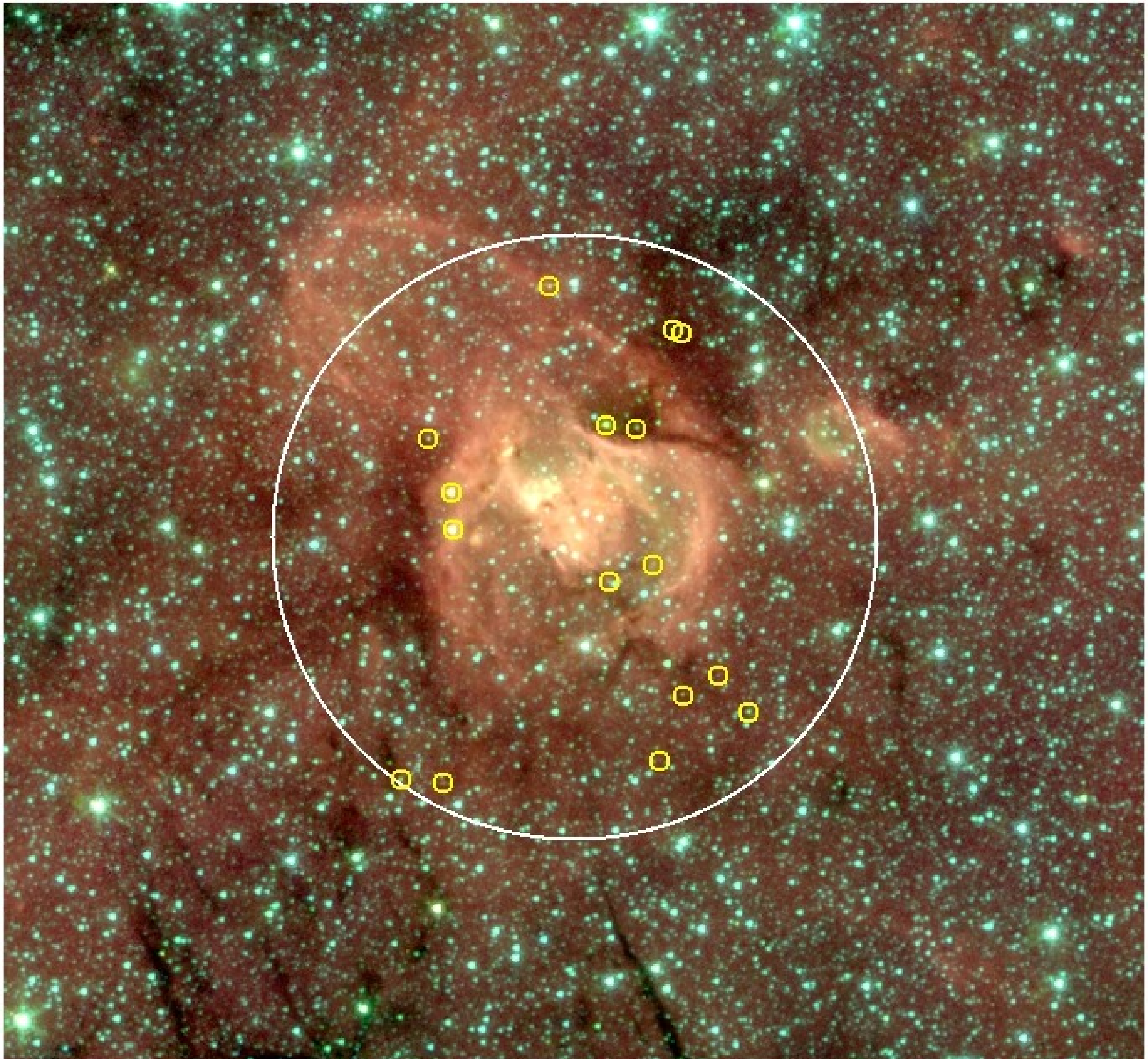


N049
−0.20
−0.22
−0.24
−0.26
Galactic Latitude
28.86
28.84
28.82
28.80
Galactic Longitude

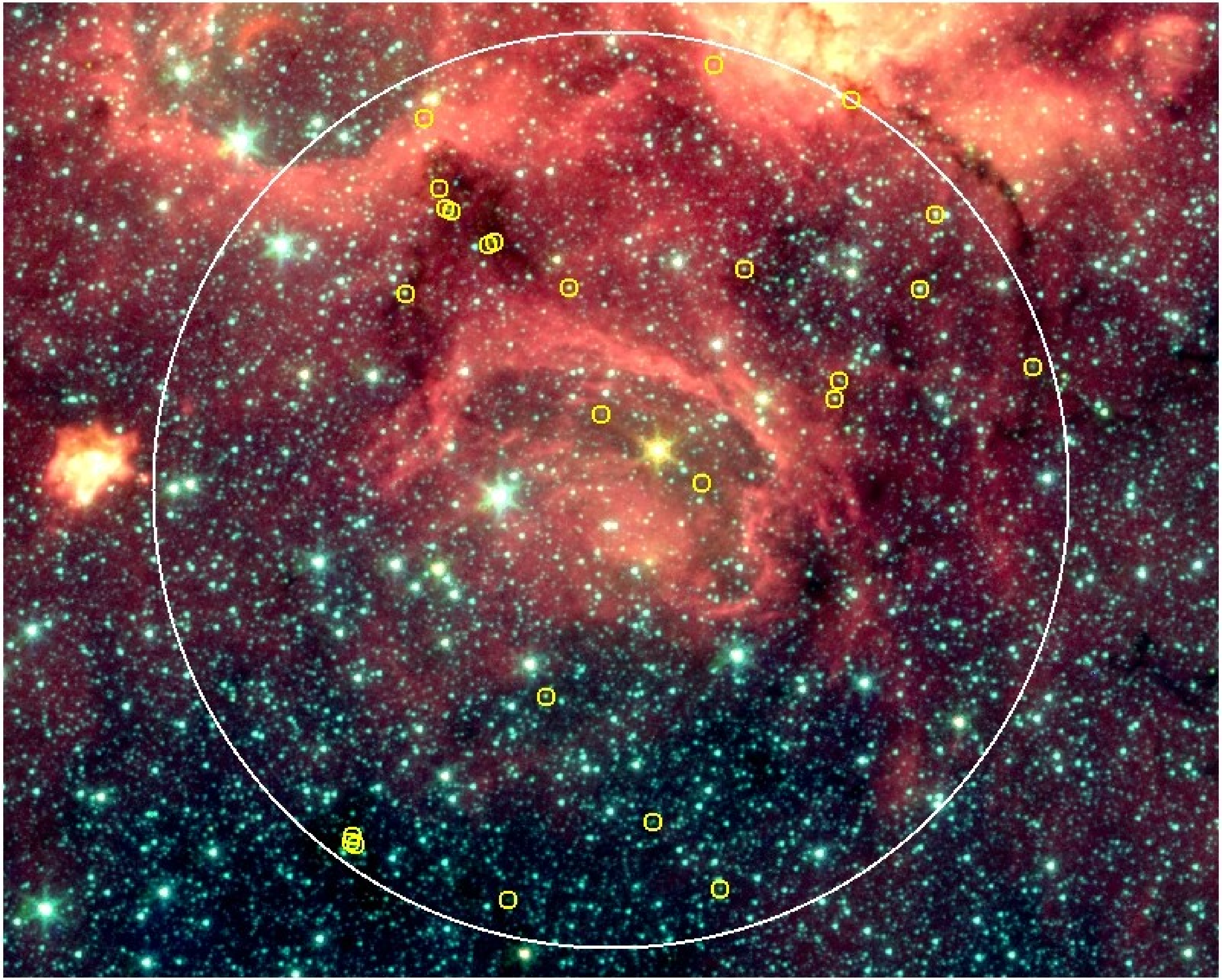


N049
Galactic Latitude
Galactic Longitude
Intensity (Jy)
Longitude
8.0 um
5.8 um
24 um
20 cm
3.6 um
4.5 um

N10: Candidate YSOs



N21: Candidate YSOs



Comparison of Observed ΔR/R with Theory