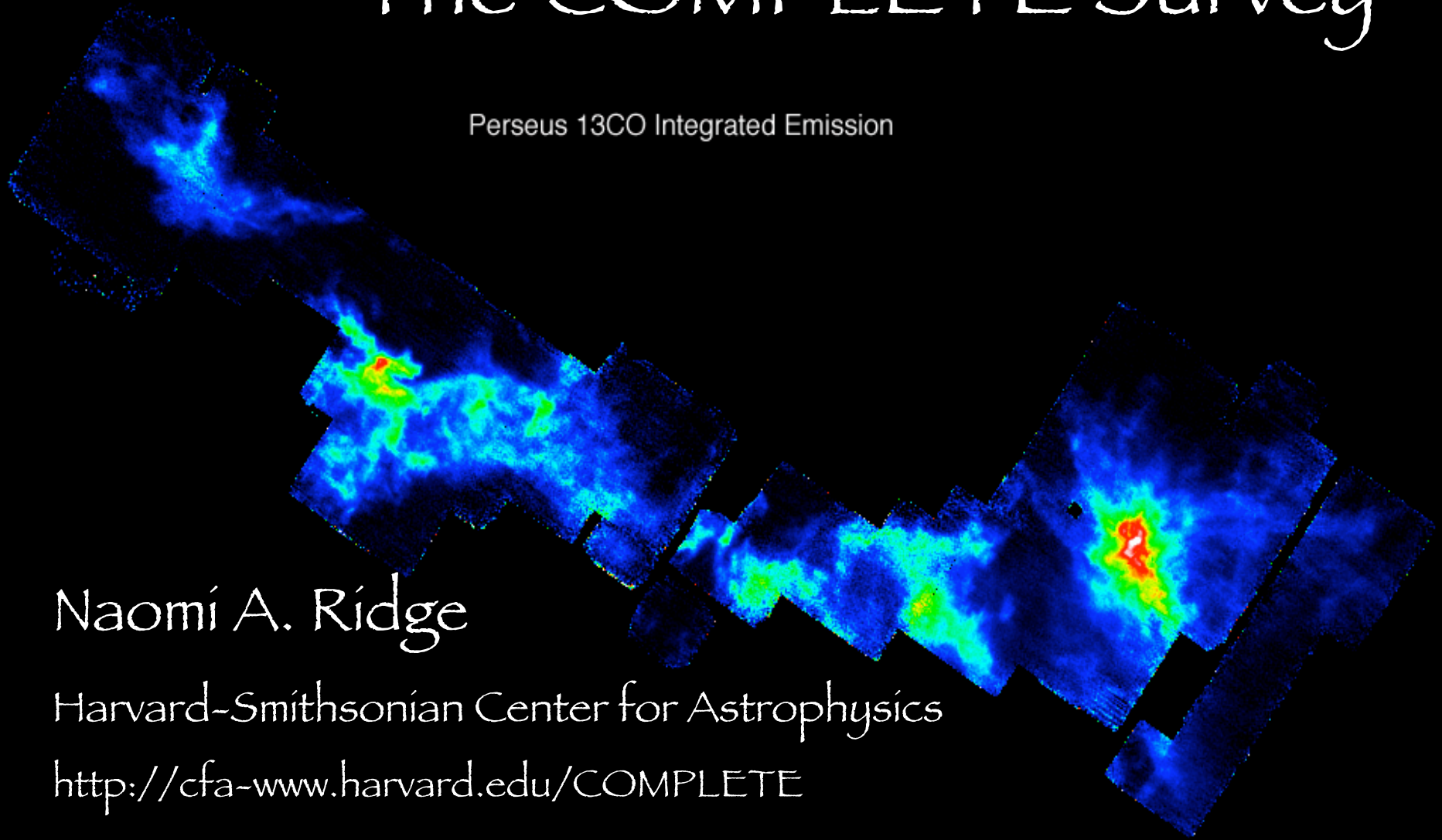


The COMPLETE Survey

Perseus 13CO Integrated Emission



Naomí A. Ridge

Harvard-Smithsonian Center for Astrophysics

<http://cfa-www.harvard.edu/COMPLETE>

The Elements of COMPLETE

COMPLETE covers the 3 northern c2d regions:
Perseus, Ophiuchus and Serpens.

- Molecular Line Emission

~10pc scale maps in ^{12}CO and ^{13}CO at FCRAO
similar size maps in HI from GBT

- Thermal Dust Emission

warm dust emission maps from IRAS/ISSA
pc scale maps from SCUBA at $850\mu\text{m}$

- Extinction

2MASS/NICER-based extinction maps

Some highlights

- The Warm Dust Ring in Perseus
- All column density density tracers are not equal
- “Cloudshine”

Some highlights

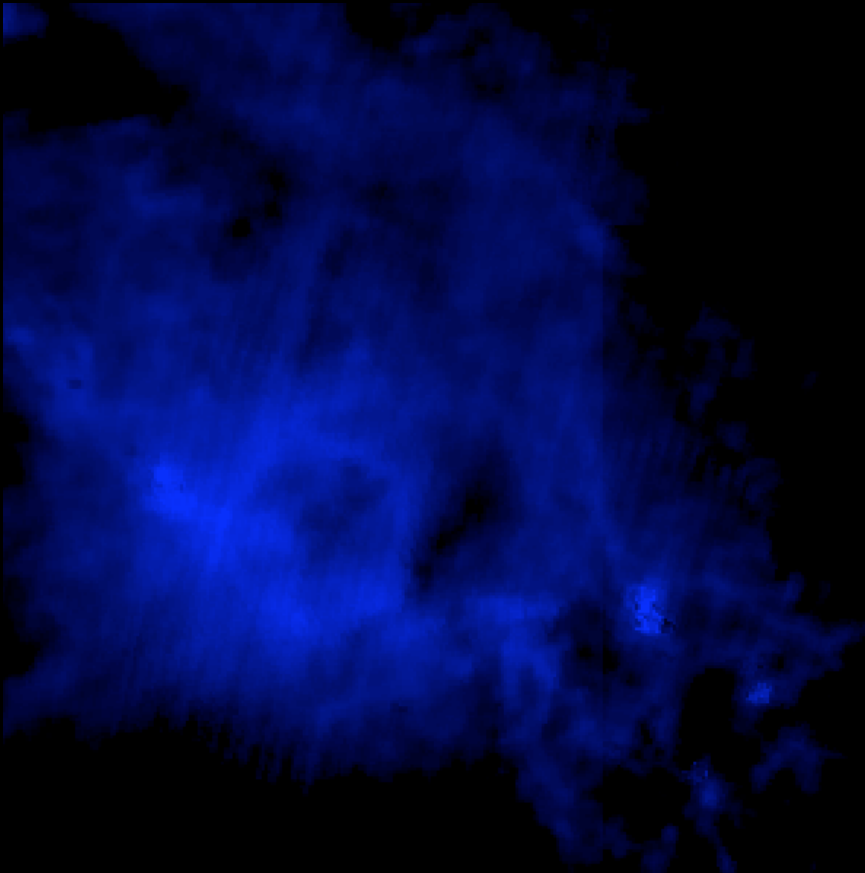
- The Warm Dust Ring in Perseus
 - Ridge et al. (submitted to ApJ).
- All column density density tracers are not equal!
- “Cloudshine”

25 28 37 30
COMPLETE/IRAS N_{dust}

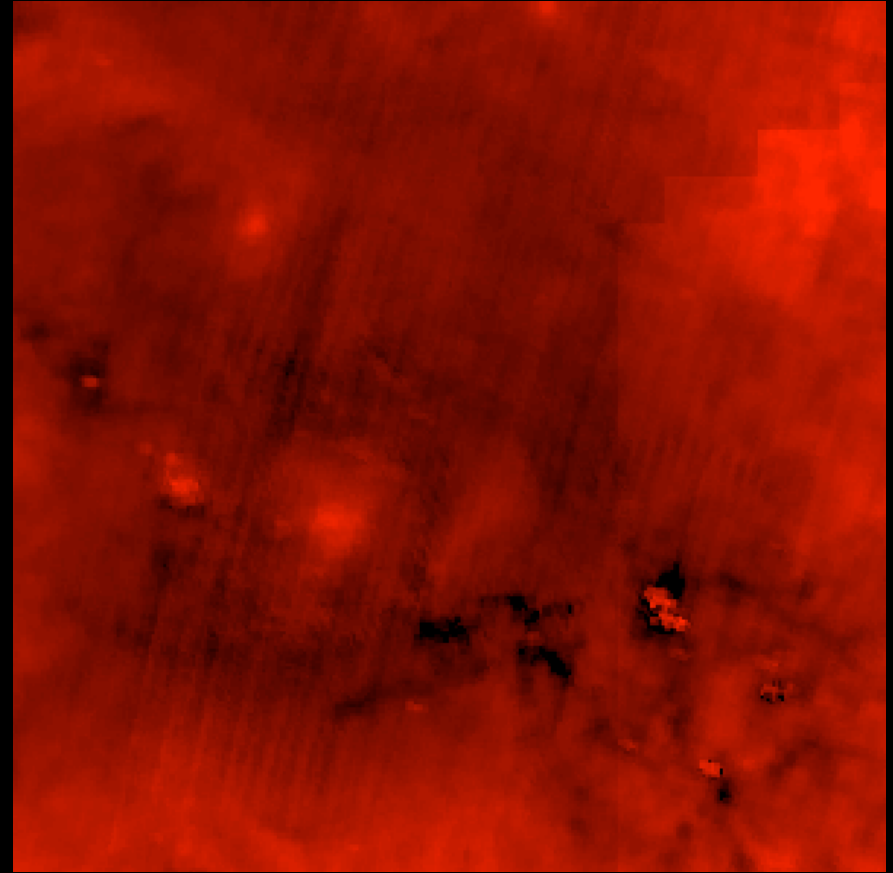
Barnard's Perseus

Dust Density & Dust Temperature in Perseus

Total Dust Column (0 to 15 mag A_V)
(Based on 60/100 microns)

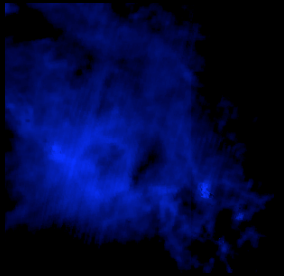


Dust Temperature (25 to 45 K)
(Based on 60/100 microns)



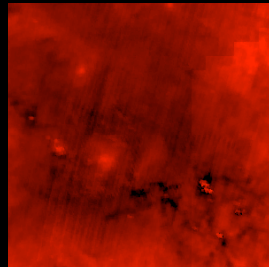
Hot Source in a Warm Shell

IRAS
Column Density

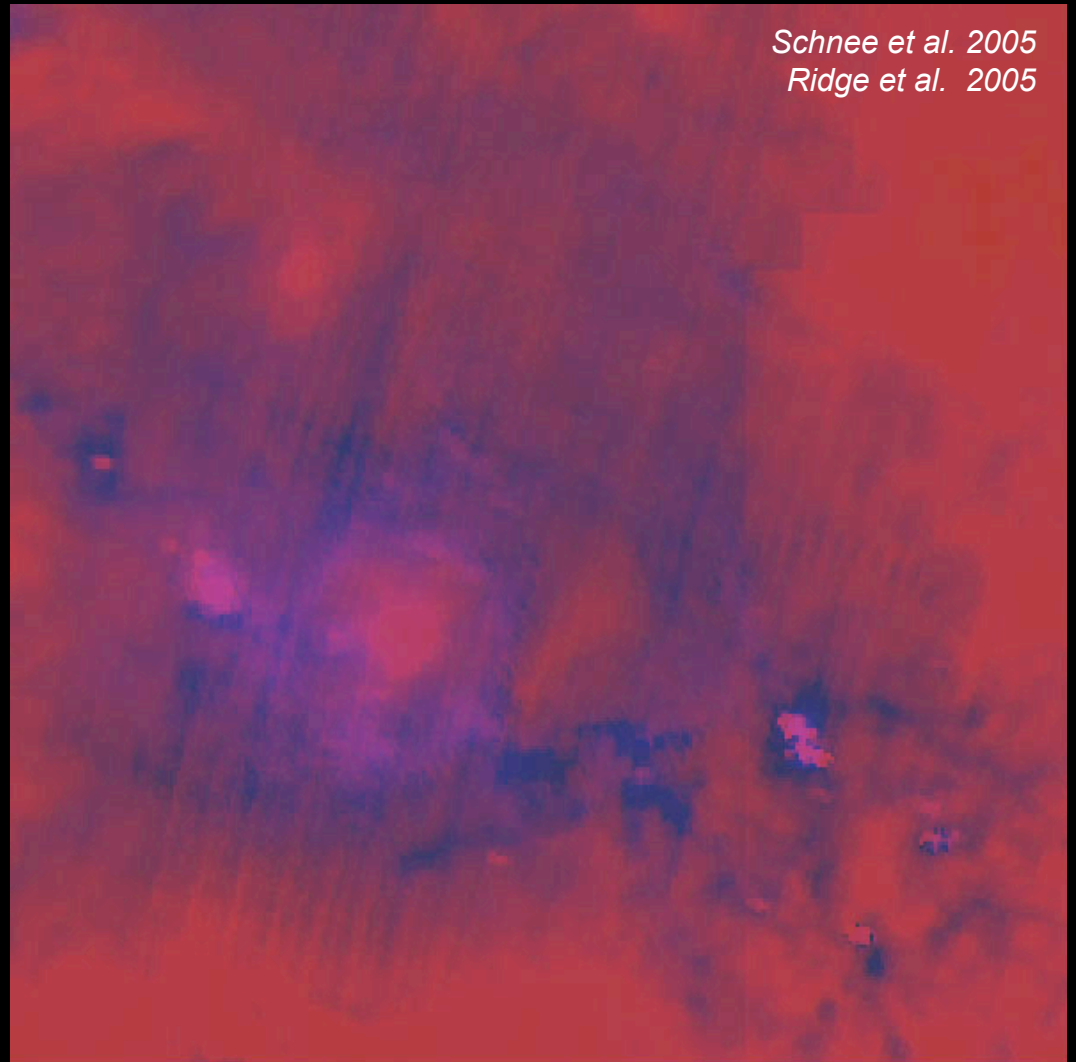


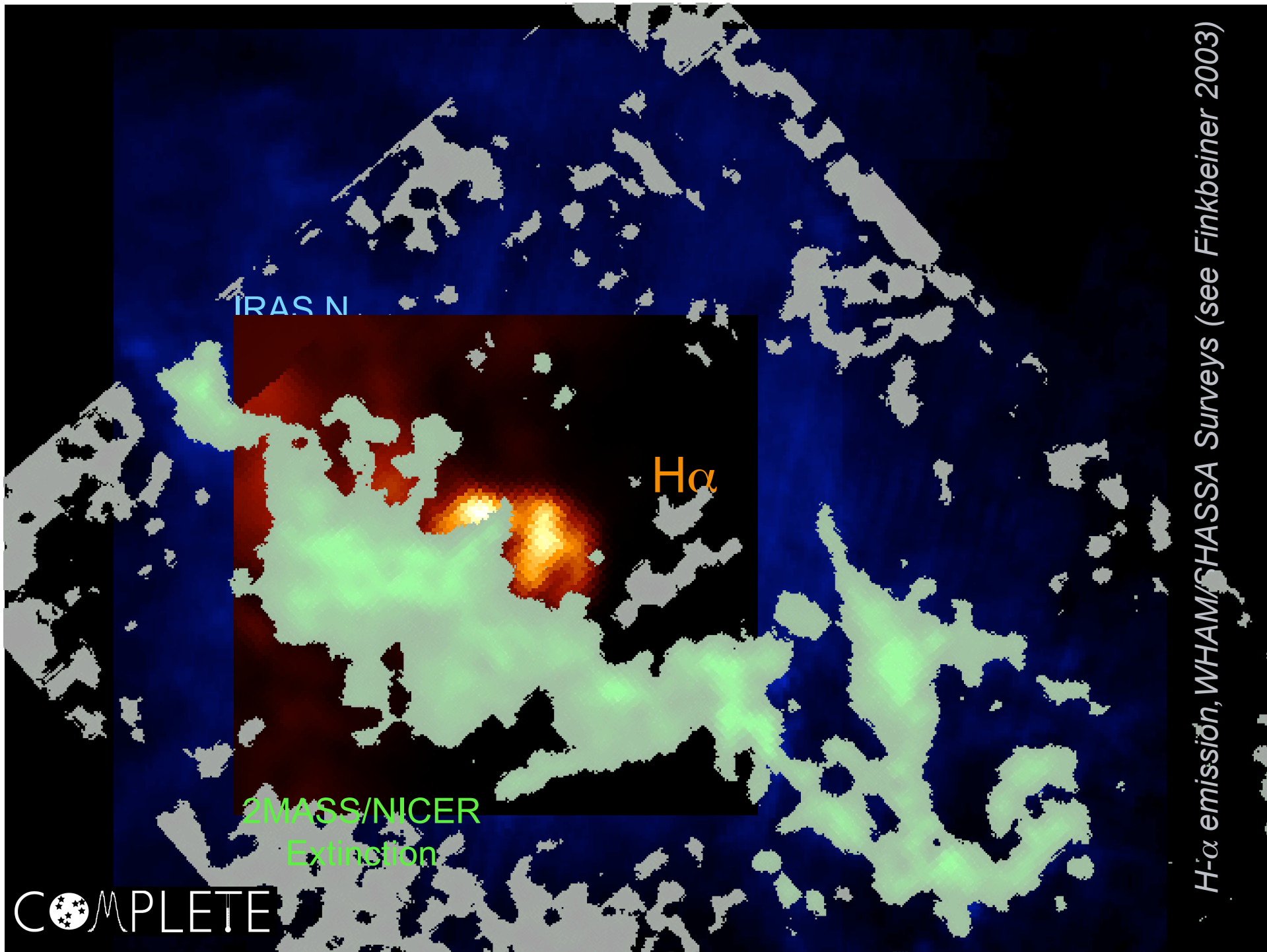
+

IRAS
Temperature



=





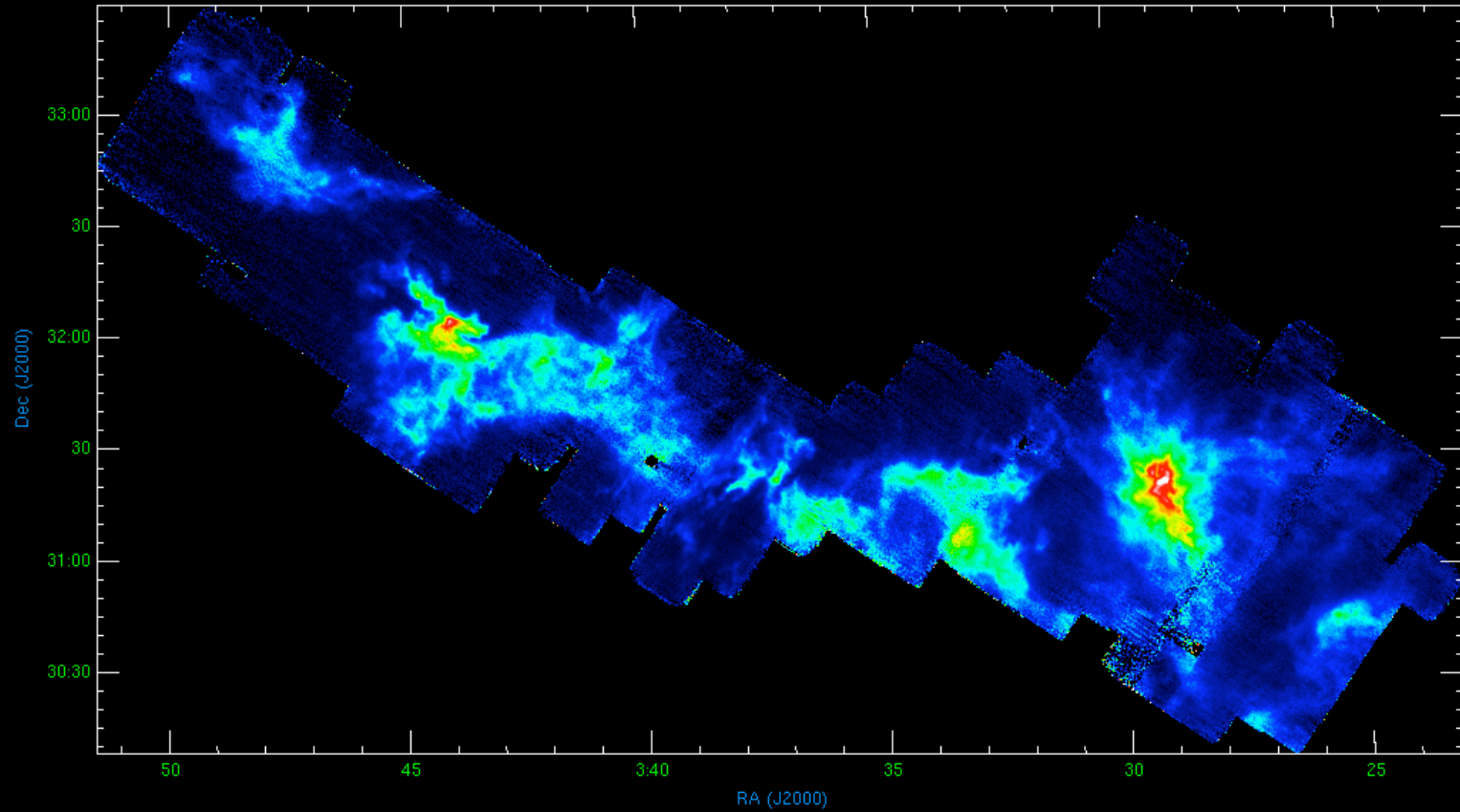
H- α emission, WHAM/CHASSA Surveys (see Finkbeiner 2003)

Some highlights

- The Warm Dust Ring in Perseus
- All column density density tracers are not equal
 - Schnee et al. (submitted to ApJ),
 - Goodman, Ridge & Schnee (in prep.)
- “Cloudshine”

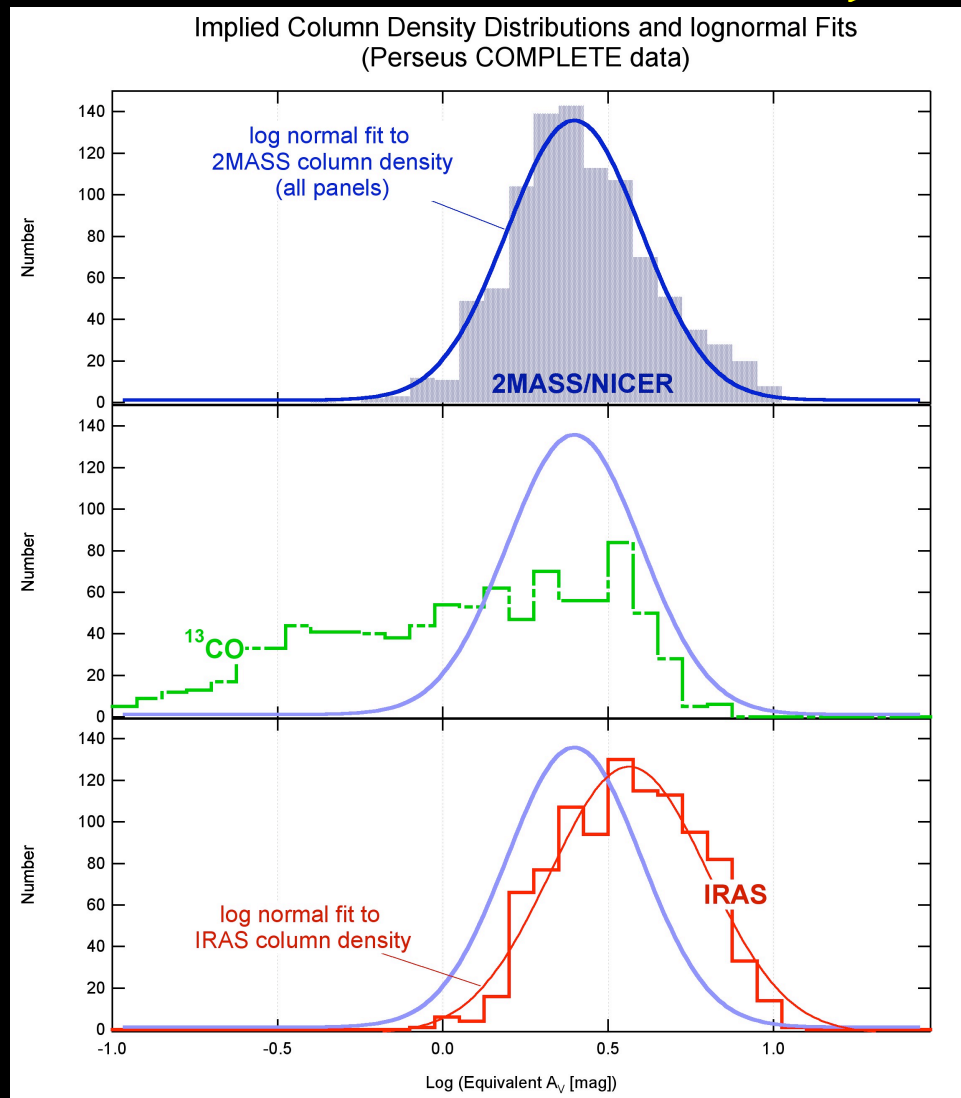
N(IRAS)

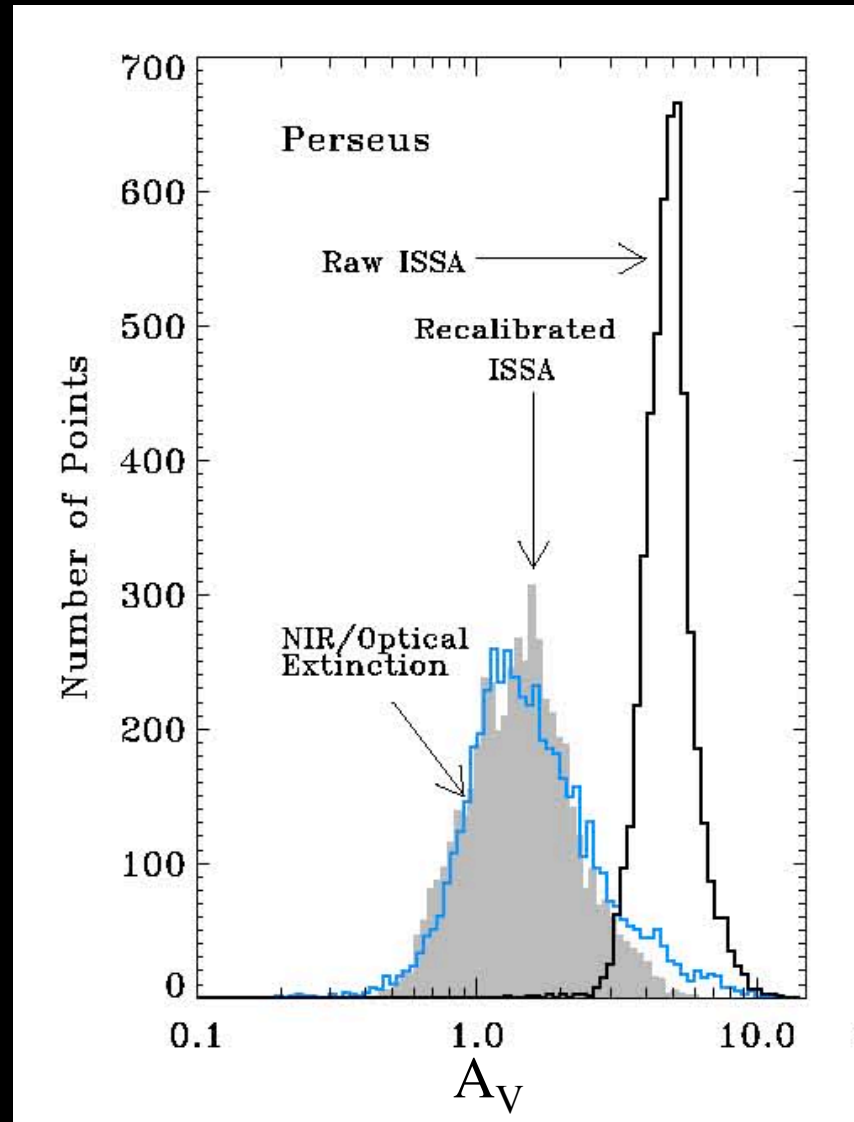
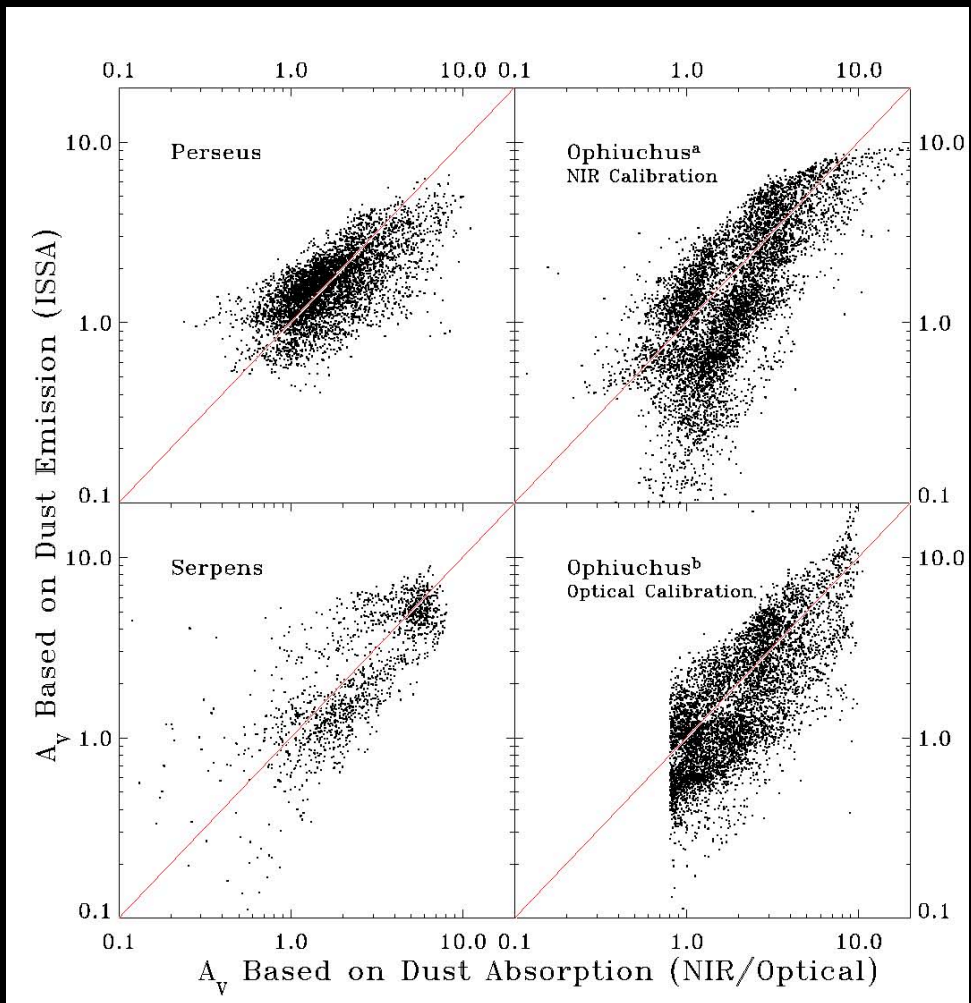
N(2MASS/NICER)



Integrated ^{13}CO

Column Density comparison

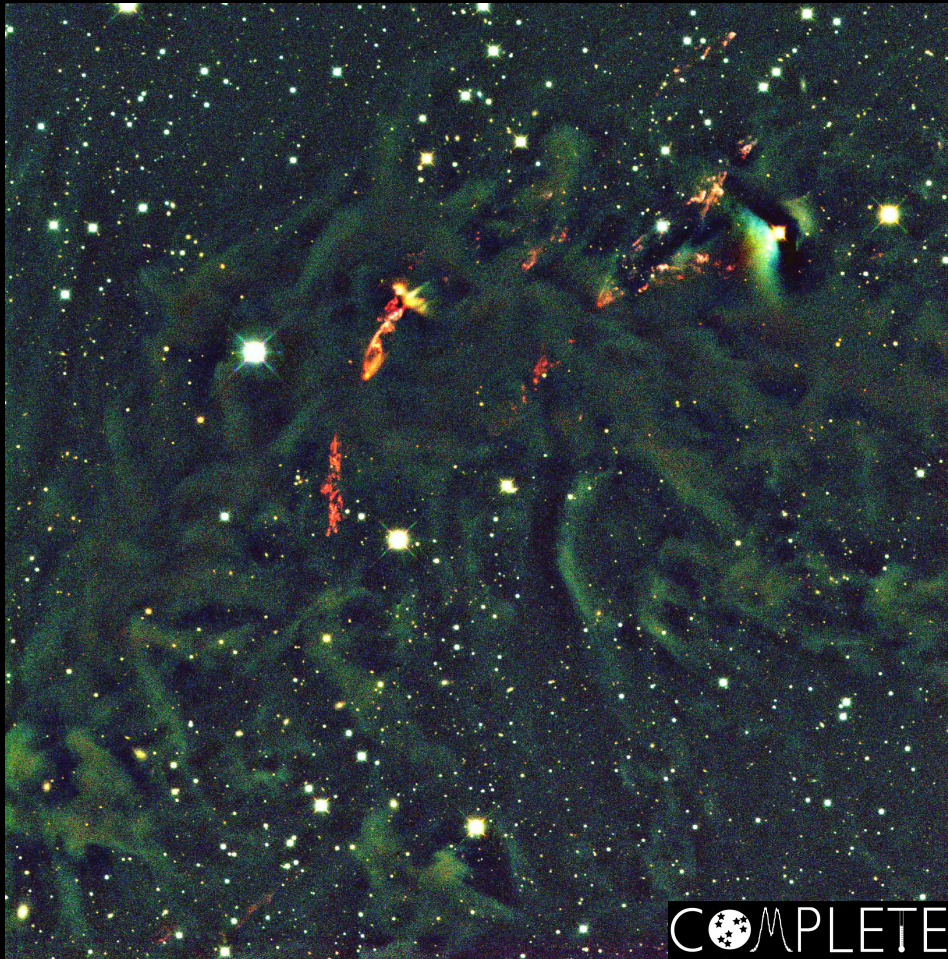




Schnee et al. 2005

Some highlights

- The Warm Dust Ring in Perseus
- All column density density tracers are not equal
- “Cloudshine”
 - Foster et al. (ApJL, in prep).

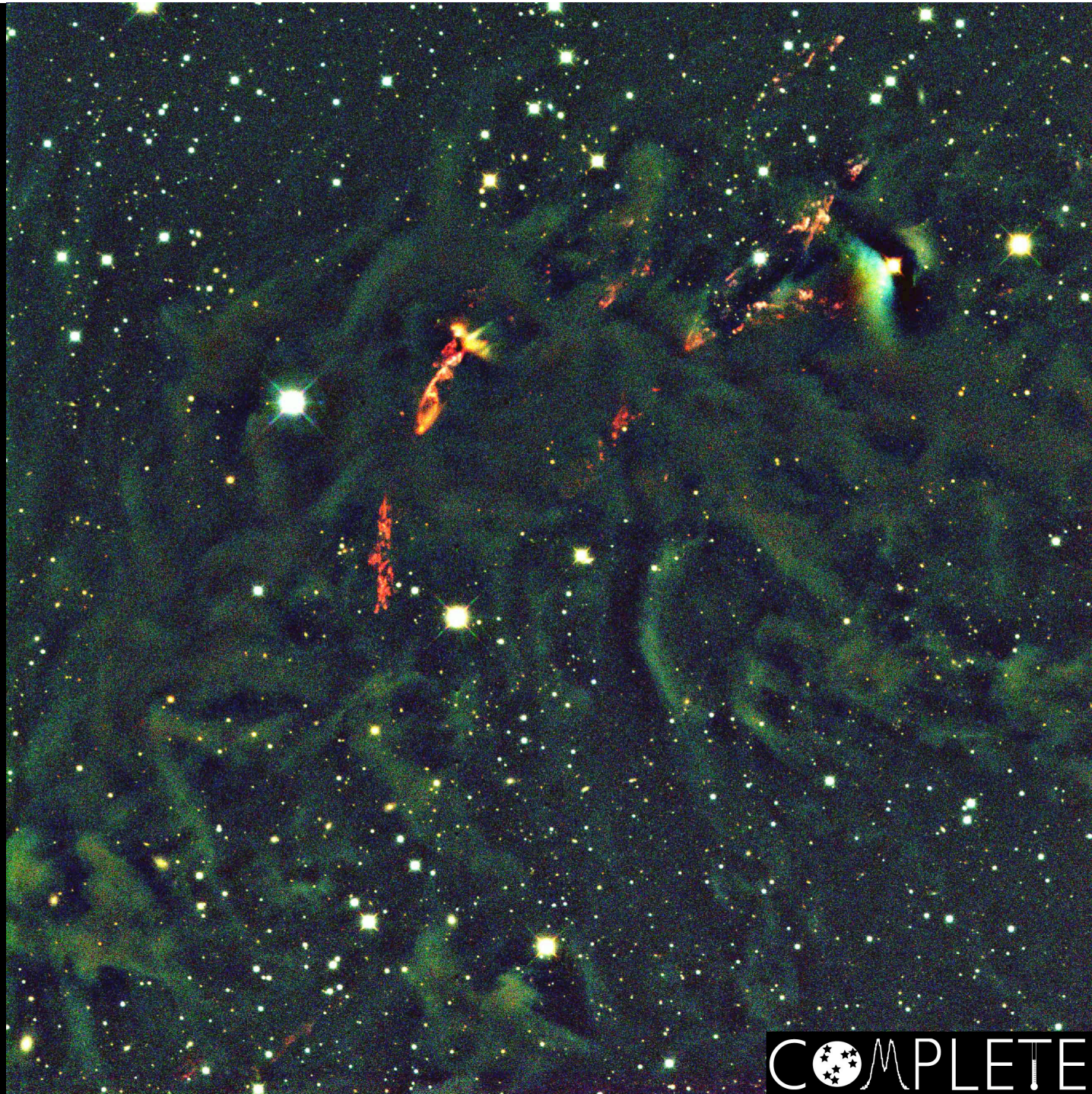


Deep near-IR image of L1448 in
the southwest corner of Perseus

Image size 15'x15'

“Red” Outflows & Shining Dust

- Outflows glowing red with excited hydrogen.
- Small blue reflection nebula.
- Ambient starlight reflects off dust density features in this small star-forming cloud - provides an unprecedented high-resolution view of its complex structure.



COMPLETE

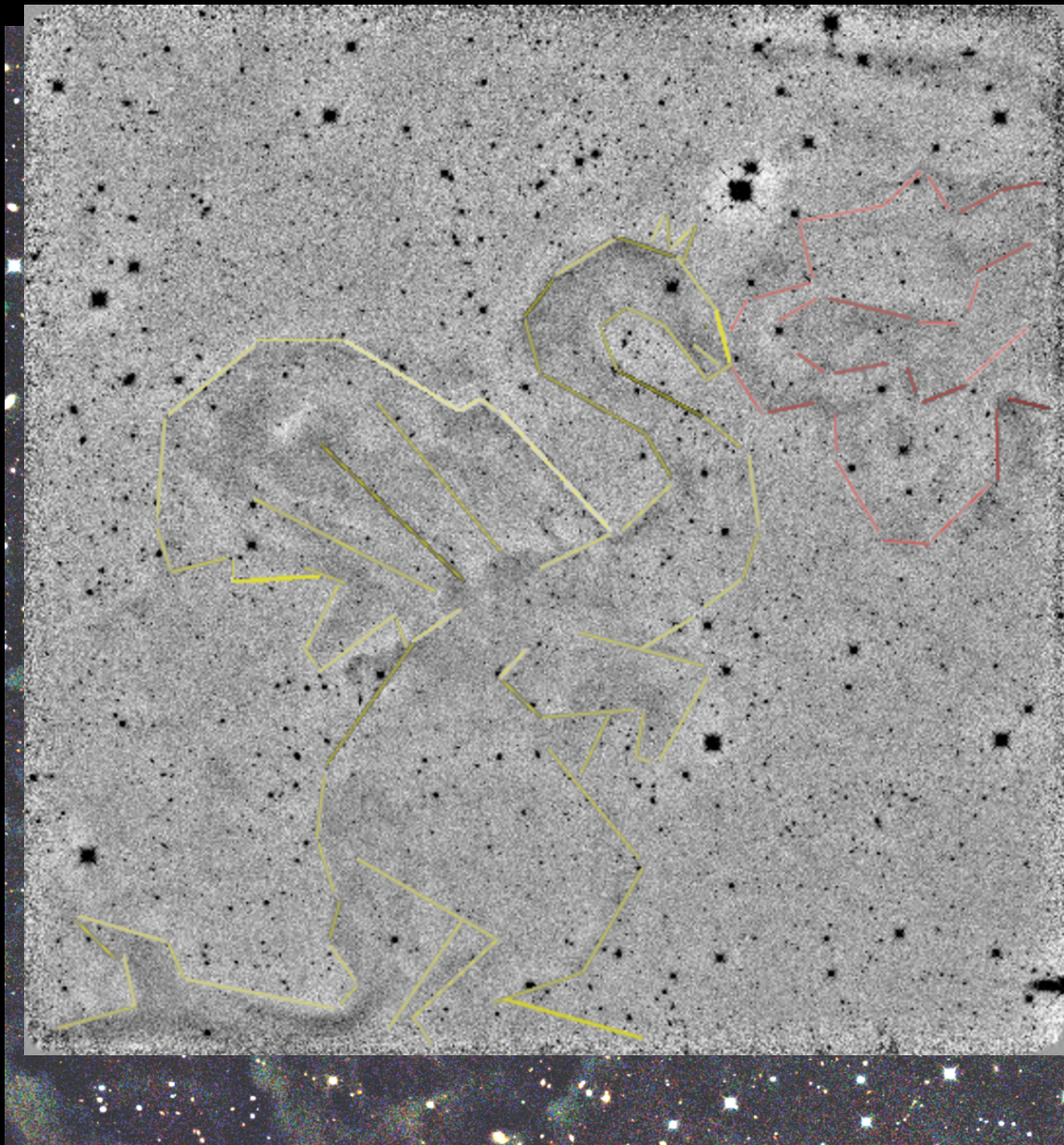


Image: JHK

Contours: 1.3mm
continuum.

Summary

- COMPLETE provides large scale images of Perseus, Ophiuchus and Serpens in extinction, thermal emission and molecular lines.
- Data is freely available from our website:
 - <http://cfa-www.harvard.edu/COMPLETE/>