Cloudshine and the Quest to See Dark Clouds

Jonathan Foster (Boston University)
Phil's grand-advisee

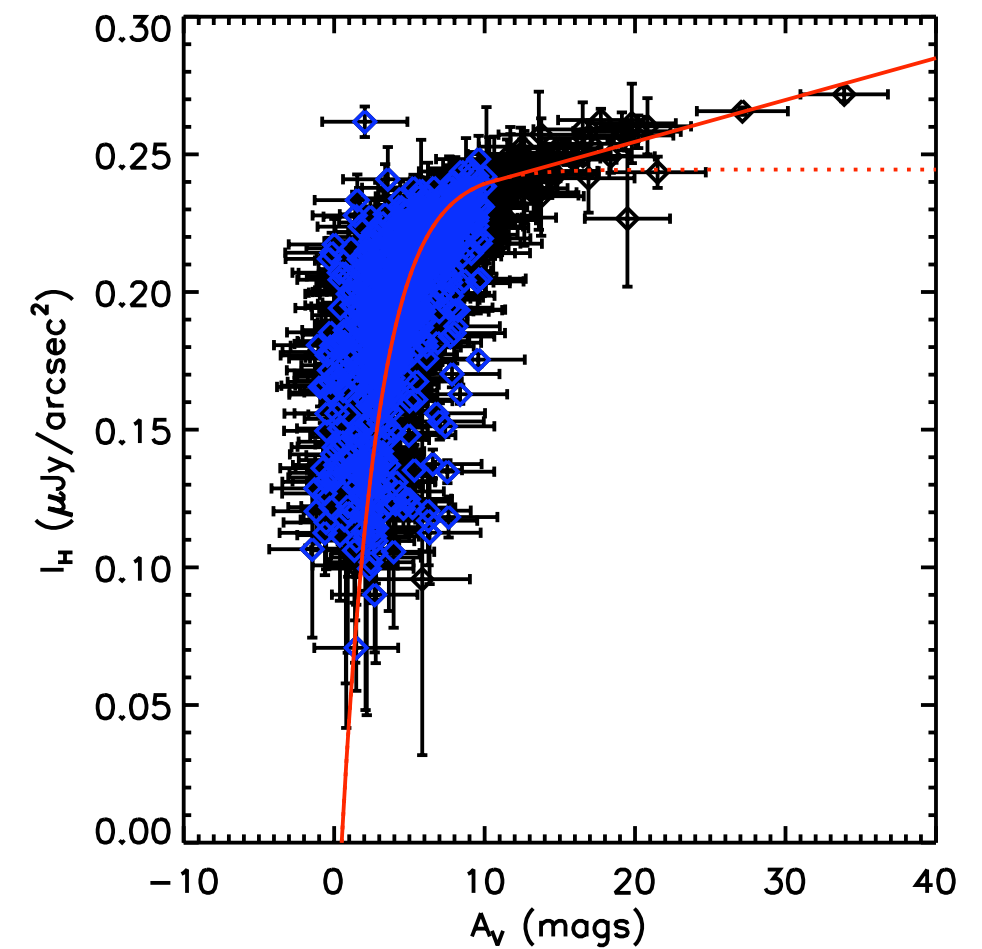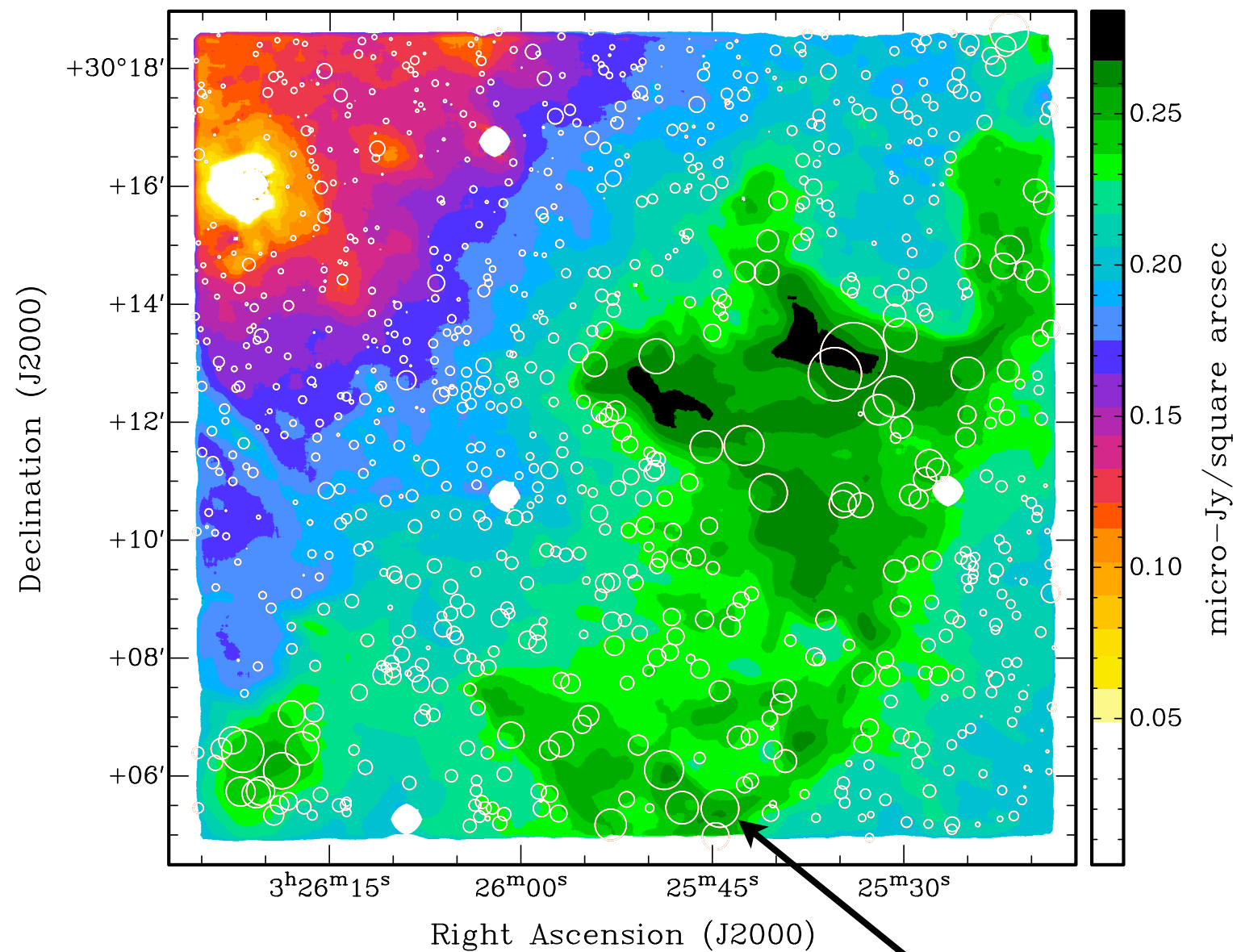Wednesday, November 18, 2009

Bolo-4 in Perseus

A candidate un-evolved core in Perseus

Data from OMEGA 2000 on Calar Alto 3.5-m

False color (J=blue, H=green, Ks=red)

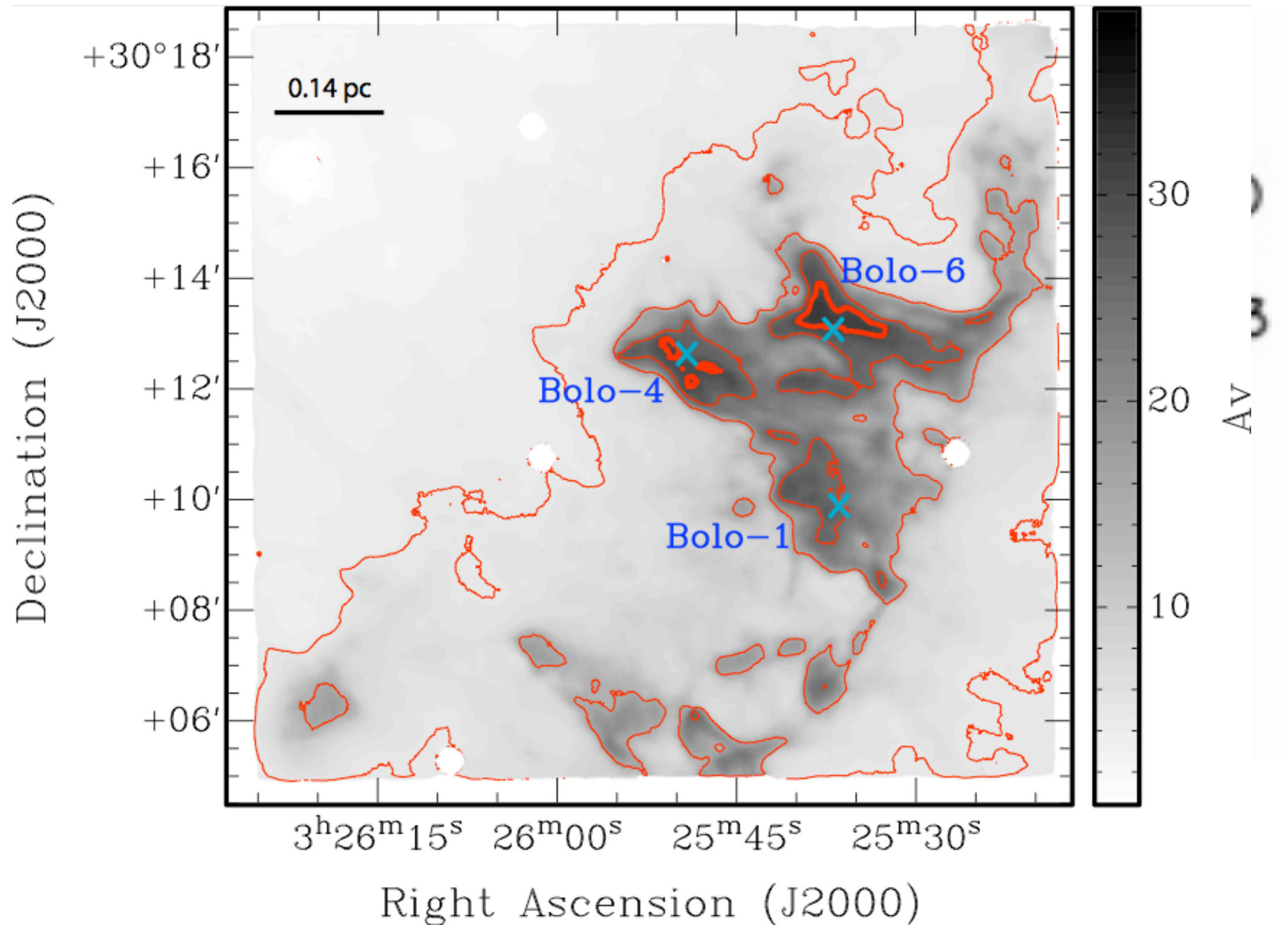Bolocam 1,3,5 sigma contours are overlain
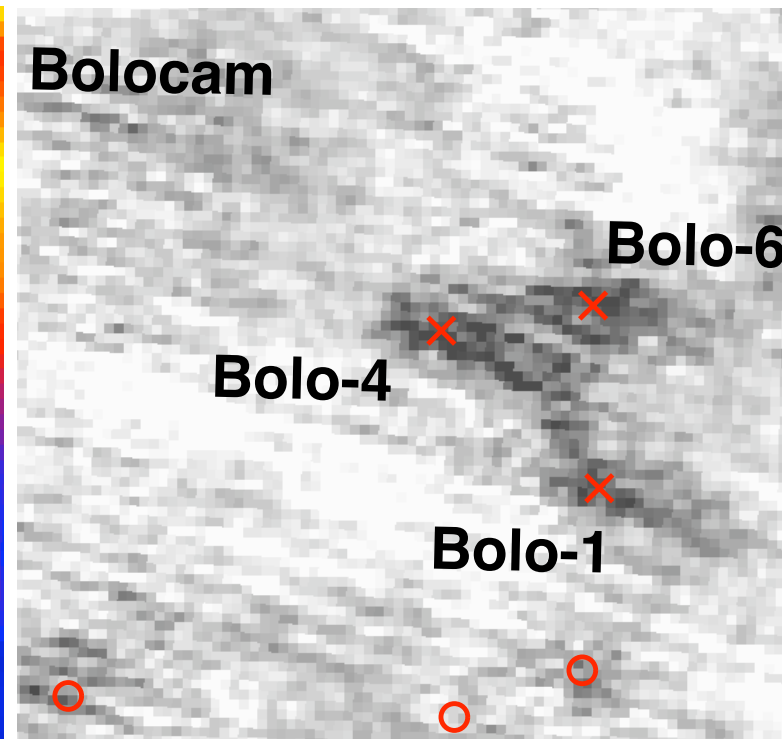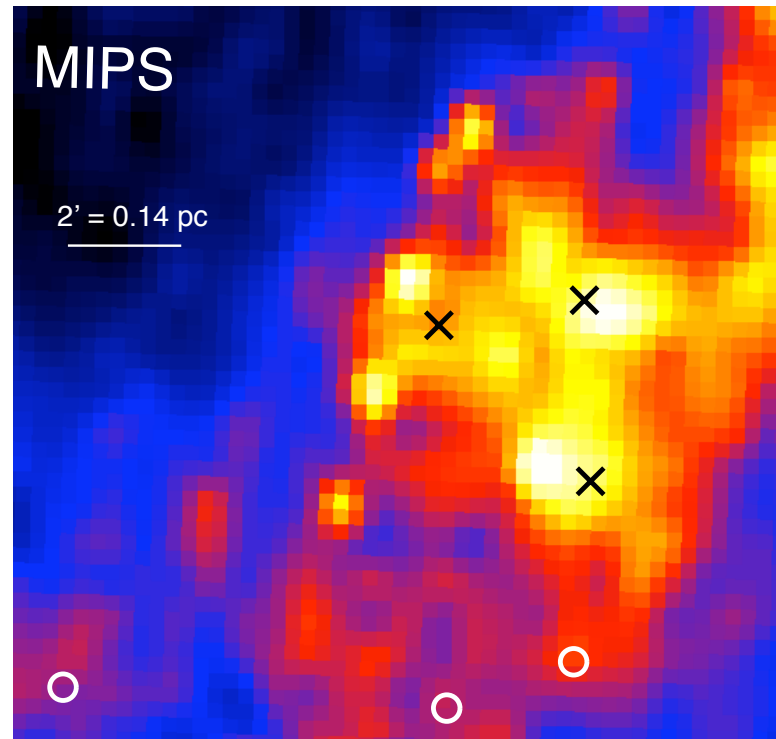
Making Maps from Cloudshine

Size of circle is extinction
measured for a background star

See also: Juvela et al. (2008) and Nakajima et al. (2008)
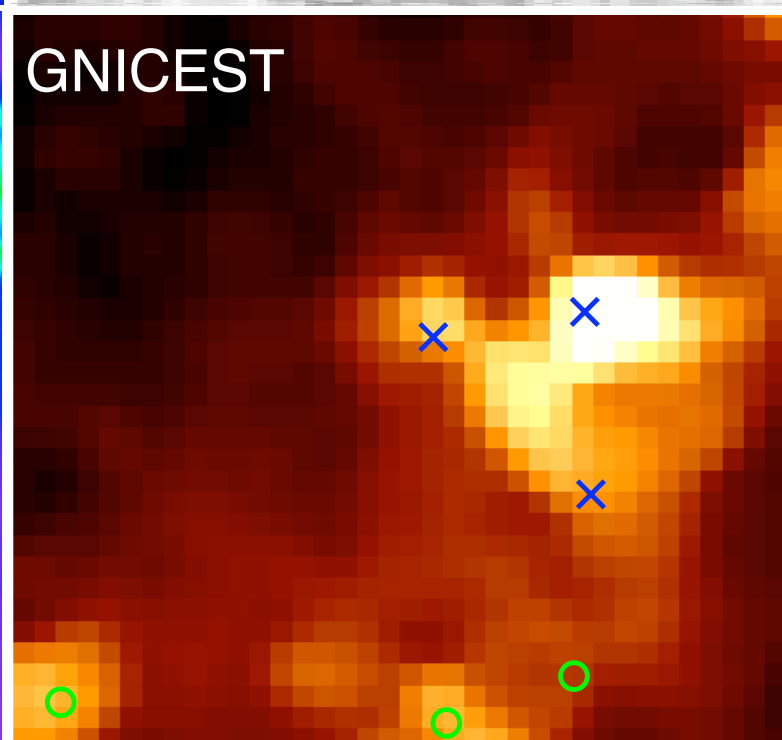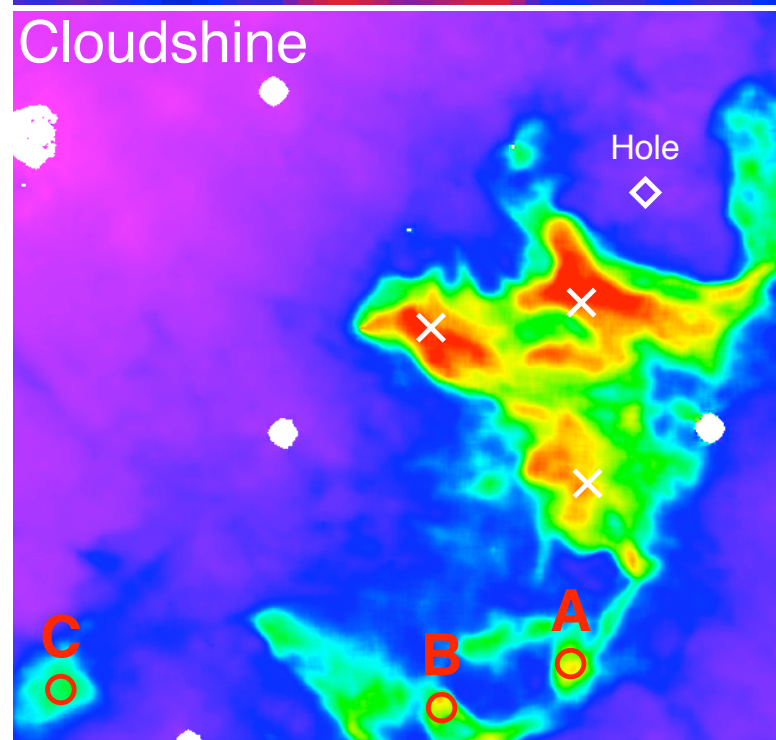
High-resolution Maps

Comparing Multiple Methods

Spitzer-MIPS + IRAS dust temperatures and column from Scott Schnee (2008) (Phil grand-advisee).

Bolocam 1.1-mm map of Perseus (from Melissa Enoch 2006) scaled based on NH$_3$ temperatures

Cloudshine method just described: calibrate NIR flux from extinction to background stars and use flux to make smooth map
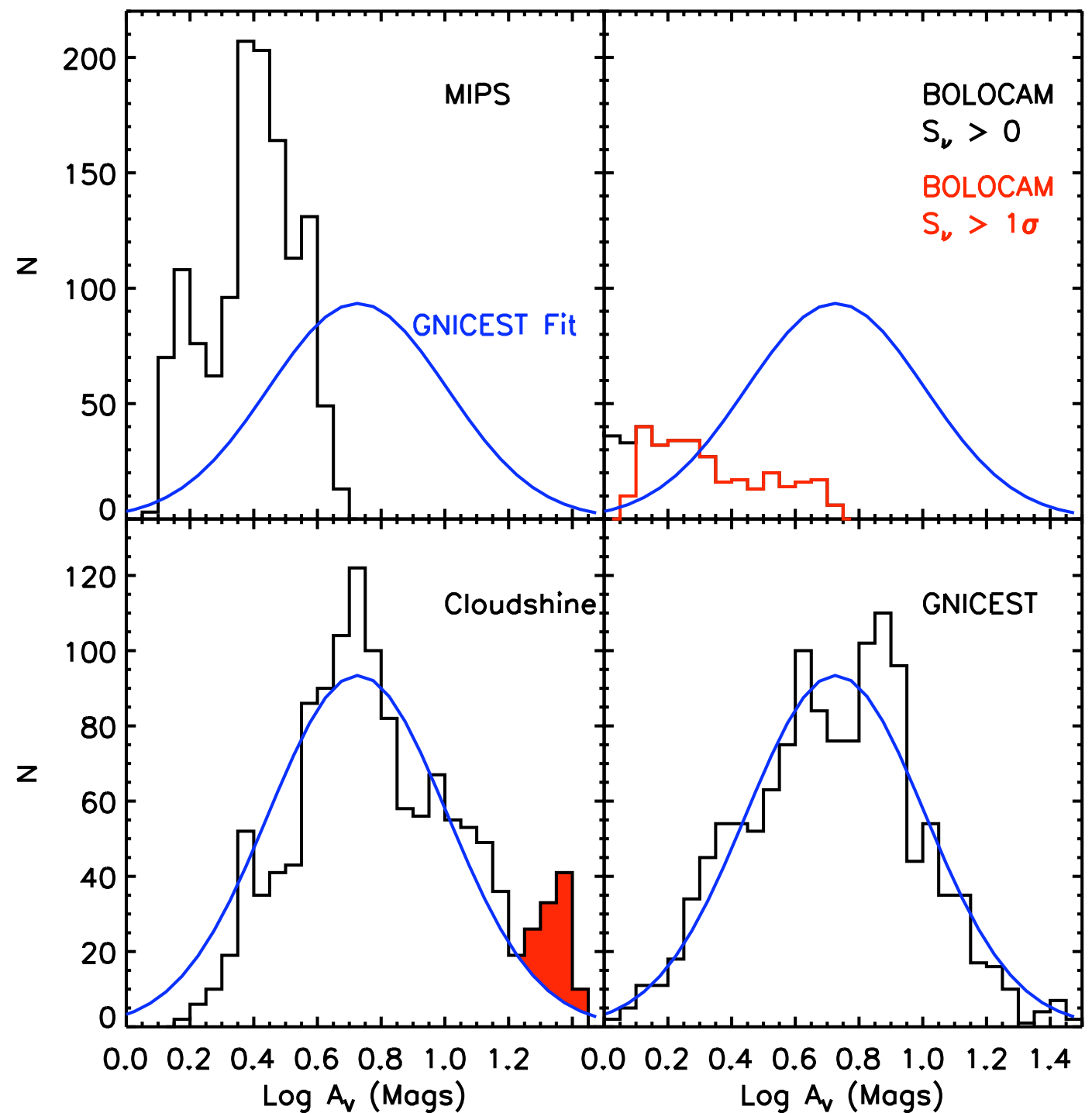
Extinction map based on (G)NICEST algorithm adapted from Lombardi (2009) and the same deep NIR data

Log-normal?

Various biases in different maps

Cores are quiescent, so we don't expect log-normal shape to persist at small scales and high densities

When does gravity take over from turbulence?

Thanks Phil

- Apart from being a descendent...

- Phil served as chair for my thesis advisory committee, and on my Research Exam committee

- Phil also provided many helpful discussions throughout my grad school career about Cloudshine, low-mass star formation, and NH3.

Hermann von Helmholtz

↓

Albert Michelson

↓

Henry Gale

↓

William Smythe

↓

Charles Townes

↓

Alan Barrett

↓

Phil Myers

↓

Alyssa Goodman

↓

Jonathan Foster