

Observing Low-mass Star Formation Regions with NANTEN2

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LMSF – why?

- Most local SF is low-mass (ie almost all of the Gould Belt)
- All very local SF is low-mass with a bit of intermediate
- So low-mass SF is the stuff we can see
- But we still don't really get it
 - Spitzer c2d project conclusions
 - Wide variation in SFE between clouds

LMSF – why not?

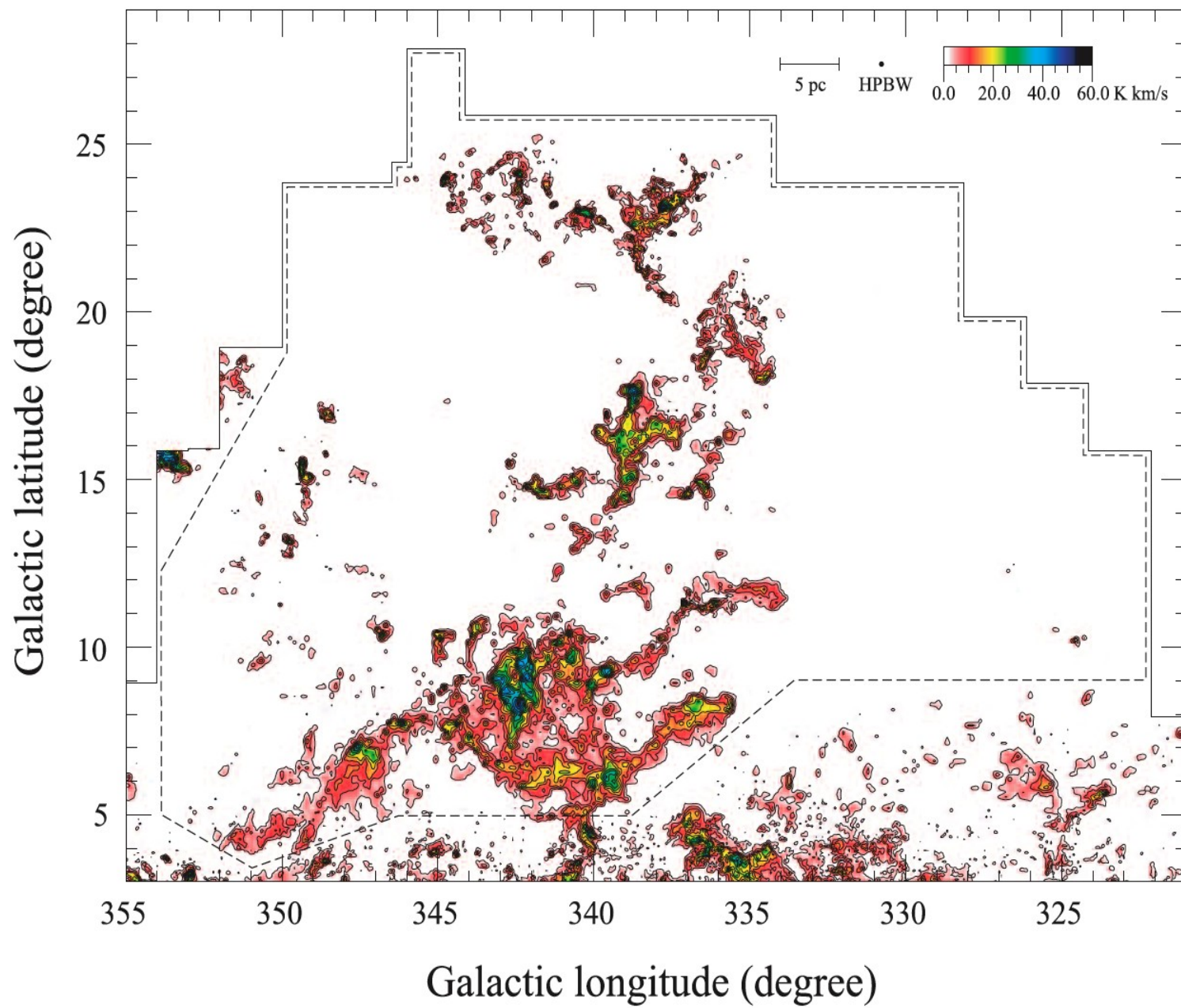
- On a Galactic scale HMSF is the stuff that counts
- And we have far more trouble understanding HMSF

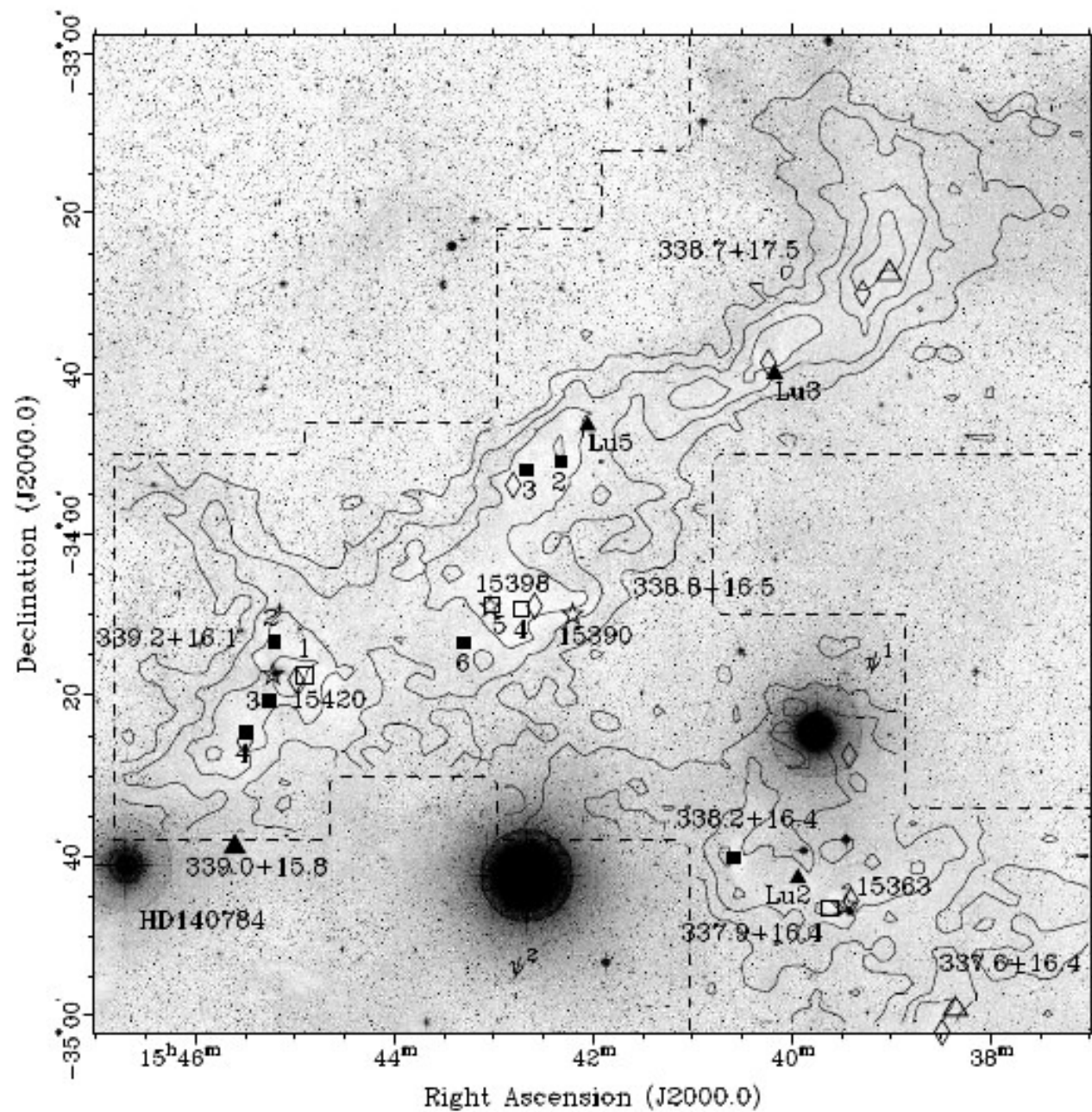
How do you observe LMSF?

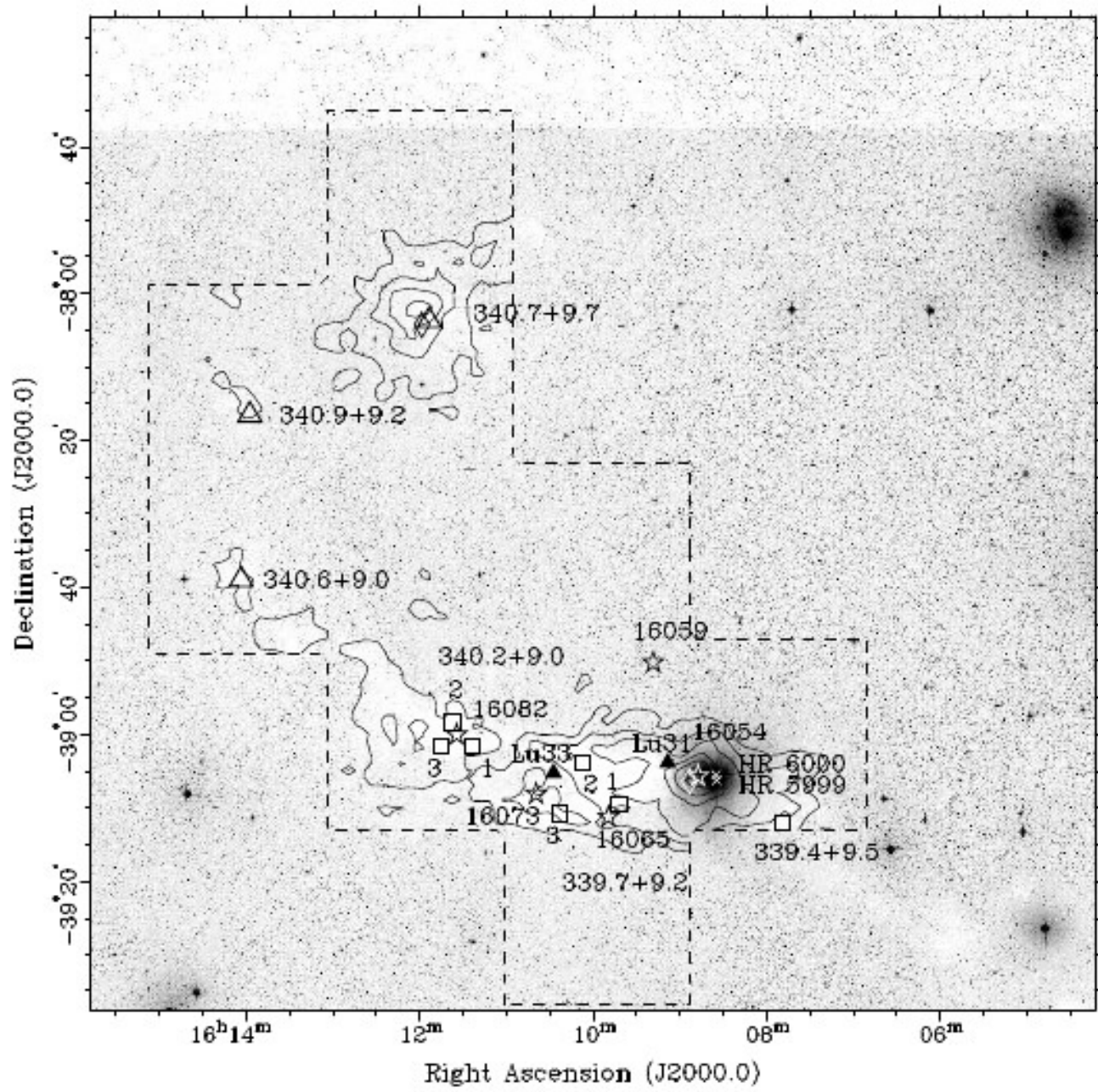
- Optical/IR – dark clouds
- Far-IR – satellite based, emission from dust peak
- Sub-mm/mm-wave continuum – dust RJ tail
- Mm-wave spectral line mapping – low-J CO, more exotic molecules (NH₃, HC(2n+1)N, C₄H, ...)
- Sub-mm spectral line mapping... not really

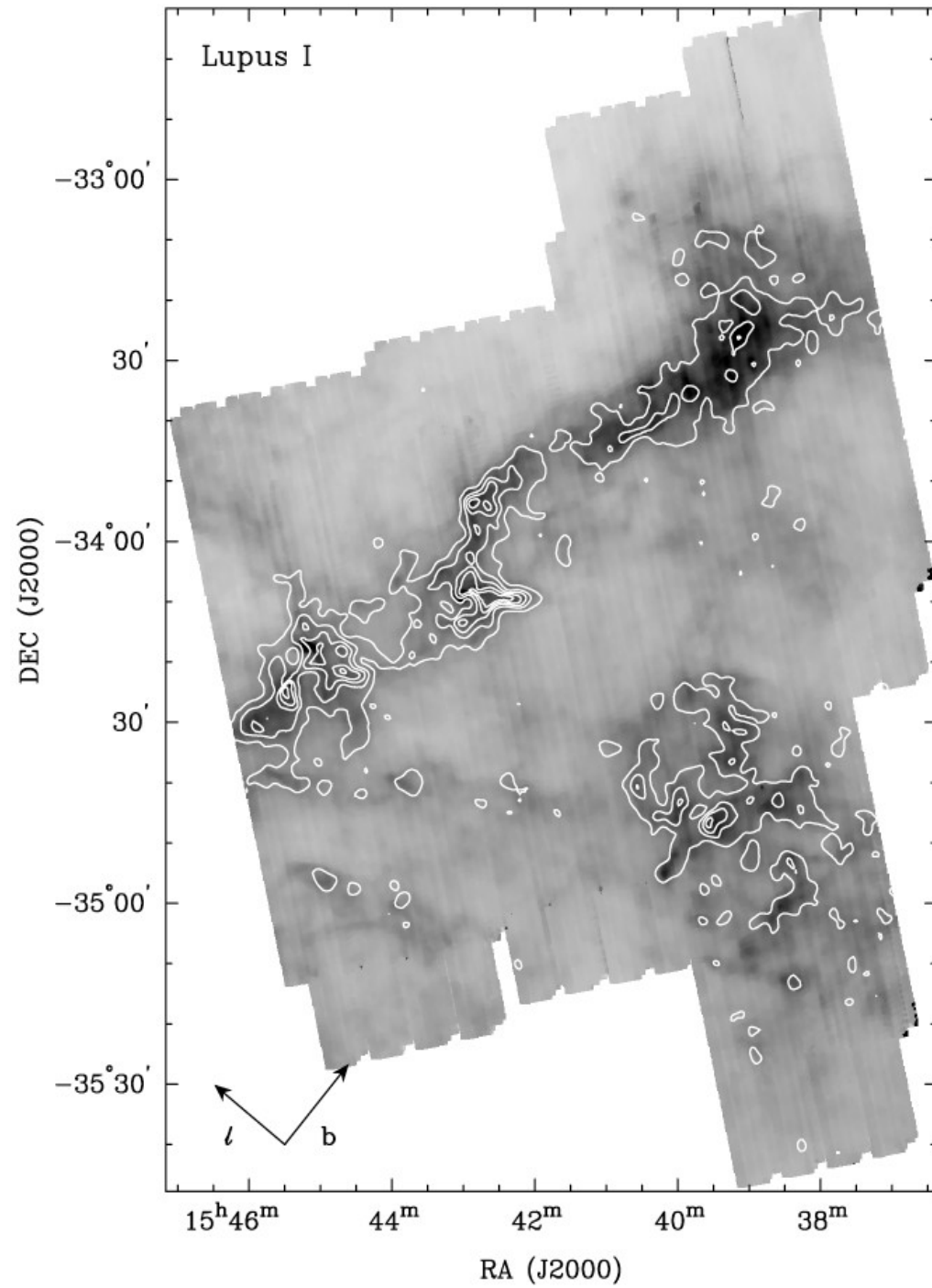
LMSF with SMART

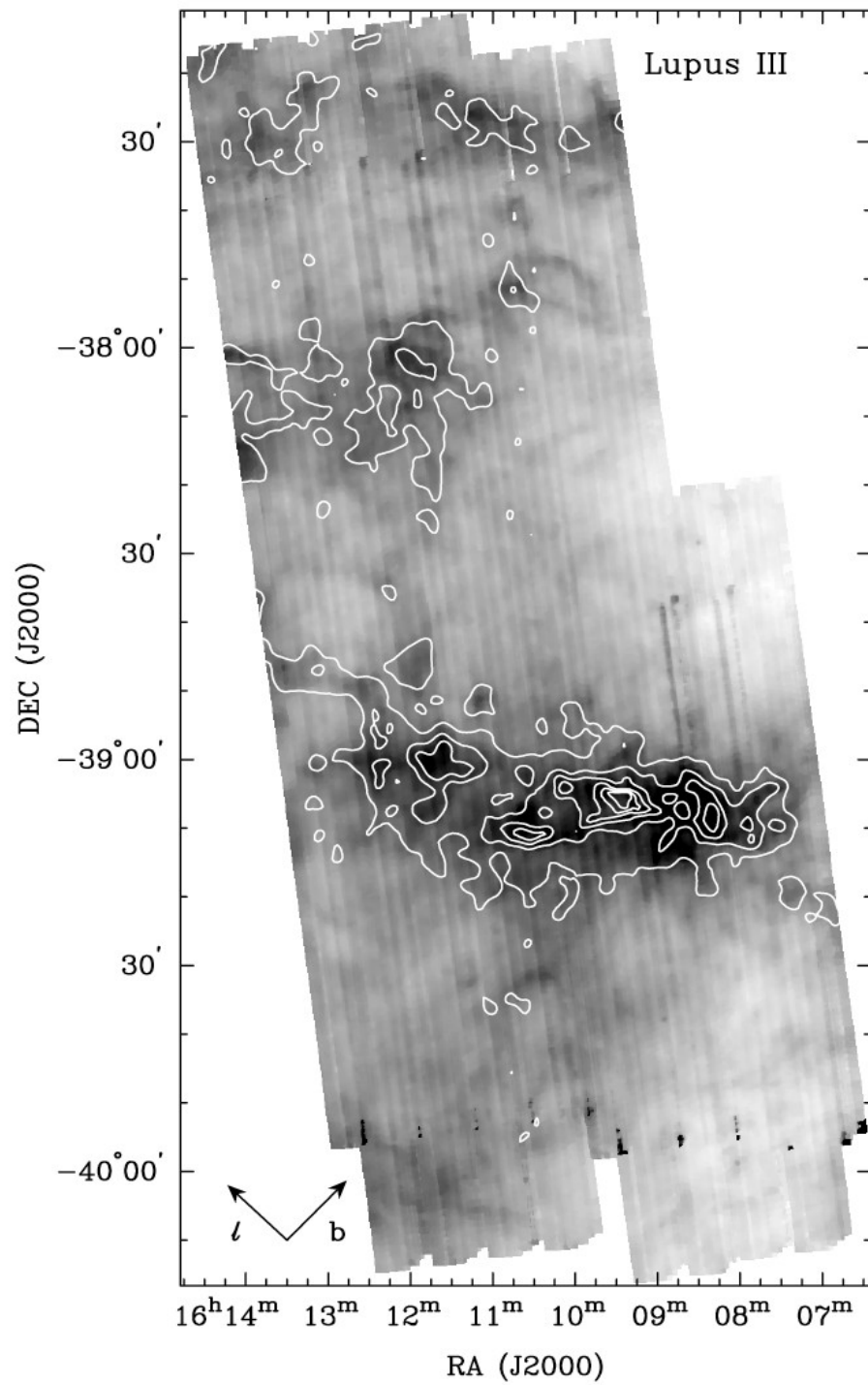
- It's worth mapping LMSF at CO 4-3
 - (5-4 is impossible, 6-5 & 7-6 unlikely to be visible)
- How about CI?

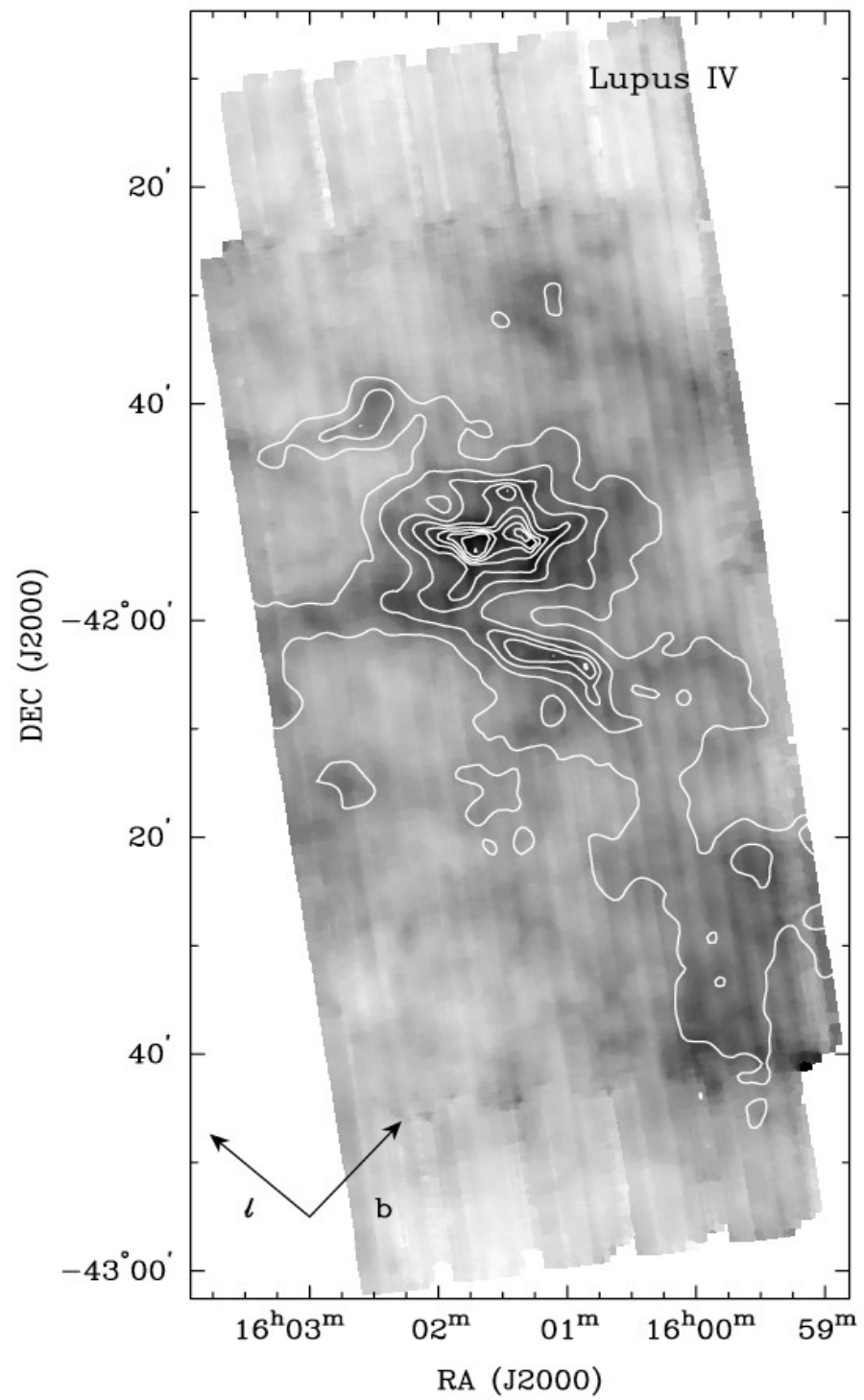


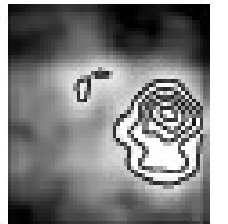
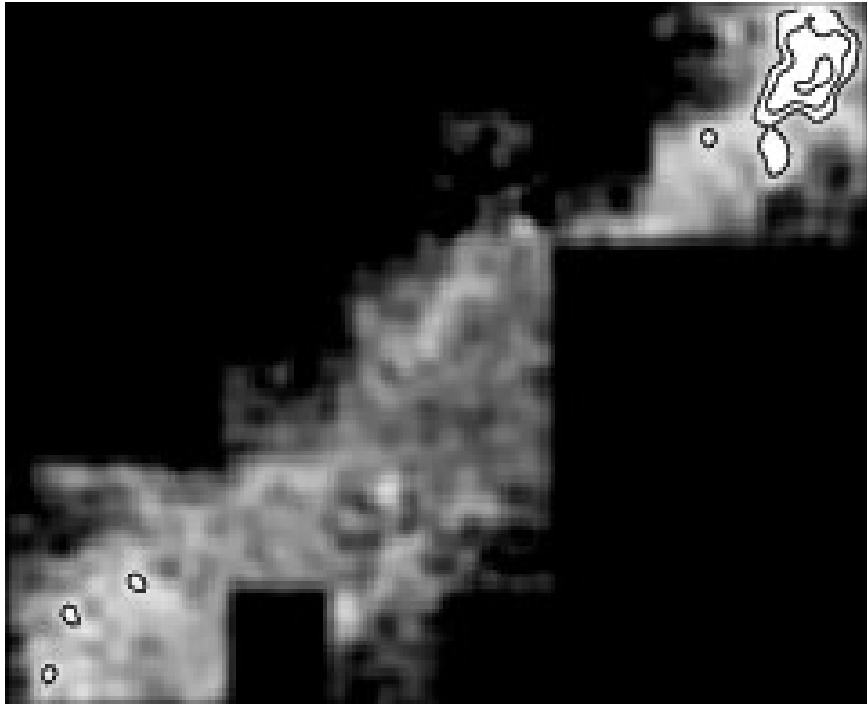












LMSF with Nagoya rxs

- There is strong interest in LMSF at Nagoya
- Some plans for LMSF
- What we really want:
 - 1-0, 2-1, and then 4-3 from SMART, in the 3 important isotopologues
 - 1-0 we can get from Mopra without limiting resolution

Project targets

- Lupus
- Musca
- Chamaeleon
- Et al...

Project people

- UWS: Nick Tothill, Graeme Wong, Miroslav Filipovic
- Nagoya: Kengo Tachihara, Sayaka Mochizuki
- Koln/Bonn: ?
- Rest of Oz: ?
- Anyone else?

Project plans

- Lupus clouds
 - Lupus 1 quite well-mapped in 4-3
 - Small 4-3 maps of Lupus 3 & 4 – get bigger ones!
 - Other Lupus clouds e.g. Lupus 2?
- Musca
 - No star formation
- Chamaeleon
 - We have good maps of 4-3 in Cham 2.
- Lupus and Musca should be a good combination
- Should we use the standard mapping configuration?
- And, of course, Mopra!