



SEST/SIMBA

– The ATCA's Finder Telescope

Tracey Hill

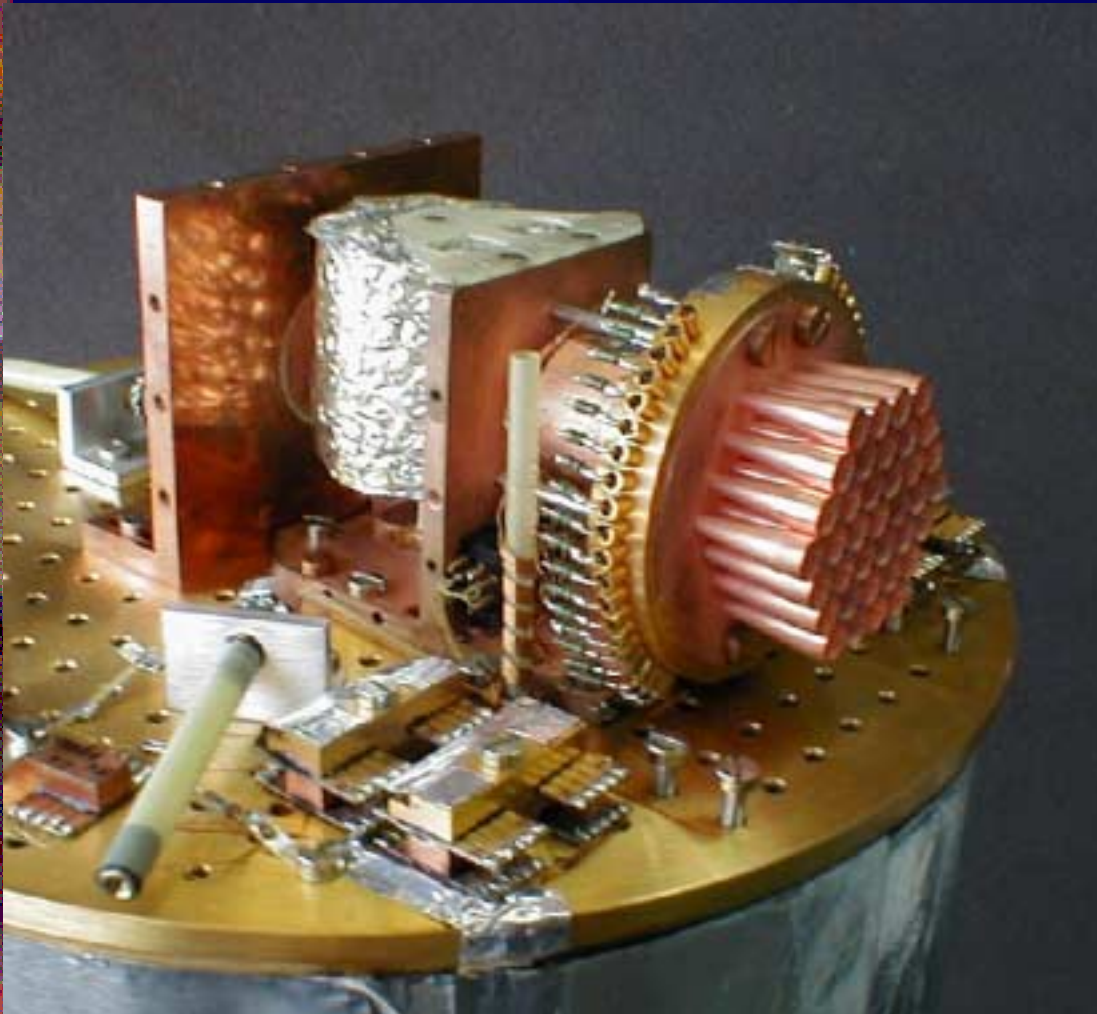
University of NSW

SEST

- ☀ 15m diameter radio telescope.
- ☀ Operates in freq range: 80-365 GHz.
- ☀ Currently the only large sub-mm telescope in the Sthn Hemisphere.
- ☀ Fixed secondary mirror.



SIMBA



eter array.

$\nu = 250 \text{ GHz}$

ent is $\sim 23''$,
on the sky is $44''$.

re: 0.3K .

id Nitrogen.

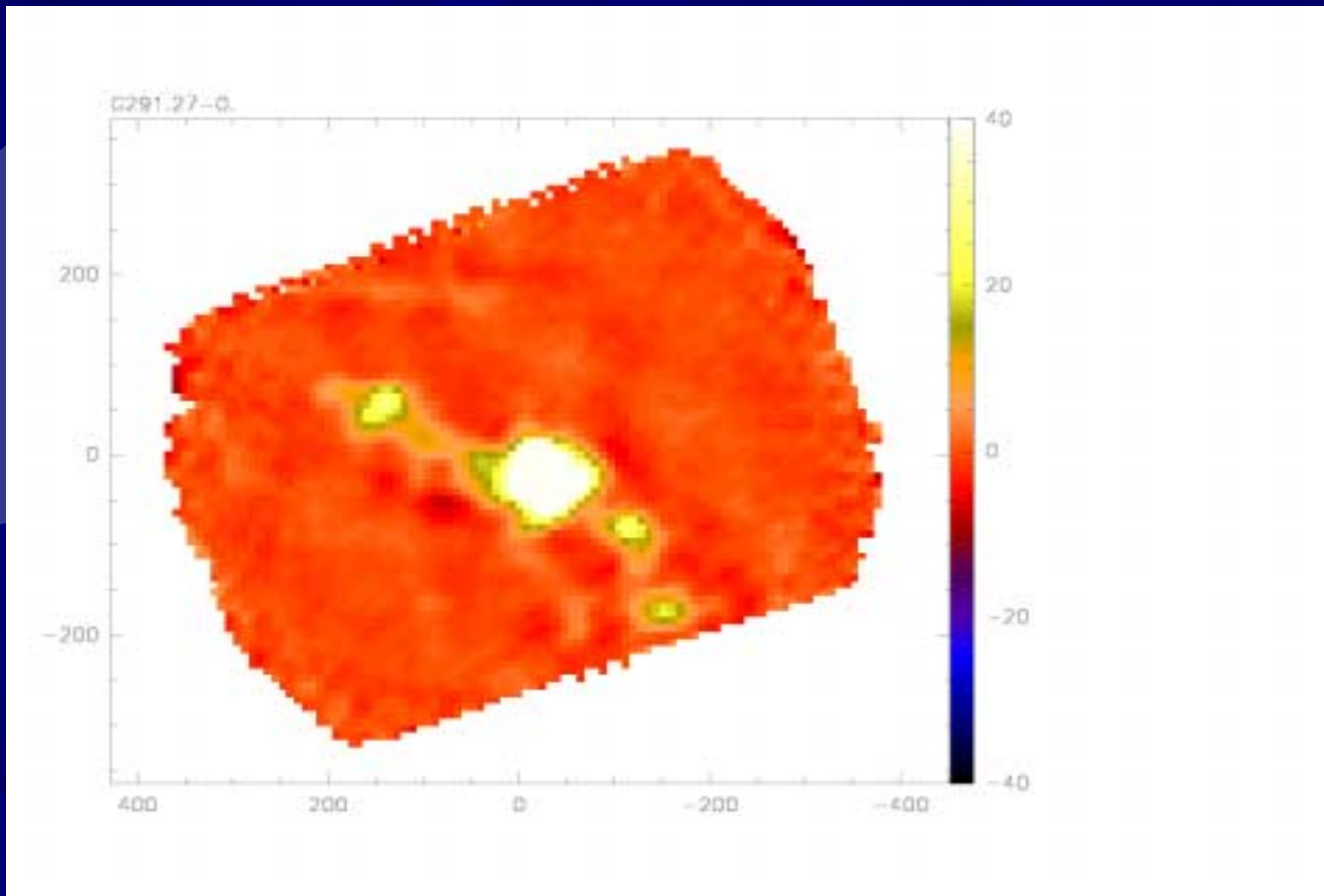
p sizes.

On the fly chopping (chopping done in electronics).

Observing with SEST/SIMBA

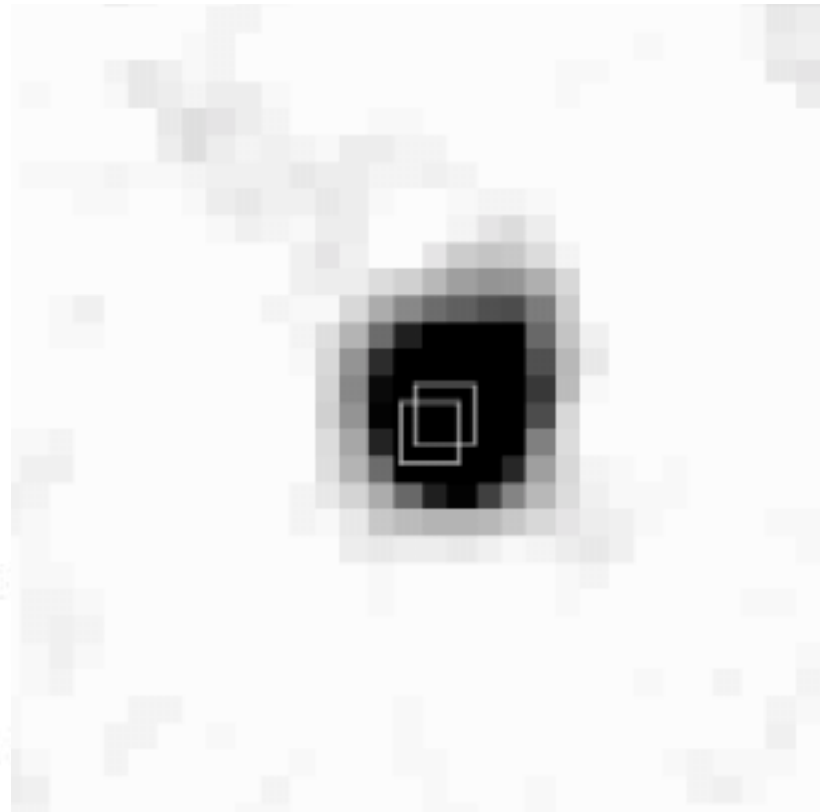
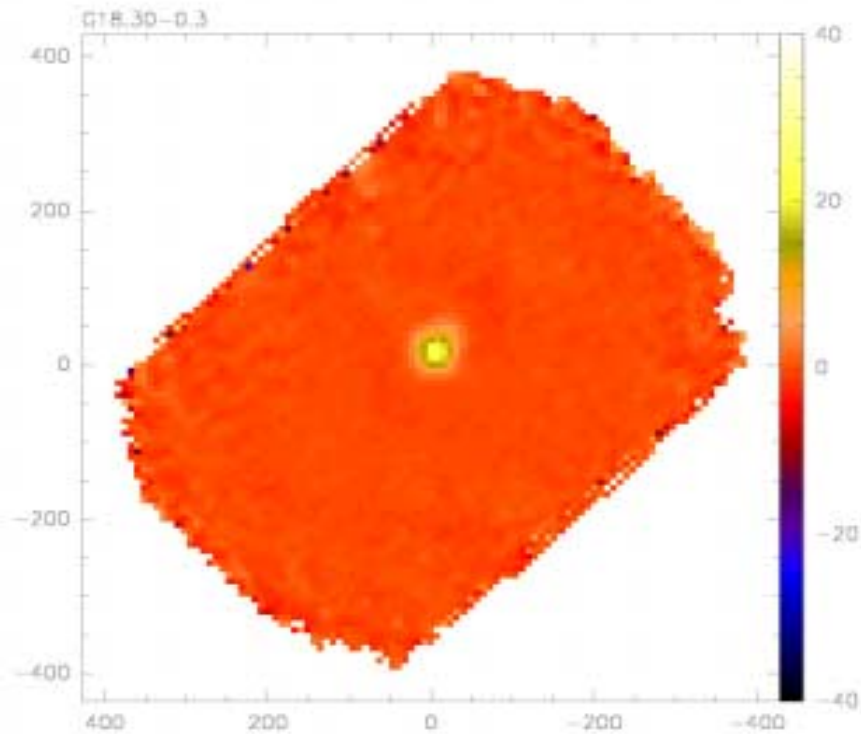
- ★ On-the-fly mapping.
- ★ Scanning speed: 8'' per second.
- ★ Map size: 480'' x 240''.
- ★ Mapped each source for 4 minutes each.
- ★ Mapped each source 3 times.
- ★ Data reduction produces individual images, which you can coadd together.
- ★ Noise level of 90mJy (after 3 maps).
- ★ Observed 120 maps - most have >2 sources.

G291.27-0.70



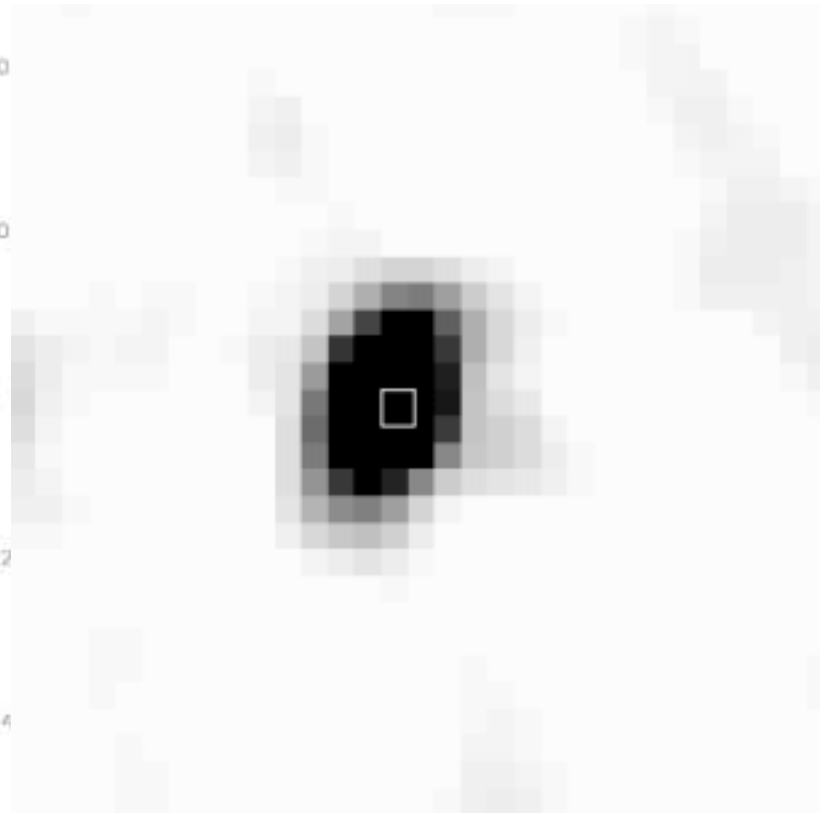
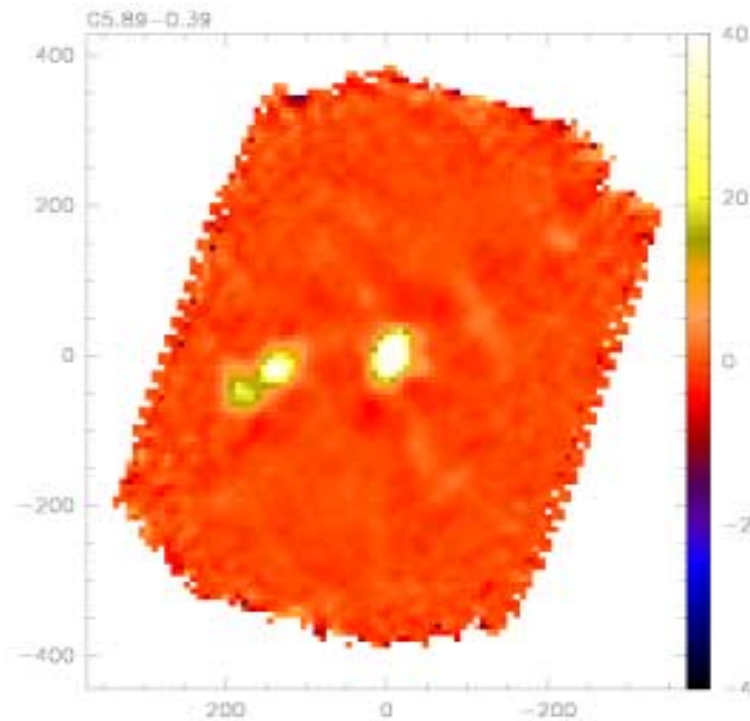
☀ Flux: 68.7Jy, Mass: $\sim 15, 300M_{\odot}$

G18.30-0.39



Flux: 5.6Jy, Mass: $\sim 850M_{\odot}$

G5.89-0.39



☀ Flux: 39.8Jy, Mass: $\sim 4,900M_{\odot}$

SEST + ATCA

- ✦ Using UCHII and CH₃OH maser surveys, we can detect star forming regions with SEST.
- ✦ Determining the masses of the objects allows us to infer the presence of multiple cores in our detection.
- ✦ Using ATCA we can resolve single sources into multiple cores.

Potential Results with ATCA

- ★ ATCA provides high resolution imaging of the source.
- ★ At 3mm, the protostellar core is cold and optically thin –thus we can probe the inner parts of the star forming complex.
- ★ Multiwavelength data gives the S.E.D.
- ★ S.E.D gives the age of the star forming complex.
- ★ Age allows prediction of evolutionary scenario for massive star formation.

Summary:

- ★ Survey of UC HII and CH₃OH masers produced many multiple, massive cores when observed with SEST.
- ★ ATCA can be used to resolve these cores into individual components.