Dust to Disks to Planets with the JCMT

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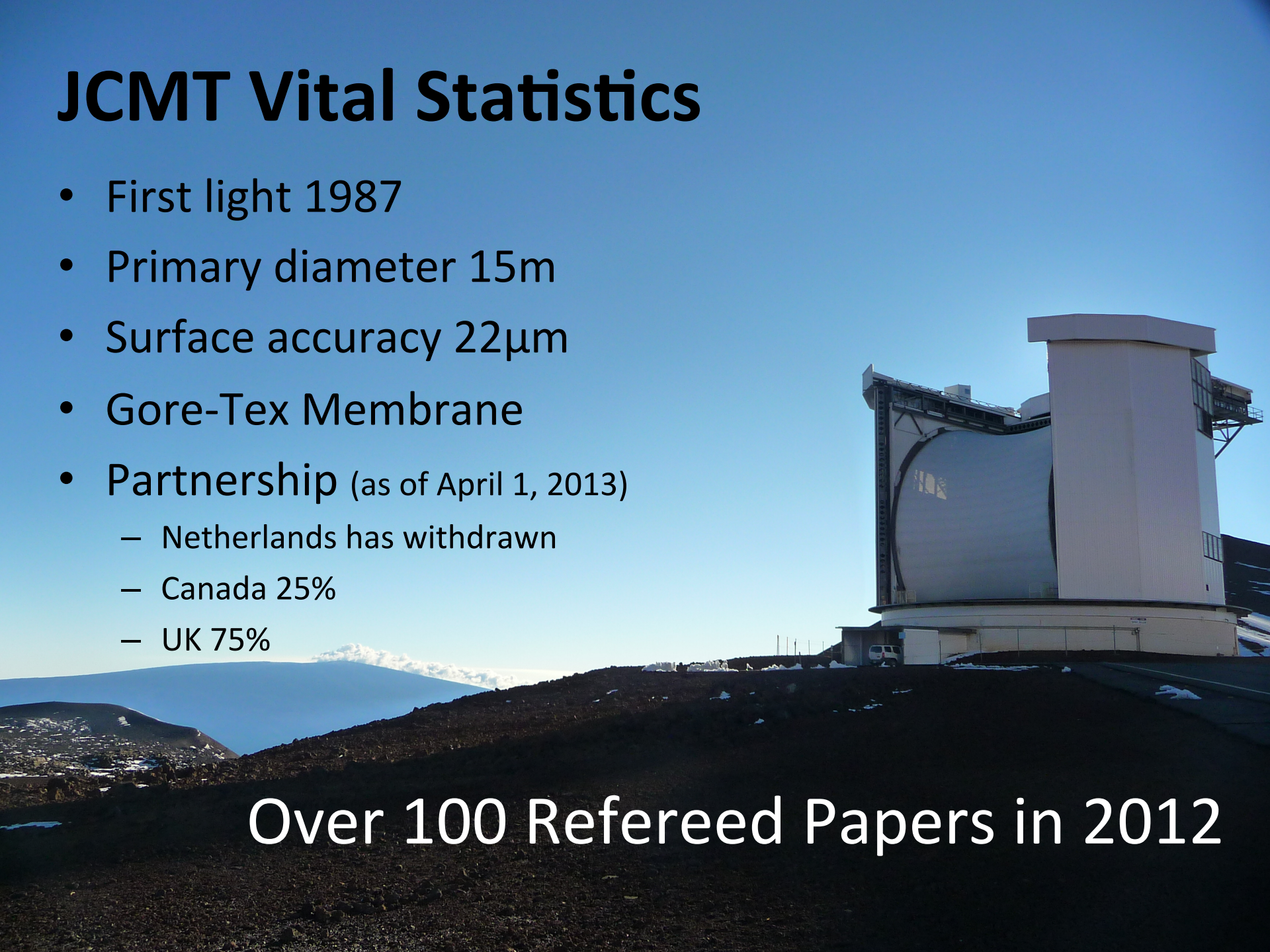
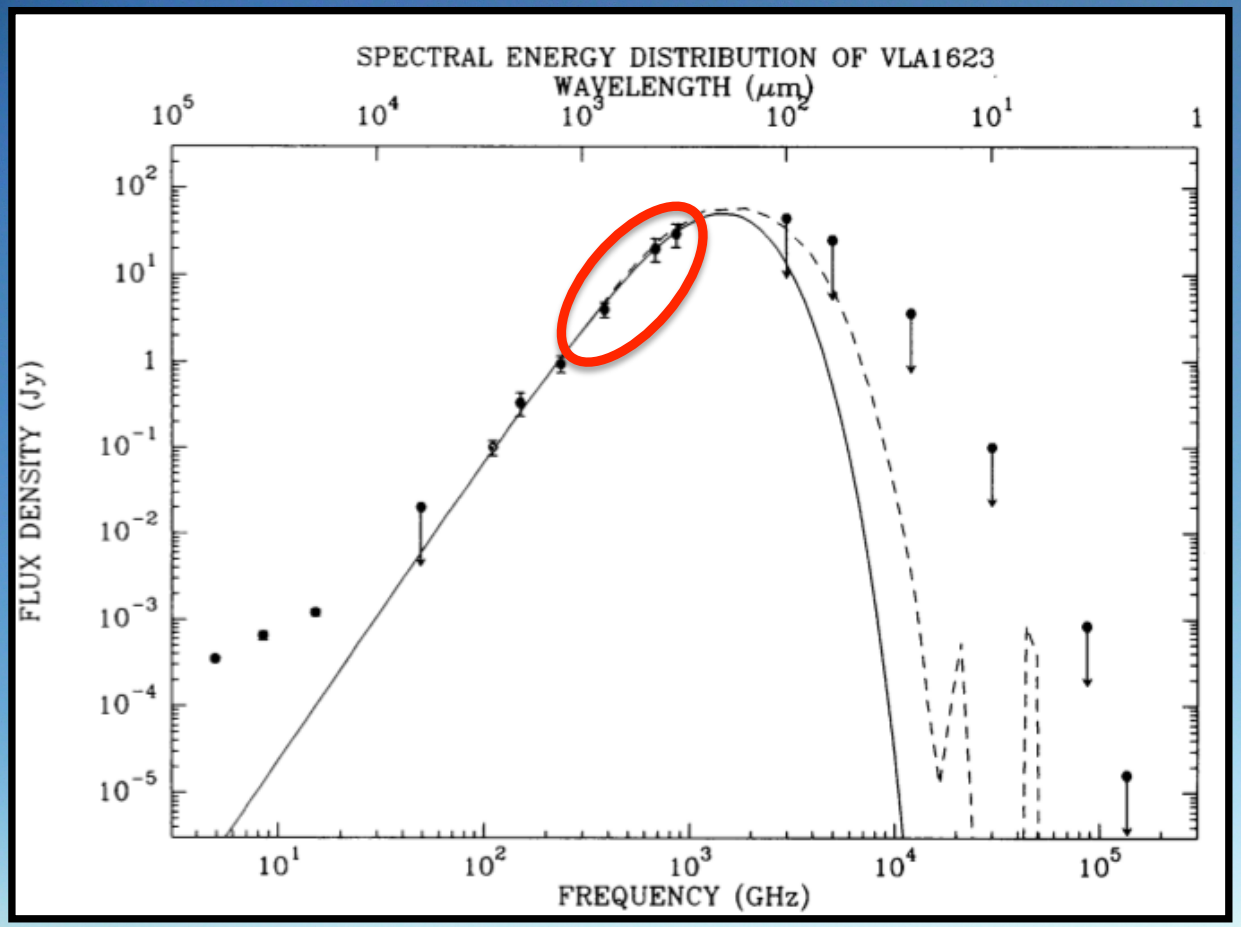
JCMT Vital Statistics

- First light 1987
- Primary diameter 15m
- Surface accuracy 22µm
- Gore-Tex Membrane
- Partnership (as of April 1, 2013)
  - Netherlands has withdrawn
  - Canada 25%
  - UK 75%

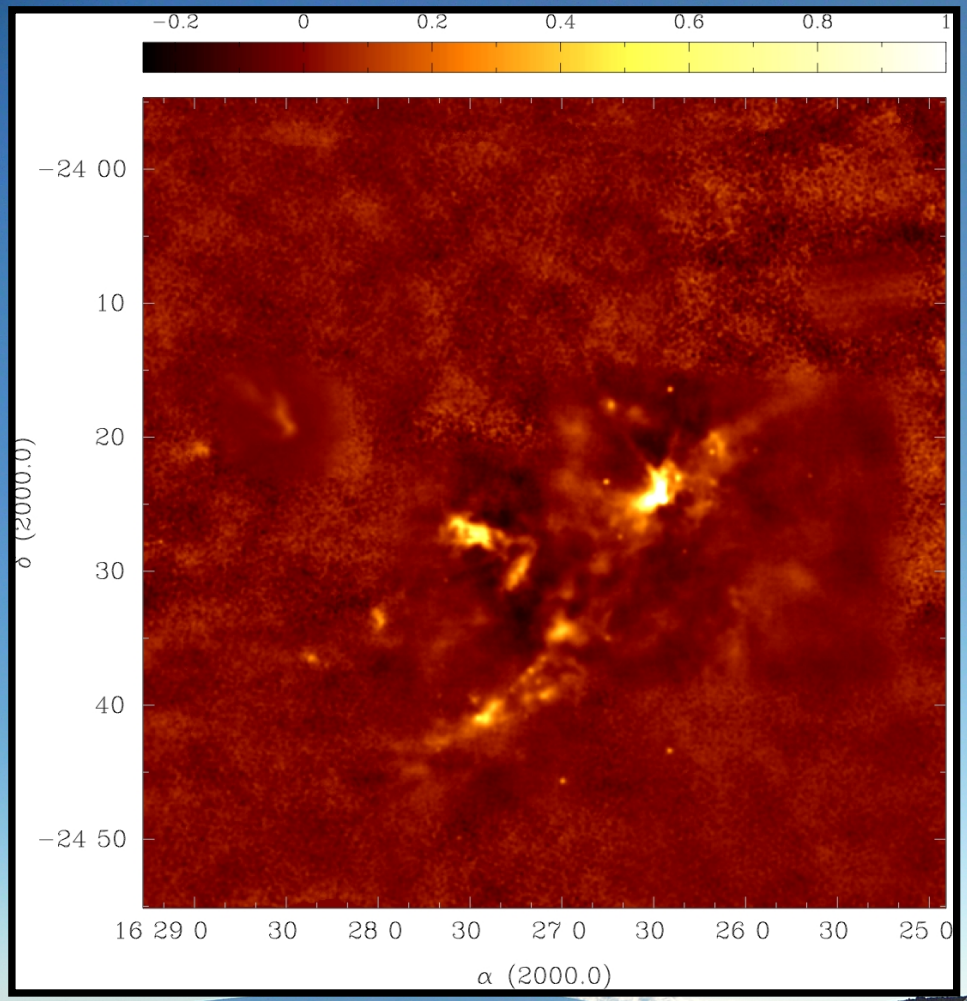


Over 100 Refereed Papers in 2012



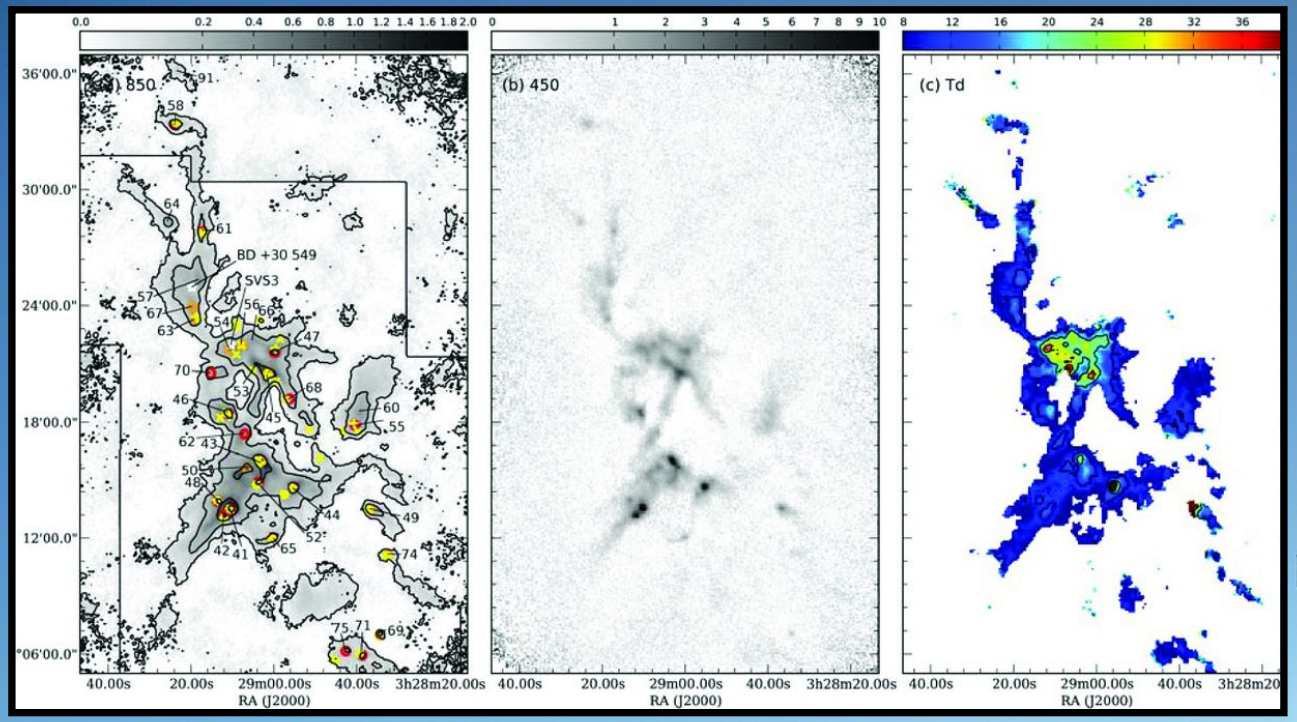
VLA 1623 SED by
Andre et al. 1993
- UKT14 (single bolometer)

Deeply Embedded (Class O) Protostars



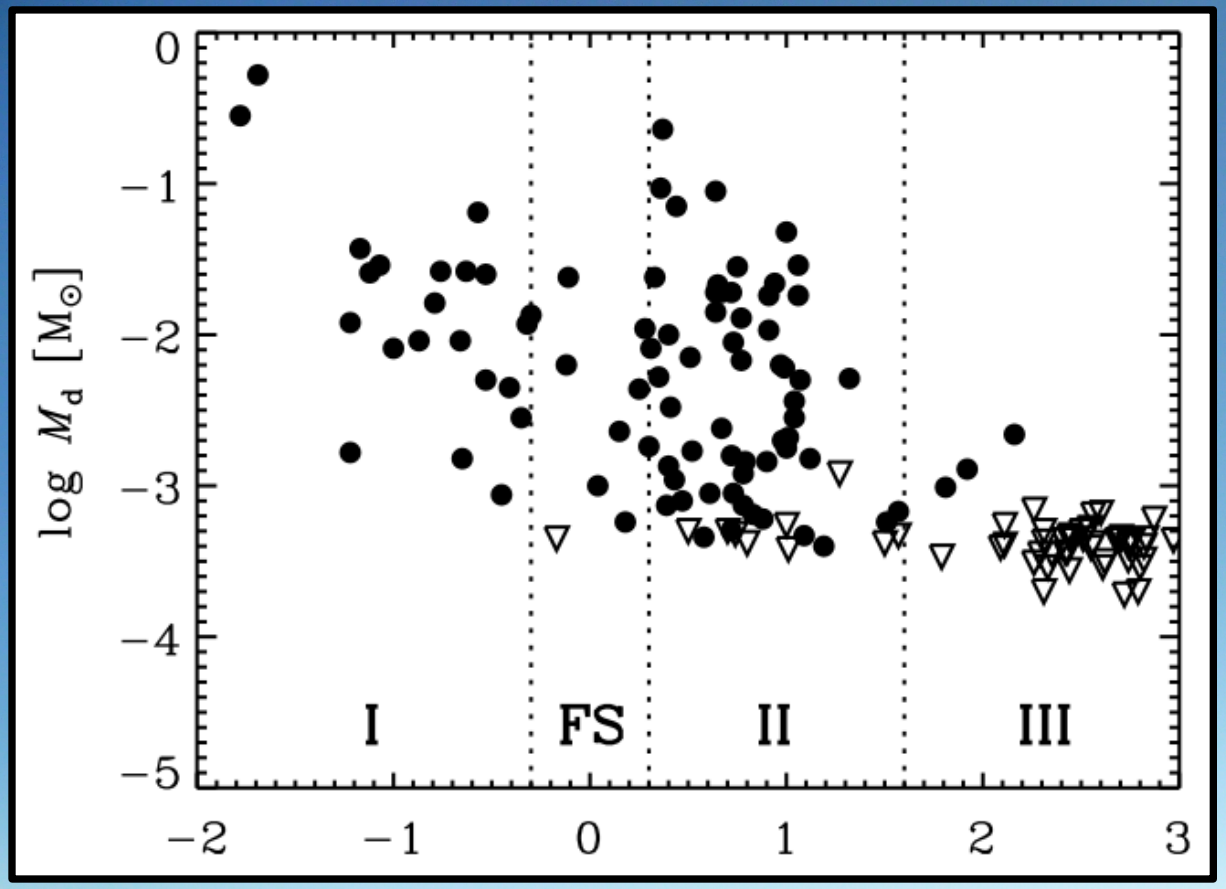
Ophiuchus Map – 1 sq. degree
From the Legacy Catalogue by
Di Francesco, Johnstone et al 2008
- SCUBA (128 bolometers, 450/850μm)

Surveys of Star Forming Regions



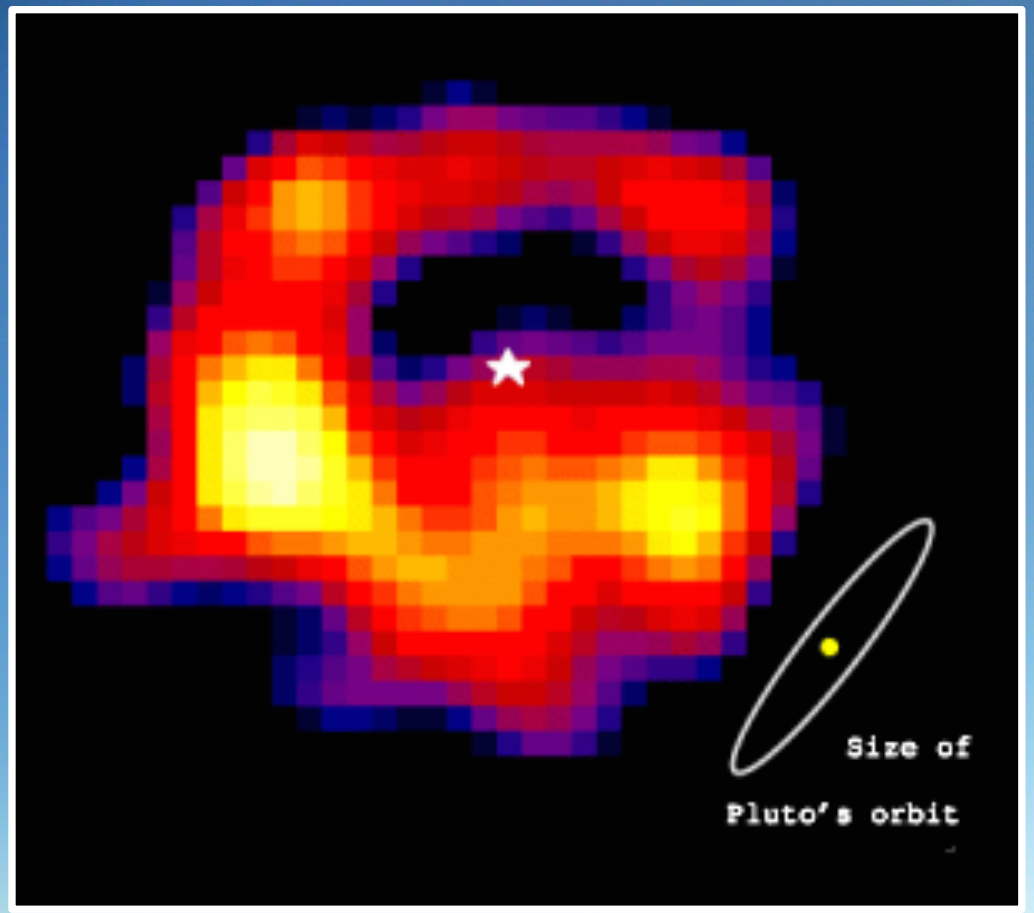
NGC1333 at 450/850μm + Sp. Index by
Hatchell and the GBS Team 2012
- SCUBA-2 (10240 bolometers, 450/850μm)

Legacy Surveys of Star Forming Regions



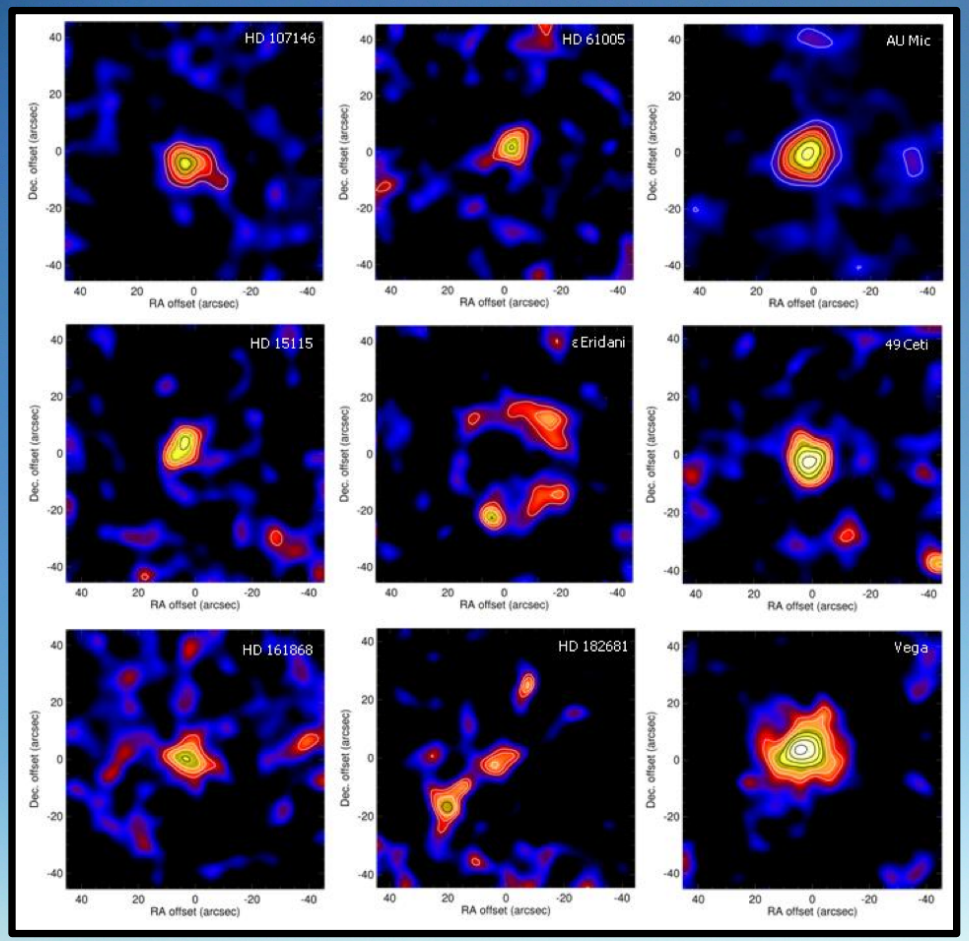
Disk Mass Evolution in Taurus-Auriga by Andrews and Williams 2005 - SCUBA

Surveys of YSO Disks



Epsilon Eridani by
Greaves et al. 1998
- SCUBA

Images of Dusty Debris Disks

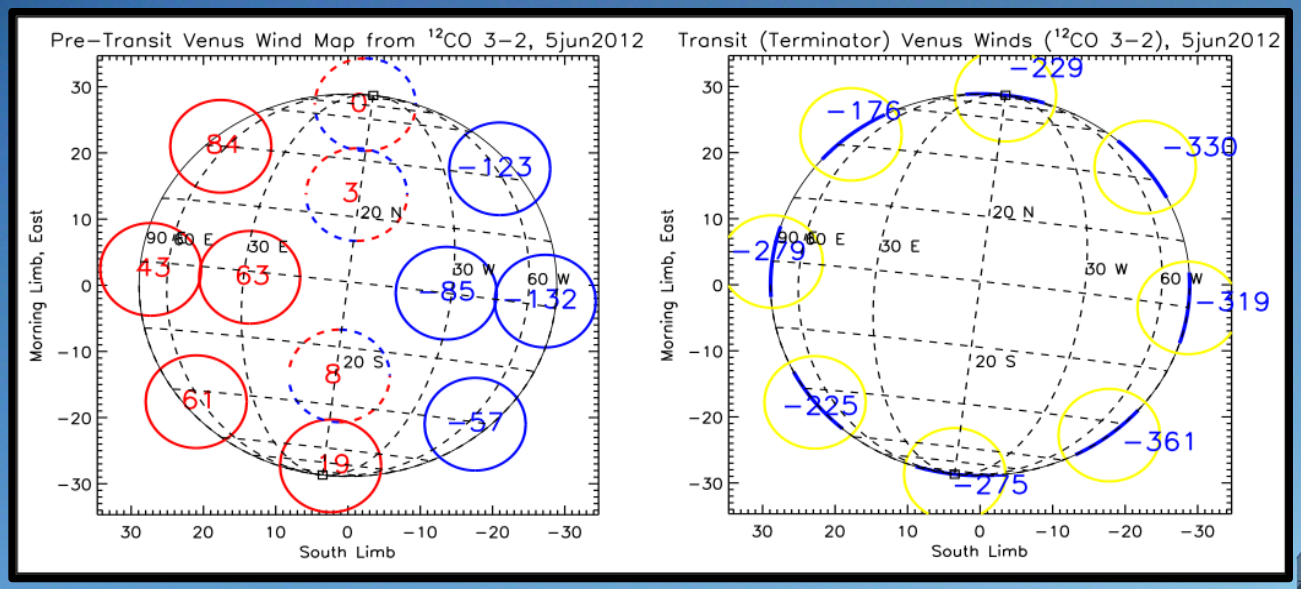


Rogues Gallery from SONS

Holland, Matthews, Greaves and the SONS Team, 2012

- SCUBA-2

Legacy Surveys of Dusty Debris Disks



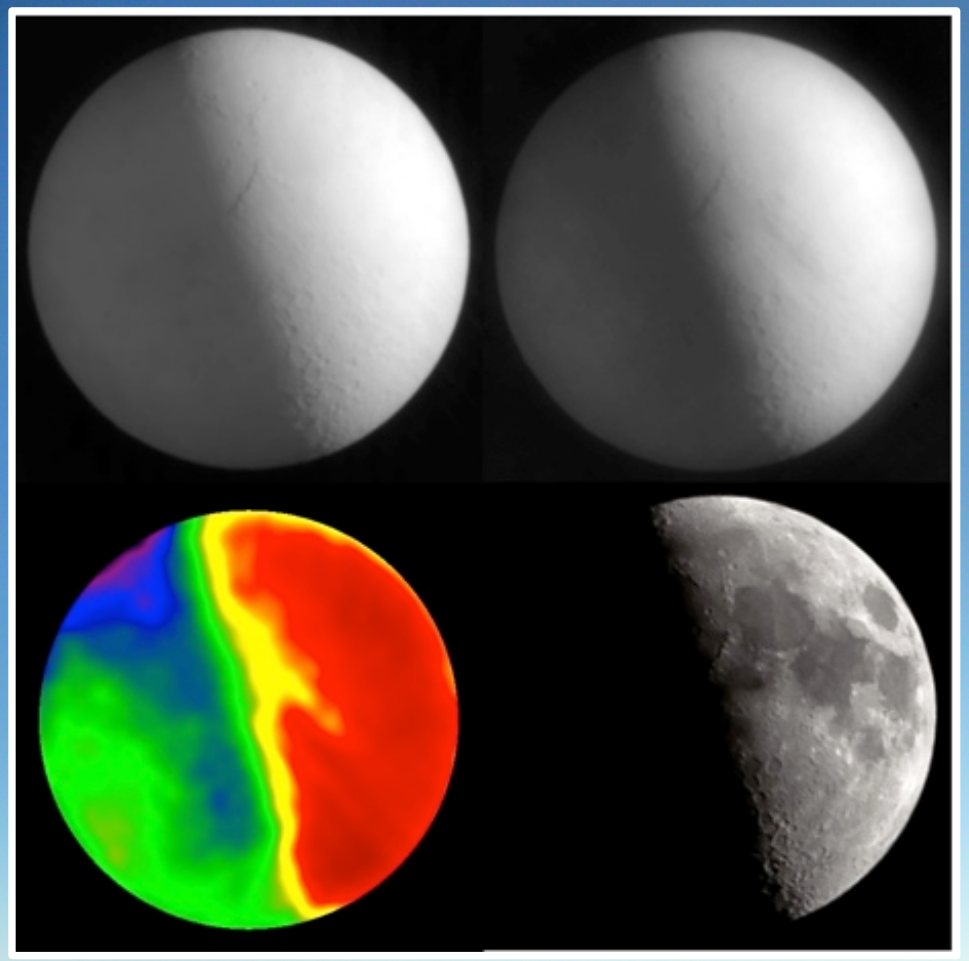
Wind Speeds on Venus by Sandor et al 2012

- HARP: 16 element 350 GHz heterodyne array

The JCMT has observed:

- Atmospheres of many planets
  - Venus, Mars, Jupiter, Saturn, Uranus, Neptune, Pluto
- Chemistry (SO, SO_2, CO, etc)
  - detection of CO in Neptune's atmosphere (1993)
- Temperatures, Phase Variations (day/night)

Planetary Atmospheres



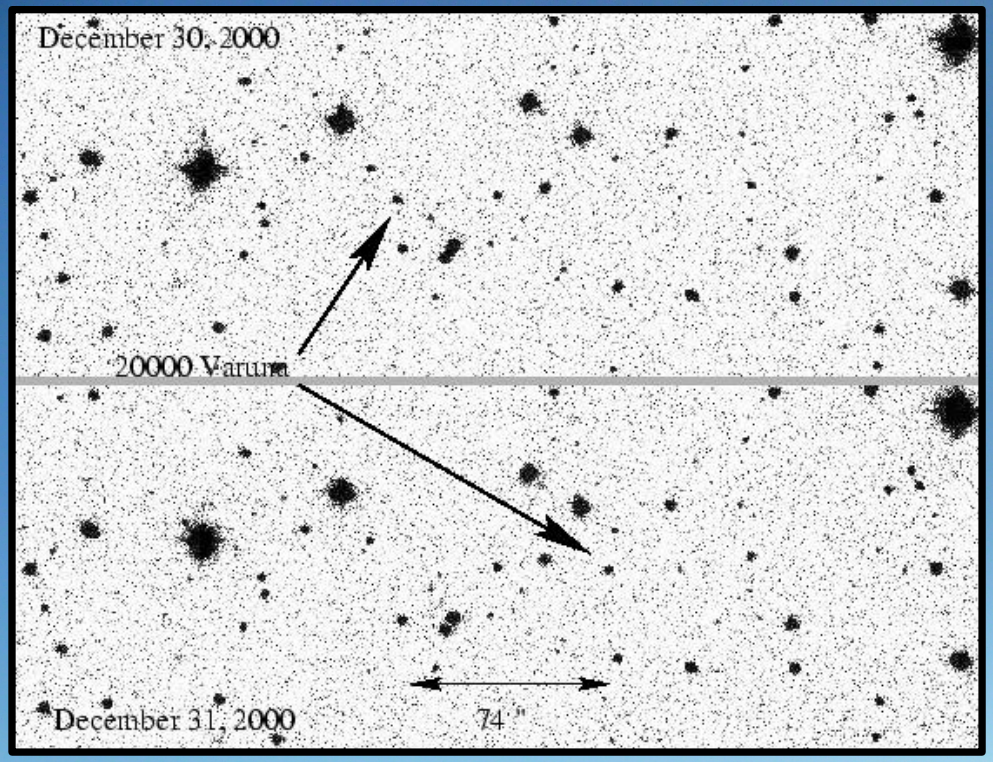
Temperature of Lunar Surface

Top: Left 450μm; Right 850μm

Bottom: Left Temp map; Visible Image

- SCUBA-2 Commissioning

Lunar Surface

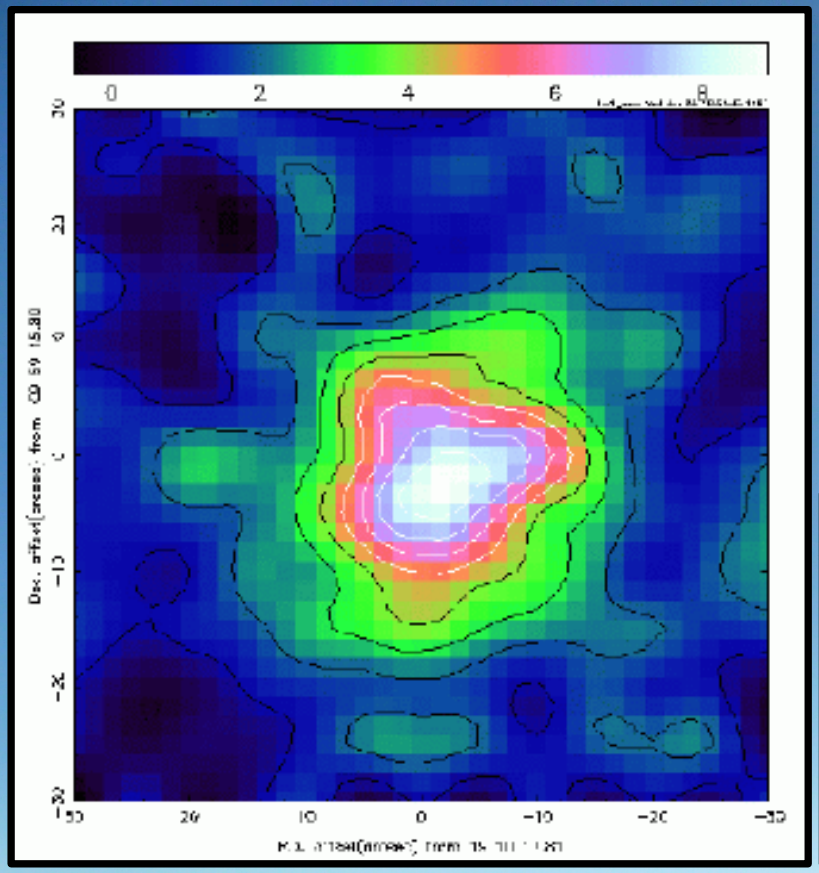


R-band Image of KBO 20000 Varuna ~ 900km diameter

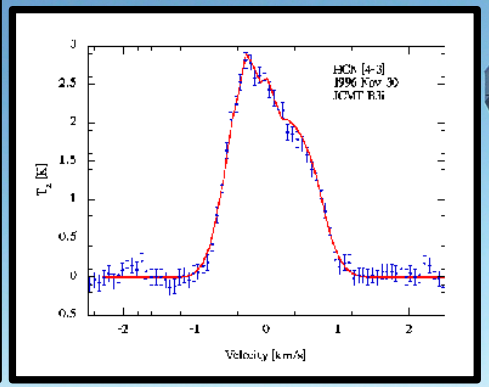
Aussel & Jewitt 2001

- SCUBA photometry estimate of size

Kuiper Belt Object Sizes



Left: HCN 4-3 map of Hale-Bopp
Right: HCN line profile fit with an outgassing model in which the rate of day to night emission is 3:1

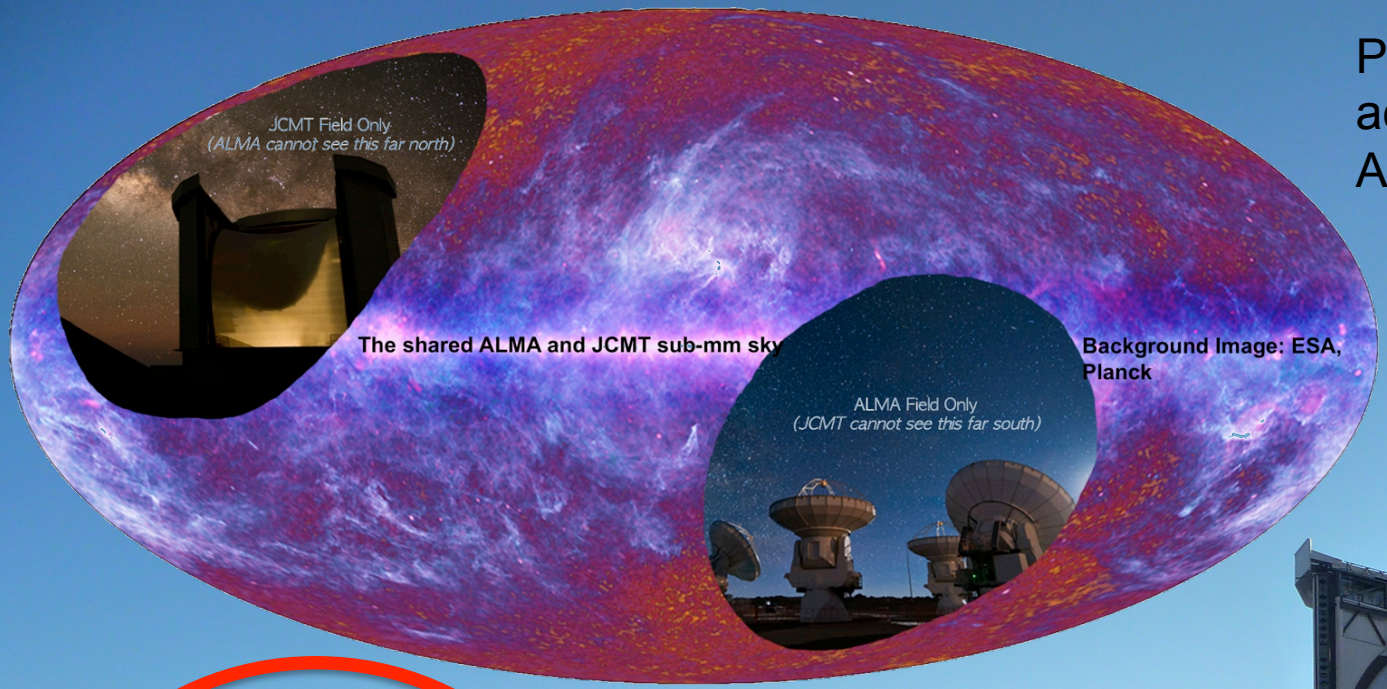


Comets

Observing L4 PanStarrs and anticipating the arrival of ISON ….

“Comets are like cats: they have tails and do whatever they want."

Comets Right Now



Portion of the Universe accessible to both ALMA and the JCMT.

The JCMT in an ALMA Era

Fields of View: ALMA (yellow) JCMT (red)

Location, Location, Location

- *one careful owner!*
- *only driven at night, in benign conditions!*
- *owner leaving town, must sell!*
- *bargain price!*
  - *call for details …*

Marcel Clemens