

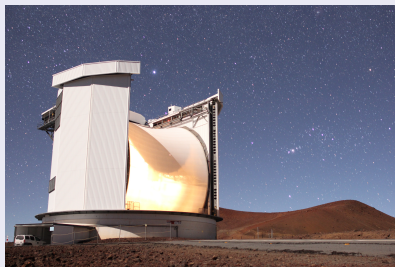
Future prospects for the JCMT

Ciska Kemper (ASIAA)

January 31, 2018

TMT

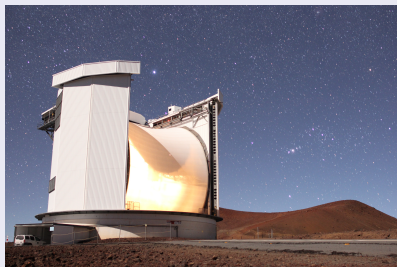
- 3 telescopes to be decommissioned
 - CSO
 - UH-teaching
 - UKIRT?
- pending approval incoming IfA director



Brief outlook

TMT

- 3 telescopes to be decommissioned
 - CSO
 - UH-teaching
 - UKIRT?
- pending approval incoming IfA director



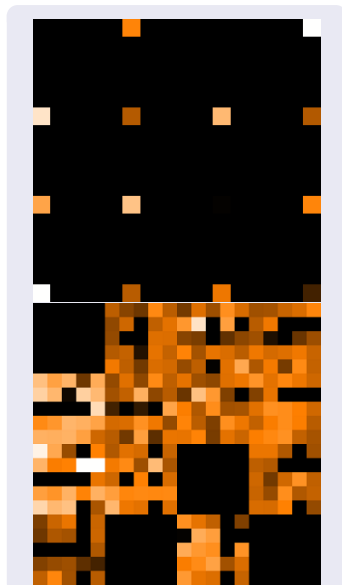
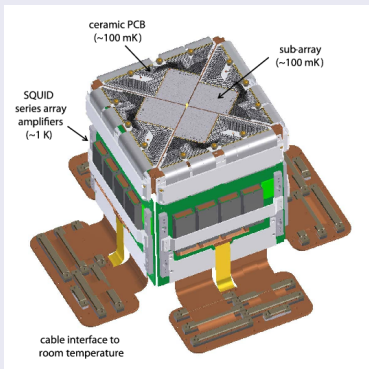
Funding

- 2 years + 5 years pending
- EAO, UK, Canada
- VLBI
- UKIRT
- Vietnam, Thailand, Australia

Single-dish submm astronomy in the era of interferometry

Instrumentation

- multipixel
- complexity
- testing for e.g. ALMA
- no funding in baseline



Planned instrumentation upgrades

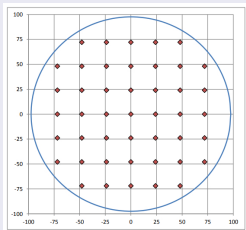
Heterodyne

RxA

- new dewar / VLBI receiver
- 3 slots

HARP-B

- 4x4 pixels, 2/3 not working
- fix pixels?
- New, larger array?



Continuum

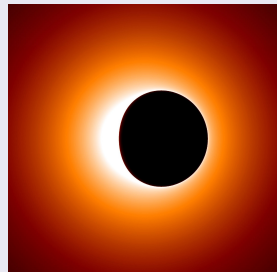
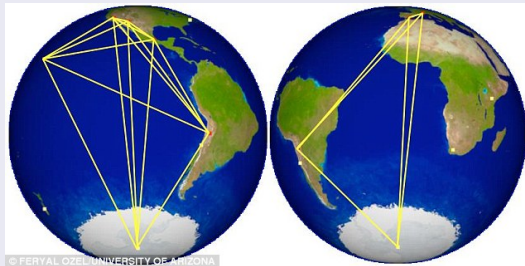
SCUBA-2:

- 10,000 pixels

SCUBA-3

- efficient mapping
- 15' FOV
- 100,000 pixels
- no polarization
- 850 only

VLBI and the Event Horizon Telescope



JCMT is part of the EHT.

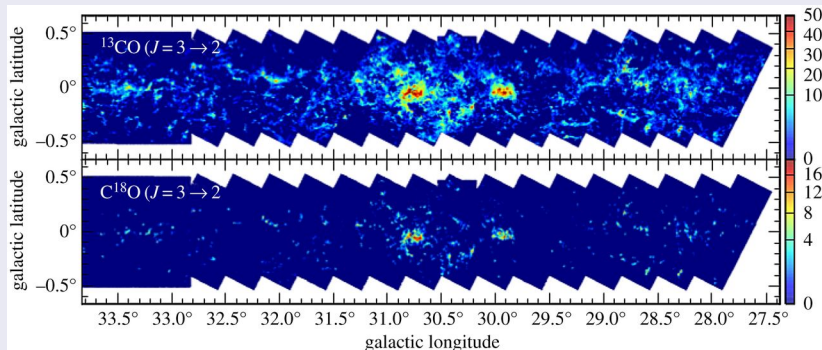
The primary goal is to image the black hole shadow of Sgr A* or M87.

Surveys & Mapping

Single dish lends itself very well for mapping large areas.

Can be enhance with multipixel instruments:

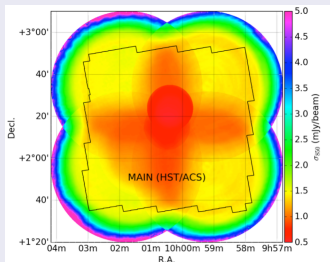
- HARP-B
- SCUBA2
- future



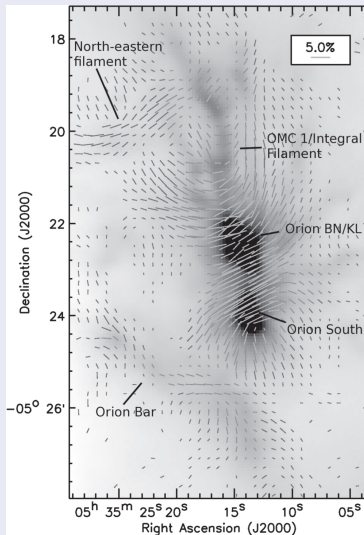
(CHIMPS; Rigby et al. 2016)

Science goals

- Galactic structure:
 - Milky Way
 - external galaxies
- large scale structure in ISM
- deep fields
- polarization maps

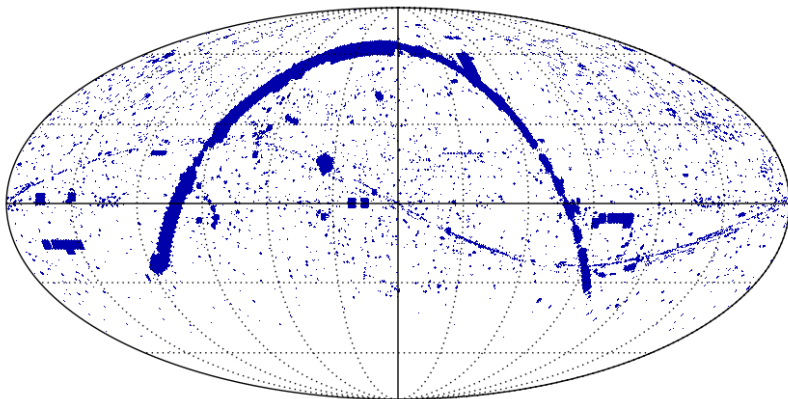


S2COSMOS

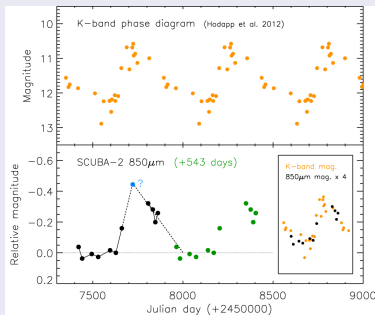


(Ward-Thompson et al. 2017)

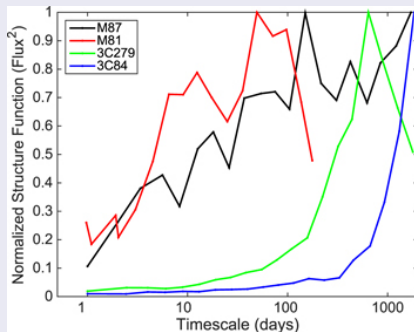
Sky coverage of existing SCUBA2 observations



Time domain astronomy

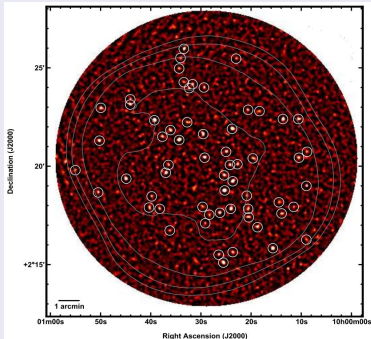


A variable YSO in TRANSIENTS
(Yoo et al. 2017)



- relatively unexplored
- different time scales:
 - follow-up on trigger events
 - longer time series
- talk by Sofia Wallström and poster by Thavisha

Large programs



COSMOS 450 micron field

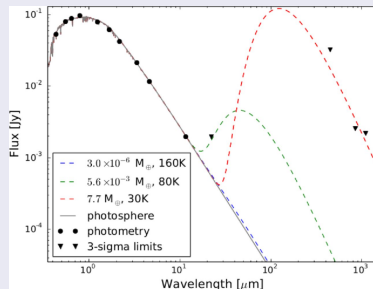
- Large beam-size: low spatial resolution, but easy to cover larger areas
- Multi-pixel receivers allow for fast mapping
- Different kind of science than PI projects: Statistics
- Better return rate in terms of number of papers
- Beneficial for small partners

LAP are successful:

- participation
- EAO vs Canada, UK
- publications

- ToO
- Solar System
- "Unique" objects
- New observational methods, techniques, strategies
- Pilot programs
- Completion/follow-up of large programs

Ruling out mega-structures



(Thompson et al. 2016)

The legacy of JCMT

Telescope Data Products Advanced Data Products Services Advanced Search Sarah F Graves

CADC Home > JCMT Science Archive

JCMT Science Archive

Search All Observation

- Complete collection
- Processed observations
- Raw observations

Processed Observations

- SCUBA-2
- HARP-ACSIS
- RxA3-ACSIS

Raw Observations

- SCUBA-2
- HARP-ACSIS
- RxA3-ACSIS

Acknowledgments

Credit

The JCMT Science Archive (JSA), a collaboration between the [CADC](#) and [JAC](#), is the official distribution site for observational data obtained with the [James Clerk Maxwell Telescope \(JCMT\)](#) on Mauna Kea, Hawaii.

The JSA search interface is provided by the CADC [Search](#) tool, which provides generic access to the complete set of telescopic data archived at the CADC. Help on the use of this tool is provided via tooltips. For additional information on instrument capabilities and data reduction, please consult the [SCUBA-2](#) and [ACSIS](#) instrument pages provided on the JAC maintained [JCMT](#) pages. [JCMT-specific help](#) related to the use of the CADC AdvancedSearch tool is available from the [JAC](#).

Programmatic access to the complete JCMT archive is also available via the CADC [Table Access Protocol](#) (TAP). TAP is an [IVOA](#) standards based approach to querying remote databases. The contents accessible via TAP are identical to those presented using the AdvancedSearch interface. To learn the structure of queries that can be made using the TAP service see the 'Query' tab on the CADC [search](#) page.

All accessible JCMT observations are available through the AdvancedSearch interface, including spectral datacubes produced by ACSIS as well as images taken with the SCUBA-2 camera. The raw observations are available in [NDF](#) format. Each ACSIS and SCUBA-2 observation is also available as reduced products in FITS format with a full set of world coordinate system headers.

All public JCMT data can be downloaded freely from the CADC. Observation products remain proprietary as long as the raw data from which they were derived remains proprietary. Users authorized to access these data should log in using their CADC username and password, after which they will be able to search for and download proprietary data from all JCMT projects of which they are members.

Date modified: 2014-04-17

<http://www.eaobservatory.org/jcmt/science/archive/guide/>
The JCMT data archive for the virtual observer

Training and development

young astronomers

- observing / analysis
- internships
- instrumentation

instruments

- test site for e.g. ALMA

new communities

- EAO countries
- beneficial to UK and Canada
- expansion into east-asia



In the era of large submm interferometric arrays, JCMT has to build on its strengths:

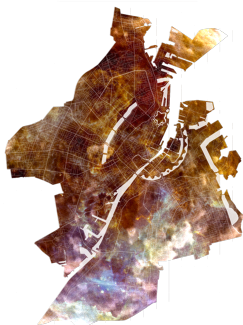
- Collaboration within and between the regions
- Large programs targeting relatively large areas
- Updating the instrumentation to improve mapping speed, both for bolometer and heterodyne receivers
- Time domain astronomy
- Participation in VLBI and EHT
- Further development of upcoming communities in astronomy
- Training of students and post-docs in observational astronomy and instrumentation

Cosmic Dust: origin, applications & implications

11 - 15 June 2018

Copenhagen

<http://cphdust2018.nbi.ku.dk/>



Registration opens tomorrow: 1 February 2018

Abstract submission deadline: 5 March 2018