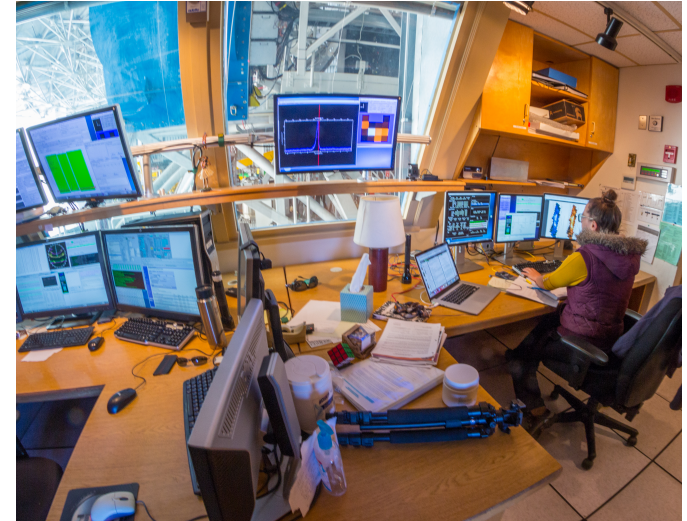
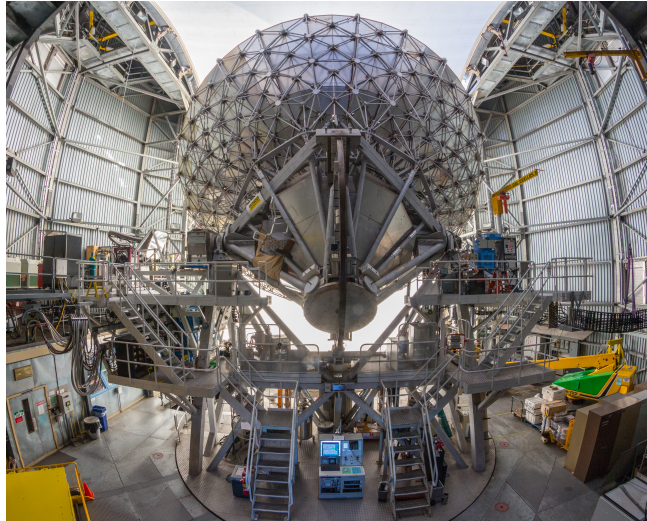


Observing with the JCMT: Capabilities and our Operational model



Harriet Parsons JCMT-LLAMA Community talk March 2023

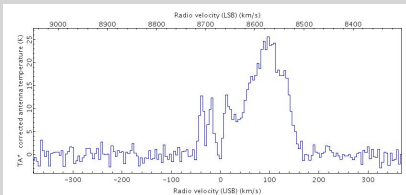
JCMT

- 15m cassegrain telescope
- Maunakea, Hawai'i ($19^{\circ}49'22.2''\text{N}$ $155^{\circ}28'37.0''\text{W}$)
- Altitude 4,092m
- 24 micron surface accuracy
- Pointing accuracy $\sim 2''$
- Operate with GorTex Membrane
- Continuum, Spectral, Polarization
- Started operations in 1987
- Since 2019 operated remotely from Hilo base facility
- Single dish and VLBI observing



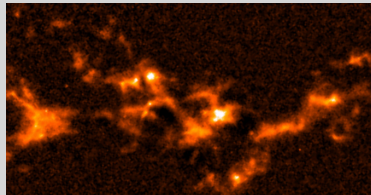
Science

JCMT Website



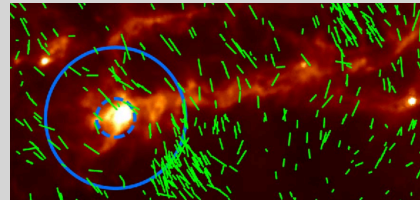
Spectral line

Mairs, S et al. 2016



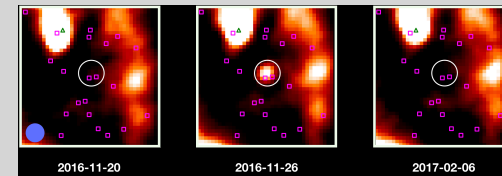
Continuum

Wang, J-W. et al. 2018



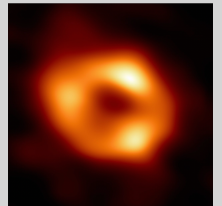
Polarization

Mairs, S et al. 2019



Variability

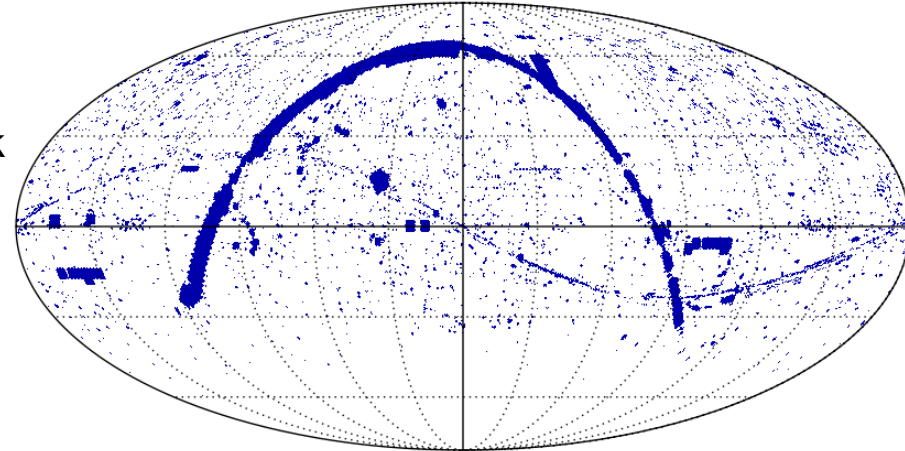
EHT 2022 M87*



VLBI

Science

- Comets, planets, star formation, evolved stars, nearby galaxies, high-z studies, pulsars, gamma ray bursts, black holes.
- Large Programs, PI lead programs, ToO, archive mining
- Individual users to global consortiums



All areas of the sky observed by SCUBA-2 on the JCMT. This includes legacy survey fields as well as publicly available data (as of 2014).

<https://www.eaobservatory.org/jcmt/science/archive/>

Science

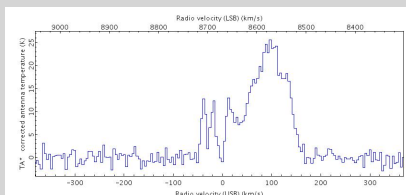
JCMT Website

Mairs, S et al. 2016

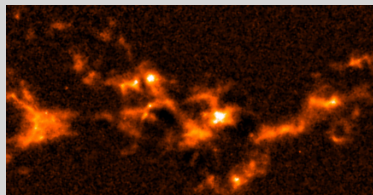
Wang, J-W. et al. 2018

Mairs, S et al. 2019

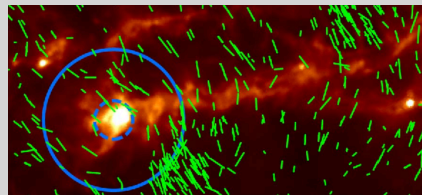
EHT 2022 M87*



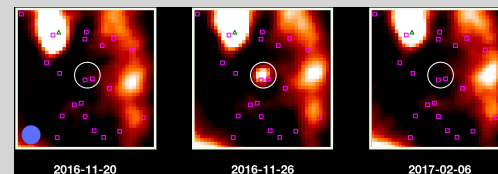
Spectral line



Continuum



Polarization



Variability

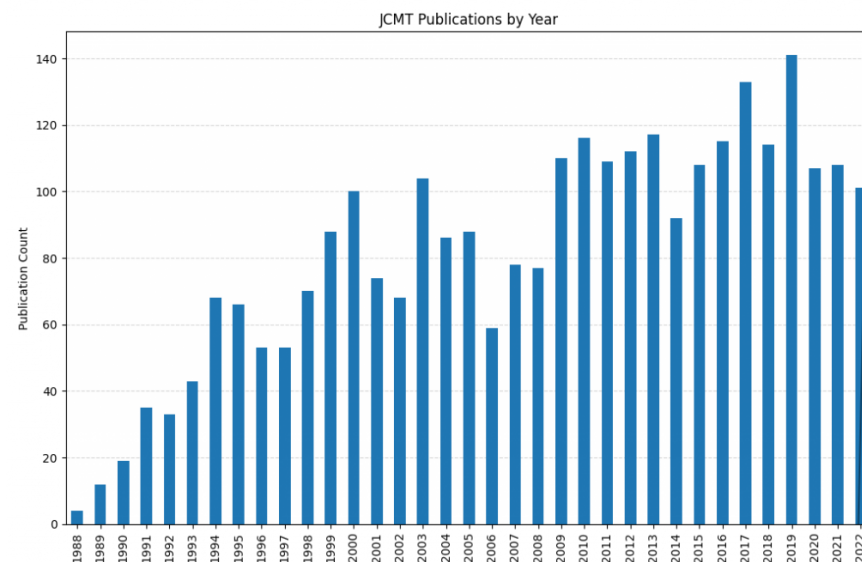


VLBI

Science

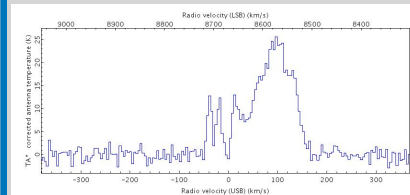
- Comets, planets, star formation, evolved stars, nearby galaxies, high-z studies, pulsars, gamma ray bursts, black holes.
- Large Programs, PI lead programs, ToO, archive mining
- Individual users to global consortiums
- Average > 100 publications a year

<https://www.eaobservatory.org/jcmt/science/publications/>



Science

JCMT Website



Spectral line

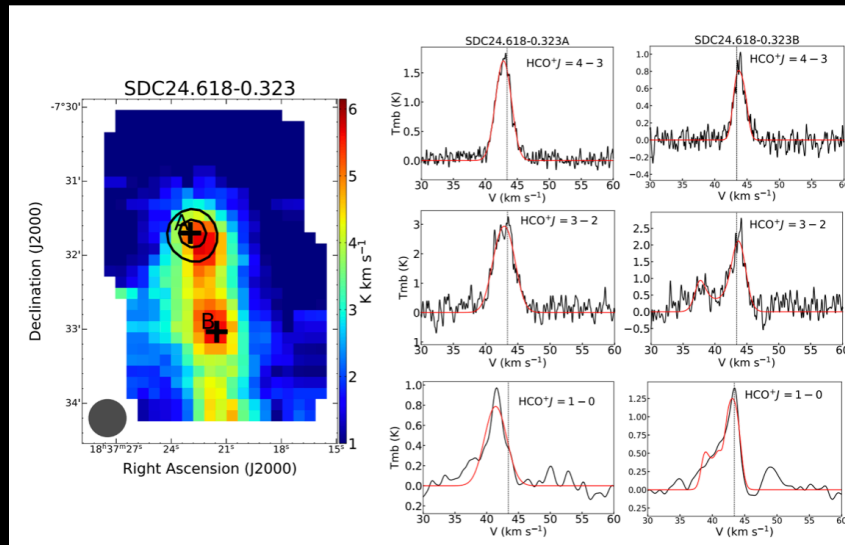
HCO⁺J=4-3 with HARP
HCO⁺J=3-2 with RxA

RxA: now replaced with
the $\bar{U}\bar{u}$ 230GHz insert
inside Nāmanui

Studying Infall in Infrared Dark Clouds with Multiple HCO⁺ Transitions

Xie, Jin-Jin et al. *Research in Astronomy and Astrophysics*, 2021

Goal: Use the JCMT to map 20+ clumps in 11 IRDCs in HCO⁺ J=4-3 and J=3-2 to study evolutionary stages and properties of protoclusters



The integrated intensity map of HCO⁺J=1-0 (IRAM) overlaid with HCO⁺J=4-3 contours (JCMT). A and B are the observed positions of HCO⁺J=3-2 (JCMT). The grey dot at the corner of the emission map represents the IRAM beam size.

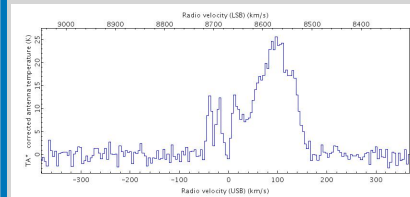
Results

- ★ Size and luminosity distributions were derived and compared across 11 IRDCs
- ★ HCO⁺(J=3-2) reliably traces the infall signature. The median velocity is 1.0 km/s with a maximum of 2.7 km/s
- ★ The values are comparable to known massive star-forming clumps in late evolutionary stages

<https://iopscience.iop.org/article/10.1088/1674-4527/21/8/208/meta>

Science

JCMT Website

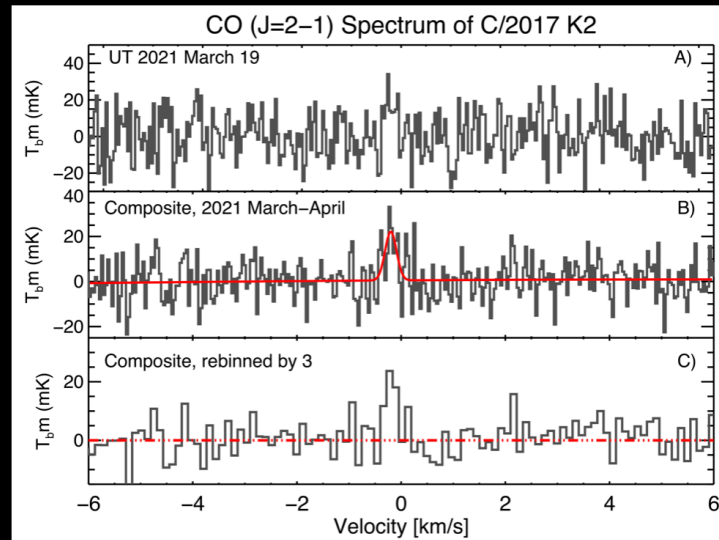


Spectral line

Discovery of Carbon Monoxide in Comet C/2017 K2

Yen et al. *The Astrophysical Journal*. 2021

Goal: Investigate the abnormal long-period comet C/2017 K2 to explain its activity at large heliocentric distances



Spectrum of CO(J=2-1) emission obtained by the JCMT ($\bar{U}'\bar{U}$).

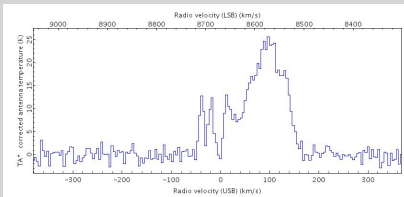
- A) The first detection of the CO line was obtained on UT 2021 March 19 (1.8 hr)
- B) A composite spectrum from 2021 March to April ($6.62 \leq r_H \leq 6.83$ AU; 7.7 hr)
- C) The spectrum rebinned by 3 spectral channels to a resolution of ~ 0.12 km/s

Results

- ★ First observations of a gaseous species in C/2017 K2 that can explain mass loss: Carbon Monoxide
- ★ The measured CO production can be explained by surface sublimation of CO from a 1 km^2 ice patch
- ★ This super volatile sublimation better explains the activity at large heliocentric distances than water ice

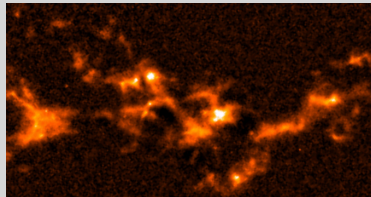
Science

JCMT Website



Spectral line

Mairs, S et al. 2016

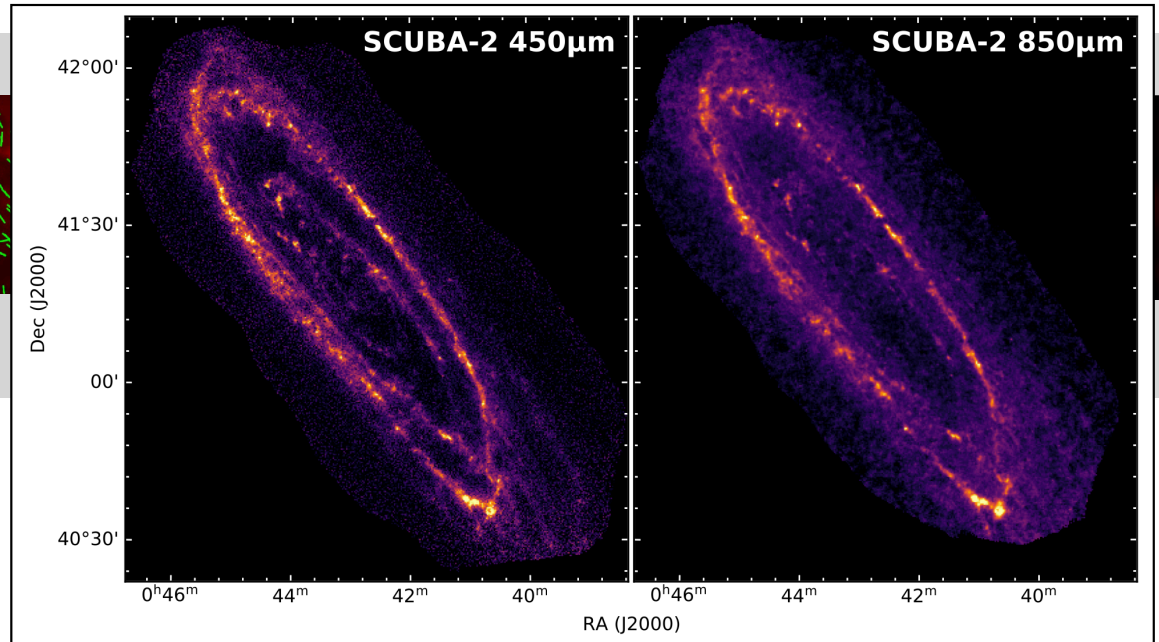
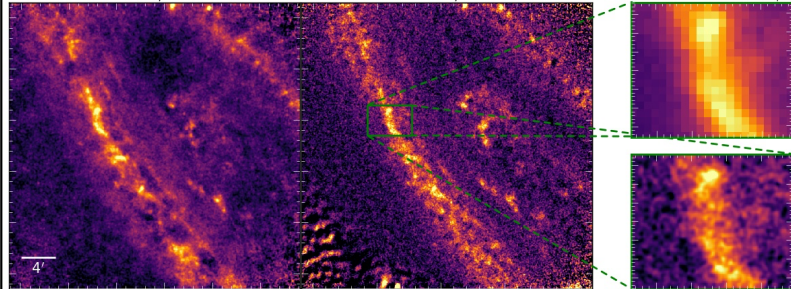


Continuum

SCUBA-2 850 μm & Planck

SCUBA-2 450 μm & SPIRE

SPIRE 500 μm



The HASHTAG project: The First Submillimeter Images of the Andromeda Galaxy from the Ground.

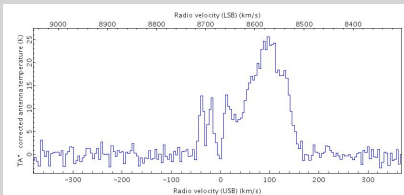
Smith et al. 2021: <https://ui.adsabs.harvard.edu/abs/2021ApJS..257...52S/abstract>
<https://hashtag.astro.cf.ac.uk/index.html>

Challenges for nearby galaxy observations with ground based sub-mm telescopes

- 1) brightness is significantly reduced at long submillimeter wavelengths compared to the brightness at the peak of the dust emission.
- 2) Second, it is necessary to use a high-pass spatial filter to remove atmospheric noise on large angular scales, which has the unwelcome by-product of also removing the galaxy's large-scale structure.

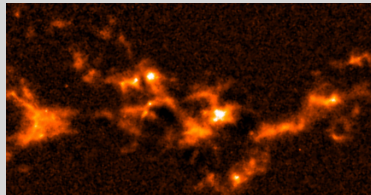
Science

JCMT Website



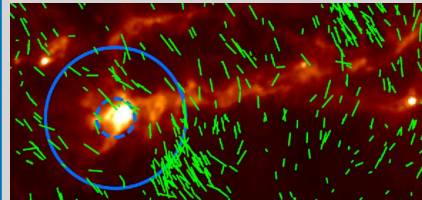
Spectral line

Mairs, S et al. 2016



Continuum

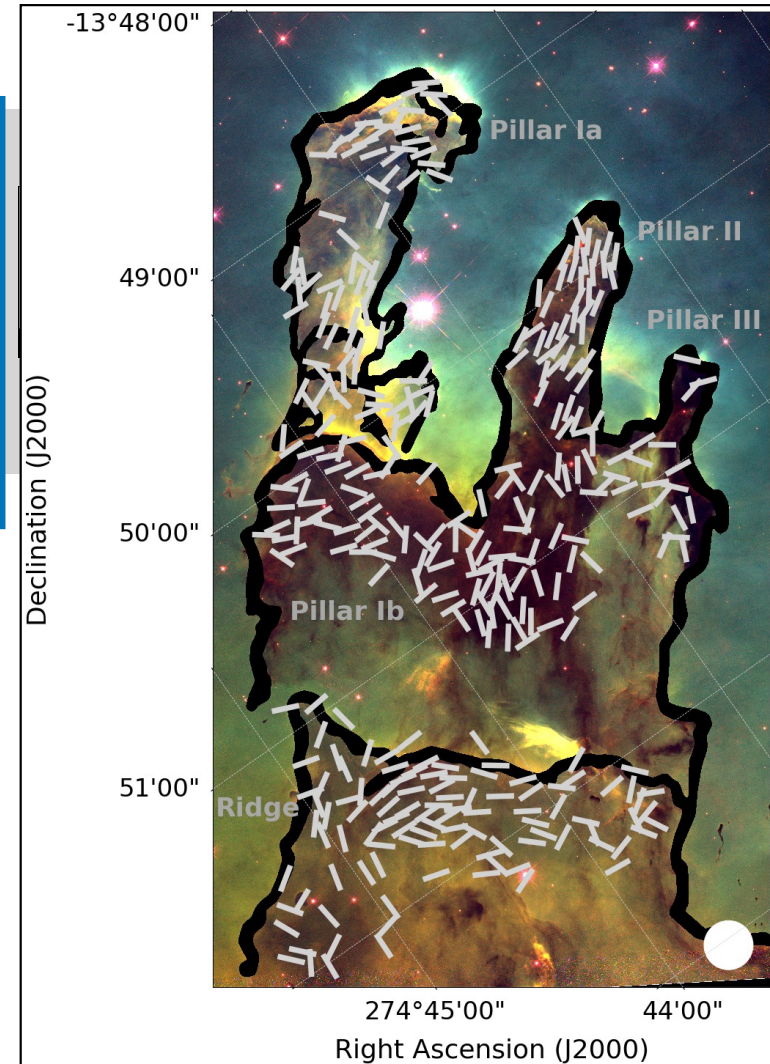
Wang, J-W. et al. 2018



Polarization

Pillars of creation - results from BISTRO

- Pattle et al. 2018 - <https://ui.adsabs.harvard.edu/abs/2018ApJ...860L...6P/abstract>
- First direct observations of magnetic fields inside Pillars of creation

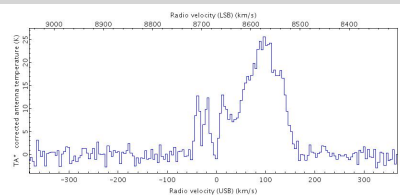


Science

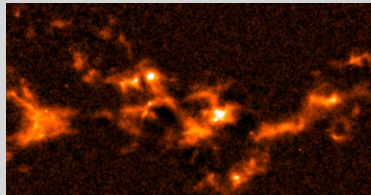
JCMT Website

Mairs, S et al. 2016

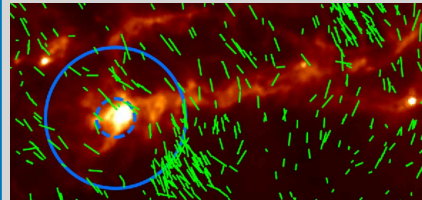
Wang, J-W. et al. 2018



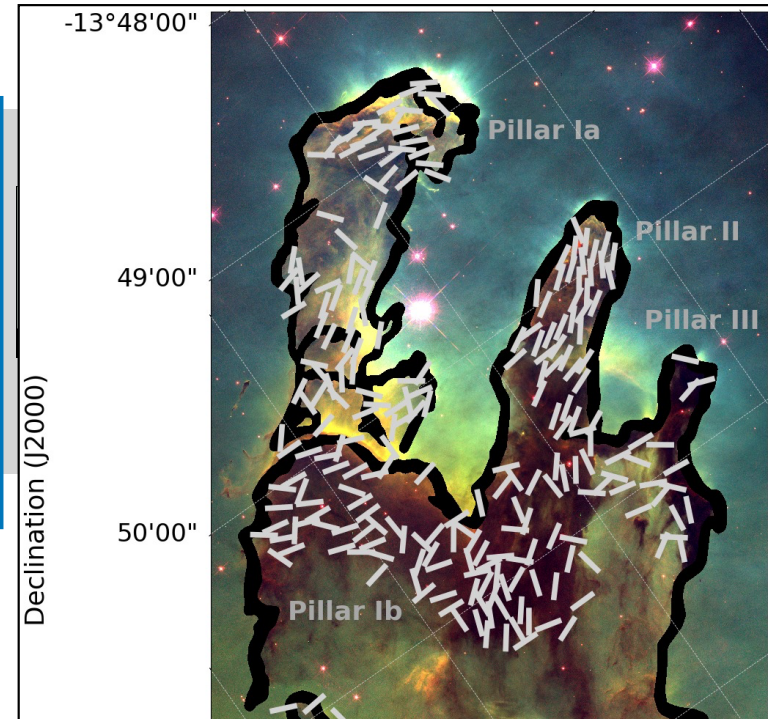
Spectral line



Continuum

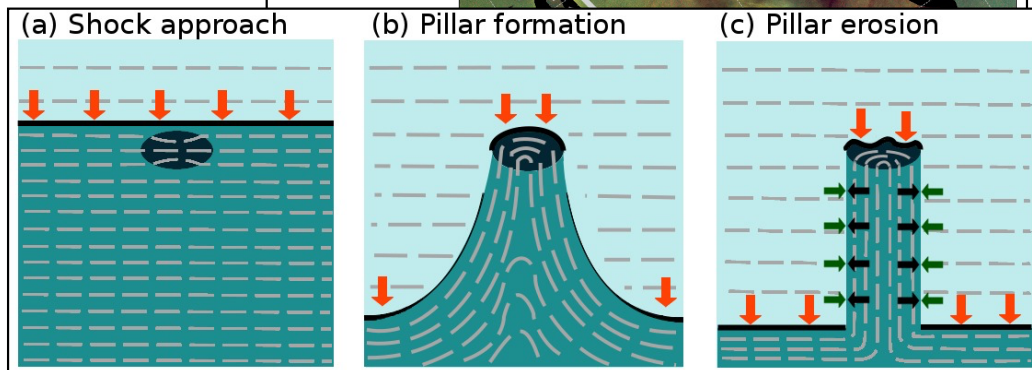


Polarization



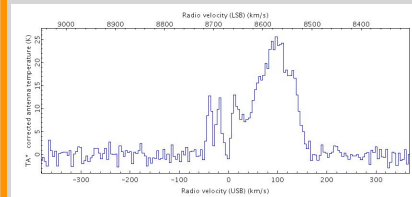
Pillars of creation - results from BISTRO

- Pattle et al. 2018 - <https://ui.adsabs.harvard.edu/abs/2018ApJ...860L...6P/abstract>
- First direct observations of magnetic fields inside Pillars of creation



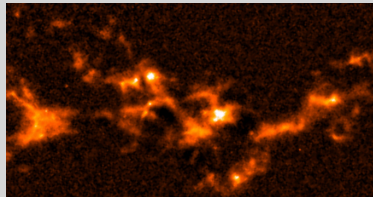
Science

JCMT Website



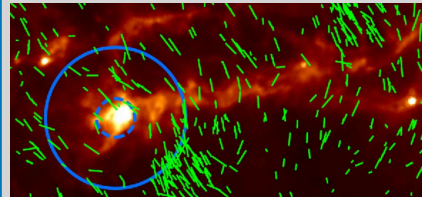
Spectral line

Mairs, S et al. 2016

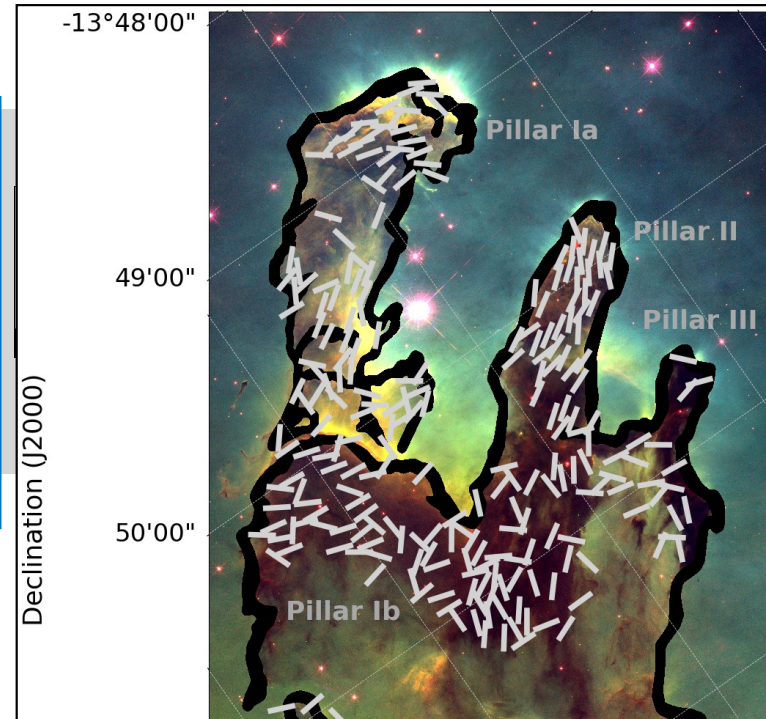


Continuum

Wang, J-W. et al. 2018



Polarization



Pillars of creation - results from BISTRO

- Pattle et al. 2018 - <https://ui.adsabs.harvard.edu/abs/2018ApJ...860L...6P/abstract>
- First direct observations of magnetic fields inside Pillars of creation

Continuum

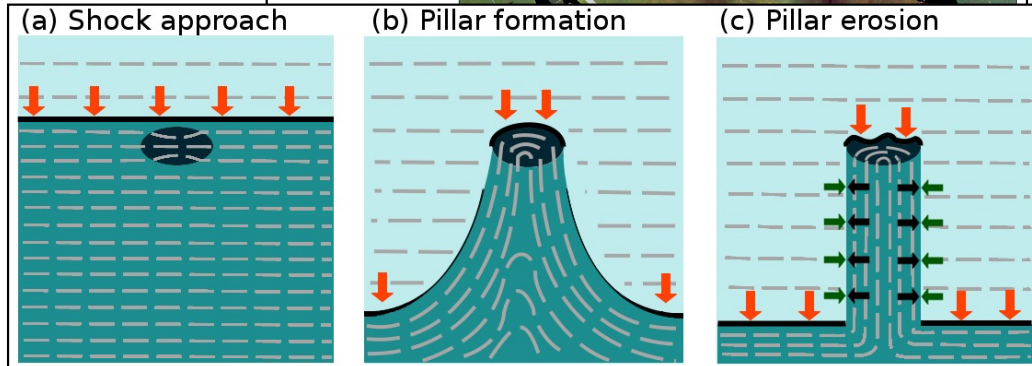
Spectral line

$$B_{pos} = Q \sqrt{4\pi\rho} \frac{\sigma_v}{\sigma_\theta} \approx 9.3 \sqrt{n(\text{H}_2)} \frac{\Delta v}{\sigma_\theta} \mu\text{G}$$

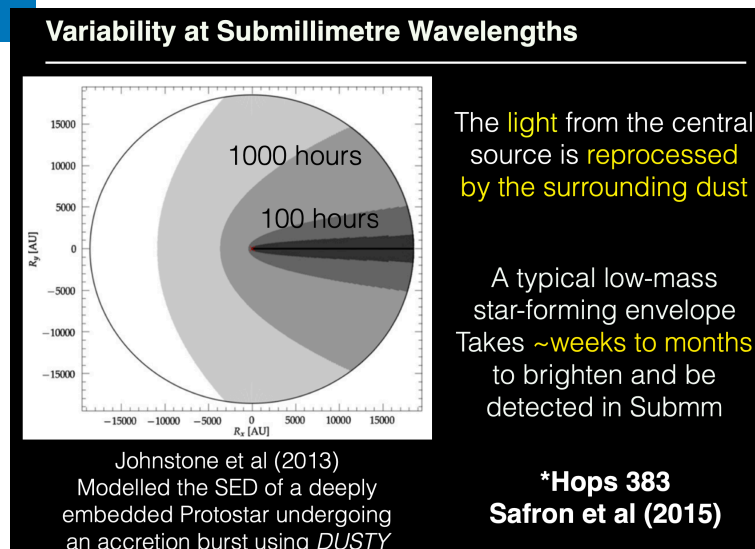
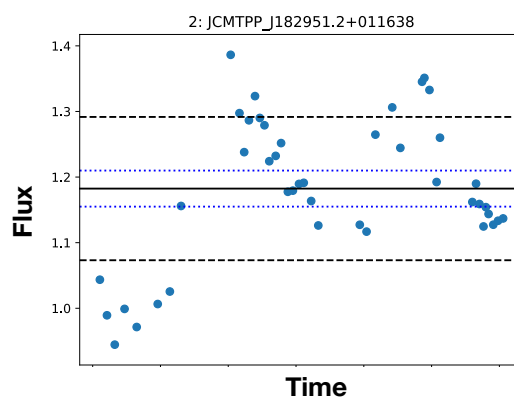
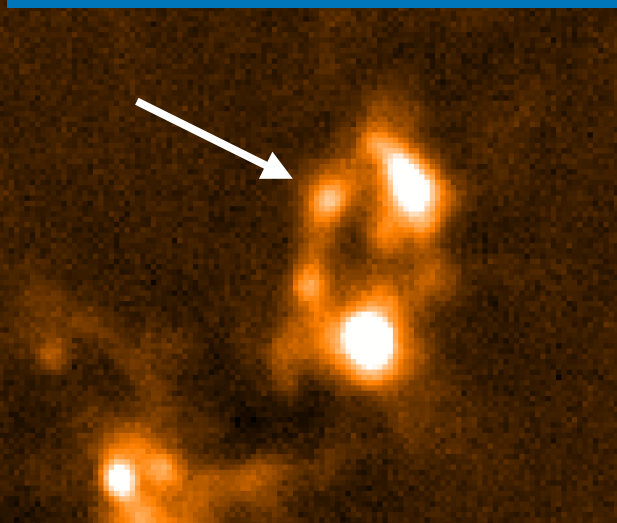
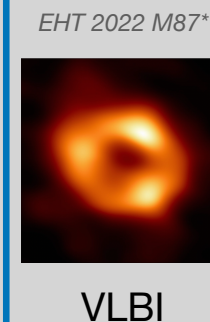
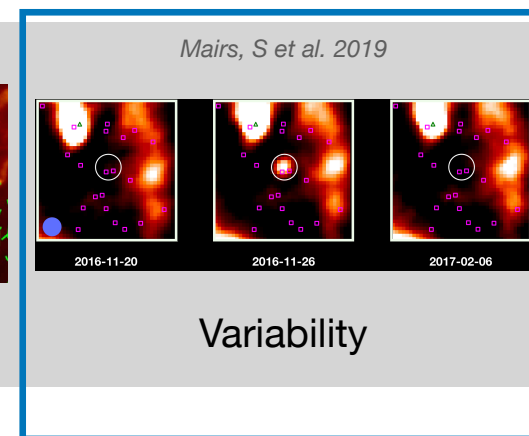
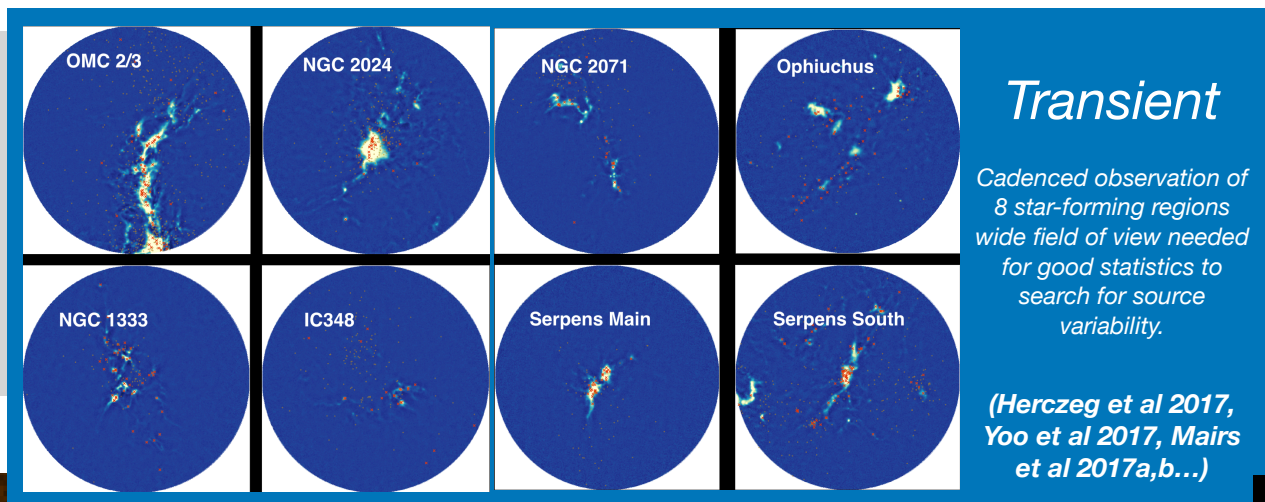
Crutcher et al.
2004, ApJ 600:279

Polarization

Davis-Chandrasekhar-Fermi (DCF) method combines Polarization, Continuum, and spectral line data to calculate the B-Field strength



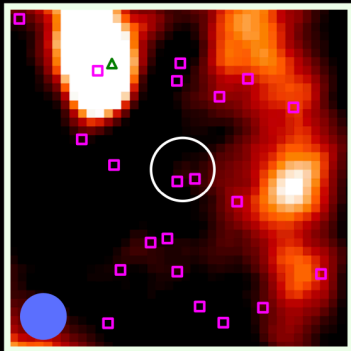
Science



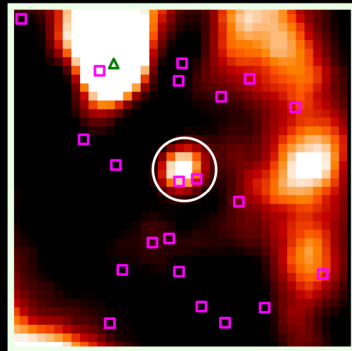
Science

An Extraordinary Submillimetre Flare Event

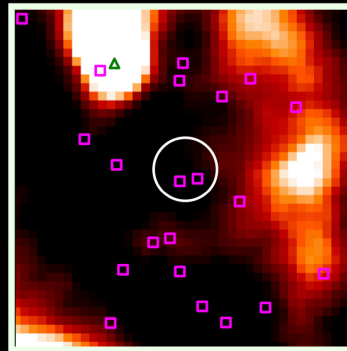
(Mairs et al, 2019, ApJ 871:72)



2016-11-20



2016-11-26



2017-02-06

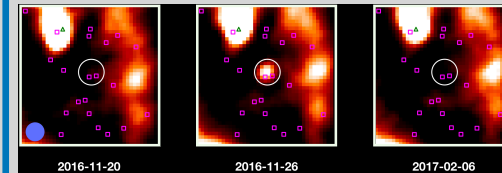
□ = Previously Identified Class II (Disk) Source (Megeath et al. 2012)

● = JCMT Beam size (~15" at 850 microns)

- * Point Source
- * Coincident with binary disk system JW 566
- * Previously known X-ray Variable (timescales of hours)
- * No simultaneous optical, infrared, x-ray, or radio data

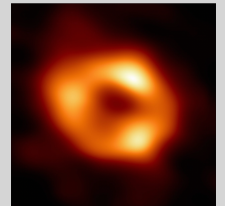
Slides from Mairs 2019 talk: Highlights from the JCMT-Transient Survey
<https://www.eaobservatory.org/jcmt/science/futures-2019/eao-sub-mm-futures-program/>

Mairs, S et al. 2019



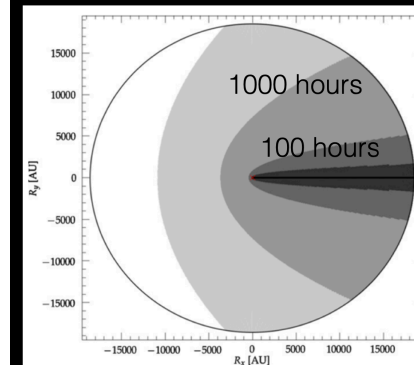
Variability

EHT 2022 M87*



VLBI

Variability at Submillimetre Wavelengths



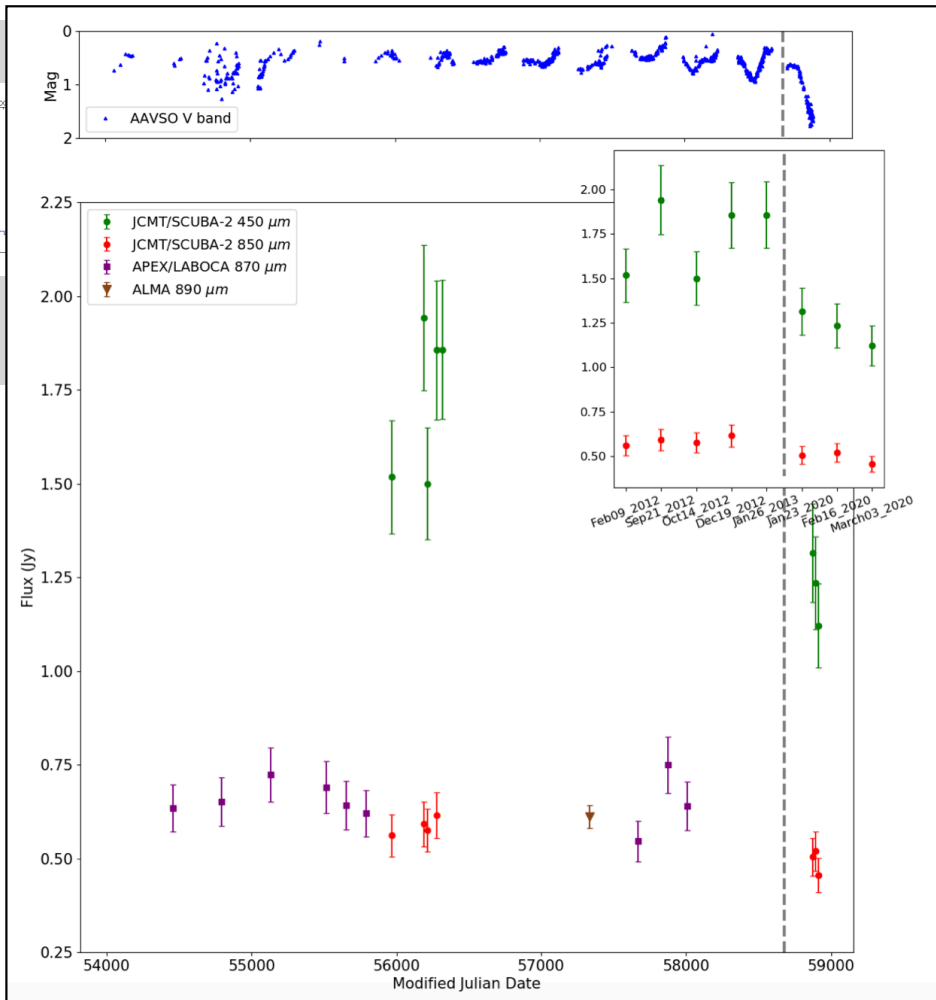
The light from the central source is reprocessed by the surrounding dust

A typical low-mass star-forming envelope Takes ~weeks to months to brighten and be detected in Submm

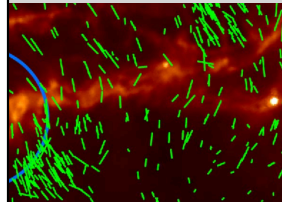
Johnstone et al (2013)
 Modelled the SED of a deeply embedded Protostar undergoing an accretion burst using DUSTY

*Hops 383
 Safron et al (2015)

Science

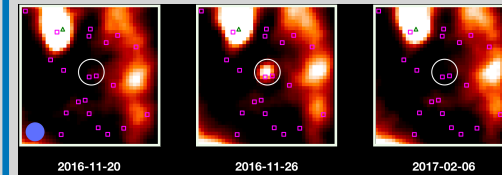


J-W. et al. 2018



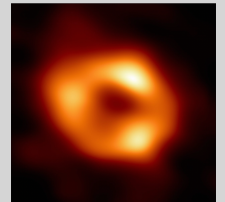
Polarization

Mairs, S et al. 2019



Variability

EHT 2022 M87*



VLBI

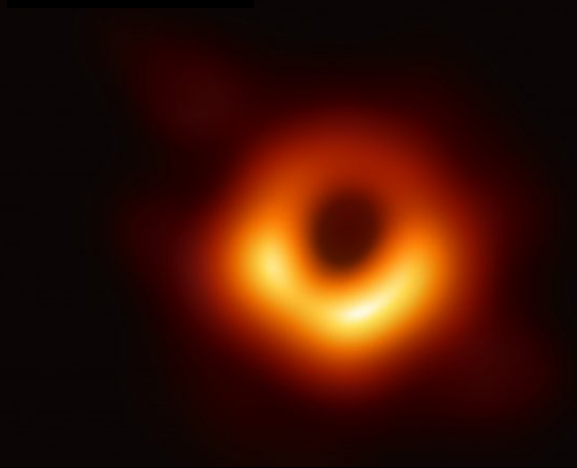
October 2019 Betelgeuse dimming event:

- Dharhawardena et al. 2020
- Result: 20% dimming found in sub-mm
- Modeling indicated change in photosphere of star
- Data: Archival & PI continuum observations
 - JCMT/SCUBA-2 & APEX/LABOCA
 - 2007- 2020 (LABOCA for extended time monitoring)
 - JCMT observations during the event.

<https://ui.adsabs.harvard.edu/abs/2020ApJ...897L...9D/abstract>

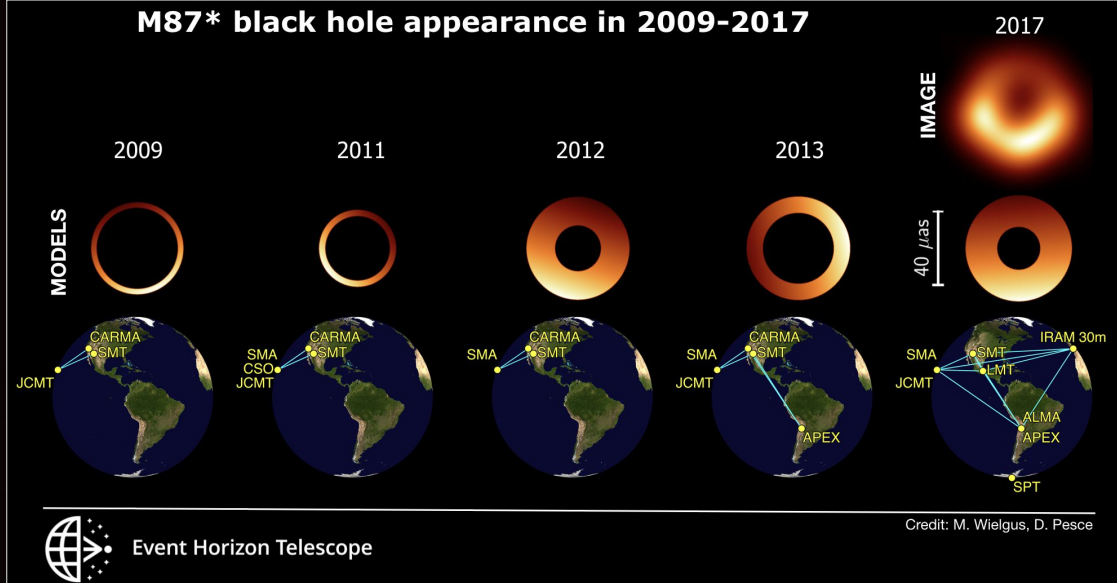
Science

Pōwehi - M87*

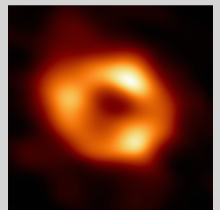


 Event Horizon Telescope

M87* black hole appearance in 2009-2017



EHT 2022 SgrA*



VLBI



2019 EHT meeting, Hilo, Hawai'i

EHT

2019 First image of a Black Hole - M87*

2020 First "movie" of M87* from 2009-2013 data

2021 First look at polarization ring around M87*

2022 First image of SgrA*

JCMT on Manunakea provides the most critical point of the East West baseline.

<https://eventhorizontelescope.org>

Science

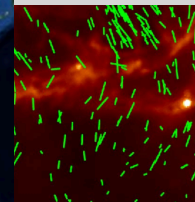
EAVN



GMVA

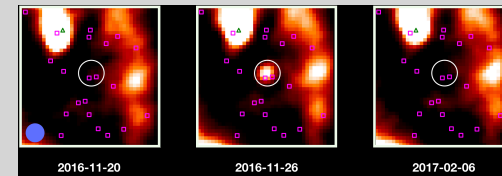


al. 2018



ization

Mairs, S et al. 2019



Variability

EHT 2022 SgrA*



VLBI

Nāmakanui brings new collaborations:

2022 JCMT joining - EAVN - <https://radio.kasi.re.kr/eavn/main.php>

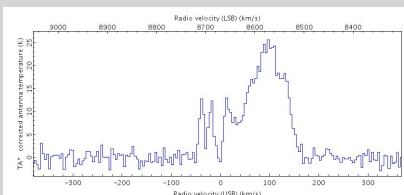
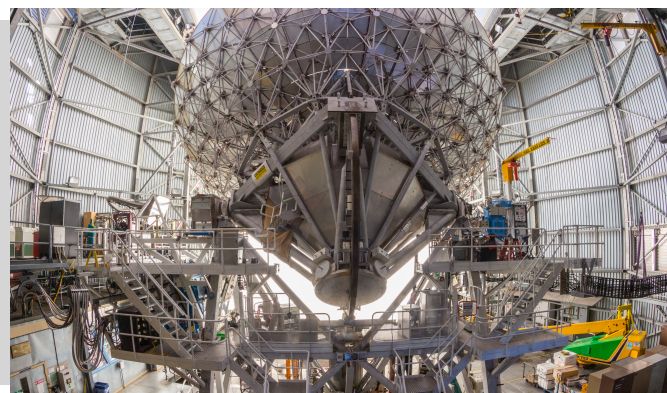
2023 JCMT joining - GMVA - Global mm-VLBI Array - <https://www3.mpifr-bonn.mpg.de/div/vlbi/globalmm/>

Instrumentation

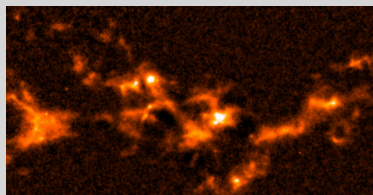
JCMT Website

Mairs, S et al. 2016

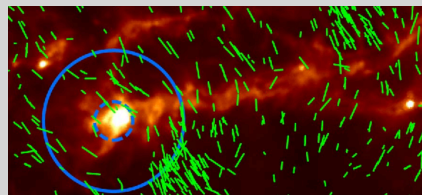
Wang, J-W. et al. 2018



Heterodyne



Continuum



Polarization

Heterodyne

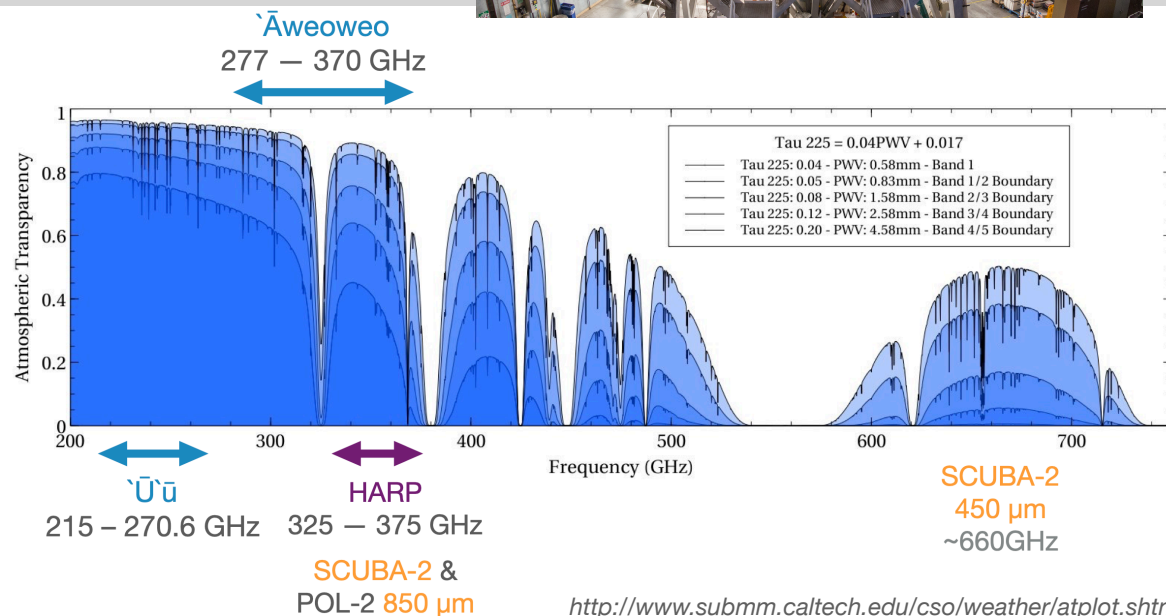
HARP and **Nāmakanui** covering 86GHz, 230GHz and 345GHz windows with **ACSIS** backend spectrometer

Continuum

SCUBA-2 450 and 850 micron simultaneously

Polarization

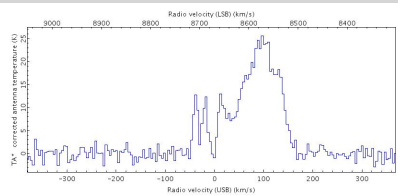
POL-2 (with SCUBA-2) 450 and 850 micron linear polarization simultaneously



<http://www.submm.caltech.edu/cso/weather/atplot.shtml>

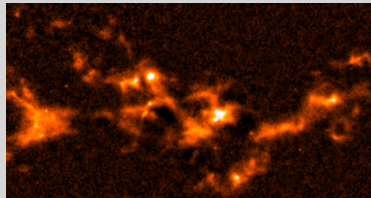
HARP

JCMT Website



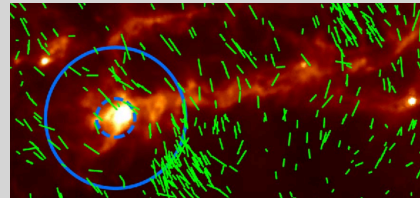
Heterodyne

Mairs, S et al. 2016

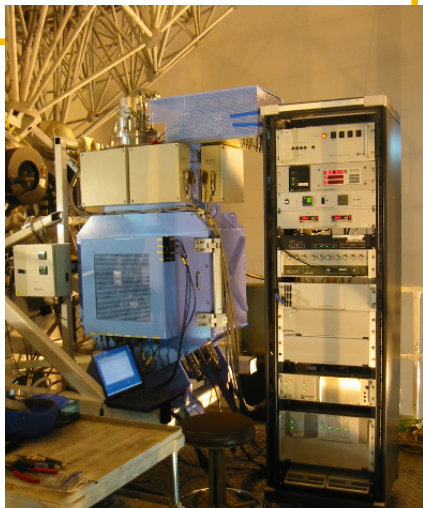
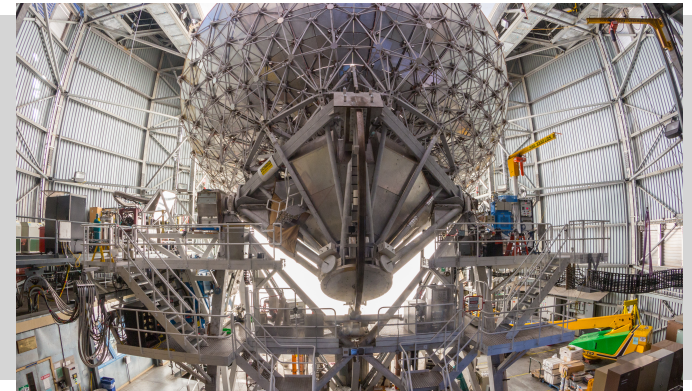


Continuum

Wang, J-W. et al. 2018

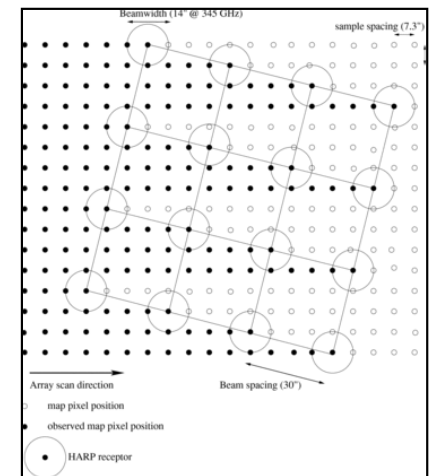
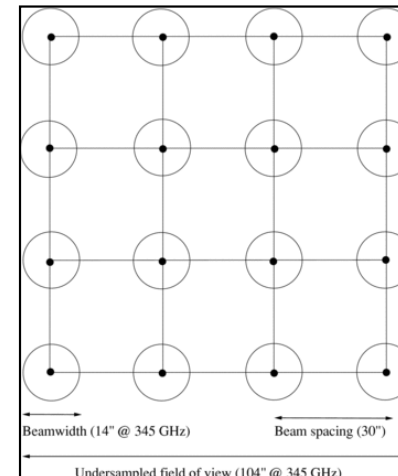


Polarization



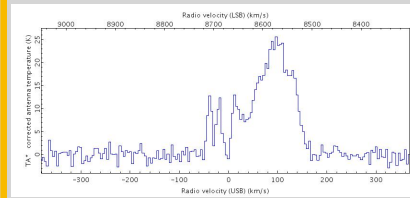
HARP (Heterodyne Array Receiver Programme)

- Single Sideband (SSB) array receiver with 16 SIS mixers
- Tuned between 325 and 375 GHz
- Can be operated in stare, jiggle and scanning mode - great for mapping larger areas

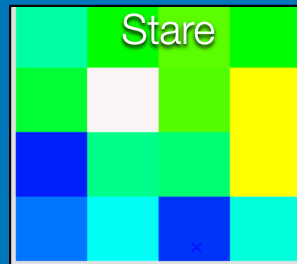


HARP

JCMT Website

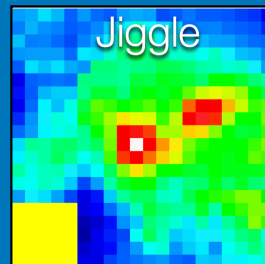


Heterodyne



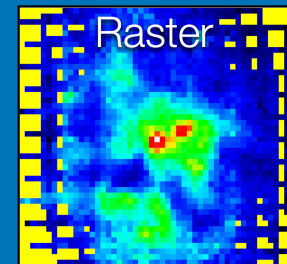
2' field

30'' pixels



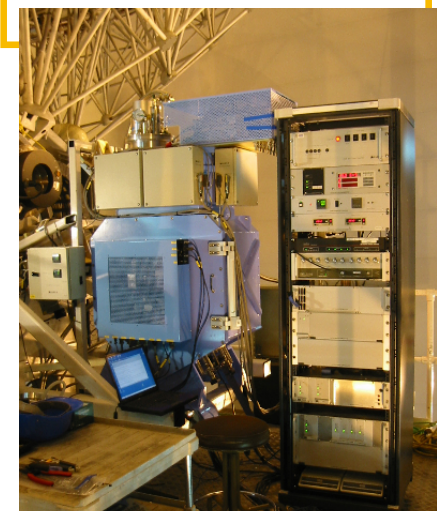
2' field

6'' pixels

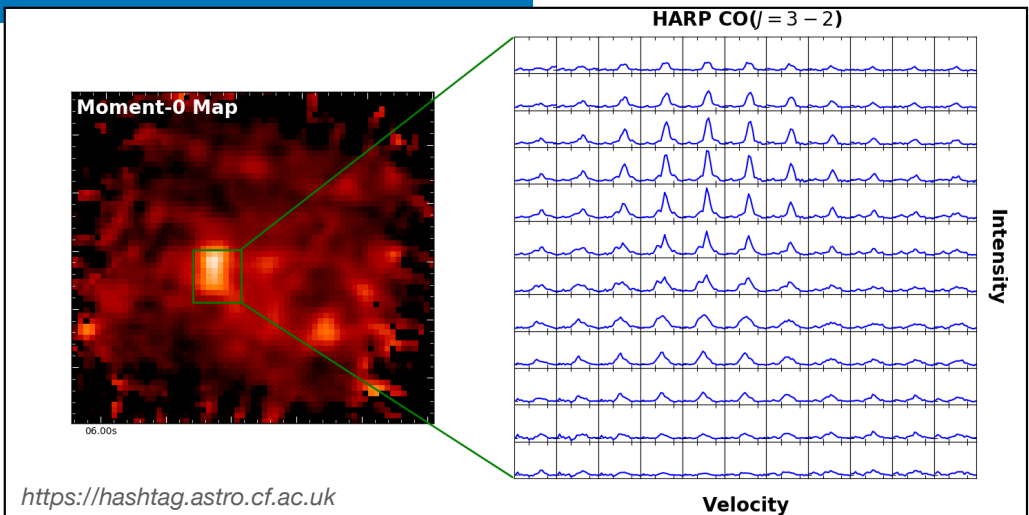
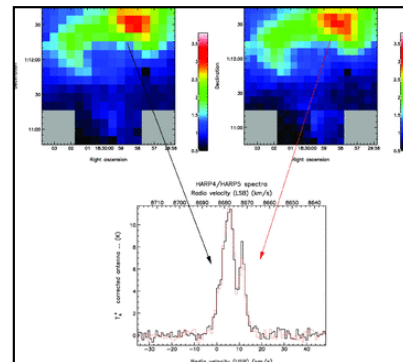


6' field

7.25'' pixels



HARP (Heterodyne Array Receiver Programme)



HARP

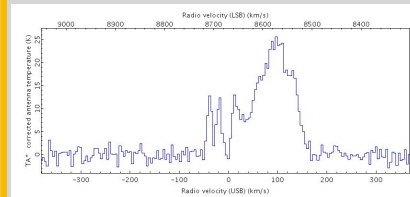
CO (3 – 2) HIGH-RESOLUTION SURVEY OF THE GALACTIC PLANE: R1

Dempsey, Thomas, Currie 2013

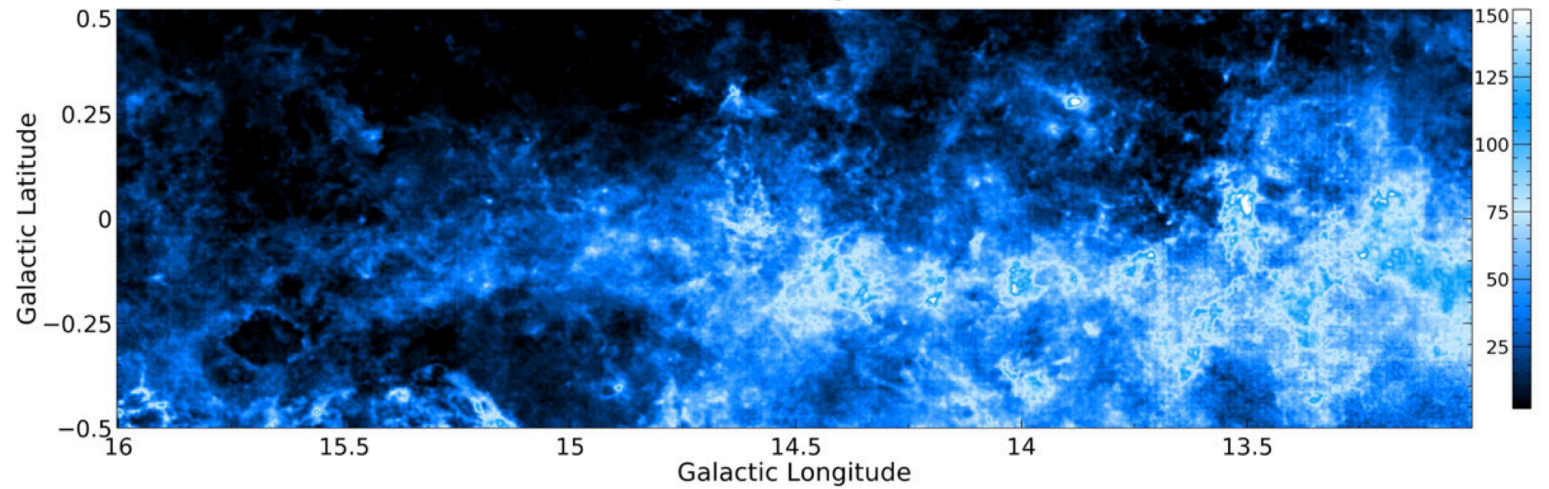
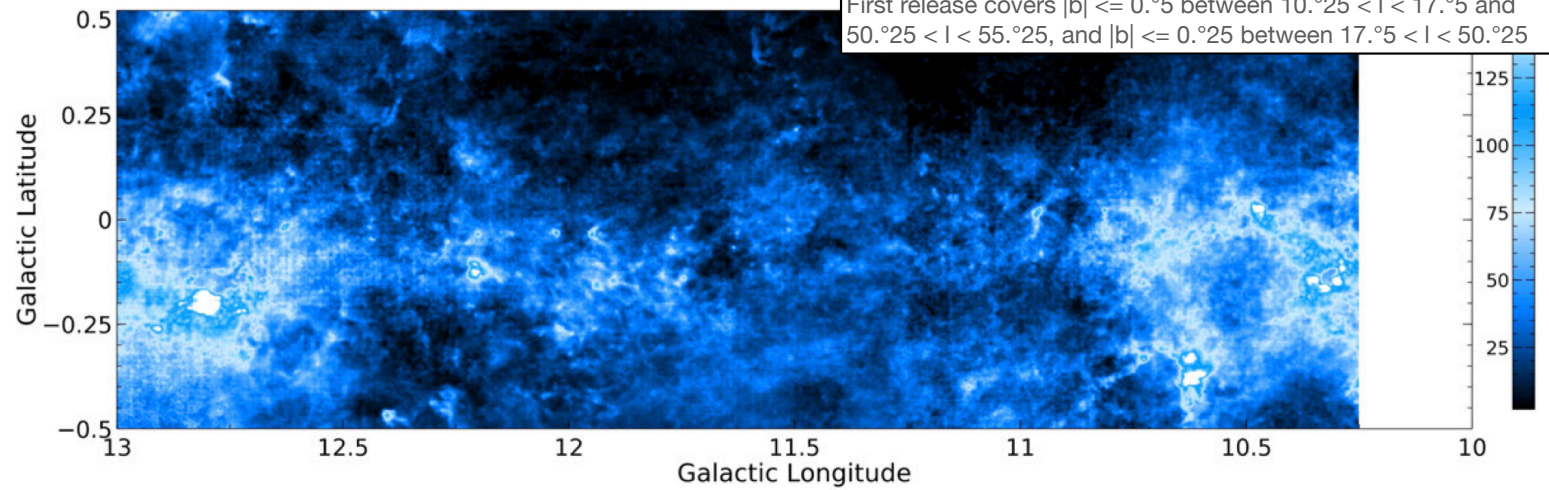
<https://ui.adsabs.harvard.edu/abs/2013ApJS..209....8D/abstract>

First release covers $|b| \leq 0.5$ between $10.25 < l < 17.5$ and $50.25 < l < 55.25$, and $|b| \leq 0.25$ between $17.5 < l < 50.25$

JCMT Website



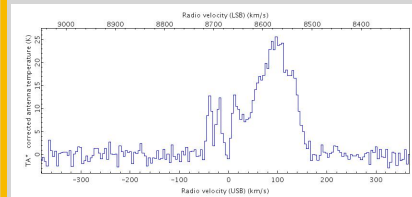
Heterodyne



HARP (Heterodyne Array Receiver Programme)

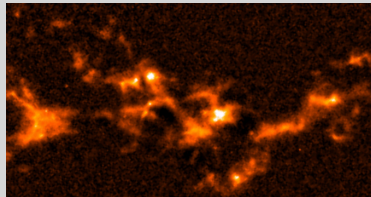
Nāmakanui

JCMT Website



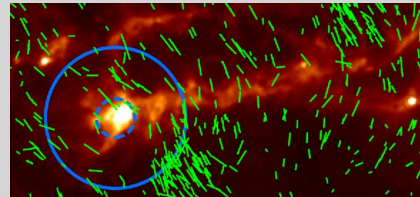
Heterodyne

Mairs, S et al. 2016

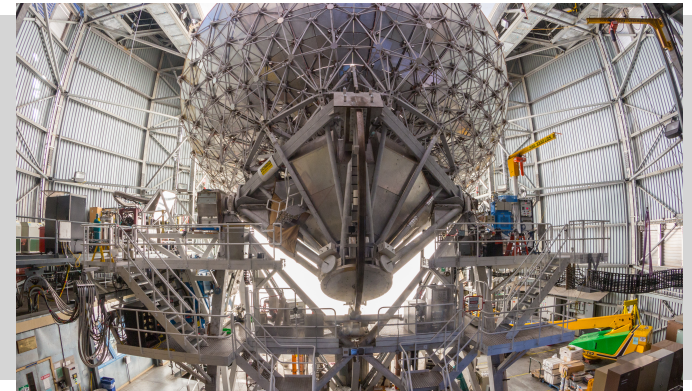


Continuum

Wang, J-W. et al. 2018



Polarization



Nāmakanui was built by ASIAA, Taiwan, and is on loan to the JCMT as a spare for the Greenland Telescope (GLT).

ʻŌʻū:

- 215 – 270.6GHz (sideband separating, single pixel)
- commissioned 2023 (first light October 2019)

ʻĀweoweo:

- 277 – 370GHz (sideband separating, single pixel) Some overlap with HARP but greater sensitivity
- shared risk observing (first light October 2021)

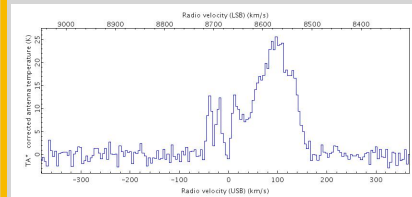
ʻAlaʻihi:

- 77.0–88.5GHz (1-sideband, single pixel) - VLBI only - first light November 2022



Nāmakanui

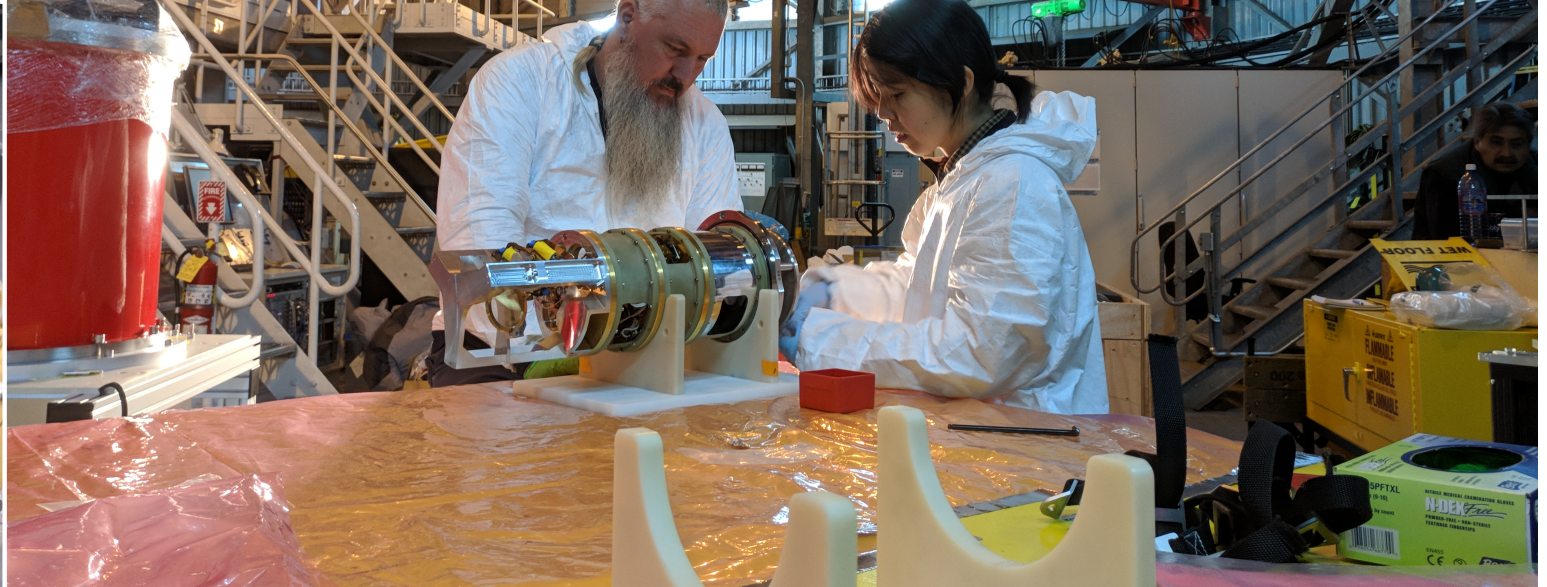
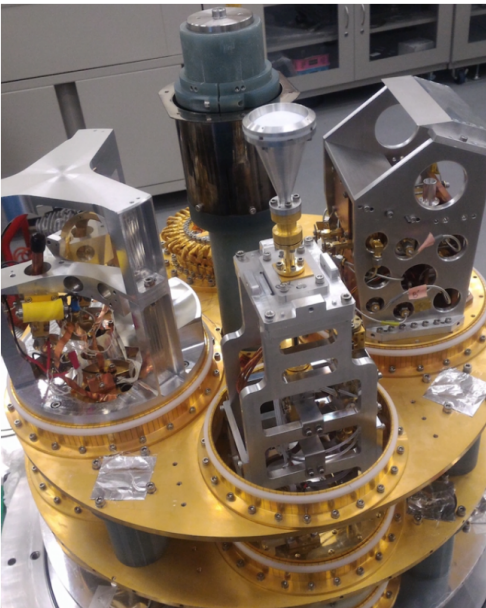
JCMT Website



Heterodyne

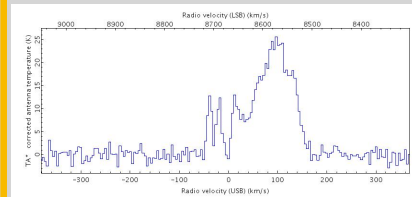


With support from LLAMA group, ASIAA Taiwan, and SRON LLAMA's 690GHz system will be loaned to JCMT and integrated within the Nāmakanui instrument. Arrival and commissioning expected this summer (2023).



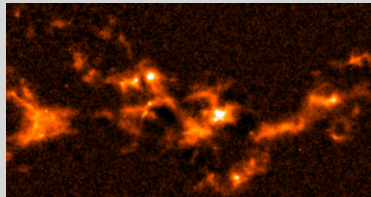
ACSIS

JCMT Website



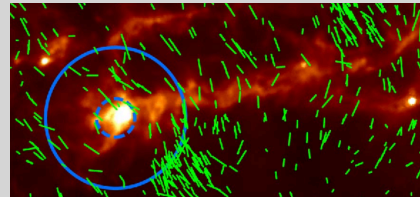
Heterodyne

Mairs, S et al. 2016

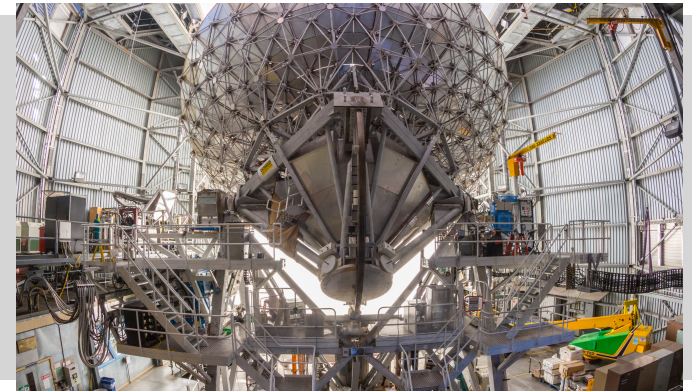


Continuum

Wang, J-W. et al. 2018



Polarization



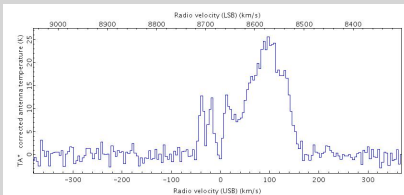
ACSIS (Auto Correlation Spectral Imaging System)

- 4 DCMs/correlators fed from the same IF
- HARP - can be configured with up to two spectral windows
- Nāmakānui - can be configured up to four spectral windows
- Supports a variety of bandwidth modes ranging from 250 to 3200 MHz
- Spectral resolution of ACSIS varies from 30 kHz to ~1 MHz, depending on the configuration used



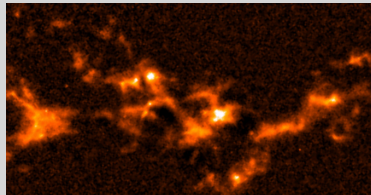
Instrumentation

JCMT Website



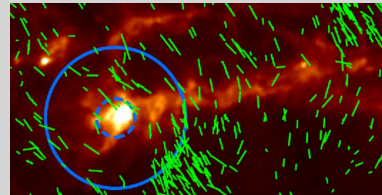
Heterodyne

Mairs, S et al. 2016



Continuum

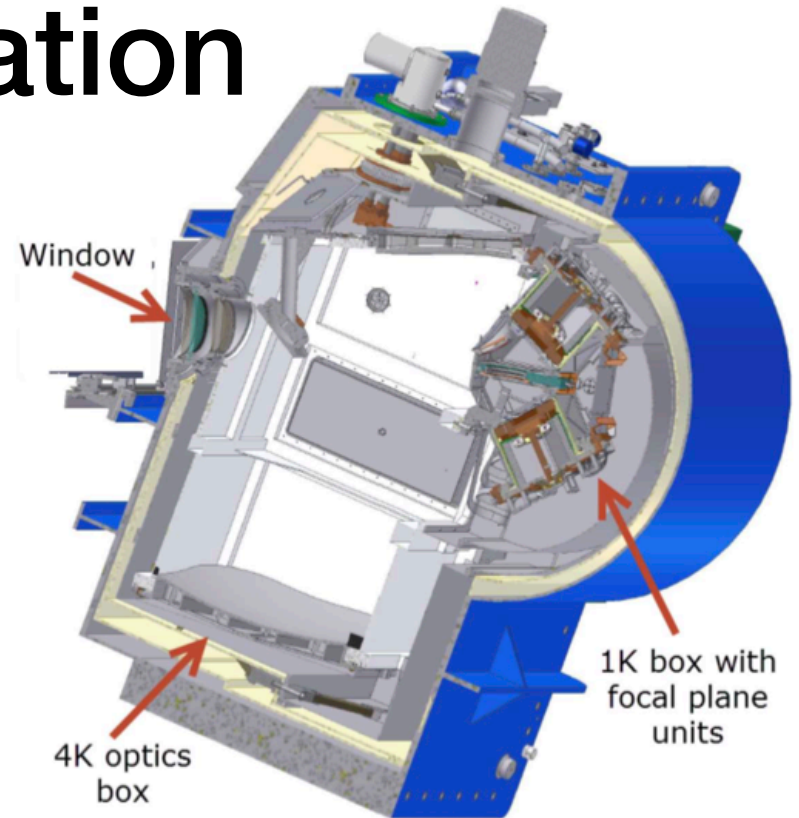
Wang, J-W. et al. 2018



Polarization

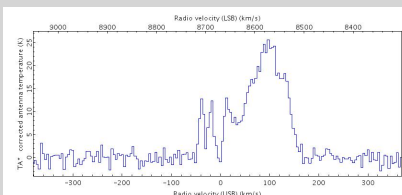
SCUBA-2

- Submillimetre Common-User Bolometer Array 2
- 10,000 pixel bolometer camera (Transition Edge Sensors, TES)
- 850 and 450 micron simultaneous observations
- Bolometers are temp controlled to 75mK
- Beam is 7.9 arcsec at 450 micron and 13.0 arcsec at 850 micron
- Derived confusion limit (depends on a number of factors including Galactic cirrus emission, the extra galactic background):
 - 850 microns = 0.7 mJy/beam
 - 450 microns = 0.5 mJy/beam



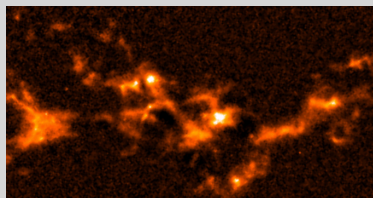
Instrumentation

JCMT Website



Heterodyne

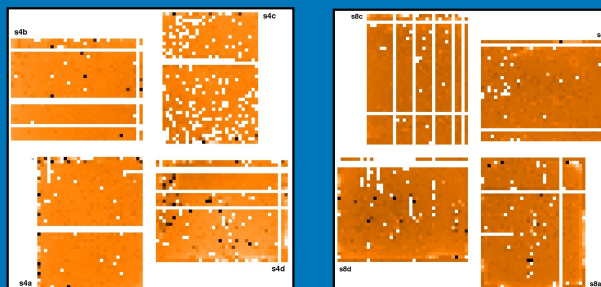
Mairs, S et al. 2016



Continuum

SCUBA-2

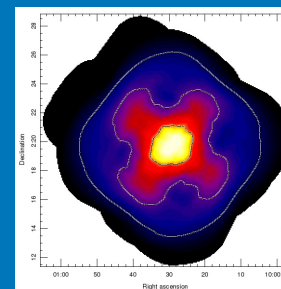
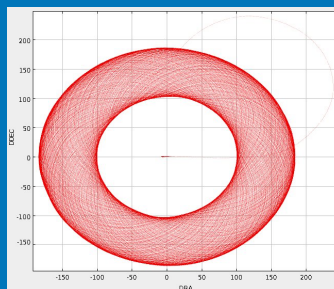
- Two observing modes: CV Daisy for point sources - compact sources, Rotating Pong pattern for larger scale mapping
- SCUBA-2 removes atmospheric noise in the data processing stage (not by chopping), making SCUBA-2 less sensitive to large scale structure.



Focal Plane arrays

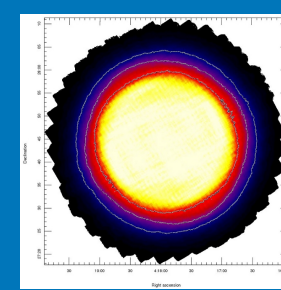
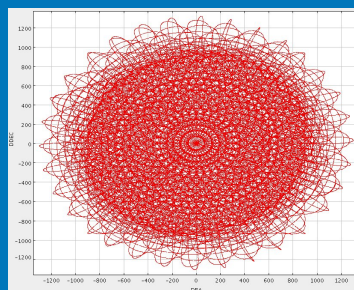
450 and 850 micron

Each wavelength has four sub-arrays containing 32x40 TES bolometers



CV Daisy

Use: point sources/compact sources of order 3-arcmin or less, although there is significant exposure time in the map out to 12-arcmin

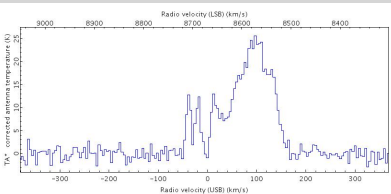


Rotating Pong pattern

Use: larger scale mapping - diameters 900", 1800", 2700", 3600" and 7200" available

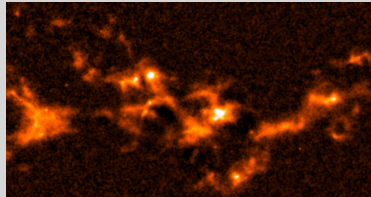
Instrumentation

JCMT Website



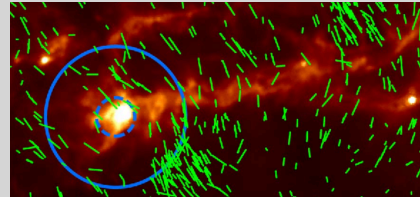
Heterodyne

Mairs, S et al. 2016

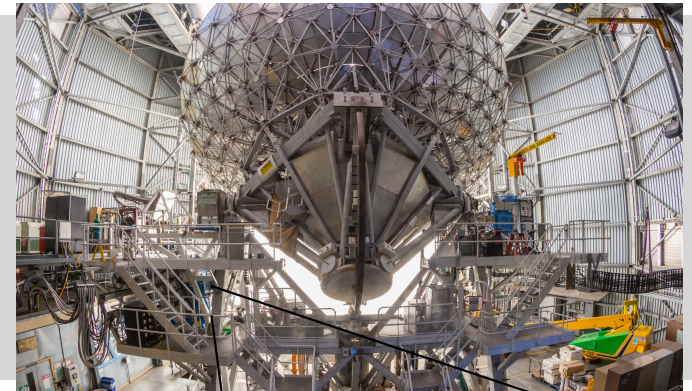


Continuum

Wang, J-W. et al. 2018

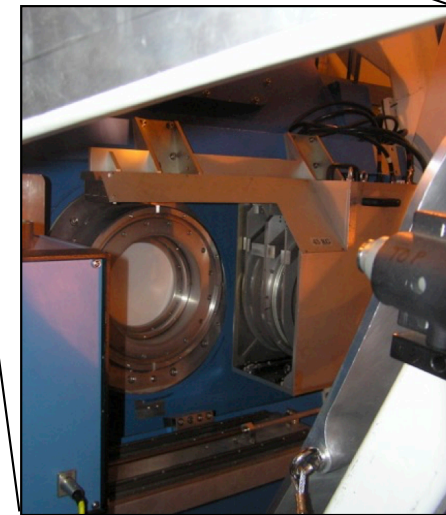


Polarization



POL-2

- linear polarimeter (obtaining stokes I, Q and U vectors)
- requires SCUBA-2 (not a detector in itself)
- 11' diameter maps
- scanning at 8"/second
- 3 optical components in "blades": Calibrator (~100% polarization), Half-wave plate (HWP). Continuous rotation of this modulates polarization, allowing removal of atmospheric effects. Transmission at 850 μ m ~ 86%, and Analyser
- Total effective 850 μ m transmission ~ 74%

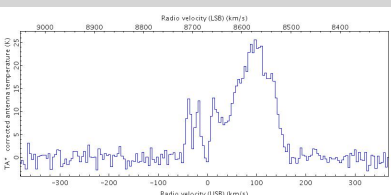
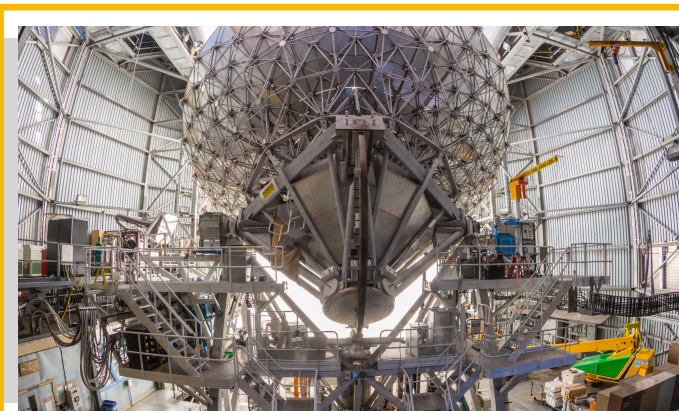


Instrumentation

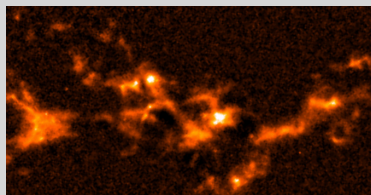
JCMT Website

Mairs, S et al. 2016

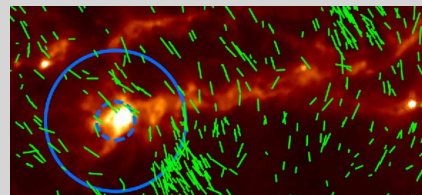
Wang, J-W. et al. 2018



Heterodyne



Continuum

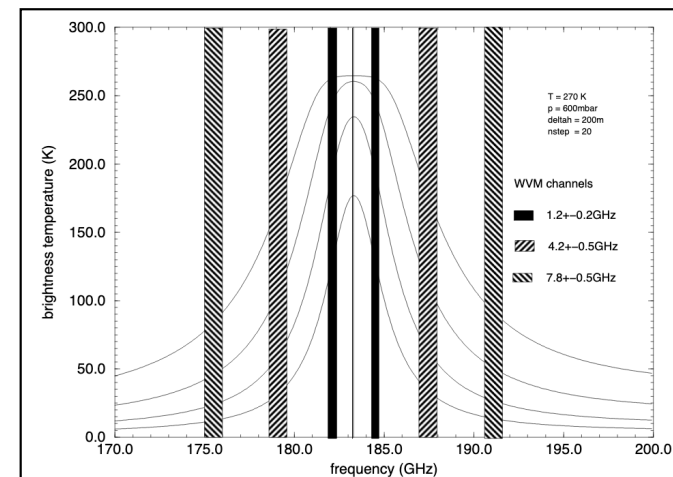


Polarization

Ancillary

Water Vapor Monitor

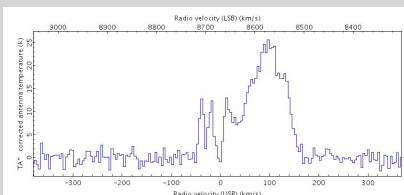
- In-cabin line-of-sight 183 GHz radiometer
- Critical for Nāmakānui and SCUBA-2
- Used for determining sky opacity for Flexible Observing
- The WVM works by obtaining measurements of the 183 GHz water line in three double side band frequency channels



<https://www.eaobservatory.org/jcmt/instrumentation/wvm/>

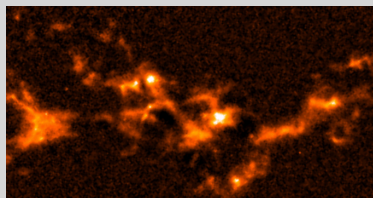
Instrumentation

JCMT Website



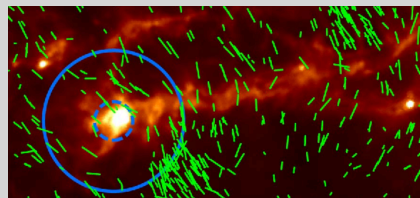
Heterodyne

Mairs, S et al. 2016

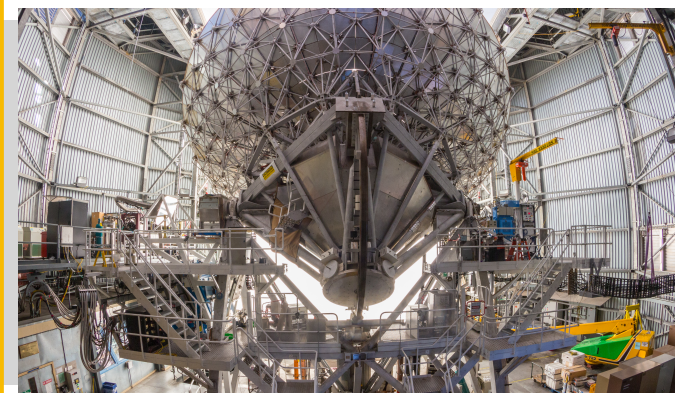


Continuum

Wang, J-W. et al. 2018



Polarization

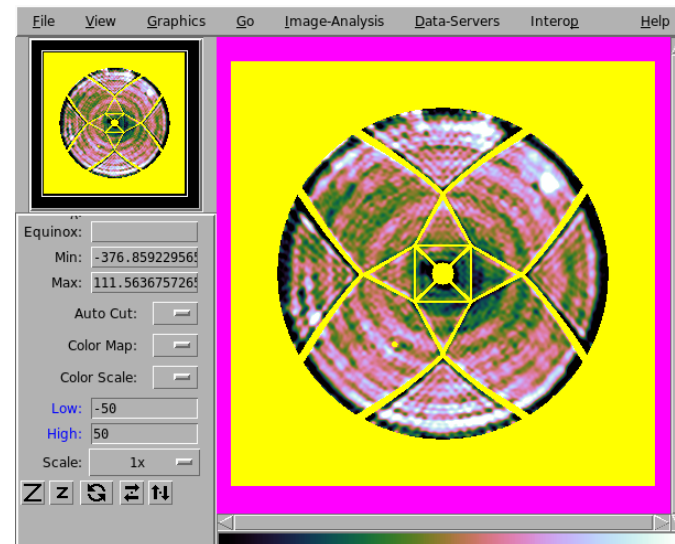


Ancillary

Holography system (RxH3)

- JCMT dish 276 panels moved by 3 motorized adjusters.
- A 2-channel source located inside the UKIRT dome and a 4-channel receiver (two frequencies at orthogonal polarizations) in the JCMT receiver cabin.
- Two frequency operation at 80 and 160GHz
- 80GHz for monitoring (50 mins per map)
- 160GHz for adjustments (110 minutes per map)

<https://www.eaobservatory.org/jcmt/observing/jcmt-surface/>
<http://starlink.eao.hawaii.edu/devdocs/sun272.pdf>



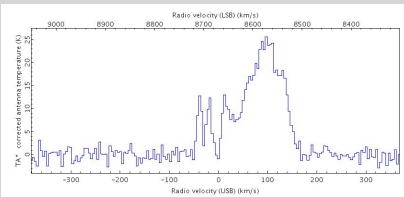
Maunakea Weather

JCMT Website

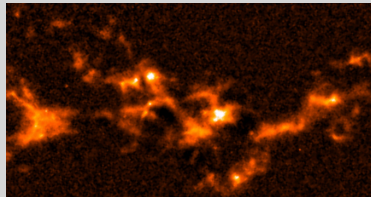
Mairs, S et al. 2016

Wang, J-W. et al. 2018

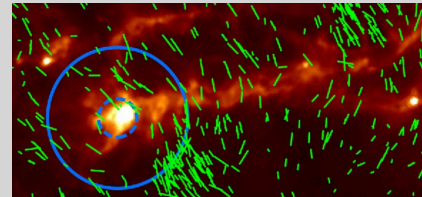
Weather Grades are arbitrary cuts in opacity. Transmission is key. But for now operations based on weather Grades.



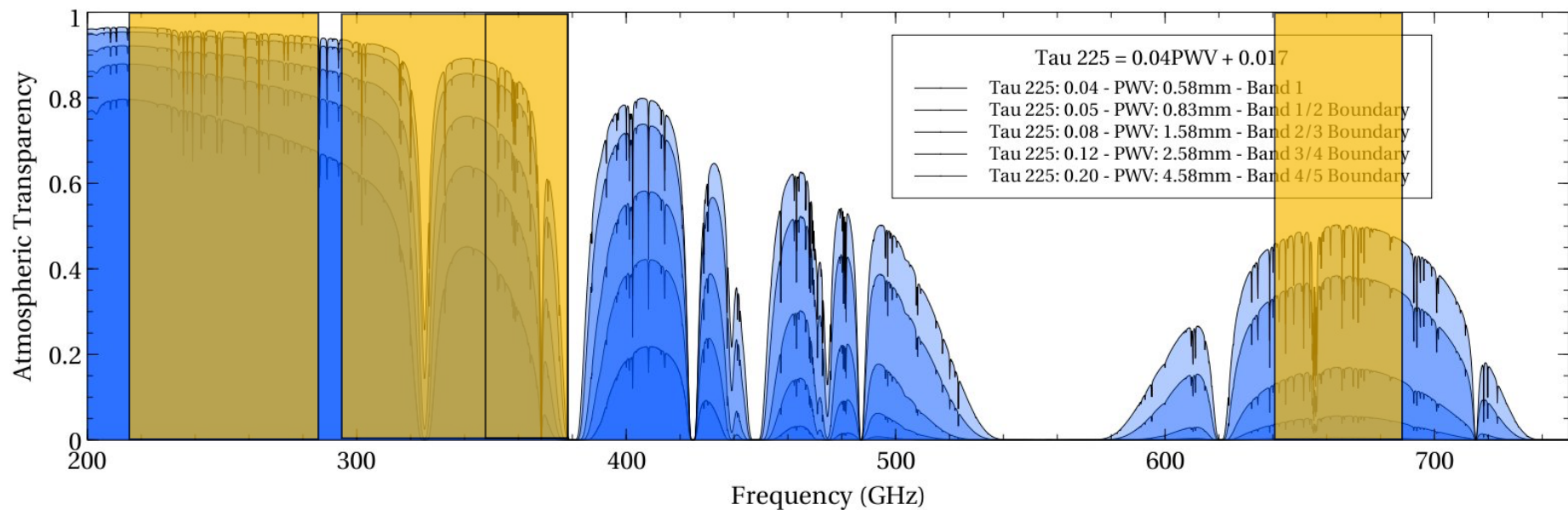
Heterodyne



Continuum

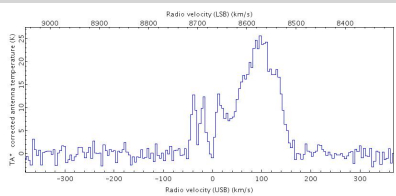


Polarization



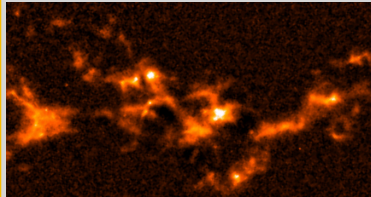
Maunakea Weather

JCMT Website



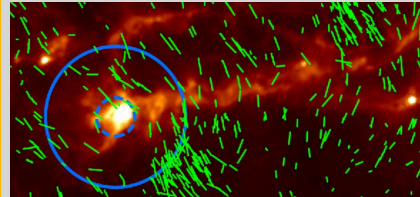
Heterodyne*

Mairs, S et al. 2016



Continuum

Wang, J-W. et al. 2018



Polarization

Weather Grades are arbitrary cuts in opacity. Transmission is key. But for now operations based on weather Grades.

Grade 1

Grade 1 (450,850)

Grade 1 (450, 850)

Grade 2

Grade 2 (450,850)

Grade 2 (850)

Grade 3

Grade 3 (850)

Grade 4

Grade 5

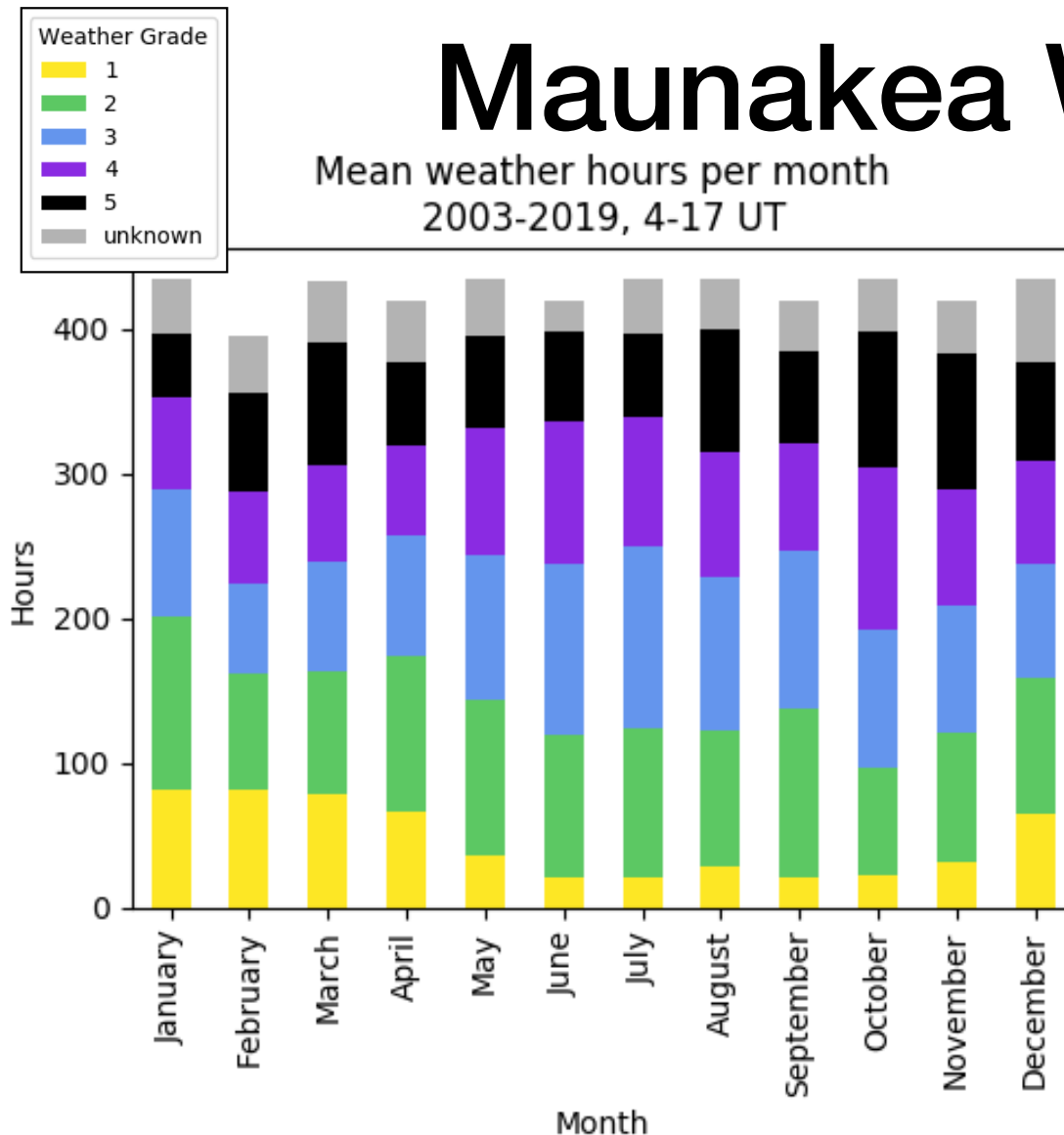
* dependent on molecule/frequency

$^{13}\text{CO}/\text{C}^{18}\text{O}$ (3-2): Grade 1/2

H_2O = workhorse in Grades 4/5

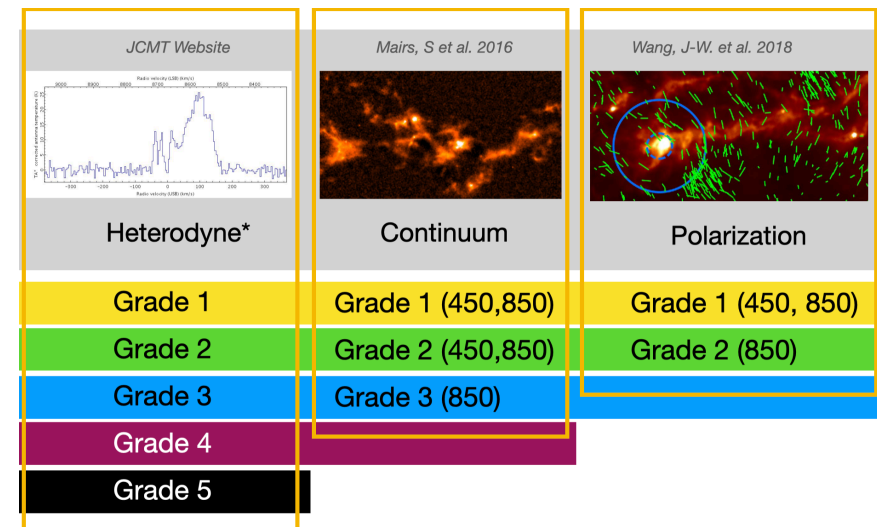
Maunakea Weather

Mean weather hours per month
2003-2019, 4-17 UT



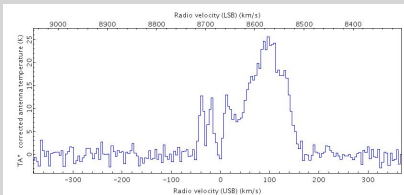
Weather Grades are arbitrary cuts in opacity. Transmission is key. But for now operations based on weather Grades.

* large year-to-year variation on hours obtained in any given weather Grade



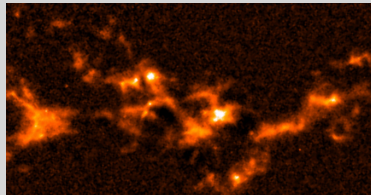
Flexible Observing

JCMT Website



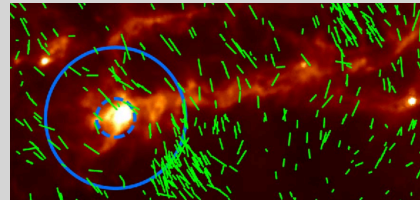
Spectral line

Mairs, S et al. 2016



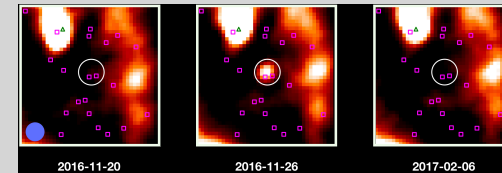
Continuum

Wang, J-W. et al. 2018



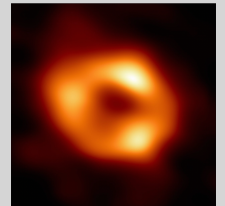
Polarization

Mairs, S et al. 2019



Variability

EHT 2022 M87*



VLBI

Science programs observed based on weather, instrumentation and science raking

Aim: Maximizing science time since 2003

Enabled by

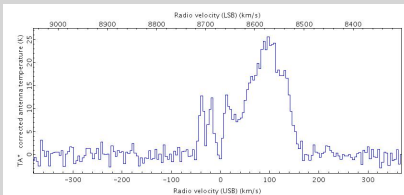
- Automatically managed by telescope software
- Telescope operator makes final call (adjusting for trends in weather availability overrides etc)
- Single Time Allocation Committee (TAC) ranks programs
- Nights allocated to a queue: 50-50 split in time between Large Program and PI queue.
- Queue switching (between PI and LAP if holes exist at RAs) provides redundancy.

<https://www.eaobservatory.org/jcmt/observing/guidelines-for-flexible-observing/>

<https://ui.adsabs.harvard.edu/abs/2014SPIE.9149E..1FD/abstract>

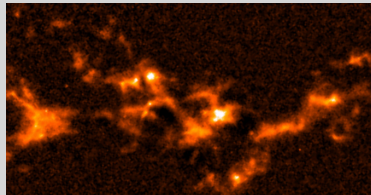
Flexible Observing

JCMT Website



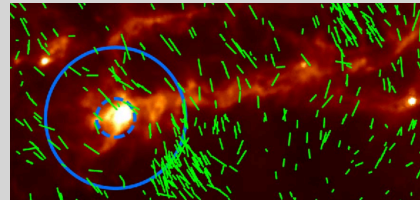
Spectral line

Mairs, S et al. 2016



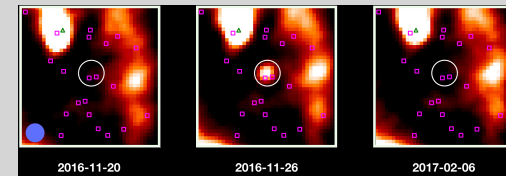
Continuum

Wang, J-W. et al. 2018



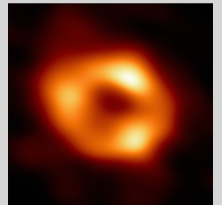
Polarization

Mairs, S et al. 2019



Variability

EHT 2022 M87*



VLBI

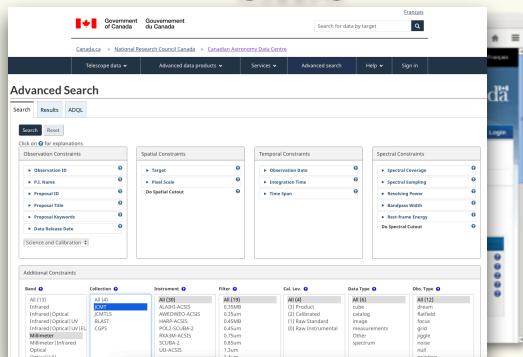
Benefits to observatory

- No requirement for observes
- Flexibility with instrumentation (e.g. faults)
- Flexibility with weather
- Best science prioritized (along with regional contributions)

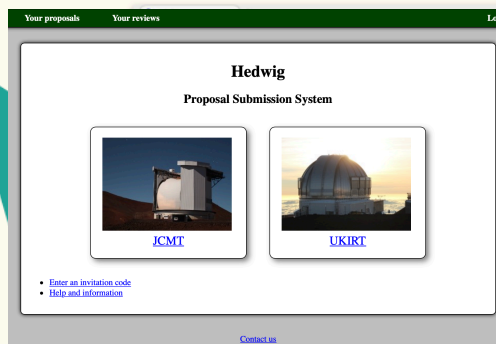
Benefits to community

- No requirement to visit telescope
- Program automatically scheduled
- Program data automatically collected, PI/COIs notified
- Data available <24 hours via CADC
- Flexibility with program

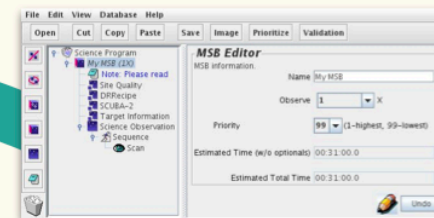
CADC



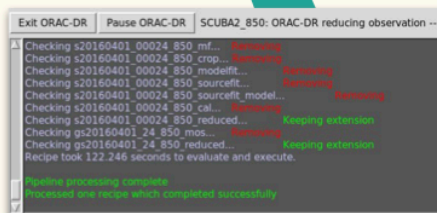
Hedwig



JCMT-OT



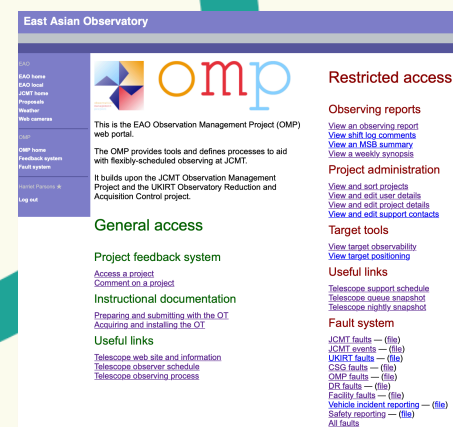
Flexible observing from a user perspective



ORAC-DR

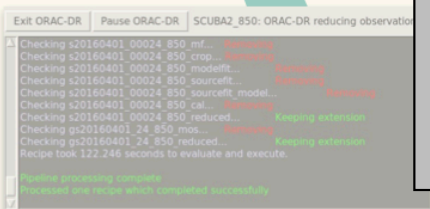
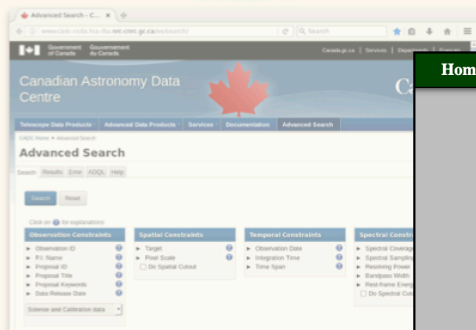


QT



OMP

CADC

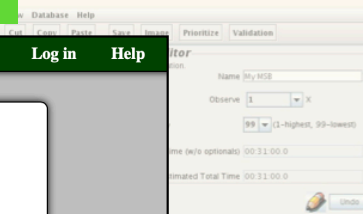


ORAC-DR

Proposals are submitted using Hedwig

<https://proposals.eaobservatory.org/jcmt/>

JCMT-OT



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Hedwig

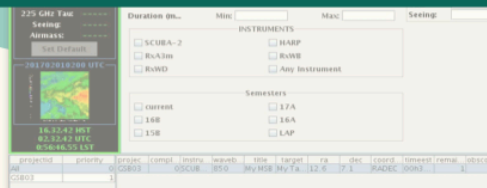
Proposal Submission System

[JCMT](#)

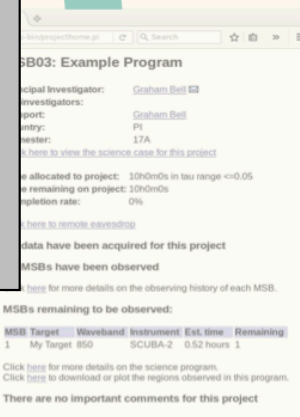
[UKIRT](#)

- [Enter an invitation code](#)
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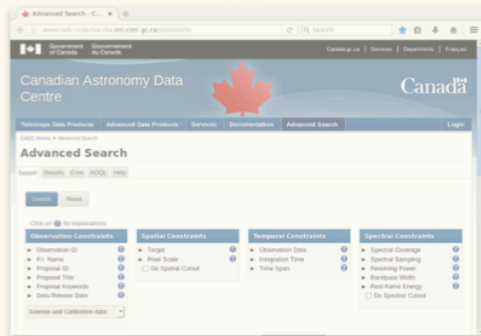


QT

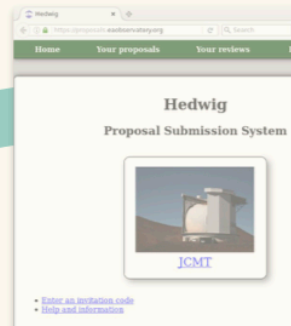


OMP

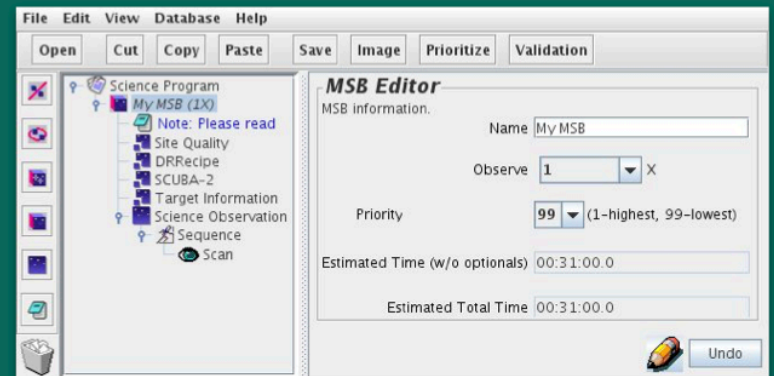
CADC



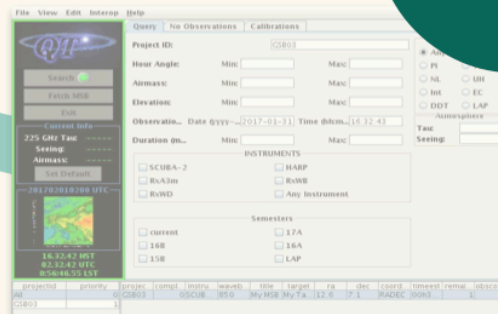
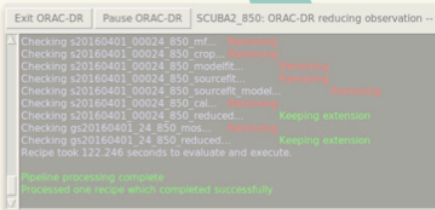
Hedwig



MSBs are created and uploaded using the JCMT Observing Tool (JCMT-OT)

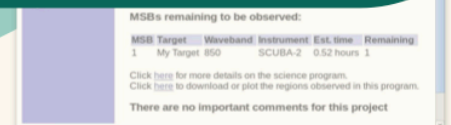


ORAC-DR



QT

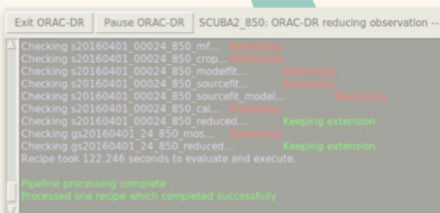
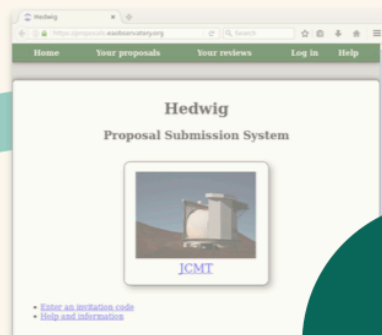
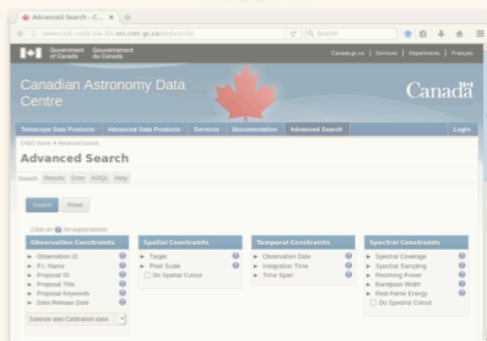
OMP



CADC

Hedwig

JCMT-OT

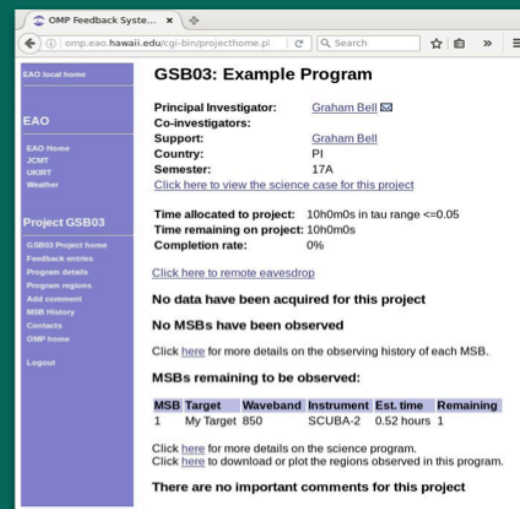


ORAC-DR

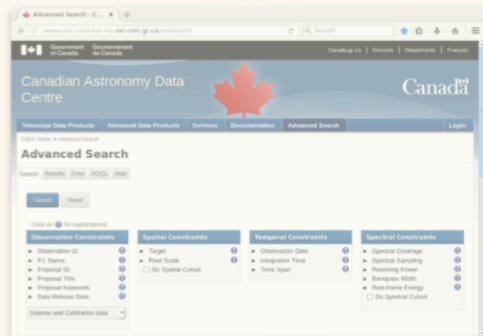


QT

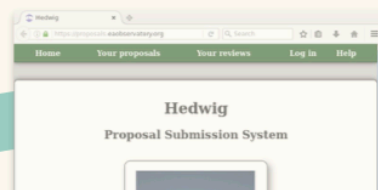
Progress of the observing program is monitored using the OMP. Includes links to follow a night's observing live.



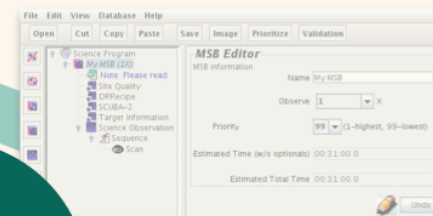
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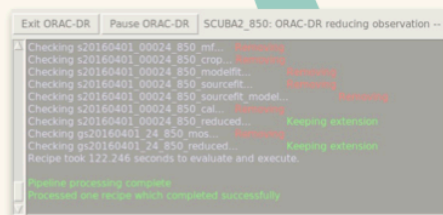
Hedwig



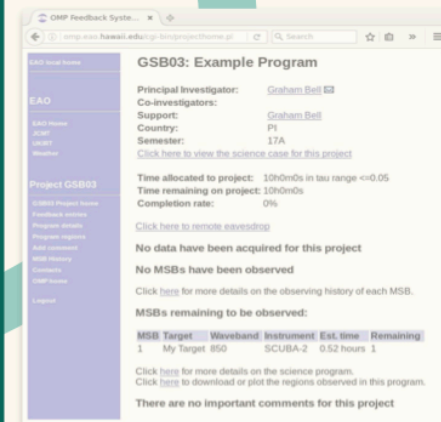
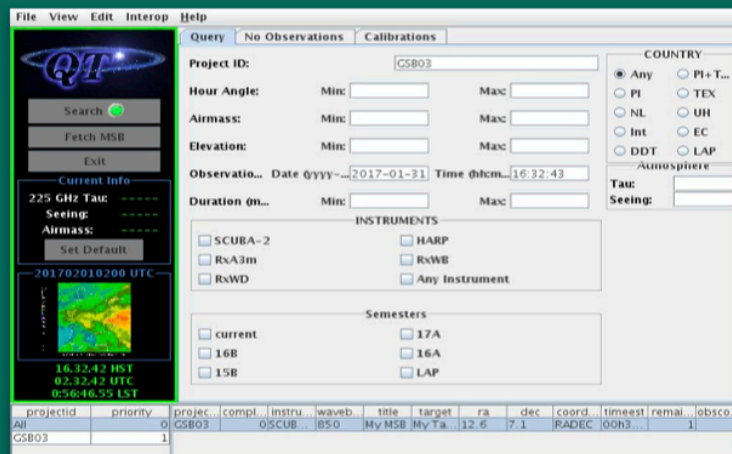
JCMT-OT



Telescope operators use the Query Tool (QT) to select the appropriate project to observe based on scientific ranking and current conditions

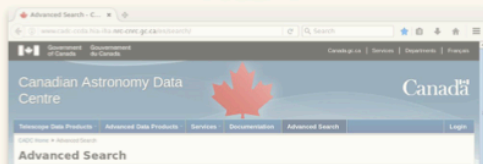


ORAC-DR

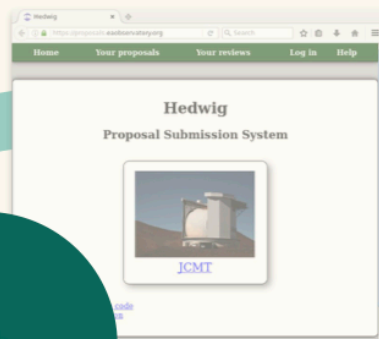


OMP

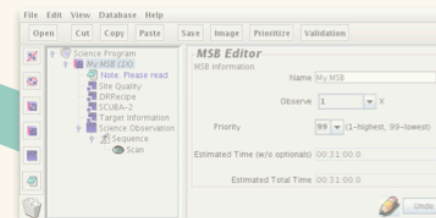
CADC



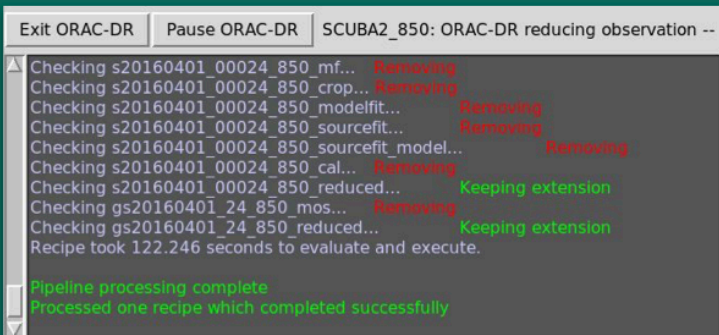
Hedwig



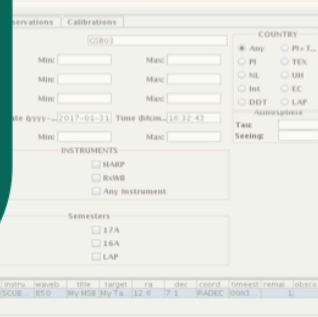
JCMT-OT



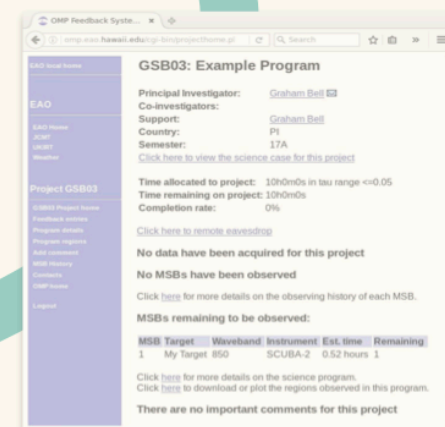
The ORAC-DR Data Reduction pipelines are run on the observations, both during the night so the Telescope Operator can assess quality, and the next day for a high quality reduction.



QT



OMP



Raw and Reduced data are uploaded within 24 hours to the JCMT Science Archive at CADC.

Checking s20160401_00024_850_modelent...
 Checking s20160401_00024_850_sourceff...
 Checking s20160401_00024_850_sourceff_model...
 Checking s20160401_00024_850_cal...
 Checking s20160401_00024_850_reduced...
 Checking gs20160401_24_850_mos...
 Checking gs20160401_24_850_reduced...
 Recipe took 122.246 seconds to evaluate and execute.
 Pipeline processing complete
 Processed one recipe which completed successfully

ORAC-DR

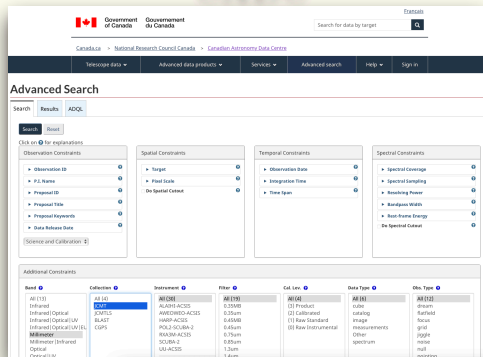
QT

Hedwig

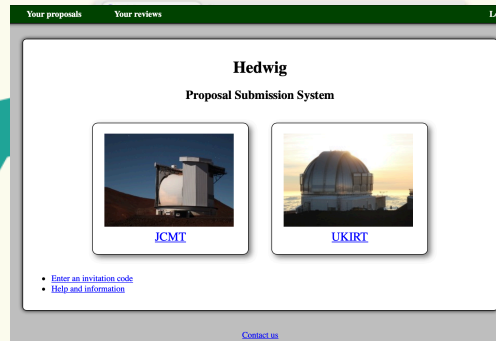
JCMT-OT

OMP

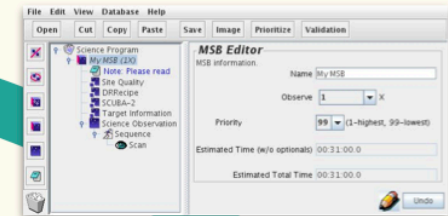
CADC



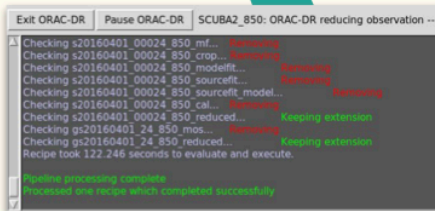
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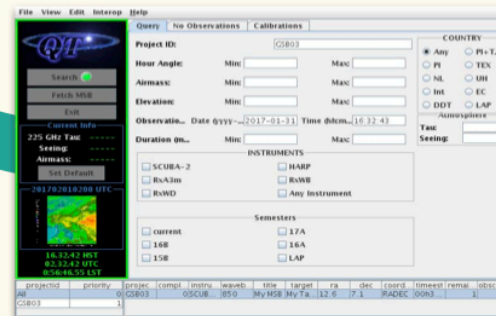
JCMT-OT



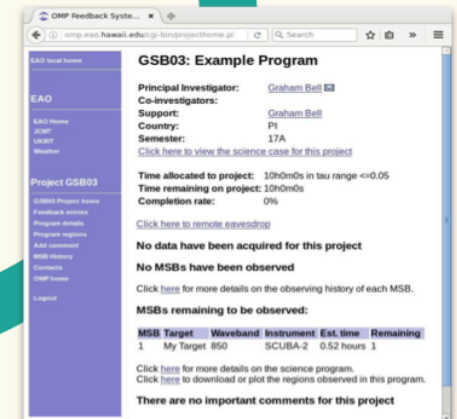
ORAC-DR



QT

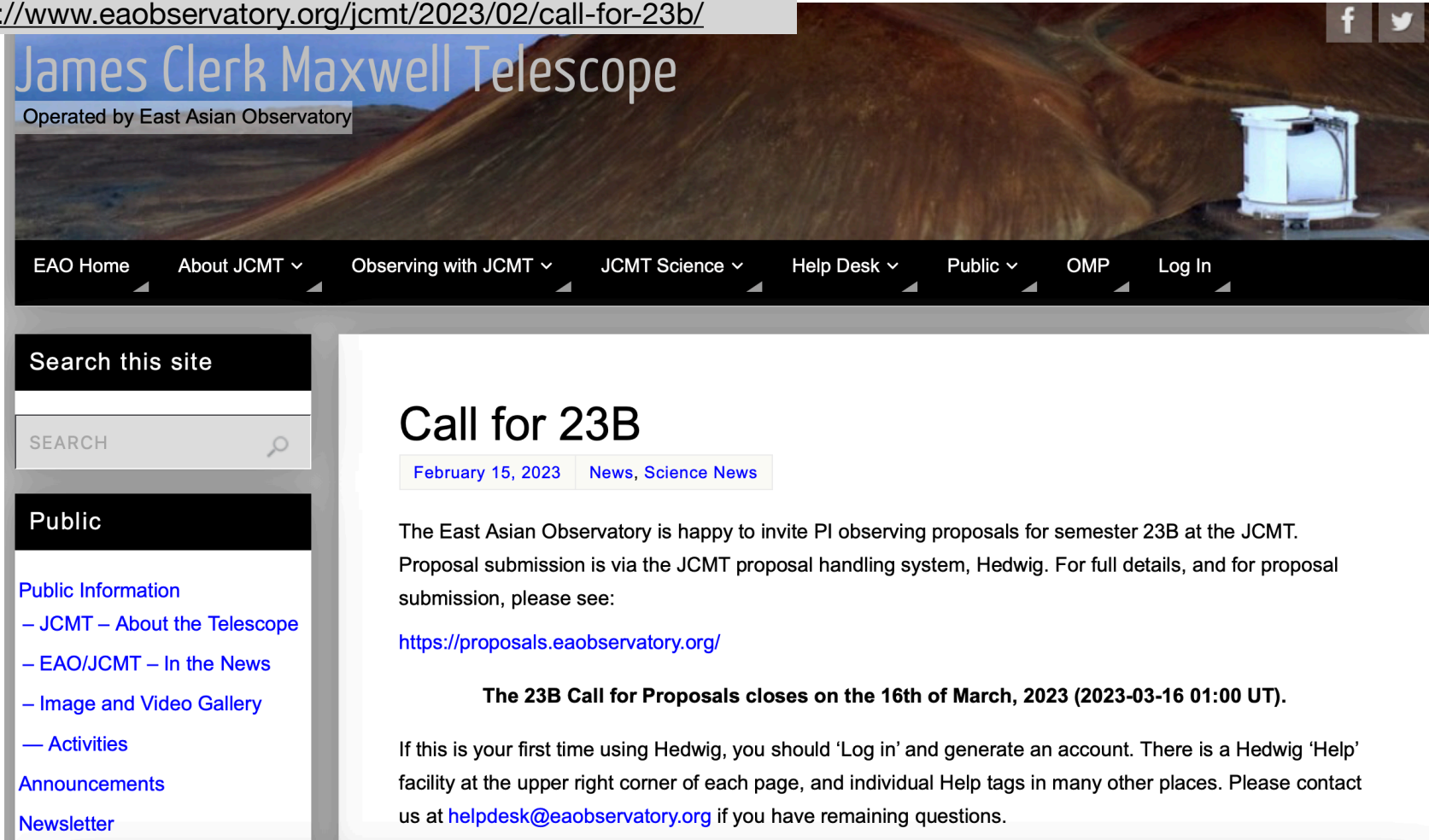


OMP



23A Call for Proposals

<https://www.eaobservatory.org/jcmt/2023/02/call-for-23b/>



The screenshot shows the homepage of the James Clerk Maxwell Telescope website. The header features the telescope's name and its operator, the East Asian Observatory. A navigation bar includes links to EAO Home, About JCMT, Observing with JCMT, JCMT Science, Help Desk, Public, OMP, and Log In. A search bar is located on the left. The main content area displays a 'Call for 23B' announcement dated February 15, 2023, categorized under News and Science News. The announcement text states that the East Asian Observatory is inviting PI observing proposals for semester 23B at the JCMT, with submission via the Hedwig system. It provides a link to the proposals page and states that the call closes on March 16, 2023. A sidebar on the left contains links for Public Information, Announcements, and a Newsletter.

James Clerk Maxwell Telescope
Operated by East Asian Observatory

EO Home About JCMT Observing with JCMT JCMT Science Help Desk Public OMP Log In

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Public

Public Information
– JCMT – About the Telescope
– EAO/JCMT – In the News
– Image and Video Gallery
– Activities

Announcements

Newsletter

Call for 23B

February 15, 2023 News, Science News

The East Asian Observatory is happy to invite PI observing proposals for semester 23B at the JCMT. Proposal submission is via the JCMT proposal handling system, Hedwig. For full details, and for proposal submission, please see:

<https://proposals.eaobservatory.org/>

The 23B Call for Proposals closes on the 16th of March, 2023 (2023-03-16 01:00 UT).

If this is your first time using Hedwig, you should 'Log in' and generate an account. There is a Hedwig 'Help' facility at the upper right corner of each page, and individual Help tags in many other places. Please contact us at helpdesk@eaobservatory.org if you have remaining questions.

23B Call for Proposals

<https://www.eaobservatory.org/jcmt/2023/02/call-for-23b/>



The Expanding Partner Program

PIs from Thailand, Malaysia, Vietnam, Indonesia, India, **Brazil** and **Argentina** requesting <15 hours will be automatically approved*** for time under the “Expanding Partner Program” – a program to encourage astronomers from new JCMT partners to make use of the JCMT.

**** approval reliant upon the program being technically feasible, without clashing with existing proprietary data (as per observatory requirements), dependent on weather/instrument pressures and with adjustments in line with recommendations by the TAC. Under the “Expanding Partner Program” priority will be given to new users of the JCMT.*

Public Information

- [JCMT – About the Telescope](#)
- [EAO/JCMT – In the News](#)
- [Image and Video Gallery](#)

— [Activities](#)

[Announcements](#)

[Newsletter](#)

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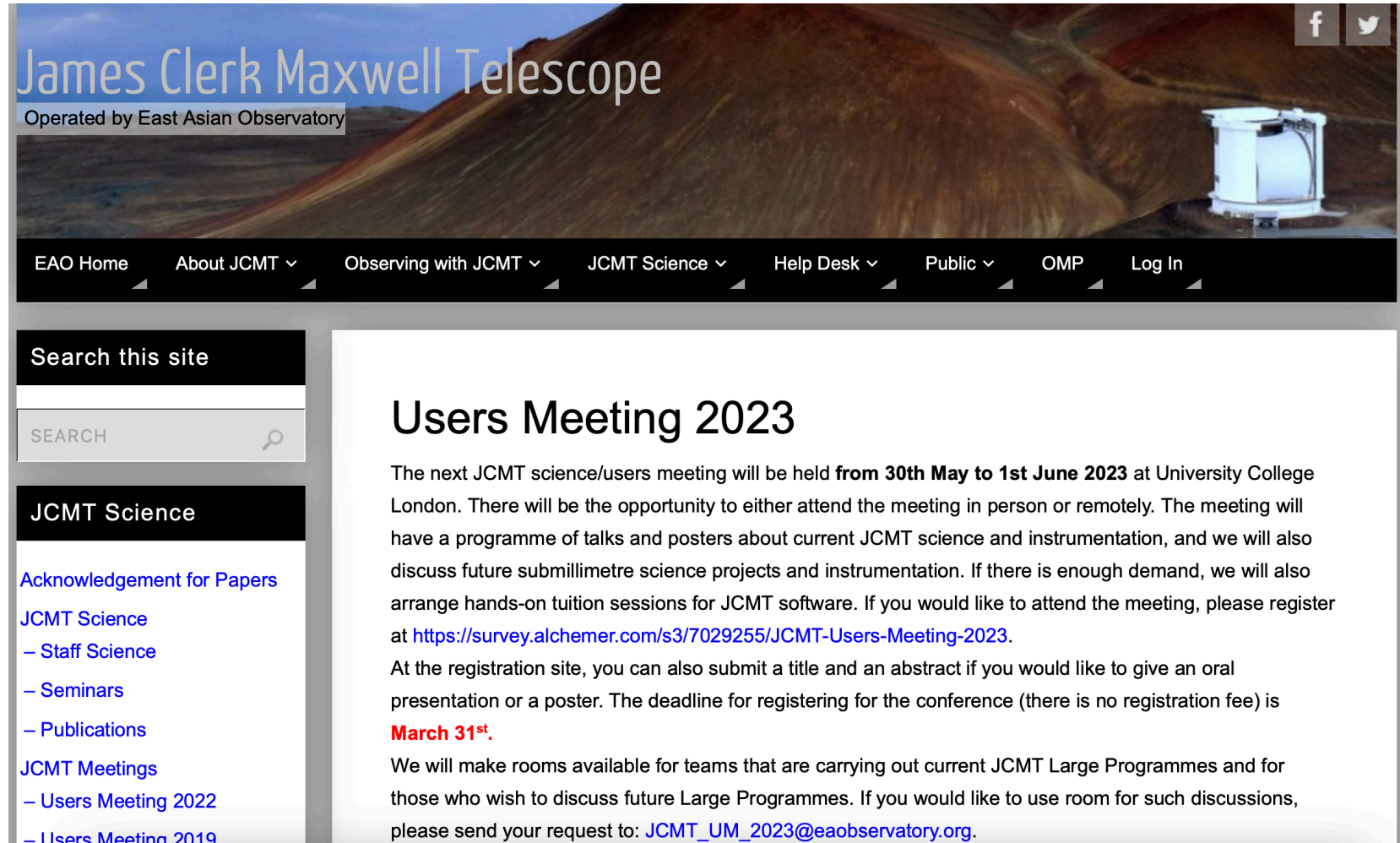
If this is your first time using Hedwig, you should ‘Log in’ and generate an account. There is a Hedwig ‘Help’ facility at the upper right corner of each page, and individual Help tags in many other places. Please contact us at helpdesk@eaobservatory.org if you have remaining questions.

Homework

- Start thinking about PI Science for 23B - Decline March 15th - the LLAMA (Brazil/Argentina) community qualifies for JCMT time under Expanding partner Program (guaranteed time*).
- Sign up for Hedwig account: <https://proposals.eaobservatory.org/jcmt/>
- Sign up to JCMT_Users email list by sending an e-mail to jcmt_users+subscribe@eaobservatory.org
- For information or assistance, please contact helpdesk@eaobservatory.org



JCMT Users Meeting



The screenshot shows the homepage of the James Clerk Maxwell Telescope website. The header features a large image of the telescope on a mountain ridge, with the text "James Clerk Maxwell Telescope" and "Operated by East Asian Observatory". A navigation bar contains links: EAO Home, About JCMT, Observing with JCMT, JCMT Science, Help Desk, Public, OMP, and Log In. A search bar is located on the left. The main content area is titled "Users Meeting 2023" and contains the following text:

The next JCMT science/users meeting will be held **from 30th May to 1st June 2023** at University College London. There will be the opportunity to either attend the meeting in person or remotely. The meeting will have a programme of talks and posters about current JCMT science and instrumentation, and we will also discuss future submillimetre science projects and instrumentation. If there is enough demand, we will also arrange hands-on tuition sessions for JCMT software. If you would like to attend the meeting, please register at <https://survey.alchemer.com/s3/7029255/JCMT-Users-Meeting-2023>.

At the registration site, you can also submit a title and an abstract if you would like to give an oral presentation or a poster. The deadline for registering for the conference (there is no registration fee) is **March 31st**.

We will make rooms available for teams that are carrying out current JCMT Large Programmes and for those who wish to discuss future Large Programmes. If you would like to use room for such discussions, please send your request to: JCMT_UM_2023@eaobservatory.org.

Left sidebar navigation:

- Search this site
- SEARCH
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 - Acknowledgement for Papers
 - JCMT Science
 - Staff Science
 - Seminars
 - Publications
 - JCMT Meetings
 - Users Meeting 2022
 - Users Meeting 2019

