

JCMT USER'S MEETING 2017 OVERVIEW

Jessica Dempsey and Harriet Parsons

Nanjing, 13 - 14 February



13 February 2017

WELCOME!

- Two years of EAO operation of JCMT
- Six proposal Calls down and half way through large programs
- Bumpy year for instrument performance
- SCUBA-2 has new filters
- POL-2 operational
- Visiting student program underway
- Big year coming up...

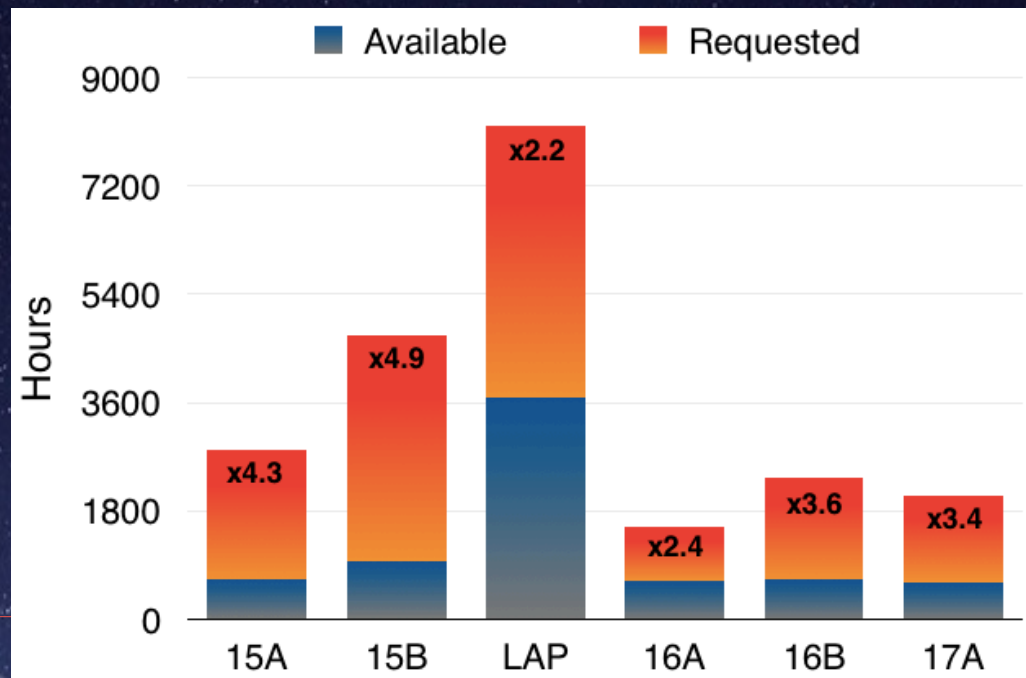
2 YEARS IN



SCIENCE CALLS

In 18 months we have had six proposal calls (4 in first five months) 22,000 hours requested, and over 1200 astronomers involved in proposals

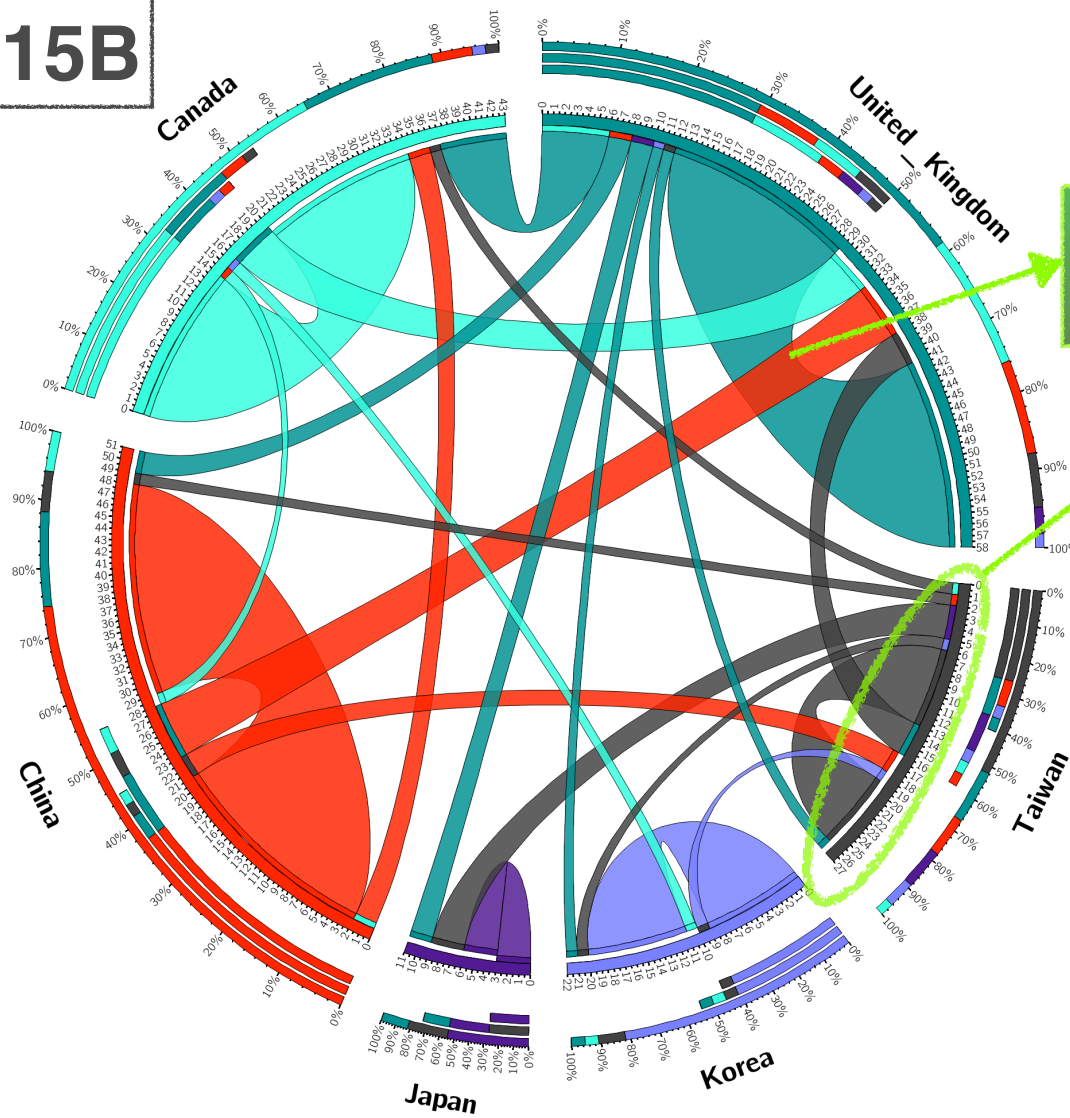
Average oversubscription of 3.5



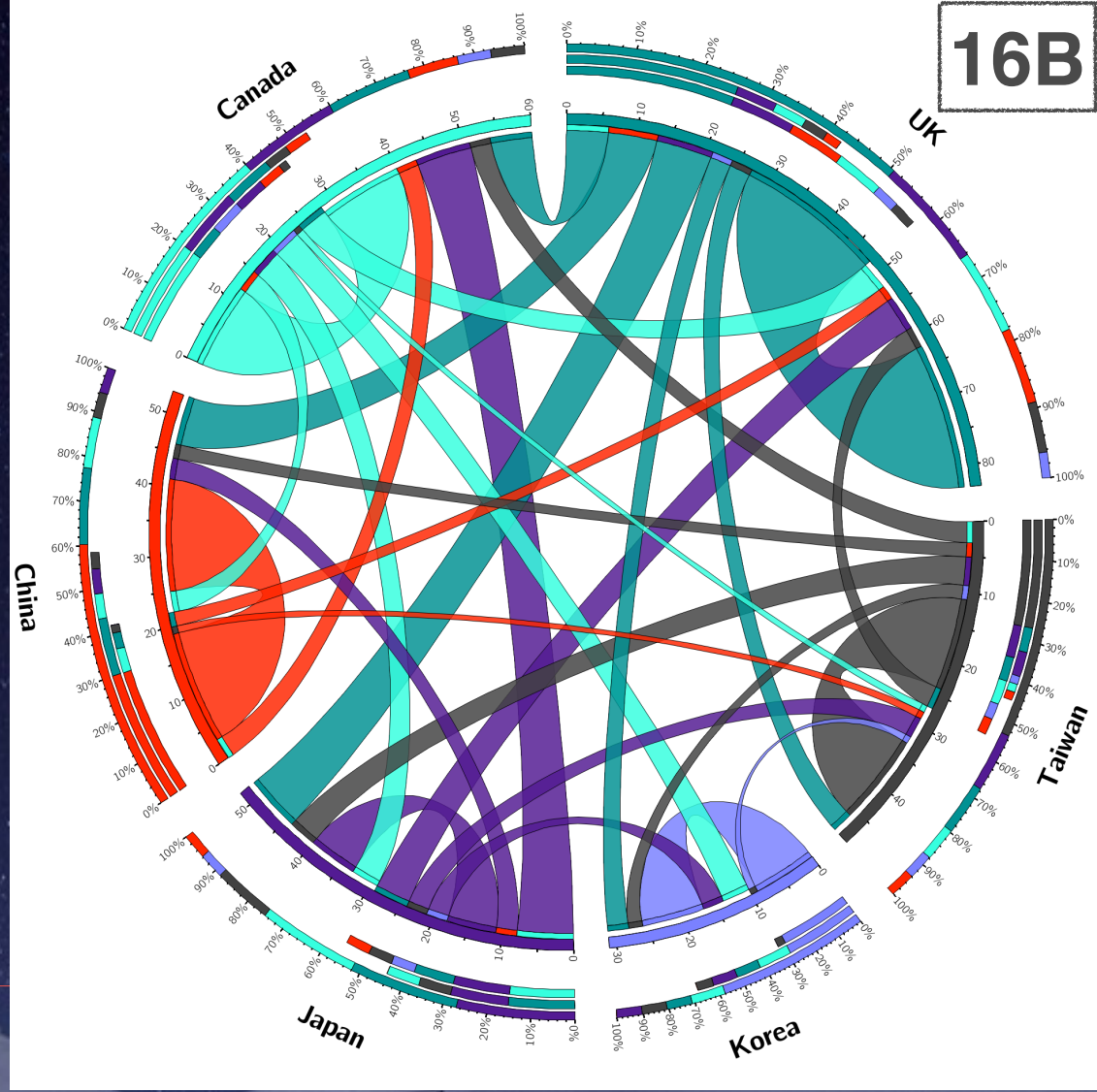
P.I. TIME ALLOCATIONS

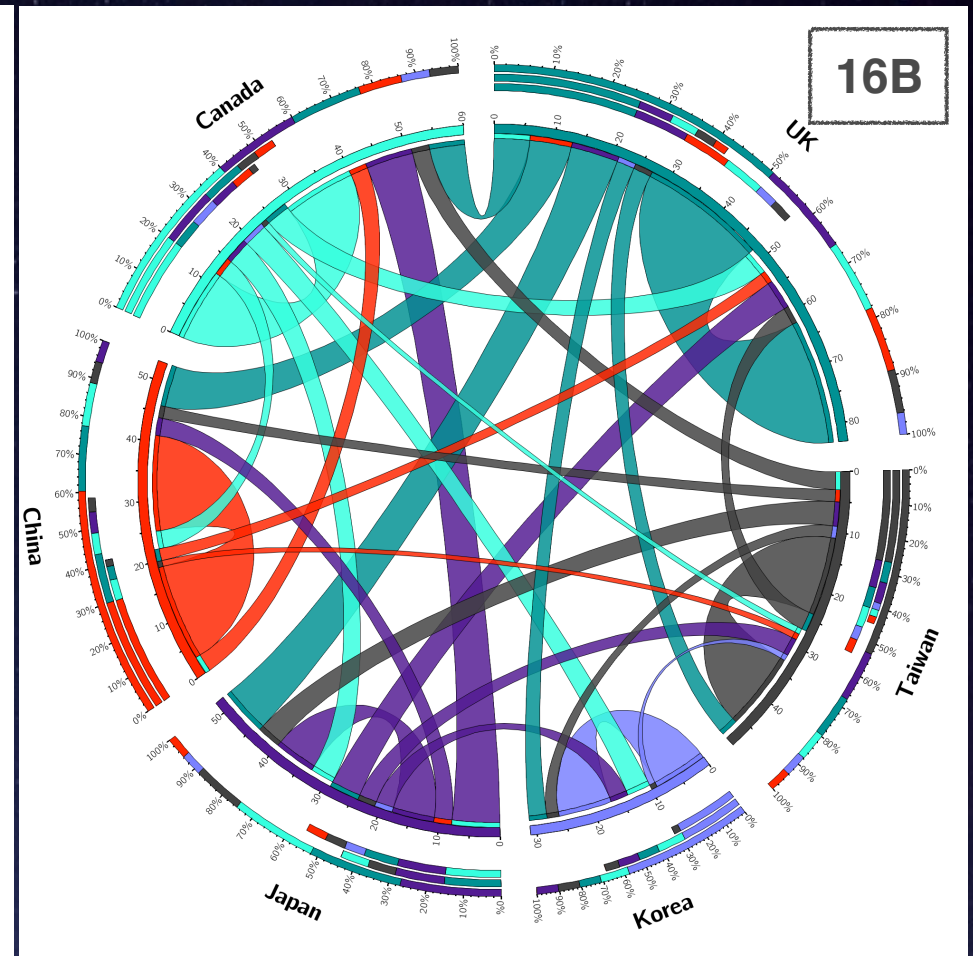
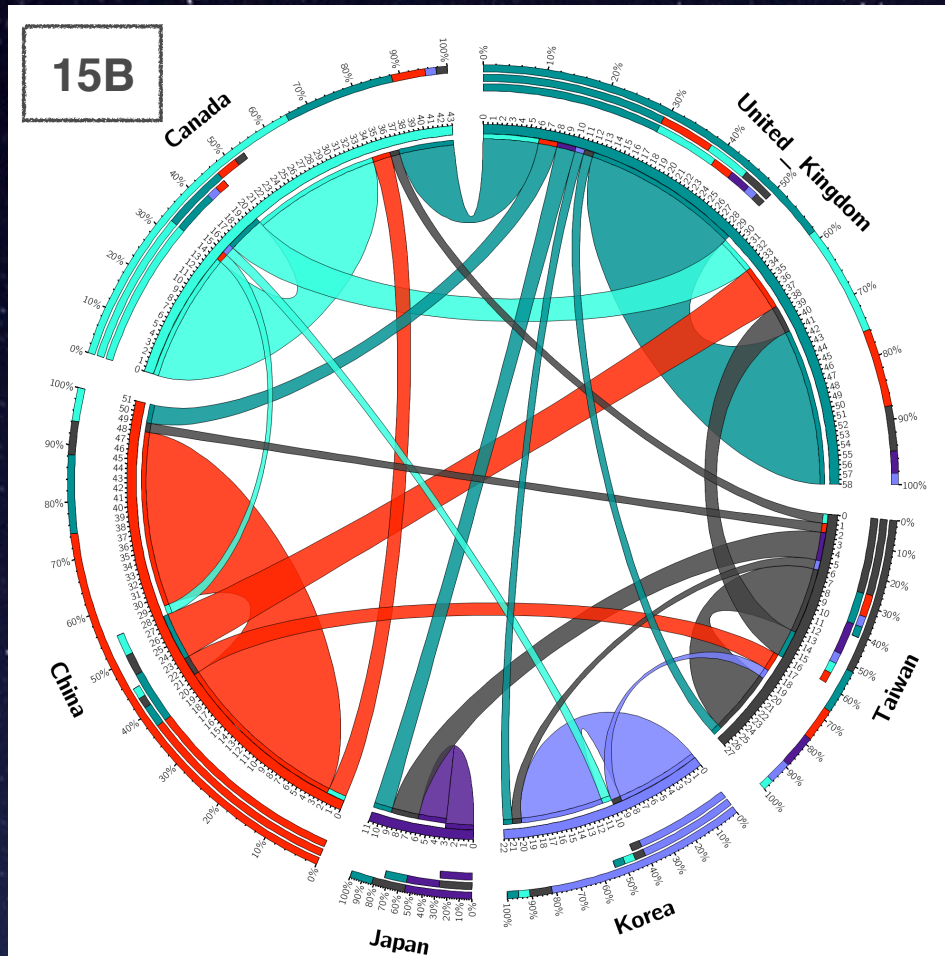
- 50% of each semester's science time is allocated to PI science
- We have a single TAC reviewing all regional submissions
- We have a fractional allocation algorithm designed to encourage collaborations between regions with experience (but little \$ therefore allocation) and less experienced regions with a lot of time to play with
- The key is to reward P.I.s who look to collaborate strongly between regions - and so we try to make that as easy as possible
- The TAC is charged with over-filling our flexible queues by 30-50%, and to maintain an eye on the relative regional allocations (which are scaled by financial contribution)
- We leave a fraction (currently 10%) open to 'Best Science' and this is not debited against any regional allocation

15B



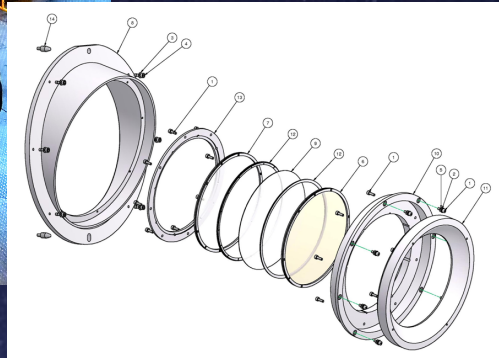
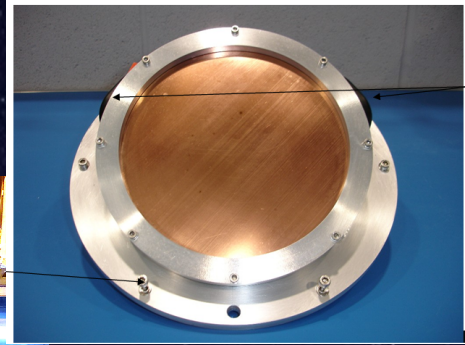
16B





Chord diagram software:
<http://mkweb.bcgsc.ca/tableviewer/>

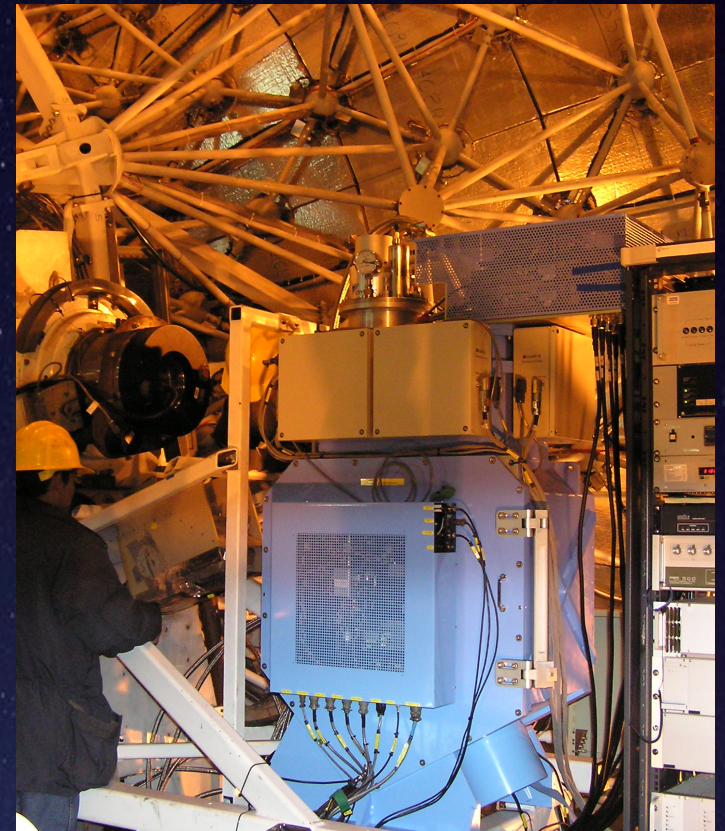
SCUBA-2



- Unscheduled warm-up in July indicated that the pulse tubes needed replacing
- Pushed for planned warm-up in October to:
 - Replace pulse tubes with new
 - Install new filter stack designed by Cardiff
- Cool-down started in mid-November - initially successful: first (preliminary) results suggest 20% improvement in throughput at 850 microns
- BUT... a mixture tweak started another warm-up in early December.
- We found a leak on cryostat exterior - after repair in January our cool-down was unsuccessful
- Just last week we successfully cooled - and traced the issue to clogged filters in the gas handling system

HARP

- Mostly operational until forced warm-up in January as result of failing cold-head which required repair and reinstallation
- Some issues with unstable receptors
- Tuning issues in mid-year required significant overhaul of tuning curves



RXA

- New mixer (ASIAA) installed at start of 2016 to improve low-frequency performance for better compatibility with Event Horizon Telescope VLBI
- Instabilities observed - suspected to be standing waves as result of altered mixer optics
- Uneven side-band ratios observed
- Significant and on-going work to characterize the calibration
- See Sarah Graves workshop talk on Wednesday for more details



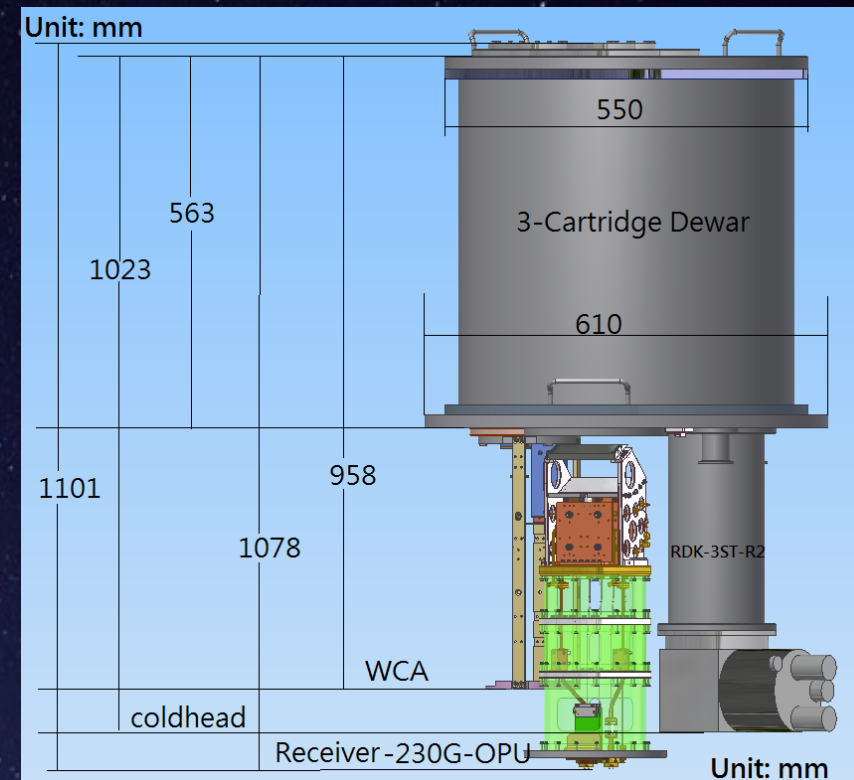
FUTURE INSTRUMENT PROJECT

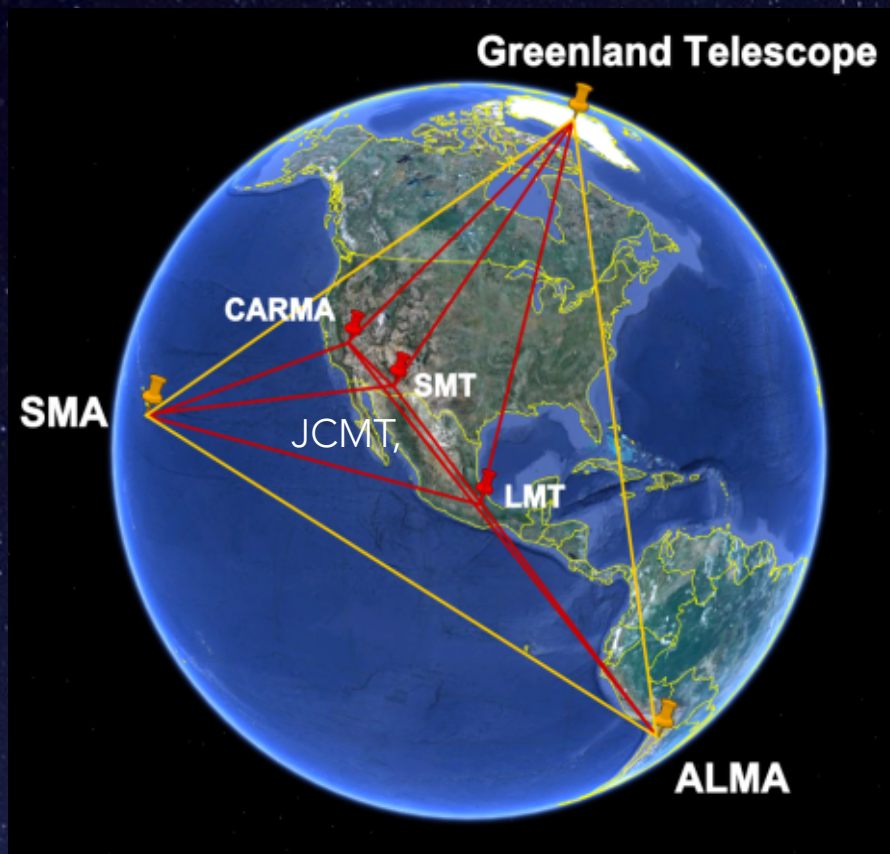
Instrument	Type	Frequency	Pixels	PolS	Bandwidth	Tsys/ NEFD	F.O.V. (arcmin ²)	Map speed (x)	Timescale
RxA (230 - current)	Heterodyne	219 - 272 GHz	1	1	3 - 9 GHz	140	0.1	1.0	
New 230 receiver	Heterodyne	210 - 275 GHz	1	2	4 - 10 GHz	100	0.1	3.9	2018
HARP (345 - current)	Heterodyne	325 - 375 GHz	16	1	3 - 5 GHz	250	2.3	1.0	
New 345 receiver	Heterodyne	320 - 375 GHz	45	2	4 - 8 GHz	200	7.1	8.8	Nov. 2021
SCUBA-2	Continuum	850/450 μ m	5120	-	-	93	30.1	1.0	
SCUBA-2+	Continuum	850/450 μ m	6400	-	-	35	48.4	11.3	Dec 2016 / Nov 2020



- Identical 3-cartridge dewar design as for the GLT
- Much better compatibility for EHT - first 230GHz cartridge with dual-polarization
- 345GHz cartridge following (HARP is ill-suited for VLBI)
- Remaining cartridge space for new ALMA technology testing, GLT testing, low-frequency East-Asian VLBI

NEW 230GHZ RECEIVER





- JCMT is part of EHT
- $D \sim 9000 \text{ km}$
- Resolution $\sim 10 \mu\text{as}$
- Goal: Resolve Black Hole shadow; measure spin and mass
- Fringes with ALMA in Sept 2015

EVENT HORIZON TELESCOPE



VLBI PLANS AT JCMT

- Intent is to move to stand-alone VLBI station
- This reduces impact on SMA and allows full use of all antennas
- Current RxA receiver has new mixer for better compatibility with EHT frequencies
- Next EHT VLBI run in April to be using current receiver,
- Stand-alone VLBI capabilities at JCMT by end of 2017
- Obvious synergies with SMA offer further opportunities



TIMELINE FOR EAO



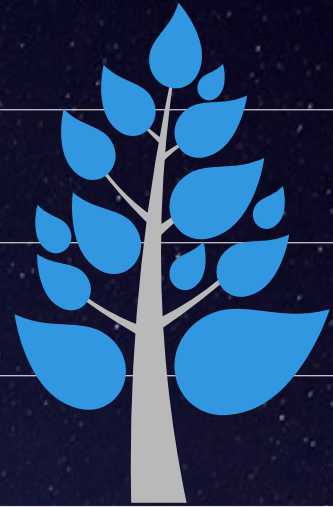
1. 2015 - 2016:

EAO incorporated
JCMT operations assumed
JCMT Instrument upgrades begin
JCMT joins EHT



2. 2017

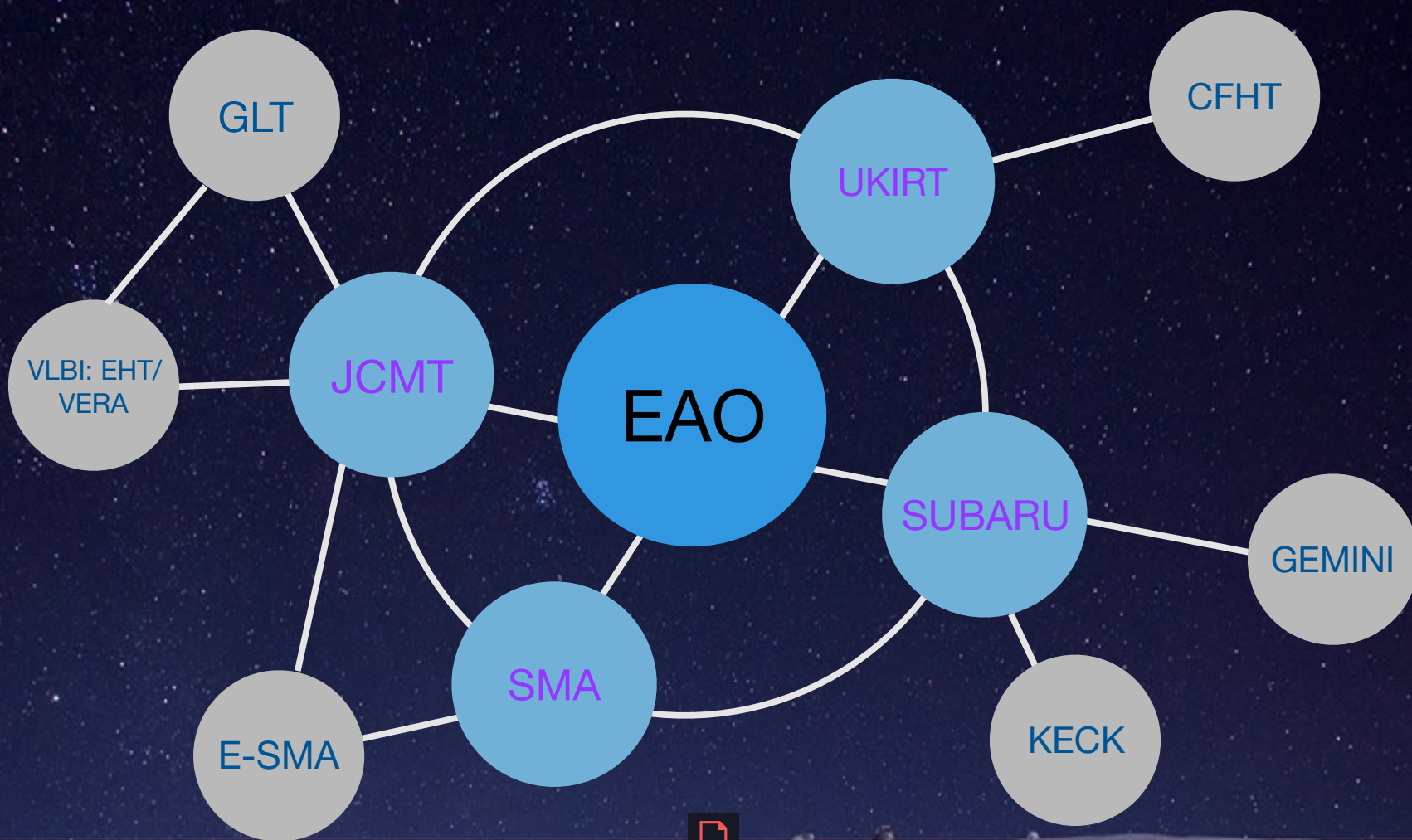
Access to 17A/17B Subaru time
Access to 17A/17B SMA time
EHT and standalone VLBI



3. 2018...

UKIRT operational partner?
Full Partnership with Subaru?

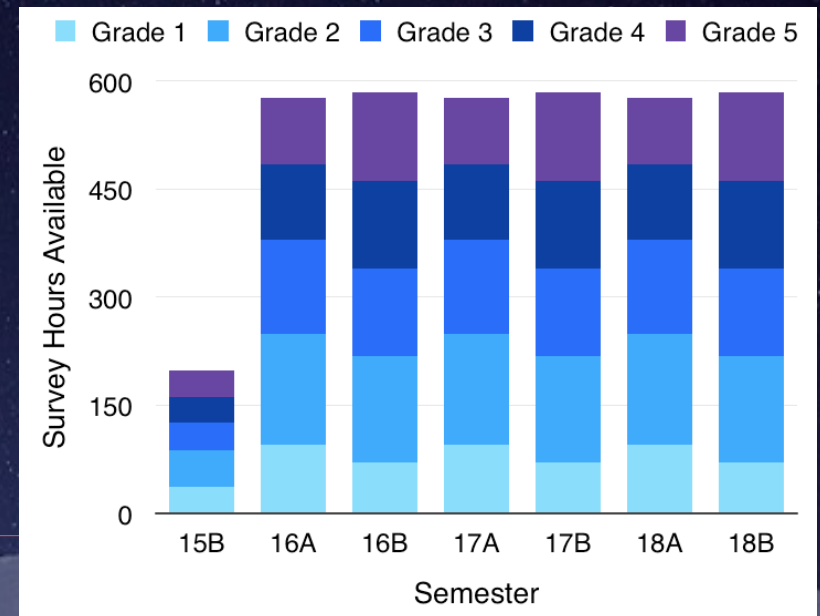




LARGE PROGRAM CALL (I)

- Large program call opened July 1st 2015
- Up to 3,676 hours available over three years
 - 50% of telescope time from December 2015 - January 2019 (end of 18B)
- Requirements:
 - self contained & answering number of important scientific questions
 - >200 hours
 - demonstrate legacy value
 - include members from multiple EAO partner regions
- Large Program call closed July 31st 2015
- seven approved programs

Semester	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Total Hours
15B	36	51	38	36	35	197
16A	95	154	131	104	92	576
16B	70	148	121	122	122	584
17A	95	154	131	104	92	576
17B	70	148	121	122	122	584
18A	95	154	131	104	92	576
18B	70	148	121	122	122	584
Total	532	955	795	715	679	3676



LARGE PROGRAM ALLOCATIONS

- 2,397 hours allocated to seven programs
- Programs ranked on scientific merit
- Under-allocation of time will allow programs to be completed faster than predicted - faster science return
- Mid-Term review March 2017
 - review current programs
 - accept new programs
 - return unallocated hours to PI queue
- Only members from EAO partners and regions can have access to raw and initial data products

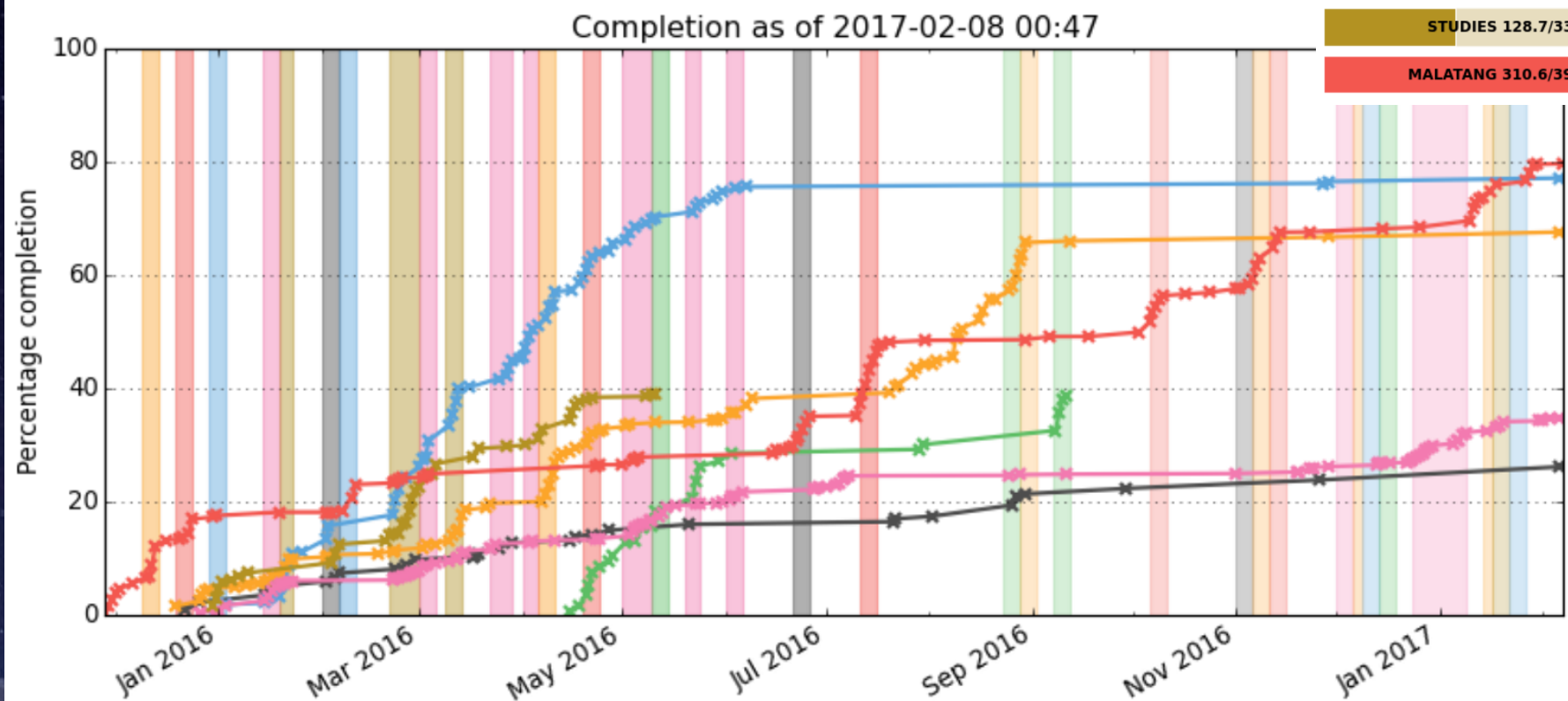
Large Program Allocations

Large Program	Instrument	Hours awarded
A Transient Search for Variable Protostars	Sc-2	150
S2-COSMOS: An EAO SCUBA-2 survey of 1,000 SMGs in the COSMOS field	Sc-2	223
SCOPE: SCUBA-2 Continuum Observations of Pre-protostellar Evolution	Sc-2	300
BISTRO: B-fields In Star forming RegiOns	Pol-2	224
JINGLE: the JCMT dust and gas In Nearby Galaxies Legacy Exploration	Sc-2/RxA	780
STUDIES: SCUBA-2 Ultra Deep Imaging EAO Survey	Sc-2	330
MALATANG: Mapping the Dense Molecular Gas in the Strongest Star-forming Galaxies	HARP	390
Total		2397

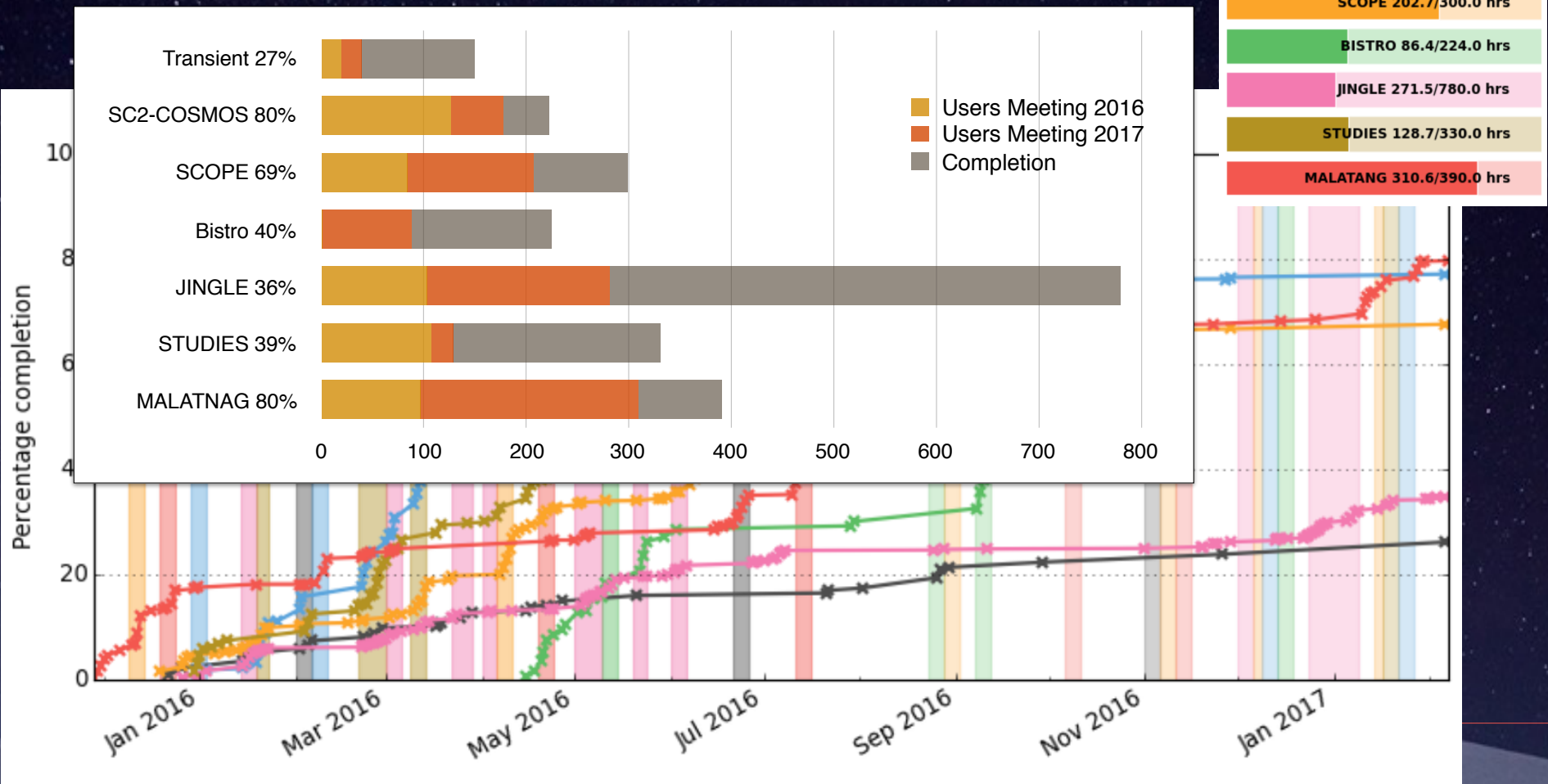
Hours awarded per weather band

Large Program	Band 1	Band 2	Band 3	Band 4	Band 5
Transient	50	50	50		
S2-COSMOS		111	112		
SCOPE			150	150	
BISTRO		224			
JINGLE		57	123	200	400
STUDIES	330				
MALATANG		40	100	250	

LARGE PROGRAM PROGRESS

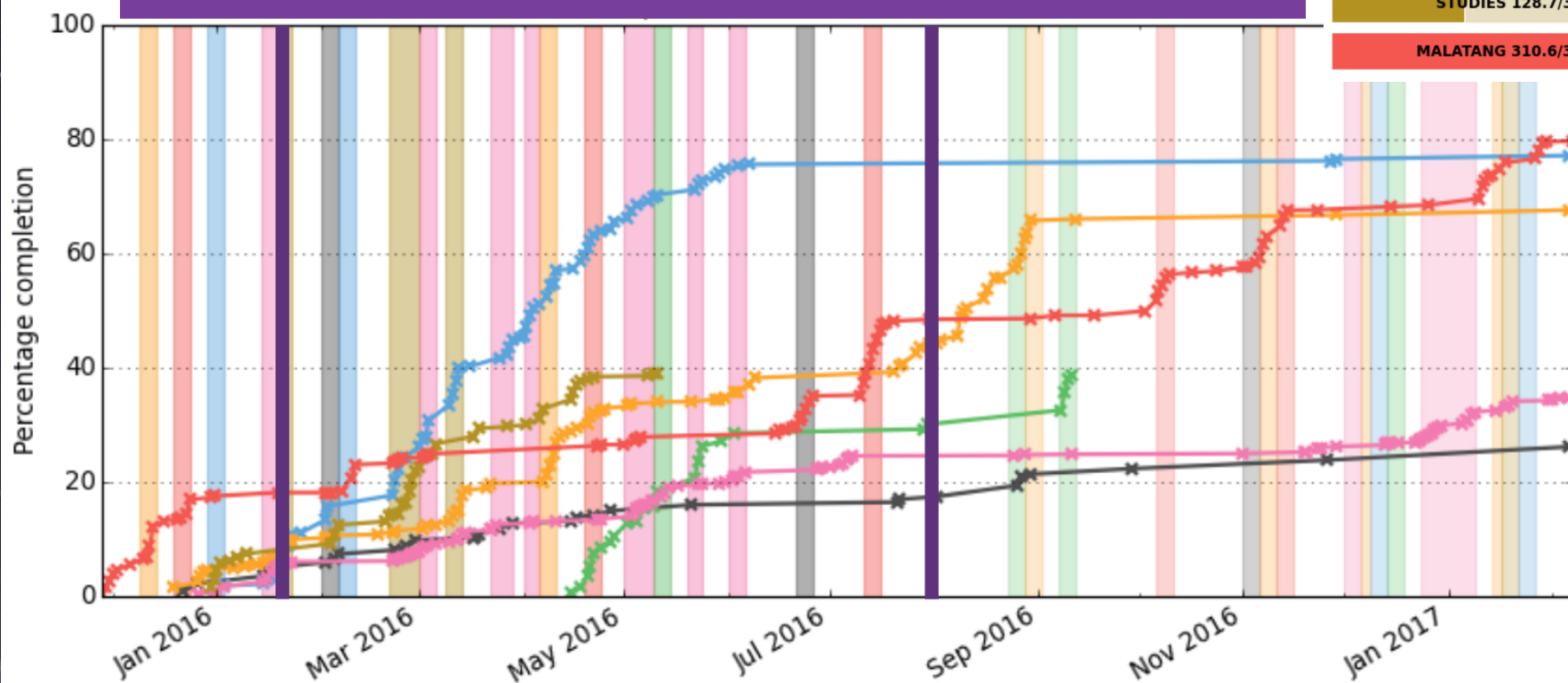


LARGE PROGRAM PROGRESS

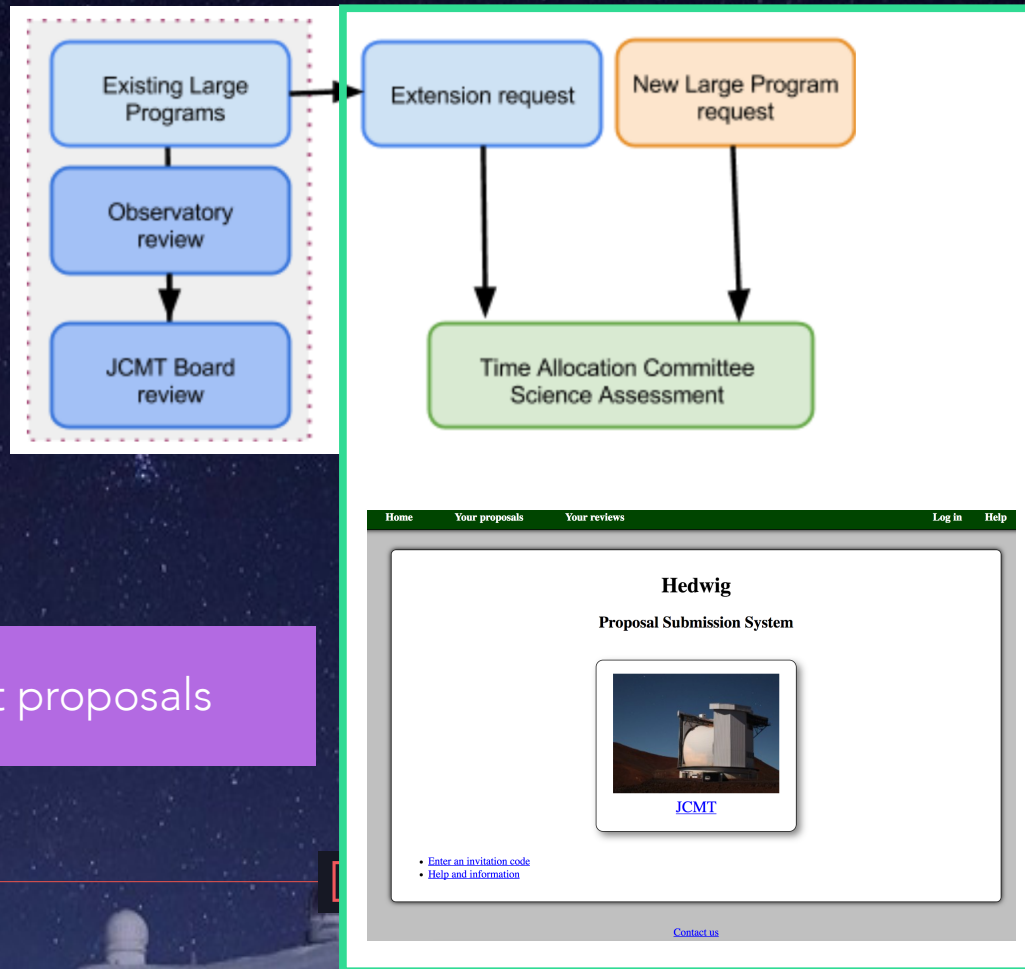


LARGE PROGRAM PROGRESS

Data observed before February 2016 are **now** publicly available via CADC



LARGE PROGRAM MID TERM REVIEW AND OPEN CALL



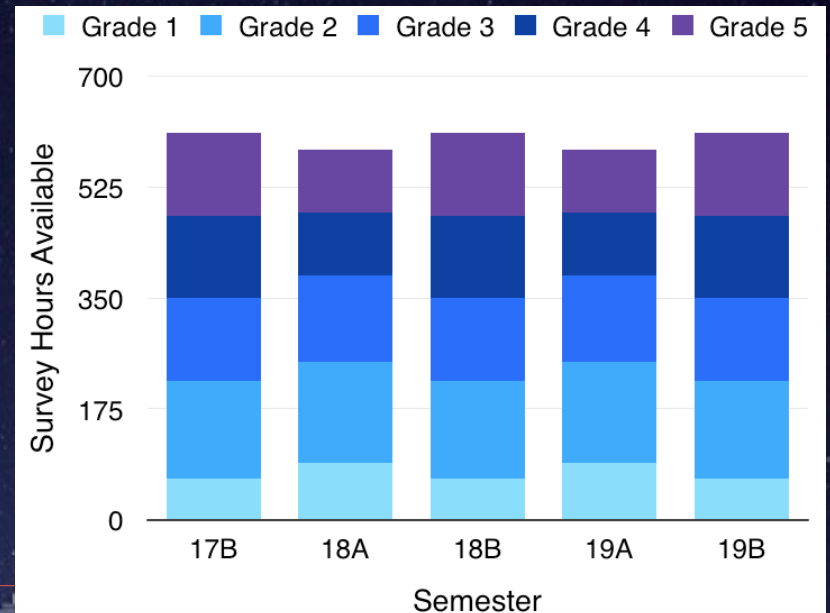
Hedwig is now open to accept proposals

LARGE PROGRAM CALL (II)

- Large Program call opens Feb 13th 2015 - TODAY
- Up to 3,000 hours available over 2.5 years
 - 50% of telescope time from August 2017 - January 2020 (end of 19B)
- Requirements:
 - self contained & answering number of important scientific questions
 - > 200 hours
 - demonstrate legacy value
 - include members from multiple EAO partner regions
- Large Program call closes March 15th 2017

Watch this space and get involved now!

Semester	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Total Hours
17B	65	155	130	130	130	610
18A	90	160	135	100	100	585
18B	65	155	130	130	130	610
19A	90	160	135	100	100	585
19B	65	155	130	130	130	610
Total avail	375	785	660	590	590	3000



LARGE PROGRAM CALL (II) & 17B CALL NOW OPEN

James Clerk Maxwell Telescope

Operated by East Asian Observatory

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Observing

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Regular Call for Semester 17B

Semester Information

Semester start of observing	2017-08-02 00:00 UT
Semester end of observing	2018-02-02 00:00 UT

Queue	Large Program	PI Science
Call for proposals closing date	2017-03-16 01:00 UT	2017-03-16 01:00 UT

The East Asian Observatory invites observing proposals of two types at this time:

1. 17B PI Proposals

Proposals with Principal Investigators (PIs) from its partner regions (China, Japan, South Korea, Taiwan) or from eligible PIs in the UK and Canada. Please check [the eligibility requirements](#) to see if you are eligible to submit.

PI requests are limited to a maximum of 200 hours; each PI proposal should aim to be

- The Time Allocation Committee (TAC) for JCMT will assess each PI proposal and allocate observing time accordingly.
- We encourage multi-national collaboration — time will be distributed following the [rules for collaborative projects](#).
- We also encourage projects which request the heterodyne instruments and/or [weather bands](#) 4 and 5.
- Anyone who submits a proposal to the JCMT should expect to be called upon to review one or two of the other proposals received in the same round. Your co-operation in the review process is appreciated.

2. JCMT Large Programs II (to encompass all semesters from 17B up to and including 19B)

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

JCMT (for details

al handling

SUBARU CALL (EAO ASTRONOMERS)

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<http://www.eaobservatory.org/east-asia-observatory/subaru/subaru-call/>

SUBARU TELESCOPE

EAO_subaru@eaobservatory.org

The East Asian Observatory is pleased to partner with the Subaru Telescope to enable astronomers from an East Asian participant region to have access to Subaru time. The East Asian Observatory proposals are considered by the Subaru scientific panel alongside regular Subaru proposals, with a guaranteed award of time of a total of 3 nights of observing in the semester.

The 17B semester Call at the Subaru Telescope is now open, click [here](#) for more details.

If you have any questions related to the EAO/Subaru partnership, future proposals or past programs please email:

EAO_subaru "at" eaobservatory.org

Open Enrollment for successful proposals

The following link provides details of past successful EAO/Subaru proposals. Details of these projects and how to get involved with their programs

OBSERVATORY FEEDBACK



<http://www.eaobservatory.org/jcmt/observing/support/reporting-back/>

James Clerk Maxwell Telescope

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- Observing Proposals
- Approved PI Programs
- Proposal submission
- Preparing justification files
- Submissions Checklist
- Observation Management
- Project
- Observing Tool
- User support
- Schedules
- Visitor information
- Safety Briefing

Reporting back

Summit Report Form

Summit observers should fill in the following form on completion of their observing run. It is important for JCMT's records and to ensure that any problems encountered during the run are dealt with. Your feedback will also help inform our future planning for improvements to our level of service and support. Completion of the form should take no more than 5-10 minutes:

[Observing Report Form](#)

PI Semester Report Form

If you have any problems, questions or concerns with your project before, during or after your data has been collected you should feel free to contact your Friend of Project or support scientist. You can contact your Friend of Project by sending an email to flex@eaobservatory.org, and by putting the project ID in square parentheses [] in the Subject line. i.e. [m15ai72].

...respective of if their program has received time or not – will be
...ck will help inform our future planning for improvements to our
...project's lifespan (from MSB creation to data acquisition and
...e no more than 5-10 minutes:

[Project/PI Report Form](#)

OBSERVATORY SUPPORT - COME JOIN US!

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EMPLOYMENT WITH EAO/JCMT

EAO/JCMT Employment Opportunities

EAO/JCMT SUPPORT ASTRONOMER – ID# 17054

<http://www.eaobservatory.org/east-asia-observatory/employment/jcmtjobs/>

), located in Hilo, Hawai'i. Continuation of employment is
y of funds, and compliance with applicable Federal/State

laws.

MONTHLY SALARY: Salary commensurate with qualifications.

JCMT SOFTWARE UPDATES

- Starlink 2016A was released: this must be used for any data taken in 2017 onwards (leap second support)

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Starlink: **WelcomePage**

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Starlink

The Starlink Project was a long running UK Project supporting astronomical data processing. It was shut down in 2005 but the software continued to be developed at the [Joint Astronomy Centre](#) until March 2015, and is now maintained by the [East Asian Observatory](#). The code is open source.

[Starlink News](#) was last updated November 15th 2016.

Getting the Software

The Joint Astronomy Centre and East Asian Observatory have made a number of [Releases](#). The most recent is [2016A](#) which can be downloaded from [here](#) where installation instructions are also provided.

Please note that there will be a leap second at the end of December 2016; data taken since then will be gridded wrongly by all releases prior to [2016A](#). Please use [2016A](#) (or a development rsync version) to reduce JCMT data taken from this point onwards.

For a cutting edge version, you can [rsync from the East Asian Observatory](#)

Citing the software

If you have used Starlink software in your research, please cite the software in your papers.

For the Starlink software package please use:

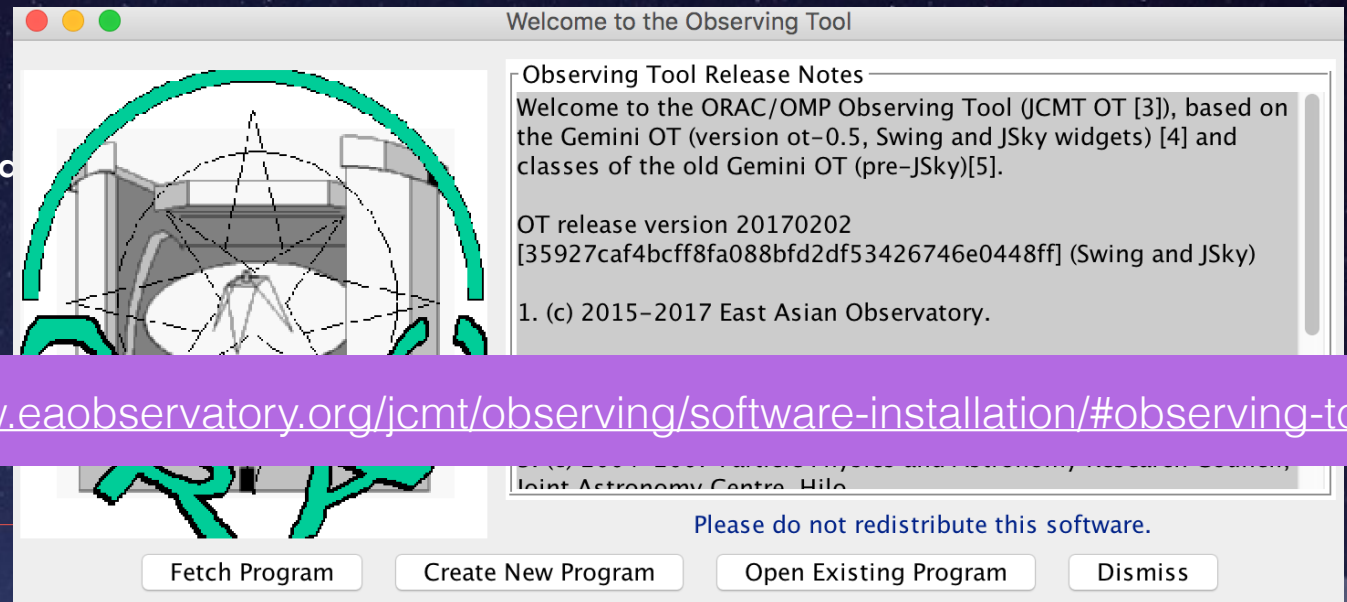
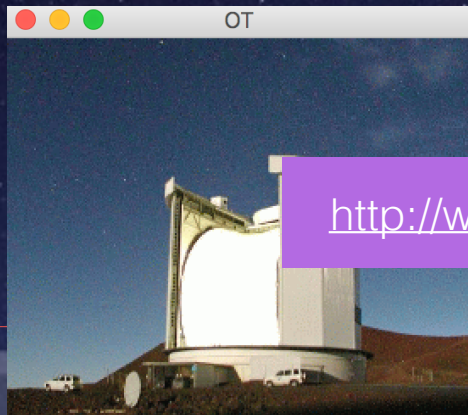
- Starlink citation: Currie et al 2014 [2014ASPC..485..391C](#)
- Starlink acknowledgement: "The Starlink software (Currie et al 2014) is currently supported by the East Asian Observatory."

<http://starlink.eao.hawaii.edu/starlink>

JCMT SOFTWARE UPDATES

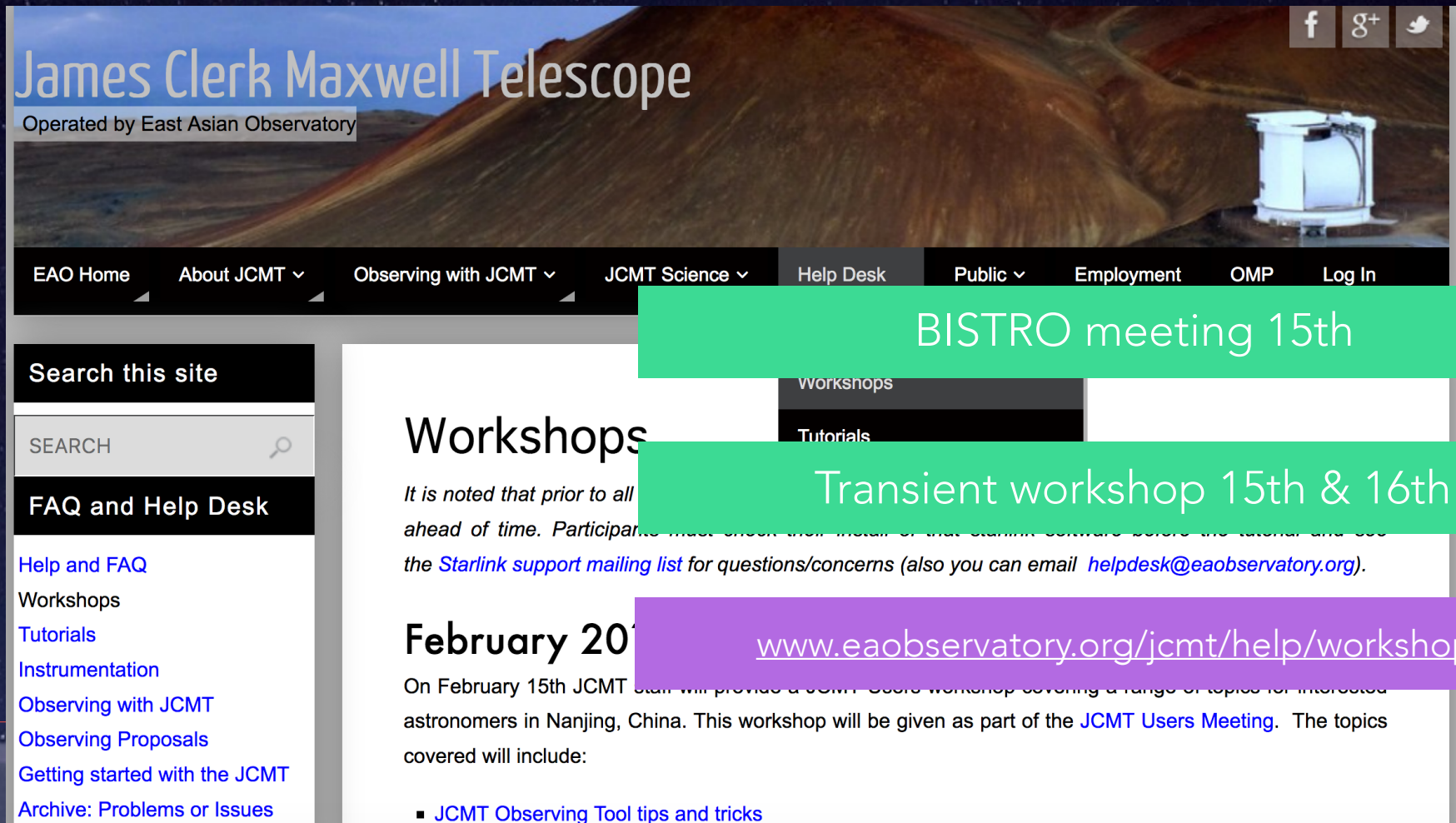
- Starlink 2016A was released: this must be used for any data taken in 2017 onwards (leap second support)
 - POL-2 reduction software included in Starlink 2016A: see tutorial in DR workshop
 - David Berry is developing improved DR software that won't require a separate SCUBA-2 map for POL-2 DR.

- Observing Tool: improved



<http://www.eaobservatory.org/jcmt/observing/software-installation/#observing-tool>

USER MEETING WORKSHOP - 15TH FEBRUARY



The screenshot shows the homepage of the James Clerk Maxwell Telescope (JCMT) website. The header features the telescope's name and the text 'Operated by East Asian Observatory'. A navigation bar includes links for EAO Home, About JCMT, Observing with JCMT, JCMT Science, Help Desk, Public, Employment, OMP, and Log In. A search bar is located on the left. The main content area is titled 'Workshops' and includes a notice about the February 20th workshop. Overlays highlight specific information: a green box for the BISTRO meeting, another green box for the Transient workshop, and a purple box for the workshop URL.

James Clerk Maxwell Telescope
Operated by East Asian Observatory

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Workshops

workshops
Tutorials

BISTRO meeting 15th

Transient workshop 15th & 16th

February 20th

www.eaobservatory.org/jcmt/help/workshops/

It is noted that prior to all ahead of time. Participants must check their install of that Starlink software before the tutorial and see the [Starlink support mailing list](#) for questions/concerns (also you can email helpdesk@eaobservatory.org).

On February 15th JCMT will provide a JCMT Users Meeting covering a range of topics for interested astronomers in Nanjing, China. This workshop will be given as part of the **JCMT Users Meeting**. The topics covered will include:

- JCMT Observing Tool tips and tricks

Hosted by East Asian Observatory

Univ. of Arizona/UKIRT



Mauna Kea, Hawaii

2017 Feb 12 Sun 11:58 HST

East Asian Observatory

James Clerk Maxwell Telescope



Mauna Kea, Hawaii

2017 Feb 12 Sun 11:58 HST