

ALMA Cycle 6 Proposer's Guide

Jongsoo Kim

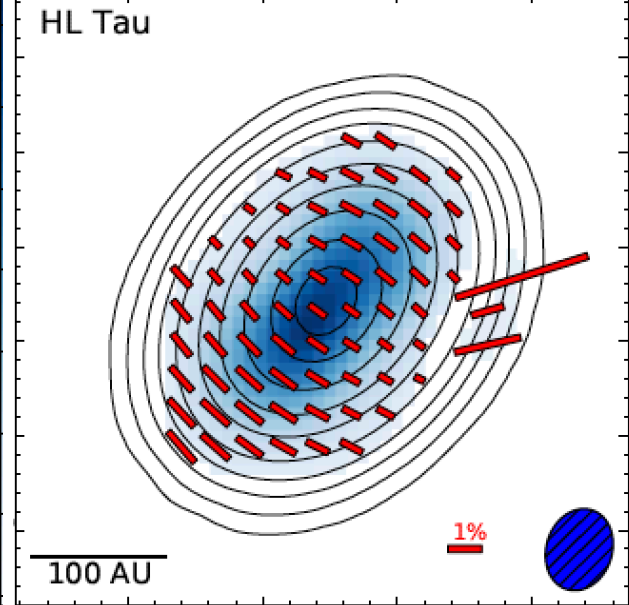
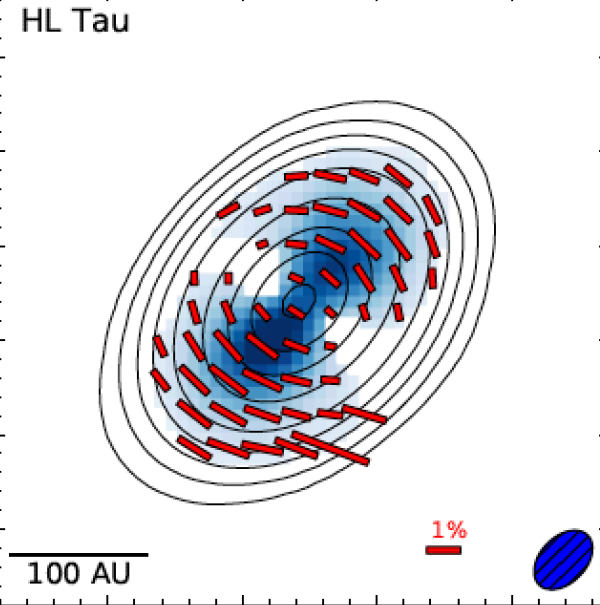
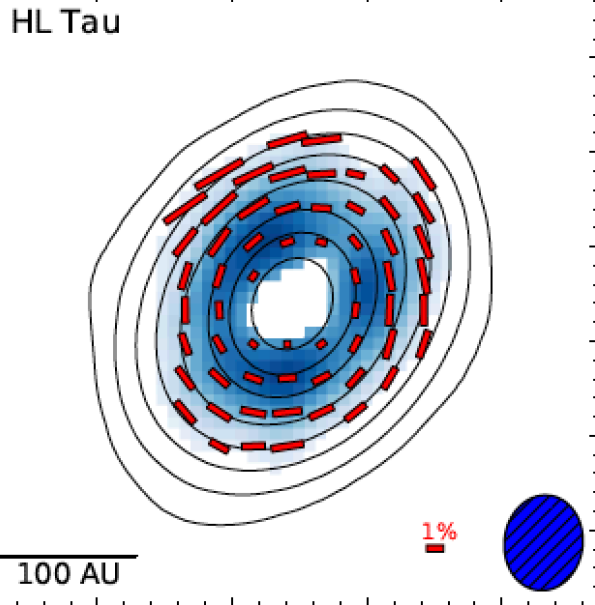
ALMA EA Korean Node, KASI

Polarization Continuum in HL Tau

3.1 mm (ALMA Band 3)

1.3 mm (ALMA Band 6)

870 μm (ALMA Band 7)

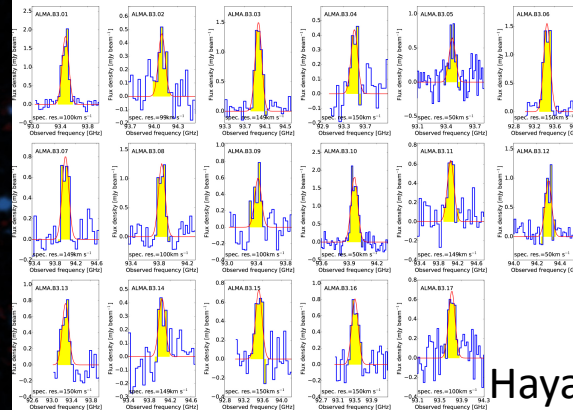
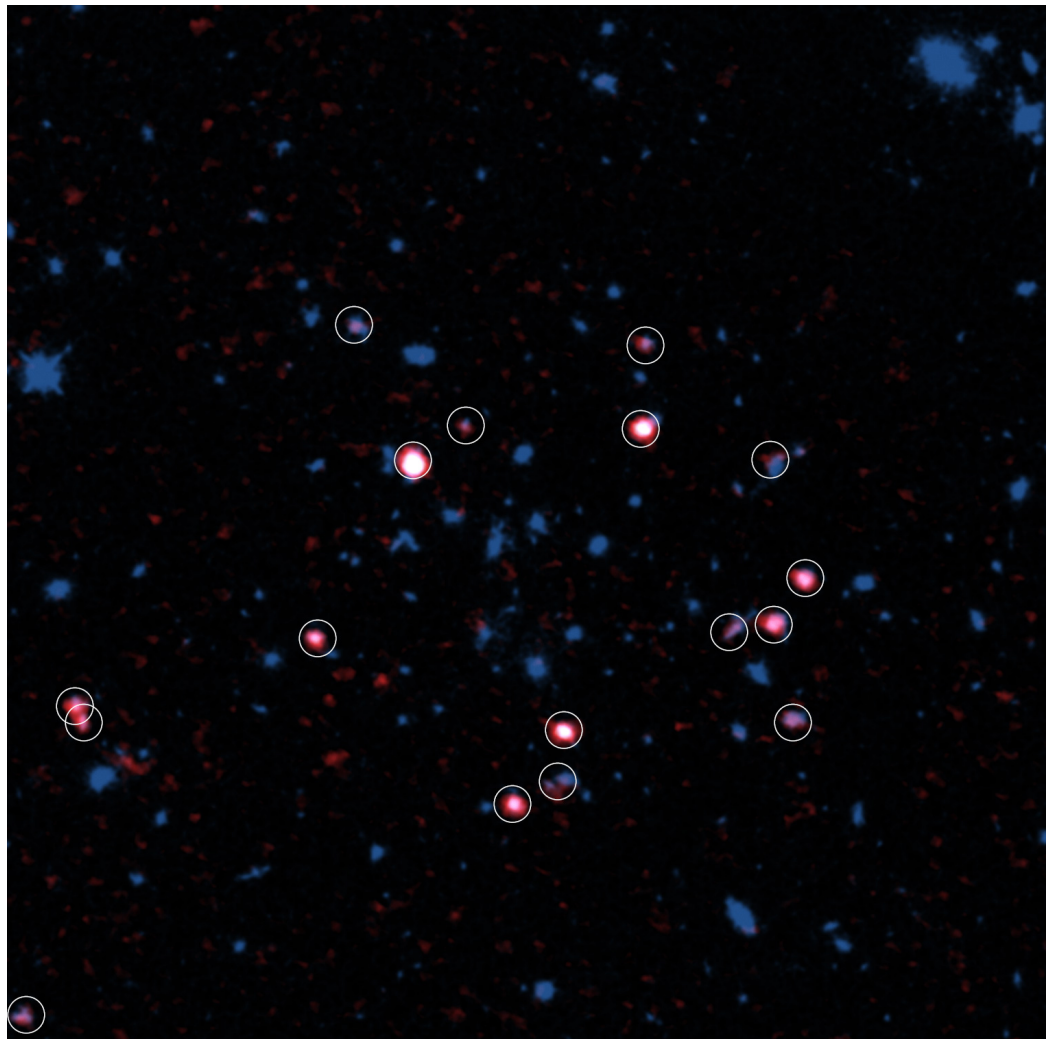


- Different polarization pattern with wavelengths
- Scattering and radiation anisotropy thought to be the cause
- Difficult then to probe magnetic fields

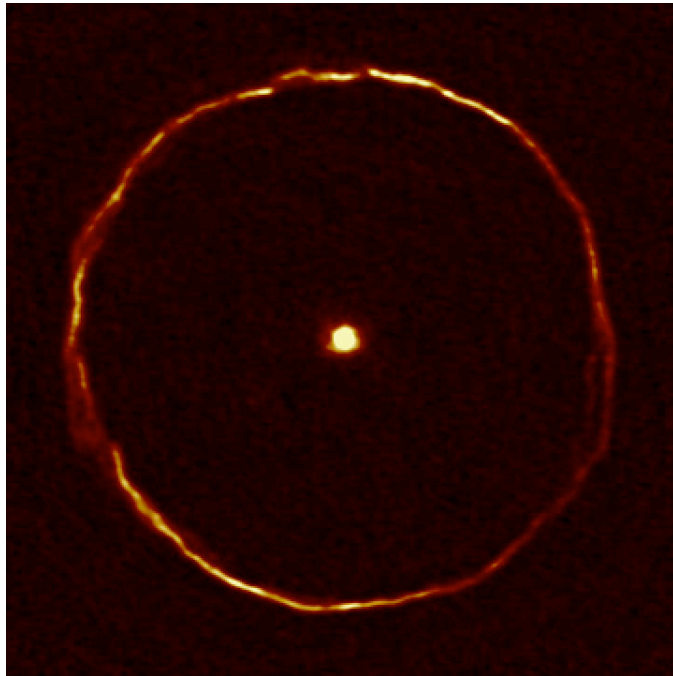
Kataoka et al. (2016, 2017)
Stephens et al. (2017)

Molecular Gas in Galaxy Cluster at $z=1.46$

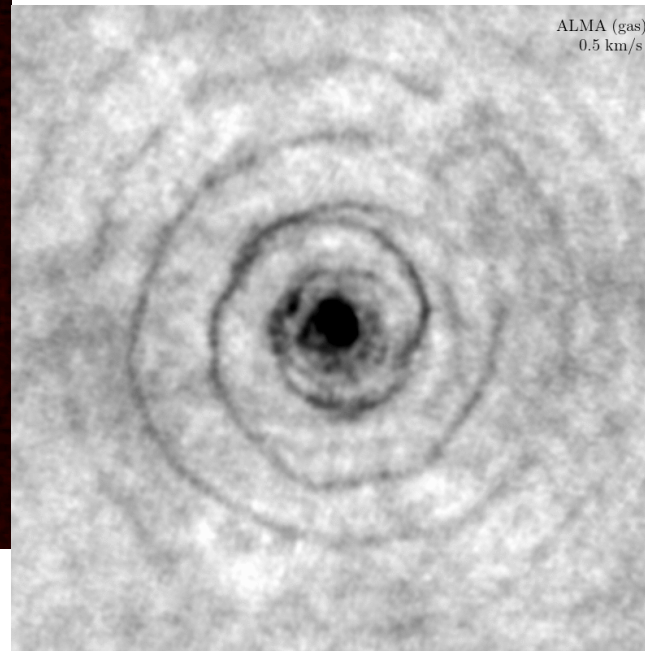
- 17 galaxies detected in CO 2-1 (shown by circles)
- Gas-rich galaxies tend to be on the outskirts
 - velocities suggest they have recently entered the cluster
- Ram-pressure stripping for clusters at the center of the cluster



Evolved Stars



U Antliae
(Carbon star)
Kerschbaum et al. (2017)



AFGL 3068
(AGB star)
Kim et al. (2017)

Boomerang Nebula
(pre-planetary nebula)
Sahai et al. (2017)



Antennas

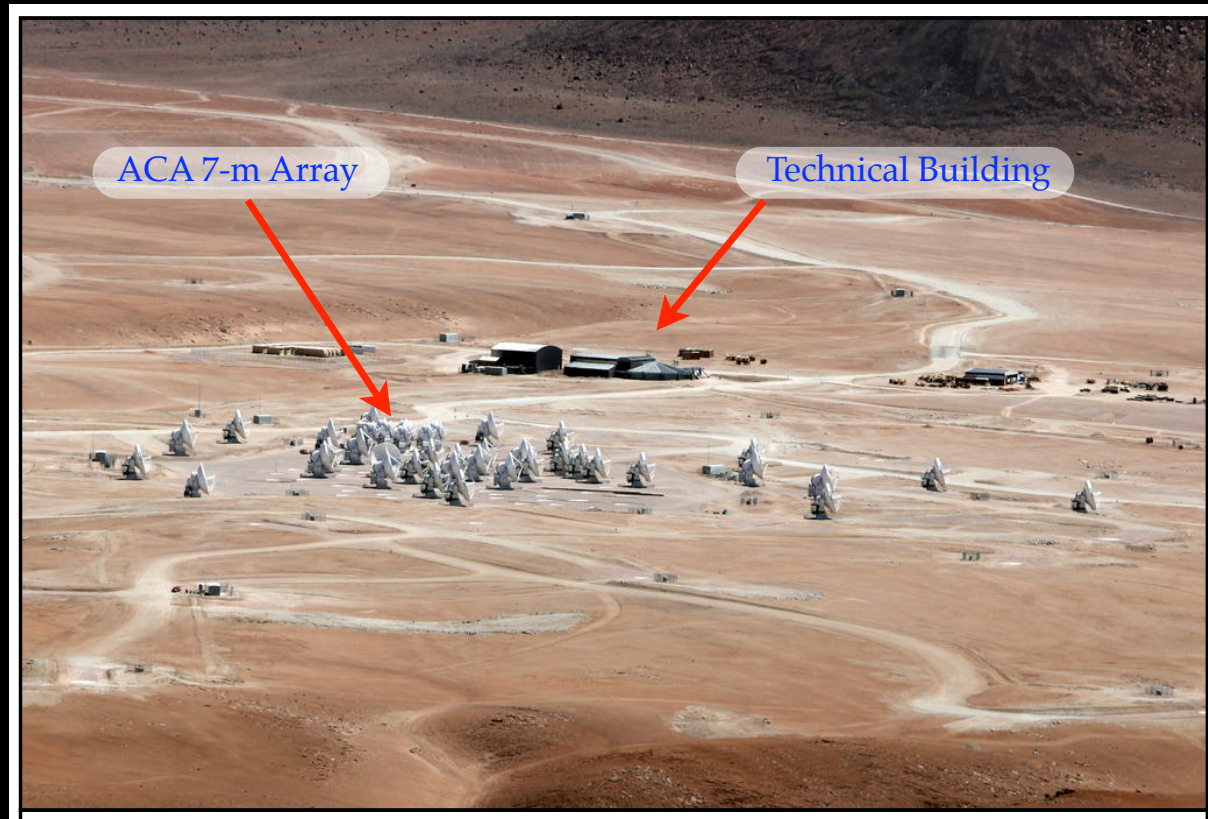
50x12m-Array

12x7m-Array

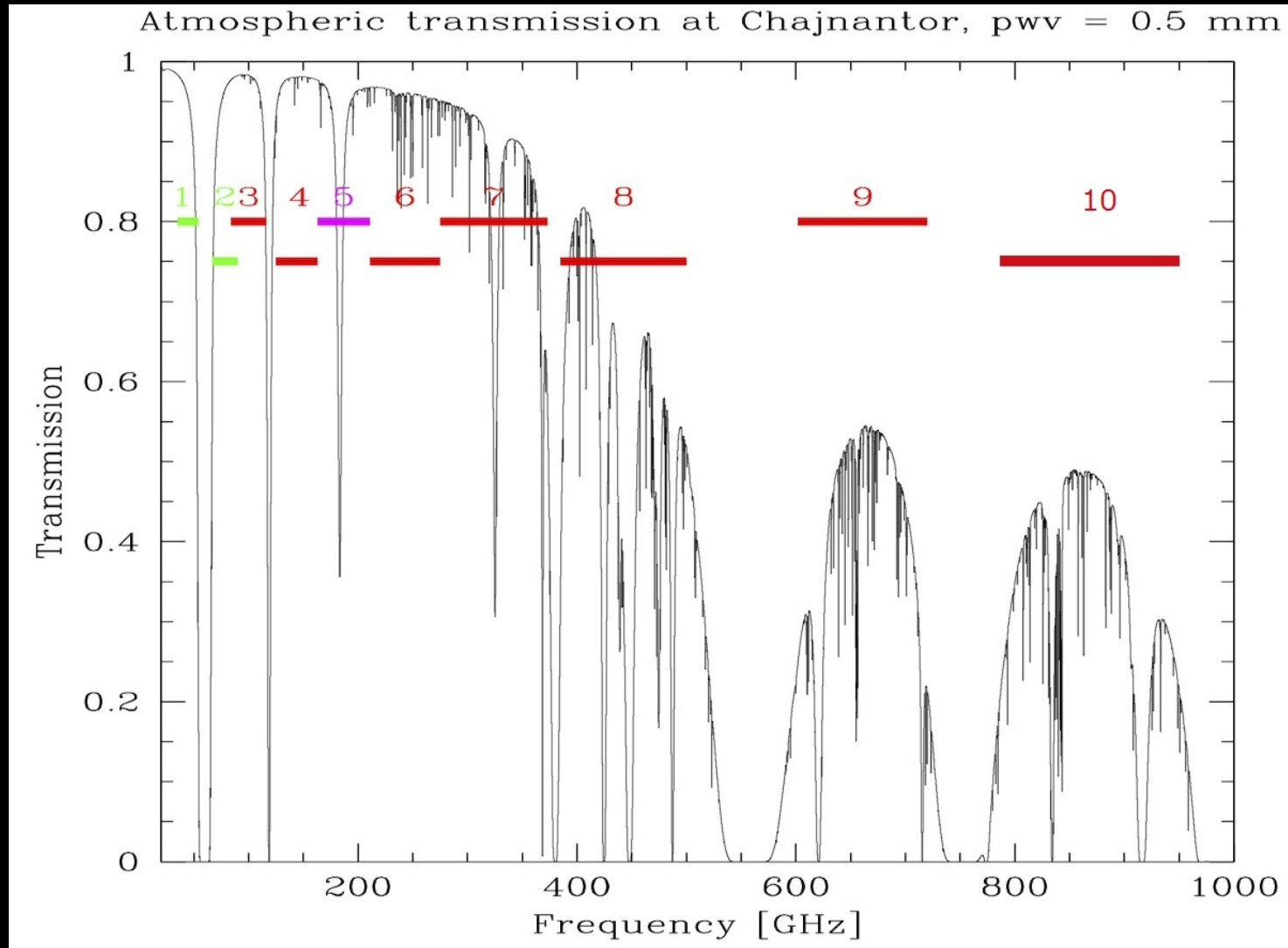
4 12m-TP Array

Longest baseline: 16 km

Completed in 2013



ALMA Receiver Bands



Cycle 6 Time lines

18 December 2017	Cycle 6 pre-announcement
1 February 2018	Additional information on configuration schedule
20 March 2018	Release of the ALMA Cycle 6 Call for Proposals and Observing Tool, and opening of archive for proposal submission
19 April 2018	Proposal deadline
18-23 June 2018	Proposal Review meeting
End of July 2018	Result of the proposal review sent to Proposers
6 September 2018	Deadline for Phase 2 submission by Proposers
October 2018	Start of ALMA Cycle 6 observations
September 2019	End of Cycle 6 observations

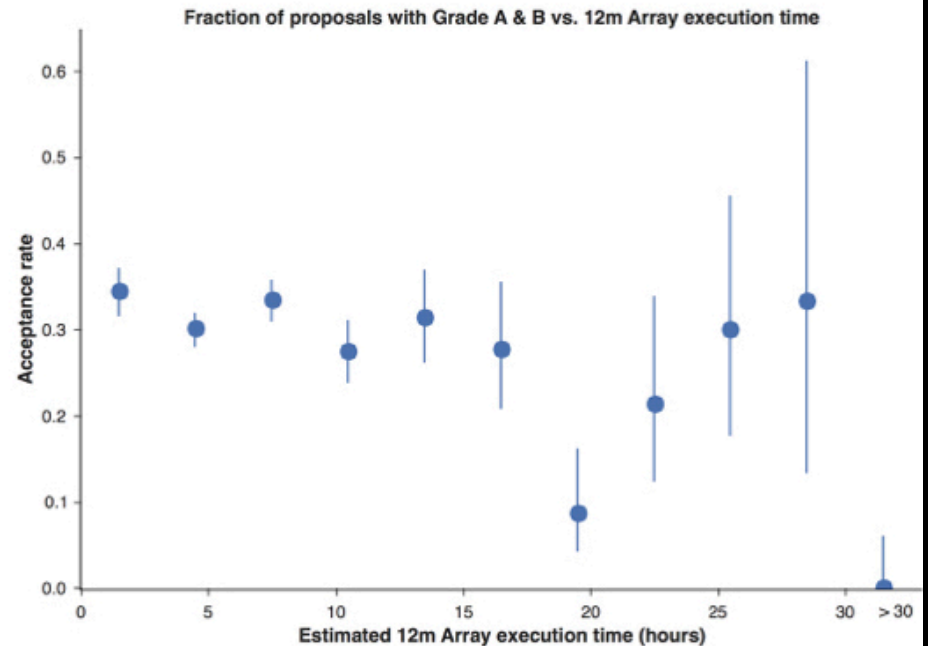
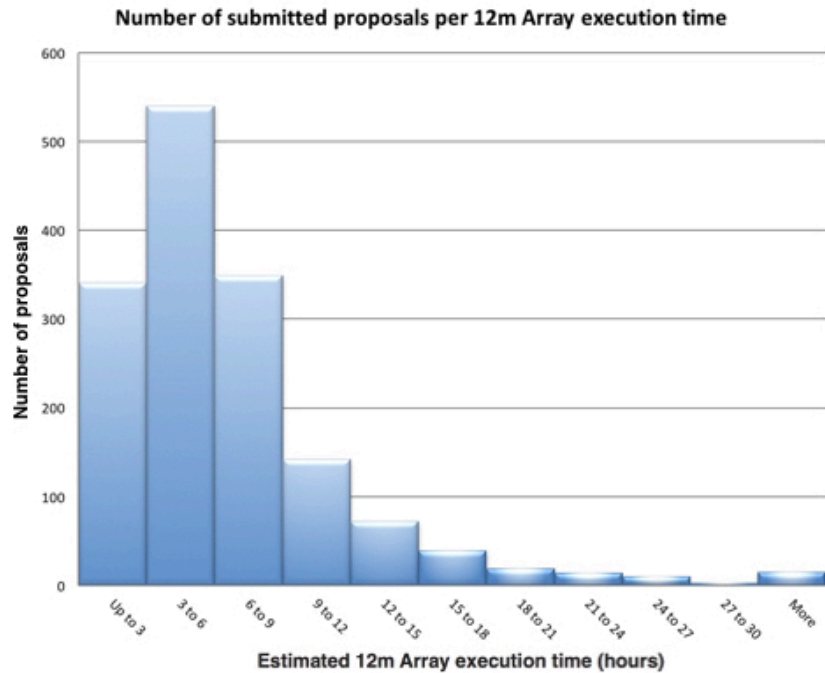
Time available for C6 and Regional Share

- Total observation time
 - 4000 hours for 12m Array
 - 3000 hours for ACA Array
 - 20% for non-standard, 15% for Large, 5% for VLBI, 5% for DDT
- Regional Share
 - 22.5% for EA
 - 33.75% for EU
 - 33.75% for NA
 - 10% for Chile

Proposal Types

- Regular Proposals
 - < 50 hr for 12-m Array, < 150 hr for ACA
 - Typical requested time: 5~7 hours, but encourage to request more than 10 hours
- ToO Proposals
- Large Proposals
 - > 50 hours of 12-m and > 150 hr for ACA
 - standard observation mode
- mm-VLBI Proposals
 - GMVA at 3mm continuum (Band 3), deadline Feb 1
 - NRAO/EHT at 1.3mm continuum (Band 6)
- DDT (Director Discretionary Time) Proposals

Cycle 4 Regular Proposals



Number of Antennas

- > 43 (40 for C4) antennas in the 12-m array
- Ten 7-m antennas and three 12-m antennas (single-dish observation) in the ACA

Receiver Bands

- Bands 3,4,5,6,7,8,9,10
(3.1,2.1,1.6,1.3,0.87,0.74,0.44,0.35mm)

12-m Array configuration

- Maximum baselines between 0.15 to 16 km
- Maximum baselines of 3.6 km for Bands 8,9,10
- Maximum baselines of 8.5 km for Band 7
- Maximum baselines of 16 km for Bands 3,4,5,6
- Antenna configuration files for 12-m and 7-m arrays (useful for CASA simulator) are available, <https://almascience.org/documents-and-tools/cycle6/alma-configuration-files>

Spectral line, Continuum and Mosaic Observations

- Spectral line and continuum observations with the 12-m and 7-m arrays in all Bands
- Single field interferometry (all bands) and mosaics (Bands 3 to 9) with 12-m and 7-m arrays.
- Single-dish spectral line observations in Bands from 3 to 8

Polarization

- Single pointing, on-axis, full linear and circular (new) polarization capabilities for continuum and full-spectral resolution observations in Bands 3,4,5,6,7 on the 12-m Array.
- The field-of-views of both linear and circular polarization observations are limited to the inner $1/3$ and 10% of the primary beam, respectively.

Standard vs. non-standard

- Standard observations are calibrated with the the ALMA data reduction pipeline but non-standard observations require manual calibration by ARC staff.
- Up to 20% of observing time in C6 will be allocated to proposals requesting non-standard modes

Non-standard observation modes

- Bands 9 and 10 observations
- Band 7 observations with maximum baselines > 5 km
- All polarization observations
- Spectral Scans
- Bandwidth switching projects (less than 0.9375 GHz aggregate bandwidths over all spectral windows)
- Solar observations (Band 3 and 6)
- VLBI observations
- User-specified calibrations
- Astrometric observations

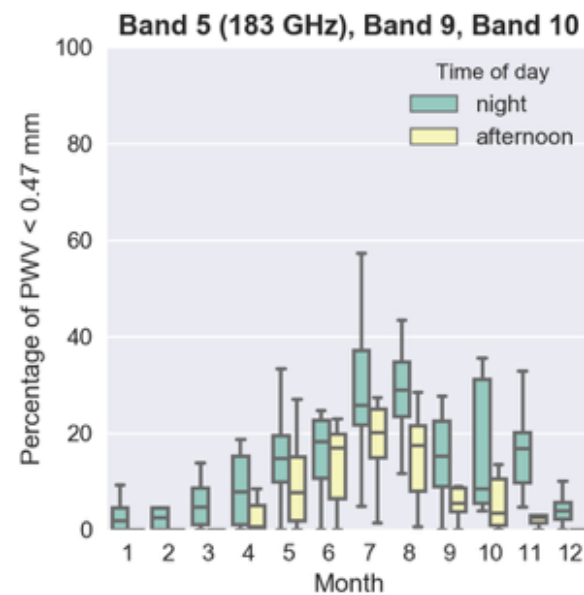
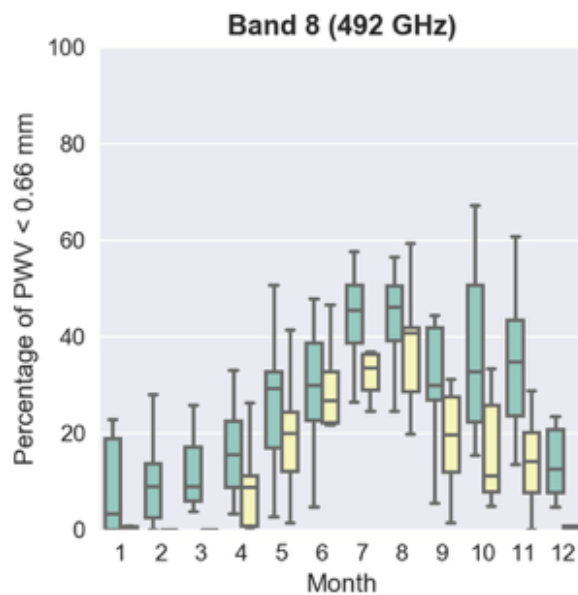
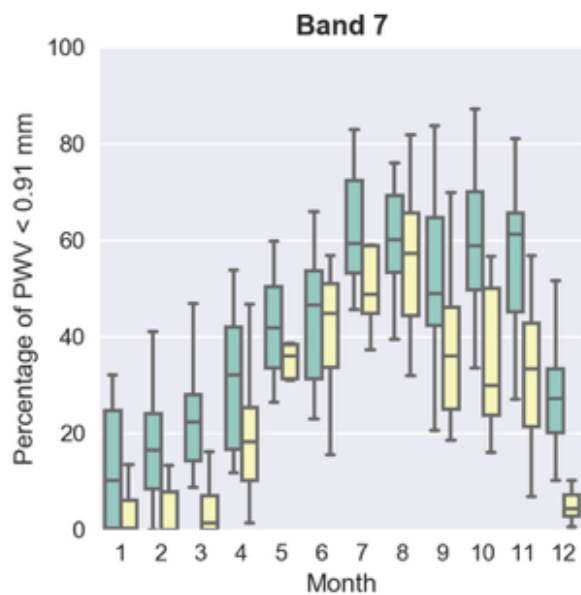
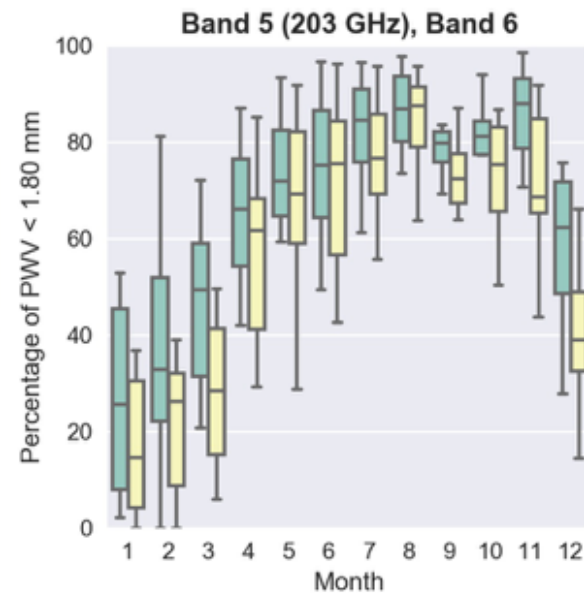
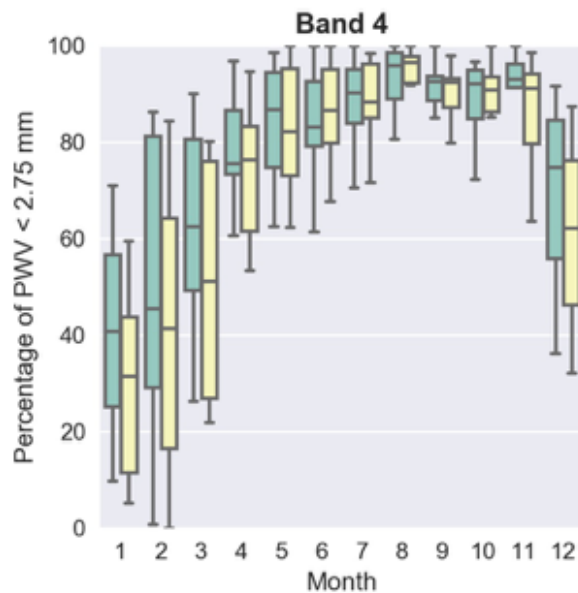
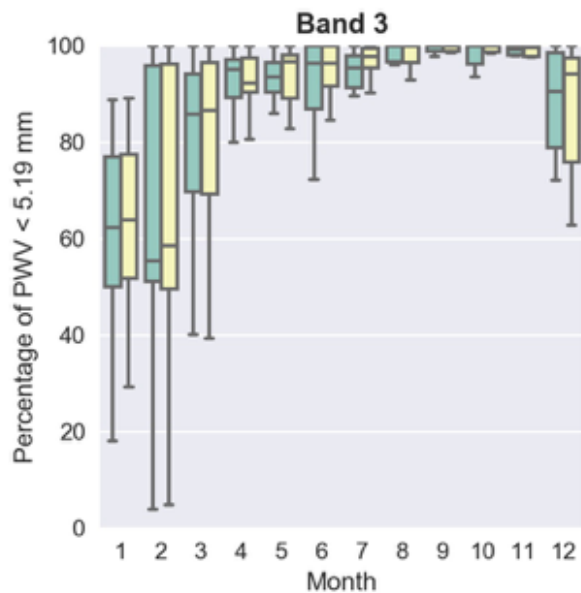
New in C6

- **Circular polarization:** The minimum detectable degree of circular polarization, defined as three times the systematic calibration uncertainty, is currently 1.8% of the peak flux for both TDM and FDM observations.
- **Band 8 standard mode**
- **Band 8 ACA Standalone**
- **Band 6 IF extension:** ^{12}CO , ^{13}CO , C^{18}O $J=2-1$ to be observed simultaneously.

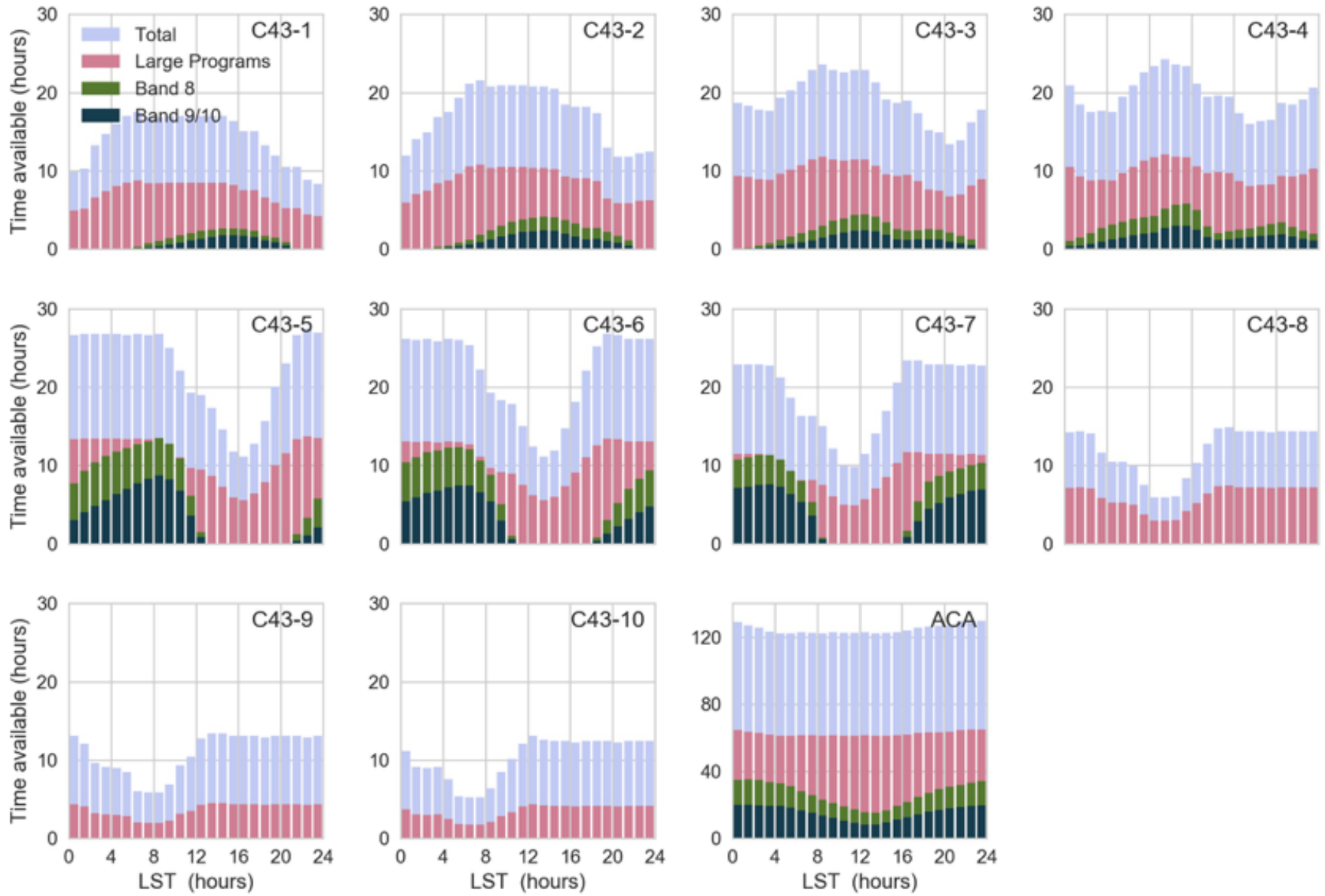
Configuration schedule for 12m

Start date	Configuration	Longest baseline ¹	LST for best observing conditions
2017 October 1	C43-7	3.6 km	~ 21h – 10h
2017 October 5	C43-8	8.5 km	~ 22h – 11h
2017 October 25	C43-9	13.9 km	~ 23h – 12h
2017 November 10	C43-10	16.2 km	~ 1h – 13h
2017 December 1-18	<i>No observations due to large antenna reconfiguration</i>		
2017 December 19	C43-6	2.5 km	~ 4h – 15h
2018 January 10	C43-5	1.4 km	~5h – 17h
2018 February 1-28	<i>No observations due to February shutdown</i>		
2018 March 1	C43-4	0.78 km	~ 8h – 21h
2018 March 30	C43-3	0.50 km	~ 10h – 0h
2018 May 15	C43-2	0.31 km	~ 12h – 3h
2018 June 15	C43-1	0.16 km	~ 14h – 5h
2018 July 15	C43-2	0.31 km	~ 17h – 7h
2018 August 15	C43-3	0.50 km	~ 18h – 8h
2018 August 30	C43-4	0.78 km	~ 19h – 9h
2018 September 15	C43-5	1.4 km	~ 20h – 10h

Percentage of PWV vs. month of year



Effective available time per configuration



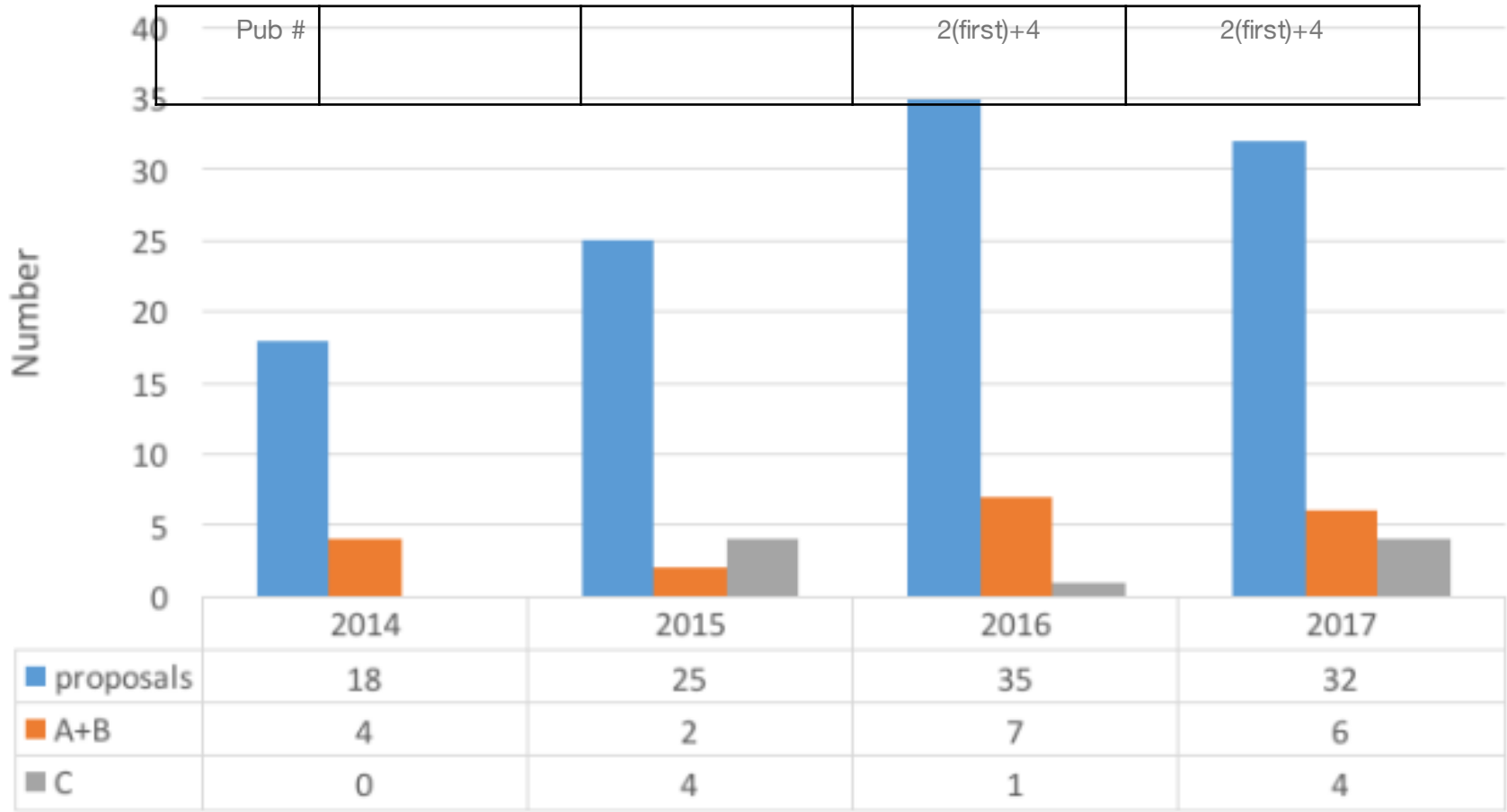
Proposal preparation and submission

- Science justification uploaded as a PDF file into OT
 - Includes S/N, range of angular resolution, source size, source sample size
 - figures, tables, references: 10-point font
- ALMA OT
 - includes self-contained technical justification without figures
- The PDF: 4 pages, 12-point font, < 20 MB.
<http://almascience.org/proposing/proposal-template>

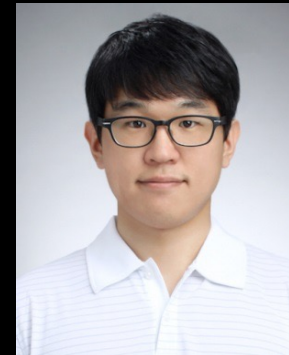
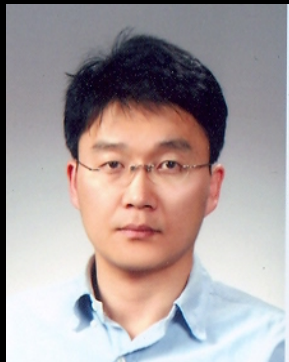
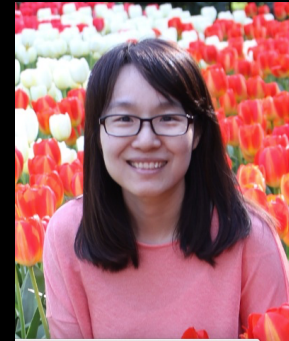
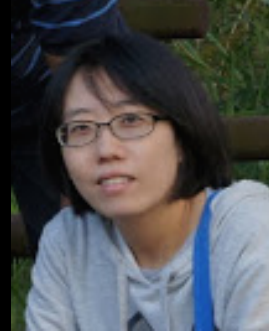
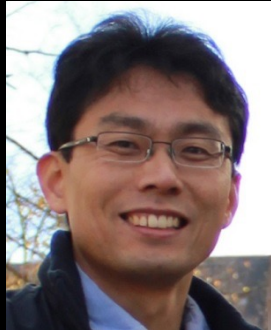
To do list for a Cycle 6 proposal

- Read two documents
 - <https://almascience.nao.ac.jp/proposing/call-for-proposals>
 - ALMA Cycle 6 Proposer's Guide
 - Observing with ALMA – A Primer (Cycle 6)
- Register yourself at the Science Portal, now
 - <https://asa.alma.cl/UserRegistration/newAccount.jsp>
- Download the ALMA OT software
- Prepare a proposal in advance. Science is the most important factor for a successful proposal.

Yearly Status of ALMA Proposals form Korea



People in EA ARC Korean Node



Korean Flag at OSF at 2900m

