ALMA Cycle 5 Proposer's Guide

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Antennas

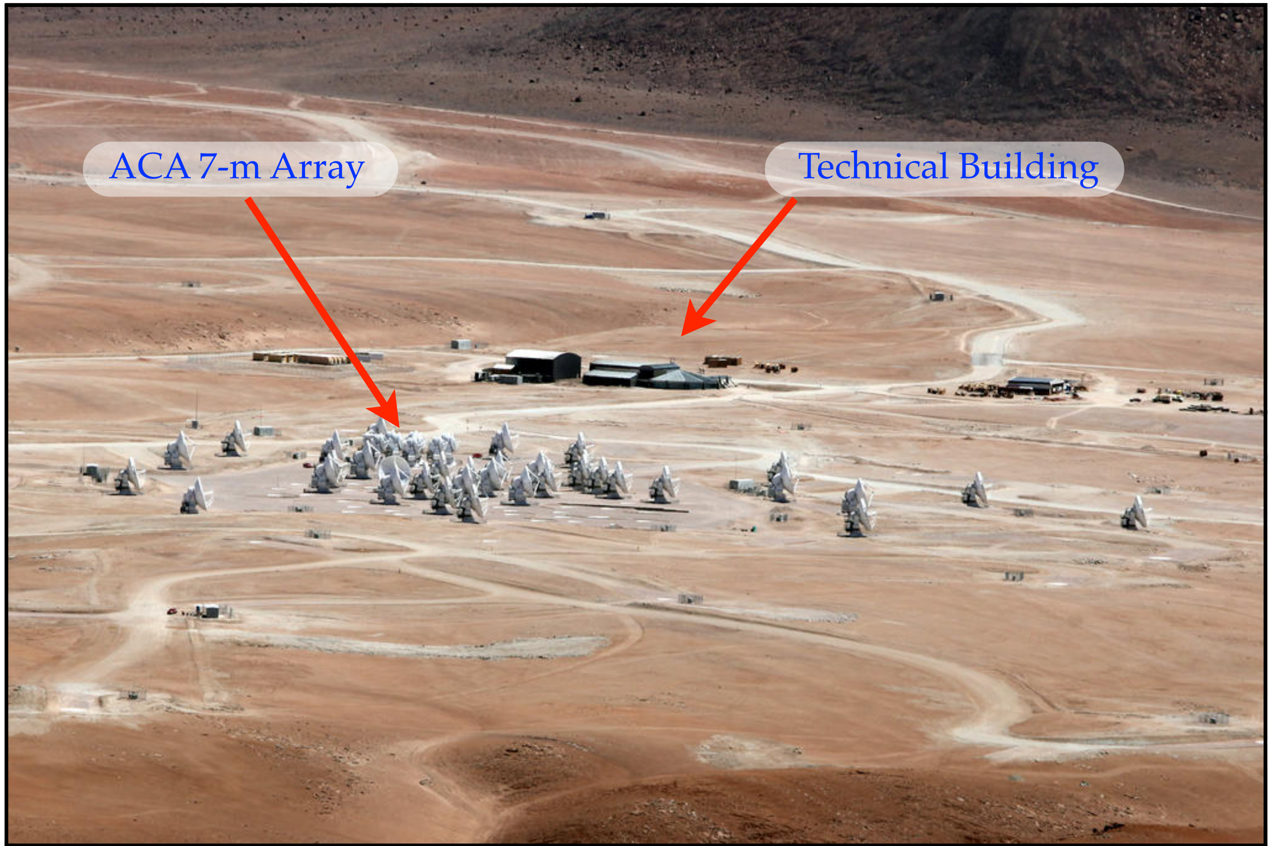
50x12m-Array

12x7m-Array

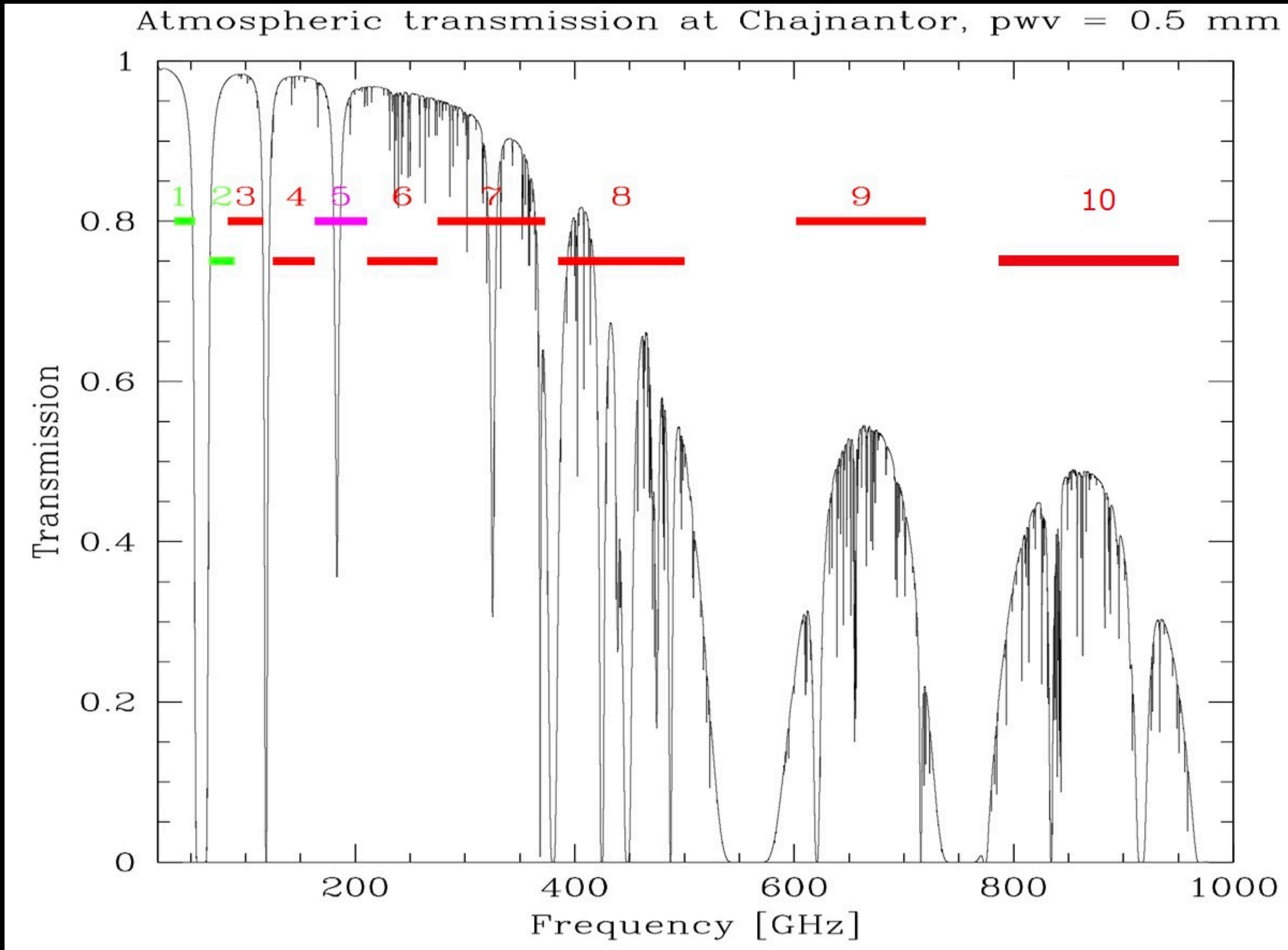
4 12m-TP Array

Longest baseline: 16 km

Completed in 2013



ALMA Receiver Bands



Cycle 5 Timeline

Date	Milestone
21 March 2017 (15:00UT)	Release of Cycle 5 Call for Proposals, Observing Tool & supporting documents and opening of the Archive for proposal submission
20 April 2017 (15:00 UT)	Proposal submission deadline
End of July 2017	Announcement of the outcome of the proposal review process
August-September 2017	Submission of Phase 2 Scheduling Blocks
October 2017	Start of ALMA Cycle 5 Science Observations
September 2018	End of ALMA Cycle 5

New capability in C5

- Band 4 polarization
- Band 5 observation from March 2018

Proposal Types

- Regular Proposals
  - < 50 hr for 12-m Array, < 150 hr for ACA
- ToO Proposals
- Large Proposals
  - > 50 hr of 12-m and > 150 hr for ACA
  - standard observation mode
- mm-VLBI Proposals
  - GMVA at 3mm (Band 3)
  - NRAO/EHT at 1.3mm (Band 6)
  - March/April, 2018 (compact configuration)
- DDT (Director Discretionary Time) Proposals

Time available for C5 and Regional Share

- Total observation time
  - 4000 hours for 12m Array
  - 3000 hours for ACA Array
  - 20% for non-standard, 5% 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

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(new),6,7,8,9,10 (3.0,2.0,1.6,1.3,0.85,0.65,0.45,0.35mm)

12-m Array configuration

- Maximum baselines between 0.161 km to 16.2 (12.6 km for C4)
- Maximum baselines of 1.4 km for Band
- Maximum baselines of 3.6 km for Bands 8,9,10
- Maximum baselines of 8.5 km (6.8 km for C4) for Band 7
- Maximum baselines of 16.2 km (12.6 km for C4) for Bands 3,4,6
- Antenna configuration files for 12-m and 7-m arrays (useful for CASA simulator) are available, https://almascience.org/documents-and-tools/cycle5/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) polarization capabilities for continuum and full spectral resolution observations in Bands 3,4,5,6,7 on the 12-m Array

Standard vs. non-standard

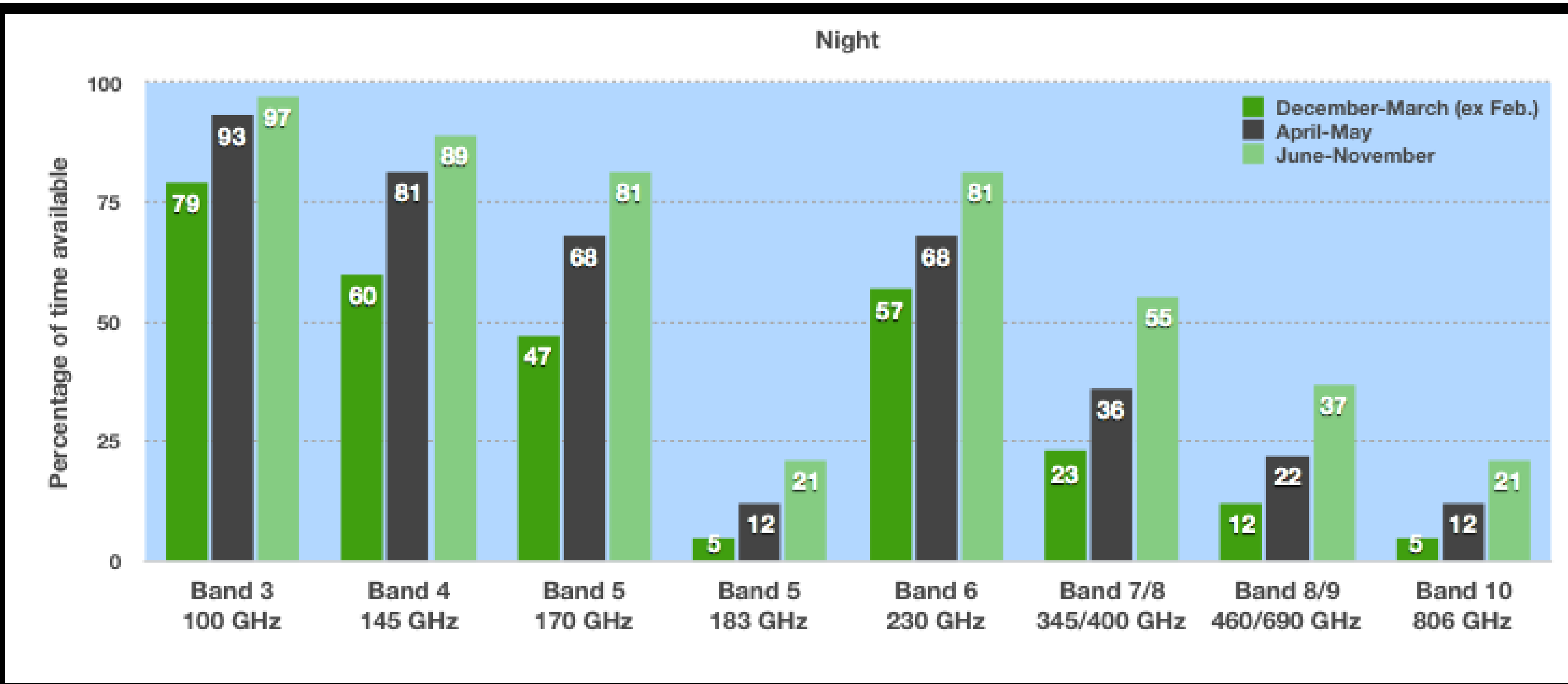
- Standard observations are calibrated with the the ALMA data reduction pipeline but non-standard observations require manual calibration by ARC staff

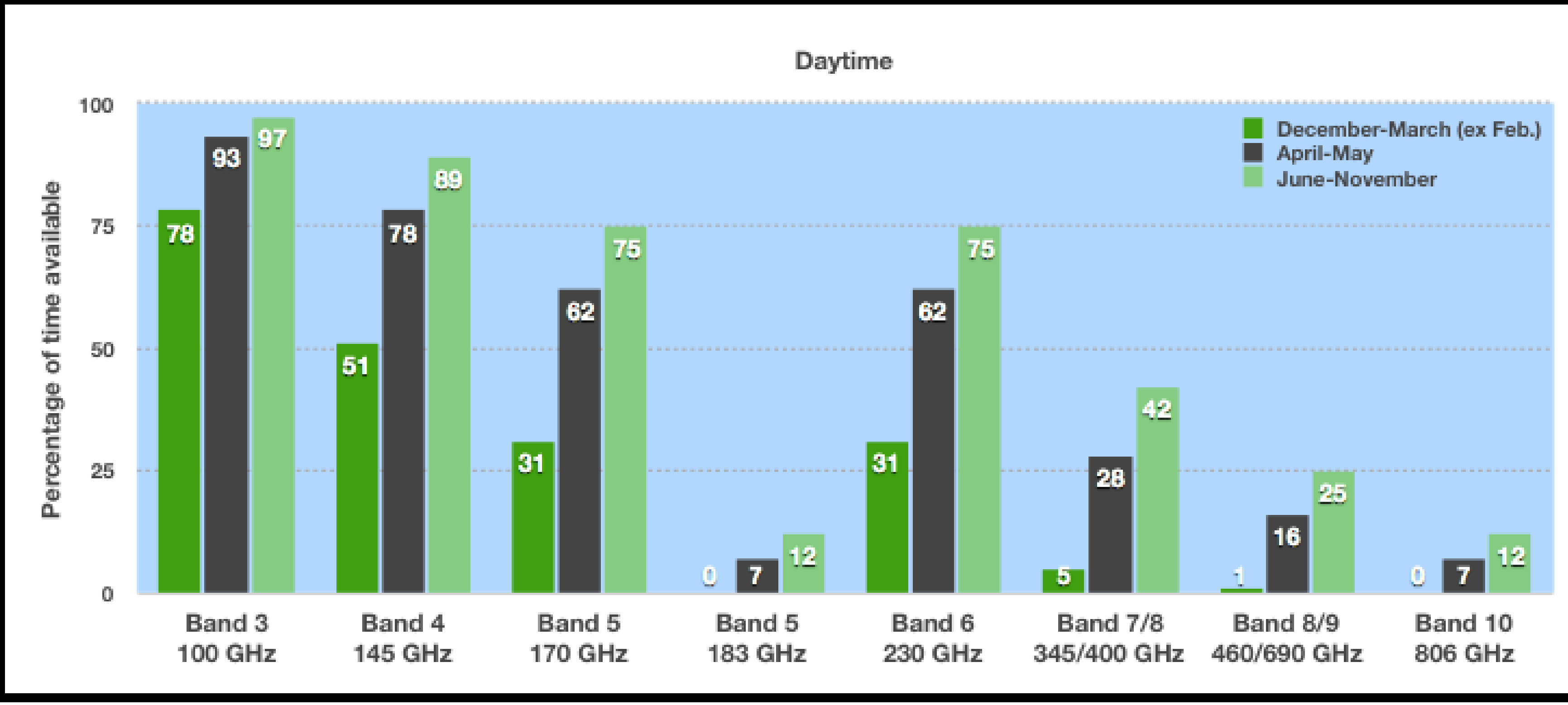
Non-standard observation mode

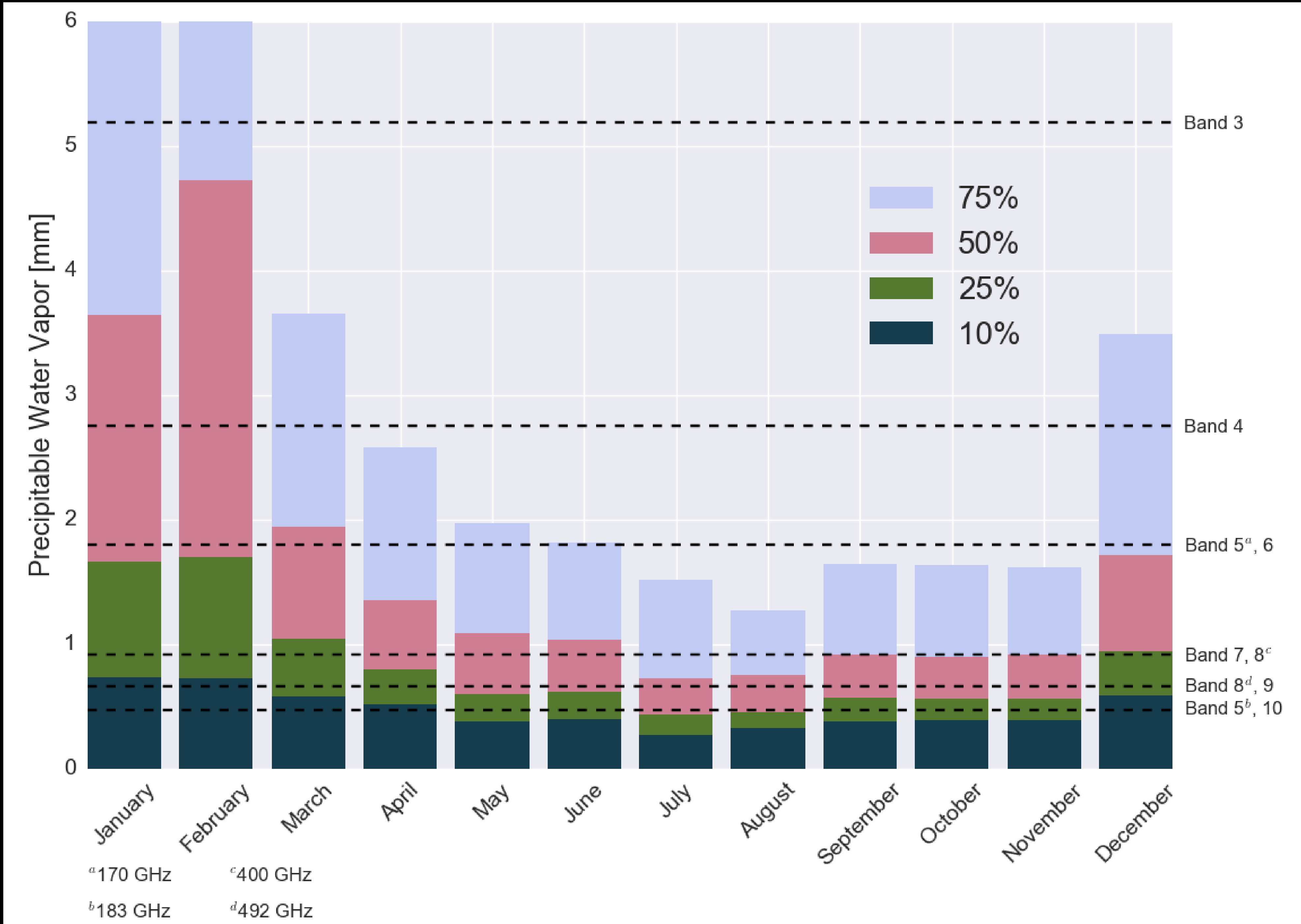
- Bands 8, 9 and 10 observations
- Band 7 observations with maximum baselines > 5 km
- All full polarization observations
- Spectral Scans
- Bandwidth switching projects
- Solar observation
- VLBI observations
- Non-standard calibrations
- Astrometric observations

Scheduling Priority

- Weather condition
- Angular resolution and LAS
- Target elevation and other practical constrains
- C4A, C5A, C5B, C5C


Night
Percentage of time available
100
75
50
25
0
December-March (ex Feb.)
April-May
June-November
79
93
97
60
81
89
47
68
81
5
12
21
57
68
81
23
36
55
12
22
37
5
12
21
Band 3
100 GHz
Band 4
145 GHz
Band 5
170 GHz
Band 5
183 GHz
Band 6
230 GHz
Band 7/8
345/400 GHz
Band 8/9
460/690 GHz
Band 10
806 GHz

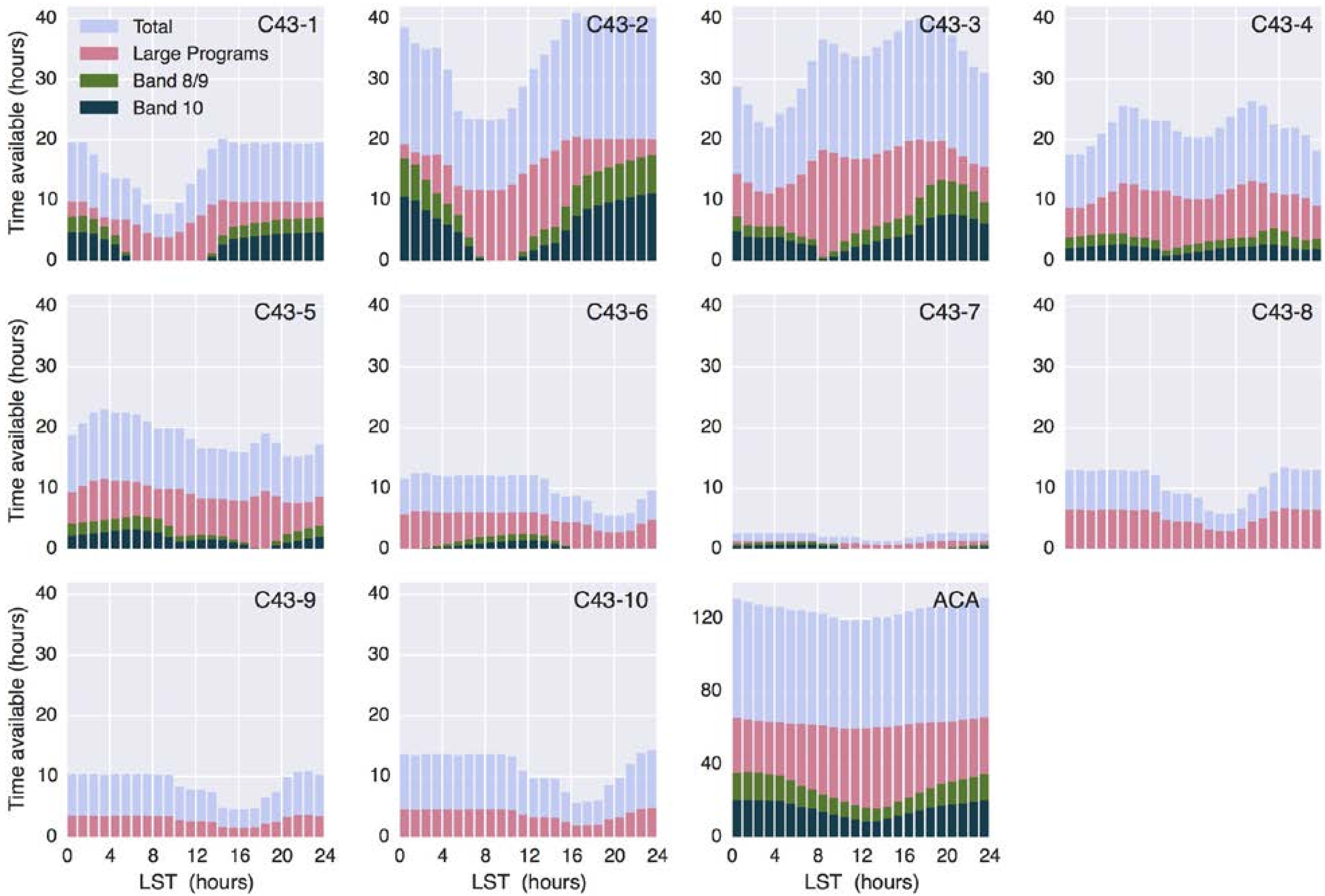

Daytime
Percentage of time available
100
75
50
25
0
December-March (ex Feb.)
April-May
June-November
78
93
97
51
78
89
31
62
75
0
7
12
31
62
75
5
28
42
1
16
25
0
7
12
Band 3
100 GHz
Band 4
145 GHz
Band 5
170 GHz
Band 5
183 GHz
Band 6
230 GHz
Band 7/8
345/400 GHz
Band 8/9
460/690 GHz
Band 10
806 GHz



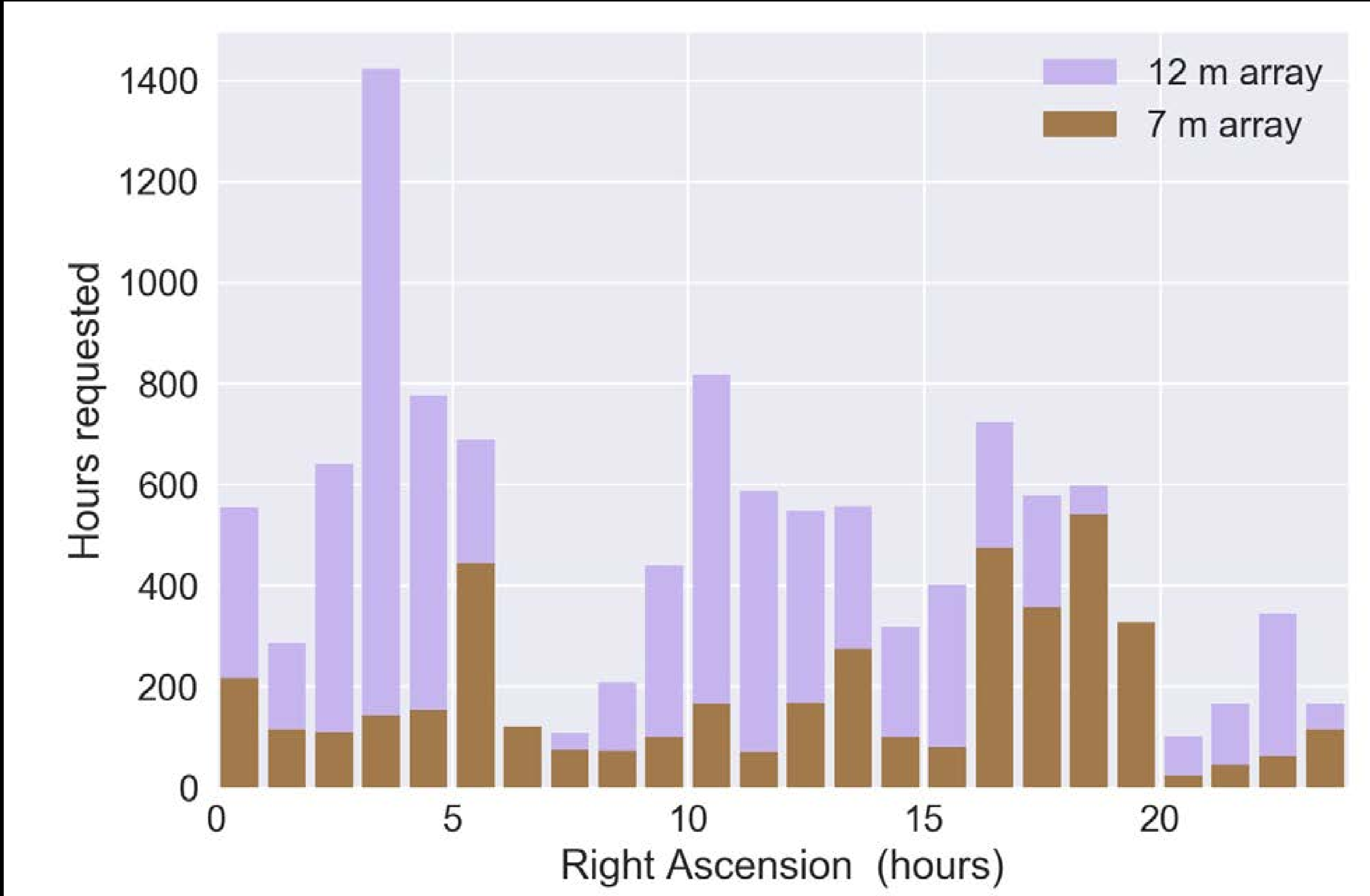
Precipitable Water Vapor [mm]
0
1
2
3
4
5
6
75%
50%
25%
10%
Band 3
Band 4
Band 5[a], 6
Band 7, 8[c]
Band 8[d], 9
Band 5[b], 10
January
February
March
April
May
June
July
August
September
October
November
December
[a]170 GHz
[b]183 GHz
[c]400 GHz
[d]492 GHz

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	*No observations due to large antenna reconfiguration*		
2017 December 19	C43-6	2.5 km	~ 4h – 15h
2018 January 10	C43-5	1.4 km	~5h – 17h
2018 February 1-28	*No observations due to February shutdown*		
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


Total
Large Programs
Band 8/9
Band 10
C43-1
C43-2
C43-3
C43-4
C43-5
C43-6
C43-7
C43-8
C43-9
C43-10
ACA
Time available (hours)
LST (hours)
0
4
8
12
16
20
24
10
20
30
40
80
120

Obs. Pressure as a function of RA



Duplication check

- Duplications of the same location on the sky with similar observing parameters (frequency, angular resolution, coverage, and sensitivity) are not permitted unless scientifically justified.
  - Archive
  - List of ongoing observations (excel sheet)
  - https://almascience.nao.ac.jp/proposing/duplications

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 5 proposal

- Read two documents
  - https://almascience.nao.ac.jp/proposing/call-for-proposals
  - ALMA Cycle 5 Proposer's Guide
  - Observing with ALMA – A Primer (Cycle 5)
- 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.