The ALMA Cycle 10 Proposal Process

The results of the Cycle 10 Call for Proposals were announced to the community on 21 August 2023. After considering the scientific rankings and operational considerations (e.g., configuration schedule, available time due to weather, regional balance), 240 high-priority programs (Grade A+B) were selected. The titles and abstracts of the selected programs are available on the ALMA Science Portal.

Proposals requesting less than 50 h on the 12-m Array or less than 150 h on the 7-m Array in stand-alone mode were reviewed using distributed peer review, where each proposal team nominates one person to review 10 proposals. A total of 1635 proposals went through this peer review process, with 1098 individual reviewers. The proposals for three reviewers were canceled by the JAO: one reviewer did not submit their Stage 1 reviews, and the JAO found that two other reviewers did not behave in an ethical manner.

The ALMA Proposal Review Committee (APRC) met on 10-14 July 2023 to recommend which Large Programs should be scheduled. Large Programs were also reviewed by external Science Assessors, who provided their expert assessment of individual Large Programs to the APRC but did not participate in the APRC meeting. Each external Science Assessor reviewed between 1 and 3 Large Programs in their area of expertise and wrote a scientific assessment for each assigned proposal. These assessments were sent to the APRC, who took this information into account during the discussion of the virtual face-to-face meeting and for the composition of the consensus reports.

Proposal statistics and results

The community submitted a total of 1679 proposals requesting close to 29,500 h of 12-m Array time, with an overall subscription rate on the 12-m Array of 6.9. As a result, many excellent proposals could not be scheduled because of the high oversubscription. Table 1 and Table 2 present the selection statistics grouped by regional affiliation and scientific category, respectively. Figures 1-3 show the time assigned to the Grade A and B proposals by region, science category, and receiver band. Overall, 14% of the submitted proposals were accepted with priority Grade A or B.

Figure 4 shows the percentage of proposals assigned priority grade A or B as a function of the estimated execution time on the 12-m Array. The success rate, including Large Programs, is largely independent of execution time. The following 4 Large Programs are scheduled for Cycle 10 based on the recommendation from the APRC and scheduling considerations.

1. *The Large 12P COMA survey (Cometary Molecules with ALMA)* (2023.1.01143.L)
   PI: Martin Cordiner (NA)

2. *UNveiling the Initial Conditions of the high-mass star-formation (UNIC)* (2023.1.00360.L)
   PI: Elena Redaelli (EU); co-PIs: Stefano Bovino (CL), Vivien Chen (EA), Patricio Sanhueza (EA), Rachel Friesen (NA)

3. *The COSMOS High-z ALMA-MIRI Population Survey (CHAMPS): A Wide-Area Comprehensive Survey of the Dusty Universe* (2023.1.00180.L)
   PI: Andreas Faisst (NA); co-PIs: Jeyhan Kartaltepe (NA), Caitilin Casey (NA), Ezequiel Treister (CL), John Silverman (EA), Manuel Aravena (CL), Jorge Zavala (EA), Sune Toft (EU).

4. *Probing the molecular gas – the missing puzzle pieces to the baryon cycle* (2023.1.00127.L)
   PI: Celine Peroux (EU); co-PIs: Varsha Kulkarni (NA), Laurent Chemin (CL)

Table 1: Summary of submitted and accepted proposals

	Chile (CL)	East Asia (EA)	Europe (EU)	North America (NA)	Open Skies	Total
Submitted Proposals						
Number of proposals	83	366	671	504	55	1679
12-m Array time (hours)	1508	5940	12167	9196	687	29499
7-m Array time (hours)	1299	3263	6098	5256	194	16109
Total Power Array time (hours)	792	4362	5748	4895	121	15918
Subscription rate						
12-m Array (4300 h offered)	3.5	6.1	8.4	6.3	N/A	6.9
7-m Array time (4300 h offered)	3	3.4	4.2	3.6	N/A	3.7
Total Power Array (4300 h offered)	1.8	4.5	4	3.4	N/A	3.7
Grade A & B projects						
Number of proposals	25	62	75	76	3	240
12-m Array time (hours)	405	909	1408	1409	32	4163
7-m Array time (hours)	212	435	592	1022	27	2287
Total Power Array time (hours)	202	551	834	1010	0	2597
Grade C projects						
Number of proposals	16	45	84	56	3	204
12-m Array time (hours)	219	551	856	763	16	2405
7-m Array time (hours)	452	607	1467	575	48	3148
Total Power Array time (hours)	60	768	653	666	0	2148

Regional distribution of all submitted proposals, and of the proposals recommended for scheduling with Grades A and B, and Grade C. Note: subscription rates do not apply for Open Skies since all regions contribute observing time for proposals from PIs who are not affiliated with any of the ALMA regions.

Table 2: Proposals by science category

	Category 1	Category 2	Category 3	Category 4	Category 5	Total
Submitted Proposals						
Number of proposals	428	384	454	314	99	1679
12-m Array time (hours)	9272	7202	6576	5122	1326	29499
7-m Array time (hours)	1388	6015	8049	368	290	16109
Total Power Array time (hours)	39	5218	10487	26	149	15918
Grade A & B projects						
Number of proposals	64	59	65	40	12	240
12-m Array time (hours)	1339	1052	981	580	211	4163
7-m Array time (hours)	211	829	1134	65	48	2287
Total Power Array time (hours)	0	1006	1576	0	15	2597
Grade C projects						
Number of proposals	58	41	65	24	16	204
12-m Array time (hours)	932	371	591	366	145	2405
7-m Array time (hours)	650	1069	1192	44	193	3148
Total Power Array time (hours)	39	649	1442	17	0	2148

Category 1: Cosmology and the high redshift universe; Category 2: Galaxies and Galactic nuclei; Category 3: Interstellar medium, star formation, and astrochemistry; Category 4: Circumstellar disks, exoplanets, and the solar system; Category 5: Stellar evolution and the Sun.

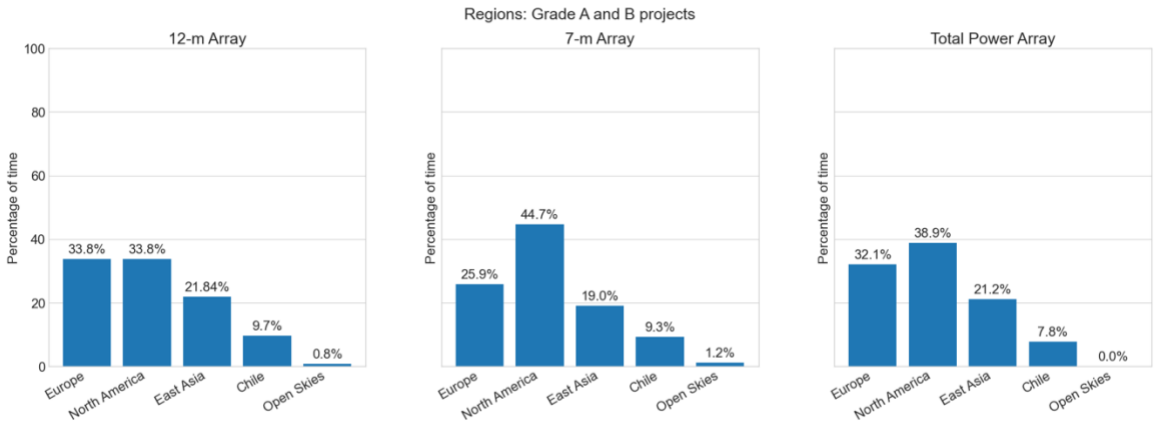

Figure 1: Distribution of execution time for Grade A and B projects by region for the 12-m (left), the 7-m (center), and the Total Power (right) arrays.

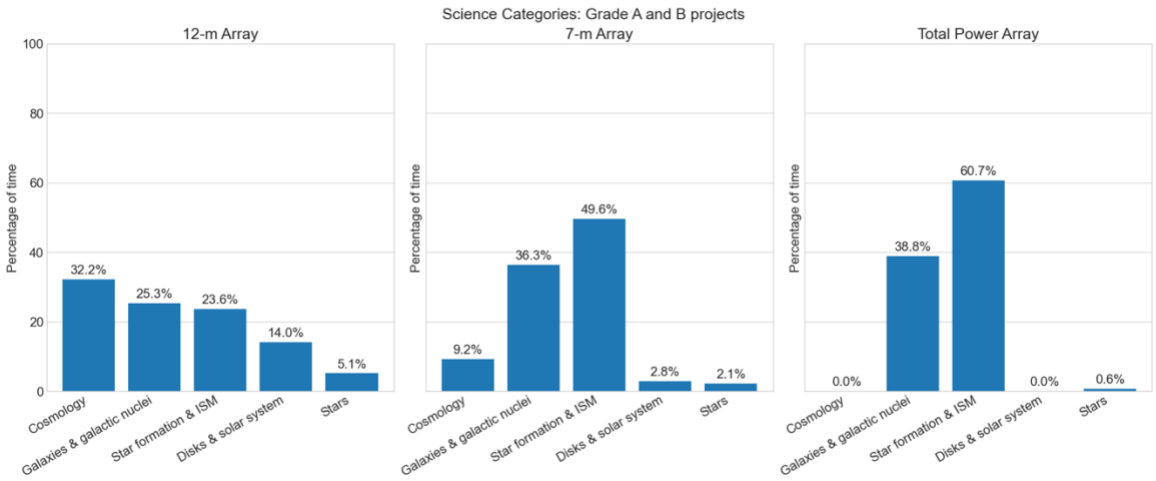

Figure 2: Distribution of execution time for Grade A and B projects by scientific category for the 12-m (left), the 7-m (center) and the Total Power (right) array.

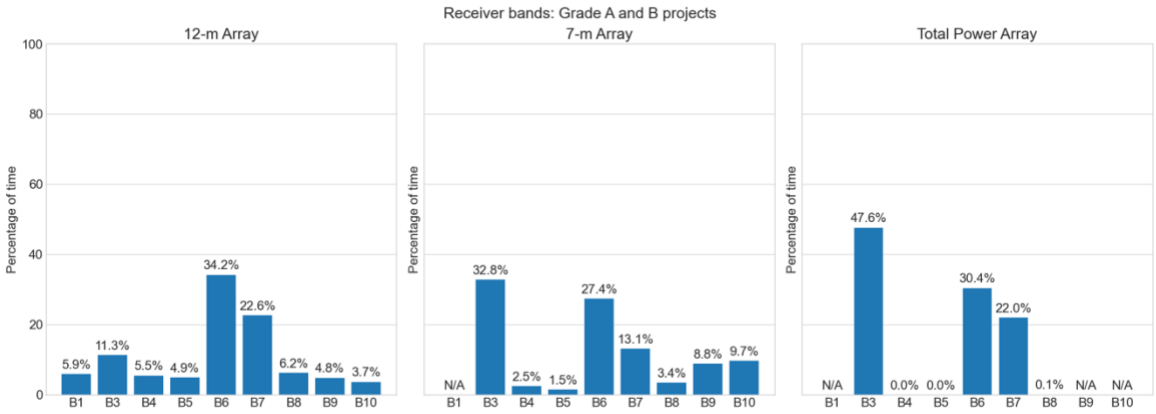

Figure 3: Distribution of execution time for Grade A and B projects by band for the 12-m (left), the 7-m (center) and the Total Power (right) array. Times labeled as "N/A" indicate the receiver band is not offered with that array in Cycle 10.

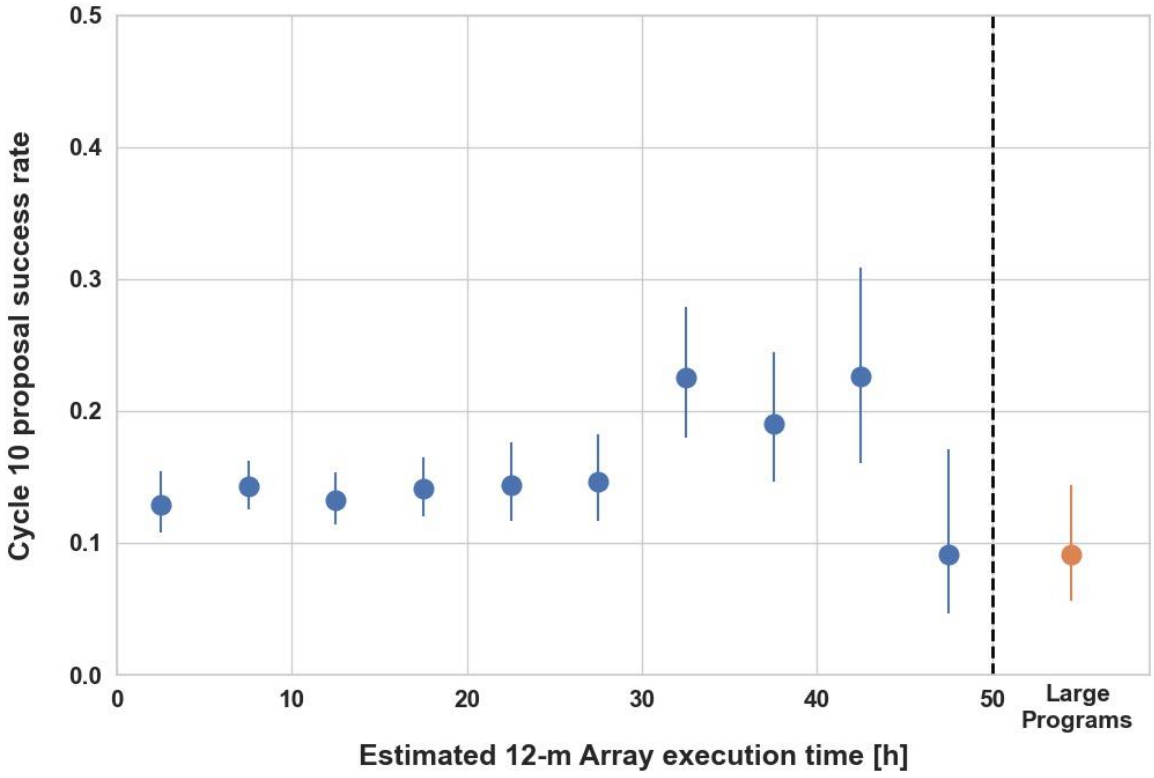

Figure 4: Fraction of proposals assigned Grade A and B as a function of the estimated execution time on the 12-m Array. The error bars are 1 sigma from Poisson statistics.

Figure 5 (left panel) shows the mean and median time requested on the 12-m Array for Grade A+B proposals in each cycle. We can see that in Cycle 10 the typical proposal needs more than 18 h on the 12-m Array, which is a 12% increase over Cycle 9. As a result, the overall number of accepted high-priority proposals in Cycle 10 decreased relative to Cycle 9 (see Figure 5, right panel).

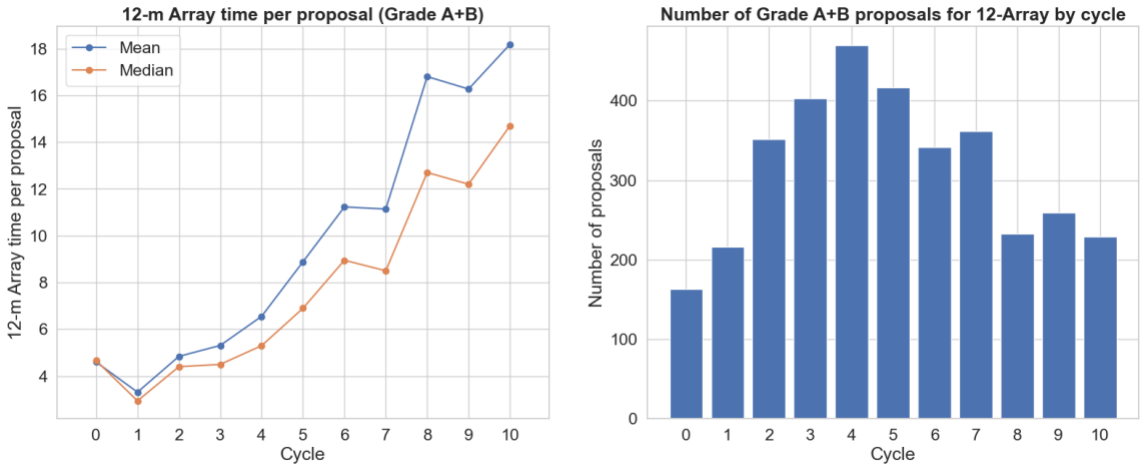

Figure 5: (Left) The requested 12-m Array time per proposal that has been assigned priority Grade A or B. (Right) The number of proposals assigned Grade A + B that requested the 12-m Array versus the proposal cycle.

Acknowledgements

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The APRC was chaired by Dr. David Wilner, and included the following panel members:

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Paolo Cassata	Yusuke Miyamoto	Ya-Wen Tang
Claudio Codella	Thushara Pillai	Tao Wang
Hiroshi Imai	Kartik Sheth	Lin Yan
Enrique Macias	Flora Stanley	
Diego Mardones	Karl Stapelfeldt	

We would also like to thank the over 1000 reviewers who took part of the distributed peer review process, whose participation was essential to the success of the Cycle 10 proposal call.