ALMA Cycle 12 Proposal Review: Process and Results

Joint ALMA Observatory
September 8, 2025

Overview

Cycle 12 remained highly competitive for ALMA time. A total of 1640 proposals were submitted, requesting over 30,000 hours on the 12-m Array. This corresponds to an oversubscription rate of 7.0, comparable to recent cycles (see Figure 1). Although the number of submitted proposals decreased slightly from Cycle 11, the demand for ALMA observing time remains very strong, reflecting the continued broad interest of the global astronomy community. The list of approved Cycle 12 high-priority projects, along with titles, abstracts, and investigator lists, is available on the ALMA Science Portal.

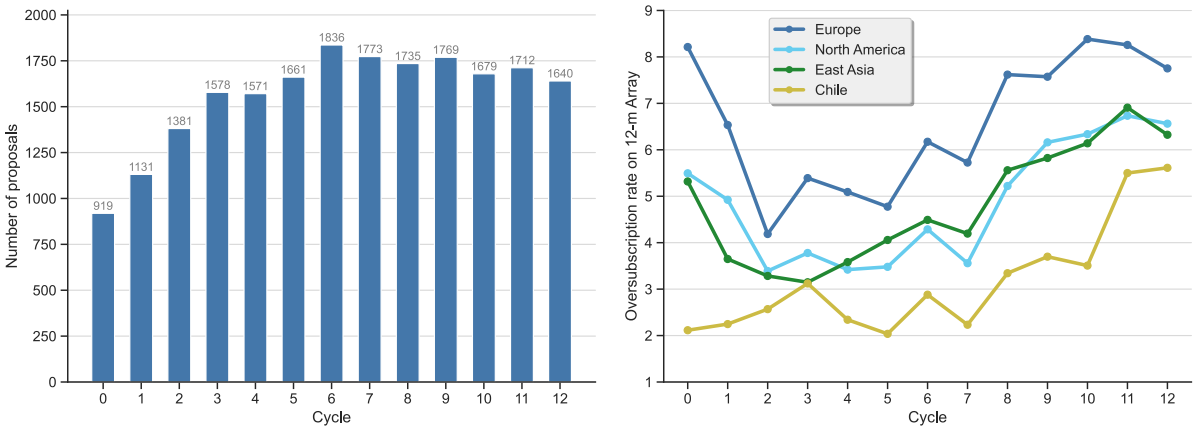

Figure 1 – Left: Number of submitted proposals by cycle. Right: Oversubscription rate per cycle by ALMA region.

Review Process

Large Programs

Large Programs were evaluated by the ALMA Proposal Review Committee (APRC), supported by 79 external Science Assessors. The APRC, composed of 18 members and a chair, reviewed 43 proposals and provided recommendations to the ALMA Director regarding which Large Programs should be accepted. For Cycle 12, six Large Programs were scheduled.

Regular Proposals

All other proposals were reviewed through the distributed peer review process, in which a member of the proposal team evaluated proposals from their peers. A total of 1018 reviewers submitted nearly 16,000 reviews, ensuring broad expertise and community participation in shaping ALMA's science program.

Creating the observing queue

Once the scientific rankings are established, ALMA determines which proposals will be accepted and entered into the observing queue. This process balances several factors beyond the scientific rankings. These include the time distribution across ALMA's Executives, the array configuration schedule, requested receiver bands, and historical weather patterns. As a result, lower-ranked proposals may be selected over higher-ranked ones if they help fill undersubscribed configurations, weather conditions, or right ascensions.

Accepted proposals were assigned one of three grades: A, B, or C. Grade A proposals represent the highest priority and were limited to one-third of the available time. Grade B proposals were also included in the observing queue, with the combined A+B allocation totaling 4170 hours. This is below the nominal 4300 hours due to the expected carryover of unfinished Grade A projects from Cycle 11.

Grade C proposals exceeded the expected available time but were included as contingency to accommodate variations in weather and observing efficiency. Extra low-frequency proposals (Bands 1, 3, and 4) were added for scheduling under poor weather conditions, while extra high-frequency proposals (Bands 9 and 10) were included for execution under optimal conditions.

Results

The results of the proposal review process are summarized in Tables 1 and 2 by region and science category, respectively. Table 3 shows the acceptance rate for various proposal types.

ALMA time was allocated on the 12-m Array according to the regional shares of the ALMA partners: Chile (10%), East Asia (22.5%), Europe (33.75%), and North America (33.75%). In addition, all regions contribute proportionally toward a pool of time reserved for Open Skies, which is open to proposals from any country. Balance is maintained for Grade A and Grade B proposals separately and attempted for Grade C proposals to the extent possible. Balance across regions is not enforced for the 7-m and Total Power Arrays.

Table 1 – Submitted and accepted proposals by region

	Chile (CL)	East Asia (EA)	Europe (EU)	North America (NA)	Open Skies	Total
Submitted Proposals						
Number of proposals	141	360	587	487	65	1640
12-m Array time (hours)	2454	6094	11248	9510	757	30063
7-m Array time (hours)	1634	3572	5236	5460	642	16544
Total Power Array time (hours)	892	3293	3051	3488	550	11274
Subscription rate						
12-m Array (4300 h offered)	5.7	6.3	7.8	6.6		7.0
7-m Array time (4300 h offered)	3.8	3.7	3.6	3.8		3.8
Total Power Array (4300 h offered)	2.1	3.4	2.1	2.4		2.6
Grade A & B projects						
Number of proposals	21	52	70	66	2	211
12-m Array time (hours)	462	910	1363	1378	45	4159
7-m Array time (hours)	415	452	511	1094	0	2473
Total Power Array time (hours)	374	429	437	989	4	2232
Grade C projects						
Number of proposals	34	85	100	86	12	317
12-m Array time (hours)	398	901	1274	1236	75	3884
7-m Array time (hours)	607	1696	1941	1492	285	6021
Total Power Array time (hours)	219	1760	952	791	192	3913

*Table 1 – Submitted and accepted proposals by science category**

	Category 1	Category 2	Category 3	Category 4	Category 5	Total
Submitted Proposals						
Number of proposals	362	387	451	348	92	1640
12-m Array time (hours)	8901	6864	6889	6077	1333	30063
7-m Array time (hours)	1813	4989	7371	1677	693	16544
Total Power Array time (hours)	119	4185	6759	120	91	11274
Grade A & B projects						
Number of proposals	48	49	61	41	12	211
12-m Array time (hours)	1268	953	1027	766	145	4159
7-m Array time (hours)	150	751	1355	198	19	2473
Total Power Array time (hours)	0	712	1461	56	4	2232
Grade C projects						
Number of proposals	78	79	98	50	12	317
12-m Array time (hours)	1399	1033	776	604	72	3884
7-m Array time (hours)	973	1606	2820	553	68	6021
Total Power Array time (hours)	119	1079	2712	0	3	3913

* The five ALMA science categories are (1) Cosmology and the high redshift universe, (2) Galaxies and galactic nuclei, (3) ISM, star formation and astrochemistry, (4) Circumstellar disks, exoplanets and the solar system, and (5) Stellar evolution and the Sun.

Table 2: Acceptance rate for various proposal types

Proposal Type	Number Submitted	Number Grade A & B	Acceptance Rate
Overall			
All	1640	211	13%
Morita Array (ACA)	402	46	11%
Morita Array (ACA standalone)	153	18	12%*
By science category			
Category 1	362	48	13%
Category 2	387	49	13%
Category 3	451	61	14%
Category 4	348	41	12%
Category 5	92	12	13%
Selected proposal types			
Large Programs	43	6	14%
Joint Proposals	79	12	15%
Target of Opportunity	29	7	24%
VLBI	15	4	27%
* For Grade A+B+C, ACA standalone proposals had a 76% acceptance rate.			

Six Large Programs were accepted, spanning science from the early universe to investigations of star and planet formation in our Galaxy:

1. *DMOST: Disks around the MOST common stars* (2025.1.00324.L)
   PI + coPIs: Nicolas Kurtovic, Feng Long, Laura Perez, and Paola Pinilla

2. *Panta Rei: Following the flow of star cluster formation* (2025.1.00383.L)
   PI + coPIs: Nicolas Peretto, Alessio Traficante, Manuel Merello, and Seamus Clarke

3. *The 10 pc Survey of Molecular Clouds and Stellar Feedback* (2025.1.00576.L)
   PI + coPIs: Adam Leroy, Alberto Bolatto, Angela Adamo, Eric Koch, Erik Rosolowsky, Eva Schinnerer, Jiayi Sun, and Karin Sandstrom

4. *Meet in the Middle: An ALMA Treasury of Mid-Stage Mergers* (2025.1.01181.L)
   PI + coPIs: Sean Linden, Aaron Evans, Cosima Eibensteiner, Ezequiel Treister, Hideo Matsuhara, Maria Sanchez-Garcia, Susanne Aalto, and Yiqing Song

5. *HIDING in the HUDF: High-definition Dust Imaging of Normal Galaxies in the Hubble Ultra Deep Field* (2025.1.01377.L)
   PI + coPIs: Leindert Boogaard, Jorge González López, Manuel Aravena, Rachel Somerville, and Roberto Decarli

6. *PHOENIX: the Emergence of Dust, Obscured Star Formation and ISM Physics at Cosmic Dawn* (2025.1.01606.L)
   PI + coPIs: Sander Schouws, Hiddo Algera, Laura Sommovigo, Manuel Aravena, and Rychard Bouwens

Overall, the acceptance rate (Grade A+B) of proposals requesting the 12-m Array is 13% (i.e., 1 in 7.7 proposals), highlighting the highly competitive process. The acceptance rate is similar across scientific categories and proposal types, with VLBI and Target of Opportunity proposals having the highest acceptance rates. Figure 2 shows the acceptance rate of proposals versus the requested observing time on the 12-m Array: there is no strong dependence on requested time, so that relatively small, medium, and large time requests have similar acceptance rates.

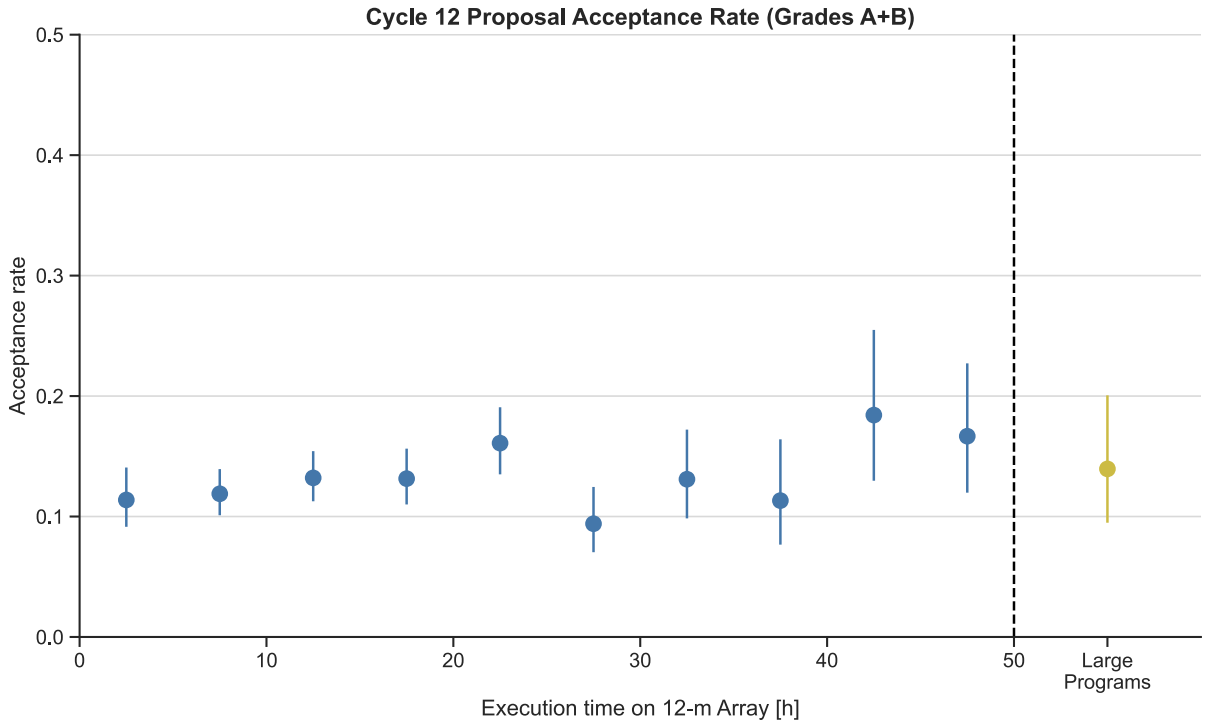

Figure 2 – Fraction of proposals assigned priority Grade A and B as a function of the estimated 12-m Array execution time. The error bars are one sigma uncertainties from Poisson statistics.

Figures 3–5 show the distribution of estimated execution time on the 12-m, 7-m, and Total Power Arrays by region, science category, and receiver band for Grade A and B proposals. As in previous cycles, Bands 6 and 7 remain the most requested and allocated, while the new Band 1 is the fourth most allocated. Overall, the percentage of time awarded to Grade A and B proposals closely matches the submitted time distribution across all science categories and receiver bands. For the highest-frequency bands, 61% of Band 9 and 54% of Band 10 proposals were accepted (Grade A, B, and C) and will receive observatory priority whenever weather permits.

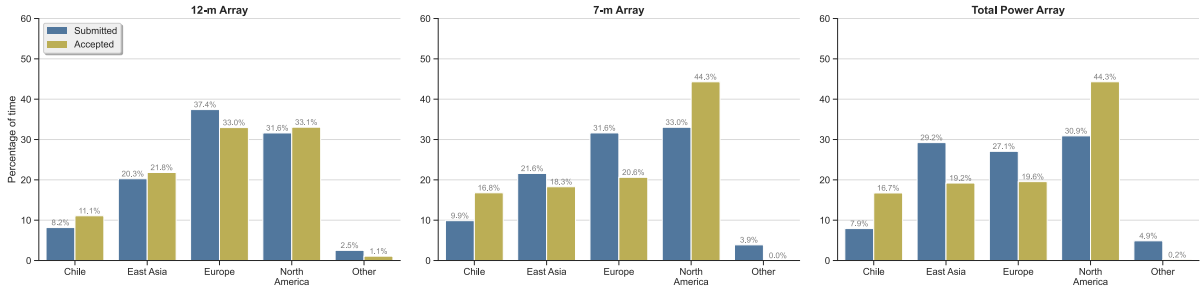

Figure 3 – Distribution of estimated execution time for Grade A and B projects by region.

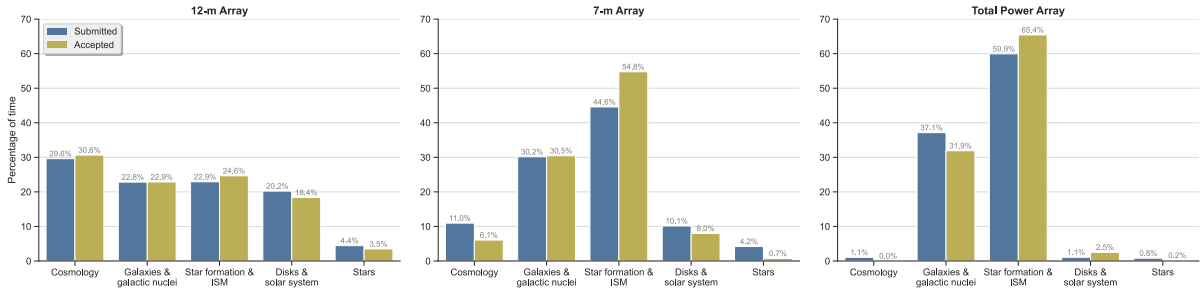

Figure 4 – Distribution of estimated execution time for Grade A and B projects by scientific category.

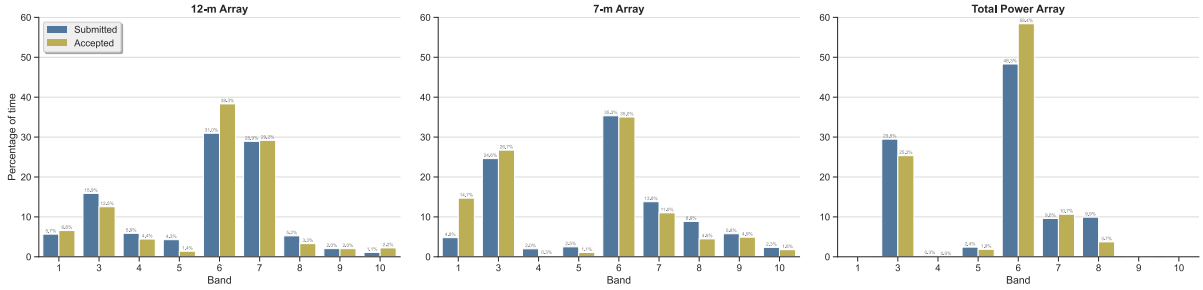

Figure 5 – Distribution of estimated execution time for Grade A and B projects by receiver band. Note that the Total Power Array is not offered in Bands 1, 9, and 10.

Preliminary results from the Cycle 12 reviewer survey

New to Cycle 12, reviewers were asked to rate the quality of 10 randomly selected reviews for proposals they also assessed. The reviewers were asked to rate the quality of reviews as:

- **High quality**: The review provides clear, specific, and constructive feedback that effectively identifies the proposal's strengths and weaknesses.
- **Adequate**: The review offers some useful insights but lacks the detail, clarity, or specificity needed to be fully effective.
- **Low quality**: The review fails to provide meaningful feedback, contains significant errors, or adopts an unprofessional tone.

A total of 228 reviewers participated, providing 3420 quality assessments. Figure 6 shows 54% of the reviews rated as high quality, 36% adequate, and 10% low quality. Figure shows that positive assessments are similar across all career stages of the reviewers who wrote the

reviews. These results indicate that most reviewers provide constructive feedback, but also reveal the need to strengthen guidance and training to improve review quality in future cycles.

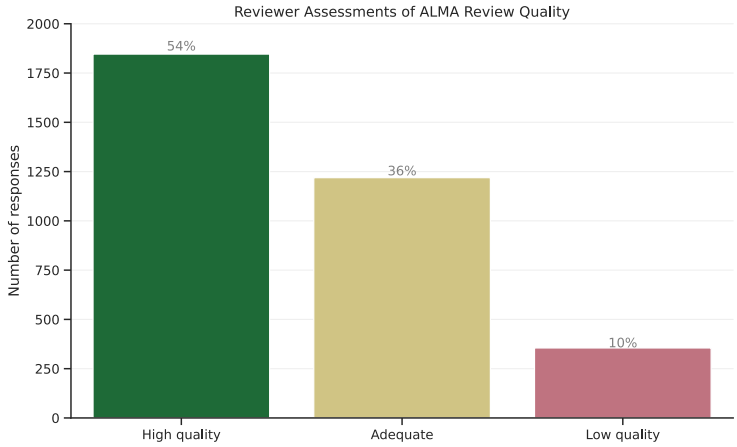

Figure 6 – Histogram of the review quality in the distributed peer review process as rated by Cycle 12 reviewers.

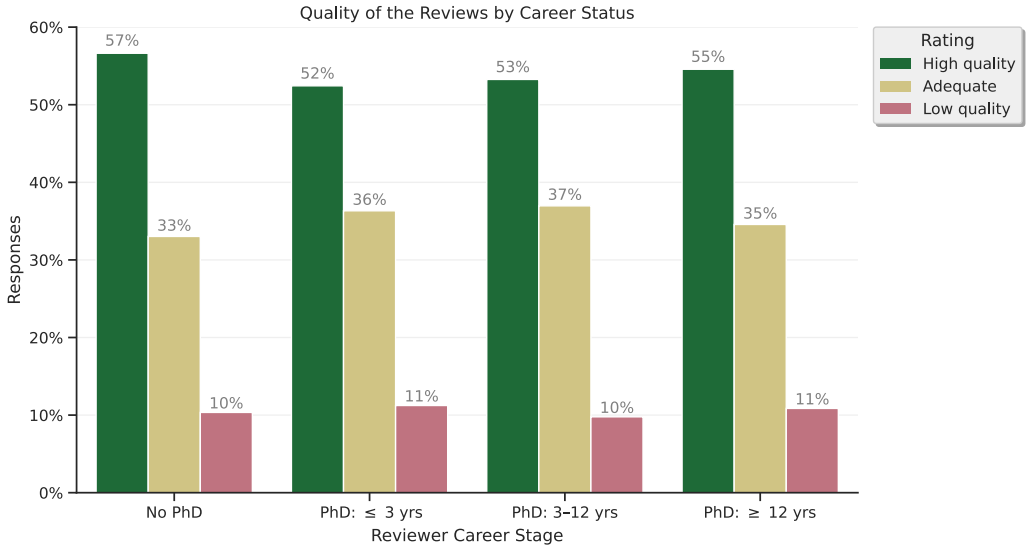

Figure 7 -- Quality of the reviews by the career status of the person who wrote the review.

Acknowledgements

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Daniela Calzetti	Uma Gorti	John McKean	Hyunjin Shim
Carlos Carrasco-Gonzalez	Pablo García	Matthias Maercker	Julie Wardlow
Rei Enokiya	Yoshiaki Hagiwara	Takayuki Muto	
Laura Fissel	Tomasz Kaminski	Miguel Pereira Santaella	

We also extend our gratitude to the over 1000 reviewers who contributed to the distributed peer review process. Your efforts are essential to the success of the proposal review process.