

ALMA Users' Policies



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ALMA, an international astronomy facility, is a partnership of ESO (representing its member states), NSF (USA) and NINS (Japan), together with NRC (Canada), NSC and ASIAA (Taiwan), and KASI (Republic of Korea), in cooperation with the Republic of Chile. The Joint ALMA Observatory is operated by ESO, AUI/NRAO and NAOJ.

User Support:

For further information or to comment on this document, please contact your regional Helpdesk through the ALMA User Portal at www.almascience.org. Helpdesk tickets will be directed to the appropriate ALMA Regional Center at ESO, NAOJ or NRAO.

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1 Purpose and Scope

This document defines the long-term core policies for use of the Atacama Large Millimeter/submillimeter Array (ALMA) and ALMA data by the science community. Cycle-dependent implementation parameters and procedures are detailed in the Call for Proposals documents for each cycle: the cycle announcement, the Proposer's Guide, and the Technical Handbook. In case of conflict between the Call documents and the Users' Policies, the latter takes precedence, unless explicitly indicated otherwise. All ALMA users are subject to the Users' Policies described here and in the Call documents. Violation of these policies by a user may result in sanctions against scientific project(s) under evaluation or execution in which he/she is involved.

2 ALMA Users

A number of ALMA resources are available to unauthenticated users (unregistered users, or users who are registered but have not logged in). Registering with ALMA confers authenticated users the privilege to access additional documents and services.

2.1 *Non-registered ALMA users*

Users do not need to be authenticated to access ALMA non-proprietary data, documentation, tools, or the Helpdesk Knowledgebase articles listing solutions to common questions and problems.

2.2 *Registered ALMA users*

Anyone can register for an ALMA user account. Each user may only have a single ALMA account, which is identified by a unique, user-selected username. This username is permanent: a user may not change his/her username after he/she has completed the registration process. To register, a user must provide his/her full name, a valid email address, and the country of his/her affiliation or the country of residence (for users not affiliated with a scientific institution). The Observatory has experienced that often ALMA official notifications end up in the spam folder of users' emails whose addresses belong to commercial servers. The Observatory reserves the right to refuse any complaint from users entering such email addresses in the user profile.

Users are required to update their ALMA user profile whenever there is a change in their personal details, such as a new email address or a change of affiliation. Users are responsible for ensuring that their profile is correct, and are requested to contact ALMA staff through the Helpdesk if they encounter problems or to delete unnecessary, duplicated, profiles.

By default, all authenticated ALMA users may:

- Access user profile and password management;
- Participate as PI, Co-PI, or Co-I on ALMA proposals;
- Access project tracking tools to monitor the status of their projects;
- Submit Helpdesk tickets;
- Access their proprietary data.

In addition, ALMA may assign specific roles to selected registered users that provide additional privileges. For instance, ALMA Proposal Review Committee (APRC) and ALMA Review Panel (ARP) members are assigned the role of Science Assessor, which allows them, for the ALMA cycles in which they serve, to run the Proposal Handling Tool to access and review proposals and submit their proposal assessments.

3 User Support

User support is provided by the ALMA Regional Centers (ARCs) and ARC nodes.

The country specified in the user's profile constrains which ARC will provide his/her support. Users from a country within the three Executives (EA, EU or NA, see Sect. 4.4) are automatically and compulsorily assigned the ARC of their Executive for support. Users from Taiwan may elect either the EA ARC or the NA ARC as their support ARC. Users outside the three ALMA Executives, including Chilean users, may choose any Executive ARC as their support ARC.

Questions should be submitted to the corresponding ARC through the ALMA Helpdesk. Any potentially sensitive information communicated to ARC staff or submitted to the Helpdesk regarding the user or proprietary project details are held in the strictest confidence. Information submitted through the Helpdesk can only be accessed through a secured database by ARC-affiliated staff.

ARC-affiliated staff are the interface between ALMA users and the Observatory for all communications. Users are prohibited from contacting the Joint ALMA Observatory (JAO) or telescope operations staff – Array Operators or Astronomers on Duty – for issues related to any project, including project execution, proposal submissions, change requests, etc.

An exception to this rule is allowed for Target of Opportunity (ToO, see <http://almascience.org/documents-and-tools/latest/alma-proposal-review-process> for a definition of proposal types) projects or special observing campaigns (e.g. Solar, VLBI), for which the Astronomer on Duty (AoD) may contact the PI if there are important questions regarding the execution of the observations. In this case the communication proceeds via Helpdesk at a dedicated department continuously staffed.

4 ALMA Proposal Preparation and Submission

This section details policies that govern proposal preparation and submission and time assignment.

4.1 *Eligibility and responsibility*

Registered users of any professional background, nationality, or affiliation may submit ALMA proposals: students, postdoctoral researchers, professionals, and non-professionals. Each proposal must identify a single individual¹ who will serve as Principal Investigator (PI). The PI will act as the official contact between ALMA and the proposing team for all proposal correspondence. Proposals may include any number of Co-Investigators (Co-Is) and, for Large Programs and VLBI Proposals (see <http://almascience.org/documents-and-tools/latest/alma-proposal-review-process>), Co-Principal Investigators (Co-PIs). Additional rules, described at http://www.das.uchile.cl/das_alma_crc.html, apply for qualification to use the Chilean share of the time. Proposals submitted by a proposer with a Chilean affiliation that do not qualify to use the Chilean share of time will be eligible as Open Skies proposals (see Sect. 6.4).

¹ Single individual is understood as a single person, i.e. proposals submitted by a consortium are not valid. Instead, a person within the consortium should submit the proposal and act as PI and any other consortium members will act as co-Is or co-PIs (if the proposal type allows them).

By submitting a proposal, the PI takes full responsibility for its contents, in particular with regard to the Co-PI and Co-I names, and agrees to act according to the ALMA policies and procedures, as defined in this document and in Proposal Call documentation. In particular, the PI accepts the limitations of the observing capabilities and operational restrictions applicable for the cycle for which he/she submits a proposal.

Co-I and/or Co-PI names cannot be added to or be withdrawn from the proposal after the proposal deadline.

PI responsibilities include proposal submission and, for approved projects, submission of Phase 2 products (see Sect. 6.1) and proposal change requests (see Sect. 7). These responsibilities may only be transferred to Co-PIs or Co-Is in the case of emergencies (e.g. sickness) or status change (e.g. retirement). They may not be transferred for non-urgent circumstances (e.g., sabbatical or science leave, vacations). Requests to transfer PI responsibility should be sent to the ALMA Helpdesk.

The project PI may delegate the following PI privileges on a project basis to one or more ALMA registered users:

- Access to proprietary data (see Section 8.4);
- Email notification of state changes to an approved project.

These privileges are delegated through the Science Portal (SP) user profile “Project Delegation” interface.

PIs, Co-PIs, and Co-Is may all track the progress of their proposals via the Snooping Project Interface (SnooPI) and are entitled to receive help from or discuss project details with ARC staff.

4.2 Proposal Time Assignment

Proposal types and the policies related to the time allocation are described in a document approved by the ALMA Board which is publicly available in the ALMA Science Portal (<http://almascience.org/documents-and-tools/cycle4/alma-proposal-review-process>). There may be cycle-dependent limits on the time allocated for proposals of different types (e.g. using non-standard modes, Large Programs, stand-alone ACA). These will be described in the Proposer’s Guide for each cycle.

4.3 Science categories

For each cycle, ALMA will define a limited number of broad categories and keywords for the scientific characterization of each proposal. These are used to facilitate the proposal review process. The relevant science categories and keywords are announced in the Proposer’s Guide for each cycle. The PI must select a relevant category before submitting a proposal. The JAO may re-assign a proposal to a different category that it deems more appropriate.

4.4 Proposal submission: Phase 1

Proposals are generated and submitted using the ALMA Observing Tool (OT). This is known as the “Phase 1” process. The capabilities and most of the observing mode restrictions in the proposal call documentation are designed into the OT. If inconsistencies exist, the Proposer’s Guide takes precedence.

Only proposals that conform to the prescribed format, that are submitted through the proper OT version, that comply with the advertised technical constraints and restrictions, and that are received before the submission deadline will be considered.

The final proposal submission deadline is firm – proposals submitted after this deadline will not be accepted. Proposals for Directors Discretionary Time (DDT) do not have a specific deadline.

Except for DDT proposals, a submitted proposal can be resubmitted any number of times until the submission deadline. When a proposal is resubmitted, the previous version is overwritten. DDT proposal submission is final; DDT proposals cannot be resubmitted.

Multiple submissions of the same proposal using different regional affiliations (see Sect. 6.4) are not allowed. If such proposals are detected, the first submitted version will be considered, and the remaining proposals will be ignored.

Proposals accepted in the previous cycle for which observations have not been completed by the proposal deadline can be resubmitted in the new cycle. If accepted and some SGs were successfully completed in the previous cycle, the relevant portion of the new cycle proposal will be cancelled.

5 ALMA Proposal Selection

ALMA proposals other than DDT are subject to international peer review by the ALMA Review Panels (ARP) and the ALMA Proposal Review Committee (APRC). Panel members are appointed by the ALMA Director with the approval of the Directors Council and a designated representative of the Chilean astronomical community. These appointments will strive to ensure appropriate representation of the ALMA regions.

JAO and ARC staff cannot be members of the APRC or ARP. Further, the APRC chair may not also be a member of any ALMA science advisory committee or the ALMA Board.

5.1 Assessment criteria

ALMA proposals are assessed on the basis of the overall scientific merit of the proposed investigation and its potential contribution to the advancement of scientific knowledge, as well as on the extent to which the planned observations exploit the advertised ALMA capabilities. Review panels will be instructed not to consider voluntary waivers of the proprietary period in ranking the proposals. ALMA will not reduce the proprietary period in the archive even if an approved proposal requests it. The above holds for all proposals, including Large Programs. The ALMA Director can waive the proprietary period for a proposal in exceptional circumstances.

Further description of this process can be found in the *Principles of Proposal Review Process* document in the ALMA Science Portal (<http://almascience.org/documents-and-tools/latest/alma-proposal-review-process>).

5.2 Duplications

In order to ensure the most efficient use of ALMA, duplicate observations of the same location on the sky with similar observing parameters (frequency, angular resolution, coverage, and sensitivity) are not permitted unless scientifically justified. Archival data should be used whenever possible to accomplish the science goals of a proposed investigation. Detailed criteria of what constitutes a duplicated observation are specified in Appendix A of this document.

It is the responsibility of the proposers to check the proposed observations against the previously executed programs in the Archive and accepted grade A programs to avoid duplicate observations. Proposers cannot

be penalized for proposing duplications of previous Cycle observations if they had no way to know about them by the proposal deadline. Any proposed duplicate observation must be justified within the Scientific Justification of the proposal. PIs are also advised to justify their proposed observations in cases where they are similar to previously executed or accepted programs but are not formal duplicates. The ALMA Review Panels will determine if the requested duplicate observation is scientifically justified.

Duplicate observations may result among proposals submitted within the same Cycle. In these cases, the ALMA Proposal Review Committee (APRC) will determine if the duplicate observations are scientifically necessary. If not, the APRC will determine which proposal has priority. In general, the higher ranked proposal will be given priority, but regional shares may be considered for closely ranked proposals. The final decision of which proposal is awarded time will be determined when the observing queue is formed, which factors in the share of time available to each region.

Examples of duplicate observations that may be approved include:

- Synoptic observations of time-variable phenomena.
- A large-area survey where cutting out a smaller area to avoid overlap with a previous observation will make the observation inefficient and increase the overall execution time.
- Spectral scan surveys where excluding a frequency range covered by a previous observation will make the observation inefficient and increase the overall execution time.

For proposals within the same cycle, the proposal that stands to lose the proposed duplicate observation will normally not have access to the data from the other proposal until the proprietary period has expired.

5.3 Descoping

Projects may be descoped as a result of the review process by the APRC. Descopes will be made only for compelling scientific or technical reasons. This includes duplications with existing data or with a higher-ranked project from the same cycle. If any part of a project should be descoped because of duplication, this must be clearly stated by the panel review committee and included in the consensus report sent to PIs. Project descoping must be done without adding science goals to a proposal. Proposal descoping will only be done on entire SGs. However, parameters will not be changed for a subset of targets within a science goal (e.g. remove one spectral window or change the correlator setup or requested resolution and sensitivity for a subset of targets in a science goal).

5.4 Proposal Assessment

Each proposal is assigned a letter grade as a result of the proposal review process as described in the *Principles of Proposal Review Process* document in the ALMA Science Portal (<http://almascience.org/documents-and-tools/latest/alma-proposal-review-process>). Grades A, B and C will be assigned based on scientific rank, Executive balance, and scheduling feasibility. Proposal grades affect scheduling priority, with proposals with A grades having the highest priority and proposals with C grades having the lowest. All other proposals will not have Phase 2 (see Sect. 6.1) SBs prepared and not be considered for scheduling at the telescope. Specific details of grade assignments will be given in the Proposer's Guide for each cycle (Section 6.5.3).

Technical assessments will be done on a subset of the submitted proposals before the proposal review meetings. The ALMA Observatory may declare any type of observation that does not conform to the

advertised capabilities technically infeasible at any stage of the Proposal Review Process or during “Phase 2” (Scheduling Block preparation; see Sect. 6.1). The final decision on project infeasibility will be taken by the ALMA Director, based on the advice from a small standing committee consisting of senior staff at the JAO, and cannot be appealed. PIs of proposals found to be infeasible will be notified by email with a description of the technical issue.

5.5 Outcome

An email notification will be sent to the PIs that will include the consensus report from the ALMA review and the assigned letter grade. The outcome of the proposal selection process is final.

In case of questions about details in the consensus report, the PI may submit a request for clarification through the ALMA Helpdesk. However, in no case will such a request lead to a revision of the grade assigned to the proposal.

6 Preparation and Execution of ALMA Observations

This section details policies that govern the preparation, execution, and quality assessment of approved projects.

6.1 Observation preparation: Phase 2

Once a project has been approved for execution, it passes into Phase 2.

The PI will retrieve the project from the archive with the OT, and use the OT to check and approve the Phase 2 material following the guidelines provided through the SP (see [Phase 2 QuickStart Guide](#) and [User's Guide to ALMA Scheduling Blocks](#)). These guidelines describe any allowed changes that may be made by PIs with respect to the submitted proposal before the Phase 2 material is generated. Any changes to a project mandated by the proposal review process (as described in the consensus report) or motivated by technical considerations will be made by ALMA staff. PIs may contact ALMA staff at any time for questions or recommendations regarding checking and generating Phase 2 material.

Once the SBs are prepared and reviewed, the PI has the responsibility to submit them through the OT to the ALMA archive. This submission constitutes the PI approval that the SBs are valid for scheduling on the telescope. ALMA staff may modify submitted projects for technical reasons (e.g. to improve the efficiency of the observational setup). If such technical modifications may affect by any means the scientific output (e.g. moving slightly the spectral windows from the band edge) of the project, the PI will be contacted to approve the modified SBs.

Non-minor changes to a project that are not mandated by the proposal review process or technical considerations may only be made after the approval of a PI-initiated Change Request (Section 7).

If the PI does not approve the Phase 2 products within the given deadline as indicated in the email notification, the project may be downgraded to the next lower grade (from A to B, from B to C, from C to U).

6.2 Observation scheduling

Science observations will be executed by ALMA operations staff, taking into account the weather conditions, the array configuration, target elevation and other practical constraints, the project grades and the Executive balance. All other things being equal, the highest grade proposal will be observed first.

The individual Scheduling Blocks (SBs) of projects with grades A-C will be observed until one of the following three criteria are met:

1. The data are determined to meet the user specified criteria (see Sect. 6.3)
2. The potential scheduling period has ended (one observing season for grade B and C projects, two observing seasons for grade A projects)
3. There are no more 12-m Array configurations planned for the rest of the scheduling period that match the Scheduling Block angular resolution requirements or time constraints have expired.

If a project has been observed for more than twice the originally estimated time, further executions may be deprioritized.

6.3 Quality Assurance, project completion and carry-over

Data acquired with ALMA are subject to a near real-time verification of data quality for each individual execution (Quality Assurance level 0 or QA0), and again after an SB has run to completion or been terminated (QA2)². The quality assurance criteria and outcomes (Pass, Fail, SemiPass) are described in the Quality Assurance chapter of the [Technical Handbook](#). Data that have no scientific value (e.g. no valid data or cannot be calibrated or exported) are marked “QA0 Fail”. These data do not count against project completion or regional time shares, are not available to PIs, and do not show up in archival searches. Data that are not useful for the proposed science goal but which are worthy of archiving (e.g. because they contain useful calibrator data) are marked “QA0 SemiPass”. These data will not be used in the generation of PI science products, and do not count against the PI or regional time shares, but the raw data follow the same access rules and proprietary periods as “QA0 Pass” data (Sect. 8.4.1) and do show up in archival searches.

QA2 is performed on the data that result from all executions of an SB (called an ObsUnitSet or OUS). Data that meet the PI-specified goals within cycle-specific tolerances (as published in the Technical Handbook for each cycle) are marked “QA2 Pass” and are made available to the PI. Data that do not pass QA2 have two outcomes: if there is still the chance to obtain more observations in the current cycle then the data are marked “QA2 Fail” and the corresponding SB is re-inserted into the observation queue; otherwise they are marked “QA2 SemiPass” and delivered to the PI. QA2 SemiPass data have the same proprietary period as other data deliveries (Sect. 8.4), and do count against regional shares (Sect. 6.4).

SBs from Grade B and C projects that have not been started or completed by the end of the cycle and have not been accepted as a resubmission in the new cycle will be “TimedOut” and removed from the observing queue. Grade A proposals that have not been completed at the end of the cycle in which they were submitted will be carried over to the next cycle. Grade A proposals that have been in the observing queue

² Quality assurance level 1 (QA1) deals with the overall performance of the array. See the ALMA Technical Handbook for details.

for two consecutive cycles or more will be subject to APRC review to establish if they should be carried over for one more cycle or if they should be terminated at the end of the on-going cycle.

Projects which are considered resubmission approved in the new Cycle but completed in the previous cycle before the end of that cycle will be QA2-ed and delivered with the code of the past cycle.

A project is deemed completed if all associated QA0 Pass data have been assessed and delivered and all its OUS have been assessed and delivered as QA2 Pass.

A project is deemed terminated if not all of its OUS have been delivered as QA2 Pass but there is no further opportunity to observe the project in the current cycle (e.g. because the requested configuration is no longer available) or to roll it forward into the next cycle.

6.4 Time accounting

The policies of time accounting are described in the *Principles of Proposal Review Process* document in the ALMA SP (<http://almascience.org/documents-and-tools/latest/alma-proposal-review-process>).

During each observing season, balancing across regions will be based on the actual execution time of the 12-m Array observations. The final evaluation will be done shortly after the observing season is over, and will be based on the time associated with valid 12-m Array data delivered to PIs (i.e., data that passed QA0). Executive shares will be calculated separately for observations of A and B graded projects, C graded projects, and DDT projects. These will be published in an Observing Summary at the end of each cycle. In steady state operations, Executive balance will be computed over a two years period, although large year-to-year variations should be avoided.

Regular, ToO and DDT projects will have their observing time assigned to the region of the PI. As long as it does not exceed 5% of the total observation time of the cycle, observation time for PIs unaffiliated with an ALMA partner (Open Skies projects) will be accounted to the regions, proportionally to their regional share, i.e., 10% for Chile, 22.5% for EA, and 33.75% for each of EU and NA. Any additional time required by Open Skies observations will be assigned to NA.

The observing time of Large Programs and VLBI Proposals will be assigned to the regions of the PI and of the Co-PIs, proportionally to the fraction that are affiliated with each region.

For calculation of the Executive balance, the affiliation of a PI – or of a Co-PI, in the case of Large Programs and VLBI Proposals – is the affiliation in his/her ALMA user profile at the time of the proposal's first submission. For EA/NA affiliation, 50% of the time is accounted to EA and 50% to NA.

6.5 PI errors

The Observatory is not responsible for errors in tuning or pointing due to incorrect information included in a given project by the PI. All ALMA time allocations charged to observations that are flawed due to user error will be charged to the relevant region as if the observation had been completed without errors.

Should a PI realize after observations of his/her project have been made that, due to an error on his/her part, they do not actually produce the expected scientific outcome, then the observations will not be repeated. Any remaining unexecuted Scheduling Blocks from the same project without errors may be retained in the observing queue at the discretion of the Observatory. If unexecuted parts of the project are

found to contain similar (or any other) errors before the project execution has been completed, the PI should immediately submit a change request to correct those errors. This change request will be handled through the standard procedure (see Section 7).

7 Changes to ALMA Proposals

After the proposal deadline, submitted proposals may not be changed prior to the completion of the review process.

All changes made to projects after completion of the review process will be logged in the project, along with the name of the ALMA staff member who implemented the change. Only authorized ALMA science staff can write these change logs, though they are viewable by the project PI and are an integral part of a project file.

Changes to a project mandated by the proposal review process (and included in the feedback to the PI) or motivated by technical considerations will be implemented during Phase 2. Changes to a project that are not mandated by the proposal review process or technical considerations may only be made after the approval of a PI-initiated change request (see below).

Changes to a project for which Phase 2 has been finalized and accepted for admission to the ALMA observing queue will only be permitted in exceptional circumstances and only if the pertinent Scheduling Block has not been observed and had some data pass QA0. An exception is the correction of errors introduced by the Observatory (either by ALMA staff or ALMA tools) in the generation of a Scheduling Block and identified after it is admitted to the observing queue. Consultation with the PI, if required, will be handled via the respective support ARC. Any time spent executing such erroneous SBs will not be charged against the PI observing time.

A PI may request a change to a project – e.g. to correct a mistake in a field source list, or in response to information obtained later that may seriously affect a project’s scientific case – via a standard change request via the Helpdesk. Such change requests must include a clear description of the proposed change and a substantive justification for the change. A description of criteria followed by the Observatory to approve or reject a change request can be found in the [Proposer’s Guide](#) and [Phase 2 QuickStart Guide](#). Changes that may be made by PIs without a change request are described in the [Phase 2 OT documentation](#).

Change requests initiated during Phase 2 that are not resolved before the deadline for generation and approval of Phase 2 products will result in generation of the Phase 2 products by ALMA staff once the change request resolution is announced. For change requests initiated after the Phase 2 products have been submitted to the observing queue, these products will be immediately removed from the queue until the change request status is resolved.

Change requests leading to duplications against current or past ALMA proposals are not allowed.

Approval of major change requests is the responsibility of the ALMA Director, who may delegate this responsibility to the ALMA Science Operations Department Head or ARC managers. The decision of the ALMA Director, or of his/her delegate, is final. The Director or his/her delegate consults the Change Request Standing Committee (CRSC) on these decisions. This Committee consists of several JAO senior astronomers and one ARC manager selected on a rotating basis between the ALMA Executives. The Observatory’s decision on the requested change will be communicated to the PI via the Helpdesk system. Approved changes will be implemented by ARC staff, in consultation with the PI.

7.1 Project withdrawal

A PI may withdraw a submitted project at any time. If a PI withdraws a project prior to completion, a Helpdesk ticket should be filed so that no further observations are acquired for the project.

8 ALMA Data Delivery and Data Rights

This section details policies that govern ALMA data, including proprietary times.

8.1 Data property

All data taken by ALMA shall be jointly owned by the Parties³. Ownership shall not impact the free access to the data for use by observers and the astronomical community, according to the policies described in this document.

8.2 ALMA proposal data

Proposal data includes: the Phase 1 materials submitted by the PI (proposal title, abstract, scientific and technical justification, and the names, institutions, and regions of PIs Co-PIs and Co-Is); the APRC grades and reviews; and the Phase 2 content prior to execution, including target positions, frequency settings, and spectral window parameters.

For proposals assigned grade A or B, the project code, proposal title and abstract, and the names of the PI, Co-PIs and Co-Is will be made public soon after PIs are informed of the outcome of the proposal review process. For proposals assigned grade C, the corresponding information will be made public when the first data pass QA0.

Proposal metadata (for example the source positions, observation frequencies, and integration times) for Grade A, B and C proposals will be made public as soon as the first data are archived. The metadata for unaccepted proposals or unobserved proposals will remain confidential.

The scientific and technical justification, figures, references, and panel review rankings and reviews are never made public for any proposal.

8.3 Observational metadata

Observational metadata describe the observations and the bulk data (excluding proposal data). They include positional and sky coverage information; frequency settings, frequency coverage and resolution; angular resolution, *uv*-coverage, and antenna lists; source and calibrator names; polarization; observation date(s) and start/end times; time on source and sampling rate; basic weather; and PI name.

Observational metadata will be made available without restrictions when an observation that passes QA0 is archived, regardless of its grade.

³ 'Parties' are defined in the ALMA Trilateral Agreement and it means the NSF (National Science Foundation of the United States), ESO (European Organisation for Astronomical Research in the Southern Hemisphere) and NINS (National Institutes of Natural Sciences of Japan).

8.4 Observational data

Observational data (also called ‘instrumental data’) include visibility data and all resulting products and images.

8.4.1 Observational data access and proprietary periods

All OUSs that do not fail QA2 (see Sect. 6.3) will be made available to the PI, and any ALMA users delegated by the PI (see Sect. 4.1). These data are subject to a 12 month proprietary period that begins when the ARC sends an email notification to the PI that the data are available. Under no circumstances will a waiving of proprietary period be considered during the proposal review process for proposals submitted to the regular observing cycle (Section 5.1). For DDT Projects, this proprietary period is reduced to 6 months. The ALMA Director may exceptionally grant a different proprietary period.

Successful proposers will have exclusive access to their project’s observational data for the proprietary period, after which the data will become publicly accessible.

ALMA staff will have access to observational data at all times, as necessary for technical analysis and performance tuning. In addition, ALMA staff members formally assigned to perform project Quality Assurance (stage 2, QA2) can download and reduce project data for this purpose.

Until the proprietary period expires, ALMA staff may not disclose or scientifically use ALMA observational data from projects for which they are not PI, including projects they support, without explicit PI permission registered on a Helpdesk ticket. Similarly, ALMA staff performing QA2 may not disclose any intermediate or final data reduction products of PI observations to anyone outside the ALMA/ARC network, including the project PI, co-PIs and Co-Is, prior to data delivery. Any exceptions to this policy must be approved by the Head of Science Operations and the associated ARC Manager.

8.4.2 Stale Data

SBs that have been started but not completed and have no opportunity to be completed for some time (e.g. due to observing conditions or configuration schedule) result in partially completed OUSs. These OUSs are said to be in “stale” state if they satisfy the following set of conditions:

- No new data for the given OUS is expected to be taken for a period of at least 90 days since the last QA0 Pass execution;
- The SB remains “active” (it is not TimedOut, e.g. due to no further observing opportunities for the remainder of the observing season);
- The fraction of QA0 Pass data indicates that the OUS is at least 25% complete, but not complete enough to be expected to meet the QA2 Pass criteria.

Data that are considered stale are eligible for “intermediate data delivery”, which means that the raw (QA0 Pass) data may be made available to the PI or PI delegates (see Section 4.1). Intermediate data delivery will only be done if triggered by the Principle Investigator (PI). In each case the possibility and consequences of delivering the data partially to the PI will be assessed by ALMA staff. Considerations must include the benefit provided to the PI, the burden on the Observatory, and the probability of additional data to be collected.

As a minimum, raw (uncalibrated) visibilities will be made available. The details of the delivery products may evolve with time as the pipeline becomes more mature, and are left to the discretion of the Integrated

Science Operations Team. The data will be made available without undergoing the full set of quality assurance checks, and will be delivered without further support from the ARCs.

Intermediate data delivery does not initiate the proprietary period. The normal proprietary period restrictions and extension request processes apply once calibrated products are delivered.

8.4.3 Problems with delivered data

If users discover problems with the calibration or imaging data products that they believe require the project to be re-observed, they should submit a Helpdesk ticket to their supporting ARC. These problems may include incorrect observing procedures, calibration, or observing parameters (e.g. target positions, mosaic spacing, different than those approved by the PI during Phase 2 or anything else that may reflect an underlying data validity problem.

The supporting ARC will submit a “QA3” ticket to the JAO if there is no known solution or re-observing or re-processing is required. The JAO will evaluate the problem and whether it affects just the reporting user’s data or similarly observed data. All active project components that might be affected by the reported issue and have not yet been delivered will be put on hold. For delivered data, public release of the archival data will be suspended until the corrected data have been re-delivered to the PIs.

For issues that have little to no impact to the affected projects’ Science Goals, the solution or work-around will be communicated to the PI, and the original proprietary period will be reinstated (see Sect. 8.4.1).

If all or part of the project needs to be re-observed, the relevant Scheduling Blocks will be placed back in the observing queue with the original priority. If necessary, corrected Phase 2 products will be produced and resubmitted. The part of the data that requires re-observing will be flagged in the Archive as “QA0 FAIL”. When re-observed, the data will be processed through QA2 and re-delivered to the PI with the corresponding proprietary period (see Sect. 8.4.1).

Re-observation will only be possible within the same Cycle, except for grade A proposals that are carried over to one subsequent cycle. If the data need to be corrected rather than re-observed, this corrected data will replace the original data in the archive.

The QA3 procedure will be not activated if the reported case is due to a mistake or incorrect interpretation of the data by the users.

8.4.4 Extension of Proprietary periods

Projects that need to have their data corrected but which do not need to be re-observed will have their proprietary period extended if the proposal Science Goals are affected by the correction. To encourage PIs to check the data they receive as soon as possible, the extension of the proprietary period is granted based on the rapidity of the problem report.

- Problems reported within two months of original delivery: The full proprietary period will be reset based on the delivery date of the corrected data.
- Problems reported more than two months from the original delivery: The affected PIs will only receive an extension equal to the elapsed time between the posting of the reporting Helpdesk ticket and the delivery date of the corrected data.

8.5 Calibration data

Standard calibration data are observations of calibrators needed to perform the correct calibration of the scientific data. They include the bandpass, amplitude, phase and polarization observations taken during PI observations as well as grid survey observations run by the Joint ALMA Observatory.

All standard calibration data that have passed QA2, whether generated from Joint ALMA Observatory observations or PI observations, have no proprietary period and will in the future be accessible separately from the ALMA archive.

8.6 ALMA Test and Science Verification Data

Data obtained during commissioning or engineering tests or science verification (SV) activities that have not been publicly released will be used only for the purposes of characterization and development of the ALMA system, including hardware and software. The release of intermediate or final data reduction products or test images from these data to anyone who is not an ALMA staff member, including use in ALMA publicity, requires the authorization of the ALMA Director or Deputy Director. Any plots or figures shown must have an appropriate watermark identifying them as test or commissioning data, and will not have axis labels that allow them to be used for scientific purposes.

No personnel granted access to ALMA test or SV data may use these data for any scientific purpose unless and until the data are offered at the ALMA Science Portal for public release. Any ALMA registered user may then request such data by opening a Helpdesk ticket at the corresponding ARC. Users are advised to carefully check the characteristics of a given offered dataset at the Science Portal before requesting the raw data since often test data do not fulfil the requirements of scientific data regarding calibration.

Science Verification projects may not duplicate any PI proposal approved with A, B, C grades nor any DDT approved proposal while unexecuted or during their proprietary period. If any DDT or PI proposal is approved that duplicates a planned SV observation, the corresponding SV project must be changed to avoid duplication.

9 Confidentiality of Information

Through the Observing Tool, any authenticated ALMA user has access to the following information: first and last name, email address, affiliation, Executive, and ALMA username of registered users. All other ALMA user information is confidential.

ALMA records the IP address and browser information of registered users logging in to the Science Portal. This information is used exclusively to track download parameters such as download speed and file size.

ALMA also records the IP address and browser information of authenticated and non-authenticated Helpdesk users. Access to this information, as well as to the contents of Helpdesk tickets, is restricted to authorized ALMA staff.

Helpdesk Knowledgebase articles will not contain any information which would identify users or reveal confidential proposal information.

10 Publication of ALMA Results

The following statement must be included in the acknowledgment of papers that use ALMA data:

"This paper makes use of the following ALMA data: ADS/JAO.ALMA#YYYY.C.NNNNN.Z. ALMA is a partnership of ESO (representing its member states), NSF (USA) and NINS (Japan), together with NRC (Canada), NSC and ASIAA (Taiwan), and KASI (Republic of Korea), in cooperation with the Republic of Chile. The Joint ALMA Observatory is operated by ESO, AUI/NRAO and NAOJ."

In this statement, YYYY.C.NNNNN.Z must be replaced by the actual project code. Here, "YYYY" denotes the year when the CfP for a given cycle is issued, "C" identifies the cycle ID during that year⁴, "NNNNN" is a five-digit running number and "Z" denotes the proposal type (**S**: Regular, **V**: VLBI, **L**: Large, **T**: ToO, **C**: Calibration, **E**: Engineering, **SV**: Science Verification).

In addition, publications from NA authors must include the standard NRAO acknowledgement:

"The National Radio Astronomy Observatory is a facility of the National Science Foundation operated under cooperative agreement by Associated Universities, Inc."

10.1 Naming convention of sources discovered by ALMA

If referring to sources detected for the first time in ALMA fields one should follow the naming convention **ALMA JHHMMSS.s+/-DDMMSS** (approved by IAU "Clearing House" of Commission 5 Working Group on Designations), where J indicates J2000 coordinates.

The coordinates should be truncated according to the precision in the position of the source. Typically, this should be approximately 1/10th of the size of the synthesized beam used in the discovery observation (see the ALMA Technical Handbook for details on ALMA astrometric precision), e.g. for a 1" beam, declination should be given to a precision of 0.1" of arc and RA to 0.01s of time (ALMA JHHMMSS.ss+/-DDMMSS.s), for a 0.1" beam declination to 0.01" of arc and RA to 0.001s of time (ALMA JHHMMSS.sss+/-DDMMSS.ss) etc.

For example, ALMA J123456.7890-123456.789 designates a new source with RA 12:34:56.7890 and Declination 12:34:56.789 detected in a field observed in Band 9 with a long-baseline configuration with an angular resolution of 0.04 arcsec. ALMA J123456.789-123456.789 designates a new source with RA 12:34:56.789 and Declination 12:34:56.789 detected in a field observed in Band 3 with a compact configuration with an angular resolution of 3.4 arcsec.

11 Final Provisions

Any situation that is unforeseen or for which ambiguity exists in this Users' Policies document and in the associated Call for Proposals material will be referred to the ALMA Director, whose decision is final.

ALMA reserves the right to change the policies defined in this document at any time. Barring unforeseen emergencies, such changes will apply at the start of the observing cycle following the date of their

⁴ The "C" is used to identify both regular cycles (using a single digit), and DDT cycles (using a single letter). C=1 for the first regular cycle of the considered year, C=2 for the second (if any), etc. C=A for the DDT cycle coinciding with the regular C=1 observation period, C=B for the DDT cycle corresponding to the C=2 observing period, and so on.

introduction. These changes will be published in the users' policy document at the call for each cycle and the proposers should review the policies with each proposing cycle.

A. Appendix: Definition of a Duplicate Observation

A proposed observation is considered a duplicate of another observation if *all* of the following conditions are met:

Target field location

- For single-field interferometry, the proposed position coincides within the half-power beam width of the other observation. Moving objects (e.g., Solar System objects) will be identified by name.
- For mosaic observations, more than 50% of the proposed pointings are within the half power beam width area covered by the other observation.

Angular Resolution

- The proposed angular resolution differs by a factor of ≤ 2 from the other observation.

Spectral windows

- Continuum: The requested sensitivity (rms) for the aggregate bandwidth is better by a factor of ≤ 2 from the other observation and the requested frequency is within a factor of 1.3.

- or -

- Spectral line: If the central frequency in any requested correlator window observed in Frequency Division Mode (FDM) mode is encompassed by the other observation observed in FDM mode and the sensitivity per spectral channel, after smoothing to the same spectral resolution, is better by a factor of ≤ 2 .

To be considered a “continuum” observation, the proposed correlator setup must contain 2 or more windows with a bandwidth > 1.8 GHz.

Solar observations will not be checked for duplications.