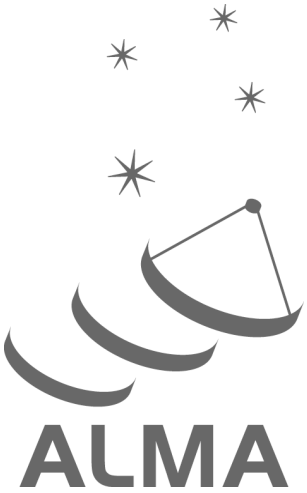
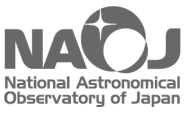
ALMA Users' Policies





www.almascience.org

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.

Revision History:

Version	Date	Editors
1.0	March 2015	

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Table of contents

1 Purpose and Scope

This document defines the long-term core policies for use of the Atacama Large Millimeter/submilleter 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 preference, 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, or tools, or the helpdesk Knowledge Base 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).

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. Each user is responsible for ensuring that his/her profile is correct.

By default, all authenticated ALMA users may:

- Access user profile and password management;
- Participate as PI, Co-PI, or Co-I in ALMA proposals;
- Access the Project Tracker to monitor the status of their scheduled observing 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) or 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.

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 individual 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 Proposals (see Sect. 4.2.2), Co-Principal Investigators (Co-PIs).

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.

PI responsibilities include proposal submission, approval of phase 2 products (see Sect. 6.1), and submission of 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[1].

[1] The co-I or co-PI to whom the PI rights and duties are transferred must be designated by the original PI of the proposal, except in case of death of the latter, in which case the co-Is and co-PIs are responsible for designating the successor of the original PI.

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 changes to an approved project logged in the Project Tracker, such as one of its components being first observed, fully observed, or successfully processed.

These privileges are delegated through the Science Portal user profile "Project Delegation" interface.

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

4.2 Proposal types

There are four proposal types, as defined below. Not all types may be allowed in a given cycle: the allowed types are specified in the Call for Proposals for each cycle.

4.2.1 Standard Proposals

Standard Proposals request observations that can be fully specified by the regular proposal submission deadline, and whose estimated execution time (including all Array components) is less than the number of hours set for Large Proposals in the Proposer's Guide. They may involve time-critical and monitoring observations. However, ALMA may impose restrictions on applicable timing constraints for any cycle.

4.2.2 Large Proposals

Large Proposals are similar to Standard Proposals, but their estimated execution time (including all Array components) is greater than the number of hours set for Large Proposals in the Proposer's Guide. Large Proposals may include one or more Co-PIs to represent different ALMA regions and account for time assigned to each region (see Section 6.4). Large Proposals are not offered in Cycle 3.

4.2.3 Target of Opportunity (ToO) Proposals

ToO Proposals should be used to observe targets that can be anticipated but not specified in detail. While the target list may be left unspecified, observing modes and sensitivity requests must be specified in detail for ToO observations. ToO proposals must clearly indicate the number of triggers needed to reach the proposal's science goals, the trigger required to initiate the actual observation, and the necessary reaction time for scheduling the observation after it is triggered. ALMA may determine that reaction times below a certain threshold cannot be offered or guaranteed for a given cycle.

4.2.4 Director's Discretionary Time (DDT) Proposals

Unlike the other proposal types, DDT Proposals may be submitted at any time during a cycle for implementation during that cycle or, possibly, at the beginning of the following cycle[2]. A DDT proposal must belong to one of the following categories:

[2] If submitted close to the cycle end.

- Proposals requiring timely observation of a sudden and *unexpected* astronomical event
- Proposals requesting observations on a highly competitive scientific topic, motivated by developments that have taken place after the regular proposal submission deadline;
- Proposals requesting follow-up observations for a program recently conducted with ALMA or any other observing facility, where a quick implementation is expected to provide breakthrough results.

The same observing capabilities and restrictions are applicable to DDT Proposals as to other proposals of the same cycle, including time constraints and reaction time for ToO observations.

The maximum fraction of the available observing time in a given cycle that may be dedicated to DDT project executions will be announced in each Call for Proposals and will not exceed 5% of the total time available for the cycle.

The science assessment of DDT proposals will be based on the same criteria as for proposals submitted to the regular cycle and specified in the Proposer's Guide. Additionally, DDT proposals may not be a resubmission of a proposal from the same cycle and may not duplicate any A, B, or C graded proposals from the same cycle.

Given the limited fraction of the available time for their execution, DDT Proposals may be approved only if their science case is exceptionally strong, especially if they are not related to the observation of a sudden and unexpected astronomical event. Approval of a DDT Proposal will also be subject to confirmation via a technical assessment that it can be carried out with the capabilities offered for the cycle in which it is submitted.

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 Call for Proposals 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 Time assignment

The country specified in the user's profile determines which ALMA region his/her proposals will be affiliated with for the purposes of time allocation, as follows:

- EA (East Asia) for users from Japan and South Korea;
- EU (Europe) for users from any ESO member state;
- NA (North America) for users from Canada and the USA;
- EA, NA, or split equally between EA/NA, for users from Taiwan;
- CL (Chile) for users from Chile[3];
- Non-ALMA for users of countries not appearing above.

[3] JAO staff proposals are assigned to the Executive with whom they are contracted.

The time for each proposal is assigned based solely on the regional affiliation of the PI, except for Large Proposals, for which it is assigned proportionally based on the regional affiliation of the PI and co-PIs.

4.5 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.

In case of last-minute technical problems with the proposal server, the Observatory may extend the deadline so that proposers are not unduly penalized. Such extensions will be in increments of at least 30 minutes, and will be announced on the ALMA Science Portal, along with the revised deadline. The final proposal submission deadline is firm – proposals submitted after this deadline will not be accepted. DDT proposals 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 submission of the same proposal using different Executive affiliations (see Sect.4.4) is not allowed. If such proposals are detected, the first submitted version will be considered, and the remaining proposals will be ignored.

5 ALMA Proposal Selection

ALMA proposals other than DDT (see Sect. 4.2.4) are subject to 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.

The ARP and APRC 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 available ALMA capabilities.

5.2 Duplications

A high-level principle of ALMA is that identical data should not be taken twice unless scientifically necessary. The term "duplication" refers to entire projects that may potentially replicate the data or results obtained in

another proposal or in the ALMA archive. If only part of a project duplicates existing data or another proposal, the duplicating portions may be descoped (see section 5.3).

Potential proposal duplication may occur when more than one team applies to observe the same targets in the same observing mode (frequency, angular resolution, area, depth, etc). Duplications will be assessed at the Science Goal level, i.e., a Science Goal will be considered a duplication of another Science Goal only if the observations are judged to be scientifically equivalent. Duplication checks are performed against archived data taken until the proposal submission deadline, or, for unexecuted grade A proposals, against proposal data (see Sec. 8.2). Duplication checks are not performed against dynamically selected calibrators.

Observations are considered duplicates if all the following conditions are met:

- Target field location:
  - For single-field interferometry, the map reference positions coincide within the primary beam (Half-Power Beam Width), or
  - For mosaic observations, the fields of the two Science Goals (defined as the Half-Power Beam Widths) overlap by more than 50% of the size of the smaller one.
- The values of the highest angular resolution for the two considered Science Goals differ by a factor of less than 2.
- Spectral windows:
  - Each spectral window of one Science Goal overlaps with a spectral window of the other by more than 50% (for observations utilizing the correlator Time Division Mode), or
  - At least 50% of the spectral lines to be observed in the Science Goal including the smaller number of lines overlap the lines of the other Science Goal (for observations utilizing the correlator Frequency Division Mode).
- The difference of spectral resolution between overlapping spectral windows (as defined above) is less than a factor of 2.
- The difference in the requested rms (rms noise values in Jy for continuum observations and in deg K for line observations at the same velocity resolution and the same angular resolution) within each pair of matching spectral windows is less than a factor of 2.

If one proposed observation is less sensitive than a second observation, and if it meets the area and spectral overlap criteria above, it will also be considered a duplicate since the science objective of the poorer sensitivity program can be achieved using the deeper observation. Similar criteria will be applied to proposed observations that have poorer angular or spectral resolution than another proposal, provided that the higher resolution observation can achieve all the science requirements of the lower resolution observation, including sensitivity on the desired spectral resolution and angular scales.

Note that, for targets undergoing non-periodic or non-semi-periodic variations, observations at different epochs do not represent potential duplications.

In case of potential duplications of proposals within the same cycle, the relevant proposals will be directly compared with each other, including also proposals resubmitted from the previous Cycle because data had not yet been taken. The science assessors will determine if the considered duplicate proposals are mutually exclusive or if it would be scientifically meaningful for more than one to be approved. If duplicated proposals that are mutually exclusive have a similar scientific rank, regional shares may be taken into consideration for discarding one of the proposals. The ALMA Proposal Review Committee will render the final verdict.

5.3 Descoping

Descoping of projects will only arise as a result of the review process, and will be made only for compelling scientific and/or technical reasons. This includes partial duplications with existing data or with a higher-ranked project from the same cycle. Clear instructions on how a project should be descoped must be given by the panel review committee and included in the consensus report sent to PIs.

Project descoping must be done so that no additional science goals need to be added to a proposal. This means that entire targets or spectral windows may be descoped from an individual science goal. 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 Grading system

One of the following grades will be assigned to each proposal.

- **Grade A**: The proposal is assigned the highest execution priority. If it is not completed by the end of the current cycle, it will be carried over to the next cycle.
- **Grade B:** The proposal is assigned a high execution priority. However, it will not be carried over to future cycles, even if it is not completed by the end of the current cycle.
- **Grade C:** The proposal is in the group of filler projects, which will be observed only if the conditions do not allow any higher priority project to be executed.
- **Grade U:** The proposal will not be scheduled, and Phase 2 products (see Section 6.1) will not be prepared.
- **Grade I:** The proposal is rejected because it is technically infeasible with the capabilities offered for the current cycle.
- **Grade O:** The proposal will not be observed because of duplication with archived data from a previous cycle or a higher-ranked project of the current cycle.

Grade A is assigned to proposals solely on the basis of scientific rank. Grades B and C are assigned to proposals solely on the basis of scientific rank and Executive balance. The maximum fraction of the available time that may be allocated to proposals of grades A, B, C is defined on a cycle-by-cycle basis, and announced in each Call for Proposals.

5.5 Outcome

The outcome of the proposal selection process, as communicated to the PI, is final. Exceptions may only be made in the case of demonstrable error in the technical assessment of a proposal leading to its rejection. 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 (see Section 5.4).

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. Scheduling Blocks (SBs) are then prepared by trained ARC staff known as "Phase 2 Group" or P2G members. The P2G member may not be a PI, Co-PI, or Co-I on a project for which he/she is preparing the Phase 2 products.

Each project is assigned a Contact Scientist, an ARC or ARC node staff member who acts as the primary channel of communication between the PI and the Observatory for the project. A Contact Scientist may be a PI, Co-PI,or Co-I on a project they support.

The P2G member prepares the Phase 2 products following Observatory "best practices," and incorporating any changes to a project mandated by the proposal review process (and included in the feedback to the PI) or motivated by technical considerations. 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).

Once the Phase 2 products are prepared by P2G, the Contact Scientist presents them to the PI for approval. All projects must be approved by the PI before being marked as ready for scheduling. As for all other ALMA staff, neither P2G members nor Contact Scientists have any impact on the scheduling priority of any projects they prepare or support.

ALMA staff will initiate contact with the PI to validate the Phase 2 products. If the PI is contacted in a timely manner, but does not review and approve the products within the given deadline, the project may be downgraded to the next lower grade (from A to B, from B to C, etc) and, consequently, it may not be observed.

Scheduling Blocks are prepared for proposals with grades A or B well before the array is in a configuration appropriate for their science goals. It is possible that proposals with C grades are not prepared until it appears likely that the ALMA observing queue will have a dearth of prepared projects for certain observing conditions (LST range, frequency, array configuration), in which case grade C proposals matching these conditions may be prepared.

If it appears likely that the ALMA observing queue will have a dearth of projects for certain observing conditions (LST range, frequency, configuration), and there are no remaining A, B or C graded projects that meet these conditions, then the Observatory will use the relevant science observing time to conduct other Observatory tasks, such as calibrator surveys, Quality Assurance observations, Science Verification or commissioning observations, etc.

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. For projects with the same requirements, the higher ranking one will be observed first.

The individual Scheduling Blocks 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 Sec.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 requirements.

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. This "level zero" Quality Assurance (QA0) evaluates the basic project execution, calibration, and archiving. QA0 is assessed for each individual execution of an observation. Only data that pass QA0 are processed further. There are two states for data that do not pass QA0. Data that have no scientific value (e.g. no valid data or cannot be calibrated or exported) are marked "QA0 Fail", and the observation is re-inserted into the observing queue. 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", and the corresponding Scheduling Block is re-inserted into the observing queue. 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 rules as "QA0 Pass" data for proprietary time and do show up in archival searches.

After all executions for a particular PI-specified science goal (called an ObsUnitSet or OUS) have been obtained, the data are processed and the calibrated data are evaluated against the PI-specified goals (requested resolution, sensitivity, etc.). This is the "level 2" of Quality Assurance (QA2)[4]. Data that meet the PI-specified goals within cycle-specific tolerances (as published in the Technical Handbook) are marked "QA2 Pass" and are made available to the PI through the ARC with which the PI is registered. Data that do not pass QA2 have two outcomes: if there is still the chance to obtain more observation in the current cycle then the data are marked "QA2 Fail" and the corresponding Scheduling Block 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 (Sec. 8.4), and do count against regional shares (Sec. 6.4).

The applicable QA0 and QA2 pass/fail criteria are specified in the Call for Proposals documentation for the considered cycle.

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

A project is deemed completed if all the required data have been obtained and have passed QA2, or if there is no further opportunity to observe the project in the current cycle or to roll it forward into the next cycle and the data are marked QA2 SemiPass and delivered.

Grade B and C projects that have not been completed by the end of the cycle will be terminated, i.e., they will be removed from the observing queue. Any QA0 Pass data will be processed, assigned the appropriate QA2 state (Pass or SemiPass), and delivered.

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 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. If terminated, any QA0 Pass data will be processed, assigned the appropriate QA2 state, and delivered.

6.4 Time accounting

While the main guiding principle in the assignment of observing priorities is to optimize the scientific impact of ALMA, the Observatory will try to ensure that, over the balance of a cycle, each region receives its share of the time, that is:

- 22.5% for East Asia (EA);
- 33.75% for Europe (EU);
- 33.75% for North America (NA);
- 10% for Chile.

During the 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 three-year period, although large year-to-year variations should be avoided.

Standard, 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 three Executives, proportionally to their regional share, excluding Chile, i.e., 25% for EA, and 37.5% for each of EU and NA. Any additional time required by Open Skies observations will be assigned to NA.

The observing time of Large Proposals will be assigned to the regions of the PI and of the Co-PIs, proportionally to the fraction 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 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 the 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

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 faulty 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. Since any such error affects Scheduling Blocks that have previously passed validation, its existence must be attributed to flaws in the ALMA software validation process. Consequently, the affected project will not be charged for any resulting time loss.

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 detailed description of the criteria followed by the Observatory to approve or reject a change request can be found in the Proposers' Guide.

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. 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

From the new Trilateral Agreement: Art. 18.2: " All data taken by ALMA shall be jointly owned by the Parties. Ownership shall not impact the free access to the data for use by observers and the astronomical community according to a policy set by the Board", which is 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[5]); 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, grade, proposal title and abstract, the names, institutions and countries 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.

Since proposals assigned priority grade A have a high probability of being completed, their proposal metadata (e.g. source coordinates, frequency setups) will also be public.

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

[5] Note that the PI name is considered observational metadata (see Sect. 8.3 below).

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.

8.4 Observational data[6]

Observational data include visibility data and pipeline generated 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 delegated ALMA users (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. 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 scientific 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 and Co-Is, prior to data delivery. Any exceptions to this policy must be approved by the Head of Science Operations and associated ARC Manager.

8.4.2 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 confirmation that the corrected data has been re-delivered to the PIs.

[6] Also called 'Instrumental data'

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. 8.4.2).

If all or part of the project needs to be re-observed, the relevant Schedule 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.

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.

8.4.3 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, Extension and Optimization, Commissioning, and Science Verification Data

Data obtained during commissioning and science verification (CSV) or extension and optimization (EOC) 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 EOC or CSV to anyone who is not an ALMA staff member, including use in ALMA publicity, requires the authorization of the CSV/EOC Project Scientist or the ALMA 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 EOC/CSV data may use these data for any scientific purpose unless

and until the data are publicly released.

Science Verification (SV) 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 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 Knowledge Base 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, "C" identifies the cycle during that year[7], "NNNNN" is a five-digit running number and "Z" denotes the proposal type (**S**tandard, **L**arge, **T**oO, **C**alibration, **E**ngineering, **S**cience **V**erification).

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."

For the special case of an ALMA Cycle 0 project duplicating another project, and whose data have been obtained as part of the execution of the latter, a statement such as the following should be added (inserting the correct project codes):

[7] 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.

“These data were made available to <author's name(s)> as part of his/her/their ALMA proposal 2011.0.01234.S, which requested observations duplicating those of proposal 2011.0.05678.S”

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 introduction.

The Atacama Large Millimeter/submillimeter Array (ALMA), an international astronomy facility, is a partnership of the European Organization for Astronomical Research in the Southern Hemisphere (ESO), the U.S. National Science Foundation (NSF) and the National Institutes of Natural Sciences (NINS) of Japan in cooperation with the Republic of Chile. ALMA is funded by ESO on behalf of its Member States, by NSF in cooperation with the National Research Council of Canada (NRC) and the National Science Council of Taiwan (NSC) and by NINS in cooperation with the Academia Sinica (AS) in Taiwan and the Korea Astronomy and Space Science Institute (KASI).

ALMA construction and operations are led by ESO on behalf of its Member States; by the National Radio Astronomy Observatory (NRAO), managed by Associated Universities, Inc. (AUI), on behalf of North America; and by the National Astronomical Observatory of Japan (NAOJ) on behalf of East Asia. The Joint ALMA Observatory (JAO) provides the unified leadership and management of the construction, commissioning and operation of ALMA.