



Additional information from scheduling and Phase 2 Generation viewpoints

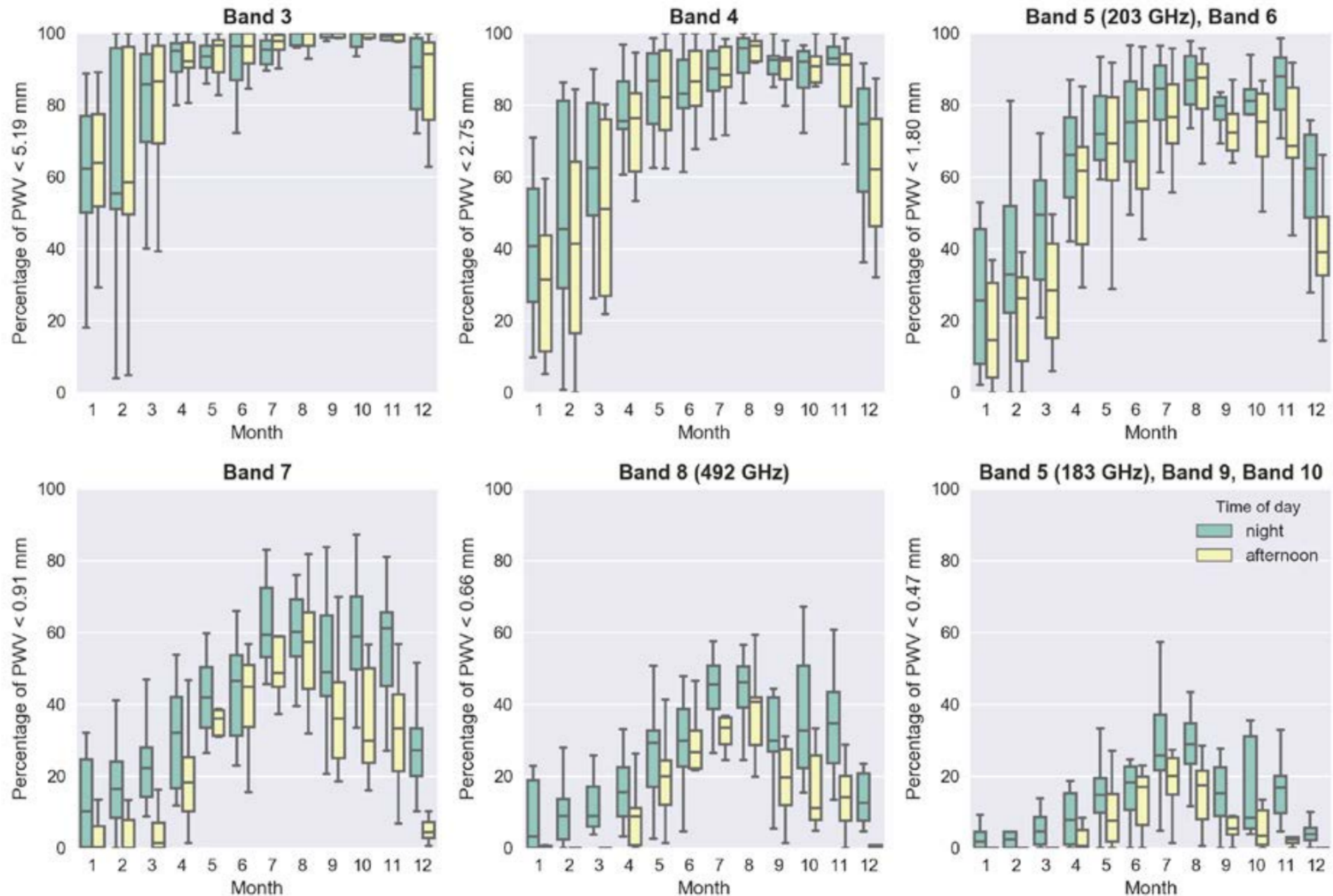
Daniel Espada

East Asian ALMA Regional Center
Specially Appointed Associate Professor

Summary

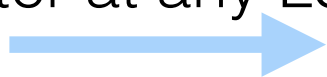
- 1) Weather pattern, configuration plan, observing time available, and observing pressure
- 2) Duplications and Resubmission
- 3) Double check observing parameters before deadline
- 4) Minor/Major changes
- 5) Other considerations

1) Weather pattern



Configuration plan

Bands 7, 8, 9, and 10 and 5 near 183 GHz are not recommended around the Altiplanic winter at any LST



B9, and B10 will only be scheduled in these time ranges, and the rest will also be limited for B7 and B8 observations



| Start date | Configuration | Longest baseline | LST for best observing conditions |
|--------------------|--|------------------|-----------------------------------|
| 2018 October 1 | C43-6 | 2.5 km | ~ 22h – 10h |
| 2018 October 15 | C43-5 | 1.4 km | ~ 0h – 12h |
| 2018 November 25 | C43-4 | 0.78 km | ~ 2h – 14h |
| 2018 December 15 | C43-3 | 0.50 km | ~ 4h – 15h |
| 2019 January 5 | C43-2 | 0.31 km | ~ 5h – 16h |
| 2019 January 20 | C43-1 | 0.16 km | ~ 6h – 17h |
| 2019 February 1-28 | <i>No observations due to February shutdown</i> | | |
| 2019 March 1 | C43-1 | 0.16 km | ~ 8h – 21h |
| 2019 March 15 | C43-2 | 0.31 km | ~ 8h – 22h |
| 2019 April 1 | C43-3 | 0.50 km | ~ 9h – 23h |
| 2019 April 15 | C43-4 | 0.78 km | ~ 10h – 0h |
| 2019 May 1 | <i>No observations due to major antenna relocation</i> | | |
| 2019 June 1 | C43-10 | 16.2 km | ~ 13h – 3h |
| 2019 June 20 | C43-9 | 13.9 km | ~ 14h – 5h |
| 2019 July 10 | C43-8 | 8.5 km | ~ 16h – 6h |
| 2019 August 1 | C43-7 | 3.6 km | ~ 18h – 8h |
| 2019 September 5 | C43-6 | 2.5 km | ~ 20h – 9h |

Configurations

The screenshot shows a software interface for configuring astronomical observations. The interface is divided into several panels:

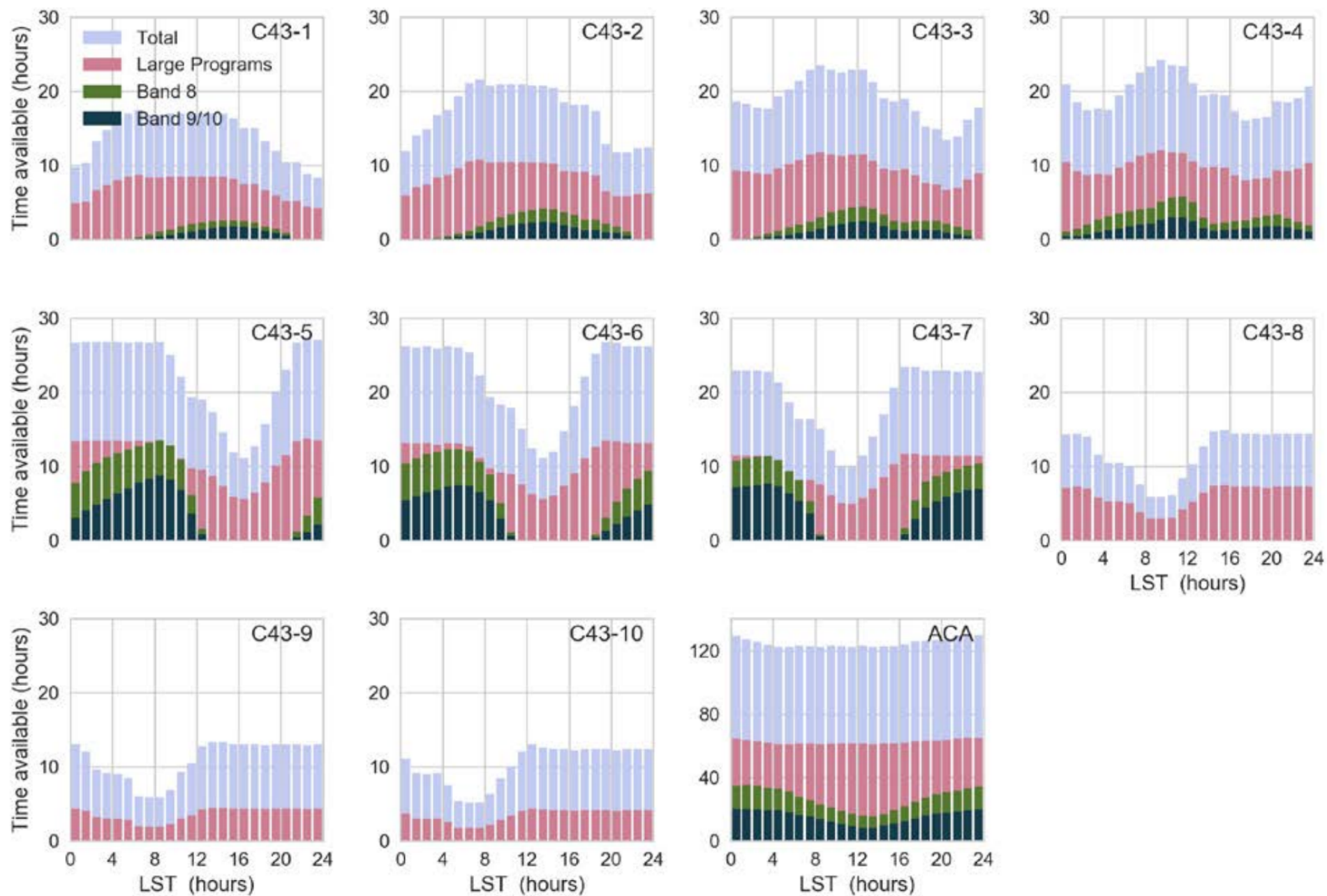
- Project Structure:** A tree view on the left showing the hierarchy of the proposal, with "Control and Performance" highlighted.
- Editors:** A central panel with tabs for "Spectral", "Spatial", and "Control and Performance". The "Control and Performance" tab is active, showing various configuration parameters.
- Configuration Information:** A table of parameters including Antenna Beamsize, Number of Antennas, Longest baseline, Synthesized beamsize, Shortest baseline, and Maximum recoverable scale.
- Desired Performance:** A section with radio buttons for "Single", "Range", "Any", and "Standalone ACA". Below this, there are input fields for angular resolution (0.40000 arcsec to 1.0 arcsec), largest angular structure (70.0 arcsec), and desired mosaic sensitivity (10.00000 mJy).
- Bandwidth used for Sensitivity:** A section with a dropdown menu for "RepresentativeWindowResolution" and a "Time Estimate" button.
- Override OT's sensitivity-based time estimate (must be justified):** A section with radio buttons for "Yes" and "No".
- Are the observations time-constrained?:** A section with radio buttons for "Yes" and "No".
- Input Parameters:** A section on the right showing requested sensitivity (10.00 mJy), bandwidth used for sensitivity (1.129 MHz), and representative frequency (90.30 GHz).
- Estimated Total time for Science Goal:** A section showing a total time of 6.43 h.
- Cluster 1:** A table showing source information for "Cluster 1".
- Possible Configuration Combinations:** A table showing combinations of configurations (12-m (1), 12-m (2), 7-m, TP) and their availability (Yes/No).
- Input Parameters (Detailed):** A section showing precipitable water vapour (5.186mm) and time required for 12m (1) [C43-5].
- Time required for 12m (1) [C43-5]:** A section showing time on source per pointing (18.1 s), total number of pointings (39), number of tunings (1), total time on source (11.79 min), total calibration time (13.83 min), other overheads (5.98 min), total time for 1 SB execution (31.60 min), number of SB executions (1), and total time to complete SB (31.60 min).
- Calibration Breakdown per SB execution:** A table showing calibration overheads for pointing, amplitude/bandpass, phase, atmospheric, and other overheads.
- Additional Arrays:** A section showing time required for additional 12-m (15.80 min).

Callout boxes highlight specific features:

- "Source(s) in the SB cluster" points to the "Cluster 1" table.
- "First (more extended) 12-m config assigned" points to the "12-m (1)" column in the "Possible Configuration Combinations" table.
- "Range of angular resolutions possible" points to the angular resolution input fields.
- "ACA (7-m + TP Array) needed?" points to the "7-m" and "TP" columns in the "Possible Configuration Combinations" table.
- "Second (more compact) 12-m config assigned" points to the "12-m (2)" column in the "Possible Configuration Combinations" table.

- Angular resolution: Single value / Range / Any / Standalone ACA
- LAS, sensitivity

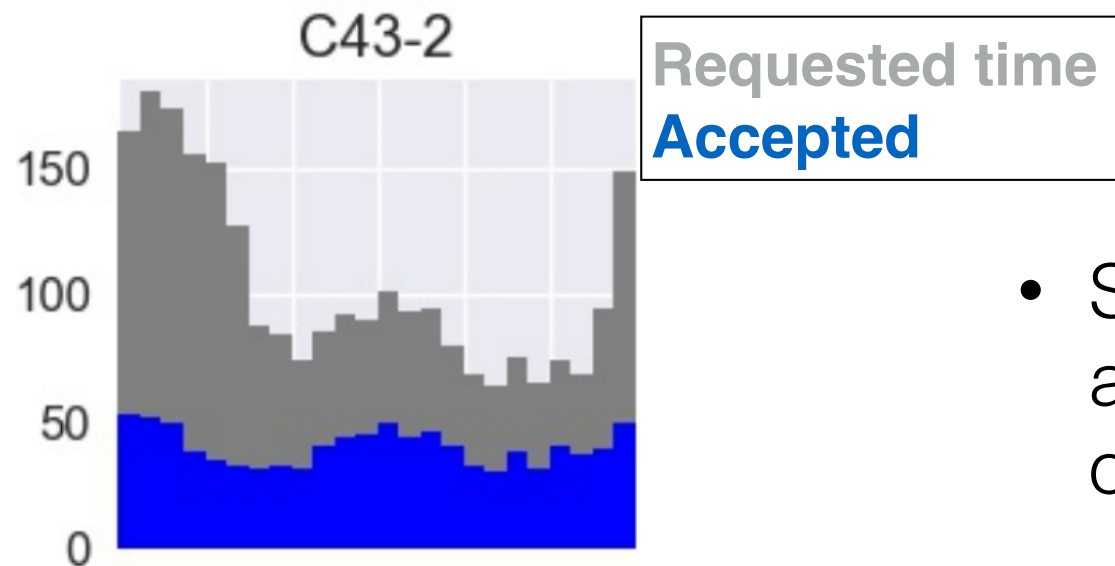
Effective Cycle 6 observing time



Observing Pressure

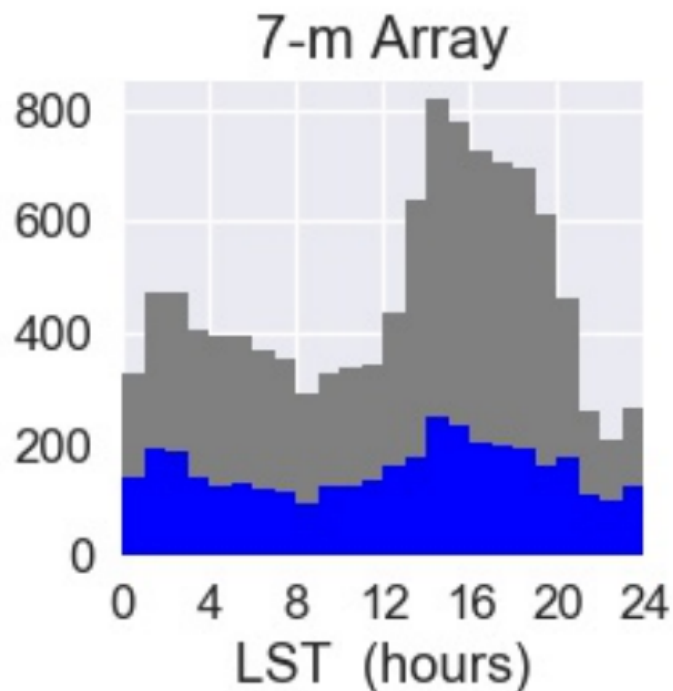
- The probability that an observation be scheduled depends on the over-subscription for a given LST and configuration besides the required weather conditions.
- In particular in Cycle 5, projects requesting:
 - Configurations C43-8, 9, or 10 had a higher success rate than those requesting other configurations
 - stand-alone ACA observations have a high probability of being scheduled, especially at LST between 20 h and 14 h.

(Cycle 5) Observing Pressure



- Some LST ranges such as 0-6 h or 13-19 h show over-subscription

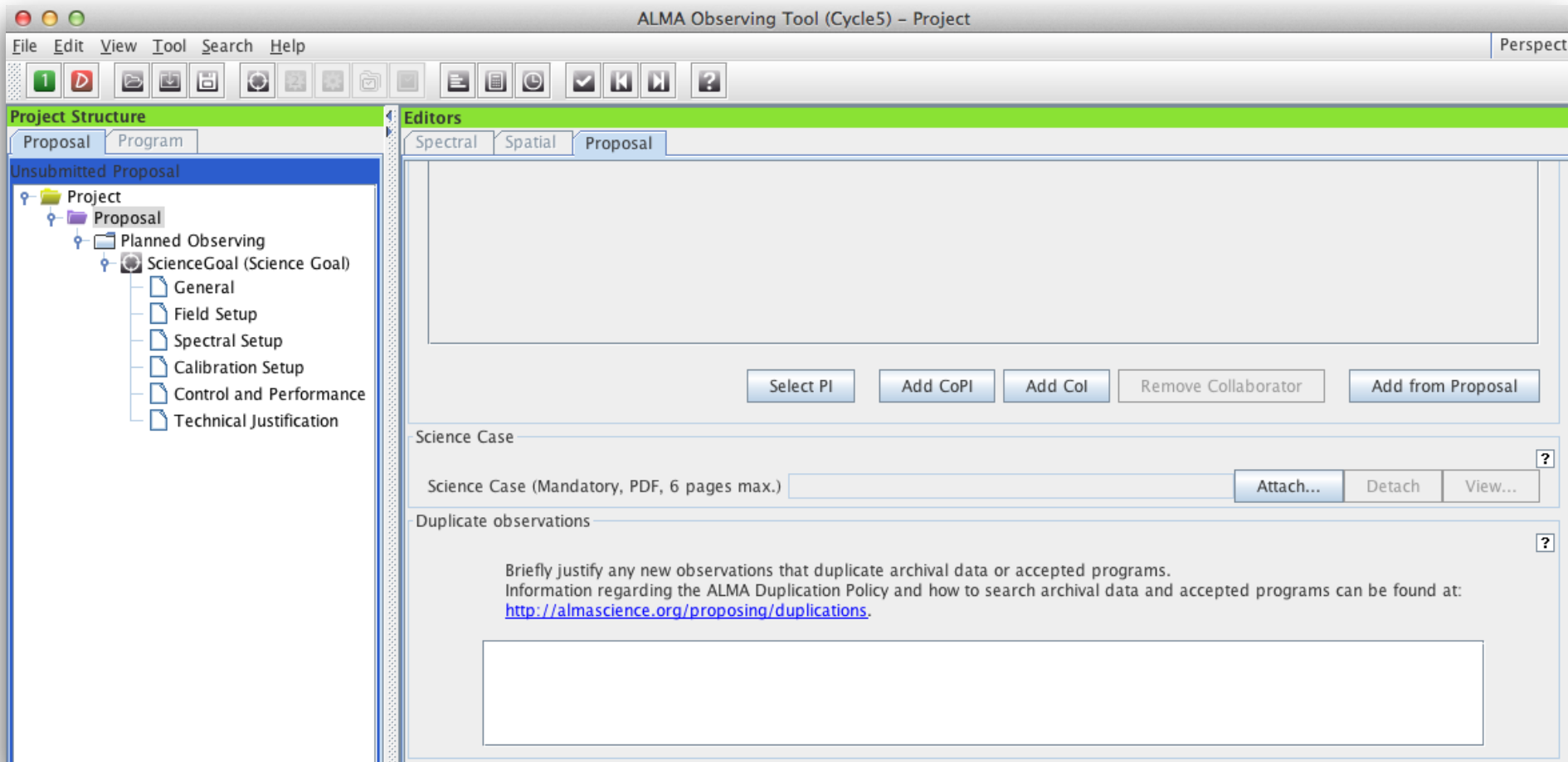
- In general, proposals in less subscribed LST ranges will have a higher probability of execution



2) Duplications

Check proposed observations against both the ALMA archive and a list of projects in the queue (grade A projects not started as of 2018 March 17).

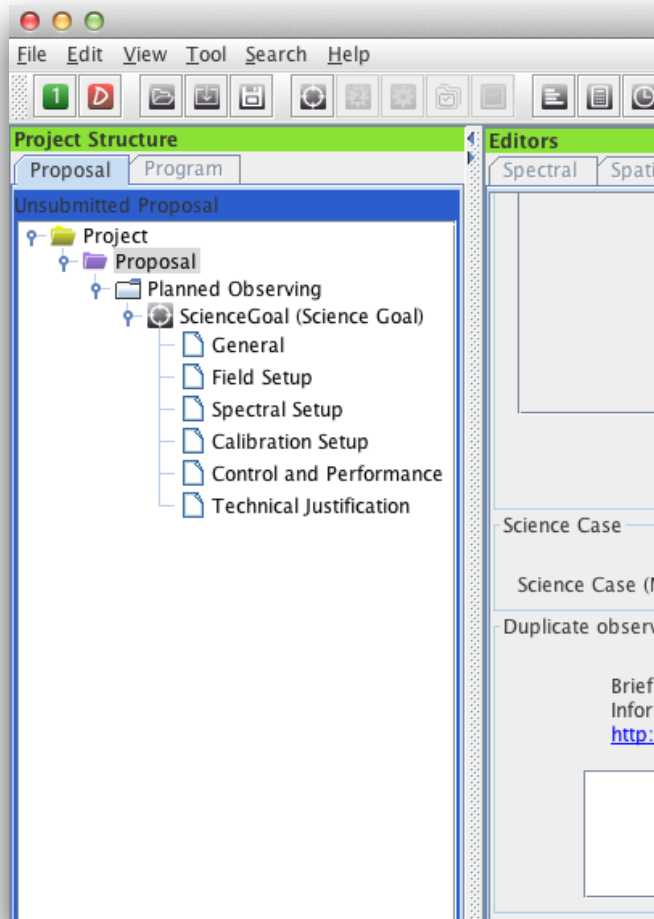
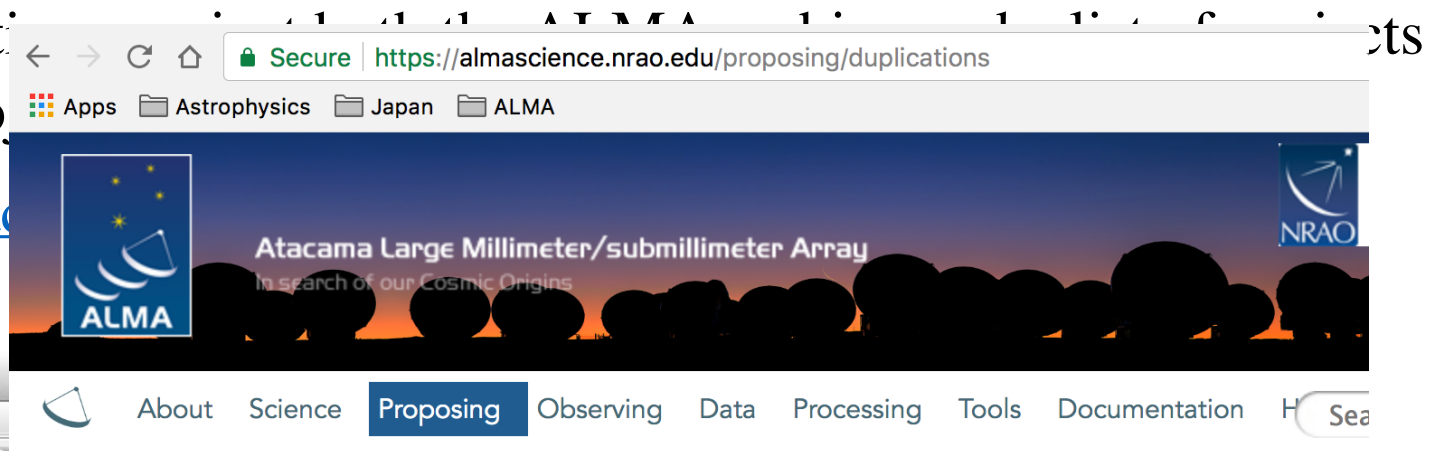
<https://almascience.nao.ac.jp/proposing/duplications>



2) Duplications

Check proposed observations in the queue (grade A projects)

<https://almascience.nrao.edu/proposing/duplications>



Duplicate Observations

In order to ensure the most efficient use of ALMA, duplicate observations of the same location on the sky with similar or (frequency, angular resolution, coverage, and sensitivity) are not permitted unless scientifically justified. Details on the d provided in Section 4.4 of the Cycle 6 Proposer's Guide and Section 5.2 of the Users' Policies. It is the responsibility of t (PI) to check their proposed observations against both the ALMA Archive and the spreadsheet provided below to avoid

The ALMA Archive contains an up-to-date list of the PI science observations, including Cycle 5 programs that have been spreadsheet "Projects in the Queue" supplements the ALMA archive in that it lists the metadata for Grade A projects th completed as of 2018 March 17 and are still in the observing queue. The spreadsheet lists the sensitivity and angular re to be achieved assuming the observations are completed in full. Observations from for Grade B and C projects that hav March 17 will not be used in the duplication checks conducted by ALMA even if observations are obtained later in Cycl

The ongoing list of observations is provided in both Excel Workbook (xlsx) and Comma Separated Variable (CSV) text fc for each target, rectangular mosaic, or each pointing in custom mosaics. The spreadsheet content is described at the b includes target names, coordinates, properties of each spectral window, along with the resolution and sensitivity reques

A link is provided to a user-contributed python script, which contains functions to search, plot, and display source inform of ongoing observations. Instructions on how to run the script are provided in the script header. The script is made avail convenience and is not supported by the ALMA Regional Centers (ARCs).

[ALMA Science Archive Query](#) [Projects in the Queue \(Excel spreadsheet\)](#) [Projects in the Queue \(CSV text file\)](#) [Python Script](#)

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Check proposed observations in the queue (grade A projects)

<https://almascience.nrao.edu/proposing/duplications>

Secure | <https://almascience.nrao.edu/proposing/duplications>

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File Edit View Tool Search Help

Project Structure | Editors

Proposal | Program

Unsubmitted Proposal

- Project
 - Proposal
 - Planned Observing
 - ScienceGoal (Science Goal)
 - General
 - Field Setup
 - Spectral Setup
 - Calibration Setup
 - Control and Performance
 - Technical Justification

Resubmissions

- Proposal teams that submit a Cycle 6 proposal to observe some or all SGs of a currently active but unfinished project will have the relevant SGs identified as a “resubmission” by ALMA.
- A SG is deemed a “resubmission” if it constitutes a duplication of an active SG and the PI of the relevant Cycle 5 project is listed as a PI, co-PI or co-I of the corresponding Cycle 6 proposal or the Cycle 6 PI is listed as an investigator on the Cycle 5 proposal.
- For such resubmissions, the relevant portion of the Cycle 6 proposal will be cancelled if the observations are successfully completed in Cycle 5. Observations started in a previous cycle and accepted as a resubmission in Cycle 6 will continue to be observed with the setup of the previous cycle.

3) Check your observing setup

- Target properties (coordinates, velocity/redshift)
- Single pointing/Mosaic information
- Spectral setup
- Angular resolution/LAS and sensitivity. Time constraints?
- ... and make sure sufficient justification in the Technical justification

4) Minor and Major changes

- Changes to a submitted proposal are not permitted prior to the completion of the review process
- Minor changes in the Science Goals can usually be made during the Phase 2 process by the PI
- PIs of proposals assigned a grade of A, B, or C may request changes to their projects subject to the ALMA Change Request policies described in the Users' Policies. These are decided by change request committee

5) Other considerations

- **Non standard observations:** Remember that only 20% of the time goes to non-standard modes, so select if really needed. Note that Band 8 observations is standard.
- **Aggregate bandwidth** (sum of bandwidths of all spectral windows): Try to maximize because it is used for calibration. If aggregate bandwidth less than ~ 1 GHz then it is non-standard
- **ToO:** Observations that can be anticipated, but for which source coordinates and timing are not known at proposal submission time (Examples: Supernovae, gamma ray bursts, transients) Just time critical is not ToO and should be submitted as a regular proposal
- **Spectral scan:** If long on-source times and many frequency tunings then it is more efficient to setup such spectral scans using separate SGs for each frequency tuning.