

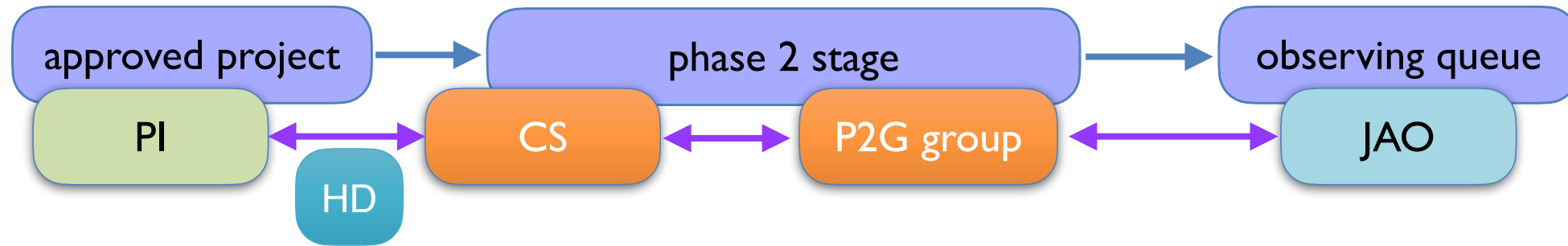
From scheduling and Phase 2 generation viewpoints

Yu-Ting Wu (EA ARC)
and Phase 2 Generation Group in EA



What is Phase 2?

- Once a project has been approved for scheduling, it passes to Phase 2.



- Each approved project will be assigned an ALMA Contact Scientist (CS).
- A project Helpdesk (HD) ticket will be opened on behalf of the PI for communication with the CS and others.
- ALMA staff will generate the Scheduling Blocks and, in case of problems, will contact the CS and the PI. If no problems are found, the project will be submitted to the ALMA observing queue to await execution at the telescope.





Why we care about scheduling and Phase 2 generation?

- Various aspects of a proposed observation such as weather conditions, requested angular resolution and Largest Angular Structure (LAS) are important when an observation is scheduled.
- Let's plan observations to maximize project completion to achieve our scientific goals!





1. Angular resolution

- Observations are scheduled based on the angular resolution
- Whenever a range of angular resolution is acceptable for the science goals, PIs are encouraged to enter a range covering more than one configuration.

do this ONLY when your science goals can be achieved!!

Number of Antennas: 12m: 43, 7m: 10, 15m: 5
 ACA 7m configuration, Most compact 12m configuration, Most extended 12m configuration

Longest baseline: 0.049 km, 0.168 km, 0.256 km

Synthesized beam: 0.015 km, 0.256 km

Maximum recoverable scale: 58.686 arcsec, 25.616 arcsec, 0.441 arcsec

Desired Performance

Desired Angular Resolution (Synthesized Beam): Single Range Any Standalone ACA

arcsec to arcsec

Largest Angular Structure in source: arcsec

Desired sensitivity per pointing: mJy equivalent to mK @ 5.00 " and K @ 1.00 "

Bandwidth used for Sensitivity: Frequency Width: km

Override OT's sensitivity-based time estimate (must be justified): Yes No

Science Goal Breakdown: time estimate, clustering, beam and configurations:

Simultaneous 12-m and ACA observations: Yes No

Are the observations time-constrained?: Yes No

Planning and Time Estimate

Note: The time in brackets is that required to reach the sensitivity. Operational requirements often mean that the actual observed time is longer, especially for mosaics. Please see the User Manual for more details.

Input Parameters

Requested sensitivity: 0.5000 mJy
 Bandwidth used for sensitivity: 10.000 km/s
 Representative frequency (sky, first source): 114.950 GHz

Estimated Total time for Science Goal: 1.30 d

Cluster 1

Source Name	RA	Dec	Velocity
NGC1291	03:17:18.6000	-41:06:29.048	837.100 km/s

Possible Configuration Combinations

	12-m (1)	12-m (2)	7-m	TP	Nominal Beam(")	Max expected axial ratio
C-1	None	Yes	Yes	Yes	2.867 x 3.166	1.5
C-2	None	Yes	Yes	Yes	1.948 x 2.152	1.5
C-3	None	Yes	Yes	Yes	1.17 x 1.357	1.5

Input Parameters

Precipitable water vapour (all sources): 5.186mm (7th Octile)

Time required for 12m (1) [C-3]

Time on source per pointing (first source): 2.82 h [2.79 h]
 Total number of pointings (all sources): 1
 Number of tunings: 1
 Total time on source: 2.82 h [2.79 h]
 Total calibration time: 1.24 h
 Other overheads: 15.07 min
 Total time for 1 SB execution: 1.08 h
 Number of SB executions: 4





2. Weather

- Section 4.3 of the ALMA Cycle 11 Proposer’s Guide
 - observations in Bands 7 through 10 outside of the LST ranges given in the fourth column is limited.

Start date	Configuration	Longest baseline	LST for best observing conditions
2024 October 1	C-3	0.50 km	~ 22–10 h
2024 October 20	C-2	0.31 km	~ 23–11 h
2024 November 10	C-1	0.16 km	~ 1–13 h
2024 November 30	C-2	0.31 km	~ 2–14 h
2024 December 20	C-3	0.50 km	~ 4–15 h
2025 January 10	C-4	0.78 km	~ 5–17 h
2025 February 1	<i>No observations due to maintenance</i>		
2025 March 1	C-4	0.78 km	~ 8–21 h
2025 March 20	C-5	1.4 km	~ 9–23 h
2025 April 20	C-6	2.5 km	~ 11–1 h
2025 May 20	C-7	3.6 km	~ 13–3 h
2025 June 20	C-8	8.5 km	~ 14–5 h
2025 July 11	C-9	13.9 km	~ 16–6 h
2025 July 30	C-10	16.2 km	~ 17–7 h
2025 August 20	C-9	13.9 km	~ 19–8 h
2025 September 10	C-8	8.5 km	~ 20–9 h

Check the configuration schedule in SP during the cycle.

Atacama Large Millimeter/submillimeter Array
In search of our Cosmic Origins

ALMA

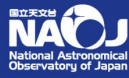
About Science Proposing **Observing** Data Processing Tools Doc

Configuration Schedule

Cycle 10 - by Block

Block	Start date	End date			
01	2023-09-30	2023-10-09			
02	2023-10-09	2023-10-16	PI (Observing Report)	C-8	110-8500
03	2023-10-16	2023-10-23	PI (Observing Report)	C-8	110-8500

mentioned in Nagai-san’s talk





3. Spectral setup

- Avoid placing spectral windows (spw) close to the baseband edge
- Any spw located within 30 MHz of the baseband edge could result in compromised flux calibration and might cause problems for finding the tuning solution for Local Oscillator signals as well.

Unsubmitted Proposal

- Demo
 - Proposal
 - Planned Observing
 - ScienceGoal (Demo)
 - General
 - Field Setup
 - Spectral Setup
 - Calibration Setup
 - Control and Perform
 - Technical Justificatio

Spectral Setup

Observed Frequency (GHz)

Rest Frequency (GHz)

LO1

S1, S2, S3, S4, S5

Overlays: Receiver Bands Transmission DSB Image Spectral Lines

Water Vapour Column Density: Automatic Choice Manual Choice 0.913mm (3rd Octile)

Viewport:

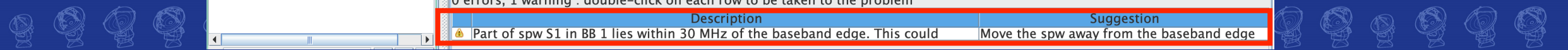
Feedback

Validation Validation History Log

0 errors, 1 warning : double-click on each row to be taken to the problem

Description	Suggestion
Part of spw S1 in BB 1 lies within 30 MHz of the baseband edge. This could	Move the spw away from the baseband edge

mentioned in Jorge's talk





4. Target of Opportunity (ToO) proposals with multiple-visit observation

- Section 3.2 of the ALMA Cycle II Proposer's Guide
 - PIs should be aware that, once a monitoring SG is triggered on a source, any remaining unused visits within that SG cannot be re-assigned unless fully justified and approved through a Major Change Request (see Section 6.2).

File Edit View Tool Search Help

Project Structure

Unsubmitted Proposal

- Example
- Proposal
 - Planned Observing
 - ScienceGoal (monitor_Band 3)
 - General
 - Field Setup
 - Spectral Setup
 - Calibration Setup
 - Control and Performance
 - Technical Justification

Editors

Spectral Spatial Control and Performance

Desired sensitivity per pointing: 100.00000 uJy eq

Bandwidth used for Sensitivity: AggregateBandWidth Frequency Width: 7.500000 GHz

Override OT's sensitivity-based time estimate (must be justified): Yes No

Science Goal Breakdown: time estimate, clustering, beam and configurations

Simultaneous 12-m and ACA observations: Yes No

Are the observations time-constrained? Yes No

Time Windows: None Single Visit Multiple Visits

Visits specified : 4

- Visit 1 : Arbitrary start
- Visit 2 : To be scheduled 2.0 d after visit 1 with a margin of ± 1.0 d
- Visit 3 : To be scheduled 5.0 d after visit 1 with a margin of ± 1.0 d
- Visit 4 : To be scheduled 7.0 d after visit 3 with a margin of ± 1.0 d

Add Edit

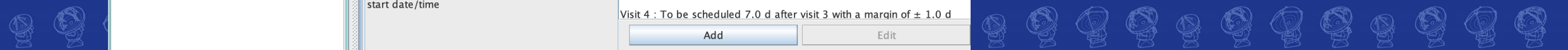
Please specify the arrangement of visits for your observation.

Visits can either be for a specific date or relative to a previous visit.

The first visit can be defined as having an arbitrary start date/time

If Visit 1 was executed but the PI finds that the source is not suitable, the PI needs to submit a major change request and get approval to use remaining unused visits within the SG

Visit 1 for assessing the target



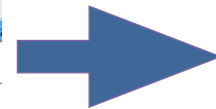


4. Target of Opportunity (ToO) proposals with multiple-visit observation

- Section 3.2 of the ALMA Cycle II Proposer's Guide
 - If it is desirable to use a first epoch of observations to assess target properties (e.g., suitability for monitoring), it is recommended that PIs create single-visit Science Goals (SGs) for this purpose, separate from multi-visit SGs for any subsequent monitoring.

before

Visit 1 for assessing the target



after

multi-visit SG for any subsequent monitoring

single-visit Science Goals (SGs) for assessing the target

5. Checking for duplications

- Duplicate observations of the similar location on the sky with similar observing parameters (frequency, angular resolution, coverage, and sensitivity) are not permitted unless scientifically justified (Section 4.4.1)

The screenshot shows the ALMA website interface. At the top, the ALMA logo and the text "Atacama Large Millimeter/submillimeter Array" are visible. Below the logo is a navigation bar with the following items: About, Science, Proposing, Observing, Data, Processing, Tools, Documentation, and Help. The "Proposing" item is highlighted with a red box. A dropdown menu is open under "Proposing", listing several options: ALMA Cycle 11 Call for Proposals, ALMA Proposal Review, Proposing Guidance, Cycle 11 Proposer's Guide, Cycle 11 Capabilities, Observing Tool, and Sensitivity Calculator. A red box highlights the "Proposing" item in the navigation bar, and a green box highlights the "on-going Grade A" option in the dropdown menu. Below the dropdown menu, there are three buttons: "ALMA Science Archive Query", "Projects in the Queue (Excel spreadsheet)", and "Projects in the Queue (CSV text file)". The "ALMA Science Archive Query" and "Projects in the Queue (Excel spreadsheet)" buttons are highlighted with red boxes. Below these buttons, there is a "Duplicate Observations" link, which is also highlighted with a red box. The background of the page shows a sunset over a landscape with silhouettes of people and structures.

1. ALMA Science Archive Query

2. on-going Grade A

or

Projects in the Queue (CSV text file)

Python Script

Duplicate Observations



5. Checking for duplications

• Criteria

ALMA Users' Policies

Appendix A 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

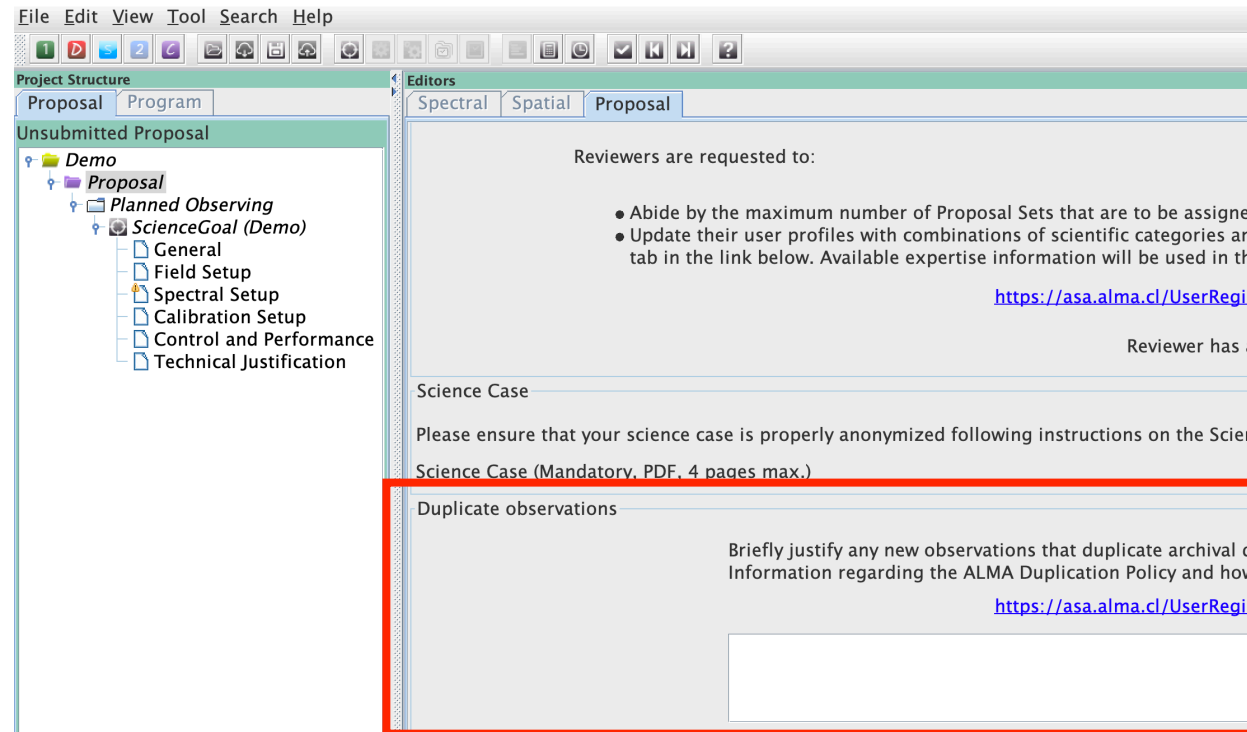
- The proposed angular resolution differs by a factor of ≤ 2 from the other observation.

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.



File Edit View Tool Search Help

Project Structure

Proposal Program

Unsubmitted Proposal

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

Editors

Spectral Spatial Proposal

Reviewers are requested to:

- Abide by the maximum number of Proposal Sets that are to be assigned
- Update their user profiles with combinations of scientific categories and expertise information in the tab in the link below. Available expertise information will be used in the review process.

<https://asa.alma.cl/UserRegi>

Reviewer has

Science Case

Please ensure that your science case is properly anonymized following instructions on the Science Case (Mandatory, PDF, 4 pages max.)

Duplicate observations

Briefly justify any new observations that duplicate archival data. Provide a link to the Science Case and Information regarding the ALMA Duplication Policy and how to request a duplicate observation.

<https://asa.alma.cl/UserRegi>





6. Resubmission of an unfinished proposal

- Proposal teams that submit a Cycle II proposal to observe some or all the SGs of an unfinished project will have the relevant SGs identified as a “resubmission”.
- Criteria: Appendix A of the Users’ Policies
- Policies (Section 4.4.2 of the ALMA Cycle II Proposer’s Guide):
 - For such resubmissions, the relevant portion of the Cycle II proposal will be canceled if the observations are successfully completed in Cycle I0.
 - Observations of a SG started in a previous cycle and accepted as a resubmission in Cycle II will continue to be observed with **the setup of the previous cycle**.



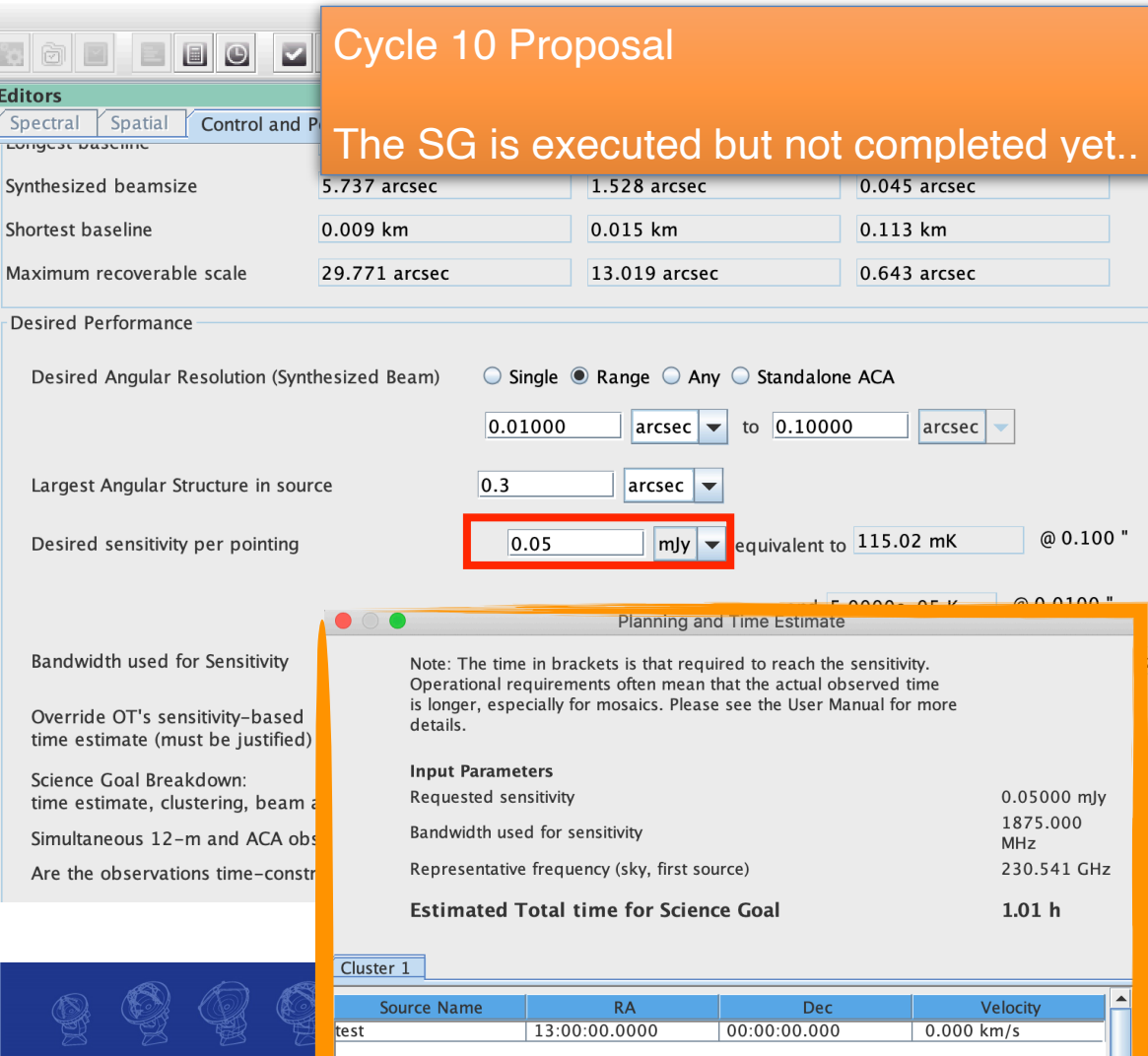


6. Resubmission of an unfinished proposal

- Example:

Cycle 10 Proposal

The SG is executed but not completed yet..



Editors

Spectral Spatial Control and Performance

Longest baseline

Synthesized beamsize 5.737 arcsec 1.528 arcsec 0.045 arcsec

Shortest baseline 0.009 km 0.015 km 0.113 km

Maximum recoverable scale 29.771 arcsec 13.019 arcsec 0.643 arcsec

Desired Performance

Desired Angular Resolution (Synthesized Beam) Single Range Any Standalone ACA

0.01000 arcsec to 0.10000 arcsec

Largest Angular Structure in source 0.3 arcsec

Desired sensitivity per pointing **0.05 mJy** equivalent to 115.02 mK @ 0.100 "

Bandwidth used for Sensitivity

Override OT's sensitivity-based time estimate (must be justified)

Science Goal Breakdown: time estimate, clustering, beam size

Simultaneous 12-m and ACA observations

Are the observations time-constant

Planning and Time Estimate

Note: The time in brackets is that required to reach the sensitivity. Operational requirements often mean that the actual observed time is longer, especially for mosaics. Please see the User Manual for more details.

Input Parameters

Requested sensitivity 0.05000 mJy

Bandwidth used for sensitivity 1875.000 MHz

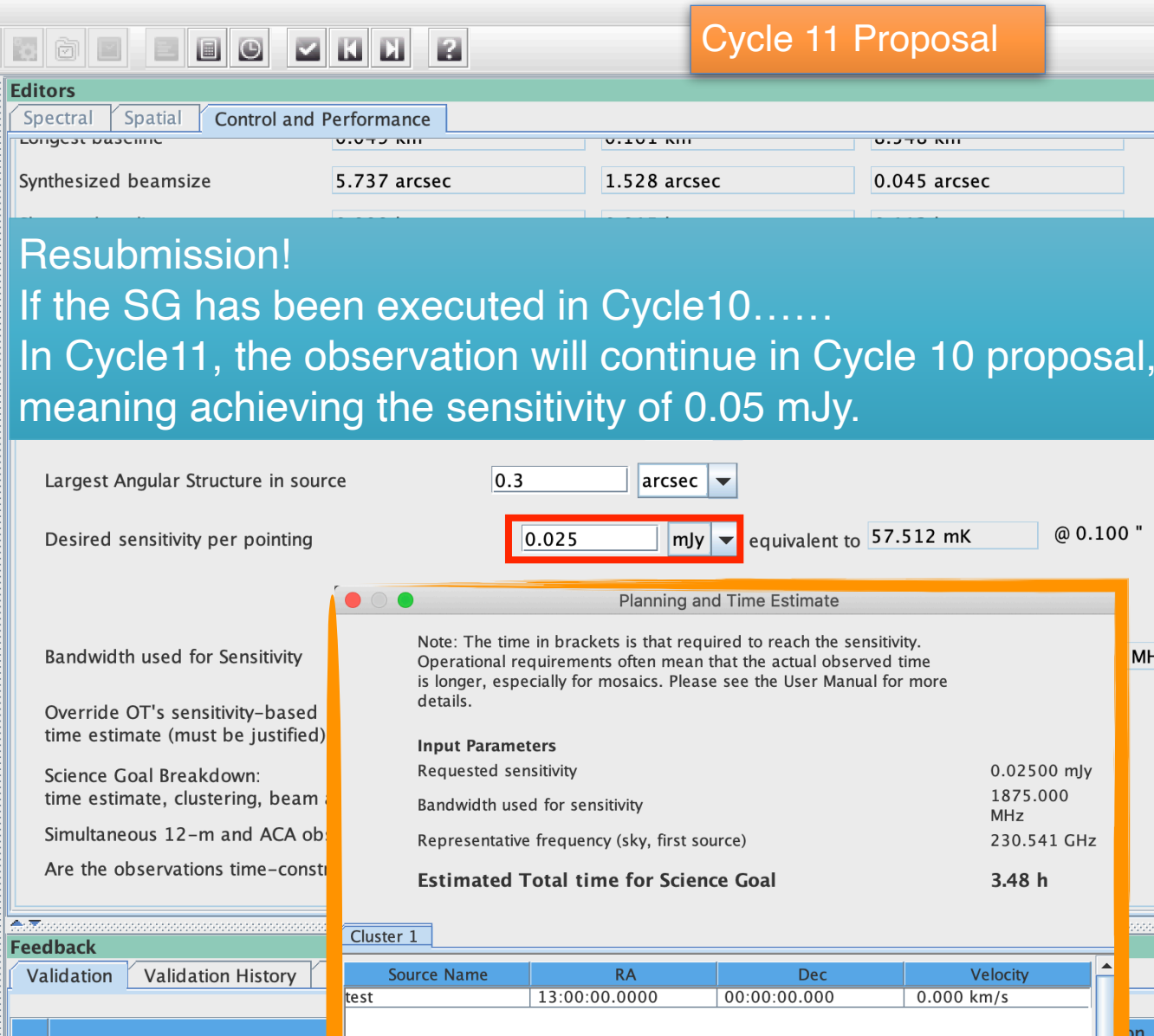
Representative frequency (sky, first source) 230.541 GHz

Estimated Total time for Science Goal 1.01 h

Cluster 1

Source Name	RA	Dec	Velocity
test	13:00:00.0000	00:00:00.000	0.000 km/s

Cycle 11 Proposal



Editors

Spectral Spatial Control and Performance

Longest baseline 0.045 km 0.101 km 0.348 km

Synthesized beamsize 5.737 arcsec 1.528 arcsec 0.045 arcsec

Resubmission!
If the SG has been executed in Cycle10.....
In Cycle11, the observation will continue in Cycle 10 proposal, meaning achieving the sensitivity of 0.05 mJy.

Largest Angular Structure in source 0.3 arcsec

Desired sensitivity per pointing **0.025 mJy** equivalent to 57.512 mK @ 0.100 "

Bandwidth used for Sensitivity

Override OT's sensitivity-based time estimate (must be justified)

Science Goal Breakdown: time estimate, clustering, beam size

Simultaneous 12-m and ACA observations

Are the observations time-constant

Planning and Time Estimate

Note: The time in brackets is that required to reach the sensitivity. Operational requirements often mean that the actual observed time is longer, especially for mosaics. Please see the User Manual for more details.

Input Parameters

Requested sensitivity 0.02500 mJy

Bandwidth used for sensitivity 1875.000 MHz

Representative frequency (sky, first source) 230.541 GHz

Estimated Total time for Science Goal 3.48 h

Cluster 1

Feedback

Validation Validation History

Source Name	RA	Dec	Velocity
test	13:00:00.0000	00:00:00.000	0.000 km/s



7. Change requests (Section 8 of the ALMA Users' Policies)

- Triple-check all setups before the proposal submission deadline!!
- After the PIs have been notified of the results of the proposal review process, PIs of scheduled proposals may request necessary changes to their project via the ALMA Helpdesk.
- Major changes (defined in Appendix B of the ALMA Users' Policies) are allowed **only if the change is essential for the science goals** of the project. Any major change request by a PI must be made by submitting a Helpdesk ticket and will only be implemented after the approval of the change request.





7. Change requests (Section 8 of the ALMA Users' Policies)

- Major change requests may be motivated by the following considerations
 - New information received since the original proposal submission
 - e.g. new observations including interim observational results of a project, other new information on planned observing targets, or externally-imposed changes to the scheduling of time-coordinated observations at other observatories
 - Technical considerations for implementation during Phase 2 (that are initiated by the PI, e.g. to optimize the scientific yield of the observations)
 - Mistakes made by the PI
- Please read **Section 8** and **Appendix B** of the ALMA Users' Policies carefully before requesting any changes!





Observations that are particularly encouraged in Cycle 11

- ACA, especially in the Local Sidereal Time (LST) range of 20h to 10h
- High frequency (Bands 8, 9, and 10) in any configuration
- Low frequency (Bands 1, 3, and 4) at long baselines (C-7, C-8, C-9, and C-10)





Edit Profile

(Fields marked with a red dot are mandatory)

First name

Middle initials

Surname

Gender

E-mail

Receive optional emails

Notify me of changes I make

Account name

Password

Re-type password

Institution Choose country... Choose Institution...

During the whole cycle, please keep the affiliation and email up to date so that you can get adequate support from the corresponding ARC.

In case of problems with the registration, please use [this Web form](#) to contact us
You may find a solution to your problem in the [Support Center/Knowledgebase](#)

Please don't hesitate to contact us through the Helpdesk!

ALMA Science

<https://help.almascience.org/>

Submit Helpdesk Ticket

Log in

How can we help you today?

Help Center

TOO

Search Sci Portal



Knowledgebase

View all articles



[Submit Helpdesk Ticket](#)

Get in touch for help



My Tickets

View your tickets



Face to Face Visit

Arrange a visit

