The ALMA Proposal Preparation Process

How to get started and what to expect

Tarraneh Eftekhari

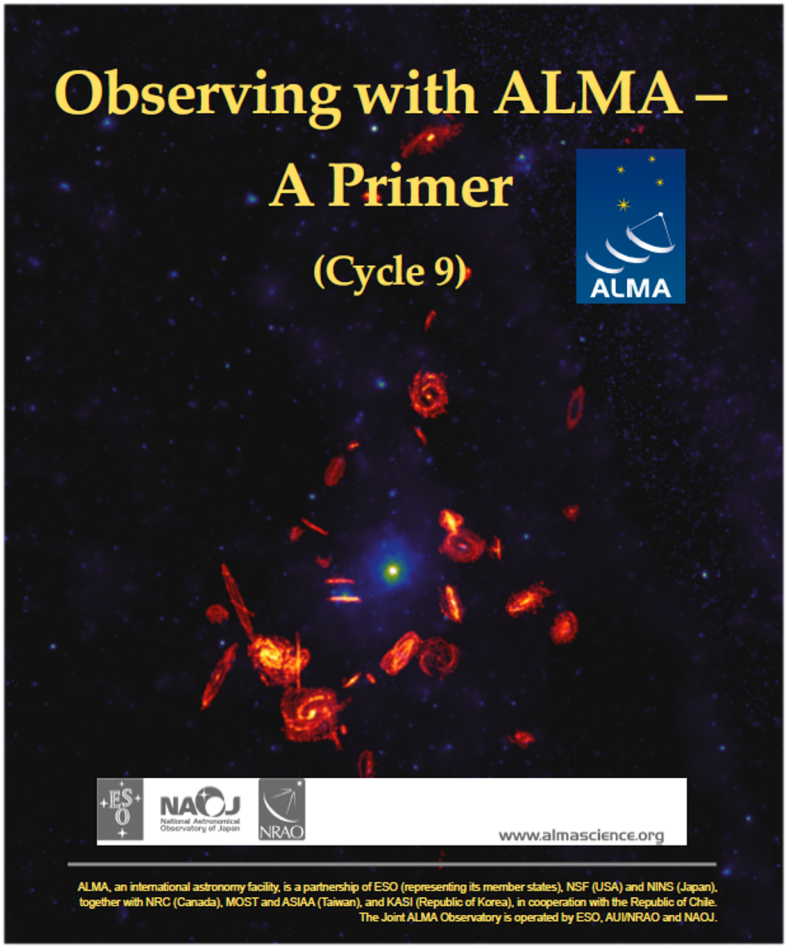
CIERA Postdoctoral Fellow

Proposal Checklist

- Read relevant documentation (CfP, Guide, Primer, etc.)
- Create an ALMA account by registering at the Science Portal (almascience.org)
- Download the Observing Tool (OT) & related guides
- Prepare the Science Case
  - New capabilities for Cycle 9!
- Prepare Science Goals (sources, frequency & correlator setup, integration times) within the OT
- Make use of the Helpdesk & the Knowledgebase

Cycle 9 Documentation & Timeline

- Call for Proposals
- Proposer's Guide
- ALMA Primer
- *OT Guide*
- *ALMA Technical Handbook*
- Timeline for Cycle 9
  - 24 Mar – Call for Proposals
  - 21 Apr – Proposal Deadline
  - August – Results to PIs
  - Oct. 2022 – Start of Cycle 9
  - Sept. 2023 – End of Cycle 9

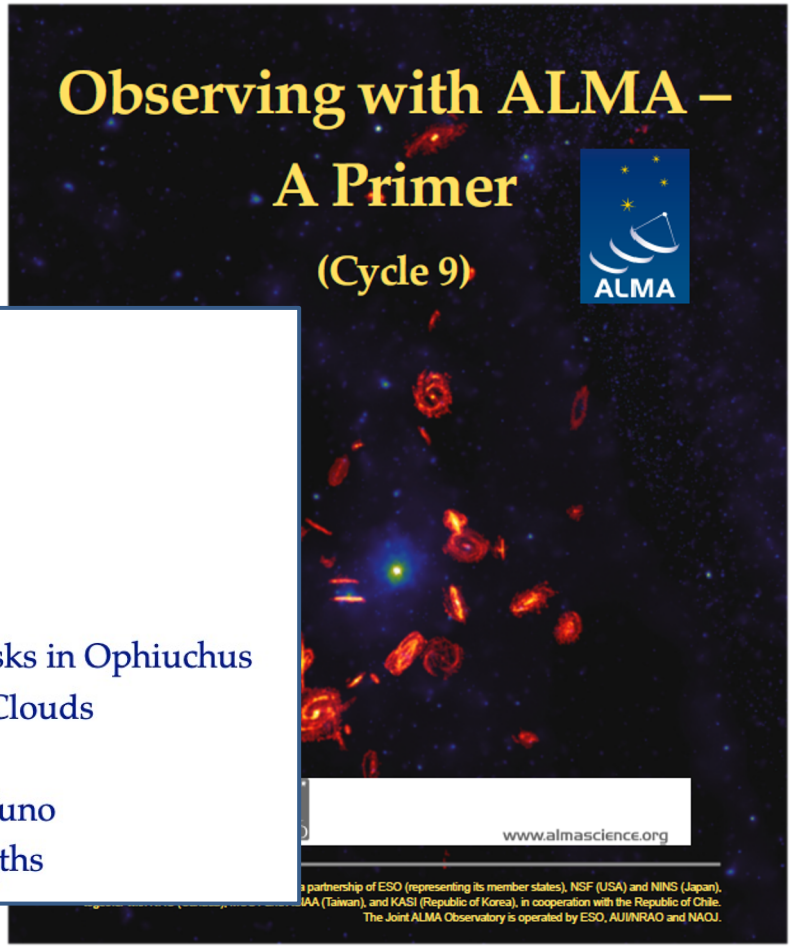


Cycle 9 Documentation & Timeline

- Call for Proposals
- Proposer's Guide
- ALMA Primer

Examples of Cycle 9 Observing With ALMA

- Molecular Absorption Lines at z=0.9
- Mapping a Lensed, High Redshift, Gas-Rich Galaxy
- A Survey of Submillimeter Galaxies
- Observing a GRB Afterglow (A Target of Opportunity)
- Mosaicing the Nearby Spiral Galaxy M100
- Multi-wavelength Continuum Survey of Protostellar Disks in Ophiuchus
- Dust Polarization and Magnetic Fields in Star Forming Clouds
- Observing Molecular Gas in a Planetary Nebula
- Continuum High Resolution Imaging of the Asteroid 3 Juno
- Continuum Mapping of the Sun at Millimeter Wavelengths



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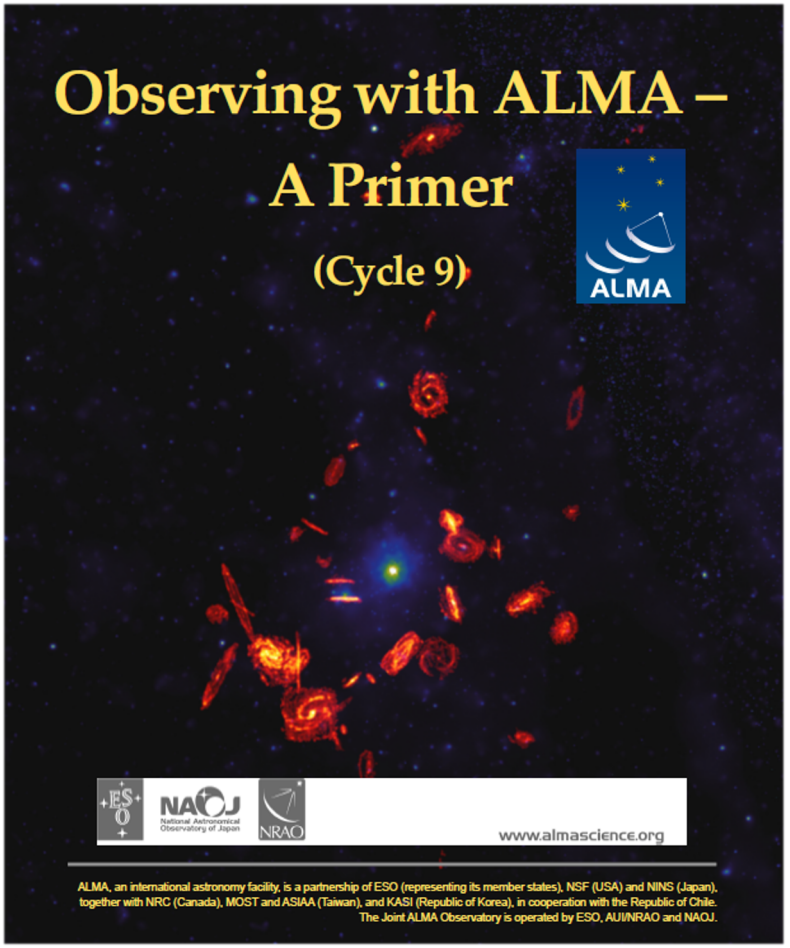

FINAL WARNING!!!!

THERE IS NO SUCH THING AS A "LATE" PROPOSAL

"My internet is down…"

"My proposal won't validate…"

"My power went out…"

"I thought the time was 16UT not 15UT…"

"My dog at my proposal…"

There is no excuse for a late proposal UNLESS the Observatory grants an extension.

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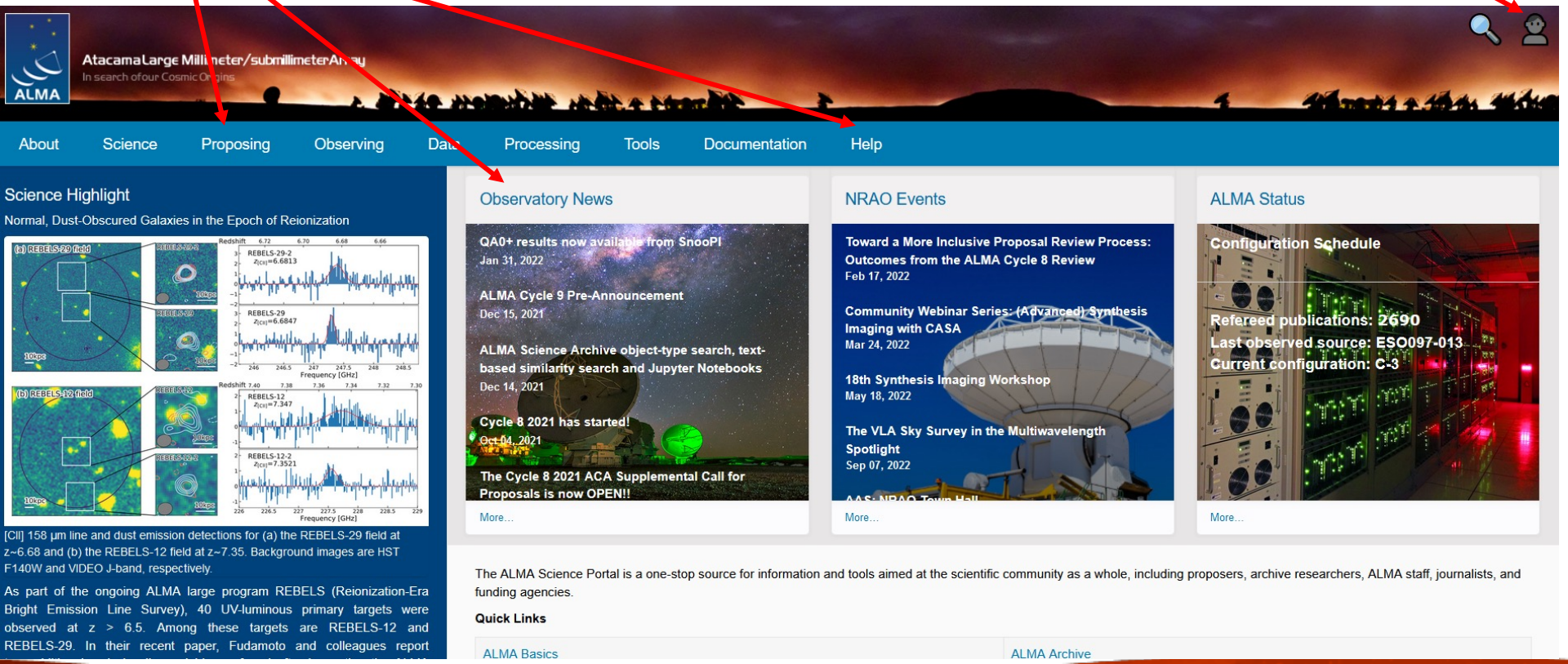
ALMA Science Portal @ NRAO

Get the OT
Call for Proposals
Helpdesk Support

www.almascience.org

Login
Set preferences
Set Expertise for DPR



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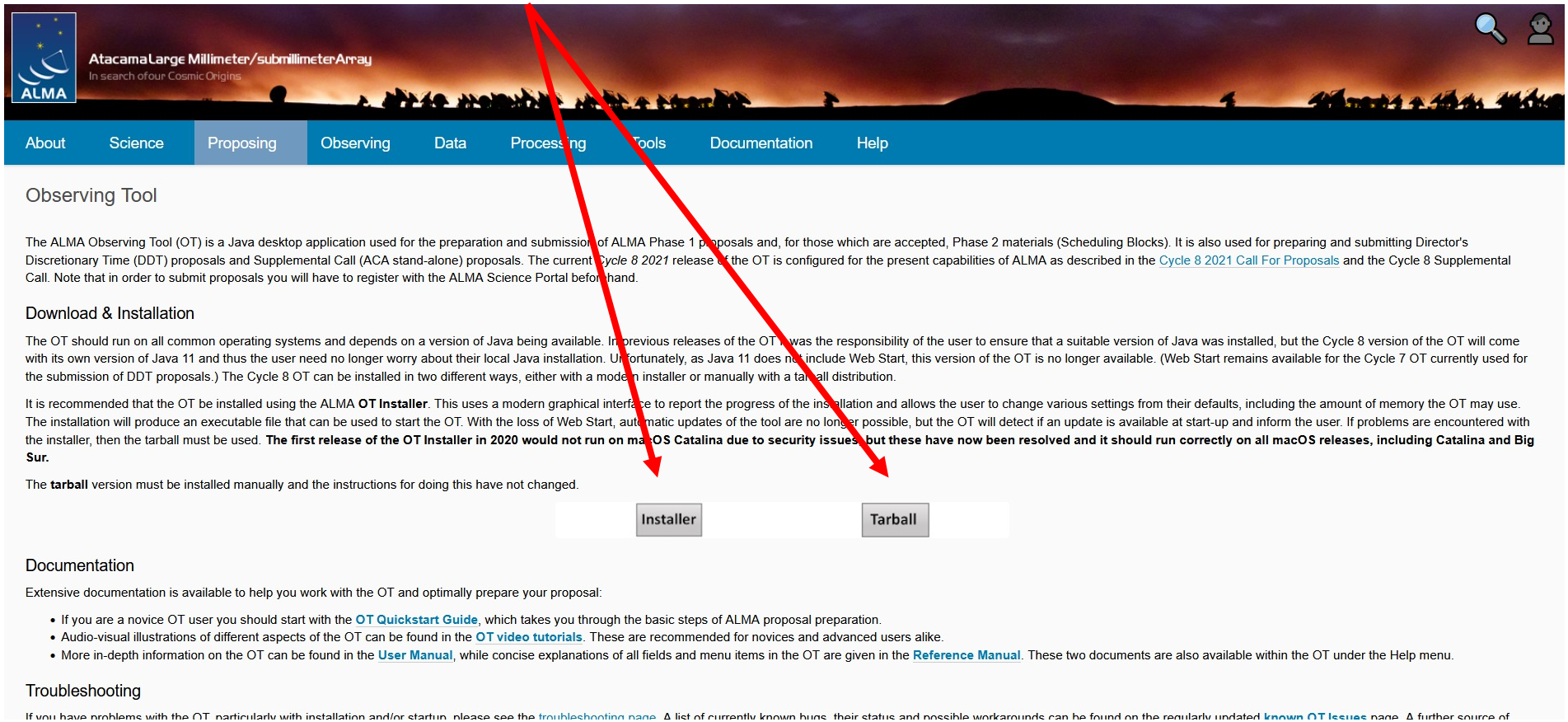
Downloading the ALMA OT

Select the Installer or Tarball

Installer will automatically update if there is a new version of the OT pushed out.



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Science Case

- Must include:
  - Astronomical Importance
  - Estimated intensity, S/N
- May include:
  - Figures
  - Tables
  - References

- Free-form PDF document
  - 12+ font, English only! (OT will check for font size)
  - 20 MB file size
  - 4 pages (6 for Large Programs)

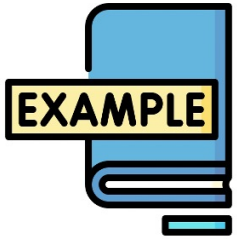
Dual-Anonymous Proposal Review: ***It will be the responsibility of the investigators to write their proposals such that anonymity is preserved.***

Do not reveal the PI!

- Do not list the PI, co-PIs, or cols anywhere in the proposal
- Includes abstract, Scientific Justification, and Technical Justification

Use third person phrasing

- Reference your own work in the third person



~~*In Smith et al. (2018), we demonstrated …*~~

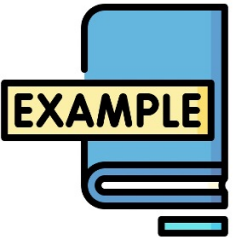
~~*Our study (Hayashi et al. 2021) showed that …*~~

As demonstrated in Smith et al. (2018), …

Hayashi et al. (2021) showed that …

Referencing data and software anonymously

- Do not refer to software or data from ALMA or other observatories in a self-identifying fashion
  - If software or datasets are available in a public repository (e.g., GitHub) or in a public paper, they can be referenced per normal practices
  - If software or datasets are not public reference them as "obtained via private communication" or similar language



~~*Figure 1 shows the image from our Cycle 7 ALMA program (2019.1.01045.S, PI Smith)...*~~

~~*The proposed ALMA observations will be combined with our HST data ...*~~

~~*We use our group's line identification package STAR ...*~~

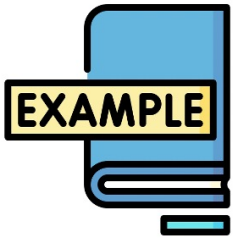
Figure 1 shows the image from the Cycle 7 ALMA program 2019.1.01045.S

The proposed ALMA observations will be combined with available HST data (private communication) ...

We use the line identification package STAR (obtained via private communication) ...

Do not list PIs of other proposals

- Do not name the PI when listing a project code, even if it is not your own project

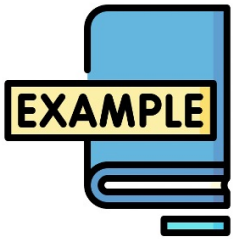


~~*Figure 1 shows the image from the Cycle 7 program (2091.1.02045.S, PI Pérez).*~~

Figure 1 shows the image from the Cycle 7 program (2019.1.02045.S)

Referencing papers in preparation

- Papers in preparation need to be referenced as private communication without an associated name.

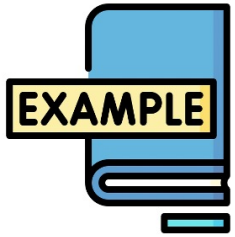


~~*Figure 1 shows the CO image from Gómez et al. (in preparation)*~~

Figure 1 shows the CO image (private communication)

Referencing submitted papers

- References to submitted papers are not permitted (use “private communication”)
- If a submitted paper has been posted on the archive (e.g, arXiv), the archive paper can be referenced per usual practices

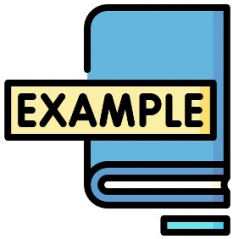


~~*Our sample was obtained from a recent survey (Chang et al. submitted).*~~

Our sample was obtained from a recent survey (private communication).

Use of "private communication"

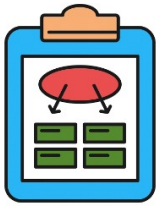
- Do not provide the name of the person when using "private communication"



~~*We will combine the observations with archival data (Liu, private communication).*~~

We will combine the observations with archival data (private communication)

Special note for Large Programs



- Proposals for Large Programs are required to submit a management plan
- This document is separate from the Scientific Justification
- The management plan is allowed to include names and institutions

- The ALMA Proposal Review Committee (APRC) will read the management plan only after completing the scientific ranking of the proposals.

Science Case

- Must include:
  - Astronomical Importance
  - Estimated intensity, S/N
- May include:
  - Figures
  - Tables
  - References

- Free-form PDF document
  - 12+ font, English only! (OT will check for font size)
  - 20 MB file size
  - 4 pages (6 for Large Programs)

Encourage large proposals, high frequency proposals, and undersubscribed LST ranges! (see Proposer's Guide)

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ALMA in Cycle 9

- **In Cycle 9, the following technical capabilities will be available for the first time:**
  - Fast Regional Mapping (FRM) for Solar Total Power observations. The size of the field of view for Solar Total Power observations can be changed by PI.
  - Spectral line Very Long Baseline Interferometry (VLBI). This capability is offered in Band 3 only, in conjunction with the Global Millimeter VLBI Array (GMVA).
  - Submillimeter VLBI. A continuum VLBI capability will be offered for the first time in Band 7 (0.87 mm) in conjunction with the Event Horizon Telescope (EHT).
  - Longer baseline high-frequency observations: Band 8 up to C-10, Band 9 up to C-9, and Band 10 up to C-8. The band-to-band (B2B) calibration mode may be triggered for long baseline high frequency observations in order to find a suitably close and strong calibrator. Some science targets, particularly at the highest frequencies and longest baselines, may NOT BE POSSIBLE even with B2B (see Appendix 9.6 of the PG).
    - ***Up to a total of 75 hours of full polarization observations of a single field with the 7-m Array in stand-alone mode at the Main Call only still remains from Cycle 8 2021***
    - ***The total time allocated to projects requiring band-to-band calibration techniques may be limited to 450 hours. For more information about band-to-band calibration see Section 4.2 of this document or Section 10.5.3 of the Technical Handbook.***

See the Capabilities Presentation

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File Edit View Tool Search Help

Project Structure

Proposal | Program

Unsubmitted Proposal

- Project
  - Proposal
    - Planned Observing
      - ScienceGoal (Copy of B6 12CO (2-1): N
        - General
        - Field Setup
        - Spectral Setup
        - Calibration Setup
        - Control and Performance
        - Technical Justification

Template library. Turn the keys on the JTree below & r...

- Proposal
  - Planned Observing
    - ScienceGoal (B3 spectral sweep CO
    - ScienceGoal (B7 continuum: COSMO
    - ScienceGoal (B7 CO(9-8): Cosmic Ey
    - ScienceGoal (B9 continuum: Cosmic
    - ScienceGoal (B3 spectral sweep: PK
    - ScienceGoal (B3 continuum: GRB To
    - ScienceGoal (B6 continuum: GRB To
    - ScienceGoal (B7 continuum: GRB To
    - ScienceGoal (B6 continuum: GRB To
    - ScienceGoal (B3 continuum: GRB To
    - ScienceGoal (B6 12CO (2-1): NGC32
    - ScienceGoal (B6 13CO (2-1): NGC32
    - ScienceGoal (B6 spectral line: Massi
    - ScienceGoal (B9 spectral line: Massi
    - ScienceGoal (B3 continuum: Protoste
    - ScienceGoal (B6 continuum: Protoste

Editors

Spectral | Spatial | Field Setup

Source Name: NGC3256 — Resol

Choose a Solar System Object? ☐ — Name of object: Unspecified

Source Coordinates — System: J2000 — Sexagesimal display? ☑

RA: 10:27:51.6000

Dec: -43:54:18.000

Parallax: 0.00000 mas

PM RA: 0.00000 mas/yr

PM DEC: 0.00000 mas/yr

Source Radial Velocity: 0.000 km/s hel — z: 0.000000000 — Doppler Type: RELATIVISTIC

Target Type: ○ Individual Pointing(s) ◉ 1 Rectangular Field

Expected Source Properties

Peak Continuum Flux Density per Beam	0.17400	Jy
Continuum Polarization Percentage	0.0	%
Peak Line Flux Density per Beam	0.00000	Jy
Line Width	0.00000	km/s
Line Polarization Percentage	0.0	%

Rectangle

Coords Type ○ ABSOLUTE ◉ RELATIVE

Field Center Coordinates — System: J2000

Offset(Longitude): 0.00000 arcsec

Offset(Latitude): 0.00000 arcsec

Feedback

Validation | Validation History | Log

Description	Suggestion

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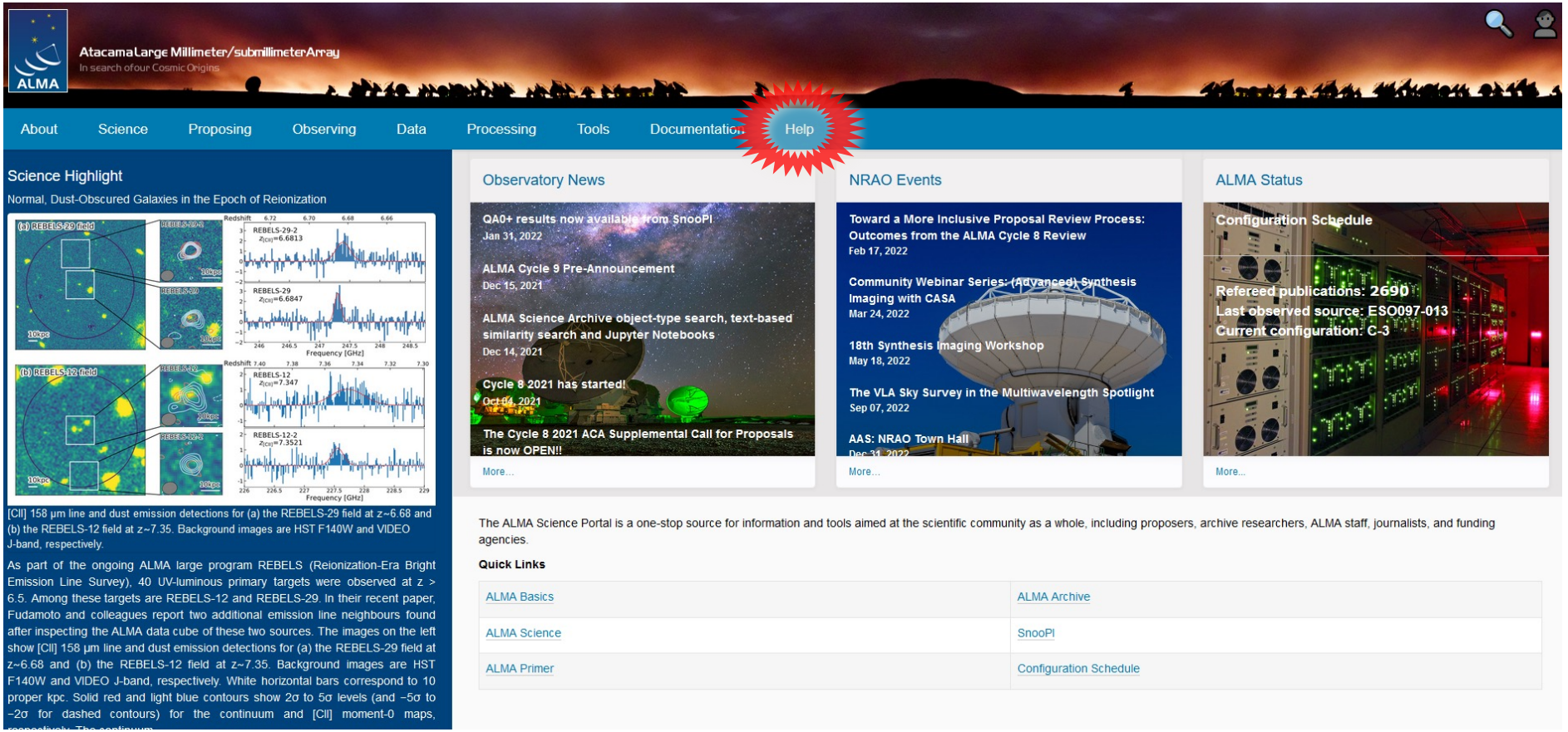
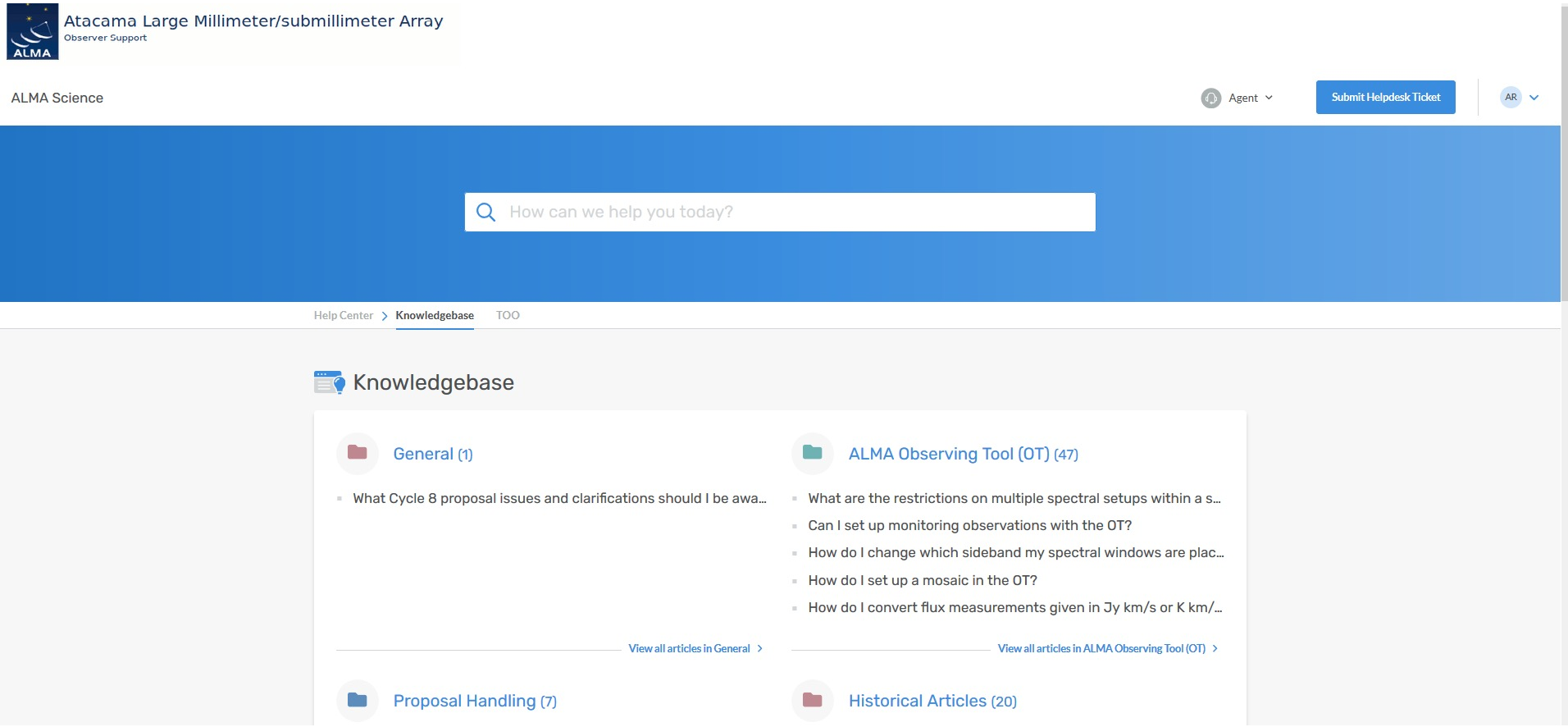
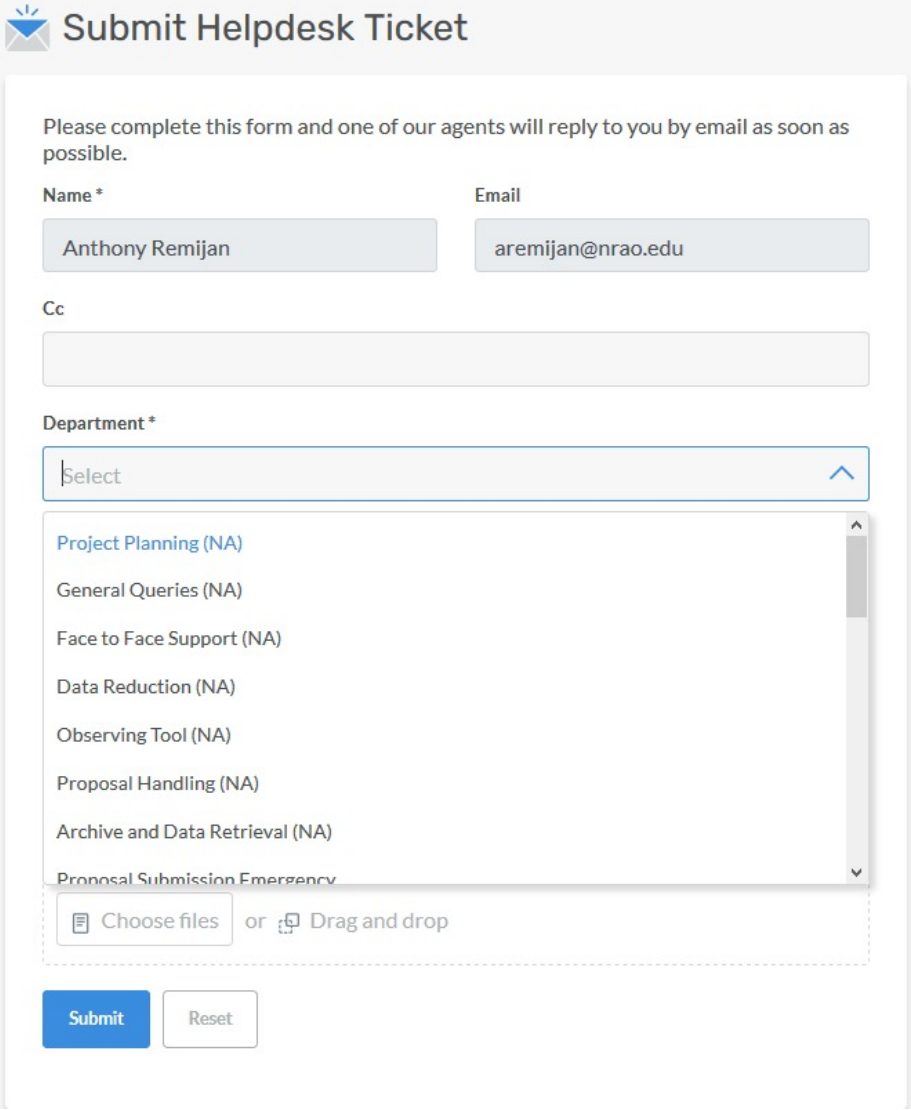


I could use a hand…

ALMA

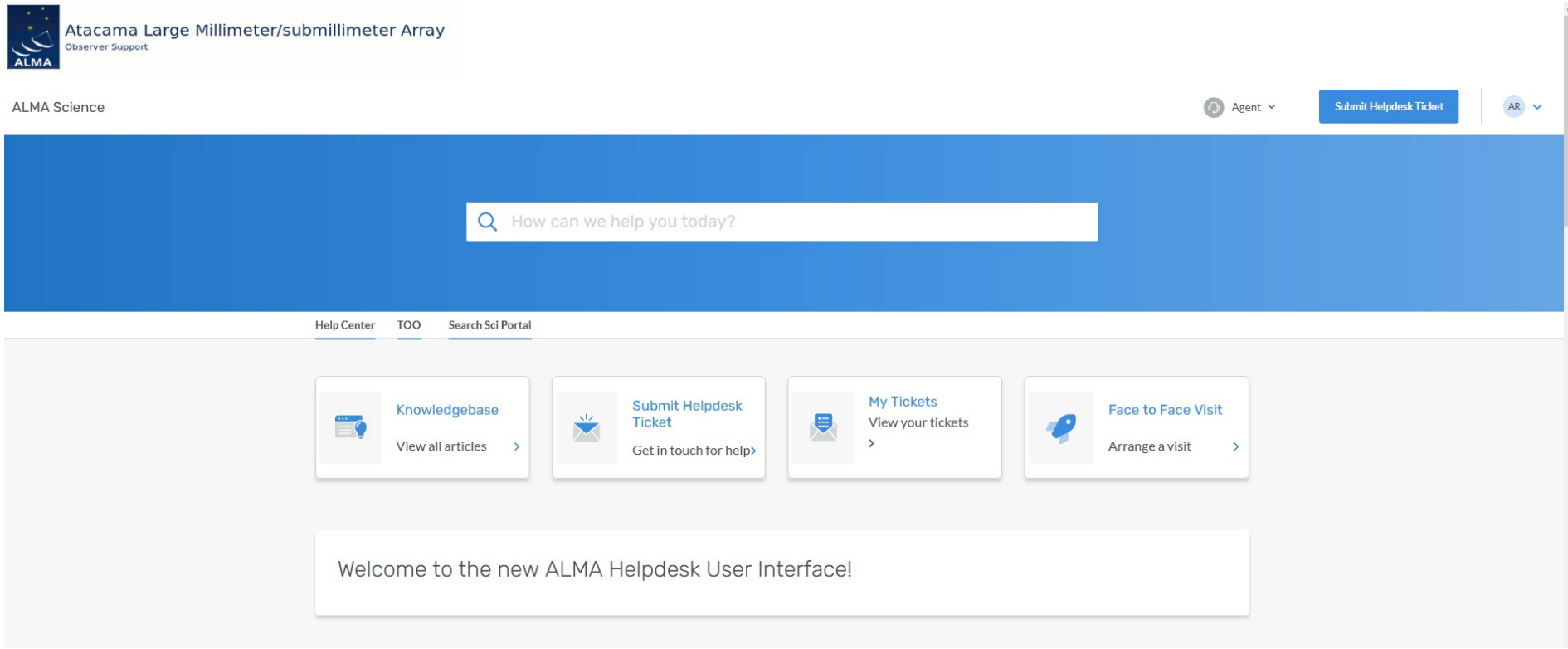
Have no fear, the ALMA Helpdesk is here…





help.almascience.org

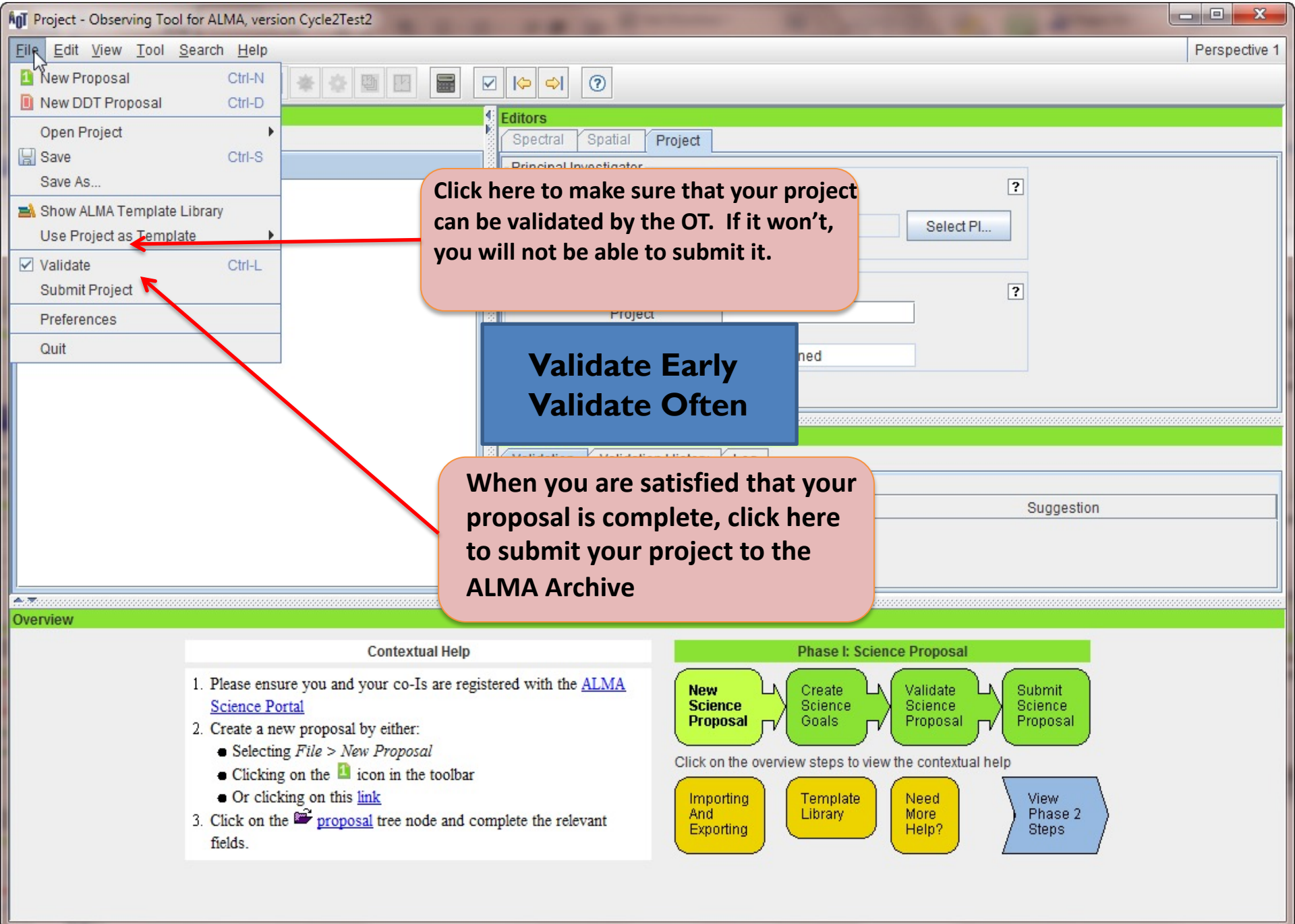
ALMA Helpdesk @ NRAO (logged in view)



For “Face-to-Face Visit” – try the new “ALMA Chats” option which is more than a ticket but less than a full virtual f2f visit!

help.almascience.org

ALMA Helpdesk @ NRAO (logged in view)


Project - Observing Tool for ALMA, version Cycle2Test2
File Edit View Tool Search Help
Perspective 1
New Proposal Ctrl-N
New DDT Proposal Ctrl-D
Open Project
Save Ctrl-S
Save As...
Show ALMA Template Library
Use Project as Template
Validate Ctrl-L
Submit Project
Preferences
Quit
Editors
Spectral Spatial Project
Select PI...
Suggestion
Click here to make sure that your project can be validated by the OT. If it won't, you will not be able to submit it.
Validate Early
Validate Often
When you are satisfied that your proposal is complete, click here to submit your project to the ALMA Archive
Overview
Contextual Help
1. Please ensure you and your co-Is are registered with the ALMA Science Portal
2. Create a new proposal by either:
Selecting File > New Proposal
Clicking on the icon in the toolbar
Or clicking on this link
3. Click on the proposal tree node and complete the relevant fields.
Phase I: Science Proposal
New Science Proposal
Create Science Goals
Validate Science Proposal
Submit Science Proposal
Click on the overview steps to view the contextual help
Importing And Exporting
Template Library
Need More Help?
View Phase 2 Steps

After submission

- Remember, you can resubmit as often as needed, but keep in mind that the server is quite busy right before the deadline
- Distributed peer review will be used for all proposals requesting less than 50 hours on the 12-m Array, and ACA stand-alone proposals requesting less than 150 hours on the 7-m Array.
- In this review system, for each submitted proposal the PI (or one of the delegated co-Is) will be responsible for reviewing up to 10 other submitted proposals, thus increasing the involvement of the ALMA community in the review process **– if you don't submit reviews, YOUR proposal will be rejected!**
- Large proposals will be reviewed by science review panels, as in previous cycles.
- All proposals will be subject to Technical Assessment by a selected group of JAO and ARC experts.

After submission

- Proposals will be assessed on the basis of the overall scientific merit of the proposed investigation and its potential contribution to the advancement of scientific knowledge.
- Following approval by the Directors Council, the outcome of the Proposal Review Process will be communicated to the PIs of all valid submitted proposals - expected around August 2022.
- Any change requests need to go to the Helpdesk, and possibly a formal change request
  - Being prompt helps ensure your project can be observed!
- Then wait – dynamic scheduling means your Contact Scientist doesn't know when your project will run. As observations are made, updates are shown in the SnooPI tool on the Science Portal:

https://almascience.nrao.edu/observing/snoopi

For more info:

https://almascience.nrao.edu/

The Atacama Large Millimeter/submillimeter Array (ALMA), an international astronomy facility, is a partnership of Europe, North America and East Asia in cooperation with the Republic of Chile. ALMA is funded in Europe by the European Organization for Astronomical Research in the Southern Hemisphere (ESO), in North America by the U.S. National Science Foundation (NSF) in cooperation with the National Research Council of Canada (NRC) and the National Science Council of Taiwan (NSC), and in East Asia by the National Institutes of Natural Sciences (NINS) of Japan in cooperation with the Academia Sinica (AS) in Taiwan. ALMA construction and operations are led on behalf of Europe by ESO, on behalf of North America by the National Radio Astronomy Observatory (NRAO), which is managed by Associated Universities, Inc. (AUI), and on behalf of East Asia by the National Astronomical Observatory of Japan (NAOJ). The Joint ALMA Observatory (JAO) provides the unified leadership and management of the construction and operation of ALMA.