The ALMA Proposal Preparation Process

How to get started and what to expect

George C. Privon

Atacama Large Millimeter/submillimeter Array
Expanded Very Large Array

This talk is for you if…

- You are new to ALMA and have not yet had experience with the relevant documentation
- You have not downloaded the ALMA Observing Tool (OT) or even know where to get it
- You have a fabulous science case that will be essential to follow-up with ALMA facilities
- You were familiar with past Cycles and wonder what changes will be made for Cycle 7

This talk will be available online for reference after this workshop.

Proposal Checklist

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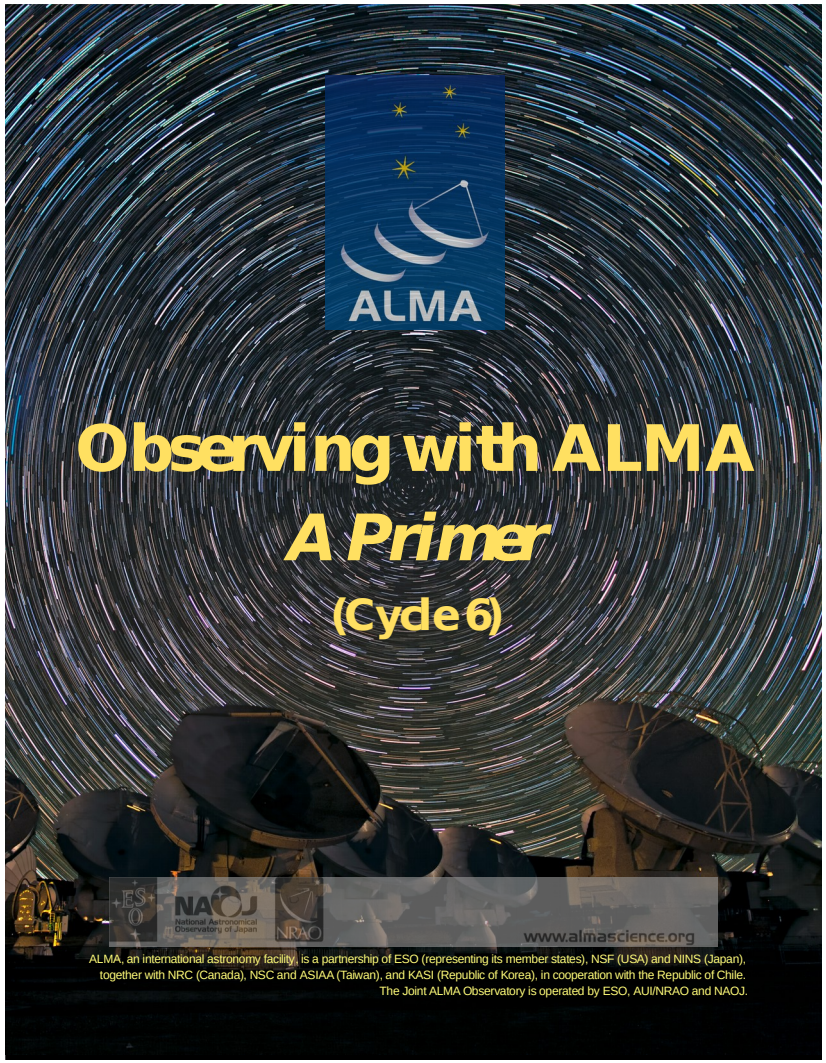
Cycle 7 Documentation & Timeline

- Call for Proposals
- Proposer's Guide
- ALMA Primer
- OT Guide
- ALMA Tech Handbook
- Timeline for Cycle 7
  - Mar. 19 – Call for Proposals
  - Apr. 17 – Proposal Deadline
  - End July – Results to PIs
  - Sept. 5 – Phase 2 submission
  - Oct. 2019 – Start of Cycle 7
  - Sept. 2020 – End of Cycle 7



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

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www.almascience.org
ALMA Science Portal @ NRAO

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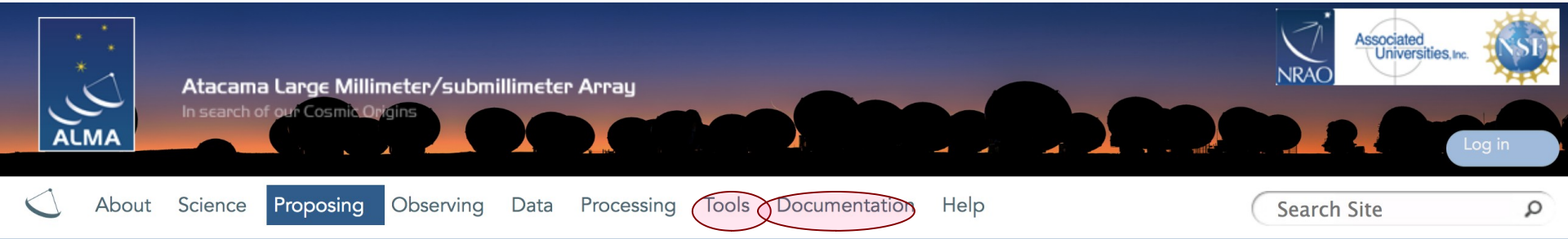
Downloading the ALMA OT



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Observing Tool

The ALMA Observing Tool (OT) is a Java application used for the preparation and submission of ALMA Phase 1 (observing proposal) and Phase 2 (telescope runfiles for accepted proposals) materials. It is also used for preparing and submitting Director's Discretionary Time (DDT) proposals. The current *Cycle 6* release of the OT is configured for the present capabilities of ALMA as described in the Cycle 6 Call For Proposals. Note that in order to submit proposals you will have to register with the ALMA Science Portal beforehand.

Download & Installation

The OT will run on most common operating systems, as long as a **64-bit version of Java 8** is installed (see the troubleshooting page if you are experiencing Java problems). The ALMA OT is available in two flavours: Web Start and tarball.

The **Web Start** application is the recommended way of using the OT. It has the advantage that the OT is automatically downloaded and installed on your computer and it will also automatically detect and install updates. There are some issues with Web Start, particularly that it does not work with the Open JDK versions of Java such as the "Iced Tea" flavour common on many modern Linux installations. The Oracle variant of Java should therefore be installed instead. If this is not possible, then the tarball installation of the OT is available.

The **tarball** version must be installed manually and will not automatically update itself, however there should be no installation issues.

Webstart Tarball

Documentation

Extensive documentation is available to help you work with the OT and optimally prepare your proposal:

- If you are a novice OT user you should start with the **OT Quickstart Guide**, which takes you through the basic steps of ALMA proposal preparation.
- Audio-visual illustrations of different aspects of the OT can be found in the **OT video tutorials**. These are recommended for novices and advanced users alike.

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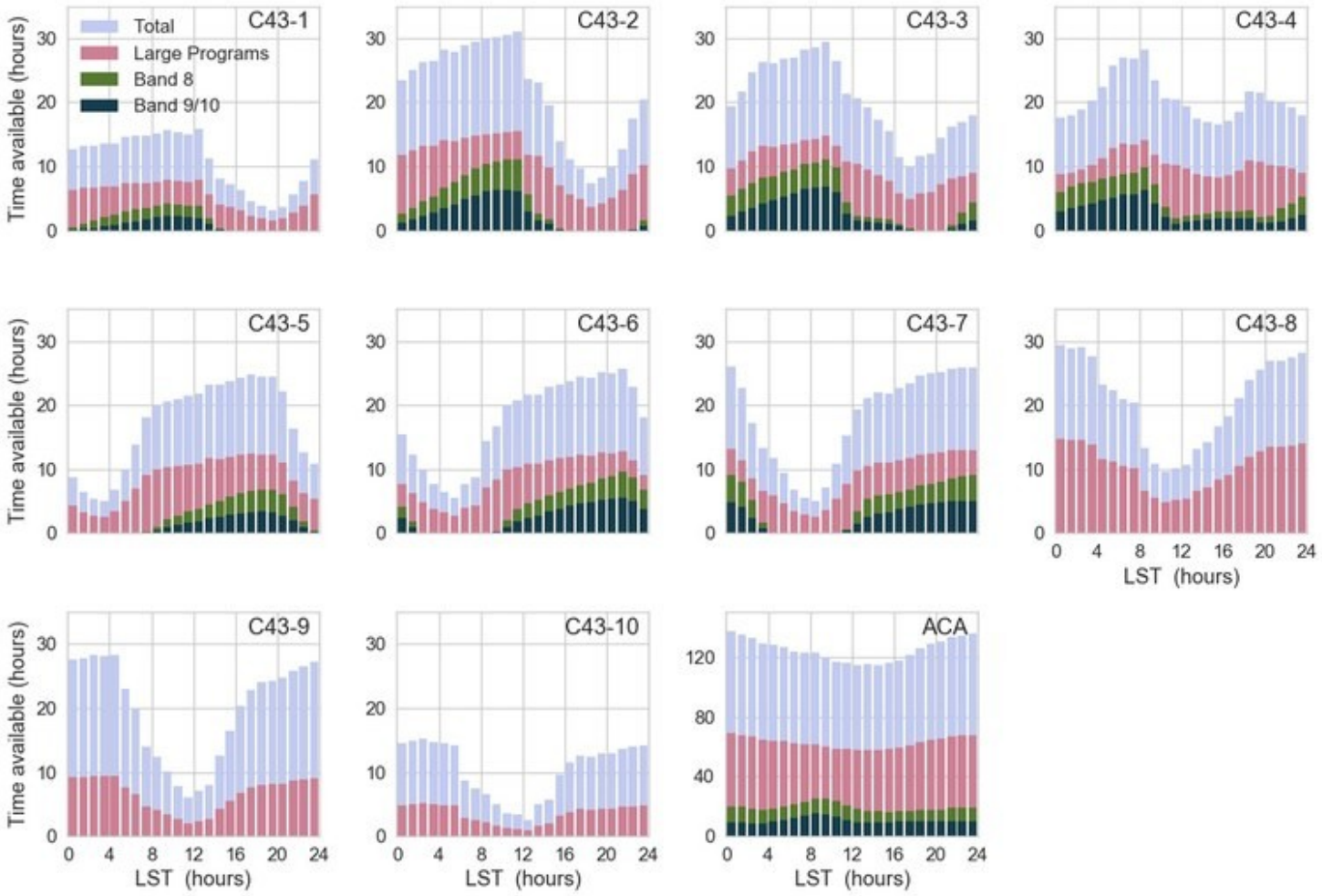
ALMA Observing Strategies (Cycle 7)

- Cycle 7 configuration schedule is ideal for long baselines in Chilean winter (typically best weather conditions)
- **Cycle 8 will NOT go to the longest baselines**

Start date	Configuration	Longest baseline	LST for best observing conditions
2019 October 1	C43-4	0.78 km	~ 22—10 h
2019 October 20	C43-3	0.50 km	~ 23—11 h
2019 November 10	C43-2	0.31 km	~ 1—13 h
2019 November 30	C43-1	0.16 km	~ 2—14 h
2019 December 20	C43-2	0.31 km	~ 4—15 h
2020 January 10	C43-3	0.50 km	~ 5—17 h
2020 February 1	No observations due to maintenance		
2020 March 1	C43-4	0.78 km	~ 8—21 h
2020 March 20	C43-5	1.4 km	~ 9—23 h
2020 April 20	C43-6	2.5 km	~ 11—1 h
2020 May 20	C43-7	3.6 km	~ 13—3 h
2020 June 20	C43-8	8.5 km	~ 15—5 h
2020 July 11	C43-9	13.9 km	~16—6 h
2020 July 30	C43-10	16.2 km	~17—7 h
2020 August 20	C43-9	13.9 km	~19—8 h
2020 September 10	C43-8	8.5 km	~20—9 h

ALMA Observing Strategies (Cycle 7)



- Histograms of the anticipated amount of observing time available versus LST for the antenna configurations in Cycle 7. Also shown are histograms of the time available for Large Programs, as well as high frequency observations (Bands 8, 9, and 10) based on historical PWV data

Science Case

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

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

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Cycle 7 Capabilities

- **Antennas:** At least 43 antennas in the 12-m Array, ten 7-m antennas (for short baselines) and three 12-m antennas (for single dish maps)
- **Receiver bands:** 3, 4, 5, 6, 7, 8, 9, & 10 (wavelengths of about 3.1, 2.1, 1.5, 1.3, 0.87, 0.74, 0.44, and 0.35 mm, respectively)
- **Baselines:** Maximum baselines up to 3.7 km for Bands 8 – 10 and up to 16.2 km for Bands 3 - 7
- Spectral line, continuum, and mosaic observations

New Capabilities

- Band 7 observations at longest baselines (16.2 km)
- Solar observations in Band 7 in compact configurations
- Spectral scans are standard modes
- Data rate limitations will be significantly relaxed – long baseline AND high spectral resolution modes possible

Large Projects (started in Cycle 4)

- Any project >50 hours, or standalone ACA > 150 hours
- Standard observing modes
- Automatic ‘A’ grade if successful
- +2 pages for Science Case
    - Data/Project Management Plans
    - Enhanced Data Products

Other New Features

- Polarization limits have been made much simpler: 0.1% or more for linear polarization 1.8% for circular. Now independent of correlator mode or source extent.
- Receiver temperatures have been updated in many bands

The expected values are:

Band 3: 40K

Band 4: 42

Band 5: 50

Band 6: 50

Band 7: **72**

Band 8: 135

Band 9: **105**

Band 10: **230**

Values in bold have not changed from Cycle 6.

- The whole-proposal .pdf you generate will have a single combined list of all investigators in random order with first names replaced by initials. The PI is not distinguished.

Cycle 7 Non-standard Modes

- As before, observing modes will be classed as standard or non-standard. Up to 20% of the observing will be allocated to proposals requesting these non-standard modes:
  - Band 7 observations with baselines > 5 km if the phase calibrator is expected to be further than 5°
  - Band 9 and 10 observations
  - Polarization observations
  - Projects with <0.9375 GHz aggregate bandwidth
  - Solar observations
  - VLBI observations
  - Observations with user-specified calibration
  - Astrometry

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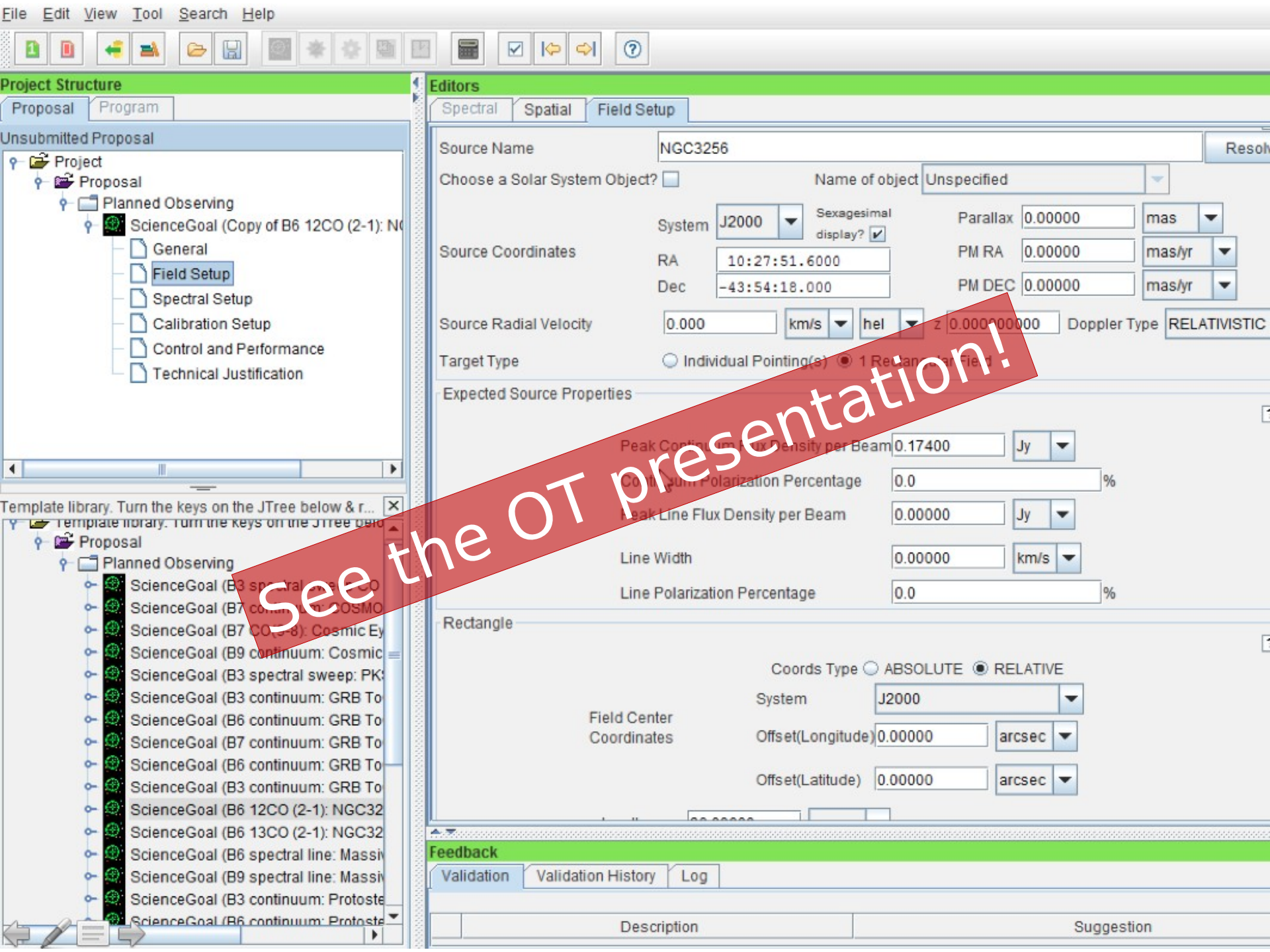
File Edit View Tool Search Help
Project Structure
Proposal Program
Unsubmitted Proposal
Project
Proposal
Planned Observing
ScienceGoal (Copy of B6 12CO (2-1): N
General
Field Setup
Spectral Setup
Calibration Setup
Control and Performance
Technical Justification
Template library. Turn the keys on the JTree below & r...
Proposal
Planned Observing
ScienceGoal (B7 COLD-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
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ScienceGoal (B6 13CO (2-1): NGC32
ScienceGoal (B6 spectral line: Massi
ScienceGoal (B9 spectral line: Massi
ScienceGoal (B3 continuum: Protoste
Editors
Spectral Spatial Field Setup
Source Name NGC3256
Choose a Solar System Object?
Name of object Unspecified
System J2000
Sexagesimal display?
Source Coordinates
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
Doppler Type RELATIVISTIC
Target Type
Individual Pointing(s)
Expected Source Properties
Peak Line Flux Density per Beam 0.17400 Jy
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
System J2000
Field Center Coordinates
Offset(Longitude) 0.00000 arcsec
Offset(Latitude) 0.00000 arcsec
Feedback
Validation Validation History Log
Description
Suggestion
See the OT presentation!

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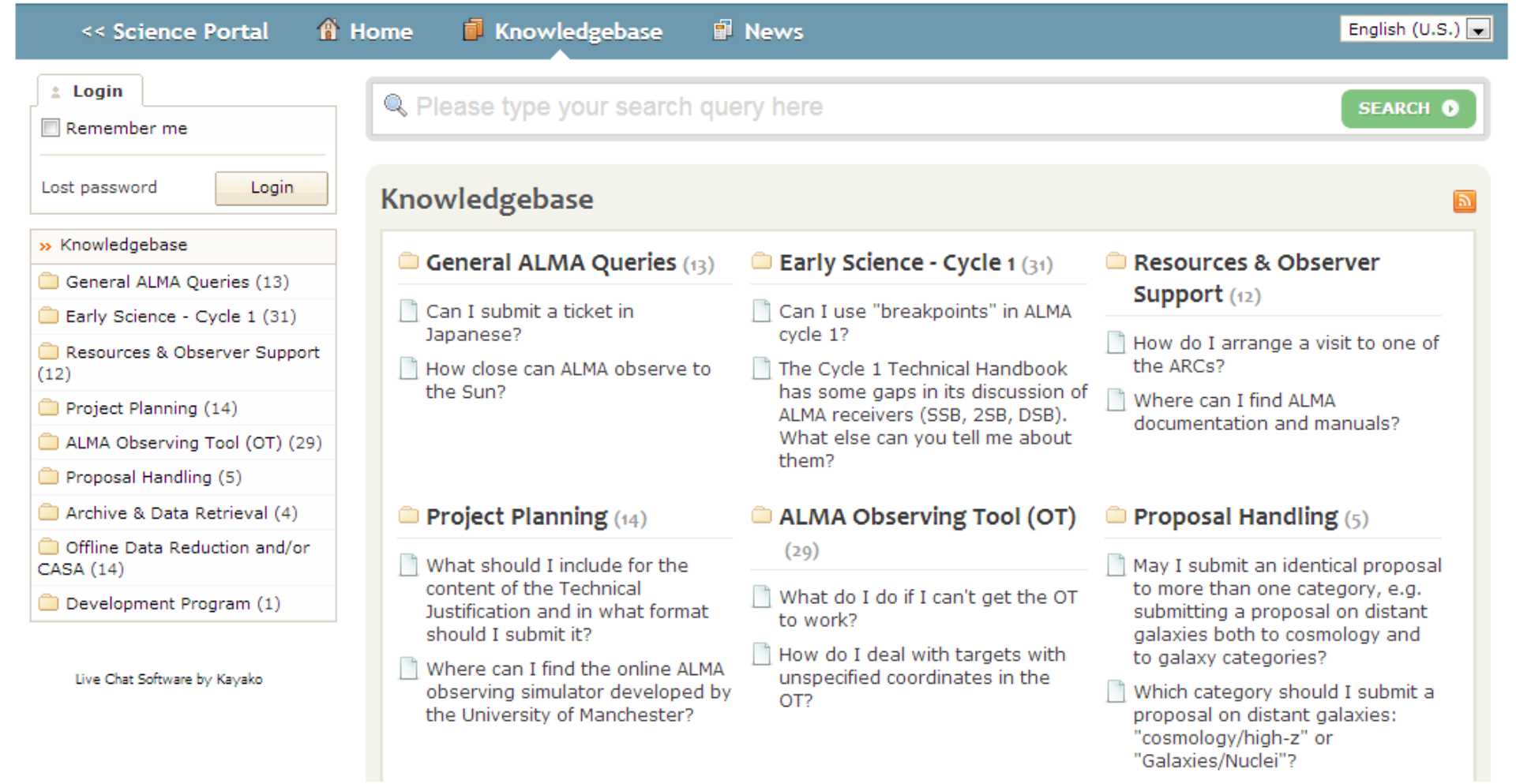

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After submission

- You can resubmit as often as needed, but keep in mind that the server is quite busy right before the deadline
- Standard and ToO proposals will be reviewed by the ALMA Proposal Review Committee (APRC) and the ALMA Review Panels (ARP).
- A limited number of proposals will be subject to Technical Assessment by a selected group of JAO and ARC experts.
- 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 at the end of July 2019.

After submission

- Phase II (Creating and Queuing Scheduling Blocks)
  - PIs review their scheduling blocks by Sept. 5, 2019
  - 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

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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.

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