

Observing Tool

Quick guide and new in Cycle 8 2021

2021 March 22
Proposal Preparation Meeting
Shun Ishii (EA-ARC)

The screenshot shows the ALMA Science Portal website. At the top, there is a navigation bar with the ALMA logo on the left and the NAOJ logo on the right. Below the logos is a search bar labeled "Search Site". A pink arrow points from the search bar area to a dropdown menu containing the following options: "Log in", "Register", "Reset Password", and "Forgot Account". Below the search bar is a horizontal menu with links for "About", "Science", "Proposing", "Observing", "Data", "Processing", "Tools", "Documentation", and "Help". Below this menu are three columns of news: "Observatory News", "NAOJ News", and "Status". A large blue rounded rectangle is overlaid on the page, containing the text: "Before downloading the OT... Please update your expertises in your ALMA user profile!". Below the blue box, there is a section with a blue-tinted image of a protostar and a text block. The text block discusses the detection of continuum sources and outflows, mentioning a median mass of $2 M_{\text{sun}}$ and a dynamical age of 10^3 years. At the bottom of the page, there is a footer with links for "Site Map", "Accessibility", "Contact", and "Privacy Statement", and a "Region:" dropdown menu with options "EA", "EU", and "NA".

"expertise" will be used for the reviewer assignment in the distributed review

then let's download the OT

Observing Tool (OT): application for submitting ALMA proposals

Proposers must use the appropriate version of the OT (=latest one for Cycle 8 2021)

ALMA science portal → Tools → Observing Tool

ALMA Science Portal at NAOJ

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

Search Site

Log in

About Science Proposing Observing Data Processing Tools Documentation Help

Observing Tool

Sensitivity Calculator

CASA Simulator

Observation Support Tool

Atmospheric Models

Splatalogue

Science Ready Data

Products

Toyama Microwave Atlas

Solar Ephemeris

Japanese Virtual Obs.

EU ARC network

Community-Developed

Observatory News

ALMA Cycle 8 2021 Call for Proposals is Now OPEN!
Mar 17, 2021

ALMA anticipates resuming science observations
Mar 15, 2021

Array Recovery Status Update
Jan 25, 2021

More...

More...

Science Highlight: An Active Protocluster in the Massive, Dense G0.253+0.016

-28°42'00" Declination (J2000)

29 - 42 km/s
43 - 56 km/s

15 16
12 13 14

6 10
4 8 11
3 7
1 9
2 5

Status

Cycle 8 2021 Call for Proposals
Proposer's Guide
ALMA Primer

Refereed publications: 2267
Last observed source: HerBS-152
Current configuration: C43-4

on ALMA observations are a great probe for star formation in the Galactic Center. In a recent paper, Dr. Walker and his collaborators made use of high-resolution (~ 1000 AU resolution) Band 6 observations with ALMA to detect dust continuum sources and SiO outflows in G0.253+0.016, one of the most massive (> 10⁵) and dense (> 10⁴ cm⁻³) molecular clouds in the Central Molecular Zone (CMZ). The CMZ is notable in having a substantially lower star formation rate than one would expect based on that measured in nearby galactic disk environments. Eighteen continuum sources are detected, and despite the high density of the molecular cloud, no high-mass protostars were detected. Indeed, the median mass of the detected continuum sources is 2 M_{SUN}. However, 9 of the continuum sources have outflows traced in SiO(5-4) (see Figure 1) with properties similar to intermediate to high-mass star formation. The dynamical ages of the outflows are estimated to be 10³ years. Thus, these source are young and may accrete sufficient mass to ultimately form intermediate-to-high-mass stars. The authors discuss the clear importance of thermal fragmentation relative to large-scale turbulence and magnetic fields at the scales of these protostars, and thus conclude that star formation on these scales is similar to that in Galactic disk environments.

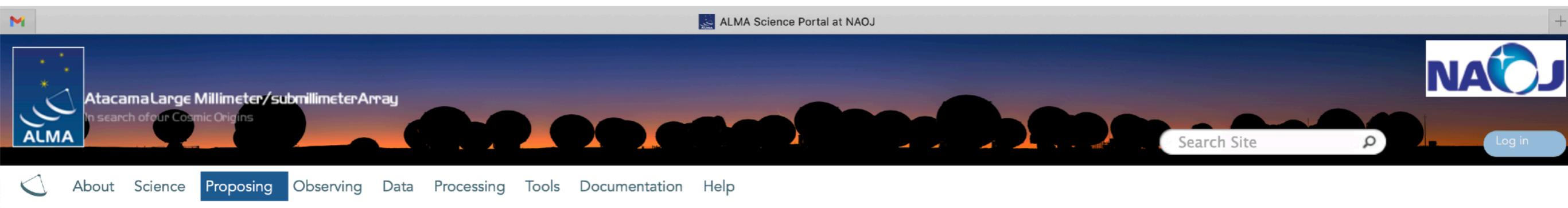
Site Map Accessibility Contact Privacy Statement

Region: EA EU NA

Observing Tool (OT): application for submitting ALMA proposals

Proposers must use the appropriate version of the OT (=latest one for Cycle 8 2021)

<https://almascience.nao.ac.jp/proposing/observing-tool>



Observing Tool

The ALMA Observing Tool (OT) is a Java desktop application used for the preparation and submission of ALMA Phase 1 proposals and, for those which are accepted, Phase 2 materials (Scheduling Blocks). It is also used for preparing and submitting Director's Discretionary Time (DDT) proposals. The current *Cycle 8 2021* release of the OT is configured for the present capabilities of ALMA as described in the [Cycle 8 2021 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 should run on all common operating systems and depends on a version of Java being available. In previous releases of the OT it was the responsibility of the user to ensure that a suitable version of Java was installed, but the Cycle 8 version of the OT will come with its own version of Java 11 and thus the user need no longer worry about their local Java installation. Unfortunately, as Java 11 does not include Web Start, this version of the OT is no longer available. (Web Start remains available for the Cycle 7 OT currently used for the submission of DDT proposals.) The Cycle 8 OT can be installed in two different ways, either with a modern installer or manually with a tarball distribution.

It is recommended that the OT be installed using the [ALMA OT Installer](#). This provides a modern graphical interface to report the progress of the installation and allows the user to change various settings from their defaults, including the amount of memory the OT may use. The installer is used to start the OT. With the loss of Web Start, automatic updates of the tool are no longer possible, but the OT will detect if an update is available at start-up and inform the user. If problems are encountered with the installer, then the tarball must be used. **The first release of the OT Installer in 2020 would not run on macOS Catalina due to security issues, but these have now been resolved and it should run correctly on all macOS releases, including Catalina and Big Sur.**

The tarball version must be installed manually and the instructions for doing this have not changed.



To Download page

- * **Java 11 is bundled. No additional installation is needed.**
- * **Installer works for all Mac OS releases!**

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.
- More in-depth information on the OT can be found in the [User Manual](#), while concise explanations of all fields and menu items in the OT are given in the [Reference Manual](#). These two documents are also available within the OT under the Help menu.

Observing Tool (OT): application for submitting ALMA proposals

Proposers must use the appropriate version of the OT (=latest one for Cycle 8 2021)

<https://almascience.nao.ac.jp/proposing/observing-tool>



Installer Page



- [Mac OS Installer](#)
- [Linux Installer](#)
- [Windows Installer](#)

← **Download here**

Click on one of the links next to the OT Logo to download the Cycle-8 2021 OT Installer for your particular operating system. The Installer is an executable file which can be started by double-clicking in a file-manager window or started from a shell's command line. Once started, it will take you through a number of screens which, for example, allow you to change the default amount of memory available to the OT. In most cases you can just accept all the defaults using the 'Next' button and click 'Install' when you are happy.

After the Installer has finished, an executable file ('ALMA-OT.sh' on Linux and 'ALMA-OT.app' on Macs) should be found inside a directory named 'ALMAOT-C8-2021'. This can be run from the command line or by double-clicking in a file manager if this is configured in this way. We recommend that the name of this directory not be changed so that multiple versions of the OT (for use in different cycles) can be maintained on your computer. On Macs, a shortcut will be created on your Desktop with the name 'ALMAOT-C8-2021' - the OS will probably ask to control your Finder for this to happen.

Additional Information

- The Mac download is a zip archive which must first be opened in order to extract the installer. This will often be done automatically for you or a suitable program will be suggested ('Archive Utility').
- On Linux, typing 'sh almaot-C8.bin' is the recommended way of starting the installer - it should not be necessary to make it executable.
- There may be various issues related to security when running the Installer. Mac users may need to give permission to run the tool by opening the 'Security & Privacy' menu of 'System Preferences' and this menu should also be set to allow the use of apps from 'identified developers'. Alternatively, running the installer by right-clicking and choosing 'Open' (maybe twice) might work. On Windows, we are aware of 'Defender SmartScreen' - this can be bypassed by clicking on 'More Info'.
- In contrast to the previous 'automated' OT installation (Web Start), the OT will no longer update itself automatically if an update is released. However, the OT will inform you if an update is available after which a new version of the OT Installer should be downloaded and the install procedure repeated. Re-running the Installer will overwrite the previous installation.

Observing Tool (OT): application for submitting ALMA proposals

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Installer Page



- Mac OS Installer
- Linux Installer
- Windows Installer

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After the Installer has finished, an executable file ('ALMA-OT.sh' on Linux and 'ALMA-OT.app' on Macs) should be found inside a directory named 'ALMAOT-C8-2021'. This can be run from the command line or by double-clicking in a file manager if this is convenient. On Linux, you should also be set to allow the use of apps from unknown sources, a shortcut will be created on your Desktop with the following command:

Additional Info

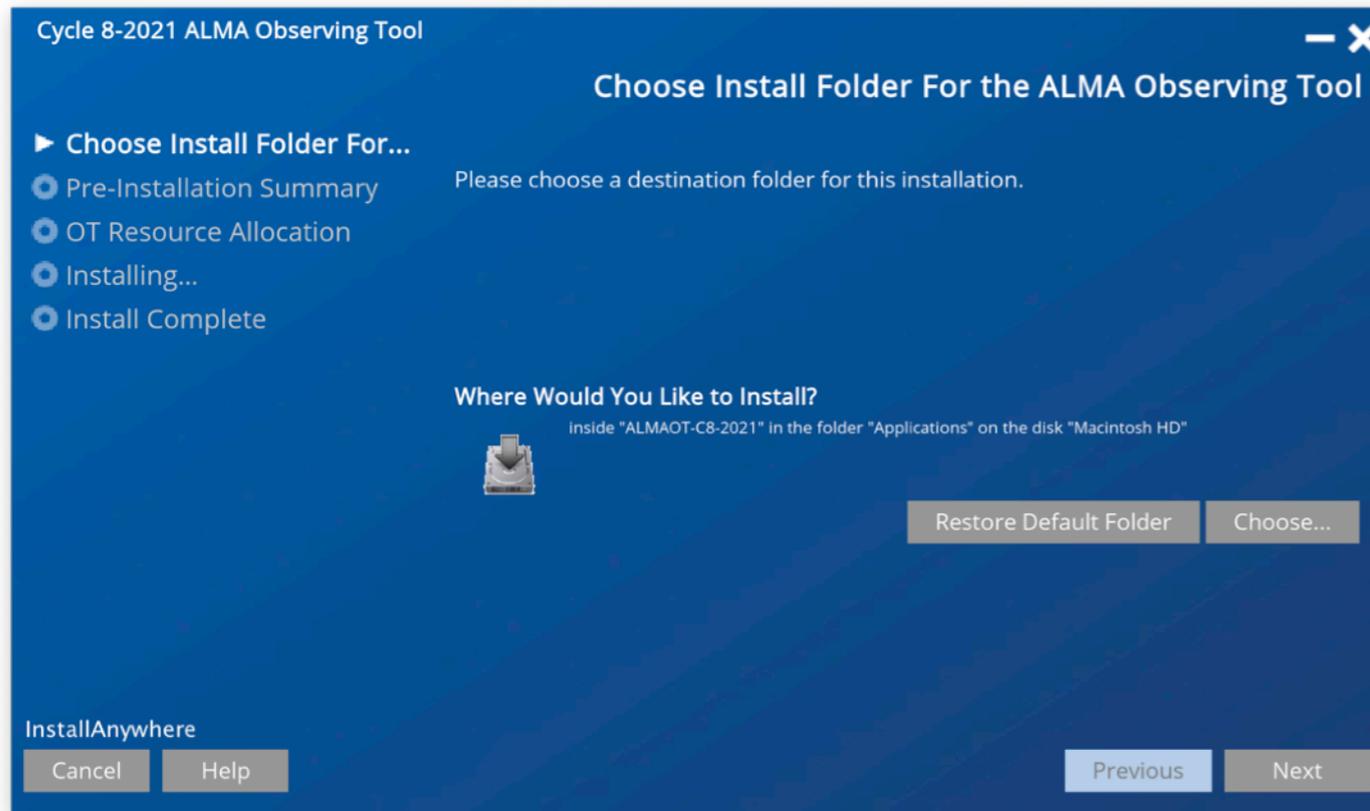
- The Mac download is a .zip file. You should also be set to allow the use of apps from unknown sources, a shortcut will be created on your Desktop with the following command:
- On Linux, typing `./ALMA-OT.sh` will start the installer.
- There may be various versions of the OT Installer available. You should also be set to allow the use of apps from unknown sources, a shortcut will be created on your Desktop with the following command:
- In contrast to the Linux version, the Mac version should be downloaded from the following link:

A screenshot of a file manager window showing a table of files. The table has columns for '名前' (Name), '変更日' (Modified), 'サイズ' (Size), '種類' (Type), and '最後に開いた日' (Last Opened).

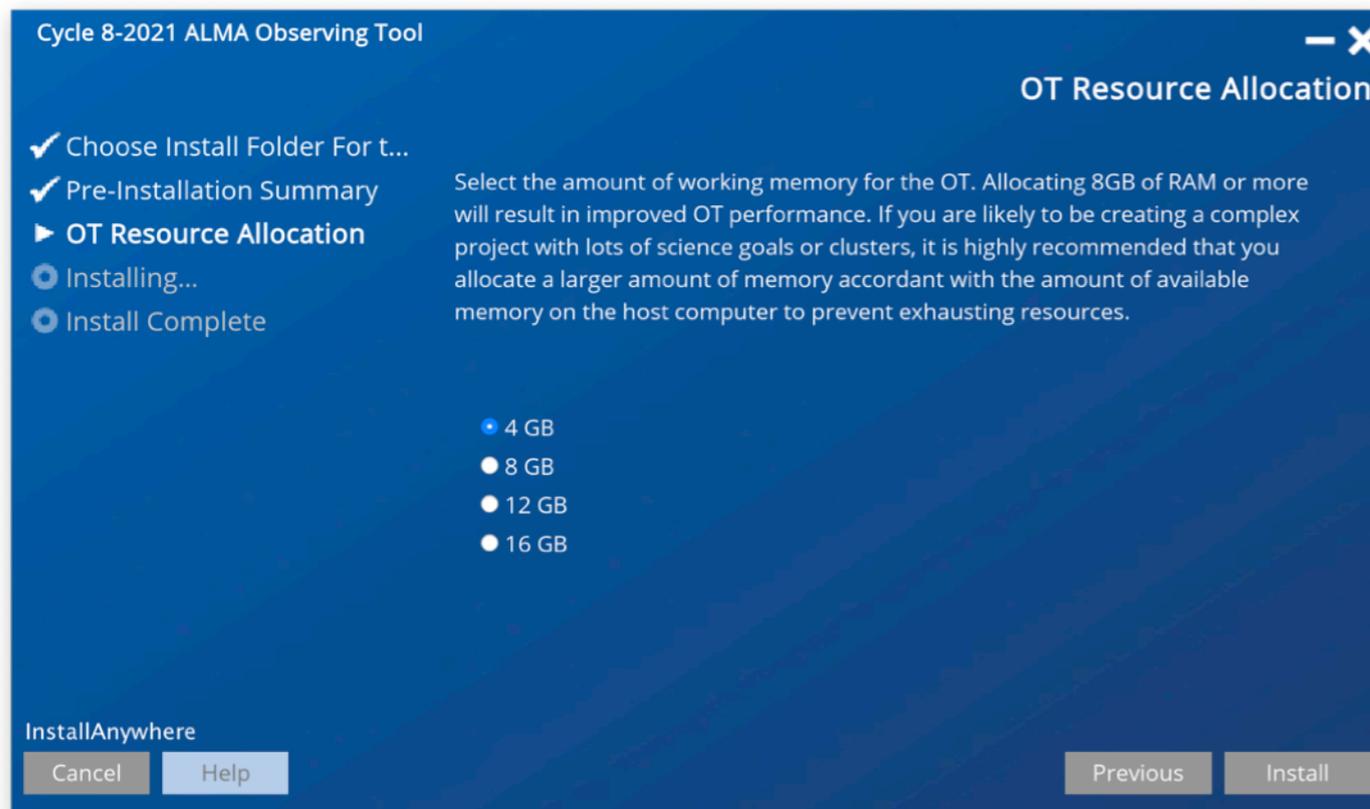
名前	変更日	サイズ	種類	最後に開いた日
almaot-C8-2021.zip	今日 7:52	288.8 MB	ZIPアーカイブ	今日 8:43
almaot-C8-2021.app	昨日 2:52	291.4 MB	アプリケーション	--

A .zip installer downloaded that expands to the installer application

Installing the ALMA OT

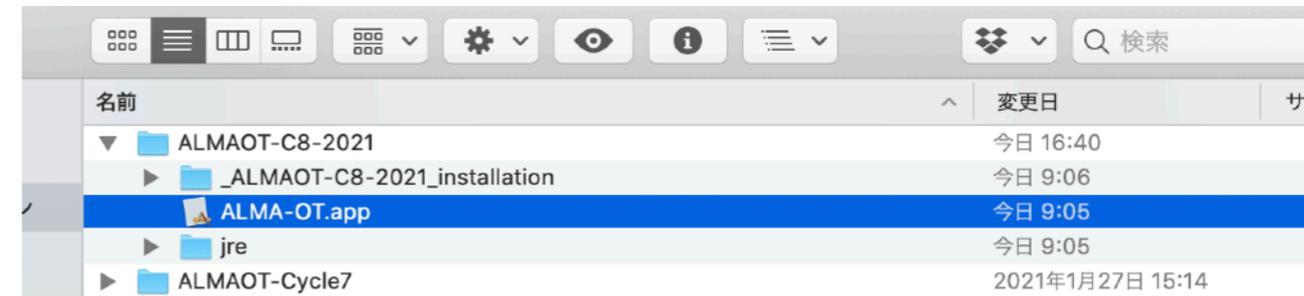
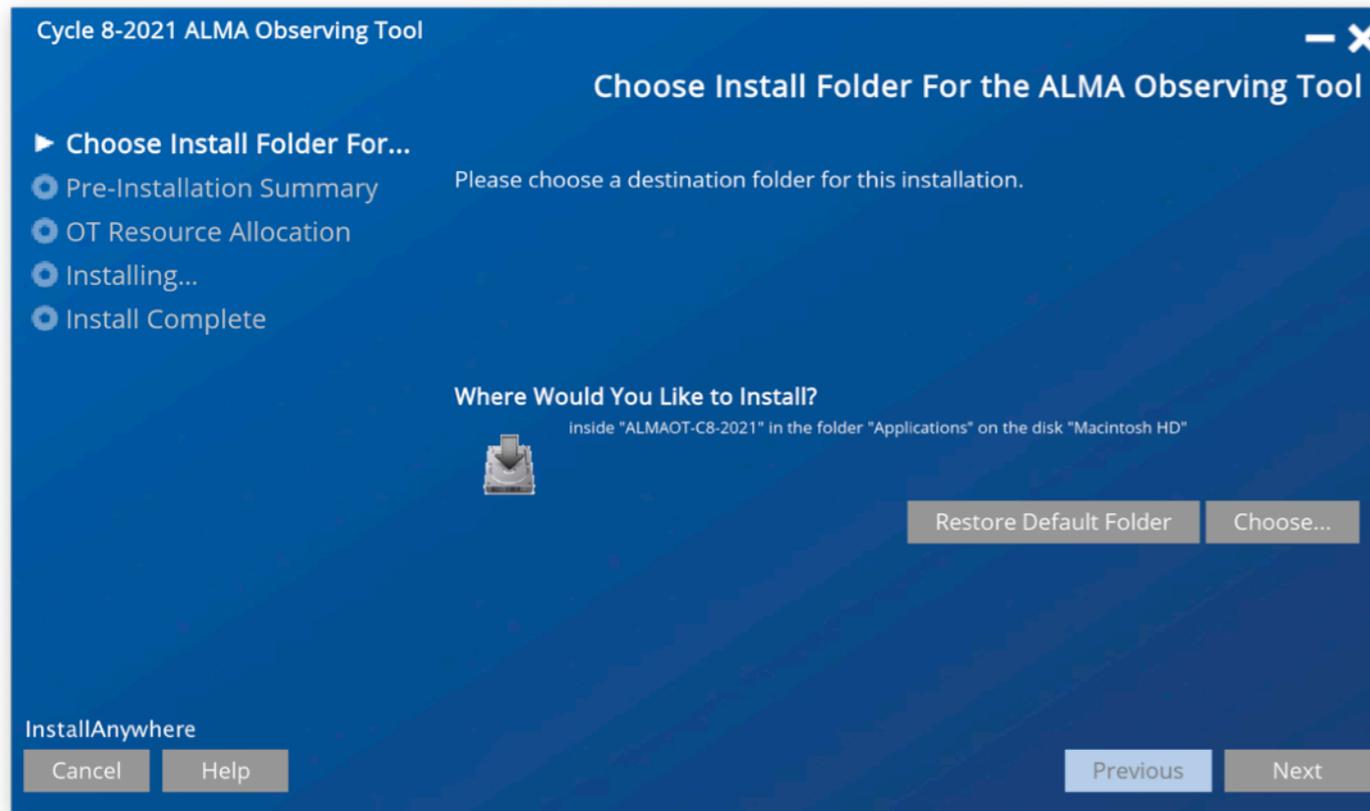


The installation package will ask where to install with a default in 'Applications' for MacOS

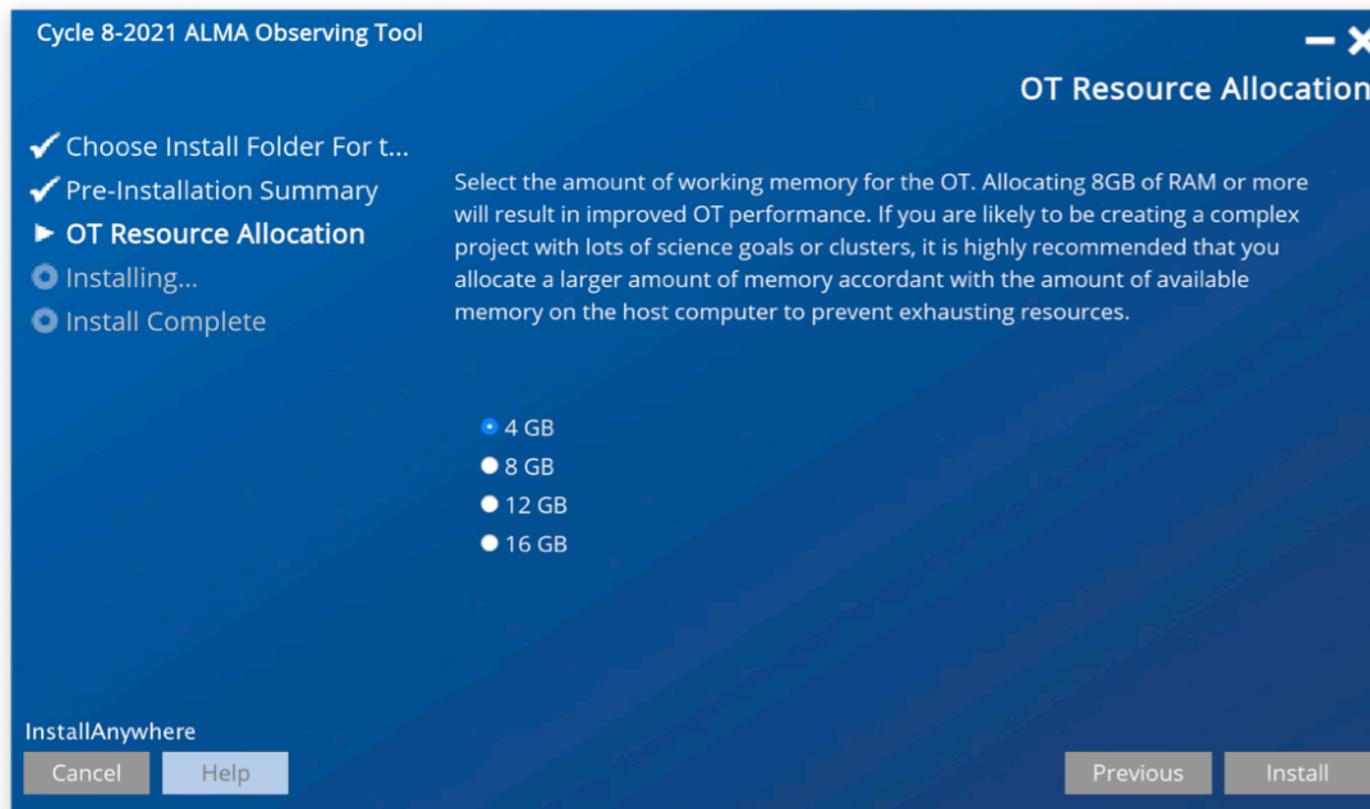


It will ask for the memory size. 8 GB or more is recommended.

Installing the ALMA OT

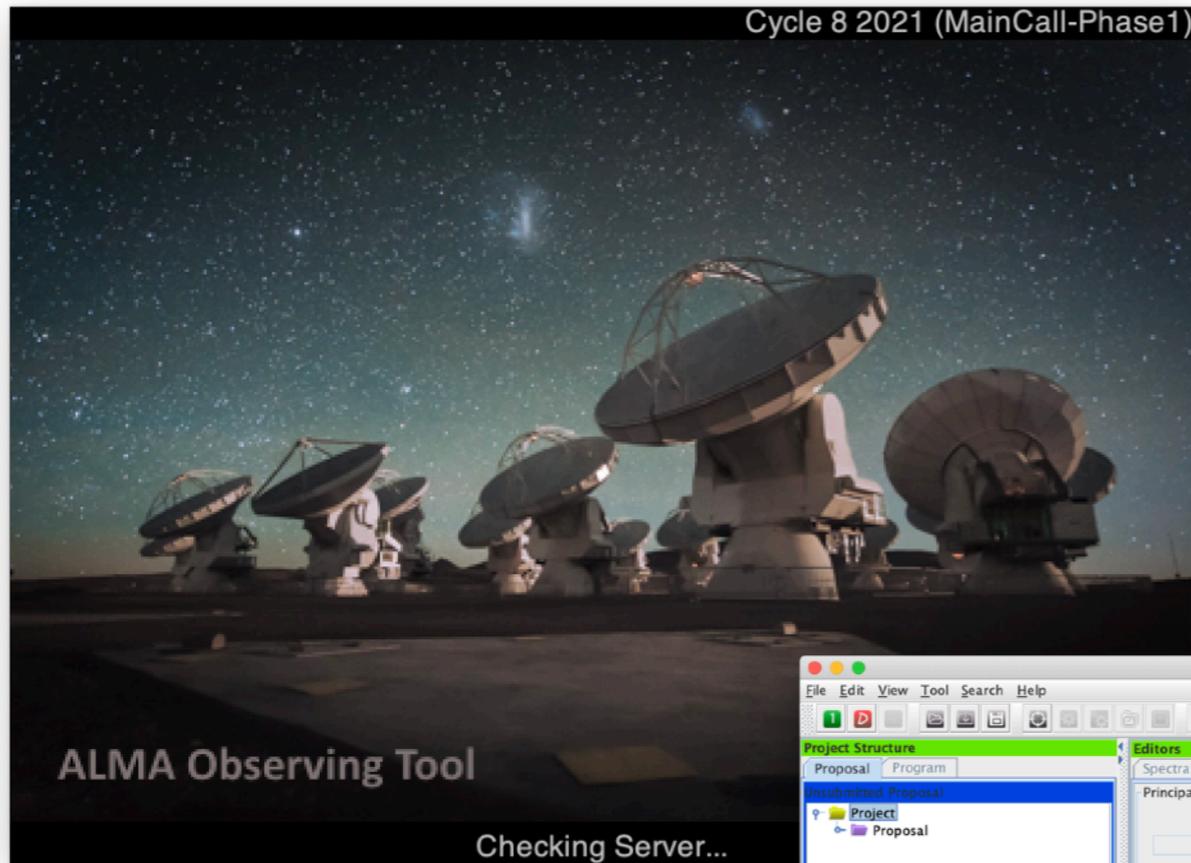


After installation there will be an application in the destination directory



Quick guide and new in Cycle 8 2021

When the ALMA OT starts



First you see this...

And the main window appears

A screenshot of the ALMA Observing Tool main window. The window title is "ALMA Observing Tool (Cycle 8 2021 (MainCall-Phase1)) - Project". The interface is divided into several panes. On the left is the "Project Structure" pane showing a tree view with "Project" and "Proposal" nodes. The main area is the "Editors" pane, which has tabs for "Spectral", "Spatial", and "Project". The "Project" tab is active, showing fields for "Principal Investigator" (with a "Select PI..." button), "Main Project Information" (with fields for "Project", "Assigned Priority", and "Project Code" set to "None Assigned"), and a "Feedback" section with tabs for "Validation", "Validation History", and "Log". Below the main area is an "Overview" section containing "Contextual Help" (with a list of instructions) and a "Phase I: Science Proposal" flowchart with steps: "New Science Proposal", "Create Science Goals", "Validate Science Proposal", and "Submit Science Proposal". There are also buttons for "Importing And Exporting", "Template Library", "Need More Help?", and "View Phase 2 Steps".

When the ALMA OT starts

ALMA Observing Tool (Cycle 8 2021 (MainCall-Phase1)) - Project

File Edit View Tool Search Help

Perspective 1

Project Structure

Proposal Program

Unsubmitted Proposal

Project

Proposal

Editors

Spectral Spatial Project

Principal Investigator

Select PI...

Feedback

Validation Validation History Log

Description	Suggestion
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Overview

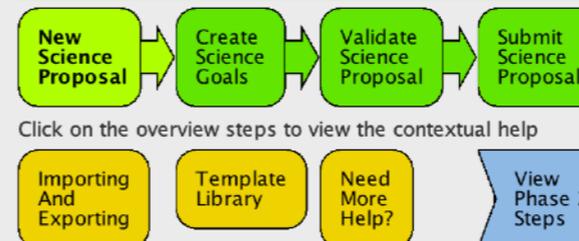
A clean slate. From here, you can:

- * Start a new proposal
 - * Add blank Science Goals (SG)
- * Recall a project from the archive
 - * As new to use as a template

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



Proposal editor and New in Cycle 8 2021

The screenshot displays the ALMA Observing Tool interface for Cycle 8 2021. The main window is titled "ALMA Observing Tool (Cycle 8 2021 (MainCall-Phase1)) - Project" and shows a "Proposal" editor. The interface is divided into several sections:

- Project Structure:** A tree pane on the left showing the "Project" and "Proposal" nodes.
- Editors:** A central area for editing proposal information, including:
 - Proposal Title (text input)
 - Proposal Cycle (2021.1)
 - Abstract (max. 1200 characters)
 - Proposal Type (radio buttons for Regular, Large Program, Target Of Opportunity, Phased Array, VLBI)
 - Scientific Category (radio buttons for various categories like Cosmology and the High Redshift Universe, Galaxies and Galactic Nuclei, etc.)
 - Please select one or two keywords (text input)
 - Student project (checkbox)
 - Investigators (text input)
- Contextual Help:** A section on the bottom left providing instructions on how to create a new proposal.
- Phase I: Science Proposal:** A flowchart on the bottom right showing the steps: New Science Proposal → Create Science Goals → Validate Science Proposal → Submit Science Proposal. Below this are buttons for "Importing And Exporting", "Template Library", "Need More Help?", and "View Phase 2 Steps".

Two blue callout boxes provide additional information:

- Left Callout:** "This is the tree pane and the proposal node is where you provide a broad description about your proposal"
- Right Callout:** "This is your meta information, proposal title, abstract, proposal type, scientific category..."

Contextual Help:

- Please ensure you and your co-Is are registered with the [ALMA Science Portal](#)
- Create a new proposal by either:
 - Selecting *File > New Proposal*
 - Clicking on the icon in the toolbar
 - Or clicking on this [link](#)
- 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

Proposal editor and New in Cycle 8 2021

The screenshot shows the ALMA Observing Tool interface. The main window is titled "ALMA Observing Tool (Cycle 8 2021 (MainCall-Phase1)) - Project". The "Editors" tab is active, showing a table of investigators. A "Project Structure" panel on the left shows "Unsubmitted Proposal" and "Project" folders. A "Investigator search constraints" dialog is open, showing a search for "Name" containing a blank field. Below the table, there are sections for "Please designate a reviewer..." and "Reviewers are requested to update their user profiles...". A "Select PI" button is visible. At the bottom, there are "Attach...", "Detach", and "View..." buttons. A URL <http://almascience.org/proposing/duplications> is also visible.

Type	Full name	Email	Affiliation	ALMA ID	Executive	Reviewer
PI	Shun Ishii	shun.ishii@nao.ac.jp	National Astronomical Observatory of Japan		East Asia	<input checked="" type="checkbox"/>
Co-I	Yusuke Miyamoto	miyamoto.yusuke@nao.ac.jp	Chilean National Observatory		East Asia	<input type="checkbox"/>

New!! Select PI/Co-I's from the registered (only) ALMA users

New!! Select a reviewer for all non-Large program, including regular proposals with more than 25 hours for 12m.

New!! If the reviewer does not have a Ph.D., please select a mentor with a Ph.D. The user registration is required.

New!! Browse to attach the Science Case as a .pdf max 4 pages (6 pages for Large program).

New!! If >15% of the PDF text is less than 12 point, the OT will now issue a validation ERROR (i.e. cannot submit the proposal).

Proposal editor and New in Cycle 8 2021

The screenshot shows the ALMA Observing Tool interface. The main window is titled "ALMA Observing Tool (Cycle 8 2021 (MainCall-Phase1)) - Project". The "Editors" tab is active, showing a table of investigators. A "Project Structure" panel on the left shows "Unsubmitted Proposal" and "Project" folders. A "Investigator search constraints" dialog is open, showing a search for "Name" containing a blank field. Below the dialog is a table with columns for "Full name", "Email", "Affiliation", and "ALMA ID". A "Select PI" button is visible. A "Select Mentor" dialog is also present, with a "Mentor name" field and "Mentor has a PhD?" radio buttons. At the bottom, there are "Attach...", "Detach", and "View..." buttons. A URL is visible at the bottom: <http://almascience.org/proposing/duplications>.

Type	Full name	Email	Affiliation	ALMA ID	Executive	Reviewer
PI	Shun Ishii	shun.ishii@nao.ac.jp	National Astronomical Observatory of Japan		East Asia	<input checked="" type="checkbox"/>
Co-I	Yusuke Miyamoto	miyamoto.yusuke@nao.ac.jp	Chile Observatory		East Asia	<input type="checkbox"/>

New!! Select PI/Co-I's from the registered ALMA users (only)

New!! Select a reviewer for all non-Large program, including regular proposals with more than 25 hours for 12m.

New!! If the reviewer does not have a Ph.D., please select a mentor with a Ph.D. (user registration is required)

Browse to attach the Science Case as a .pdf max 4 pages (6 pages for Large program).

Remember to write your science case following the Dual Anonymous guidelines

New capabilities in Cycle 8 2021

Continuum Linear Polarization Mosaic with the 12m array in Bands 3-7

ALMA Observing **Field Setup** roject

File Edit View Tool Search Help Perspective 1

Spectral Setup

up to 150 pointings allowed

select FULL

input the expected Polarization property

Project Structure

- Unsubmitted Proposal
- Project
 - Proposal
 - Planned Observing
 - ScienceGoal (Science Goal)
 - General
 - Field Setup
 - Spectral Setup

Editors

Spectral Spatial **Field Setup**

Spatial Image

NGC253

Source

Source Name NGC253 Resolve

Choose a Solar System Object? Name of object Unspecified

System ICRS Sexagesimal display? Parallax 0.00000 mas

Source Coordinates RA 00:47:33.1330 PM RA 0.00000 mas/yr

Source Radial Velocity

Target Type Individual Pointing(s) 1 Rectangular Field

Expected Source Properties

Peak Continuum Flux Density per Synthesized Beam 2.0 mJy

Continuum Linear Polarization 2.0 per cent

Continuum Circular Polarization 0.0 per cent

Rectangle

Coords Type Relative Absolute

Field Center Coordinates

Offset(Longitude) 0.00000 arcsec

Offset(Latitude) 0.00000 arcsec

p length 60.00000 arcsec

q length 60.00000 arcsec

Position Angle 0.00000 deg

Spacing 0.51093 fraction of antenna beamsize Reset to Nyquist

#Pointings 12m Array 27 Export

Receiver Band 6 [211.0-275.0] Reset to Standard Frequency

Sky Frequency 233.00000 GHz

Rest Frequency 233.201227 GHz

Low spectral resolution (TDM) High spectral resolution (FDM)

Line Freq (topo)	Transition	Bandwidth, Resolution (smoothed)
100 GHz	Single Continuum	1875.000 MHz(2509 km/s), 62.500 MHz(83.647 km/s)
100 GHz	Single Continuum	1875.000 MHz(2487 km/s), 62.500 MHz(82.907 km/s)

Frequency (Sky) 242.000 GHz

Antenna Diameter 12m

Beam size (HPBW) 24.062 arcsec

Beamsize

Digitized Sky (Version II infrared) at ESO

Resolution (in) 10.0 Query

Buttons: Add Source Load from File... Export to File... Clone Source Delete Source Delete All Sources

New capabilities in Cycle 8 2021

ACA stand-alone (7m array) in Band 9 and 10

Control & Performance

Spectral Setup

Editors: Spectral | Spatial

These parameters are used to control various aspects of the observations, including the required antenna configurations and integration times.

Control and Performance

Configuration Information

Antenna Beamsize ($1.13 * \lambda / D$) 12m 7.195 arcsec 7m 12.334 arcsec

Number of Antennas 12m 43 7m 10 TP 3

Longest baseline 0.049 km

Synthesized beamsize 1.578 arcsec

Shortest baseline 0.009 km

Maximum recoverable scale 8.316 arcsec

Desired Performance

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

Largest Angular Structure in source 5.00000 arcsec

Desired sensitivity per pointing 133.0 mJy equivalent to 99.667 mK

Science Goal time estimate (includes configuration and beam information) Time Estimate

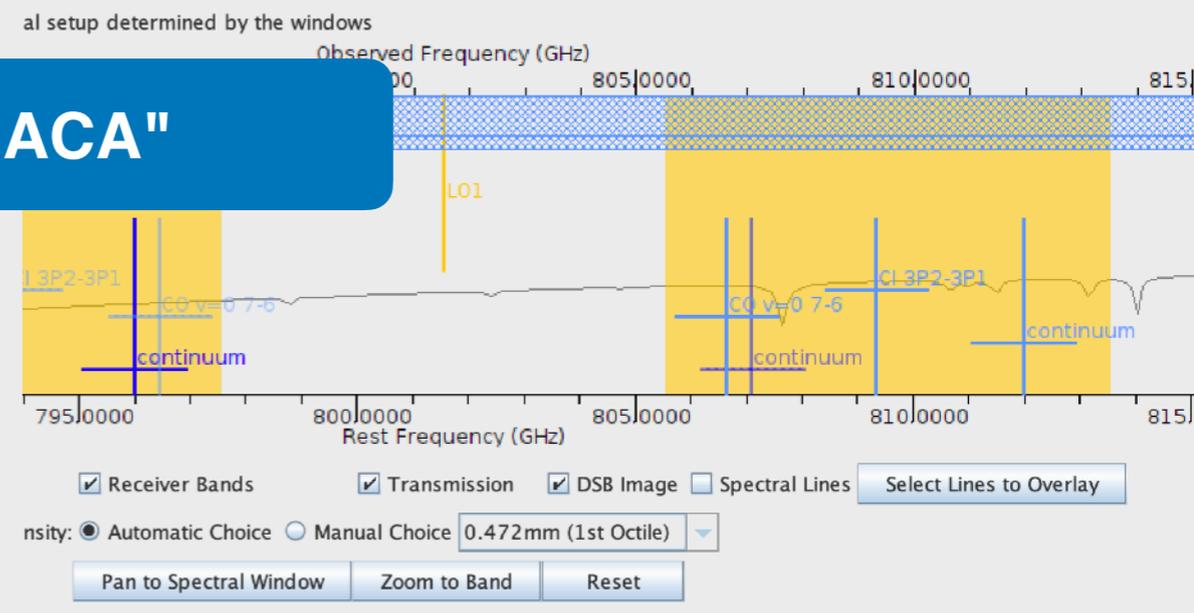
Simultaneous 12-m and ACA observations Yes No

Are the observations time-constrained? Yes No

Select "Standalone ACA"

Largest angular structure should be less than the maximum recoverable scale

ral windows, 4 per baseband as long as the total Fraction per baseband is no more than 1. figured i.e. each spectral window can have a different bandwidth and resolution. ebands in one sideband and the fourth one in the other.



Spectral Type Spectral Line Single Continuum Spectral Scan

Produce image sidebands (Bands 9 and 10 only)

Polarization products desired XX DUAL FULL

Spectral Setup Errors

Spectral Line

Fraction	Centre Freq (rest, hel)	
1(Full)	809.34197 GHz	80

Select "Produce image sidebands"

New capabilities in Cycle 8 2021

- Solar band 5
- Continuum/line linear polarization with ACA standalone in Bands 3-7
- Spectral scan observation with the 7m array
- Phased array mode...

Guides, manuals, and handbook are available in the ALMA science portal

The screenshot shows the ALMA science portal documentation page for Cycle 8 2021. The navigation bar includes links for About, Science, Proposing, Observing, Data, Processing, Tools, Documentation (highlighted), and Help. The main content is organized into sections: 'Cycle 8 2021 Documents', 'Call for Proposals', 'Phase 1 & 2', and 'Contents'. The 'Call for Proposals' section features a table of documents and a paragraph of text. The 'Phase 1 & 2' section also features a table of documents and a paragraph of text. The 'Contents' section is a sidebar with a list of five items.

Cycle 8 2021 Documents

Call for Proposals

Documentation supporting the current ALMA Call for Proposals – **Cycle 8 2021**. Documents from previous Cycles are provided [here](#).

Document	Description
ALMA Proposer's Guide	Contains all pertinent information regarding the ALMA Call for Proposals
ALMA Technical Handbook	A comprehensive description of the ALMA observatory and its components
ALMA Users' Policies	The long-term core policies for use of the ALMA and ALMA data by the science community
Observing With ALMA - A Primer	Introduction to interferometry and how to use ALMA
ALMA Proposal Template	LaTeX format. Recommended but not mandatory
ALMA Proposal Review Process	The latest version of the ALMA Principles of the ALMA Proposal Review Process

Phase 1 & 2

ALMA Phase 1 (observing proposal) and Phase 2 (telescope runfiles for accepted proposals) materials are submitted through the [ALMA Observing Tool \(OT\)](#). Below are documentation which will aid the created and submitted of Phase 1 and Phase 2 with the OT.

Document	Description
OT Quickstart	A Quick Start Guide for using the Observing Tool
OT User Manual	Describes how to use the Observing Tool for preparing ALMA proposals
OT Reference Manual	An in-depth description of the Observing Tool
Video Tutorials	Video how-to for the Observing Tool
Known OT issues	For those instances when OT problems are encountered
Phase 2 Quickstart Guide	A guide intended to walk the PI of an approved ALMA observing proposal through the process of reviewing and submitting Phase 2 Science Goals (SGs) using the ALMA Observing Tool
A User's Guide to ALMA Scheduling Blocks	(Cycle 4) Guide to understanding the structure and content of ALMA Scheduling Blocks (SBs) using the Observing Tool (OT)

Contents

1. [Call for Proposals](#)
2. [Phase 1 & 2](#)
3. [Guides to the ALMA Regional Centers](#)
4. [ALMA Science Data Tracking, Data Processing and Pipeline, Archive, QA2 and Large Program Data Products](#)
5. [ALMA Reports, Memos and Newsletters](#)