



ALMA Observing Tool (OT)

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What is the OT?

- the ALMA Observing Tool (OT) is the software used to submit an ALMA proposal
- information entered in the OT:
 - general information (PI, co-Is, proposal title,...)
 - technical parameters (target coordinates, spectral setup, angular resolution...)
 - Technical Justification



Where can I download the OT?



- [Science Portal](#)
- make sure you use the cycle 12 version of the OT!

The screenshot shows the ALMA Science Portal website. The header includes the ALMA logo and the text "Atacama Large Millimeter/submillimeter Array" and "In search of our Cosmic Origins". The navigation bar contains links for "About", "Science", "Proposing", "Observing", "Data", "Processing", "Tools", "Documentation", and "Help". The "Tools" link is circled in red. A dropdown menu is open under "Tools", with "Observing Tool" also circled in red. Other items in the dropdown include "Sensitivity Calculator", "CASA Simulator", "ALMA Primer Instructional Videos", "Observation Support Tool", "Splatalogue", "NRAO Science Ready Data Products", "Toyama Microwave Atlas", "Community-Developed", and "EU ARC network".

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

ALMA

About Science Proposing Observing Data Processing **Tools** Documentation Help

Science Highlight
Successful Observation of Magnetic Fields in Planet-forming Regions

Observatory News

ALMA Cycle 12 Call for Proposals is Now OPEN!
Mar 20, 2025

Announcement for early proposal planning for Cycle 12
Dec 20, 2024

Release of Science Verification Data for Orion KL in Band 1
Dec 05, 2024

Announcement of Intent to Release a New Installment of Science Verification Data in Band 1: Orion

More...

Observing Tool

Sensitivity Calculator

CASA Simulator

ALMA Primer Instructional Videos

Observation Support Tool

Splatalogue

NRAO Science Ready Data Products

Toyama Microwave Atlas

Community-Developed

EU ARC network

100 au

https://almascience.nao.ac.jp/tools/observing-tool

Installation

- the OT is available for Windows, Mac and Linux
- please follow the instructions on the download webpage
- if you have problems, feel free to contact the helpdesk



The screenshot shows the ALMA Observing Tool website. The header includes the ALMA logo and the text "Atacama Large Millimeter/submillimeter Array" and "In search of our Cosmic Origins". The navigation menu includes "About", "Science", "Proposing", "Observing", "Data", "Processing", "Tools", "Documentation", and "Help". The "Observing Tool" page content includes a description of the tool and a section titled "Download & Installation" which is circled in red. This section contains a button labeled "Tarball" and a note about the Cycle 11 version of the OT.

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

About Science Proposing Observing Data Processing Tools Documentation Help

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 12 release of the OT is configured for the present capabilities of ALMA as described in the Proposer's Guide. 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. The Cycle 12 can only be installed manually with a tarball distribution, as an installer is not available.

The **tarball** version and the instructions for its manual installation can be found clicking on the button:

[Tarball](#)

NOTE: For those who require the **Cycle 11 version of the OT**, it can be found [here](#).

OT documentation



Navigation menu: About, Science, Proposing, Observing, Data, Processing, Tools, **Documentation**, Help

Cycle 12 Documents

Call for Proposals

Documentation supporting the current ALMA Call for Proposals – **Cycle 12**. Documents from previous Cycles are provided in the [Previous Cycles](#) section.

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	Zip files containing the proposal templates in LaTeX format. Recommended but not mandatory
ALMA Proposal Review Process	A detailed description of the ALMA Proposal Review Process
Principles of the ALMA Proposal Review Process	The latest version of the 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 proposals.

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 Quick Start Guide for approved ALMA observing proposals - the process of Phase 2
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)

Overview



ALMA Observing Tool (Cycle 12 (Phase1)) - Project

File Edit View Tool Search Help Perspective 1

Editors

Proposal Program Spectral Spatial **Field Setup**

Unsubmitted Proposal

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

Input source details and mapping info or use the Visual Editor on the spatial tab.
You must choose between checking 1 Rectangular Field on all sources or none.
Check 1 Rectangular Field on the first source before adding others to put rectangular mosaics around multiple sources.

beta pic

Source

Source Name: beta pic Resolve

Choose a Solar System Object? Name of object: Unspecified

System: ICRS Sexagesimal display? Parallax: 50.93070 mas

Source Coordinates: RA: 05:47:17.0876 PM RA: 5.16000 mas/yr
Dec: -51:03:59.441 PM Dec: 84.04100 mas/yr

Resolved by simbad.u-strasbg.fr (SIMBAD)

Source Radial Velocity: 16.840 km/s hel z: 0.000056174 Doppler Type: RELATIVISTIC

Target Type: Individual Pointing(s) 1 Rectangular Field

Expected Source Properties

Peak Continuum Flux Density per Synthesized Beam: 0.023 Jy

Continuum Linear Polarization: 0.0 per cent

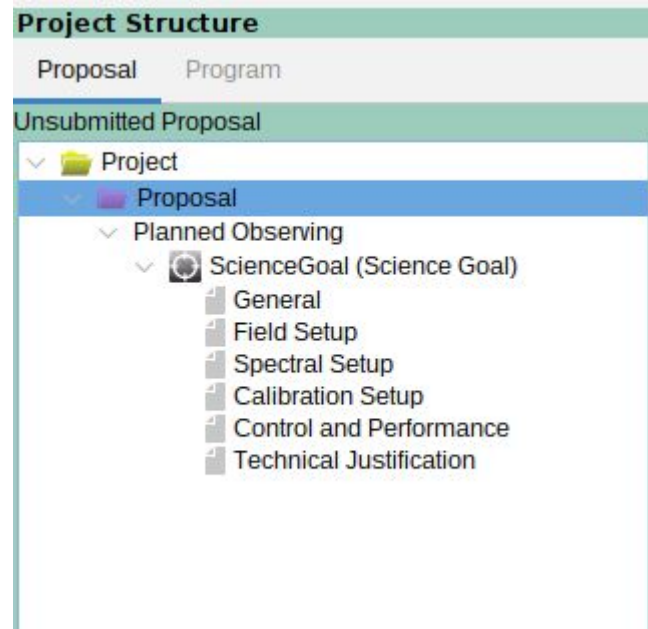
Feedback

Validation Validation History Log

Description	Suggestion
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Proposal information

- here you enter general information about your proposal such as
 - Title
 - Abstract
 - Proposal type
 - Science category
 - PI / co-Is
 - Reviewer information
 - Justification for duplicated observations

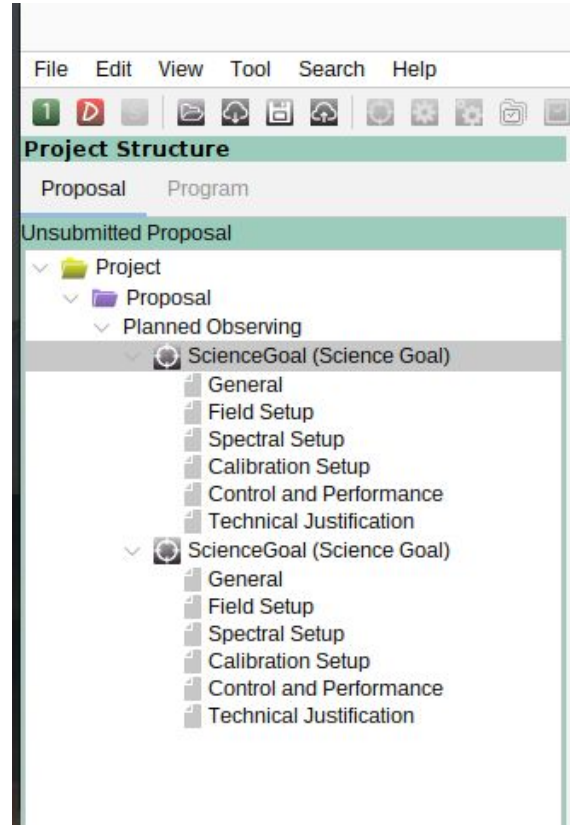


Tip:

you can open your previous proposal as template (doesn't matter whether it was accepted or not):
"File -> Open Project as New Proposal"

Science Goals (SGs)

- your proposal consists of one or several Science Goals
- a Science Goal can have several targets, but only one spectral setup and only one set of “Control and Performance” parameters
 - Example: observe 10 sources with the same spectral setup, sensitivity and resolution: one SG
 - Example: observe a source in Band 3 and Band 6: two SGs

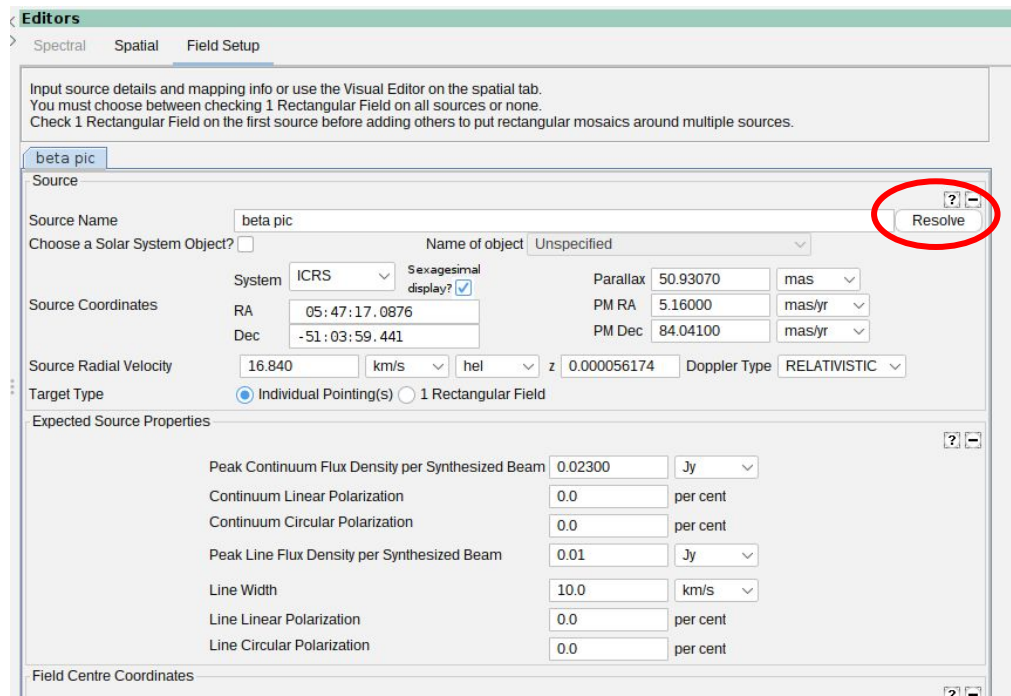
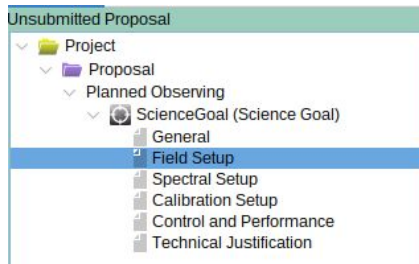


Tip:
you can copy / paste
whole Science Goals
and certain nodes
within a Science Goal!

Field Setup

- define properties of your sources (coordinates, velocity,...)
- there are two types of sources:
 - Individual Pointing(s)
 - Rectangular Field
- Expected Source Properties:
 - Peak continuum flux
 - Peak line flux and line width (for line observations)
 - Polarisation properties (only for polarisation observation)

Tip:
Use "Resolve" to automatically fill target coordinates etc.

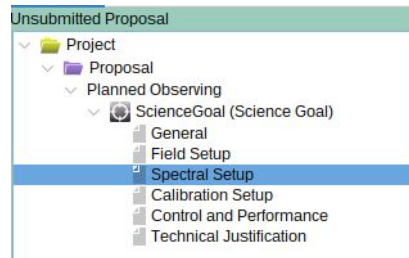


The image shows the 'Editors' window with the 'Field Setup' tab selected. The source name is 'beta pic'. The 'Resolve' button is circled in red. The 'Expected Source Properties' section is visible below.

Field	Value	Unit
Peak Continuum Flux Density per Synthesized Beam	0.02300	Jy
Continuum Linear Polarization	0.0	per cent
Continuum Circular Polarization	0.0	per cent
Peak Line Flux Density per Synthesized Beam	0.01	Jy
Line Width	10.0	km/s
Line Linear Polarization	0.0	per cent
Line Circular Polarization	0.0	per cent

Spectral Setup

- define the frequencies and spectral resolution of your observations
- Spectral Type:
 - *Spectral Line*
 - *Single Continuum* (shortcut to define 4 continuum spectral windows)
 - *Spectral Scan* (to cover a wide, uninterrupted frequency range)



Tip:

90° Walsh switching
available in Bands 9 and 10,
see OT Quickstart Guide for
details

Tip:

4-bit mode can improve the
efficiency of your
observations, see
Proposer's Guide for details

Spectral Line

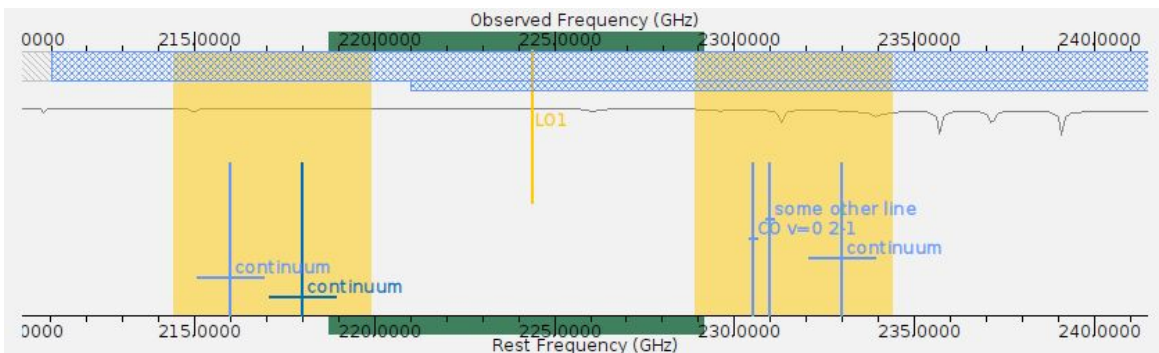
- 4 basebands of ~2 GHz each
- each baseband can contain up to 4 spectral windows (i.e. up to 16 spectral windows in total)
- the higher the spectral resolution, the lower the bandwidth of the spectral window
- basebands not needed for spectral line observations should be used for continuum to maximise total bandwidth (helps calibration)!

Bandwidth, Resolution (smoothed)		
58.594 MHz (76 km/s),	35.278 kHz (0.046 km/s)	(2-bit)
58.594 MHz (76 km/s),	141.113 kHz (0.184 km/s)	(4-bit)
117.188 MHz (152 km/s),	70.557 kHz (0.092 km/s)	(2-bit)
117.188 MHz (152 km/s),	282.227 kHz (0.367 km/s)	(4-bit)
234.375 MHz (305 km/s),	141.113 kHz (0.184 km/s)	(2-bit)
234.375 MHz (305 km/s),	564.453 kHz (0.734 km/s)	(4-bit)
468.750 MHz (610 km/s),	282.227 kHz (0.367 km/s)	(2-bit)
468.750 MHz (610 km/s),	1.129 MHz (1.468 km/s)	(4-bit)
937.500 MHz (1219 km/s),	564.453 kHz (0.734 km/s)	(2-bit)
937.500 MHz (1219 km/s),	2.258 MHz (2.936 km/s)	(4-bit)
1875.000 MHz (2438 km/s),	1.129 MHz (1.468 km/s)	(2-bit)
1875.000 MHz (2438 km/s),	36.125 MHz (46.978 km/s)	(2-bit)



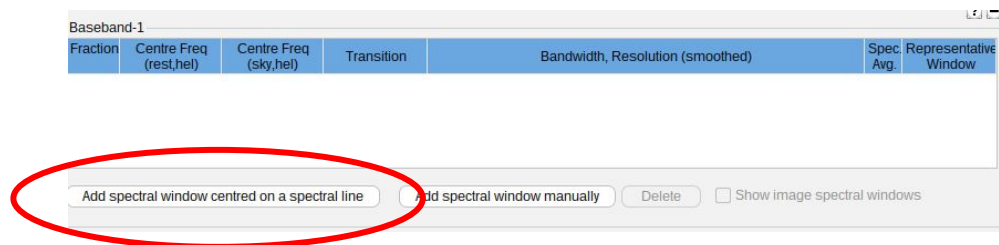
The higher the spectral resolution, the lower the bandwidth of the spectral window

Example of a setup using continuum spectral windows to maximise the total bandwidth



Spectral Line

- you can use the line frequency catalog to center spectral windows on emission lines



Create spectral windows centred on spectral lines

Transition Filter
CO⁺2-1*
e.g. CO⁺2-1* or *oxide*
 Include description

Frequency Filters
ALMA Band: [Slider from 1 to 10, centered at 6-7]
Sky Frequency (GHz): [Slider from 211 to 373]

Receiver/Back End Configuration
 All lines
 Potentially selectable lines
 Lines in defined spws
 Filtering unobservable lines

Upper-state Energy (K)
Min: 0 Max: 0

Molecule Filter / Environment
Show: all atoms and molecules

Can't find the transition you're looking for in the offline pool? Find more in the online Splatalogue.

Transitions matching your filter settings:
(double-click column header for primary sort, single-click subsequent columns for secondary sorting. Single clicks will reverse sort order of already selected columns.)

Transition	Description	Rest Frequency	Sky Frequency	Upper-state Energy	Lovas Intensity	Sij μ^2	Catalog
CO v=2 2-1	Carbon Monoxide	226.340357 GHz	226.335450 GHz	6145.538 K		0.024 D ²	Offline
CO v=1 2-1	Carbon Monoxide	228.439110 GHz	228.434157 GHz	3100.118 K	0.62	0.024 D ²	Offline
CO v=0 2-1	Carbon Monoxide	230.539000 GHz	230.533002 GHz	16.596 K		70 0.024 D ²	Offline
CO+ J=2-1, F=3/2-1/2	Carbon Monoxide Ion	235.789605 GHz	235.784493 GHz			0.1 0.668 D ²	Offline
CO+ J=2-1, F=5/2-3/2	Carbon Monoxide Ion	236.062574 GHz	236.057456 GHz			0.1 1.2 D ²	Offline

Add to spectral window list

Spectral windows in this baseband (maximum of four)

Transition	Description	Rest Frequency	Sky Frequency
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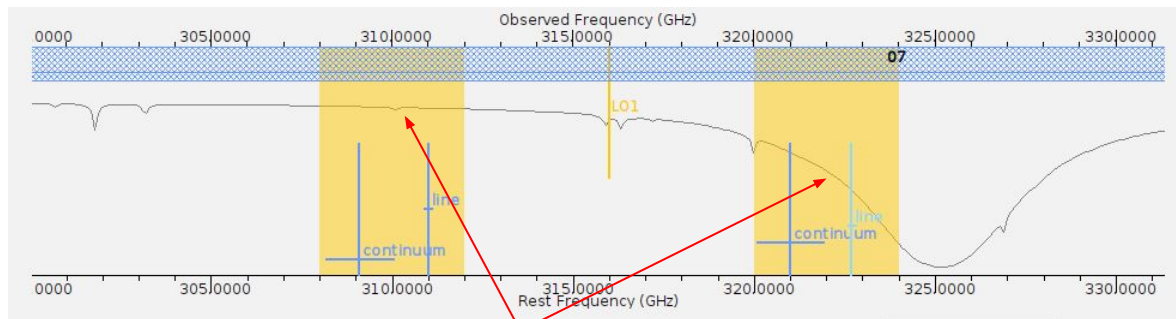
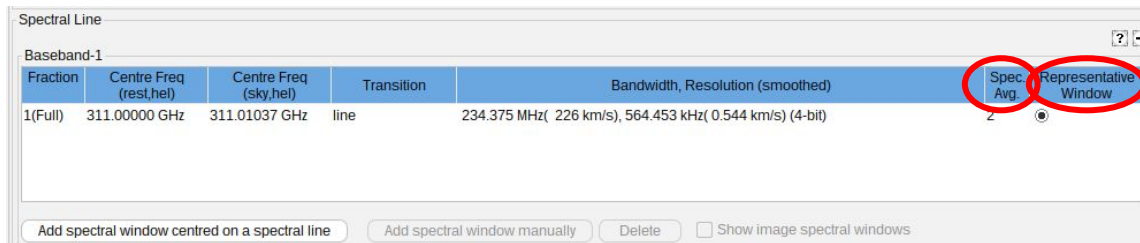
Remove spectral window(s)

Cancel Ok

Representative window / Spectral Averaging



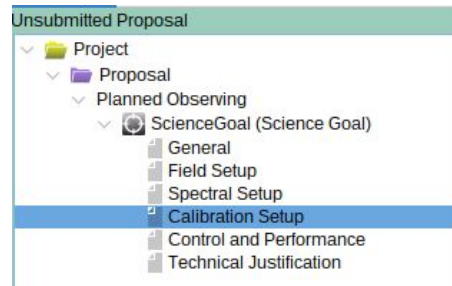
- pay attention to the representative window / frequency, because it affects the time estimate! (e.g. if the atmospheric transmission is very different for different windows)
- usually choose the window most important for your science
- Spectral Averaging can be used to reduce the data rate if necessary (see OT Quickstart Guide for details)



Very different atmospheric transmission. Choice of representative window will affect time estimate!

Calibration Setup

- normally, just use the defaults!



Editors

Spectral Spatial **Calibration Setup**

Select calibration strategy.

Goal Calibrators ?

By default, calibrators will be selected automatically at runtime and a single observation will be used to calibrate the bandpass and flux scale.

System-defined calibration (recommended)

System-defined calibration (force separate amplitude calibration using solar-system object)

User-defined calibration

Astrometry ?

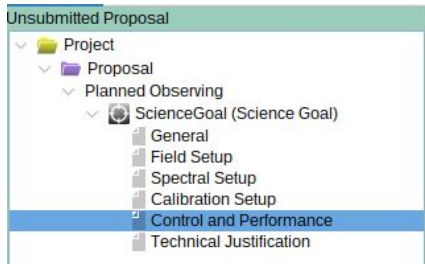
If you wish positional accuracy that is better than that provided by default (see the Proposer's Guide for more information) then select enhanced accuracy.

Standard positional accuracy (default)

Enhanced positional accuracy

DGC Override (observatory-use only) ? +

Control and Performance



- requested angular resolution
- largest angular structure you want to recover
- requested sensitivity
- (time-constraints)

Editors

Spectral Spatial **Control and Performance**

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

Configuration Information

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

Number of Antennas 12m 7m TP

ACA 7m configuration Most compact 12m configuration Most extended 12m configuration

Longest baseline

Synthesized beamsize

Shortest baseline

Maximum recoverable scale

Desired Performance

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

Largest Angular Structure in source

Desired sensitivity per pointing equivalent to

Bandwidth used for Sensitivity Frequency Width

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

Angular resolution



- *Single*: a single value (although in practice $\pm 20\%$ is considered)
- *Range*: if science can be done with several configurations (might increase chances of observation), a range of angular resolutions can be defined
- *Any*: science can be done with any configuration (in practice, long baselines will not be used)
- *Standalone ACA*: use only ACA, no 12m array

Desired Performance

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

0.3 arcsec to 0.6 arcsec

Largest Angular Structure in source 10.0 arcsec

Desired sensitivity per pointing 0.023 Jy equivalent to @ 0.600 "

and @ 0.300 "

Bandwidth used for Sensitivity AggregateBandWidth Frequency Width 5.667248 GHz

Largest angular structure



- interferometers filter out large scale emission (maximum recoverable scale is approximately $0.6\lambda/L_{\min}$, where L_{\min} is the shortest baseline)
- you have to define the largest angular scale that you need to recover for your science
- the OT will automatically add compact configurations if necessary
- see <https://www.youtube.com/watch?v=9iDNq82t7gs>

Desired Performance

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

0.3 arcsec to 0.6 arcsec

Largest Angular Structure in source 10.0 arcsec

Desired sensitivity per pointing 0.023 Jy equivalent to @ 0.600 "

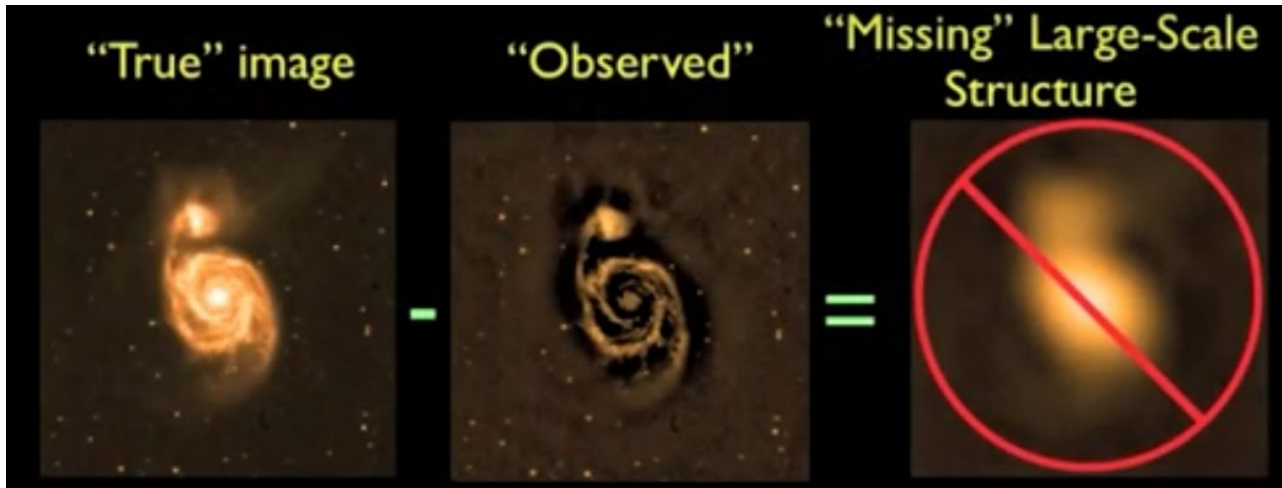
and @ 0.300 "

Bandwidth used for Sensitivity AggregateBandWidth Frequency Width 5.667248 GHz

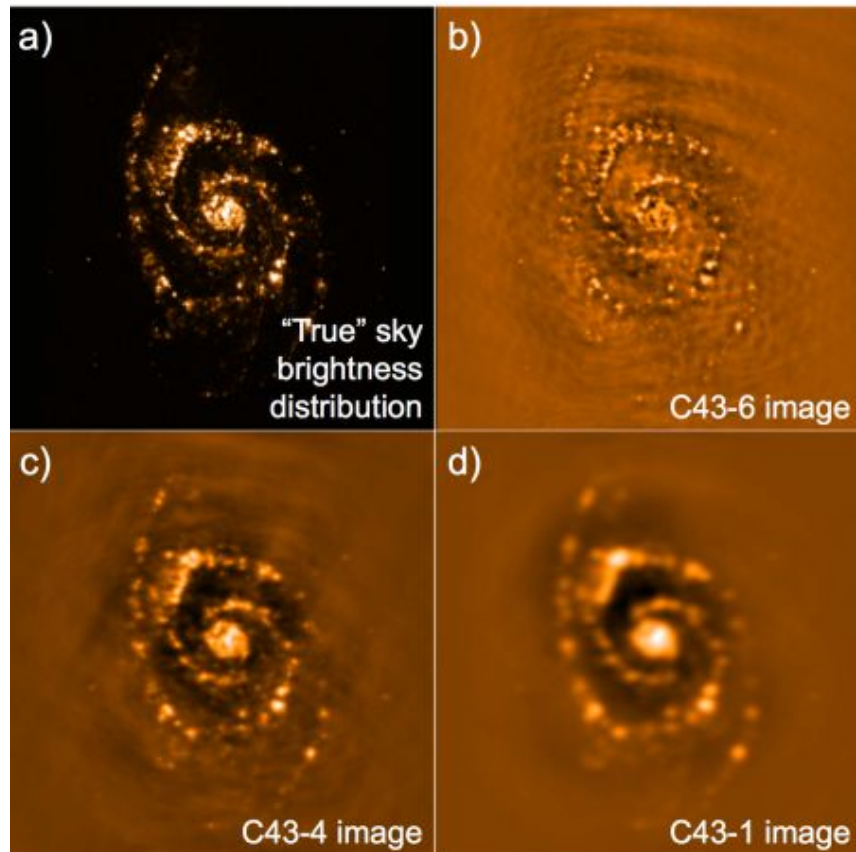
Largest angular structure



- interferometers filter out large scale emission (maximum recoverable scale is approximately $0.6\lambda/L_{\min}$, where L_{\min} is the shortest baseline)
- you have to define the largest angular scale that you need to recover for your science
- the OT will automatically add compact configurations if necessary
- see <https://www.youtube.com/watch?v=9iDNq82t7gs>



Largest angular structure



Simulated observations illustrating spatial filtering (Fig. 3.6 in Technical Handbook cycle 11)

Sensitivity



- enter the sensitivity (1σ) you need for your science
- pay attention to the “Bandwidth used for Sensitivity”

Desired Performance

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

0.3 arcsec to 0.6 arcsec

Largest Angular Structure in source 10.0 arcsec

Desired sensitivity per pointing 0.023 Jy equivalent to @ 0.600 "

and @ 0.300 "

Bandwidth used for Sensitivity AggregateBandWidth Frequency Width 5.667248 GHz

RepresentativeWindowBandWidth
RepWindowEffectiveChannelWidth
AggregateBandWidth
LargestWindowBandWidth
FinestEffectiveChannelWidth
User

Possible choices for
the “Bandwidth
used for Sensitivity”

Time Estimate

- “Planning and Time Estimate” gives you an overview of the required observing time and antenna configurations

In this example, two 12m configurations are used to achieve the requested angular resolution and recover emission on the largest angular structure

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	10.00 mJy
Bandwidth used for sensitivity	3.516 GHz
Representative frequency (sky, first source)	144.992 GHz

Estimated Total time for Science Goal **1.14 h**

Cluster 1

Source Name	RA	Dec	Velocity
beta pic	05:47:17.0876	-51:03:59.441	16.840 km/s

Possible Configuration Combinations

12-m (1)	12-m (2)	7-m	TP
C-4	C-1	Yes	No

Input Parameters

Precipitable water vapour (all sources)	2.748mm (6th Octile)
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Time required for 12m (1) [C-4]

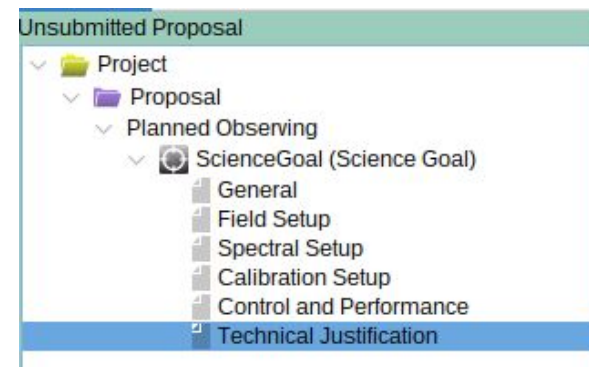
Time on source per pointing (first source)	5.04 min [10.97 ms]
Total number of pointings (all sources)	1
Number of tunings	1



Technical Justification (TJ)



- **quantitatively** justify your technical setup (usually three text boxes):
 - Sensitivity
 - Imaging (angular resolution, largest angular scale)
 - Correlator Setup (=Spectral Setup)
- you need to convince the reviewers that your setup
 - can achieve your scientific goals
 - uses ALMA time efficiently
- the Technical Justification is important!
 - If you have a weak science case, a good TJ will not save you
 - ...but if you write a bad TJ, your proposal might be rejected even though you have a great science case (もったいない！)
- look at examples from your colleagues!



Technical Justification (TJ)



- pay particular attention to the blue text and be sure to include the corresponding justifications in your TJ (or change your setup)

Editors

Spectral Spatial **Technical Justification**

Enter a Technical Justification for this Science Goal, paying special attention to the parameters reproduced below.

Sensitivity

Requested RMS over is For a peak flux density of , the S/N is

Achieved RMS over the total bandwidth is For a continuum flux density of , the achieved S/N is

For a peak line flux of , the achieved S/N over 1/3 of the source line width (/ 3 =) is

The proposed observations exceed the nominal limits for the Line Imaging Dynamic Range for at least one source

Line width / bandwidth used for sensitivity (/) =

Note that the bandwidth used for sensitivity is larger than 1/3 of the linewidth.
The S/N achieved for a resolution element that allows the line to be resolved will be lower than that reported.

Spectral Dynamic Range (continuum flux / line rms):

Note that the dynamic range is higher than that offered for the chosen band in this cycle. Please double-check your input and/or address the issue below.
The proposed observations exceed the nominal limits for the Spectral Dynamic Range for at least one source
Justify your requested RMS and resulting S/N for the spectral line and/or continuum observations.

For line observations also justify the bandwidth used for the sensitivity calculation.

Imaging

Requested angular resolution:

Technical Justification: Sensitivity



Justify your requested RMS and resulting S/N for the spectral line and/or continuum observations.

For line observations also justify the bandwidth used for the sensitivity calculation.

- What is the justification for the requested sensitivity?
 - What is the expected source brightness?
 - What S/N ratio do you need, and why?
 - Example: “To measure the disk size with an error of ~20%, our simulated observations indicate that we need a peak S/N of at least 10 in a single beam. Considering the total flux of the source measured by Camelot (1999), we expect a flux of 1 mJy/beam. Thus, we request a sensitivity of 0.1 mJy/beam...”
- For line observations, justify also the bandwidth used for the sensitivity calculation
 - Example: “As described in the Scientific Justification, to distinguish between our two hypotheses, we need to measure the CO 2-1 spectrum with a peak S/N of at least 5. Our models predict a CO 2-1 peak flux larger than 20 mJy. Thus, we request a sensitivity of 4 mJy over the bandwidth of a single channel.”
- If you do both line and continuum observations, be sure to discuss both

Technical Justification: Imaging



Imaging

Requested angular resolution

Requested Largest Angular Scale

Justify the chosen angular resolution and largest angular scale for the source(s) in this Science Goal

- Why do you need to achieve the requested angular resolution for your science?
 - What do you want to resolve?
 - Example: "To accurately characterise the ring morphology, we need to resolve it with at least 5 beams. Given the ring width of 0.5" measured by Lancelot (1988), we thus request an angular resolution of 0.1"..."
- What is the maximum angular scale you need to recover for your science, and why?
 - Example: "For our science, we need to recover the large scale emission of our source. Therefore, we set the largest angular scale equal to the galaxy diameter..."

Technical Justification: Correlator configuration

Justify your correlator set-up with particular reference to the number of spectral resolution elements per line width.
You may want to consider spectral averaging to lower the data rate



- What is the idea behind your spectral setup?
 - Example: "We place one spectral window onto the CO 2-1 line, while the remaining three spectral windows will observe the continuum to aid calibration. The continuum spectral windows will observe in FDM mode to allow serendipitous line detection..."
- What spectral resolution do you need, and why?
 - Example: "We want to resolve the line shape with at least 10 resolution elements to characterise the kinematics of the source in detail. Given the known line width of 10 km/s (Robin et al. 2000), we thus need a spectral resolution of 1 km/s."
- Why did you choose Band X?
 - Example: "Observations in Band X give best tradeoff between the achieved S/N and the required observing time..."

Validation

- Before submission, proposal needs to be validated
- double-click on any errors to be taken to the problem



The screenshot shows the ALMA proposal software interface. The 'Editors' tab is active, and the 'ScienceGoal (Science Goal)' section is selected in the 'Project Structure' tree. A red circle highlights the 'Validate' button in the top toolbar. A red arrow points to the 'Feedback' section at the bottom, which displays a list of 16 errors and 1 warning. The 'Spectral Setup Errors' section shows a table with the following data:

Fraction	Centre Freq (rest, hel)	Centre Freq (sky, hel)	Transition	Bandwidth, Resolution (smoothed)	Spec. Avg.	Representative Window
1(Full)	145.00000 GHz	144.99186 GHz	...Enter Name H...	1875.000 MHz(3877 km/s), 1.129 MHz(2.334 km/s) (2-bit)	2	●

The 'Feedback' section contains the following errors and suggestions:

Description	Suggestion
✘ Abstract appears to be empty	Select the proposal node in the Proposal tab and edit your abstract
✘ No scientific category defined	Select Proposal node and set a scientific category
✘ No proposal type defined	Select Proposal node and set a proposal type
✘ No document found - you must add a Science Case to your proposal	Select the proposal node in the Proposal tab and add your document
✘ Must select a minimum of 1 science keywords	Select the Proposal node and then add some science keywords (minimum 1 keywords)

Tip: help function

- Use the help function!



Editors

Spectral Spatial **Control and Performance**

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

Configuration Information

Antenna Beamsize ($1.13 \cdot \lambda / D$) 12m 7m

Number of Antennas 12m 7m TP

	ACA 7m configuration	Most compact 12m configuration	Most extended 12m configuration
Longest baseline	<input type="text" value="0.049 km"/>	<input type="text" value="0.161 km"/>	<input type="text" value="8.548 km"/>
Synthesized beamsize	<input type="text" value="5.369 arcsec"/>	<input type="text" value="1.401 arcsec"/>	<input type="text" value="0.072 arcsec"/>
Shortest baseline	<input type="text" value="0.009 km"/>	<input type="text" value="0.015 km"/>	<input type="text" value="0.113 km"/>
Maximum recoverable scale	<input type="text" value="29.009 arcsec"/>	<input type="text" value="12.798 arcsec"/>	<input type="text" value="0.630 arcsec"/>

Desired Performance

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

Largest Angular Structure in source

Desired sensitivity per pointing equivalent to

Bandwidth used for Sensitivity Frequency Width

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

Note: Two red circles highlight the help function icons (question marks) in the top right corner of the 'Configuration Information' and 'Desired Performance' sections.

Tip: help function

- Use the help function!



The screenshot shows the 'ALMA Observing Tool Reference Manual' help window. The left sidebar contains a table of contents with 'Desired Performance' highlighted. The main content area is titled 'Desired Performance' and contains the following text and list:

Desired Performance

Based on the configuration information, the user should then enter desired performance parameters in the bottom panel. These will determine which configurations are required (including ACA) and how much time is required. The following fields are included:

Desired Angular Resolution: A number of options are available to request the desired angular resolution or synthesized beam size i.e. the finest detail that will be visible in the map of the source. These are:

- **Single:** A user may request a single value of angular resolution, although in practice a value within approximately ± 20 per cent of this will be delivered.
- **Range:** If the science could be done using one of several nominal configurations, this can be indicated by entering a range. In principle this increases the chances of a project being observed as it gives the observatory more flexibility when scheduling. Note that if the possible configurations include a mixture of long-baseline and smaller configurations, the long-baseline possibilities will be disregarded as the observing overheads are much higher.
- **Any:** By selecting this the user indicates that the SBs could be observed on any of the available configurations. As with a specific range of values, long-baseline configurations will not be considered by the OT or by the Scheduler.
- **Stand-alone ACA:** Instead of entering an angular resolution, the Stand-alone ACA is selected using this option. No 12-m configuration will be selected, but the TP Array might be added depending on the requested LAS. This is the only option if the proposal is for the ACA Supplemental Call.

Any value that is entered must lie in the range provided by the available configurations i.e. given in the Configuration Information panel. Unless the Stand-alone ACA was requested, the OT will select one or more 12-m

Are the observations time-constrained? Yes No

The background software interface shows a 'TP' field set to '3', a 'Most extended 12m configuration' section with input fields for '16.197 km', '0.025 arcsec', '0.256 km', and '0.228 arcsec', and a 'Frequency Width' field set to '1.562500 MHz'.