

An Introduction to the ALMA Observing Tool

How to turn that great idea into ALMA data..



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Atacama Large Millimeter/submillimeter Array
Expanded Very Large Array
Robert C. Byrd Green Bank Telescope
Very Long Baseline Array



Cycle 3 Capabilities

- At least **36 x 12-m** antennas, plus **10 x 7-m** antennas (for short baselines) and **2 x 12-m** antennas (for zero-spacing)
- Receiver bands 3, 4, 6, 7, 8, 9, & 10 (wavelengths of about 3.1 to 0.35 mm)
- Baselines up to **2 km** for **Bands 8, 9 and 10**, up to **5 km** for **Band 7**, and up to **10 km** for **Bands 3, 4, & 6**
- Both single field interferometry and **mosaics** of up to **150 pointings**
- Spectral-line observations with all arrays and continuum observations with the 12-m Array and the 7-m Array. Single dish use will be limited to spectral line observations in Bands 3 to 8.
- Polarization (on-axis, continuum in Band 3, 6 and 7, no ACA, no mosaics, no spectral line, no circular polarization)
- Mixed correlator modes and multiple spectral windows (both high and low frequency resolution in the same observation)
- The **maximum** observing **time** per proposal, as estimated by the OT, is **100 hours**.

Once you have done this...

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Observing Tool

The ALMA Observing Tool (OT) is a Java application used for the preparation and submission of ALMA Phase I (observing proposal) and Phase II (telescope runfiles for accepted proposals) materials. It is also used for preparing and submitting Director's Discretionary Time (DDT) proposals. The current Cycle 1 release of the OT is configured for the Early Science Capabilities of ALMA as described in the [Cycle 1 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 you have Java 6 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 Sun/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. For Linux users, we also provide a download complete with a recommended version of the Java run time environment. Please use this if you have any problems running the OT tarball install with your default Java.

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.
- 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.



Expanded Very Large Array
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The upper part of the proposal cover page is where you define the proposal: Title, Abstract, Category, Keywords, note related/previous proposals ...

The screenshot shows a web form for submitting a proposal. The form is titled "(Cycle3-RC2) - Really catchy title here" and is viewed in "Perspective 1". The form is divided into several sections:

- Proposal Title:** A text input field containing "Really catchy title here".
- Proposal Cycle:** A dropdown menu set to "C3UT.1".
- Abstract:** A large text area containing "Not too abstract, please". A "Launch Editor" button is located below the text area.
- Proposal Type:** Radio buttons for "Standard" (selected) and "Target Of Opportunity".
- Scientific Category:** Radio buttons for "Cosmology and the High Redshift Universe" (selected), "Galaxies and Galactic Nuclei", "ISM, star formation and astrochemistry", "Circumstellar disks, exoplanets and the solar system", and "Stellar Evolution and the Sun".
- Keywords:** A list box containing "Lyman Alpha Emitters/Blobs (LAE/LAB)", "Lyman Break Galaxies (LBG)", "Starburst galaxies", "Sub-mm Galaxies (SMG)", and "High-z Active Galactic Nuclei (AGN)".
- Student project:** A checkbox that is unchecked.
- Continuation:** A checkbox that is unchecked.
- Related Proposals:** An empty text input field.
- Previous Proposals:** An empty text input field.
- Investigators:** A text input field.

Annotations with blue arrows point from the text box to the following fields:

- Proposal Title
- Abstract
- Proposal Type
- Scientific Category
- Keywords

Further down, select PI/Co-I's from a search of registered ALMA users and attach the Science Case from a .pdf on disk



Unsubmitted Proposals

- Really catchy title here
 - Proposal
 - Planned Observing

Cosmology and the High Redshift Universe Galaxies and Galactic Nuclei ISM, star formation and astrochemistry

Circumstellar disks, exoplanets and the solar system Stellar Evolution and the Sun

Keywords (max. 2 keywords)

- Lyman Alpha Emitters/Blobs (LAE/LAB)
- Lyman Break Galaxies (LBG)
- Starburst galaxies
- Sub-mm Galaxies (SMG)
- High-z Active Galactic Nuclei (AGN)

Student project Continuation

Related Proposals

Previous Proposals

Investigators

Type	Full name	Email	Affiliation
PI	Not set	Not set	Not set

Science Case will be a PDF with a max of 4 pages, including figures.

Investigator search constraints

ALMA ID is hliszt

Find Investigators

Full name	Email	Affiliation	ALMA ID
Harvey Liszt	hlistz@nrao.edu	North American ALMA ...	hlistz

Select PI Cancel

Select PI... Add Col... Remove Col Add from Proposal...

Science Case (Mandatory, PDF, 4 pages max.) Attach... Detach View...

AgI Project - Observing Tool for ALMA, version Cycle2Test2

File Edit View Tool Search Help Perspective 1

Project Structure

Proposal Program

Unsubmitted Proposal

- Project
 - Proposal

Editors

Spectral Spatial Project

Principal Investigator

Main Project Information

Project

Assigned Priority



Project Code

Validation History Log



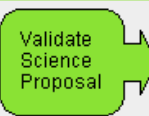

Description	Suggestion
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Overview



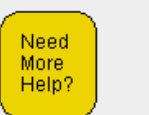
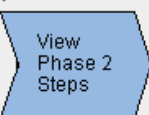
Contextual Help

- 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

 →  →  → 

Click on the overview steps to view the contextual help

You can right-click and add blank Science Goals

- A clean slate. From here, you can:
- Start a new proposal
 - Add blank Science Goals (SG)
 - Load templates with example SG

The screenshot shows the 'Agt Project - Observing Tool for ALMA, version Cycle2Test2' application window. The 'File' menu is open, showing options like 'New Proposal', 'New DDT Proposal', 'Open Project', 'Save', 'Show ALMA Template Library', 'Validate', and 'Submit Project'. Two callout boxes provide instructions: one pointing to 'Show ALMA Template Library' and another pointing to 'Validate'. The main workspace contains a 'Main Project Information' form with fields for 'Project', 'Assigned Priority', and 'Project Code'. Below this is a 'Feedback' section with 'Validation', 'Validation History', and 'Log' tabs. At the bottom, there is an 'Overview' section with 'Contextual Help' and a 'Phase I: Science Proposal' flowchart.

Click here to load the standard templates that are distributed with the OT

Or click here to load another project (perhaps on old one of yours) 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 **1** 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

Template library. Turn the keys on the JTree below & read the descriptions - Observing Tool for ALMA, version Cycle2Test2

File Edit View Tool Search Help

Perspective 1

Project Structure

Proposal Program

Unsubmitted Proposal

- Project
 - Proposal

Editors

Spectral Spatial ScienceGoal (B6 12CO (2-1): NGC3256 mosaic)

General (Optional)

Science Goal Name B6 12CO (2-1): NGC3256 mosaic

This is a project to observe the nearby starburst galaxy NGC3256 in the band 6 in the emission line of 12CO (2-1). As the source is extended, a mosaic will be used to cover the 30x30 arcsec area of interest.

Description

Launch Editor

NGC3256

Source

Subject Unspecified

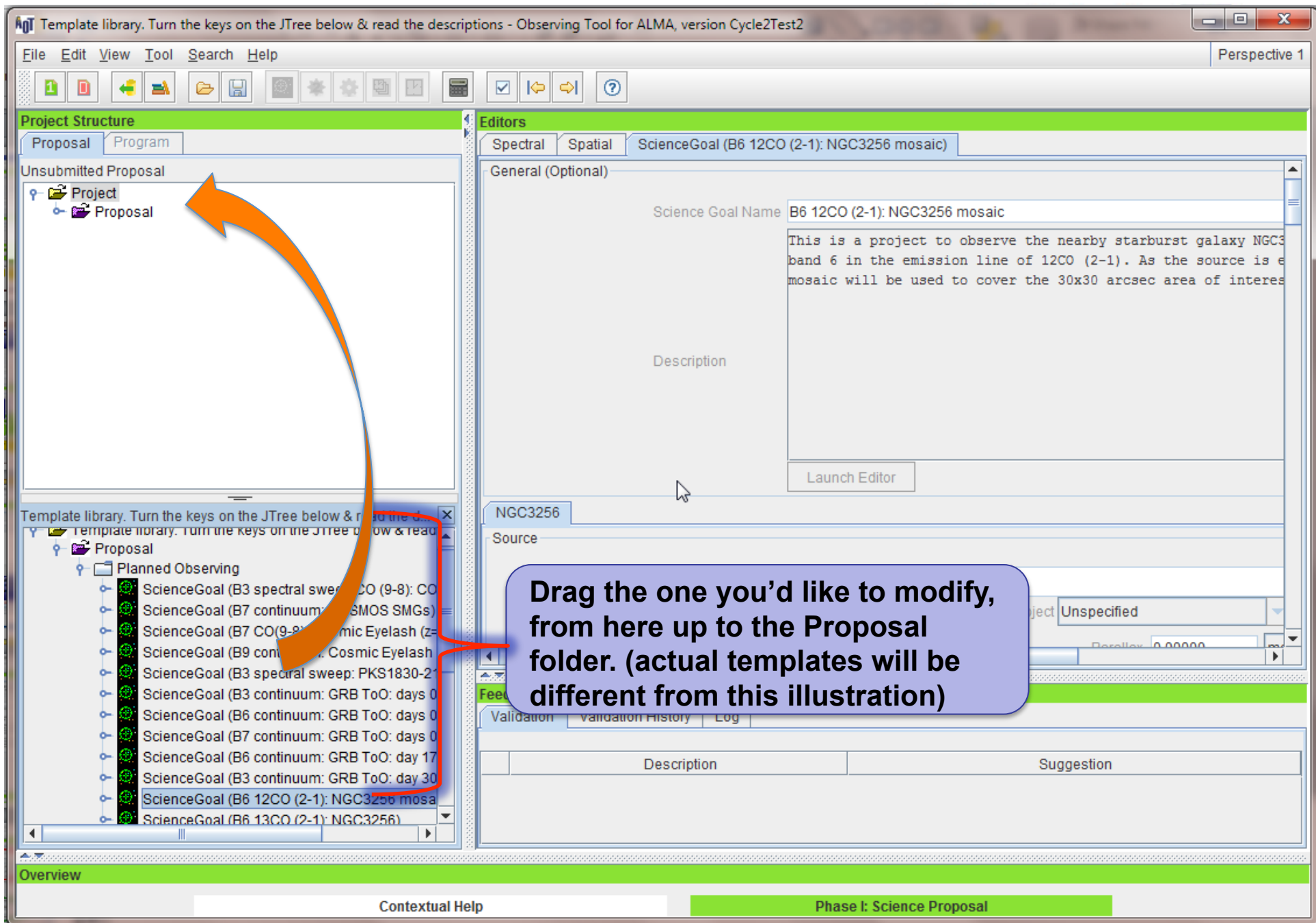
Resolution 0.00000

Validation Validation History Log

Description	Suggestion

Overview

Contextual Help Phase I: Science Proposal



Drag the one you'd like to modify, from here up to the Proposal folder. (actual templates will be different from this illustration)

AgI Template library. Turn the keys on the JTree below & read the descriptions - Observing Tool for ALMA, version Cycle2Test2

File Edit View Tool Search Help Perspective 1

You're now ready to modify the Science Goal (SG)

Give the SG a brief, descriptive name.

A description is useful for you, for the technical assessors, and for your Contact Scientist after your project is approved.

Project Structure

Editors

Spectral Spatial ScienceGoal (B6 12CO (2-1): NGC3256 mosaic)

General (Optional)

Science Goal Name B6 12CO (2-1): NGC3256 mosaic

Description

This is a project to observe the nearby starburst galaxy NGC3256 in the B6 band 6 in the emission line of 12CO (2-1). As the source is extended, a mosaic will be used to cover the 30x30 arcsec area of interest.

Launch Editor

Template library. Turn the keys on the JTree below & read the descriptions

NGC3256

Source

NGC3256

Name of object Unspecified

Sexagesimal

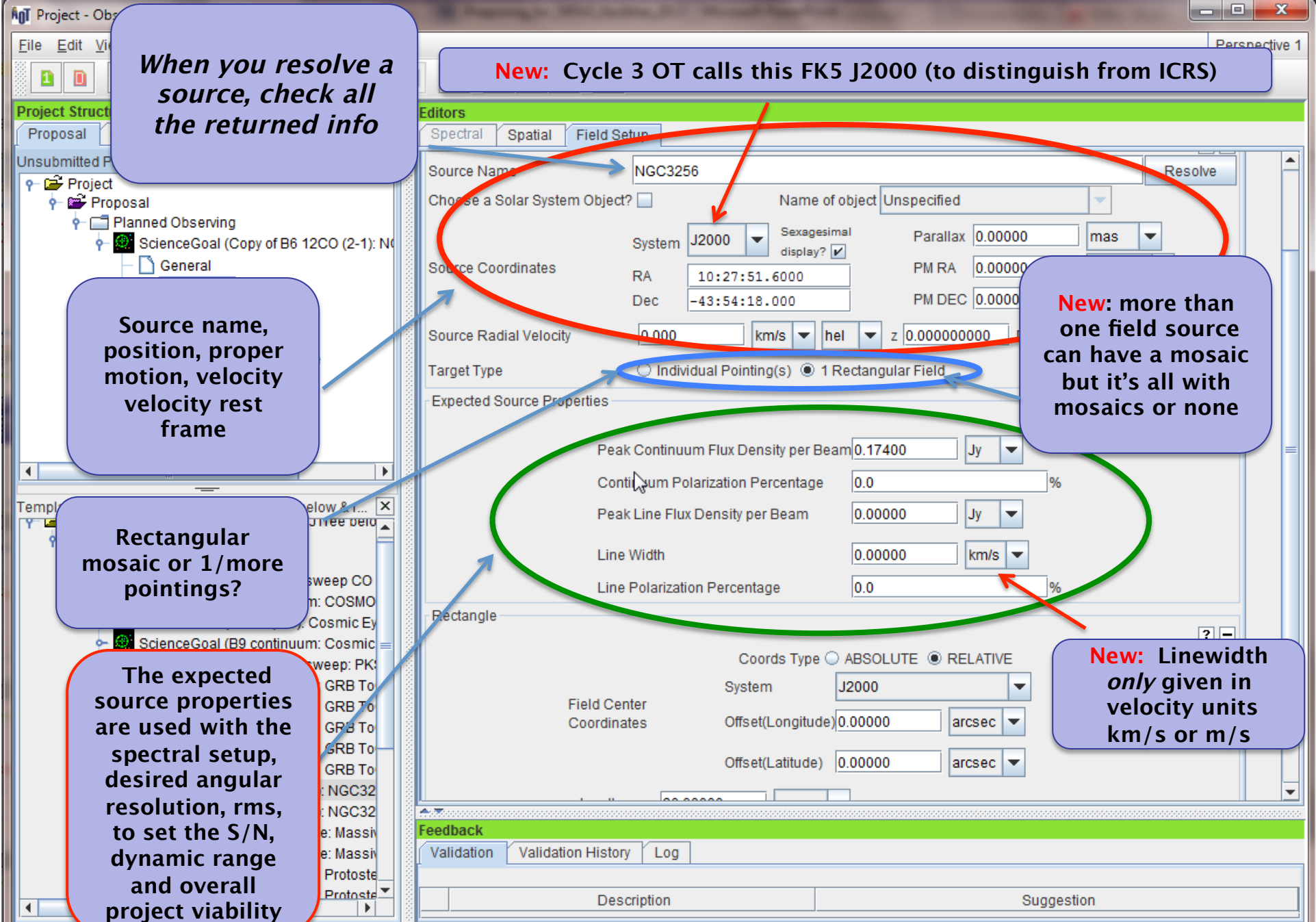
RA offset 0.00000

log

Description	Suggestion

Overview

Contextual Help Phase I: Science Proposal



When you resolve a source, check all the returned info

New: Cycle 3 OT calls this FK5 J2000 (to distinguish from ICRS)

Source name, position, proper motion, velocity velocity rest frame

New: more than one field source can have a mosaic but it's all with mosaics or none

Rectangular mosaic or 1/more pointings?

The expected source properties are used with the spectral setup, desired angular resolution, rms, to set the S/N, dynamic range and overall project viability

New: Linewidth only given in velocity units km/s or m/s

ALMA Observing Tool (2014.6) – Observing Tool for ALMA Cycle3 Groundhog Day Test

File Edit View Tool Search Help Perspective 1

Project Structure: Proposal, Program

Editors: Spectral, Spatial, Field Setup

anti-bllac

Source Name: anti-bllac

Source Coordinates: RA 22:02:43.2912, Dec -42:16:39.978

Source Radial Velocity: 0.000 km/s

Target Type: Individual Pointing(s)

Expected Source Properties: Peak C, Contin, Peak L, Line W, Line Polarization Percentage

Field Center Coordinates: Custom Mosaic: (circled), Pointing Pattern: Offset (circled), Offset Unit: arcsec, #Pointings: 2

RA	Dec
22:02:44.2910	-42:16:39.978
22:02:43.2910	-42:16:39.978

Buttons: Add, Delete, Import, Export

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

Custom Mosaics using Individual Pointings: Offsets or absolute positions. The OT will convert if you check/uncheck "Offset"

New: You can use the ACA and Total Power with individual pointings

New: you can read/write the pointings from/to a text file

New: Put a mosaic around more than one field source

The screenshot displays the 'Observing Tool for ALMA' interface. The 'Editors' panel at the top has three tabs: 'Spectral', 'Spatial', and 'Field Setup'. The 'Spatial' tab is selected and circled in red. It shows a graphical visualization of a field setup on a starry background, with a green rectangle and a red 'X' marking a source. A callout box points to this tab with the text: 'The Spatial tab gives a graphical visualization of the Field Setup.'

The 'Field Setup' panel on the right contains various parameters for the observation. A callout box points to the 'Image Query' section with the text: 'Select a background image from an online image server'. The 'Image Query' section includes a dropdown menu for 'Image Server' set to 'Digitized Sky (Version II) at ESO' and a 'Query' button. Other parameters include 'Source Radial Velocity' (2794.200 km/s), 'Target Type' (1 Rectangular Field), and 'Expected Source Properties' such as 'Peak Continuum Flux Density per Beam' (0.17400 Jy).

The 'FOV Parameters' section includes 'Representative Frequency (Sky)' (231.546 GHz), 'Antenna Diameter' (12m), and 'Antenna Beamsize (HPBW)' (26.706 arcsec). The 'Image Query' section also shows 'Image Size(arcmin)' (10.0).

The 'Project Structure' panel on the left shows a tree view of the project, including 'Unsubmitted Proposal', 'Project', 'Proposal', 'Planned Observing', and 'ScienceGoal (Cop)'. The 'Overview' panel at the bottom shows 'Contextual Help' and 'Phase I: Science Proposal'.

New: Put a mosaic around more than one field source

Or load a local fits image

You can turn "on/off" the mosaic beam pattern using this button. Each circle is the size of the primary beam, centered on the field center

The screenshot shows the 'Spatial Image' editor for source NGC3256. The toolbar contains a mosaic button (a grid of circles) which is circled in red. A red arrow points from this button to a callout box. The main image shows a galaxy with a green rectangular field and a mosaic of beam footprints overlaid. The right-hand panel displays source properties for NGC3256, including coordinates (RA: 10:27:51.6000, Dec: -43:54:18.000) and flux density values.

Property	Value	Unit
Source Name	NGC3256	
Source Coordinates	RA: 10:27:51.6000, Dec: -43:54:18.000	
Source Radial Velocity	2794.200	km/s
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	

New: Put a mosaic around more than one field source

The screenshot shows the 'Observing Tool for ALMA' interface. The main window displays a 'Spatial Image' of a star field. A red mosaic beam pattern is overlaid on a central region of the field. A toolbar at the top of the image editor contains various icons, with a red circle highlighting a specific icon (a grid of dots) used for toggling the mosaic beam. A red arrow points from this icon to a text box. Another red arrow points from the text box to the 'Mosaic' checkbox in the 'Expected Source Properties' section of the right-hand panel.

Or load a local fits image

You can turn "on/off" the mosaic beam pattern using this button. Each circle is the size of the primary beam, centered on the field center

NGC3256

Source

Source Name: NGC3256

Choose a Solar System Object? Name of object: Unspecified

System: J2000 Sexagesimal display? Parallax: 0.000

Source Coordinates: RA: 10:27:51.6000 PM RA: 0.000
Dec: -43:54:18.000 PM DEC: 0.000

Source Radial Velocity: 2794.200 km/s hel z: 0.009364291

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

System: J2000

Offset(Longitude): 0.00000 arcsec

Image Filename: remijan\jsky3\cache\jsky9043341093951517820.fits

FOV Parameters

1x 388,468 13678.0

10:27:42.245, -43:51:24.64 (J2000)

New: Put a mosaic around more than one field source



Editors
Spectral Spatial **Field Setup**

System J2000 Sexagesimal display? Parallax 0.00000

Setting up the mosaic in the Field Setup
Define the length, width and position angle of the region to mosaic. Default is to separate the field centers by about 48% of the primary beam (the Nyquist rate).

Line Width 0.00000 km/s
Line Polarization Percentage 0.0 %

Rectangle

Coords Type ABSOLUTE RELATIVE
System J2000
Offset(Longitude) 0.00000
Offset(Latitude) 0.00000

Field Center Coordinates

p length 2.0 arcmin
q length 2.0 arcmin
Position Angle 0.00000 deg
Spacing 0.48113 fraction of main beam
Reset to Nyquist

Estimated number of 7m Array pointings

No more than 150 12m Array pointings.

#Pointings: 12m Array 105 7m Array 39

Export

File Edit View Tool Search Help Perspective 1

Project Structure

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

Editors

Spectral Spatial Spectral Setup

range [-0.03125 GHz, 231.538 GHz]

	(Rest)	Center Freq (Sky)	Transition	Bandwidth, Resolution (smoothed)	Spec Avg.	Representativ Window
1(Full)	230.53800 GHz	230.53800 GHz	CO v=0 2-1	1875.000 MHz(2438 km/s), 976.563 kHz(1.270 km/s)	1	<input checked="" type="radio"/>

Select Lines to Observe in Baseband-1... Add

Baseband-2

1(Full)	0.00000 GHz	0.00000 GHz	...Enter Name ...	58.594 MHz, 30.518 kHz	1	<input type="radio"/>
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Select Lines to Observe in Baseband-2... Add Delete

Baseband-3

1) ADD spectral windows to get started!

2) Rest frequency can be entered manually, OT will show sky freq

Define the spectral setup

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

Feedback

Validation Validation History Log

Description Sugg

Overview

Contextual Help Phase I: Science Proposal

Project - Observing Tool for ALMA, version Cycle2Test2

File Edit View Tool Search Help

Perspective 1

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

Editors

Spectral Spatial Spectral Setup

Each baseband is 2GHz wide and can be separately configured i.e. each spectral window can have a different bandwidth and resolution. Note that for bands 3, 4, 6, 7 and 8, it is not possible to put 3 basebands in one sideband and the fourth one in the other.

Spectral Type

Spectral Line
 Single Continuum
 Spectral Scan

Polarization products desired XX DUAL FULL

Spectral Setup Errors

Spectral Line

Baseband-1

Fraction	Center Freq (Rest)	Center Freq (Sky)	Transition	Bandwidth Resolution (smoothed)	Spec Avg.	Representative Window
1(Full)	230.53800 GHz	230.53800 GHz	CO J=1-0	1875.000 MHz (2438 km/s), 976.563 kHz (1.270 km/s)	1	0
	58.594 MHz (76 km/s),	20.518 kHz (0.040 km/s)				
	117.188 MHz (152 km/s),	61.035 kHz (0.079 km/s)				
	234.375 MHz (305 km/s),	122.070 kHz (0.159 km/s)				
	468.750 MHz (610 km/s),	244.141 kHz (0.317 km/s)				
	937.500 MHz (1219 km/s),	488.281 kHz (0.635 km/s)				
	1875.000 MHz (2438 km/s),	976.563 kHz (1.270 km/s)				
	2000.000 MHz (2438 km/s),	31.250 MHz (40.638 km/s)				

Select Lines to Observe in Baseband-1... Add

Baseband-2

Feedback

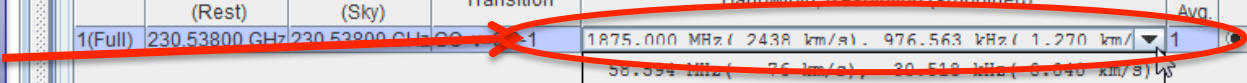
Validation Validation History Log

Description Suggestion

Overview

Contextual Help Phase I: Science Proposal

Double click this field to select the desired bandwidth/resolution



Project - Observing Tool for ALMA, version Cycle2Test2

File Edit View Tool Search Help

Perspective 1

Project Structure

- Proposal
 - Program
 - Unsubmitted Proposal
 - Project
 - Proposal
 - Planned Observing
 - ScienceGoal (Copy)
 - General
 - Field Setup
 - Spectral Setup
 - Calibration Setup
 - Control and Performance
 - Technical Justification

Editors

Spectral Spatial Spectral Setup

In the table below, it is possible to define up to 16 spectral windows, 4 per baseband as long as the total Fraction per baseband is no more than 1. Each baseband is 2GHz wide and can be separately configured i.e. each spectral window can have a different bandwidth and resolution. Note that for bands 3, 4, 6, 7 and 8, it is not possible to put 3 basebands in one sideband and the fourth one in the other.

Spectral Type

Spectral Line
 Single
 Spectral Line

Spectral specs share a baseband, sum of shares can't exceed 1

Multiple spectral specs, spectral averaging

Fraction	Center Freq (Rest)	Center Freq (Sky)	Transition	Bandwidth, Resolution (smoothed)	Spec Avg.	Representative Window
1/4	230.30000 GHz	228.16341 GHz	...Enter Name ...	117.188 MHz(154 km/s), 244.141 kHz(0.321 km/s)	1	<input type="radio"/>
1/4	231.10000 GHz	228.95599 GHz	...Enter Name ...	117.188 MHz(153 km/s), 244.141 kHz(0.320 km/s)	1	<input type="radio"/>
1/2	230.53800 GHz	228.39920 GHz	CO v=0 2-1	234.375 MHz(308 km/s), 484.619 kHz(0.636 km/s)	1	<input checked="" type="radio"/>

Select Lines to Observe in Baseband-1... Add Delete

Feedback

Validation Validation History Log

15 errors, 0 warnings

Description
no science case: a science and technical case is a mandatory requirement
Must select a minimum of 1 science keywords
Largest scale is not achievable with the 12m array configuration
Spectral Window name is invalid
Spectral Window name is invalid

Failing to rename a spw brings a validation error

Contextual Help Phase I: Science Proposal

Project - Observing Tool for ALMA, version Cycle2Test2

File Edit View Tool Search Help Perspective 1

Project Structure

- Proposal
- Program

Unsubmitted Proposal

- Project
 - Proposal
 - Planned Observing
 - ScienceGoal (Copy of B6 12CO (2-1): NGC325) (Spectral Setup)
 - 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 Eye)
 - ScienceGoal (B9 continuum: Cosmic Eye)
 - 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): NGC325)
 - ScienceGoal (B6 13CO (2-1): NGC325)
 - ScienceGoal (B6 spectral line: Massive Star Formation)
 - ScienceGoal (B9 spectral line: Massive Star Formation)
 - ScienceGoal (B3 continuum: Protostar)
 - ScienceGoal (B6 continuum: Protostar)

Editors

Spectral Spatial Spectral Setup

Each baseband is 2GHz wide and can be separately configured i.e. each spectral window can have a different bandwidth and resolution. Note that for bands 3, 4, 6, 7 and 8, it is not possible to put 3 basebands in one sideband and the fourth one in the other.

Spectral Type

- Spectral Line
- Single Continuum
- Spectral Scan

Polarization products desired XX

Spectral Setup Errors

Spectral Line

Fraction	Center Freq (Rest)	Center Freq (Sky)	Transition	Bandwidth	Rep
1(Full)	230.53800 GHz	230.53800 GHz	CO v=0 2-1	1875.000 MHz(2438 km/s), 976.563 kHz(1.270 km/s)	1

Select Lines to Observe in Baseband-1... Add Delete

Baseband-2

Select Lines to Observe in Baseband-2... Add Delete

Feedback

Validation Validation History Log

Description	Suggestion
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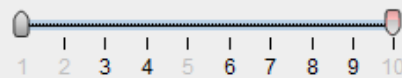
Transition Filter

CO*

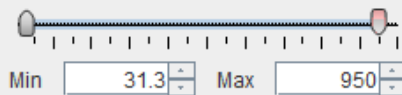
Include description

Frequency Filters

ALMA Band



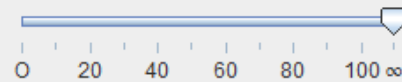
Sky Frequency (GHz)



Receiver/Back End Configuration

Hide unobservable lines
 Filtering unobservable lines

Maximum Upper-state Energy (K)



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.

Find More...

Reset Filters

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 sorted columns.)

Transition ^	Description	Rest Frequency ^	Sky Frequency	Upper-state Energy	Lowas Intensity
CO v=2 1-0	Carbon Monoxide	113.172 GHz	113.172 GHz	6134.675 K	0.01
CO v=1 1-0	Carbon Monoxide	114.222 GHz	114.222 GHz	3089.154 K	0.01
CO v=0 1-0	Carbon Monoxide	115.271 GHz	115.271 GHz	5.532 K	60 0.01
CO v=2 2-1	Carbon Monoxide	226.34 GHz	226.34 GHz	6145.538 K	0.02
CO v=1 2-1	Carbon Monoxide	228.439 GHz	228.439 GHz	3100.118 K	0.62 0.02
CO v=0 2-1	Carbon Monoxide	230.538 GHz	230.538 GHz	16.596 K	70 0.02
CO+ J=2-1, F=3/2-1/2	Carbon Monoxide Ion	235.70 GHz	235.70 GHz		0.1 0.66
CO+ J=2-1, F=5/2-3/2	Carbon Monoxide Ion	236.063 GHz	236.063 GHz		0.1 1.21
CO v=2 3-2	Carbon Monoxide	339.5 GHz	339.5 GHz	6161.831 K	0.03
CO v=1 3-2	Carbon Monoxide	342.648 GHz	342.648 GHz	3116.561 K	0.71 0.03
CO v=0 3-2	Carbon Monoxide	345.796 GHz	345.796 GHz	33.192 K	70 0.03
CO+ J=3-2	Carbon Monoxide Ion	353.741 GHz	353.741 GHz		0.1 1.21
CO+ J=3-2, F=11/2-5/2	Carbon Monoxide Ion	354.014 GHz	354.014 GHz		0.18 1.71
CO v=2 4-3	Carbon Monoxide	452.645 GHz	452.645 GHz	6183.555 K	0.04
CO v=1 4-3	Carbon Monoxide	456.843 GHz	456.843 GHz	3138.486 K	0.04
CO v=0 4-3	Carbon Monoxide	461.041 GHz	461.041 GHz	55.317 K	60 0.04
CO v=2 5-4	Carbon Monoxide	565.774 GHz	565.774 GHz	6210.707 K	0.06
CO v=1 5-4	Carbon Monoxide	571.021 GHz	571.021 GHz	3165.891 K	0.06
CO v=0 5-4	Carbon Monoxide	576.268 GHz	576.268 GHz	82.974 K	0.06
CO v=2 6-5	Carbon Monoxide	678.88 GHz	678.88 GHz	6243.288 K	0.07
CO v=1 6-5	Carbon Monoxide	685.176 GHz	685.176 GHz	3198.774 K	0.07
CO v=0 6-5	Carbon Monoxide	691.473 GHz	691.473 GHz	116.159 K	100 0.07
CO v=2 7-6	Carbon Monoxide	799.306 GHz	799.306 GHz	6281.296 K	0.08
CO v=1 7-6	Carbon Monoxide	799.306 GHz	799.306 GHz	3237.134 K	0.08
CO v=0 7-6	Carbon Monoxide	806.652 GHz	806.652 GHz	154.872 K	110 0.08
CO v=2 8-7	Carbon Monoxide	905.009 GHz	905.009 GHz	6324.729 K	0.09

Select a line from the list

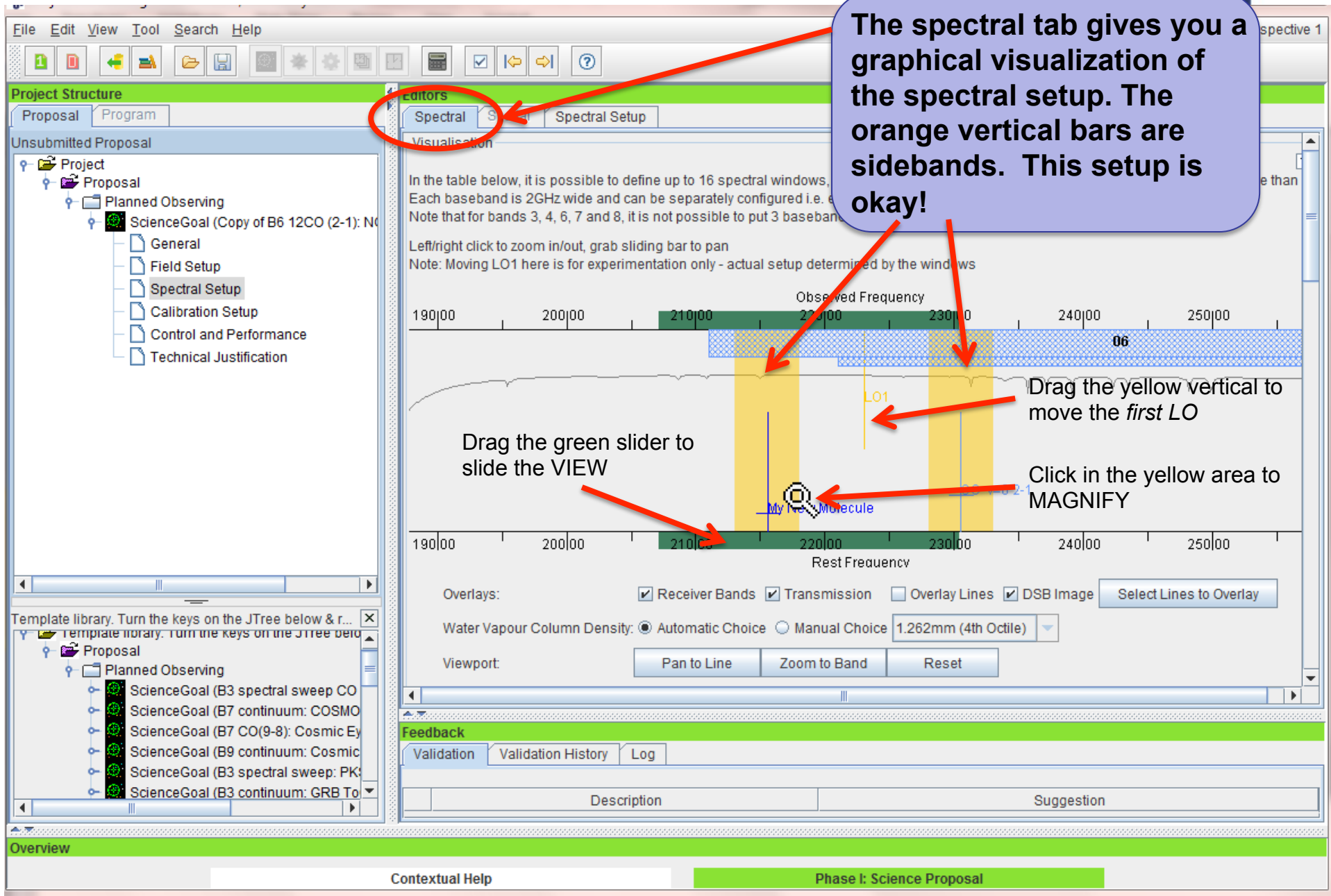
Filters can be used to narrow the search

Add to Selected Transitions

Selected transitions

Transition ^	Description	Rest Frequency ^	Sky Fre
CO v=0 2-1		230.538 GHz	230.538 GHz

Remove from Selected Transitions



The spectral tab gives you a graphical visualization of the spectral setup. The orange vertical bars are sidebands. This setup is okay!

Drag the green slider to slide the VIEW

Drag the yellow vertical to move the first LO

Click in the yellow area to MAGNIFY

Full Continuum & Polarization

ALMA Observing Tool (2014.6) - Proposal test of OT TJ

File Edit View Tool Search Help Perspective 1

Project Structure

- Unsubmitted Proposal
 - Proposal test of OT TJ
 - Proposal
 - Planned Observing
 - ScienceGoal (Science Goal)
 - General
 - Field Setup
 - Spectral Setup
 - Calibration
 - Contrast
 - Technical

Editors

Spectral Spatial Spectral Setup

Spectral Type

Spectral Type

- Spectral Line
- Single Continuum
- Spectral Scan

Polarization products desired

- XX
- DUAL
- FULL

Receiver Band: 10 [787.0-950.0 GHz]

Sky Frequency

Rest Frequency: 10 [787.0-950.0 GHz]

Baseband-1

Fraction	Center Freq (Rest)	Center Freq (Sky)	Transition	Bandwidth, Resolution (smoothed)	Spec Avg.	Representative Window
1(Full)	866.25000 GHz	866.25000 GHz	Single Continuum	1875.000 MHz(649 km/s), 31.250 MHz(10.815 km/s)	1	<input type="radio"/>

Baseband-2

1(Full)	868.25000 GHz	868.25000 GHz	Single Continuum	1875.000 MHz(647 km/s), 31.250 MHz(10.790 km/s)	1	<input type="radio"/>
---------	---------------	---------------	------------------	--	---	-----------------------

Baseband-3

1(Full)	870.25000 GHz	870.25000 GHz	Single Continuum	1875.000 MHz(646 km/s), 31.250 MHz(10.765 km/s)	1	<input type="radio"/>
---------	---------------	---------------	------------------	--	---	-----------------------

Baseband-4

1(Full)	872.25000 GHz	872.25000 GHz	Single Continuum	1875.000 MHz(644 km/s), 31.250 MHz(10.741 km/s)	1	<input checked="" type="radio"/>
---------	---------------	---------------	------------------	--	---	----------------------------------

Standard single continuum setups, can be modified with justification

Full Polarization for Bands 3, 6 and 7
New: User can edit frequencies used for full polarization

New: Band 10!

NEW: Width of TDM windows shown as 1.875 GHz, results are not changed

Automated spectral scan - I



Project - Observing Tool for ALMA, version Cycle2Test2

File Edit View Tool Search Help Perspective 1

Project Structure: Proposal, Program

Editors: Spectral, Spatial, Spectral Setup

Spectral Type: Spectral Line, Single Continuum, Spectral Scan

Polarization products desired: XX, DUAL, FULL

Spectral Setup Errors

Spectral Scan

Requested start frequency (sky): 95.0 GHz

Requested end frequency (sky): 107.0 GHz

Requested range (rest): 95.8896 GHz - 108.0020 GHz

Achieved scan range (sky): 95.0 GHz - 110.0 GHz

Bandwidth, Resolution (Hanning smoothed): 1875.000 MHz, 976.563 kHz

Spectral averaging: 1

Representative frequency (sky): 102.50000 GHz

Automated Spectral Scan mode and tunings

The representative frequency defined in the observed frame is used in conjunction with the sensitivity entered on the 'Control and Performance' page to estimate the required observing time and to set the size of the antenna beam shown in the 'Spatial Visual' editor. The representative frequency defaults to the average mid-frequency of the achieved scan range but may be subsequently set by the user to any frequency within the achieved scan range.

Tuning (Max. 5)	SPW 1 (GHz)	SPW 2 (GHz)
1	95.9375 GHz	97.8125 GHz
2	99.6875 GHz	101.5625 GHz
3	103.4375 GHz	105.3125 GHz
4	107.1875 GHz	109.0625 GHz

Feedback

Automated spectral scan - II



AgT Project - Observing Tool for ALMA, version Cycle2Test2

File Edit View Tool Search Help Perspective 1

Project Structure: Proposal, Program

Editors: Spectral, Spatial, Spectral Setup

Visualisation

Visual Representation of the Spectral Scan Mode – Actual spectral coverage vs. requested coverage

Observed Frequency

Rest Frequency

Overlays: Receiver Bands Transmission Overlay Lines DSB Image

Spectral Scan: Requested Scan Tuning 1 Tuning 2 Tuning 3 Tuning 4

Water Vapour Column Density: Automatic Choice Manual Choice 1.262mm (4th Octile)

Spectral Type: Spectral Line Single Continuum Spectral Scan

ALMA Observing Tool (2014.6) - Observing Tool for ALMA Cycle3 Groundhog Day Test

File Edit View Tool Search Help

Project Structure

- Unsubmitted Proposal
 - Observing Tool for ALMA Cycle3 Grou...
 - Proposal
 - Planned Observing
 - ScienceGoal (Science Goal)
 - General
 - Field Setup
 - Spectral Setup
 - Calibration Setup
 - Control and Performance**
 - Technical justification

Editors

Spectral Spatial **Control and Performance**

These parameters are used to control various aspects of the observation.

Control and Performance

Configuration Information

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

Number of Antennas 12m 7m TP

Most compact 12m configuration Most extended 12m configuration

Longest baseline (L_{max})

Synthesized beamsize (λ/L_{max})

Shortest baseline (L_{min})

Maximum recoverable scale ($0.6\lambda/L_{min}$)

Desired Performance

Desired Angular Resolution

Largest Angular Structure in source

Desired sensitivity per pointing Jy equivalent to K

Bandwidth used for Sensitivity Frequency Width

Do you request complementary ACA Observations? Yes No

Science goal integration time estimate

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

Are the observations time-constrained? Yes No

Feedback

Validation Validation History Log

Description	Suggestion

Control and Performance defines the required angular resolution, sensitivity, largest angular scale, etc.

Array properties summarized
New: Varies with declination

ALMA Observing Tool (2014.6) - Observing Tool for ALMA Cycle3 Groundhog Day Test

File Edit View Tool Search Help

Project Structure

Proposal Program

Unsubmitted Proposal

- Observing Tool for ALMA Cycle3 Groundhog Day Test
- Proposal
 - Planned Observing
 - ScienceGoal (Science Goal)
 - General
 - Field Setup
 - Spectral Setup
 - Calibration Setup
 - Control and Performance**
 - Technical justification

Editors

Spectral Spatial **Control and Performance**

These parameters are used to control various aspects of the observation.

Control and Performance

Configuration Information

Antenna Beamsize ($1.13 * \lambda / D$) 12m 17.276 arcsec 7m 29.615 arcsec

Number of Antennas 12m 36 7m 10 TP 2

Most compact 12m configuration. Most extended 12m configuration.

Longest baseline (L_{max})

Synthesized beamsize (λ/L_{max})

Shortest baseline (L_{min})

Maximum recoverable scale ($0.6\lambda/L_{min}$)

Desired Performance

Desired Angular Resolution 0.00000 arcsec

Largest Angular Structure in source Undefined arcsec

Desired sensitivity per pointing 0.00000 Jy equivalent

Bandwidth used for Sensitivity RepresentativeWindowResolution Frequency Width 0.122070 MHz

Do you request complex flagging? Yes No

Science goal integration Suggest

Override OT's sensitivity Yes No

Are the observations time-constrained? Yes No

Time Estimate

Feedback

Validation Validation History Log

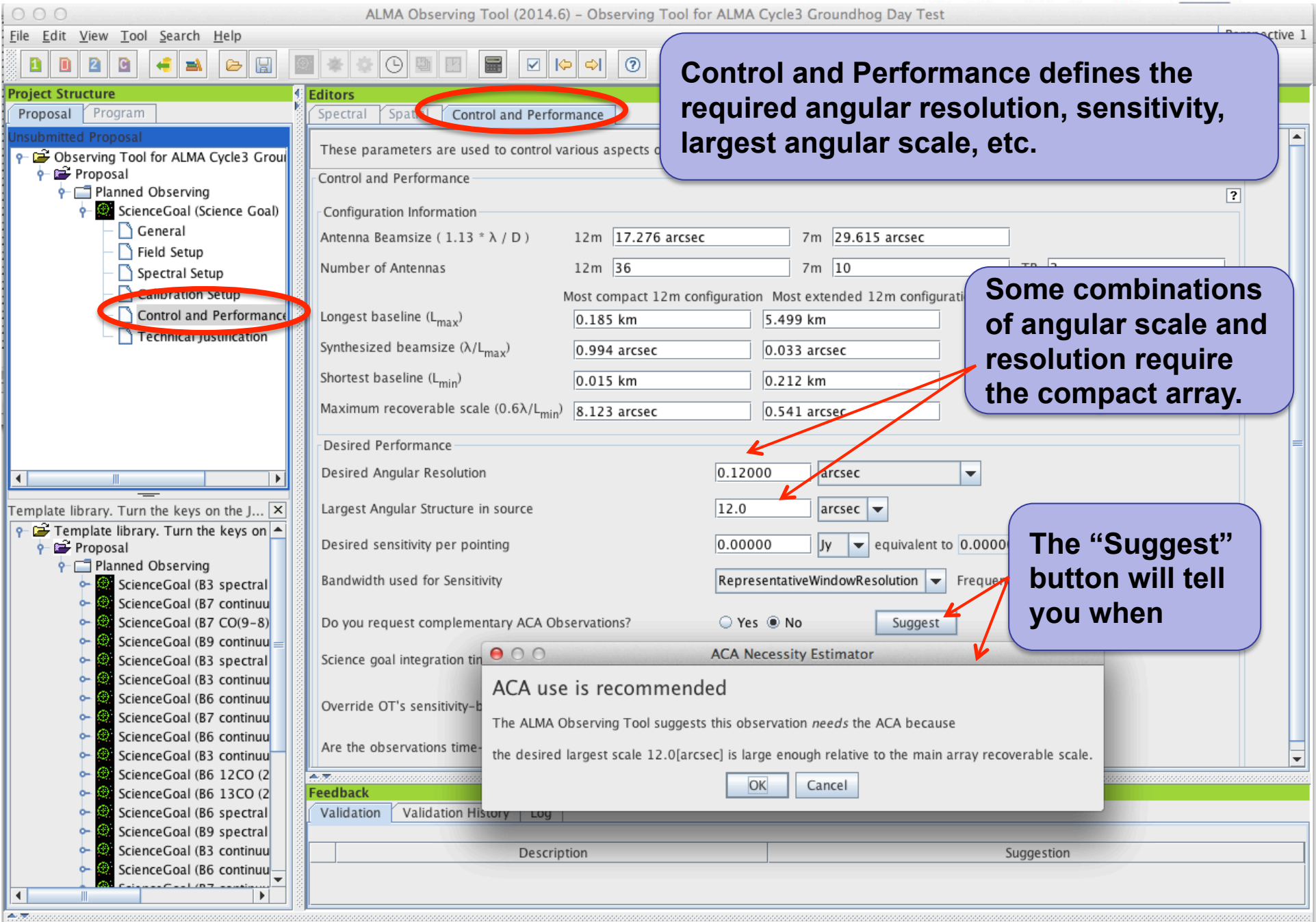
Description	Suggestion
-------------	------------

Control and Performance defines the required angular resolution, sensitivity, largest angular scale, etc.

Specify the desired angular resolution and the largest structure in the map area

New: Use 0 for a true point source. There is no default!

Specify the desired rms Jy/beam noise level and the bandwidth over which that should be measured



Control and Performance defines the required angular resolution, sensitivity, largest angular scale, etc.

Some combinations of angular scale and resolution require the compact array.

The "Suggest" button will tell you when

ACA Necessity Estimator
ACA use is recommended
The ALMA Observing Tool suggests this observation needs the ACA because the desired largest scale 12.0[arcsec] is large enough relative to the main array recoverable scale.
[OK] [Cancel]

Description	Suggestion

Time estimates - I

ALMA Observing Tool (2014.6) - Observing Tool for ALMA Cycle3 Groundhog Day Test

File Edit View Tool Search Help Perspective 1

Estimated Time

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	0.122 MHz
Representative frequency (sky, first source)	337.06 GHz
Precipitable water vapour (all sources)	0.658mm (2nd Octile)

Time required for largest 12-m array

Time on source per pointing (first source)	22.17 min [22.08 min]
Total number of pointings (all sources)	1
Number of tunings	1
Total time on source	22.17 min [22.08 min]
Calibration time	27.98 min
Other overheads	20.10 min
Total time for 1 SB execution	1.17 h
Number of SB executions	1
Total time to complete SB	1.17 h

Calibration Breakdown per SB execution

3 x Pointing	34.00 s
1 x SidebandRatio	1.68 min
1 x Amplitude	2.60 min
2 x Bandpass	15.20 min
4 x Phase	2.40 min
2 x Phase reference check source	1.20 min
6 x Atmospheric	4.00 min

Additional Arrays

Number of additional 12-m configurations	1
Time required for additional 12-m	35.13 min
ACA 7-m time (t_12m x 2)	2.34 h
Total ACA time (max[t_7-m, t_TP])	2.34 h

Estimated total time for science goal 4.10 h

OK

Observations, including the required antenna configurations and integration times.

7m 29.615 arcsec

7m 10 TP 2

Configuration Most extended 12m configuration

5.499 km

0.033 arcsec

0.212 km

0.541 arcsec

0.12000 arcsec

12.00000 arcsec

0.01 Jy equivalent to 7.47375 K

RepresentativeWindowResolution Frequency Width 0.12

Yes No

Yes No

Yes No

New: Total power will not be scheduled when 12m+7m synthesis suffice

Suggestion

You can see how much time you need and get a breakdown

Time estimates - II



The screenshot shows the ALMA Observing Tool (OT) interface. A pop-up window titled 'ALMA OT - Information' is open, displaying 'Estimated time' details. The background shows the main OT interface with various configuration parameters and a 'Perspective 1' view.

Estimated time	
Requested sensitivity	2.4640 mJy
Bandwidth used for sensitivity	0.977 MHz
Representative frequency (sky, first source)	102.50 GHz
Precipitable water vapour (all sources)	5.186mm (7th Octile)
ALMA 12m Array - 34 antennas	
Time on source per pointing (first source)	4.83 min
Total number of pointings (all sources)	23
Estimated number of tunings required	4
Total time on source	7.41 h
Total time on calibrators	4.46 h
Total overheads	105.60 min
Total 12m array time (inc. calibration & overheads)	13.63 h
Calibration Breakdown	
16 x SidebandRatio	26.93 min
12 x Pointing	3.60 min
16 x Amplitude (inc. AtmosphericCal)	52.27 min
16 x Bandpass (inc. AtmosphericCal)	1.54 h
48 x Phase (inc. AtmosphericCal)	1.01 h
48 x Atmospheric	32.00 min
Additional calibration overheads	1.45 h
Additional 12M Array Configurations	
No of 12M Array Configurations	2
Additional overhead for extra configurations	6.82 h
Estimated total time for science goal	20.45 h

Multiple array configuration time estimates based on resolution and largest angular scale.

Note that the OT calculates the number of executions based on an estimate of SB duration. This means that e.g. 50 mins on source can make for a significantly longer observation than 44 mins, because it may split it into 2 observations, doubling the calibration time

ALMA Observing Tool (2014.6) - Bulge Asymmetries and Dynamical Evolution (BAaDE) (2013.1.01180.S last submitted 2014-11-14 17:52:31)

File Edit View **Tool** Search Help

ALMA Calibrator Selection Tool...
ALMA LO Configuration Tool...
Sensitivity Calculator...
Generate SBs from the Selected Goal
Generate Phase I SBs from all the Science Goals
Generate Phase II SBs from all the Science Goals (lsjouwer@nrao.edu)
Export selected Scheduling
Generate a PDF of Whole P
Disable Edit Protect

Display Project Time Summary

New: Project-level Total Time and Data Volume Summary can also be seen after right-click on Proposal

Total and Calibration Times

Science Goal	12-m Ext.		12-m Compact		12-m Ext. + Compact		ACA 7-m		ACA TP		Overall		Non-standard Mode
	Tot.	Cal.	Tot.	Cal.	Tot.	Cal.	Tot.	Cal.	Tot.	Cal.	Tot.	Cal.	
MSXiiiRA16a1	51.12 min	24.75 min	-	-	51.12 min	24.75 min	-	-	-	-	51.12 min	24.75 min	No
MSXiiiRA16a2	51.12 min	24.75 min	-	-	51.12 min	24.75 min	-	-	-	-	51.12 min	24.75 min	No
MSXiiiRA16a3	51.97 min	24.75 min	-	-	51.97 min	24.75 min	-	-	-	-	51.97 min	24.75 min	No
MSXiiiRA16a4	51.12 min	24.75 min	-	-	51.12 min	24.75 min	-	-	-	-	51.12 min	24.75 min	No
MSXiiiRA16b1	1.29 h	29.95 min	-	-	1.29 h	29.95 min	-	-	-	-	1.29 h	29.95 min	No
MSXiiiRA16b2	1.29 h	29.95 min	-	-	1.29 h	29.95 min	-	-	-	-	1.29 h	29.95 min	No
Overall	6.01 h	2.65 h	-	-	6.01 h	2.65 h	-	-	-	-	6.01 h	2.65 h	

Data Volumes and Data Rates

Science Goal	Data Volume			Data Rate		
	12-m	ACA 7-m	ACA TP	12-m	ACA 7-m	ACA TP
MSXiiiRA16a1	54.85 GB	-	-	18.31 MB/s	-	-
MSXiiiRA16a2	54.85 GB	-	-	18.31 MB/s	-	-
MSXiiiRA16a3	55.77 GB	-	-	18.31 MB/s	-	-
MSXiiiRA16a4	54.85 GB	-	-	18.31 MB/s	-	-
MSXiiiRA16b1	83.35 GB	-	-	18.31 MB/s	-	-
MSXiiiRA16b2	83.35 GB	-	-	18.31 MB/s	-	-
Overall	387.01 GB	-	-			

OK

Time constrained observing



Project - Observing Tool for ALMA, version Cycle2Test2

File Edit View Tool Search Help Perspective 1

Project Structure

- Proposal
- Program
- Unsubmitted Proposal
 - Project
 - Proposal
 - Planned Observing
 - ScienceGoal (Copy)
 - General
 - Field Setup
 - Spectral Setup
 - Calibration Setu
 - Control and Perf
 - Technical Justifi

Editors

Spectral Spatial Control and Performance

Do you request complementary ACA Observations? Yes No Suggest

Science goal integration time estimate Time Estimate

Is more time required due to u,v coverage issues? (must be justified) Yes No

Are the observations time-constrained? Yes No Specific Dates Multiple Epochs Continuous Monitoring

Number of time windows specified : 1

Start Date/Time (UTC)	End Date/Time (UTC)
2013-10-02 13:17	2013-10-02 13:18

Please specify one or more suitable time windows for your observation

Your observation will be scheduled once during or

Entering Time Constrained observations – Dates, Epochs or Monitoring

appropriate justification or additional information

Template library. Turn the keys on...

- Proposal
- Planned Observing
 - ScienceGoal (B3)
 - ScienceGoal (B7)
 - ScienceGoal (B7)
 - ScienceGoal (B9)
 - ScienceGoal (B3)
 - ScienceGoal (B3)
 - ScienceGoal (B6)
 - ScienceGoal (B7)
 - ScienceGoal (B6)
 - ScienceGoal (B3)
 - ScienceGoal (B6)

Feedback

Overview

Contextual Help Phase I: Science Proposal

The sensitivity calculator is available separately in the OT (or on the web)

The screenshot shows the 'ALMA LO Configuration Tool' interface. The 'Tool' menu is circled in red, and a red arrow points to the 'Sensitivity Calculator' dialog box. The dialog box is titled 'Sensitivity Calculator' and contains the following sections:

Configuration Information

- Antenna Beamsize ($1.2 * \lambda / D$)
- Number of Antennas
- Longest baseline (L_{max})
- Synthesized beamsize ($M L_{max}$)
- Shortest baseline (L_{min})
- Maximum recoverable scale (0)

Common Parameters

- Dec: 00:00:00.000
- Polarization: Dual
- Observing Frequency: 345.00000 GHz
- Bandwidth per Polarization: 0.00000 GHz
- Water Vapour: Automatic Choice Manual Choice
- Column Density: 0.913mm (3rd Octile)
- tau/Tsky: tau=0.158, Tsky=44.400 K
- Tsys: 153.577 K

Individual Parameters

	12m Array	7m Array	Total Power Array
Number of Antennas	34	9	2
Resolution	0.00000 arcsec	5.974554 arcsec	17.923662 arcsec
Sensitivity(rms) (equivalent to)	0.00000 Jy	0.00000 Jy	0.00000 Jy
	Infinity K	0.00000 K	0.00000 K
Integration Time	0.00000 s	0.00000 s	0.00000 s

Integration Time Unit Option: Automatic

Buttons: Calculate Integration Time, Calculate Sensitivity, Close

Desired Performance

- Desired Angular Resolution
- Largest Angular Structure in source
- Desired mosaic sensitivity
- Bandwidth used for Sensitivity
- Do you request complementary observations?
- Science goal integration time estimates
- Is more time required due to u,v coverage?
- Are the observations time-constant?

Tech Justification New for Cycle 3!!

ALMA Observing Tool (2014.6) - Observing Tool for ALMA Cycle3 Groundhog Day Test

File Edit View Tool Search Help Perspective 1

Project Structure

- Proposal
- Program
 - Unsubmitted Proposal
 - Observing Tool for ALMA Cycle3 Groundhog Day Test
 - Proposal
 - Planned Observing
 - ScienceGoal (Science Goal)
 - General
 - Field Setup
 - Spectral Setup
 - Calibration Setup
 - Control and Performance
 - Technical Justification**

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 achieved 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

Line width / bandwidth used for sensitivity / =

Dynamic Range:

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.

Here would be the standard required justification of the sensitivity parameters

There are separate sections for Sensitivity, Imaging and Correlator

Each requires its own 50+ word justification

Each comes with a summary of input information and details of how it is construed to specify the program

Template library. Turn the keys on the JTr... [x]

- Template library. Turn the keys on the JTr...
 - Proposal
 - Planned Observing
 - ScienceGoal (B3 spectral sv)
 - ScienceGoal (B7 continuum)
 - ScienceGoal (B7 CO(9-8): C)
 - ScienceGoal (B9 continuum)
 - ScienceGoal (B3 spectral sv)
 - ScienceGoal (B3 continuum)
 - ScienceGoal (B6 continuum)
 - ScienceGoal (B7 continuum)
 - ScienceGoal (B6 continuum)
 - ScienceGoal (B3 continuum)
 - ScienceGoal (B6 12CO (2-1))
 - ScienceGoal (B6 13CO (2-1))
 - ScienceGoal (B6 spectral lir)
 - ScienceGoal (B9 spectral lir)
 - ScienceGoal (B3 continuum)
 - ScienceGoal (B6 continuum)

Tech Justification New for Cycle 3



File Edit View Tool Search Help Perspective 1

Project Structure

- Proposal
- Program
- Unsubmitted Proposal
 - Observing Tool for ALMA Cycle3 Ground
 - Proposal
 - Planned Observing
 - ScienceGoal (Science Goal)
 - General
 - Field Setup
 - Spectral Setup
 - Calibration Setup
 - Control and Performance
 - Technical Justification

Editors

Spectral Spatial Technical Justification

Imaging

Requested angular resolution : 1.10 arcsec

Requested largest angular scale : 1.00 arcsec

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

Here would be the standard required justification of the imaging parameters

ACA is not recommended but is selected.
Justify over-riding of the OT recommendation for the ACA

Exceptions to standard practice require separate justification. Here, the OT notes that the ACA is selected even though the OT thinks it is unneeded.

Correlator configuration

line width / representative spectral window resolution: 30.00 km/s / 731.92 m/s = 40.99

Representative spectral window width : 702.64 km/s

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

Here would be the regular required correlator justification

The screenshot shows the 'Project - Observing Tool for ALMA, version Cycle2Test2' interface. The 'File' menu is open, showing options like 'New Proposal', 'Validate', and 'Submit Project'. Two callout boxes provide instructions: one pointing to the 'Validate' menu item and another pointing to the 'Submit Project' menu item. The main window displays a form for project details, including 'Principal Investigator' and 'Project Code'. Below the form is a 'Feedback' section with 'Validation', 'Validation History', and 'Log' tabs. At the bottom, an 'Overview' section contains a list of steps and a flowchart.

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.

When you are satisfied that your proposal is complete, click here to submit your project to the ALMA Archive

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 **1** icon in the toolbar
 - Or clicking on this [link](#)
3. Click on the **proposal** tree node and complete the relevant fields.

ALMA 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

What else new in Cycle 3 OT?

undhog Day Test

Perspective 1

The screenshot displays the ALMA Cycle 3 OT software interface. On the left, the 'Project Structure' pane shows a tree view with 'ScienceGoal (Science Goal)' selected. The main 'Editors' pane is set to the 'ScienceGoal (Science Goal)' tab, showing various parameters for the Science Goal, including Source Coordinates, Source Radial Velocity, Target Type, and Expected Source Properties. A red arrow points from a validation error in the Feedback panel to the 'Expected peak continuum flux' field in the Science Goal configuration.

Clicking on a validation error usually takes you to the problem directly

Feedback

Validation | Validation History | Log

9 errors, 0 warnings

Description	Suggestion
No Principal Investigator specified	Select the top level Project node in the tree and fill in the Principal Investigator field
No scientific category defined	Select Proposal node and set a scientific category
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
Expected peak continuum flux is required for a single continuum	Select the Target Parameters (anti-bllac) in the Science Goal and enter a valid value
Either a continuum or a line polarization percentage is required for	Select the Target Parameters (anti-bllac) in the Science Goal and enter a valid value

Summary: New for Cycle 3 OT



For Cycle 3, there are a relatively small number of new "ALMA" features:

- + Band 10 (780 – 950 GHz)
- + Free choice of TDM frequency for full polarization observations (Bands 3, 6 and 7)
- + 36 12-m array, 10 7-m array, 2 TP

There are more new "OT" features:

- + *Sesame* is now used to query source information
- + A Science Goal can contain multiple sources with rectangular field definitions
- + The TP mapping area is automatically calculated for custom mosaics or single pointings
- + Import/export of pointing positions has been updated slightly
- + Absolute positions can be used for pointing centers
- + "Point source" button has been removed, use 0 for LAS, *there is no default*
- + TP will not be scheduled if 7-m array can achieve the requested LAS
- + Various improvements to time-constrained interface
- + Technical Justification node completely overhauled
- + Total time for a proposal can be displayed in the main OT GUI – Under "Tool" in menu bar



Use preferences to customize

The image illustrates the 'Preferences' dialog box in a software application, showing three different tabs highlighted with red boxes:

- Appearance Tab:** Shows settings for 'Tab Placement' (top or bottom), 'Font Size' (12), 'Mouse-over Tooltips' (Show for 4 secs), 'Science Goal Summary View' (all its page editors), 'Preferred Editors' (Forms), 'Text Forms' (select it for easy overwriting), 'Perspective' (1, 2), and 'Look and Feel' (Metal, Nimbus).
- Colours Tab:** Shows color swatches for 'General' (Clipboard, Error, Warning, Phase 1, Phase 2, DDT, FOV, FOV 1/3 HPBW) and 'Spectral Display' (Baseband, Spectral Window, Averaging Region, Suppressed Windows, Rest Frequency, Centre Frequency, Catalog Lines, Sidebands, Sidebands(Unconfigured), Transmission Spectrum).
- Dialogs Tab:** Shows a list of 'Wanted Dialogs' with checkboxes to enable or disable them, including (All Others), Add.Confirm, Close.DiscardChanges, Delete.Confirm, Display field source name resolution information, Display initial start-up options, Display offset coordinates reference system change message, Display sky coordinates reference system change message, Display velocity reference system change message, Editor.UnexpectedError, Export to file. Overwrite existing file?, ExportProject.OverwriteFile, ExportSB.OverwriteFile, Exporting to file. Coordinates out of range, Exporting to file. Ignoring unsupported coordinates, Exporting to file. Invalid coordinates, Exporting to file. Problem while writing file, IAU lookups are not advised, Import.ConfirmConversion, Import.OverwriteInvestigators, Import.SaveCurrentProject, NetworkService.offline, Notify the user that basebands have been re-ordered, OT Version Check, and PointingPatternEditor.OverwriteFile.

At the bottom left, there are logos for the **NATIONAL SCIENCE FOUNDATION** and **Associated Universities, Inc.** At the bottom right, there are logos for the **Green Bank Telescope**, **Very Long Baseline Array**, and **NRAO**.

A Few OT Tips...



- In the OT, select, cut, copy, paste work with CTRL
 - Independent of what you do outside the OT
 - CTRL-A (sel) CTRL-x(cut) CTRL-c(copy) CTRL-v(ins)
- Holding down ALT when making choices in dropdown lists will convert to the unit or type of the new choice
 - Otherwise, only the description changes, not value
- OT can do galactic-celestial coord. Conversion
 - Not FK5 J2000 to ICRS, or to ecliptic etc.



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.

