

# An Introduction to the Cycle 6 ALMA Observing Tool

How to turn that great idea into an ALMA proposal...



Patrick Sheehan

Authors: Arielle Moullet & Harvey Liszt

Atacama Large Millimeter/submillimeter Array  
Expanded Very Large Array  
Very Long Baseline Array



# Downloading the ALMA OT



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



Log in

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

Search Site

## Observing Tool

The ALMA Observing Tool (OT) is a Java application used for the preparation and submission of ALMA Phase 1 (observing proposal) and Phase 2 (telescope runfiles for accepted proposals) materials. It is also used for preparing and submitting Director's Discretionary Time (DDT) proposals. The current Cycle 4 release of the OT is configured for the present capabilities of ALMA as described in the [Cycle 4 Call For Proposals](#). Note that in order to submit proposals you will have to register with the ALMA Science Portal beforehand.

Note that preparation of Cycle 3 Phase 1 and DDT proposals needs to be done using the Cycle 3 version of the Observing Tool. This version of the OT can be found in the [DDT page](#), or the Phase 2 menu.

## Download & Installation

The OT will run on most common operating systems, as long as you have **Java 8** 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 require the installation of Java. For Linux users, we also provide a download complete with a recommended version of the Java.

Webstart

Tarball

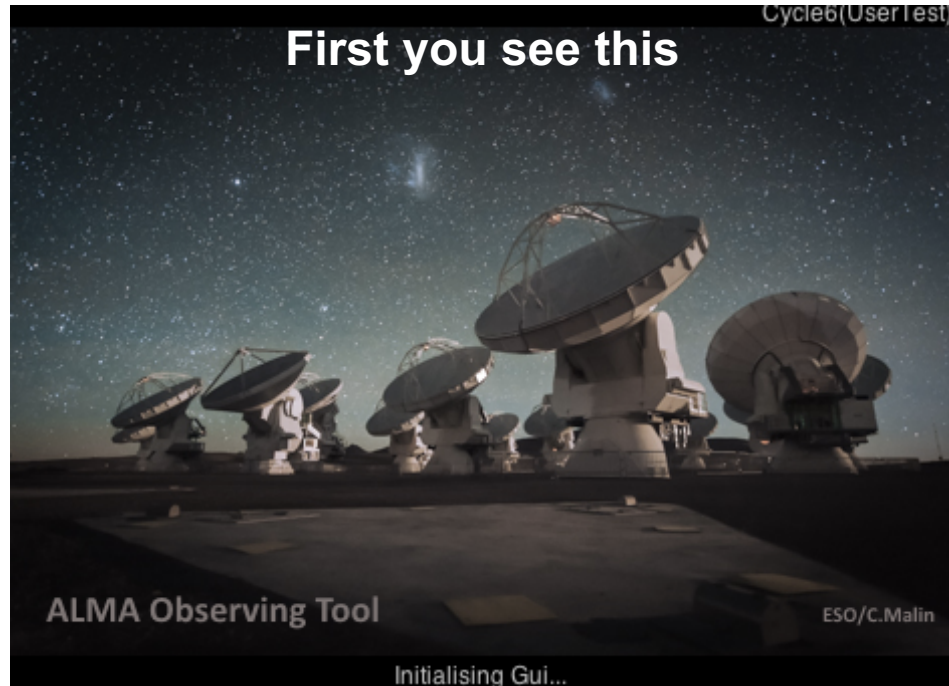
**Using webstart is easier and has the advantage that it checks for and will download a newer version at startup**



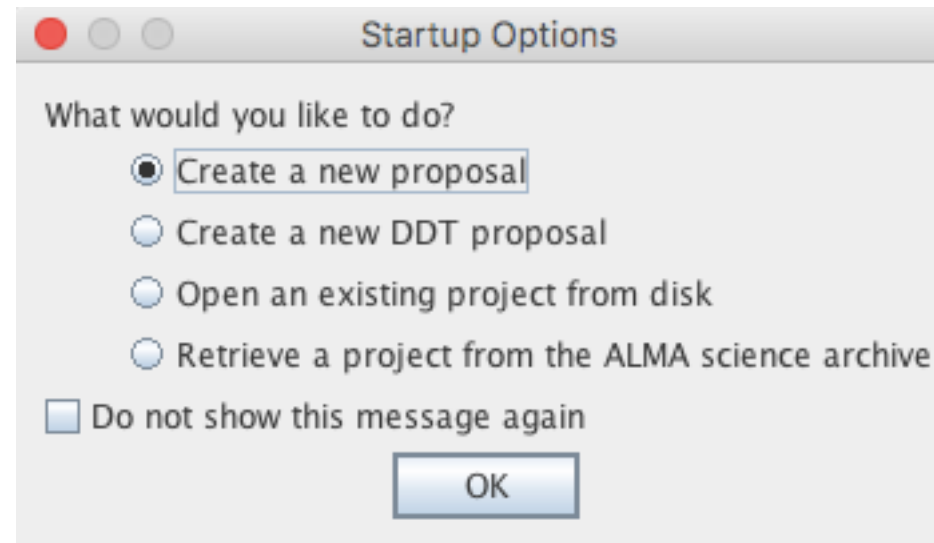
# When the ALMA OT starts



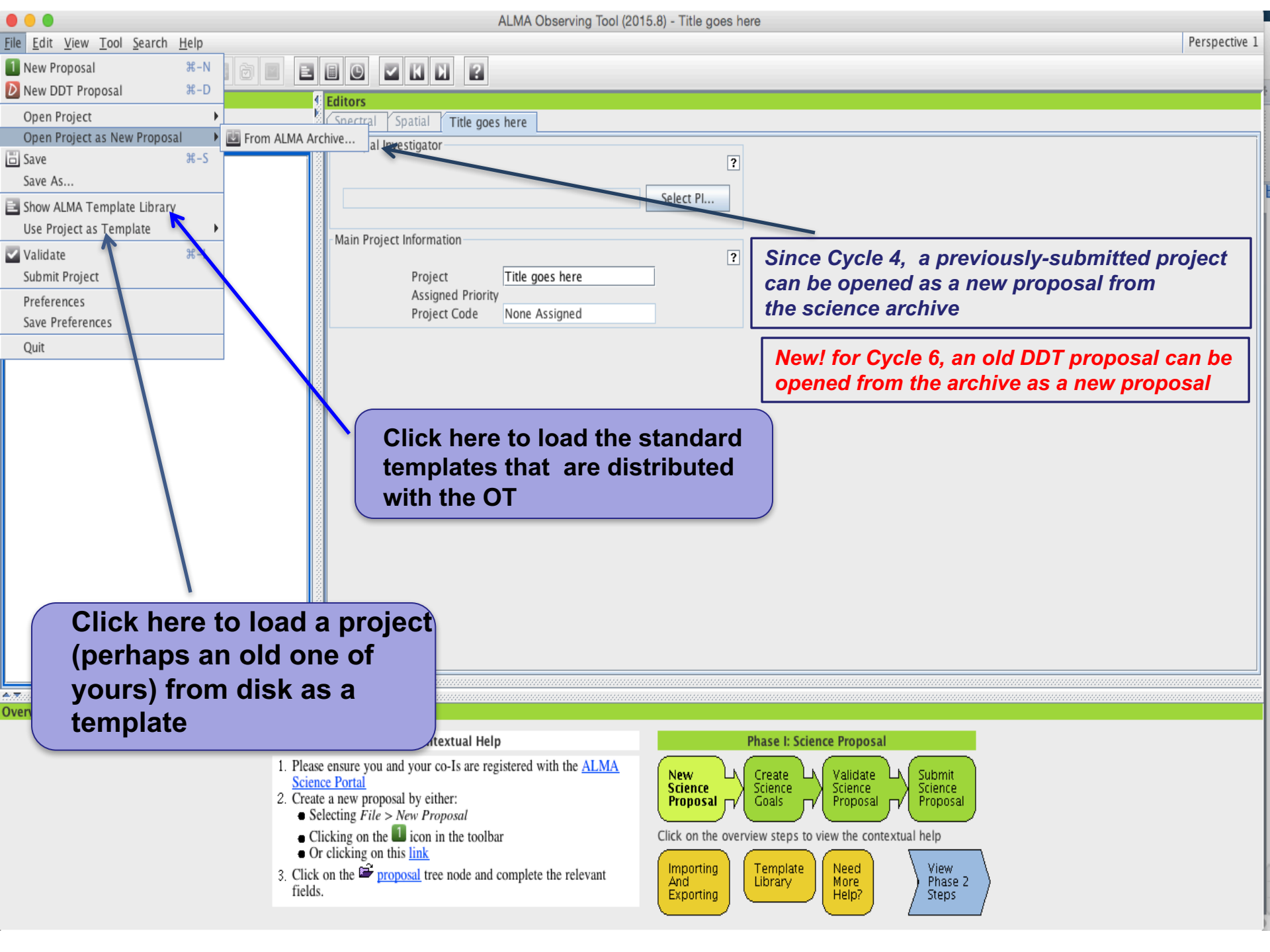
First you see this



Then you see this







- 1 New Proposal ⌘-N
- New DDT Proposal ⌘-D
- Open Project
- Open Project as New Proposal
- Save ⌘-S
- Save As...
- Show ALMA Template Library
- Use Project as Template
- Validate ⌘-V
- Submit Project
- Preferences
- Save Preferences
- Quit

From ALMA Archive...

Editors

Spectral

Spatial

Title goes here

al Investigator

Select PI...

Main Project Information

Project Title goes here

Assigned Priority

Project Code None Assigned

*Since Cycle 4, a previously-submitted project can be opened as a new proposal from the science archive*

*New! for Cycle 6, an old DDT proposal can be opened from the archive as a new proposal*

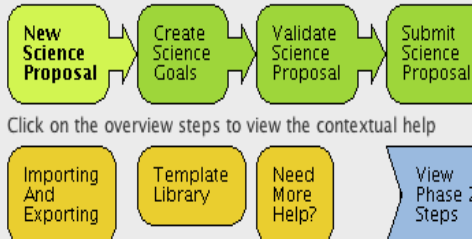
Click here to load the standard templates that are distributed with the OT

Click here to load a project (perhaps an old one of yours) from disk as a template

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

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

**Editors**

Spectral Spatial Project

Principal Investigator

Select PI...

Main Project Information



Project Assigned Priority Project Code None Assigned

Validation History Log

Description

**Overview**

Contextual Help

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

**Phase I: Science Proposal**

New Science Proposal Create Science Goals Validate Science Proposal Submit Science Proposal

Click on the overview steps to view the contextual help

Importing And Exporting Template Library Need More Help? View Phase 2 Steps

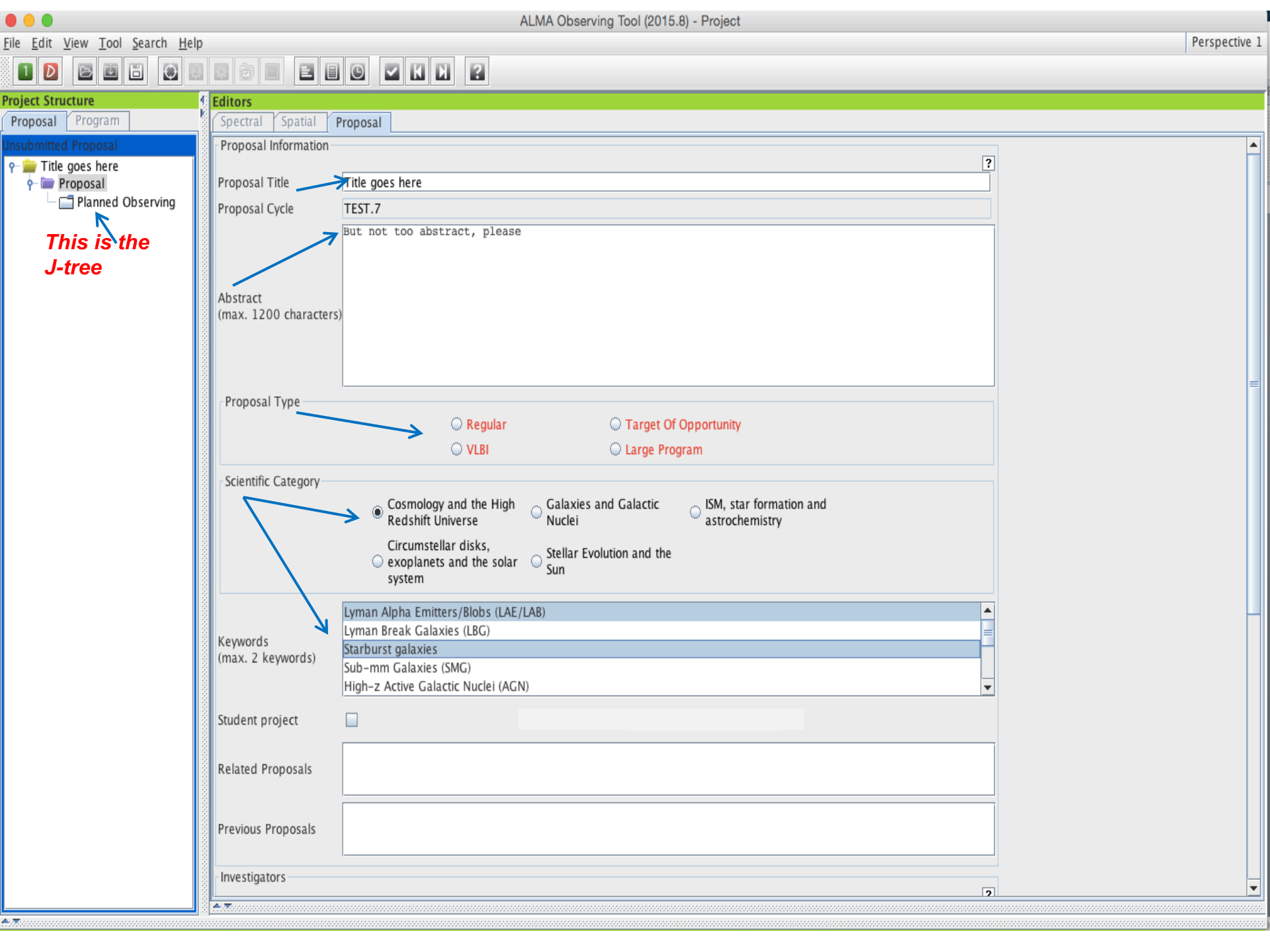
**You can right-click and add blank Science Goals**

**A clean slate. From here, you can:**

- Start a new proposal
- Add blank Science Goals (SG)
- Load templates with example SG

**Grab and move stiped bars to resize panes**

**arrowheads minimize, maximize panes**



## Project Structure

Proposal Program

Unsubmitted Proposal

- Title goes here
- Proposal
  - Planned Observing

This is the  
J-tree

## Editors

Spectral Spatial Proposal

Proposal Information

Proposal Title Title goes here

Proposal Cycle TEST.7

But not too abstract, please

Abstract  
(max. 1200 characters)

Proposal Type

☐ Regular☐ Target Of Opportunity☐ VLBI☐ Large Program

Scientific Category

☒ 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  
SunKeywords  
(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

Related Proposals

Previous Proposals

Investigators

ALMA Observing Tool (Cycle3-RC2) - Really catchy title here

File Edit View Tool Search Help

Perspective 1

Project Structure

Proposal Program

Unsubmitted Proposal

- Really catchy title here
  - Proposal
    - Planned Observing

Editors

Spectral Spatial Proposal

☒ 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)

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

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

Investigator search constraints

ALMA ID is hlszt

Find Investigators

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

Select PI

Cancel

Select PI...

Add Col...

Remove Col

Add from Proposal...

Science Case (Mandatory, PDF, 4 pages max.)

Attach...

Detach

View...





## Project Structure

Proposal Program

Unsubmitted Proposal

- Project
  - Proposal
    - Planned Observing

## Editors

Spectral Spatial Proposal

Related Proposals

Previous Proposals

Investigators

Type	Full name	Email	Affiliation	ALMA ID	Executive
PI	Not set	Not set	Not set	Not set	Non-ALMA

Concise (please) justification when asking to duplicate previous observations or accepted proposals. Not for use when resubmitting rejected proposals

Select PI

Add CoPI

Add Col

Remove Collaborator

Add from Proposal

Science Case

Science Case (Mandatory, PDF, 4 pages max.)

Attach...

Detach

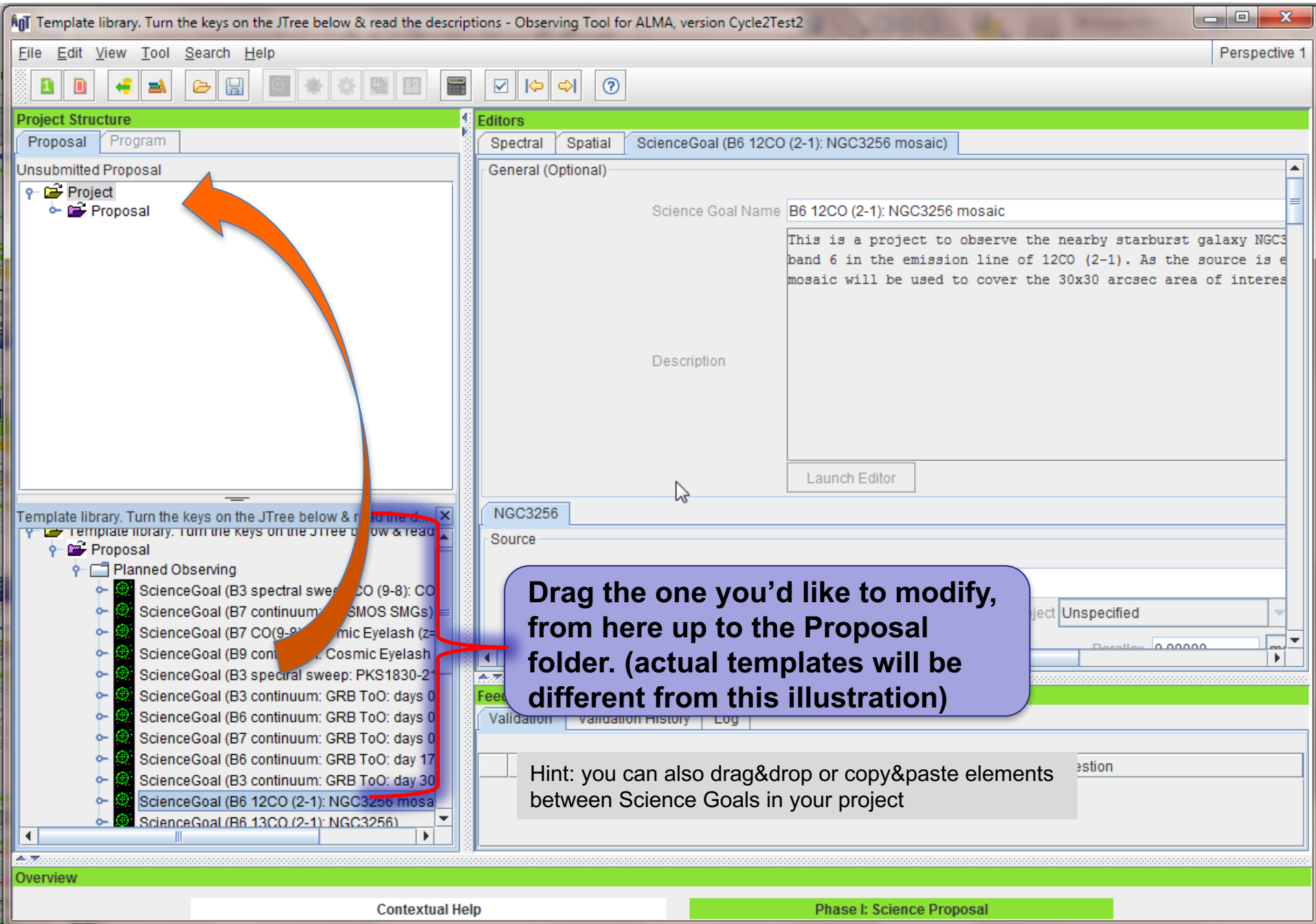
View...

Duplicate observations

Briefly justify any new observations that duplicate archival data or accepted programs.

Information regarding the ALMA Duplication Policy and how to search archival data and accepted programs can be found at:  
<http://almascience.org/proposing/duplications>.

Observatory Use Only



AgT 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**

Prop

Unsub

**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 emission line of 12CO (2-1). As the source is a mosaic will be used to cover the 30x30 arcsec area of interest

Description

Launch Editor

NGC3256

Source

NGC3256

System Object? ☐ Name of object Unspecified

Sexagesimal

Decalor 0.00000

Log

Description Suggestion

**Template library. Turn the keys on the JTree below & read the d...**

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

Proposal

Planned Observ

ScienceC

ScienceC

ScienceC

ScienceC

ScienceC

ScienceC

ScienceC

ScienceGoal (B7 continuum: GRB ToO: days 0

ScienceGoal (B6 continuum: GRB ToO: day 17

ScienceGoal (B3 continuum: GRB ToO: day 30

ScienceGoal (B6 12CO (2-1): NGC3256 mosa

ScienceGoal (B6 13CO (2-1): NGC3256)

**Overview**

Contextual Help

Phase I: Science Proposal

**You're now ready to flesh out 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.**



*When you resolve a source, check all the returned info, velocity, proper motions may be bogus*

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

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

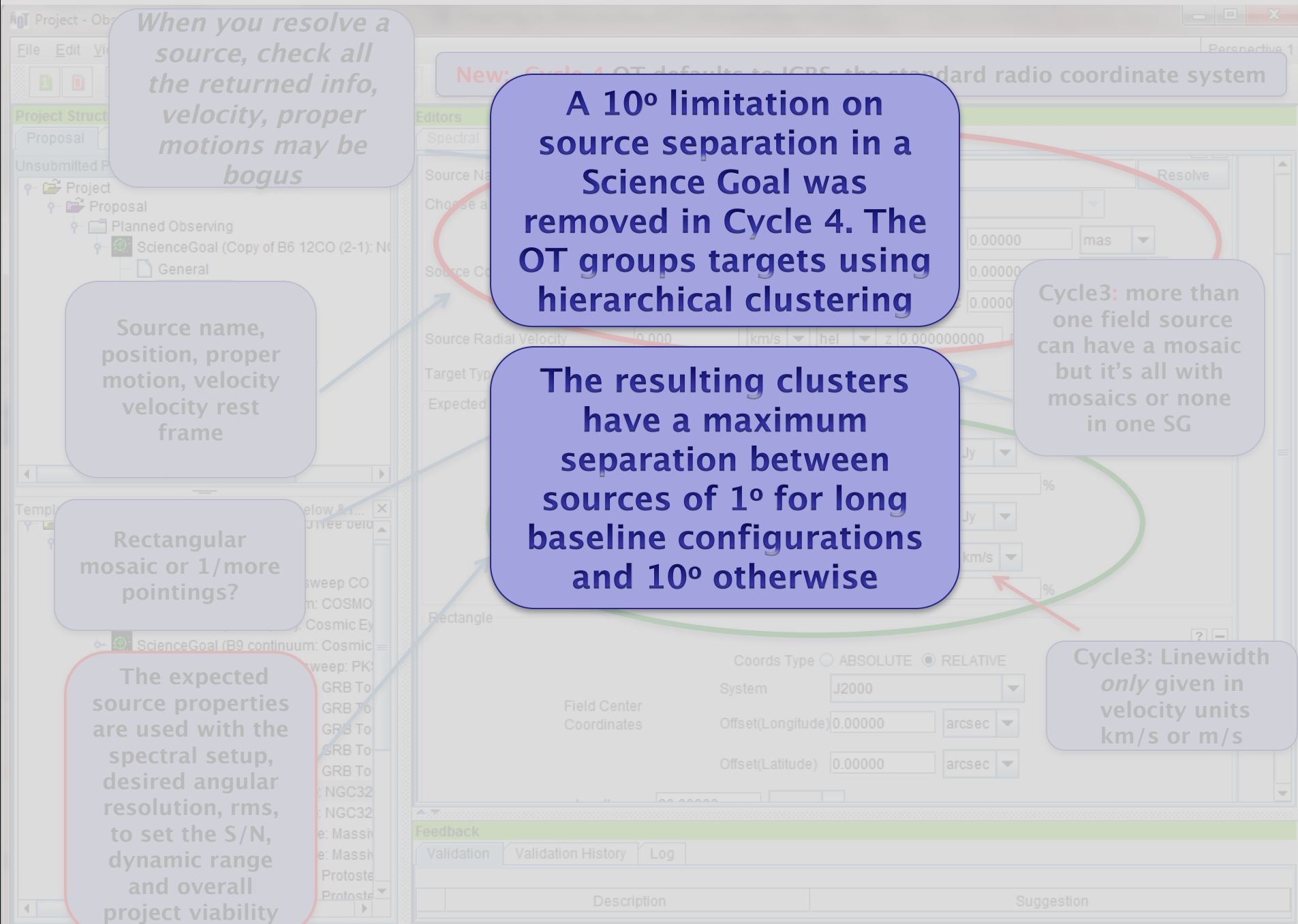
New: Cycle 4 OT defaults to JCRS, the standard radio coordinate system

**A 10° limitation on source separation in a Science Goal was removed in Cycle 4. The OT groups targets using hierarchical clustering**

**The resulting clusters have a maximum separation between sources of 1° for long baseline configurations and 10° otherwise**

Cycle3: more than one field source can have a mosaic but it's all with mosaics or none in one SG

Cycle3: Linewidth *only* given in velocity units km/s or m/s



File Edit View Tool Search Help

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

Project Structure

Proposal Program

Unsubmitted Proposal

Casting Light on Chameleon's Dark CO

Editors

Spectral

Source Name J1136-6827-0.4 Resolve

Choose a Solar System Object? ☐ Name of object Unspecified

System ICRS Sexagesimal display? ☒

Source Coordinates RA 11:36:02.0970 Dec -68:27:05.810

Parallax 0.00000 mas

PM RA 0.00000 mas/yr

PM DEC 0.00000 mas/yr

Source Radial Velocity 0.000 km/s lsrk z 0.000000000 Doppler Type RADIO

Target Type ☒ Individual Pointing(s) ☐ 1 Rectangular Field

Expected Source Properties

Peak Continuum Flux Density per Synthesized Beam 1.00000 Jy

Continuum Linear Polarization 4.0 per cent

Continuum Circular Polarization 0.0 per cent

Peak Line Flux Density per Synthesized Beam 0.10000 Jy

Line Width 3.5 km/s

Line Linear Polarization 0.0 per cent

Line Circular Polarization Percentage 2.0 per cent

Field Center Coordinates

Coord Type ☒ Relative ☐ Absolute

Offset Unit arcsec

#Pointings 1

RA [arcsec]	Dec
0.00000	0.00000

Feedback

Validation Validation History Log

0 errors, 1 warning : double-click on each row to be taken to the problem

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

Source name, position, proper motion, velocity, velocity rest frame. LSR gone, use LSRK

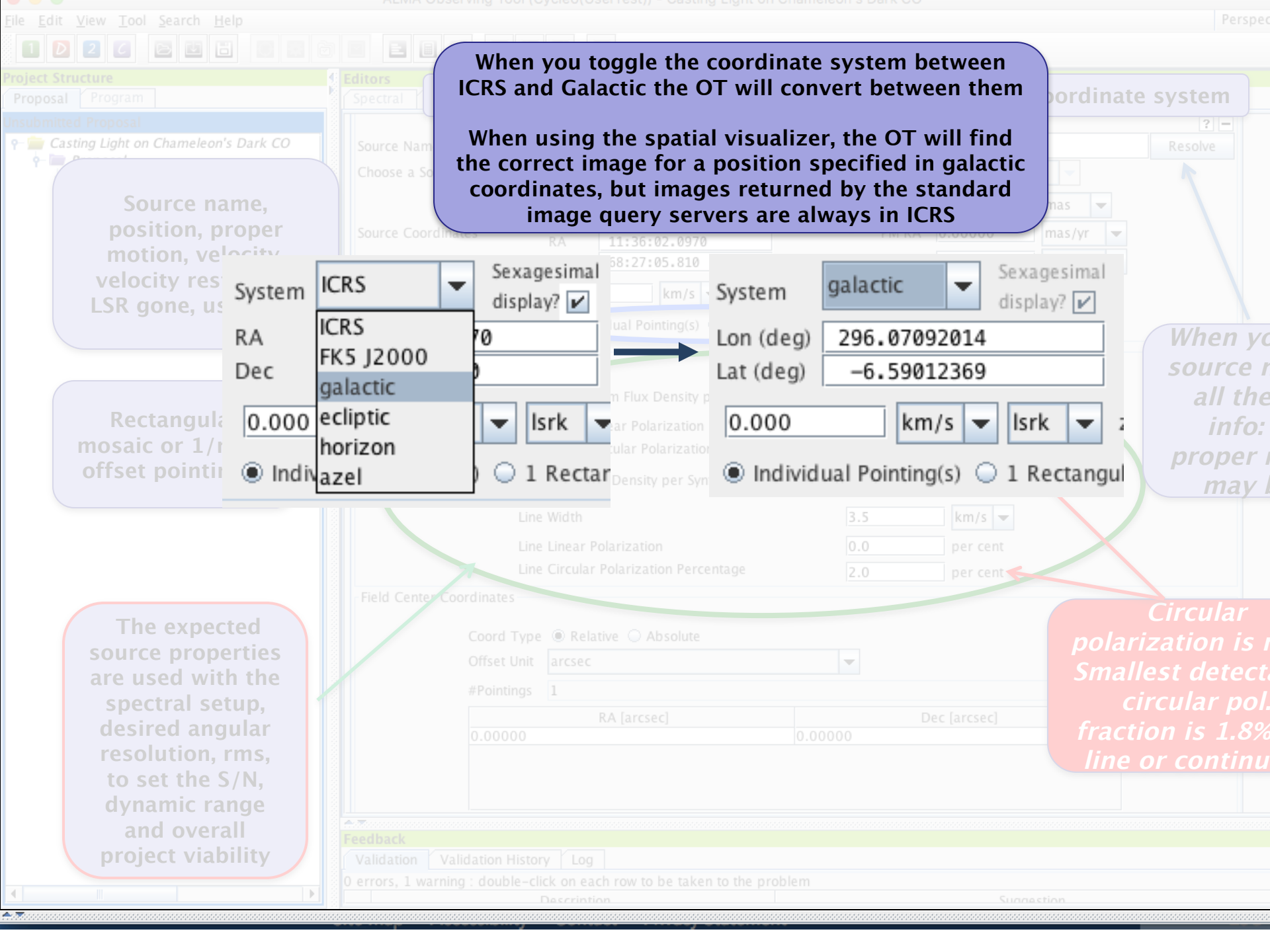
Rectangular mosaic or 1/more offset pointings?

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

Since Cycle 4, OT defaults to ICRS, the standard radio coordinate system

When you resolve a name check all returned info

Circular polarization is new! Smallest expected circular pol. fraction here is 1.8% for line or continuum



When you toggle the coordinate system between ICRS and Galactic the OT will convert between them

When using the spatial visualizer, the OT will find the correct image for a position specified in galactic coordinates, but images returned by the standard image query servers are always in ICRS

Source name,  
position, proper  
motion, velocity  
resolution, LSR gone, use

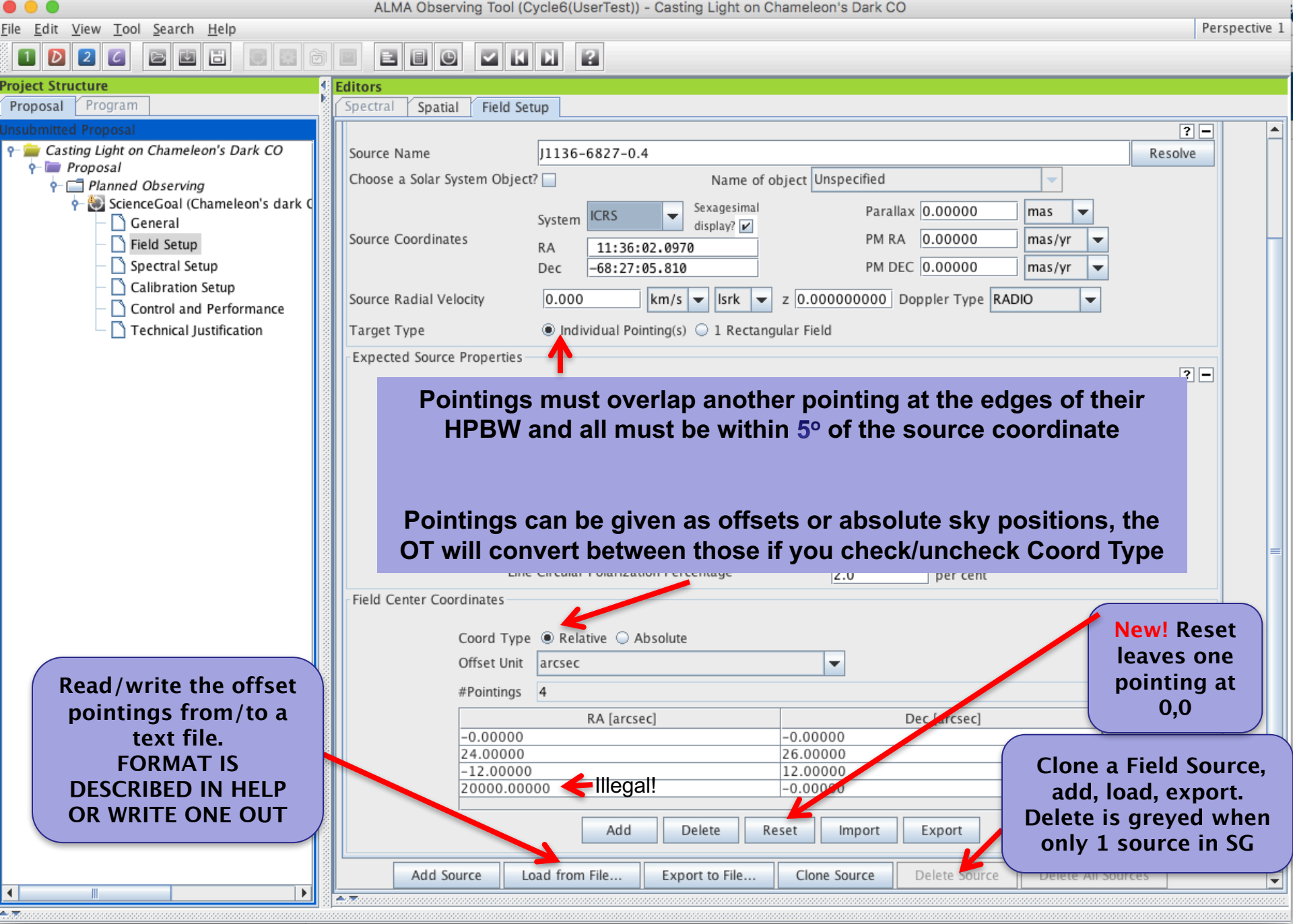
Rectangular  
mosaic or 1/r  
offset pointing

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

When you source n  
all the  
info:  
proper  
may k

Circular  
polarization is  
Smallest detect  
circular pol.  
fraction is 1.8%  
line or continu







# Crafting mosaics

Project - Observing Tool for ALMA, version Cycle2Test2

File Edit View Tool Search Help

Perspective 1

Project Structure

- Unsubmitted Proposal
  - Project
    - Proposal
      - Planned Observing
        - ScienceGoal (Cop)
          - General
          - Field Setup
          - Spectral Setup
          - Calibration Set
          - Control and Pe
          - Technical Justi

Editors

Spectral Spatial Field Setup

Spatial Image

NGC3256

Source

Source Name NGC3256

Choose a Solar System Object? ☐ Name of object Unspecified

System ICRS Sexagesimal display? ☒

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 71, -52 0.0

10:28:13.821, -44:00:03.43 (J2000)

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

Or load a local fits image

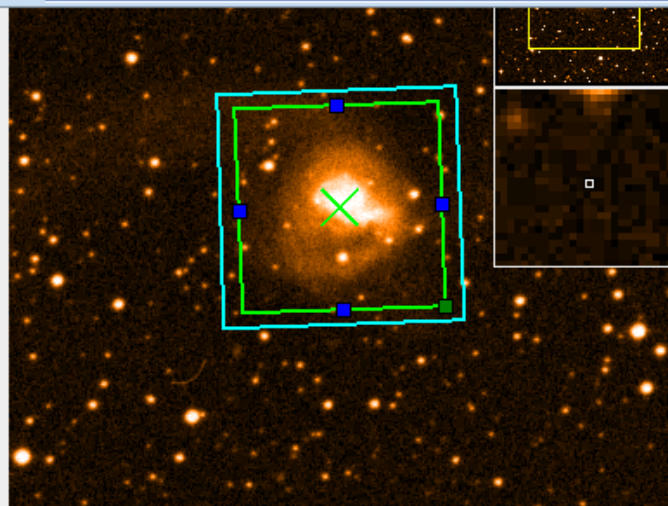




# Crafting mosaics

Editors

Spectral Spatial Field Setup



1x 469, 175 13357.0  
10:27:35.522, -43:56:25.99 (J2000)  
Image Filename remijan\jsky3\cache\jsky9043341093951517820.fits

FOV Parameters

Representative Frequency (Sky) 231.546 GHz  
Antenna Diameter ☒ 12m ☐ 7m  
Antenna Beamsize (HPBW) 26.706 arcsec  
Show Antenna Beamsize ☒

Image Query

Image Server Digitized Sky (Version 1)  
Image Size(arcmin) 10.0

## 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).

**HPBW for the 12m antennas are  $1.13\lambda/D$**

Line Width 0.00000 km/s  
Line Polarization Percentage 0.0 %

Rectangle

Coords Type ☐ ABSOLUTE ☒ RELATIVE

Field Center Coordinates

System J2000  
Offset(Longitude) 0.00000  
Offset(Latitude) 0.00000

p length 2.0 arcmin

q length 2.0 arcmin

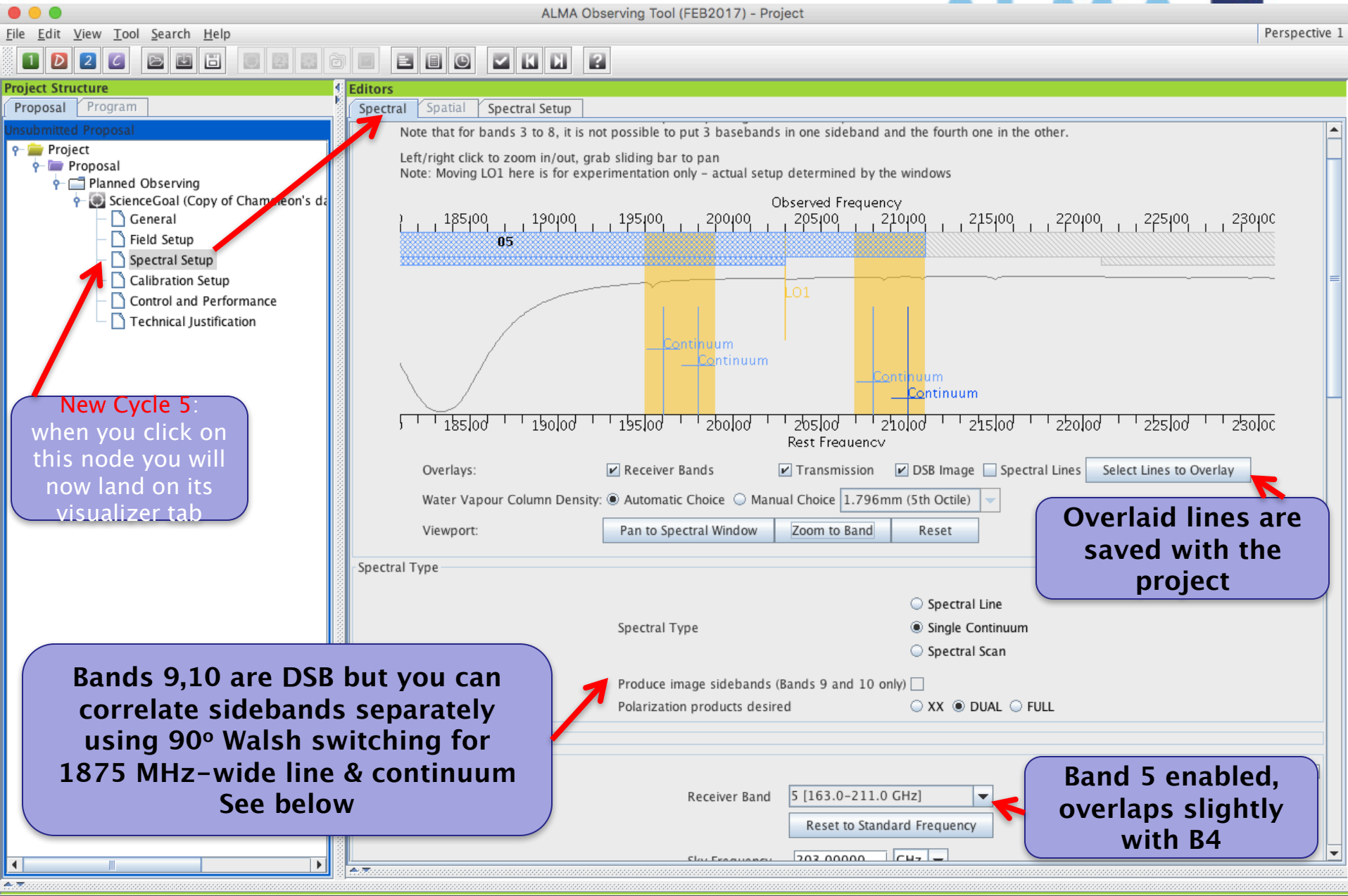
Position Angle 0.00000 deg

Spacing 0.48113 fraction of main beam

#Pointings 12m Array 105 7m Array 39

**Estimated number of 7m Array pointings**

**No more than 150 12m Array pointings.**



## Project Structure

Proposal Program

## Unsubmitted Proposal

- Project
  - Proposal
    - Planned Observing
      - ScienceGoal (Copy of Chameleon's data)
        - General
        - Field Setup
        - Spectral Setup
        - Calibration Setup
        - Control and Performance
        - Technical Justification

## Editors

Spectral Spatial Spectral Setup

## Spectral Line

## Baseband-1

Fraction	Centre Freq (rest,lsrk)	Centre Freq (sky,bar)	Transition	Bandwidth, Resolution
1(Full)	98.70000 GHz	98.69607 GHz	continuum	1875.000 MHz( 5695 km/s), 31.250 MHz

1) ADD spectral windows to get started!

Add spectral window centred on a spectral line

Add spectral window manually

Delete

☐ Show image spectral windows

## Baseband-2

1/2	97.99517 GHz	97.99127 GHz	I-C3H v=0 J=9...	58.594 MHz( 179 km/s), 70.557 kHz( 0.216 km/s)	2	<input type="radio"/>
1/2	97.98095 GHz	97.97705 GHz	CS v=0 2-1	58.594 MHz( 179 km/s), 61.035 kHz( 0.187 km/s)	1	<input type="radio"/>

Add spectral window centred on a spectral line

Add spectral window manually

Delete

☐ Show image spectral windows

## Baseband-3

1/2	86.67076 GHz	86.66731 GHz	HCO 1(0,1)-0(...	58.594 MHz( 203 km/s), 61.035 kHz( 0.211 km/s)	1	<input type="radio"/>
1/2	87.31690 GHz	87.31342 GHz	CCH v=0 N=1-...	58.594 MHz( 201 km/s), 61.035 kHz( 0.210 km/s)	1	<input type="radio"/>

Add spectral window centred on a spectral line

Add spectral window manually

Delete

☐ Show image spectral windows

## Baseband-4

1-0	58.594 GHz	58.594 GHz	...	...	1	<input checked="" type="radio"/>
1-0	58.594 GHz	58.594 GHz	...	...	1	<input type="radio"/>

Add spe

spectral windows

This option will call up a version of the spectral line picker. Windows added this way retain line id and other info from the Splatalogue

Frequencies may also be entered by hand

## Representative Frequency

The representative frequency 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. If the transition you are most interested in does



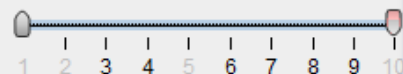
### Transition Filter

CO\*

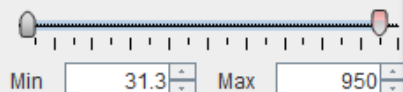
☒ Include description

### Frequency Filters

#### ALMA Band



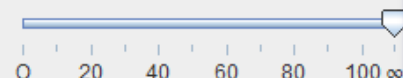
#### Sky Frequency (GHz)



### 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	Line 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	235.79 GHz	235.79 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=7/2-5/2	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 Frequency
CO v=0 2-1		230.538 GHz	230.538 GHz

Remove from Selected Transitions



## Project Structure

Proposal Program

## Unsubmitted Proposal

- Project
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      - ScienceGoal (Copy of Chameleon's data)
        - General
        - Field Setup
        - Spectral Setup
        - Calibration Setup
        - Control and Performance
        - Technical Justification

## Editors

Spectral Spatial Spectral Setup

## Spectral Line

## Baseband-1

Factor	Centre Freq (rest,lsrk)	Centre Freq (sky,bar)	Transition	Bandwidth, Resolution (smoothed)	Spec. Avg.	Representative Window
1(Full)	98.70000 GHz	98.69997 GHz	continuum	1875.000 MHz( 5695 km/s), 31.250 MHz(94.923 km/s)	1	<input type="radio"/>

Sky frequency shown in barycentric frame so rest and sky frequency differ even when  $V_{lsrk}=0$

Add spectral window centred on a spectral line

Add spectral window manually

Delete

☐ Show image spectral windows

## Baseband-3

1/2	86.67076 GHz	86.66731 GHz	HCO 1(0,1)-0(...	58.5	1	<input type="radio"/>
1/2	87.31690 GHz	87.31342 GHz	CCH v=0 N=1-...	58.5	1	<input type="radio"/>

Default spectral binning is 2

Add spectral window centred on a spectral line

Add spectral window manually

Delete

☐ Show image spectral windows

## Baseband-4

1-0	58.594 MHz( 198 km/s), 61.035 kHz( 0.206 km/s)	1	<input checked="" type="radio"/>
1-0	58.594 MHz( 197 km/s), 61.035 kHz( 0.205 km/s)	1	<input type="radio"/>

Once a window is defined with a rest frequency within, the window must always thereafter contain that rest frequency or the OT will complain

## Representative Frequency

The representative frequency 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. If the transition you are most interested in does



## Project Structure

Proposal Program

Unsubmitted Proposal

- Project
  - Proposal
    - Planned Observing
      - ScienceGoal (Copy of Chameleon's data)
        - General
        - Field Setup
        - Spectral Setup
        - Calibration Setup
        - Control and Performance
        - Technical Justification

## Editors

Spectral Spatial Spectral Setup

Polarization products desired

☐ XX
 ☒ DUAL
 ☐ FULL

Spectral Setup Errors

No suitable receiver band for the range :[0.0 GHz, 98.02251613655123 GHz]

Spectral Line

Baseband-1

Fraction	Centre Freq (rest,lsrk)	Centre Freq (sky,bar)	Transition	Bandwidth, Resolution (smoothed)	Spec. Avg.	Representative Window
1(Full)	0.00000 GHz	0.00000 GHz	...Enter Name...	58.594 MHz, 30.518 kHz	1	
				58.594 MHz, 30.518 kHz		
				117.188 MHz, 61.035 kHz		
				234.375 MHz, 122.070 kHz		
				468.750 MHz, 244.141 kHz		
				937.500 MHz, 488.281 kHz		
				1875.000 MHz, 976.563 kHz		
				1875.000 MHz, 31.250 MHz		

Add spectral window centred on a spectral line

Add

Baseband-2

1/2	97.89517 GHz	97.99127 GHz	I-C3H v=0 J=9...	58.594 MHz, 70.557 kHz	2	<input type="radio"/>
1/2	97.98095 GHz	97.97705 GHz	CS v=0 2-1	58.594 MHz, 61.035 kHz	1	<input type="radio"/>

Add spectral window centred on a spectral line

Add spectral window manually

Delete

☐ Show image spectral windows

Baseband-3

1/2	86.67076 GHz	86.66731 GHz	HCO 1(0,1)-0(...	58.594 MHz, 61.035 kHz	1	<input type="radio"/>
1/2	87.31690 GHz	87.31342 GHz	CCH v=0 N=1-...	58.594 MHz, 61.035 kHz	1	<input type="radio"/>

Add spectral window centred on a spectral line

Add spectral window manually

Delete

☐ Show image spectral windows

Baseband-4

1/2	88.63160 GHz	88.62807 GHz	HCN v=0 J=1-0	58.594 MHz, 61.035 kHz	1	<input checked="" type="radio"/>
1/2	89.18853 GHz	89.18498 GHz	HCO+ v=0 1-0	58.594 MHz, 61.035 kHz	1	<input type="radio"/>

Add spectral window centred on a spectral line

Add spectral window manually

Delete

☐ Show image spectral windows

Double click this field to select the desired bandwidth/resolution from a dropdown list

ALMA Observing Tool (FEB2017) - Project

File Edit View Tool Search Help

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000

Perspective 1

Project Structure

Unsubmitted Proposal

Project

Proposal

Planned Observing

ScienceGoal (Copy of Chameleon's data)

General

Field Setup

Spectral Setup

Calibration Setup

Control and Performance

Technical Justification

Editors

Spectral

Spatial

Spectral Setup

Polarization products desired

Spectral Setup Errors

No suitable receiver band for the range :[0.0 GHz, 98.02251613655123 GHz]

Spectral Line

Baseband-1

Fractor

Centre Freq (rest,lsrc)

Centre Freq (sky,bar)

Transition

Bandwidth, Resolution (smoothed)

Spec. Avg.

Representative Window

1(Full)

0.00000 GHz

0.00000 GHz

...Enter Name ...

58.594 MHz, 30.518 kHz

58.594 MHz, 30.518 kHz

117.188 MHz, 61.035 kHz

234.375 MHz, 122.070 kHz

468.750 MHz, 244.141 kHz

937.500 MHz, 488.281 kHz

1875.000 MHz, 976.563 kHz

1875.000 MHz, 31.250 MHz

Add spectral window centred on a spectral line

Add spectral window manually

Baseband-2

1/2

97.99517 GHz

97.99127 GHz

l-C3H v=0 J=9...

58.594 MHz, 70.557 kHz

2

1/2

97.98095 GHz

97.97705 GHz

CS v=0 2-1

58.594 MHz, 61.035 kHz

1

Add spectral window centred on a spectral line

Add spectral window manually

Baseband-3

1/2

86.67076 GHz

86.66731 GHz

HCO 1(0,1)-0(...

58.594 MHz, 61.035 kHz

1

1/2

87.31690 GHz

87.31342 GHz

CCH v=0 N=1-...

58.594 MHz, 61.035 kHz

1

Spectral window manually

Delete

Show image spectral windows

Add spectral window centred on a spectral line

Add spectral window manually

Delete

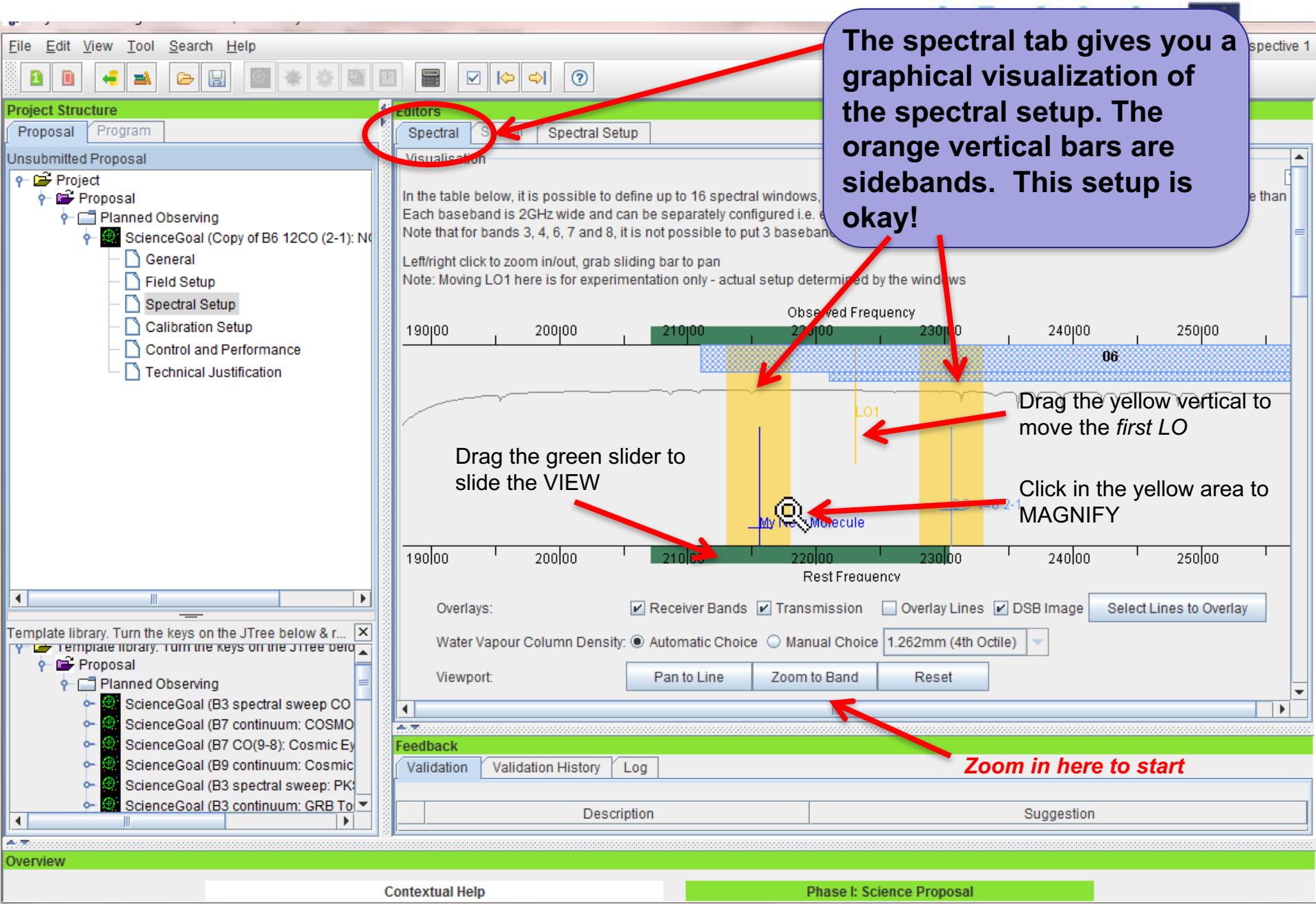
Show image spectral windows

Failing to rename a new spw brings a validation error

Channel binning = spectral averaging default is 2

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

NRAO



# Full Continuum & Polarization

ALMA Observing Tool (FEB2017) - Project

File Edit View Tool Search Help

Perspective 1

**Project Structure**

- Unsubmitted Proposal
  - Project
    - Proposal
      - Planned Observing
        - ScienceGoal (Copy of Chameleon's d...
          - General
          - Field Setup
          - Spectral Setup
          - Calibration Setup
          - Control
          - Techn

**Editors**

Spectral Spatial Spectral Setup

Spectral Type

- ☒ Single Continuum
- ☐ Spectral Scan

Produce image sidebands (Bands 9 and 10 only) ☐

Polarization products desired

- ☐ XX
- ☐ DUAL
- ☒ FULL

Spectral Setup Errors

Single Continuum

Receiver Band

- 4 [125.0-163.0 GHz]
- 3 [84.0-116.0 GHz]
- 4 [125.0-163.0 GHz]
- 5 [163.0-211.0 GHz]
- 6 [211.0-275.0 GHz]
- 7 [275.0-373.0 GHz]

Sky Frequency

Rest Frequency 145.000000 GHz

Centre Freq (sky,topo) Transition Bandwidth, Resolution

145.000000 GHz	Single Continuum	1875.000 MHz( 4073 km/s), 62.500 MHz
----------------	------------------	--------------------------------------

☐ Show image spectral windows

Baseband-2

1(Full)	140.00000 GHz	140.00000 GHz	Single Continuum	1875.000 MHz( 4015 km/s), 62.500 MHz(133.850 km/s)
---------	---------------	---------------	------------------	--

☐ Show image spectral windows

Baseband-3

1(Full)	150.00000 GHz	150.00000 GHz	Single Continuum	1875.000 MHz( 3747 km/s), 62.500 MHz(124.914 km/s)
---------	---------------	---------------	------------------	--

☐ Show image spectral windows

Baseband-4

1(Full)	152.00000 GHz	152.00000 GHz	Single Continuum	1875.000 MHz( 3698 km/s), 62.500 MHz(123.270 km/s)
---------	---------------	---------------	------------------	--

**Standard single continuum setups, can be modified with justification**

**Full Polarization for Bands 3 - 7**  
User can edit frequencies used for continuum polarization. If FULL is specified, an expected polarization percentage must be given with the field setup tab



# Full Continuum & Polarization

ALMA Observing Tool (FEB2017) - Project

File Edit View Tool Search Help

Perspective 1

Project Structure

- Unsubmitted Proposal
  - Project
    - Proposal
      - Planned Observing
        - ScienceGoal (Copy of Chameleon's d...
          - General
          - Field Setup
          - Spectral Setup
          - Calibration Setup
          - Control a
          - Techn

Editors

Spectral Spatial Spectral Setup

Spectral Type

☒ Single Continuum  
☐ Spectral Scan

Produce image sidebands (Bands 9 and 10 only) ☐

Polarization products desired ☐ XX ☐ DUAL ☒ FULL

Receiver Band

4 [125.0-163.0 GHz]  
3 [84.0-116.0 GHz]  
5 [133.0-163.0 GHz]

Standard single continuum setups, can be modified with justification

**Suggestion:**

Polarization Schedule blocks are 3+ hours long to get parallactic angle coverage and the rms noise may be much less than specified on the ctrl&perf page

TECHNICAL JUSTIFICATION shows the actual expected rms noise and various S/N ratios

Full Polarization for Bands 3 - 7  
User can edit frequencies used for continuum polarization. If FULL is specified, an expected polarization percentage must be given with the field setup tab

Baseband-2

1(Full) 140.0000

Baseband-3

1(Full) 150.000000

Baseband-4

1(Full) 152.00000 GHz 152.00000 GHz Single Continuum 1875.000 MHz( 3698 km/s), 62.500 MHz(123.270 km/s)

# Automated spectral scan - I

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 **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



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

- 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)

**Editors**

Spectral Spatial Spectral Setup

**Visualisation**

Spectral windows, 4 per baseband as long as the total Fraction per baseband is no more than 1. configured i.e. each spectral window can have a different bandwidth and resolution. to put 3 basebands in one sideband and the fourth one in the other.

Actual setup determined by the windows

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)

Viewport:

Spectral Type

☐ Spectral Line ☐ Single Continuum ☒ Spectral Scan

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

Feedback

# Saving spw & line rest frequencies

ALMA Observing Tool (FEB2017) - Project

File Edit View Tool Search Help

Perspective 1

**Project Structure**

- Unsubmitted Proposal
  - Project
    - Proposal
      - Planned Observing
        - ScienceGoal (Copy of Chameleon's data)
          - General
          - Field Setup
          - Spectral Setup
          - Calibration Setup
          - Control and Performance
          - Technical Justification

**Editors**

Spectral Spatial Spectral Setup

**Representative Frequency**

The representative frequency is used in conjunction with the sensitivity entered on the 'Control and Performance' editor to set the size of the antenna beam shown in the 'Spatial Visual' editor. If the frequency does not fall in the centre of the chosen spectral window, its frequency can be changed here. The sky position is shown in the targets table below.

152.00000 GHz

**Rest Frequencies**

Please set the rest frequencies of spectral lines that will be observed. These will be used to set the velocity scale and will enhance the ALMA Science Archive. We recommend setting these once the spectral setup is fully defined.

Define Rest Frequencies

**Targets**

Source Name	Velocity	System	Representative Frequency (Sky)
J0942-7731...	0.0 km/s	lsrk	152.0000 GHz
J1058-8003...	0.0 km/s	lsrk	152.0000 GHz
J1136-6827...	0.0 km/s	lsrk	152.0000 GHz
J1145-6954...	0.0 km/s	lsrk	152.0000 GHz
J1147-6753...	0.0 km/s	lsrk	152.0000 GHz
J1152-8344...	0.0 km/s	lsrk	152.0000 GHz
J1224-8313...	0.0 km/s	lsrk	152.0000 GHz
B1251-713...	0.0 km/s	lsrk	152.0000 GHz
J1312-7724...	0.0 km/s	lsrk	152.0000 GHz
J1550-8258...	0.0 km/s	lsrk	152.0000 GHz
J1617-7717...	0.0 km/s	lsrk	152.0000 GHz
J1723-7713...	0.0 km/s	lsrk	152.0000 GHz
J1733-7935...	0.0 km/s	lsrk	152.0000 GHz

**List of saved rest frequencies including:**

- + spw centers
- + Saved overlaid lines (if desired)
- + Defined Rest Frequencies

**This calls a version of the spectral line picker to add rest frequencies that may fall in spectral windows. This can be used later in data reduction to set velocity scales for lines that fall within a spectral window**

# Sideband separation (90° Walsh)

ALMA Observing Tool (FEB2017) - Cycle 5 Kelvin Sensitivity Test

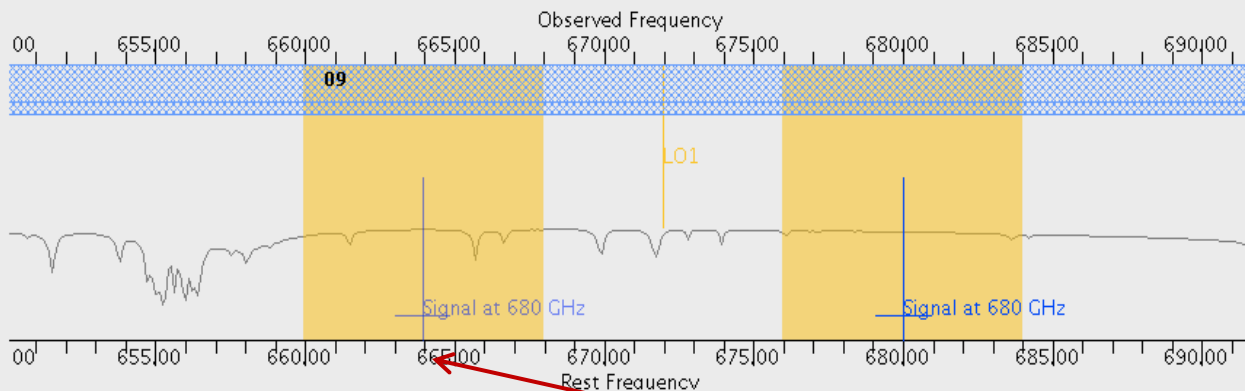
Perspective 1

Bands 9,10 have double sideband rcvrs but the sidebands can be separated using an additional phase-switching step, 90° Walsh switching. This can be turned on solely to reject lines in the image sideband, but once enabled, the two SB may be stored separately. Note that the noise is not affected because only a correlated signal can be separated.

Editors

Spectral Spatial Spectral Setup

Left/right click to zoom in/out, grab sliding bar to pan  
Note: Moving LO1 here is for experimentation only - actual setup determined by the windows



Overlays: ☒ Receiver Bands ☒ Transmission ☒ DSB Image ☐ Spectral Lines   
Water Vapour Column Density: ☒ Automatic Choice ☐ Manual Choice (0.658 mm (2nd Octile))  
Viewport:

See where lines in one SB appear in the other if checked

Turn it on here!

Record both SB?

Spectral Type

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

Baseband-1

Fraction	Centre Freq (rest,lsrk)	Centre Freq (sky,bar)	Transition	Bandwidth, Resolution (smoothed)	Spec. Store	Representativ
1(Full)	679.99934 GHz	680.00000 GHz	Signal at 680 ...	1875.000 MHz( 827 km/s), 1.129 MHz( 0.498 km/s)	2	<input checked="" type="checkbox"/>

Only 1.875 GHz bandwidth, line or continuum





## Project Structure

Proposal Program

Unsubmitted Proposal

- Project
  - Proposal
    - Planned Observing
      - ScienceGoal (Copy of Chameleon's d
      - 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 o

## Control and Performance

## Configuration Information

Antenna Beamsize ( $1.13 * \lambda / D$ )	12m	38.309 arcsec	7m	65.672 arcsec	
Number of Antennas	12m	43	7m	10	TP 3
	ACA 7m configuration      Most compact 12m configuration      Most extended 12m configuration				
Longest baseline		0.049 km	0.161 km	16.197 km	
Synthesized beamsize		10.103 arcsec	2.906 arcsec	0.033 arcsec	
Shortest baseline		0.009 km	0.015 km	0.256 km	
Maximum recoverable scale		47.725 arcsec	24.192 arcsec	0.409 arcsec	

## Desired Performance

Desired Angular Resolu

**Array properties summarized**

Largest Angular Structure in source

0.00000 arcsec

Desired sensitivity per pointing

0.00350 Jy equivalent to 20.581 mK

Bandwidth used for Sensitivity

AggregateBandWidth

Frequency Width 7.500000 GHz

Science goal integration time estimate

Time Estimate

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

Are the observations time-constrained?

☐ Yes ☒ No

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

ALMA Observing Tool (FEB2017) - Cycle 5 Kelvin Sensitivity Test

File Edit View Tool Search Help

Project Structure

- Unsubmitted Proposal
  - Cycle 5 Kelvin Sensitivity Test
    - Proposal
      - Planned Observing
        - ScienceGoal (Range 1.05" .. 3" las=
          - General
          - Field Setup
          - Spectral Setup
          - Calibration Setup
          - Control and Performance**
          - Technical Justification
        - ScienceGoal (Single at 1.053" las=
          - General
          - Field Setup
          - Spectral Setup
          - Calibration Setup
          - Control and Performance
          - Technical Justification
        - ScienceGoal (Single at 2" las=29")
          - General
          - Field Setup
          - Spectral Setup
          - Calibration Setup
          - Control and Performance
          - Technical Justification
        - ScienceGoal (Single at 3" las=29")
          - General
          - Field Setup
          - Spectral Setup
          - Calibration Setup
          - Control and Performance
          - Technical Justification
        - ScienceGoal (Range 1.05" .. 2.63"
          - General
          - Field Setup
          - Spectral Setup
          - Calibration Setup
          - Control and Performance

Editors

Spectral Spatial **Control and Performance**

These parameters are used to control various aspects

Control and Performance

Configuration Information

Antenna Beamsize (  $1.13 * \lambda / D$  ) 12m 65.288 arcsec

Number of Antennas 12m 43

ACA 7m configuration

Longest baseline 0.049 km

Synthesized beamsize 14.158 arcsec 3.882 arcsec 0.048 arcsec

Shortest baseline 0.009 km 0.015 km 0.256 km

Maximum recoverable scale 75.610 arcsec 33.005 arcsec 0.568 arcsec

Desired Performance

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

1.05000 arcsec to 3.00000 arcsec

Largest Angular Structure in source 29.00000 arcsec

Desired sensitivity per pointing 0.10000 K equivalent to 721.13 uJy @ 1.05 "

will provide 12.216 mK @ 3.00 "

Resolution

Are the observations time-constrained? ☐ Yes ☒ No

**Control and Performance shows what resolution and angular scales are observable and defines required angular resolution, sensitivity, largest angular scale etc**

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

**For line work the bandwidth for sensitivity must not be less than the channel spacing in the representative spectral window**

ALMA Observing Tool (FEB2017) - Project

File Edit View Tool Search Help

Perspective 1

Project Structure

- Unsubmitted Proposal
  - Project
    - Proposal
      - Planned Observing
        - ScienceGoal (Copy of Chameleon's d
        - 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 observations, including the required antenna configurations and integration times.

Control and Performance

Configuration Information

Antenna Beamsize (  $1.13 * \lambda / D$  ) 12m 38.309 arcsec 7m 65.672 arcsec

Number of Antennas 12m 43 7m 10 TP 3

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

Longest baseline 0.0

Synthesized beamsize 10.0

Shortest baseline 0.0

Maximum recoverable scale 47.0

Desired Performance

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

3.00000 arcsec

Largest Angular Structure in source 2.0 arcsec

Desired sensitivity per pointing 0.00350 Jy equivalent to 20.581 mK

Bandwidth used for Sensitivity AggregateBandWidth Frequency Width 7.500000 GHz

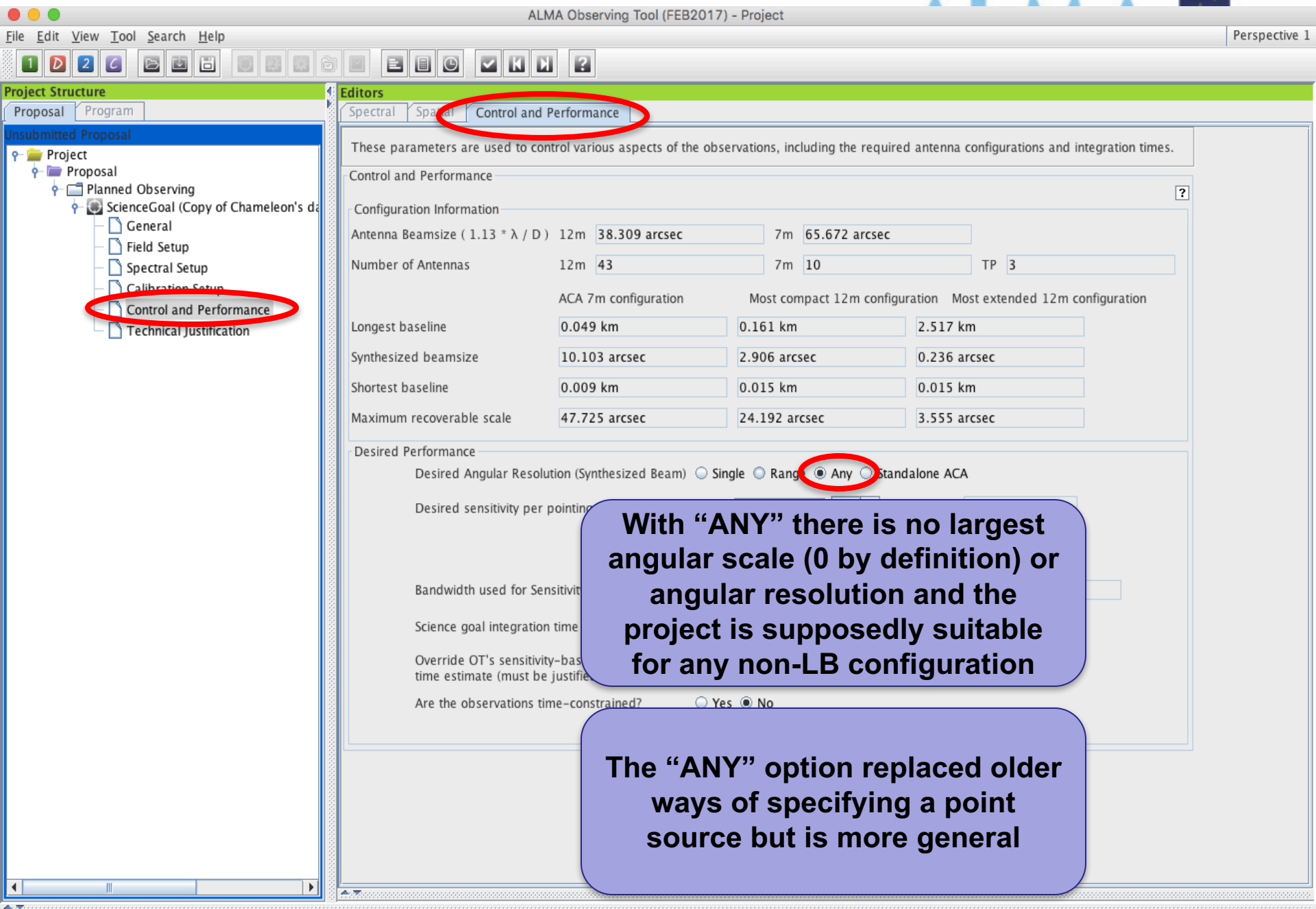
Science goal integration time estimate Time Estimate

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

Are the observations time-constrained? ☐ Yes ☒ No

**Angular resolution options control which configurations and combinations of arrays are considered (see later pages)**

**Flux - Temperature conversion at the desired resolution**



ALMA Observing Tool (FEB2017) - Project

File Edit View Tool Search Help

Perspective 1

Project Structure

Unsubmitted Proposal

- Project
  - Proposal
    - Planned Observing
      - ScienceGoal (Copy of Chameleon's d
      - 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 observations, including the required antenna configurations and integration times.

Control and Performance

Configuration Information

Antenna Beamsize ( $1.13 * \lambda / D$ )	12m 38.309 arcsec	7m 65.672 arcsec
Number of Antennas	12m 43	7m 10

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

Longest baseline	0.049 km	0.161 km	16.197 km
Synthesized beamsize	10.103 arcsec	2.906 arcsec	0.033 arcsec
Shortest baseline	0.009 km	0.015 km	0.256 km
Maximum recoverable scale	47.725 arcsec	24.192 arcsec	0.409 arcsec

Desired Performance

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

Largest Angular Structure in source  arcsec

Desired sensitivity per point

Bandwidth used for Sens

Science goal integration t

Override OT's sensitivity-time estimate (must be ju

Are the observations time

**New! Band 8 is no longer a non-standard observing mode, so can be used with Standalone ACA**

**With Standalone ACA there is a largest angular scale but the angular resolution is fixed by the observing frequency in the representative spectral window**



## 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 3.500 mJy  
Bandwidth used for sensitivity 7.500 GHz  
Representative frequency (sky, first source) 152.00 GHz

Estimated Total time for Science Goal

24.00 h

Cluster 1 Cluster 2 Cluster 3 Cluster 4

Source Name	RA	Dec	Velocity
1723-7713-350	17:23:50.8450	-77:13:50.540	0.000 km/s
1617-7717-1600	16:17:49.2760	-77:17:18.460	0.000 km/s
1550-8258-405	15:50:59.1420	-82:58:06.840	0.000 km/s
1733-7935-1130	17:33:40.7000	-79:35:55.710	0.000 km/s

### Possible Configuration Combinations

12-m (1)	12-m (2)	7-m	TP
C43-1	None	No	No
C43-2	None	No	No
C43-3	None	No	No

### Input Parameters

Precipitable water vapour (all sources) 2.748mm (6th Octile)

### Time required for 12m (1)

Time on source per pointing (first source) 18.14 min [ 70.69 ms]  
Total number of pointings (all sources) 4  
Number of tunings 1  
Total time on source 1.21 h [295.66 ms]  
Total calibration time 33.15 min  
Other overheads 13.60 min

Total time for 1 SB execution  
Number of SB executions  
Total time to complete SB

### Calibration Breakdown

2 x Pointing 4.00 min  
1 x Amplitude/bandpass 5.00 min  
2 x Polarization 4.00 min

Close

## ng Tool (FEB2017) - Project

Perspective 1

aspects of the observations, including

309 arcsec 7m 6

7m 1

configuration Most comp

n 0.161 km

arcsec 2.906 arcsec

n 0.015 km

arcsec 24.192 arcs

d Beam) ☐ Single ☒ Range ☐ Any ☐ Standalone ACA

1.0 arcsec to 3.0 arcsec

3.0 arcsec

0.00350 Jy equivalent to 20.581 mK @ 3.00 "

and 0.18522 K @ 1.00 "

AggregateBandWidth Frequency Width 7.500000 GHz

Time Estimate

**RANGE:**  
You can specify an acceptable range of angular resolution for the 12m array. This implies a set of configuration possibilities, use the time estimate to see what they are

Use the time estimate to see what combinations are possible, what was chosen

## Total and Calibration Times

Science Goal	12-m (1)		12-m (2)		12-m (1+2)		ACA 7-m		ACA TP		Overall		Non-standard Mode
	Tot.	Cal.	Tot.	Cal.	Tot.	Cal.	Tot.	Cal.	Tot.	Cal.	Tot.	Cal.	
At ar 1"	1.03 d	6.21 h	9.92 h	2.48 h	1.45 d	8.70 h	-	-	-	-	1.45 d	8.70 h	No
Overall	1.03 d	6.21 h	9.92 h	2.48 h	1.45 d	8.70 h	-	-	-	-	1.45 d	8.70 h	

Use Tool->display project time summary on the main menu to see these

## Total and Calibration Times

Science Goal	12-m (1)		12-m (2)		12-m (1+2)		ACA 7-m		ACA TP		Overall		Non-standard Mode
	Tot.	Cal.	Tot.	Cal.	Tot.	Cal.	Tot.	Cal.	Tot.	Cal.	Tot.	Cal.	
At ar 3"	31.53 min	13.83 min	-	-	31.53 min	13.83 min	2.63 h	1.15 h	-	-	3.15 h	1.38 h	No
Overall	31.53 min	13.83 min	-	-	31.53 min	13.83 min	2.63 h	1.15 h	-	-	3.15 h	1.38 h	

### When using RANGE:

Rules are operating under the hood to choose among the possible configuration choices and they may be biased toward the low resolution end of a range because less 12m time is needed. See above for an example where is a factor 50 difference in 12m time for ar = 1" vs. ar = 3"

Be careful that the OT is not making choices for you that you would not make for yourself. Before submitting with a range, narrow it and use the project time summary to examine the choices the OT is making

## 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 3.500 mJy  
Bandwidth used for sensitivity 7.500 GHz  
Representative frequency (sky, first source) 152.00 GHz

Estimated Total time for Science Goal 24.00 h

Cluster 1 Cluster 2 Cluster 3 Cluster 4

Source Name	RA	Dec	Velocity
1723-7713-350	17:23:50.8450	-77:13:50.540	0.000 km/s
1617-7717-1600	16:17:49.2760	-77:17:18.460	0.000 km/s
1550-8258-405	15:50:59.1420	-82:58:06.840	0.000 km/s
1733-7935-1130	17:33:40.7000	-79:35:55.710	0.000 km/s

### Possible Configuration Combinations

12-m (1)	12-m (2)	7-m	TP
C43-1	None	No	No
C43-2	None	No	No
C43-3	None	No	No

### Input Parameters

Precipitable water vapour (all sources) 2.748mm (6th Octile)

### Time required for 12m (1)

Time on source per pointing (first source) 18.14 min [ 70.69 ms]  
Total number of pointings (all sources) 4  
Number of tunings 1  
Total time on source 1.21 h [295.66 ms]  
Total calibration time 33.15 min  
Other overheads 13.60 min  
Total time for 1 SB execution 1.50 h  
Number of SB executions 2  
Total time to complete SB 3.00 h

### Calibration Breakdown per SB execution\*

2 x Pointing 4.00 min  
1 x Amplitude/bandpass 5.00 min  
2 x Polarization 4.00 min

Close

## ng Tool (FEB2017) - Project

Perspective 1

aspects of the observations, including the required antenna configurations and integration times.

The time estimate is where you can see how the OT has grouped your targets into clusters, each of which will be in a different schedule block

arcsec

n

arcsec

n

d Beam)

Single

Range

Any

Standalone ACA

1.0

arcsec

to

3.0

arcsec

3.0

arcsec

0.00350

Jy

equivalent to

20.581 mK

@ 3.00 "

and

0.18522 K

@ 1.00 "

AggregateBandWidth

Frequency Width 7.500000 GHz

Time Estimate

Yes No

Yes No

# SG Time Estimates

ALMA Observing Tool (2015.8) - Debris Disk Structure around Nearby Sun-like Stars (2015)

File Edit View Tool Search Help

Project Structure

- Debris Disk Structure around Nearby Sun-like Stars
  - Science Plan
    - ScienceGoal (HD 10647) - generat
      - General
      - Field Setup
      - Spectral Setup
      - Calibration Setup
      - Control and Performance
      - Technical Justification
      - SG OUS (HD 10647)
        - Group OUS
          - Member OUS (HD\_10647)
            - HD\_10647\_a\_06\_TP
              - Group 1 : Calib
              - Group 2 : Scier
              - 6 Targets
                - query Point
                - query Point
                - query Ampl

Editors

Spectral Spatial Control and Performance

These parameters are used to control various aspects of the observations, including the

Control and Performance

Configuration Information

Antenna Beamsize ( $1.13 * \lambda / D$ )	12m	25.260 arcsec	7m	43.3
Number of Antennas	12m	40	7m	10
ACA 7m configuration Most compact				
Longest baseline		0.049 km		0.157 km
Synthesized beamsize		5.712 arcsec		1.721 arcsec
				0.015 km
				12.765 arcsec

0.60000 arcsec

9.0 arcsec

0.00001 Jy

AggregateBandWidth

Time Estimate

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

Click the time estimate to see how much time you need and get a breakdown by array and on-source vs. overhead for the 12m synthesis

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	0.01400 mJy
Bandwidth used for sensitivity	7.500 GHz
Representative frequency (sky, first source)	230.52 GHz

**Estimated Total time for Science Goal** 6.02 h

SB-1

**Input Parameters**

Precipitable water vapour (all sources)	1.796mm (5th Octile)
---	----------------------

**Time required for C40-3**

Time on source per pointing (first source)	1.44 h [1.43 h]
Total number of pointings (all sources)	1
Number of tunings	1
Total time on source	1.44 h [1.43 h]
Total calibration time	49.50 min
Other overheads	14.30 min
Total time for 1 SB execution	1.25 h
Number of SB executions	2
Total time to complete SB	2.51 h

**Calibration Breakdown per SB execution**

5 x Pointing	35.00 min
1 x SidebandRatio	1.58 min
1 x Amplitude	2.50 min
1 x Bandpass	5.00 min
6 x Phase	3.00 min
2 x CheckSource	2.00 min
7 x Atmospheric	4.67 min
Calibration overheads	5.40 min

**Additional Arrays**

ACA 7-m time ( $t_{12m} \times 1.40$ )	3.51 h
Total ACA time ( $\max(t_{7-m}, t_{TP})$ )	3.51 h

**Estimated total time for SB-1** 6.02 h

Close

# SG Time Estimates

ALMA Observing Tool (2015.8) - Debris Disk Structure around Nearby Sun-like Stars (2015)

File Edit View Tool Search Help

Project Structure

- Debris Disk Structure around Nearby Sun-like Stars
  - Science Plan
    - ScienceGoal (HD 10647) - generat
      - General
      - Field Setup
      - Spectral Setup
      - Calibration Setup
      - Control and Performance
      - Technical Justification
      - SG OUS (HD 10647)
        - Group OUS
          - Member OUS (HD\_10647)
            - HD\_10647\_a\_06\_TP
              - Group 1 : Calib
              - Group 2 : Scier
              - 6 Targets
                - query Point
                - query Point
                - query Ampl

Editors

Spectral Spatial Control and Performance

These parameters are used to control various aspects of the observations, including the

Control and Performance

Configuration Information

Antenna Beamsize ( $1.13 * \lambda / D$ )	12m	25.260 arcsec	7m	43.3
Number of Antennas	12m	40	7m	10
ACA 7m configuration Most compact				
Longest baseline		0.049 km		0.157 km
Synthesized beamsize		5.712 arcsec		1.721 arcsec
				0.015 km
				12.765 arcsec

0.60000 arcsec

9.0 arcsec

0.00001 Jy

AggregateBandWidth

Time Estimate

Science goal integration time estimate

Override OT

Are the ob

Feedback

Validation

Click the time estimate to see how much time you need and get a breakdown by array and on-source vs. overhead for the 12m synthesis

This project needs 12m + 7m synthesis owing to the combination of angular resolution and largest angular scale

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	0.01400 mJy
Bandwidth used for sensitivity	7.500 GHz
Representative frequency (sky, first source)	230.52 GHz

**Estimated Total time for Science Goal** 6.02 h

SB-1

**Input Parameters**

Precipitable water vapour (all sources)	1.796mm (5th Octile)
---	----------------------

**Time required for C40-3**

Time on source per pointing (first source)	1.44 h [1.43 h]
Total number of pointings (all sources)	1
Number of tunings	1
Total time on source	1.44 h [1.43 h]
Total calibration time	49.50 min
Other overheads	14.30 min
Total time for 1 SB execution	1.25 h
Number of SB executions	2
Total time to complete SB	2.51 h

**Calibration Breakdown per SB execution**

5 x Pointing	35.00 min
1 x SidebandRatio	1.58 min
1 x Amplitude	2.50 min
1 x Bandpass	5.00 min
6 x Phase	3.00 min
2 x CheckSource	2.00 min
7 x Atmospheric	4.67 min
Calibration overheads	5.40 min

**Additional Arrays**

ACA 7-m time ( $t_{12m} \times 1.40$ )	3.51 h
Total ACA time ( $\max(t_{7-m}, t_{TP})$ )	3.51 h

**Estimated total time for SB-1** 6.02 h

Close



# Single source time estimates

ALMA Observing Tool (2015.8) - Debris Disk Structure around Nearby Sun-like Stars (2015)

File Edit View Tool Search Help

Project Structure

- Debris Disk Structure around Nearby Sun-like Stars
  - Science Plan
    - ScienceGoal (HD 10647) - generate
      - General
      - Field Setup
      - Spectral Setup
      - Calibration Setup
      - Control and Performance
      - Technical Justification
      - SG OUS (HD 10647)
        - Group OUS
          - Member OUS (HD 10647)
            - Group 1
            - Group 2
            - 6 Target
              - query
              - query
              - query

Editors

Spectral Spatial Control and Performance

These parameters are used to control various aspects of the observations, including the

Control and Performance

Configuration Information

Antenna Beamsize (  $1.13 * \lambda / D$  ) 12m 25.260 arcsec 7m 43.3

Desired sensitivity per pointing 0.00001 Jy

Bandwidth used for Sensitivity AggregateBandWidth

Science goal integration time estimate 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

Note that the OT calculates the number of executions based on an estimate of the maximum duration of an SB. This means that adding a little bit of on-source time can sometimes make for a significantly larger total time if another execution is implied

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	0.01400 mJy
Bandwidth used for sensitivity	7.500 GHz
Representative frequency (sky, first source)	230.52 GHz
<b>Estimated Total time for Science Goal</b>	<b>6.02 h</b>

Input Parameters

Precipitable water vapour (all sources)	1.796mm (5th Octile)
---	----------------------

Time required for C40-3

Time on source per pointing (first source)	1.44 h [1.43 h]
Total number of pointings (all sources)	1
Number of tunings	1
Total time on source	1.44 h [1.43 h]
Total calibration time	49.50 min
Other overheads	14.30 min
Total time for 1 SB execution	1.25 h
Number of SB executions	2
Total time to complete SB	2.51 h

Calibration Breakdown per SB execution

3 x Pointing	36.00 s
1 x SidebandRatio	1.58 min
1 x Amplitude	2.50 min
1 x Bandpass	5.00 min
6 x Phase	3.00 min
2 x CheckSource	2.00 min
7 x Atmospheric	4.67 min
Calibration overheads	5.40 min

Additional Arrays

ACA 7-m time ( $t_{12m} \times 1.40$ )	3.51 h
Total ACA time ( $\max(t_{7-m}, t_{TP})$ )	3.51 h

Estimated total time for SB-1 6.02 h

Close

Project Structure

Proposal

SUBMITTED

Bulge Asymmetries and Dynamical Evolution (BAaDE)

Generate SBS from the Selected Goal

Generate Phase I SBS from all the Science Goals

Generate Phase II SBS from all the Science Goals

Export selected Scheduling

Generate a PDF of Whole P

Disable Edit Protect

ScienceGoal (MSXiiiRA16b1)

ScienceGoal (MSXiiiRA16b2)

Bulge Asymmetries and Dynamical Evolution (BAaDE)

Generate Phase I SBS from all the Science Goals

Generate Phase II SBS from all the Science Goals

Export selected Scheduling

Generate a PDF of Whole P

Disable Edit Protect

ScienceGoal (MSXiiiRA16b1)

ScienceGoal (MSXiiiRA16b2)

Project Time Estimates

## 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
          - General
          - Field Setup
          - Spectral Setup
          - Calibration Setup
          - Control and Performance
          - Technical Justification

**Editors**

Spectral Spatial Control and Performance

Do you request complementary ACA Observations? ☐ Yes ☒ No

Suggest

Time Estimate

A file format is defined in the help to import a list of time constraints

Are the observations time-constrained? ☒ Yes ☐ No

Please specify one or more suitable time windows for your observation

Your observation will be scheduled once during on

Number of time windows specified : 1

Start Date/Time (UTC) End Date/Time (UTC)

2013-10-02 13:17 2013-10-02 13:18

< October >

< 2013 >

S M T W T F S

29 30 1 2 3 4 5

6 7 8 9 10 11 12

13 14 15 16 17 18 19

20 21 22 23 24 25 26

27 28 29 30 31 1 2

3 4 5 6 7 8 9

Add Delete

**Entering Time Constrained observations – Dates, Epochs or Monitoring**

appropriate justification or additional information

Feedback

Overview

Contextual Help

Phase I: Science Proposal

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

ALMA Observing Tool (FEB2017) - Chameleon's Dark Neutral Matter (2016.1.00714.S last submitted 2016-08-30 10:29:11)

File Edit View Tool Search Help

ALMA LO Configuration Tool...

Project Structure

Proposal Program

SUBMITTED

Chameleon's Dark Neutral Matter

Science Plan

ScienceGoal (Chameleon's dark neutral matter)

General

Field Setup

Spectral Setup

Calibration Setup

Control and Performance

Technical Justification

SG OUS (Chameleon's dark neutral matter)

Group OUS

Member OUS (J1723-7713)

J1723-77\_a\_03\_TM1[1]

Group 1 : Calibrator

Group 2 : Science

9 Targets

query Pointing Temperature

query Pointing Temperature

query Amplitude

query Phase (Phase)

query Bandpass

[R] [D2] J1723-7713

J1550-8258-40

J1617-7717-16

J1733-7935-11

Resources

9 Field Sources

Pointing Temperature

Pointing Temperature

Amplitude query

Phase query

Bandpass query

Primary: J1723-7713

Primary: J1550-8258-40

Primary: J1617-7717-16

Primary: J1733-7935-11

2 Instrument Setups

B3 Pointing Setup

HCN v=0 J=1-0

Sensitivity Calculator

These parameters are used

Control and Performance

Configuration Information

Antenna Beamsize ( 1.13 \* )

Number of Antennas

Longest baseline

Synthesized beamsize

Shortest baseline

Maximum recoverable scale

Desired Performance

Desired Angular Resolution

Largest Angular Structure

Desired sensitivity per

Bandwidth used for Ser

Science goal integration

Override OT's sensitivity

time estimate (must be

Are the observations tim

Sensitivity Calculator

Common Parameters

Dec 00:00:00.000

Polarization Dual

Observing Frequency 345.00000 GHz

Bandwidth per Polarization 7.50000 GHz

Water Vapour ☒ Automatic Choice ☐ Manual Choice

Column Density 0.913mm (3rd Octile)

Trx, tau, Tsky 75 K, 0.158, 39.538 K

Tsys 157.027 K

Individual Parameters

	12m Array		7m Array		Total Power Array	
Number of Antennas	43		10		3	
Resolution	0.00000	arcsec	5.97455	arcsec	16.9	arcsec
Sensitivity (rms)	0.00000	uJy	0.00000	uJy	0.00000	uJy
(equivalent to)	Unknown	K	0.00000	K	0.00000	K
Integration Time	60.00000	s	60.00000	s	60.00000	s

Integration Time Unit Option Automatic

Sensitivity Unit Option Automatic

Calculate Integration Time Calculate Sensitivity Close

A valid sensitivity must be entered in order to calculate an integration time.

# Tech Justification

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 2.4414062500000005E-4 GHz is 3.00 mJy For a peak flux density of 30.00 mJy, the achieved S/N is 10.0

Achieved RMS over the total 351.56 MHz bandwidth is 111.80 uJy For a continuum flux density of 100.00 mJy, the achieved S/N is 894.4

For a peak line flux of 30.00 mJy, the achieved S/N over 1/3 of the source line width ( 30.00 km/s / 3 = 10.00 km/s ) is 26.1

Line width / bandwidth used for sensitivity 30.00 km/s / 731.92 m/s = 40.99

Dynamic Range: 33.33

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 standard sections for Sensitivity, Imaging and Correlator and another may appear to allow you to justify some of the parameter choices you may have made

Each requires its own 50+ word justification

Each standard section comes with a summary of the requested input information to detail the different technical aspects of your program.



# Tech Justification



File Edit View Tool Search Help

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

# When the time is ripe ... validate & submit

Project - Observing Tool for ALMA, version Cycle2Test2

Note the spiffy new icons!


Editors: Spectral, Spatial, Project

Click here to make sure that your project can be validated by the OT. If it doesn't validate the archive will reject it.

When you are satisfied that your proposal is complete, click here to submit your proposal to the archive

Overview

Contextual Help

1. Please ensure you and your co-Is are registered with the [ALMA Science Portal](#)
2. Create a new proposal by either:
  - Selecting *File > New Proposal*
  - Clicking on the **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

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

Template library. Turn the keys on the J...

- Template library. Turn the keys on the J...
- Proposal
  - Planned Observing
    - ScienceGoal (B3 spectral)
    - ScienceGoal (B7 continuum)
    - ScienceGoal (B7 CO(9-8))
    - ScienceGoal (B9 continuum)
    - ScienceGoal (B3 spectral)
    - 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)
    - ScienceGoal (B9 spectral)
    - ScienceGoal (B3 continuum)
    - ScienceGoal (B6 continuum)

## Editors

Spectral Spatial ScienceGoal (Science Goal)

System J2000 Sexagesimal display? ☒ Parallax 0.00000 mas

Source Coordinates RA 22:02:43.2912 PM RA 0.00000 mas/yr

Dec -42:16:39.978 PM DEC 0.00000 mas/yr

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

Target Type ☒ Individual Pointing(s) ☐ 1 Rectangular Field

Expected Source Properties

Peak Continuum Flux Density per Beam 0.00000 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 %

Field Center Coordinates

Offset ☒ arcsec

1

RA [arcsec]	Dec [arcsec]
0.00000	0.00000

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

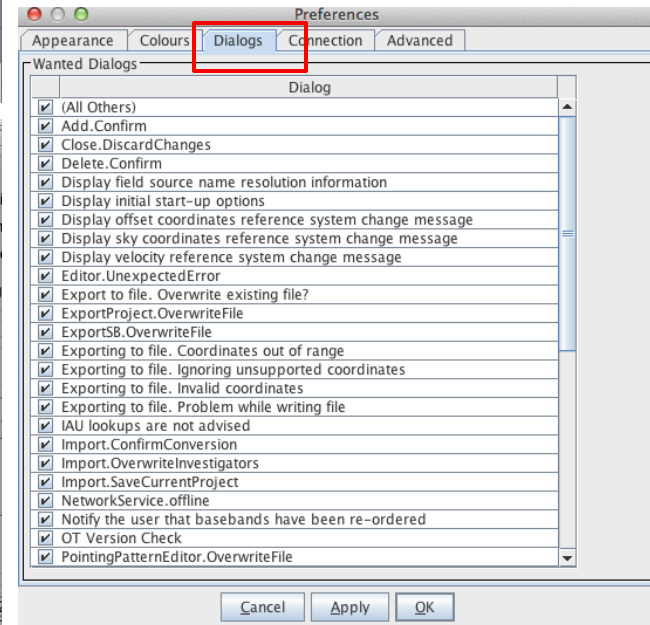
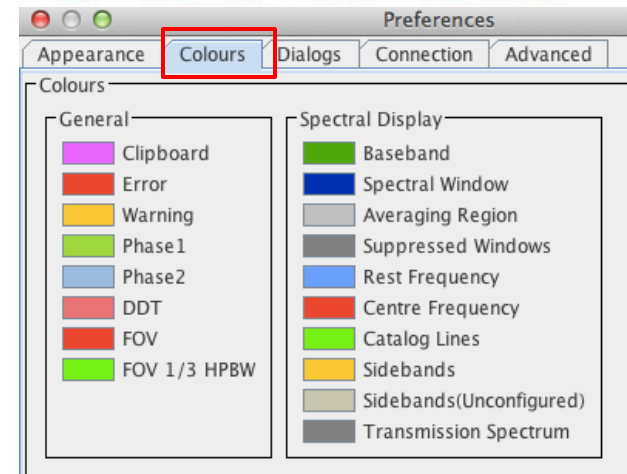
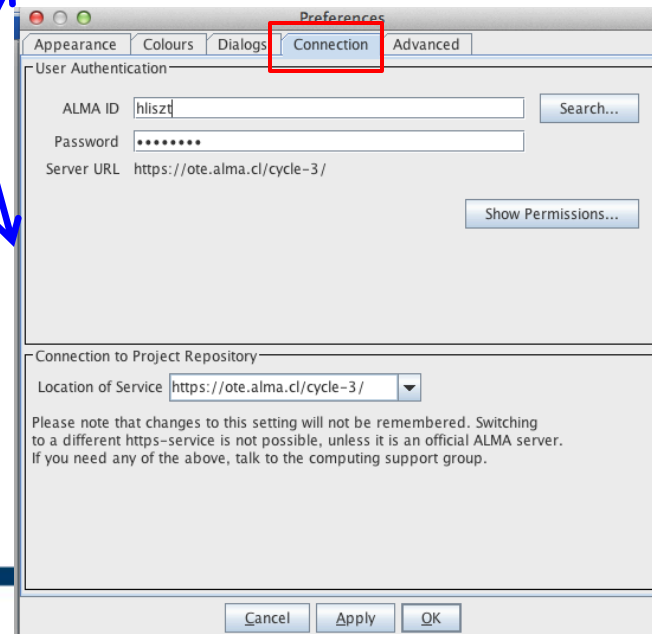
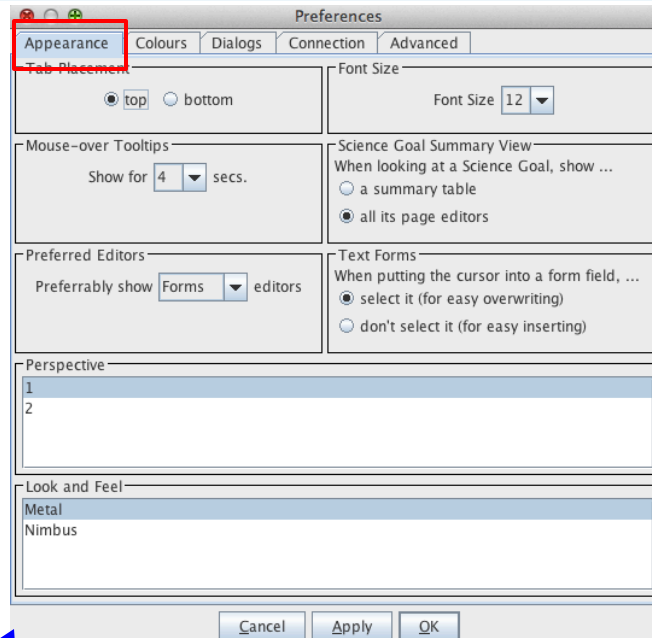
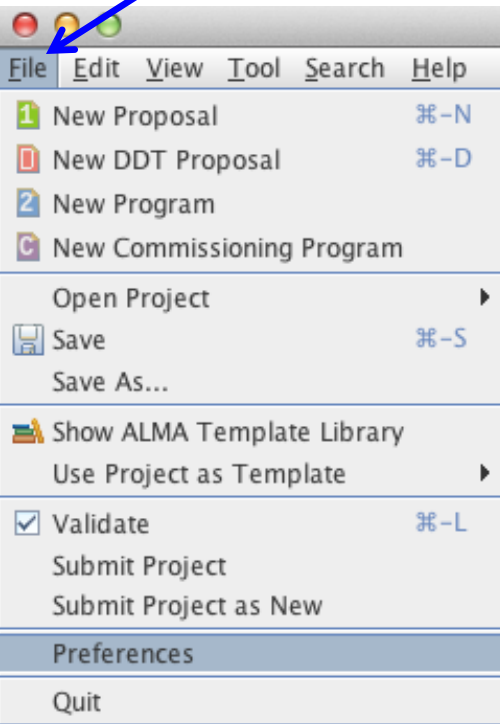
## Feedback

Validation Validation History Log

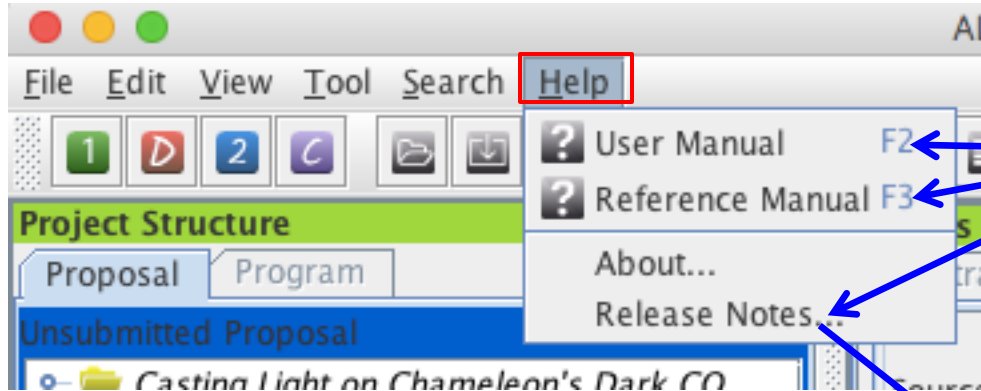
9 errors, 0 warnings

Description	Suggestion
<input checked="" type="checkbox"/> No Principal Investigator specified	Select the top level Project node in the tree and fill in the Principal Investigator field
<input checked="" type="checkbox"/> No scientific category defined	Select Proposal node and set a scientific category
<input checked="" type="checkbox"/> No document found – you must add a Science Case to your proposal	Select the proposal node in the Proposal tab and add your document
<input checked="" type="checkbox"/> Must select a minimum of 1 science keywords	Select the Proposal node and then add some science keywords (minimum 1
<input checked="" type="checkbox"/> 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
<input checked="" type="checkbox"/> 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

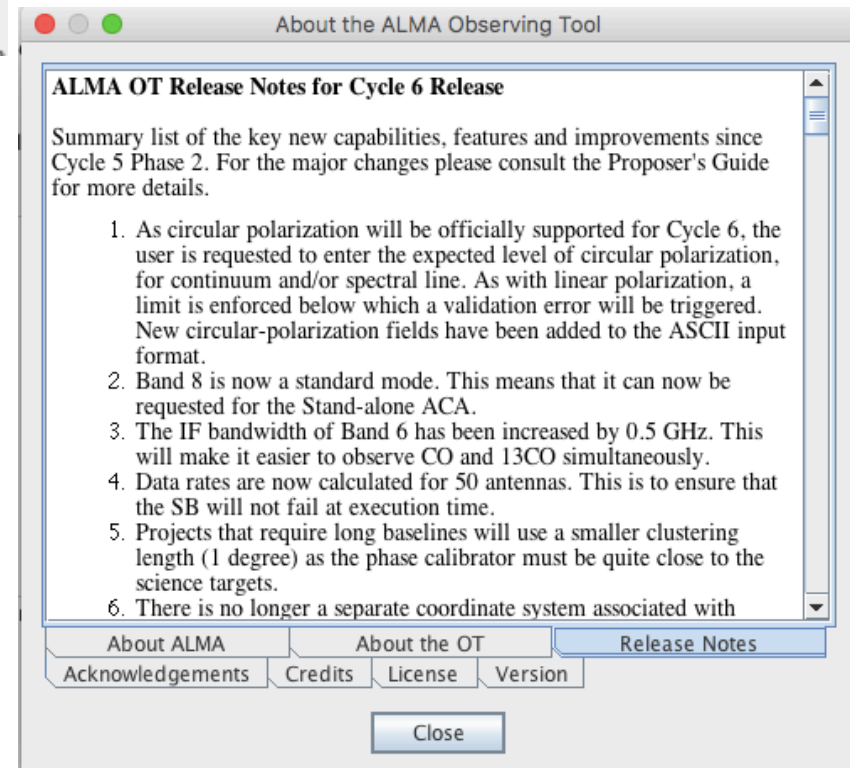
# Use preferences to customize



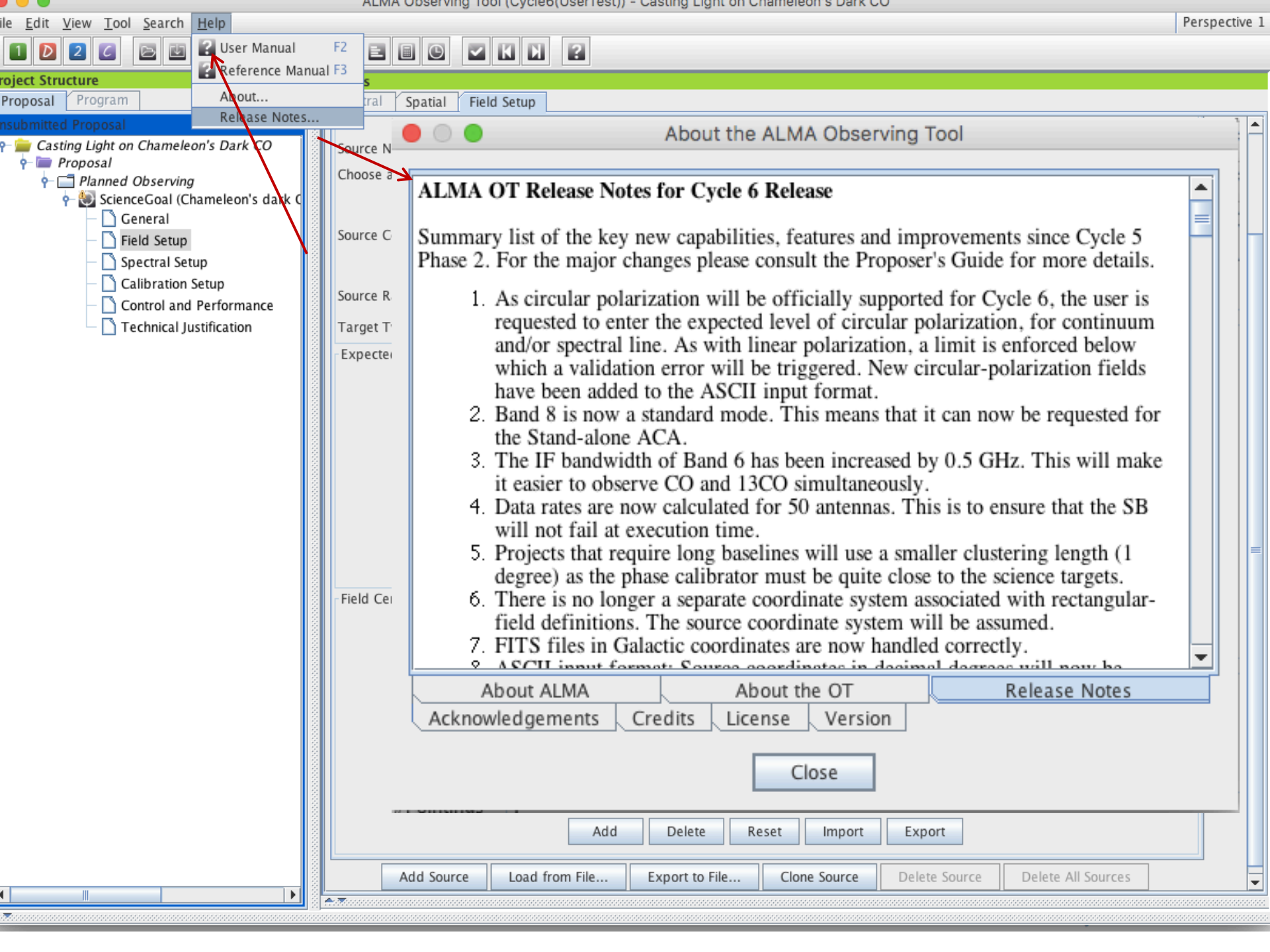
# Don't be afraid to ask for directions



Suggestion: input file formats are shown in the help sections that you invoke with the local ?







## About the ALMA Observing Tool

## ALMA OT Release Notes for Cycle 6 Release

Summary list of the key new capabilities, features and improvements since Cycle 5 Phase 2. For the major changes please consult the Proposer's Guide for more details.

1. As circular polarization will be officially supported for Cycle 6, the user is requested to enter the expected level of circular polarization, for continuum and/or spectral line. As with linear polarization, a limit is enforced below which a validation error will be triggered. New circular-polarization fields have been added to the ASCII input format.
2. Band 8 is now a standard mode. This means that it can now be requested for the Stand-alone ACA.
3. The IF bandwidth of Band 6 has been increased by 0.5 GHz. This will make it easier to observe CO and 13CO simultaneously.
4. Data rates are now calculated for 50 antennas. This is to ensure that the SB will not fail at execution time.
5. Projects that require long baselines will use a smaller clustering length (1 degree) as the phase calibrator must be quite close to the science targets.
6. There is no longer a separate coordinate system associated with rectangular-field definitions. The source coordinate system will be assumed.
7. FITS files in Galactic coordinates are now handled correctly.
8. ASCII input format: Source coordinates in decimal degrees will now be

About ALMA

About the OT

Release Notes

Acknowledgements

Credits

License

Version

Close

Add

Delete

Reset

Import

Export

Add Source

Load from File...

Export to File...

Clone Source

Delete Source

Delete All Sources

- The same cut and paste commands you use outside the OT for text also work inside it since Cycle 5
- Ctrl-Z global shortcut will expand out all succeeding items in the J-tree (try it, you'll see what we mean)
- 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 does galactic-celestial conversion automatically
  - Cannot convert in other ways, eg not FK5 J2000 to ICRS. FK5 J2000 now deprecated

# A Few More OT Tips...

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- **NEW** In the J-tree: Holding down the alt key in combination with the up/down arrows will move from a node in one SG to the same node in the adjacent SG (try it when you have more than one SG)



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

# ALMA



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## Observatory News

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Jan 18, 2017

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Jan 16, 2017

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## NRAO News

[American Astronomical Society Meeting](#)  
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Jun 05, 2017

[Women in Astronomy IV: The Many Faces of Women Astronomers](#)  
Jun 09, 2017

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## Status

[ALMA Cycle 5 Pre-Announcement](#)

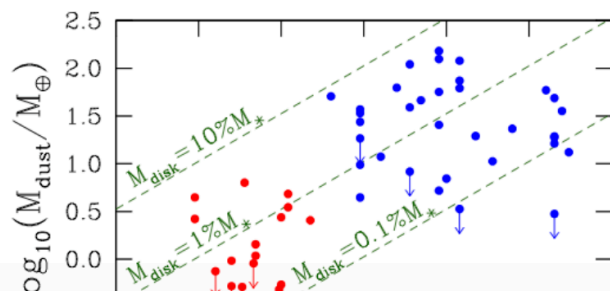
[Refereed publications:](#)

[Last observed source:](#)

[Current configuration: C40-2](#)

[More...](#)

## Science Highlights - Possible Disk Truncation in Ophiuchus Brown Dwarfs



The sensitivity, resolution and the wavelength coverage of ALMA makes it an ideal tool for studying the properties of the cold outer disks of young stars and low mass objects. Such observations can aid us in understanding the formation of their central objects and their likelihood of ultimately hosting planets. In a recent [Astronomy & Astrophysics paper](#), Dr. Testi and his collaborators made use of ALMA Band 7 to observe an unbiased sample of spectroscopically confirmed Ophiuchus brown dwarfs with infrared excesses.



[www.almascience.org](http://www.almascience.org)  
**ALMA Science Portal @ NRAO**

# I could use a hand...

# ALMA



*Have no fear, the ALMA Helpdesk is here...*

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Live Chat Software by Kayako

[SEARCH](#)

## Knowledgebase

### General ALMA Queries (13)

- Can I submit a ticket in Japanese?
- How close can ALMA observe to the Sun?

### Project Planning (14)

- What should I include for the content of the Technical Justification and in what format should I submit it?
- Where can I find the online ALMA observing simulator developed by the University of Manchester?

### Early Science - Cycle 1 (31)

- Can I use "breakpoints" in ALMA cycle 1?
- The Cycle 1 Technical Handbook has some gaps in its discussion of ALMA receivers (SSB, 2SB, DSB). What else can you tell me about them?

### ALMA Observing Tool (OT) (29)

- What do I do if I can't get the OT to work?
- How do I deal with targets with unspecified coordinates in the OT?

### Resources & Observer Support (12)

- How do I arrange a visit to one of the ARCs?
- Where can I find ALMA documentation and manuals?

### Proposal Handling (5)

- May I submit an identical proposal to more than one category, e.g. submitting a proposal on distant galaxies both to cosmology and to galaxy categories?
- Which category should I submit a proposal on distant galaxies: "cosmology/high-z" or "Galaxies/Nuclei"?







**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.

