# An Introduction to the Cycle 8 ALMA Observing Tool

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


George C. Privon

Author: Harvey Liszt


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

# New for Cycle 8 - 1I:

- The whole-proposal .pdf and printable summary generated by the OT will not show PI or co-I names

## Casting Light on Chameleon's Dark CO

**ABSTRACT**

In Cycle 4 proposal 2016.1.00714.S we searched for HCO+ absorption against 13 QSO-phase calibrators seen toward the Chameleon cloud complex, where the H I - H2 transition has been extensively studied in H I, CO, dust optical depth, extinction, and gamma-ray emission. The results were delivered in 2017 March. Although CO emission is seen in one or two directions, HCO+ absorption was present in all directions but one where the QSO flux was very low. Here we propose to observe 2.6mm 12CO absorption along six of the Chameleon sightlines (two clusters of three sources), to determine whether the CO is dark due to low CO column density or low number density and weak rotational excitation. The 5sigma upper limits on N(CO) derived from this work will be 10 times below those that would be inferred from the upper limits on CO emission alone.

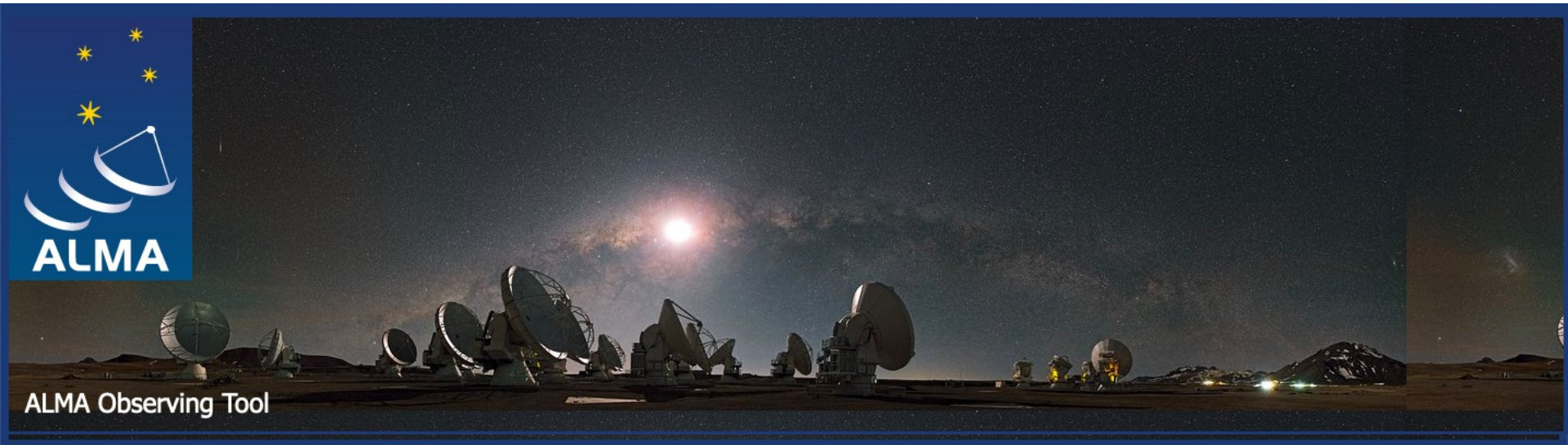
| | | | | | |
|---|---|---|---|---|---|
| SCIENCE CATEGORY: | ISM, star formation and astrochemistry | | | | |
| ESTIMATED 12-M TIME: | 2.0 h | ESTIMATED 7-M TIME: | 0.0 h | ESTIMATED TP TIME: | 0.0 h |
| DUPLICATE OBSERVATION JUSTIFICATION: | | | | | |

**REPRESENTATIVE SCIENCE GOALS (UP TO FIRST 30)**

| SCIENCE GOAL | POSITION | BAND | ANG.RES.(") | LAS.(") | ACA? |
|---|---|---|---|---|---|
| Chameleon's dark CO viewed in 2.6 mm J=1-0 absorption cluster 1 | ICRS 11:36:02.0970, -68:27:05.810 | 3 | 1.600 - 0.100 | 0.000 | N |
| Chameleon's dark CO viewed in 2.6 mm J=1-0 absorption cluster 2 | ICRS 09:42:42.7520, -77:31:11.840 | 3 | 1.600 - 0.100 | 0.000 | N |
| Total # Science Goals : 2 | | | | | |

| | | | |
|---|---|---|---|
| SCHEDULING TIME CONSTRAINTS | NONE | TIME ESTIMATES OVERRIDDEN ? | No |

# Installing the ALMA OT




**OT Installers**

The recommended method of installing the OT is using the platform specific installers below. All of the installers come with a 64-bit Java runtime environment included so there is no requirement to install Java separately.

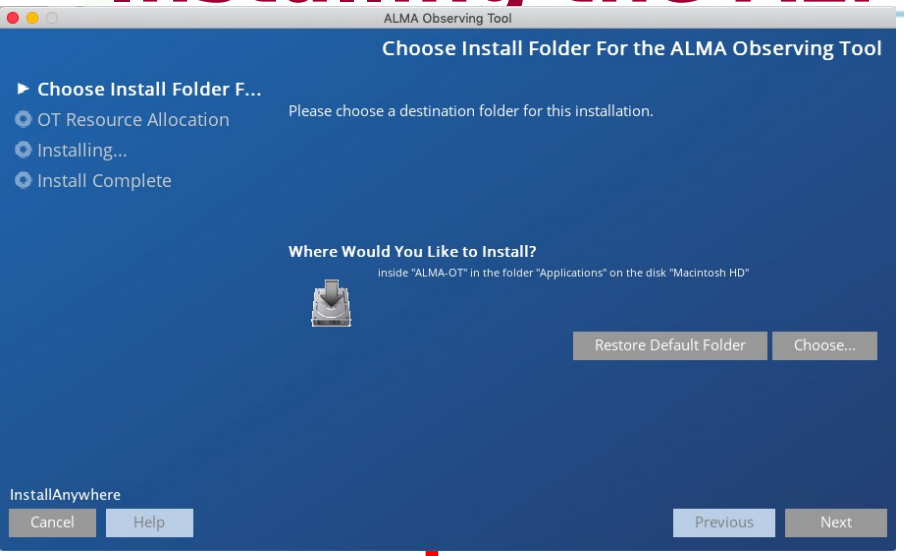
- **Linux Installer**
- **Windows Installer**
- **MacOS Installer**

**An installer .zip is downloaded that expands to the installer application**

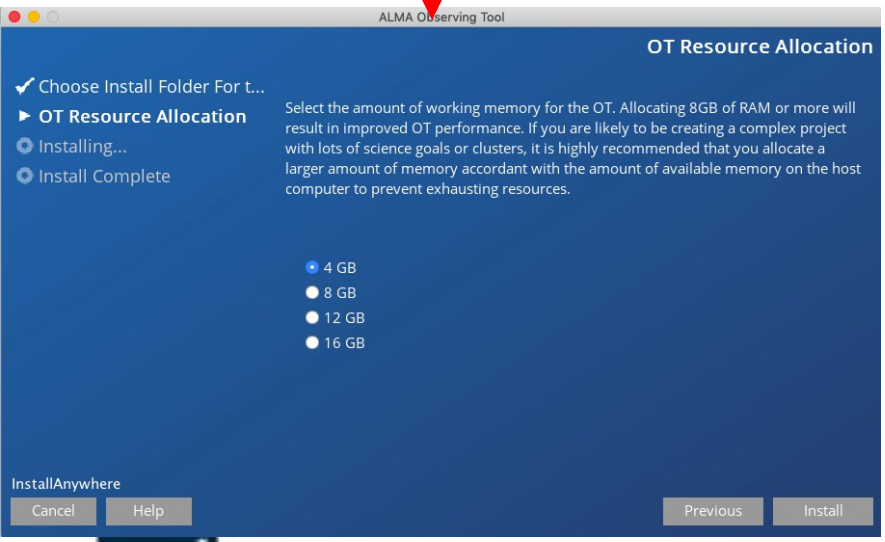
**Bigger with an RTE**

| Name | Size | Date Modified | Kind |
|---|---|---|---|
| IMG_0095.MOV | 513.6 MB | Nov 24, 2019 at 11:58 PM | QuickTime movie |
| almaot-installer | 291.1 MB | Today at 9:40 AM | Application |
| almaot-installer.zip | 288.5 MB | Yesterday at 9:24 AM | ZIP archive |

# Installing the ALMA OT

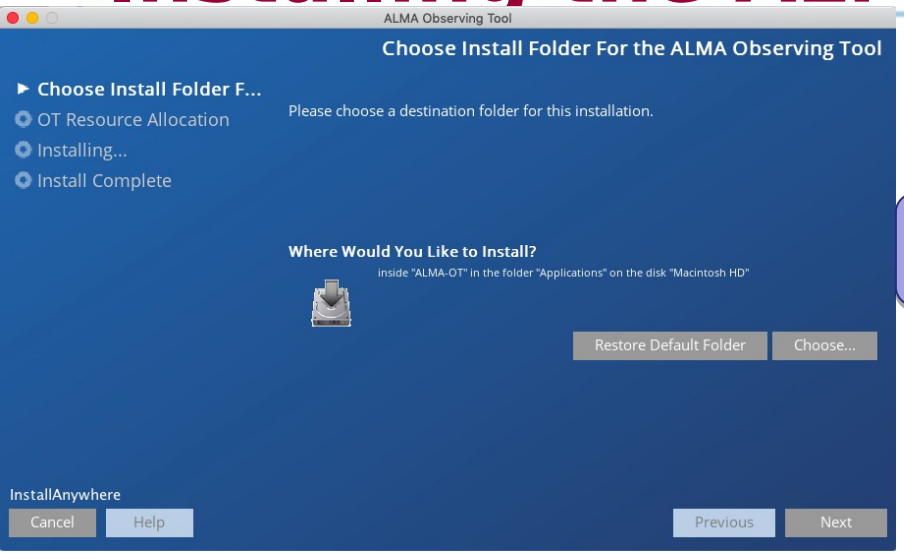



The installation package will ask where to install with a default in 'Applications' for MacOS

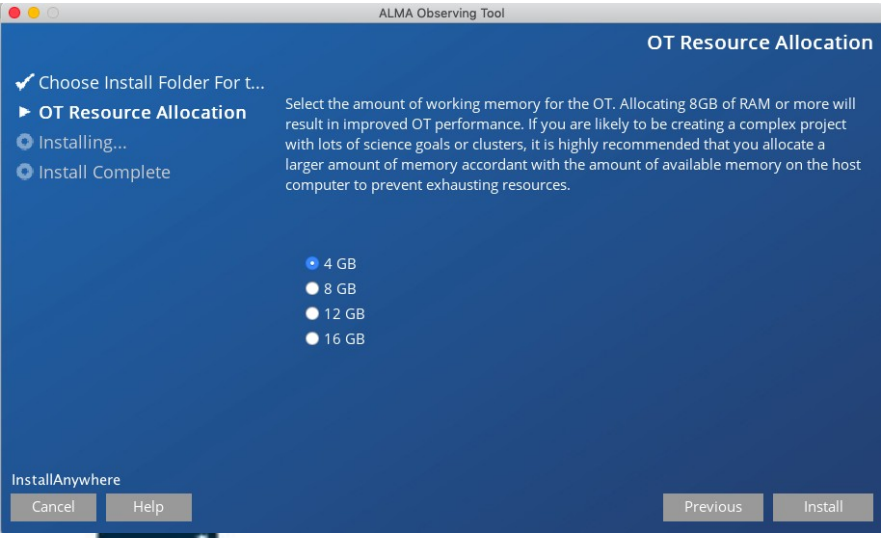


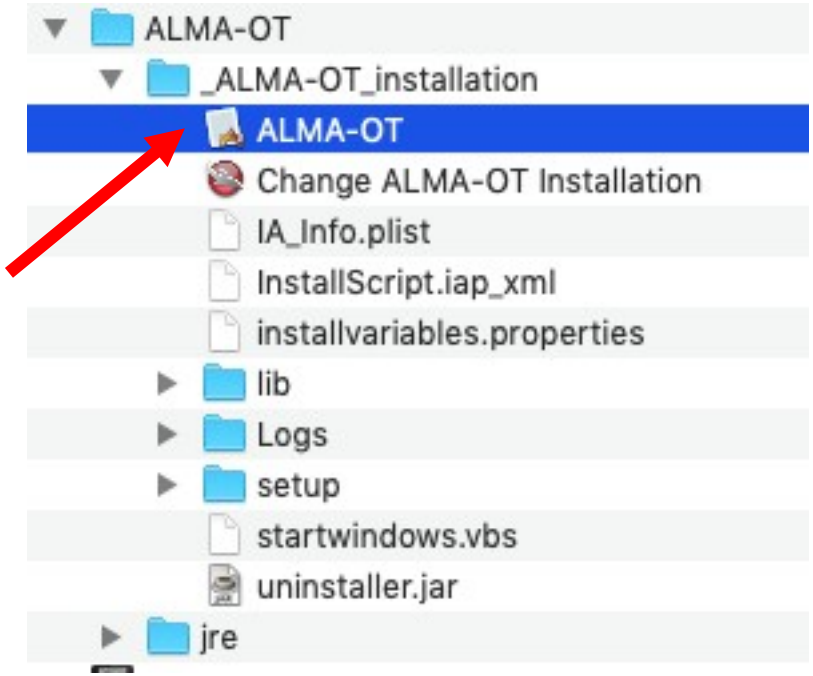

It will ask for a heap size. Larger is better. You can specify a number greater than your machine memory without causing problems

# Installing the ALMA OT




**After installation there will be an application in the destination directory**



# Installing the ALMA OT


1. Download the tar file using the following **link**
2. Unzip the tar file.
3. Perform the setup:
   - Linux or macOS:

     ```
     cd ALMAOT-Cycle*/setup
     ./Setup-Linux.sh
     cd ..
     ```

   - MS Windows

     Go to the ALMAOT-Cycle*/setup directory

     Double click "Setup-Windows" (may read "Setup-Windows.cmd")
4. Start the OT:
   - Linux or macOS:

     ```
     ./ALMA-OT.sh
     ```

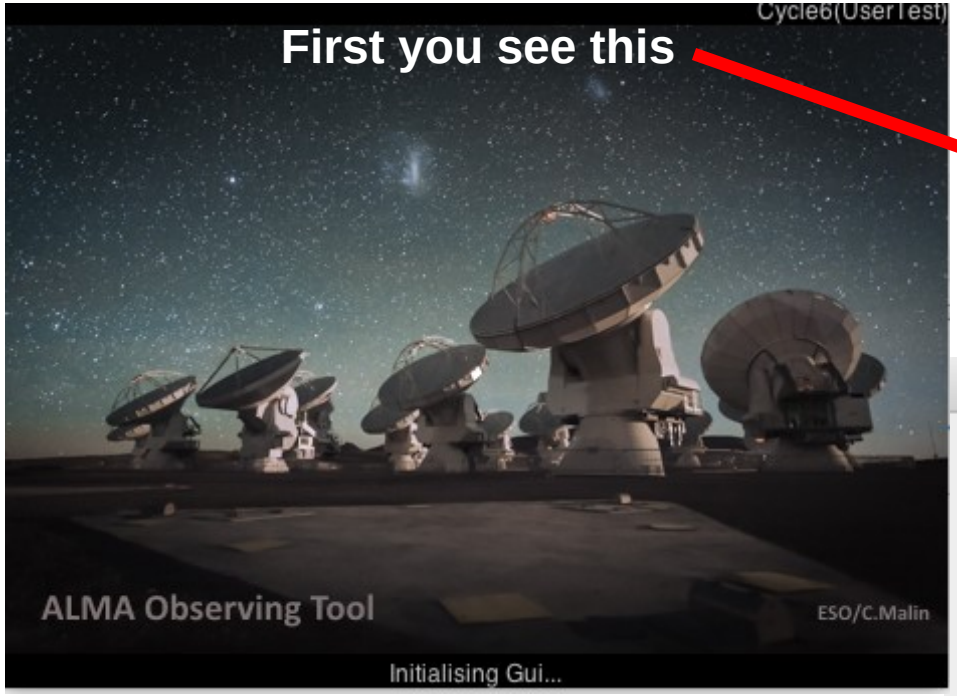
   - MS Windows

     Double-click "ALMA-OT" (might read "ALMA-OT.cmd")

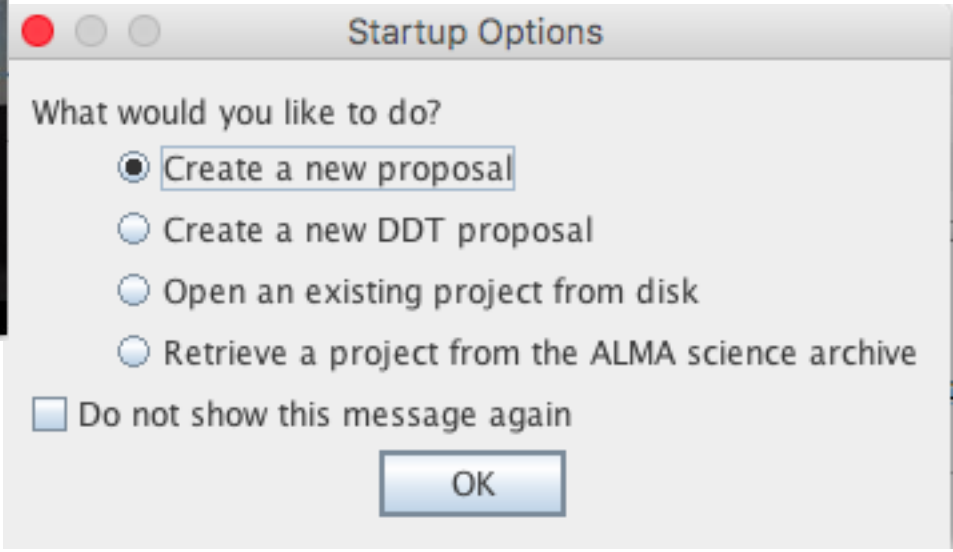
craige.bevil@stfc.ac.uk

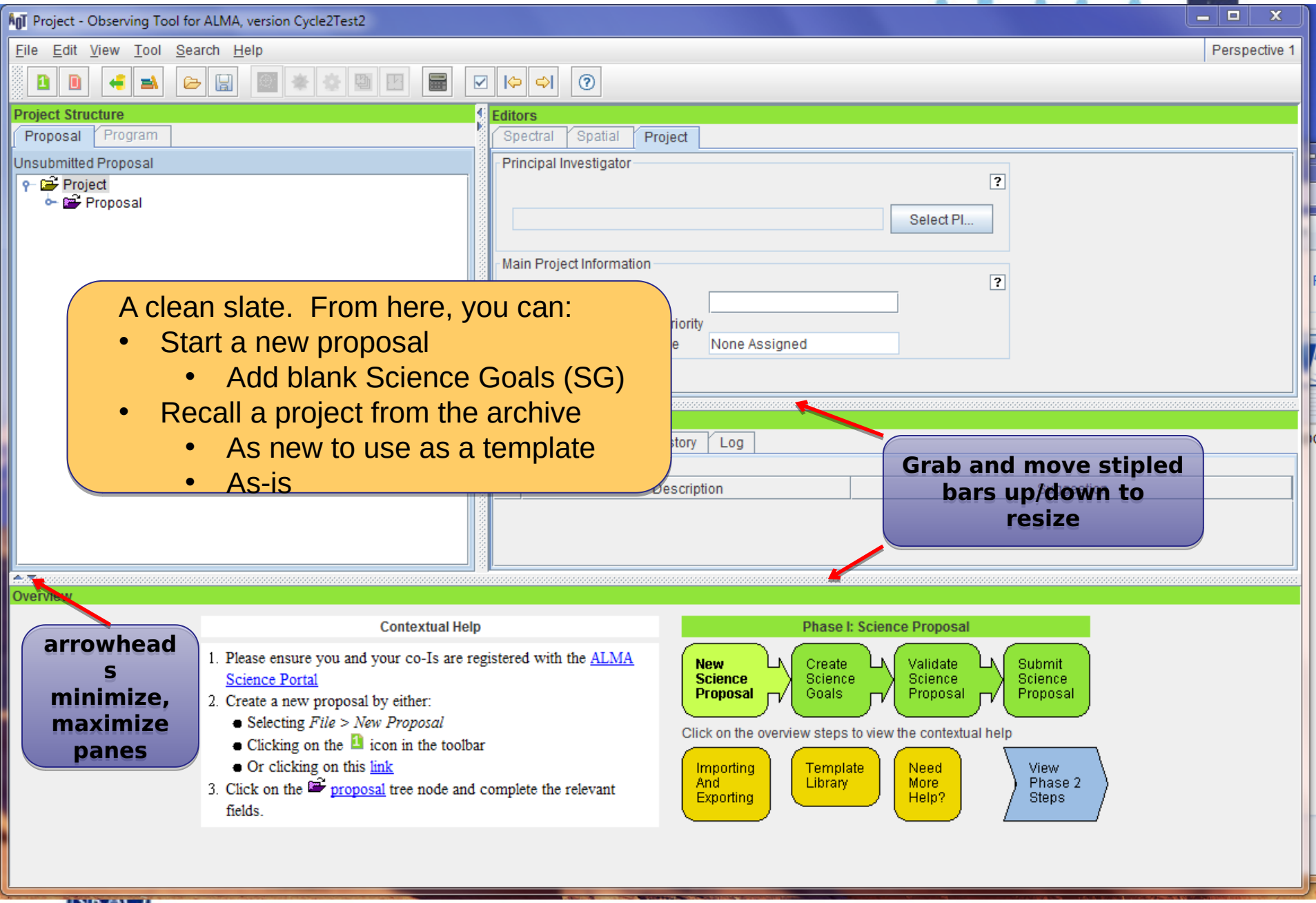
**A tarball installation package will also be available as before but with its own Jave Run Time Environment. It may be needed for MacOS Catalina (10.15)**

# When the ALMA OT starts




Then you see this






A clean slate. From here, you can:

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

**Grab and move stipled bars up/down to resize**

**arrowheads minimize, maximize panes**

ALMA Observing Tool (Cycle7(2018dec-20190121)) - Project

File Edit View Tool Search Help

Perspective 1

Project Structure

Proposal Program

Unsubmitted Proposal

- Project
  - Proposal
  - Planned Observing

*This is the J-tree and the proposal node is where you provide a broad description*

*We'll move down the nodes of the J-tree in the course of these slides*

**You can search the J-tree for names of nodes, details are in the help (?)**

Editors

Spectral Spatial Proposal

Proposal Title

Proposal Cycle 2018.1

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 Sun

Please select one or two keywords

Student project

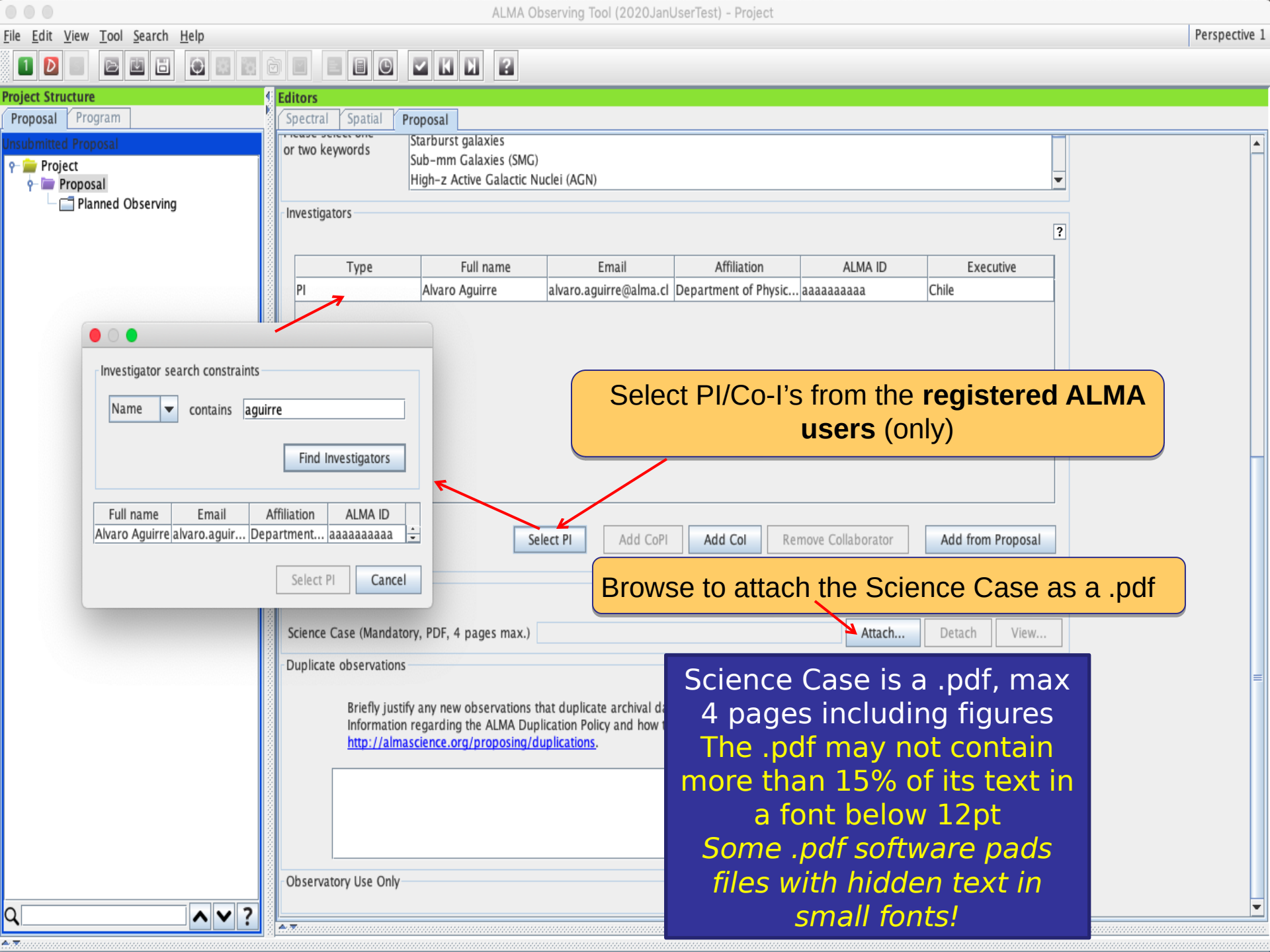
Related Proposals

Previous Proposals

Investigators

**NEW!!!**
Student project, related and previous proposal entries will no longer appear as of Cycle 8

**This is your meta information, proposal title, abstract, proposal type, scientific category (for the review panels) etcetera**


ALMA Observing Tool (2020JanUserTest) - Project
File Edit View Tool Search Help
Perspective 1
Project Structure
Proposal Program
Unsubmitted Proposal
Project
Proposal
Planned Observing
Editors
Spectral Spatial Proposal
or two keywords
Starburst galaxies
Sub-mm Galaxies (SMG)
High-z Active Galactic Nuclei (AGN)
Investigators
Type Full name Email Affiliation ALMA ID Executive
PI Alvaro Aguirre alvaro.aguirre@alma.cl Department of Physic... aaaaaaaaaa Chile
Investigator search constraints
Name contains aguirre
Find Investigators
Full name Email Affiliation ALMA ID
Alvaro Aguirre alvaro.aguir... Department... aaaaaaaaaa
Select PI Cancel
Select PI
Add CoPI
Add CoI
Remove Collaborator
Add from Proposal
Science Case (Mandatory, PDF, 4 pages max.)
Attach...
Detach
View...
Duplicate observations
Briefly justify any new observations that duplicate archival d
Information regarding the ALMA Duplication Policy and how t
http://almascience.org/proposing/duplications.
Observatory Use Only
Select PI/Co-I's from the registered ALMA users (only)
Browse to attach the Science Case as a .pdf
Science Case is a .pdf, max 4 pages including figures
The .pdf may not contain more than 15% of its text in a font below 12pt
Some .pdf software pads files with hidden text in small fonts!

ALMA Observing Tool (2020JanUserTest) - Project

File Edit View Tool Search Help

Perspective 1

**Project Structure**

Proposal | Program

Unsubmitted Proposal

- Project
  - Proposal
    - Planned Observing

**Editors**

Spectral | Spatial | Proposal

or two keywords

Starburst galaxies
Sub-mm Galaxies (SMG)
High-z Active Galactic Nuclei (AGN)

Investigators

| Type | Full name | Email | Affiliation | ALMA ID | Executive |
|---|---|---|---|---|---|
| PI | Alvaro Aguirre | alvaro.aguirre@alma.cl | Department of Physic... | aaaaaaaaaa | Chile |

Select PI | Add CoPI | Add CoI | Remove Collaborator | Add from Proposal

Science Case

Please ensure that your science case is properly anonymized following instructions on the science portal

Science Case (Mandatory, PDF, 4 pages max.) 0714Successor-ScienceCase.pdf | Attach... | Detach | View...

**Remember to write your science case following the Dual Anonymous guidelines**

**https://almascience.nrao.edu/documents-and-tools/cycle7/DualAnonymous_CfP_guidelines_SP.pdf**

Observatory Use Only

ALMA Observing Tool (2020JanUserTest) - Project

File Edit View Tool Search Help

Perspective 1

**Project Structure**

Proposal | Program

Unsubmitted Proposal

- Project
  - Proposal
    - Planned Observing

**Editors**

Spectral | Spatial | Proposal

or two keywords

Starburst galaxies
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| PI | Alvaro Aguirre | alvaro.aguirre@alma.cl | Department of Physic... | aaaaaaaaaa | Chile |

Select PI | Add CoPI | Add CoI | Remove Collaborator | Add from Proposal

Science Case

Please ensure that your science case is pro

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

This takes the place of the related and previous proposal info that was removed elsewhere

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.

Give a concise justification if asking to duplicate previous observations or *accepted* proposals. This is not for resubmitting a rejected proposal.

# Science Case

- Must include:
  - Astronomical Importance
  - Estimated intensity, S/N
- May include:
  - Figures, Tables, References
- It is a free-form PDF document
  - 12pt or larger font, English only
    - 15% of text or less in font below 12pt
    - Some software (Acrobat!) has been known to pad its output with hidden text in small font sizes!
  - 20 MB file size
  - 4 pages total (6 for Large Projects)

**Remember to write your science case under a dual-anonymous format. For guidelines on how to do this, visit here: https://almascience.nrao.edu/documents-and-tools/cycle7/DualAnonymous_CfP_guidelines_SP.pdf**

Project - Observing Tool for ALMA, version Cycle2Test2

File Edit View Tool Search Help

Perspective 1

Project Structure

Proposal Program

Unsubmitted Proposal

Project

Proposal

**You can right-click and add blank Science Goals or use options of the File menu as shown on the next slide)**

Editors

Spectral Spatial Project

Principal Investigator

Main Project I

Cut ⌘-X

Copy ⌘-C

Paste ⌘-V

New Science Goal

Clone node

Show Printable Summary of Proposal

Generate a PDF of Whole Proposal

Display Project Time Summary

Expand all ⌘-Z

Collapse all

Find previous ⌥-↑

Find next ⌥-↓

Delete

Feedback

Validation

Suggestion

Overview

Contextual Help

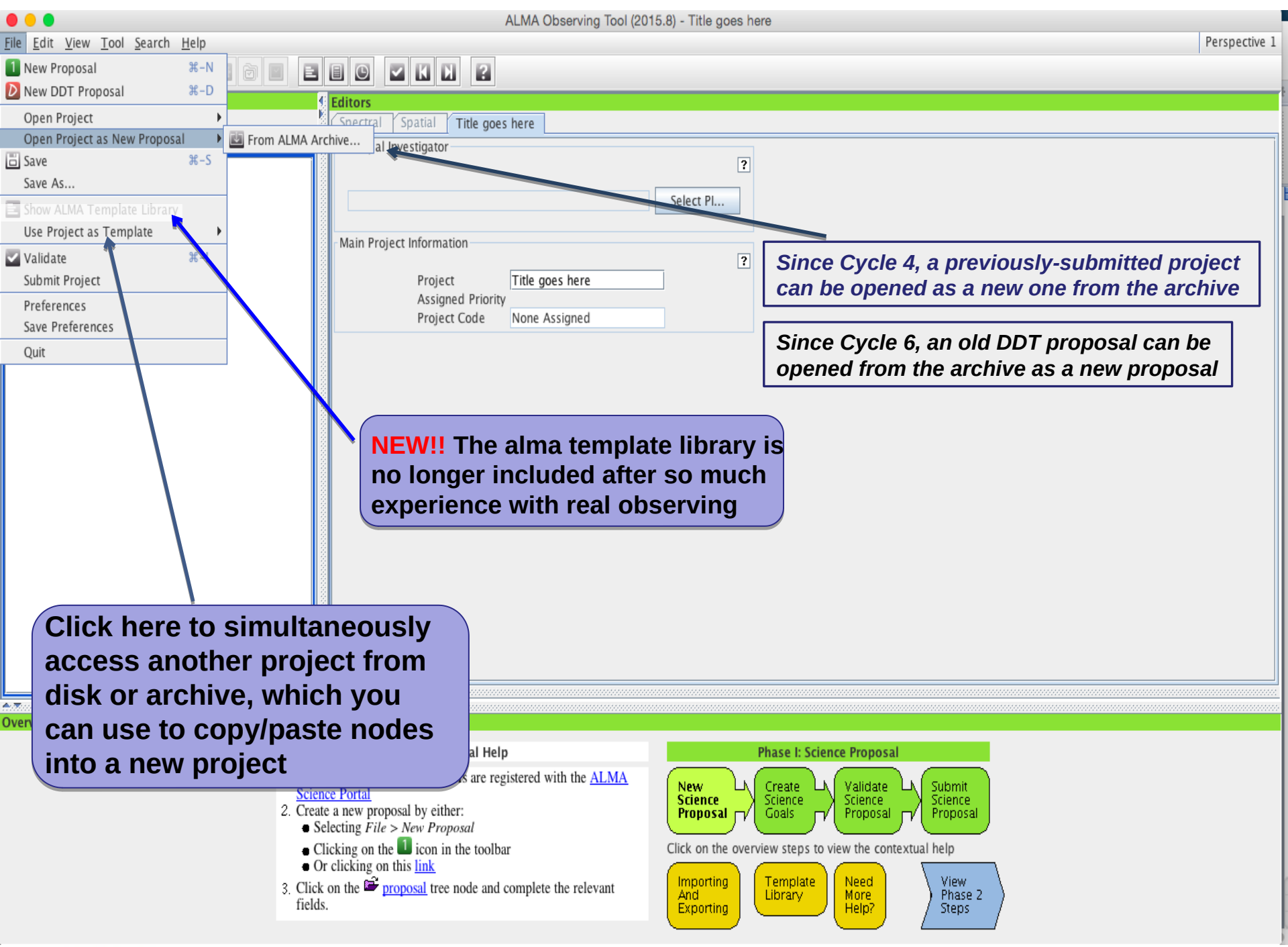
1. Please ensure you and your co-Is are registered with the ALMA Science Portal
2. Create a new proposal by either:
   - Selecting *File > New Proposal*
   - Clicking on the icon in the toolbar
   - Or clicking on this link
3. Click on the proposal tree node and complete the relevant fields.

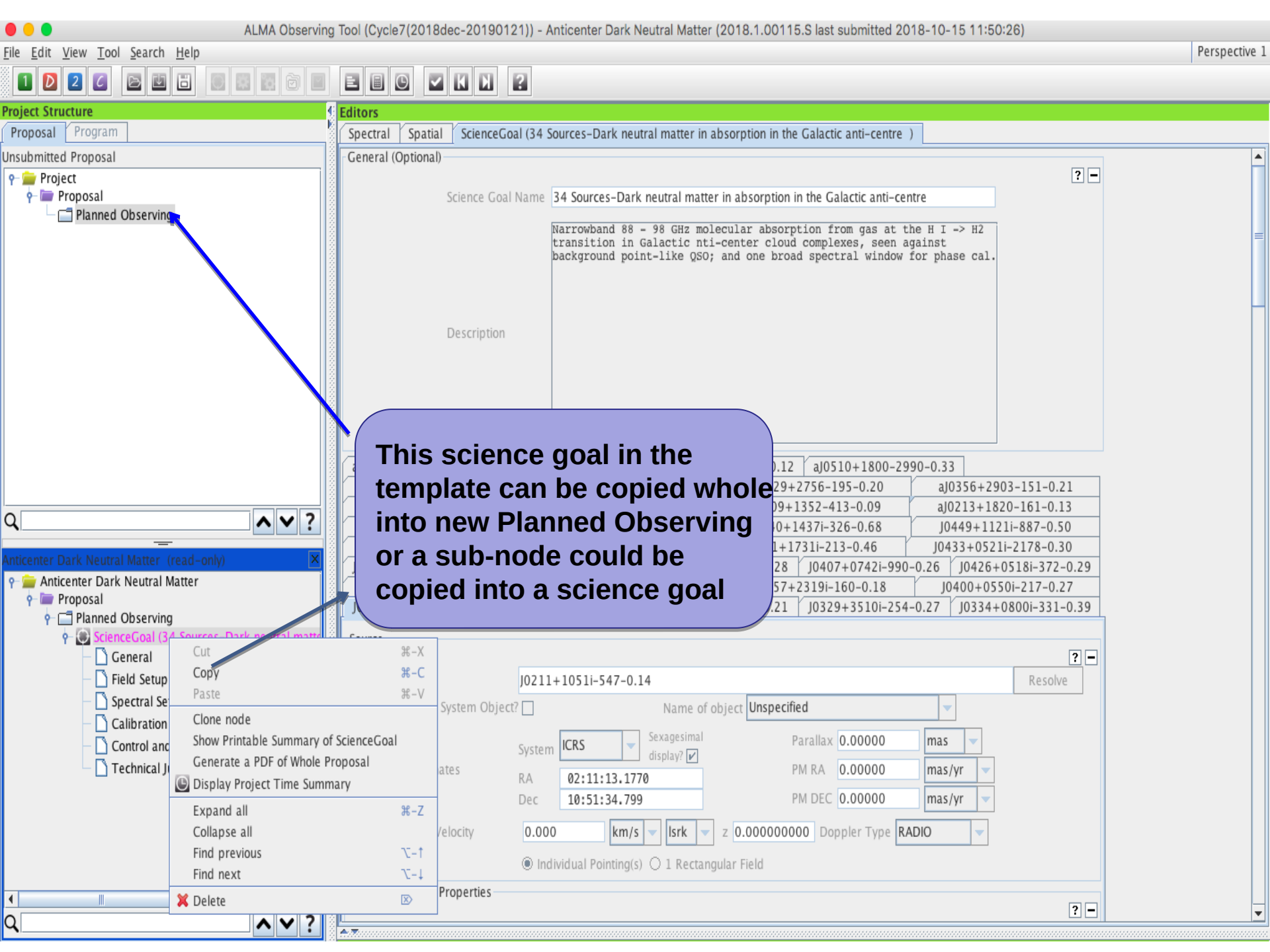
Phase I: Science Proposal

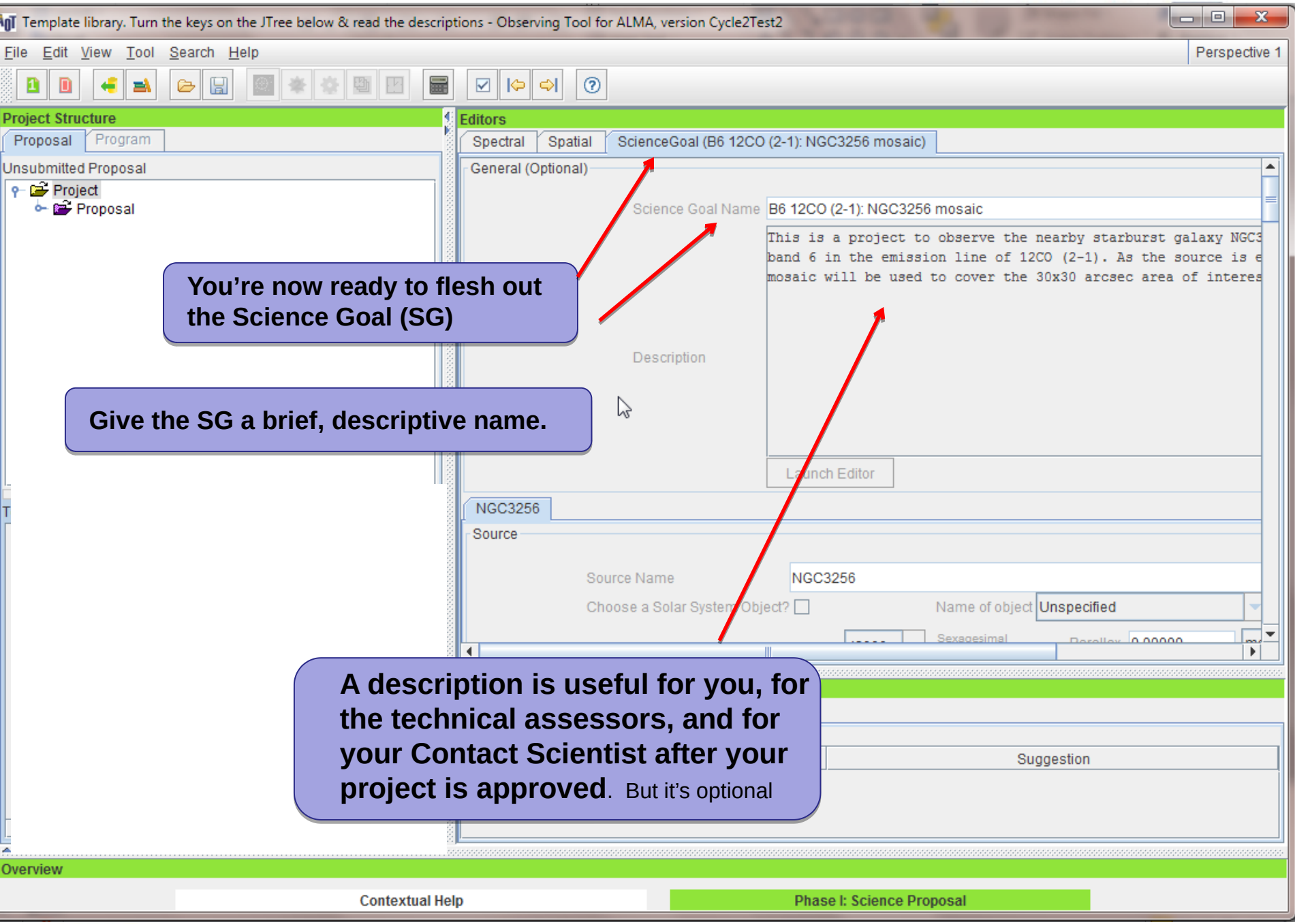
New Science Proposal → Create Science Goals → Validate Science Proposal → Submit Science Proposal

Click on the overview steps to view the contextual help

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


ALMA Observing Tool (2015.8) - Title goes here
File Edit View Tool Search Help
Perspective 1
New Proposal ⌘-N
New DDT Proposal ⌘-D
Open Project
Open Project as New Proposal
From ALMA Archive...
Save ⌘-S
Save As...
Show ALMA Template Library
Use Project as Template
Validate
Submit Project
Preferences
Save Preferences
Quit
Editors
Spectral
Spatial
Title goes here
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 one from the archive
Since Cycle 6, an old DDT proposal can be opened from the archive as a new proposal
NEW!! The alma template library is no longer included after so much experience with real observing
Click here to simultaneously access another project from disk or archive, which you can use to copy/paste nodes into a new project
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
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.


ALMA Observing Tool (Cycle7(2018dec-20190121)) - Anticenter Dark Neutral Matter (2018.1.00115.S last submitted 2018-10-15 11:50:26)
File Edit View Tool Search Help
Perspective 1
Project Structure
Proposal Program
Unsubmitted Proposal
Project
Proposal
Planned Observing
Editors
Spectral Spatial ScienceGoal (34 Sources-Dark neutral matter in absorption in the Galactic anti-centre )
General (Optional)
Science Goal Name 34 Sources-Dark neutral matter in absorption in the Galactic anti-centre
Narrowband 88 - 98 GHz molecular absorption from gas at the H I -> H2 transition in Galactic nti-center cloud complexes, seen against background point-like QSO; and one broad spectral window for phase cal.
Description
This science goal in the template can be copied whole into new Planned Observing or a sub-node could be copied into a science goal
Anticenter Dark Neutral Matter (read-only)
Anticenter Dark Neutral Matter
Proposal
Planned Observing
ScienceGoal (34 Sources-Dark neutral matter
General
Field Setup
Spectral Se
Calibration
Control and
Technical J
Cut ⌘-X
Copy ⌘-C
Paste ⌘-V
Clone node
Show Printable Summary of ScienceGoal
Generate a PDF of Whole Proposal
Display Project Time Summary
Expand all ⌘-Z
Collapse all
Find previous ⌥-↑
Find next ⌥-↓
Delete
aJ0510+1800-2990-0.33
29+2756-195-0.20
aJ0356+2903-151-0.21
09+1352-413-0.09
aJ0213+1820-161-0.13
0+1437i-326-0.68
J0449+1121i-887-0.50
1+1731i-213-0.46
J0433+0521i-2178-0.30
28
J0407+0742i-990-0.26
J0426+0518i-372-0.29
57+2319i-160-0.18
J0400+0550i-217-0.27
21
J0329+3510i-254-0.27
J0334+0800i-331-0.39
J0211+1051i-547-0.14
Resolve
System Object?
Name of object Unspecified
System ICRS
Sexagesimal display?
Parallax 0.00000 mas
RA 02:11:13.1770
PM RA 0.00000 mas/yr
Dec 10:51:34.799
PM DEC 0.00000 mas/yr
0.000 km/s lsrk
z 0.000000000
Doppler Type RADIO
Individual Pointing(s)
1 Rectangular Field
Properties




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. But it's optional

ALMA Observing Tool (Cycle6(UserTest)) - Casting Light on Chameleon's Dark CO

File Edit View Tool Search Help

Perspective 1

**Project Structure**

Proposal | Program

Unsubmitted Proposal

- *Casting Light on Chameleon's Dark CO*
  - *Proposal*
    - *Planned Observing*
      - ScienceGoal (Chameleon's dark C
        - General
        - Field Setup
        - Spectral Setup
        - Calibration Setup
        - Control and Performance
        - Technical Justification

**Editors**

Spectral | Spatial | Field Setup

Source Name: J1136-6827-0.4 — Resolve

Choose a Solar System Object? ☐ Name of object: Unspecified

Source Coordinates — System: ICRS — Sexagesimal display? ☑

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 |
| ular Polarization Percentage | 2.0 | per cent |

elative ○ Absolute

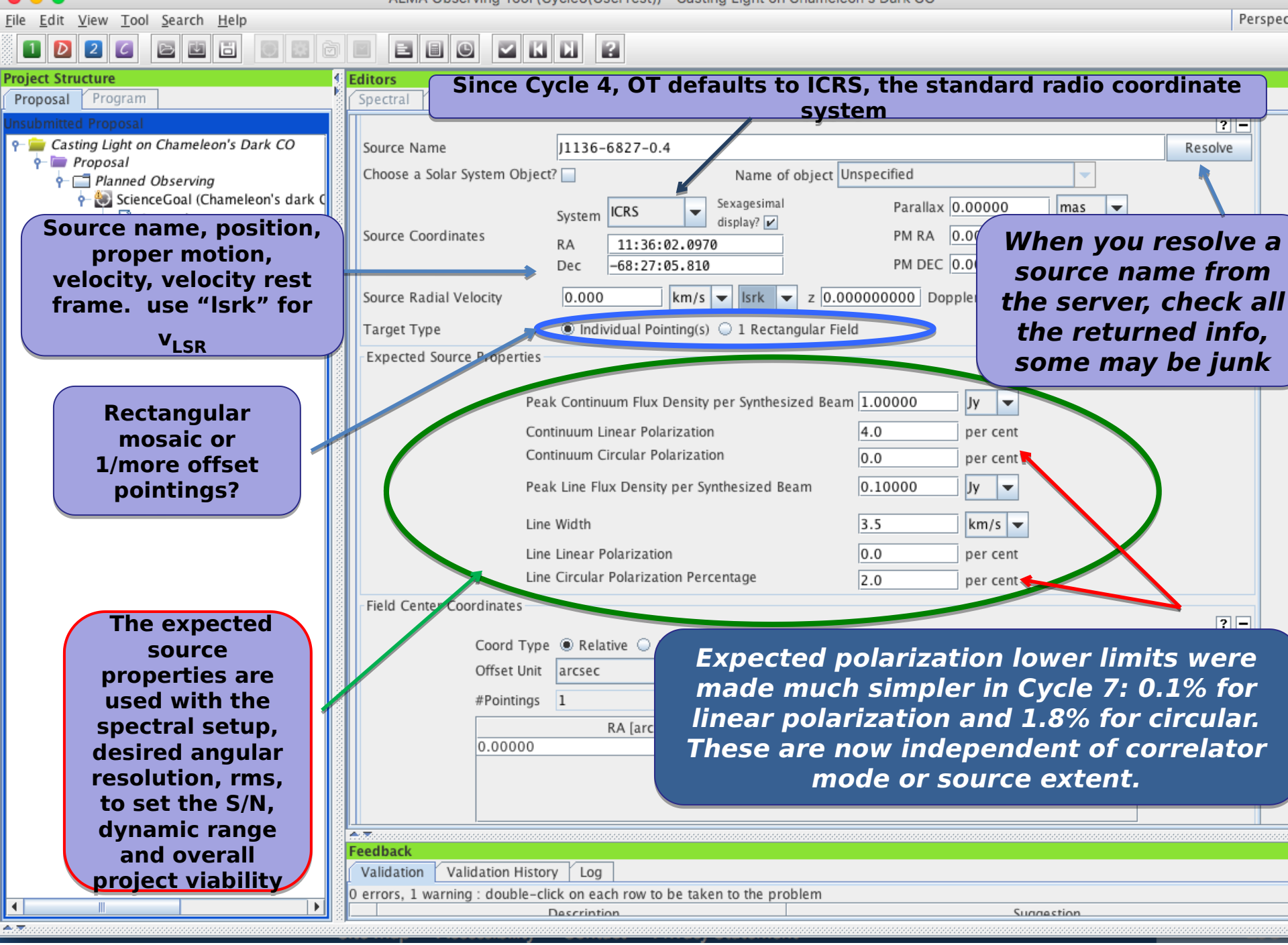
ec

| RA [arcsec] | Dec [arcsec] |
|---|---|
| -0.00000 | -0.00000 |
| 24.00000 | 26.00000 |
| -12.00000 | 12.00000 |
| 20000.00000 | -0.00000 |

Add | Delete | Reset | Import | Export

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

**The field setup node is where you provide source coordinates and other basic properties for one or more field sources/pointings**




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

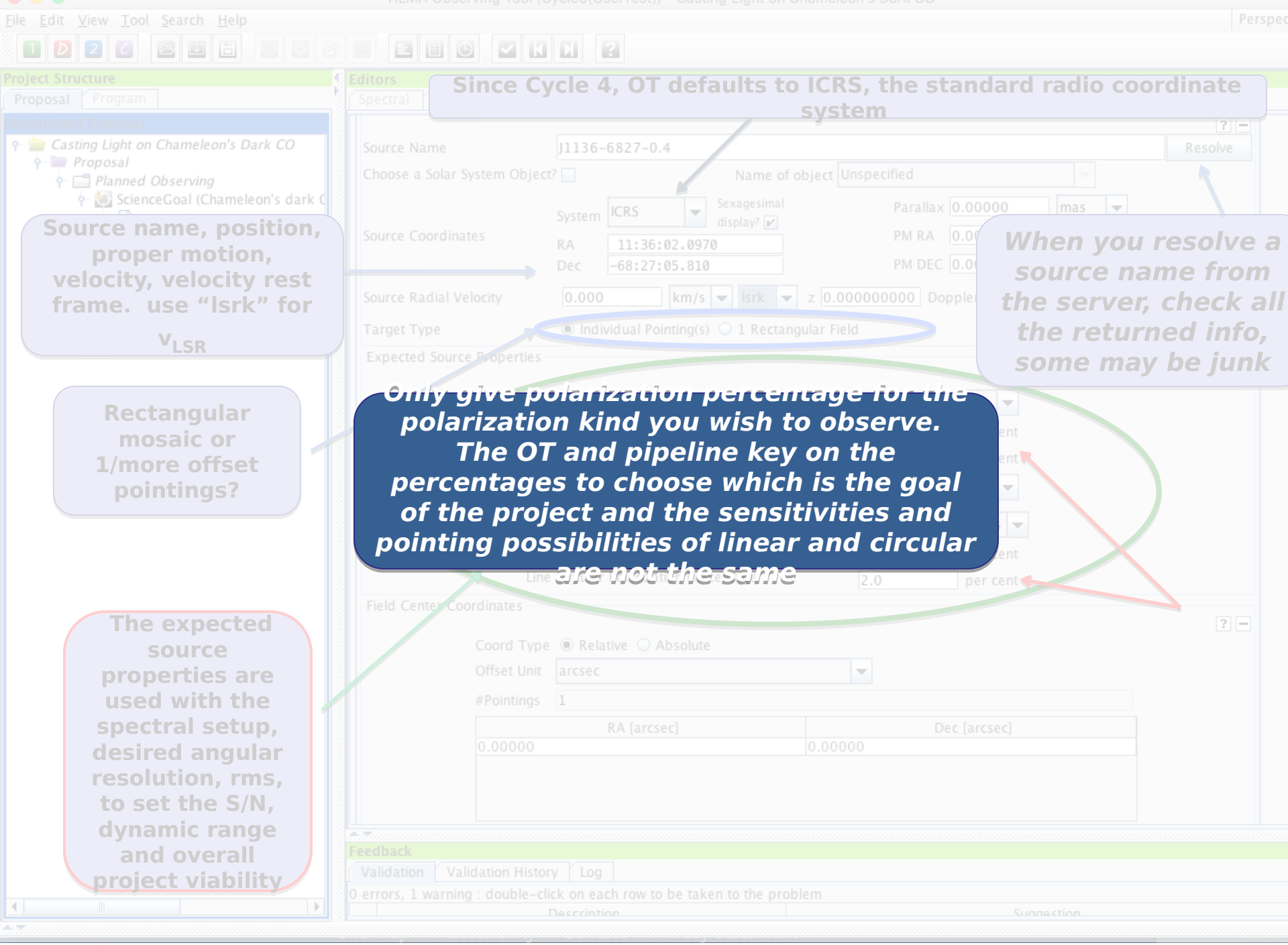
Source name, position, proper motion, velocity, velocity rest frame. use "lsrk" for $v_{LSR}$

When you resolve a source name from the server, check all the returned info, some may be junk

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

Expected polarization lower limits were made much simpler in Cycle 7: 0.1% for linear polarization and 1.8% for circular. These are now independent of correlator mode or source extent.




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

Source name, position, proper motion, velocity, velocity rest frame. use "lsrk" for $v_{LSR}$

When you resolve a source name from the server, check all the returned info, some may be junk

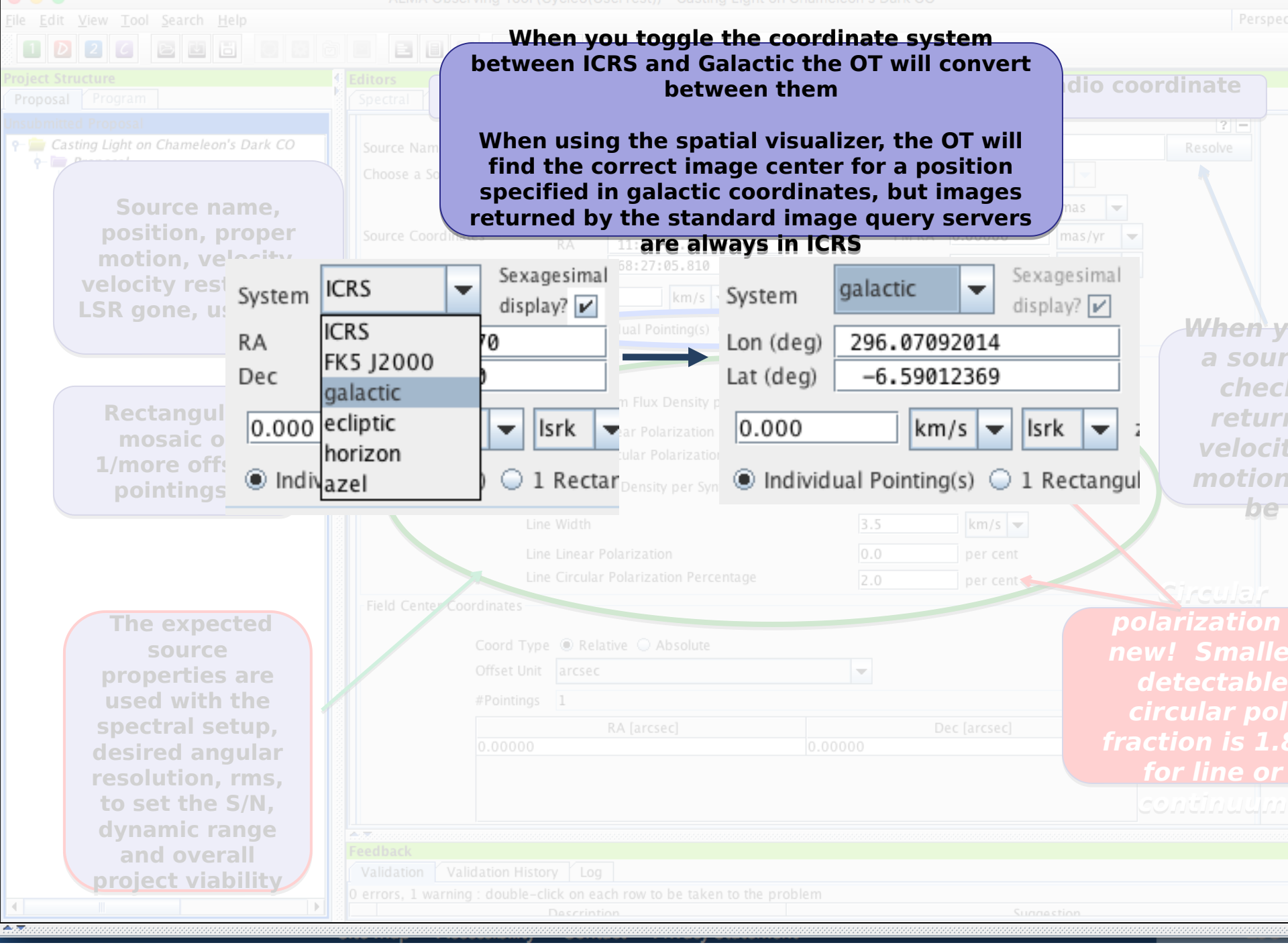
Rectangular mosaic or 1/more offset pointings?

Only give polarization percentage for the polarization kind you wish to observe. The OT and pipeline key on the percentages to choose which is the goal of the project and the sensitivities and pointing possibilities of linear and circular are not the same

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 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 center for a position specified in galactic coordinates, but images returned by the standard image query servers are always in ICRS**



ALMA Observing Tool (Cycle6(UserTest)) - Casting Light on Chameleon's Dark CO

File Edit View Tool Search Help

Perspective 1

Project Structure

Proposal | Program

Unsubmitted Proposal

- Casting Light on Chameleon's Dark CO
  - Proposal
    - Planned Observing
      - ScienceGoal (Chameleon's dark C
        - General
        - Field Setup
        - Spectral Setup
        - Calibration Setup
        - Control and Performance
        - Technical Justification

Editors

Spectral | Spatial | Field Setup

Source Name: J1136-6827-0.4 — Resolve

Choose a Solar System Object? — Name of object: Unspecified

Source Coordinates — System: ICRS — Sexagesimal display? ☑

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

**Individual pointings around a single target must overlap another pointing at the edges of their HPBW and all must be within 5° of the source coordinate**

**Pointings can be given as offsets or absolute sky positions, the OT will convert between those if you check/uncheck Coord Type**

Field Center Coordinates

Coord Type: ◉ Relative ○ Absolute

Offset Unit: arcsec

#Pointings: 4

| RA [arcsec] | Dec [arcsec] |
|---|---|
| -0.00000 | -0.00000 |
| 24.00000 | 26.00000 |
| -12.00000 | 12.00000 |
| 20000.00000 | -0.00000 |

Illegal!

Add | Delete | Reset | Import | Export

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

**Read/write field sources to/from a text file. Format is described in help for 'field source' or write one out to make a template**

**Reset leaves one pointing at 0,0**

**Clone a Field Source, add, load, export. Delete is greyed when only 1 source in SG**

ALMA Observing Tool (Cycle6(UserTest)) - Casting Light on Chameleon's Dark CO

File Edit View Tool Search Help

Perspective 1

Project Structure

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Unsubmitted Proposal

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

Editors

Spectral | Spatial | Field Setup

Source Name: J1136-6827-0.4 — Resolve

Choose a Solar System Object? — Name of object: Unspecified

Source Coordinates — System: ICRS — Sexagesimal display? ✓

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

**Individual pointings around a single target must overlap another pointing at the edges of their HPBW and all must be within 5° of the source coordinate**

**Pointings can be given as offsets or absolute sky positions, the OT will convert between those if you check/uncheck Coord Type**

Field Center Coordinates

Coord Type: (●) Relative ( ) Absolute

Offset Unit: arcsec

#Pointings: 4

| RA [arcsec] | Dec [arcsec] |
|---|---|
| -0.00000 | -0.00000 |
| 24.00000 | 26.00000 |
| -12.00000 | 12.00000 |
| 20000.00000 | -0.00000 |

Illegal!

Add | Delete | Reset | Import | Export

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

**Read/write field sources to/from a text file. Format is described in help for 'field source' or write one out**

**Read/write a text file See help for format**

ALMA Observing Tool (Cycle6(UserTest)) - Casting Light on Chameleon's Dark CO

File Edit View Tool Search Help

Perspective 1

Project Structure

Proposal | Program

Unsubmitted Proposal

- Casting Light on Chameleon's Dark CO
  - Proposal
    - Planned Observing
      - ScienceGoal (Chameleon's dark C
        - General
        - Field Setup
        - Spectral Setup
        - Calibration Setup
        - Control and Performance
        - Technical Justification

Editors

Spectral | Spatial | Field Setup

Source Name: J1136-6827-0.4 — Resolve

Choose a Solar System Object? — Name of object: Unspecified

Source Coordinates — System: ICRS — Sexagesimal display? ☑

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

Line Circular Polarization Percentage: 2.0 per cent

Field Center Coordinates

Coord Type: Relative — Absolute

Offset Unit: arcsec

#Pointings: 4

| RA [arcsec] | Dec [arcsec] |
|---|---|
| -0.00000 | -0.00000 |
| 24.00000 | 26.00000 |
| -12.00000 | 12.00000 |
| 20000.00000 | -0.00000 |

Add | Delete | Reset | Import | Export

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

**Pointings must overlap another pointing at the edges of their HPBW and all must be within 5° of the source coordinate**

**Pointings can be given as offsets or absolute sky positions, the OT will convert between those if you check/uncheck Coord Type**

**Read/write a text file See help for format**

Illegal!

**Input in galactic coordinates was possible in Cycle 6! *l,b* input in decimal degrees is assumed if coordinate entries have no colons! A hack.**

File Edit View Tool Search Help

Perspective 1

**Project Structure**

Proposal | Program

Unsubmitted Proposal

- Project
  - Proposal
    - Planned Observing
      - ScienceGoal (Copy of 34 Sources
        - General
        - Field Setup
        - Spectral Setup
        - Calibration Setup
        - Control and Performance
        - Technical Justification

**Editors**

Spectral | Spatial | Field Setup

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

| | | | |
|---|---|---|---|
| aJ0426+2327-210-0.54 | aJ0439+3045-154-0.87 | aJ0445+0715-305-0.12 | aJ0510+1800-2990-0.33 |
| aJ0231+1322-790-0.12 | aJ0242+1742-168-0.08 | aJ0329+2756-195-0.20 | aJ0356+2903-151-0.21 |
| J0502+1338i-600-0.56 | aJ0203+1134-151-0.14 | aJ0209+1352-413-0.09 | aJ0213+1820-161-0.13 |
| J0437+2940i-224-0.98 | J0438+3004i-478-0.95 | J0440+1437i-326-0.68 | J0449+1121i-887-0.50 |
| J0427+0457i-233-0.33 | J0437+2037i-245-0.53 | J0431+1731i-213-0.46 | J0433+0521i-2178-0.30 |
| J0403+2600i-327-0.20 | J0406+0637i-330-0.28 | J0407+0742i-990-0.26 | J0426+0518i-372-0.29 |
| J0357+2319s-170-0.18 | J0357+2319i-160-0.18 | J0400+0550i-217-0.27 | J0401+0413i-550-0.34 |
| J0325+2224i-400-0.21 | J0329+3510i-254-0.27 | J0334+0800i-331-0.39 | J0336+3218i-1050-0.73 |
| J0211+1051i-547-0.14 | | J0252+1718i-342-0.22 | |

Source

Source Name: J0211+1051i-547-0.14 Resolve

Choose a Solar System Object?

Source Coordinates: mas / mas/yr / mas/yr

Source Radial Velocity: RADIO

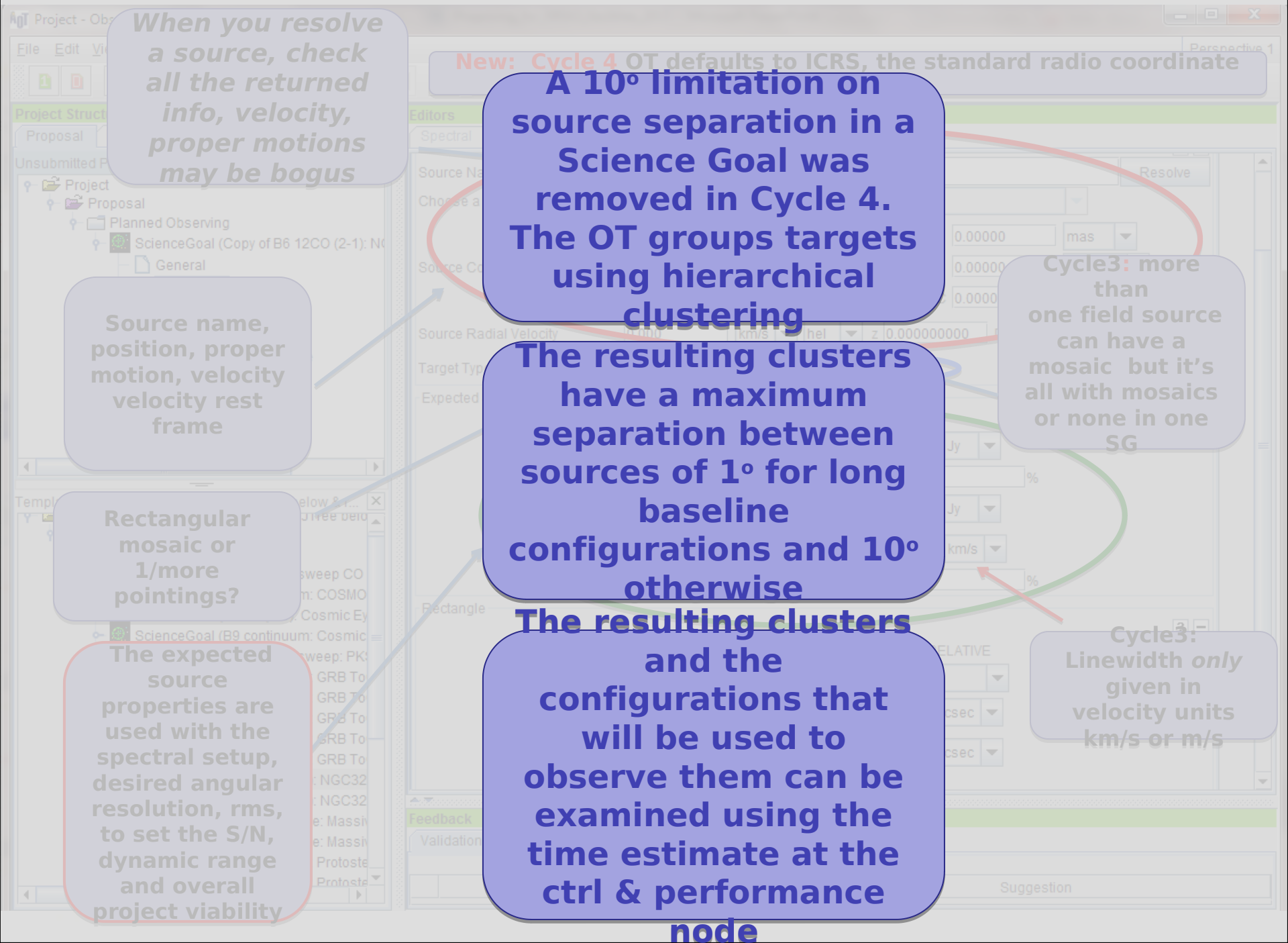
Target Type

Expected Source Properties

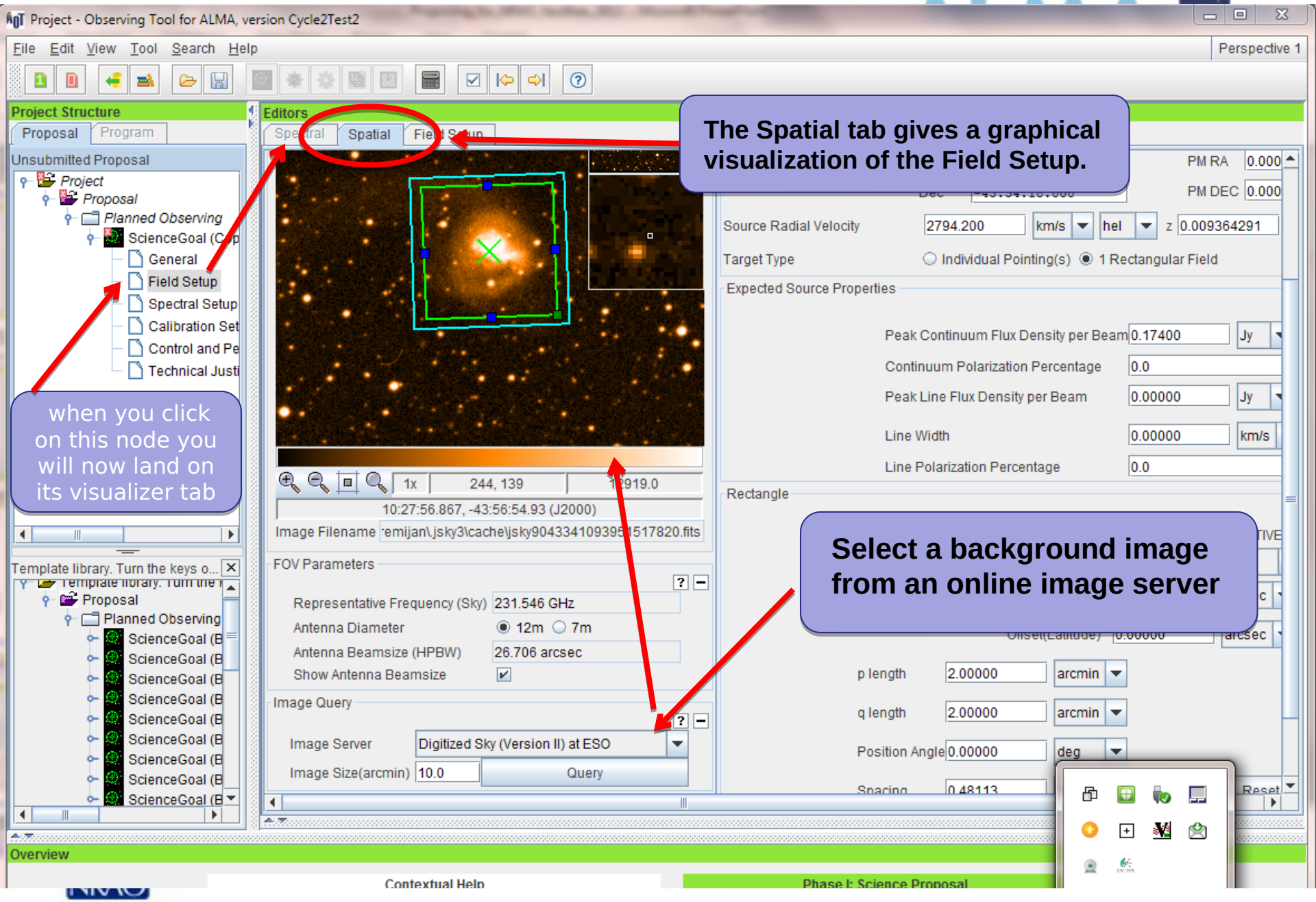
Line Linear Polarization: 0.0 per cent

Line Circular Polarization: 0.0 per cent

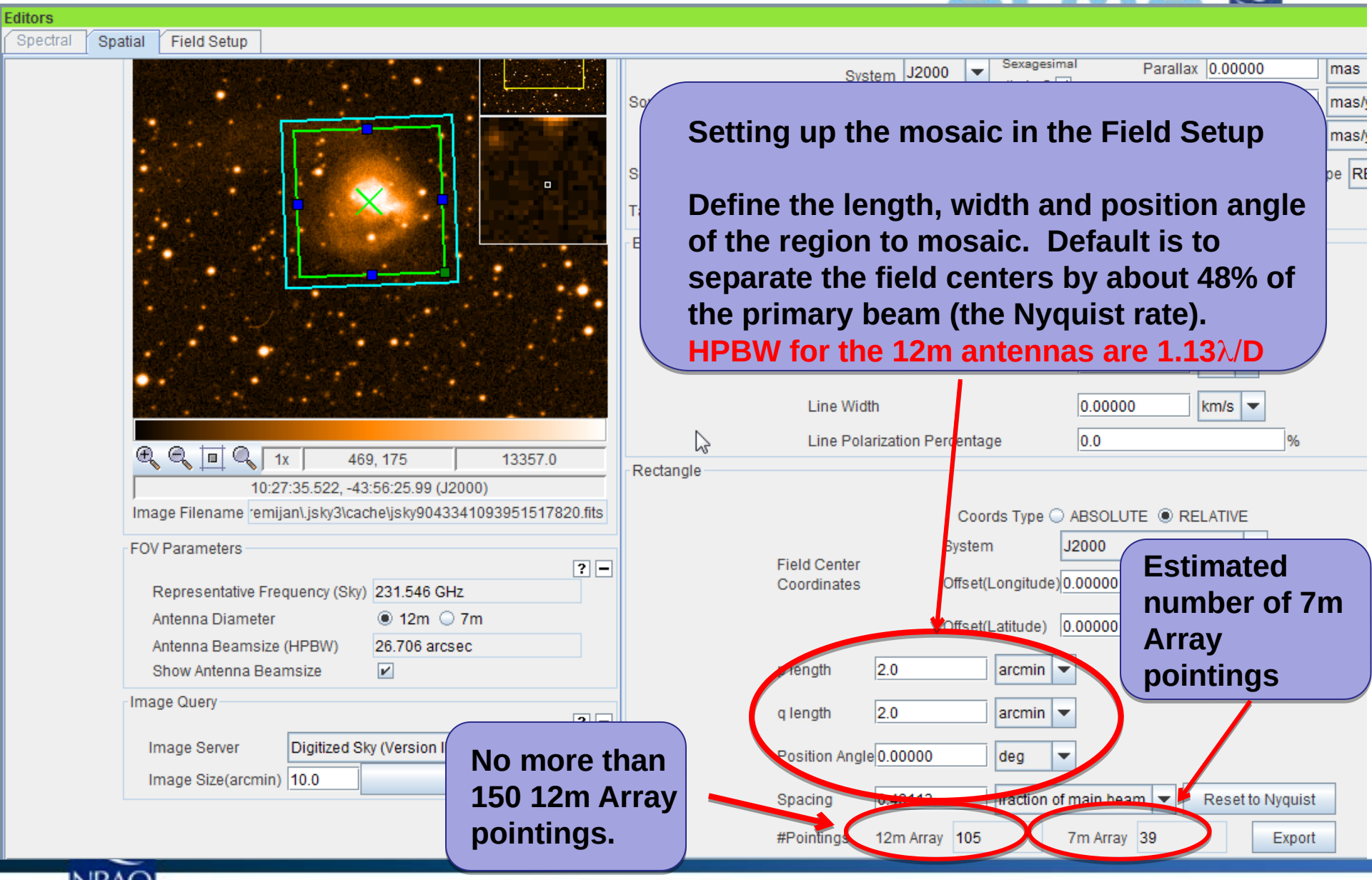
**Sources having a common spectral setup and observing pattern (single pointings or rectangular mosaic) can (if possible, should!) be put in the same Science Goal no matter how far apart they are**


When you resolve a source, check all the returned info, velocity, proper motions may be bogus
New: Cycle 4 OT defaults to ICRS, the standard radio coordinate
A 10° limitation on source separation in a Science Goal was removed in Cycle 4. The OT groups targets using hierarchical clustering
Source name, position, proper motion, velocity velocity rest frame
Cycle3: more than one field source can have a mosaic but it's all with mosaics or none in one SG
The resulting clusters have a maximum separation between sources of 1° for long baseline configurations and 10° otherwise
Rectangular mosaic or 1/more pointings?
The resulting clusters and the configurations that will be used to observe them can be examined using the time estimate at the ctrl & performance node
Cycle3: Linewidth *only* given in velocity units km/s or m/s
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

# The spatial visualizer



# Crafting mosaics




**Setting up the mosaic in the Field Setup**

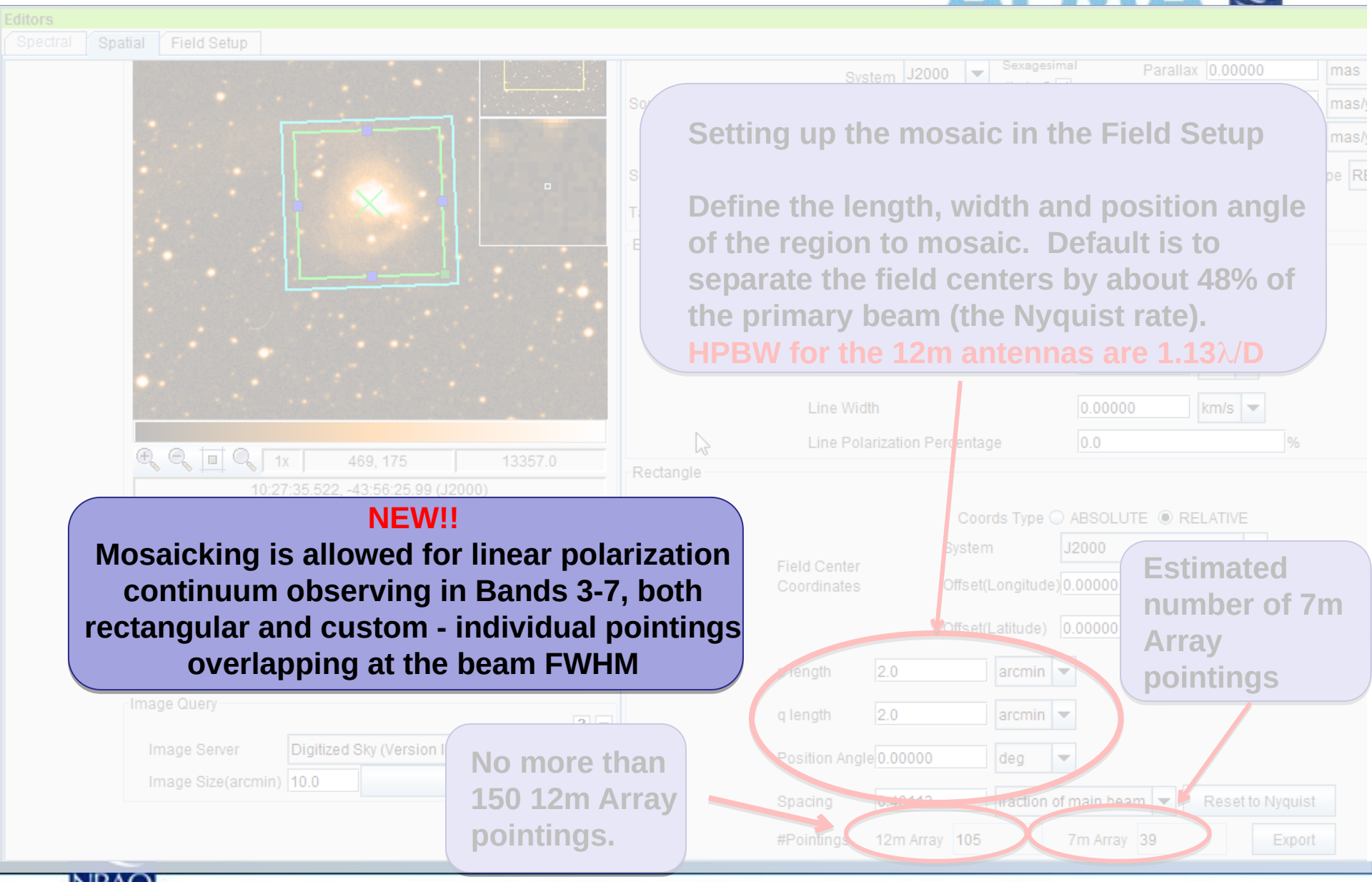
**Define the length, width and position angle of the region to mosaic. Default is to separate the field centers by about 48% of the primary beam (the Nyquist rate).**

**HPBW for the 12m antennas are 1.13λ/D**

**Estimated number of 7m Array pointings**

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

# Crafting mosaics




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 1.13λ/D

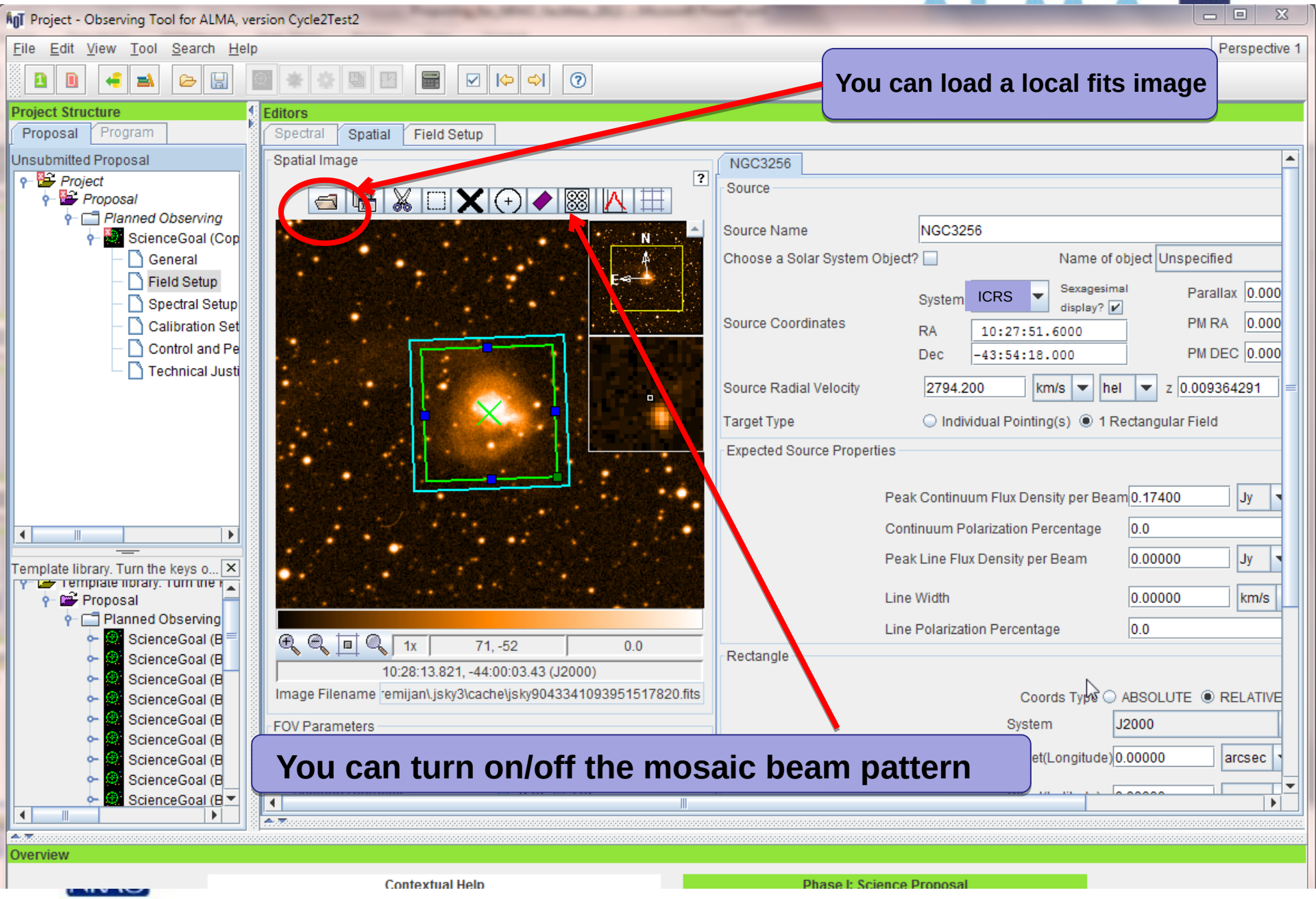
**NEW!!**

**Mosaicking is allowed for linear polarization continuum observing in Bands 3-7, both rectangular and custom - individual pointings overlapping at the beam FWHM**

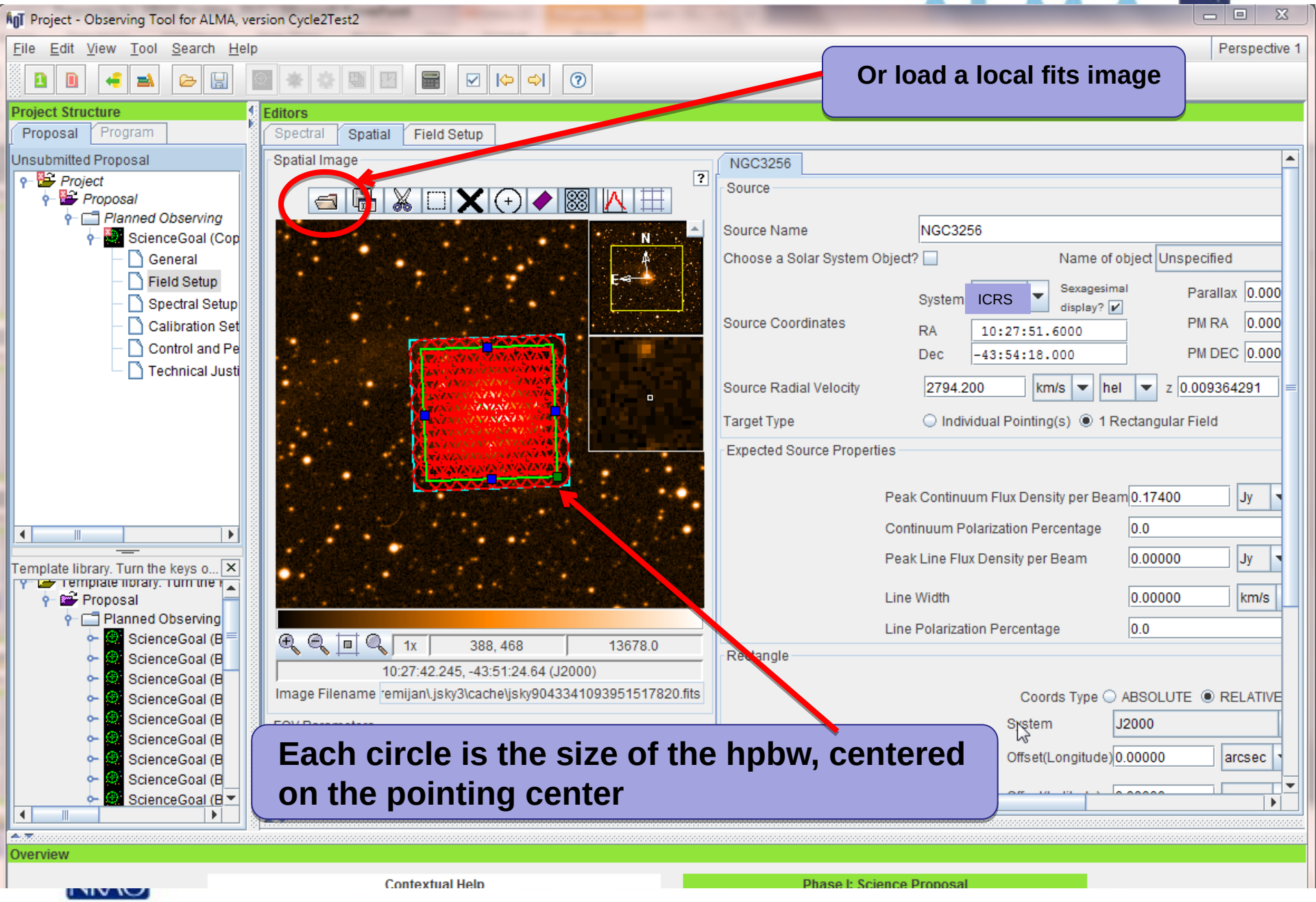
Estimated number of 7m Array pointings

No more than 150 12m Array pointings.

# Crafting mosaics



# Crafting and displaying mosaics



# The spectral setup tab

ALMA Observing Tool (FEB2017) - Project

File Edit View Tool Search Help

Perspective 1

Project Structure

Proposal Program

Unsubmitted Proposal

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

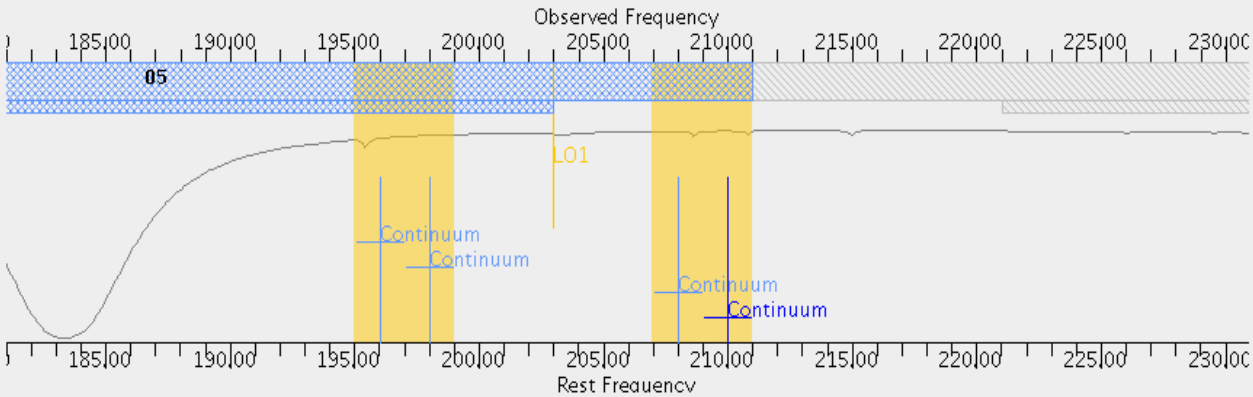
Editors

Spectral Spatial Spectral Setup

Note that for bands 3 to 8, it is not possible to put 3 basebands in one sideband and the fourth one in the other.

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 Select Lines to Overlay

Water Vapour Column Density: ◉ Automatic Choice ○ Manual Choice 1.796mm (5th Octile)

Viewport: Pan to Spectral Window Zoom to Band Reset

Spectral Type

Spectral Type: ○ Spectral Line ◉ Single Continuum ○ Spectral Scan

Produce image sidebands (Bands 9 and 10 only) ☐

Polarization products desired ○ XX ◉ DUAL

Receiver Band 5 [163.0-211.0 GHz]

Reset to Standard Frequency

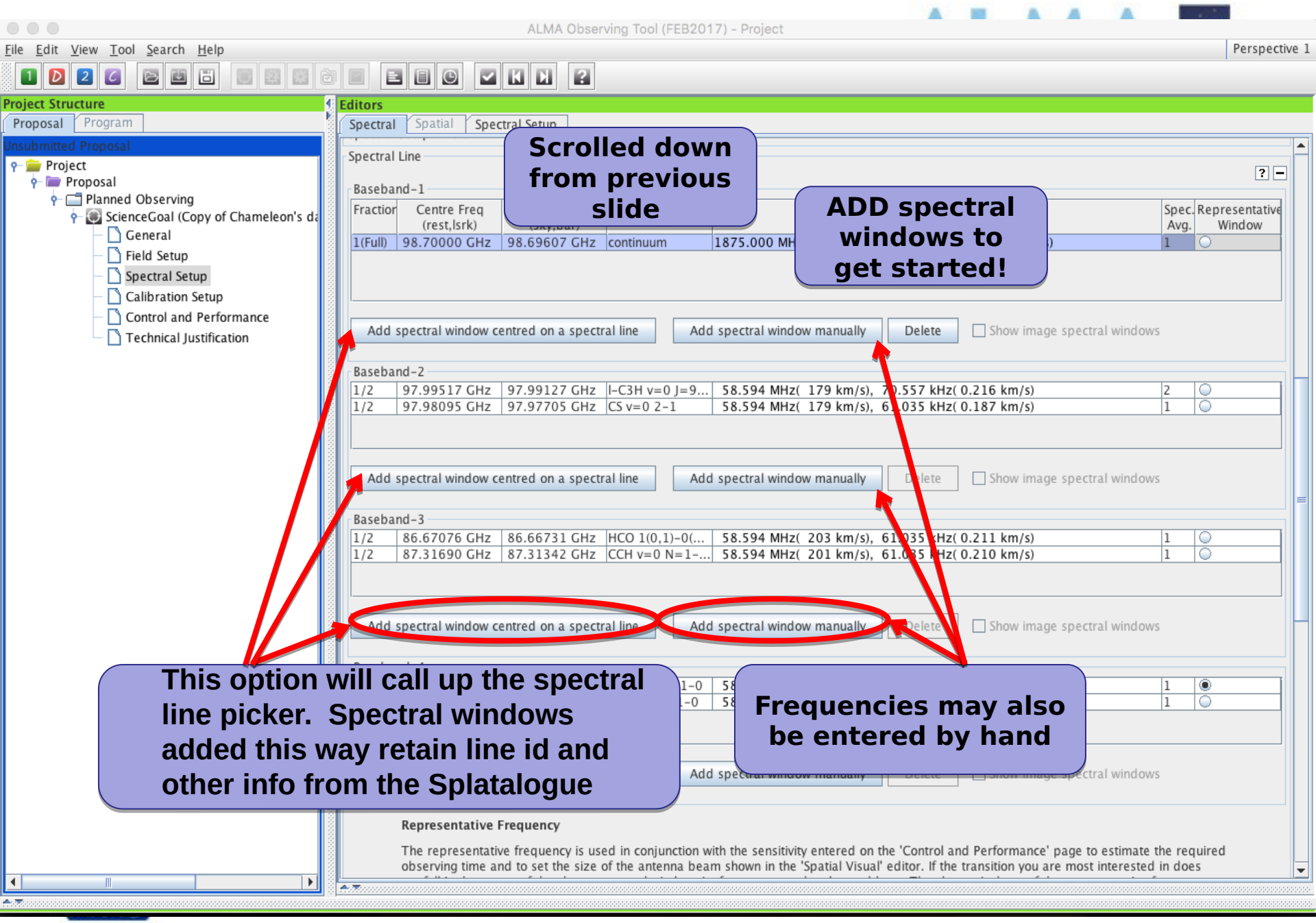
Sky Frequency 203.00000 GHz

when you click on this node you will land on its visualizer tab

**Overlaid lines are saved with the project see below**

**Bands 9,10 are double sideband but sidebands are correlated separately using 90° Walsh switching.**
**90° Walsh switching has been on by default since Cycle 7**

**Band 5 enabled in Cycle 6, overlaps more with Band 4 since Cycle 7**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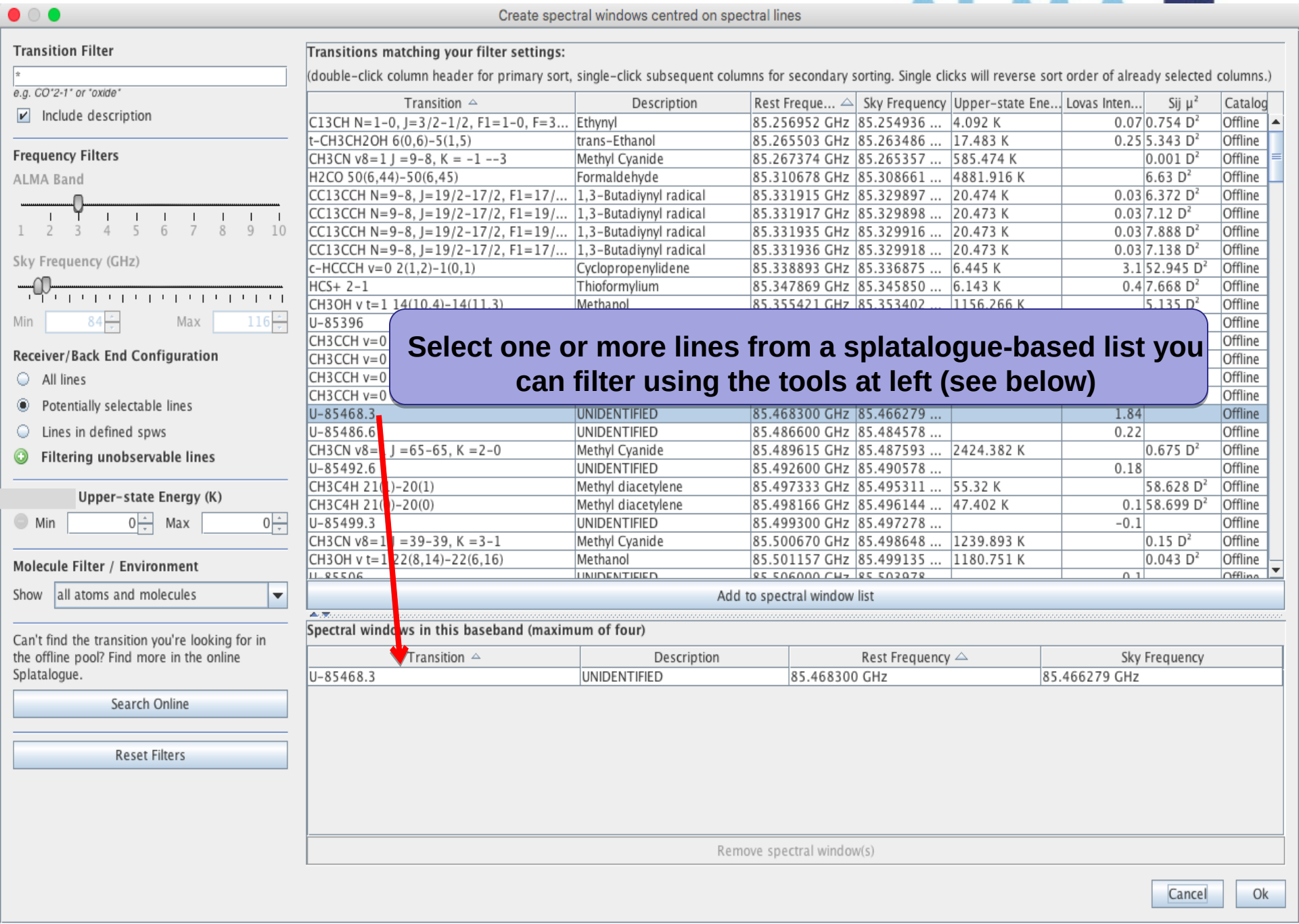
Editors
Spectral Spatial Spectral Setup
Spectral Line
Baseband-1
Fraction Centre Freq (rest,lsrk) Spec. Avg. Representative Window
1(Full) 98.70000 GHz 98.69607 GHz continuum 1875.000 MH 1
Add spectral window centred on a spectral line
Add spectral window manually
Delete
Show image spectral windows
Baseband-2
1/2 97.99517 GHz 97.99127 GHz l-C3H v=0 J=9... 58.594 MHz( 179 km/s), 70.557 kHz( 0.216 km/s) 2
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
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
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
Add spectral window centred on a spectral line
Add spectral window manually
Delete
Show image spectral windows
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
Scrolled down from previous slide
ADD spectral windows to get started!
This option will call up the spectral line picker. Spectral windows added this way retain line id and other info from the Splatalogue
Frequencies may also be entered by hand

# The spectral line picker has new filters




**Select one or more lines from a splatalogue-based list you can filter using the tools at left (see below)**

Create spectral windows centred on spectral lines

**Transition Filter**

*

*e.g. CO*2-1* or *oxide**

☑ Include description

**Frequency Filters**

ALMA Band

1 2 3 4 5 6 7 8 9 10

Sky Frequency (GHz)

Min 84 Max 116

**Receiver/Back End Configuration**

- All lines
- Potentially selectable lines
- Lines in defined spws
- Filtering unobservable lines

**Upper-state Energy (K)**

Min 0 Max 0

**Molecule Filter / Environment**

Show all atoms and molecules

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

Search Online

Reset Filters

**Filter by name**

**The line lists can be long, so use filters**

**Filter by receiver band / frequency**

**The Receiver/Back End Configuration Filters were revised in Cycle 7**
**Potentially selectable => in either sideband**

**Before Cycle 7 this used a slider**

sort, single-click subsequent columns for secondary sorting. Single clicks will reverse sort order of already selected columns.)

| | | | | | | | Catalog |
|---|---|---|---|---|---|---|---|
| CH3NH2 4(1)A2-4(0)A1, F=5-5 | Methylam | | | | | | Offline |
| CH3NH2 4(1)A2-4(0)A1 | Methylamine | 86.074729 GHz | 86.072693 ... | 25.405 K | | 7.29 $D^2$ | Offline |
| CH3NH2 4(1)A2-4(0)A1, F=4-4 | Methylamine | 86.075367 GHz | 86.073331 ... | 25.405 K | | 2.193 $D^2$ | Offline |
| SO 3Σ v=0 2(2)-1(1) | Sulfur Monoxide | 86.093950 GHz | 86.091914 ... | 19.314 K | 1.7 | 3.534 $D^2$ | Offline |
| | | | 86.107150 ... | 43.712 K | | 0 $D^2$ | Offline |
| | | | 86.109483 ... | 109.97 K | | 0.007 $D^2$ | Offline |
| | | | 86.131163 ... | | 0.5 | | Offline |
| | | | 86.145963 ... | | 0.5 | | Offline |
| U-86151.6 | UNIDENTIFIED | 86.151600 GHz | 86.149562 ... | | 0.6 | | Offline |
| 13CH3OH v t=1 5(3,3)-6(2,5) | Methanol | 86.168150 GHz | 86.166112 ... | 451.624 K | | 0.162 $D^2$ | Offline |
| | | | | 23.345 K | 1.6 | | Offline |
| | | | | | 0.9 | | Offline |
| | | | | | 0.9 | | Offline |
| | | | | 1227.895 K | | 7.175 $D^2$ | Offline |
| | | | | | 0.9 | | Offline |
| | | | | 8.357 K | | 2.994 $D^2$ | Offline |
| | | | | 8.357 K | | 5.709 $D^2$ | Offline |
| | | | | 8.357 K | 0.28 | 23.651 $D^2$ | Offline |
| CH3OCH3 2(2,0)-2(1,1) AA | Dimethyl ether | 86.228720 GHz | 86.226681 ... | 8.357 K | | 8.981 $D^2$ | Offline |
| U-86239.6 | UNIDENTIFIED | 86.239600 GHz | 86.237560 ... | | 1.7 | | Offline |
| | | | 86.241330 ... | 1775.339 K | 17.4 | 19.495 $D^2$ | Offline |
| | | | 86.241460 ... | | 1.6 | | Offline |
| | | | 86.246160 ... | | 0.8 | | Offline |
| | | | 86.252808 ... | 716.792 K | 0.6 | 124.513 $D^2$ | Offline |
| U-86259.7 | UNIDENTIFIED | 86.259700 GHz | 86.257660 | | -0.12 | | Offline |

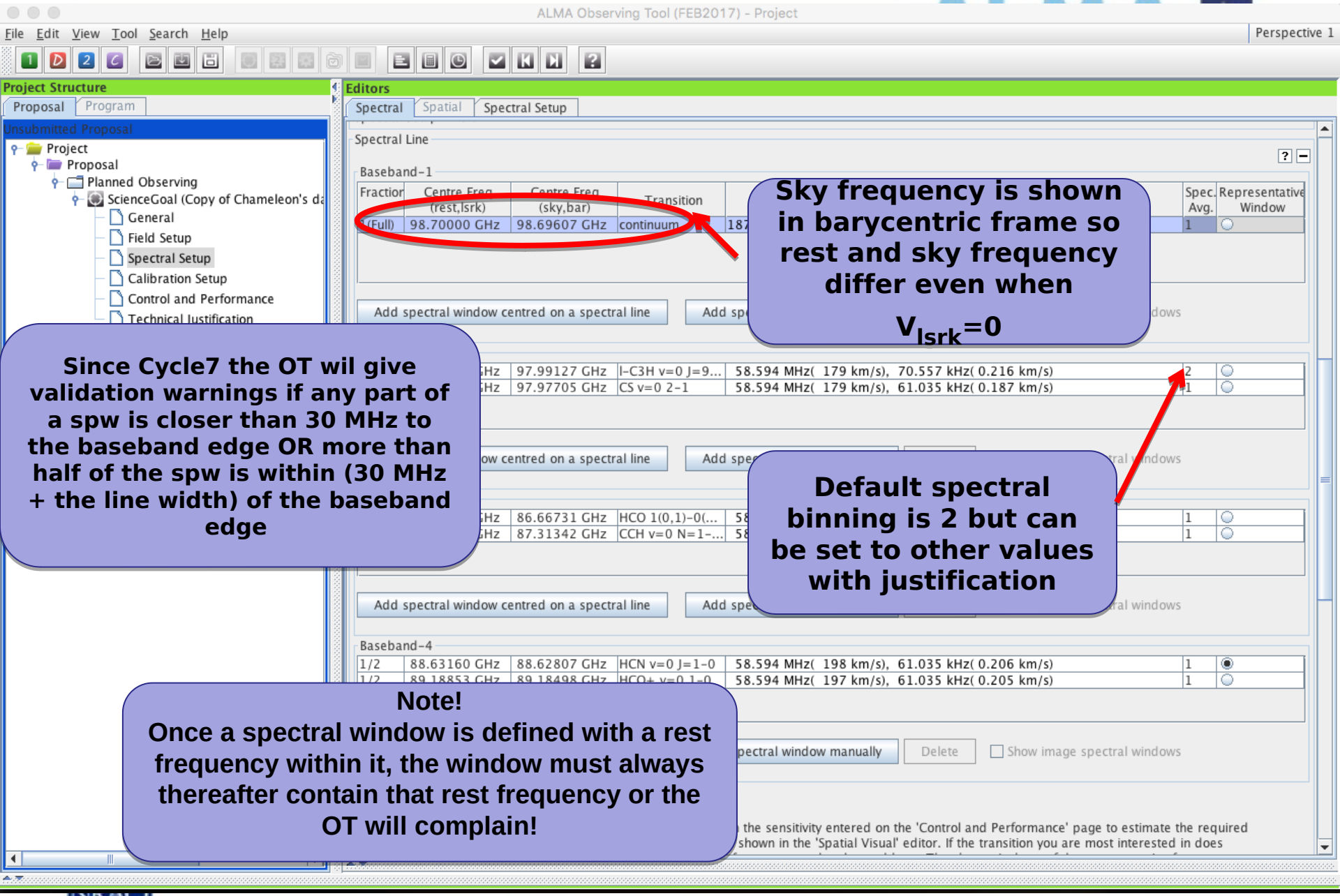
Add to spectral window list

**Spectral windows in this baseband (maximum of four)**

| Transition | Description | Rest Frequency | Sky Frequency |
|---|---|---|---|
| our pseudo continuum | | 88.000000 GHz | 87.997919 GHz |

Remove spectral window(s)

Cancel Ok




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

**Since Cycle7 the OT wil give validation warnings if any part of a spw is closer than 30 MHz to the baseband edge OR more than half of the spw is within (30 MHz + the line width) of the baseband edge**

**Default spectral binning is 2 but can be set to other values with justification**

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

ALMA Observing Tool (FEB2017) - Project

File Edit View Tool Search Help

Perspective 1

**Project Structure**

Proposal | Program

Unsubmitted Proposal

- Project
  - Proposal
    - Planned Observing
      - ScienceGoal (Copy of Chameleon's da
        - 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 | 97.99517 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 | 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 | |
| 1/2 | 87.31690 GHz | 87.31342 GHz | CCH v=0 N=1-... | 58.594 MHz, 61.035 kHz | 1 | |

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 | |
| 1/2 | 89.18853 GHz | 89.18498 GHz | HCO+ v=0 1-0 | 58.594 MHz, 61.035 kHz | 1 | |

Add spectral window centred on a spectral line | Add spectral window manually | Delete | Show image spectral windows

**Double click this field to select bandwidth & resolution from a dropdown list**

ALMA Observing Tool (FEB2017) - Project

File Edit View Tool Search Help

Perspective 1

**Failing to rename a new spw brings a validation error!** Picky picky.

**Spectral specs share a base-band so the sum of shares can't exceed 1. Choices for resolution change with this fraction**

Project Structure

Proposal | Program

Unsubmitted Proposal

- Project
  - Proposal
    - Planned Observing
      - ScienceGoal (Copy of Chameleon's da
        - 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 G

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 | 97.99517 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 | 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 | |
| 1/2 | 87.31690 GHz | 87.31342 GHz | CCH v=0 N=1-... | 58.594 MHz, 61.035 kHz | 1 | |

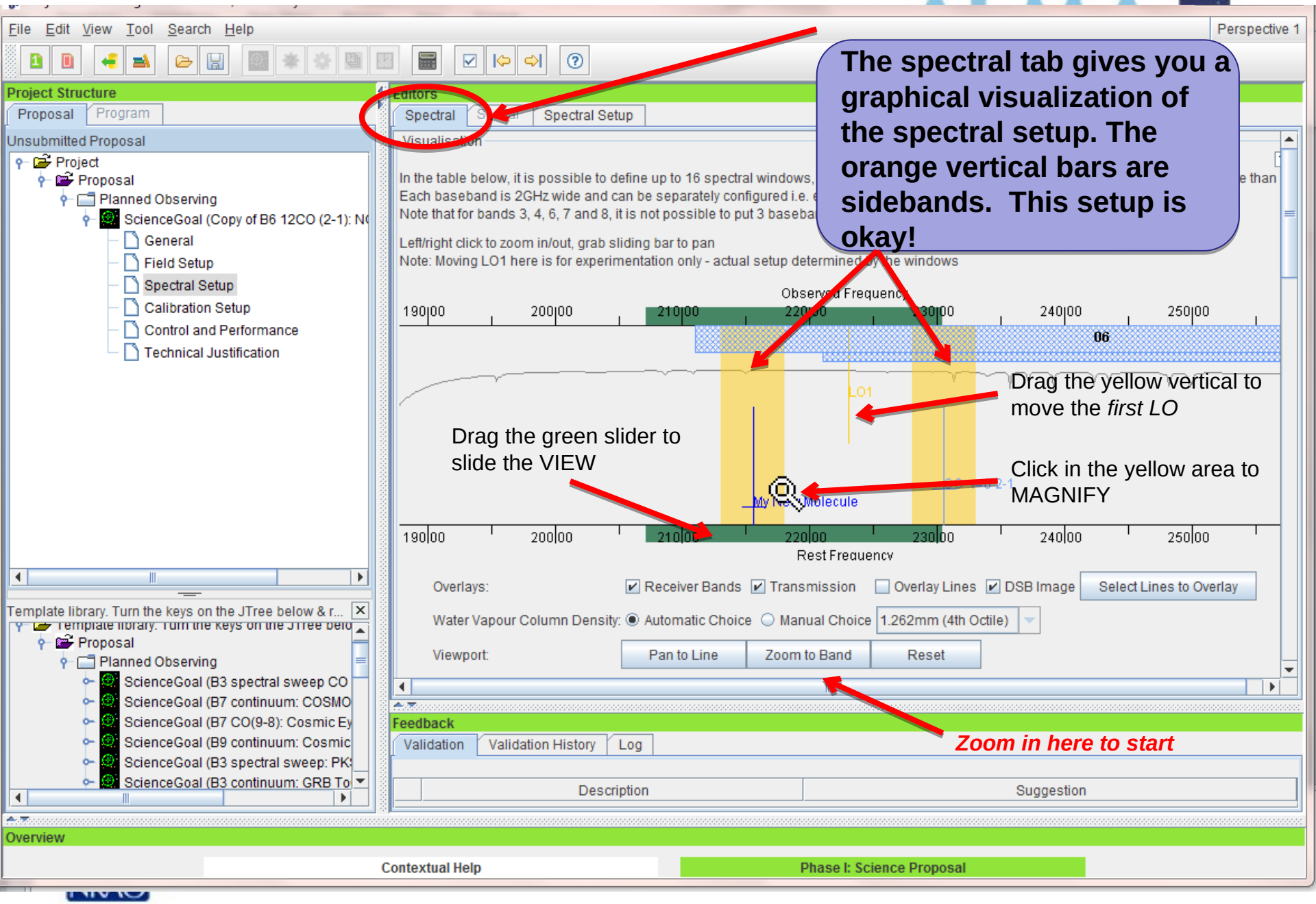
ually | Delete | Show image spectral windows

5 kHz 1
5 kHz 1

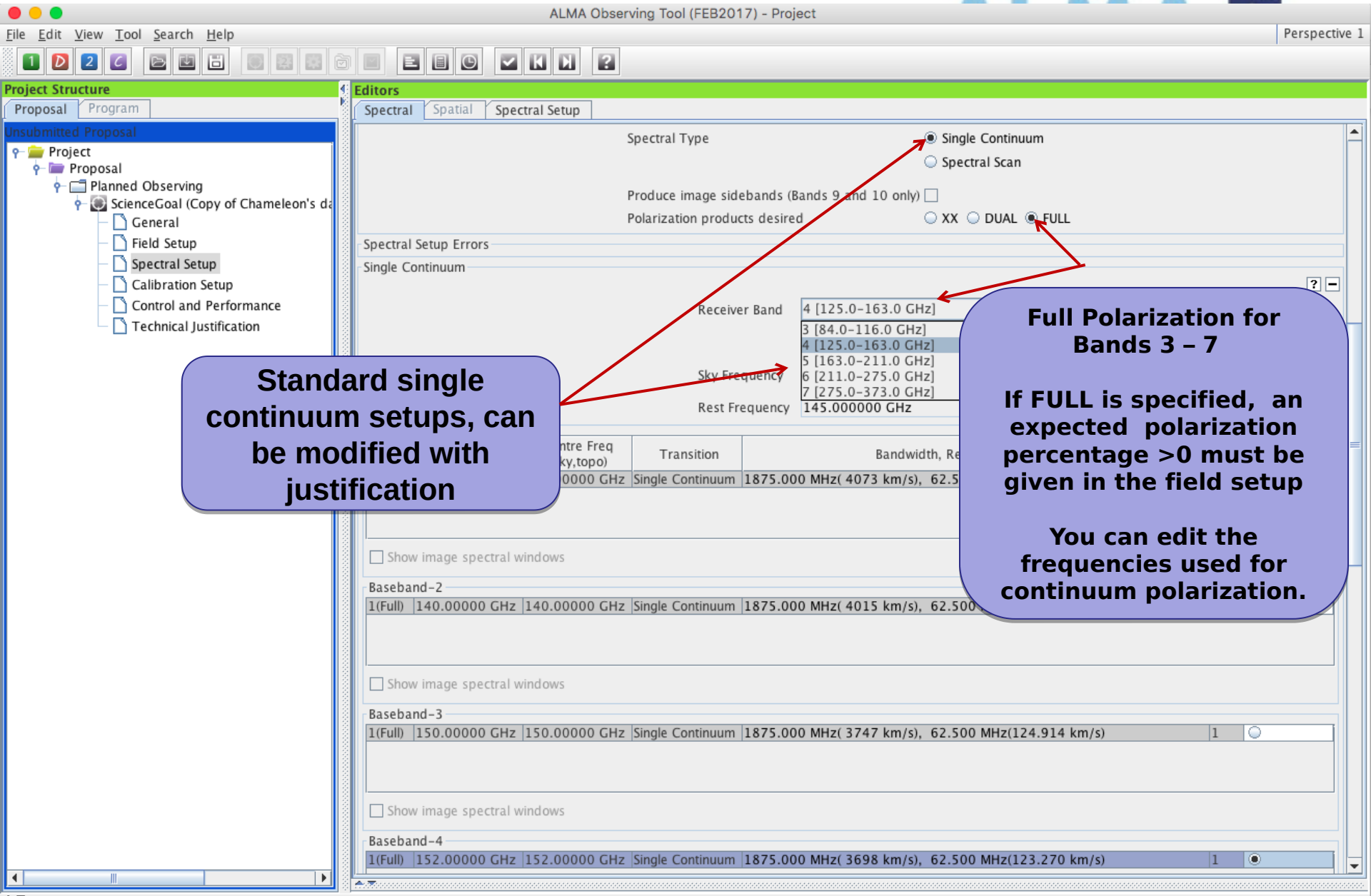
ually | Delete | Show image spectral windows

NRAO

# The spectral setup has a visualizer for spectral windows and spectral lines



# Full Continuum & Polarization



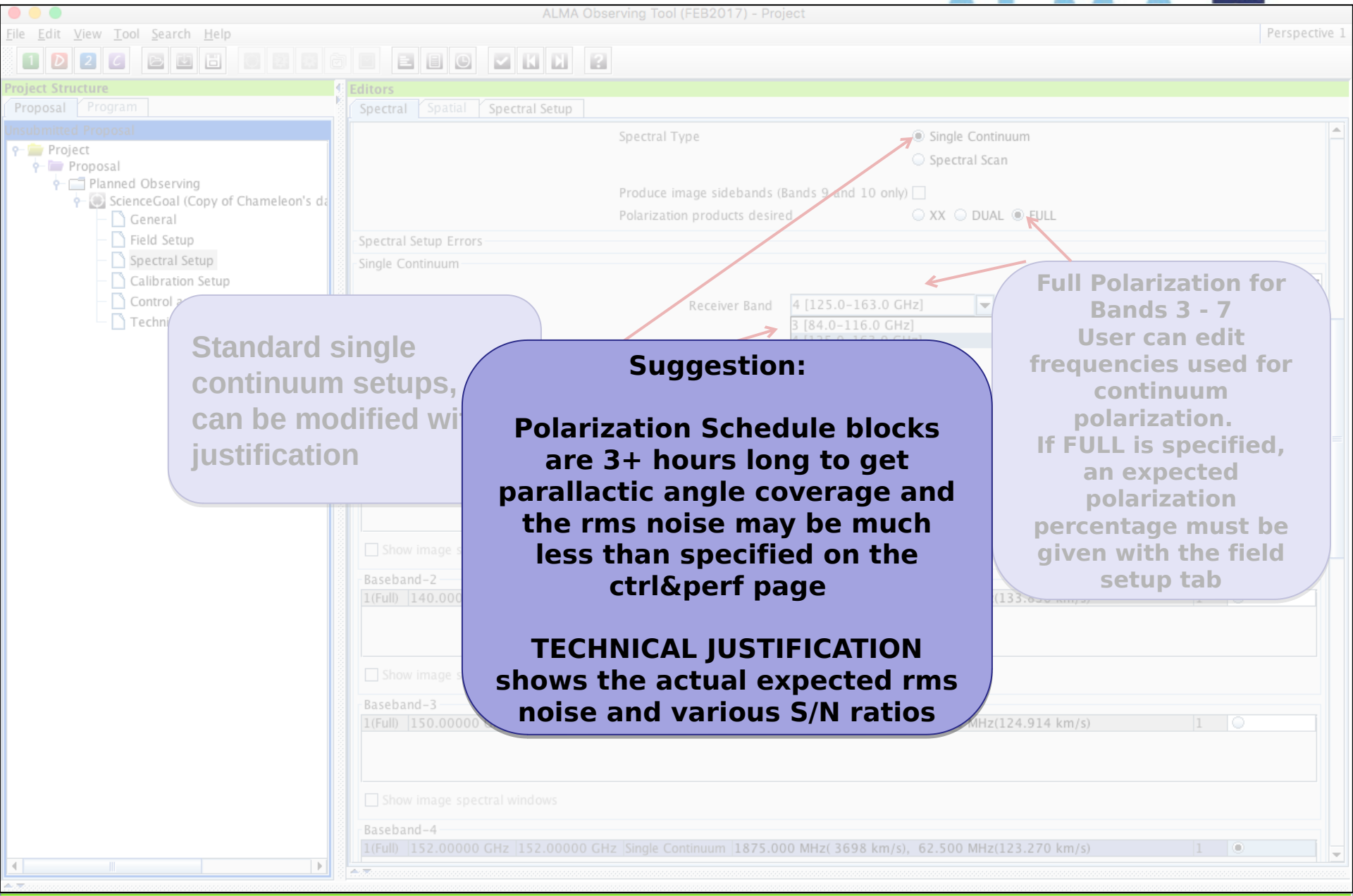

**Standard single continuum setups, can be modified with justification**

**Full Polarization for Bands 3 – 7**

**If FULL is specified, an expected polarization percentage >0 must be given in the field setup**

**You can edit the frequencies used for continuum polarization.**

# Full Continuum & Polarization




Standard single continuum setups, can be modified wi justification

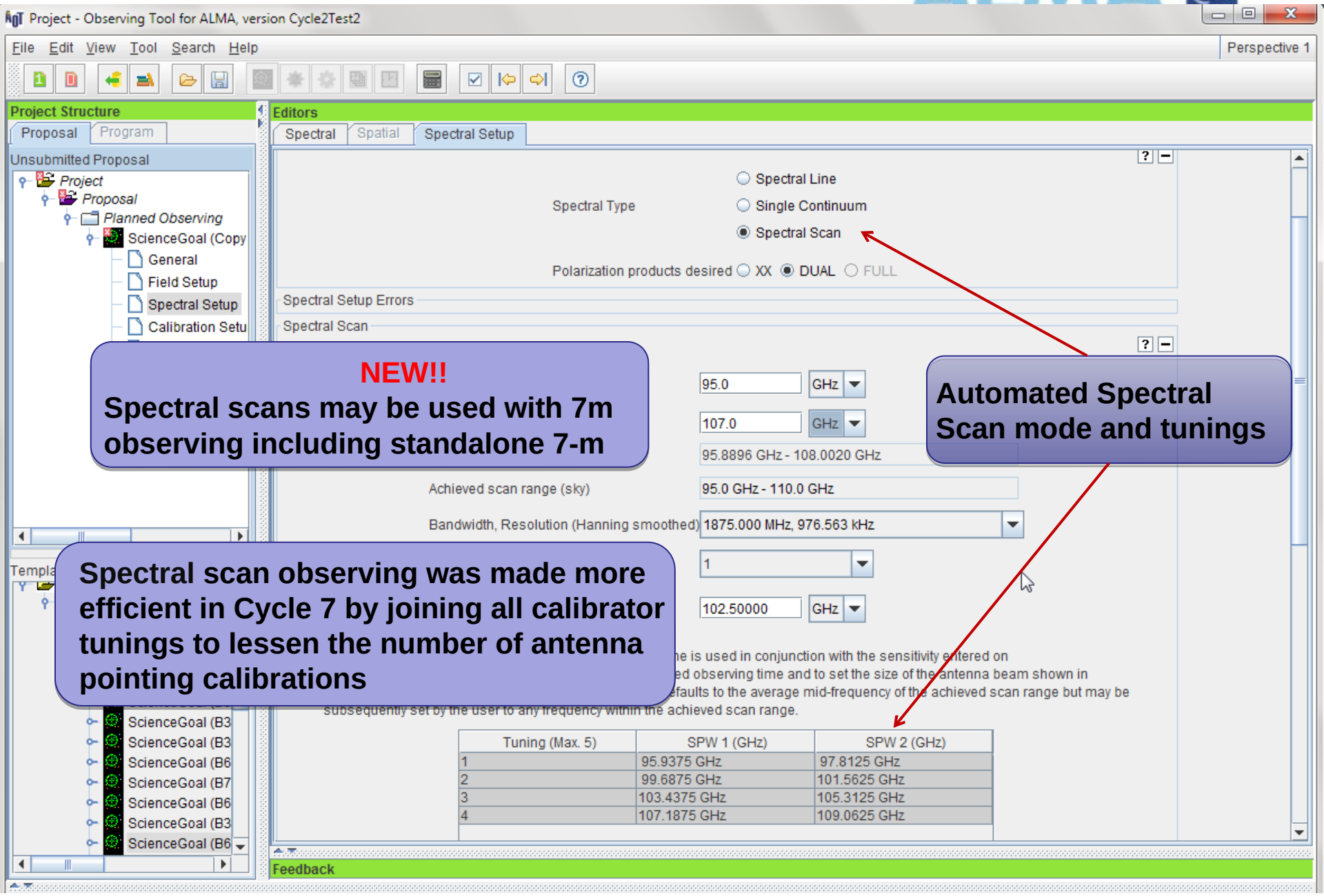
**Suggestion:**

**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

# Automated spectral scan - I

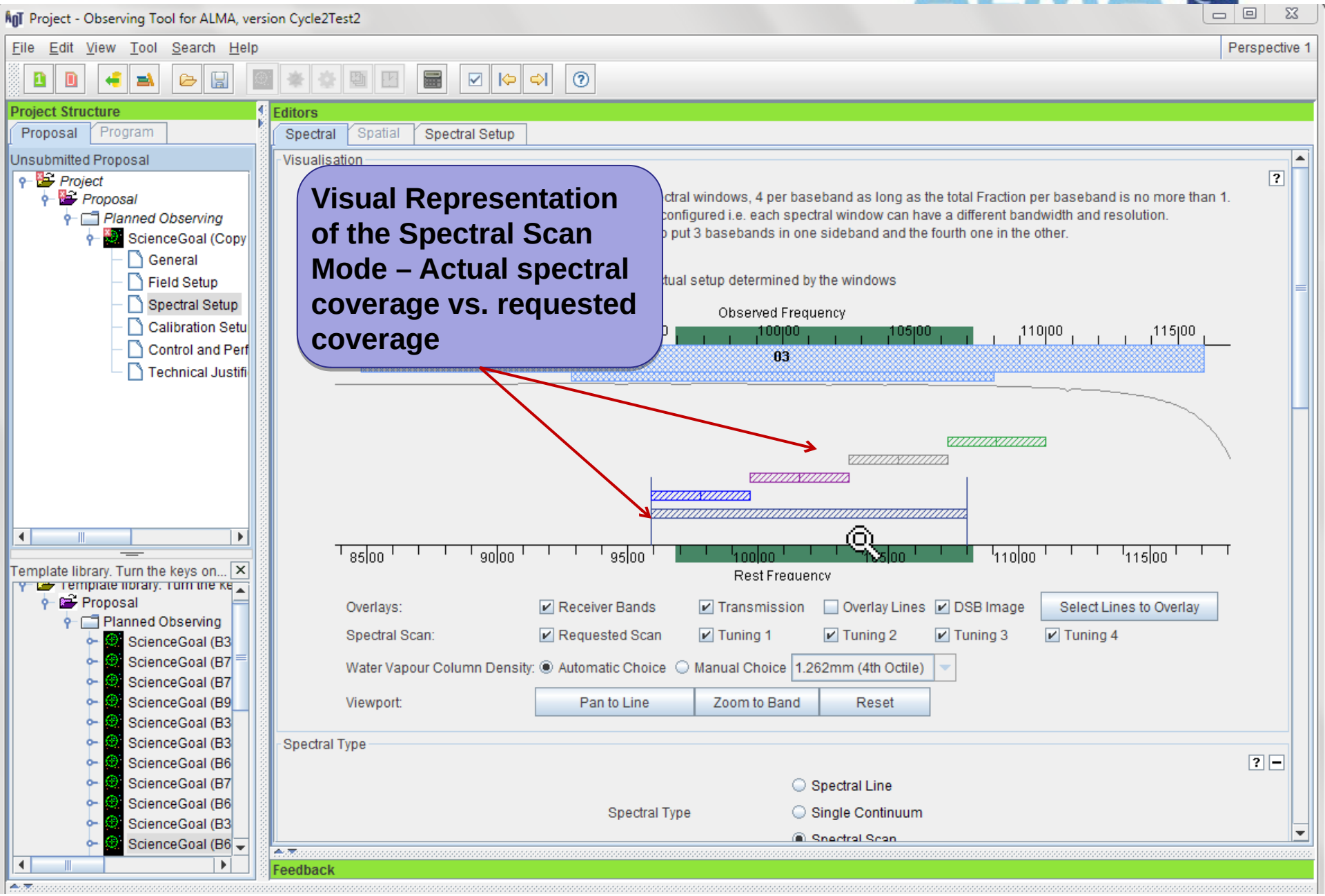



**NEW!!**
**Spectral scans may be used with 7m observing including standalone 7-m**

**Automated Spectral Scan mode and tunings**

**Spectral scan observing was made more efficient in Cycle 7 by joining all calibrator tunings to lessen the number of antenna pointing calibrations**

# Automated spectral scan - II



# Saving spw & line rest frequencies

ALMA Observing Tool (FEB2017) - Project

File Edit View Tool Search Help

Perspective 1

**Project Structure**

Proposal | Program

Unsubmitted Proposal

- Project
  - Proposal
    - Planned Observing
      - ScienceGoal (Copy of Chameleon's da
        - 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 an observing time and to set the size of the antenna beam shown in the 'Spatial Visual' editor. If the not fall in the centre of the chosen spectral window, its frequency can be changed here. The sky 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 to set the velocity scale and will enhance the ALMA Science Archive. We recomme once the spectral setup is fully defined.

Define Rest Frequencies

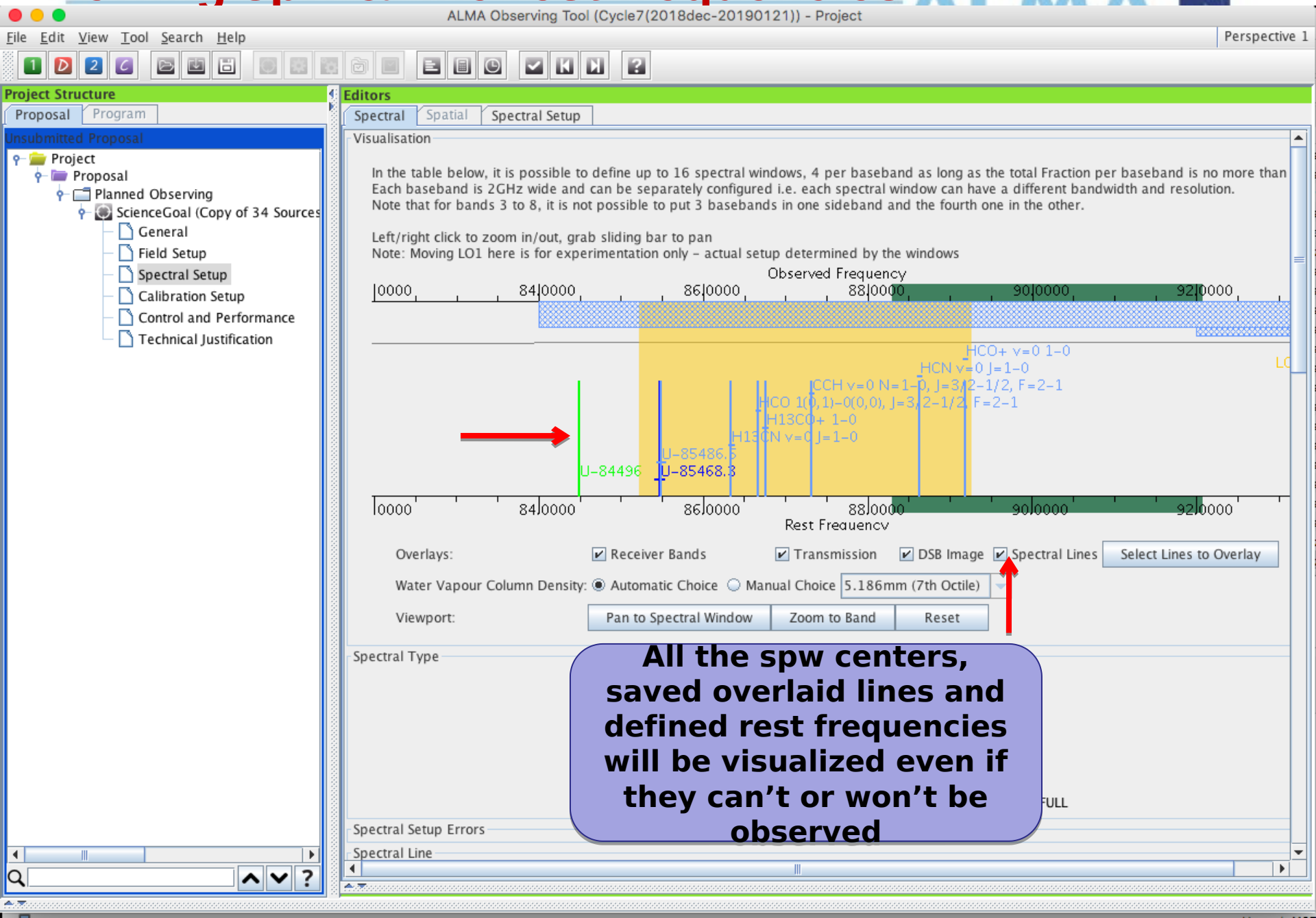
Targets

| 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 |

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

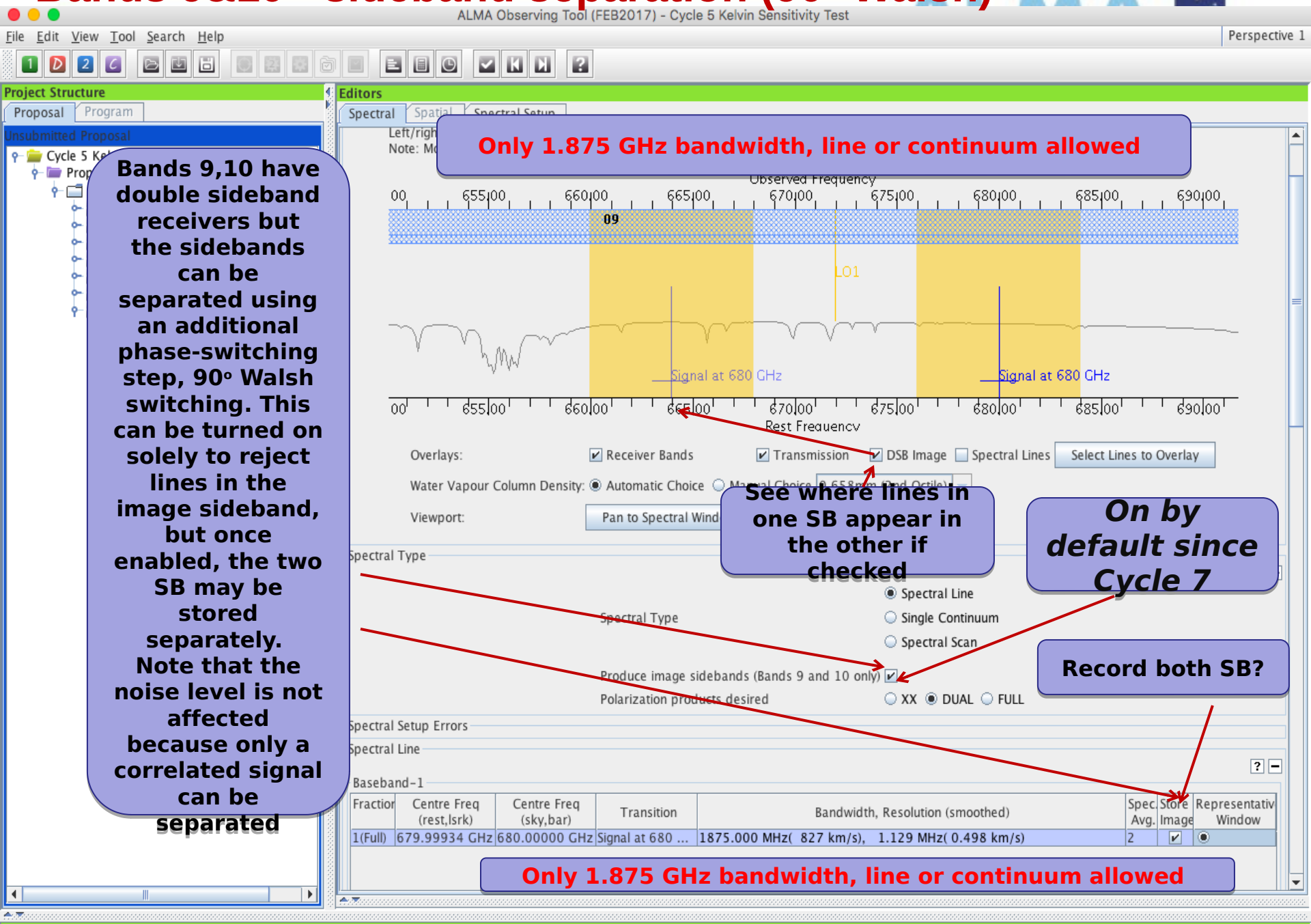
**List of saved rest frequencies including:**
**+ spw centers**
**+ Saved overlaid lines (if desired)**
**+ Defined Rest Frequencies**

# Viewing spw & line rest frequencies




**All the spw centers, saved overlaid lines and defined rest frequencies will be visualized even if they can't or won't be observed**

# Bands 9&10 - sideband separation (90° Walsh)



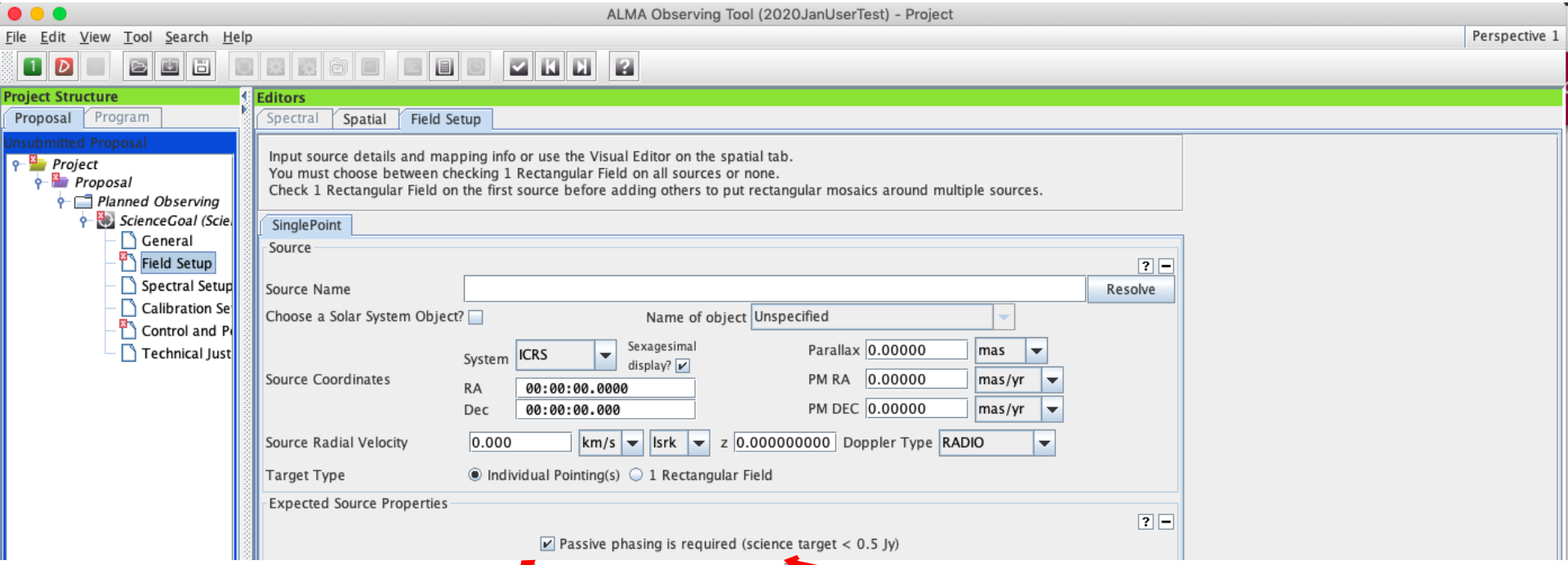

Bands 9,10 have double sideband receivers but the sidebands can be separated using an additional phase-switching step, 90° Walsh switching. This can be turned on solely to reject lines in the image sideband, but once enabled, the two SB may be stored separately. Note that the noise level is not affected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

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

*On by default since Cycle 7*

Record both SB?

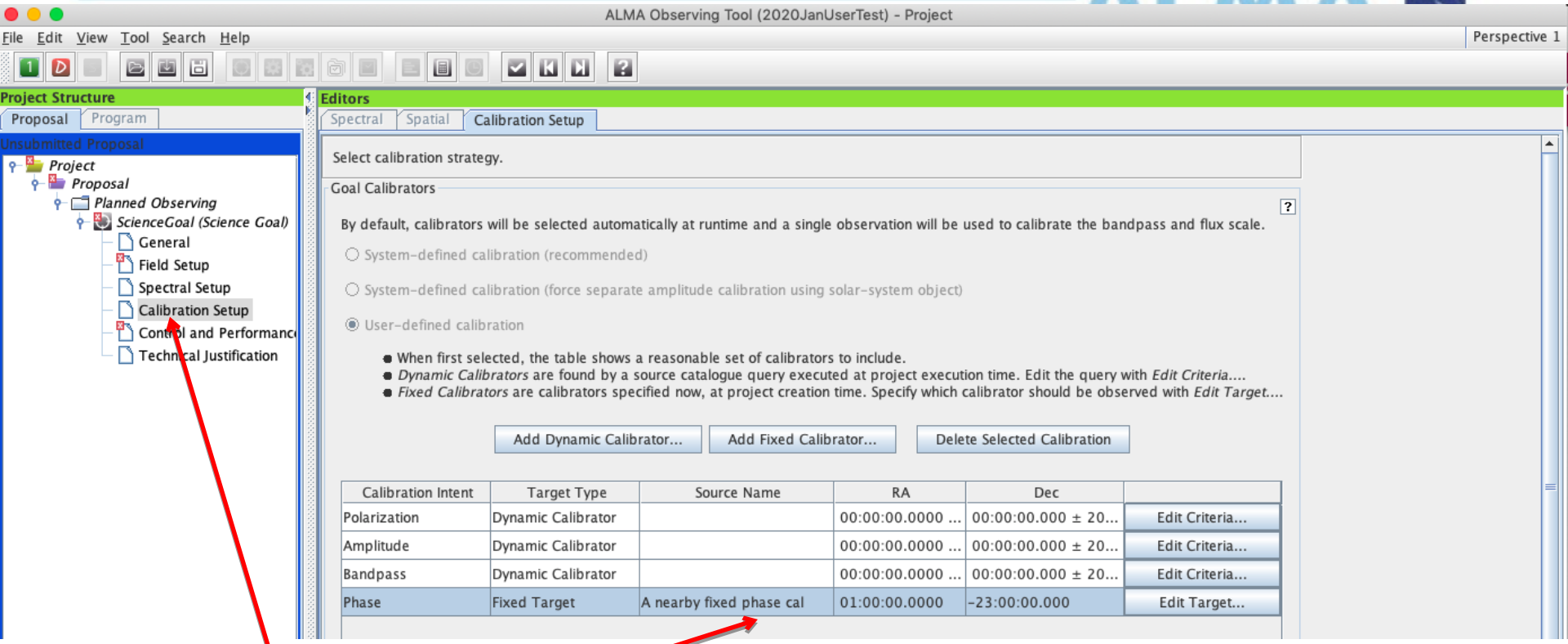
# Passive phasing of the 12m array for VLBI of weak sources - I




**NEW!!** For VLBI observation of weak unresolved sources the 12m array may be phased up if a sufficiently bright phase calibrator is known near the science target

This possibility appears for VLBI proposals. The default is unchecked.

# Passive phasing of the 12m array for VLBI of weak sources - II




**In this case a suitable phase calibrator must be fixed, in place of the usual runtime calibrator query**

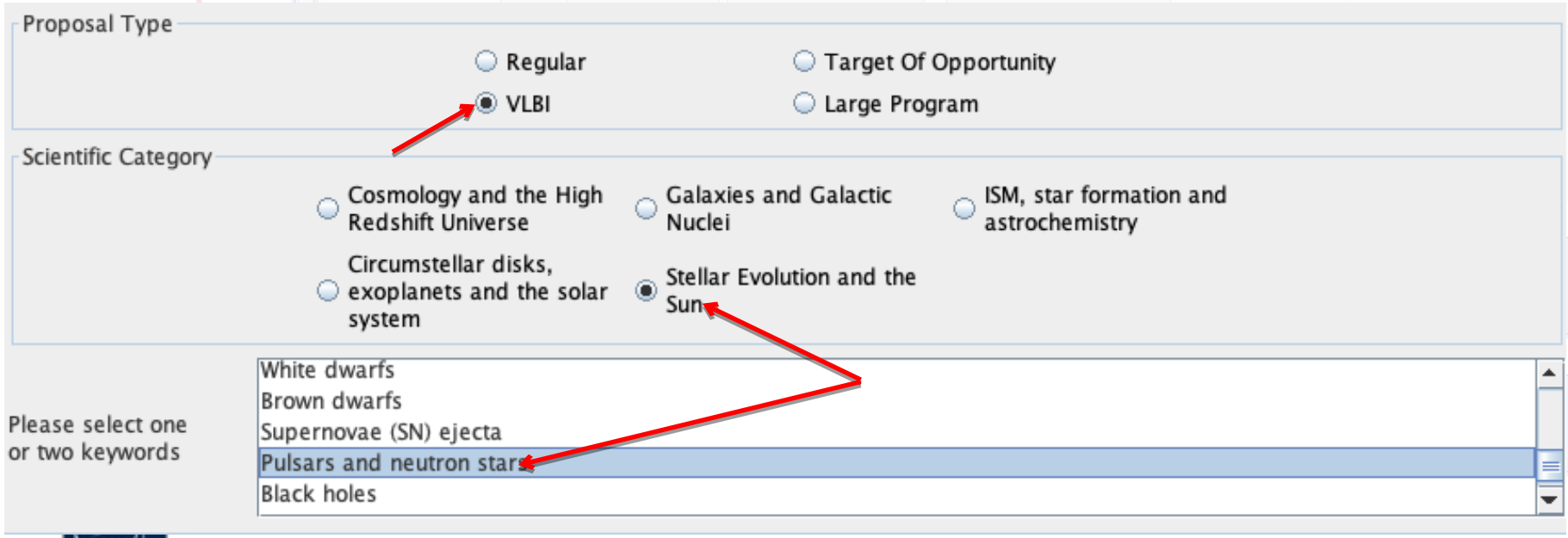
**The default query phase cal should be removed**

**Additional technical justification will be requested**

# PULSAR MODE passive phasing of the 12m array for pulsar observing

**Wait! There's more for passive-phased 'VLBI' proposals using a fixed phase cal**

**When the proposal category is "Stellar Evolution…" and the keyword "Pulsars …." is chosen, a so-called pulsar mode is invoked whereby the phased and summed signal from the ALMA antennas (to date only used for VLBI) is instead used in a stand-alone mode. For now, only pulsars can be observed, but this mode may be extended to other source types in the future. Such proposals will receive a ".V" proposal code in Cycle 8. A separate technical justification will be required. *Co-PI's are not allowed with such proposals.***



ALMA Observing Tool (FEB2017) - Project

File Edit View Tool Search Help

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

Project Structure

Proposal | Program

Unsubmitted Proposal

- Project
  - Proposal
    - Planned Observing
      - ScienceGoal (Copy of Chameleon's da
        - 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 * λ / 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 |

**Array properties summarized**

Desired Performance

Desired Angular Resolu

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

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

File Edit View Tool Search Help

Perspective 1

**Project Structure**

Proposal | Program

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

**Editors**

Spectral | Spatial | Control and Performance

These parameters are used to control various aspects

Control and Performance

Configuration Information

| | | | |
|---|---|---|---|
| Antenna Beamsize ( 1.13 * λ / D ) | 12m | 65.288 ar | |
| Number of Antennas | 12m | 43 | |
| | ACA 7m configura | | |
| 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 "

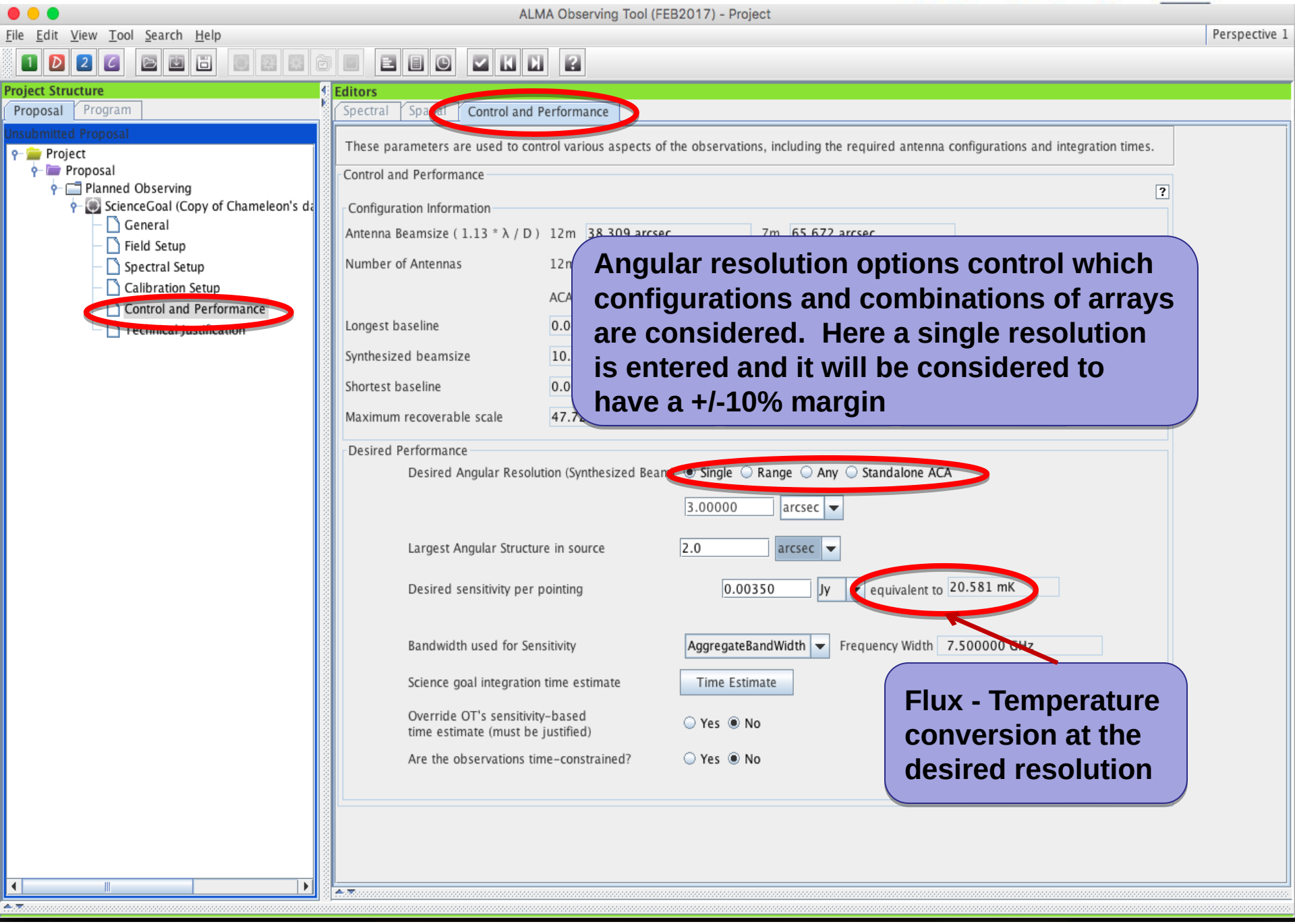
will provide 12.316 mK @ 3.00 "

Bandwidth used for Sensitivity RepresentativeWindowResolution Frequency Width 0.141113 MHz

**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 spectral line 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
Proposal Program
Unsubmitted Proposal
Project
Proposal
Planned Observing
ScienceGoal (Copy of Chameleon's da
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 * λ / D ) 12m 38.309 arcsec 7m 65.672 arcsec
Number of Antennas
Longest baseline
Synthesized beamsize
Shortest baseline
Maximum recoverable scale
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. Here a single resolution is entered and it will be considered to have a +/-10% margin
Flux - Temperature conversion at the desired resolution

ALMA Observing Tool (Cycle7(2018dec-20190121)) - Project name

File Edit View Tool Search Help

Perspective 1

Project Structure

Proposal Program

Unsubmitted Proposal

- Project name
  - Proposal
    - Planned Observing
      - ScienceGoal (Copy of 34 Sources
        - General
        - Field Setup
        - Spectral Setup
        - Calibration Setup
        - Control and Performance
        - Technical Justification

Editors

Spectral | Spati | Control and Performance

These parameters are used to control various aspects of the observations ... mes.

Control and Performance

Configuration Information

| | | |
|---|---|---|
| Antenna Beamsize ( 1.13 * λ / D ) | 12m | 8.260 arcsec |
| Number of Antennas | 12m | 43 |

| | ACA 7m configuration | Mos |
|---|---|---|
| Longest baseline | 0.049 km | 0.16 |
| Synthesized beamsize | 2.046 arcsec | 0.62 |
| Shortest baseline | 0.009 km | 0.01 |
| Maximum recoverable scale | 10.413 arcsec | 4.773 |

Desired Performance

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

0.10000 arcsec to 0.20000 arcsec

Largest Angular Structure in source 1.00000 arcsec

Desired sensitivity per pointing 0.50000 Jy

Bandwidth used for Sensitivity AggregateBandWidth

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

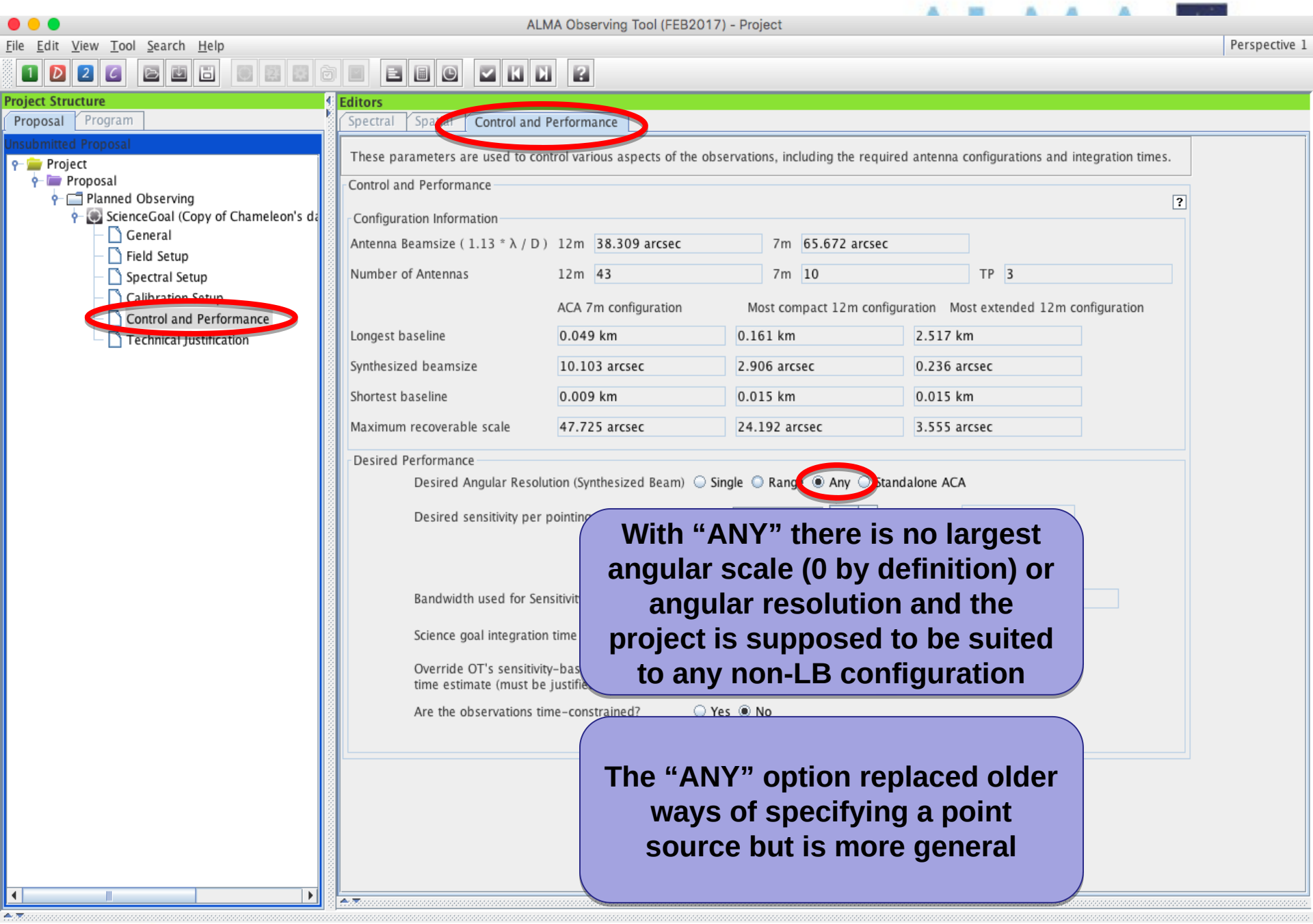
Science Goal time estimate (includes configuration and beam information) Time Estimate

Simultaneous 12-m and ACA observations ○ Yes ◉ No

Are the observations time-constrained? ○ Yes ◉ No

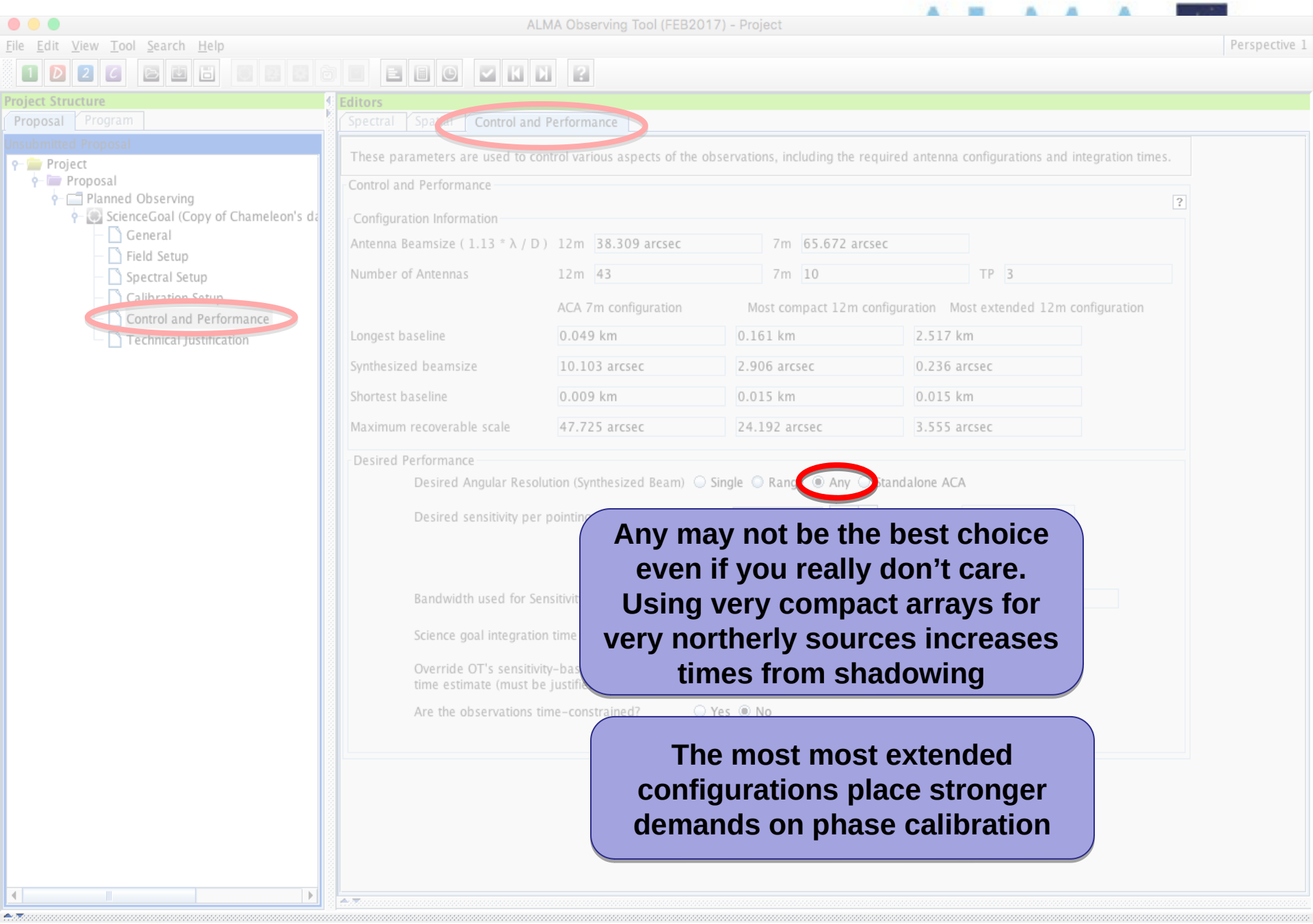
**RANGE:**
**You can specify an acceptable range of angular resolution for the 12m array. This implies a set of configuration possibilities, use the time estimate to see what they are**

**Since Cycle 6 the min and max allowed user-input angular resolutions are ½ the smallest and twice the largest of the values shown for the 12m configurations**




**With "ANY" there is no largest angular scale (0 by definition) or angular resolution and the project is supposed to be suited to any non-LB configuration**

**The "ANY" option replaced older ways of specifying a point source but is more general**




**Any may not be the best choice even if you really don't care. Using very compact arrays for very northerly sources increases times from shadowing**

**The most most extended configurations place stronger demands on phase calibration**

ALMA Observing Tool (FEB2017) - Project

File Edit View Tool Search Help

Perspective 1

**Project Structure**

Proposal | Program

Unsubmitted Proposal

- Project
  - Proposal
    - Planned Observing
      - ScienceGoal (Copy of Chameleon's da
        - 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 * λ / D ) | 12m | 38.309 arcsec | 7m | 65.672 arcsec |
| Number of Antennas | 12m | 43 | 7m | 10 |

| | ACA 7m configuration | Most compact 12m configuration | Most |
|---|---|---|---|
| Longest baseline | 0.049 km | 0.161 km | 16.197 km |
| Synthesized beamsize | 10.103 arcsec | 2.906 arcsec | 0.033 arc |
| 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 3.0 arcsec

Desired sensitivity per point

Bandwidth used for Sensi

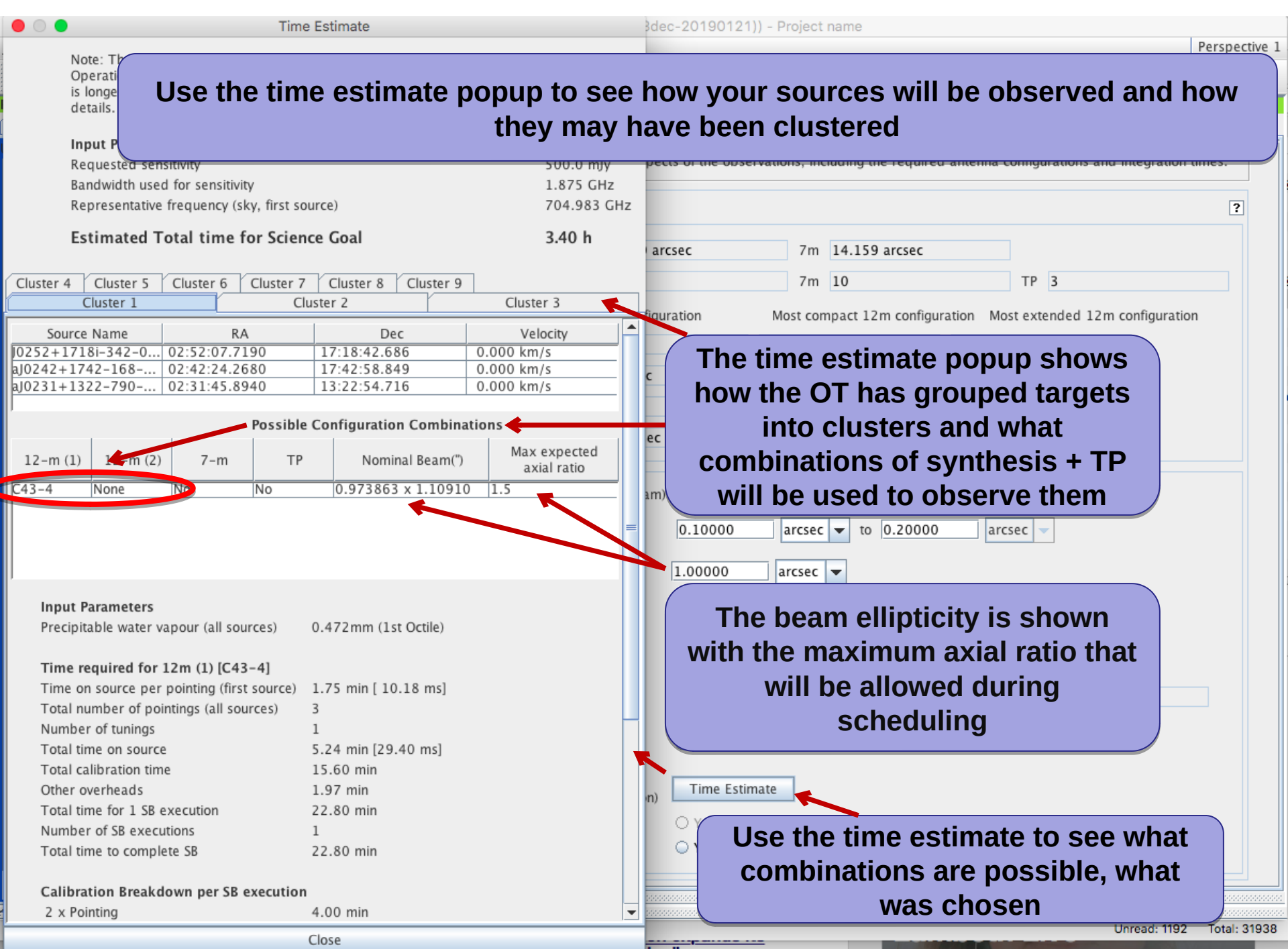
Science goal integration t

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

Are the observations time

**NEW!!**
**Bands 9-10 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
Use the time estimate popup to see how your sources will be observed and how they may have been clustered
Requested sensitivity 500.0 mJy
Bandwidth used for sensitivity 1.875 GHz
Representative frequency (sky, first source) 704.983 GHz
Estimated Total time for Science Goal 3.40 h
Cluster 4 Cluster 5 Cluster 6 Cluster 7 Cluster 8 Cluster 9
Cluster 1 Cluster 2 Cluster 3
Source Name RA Dec Velocity
J0252+1718i-342-0... 02:52:07.7190 17:18:42.686 0.000 km/s
aJ0242+1742-168-... 02:42:24.2680 17:42:58.849 0.000 km/s
aJ0231+1322-790-... 02:31:45.8940 13:22:54.716 0.000 km/s
Possible Configuration Combinations
12-m (1) 12-m (2) 7-m TP Nominal Beam(") Max expected axial ratio
C43-4 None No No 0.973863 x 1.10910 1.5
The time estimate popup shows how the OT has grouped targets into clusters and what combinations of synthesis + TP will be used to observe them
The beam ellipticity is shown with the maximum axial ratio that will be allowed during scheduling
Input Parameters
Precipitable water vapour (all sources) 0.472mm (1st Octile)
Time required for 12m (1) [C43-4]
Time on source per pointing (first source) 1.75 min [ 10.18 ms]
Total number of pointings (all sources) 3
Number of tunings 1
Total time on source 5.24 min [29.40 ms]
Total calibration time 15.60 min
Other overheads 1.97 min
Total time for 1 SB execution 22.80 min
Number of SB executions 1
Total time to complete SB 22.80 min
Calibration Breakdown per SB execution
2 x Pointing 4.00 min
Close
Time Estimate
Use the time estimate to see what combinations are possible, what was chosen
Perspective 1
7m 14.159 arcsec
7m 10 TP 3
Most compact 12m configuration Most extended 12m configuration
0.10000 arcsec to 0.20000 arcsec
1.00000 arcsec
Unread: 1192 Total: 31938

# 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

Proposal | Program

Debris Disk Structure around Nearby Sun-like Stars

- Debris Disk Structure around Nearby Sun-
  - 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_1064
          - HD_10647_a_06_TE
            - Group 1 : Calibra
            - Group 2 : Science
            - 6 Targets
              - query Pointing
              - query Pointing
              - query Amplitu

Cycle3 Template Library (read-only)

- Cycle3 Template Library
  - Science Plan

Editors

Spectral | Spatial | Control and Performance

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

Control and Performance

Configuration Information

| | | | | |
|---|---|---|---|---|
| Antenna Beamsize ( 1.13 * λ / 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 | |

Science goal integration time estimate — Time Estimate

Feedback

Validation

**scroll down in the time estimate popup to see a breakdown of how the required time is made of its various constituents**

**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.

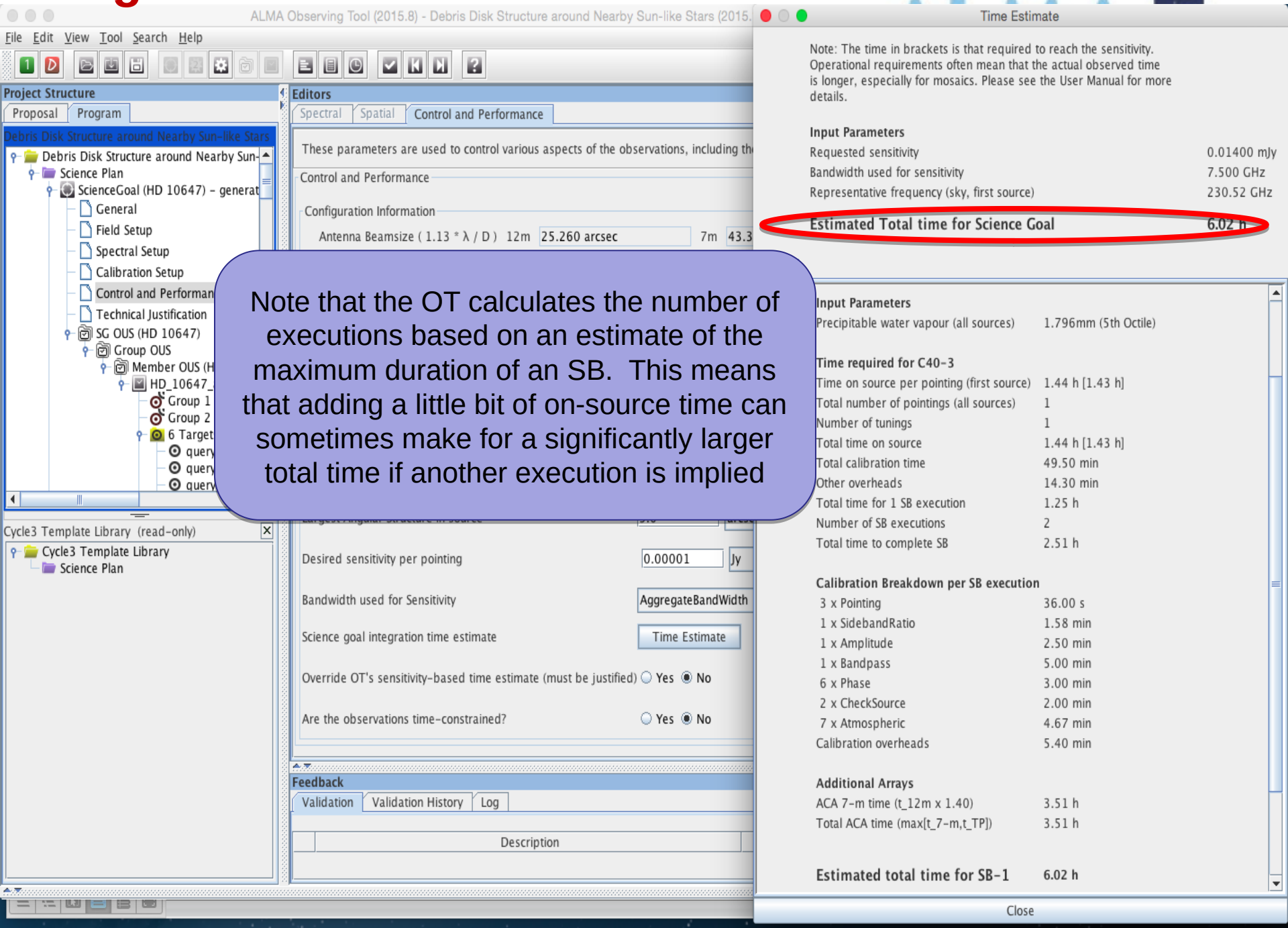
| Input Parameters | |
|---|---|
| Requested sensitivity | 0.01400 mJy |
| Bandwidth used for sensitivity | 7.500 GHz |
| Representative frequency (sky, first source) | 230.52 GHz |
| **Estimated Total time for Science Goal** | **6.02 h** |

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** | |
| 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 x 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




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

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

Perspective 1

ALMA Calibrator Selection Tool...
ALMA LO Configuration Tool...
Sensitivity Calculator...
Generate SBs from the Selected Goal
Display Project Time Summary
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

Project Structure

Proposal

SUBMITTED

Bulge Asy
Propos
Pla
ScienceGoal (MSXiiiaRA16b1)
ScienceGoal (MSXiiiaRA16b2)

Template library. Turn the keys on the JTr...

Template library. Turn the keys on th
Proposal
Planned Observing
ScienceGoal (B3 spectral sv
ScienceGoal (B7 continuum
ScienceGoal (B7 CO(9-8): (
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

Bulge Asymm

n (lsjouwer@nra

**Use Tool->display project time summary on the main menu to see these summaries per science goal**

## 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. | |
| MSXiiiaRA16a1 | 51.12 min | 24.75 min | - | - | 51.12 min | 24.75 min | - | - | - | - | 51.12 min | 24.75 min | No |
| MSXiiiaRA16a2 | 51.12 min | 24.75 min | - | - | 51.12 min | 24.75 min | - | - | - | - | 51.12 min | 24.75 min | No |
| MSXiiiaRA16a3 | 51.97 min | 24.75 min | - | - | 51.97 min | 24.75 min | - | - | - | - | 51.97 min | 24.75 min | No |
| MSXiiiaRA16a4 | 51.12 min | 24.75 min | - | - | 51.12 min | 24.75 min | - | - | - | - | 51.12 min | 24.75 min | No |
| MSXiiiaRA16b1 | 1.29 h | 29.95 min | - | - | 1.29 h | 29.95 min | - | - | - | - | 1.29 h | 29.95 min | No |
| MSXiiiaRA16b2 | 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 |
| MSXiiiaRA16a1 | 54.85 GB | - | - | 18.31 MB/s | - | - |
| MSXiiiaRA16a2 | 54.85 GB | - | - | 18.31 MB/s | - | - |
| MSXiiiaRA16a3 | 55.77 GB | - | - | 18.31 MB/s | - | - |
| MSXiiiaRA16a4 | 54.85 GB | - | - | 18.31 MB/s | - | - |
| MSXiiiaRA16b1 | 83.35 GB | - | - | 18.31 MB/s | - | - |
| MSXiiiaRA16b2 | 83.35 GB | - | - | 18.31 MB/s | - | - |
| Overall | 387.01 GB | - | - | | | |

OK

Project Summary

## 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 | |

Project Summary

## Total and Calibration Times

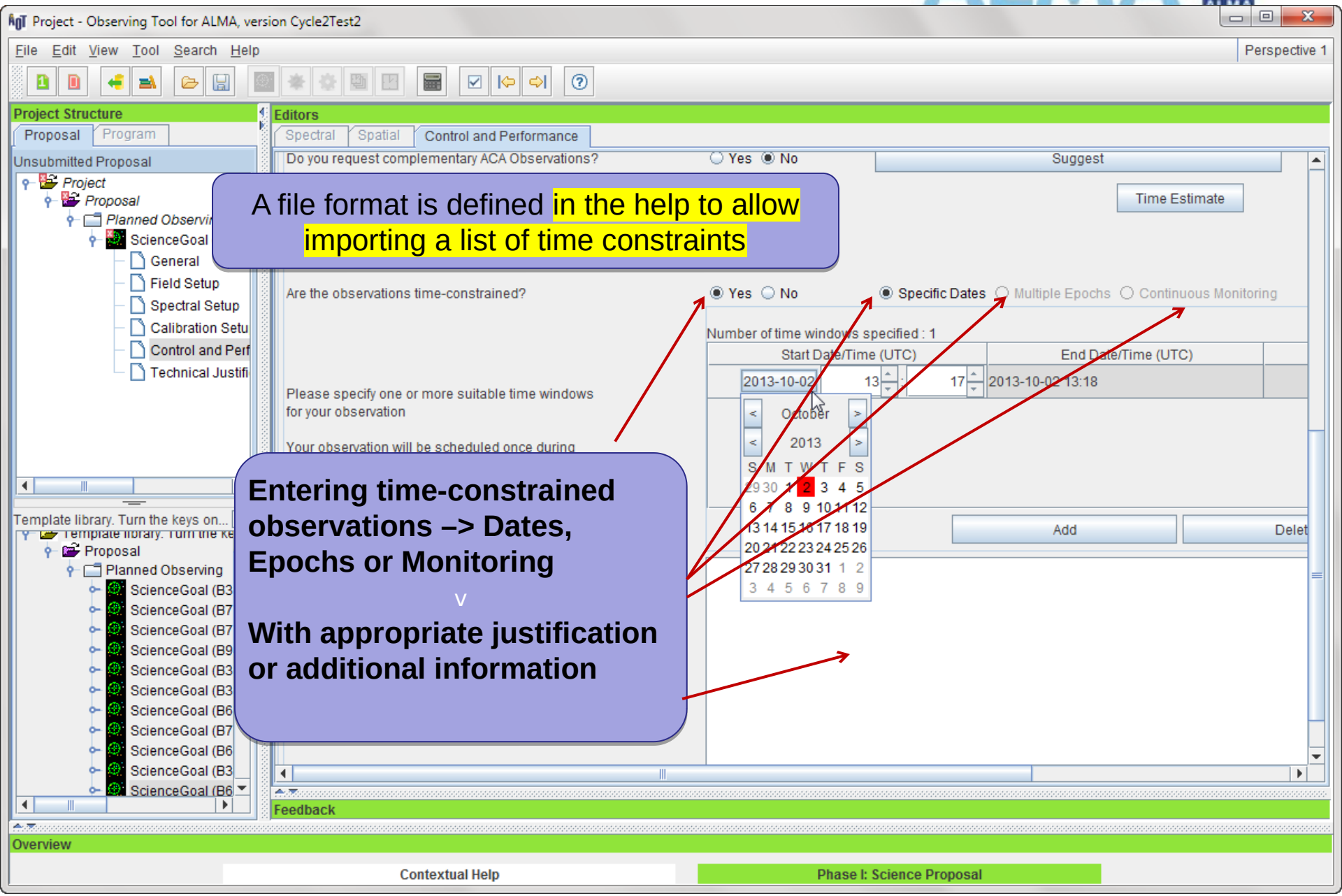
| Science Goal | 12-m (1) | | 12-m (2) | | 12-m (1+2) | | ACA 7-m | | ACA TP | | Overall | | Non-standard Mode |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Tot. | Cal. | Tot. | Cal. | Tot. | Cal. | Tot. | Cal. | Tot. | Cal. | Tot. | Cal. | |
| At ar 3" | 31.53 min | 13.83 min | - | - | 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 | |

**Especially when using a RANGE of angular resolution:**
**Rules are operating under the hood to choose among the possible configuration choices and they may be biased toward the low resolution end of an angular range because less 12m time is needed. *Variations in the range can cause disproportionately large differences in the time*.**

**In the cases above only the upper end of a range changes, from 1" to 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 constrained observing



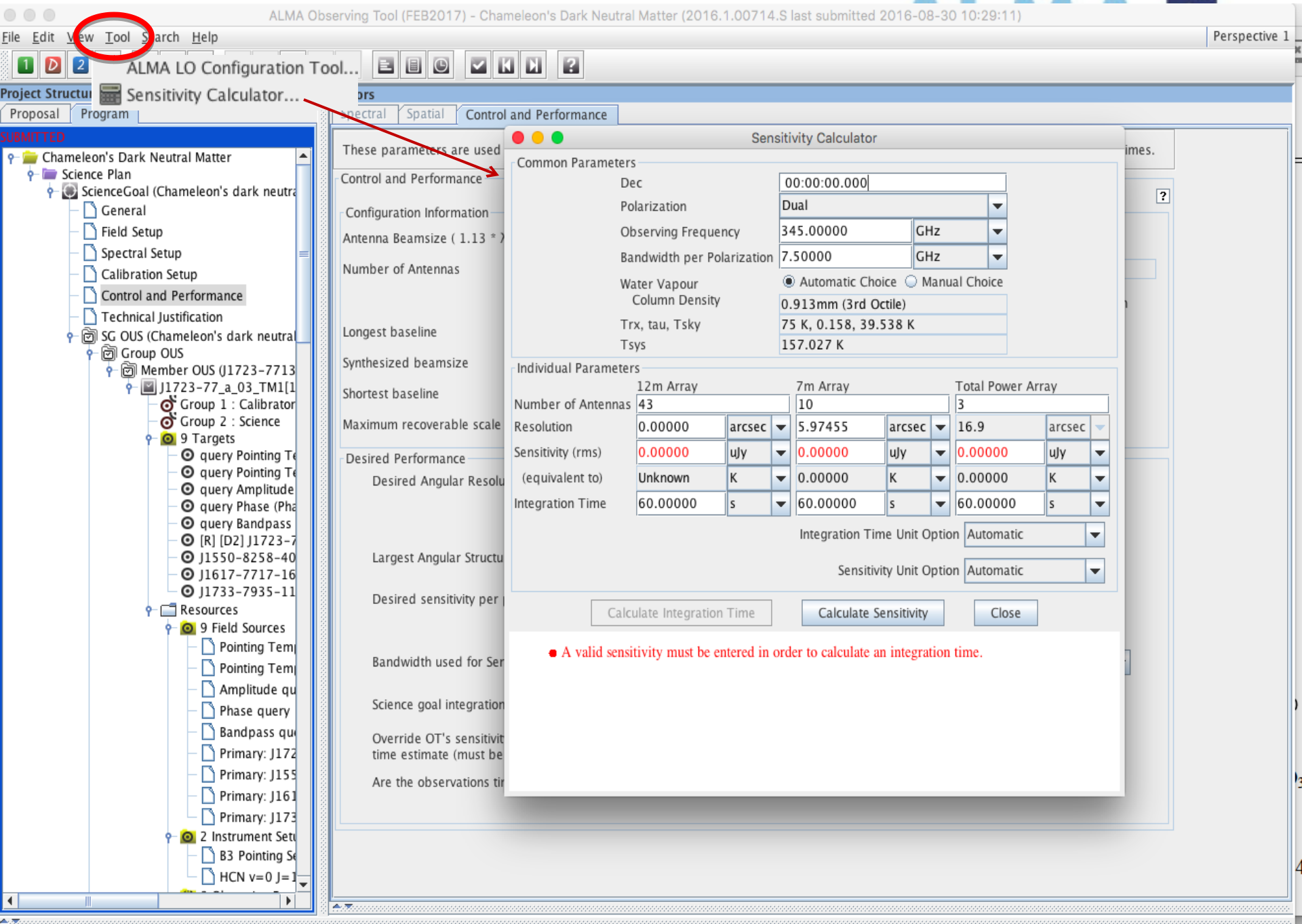

A file format is defined in the help to allow importing a list of time constraints

**Entering time-constrained observations –> Dates, Epochs or Monitoring**

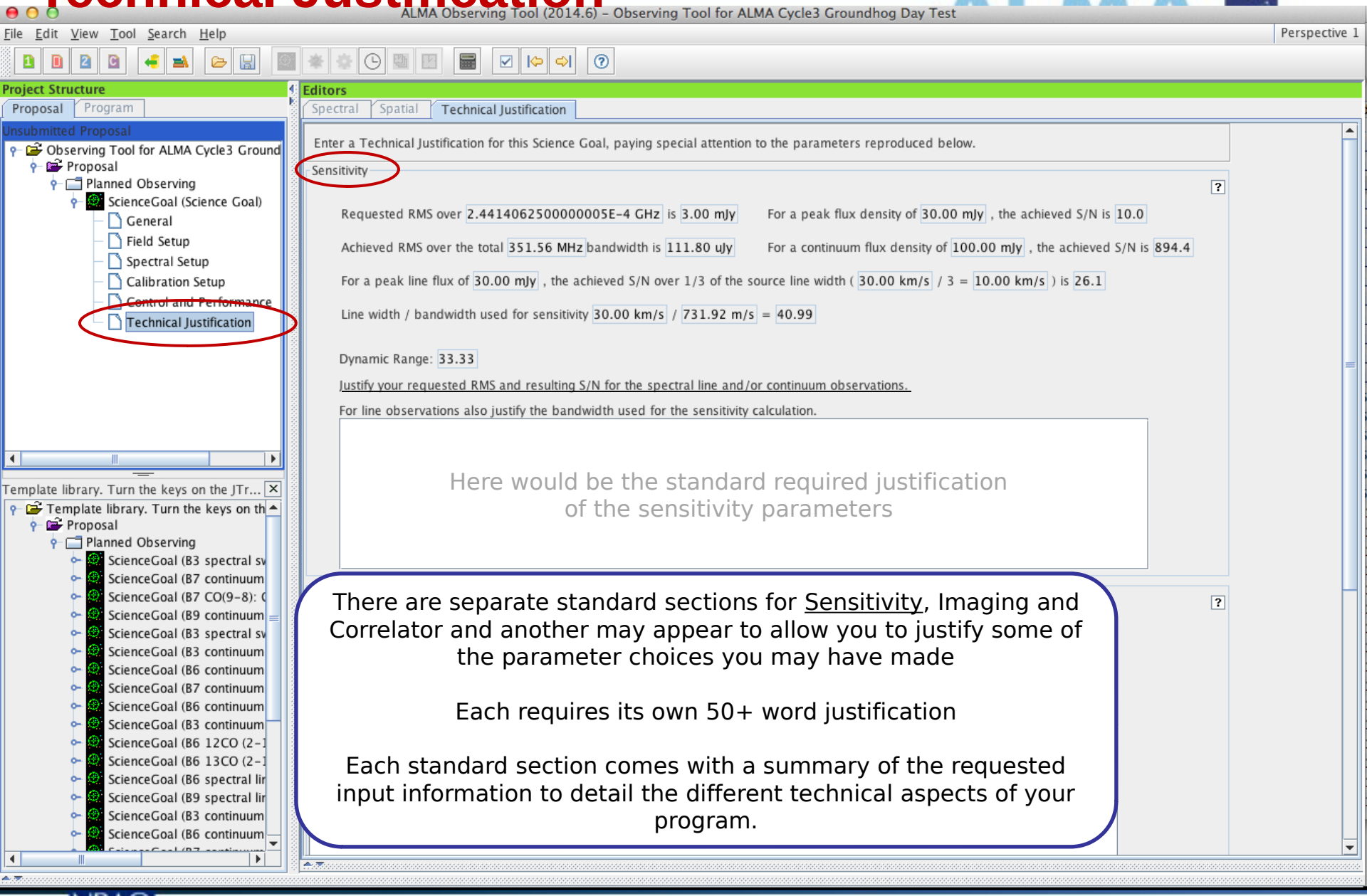
v

**With appropriate justification or additional information**

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



# Technical Justification




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.

# Technical Justification

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

Template library. Turn the keys on the JTr...

- Template library. Turn the keys on th
  - Proposal
    - Planned Observing
      - ScienceGoal (B3 spectral sv
      - ScienceGoal (B7 continuum
      - ScienceGoal (B7 CO(9-8): (
      - 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

**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

NRAO

# When the time is ripe … validate & submit

Note the spiffy new icons!

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

Project - Observing Tool for ALMA, version Cycle2Test2

- 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 ⌘-L
- Submit Project
- Preferences
- Save Preferences
- Quit

Perspective 1

Editors: Spectral | Spatial | Project

Select PI...

Project
Assigned Priority
Project Code: None Assigned

Feedback: Validation | Validation History | Log

| Description | Suggestion |
|---|---|

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

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 Grou
  - 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
  - Proposal
    - Planned Observing
      - ScienceGoal (B3 spectral
      - ScienceGoal (B7 continuu
      - ScienceGoal (B7 CO(9-8)
      - ScienceGoal (B9 continuu
      - ScienceGoal (B3 spectral
      - ScienceGoal (B3 continuu
      - ScienceGoal (B6 continuu
      - ScienceGoal (B7 continuu
      - ScienceGoal (B6 continuu
      - ScienceGoal (B3 continuu
      - ScienceGoal (B6 12CO (2
      - ScienceGoal (B6 13CO (2
      - ScienceGoal (B6 spectral
      - ScienceGoal (B9 spectral
      - ScienceGoal (B3 continuu
      - ScienceGoal (B6 continuu

**Editors**

Spectral | Spatial | ScienceGoal (Science Goal)

Source Coordinates
System J2000 Sexagesimal display? ☑
RA 22:02:43.2912
Dec -42:16:39.978
Parallax 0.00000 mas
PM RA 0.00000 mas/yr
PM DEC 0.00000 mas/yr

Source Radial Velocity 0.000 km/s hel z 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 should take 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 |

# When the time is ripe … validate & submit

Note the spiffy new icons!

Project - Observing Tool for ALMA, version Cycle2Test2

- 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 ⌘-L
- Submit Project
- Preferences
- Save Preferences
- Quit

Perspective 1

Editors

Spectral | Spatial | Project

Principal Investigator

Select PI...

Main Project Information

Project

Assigned Priority

Project Code: None Assigned

Feedback

Suggestion

**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 icon in the toolbar
   - Or clicking on this link
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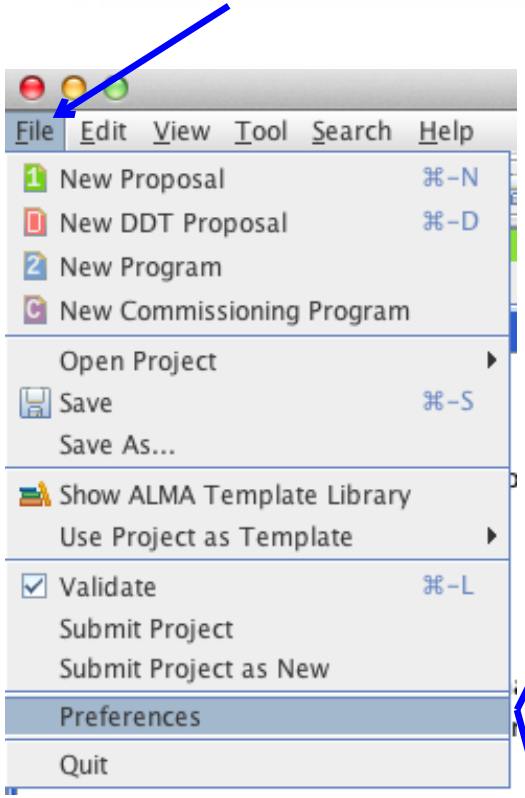
Phase I: Science Proposal

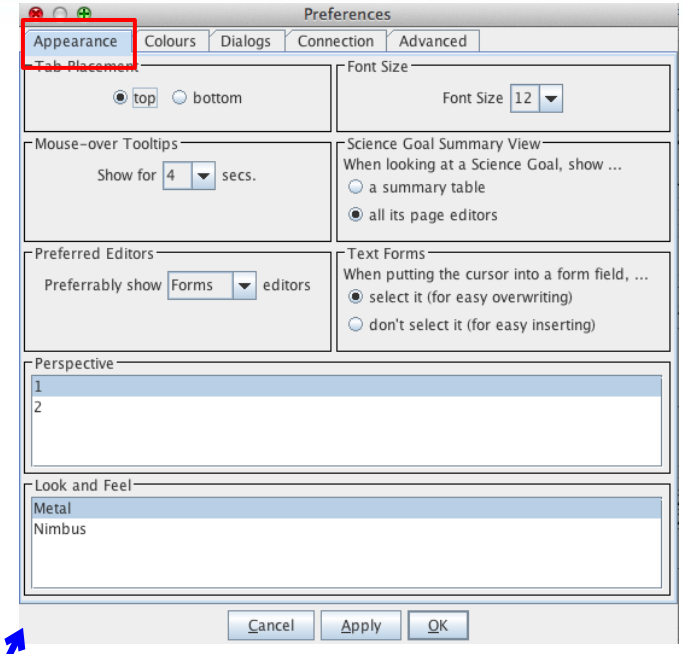
**New Science Proposal** → Create Science Goals → Validate Science Proposal → Submit Science Proposal

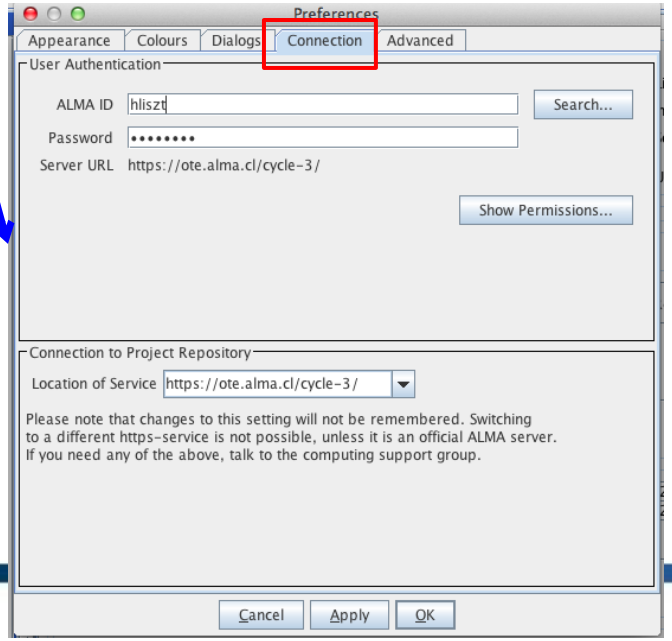
Click on the overview steps to view the contextual help

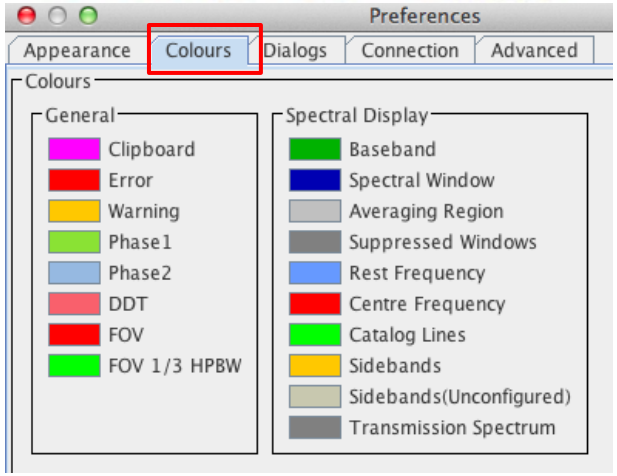
Importing And Exporting | Template Library | Need More Help? | View Phase 2 Steps

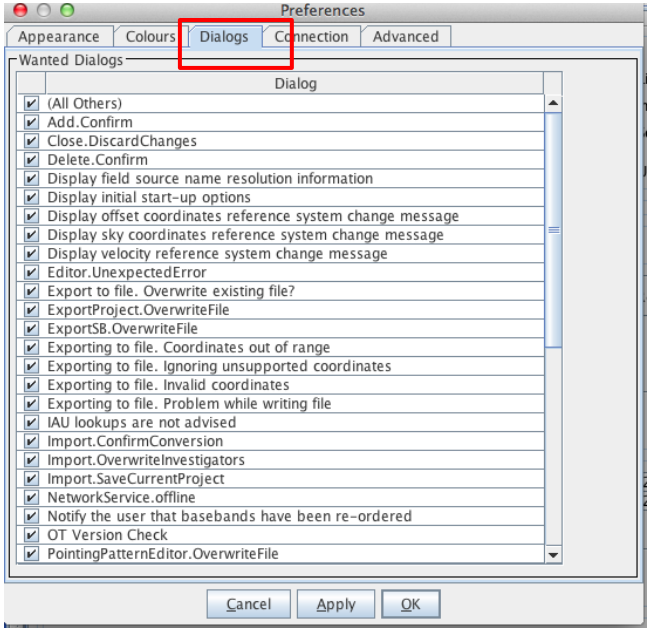
# Use preferences to customize



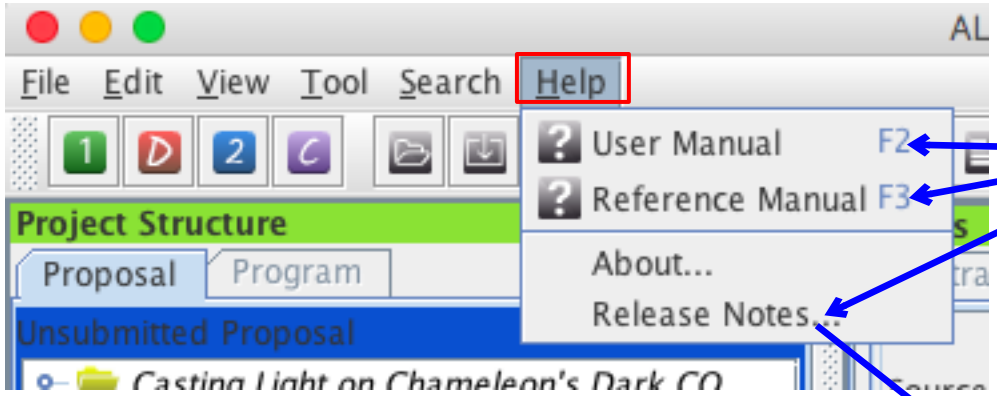



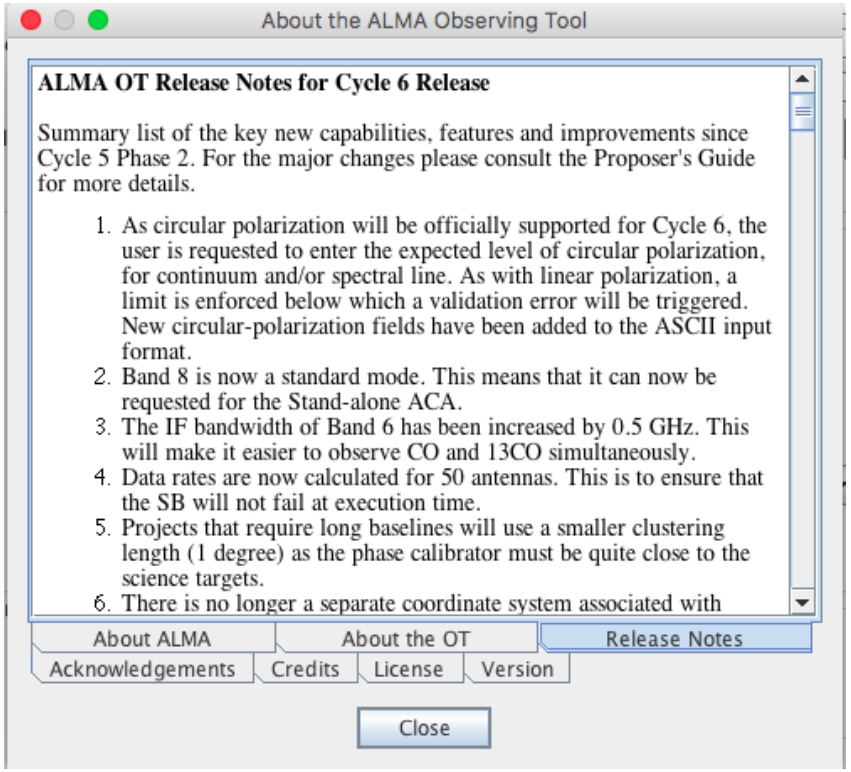



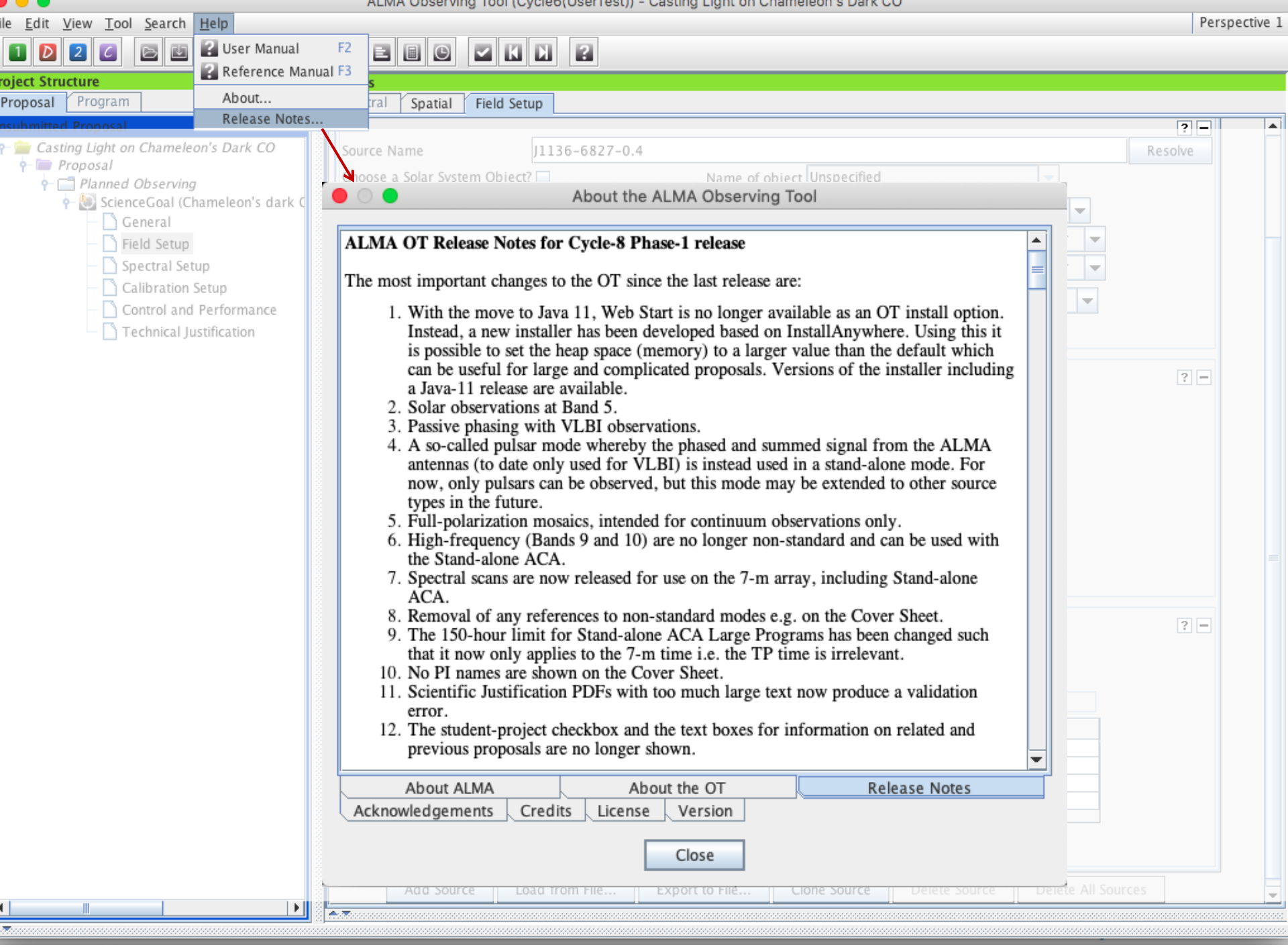



# Don’t be afraid to ask for directions




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


ALMA Observing Tool (Cycle6(UserTest)) - Casting Light on Chameleon's Dark CO
File Edit View Tool Search Help
Perspective 1
User Manual F2
Reference Manual F3
About...
Release Notes...
Project Structure
Proposal Program
Spatial Field Setup
Casting Light on Chameleon's Dark CO
Proposal
Planned Observing
ScienceGoal (Chameleon's dark C
General
Field Setup
Spectral Setup
Calibration Setup
Control and Performance
Technical Justification
Source Name
J1136-6827-0.4
Resolve
Name of object
Unspecified
About the ALMA Observing Tool
ALMA OT Release Notes for Cycle-8 Phase-1 release
The most important changes to the OT since the last release are:
1. With the move to Java 11, Web Start is no longer available as an OT install option. Instead, a new installer has been developed based on InstallAnywhere. Using this it is possible to set the heap space (memory) to a larger value than the default which can be useful for large and complicated proposals. Versions of the installer including a Java-11 release are available.
2. Solar observations at Band 5.
3. Passive phasing with VLBI observations.
4. A so-called pulsar mode whereby the phased and summed signal from the ALMA antennas (to date only used for VLBI) is instead used in a stand-alone mode. For now, only pulsars can be observed, but this mode may be extended to other source types in the future.
5. Full-polarization mosaics, intended for continuum observations only.
6. High-frequency (Bands 9 and 10) are no longer non-standard and can be used with the Stand-alone ACA.
7. Spectral scans are now released for use on the 7-m array, including Stand-alone ACA.
8. Removal of any references to non-standard modes e.g. on the Cover Sheet.
9. The 150-hour limit for Stand-alone ACA Large Programs has been changed such that it now only applies to the 7-m time i.e. the TP time is irrelevant.
10. No PI names are shown on the Cover Sheet.
11. Scientific Justification PDFs with too much large text now produce a validation error.
12. The student-project checkbox and the text boxes for information on related and previous proposals are no longer shown.
About ALMA
About the OT
Release Notes
Acknowledgements
Credits
License
Version
Close
Add Source
Load from File...
Export to File...
Clone Source
Delete Source
Delete All Sources

# A Few OT Tips…

- 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…

- 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)

ALMA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## Observatory News

Additional Information for Cycle 5 Proposals
Feb 01, 2017

Release of a New Installment of Science Verification Data
Jan 18, 2017

RadioNet: Calls for financial support - OPEN
Jan 16, 2017

More news...

## NRAO News

American Astronomical Society Meeting
Jun 04, 2017

2017 Astrobiology Graduate Conference
Jun 05, 2017

Women in Astronomy IV: The Many Faces of Women Astronomers
Jun 09, 2017

More...

## Status

ALMA Cycle 5 Pre-Announcement

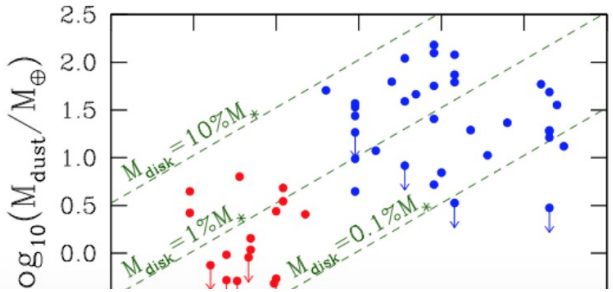
Refereed publications:

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.

NRAO

**www.almascience.org**

**ALMA Science Portal @ NRAO**

# I could use a hand…

ALMA

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

<< Science Portal | Home | Knowledgebase | News | English (U.S.)

Login

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» Knowledgebase

- General ALMA Queries (13)
- Early Science - Cycle 1 (31)
- Resources & Observer Support (12)
- Project Planning (14)
- ALMA Observing Tool (OT) (29)
- Proposal Handling (5)
- Archive & Data Retrieval (4)
- Offline Data Reduction and/or CASA (14)
- Development Program (1)

Live Chat Software by Kayako

Please type your search query here | SEARCH

## Knowledgebase

### General ALMA Queries (13)

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

### 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?

### Resources & Observer Support (12)

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

### 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?

### 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?

### 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"?

NRAO

# 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.