An Introduction to the Cycle 7 ALMA Observing Tool

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

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Author: Harvey Liszt

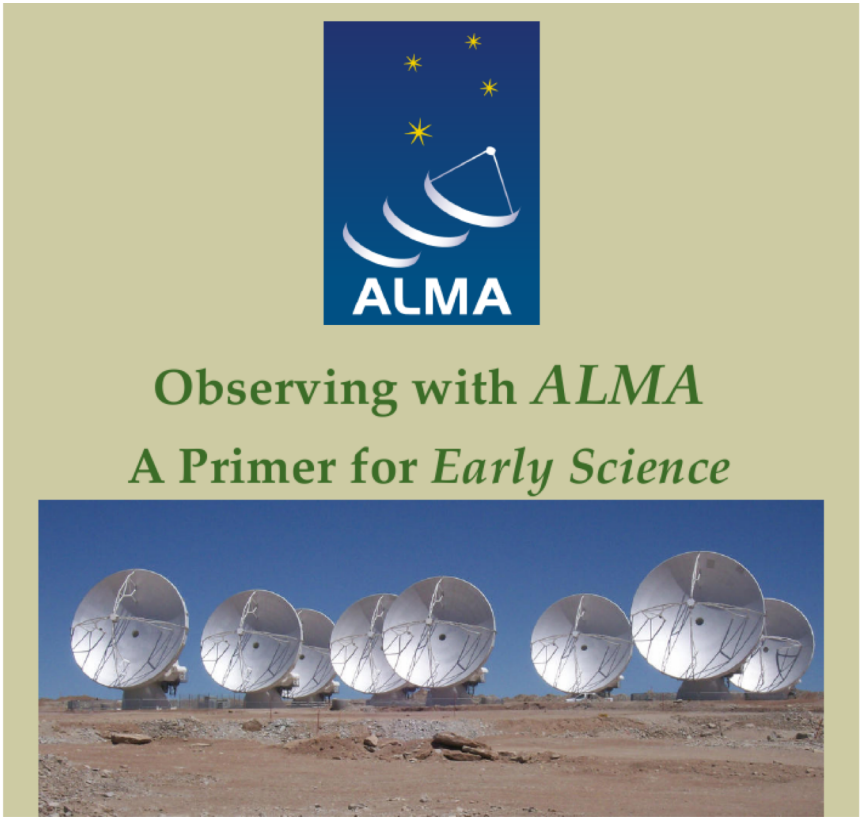
Atacama Large Millimeter/submillimeter Array
Expanded Very Large Array
Very Long Baseline Array

Proposal Checklist

- Read relevant documentation (CfP, Guide, Primer, etc.)
- Create an ALMA account by registering at the Science Portal (almascience.org)
- Download the Observing Tool (OT) & related guides
- Prepare the Science Case
  - Note the new capabilities for this cycle!
- Prepare Science Goals (sources, frequency & correlator setup, integration times) within the OT
- Make use of the Helpdesk & the Knowledgebase

Documentation

- Call for Proposals (CfP)
- ALMA Primer
- OT Guide
- ALMA Tech Handbook
- Helpdesk Knowledgebase



Downloading the ALMA OT

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 7* release of the OT is configured for the present capabilities of ALMA as described in the Cycle 7 Call For Proposals. Note that in order to submit proposals you will have to register with the ALMA Science Portal beforehand.

Download & Installation

The OT will run on most common operating systems, as long as a **64-bit version of Oracle Java 8** is installed (see the troubleshooting page if you are experiencing Java problems) and **is unlikely to work with higher versions of Java.** The tool 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. However, Web Start has been removed from Java 11 and bugs were present in Java 9 (and maybe 10). If problems are encountered with the Web Start version, then the tarball installation is available.

The **tarball** version must be installed manually and will not automatically update itself, although it will indicate if an OT update is available for download. It is in general though less prone to installation problems than Web Start.

Webstart Tarball

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

Documentation

Extensive documentation is available to help

- If you are a novice OT user you should sta aration.
- Audio-visual illustrations of different aspects of the OT can be found in the **OT video tutorials**. These are recommended for novices and advanced users alike.
- More in-depth information on the OT can be found in the **User Manual**, while concise explanations of all fields and menu items in the OT are given in the **Reference Manual**. These two documents are also available within the OT under the Help menu.

Troubleshooting

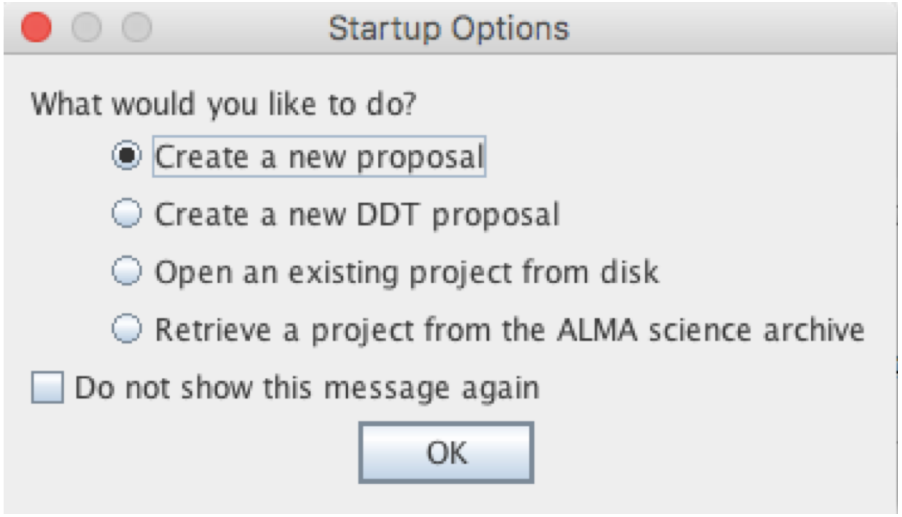
If you have problems with the installation and/or startup of the OT, please see the troubleshooting page. A list of currently known bugs, their status and possible workarounds can be found on the regularly updated **known OT Issues** page. A further source of information is the OT section of the ALMA Helpdesk Knowledgebase - this contains a number of articles that deal with frequently-asked questions. After exploring these resources, if confusion over some aspect of the OT remains, or if a previously unidentified bug has been uncovered, please file a Helpdesk ticket.

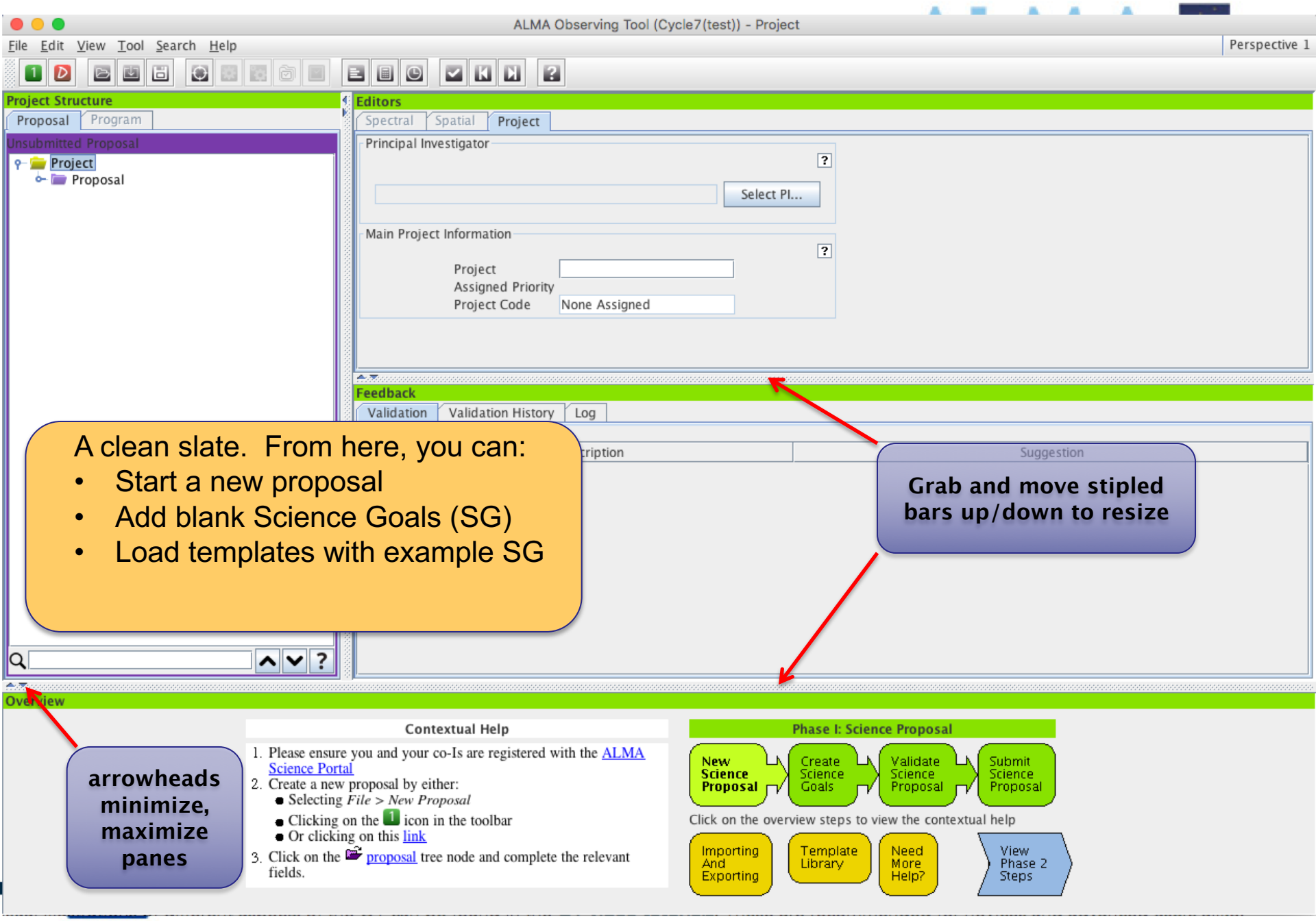
When the ALMA OT starts

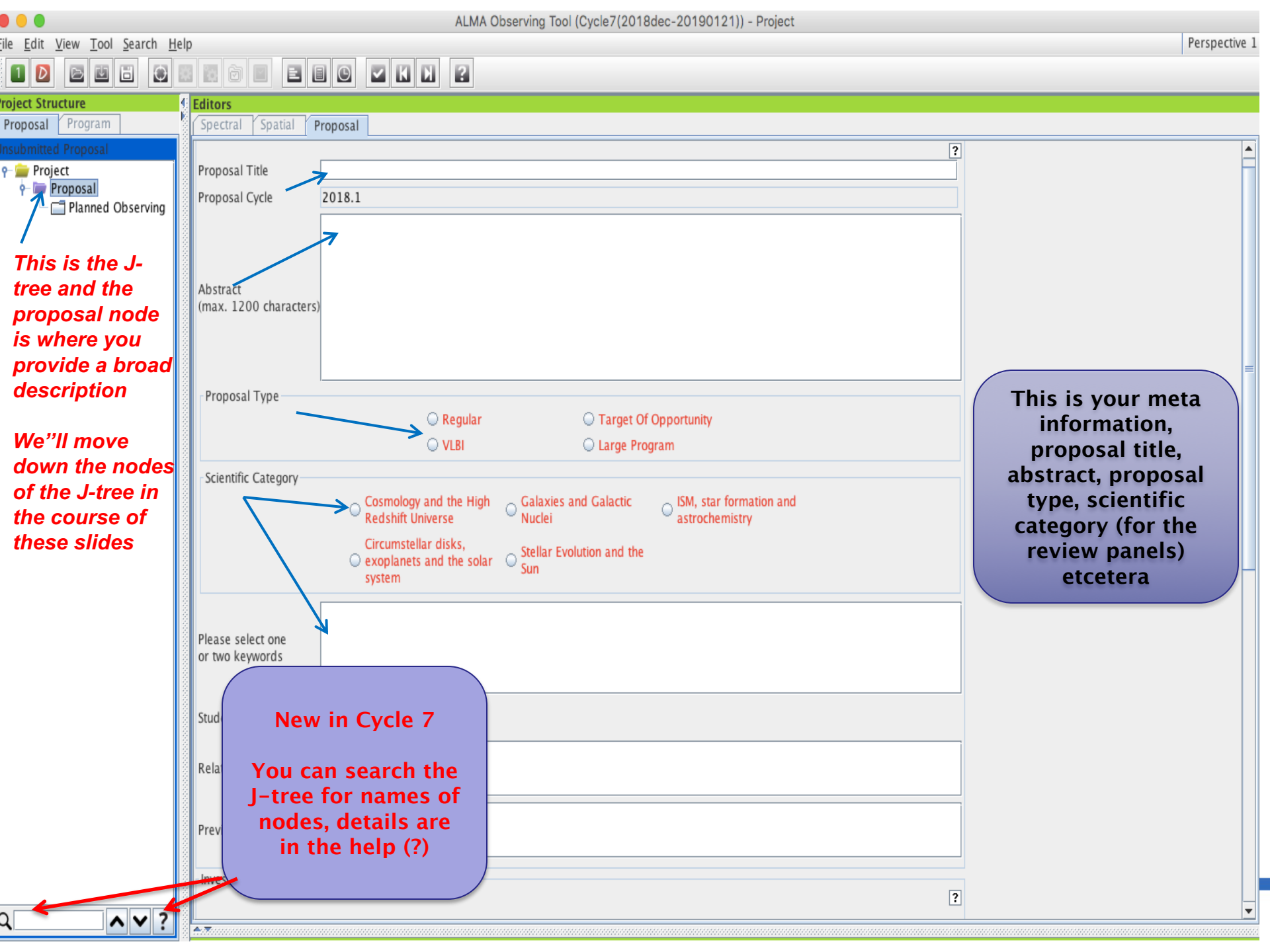
Make sure it's Cycle 7 OT

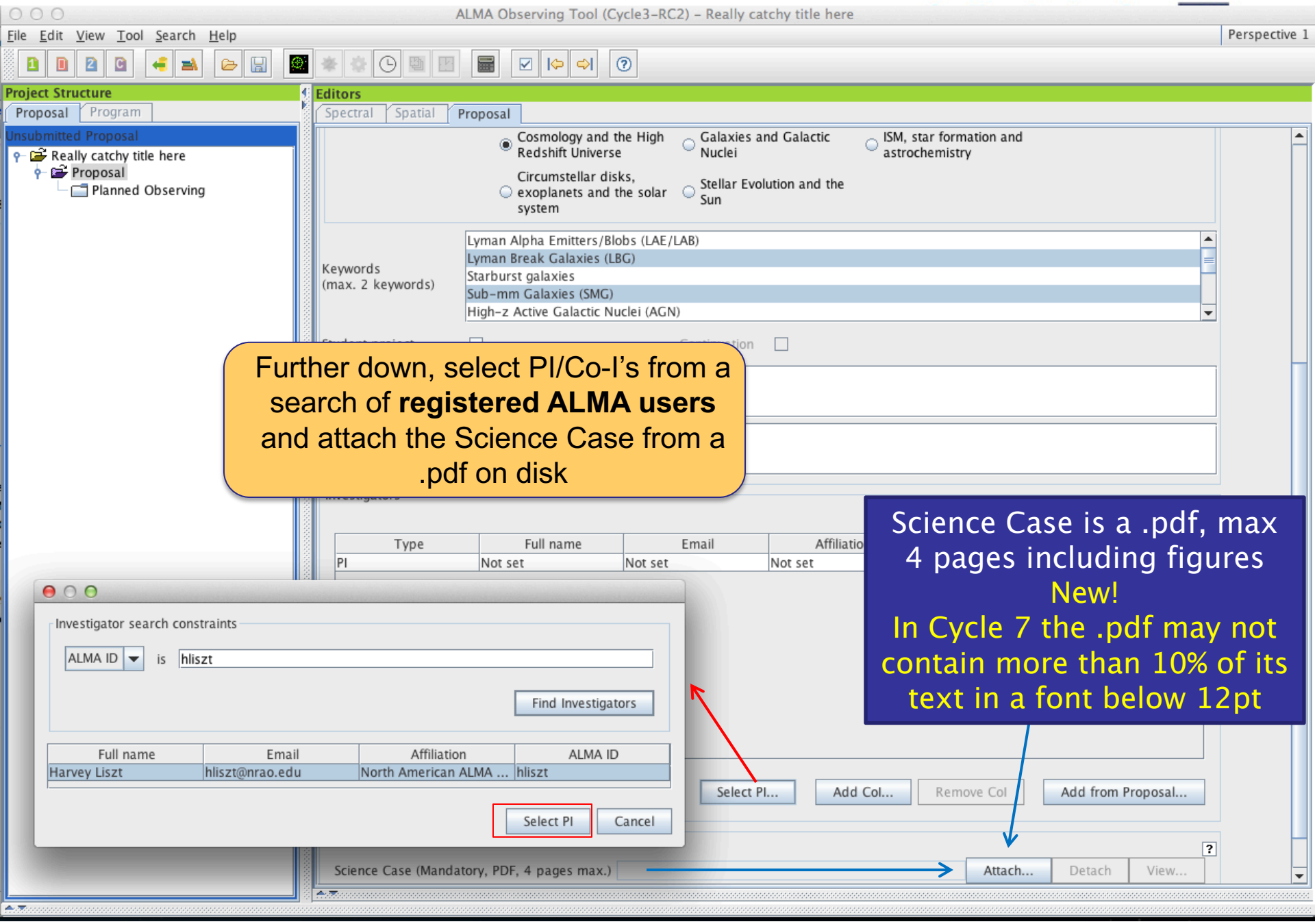
First you see this

Then you see this




ALMA Observing Tool (Cycle7(test)) - Project
File Edit View Tool Search Help
Perspective 1
Project Structure
Proposal Program
Unsubmitted Proposal
Project
Proposal
Editors
Spectral Spatial Project
Principal Investigator
Select PI...
Main Project Information
Project
Assigned Priority
Project Code
None Assigned
Feedback
Validation Validation History Log
Suggestion
A clean slate. From here, you can:
• Start a new proposal
• Add blank Science Goals (SG)
• Load templates with example SG
Grab and move stipled bars up/down to resize
Overview
arrowheads minimize, maximize panes
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 (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
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
This is your meta information, proposal title, abstract, proposal type, scientific category (for the review panels) etcetera
New in Cycle 7
You can search the J-tree for names of nodes, details are in the help (?)



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

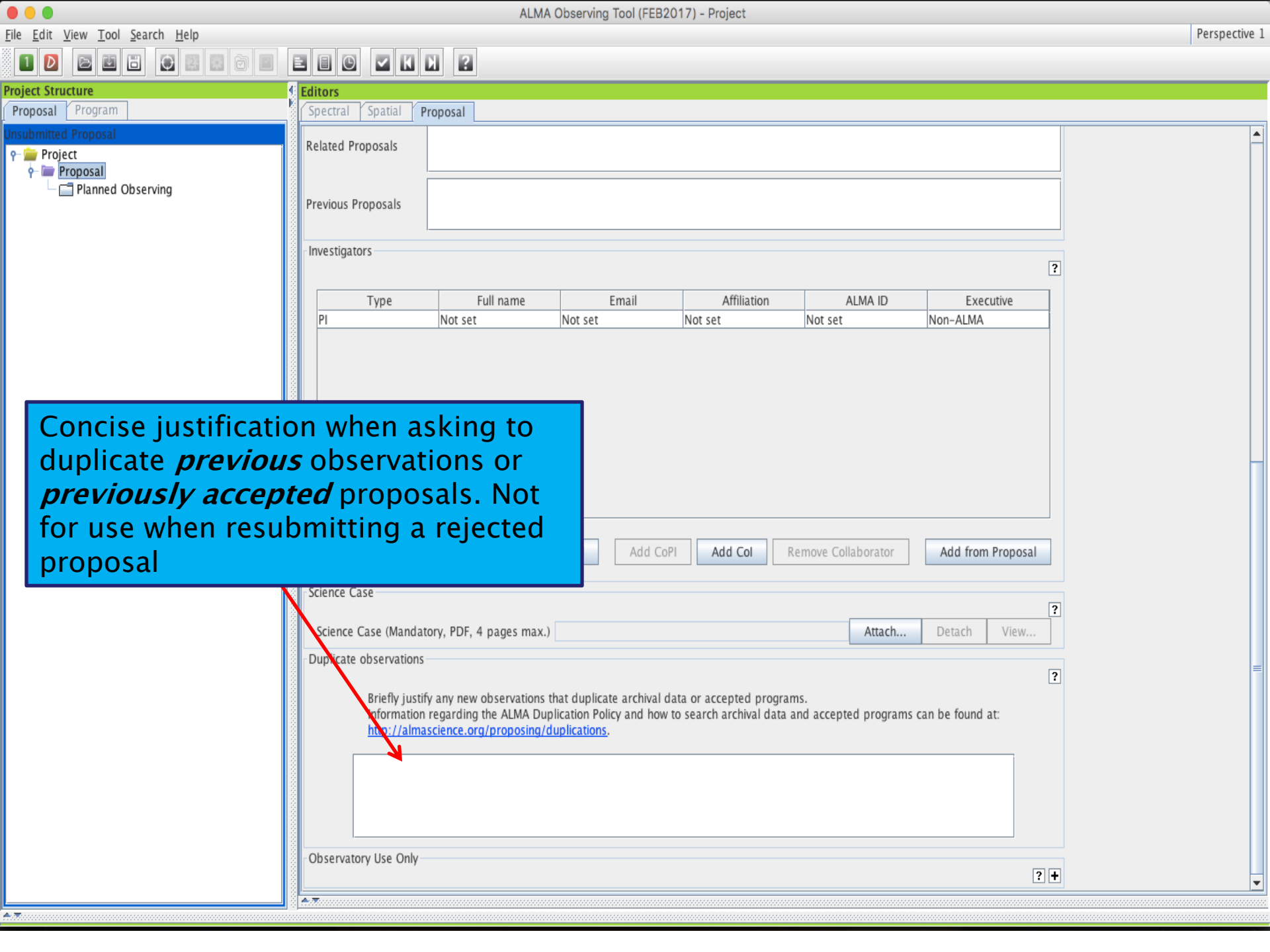
Science Case is a .pdf, max 4 pages including figures

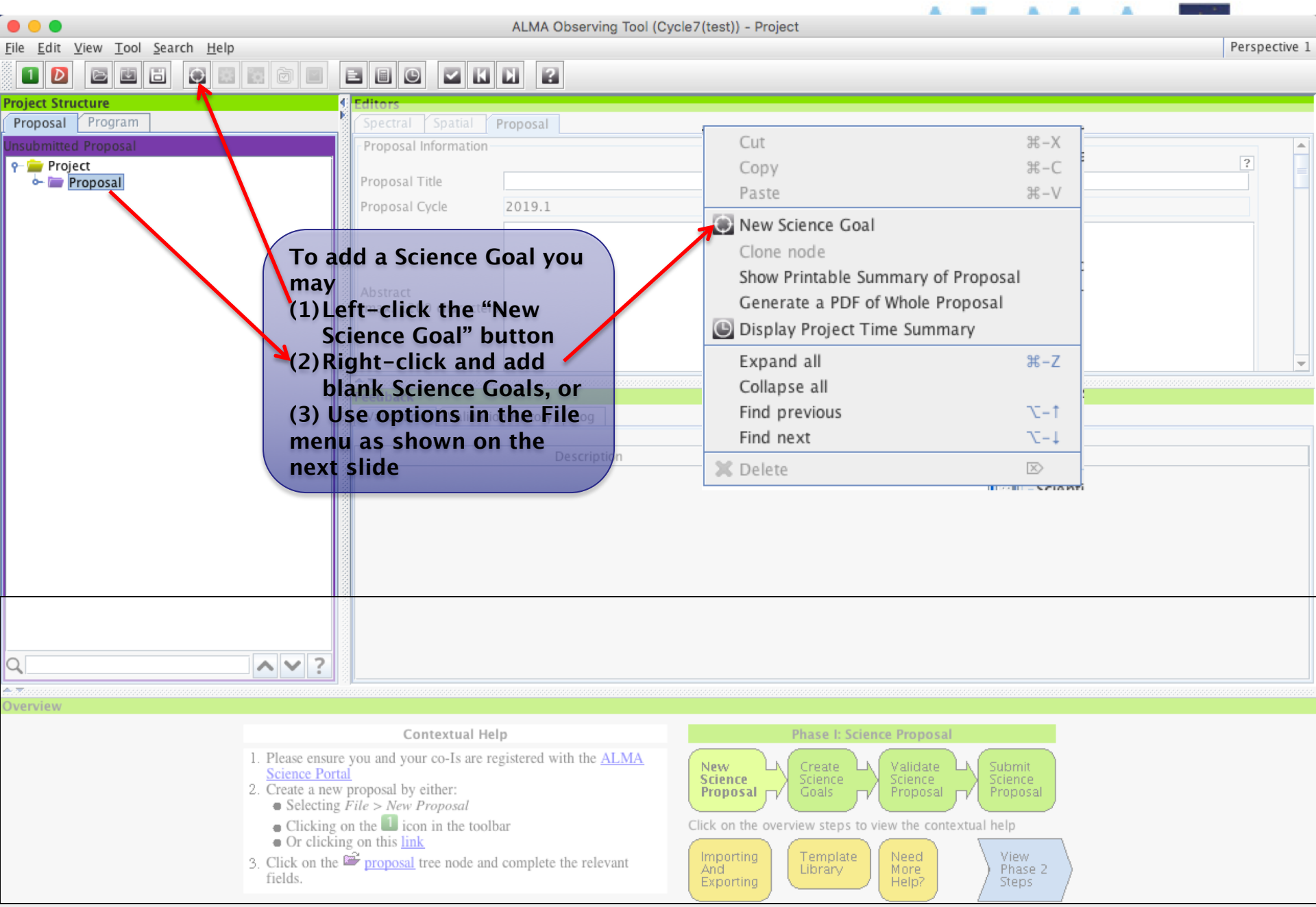
New!

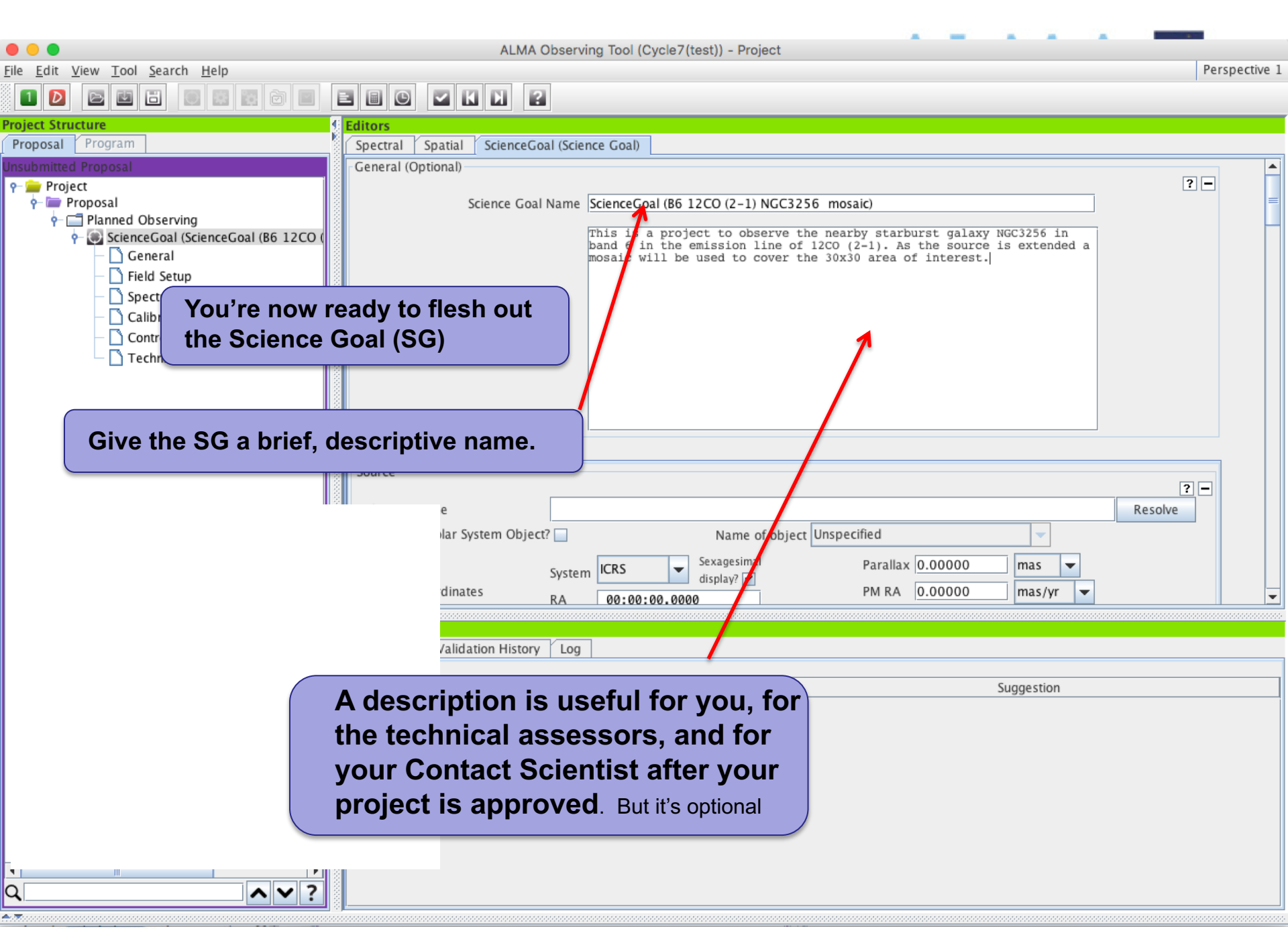
In Cycle 7 the .pdf may not contain more than 10% of its text in a font below 12pt

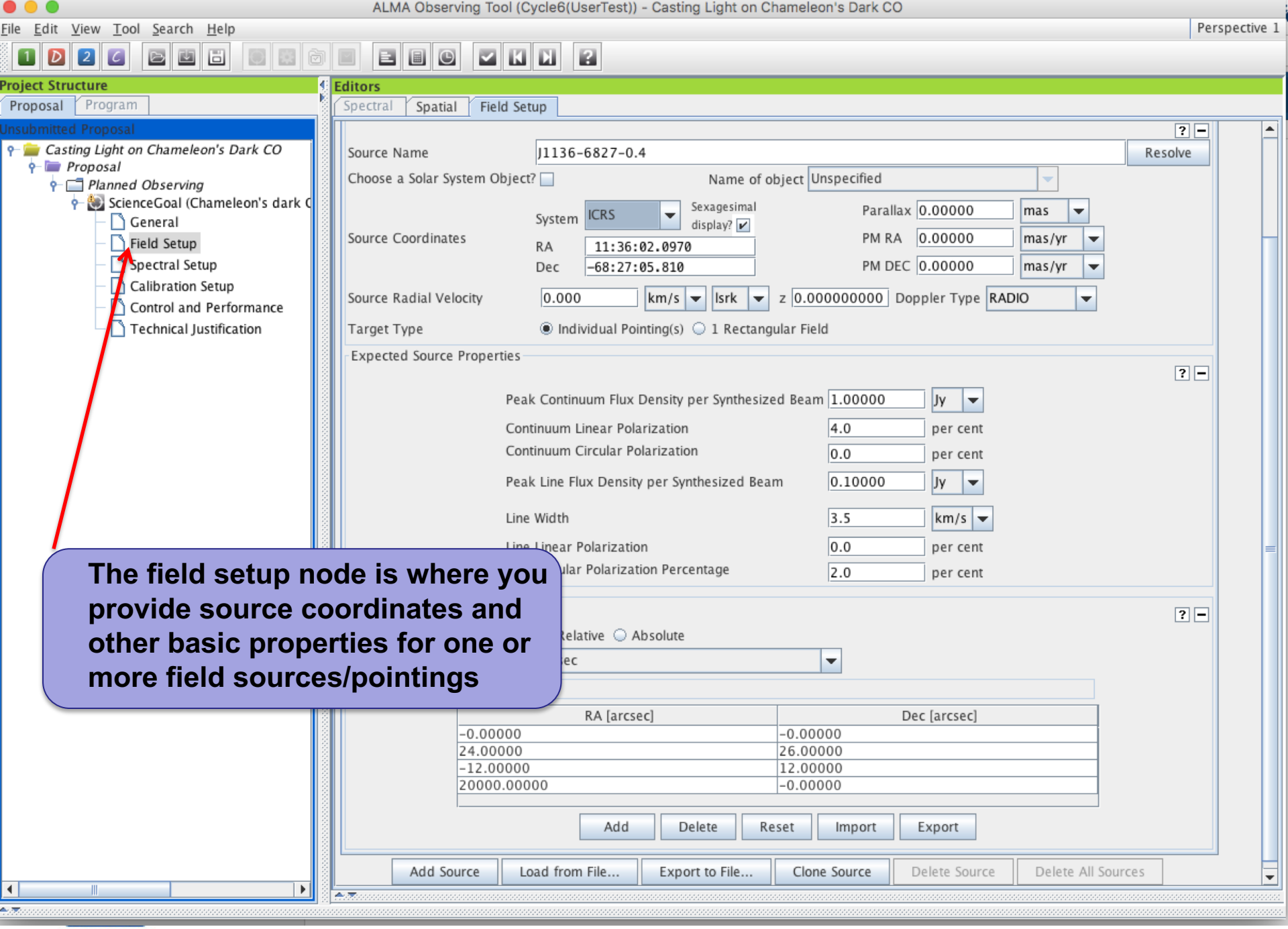
Science Case

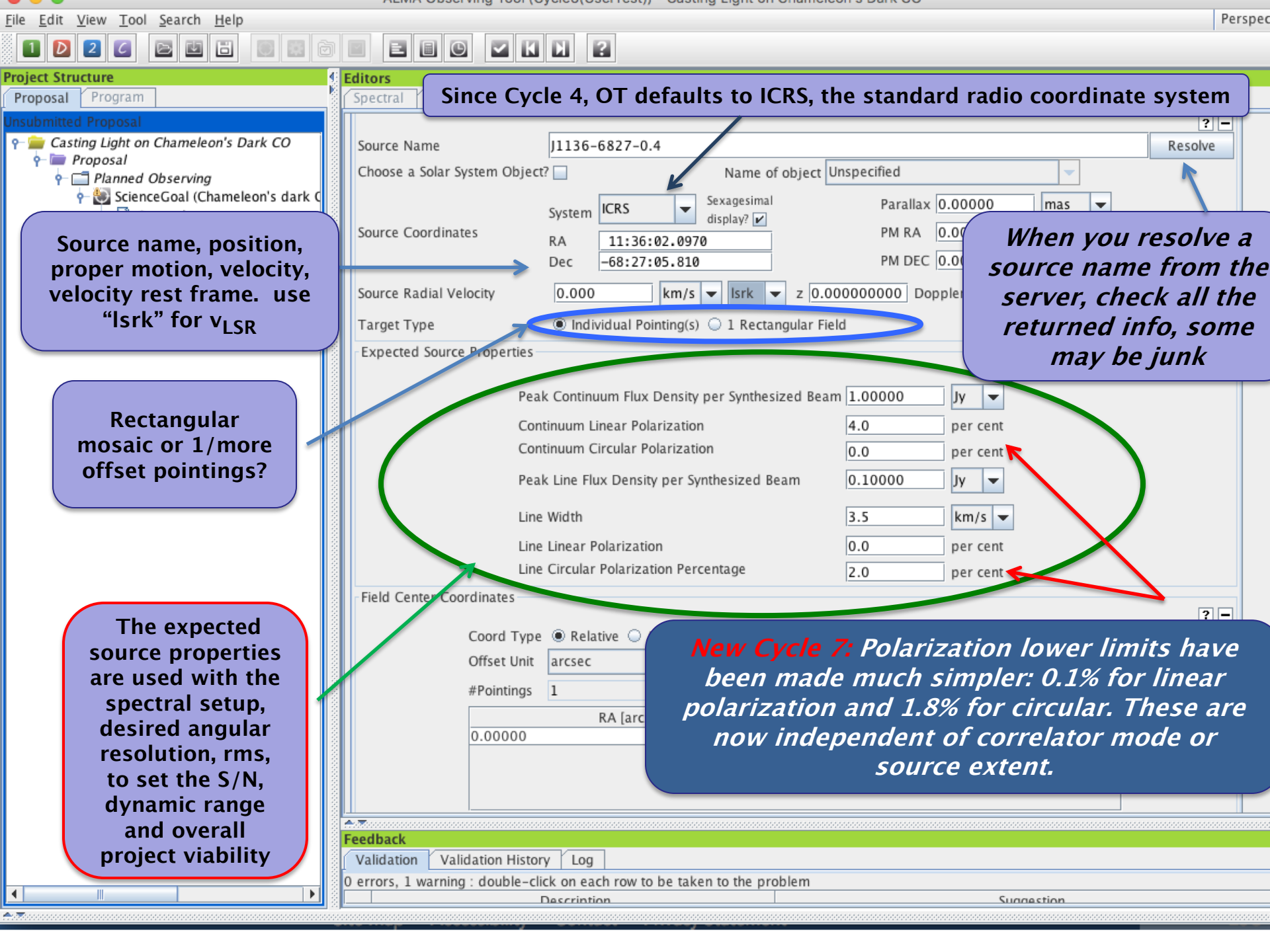
- Must include:
  - Astronomical Importance
  - Estimated intensity, S/N
- May include:
  - Figures
  - Tables
  - References
- Free-form PDF document
  - 12+ font, English only
    - 10% of text or less in font below 12pt
  - 20 MB file size
  - 4 pages total (6 for Large Projects)


ALMA Observing Tool (FEB2017) - Project
File Edit View Tool Search Help
Perspective 1
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
Add CoPI Add CoI 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
Concise justification when asking to duplicate *previous* observations or *previously accepted* proposals. Not for use when resubmitting a rejected proposal


ALMA Observing Tool (Cycle7(test)) - Project
File Edit View Tool Search Help
Perspective 1
Project Structure
Proposal Program
Unsubmitted Proposal
Project
Proposal
Editors
Spectral Spatial Proposal
Proposal Information
Proposal Title
Proposal Cycle
2019.1
Abstract
Description
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
To add a Science Goal you may
(1) Left-click the "New Science Goal" button
(2) Right-click and add blank Science Goals, or
(3) Use options in the File menu as shown on the next slide
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 (Cycle7(test)) - Project
File Edit View Tool Search Help
Perspective 1
Project Structure
Proposal Program
Unsubmitted Proposal
Project
Proposal
Planned Observing
ScienceGoal (ScienceGoal (B6 12CO (
General
Field Setup
Editors
Spectral Spatial ScienceGoal (Science Goal)
General (Optional)
Science Goal Name ScienceGoal (B6 12CO (2-1) NGC3256 mosaic)
This is a project to observe the nearby starburst galaxy NGC3256 in band 6 in the emission line of 12CO (2-1). As the source is extended a mosaic will be used to cover the 30x30 area of interest.
Resolve
Name of object Unspecified
System ICRS
Sexagesimal display?
Parallax 0.00000 mas
RA 00:00:00.0000
PM RA 0.00000 mas/yr
Validation History Log
Suggestion
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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Project Structure
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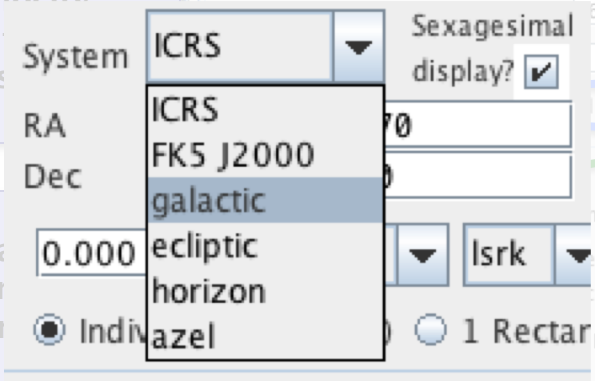
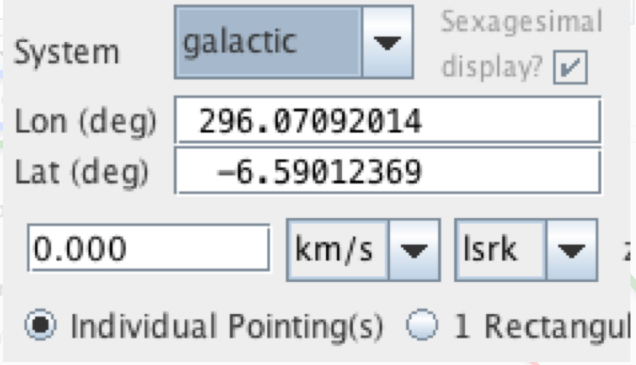
Casting Light on Chameleon's Dark CO
Proposal
Planned Observing
ScienceGoal (Chameleon's dark C
Editors
Spectral
Since Cycle 4, OT defaults to ICRS, the standard radio coordinate system
Source Name
J1136-6827-0.4
Resolve
Choose a Solar System Object?
Name of object
Unspecified
System
ICRS
Sexagesimal display?
Parallax
0.00000
mas
Source Coordinates
RA
11:36:02.0970
Dec
-68:27:05.810
PM RA
PM DEC
Source Radial Velocity
0.000
km/s
lsrk
z
0.000000000
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
Offset Unit
arcsec
#Pointings
1
RA [arc
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. 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
New Cycle 7: Polarization lower limits have been made much simpler: 0.1% for linear polarization and 1.8% for circular. These are now independent of correlator mode or source extent.

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





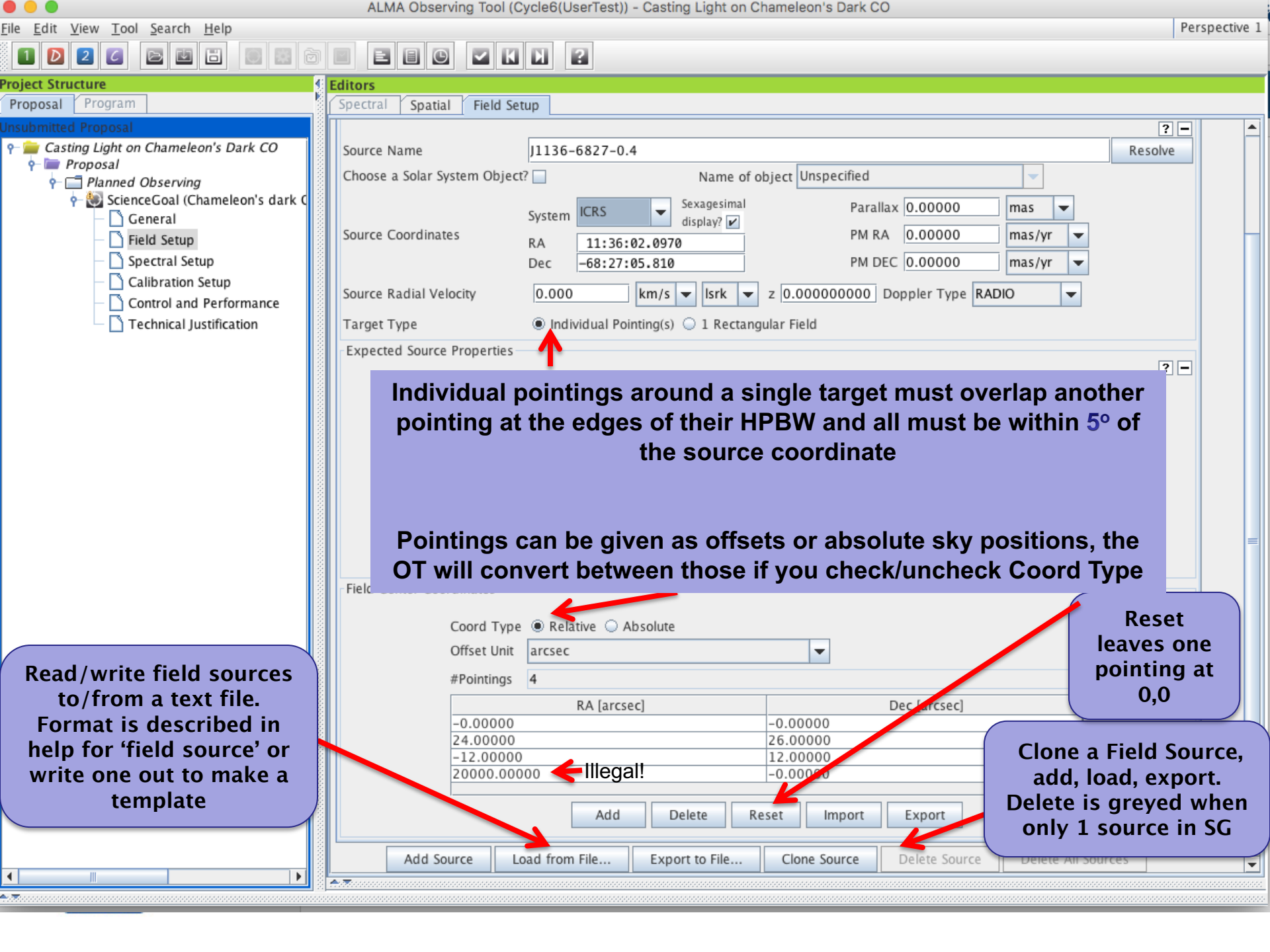
Source name, position, proper motion, velocity velocity res LSR gone, us

Rectangula mosaic or 1/r offset pointi

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 yo source r all the info: proper may b

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


ALMA Observing Tool (Cycle6(UserTest)) - Casting Light on Chameleon's Dark CO
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Proposal
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ScienceGoal (Chameleon's dark C
General
Field Setup
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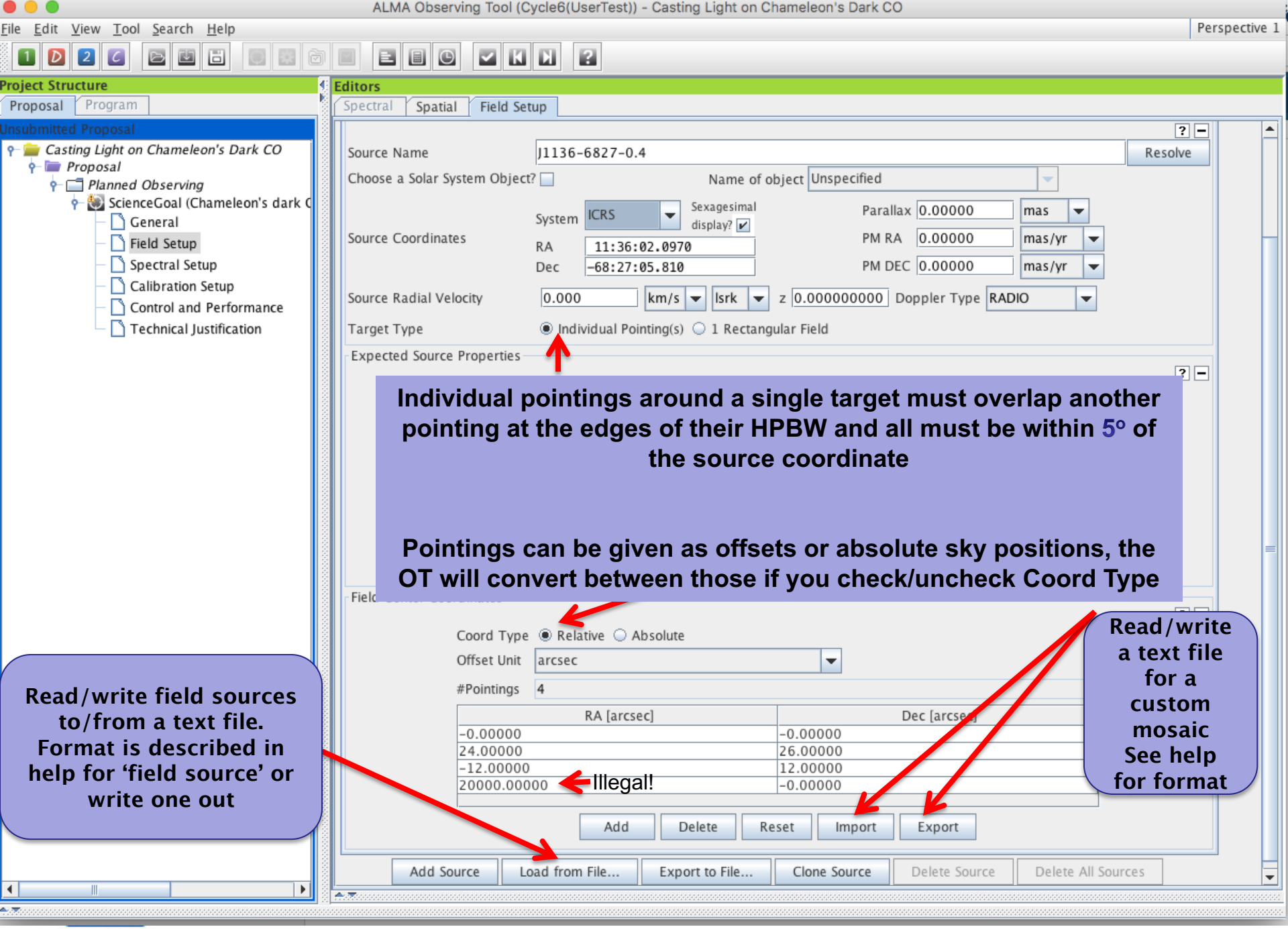
Calibration Setup
Control and Performance
Technical Justification
Editors
Spectral Spatial Field Setup
Source Name
J1136-6827-0.4
Resolve
Choose a Solar System Object?
Name of object
Unspecified
Source Coordinates
System
ICRS
Sexagesimal display?
RA
11:36:02.0970
Dec
-68:27:05.810
Parallax
0.00000
mas
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
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
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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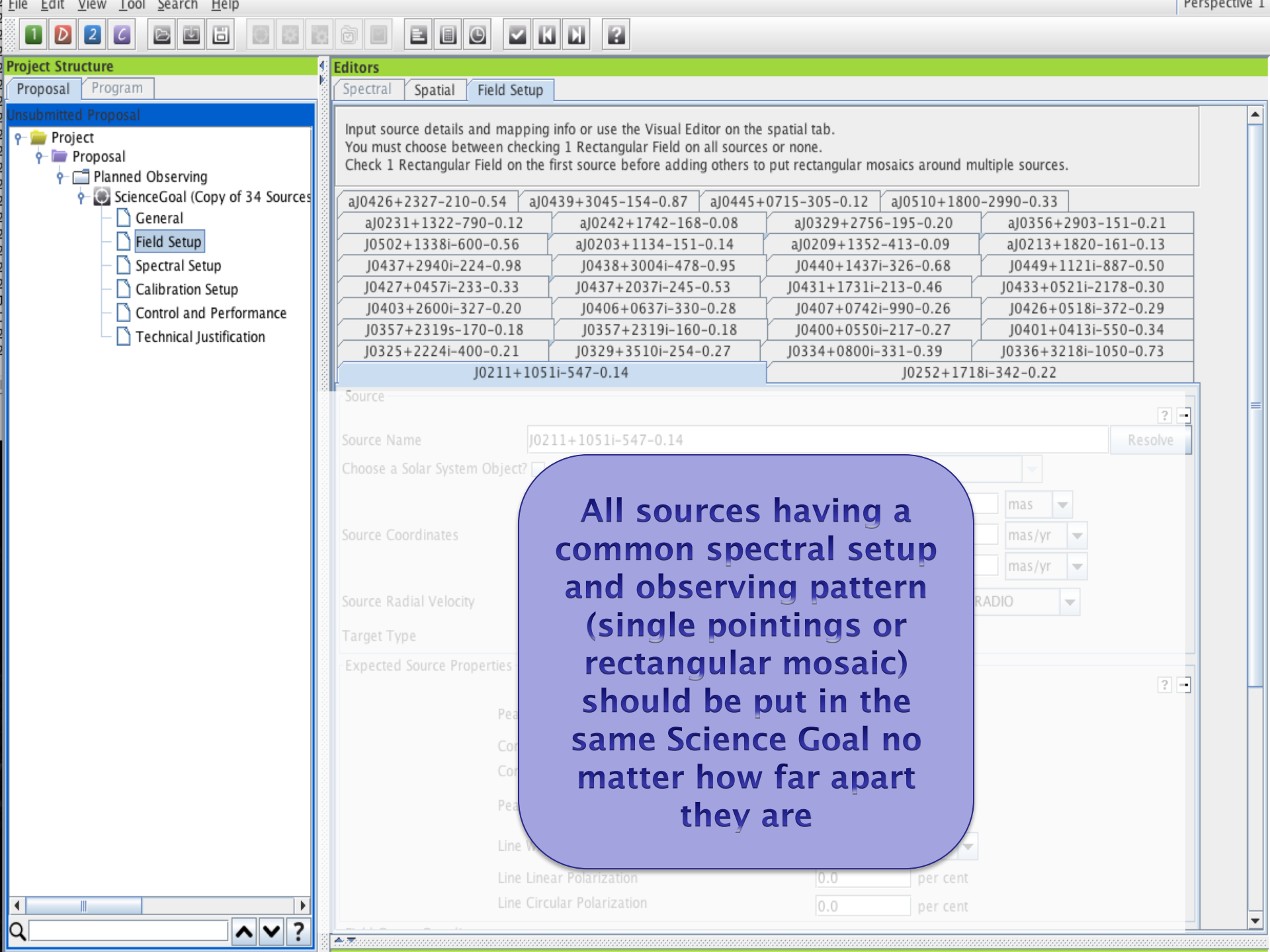
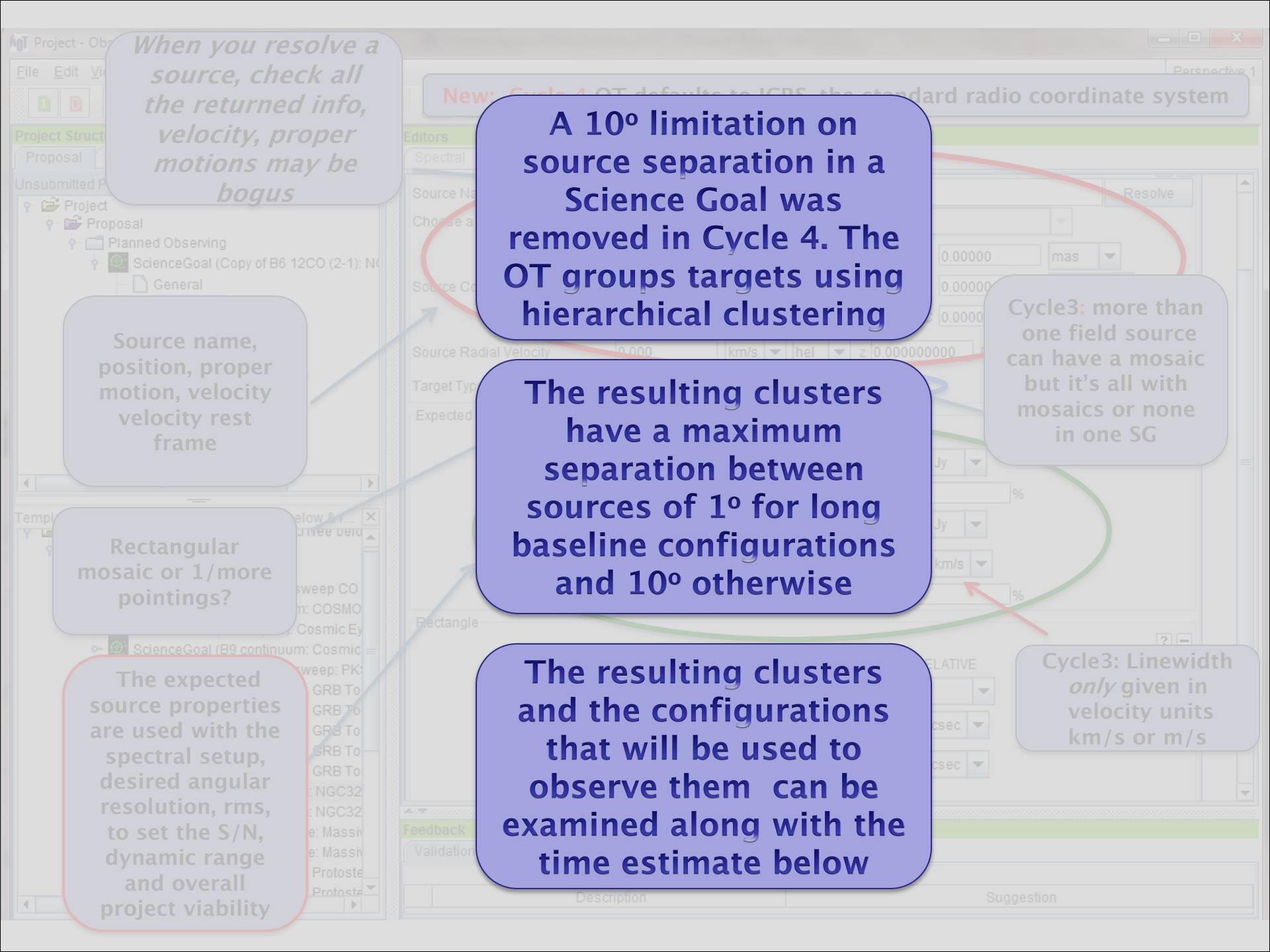
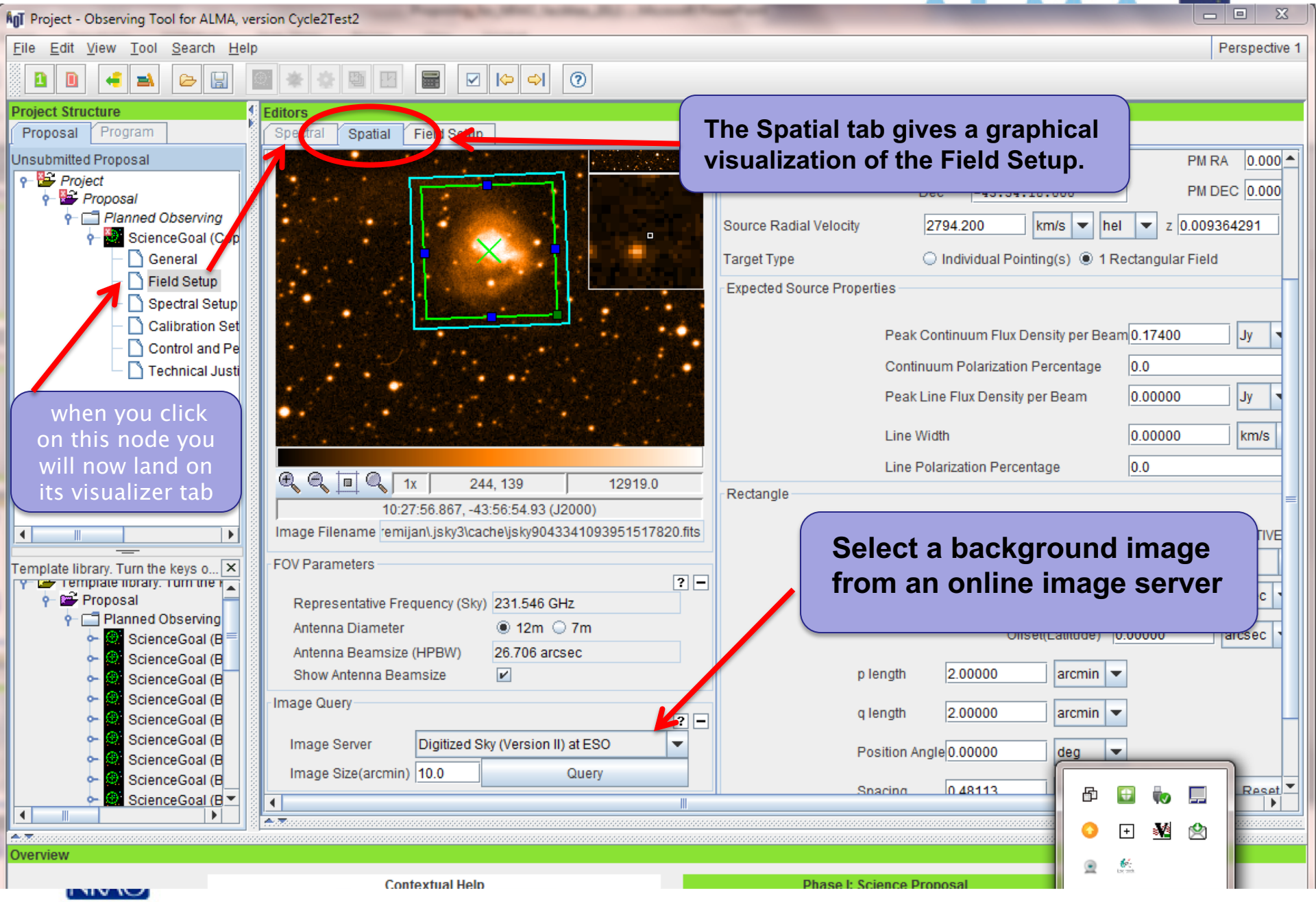
Source Name
J1136-6827-0.4
Resolve
Choose a Solar System Object?
Name of object
Unspecified
Source Coordinates
System
ICRS
Sexagesimal display?
RA
11:36:02.0970
Dec
-68:27:05.810
Parallax
0.00000
mas
PM RA
0.00000
mas/yr
PM DEC
0.00000
mas/yr
Source Radial Velocity
0.000
km/s
lsrk
z
0.000000000
Doppler 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
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 for a custom mosaic See help for format

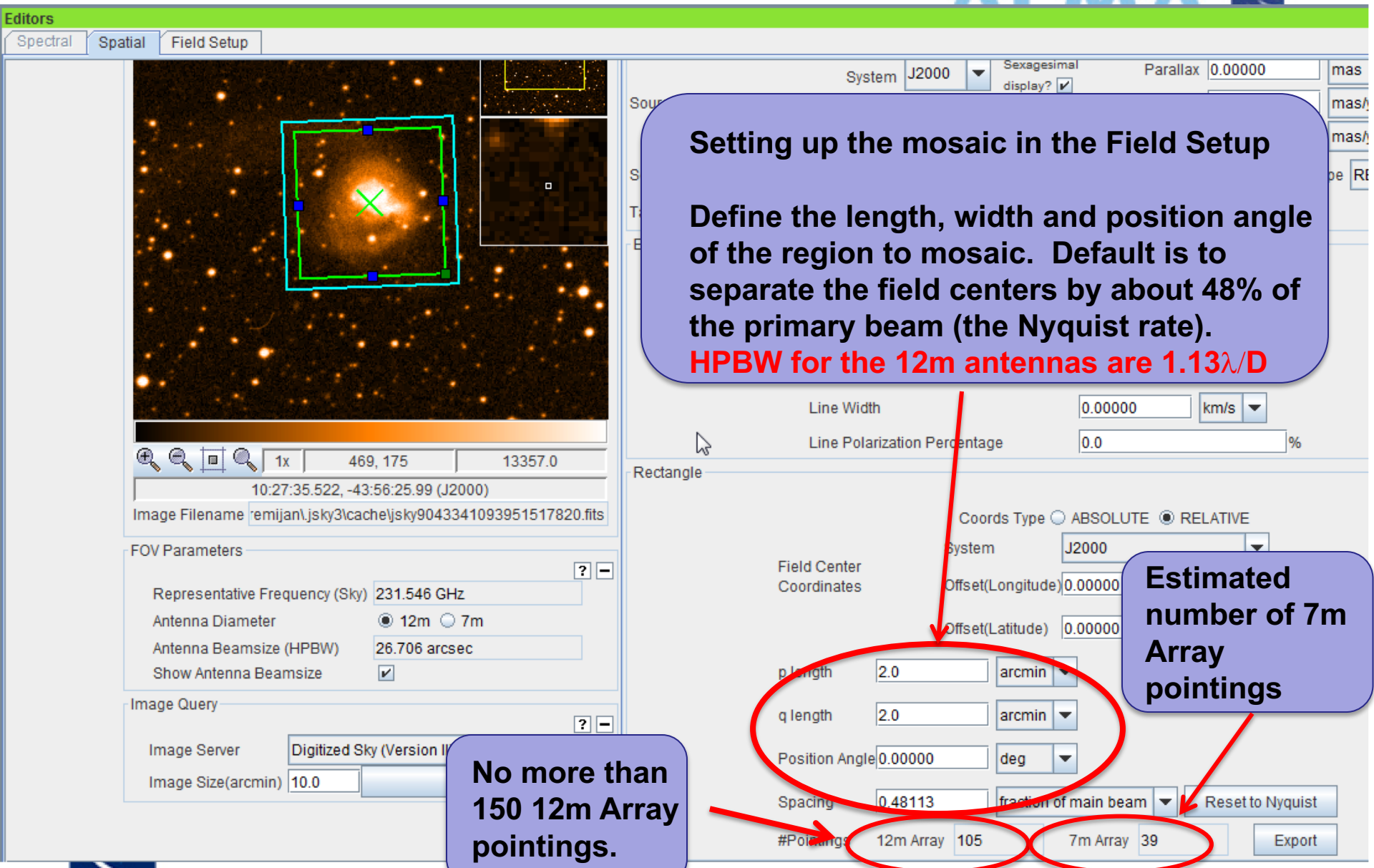

File Edit View Tool Search Help
Perspective 1
Project Structure
Proposal Program
Unsubmitted Proposal
Project
Proposal
Planned Observing
ScienceGoal (Copy of 34 Sources
General
Field Setup
Spectral Setup
Calibration Setup
Control and Performance
Technical Justification
Editors
Spectral Spatial Field 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
All sources having a common spectral setup and observing pattern (single pointings or rectangular mosaic) 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
A 10º 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 1º for long baseline configurations and 10º otherwise
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
The resulting clusters and the configurations that will be used to observe them can be examined along with the time estimate below
Cycle3: Linewidth *only* given in velocity units km/s or m/s

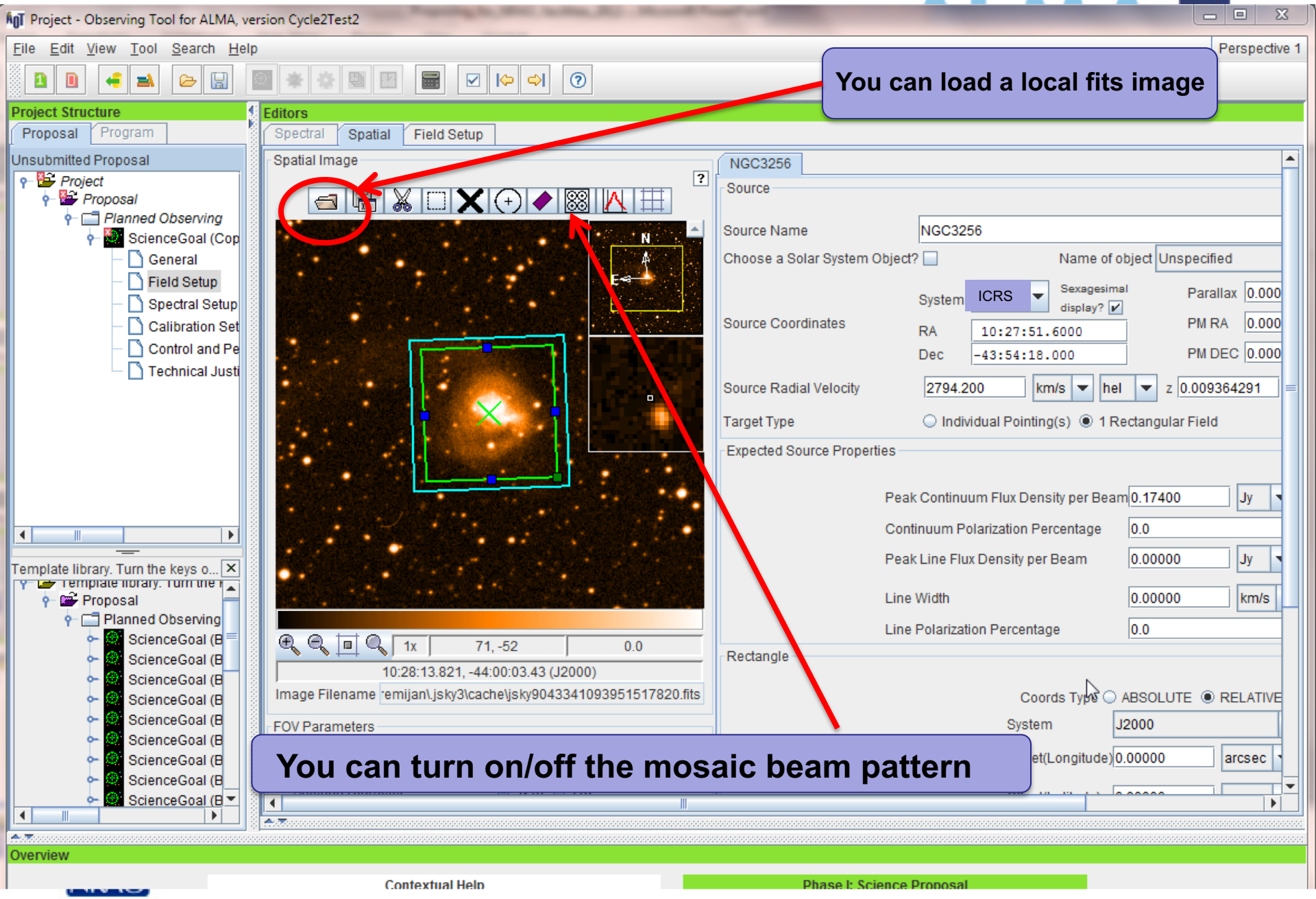
Crafting mosaics



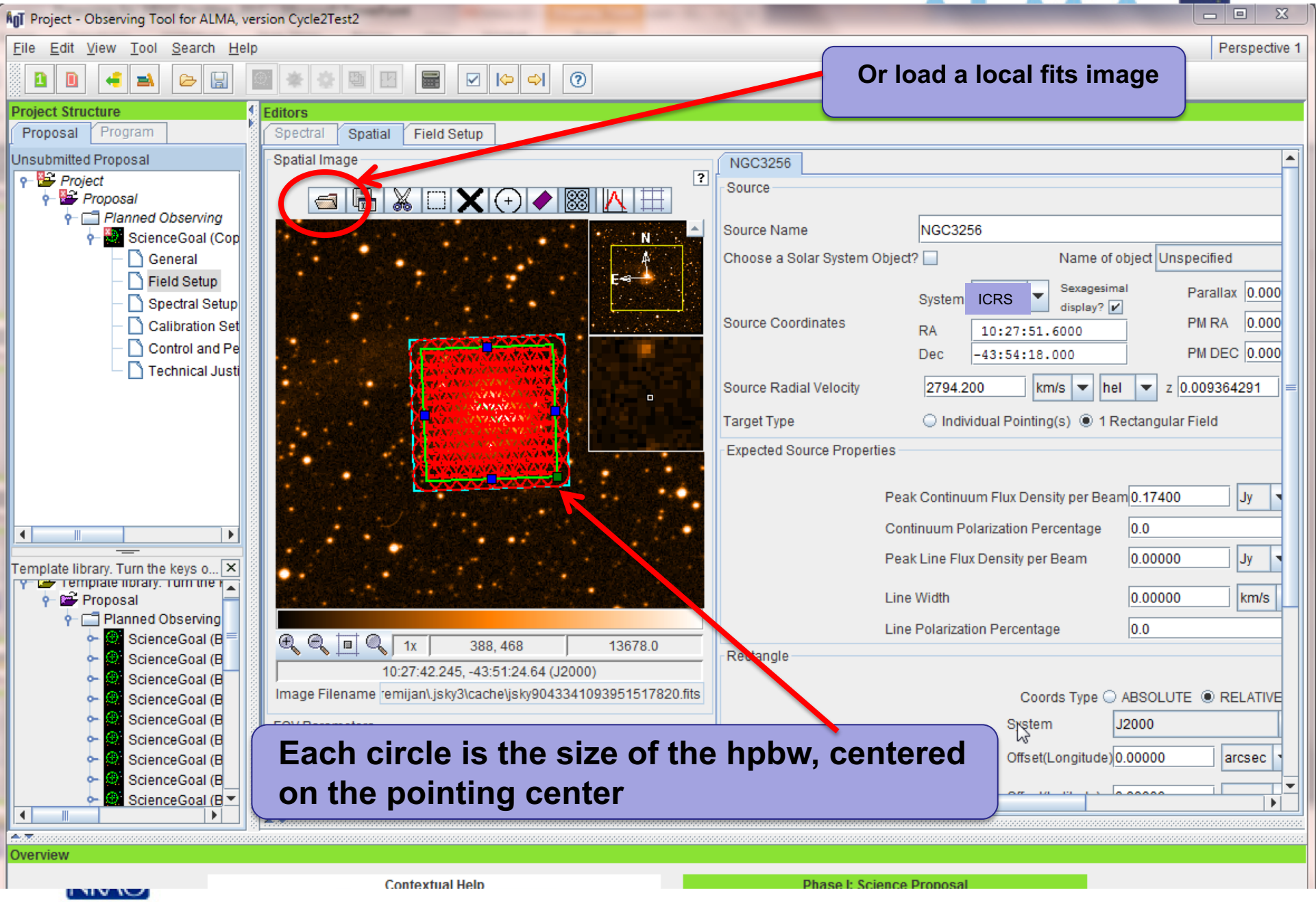
Crafting mosaics



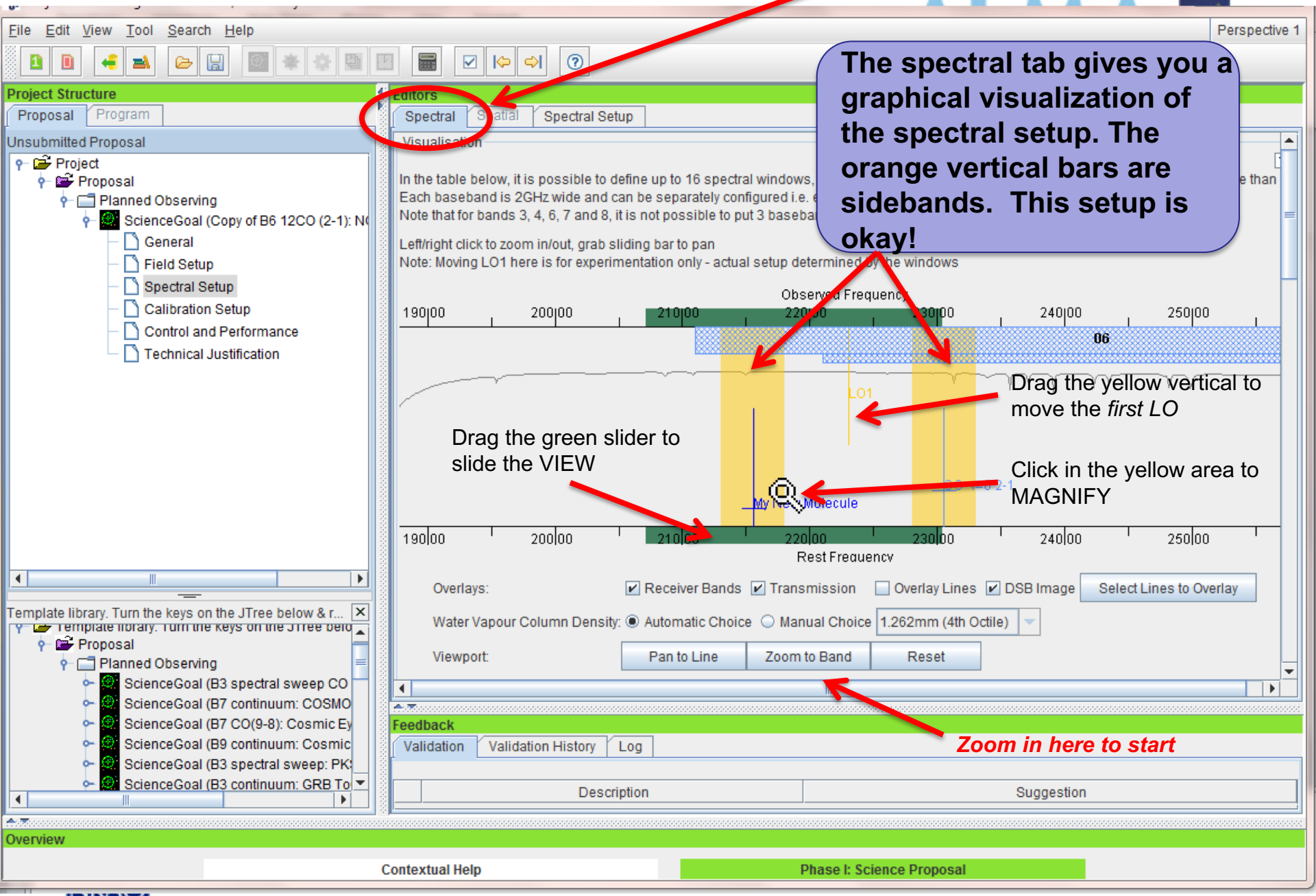
Crafting mosaics



Crafting mosaics



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



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

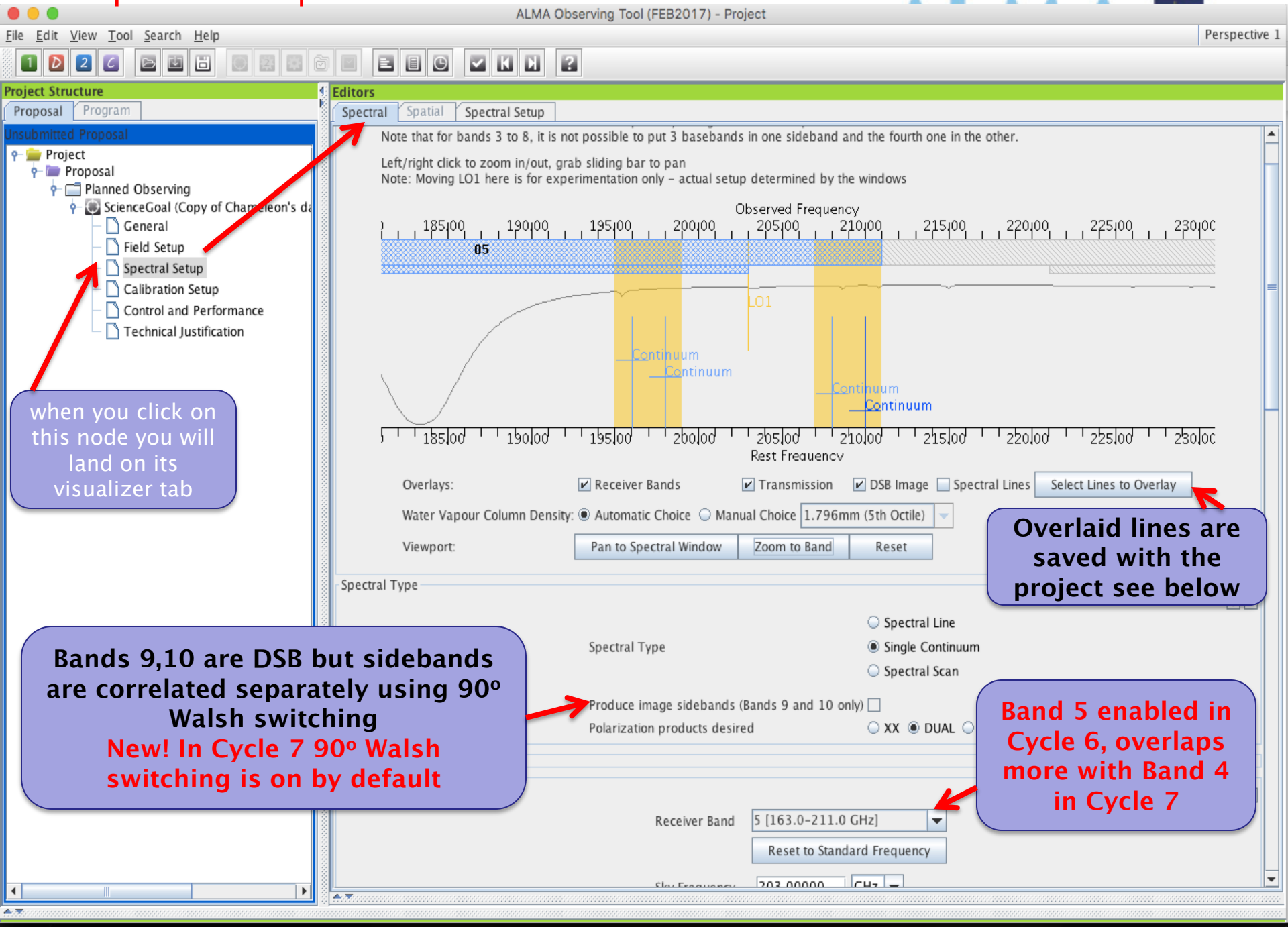
Drag the yellow vertical to move the *first LO*

Drag the green slider to slide the VIEW

Click in the yellow area to MAGNIFY

Zoom in here to start

The spectral setup tab



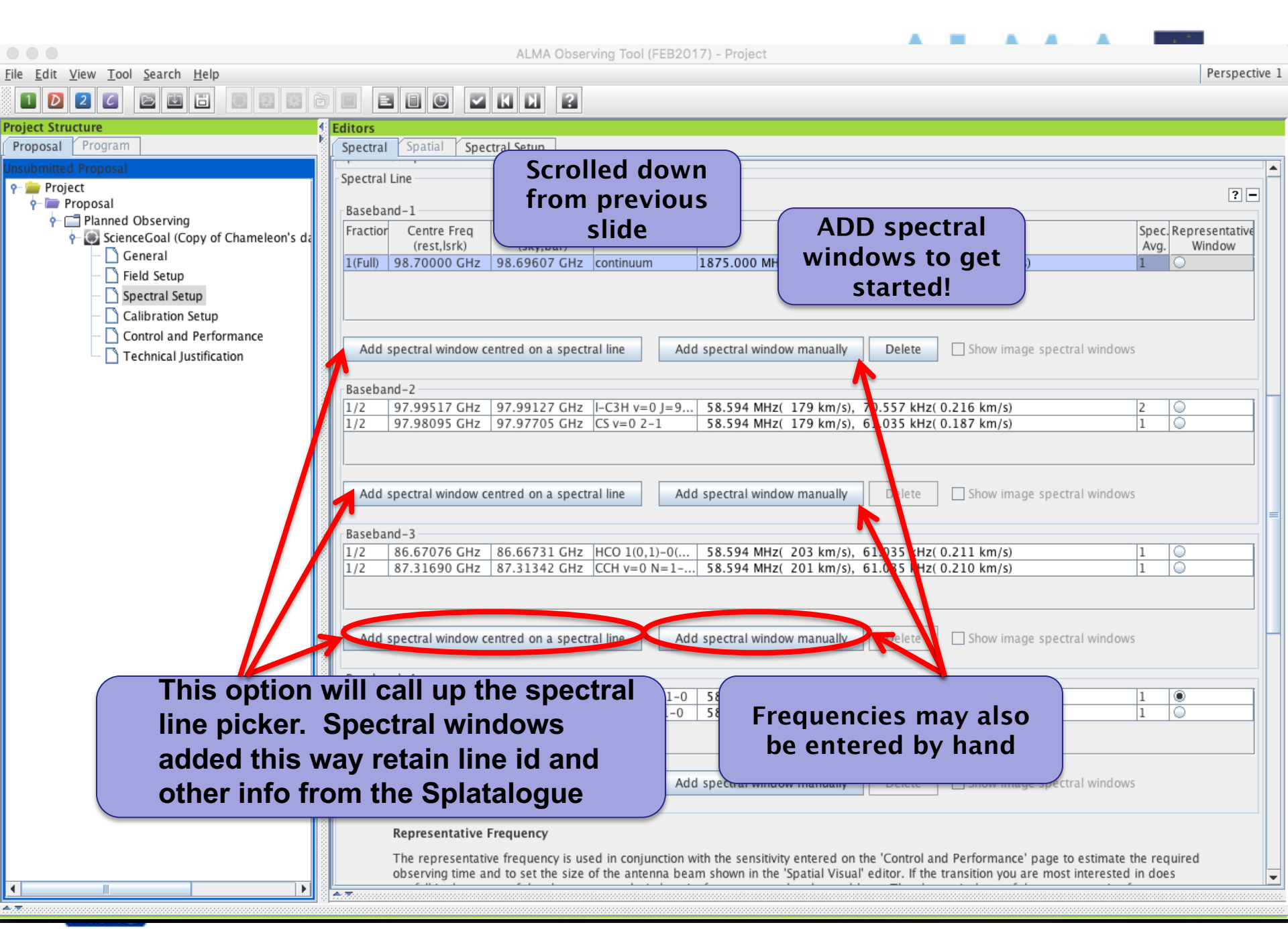
when you click on this node you will land on its visualizer tab

Overlaid lines are saved with the project see below

Bands 9,10 are DSB but sidebands are correlated separately using 90º Walsh switching

New! In Cycle 7 90º Walsh switching is on by default

Band 5 enabled in Cycle 6, overlaps more with Band 4 in Cycle 7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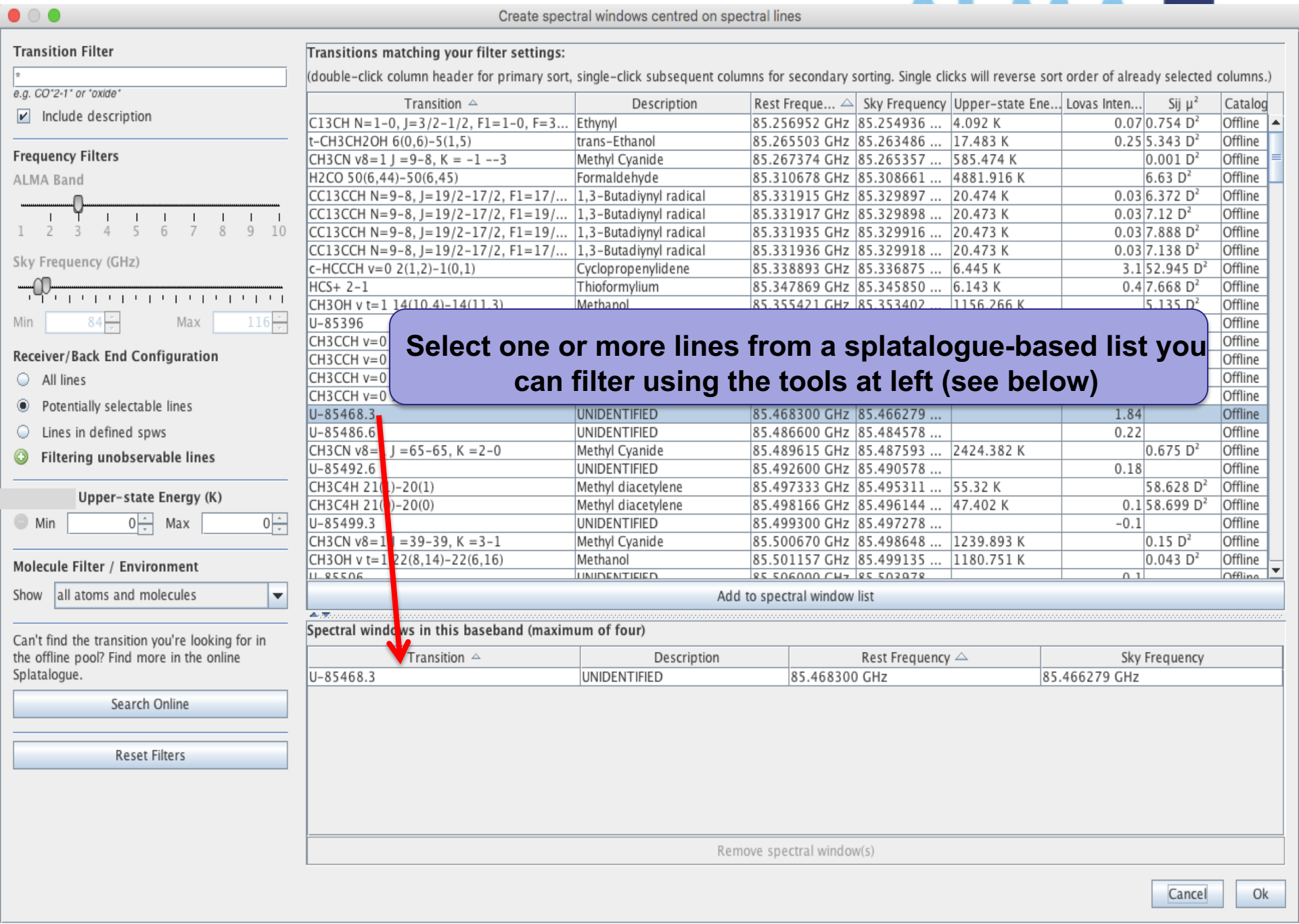
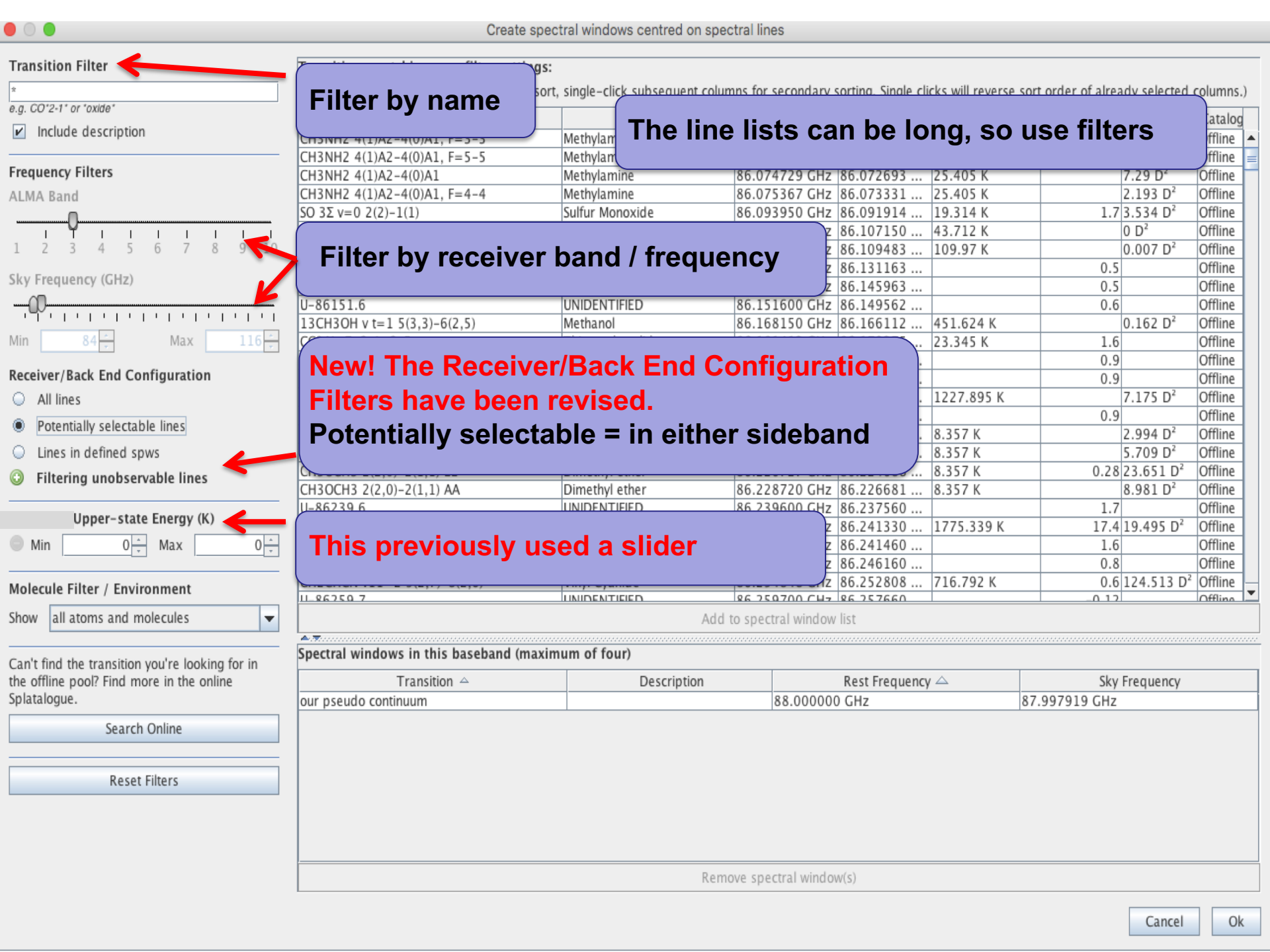
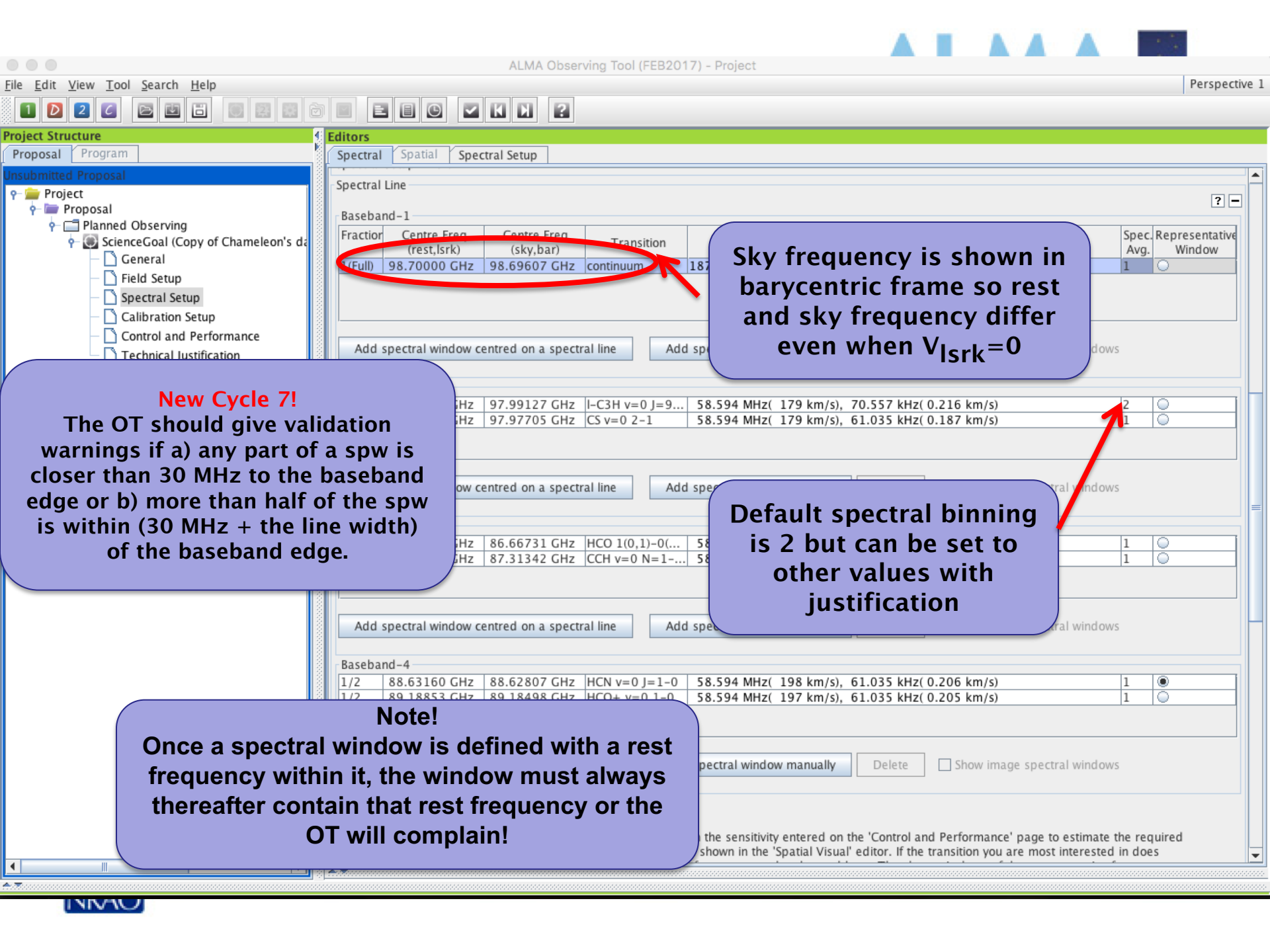
Baseband-1
Fractior
Centre Freq (rest,lsrk)
Spec. Avg.
Representative Window
1(Full) 98.70000 GHz 98.69607 GHz continuum 1875.000 MH 1
Add spectral window centred on a spectral line
Add spectral window manually
Delete
Show image spectral windows
Baseband-2
1/2 97.99517 GHz 97.99127 GHz l-C3H v=0 J=9... 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
Add spectral window manually
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




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
New! The Receiver/Back End Configuration Filters have been revised.
Potentially selectable = in either sideband
This previously used a slider
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 D² Offline
CH3NH2 4(1)A2-4(0)A1, F=4-4 Methylamine 86.075367 GHz 86.073331 ... 25.405 K 2.193 D² Offline
SO 3Σ v=0 2(2)-1(1) Sulfur Monoxide 86.093950 GHz 86.091914 ... 19.314 K 1.7 3.534 D² Offline
86.107150 ... 43.712 K 0 D² Offline
86.109483 ... 109.97 K 0.007 D² 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 D² Offline
23.345 K 1.6 Offline
0.9 Offline
0.9 Offline
1227.895 K 7.175 D² Offline
0.9 Offline
8.357 K 2.994 D² Offline
8.357 K 5.709 D² Offline
8.357 K 0.28 23.651 D² Offline
CH3OCH3 2(2,0)-2(1,1) AA Dimethyl ether 86.228720 GHz 86.226681 ... 8.357 K 8.981 D² Offline
U-86239.6 UNIDENTIFIED 86.239600 GHz 86.237560 ... 1.7 Offline
86.241330 ... 1775.339 K 17.4 19.495 D² Offline
86.241460 ... 1.6 Offline
86.246160 ... 0.8 Offline
86.252808 ... 716.792 K 0.6 124.513 D² Offline
U-86259.7 UNIDENTIFIED 86.259700 GHz 86.257660 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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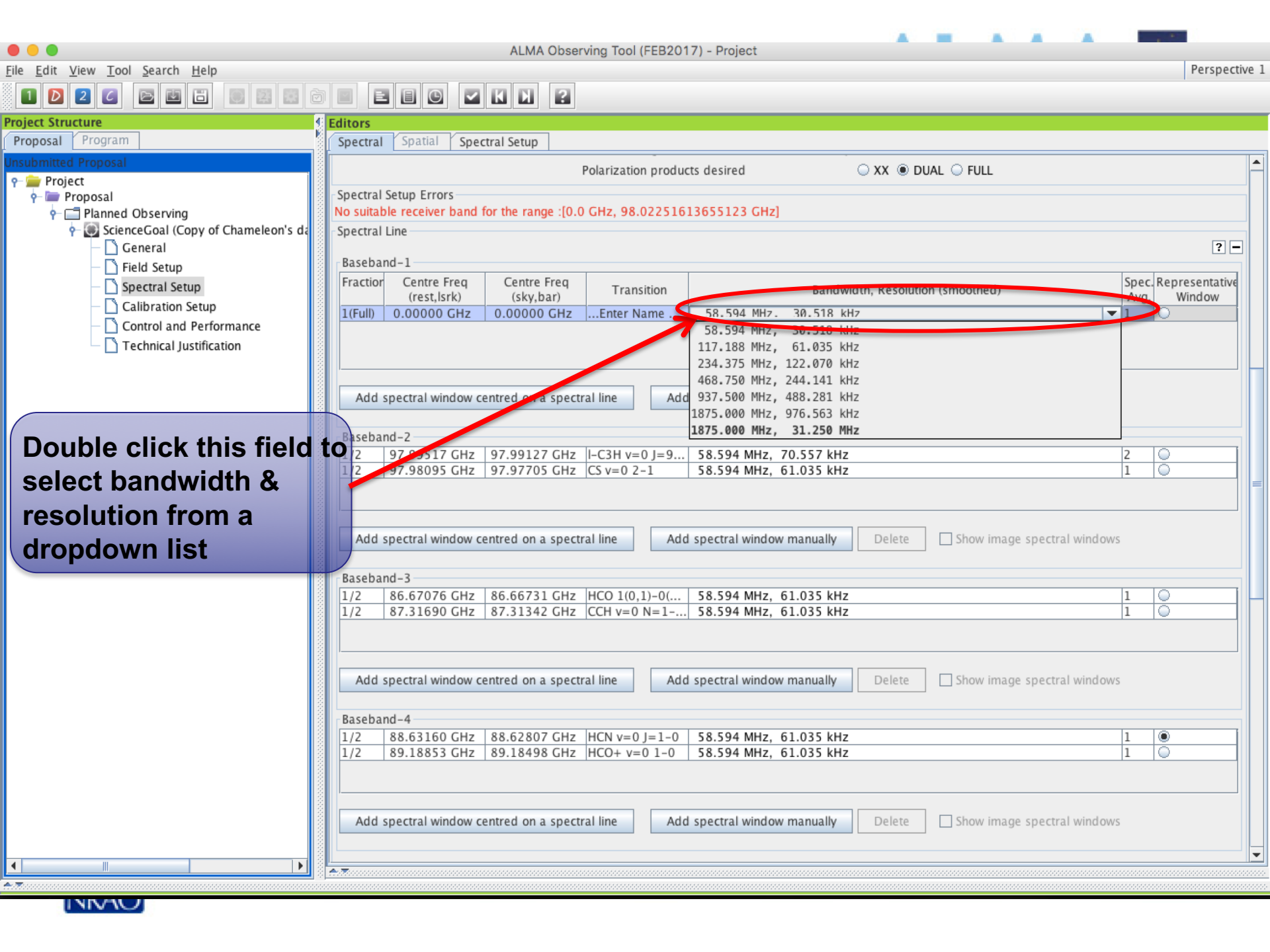
Baseband-1
Fraction
Centre Freq (rest,lsrk)
Centre Freq (sky,bar)
Transition
Spec. Avg.
Representative Window
(Full) 98.70000 GHz 98.69607 GHz continuum
Add spectral window centred on a spectral line
97.99127 GHz l-C3H v=0 J=9... 58.594 MHz(179 km/s), 70.557 kHz(0.216 km/s)
97.97705 GHz CS v=0 2-1 58.594 MHz(179 km/s), 61.035 kHz(0.187 km/s)
86.66731 GHz HCO 1(0,1)-0(...
87.31342 GHz CCH v=0 N=1-...
Baseband-4
1/2 88.63160 GHz 88.62807 GHz HCN v=0 J=1-0 58.594 MHz(198 km/s), 61.035 kHz(0.206 km/s)
58.594 MHz(197 km/s), 61.035 kHz(0.205 km/s)
Delete
Show image spectral windows
Sky frequency is shown in barycentric frame so rest and sky frequency differ even when $V_{lsrk}=0$
New Cycle 7!
The OT should give validation warnings if a) any part of a spw is closer than 30 MHz to the baseband edge or b) 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!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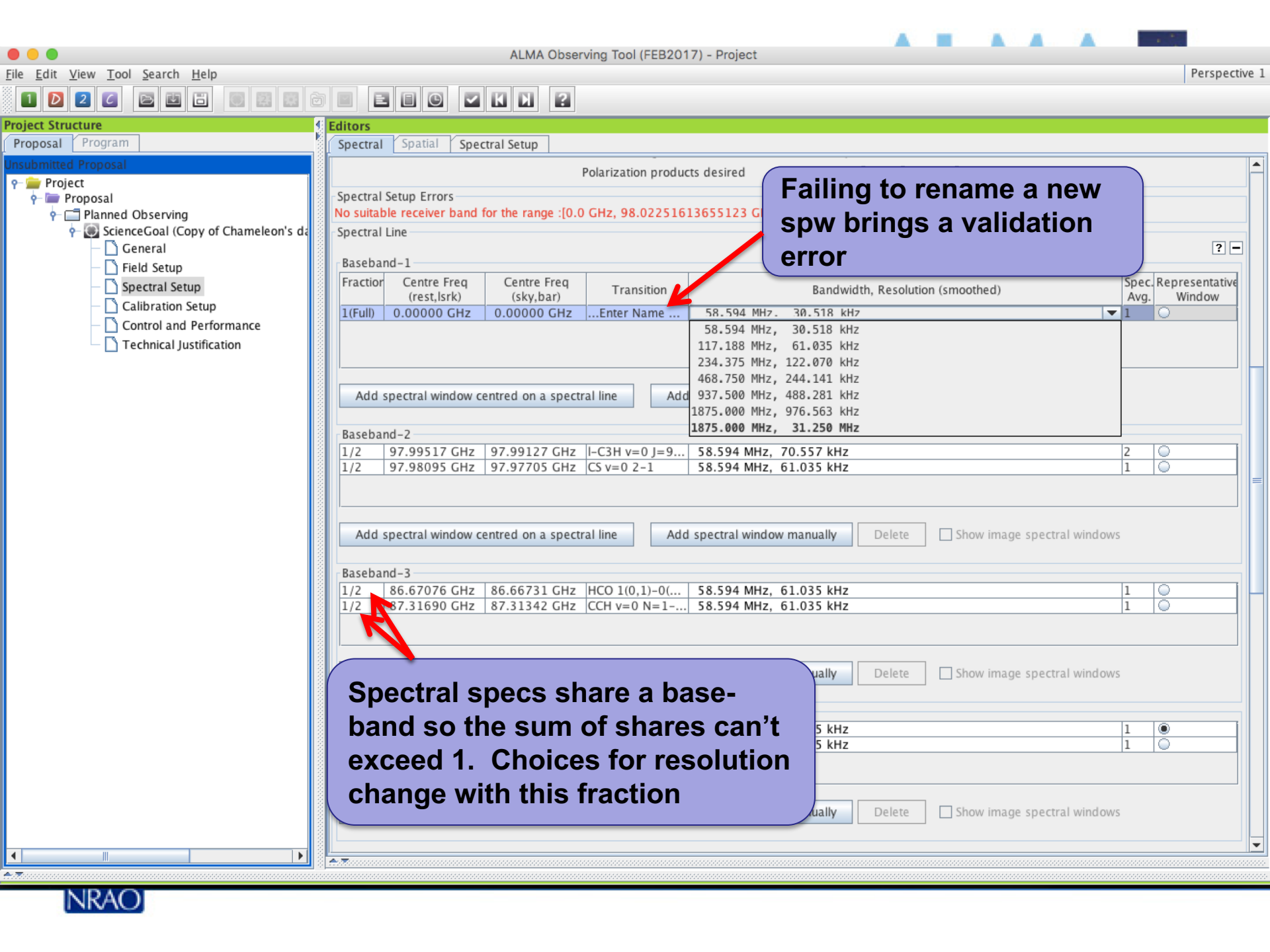
Spectral Spatial Spectral Setup
Polarization products desired
XX DUAL FULL
Spectral Setup Errors
No suitable receiver band for the range :[0.0 GHz, 98.02251613655123 GHz]
Spectral Line
Baseband-1
Fraction
Centre Freq (rest,lsrk)
Centre Freq (sky,bar)
Transition
Bandwidth, Resolution (smoothed)
Spec. Avg
Representative Window
1(Full)
0.00000 GHz
0.00000 GHz
...Enter Name ...
58.594 MHz, 30.518 kHz
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
Delete
Show image spectral windows
Baseband-2
1/2
97.99127 GHz
97.97705 GHz
l-C3H v=0 J=9...
58.594 MHz, 70.557 kHz
CS v=0 2-1
58.594 MHz, 61.035 kHz
Baseband-3
1/2
86.67076 GHz
86.66731 GHz
HCO 1(0,1)-0(...
58.594 MHz, 61.035 kHz
87.31690 GHz
87.31342 GHz
CCH v=0 N=1-...
Baseband-4
88.63160 GHz
88.62807 GHz
HCN v=0 J=1-0
89.18853 GHz
89.18498 GHz
HCO+ v=0 1-0
Double click this field to select bandwidth & resolution from a dropdown list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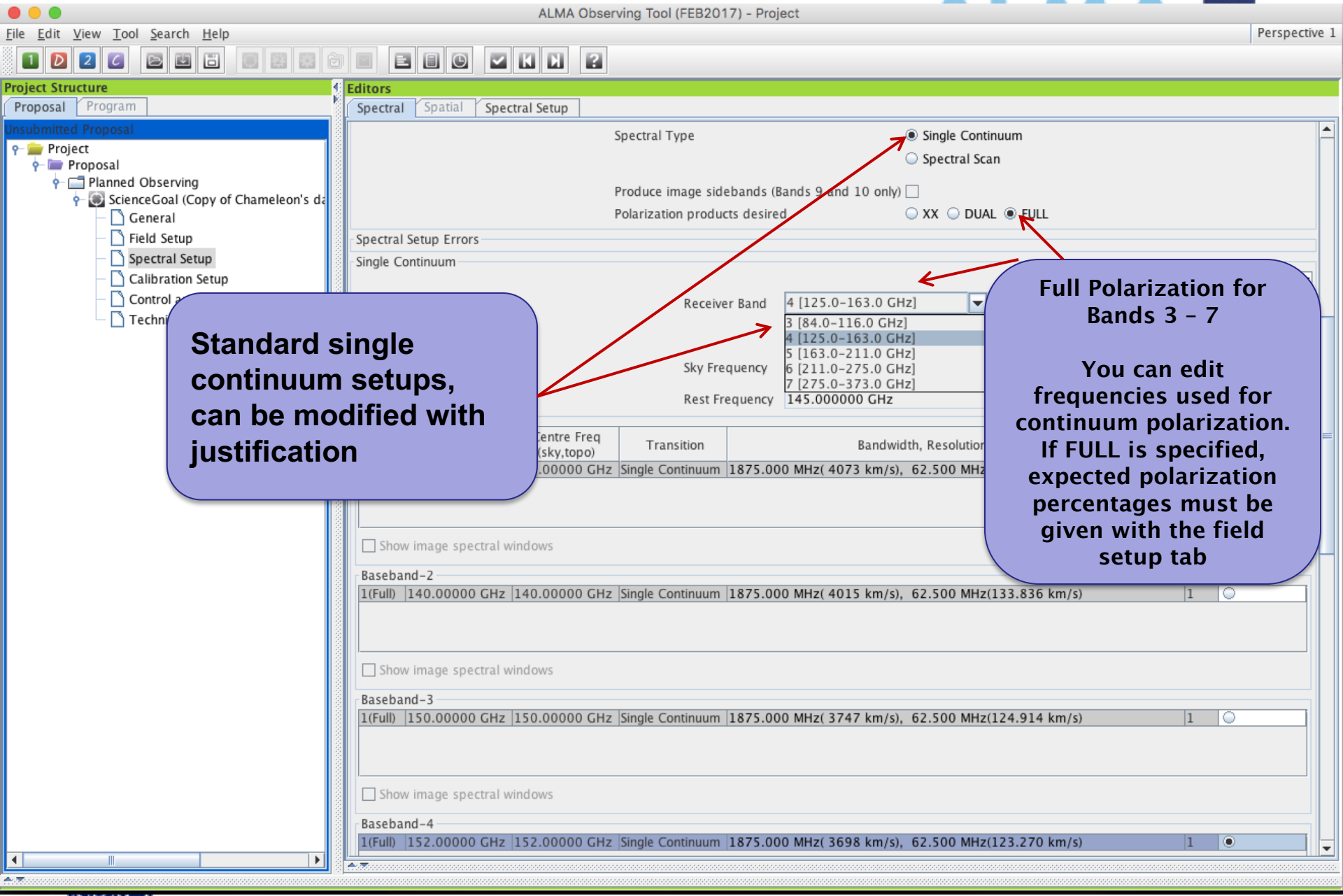
Spectral Spatial Spectral Setup
Polarization products desired
Spectral Setup Errors
No suitable receiver band for the range :[0.0 GHz, 98.02251613655123 G
Spectral Line
Baseband-1
Fraction
Centre Freq (rest,lsrk)
Centre Freq (sky,bar)
Transition
Bandwidth, Resolution (smoothed)
Spec. Avg.
Representative 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
Delete
Show image spectral windows
Delete
Show image spectral windows
Failing to rename a new spw brings a validation error
Spectral specs share a base-band so the sum of shares can't exceed 1. Choices for resolution change with this fraction
NRAO

Full Continuum & Polarization

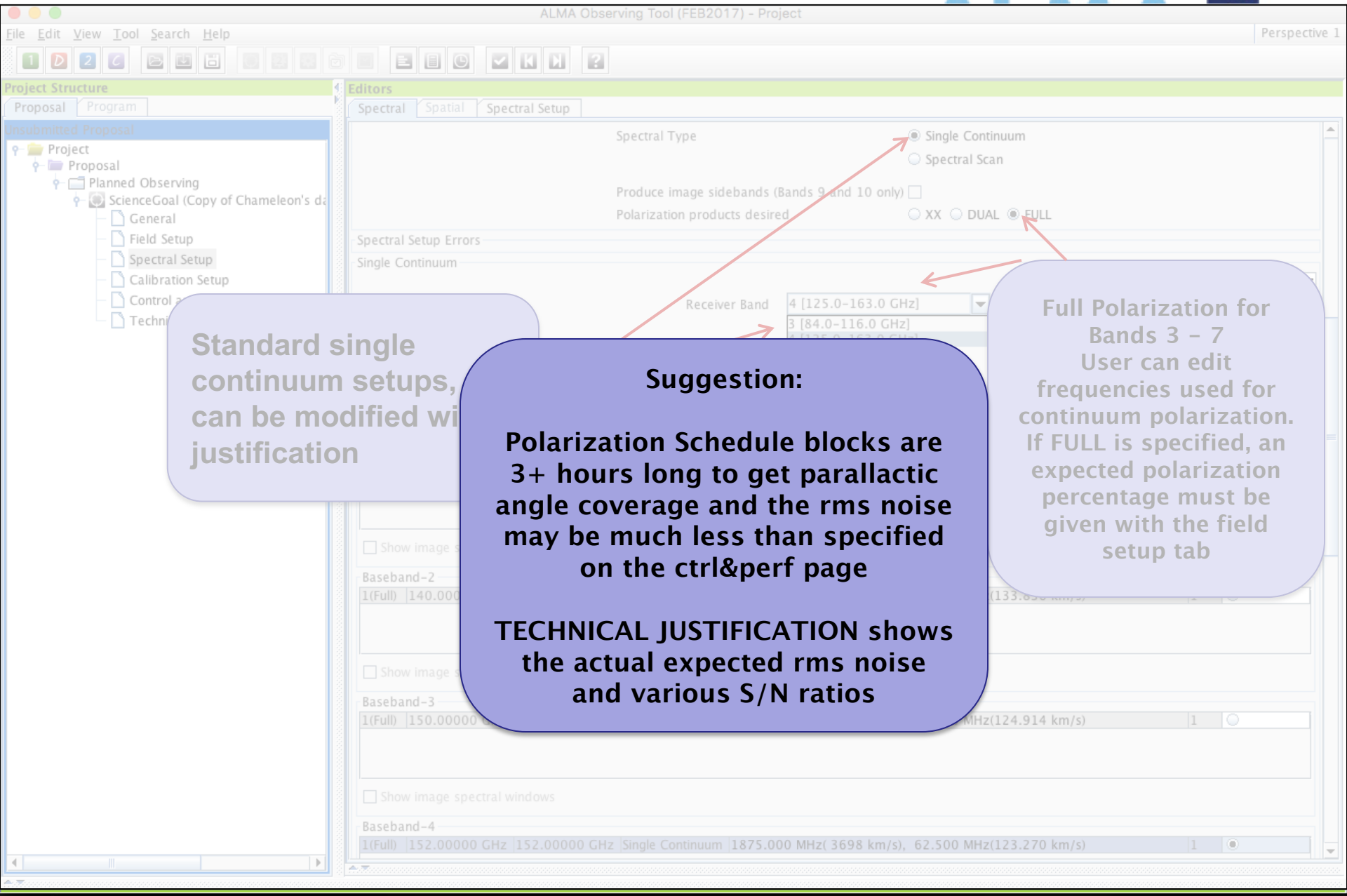


Standard single continuum setups, can be modified with justification

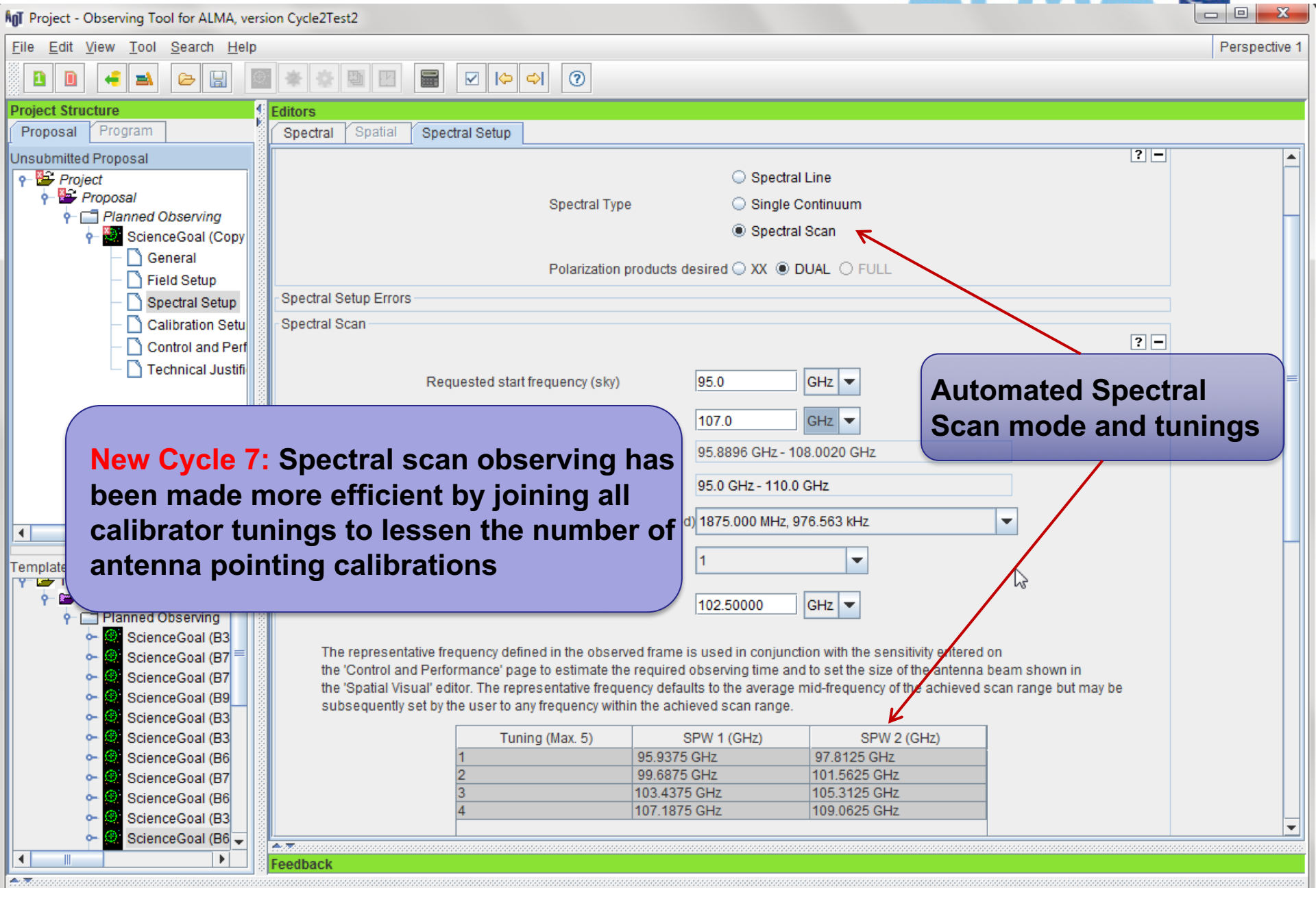
Full Polarization for Bands 3 – 7

You can edit frequencies used for continuum polarization. If FULL is specified, expected polarization percentages must be given with the field setup tab

Full Continuum & Polarization



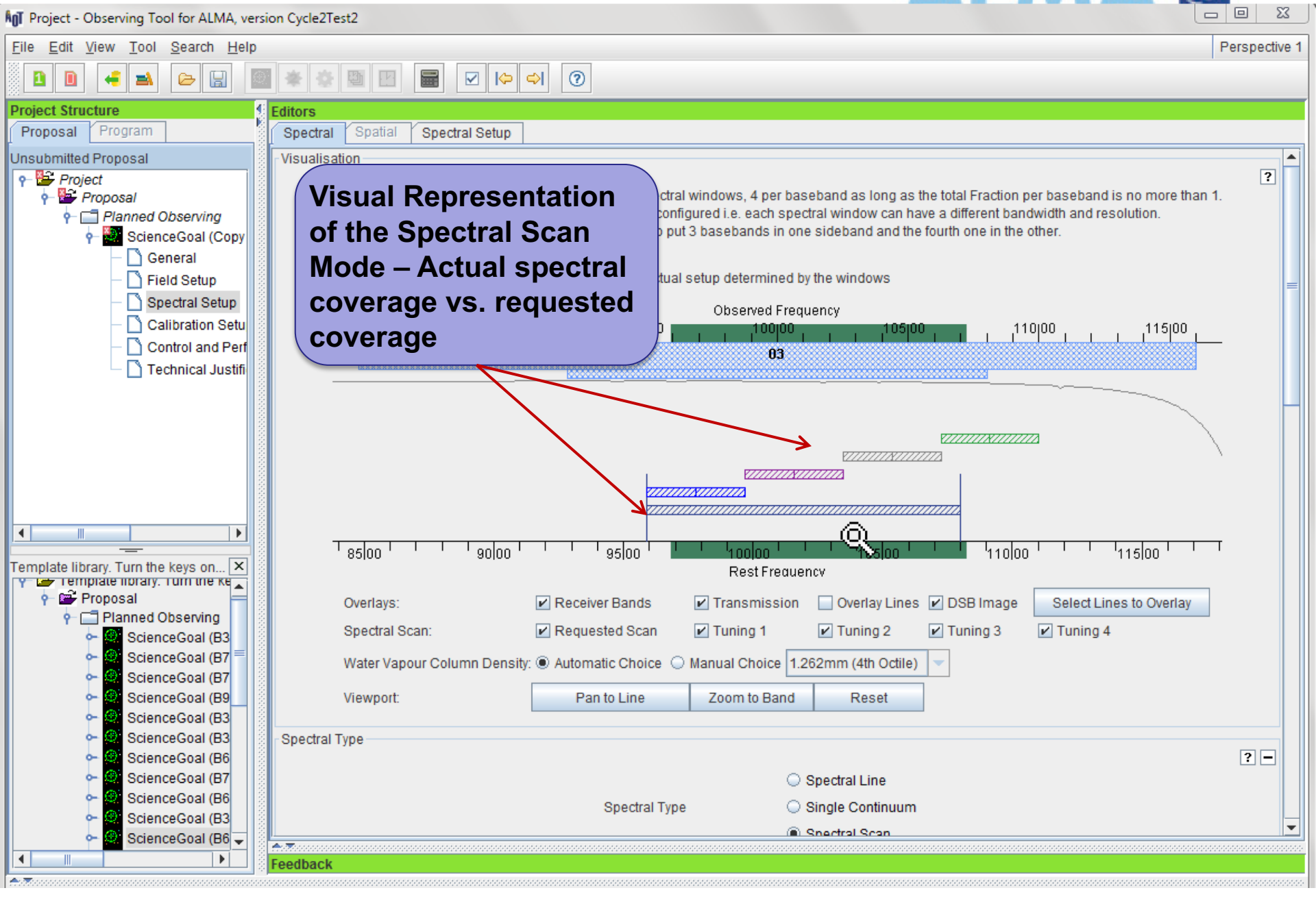
Automated spectral scan - I



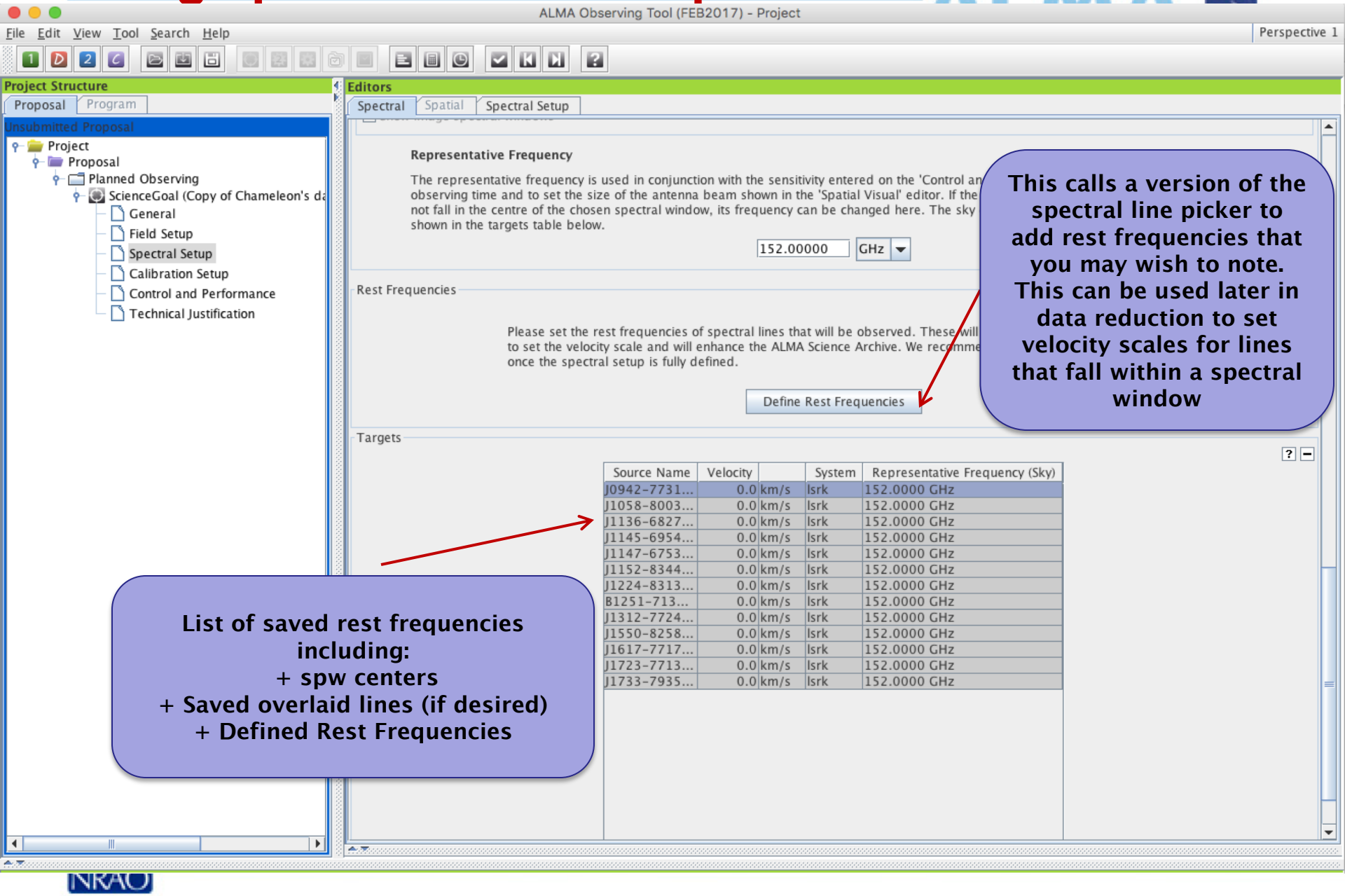
New Cycle 7: **Spectral scan observing has been made more efficient by joining all calibrator tunings to lessen the number of antenna pointing calibrations**

Automated Spectral Scan mode and tunings

Automated spectral scan - II



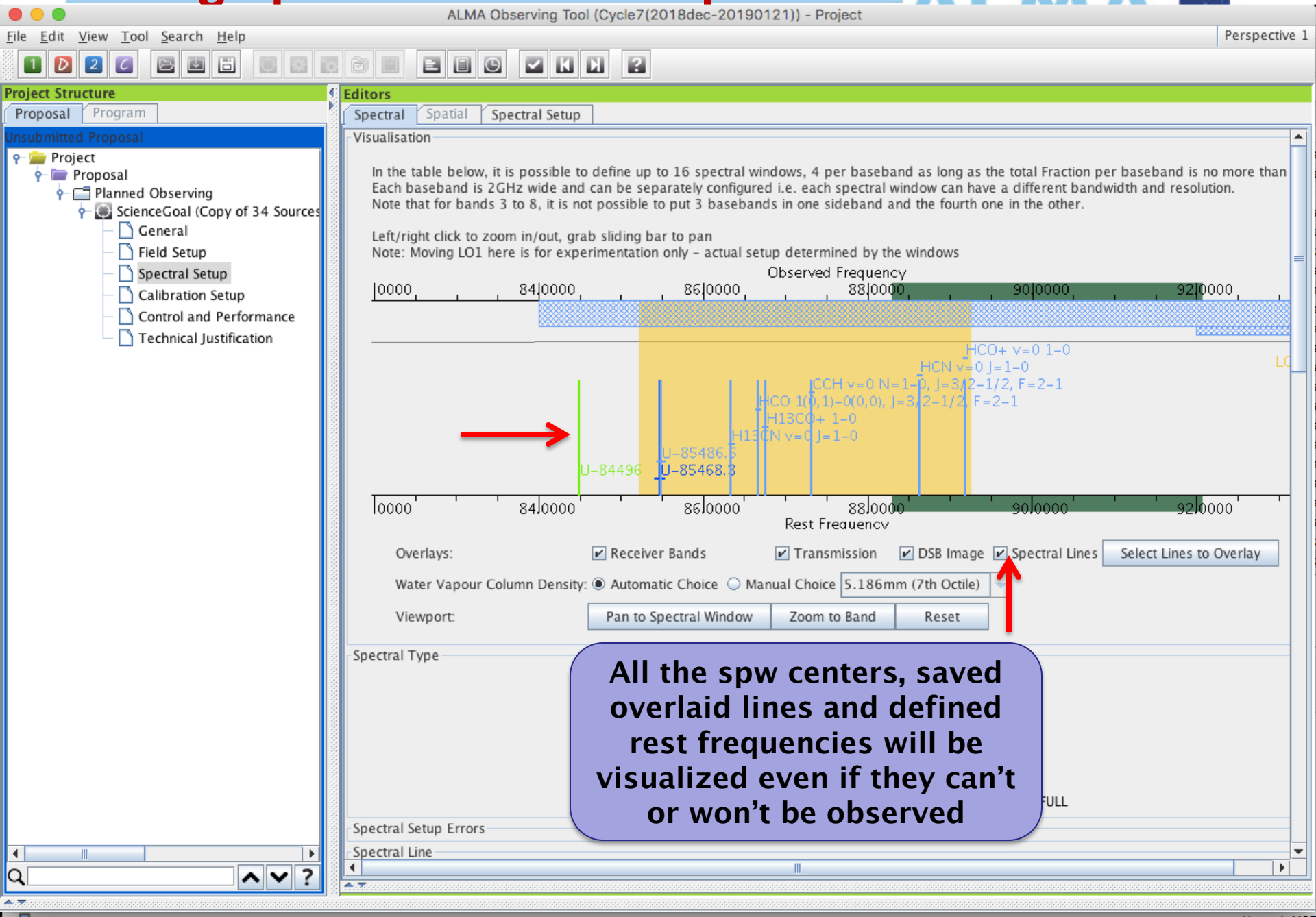
Saving spw & line rest frequencies



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

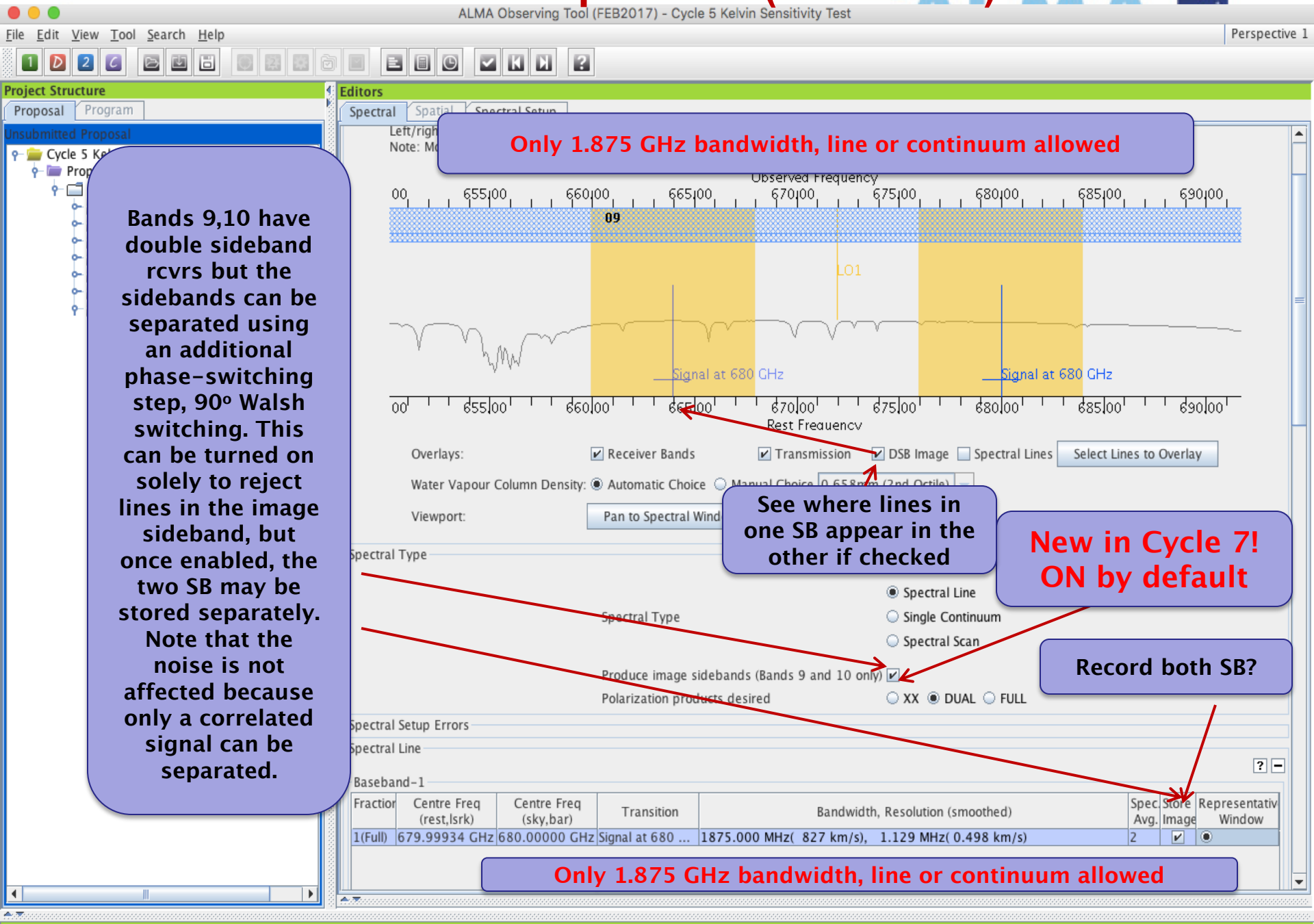
List of saved rest frequencies including:
+ spw centers
+ Saved overlaid lines (if desired)
+ Defined Rest Frequencies

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 (90º Walsh)

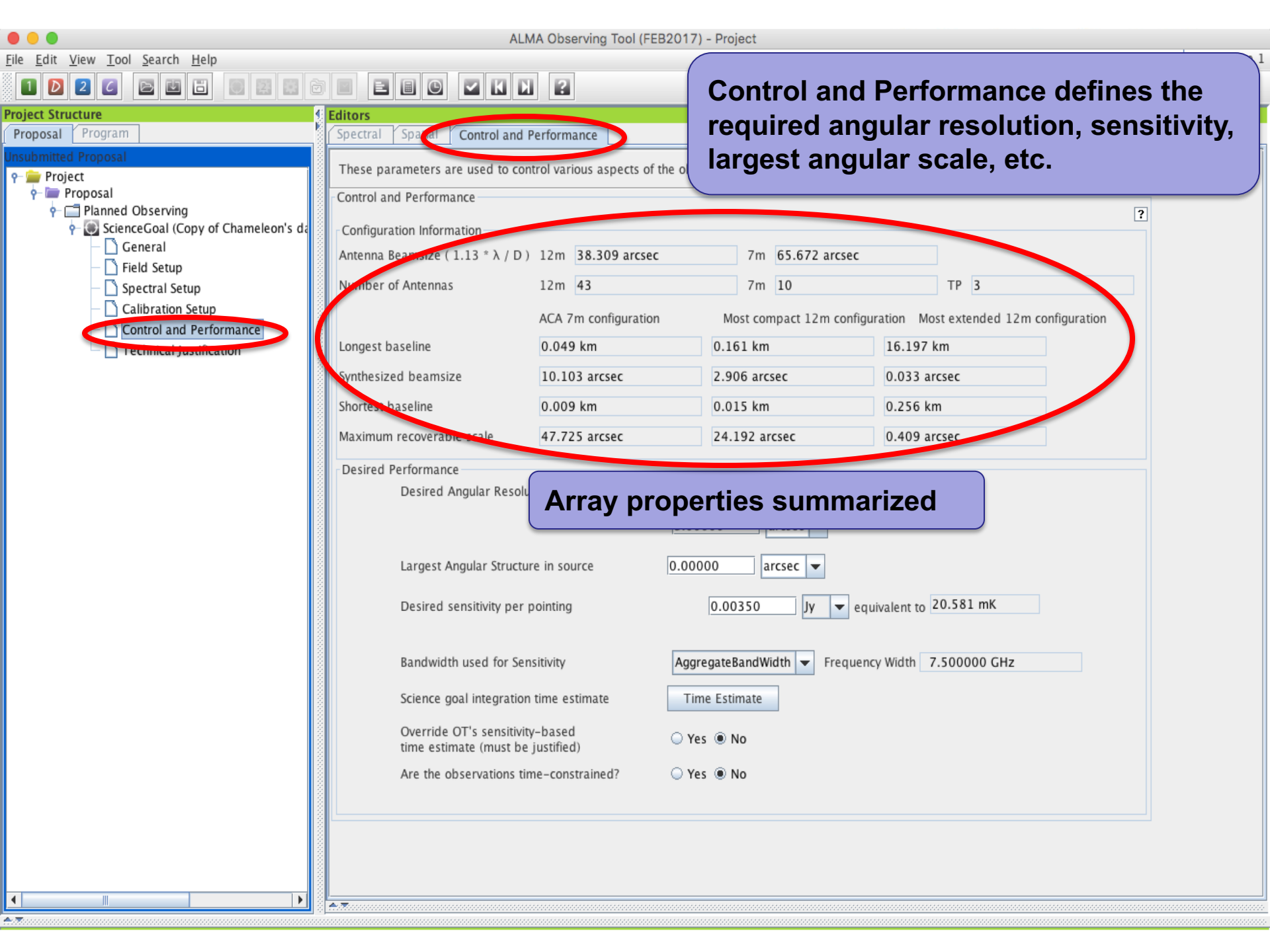


Bands 9,10 have double sideband rcvrs but the sidebands can be separated using an additional phase-switching step, 90º Walsh switching. This can be turned on solely to reject lines in the image sideband, but once enabled, the two SB may be stored separately. Note that the noise is not affected because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

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

New in Cycle 7! ON by default

Record both SB?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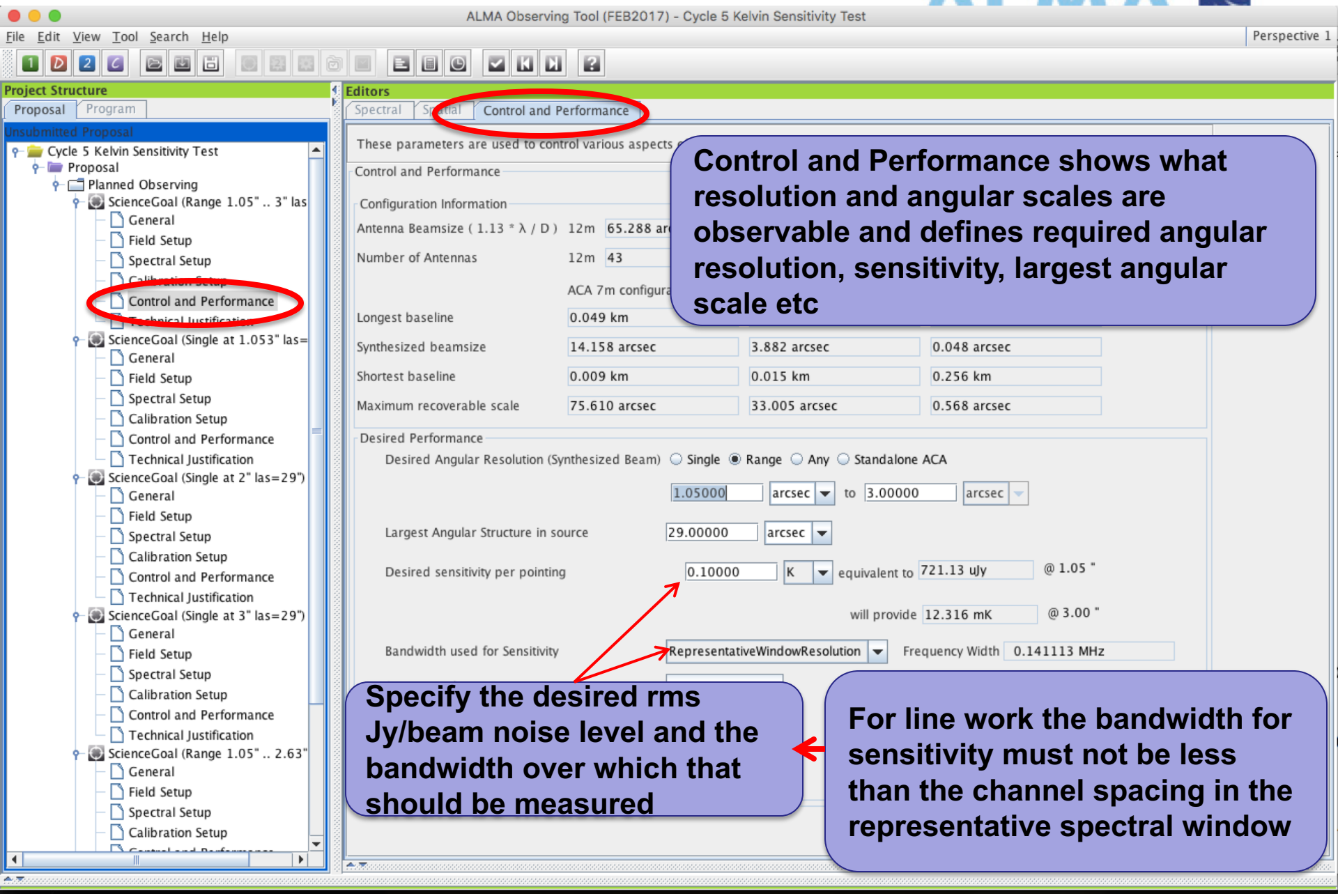
Control and Performance
These parameters are used to control various aspects of the o
Control and Performance
Configuration Information
Antenna Beamsize (1.13 * λ / D) 12m 38.309 arcsec 7m 65.672 arcsec
Number of Antennas 12m 43 7m 10 TP 3
ACA 7m configuration
Most compact 12m configuration
Most extended 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
Desired Performance
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.
Array properties summarized


ALMA Observing Tool (FEB2017) - Cycle 5 Kelvin Sensitivity Test
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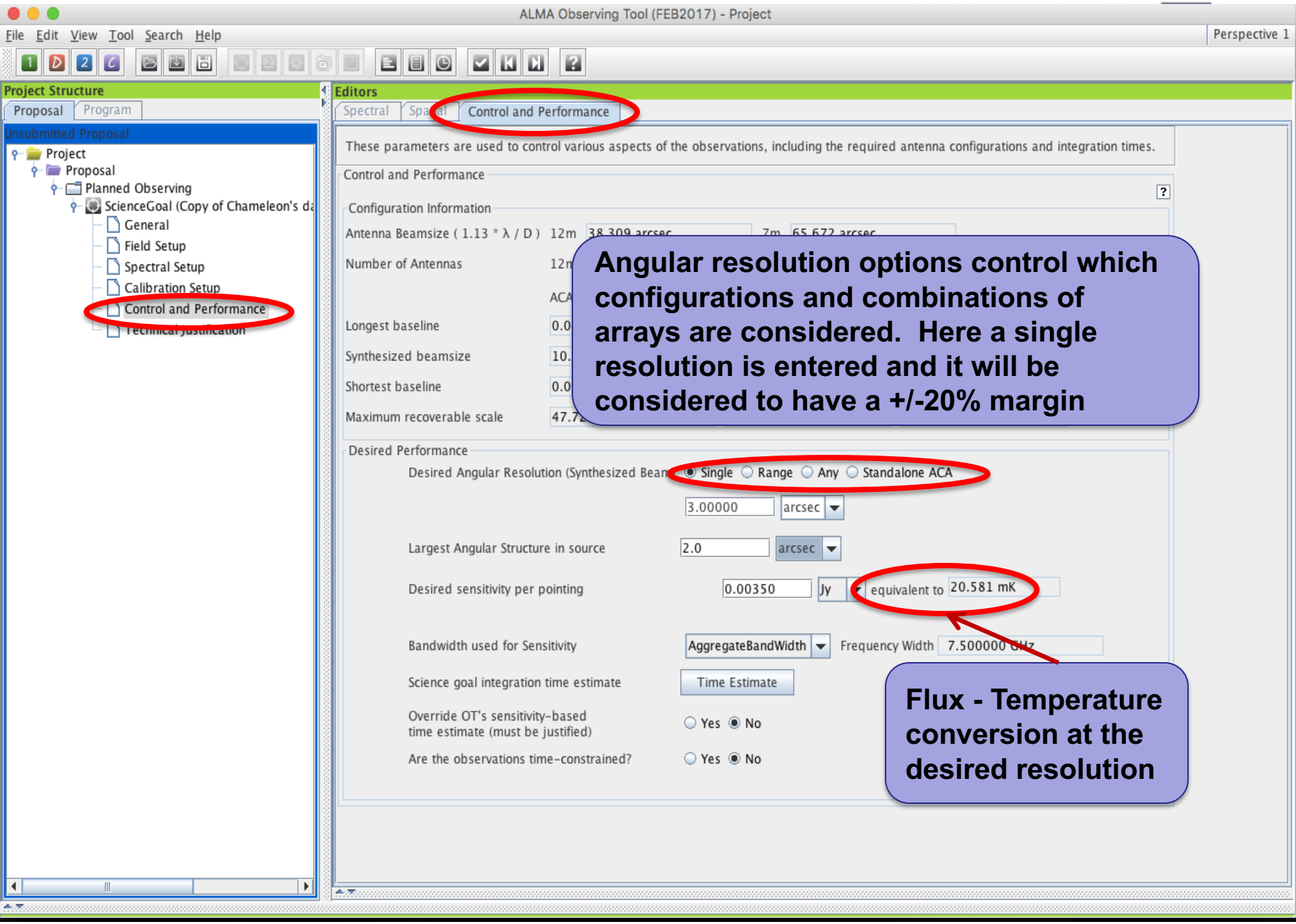
ScienceGoal (Single at 1.053" las=
General
Field Setup
Spectral Setup
Calibration Setup
Control and Performance
Technical Justification
ScienceGoal (Single at 2" las=29")
General
Field Setup
Spectral Setup
Calibration Setup
Control and Performance
Technical Justification
ScienceGoal (Single at 3" las=29")
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
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 line work the bandwidth for sensitivity must not be less than the channel spacing in the representative spectral window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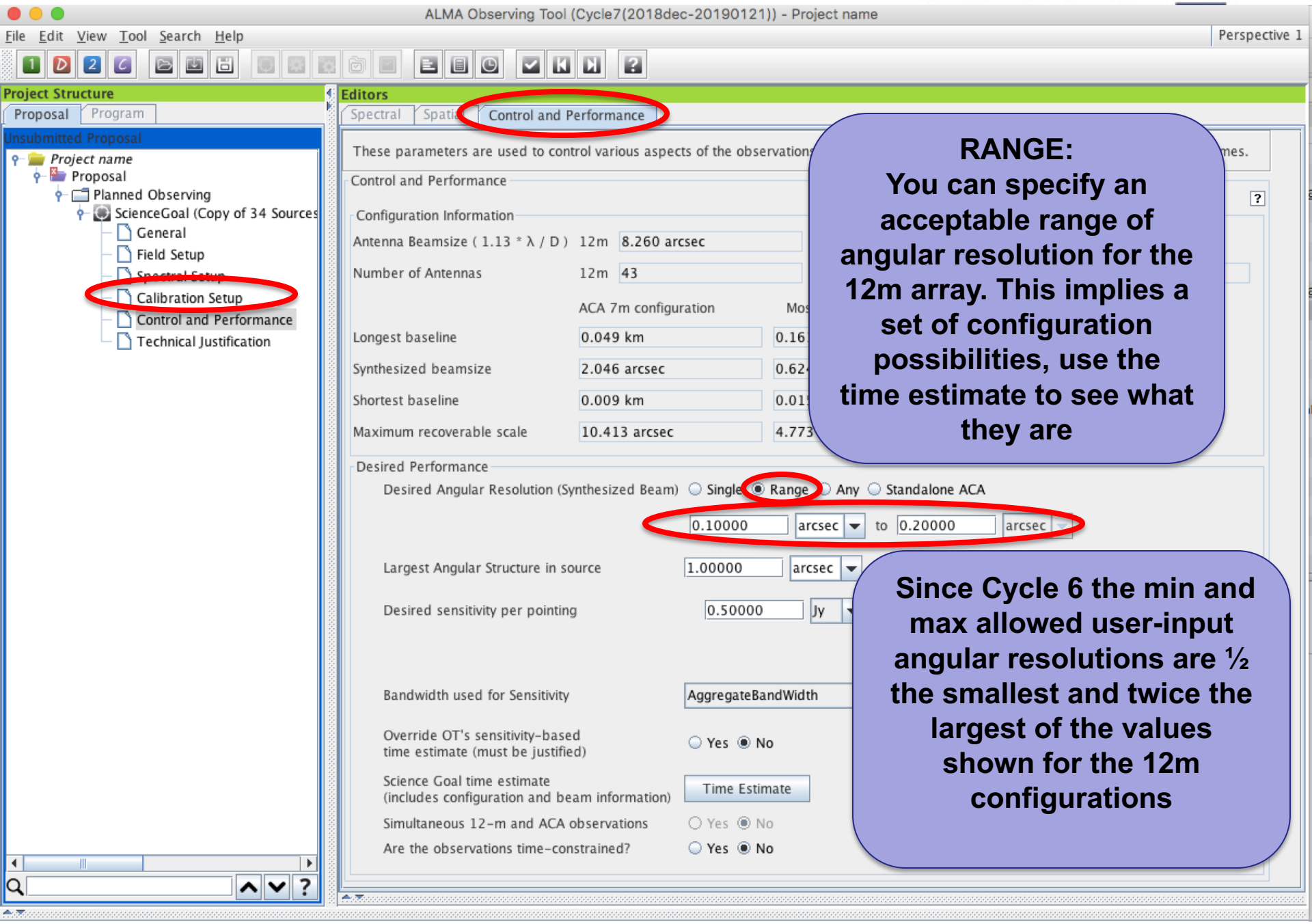
Control and Performance
Technical Justification
Editors
Spectral Spatial Control and Performance
These parameters are used to control various aspects of the observations, including the required antenna configurations and integration times.
Control and Performance
Configuration Information
Antenna Beamsize (1.13 * λ / D) 12m 38.309 arcsec 7m 65.672 arcsec
Number of Antennas 12m
ACA
Longest baseline 0.0
Synthesized beamsize 10.
Shortest baseline 0.0
Maximum recoverable scale 47.72
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 +/-20% margin
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
Flux - Temperature conversion at the desired resolution


ALMA Observing Tool (Cycle7(2018dec-20190121)) - Project name
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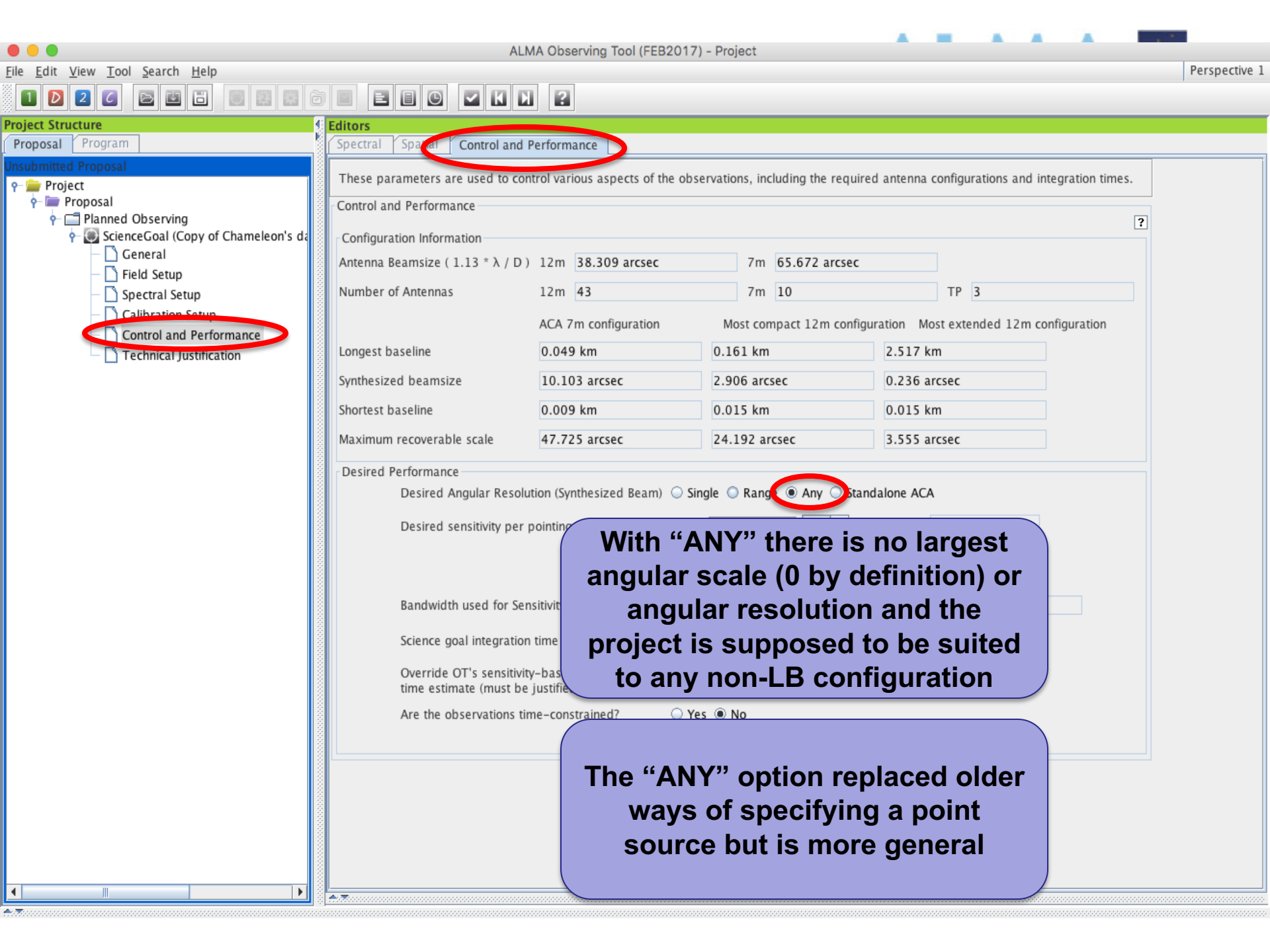
Spectral
Control and Performance
These parameters are used to control various aspects of the observations
Control and Performance
Configuration Information
Antenna Beamsize (1.13 * λ / D) 12m 8.260 arcsec
Number of Antennas 12m 43
ACA 7m configuration
Longest baseline 0.049 km
Synthesized beamsize 2.046 arcsec
Shortest baseline 0.009 km
Maximum recoverable scale 10.413 arcsec
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


ALMA Observing Tool (FEB2017) - Project
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Unsubmitted Proposal
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Planned Observing
ScienceGoal (Copy of Chameleon's da
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Control and Performance
Technical Justification
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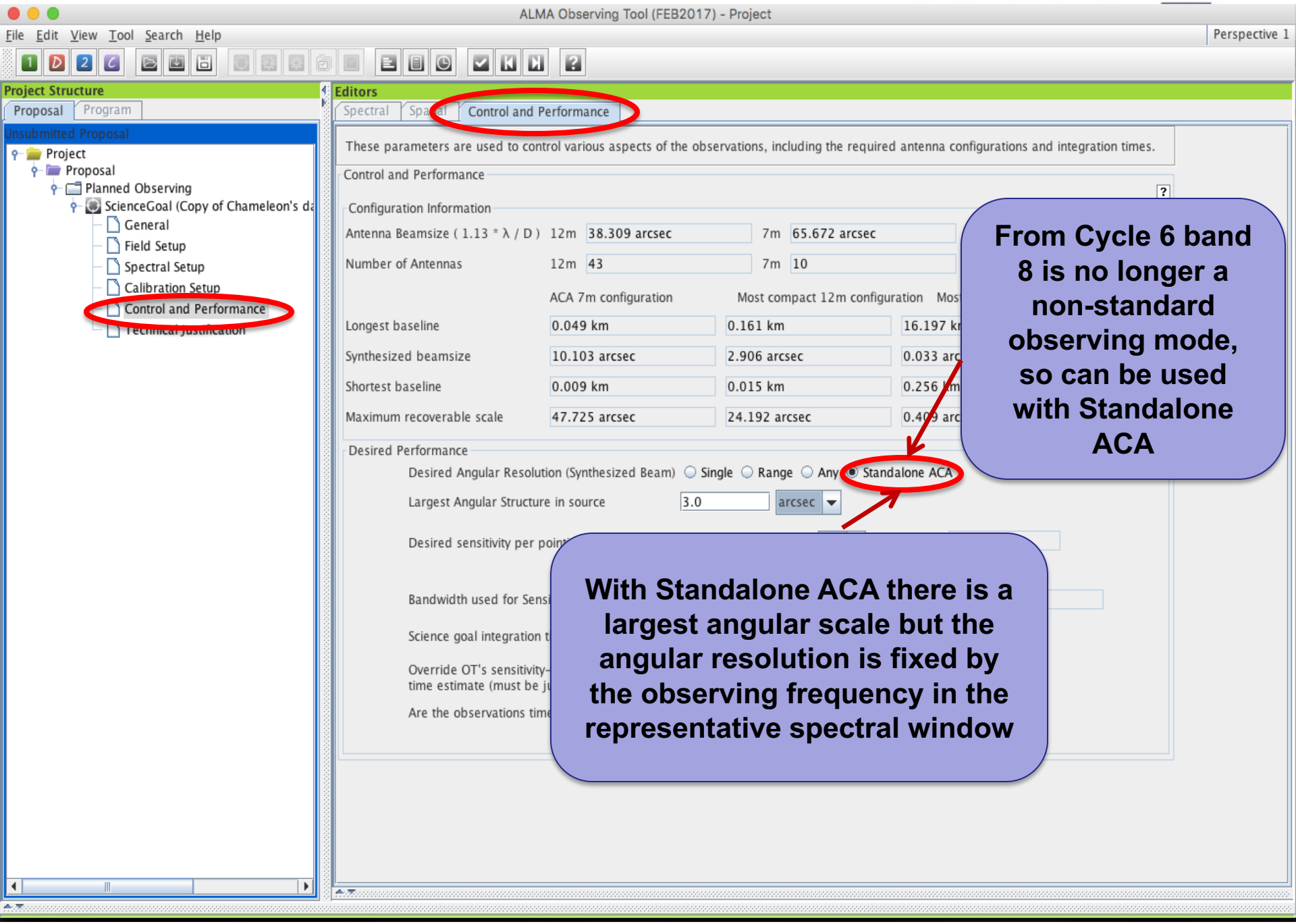
Spectral
Spatial
Control and Performance
These parameters are used to control various aspects of the observations, including the required antenna configurations and integration times.
Control and Performance
Configuration Information
Antenna Beamsize (1.13 * λ / D) 12m 38.309 arcsec 7m 65.672 arcsec
Number of Antennas 12m 43 7m 10 TP 3
ACA 7m configuration
Most compact 12m configuration
Most extended 12m configuration
Longest baseline 0.049 km 0.161 km 2.517 km
Synthesized beamsize 10.103 arcsec 2.906 arcsec 0.236 arcsec
Shortest baseline 0.009 km 0.015 km 0.015 km
Maximum recoverable scale 47.725 arcsec 24.192 arcsec 3.555 arcsec
Desired Performance
Desired Angular Resolution (Synthesized Beam) Single Rang Any Standalone ACA
Desired sensitivity per pointing
Bandwidth used for Sensitivit
Science goal integration time
Override OT's sensitivity-bas
time estimate (must be justifie
Are the observations time-constrained? Yes No
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


ALMA Observing Tool (FEB2017) - Project
File Edit View Tool Search Help
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ScienceGoal (Copy of Chameleon's da
General
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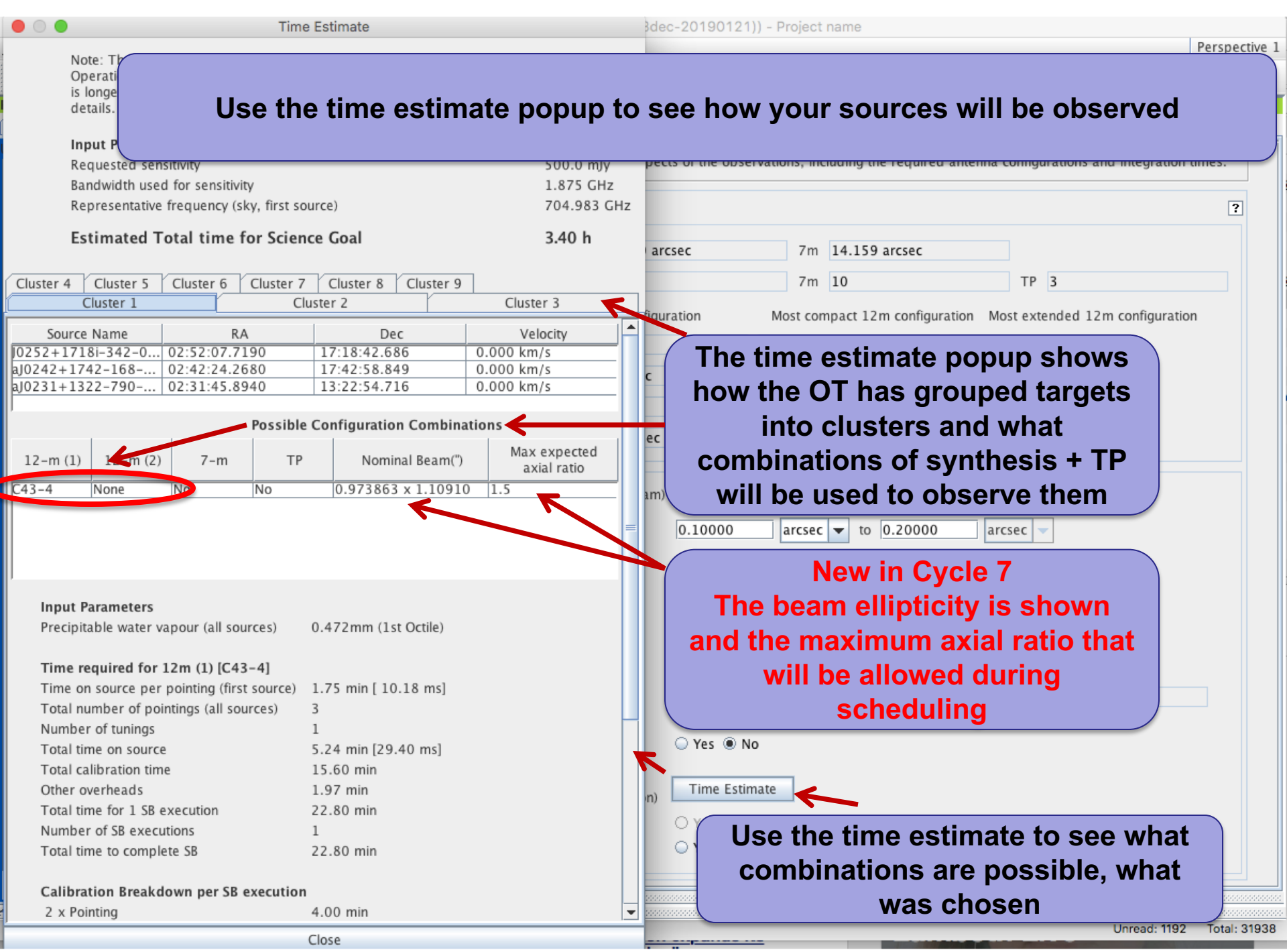
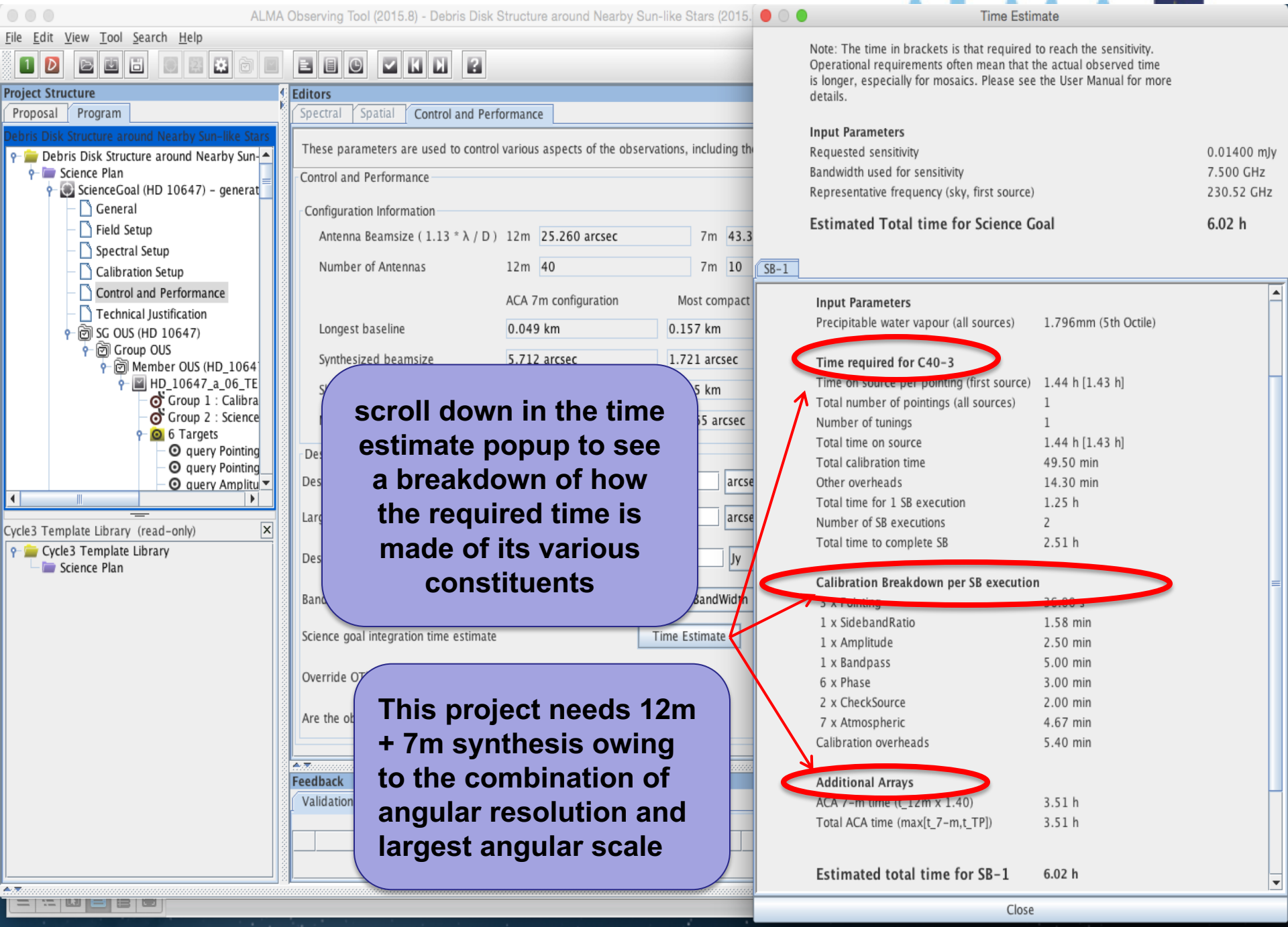
Spectral Spatial Control and Performance
These parameters are used to control various aspects of the observations, including the required antenna configurations and integration times.
Control and Performance
Configuration Information
Antenna Beamsize (1.13 * λ / D) 12m 38.309 arcsec 7m 65.672 arcsec
Number of Antennas 12m 43 7m 10
ACA 7m configuration
Most compact 12m configuration
Longest baseline 0.049 km 0.161 km
Synthesized beamsize 10.103 arcsec 2.906 arcsec
Shortest baseline 0.009 km 0.015 km
Maximum recoverable scale 47.725 arcsec 24.192 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
From Cycle 6 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


Use the time estimate popup to see how your sources will be observed
Time Estimate
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
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
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
New in Cycle 7
The beam ellipticity is shown and the maximum axial ratio that will be allowed during scheduling
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
Yes No
Unread: 1192 Total: 31938

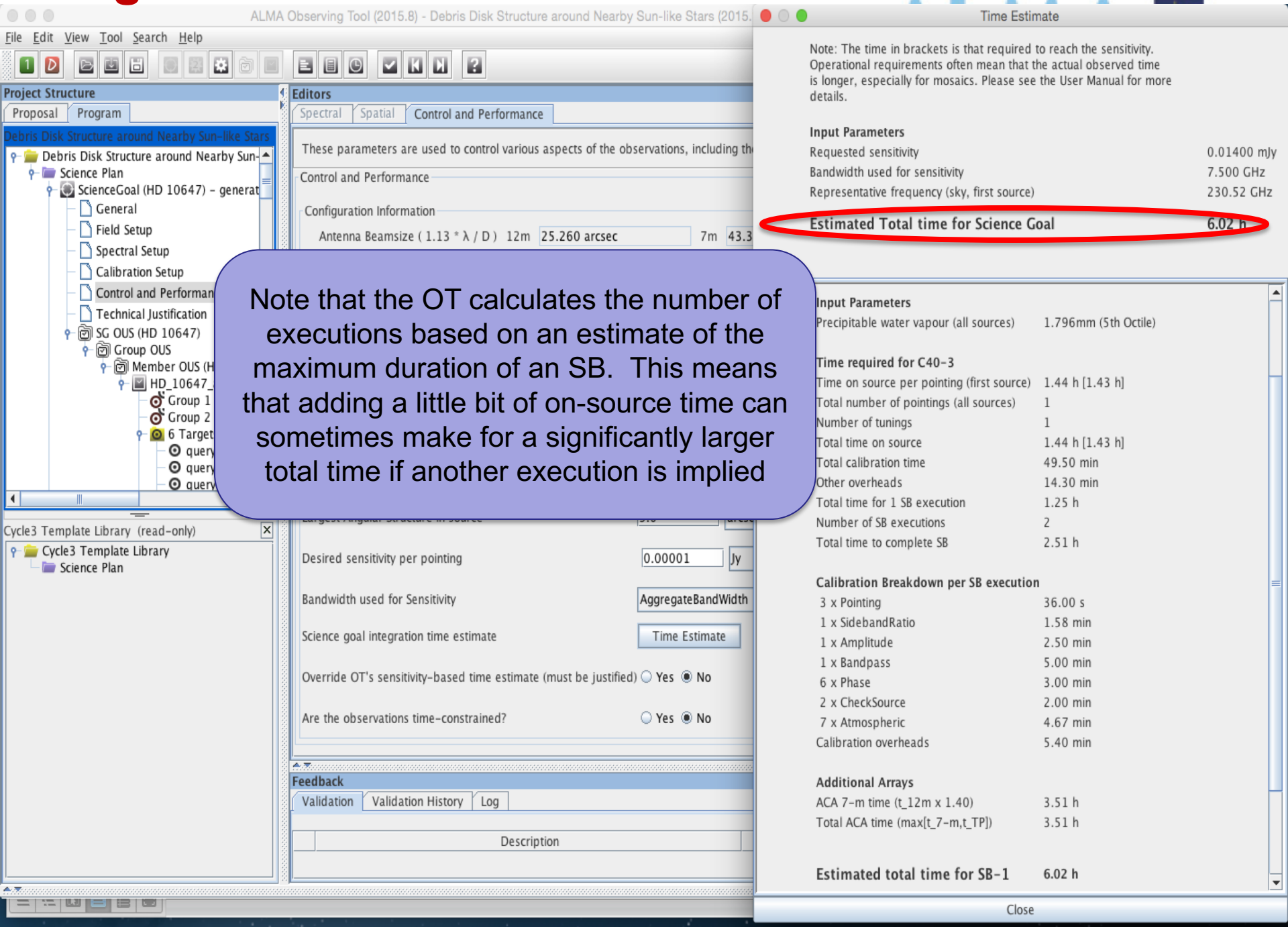
SG Time Estimates



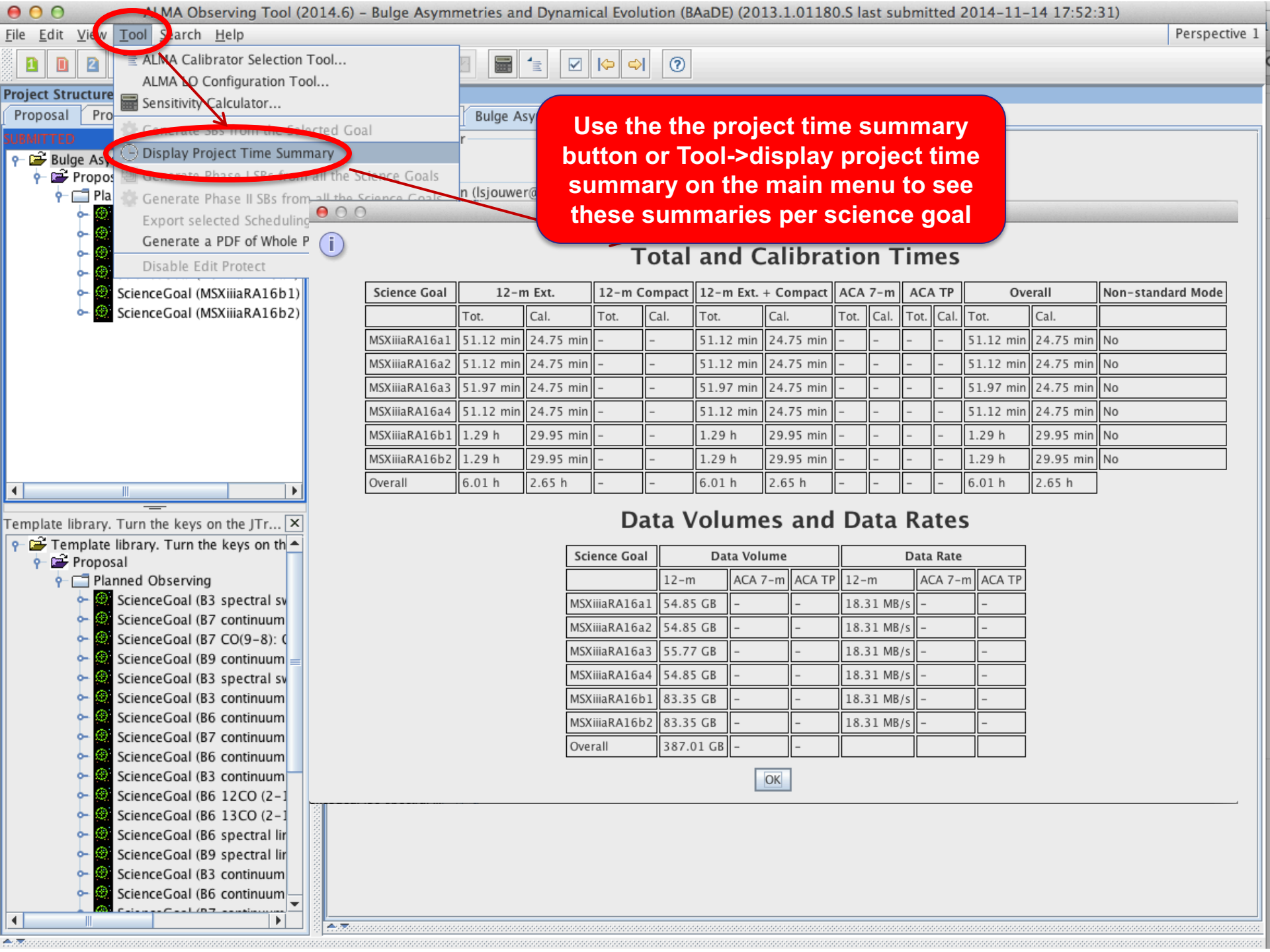
scroll down in the time estimate popup to see a breakdown of how the required time is made of its various constituents

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

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



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	

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	-	-			

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	

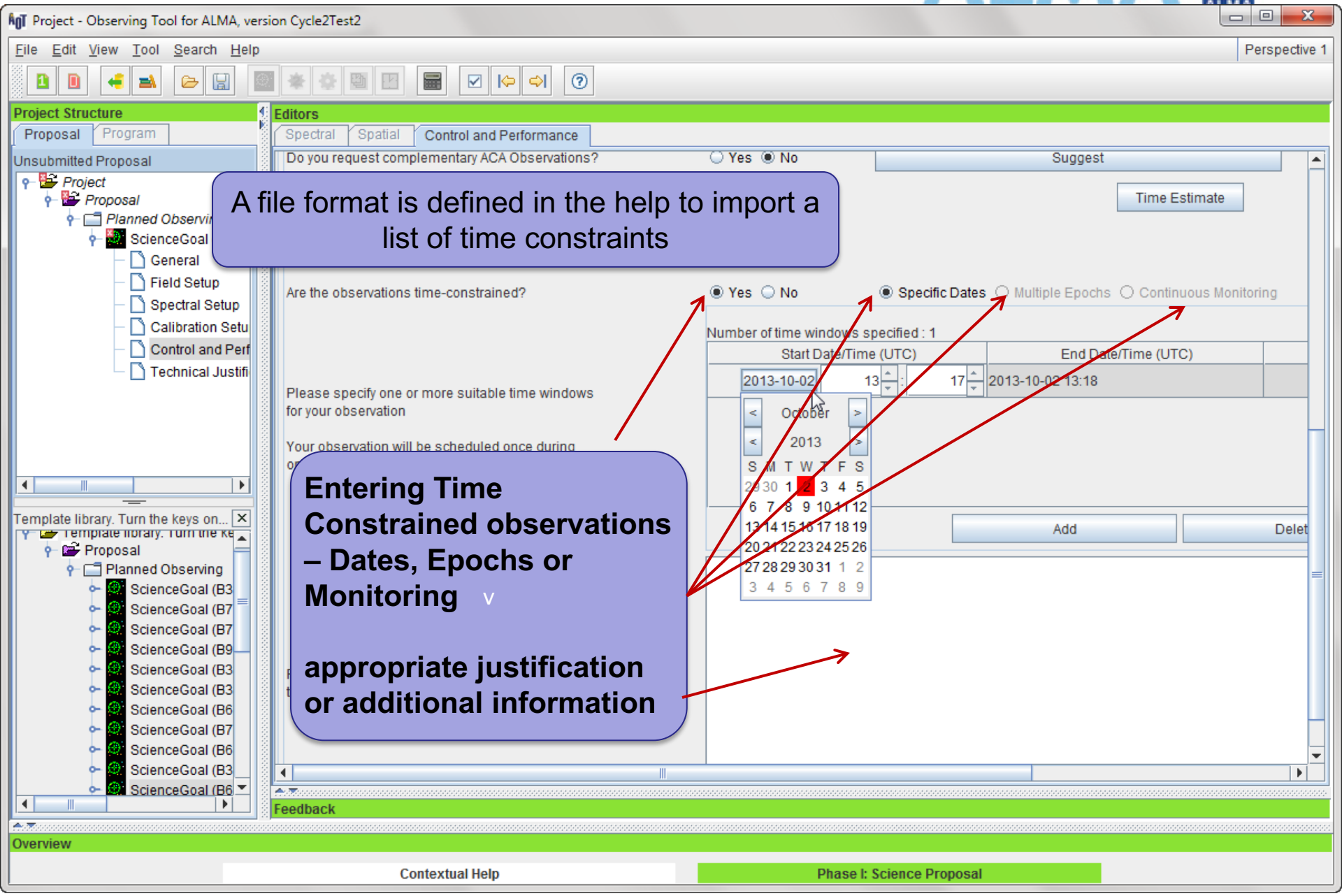
Especially when using RANGE:
Rules are operating under the hood to choose among the possible configuration choices and they may be biased toward the low resolution end of a range because less 12m time is needed. *Variations in the range can cause disproportionately large differences in the required time*.

In the two cases only the upper end of a range changes, from 1” to 3”

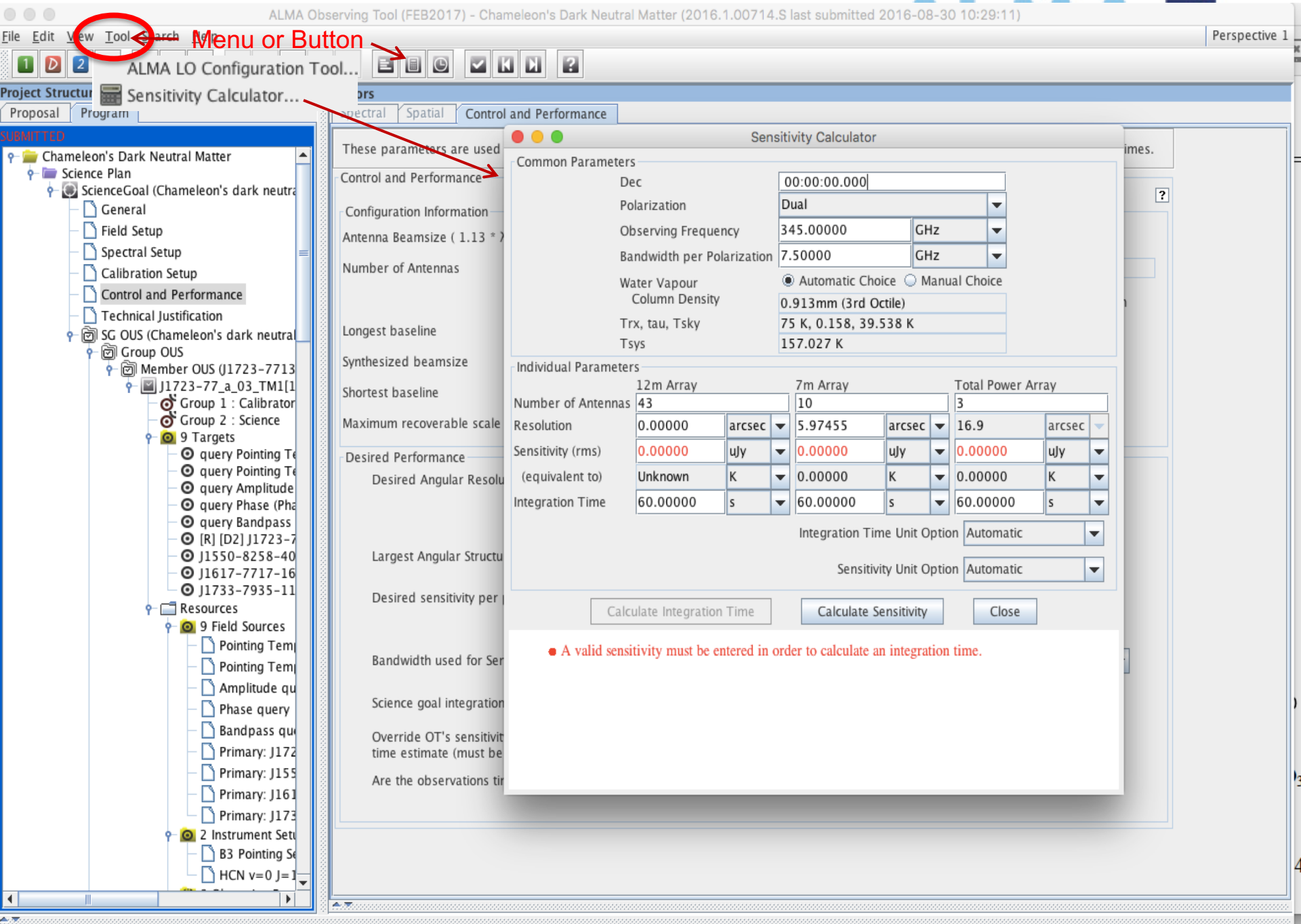
Be careful that the OT is not making choices for you that you would not make for yourself. Before submitting with a range, narrow it and use the project time summary to examine the choices the OT is making

NRAO

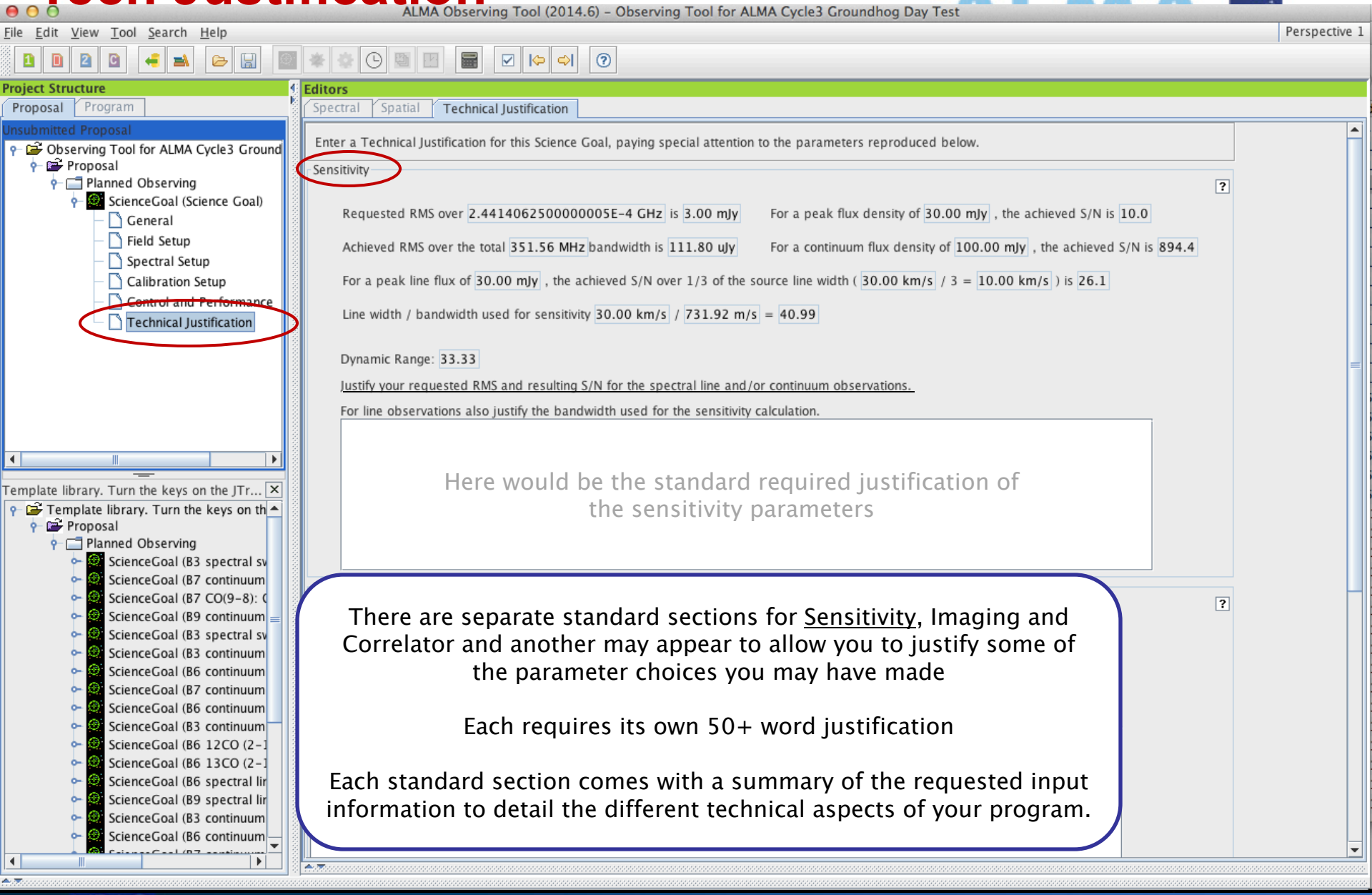
Time constrained observing



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



Tech Justification

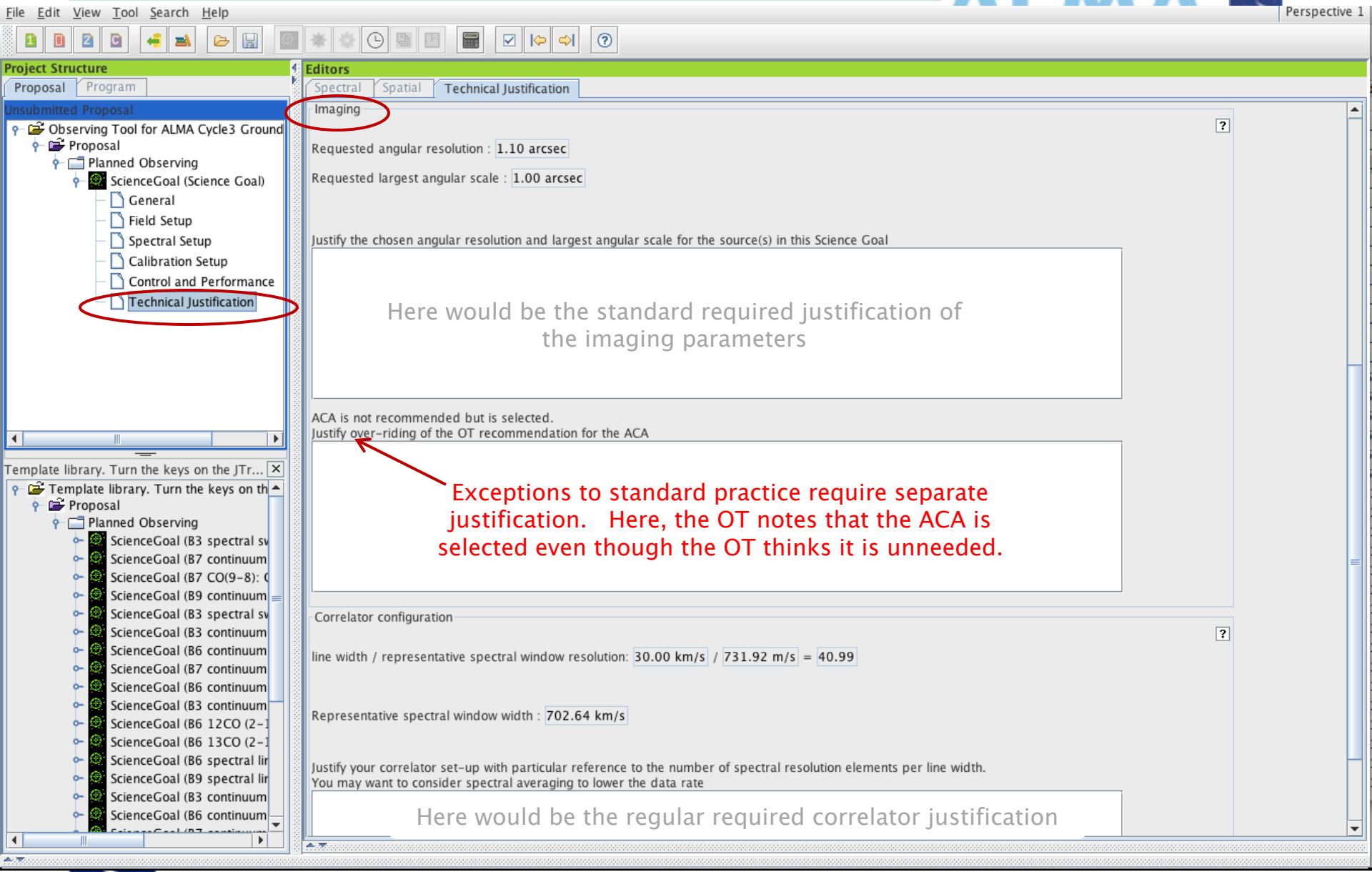


There are separate standard sections for Sensitivity, Imaging and Correlator and another may appear to allow you to justify some of the parameter choices you may have made

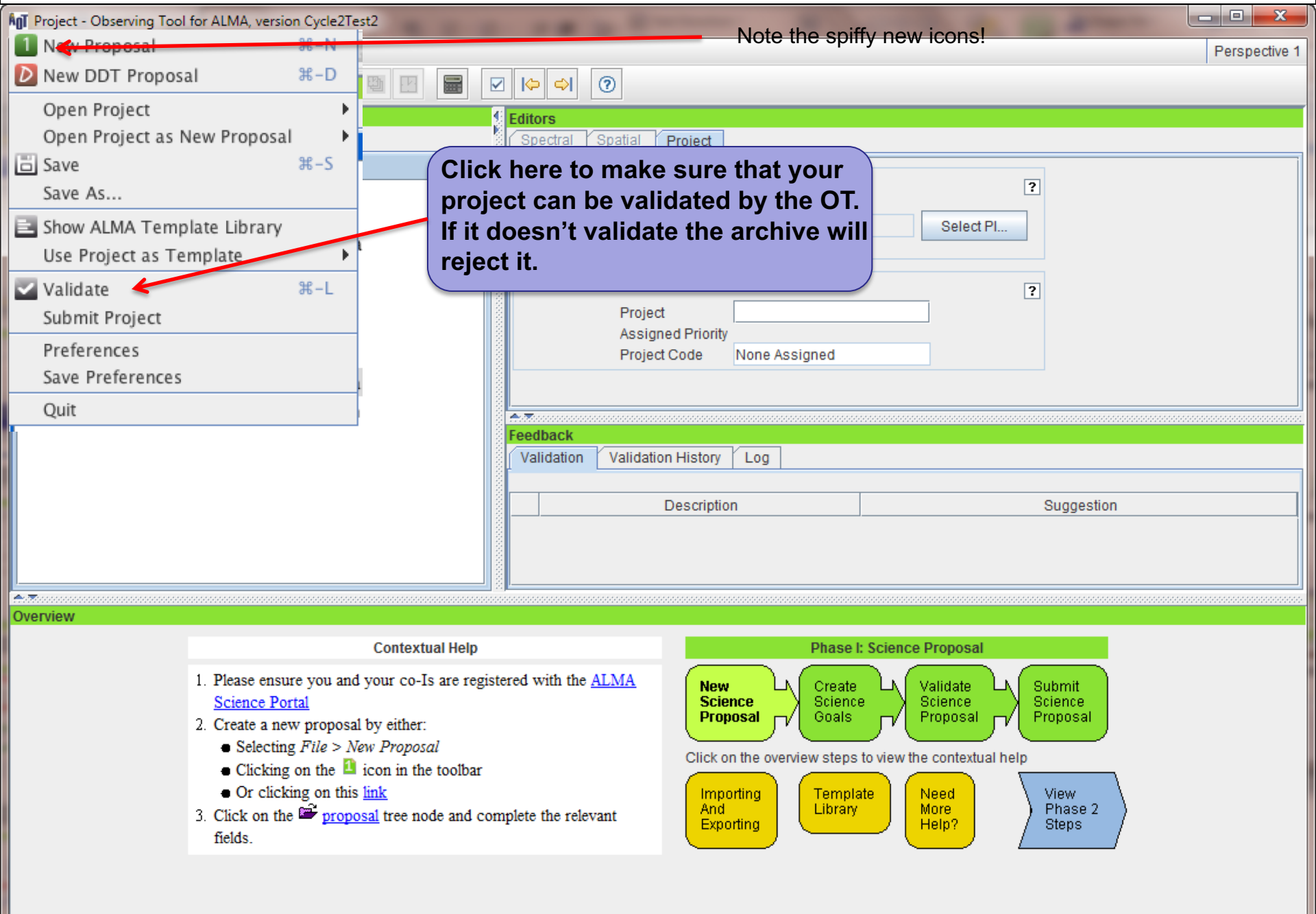
Each requires its own 50+ word justification

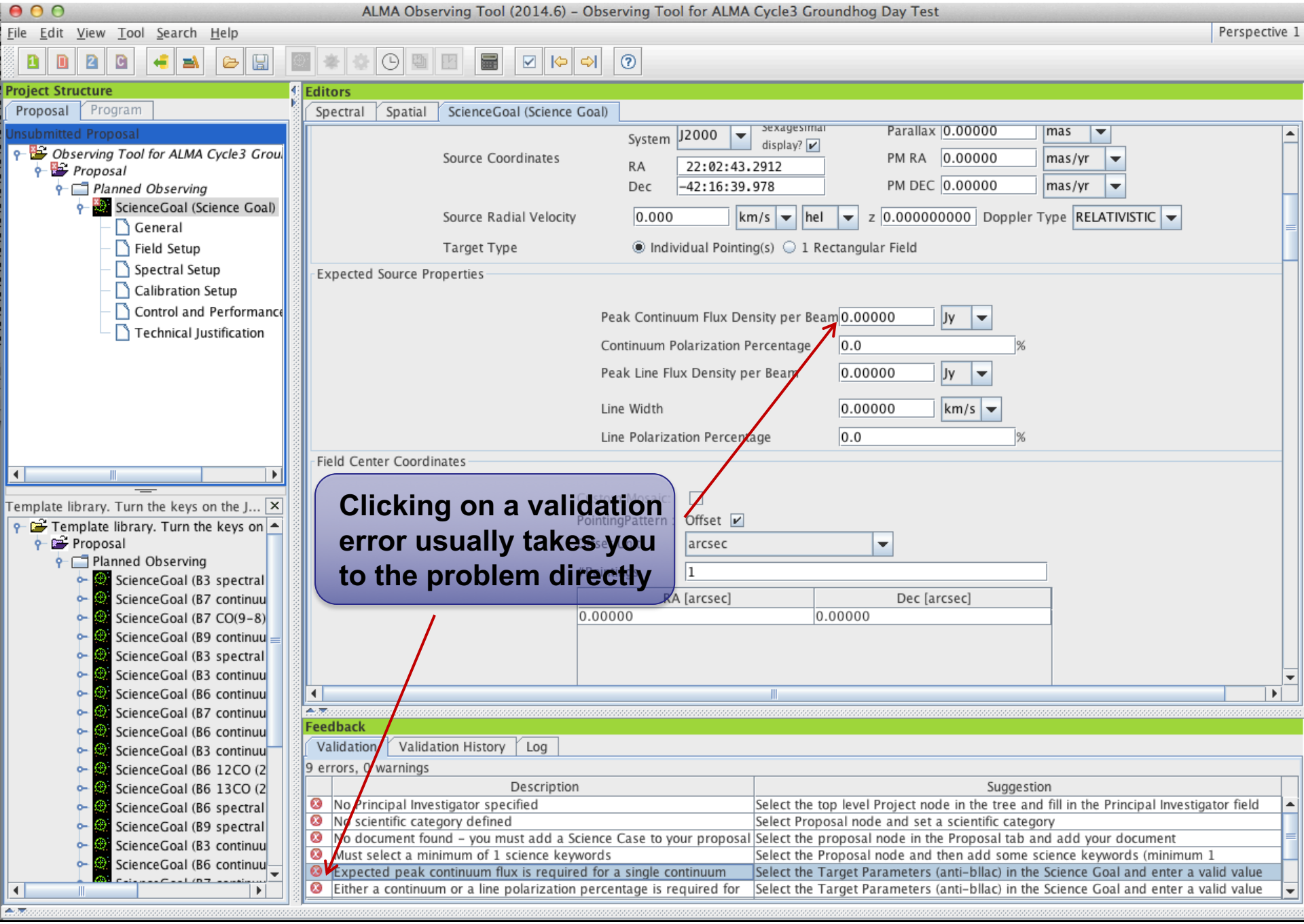
Each standard section comes with a summary of the requested input information to detail the different technical aspects of your program.

Tech Justification



When the time is ripe … validate & submit




ALMA Observing Tool (2014.6) – Observing Tool for ALMA Cycle3 Groundhog Day Test
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Template library. Turn the keys on
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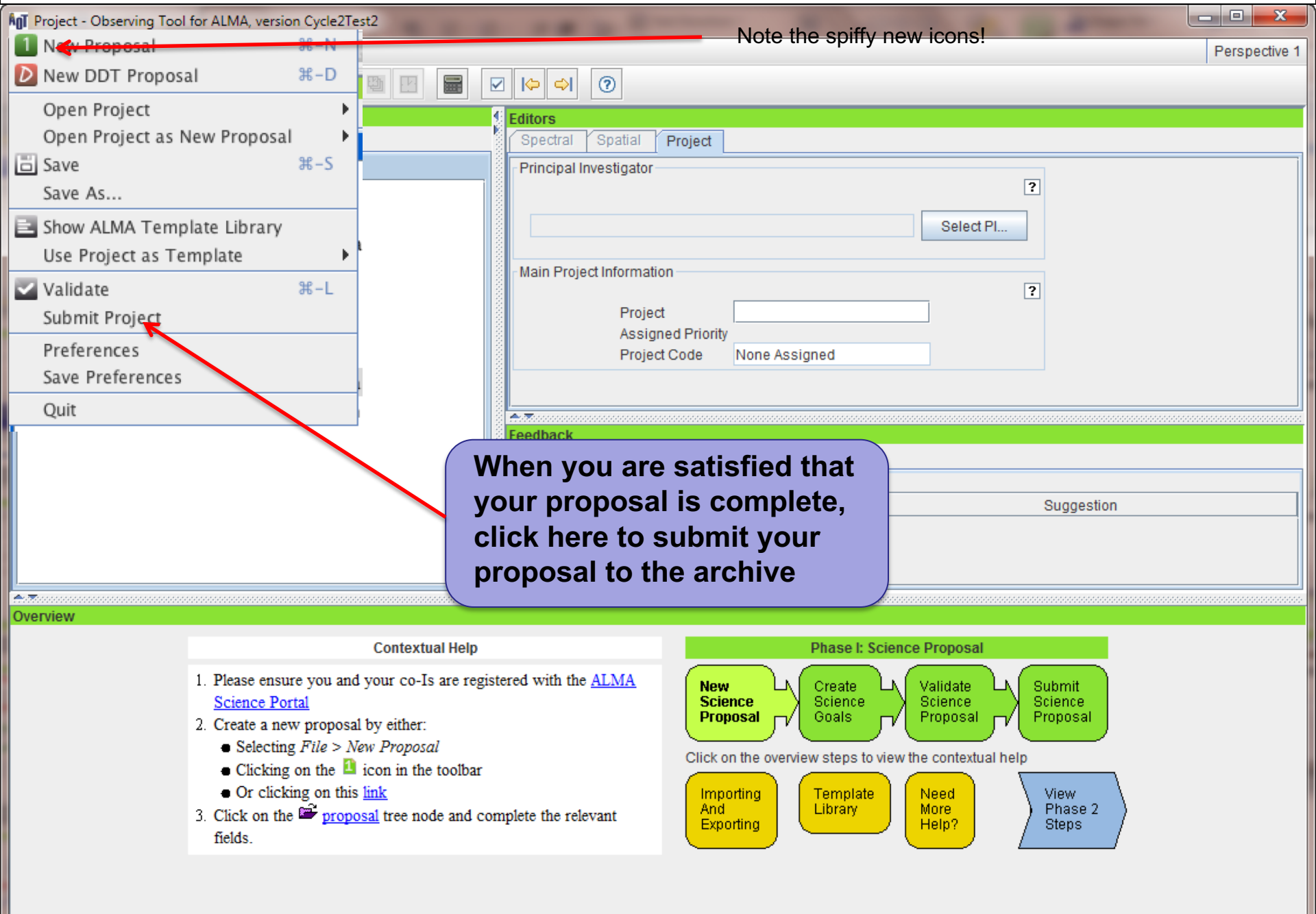
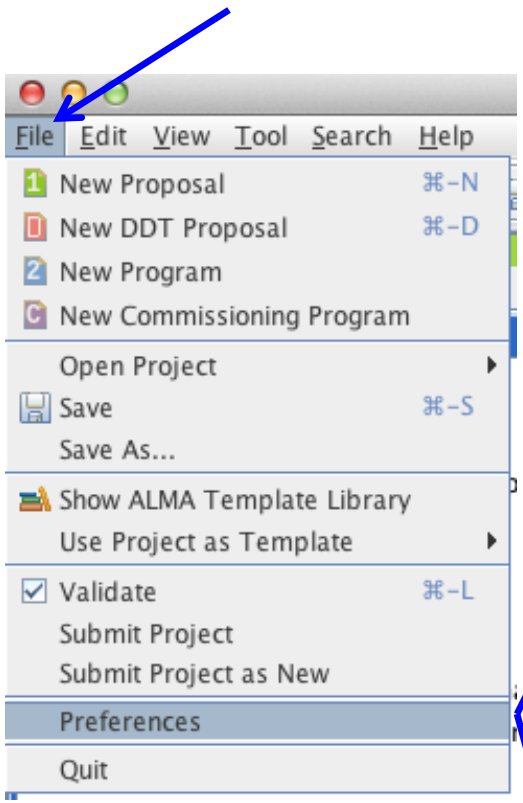
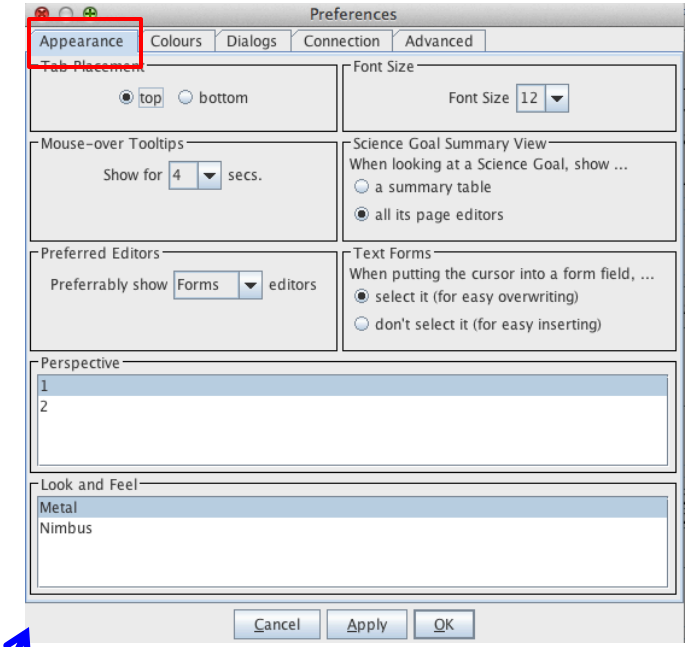
ScienceGoal (B7 continuu
ScienceGoal (B7 CO(9-8)
ScienceGoal (B9 continuu
ScienceGoal (B3 spectral
ScienceGoal (B3 continuu
ScienceGoal (B6 continuu
ScienceGoal (B7 continuu
ScienceGoal (B6 continuu
ScienceGoal (B3 continuu
ScienceGoal (B6 12CO (2
ScienceGoal (B6 13CO (2
ScienceGoal (B6 spectral
ScienceGoal (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
PointingPattern
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
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

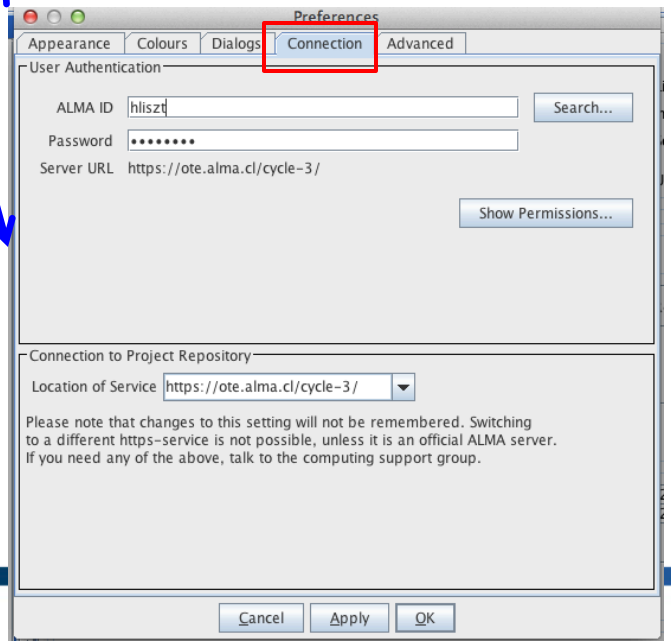
When the time is ripe … validate & submit

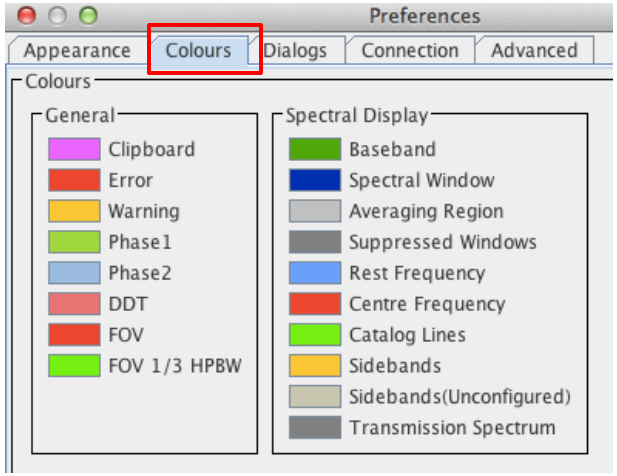


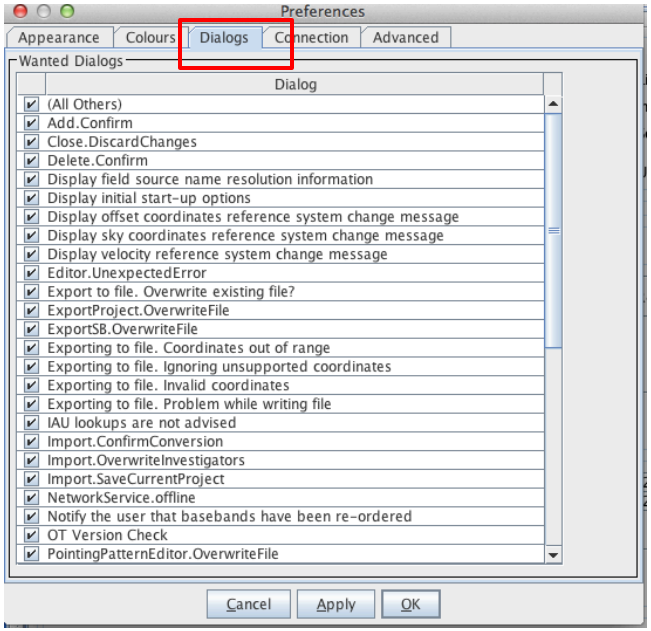
Use preferences to customize



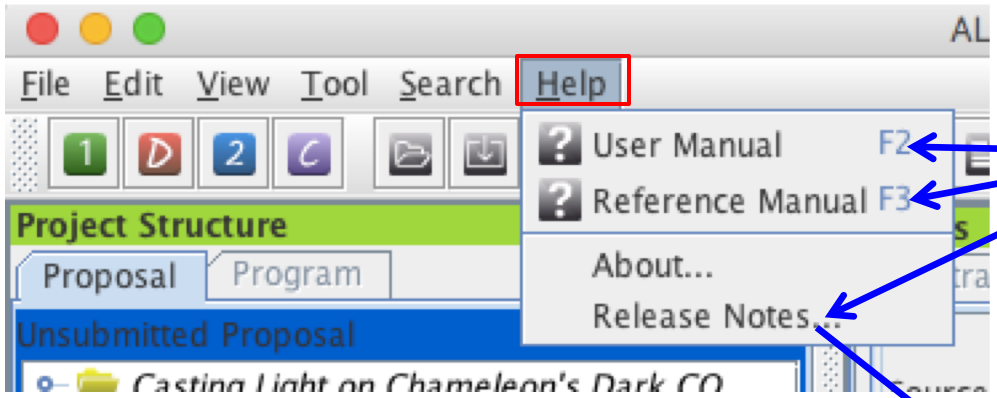


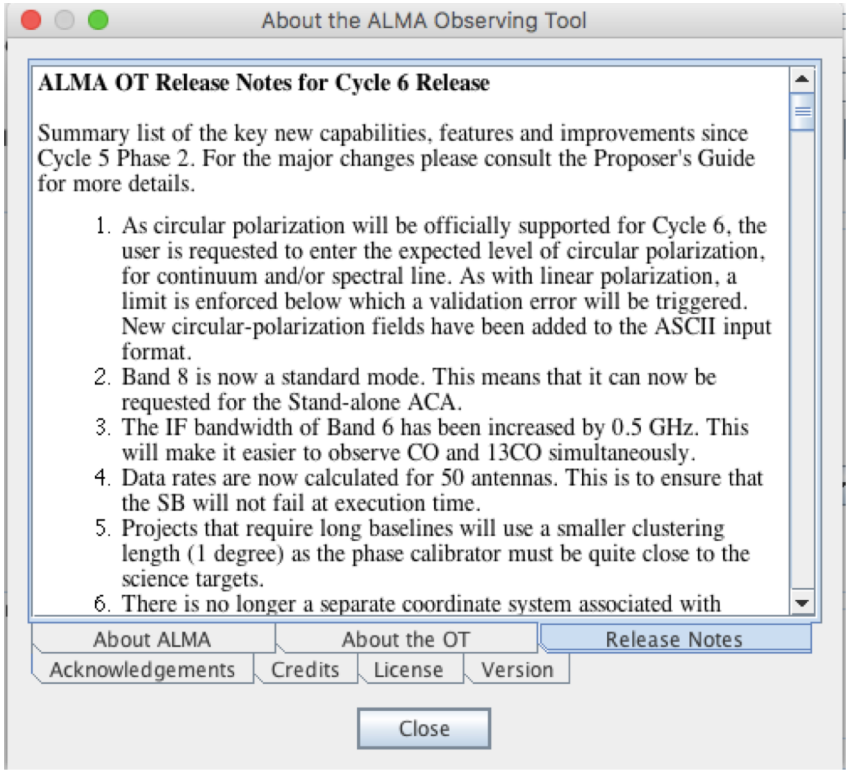


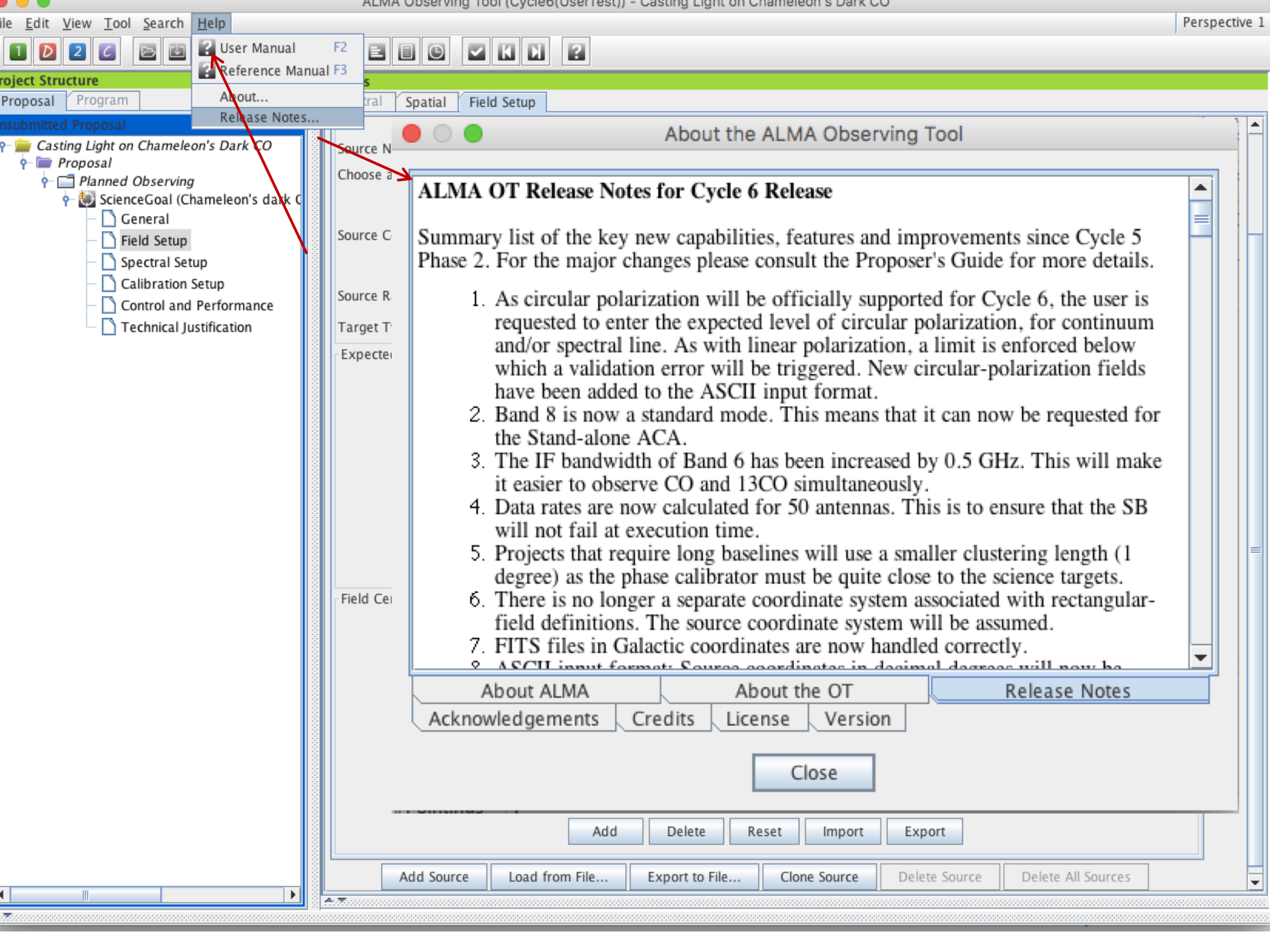




Don’t be afraid to ask for directions






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

- 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)

Observatory News

Announcement of 3mm VLBI in Cycle 7
Jan 07, 2019

ALMA Cycle 7 Pre-Announcement
Dec 19, 2018

Job Opening: Head of ALMA Department of Science Operations
Dec 05, 2018

More...

NRAO News

Multi-Messenger Astrophysics: Insights from Combining Gravity and Radio Waves
Feb 16, 2019

ALMA Data Reduction Party
Mar 13, 2019

New Horizons in Planetary Systems
May 13, 2019

More...

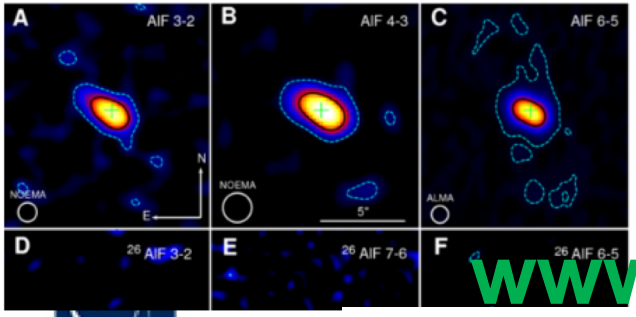
Status

Configuration Schedule
Cycle 6 Highest Priority Projects

Refereed publications: 1309
Last observed source:
Northeast_Section_of_NGC6334
Current configuration: C43-1

More...

Science Highlights - An ALMA Detection of the Radioactive Molecule 26AlF in a Stellar Merger Remnant.

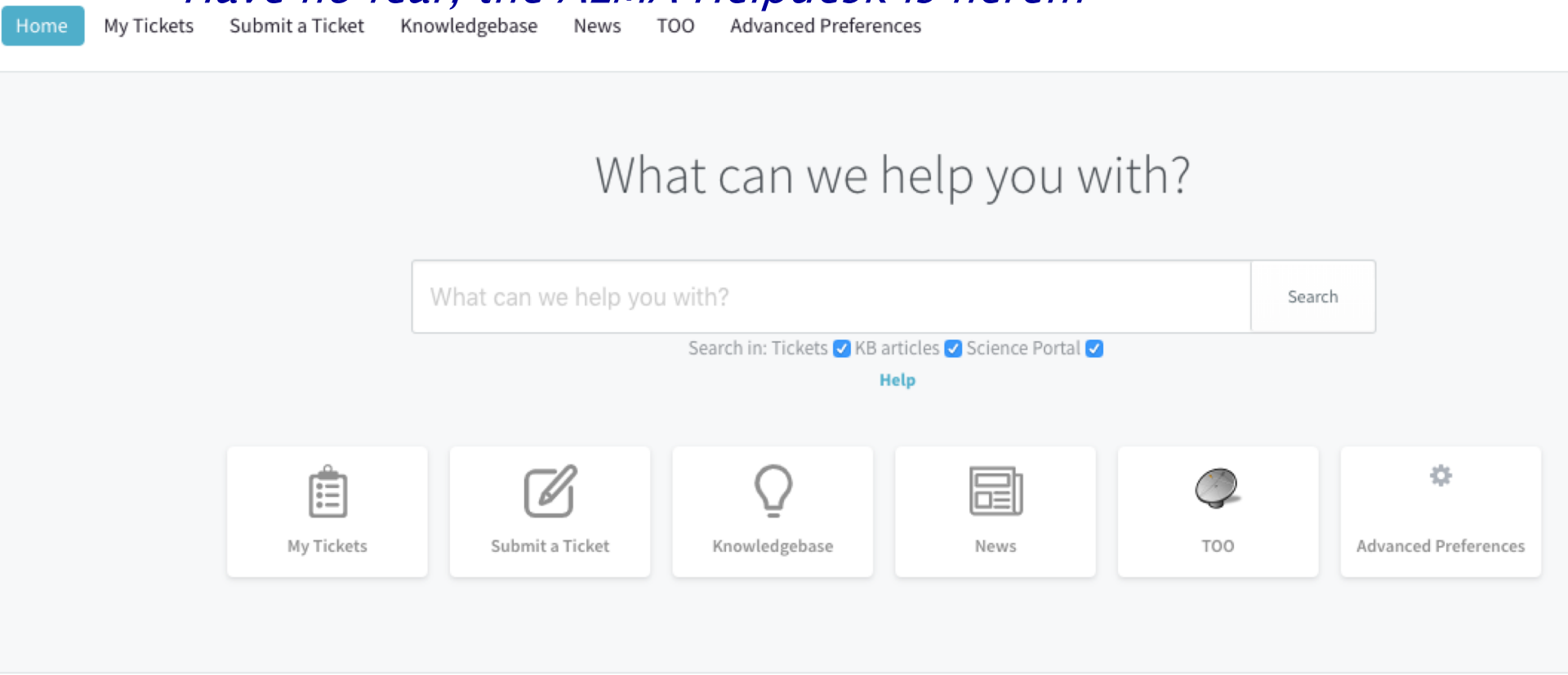


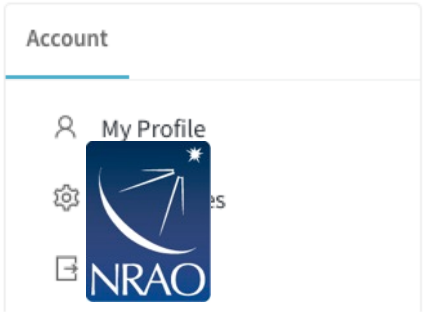
Although diffuse Galactic gamma-ray emission from the isotope of aluminum, ^{26}Al, was first detected in the 1980s, the identification of the source of emission has been hard to pinpoint due to the poor spatial resolution of gamma-ray observations. In a recent Nature paper, a team led by Dr. Kaminski has made use of sensitive, high-resolution observations with Band 6 and the newly commissioned Band 5 on ALMA, as well as observations with NOEMA, to detect millimeter-wave emission from an isotopologue of aluminum monofluoride (^{26}AlF) towards the stellar merger remnant CK Vul (aka *Nova 1670*; see Figure). These observations have provided information about the nature of one of the stars in the merger. I.e., in the case of CK Vul, the ^{26}Al is likely produced within a star with an initial stellar mass in the range of 0.8-2.5 M_{sun} that has already formed a condensed degenerate core. During the merger, the ^{26}Al from the outer layers of the helium core are ejected. The authors propose that unless there is significant amounts of ^{26}Al in atomic phase, in molecules other than ^{26}AlF, and in solids.

I could use a hand...

ALMA

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





ALMA

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.

NRAO