An Introduction to the Cycle 10 ALMA Observing Tool

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

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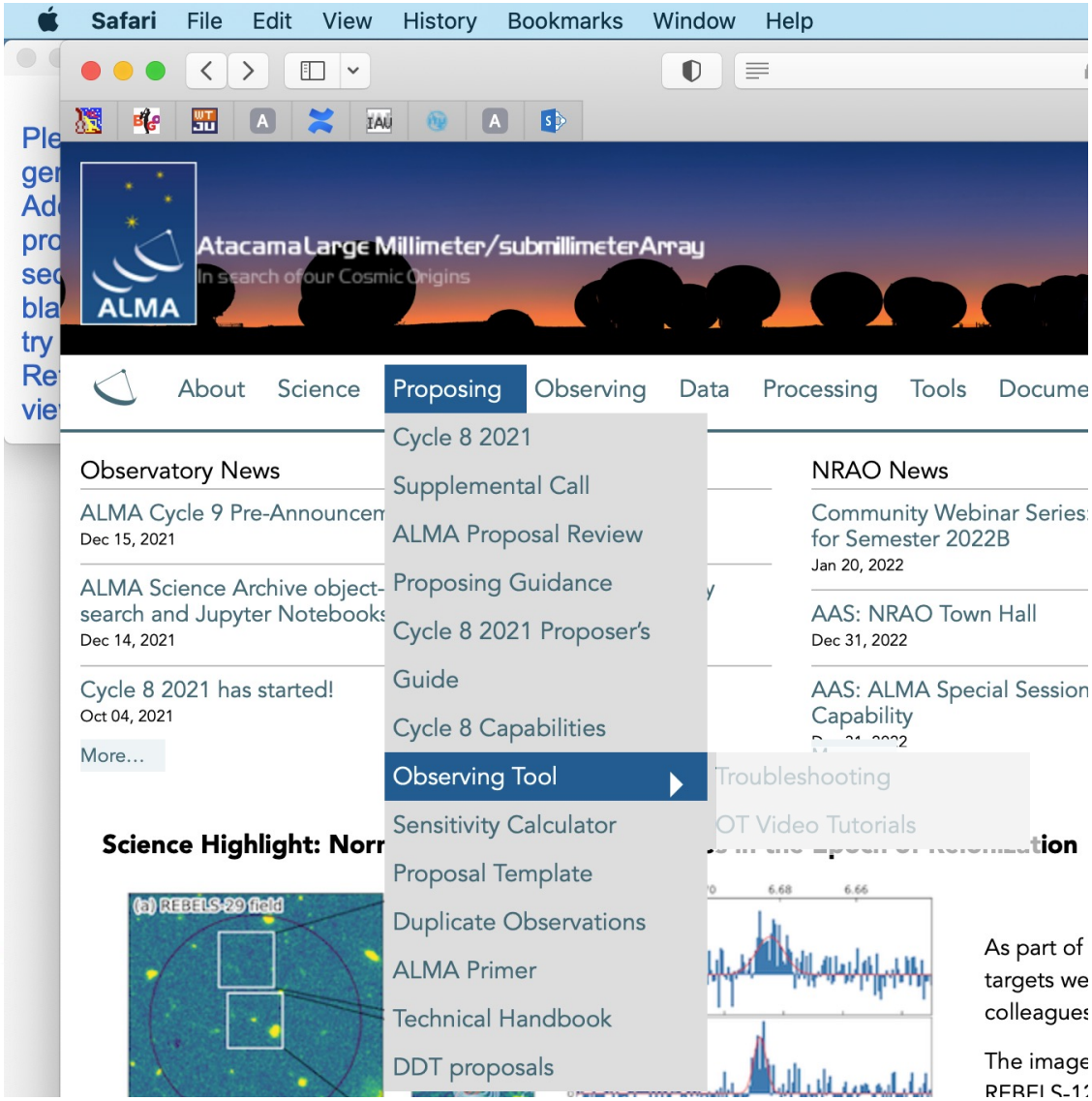
Author: Harvey Liszt

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

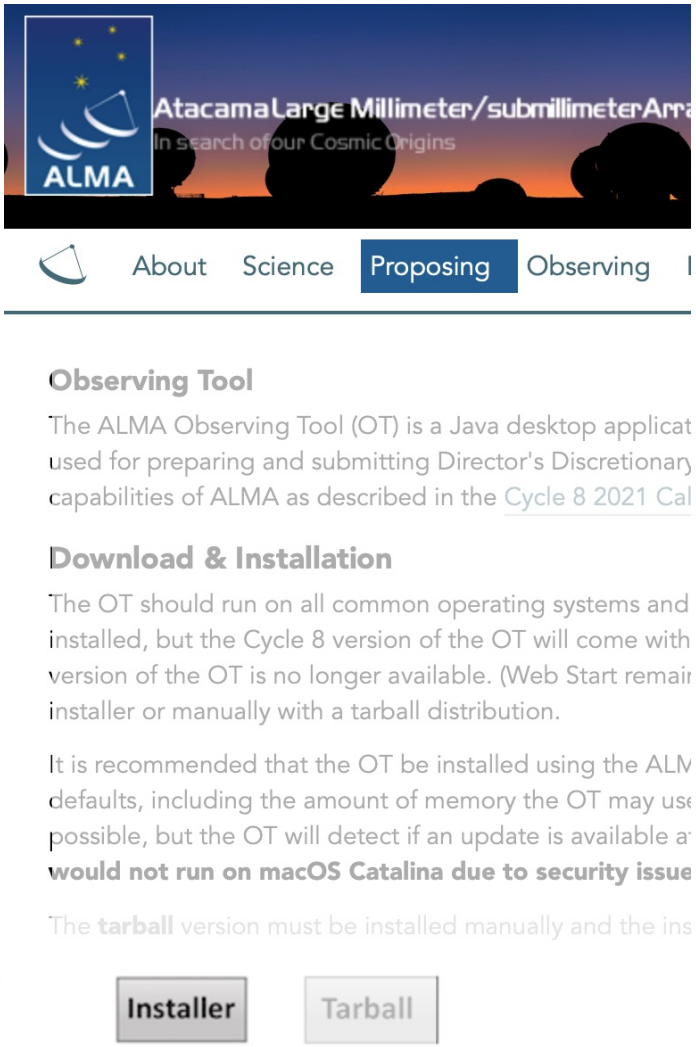
Where is the OT?

On the science portal under Proposing, click on Observing Tool



Installing the ALMA OT

You will land here to access the OT's installer

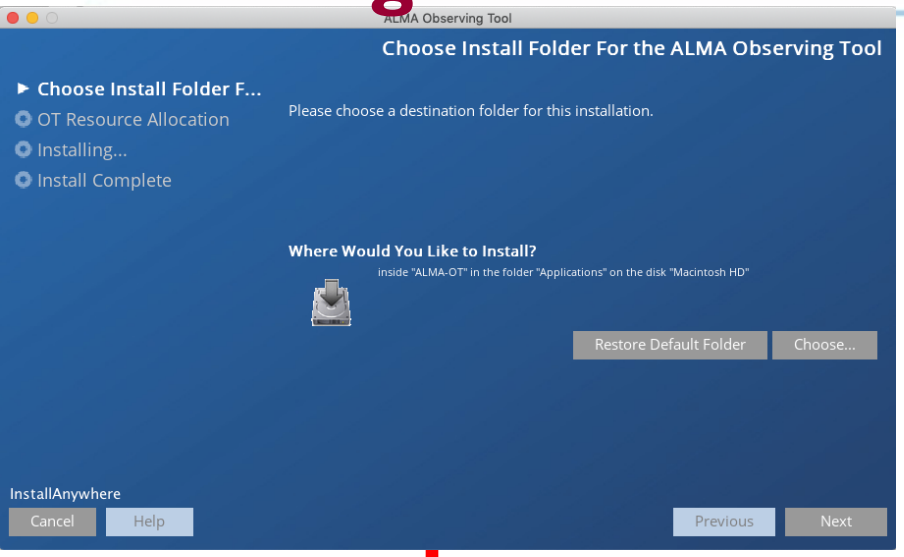


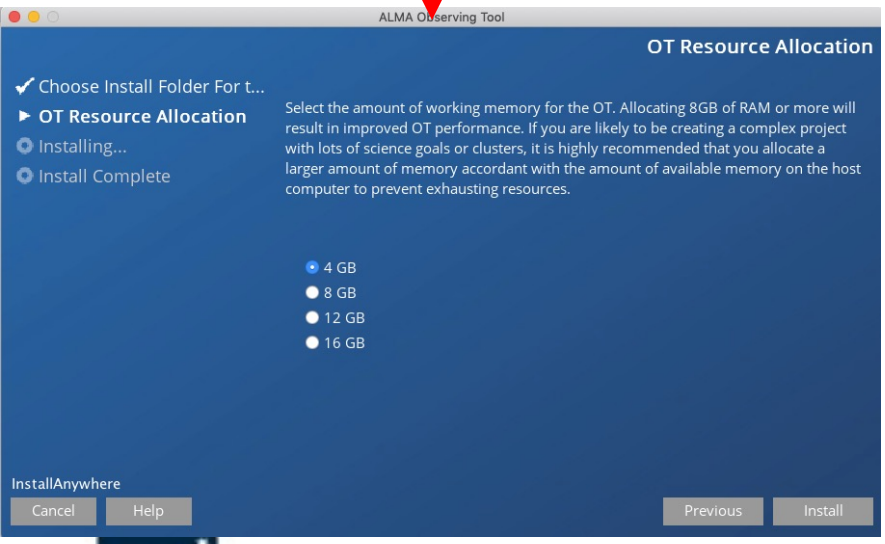
Installer Page

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

This takes you to the installer's own page

Installing the ALMA OT

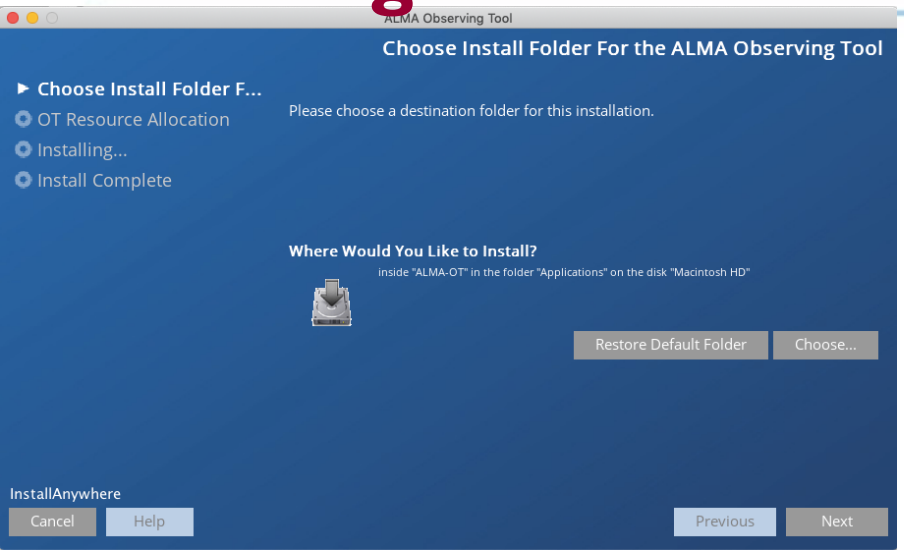


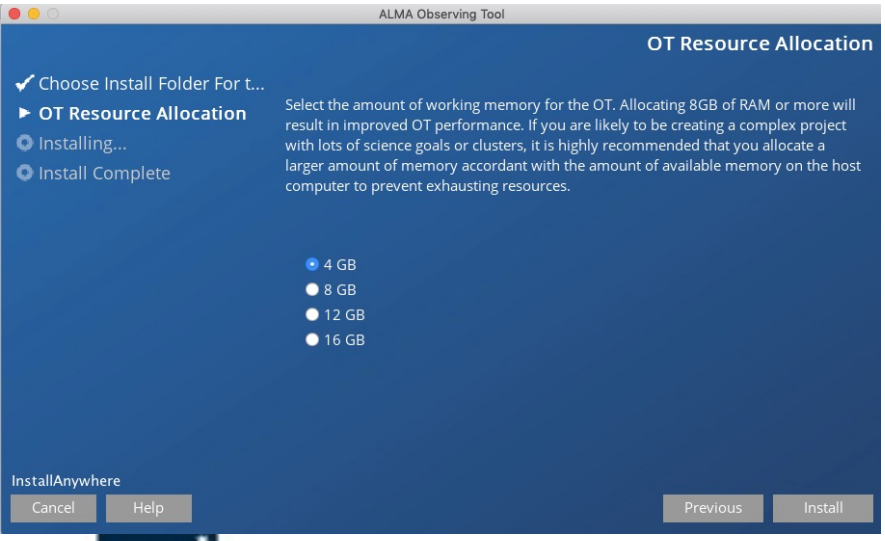


The installation package will ask where to install with a default in 'Applications' for MacOS

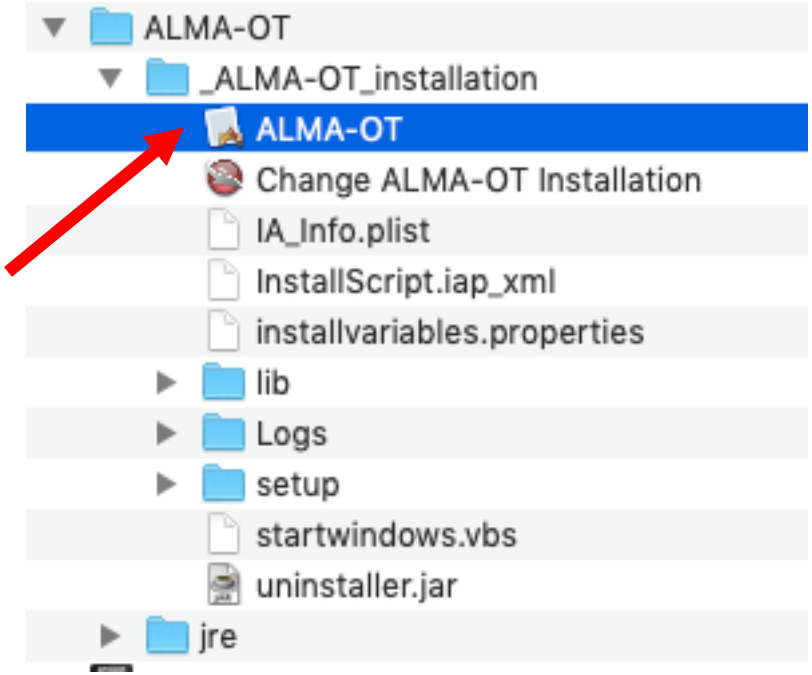
It will ask for a heap size. Larger is better. You can specify a number greater than your machine memory without causing problems

Installing the ALMA OT



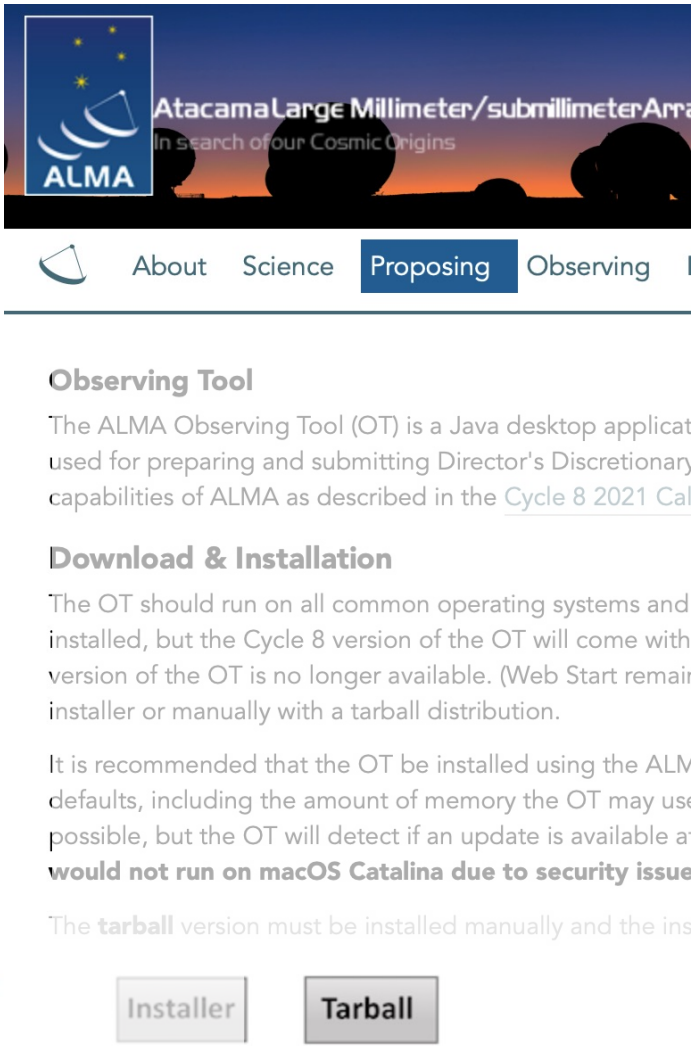


After installation there will be an application in the destination directory and an icon on the desktop



If the installer doesn't work for you

There is a manual installation available for each OS



Take the JRE

Tarball Download Page

If you experience problems with the new OT Installer, the tarball version re
to use a pre-installed version of Java 11, a fourth version of the tarball inst

The installation instructions for the tarball version are:

1. Download the tarball in your preferred format:

- OT tarball for MacOS with a x64-based JRE included
- OT tarball for Linux with a x64-based JRE included
- OT tarball for Windows with a x64-based JRE included
- OT tarball with no JRE included

2. Unpack the tarball (it will unpack into its own directory)

3. Run post-installation setup

- Linux or Mac OS:

  cd ALMAOT-C8-2021/setup
  ./Setup-Linux.sh
  cd ..

  Would be Cycle9 now

- MS Windows

  -> Go to the ALMAOT-C8-2021/setup directory

  -> Double click "Setup-Windows" (may read "Setup-Windows.cmd

4. Start up the OT

- Mac OS:

  ./ALMA-OT.app or double-click in a Finder window

- Linux:

  ./ALMA-OT.sh or double-click in a window manager if this is config

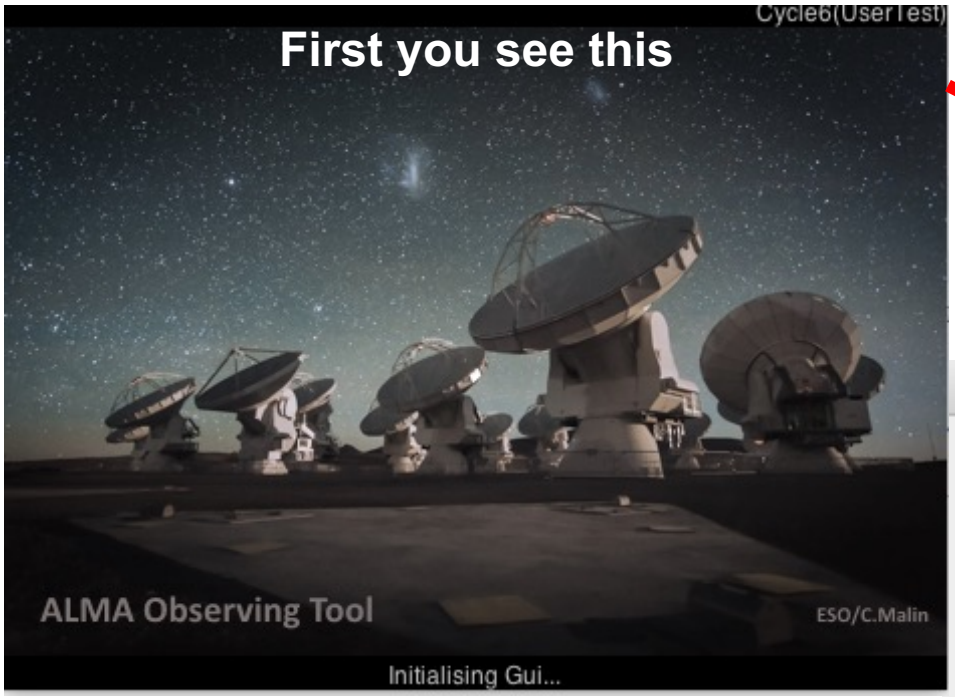
- MS Windows

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

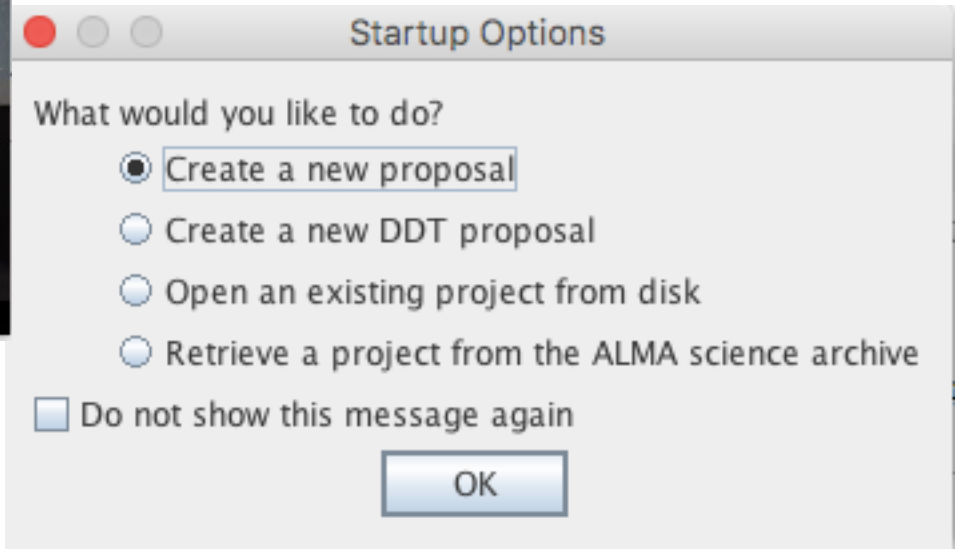
To the OT tarball's page

When the ALMA OT starts

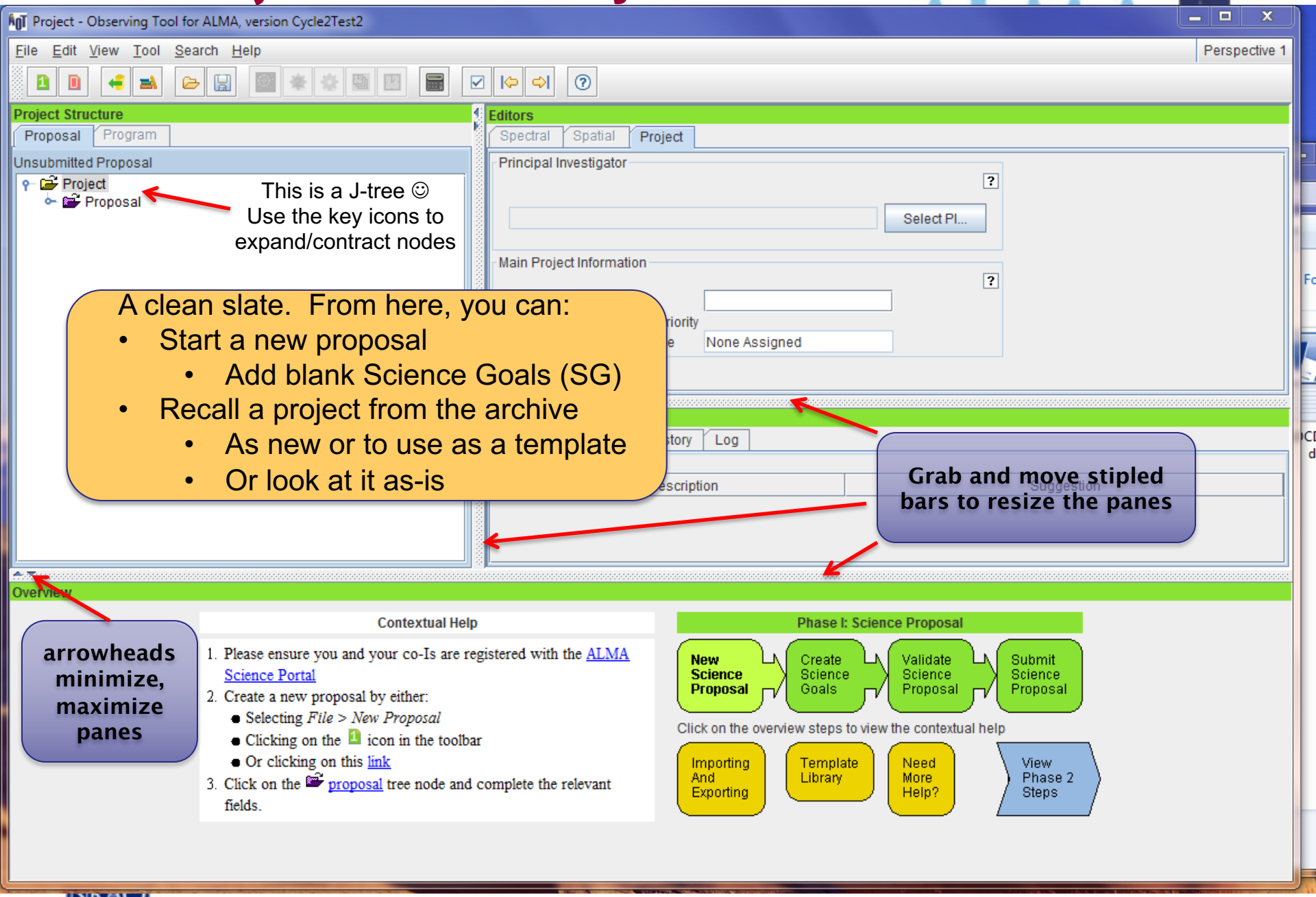
PI: Make sure to use the Cycle 9 OT from the Science Portal



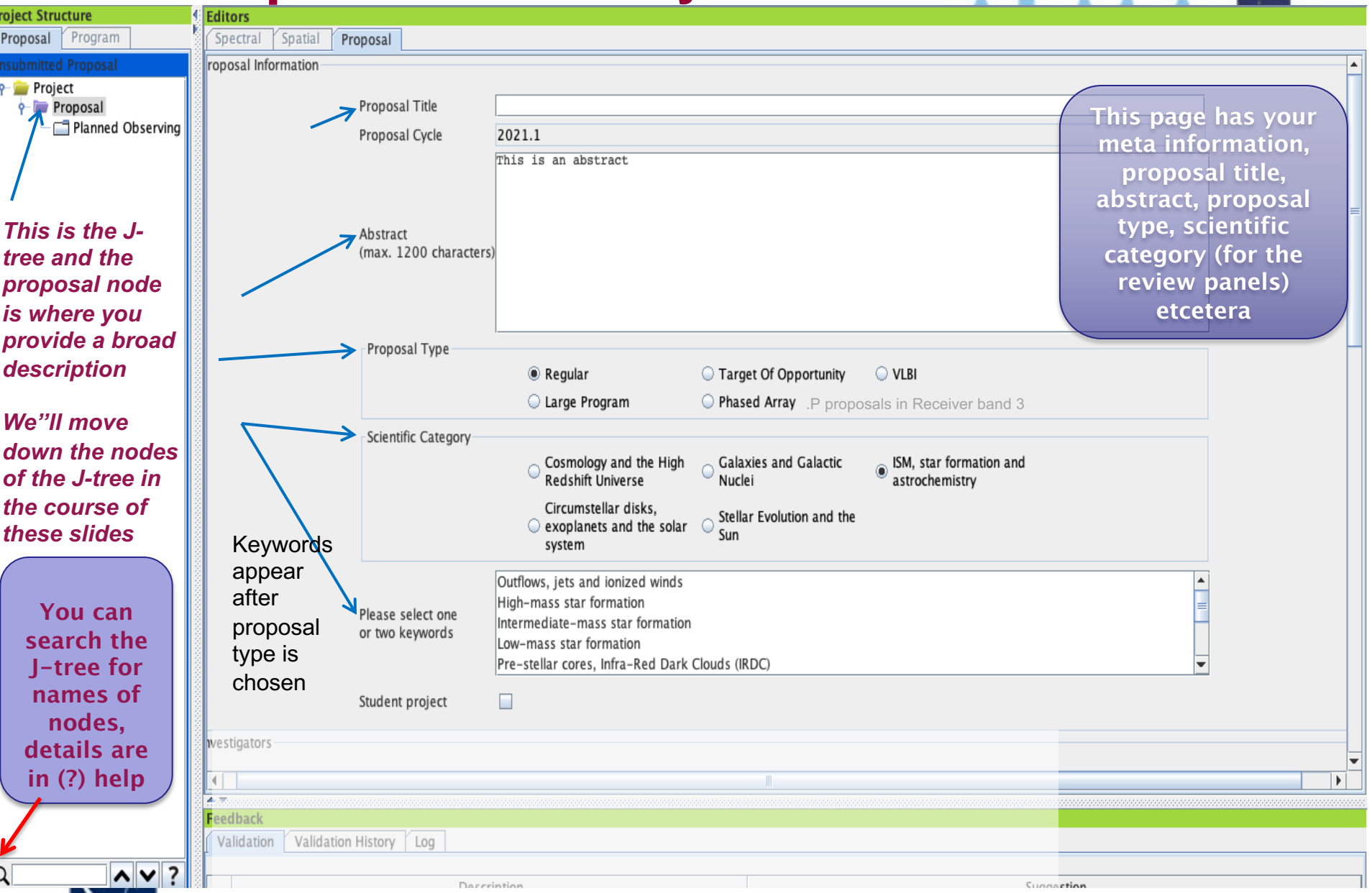
Then you see this



The Project node in the J-tree



The Proposal node in the J-tree



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

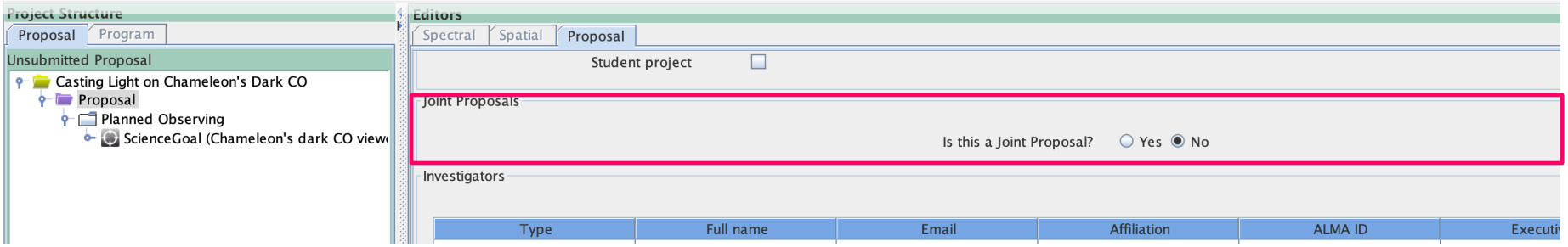
You can search the J-tree for names of nodes, details are in (?) help

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

Keywords appear after proposal type is chosen

NRAO

New! Joint Proposals w/VLA, VLT, JWST - I



Joint Proposals

Is this a Joint Proposal? Yes No

Type of Joint Proposal Main Partner

Is ALMA the Main partner?
- During the ALMA call it must be
- Outside the ALMA call, it can't be

+ Edit the list of partners
+ Provide info about each partners observing

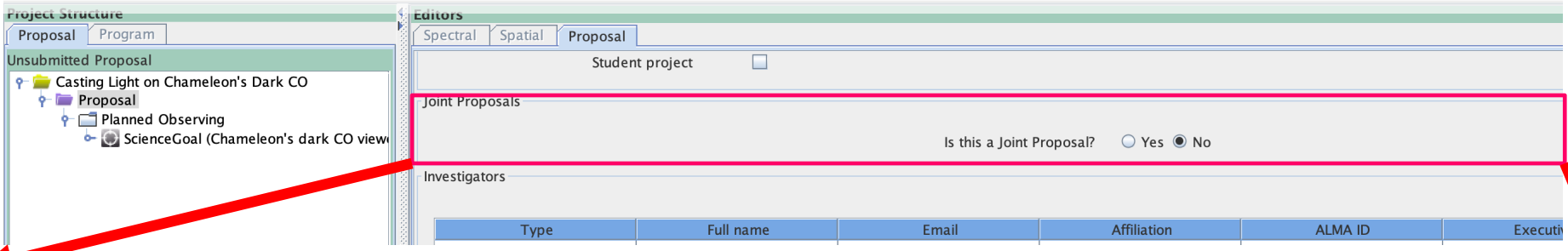
Observatory	Project Code	Requested Time
JWST	N/A	0.00 h
VLA	N/A	0.00 h
VLT	N/A	0.00 h

Add Partner Observatory Remove Partner Observatory

Please provide the technical justification for the time requested on JWST as a joint proposal

Please provide the technical justification for the time requested on VLA as a joint proposal

New! Joint Proposals w/VLA, VLT, JWST- II



Joint Proposals

Is this a Joint Proposal? (•) Yes ( ) No

Type of Joint Proposal (•) Main ( ) Partner

Is ALMA the Main partner?
- **During the ALMA call it must be**
- **Outside the ALMA call it can't be**

Edit the list of partners
Provide info about partners if ALMA is main

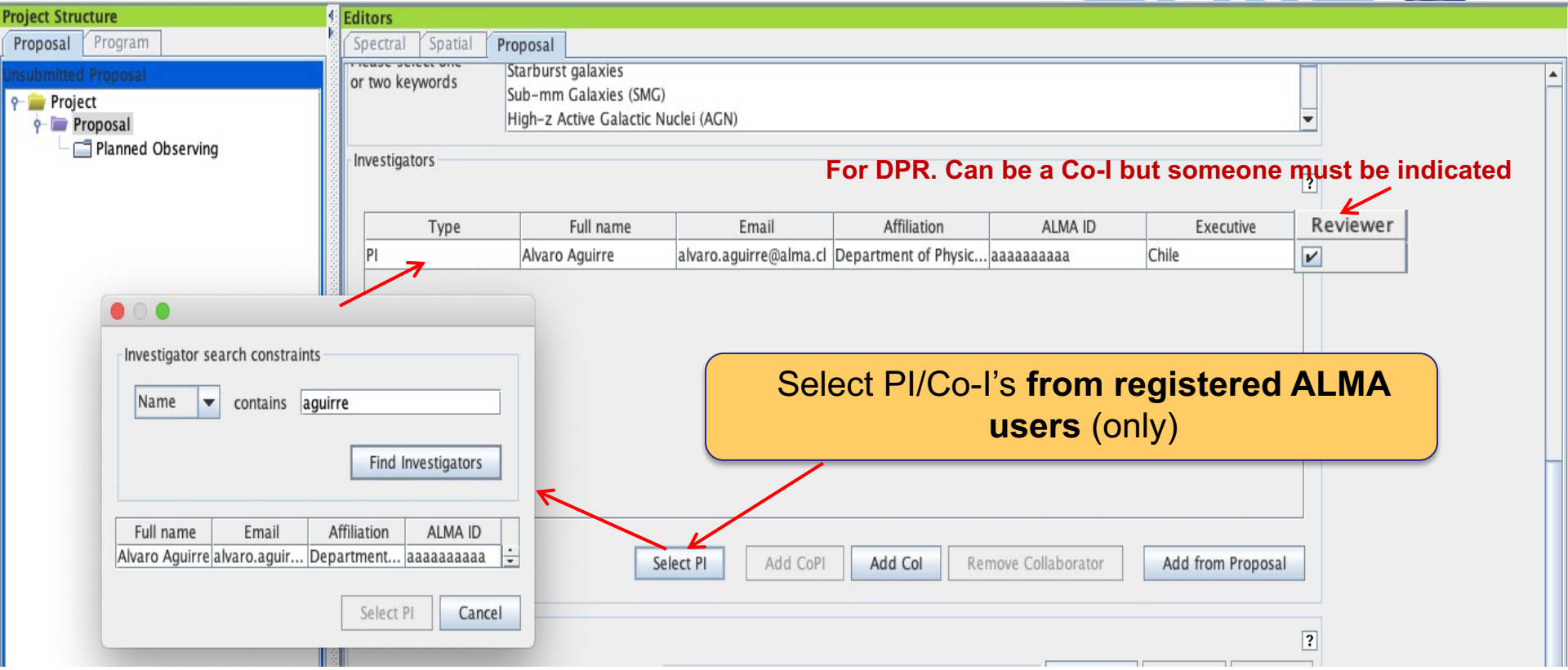
Observatory	Project Code	Requested Time
JWST	N/A	0.00 h
VLA	N/A	0.00 h
VLT	N/A	0.00 h

Add Partner Observatory | Remove Partner Observatory

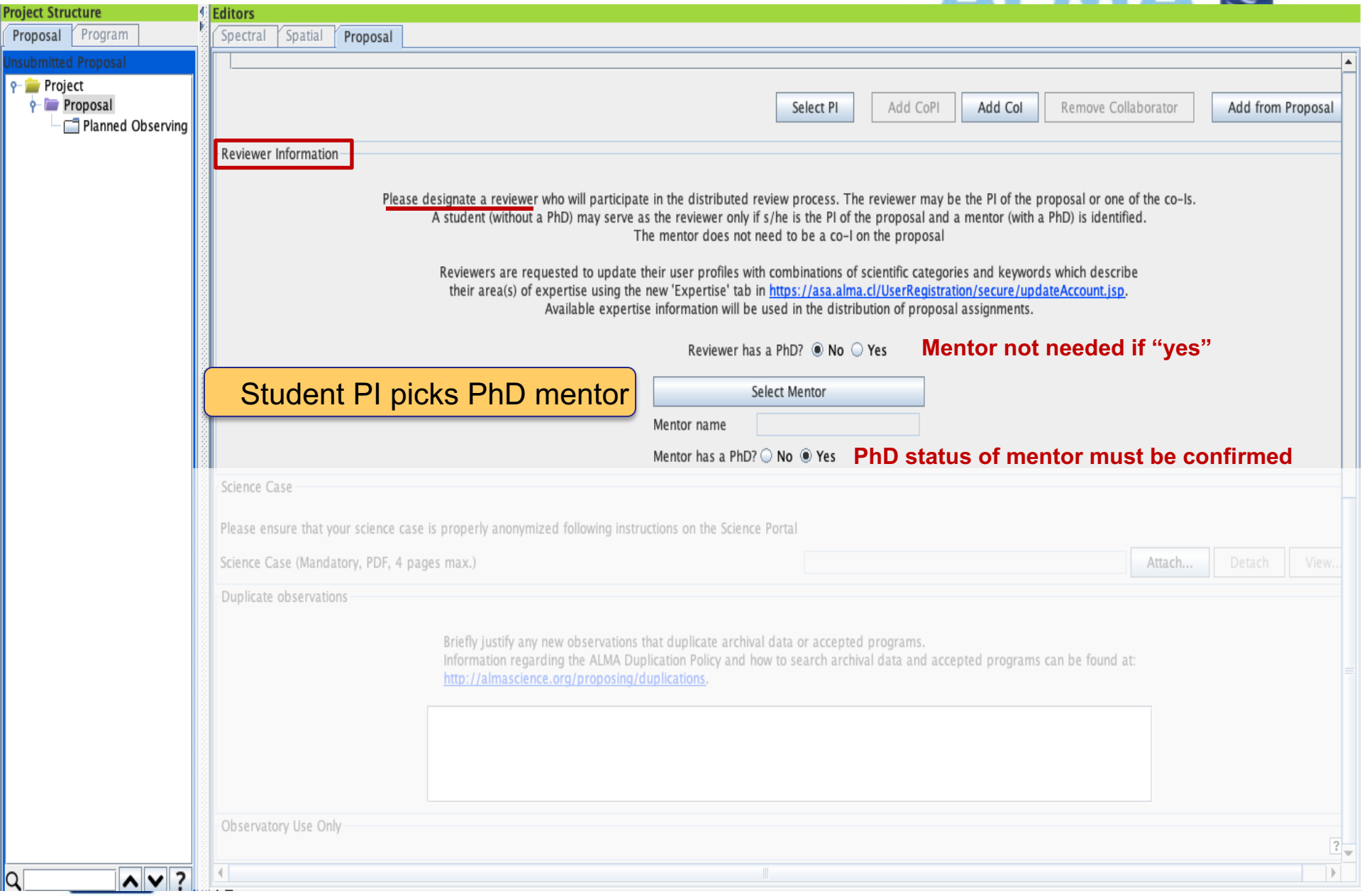
Please provide the technical justification for the time requested on JWST as a joint proposal

Please provide the technical justification for the time requested on VLA as a joint proposal

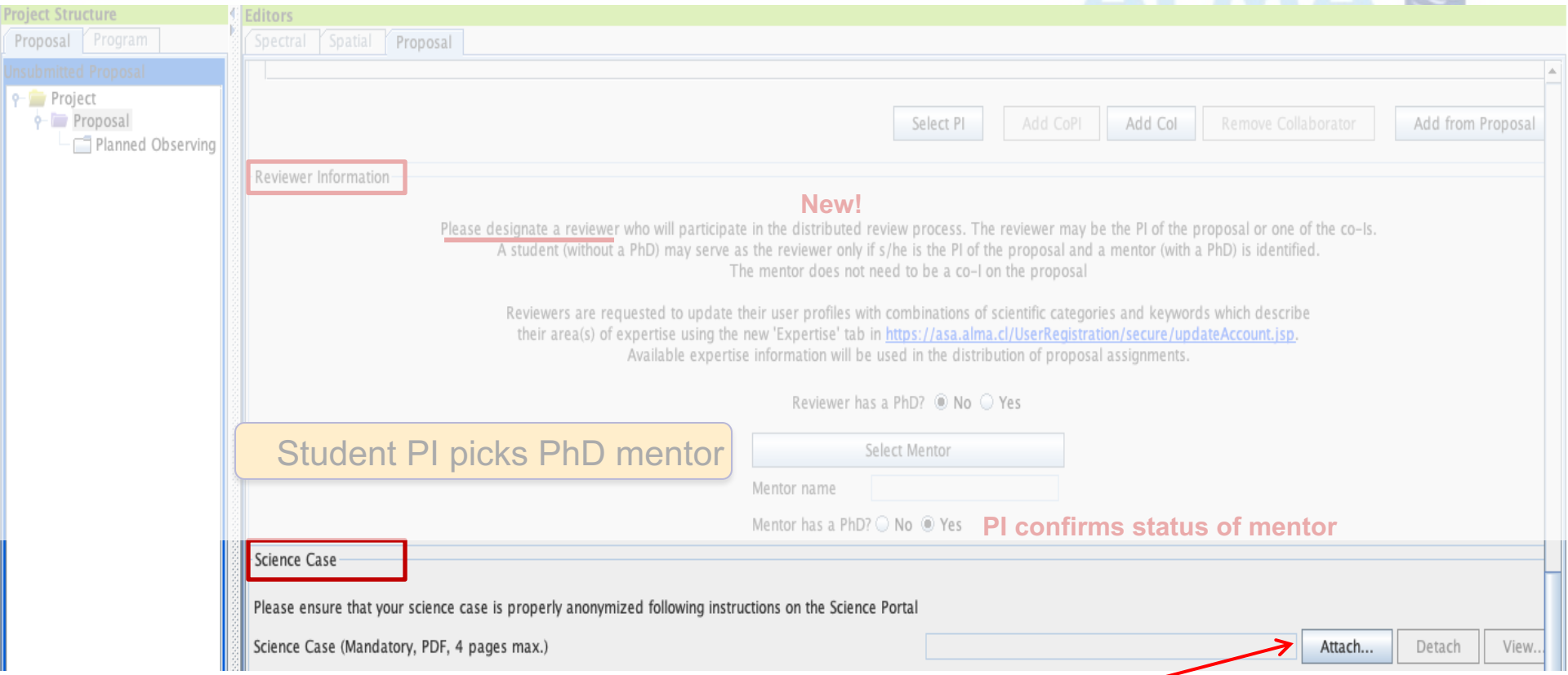
Proposal: pick PI, CoI & designate reviewer



Scroll down, pick reviewer/mentor



Attach the science case as a .pdf

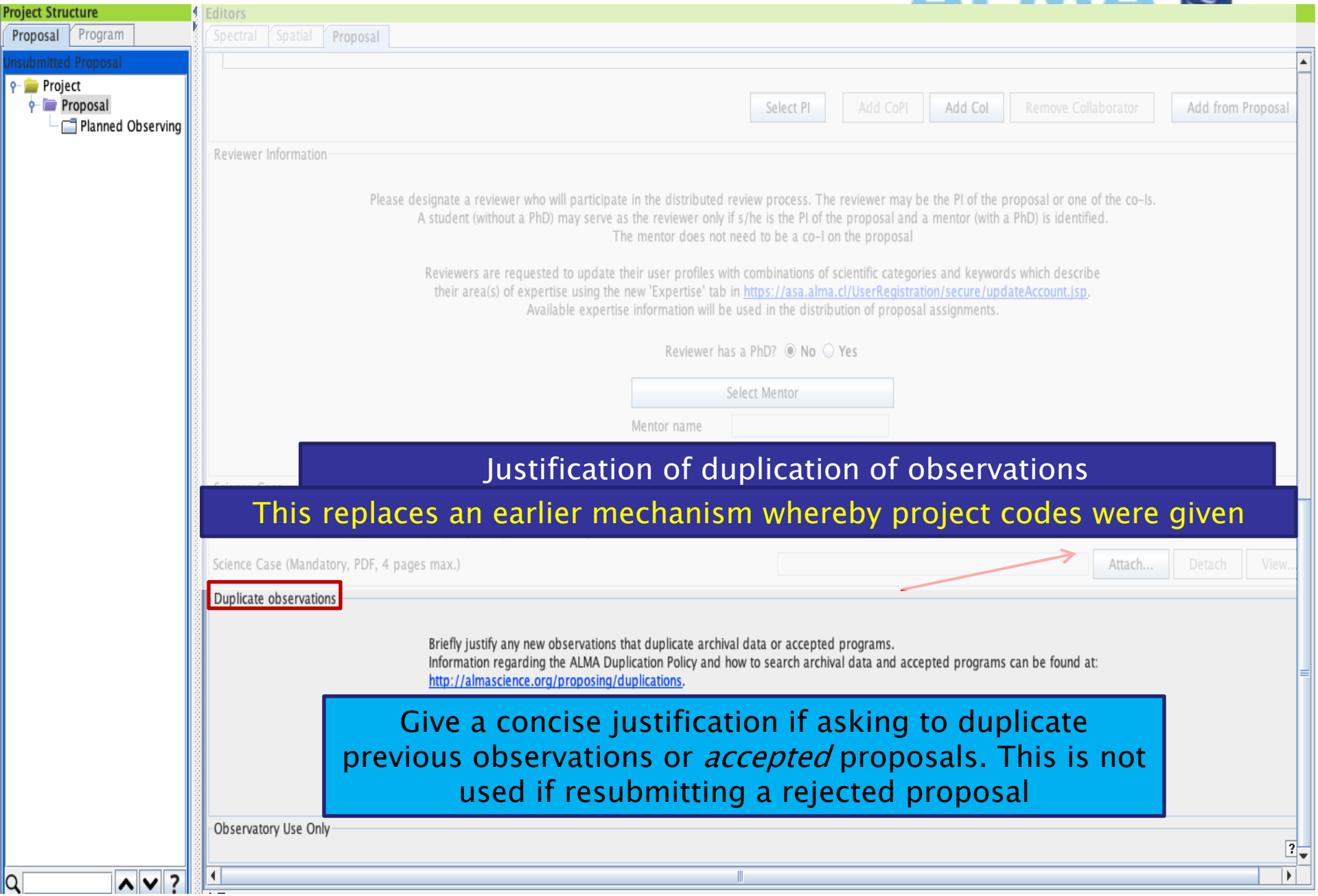


Attach a science case, max 4 page .pdf including figures

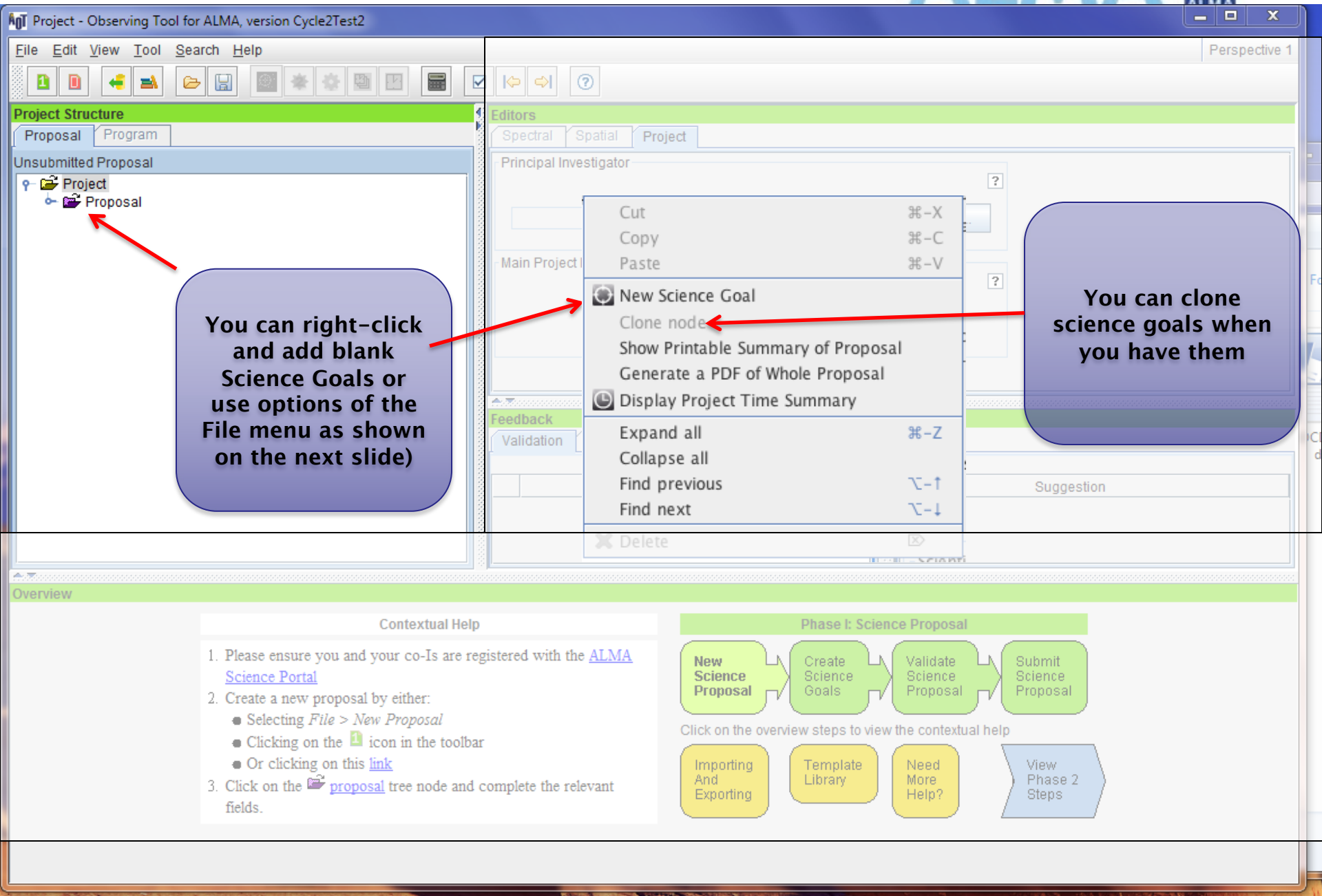
The .pdf may not contain more than 15% of its text in a font below 12pt
Some .pdf creation software pads files with hidden text in small fonts

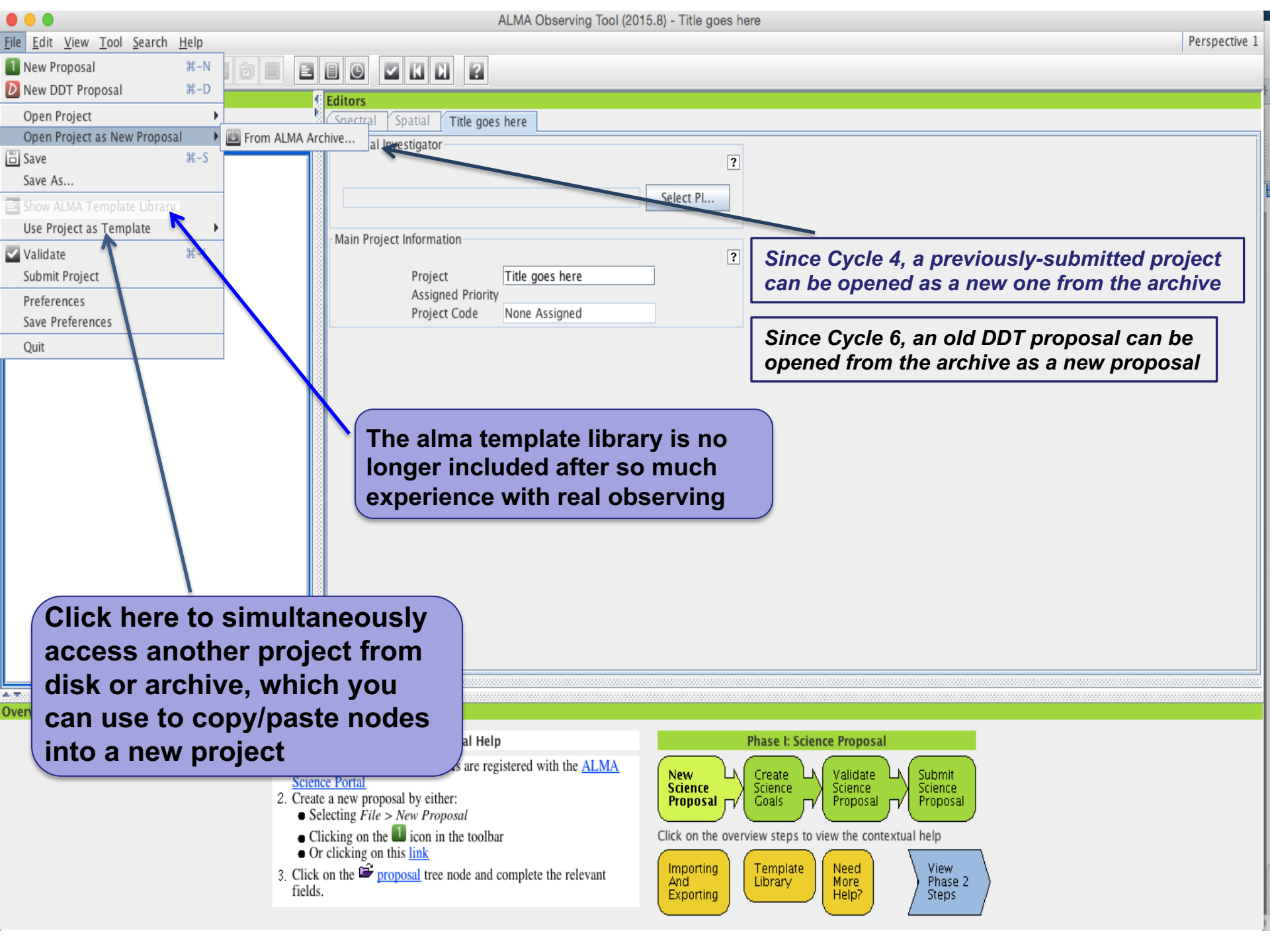
Large proposals are allowed 6 pages and require an additional one page management plan

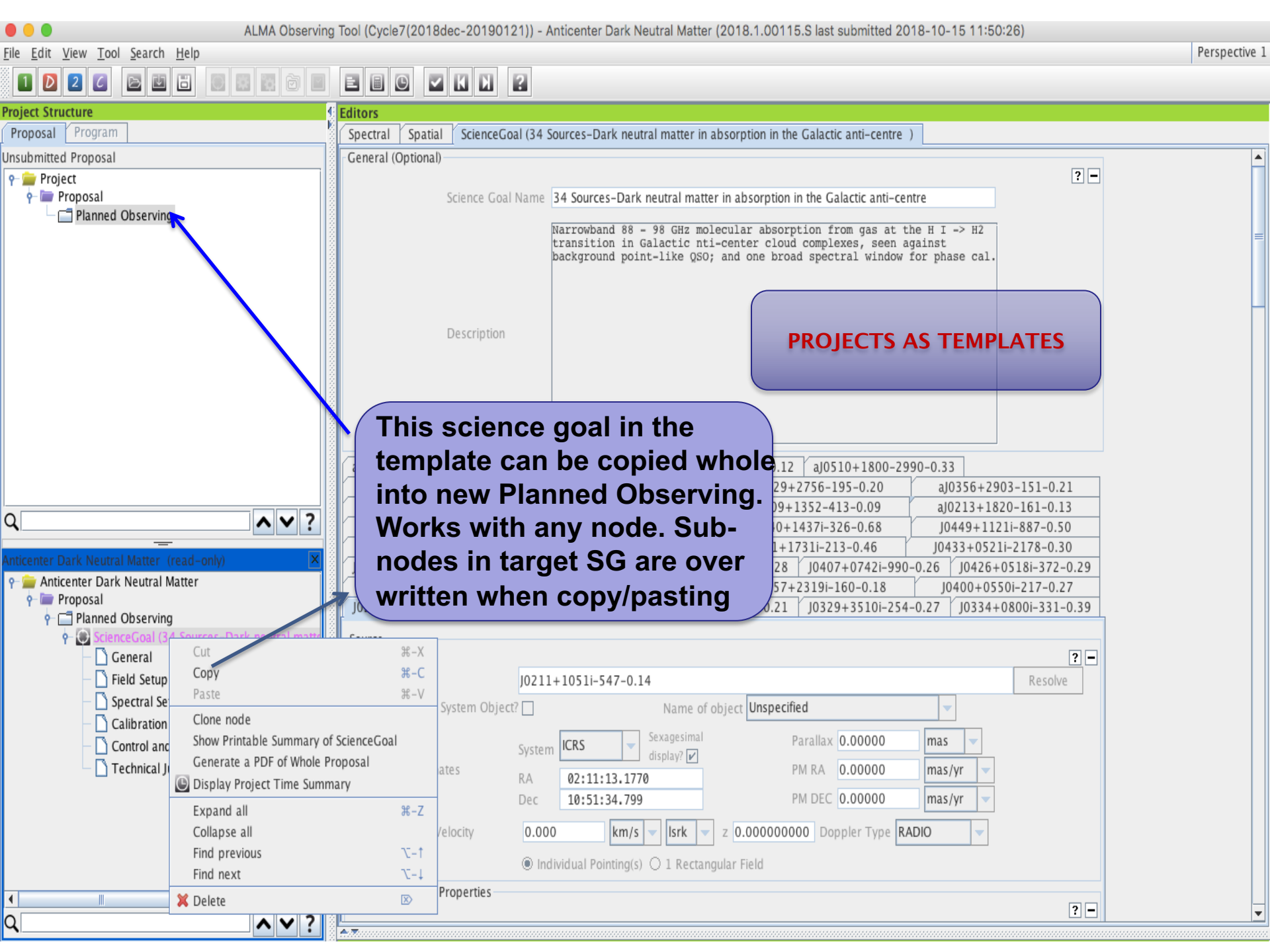
Justify duplicative observing

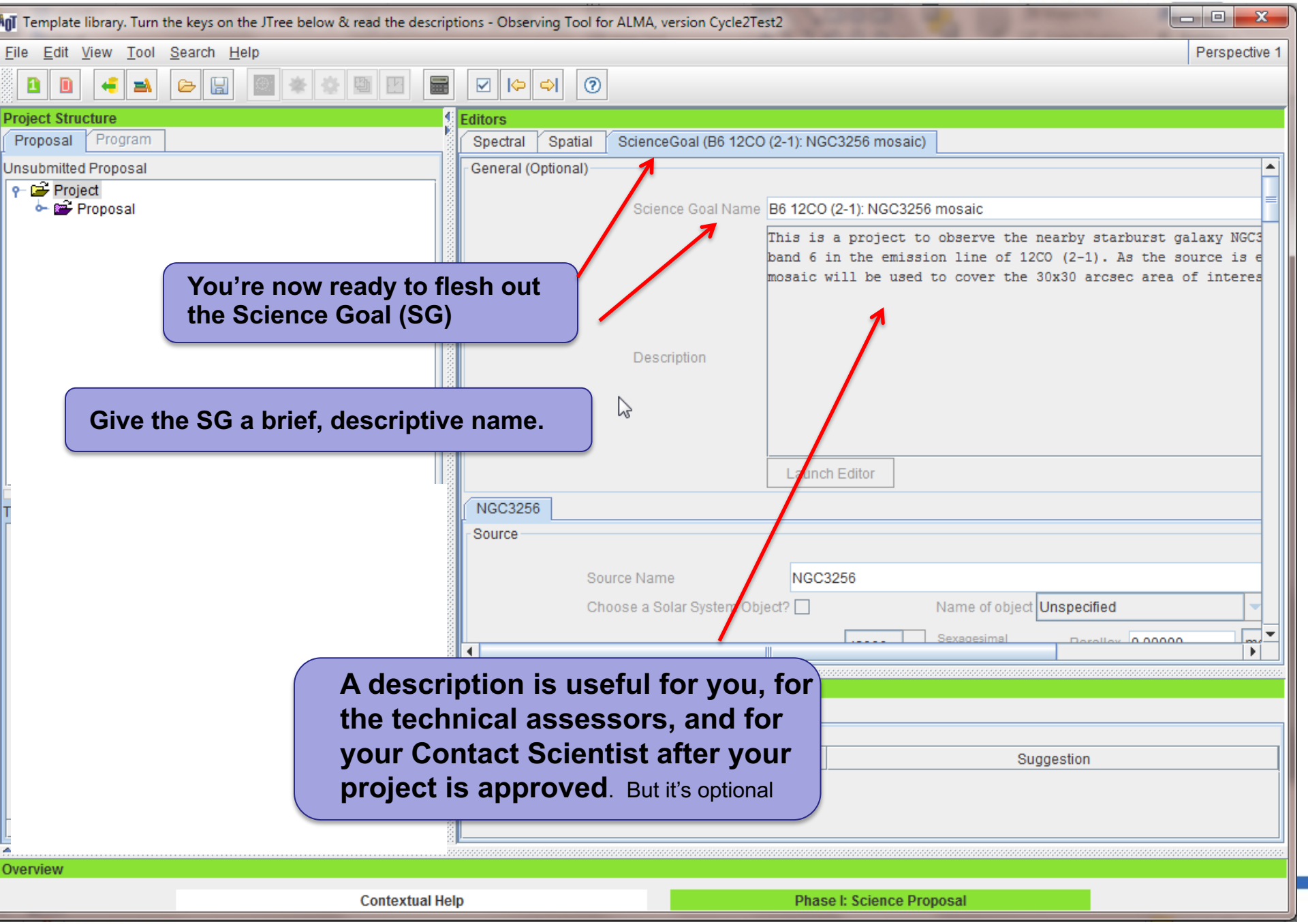


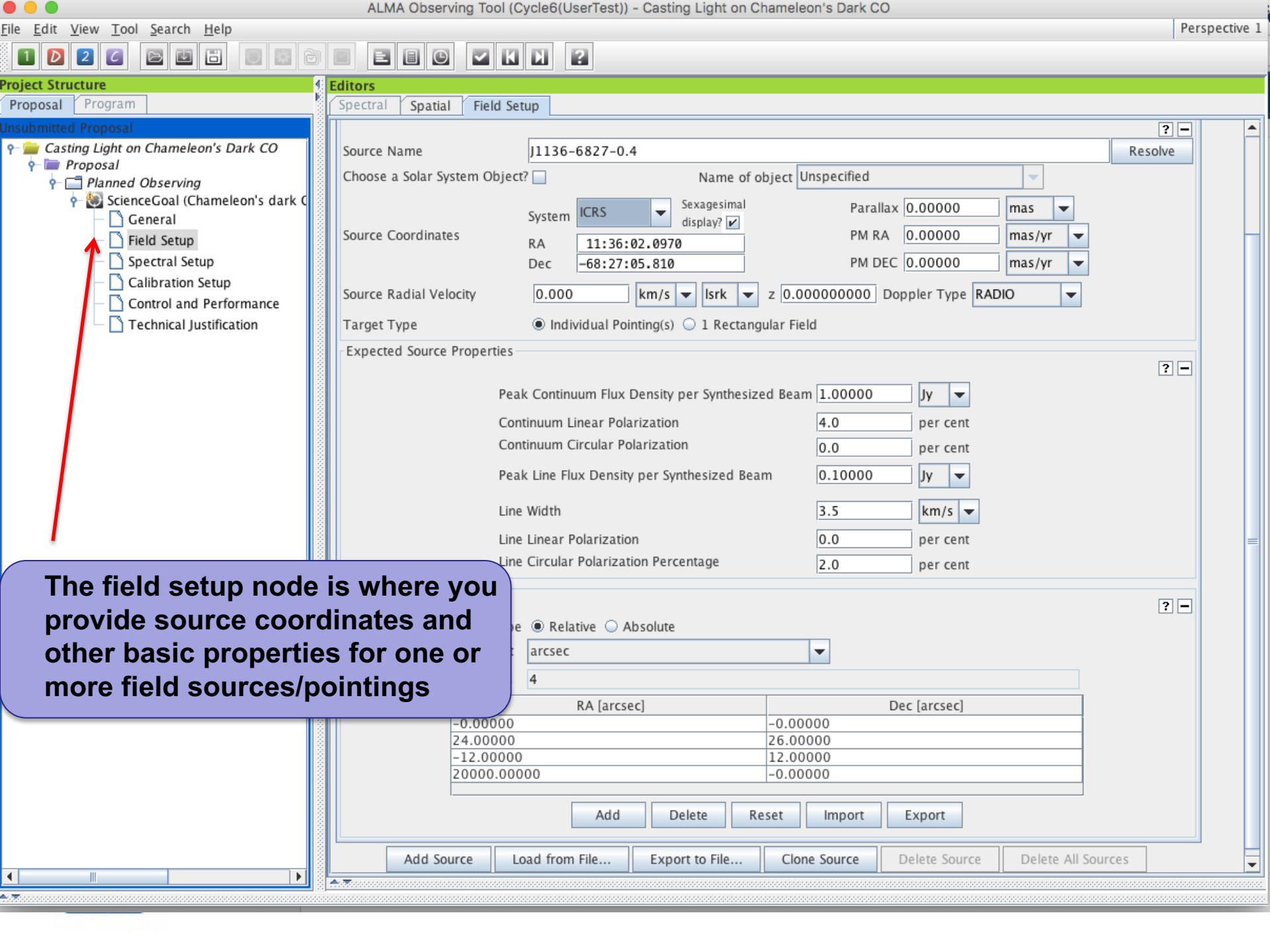
Do some science - add a Science Goal

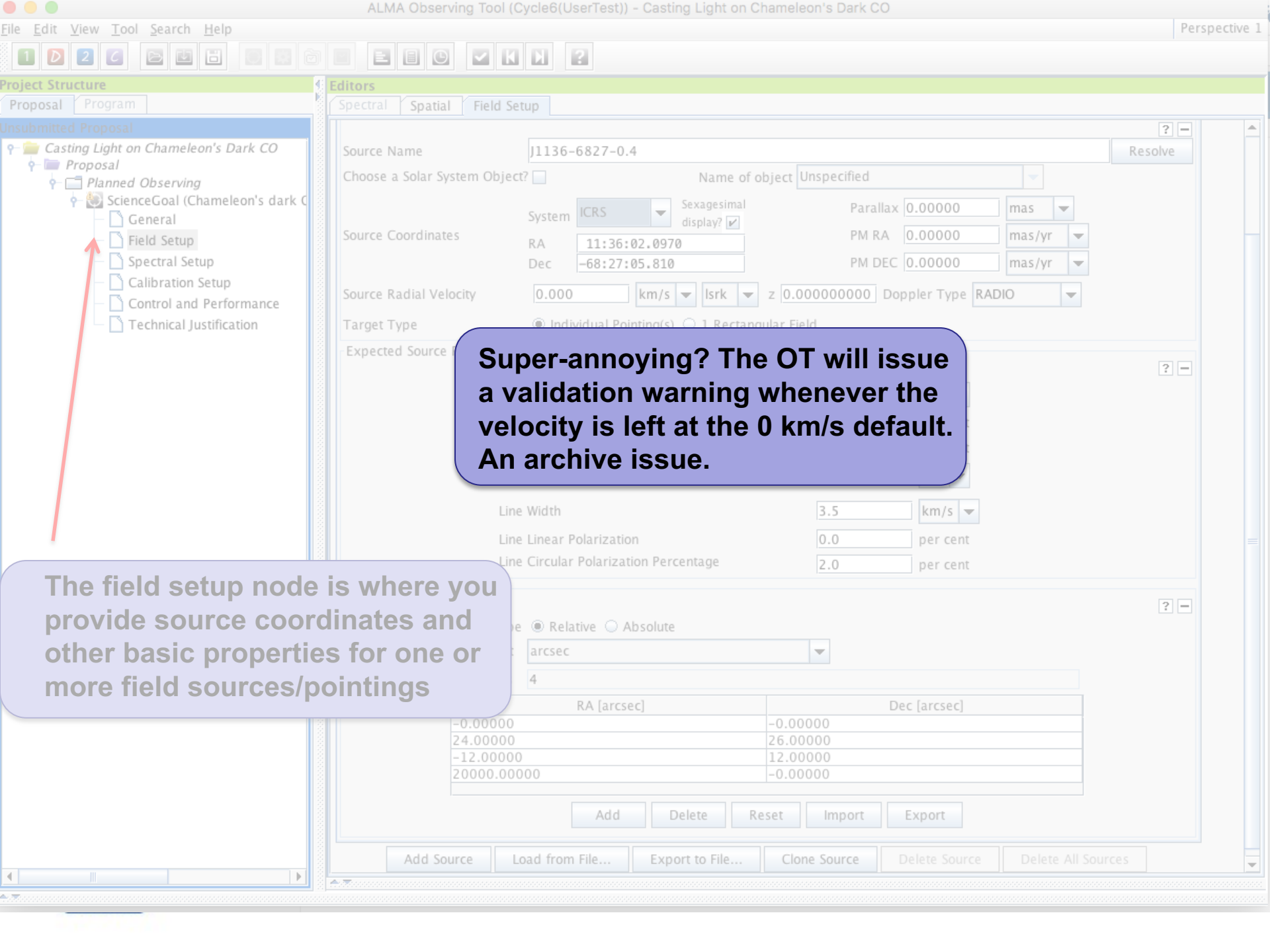


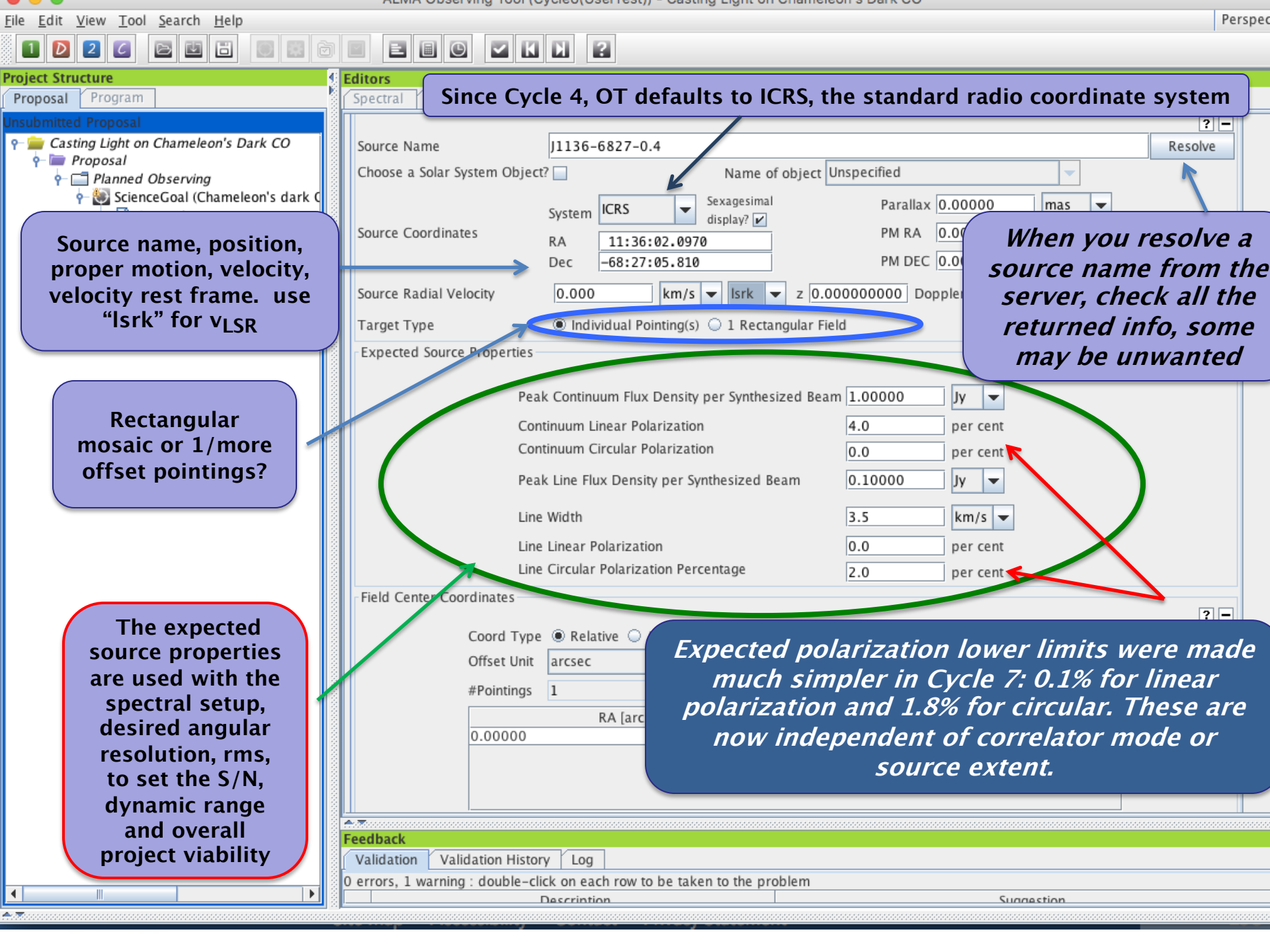

ALMA Observing Tool (2015.8) - Title goes here
File Edit View Tool Search Help
Perspective 1
New Proposal ⌘-N
New DDT Proposal ⌘-D
Open Project
Open Project as New Proposal
From ALMA Archive...
Save ⌘-S
Save As...
Show ALMA Template Library
Use Project as Template
Validate ⌘-I
Submit Project
Preferences
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
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
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

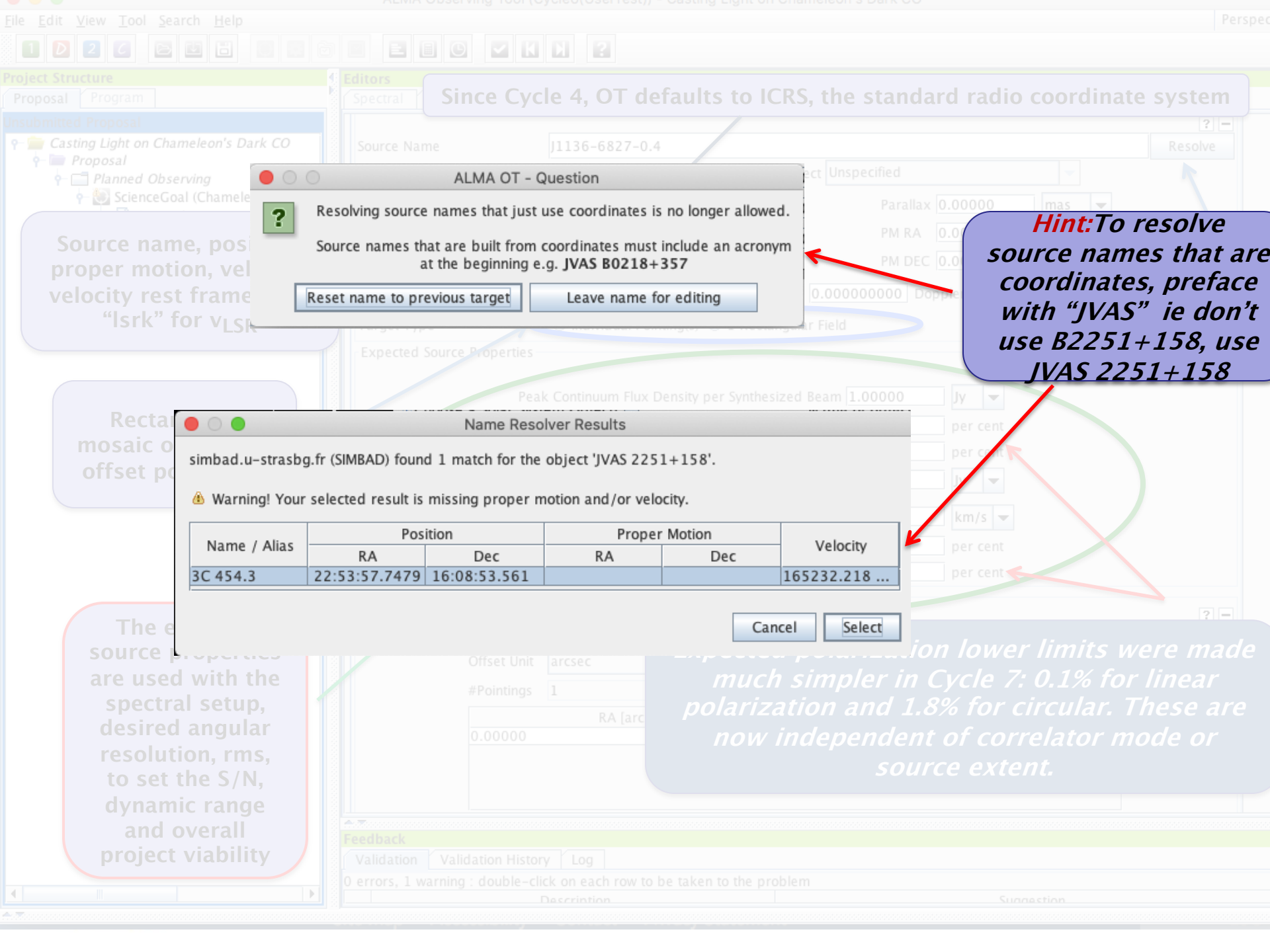

ALMA Observing Tool (Cycle7(2018dec-20190121)) - Anticenter Dark Neutral Matter (2018.1.00115.S last submitted 2018-10-15 11:50:26)
File Edit View Tool Search Help
Perspective 1
Project Structure
Proposal Program
Unsubmitted Proposal
Project
Proposal
Planned Observing
Editors
Spectral Spatial ScienceGoal (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
Description
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.
PROJECTS AS TEMPLATES
This science goal in the template can be copied whole into new Planned Observing. Works with any node. Sub-nodes in target SG are over written when copy/pasting
Anticenter Dark Neutral Matter (read-only)
Anticenter Dark Neutral Matter
Proposal
Planned Observing
ScienceGoal
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
aJ0356+2903-151-0.21
aJ0213+1820-161-0.13
J0449+1121i-887-0.50
J0433+0521i-2178-0.30
J0426+0518i-372-0.29
J0400+0550i-217-0.27
J0334+0800i-331-0.39
J0211+1051i-547-0.14
Resolve
System Object?
Name of object
Unspecified
System
ICRS
Sexagesimal display?
RA
02:11:13.1770
Dec
10:51:34.799
Parallax 0.00000 mas
PM RA 0.00000 mas/yr
PM DEC 0.00000 mas/yr
Velocity 0.000 km/s lsrk z 0.000000000 Doppler Type RADIO
Individual Pointing(s) 1 Rectangular Field
Properties

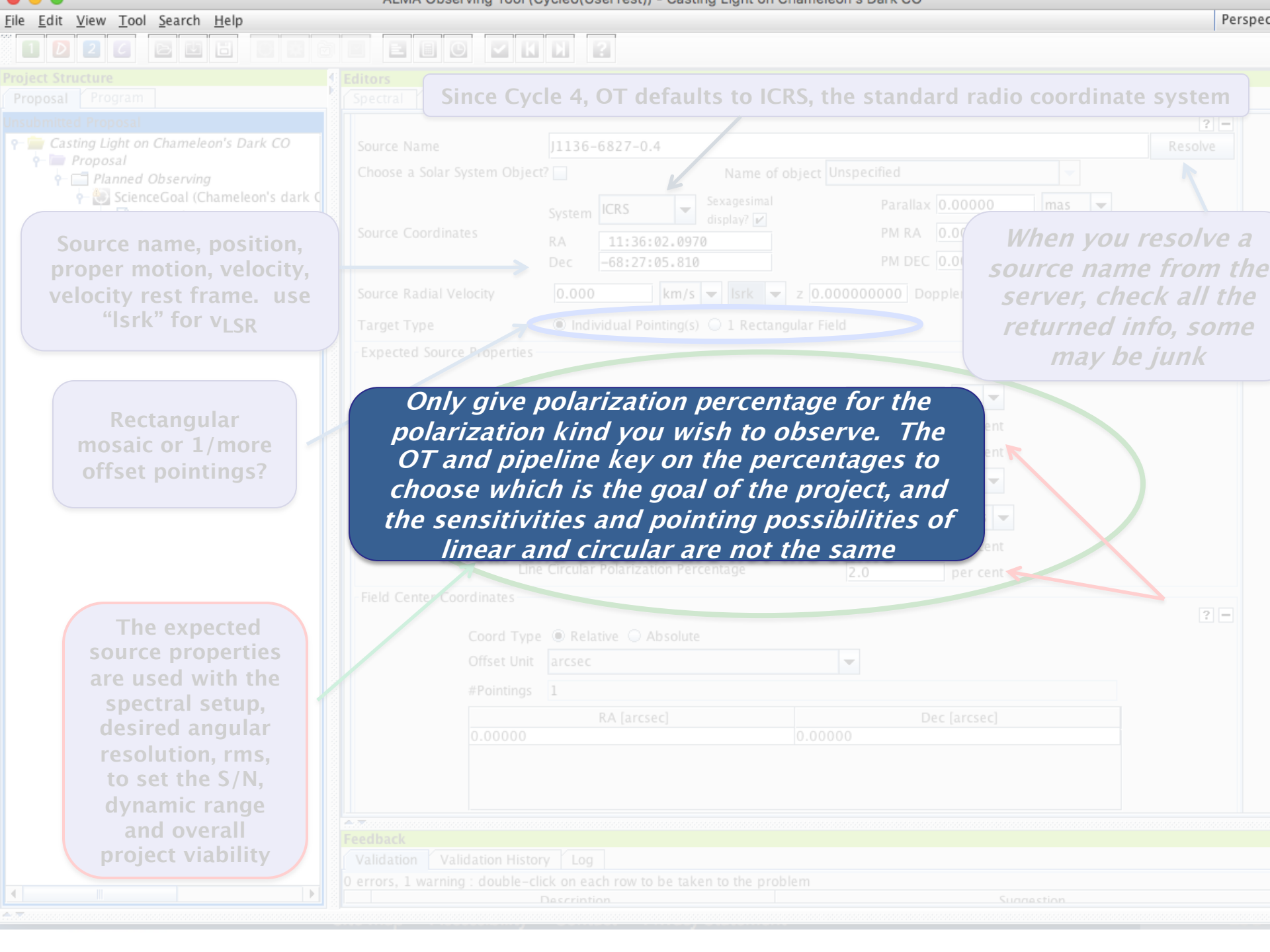

Template library. Turn the keys on the JTree below & read the descriptions - Observing Tool for ALMA, version Cycle2Test2
File Edit View Tool Search Help
Perspective 1
Project Structure
Proposal Program
Unsubmitted Proposal
Project
Proposal
Editors
Spectral Spatial ScienceGoal (B6 12CO (2-1): NGC3256 mosaic)
General (Optional)
Science Goal Name B6 12CO (2-1): NGC3256 mosaic
This is a project to observe the nearby starburst galaxy NGC3
band 6 in the emission line of 12CO (2-1). As the source is e
mosaic will be used to cover the 30x30 arcsec area of interes
Description
Launch Editor
NGC3256
Source
Source Name NGC3256
Choose a Solar System Object?
Name of object Unspecified
Sexagesimal
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
Overview
Contextual Help
Phase I: Science Proposal


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
Line Circular Polarization Percentage
2.0
per cent
Relative
Absolute
arcsec
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
The field setup node is where you provide source coordinates and other basic properties for one or more field sources/pointings


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
Super-annoying? The OT will issue a validation warning whenever the velocity is left at the 0 km/s default. An archive issue.
Line Width
3.5
km/s
Line Linear Polarization
0.0
per cent
Line Circular Polarization Percentage
2.0
per cent
Relative
Absolute
arcsec
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
The field setup node is where you provide source coordinates and other basic properties for one or more field sources/pointings

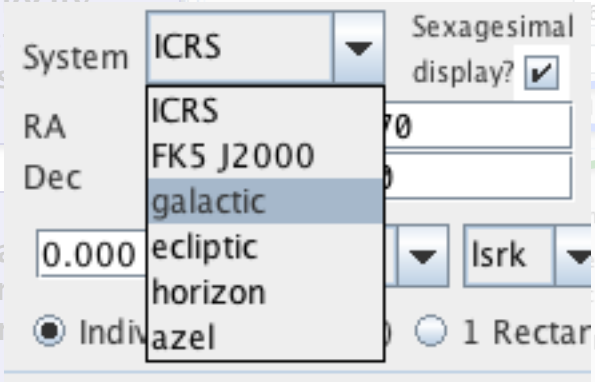

File Edit View Tool Search Help
Project Structure
Proposal Program
Unsubmitted Proposal
Casting Light on Chameleon's Dark CO
Proposal
Planned Observing
ScienceGoal (Chameleon's dark C
Editors
Spectral
Since Cycle 4, OT defaults to ICRS, the standard radio coordinate system
Source Name
J1136-6827-0.4
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 unwanted
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.

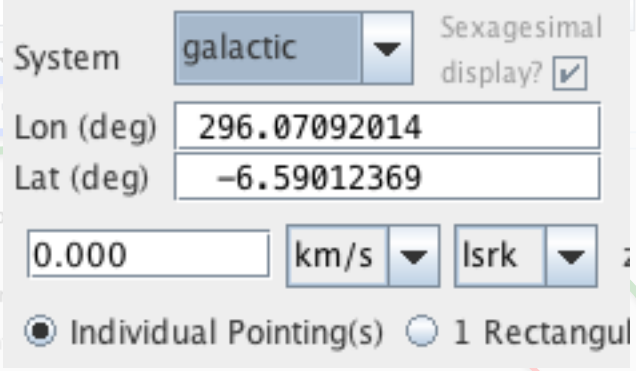

Since Cycle 4, OT defaults to ICRS, the standard radio coordinate system
ALMA OT - Question
Resolving source names that just use coordinates is no longer allowed.
Source names that are built from coordinates must include an acronym at the beginning e.g. JVAS B0218+357
Reset name to previous target
Leave name for editing
Hint:To resolve source names that are coordinates, preface with "JVAS" ie don't use B2251+158, use JVAS 2251+158
Name Resolver Results
simbad.u-strasbg.fr (SIMBAD) found 1 match for the object 'JVAS 2251+158'.
Warning! Your selected result is missing proper motion and/or velocity.
Name / Alias
Position
RA
Dec
Proper Motion
RA
Dec
Velocity
3C 454.3
22:53:57.7479
16:08:53.561
165232.218 ...
Cancel
Select
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.
Source name, pos
proper motion, vel
velocity rest frame
"lsrk" for v
Recta
mosaic o
offset p
The e
source
are used with the spectral setup, desired angular resolution, rms, to set the S/N, dynamic range and overall project viability


File Edit View Tool Search Help
Project Structure
Proposal Program
Unsubmitted Proposal
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
PM RA
Dec
-68:27:05.810
PM DEC
Source Radial Velocity
0.000
km/s
lsrk
z
0.000000000
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
1
RA [arcsec]
Dec [arcsec]
0.00000
0.00000
Feedback
Validation
Validation History
Log
0 errors, 1 warning : double-click on each row to be taken to the problem
Description
Suggestion
Source name, position, proper motion, velocity, velocity rest frame. 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





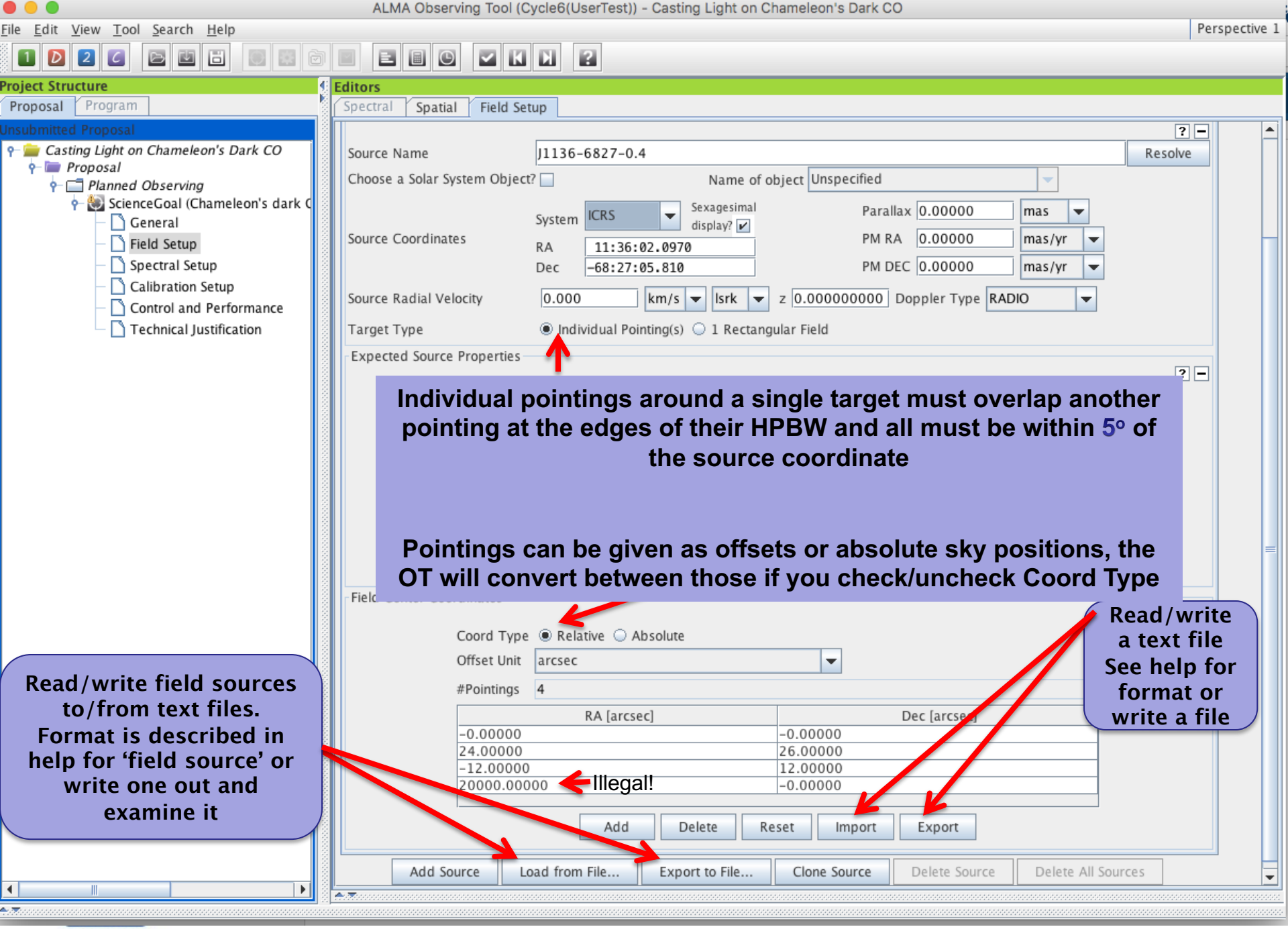
Source name, position, proper motion, velocity, velocity res... LSR gone, us...

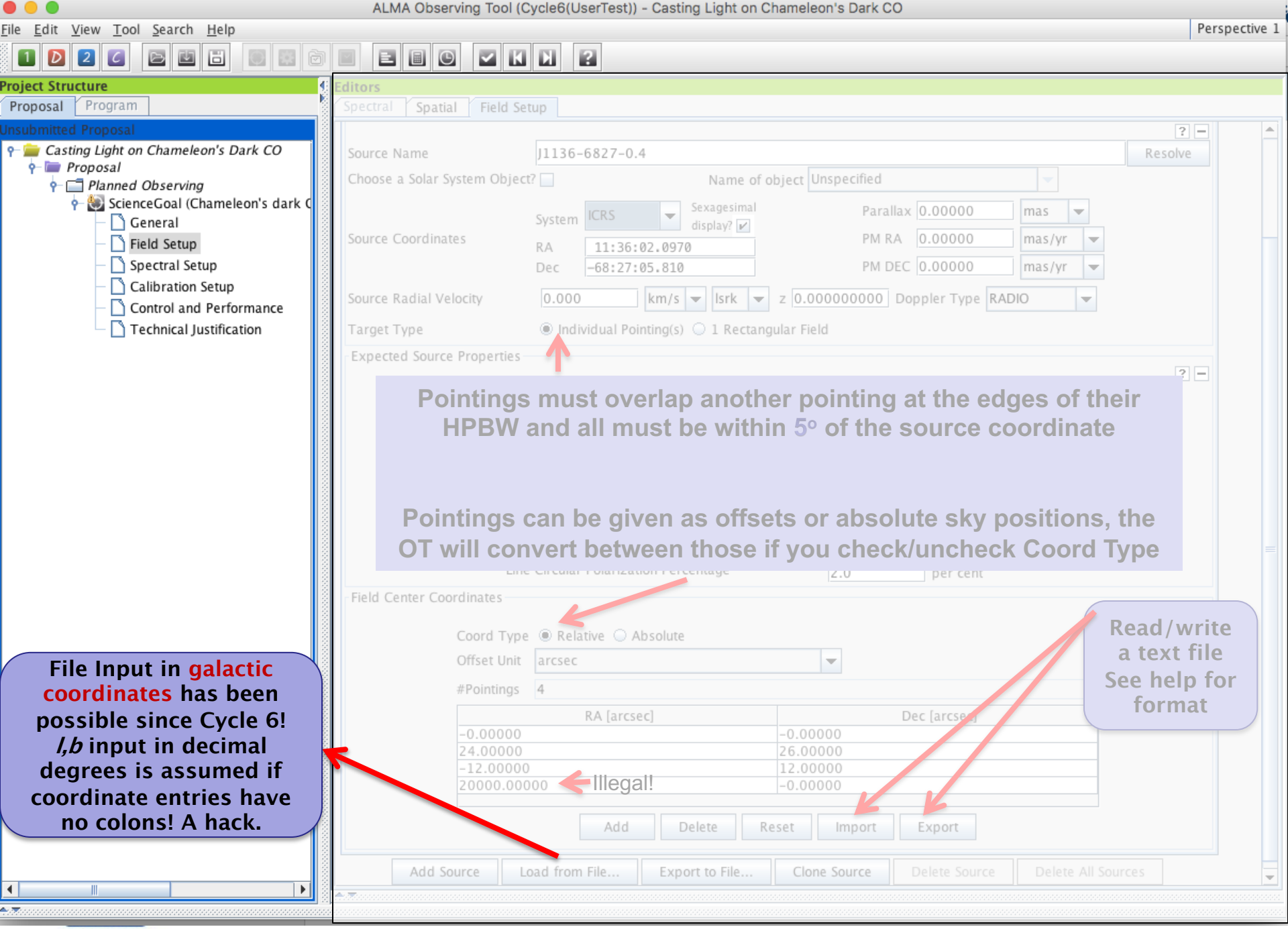
Rectangul... mosaic or 1/... offset pointi...

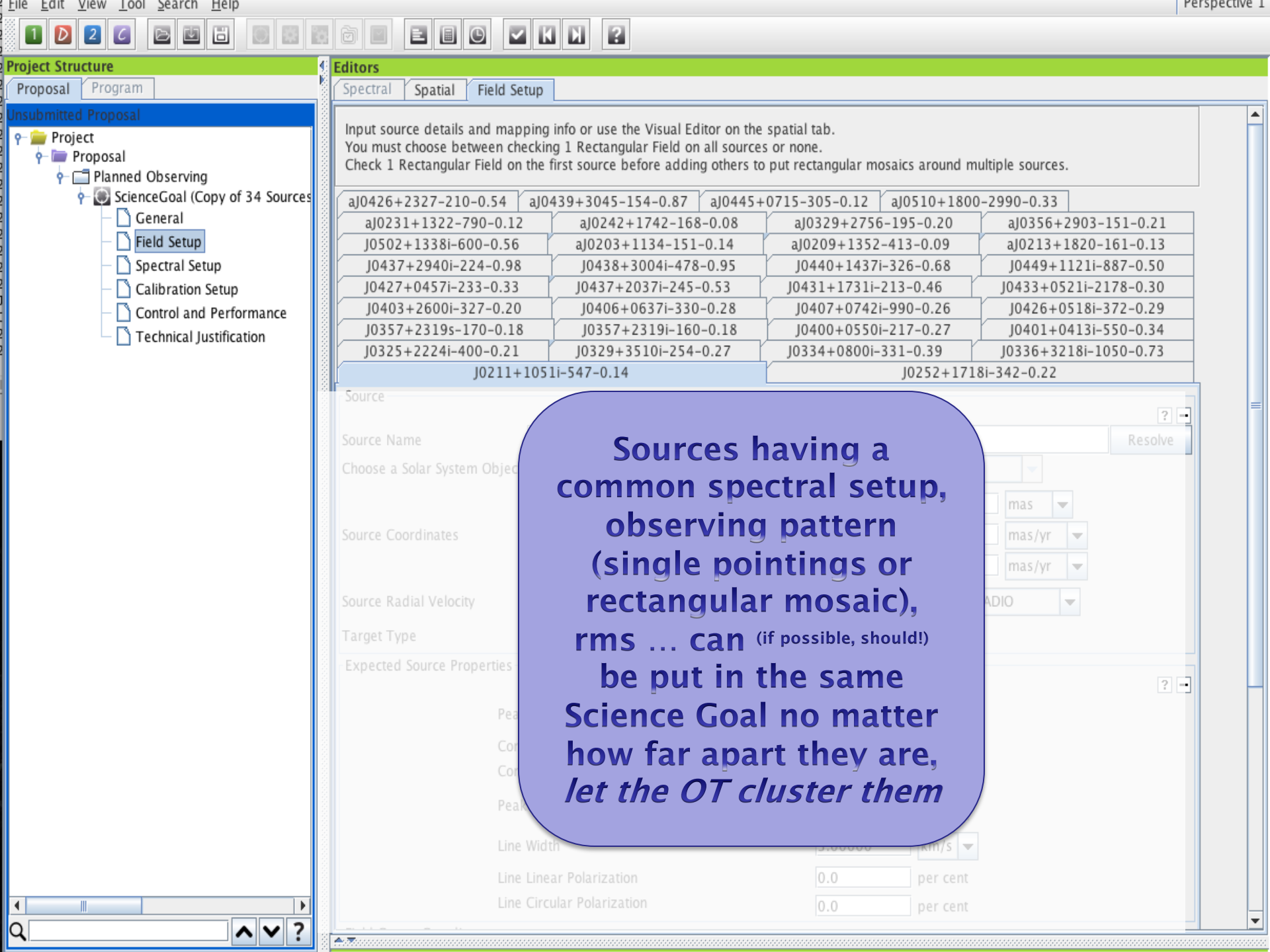
When yo... source ... all the ... info: ... proper ... may ...

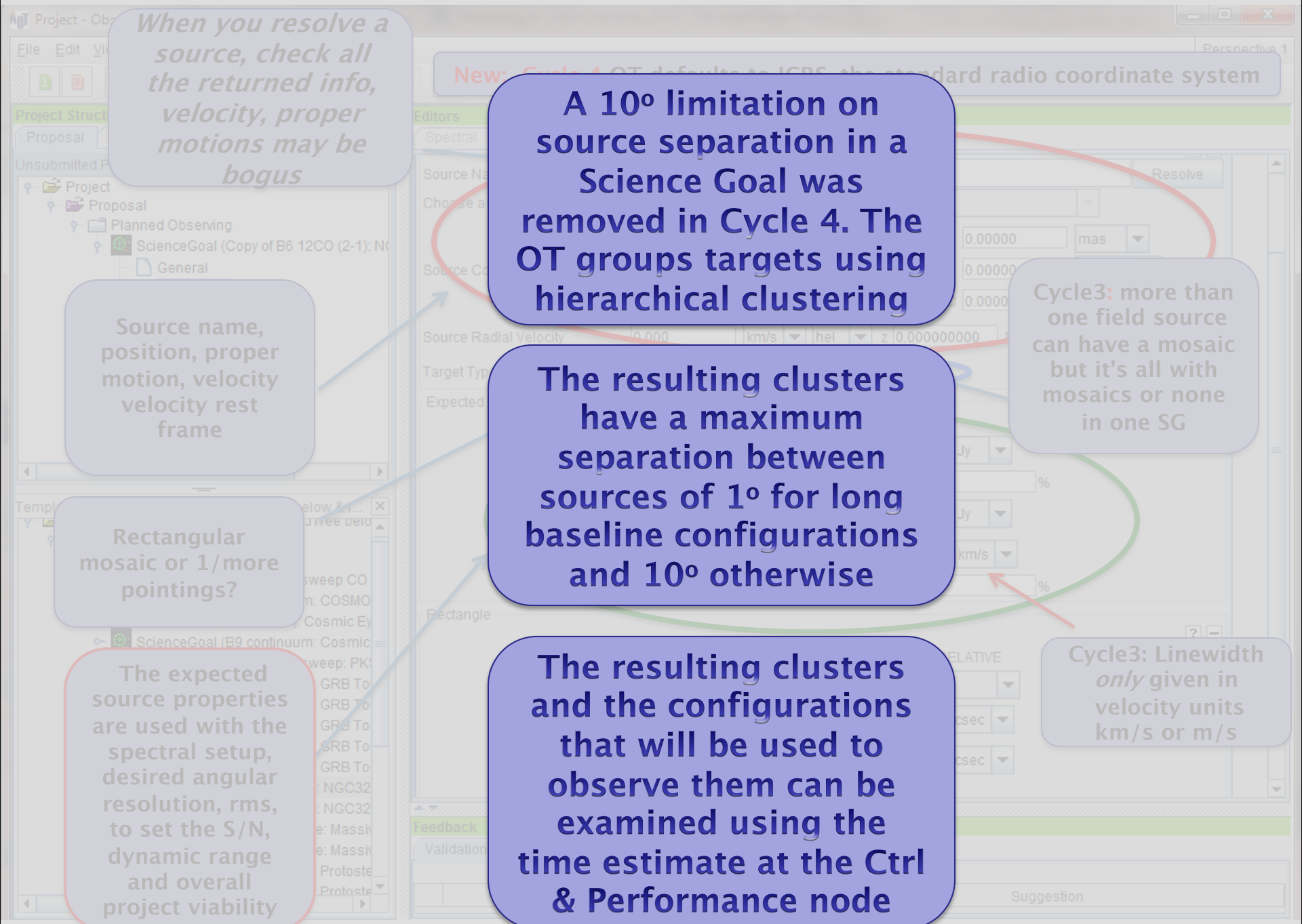
The expected source properties are used with the spectral setup, desired angular resolution, rms, to set the S/N, dynamic range and overall project viability

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

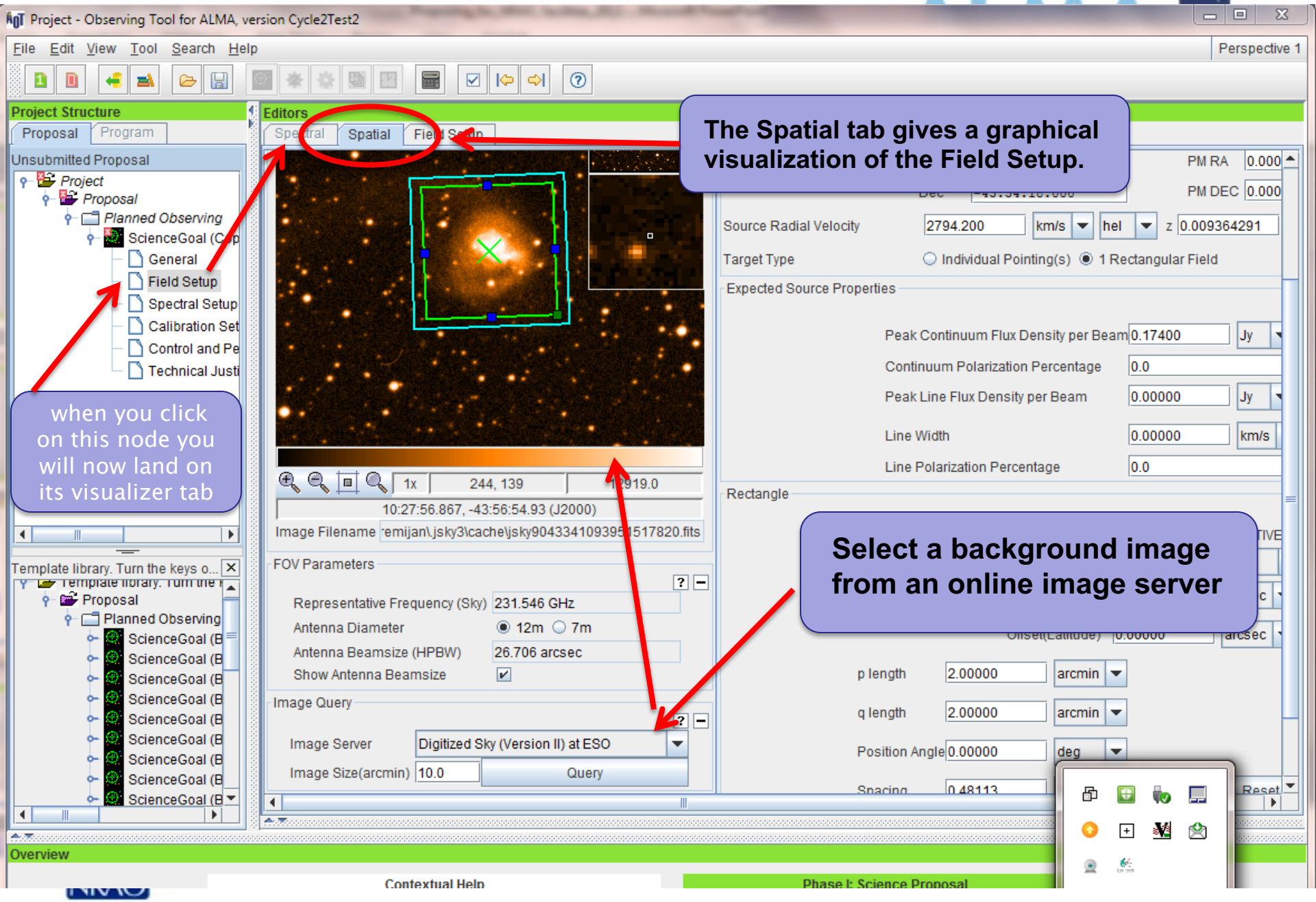

ALMA Observing Tool (Cycle6(UserTest)) - Casting Light on Chameleon's Dark CO
File Edit View Tool Search Help
Perspective 1
Project Structure
Proposal Program
Unsubmitted Proposal
Casting Light on Chameleon's Dark CO
Proposal
Planned Observing
ScienceGoal (Chameleon's dark C
General
Field Setup
Spectral 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
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 text files. Format is described in help for 'field source' or write one out and examine it
Read/write a text file See help for format or write a file


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
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
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 a text file See help for format
File Input in galactic coordinates has been possible since Cycle 6! l,b input in decimal degrees is assumed if coordinate entries have no colons! A hack.

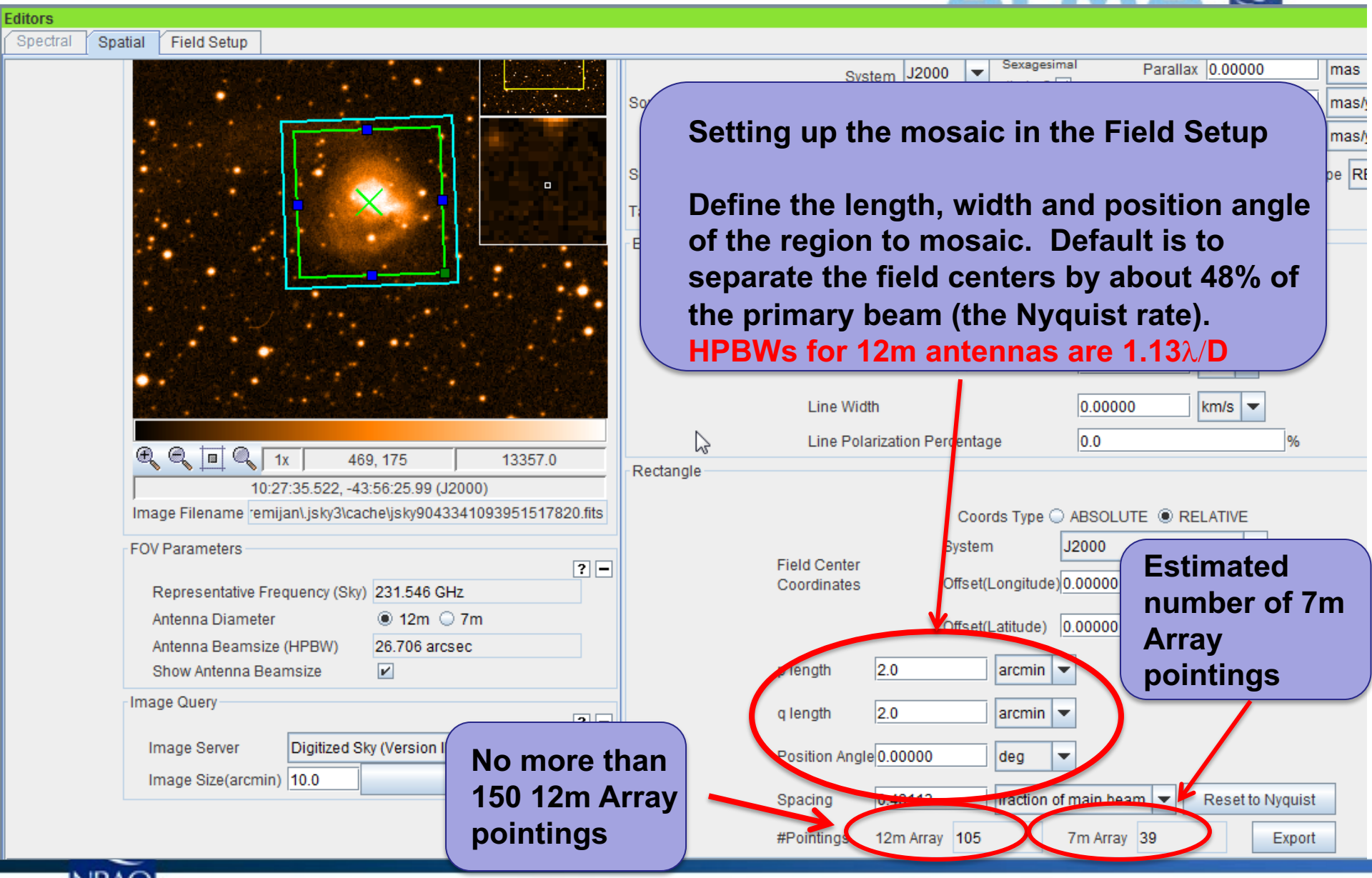

File Edit View Tool Search Help
Perspective 1
Project Structure
Proposal Program
Unsubmitted Proposal
Project
Proposal
Planned Observing
ScienceGoal (Copy of 34 Sources
General
Field Setup
Spectral Setup
Calibration Setup
Control and Performance
Technical Justification
Editors
Spectral Spatial Field 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
Resolve
Choose a Solar System Objec
Source Coordinates
mas
mas/yr
mas/yr
Source Radial Velocity
ADIO
Target Type
Expected Source Properties
Line Width
km/s
Line Linear Polarization
0.0
per cent
Line Circular Polarization
0.0
per cent
Sources having a common spectral setup, observing pattern (single pointings or rectangular mosaic), rms … can (if possible, should!) be put in the same Science Goal no matter how far apart they are, let the OT cluster them


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 using the time estimate at the Ctrl & Performance node
Cycle3: Linewidth *only* given in velocity units km/s or m/s

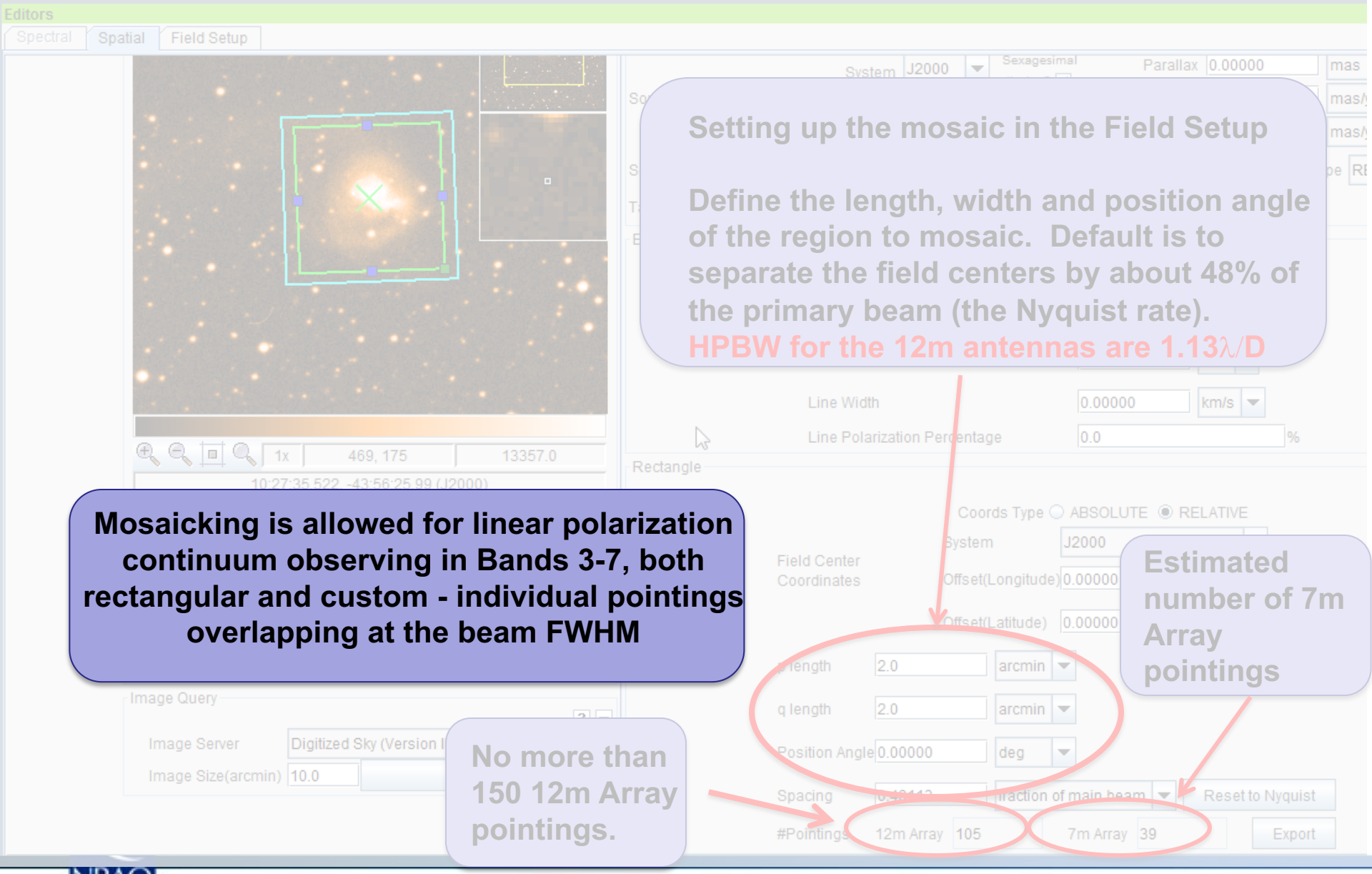
The spatial visualizer



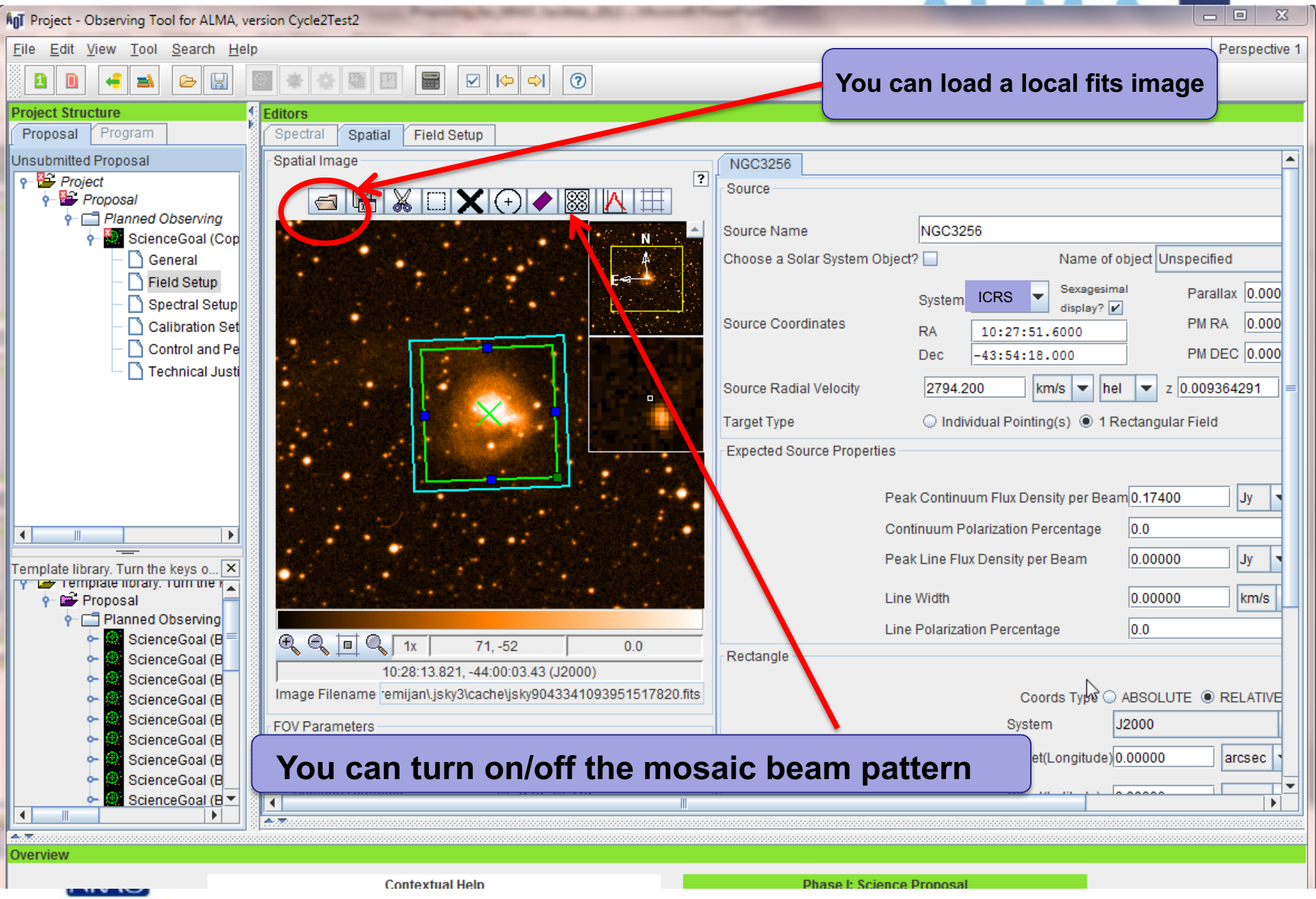
Crafting mosaics



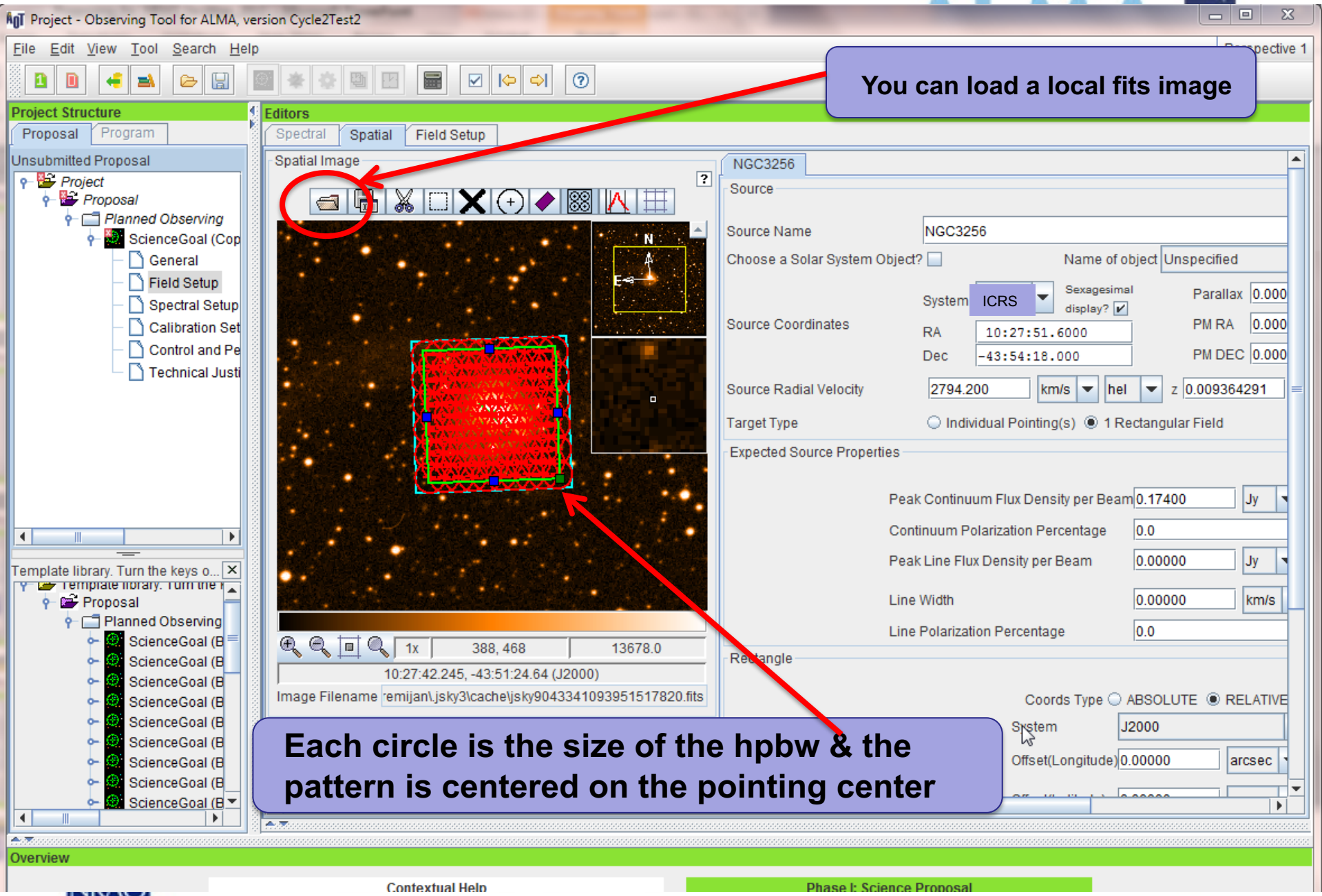
Crafting mosaics



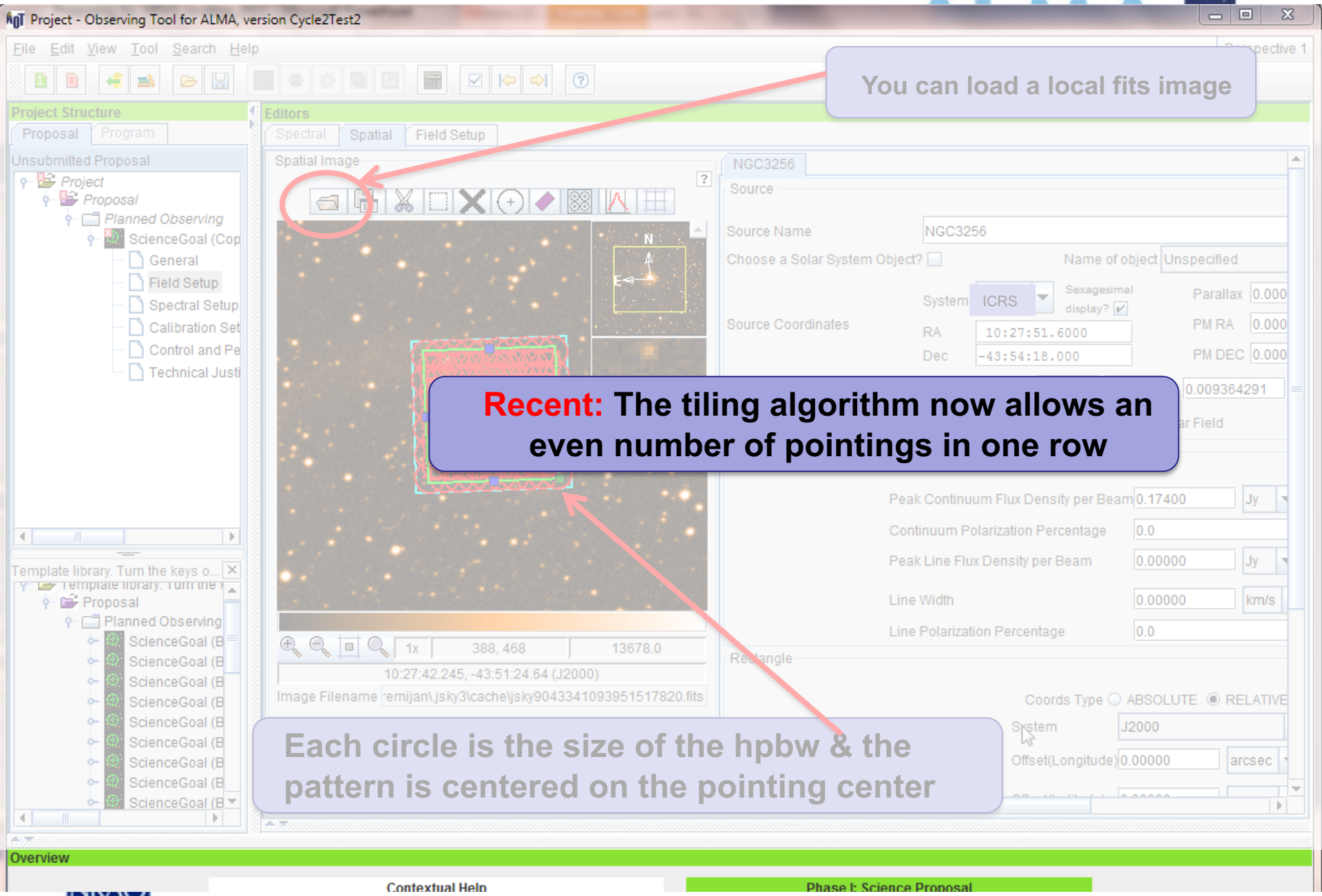
Crafting mosaics



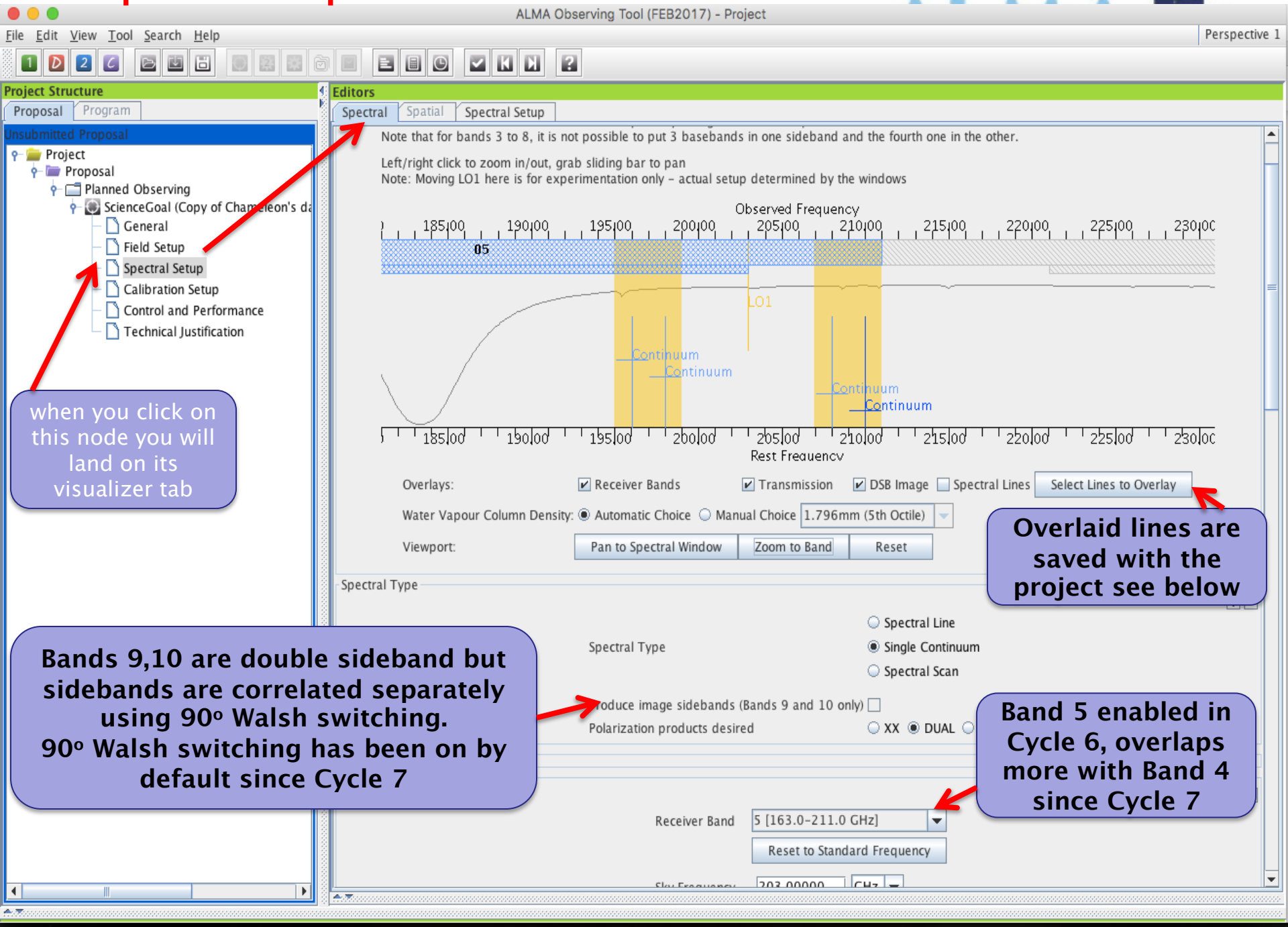
Crafting and displaying mosaics



Crafting and displaying mosaics



The Spectral Setup Tab



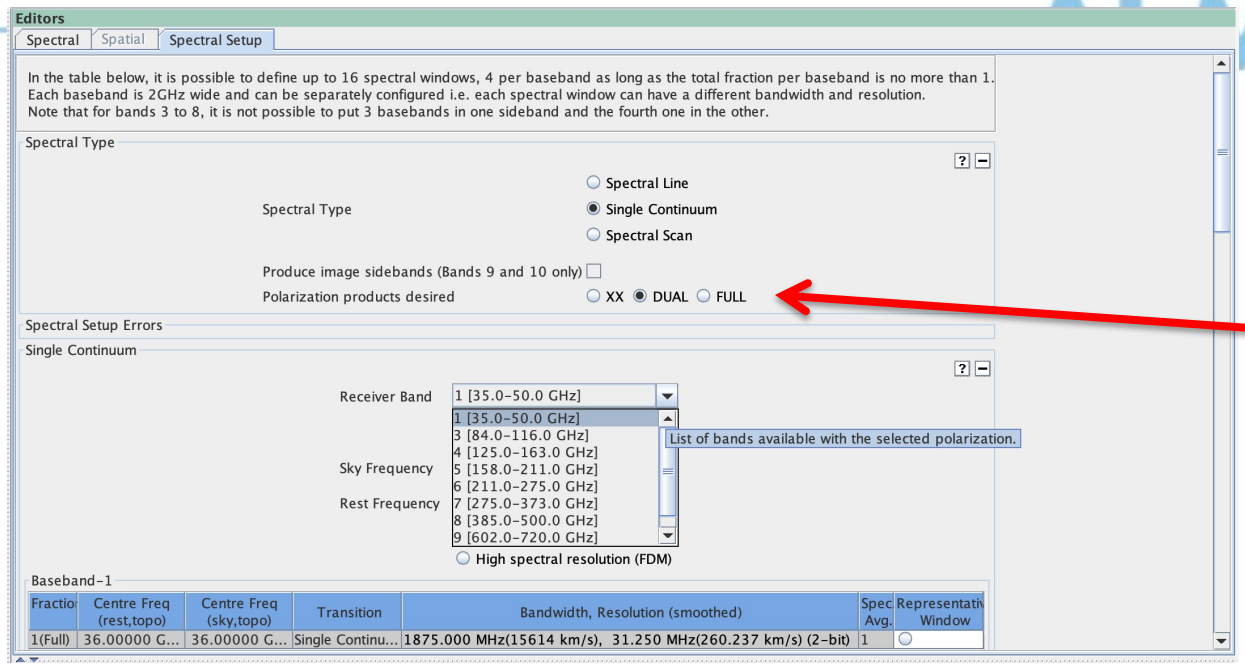
when you click on this node you will land on its visualizer tab

Overlaid lines are saved with the project see below

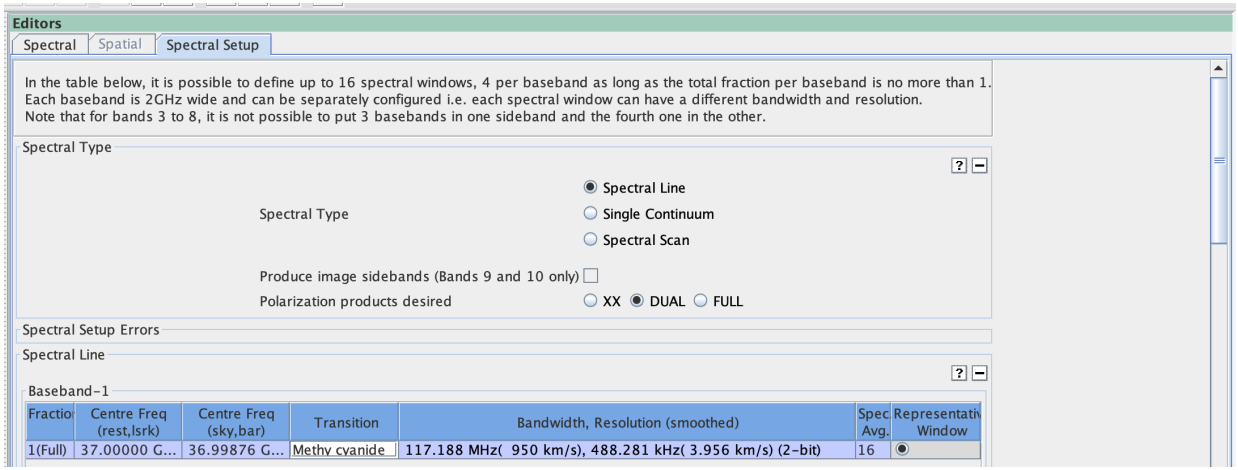
Bands 9,10 are double sideband but sidebands are correlated separately using 90º Walsh switching.
90º Walsh switching has been on by default since Cycle 7

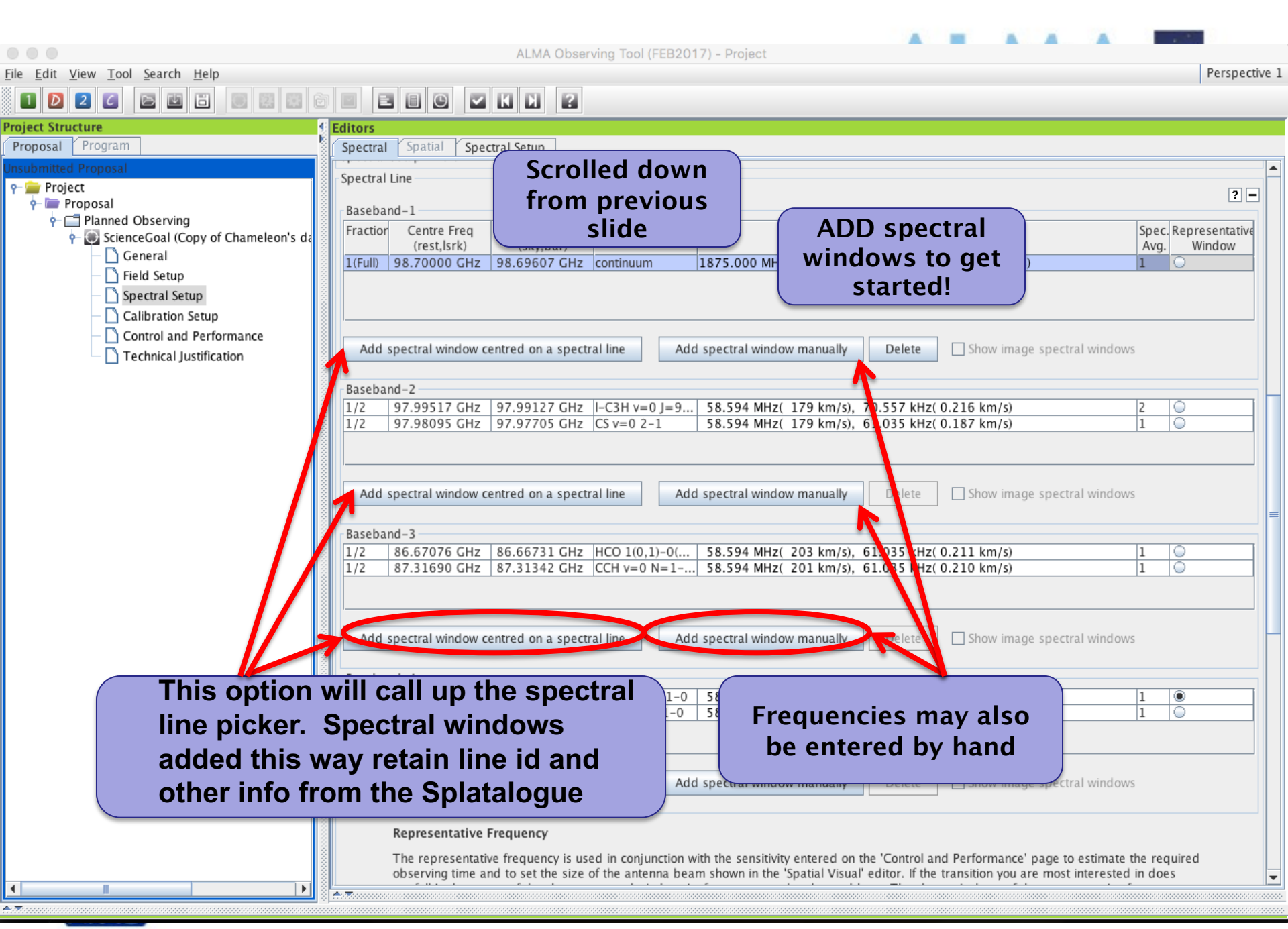
Band 5 enabled in Cycle 6, overlaps more with Band 4 since Cycle 7

NEW! BAND 1 35 – 50 GHz Spectral Line, Continuum *and VLBI*

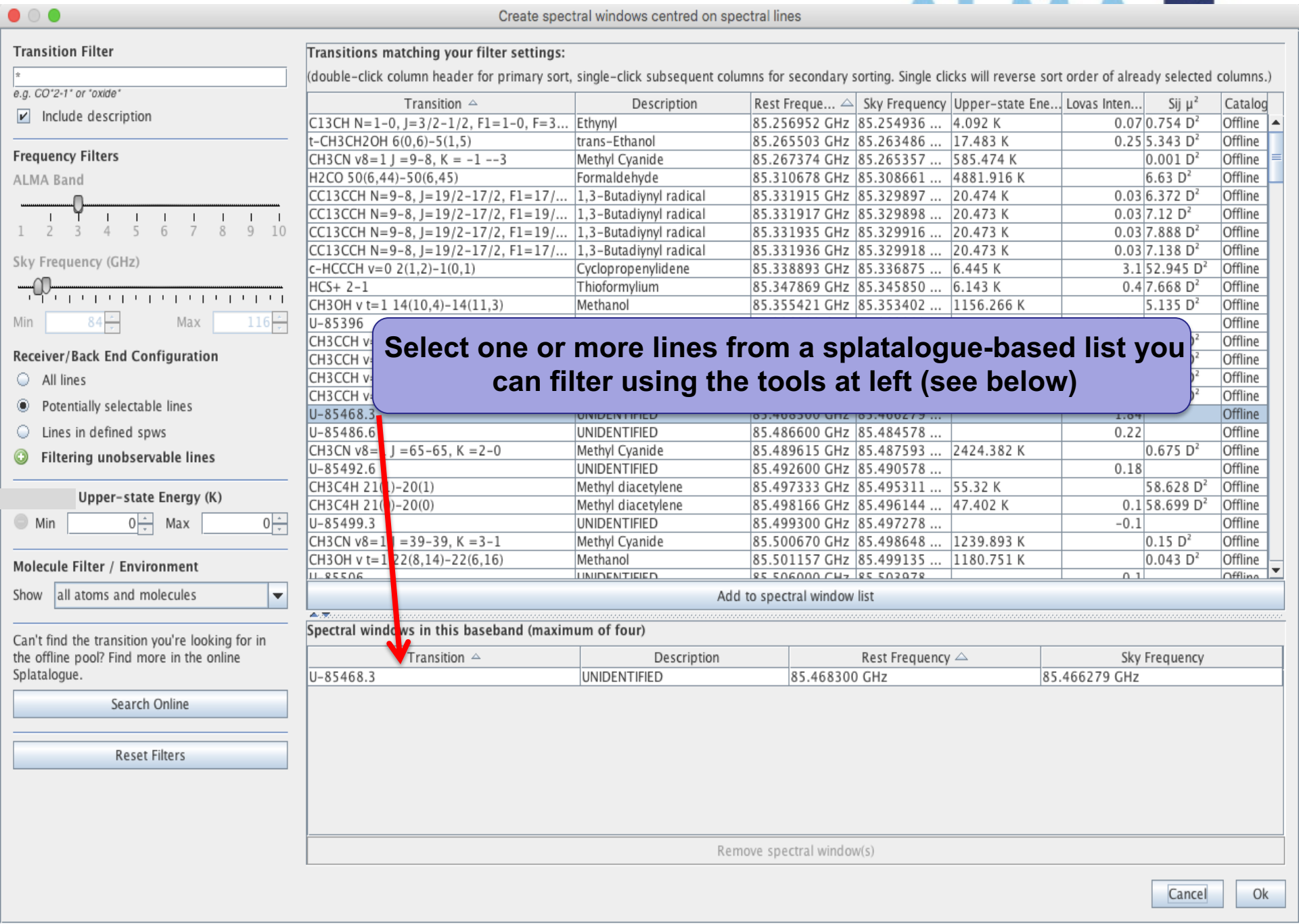


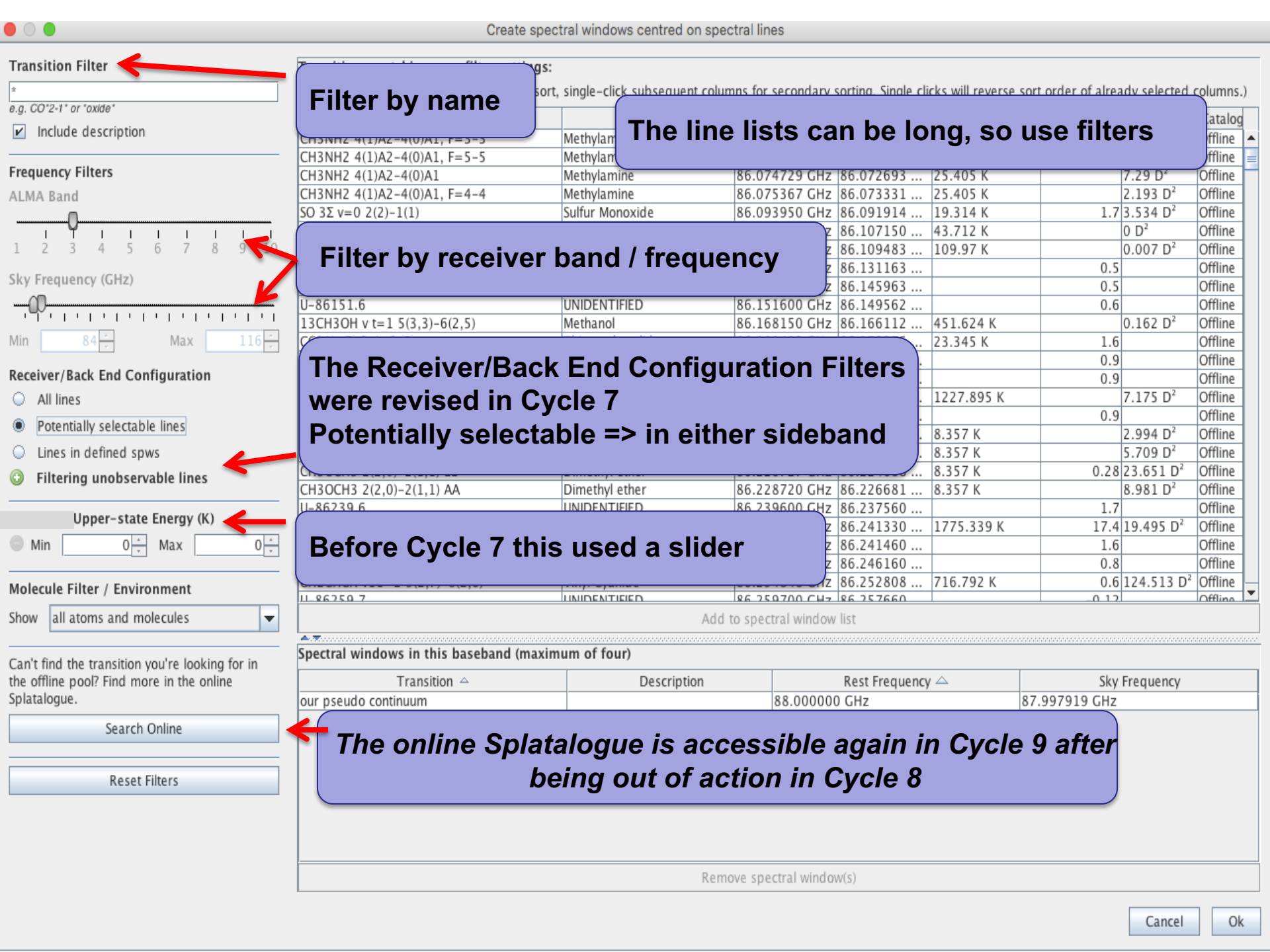
Full polarization Is NOT Possible In Band 1 Yet

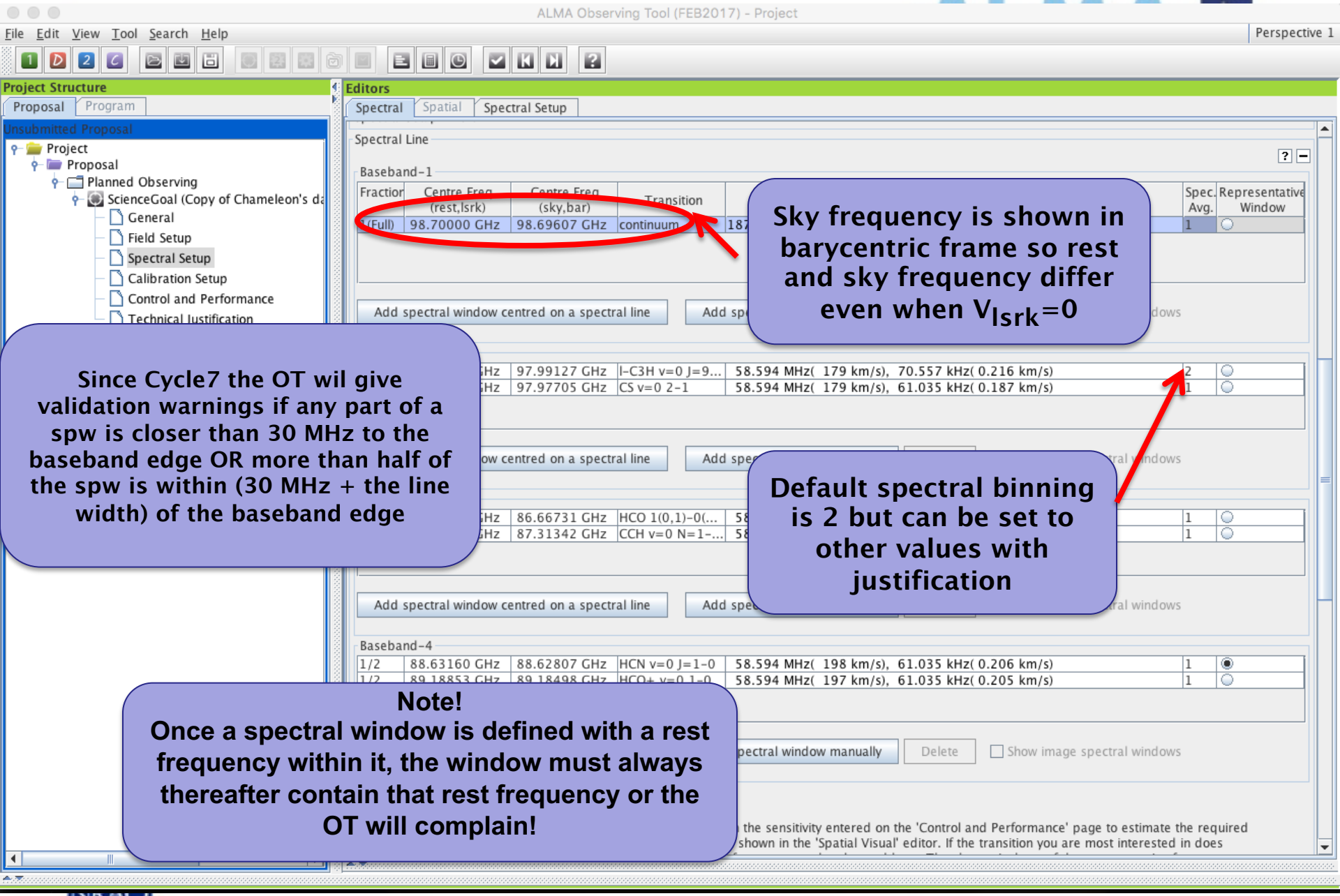



ALMA Observing Tool (FEB2017) - Project
File Edit View Tool Search Help
Perspective 1
Project Structure
Proposal Program
Unsubmitted Proposal
Project
Proposal
Planned Observing
ScienceGoal (Copy of Chameleon's da
General
Field Setup
Spectral Setup
Calibration Setup
Control and Performance
Technical Justification
Editors
Spectral Spatial Spectral Setup
Scrolled down from previous slide
ADD spectral windows to get started!
Spectral Line
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
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
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

Online Spatalogue is accessible again after an absence in Cycle 8




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
The online Splatalogue is accessible again in Cycle 9 after being out of action in Cycle 8
CH3NH2 4(1)A2-4(0)A1, F=5-5 Methylamine
CH3NH2 4(1)A2-4(0)A1 Methylamine 86.074729 GHz 86.072693 ... 25.405 K 7.29 D²
CH3NH2 4(1)A2-4(0)A1, F=4-4 Methylamine 86.075367 GHz 86.073331 ... 25.405 K 2.193 D²
SO 3Σ v=0 2(2)-1(1) Sulfur Monoxide 86.093950 GHz 86.091914 ... 19.314 K 1.7 3.534 D²
86.107150 ... 43.712 K 0 D²
86.109483 ... 109.97 K 0.007 D²
86.131163 ... 0.5
86.145963 ... 0.5
U-86151.6 UNIDENTIFIED 86.151600 GHz 86.149562 ... 0.6
13CH3OH v t=1 5(3,3)-6(2,5) Methanol 86.168150 GHz 86.166112 ... 451.624 K 0.162 D²
23.345 K 1.6
0.9
0.9
1227.895 K 7.175 D²
0.9
8.357 K 2.994 D²
8.357 K 5.709 D²
8.357 K 0.28 23.651 D²
CH3OCH3 2(2,0)-2(1,1) AA Dimethyl ether 86.228720 GHz 86.226681 ... 8.357 K 8.981 D²
86.237560 ... 1.7
86.241330 ... 1775.339 K 17.4 19.495 D²
86.241460 ... 1.6
86.246160 ... 0.8
86.252808 ... 716.792 K 0.6 124.513 D²
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



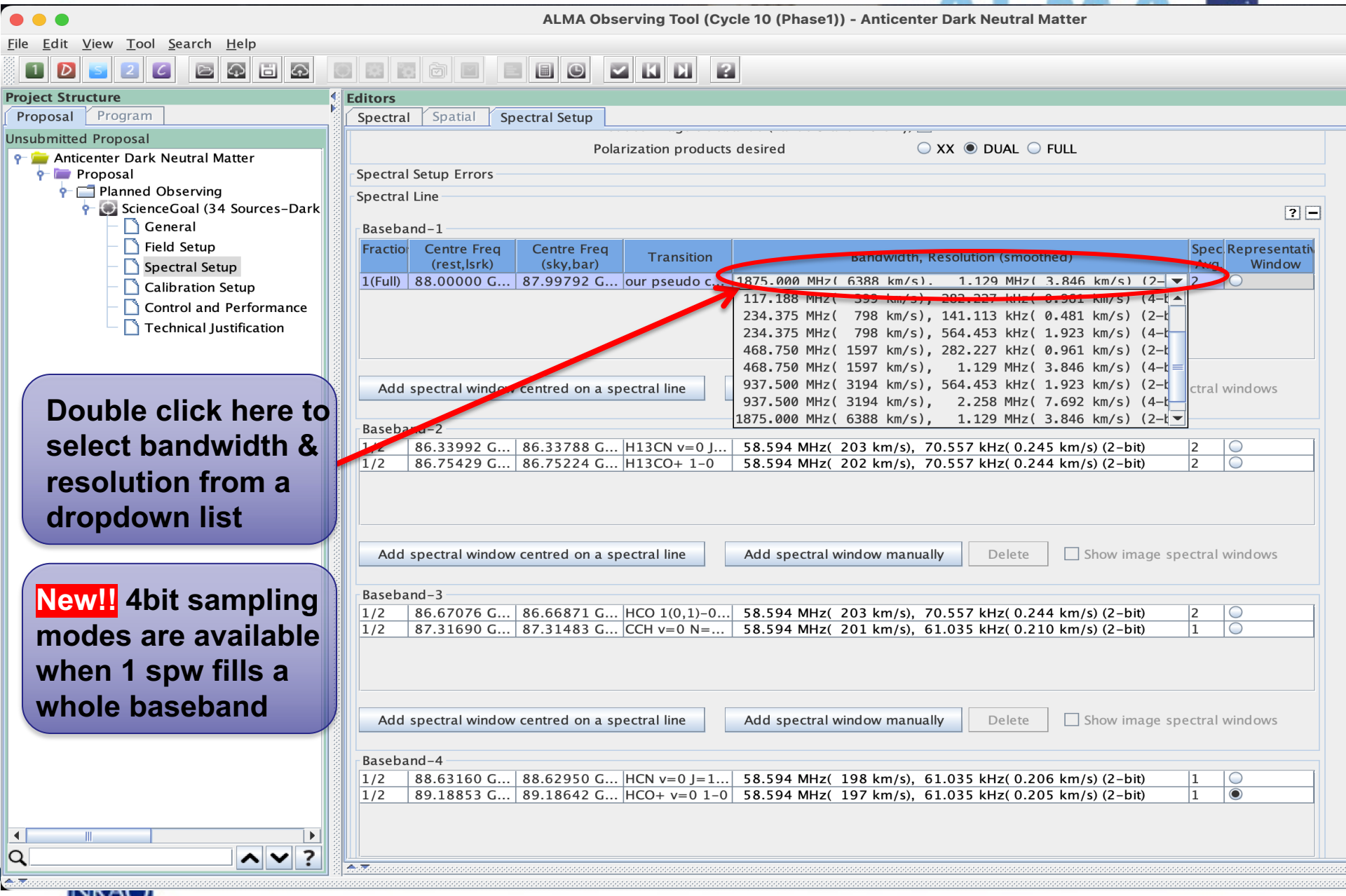
Sky frequency is shown in barycentric frame so rest and sky frequency differ even when $V_{lsrk}=0$

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

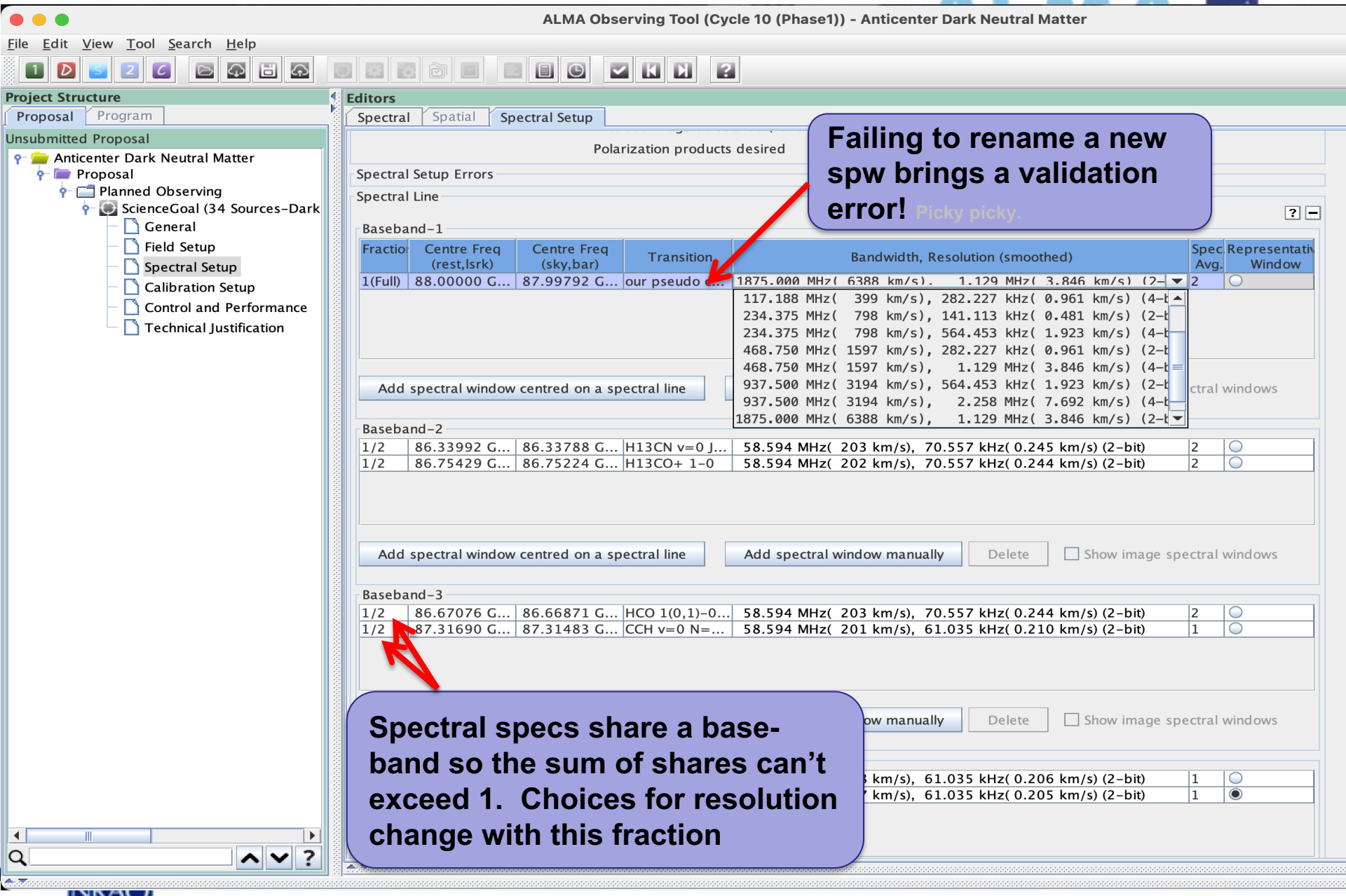
Note!
Once a spectral window is defined with a rest frequency within it, the window must always thereafter contain that rest frequency or the OT will complain!

New! 4bit sampling when 1 spectral window occupies a whole baseband

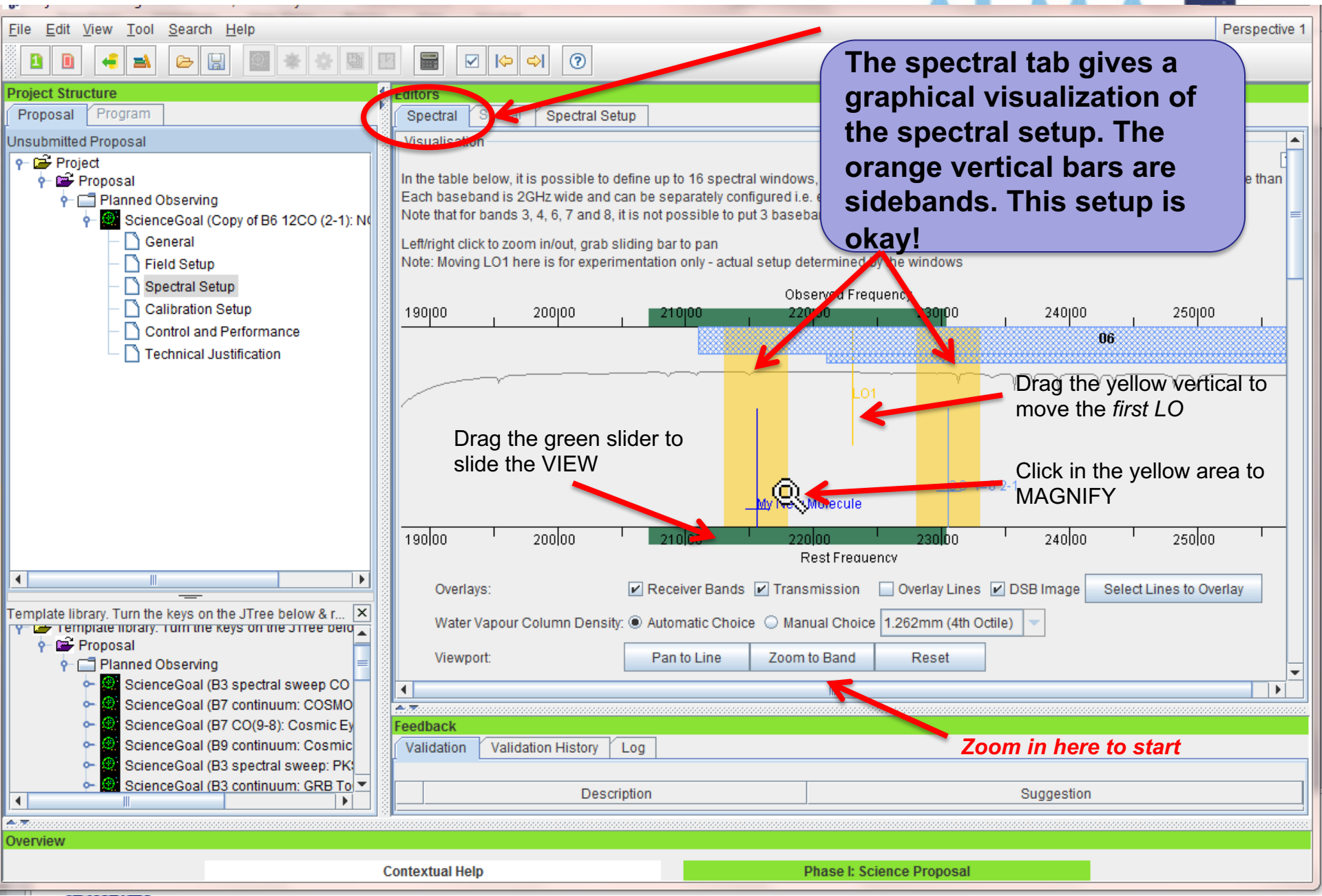


Double click here to select bandwidth & resolution from a dropdown list

New!! 4bit sampling modes are available when 1 spw fills a whole baseband


ALMA Observing Tool (Cycle 10 (Phase1)) - Anticenter Dark Neutral Matter
File Edit View Tool Search Help
Project Structure
Proposal Program
Unsubmitted Proposal
Anticenter Dark Neutral Matter
Proposal
Planned Observing
ScienceGoal (34 Sources-Dark
General
Field Setup
Spectral Setup
Calibration Setup
Control and Performance
Technical Justification
Editors
Spectral Spatial Spectral Setup
Polarization products desired
Spectral Setup Errors
Spectral Line
Baseband-1
Fractio
Centre Freq (rest,lsrk)
Centre Freq (sky,bar)
Transition
Bandwidth, Resolution (smoothed)
Spec Avg.
Representativ Window
1(Full)
88.00000 G...
87.99792 G...
our pseudo c...
1875.000 MHz(6388 km/s), 1.129 MHz(3.846 km/s) (2-
2
117.188 MHz(399 km/s), 282.227 kHz(0.961 km/s) (4-b
234.375 MHz(798 km/s), 141.113 kHz(0.481 km/s) (2-b
234.375 MHz(798 km/s), 564.453 kHz(1.923 km/s) (4-b
468.750 MHz(1597 km/s), 282.227 kHz(0.961 km/s) (2-b
468.750 MHz(1597 km/s), 1.129 MHz(3.846 km/s) (4-b
937.500 MHz(3194 km/s), 564.453 kHz(1.923 km/s) (2-b
937.500 MHz(3194 km/s), 2.258 MHz(7.692 km/s) (4-b
1875.000 MHz(6388 km/s), 1.129 MHz(3.846 km/s) (2-b
Add spectral window centred on a spectral line
ctral windows
Baseband-2
1/2 86.33992 G... 86.33788 G... H13CN v=0 J... 58.594 MHz(203 km/s), 70.557 kHz(0.245 km/s) (2-bit) 2
1/2 86.75429 G... 86.75224 G... H13CO+ 1-0 58.594 MHz(202 km/s), 70.557 kHz(0.244 km/s) (2-bit) 2
Add spectral window centred on a spectral line
Add spectral window manually
Delete
Show image spectral windows
Baseband-3
1/2 86.67076 G... 86.66871 G... HCO 1(0,1)-0... 58.594 MHz(203 km/s), 70.557 kHz(0.244 km/s) (2-bit) 2
1/2 87.31690 G... 87.31483 G... CCH v=0 N=... 58.594 MHz(201 km/s), 61.035 kHz(0.210 km/s) (2-bit) 1
ow manually
Delete
Show image spectral windows
km/s), 61.035 kHz(0.206 km/s) (2-bit) 1
km/s), 61.035 kHz(0.205 km/s) (2-bit) 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

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



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

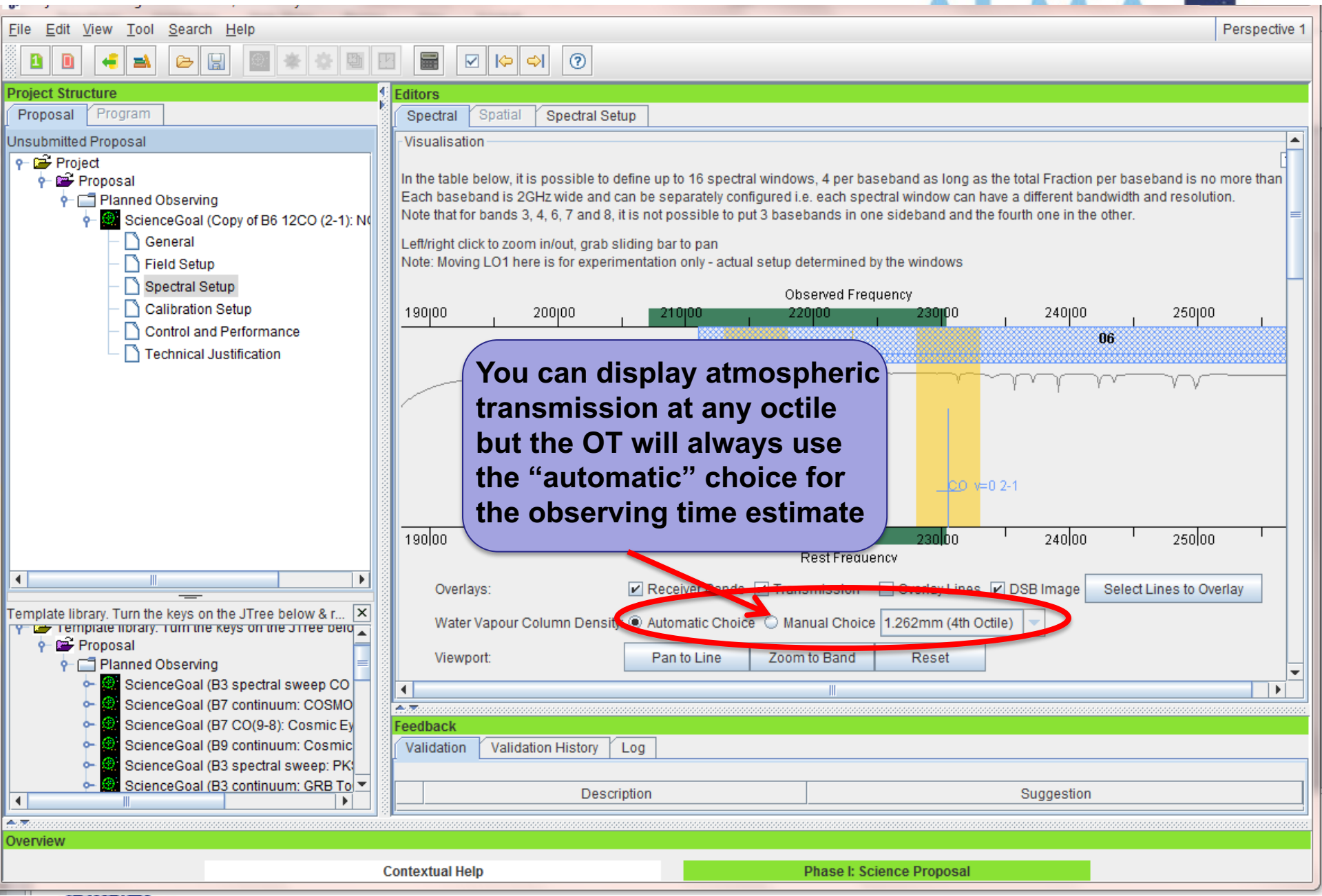
Drag the yellow vertical to move the *first LO*

Drag the green slider to slide the VIEW

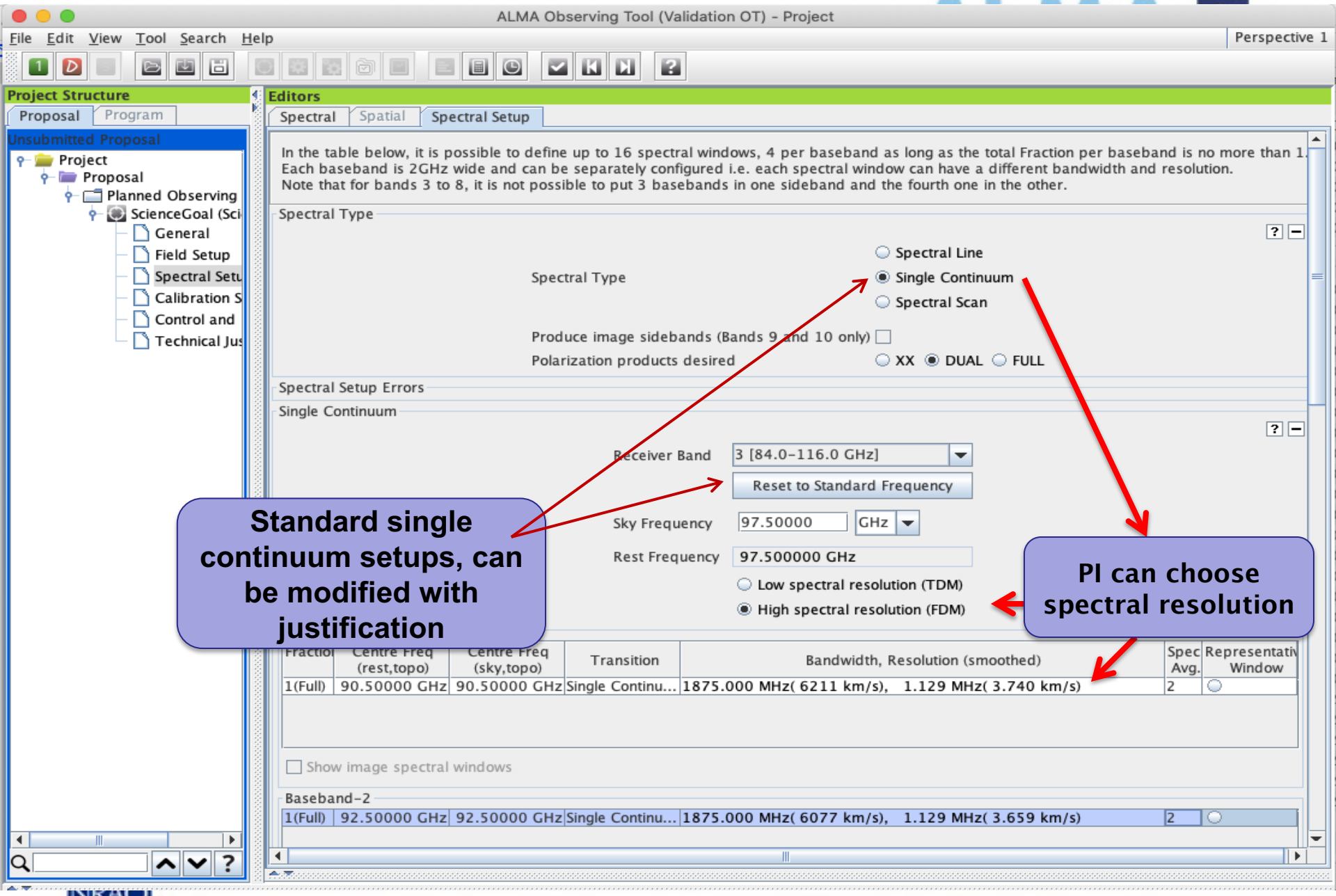
Click in the yellow area to MAGNIFY

Zoom in here to start

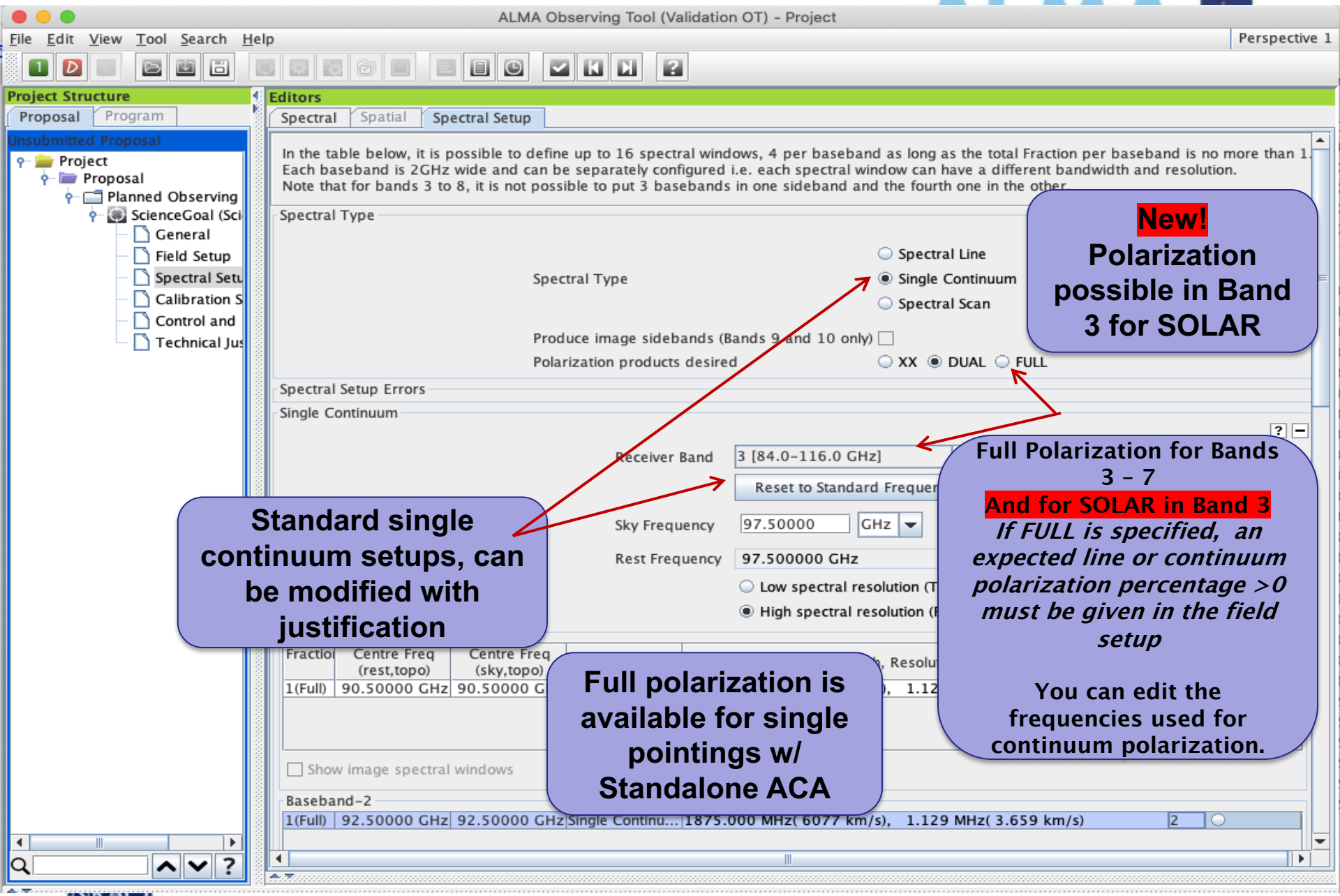
The spectral setup has a **visualizer** for spectral windows and spectral lines



Continuum & choice of resolution



Full Continuum & Polarization



New!
Polarization possible in Band 3 for SOLAR

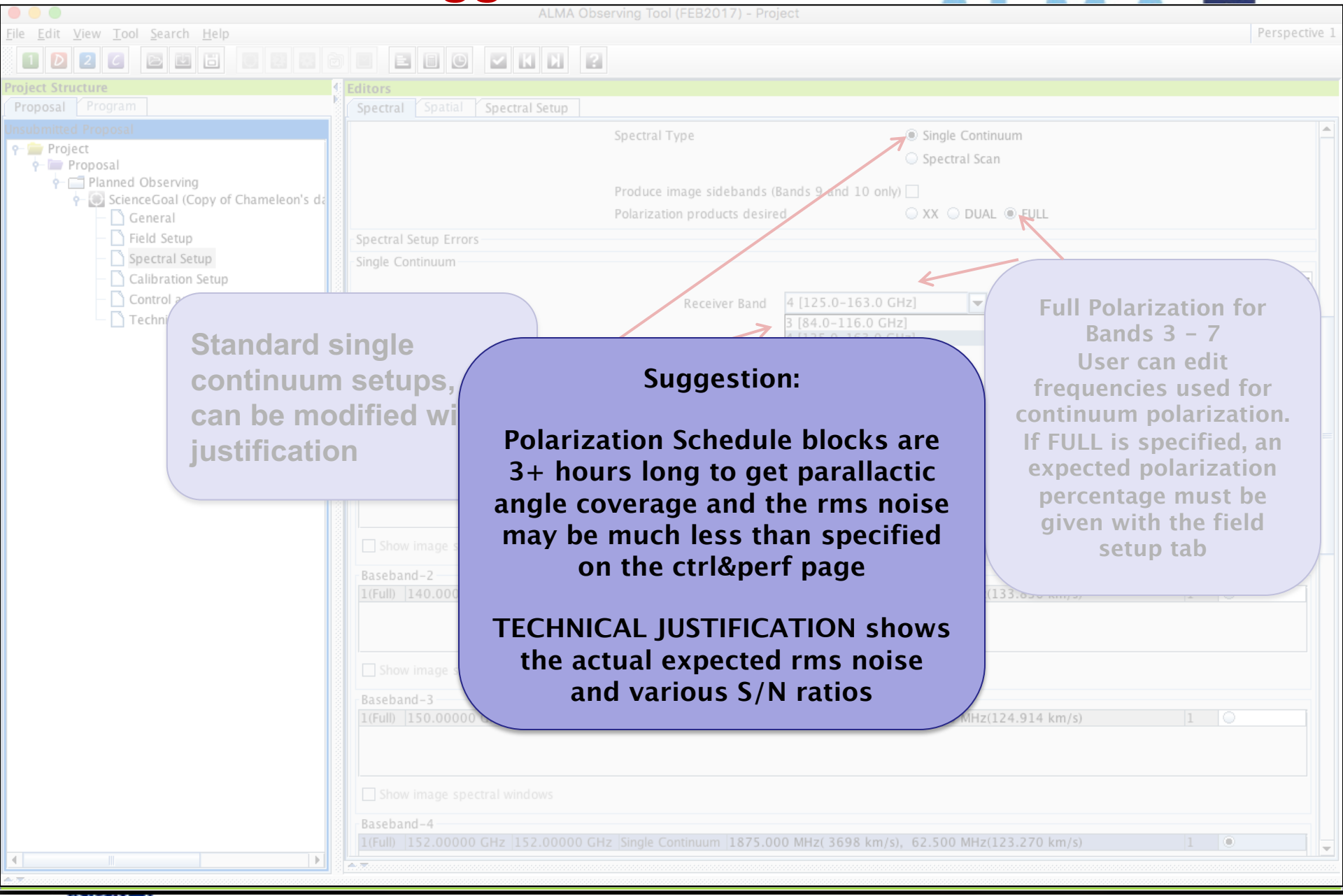
Standard single continuum setups, can be modified with justification

Full Polarization for Bands 3 – 7
And for SOLAR in Band 3
If FULL is specified, an expected line or continuum polarization percentage >0 must be given in the field setup

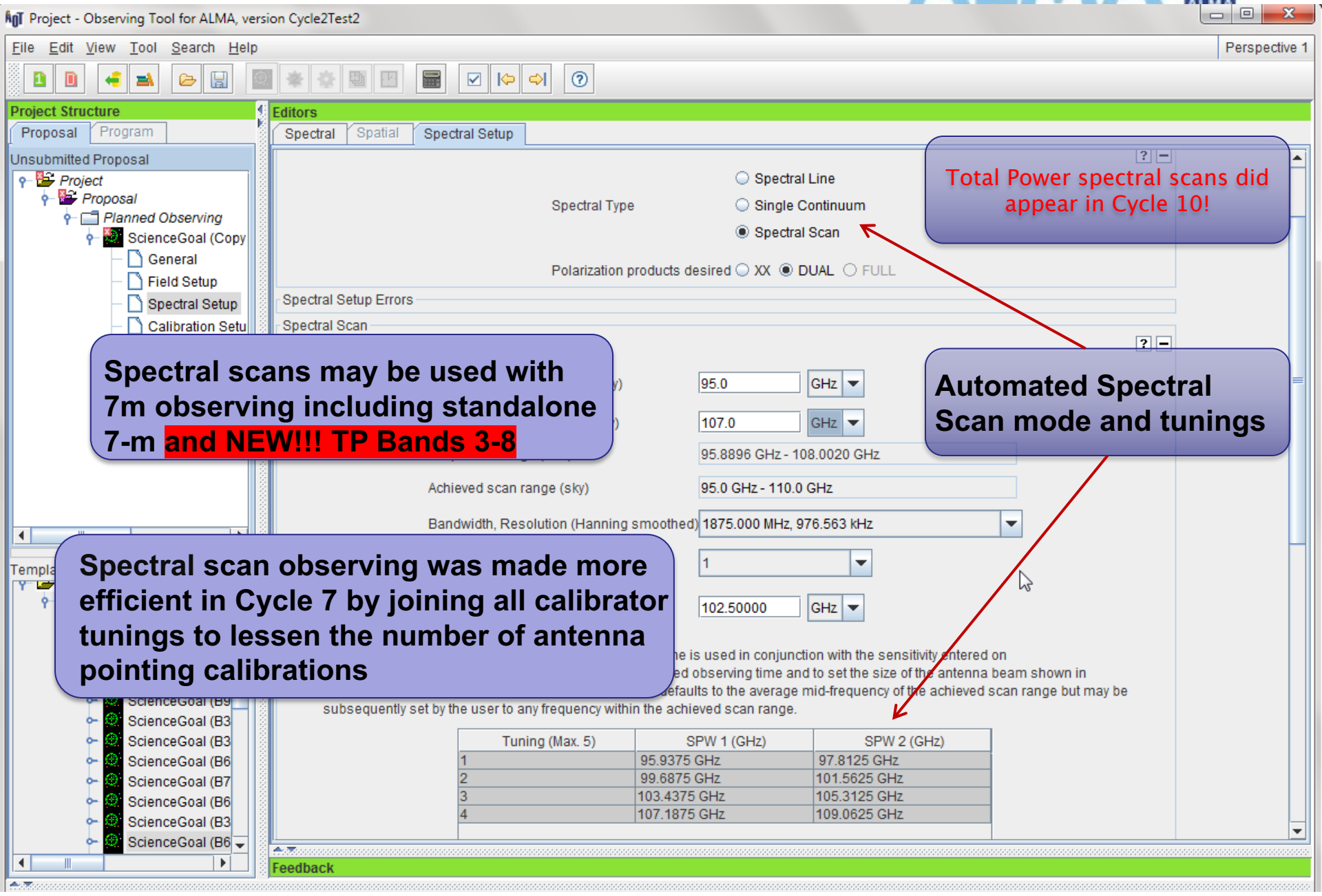
You can edit the frequencies used for continuum polarization.

Full polarization is available for single pointings w/ Standalone ACA

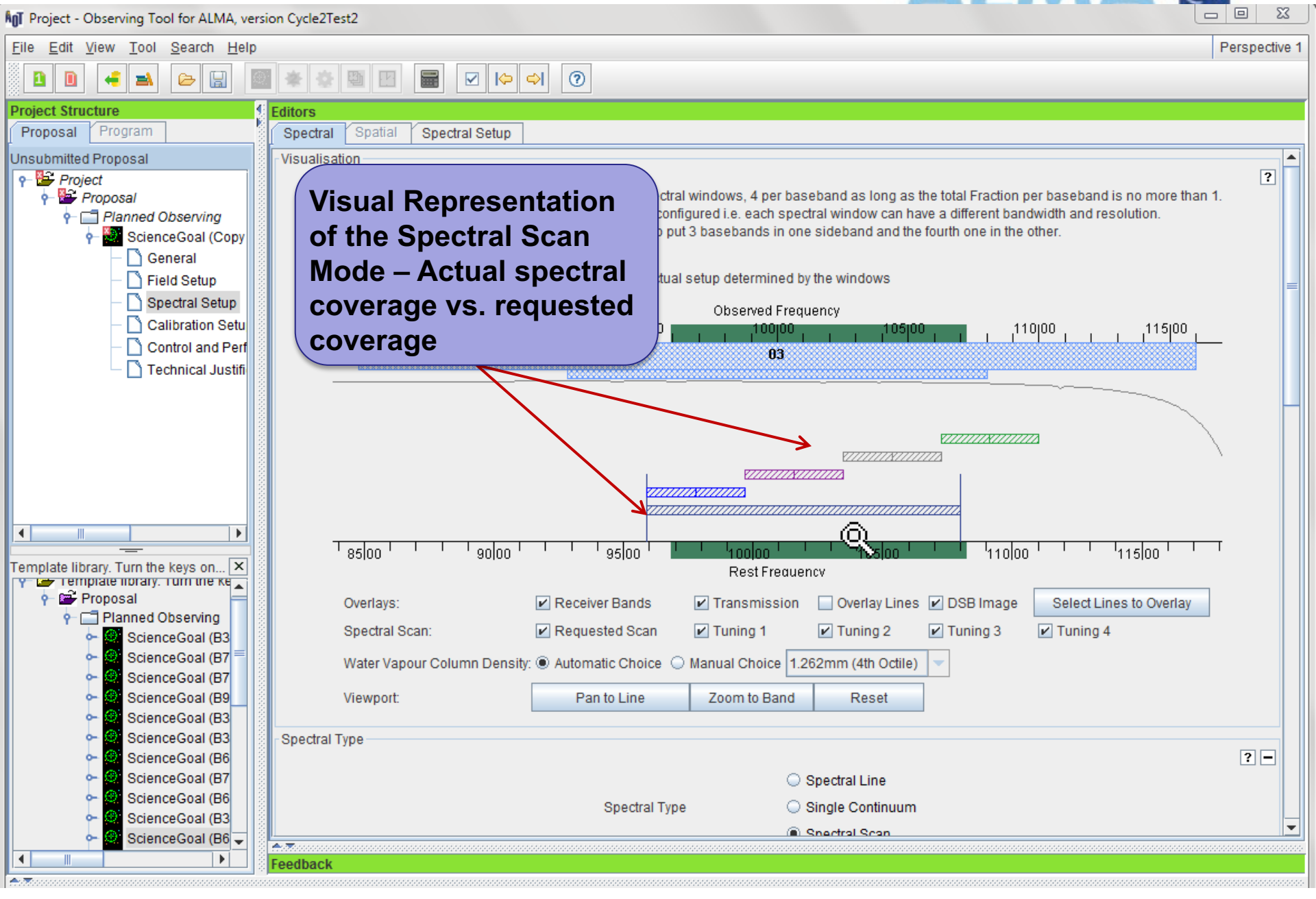
Polarization - suggestion



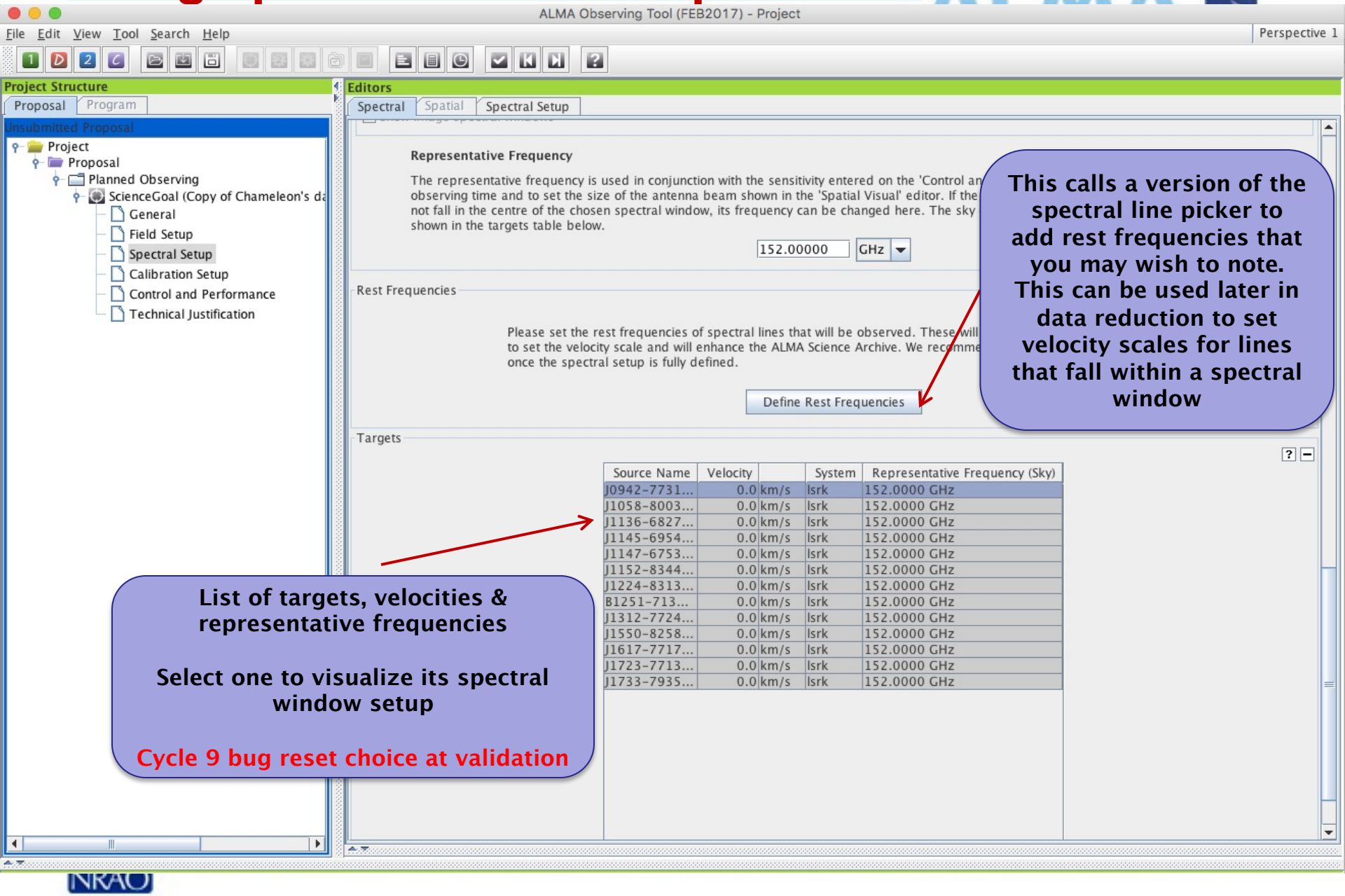
Automated spectral scan - I



Automated spectral scan - II



Saving spw & line rest frequencies



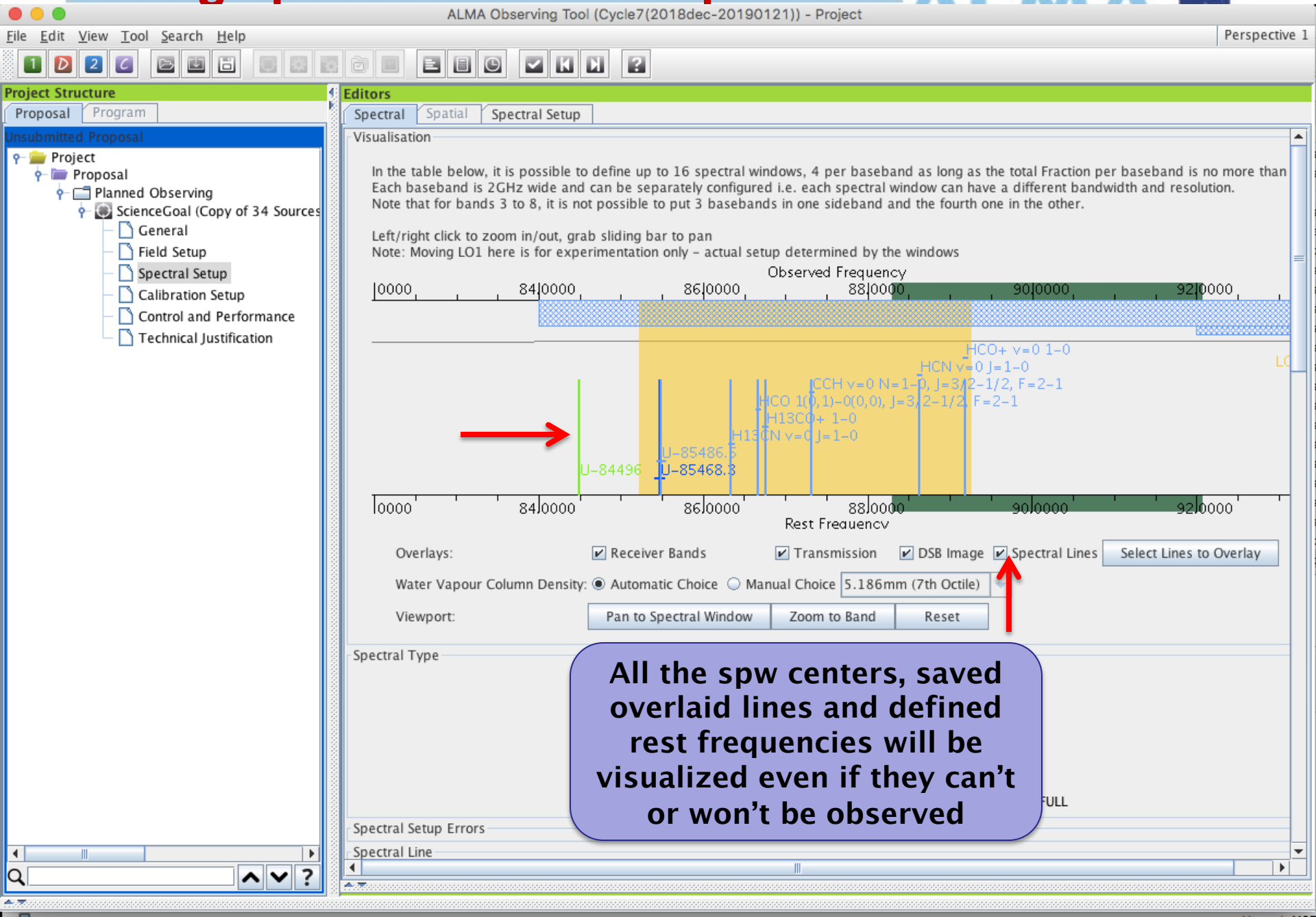
This calls a version of the spectral line picker to add rest frequencies that you may wish to note. This can be used later in data reduction to set velocity scales for lines that fall within a spectral window

List of targets, velocities & representative frequencies

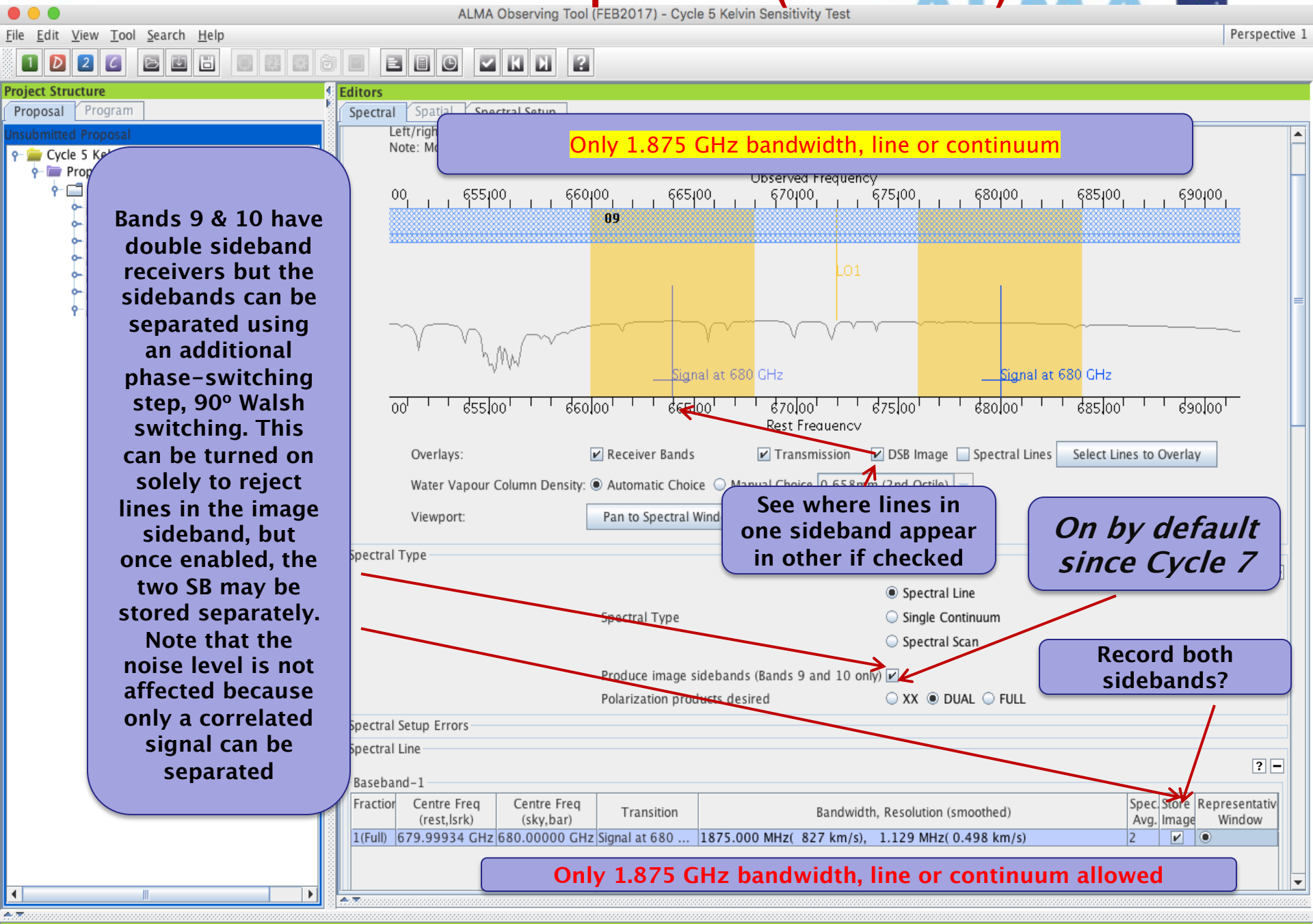
Select one to visualize its spectral window setup

Cycle 9 bug reset choice at validation

Viewing spw & line rest frequencies



Bands 9 &10 - sideband separation (90º Walsh)



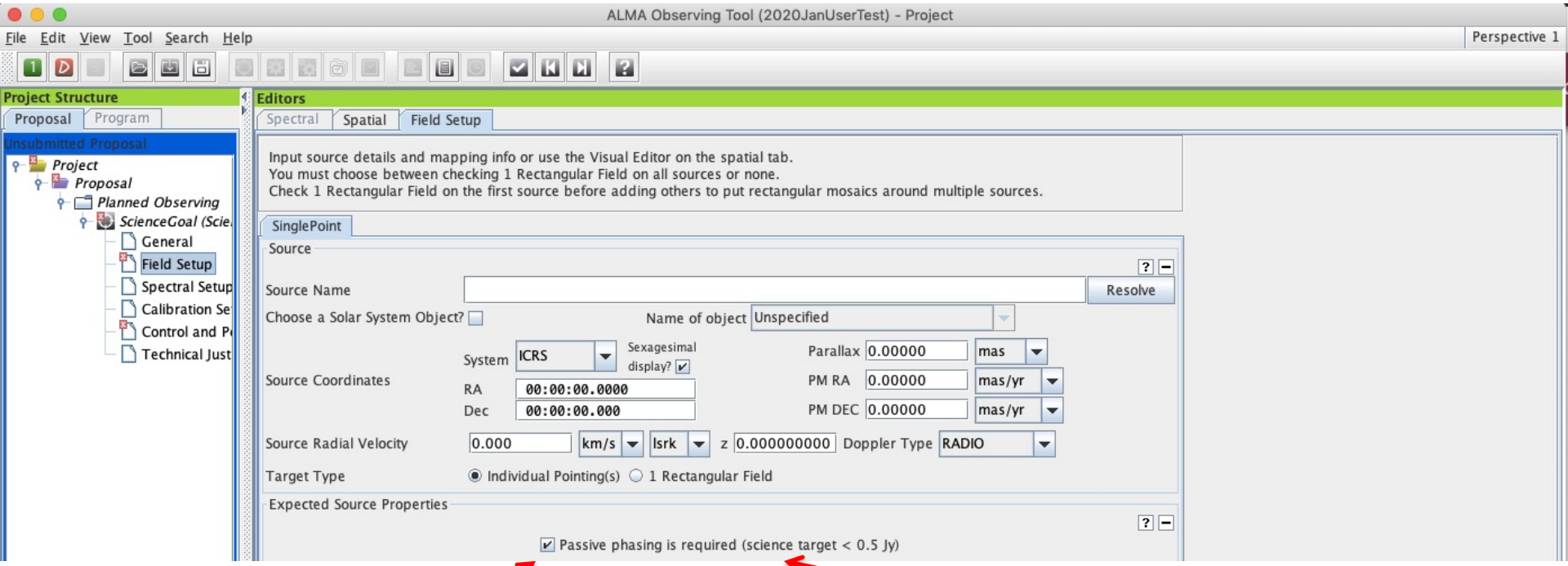
Bands 9 & 10 have double sideband receivers but the sidebands can be separated using an additional phase-switching step, 90º Walsh switching. This can be turned on solely to reject lines in the image sideband, but once enabled, the two SB may be stored separately. Note that the noise level is not affected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

See where lines in one sideband appear in other if checked

On by default since Cycle 7

Record both sidebands?

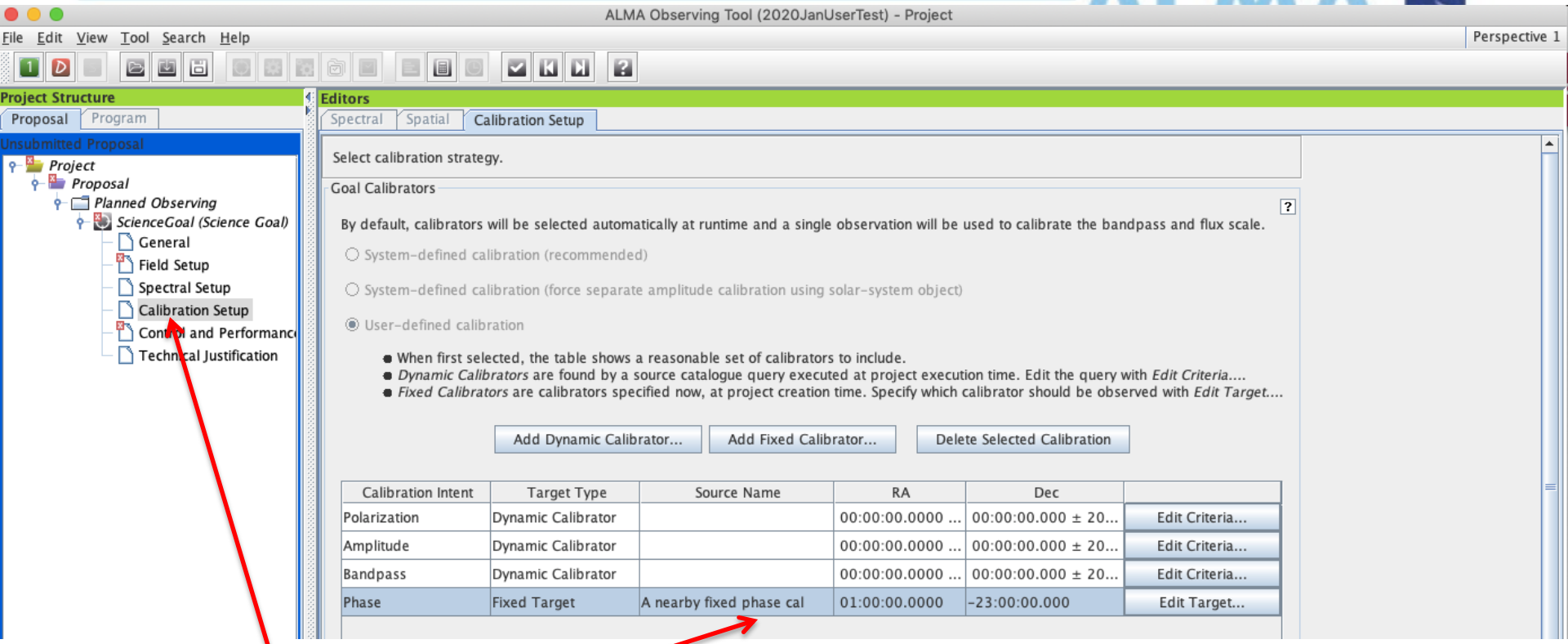
Passive phasing of the 12m array for VLBI of weak sources - I



For VLBI observation of weak, unresolved sources the 12m array may be phased up if a bright enough phase calibrator is known within 5º of 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

New! Passive phasing extended to Bands 1,3,6,7 line and continuum

New! VLBI spectral line handling in receiver bands 1, 3, 6 and 7

Capabilities are somewhat complex, please see the proposer's handbook

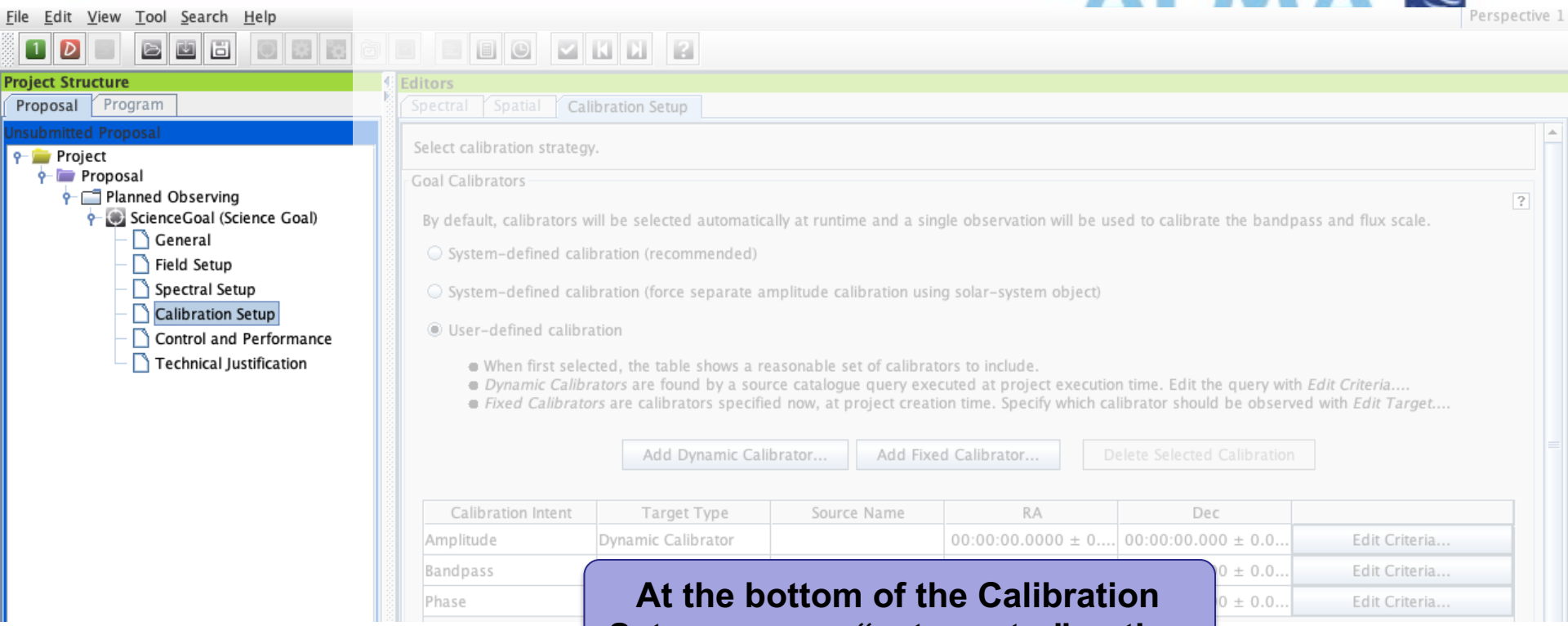
- Baseband 1 (BB1) need not be associated with an SiO line, even for Band3

- For Receiver Bands 1 & 3, BB1 must be in VLBI mode, i.e. its bandwidth must be 1875 MHz; only one spw should be allowed; its centre frequency will be the same as in the default single continuum setup but may be modified by the user.

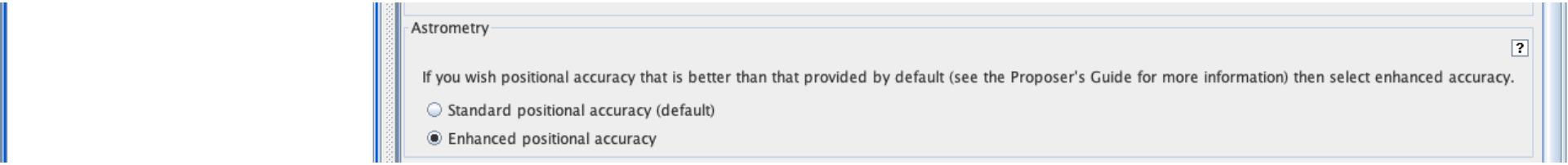
- For Band 6 & Band 7 at least one baseband must be in VLBI mode (but not necessarily BB1): its bandwidth should be 1875 MHz bandwidth and only one spw is allowed; the default center frequency will be the same as in the single continuum setup but can be modified by the user

- The other BBs are treated as normal ALMA BBs.

Enhanced positional accuracy - 1st step to astrometry

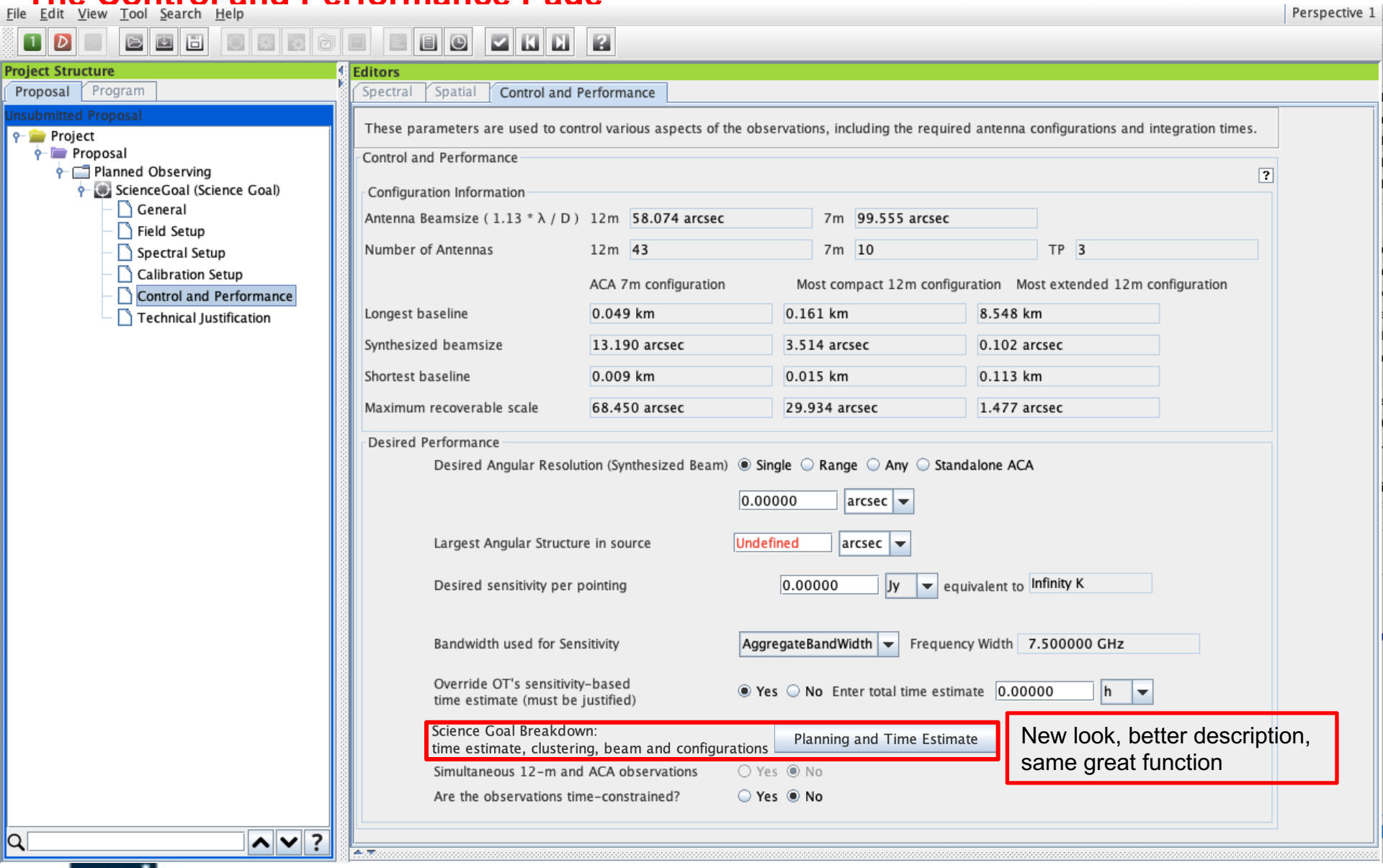


At the bottom of the Calibration Setup page an "astrometry" option

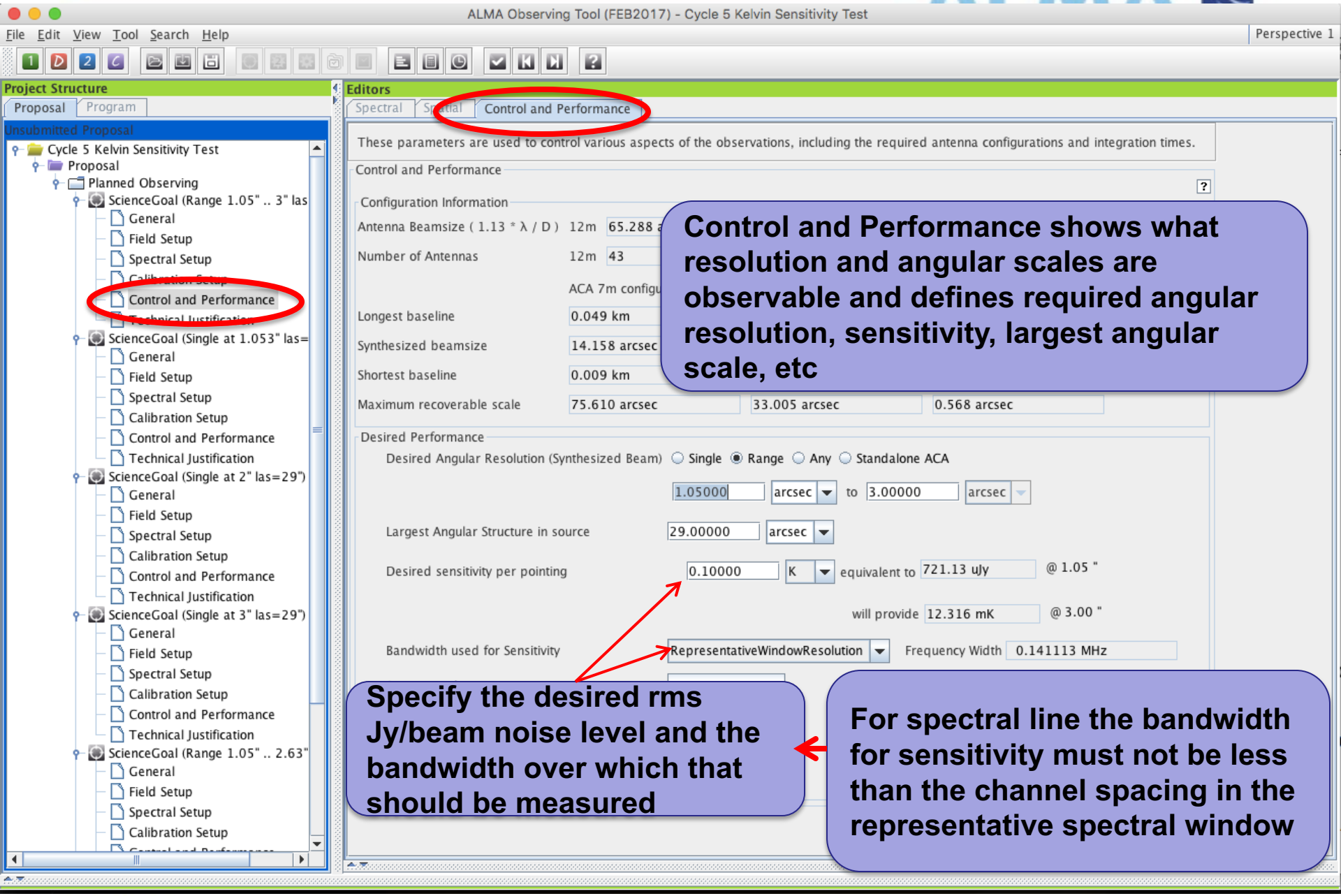


Uses extra calibration and a bright grid calibrator must be within 5°

The Control and Performance Page



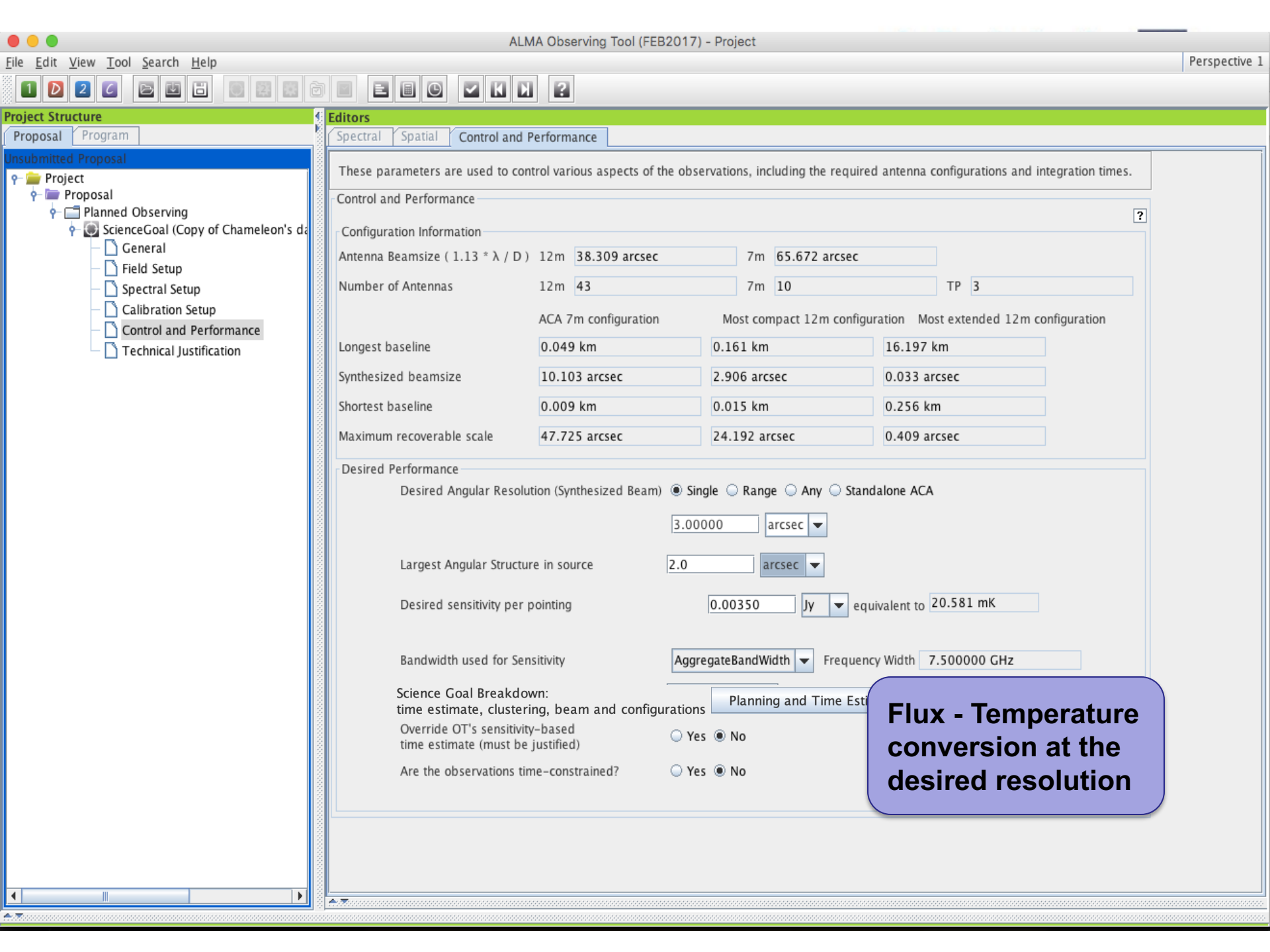
The Control and Performance Page



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
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Planned Observing
ScienceGoal (Copy of Chameleon's da
General
Field Setup
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Calibration Setup
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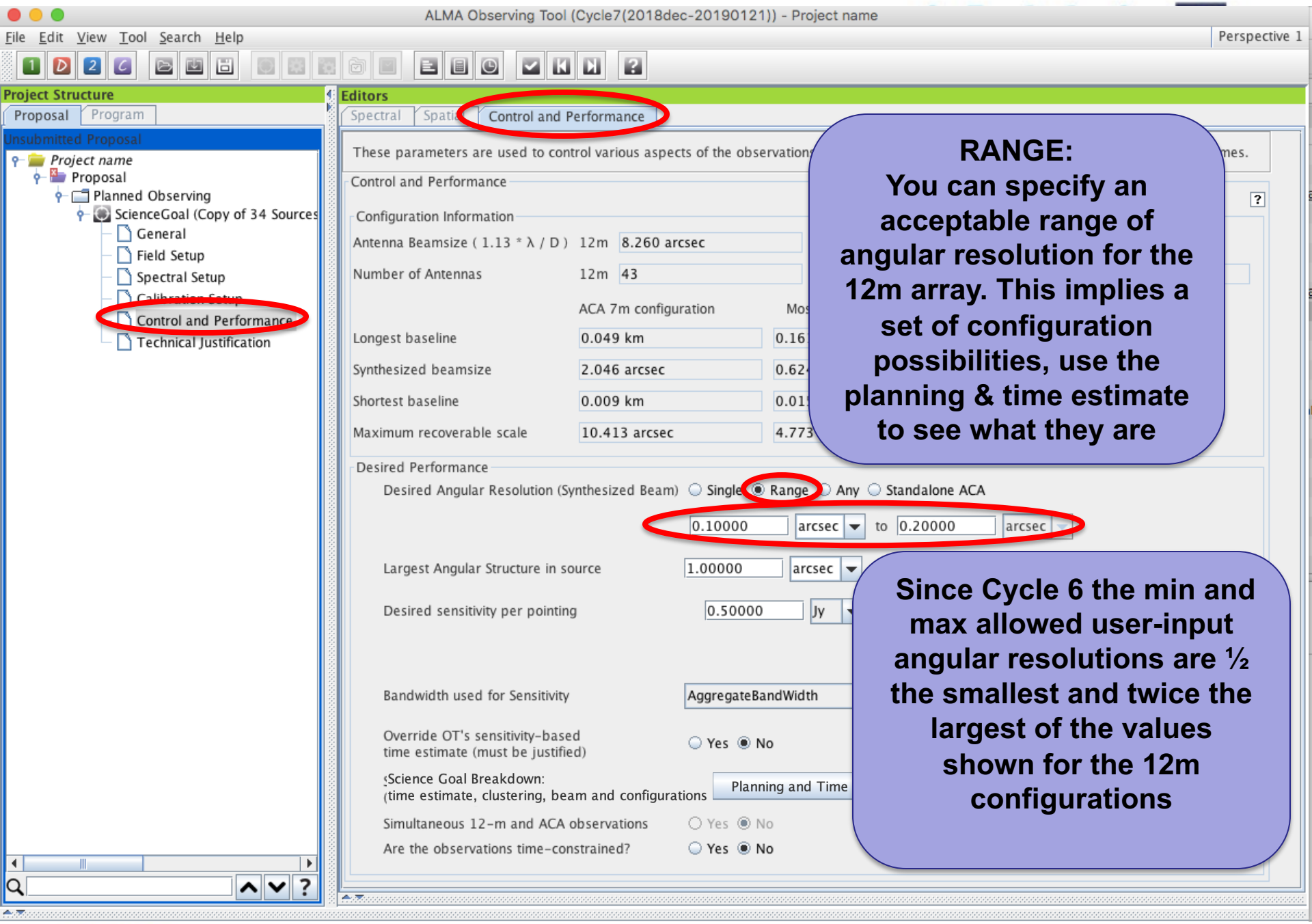
Technical Justification
Editors
Spectral Spatial Control and Performance
These parameters are used to control various aspects of the observations, including the required antenna configurations and integration times.
Control and Performance
Configuration Information
Antenna Beamsize (1.13 * λ / D) 12m 38.309 arcsec 7m 65.672 arcsec
Number of Antennas 12m 43 7m 10 TP 3
ACA 7m configuration
Most compact 12m configuration
Most extended 12m configuration
Longest baseline 0.049 km 0.161 km 16.197 km
Synthesized beamsize 10.103 arcsec 2.906 arcsec 0.033 arcsec
Shortest baseline 0.009 km 0.015 km 0.256 km
Maximum recoverable scale 47.725 arcsec 24.192 arcsec 0.409 arcsec
Desired Performance
Desired Angular 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 Breakdown:
time estimate, clustering, beam and configurations
Planning and Time Esti
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
File Edit View Tool Search Help
Perspective 1
Project Structure
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Unsubmitted Proposal
Project name
Proposal
Planned Observing
ScienceGoal (Copy of 34 Sources
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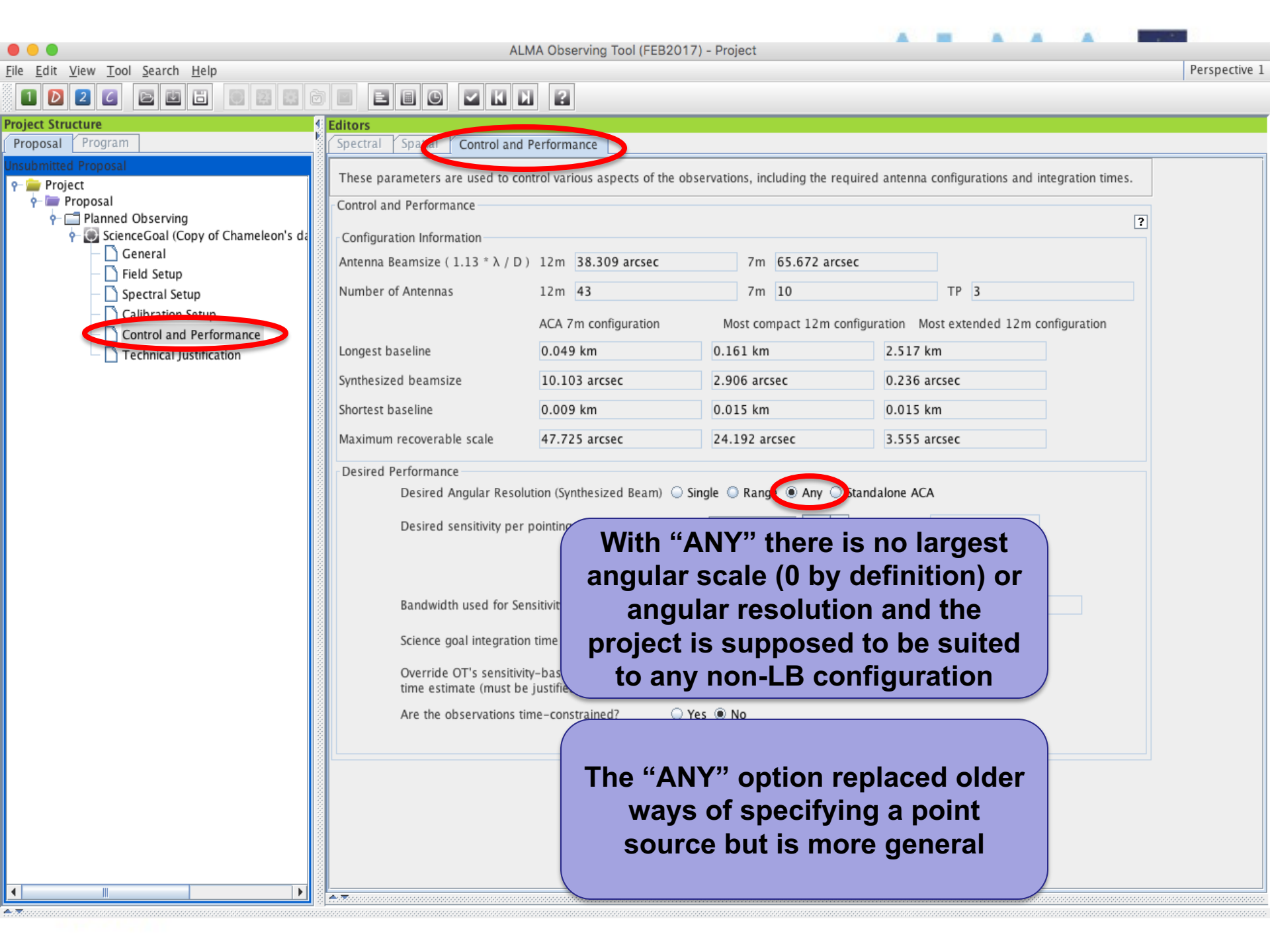
Control and Performance
Technical Justification
Editors
Spectral
Control and Performance
These parameters are used to control various aspects of the observation
Control and Performance
Configuration Information
Antenna Beamsize (1.13 * λ / D) 12m 8.260 arcsec
Number of Antennas 12m 43
ACA 7m configuration
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 Breakdown: (time estimate, clustering, beam and configurations Planning and Time
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 planning & 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
File Edit View Tool Search Help
Perspective 1
Project Structure
Proposal Program
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Planned Observing
ScienceGoal (Copy of Chameleon's da
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Calibration Setup
Control and Performance
Technical Justification
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Spectral
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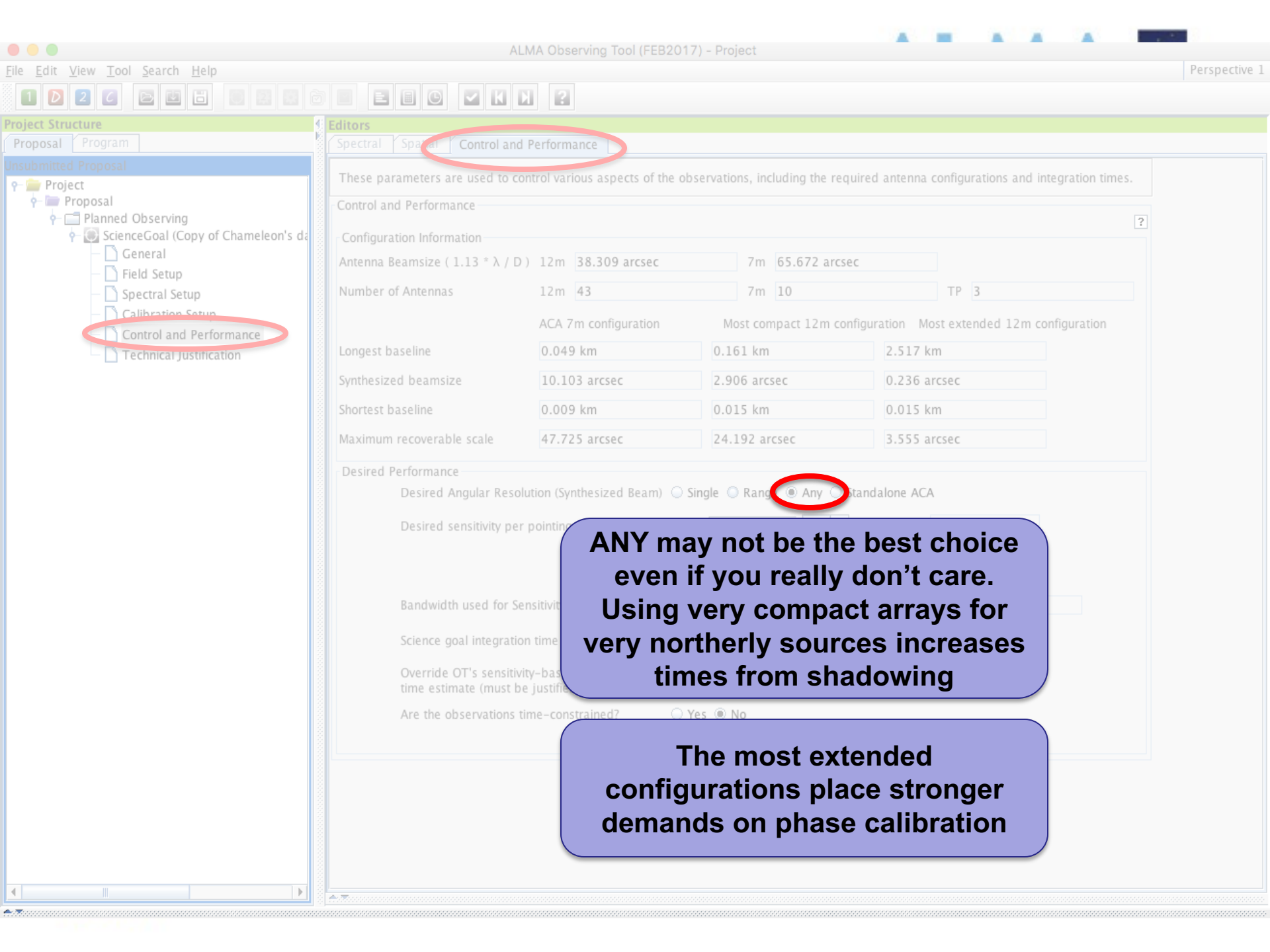
Control and Performance
Configuration Information
Antenna Beamsize (1.13 * λ / D) 12m 38.309 arcsec 7m 65.672 arcsec
Number of Antennas 12m 43 7m 10 TP 3
ACA 7m configuration
Most compact 12m configuration
Most extended 12m configuration
Longest baseline 0.049 km 0.161 km 2.517 km
Synthesized beamsize 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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Proposal Program
Unsubmitted Proposal
Project
Proposal
Planned Observing
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Technical Justification
Editors
Spectral Spatial Control and Performance
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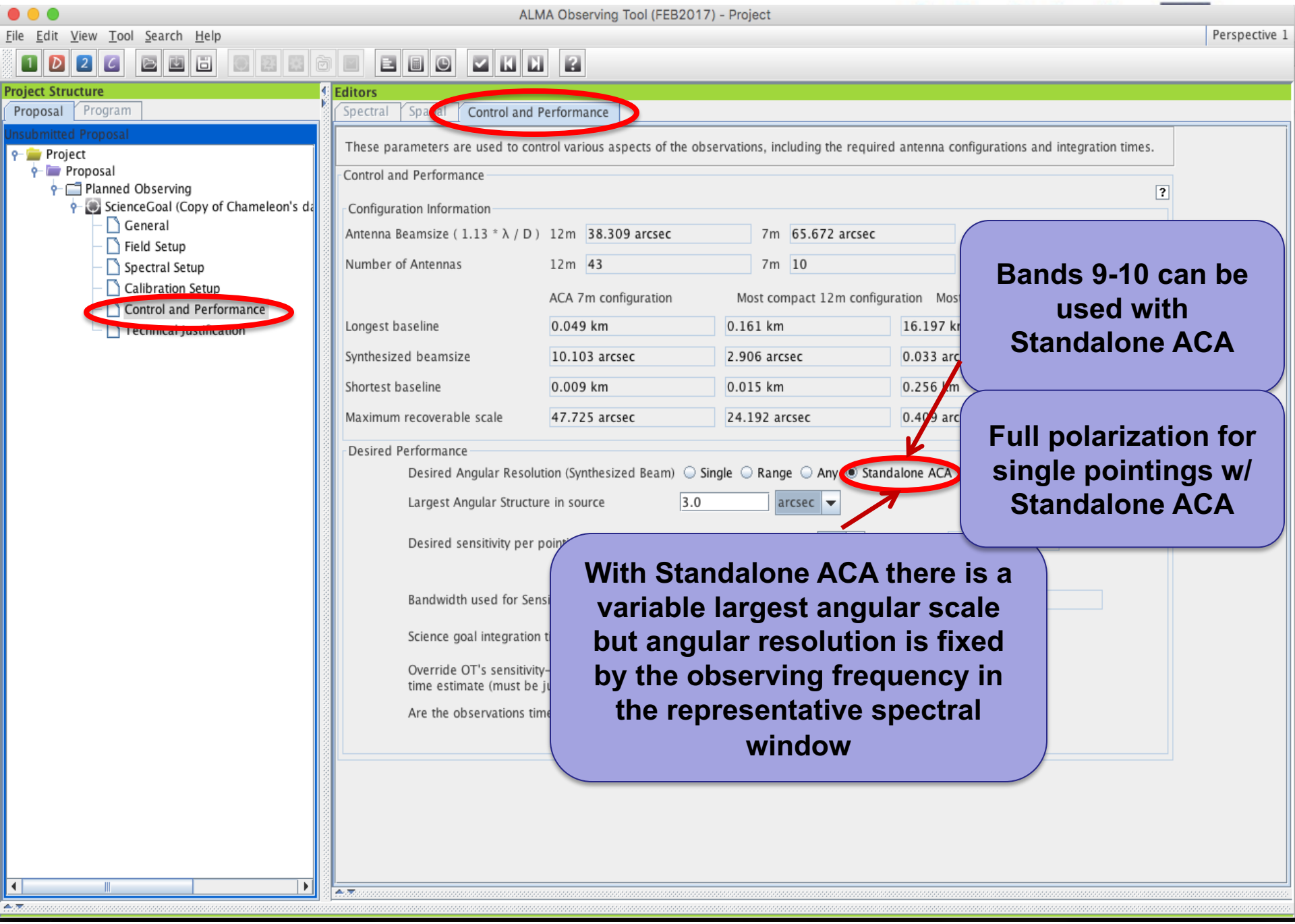
Configuration Information
Antenna Beamsize (1.13 * λ / D) 12m 38.309 arcsec 7m 65.672 arcsec
Number of Antennas 12m 43 7m 10 TP 3
ACA 7m configuration
Most compact 12m configuration
Most extended 12m configuration
Longest baseline 0.049 km 0.161 km 2.517 km
Synthesized beamsize 10.103 arcsec 2.906 arcsec 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 Any Standalone ACA
Desired sensitivity per pointing
Bandwidth used for Sensitivit
Science goal integration time
Override OT's sensitivity-bas
time estimate (must be justifi
Are the observations time-constrained? Yes No
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 extended configurations place stronger demands on phase calibration


ALMA Observing Tool (FEB2017) - Project
File Edit View Tool Search Help
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Project Structure
Proposal Program
Unsubmitted Proposal
Project
Proposal
Planned Observing
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General
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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.
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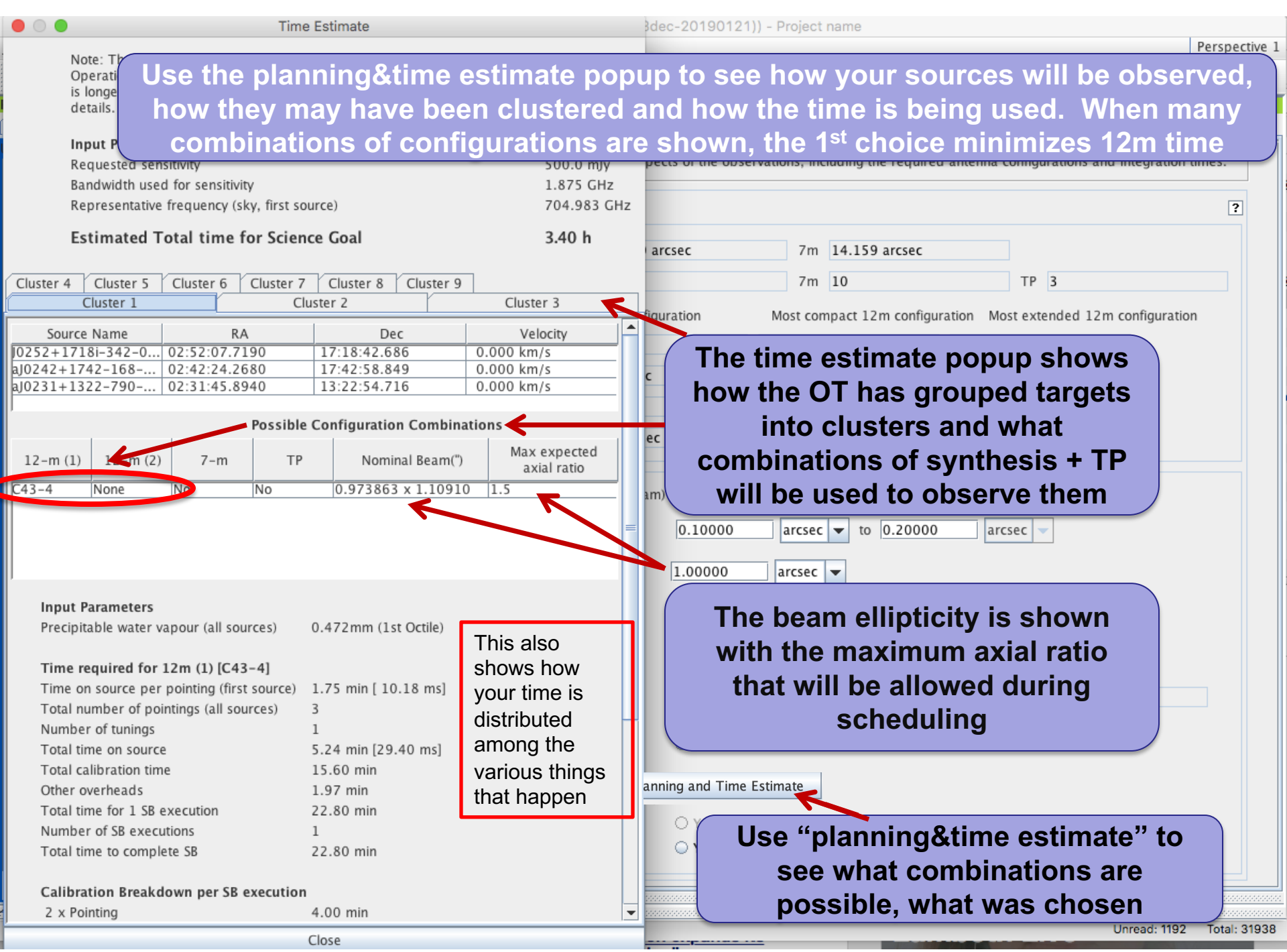
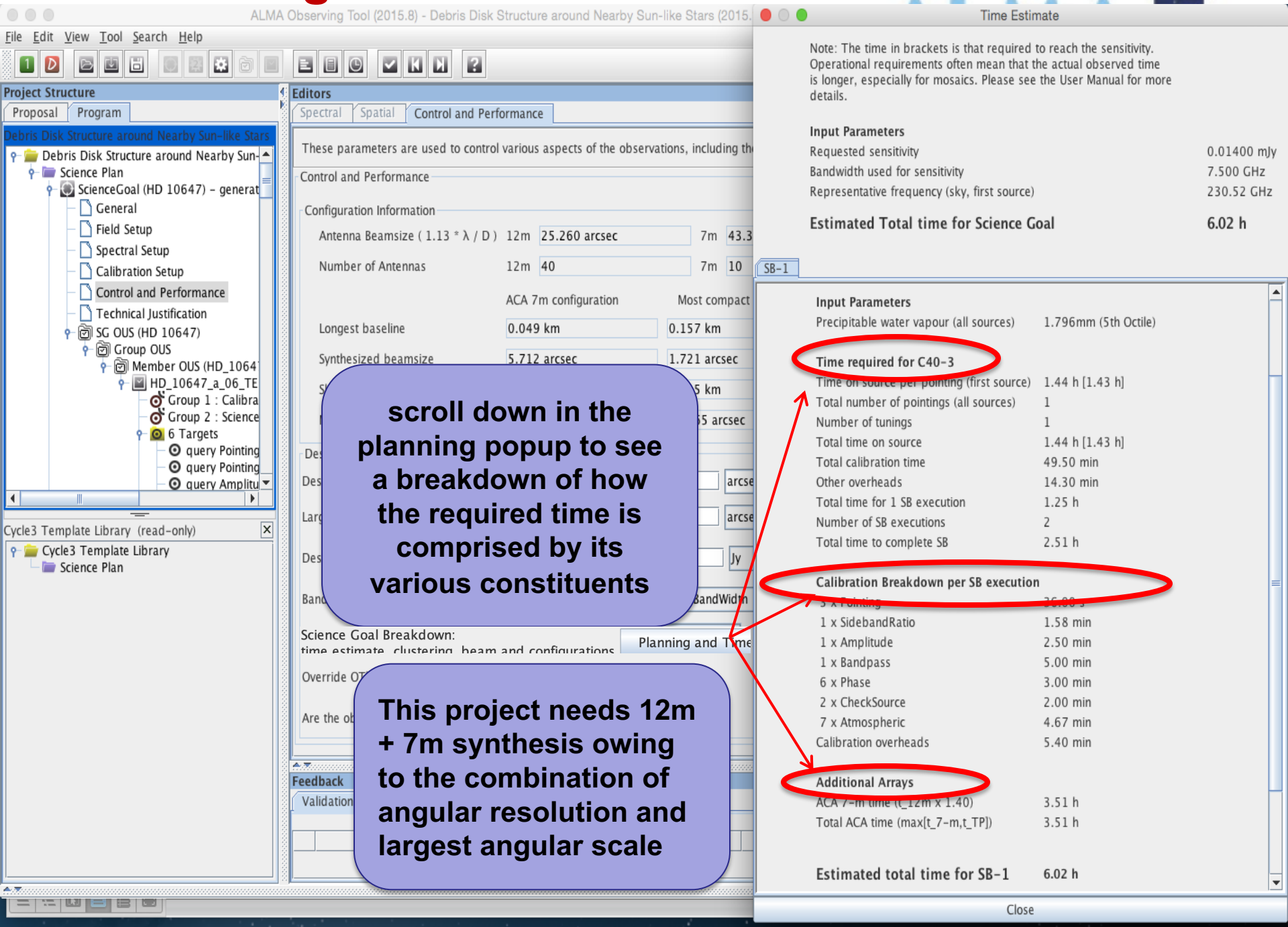
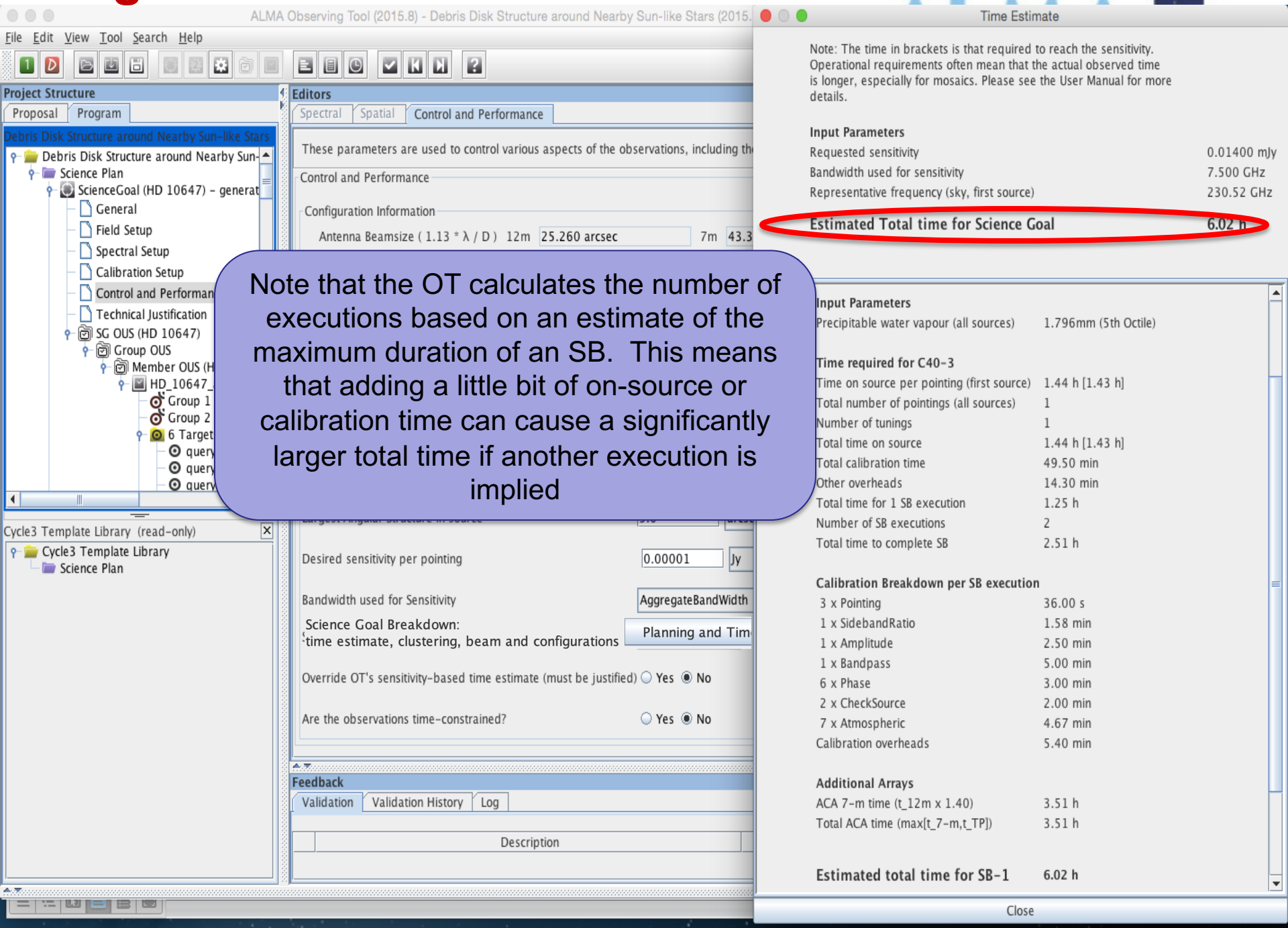
Antenna Beamsize (1.13 * λ / D) 12m 38.309 arcsec 7m 65.672 arcsec
Number of Antennas 12m 43 7m 10
ACA 7m configuration
Most compact 12m configuration
Longest baseline 0.049 km 0.161 km
Synthesized beamsize 10.103 arcsec 2.906 arcsec
Shortest baseline 0.009 km 0.015 km
Maximum recoverable scale 47.725 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
Bands 9-10 can be used with Standalone ACA
Full polarization for single pointings w/ Standalone ACA
With Standalone ACA there is a variable largest angular scale but angular resolution is fixed by the observing frequency in the representative spectral window


Use the planning&time estimate popup to see how your sources will be observed, how they may have been clustered and how the time is being used. When many combinations of configurations are shown, the 1st choice minimizes 12m time
Time Estimate
Requested sensitivity
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
02:52:07.7190
17:18:42.686
0.000 km/s
02:42:24.2680
17:42:58.849
0.000 km/s
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
This also shows how your time is distributed among the various things that happen
The beam ellipticity is shown with the maximum axial ratio that will be allowed during scheduling
Use “planning&time estimate” to see what combinations are possible, what was chosen
Perspective 1
14.159 arcsec
10
TP
3
Most compact 12m configuration
Most extended 12m configuration
0.10000
arcsec
to
0.20000
1.00000
Unread: 1192
Total: 31938

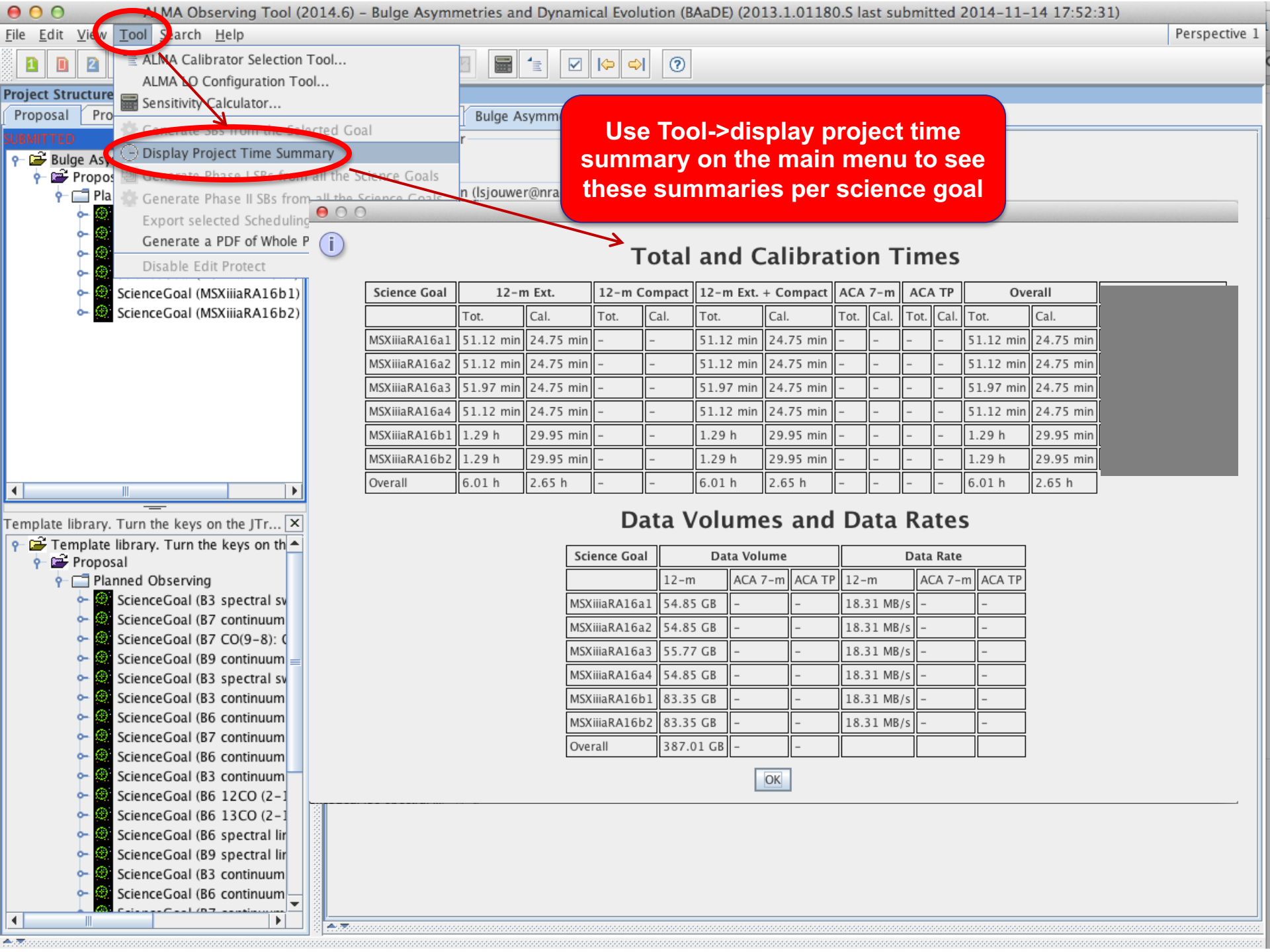
SG Planning and Time Estimates



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 or calibration time can cause 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...
Display Project Time Summary
Export selected Scheduling
Generate a PDF of Whole P
Disable Edit Protect
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
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
MSXiiiaRA16a2 | 51.12 min | 24.75 min | - | - | 51.12 min | 24.75 min | - | - | - | - | 51.12 min | 24.75 min
MSXiiiaRA16a3 | 51.97 min | 24.75 min | - | - | 51.97 min | 24.75 min | - | - | - | - | 51.97 min | 24.75 min
MSXiiiaRA16a4 | 51.12 min | 24.75 min | - | - | 51.12 min | 24.75 min | - | - | - | - | 51.12 min | 24.75 min
MSXiiiaRA16b1 | 1.29 h | 29.95 min | - | - | 1.29 h | 29.95 min | - | - | - | - | 1.29 h | 29.95 min
MSXiiiaRA16b2 | 1.29 h | 29.95 min | - | - | 1.29 h | 29.95 min | - | - | - | - | 1.29 h | 29.95 min
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 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

Project Summary

Total and Calibration Times

Science Goal	12-m (1)		12-m (2)		12-m (1+2)		ACA 7-m		ACA TP		Overall	
	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
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

Total and Calibration Times

Science Goal	12-m (1)		12-m (2)		12-m (1+2)		ACA 7-m		ACA TP		Overall	
	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
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

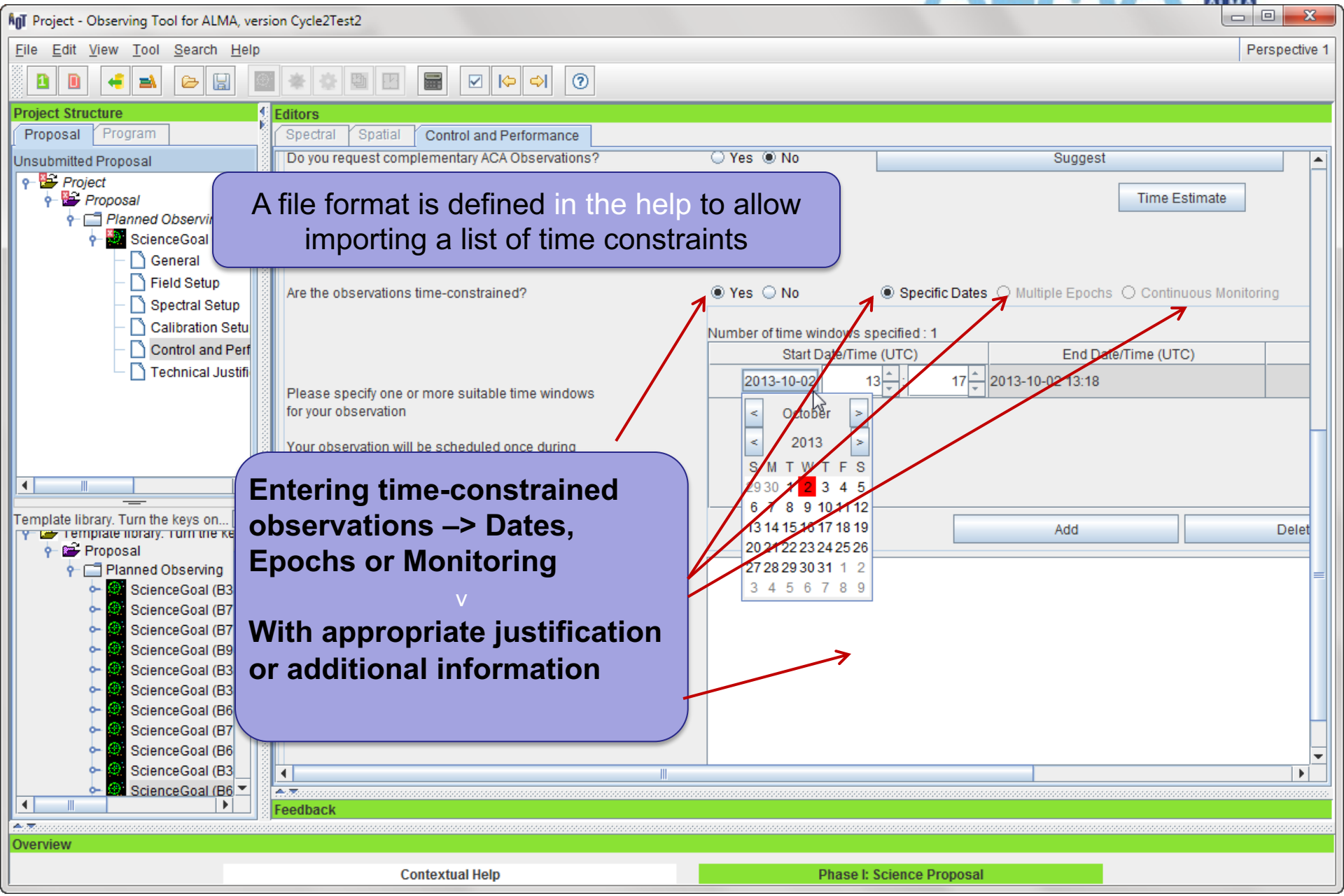
Especially when using a RANGE of angular resolution:
Rules are operating under the hood to choose among the possible configuration choices and they may be biased toward the low resolution end of an angular range because less 12m time is needed. *Variations in the range can cause disproportionately large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

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

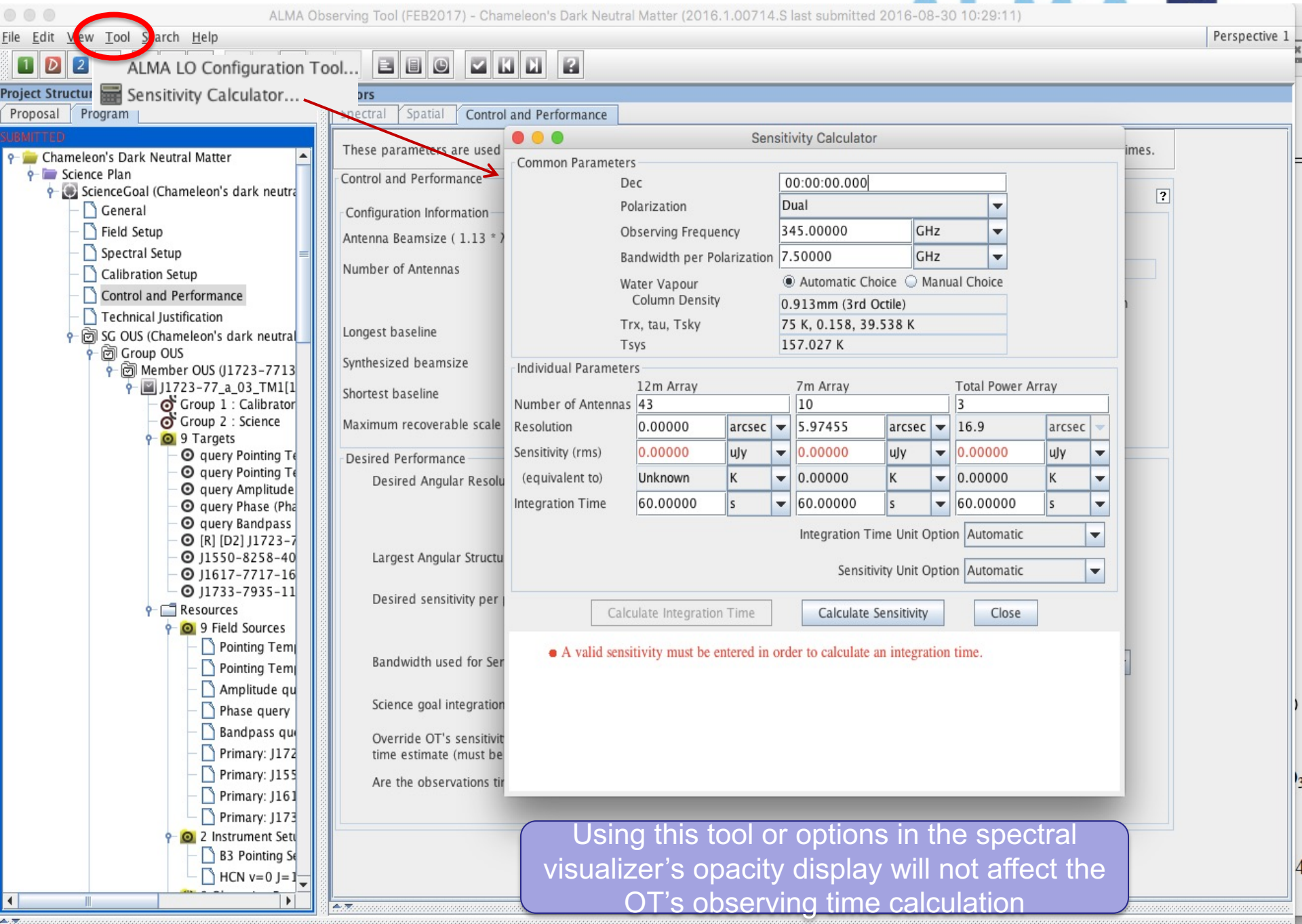
Be careful that the OT is not making choices for you that you would not make for yourself. Before submitting with a range, narrow it and use the project time summary to examine the choices the OT is making

NRAO

Time-constrained observing

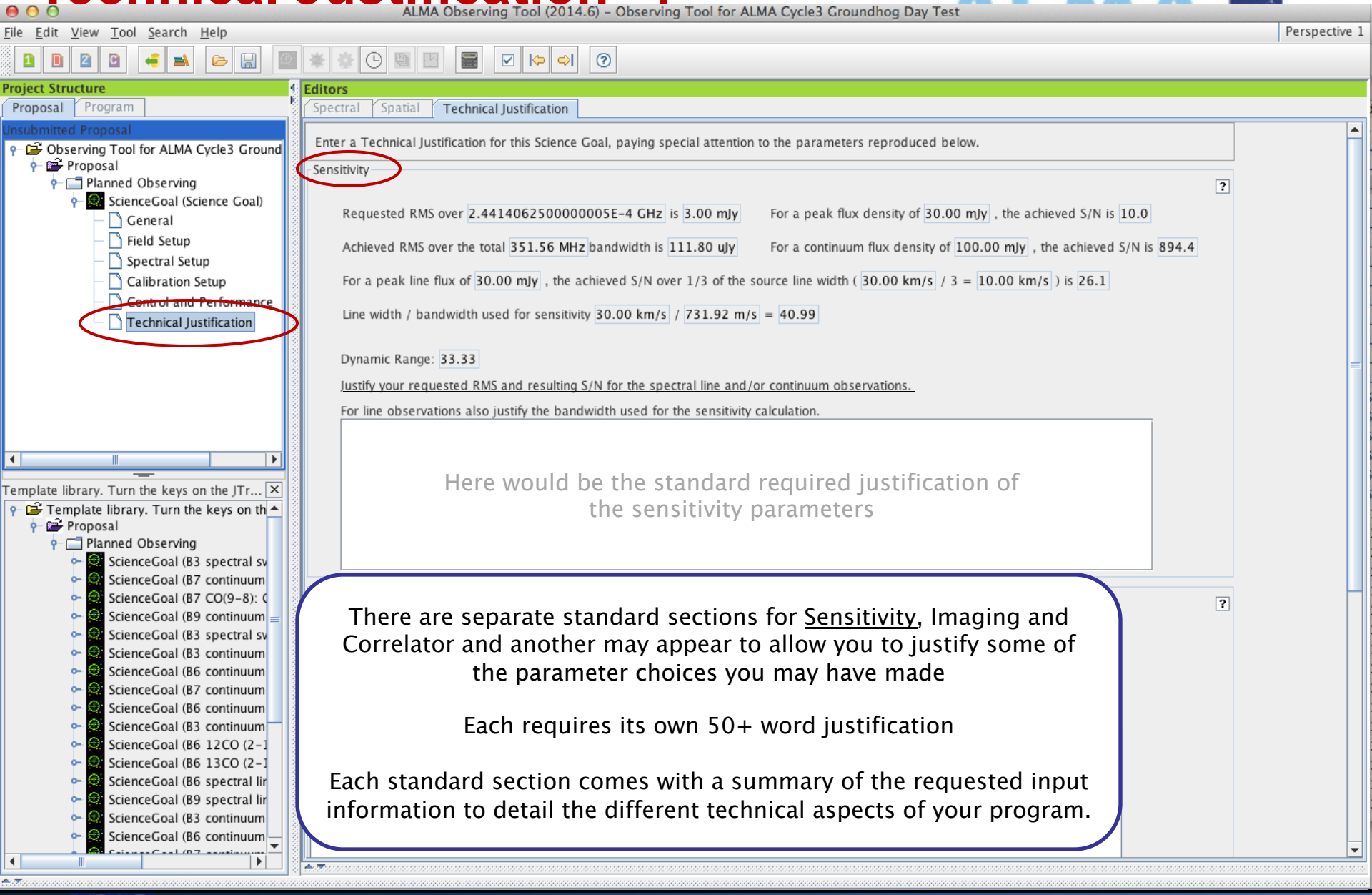


The sensitivity calculator is available separately in the OT (or on the web)



Using this tool or options in the spectral visualizer's opacity display will not affect the OT's observing time calculation

Technical Justification - I

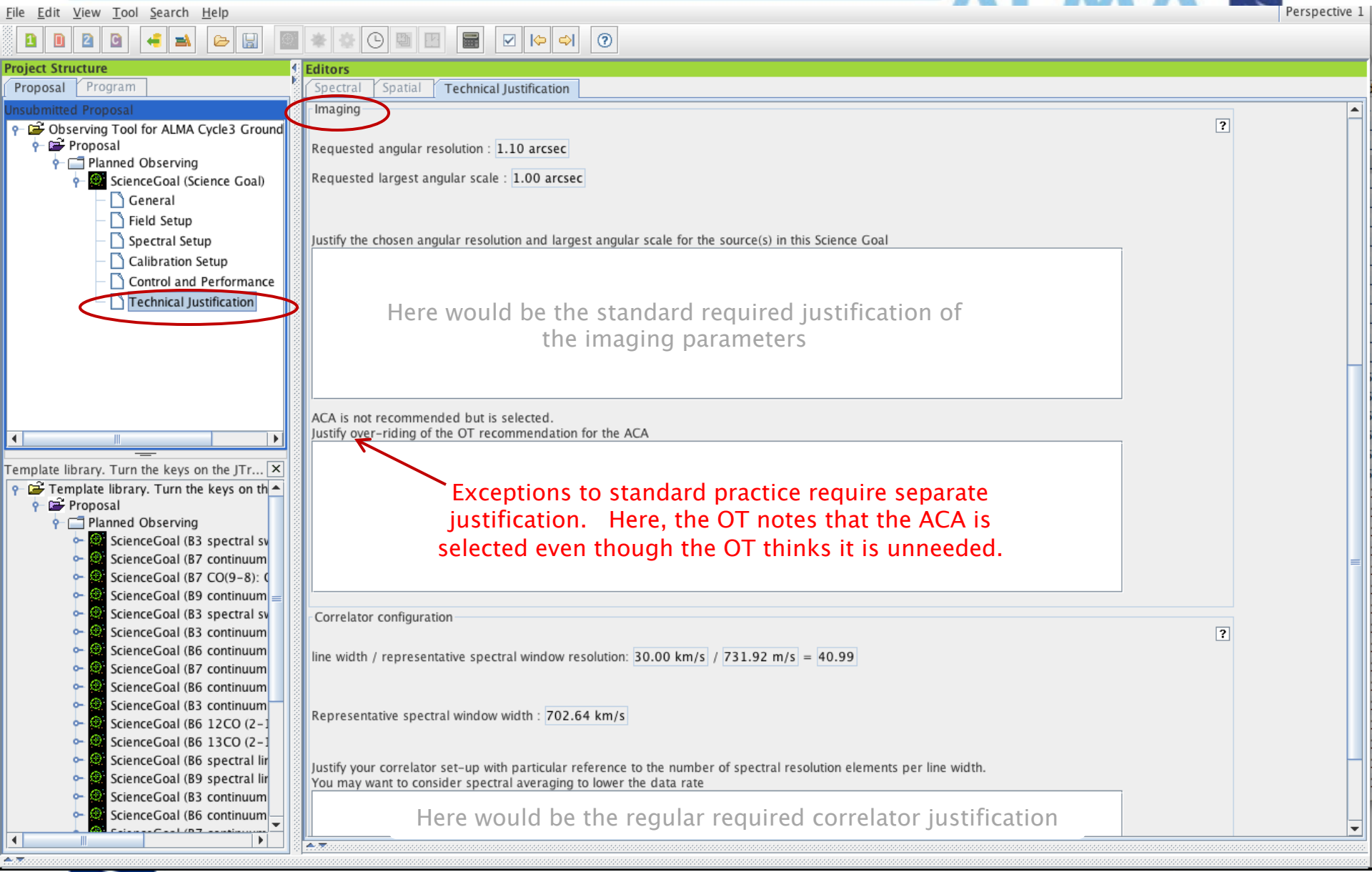


There are separate standard sections for Sensitivity, Imaging and Correlator and another may appear to allow you to justify some of the parameter choices you may have made

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 - II



Technical Justification - III

NEW! **Separate justification text required when observing parameters result in dynamic range exceeding some system limits**

Excessively High Imaging and/or Spectral Dynamic Range. Please explain why this is required and how this can be achieved.

Conditions on SDR = continuum flux/line RMS)

(

SDR > 1000 if using Band 6 or lower

SDR > 400 if using Band 7

SDR > 250 if using Band 8

SDR > 170 if using Band 9

SDR > 150 if using Band 10

Conditions on
c-IDR = peak continuum flux density/ map rms and
l-IDR = peak line flux / map rms

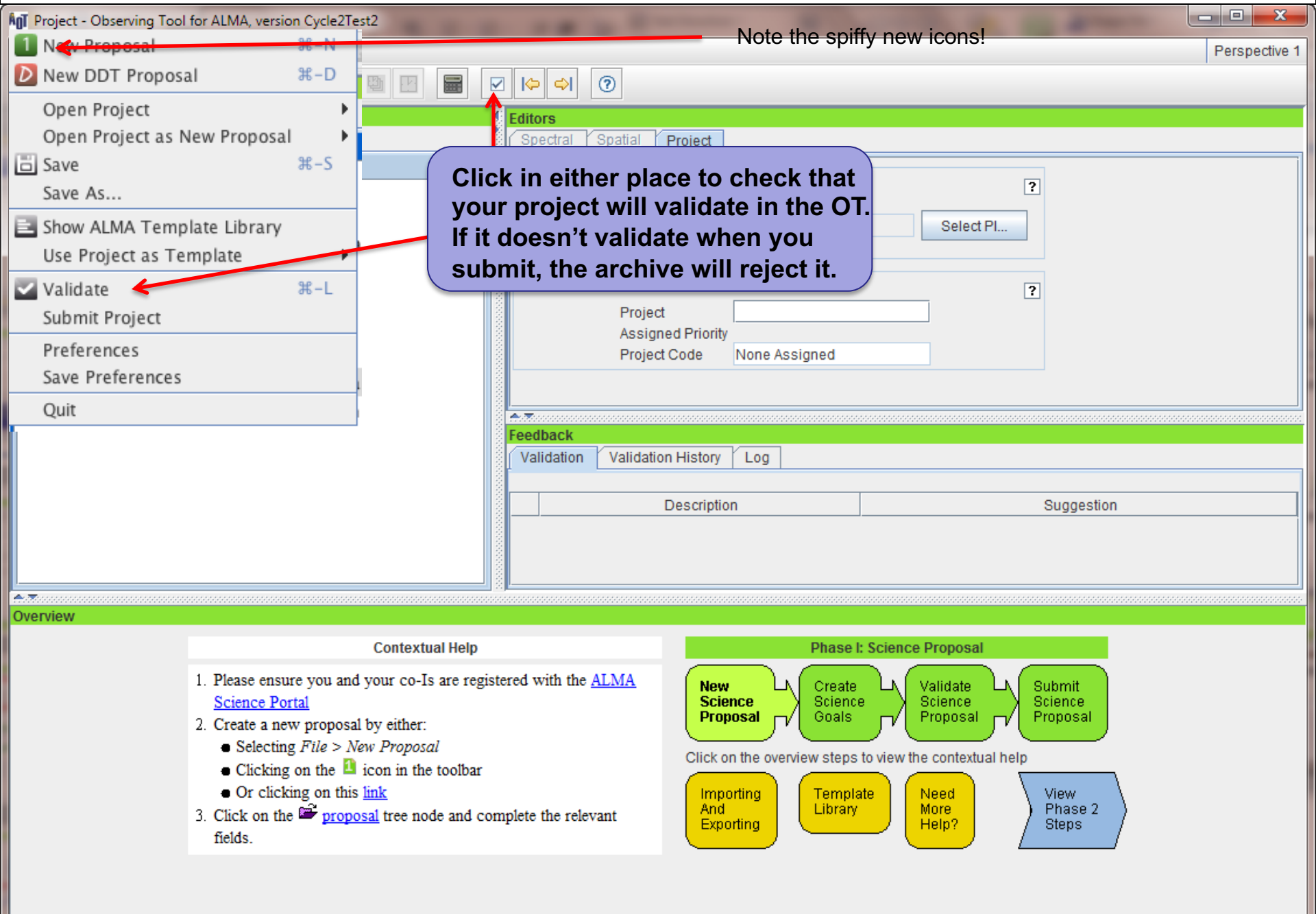
c-IDR and/or l-IDR > 50 if using band 8, 9, or 10

c-IDR and/or l-IDR > 50 if using configurations C-6 up to C-10

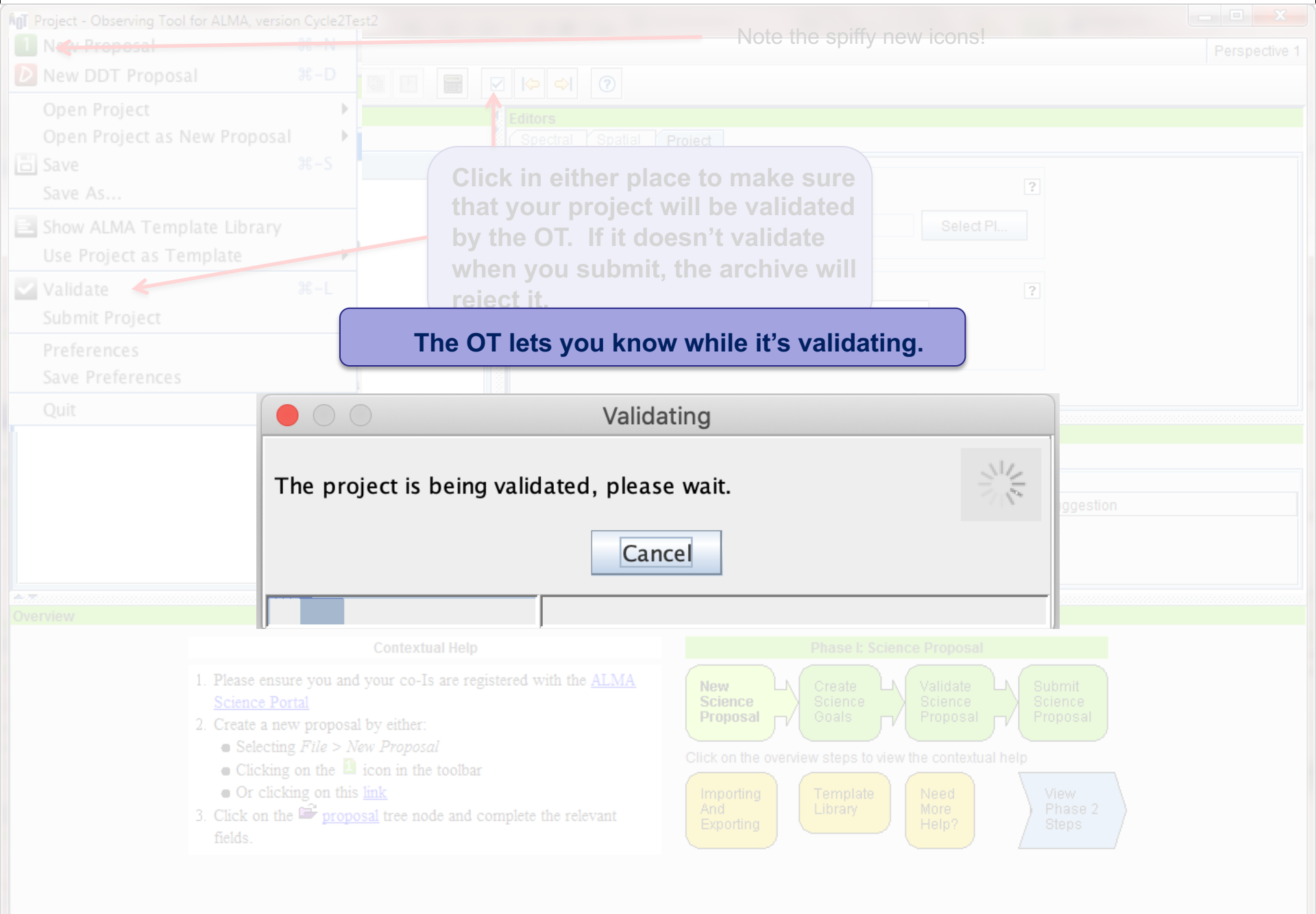
c-IDR and/or l-IDR > 100 if using ACA or configurations C-1 to C-5 and observing at band 7 or lower

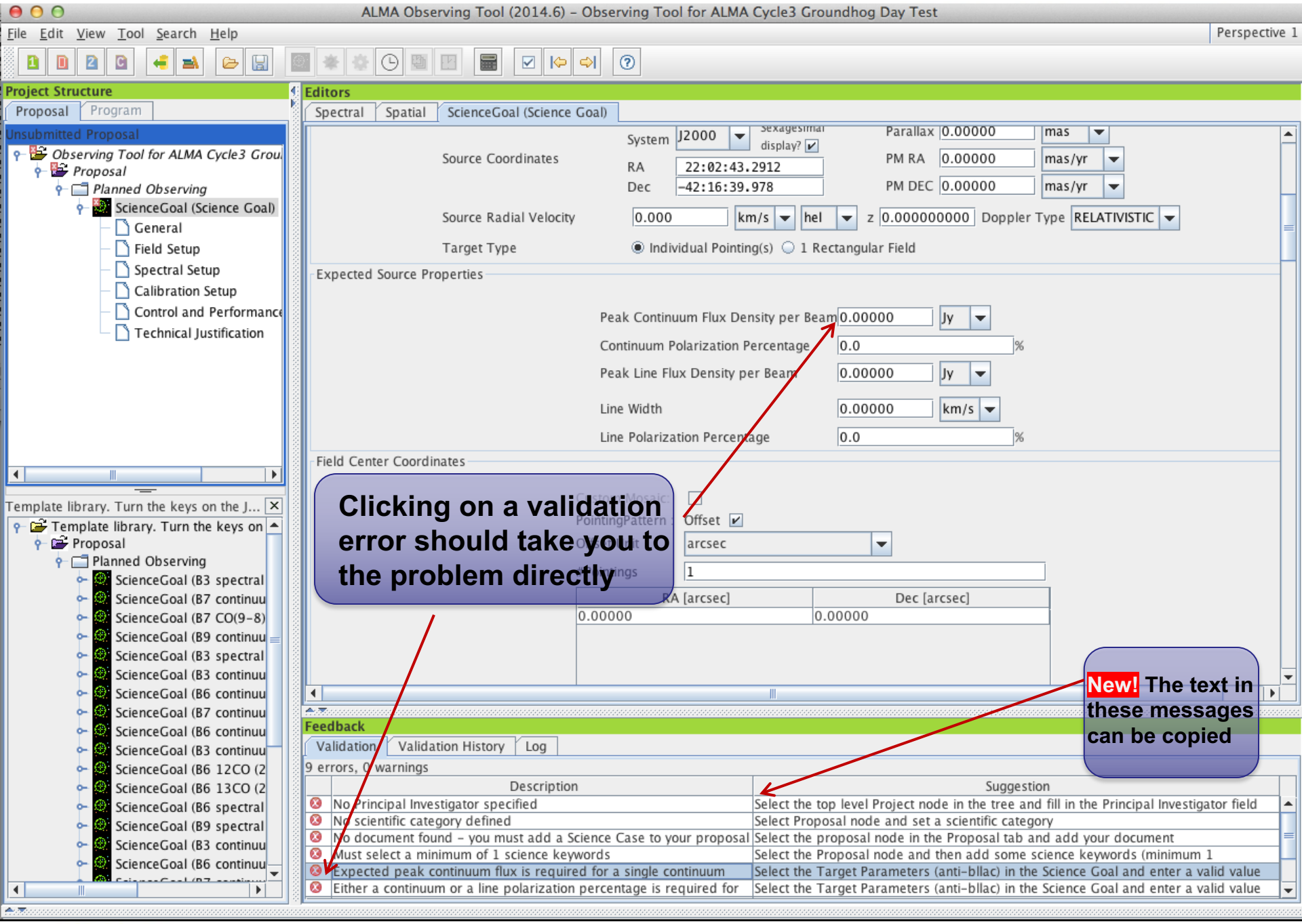
Here would be the regular required correlator justification

When the time is ripe … validate & submit



When the time is ripe … validate & submit




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
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Template library. Turn the keys on
Proposal
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ScienceGoal (B3 spectral
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ScienceGoal (B9 continuu
ScienceGoal (B3 spectral
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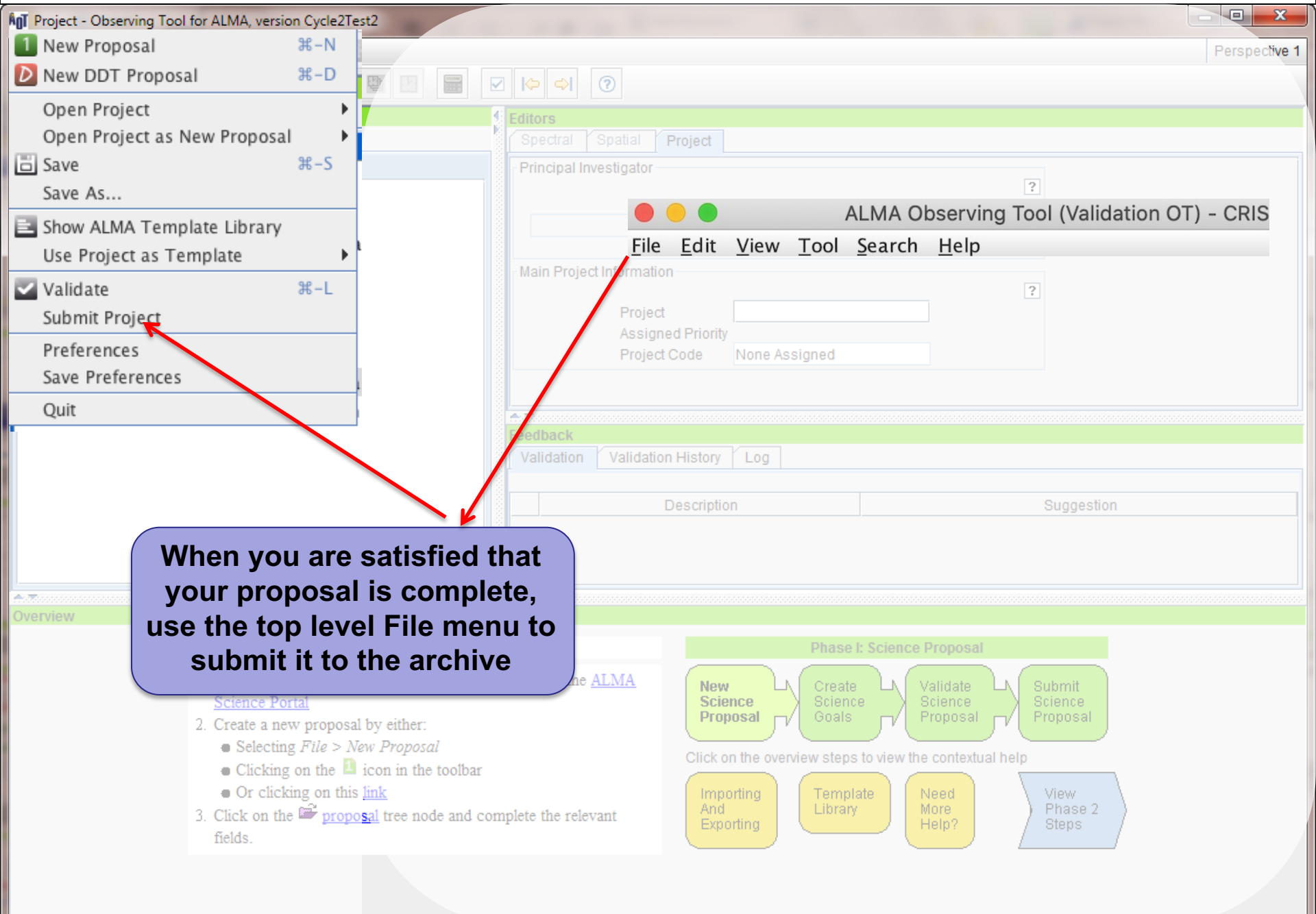
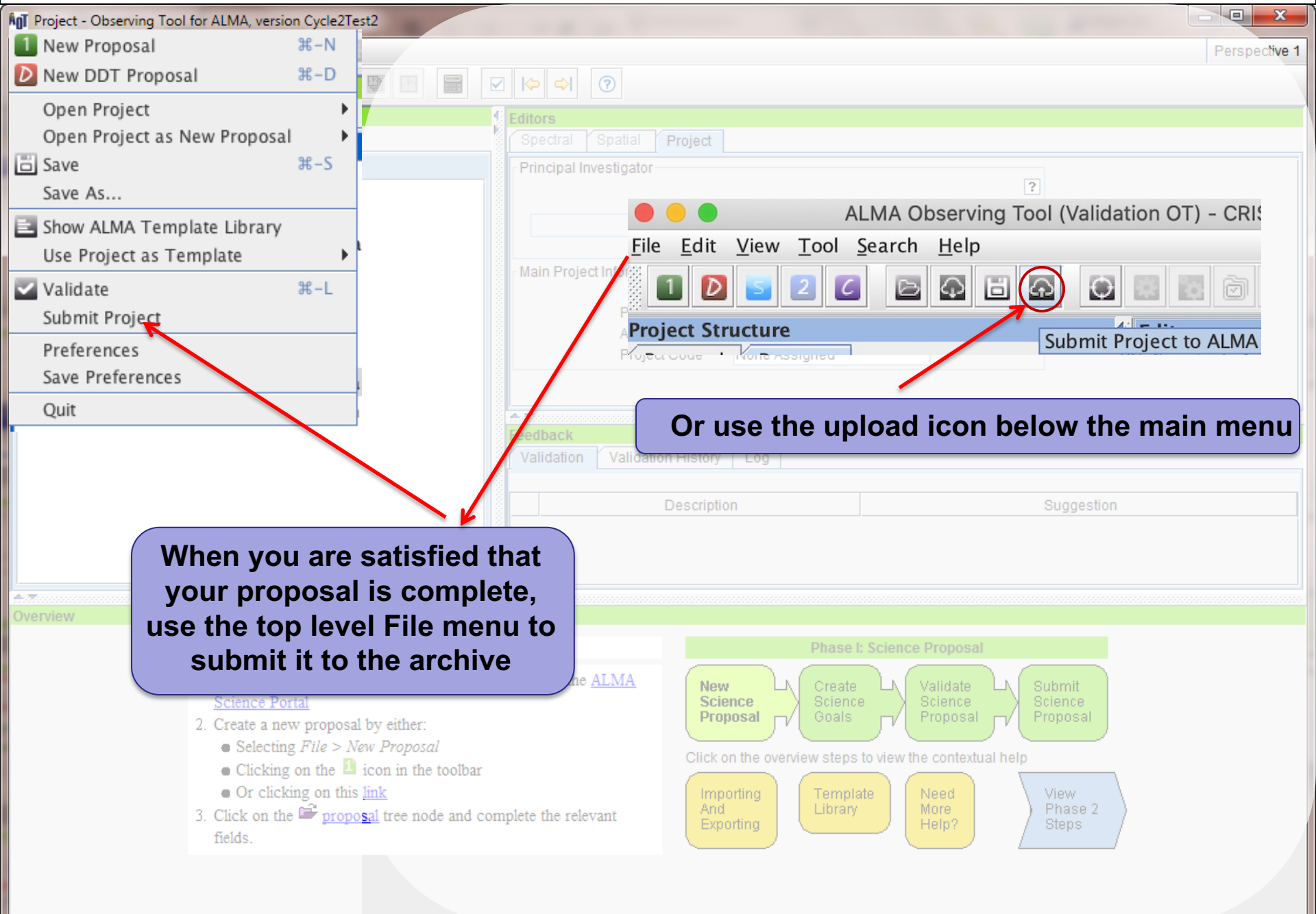
Editors
Spectral Spatial ScienceGoal (Science Goal)
Source Coordinates
System J2000
Sexagesimal display?
RA 22:02:43.2912
Dec -42:16:39.978
Parallax 0.00000 mas
PM RA 0.00000 mas/yr
PM DEC 0.00000 mas/yr
Source Radial Velocity 0.000 km/s hel
z 0.000000000 Doppler Type RELATIVISTIC
Target Type
Individual 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
New! The text in these messages can be copied

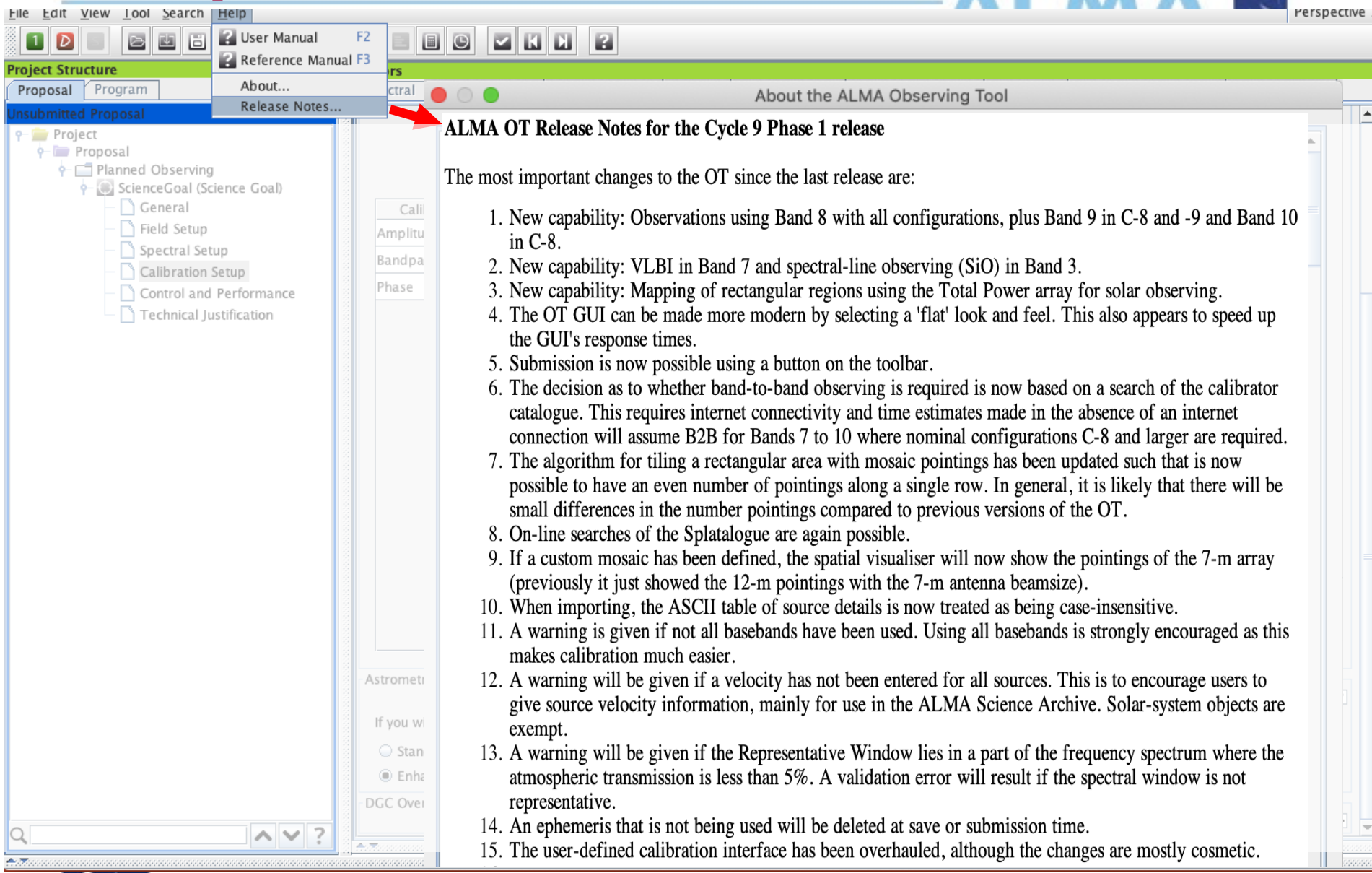
When the time is ripe … validate & submit



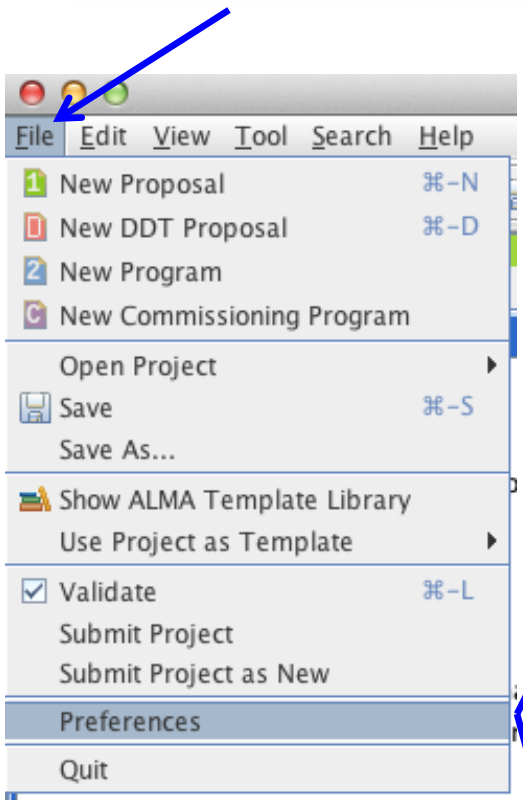
When the time is ripe … validate & submit

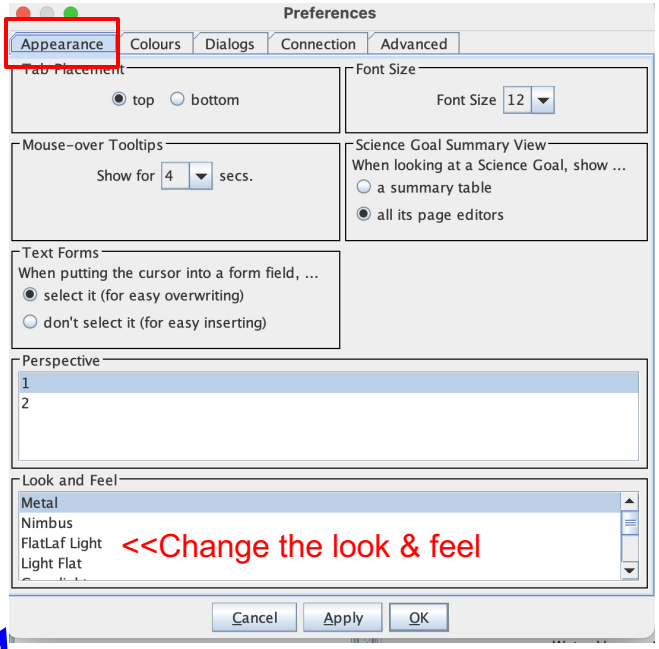


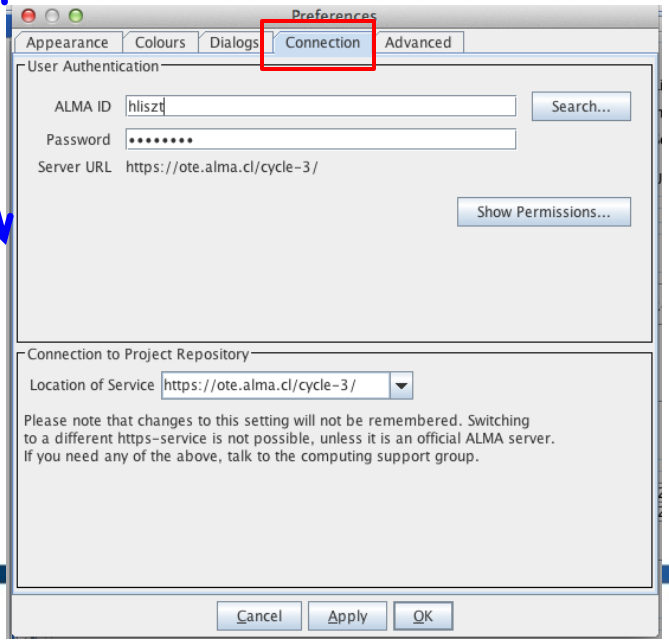
Recap

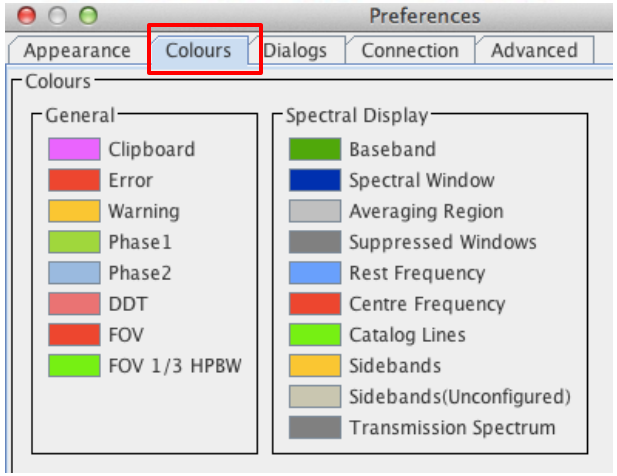

File Edit View Tool Search Help
User Manual F2
Reference Manual F3
About...
Release Notes...
Project Structure
Proposal Program
Unsubmitted Proposal
Project
Proposal
Planned Observing
ScienceGoal (Science Goal)
General
Field Setup
Spectral Setup
Calibration Setup
Control and Performance
Technical Justification
About the ALMA Observing Tool
ALMA OT Release Notes for the Cycle 9 Phase 1 release
The most important changes to the OT since the last release are:
1. New capability: Observations using Band 8 with all configurations, plus Band 9 in C-8 and -9 and Band 10 in C-8.
2. New capability: VLBI in Band 7 and spectral-line observing (SiO) in Band 3.
3. New capability: Mapping of rectangular regions using the Total Power array for solar observing.
4. The OT GUI can be made more modern by selecting a 'flat' look and feel. This also appears to speed up the GUI's response times.
5. Submission is now possible using a button on the toolbar.
6. The decision as to whether band-to-band observing is required is now based on a search of the calibrator catalogue. This requires internet connectivity and time estimates made in the absence of an internet connection will assume B2B for Bands 7 to 10 where nominal configurations C-8 and larger are required.
7. The algorithm for tiling a rectangular area with mosaic pointings has been updated such that is now possible to have an even number of pointings along a single row. In general, it is likely that there will be small differences in the number pointings compared to previous versions of the OT.
8. On-line searches of the Splatalogue are again possible.
9. If a custom mosaic has been defined, the spatial visualiser will now show the pointings of the 7-m array (previously it just showed the 12-m pointings with the 7-m antenna beamsize).
10. When importing, the ASCII table of source details is now treated as being case-insensitive.
11. A warning is given if not all basebands have been used. Using all basebands is strongly encouraged as this makes calibration much easier.
12. A warning will be given if a velocity has not been entered for all sources. This is to encourage users to give source velocity information, mainly for use in the ALMA Science Archive. Solar-system objects are exempt.
13. A warning will be given if the Representative Window lies in a part of the frequency spectrum where the atmospheric transmission is less than 5%. A validation error will result if the spectral window is not representative.
14. An ephemeris that is not being used will be deleted at save or submission time.
15. The user-defined calibration interface has been overhauled, although the changes are mostly cosmetic.

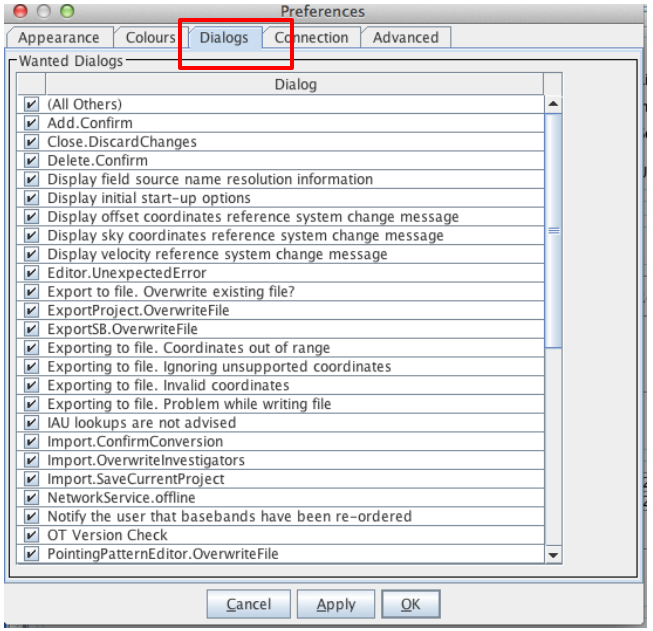
Use preferences to customize











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 is 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)

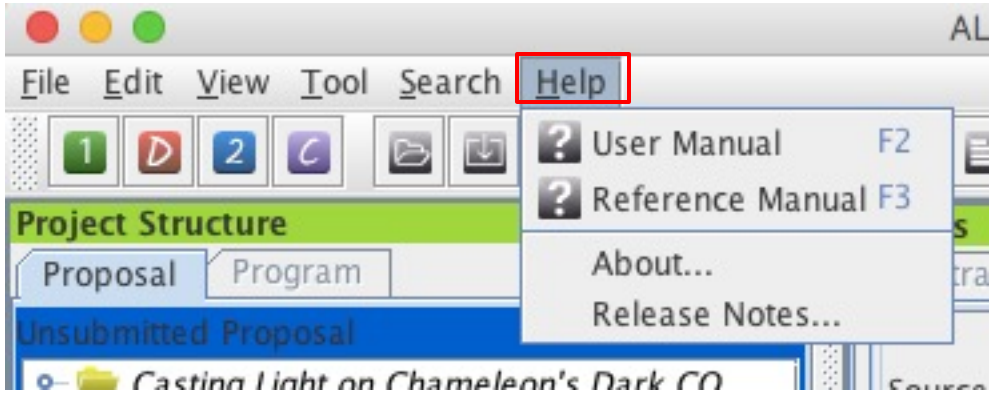
- Ctrl-B will generate all SB's for items lower in tree

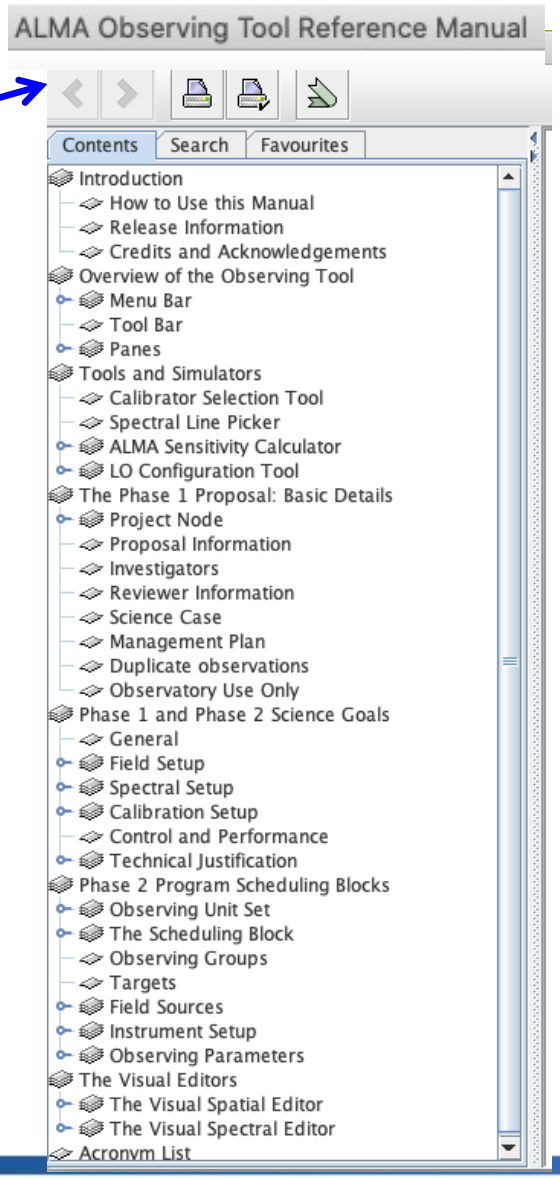
NEW!!! Undo/Redo in Text Editing

The standard Ctrl-Z (undo) and Ctrl-Y (redo) functionality are now available in most text edit fields:

- Source coordinates in the field setup
- The frequency input fields of the spectral setup
- The LAS input field in the control and performance page
- Any of the text fields in the Technical Justification editor
- Description field of General node associated with an SG
- Fields in a science parameters editor
- Frequency input fields in the spectral spec editor
- Time-related input fields in correlator configuration

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 but writing to a file provides an example most directly

The motherships are always there

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

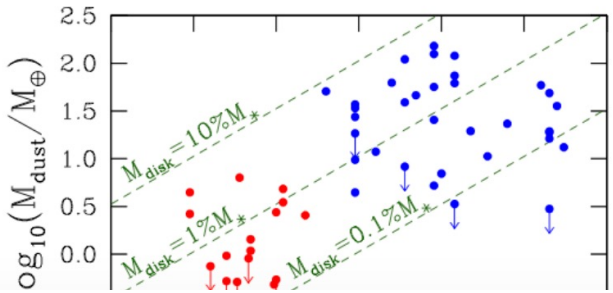
Refereed publications:

Last observed source:

Current configuration: C40-2

More...

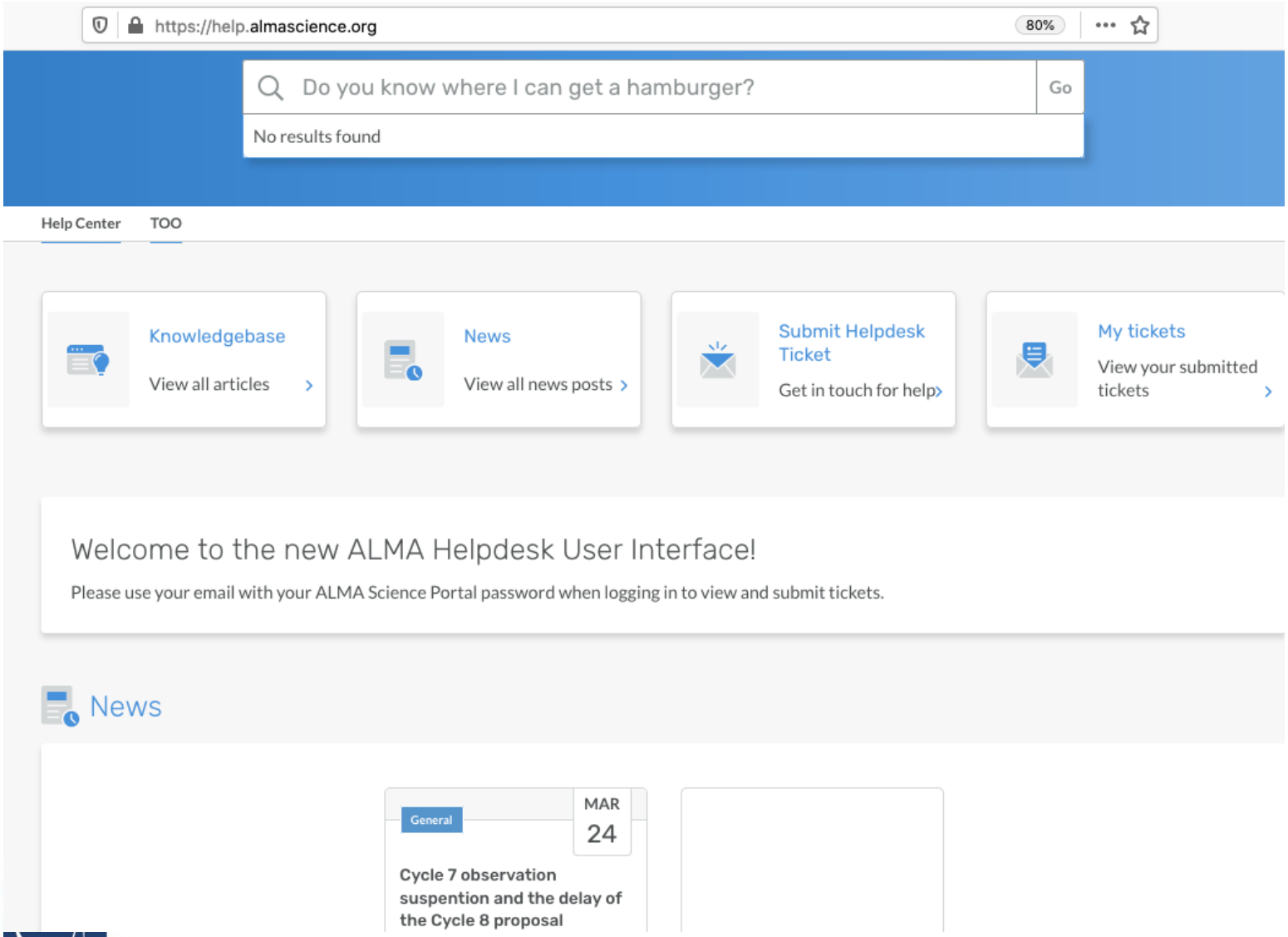
Science Highlights - Possible Disk Truncation in Ophiuchus Brown Dwarfs



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.

www.almascience.org
www.almascience.nrao

Have no fear, 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