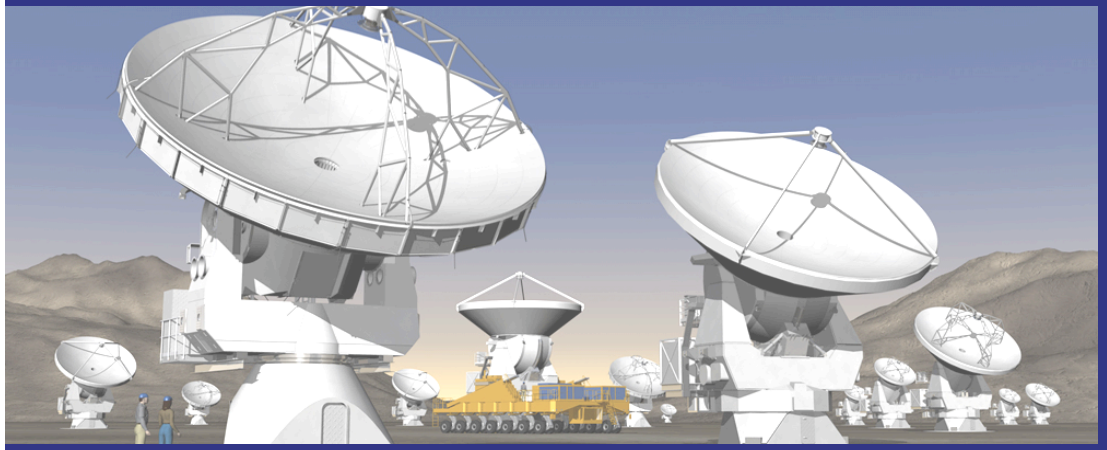


EUROPEAN ARC
ALMA Regional Centre

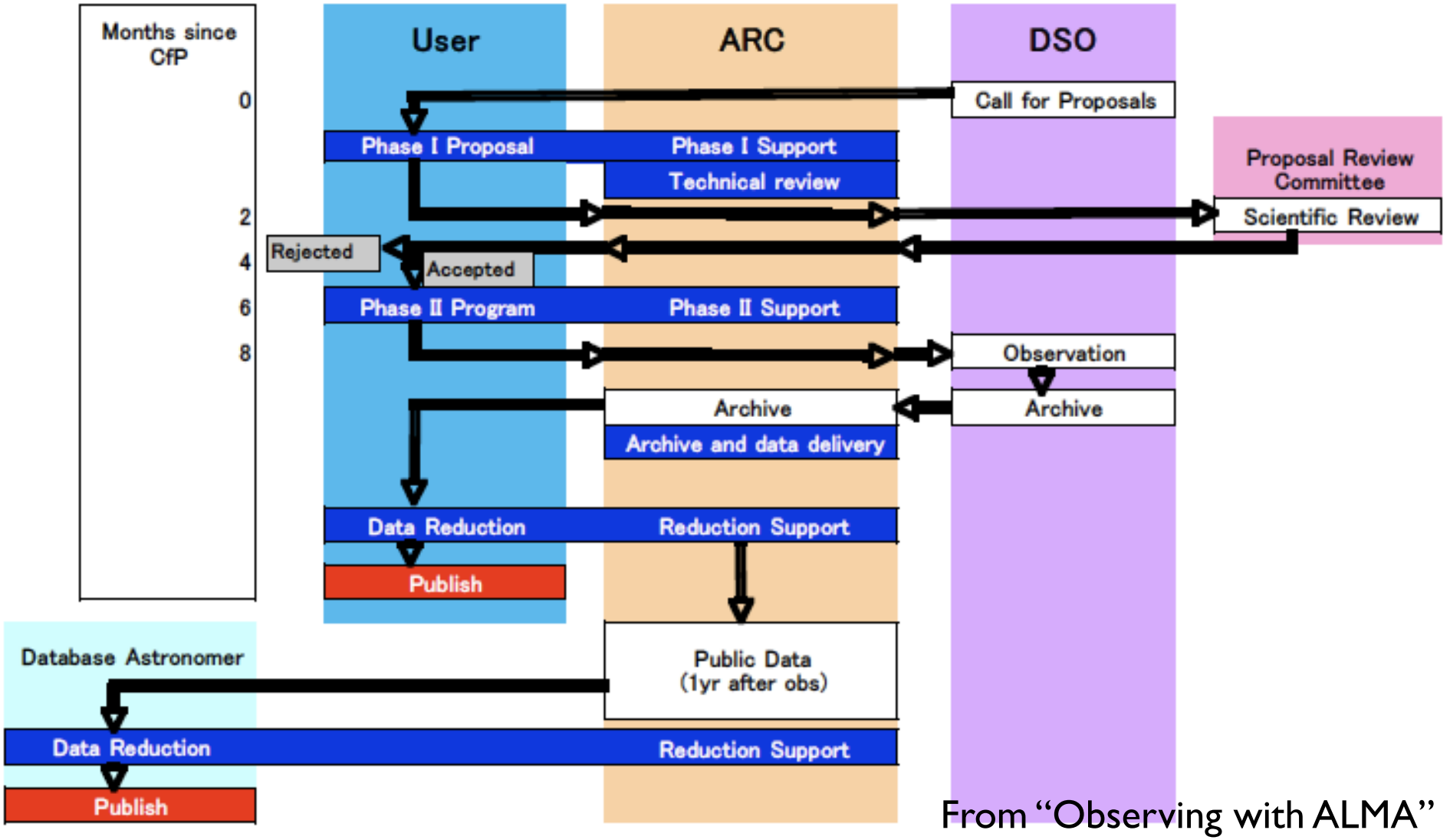
ALMA Proposal Preparation and Submission

Liz Humphreys

European ALMA Regional Centre
ESO, Garching

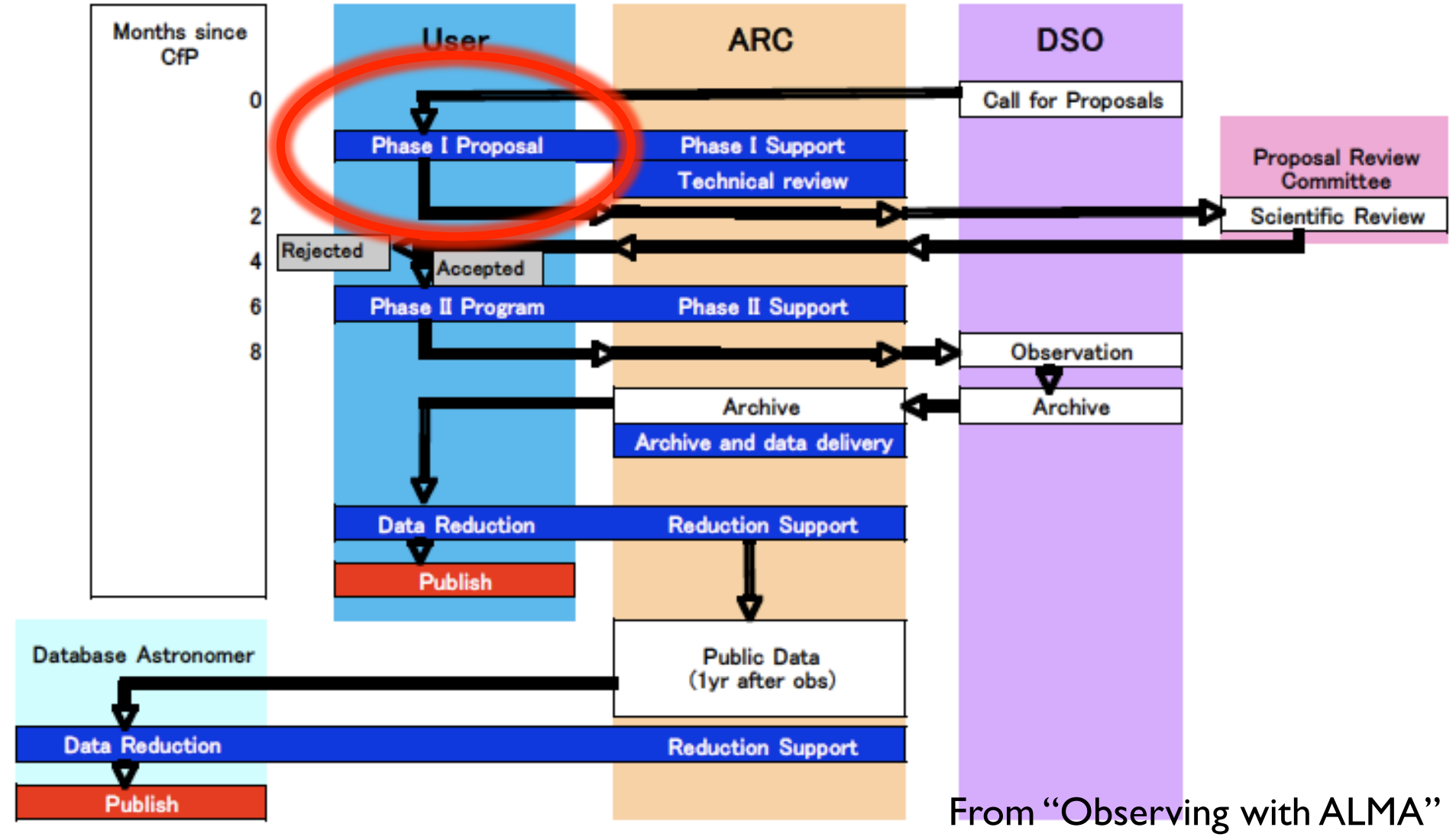
Thanks to Andy Biggs, Paola Andreani, Eelco van Kampen and Jan Brand for materials

From Proposal to Data



From "Observing with ALMA"

From Proposal to Data



From "Observing with ALMA"

Phase I ALMA Software

The ALMA Observing Tool

- Responsible for project Proposal Preparation and Submission (Phase I) and Accepted Program Observation Preparation (Phase II)
- Main requirements
  - Needs to run on "all" systems
  - Needs to support all observing modes
  - Needs to support "novice" and "expert" users
  - Needs to provide tools and feedback
- Implemented as a downloadable Java application
  - Connects to the ALMA system as appropriate (submission, user database, etc)
  - Version 7.1 just being released

The OT Team

- Development of tool based in Edinburgh, UK
  - UK Astronomy Technology Centre (UK ATC)
  - Lead developer is Alan Bridger
- Work spread over three countries
  - 2 programmers in Edinburgh
  - 1 at ESO, Germany (50%)
  - 1 at NAOJ, Japan (20%)
  - Documentation compiled at ESO
  - ESO also provides 2 astronomers (Sub-System Scientist is Andy Biggs)

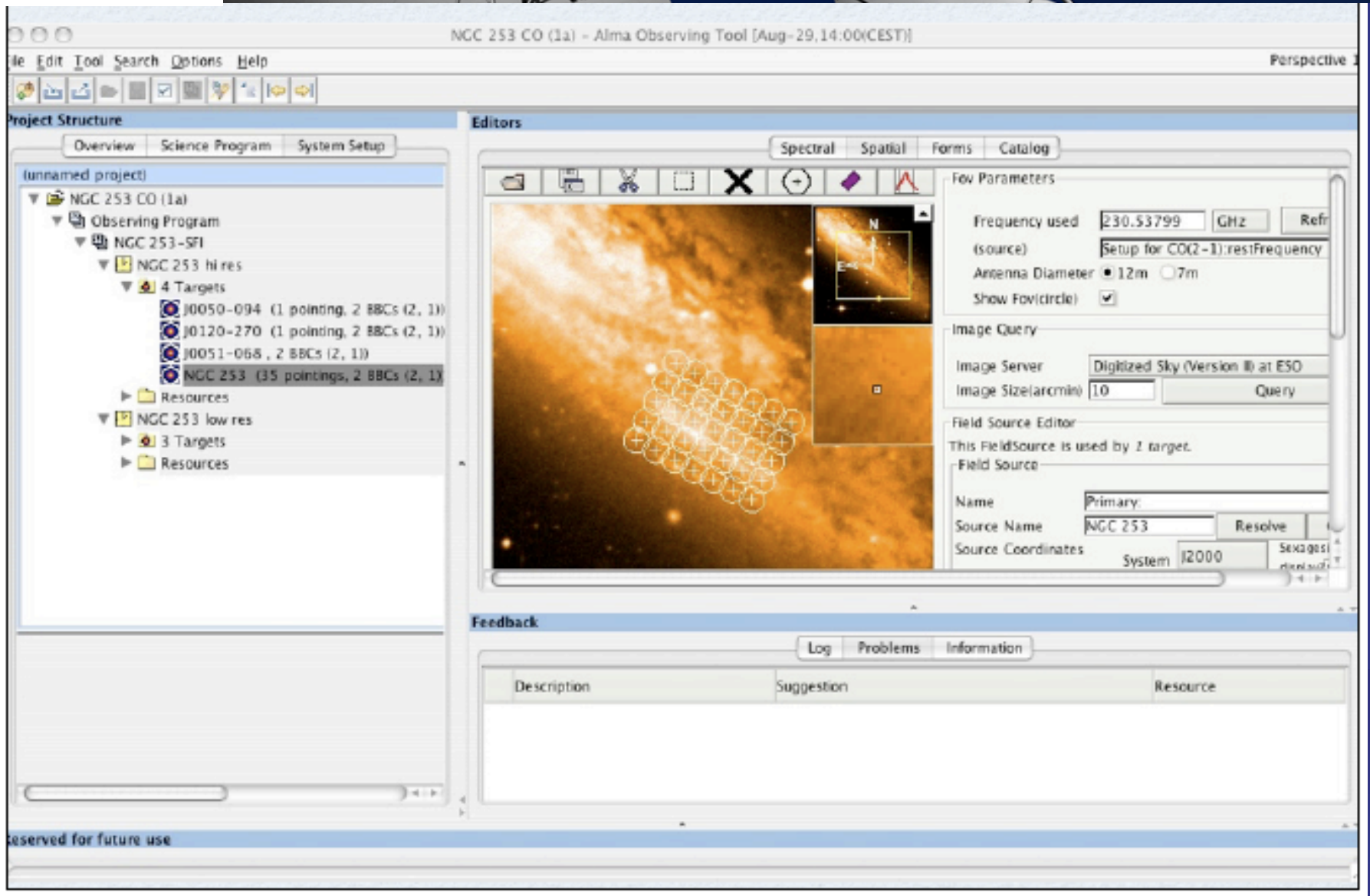
ALMA Observing Tool

Fundamentals

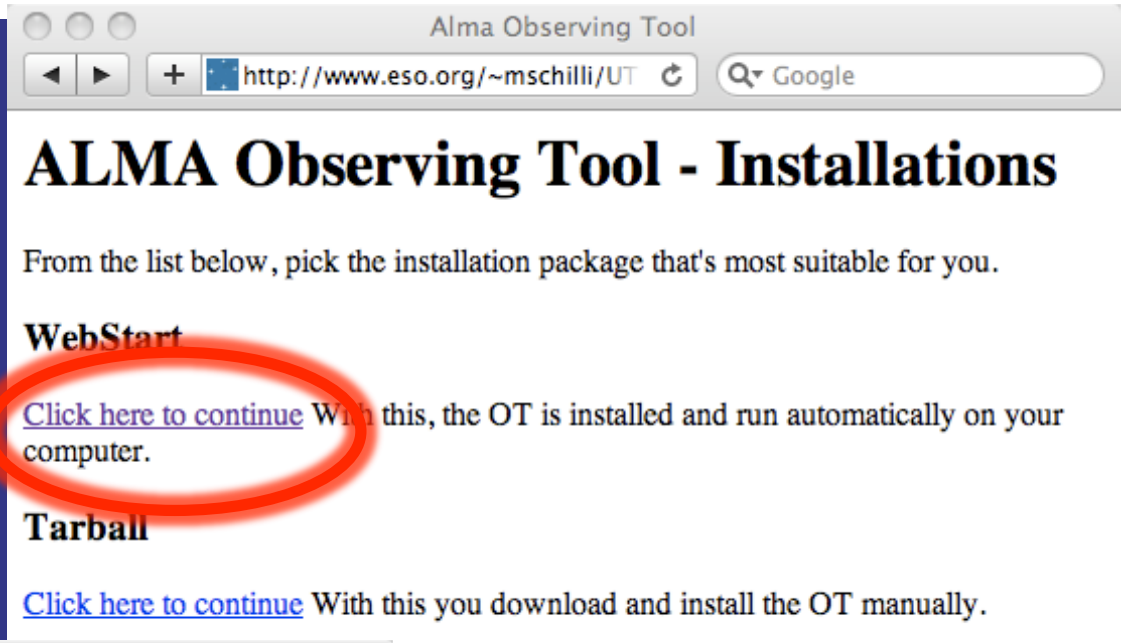
- Basic unit of ALMA observations is the Scheduling Block (SB)
  - Contains all information required to run the observing scripts (modes)
  - Most observations will consist of multiple SBs
- OT will create SBs from Science Goals
  - User need only enter minimal technical information
    - Fields, line frequencies, desired sensitivity, etc.
  - The OT does the rest!
- Lots of feedback is provided – project must validate!

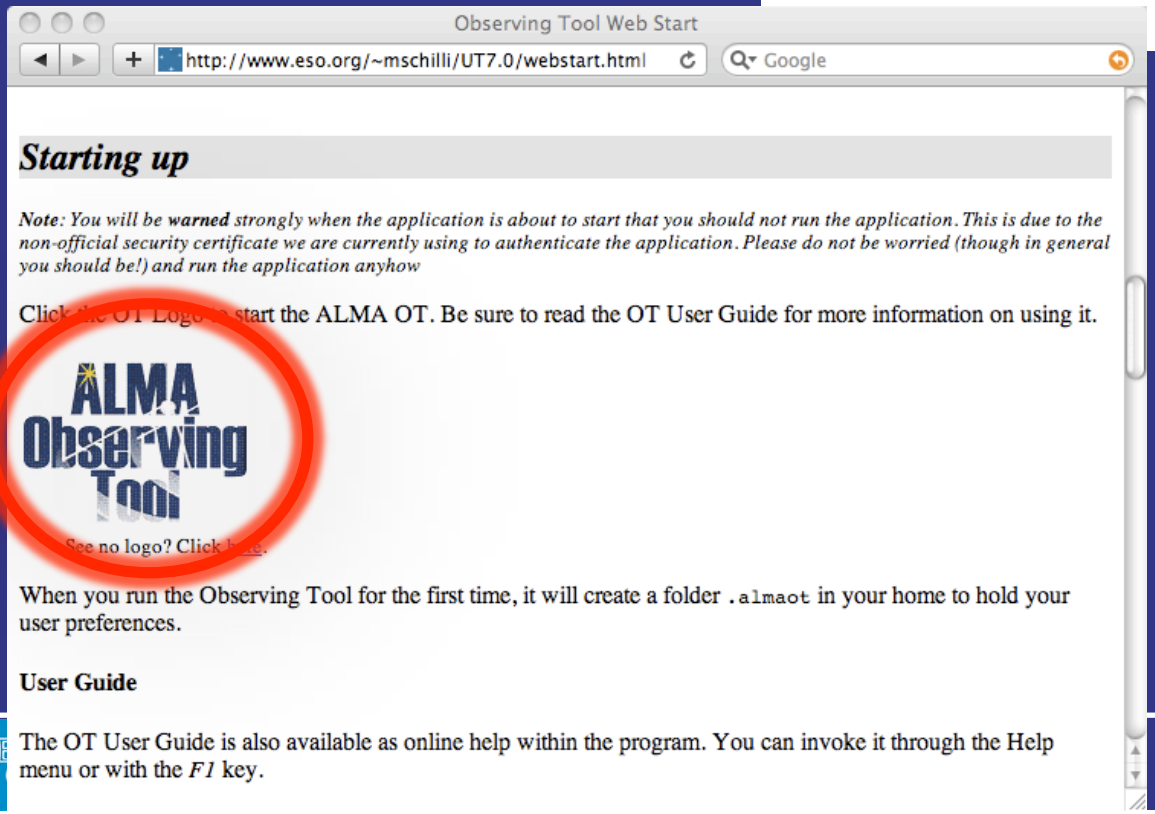
ALMA Observing Tool

Observing Tool

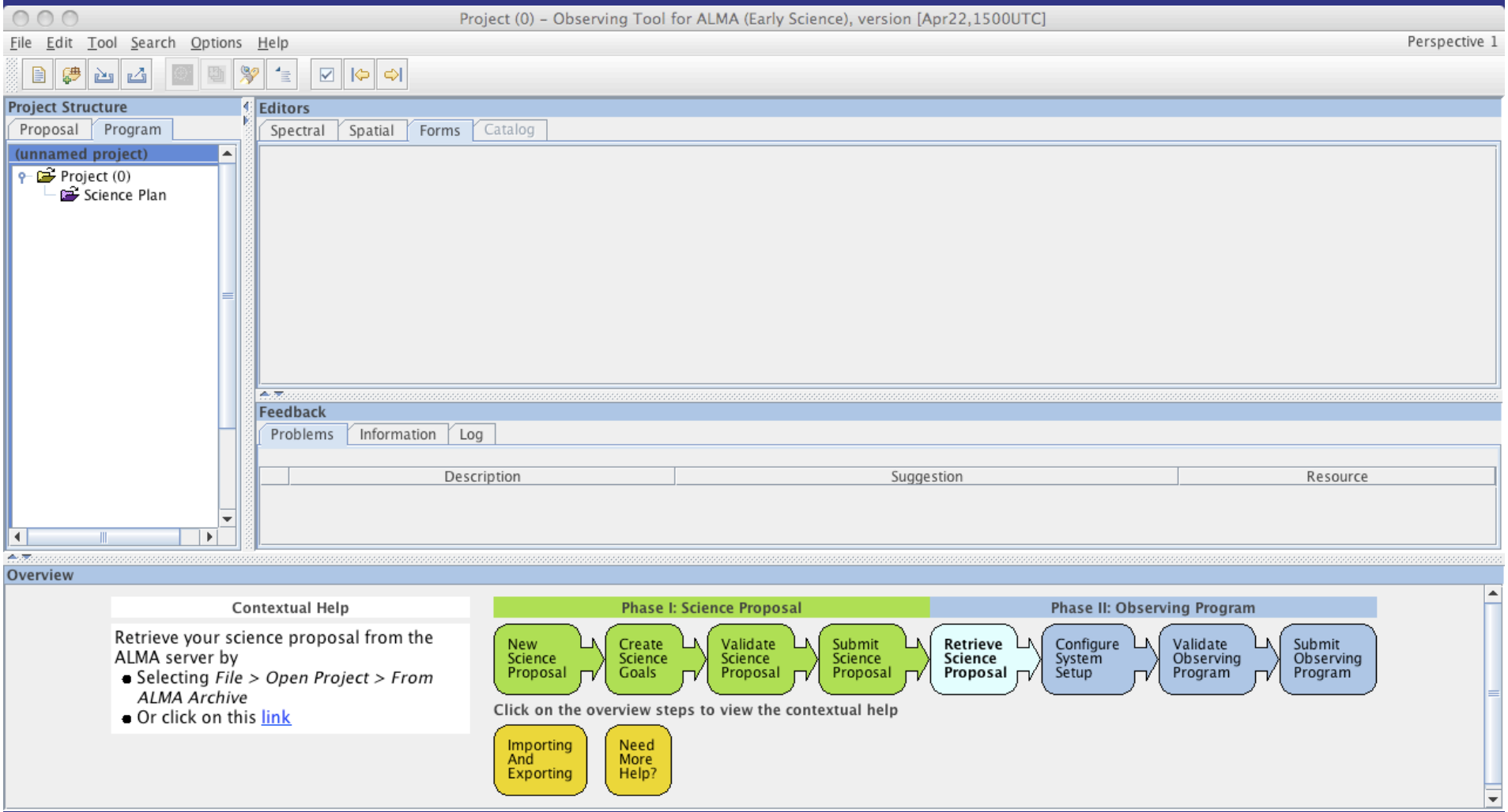


Installation: 2 clicks





Overview


Project (0) – Observing Tool for ALMA (Early Science), version [Apr22,1500UTC]
File Edit Tool Search Options Help
Perspective 1
Project Structure
Proposal Program
(unnamed project)
Project (0)
Science Plan
Editors
Spectral Spatial Forms Catalog
Feedback
Problems Information Log
Description Suggestion Resource
Overview
Contextual Help
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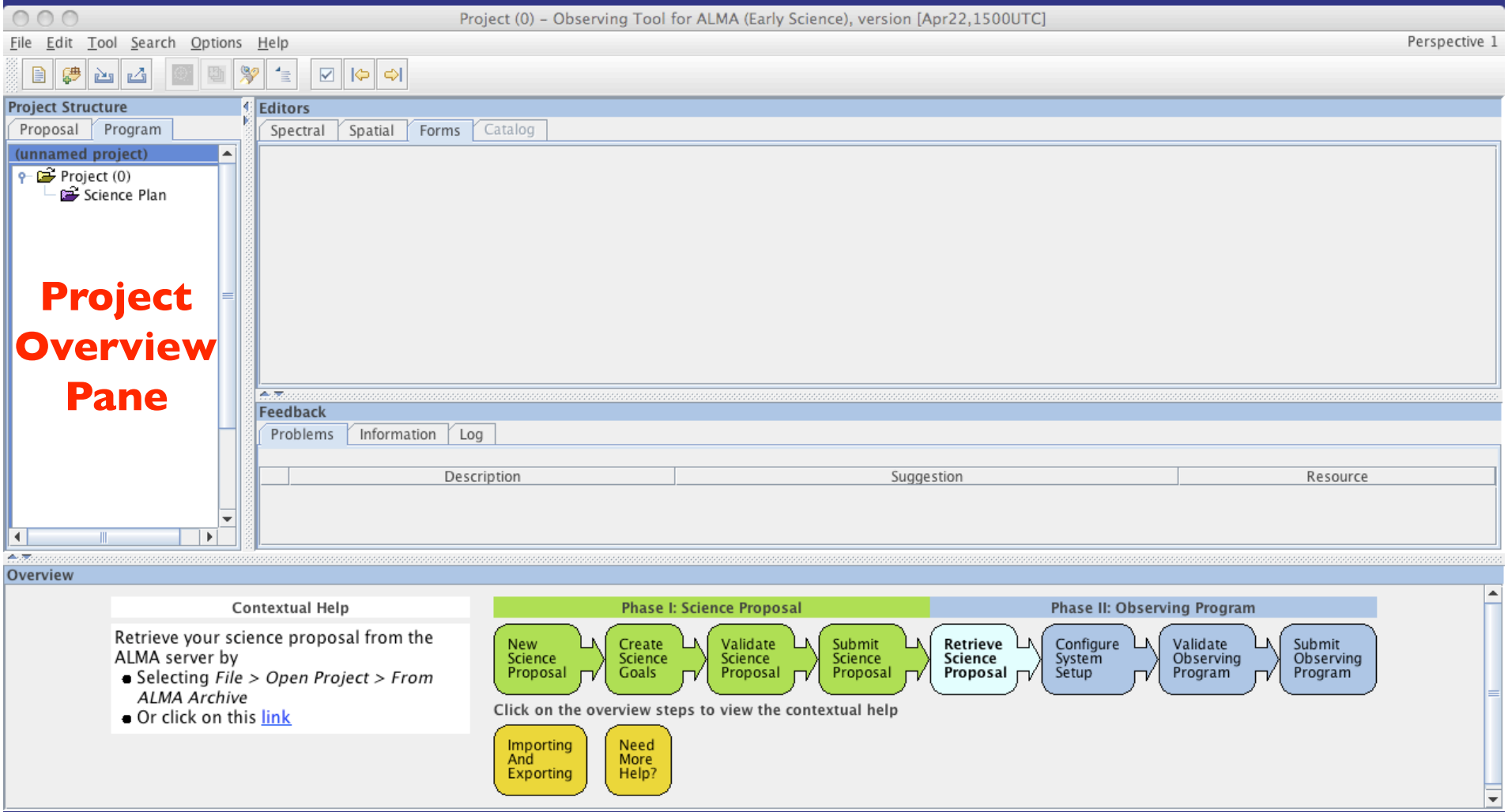
Selecting File > Open Project > From ALMA Archive
Or click on this link
Phase I: Science Proposal
Phase II: Observing Program
New Science Proposal
Create Science Goals
Validate Science Proposal
Submit Science Proposal
Retrieve Science Proposal
Configure System Setup
Validate Observing Program
Submit Observing Program
Click on the overview steps to view the contextual help
Importing And Exporting
Need More Help?

Overview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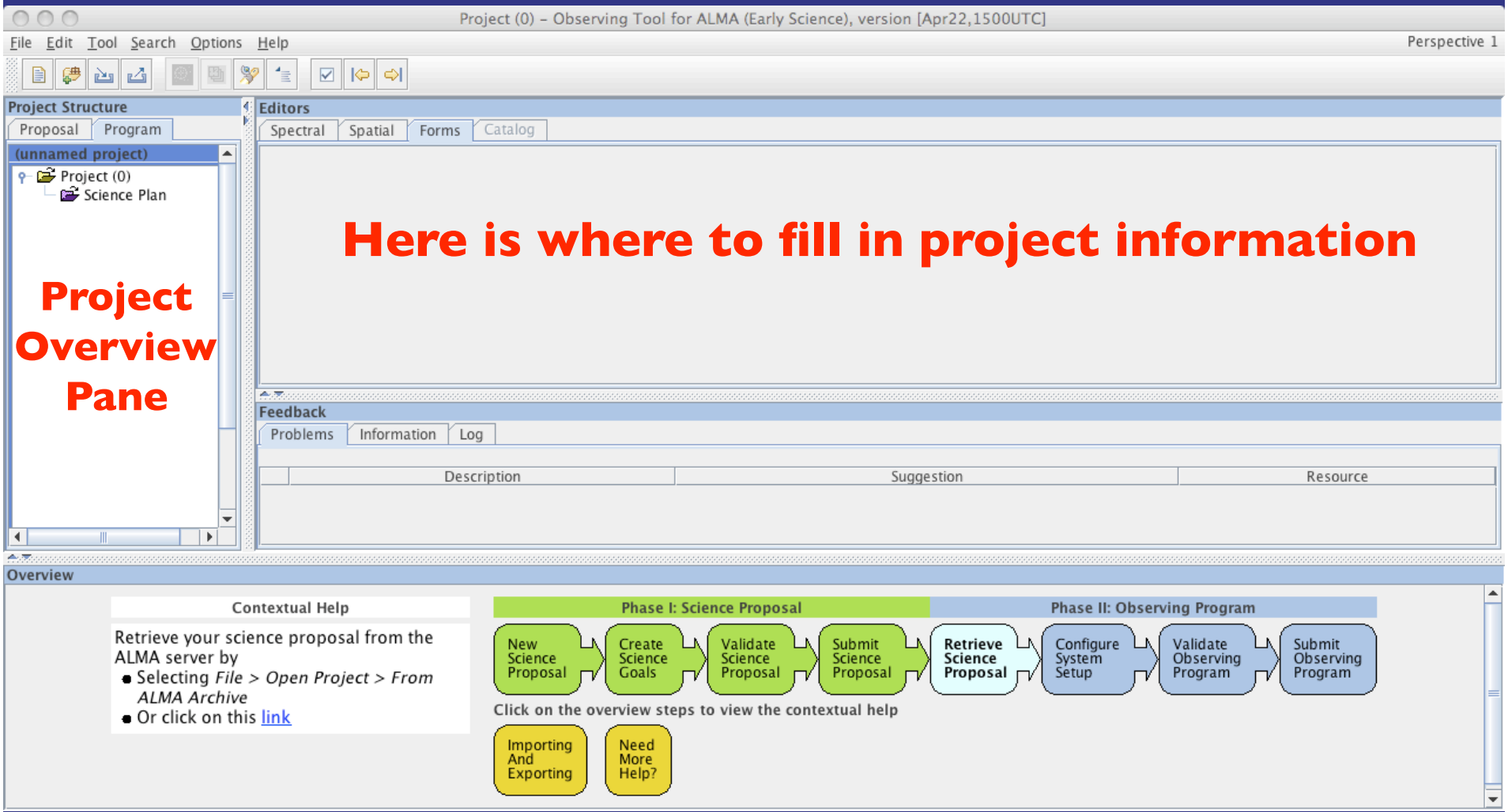
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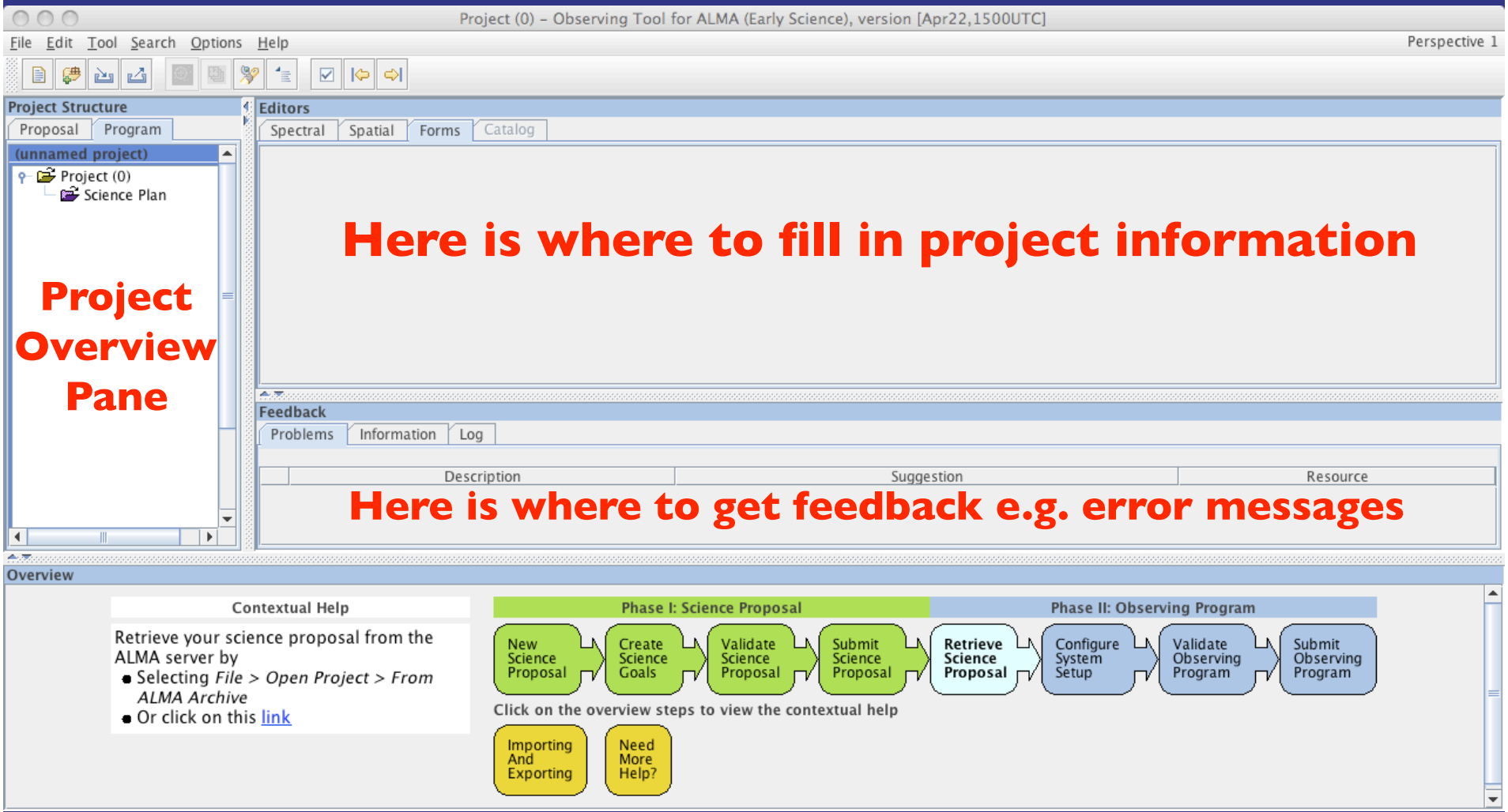
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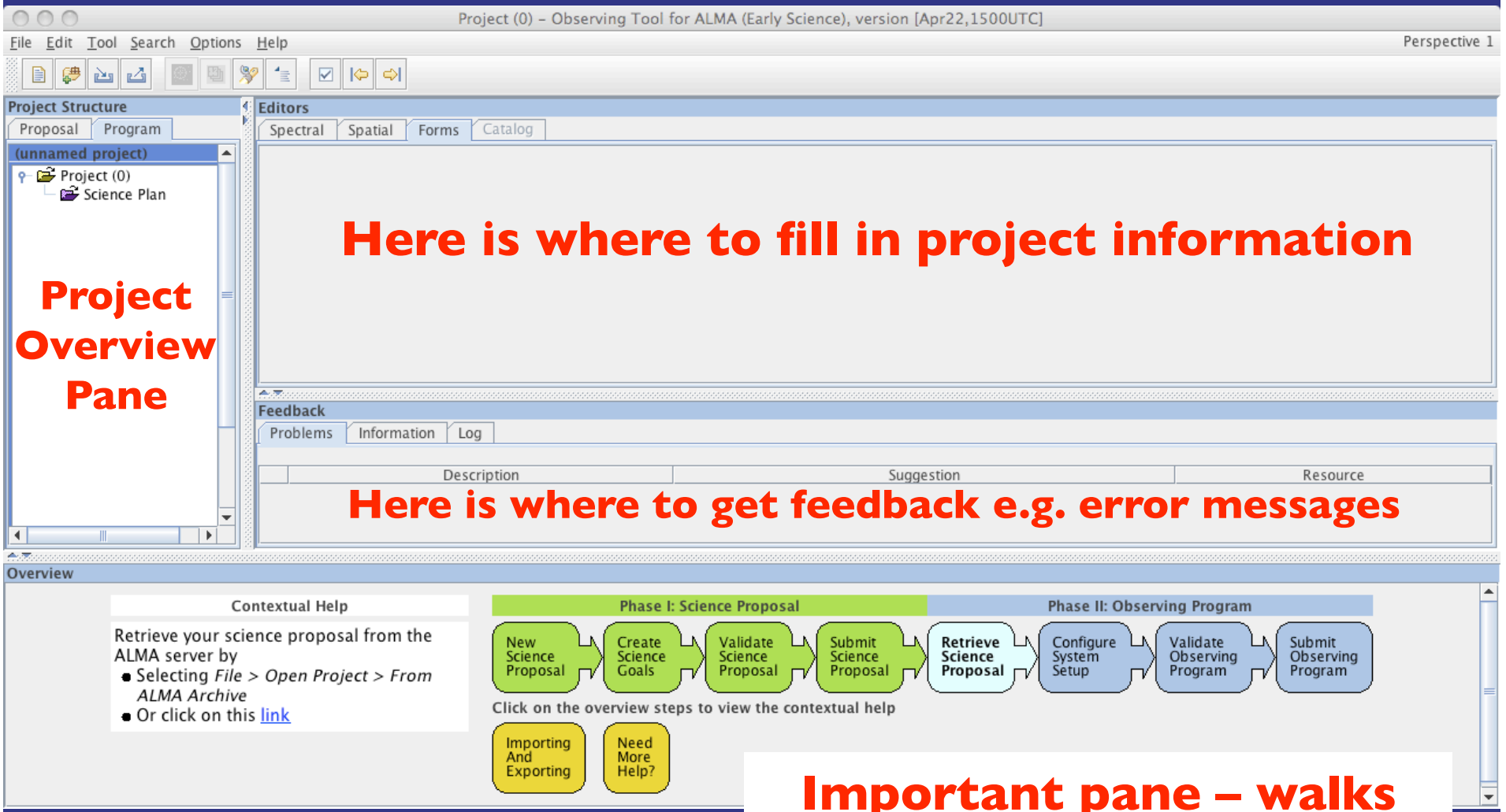
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Important pane – walks through the whole process

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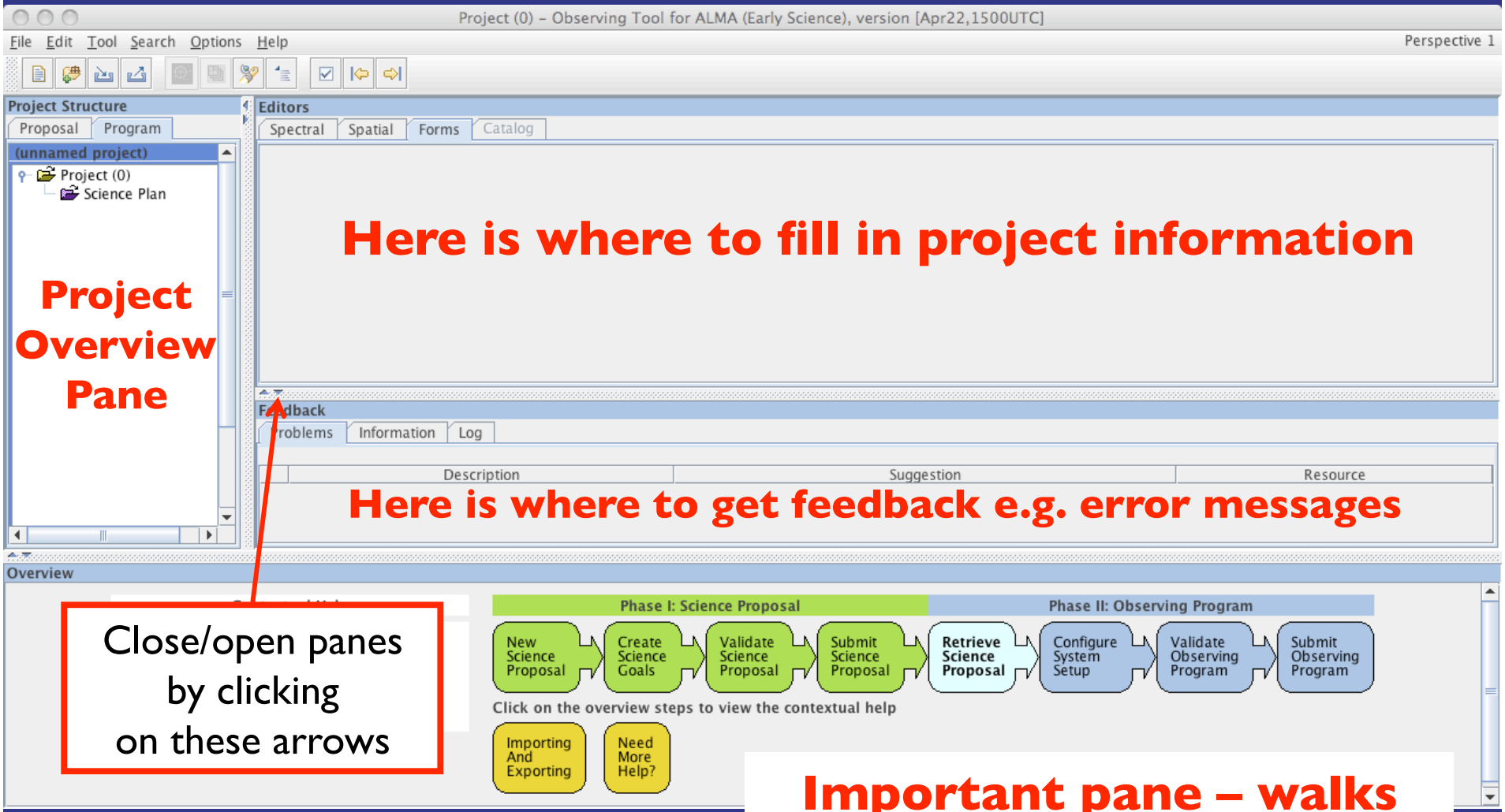
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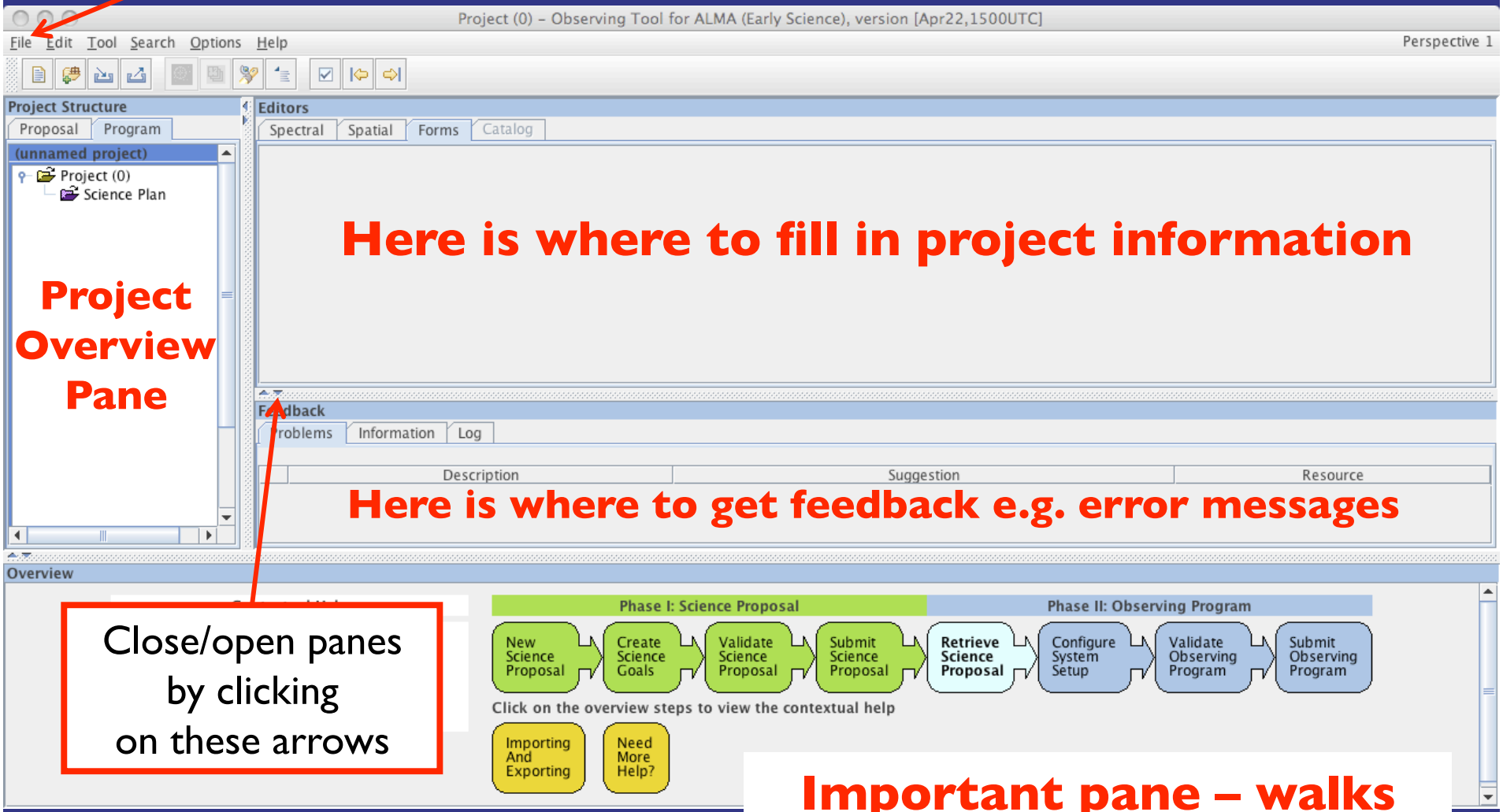
Overview

Save at any point

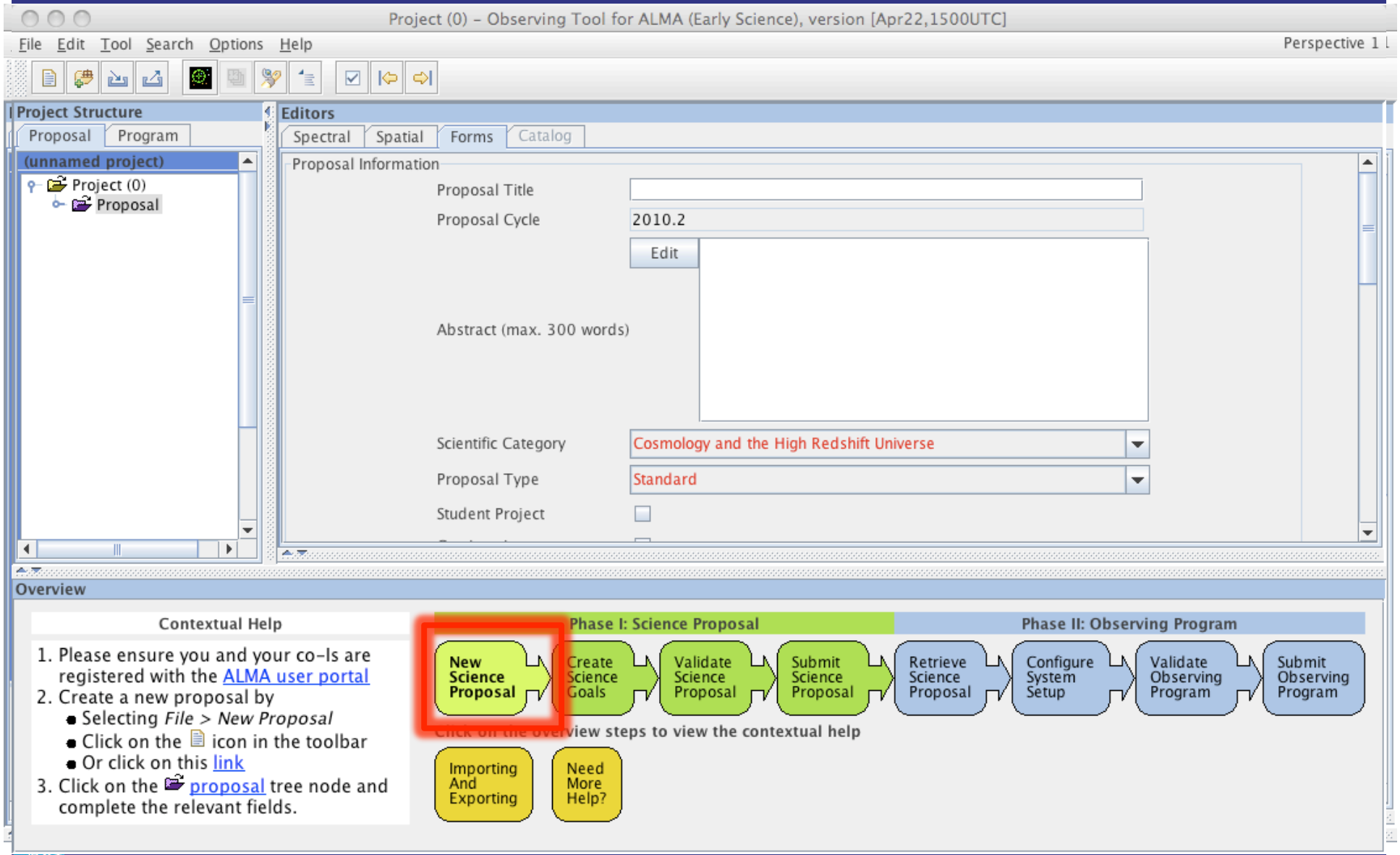


Close/open panes by clicking on these arrows

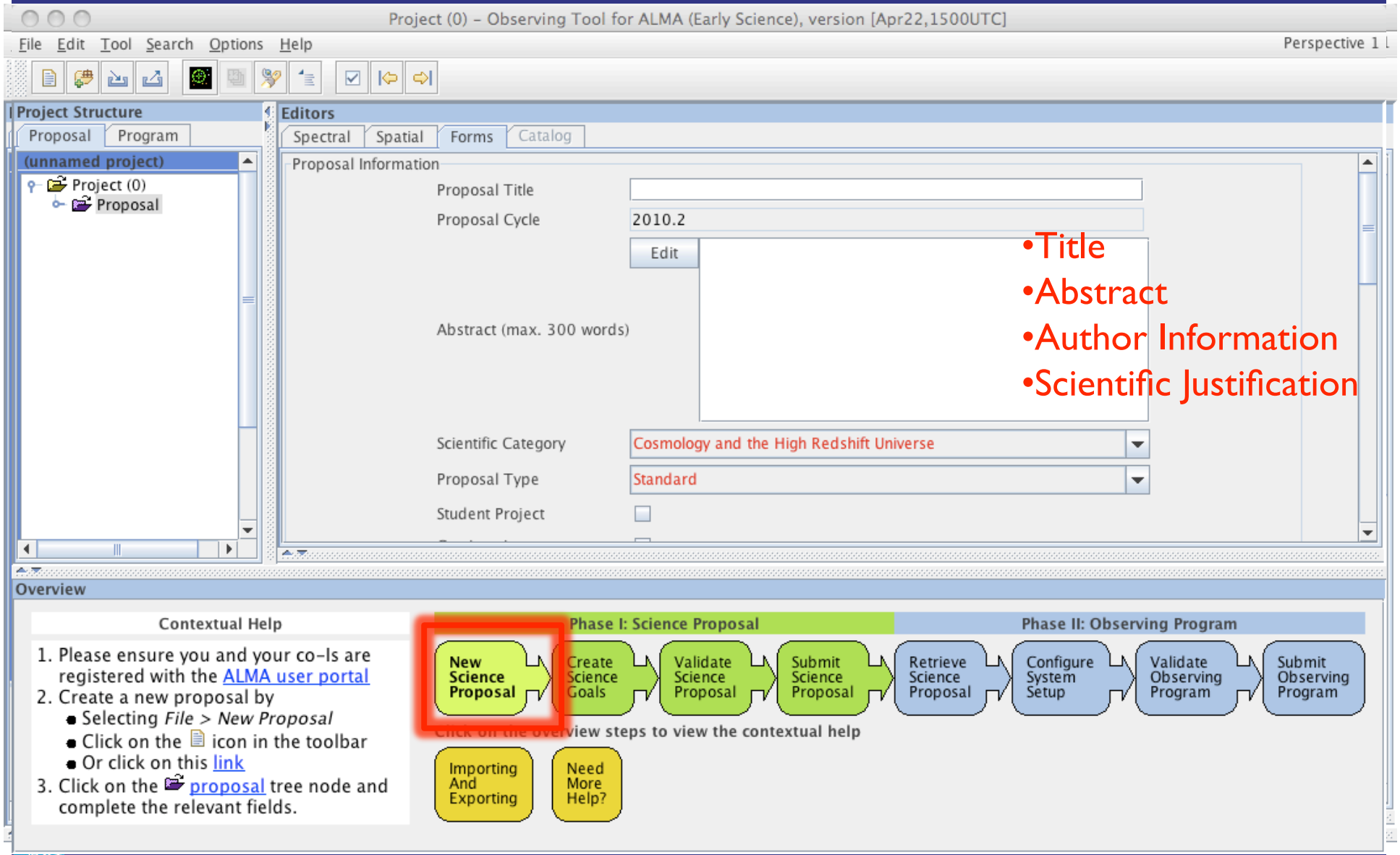
Important pane – walks through the whole process

Creating A Proposal

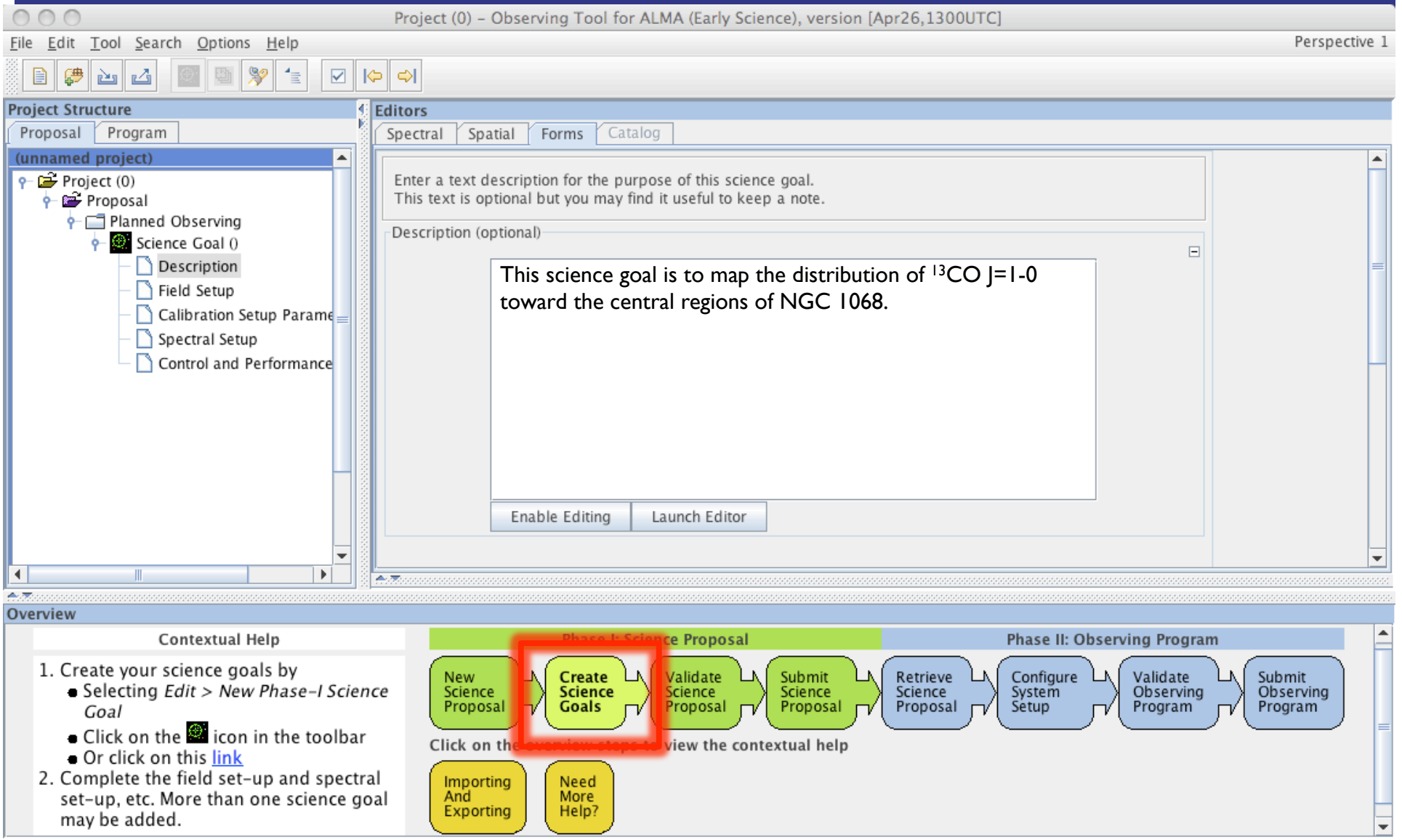
Phase 1: New Science Proposal



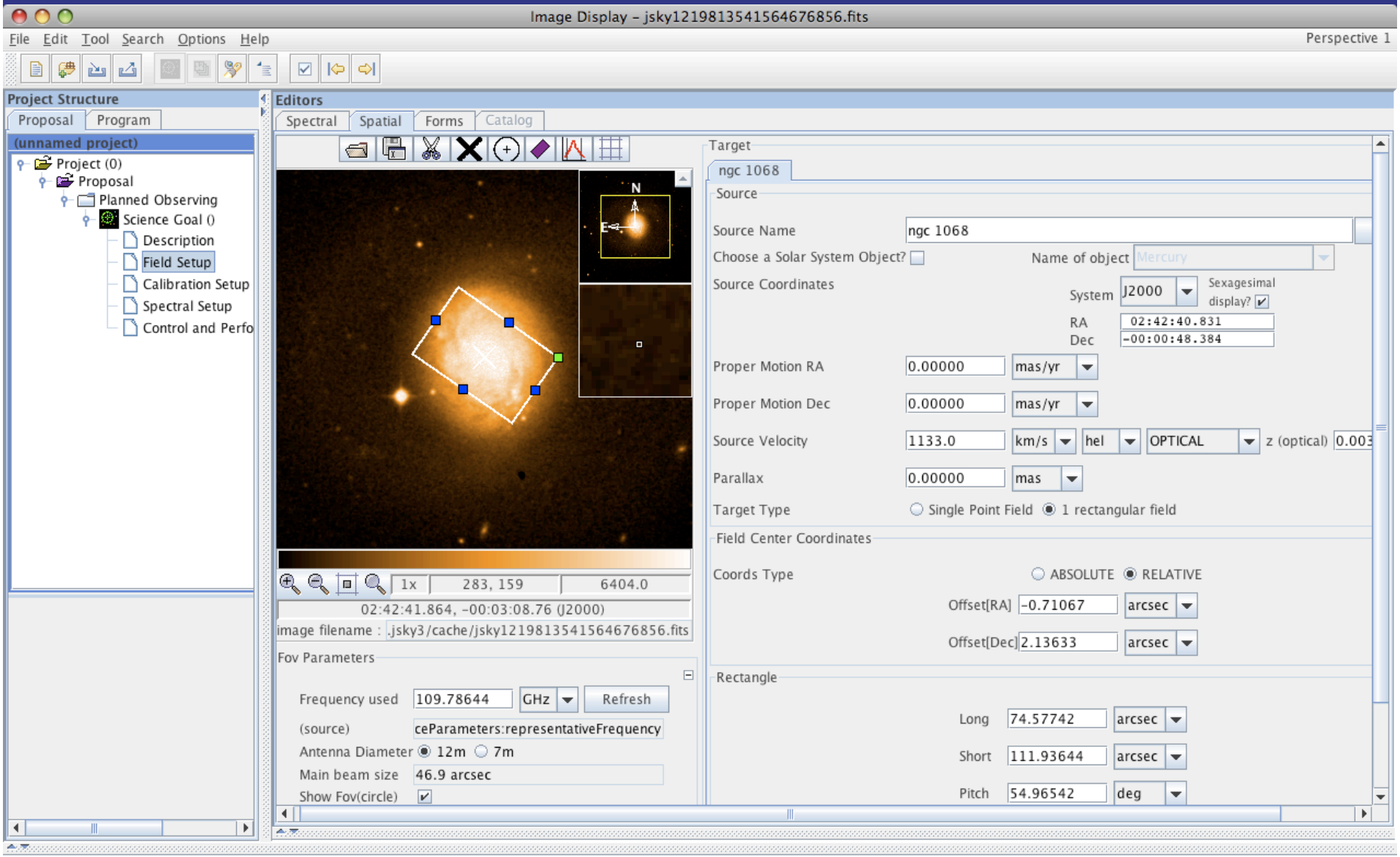
Phase 1: New Science Proposal



Phase 1: Create Science Goals



Create Science Goals: Field Setup



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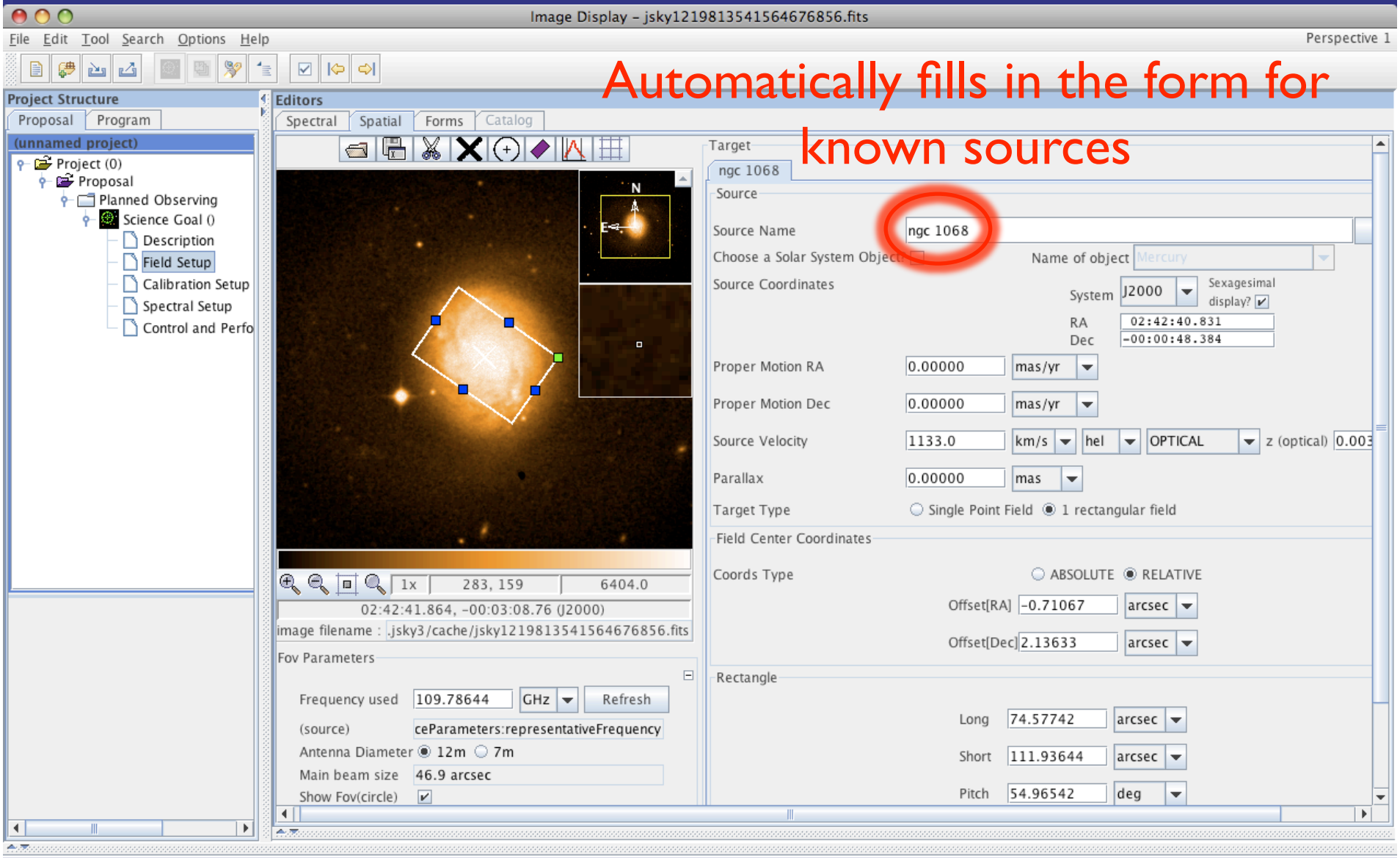

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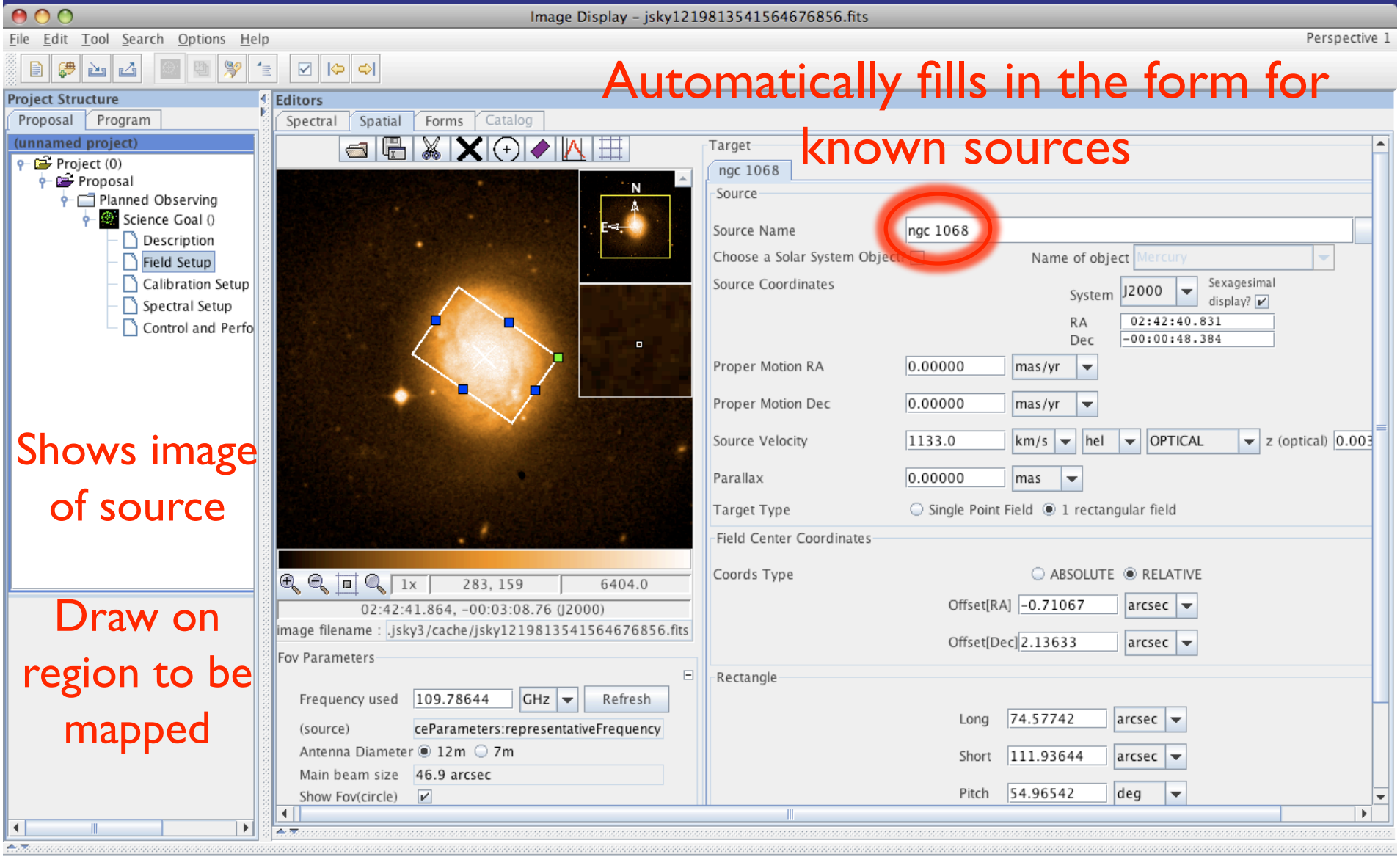
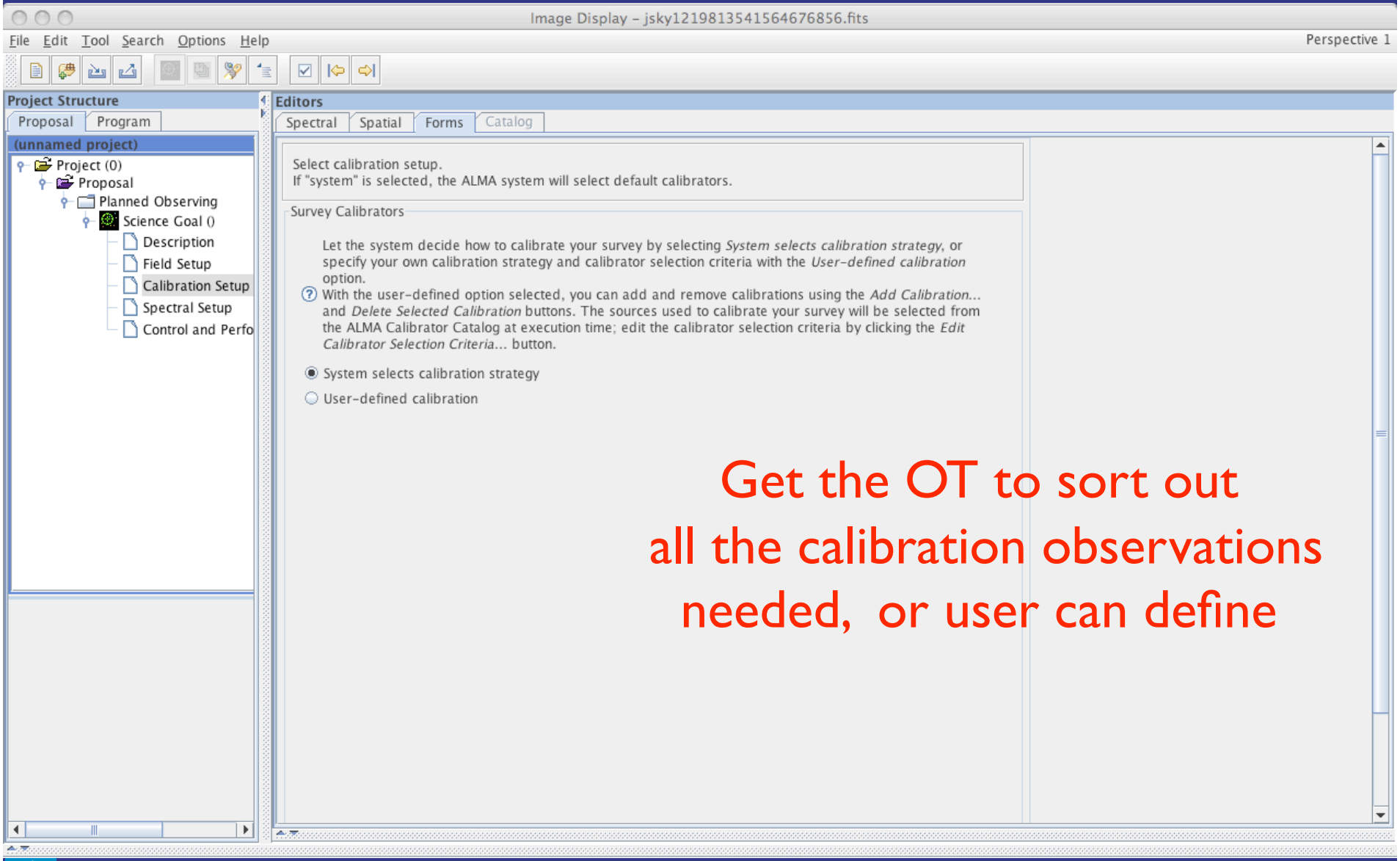
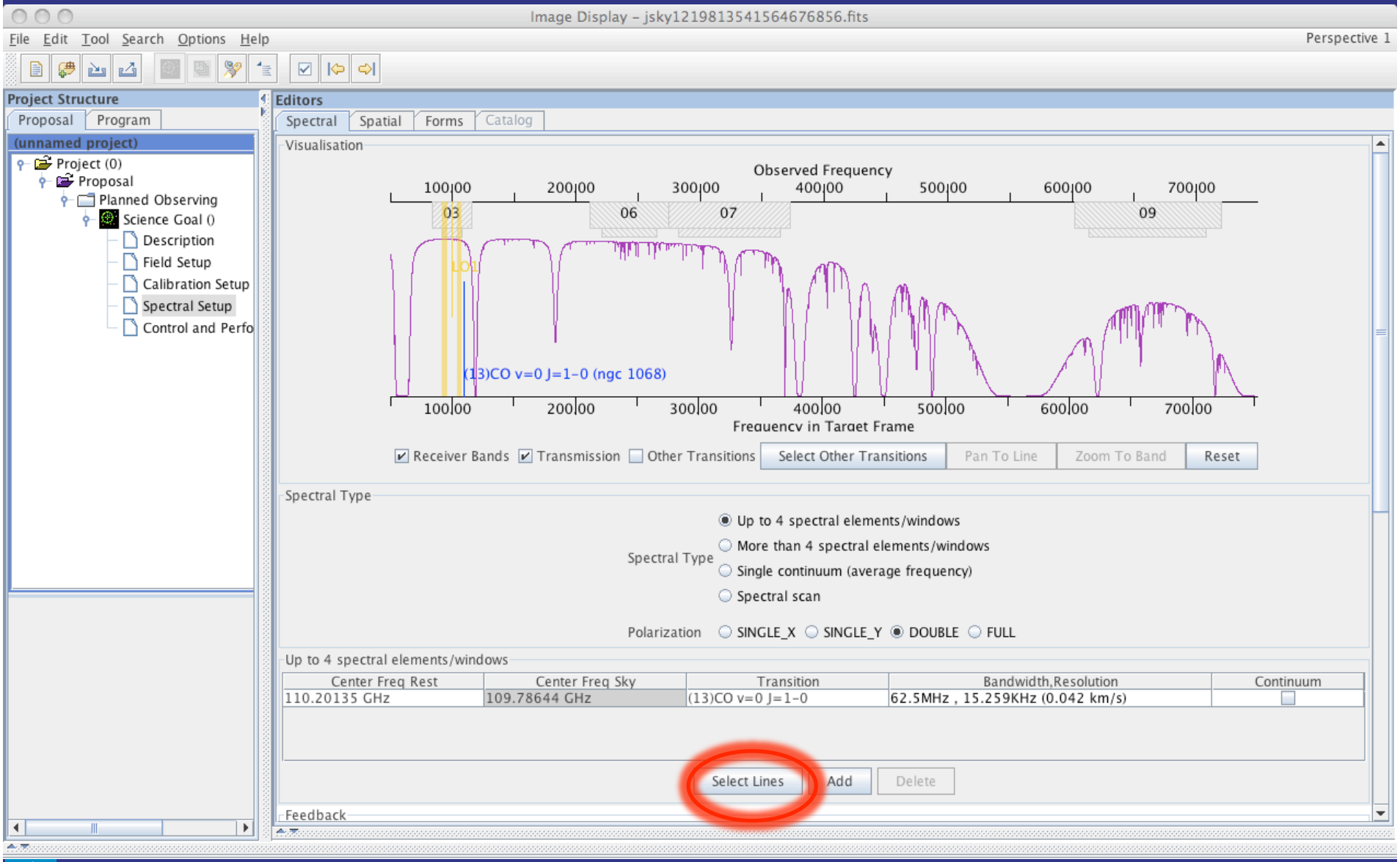


Create Science Goals: Calibration Setup

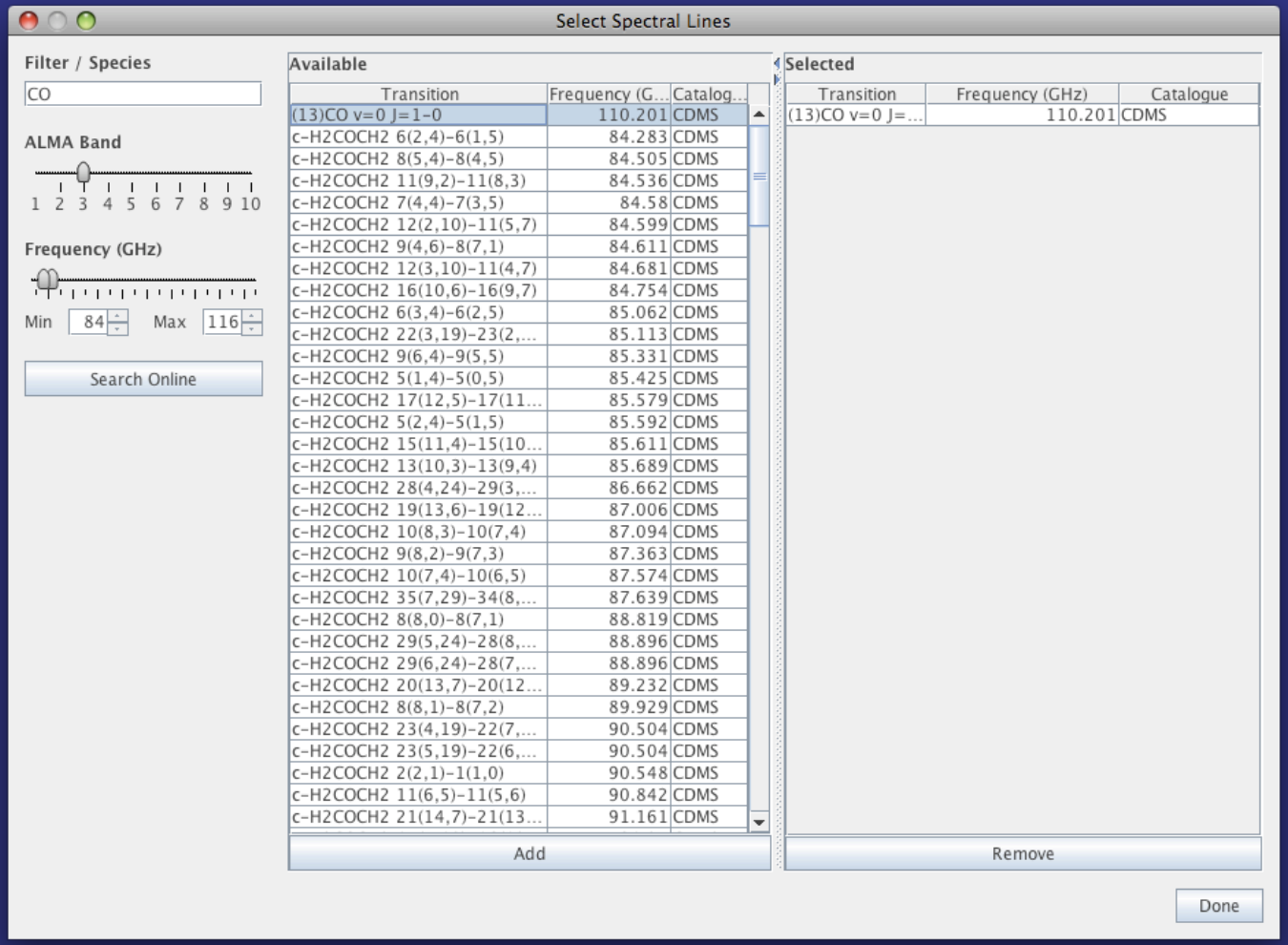


Get the OT to sort out
all the calibration observations
needed, or user can define

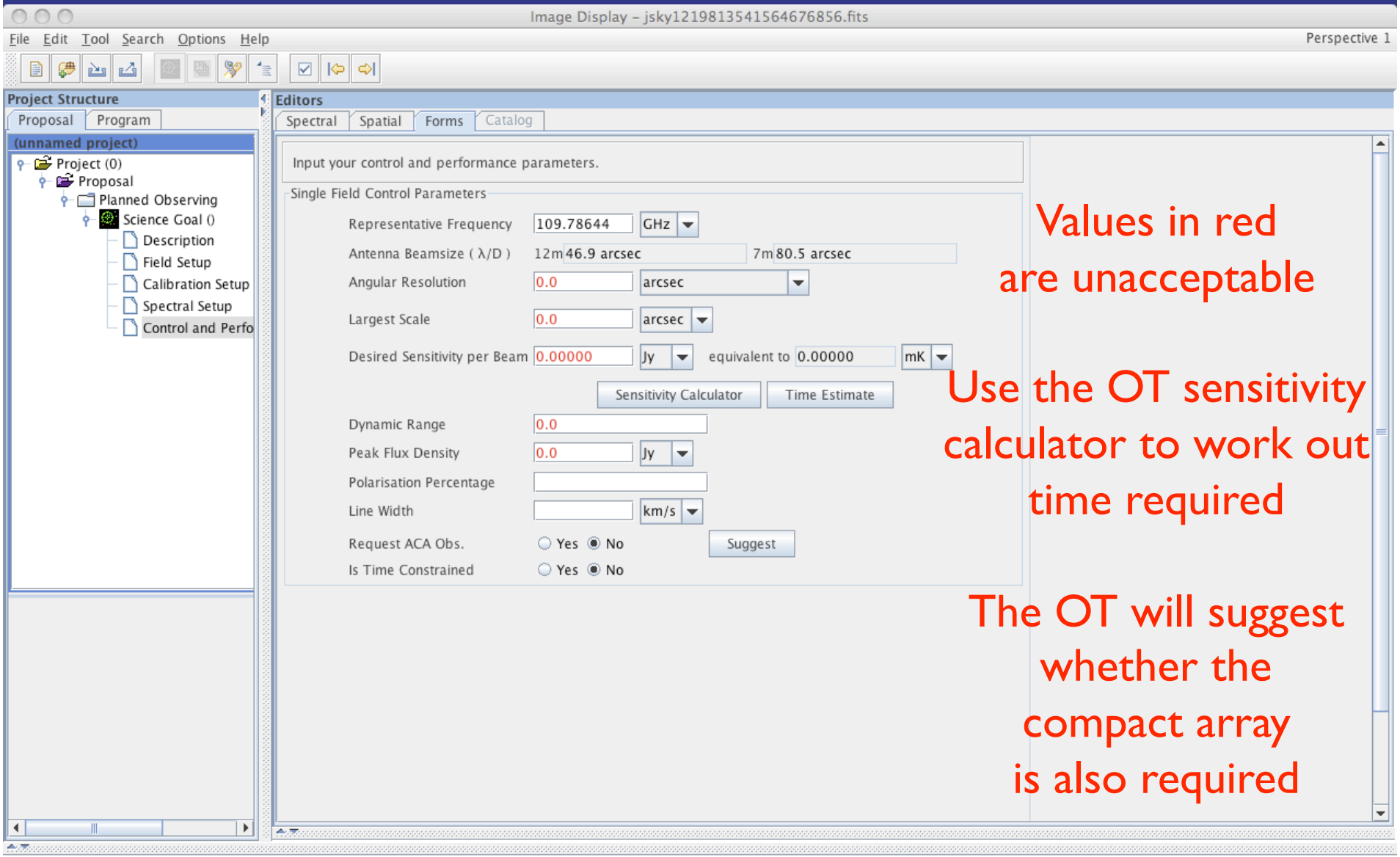
Create Science Goals: Spectral Setup



Spectral Line Tool



Science Goal: Control/Performance Setup

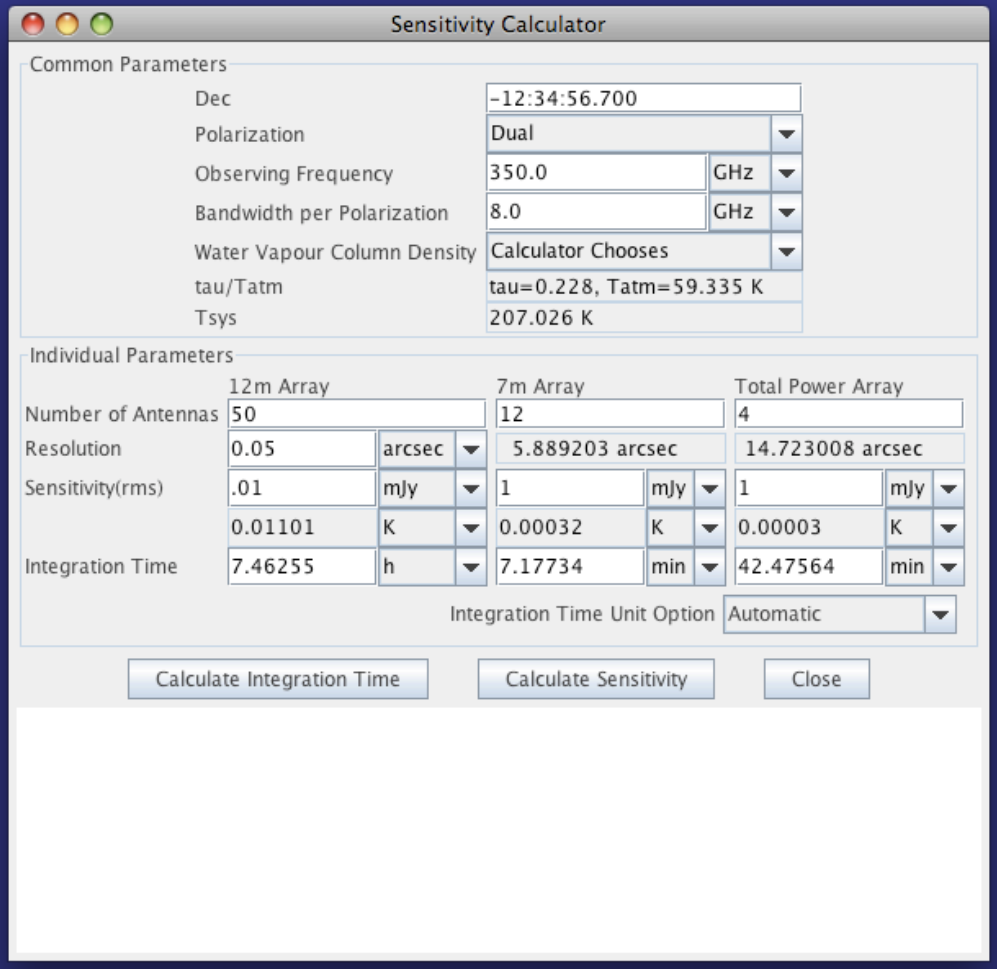


Values in red are unacceptable

Use the OT sensitivity calculator to work out time required

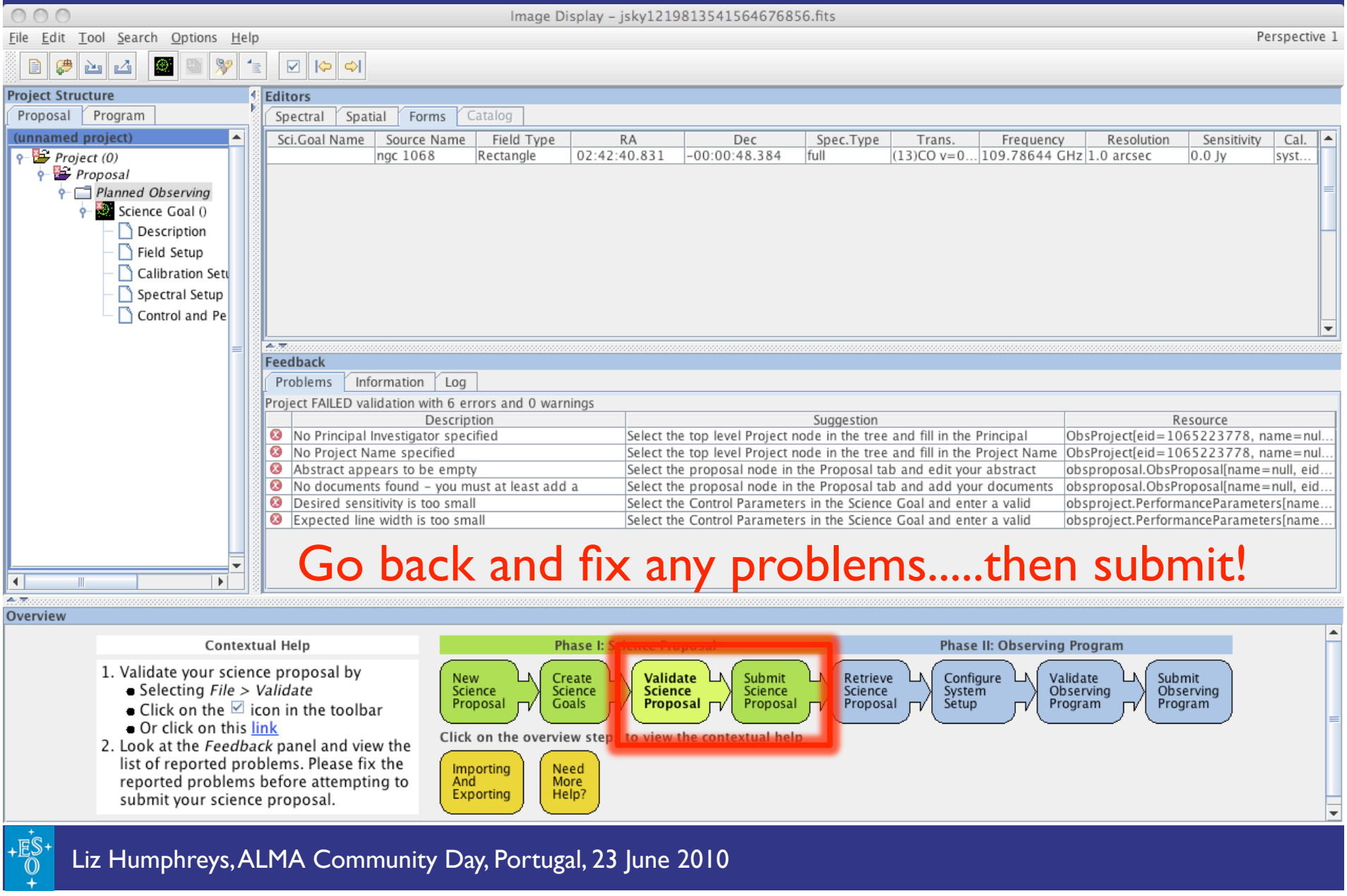
The OT will suggest whether the compact array is also required

ALMA Sensitivity Calculator



Also available on the web at ESO ALMA pages: http://www.eso.org/sci/facilities/alma

Project Validation & Submission



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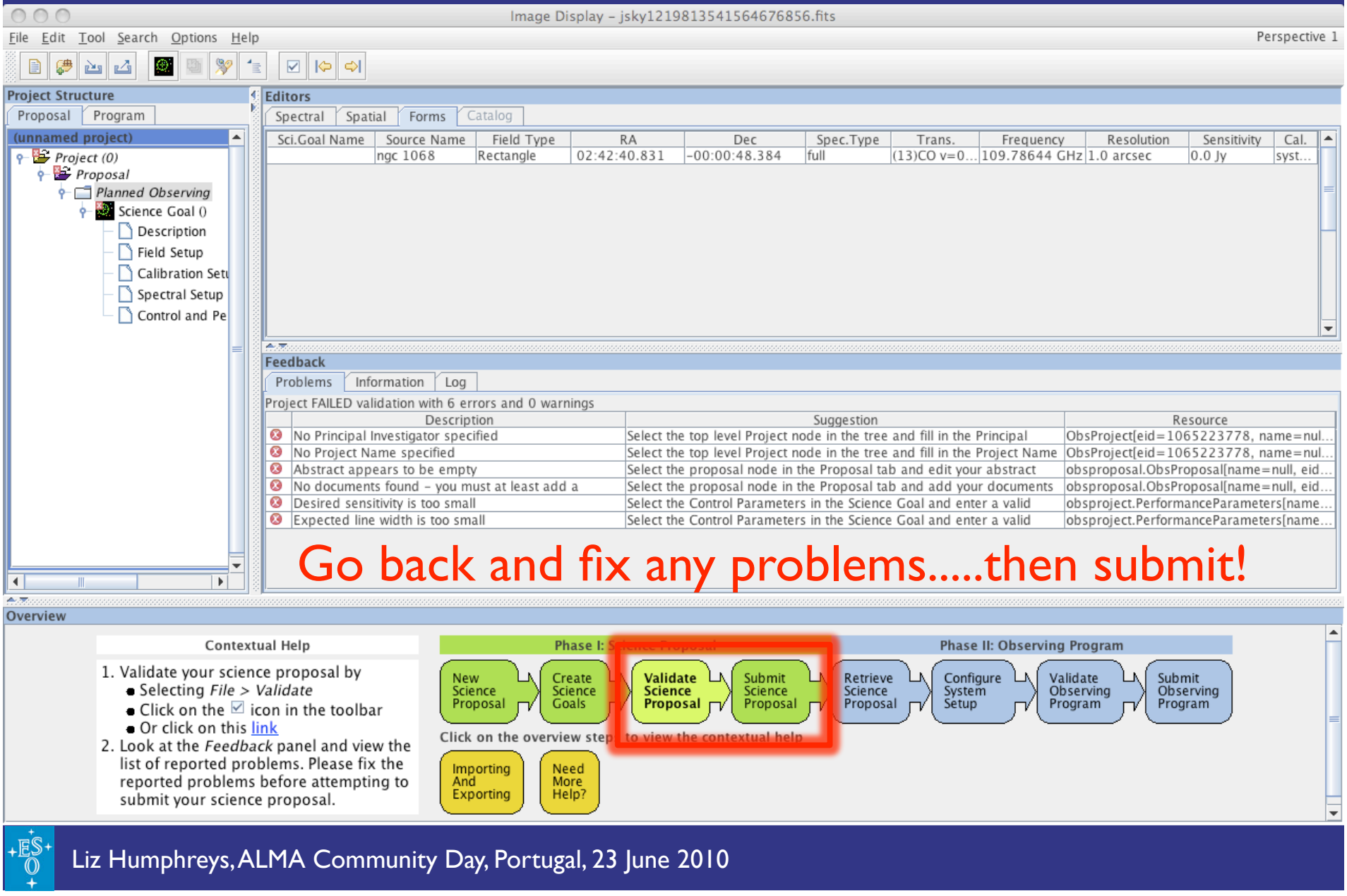


Proposal preparation (phase 1)

- OT captures all relevant info and submits to archive in Santiago
- Scientific justification and figures attached as pdf files
- Links to a central database for user information
- A number of tools are available
  - Sensitivity Calculator
  - Spectral Line Catalogue (Splatalog) search tool
  - Template Library
- User only needs fill in technical details as Science Goals
- Provides a complete printable record of proposal

Observing preparation (phase II)

- Re-use Science Goals from Phase I
- Observing mode scripts provided by project
  - On-the-fly, mosaicing, single-field interferometry, etc.
- Technical details/observing scripts editable by expert users/staff
- Other tools include:
  - Calibrator selection tool (OT can choose calibrators if required)
  - ACA necessity estimator (early version)
- User submits SBs to the archive in Santiago

Documentation

- Available on-line or within the OT are:
  - User Manual
  - Reference Guide
  - Cookbook
- ARCs will also be writing their own documentation e.g., "Quick Start" Guides

Preparing the OT for Early Science

- Tests are held regularly (twice a year)
  - Testers usually come from within ALMA project
- Testing using the archive in Chile was performed in 2010
- Beta-testing was 2 weeks ago - some external testers
- "Public Preview" of OT this July
- ARCs to use OT for training and documentation May-Sep
- Version for first CfP ready Oct 2010

Inputs, Training & Getting Help

Proposal Planning

- What frequency?
  - Spectral line, continuum emission
  - Tradeoff between resolution, FOV, surface brightness sensitivity
  - Noise level in flux density/beam area
- What baseline?
  - Resolution (λ/Bmax maximum B)
  - Maximum spatial scale (λ/Bmin minimum B)
- Field of View?
  - Primary Beam (λ/D)
  - Mosaic of many pointings?
- Spectral Resolution?
  - Compromise between bandwidth and resolution set by maximum # of correlator channels setup
- How Long?
  - Signal-to-noise ratio
  - Image fidelity
- More Advanced Considerations
  - Polarization, more configuration, +ACA…

P. Andreani

ALMA Sensitivity Calculator

ESO – Observing Tools and Services

http://www.eso.org/sci/facilities/alma/observing/tools/etc/ RSS alma primer

European Southern Observatory

Observing with ALMA

ESO — Reaching New Heights in Astronomy

ESO Home | User Portal | Contact | Site Map | Search | Go!

Science Users Information > Future Facilities > ALMA > Observing with ALMA > Tools and Services > Sensitivity Calculator 28 Oct 2009

- ALMA
- News and Events
- ALMA Newsletter
- About ALMA
- Description and Concepts
- Science with ALMA
- Observing with ALMA
  - ALMA Basics
  - System Specifications
  - Tools and Services
    - Sensitivity Calculator
    - Observing Tool
    - Data Reduction: CASA
  - Policies and Procedures
- ALMA Regional Centre
- ALMA Scientific Meetings
- Publications
- Internal Access Only
- Public

ALMA Sensitivity Calculator

This tool will calculate the necessary integration times for a given sensitivity, or vice versa, for your ALMA observing project. Input and output parameters are explained below. You can also get additional information on the valid range for each parameter by hovering your mouse pointer over each field in the calculator applet.

To run the calculator you need the Java Plug-in installed. If you do not see the calculator then it is likely that you do not have it installed. Instructions for installing the plugin will vary depending on your browser and operating system. A plugin compatible with the Java Development Kit version 1.6 (or Java6) is recommended (version 1.5 should work at the moment). Please contact your IT department for installation help if necessary.

Common Parameters

Sensitivity Type	Point Source detection
RA	00:00:00.000
Dec	00:00:00.000
Effective Bandwidth	16.0 GHz
Frequency (GHz)	345.0
Observatory site	Chajnantor
Water Vapour Column Density	ETC Chooses
Sensitivity Unit	mJy

Individual Parameters

Parameters

Common Parameters

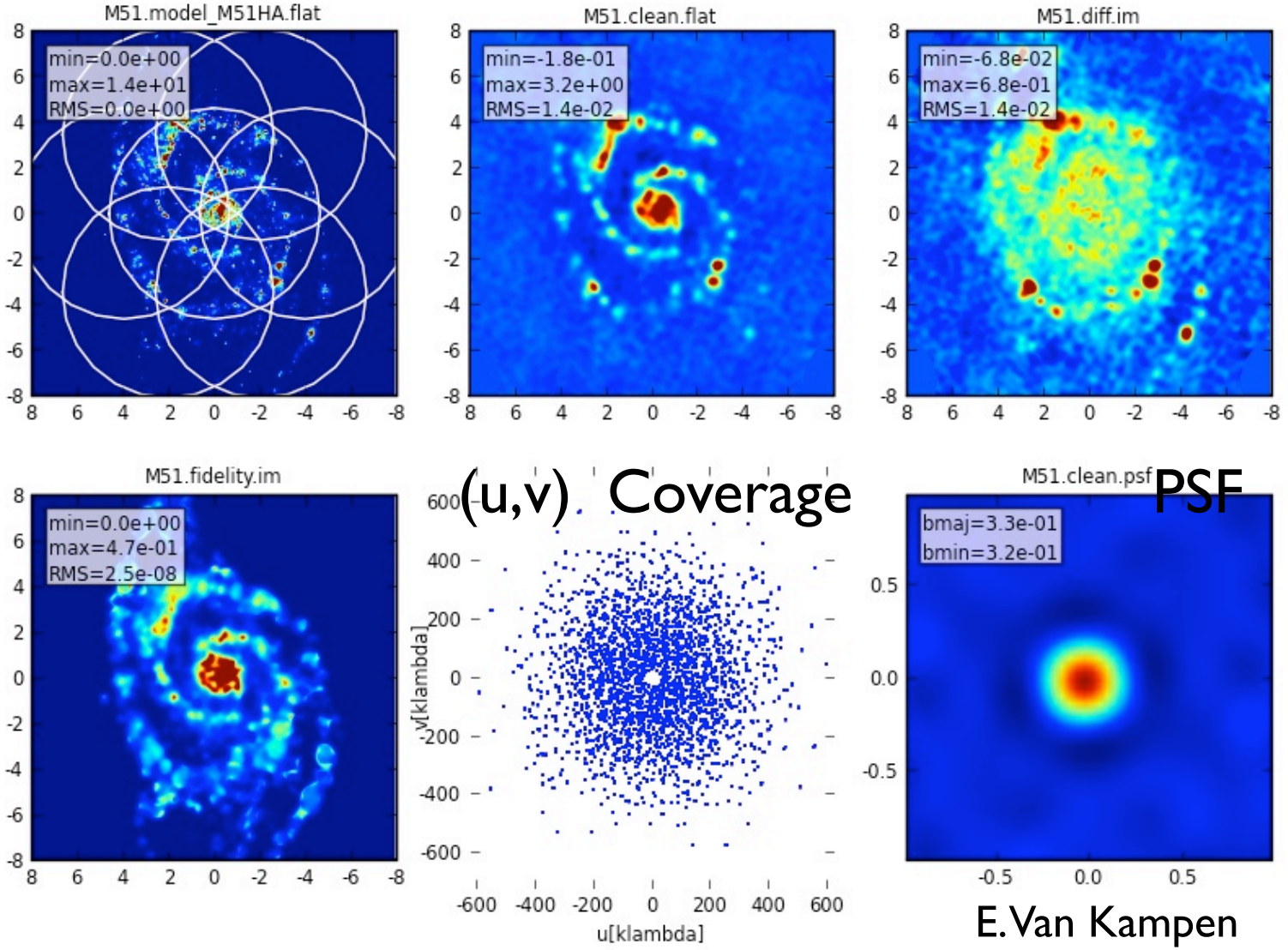
Sensitivity Type: Choose between a point-like or extended source.

RA/Dec: Coordinates of the observation target.

Effective Bandwidth: The standard observing mode will be using two polarizations.

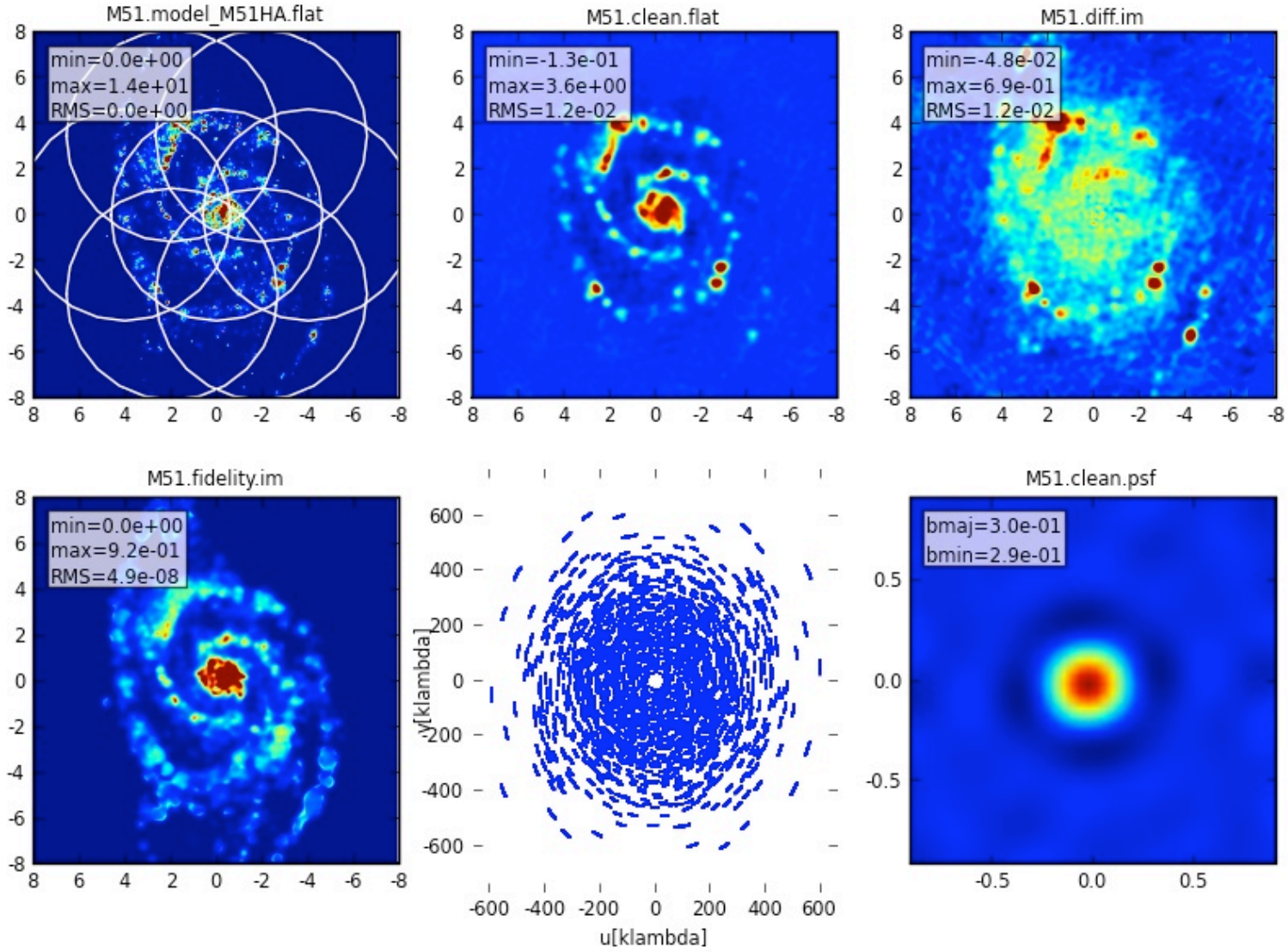
Proposal Planning: The CASA ALMA Simulator

ALMA (u,v) coverage t=2 min

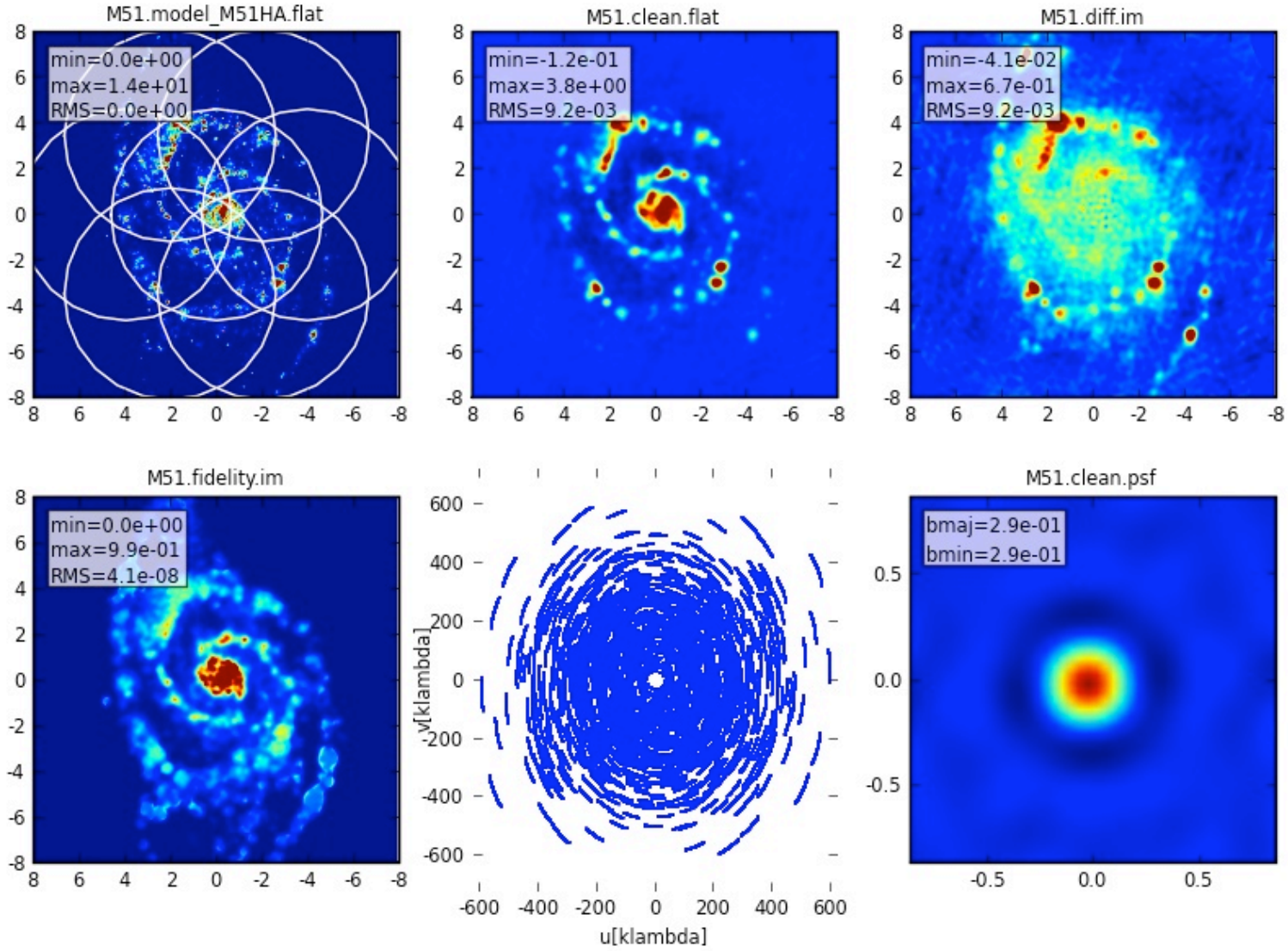


E.Van Kampen

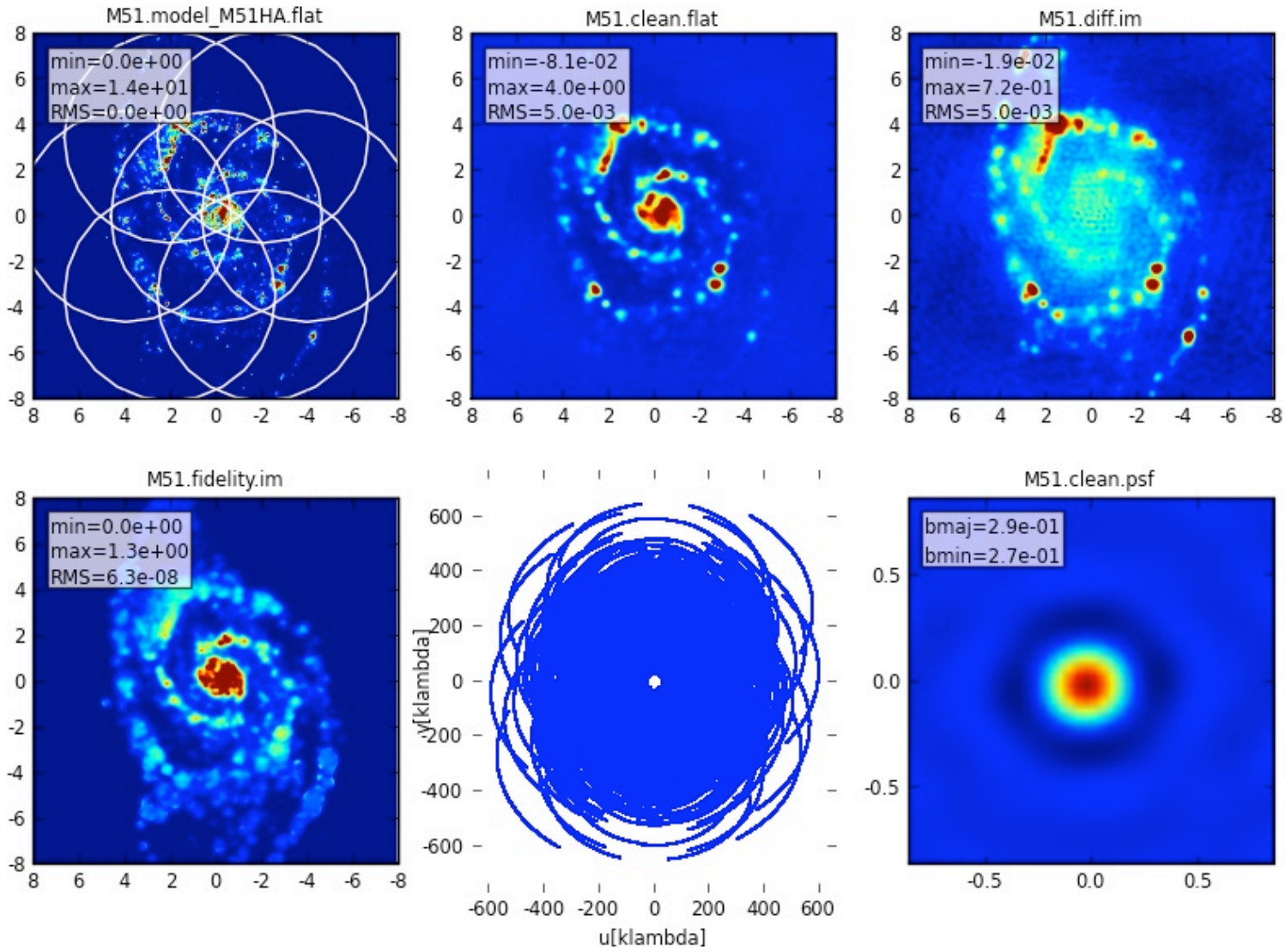
ALMA (u,v) Coverage t=30 min

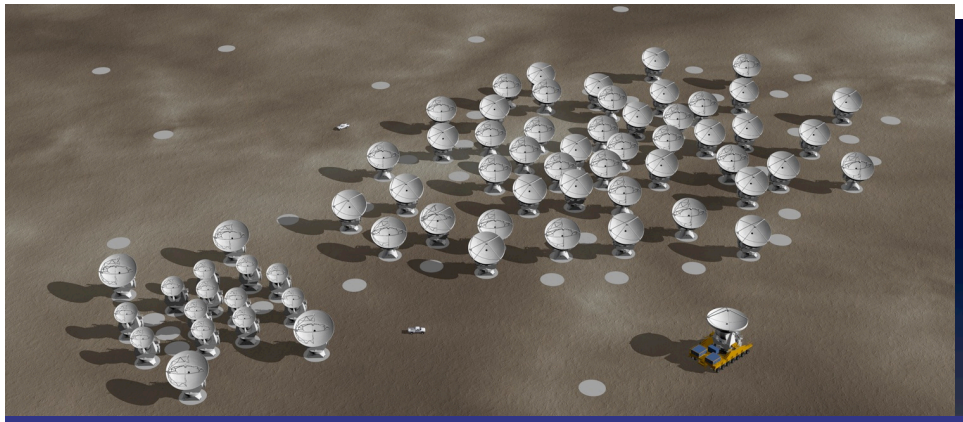


ALMA (u,v) Coverage t=1 hr

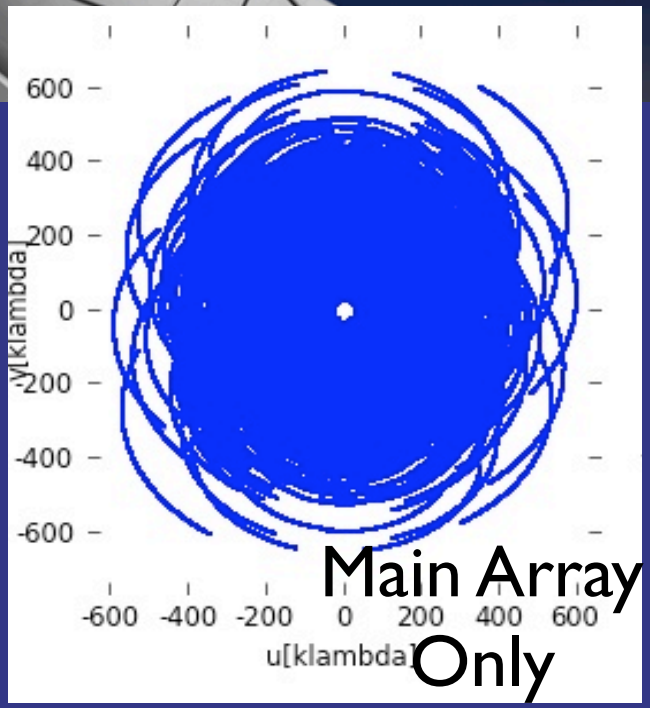


ALMA (u,v) Coverage t=5 hr





Proposal planning: Adding in the ACA ?



- Supplement the 12-m array with
  - Short baseline data (7 m antennas)
  - Total power data (12m antennas)
- Enhance fidelity of ALMA images (overcome the "missing flux" problem)
- Essentially one configuration
- Stand alone mode of operation
  - available for target of opportunity observations, wide field surveys etc

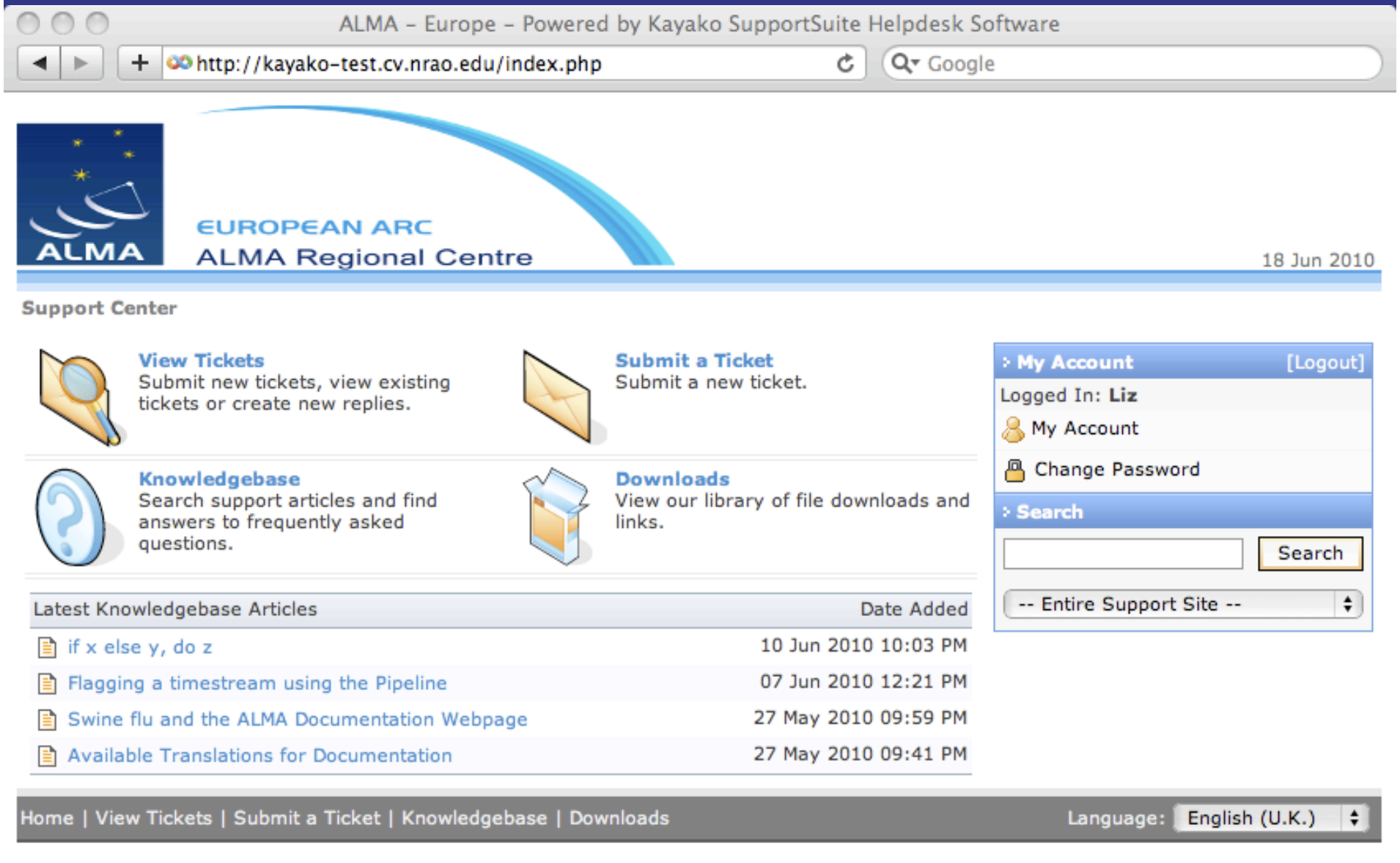
J. Brand

Training for the OT and Simulator

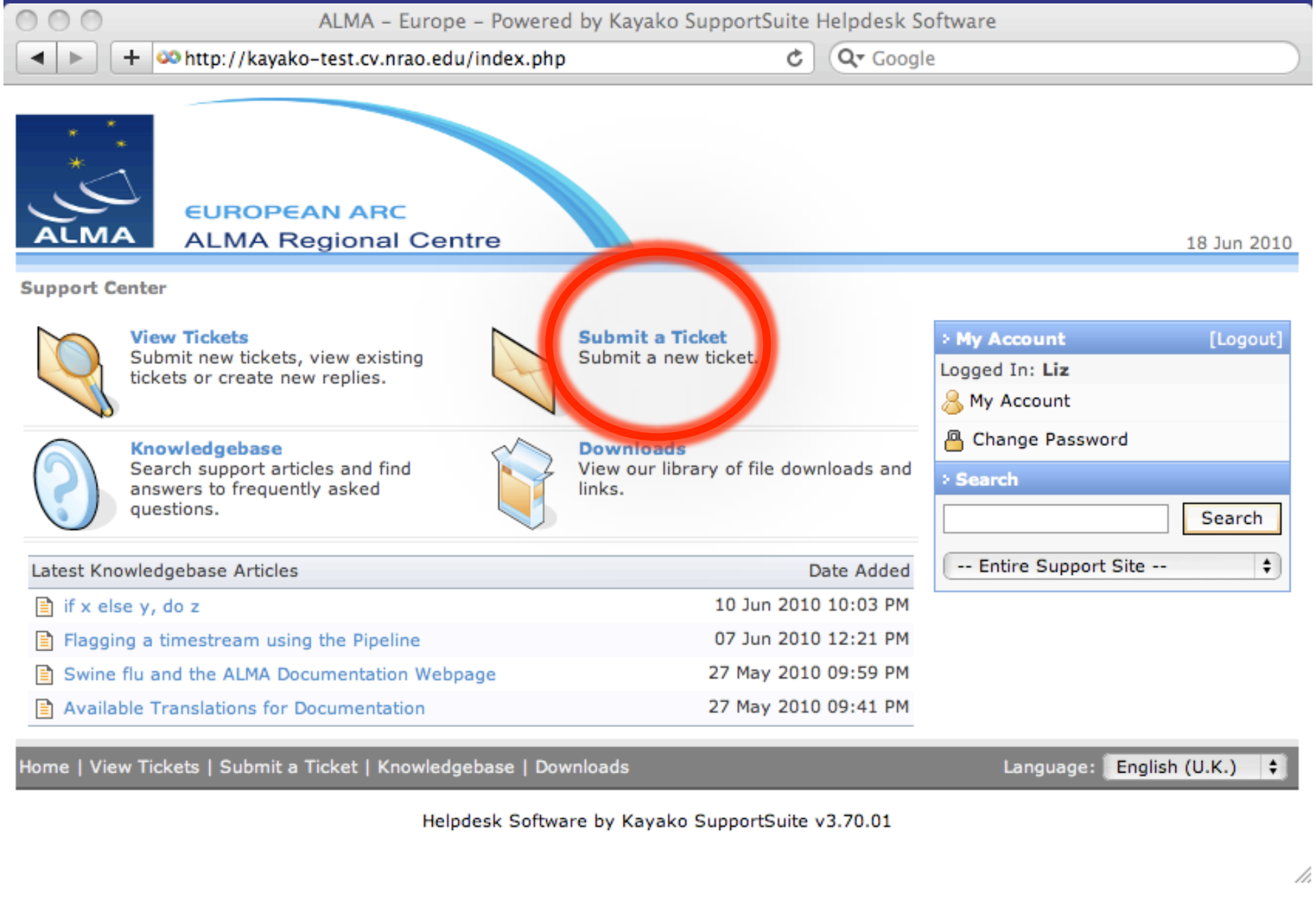
- The ALMA Regional Centres are already providing training via workshops, tutorials, community days and schools
- For European activities, check the ESO web pages at:

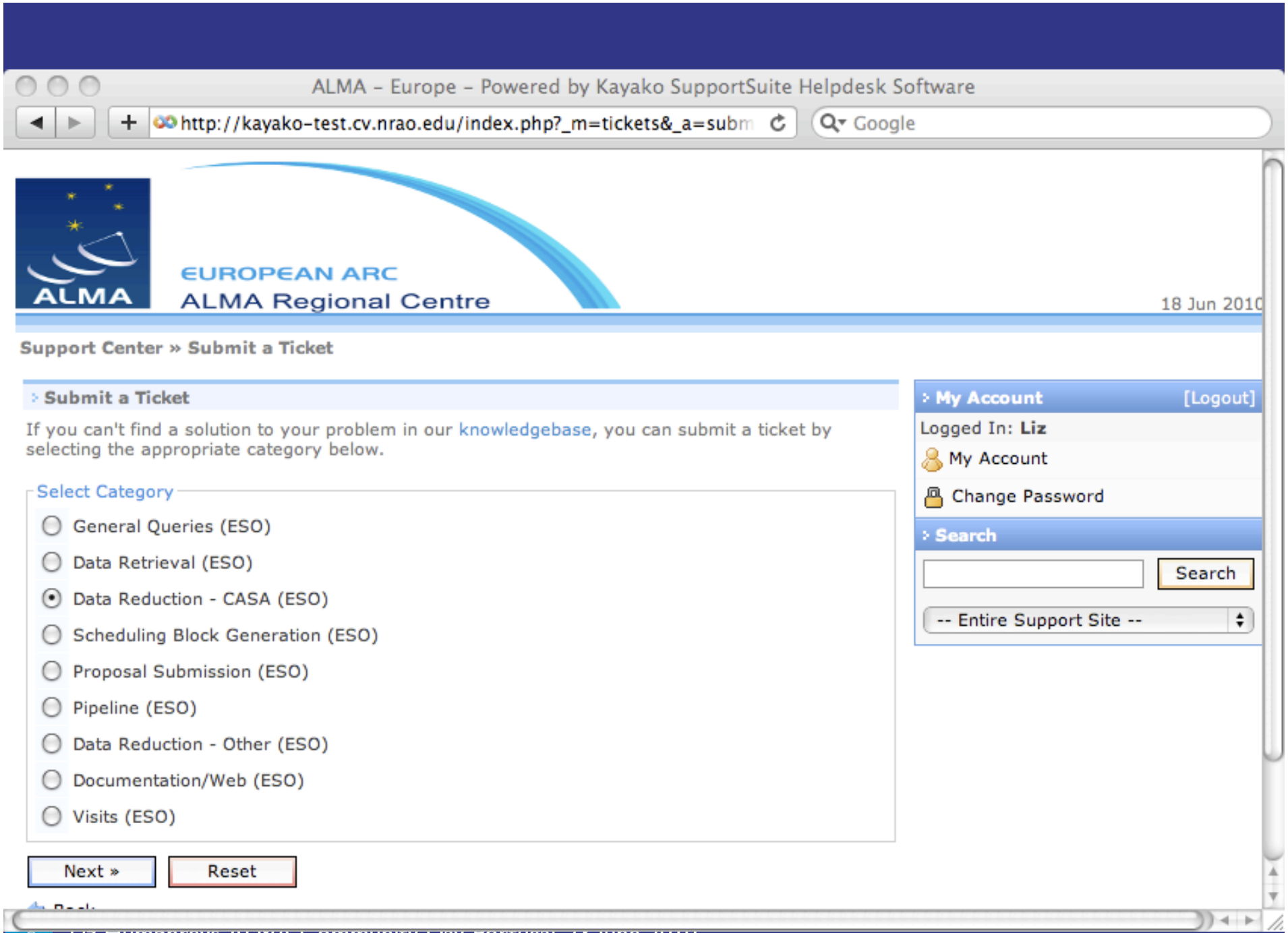
  http://www.eso.org/sci/facilities/alma/arc/

Proposal Preparation: Getting Help



Proposal Preparation: Getting Help

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18 Jun 2010
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Submit a Ticket
If you can't find a solution to your problem in our knowledgebase, you can submit a ticket by selecting the appropriate category below.
Select Category
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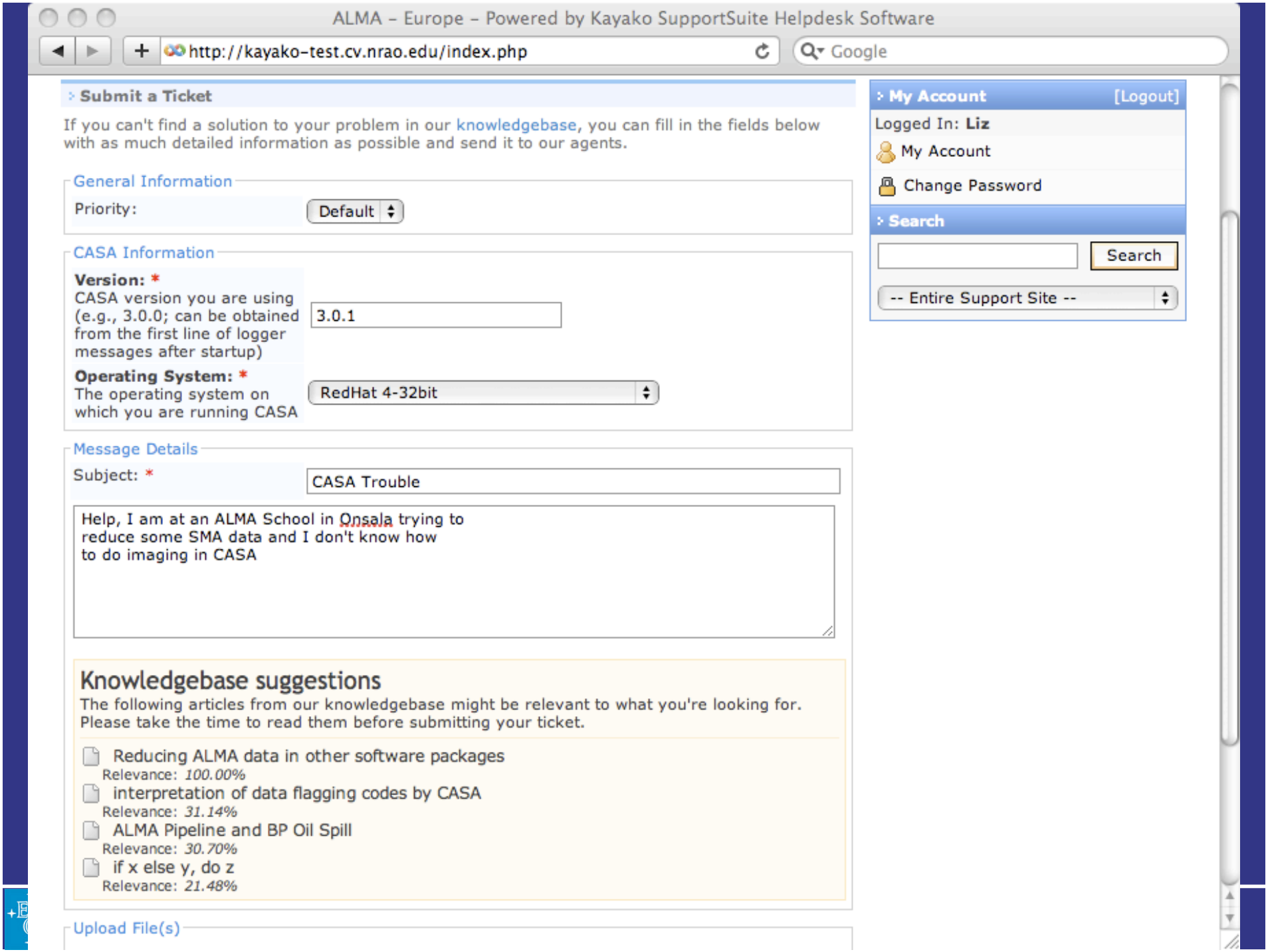
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Submit a Ticket
If you can't find a solution to your problem in our knowledgebase, you can fill in the fields below with as much detailed information as possible and send it to our agents.
General Information
Priority:
Default
CASA Information
Version: *
CASA version you are using (e.g., 3.0.0; can be obtained from the first line of logger messages after startup)
3.0.1
Operating System: *
The operating system on which you are running CASA
RedHat 4-32bit
Message Details
Subject: *
CASA Trouble
Help, I am at an ALMA School in Onsala trying to reduce some SMA data and I don't know how to do imaging in CASA
Knowledgebase suggestions
The following articles from our knowledgebase might be relevant to what you're looking for. Please take the time to read them before submitting your ticket.
Reducing ALMA data in other software packages
Relevance: 100.00%
interpretation of data flagging codes by CASA
Relevance: 31.14%
ALMA Pipeline and BP Oil Spill
Relevance: 30.70%
if x else y, do z
Relevance: 21.48%
Upload File(s)
My Account
[Logout]
Logged In: Liz
My Account
Change Password
Search
Search
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OT Demo

Demo Project

- Project from ALMA Design Reference Science Plan (DRSP)
- http://www.eso.org/sci/facilities/alma/science/drsp
- ^{12}CO J=2-1 observations of AGN NGC 1068 (Schinnerer)
- Single field interferometry
- Angular Scales reqd: 0.06 to 20 arcsec
- Rms 0.2 mJy/beam, 5 km/s channels, 1200 km/s linewidth
- Using OT v7.1

ALMA Useful Links

http://www.almaobservatory.org/

EU ARC: http://www.eso.org/sci/facilities/alma/arc/

East Asia ARC: http://alma.mtk.nao.ac.jp/EA-ARC/

North American ALMA Science Center:
http://www.cv.nrao.edu/naasc/

CASA Download & Tutorials: http://casa.nrao.edu/

ALMA Sensitivity Calculator:
http://www.eso.org/sci/facilities/alma/observing/tools/

ALMA Simulations Pages:
http://www.cv.nrao.edu/naasc/alma_simulations.shtml/
http://iram.fr/IRAMFR/ARN/may01/node7.html/

Line catalogues: http://www.splatalogue.net/

Observing With ALMA Primer:
http://ww.almatelescope.ca/Workshop/ALMAPrimer.pdf/