NRAO

National Radio Astronomy Observatory

Atacama Large Millimeter/submillimeter Array
Expanded Very Large Array
Robert C. Byrd Green Bank Telescope
Very Long Baseline Array

Preparing for ALMA

http://science.nrao.edu/alma

National Radio Astronomy Observatory

North America ALMA Science Center

Charlottesville, Virginia U.S.

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ALMA from the Users' Perspective

Kelsey Johnson
University of Virginia / NRAO

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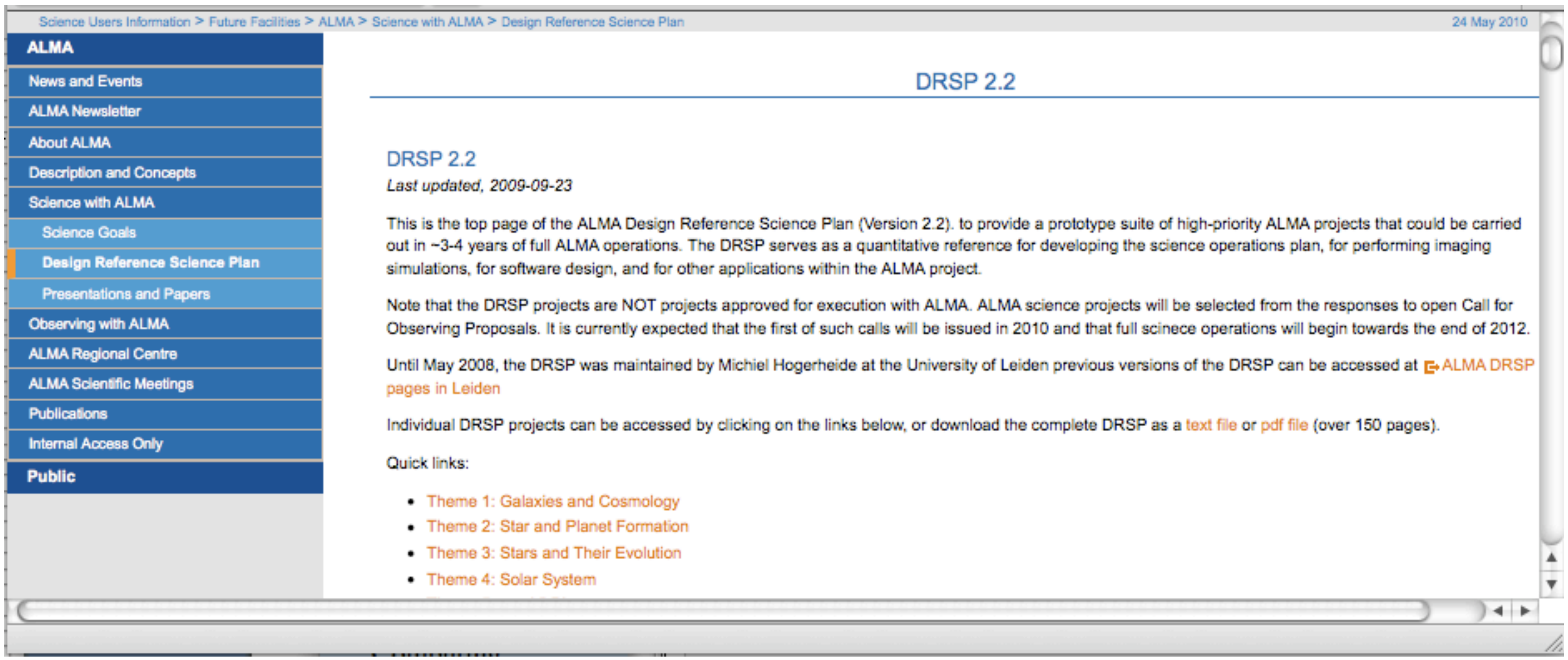
Step 1: Thinking of Proposing

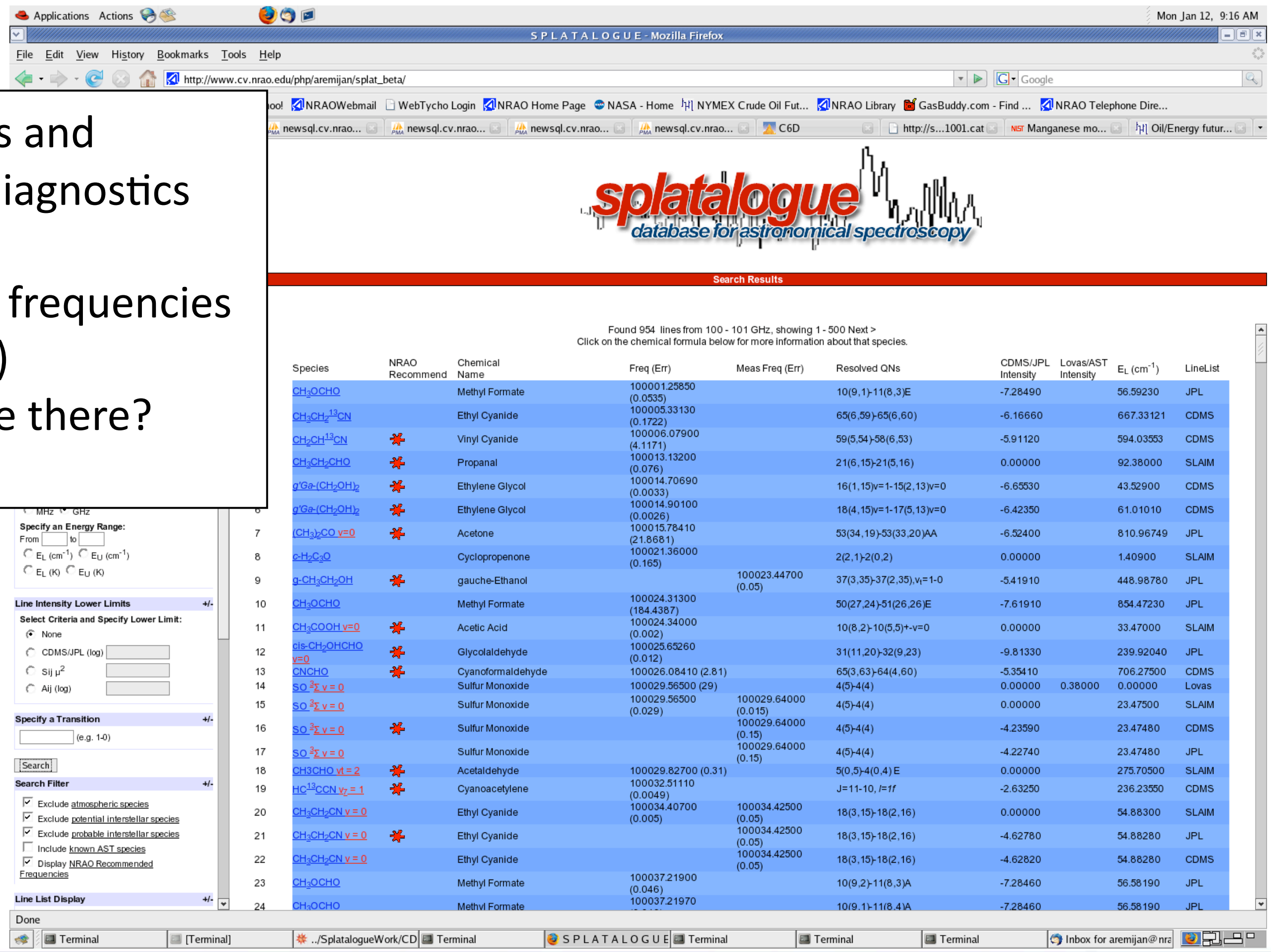
- Check out "Design Reference Science Plans" (DRSPs)
- Think outside the box
- Play with the ALMA tools!



Step 1:Thinking of Proposing

⇒ tools to help refine your ideas: **Splatalogue**

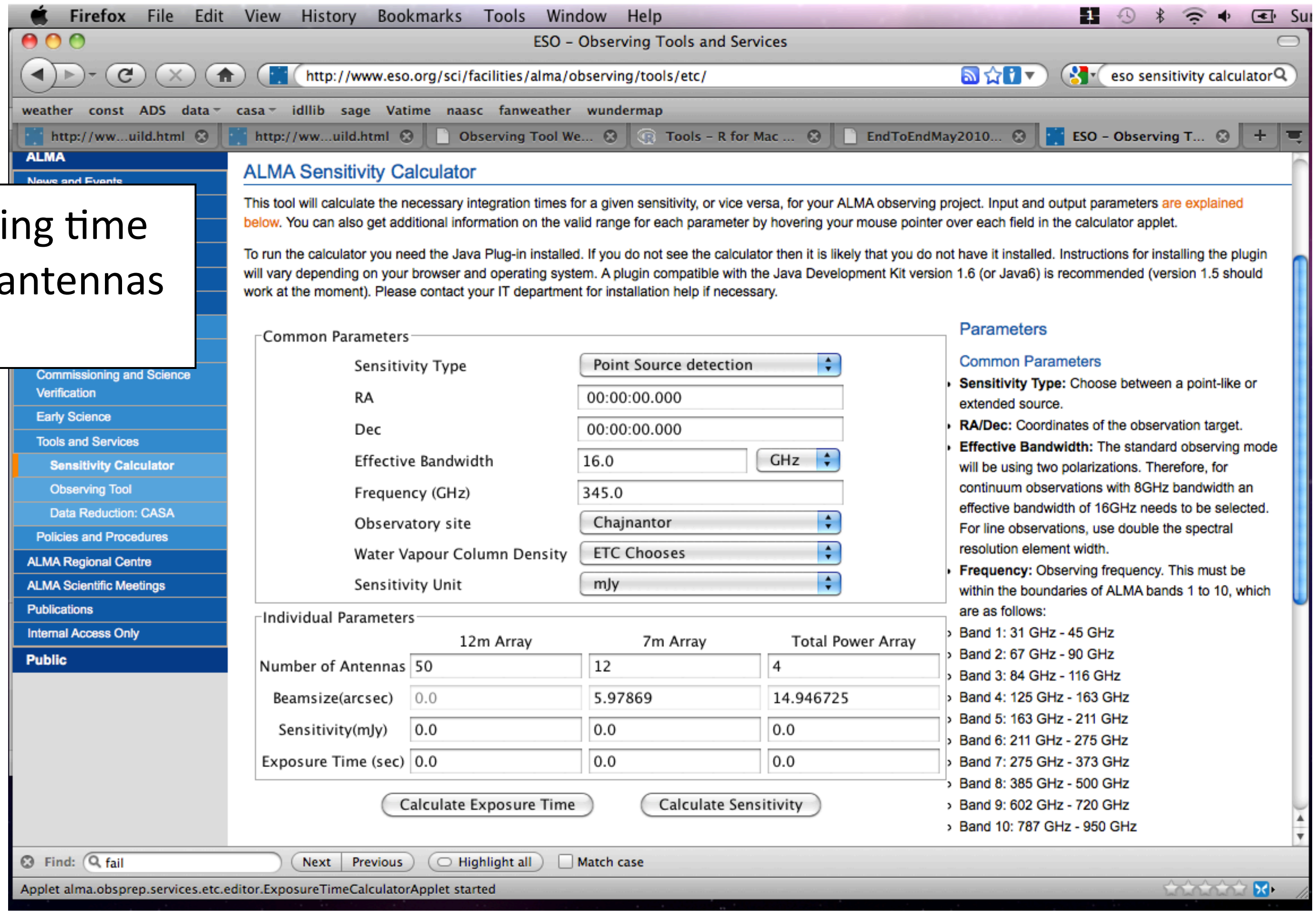
- ✓ Determine which species and transitions are the best diagnostics for your sciences
- ✓ Look up line strengths & frequencies
- ✓ Think about best band(s)
- ✓ What other cool lines are there?



Step 1:Thinking of Proposing

⇒ tools to help refine your ideas: **Sensitivity Calculator**

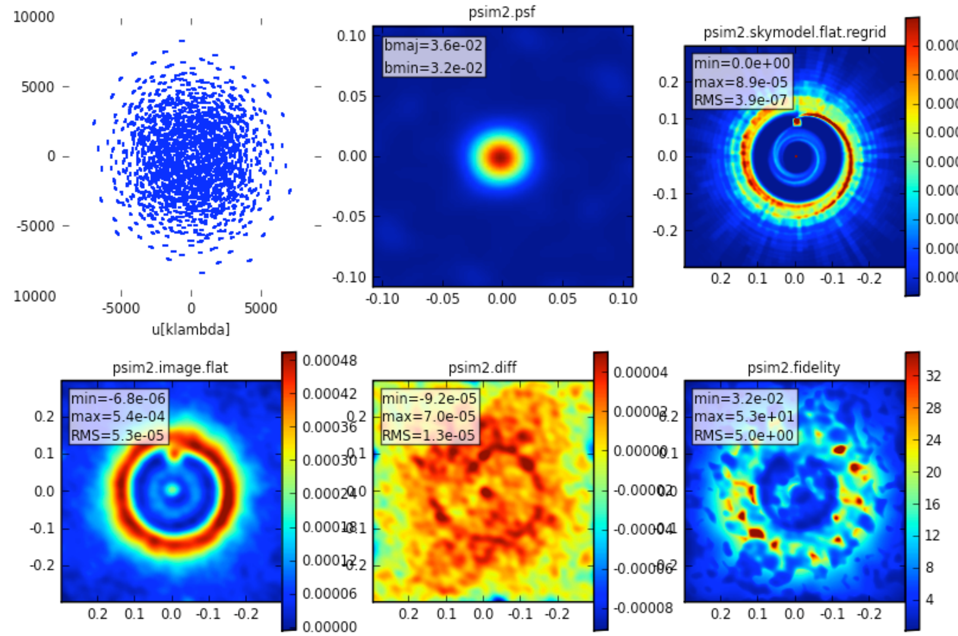
- ✓ Estimate observing time
- ✓ Customize # of antennas
- ✓ Vary conditions



Step 1:Thinking of Proposing

⟹ tools to help refine your ideas: **Simulator**

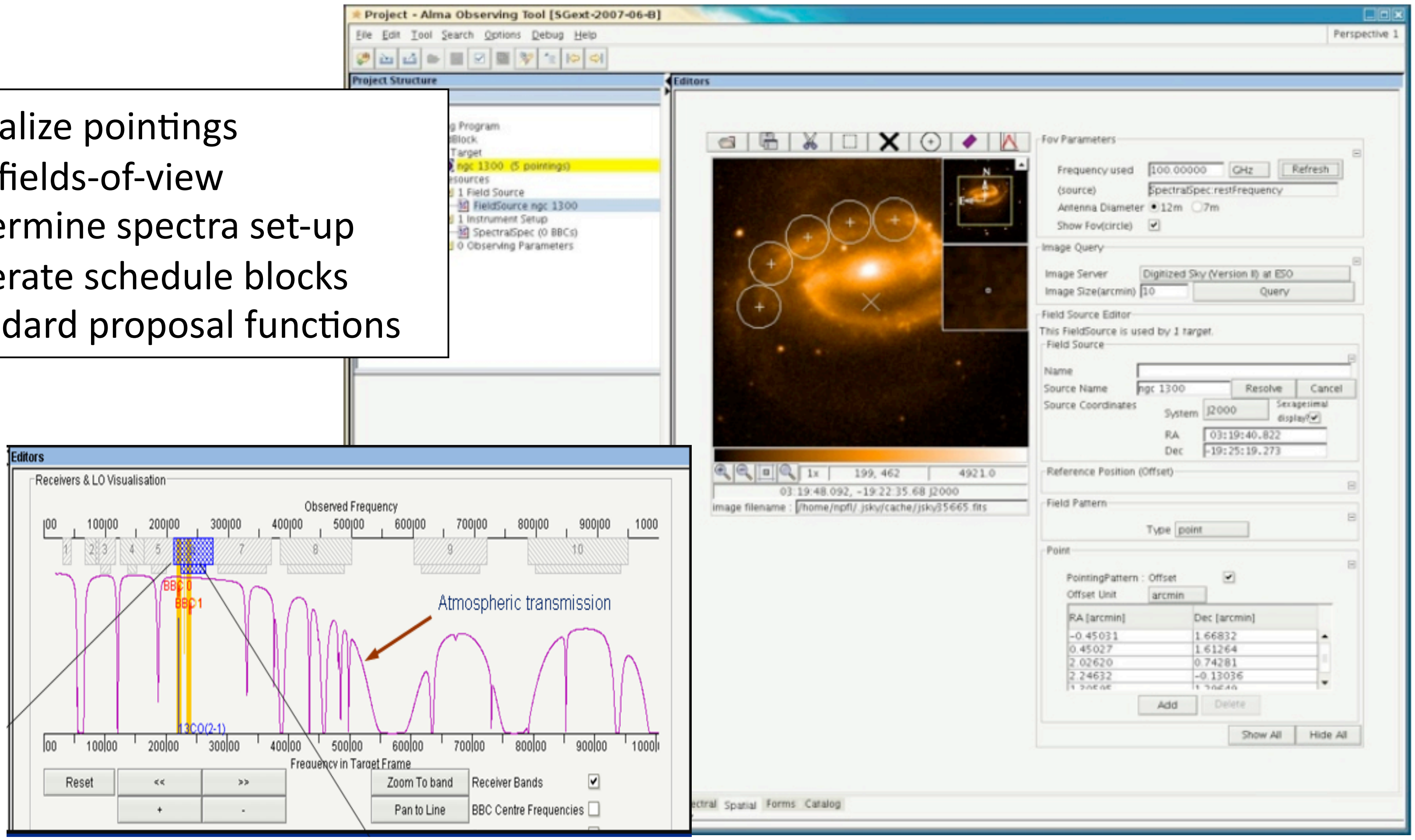
- ✓ Calculate visibilities
- ✓ Calculate total power observation
- ✓ Add noise
- ✓ Re-image the data
- ✓ Analyze the difference between output and input images



Step 2: Proposal Preparation:

⇒The Observing Tool (OT)

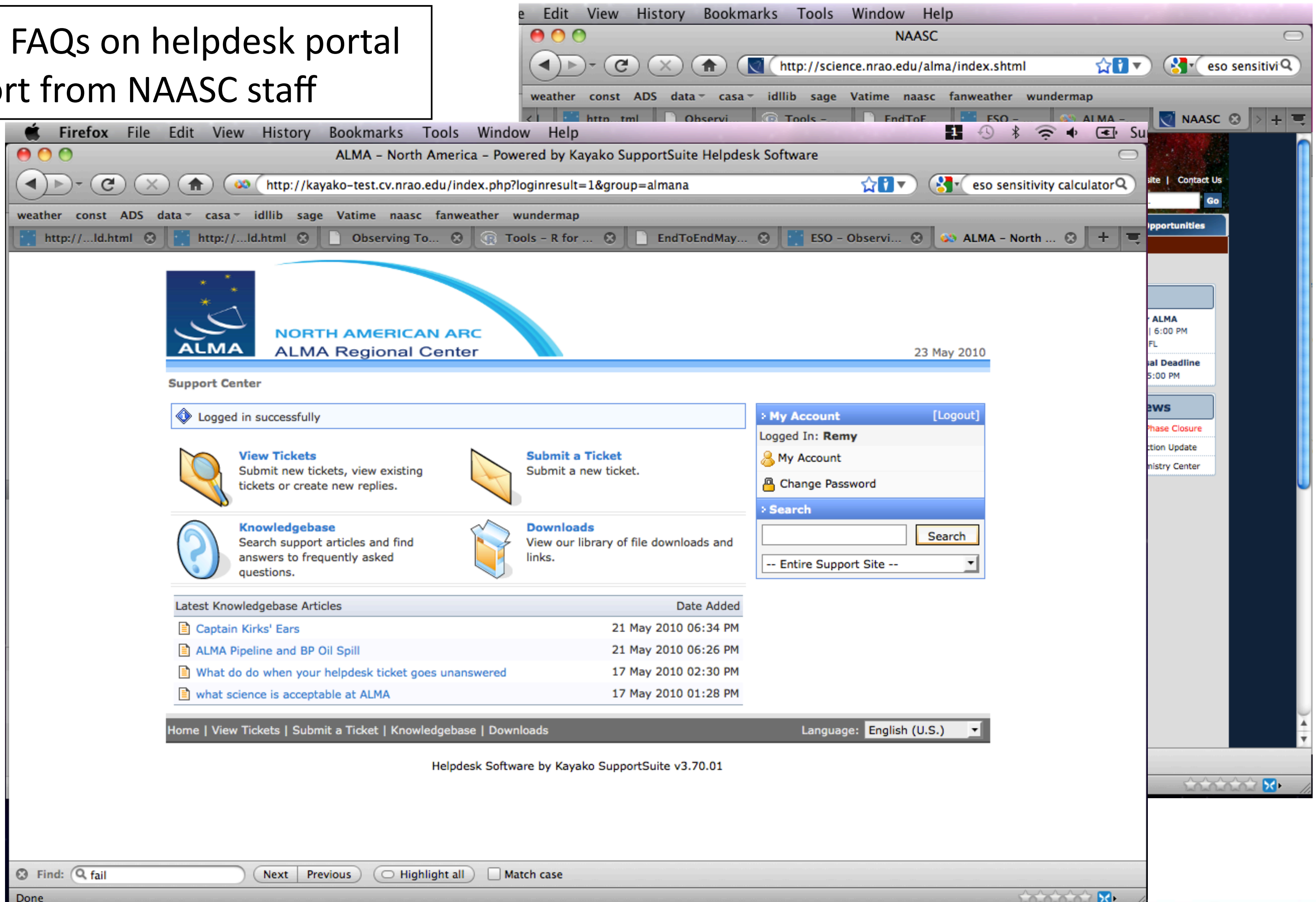
- ✓ Visualize pointings
- ✓ See fields-of-view
- ✓ Determine spectra set-up
- ✓Generate schedule blocks
- ✓ Standard proposal functions



Step 2: Proposal Preparation

ALMA

- ✓ Info & FAQs on helpdesk portal
- ✓ Support from NAASC staff



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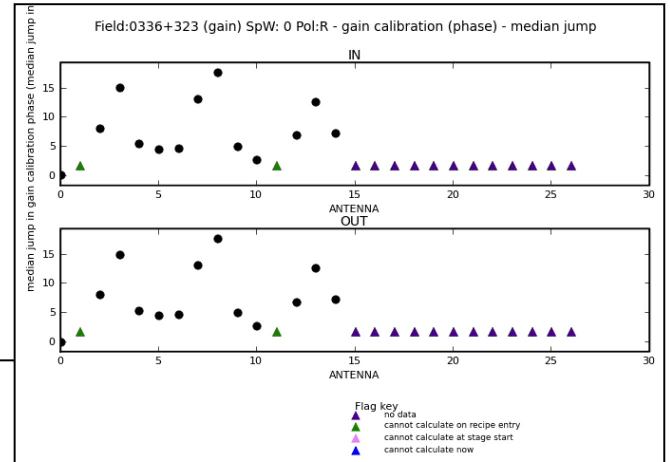
Step 3: Proposal Review

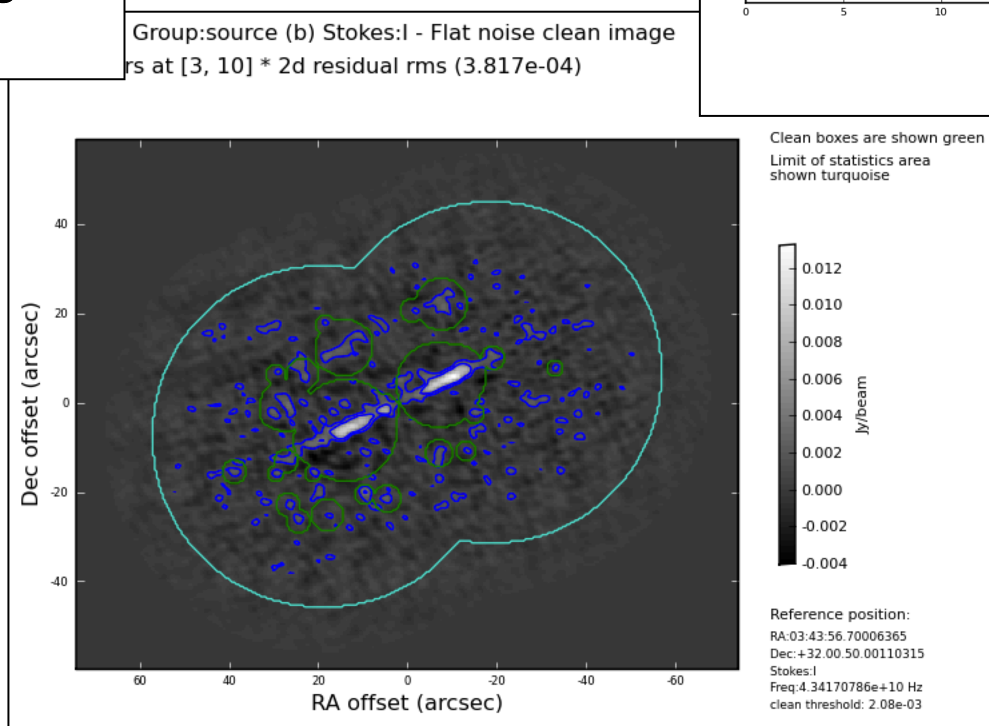
- International TAC
  - (North America, East Asia, Europe; Chile TBD)
- Face-to-face meetings
  - Twice per year (at least initially)
- Proposals ranked, then merged
  - programs drained from queue w.r.t. weather, R.A., etc
- Some DD time
  - ~ 5%
- "Open Skies" time distributed up to 5%

- Phase 1 & Phase 2

Step 4: Download "pipeline" data from the archive

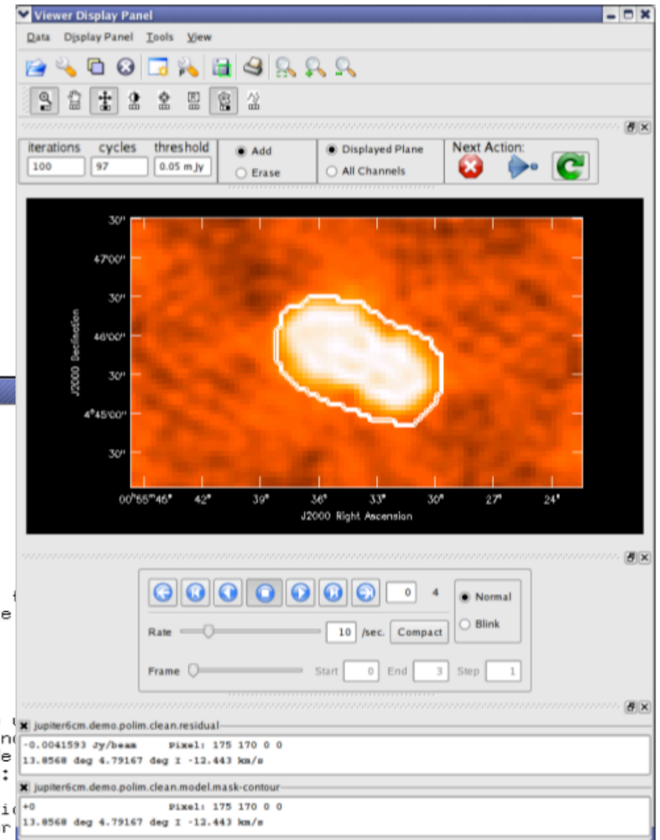
- ✓ Default flagging
- ✓ Basic calibration
- ✓ Cleaned image
- ✓ diagnostics

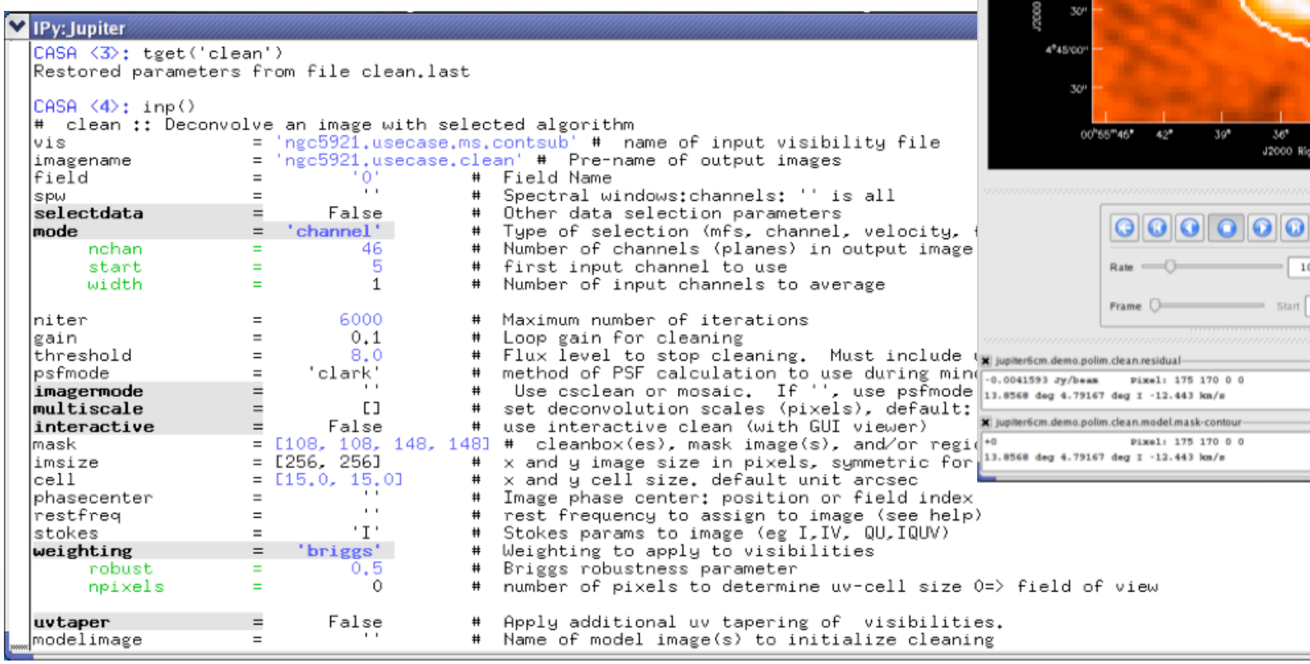




Step 5: Analyze data - CASA

- ✓ Visualize data cubes
- ✓ Overlay multi-wavelength data
- ✓ Measure flux densities
- ✓ Fit sources
- ✓ Generate publication images

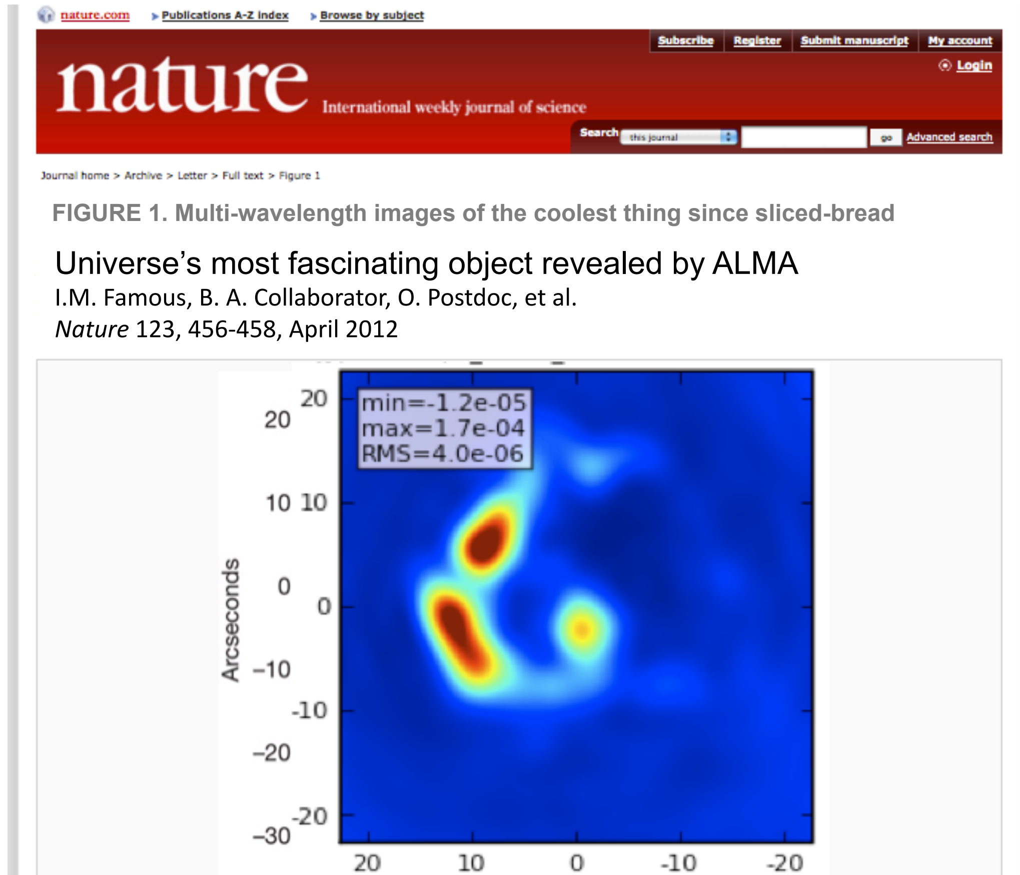




Step 6: Write cutting edge paper!

✓ Cutting edge capabilities
= amazing science

✓ best ideas yet to come



Take home points

- This is <u>your</u> observatory

- NAASC is here to help you

- To get started:
  -- NAASC tutorials
  -- On-line tutorials
  -- Science workshops

- Call for proposals end of 2010

- Be EXCITED!

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