Observation Preparation

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

NRAO

Outline

- All-time, general observation preparation rules
- The EVLA is not the VLA!
  - *Receivers and bandwidth*
  - *Spectral line correlator*
  - *Dynamic scheduling*
- Detailed observation preparation hints
  - *Dynamic observing considerations*
  - *Logistical considerations*
  - *Tactical considerations*
  - *Special topics*
- Scheduling blocks in the OPT
  - *New 2x 8 subband (2x 1 GHz maximum) wide OSRO resource catalogs*
  - *Check, check, check!*
  - *Quick run-through*

All-time, general observation preparation rules:

- We receive lots of general questions which usually must be answered specifically for the science pursued, boundary conditions imposed and resources used (and which typically are not given along with the question ..)

  Many questions don't have a straight general answer or solution!

- Remember during this talk
  - Everything is a trade-off and a zero sum game. Answers, solutions or tricks depend on ***your*** science goal, available flexibility to achieve that goal, and sensitivity to changing conditions. What may work for one may not work for another similar case, vice versa.
  - Simpler observations (setups, strategies, ..) are much easier to design and process
  - Choose so that you can calibrate your data versus extending on your on-source time; if you can't calibrate the data, your on-source time will most likely be lost anyway
  - There are tools to help planning - planning increases the ability to do the right thing when observing and this planning preferably starts before proposing!
  - Planning tools may not accurately reflect the conditions during your observations

The EVLA is not the VLA!

- The EVLA has increased frequency coverage
  - Sensitivity to radio frequency interference (RFI) and the art (i.e. pain) of editing
- The EVLA has increased instantaneous bandwidth
  - Wide fractional bandwidth effects
    - Calibration (pro 's and con's)
    - Imaging
  - Subband boundaries, inhomogeneous spectral response over the observed bandwidth
- The EVLA has a complex correlator
  - Large data set sizes, always spectral line, possibly with complex data structures
  - May need to process in subsets or on computing clusters
- The EVLA primarily uses dynamic scheduling for flexibility
  - Each scheduling block must include a range of scheduling constraints
    - LST start range
    - Weather (atmospheric phase noise and wind limits)
  - Anticipate and protect against unknown startup slew time and cable wrap
  - Anticipate and protect against availability of calibrators/slew for different starting times

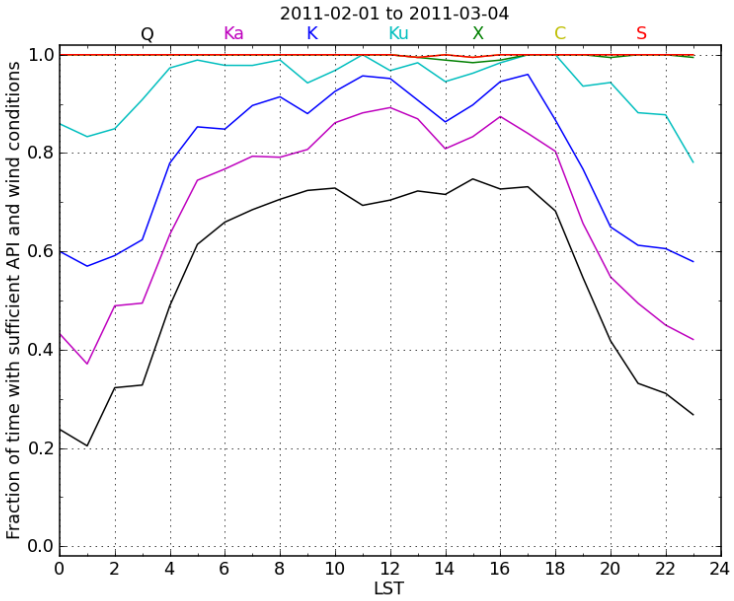
Detailed observation preparation hints

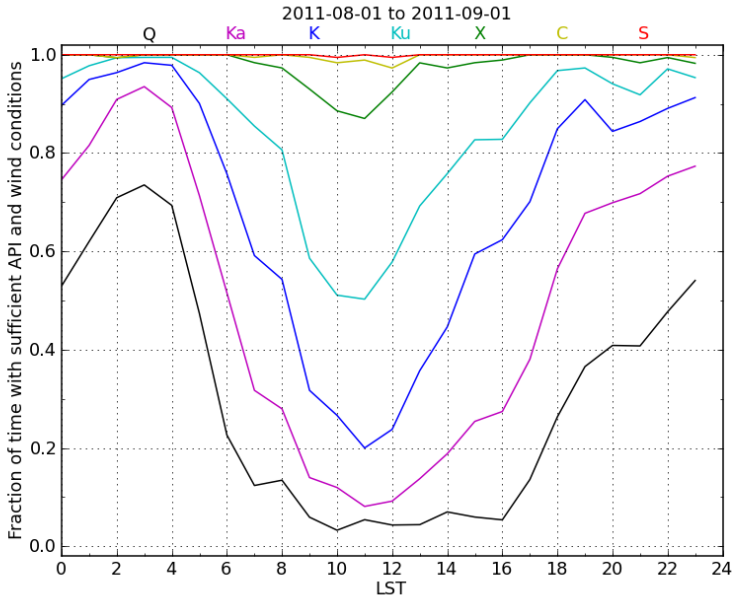
- Dynamic observing considerations:
  - Things to realize and anticipate when you don't know when your observation starts
- Logistical considerations:
  - When to do what in your SB to make your observation succeed
- Tactical considerations:
  - How to get your low priority SB more likely to be observed (no guarantees though!)
- Special topics:
  - Calibration and calibrators
  - Wideband issues
  - Spectral line issues
  - Shadowing

Dynamic observing considerations

- Before proposing consider
  - Where is my source on the sky
    - Popular LST ranges are more competitive (see pressure diagrams of previous cycles)
      - Can your science be done with a different source in a different, less popular LST range ?
  - What observing frequencies does my science require
    - Higher frequencies (above ~15 GHz) are harder to observe and require more careful planning at every stage
      - Can your science be done with lower frequencies, or with less time in high frequency observing ?
  - Does my target occur during day/night (etc) during this proposal cycle
    - Observing conditions are different for day/night and in spring/fall, etc
    - Maintenance reduces the available observing time during the day and is thus always more competitive
      - Can your science be deferred to a different season when better conditions are available (see later) ?
  - Where in this cycle is the array configuration scheduled that my science needs
    - e.g., A-array configuration conditions in early summer and in late summer are different, and priority determines when it will run, but there is no advance indication when this will be (and if they all are in the same season)
      - Can your science be done in a different array or the same array in a different season ?
  - When all above is less favorable for my case, do I still propose for this cycle
    - Even when approved with a very high science rating, your program may not complete, or not be observed at all
      - This depends on observatory conditions, boundary conditions you set, competition from others, ..
    - You may get a review that will help improve your proposal for a next proposal cycle (still without guarantees)

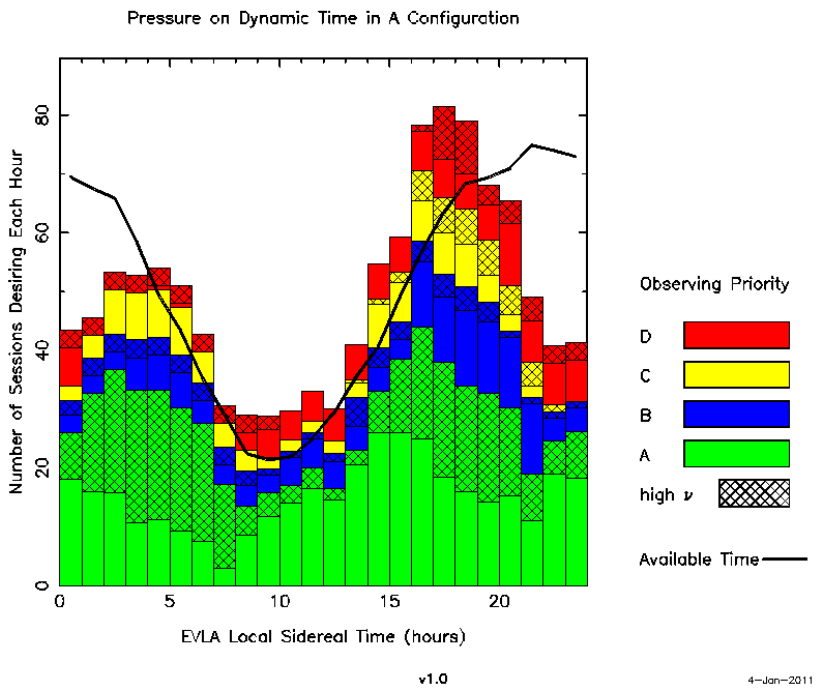
High frequency conditions (pre-proposing)

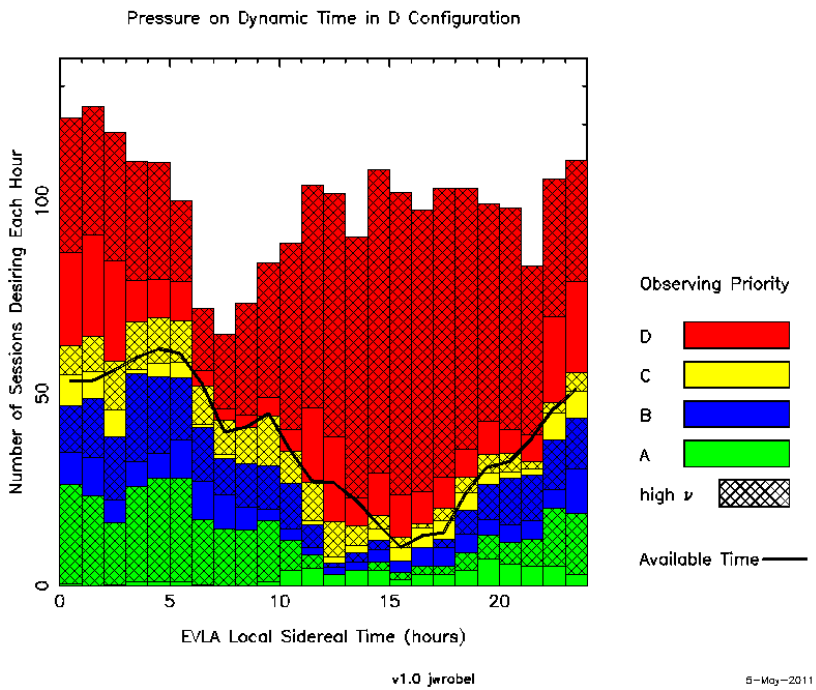




- February versus August high frequency observing conditions:
  - ✓ Observing LST 06-18h good in February, even daytime LSTs
  - ✓ Conditions LST 08-16 bad in August (daytime ~2 Q-days, maint!)
  - ✓ Below ~15 GHz almost always possible

LST pressure diagrams (post-proposing)





- 11A (A configuration) versus 11B (D configuration):
  - ✓ Daytime impact on available observing time
  - ✓ Popular versus unpopular LST ranges
  - ✓ Competition for time and weather conditions

Dynamic observing considerations

- When making the schedule consider
  - Where are my calibrators and target sources on the sky (if not done before proposing)
    - Strong, point like calibrators are good for bandpass and delay calibration
    - Nearby calibrators are good for phase calibration
    - Pointing calibrators should be in the same general region of the sky (Az, El)
    - Near Declination +34° is unfortunate for wraps – choose calibrators on the same side as target
    - What is the limited choice of flux calibrators for this project
      - Can certain calibrations be combined with fewer calibrator sources
      - What trade-offs can be made, and at what cost/gain
  - What competition from other projects can I expect
    - Lower priority projects are doomed to fill up the gaps left by higher priority projects and/or use less favorable weather conditions, and therefore must be very flexible in scheduling constraints. If, e.g., your priority is a low C and needs 50h on a single target to do the science, it is not a shame not to submit anything (other than an improved proposal with more realistic goals at the appropriate next deadline).
      - Short scheduling blocks are good, but inefficient ,and impact uv-coverage and parallactic angle range
      - Less tight weather constraints are good, but may yield lesser quality data
      - Plan for observations at the end of the cycle, but submit scheduling blocks at the start
  - How do I keep data reduction simple
    - EVLA may produce huge data sets, which may be separated by months in different array configurations
    - Where do I place my subbands to minimize RFI (continuum) or maximize use of spectral coverage (line) , etc.
      - Please follow guidelines for "standard observing modes" to enable application of pipeline calibration

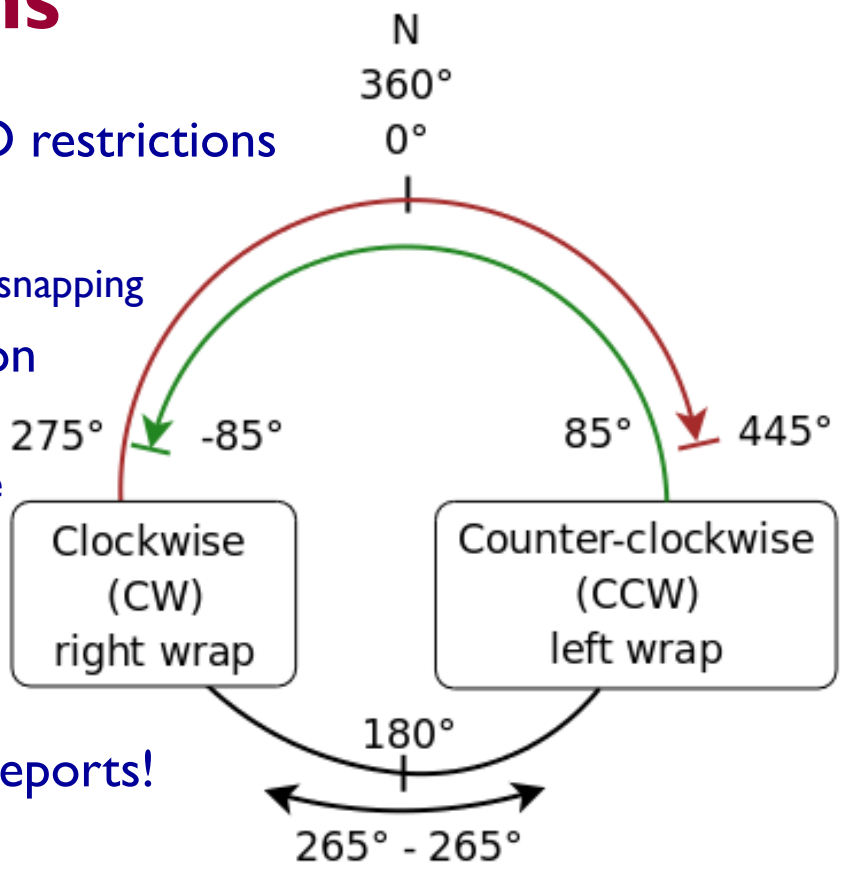
Logistical considerations

- Adhere to current (and changing!) OSRO restrictions
- The antenna wrap diagram is your guide:
  - How far the antenna cables can reach before snapping
- You don't know the starting wrap position
  - But you can control it as soon as you start
  - Use the startup sequence and LST start range
  - From then you are in control

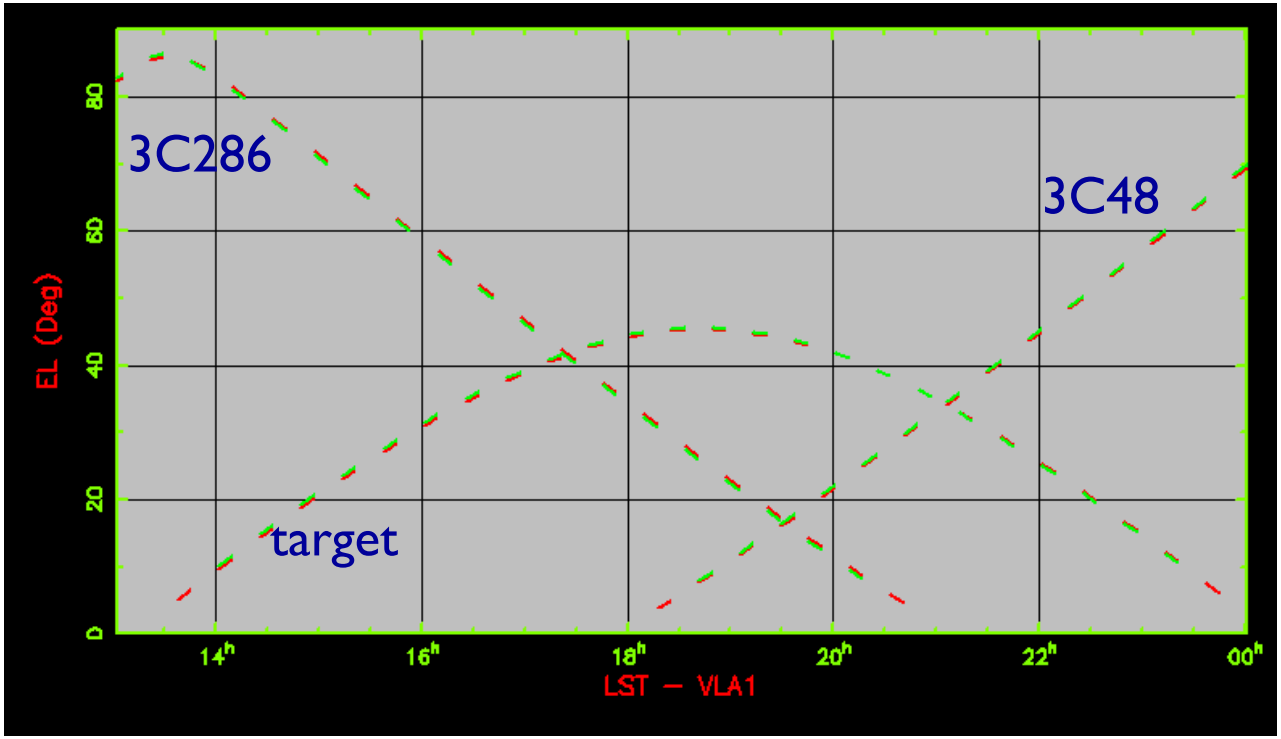
    But need to sacrifice up to 10-12 minutes
    - ✓ less for low-Dec. sources observed at low frequency
    - ✓ great dead time to place your dummy scans
- On all scans for different LST start, use reports!
  - Carefully examine slew and on-source times
  - Carefully examine each azimuth and elevation, shadowing
  - Play around with placing flux (etc) at start or end

    Especially catching 3C286 and 3C48 at rise/set (or zenith) causes trouble (Dec. ~34°)

    You may consider submitting separate scheduling blocks, with caution!



Example



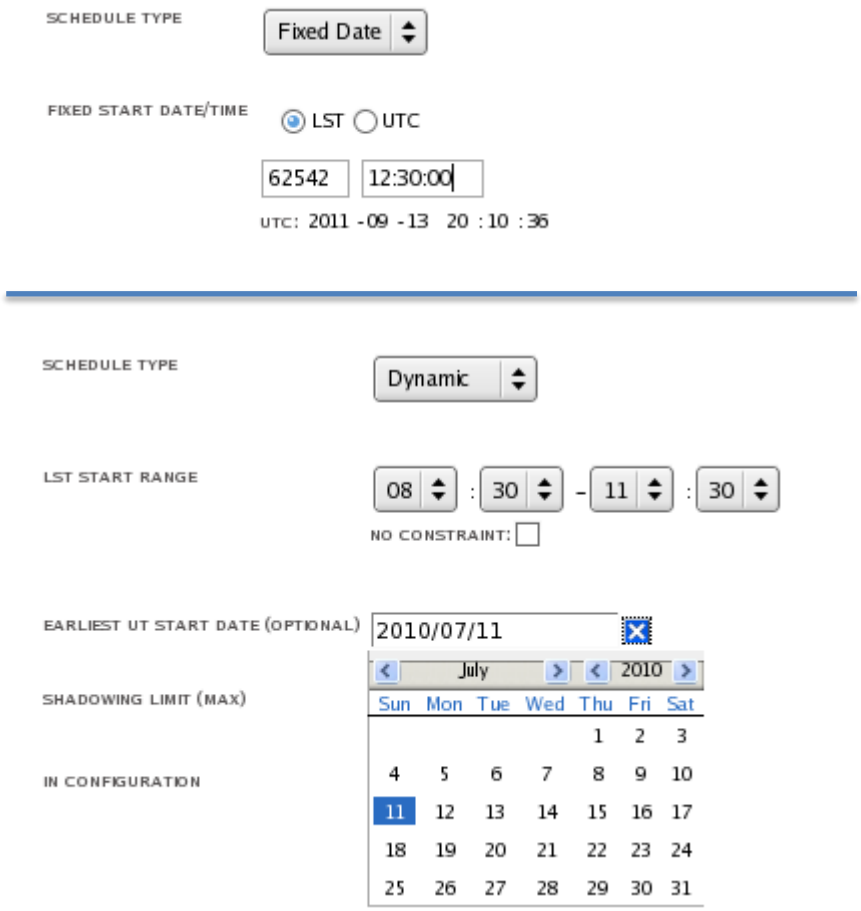
- A 2-hour block for a target at 18h30m, -10° which is up between LST 14-23h
  - Early LST: flux calibrator 3C286, but cannot be used at late LST
  - Late LST: use flux calibrator 3C48, but cannot be used at early LST
- Possible solutions:
  - Choose to **start** with 3C286 and limit LST range to 14-19 (or less for a minimum elevation)
  - Choose to **end** with 3C48 and limit LST range 18-21 (or less for a minimum elevation)
  - Submit either block, or submit both! (but specify a note to operator; limited time allocation)

Tactical considerations

- If you have very high grades (low numbers) from the science review panel and a high scheduling priority (**A**) from the time allocation committee:
  - You can schedule whatever, whenever(within reason), mostly only care about logistics
- If you have priority **A** or **B** but are in a popular LST range or require good high frequency observing weather you have to be more flexible:
  - Make shortish blocks (up to ~3h) perhaps with non-overlapping LST ranges
  - Relax the weather conditions somewhat, especially if you can use self-calibration
  - More flexible blocks are more likely to fill a gap in the "triple-A" rated scheduling blocks
- If you have low grades and low priority (**C**), or intermediate priority (**B**) and require popular LST ranges in addition to high frequency conditions
  - Make your blocks as short as your science allows, perhaps only 30 minutes long
  - Consider observing the extreme LST ranges/elevations and weather
  - Make the block 30 seconds shorter than the nominal integer times 30 minutes
  - Submit early to perhaps jump the queue while others are still creating their blocks
  - Consider observing in between different array configurations (move time, ask schedsoc)
  - Pray, or if your science can't be done with partial observations, reconsider or repropose

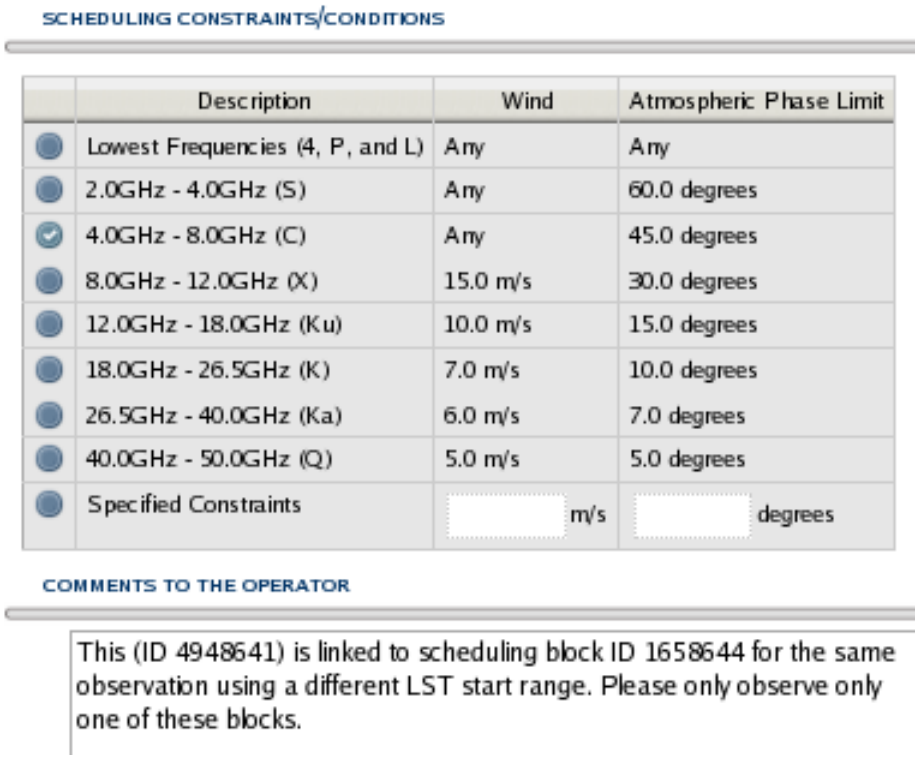
Observing constraints in the OPT

- Fixed date observations
  - Only use for this purpose!
- LST start range
  - Has to be specified if any of your sources is *below* Declination +42˚
  - The range when your sources are above the elevation limit: from the (start LST time) till the (end LST time *minus* scheduling block length)
  - Note that the choice of calibrators and where they are placed in the scheduling lock may significantly shorten the LST start range for an observation; consider breaking it up and supply two different scheduling blocks (use caution!)
  - Make blocks a multiple of 30 minutes



Observing constraints in the OPT

- Default wind and API setting
  - Will get you *mostly* good data for that frequency band (note: empirical limits)
  - Choose highest frequency in the block
- Wind limits
  - If pointing errors aren't your main concern (e.g., flux is less important) you could consider accepting higher winds than normal
- Atmospheric phase constraints
  - If you can self-calibrate your target, you don't need the best phase-stability
- Comments to the operator
  - Let them know about linked blocks, and when to choose between them
  - Operators cannot modify the scans!



SCHEDULING CONSTRAINTS/CONDITIONS

	Description	Wind	Atmospheric Phase Limit
○	Lowest Frequencies (4, P, and L)	Any	Any
○	2.0GHz - 4.0GHz (S)	Any	60.0 degrees
◉	4.0GHz - 8.0GHz (C)	Any	45.0 degrees
○	8.0GHz - 12.0GHz (X)	15.0 m/s	30.0 degrees
○	12.0GHz - 18.0GHz (Ku)	10.0 m/s	15.0 degrees
○	18.0GHz - 26.5GHz (K)	7.0 m/s	10.0 degrees
○	26.5GHz - 40.0GHz (Ka)	6.0 m/s	7.0 degrees
○	40.0GHz - 50.0GHz (Q)	5.0 m/s	5.0 degrees
○	Specified Constraints	m/s	degrees

COMMENTS TO THE OPERATOR

This (ID 4948641) is linked to scheduling block ID 1658644 for the same observation using a different LST start range. Please only observe only one of these blocks.

Special topics: calibration

- ***If you cannot calibrate, your data may end up to be useless !***
  - Be conservative, better to spend a bit more observing time on your calibrator
    - Example for a 2-hour run on a single target at 5 GHz (2GHz bandwidth)

      Phase cal. scan 3 min every 30 min: on-source time is 81 min, rms is 4.9 uJy/beam

      Phase cal. scan 4 min every 15 min: on-source time is 66 min, rms is 5.1 uJy/beam
    - Better calibration allows for easier/smoother data reduction
- Calibration is derived for *individual* antennas, baselines and polarizations
  - Look up a current flux density for the calibrator (if available)
  - Calculate for 2 antennas, single polarization and robust weighing in the exposure calculator
  - Use appropriate bandwidth: channel for delay/bandpass, subband for flux/phase
    - Total bandwidth for weak phase cal, provided you have a strong one too (multiband corrected)
  - If you plan a particular calibrator scan length, calculate for 10 seconds less (QUACK)
- You want a good calibration solution; aim for 10-sigma or better
  - Bad data and data editing reduce the anticipated S/N, i.e. don't aim for 5-sigma and get noise
  - The calibrator flux density may be less than anticipated (they typically are outdated)

Special topics: calibrators

- How often, how bright, how far?
  - Remember: everything is a trade-off and depends on your science goal!
- Electronics (instrument) calibration:
  - Should not be (heavily) time dependent and independent of target source
  - (multiband) delay, flux density and bandpass calibration
  - Typically one scan sufficient, though a second may protect against e.g. RFI, missed scan, etc
  - Bright enough to calibrate, see previous slide.
  - Direction does not matter much (apart for slewing/wraps/pointing)
- Delay calibration allows to use the full bandwidth for weaker phase calibrators
- Flux density bootstrapping
  - Scaling factor to get correlator output into Jansky's per beam
  - Flux doesn't need all antennas; solutions may be better to obtain using standard models (spex)
  - At high frequency maybe correct for opacity by *only using scans taken near the same elevation*
  - Be realistic in the error propagation, it is *very hard* to get better than 5% absolute accuracy
    - Attempting 5% or better accuracy requires dedicated flux density calibration and very careful data reduction
    - At high frequencies even typical careful standard data reduction may easily be off by 10-20% or more

Special topics: calibrators

- Atmosphere (gain) calibration:
  - Assumes that atmosphere for target and calibrator behave similarly and that solutions for calibrator (known properties) can be applied to target (unknown properties)
  - Derive solution (how bright?) in a similar patch of sky (how far?) often enough (how often?)
    - How bright? See before; 10 sigma in bandwidth on a single baseline, single polarization
      - Determines the calibrator scan length and impacts (minimum) cycle time
    - How often? Need to track phase in coherence time – range 2-60 minutes
      - Depends on frequency, array configuration, elevation, weather: see documentation
    - How far? Need to see same atmosphere – range 0-15 degrees, within coherence time!
      - Depends on frequency, array configuration, elevation, weather: see documentation
      - High frequency coherence times usually limit the cycle time to a few minutes, i.e. few degrees
      - Remember that you have to detect your calibrator within the cycle/scan, and you better make sure you do!
    - Cycle time includes: slew, calibration, slew back and target scan, within coherence time!
    - A weaker calibrator may be much better than a brighter distant calibrator: trade-offs!
    - Sometimes there is no nearby choice;
      - Consider to tighten the weather constraints or elevation/LST constraints: trade-offs!
    - Note: L band in A array during TEC activity may need few-minute loops (if no self-cal)

Special topics: pointing

- Pointing calibration:
  - Only needed for high frequencies (~15 GHz and up)
  - Use the predefined pointing setups (in NRAO default resource catalog)
  - Brightness: solution derived for
    - 10 second subscans (but pointing procedure requires 2.5 minutes on-source!)
    - 128 MHz bandwidth (i.e. a single subband in wideband mode, for now)
    - a single polarization (RR and LL determined separately, then averaged)
    - X or C band

    so typically your pointing source should (currently) be 100 mJy or brighter (for 10-sigma)
  - Pointing should be done in the general Azimut/Elevation direction of the target (~20-30°)
  - Movement of the target toward the pointing direction is better than moving away from it
  - Do a new pointing if
    - Observing Az/El has changed considerably (tens of degrees) from the last pointing (typically each hour)
    - Temperature or gravitational pull is changing rapidly (observing at sunset/sunrise or near zenith)
    - Moving to or away from your flux (etc.) calibrator (unless it is near your target)
  - If your first scans need pointing, the startup time is 2.5 minutes more (~12 minutes)!
    - Must allow for most unfortunate slew to get to your pointing source first, then add 2.5 minutes on source

Special topics: frequencies, wideband

- NRAO default frequencies should be the best trade-off between widest contiguous continuum in the two basebands and the least RFI presence
  - Not guaranteed RFI free: you must be prepared to inspect and edit your data

- At lower frequency bands, the bandwidth ratio is 1:2 !
  - Calibrator sources may (will) have a considerable spectral energy distribution (index), which is only modeled for the standard calibrators
    - You may be able to derive the spectral index in your observation for free
  - The primary beam and field-of-view for the high-frequency end and the low-frequency end of the observing band will differ up to a factor 2
    - A very strong source in the (first) null at higher frequencies may be prominent and complicate your calibration and imaging at lower frequencies
    - There will be more effects, mostly in imaging, that will not be mentioned here

- We will see more of this when 8 GHz bandwidth observing is enabled

Special topics: frequencies, spectral line

- Spectral line observations need a newly user created resource (see later)
  - Depends on your science, and trade-offs you can/want to make (e.g. easy data reduction)
  - Fundamentally restricted to have a regular (7x) 128 MHz suck-out comb (1GHz baseband)
  - Over 128 MHz per baseband there is thus no contiguous homogeneous spectral response
    - Use interleaving/feathering if your science allows (i.e. trade-off the second baseband)
    - Have to be careful to set up, and check frequency resource reports!
    - Doppler setting tunes the baseband center as required and keeps the comb "frozen" relative to the baseband
- Note: post-processing Hanning smoothing or (diurnal LSR Galactic) Doppler tracking corrections reduce the effective spectral resolution (by a factor 2)
  - Must realize, act and prevent before submitting the scheduling block for observations
  - Use more channels than your science requires (if possible; use half the original bandwidth)
  - Use short blocks so that Doppler setting on different days set the fixed sky frequency; if short enough, the Doppler velocity doesn't vary too much over the block duration and thus the effect over the block can be ignored (not always negilible for narrow channels)
- If you change your resource (e.g. frequency), use bulk edit in the OPT
  - And check, check, check your reports if it applied the change that you expected

Special topics: shadowing

- Shadowing: part of the collecting area of the 'far' antenna is blocked by the 'near' antenna of the baseline, and thus less radiation will be collected on that particular baseline, resulting in reduced sensitivity on that baseline.
- The OPT reports per scan the maximum shadowing if it occurs
  - Mostly an issue in D array configuration (antennas packed close together)
  - May be an issue for low elevation in the azimuth direction of the array arms (i.e. also in C)
  - For "Any" array configuration, the OPT calculates the worst case scenario (i.e. for D)
  - You can set the limit for which you want to see/ignore the warnings, e.g., 15 meters
- Do not panic!
  - Is not linear
  - But anticipate loss for your calibration scans (i.e. use longer scans)

Shadowing	Fraction of area blocked	Baseline sensitivity loss
1 meter	0.01	0.5%
5 meters	0.10	5%
12.5 meters	0.39	22%
18 meters	0.64	40%
25 meters	1	100%

Scheduling blocks and the OPT

- Creating scheduling blocks in the OPT
  - Your source lists should be transferred from the PST, but check the coordinates !
  - Submitted scheduling blocks will be checked by staff for logistics and overall sanity; scheduling blocks will **not** be checked for science content, intent and sanity ! (i.e. get your Doppler frequencies right for all different target sources !)

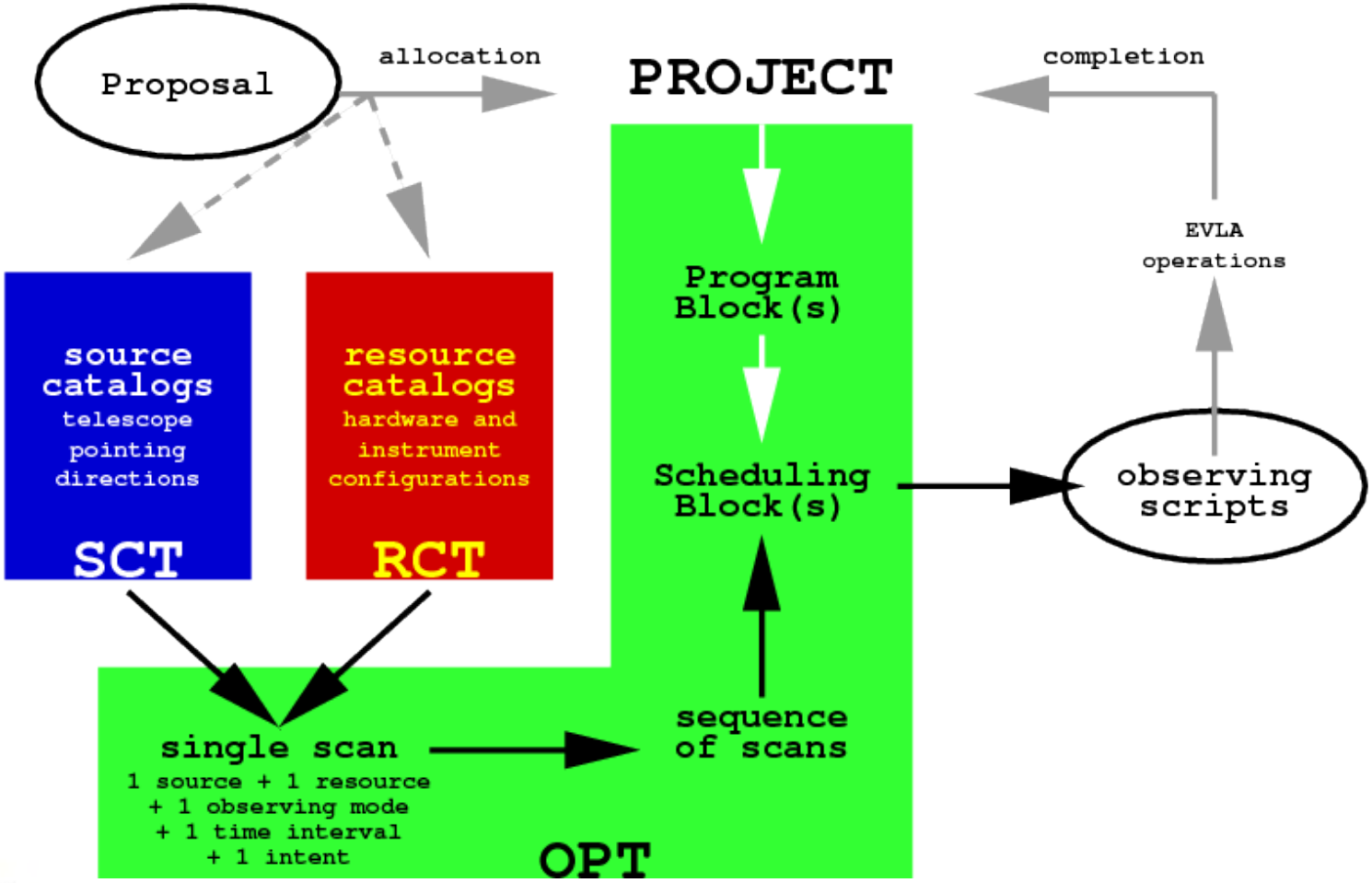
- Noticed that most of you have used the OPT, so what is new?
  - New 2x 8 subband 2 GHz wide OSRO resource catalogs/capability available to everyone
  - Need to more carefully check reports of resources, and scans
  - Adhere to current (11B semester) OSRO restrictions
    - They change constantly, but only less restrictive (old blocks remain valid)
  - OPT manual needs updating (especially RCT), but is still a great source of information
    - Also check the general OPT information page (next to the OSRO restrictions page)
  - Quick run-through (details in documentation or the 2010 synthesis imaging workshop lecture)

Set up a 2012 OSRO resource in the RCT

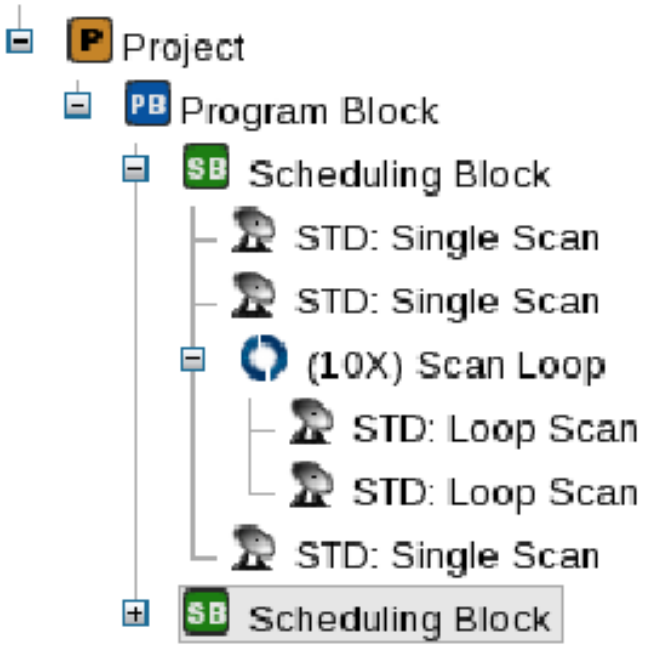
- Previous (pre-D 2011) OSRO was similar to common VLA setups
  - 2 IF/baseband/subband tunings, up to 128 MHz, fixed number of channels (polarization)
- *Current* OSRO has
  - 2 basebands, each covering 1024 MHz and independently tunable
    - There are some restrictions for the higher frequency bands
  - Up to 8 subbands per baseband, each up to 128 MHz
    - All subbands must have a fixed number of channels (depending on polarization products)
    - All subbands in a baseband must be contiguous in frequency (introducing bandpass effects)
    - No subband may not cross any of the 128 MHz suck-out frequencies in a baseband
    - Doppler setting is applied to the baseband; the suck-out comb pattern will move with it
    - Can use the second baseband to interleave the first for homogeneous frequency response (or OSRO2)
  - Be more careful in designing the resource setup (but the RCT tries to keep it simple)
- Later, in 2013, gradually more flexibility will be allowed
  - Earlier opportunities for the RSRO program visitors

- **But first a quick refresher of the OPT software** (using 2010 SIW slides)

Flow diagram



Example project "tree"



- Project has Program Blocks (PB)
- PB has ***Scheduling Blocks*** (SB)
  - Is "observing run" script
  - Sequence of scans and/or (loops of) loops of scans
  - Includes calibration !

Designing a schedule

- Designing a schedule: determine which/what
  - Sources to observe, and for how long (with each setup)
  - Setups ("resources") to use
    - Receivers, (baseband/subband) signals, correlator
  - Calibrations to perform
    - Extra sources/resources? (e.g. pointing)
  - Strategies and tactics to apply (short, long, less quality acceptable?)
  - Optimization and constraints to choose (slew, wrap, weather..)
- Everything is part of a trade-off and depends on the science goals

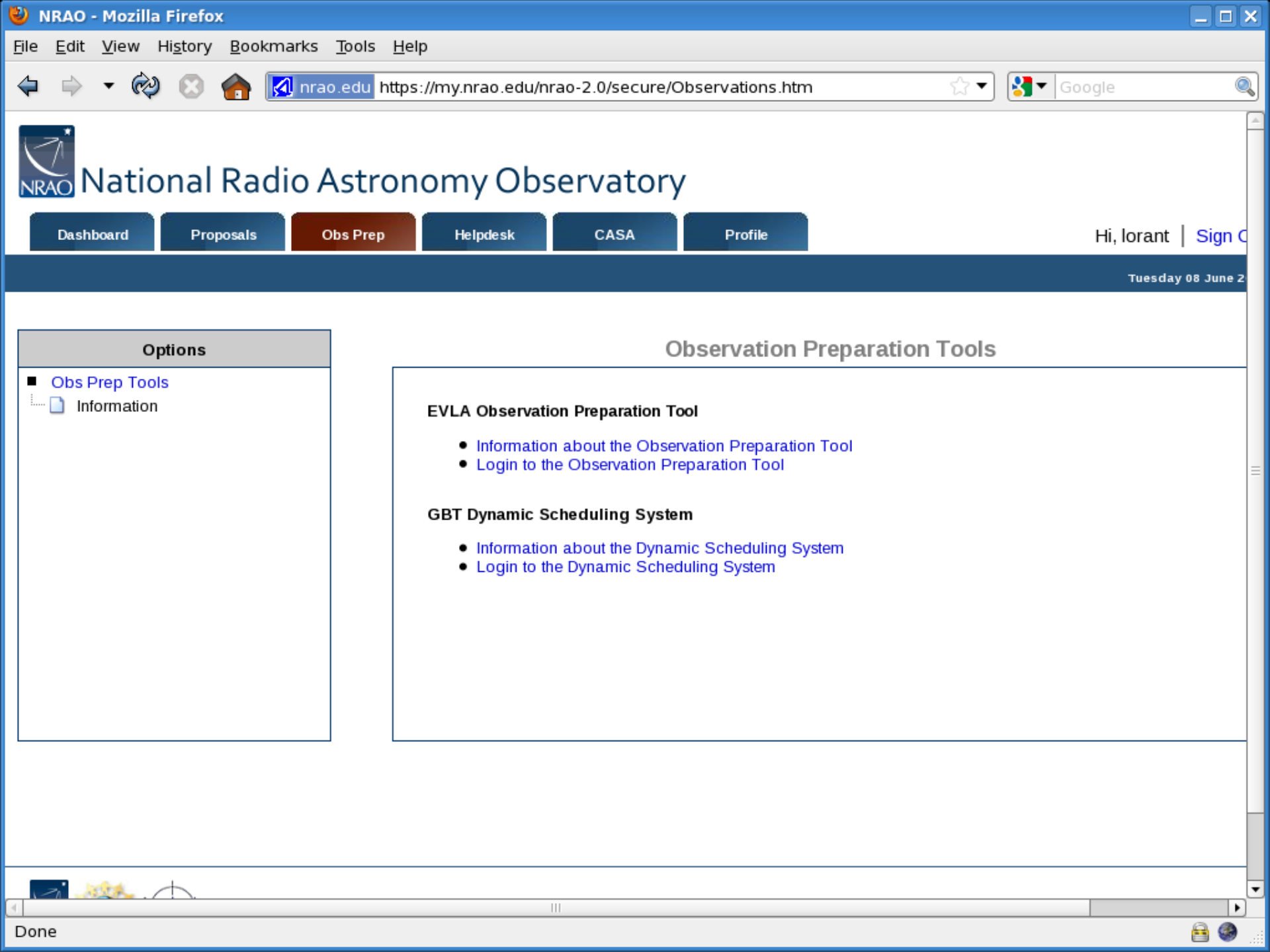
- Demonstration of how to **make** a *scheduling block* (SB) with the OPT

How to start the OPT

- Register at

  https://my.nrao.edu

- Registration/login/webaddress also good for
  - Proposal submission for EVLA, GBT, VLBA (HSA)
  - (preparing EVLA observations)
  - Proprietary data retrieval (archive.nrao.edu)
  - Obtaining user help (help.nrao.edu)
  - …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Options
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Information about the Observation Preparation Tool
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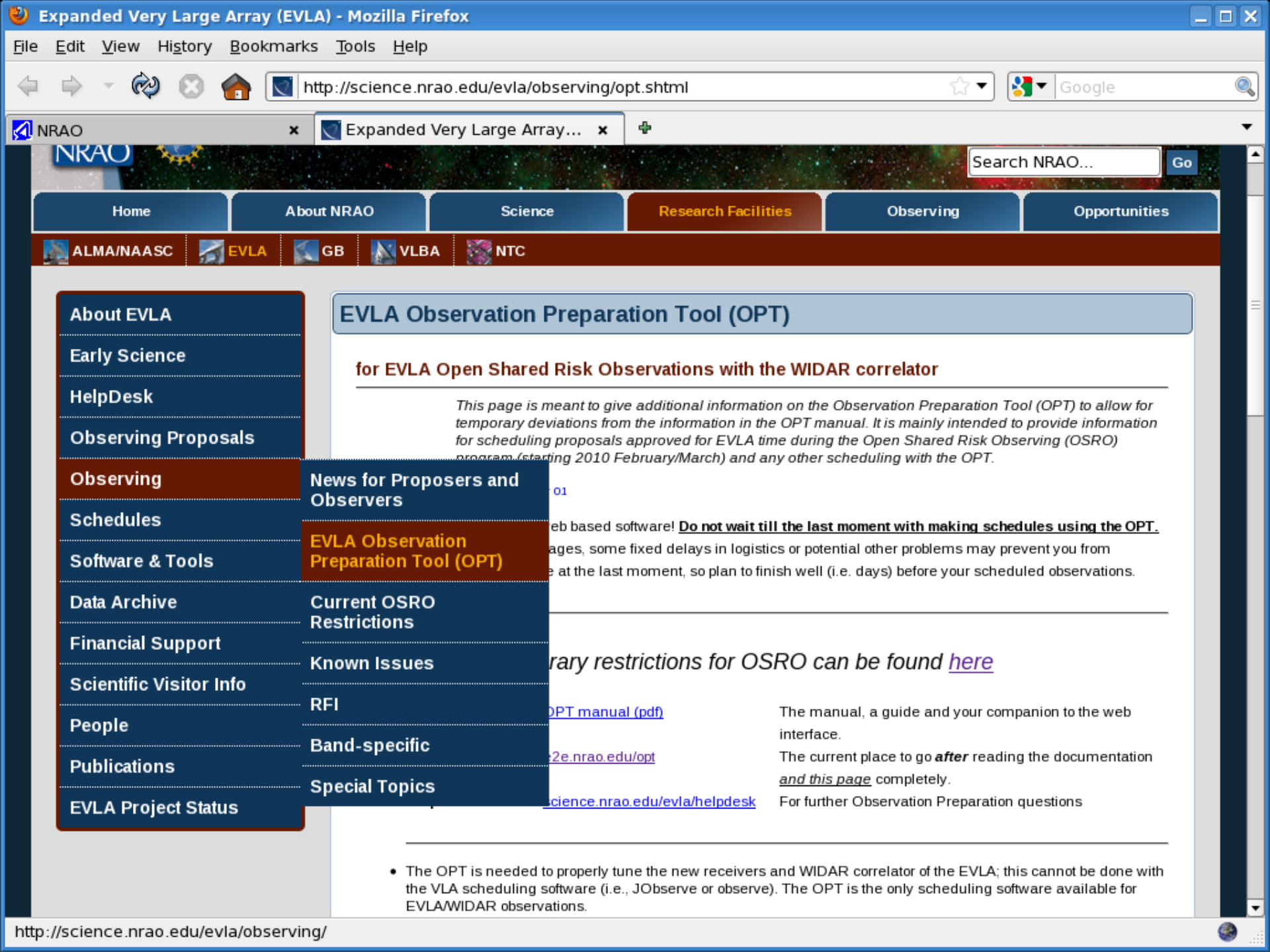
GBT Dynamic Scheduling System
Information about the Dynamic Scheduling System
Login to the Dynamic Scheduling System
Done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Research Facilities
Observing
Opportunities
ALMA/NAASC
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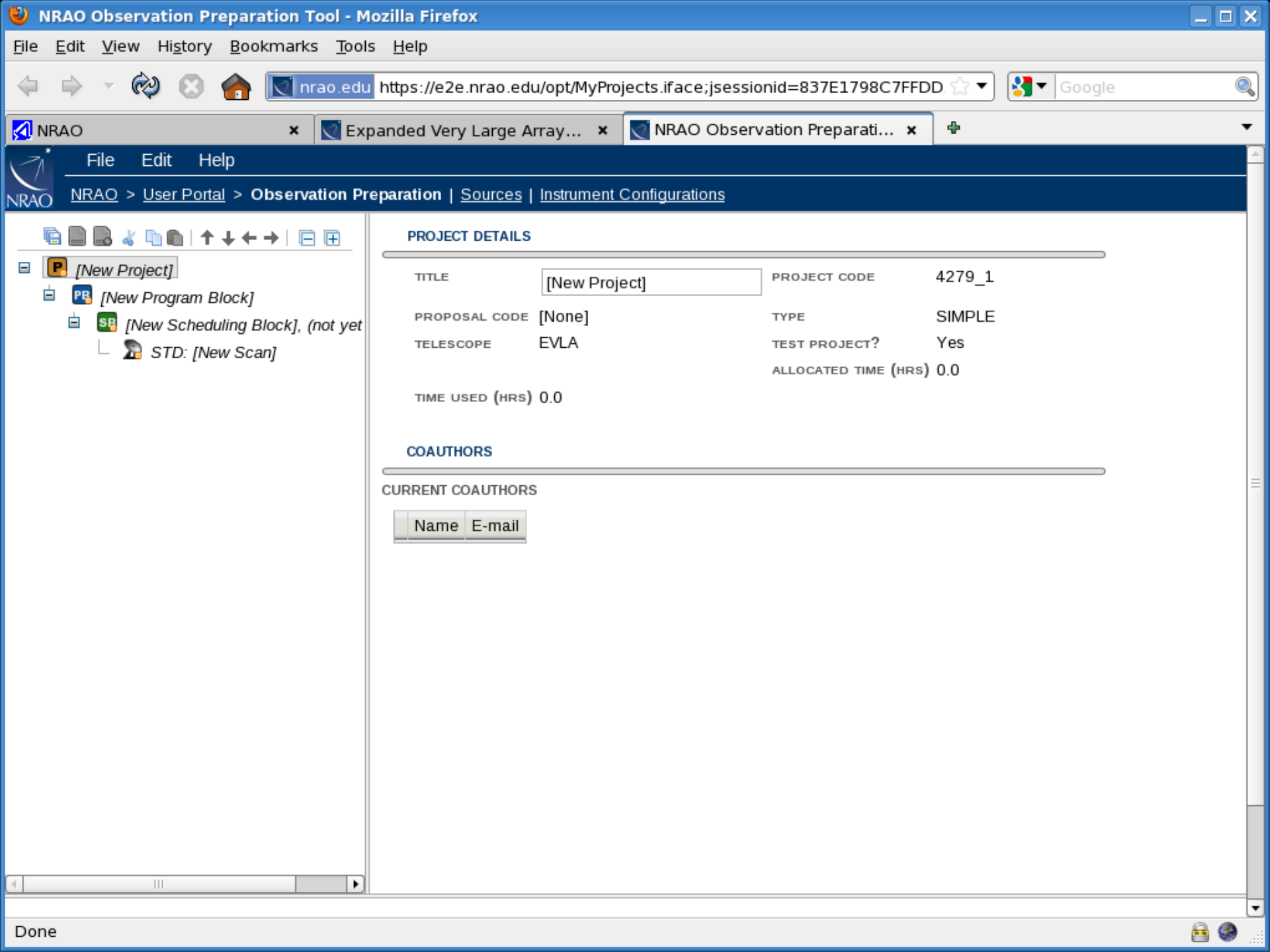
Observing Proposals
Observing
Schedules
Software & Tools
Data Archive
Financial Support
Scientific Visitor Info
People
Publications
EVLA Project Status
News for Proposers and Observers
EVLA Observation Preparation Tool (OPT)
Current OSRO Restrictions
Known Issues
RFI
Band-specific
Special Topics
EVLA Observation Preparation Tool (OPT)
for EVLA Open Shared Risk Observations with the WIDAR correlator
This page is meant to give additional information on the Observation Preparation Tool (OPT) to allow for temporary deviations from the information in the OPT manual. It is mainly intended to provide information for scheduling proposals approved for EVLA time during the Open Shared Risk Observing (OSRO) program (starting 2010 February/March) and any other scheduling with the OPT.
eb based software! Do not wait till the last moment with making schedules using the OPT.
ages, some fixed delays in logistics or potential other problems may prevent you from
e at the last moment, so plan to finish well (i.e. days) before your scheduled observations.
rary restrictions for OSRO can be found here
OPT manual (pdf)
The manual, a guide and your companion to the web interface.
2e.nrao.edu/opt
The current place to go after reading the documentation and this page completely.
cience.nrao.edu/evla/helpdesk
For further Observation Preparation questions
The OPT is needed to properly tune the new receivers and WIDAR correlator of the EVLA; this cannot be done with the VLA scheduling software (i.e., JObserve or observe). The OPT is the only scheduling software available for EVLA/WIDAR observations.
http://science.nrao.edu/evla/observing/


NRAO Observation Preparation Tool - Mozilla Firefox
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PROJECT DETAILS
TITLE
[New Project]
PROJECT CODE
4279_1
PROPOSAL CODE
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TYPE
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EVLA
TEST PROJECT?
Yes
ALLOCATED TIME (HRS)
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TIME USED (HRS)
0.0
COAUTHORS
CURRENT COAUTHORS
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E-mail
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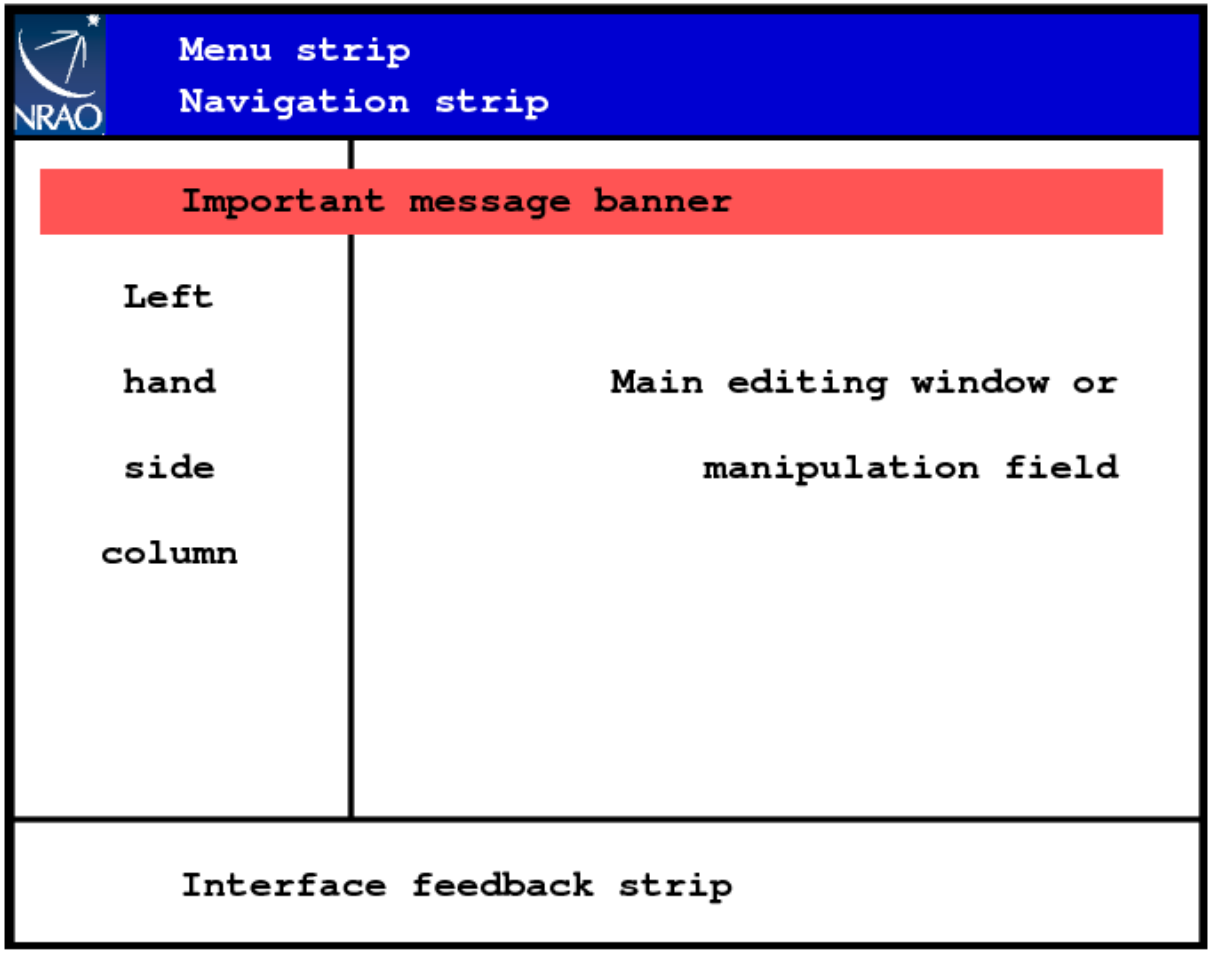
Layout of the OPT



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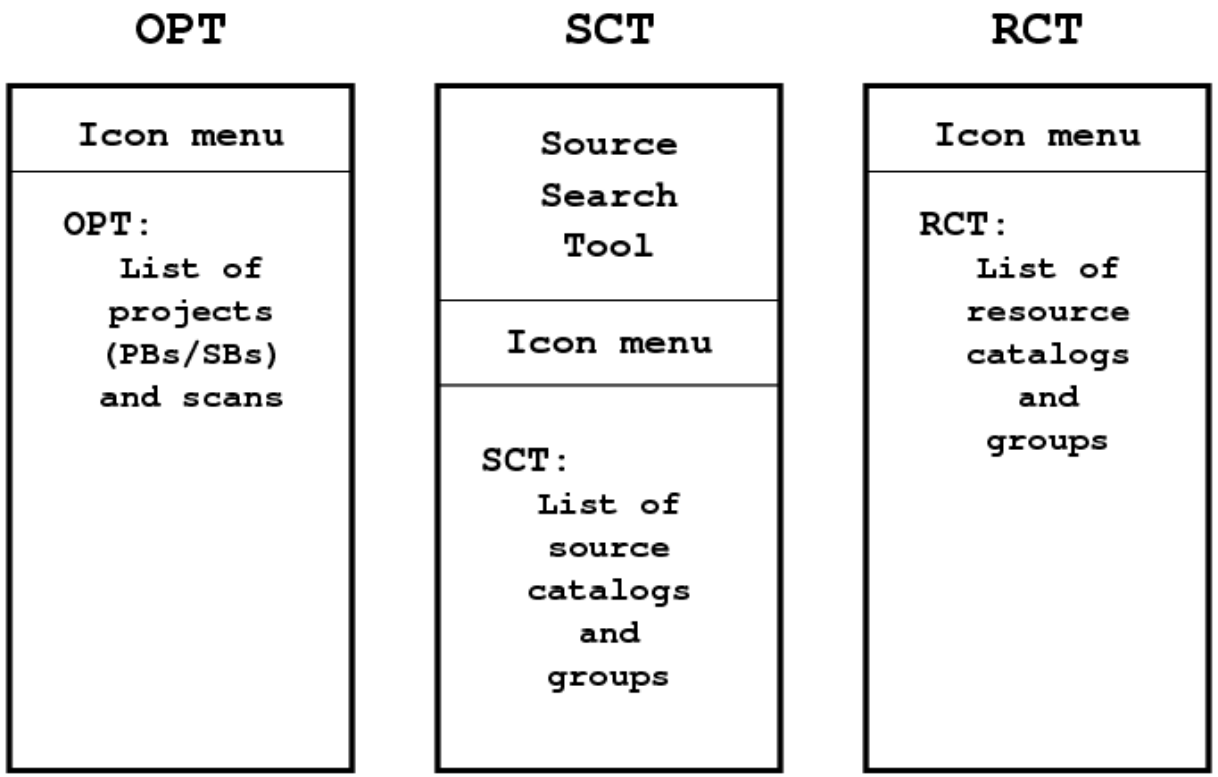

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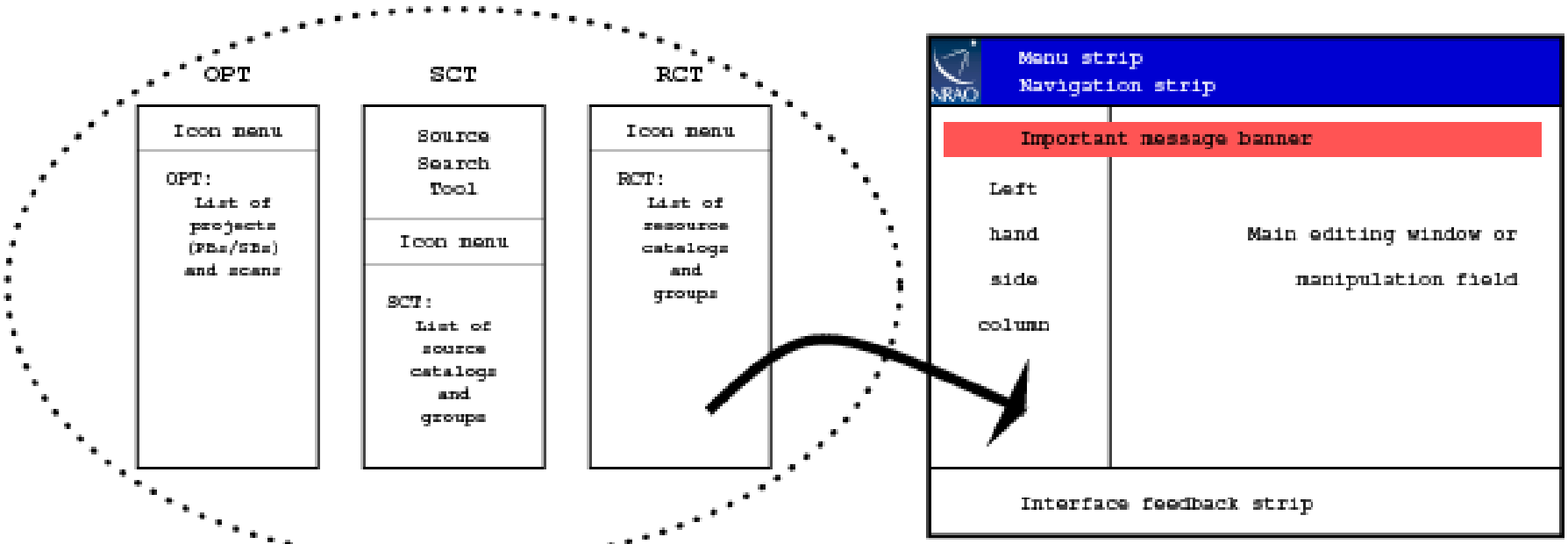

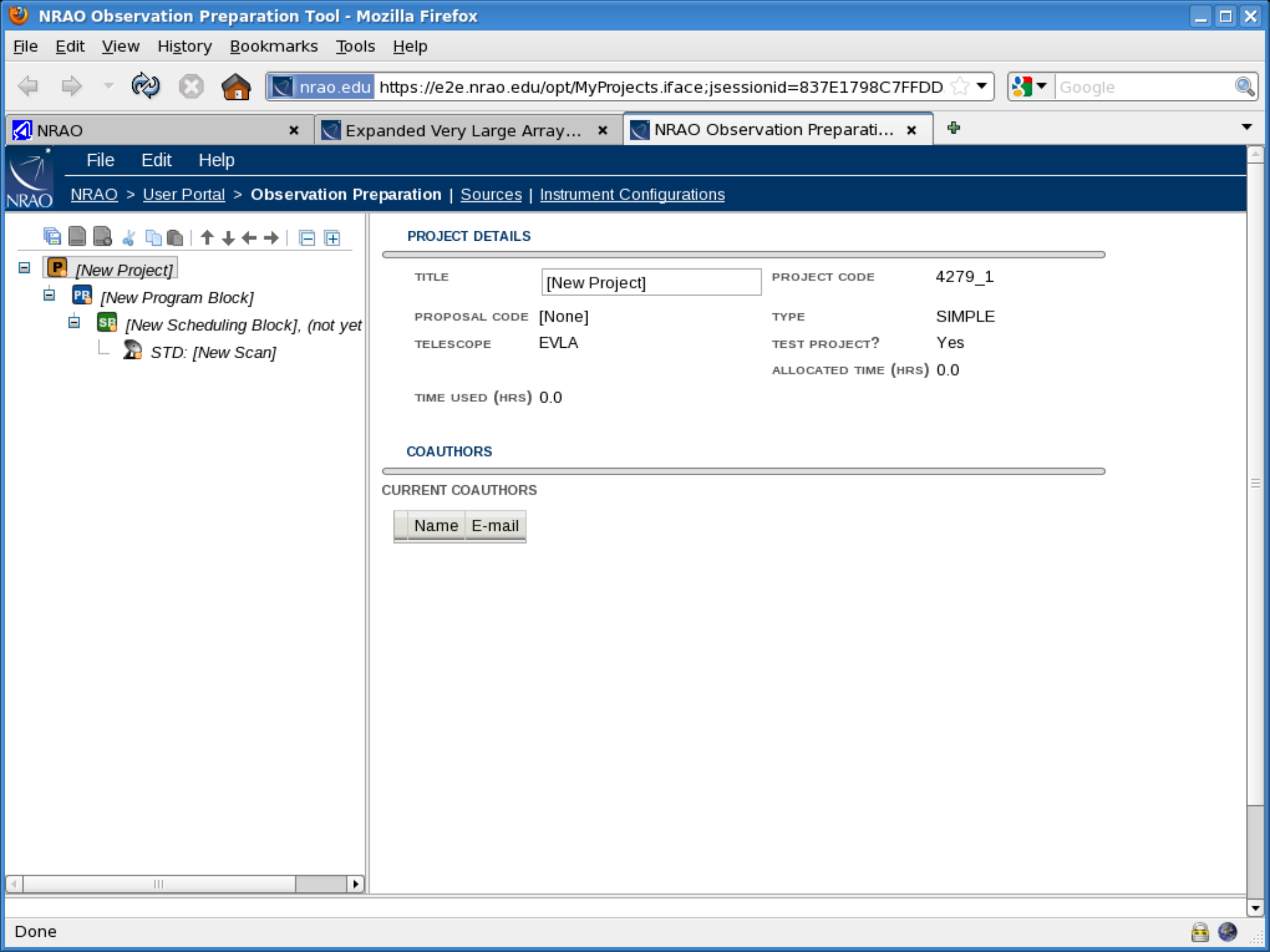
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TEST PROJECT?
Yes
ALLOCATED TIME (HRS)
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TIME USED (HRS)
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COAUTHORS
CURRENT COAUTHORS
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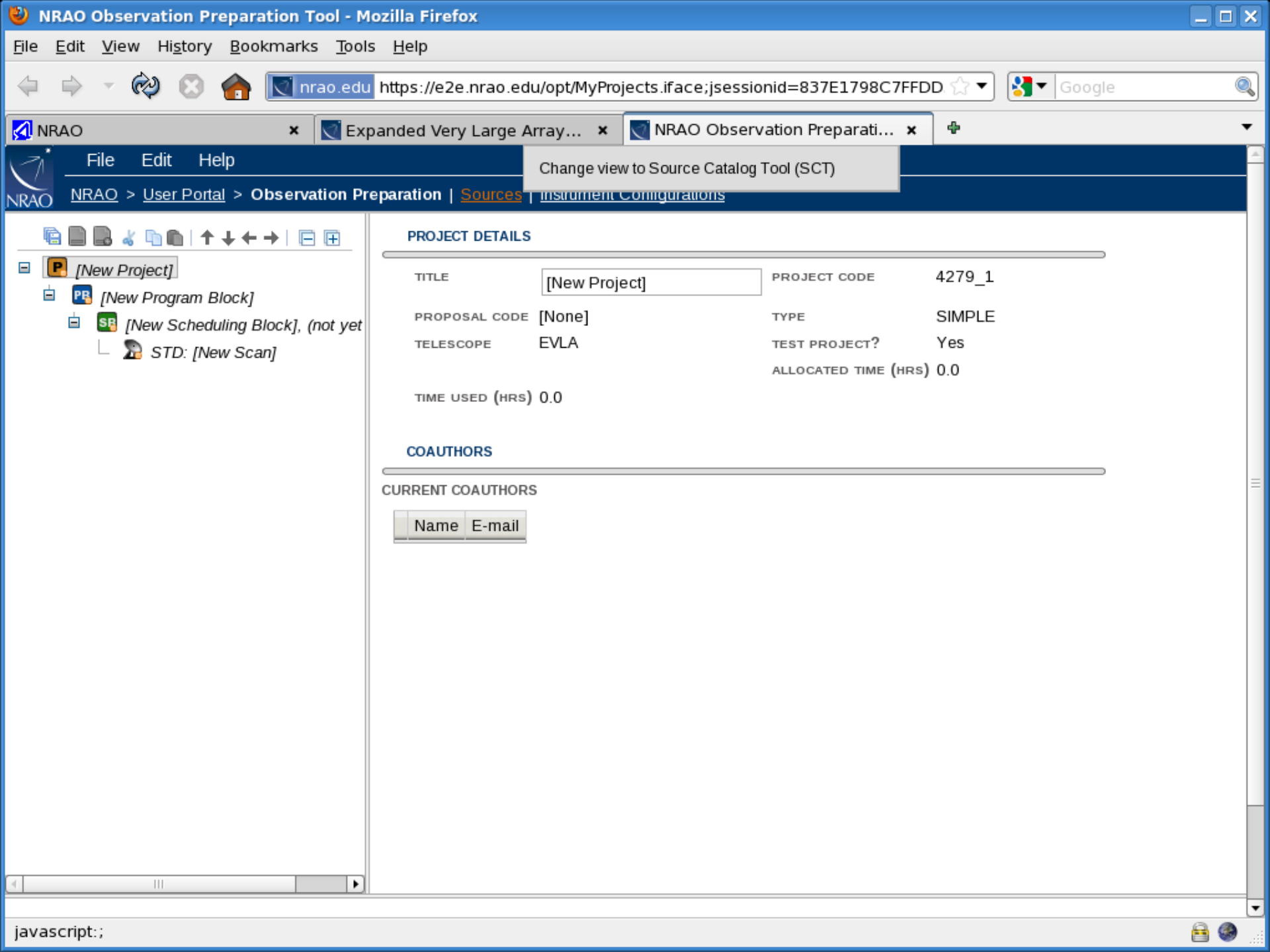
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TEST PROJECT?
Yes
ALLOCATED TIME (HRS)
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TIME USED (HRS)
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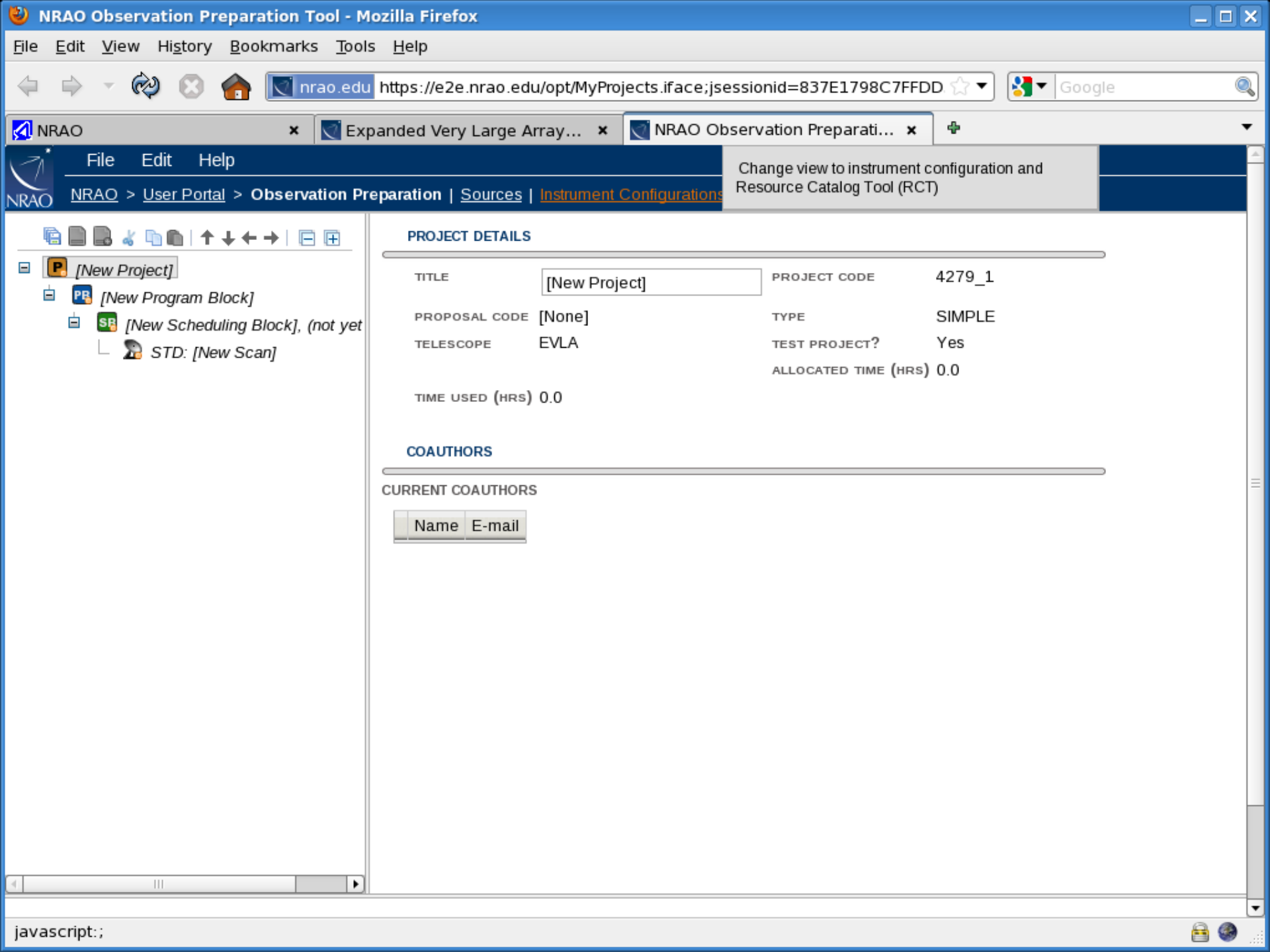
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PROJECT CODE
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PROPOSAL CODE
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EVLA
TEST PROJECT?
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ALLOCATED TIME (HRS)
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TIME USED (HRS)
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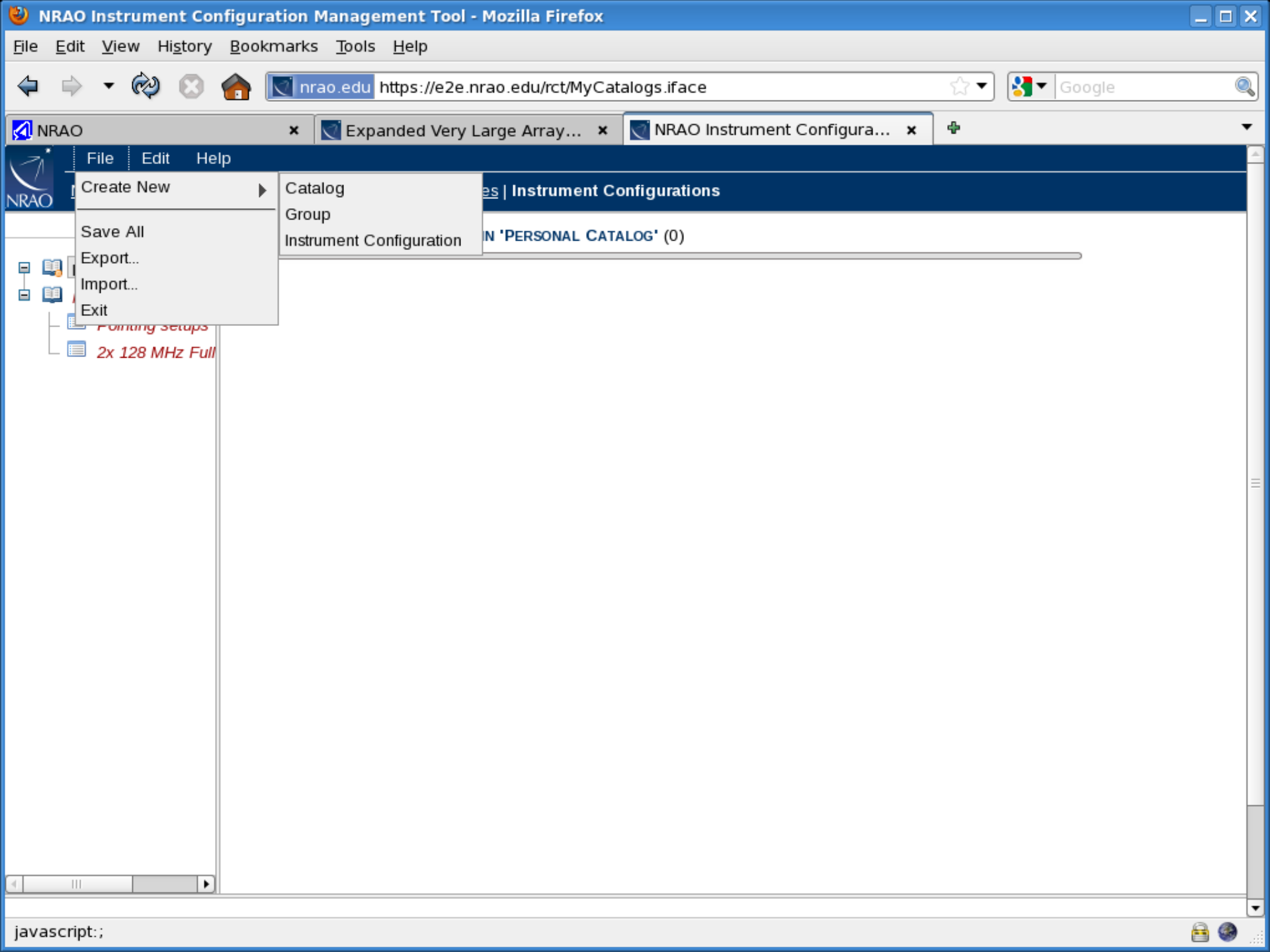
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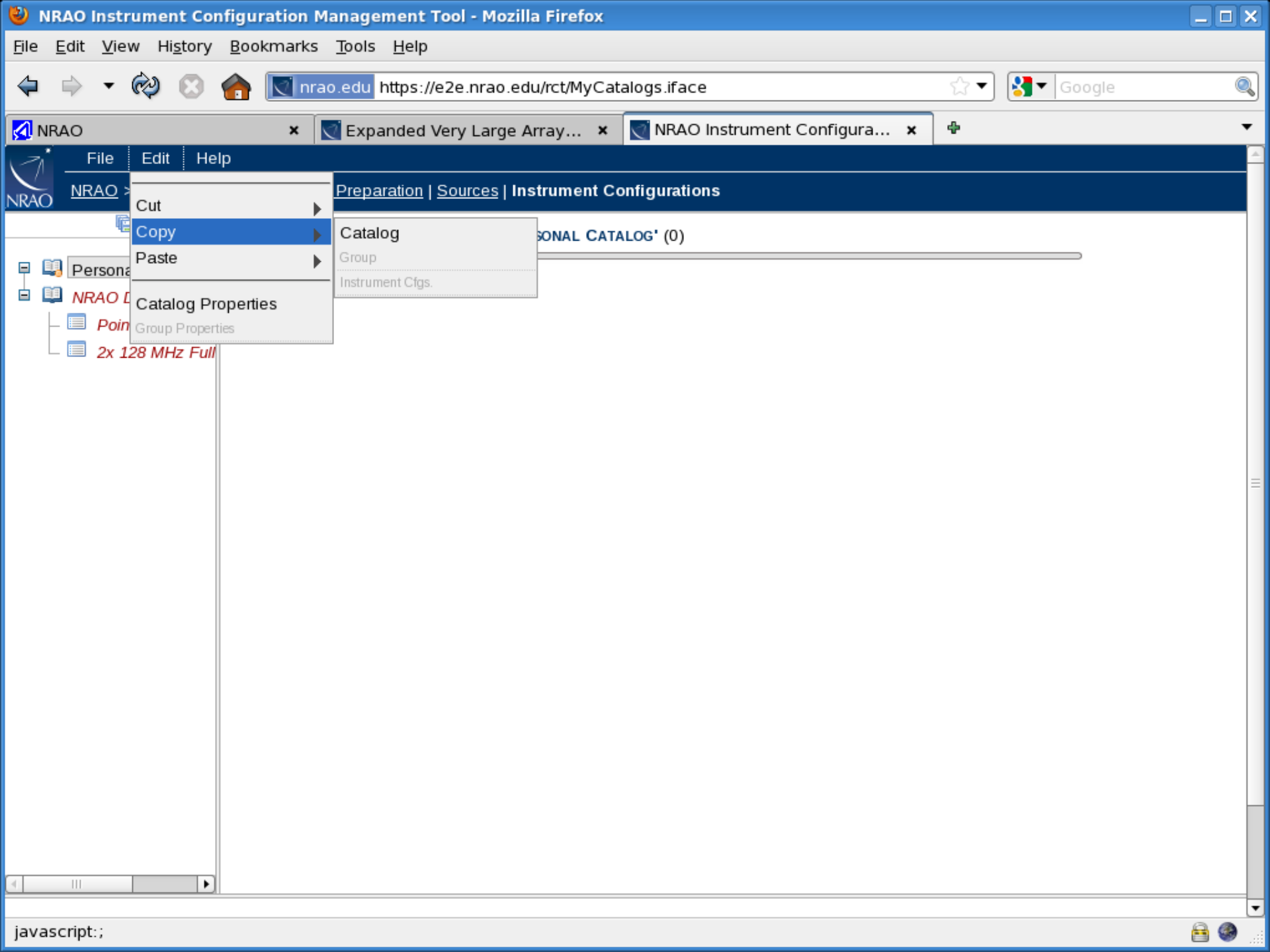
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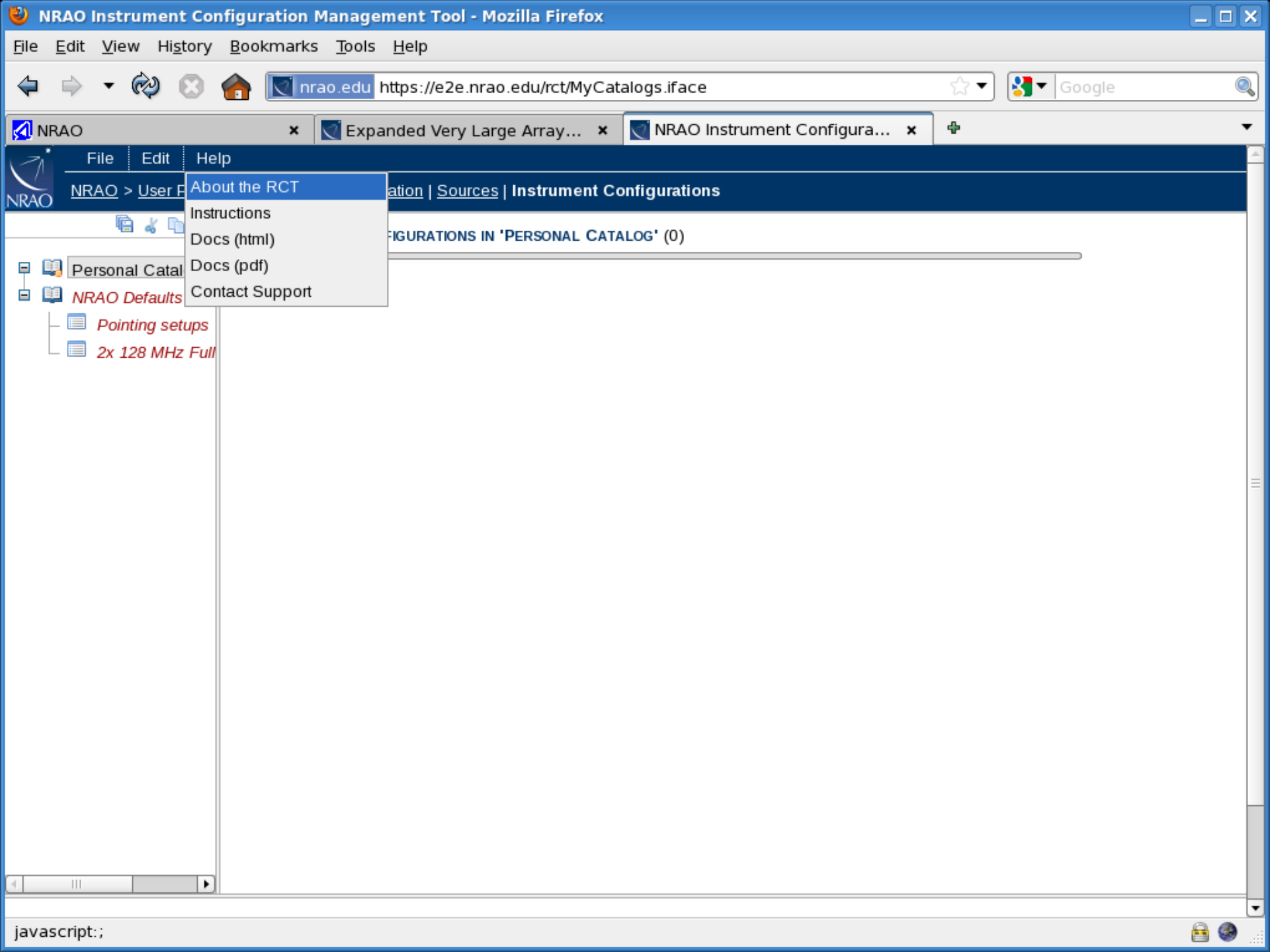
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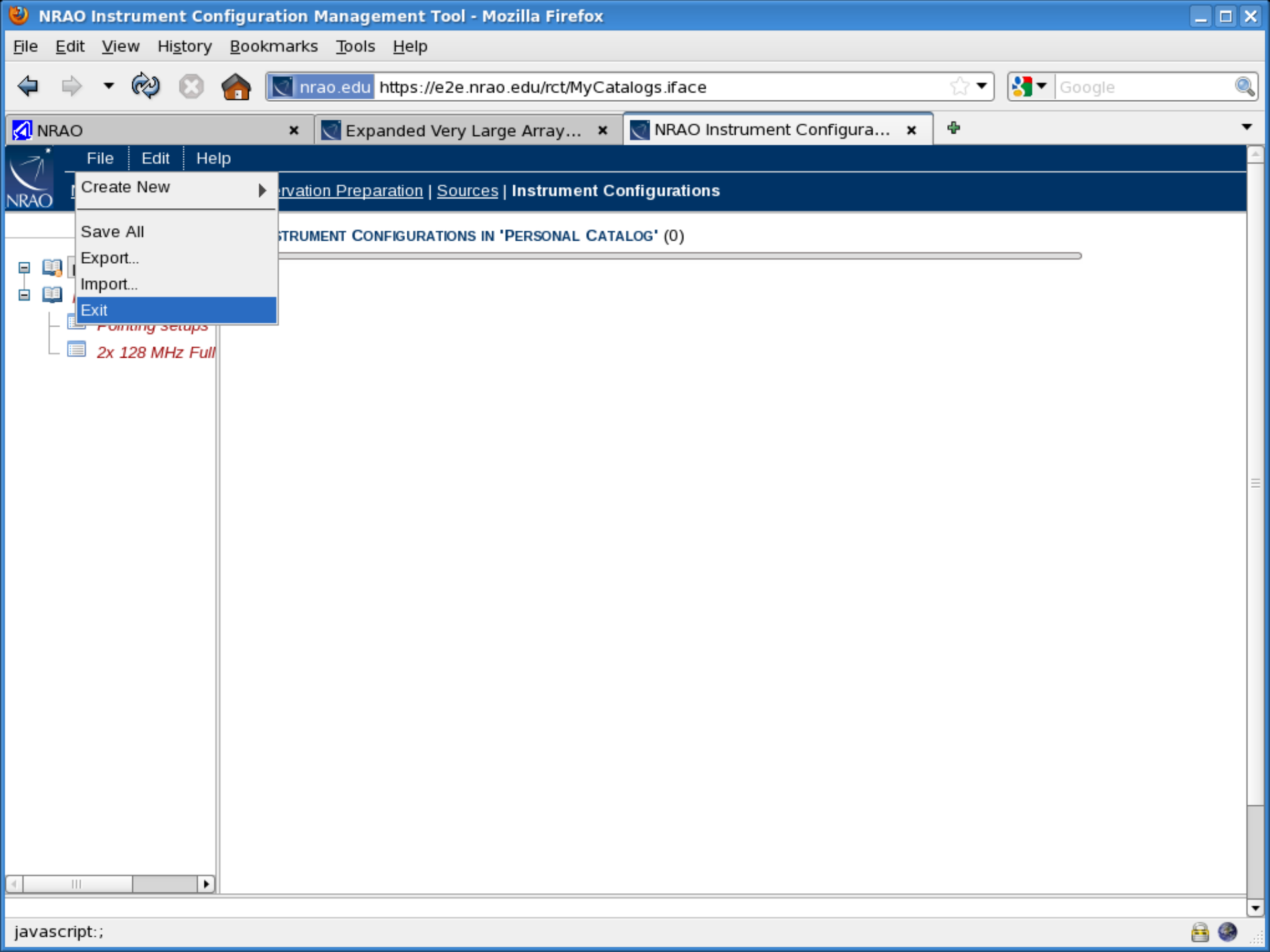
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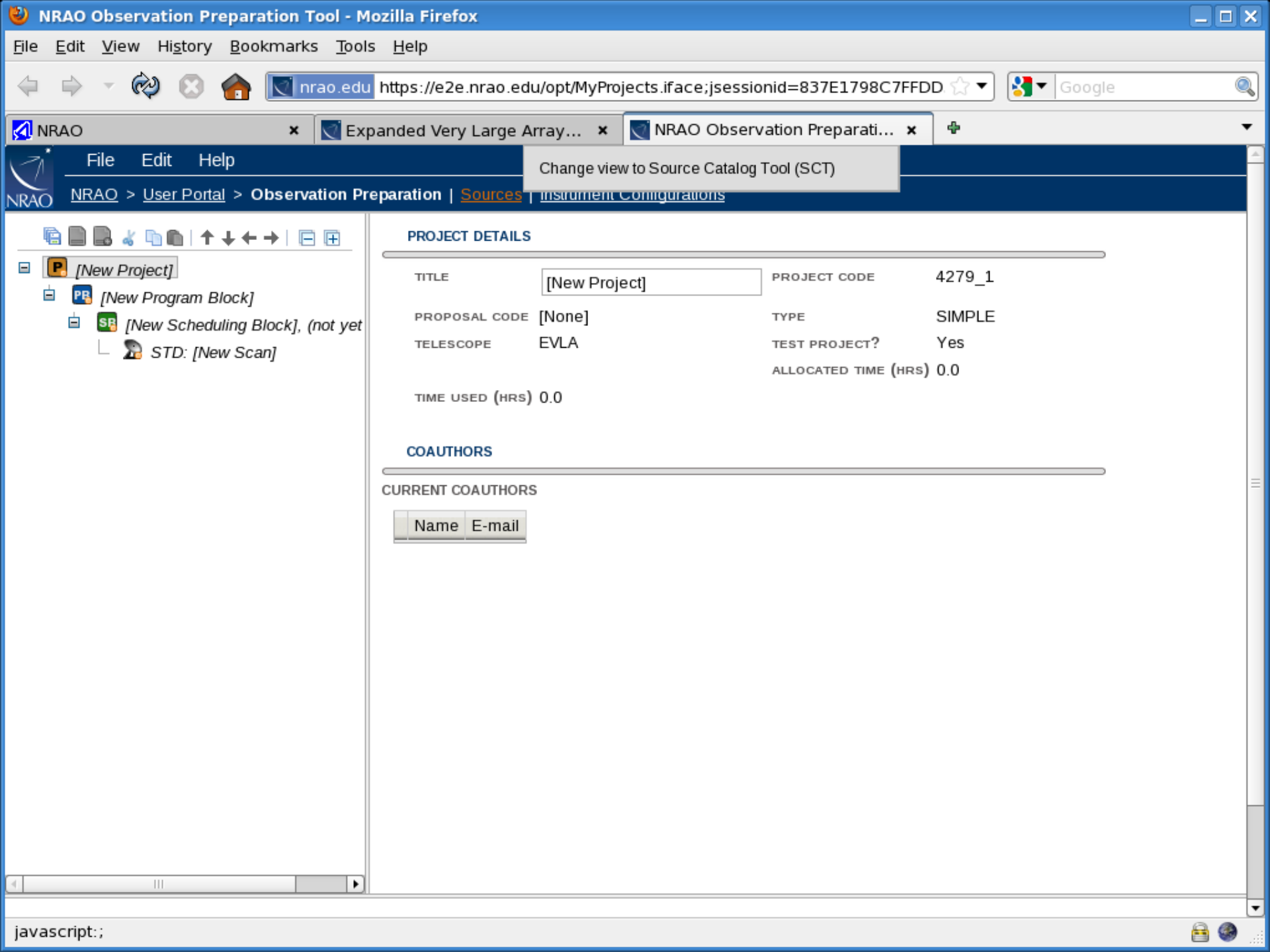
Creating source catalogs using the SCT

- Sources may have been transferred from the proposal information
  - If so, check the source positions, velocity definitions, ..
- Can define your own sources (telescope pointing directions)
- Can use sources predefined in (VLA) "calibrator" source list
  - Not every (calibrator) source in this list is useful for calibration in every observation; check its properties before using for calibration!
  - Some (calibrator) sources make great target sources…
- Useful to combine all sources to be used in an SB(/PB) in its own "group"
- Make sure all sources are defined before creating the scan list


NRAO Observation Preparation Tool - Mozilla Firefox
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TITLE
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PROJECT CODE
4279_1
PROPOSAL CODE
[None]
TYPE
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TEST PROJECT?
Yes
ALLOCATED TIME (HRS)
0.0
TIME USED (HRS)
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COAUTHORS
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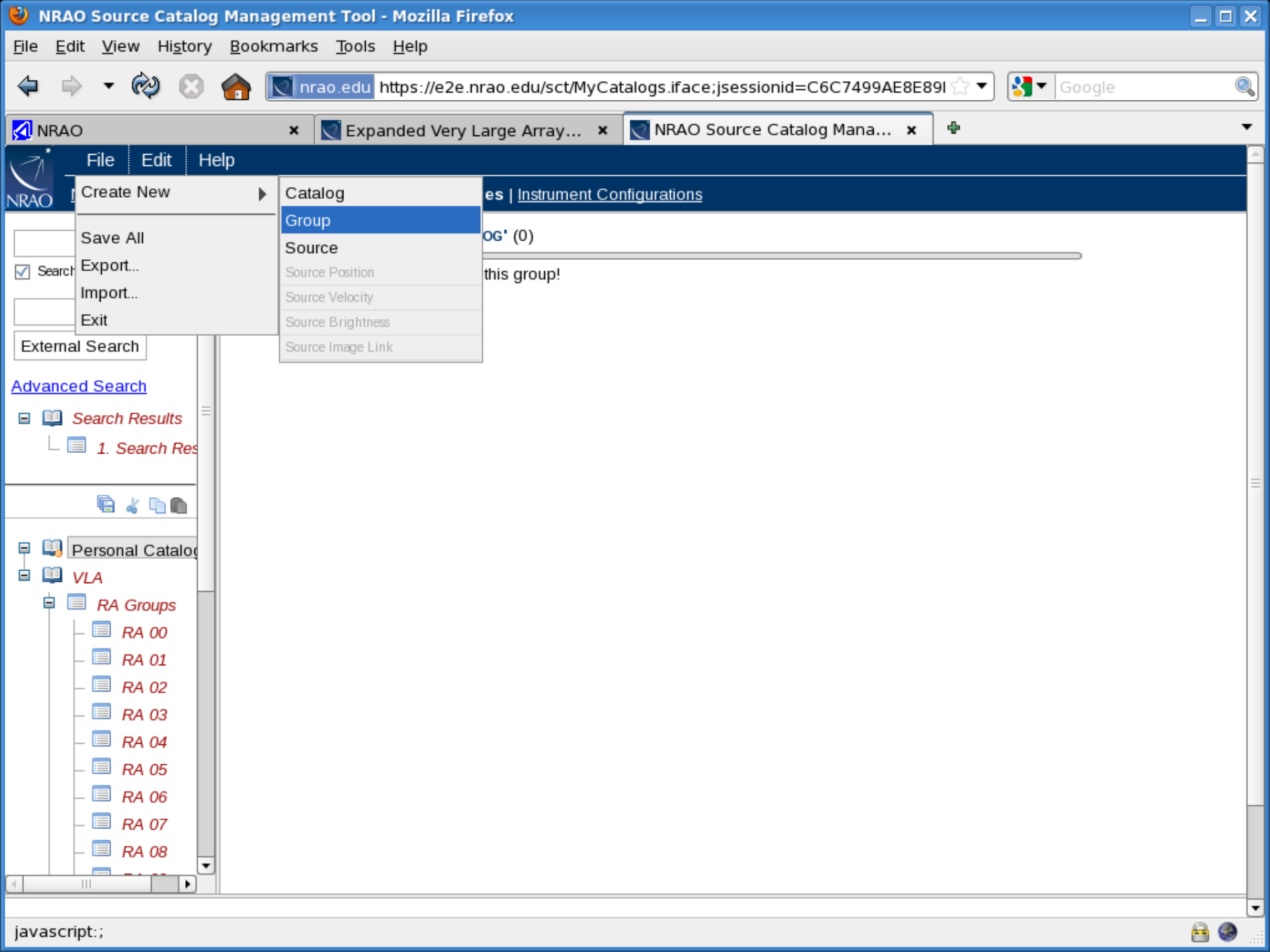
SOURCES IN 'PERSONAL CATALOG' (0)
There are currently no Sources in this group!
Done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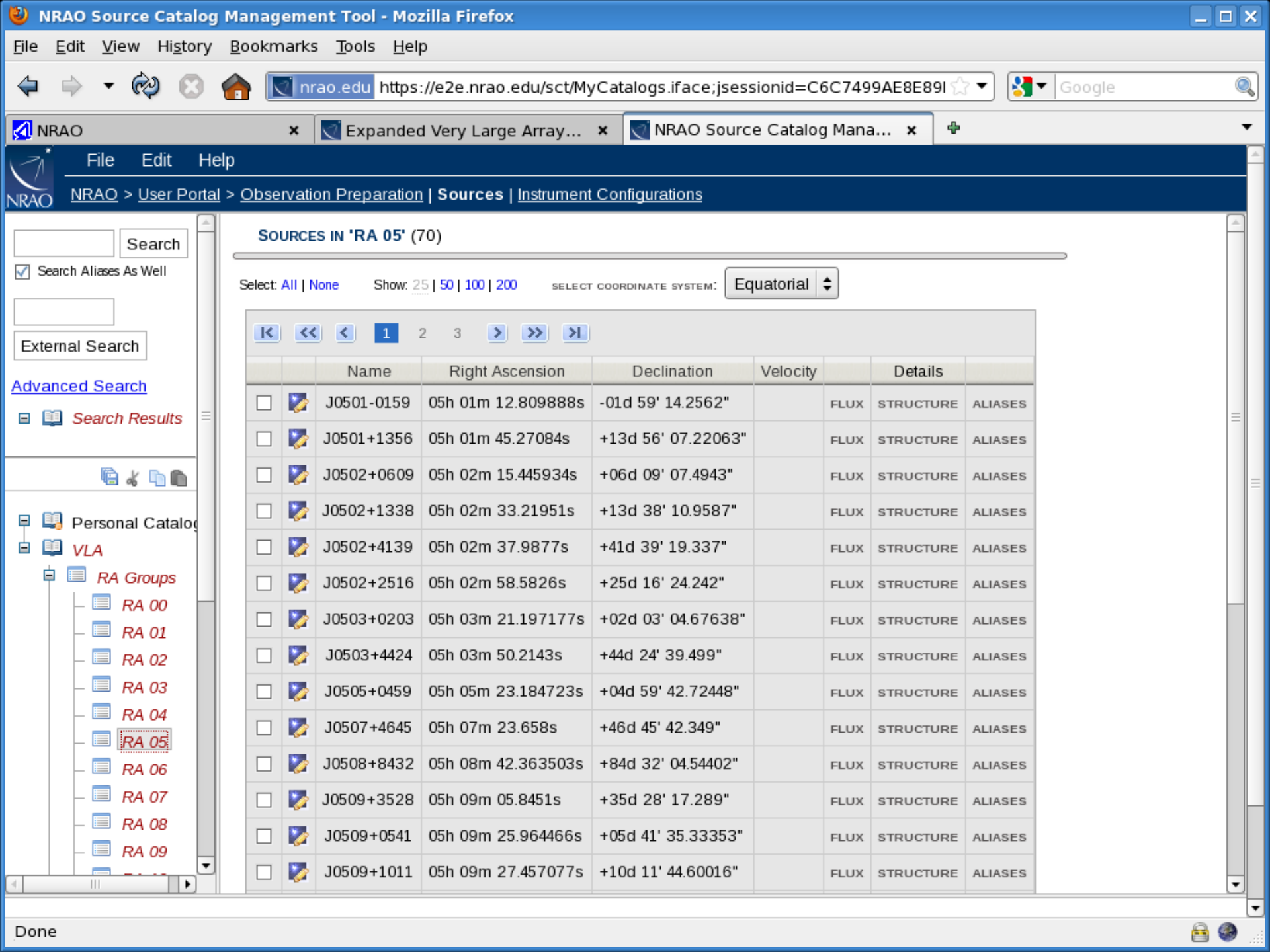
SOURCES IN 'VLA FLUX CAL' (5)
Select: All | None
Show: 25 | 50 | 100 | 200
SELECT COORDINATE SYSTEM: Equatorial
Name
Right Ascension
Declination
Velocity
Details
0137+331=3C48 01h 37m 41.299431s +33d 09' 35.13299" FLUX STRUCTURE ALIASES
0542+498=3C147 05h 42m 36.137916s +49d 51' 07.23356" FLUX STRUCTURE ALIASES
1331+305=3C286 13h 31m 08.287984s +30d 30' 32.95885" FLUX STRUCTURE ALIASES
0521+166=3C138 05h 21m 09.886021s +16d 38' 22.05122" FLUX STRUCTURE ALIASES
1411+522=3C295 14h 11m 20.6477s +52d 12' 09.141" FLUX STRUCTURE ALIASES
Done


NRAO Source Catalog Management Tool - Mozilla Firefox
File Edit View History Bookmarks Tools Help
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Search Aliases As Well
External Search
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Personal Catalog
VLA
RA Groups
RA 00
RA 01
RA 02
RA 03
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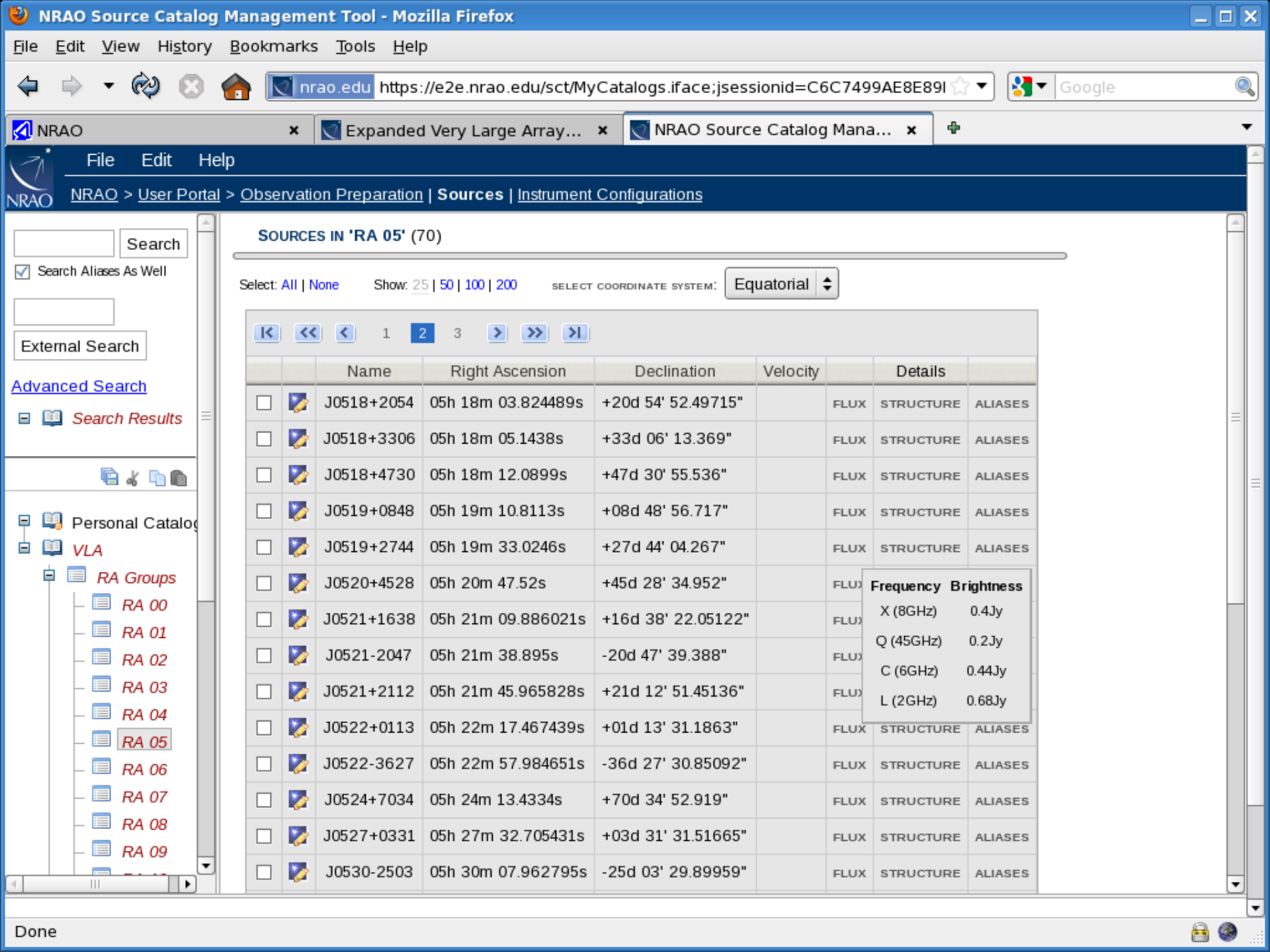
RA 05
RA 06
RA 07
RA 08
RA 09
SOURCES IN 'RA 05' (70)
Select: All | None
Show: 25 | 50 | 100 | 200
SELECT COORDINATE SYSTEM: Equatorial
1 2 3
Name | Right Ascension | Declination | Velocity | Details
J0501-0159 | 05h 01m 12.809888s | -01d 59' 14.2562" | FLUX STRUCTURE ALIASES
J0501+1356 | 05h 01m 45.27084s | +13d 56' 07.22063" | FLUX STRUCTURE ALIASES
J0502+0609 | 05h 02m 15.445934s | +06d 09' 07.4943" | FLUX STRUCTURE ALIASES
J0502+1338 | 05h 02m 33.21951s | +13d 38' 10.9587" | FLUX STRUCTURE ALIASES
J0502+4139 | 05h 02m 37.9877s | +41d 39' 19.337" | FLUX STRUCTURE ALIASES
J0502+2516 | 05h 02m 58.5826s | +25d 16' 24.242" | FLUX STRUCTURE ALIASES
J0503+0203 | 05h 03m 21.197177s | +02d 03' 04.67638" | FLUX STRUCTURE ALIASES
J0503+4424 | 05h 03m 50.2143s | +44d 24' 39.499" | FLUX STRUCTURE ALIASES
J0505+0459 | 05h 05m 23.184723s | +04d 59' 42.72448" | FLUX STRUCTURE ALIASES
J0507+4645 | 05h 07m 23.658s | +46d 45' 42.349" | FLUX STRUCTURE ALIASES
J0508+8432 | 05h 08m 42.363503s | +84d 32' 04.54402" | FLUX STRUCTURE ALIASES
J0509+3528 | 05h 09m 05.8451s | +35d 28' 17.289" | FLUX STRUCTURE ALIASES
J0509+0541 | 05h 09m 25.964466s | +05d 41' 35.33353" | FLUX STRUCTURE ALIASES
J0509+1011 | 05h 09m 27.457077s | +10d 11' 44.60016" | FLUX STRUCTURE ALIASES
Done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External Search
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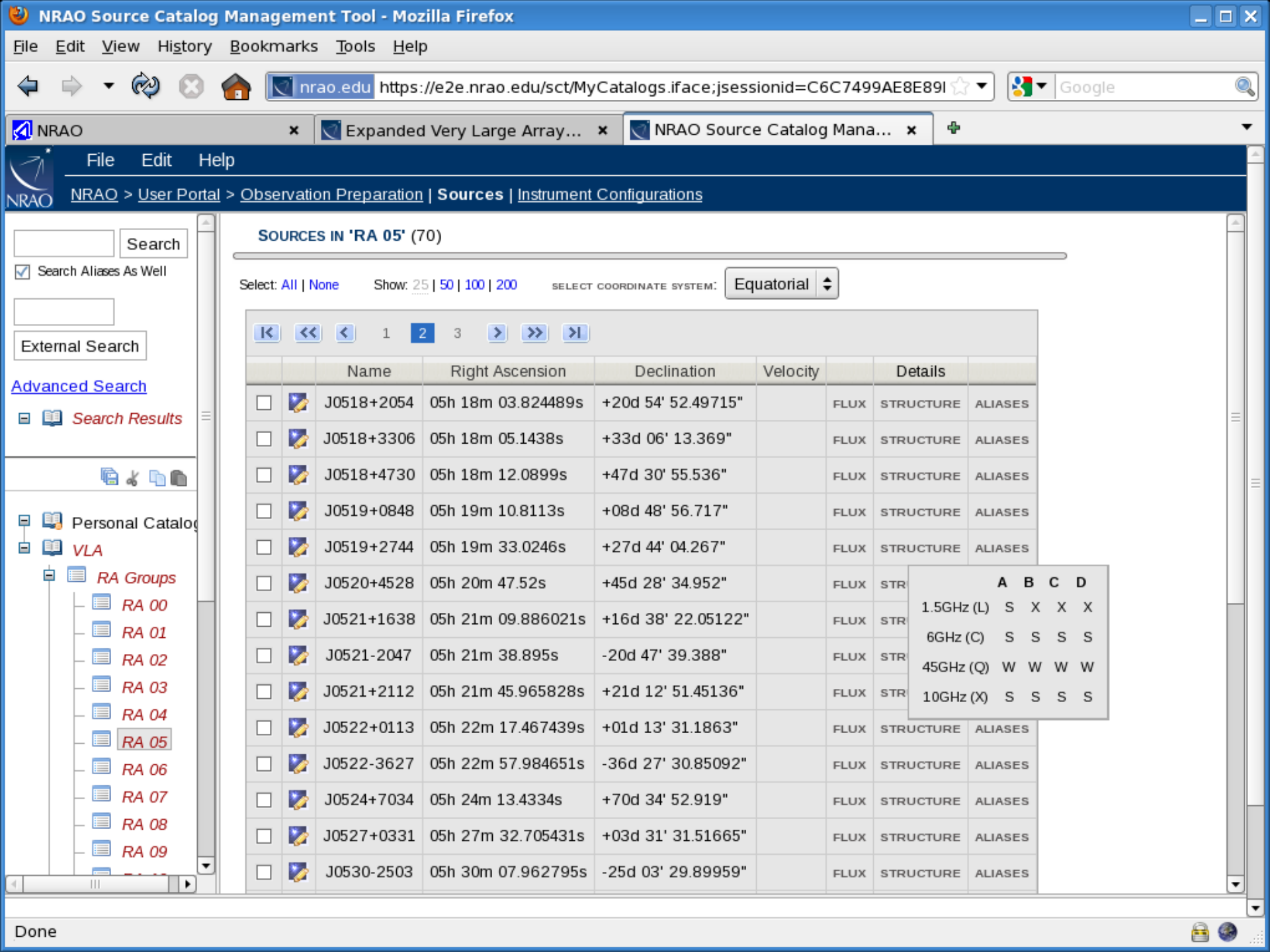
Search Results
Personal Catalog
VLA
RA Groups
RA 00
RA 01
RA 02
RA 03
RA 04
RA 05
RA 06
RA 07
RA 08
RA 09
SOURCES IN 'RA 05' (70)
Select: All | None
Show: 25 | 50 | 100 | 200
SELECT COORDINATE SYSTEM: Equatorial
1 2 3
Name
Right Ascension
Declination
Velocity
Details
J0518+2054 05h 18m 03.824489s +20d 54' 52.49715" FLUX STRUCTURE ALIASES
J0518+3306 05h 18m 05.1438s +33d 06' 13.369" FLUX STRUCTURE ALIASES
J0518+4730 05h 18m 12.0899s +47d 30' 55.536" FLUX STRUCTURE ALIASES
J0519+0848 05h 19m 10.8113s +08d 48' 56.717" FLUX STRUCTURE ALIASES
J0519+2744 05h 19m 33.0246s +27d 44' 04.267" FLUX STRUCTURE ALIASES
J0520+4528 05h 20m 47.52s +45d 28' 34.952"
J0521+1638 05h 21m 09.886021s +16d 38' 22.05122"
J0521-2047 05h 21m 38.895s -20d 47' 39.388"
J0521+2112 05h 21m 45.965828s +21d 12' 51.45136"
J0522+0113 05h 22m 17.467439s +01d 13' 31.1863" FLUX STRUCTURE ALIASES
J0522-3627 05h 22m 57.984651s -36d 27' 30.85092" FLUX STRUCTURE ALIASES
J0524+7034 05h 24m 13.4334s +70d 34' 52.919" FLUX STRUCTURE ALIASES
J0527+0331 05h 27m 32.705431s +03d 31' 31.51665" FLUX STRUCTURE ALIASES
J0530-2503 05h 30m 07.962795s -25d 03' 29.89959" FLUX STRUCTURE ALIASES
Frequency Brightness
X (8GHz) 0.4Jy
Q (45GHz) 0.2Jy
C (6GHz) 0.44Jy
L (2GHz) 0.68Jy
Done


NRAO Source Catalog Management Tool - Mozilla Firefox
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Search Aliases As Well
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Advanced Search
Search Results
Personal Catalog
VLA
RA Groups
RA 00
RA 01
RA 02
RA 03
RA 04
RA 05
RA 06
RA 07
RA 08
RA 09
SOURCES IN 'RA 05' (70)
Select: All | None
Show: 25 | 50 | 100 | 200
SELECT COORDINATE SYSTEM: Equatorial
1 2 3
Name
Right Ascension
Declination
Velocity
Details
J0518+2054 05h 18m 03.824489s +20d 54' 52.49715" FLUX STRUCTURE ALIASES
J0518+3306 05h 18m 05.1438s +33d 06' 13.369" FLUX STRUCTURE ALIASES
J0518+4730 05h 18m 12.0899s +47d 30' 55.536" FLUX STRUCTURE ALIASES
J0519+0848 05h 19m 10.8113s +08d 48' 56.717" FLUX STRUCTURE ALIASES
J0519+2744 05h 19m 33.0246s +27d 44' 04.267" FLUX STRUCTURE ALIASES
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J0521-2047 05h 21m 38.895s -20d 47' 39.388" FLUX STR
J0521+2112 05h 21m 45.965828s +21d 12' 51.45136" FLUX STR
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J0524+7034 05h 24m 13.4334s +70d 34' 52.919" FLUX STRUCTURE ALIASES
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J0530-2503 05h 30m 07.962795s -25d 03' 29.89959" FLUX STRUCTURE ALIASES
A B C D
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45GHz (Q) W W W W
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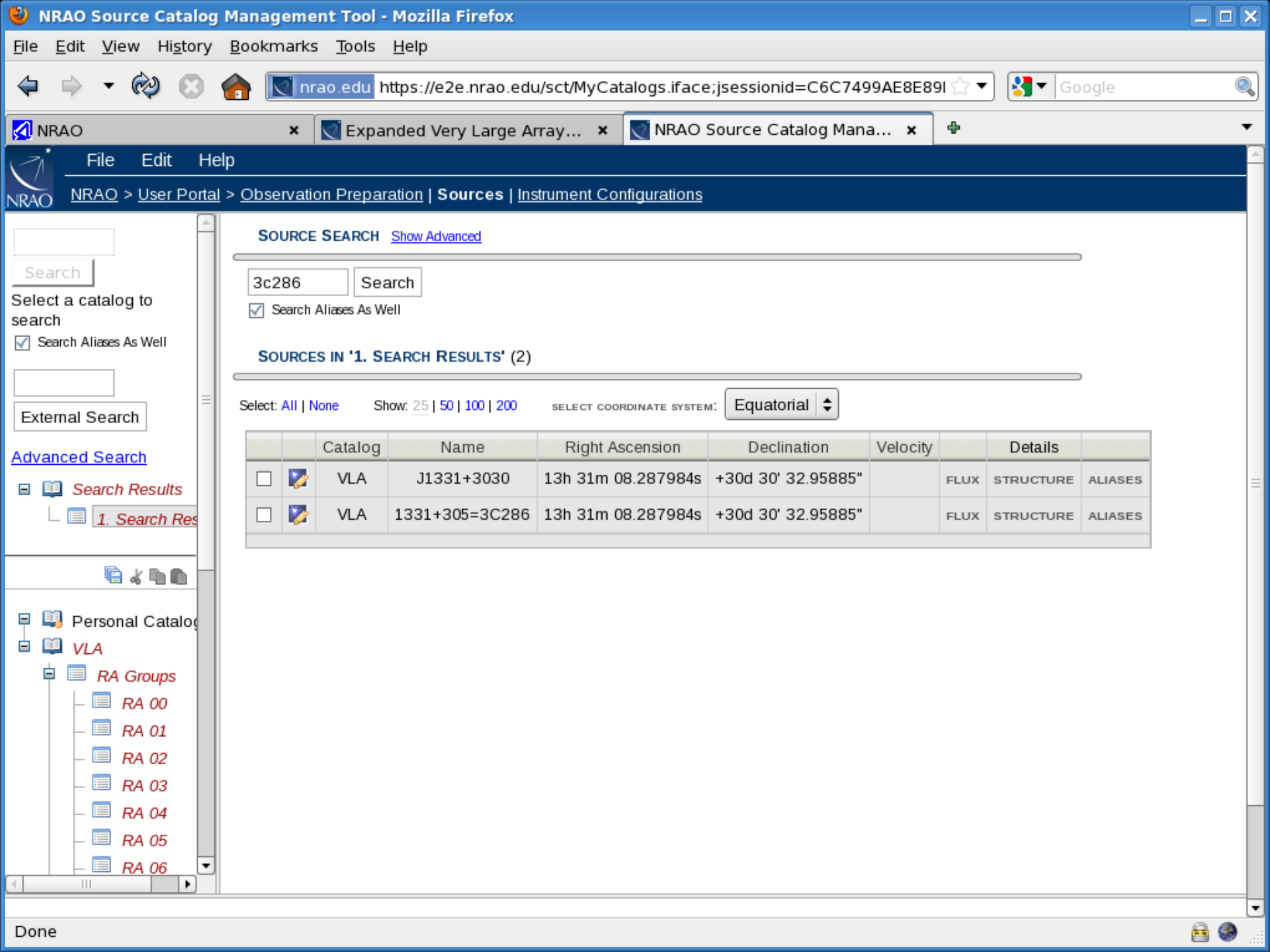
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External Search
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VLA
RA Groups
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RA 01
RA 02
RA 03
RA 04
RA 05
RA 06
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Search
Search Aliases As Well
SOURCES IN '1. SEARCH RESULTS' (2)
Select: All | None
Show: 25 | 50 | 100 | 200
SELECT COORDINATE SYSTEM:
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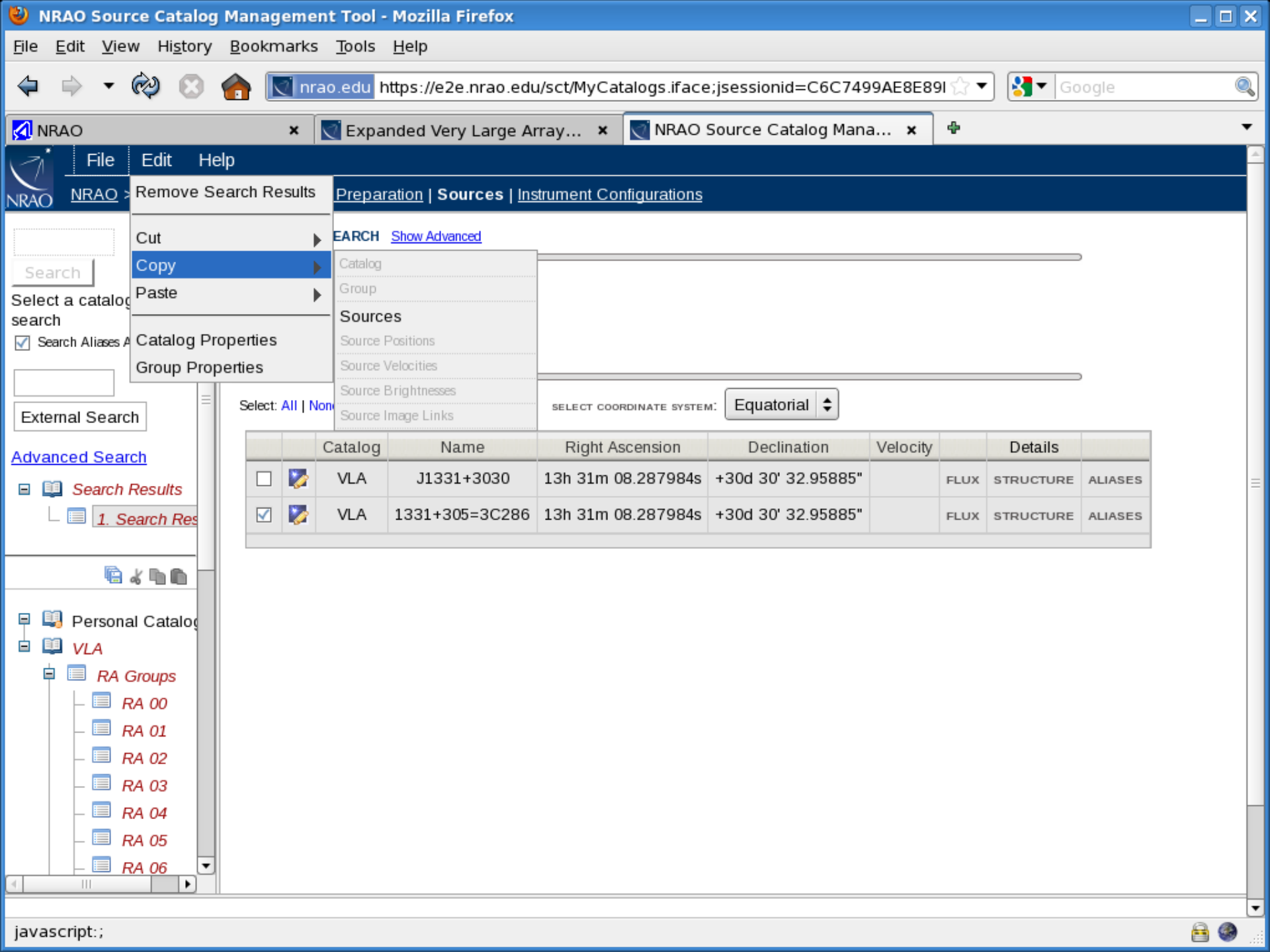
Name
Right Ascension
Declination
Velocity
Details
VLA
J1331+3030
13h 31m 08.287984s
+30d 30' 32.95885"
FLUX
STRUCTURE
ALIASES
VLA
1331+305=3C286
13h 31m 08.287984s
+30d 30' 32.95885"
FLUX
STRUCTURE
ALIASES
Done


NRAO Source Catalog Management Tool - Mozilla Firefox
File Edit View History Bookmarks Tools Help
nrao.edu https://e2e.nrao.edu/sct/MyCatalogs.iface;jsessionid=C6C7499AE8E89I
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NRAO >
Remove Search Results
Cut
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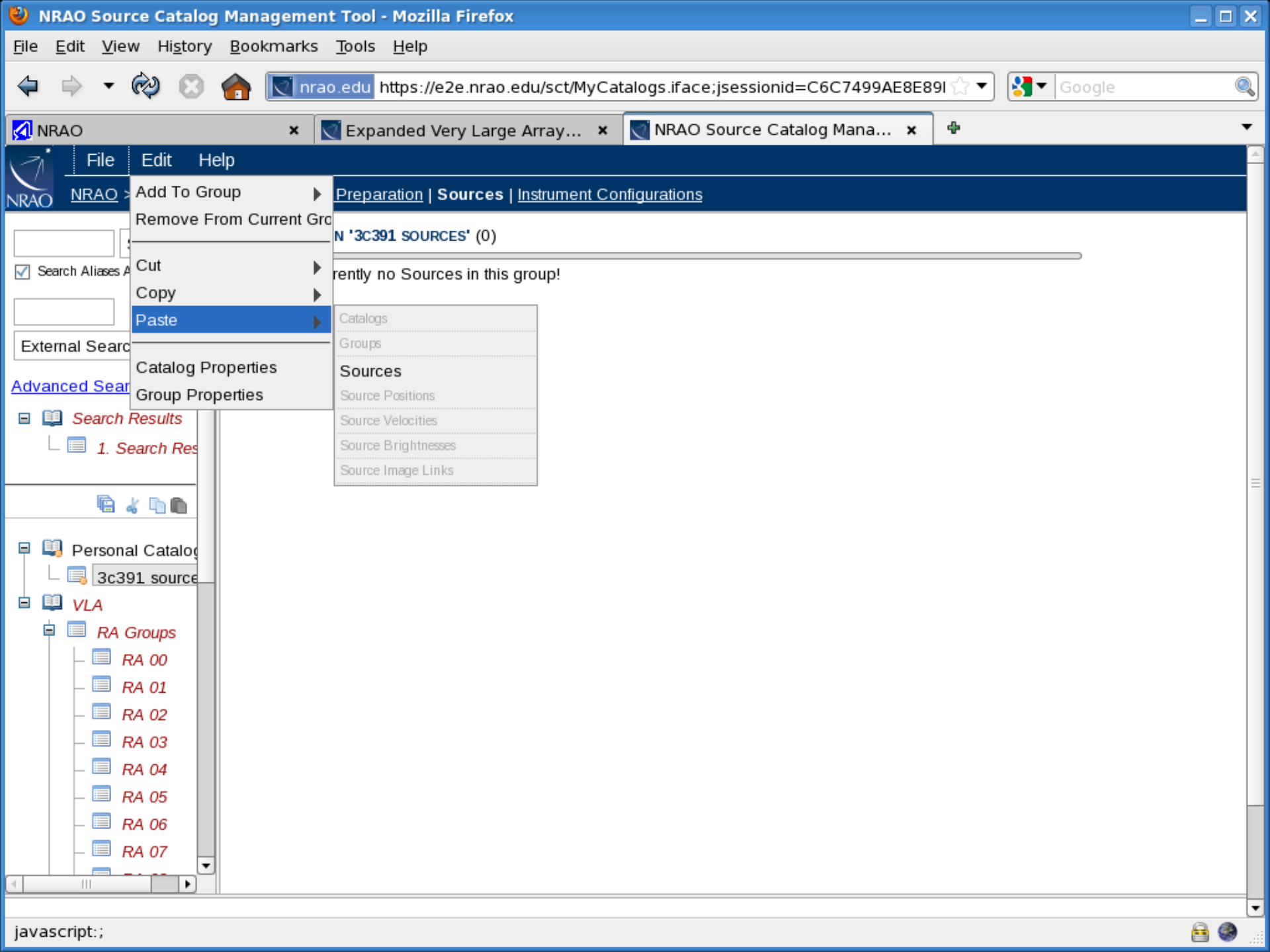
Catalog Properties
Group Properties
Catalog
Group
Sources
Source Positions
Source Velocities
Source Brightnesses
Source Image Links
Preparation | Sources | Instrument Configurations
EARCH Show Advanced
Search
Select a catalog
search
Search Aliases A
External Search
Advanced Search
Search Results
1. Search Res
Select: All | Non
SELECT COORDINATE SYSTEM: Equatorial
Catalog Name Right Ascension Declination Velocity Details
VLA J1331+3030 13h 31m 08.287984s +30d 30' 32.95885" FLUX STRUCTURE ALIASES
VLA 1331+305=3C286 13h 31m 08.287984s +30d 30' 32.95885" FLUX STRUCTURE ALIASES
Personal Catalog
VLA
RA Groups
RA 00
RA 01
RA 02
RA 03
RA 04
RA 05
RA 06
javascript:;


NRAO Source Catalog Management Tool - Mozilla Firefox
File Edit View History Bookmarks Tools Help
nrao.edu https://e2e.nrao.edu/sct/MyCatalogs.iface;jsessionid=C6C7499AE8E89I
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File Edit Help
NRAO >
Add To Group
Remove From Current Grc
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Copy
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Catalog Properties
Group Properties
Catalogs
Groups
Sources
Source Positions
Source Velocities
Source Brightnesses
Source Image Links
Preparation | Sources | Instrument Configurations
N '3C391 SOURCES' (0)
rently no Sources in this group!
Search Aliases A
External Searc
Advanced Sear
Search Results
1. Search Res
Personal Catalo
3c391 source
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RA Groups
RA 00
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RA 02
RA 03
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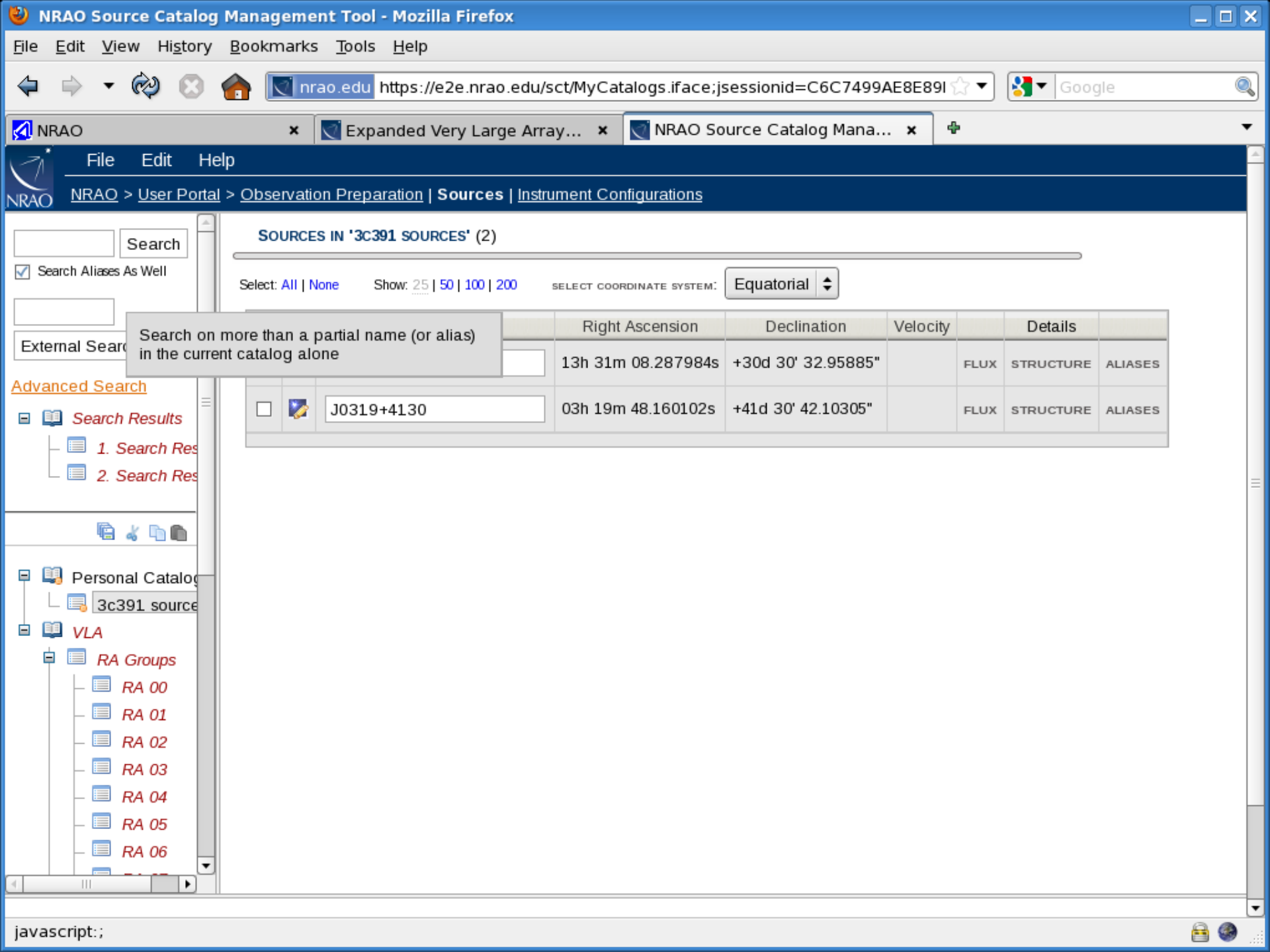
NRAO Source Catalog Management Tool - Mozilla Firefox
File Edit View History Bookmarks Tools Help
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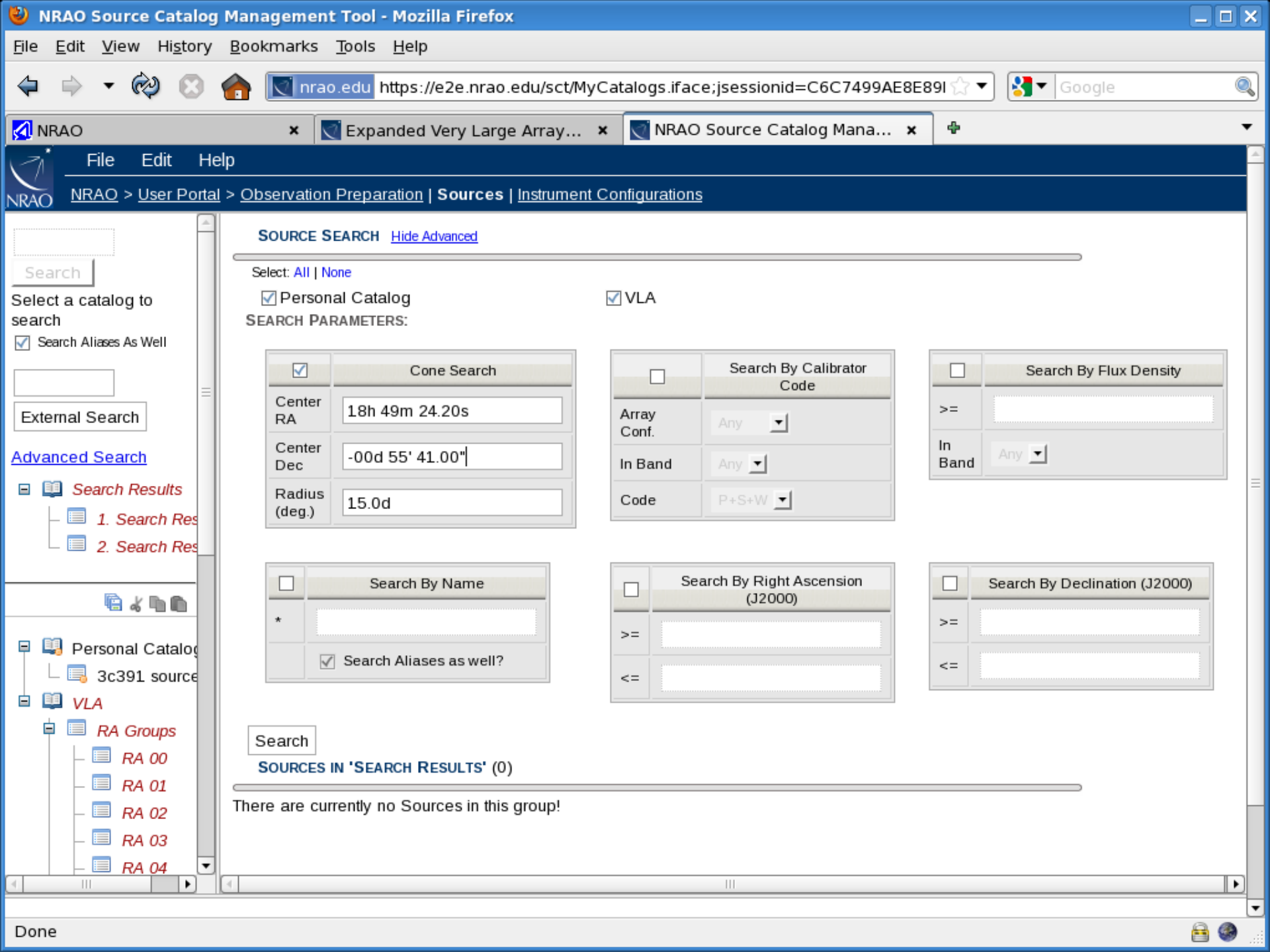
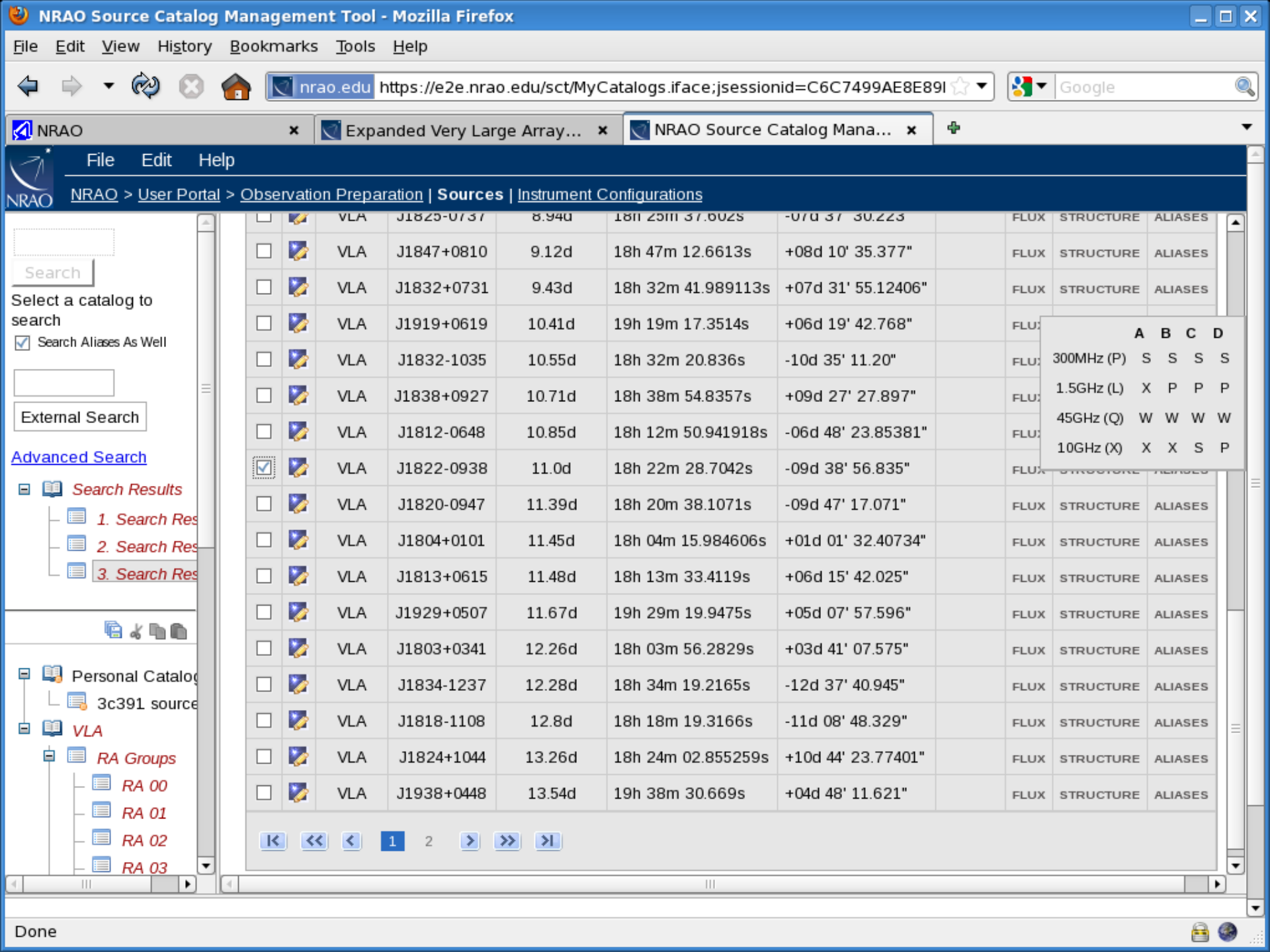
Google
NRAO
Expanded Very Large Array...
NRAO Source Catalog Mana...
File Edit Help
NRAO > User Portal > Observation Preparation | Sources | Instrument Configurations
Search
Search Aliases As Well
External Searc
Search on more than a partial name (or alias) in the current catalog alone
Advanced Search
Search Results
1. Search Res
2. Search Res
Personal Catalog
3c391 source
VLA
RA Groups
RA 00
RA 01
RA 02
RA 03
RA 04
RA 05
RA 06
SOURCES IN '3C391 SOURCES' (2)
Select: All | None
Show: 25 | 50 | 100 | 200
SELECT COORDINATE SYSTEM:
Equatorial
Right Ascension
Declination
Velocity
Details
13h 31m 08.287984s
+30d 30' 32.95885"
FLUX
STRUCTURE
ALIASES
J0319+4130
03h 19m 48.160102s
+41d 30' 42.10305"
FLUX
STRUCTURE
ALIASES
javascript:;


NRAO Source Catalog Management Tool - Mozilla Firefox
File Edit View History Bookmarks Tools Help
nrao.edu https://e2e.nrao.edu/sct/MyCatalogs.iface;jsessionid=C6C7499AE8E89I
Google
NRAO
Expanded Very Large Array...
NRAO Source Catalog Mana...
File Edit Help
NRAO > User Portal > Observation Preparation | Sources | Instrument Configurations
Search
Select a catalog to search
Search Aliases As Well
External Search
Advanced Search
Search Results
1. Search Res
2. Search Res
Personal Catalog
3c391 source
VLA
RA Groups
RA 00
RA 01
RA 02
RA 03
RA 04
SOURCE SEARCH Hide Advanced
Select: All | None
Personal Catalog
VLA
SEARCH PARAMETERS:
Cone Search
Center RA
18h 49m 24.20s
Center Dec
-00d 55' 41.00"
Radius (deg.)
15.0d
Search By Calibrator Code
Array Conf.
Any
In Band
Any
Code
P+S+W
Search By Flux Density
>=
In Band
Any
Search By Name
*
Search Aliases as well?
Search By Right Ascension (J2000)
>=
<=
Search By Declination (J2000)
>=
<=
Search
SOURCES IN 'SEARCH RESULTS' (0)
There are currently no Sources in this group!
Done


NRAO Source Catalog Management Tool - Mozilla Firefox
File Edit View History Bookmarks Tools Help
nrao.edu https://e2e.nrao.edu/sct/MyCatalogs.iface;jsessionid=C6C7499AE8E89I
Google
NRAO
Expanded Very Large Array...
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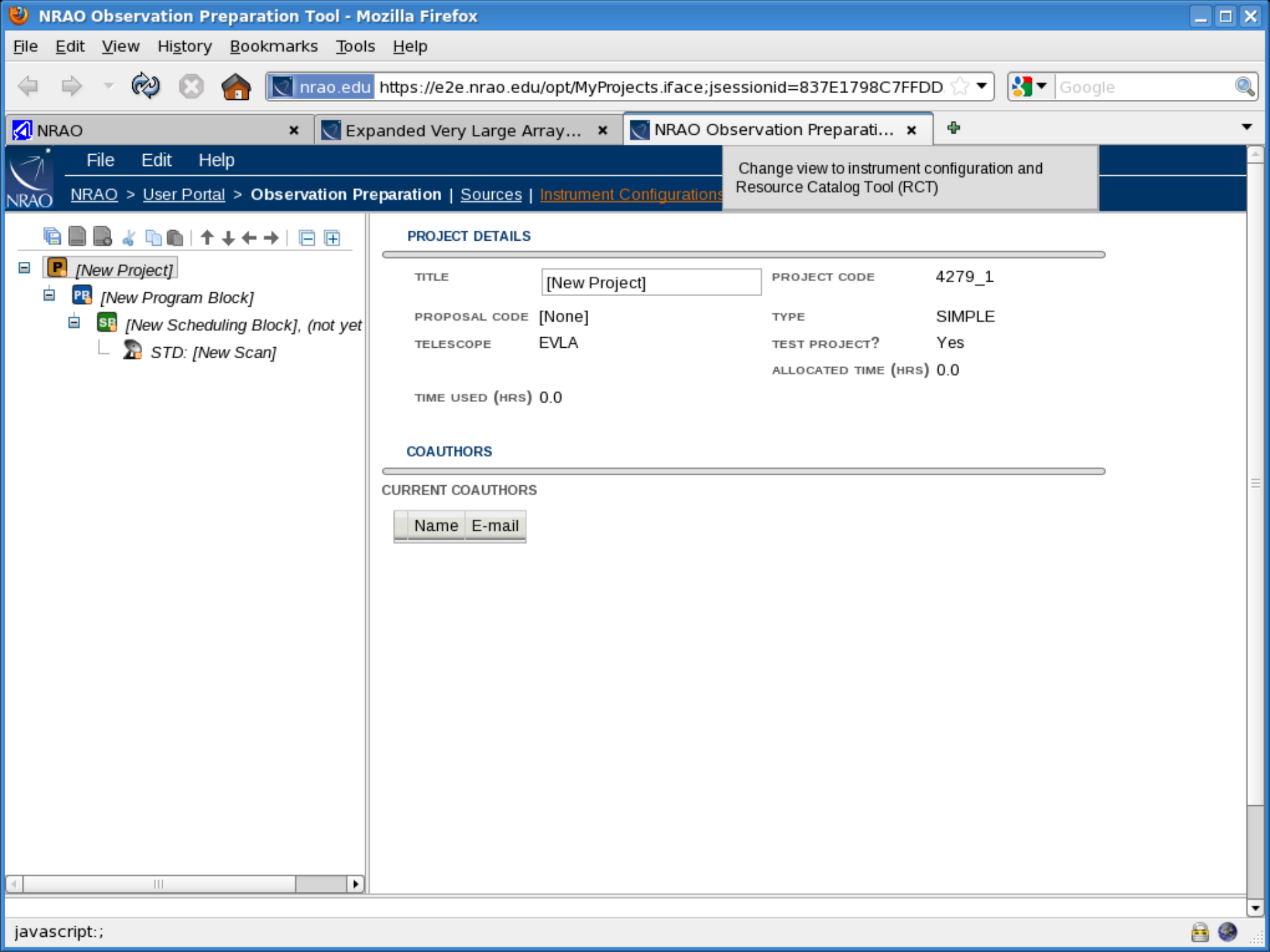
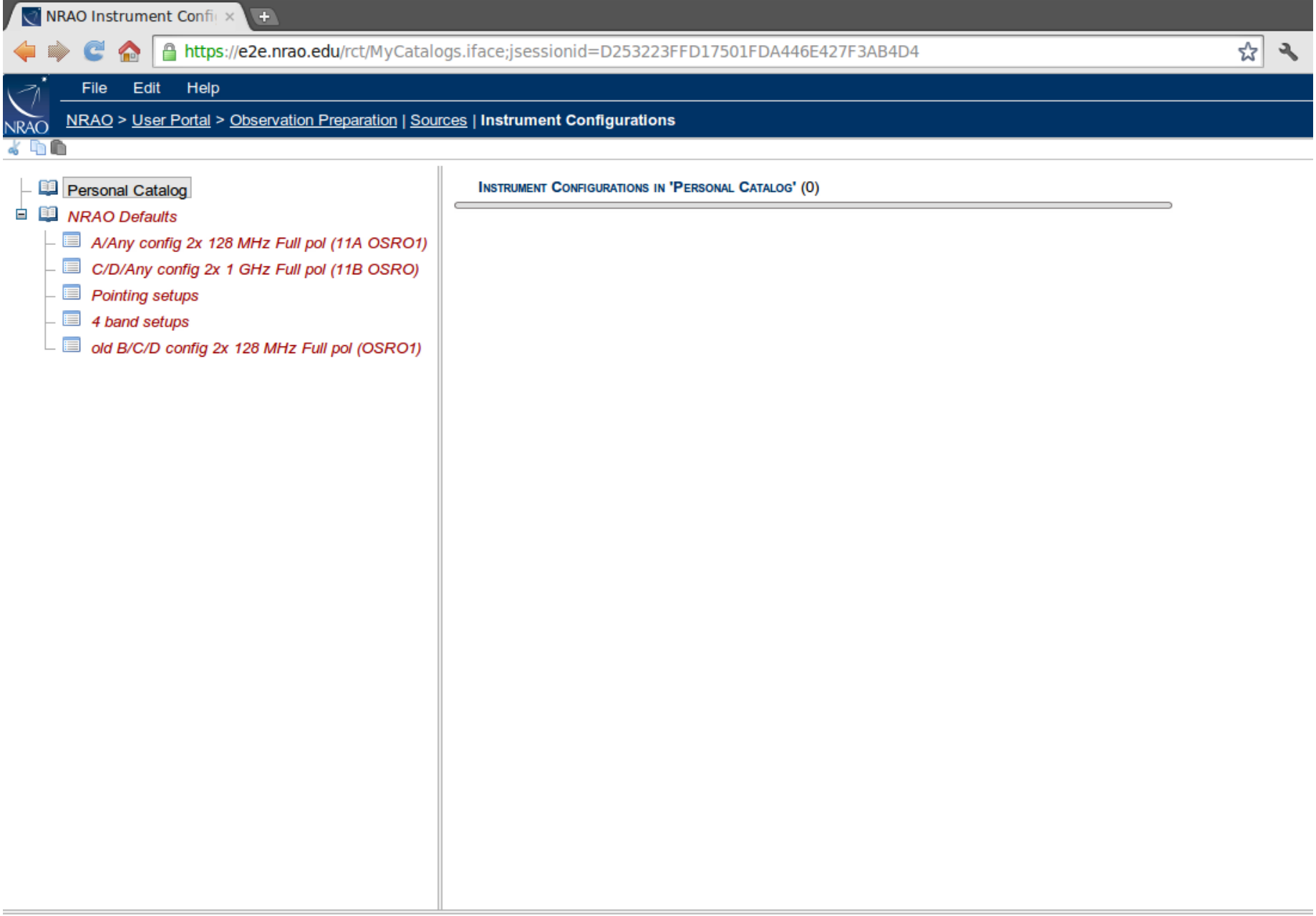
File Edit Help
NRAO > User Portal > Observation Preparation | Sources | Instrument Configurations
Search
Select a catalog to search
Search Aliases As Well
External Search
Advanced Search
Search Results
1. Search Res
2. Search Res
3. Search Res
Personal Catalog
3c391 source
VLA
RA Groups
RA 00
RA 01
RA 02
RA 03
VLA J1825-0737 8.94d 18h 25m 37.602s -07d 37' 30.223" FLUX STRUCTURE ALIASES
VLA J1847+0810 9.12d 18h 47m 12.6613s +08d 10' 35.377" FLUX STRUCTURE ALIASES
VLA J1832+0731 9.43d 18h 32m 41.989113s +07d 31' 55.12406" FLUX STRUCTURE ALIASES
VLA J1919+0619 10.41d 19h 19m 17.3514s +06d 19' 42.768" FLUX STRUCTURE ALIASES
VLA J1832-1035 10.55d 18h 32m 20.836s -10d 35' 11.20" FLUX STRUCTURE ALIASES
VLA J1838+0927 10.71d 18h 38m 54.8357s +09d 27' 27.897" FLUX STRUCTURE ALIASES
VLA J1812-0648 10.85d 18h 12m 50.941918s -06d 48' 23.85381" FLUX STRUCTURE ALIASES
VLA J1822-0938 11.0d 18h 22m 28.7042s -09d 38' 56.835" FLUX STRUCTURE ALIASES
VLA J1820-0947 11.39d 18h 20m 38.1071s -09d 47' 17.071" FLUX STRUCTURE ALIASES
VLA J1804+0101 11.45d 18h 04m 15.984606s +01d 01' 32.40734" FLUX STRUCTURE ALIASES
VLA J1813+0615 11.48d 18h 13m 33.4119s +06d 15' 42.025" FLUX STRUCTURE ALIASES
VLA J1929+0507 11.67d 19h 29m 19.9475s +05d 07' 57.596" FLUX STRUCTURE ALIASES
VLA J1803+0341 12.26d 18h 03m 56.2829s +03d 41' 07.575" FLUX STRUCTURE ALIASES
VLA J1834-1237 12.28d 18h 34m 19.2165s -12d 37' 40.945" FLUX STRUCTURE ALIASES
VLA J1818-1108 12.8d 18h 18m 19.3166s -11d 08' 48.329" FLUX STRUCTURE ALIASES
VLA J1824+1044 13.26d 18h 24m 02.855259s +10d 44' 23.77401" FLUX STRUCTURE ALIASES
VLA J1938+0448 13.54d 19h 38m 30.669s +04d 48' 11.621" FLUX STRUCTURE ALIASES
1 2
A B C D
300MHz (P) S S S S
1.5GHz (L) X P P P
45GHz (Q) W W W W
10GHz (X) X X S P
Done

Creating resource catalogs in the RCT

- Can define your own resources (hardware/instrument configurations)
  - Different targets may need different Doppler setups/resources and extra dummy scans
- Can use resources predefined in default continuum "OSRO" resource list
  - Not every (continuum) resource in this list is useful for every continuum observation; check its properties before using !
  - More (default) resources will appear with advances in commissioning
    - We also kept the old OSRO2 available (used in last D array configuration, twice the channels in one subband)
    - But it is probably more advantageous to use 8 interleaved subbands to get 4x the bandwidth for calibration
- Useful to combine resources to be used in an SB(/PB) in its own "group"
- Make sure all resources are defined before creating the scan list


NRAO Observation Preparation Tool - Mozilla Firefox
File Edit View History Bookmarks Tools Help
nrao.edu https://e2e.nrao.edu/opt/MyProjects.iface;jsessionid=837E1798C7FFDD
Google
NRAO
Expanded Very Large Array...
NRAO Observation Preparati...
File Edit Help
NRAO > User Portal > Observation Preparation | Sources | Instrument Configurations
Change view to instrument configuration and Resource Catalog Tool (RCT)
[New Project]
[New Program Block]
[New Scheduling Block], (not yet
STD: [New Scan]
PROJECT DETAILS
TITLE
[New Project]
PROJECT CODE
4279_1
PROPOSAL CODE
[None]
TYPE
SIMPLE
TELESCOPE
EVLA
TEST PROJECT?
Yes
ALLOCATED TIME (HRS)
0.0
TIME USED (HRS)
0.0
COAUTHORS
CURRENT COAUTHORS
Name
E-mail
javascript:;


NRAO Instrument Confi
https://e2e.nrao.edu/rct/MyCatalogs.iface;jsessionid=D253223FFD17501FDA446E427F3AB4D4
File
Edit
Help
NRAO > User Portal > Observation Preparation | Sources | Instrument Configurations
Personal Catalog
NRAO Defaults
A/Any config 2x 128 MHz Full pol (11A OSRO1)
C/D/Any config 2x 1 GHz Full pol (11B OSRO)
Pointing setups
4 band setups
old B/C/D config 2x 128 MHz Full pol (OSRO1)
Instrument Configurations in 'Personal Catalog' (0)

- Personal Catalog
- *NRAO Defaults*
  - *A/Any config 2x 128 MHz Full pol (11A OSRO1)*
  - *C/D/Any config 2x 1 GHz Full pol (11B OSRO)*
  - *Pointing setups*
  - *4 band setups*
  - *old B/C/D config 2x 128 MHz Full pol (OSRO1)*

Instrument Configurations in 'C/D/Any config 2x 1 GHz Full pol (11B OSRO)' (8)

Select: All | None Show: 25 | 50 | 100 | 200

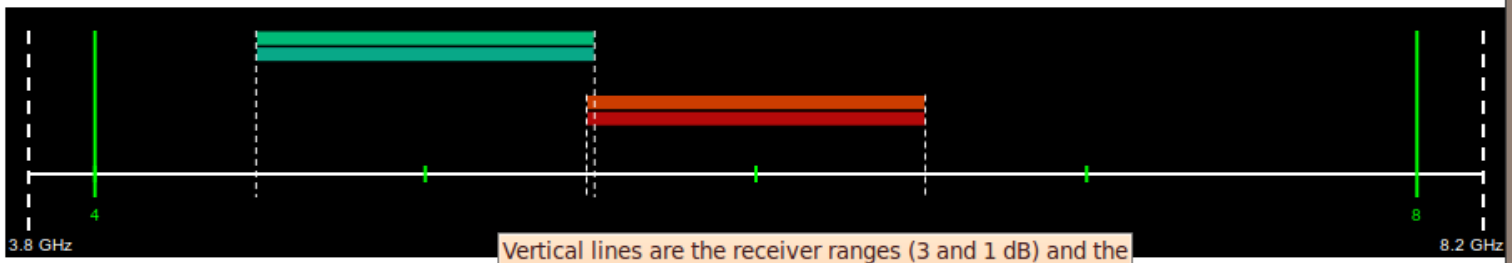
		Name	Band	Back End	T_{int}	AC BW BD BW	AC Freq BD Freq	Comments
☐		L full width	L	WIDAR / OSRO	5	0.512GHz 0.512GHz	1.25GHz 1.75GHz	
☐		S full width	S	WIDAR / OSRO	5	1.024GHz 1.024GHz	2.5GHz 3.5GHz	
☐		C wide band	C	WIDAR / OSRO	5	1.024GHz 1.024GHz	5.0GHz 6.0GHz	
☐		X band, mixed wide/narrow	X	WIDAR / OSRO	3	1.024GHz 1.024GHz	8.5GHz 9.5GHz	Uses all antennas, though some do not have the new wideband X band receivers. Good to obtain data on all baselines, but many will have no data in the second (BD) baseband.
☐		Ku wide band	Ku	WIDAR / OSRO	3	1024.0MHz 1024.0MHz	13.5GHz 14.5GHz	
☐		K wide band	K	WIDAR / OSRO	3	1024.0MHz 1024.0MHz	20.7GHz 21.7GHz	
☐		Ka wide band	Ka	WIDAR / OSRO	3	1.024GHz 1.024GHz	32.52GHz 31.52GHz	
☐		Q wide band	Q	WIDAR / OSRO	3	1024.0MHz 1024.0MHz	40.5GHz 41.5GHz	

Personal Catalog
NRAO Defaults
A/Any config
C/D/Any confi
Pointing setup
4 band setups
old B/C/D con

AC	5.0GHz	0.0MHz	4.488GHz–5.512GHz	Rest Sky
BD	6.0GHz	0.0MHz	5.488GHz–6.512GHz	Rest Sky

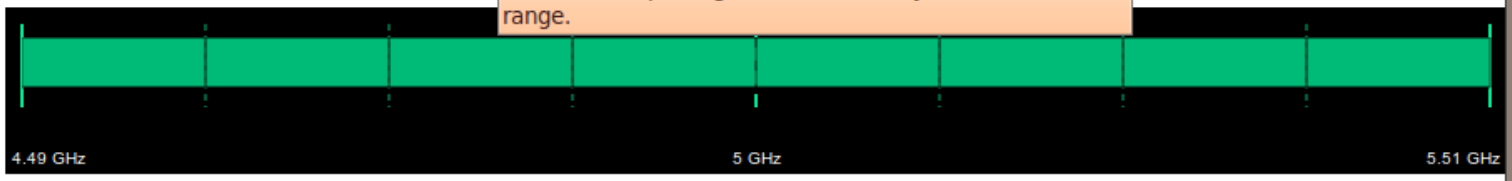
Subband Configuration

# SBs	SB BW	Polarization	Channel Width	AC Sky Range	BD Sky Range
8	0.128GHz	FULL	2.0MHz	4.488GHz - 5.512GHz	5.488GHz - 6.512GHz

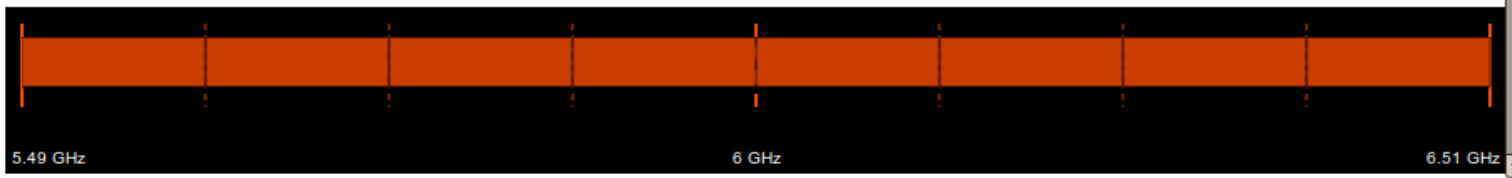


Vertical lines are the receiver ranges (3 and 1 dB) and the tuned baseband frequency coverage in the receiver bands; avoid placing the baseband beyond the receiver range.

AC



BD

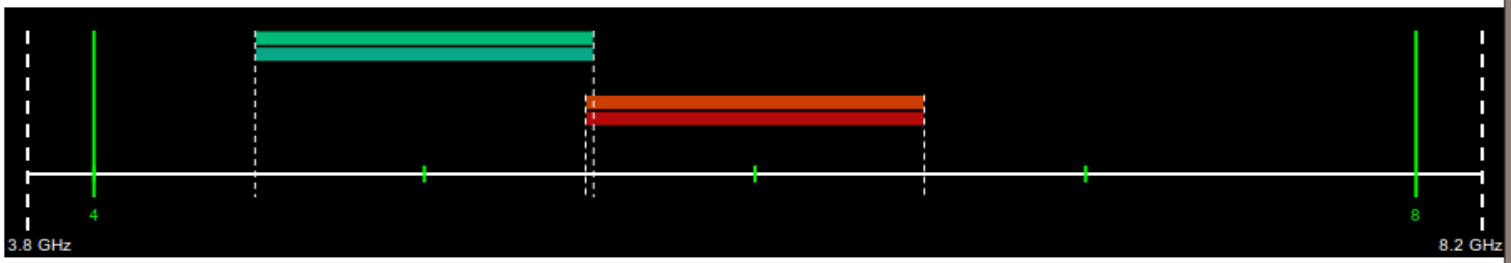


Personal Catalog
NRAO Defaults
A/Any config
C/D/Any confi
Pointing setup
4 band setups
old B/C/D con

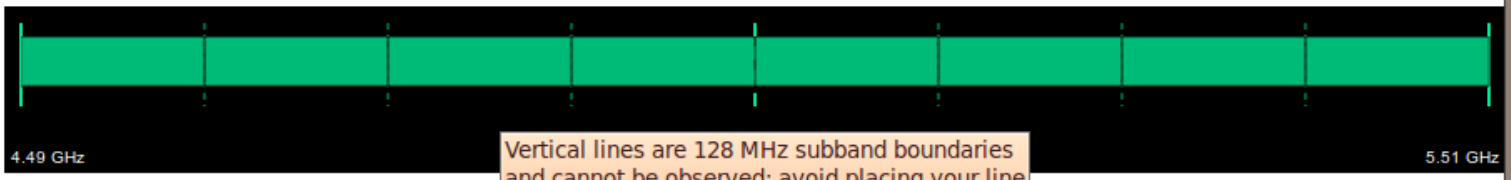
AC	5.0GHz	0.0MHz	4.488GHz–5.512GHz	Rest Sky
BD	6.0GHz	0.0MHz	5.488GHz–6.512GHz	Rest Sky

SUBBAND CONFIGURATION

# SBs	SB BW	Polarization	Channel Width	AC Sky Range	BD Sky Range
8	0.128GHz	FULL	2.0MHz	4.488GHz - 5.512GHz	5.488GHz - 6.512GHz

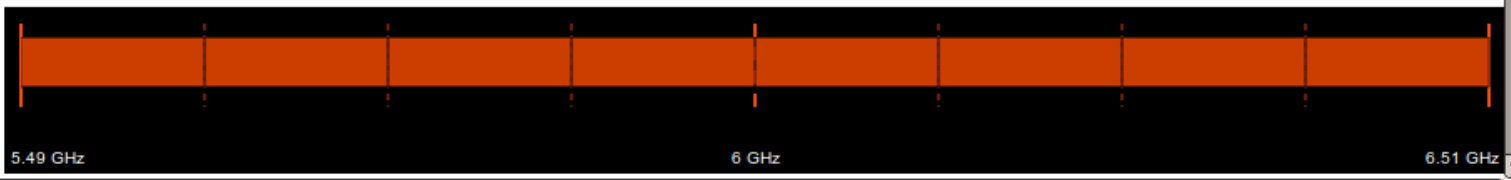


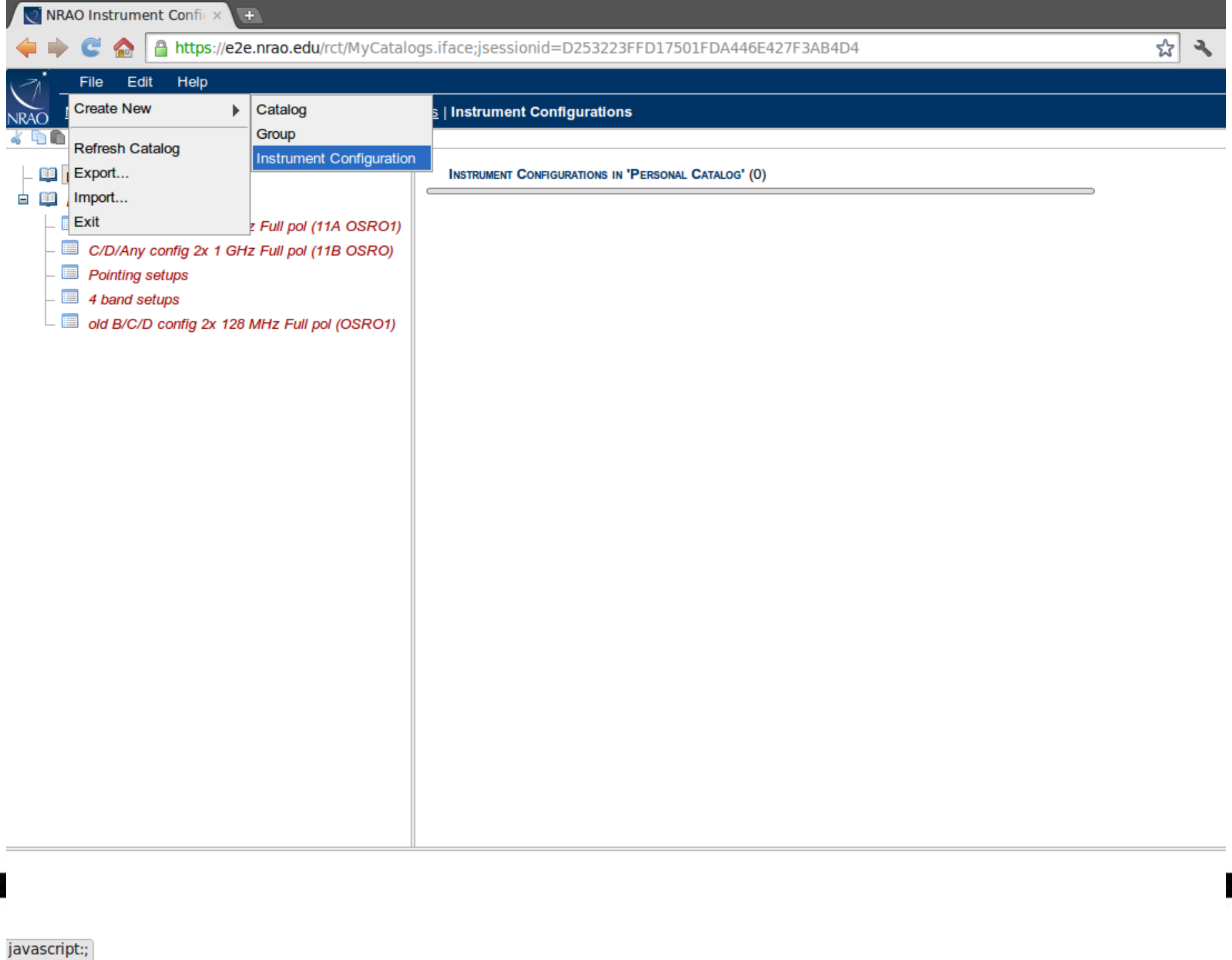
AC



Vertical lines are 128 MHz subband boundaries and cannot be observed; avoid placing your line sources near the vertical likes.

BD




NRAO Instrument Confi
https://e2e.nrao.edu/rct/MyCatalogs.iface;jsessionid=D253223FFD17501FDA446E427F3AB4D4
File
Edit
Help
Create New
Refresh Catalog
Export...
Import...
Exit
Catalog
Group
Instrument Configuration
Instrument Configurations
Full pol (11A OSRO1)
C/D/Any config 2x 1 GHz Full pol (11B OSRO)
Pointing setups
4 band setups
old B/C/D config 2x 128 MHz Full pol (OSRO1)
Instrument Configurations in 'Personal Catalog' (0)
javascript:;

NRAO Instrument Confi

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File Edit Help

NRAO > User Portal > Observation Preparation | Sources | **Instrument Configurations**

- Personal Catalog
- *NRAO Defaults*
  - *A/Any config 2x 128 MHz Full pol (11A OSRO1)*
  - *C/D/Any config 2x 1 GHz Full pol (11B OSRO)*
  - *Pointing setups*
  - *4 band setups*
  - *old B/C/D config 2x 128 MHz Full pol (OSRO1)*

Return to 'Personal Catalog'

ID	Name	Telescope	Band	Correlator	Editor
141395	Line Resource	EVLA	C (4.0GHz - 8.0GHz)	WIDAR	OSRO

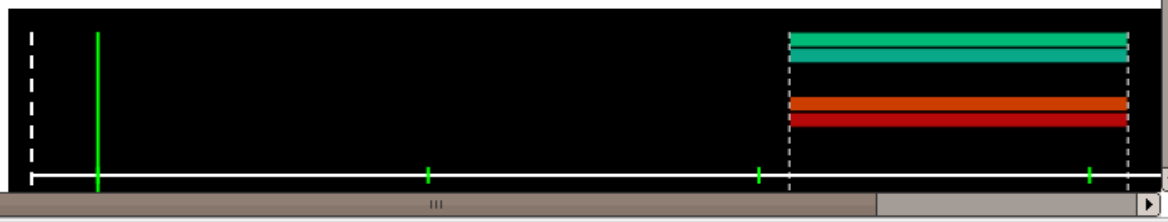
4 (73.0MHz - 74.5MHz)
L (1.0GHz - 2.0GHz)
S (2.0GHz - 4.0GHz)
C (4.0GHz - 8.0GHz)
X (8.0GHz - 12.0GHz)
Ku (12.0GHz - 18.0GHz)
K (18.0GHz - 26.5GHz)
Ka (26.5GHz - 40.0GHz)
Q (40.0GHz - 50.0GHz)

FREQUENCIES

Enabled	Output Pair	SB Center Freq.		ky Range	Rest/Sky?
☑	AC	6.668GHz	0.0MHz	6.092GHz–7.116GHz	○ Rest ◉ Sky
☑	BD	6.668GHz	0.0MHz	6.092GHz–7.116GHz	○ Rest ◉ Sky

SUBBAND CONFIGURATION

# SBs	SB BW	Polarization	Channel Width	AC Sky Range	BD Sky Range
1	128MHz	Full (64 channels/SB)	2.0MHz	6.604GHz - 6.732GHz	6.604GHz - 6.732GHz



NRAO Instrument Confi

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File Edit Help

NRAO > User Portal > Observation Preparation | Sources | **Instrument Configurations**

- Personal Catalog
- *NRAO Defaults*
  - *A/Any config 2x 128 MHz Full pol (11A OSRO1)*
  - *C/D/Any config 2x 1 GHz Full pol (11B OSRO)*
  - *Pointing setups*
  - *4 band setups*
  - *old B/C/D config 2x 128 MHz Full pol (OSRO1)*

Return to 'Personal Catalog'

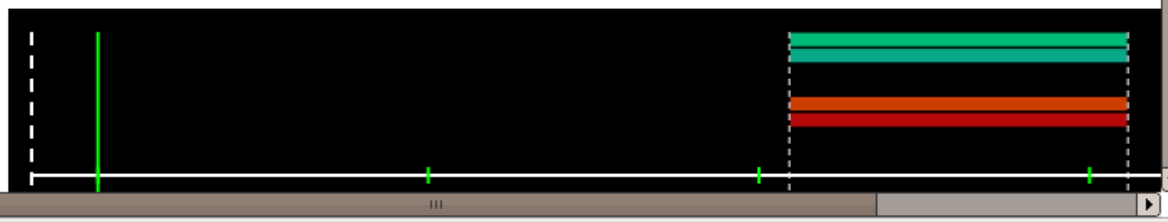
ID	Name	Telescope	Band	Correlator	Editor
141395	Line Resource	EVLA	C (4.0GHz - 8.0GHz) 3-dB range: 3.8GHz - 8.2GHz	WIDAR	OSRO OSRO 11A OSRO/OSRO-2

FREQUENCIES

Enabled	Output Pair	SB Center Freq.	Offset Freq. (Optional)	BB Sky Range	Rest/Sky?
☑	AC	6.668GHz	0.0MHz	6.092GHz–7.116GHz	○ Rest ◉ Sky
☑	BD	6.668GHz	0.0MHz	6.092GHz–7.116GHz	○ Rest ◉ Sky

SUBBAND CONFIGURATION

# SBs	SB BW	Polarization	Channel Width	AC Sky Range	BD Sky Range
1	128MHz	Full (64 channels/SB)	2.0MHz	6.604GHz - 6.732GHz	6.604GHz - 6.732GHz



NRAO Instrument Confi

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File Edit Help

NRAO > User Portal > Observation Preparation | Sources | **Instrument Configurations**

- Personal Catalog
- NRAO Defaults
  - A/Any config
  - C/D/Any confi
  - Pointing setup
  - 4 band setups
  - old B/C/D con

Return to 'Personal Catalog'

ID	Name	Telescope	Band	Correlator	Editor
141395	Line Resource	EVLA	C (4.0GHz - 8.0GHz) 3-dB range: 3.8GHz - 8.2GHz	WIDAR	OSRO

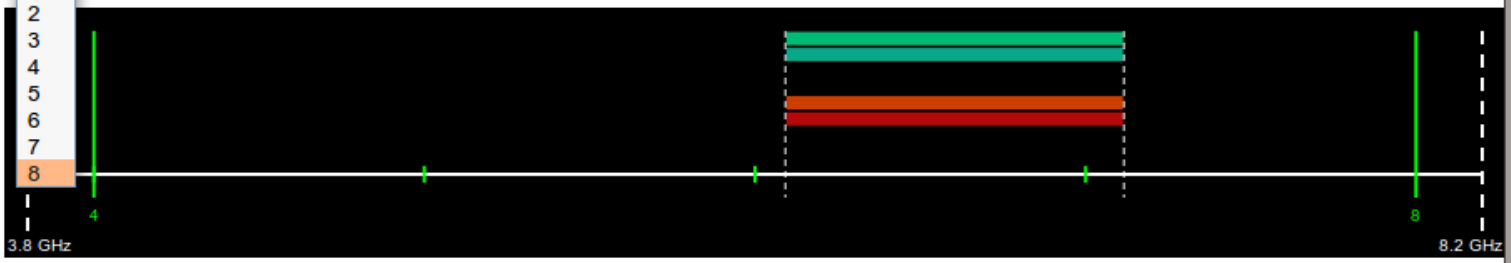
Frequencies

Enabled	Output Pair	SB Center Freq.	Offset Freq. (Optional)	BB Sky Range	Rest/Sky?
☑	AC	6.668GHz	0.0MHz	6.092GHz–7.116GHz	○ Rest ◉ Sky
☑	BD	6.668GHz	0.0MHz	6.092GHz–7.116GHz	○ Rest ◉ Sky

Subband Configuration

# SBs	SB BW	Polarization	Channel Width	AC Sky Range	BD Sky Range
1	128MHz	Full (64 channels/SB)	2.0MHz	6.604GHz - 6.732GHz	6.604GHz - 6.732GHz

1 2 3 4 5 6 7 8



AC

NRAO Instrument Confi

https://e2e.nrao.edu/rct/MyCatalogs.iface;jsessionid=D253223FFD17501FDA446E427F3AB4D4

File Edit Help

NRAO > User Portal > Observation Preparation | Sources | **Instrument Configurations**

- Personal Catalog
- NRAO Defaults
  - A/Any config
  - C/D/Any confi
  - Pointing setup
  - 4 band setups
  - old B/C/D con

Return to 'Personal Catalog'

ID	Name	Telescope	Band	Correlator	Editor
141395	Line Resource	EVLA	C (4.0GHz - 8.0GHz) 3-dB range: 3.8GHz - 8.2GHz	WIDAR	OSRO_EXPANDED

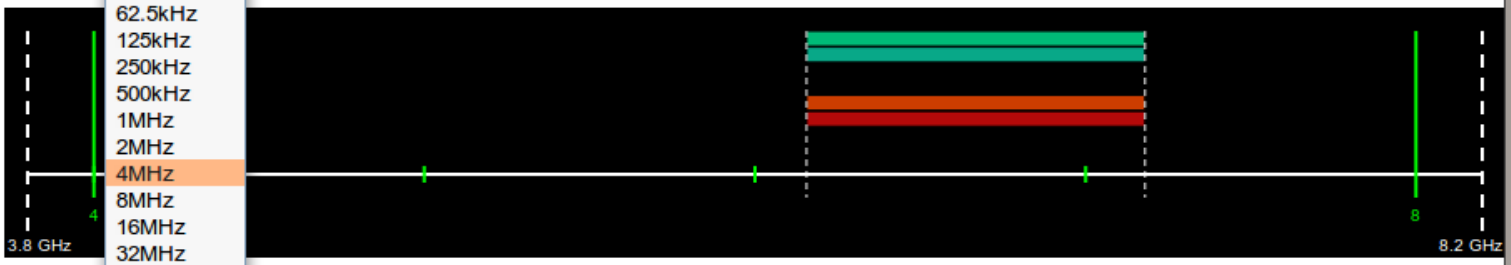
Frequencies

Enabled	Output Pair	SB Center Freq.	Offset Freq. (Optional)	BB Sky Range	Rest/Sky?
☑	AC	6.668GHz	0.0MHz	6.156GHz–7.18GHz	○ Rest ◉ Sky
☑	BD	6.668GHz	0.0MHz	6.156GHz–7.18GHz	○ Rest ◉ Sky

Subband Configuration

# SBs	SB BW	Polarization	Channel Width	AC Sky Range	BD Sky Range
8	128MHz	Full (64 channels/SB)	2.0MHz	6.156GHz - 7.180GHz	6.156GHz - 7.180GHz

31.25kHz
62.5kHz
125kHz
250kHz
500kHz
1MHz
2MHz
4MHz
8MHz
16MHz
32MHz
64MHz
128MHz



AC

NRAO Instrument Confi

https://e2e.nrao.edu/rct/MyCatalogs.iface;jsessionid=D253223FFD17501FDA446E427F3AB4D4

File Edit Help

NRAO > User Portal > Observation Preparation | Sources | **Instrument Configurations**

- Personal Catalog
- NRAO Defaults
  - A/Any config
  - C/D/Any confi
  - Pointing setup
  - 4 band setups
  - old B/C/D con

Return to 'Personal Catalog'

ID	Name	Telescope	Band	Correlator	Editor
141395	Line Resource	EVLA	C (4.0GHz - 8.0GHz) ▾ 3-dB range: 3.8GHz - 8.2GHz	WIDAR	OSRO_EXPANDED

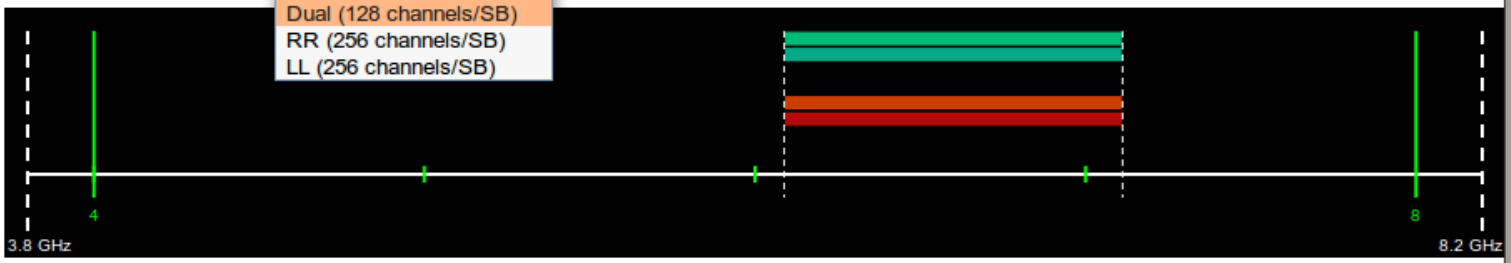
Frequencies

Enabled	Output Pair	SB Center Freq.	Offset Freq. (Optional)	BB Sky Range	Rest/Sky?
☑	AC	6.668GHz	0.0MHz	6.088GHz–7.112GHz	○ Rest ◉ Sky
☑	BD	6.668GHz	0.0MHz	6.088GHz–7.112GHz	○ Rest ◉ Sky

Subband Configuration

# SBs	SB BW	Polarization	Channel Width	AC Sky Range	BD Sky Range
8 ▾	4MHz ▾	Dual (128 channels/SB) ▾	31.25kHz	6.652GHz - 6.684GHz	6.652GHz - 6.684GHz

Full (64 channels/SB)
Dual (128 channels/SB)
RR (256 channels/SB)
LL (256 channels/SB)



AC

NRAO Instrument Confi

https://e2e.nrao.edu/rct/MyCatalogs.iface;jsessionid=D253223FFD17501FDA446E427F3AB4D4

File Edit Help

NRAO > User Portal > Observation Preparation | Sources | **Instrument Configurations**

- Personal Catalog
- NRAO Defaults
  - A/Any config
  - C/D/Any confi
  - Pointing setup
  - 4 band setups
  - old B/C/D con

Return to 'Personal Catalog'

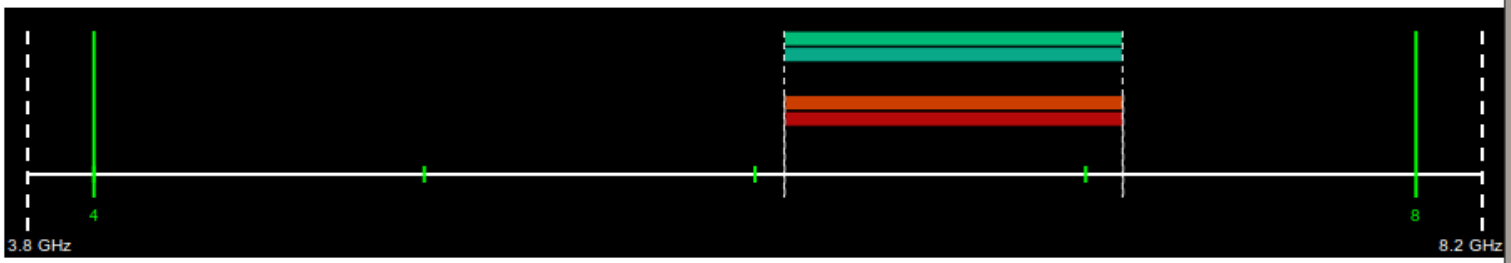
ID	Name	Telescope	Band	Correlator	Editor
141395	Line Resource	EVLA	C (4.0GHz - 8.0GHz) ▾ 3-dB range: 3.8GHz - 8.2GHz	WIDAR	OSRO_EXPANDED

Frequencies

Enabled	Output Pair	SB Center Freq.	Offset Freq. (Optional)	BB Sky Range	Rest/Sky?
☑	AC	6.668GHz	0.0MHz	6.0881GHz–7.1121GHz	◉ Rest ○ Sky
☑	BD	6.668GHz	2.0MHz	6.0901GHz–7.1141GHz	◉ Rest ○ Sky

Subband Configuration

# SBs	SB BW	Polarization	Channel Width	AC Sky Range	BD Sky Range
8 ▾	4MHz ▾	Dual (128 channels/SB) ▾	31.25kHz	6.6521GHz - 6.6841GHz	6.6541GHz - 6.6861GHz



AC

NRAO Instrument Confi

https://e2e.nrao.edu/rct/MyCatalogs.iface;jsessionid=D253223FFD17501FDA446E427F3AB4D4

File Edit Help

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- NRAO Defaults
  - A/Any config
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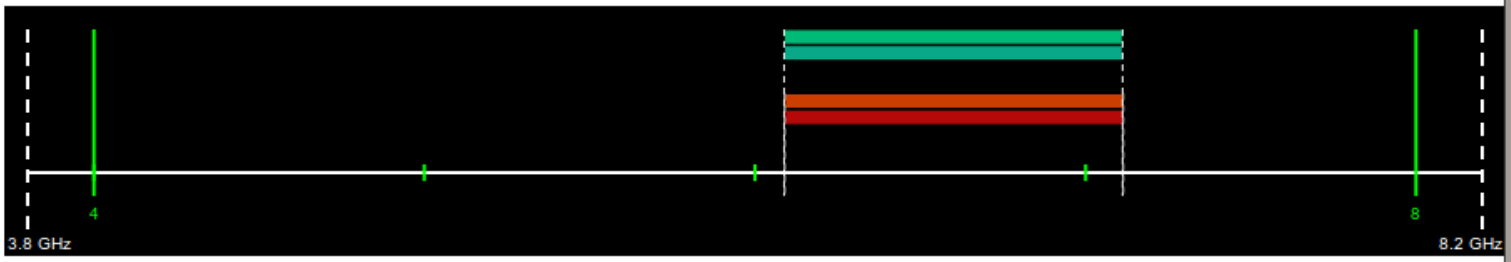
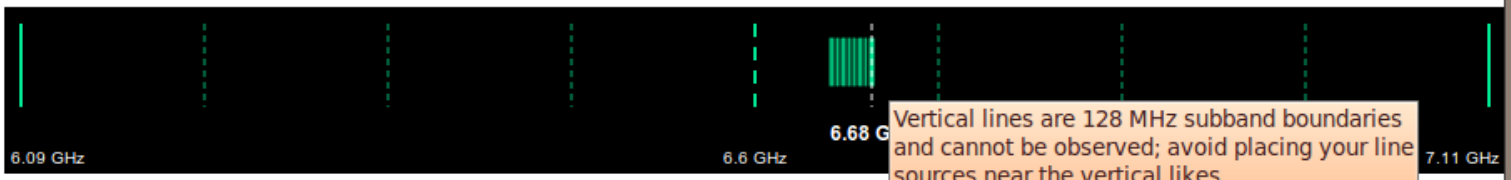
  - Pointing setup
  - 4 band setups
  - old B/C/D con

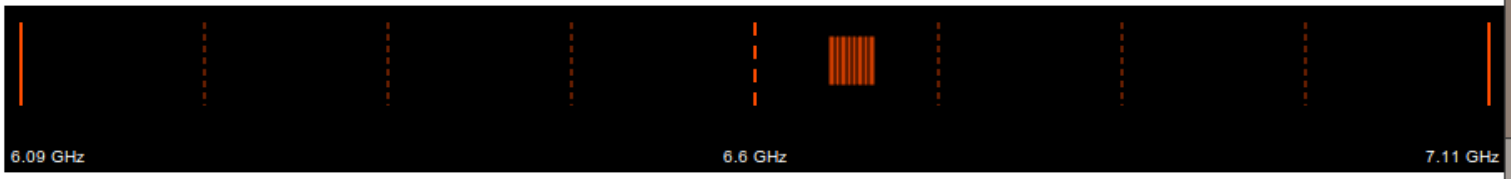


AC



Vertical lines are 128 MHz subband boundaries and cannot be observed; avoid placing your line sources near the vertical likes.

BD



Doppler Setting

Configure separately? Configure together?

Output Pair	Position		Velocity	
	Coordinate System	Equatorial		
	Right Ascension	0h 0m 0.00s	Velocity	0.0 km/s

NRAO Instrument Confi

https://e2e.nrao.edu/rct/MyCatalogs.iface;jsessionid=D253223FFD17501FDA446E427F3AB4D4

File Edit Help

NRAO > User Portal > Observation Preparation | Sources | **Instrument Configurations**

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- NRAO Defaults
  - A/Any config
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  - Pointing setup
  - 4 band setups
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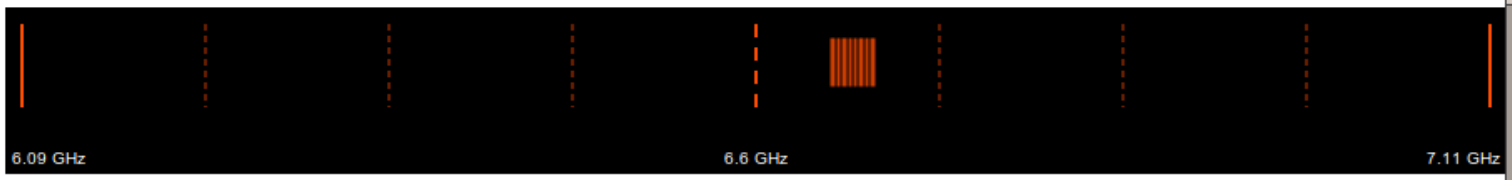

Doppler Setting

Configure separately? Configure together?

Position		Velocity	
Coordinate System	Equatorial		
Right Ascension	0h 0m 0.00s	Velocity	0.0 km/s
Declination	0d 0' 0.00"	Rest Frame	LSR
Epoch	J2000	Convention	Radio
	Select Source		

Correlator Setup

INTEGRATION TIME 1 s

DATA RATE 14.38 Mbytes/s (51.76 Gbytes/hour)

Comments

NRAO Instrument Confi

https://e2e.nrao.edu/rct/MyCatalogs.iface;jsessionid=D253223FFD17501FDA446E427F3AB4D4

File Edit Help

NRAO > User Portal > Observation Preparation | Sources | **Instrument Configurations**

- Personal Catalog
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  - A/Any config
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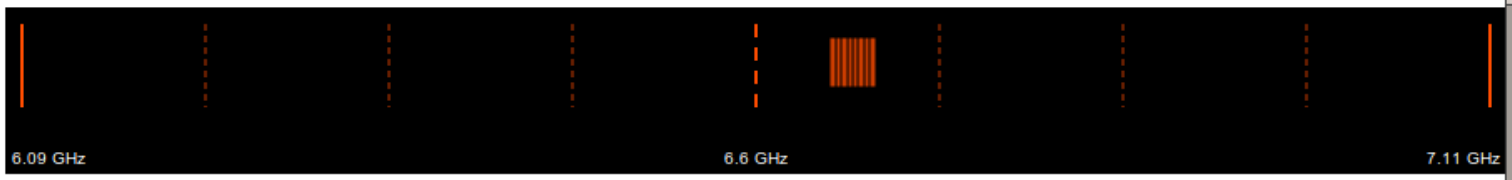
  - Pointing setup
  - 4 band setups
  - old B/C/D con



Doppler Setting

Configure separately? Configure together?

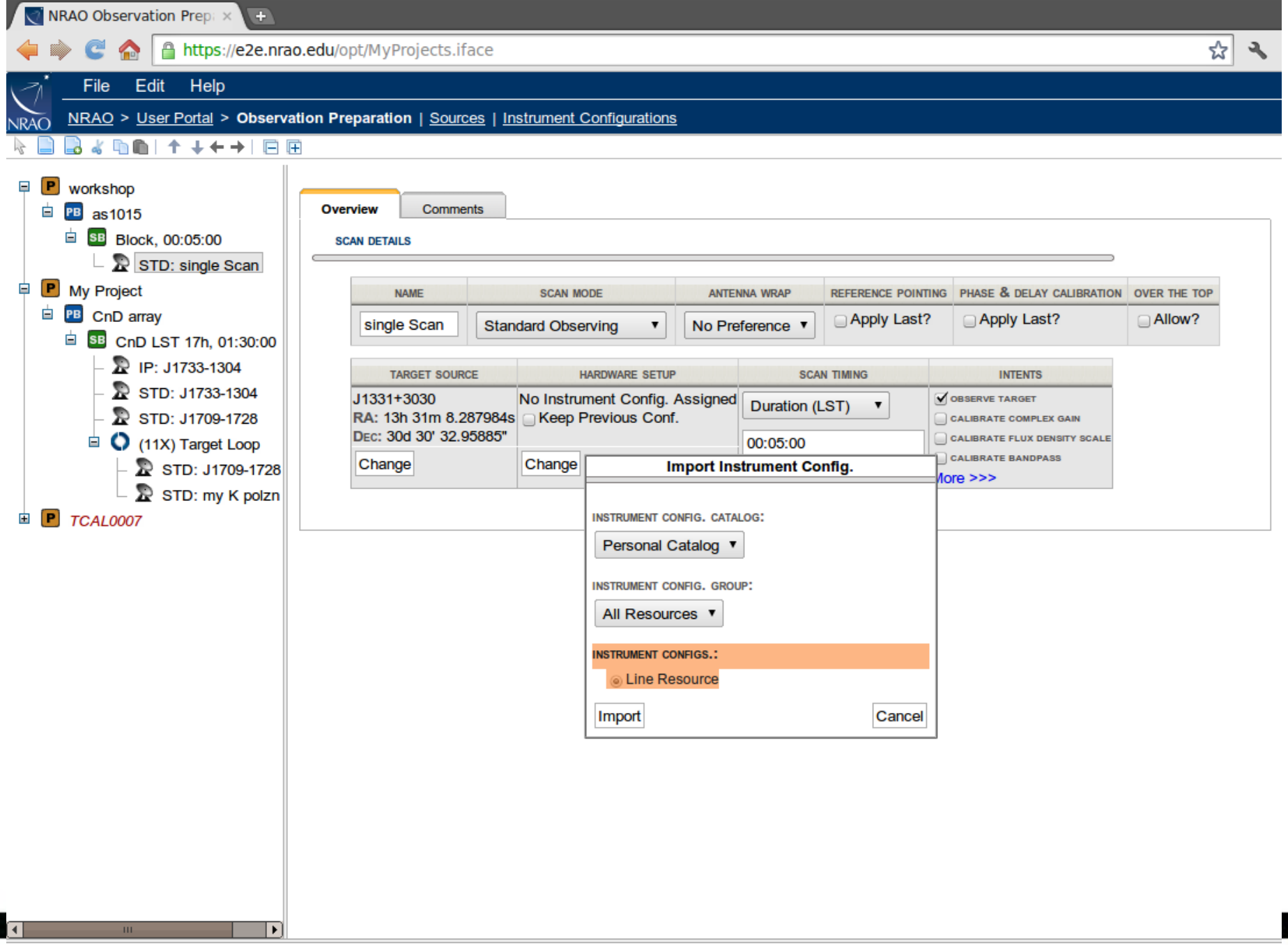
Position		Velocity	
Coordinate System	Equatorial		
Right Ascension	0h 0m 0.00s	Velocity	0.0 km/s
Declination	0d 0' 0.00"	Rest Frame	LSR
Epoch	J2000	Convention	Radio
	Select Source		

Correlator Setup

INTEGRATION TIME 5 s

DATA RATE 2.875 Mbytes/s (10.35 Gbytes/hour)

Comments


NRAO Observation Prep
https://e2e.nrao.edu/opt/MyProjects.iface
File Edit Help
NRAO > User Portal > Observation Preparation | Sources | Instrument Configurations
workshop
as1015
Block, 00:05:00
STD: single Scan
My Project
CnD array
CnD LST 17h, 01:30:00
IP: J1733-1304
STD: J1733-1304
STD: J1709-1728
(11X) Target Loop
STD: J1709-1728
STD: my K polzn
TCAL0007
Overview
Comments
SCAN DETAILS
NAME
SCAN MODE
ANTENNA WRAP
REFERENCE POINTING
PHASE & DELAY CALIBRATION
OVER THE TOP
single Scan
Standard Observing
No Preference
Apply Last?
Apply Last?
Allow?
TARGET SOURCE
HARDWARE SETUP
SCAN TIMING
INTENTS
J1331+3030
RA: 13h 31m 8.287984s
DEC: 30d 30' 32.95885"
No Instrument Config. Assigned
Keep Previous Conf.
Duration (LST)
00:05:00
OBSERVE TARGET
CALIBRATE COMPLEX GAIN
CALIBRATE FLUX DENSITY SCALE
CALIBRATE BANDPASS
More >>>
Change
Change
Import Instrument Config.
INSTRUMENT CONFIG. CATALOG:
Personal Catalog
INSTRUMENT CONFIG. GROUP:
All Resources
INSTRUMENT CONFIGS.:
Line Resource
Import
Cancel

NRAO Observation Prep

https://e2e.nrao.edu/opt/MyProjects.iface#

File Edit Help

NRAO > User Portal > **Observation Preparation** | Sources | Instrument Configurations

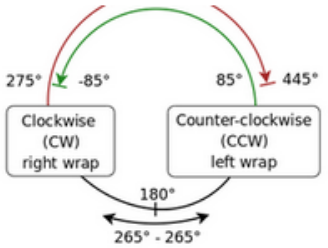
- workshop
  - as1015
    - Block, 00:05:00
      - STD: single Scan
- My Project
- *TCAL0007*

ASSUMED SCHEDULE START: 62543 13:30:00 LST Update Display UTC times

SCHEDULE STOP: 62543 13:35:00 LST

ASSUMED ANTENNA POSITION
AZIMUTH: 225.0d
ELEVATION: 35.0d

LST START RANGE: 07:30:00-19:30:00
WIND CONSTRAINTS: 100.0 m/s
API CONSTRAINTS: 45.0 degrees



- Instrument Configuration Summary
- Time On Source Summary
- Schedule Summary

INSTRUMENT CONFIGURATION SUMMARY

	Name	T_{int} / Band	AC Freq / BD Freq	AC Rest/Sky / BD Rest/Sky	AC Summed BW / BD Summed BW	AC Coverage (%) / BD Coverage (%)	Req. BIBPs / Total BIBPs	# Channels / Min/Max Width	AC Doppler Vel. / BD Doppler Vel.	AC Doppler Pos. / BD Doppler Pos.
1	Line Resource	5s	6.668GHz	Rest	32.0MHz	3.125	16	2048	10.0km/s LSR Radio	13h 31m 8.287984s 30d 30' 32.95885"
		C	6.668GHz	Rest	32.0MHz	3.125	16	31.25kHz / 31.25kHz	10.0km/s LSR Radio	13h 31m 8.287984s 30d 30' 32.95885"

Hide All Subbands | Hide A0/C0 | Hide B0/D0 |

Baseband	#	Bandwidth	Frequency Range	Polarization	BIBPs	Channels	Ch. Width	Phased	Data Rate	Comments
A0/C0	0	4MHz	6.65187707GHz - 6.65587707GHz	Dual Polarization	1	128	31.25kHz	No	0.180 MB/s	
	1	4MHz	6.65587707GHz - 6.65987707GHz	Dual Polarization	1	128	31.25kHz	No	0.180 MB/s	
	2	4MHz	6.65987707GHz - 6.66387707GHz	Dual Polarization	1	128	31.25kHz	No	0.180 MB/s	
	3	4MHz	6.66387707GHz - 6.66787707GHz	Dual Polarization	1	128	31.25kHz	No	0.180 MB/s	
	4	4MHz	6.66787707GHz - 6.67187707GHz	Dual Polarization	1	128	31.25kHz	No	0.180 MB/s	
	5	4MHz	6.67187707GHz - 6.67587707GHz	Dual Polarization	1	128	31.25kHz	No	0.180 MB/s	
	6	4MHz	6.67587707GHz - 6.67987707GHz	Dual Polarization	1	128	31.25kHz	No	0.180 MB/s	
	7	4MHz	6.67987707GHz - 6.68387707GHz	Dual Polarization	1	128	31.25kHz	No	0.180 MB/s	
B0/D0	0	4MHz	6.65387707GHz - 6.65787707GHz	Dual Polarization	1	128	31.25kHz	No	0.180 MB/s	
	1	4MHz	6.65787707GHz - 6.66187707GHz	Dual Polarization	1	128	31.25kHz	No	0.180 MB/s	
	2	4MHz	6.66187707GHz - 6.66587707GHz	Dual Polarization	1	128	31.25kHz	No	0.180 MB/s	
	3	4MHz	6.66587707GHz - 6.66987707GHz	Dual Polarization	1	128	31.25kHz	No	0.180 MB/s	
	4	4MHz	6.66987707GHz - 6.67387707GHz	Dual Polarization	1	128	31.25kHz	No	0.180 MB/s	
	5	4MHz	6.67387707GHz - 6.67787707GHz	Dual Polarization	1	128	31.25kHz	No	0.180 MB/s	
	6	4MHz	6.67787707GHz - 6.68187707GHz	Dual Polarization	1	128	31.25kHz	No	0.180 MB/s	
	7	4MHz	6.68187707GHz - 6.68587707GHz	Dual Polarization	1	128	31.25kHz	No	0.180 MB/s	

- ⚠ Warning: Scheduling block 'Block' of project '3740_1' has no Flux Calibration scans.

- The remaining ~30 slides on how to create a scheduling block are recycled from the SIW, synthesis imaging workshop held in 2010, using the demo data sets used there; they are useful to look at if you like, or have a look at the full, original SIW OPT talk posted on the SIW web pages. Also, the manual has a lot of useful information if you can see through the belated updates; be aware that the OPT software is still changing almost weekly..

- If you encounter problems that are not addressed in the documentation, create a ticket through the NRAO helpdesk: https://help.nrao.edu/ (use your my.nrao.edu account to log in or log in through my.nrao.edu)

- Questions ?

Building Scheduling Blocks (SBs)

- All sources to be used are defined
  - Transferred from the proposal semi-automatically (i.e. check!)
  - Found in existing catalogs
  - Created new
- All sources to be used are conveniently grouped
  - More user friendly if there are many, or from different catalogs
- All resources to be used are defined – see above
- All resources to be used are conveniently grouped – see above
- The project Program Blocks are present
  - Proposal information and read-only details already entered
    - PI and Co-Is, type, array config., time allocated, (priority,) …, (…)

Personal Catalog

NRAO Defaults

INSTRUMENT CONFIGURATIONS IN 'PERSONAL CATALOG' (2)

Select: All | None Show: 25 | 50 | 100 | 200

		Name	Band	Back End	T_{int}	AC BW BD BW	AC Freq BD Freq	Comments
☐		3C391 demo	C	WIDAR	1	128.0MHz 128.0MHz	4.536GHz 7.436GHz	continuum demo SIW2010
☐		IRC demo	Ka	WIDAR	1	8.0MHz 8.0MHz	36.39232GHz 36.30963GHz	

Designing the 3C391 observing run

- 7 field mozaic, 7 sources with roughly equal time on source
  - Enough signal to be able to use self-calibration
- Could use default C band continuum (OSRO1) setup *(but didn't)*
- Flux: **3C286**, can also be used for EVPA calibration *(answer: –66°)*
- Bandpass: **3C84**
- Unpolarized nearby point source: **J1822–0938** (gain, pol.z leakage)
  - C band (i.e. about 5 GHz) thus cycle every ~30 minutes
- Do not break into small observing runs (polarization angle)
- Spread sources over hour angle for best *(u,v)*-coverage
  - Set up sequence and loop several times
- Spread polarization leakage calibrator: include in loop

NRAO Observation Preparation Tool - Mozilla Firefox

File Edit View History Bookmarks Tools Help

nrao.edu https://e2e.nrao.edu/opt/MyProjects.iface

NRAO | Expanded Very Large Array... | NRAO Observation Preparati...

File Edit Help

NRAO > User Portal > **Observation Preparation** | Sources | Instrument Configurations

- *SIW 3C391*
  - *D array*
    - *3c391 mozaic, 0:00:00*
- SIW IRC10216

Scheduling Block Details | Scheduling Block Summary | Validation and Submission | Bulk Scan Edit

SCHEDULING BLOCK DETAILS

GENERATED ID 1502219

NAME 3c391 mozaic

STATUS Not Submitted

COUNT 1

COMPLETED 0

TOTAL TIME 0:00:00

TIME PER EXECUTION 0:00:00

SCHEDULE TYPE Dynamic

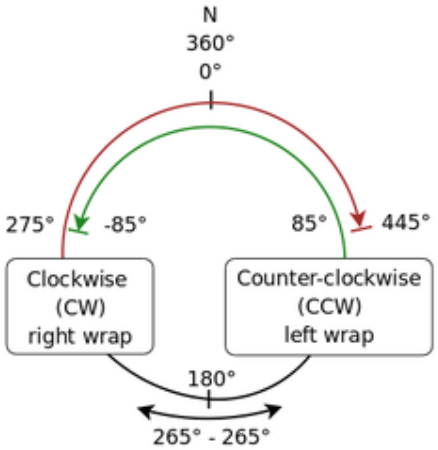
LST START RANGE 14 : 30 – 15 : 00

NO CONSTRAINT:

START AFTER DATE (OPTIONAL) yyyy - MM - dd

SHADOWING LIMIT (MAX) 0.0 m

IN CONFIGURATION D



Done

NRAO Observation Preparation Tool - Mozilla Firefox
File Edit View History Bookmarks Tools Help
nrao.edu https://e2e.nrao.edu/opt/MyProjects.iface
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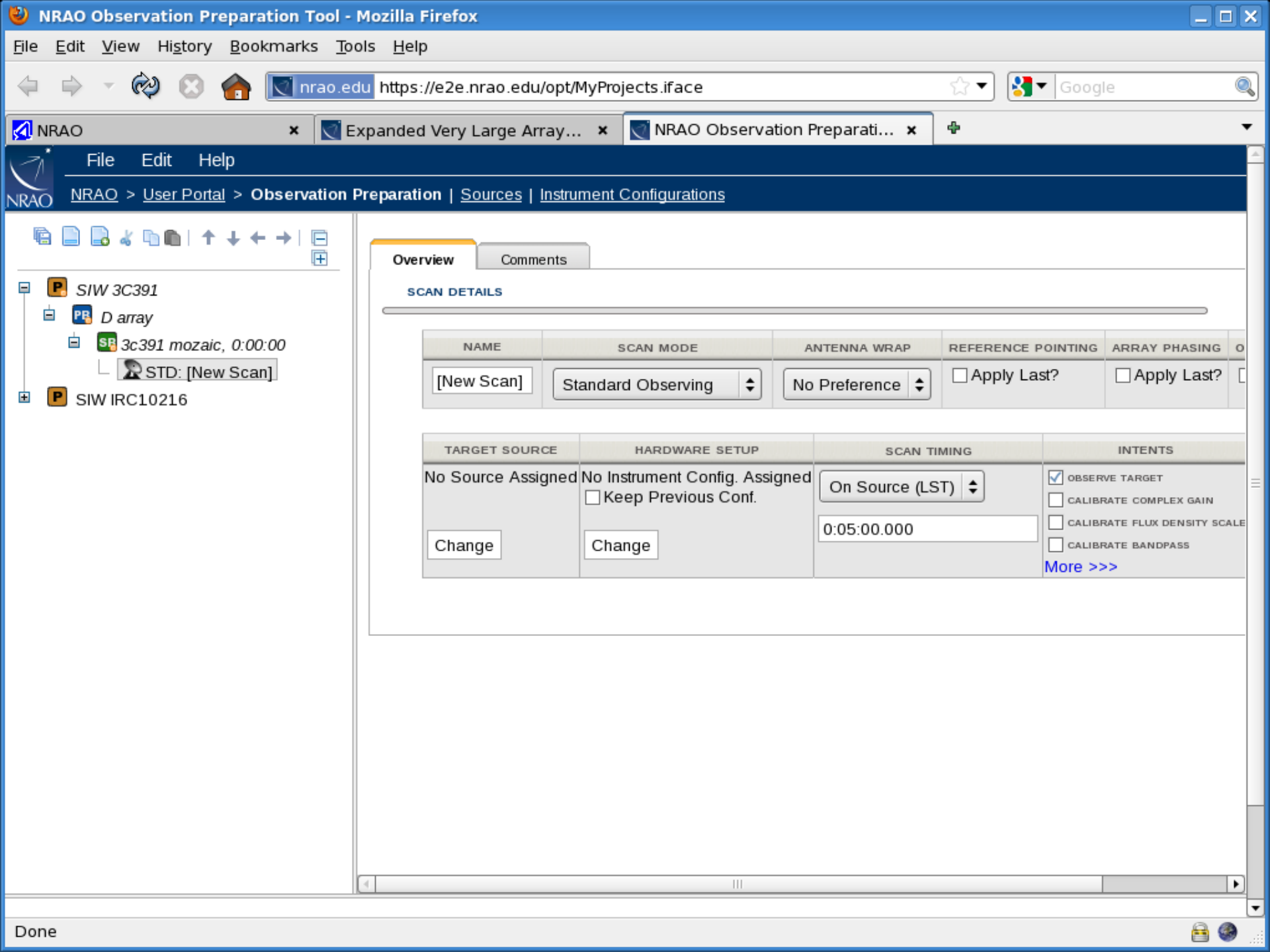
File Edit Help
NRAO > User Portal > Observation Preparation | Sources | Instrument Configurations
SIW 3C391
D array
3c391 mozaic, 0:00:00
STD: [New Scan]
SIW IRC10216
ASSUMED ANTENNA STARTING POSITION
COORDINATE SYSTEM HORIZONTAL
AZIMUTH 225.0d
ELEVATION 35.0d
SCHEDULING CONSTRAINTS/CONDITIONS
Description | Wind | Atmospheric Phase Limit
Lowest Frequencies (4, P, and L) | Any | Any
2.0GHz - 4.0GHz (S) | Any | 60.0 degrees
4.0GHz - 8.0GHz (C) | Any | 45.0 degrees
8.0GHz - 8.8GHz (X) | 15.0 m/s | 30.0 degrees
12.0GHz - 18.0GHz (Ku) | 10.0 m/s | 15.0 degrees
18.0GHz - 26.5GHz (K) | 7.0 m/s | 10.0 degrees
26.5GHz - 40.0GHz (Ka) | 6.0 m/s | 7.0 degrees
40.0GHz - 50.0GHz (Q) | 5.0 m/s | 5.0 degrees
Specified Constraints m/s degrees
COMMENTS TO THE OPERATOR
Done


NRAO Observation Preparation Tool - Mozilla Firefox
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Expanded Very Large Array...
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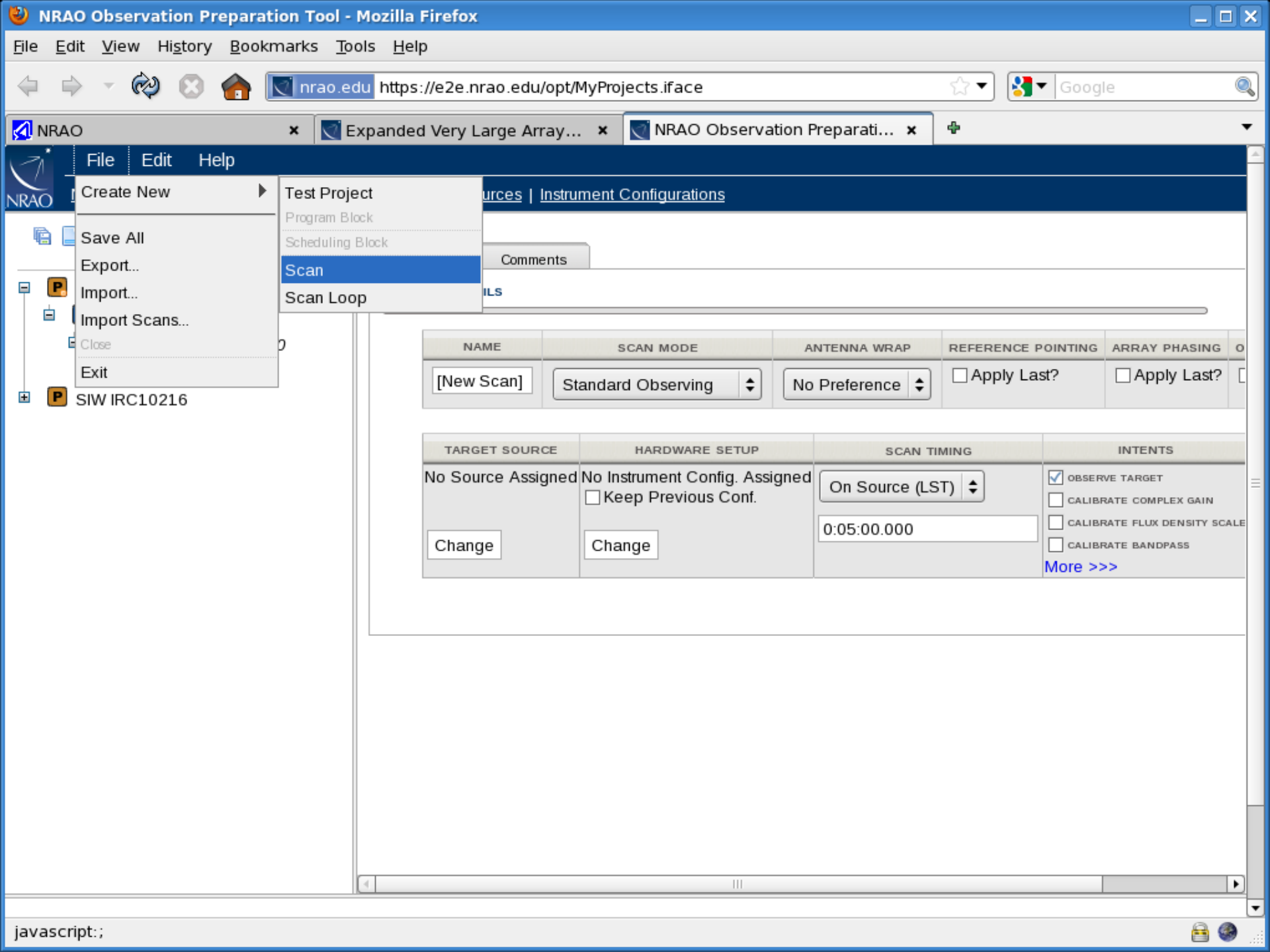
File Edit Help
NRAO > User Portal > Observation Preparation | Sources | Instrument Configurations
SIW 3C391
D array
3c391 mozaic, 0:00:00
STD: [New Scan]
SIW IRC10216
Overview
Comments
SCAN DETAILS
NAME
SCAN MODE
ANTENNA WRAP
REFERENCE POINTING
ARRAY PHASING
[New Scan]
Standard Observing
No Preference
Apply Last?
Apply Last?
TARGET SOURCE
HARDWARE SETUP
SCAN TIMING
INTENTS
No Source Assigned
No Instrument Config. Assigned
Keep Previous Conf.
On Source (LST)
0:05:00.000
OBSERVE TARGET
CALIBRATE COMPLEX GAIN
CALIBRATE FLUX DENSITY SCALE
CALIBRATE BANDPASS
Change
Change
More >>>
Done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File Edit View History Bookmarks Tools Help
nrao.edu https://e2e.nrao.edu/opt/MyProjects.iface
Google
NRAO
Expanded Very Large Array...
NRAO Observation Preparati...
File Edit Help
Create New
Save All
Export...
Import...
Import Scans...
Close
Exit
Test Project
Program Block
Scheduling Block
Scan
Scan Loop
Instrument Configurations
Comments
SIW IRC10216
NAME
SCAN MODE
ANTENNA WRAP
REFERENCE POINTING
ARRAY PHASING
[New Scan]
Standard Observing
No Preference
Apply Last?
Apply Last?
TARGET SOURCE
HARDWARE SETUP
SCAN TIMING
INTENTS
No Source Assigned
No Instrument Config. Assigned
Keep Previous Conf.
On Source (LST)
0:05:00.000
OBSERVE TARGET
CALIBRATE COMPLEX GAIN
CALIBRATE FLUX DENSITY SCALE
CALIBRATE BANDPASS
Change
Change
More >>>
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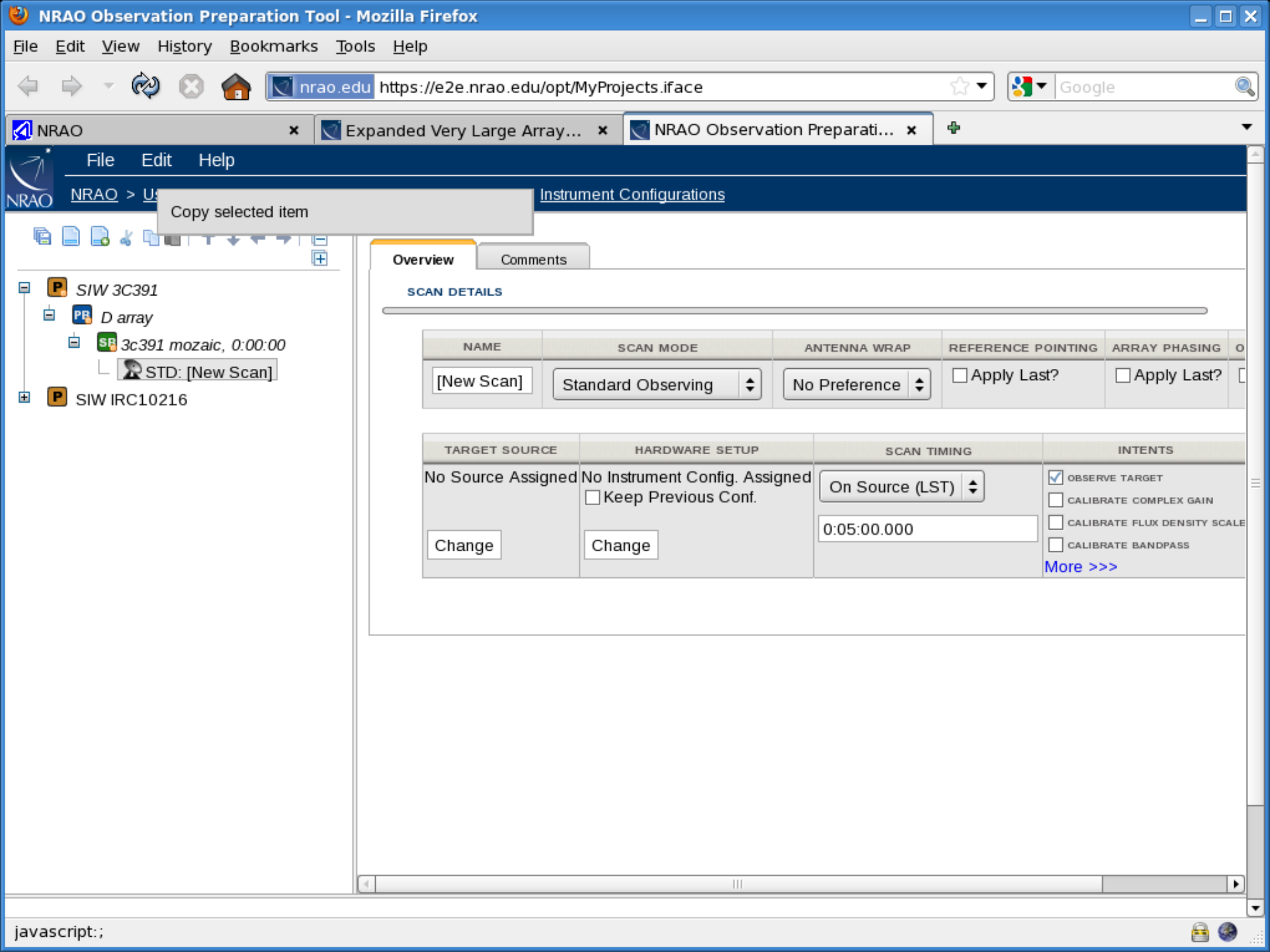
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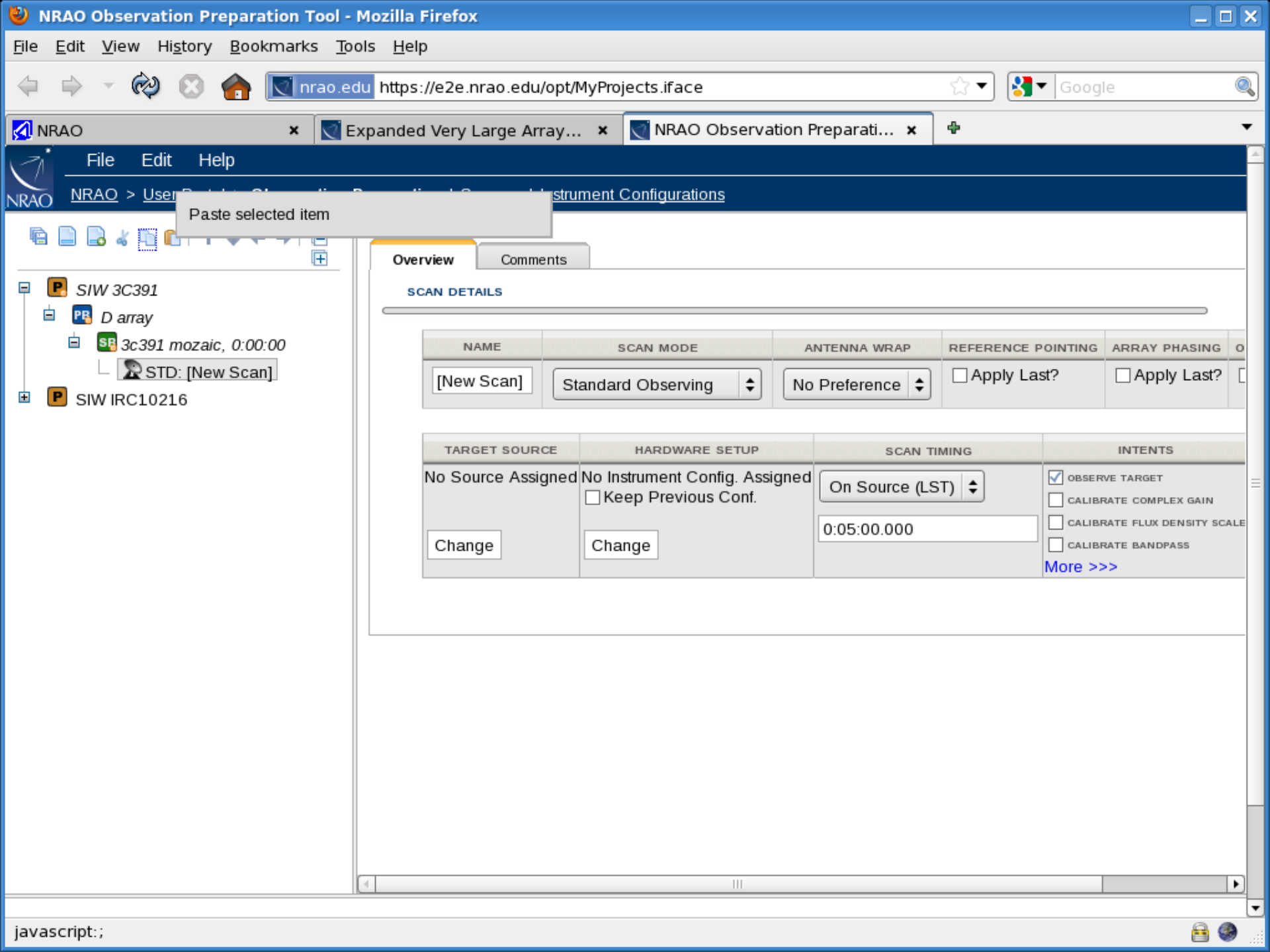
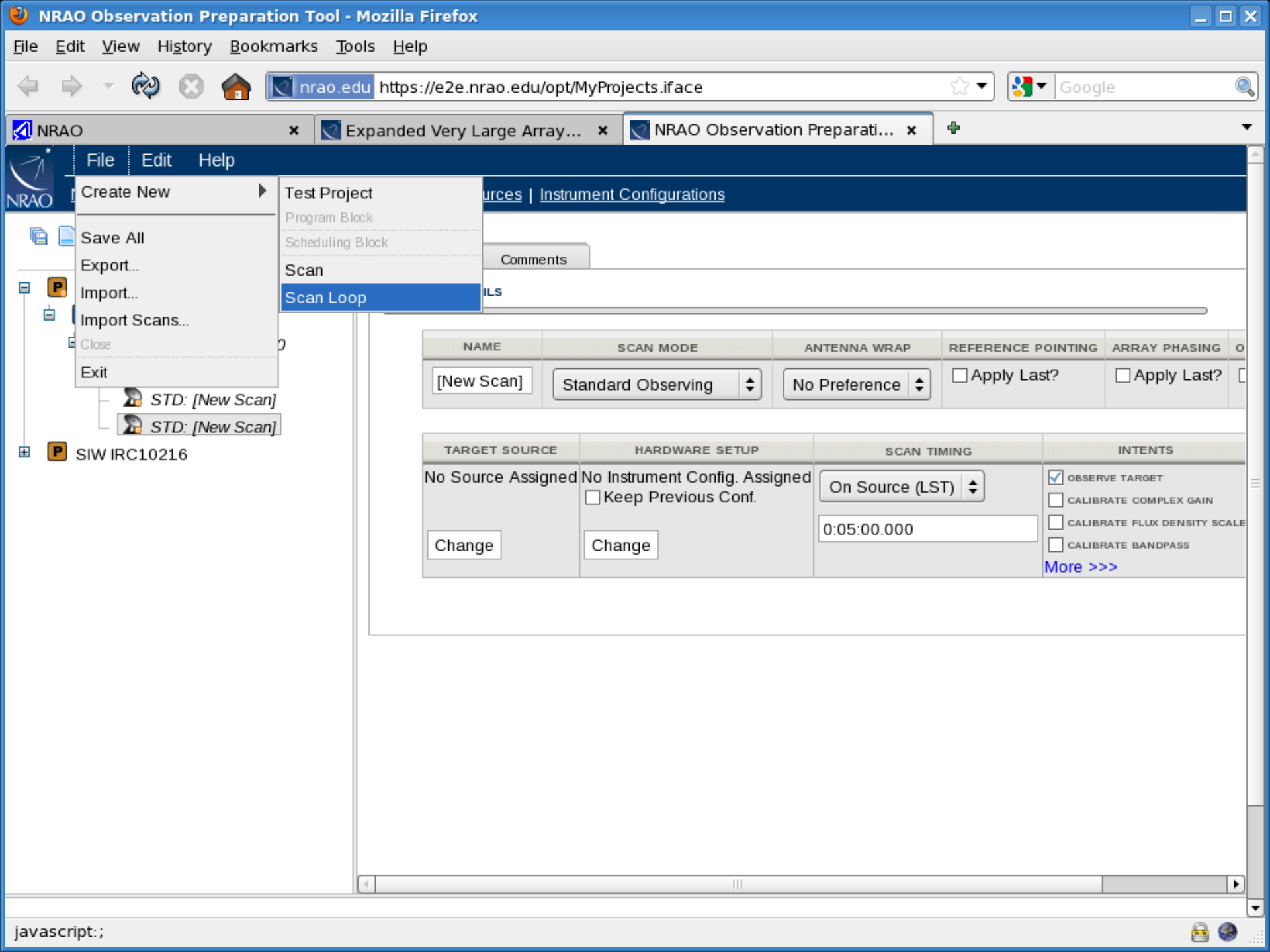
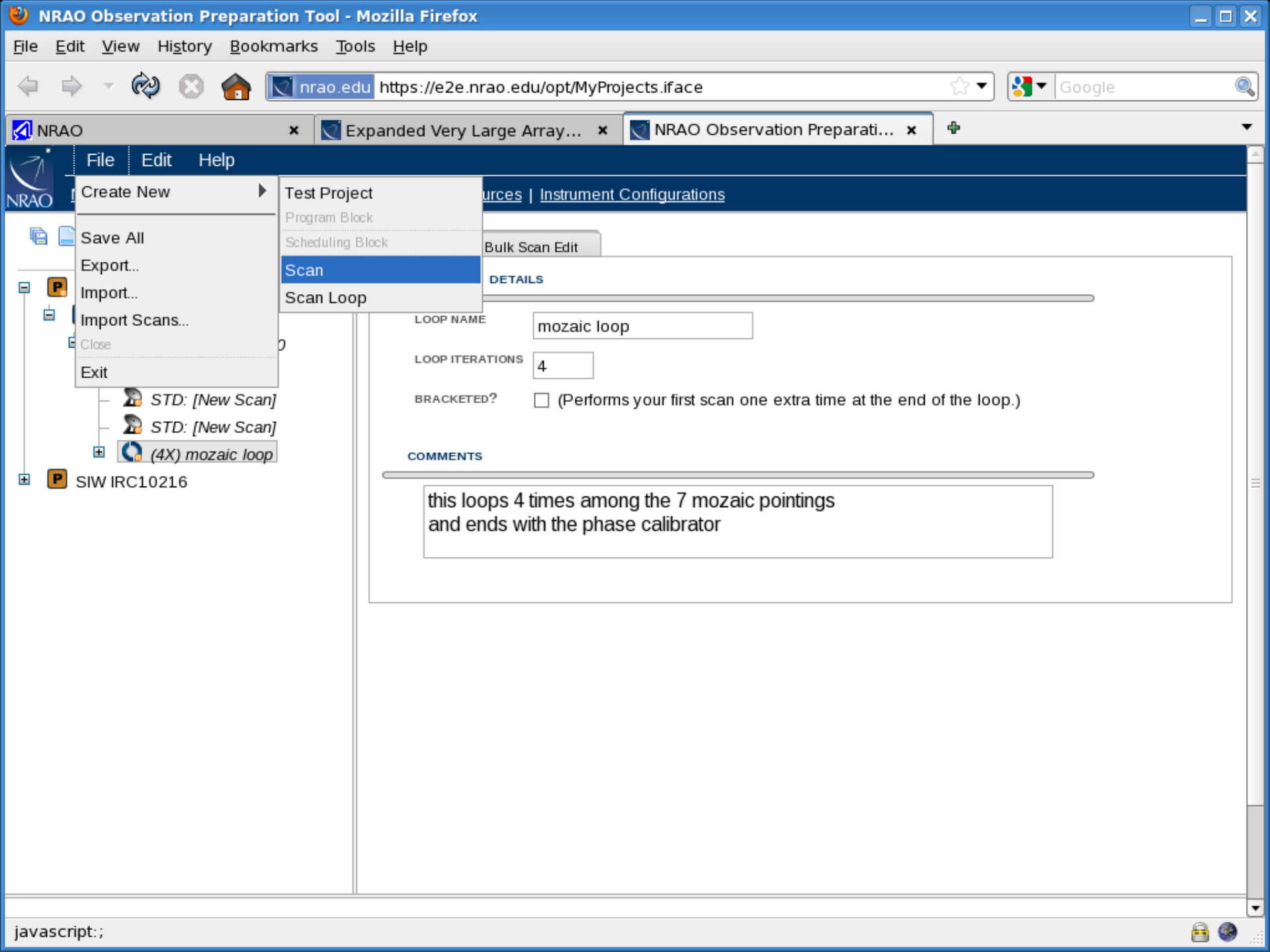
Instrument Configurations
Copy selected item
SIW 3C391
D array
3c391 mozaic, 0:00:00
STD: [New Scan]
SIW IRC10216
Overview
Comments
SCAN DETAILS
NAME
SCAN MODE
ANTENNA WRAP
REFERENCE POINTING
ARRAY PHASING
[New Scan]
Standard Observing
No Preference
Apply Last?
Apply Last?
TARGET SOURCE
HARDWARE SETUP
SCAN TIMING
INTENTS
No Source Assigned
No Instrument Config. Assigned
Keep Previous Conf.
On Source (LST)
0:05:00.000
OBSERVE TARGET
CALIBRATE COMPLEX GAIN
CALIBRATE FLUX DENSITY SCALE
CALIBRATE BANDPASS
Change
Change
More >>>
javascript:;


NRAO Observation Preparation Tool - Mozilla Firefox
File Edit View History Bookmarks Tools Help
nrao.edu https://e2e.nrao.edu/opt/MyProjects.iface
Google
NRAO
Expanded Very Large Array...
NRAO Observation Preparati...
File Edit Help
NRAO > User
strument Configurations
Paste selected item
SIW 3C391
D array
3c391 mozaic, 0:00:00
STD: [New Scan]
SIW IRC10216
Overview
Comments
SCAN DETAILS
NAME
SCAN MODE
ANTENNA WRAP
REFERENCE POINTING
ARRAY PHASING
[New Scan]
Standard Observing
No Preference
Apply Last?
Apply Last?
TARGET SOURCE
HARDWARE SETUP
SCAN TIMING
INTENTS
No Source Assigned
No Instrument Config. Assigned
Keep Previous Conf.
On Source (LST)
0:05:00.000
OBSERVE TARGET
CALIBRATE COMPLEX GAIN
CALIBRATE FLUX DENSITY SCALE
CALIBRATE BANDPASS
Change
Change
More >>>
javascript:;


NRAO Observation Preparation Tool - Mozilla Firefox
File Edit View History Bookmarks Tools Help
nrao.edu https://e2e.nrao.edu/opt/MyProjects.iface
Google
NRAO
Expanded Very Large Array...
NRAO Observation Preparati...
File Edit Help
Create New
Save All
Export...
Import...
Import Scans...
Close
Exit
Test Project
Program Block
Scheduling Block
Scan
Scan Loop
urces | Instrument Configurations
Comments
ILS
NAME
SCAN MODE
ANTENNA WRAP
REFERENCE POINTING
ARRAY PHASING
[New Scan]
Standard Observing
No Preference
Apply Last?
Apply Last?
TARGET SOURCE
HARDWARE SETUP
SCAN TIMING
INTENTS
No Source Assigned
No Instrument Config. Assigned
Keep Previous Conf.
On Source (LST)
0:05:00.000
OBSERVE TARGET
CALIBRATE COMPLEX GAIN
CALIBRATE FLUX DENSITY SCALE
CALIBRATE BANDPASS
Change
Change
More >>>
STD: [New Scan]
STD: [New Scan]
SIW IRC10216
javascript:;


NRAO Observation Preparation Tool - Mozilla Firefox
File Edit View History Bookmarks Tools Help
nrao.edu https://e2e.nrao.edu/opt/MyProjects.iface
Google
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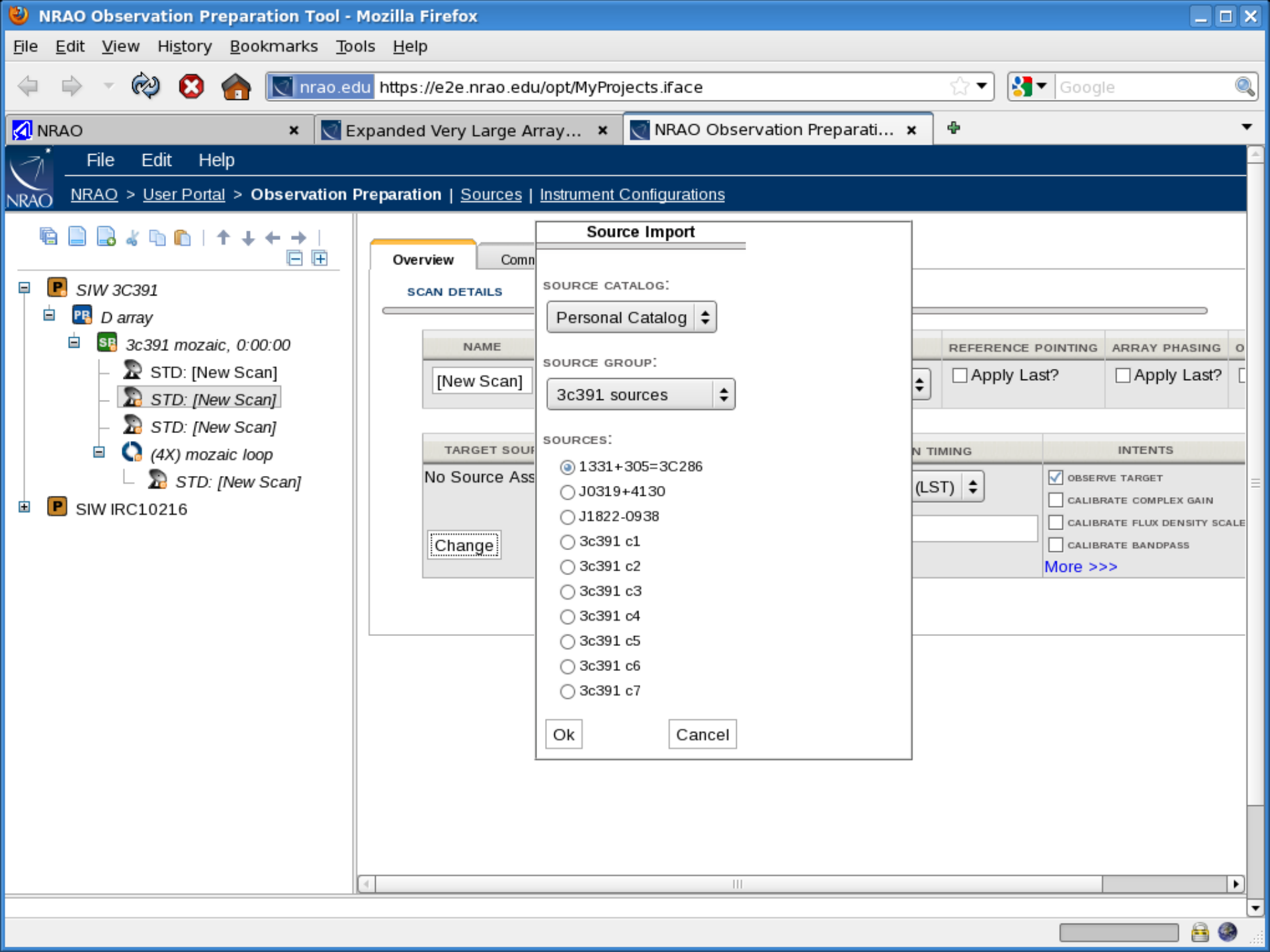
File Edit Help
Create New
Save All
Export...
Import...
Import Scans...
Close
Exit
Test Project
Program Block
Scheduling Block
Scan
Scan Loop
urces | Instrument Configurations
Bulk Scan Edit
DETAILS
LOOP NAME
mozaic loop
LOOP ITERATIONS
4
BRACKETED?
(Performs your first scan one extra time at the end of the loop.)
COMMENTS
this loops 4 times among the 7 mozaic pointings
and ends with the phase calibrator
STD: [New Scan]
STD: [New Scan]
(4X) mozaic loop
SIW IRC10216
javascript:;


NRAO Observation Preparation Tool - Mozilla Firefox
File Edit View History Bookmarks Tools Help
nrao.edu https://e2e.nrao.edu/opt/MyProjects.iface
Google
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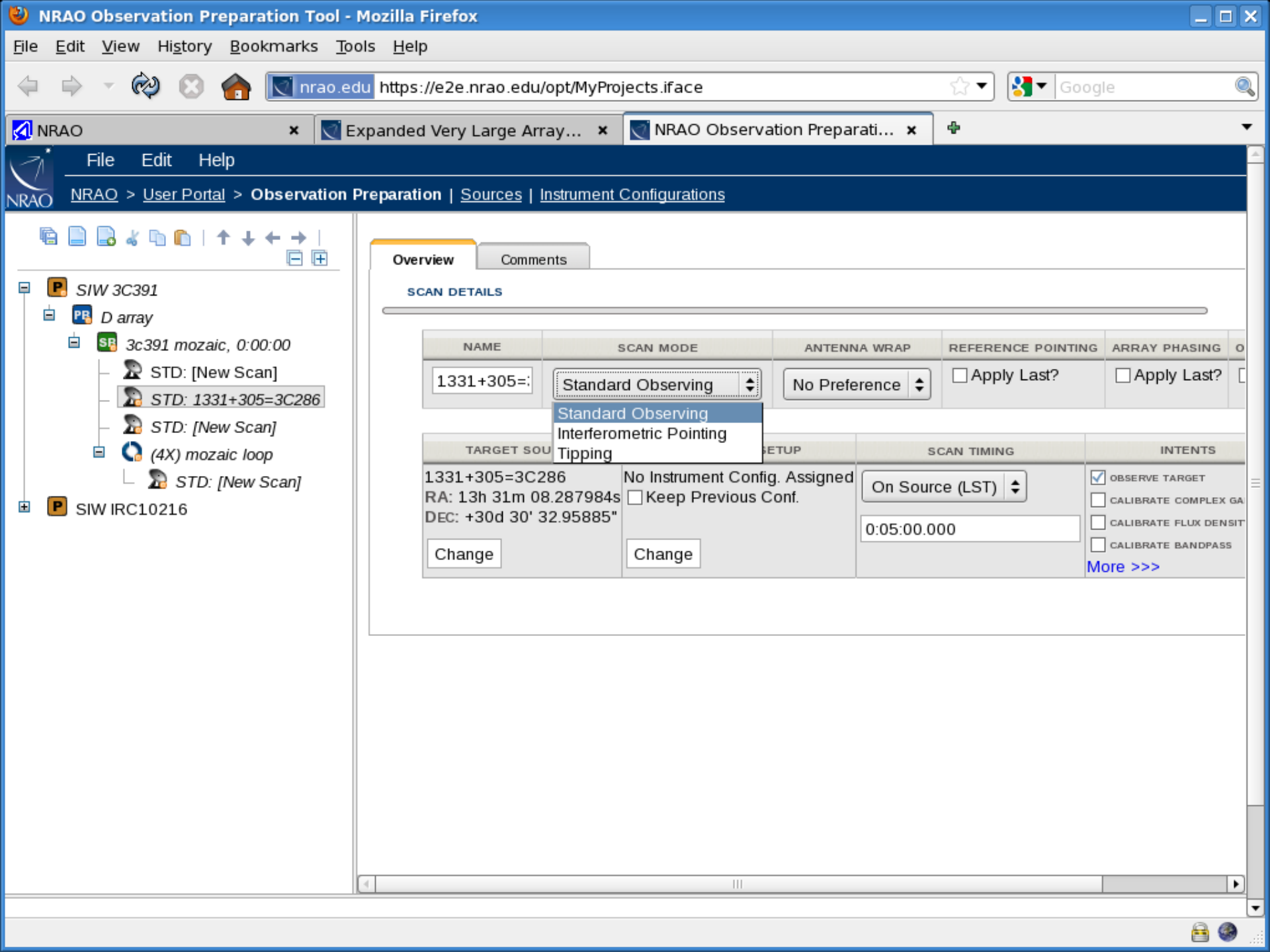
Expanded Very Large Array...
NRAO Observation Preparati...
File Edit Help
NRAO > User Portal > Observation Preparation | Sources | Instrument Configurations
SIW 3C391
D array
3c391 mozaic, 0:00:00
STD: [New Scan]
STD: [New Scan]
STD: [New Scan]
(4X) mozaic loop
STD: [New Scan]
SIW IRC10216
Overview
Comn
SCAN DETAILS
NAME
[New Scan]
TARGET SOUR
No Source Ass
Change
REFERENCE POINTING
Apply Last?
ARRAY PHASING
Apply Last?
N TIMING
(LST)
INTENTS
OBSERVE TARGET
CALIBRATE COMPLEX GAIN
CALIBRATE FLUX DENSITY SCALE
CALIBRATE BANDPASS
More >>>
Source Import
SOURCE CATALOG:
Personal Catalog
SOURCE GROUP:
3c391 sources
SOURCES:
1331+305=3C286
J0319+4130
J1822-0938
3c391 c1
3c391 c2
3c391 c3
3c391 c4
3c391 c5
3c391 c6
3c391 c7
Ok
Cancel


NRAO Observation Preparation Tool - Mozilla Firefox
File Edit View History Bookmarks Tools Help
nrao.edu https://e2e.nrao.edu/opt/MyProjects.iface
Google
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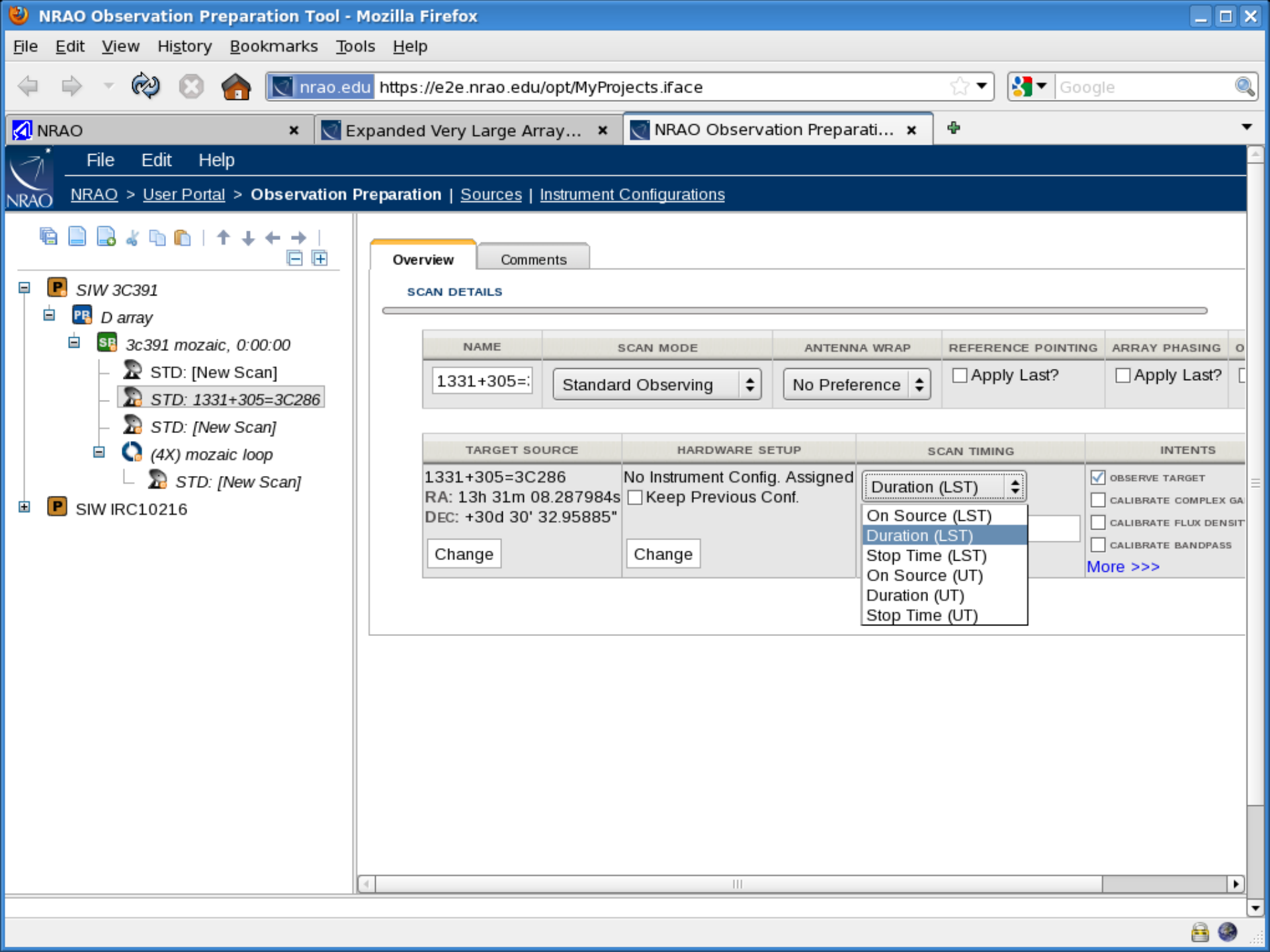
Expanded Very Large Array...
NRAO Observation Preparati...
File Edit Help
NRAO > User Portal > Observation Preparation | Sources | Instrument Configurations
SIW 3C391
D array
3c391 mozaic, 0:00:00
STD: [New Scan]
STD: 1331+305=3C286
STD: [New Scan]
(4X) mozaic loop
STD: [New Scan]
SIW IRC10216
Overview
Comments
SCAN DETAILS
NAME
SCAN MODE
ANTENNA WRAP
REFERENCE POINTING
ARRAY PHASING
1331+305=:
Standard Observing
No Preference
Apply Last?
Apply Last?
Standard Observing
Interferometric Pointing
Tipping
TARGET SOU
SETUP
SCAN TIMING
INTENTS
1331+305=3C286
RA: 13h 31m 08.287984s
DEC: +30d 30' 32.95885"
Change
No Instrument Config. Assigned
Keep Previous Conf.
Change
On Source (LST)
0:05:00.000
OBSERVE TARGET
CALIBRATE COMPLEX GA
CALIBRATE FLUX DENSIT
CALIBRATE BANDPASS
More >>>


NRAO Observation Preparation Tool - Mozilla Firefox
File Edit View History Bookmarks Tools Help
nrao.edu https://e2e.nrao.edu/opt/MyProjects.iface
Google
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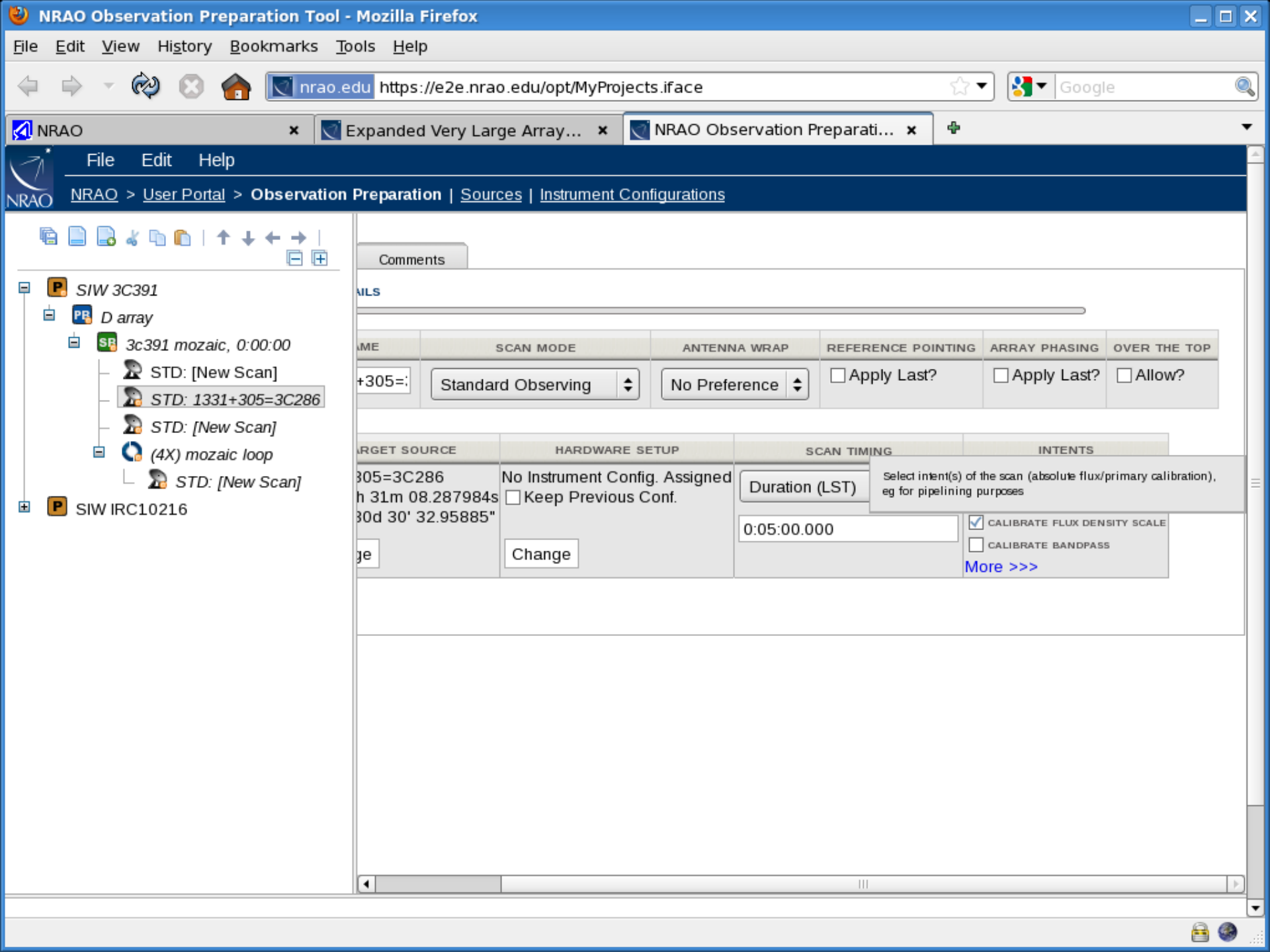
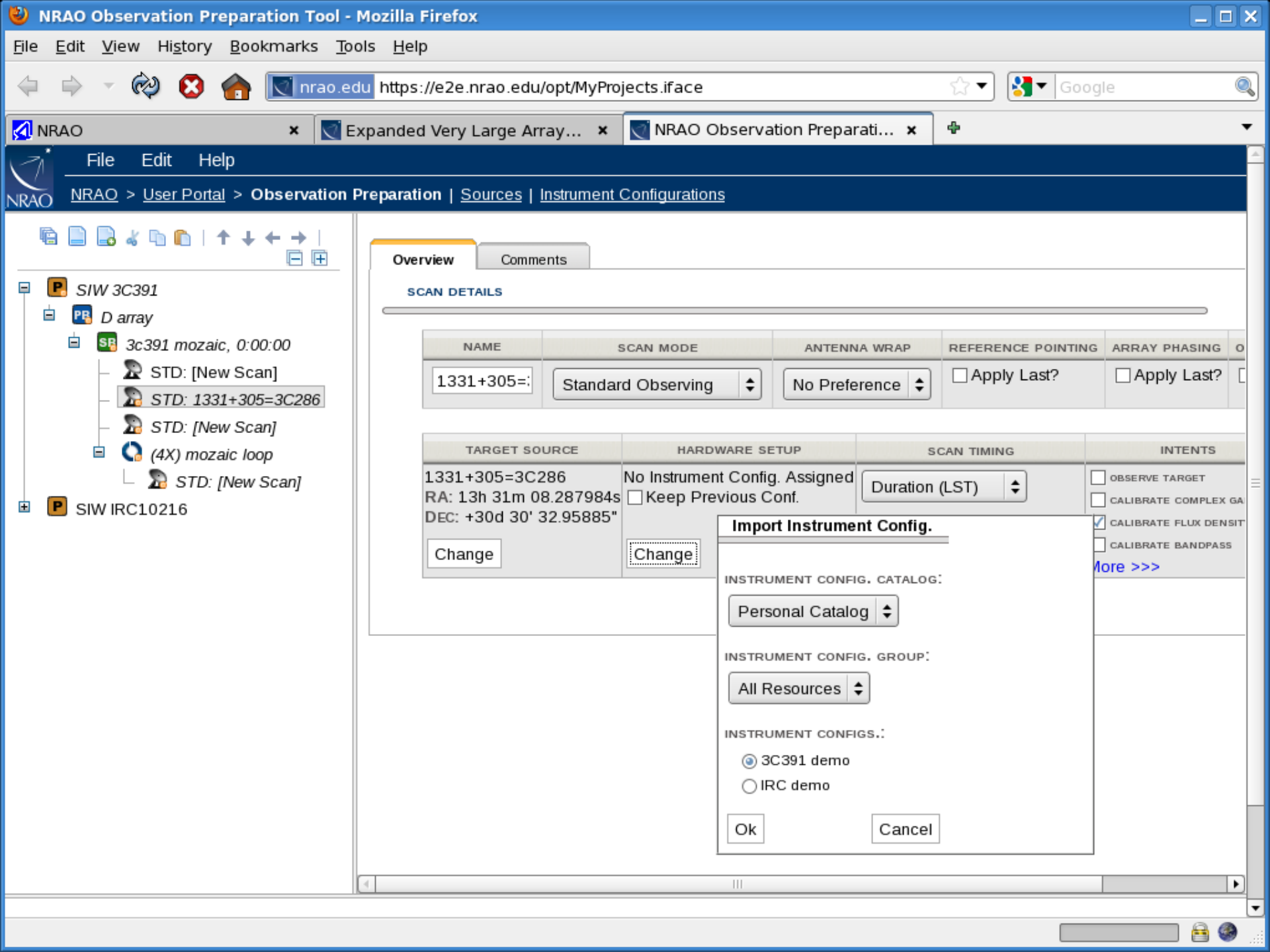
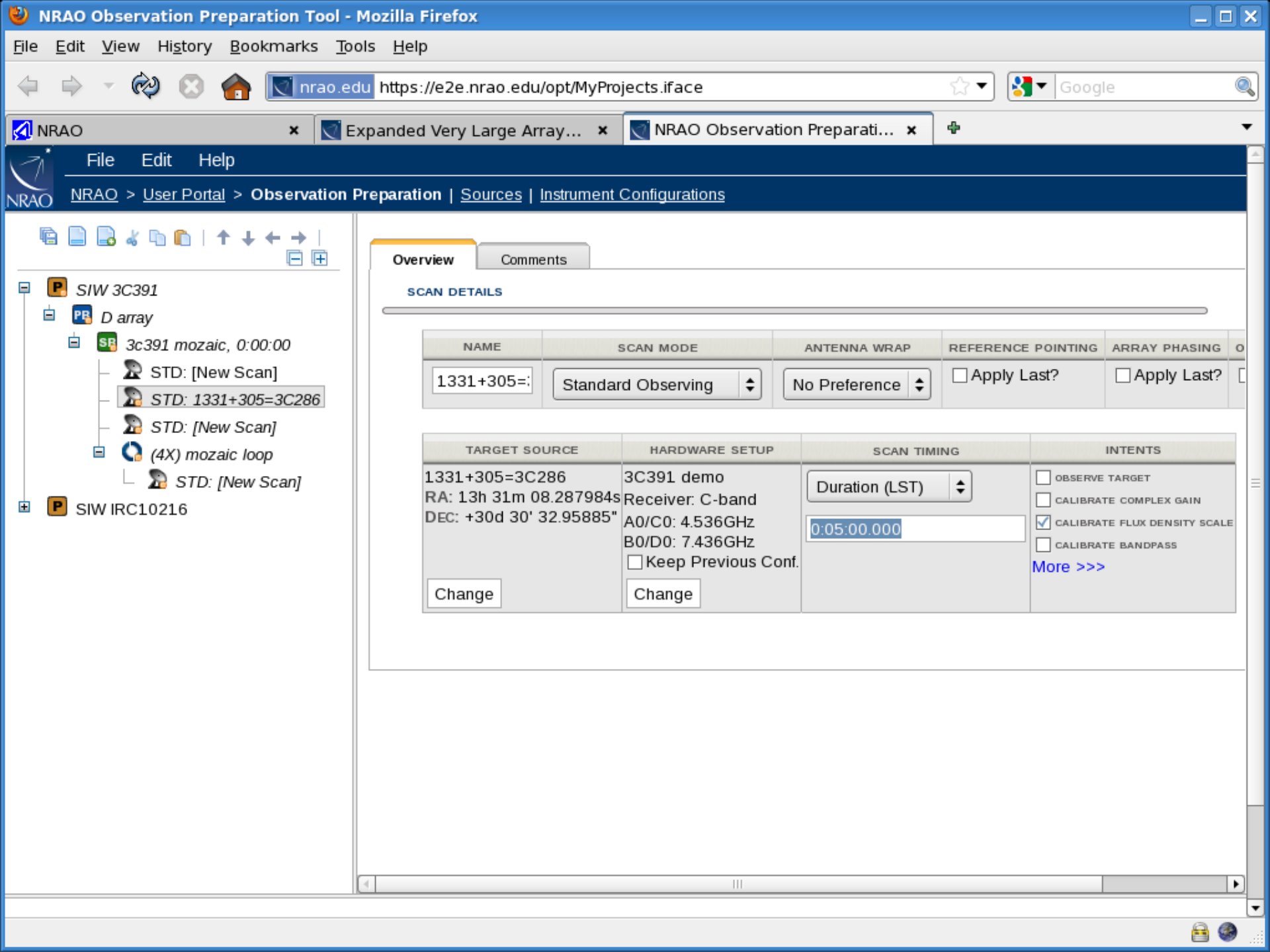
Expanded Very Large Array...
NRAO Observation Preparati...
File Edit Help
NRAO > User Portal > Observation Preparation | Sources | Instrument Configurations
SIW 3C391
D array
3c391 mozaic, 0:00:00
STD: [New Scan]
STD: 1331+305=3C286
STD: [New Scan]
(4X) mozaic loop
STD: [New Scan]
SIW IRC10216
Overview
Comments
SCAN DETAILS
NAME
SCAN MODE
ANTENNA WRAP
REFERENCE POINTING
ARRAY PHASING
1331+305=:
Standard Observing
No Preference
Apply Last?
Apply Last?
TARGET SOURCE
HARDWARE SETUP
SCAN TIMING
INTENTS
1331+305=3C286
RA: 13h 31m 08.287984s
DEC: +30d 30' 32.95885"
Change
No Instrument Config. Assigned
Keep Previous Conf.
Change
Duration (LST)
On Source (LST)
Duration (LST)
Stop Time (LST)
On Source (UT)
Duration (UT)
Stop Time (UT)
OBSERVE TARGET
CALIBRATE COMPLEX GA
CALIBRATE FLUX DENSIT
CALIBRATE BANDPASS
More >>>


NRAO Observation Preparation Tool - Mozilla Firefox
File Edit View History Bookmarks Tools Help
nrao.edu https://e2e.nrao.edu/opt/MyProjects.iface
Google
NRAO
Expanded Very Large Array...
NRAO Observation Preparati...
File Edit Help
NRAO > User Portal > Observation Preparation | Sources | Instrument Configurations
SIW 3C391
D array
3c391 mozaic, 0:00:00
STD: [New Scan]
STD: 1331+305=3C286
STD: [New Scan]
(4X) mozaic loop
STD: [New Scan]
SIW IRC10216
Comments
SCAN MODE
ANTENNA WRAP
REFERENCE POINTING
ARRAY PHASING
OVER THE TOP
Standard Observing
No Preference
Apply Last?
Apply Last?
Allow?
HARDWARE SETUP
SCAN TIMING
INTENTS
No Instrument Config. Assigned
Keep Previous Conf.
Change
Duration (LST)
0:05:00.000
Select intent(s) of the scan (absolute flux/primary calibration), eg for pipelining purposes
CALIBRATE FLUX DENSITY SCALE
CALIBRATE BANDPASS
More >>>


NRAO Observation Preparation Tool - Mozilla Firefox
File Edit View History Bookmarks Tools Help
nrao.edu https://e2e.nrao.edu/opt/MyProjects.iface
Google
NRAO
Expanded Very Large Array...
NRAO Observation Preparati...
File Edit Help
NRAO > User Portal > Observation Preparation | Sources | Instrument Configurations
SIW 3C391
D array
3c391 mozaic, 0:00:00
STD: [New Scan]
STD: 1331+305=3C286
STD: [New Scan]
(4X) mozaic loop
STD: [New Scan]
SIW IRC10216
Overview
Comments
SCAN DETAILS
NAME
SCAN MODE
ANTENNA WRAP
REFERENCE POINTING
ARRAY PHASING
1331+305=:
Standard Observing
No Preference
Apply Last?
Apply Last?
TARGET SOURCE
HARDWARE SETUP
SCAN TIMING
INTENTS
1331+305=3C286
RA: 13h 31m 08.287984s
DEC: +30d 30' 32.95885"
No Instrument Config. Assigned
Keep Previous Conf.
Duration (LST)
OBSERVE TARGET
CALIBRATE COMPLEX GA
CALIBRATE FLUX DENSIT
CALIBRATE BANDPASS
More >>>
Change
Change
Import Instrument Config.
INSTRUMENT CONFIG. CATALOG:
Personal Catalog
INSTRUMENT CONFIG. GROUP:
All Resources
INSTRUMENT CONFIGS.:
3C391 demo
IRC demo
Ok
Cancel


NRAO Observation Preparation Tool - Mozilla Firefox
File Edit View History Bookmarks Tools Help
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Google
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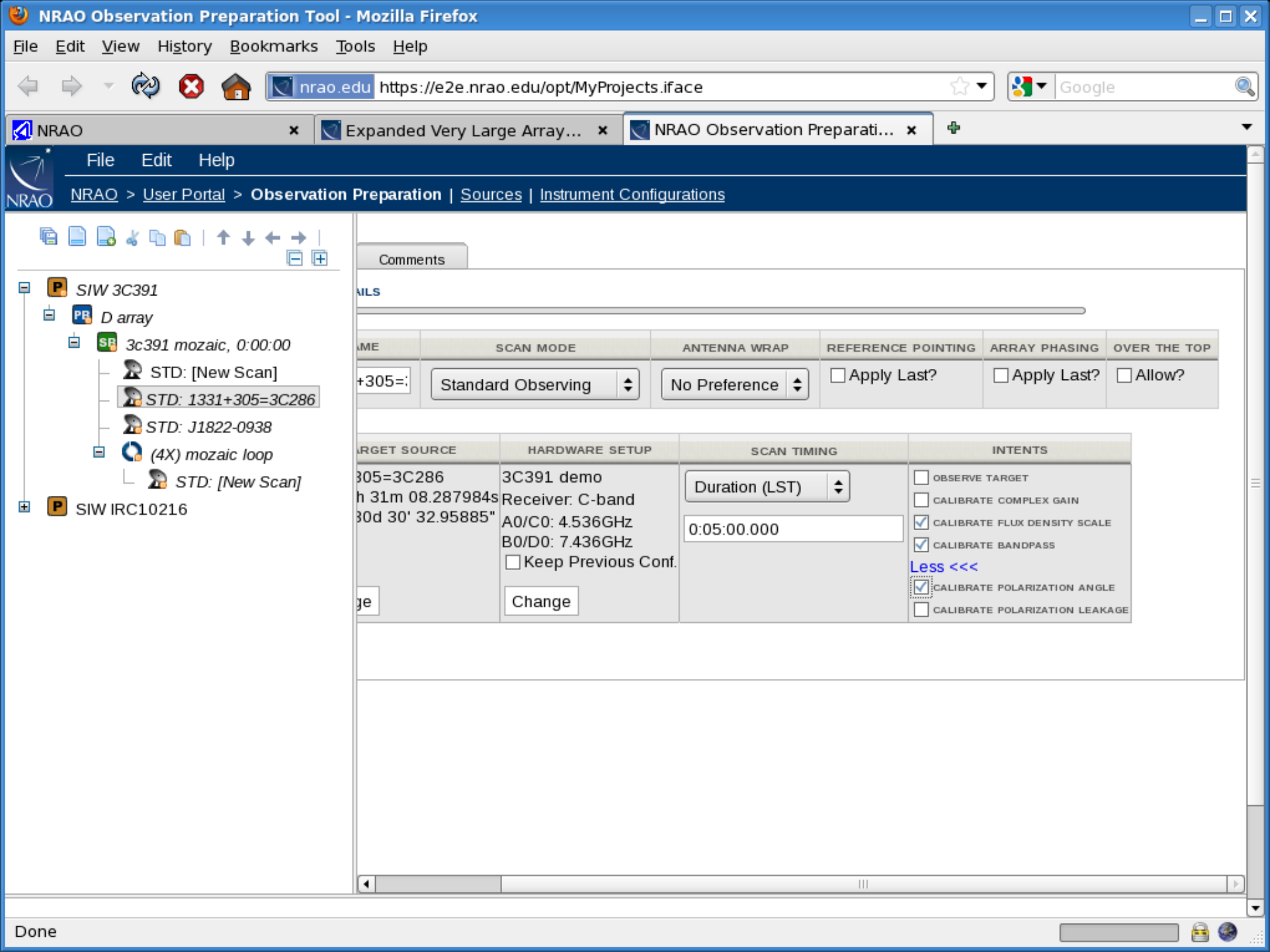
Expanded Very Large Array...
NRAO Observation Preparati...
File Edit Help
NRAO > User Portal > Observation Preparation | Sources | Instrument Configurations
SIW 3C391
D array
3c391 mozaic, 0:00:00
STD: [New Scan]
STD: 1331+305=3C286
STD: [New Scan]
(4X) mozaic loop
STD: [New Scan]
SIW IRC10216
Overview
Comments
SCAN DETAILS
NAME
SCAN MODE
ANTENNA WRAP
REFERENCE POINTING
ARRAY PHASING
1331+305=:
Standard Observing
No Preference
Apply Last?
Apply Last?
TARGET SOURCE
HARDWARE SETUP
SCAN TIMING
INTENTS
1331+305=3C286
RA: 13h 31m 08.287984s
DEC: +30d 30' 32.95885"
Change
3C391 demo
Receiver: C-band
A0/C0: 4.536GHz
B0/D0: 7.436GHz
Keep Previous Conf.
Change
Duration (LST)
0:05:00.000
OBSERVE TARGET
CALIBRATE COMPLEX GAIN
CALIBRATE FLUX DENSITY SCALE
CALIBRATE BANDPASS
More >>>


NRAO Observation Preparation Tool - Mozilla Firefox
File Edit View History Bookmarks Tools Help
nrao.edu https://e2e.nrao.edu/opt/MyProjects.iface
Google
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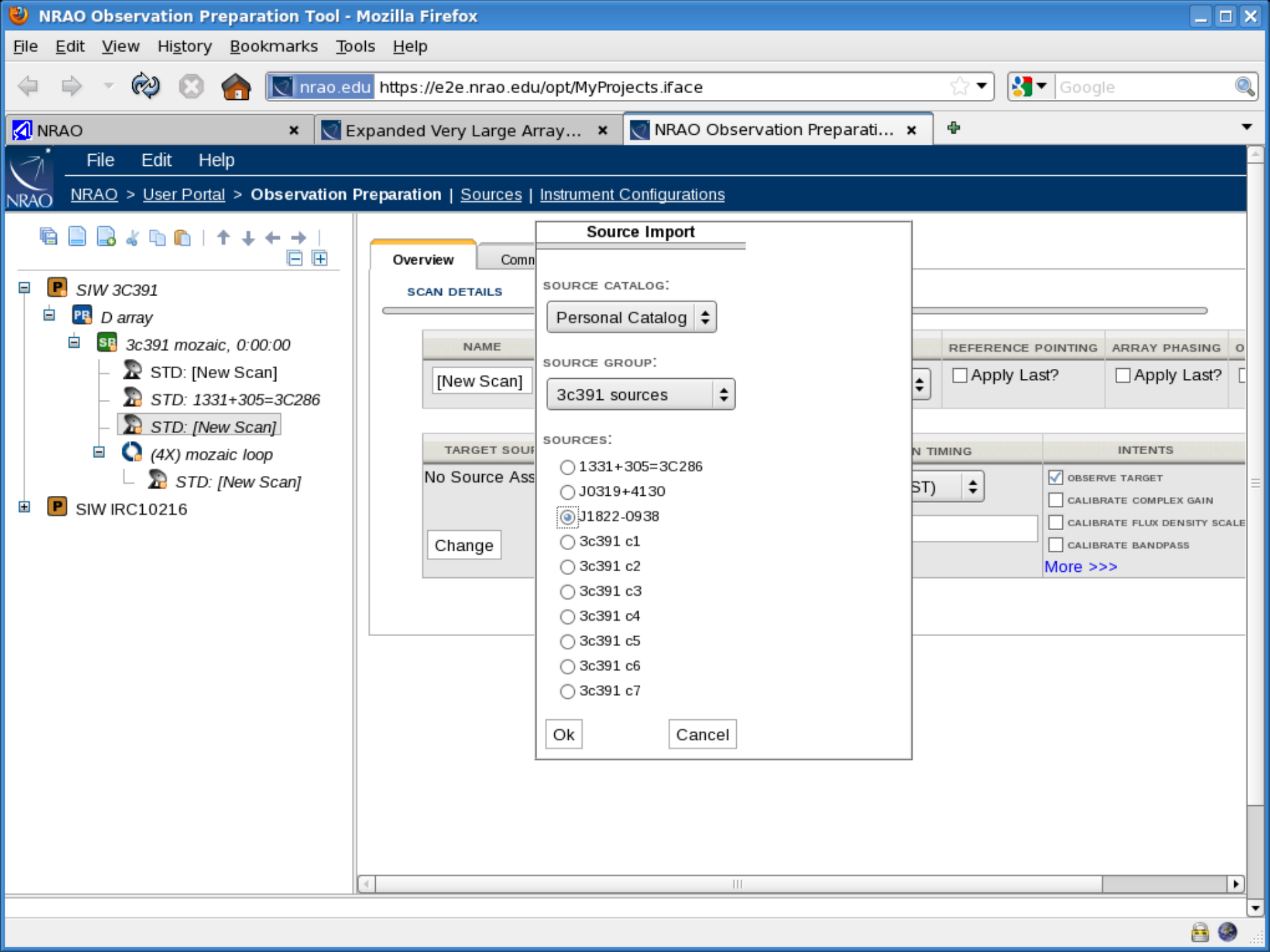
Expanded Very Large Array...
NRAO Observation Preparati...
File Edit Help
NRAO > User Portal > Observation Preparation | Sources | Instrument Configurations
SIW 3C391
D array
3c391 mozaic, 0:00:00
STD: [New Scan]
STD: 1331+305=3C286
STD: J1822-0938
(4X) mozaic loop
STD: [New Scan]
SIW IRC10216
Comments
SCAN MODE
ANTENNA WRAP
REFERENCE POINTING
ARRAY PHASING
OVER THE TOP
Standard Observing
No Preference
Apply Last?
Apply Last?
Allow?
HARDWARE SETUP
SCAN TIMING
INTENTS
3C391 demo
Receiver: C-band
A0/C0: 4.536GHz
B0/D0: 7.436GHz
Keep Previous Conf.
Change
Duration (LST)
0:05:00.000
OBSERVE TARGET
CALIBRATE COMPLEX GAIN
CALIBRATE FLUX DENSITY SCALE
CALIBRATE BANDPASS
Less <<<
CALIBRATE POLARIZATION ANGLE
CALIBRATE POLARIZATION LEAKAGE
Done


NRAO Observation Preparation Tool - Mozilla Firefox
File Edit View History Bookmarks Tools Help
nrao.edu https://e2e.nrao.edu/opt/MyProjects.iface
Google
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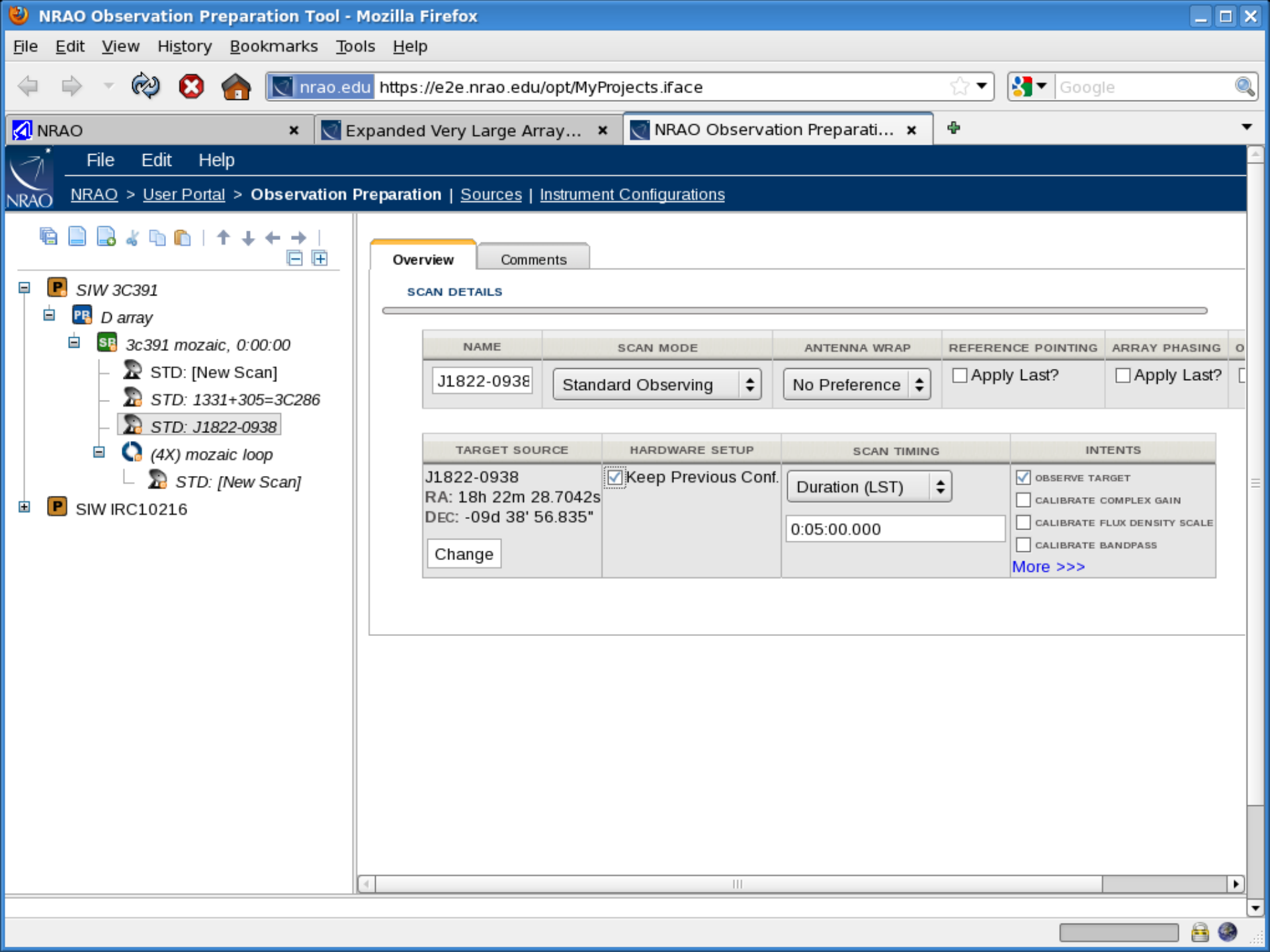
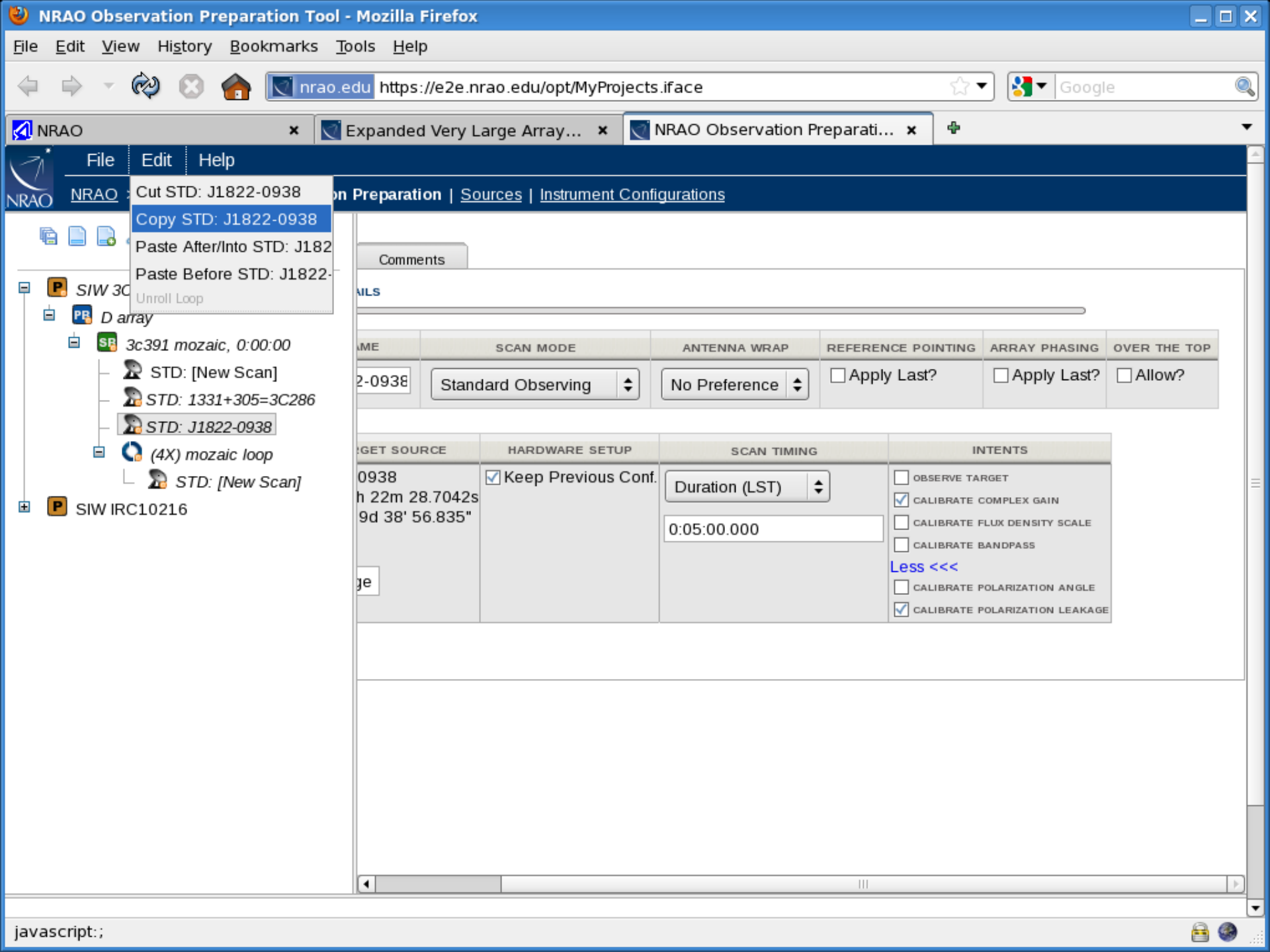
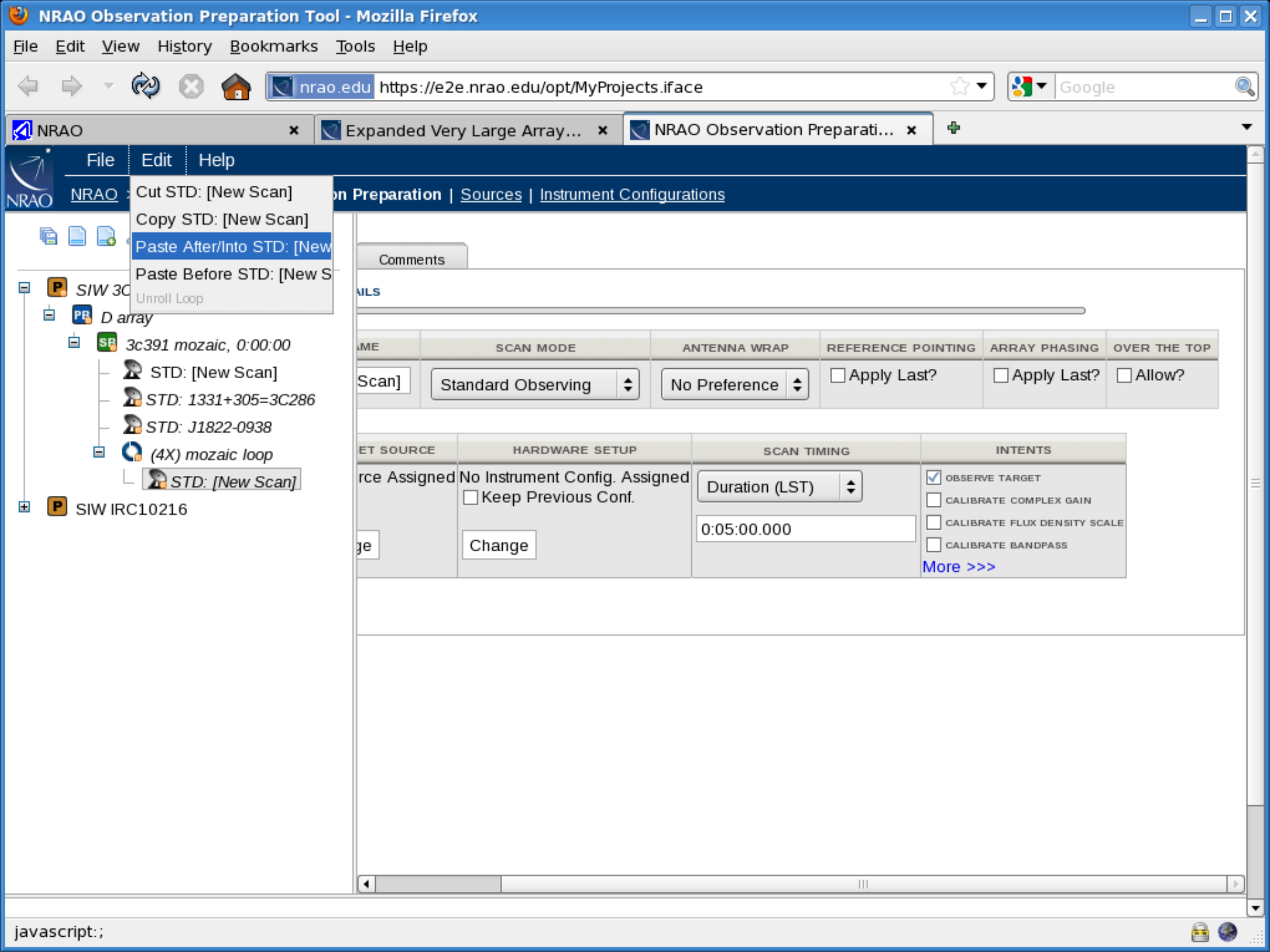
Expanded Very Large Array...
NRAO Observation Preparati...
File Edit Help
NRAO > User Portal > Observation Preparation | Sources | Instrument Configurations
SIW 3C391
D array
3c391 mozaic, 0:00:00
STD: [New Scan]
STD: 1331+305=3C286
STD: [New Scan]
(4X) mozaic loop
STD: [New Scan]
SIW IRC10216
Overview
SCAN DETAILS
NAME
[New Scan]
REFERENCE POINTING
ARRAY PHASING
Apply Last?
Apply Last?
TARGET SOUR
No Source Ass
Change
N TIMING
INTENTS
OBSERVE TARGET
CALIBRATE COMPLEX GAIN
CALIBRATE FLUX DENSITY SCALE
CALIBRATE BANDPASS
More >>>
Source Import
SOURCE CATALOG:
Personal Catalog
SOURCE GROUP:
3c391 sources
SOURCES:
1331+305=3C286
J0319+4130
J1822-0938
3c391 c1
3c391 c2
3c391 c3
3c391 c4
3c391 c5
3c391 c6
3c391 c7
Ok
Cancel


NRAO Observation Preparation Tool - Mozilla Firefox
File Edit View History Bookmarks Tools Help
nrao.edu https://e2e.nrao.edu/opt/MyProjects.iface
Google
NRAO
Expanded Very Large Array...
NRAO Observation Preparati...
File Edit Help
NRAO > User Portal > Observation Preparation | Sources | Instrument Configurations
SIW 3C391
D array
3c391 mozaic, 0:00:00
STD: [New Scan]
STD: 1331+305=3C286
STD: J1822-0938
(4X) mozaic loop
STD: [New Scan]
SIW IRC10216
Overview
Comments
SCAN DETAILS
NAME
SCAN MODE
ANTENNA WRAP
REFERENCE POINTING
ARRAY PHASING
J1822-0938
Standard Observing
No Preference
Apply Last?
Apply Last?
TARGET SOURCE
HARDWARE SETUP
SCAN TIMING
INTENTS
J1822-0938
RA: 18h 22m 28.7042s
DEC: -09d 38' 56.835"
Change
Keep Previous Conf.
Duration (LST)
0:05:00.000
OBSERVE TARGET
CALIBRATE COMPLEX GAIN
CALIBRATE FLUX DENSITY SCALE
CALIBRATE BANDPASS
More >>>


NRAO Observation Preparation Tool - Mozilla Firefox
File Edit View History Bookmarks Tools Help
nrao.edu https://e2e.nrao.edu/opt/MyProjects.iface
Google
NRAO
Expanded Very Large Array...
NRAO Observation Preparati...
File Edit Help
Cut STD: J1822-0938
Copy STD: J1822-0938
Paste After/Into STD: J182
Paste Before STD: J1822-
Unroll Loop
NRAO
on Preparation | Sources | Instrument Configurations
SIW 3C
D array
3c391 mozaic, 0:00:00
STD: [New Scan]
STD: 1331+305=3C286
STD: J1822-0938
(4X) mozaic loop
STD: [New Scan]
SIW IRC10216
Comments
AILS
ME
SCAN MODE
ANTENNA WRAP
REFERENCE POINTING
ARRAY PHASING
OVER THE TOP
2-0938
Standard Observing
No Preference
Apply Last?
Apply Last?
Allow?
GET SOURCE
HARDWARE SETUP
SCAN TIMING
INTENTS
0938
h 22m 28.7042s
9d 38' 56.835"
ge
Keep Previous Conf.
Duration (LST)
0:05:00.000
OBSERVE TARGET
CALIBRATE COMPLEX GAIN
CALIBRATE FLUX DENSITY SCALE
CALIBRATE BANDPASS
Less <<<
CALIBRATE POLARIZATION ANGLE
CALIBRATE POLARIZATION LEAKAGE
javascript:;


NRAO Observation Preparation Tool - Mozilla Firefox
File Edit View History Bookmarks Tools Help
nrao.edu https://e2e.nrao.edu/opt/MyProjects.iface
Google
NRAO
Expanded Very Large Array...
NRAO Observation Preparati...
File Edit Help
Cut STD: [New Scan]
Copy STD: [New Scan]
Paste After/Into STD: [New
Paste Before STD: [New S
Unroll Loop
NRAO
n Preparation | Sources | Instrument Configurations
SIW 3C
D array
3c391 mozaic, 0:00:00
STD: [New Scan]
STD: 1331+305=3C286
STD: J1822-0938
(4X) mozaic loop
STD: [New Scan]
SIW IRC10216
Comments
AILS
ME
SCAN MODE
ANTENNA WRAP
REFERENCE POINTING
ARRAY PHASING
OVER THE TOP
Scan]
Standard Observing
No Preference
Apply Last?
Apply Last?
Allow?
ET SOURCE
HARDWARE SETUP
SCAN TIMING
INTENTS
rce Assigned
No Instrument Config. Assigned
Keep Previous Conf.
Change
Duration (LST)
0:05:00.000
OBSERVE TARGET
CALIBRATE COMPLEX GAIN
CALIBRATE FLUX DENSITY SCALE
CALIBRATE BANDPASS
More >>>
javascript:;

NRAO Observation Preparation Tool - Mozilla Firefox

File Edit View History Bookmarks Tools Help

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NRAO | Expanded Very Large Array... | NRAO Observation Preparati...

- SIW 3C391
  - D array
    - 3c391 mozaic, 8:00:00
      - STD: dummy
      - STD: 1331+305=3C286
      - STD: 1331+305=3C286
      - STD: J1822-0938
      - (4X) mozaic loop
        - STD: 1331+305=3C286
        - STD: J1822-0938
      - (8X) mozaic loop
        - STD: 3c391 c1
        - STD: 3c391 c2
        - STD: 3c391 c3
        - STD: 3c391 c4
        - STD: 3c391 c5
        - STD: 3c391 c6
        - STD: 3c391 c7
        - STD: J1822-0938
      - STD: J0319+4130
- SIW IRC10216

Scheduling Block Details | Scheduling Block Summary | Validation and Submission | Bulk Scan Edit

SCHEDULING BLOCK DETAILS

GENERATED ID 1502219

NAME 3c391 mozaic

STATUS Not Submitte

COUNT 1

COMPLETED 0

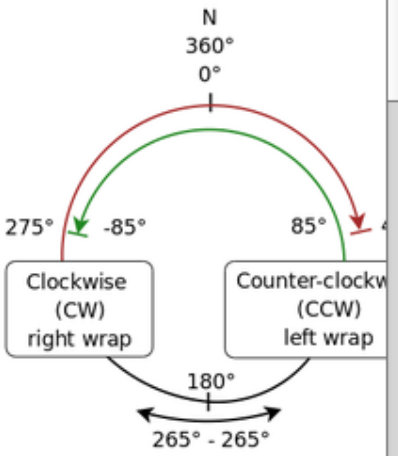
TOTAL TIME 8:00:00

TIME PER EXECUTION 8:00:00

SCHEDULE TYPE Dynamic

LST START RANGE 14 : 30 – 15 : 00

NO CONSTRAINT:



START AFTER DATE (OPTIONAL) yyyy - MM - dd

SHADOWING LIMIT (MAX) 0.0 m

IN CONFIGURATION D

Done

NRAO Observation Preparation Tool - Mozilla Firefox

File Edit View History Bookmarks Tools Help

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NRAO | Expanded Very Large Array... | NRAO Observation Preparati...

File Edit Help

NRAO > User Portal > **Observation Preparation** | Sources | Instrument Configurations

- SIW 3C391
  - D array
    - 3c391 mozaic
- SIW IRC10216

Scheduling Block Details | **Scheduling Block Summary** | Validation and Submission | Bulk Scan Edit

OBSERVING PROGRAM

Print as Shown

Expand All Loops and Print

PROJECT CODE: 4279_3

GENERATED ID: 1502219

ASSUMED SCHEDULE START: 62081 14:45:01 LST Update Display UTC times

SCHEDULE STOP: 62081 22:45:00 LST

ASSUMED ANTENNA POSITION

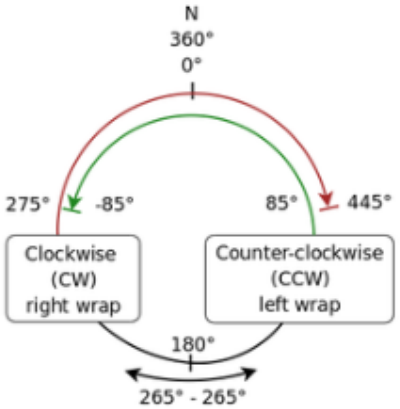
AZIMUTH: 225.0d

ELEVATION: 35.0d

LST START RANGE: 14:30:00.0-15:00:01.0

WIND CONSTRAINTS: 100.0 m/s

API CONSTRAINTS: 45.0 degrees



- Instrument Configuration Summary
- Time On Source Summary
- Schedule Summary

INSTRUMENT CONFIGURATION SUMMARY

	Name	T_{int}	Mode	AC Freq.	AC Rest/Sky	AC BW	AC Ch.	AC Res.	AC Doppler Vel.	AC Doppler Pos.	Data Rate / Sec
		Band	Modifiers	BD Freq.	BD Rest/Sky	BD BW	BD Ch.	BD Res.	BD Doppler Vel.	BD Doppler Pos.	Data Rate / Hour
1	3C391 demo	1s	Full Polarization	4.536GHz	Sky	128MHz	64	2MHz	—	—	1.797 Mbytes/sec
		C		7.436GHz	Sky	128MHz	64	2MHz	—	—	6.318 Gbytes/hour

- Warning: Schedule Summary: There is no time on source for scan 'dummy'.
- Warning: There is an antenna shadowed by 5.662m, which exceeds the maximum of 0.0

https://e2e.nrao.edu/opt/MyProjects.iface#scanTable

- SIW 3C391
  - D array
    - 3c391 mozai
- SIW IRC10216

top

TIME ON SOURCE SUMMARY (TIME IN: LST)

Source	Scan	RA	AC Vel.	AC Freq.	Min HA	Min PA	#
Epoch	Instrument Cfg.	Dec	BD Vel.	BD Freq.	Max HA	Max PA	Total Time
1331+305=3C2	dummy	13h 31m 08.28798s	—	4.536GHz	1.23	72.3d	1
J2000	(1) 3C391 demo	+30d 30' 32.9589"	—	7.436GHz	1.25	72.4d	0:00:00
1331+305=3C2	1331+305=3C286	13h 31m 08.28798s	—	4.536GHz	1.25	68.7d	3
J2000	(1) 3C391 demo	+30d 30' 32.9589"	—	7.436GHz	4.13	73.2d	0:11:48
J1822-0938	J1822-0938	18h 22m 28.7042s	—	4.536GHz	-3.42	-45.4d	14
J2000	(1) 3C391 demo	-09d 38' 56.835"	—	7.436GHz	4.23	50.3d	0:24:17
3c391 c1	3c391 c1	18h 49m 24.244s	—	4.536GHz	-3.74	-50.4d	12
J2000	(1) 3C391 demo	-00d 55' 40.58"	—	7.436GHz	3.26	47.7d	0:57:20
3c391 c2	3c391 c2	18h 49m 29.149s	—	4.536GHz	-3.65	-50.0d	12
J2000	(1) 3C391 demo	-00d 57' 48.0"	—	7.436GHz	3.34	48.2d	0:57:15
3c391 c3	3c391 c3	18h 49m 19.339s	—	4.536GHz	-3.57	-49.5d	12
J2000	(1) 3C391 demo	-00d 57' 48.0"	—	7.436GHz	3.43	48.7d	0:57:15
3c391 c4	3c391 c4	18h 49m 14.434s	—	4.536GHz	-3.48	-49.0d	12
J2000	(1) 3C391 demo	-00d 55' 40.58"	—	7.436GHz	3.51	49.2d	0:57:15
3c391 c5	3c391 c5	18h 49m 19.339s	—	4.536GHz	-3.40	-48.6d	12
J2000	(1) 3C391 demo	-00d 53' 33.16"	—	7.436GHz	3.59	49.6d	0:57:15

- Warning: Schedule Summary: There is no time on source for scan 'dummy'.
- Warning: There is an antenna shadowed by 5.662m, which exceeds the maximum of 0.0

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NRAO > User Portal > **Observation Preparation** | Sources | Instrument Configurations

- SIW 3C391
  - D array
    - 3c391 mozaic
- SIW IRC10216

top

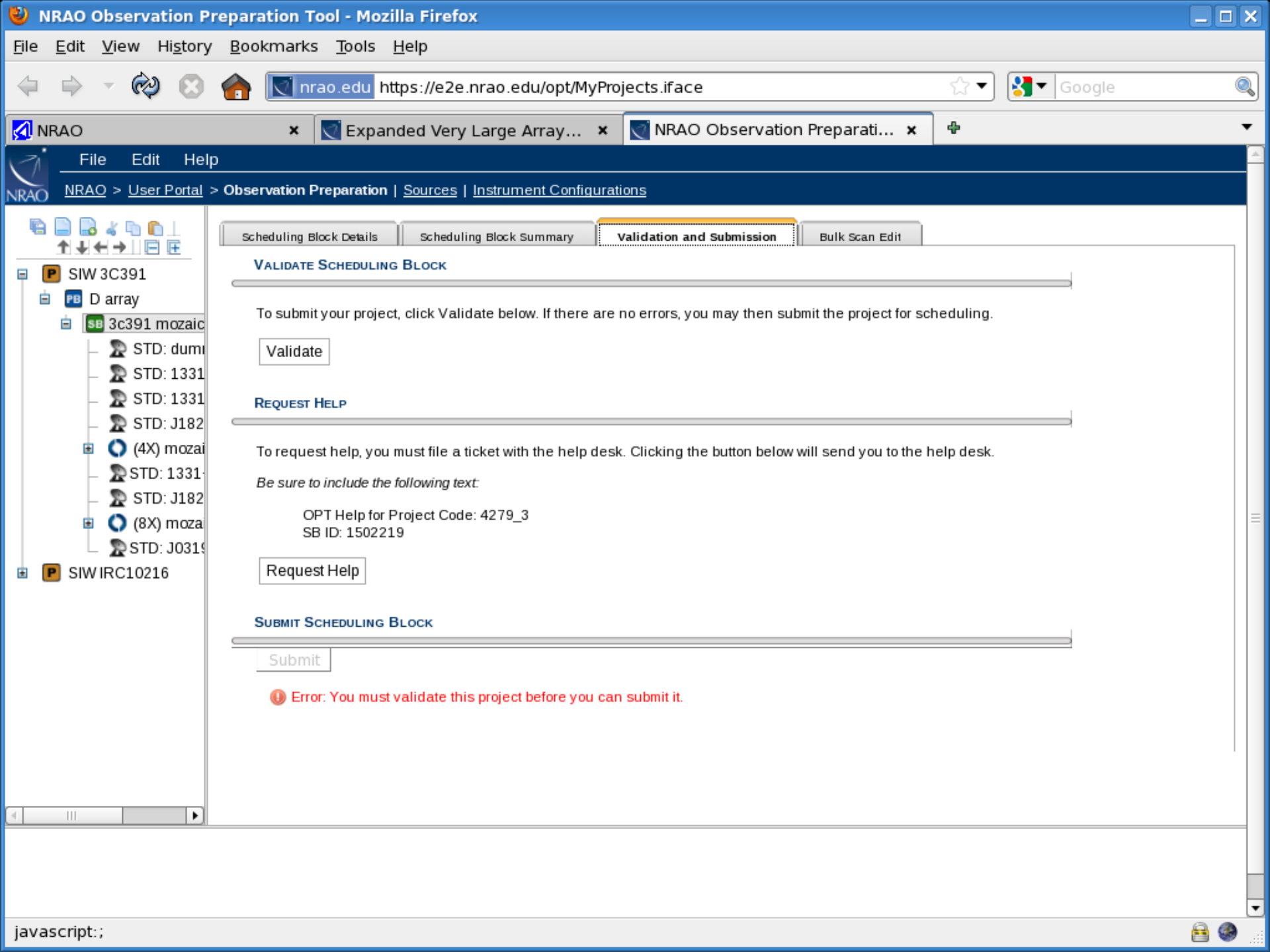
NATIONAL RADIO ASTRONOMY OBSERVATORY VLA OBSERVING PROGRAM 4279_3
FOR DAY 62081 LST 14:45:01 (FRI JUN 11 04:37:48 UTC 2010) SUMMARY REPORT.

	Source	Scan / Instrument Cfg.	AC Freq. / BD Freq.	Start LST / Stop LST	Slew / On Source	Modifiers	Start HA / End HA	Start Az / End Az	Start El / End El	Start PA / End PA
1	1331+305=3C2	dummy	4.536GHz	14:45:01	0:01:00	CalFlux, CalPolAng, CalBP	1.23	262.2d	74.0d	72.3d
		(1) 3C391 demo	7.436GHz	14:46:01	0:00:00		1.25	262.4d	73.8d	72.4d
2	1331+305=3C2	1331+305=3C286	4.536GHz	14:46:01	0:01:04	CalFlux, CalPolAng, CalBP	1.25	262.4d	73.8d	72.4d
		(1) 3C391 demo	7.436GHz	14:52:01	0:04:56		1.35	263.8d	72.6d	72.9d
3	1331+305=3C2	1331+305=3C286	4.536GHz	14:52:01	0:00:00	CalFlux, CalPolAng, CalBP	1.35	263.8d	72.6d	72.9d
		(1) 3C391 demo	7.436GHz	14:57:01	0:05:00		1.43	264.8d	71.5d	73.2d
4	J1822-0938	J1822-0938	4.536GHz	14:57:01	0:03:42	CalPolLeak, CalGain, Shadowed (5.662 m)	-3.42	122.1d	24.6d	-45.4d
		(1) 3C391 demo	7.436GHz	15:05:01	0:04:18		-3.29	123.7d	26.0d	-44.4d
	LOOP	mozaic loop	—							
			—							
37	1331+305=3C2	1331+305=3C286	4.536GHz	17:33:41	0:03:09	CalFlux, CalPolAng, CalBP, requested CW wrap	4.04	283.8d	39.4d	69.0d
		(1) 3C391 demo	7.436GHz	17:38:41	0:01:51		4.13	284.3d	38.4d	68.7d
38	J1822-0938	J1822-0938	4.536GHz	17:38:41	0:03:07	CalPolLeak, CalGain	-0.73	164.6d	45.1d	-12.9d
				46:41	0:04:53		-0.60	167.4d	45.5d	-10.6d
	LOOP	mozaic loop	—							
			—							

Expand/Collapse (show/hide) sources in this loop

- Warning: Schedule Summary: There is no time on source for scan 'dummy'.
- Warning: There is an antenna shadowed by 5.662m, which exceeds the maximum of 0.0

javascript:;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STD: 1331
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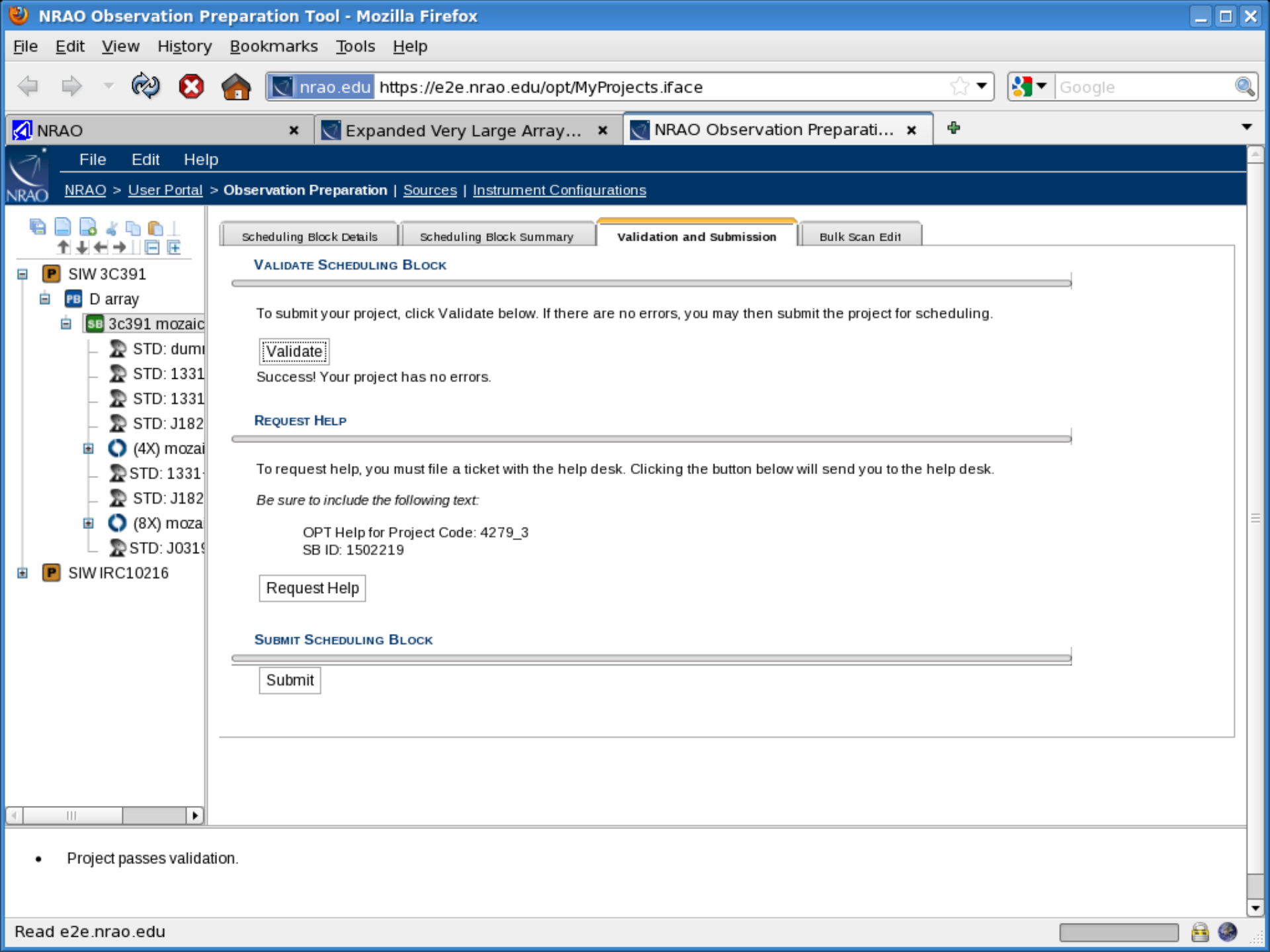
STD: 1331
STD: J182
(8X) moza
STD: J031
SIW IRC10216
Scheduling Block Details
Scheduling Block Summary
Validation and Submission
Bulk Scan Edit
VALIDATE SCHEDULING BLOCK
To submit your project, click Validate below. If there are no errors, you may then submit the project for scheduling.
Validate
REQUEST HELP
To request help, you must file a ticket with the help desk. Clicking the button below will send you to the help desk.
Be sure to include the following text:
OPT Help for Project Code: 4279_3
SB ID: 1502219
Request Help
SUBMIT SCHEDULING BLOCK
Submit
Error: You must validate this project before you can submit it.
javascript:;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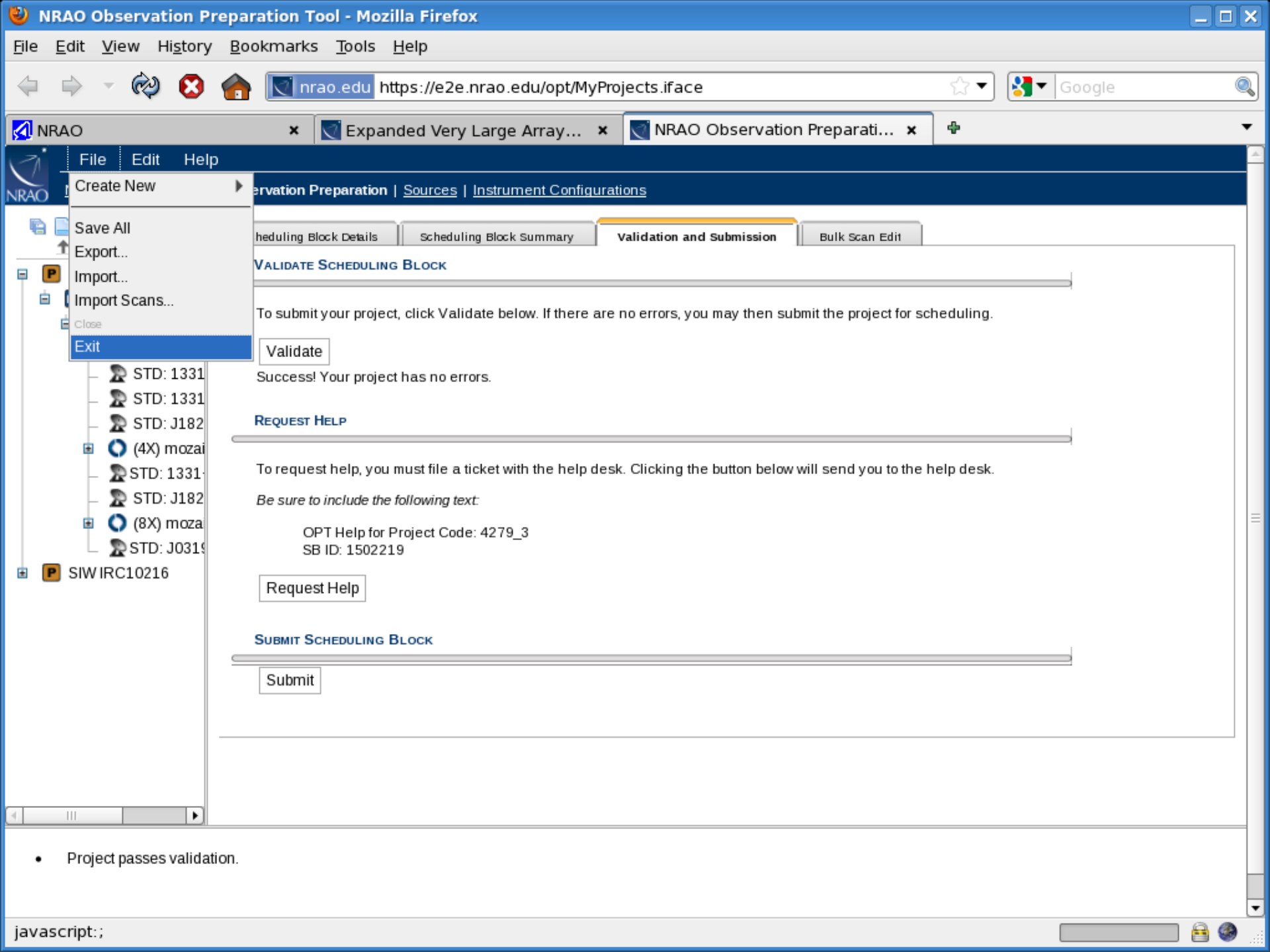
(8X) moza
STD: J031
SIW IRC10216
Scheduling Block Details
Scheduling Block Summary
Validation and Submission
Bulk Scan Edit
VALIDATE SCHEDULING BLOCK
To submit your project, click Validate below. If there are no errors, you may then submit the project for scheduling.
Validate
Success! Your project has no errors.
REQUEST HELP
To request help, you must file a ticket with the help desk. Clicking the button below will send you to the help desk.
Be sure to include the following text:
OPT Help for Project Code: 4279_3
SB ID: 1502219
Request Help
SUBMIT SCHEDULING BLOCK
Submit
Project passes validation.
Read e2e.nrao.edu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Import...
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Request Help
SUBMIT SCHEDULING BLOCK
Submit
STD: 1331
STD: 1331
STD: J182
(4X) mozai
STD: 1331
STD: J182
(8X) moza
STD: J031
SIW IRC10216
Project passes validation.
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