NRAO Archive Access Tool (AAT)

Anna D. Kapinska (NRAO)

Archive Access Tool (AAT)

The "new" NRAO science data archive (2022–)

Post observations: obtaining your data

(1) automatic email that observation was triggered
(2) few days later: email about pipeline calibrated data (VLA), can be accessed from /lustre (14 days), OR
(3) raw (VLA, VLBA) and pipeline calibrated data (VLA) available from the NRAO archive

Web address: https://data.nrao.edu/
Current version: AAT 4.2.1 (Mar 2023)

Archive Access Tool (AAT)

Array Operator logs

Post observations: obtaining your data

(1) automatic email that observation was triggered
→ in the email information on weather, time lost and reason, any problems with baselines, RFI etc
"Operator Log"

(2) Operator logs also available online:
– currently: http://www.vla.nrao.edu/cgi-bin/oplogs.cgi
– future: from within the AAT

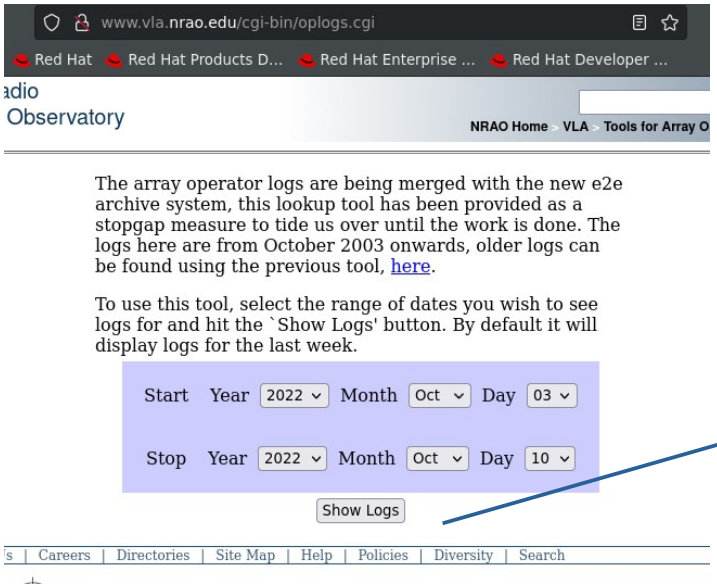
Archive Access Tool (AAT)

Array Operator logs

Post observations: obtaining your data

(2) Operator logs also available online:

- currently: http://www.vla.nrao.edu/cgi-bin/oplogs.cgi
- future: from within the AAT



Date	Time	Code	File
2022-10-10	23:37	STARTUP	pdf
2022-10-10	17:12	SOFTWARE	pdf
2022-10-10	16:36	TCAL0003	pdf
2022-10-10	14:26	22B-034	pdf
2022-10-10	13:46	TPOL0003	pdf
2022-10-10	13:23	THIG0007	pdf
2022-10-10	11:08	22B-272	pdf
2022-10-10	08:02	22B-157	pdf
2022-10-10	03:25	20A-346	pdf
2022-10-09	22:41	22B-046	pdf

Archive Access Tool (AAT)

Array Operator log – example

VLA OBSERVING LOG **2022-10-10_1426_22B-034**

Observing Date:	10-Oct-2022
Configuration:	C
Decommissioned:	20

Project:	22B-034	**# Subarrays:**	1	**Observation Type:**	Science
Observer(PI):	Dr Marco Berton			**Band(s) Used:**	X Ka K Ku
SBID(s):	42820540				
EBID(s):	42897307				
Source File(s):	22B-034_sb42820540_1_1				
Observer E-mail:	marco.berton@eso.org				
Operator(s):	Hannah Brower				

Time (UTC)	Dew Point (C)	Temp. (C)	Wind Speed & Direction (avg)	Bar. Pressure (mbars)	API RMS Phase (degs)	Remarks
10Oct 14:34:16	4.4	4.0	NE at 1.0 m/s	792.5	8.0	Sky cover 70%. Mixed clouds. Fog.
10Oct 15:01:54	5.2	5.1	S at 0.5 m/s	792.7	2.1	Sky cover 70%. Mixed clouds.
10Oct 16:02:40	7.2	9.0	SE at 0.5 m/s	793.0	3.4	Sky cover 80%. Cumuliform clouds.

Number of antennas used: **27**

Start Time	End Time	Comments/Outages	Form #	#Ants	Down Time (in minutes)
10Oct 14:26:48		Starting project 22B-034.			
10Oct 14:26:48		The band(s) used is(are): X Ka K Ku.			
10Oct 14:34:04		On source J1007-0207 with all available antennas.			
10Oct 14:26:48		Antenna(s):1,2,3,4,7,8,12,13,14,15,18,19,21,24,26			
		have recently updated baseline parameters to correct for errors resulting from			
		their recent relocation. Please check for any significant errors and submit			
		them to the NRAO Helpdesk (https://science.nrao.edu/observing/helpdesk)			
		under the VLA Observing department.			
10Oct 14:26:48		To access your data from the NRAO archive visit:			

Page 1

Archive Access Tool (AAT)

Array Operator log – example

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Configuration:	C
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Project:	22B-034	**# Subarrays:**	1	**Observation Type:**	Science
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Observer E-mail:	marco.berton@eso.org				
Operator(s):	Hannah Brower				

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10Oct 14:26:48		The band(s) used is(are): X Ka K Ku.
10Oct 14:34:04		On source J1007-0207 with all available a
10Oct 14:26:48		Antenna(s):1,2,3,4,7,8,12,13,14,15,18,1
		have recently updated baseline parameter
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		under the VLA Observing department
10Oct 14:26:48		To access your data from the NRAO arch

Page 1

Data loss and reason

Page 2

10Oct 14:26:48	10Oct 16:36:39	Antenna(s) 10 (Data: Lost): LO-IF	WO-15183	1.00	129.85
		Antenna T303 and P302-1 low voltage, antenna parked as precaution.			
10Oct 14:26:48	10Oct 16:36:39	Antenna(s) 23 (Data: Lost): FRONT END	WO-15113	0.14	18.05
		X-band dead. Water Feed.			
10Oct 14:26:48	10Oct 16:36:39	Antenna(s) 7 (Data: Lost): FOCUS/ROTATION	WO-15190	1.00	129.85
		Both focus and rotation problems that will not clear. Antenna parked.			
10Oct 14:26:48	10Oct 16:36:39	Antenna(s) 08 (Data: Lost): LO-IF	WO-14927	0.25	32.46
		Bandswitch issue for Ku and K bands			

Project End Time		Total Project Time (minutes x 27 ants.)	Down Time % of Total Time	Total Down Time
10Oct 16:36:39	**End of project 22B-034**	**3506.0**	**8.8%**	**310.2**

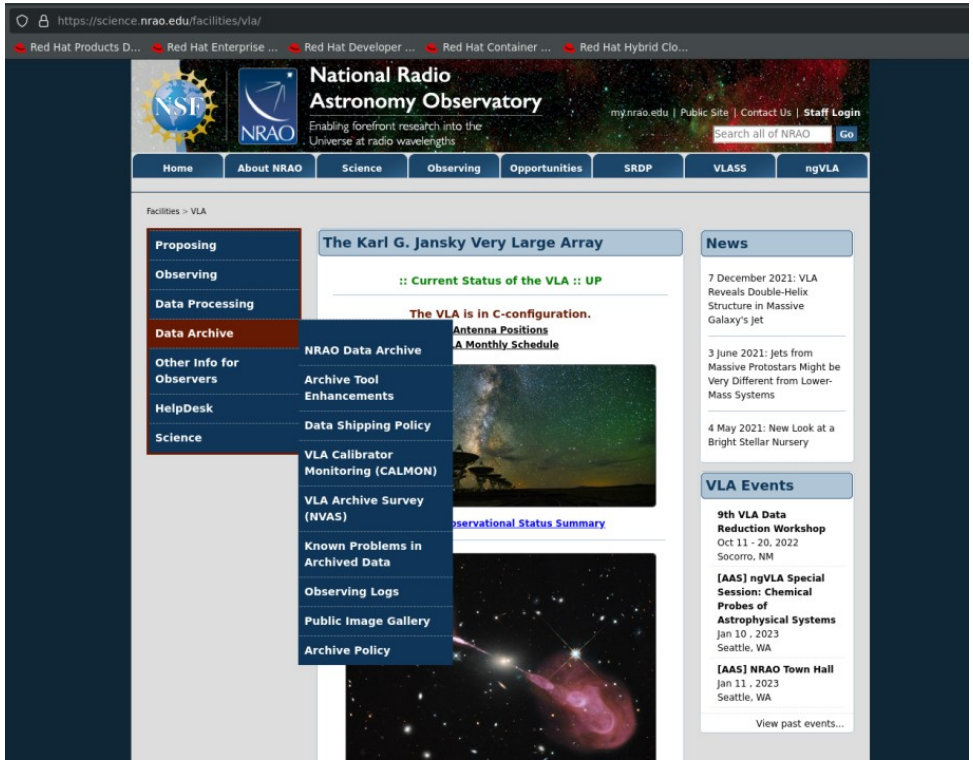
Archive Access Tool (AAT)

Obtaining data from the NRAO archive

https://data.nrao.edu/portal/

Archive Access Tool (AAT)

Information pages



VLBA related information:
https://science.nrao.edu/facilities/vlba/facilities/vlba/data-archive/index

VLA related information:
https://science.nrao.edu/facilities/vla/archive/index

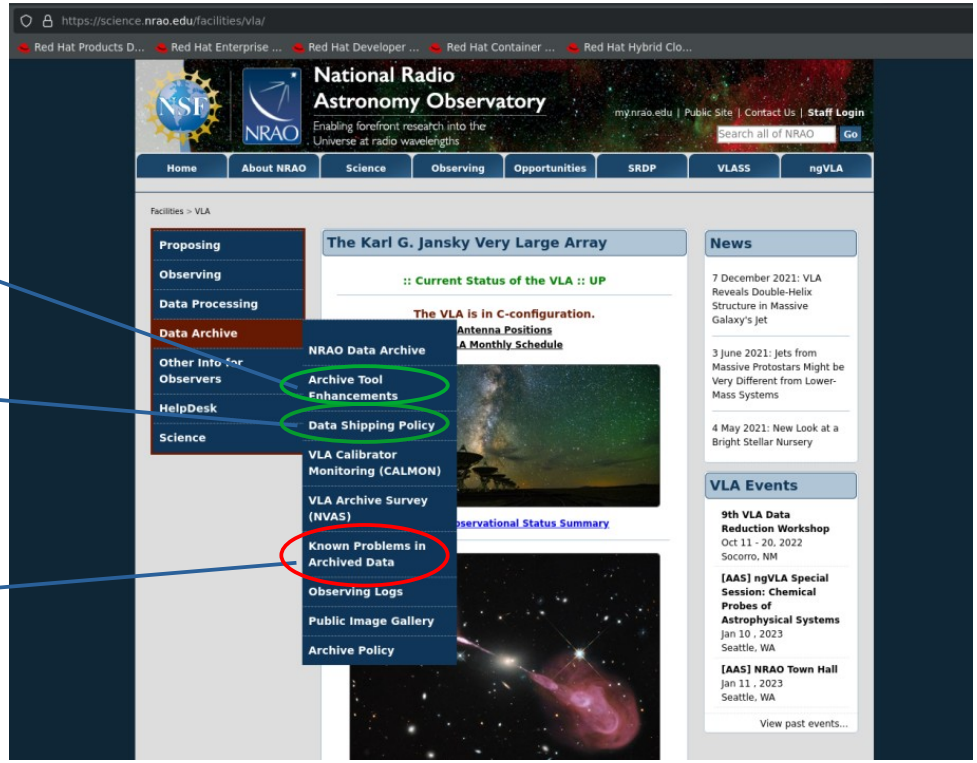
Archive Access Tool (AAT)

Information pages

Archive tool planned enhancements

Data can be shipped on hard disk (information)

Known data issues



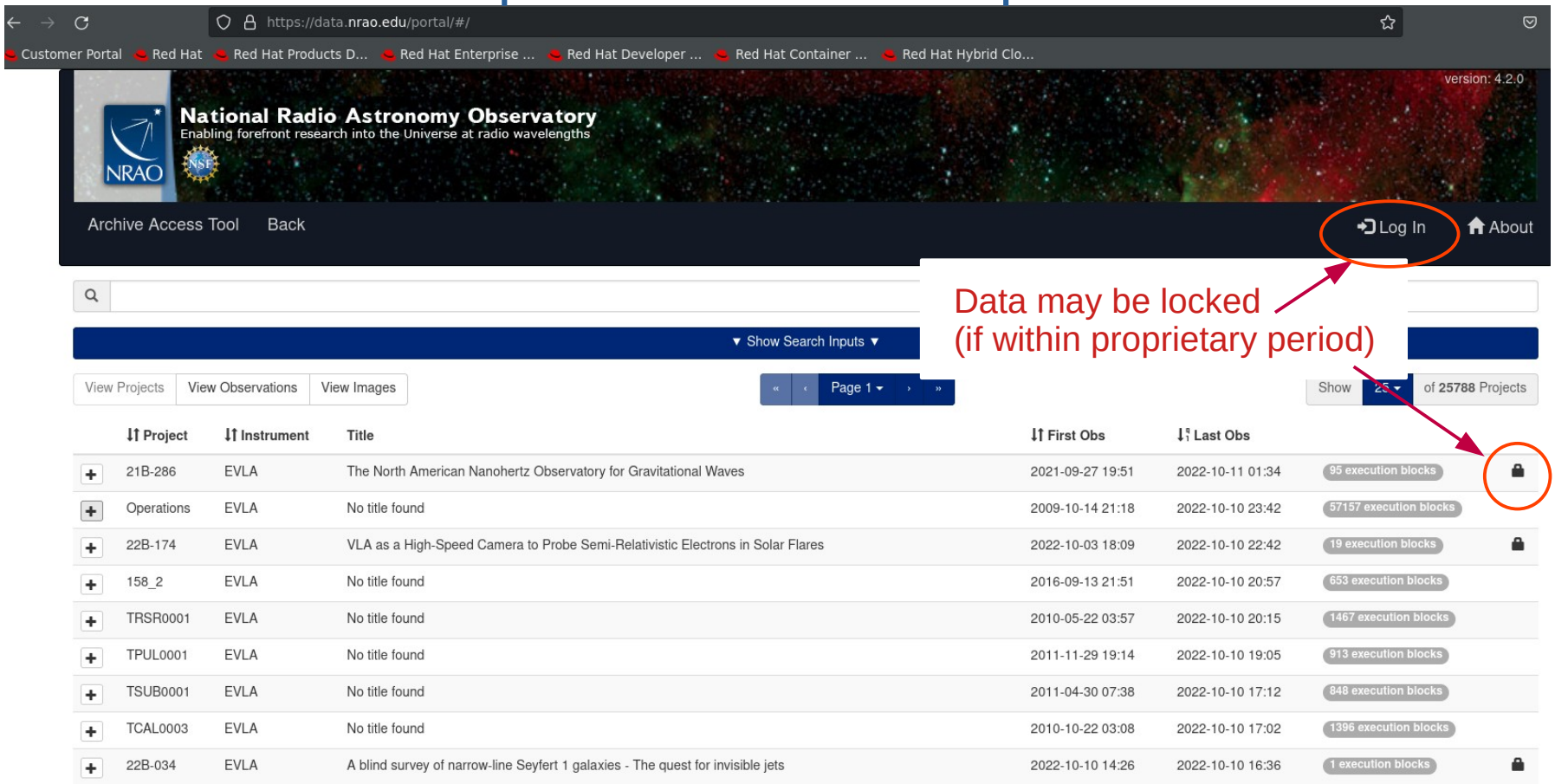
VLBA related information:
https://science.nrao.edu/facilities/vlba/facilities/vlba/data-archive/index

VLA related information:
https://science.nrao.edu/facilities/vla/archive/index

Archive Access Tool (AAT)

Interface: Landing page

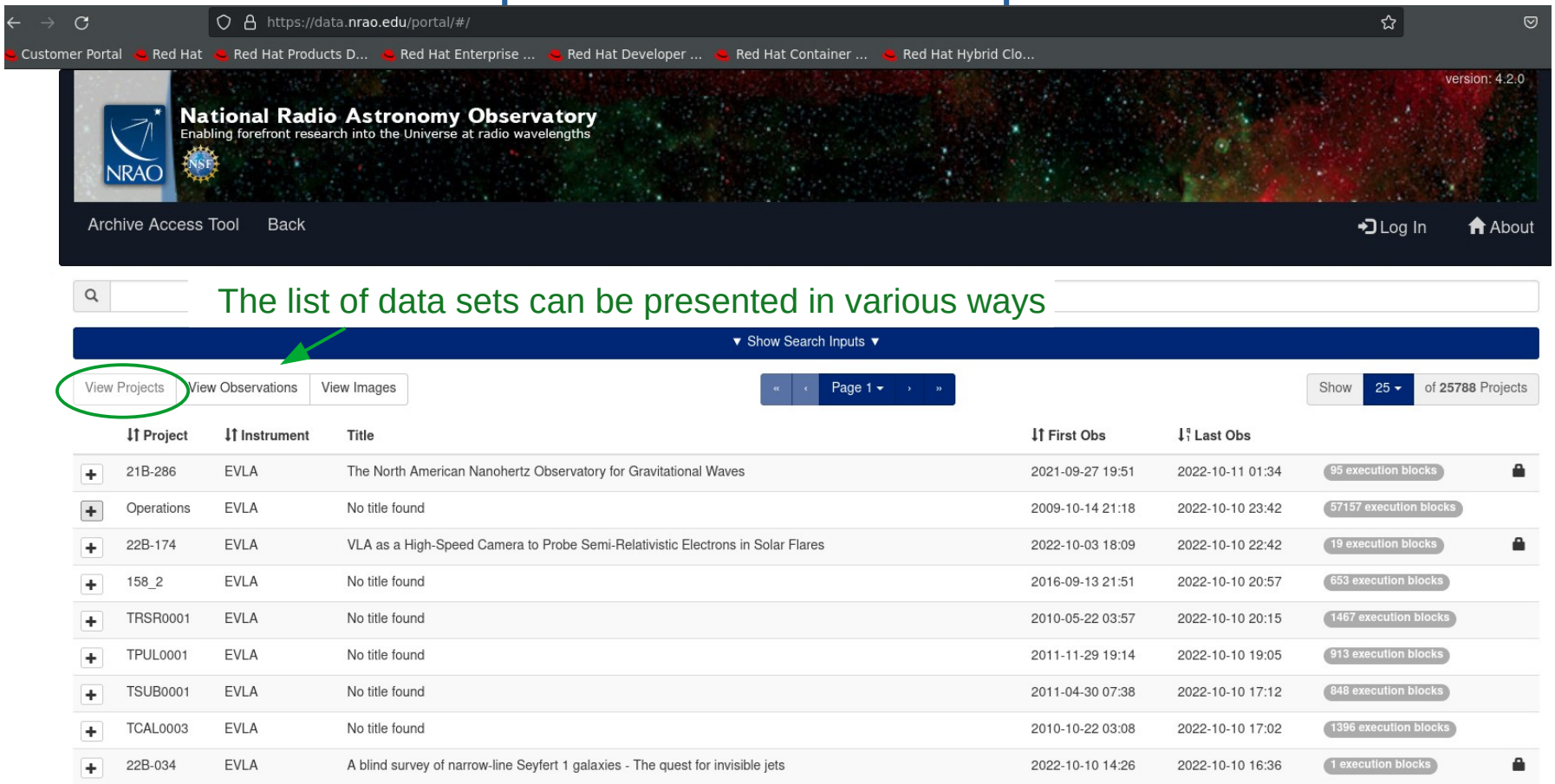
https://data.nrao.edu/portal/



Archive Access Tool (AAT)

Interface: Landing page

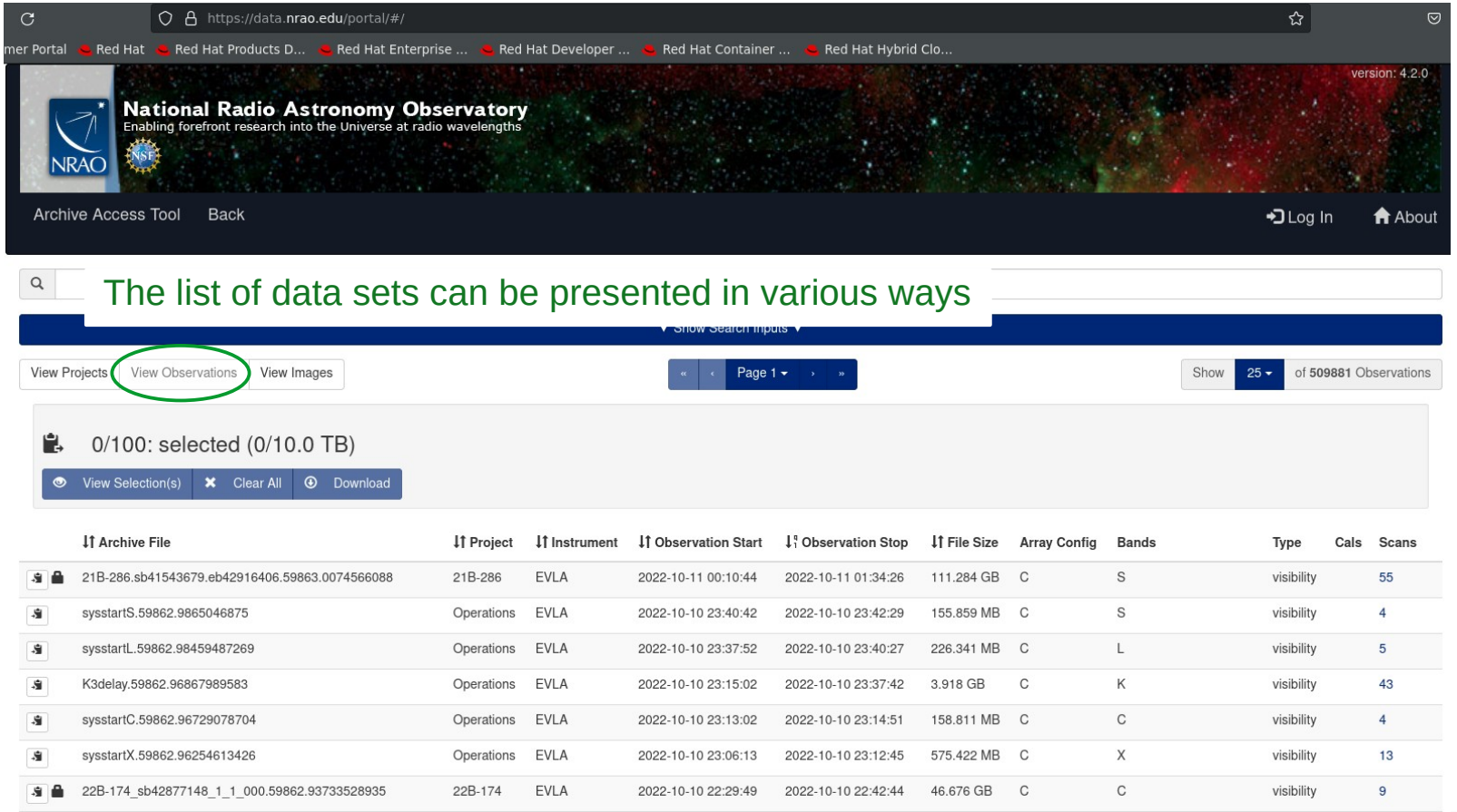
https://data.nrao.edu/portal/



Archive Access Tool (AAT)

Data lists: per observation

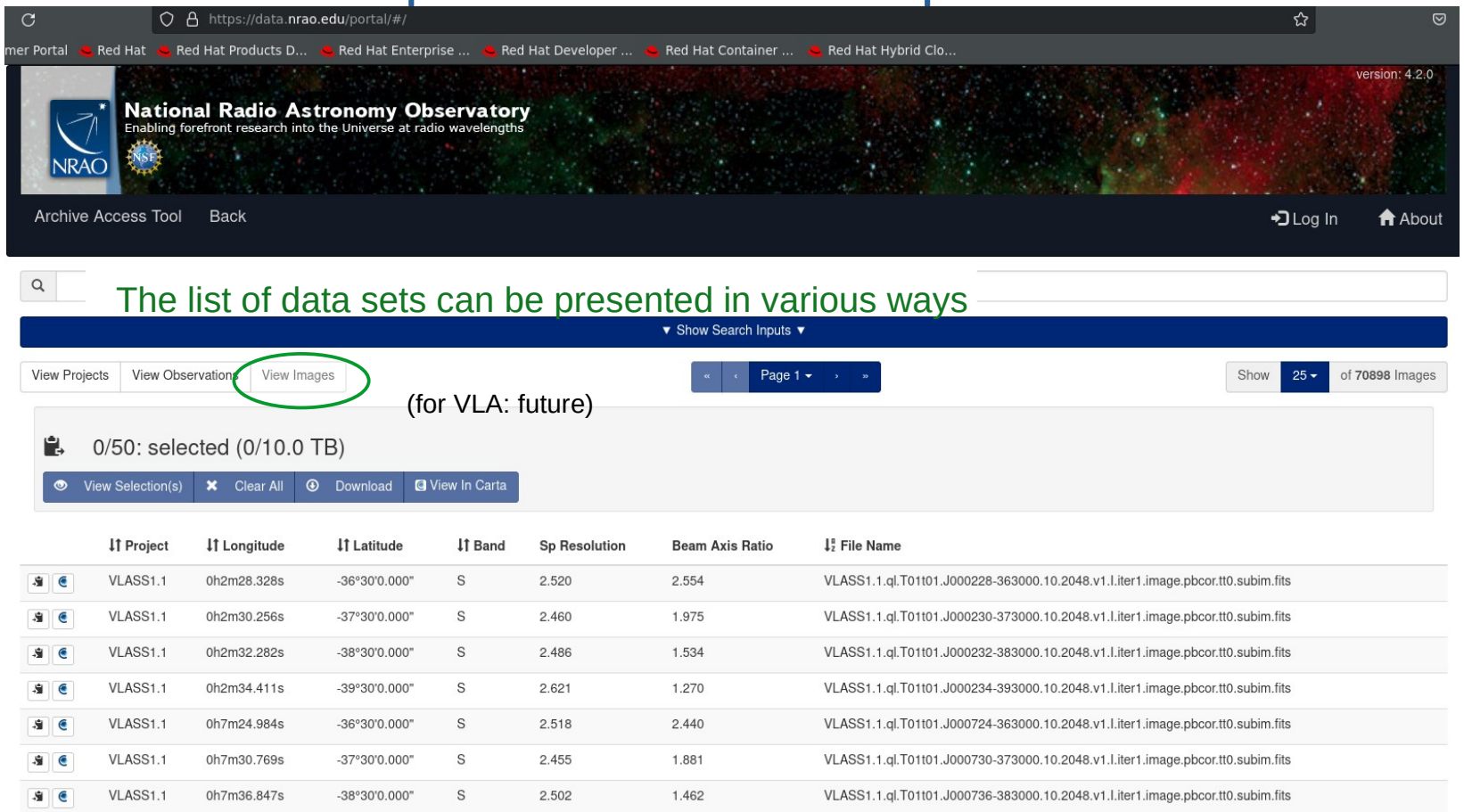
https://data.nrao.edu/portal/



Archive Access Tool (AAT)

Data lists: images

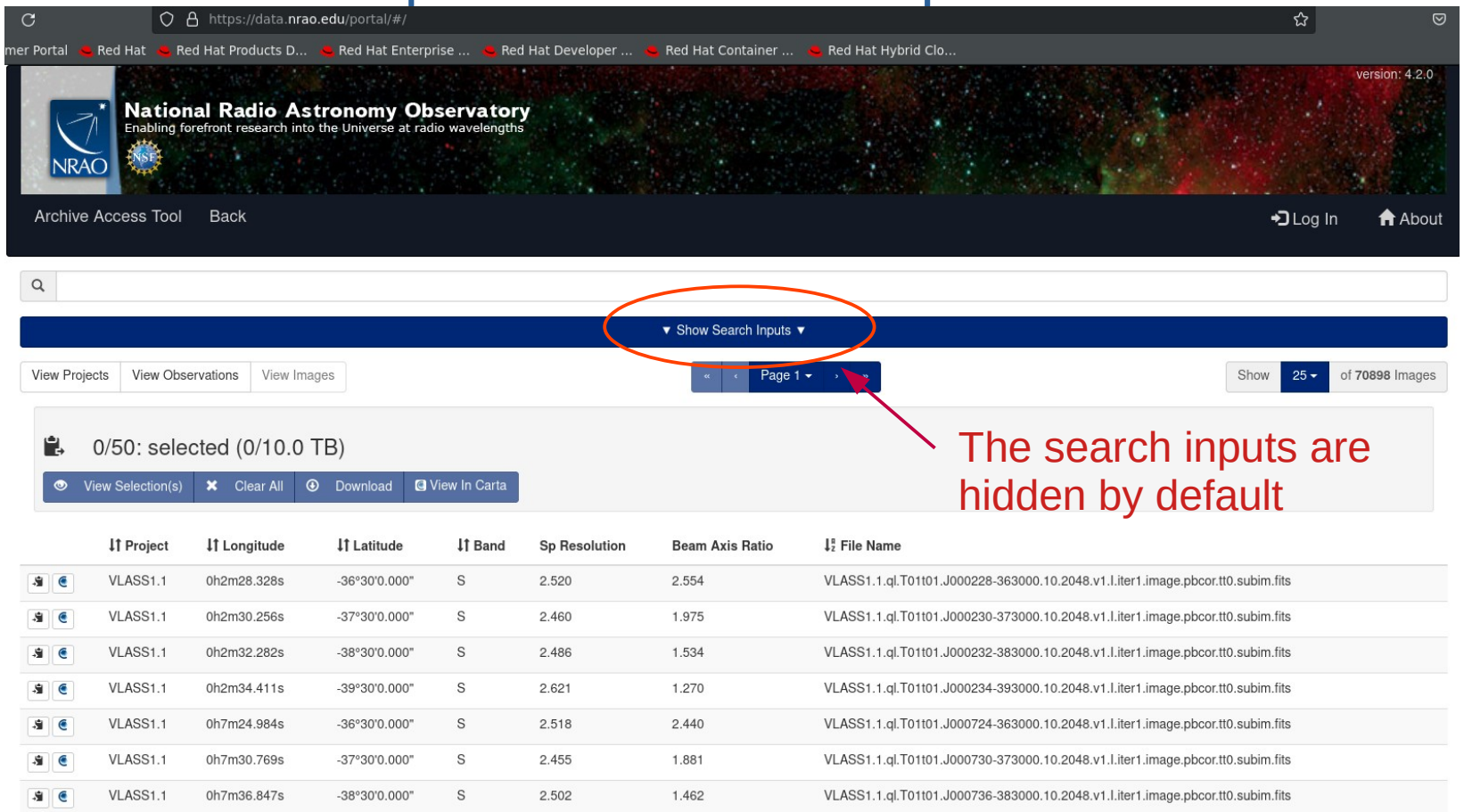
https://data.nrao.edu/portal/



Archive Access Tool (AAT)

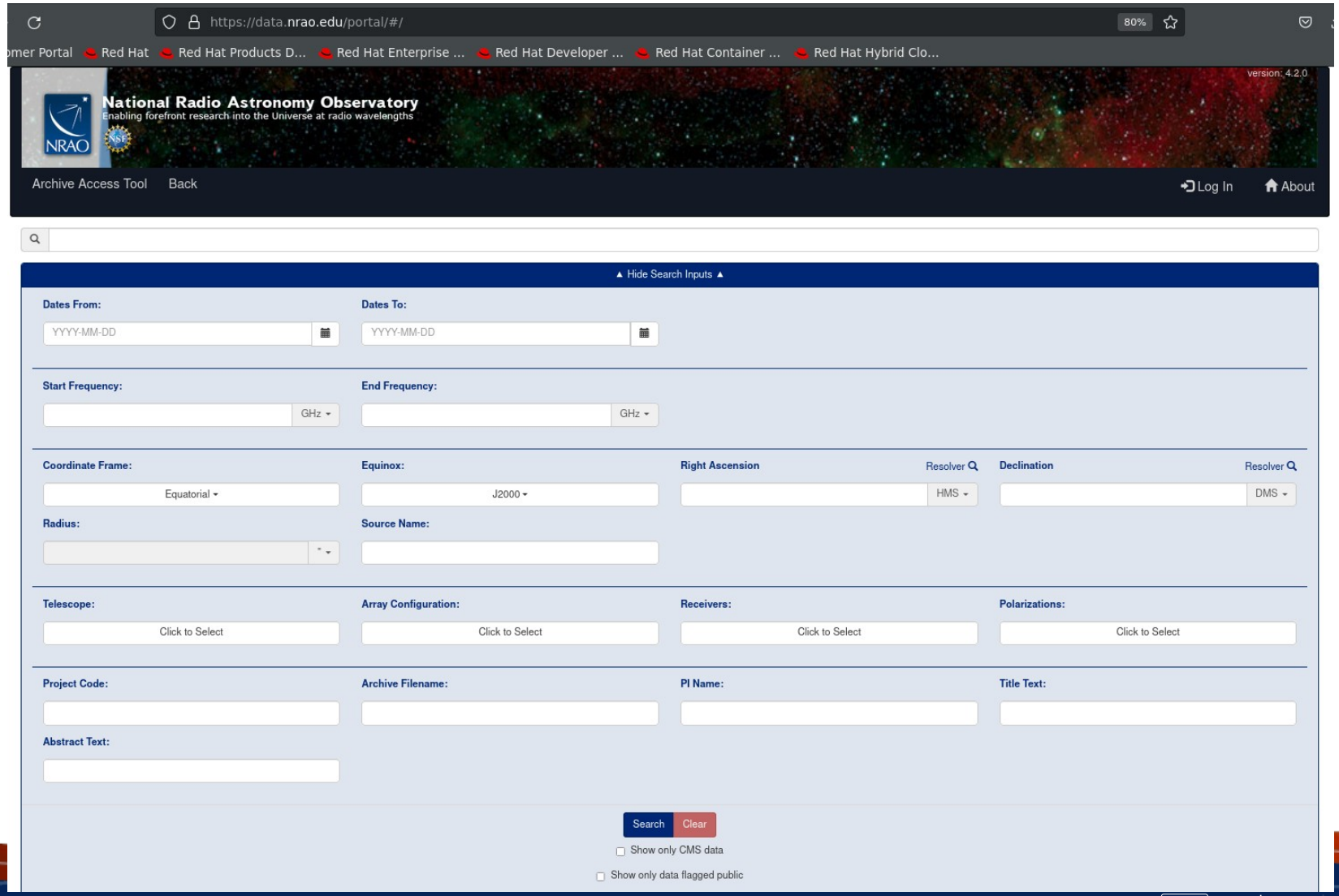
Data lists: images

https://data.nrao.edu/portal/



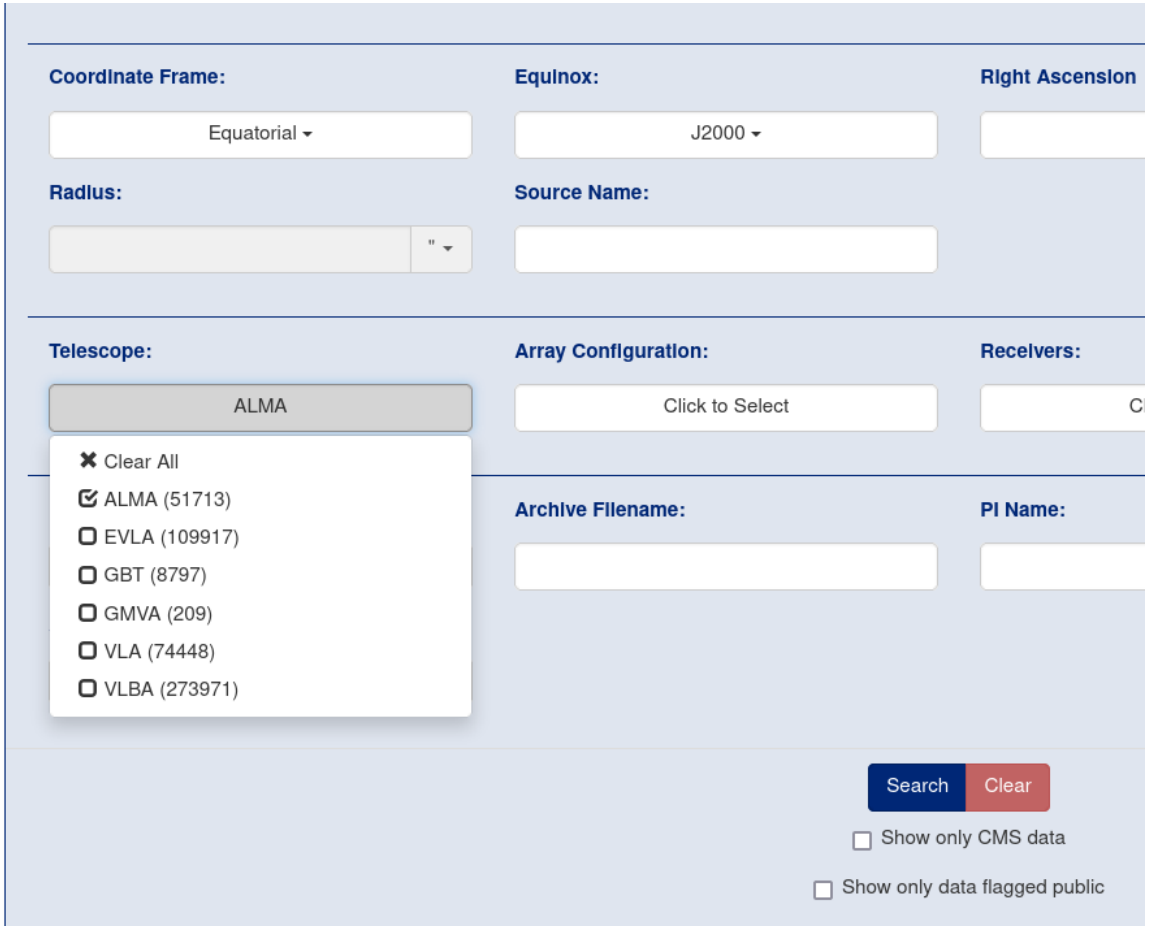
Archive Access Tool (AAT)

Archive search inputs



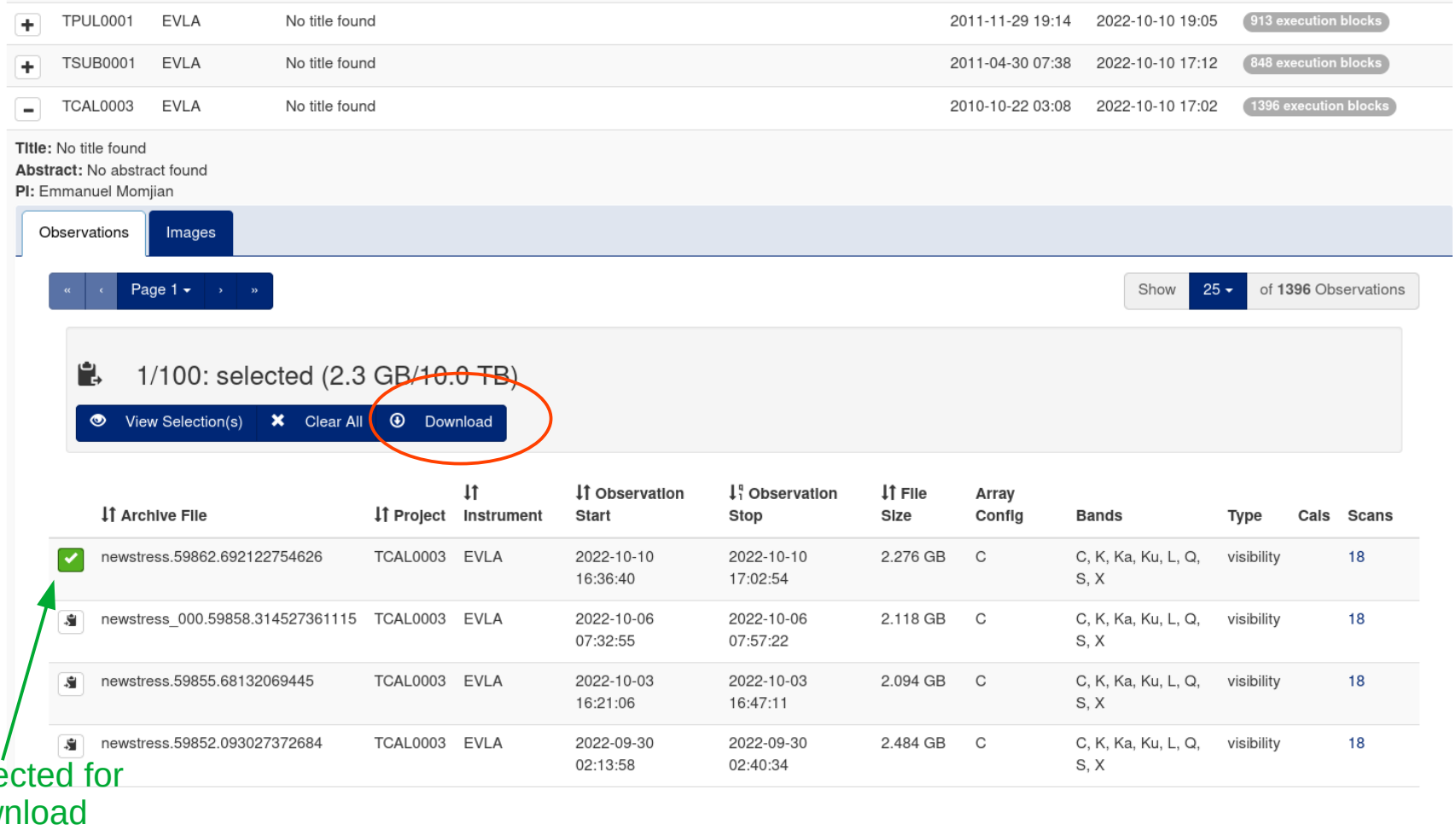
Archive Access Tool (AAT)

Archive search inputs



Archive Access Tool (AAT)

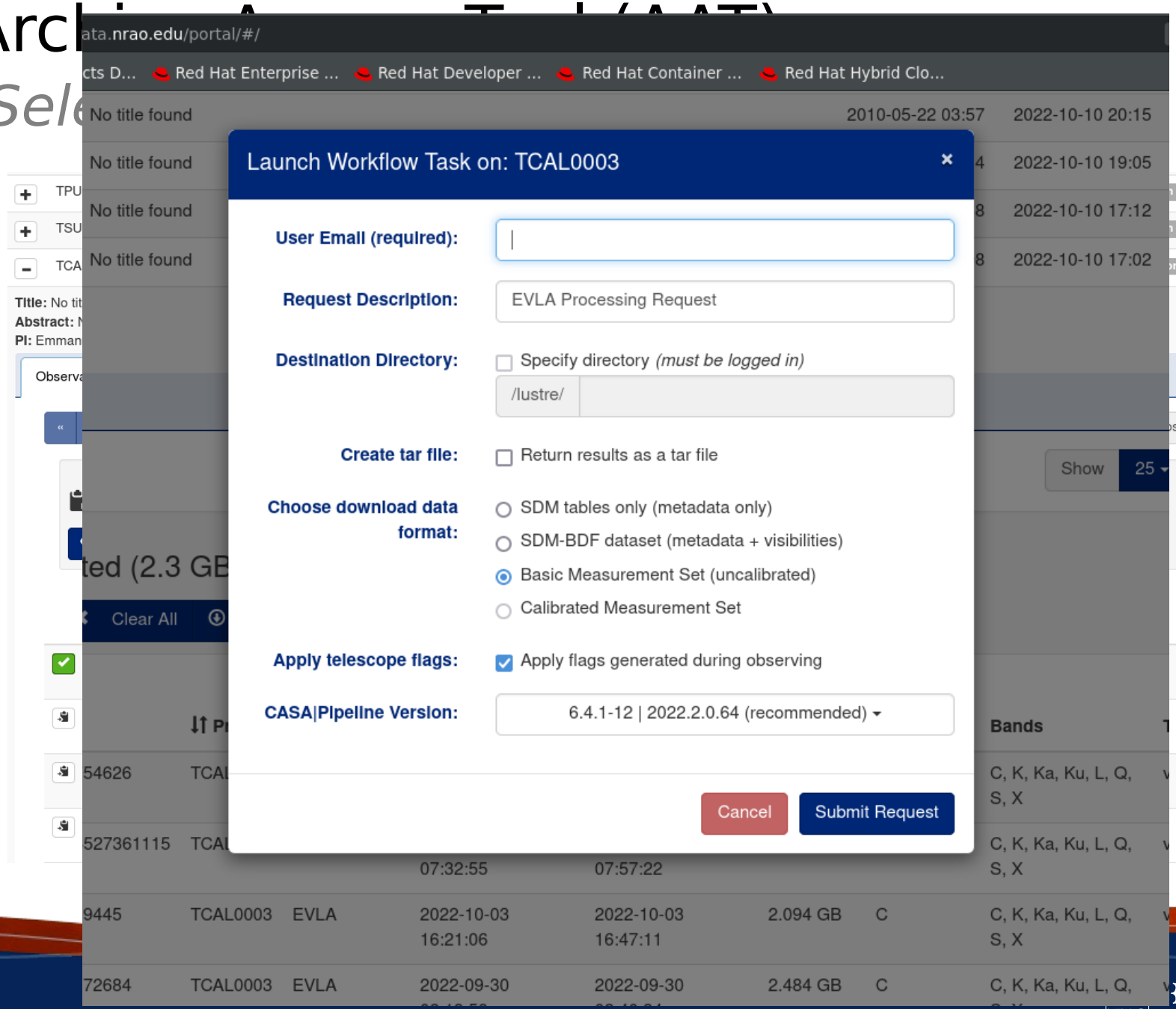
Selecting data for download



Selected for download

Archive Access Tool (AAT)

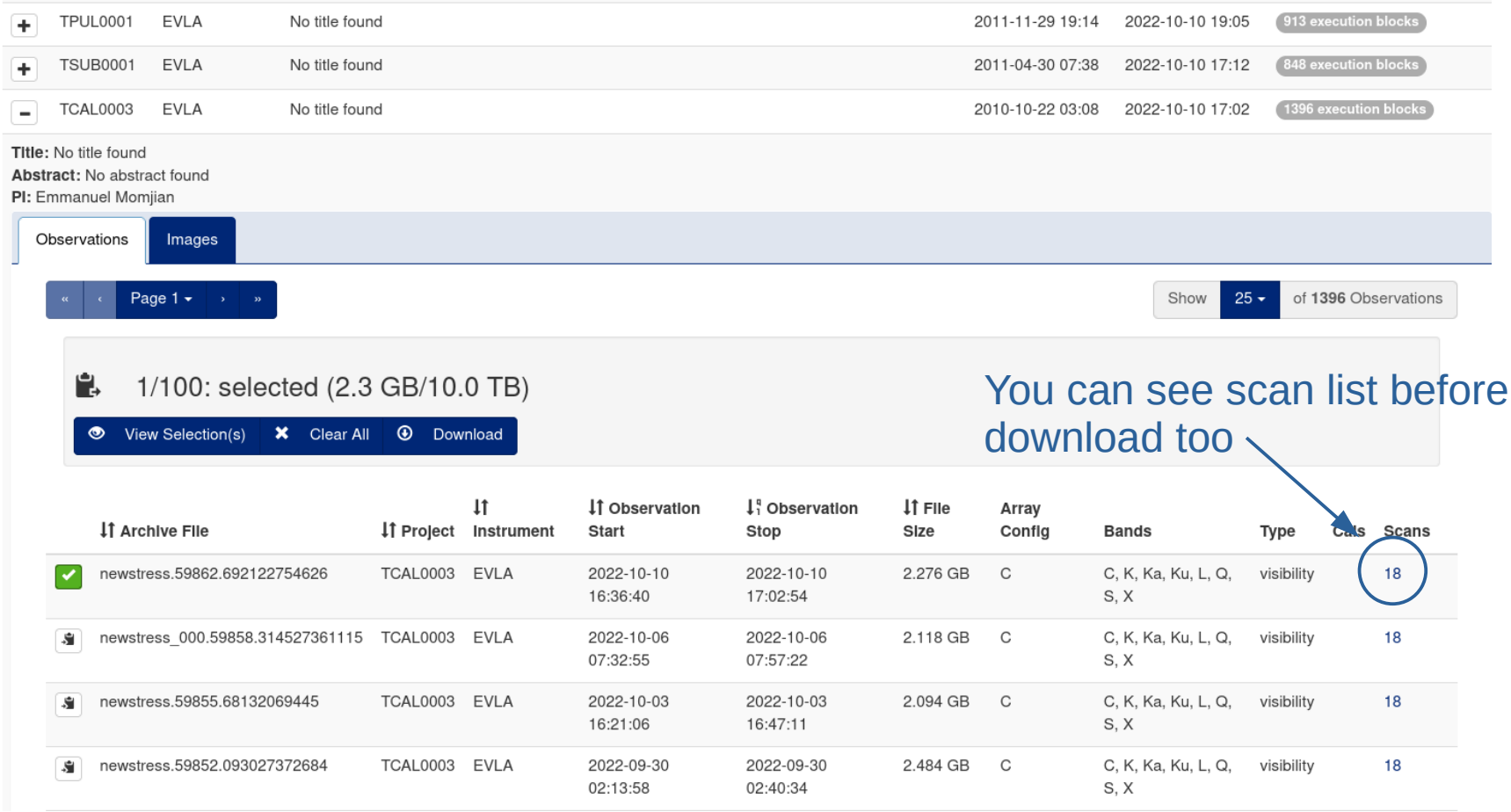
Sele



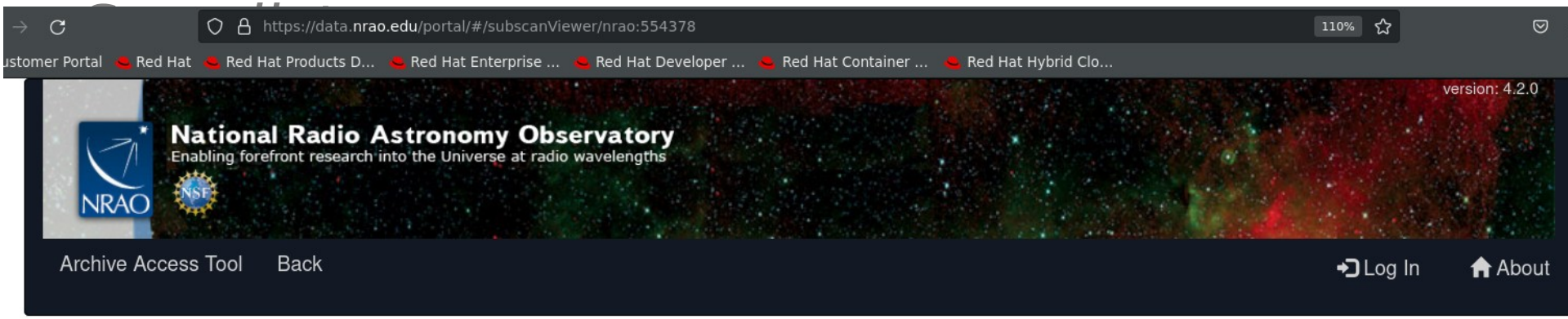
NRAO

Archive Access Tool (AAT)

Scan list



Archive Access Tool (AAT)



Observation ID: newstress.59862.692122754626

Obs ID: newstress.59862.692122754626
Project Code: TCAL0003
Estimated Size: 2.276 GB
Obs Release Date: 2022-10-10T23:02:54.550Z
Data Product Type: visibility
Receiver Band: C, K, Ka, Ku, L, Q, S, X
Array Configuration: C

Request Data

RA	Dec	Target Name	Min Frequency	Max Frequency	Scan Intent	Polarizations	Temporal Res	Scan Duration
11h53m12.499s	80°58'29.155"	1153+8058	8.3320000 GHz	8.3320000 GHz	["CALIBRATE_PHASE","CALIBRATE_AMPLI"]	["RR, RL, LR, LL"]	1.008	120 sec
11h53m12.499s	80°58'29.155"	1153+8058	8.3320000 GHz	8.3320000 GHz	["SYSTEM_CONFIGURATION"]	["RR, RL, LR, LL"]	1.023	45 sec
11h53m12.499s	80°58'29.155"	1153+8058	4.8320000 GHz	4.8320000 GHz	["CALIBRATE_PHASE","CALIBRATE_AMPLI"]	["RR, RL, LR, LL"]	1.008	120 sec
11h53m12.499s	80°58'29.155"	1153+8058	4.8320000 GHz	4.8320000 GHz	["SYSTEM_CONFIGURATION"]	["RR, RL, LR, LL"]	1.023	45 sec
11h53m12.499s	80°58'29.155"	1153+8058	3.0200000 GHz	3.0200000 GHz	["CALIBRATE_PHASE","CALIBRATE_AMPLI"]	["RR, RL, LR, LL"]	1.008	120 sec
11h53m12.499s	80°58'29.155"	1153+8058	1.3880000 GHz	1.3880000 GHz	["SYSTEM_CONFIGURATION"]	["RR, RL, LR, LL"]	1.004	149.55 sec
11h53m12.499s	80°58'29.155"	1153+8058	3.0200000 GHz	3.0200000 GHz	["SYSTEM_CONFIGURATION"]	["RR, RL, LR, LL"]	1.023	45 sec
11h53m12.499s	80°58'29.155"	1153+8058	1.3880000 GHz	1.3880000 GHz	["CALIBRATE_PHASE","CALIBRATE_AMPLI"]	["RR, RL, LR, LL"]	1.008	120 sec

Archive Access Tool (AAT)

VLBA segments

	Project	Instrument	Title	First Obs	Last Obs	
+	PPM2022	VLBA	No title found	2022-03-21 06:00	2022-09-27 11:53	5 execution blocks
+	UC003	VLBA	No title found	2021-09-01 05:00	2022-09-27 05:59	304 execution blocks
−	BS298	VLBA	Exploring Post-merger SMBH Evolution with the VLBA	2021-06-01 13:59	2022-09-27 02:38	116 execution blocks

Title: Exploring Post-merger SMBH Evolution with the VLBA
Abstract: We will continue a survey of six massive, major galaxy mergers, seeking signatures of the dual, binary, or recoiling SMBHs that should reside there. High-resolution VLBA observations of the remaining four targets will characterize the active emission history of the SMBHs and seek evidence of widely separated cores (at tens of parsec separations), and gravitational-wave searches with NANOGrav data will provide complementary searches for sub-parsec binary systems. With these two components, this program will represent a comprehensive probe of binary and active nucleus evolution within the final stages of major galaxy mergers, and will directly advance modern gravitational-wave astrophysics in the nanohertz gravitational waveband. Discoveries of dual, binary, coalescing, and recoiling SMBHs will raise our confidence in surveyable signatures that mark the presence of such systems, and will directly constrain the efficiency of binary evolution.
PI: Sarah Spolaor
Legacy ID: BS298
Co-Authors: Peter Breiding, Joseph Lazio, Caitlin V

VLBA is different to VLA due to its very nature, with often many correlations done in Socorro which are grouped into separate Segments

Segments | Images

« ‹ Page 1 › »

25 of 53 Segments

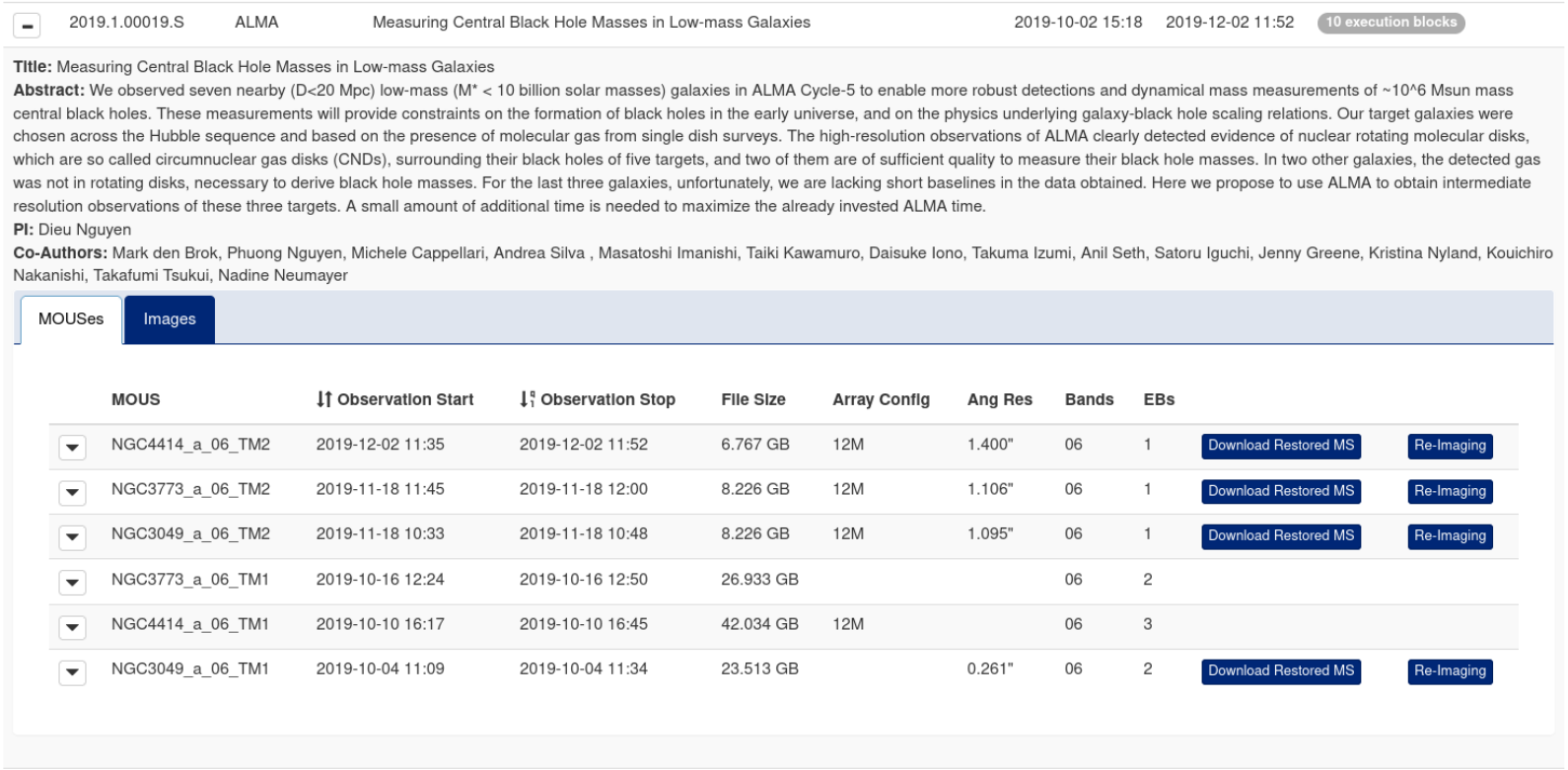
	Segment	Segment Start	Segment Stop	File Size	Bands	Correlation Files
	BS298F2	2022-09-26 21:00	2022-09-27 02:38	8.320 GB	S, X, C	2
	BS298F1	2022-09-18 21:59	2022-09-19 03:46	8.263 GB	S, X, C	2
	BS298F0	2022-09-16 21:59	2022-09-17 03:38	8.352 GB	S, X, C	2
	BS298E9	2022-09-15 21:54	2022-09-16 01:16	6.474 GB	S, X, C	2
	BS298E8	2022-09-06 01:49	2022-09-06 04:45	6.626 GB	S, X, C	2
	BS298E6	2022-09-05 01:59	2022-09-05 04:47	6.258 GB	S, X, C	2

Archive Access Tool (AAT)

ALMA Products (briefly)

ALMA has used its own data repository: https://almascience.nrao.edu/aq/
Roll-out to new integrated NRAO Archive is ongoing.

Screenshot of ALMA entries in new NRAO AAT (https://data.nrao.edu/):



2019.1.00019.S ALMA Measuring Central Black Hole Masses in Low-mass Galaxies 2019-10-02 15:18 2019-12-02 11:52 10 execution blocks

Title: Measuring Central Black Hole Masses in Low-mass Galaxies

Abstract: We observed seven nearby (D<20 Mpc) low-mass (M* < 10 billion solar masses) galaxies in ALMA Cycle-5 to enable more robust detections and dynamical mass measurements of ~10^6 Msun mass central black holes. These measurements will provide constraints on the formation of black holes in the early universe, and on the physics underlying galaxy-black hole scaling relations. Our target galaxies were chosen across the Hubble sequence and based on the presence of molecular gas from single dish surveys. The high-resolution observations of ALMA clearly detected evidence of nuclear rotating molecular disks, which are so called circumnuclear gas disks (CNDs), surrounding their black holes of five targets, and two of them are of sufficient quality to measure their black hole masses. In two other galaxies, the detected gas was not in rotating disks, necessary to derive black hole masses. For the last three galaxies, unfortunately, we are lacking short baselines in the data obtained. Here we propose to use ALMA to obtain intermediate resolution observations of these three targets. A small amount of additional time is needed to maximize the already invested ALMA time.

PI: Dieu Nguyen

Co-Authors: Mark den Brok, Phuong Nguyen, Michele Cappellari, Andrea Silva , Masatoshi Imanishi, Taiki Kawamuro, Daisuke Iono, Takuma Izumi, Anil Seth, Satoru Iguchi, Jenny Greene, Kristina Nyland, Kouichiro Nakanishi, Takafumi Tsukui, Nadine Neumayer

MOUSes | Images

MOUS	Observation Start	Observation Stop	File Size	Array Config	Ang Res	Bands	EBs		
NGC4414_a_06_TM2	2019-12-02 11:35	2019-12-02 11:52	6.767 GB	12M	1.400"	06	1	Download Restored MS	Re-Imaging
NGC3773_a_06_TM2	2019-11-18 11:45	2019-11-18 12:00	8.226 GB	12M	1.106"	06	1	Download Restored MS	Re-Imaging
NGC3049_a_06_TM2	2019-11-18 10:33	2019-11-18 10:48	8.226 GB	12M	1.095"	06	1	Download Restored MS	Re-Imaging
NGC3773_a_06_TM1	2019-10-16 12:24	2019-10-16 12:50	26.933 GB			06	2		
NGC4414_a_06_TM1	2019-10-10 16:17	2019-10-10 16:45	42.034 GB	12M		06	3		
NGC3049_a_06_TM1	2019-10-04 11:09	2019-10-04 11:34	23.513 GB		0.261"	06	2	Download Restored MS	Re-Imaging

Archive Access Tool (AAT)

Current status: known issues and planned work

- SDM-BDF and MS of the same observations have to be requested separately.
- Only a single calibrated MS can be requested at any one time.
- Frequency-dependent FoV search is not yet supported
- Download requests are returned in a nested directory, with a sub-directory named exactly the same as what you asked for; you will have to go into that sub-directory to get to the requested file, e.g.
  `20B-099.sbXXX.ms/20B-099.sbXXX.ms/20B-099.sbXXX.ms`

- Automated ways to get the data:
  - `wget` command → in place
  - Scripted access to the archive → VO TAP (Virtual Observatory Table Access Protocol) access standard to search the metadata, download not yet possible; see documentation here: https://science.nrao.edu/srdp/scripted-access-to-the-nrao-archive

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https://science.nrao.edu/observing/nrao-archive-tool-enhancements

Archive Access Tool (AAT)

Feedback

If you have issues with the archive, please send us Helpdesk ticket under the VLA/VLBA Archive and Data Retrieval department. For ALMA related issues there is ALMA Data Products or a separate dedicated ALMA science helpdesk (https://help.almascience.org/).

We also do really welcome feedback on current data archive, including requests for features, for this please send us Helpdesk ticket under the AAT Feedback department (for any telescope).

Scientific Helpdesk

https://help.nrao.edu/

www.nrao.edu
science.nrao.edu
public.nrao.edu

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