



SARAO
South African Radio
Astronomy Observatory

SARAO ARCHIVE INTERFACE USER GUIDE

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Archive Queries

The SRAO Archive Interface (<https://archive.sarao.ac.za>) allows users to view, search for and access users' observational data. This user guide describes how to use the archive interface and also how to get the rights to access the datasets.

The SRAO Archive Interface User Guide is available online at [https://archive.sarao.ac.za/statics/Archive Interface User Guide.pdf](https://archive.sarao.ac.za/statics/Archive%20Interface%20User%20Guide.pdf)

Direct all archive related queries to the SRAO Help Desk at <https://skaafrika.atlassian.net/servicedesk/customer/portal/1/group/7>

Data Reduction Queries

Additional data reduction is not supported at SRAO.

Note: Arrangements to reduce data at IDIA (Inter-university Institute for Data Intensive Astronomy) will have to be made independently. South African based PIs can apply to use IDIA.

To find out more, go to <https://www.idia.ac.za/>. Information with regards to datasets that end up in IDIA, will have to be followed up with the IDIA Help Desk. For further IDIA access, related support and support for the ilifu Research Facility, please contact support@ilifu.ac.za.

Revision History

Version	Date	History	Editors Team
V1.0.0	Oct 2019	First release version doc	Archive Team
V1.1.0	Feb 2020	Improved features and icon updates	Archive Team
V1.1.1	Feb 2022	Updates to reflect review by the Science Operations team.	Archive Team
V1.2.0	Aug 2023	Observation changes ,Transfers & Multiple Push	CAM-SCI-OPS Team
V1.2.1	May 2024	Minor edits with revised figures	CAM-SCI-OPS Team

What's new in V1.1.0

- Basic metadata fields like Capture Block ID & Frequency Band are displayed.
- Icons updated for both Data and Push buttons.
- Calibration reports display one drop down list.
- Multiple capture blocks per schedule block that are created, can now display each capture block separately.
- Display FITS images that are created from the SDP pipelines in a drop down list.
- Provide the ability to configure the conversion of data to measurement set.
- Update the push of datasets to partner institutions as per the PI agreement.
- The push button is only displayed if the push is explicitly configured for a proposal ID.
- Only one transfer at a time for the transfer ID triggered.
- Mount FITS image data and beamformer data as a directory.

What's new in V1.1.1

- Clicking the Data Access Buttons now takes you to the Configure MVF to MS section, a button to perform the requested action with the displayed configuration must be pushed on this configuration screen
- The Configure MVF to MS configuration section now includes an MS volume function that estimates MS size based on MVF to MS arguments.
- User's can now access the delay cal observations that were performed for their observations.

What's new in V1.2.0

- Clear search button added
- Apply filter button added
- Clearing individual filters added
- Display ProposalId column on transfers page
- Help option on transfer page
- Observation/ Calibration report added to transfer page
- Filtering by CBID added
- Displaying expire time on observations added

- Multiple pushes to IDIA of the same data product with different parameter selections
- Updated size calculation for MVF to MS configure page
- Displaying Quality assurance (QA) for observations
- Filter by QA (Good, Usable and Failed)
- QA comments on failed observations

What's new in V1.2.1

- Minor corrections and typo fixes.
- Updates on revised figures
- Updates w.r.t direct download link validity and restaged data policy

Table of Contents

1. Login and Registration	5
2. Access to MeerKAT Science Data	7
2.1. Principal Investigators	7
2.2. General Users	8
3. Using the Archive Interface	8
3.1. General Buttons	9
3.2. Search Bar	10
3.3. Advanced Search Menu	10
3.4. Save Search	12
4. Interaction with Archive Data	12
4.1. Observation Meta Information	12
4.2. Data Access Buttons	15
4.2.1. Direct Access (KATDAL)	15
4.2.2. Push (to IDIA)	16
4.2.3. Direct Download Link	18
4.2.4. Configure MVF to MS	20
5. MeerKAT Cookbook	20
7. Acknowledgement statement	20
8. Frequently Asked Questions (FAQs)	21

1. Login and Registration

To access the SARA0 archive interface, you must be a registered user. Details below.

Point your browser to <https://archive.sarao.ac.za>, where you will be directed to the authentication page, shown in Figure 1.

First time users:

- Click on the [Register](#) link at the tab section "New User? [Register](#)"
- And follow the instructions.
- The validation email is valid for 5 minutes
- If you don't see an email, please check your spam folder. There are known issues of emails being kept in quarantine. The token then expires before the user is able to use it.

Returning users:

- Log in with the authenticated email and password to access the SARA0 archive interface.

SARA0 users:

- Log in/register directly by clicking the SARA0 Gmail button
- Authenticate using your sarao.ac.za email ID.

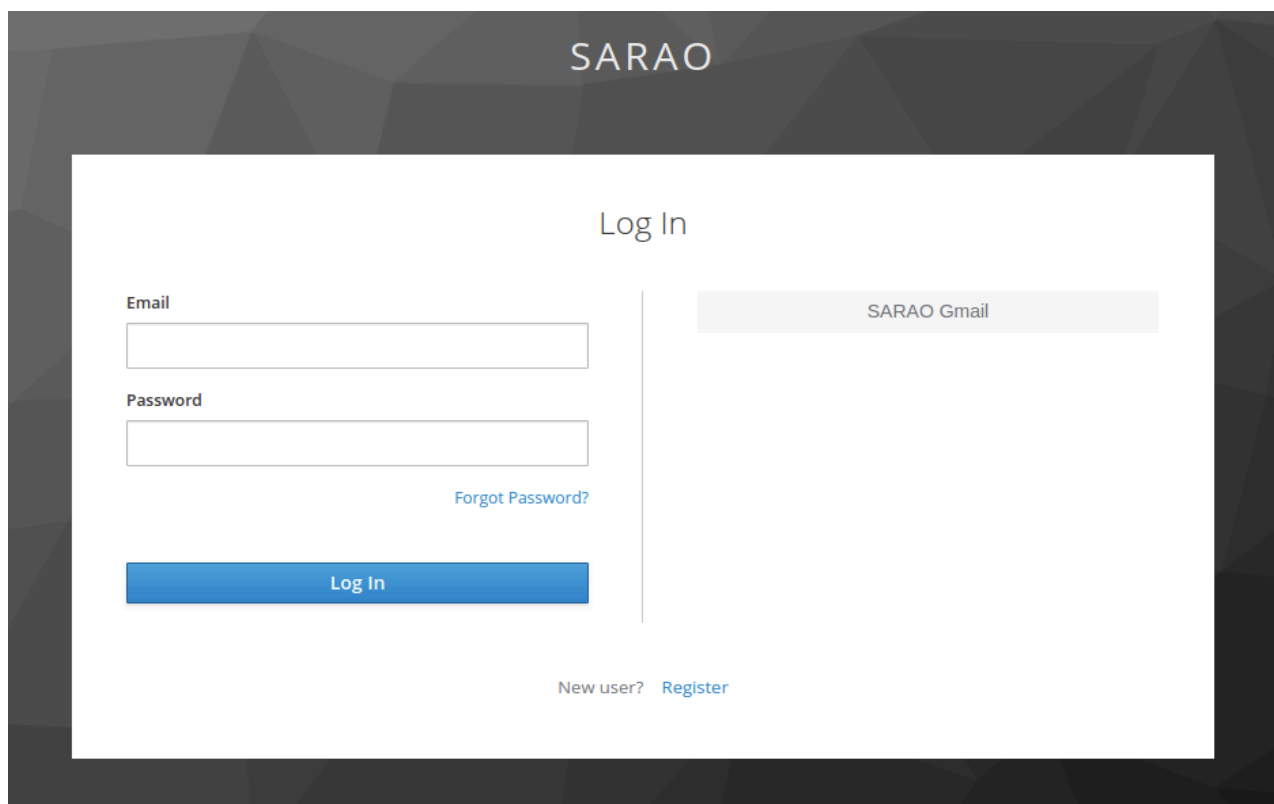
The image shows a web page for SARA0 authentication. At the top, the word "SARA0" is displayed in a large, white, sans-serif font against a dark, geometric background. Below this, the page is divided into two main sections by a vertical line. On the left, under the heading "Log In", there are two input fields: "Email" and "Password". Below the "Password" field is a blue link that says "Forgot Password?". At the bottom of this section is a blue button labeled "Log In". On the right side, there is a light gray button labeled "SARA0 Gmail". At the very bottom of the page, centered, is the text "New user? [Register](#)".

Figure 1: SARA0 Authentication Page

If **unable to register** via the SRAO archive, raise a ticket on SRAO HelpDesk via the link below:

<https://skaafrika.atlassian.net/servicedesk/customer/portal/1/group/7>

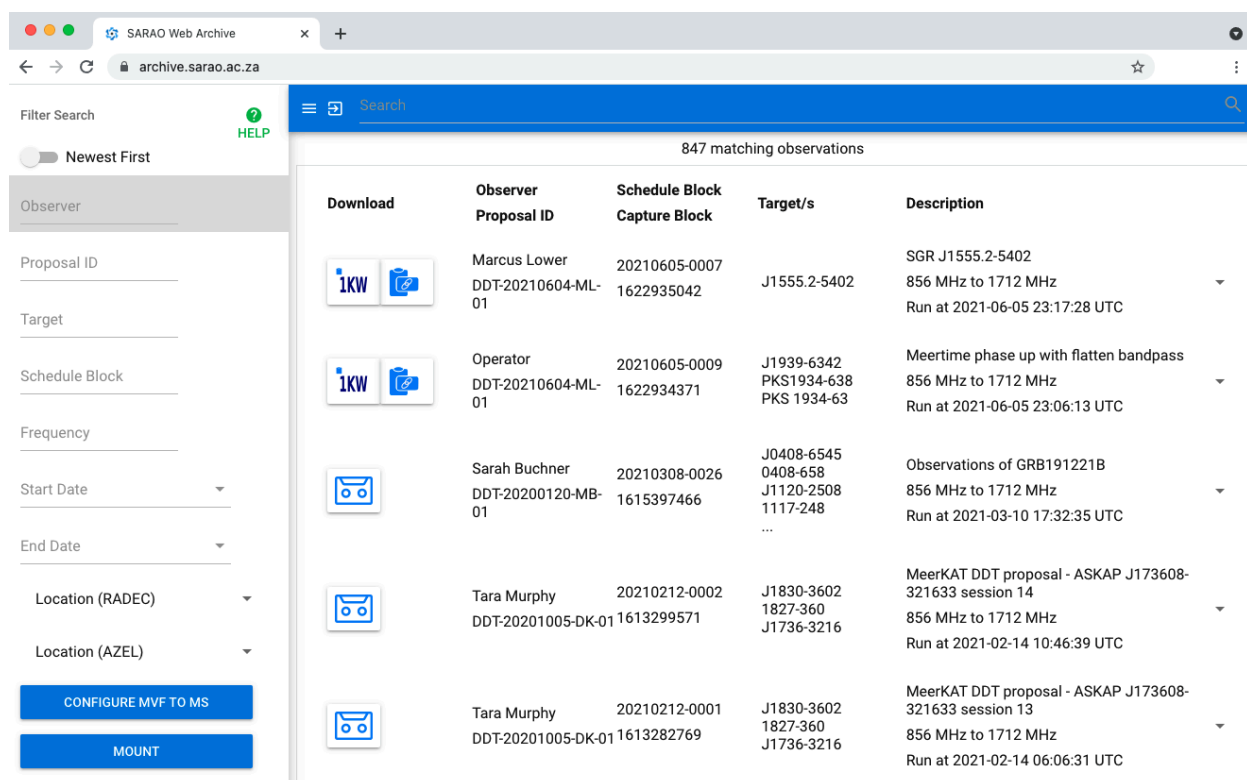
Make your email subject: **User Registration Error**

Add the following information to your email:

- **Full name and email** of the person trying to register
- [If not SRAO email holder] The name of the **project PI or affiliation** (if relevant)
- **Copy of the error message** displayed when trying to register.

New users will only be able to view publicly accessible data.

MeerKAT has publicly accessible data, so **first time users** will see the archive landing page with these public observations as in Figure 2.



The screenshot shows the SRAO Web Archive interface in a web browser. The browser address bar shows 'archive.srao.ac.za'. The interface has a blue header with a search bar and a 'Filter Search' button. On the left, there is a sidebar with a 'Filter Search' section containing a 'Newest First' toggle and a 'HELP' button. Below this is a 'Filter Search' section with input fields for 'Proposal ID', 'Target', 'Schedule Block', 'Frequency', 'Start Date', 'End Date', 'Location (RADEC)', and 'Location (AZEL)'. At the bottom of the sidebar are two blue buttons: 'CONFIGURE MVF TO MS' and 'MOUNT'. The main content area shows a table of observations with the heading '847 matching observations'. The table has columns: 'Download', 'Observer', 'Proposal ID', 'Schedule Block', 'Capture Block', 'Target/s', and 'Description'. The table lists five observations, each with a download icon (1KW) and a description of the observation.






Download	Observer	Proposal ID	Schedule Block	Capture Block	Target/s	Description
	Marcus Lower	DDT-20210604-ML-01	20210605-0007	1622935042	J1555.2-5402	SGR J1555.2-5402 856 MHz to 1712 MHz Run at 2021-06-05 23:17:28 UTC
	Operator	DDT-20210604-ML-01	20210605-0009	1622934371	J1939-6342 PKS1934-638 PKS 1934-63	Meertime phase up with flatten bandpass 856 MHz to 1712 MHz Run at 2021-06-05 23:06:13 UTC
	Sarah Buchner	DDT-20200120-MB-01	20210308-0026	1615397466	J0408-6545 0408-658 J1120-2508 1117-248 ...	Observations of GRB191221B 856 MHz to 1712 MHz Run at 2021-03-10 17:32:35 UTC
	Tara Murphy	DDT-20201005-DK-01	20210212-0002	1613299571	J1830-3602 1827-360 J1736-3216	MeerKAT DDT proposal - ASKAP J173608-321633 session 14 856 MHz to 1712 MHz Run at 2021-02-14 10:46:39 UTC
	Tara Murphy	DDT-20201005-DK-01	20210212-0001	1613282769	J1830-3602 1827-360 J1736-3216	MeerKAT DDT proposal - ASKAP J173608-321633 session 13 856 MHz to 1712 MHz Run at 2021-02-14 06:06:31 UTC

Figure 2: Example showing SRAO Archive Interface for first time users

Access to non-public MeerKAT data can only be granted by MeerKAT science Principal Investigators (PIs), see Section 2.

2. Access to MeerKAT Science Data

2.1. Principal Investigators

The PI of the proposal will have been given administrator access to the proposal. Please refer to the [group administration guide](#) for instructions on how to add co-investigators.

2.2. General Users

Access to non-public science data is allowed at the sole discretion of each project's Principal Investigator (PI).

In order to obtain access, a request must be submitted directly to the relevant PI.

This is not a function of the archive administrator and will not be granted by the archive administrator.

Access to non-scientific MeerKAT data, such as commissioning or engineering test data, will be evaluated on a case-by-case basis.

Please put a ticket onto the JIRA Helpdesk for assistance.

<https://skaafrica.atlassian.net/servicedesk/customer/portal/1/group/7>

3. Using the Archive Interface

Once access to science data has been granted, logging into the archive will display all accessible data, Figure 3. The user can now proceed to view observational information, as well as access/download the data for processing.

Not seeing observations after being added to a group?

You will need to **log out and log in** again in order for new permissions to be loaded once you have been added to a group.

The layout of the SARAO archive interface page consists of 3 major sections. The top of the page contains all the buttons for user login and quick search, there is an advanced search feature on the left, while the bulk of the user interaction will be focused on the data access section.



Figure 3: SARAO Archive Interface

3.1. General Buttons

The blue bar at the top of the page provides the user with the general interaction buttons, such as logout and help. See Figure 4.

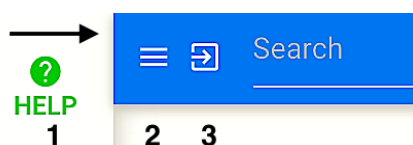


Figure 4: General Buttons

Help: To get to this help document, click the green **Help** button (marked **1**).

Search Options: To toggle the visibility of the advanced search menu on the left, click the **Search** option button (marked **2**), i.e. directly right of the **Help** button.

LogOut: To logout from the archive interface, click the **Logout** button (marked **3**), i.e. directly right of the **Search** button.

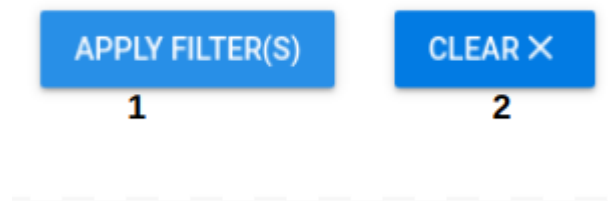


Figure 4.1: General Buttons

Apply filter: To apply all selected filters to the search (marked **1**)

Clear: To clear applied filters (marked **2**)

3.2. Search Bar

The quick search bar can be used to search the archive based on a user query string, Figure 5.

- Text is entered where "**Search**" is indicated on the left side (marked **4**).
- The search is initiated by either pressing **Enter** key or clicking on the magnifying glass on the right side (marked **4**).
- The top search bar is the general search. This will search all metadata for the value in the search bar. For an exact match, insert the search term in " "



Figure 5: Search Bar

3.3. Advanced Search Menu

On the left hand side of the archive interface, various filter search options (see Figure 6) allows you to customize the search to show only the observations of interest (marked 5).

Filter Search

NEWEST FIRST

5

Observer

Proposal ID

Target

Schedule Block

Capture Block

Frequency

QA

Start Date

End Date

Location (RADEC)

Location (AZEL)

APPLY FILTER(S)

CLEAR X

Search

6952 matching observations

Download	Observer Proposal ID	Schedule Block Capture Block	Target/s	Description	QA
<div>UHF</div>	Ziteng Wang DDT-20240213-AW-01	20240219-0024 1708396251	J1939-6342 1934-638 J1331+3030 3C286 ...	ASKAP J1832-0911 Long Observation (U-band) 544 MHz to 1088 MHz Run at 2024-02-20 02:31:00 UTC Date to archive to tape not set	
<div>SB</div>	Ziteng Wang DDT-20240213-AW-01	20240219-0030 1708396132	J1939-6342 1934-638 J1331+3030 3C286 ...	ASKAP J1832-0911 Long Observation (S0) 1750 MHz to 2625 MHz Run at 2024-02-20 02:30:03 UTC Date to archive to tape not set	
<div>SB</div>	Operator DDT-20240209-JL-01	20240219-0035 1708394448	J1939-6342 PKS1934-638 PKS 1934-63	S-band Phase up with flatten bandpass 1750 MHz to 2625 MHz Run at 2024-02-20 02:01:00 UTC Date to archive to tape not set	
<div>UHF</div>	Operator DDT-20240209-JL-01	20240219-0034 1708394447	J1939-6342 PKS1934-638 PKS 1934-63	UHF phase up with flatten bandpass 544 MHz to 1088 MHz Run at 2024-02-20 02:00:49 UTC Date to archive to tape not set	
<div>SB</div>	Yu Wing Joshua Lee DDT-20240209-JL-01	20240217-0012 1708228854	J1939-6342 1934-638 J1840-0809 J1833-2103 ...	CRACO-VAST Radio transient follow-up (S0) 1750 MHz to 2625 MHz Run at 2024-02-18 04:01:13 UTC Date to archive to tape not set	

Figure 6: Search Menu

The advanced “**Filter Search**” menu explained in detail below for utilising the advanced archive search menu options on a specific Proposal ID or Schedule Block ID or Capture Block ID, QA, etc. (see Figures 6.1 & 6.2).

Newest First

Toggling this will ensure the latest observation is first (rather than the one which most closely matches your search)

Observer

This is the name of the person who ran or prepared the observation.

Proposal ID

The code for the proposal an observation is in. Scientific observations have proposal IDs in the form XXX-yyyymmdd-xx-nn. This is generated for each scientific proposal when a proposal is accepted.

Target

A named target in the sky or a location in RA,Dec or Az,El

Schedule Block

The schedule block of the observation. Each chunk of observing time on the telescope will have a Schedule Block assigned to it.

Capture Block

The capture block of the observation. Each chunk of observing time on the telescope will have a Capture Block assigned to it.

Frequency

A Frequency in MHz for the type of observation you are interested in.

QA filter

The quality assurance code of the observation, each observation gets assigned a quality code based on the data received from the observation.

StartDate

The date from which you would like to search. The period starts at midnight at the beginning of that day.

EndDate

The date up to which you would like to search. The period ends at midnight at the beginning of that day.

Location (RADEC)

A Cone search. The location on Right Ascension and Declination, along with a radius in degrees around that point. All values can be in decimal or hour notation in degrees. ie. RA= HH:mm:ss or DD.dddd

Location (AZEL)

A Cone Search. The Location in Azimuth and Elevation from the MeerKAT telescope, along with a radius in degrees around that point. All values can be in decimal or hour notation in degrees. ie. DD:mm:ss or DD.dddd

Apply Filter(s)

The apply filters button filters by all the filled in filters.

Filter Search

☒ Newest First

Observer

Proposal ID

Target

Schedule Block

Capture Block

Frequency

QA

Start Date

End Date


Location (RADEC)

Location (AZEL)

APPLY FILTER(S)

CLEAR X

Figure 6.1: Advance Search Menu 1

<p>Clear Inline clear</p> <p>Click the  in the field to clear that field</p>	
---	--

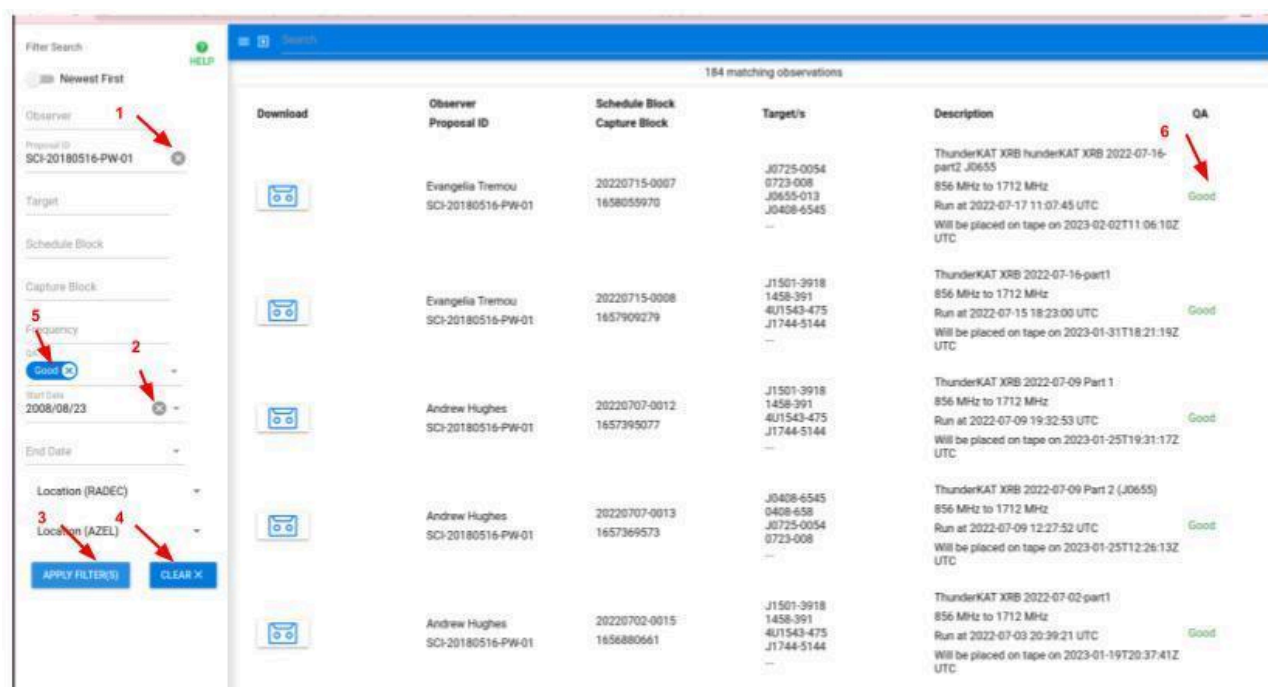


Figure 6.2: Advance Search Menu 2

1. Inline fields are clearable, the (x) resets the field (marked 1)
2. Start and End date are clearable, the (x) resets the calendar (marked 2)
3. Apply filter(s) - Applies the selected filters to your search (marked 3)
4. Clear filters - clears the filter form (marked 4)
5. QA Filter (marked 5)
6. Display QA value (marked 6)

Search					
1 matching observations					
Download	Observer Proposal ID	Schedule Block Capture Block	Target/s	Description	QA
<div>UHF</div> <div>CHPC</div> <div>IDIA</div>	Alessandro Ridolfi SCI-20180516-MB-04	20230504-0012 1683194984	J0103-7050A	MeerTIME Globular Cluster: NGC362 (09U-meertime) 544 MHz to 1088 MHz Run at 2023-05-04 10:11:03 UTC Will be placed on tape on 2023-11-20T10:09:44Z UTC	Failed
<div>QA Comments</div> <div>Data not captured on ptuse2</div>					
Details					
Script Log					
Calibration Report 1					

Figure 6.3: QA comments on failed observation

NB: Failed observations are only visible to based on roles

1. QA code (marked **1**)
2. Details of the observation on fold (marked **2**)
3. QA comments details on fold (marked **3**)
4. Actual QA comment (marked **4**)

3.4. Save Search

The current state of the archive view will be retained once the user logs out. This allows quick return to the last archive use.

For users who are working with data for multiple science projects, the relevant search results for observations related to each science project can be saved for easy access later:

- Save the search result URL containing the relevant search parameters in a text file for later use e.g. to return to search results listing observations with CAL-20190506-OP-02 proposal ID, copy and save the URL
<https://archive.sarao.ac.za/proposalid/CAL-20190506-OP-02/order/true/>
- Alternatively, **use your browser to create a bookmark for each search result page**, giving appropriate name and bookmark location.

4. Interaction with Archive Data

For each observation you will get a line containing some basic information on the observation and some buttons which will allow you to access the data. (See Figures 7 & 7.1).

2334 matching observations

Download	Observer Proposal ID	Schedule Block Capture Block	Target/s	Description
	Paul Barrett DDT20230131-PB-01	20230131-0023 1675365374	J0409-6545 0409-658 J0521+1638 3C138 ...	EF Eri in outburst 2 856 MHz to 1712 MHz Run at 2023-02-02 19:16:41 UTC Date to archive to tape not set
	Paul Barrett DDT20230131-PB-01	20230201-0016 1675281908	J0409-6545 0409-658 J0521+1638 3C138 ...	EF Eri in outburst 2 856 MHz to 1712 MHz Run at 2023-02-01 20:05:24 UTC Date to archive to tape not set
	Tara Murphy DDT20230117-TM-01	20230126-0074 1674824644	J1939-6342 PKS 1934-63 J2129-5721 ICRF J193925.0-634245 ...	A candidate pulsar: VAS1-205139.0-573906 (L-band) 856 MHz to 1712 MHz Run at 2023-01-27 13:05:28 UTC Date to archive to tape not set

Description

EF Eri in outburst 2
856 MHz to 1712 MHz
Run at 2023-02-02 19:16:41 UTC
Date to archive to tape not set

expiry date →

Figure 7: Archived Data Information

Download	Observer	Proposal ID	Schedule Block	Capture Block	Target/s	Description	QA
4KW	FernandoCamilo	SSV-20180505-FC-02	20180706-0126	1530927060	0408-658 0408-6545 0506-612 Tarantula	Tarantula observation 856 MHz to 1712 MHz Run at 2018-07-07 01:31:07 UTC Will be placed on tape on 2024-06-04T05:10:29Z UTC	

Figure 7.1: Expiry date of requested restaged data return back to tape

Expiry date:time is the expected date when the data will be moved back to tape.

When not set we display “Date to archive to tape not set”.

Important note to reader:

1. Observations requested through **Director’s Discretionary Time (DDT)** typically have a **proprietary period of three months**. PIs may also choose to waive the proprietary period.
2. **Open Time proposals** typically have a **proprietary period of 12 months** after the last observation has been obtained.
3. Proprietary periods vary for Large Survey Projects (LSPs) depending on observing seasons.
4. All the above falls in line with SRAO MeerKAT Telescope & Data Access Policy.

4.1. Observation Meta Information

To get extra information you can click anywhere on the observation line (except the buttons), this will bring a drop down with extra information. (See Figure 8).

For these options, click on the bar to open the result in your current window. Clicking on these links (marked **6**), the information will be opened in a new tab.

6	Details	6
	Script Log	
	Delay Cal Observation	
	Spectral Imager Report	
	Calibration Report 1 Calibration Report 2 Calibration Report 3 Calibration Report 4	
	Continuum PB Corrected RMS Image	
	Continuum PB Corrected Mean Image	
	Continuum Image PB corrected	
	Continuum Image	
	Continuum Image Quality Report	
	Spectral Image	

Figure 8: Observation Meta Information

Details

The **Details** link provides more detailed information about the observation. It is the same information that displays the **katdal** object in Python using the print command.

Script Log

The **Script Log** link provides the progress output of the observation script.

Delay Cal Observation

Provides a link to the Delay Cal observation that was run to calculate delays for this observation.

Spectral Imager Report.

Provides the spectral imager report for the observation. This shows the comparison of imaged to theoretical noise across the band, and highlights channels with strong sources in them.

Calibration Report/s

The Calibration Report link provides the calibration report/s for the observation.

Continuum Image PB Corrected RMS Image

An estimate of the rms noise in the primary beam corrected image, produced using the [BANE](#) tool. The rms is estimated in overlapping regions of roughly 20 times the size of the synthesised beam.

Continuum PB Corrected Mean Image

A smoothed image of the mean flux density in the primary beam corrected image, produced using the [BANE](#) tool. The rms is estimated in overlapping regions of roughly 20 times the size of the synthesised beam.

Continuum Image PB Corrected

A primary beam corrected image, produced by dividing the Continuum Image produced by the pipeline imager with the MeerKAT primary beam attenuation pattern.

Continuum Image

Continuum Images produced for this observation. Provided imaging was performed. This image is not corrected for primary beam effects. The fits image has multiple planes, the planes correspond to the continuum image across the whole bandwidth, a spectral index image and images produced for narrower spectral subbands.

Continuum Image Quality Report

A summary of the properties of bright (>500 microJy/beam) sources in the final primary beam corrected image which can be used to assess the image quality. Reported properties include source counts, the fraction of resolved sources and a comparison of source positions and fluxes in the MeerKAT image with known sources in SUMSS and NVSS.

Spectral Image

Single-channel FITS image for each channel in the observation up to 32k.

For more information on the Images and reports, please visit

<https://skafrica.atlassian.net/wiki/spaces/ESDKB/pages/338723406/SDP+pipelines+overview>

4.2. Data Access Buttons

On the left hand side of the archive user interface, each result you will see a collection of buttons. These buttons allow you to access the observation data directly, convert the data to a Measurement Set and push the data to IDIA or other institutions that you have already made prior arrangements for accessing the datasets, Figure 9.



Figure 9: Data Access Buttons

4.2.1. Direct Access (KATDAL)

Documentation for KATDAL can be found at <https://katdal.readthedocs.io/en/latest/>

This button will place a command to open your observation directly with katdal **onto your clipboard**.



The **katdal** button









Simply open an **ipython** session, **import katdal** and paste the command into your terminal:

```
data=katdal.open('https://archive-gw-1.kat.ac.za/1563881958/1563881958_sdp_l0.full.rdb',
s3_endpoint_url='https://archive-gw-1.kat.ac.za',
token='eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.eyJpc3MiOiJrYXQtYXJjaGl2ZS5rYXQuYWVMuemEiLCJhdWQiOiJhcmNoaXZILWd3LTEua2F0LmFjLnphIiwiaWF0IjoxNTYzOTY4NTc1LCJwcmVmaXgiOiJsiMTU2Mzg4MTk1OCJdLCJleHAiOiJlNjQwNTQ5NzUsInN1YiI6ImRldiIsInNjb3BlcyI6WyJyZWFKIl19.oEfrFEj0klW7A1bTdn8eIRsLOHppUWuPTIyjXurzpjhnu9frHNwk5NOSigVzg2DSyfIGVG_P2aqMVTdQdTH0zg')
```

This command will create a katdal object called **data** which you can use to examine the data.

Archive interaction and katdal usage examples can be found in the [MeerKAT-Cookbook](#).

The katdal button will reflect the type of data that you are working with. The icons for different data types are shown below as examples.

 1KN	1k channel narrowband L-band data
 4KN	4k channel narrowband L-band data
 32KN	32k narrowband L-band data
 1KW	1k channel wideband L-Band data
 4KW	4k channel wideband L-band data
 32KW	32k channel wideband L-band data
 SB	S Band data (see Details tab for all relevant info (channels, etc)).
 UHF	UHF Band data (see Details tab for all relevant info (channels, etc)).

Important note to reader:

1. SARAO archival data is accessible via the internet.
2. Access is strictly allowed through the use of tokens.

This Direct Access KATDAL token provides access to your data for 7 days.

4.2.2. Push (to IDIA)

The **Push** button is only shown if you have already set up an agreement with IDIA. If you would like to request processing at IDIA, please refer to the ilifu user guide

https://docs.ilifu.ac.za/#/data/data_transfer?id=transfer-data-from-the-sarao-archive which includes eligibility and support email for contact information.

On clicking this button the Configure MVF to MS screen is opened. This screen is explained in detail in section 4.2.5 below.

Once a transfer is triggered, all other transfer buttons are disabled until the original transfer is complete. If multiple transfers are running at once, one of them will always fail.

Each button will convert the data into a Measurement Set and push the data to IDIA, where you can perform further processing. This process could take a week to 2 weeks, depending on the length and type of observation. Once the data has been successfully pushed, you will receive an email to that effect. Also, once the data has transferred, it may take some time before it is available in your user space. Please contact IDIA or your partner institution for any queries after receiving your email.

Multiple pushes

Furthermore, a new feature for multiple transfers of the same data has been developed. The feature works by allowing users to transfer the same data multiple times based on the following criteria.






- If the selected data is being transferred with a set of different parameters from all the previous transfers of the same data,
- if the data transfer has failed before with the same set of parameters, multiple pushes will allow a new push of the same parameters for the same data.
- If the user needs to transfer the same data with the same parameters again, multiple pushes will not automatically allow this; however, it will inform the user of the previous push and the user will need to log a ticket with the helpdesk to perform the same operation again.
- Lastly, multiple pushes does not permit a new data transfer of the same parameters to be started while a previous transfer of the same operation is running.

All direct downloads and pushes share the same cluster of machines during periods of high loads, your conversion may have to wait in a queue before starting. This means your conversion could take longer than indicated above.



The **push** buttons

The push button has a number of states:

	Loading the state of the Push
	The data is ready to push. Click the button to start the push process.
	The pushing process is running normally.
	The data has been pushed to IDIA. You should receive an email notification that the data has arrived.
	The push failed. In the event that this happens, SARAO will be notified already and will restart the push once we have figured out the issue.

The state of the button will update after you click it. After that you will have to **refresh the page to see the state of your push.**

Important note to reader:

Please note that arrangements to reduce data at IDIA will have to be made independently. To find out more email support@ilifu.ac.za.

4.2.3. Direct Download Link

Once a direct transfer is triggered, all other transfer buttons are disabled until the original transfer is complete. If multiple transfers are running at once, one of them will always fail.

On clicking this button the Configure MVF to MS screen is opened. This screen is explained in detail in section 4.2.5 below.

This button will convert the observation to a Measurement Set, tar the Measurement Set and create a link that you can use to download the resulting tarball. As with a push to IDIA, this process usually takes a day to 3 weeks, depending on the size of the observation and you will receive an






email once it is complete. The email will contain the link you need to download the observation. The link will be valid for 60 days.

All direct downloads and pushes share the same cluster of machines during periods of high loads, and your conversion may have to wait in the queue before starting. This means your conversion could take longer than indicated above.



Direct Download Link Button

The Direct Download Link Button has a number of states:

	Loading the state of the link.
	The link has already been created. Click the button to copy the link to your clipboard.
	No link exists yet. Click the button to begin the link creation process
	The link creation process is running normally.
	The link creation process failed. We will have been notified of the failure and will restart the process once we have figured out the issue with the process.

Default measurement set is created using the following options. Once the process is done you will receive an email with a link, e.g.



https://archive-gw-1.kat.ac.za/1563312365-dataexport/1563312365_sdp_l0.full_1284.full_pol.ms.tar?token=eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.eyJpc3MiOiJrYXQtYXNjaGl2ZS5rYXQwYWWMuemEiLCJhdWQiOiJhcmNoaXZILWd3LTEua2F0LmFjLnphbiwiiaWF0IjoxNTY0MDYzMDEyMjYwOjE2LmVmaXgiOlsiMU2MzMxMjMNSjdLCJleHAiOiJeflNjQxNDk0MzIsInN1YiI6ImRldiIsInNjb3BlcyI6WyJyZWFKIl19.4EOdvBLEOVKHIPuIQVK3ph5a6ENyWiVOm6w9b77Xhxx94rCc2ADbEwoBQo5GytNrOHdh85yy0PSo_fefV0jpA

Use only the link provided & sent to your email to download the created measurement set.
The Direct Download link will be available to download the ms file which is valid for 60 days.

For linux users, wget with the -o and -c options should work well, e.g.

https://archive-gw-1.kat.ac.za/1563312365-dataexport/1563312365_sdp_l0.full_1284.full_pol.ms.tar?token=eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.eyJpc3MiOiJrYXQxYXJjaGl2ZS5rYXQwYWVMuemEiLCJhdWQiOiJhcmNoaXZILWd3LTEua2F0LmFjLnphbiwiiaWF0IjojNTY0MDYzMDMyLmFjbmVmaXgiOlsiMU2MzMxMjMNSjdLCJleHAiOiJeflNjQxNDk0MzIsInN1Yil6ImRldiIsInNjb3BlcyI6WyJyZWFKIl19.4EOdvBLEOVKHIPuIQVK3ph5a6ENyWiVOm6w9b77XhKx94rCc2ADbEwoBQo5GytNrOHdh85yy0PSo_fefv0jpA

4.2.4. Restage from Tape

	The data is taped. Click the button to request for restaging.(Figure 10)
	A request to restage data has been sent, when ready the state will be changed to (Figure 10)

24



Note: Refresh the tab, as sometimes it looks “busy waiting for response”

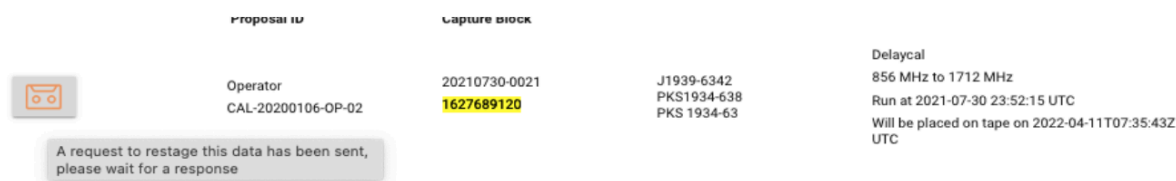


Figure 10: Restage Data Request UI Icon Change



Figure 11: Direct Download Link UI Icon Change

Important note to reader:

While making "Restage requests from tape", the following details to be noted as currently only visibility products are retrieved as part of the standard restage requests.

1. Bulk restage requests are not supported due to current hardware resource constraints. Log a query via the SRAO Science service desk portal w.r.t your needs before proceeding.
2. If you are looking for sdp imaging products, **DO NOT** trigger restage requests as this is not archived to tape.

3. Do not proceed with multiple clicks for "Restage data from tape" button on the same Capture Block ID, as the first clicked request will be already busy generating the link that is already part of the queued cluster.
4. Once restaged, the restaged data link will be available to download & expires after **90 days**.
5. Next step is to use "katdal token" (advisable) or "direct download link" which can take time.
5. The Direct Download link access will be available to download the ms file valid for **60 days**.

4.2.5. Configure MVF to MS

This screen (Figure 12) allows you to configure the measurement set creation parameters and initiate the data access action related to the button you pressed to open it.

The screenshot shows the 'Configure MVF to MS' interface. At the top, a blue header bar contains the title 'Configure MVF to MS : 32K' (callout 1). Below the header, there is a 'CREATE DIRECT DOWNLOAD' button (callout 2) and a descriptive text: 'Press this button to initiate the create direct download using the arguments below. This will result in a MS of 90.54 GB' (callout 3). To the right of the text are two buttons: 'DEFAULT UNCALIBRATED' (callout 4) and 'DEFAULT CALIBRATED'. The main area is divided into two columns: 'Description' (callout 5) and 'Parameter' (callout 6). The 'Description' column lists various configuration options, and the 'Parameter' column lists the corresponding command-line flags. The 'Value' column (callout 7) shows the current settings for each parameter. At the bottom, there is a link to the 'MVF to MS cookbook' (callout 8) and a note about flag information.

Description	Parameter	Value
Produce a full polarisation MS	-f	true
List of online flags to apply	-flags	com.data_lost,ingest_rfi
Range of numfrequency channels to keep	-C	
Output time averaging interval in seconds	-dumptime	
Bin width for channel averaging in channels	-chanbin	
Discard the first N dumps	-quick	
List of calibration solutions to apply	-applycal	
Tailor the MS	-t	
Use W term to stop fringes for each baseline	-w	
Select polarisation products	-p	
Exclude autoCorrelation data	-a	
Keep spaces in source names	-s	
Flag elevations outside range	-e	
Add MODEL_DATA and CORRECTED_DATA columns to the MS	-m	
If a single element in an averaging bin is flagged, flag the averaged bin	-flagov	
Create calibration tables from gain solutions	-caltables	

Figure 12: MVF to MS configure screen

We describe the numbered components from Figure 12 below.

1. The header. This includes the number of channels for the observation you are configuring a measurement set creation for. This can be 1K, 4K or 32K

2. The data access button. This button will depend on the data access button you pressed to open the MVF to MS configuration screen. Press this button to initiate the data access action.
3. The estimated size of the measurement set based off of the selected parameters.
4. Default configuration buttons. Click these buttons to get appropriate settings for uncalibrated or calibrated data. The initial settings are the default uncalibrated.
5. Descriptions of each parameter
6. The corresponding flag for the parameter. These are the flags you would use if you created the measurement set yourself using the mvf_to_ms.py script that is part of the katdal package.
7. The Value of the parameters. Editing these values will affect the estimated size of the MS
8. Links to further information about measurement set creation and the flags

5. MeerKAT Cookbook

The MeerKAT Cookbook provides some recipes for MeerKAT data interaction and processing for easy interaction. The link is available at <https://github.com/ska-sa/MeerKAT-Cookbook>.

6. Acknowledgement statement

As you may know, the former DST is now part of a larger Ministry, and has been renamed Department of Science and Innovation (DSI). As such, we request that you modify the MeerKAT acknowledgement statement in papers to read:

"The MeerKAT telescope is operated by the South African Radio Astronomy Observatory, which is a facility of the National Research Foundation, an agency of the Department of Science and Innovation."

7. Frequently Asked Questions (FAQs)

A quick guide to some of the commonly asked questions available via SARAo Science Portal → <https://skaafrica.atlassian.net/wiki/spaces/ESDKB/pages/1452441609/Frequently+Asked+Questions>

Any further queries, raise it via SARAo Science ServiceDesk:

<https://skaafrica.atlassian.net/servicedesk/customer/portal/1/group/7>



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SARAO, a Business Unit of the National Research Foundation.

The South African Radio Astronomy Observatory (SARAO) spearheads South Africa's activities in the Square Kilometre Array Radio Telescope, commonly known as the SKA, in engineering, science and construction. SARAO is a National Facility managed by the National Research Foundation and incorporates radio astronomy instruments and programmes such as the MeerKAT and KAT-7 telescopes in the Karoo, the Hartebeesthoek Radio Astronomy Observatory (HartRAO) in Gauteng, the African Very Long Baseline Interferometry (AVN) programme in nine African countries as well as the associated human capital development and commercialisation endeavours.