



EISCAT

*EISCAT services requiring
membership in EISCAT VO*

*Guide for access to EISCAT
portal and EISCAT tools
(GUISDAP and RTG)*

Mária Tjulin

Copyright ©2025, **EISCAT AB**.
Cover photos: Craig Heinselman

Address

EISCAT AB
Bengt Hultqvists väg 1
SE-981 92 Kiruna
Sweden

Phone: +46 980 791 50
E-mail: infocat@eiscat.se

Table of Contents

Table of Contents	3
Introduction	4
1 EISCAT services	4
1.1 EISCAT portal	4
1.2 EISCAT tools	4
2 Step by step guide to registration to EISCAT VO	6
2.1 Step 1: EGI Check-In	6
2.2 Step 2: Enrollment to EISCAT VO	8
2.3 Step 3: EISCAT VO application form	9
3 Login to EISCAT tools	10
3.1 Uploading data to EISCAT environment	14
3.2 Downloading data to local computer	14
4 Login to EISCAT portal	16

Introduction

This document is a guide which explains the necessary steps to access EISCAT services that require a membership in **EISCAT Virtual Organisation (EISCAT VO)**.

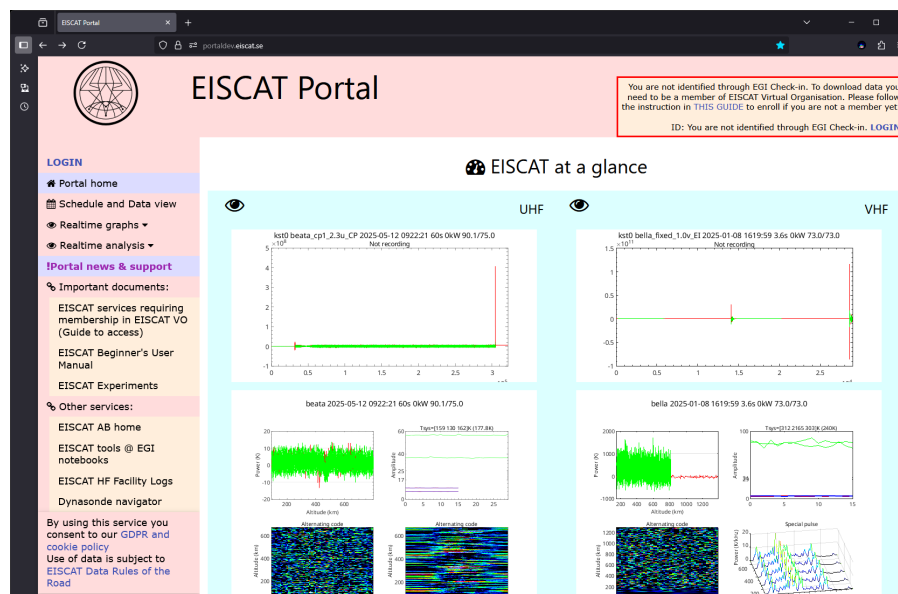
EISCAT utilizes EGI Check-in service (<https://www.egi.eu/service/check-in/>) coupled with Perun service (<https://perun-aai.org/>). This provides the solution for identity and access management to EISCAT's services. Membership in EISCAT VO and its subgroups on perun gives us the information about which services given user has access to and EGI Check-in service tells us which user is trying to access the services.

To access the download of public data on EISCAT portal you need to be minimally general member of EISCAT VO. To access further services like campaign request on the portal page or EISCAT tools on EGI notebooks you need to be a member of further subgroups of EISCAT VO. This guide explains how to become a member of the correct groups for access to your services.

1 EISCAT services

1.1 EISCAT portal

EISCAT portal (<https://portal.eiscat.se/>) is a service that offers campaign request, overview of schedule for operations and data search and download services. It is still being developed so new services are added to the page with time. EISCAT portal is described in higher detail in chapter 4



1.2 EISCAT tools

EISCAT tools is a jupyter notebook environment with pre-installed programming tools and current version of EISCAT's software GUISDAP and RTG. EISCAT plans to work also on integrating scripts and tools from interested users to make them available for trying out to wider community. This software serves for visualizing and analysis of the EISCAT radar data. Since there are historical problems with installing GUISDAP with all of its libraries on some systems, we decided to offer this opportunity to our users to use its current full version online. The aims are to preserve the GUISDAP software and its functionality, especially over the transition period to EISCAT_3D and make its clean setup available more readily from different platforms.

EISCAT tools version 2.3 is based on [jupyter/datascience-notebook](https://jupyter.org/) which includes in addition to the Python-notebook, R-notebook and Julia-notebook. MATLAB R2024b and GNU Octave, version 8.4.0 are installed to support the run of GUISDAP vs. 9.3-28 and RTG vs 3.2. In addition to these, packages for work with EISCAT data like Geospacelab <https://github.com/JouleCai/geospacelab>

with documentation at <https://geospacelab.readthedocs.io/en/latest/> were also installed.

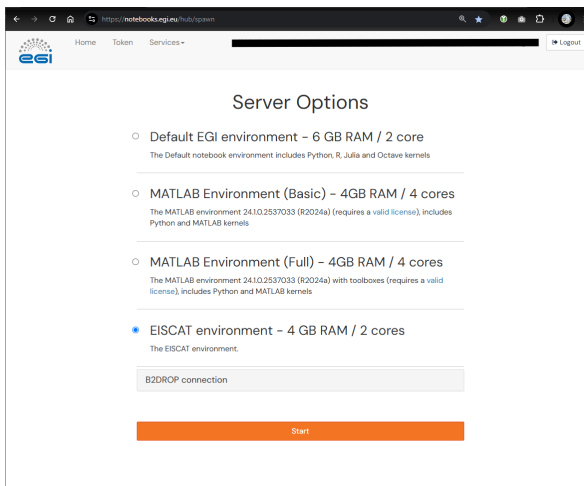
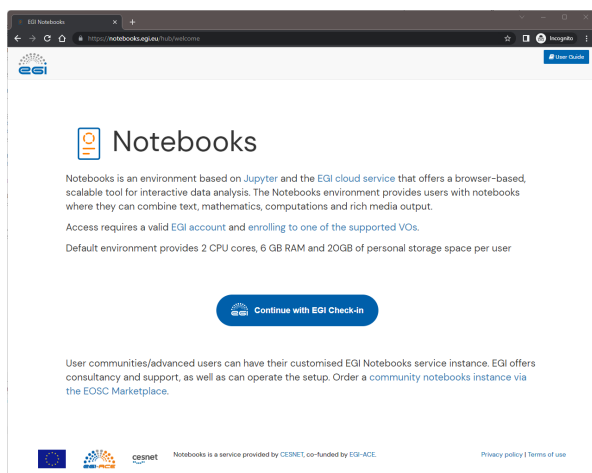
You can check the current version of EISCAT tools in notebooks in terminal of your notebook using the command:

```
jovyan@medusa:~$ echo $ET_VER
```

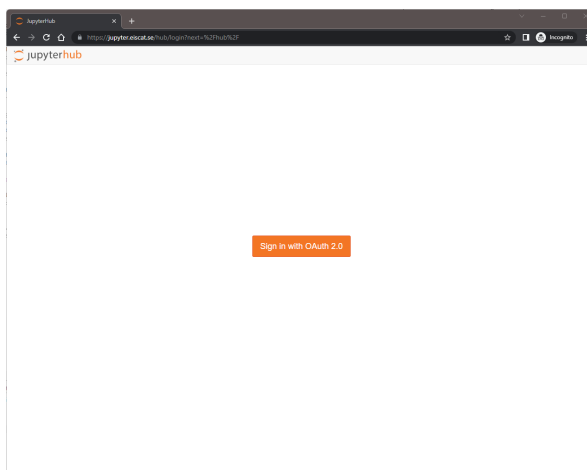
EISCAT tools at EGI: <https://notebooks.egi.eu/>

IMPORTANT: To run **GUISDAP** in this environment a valid **MATLAB** licence is required.

(Note: If you are a member of EISCAT associate or affiliate group in EISCAT VO you already have access to these notebooks.)



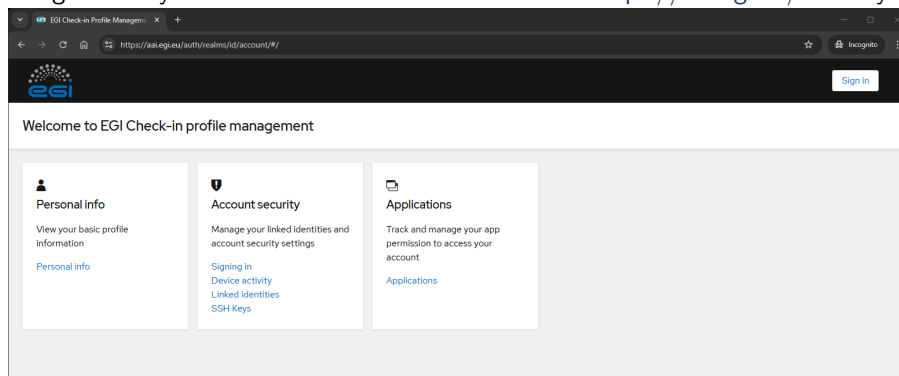
EISCAT tools at EISCAT HQ: In addition to the EGI notebooks version EISCAT uses the environment for teaching in courses organised by EISCAT personnel. During such course this environment is also available at <https://jupyter.eiscat.se/>. To access this instance of EISCAT tools you need to be enrolled in such a course or approach EISCAT personnel personally as this instance has limited up-time and no guarantee of long term persisting data storage.



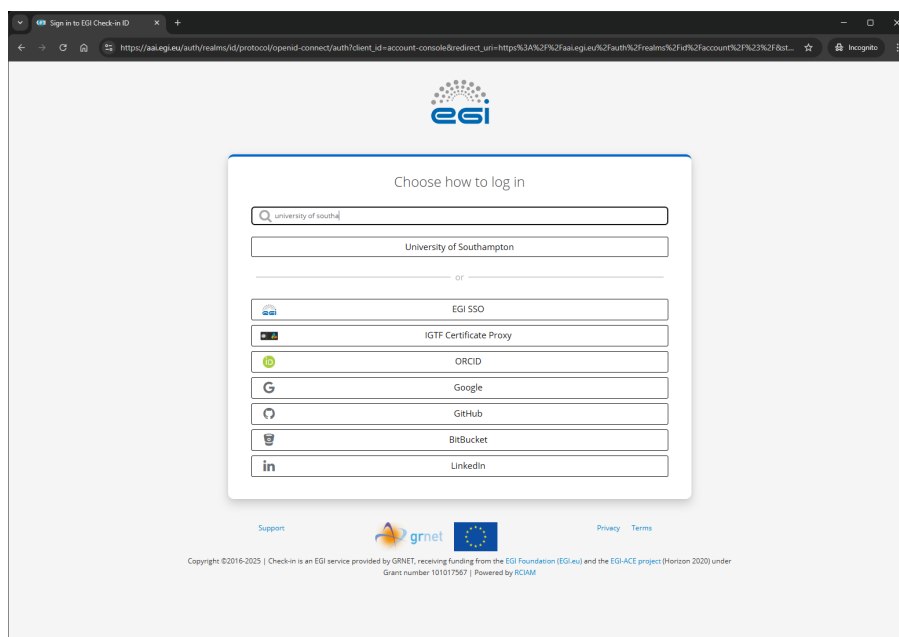
2 Step by step guide to registration to EISCAT VO

2.1 EGI Check-In

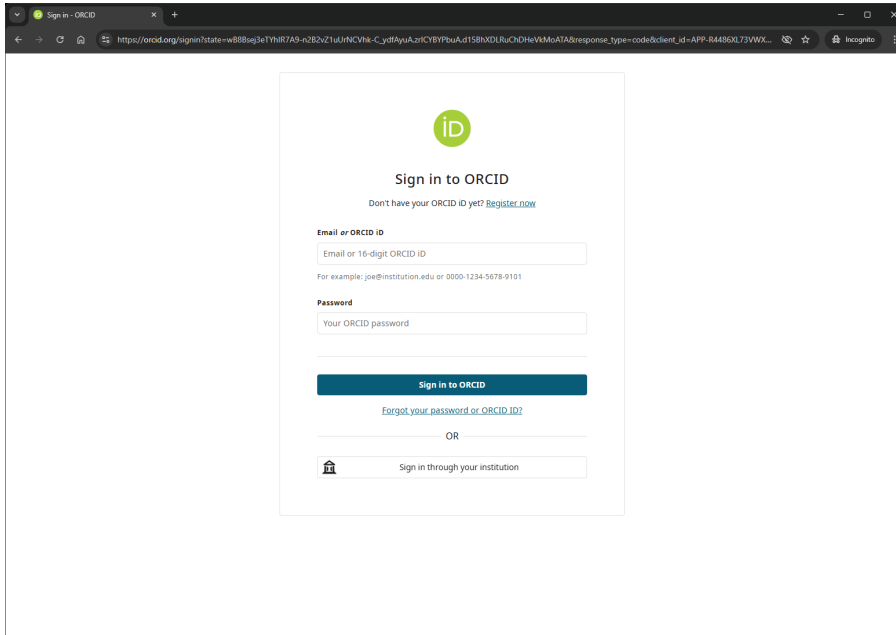
Before you register for the EISCAT VO, please check first if you already have some identity you are either using or that you can use with EGI Check-in. Go to <https://aai.egi.eu/> and try to Sign in.



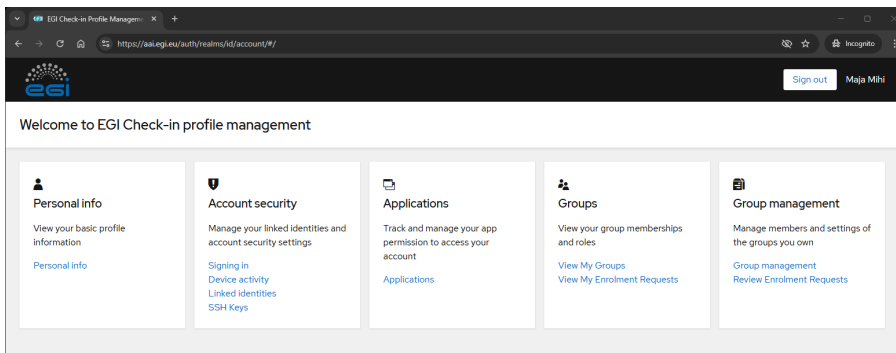
You will be directed to a page where you can choose your way of identification. If you already used this way of identification to access some other services try to search for your institution or network like Feide or a University name etc. For example all institutions that are in eduGAIN <https://technical.edugain.org/status> can use this way of identification. If you possess an ORCID account this one can be used as well. If you are able to find your institution or you have ORCID please use this. Otherwise use any of the other available accounts just let us know later in your application your name so our manager can recognize your application.



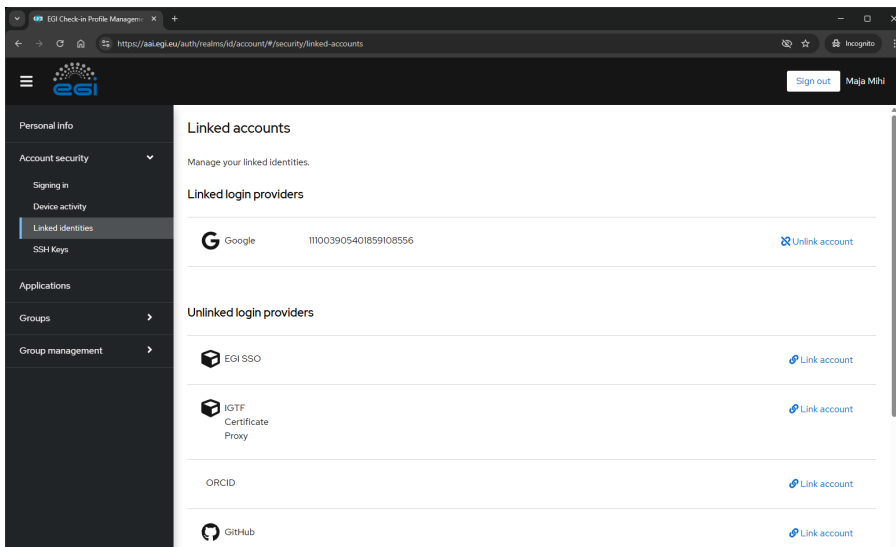
After choosing your institute/account you will be redirected to your identity provider like for example ORCID where you need to sign in and allow EGI Check-in to access your information.



If you are using EGI Check-in for the first time you might need to pass a few steps of enrollment. Eventually you will reach your EGI Check-in profile:



Please notice the Account security box which contains **Linked identities** link. Visit this link and if you desire you can link any other accounts you use to this identity. This is helpful in case you forget which account you used first time. If you accidentally use different account that is not linked to the same identity to identify yourself later in EISCAT VO you would seem as a new person to the system and you might create new identity without access right to our services which can lead to confusion. Please link accounts you feel you tend to use to avoid later mix up.



2.2 Enrollment to EISCAT VO.

The second step is to apply for general membership in EISCAT VO and the membership in appropriate group for access to your services and EGI notebooks. Once you are member of these groups you will have access to EISCAT tools at EGI notebooks and download of eligible level 2 data from our Scheduling and Data portal: <https://portal.eiscat.se/>.

To decide which group you need to apply for follow this information:

General membership in EISCAT VO:

You will be able to identify yourself at [EISCAT portal](https://portal.eiscat.se/) site and have access to public (i.e. in general data older than 3 years) level 2 data available for download there. You will *not* have access to EGI notebooks. To apply for general membership use link: <https://perun.egi.eu/egi/registrar/?vo=eiscat.se>

Membership in EISCAT Associate's or Affiliate's groups:

As a member of an associate's group you will be able to identify yourself at [EISCAT portal](https://portal.eiscat.se/) site and have access to level 2 data that is either public or belongs to the associate's group and is available for download there. You will also have access to EISCAT tools at [EGI notebooks](#).

If you belong to the communities of one of our associates you can use one of the following links to apply for group memberships. These groups are managed by the respective associate representative and the application to them needs to be manually revised so it can take up to few days for your access to be approved.

Present EISCAT Associates groups:

Norway NFR (<https://perun.egi.eu/egi/registrar/?vo=eiscat.se&group=NO>)

group manager: Lisa Baddeley, UNIS

Sweden VR (<https://perun.egi.eu/egi/registrar/?vo=eiscat.se&group=SE>)

group manager: Stephan Buchert, IRF

Finland SA (<https://perun.egi.eu/egi/registrar/?vo=eiscat.se&group=FI>)

group manager: Ilkka Virtanen, OULU

Japan NIPR (<https://perun.egi.eu/egi/registrar/?vo=eiscat.se&group=NIPR>)

group manager: Yasunobu Ogawa, NIPR

UK NERC (<https://perun.egi.eu/egi/registrar/?vo=eiscat.se&group=UK>)

group manager: Ian McCrea, RAL; Andrew Kavanagh, BAS

China CRIRP (<https://perun.egi.eu/egi/registrar/?vo=eiscat.se&group=CRIRP>)

group manager: Wu Jun, CRIRP

EISCAT Affiliate's groups:

For access to EISCAT Affiliates group membership contact EISCAT through your Affiliate representative.

IMPORTANT: *For access to campaign requests on the portal page: contact your group's manager. The access has to be assigned manually in the group. You will not be able to submit campaign requests on the portal page without this step.*

EISCAT users that are not member of any Associate or Affiliate group:

You will have access to public data through general membership of EISCAT VO on the portal pages. If you are not a member of any Associate or Affiliate group and you are interested in access to EISCAT tools at EGI notebooks (<https://notebooks.egi.eu/>) please apply to the following group:

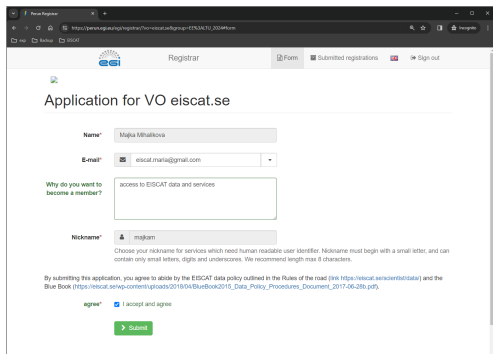
<https://perun.egi.eu/egi/registrar/?vo=eiscat.se&group=Eext%3AHub>

Please choose a link to use based on your membership eligibility. General membership is approved automatically. All other applications are reviewed by responsible managers. Membership can be denied if no valid reason is provided.

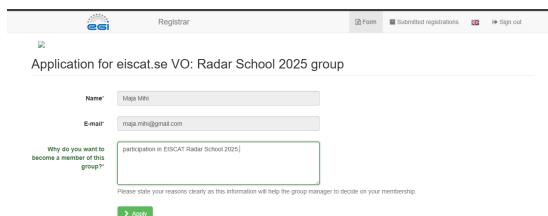
You will be redirected to the EGI Check-in webpage again. If you have still a cookie present from your previous sign-in you will be checked out automatically.

2.3 Fill in the Application form.

The form will be pre-filled, just write a reason for joining (e.g. access to EGI notebooks, download of data on portal page, radar school participation etc.) General membership application will be accepted automatically and once submitted you will receive a confirmation email and you will be redirected to the second application based on which link you chose to use. Here you also need to write a reason and submit it.



The screenshot shows a web browser window with the URL <https://www.eiscat.se/registrer-for-radarskola-grupp-EISCAT-2025.htm>. The page title is "Application for VO eiscat.se". The form includes fields for "Name" (Maja Mihalovic), "E-mail" (eiscat.maja@gmail.com), and "Nickname" (mjama). A text area for "Why do you want to become a member?" contains the text "access to EISCAT data and services". At the bottom, there is a "submit" button and a link to "accept and agree".



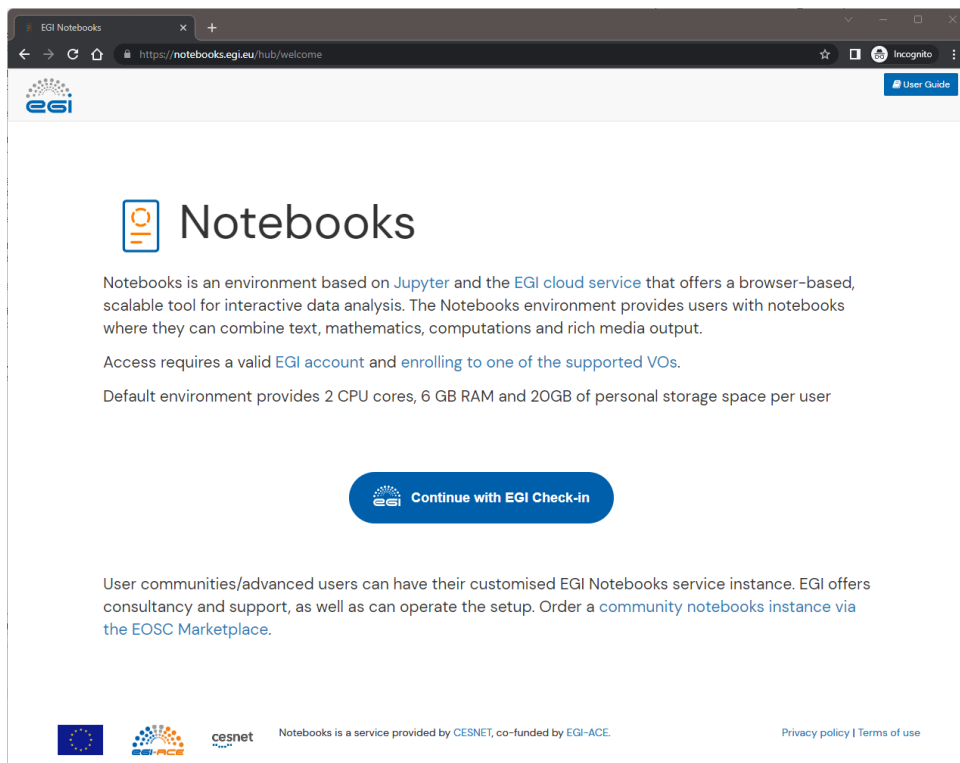
The screenshot shows a web browser window with the URL <https://www.eiscat.se/registrer-for-radarskola-grupp-EISCAT-2025.htm>. The page title is "Application for eiscat.se VO: Radar School 2025 group". The form includes fields for "Name" (Maja Mihalovic), "E-mail" (maja.mih@gmail.com), and "Why do you want to become a member of this group?" (participation in EISCAT Radar School 2025). At the bottom, there is a "submit" button and a link to "accept and agree".

The registration is complete.

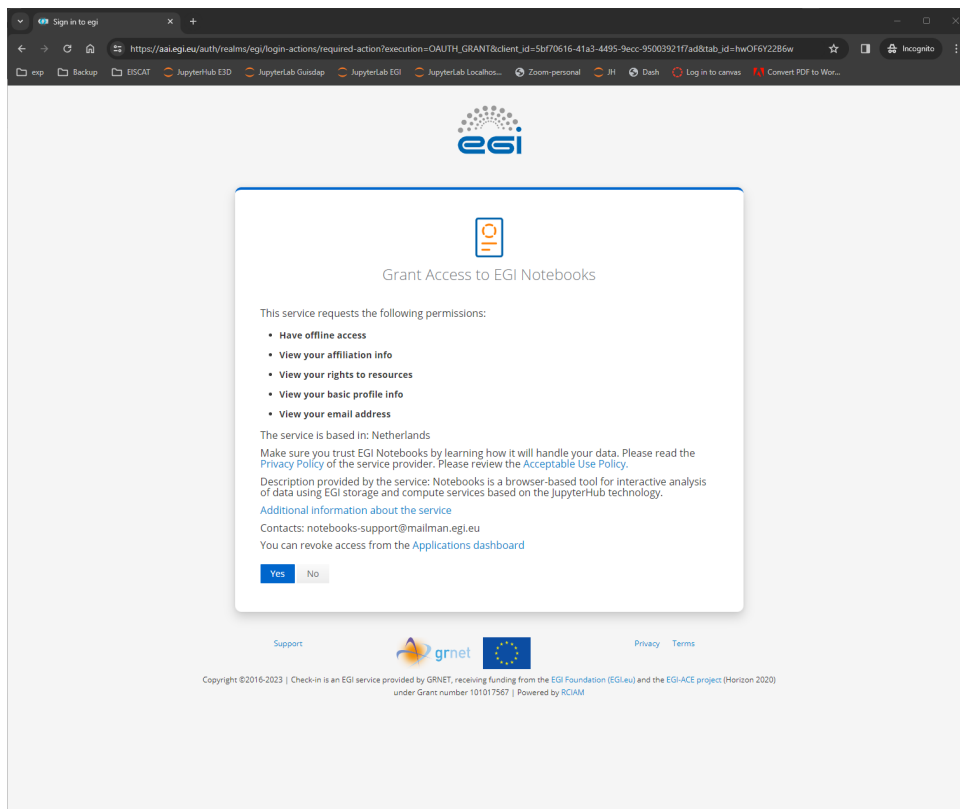
Your application for the group has to be physically approved by our VO managers so it can take up to several days until you get the second confirmation email. Once you receive both of the emails you can try to access the EISCAT tools at EGI notebooks or EISCAT portal. If you do not receive the second email in several days, or have some other problems during the registration, contact us at [vo-support\(at\)eiscat.se](mailto:vo-support(at)eiscat.se)

3 Login to EISCAT tools

After your received all the confirmation emails about your enrollment as explained in previous chapter, you are ready to go to EGI notebooks (<https://notebooks.egi.eu/>) and log in.



Identify yourself with the account you previously used for your EISCAT VO subscription. You need to first grant access to EGI notebooks to access your information.

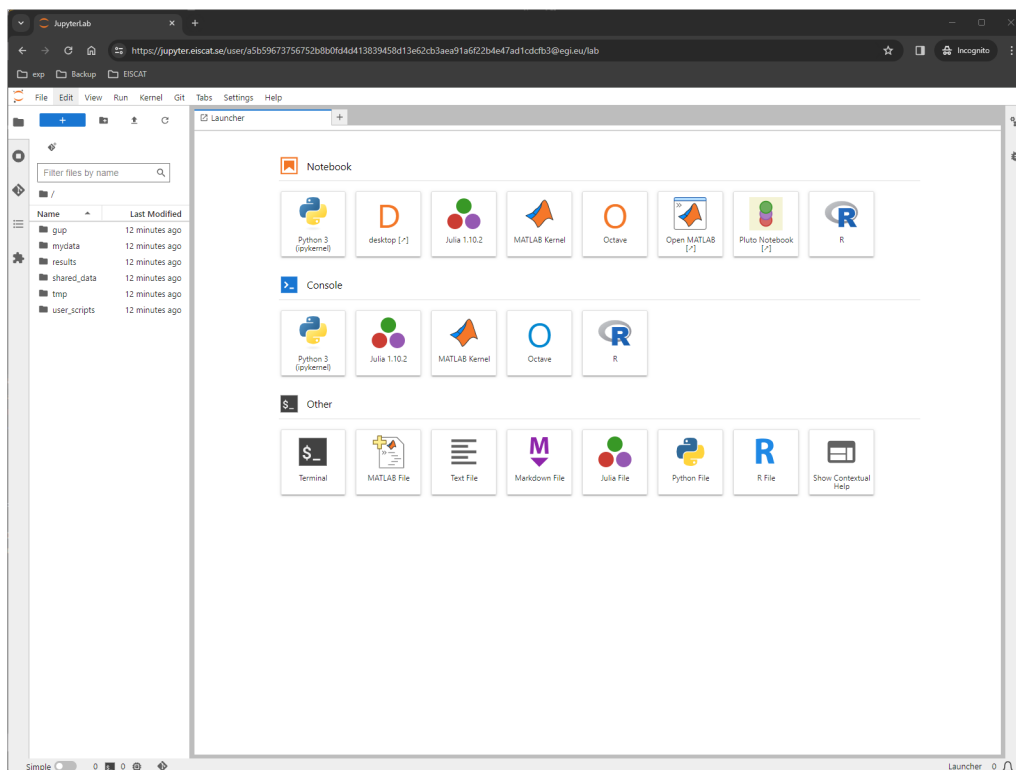


After this step you will either be granted access to the notebooks or the **Unauthorized** webpage loads. If you see a webpage that says that you are not granted access try first to use incognito tab or delete your cookies as a lingering information about your group membership may be cause of this and log in again. If you are refused access again, something went wrong and please contact vo-support(at)eiscat.se with the information what you were trying to do.

Finally you will land at the jupyter notebook page with your home directory. You will see the Launcher window with various tools like Python notebooks, Julia, Octave and R integration. But for running GUIDAP and RTG the most important will be the MATLAB integration (**Open MATLAB** icon, third from right in the first row in the following screenshot in the text.)

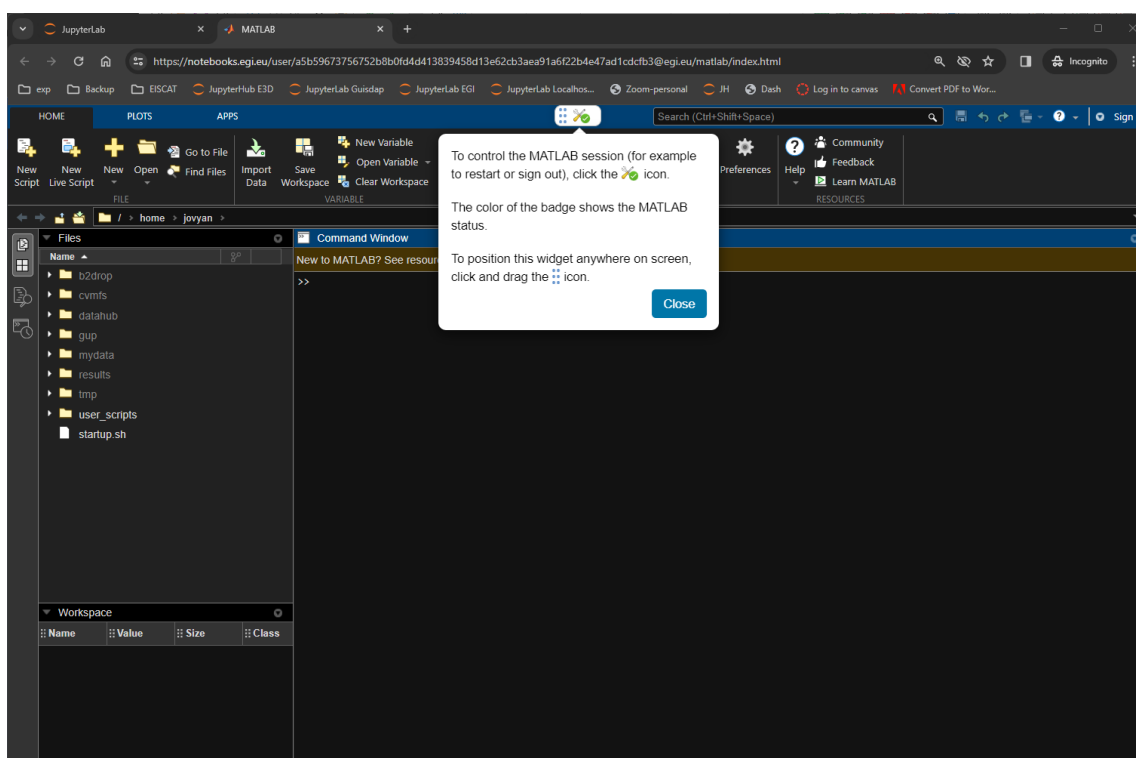
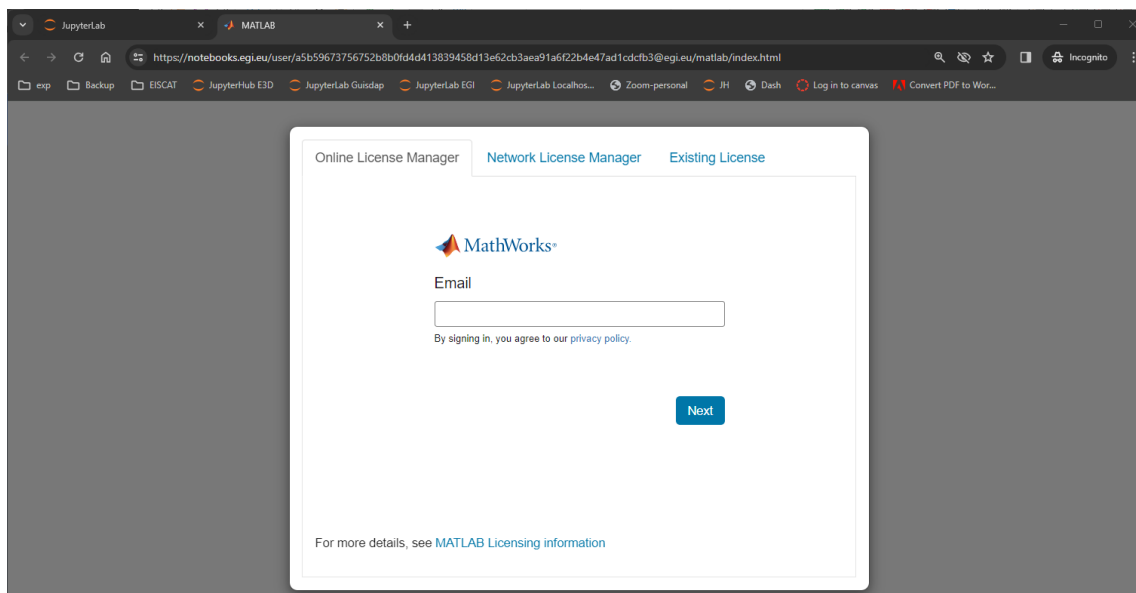
Checking necessary folders for GUIDAP

Before you start to look around check if all the necessary directories were created in your home folder. You should see following directories necessary for guidap: gup; mydata; results; tmp. You will see directory user_scripts where there are a few scripts of various users that they shared with us. On EGI notebooks there will be a few more directories unrelated to our notebooks.



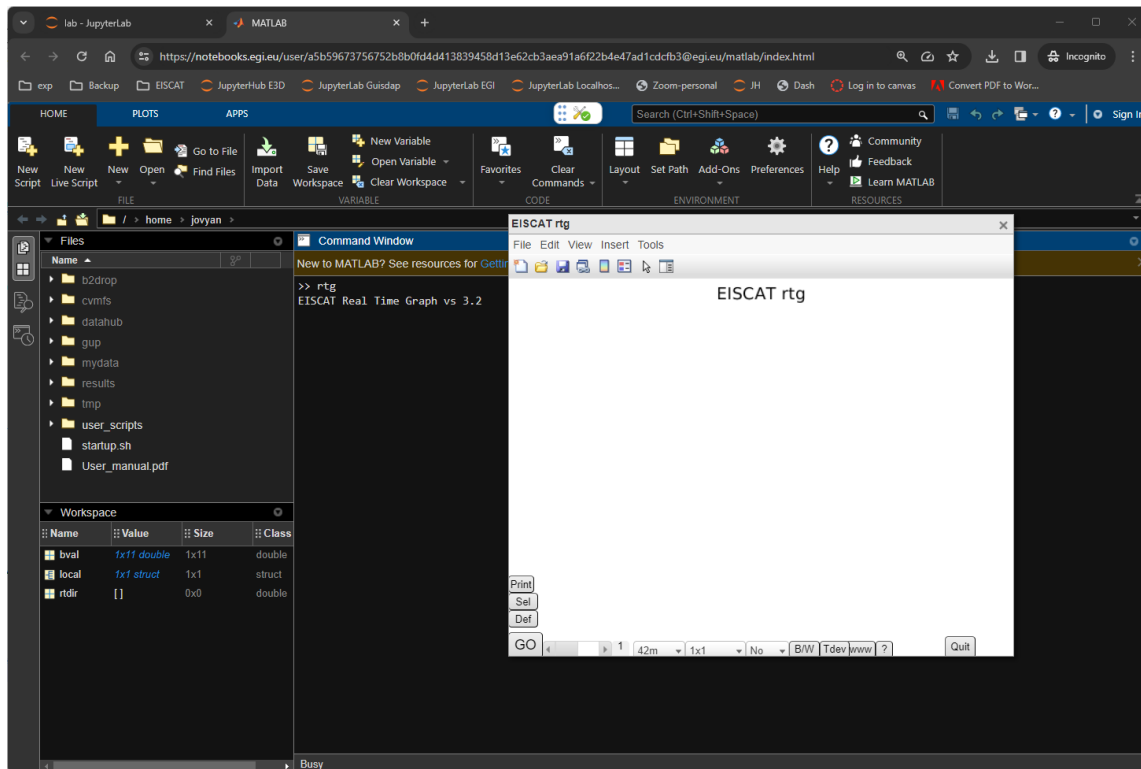
Trying to run the MATLAB integration for Jupyter notebooks

You can try to click the Open MATLAB icon. A new browser tab will open and MATLAB login screen will come up. On EGI notebooks you will need to put in your MATLAB licence credentials. The version of MATLAB currently installed in the notebooks is 2024b and unfortunately depending on the kind of your licence you might not be able to use it. You can use both Online License Manager or Network License Manager. It can take a while to validate your licence but then the MATLAB integration for jupyter notebook should load as seen in the following screenshots.

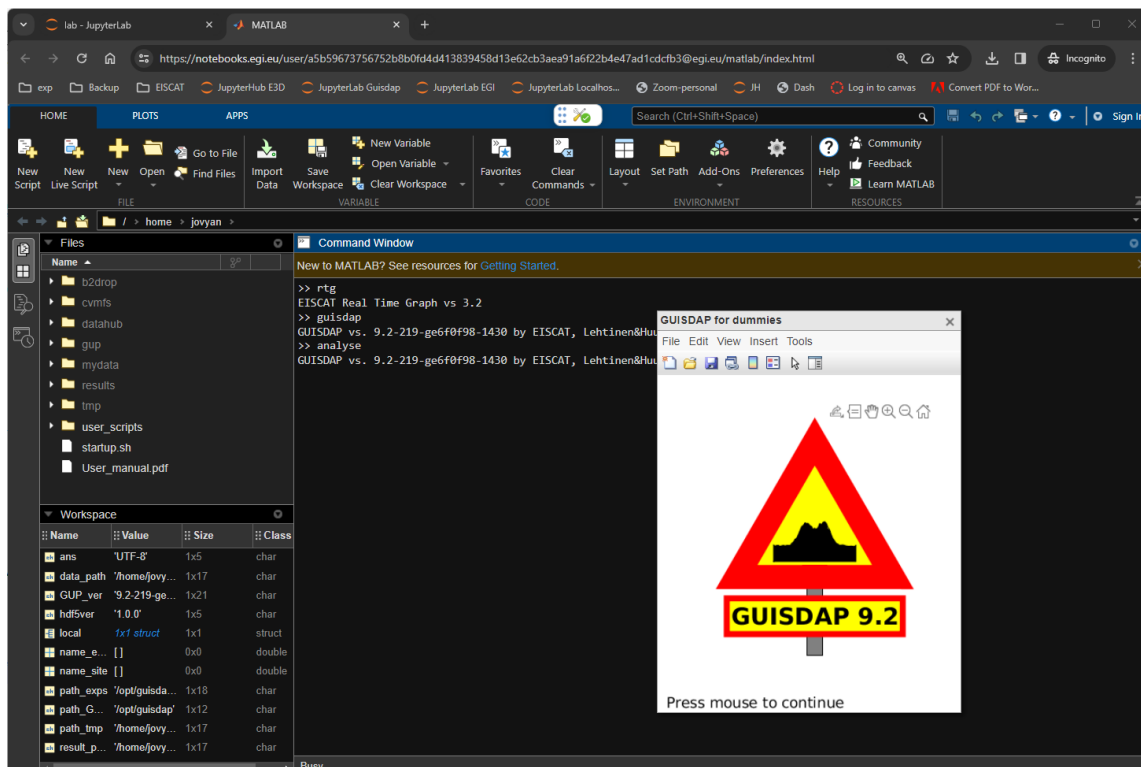


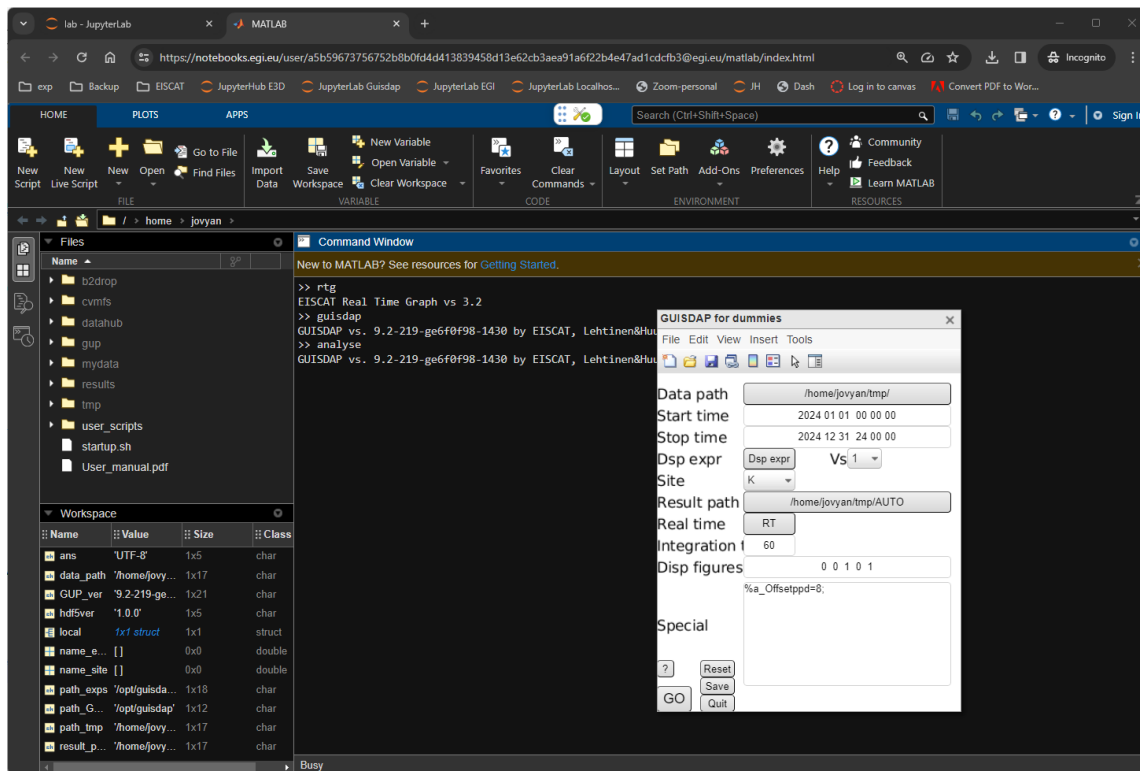
Starting RTG and GUIDAP

Once your Matlab is loaded you can try to start RTG and GUIDAP software. To start up RTG just write **rtg** command in the MATLAB command line as seen in the next screenshot.



Now you can close the rtg window by pressing **Quit** button. Next try to start **guidap** by running the commands **guidap** and **analyse** in the command line. (see the screenshots)





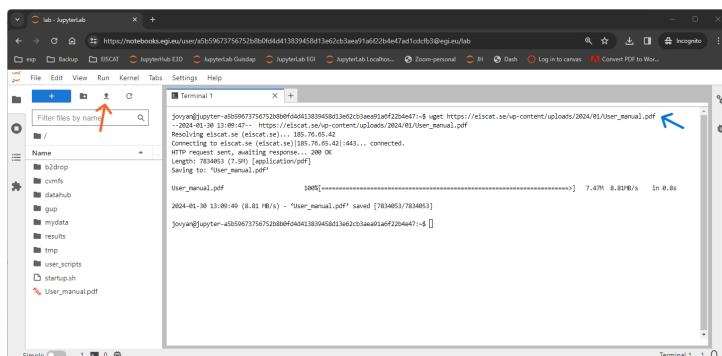
Now you can stop GUISDAP for dummies by pressing the **Quit** button and return to the other browser tab with your jupyter notebook. The Work with GUISDAP and RTG as well as EISCAT DATA is described in greater detail in our [User Manual](https://doi.org/10.5281/zenodo.15827413): <https://doi.org/10.5281/zenodo.15827413>.

3.1 Uploading data to EISCAT environment

The last question we need to answer is how to upload and download data to/from your workspace in the EISCAT tools environment. For upload you can either use the upload button (orange arrow in the screenshot) or use the wget command (blue arrow in the screenshot) to download data directly into your workspace from a place on internet like the Madrigal database (<https://madrigal.eiscat.se/madrigal/>) or the EISCAT portal page (<https://portal.eiscat.se/schedule>). To demonstrate this command you can try to download the first EISCAT Annual report and Feasibility study that is stored on [EISCAT website](https://portal.eiscat.se/schedule) directly to your home folder in the EISCAT tools environment by using the following command in the terminal (first icon in the last section of the landing page):

```
wget "https://eiscat.se/wp-content/uploads/2016/11/1971.pdf"
```

You can enclose the link into quotation marks because in case it contains special characters, the link may appear broken without them.



3.2 Downloading data to local computer

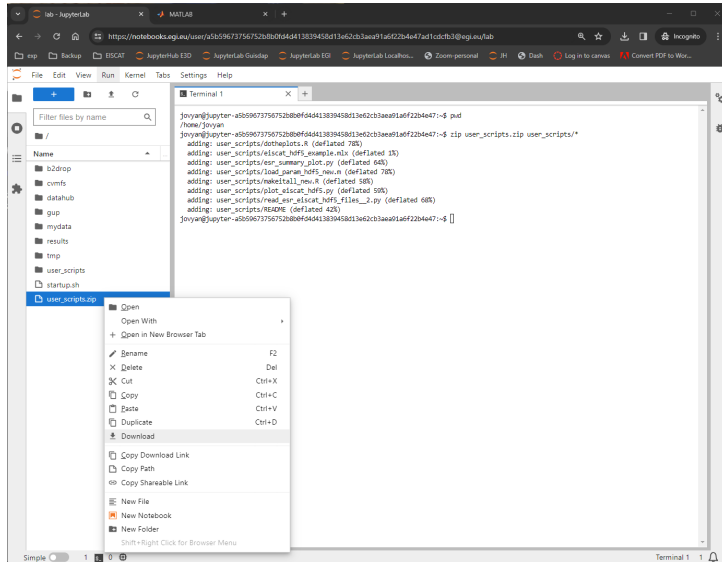
There are also few possibilities how to download data from your home folder in EISCAT tools environment to your local computer. Jupyter notebooks enable downloading of individual files (by right-clicking on them

as seen in the screenshot) but not of whole folders. To download whole folder you can create a zip or tar file first and download this file. You will have to unpack the file in your local computer afterwards.

Let's try to download the **user_scripts** folder to your local computer. First you need to pack the folder using one of the following commands in the terminal:

```
zip user_scripts.zip user_scripts/*  
tar -czvf user_scripts.tar user_scripts/*
```

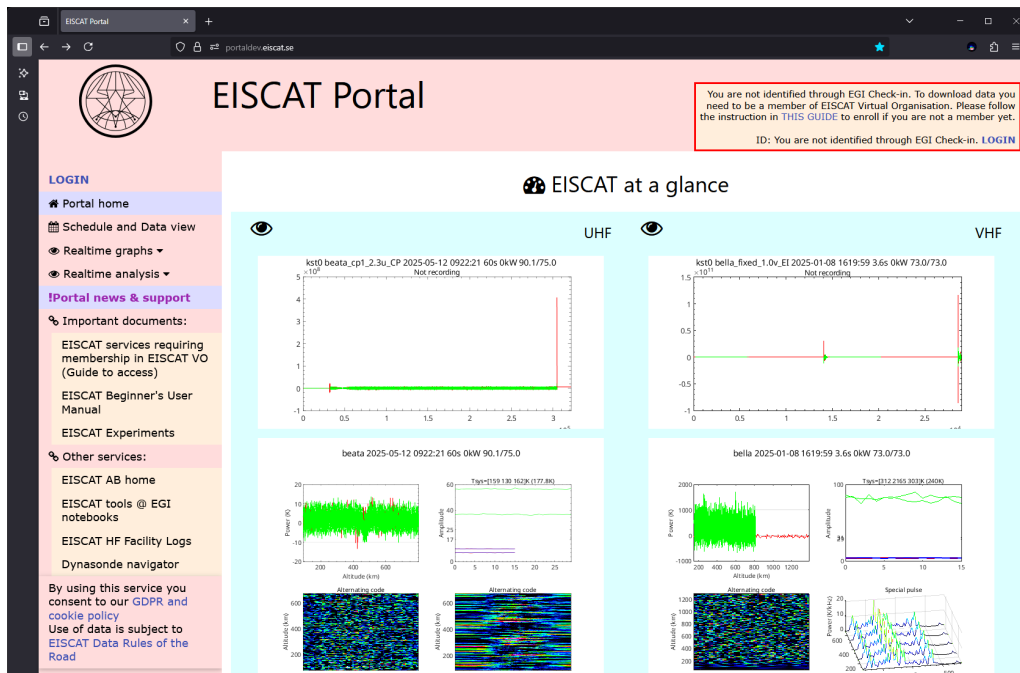
Once the **user_scripts.zip** or **user_scripts.tar** file is created you can right-click on it and choose download from the context menu (see the screenshot). Afterwards you can unpack it in your computer. For windows based computers you usually want to use zip version.



If you manage all the steps discussed in this guide you will be prepared for your work with EISCAT tools in the jupyter notebook environment.

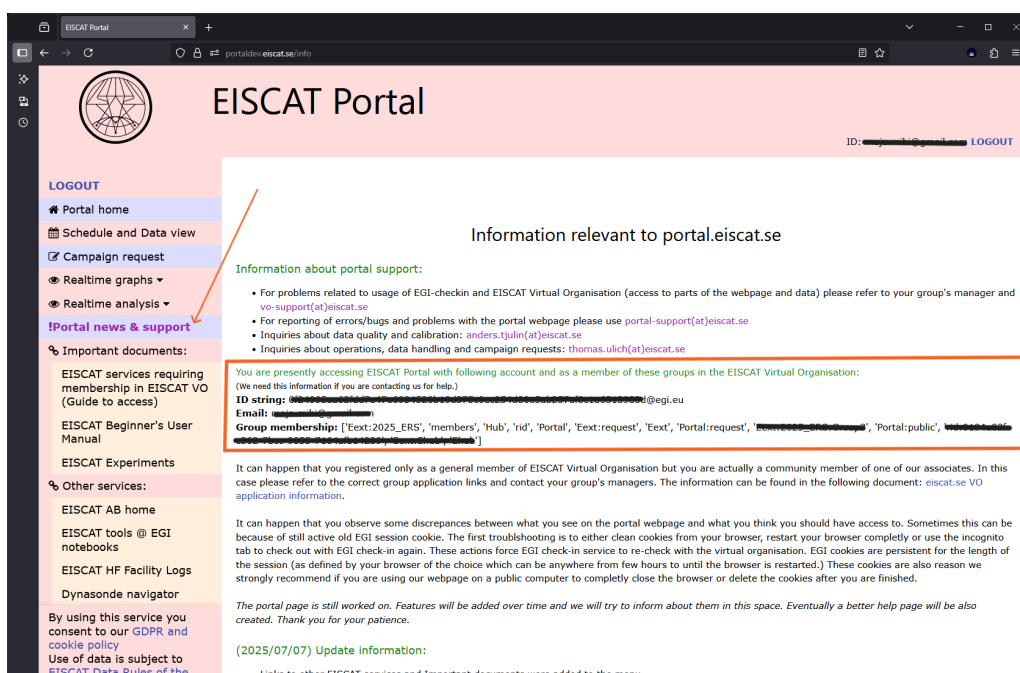
4 Login to EISCAT portal

This part describes briefly the EISCAT portal (<https://portal.eiscat.se/>) interface.

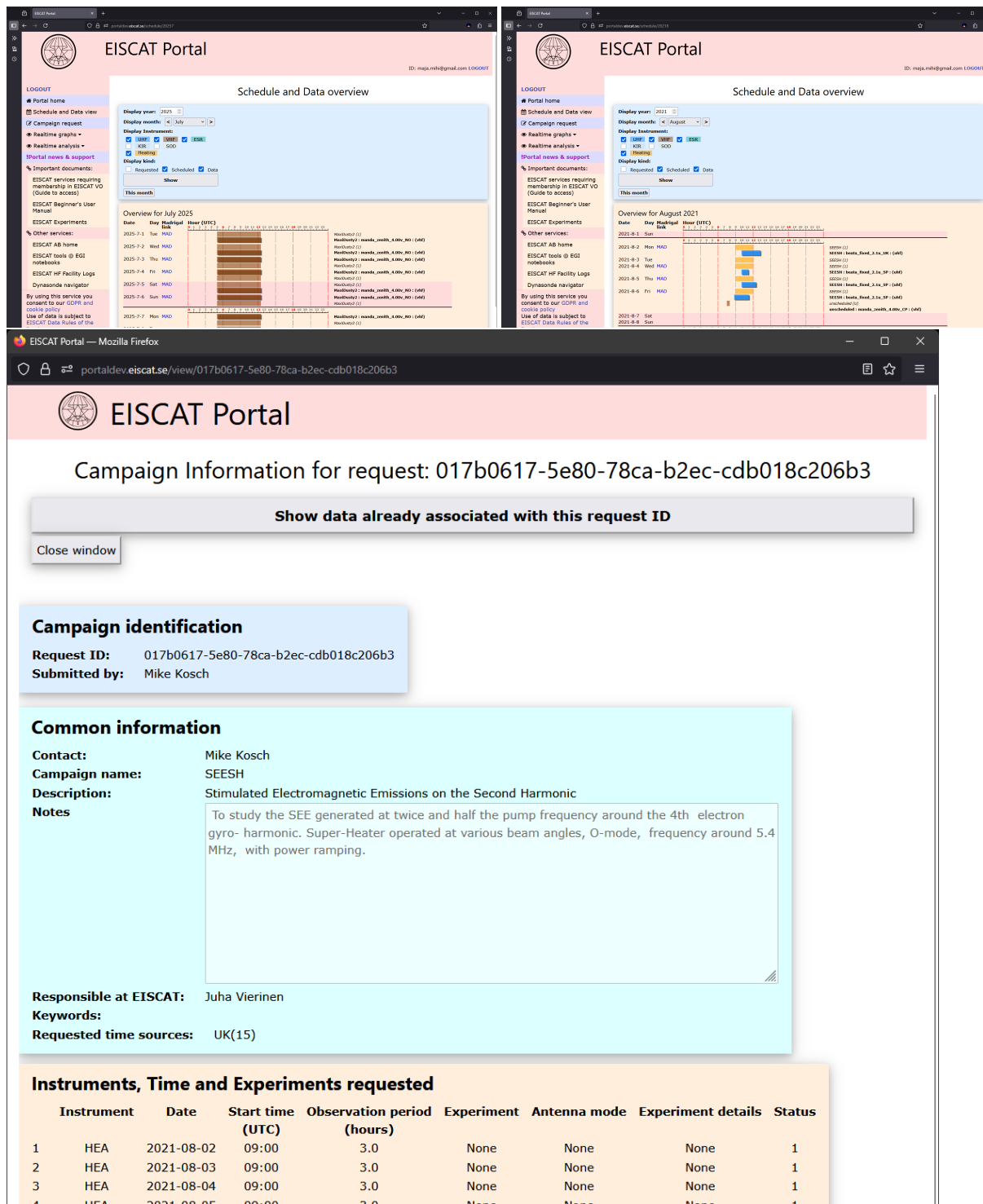


There are several functions for which the login is not necessary. For example when you come to the EISCAT portal page you will be able to see the EISCAT radar's schedule of operation and information about the scheduled campaigns as well as realtime graphs and realtime analysis if the radars are running and there are no technical problems. You can also display available data in the Schedule and Data view part, however you will not be able to download any data without logging in and identifying yourself with EGI Check-in and you will not be able to request and edit your campaigns. There are other features like Data search in development which will also be available only to identified users.

Any new information or contacts for help with the portal can be checked out on the Portal news and support page. When logged in you will also see here information about your ID string, email and group membership in the EISCAT VO. Usually if you are contacting us with a problem description we will need this information from you.



On the Schedule and Data view you can access the schedule and requests for the individual instruments as well as display the data available in our database. By clicking on the requested and scheduled items in the calendar you can explore the information about the submitted campaign requests.



EISCAT Portal

Schedule and Data overview

Display year: 2021
Display month: July

Display instrument: ☒ VLF ☒ HF ☒ ESR ☒ ESR2

Display kind: ☒ Requested ☒ Scheduled ☒ Data

Overview for July 2021

Date	Day	Request	Hour (UTC)	Instrument
2021-7-1	Fri	HAO	09:00	Heater (1)
2021-7-2	Wed	HAO	09:00	Heater (1)
2021-7-3	Thu	HAO	09:00	Heater (1)
2021-7-4	Fri	HAO	09:00	Heater (1)
2021-7-5	Sat	HAO	09:00	Heater (1)
2021-7-6	Sun	HAO	09:00	Heater (1)
2021-7-7	Mon	HAO	09:00	Heater (1)

Campaign Information for request: 017b0617-5e80-78ca-b2ec-cdb018c206b3

Show data already associated with this request ID

Close window

Campaign identification

Request ID: 017b0617-5e80-78ca-b2ec-cdb018c206b3
Submitted by: Mike Kosch

Common information

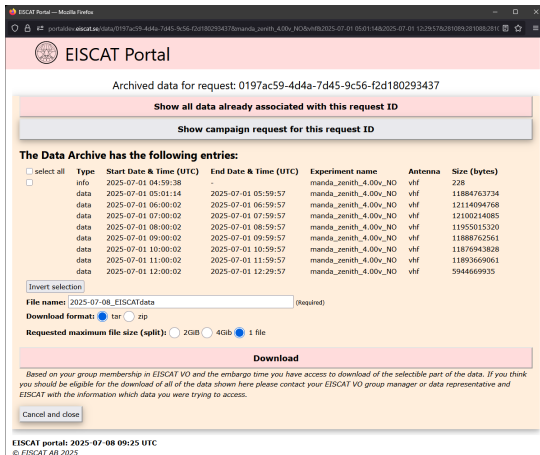
Contact: Mike Kosch
Campaign name: SEESH
Description: Stimulated Electromagnetic Emissions on the Second Harmonic
Notes: To study the SEE generated at twice and half the pump frequency around the 4th electron gyro- harmonic. Super-Heater operated at various beam angles, O-mode, frequency around 5.4 MHz, with power ramping.

Responsible at EISCAT: Juha Vierinen
Keywords:
Requested time sources: UK(15)

Instruments, Time and Experiments requested

Instrument	Date	Start time (UTC)	Observation period (hours)	Experiment	Antenna mode	Experiment details	Status
1	HEA	2021-08-02	09:00	3.0	None	None	1
2	HEA	2021-08-03	09:00	3.0	None	None	1
3	HEA	2021-08-04	09:00	3.0	None	None	1
4	HEA	2021-08-05	09:00	3.0	None	None	1

When clicking on the displayed data from the archives you will get overview of the files belonging to either that day or the whole campaign. When logged in, you will see which data is select-able and available for download. The access to the data is judged by proper membership in associate and affiliate groups in EISCAT VO and the age of the data based on EISCAT's data policy.



Archived data for request: 0197ac59-4d4a-7d45-9c56-f2d180293437

Show all data already associated with this request ID

Show campaign request for this request ID

The Data Archive has the following entries:

Type	Start Date & Time (UTC)	End Date & Time (UTC)	Experiment name	Antenna	Size (bytes)
info	2025-07-01 04:59:38	-	manda_zenith_4_00v_NO	vlf	228
data	2025-07-01 05:01:14	2025-07-01 05:59:57	manda_zenith_4_00v_NO	vlf	11884763734
data	2025-07-01 06:00:00	2025-07-01 06:59:57	manda_zenith_4_00v_NO	vlf	12114094768
data	2025-07-01 07:00:00	2025-07-01 07:59:57	manda_zenith_4_00v_NO	vlf	12100214085
data	2025-07-01 08:00:00	2025-07-01 08:59:57	manda_zenith_4_00v_NO	vlf	11955015320
data	2025-07-01 09:00:00	2025-07-01 09:59:57	manda_zenith_4_00v_NO	vlf	11888762561
data	2025-07-01 10:00:00	2025-07-01 10:59:57	manda_zenith_4_00v_NO	vlf	11876943828
data	2025-07-01 11:00:00	2025-07-01 11:59:57	manda_zenith_4_00v_NO	vlf	11893669061
data	2025-07-01 12:00:00	2025-07-01 12:29:57	manda_zenith_4_00v_NO	vlf	5944669935

Download format: ☒ tar ☐ zip

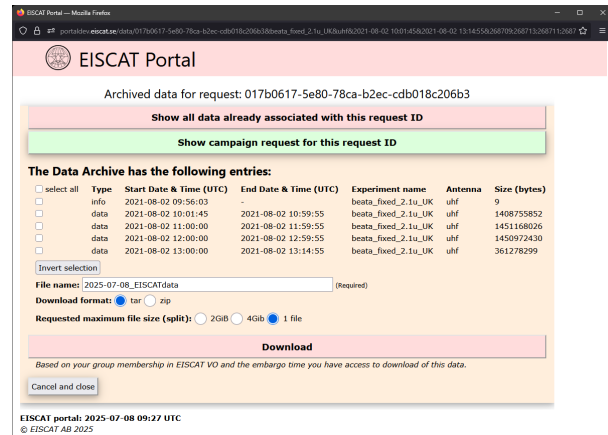
Requested maximum file size (split): ☐ 2GiB ☐ 4GiB ☒ 1 file

Download

Based on your group membership in EISCAT VO and the embargo time you have access to download of the selectable part of the data. If you think you should be eligible for the download of all of the data shown here please contact your EISCAT VO group manager or data representative and EISCAT with the information which data you were trying to access.

Cancel and close

EISCAT portal: 2025-07-08 09:25 UTC
© EISCAT AB 2025



Archived data for request: 017b0617-5e80-78ca-b2ec-cdb018c206b3

Show all data already associated with this request ID

Show campaign request for this request ID

The Data Archive has the following entries:

Type	Start Date & Time (UTC)	End Date & Time (UTC)	Experiment name	Antenna	Size (bytes)
info	2021-08-02 09:56:03	-	beata_fixed_2.1u_UK	uhf	9
data	2021-08-02 10:01:45	2021-08-02 10:59:55	beata_fixed_2.1u_UK	uhf	1408735852
data	2021-08-02 11:00:00	2021-08-02 11:59:55	beata_fixed_2.1u_UK	uhf	1451168026
data	2021-08-02 12:00:00	2021-08-02 12:59:55	beata_fixed_2.1u_UK	uhf	1450972430
data	2021-08-02 13:00:00	2021-08-02 13:14:55	beata_fixed_2.1u_UK	uhf	361278299

Download format: ☒ tar ☐ zip

Requested maximum file size (split): ☐ 2GiB ☐ 4GiB ☒ 1 file

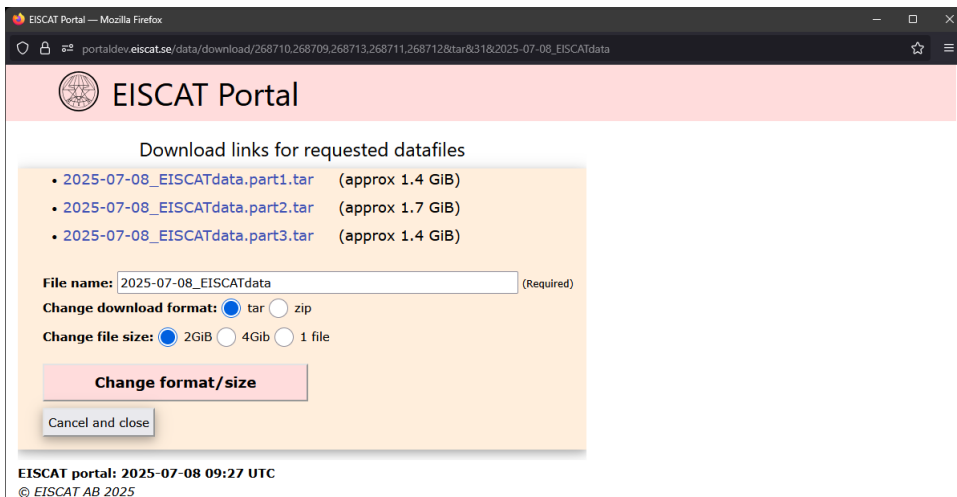
Download

Based on your group membership in EISCAT VO and the embargo time you have access to download of this data.

Cancel and close

EISCAT portal: 2025-07-08 09:27 UTC
© EISCAT AB 2025

After selecting which files you want to download, choosing the name and file format you can click download. Selected files will be offered for your download as a set of one or more links which you can click and download to your computer.



Download links for requested datafiles

- 2025-07-08_EISCATdata.part1.tar (approx 1.4 GiB)
- 2025-07-08_EISCATdata.part2.tar (approx 1.7 GiB)
- 2025-07-08_EISCATdata.part3.tar (approx 1.4 GiB)

File name: 2025-07-08_EISCATdata (Required)

Change download format: ☒ tar ☐ zip

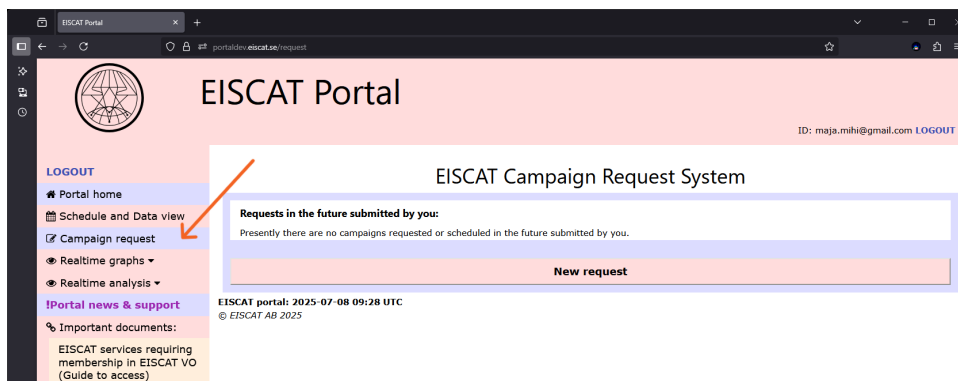
Change file size: ☒ 2GiB ☐ 4GiB ☐ 1 file

Change format/size

Cancel and close

EISCAT portal: 2025-07-08 09:27 UTC
© EISCAT AB 2025

One more function of the portal is the ability to submit campaign requests. This is enabled and managed by the individual communities and EISCAT employees. You have to contact your group manager if you want to have access to the campaign submit request functionality. To judge if you have this rights you can try to access the Campaign request link. If you do not see it or it is disabled (you will not land on the page from next screenshot) thank you do not have the rights to submit campaign requests.



EISCAT Portal

ID: maja.mih@gmail.com LOGOUT

LOGOUT

- Portal home
- Schedule and Data view
- Campaign request**
- Realtime graphs
- Realtime analysis
- Portal news & support
- Important documents:

EISCAT services requiring membership in EISCAT VO (Guide to access)

EISCAT Campaign Request System

Requests in the future submitted by you:

Presently there are no campaigns requested or scheduled in the future submitted by you.

New request

EISCAT portal: 2025-07-08 09:28 UTC
© EISCAT AB 2025

There are more functions in development on the EISCAT portal page so the look of the webpage can change with time.