

# EISCAT\_3D analytics



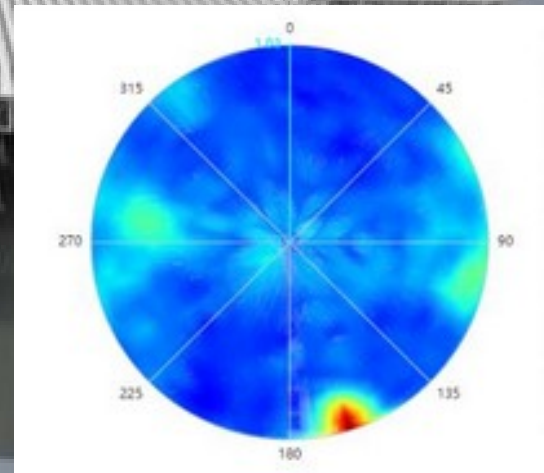
Ingemar Häggström

Carl-Fredrik Enell

EISCAT Scientific Association

EISCAT 3D, the new research radar for atmosphere, ionosphere and near Earth space - ESFRI Landmark since 2018

3D  
EISCAT





EISCAT\_3D Skibotn

EISCAT\_3D Karesuvanto

EISCAT\_3D Kaiseniemi



E45

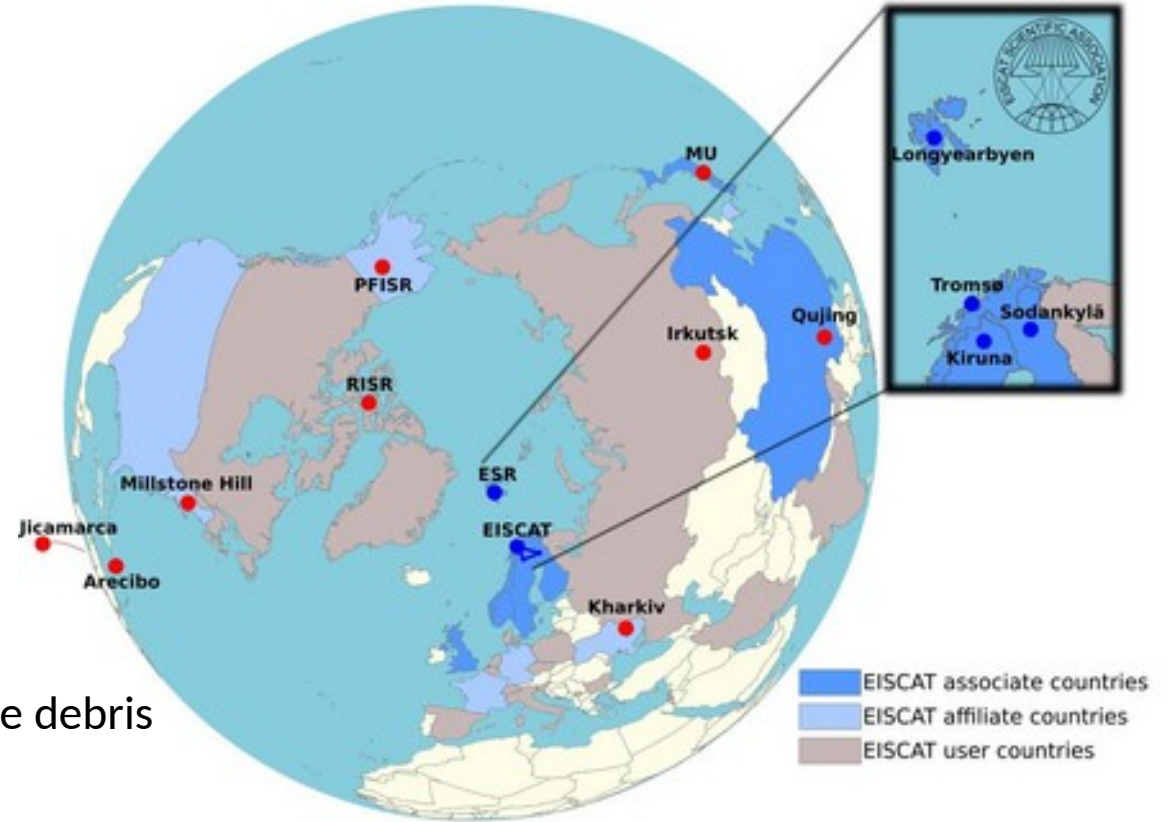
E8

# EISCAT\_3D dataflow



# Data levels

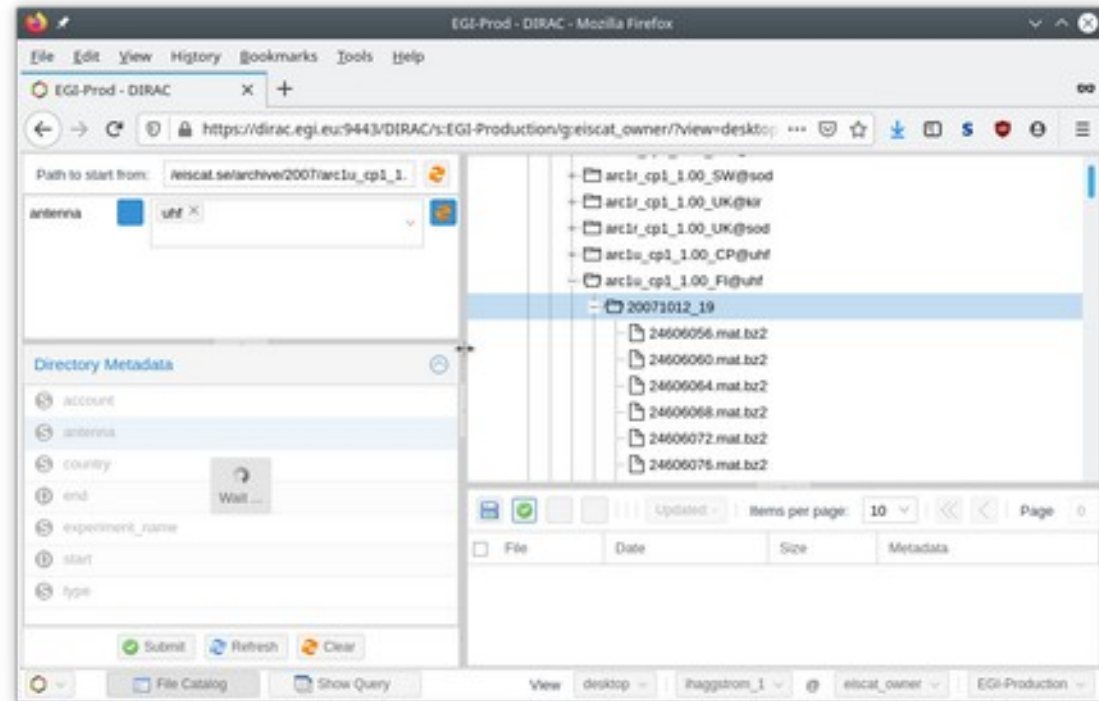
- Level 1
  - Raw voltage
  - Sensitive data, closed
- Level 2
  - Spectral data
  - Embargoed data, members
- Level 3
  - Ionospheric physical parameters
  - other products (atmospheric pars, meteors, space debris)
  - Open data
- Data identification and citation



# The EISCAT\_3D Competence Centre



- deploy and integrate necessary tools, services and infrastructures
  - Data management and processing
- DIRAC interware
  - integration component
  - a single access point towards e-Infrastructures
- EUDAT's B2 services
  - unify the data management
  - discovery system across different storages
  - storage access management
- EGI and INDIGO services
  - deploying the software stack on HPC/HTC systems including release management
- provide secondary services for production operation
  - user authentication and access control



# Workflow management

- Dirac file catalogue (L1+L2)
  - Files@EISCAT
- B2share entries (L3)
  - Not yet (B2find for Dirac)
- User authentication development
  - EGI Checkin
- Job submission
  - Deployed on cPouta cloud, CSC
  - Docker containers
  - Existing EISCAT user software (Octave, C)
    - (GUISDAP General analysis L1/L2 → L3)
    - RTG General tool for display of L2 data (L3)

## Job definition file

```
[  
    Executable = "run_rtg_docker.sh";  
    Arguments = "";  
    JobName = "my_job_name";  
    Site = "Cloud.CSC.fi";  
    CPUTime = 86400;  
    InputSandbox = {  
        "run_rtg_docker.sh",  
        "LFN:/eiscat.se/archive/2016/...  
    }  
    OutputSandbox = {"output/*"};  
]
```

# EGI Checkin

- Perun
  - EISCAT VO
    - No management
    - Access open data
  - VO Groups
    - Member=Group
    - Managed by members
    - Access embargoed data

The screenshot shows the Perun web GUI in a Mozilla Firefox browser. The page title is "Perun web gui - Mozilla Firefox" and the URL is "https://perun.egi.eu/cert/gui/#vo/detail?id=1481&active=1:". The user is logged in as "Ingemar Haggstrom" with the role "VO/GROUP MANAGER".

The main content area displays the "EGI eiscat.se VO" page. The "Groups" tab is selected, showing a table of groups. The table has columns for "Sync", "Name", "Description", and "Count: 14". The groups listed are:

Sync	Name	Description	Count: 14
<input type="checkbox"/>	members	Group containing VO members for VO eiscat.se	
<input type="checkbox"/>	CN	EISCAT P.R. China CRIRP	
<input type="checkbox"/>	Dev	System developers	
<input type="checkbox"/>	DLR50	EISCAT DLR-50 Germany	
<input type="checkbox"/>	EI	EISCAT internal	
<input type="checkbox"/>	FI	EISCAT Finland SA	
<input type="checkbox"/>	JHUAPL	EISCAT Johns Hopkins University US	
<input type="checkbox"/>	JP	EISCAT Japan	
<input type="checkbox"/>	KASI	EISCAT KASI S Korea	
<input type="checkbox"/>	KOPRI	EISCAT KOPRI S Korea	
<input type="checkbox"/>	NO	EISCAT Norway NFR	
<input type="checkbox"/>	SE	EISCAT Sweden VR	
<input type="checkbox"/>	SP	EISCAT special experiments	
<input type="checkbox"/>	UK	EISCAT UK UKRI	

The footer of the page contains the following information: "About: Perun web | License: BSD 2 | Support: perun@cesnet.cz, Online help" and "© CESNET, CERIT-SC 2011 - 2020, version: 3.9.10 rev. b1d36". There is also a "Settings:" link in the bottom right corner.



# JupyterLab for EISCAT

- Use of EGI Notebook
  - Using the docker SW (RTG)
  - Run RTG interactively
  - Develop User code
    - input for Dirac docker
- RealTimeGraph
  - Normally via GUI
    - Here only via scripts
    - New textbased control functions
- Not solved yet
  - Get data direct into Notebook via Dirac
  - Automatic RTG toolbox startup
  - User script interface

