



## **AARC2 EISCAT\_3D pilot**

Authentication and Authorisation for Research and Collaboration

**Ingemar Häggström**

EISCAT Scientific Association

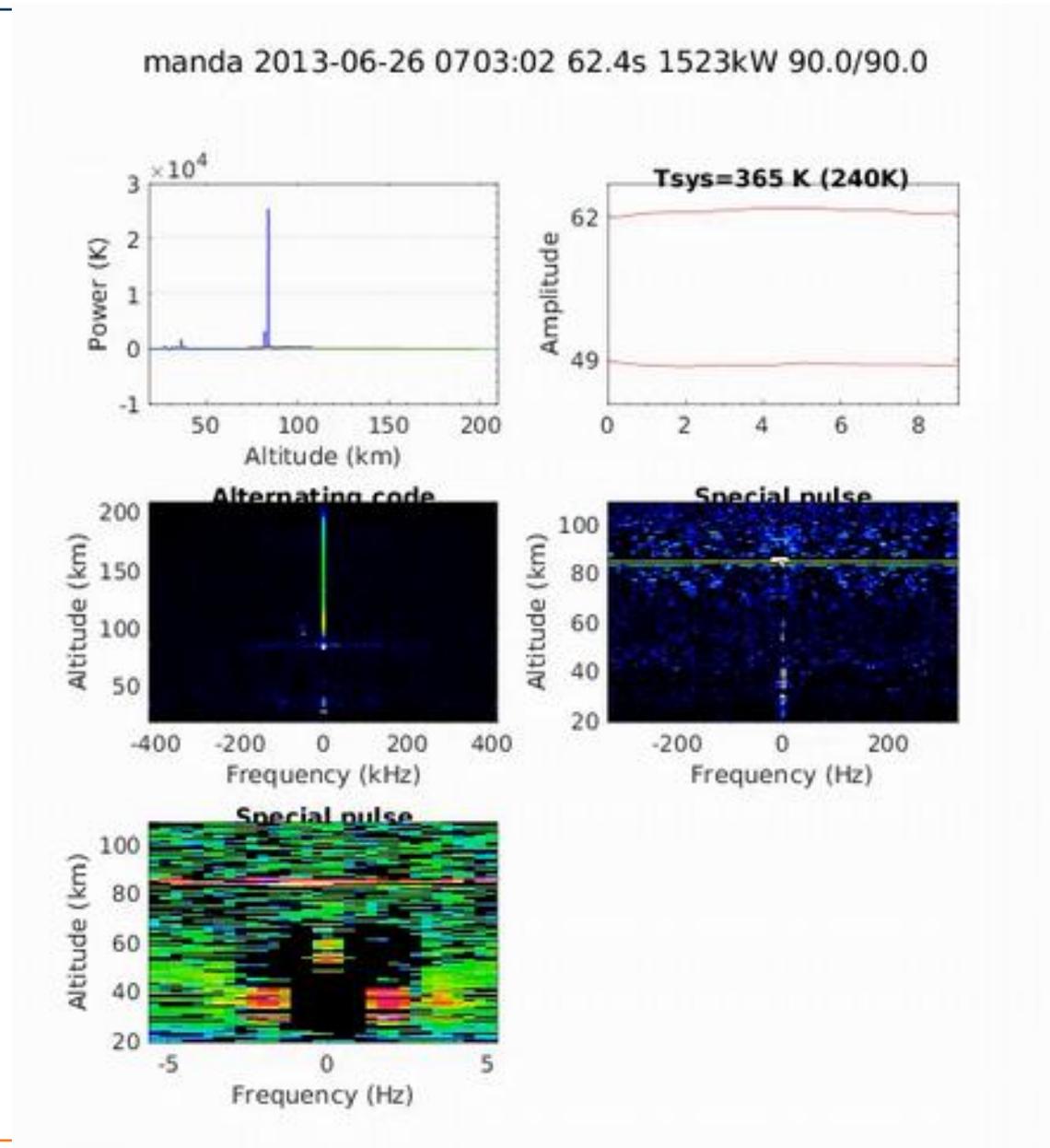
All hands meeting

12 April 2018, Athens



# The rich EISCAT data

- Ionosphere
  - Soft volume target
- Atmosphere
  - Sheet target
- Meteors
  - Fast point target
  - Slow line target
- Space Debris
  - Slow point target
- (Satellites/Air-planes)
  - Military?



# Ionospheric modification

HF heater

4-8 MHz 1.2 MW

Plasma laboratory

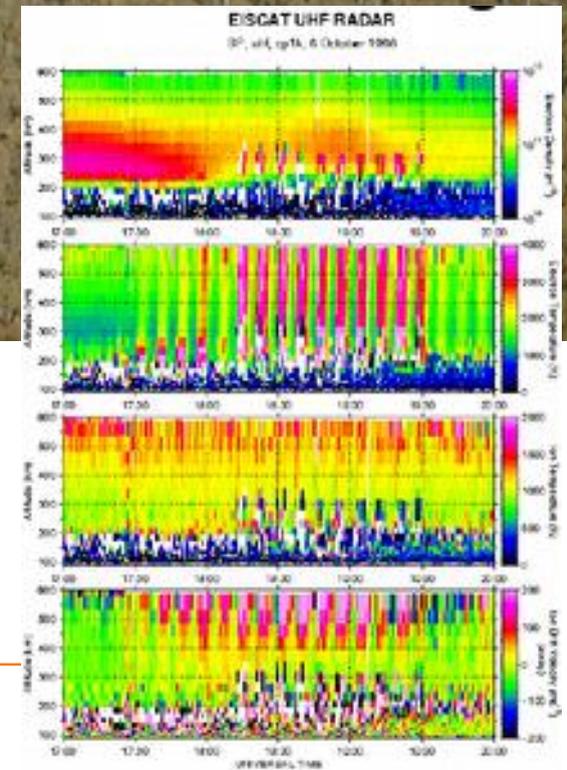
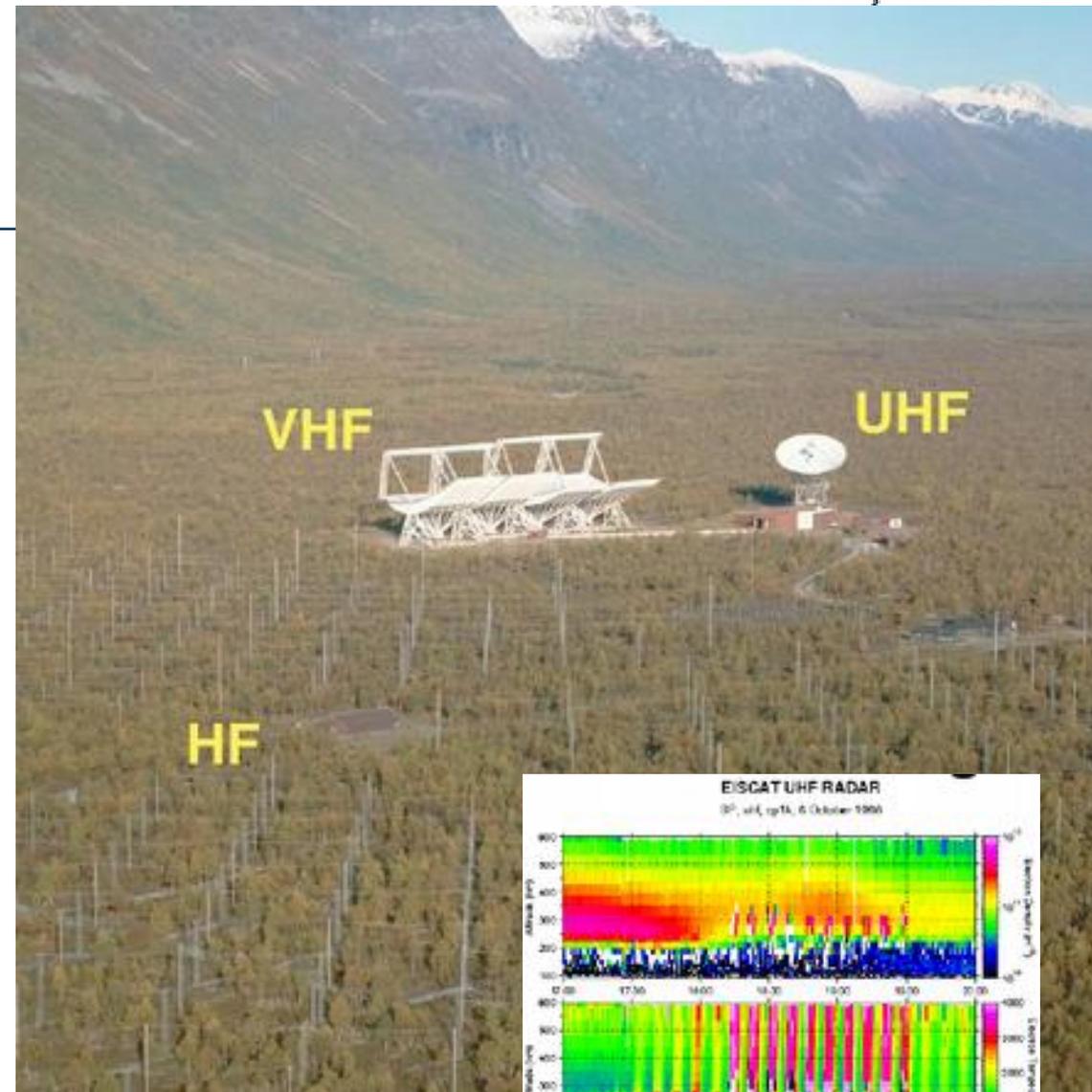
No edges!

Effects on

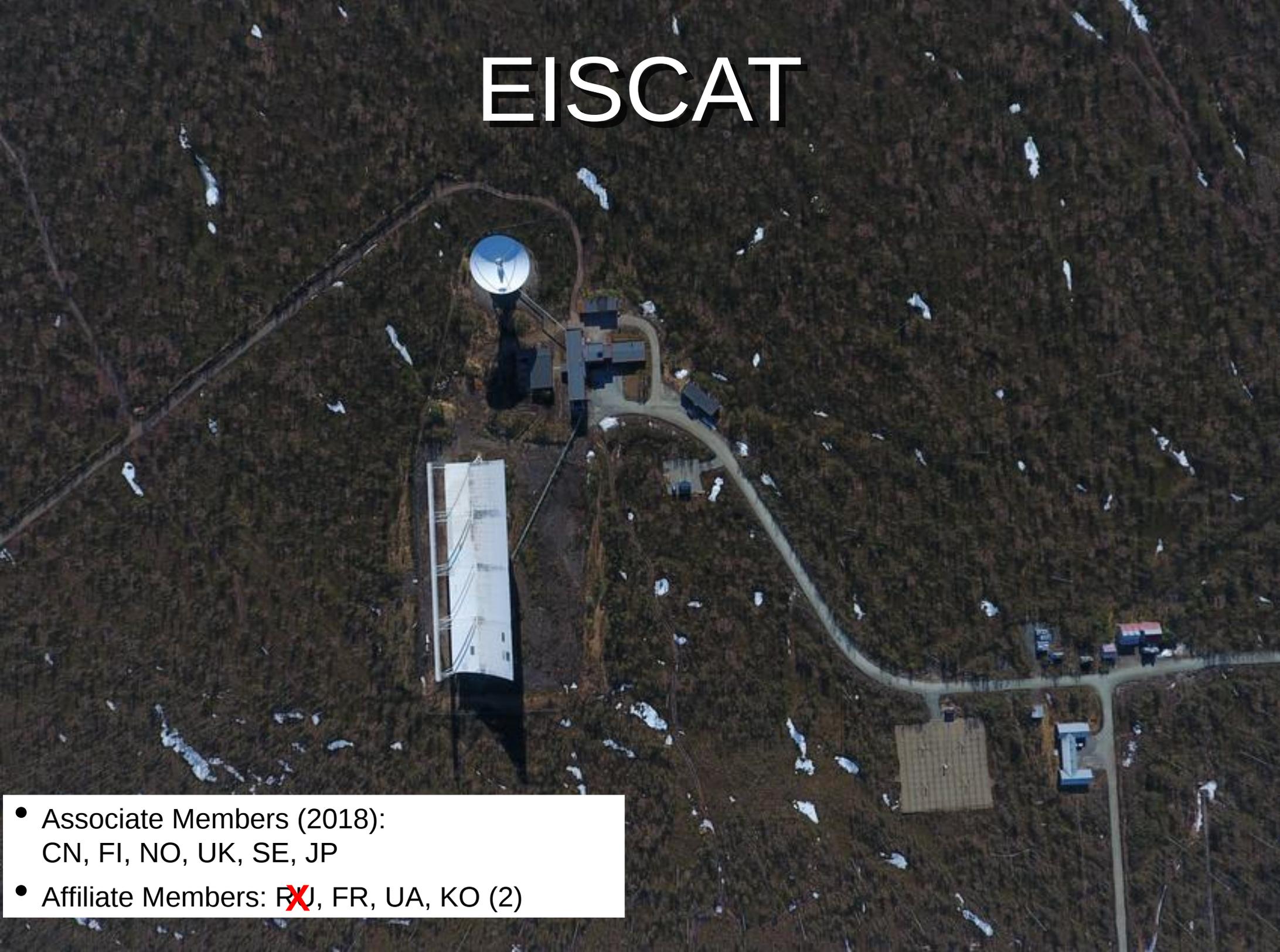
Density

Temperature

Luminosity



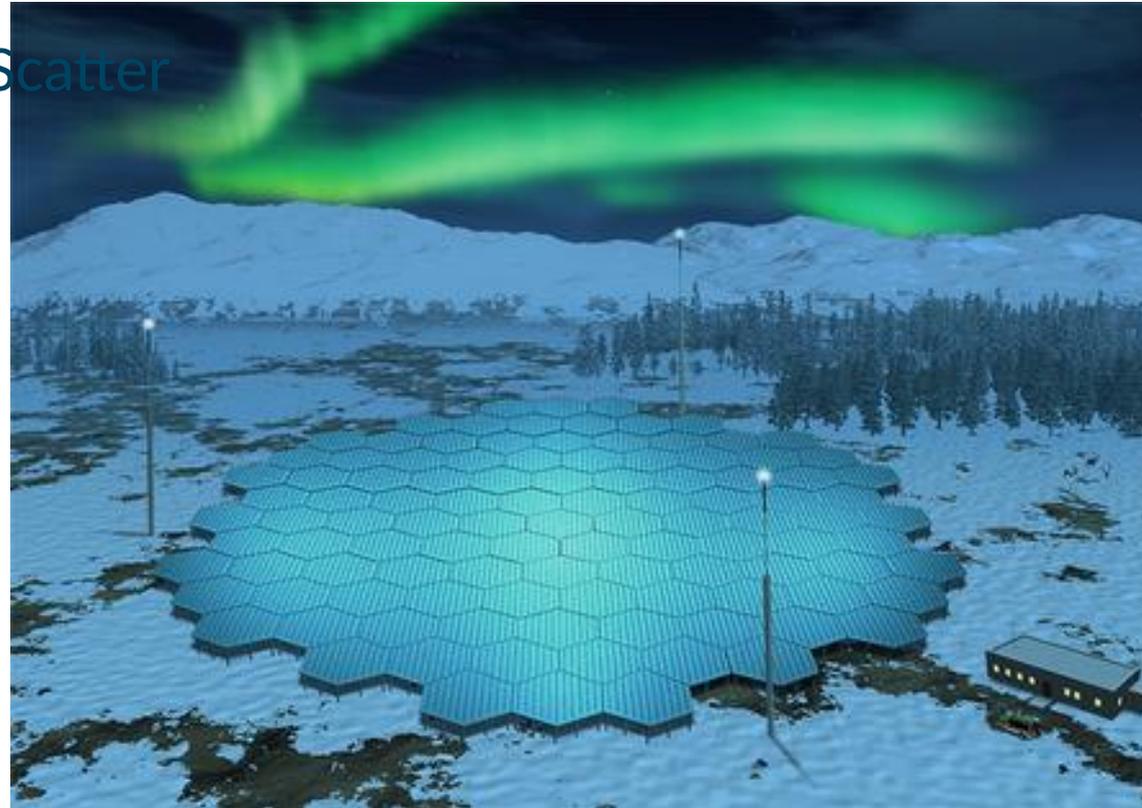
# EISCAT



- Associate Members (2018):  
CN, FI, NO, UK, SE, JP
- Affiliate Members: ~~RX~~J, FR, UA, KO (2)

# EISCAT\_3D

- EISCAT – European Incoherent Scatter
  - Mainland
    - UHF 1981-
    - VHF 1985-
    - HF 1980-
  - Svalbard
    - ESR1 1995-
    - ESR2 1999-
  - EISCAT\_3D
    - Will replace UHF/VHF
    - FP6, FP7, h2020 projects
    - ESFRI roadmap 2008-2018
    - Implementation started 2017 (85% of Stage1 budget, 56M€)
    - ESFRI landmark 2018?



# Research with EISCAT

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- **Historic**
  - Space Physics
  - Campaign/event based
- **EISCAT\_3D**
  - Geospace Environment
  - Radar to run 24/7
  - Data mining will be the main source for scientific work

- Services for Users
  - Data/Processing
    - Associate (RC, country)
    - Affiliate (institute)
    - 3P (individual)
    - Staff
    - Other
      - Data open after embargo times
    - non military/commercial use
  - Operation
    - Request (member..)
    - Expert (selected users)
    - Staff
    - Machine (predefined)

# AARC2 SA1 plug-fest

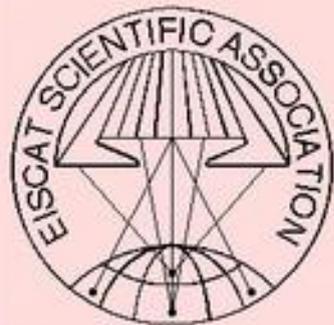
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- EGI DIRAC portal
  - Workflow Management System, accessible through web + CLI
  - EGI Checkin + EUDAT B2ACCESS
- Split between operations and research
  - operations is for managing the antennas
    - security important
  - research is for processing and getting the data
- eduGAIN IdPs, social IdPs, ...
  - Proxy with TTS
- EISCAT Idap
  - Data
    - Purpose
  - Operations
    - Step-up?
    - Known users
- An EISCAT training might be a good idea in 2nd half of 2018

# Current EISCAT portal, python cgi

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- Schedule (Operation)
  - Request (cgi)
  - Manually scheduled
- Data selection
  - Check IP
  - Link to data server
    - Makes same IP check
  - Processing at EISCAT



# HQ Operations, March 2012

Year:   Scheduled  VHF radar  Tristatic UHF  Tromsø UHF  
 Month:   Requested  Kiruna receiver  Sodankylä receiver  Svalbard radar   
 Archived data  HF heating/radar  SPEAR

[Schedule](#)  
[» Submit new experiment](#)  
[Real time graphs](#)  
[Latest analysis results](#)  
[Madrigal](#)  
[EISCAT 3D](#)  
[\[remove menu for printing\]](#) [\[compact menu\]](#)  
 Last modified Sunday 25 March at 17:42

	00UT	04UT	08UT	12UT	16UT	20UT	24UT	
2012:03:01 Thu	.	.	.	AAAAAA	.	.	.	vhf NO ( 3.0h) <a href="#">anda_zenith_4.00v_NO</a>
2012:03:02 Fri	.	.	.	.	.	.	.	
2012:03:03 Sat	.	.	.	.	.	.	.	
2012:03:04 Sun	.	.	.	.	.	.	.	
2012:03:05 Mon	.	.	A	.	.	.	.	hf EI ( 0.1h) <a href="#">mareh_any_2.0_EI</a>
2012:03:06 Tue	.	.	AA	.	.	.	.	32m FR ( 0.4h) <a href="#">taro_any_1.00_CP</a>
2012:03:07 Wed	.	.	.	.	AAAAAAAAAAAA	.	.	uhf FR ( 6.0h) <a href="#">beata_cp1_2.0v_FR</a>
2012:03:07 Wed	.	.	.	.	AAAAAAAAAAAA	.	.	32m FR ( 6.0h) <a href="#">hildel_vhfcross_1.01_FR</a>
2012:03:07 Wed	.	AAAA	.	.	.	.	.	32m FR ( 1.7h) <a href="#">taro_any_1.00_FR</a>
2012:03:07 Wed	.	AAAAAAAA	.	.	.	.	.	42m FR ( 3.7h) <a href="#">ipy_fixed42p_3.01_FR</a>
2012:03:07 Wed	.	.	.	.	AAAAAAAAAAAA	.	.	vhf FR ( 6.0h) <a href="#">tau8v_lowel_1.11_FR</a>
2012:03:07 Wed	.	.	.	.	1111111111	.	.	VHF THEMIS FR(6)
2012:03:07 Wed	.	.	.	.	1111111111	.	.	TRD THEMIS FR(6)
2012:03:07 Wed	.	.	.	.	1111111111	.	.	ESR THEMIS FR(6)
2012:03:07 Wed	.	.	1111111111	.	.	.	.	ESR ActiveUHF FR(6)
2012:03:08 Thu	A	.	.	.	.	.	.	uhf FR ( 0.0h) <a href="#">beata_cp1_2.0v_FR</a>
2012:03:08 Thu	A	.	.	.	.	.	.	vhf FR ( 0.0h) <a href="#">tau8v_lowel_1.11_FR</a>
2012:03:08 Thu	.	.	.	.	.	A	.	42m CP1 ( 0.1h) <a href="#">ipy_fixed42p_3.01_CP</a>
2012:03:08 Thu	.	.	.	.	AA	.	.	32m CP6 ( 0.8h) <a href="#">anda_zenith_4.001_CP</a>
2012:03:08 Thu	.	.	AAAAAA	AAAAAAAAAAAAAAAAAAAA	.	.	.	vhf CP6 (13.6h) <a href="#">anda_zenith_4.00v_CP</a>
2012:03:08 Thu	.	.	.	.	CCCCCCCCCCCCCCCCCCCCCCCC	.	.	VHF UP,CP6 CP(999)
2012:03:08 Thu	.	.	.	.	CCCCC	.	.	ESR UP,CP6 CP(999)
2012:03:09 Fri	.	.	AAAAAAAAAAAA	.	.	.	.	kir CP ( 5.9h) <a href="#">anda_zenithv_4.00r_CP</a>
2012:03:09 Fri	AAAAAAAAAAAAAAAAAAAA	.	.	.	.	.	.	42m CP1 (10.5h) <a href="#">ipy_fixed42p_3.01_CP</a>
2012:03:09 Fri	AAAAAAAAAAAAAAAAAAAA	.	.	.	.	.	.	vhf CP6 (14.0h) <a href="#">anda_zenith_4.00v_CP</a>
2012:03:09 Fri	CCCCCCCCCCCCCCCCCCCCCCCC	.	.	.	.	.	.	VHF UP,CP6 CP(999)
2012:03:09 Fri	CCCCCCCCCCCCCCCCCCCC	.	.	.	.	.	.	ESR UP,CP6 CP(999)
2012:03:10 Sat	.	.	.	.	AAAAAAA	.	.	uhf NI(50)NO(50) ( 4.0h) <a href="#">beata_cp2_lidar_2.0v_NI</a>
2012:03:10 Sat	.	.	.	.	11111111	.	.	TRD SPNIDLAR2 NI(12),NO(12)
2012:03:10 Sat	.	.	.	.	11111111	.	.	VHF SPNIDLAR2 NI(12),NO(12)
2012:03:11 Sun	.	.	.	.	AAAAAAA	.	.	uhf NI(50)NO(50) ( 4.0h) <a href="#">beata_cp2_lidar_2.0v_NI</a>
2012:03:11 Sun	.	.	.	.	11111111	.	.	VHF SPNIDLAR2 NI(12),NO(12)
2012:03:11 Sun	.	.	.	.	11111111	.	.	TRD SPNIDLAR2 NI(12),NO(12)
2012:03:12 Mon	.	AAAAAAAAAAAA	.	.	.	.	.	uhf NI ( 6.0h) <a href="#">beata_cp3_ti_2.0v_NI</a>
2012:03:12 Mon	.	.	.	.	AAAA	.	.	32m NO(35)SW(35)UK(30) ( 2.0h) LT4FL
2012:03:12 Mon	.	.	.	.	A	.	.	uhf NI(50)NO(50) ( 0.2h) <a href="#">beata_cp2_lidar_2.0v_NI</a>
2012:03:12 Mon	.	AAAAAAAAAAAA	.	.	.	.	.	32m NI ( 5.0h) <a href="#">taro_sweepELv3_1.00_NI</a>
2012:03:12 Mon	.	1111111111	.	.	.	.	.	TRD SP_NI_Ti NI(24)
2012:03:12 Mon	.	1111111111	.	.	.	.	.	ESR SP_NI_Ti NI(24)
2012:03:12 Mon	.	.	.	.	11111111	.	.	TRD SPNIDLAR2 NI(12),NO(12)
2012:03:12 Mon	.	.	.	.	11111111	.	.	VHF SPNIDLAR2 NI(12),NO(12)
2012:03:12 Mon	.	.	.	.	11111	.	.	ESR EAST NO(75)
2012:03:12 Mon	.	.	22222222	.	.	.	.	ESR EAST_SPEAR NO(24)
2012:03:13 Tue	.	AAAAAAAAAAAA	.	.	.	.	.	32m NI ( 6.9h) <a href="#">taro_sweepELv3_1.00_NI</a>
2012:03:13 Tue	AAAAAA	.	.	.	AAAA	.	.	32m NO(35)SW(35)UK(30) ( 5.0h) LT4FL
2012:03:13 Tue	.	AAAAAA	AAAA	.	.	.	.	uhf NI ( 5.2h) <a href="#">beata_cp3_ti_2.0v_NI</a>

# Data server python

- IP check
- http
- https

```
serve_files.py (~/EGI/AARC2) - GVIM
File Edit Tools Syntax Buffers Window Help
# !/usr/bin/env python
# the purpose of this file is to listen on a tcp port and handle
# download requests by HTTP(S) query on the form
# id=3&id=5&id=6&format=tar
# the id is the resource_id and it is the
# responsibility for this script to select an appropriate
# source to fetch from.
# format is tar, tgz or zip

import os, sys, cgi

import tapelib

portno = 37008

HQ = "127.0.0.0/8 193.11.31.253/32 192.168.10.0/23 10.0.8.0/24"
TRO= "129.242.31.0/25"
ESR= "158.39.70.0/26 158.39.70.220/32"
KIR= "193.10.33.64/27 193.10.33.96/28"
SOD= "193.167.134.192/27"
permitted_ips = HQ+" "+TRO+" "+ESR+" "+KIR+" 1.1.1.1/32"
einfra_ips = "146.48.0.0/16/CNR"
affiliate_ips = "193.48.8.59/32/FR/2018 203.250.178.0/23/KR/2018"
blacklist = ""

def permitted(ip, country, date, type):
    owners='UK NI NO SW FI CN'
    common='CP UP AA IPY'
    if not country: country='?'
    # check for ip numbers - taken from Madrigal trustedIPs.txt
    ip32=0

EGI/AARC2/serve_files.py 1,21 Top
#No hostname found or not two letter country, try with whois
#wserv='countries.blackholes.us'
wserv='zz.countries.nerd.dk'
import commands
pi=ip.split('.')
host=commands.getoutput('nslookup -q=txt '+pi[3]+'.'+pi[2]+'.'+pi[1]+'.'+pi[
0]+'.'+wserv+' | grep text').split(' ')[1]
except:
    return False

# Domain to EISCAT country code used in SQL DB.
# ge is Georgia, ni is Nicaragua. Block.
if host=='ge': return False
if host=='ni': return False
# EISCAT codes differ for Germany, Sweden, Japan
if host=='de': host='ge'
```

## Action points

- Ingemar Häggström
  - clone environment or service where users can download EISCAT data ✓
  - provide Mario / Jouke with VM's for COmanage / proxy
  - dive into pySAML and make test environment SAML-ready with AARC ✓  
DiY IdP
- Arnout Terpstra
  - Needs help from someone with Python + SAML knowledge: who?
- Jouke Roorda (?) setup SaToSa for EISCAT (March)
- Mario Reale setup COmanage (March)
- Connect first SP to proxy
- Connect everything together (April)
- Have something ready before F2F in Athens!
- Well, delay 2 months...

# Thank you Any Questions?

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<https://aarc-project.eu>



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