



EISCAT_3D

A White Rabbit based Radar

13th White Rabbit Workshop

CERN 2024-03-21



Research Infrastructure

- We operate high power radar systems in the auroral zone in northern Europe
- Provide ionospheric measurement data to our users
- Most staff are engineers who develop and operate the radars
- One of the few scientific radars
- The systems are developed in collaboration with the users



EISCAT Scientific Association

Current Associates



Forskningsrådet,
Norway



Suomen Akatemia,
Finland



Vetenskapsrådet,
Sweden



CRIRP, PRC



NIPR, Japan



NERC
UKRI, U.K.

Affiliates



KOPRI & KASI,
S. Korea



DLR-SO,
Germany

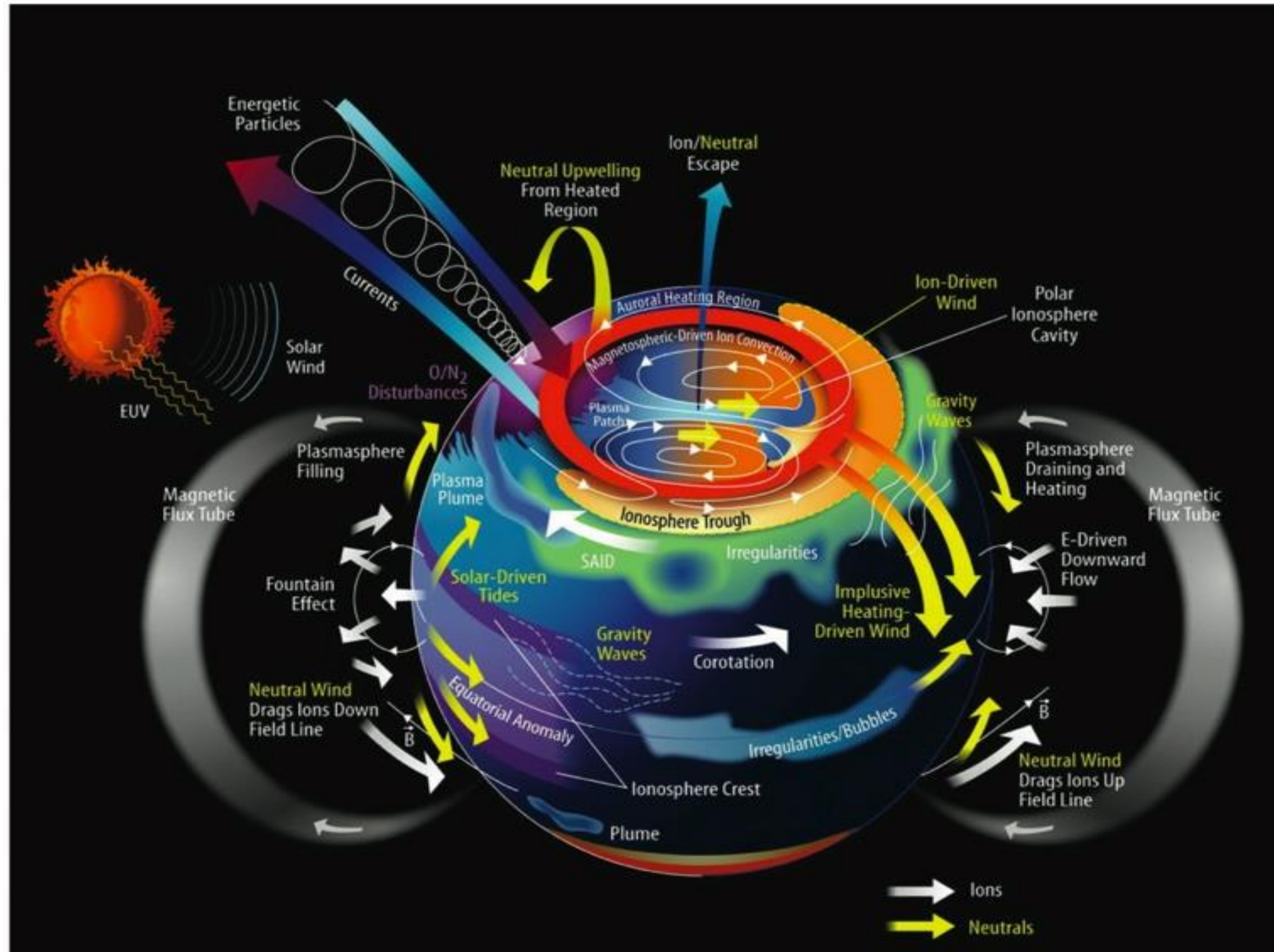


IRA, Ukraine



NASA, USA

- Atmospheric physics and climate change
- Space and plasma physics
- In- and outflow of matter in Earth's atmosphere
- Space debris, near-earth objects
- Space weather, continuous monitoring
- Radio astronomy
- Combining measurements from other instruments



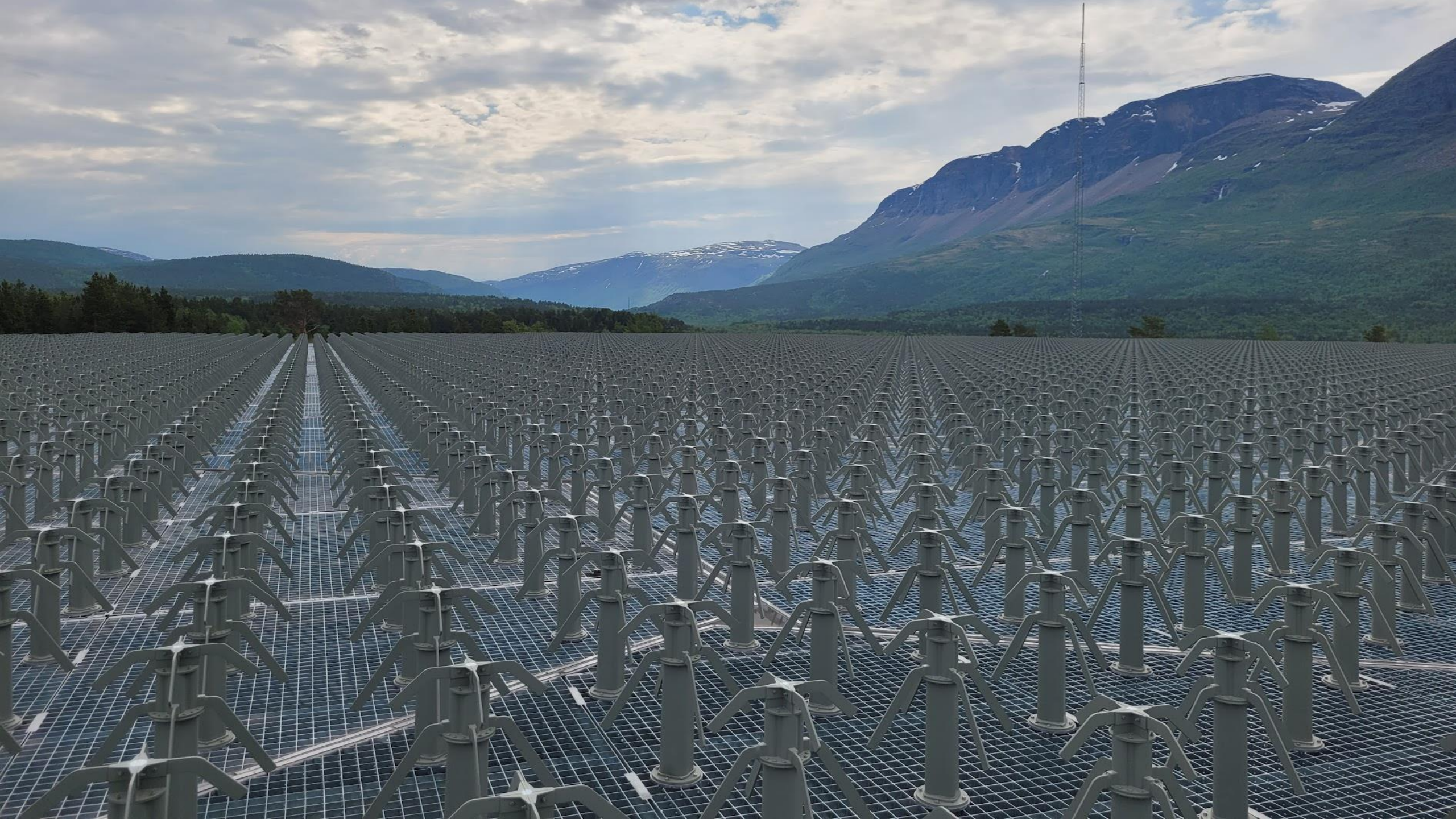






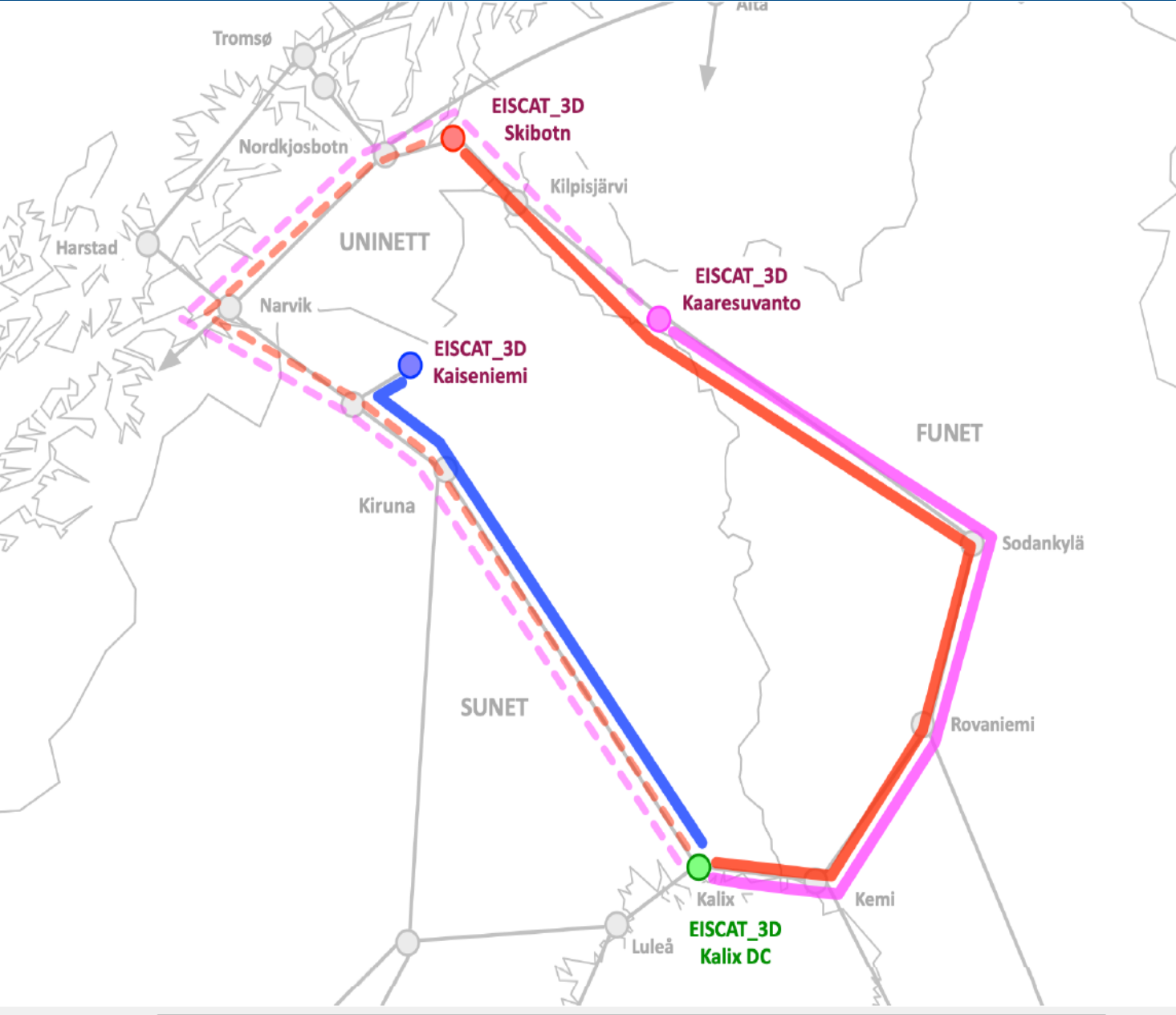
EISCAT 3D

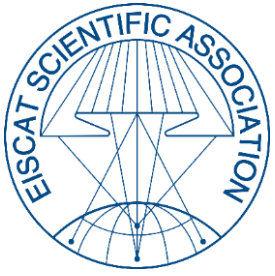
- Take advantage of decades of technological progress
- Will be the first fully digital incoherent scatter radar
- Fully electronically steerable and re-steerable
- Will be able to scan volumes
- 10 MW peak power



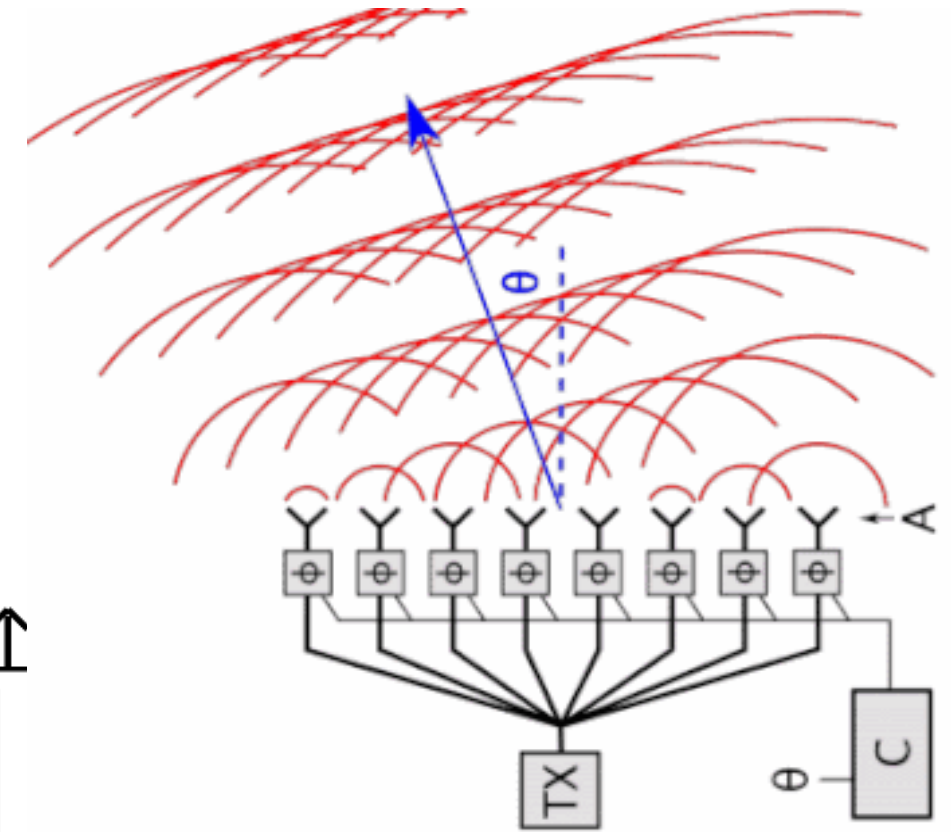
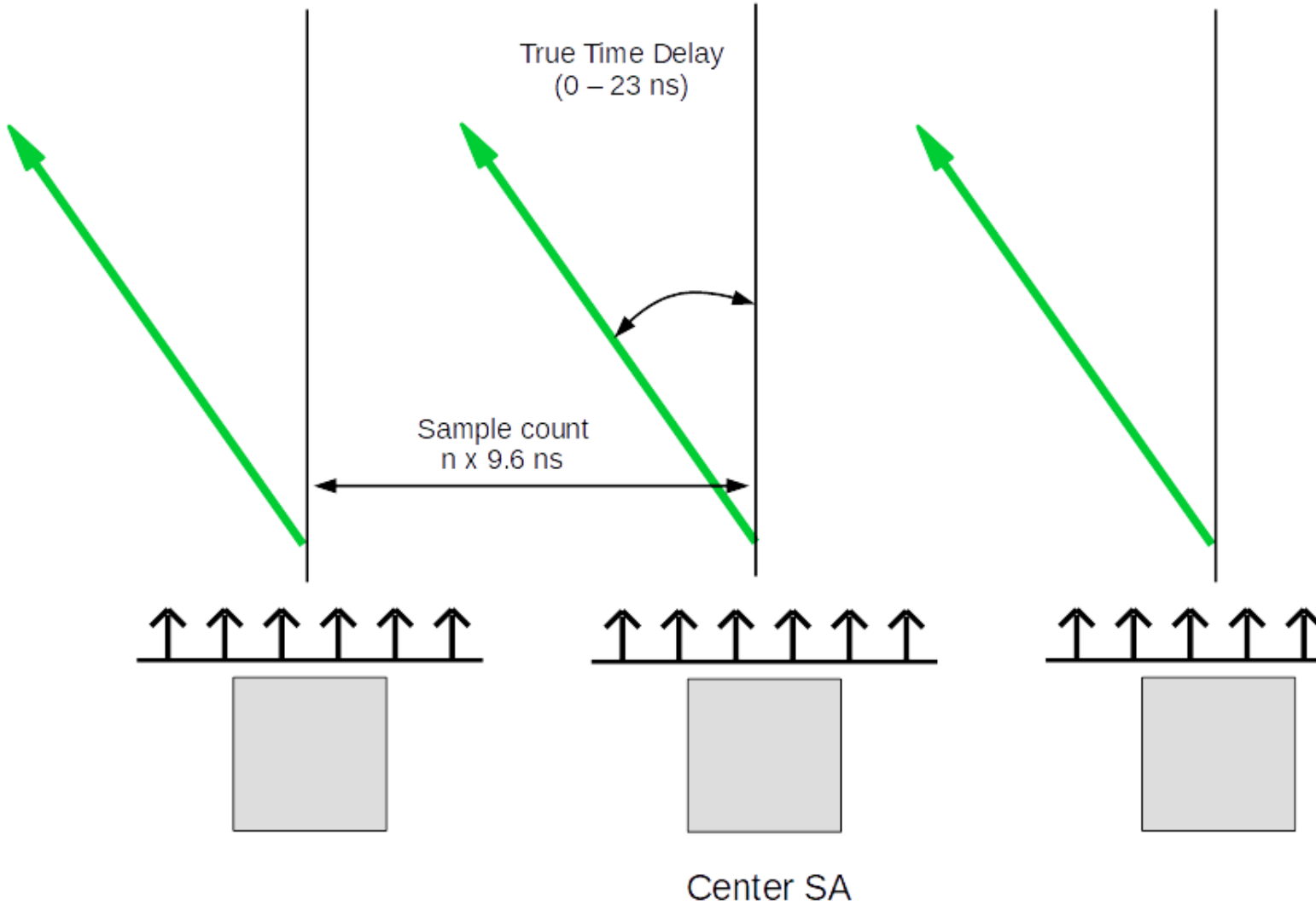






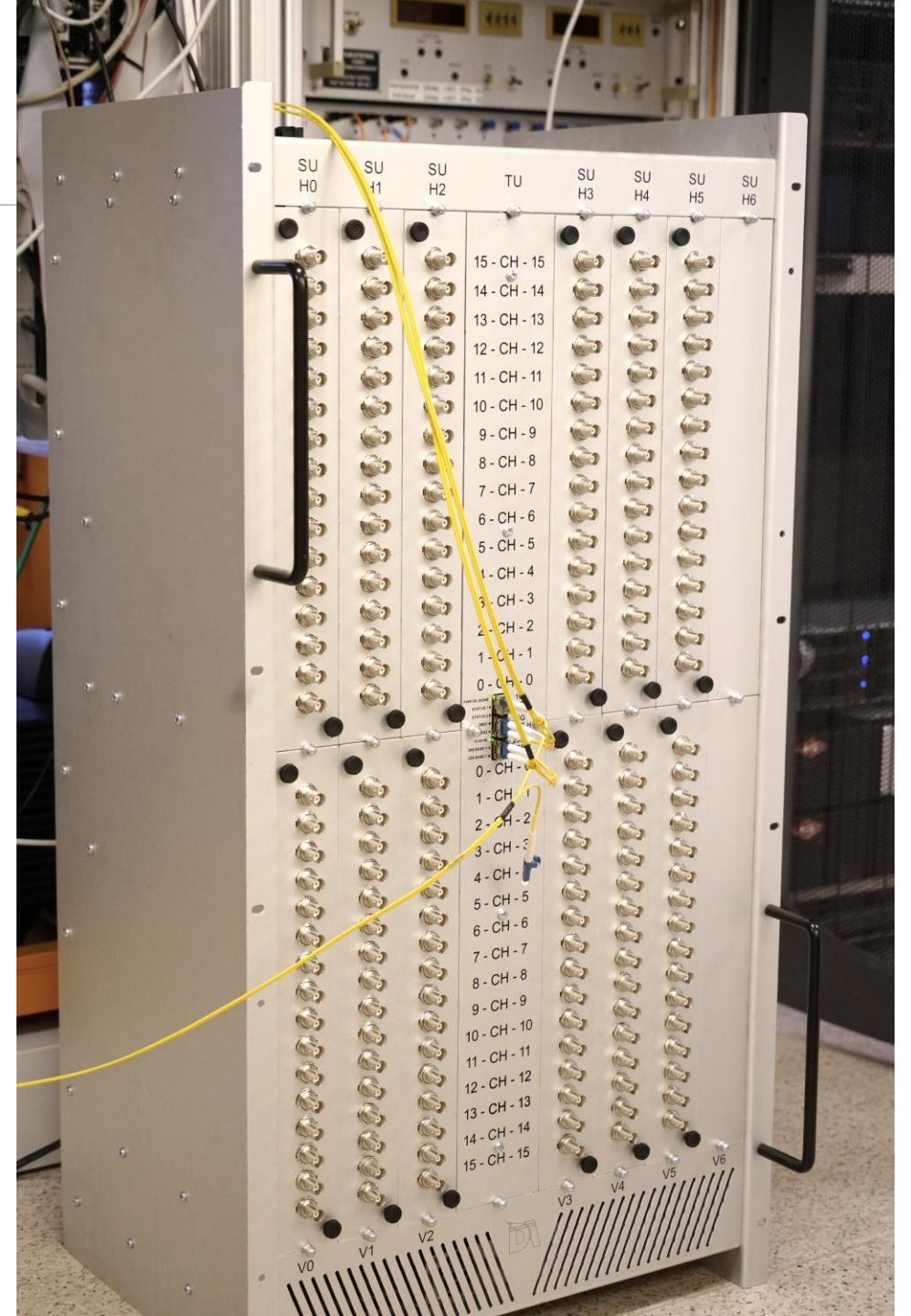


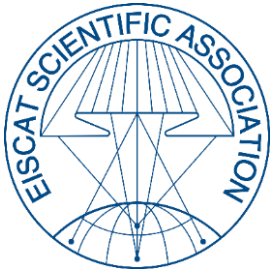
Beamforming





WR Devices





White Rabbit Experience

- One of the first to have timing and data together
- We just distribute time – No analogue signals
- Stuck on WR Switch firmware 5.0.1
- SFPs



White Rabbit Future

- WR Enabled site clock
- New WR Switch
- WR Between sites
- Connection to national time sources

