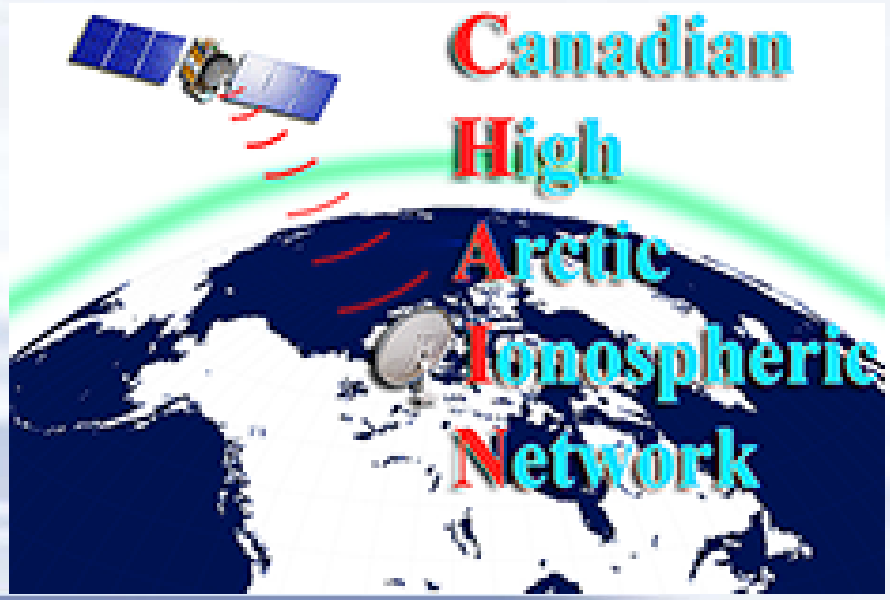
GPS scintillation and TEC at high latitudes with Canadian High Arctic Ionospheric Network

Prikryl, P.[1], Jayachandran, P. T.[2] and the CHAIN Team

[1]Communications Research Centre Canada, Ottawa, ON, Canada
[2]Physics Department, University of New Brunswick, Fredericton, NB, Canada



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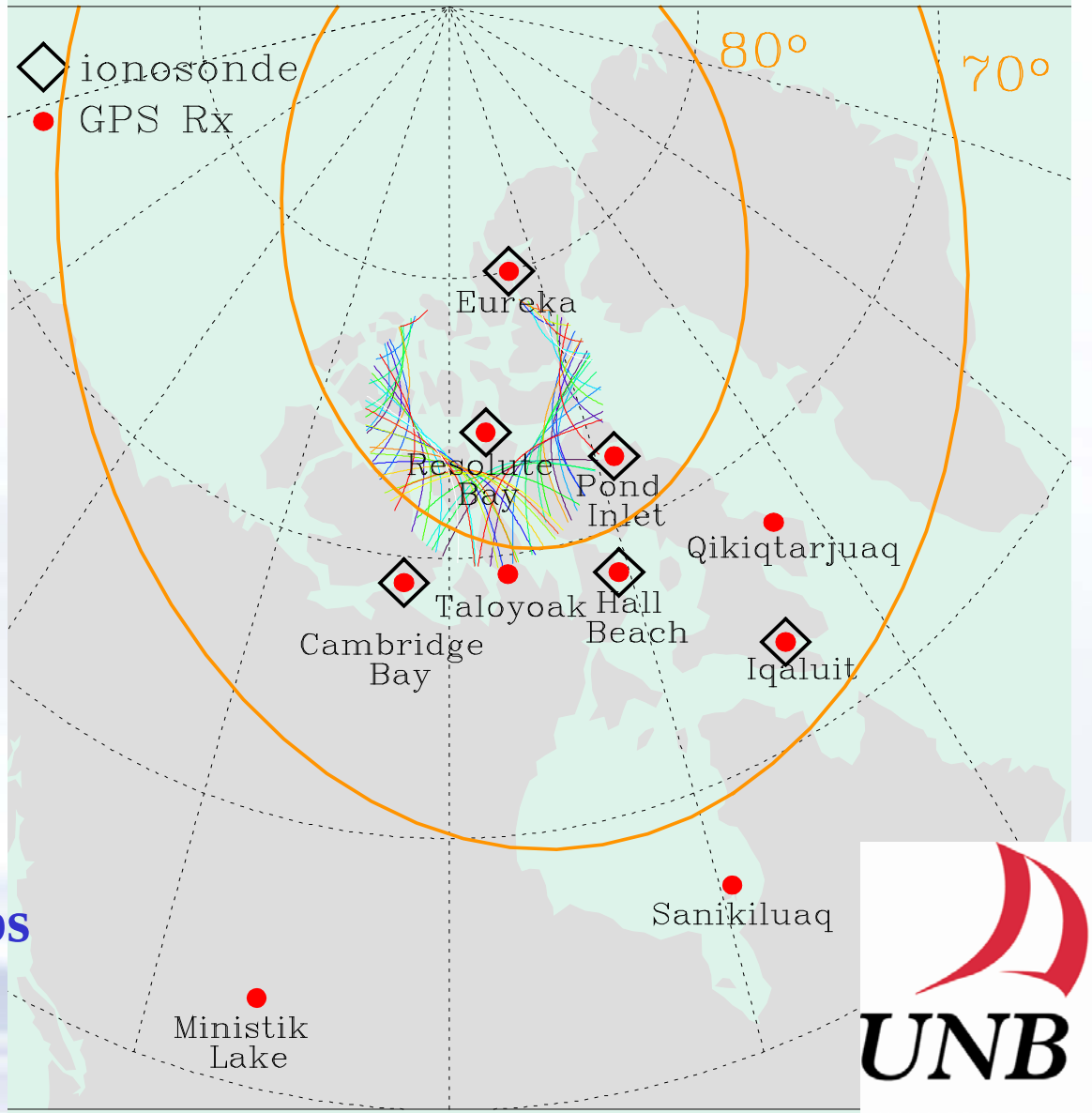
Canadian High Arctic Ionospheric Network

Basic measurements and data products

- CADI **ionograms** 1-5min
- **convection** at 30-s res.
- GPS σ_Φ *and* S_4 from 50-Hz data over 1 min intervals
- slant and vertical **TEC**
- 3D tomographic **TEC maps**



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Real-time Scintillation activity

Updated in every five minutes

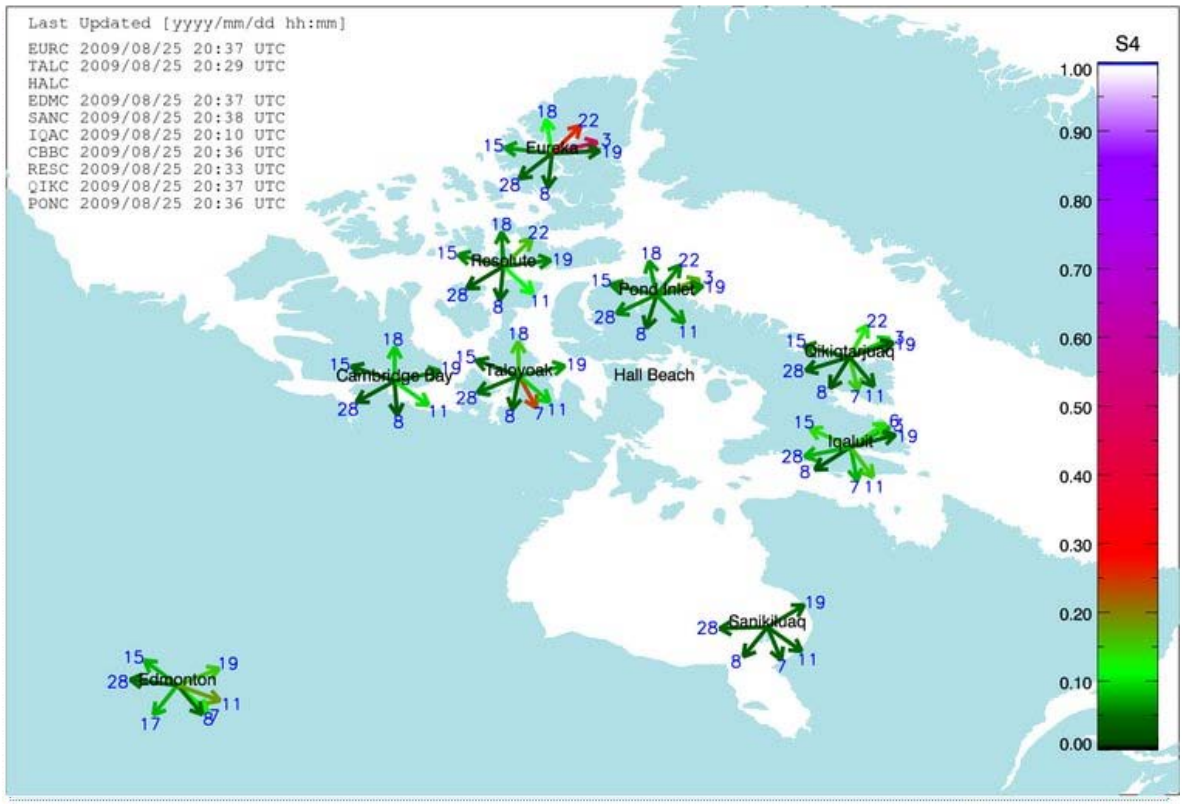
CHAIN

the Canadian High Arctic Ionospheric Network

Home | About | People | Instruments | Stations | Data Products | Photos | Publications

Welcome to the Canadian High Arctic Ionospheric Network

Real-time Scintillation Activity in the Polar Cap



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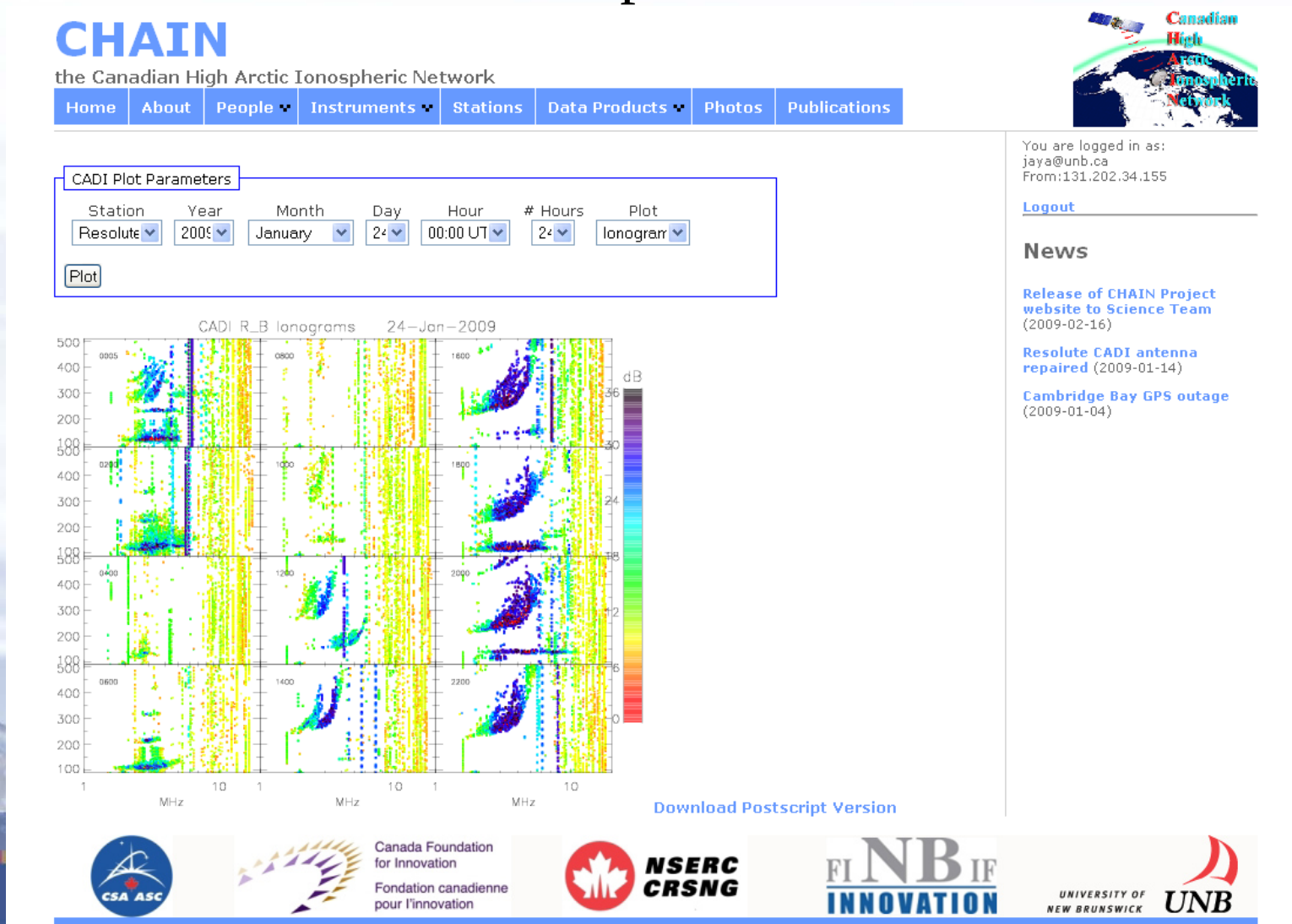
News

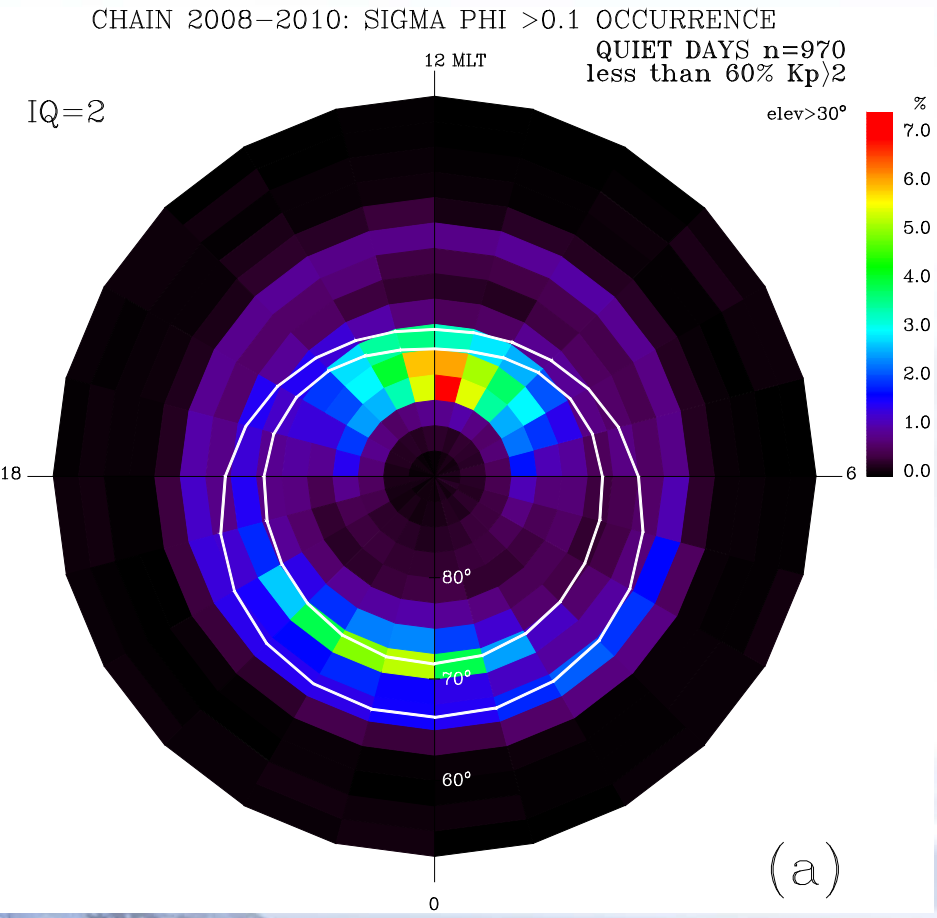
- Iqaluit power has been restored
- Hall Beach communication problem
- Hall Beach CADI installed
- Pond Inlet CADI installed
- Cambridge Bay CADI repaired

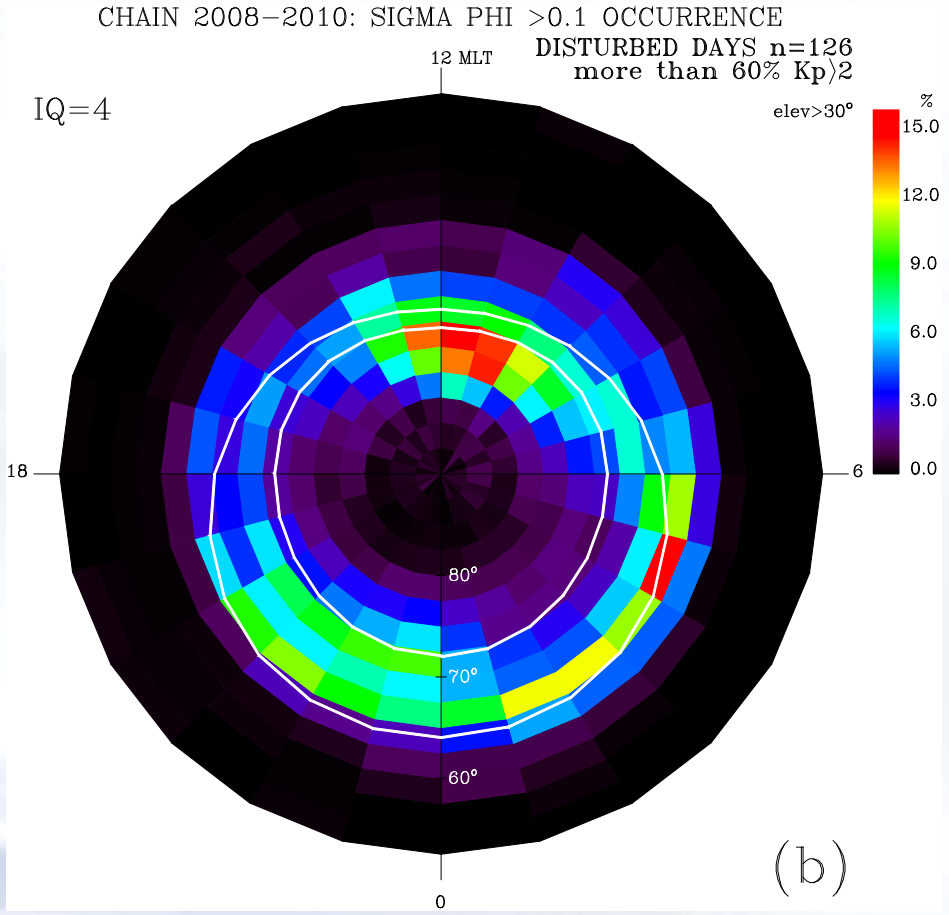
Data access, visualization and plots downloads

- http://chain.physics.unb.ca/chain
- Raw data download via ftp - links from website



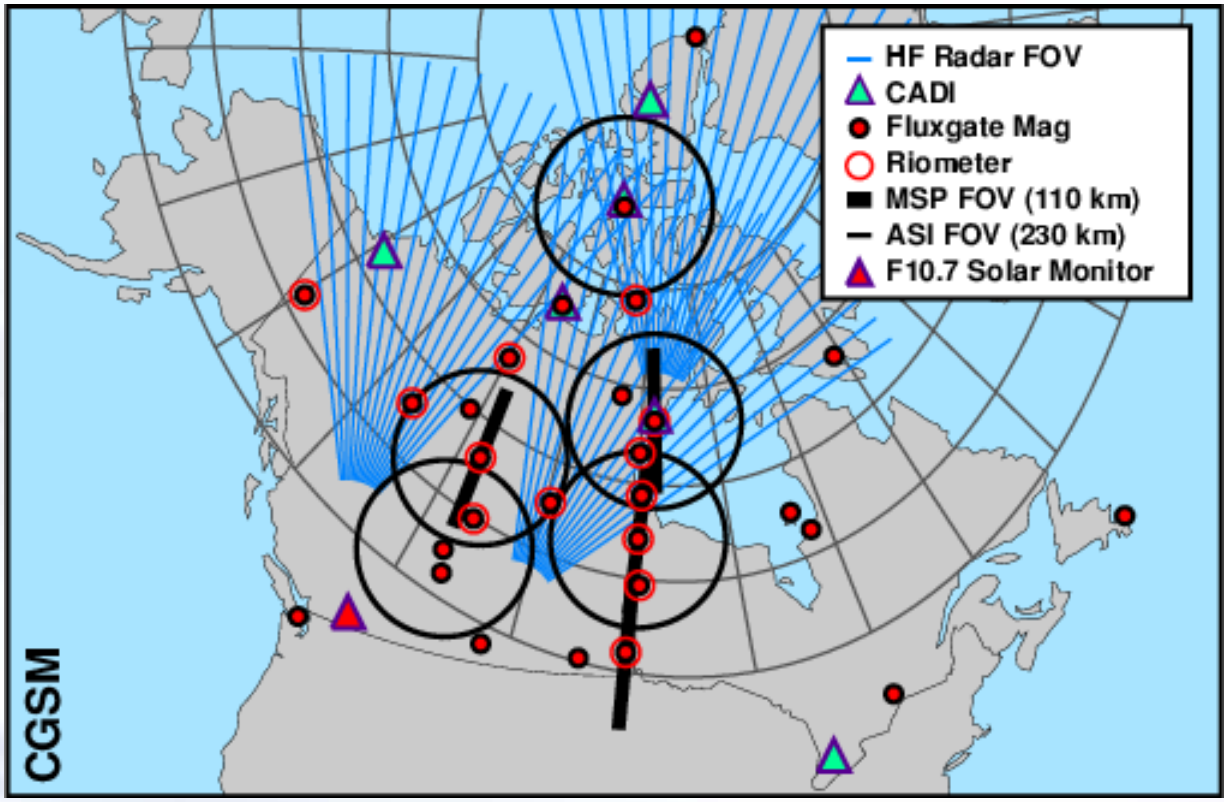
Phase scintillation occurrence in 2008-2010 for quiet & moderately disturbed days





Canadian GeoSpace Monitoring program (CGSM)

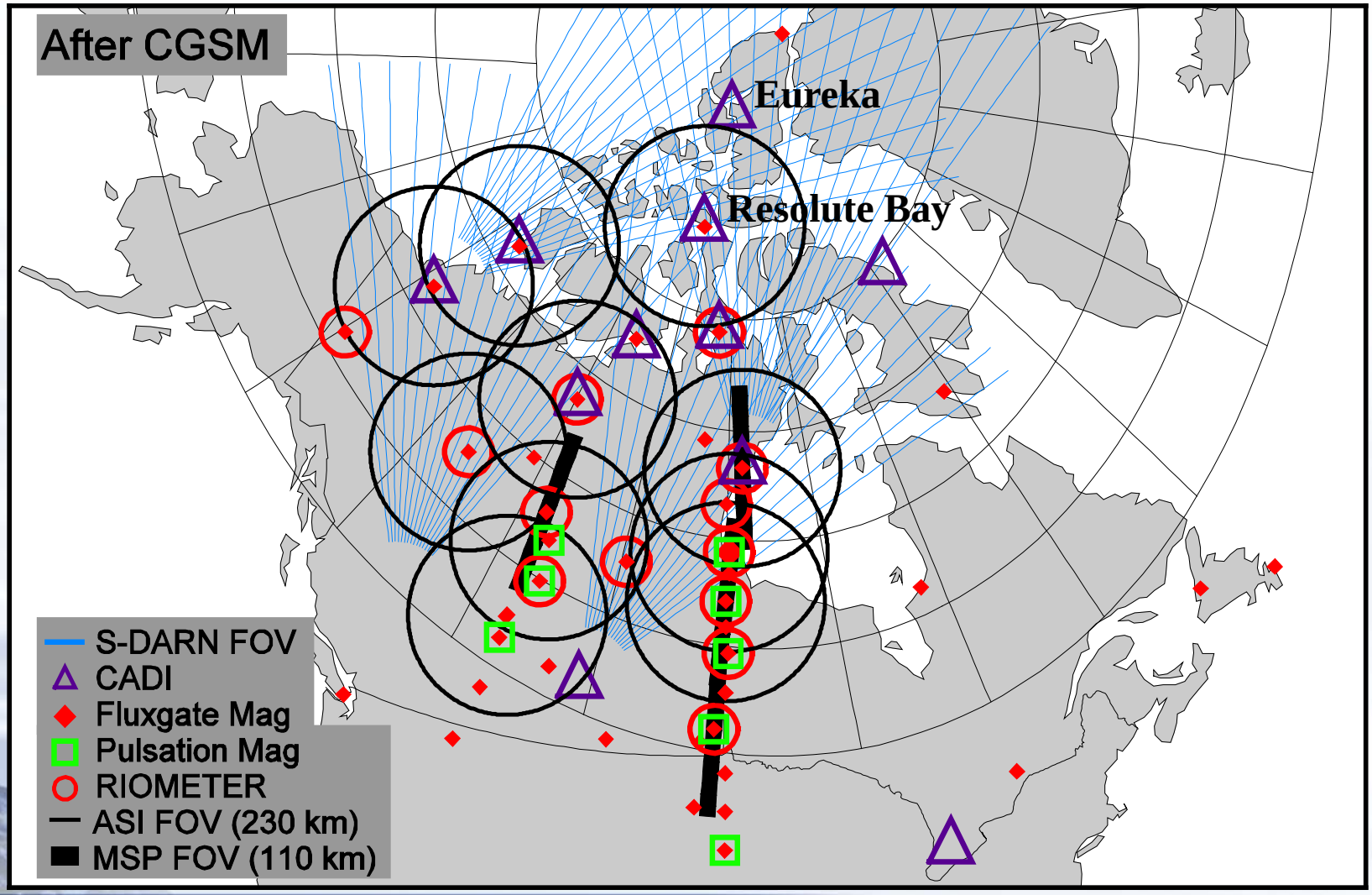
CGSM is a program coordinating observations, data-assimilation and modelling. The data are used to study the near-Earth space environment including aurora borealis and other space weather.

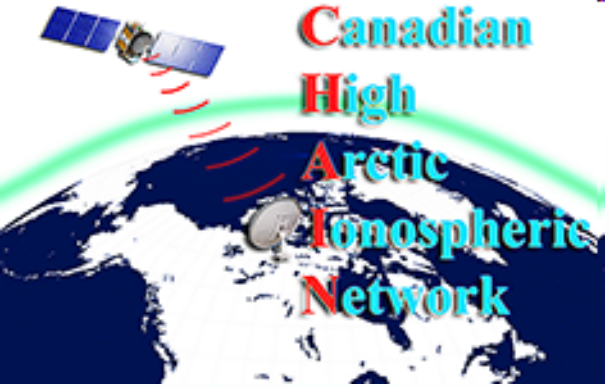


SSDP
Canadian Space Science Data Portal
In association with:
CSA ASC CANARIE

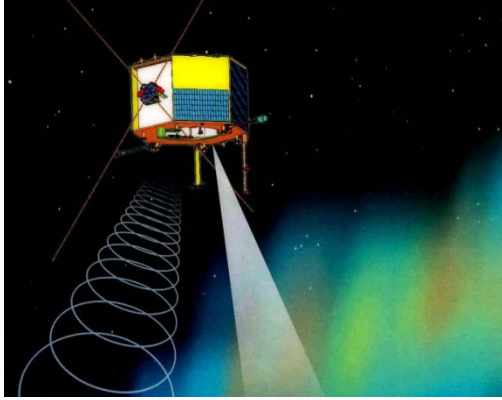
CGSM is the successor to the Canadian Space Agency CANOPUS program that operated from 1986 to March 2005.

Canadian GeoSpace Monitoring





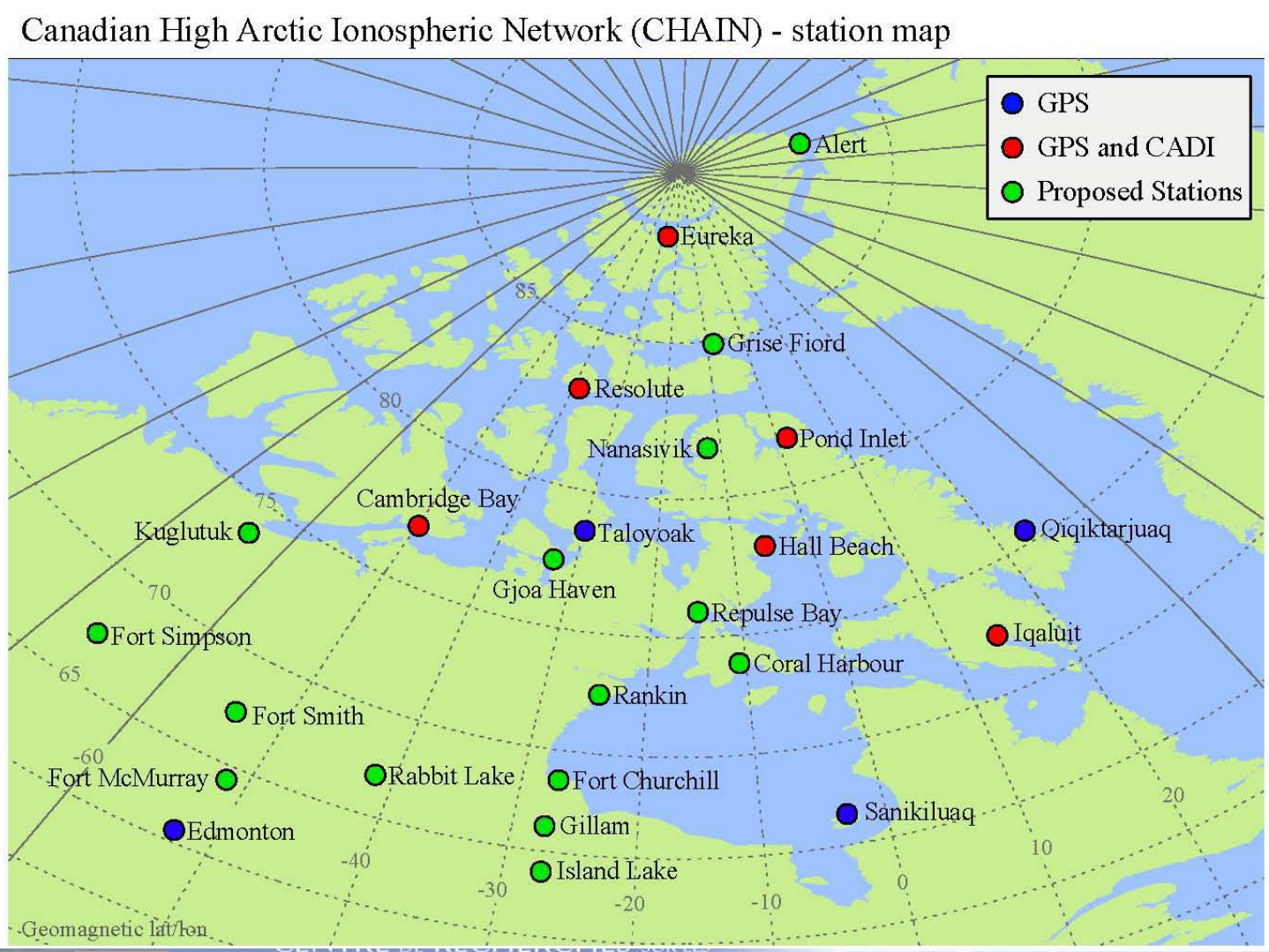
Future plans



- CHAIN expansion
- CASSIOPE/ePOP satellite mission
  - New perspective on ionospheric irregularities
  - In-situ plasma measurements for scintillation climatology modeling
- Interhemispheric comparative scintillation studies using Arctic and Antarctic GPS receiver arrays

Canadian High Arctic Ionospheric Network

New CHAIN proposal



CASSIOPE

Enhanced Polar Outflow Probe (e-POP)

Science

Plasma outflow: Micro-scale ion acceleration; wave particle interaction; auroral connection

Wave propagation: 3D structure of ionospheric irregularities; GPS radio occultation

Neutral escape: Neutral heating, non-thermal atmospheric escape

Mission Concept

High-resolution in-situ measurements

Radio wave propagation 3D studies

Fast imaging of meso-scale aurora

Mission Design

Polar orbit: 325 × 1500 km; 80° incl.

Agile, 3-axis stabilized platform

8-instrument plasma & field payload

Large onboard data storage (terabyte)

Fast telemetry downlink (>300Mbps)