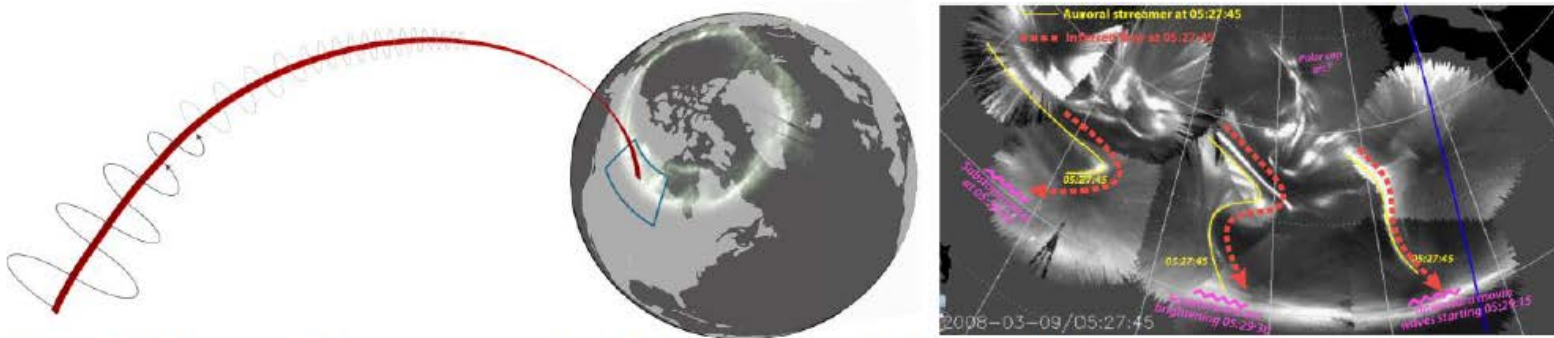
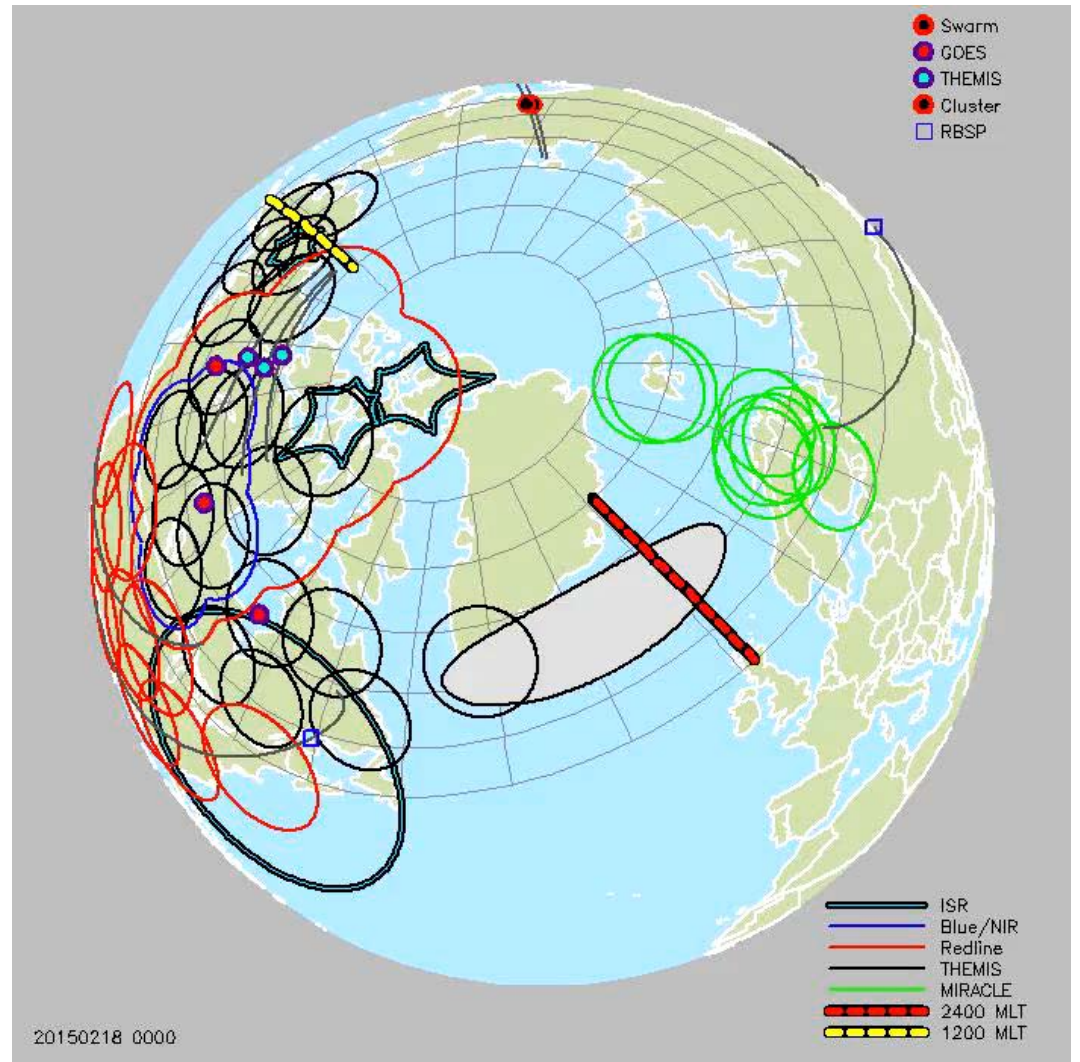
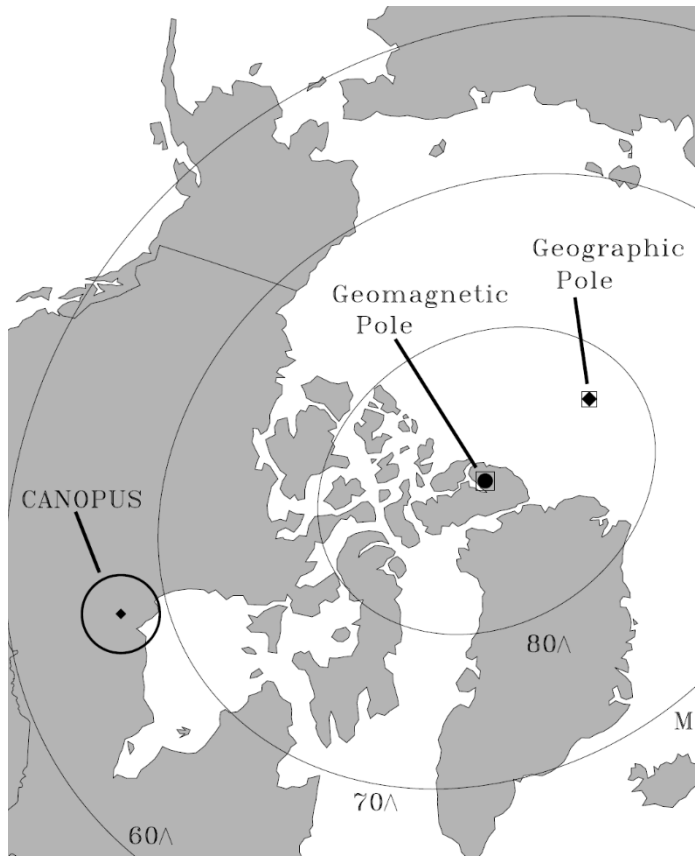


# TREx – The Transition Region Explorer

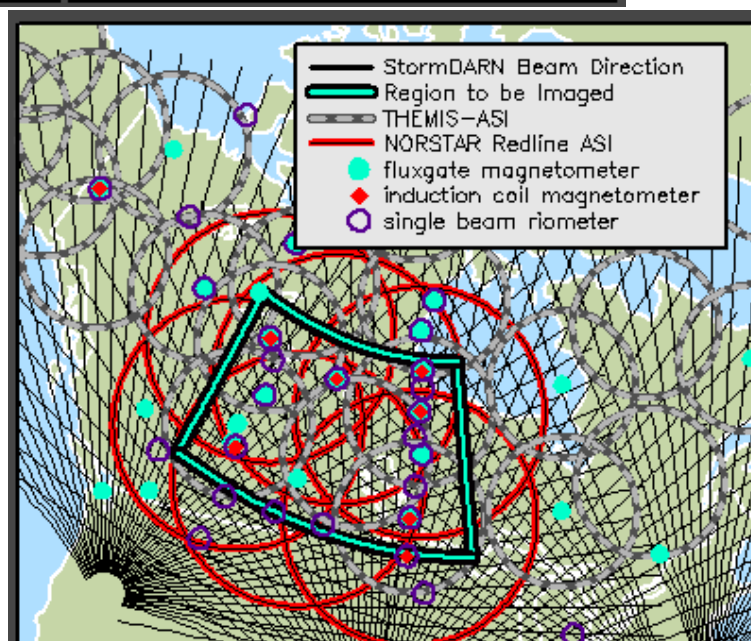
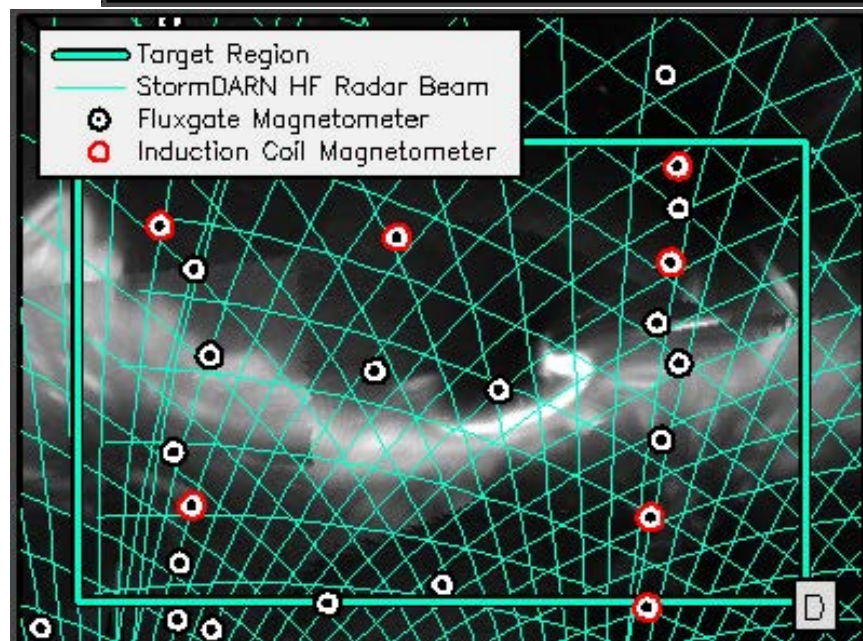
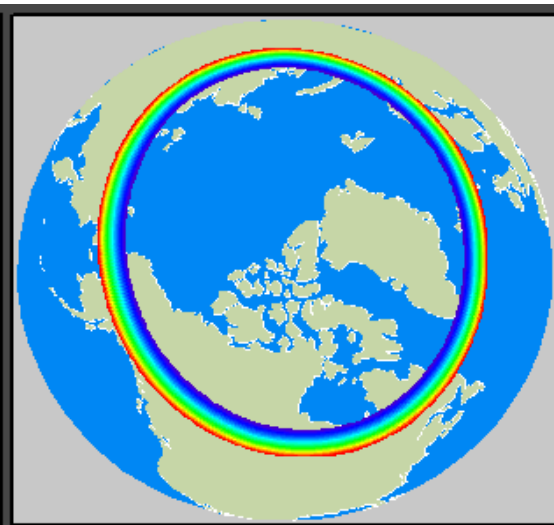
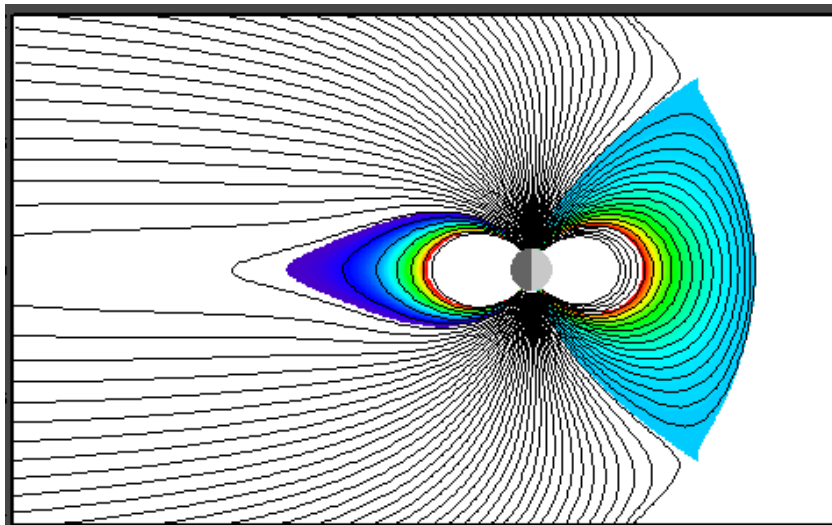
**E. Donovan, E. Spanswick, A. Weatherwax, B. Jackel, Jun Liang, S. Skone,  
T. Nishimura, Bea Gallardo, Ying Zou, D. Gillies, D. Chaddock, C. Unick, and L. Behjat.**



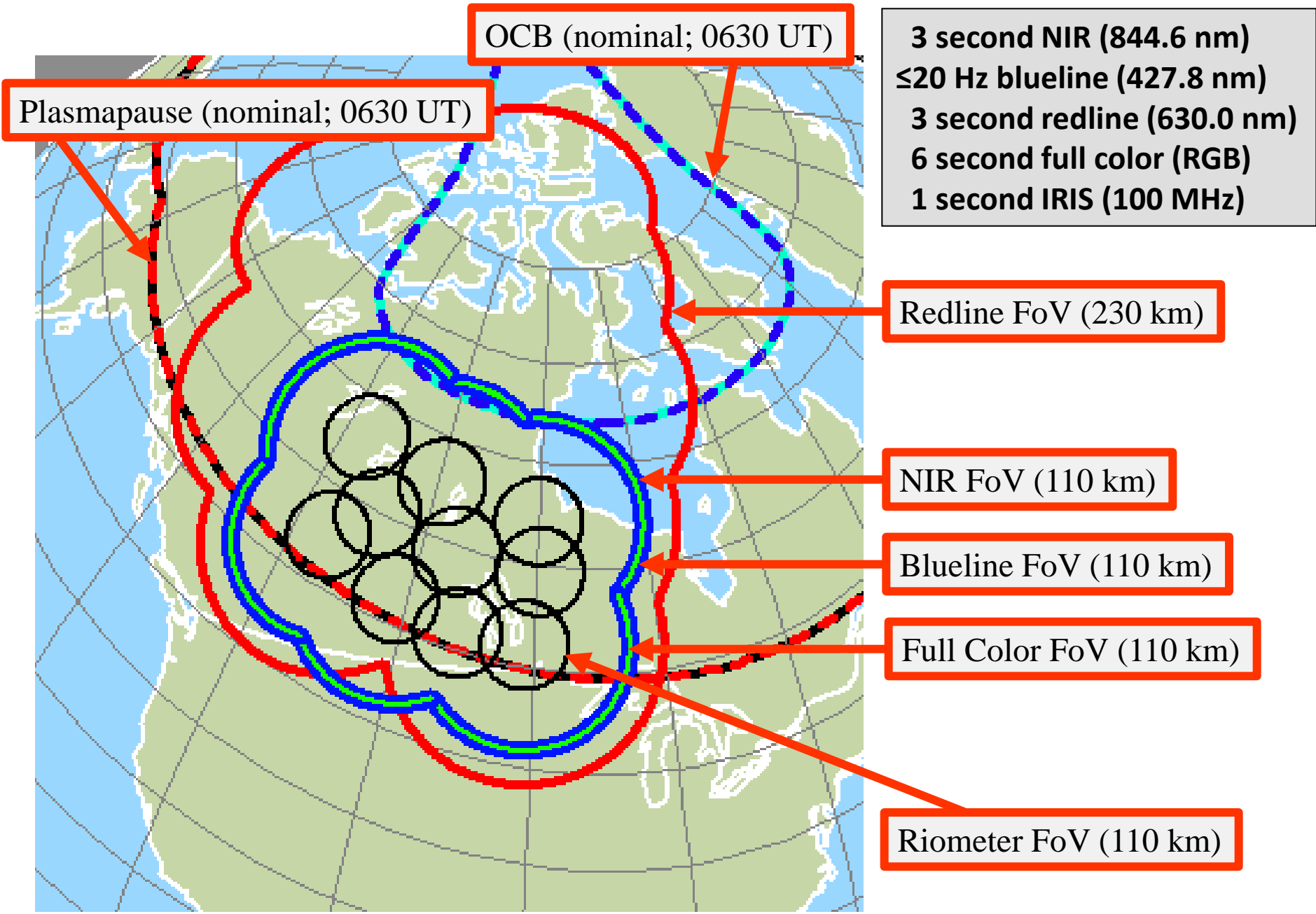
**Figure 3:** *Magnetospheric processes affect the aurora. Left) Model field line showing conjugacy between a point in the magnetosphere and the aurora. Right) THEMIS ASI mosaic showing streamers (north-south auroral structures that indicate fast plasma flows in the magnetosphere) [Lyons et al., AGU Monograph, 2012]. This 2D picture of geospace dynamics cannot be obtained any other way.*



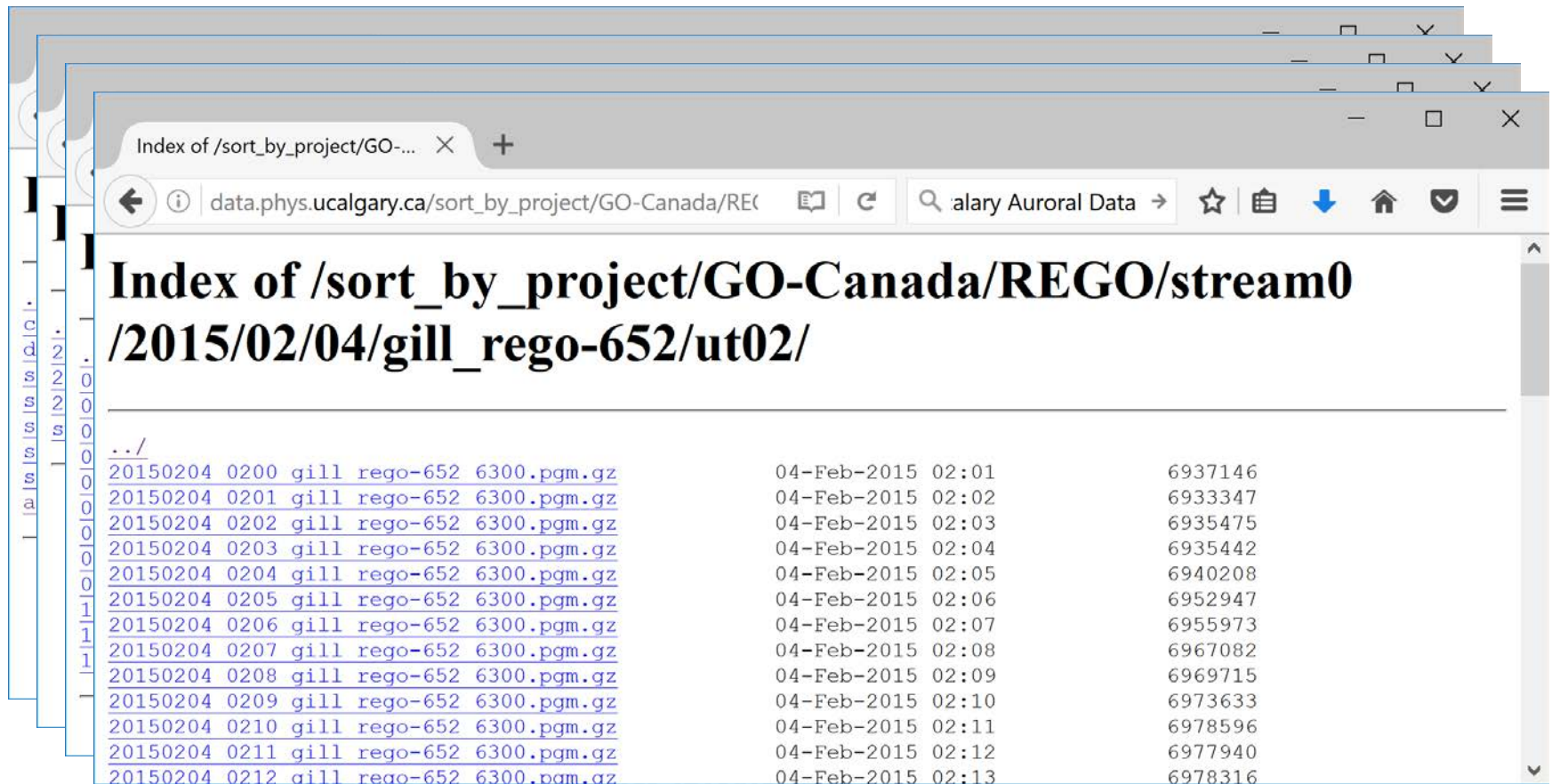
**Causes of aurora (arcs, PPA, etc.), injections and their inner magnetospheric consequences, and using aurora to remote sense geospace dynamics.**





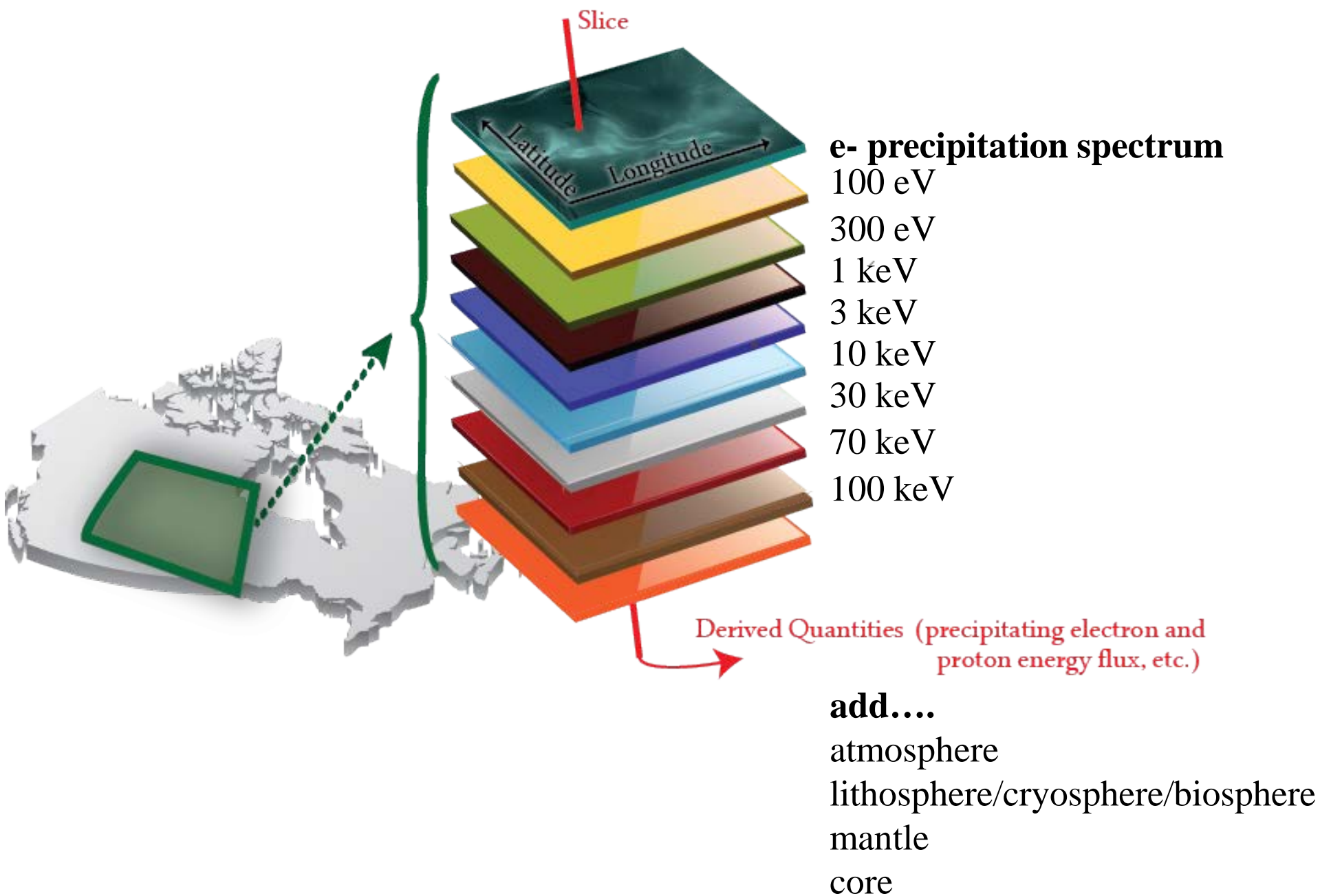


**data landing page:** [data.phys.ucalgary.ca](http://data.phys.ucalgary.ca) file format: pgm files (20 images per file) software: THEMIS-ASI; SPEDAS... *already done for redline images (Emma and Harald worked that out).*

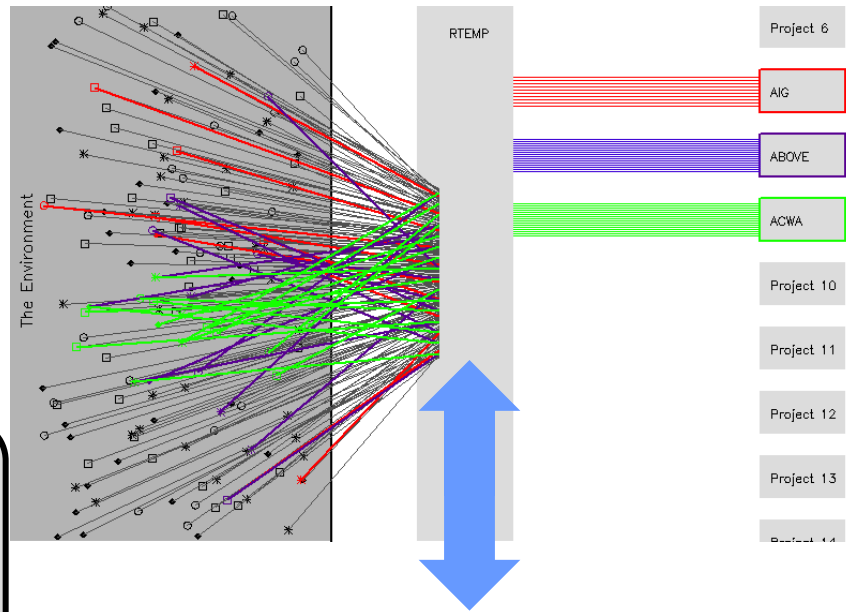
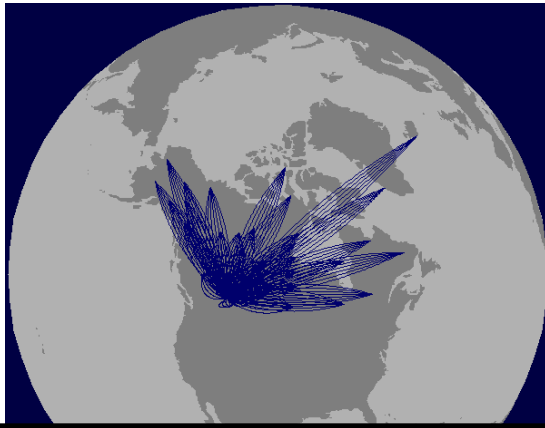


The screenshot shows a web browser window with the address bar containing the URL `data.phys.ucalgary.ca/sort_by_project/GO-Canada/REGO/stream0/2015/02/04/gill_rego-652/ut02/`. The page title is **Index of /sort\_by\_project/GO-Canada/REGO/stream0/2015/02/04/gill\_rego-652/ut02/**. The main content is a list of files with columns for file names, dates, times, and file sizes.

File Name	Date	Time	File Size
<a href="#">../</a>			
<a href="#">20150204_0200_gill_rego-652_6300.pgm.gz</a>	04-Feb-2015	02:01	6937146
<a href="#">20150204_0201_gill_rego-652_6300.pgm.gz</a>	04-Feb-2015	02:02	6933347
<a href="#">20150204_0202_gill_rego-652_6300.pgm.gz</a>	04-Feb-2015	02:03	6935475
<a href="#">20150204_0203_gill_rego-652_6300.pgm.gz</a>	04-Feb-2015	02:04	6935442
<a href="#">20150204_0204_gill_rego-652_6300.pgm.gz</a>	04-Feb-2015	02:05	6940208
<a href="#">20150204_0205_gill_rego-652_6300.pgm.gz</a>	04-Feb-2015	02:06	6952947
<a href="#">20150204_0206_gill_rego-652_6300.pgm.gz</a>	04-Feb-2015	02:07	6955973
<a href="#">20150204_0207_gill_rego-652_6300.pgm.gz</a>	04-Feb-2015	02:08	6967082
<a href="#">20150204_0208_gill_rego-652_6300.pgm.gz</a>	04-Feb-2015	02:09	6969715
<a href="#">20150204_0209_gill_rego-652_6300.pgm.gz</a>	04-Feb-2015	02:10	6973633
<a href="#">20150204_0210_gill_rego-652_6300.pgm.gz</a>	04-Feb-2015	02:11	6978596
<a href="#">20150204_0211_gill_rego-652_6300.pgm.gz</a>	04-Feb-2015	02:12	6977940
<a href="#">20150204_0212_gill_rego-652_6300.pgm.gz</a>	04-Feb-2015	02:13	6978316







# rtemp.ca

Device Unique ID: whit\_gbo-01

Previous Site Next Site Select All

Reset Site Reset To Monitoring Standards

## Base Monitoring

Summary THEMIS Rainbow-msl MSP FESO REGO SLR Riometers Magnetometers IRIS ITI DMS Login

Build Site Summary

Site: all Date: 2016/11/10

The following are kept:

**Data Products**

**Imaging System Data**

- Latest Thumbnail
- Remote USB Archive Transfer Drive
- Montages
- Keograms
- Remote USB Archive Backup Drive
- Averages

All None Monitoring Defaults

**System Monitoring Statistics**

**Real-time Monitoring Plots**

UID: calg\_rego-650, fsmi\_rego-654, fsmi\_rego-656

asi_temp	116.60 C	asi_dcnt	NA	pwr_wcnt	NA
asi_vhcn	0.00 V	asi_dcnt	NA	pwr_wcnt	NA

18:31:32 UTC  
18:31:39 UTC  
18:31:39 UTC  
18:31:26 UTC  
18:38:25 UTC



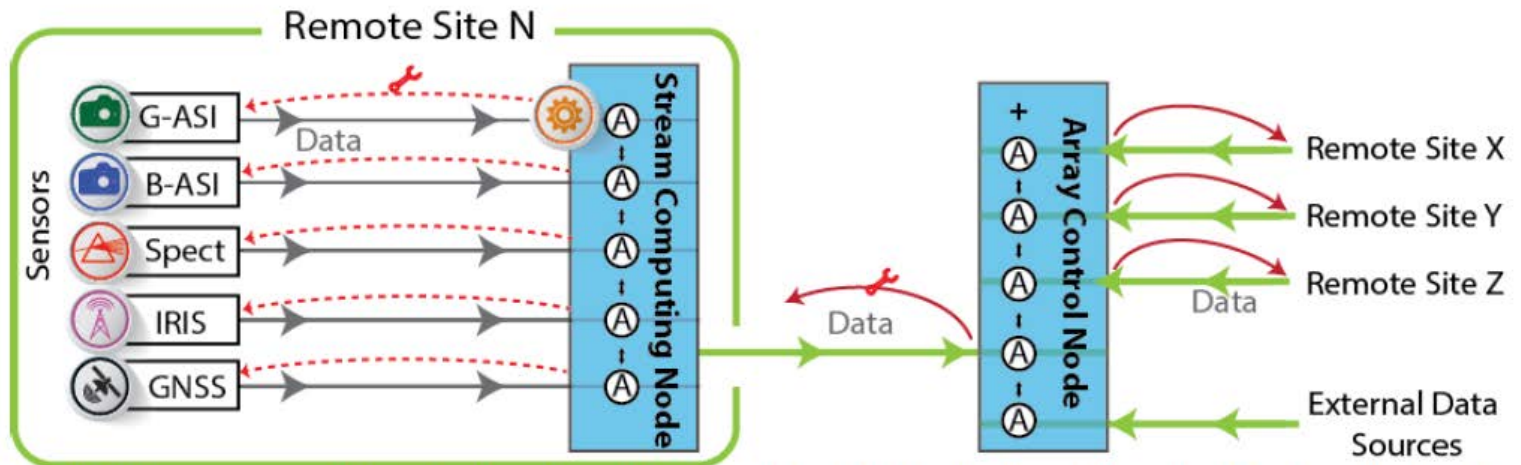
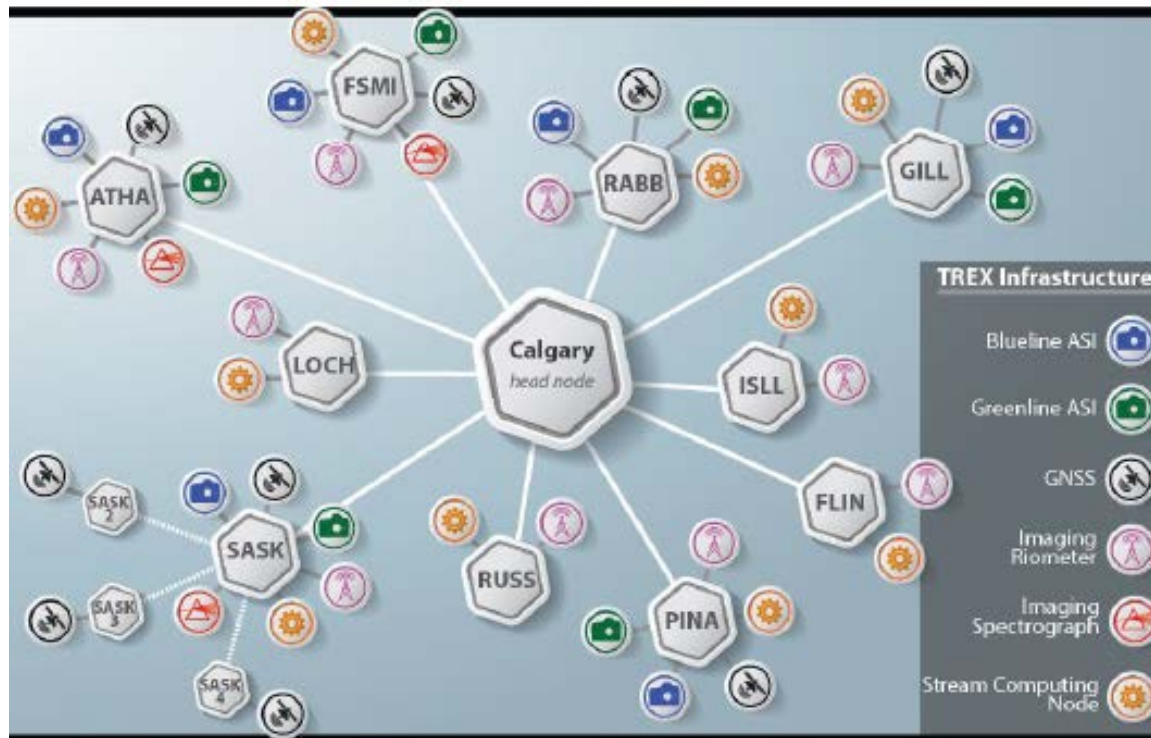
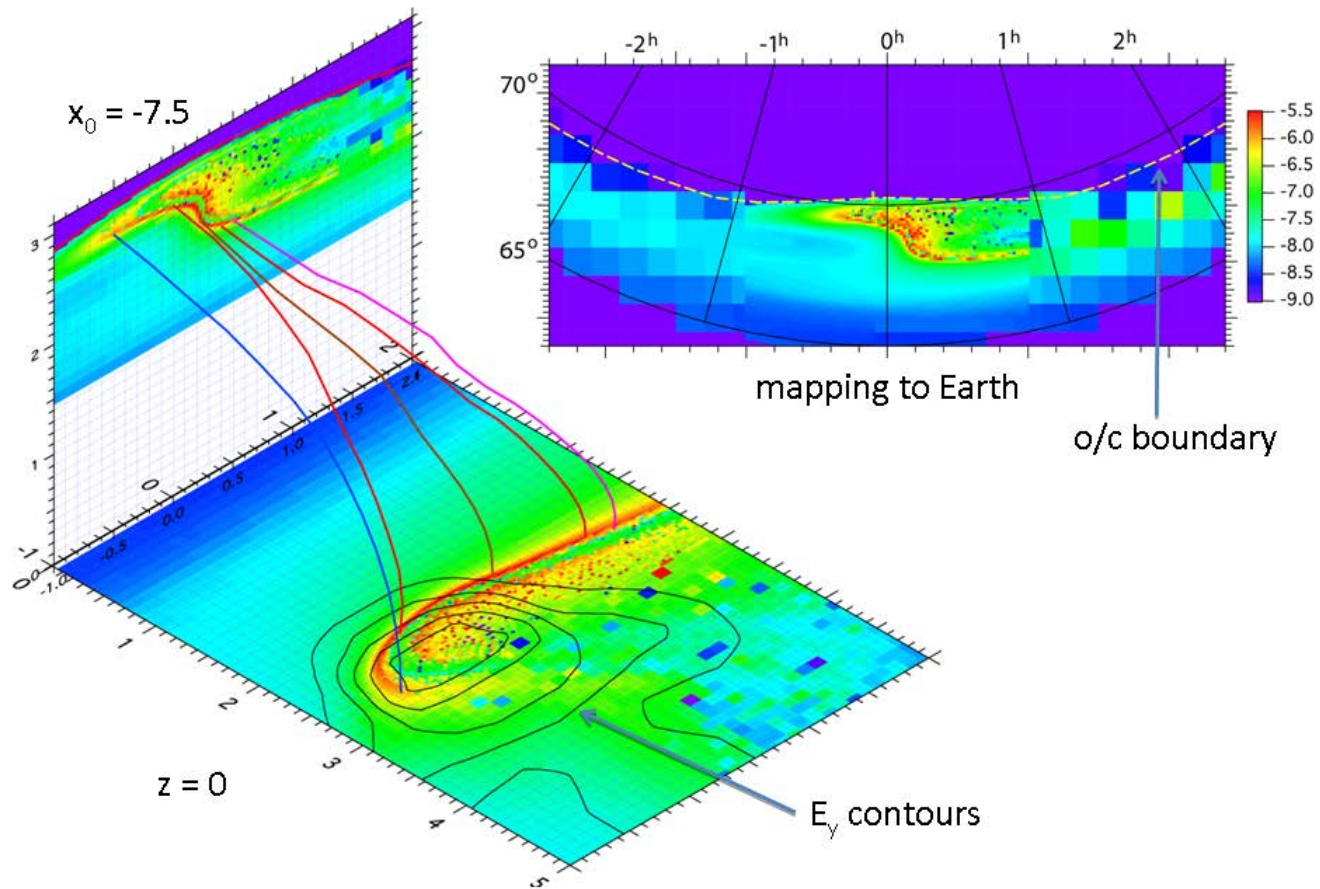


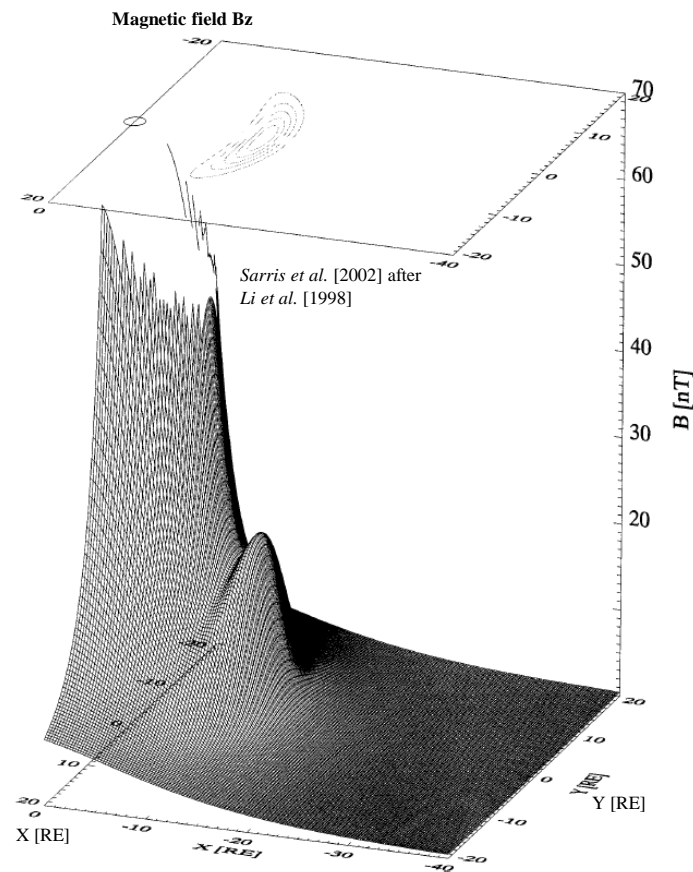
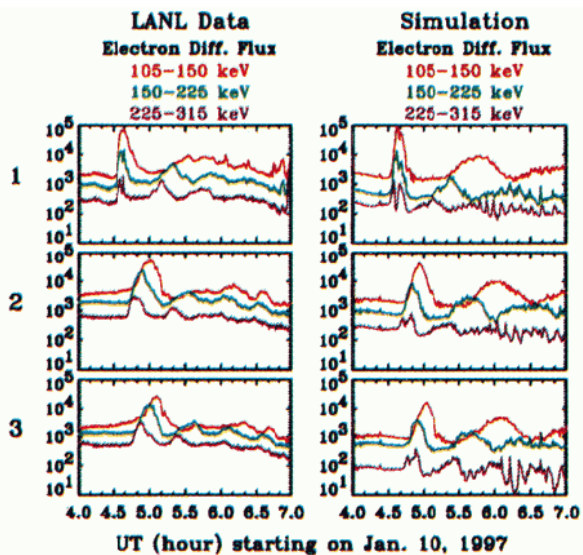
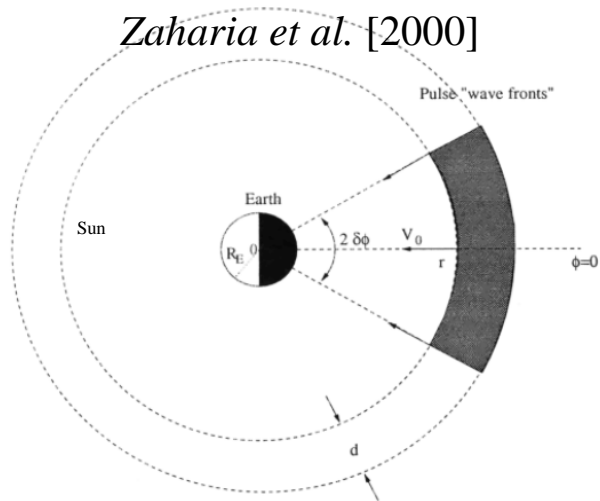
Figure 10. Stream computing infrastructure (shown in blue) to be deployed at each site. A central node will coordinate site-to-site behaviour.

# 80 keV electron fluxes, $z = 0$ and $x = x_0$ , $t=130$



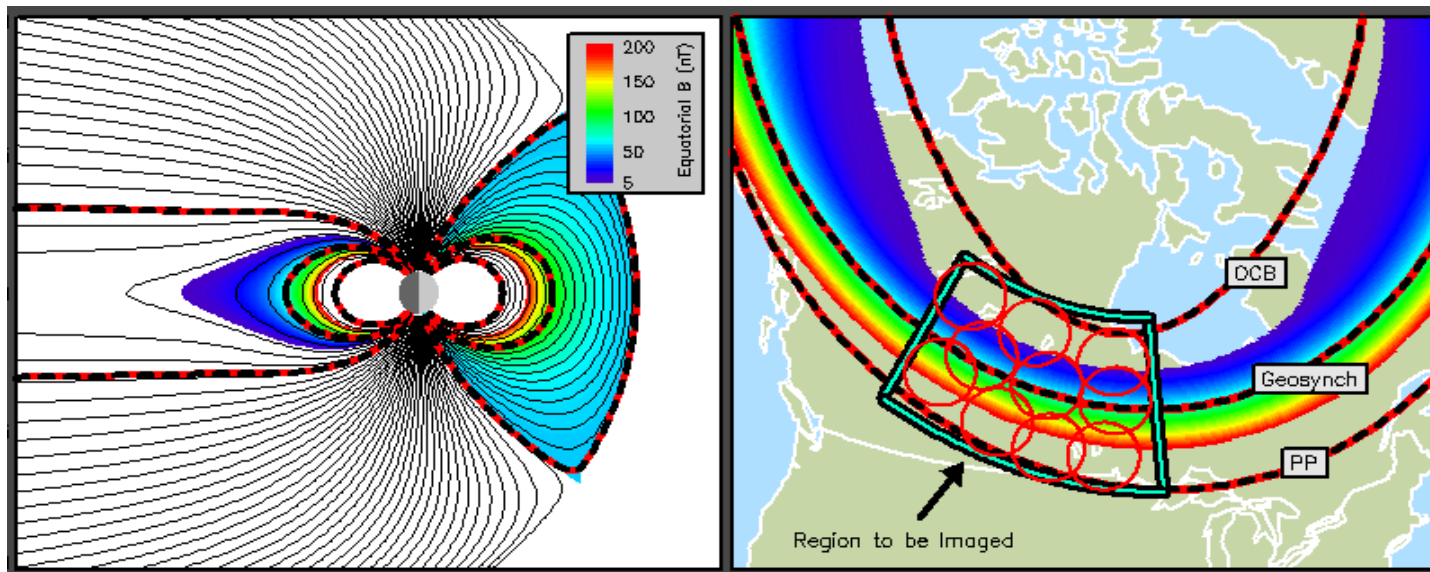
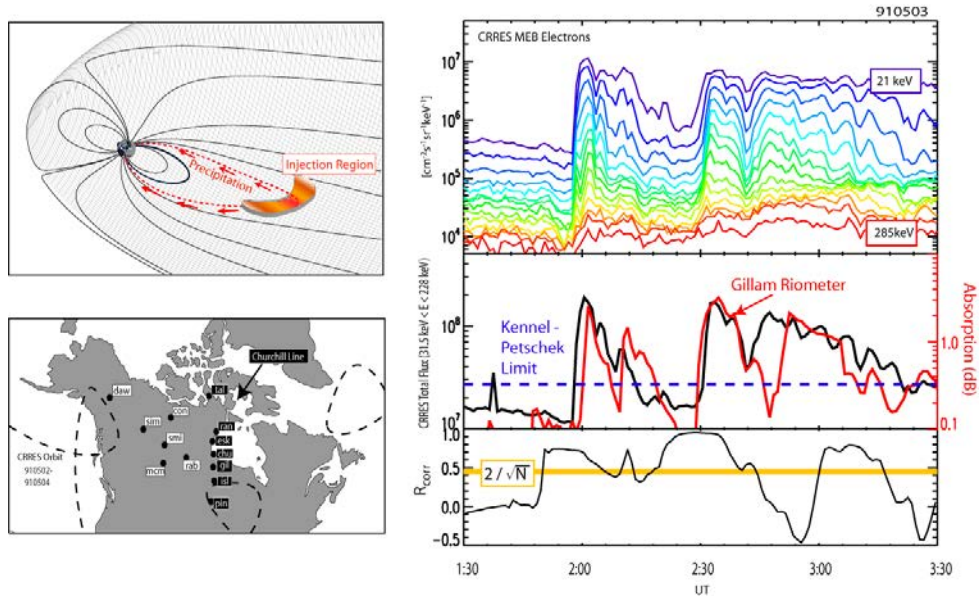
Birn et al., GEM, ICS11

- **Moore et al., [1981]:** Compression-like wave that heats/transport plasma as it propagates earthward

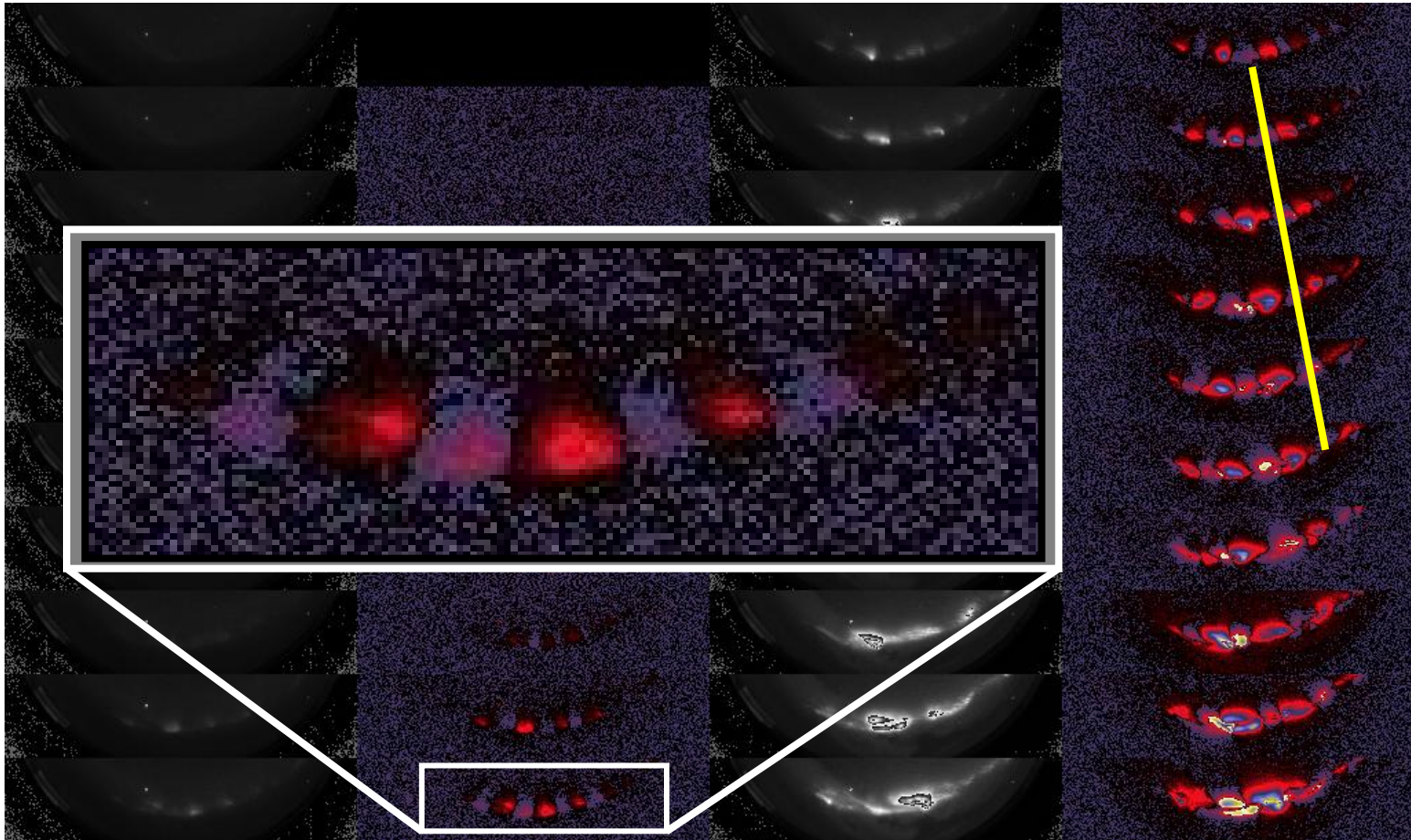


[*Li et al., 1993; 1998; 2003; Sarris et al., 2002; Delcourt, 2002; Zaharia et al., 2000; 2004; Ganushkina et al., 2001; 2005; 2013; 2014; Mithaiwala and Horton 2005, Liu et al. 2009* ]

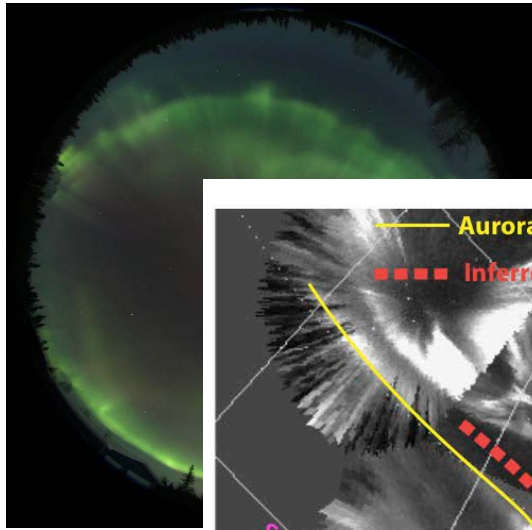




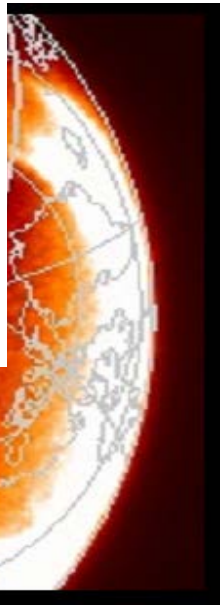
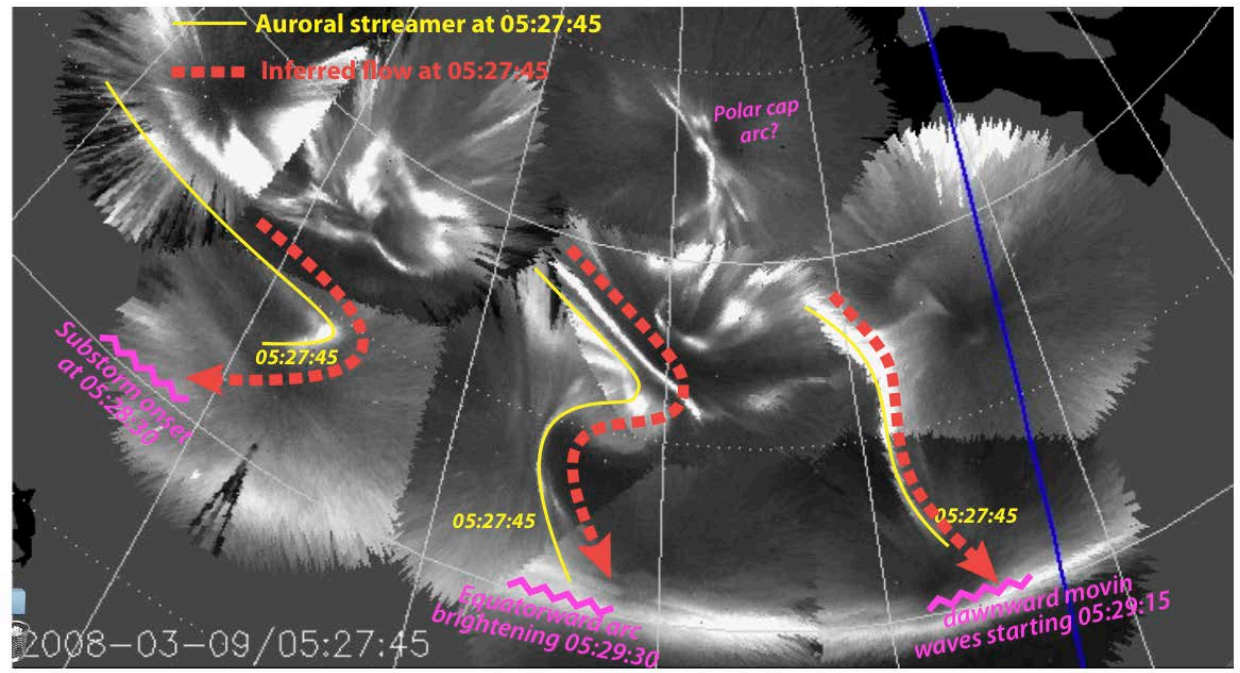




Partial images from THEMIS ASI at Inuvik [Donovan, 2006]. Donovan, then Liang, Chen, Rae, Saito, and others attributed this to the magnetotail (inner edge) instability. Immediately the reasonable criticism was raised (by Kepko, Kivelson, others): “how do you know these beads are not a consequence of something going on in the topside ionosphere (for example), a criticism addressed by conjugate observations of the beads obtained by *Motoba et al.* [2012].



**Motivation for TReX... target poorly observed regions, parameters, and space/time scales.**



**THEMIS-ASI has shown that between the small- (typically probed by an observatory) and the global- (typically probed by global imagers, SuperDARN, etc.), there is an unexplored range of scales that matter to geospace at the system level.**

