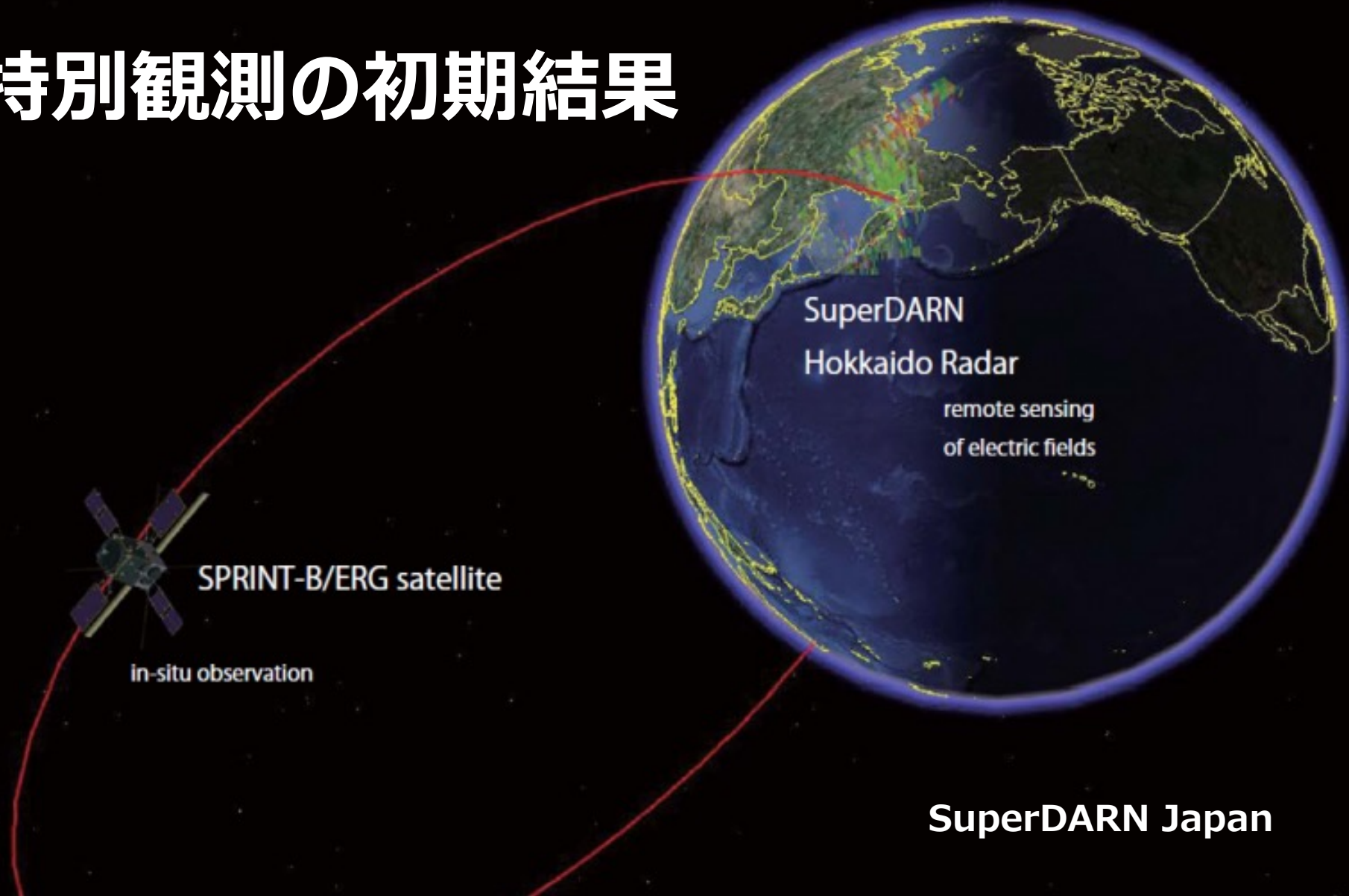


2023 年秋のあらせ・SuperDARN

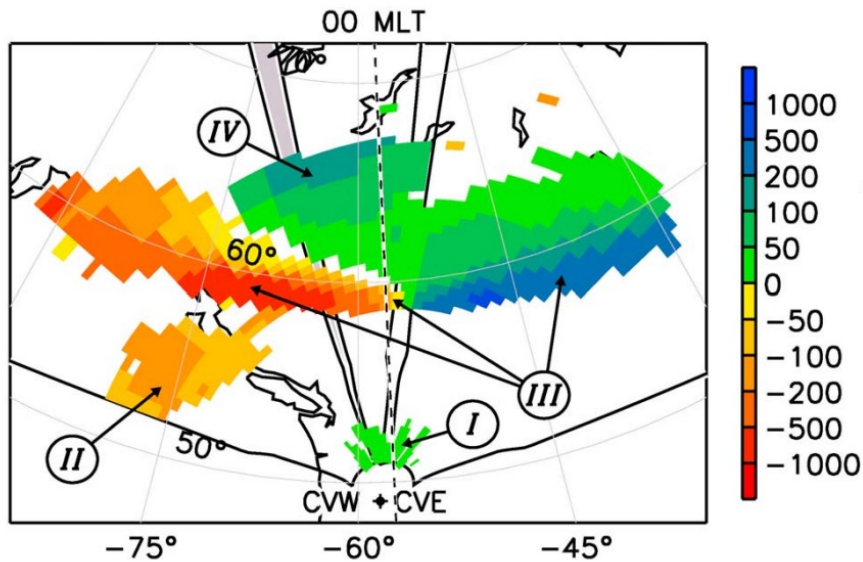
特別観測の初期結果



Possible targets of ST observations

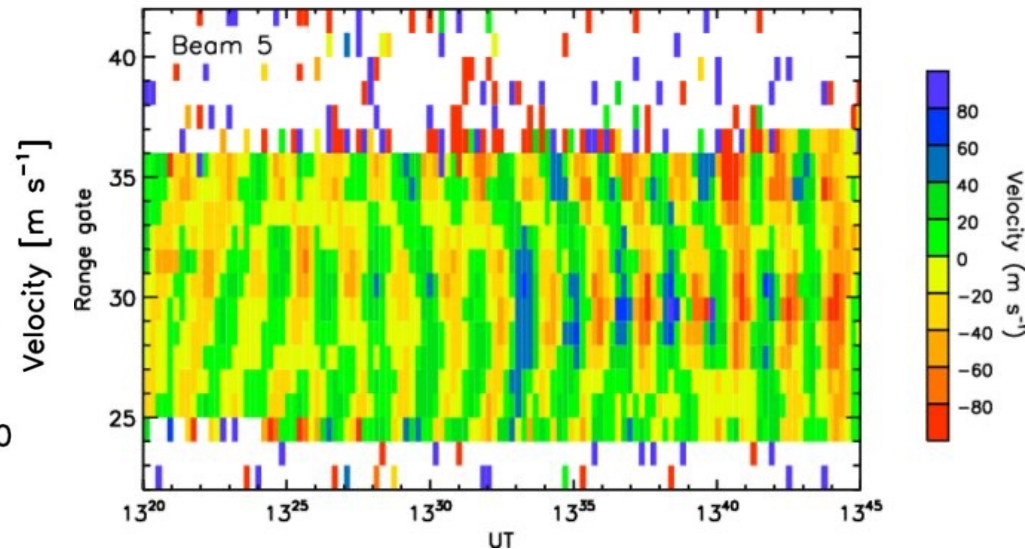
- Subauroral Polarization Stream (SAPS)
= Subauroral Ion Drift (SAID) : [Hori et al.](#)
- ULF waves in the auroral / subauroral latitudes
→ [Nishitani et al.](#), [Shinbori et al.](#)

SAPS/SAID



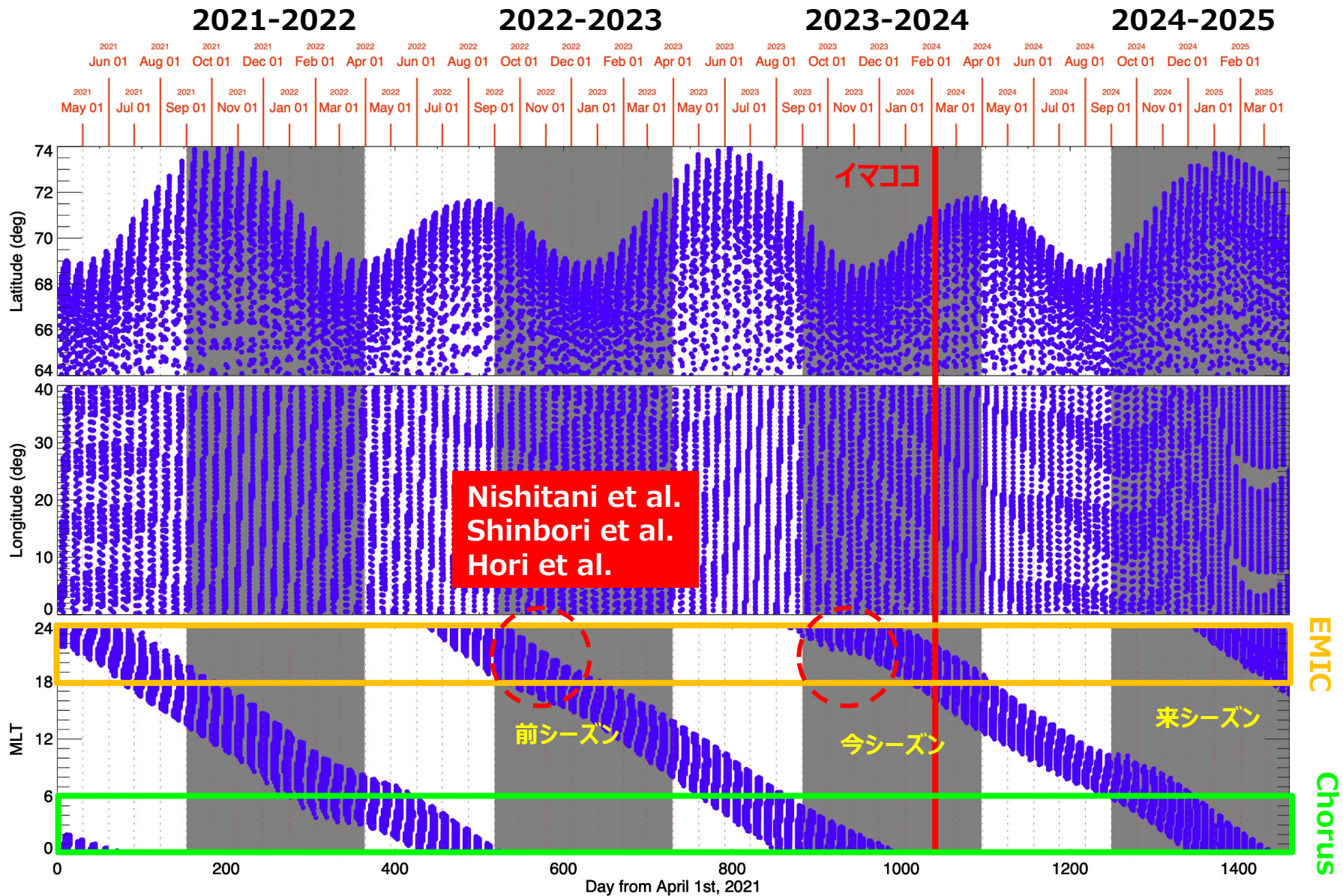
Clausen et al. (2012)

ULF signature



Yeoman et al. (2012)

2025年3月までのフットプリントの推移



Schedule in Oct and Nov, 2023

October 2023

01:00 03:00 Common Time (1-min) (no switching)
03:00 06:00 Common Time (1-min) (normalsound) [ALL]
(see Note A)
06:00 09:00 Common Time (1-min)
09:00 12:00 Discretionary Time
12:00 13:00 Common Time (1-min)
13:00 24:00 Common Time (1-min) (interleavescan) [ALL]
(see Note B)
24:00 30:00 Discretionary Time
30:00 31:24 Common Time (1-min) (no switching)

Note A: This time covers the 'normalsound' Common Time request (Thomas). All radars are requested to run the *REVISED* 'normalsound' radar control program for a full 72 hours.

Note B: This is a spacecraft working group request to support the ARASE/ERG mission. All radars should run interleaved_normalscan (a full scan of at least 16 beams with a non-sequential manner that interleaves the beam number, with a scan time of 1-min).

November 2023

01:00 07:00 Common Time (1-min) (no switching)
07:00 10:00 Common Time (1-min) (normalsound) [ALL]
(see Note A)
10:00 11:00 Common Time (1-min)
11:00 19:00 Common Time (1-min) (interleavescan) [ALL]
(see Note B)
19:00 20:00 Common Time (1-min)
20:00 29:00 Discretionary Time
29:00 30:24 Common Time (1-min)

Total Common Time (1-min): 21d 0h

Total Discretionary Time: 9d 0h

Total Special Time: 6d 0h

Notes:

Note A: This time covers the 'normalsound' Common Time request (Thomas). All radars are requested to run the *REVISED* 'normalsound' radar control program for a full 72 hours.

Note B: This is a spacecraft working group request to support the ARASE/ERG mission. All radars should run interleaved_normalscan (a full scan of at least 16 beams with a non-sequential manner that interleaves the beam number, with a scan time of 1-min).

Schedule in Dec, 2023

December 2023

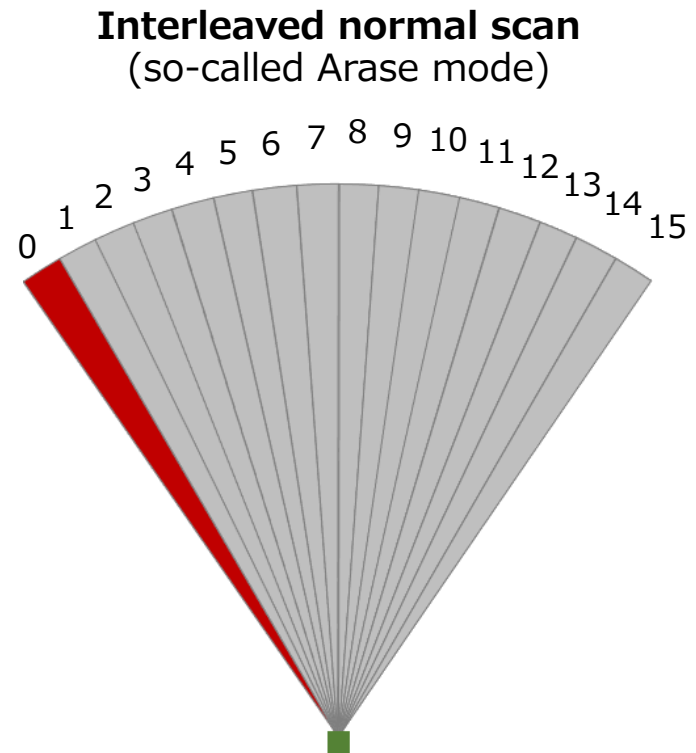
01:00 05:00 Common Time (1-min) (no switching)
08:00 Common Time (1-min) (normalsound) [ALL] (see Note A)
08:00 09:00 Common Time (1-min)
09:00 17:00 Common Time (1-min) (interleavescan) [ALL]
(see Note B)
17:00 26:00 Discretionary Time
26:00 30:00 Common Time (1-min)
30:00 31:24 Common Time (1-min) (no switching)

Note A: This time covers the 'normalsound' Common Time request (Thomas). All radars are requested to run the *REVISED* 'normalsound' radar control program for a full 72 hours.

Note B: This is a spacecraft working group request to support the ARASE/ERG mission. All radars should run interleaved_normalscan (a full scan of at least 16 beams with a non-sequential manner that interleaves the beam number, with a scan time of 1-min).

Operation of ERG/SD during ST

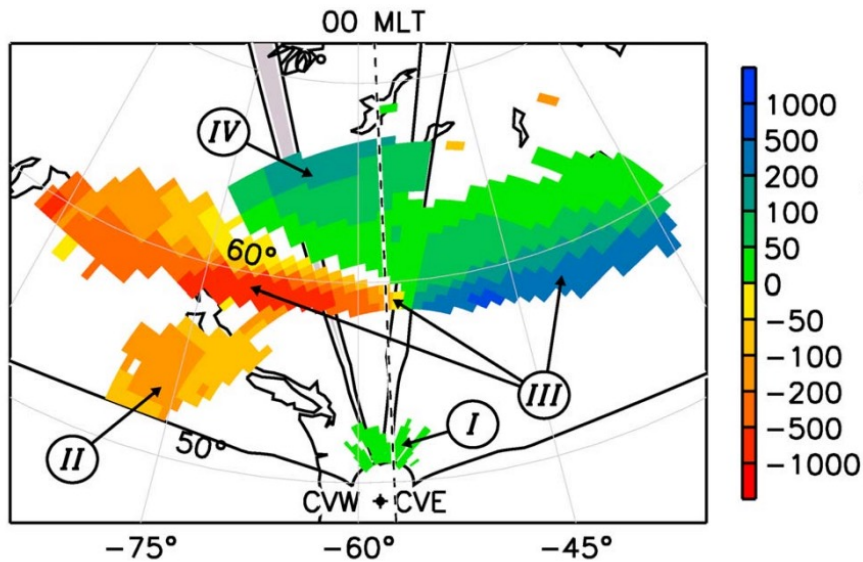
- LEP-i, MEP-i : normal mode operation (i.e., no TOF) in order to obtain the 3D distribution function for estimating P_{perp} , P_{para} of the ring current ions
- Normal beam steering of SD is like:
0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15
- Interleaved normal scan is composed of four “mini-scans”
0,4,8,12,1,5,9,13,2,6,10,14,3,7,11,15
- Able to track phenomena faster than the normal beam steering
- Requested ST operations in Sep, Oct, Nov and Dec
- Requests were approved for ~ 8 days a month during new moon periods when optical instruments are operative



Possible targets of ST observations

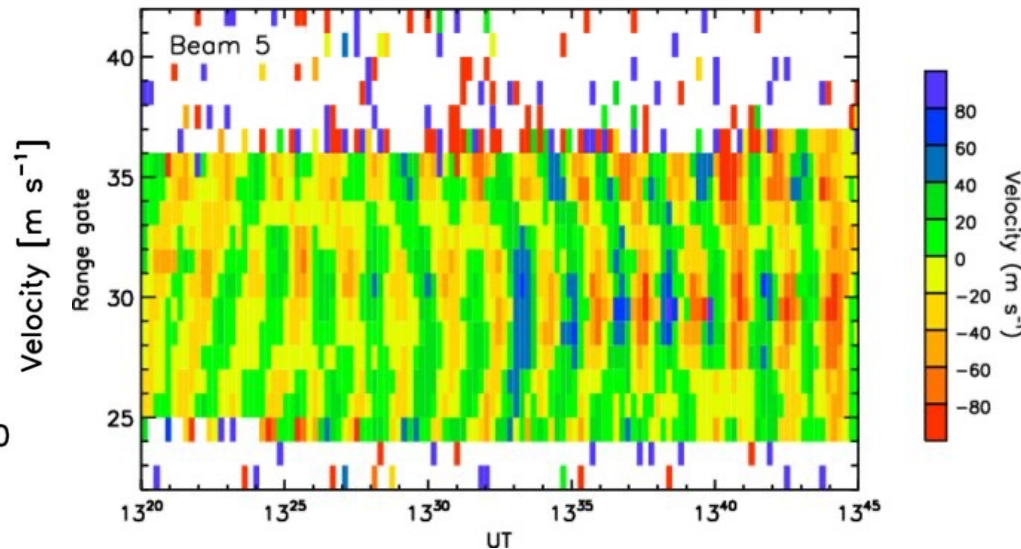
- Subauroral Polarization Stream (SAPS)
= Subauroral Ion Drift (SAID)
- ULF waves in the auroral / subauroral latitudes
- May see some substorm related disturbances near midnight?

SAPS/SAID



Clausen et al. (2012)

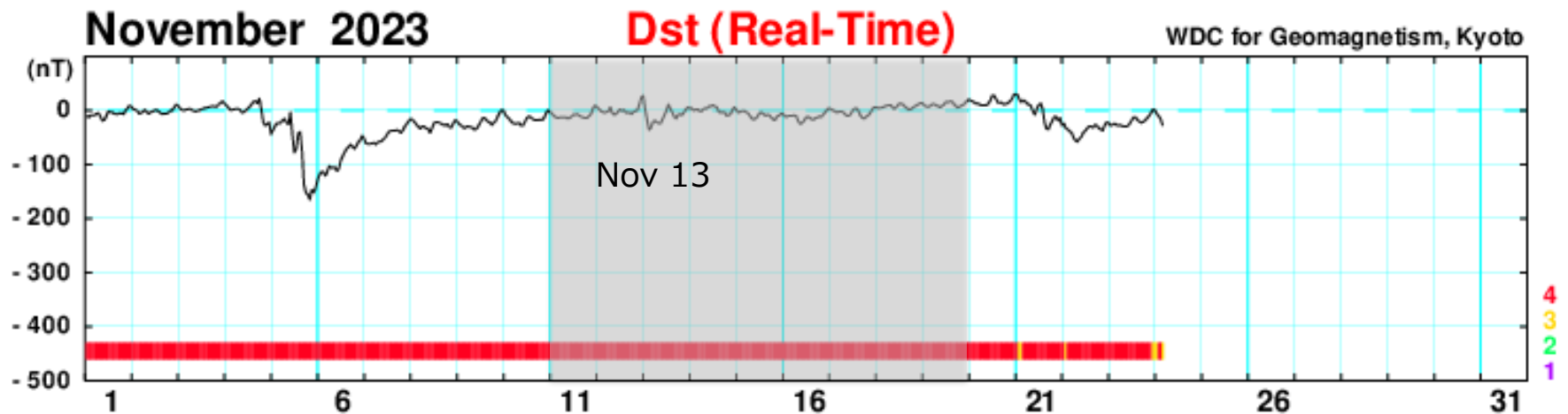
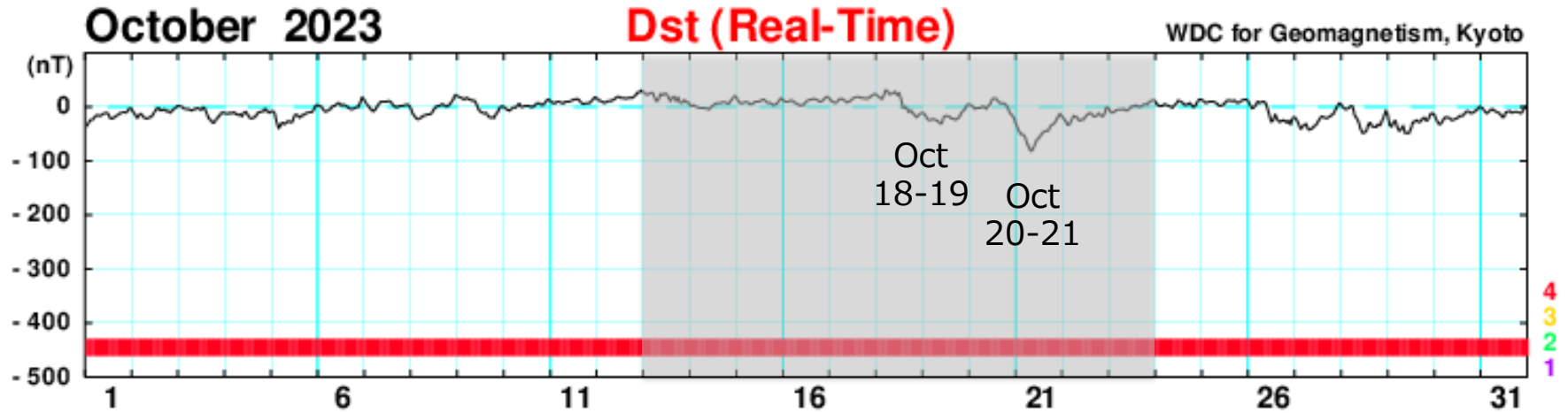
ULF signature



Yeoman et al. (2012)

Preliminary data survey

- ST operation captured a few small magnetic storms in Oct/Nov



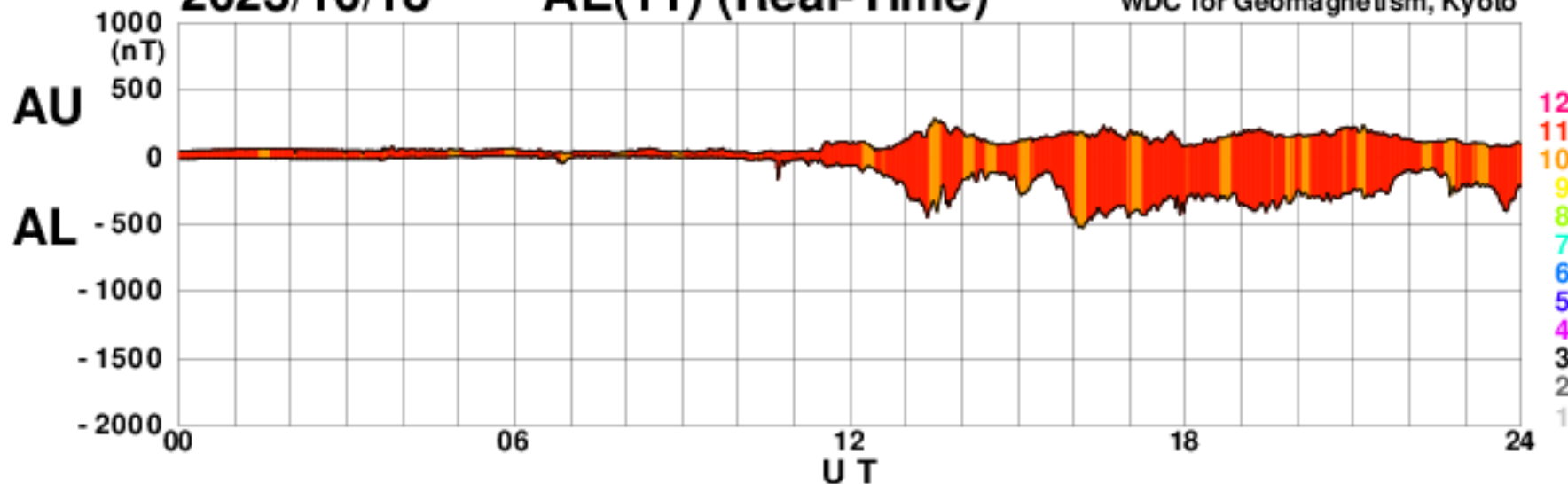
[Created at 2023-11-24 04:00UT]

Oct 18-19, 2023

2023/10/18

AE(11) (Real-Time)

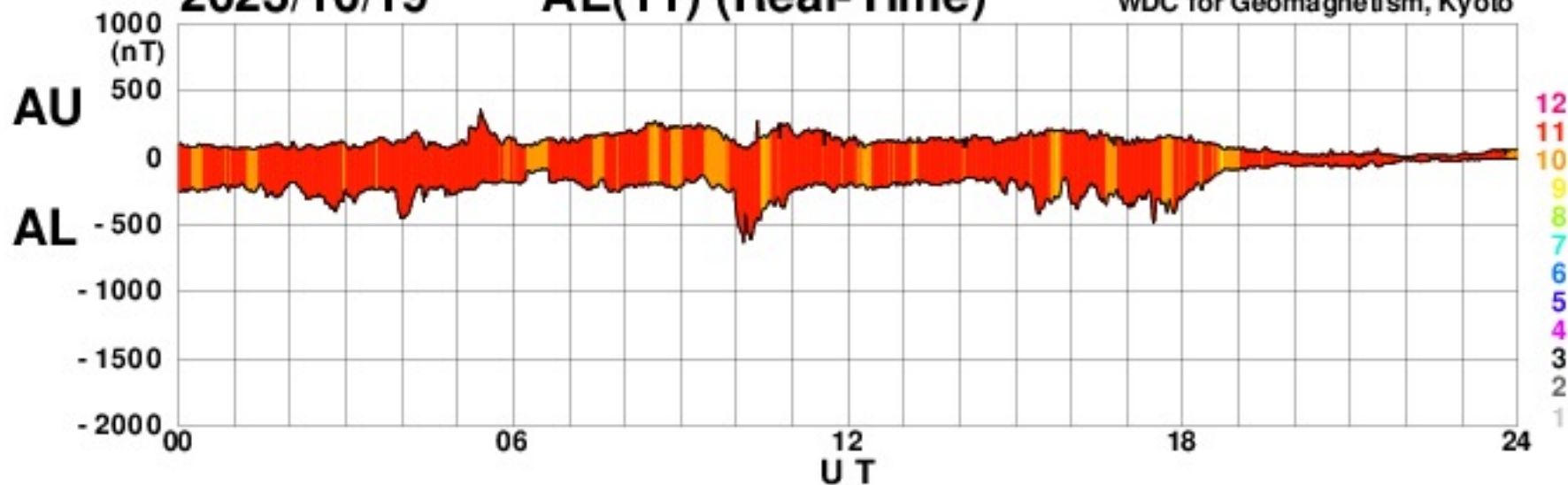
WDC for Geomagnetism, Kyoto



2023/10/19

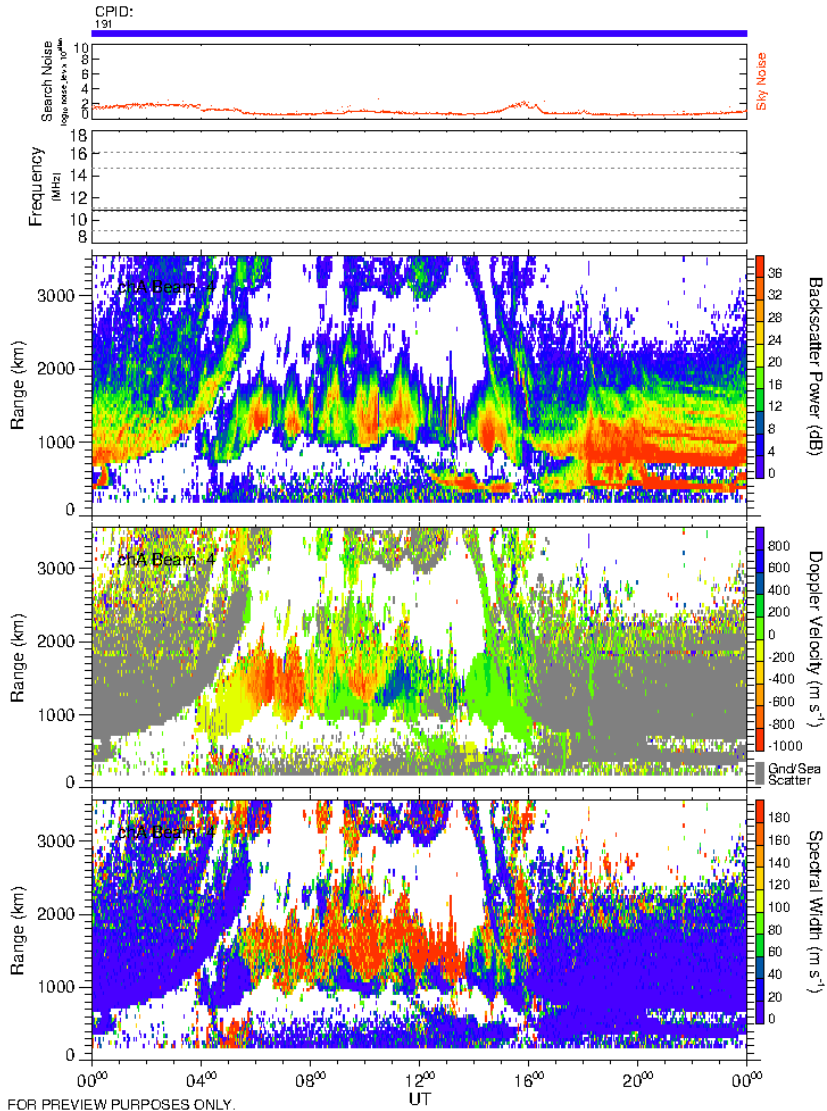
AE(11) (Real-Time)

WDC for Geomagnetism, Kyoto



Oct 18-19, 2023

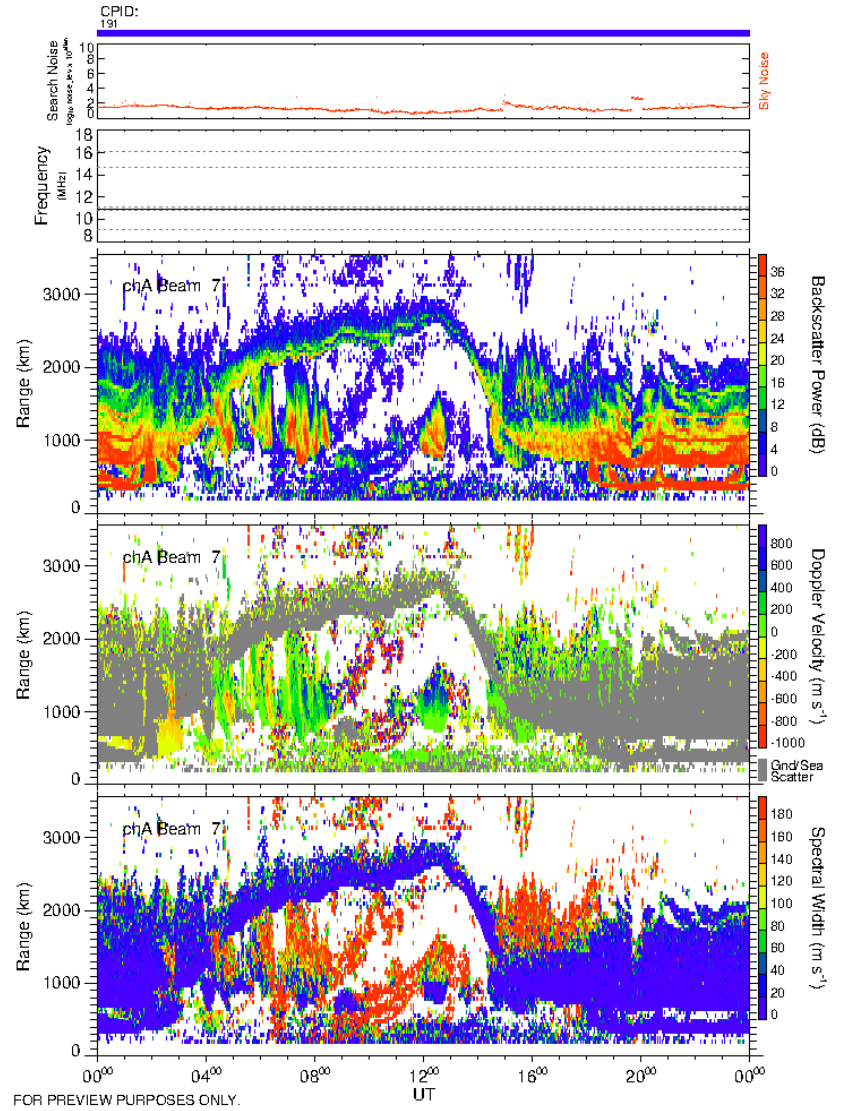
Prince George RADAR SUMMARY PLOT 18 Oct 2023



FOR PREVIEW PURPOSES ONLY.

Quick Look plot created by with fitfac3.0 for pgra,
19:43 UT, 3 Nov 2023

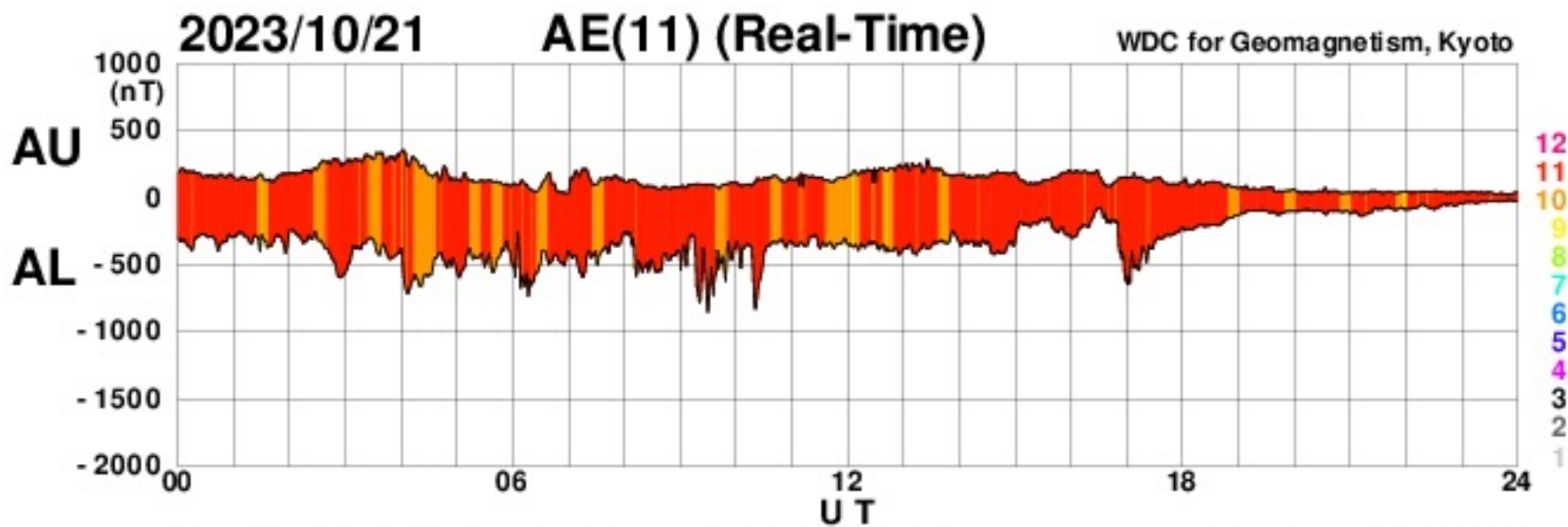
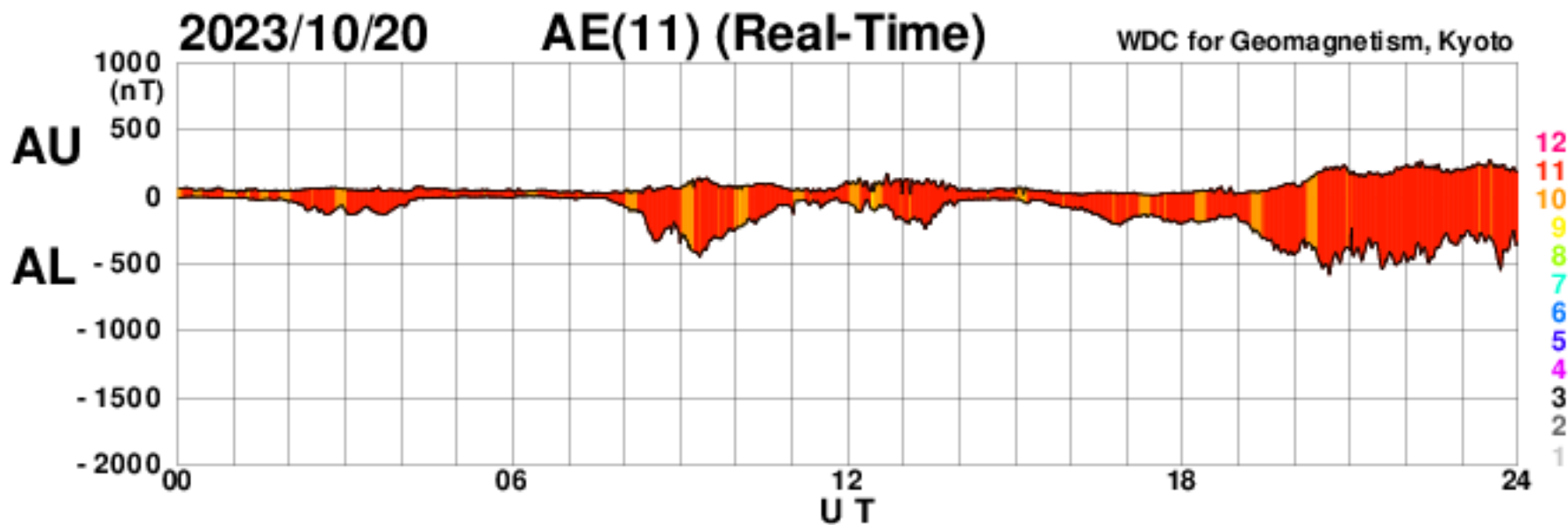
Prince George RADAR SUMMARY PLOT 19 Oct 2023



FOR PREVIEW PURPOSES ONLY.

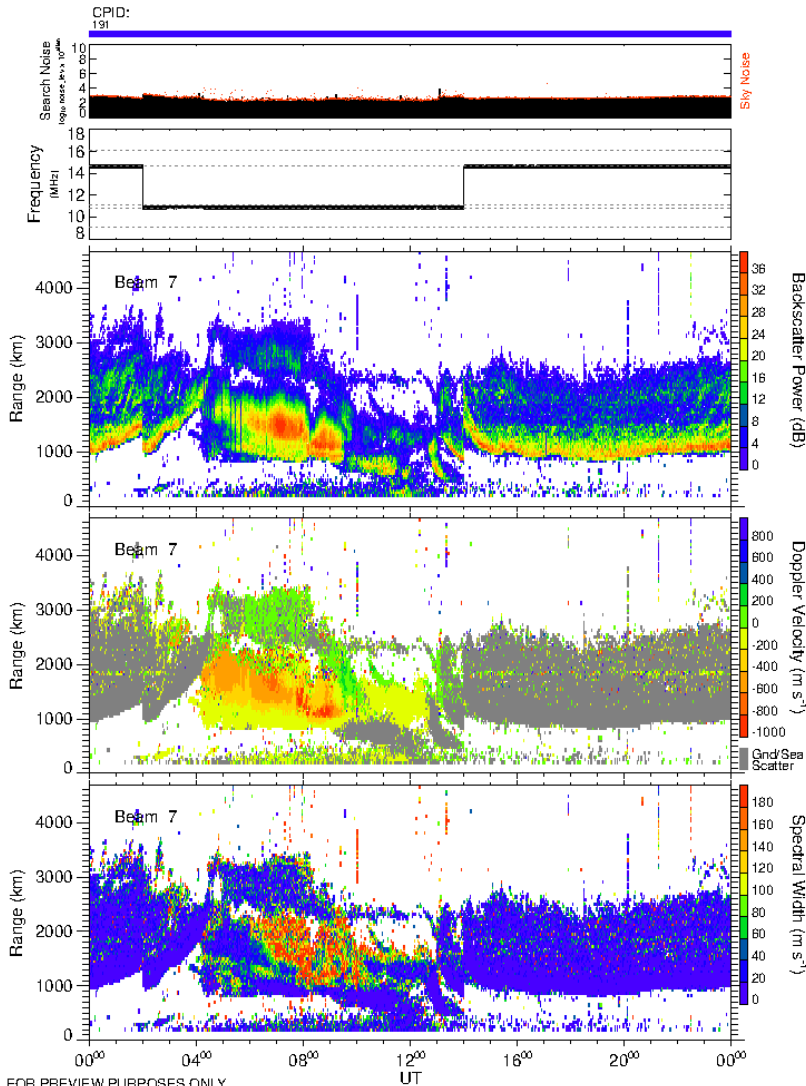
Quick Look plot created by with fitfac3.0 for pgra,
19:46 UT, 3 Nov 2023

Oct 20-21, 2023



Oct 20-21, 2023

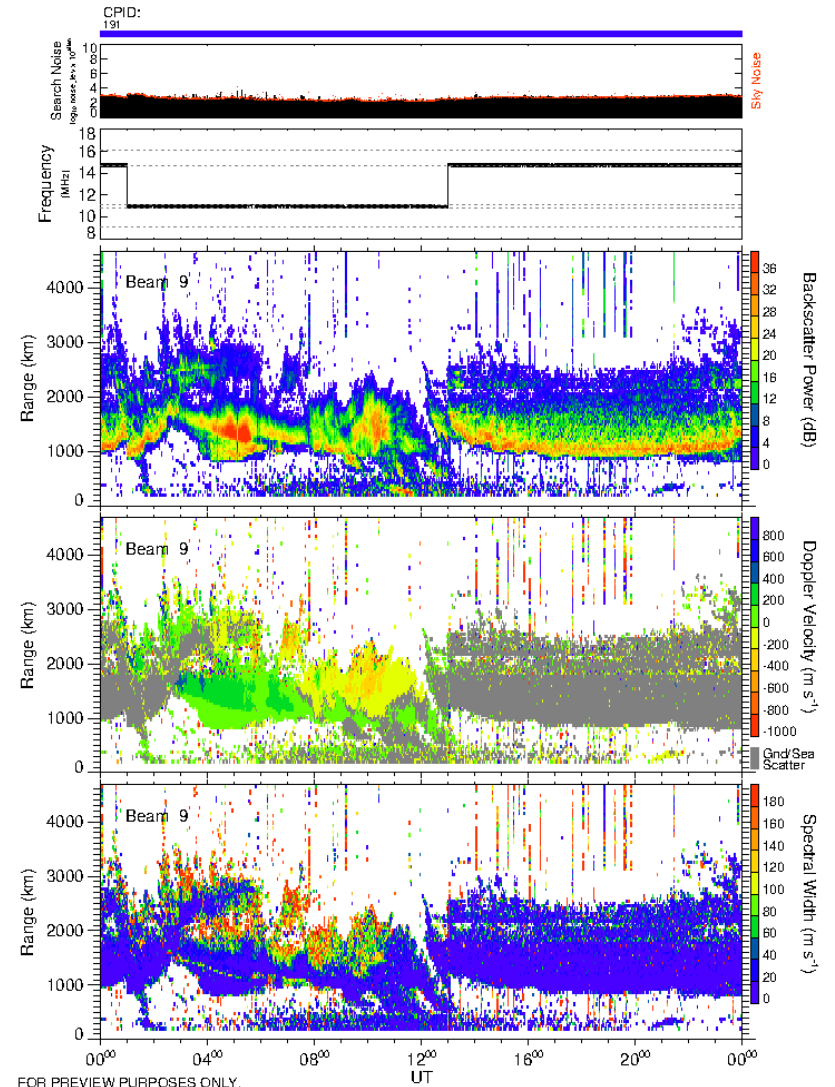
Fort Hays West RADAR SUMMARY PLOT 21 Oct 2023



FOR PREVIEW PURPOSES ONLY.

Quick Look plot created by with fitfac3.0 for fhw,
19:38 UT, 23 Oct 2023

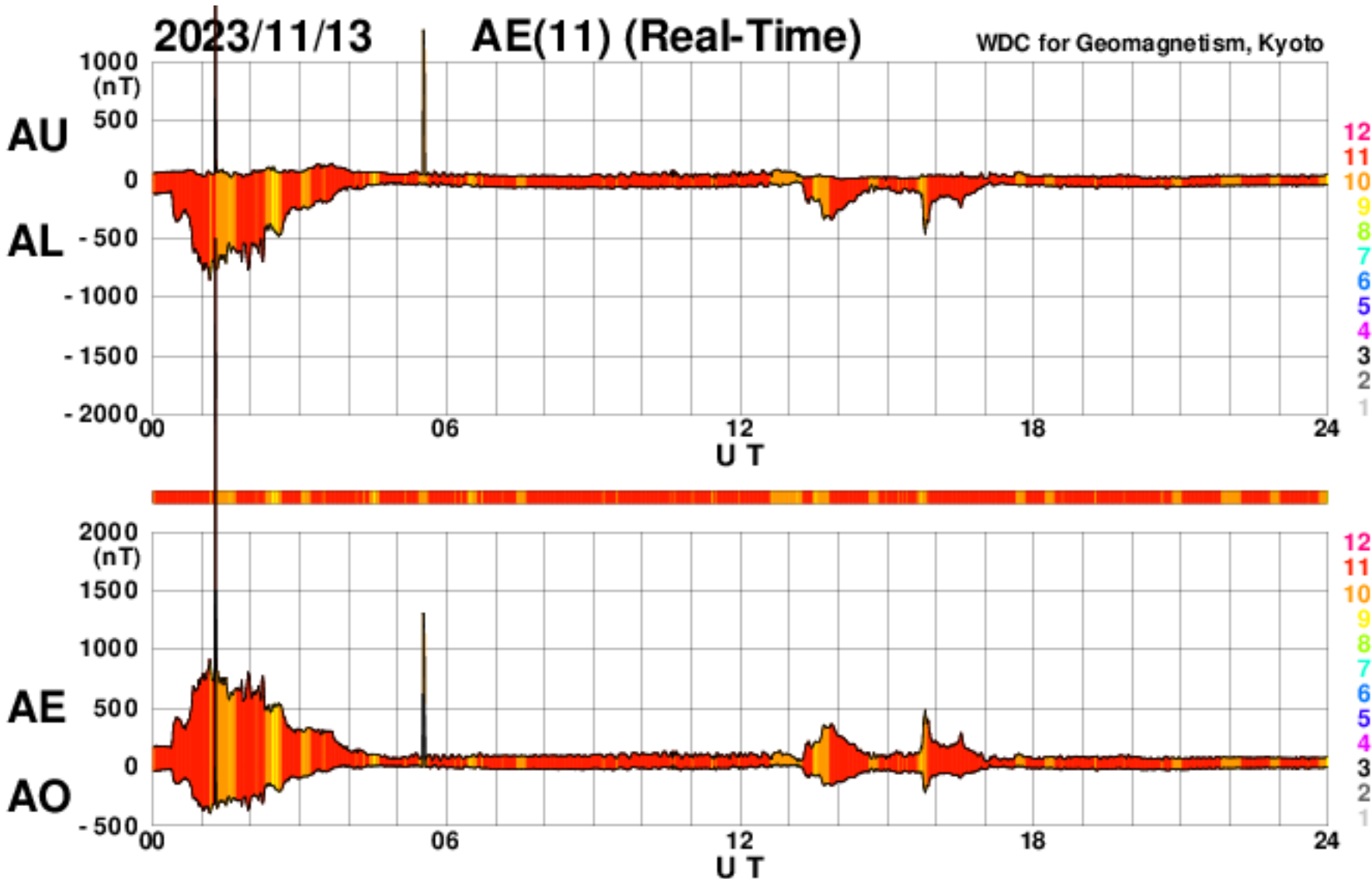
Fort Hays East RADAR SUMMARY PLOT 21 Oct 2023



FOR PREVIEW PURPOSES ONLY.

Quick Look plot created by with fitfac3.0 for fhe,
19:35 UT, 23 Oct 2023

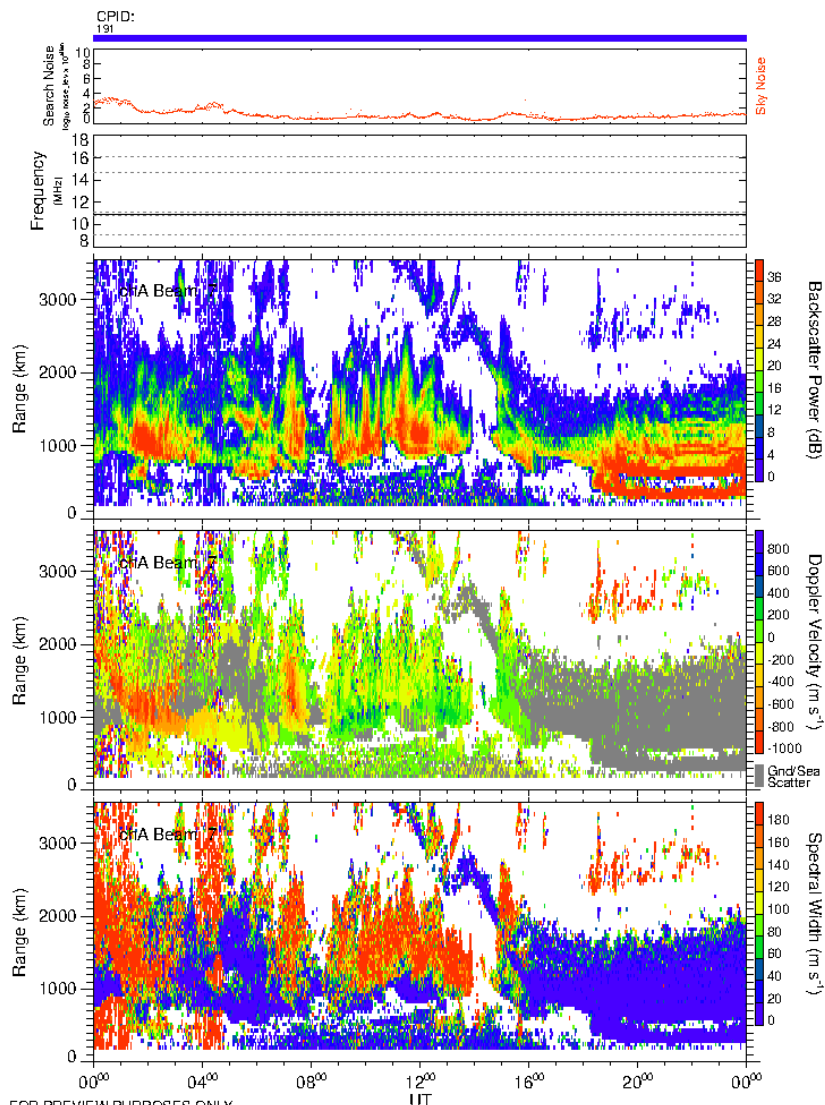
Nov 13, 2023



[Created at 2023-11-24 05:20UT]

Nov 13, 2023

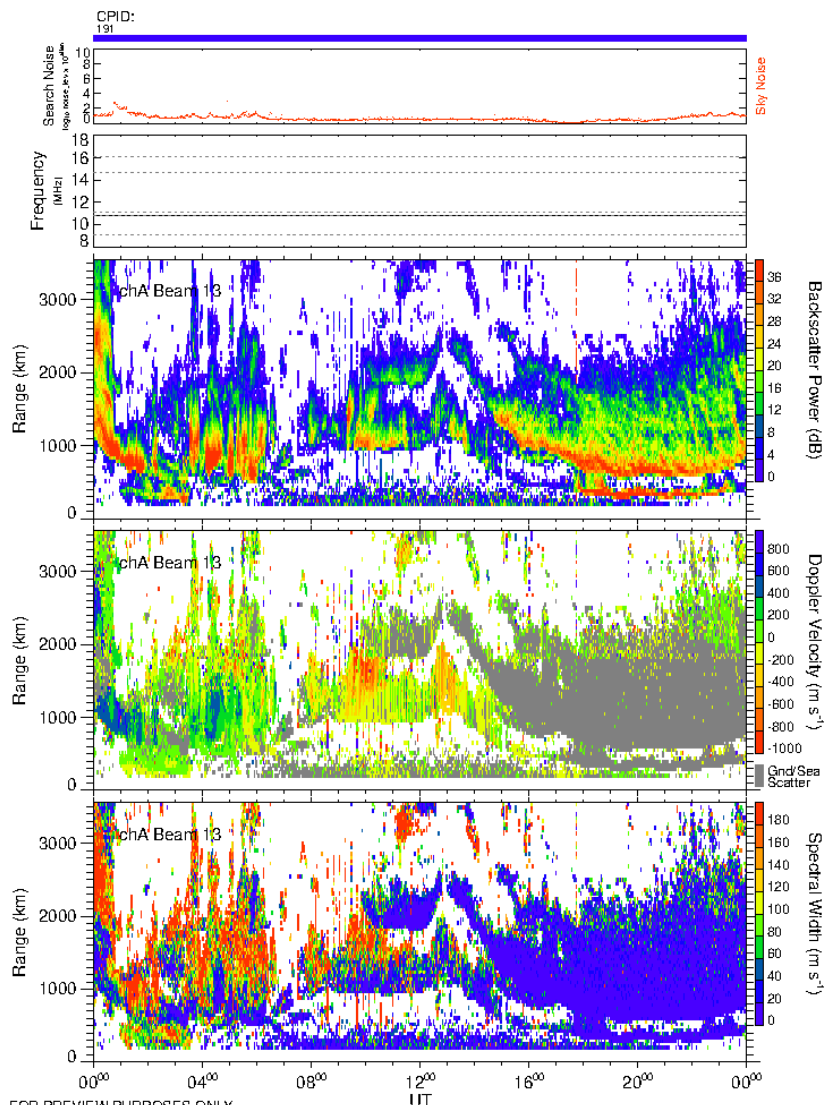
Prince George RADAR SUMMARY PLOT 13 Nov 2023



FOR PREVIEW PURPOSES ONLY.

Quick Look plot created by with ftfac3.0 for pgr.a,
19:52 UT, 14 Nov 2023

Saskatoon RADAR SUMMARY PLOT 13 Nov 2023

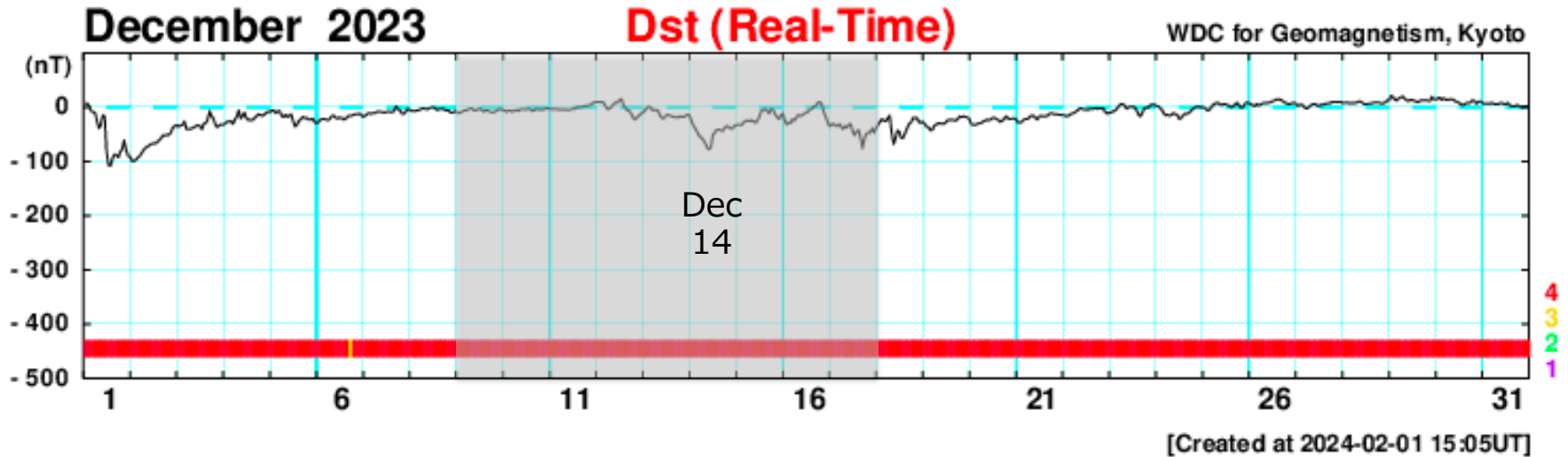


FOR PREVIEW PURPOSES ONLY.

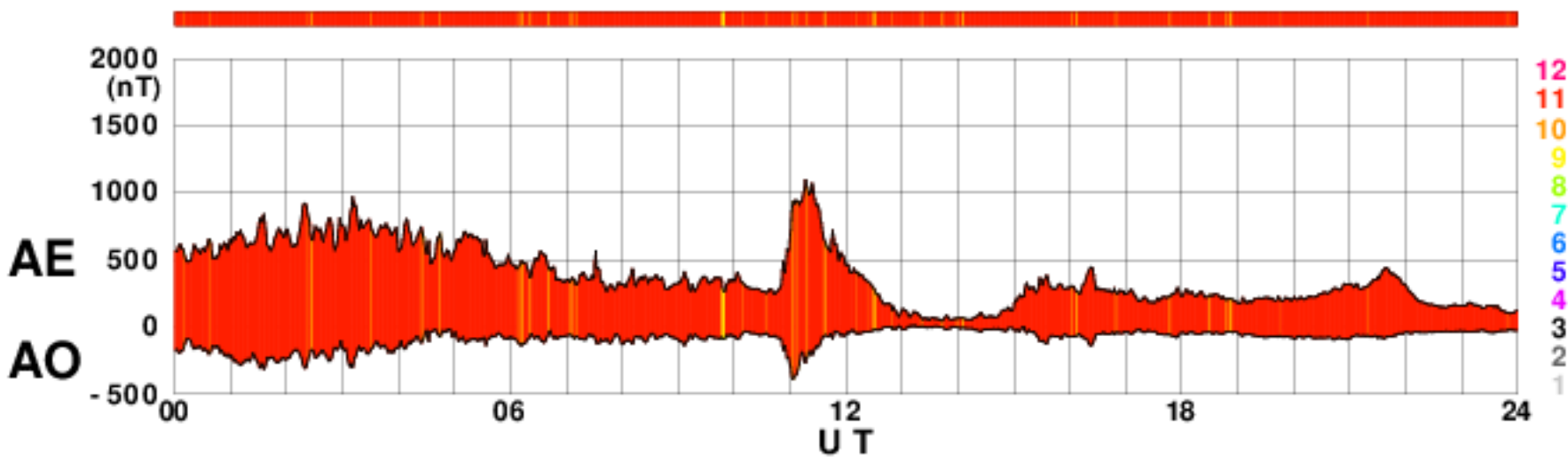
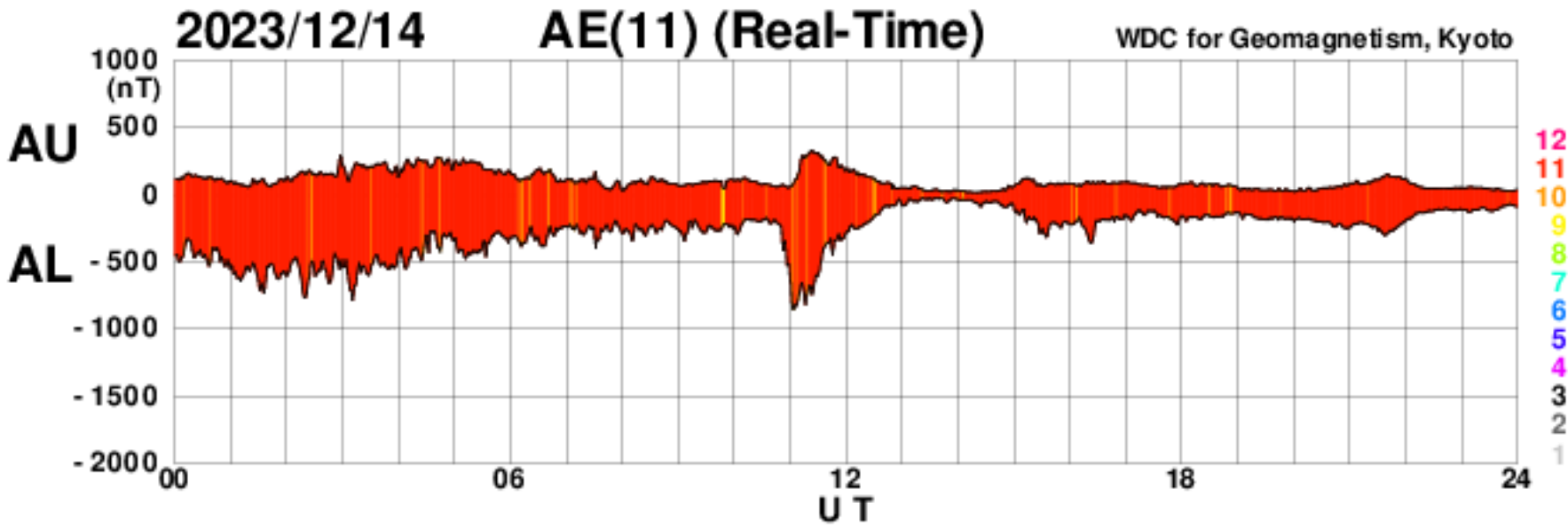
Quick Look plot created by with ftfac3.0 for sas.a,
19:55 UT, 14 Nov 2023

Preliminary data survey

- ST operation captured a few small magnetic storms in Dec too

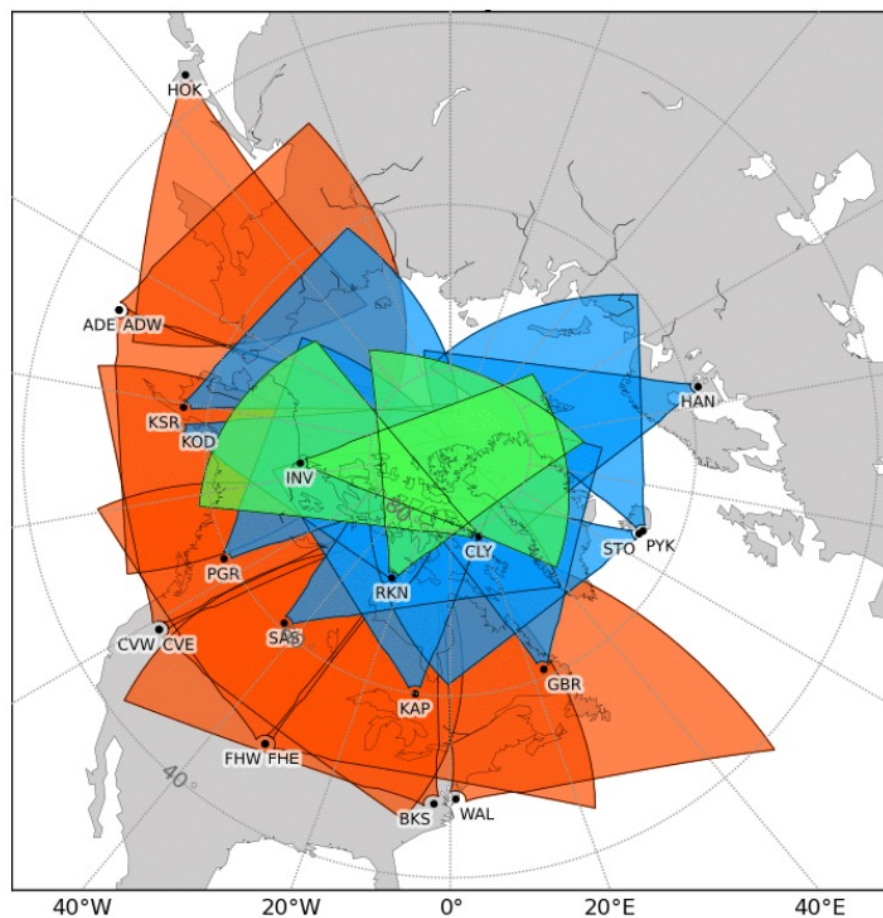
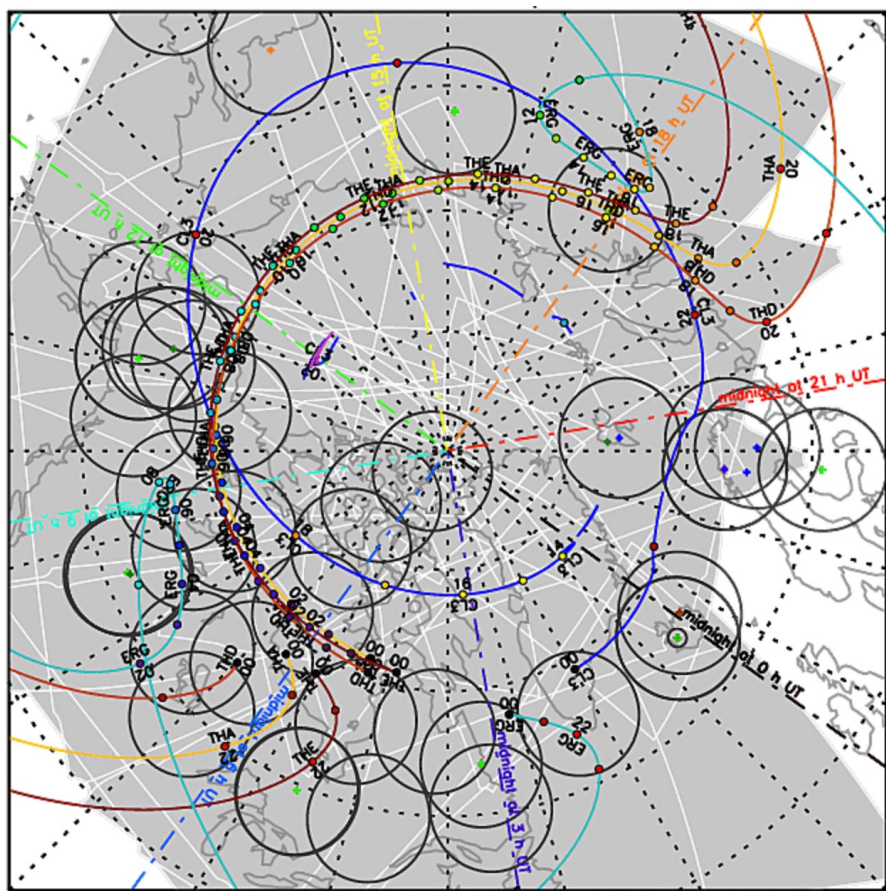


Dec 14, 2023



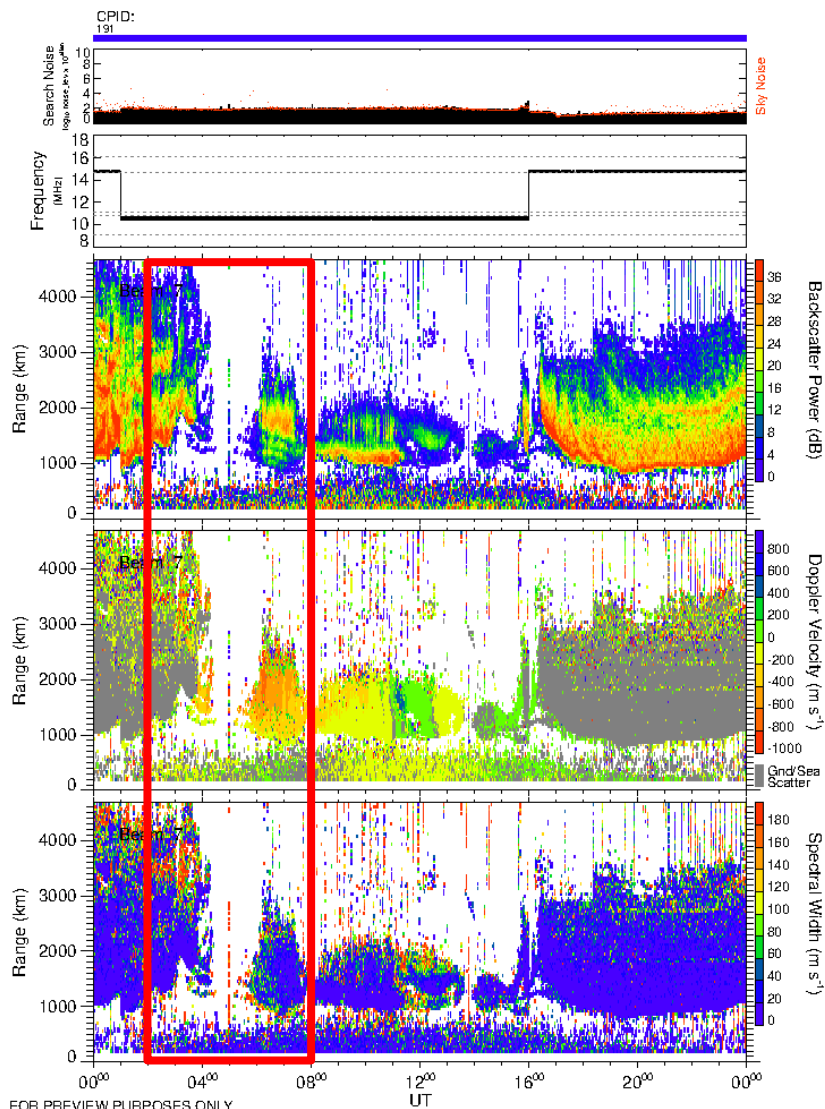
Dec 14, 2023

- Footprints of Arase were in the FOVs of CVW, CVE, FHW, FHE in the subauroral zone during ~6 h from 02 to 08 UT



Dec 14, 2023

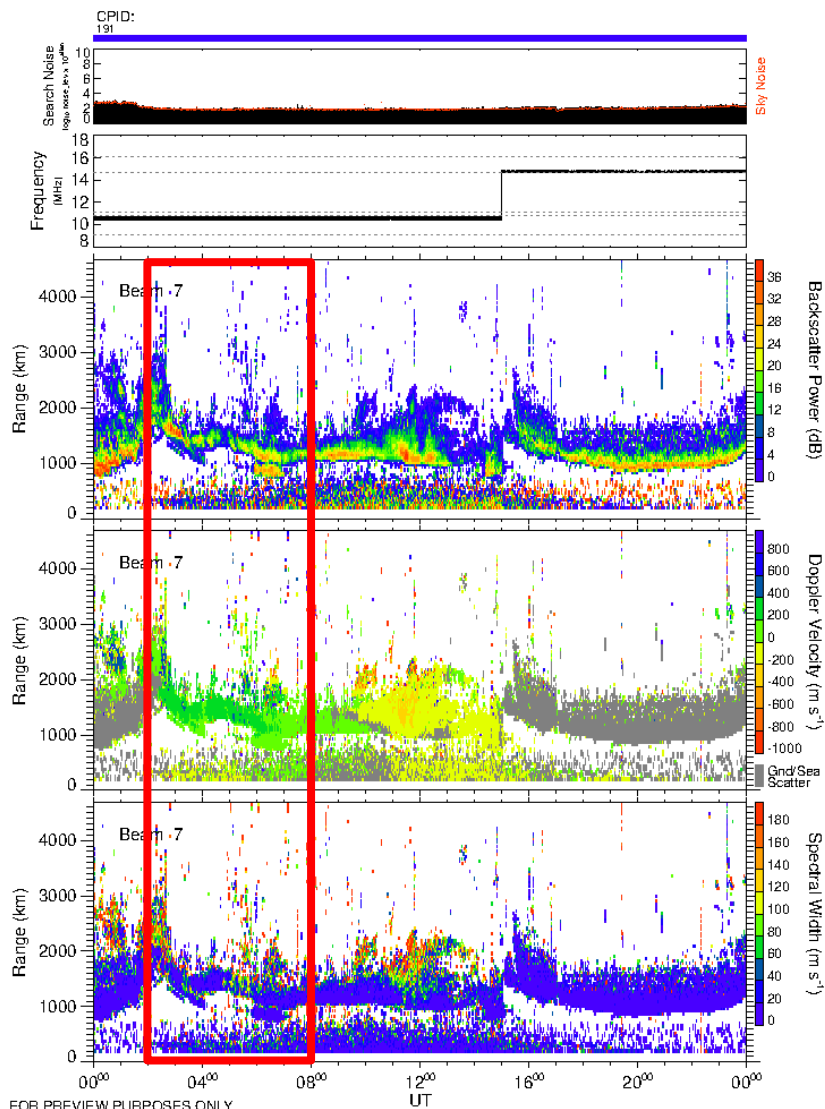
Christmas Valley West RADAR SUMMARY PLOT 4 Dec 2023



FOR PREVIEW PURPOSES ONLY.

Quick Look plot created by with ftfac3.0 for cve,
19:01 UT, 18 Dec 2023

Christmas Valley East RADAR SUMMARY PLOT 14 Dec 2023

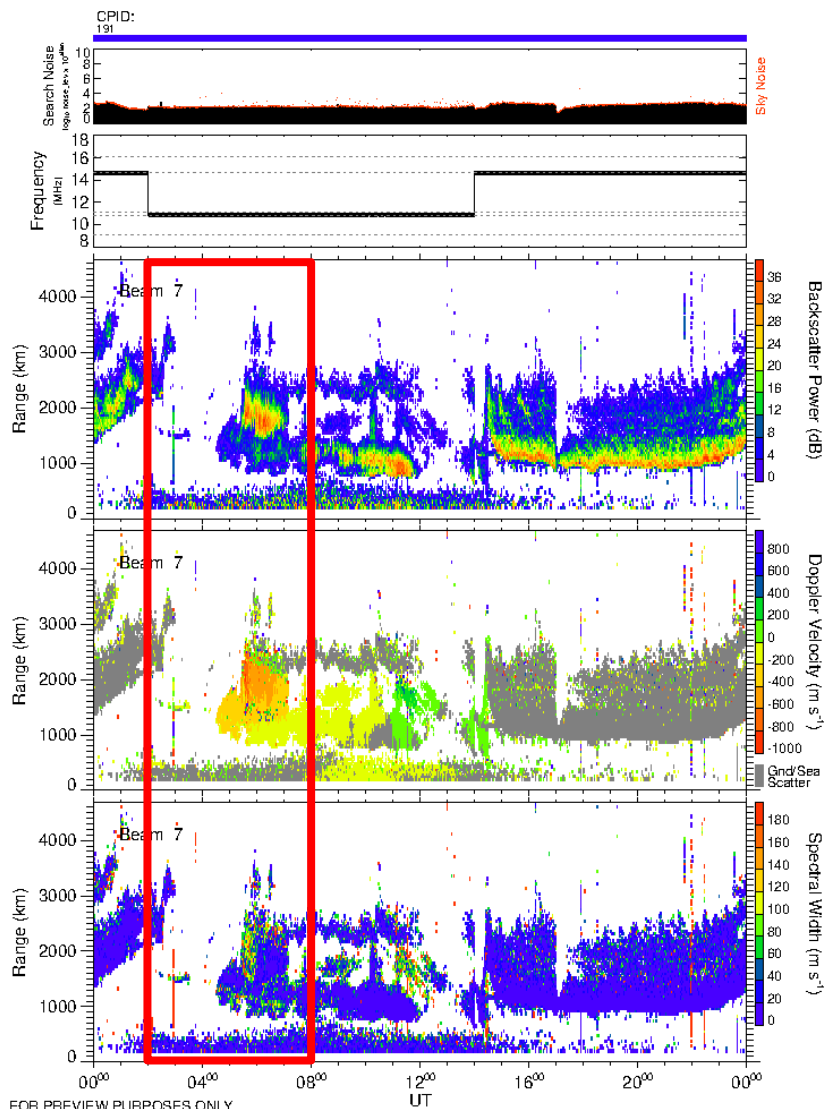


FOR PREVIEW PURPOSES ONLY.

Quick Look plot created by with ftfac3.0 for cve,
19:00 UT, 18 Dec 2023

Dec 14, 2023

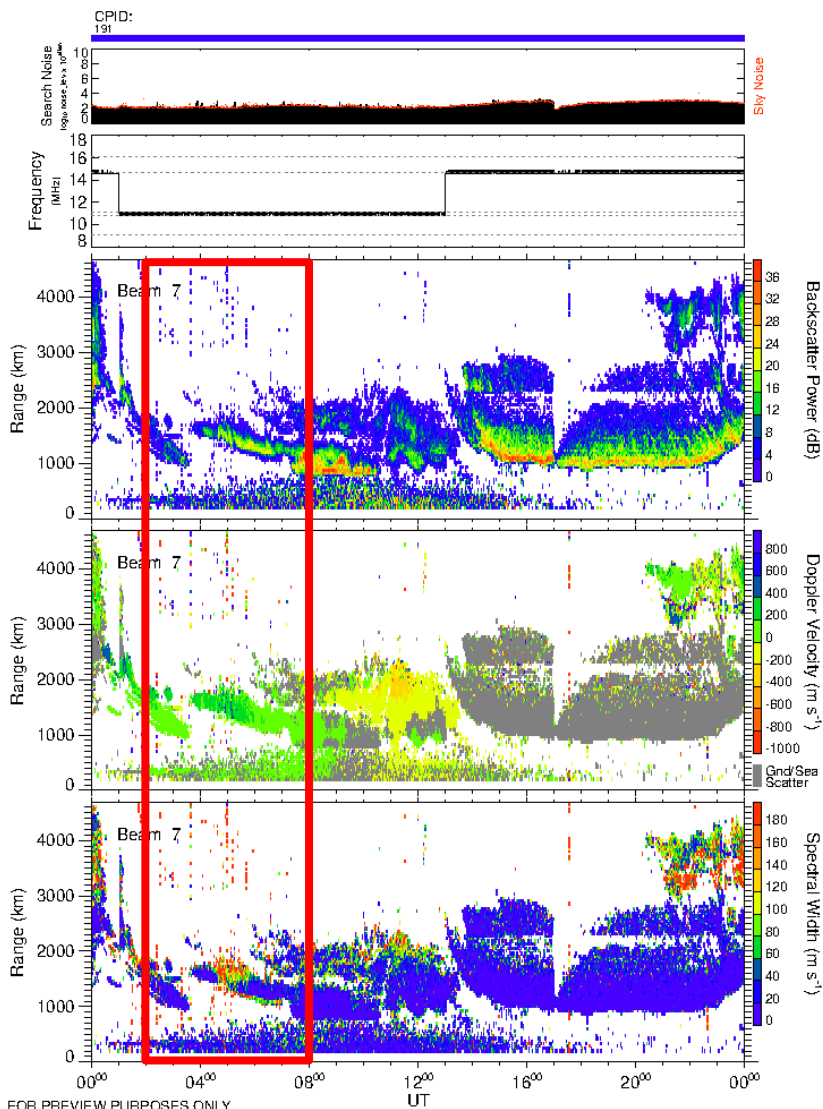
Fort Hays West RADAR SUMMARY PLOT 14 Dec 2023



FOR PREVIEW PURPOSES ONLY.

Quick Look plot created by with ftacf3.0 for fhw,
19:23 UT, 17 Dec 2023

Fort Hays East RADAR SUMMARY PLOT 14 Dec 2023

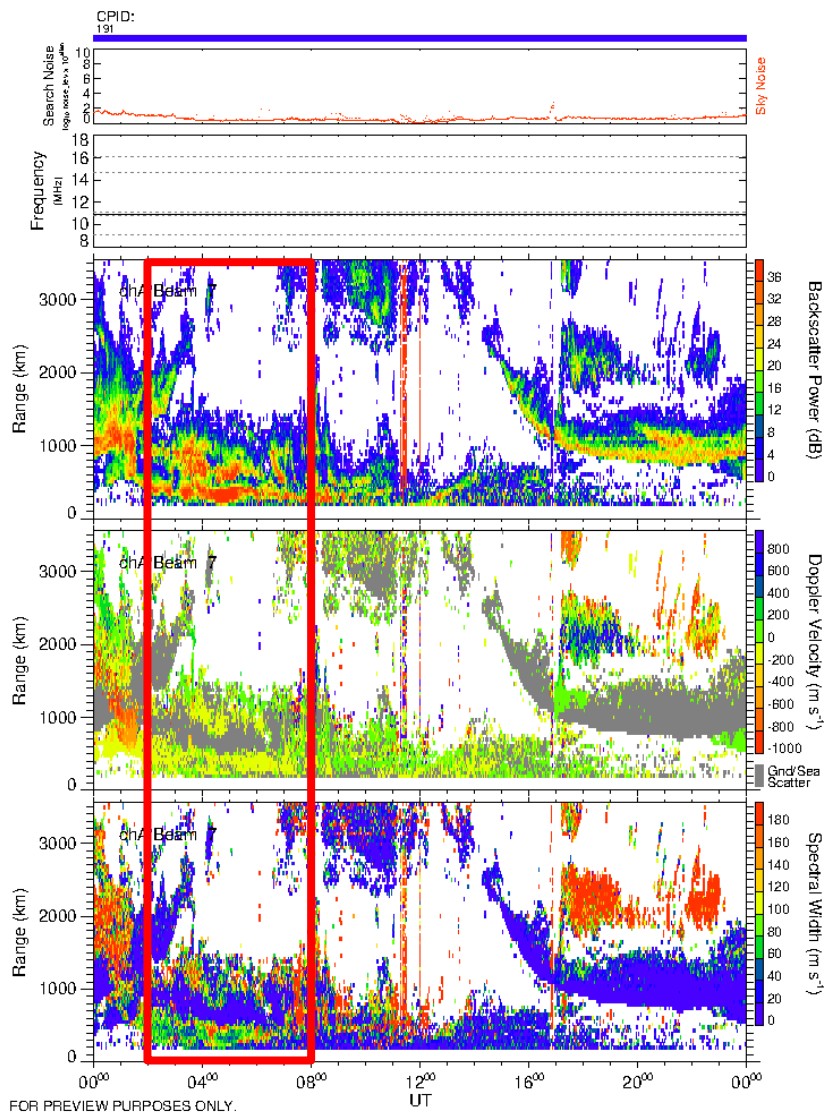


FOR PREVIEW PURPOSES ONLY.

Quick Look plot created by with ftacf3.0 for fhw,
19:22 UT, 17 Dec 2023

Dec 14, 2023

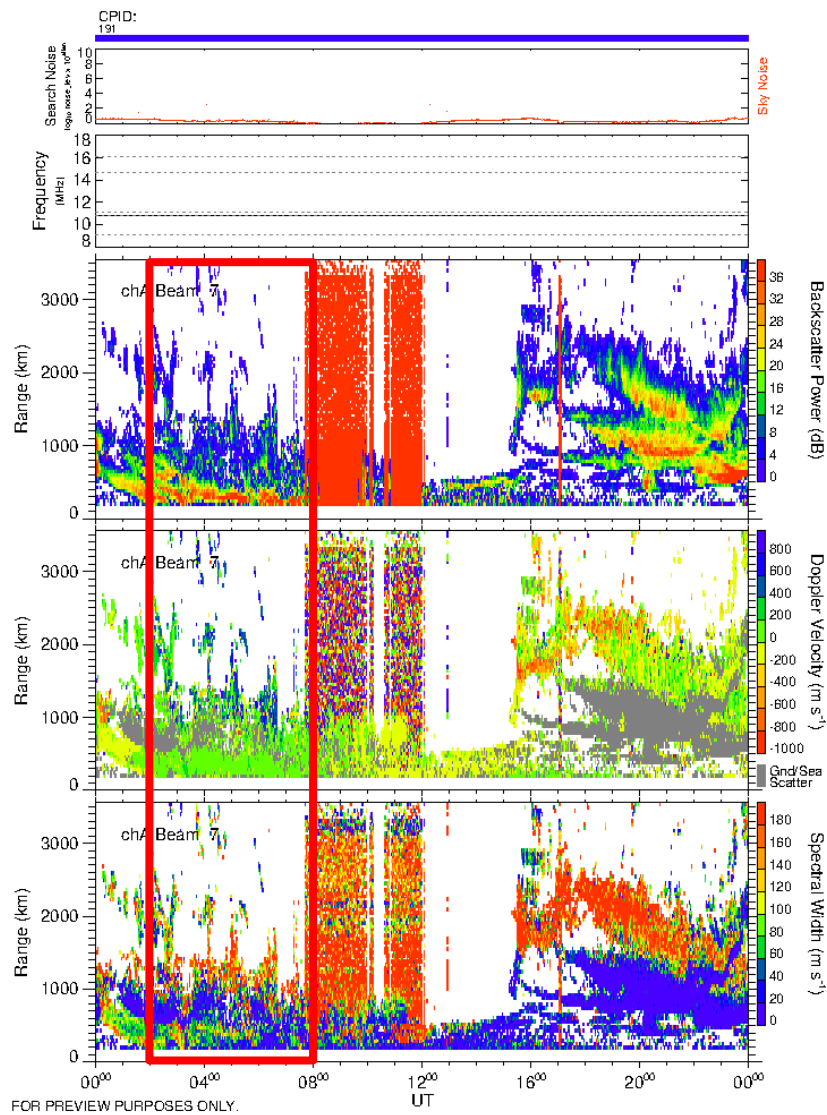
Prince George RADAR SUMMARY PLOT 14 Dec 2023



FOR PREVIEW PURPOSES ONLY.

Quick Look plot created by with ftfac3.0 for pgr.a,
19:38 UT, 17 Dec 2023

Saskatoon RADAR SUMMARY PLOT 14 Dec 2023



FOR PREVIEW PURPOSES ONLY.

Quick Look plot created by with ftfac3.0 for sas.a,
19:39 UT, 17 Dec 2023

Summary

- Carried out ST observations in Oct, Nov and Dec 2023
 - Employed interleaved normal scan for the experiment
 - Captured a few good examples during small storms
- Candidate dates: Oct 18-19, Oct 20-21, Nov 13, Dec 14
- We have not yet checked all the details of the SD data obtained during the campaign period, especially how many we detected ULF and SAPS signatures
 - We have not yet checked the corresponding data from Arase at the magnetospheric counterpart