

# 脈動オーロラのドリフト運動と 磁気圏/電離圏対流

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# Sample movie of Pulsating Aurora : 50 mm TV

*Real time speed*

ON-OFF period  
is ~ 10 sec  
including 3 Hz  
modulation

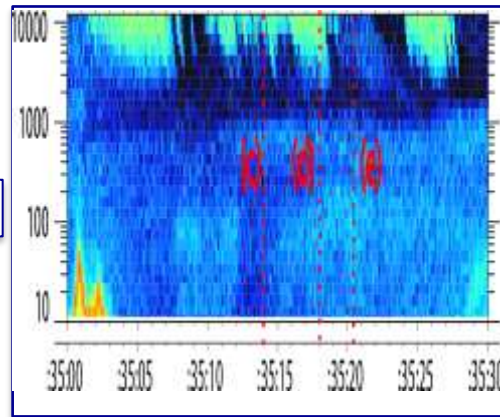


09-17 02:36:22

Ground  
(Optical)



Ionosphere  
(rocket/satellite)



Magnetosphere  
(near earth/near equator?)

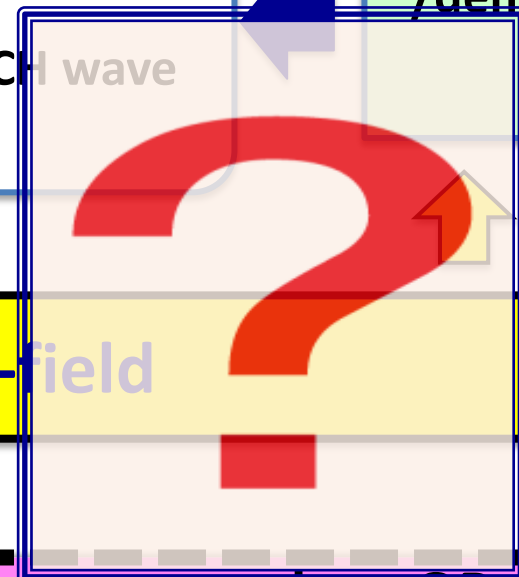
Lower-band  
chorus  
wave

ECH wave

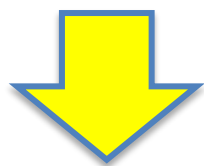
Cold  
electron  
flux  
/density

Electric-field

Un-known physical parameter to produce QP  
modulation



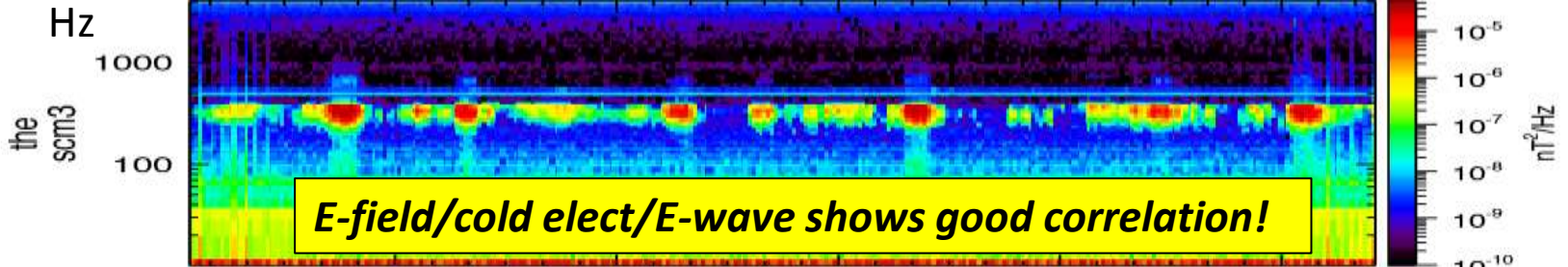
- 脈動オーロラの繰り返し周期(~10秒前後)
- 形状(パッチ、バンド、オメガバンドなど)
- 動き(定在型、伝搬型、など)



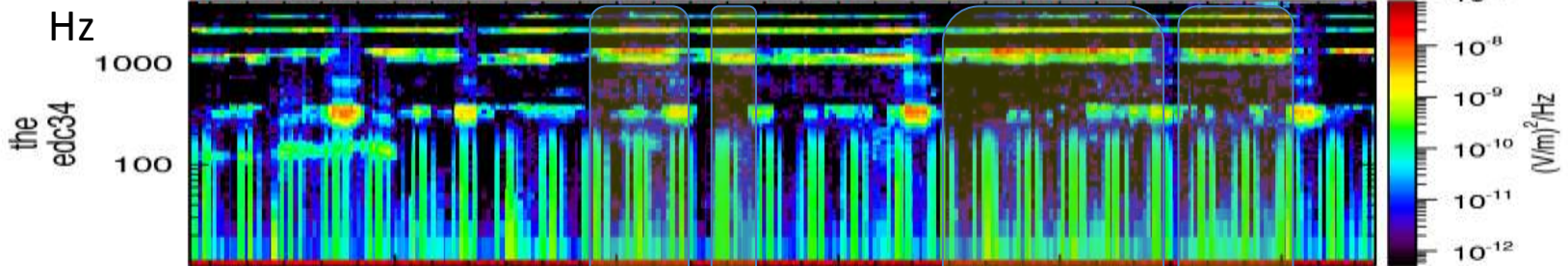
- ☆ 低温プラズマ
- ☆ 電場変調

注目!

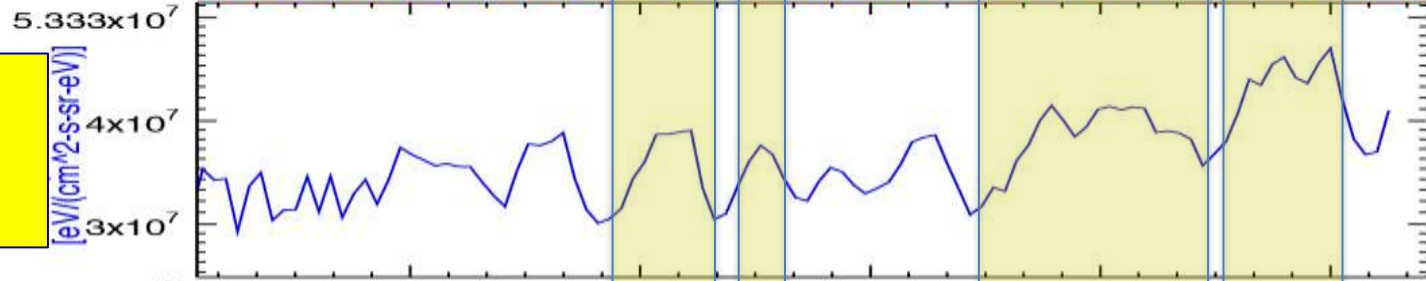
B-field wave spectra



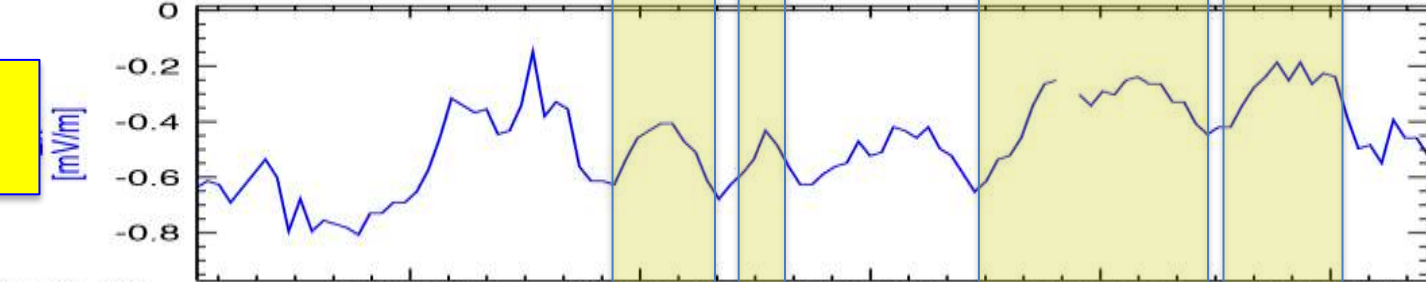
E-field wave spectra



Cold electron flux: 0 < 8 eV



E-field (X-comp)



2010-01-06  
06:20:04

06:21:00 06:22:00 06:23:00 06:24:00 06:25:00

1 minutes

# Sample movie of pulsating aurora : All-sky TV (fast-forwarding)

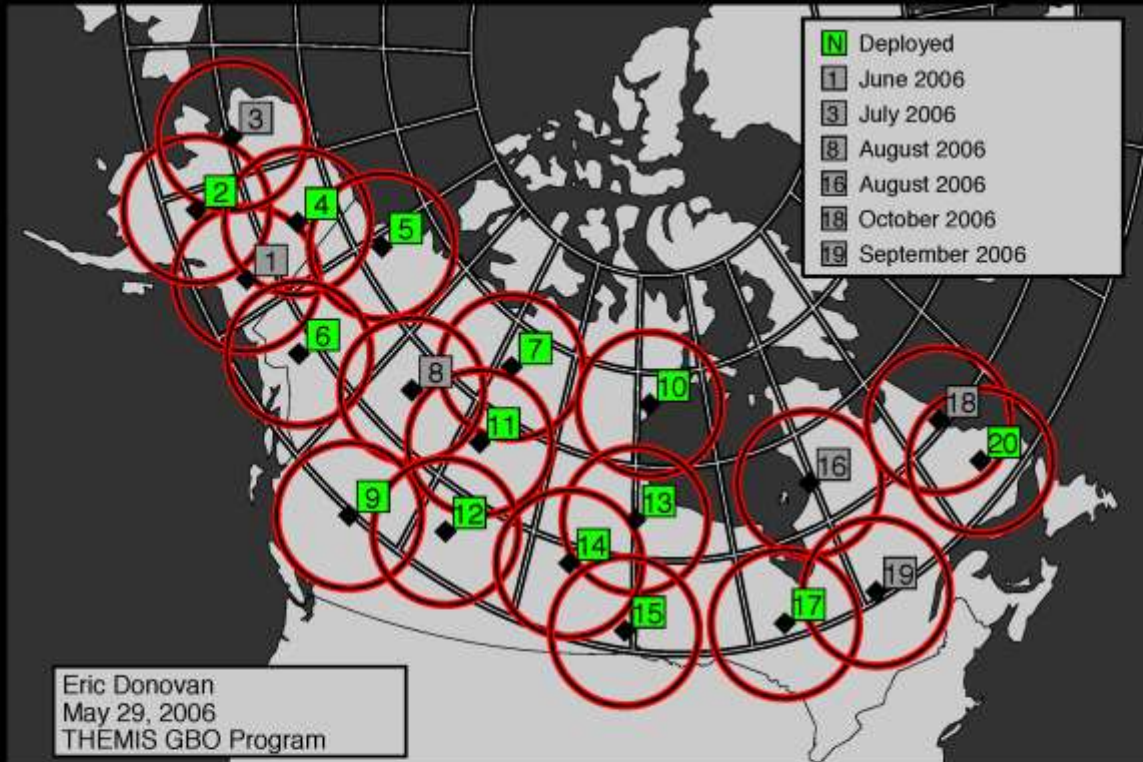
*Fast-forwarding (~200 times)  
Produced by T. Nishiyama*



*Eastward drift  
associated with  
ionospheric  
convection*

UT 14:00:03

5015\05\10 - 14:00:03



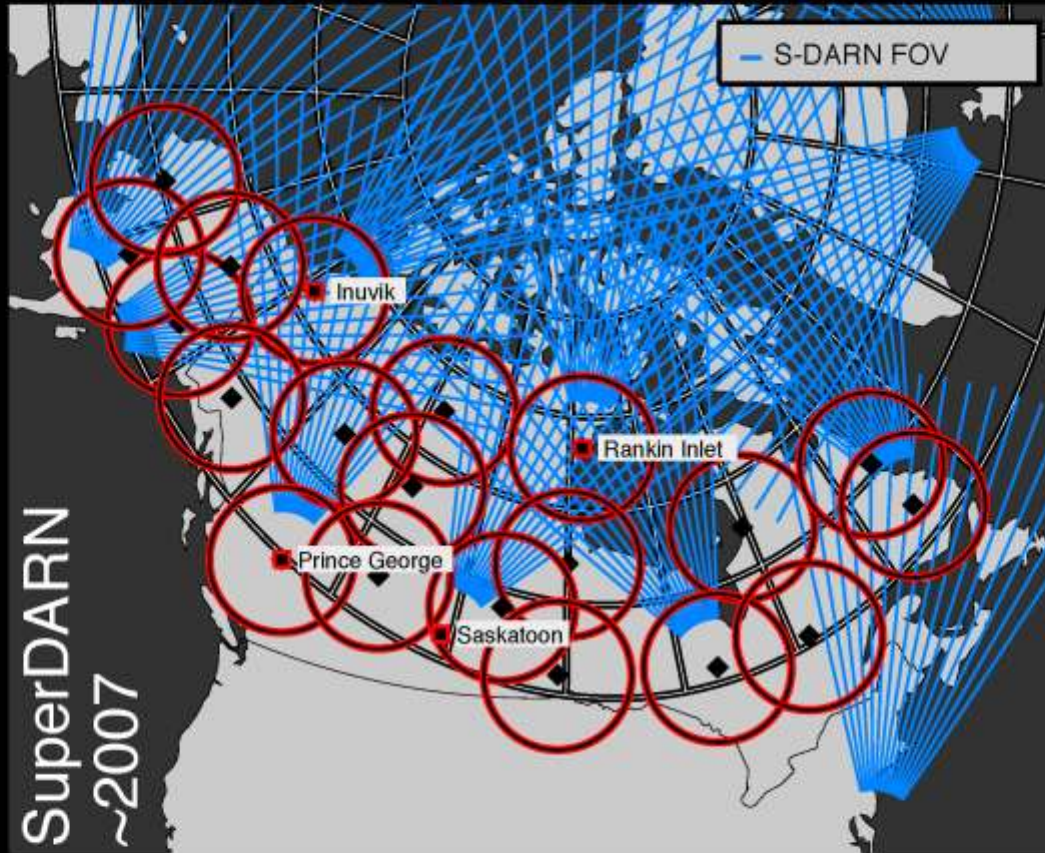
Eric Donovan  
 May 29, 2006  
 THEMIS GBO Program

## THEMIS

### ASI Sites

- 1 gakona
- 2 mcgrath
- 3 kiana
- 4 fort yukon
- 5 inuvik
- 6 whitehorse
- 7 ekati
- 8 fort simpson
- 9 prince george
- 10 rankin inlet
- 11 fort smith
- 12 athabasca
- 13 gillam
- 14 the pas
- 15 pinawa
- 16 umiujaq
- 17 kapuskasing
- 18 nain
- 19 chibougamau
- 20 goose bay

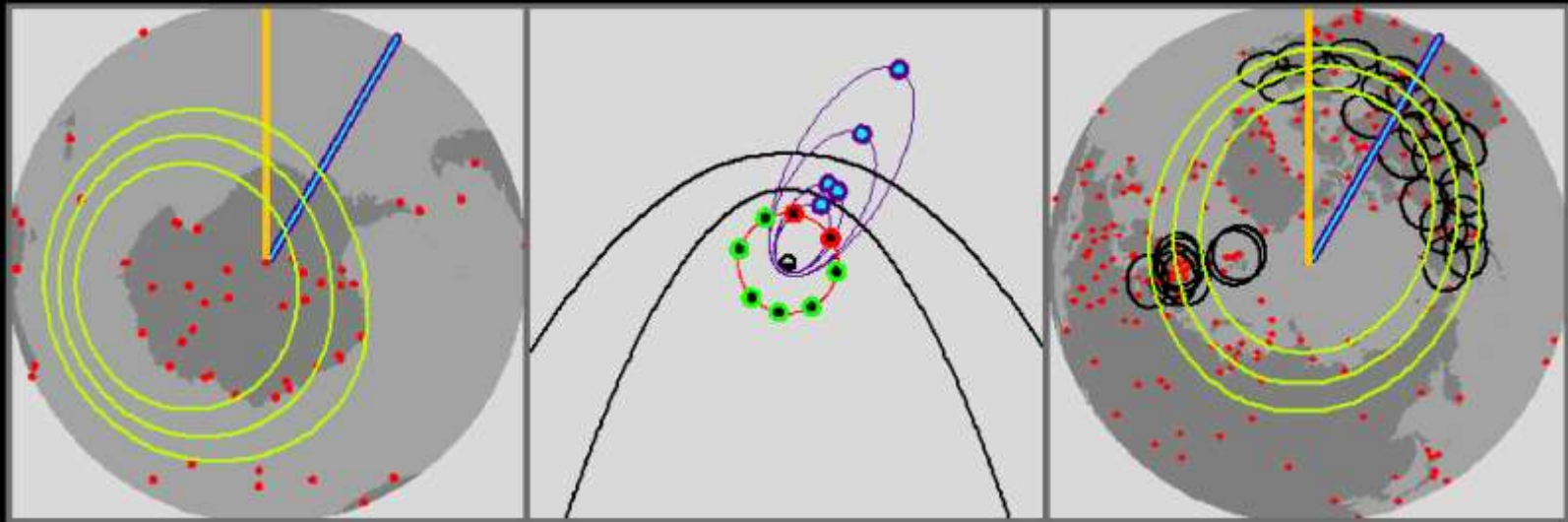






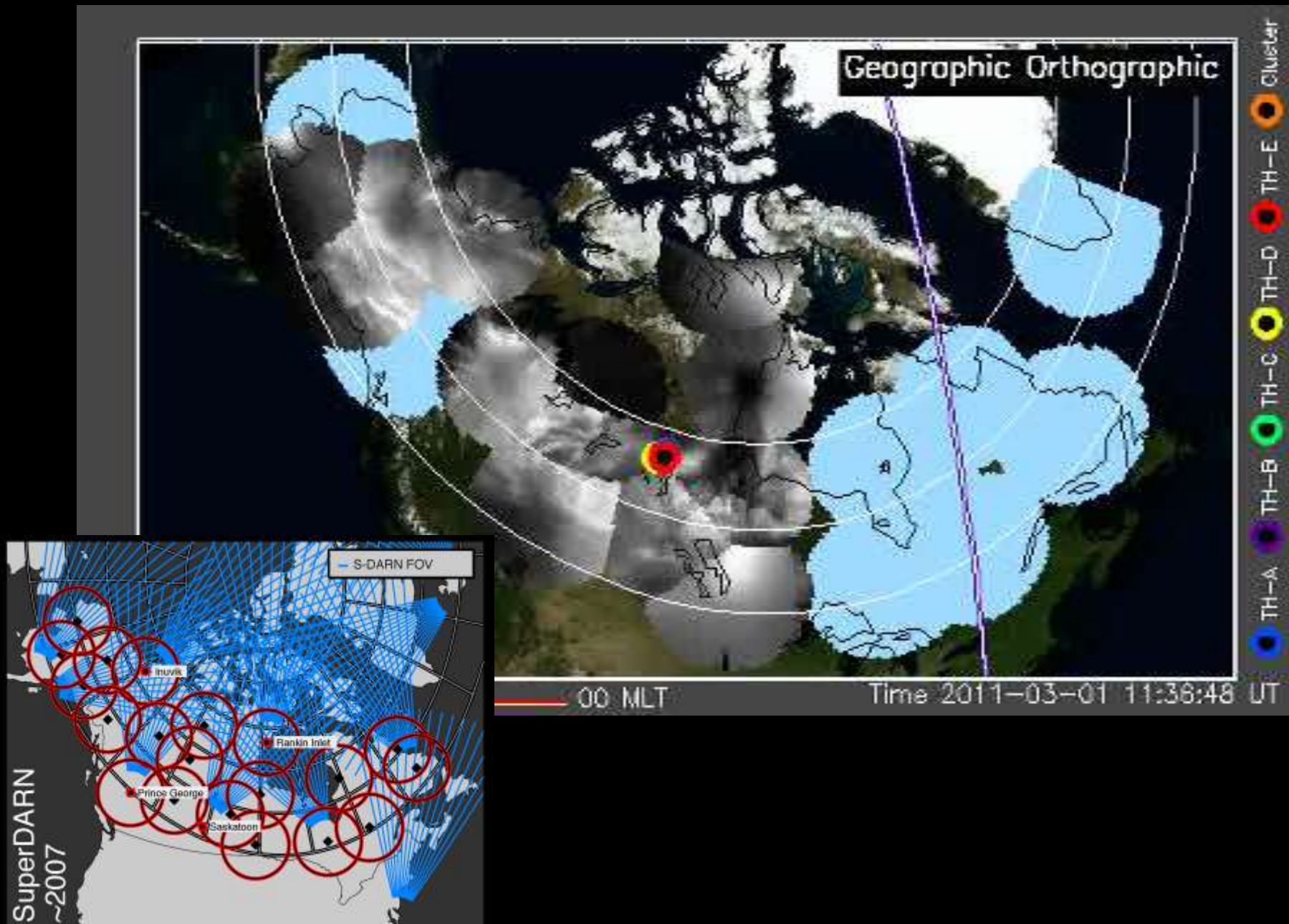
# THEMIS

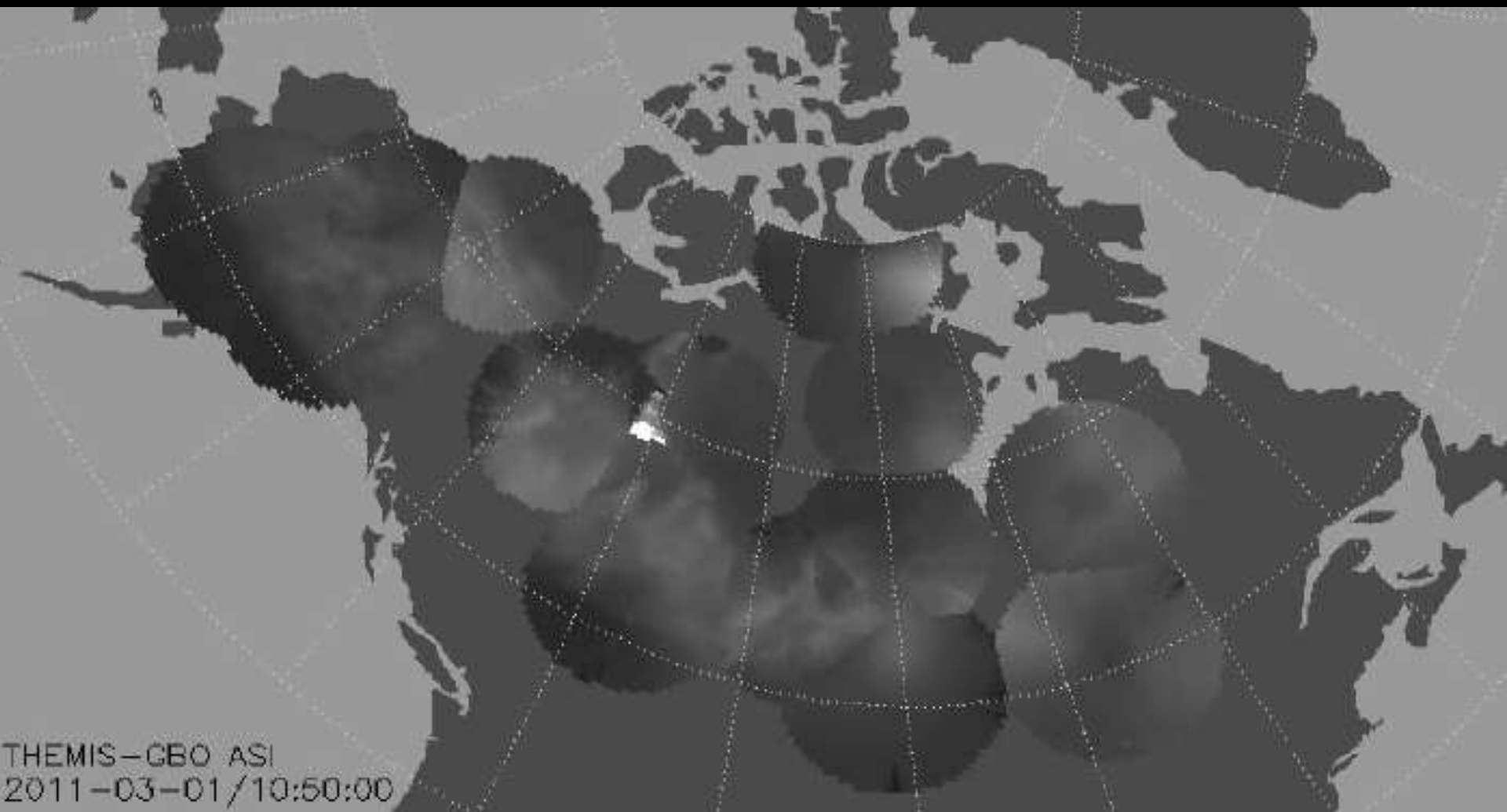
## Mission Concept



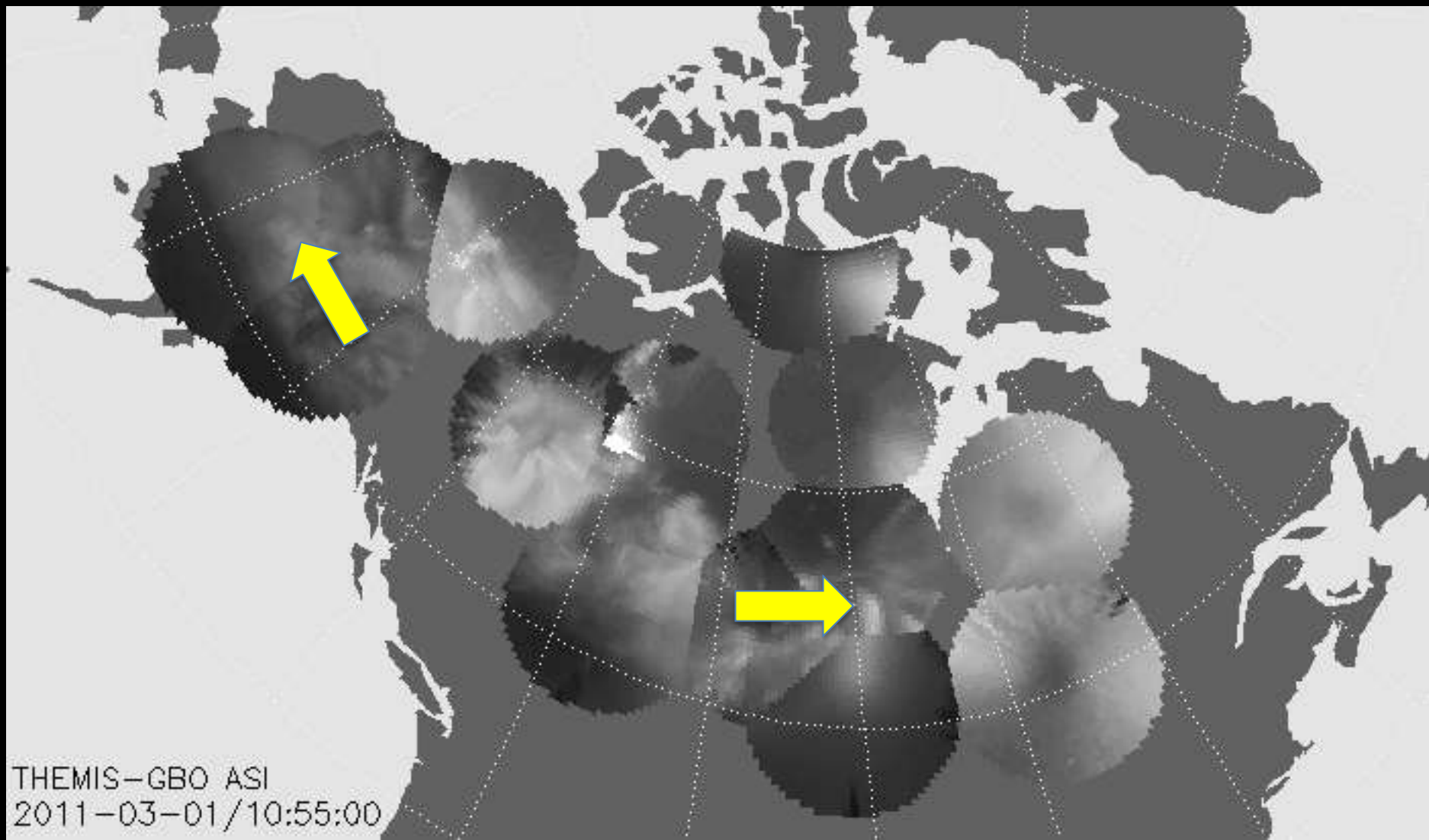
- Central Canada
- Sun-Earth
- Magnetic Latitude
- ◆ Fluxgate Mag
- GOES E/W
- LANL
- THEMIS PN



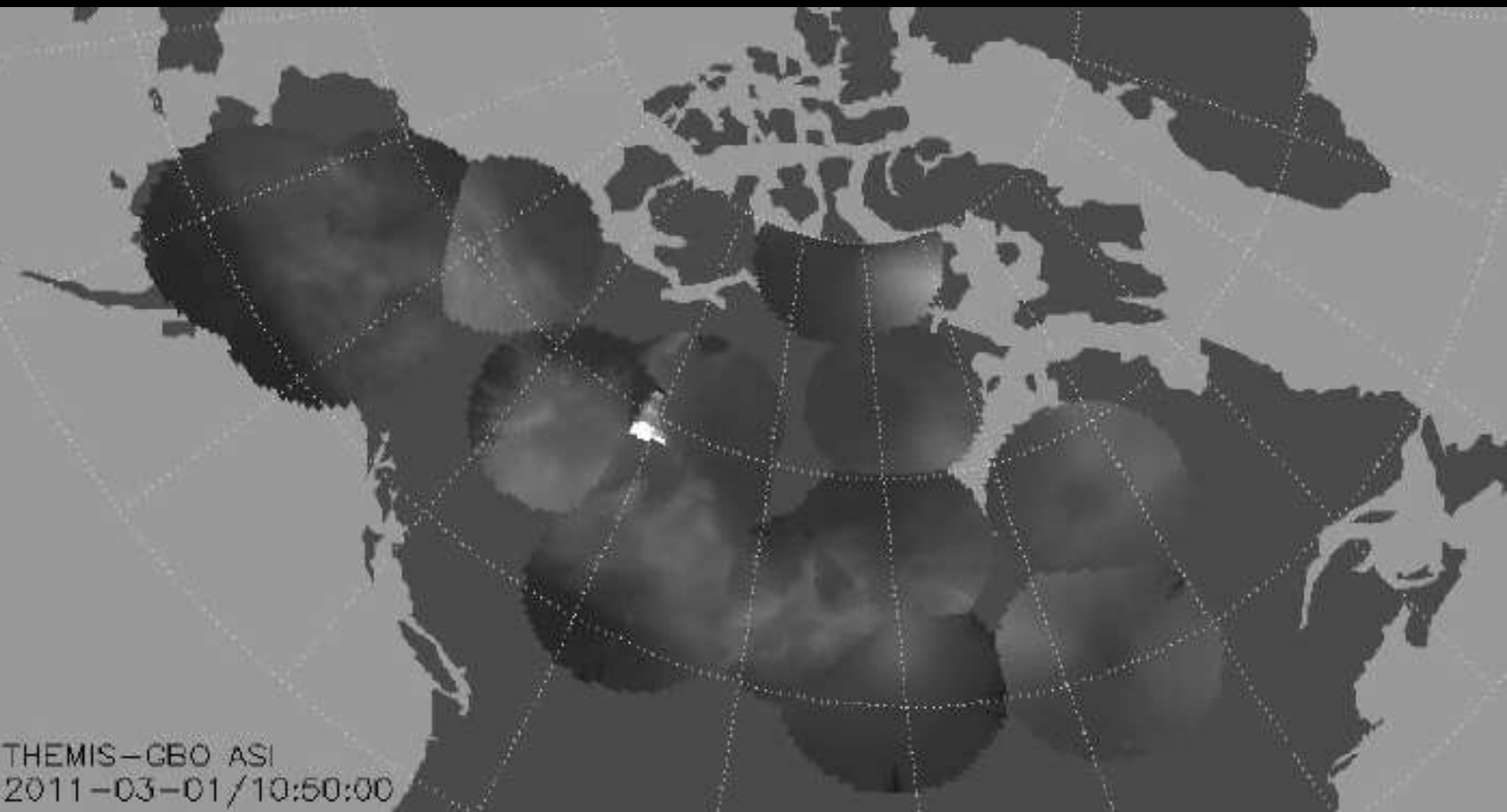




THEMIS-GB0 ASI  
2011-03-01/10:50:00



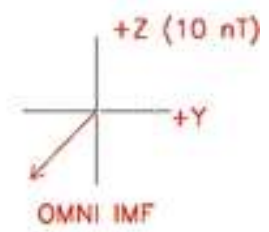
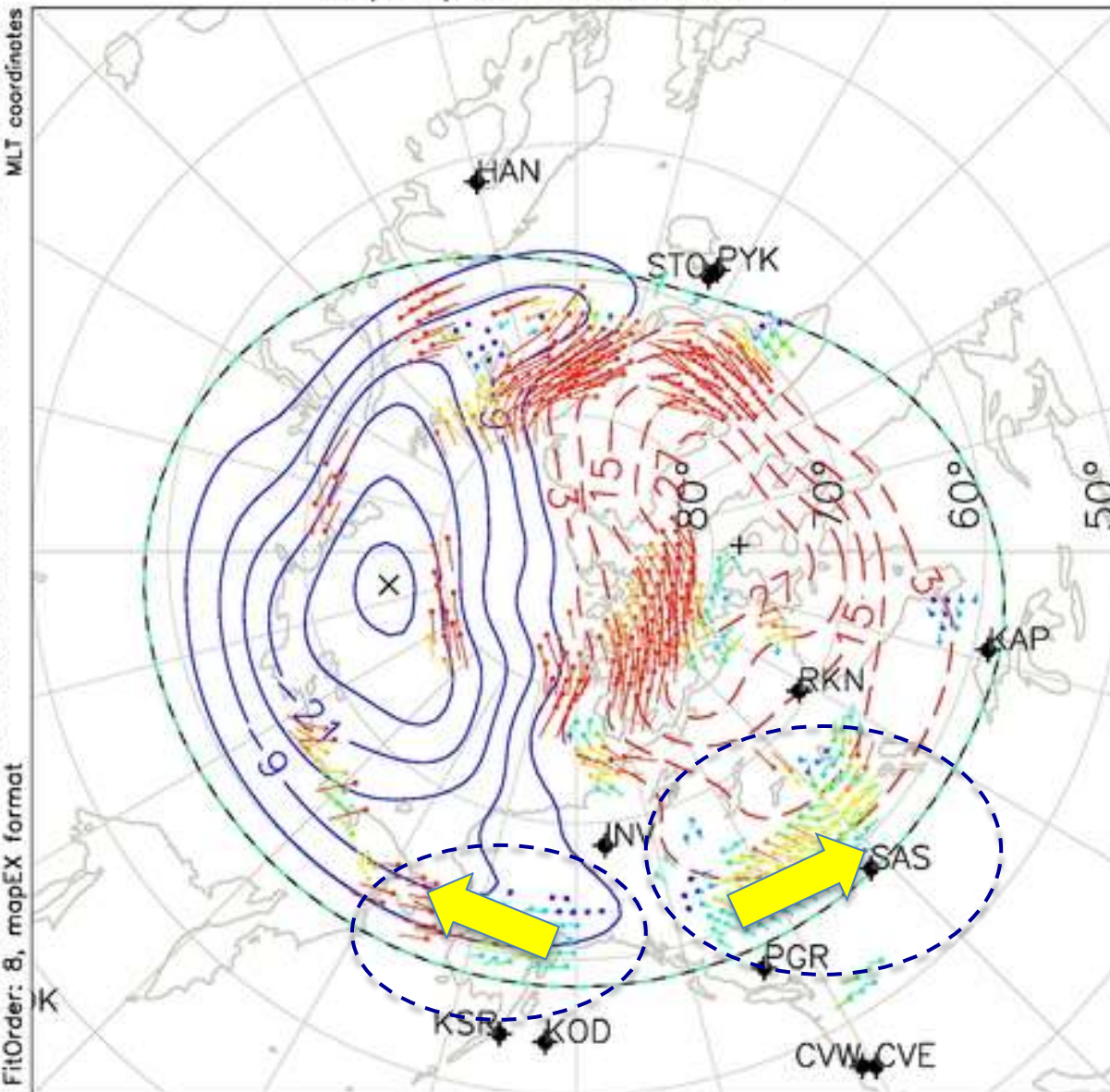
THEMIS-GBO ASI  
2011-03-01/10:55:00



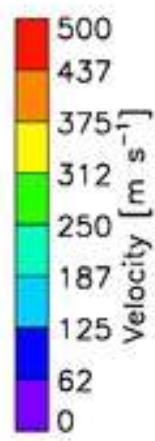
THEMIS-GB0 ASI  
2011-03-01/10:50:00

01/Mar/2011 10:55-11:00 UT

NOTE: FOR PREVIEW PURPOSES ONLY. PLEASE CONTACT VT-SD STAFF FOR VERIFICATION.  
FitOrder: 8, mapEX format



Stat Mod: RG96  
Bz-/By-, 6<BT<12



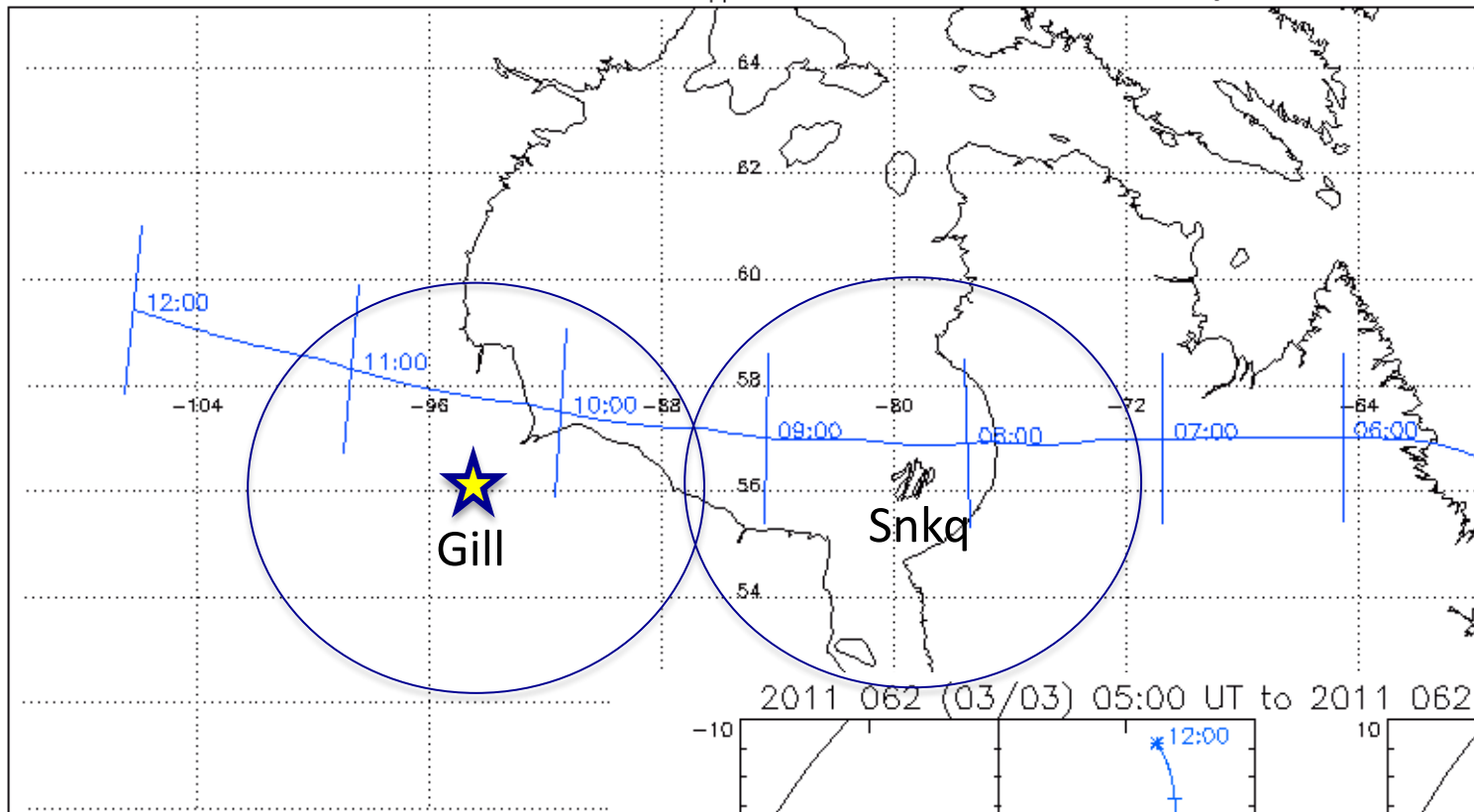
500 m/s

$\Phi_{pc} = 67$  kV  
 $\Lambda_{HM} = 58^\circ$   
 $N_{vc} = 554$  pts

21 22 23 0 1 2 3 Hour (MLT)

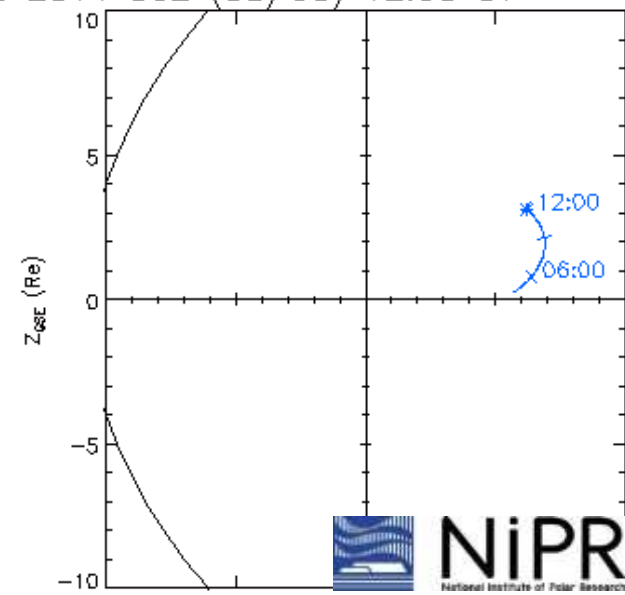
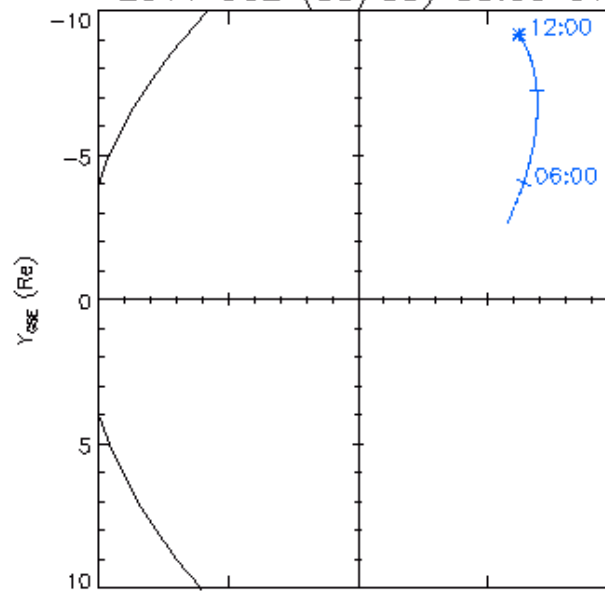
Mapped Plot

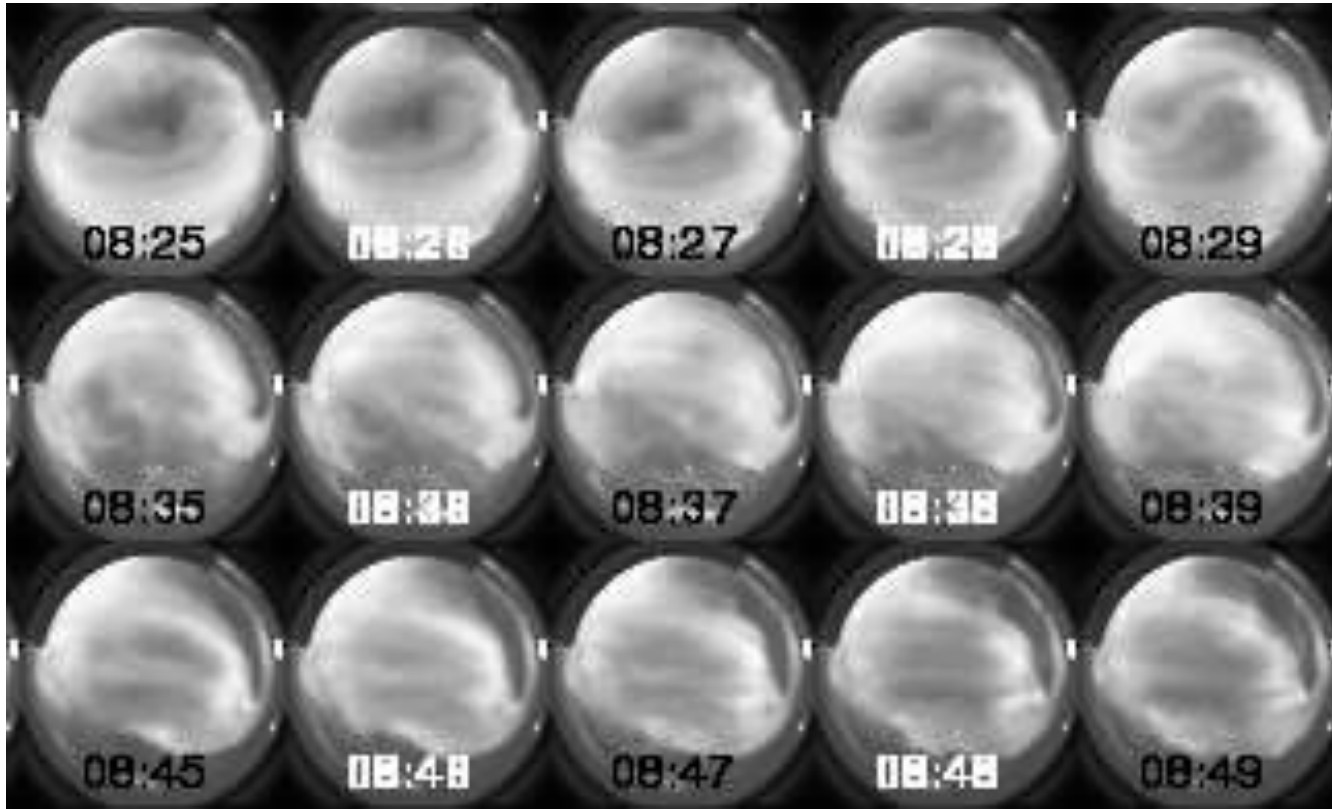
Cylindrical



2011 062 (03/03) 05:00 UT to 2011 062 (03/03) 12:00 UT

+ THEMISE North B Trace in Geographic Coord



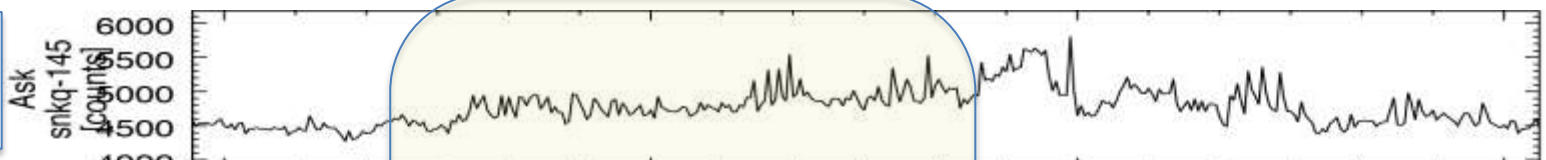


All-sky camera  
at Snkq  
2011-03-03

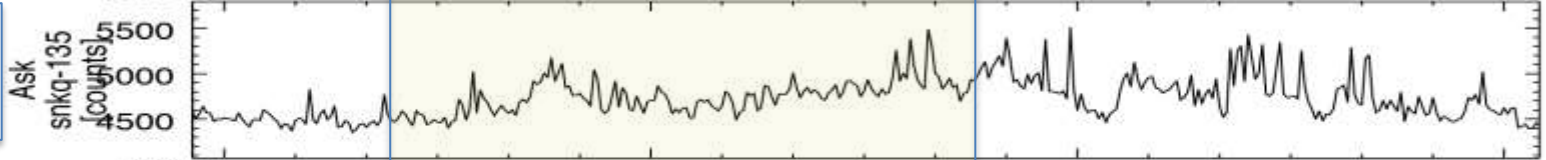




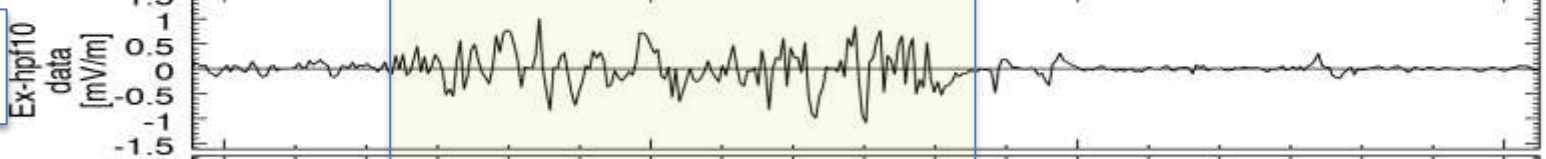
SNKQ  
Keogram  
Line-145



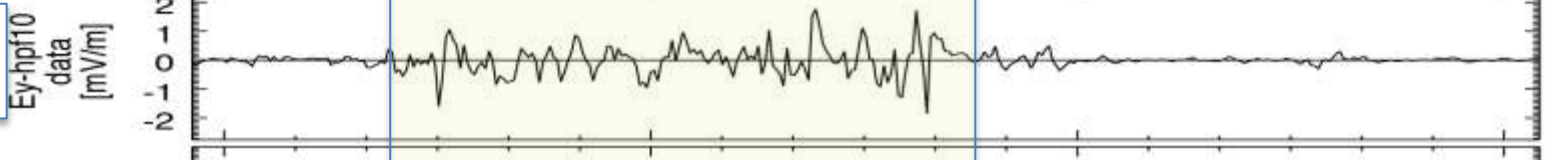
SNKQ  
Keogram  
Line-135



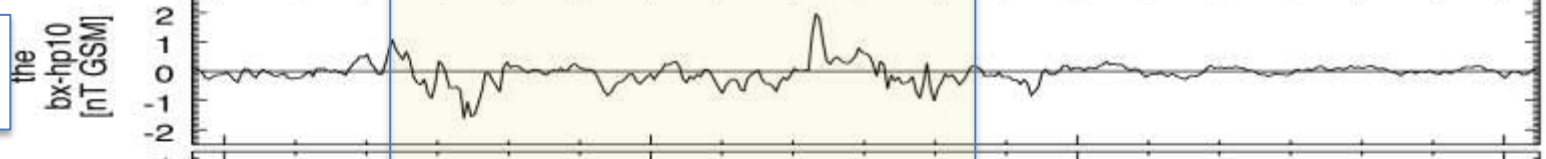
THEMIS  
E-field\_x-hp



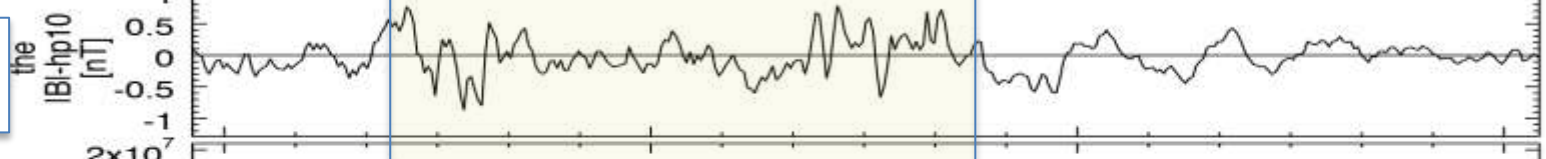
THEMIS  
E-field\_y-hp



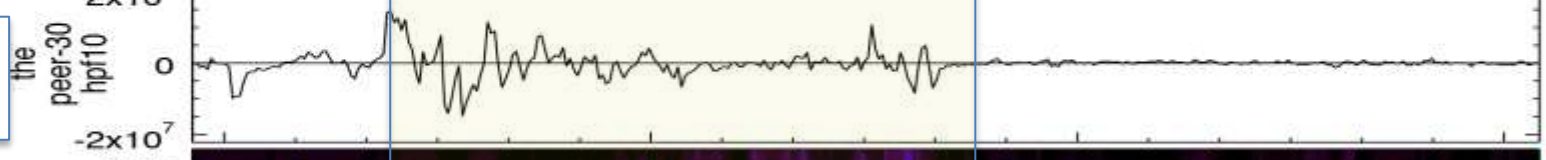
THEMIS  
B-field\_x-hp



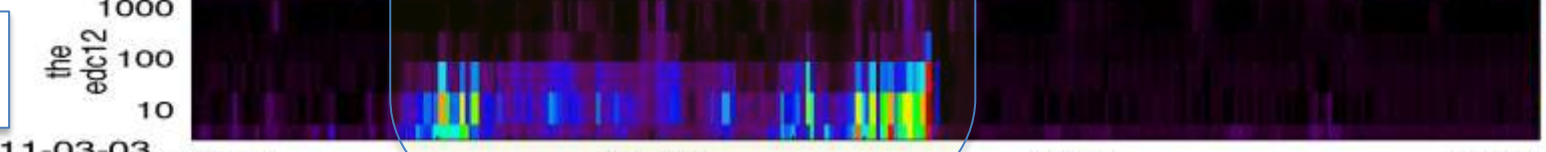
THEMIS  
B-total-hp



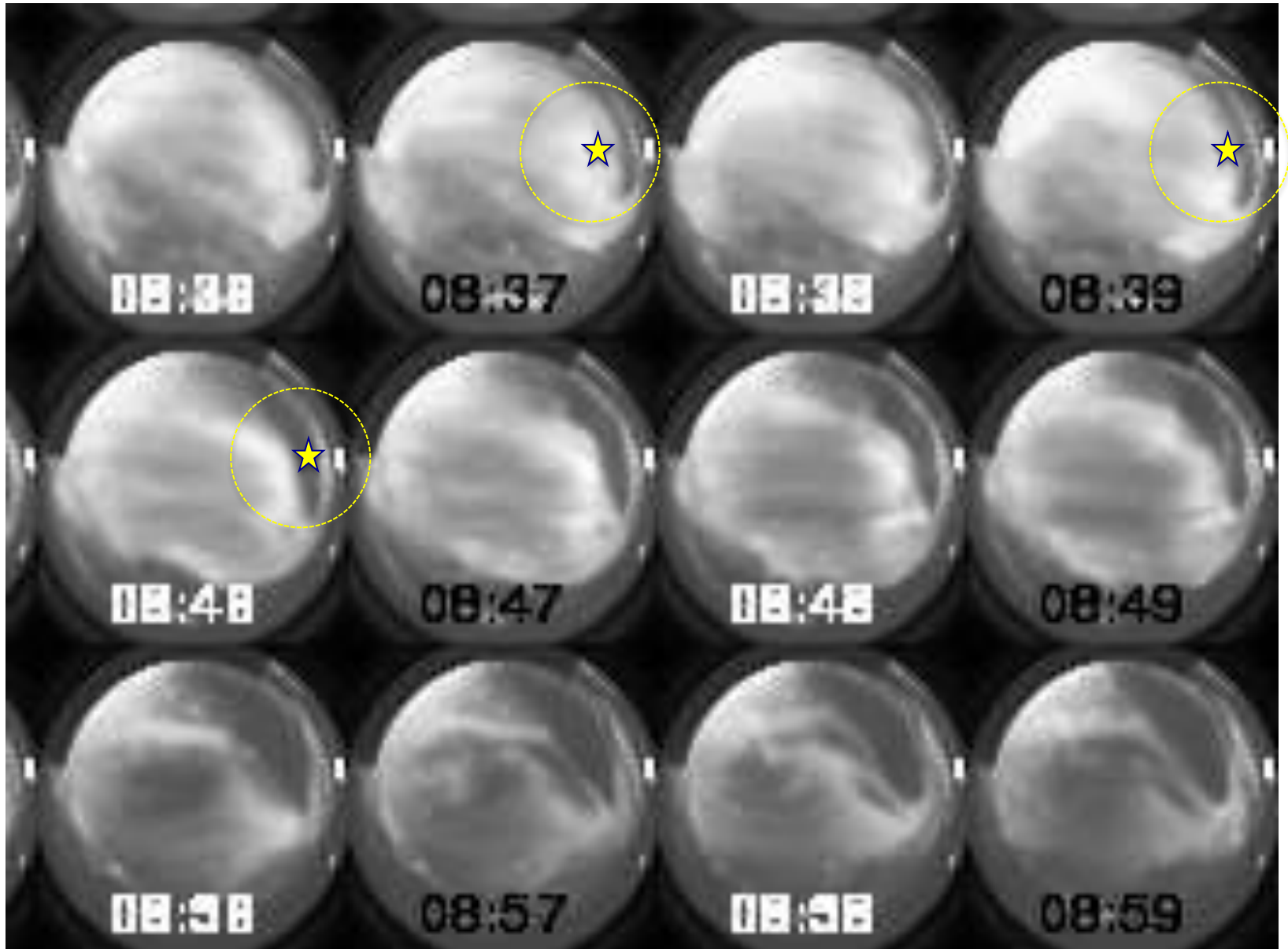
Cold electron  
(10-20 eV)-hp



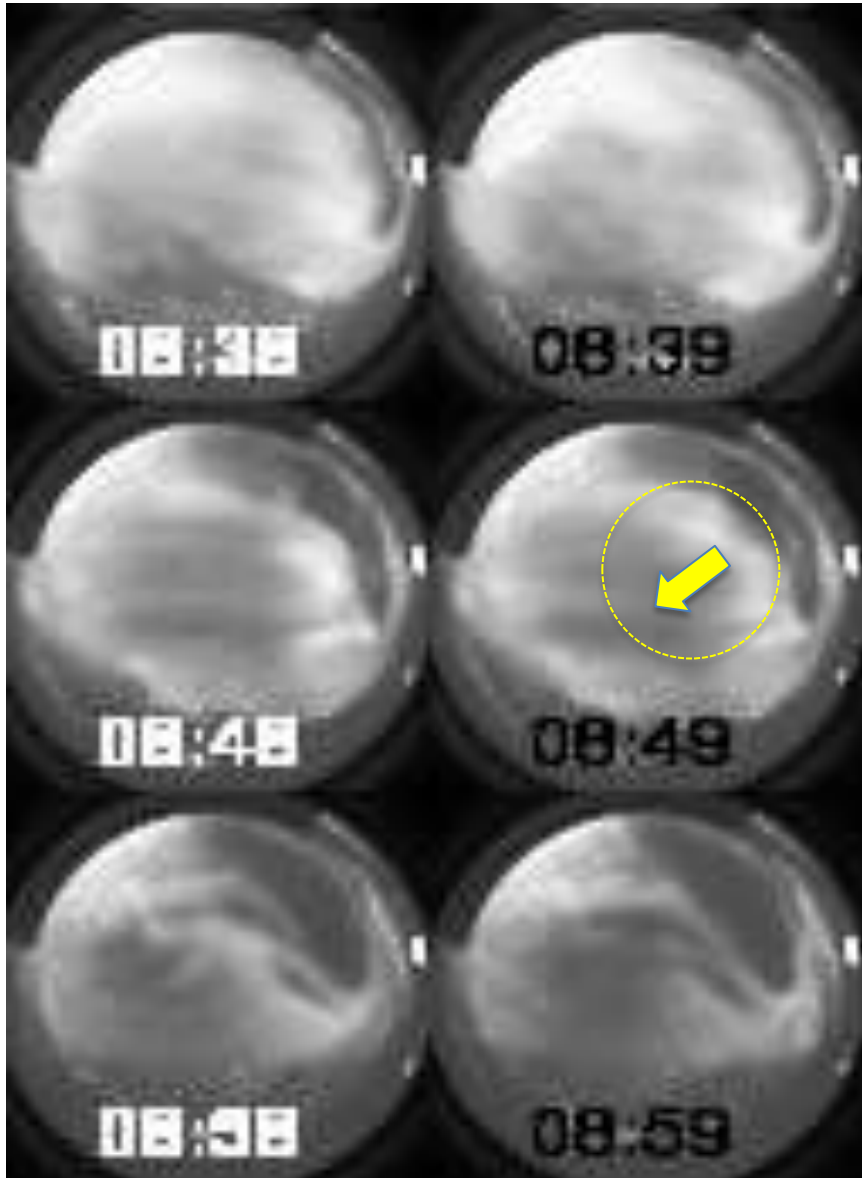
THEMIS  
E-Wave



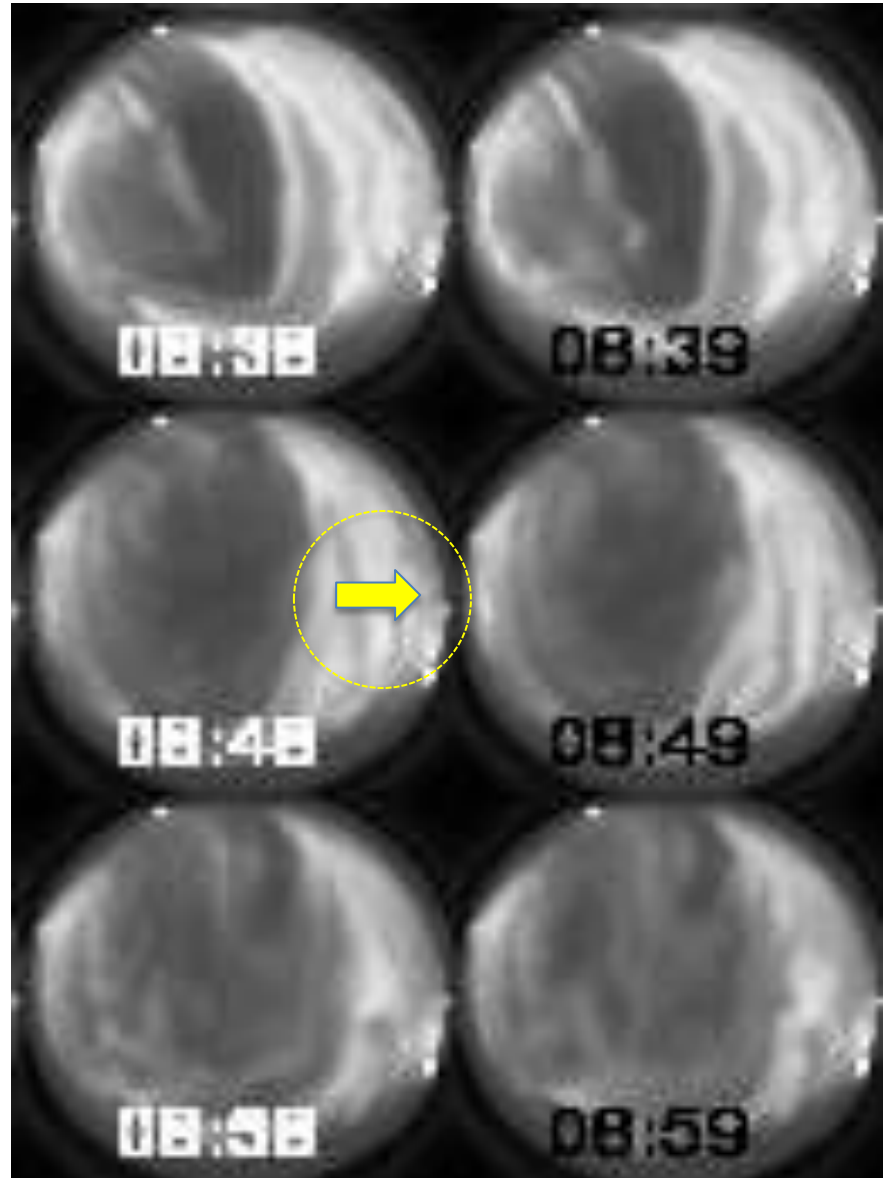
2011-03-03 08:29:33 08:30 08:36 08:42 08:48

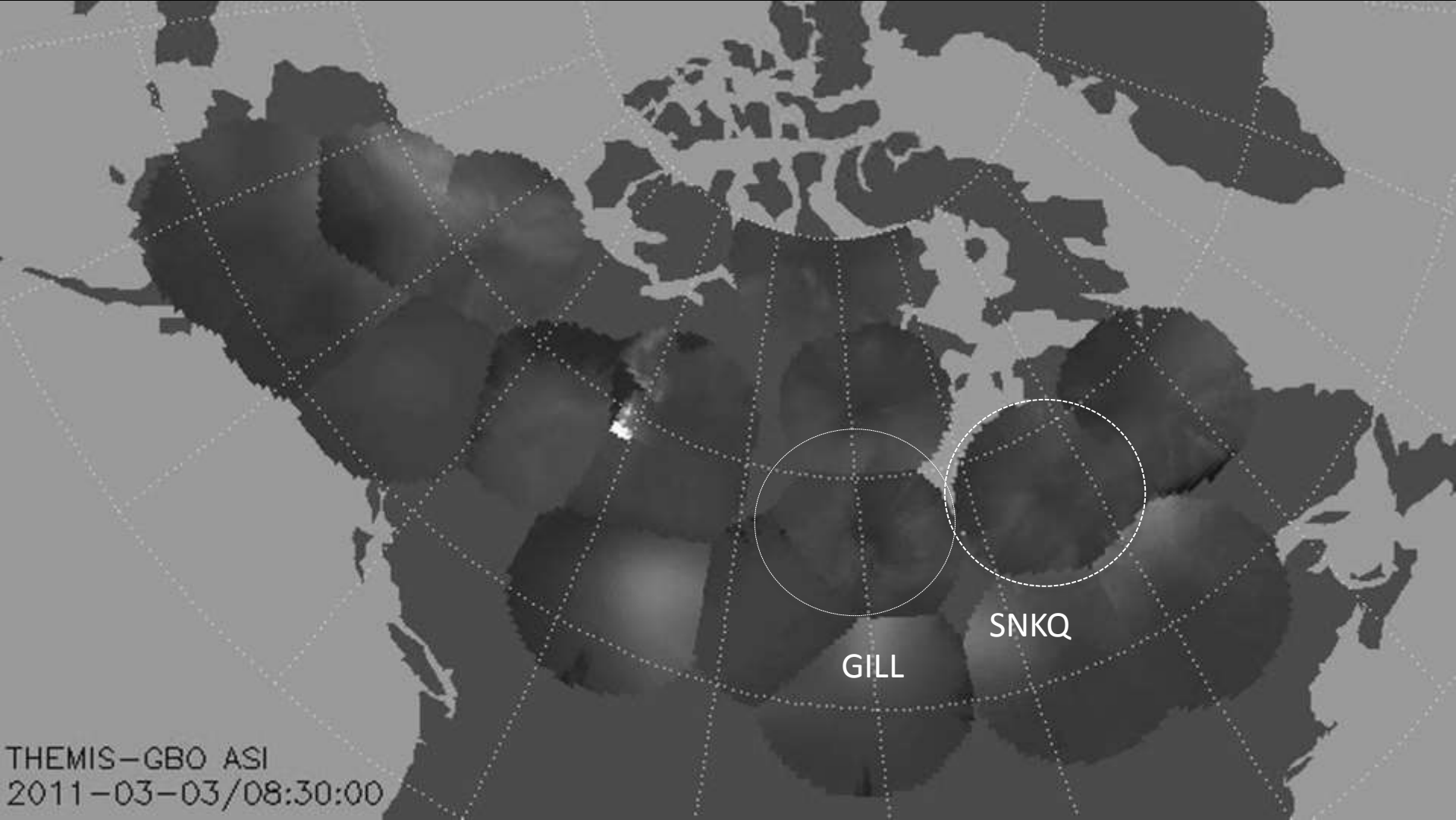


SNKQ All-sky camera



GILL All-sky camera

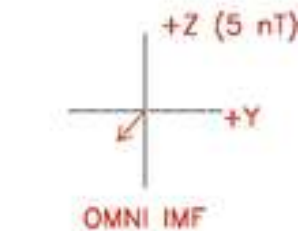
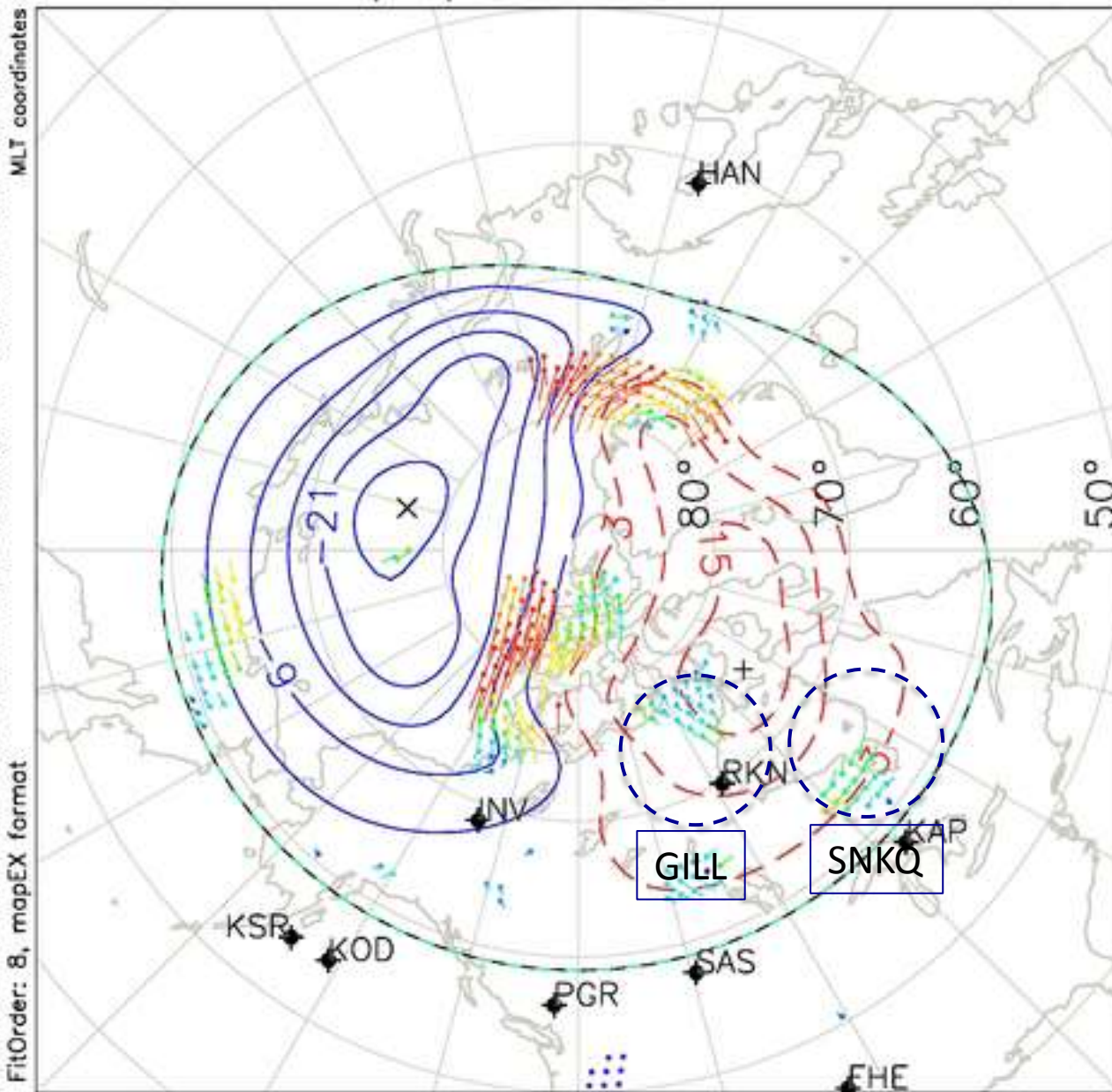




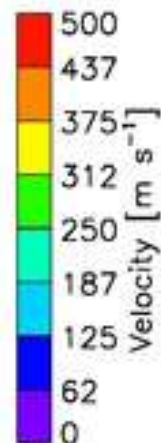
THEMIS-GBO ASI  
2011-03-03/08:30:00

03/Mar/2011 08:55-09:00 UT

NOTE: FOR PREVIEW PURPOSES ONLY. PLEASE CONTACT VT-SD STAFF FOR VERIFICATION.  
FitOrder: 8, mapEX format



Stat Mod: RG96  
Bz-/By-, 0<BT<4



500 m/s

$\Phi_{pc} = 49$  kV

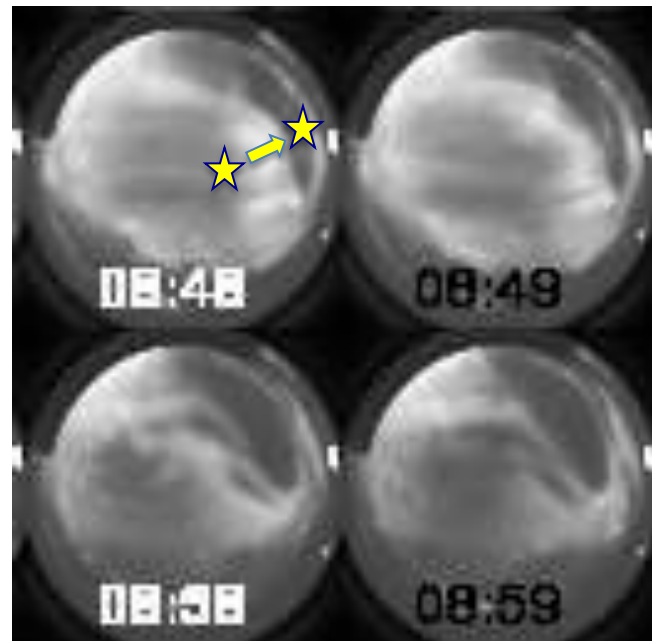
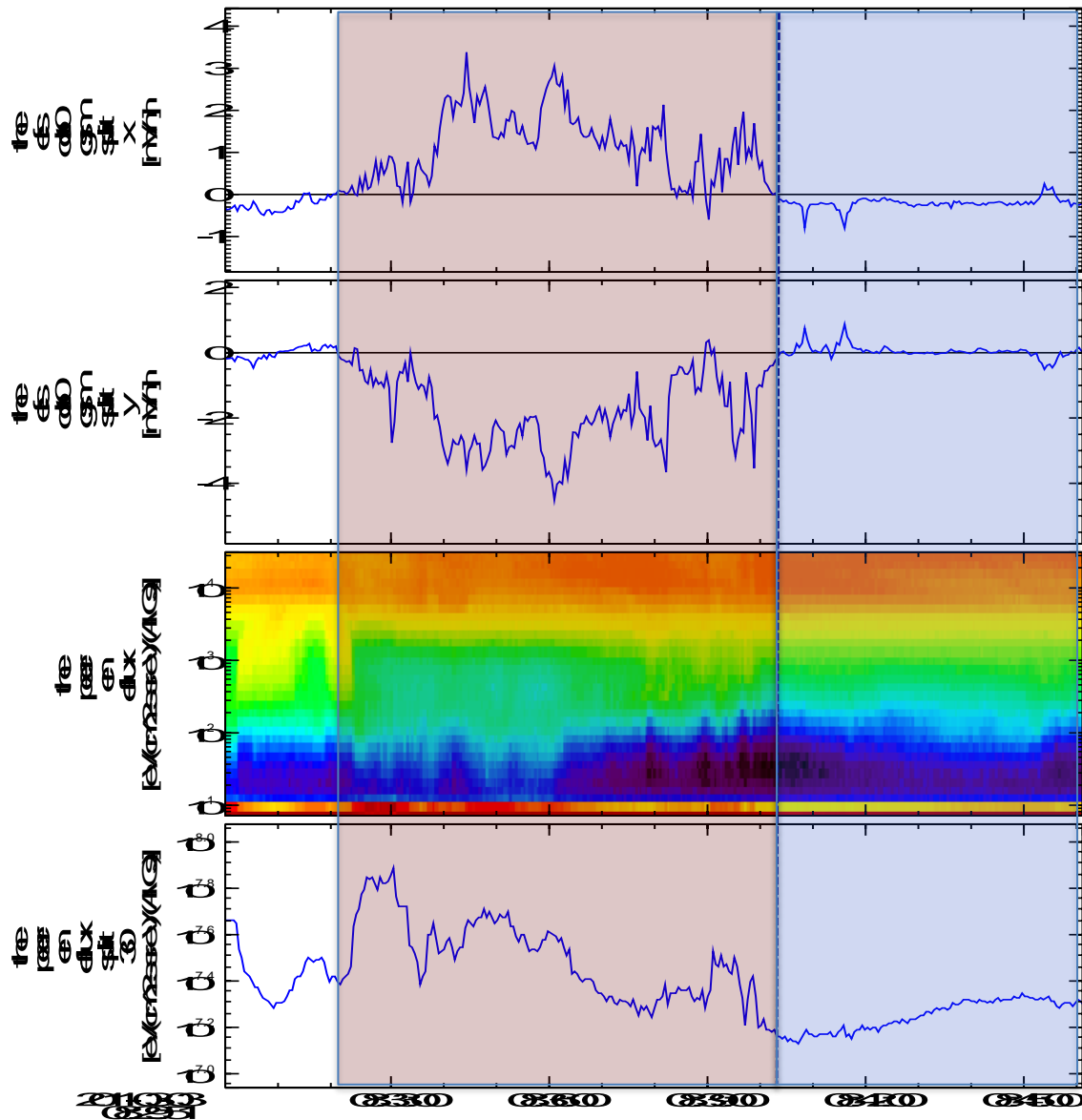
$\Lambda_{HM} = 59^\circ$

$N_{vc} = 285$  pts

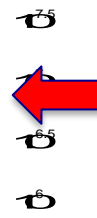
21 22 23 0 1 2 3 Hour (MLT)

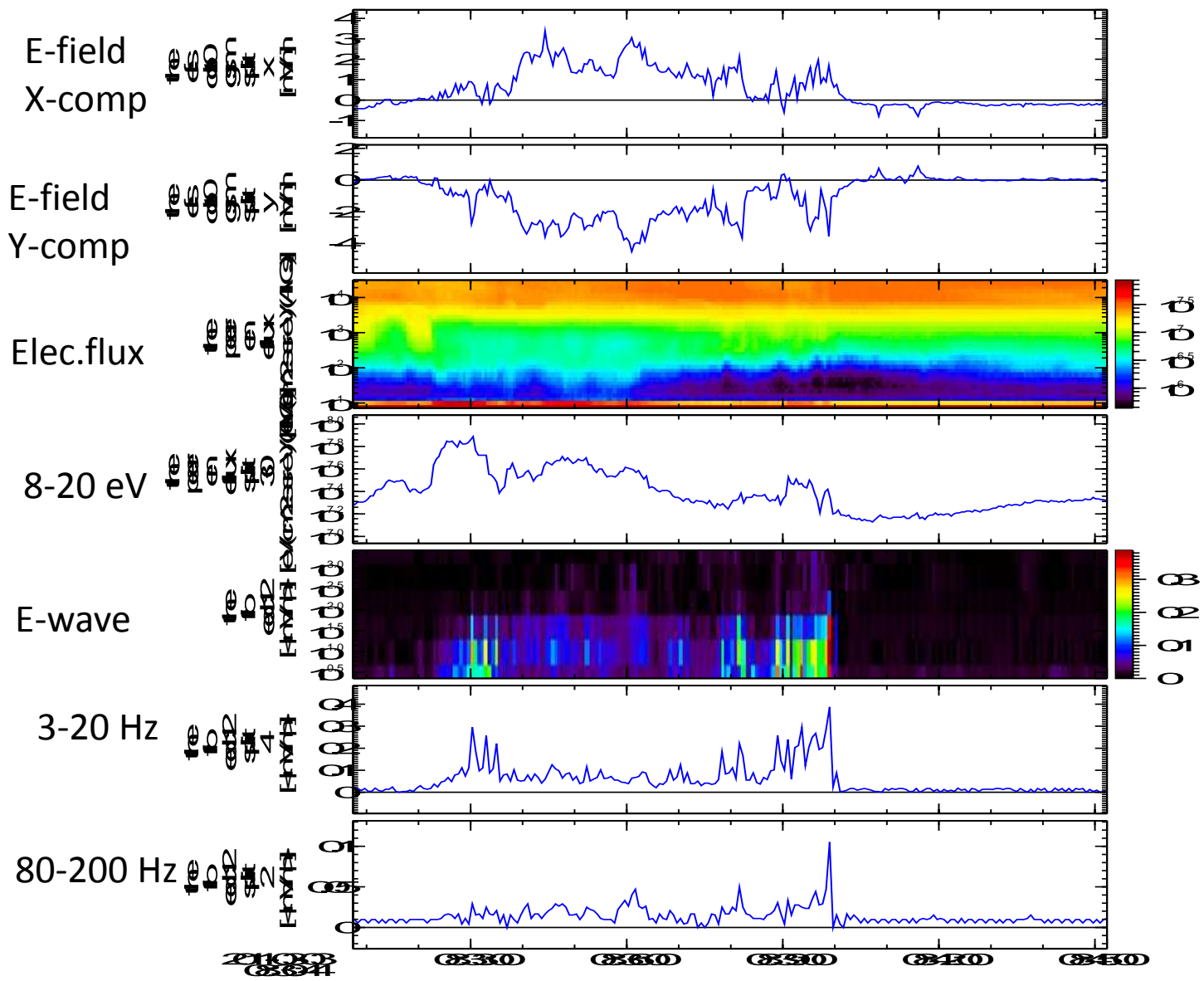
オーロラ内部

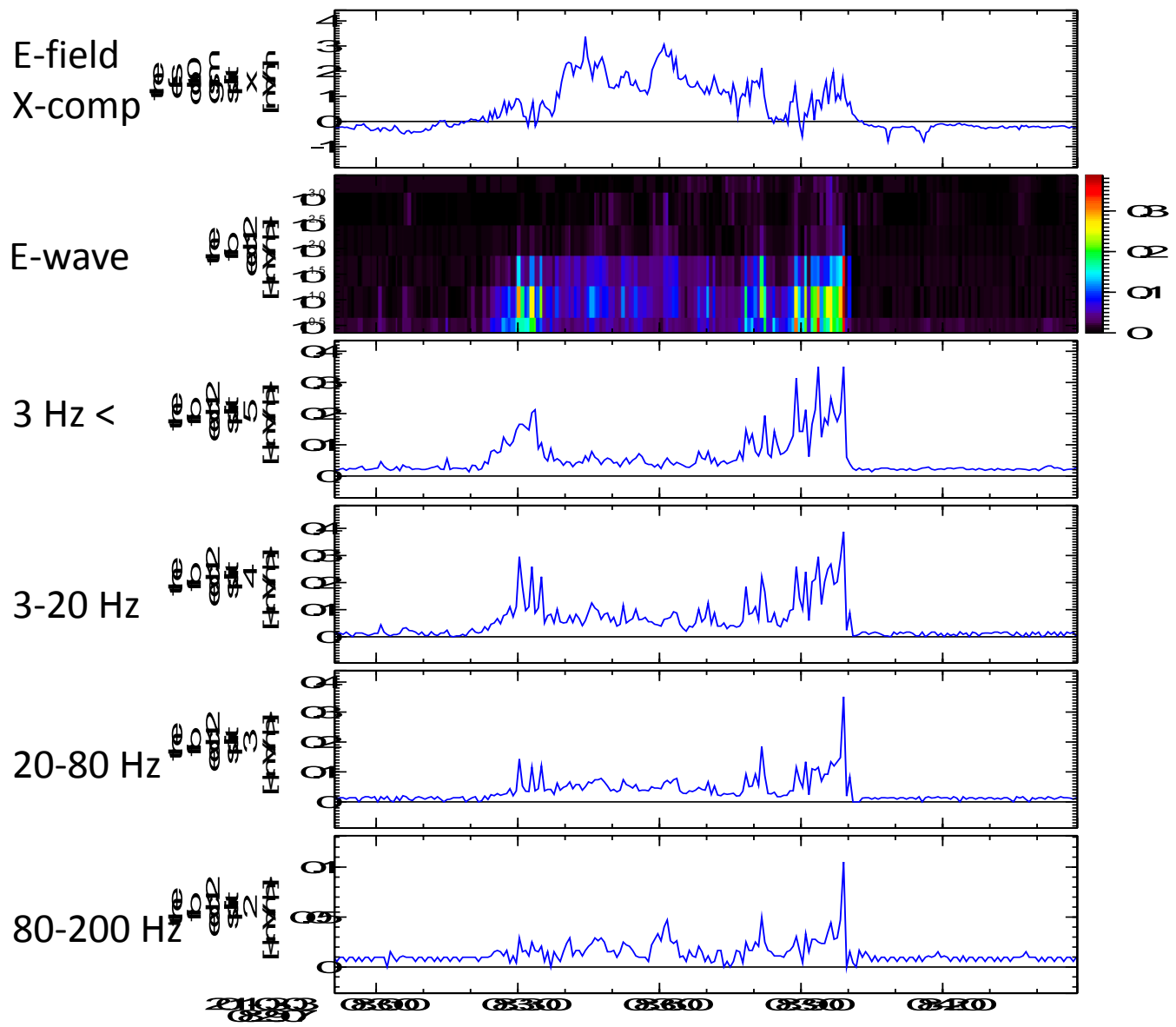
オーロラ外部



\*High-energy electron flux  
変化無し!









## 脈動オーロラの発生条件

### <絶対条件>

- ☆ 高エネルギー電子フラックス

### <必要条件>

- ☆ 静電場の変調
- ☆ 低周波数の静電波動
- ☆ 低温プラズマ