Working Slide for

Van Allen Probes Electric Fields and Energetic Electrons During the 8/07/2017 Geomagnetic Storm (Dst ~ -150 nT): " A Preliminary Look"

John Wygant and EFW Team (and data from REPT, MagEIS, HOPE)

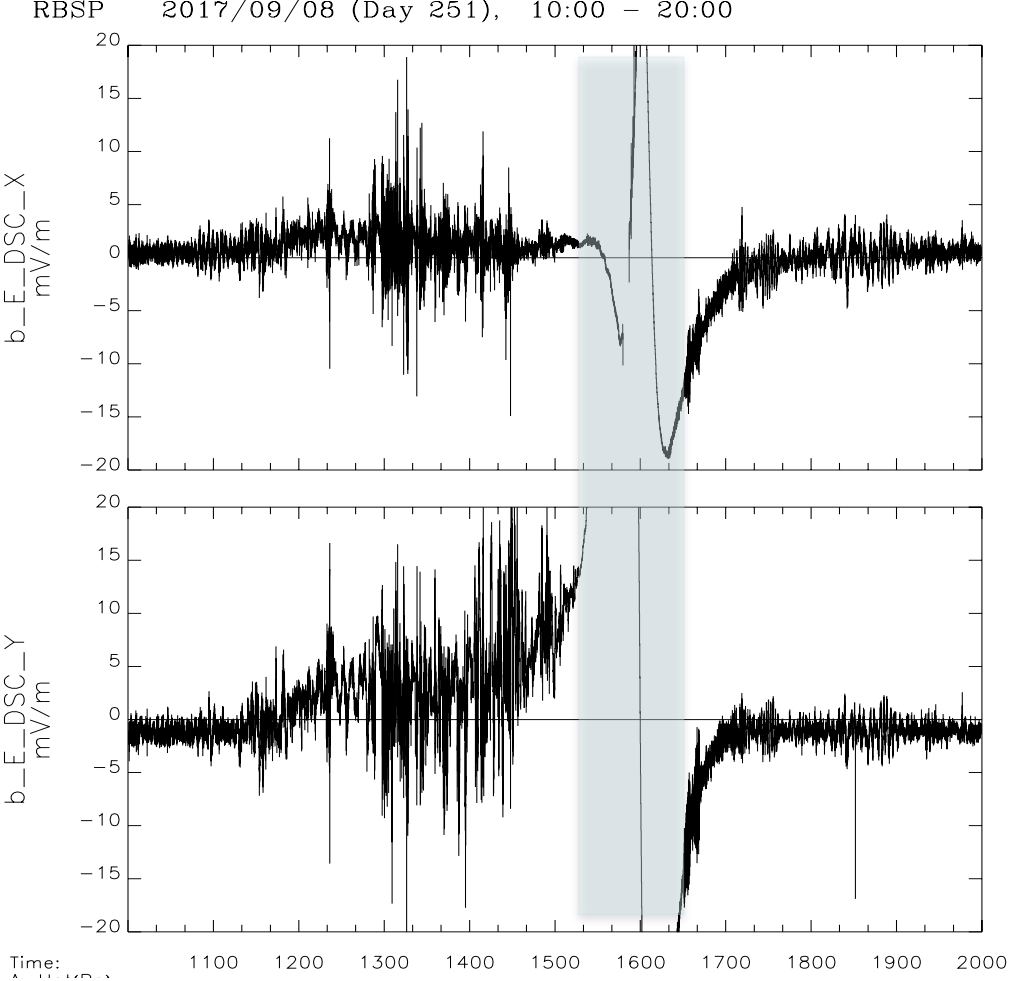
This is a very interesting storm:

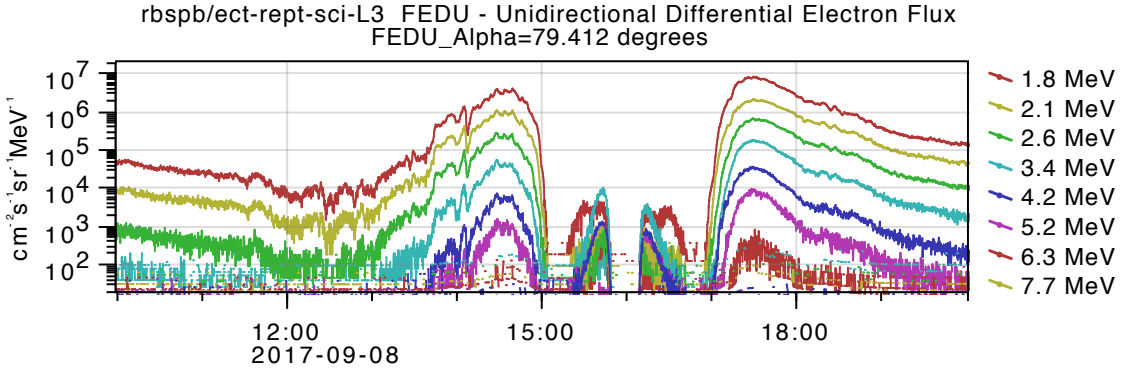
We see very large amplitude (> 20 mV/m) low frequency(ULF) electric field turbulence preferentially enhanced over the entire extent of the outer belts during main phase during a time interval of rapid increase in 2-5 MeV fluxes (as indicated by successive Van Allen Probe orbits).

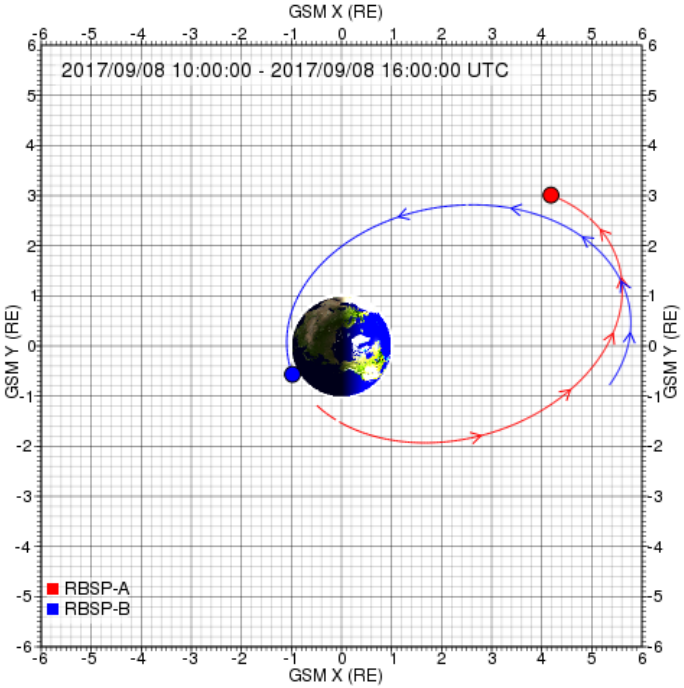
No many storms show this level of ULF turbulence so deep in the inner magnetosphere. In addition, in most other vents the turbulence is often strongest in the near Earth plasma sheet and small in the outer belt. Not in this event

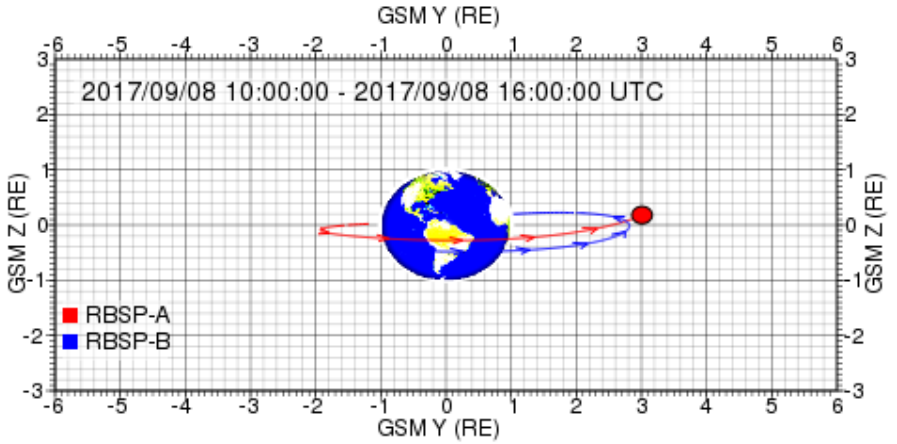
The data we are showing is the early stages of analysis still contains the spacecraft motional electric field which is largest at perigee.

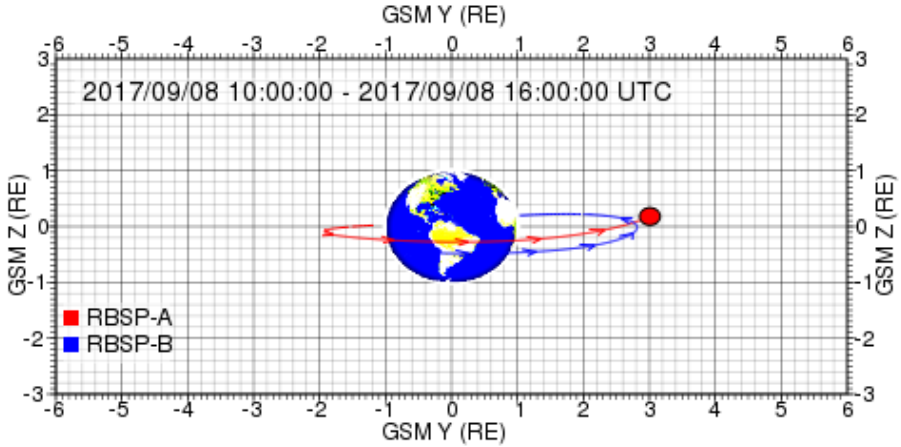
Attitude data has not been used to rotate the electric field into mgse or gse or gsm coordinate system.

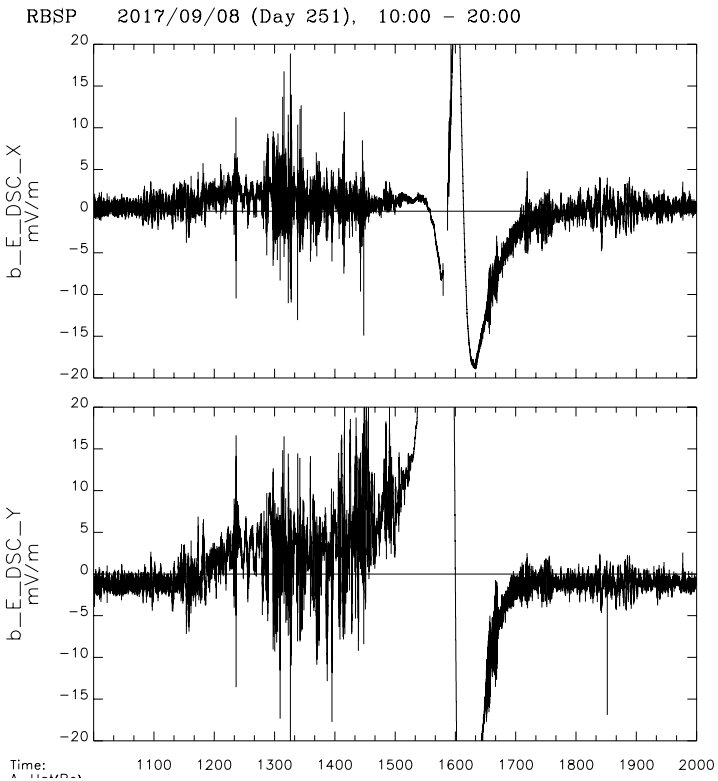

RBSP 2017/09/08 (Day 251), 10:00 – 20:00
b_E_DSC_X
mV/m
b_E_DSC_Y
mV/m
20
15
10
5
0
−5
−10
−15
−20
Time:
1100
1200
1300
1400
1500
1600
1700
1800
1900
2000

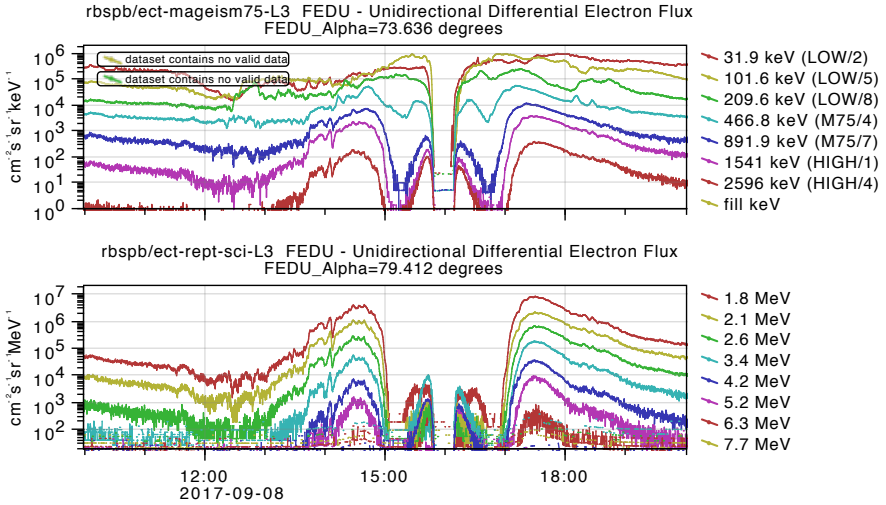

rbspb/ect-rept-sci-L3_FEDU - Unidirectional Differential Electron Flux
FEDU_Alpha=79.412 degrees
cm⁻²s⁻¹sr⁻¹MeV⁻¹
10⁷
10⁶
10⁵
10⁴
10³
10²
12:00
2017-09-08
15:00
18:00
1.8 MeV
2.1 MeV
2.6 MeV
3.4 MeV
4.2 MeV
5.2 MeV
6.3 MeV
7.7 MeV

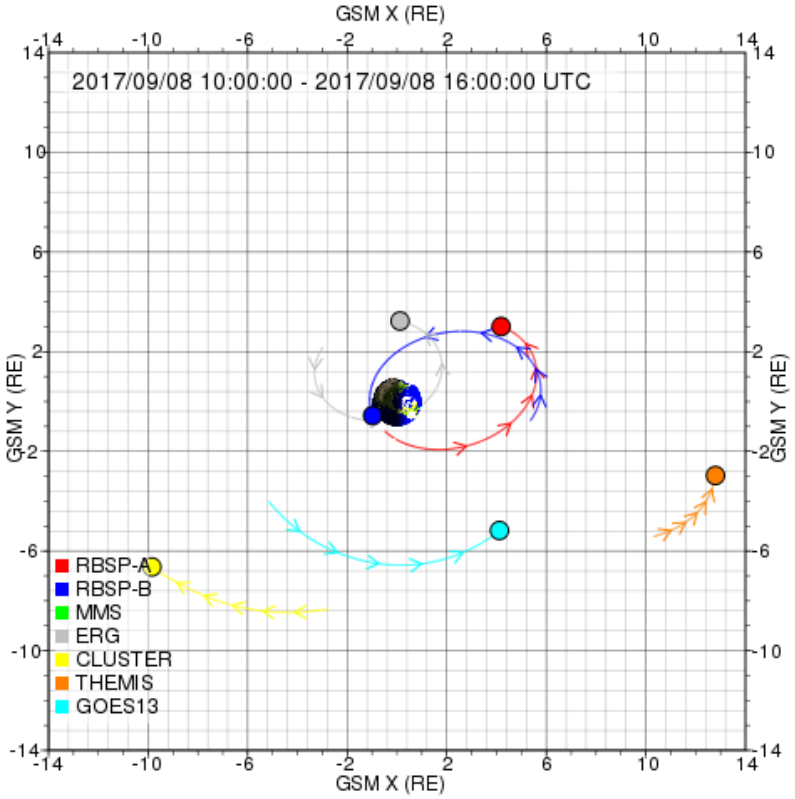

GSM X (RE)
2017/09/08 10:00:00 - 2017/09/08 16:00:00 UTC
GSM Y (RE)
RBSP-A
RBSP-B
GSM X (RE)

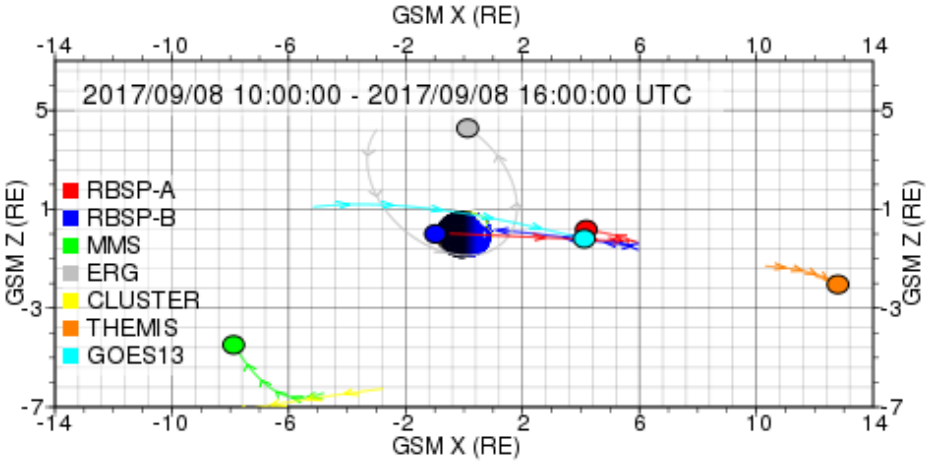

GSM Y (RE)
2017/09/08 10:00:00 - 2017/09/08 16:00:00 UTC
GSM Z (RE)
RBSP-A
RBSP-B
GSM Y (RE)


GSM Y (RE)
2017/09/08 10:00:00 - 2017/09/08 16:00:00 UTC
GSM Z (RE)
RBSP-A
RBSP-B
GSM Y (RE)


RBSP 2017/09/08 (Day 251), 10:00 – 20:00
b_E_DSC_X
mV/m
b_E_DSC_Y
mV/m
Time:
1100
1200
1300
1400
1500
1600
1700
1800
1900
2000


rbspb/ect-mageism75-L3 FEDU - Unidirectional Differential Electron Flux
FEDU_Alpha=73.636 degrees
dataset contains no valid data
dataset contains no valid data
cm^-2 s^-1 sr^-1 keV^-1
31.9 keV (LOW/2)
101.6 keV (LOW/5)
209.6 keV (LOW/8)
466.8 keV (M75/4)
891.9 keV (M75/7)
1541 keV (HIGH/1)
2596 keV (HIGH/4)
fill keV
rbspb/ect-rept-sci-L3 FEDU - Unidirectional Differential Electron Flux
FEDU_Alpha=79.412 degrees
cm^-2 s^-1 sr^-1 MeV^-1
1.8 MeV
2.1 MeV
2.6 MeV
3.4 MeV
4.2 MeV
5.2 MeV
6.3 MeV
7.7 MeV
12:00
2017-09-08
15:00
18:00


GSM X (RE)
2017/09/08 10:00:00 - 2017/09/08 16:00:00 UTC
GSM Y (RE)
RBSP-A
RBSP-B
MMS
ERG
CLUSTER
THEMIS
GOES13
GSM X (RE)


GSM X (RE)
2017/09/08 10:00:00 - 2017/09/08 16:00:00 UTC
GSM Z (RE)
RBSP-A
RBSP-B
MMS
ERG
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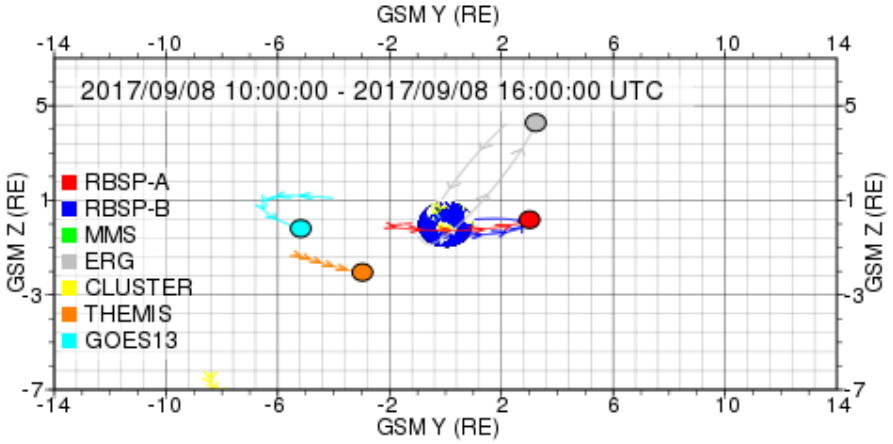
THEMIS
GOES13
GSM X (RE)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RBSP-A
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