



PRELIMINARY INVESTIGATION OF FIELD-ALIGNED ELECTRONS IN THE MAGNETOSPHERE

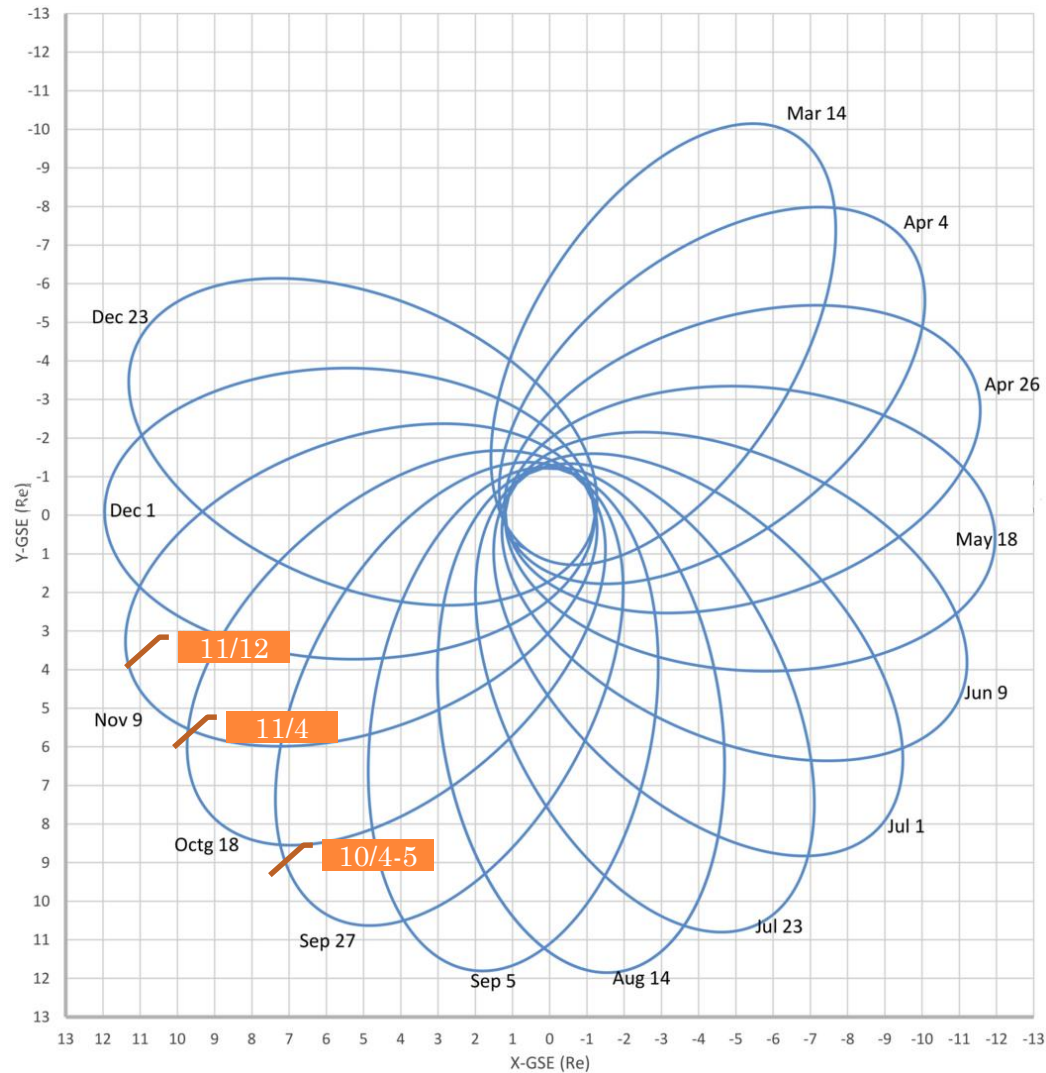
C. Schiff – 2/17/16 v0.1

STATUS

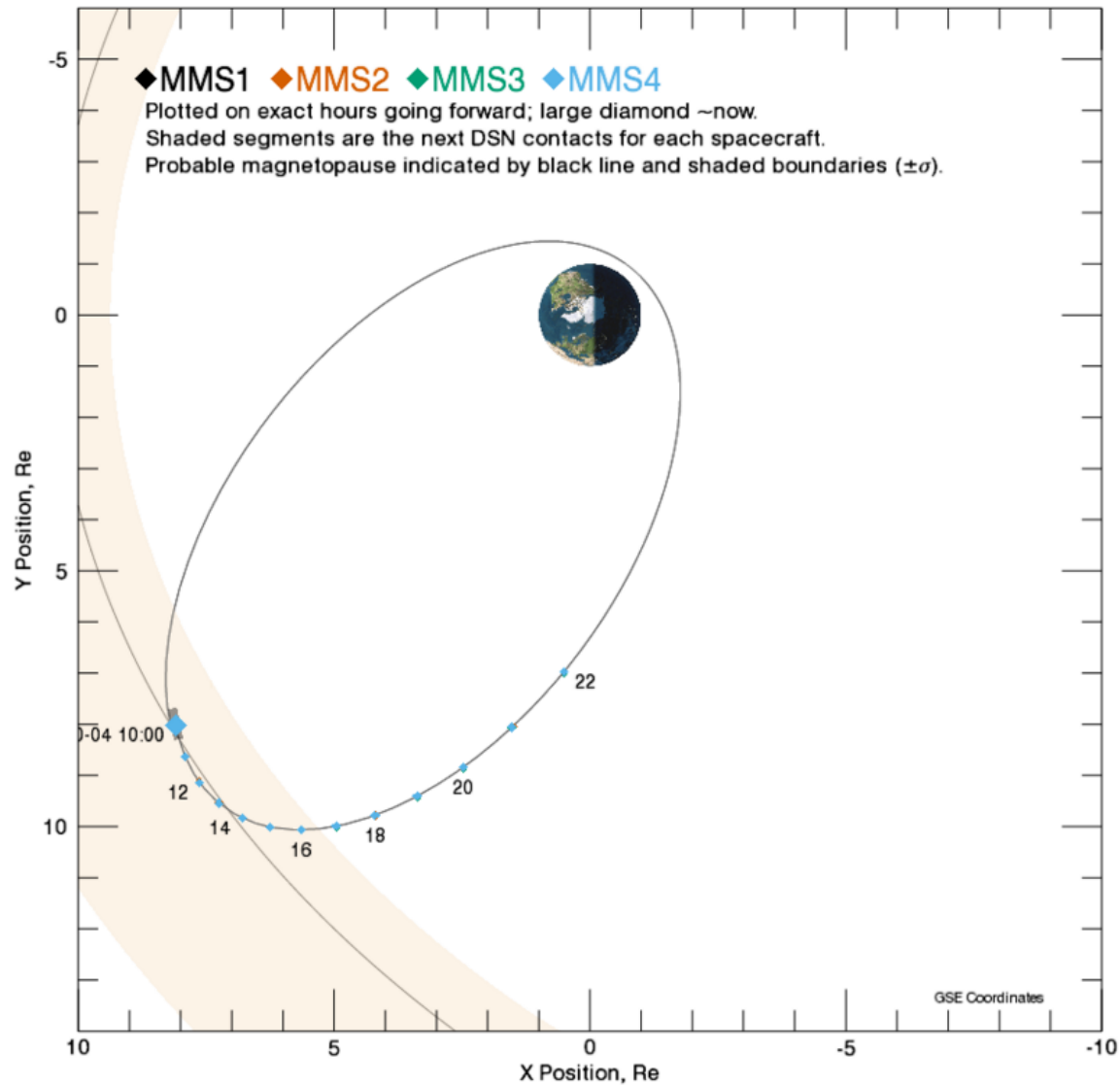
- Performed a preliminary scan through v1.1 Fast Survey Quicklook Plots
 - Oct. 1st – Dec 1st
 - Looked for field-aligned structures in the medium energy band that occurs in the magnetosphere (or perhaps not in the magnetosheath)
 - Noted candidate dates and ‘drilled down’
 - Oct 4 10:00-18:00
 - Oct 5 – 14:00-18:00
 - Nov 4 – 02:00-04:00; 06:00-08:00
 - Nov 12 – 02:00-04:00

ORBIT GEOMETRY AND APPROXIMATE CANDIDATE LOCATION

MMS GSE X-Y Evolution
3/14/15 - 12/23/15

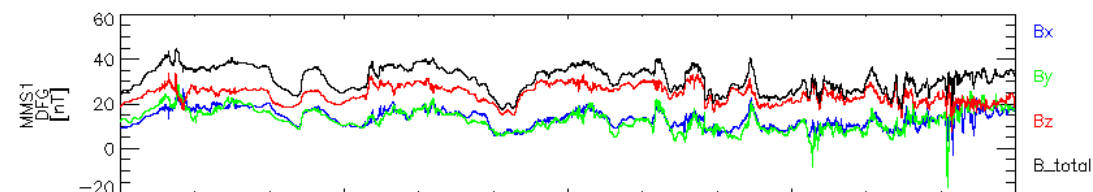


MMS Location for 2015-10-04 10:00:00 UTC



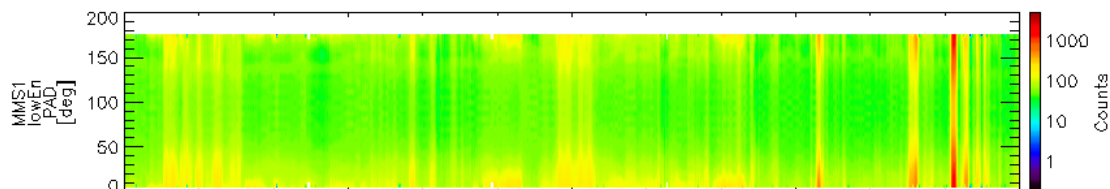
OCT. 4 – 10:00-12:00

\vec{B}

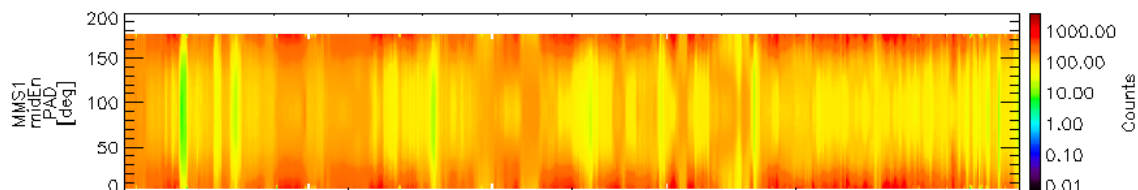


Pitch Angle Dist.

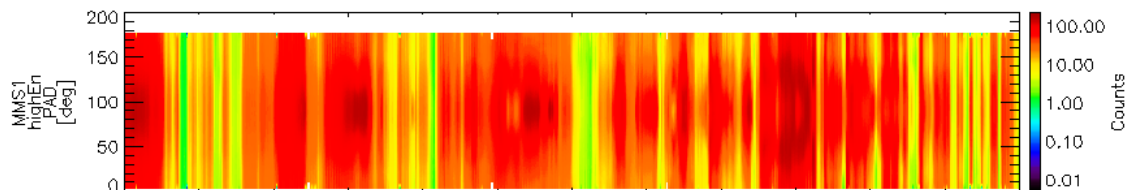
$E_{low}: 10 \dots 200 \text{ eV}$



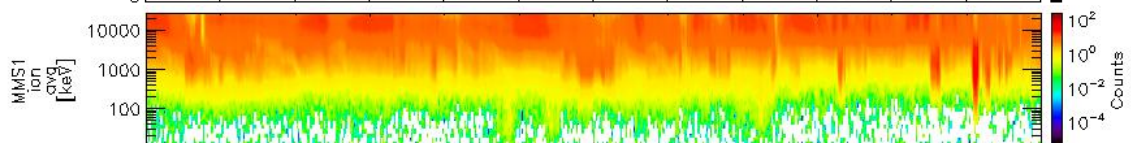
$E_{med}: 200 \dots 2000 \text{ eV}$



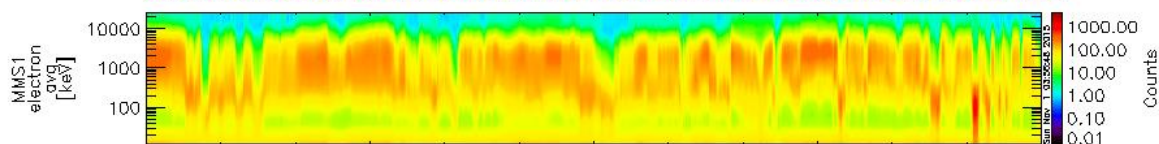
$E_{hi}: 2 \dots 30 \text{ KeV}$



E-t spectrogram
(ions)



E-t spectrogram
(electrons)



R (Re)
X (Re)
Y (Re)
Z (Re)
hhmm
2015 Oct 04

11.6
-6.3
-8.7
-4.2
1030

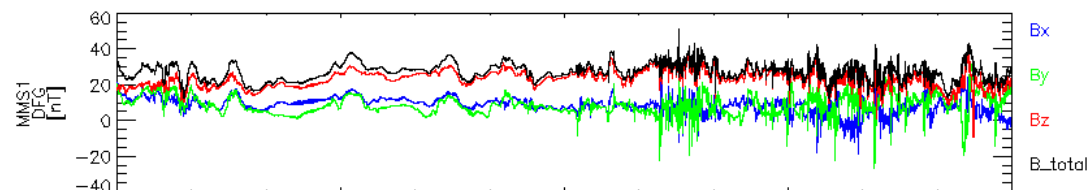
11.7
-6.2
-9.0
-4.3
1100

11.8
-6.0
-9.2
-4.5
1130

11.9
-5.8
-9.4
-4.6
1200

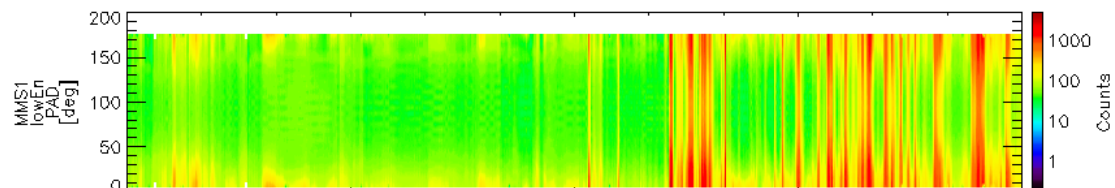
OCT. 4 – 12:00-14:00

\vec{B}

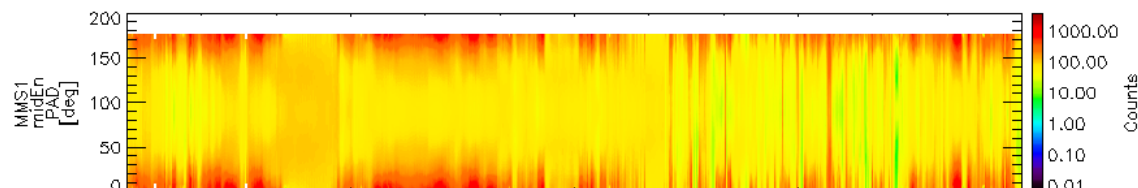


Pitch Angle Dist.

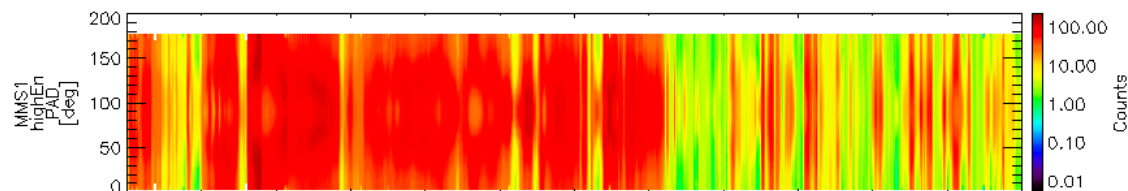
$E_{low}: 10 \dots 200 \text{ eV}$



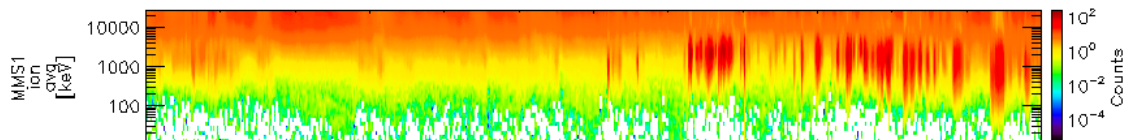
$E_{med}: 200 \dots 2000 \text{ eV}$



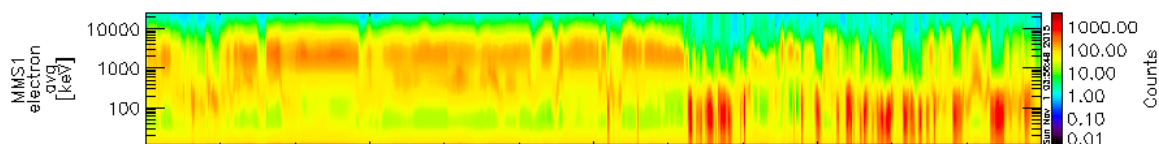
$E_{hi}: 2 \dots 30 \text{ KeV}$



E-t spectrogram
(ions)



E-t spectrogram
(electrons)



R (Re)
X (Re)
Y (Re)
Z (Re)
hhmm
2015 Oct 04

12.0
-5.6
-9.6
-4.7
1230

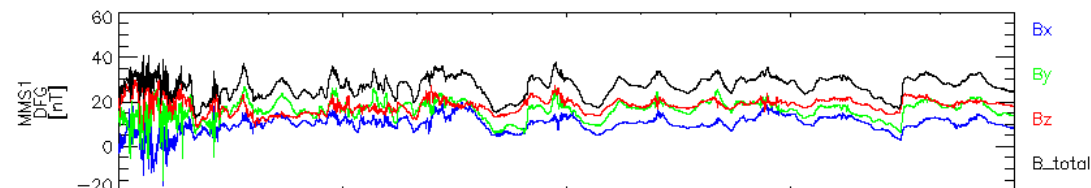
12.0
-5.4
-9.6
-4.8
1300

12.0
-5.1
-9.7
-4.8
1330

12.0
-4.8
-9.8
-4.9
1400

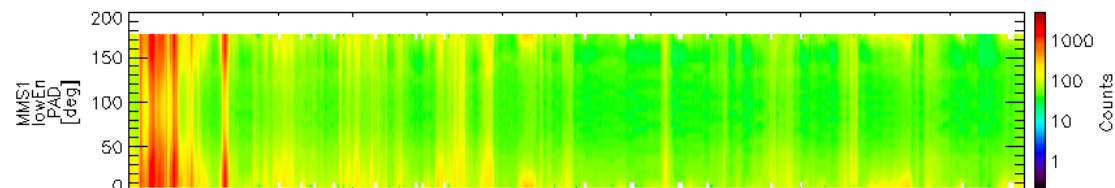
OCT. 4 – 14:00-16:00

\vec{B}

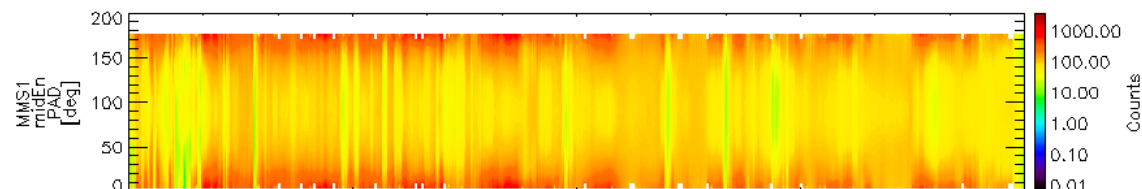


Pitch Angle Dist.

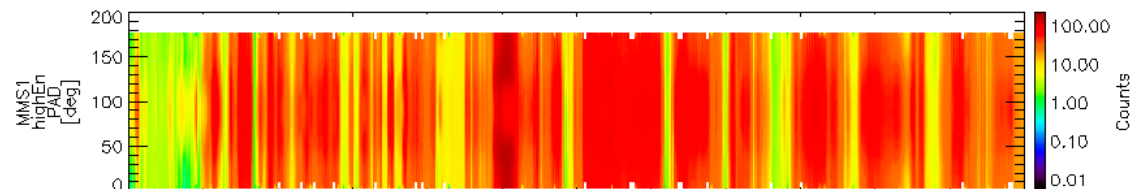
$E_{low}: 10 \dots 200 \text{ eV}$



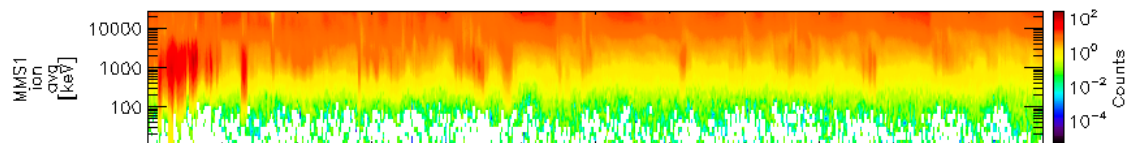
$E_{med}: 200 \dots 2000 \text{ eV}$



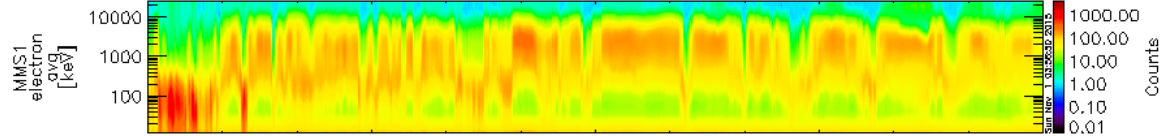
$E_{hi}: 2 \dots 30 \text{ KeV}$



E-t spectrogram
(ions)



E-t spectrogram
(electrons)



R (Re)
X (Re)
Y (Re)
Z (Re)
hhmm
2015 Oct 04

11.6
1430

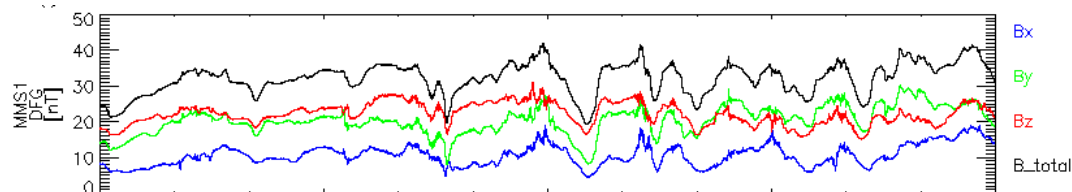
11.6
1500

11.7
1530

11.7
1600

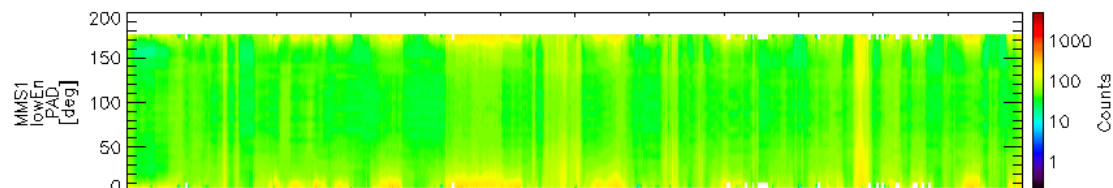
OCT. 4 – 16:00-18:00

\vec{B}

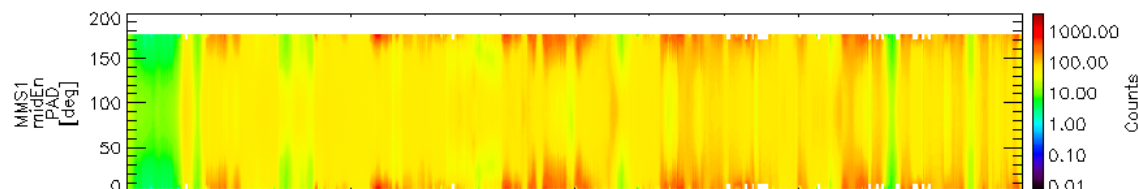


Pitch Angle Dist.

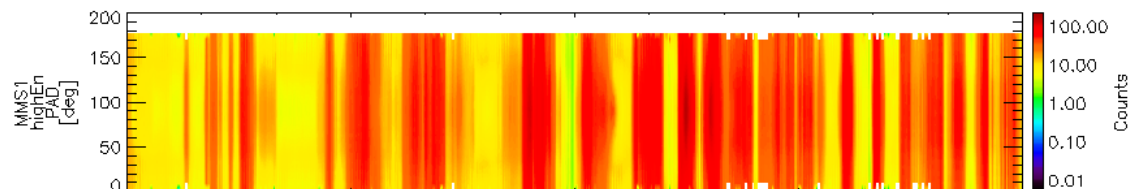
$E_{low}: 10 \dots 200 \text{ eV}$



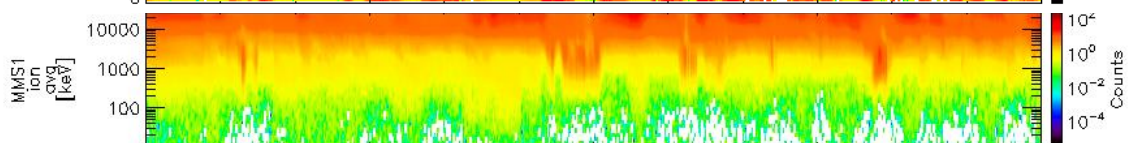
$E_{med}: 200 \dots 2000 \text{ eV}$



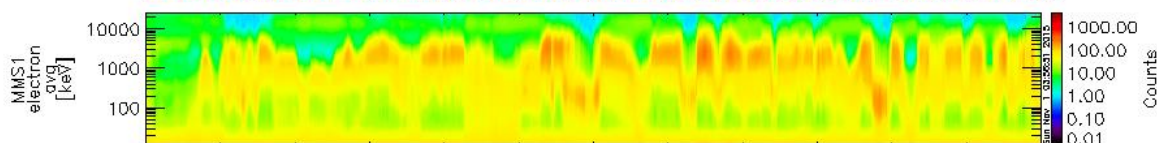
$E_{hi}: 2 \dots 30 \text{ KeV}$



E-t spectrogram
(ions)



E-t spectrogram
(electrons)



R (Re)
X (Re)
Y (Re)
Z (Re)
hhmm
2015 Oct 04

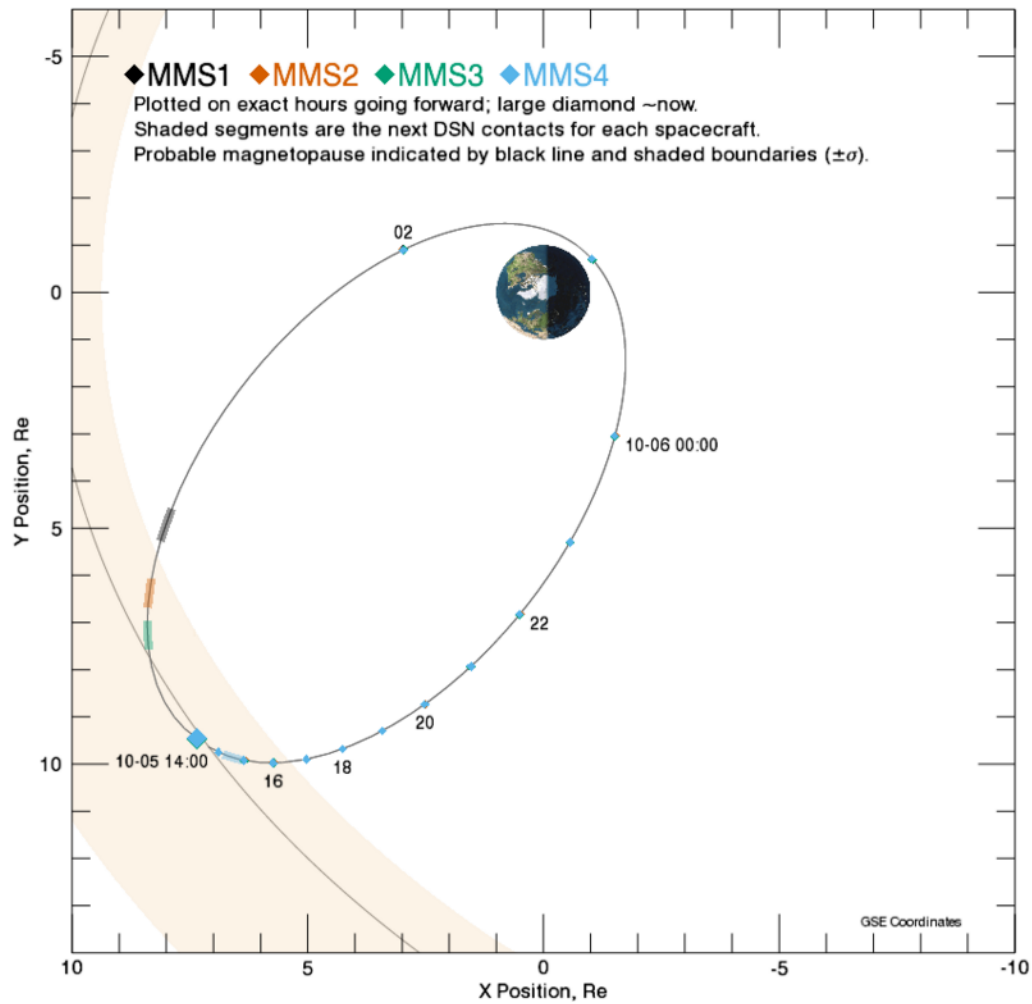
11.4
-3.5
-9.7
-5.0
1630

11.2
-3.0
-9.6
-5.0
1700

10.9
-2.6
-9.4
-4.9
1730

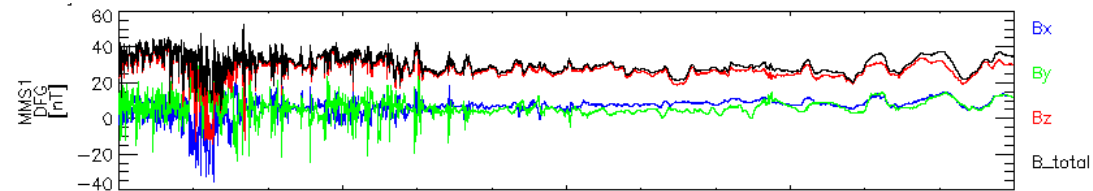
10.7
-2.2
-9.2
-4.8
1800

MMS Location for 2015-10-05 13:00:00 UTC



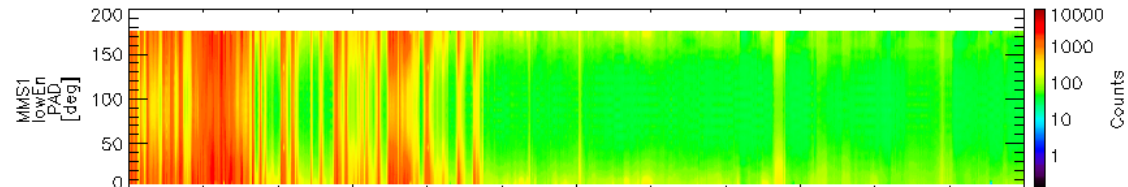
OCT. 5 – 14:00-16:00

\vec{B}

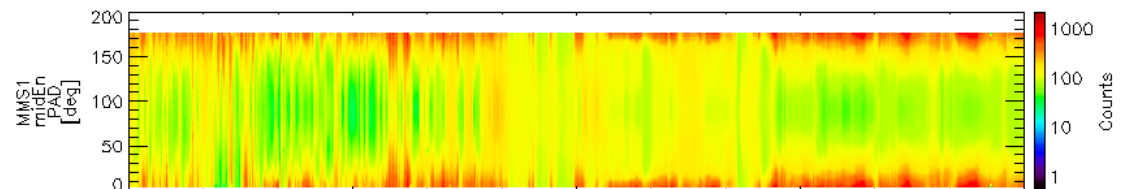


Pitch Angle Dist.

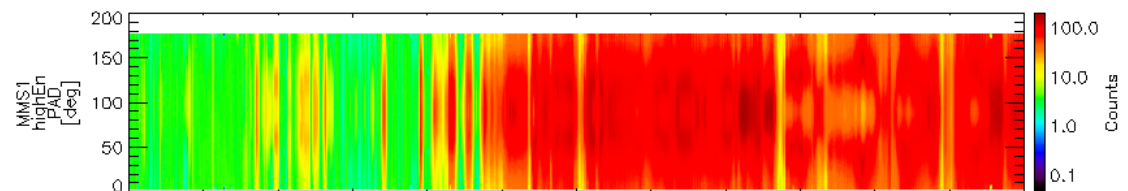
$E_{low}: 10 \dots 200 \text{ eV}$



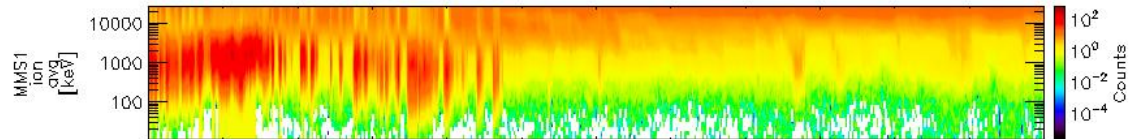
$E_{med}: 200 \dots 2000 \text{ eV}$



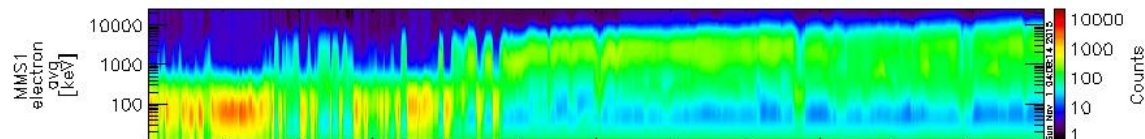
$E_{hi}: 2 \dots 30 \text{ KeV}$



E-t spectrogram
(ions)



E-t spectrogram
(electrons)



R (Re)
X (Re)
Y (Re)
Z (Re)
hhmm
2015 Oct 05

11.9
-4.5
-9.8
-5.0
1430

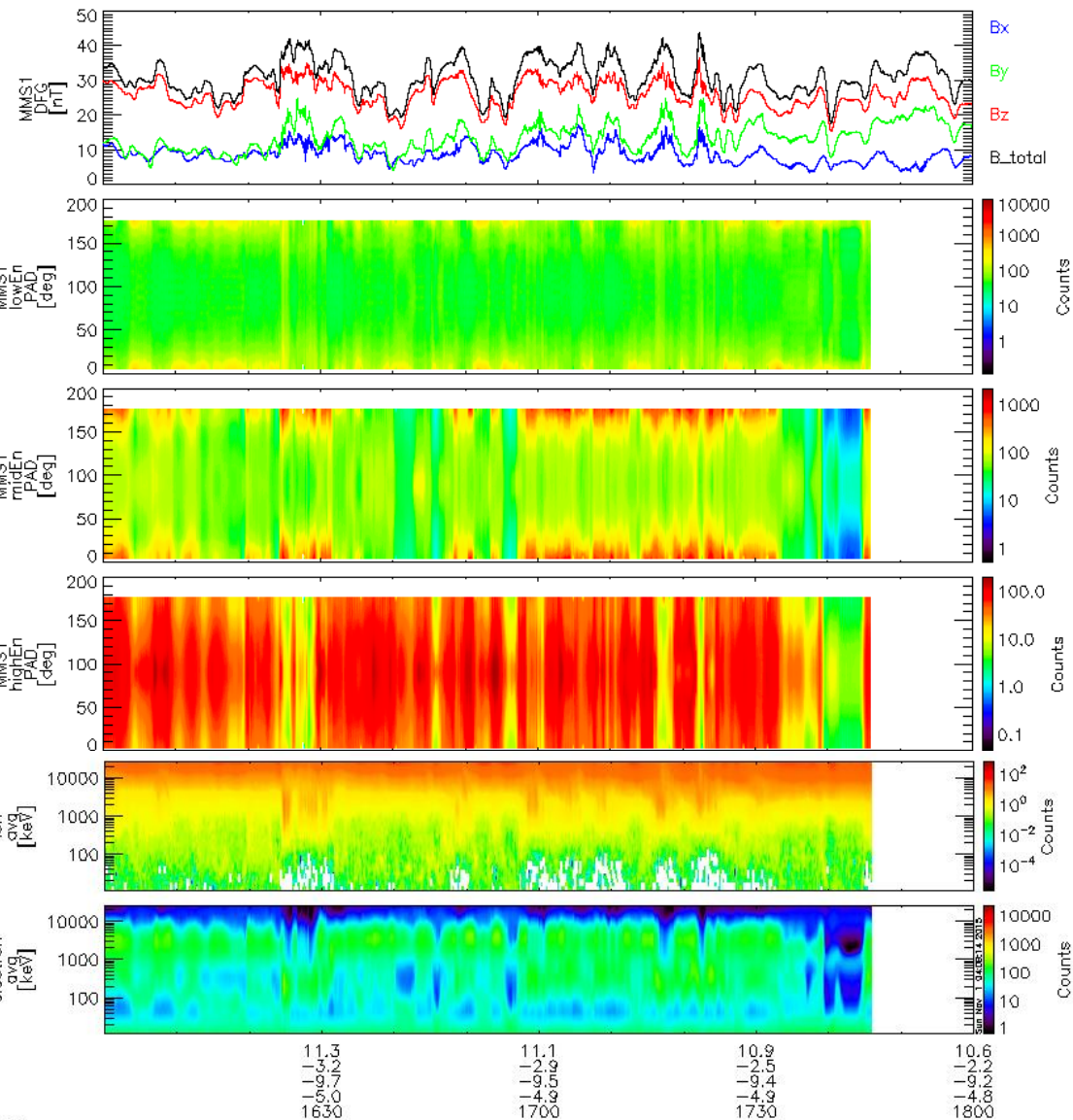
11.8
-4.3
-9.8
-5.0
1500

11.7
-3.9
-9.8
-5.0
1530

11.5
-3.5
-9.5
-5.0
1600

OCT. 5 – 16:00-18:00

\vec{B}



Pitch Angle Dist.

E_{low} : 10 ... 200 eV

E_{med} : 200 ... 2000 eV

E_{hi} : 2 ... 30 KeV

E-t spectrogram
(ions)

E-t spectrogram
(electrons)

R (Re)
X (Re)
Y (Re)
Z (Re)
hhmm
2015 Oct 05

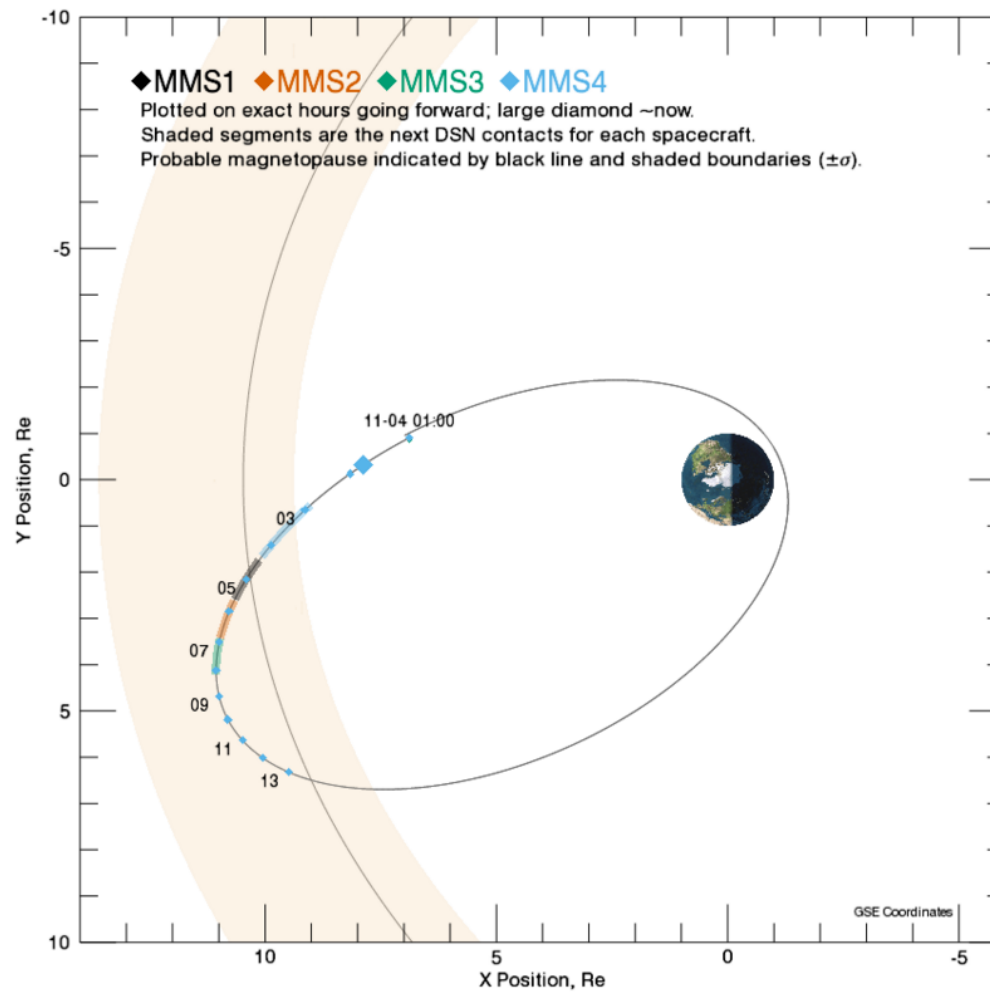
11.3
-9.2
-9.7
-5.0
1630

11.1
-2.9
-9.5
-4.9
1700

10.9
-2.5
-9.4
-4.9
1730

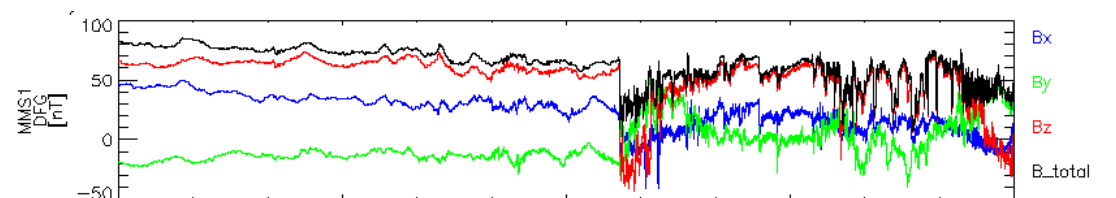
10.6
-2.3
-9.3
-4.8
1800

MMS Location for 2015-11-04 01:45:00 UTC



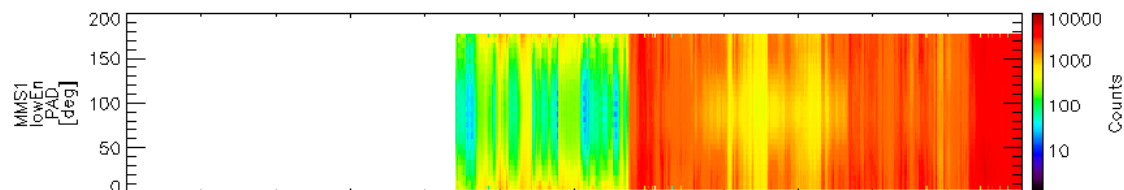
Nov 4 – 02:00-04:00

\vec{B}

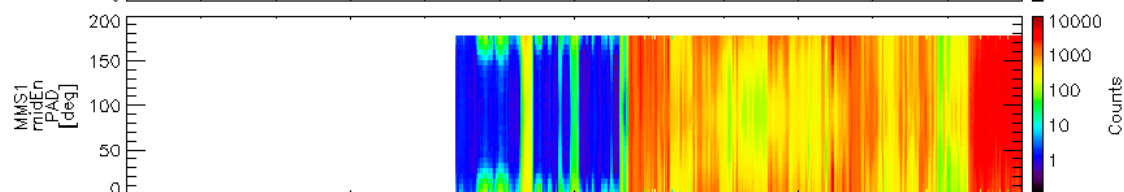


Pitch Angle Dist.

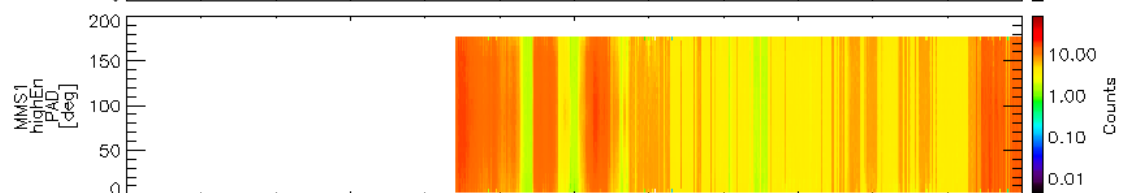
$E_{low}: 10 \dots 200 \text{ eV}$



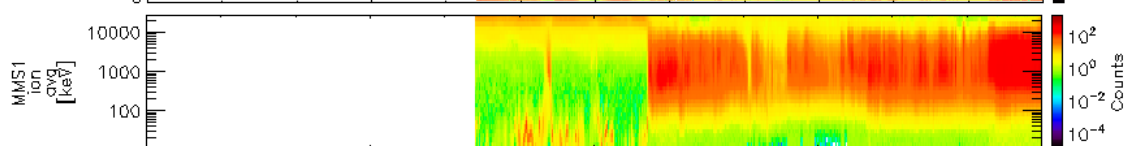
$E_{med}: 200 \dots 2000 \text{ eV}$



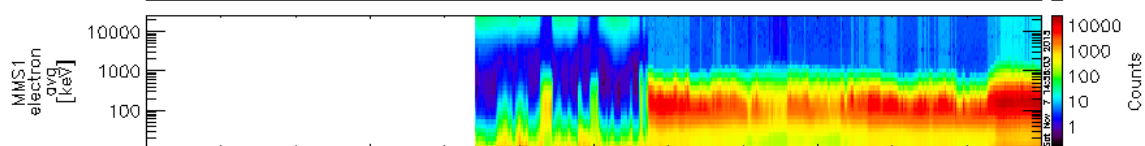
$E_{hi}: 2 \dots 30 \text{ KeV}$



E-t spectrogram
(ions)

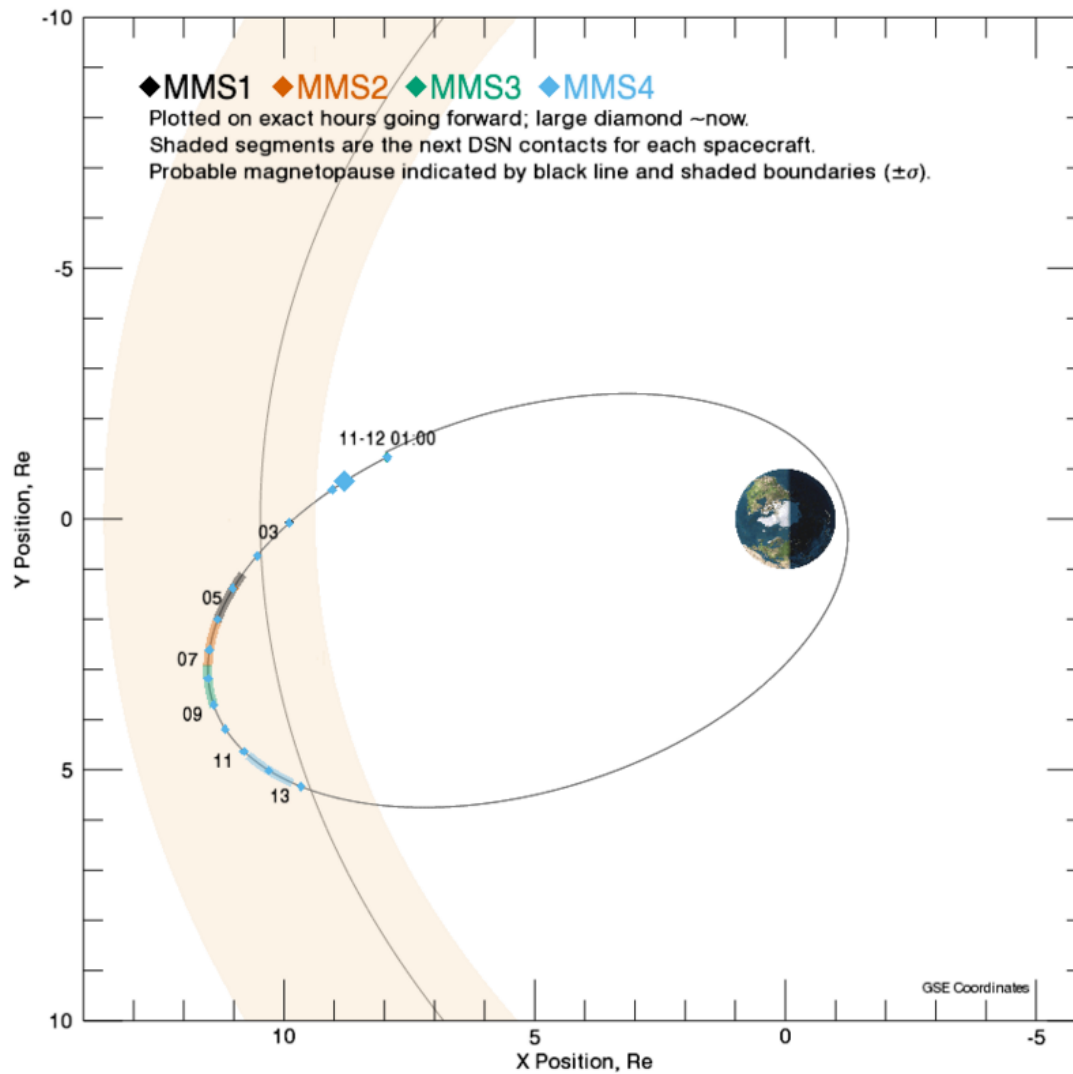


E-t spectrogram
(electrons)



| R (Re) | -6.4 | -6.4 | -6.5 | -6.5 |
|-------------|------|------|------|------|
| X (Re) | -5.4 | -5.4 | -5.4 | -5.4 |
| Y (Re) | -2.6 | -2.6 | -2.6 | -2.6 |
| Z (Re) | -3.1 | -3.1 | -3.1 | -3.1 |
| hhmm | 0230 | 0300 | 0330 | 0400 |
| 2015 Nov 04 | | | | |

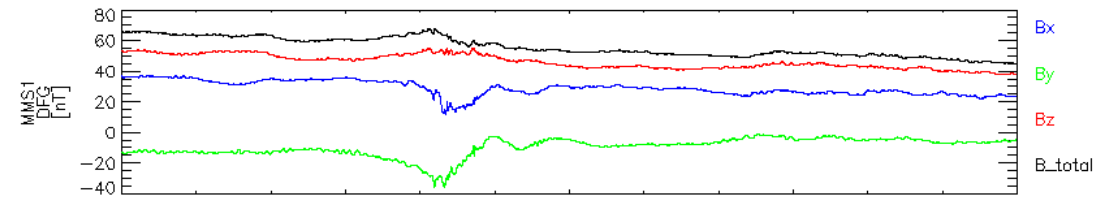
MMS Location for 2015-11-12 01:45:00 UTC



Nov 12 – 02:00-04:00

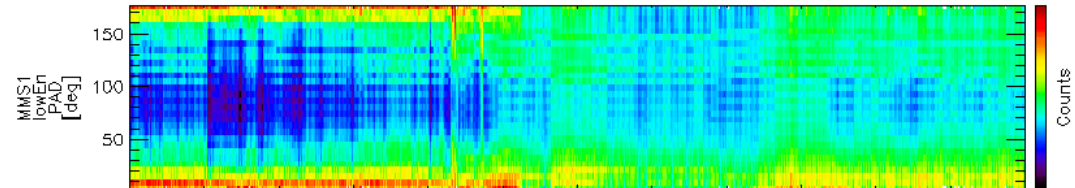
Caution: low
count rates

\vec{B}

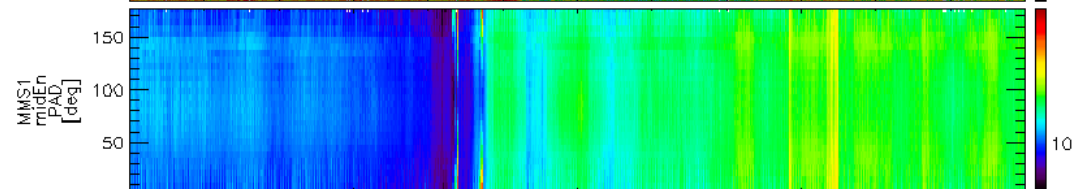


Pitch Angle Dist.

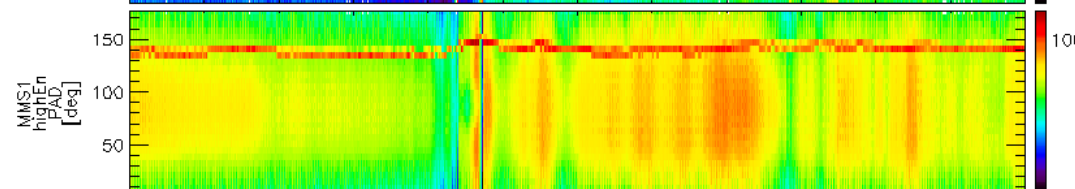
$E_{low}: 10 \dots 200 \text{ eV}$



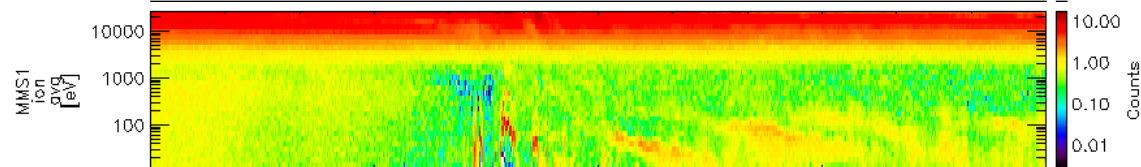
$E_{med}: 200 \dots 2000 \text{ eV}$



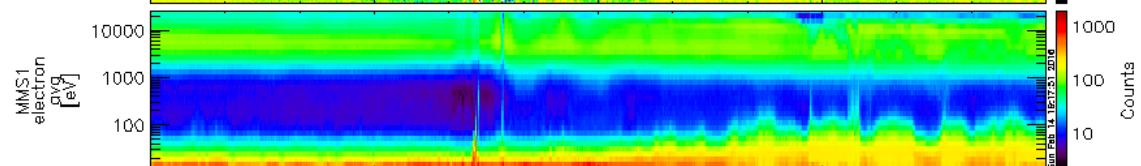
$E_{hi}: 2 \dots 30 \text{ KeV}$



E-t spectrogram
(ions)



E-t spectrogram
(electrons)



mms1 X(Re,GSM)
mms1 Y(Re,GSM)
mms1 Z(Re,GSM)
mms1 R(Re,GSM)
hhmm
2015 Nov 12

| Time | X(Re,GSM) | Y(Re,GSM) | Z(Re,GSM) | R(Re,GSM) |
|------|-----------|-----------|-----------|-----------|
| 0230 | 9.5 | -0.2 | -0.4 | 9.9 |
| 0300 | 9.9 | 0.1 | -0.4 | 10.2 |
| 0330 | 10.2 | 0.4 | -0.5 | 10.6 |
| 0400 | 10.5 | 0.7 | -0.5 | 10.6 |

Nov 12 – 12:00-14:00

\vec{B}

Pitch Angle Dist.

$E_{low}: 10 \dots 200 \text{ eV}$

$E_{med}: 200 \dots 2000 \text{ eV}$

$E_{hi}: 2 \dots 30 \text{ KeV}$

E-t spectrogram
(ions)

E-t spectrogram
(electrons)

