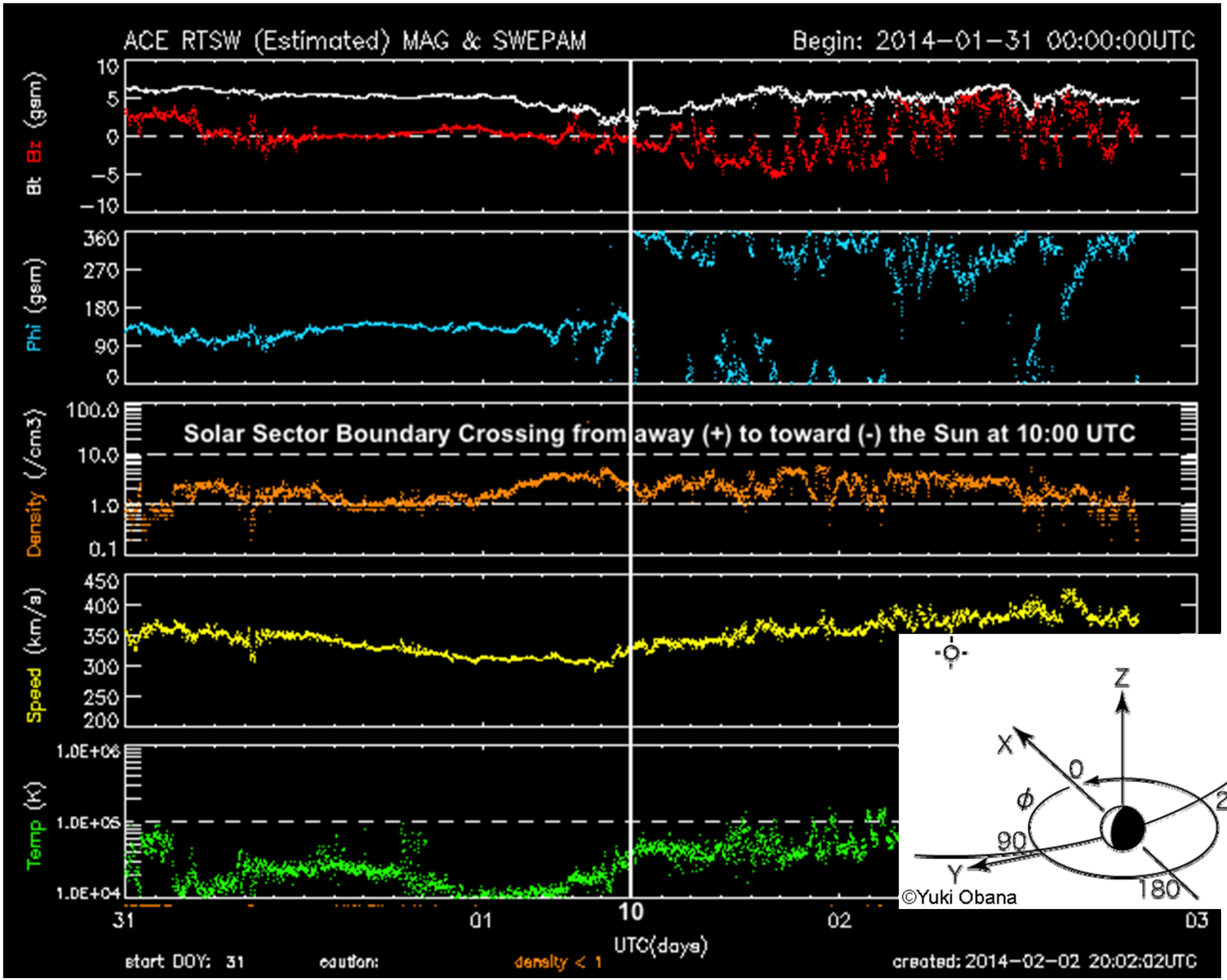

http://www.suspiciousObserverscollective.org/1/post/2014/02/solar-sector-boundary-crossing-on-february-1st-2014-research-notes.html

A.3.3.4 Geocentric Solar Ecliptic System

A.3.3.4.1 DEFINITION The geocentric solar ecliptic (GSE) system has its x-axis pointing from the earth toward the sun, and its y-axis is chosen to be in the ecliptic plane pointing toward dusk (thus opposing planetary motion). Its z-axis is parallel to the ecliptic pole. Relative to an inertial system, this system has a yearly rotation.

A.3.3.4.2 USES This system is used to display satellite trajectories, interplanetary magnetic-field observations, and data on solar-wind velocity. The system is useful for the latter display because the aberration of the solar wind caused by the earth's motion can easily be removed in this system. The velocity of the earth is approximately 30 $km \cdot s^{-1}$ in the $-y$-direction. Because the only important effect of the earth's orbital motion in solar-terrestrial relationships is to cause the aberration, other choices for the orientation of the y- and z-axes about the x-axis have been used. These are to be discussed later. Longitude, as with the geographic system, is measured in the x–y plane from the x-axis toward the y-axis, and latitude is the angle out of the x–y plane, positive for positive z-components.

A3.3 in M. G. Kivelson and C. T. Russell (1995)

A.3.3.6 Geocentric Solar Magnetospheric System

A.3.3.6.1 DEFINITION The geocentric solar magnetospheric (GSM) system, like both the GSE and GSEQ systems, has its x-axis from the earth to the sun. The y-axis is defined to be perpendicular to the earth's magnetic dipole, so that the x–z plane contains the dipole axis. The positive z-axis is chosen to be in the same sense as the northern magnetic pole. The difference between the GSM system and the GSE and GSEQ systems is simply a rotation about the x-axis.

A.3.3.6.2 USES This system is useful for displaying magnetopause and shock-boundary positions, magnetosheath and magnetotail magnetic fields, and magnetosheath solar-wind velocities, because the orientation of the magnetic-dipole axis alters the otherwise cylindrical symmetry of the solar-wind flow. It also is used in models of magnetopause currents. It reduces the three-dimensional motion of the earth's

A3.3 in M. G. Kivelson and C. T. Russell (1995)

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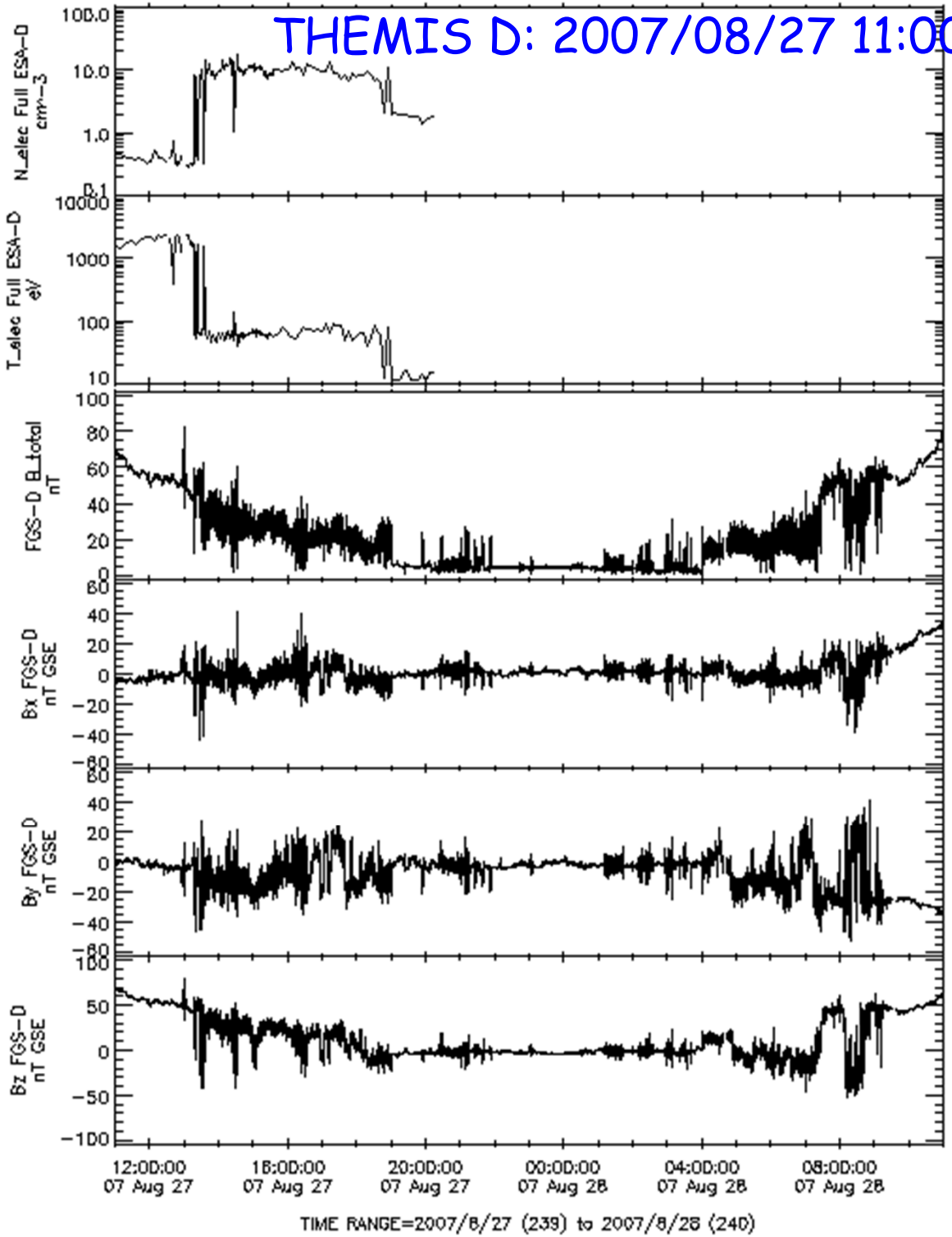

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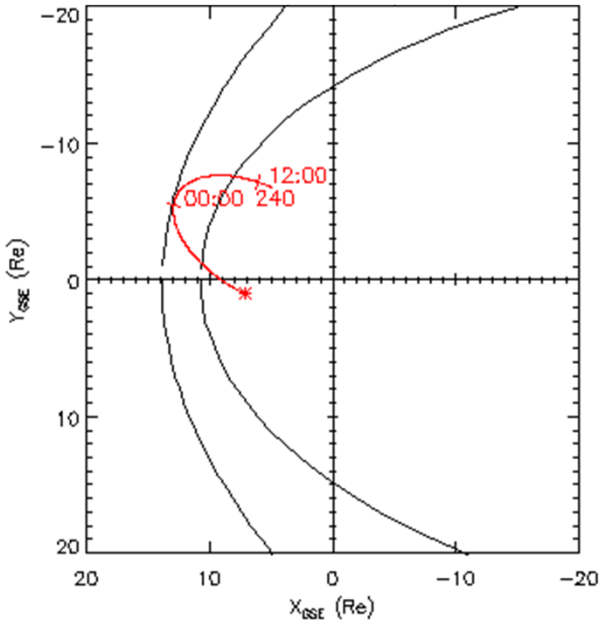
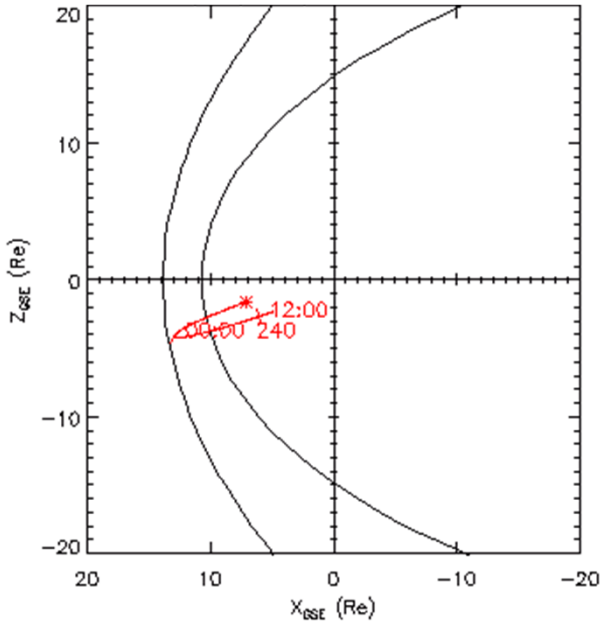
B

B_x

B_y

B_z





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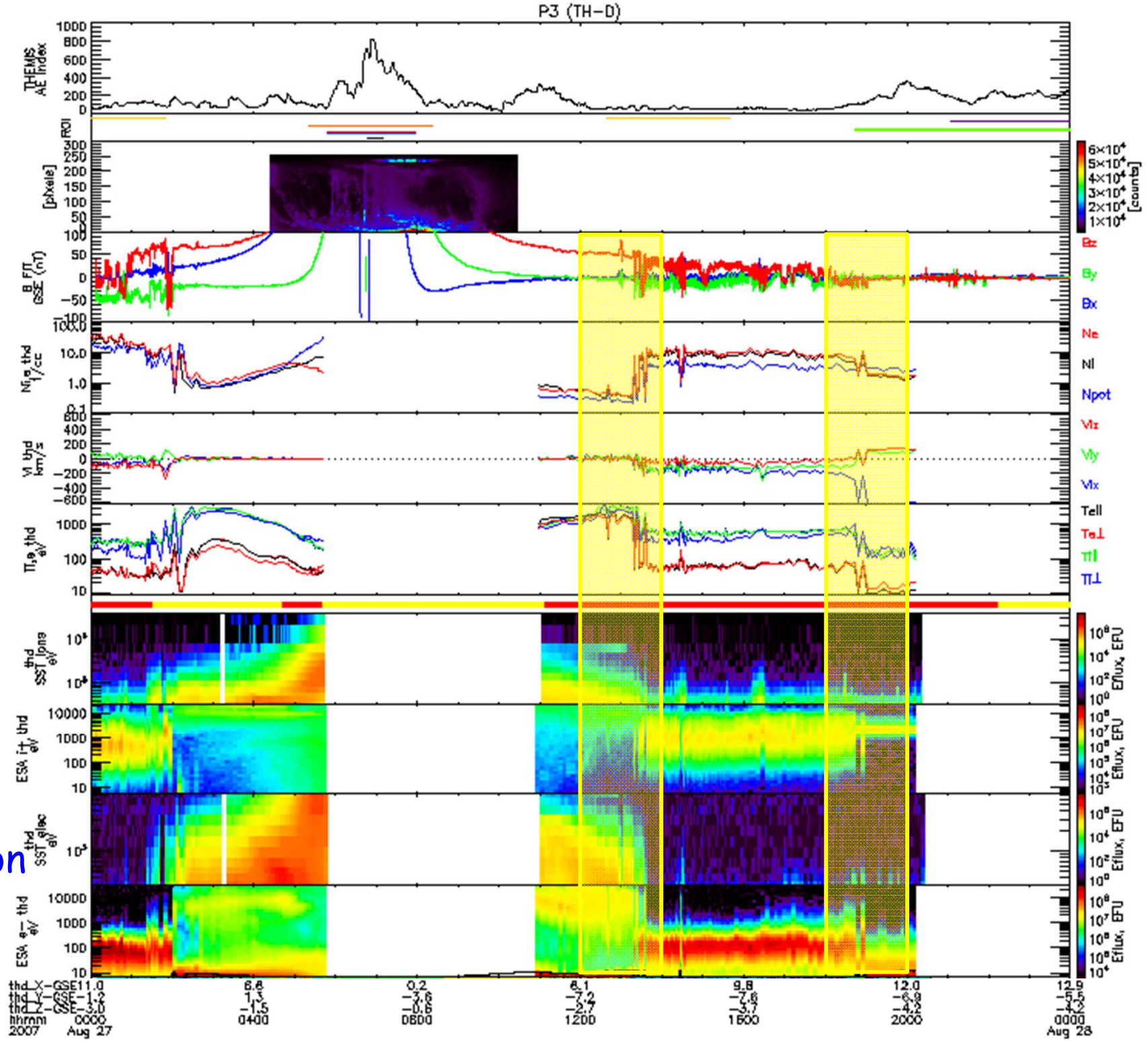

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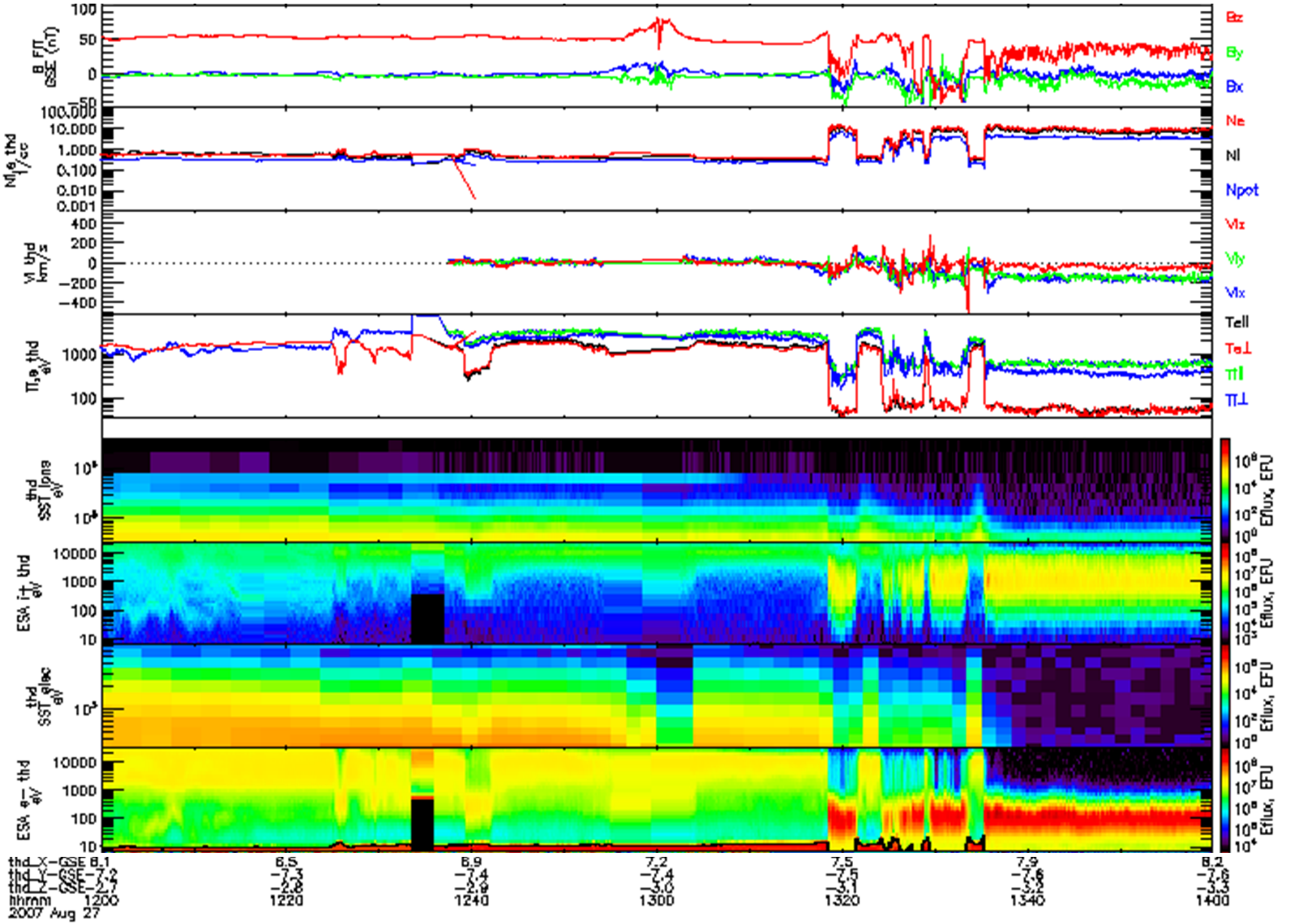

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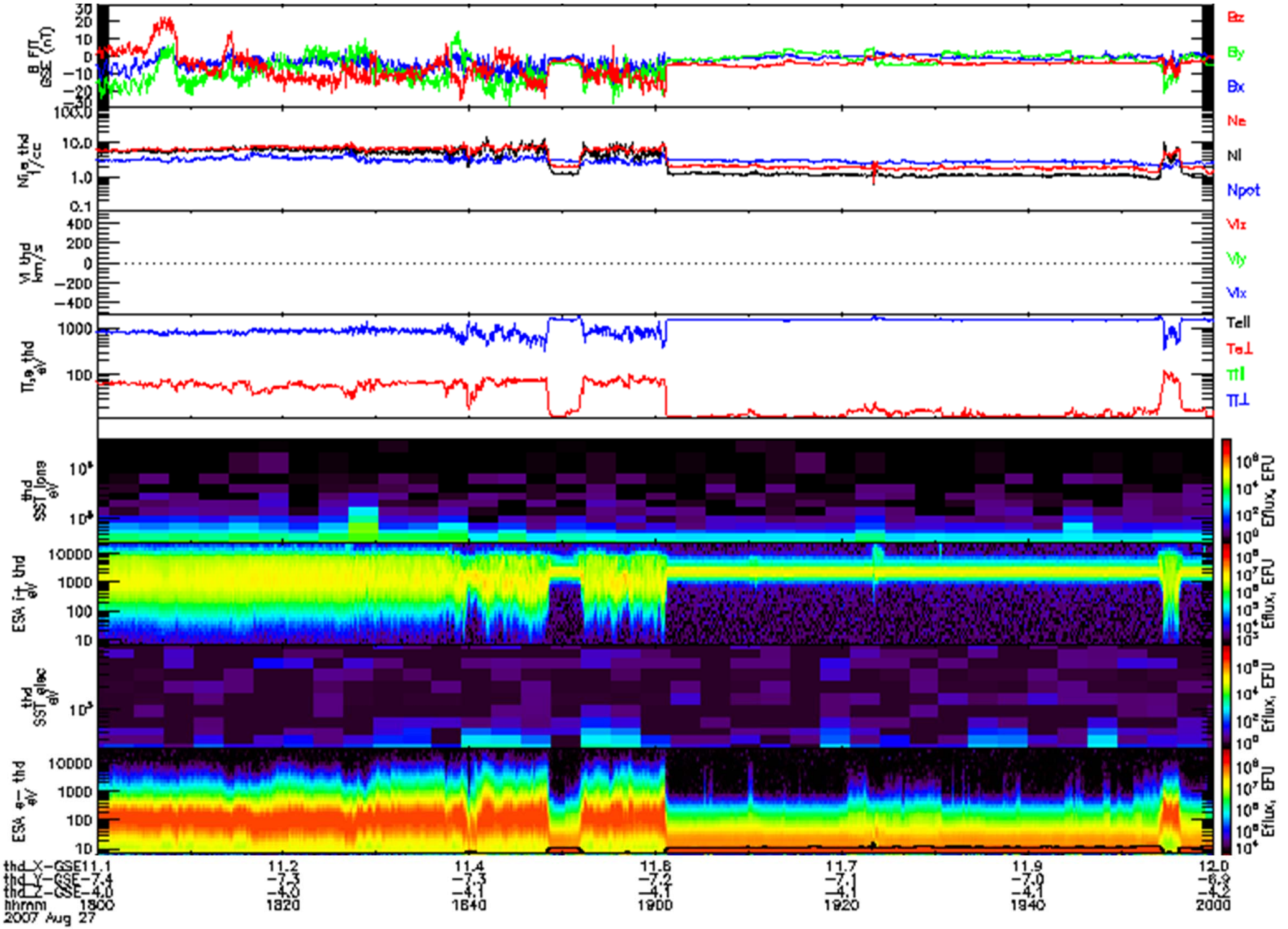

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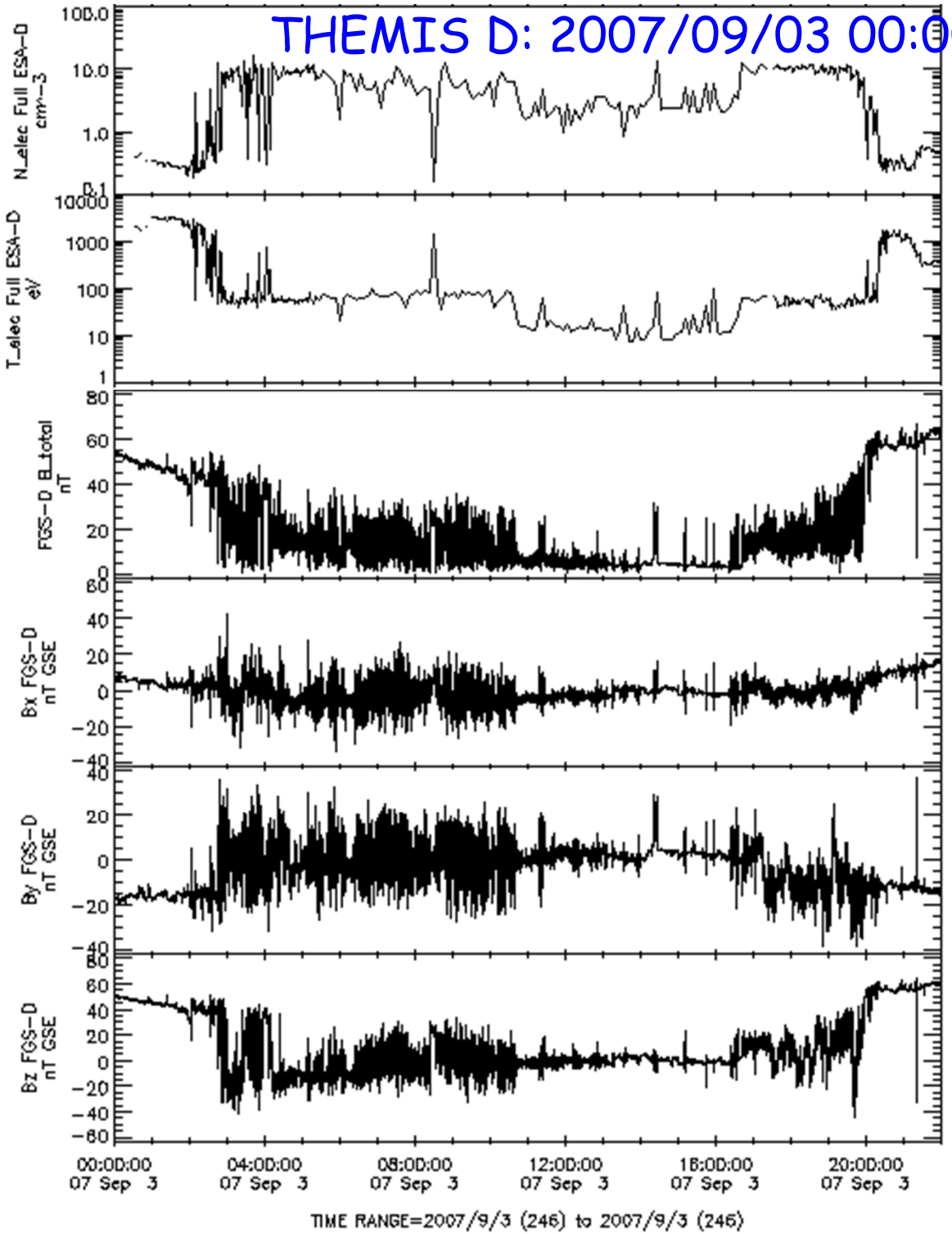

N_e

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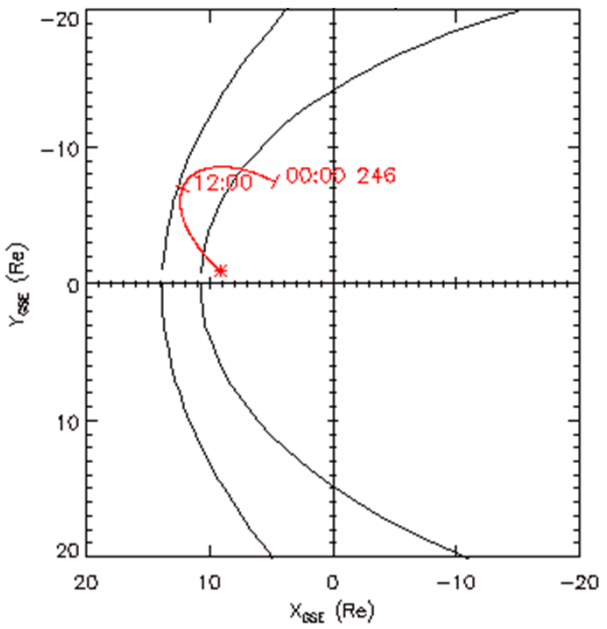
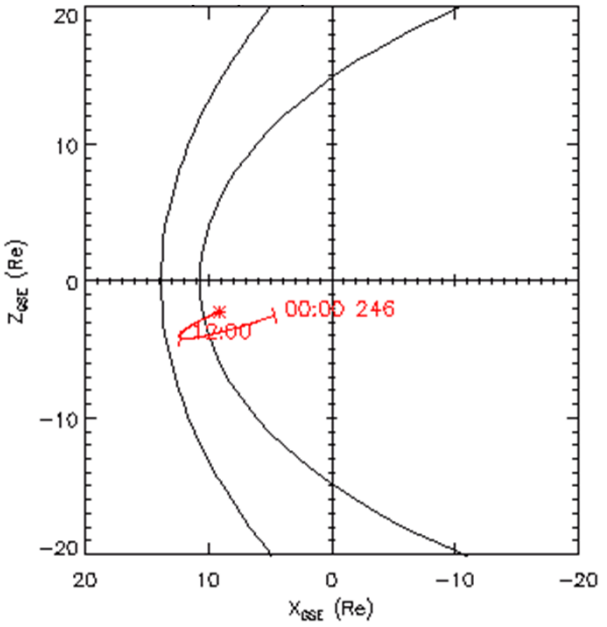
B

B_x

B_y

B_z





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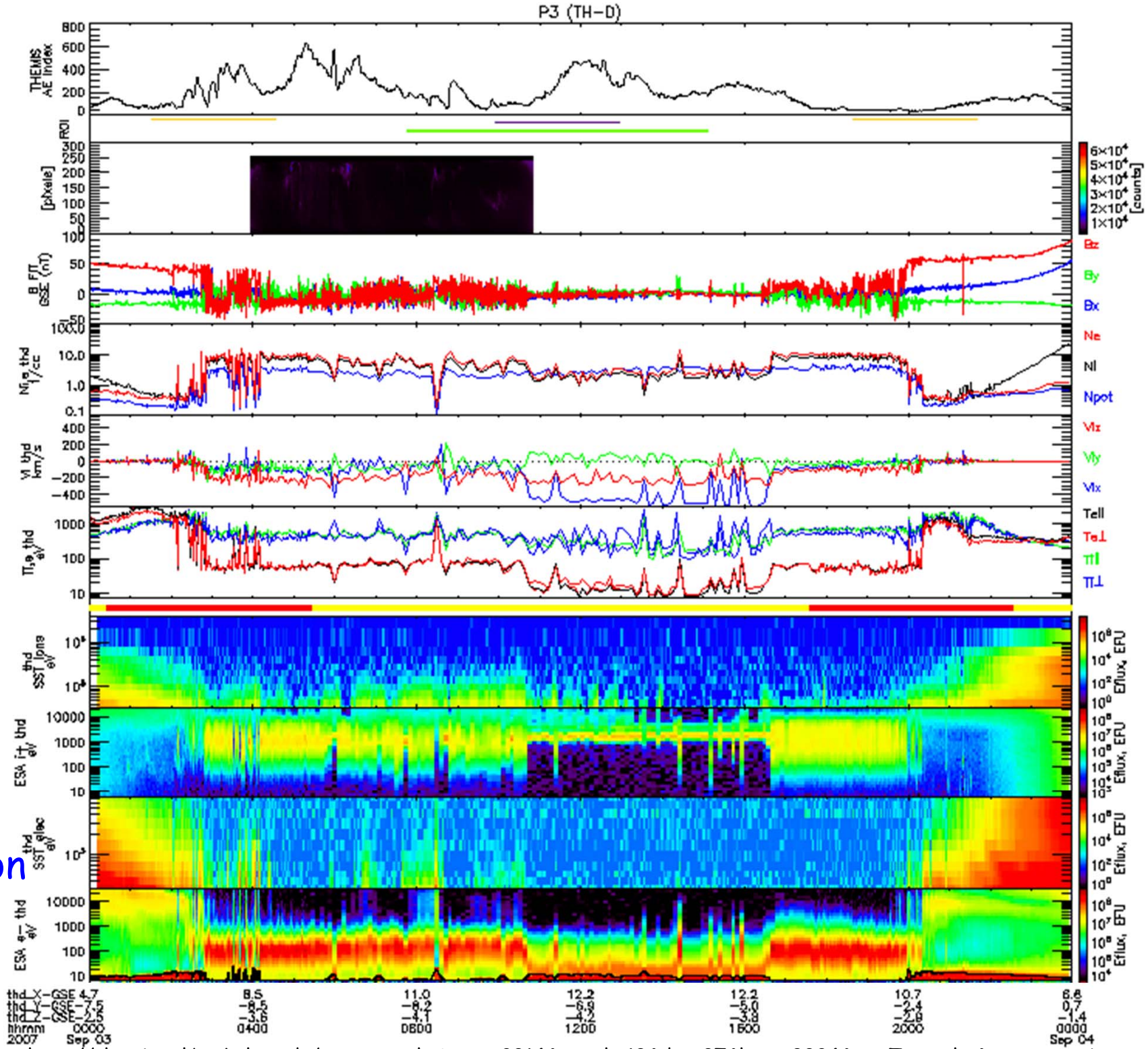

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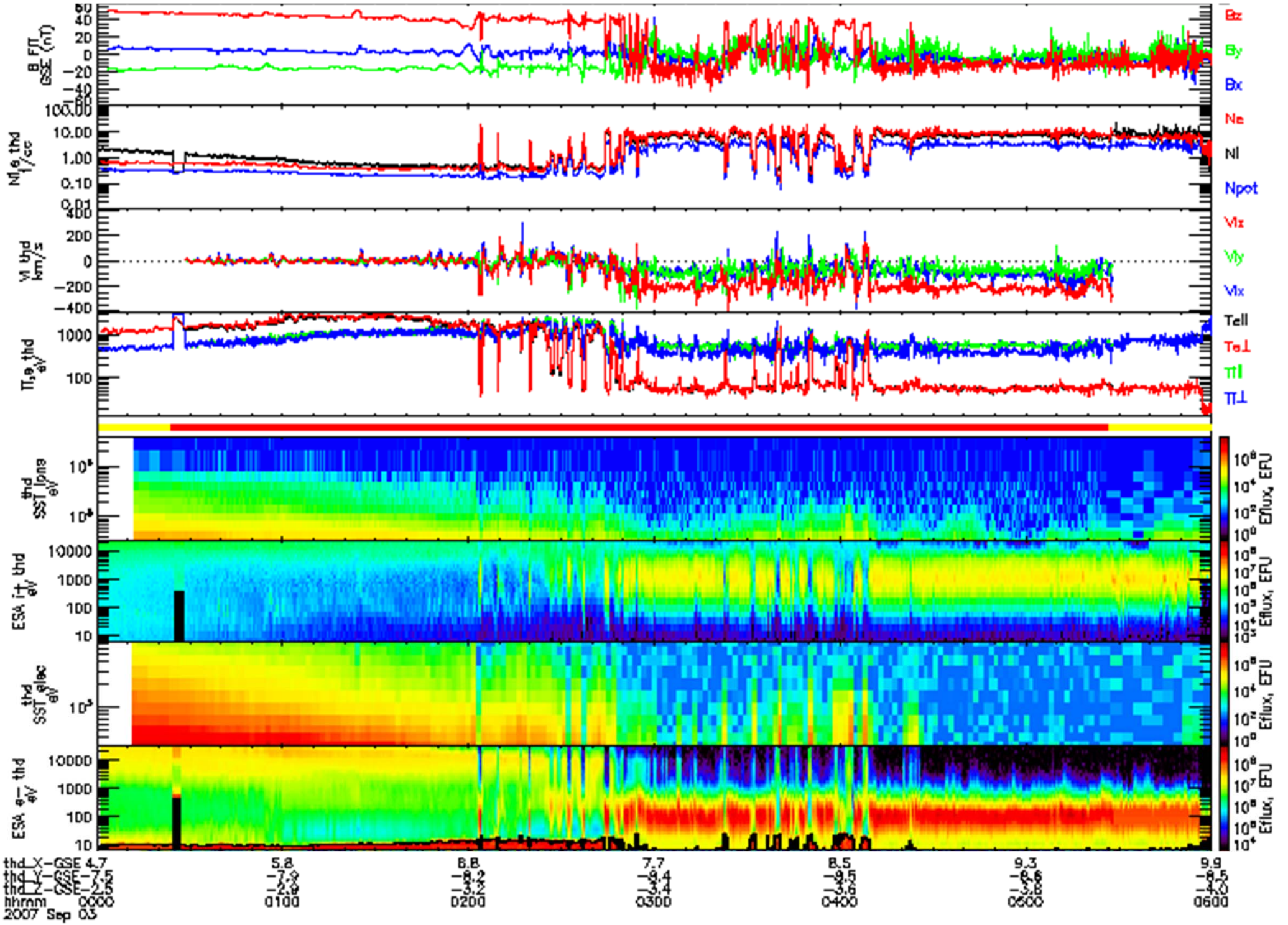

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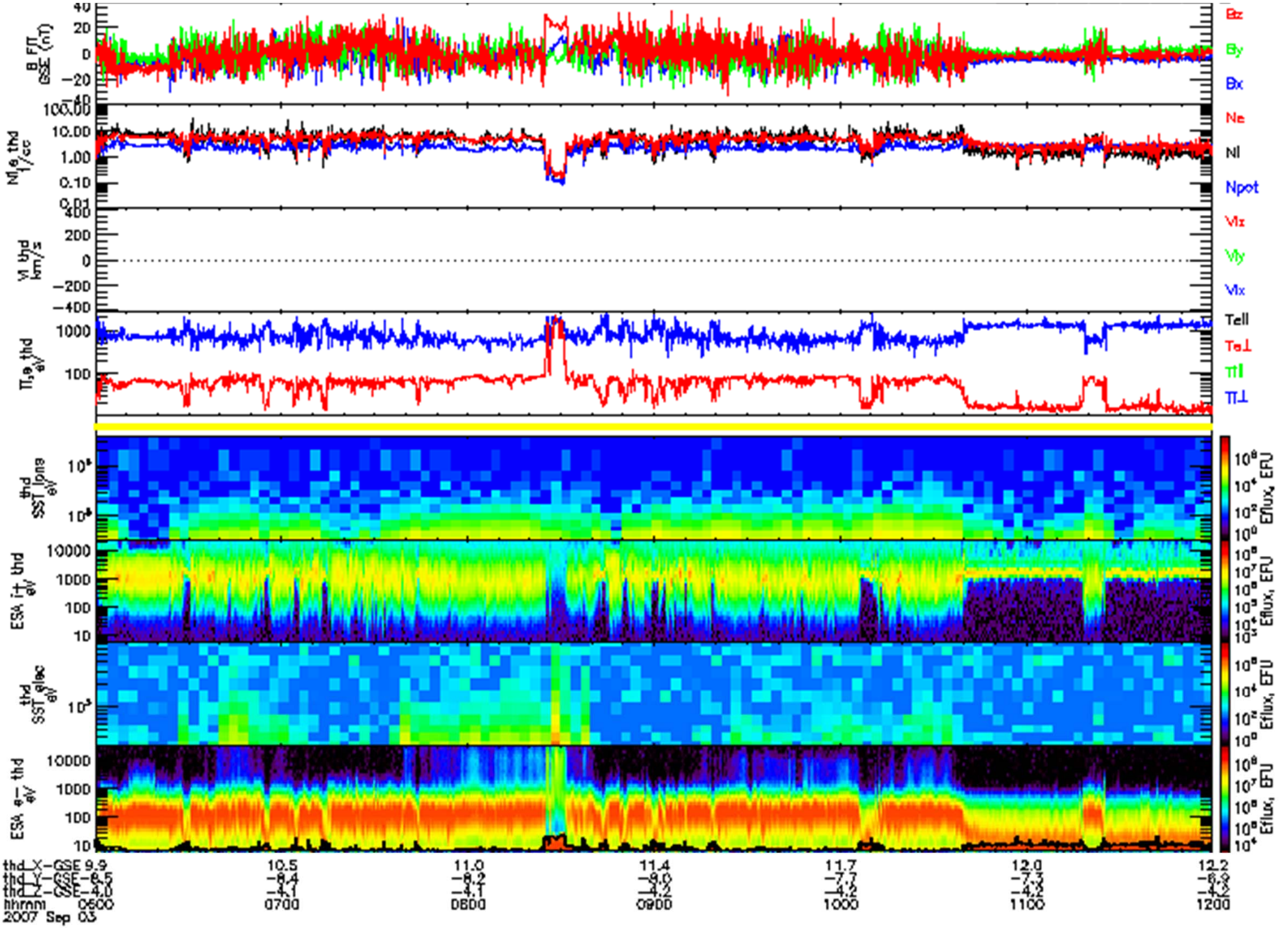

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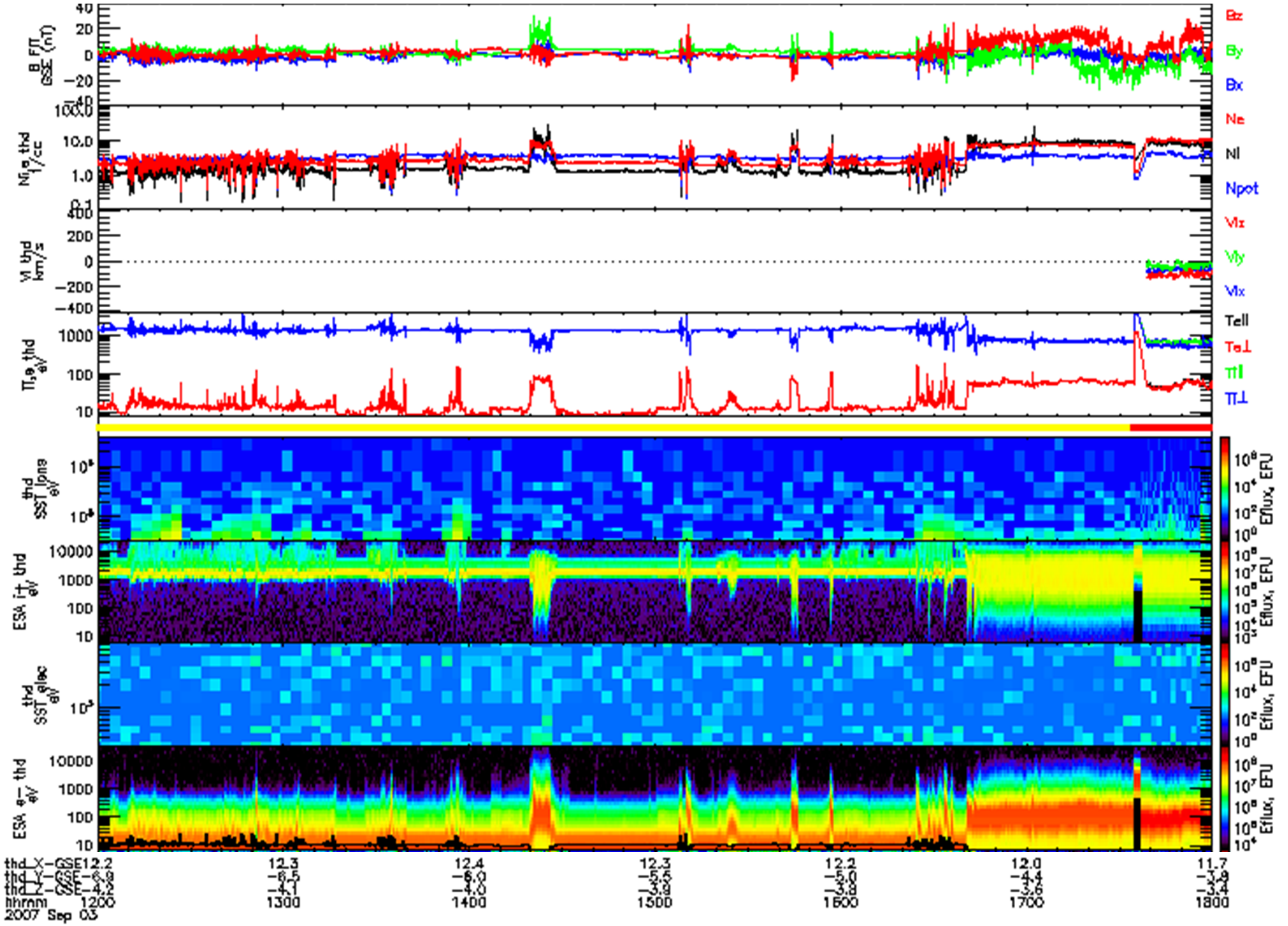

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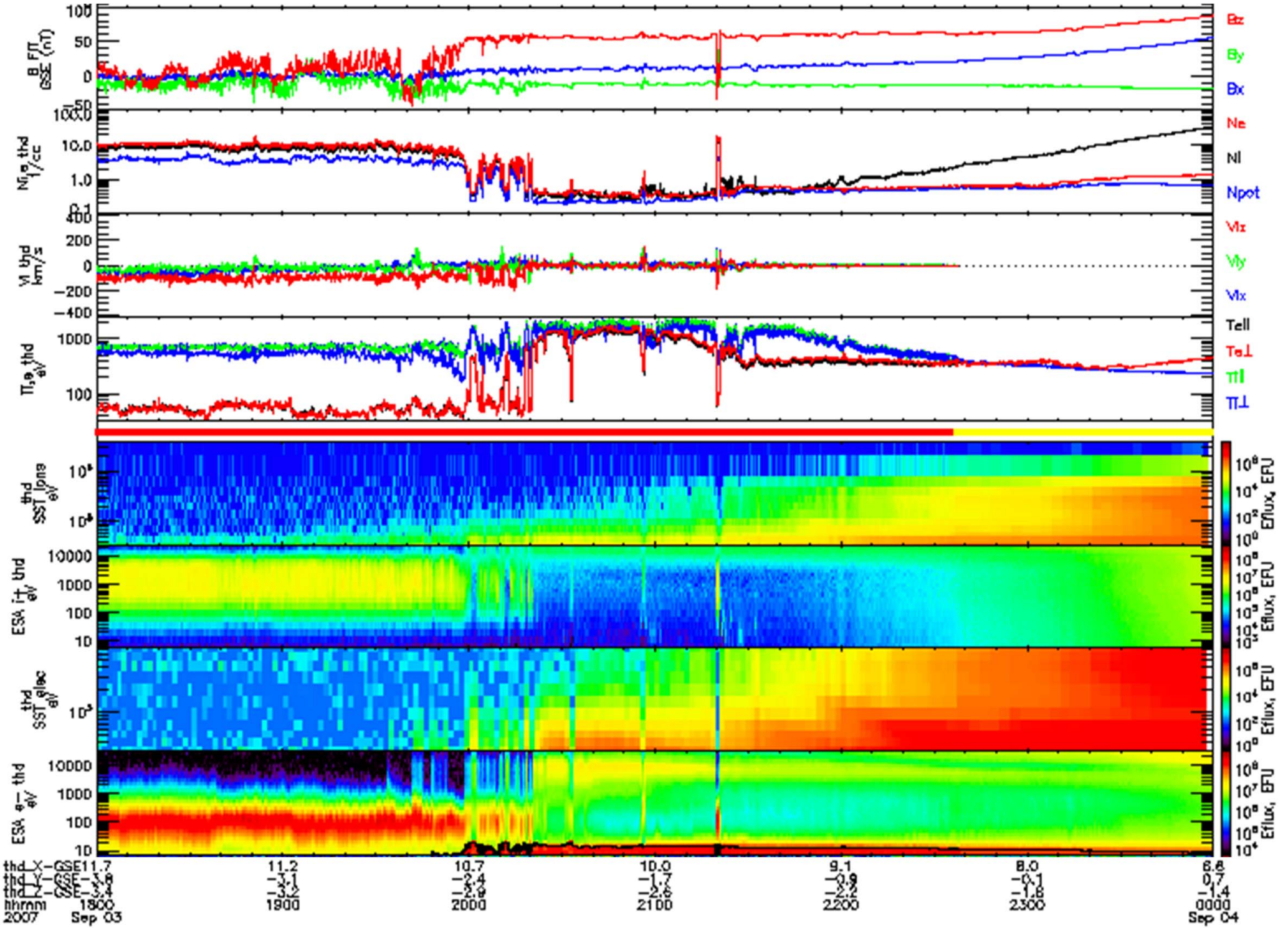

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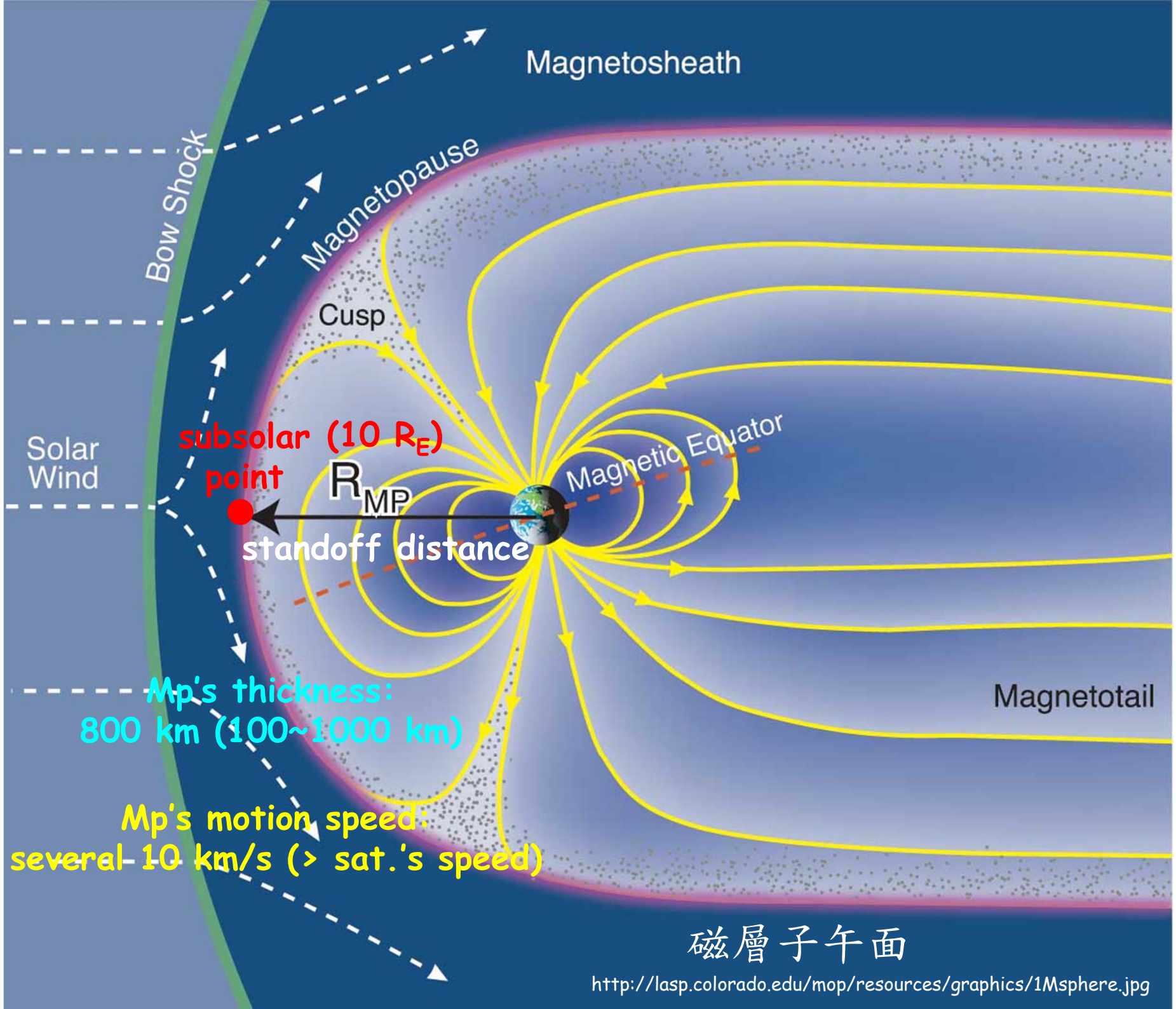
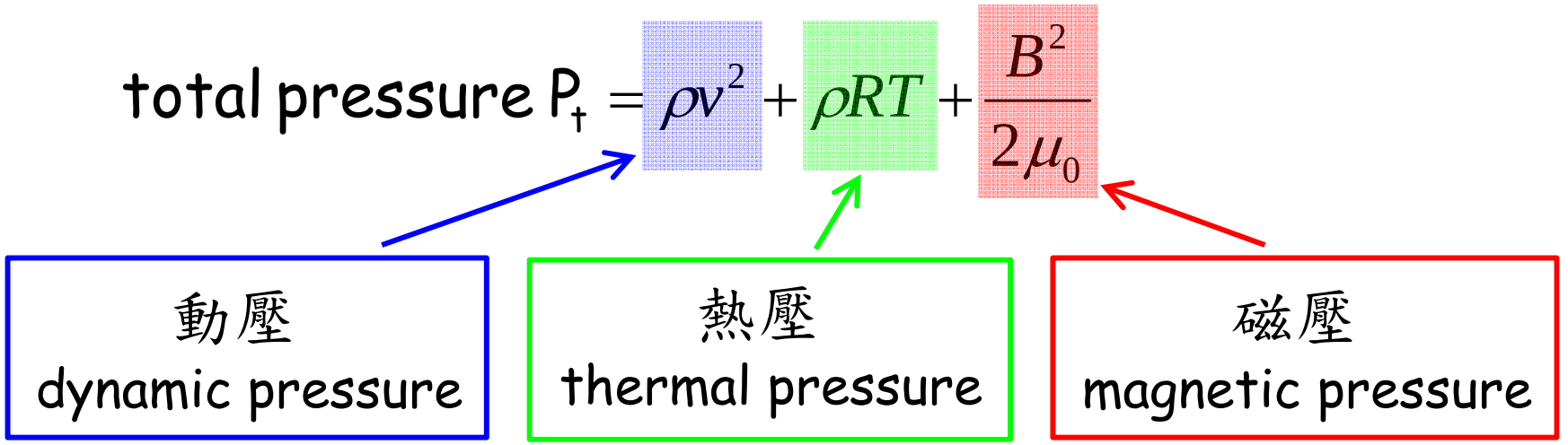


磁層子午面

http://lasp.colorado.edu/mop/resources/graphics/1Msphere.jpg



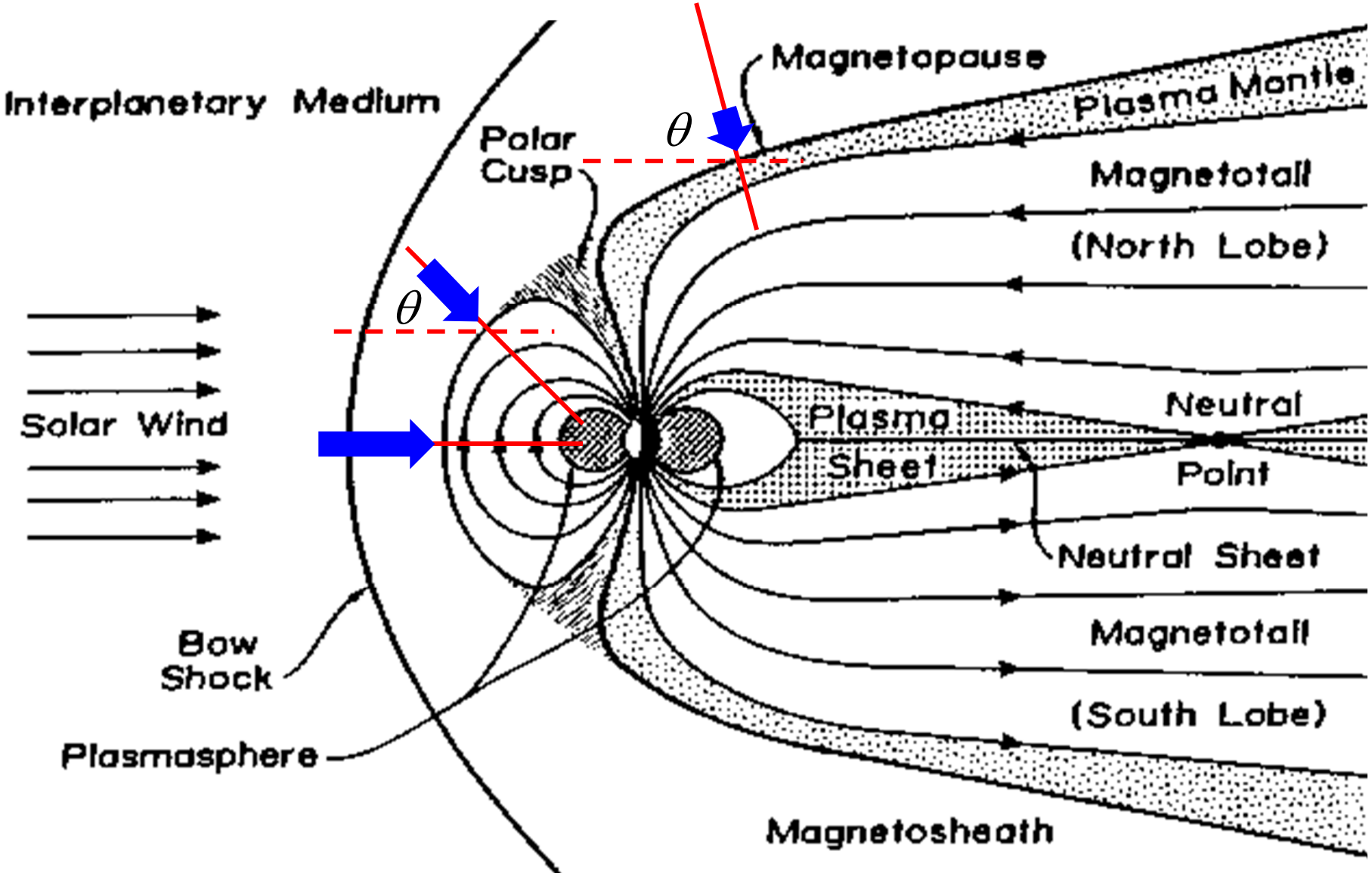
$$(P_t)_{\text{solar wind}} = (P_t)_{\text{magnetosheath}} = (P_t)_{\text{magnetosphere}}$$

$$(\rho v^2 + \underbrace{\rho RT}_{\text{small}} + \underbrace{\frac{B^2}{2\mu_0}}_{\text{small}})_{sw} = (\underbrace{\rho v^2 + \rho RT}_{\text{small}} + \frac{B^2}{2\mu_0})_{msp}$$

Dayside:

$$\Rightarrow (\rho v^2)_{sw} = (\frac{B^2}{2\mu_0})_{msp}$$

$$(\rho v^2)_{sw} = \rho_{sw} v_{sw}^2 \cos^2\theta$$



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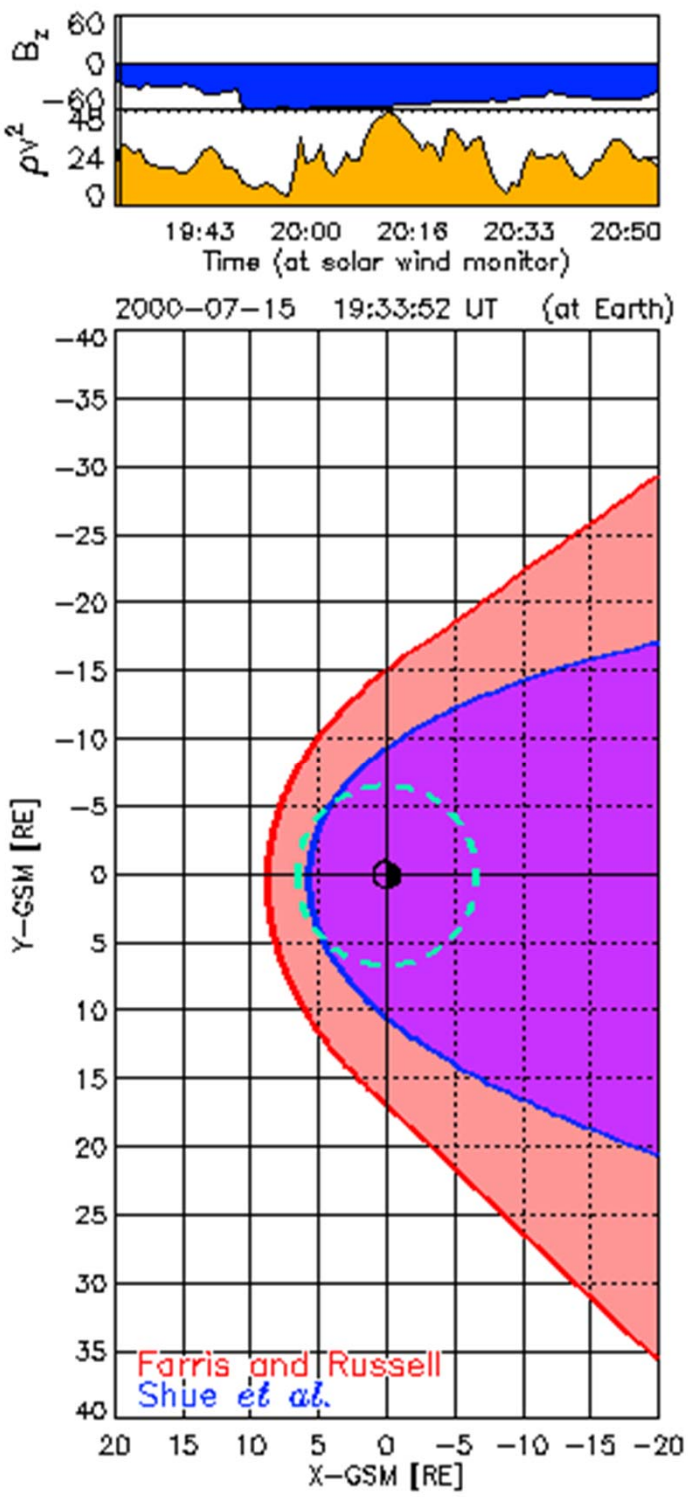
http://heavenawaits.files.wordpress.com/2008/06/earth_magnetosphere.gif



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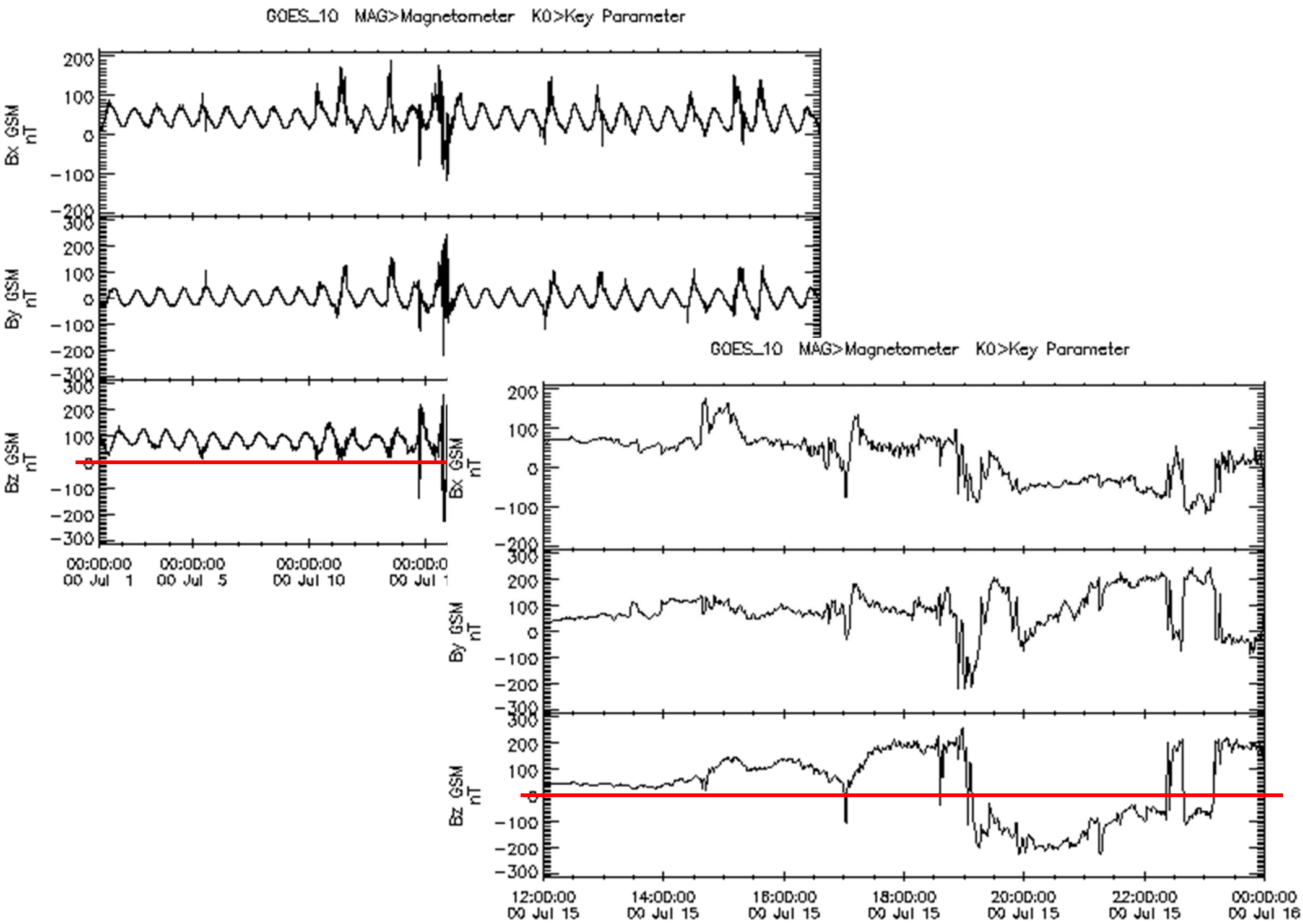
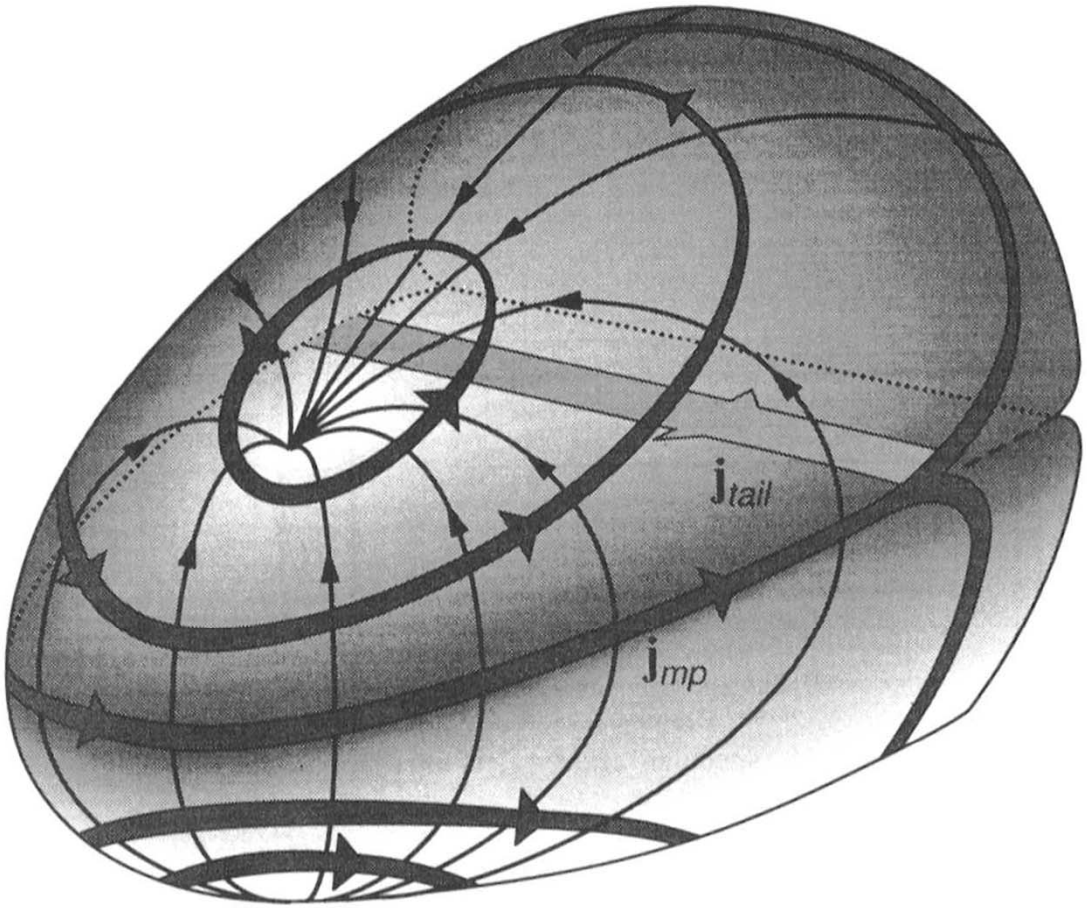
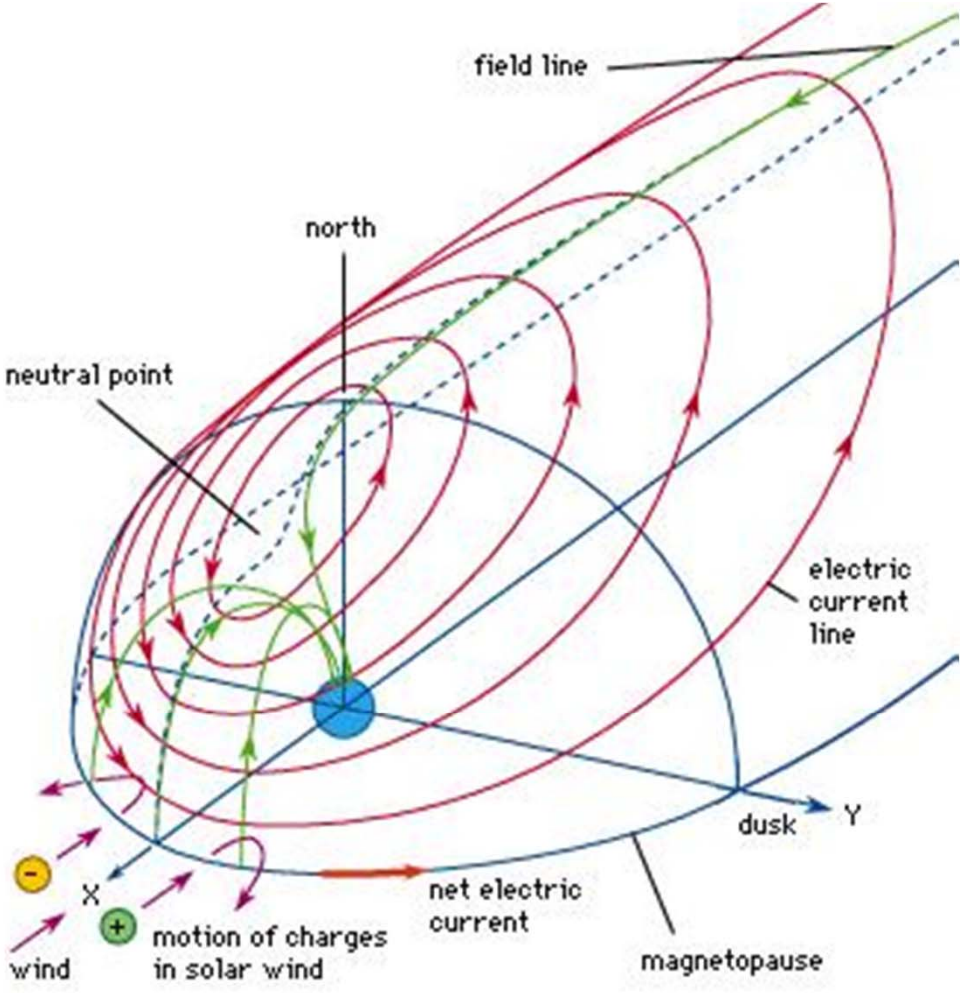


https://cdaweb.sci.gsfc.nasa.gov/index.html/

Magnetopause Current (or Chapman-Ferraro Current)

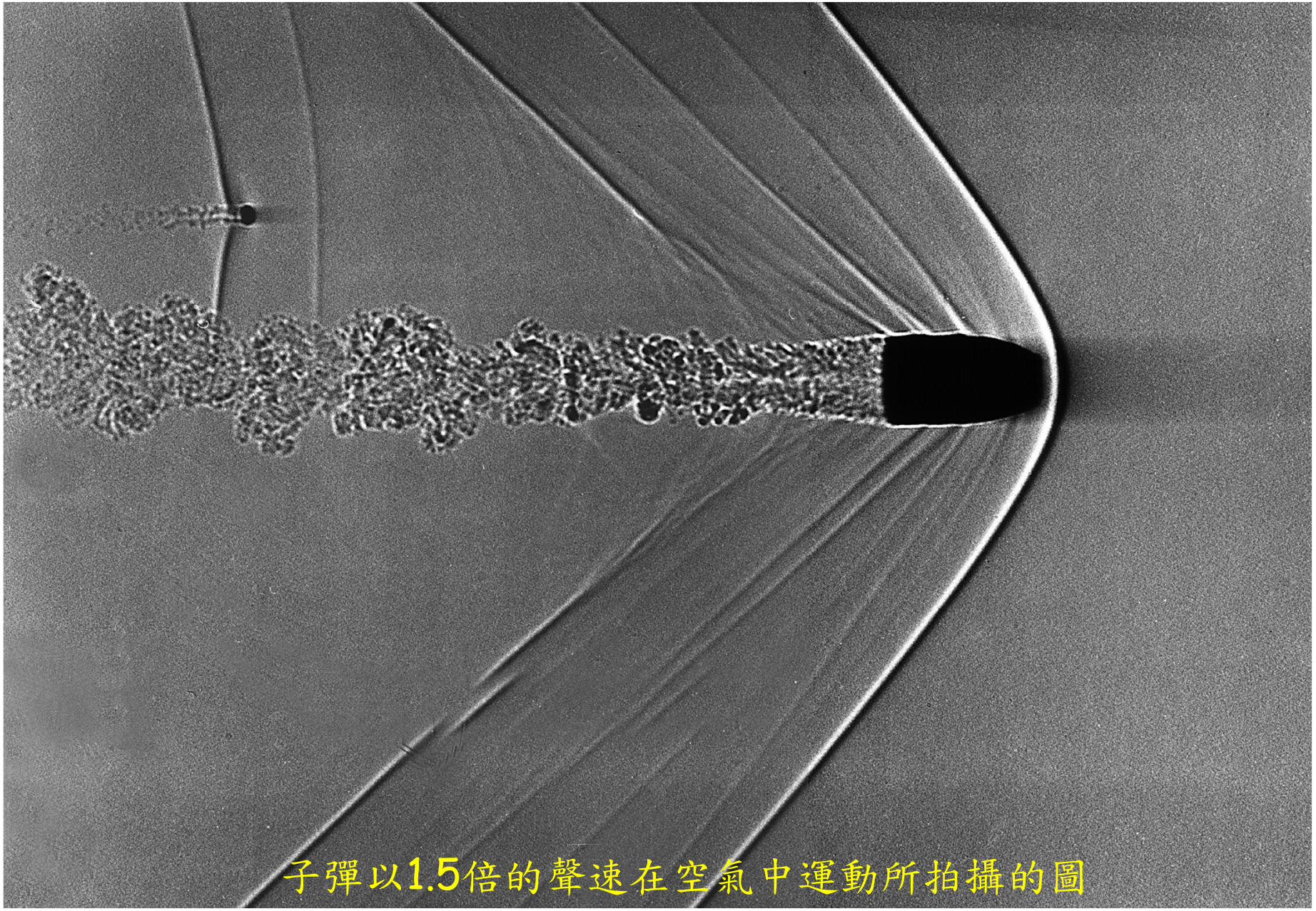




https://perswww.kuleuven.be/~u0052182/weather/les2/current.png

http://global.britannica.com/EBchecked/topic/229754/geomagnetic-field/9359/The-magnetopause-current

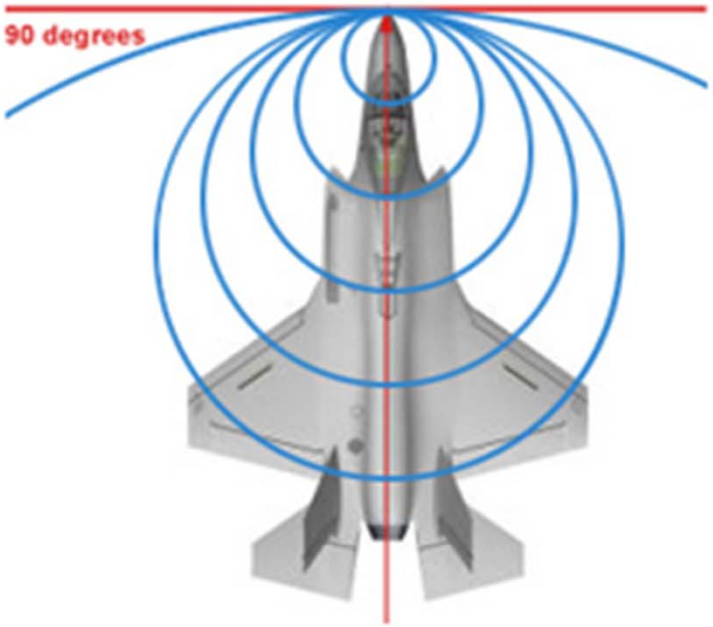
shock waves (激震波)



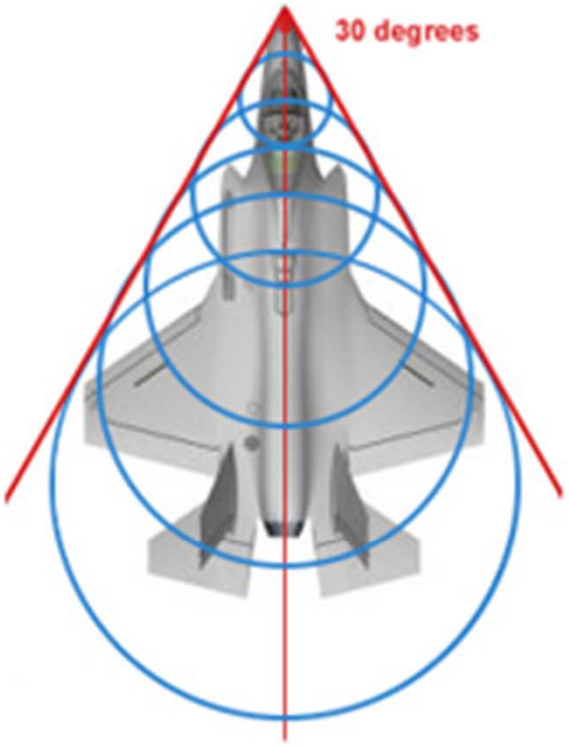
子彈以1.5倍的聲速在空氣中運動所拍攝的圖

http://www.nasa.gov/mission_pages/galex/20070815/f.html

No Speed

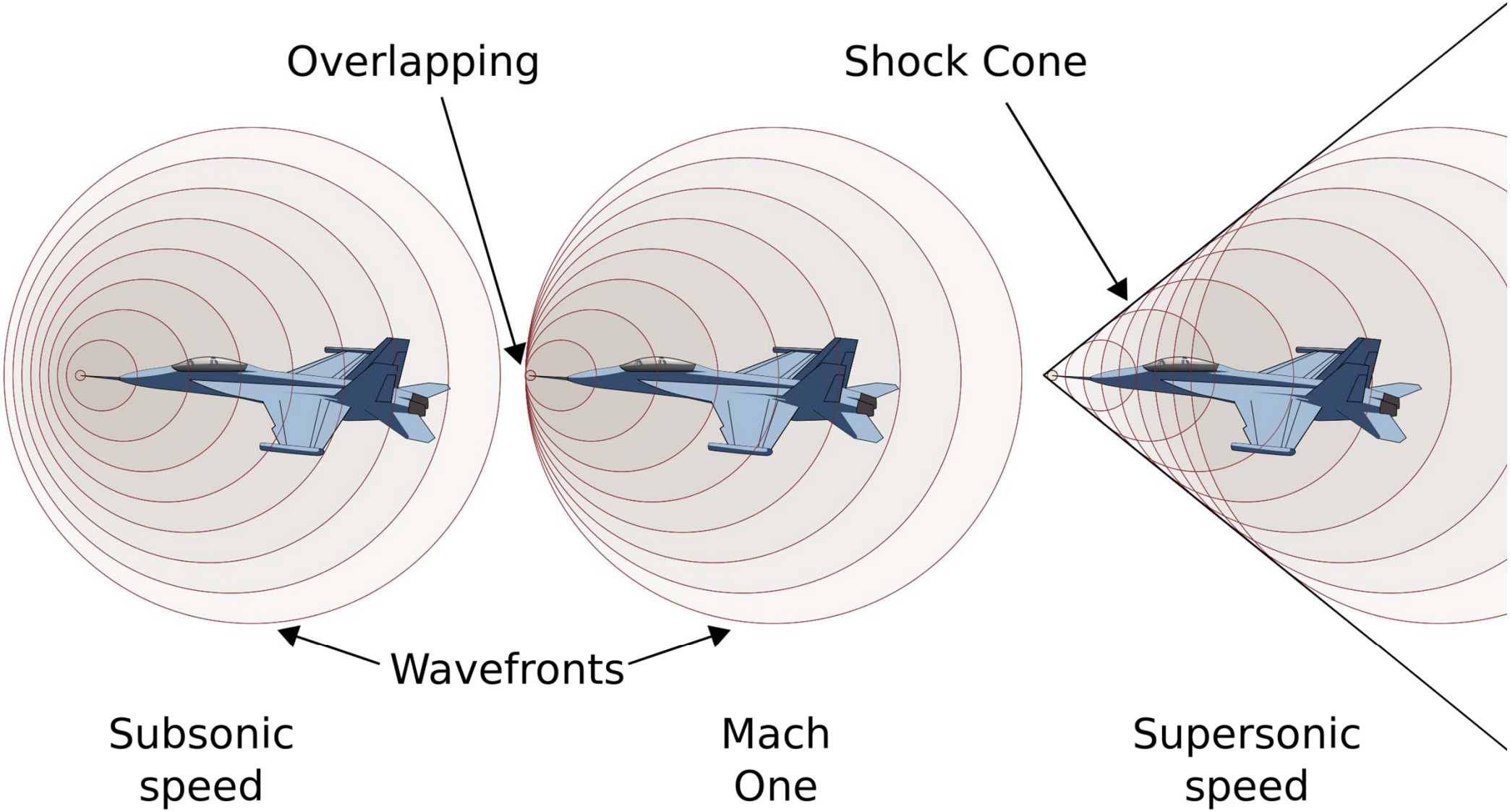


Mach 1



Mach 2

http://www.faqalert.com/wp-content/uploads/2011/05/mach.png



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