Geophysical Research Abstracts
Vol. 13, EGU2011-4445-1, 2011
EGU General Assembly 2011

Study of non-thermal continuum patches: wave propagation and plasmapause study

Sandrine Grimald (1), Farida El-Lemdani Mazouz (2), Claire Foullon (3), Pierrette Décréau (4), Scott Boardsen (5), and Xavier Vallières (4)

(1) IRAP / CESR, Toulouse, France, (2) LATMOS, Paris, France, (3) CFSA, Coventry, U.K, (4) LPC2E, Orléans, France, (5) Goddard Earth Sciences and Technology Center, Maryland, USA.

Non-thermal continuum (NTC) radiation is believed to be emitted in the plasmapause and at the magnetic equator. It is the signature of a particular shape of the plasmapause in the source region which has been shown to be very small. We present a very particular NTC signature which appears as wide frequency range and short lasting time here refer as patches. Those patches are observed everywhere along the Cluster orbit and represents a quarter of the NTC events observed in 2003. A detailed study of the frequency pattern shows that it can be divided in two classes: the plasmaspheric ones, which appear to be banded, and the magnetospheric ones, which appear to be similar to trapped NTC. A statistical study performs on the WHISPER data highlight that the plasmaspheric patches are only observed close to the source region and disappear during propagation. In an event, on 26 September 2003, we localize the sources positions and study the propagation of the beams of wave. We show the sources are located very close to the satellite and to each other. They emit beams of waves with very similar frequencies. Because the satellite is very close to the source region, it observed all ray at the same time and it overlap in the spectrogram making up the patch. After the satellite crossing, each ray follows its own path and separate. The plasmaspheric patches are the signature of a close and distorted source region.