Geophysical Research Abstracts,
Vol. 11, EGU2009-5568, 2009
EGU General Assembly 2009

Low frequency equatorial waves at Earth, Polar and Cassini observations

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Low-frequency electromagnetic emissions are often detected by spacecraft near the Earthś geomagnetic equator. These fast magnetosonic waves can accelerate electrons and are believed to play an important role in the Van Allen radiation belt dynamics. The Polar Plasma Wave Instrument (PWI) often detected these waves near the geomagnetic equator. These emissions were usually detected below a few hundred Hertz and showed a wide range of frequency structure, from macroscopic structure (funnel-shaped spectrum) to finer frequency structure (narrow frequency bands with a spacing of only a few Hertz). The Cassini spacecraft also detected low frequency emissions near the Earthś magnetic equator during its Earth flyby. A survey of properties and of these emissions will be presented and the similarities and differences between the two spacecraft will be discussed.