

Project Details

ROSES ID: NRA-02-OSS-01

Selection Year: 2003

Program Element: Independent Investigation: LWS

Project Title:

Storm time ULF waves in the inner magnetosphere

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Project Member(s):

- Krimigis, Stamatios M; Authorizing Official; Johns Hopkins University
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Summary:

ULF waves in the Pc3-5 band (period = 10-600 s) play a fundamental role in the acceleration and transport of energetic particles in the magnetosphere during geomagnetic storms. When disturbances in the solar wind hit the magnetosphere they propagate through the magnetosphere as MHD ULF waves. The electric field associated with the waves then interacts with the pre-existing particle populations. Some of these particles are accelerated and transported. The importance of understanding these processes in the context of the Living With a Star Program is obvious since elevated flux of energetic particles is hazardous to human activity in space and to operation of spacecraft. Previous studies of storm time ULF waves were done primarily using data from geostationary satellites ground magnetometers. We will use electromagnetic fields measured by the elliptically orbiting CRRES spacecraft to investigate the spatial and temporal development of storm time ULF waves. Ground magnetometer data will be also used to investigate the spatial extent of the waves.

Publication References:

Summary: "

Reference: Takahashi,Kazue JHU/APL - Storm time ULF waves in the inner magnetosphere

Summary: no summary

Reference: Takahashi, Kazue; Denton, Richard E.; Anderson, Roger R.; Hughes, W. Jeffrey; (2004), Frequencies of standing Alfvén wave harmonics and their implication for plasma mass distribution along geomagnetic field lines: Statistical analysis of CRRES data, Journal of Geophysical Research: Space Physics, Volume 109, Issue A8, CitelD A08202, doi: 10.1029/2003JA010345

Summary: no summary

Reference: Takahashi, Kazue; Denton, Richard E.; Anderson, Roger R.; Hughes, W. Jeffrey; (2006), Mass density inferred from toroidal wave frequencies and its comparison to electron density, Journal of Geophysical Research: Space Physics, Volume 111, Issue A1, CitelD A01201, doi: 10.1029/2005JA011286

Summary: no summary

Reference: Takahashi, K.; Denton, R. E.; Ohtani, S.; Anderson, R. R.; Hughes, W. J.; (2006), Radial Variation of the Average

Ion Mass Inferred From the Frequency of Standing Alfvén Waves Observed by CRRES, American Geophysical Union, Fall Meeting 2006, abstract id.SM11B-0318