

Project Details

ROSES ID: NRA-00-OSS-01

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Project Title:

Magnetic structure and current signatures of storms and substorms

PI Name: Anders M. Jorgensen

PI Email: atn@g.ucla.edu

Affiliation: Los Alamos National Laboratory

Summary:

We are proposing to use historic data sets to explore the three-dimensional structure of magnetic fields and currents in the inner magnetosphere during storms and substorms. In previous work [Jorgensen, 2000, submitted] we used CRRES data to measure the configuration of the azimuthal ring current, including the total current, its spatial distribution, as well as the motion and asymmetry of the ring current as a function of activity as defined by Dst. In preliminary studies using CRRES and SCATHA data we found that it is possible to measure the weaker non-azimuthal currents as well as the signatures of substorms. We intend to use historic data from the CRRES, SCATHA, and DE-1 missions to (1) map the magnetic fields and current systems associated with magnetic storms, (2) map the magnetic fields and current systems associated with substorms, and (3) build analytical empirical models of these currents using empirical models from the literature as well as models we create inspired from the maps.

Publication References:

Summary: no summary

Reference: Jorgensen, A. M.; Spence, H. E.; Hughes, W. J.; Singer, H. J.; (2004), A statistical study of the global structure of the ring current, Journal of Geophysical Research: Space Physics, Volume 109, Issue A12, CiteID A12204, doi: 10.1029/2003JA010090