

Project Details

ROSES ID: NRA-01-OSS-01

Selection Year: 2002

Program Element: Independent Investigation: Geospace LWS

Project Title:

Dynamics of energetic electron fluxes in the inner magnetosphere

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Summary:

This is a proposal for an energetic electron model and its coupling to solar wind parameters, primarily the radial speed, the solar wind density, and the interplanetary magnetic field Bz. The community needs such a model and observations and modeling have reached an appropriate completeness level to address this need. We will develop a set of models a range of L shells coupling them to each other and the solar wind variables. The model will be fit to SAMPEX/PET data and its coefficients will provide the timescales of the interaction, the main regions in L shell, and the seasonal variation. The input to the model will be solar wind key parameters from a solar wind monitor such as those provided currently by ACE. Validation of the model will be done with out-of-sample SAMPEX data and, at geosynchronous orbit, with Los Alamos spacecraft data. A database will be made available for wider use and further model development by the research community.

Publication References:

Summary: no summary

Reference: Vassiliadis, D.; Klimas, A. J.; Kanekal, S. G.; Baker, D. N.; Weigel, R. S.; (2002), Long-term-average, solar cycle, and seasonal response of magnetospheric energetic electrons to the solar wind speed, Journal of Geophysical Research (Space Physics), Volume 107, Issue A11, CitelD 1383, doi: 10.1029/2001JA000506

Summary: no summary

Reference: Vassiliadis, D.; Fung, S. F.; Klimas, A. J.; (2005), Solar, interplanetary, and magnetospheric parameters for the radiation belt energetic electron flux, Journal of Geophysical Research: Space Physics, Volume 110, Issue A4, CitelD A04201, doi: 10.1029/2004JA010443