

Project Details

ROSES ID: NRA-00-OSS-01

Selection Year: 2001

Program Element: Independent Investigation: LWS

Project Title:

Modeling the Acceleration and Transport of Solar Energetic Particles

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Summary:

We propose to build a more-quantitative model of solar energetic particle (SEP) events that can re-late the energy spectra and intensities of the SEPs to the properties of the CME-driven shock wave. Large SEP events are a significant hazard to astronauts outside the Earth's magnetosphere; they also damage electronic equipment, solar cells, and X-ray mirrors in space and affect terrestrial communications and the chemistry of the upper atmosphere. Recent theory of SEPs based on interaction with self-generated waves has been extremely successful in understanding SEP intensities, spectra, abundances, and anisotropies. Measurement of these properties early in an event may be used to predict subsequent behavior, especially for the intensity peak at the oncoming shock. We will analyze data from the Wind, IMP-8, Helios, and ACE spacecraft in large SEP events and test the developing theoretical model against these observations.

Publication References:

Summary: no summary

Reference: Reames, D. V.; Ng, C. K.; (2002), Angular Distributions of Fe/O from Wind: New Insight into Solar Energetic Particle Transport, The Astrophysical Journal, Volume 577, Issue 1, pp. L59-L62, doi: 10.1086/344146