Project Details

ROSES ID: NNH09ZDA001N
Selection Year: 2010
Program Element: Data, Tools, & Methods

Project Title:
Probabilistic Solar Energetic Particle Models

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Summary:
We propose to develop probabilistic solar energetic particle models for worst-case peak flux differential energy spectra and worst-case event-integrated fluence differential energy spectra for the elements with atomic numbers from 2 to 28. These models will complement the Emission of Solar Protons (ESP) models for protons and the Prediction of Solar particle Yields for CHaracterizing Integrated Circuits (PSYCHIC) Model for mission-integrated fluences of all elemental species. We also propose to update the ESP and PSYCHIC models, using all currently available data. In addition, we propose to include a procedure for extrapolating the worst-case spectra from 0.3 to ~100 AU so that they can be used for missions throughout the heliosphere.

Deliverables: We will deliver probabilistic solar energetic particle models that will accept as input the mission start date, and duration, the radial distance from the Sun and the required confidence level. The models will provide worst-case differential energy spectra for the elements hydrogen through nickel. The models will provide these spectra for the peak flux, the event-integrated fluence and the mission integrated fluence at the specified radial distance and confidence level.

Delivery Site: The Community Coordinated Modeling Center (http://ccmc.gsfc.nasa.gov/).

Schedule: 15 November, 2011

Publication References:

Summary: no summary

Reference: Adams, James; (2011), Probabilistic Solar Energetic Particle Models, Proceedings of the 32nd International Cosmic Ray Conference (ICRC2011), held 11-18 August, 2011 in Beijing, China. Vol. 10 SH1-SH2: Solar and Heliospheric Phenomena, p. 20, doi: 10.7529/ICRC2011/V10/0151