Radiation and Plasma Effects Working Team: Overview and Progress Report

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Abstract

To track space weather models' progress and performance over time, the Community Coordinated Modeling Center (CCMC), together with NASA's Living with a Star program, has initiated an extensive model validation and assessment efforts involving a community of space environment experts, model and application developers, data providers, forecasters and end-users of space weather products and services (https://ccmc.gsfc.nasa.gov/assessment/). The Radiation and Plasma Effects Working Team deals with five different subtopics: Surface Charging from 10s eV to 40 keV electrons, Internal Charging due to energetic electrons from hundreds keV to several MeVs. Single Event Effects from solar energetic particles (SEPs) and galactic cosmic rays (GCRs) (several MeV to TeVs), Total Dose due to accumulation of doses from electrons and protons in a broad energy range, and Radiation Effects from SEPs and GCRs at aviation altitudes.

A unique aspect of the Radiation and Plasma Effects focus area is that it bridges the space environments, engineering and user community. Close collaboration among them becomes even more paramount. Choosing proper metrics that are simple yet meaningful to different groups of people, and measurable over a long period of time, is a challenge. The goal of the focus team is to define such metrics and perform validation and verification of current models. In this presentation, an overview of our working team short-term and long-term goals and progress made so far will be provided. Broader participation is welcomed.

Applied Space Environments Conference 2017, 15.-19.5.2017
Huntsville, AL,
Session 6 » Modeling (09:00 - Wednesday, 17th May 2017)