

## Project Details

**ROSES ID:** NRA-02-OSS-01

**Selection Year:** 2003

**Program Element:** Independent Investigation: LWS

**Project Title:**

Empirical Low Energy Ion Flux Model for the Terrestrial Magnetosphere

**PI Name:** Billy Kauffman

**PI Email:** billy.kauffman@msfc.nasa.gov

**Affiliation:** Space Environments and Effects (SEE) Program

**Project Member(s):**

- Minow, Joseph I.; COI; Jacobs Sverdrup
- Blackwell, William Carroll; COI; Jacobs Sverdrup
- Kilpatrick, John ; Authorizing Official; NASA/MSFC

**Summary:**

This proposal addresses the Living With a Star (LWS) Targeted Research and Technology Program's Aeronautics and Space Transportation Strategic Enterprise. The purpose of this work is to develop an empirical low energy ion model of the Earth's magnetosphere incorporating ion flux observations from multiple satellites in a statistical flux model. Activities described in this proposal will exploit data from present space missions (Geotail, Polar) for the purpose of characterizing surface dose radiation environments and producing models that aid in design of more reliable subsystems for space transportation systems. Our goal is to develop an improved predictive tool for magnetospheric ion flux environments over a range of energies from 50 keV through 1 MeV for varying geomagnetic disturbance levels in the geospace environment. This model will provide an improved predictive tool that can be used to mitigate harmful effects on human technologies. A secondary objective of the proposal supports the LWS Characterization of Space Climate objective by enabling cost-effective design of scientific spacecraft and subsystems by providing design tools to minimize space environmental effects and damage. Finally, the proposed technique to incorporate ion flux observations from multiple spacecraft in a single statistical flux model yields a simple and cost-effective technique for assimilating data from networks of research spacecraft.

## Publication References:

**Summary:** "

**Reference:** Kauffman,Billy MSFC - Empirical Low Energy Ion Flux Model for the Terrestrial Magnetosphere