Project Details

ROSES ID: NNH06ZDA001N
Selection Year: 2007
Program Element: Focused Science Topic

Topic: Understand how Flares Accelerate Particles near the Sun (i.e., through Shocks and/or Reconnection) and how they Contribute to Large SEP Events

Project Title: Comparison of Accelerated Particle Populations at 1 AU and at the Sun

PI Name: Gerald H. Share
PI Email: gerald.share@nrl.navy.mil
Affiliation: Naval Research Laboratory

Project Member(s):
- Tylka, Allan J; Collaborator; NASA Goddard Space Flight Center
- Murphy, Ronald J; Co-I; Naval Research Laboratory
- Ryan, James Michael; Co-I; University of New Hampshire

Summary:
We propose to study the flare-accelerated particle population at the Sun using gamma-ray observations from RHESSI, Yohkoh, CGRO, and SMM. These can be compared to particle-acceleration models and to particle measurements in space and at Earth. This is a key element in determining the contribution of flare-accelerated particles to large gradual SEP events, a goal of the LWS-TR&T in preparing for the Sentinels Mission. As an example of this study we discuss a recent RHESSI analysis of the 2005 January 20 event that revealed two distinct accelerated-particle components at the Sun: 1) an 'impulsive' release lasting ~10 minutes with a power-law index of ~3 observed in a compact region on the Sun and 2) an associated release of much higher energy particles with index...