Project Title:
Relativistic Electron Variability in Earth's Magnetosphere

PI Name: Terrance G. Onsager
PI Email: terry.onsager@noaa.gov
Affiliation: NOAA/SEC
Project Information:
This effort will determine the conditions in the solar wind and within the magnetosphere that are responsible for the strong variability in the relativistic electron flux in Earth's magnetosphere. We will use data from a six year period, slighty over half of a solar cycle, to evaluate the conditions leading to changes in the radiation belt fluxes, and to evaluate the radial and the local time dependence of the flux variations. Data that will be used include NOAA and LANL geosynchronous satellites, NOAA polar orbiting satellites, the GPS satellites, Polar, Geotail, Wind, and ACE. This research will not be limited to time intervals of strong geomagnetic storms, since considerable variability in the radiation belt populations is observed during weak storms or even during non-storm times. The observed dependence of the particle fluxes on local time, radial distance, and energy will be used to assess the relative importance of the enhanced ring current, tail-like magnetic field stretching, and magnetopause compression for causing the abrupt particle dropouts that are commonly observed. Measurements from the Geotail spacecraft will be used to assess the adequacy of particle heating in the near-Earth plasma sheet to account for the observed enhancements of the electron flux in the inner magnetosphere.

ROSES ID: NRA-00-OSS-01
Duration:
Selection Year: 2001
Program Element: Independent Investigation: LWS

Citations:

Summary: no summary

Citation: Green, J. C.; Onsager, T. G.; O'Brien, T. P.; Baker, D. N.; (2004), Testing loss mechanisms capable of rapidly depleting relativistic electron flux in the Earth's outer radiation belt, Journal of Geophysical Research: Space Physics, Volume 109, Issue A12, CiteID A12211, doi: 10.1029/2004JA010579
