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Panels (P)

Empirical and Statistical Models for the Radiation Belts (PRBEM.1)

THE RADIATION BELT STORM PROBES MISSION: ADVANCING OUR UNDERSTANDING OF THE EARTH'S RADIATION BELTSDavid Sibeck, david.g.sibeck@nasa.gov

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We describe NASA's Radiation Belt Storm Probe (RBSP) mission, whose primary science objective is to understand, ideally to the point of predictability, the dynamics of relativistic electrons and penetrating ions in the Earth's radiation belts resulting from variable solar activity. The overarching scientific questions addressed include: 1. the physical processes that produce radiation belt enhancement events, 2. the dominant mechanisms for relativistic electron loss, and 3. how the ring current and other geomagnetic processes affect radiation belt behavior.

The RBSP mission comprises two spacecraft which will be launched during Fall 2012 into low inclination lapping equatorial orbits. The orbit periods are about 9 hours, with perigee altitudes and apogee radial distances of 600 km and 5.8 RE respectively. During the two-year primary mission, the spacecraft orbits precess once around the Earth and lap each other twice in each local time quadrant. The spacecraft are each equipped with identical comprehensive instrumentation packages to measure, electrons, ions and wave electric and magnetic fields.

We provide an overview of the RBSP mission, onboard instrumentation and science prospects and invite scientific collaboration.