BOSTON UNIVERSITY

Space Physics Seminar Thursday, March 26, 2015

Characterizing Radiation Belt Dynamics Using Van Allen Probes Data

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Abstract:

The comprehensive particle and wave measurements of the Van Allen Probes enable us to monitor the entire radiation belt near the equator from L-shells of 2.5 to 6. Using the particle data, we create an improved, high-level quantity representing the entire outer belt. This quantity, the total radiation belt electron content (TRBEC), is the half-orbit sum of outer belt electrons over the radiation belt energy ranges of importance and all pitch angles using phase space density data derived from RBSP-ECT instrument on board both spacecraft. This new dataset provides complete and high time cadence coverage of electron measurements near the magnetic equator. It also eliminates any flux variations due to adiabatic effects and internal transport within the belt. We characterize the dynamics of the entire radiation belt using TRBEC and comparing TRBEC with various solar wind parameters and magnetospheric waves measured by EMFISIS. We also present a comprehensive analysis of the TRBEC core population (MeV) and the seed population (100s keV). Quantifying the time lags between these two populations and identifying the critical flux level of the seed population is important for understanding the enhancement of MeV electrons.



725 Commonwealth Avenue Boston, MA 02215

3:00 pm Refreshments

CAS Room 500

3:30 pm

Seminar CAS Room 502

Next Week

Mika McKinnon University of British Columbia

Science Beyond the Tower: Non-traditional Career Paths in Science Communication



http://www.bu.edu/csp/ edoutreach/seminar/