Initial Results From The Electric and Magnetic Field Instrument Suite and Integrated Science on the Van AllenProbes

Craig Kletzing1, William Kurth1, Robert MacDowall2, Roy Torbert3, George Hospodarsky1, Scott Bounds1, Charles Smith3, Jack Connerney2, Ondrej Santolik4, Richard Thorne5, Vania Jordanova6, John Wygant7, John Bonnell8
Craig Kletzing1, William Kurth1, Robert MacDowall2, Roy Torbert3, George Hospodarsky1, Scott Bounds1, Charles Smith3, Jack Connerney2, Ondrej Santolik4, Richard Thorne5, Vania Jordanova6, John Wygant7, John Bonnell8

1The University of Iowa, 2Goddard Space Flight Center, 3The University of New Hampshire, 4Institute of Atmospheric Physics AS CR, 5University of California Los Angeles, 6Los Alamos National Laboratory, 7University of Minnesota, 8University of California Berkeley

The physics of the creation, loss, and transport of radiation belt particles is intimately connected to the electric and magnetic fields which mediate these processes. A large range of field and particle interactions are involved in this physics from large-scale ring current ion and magnetic field dynamics to microscopic kinetic interactions of whistler-mode chorus waves with energetic electrons. To measure these kinds of radiation belt interactions, NASA implemented the two-satellite Van Allen Probes mission. As part of the mission, the Electric and Magnetic Field Instrument Suite and Integrated Science (EMFISIS) investigation is an integrated set of instruments consisting of a tri-axial fluxgate magnetometer (MAG) and a Waves instrument which includes a tri-axial search coil magnetometer (MSC). These wave measurements include AC electric and magnetic fields from 10Hz to 400 kHz. We show examples of plasmapause identification and variation determined by the upper hybrid resonance, low frequency ULF pulsations, and whistler mode waves including upper and lower band chorus. These data are compared with particle measurements to show relationships between wave activity and particle energization.

Keywords: radiation belt, inner magnetosphere, wave measurements

キーワード: radiation belt, inner magnetosphere, wave measurements

Keywords: radiation belt, inner magnetosphere, wave measurements