Geophysical Research Abstracts
Vol. 19, EGU2017-9382, 2017
EGU General Assembly 2017

Energetic heavy ion dominance in the outer magnetosphere

Ian Cohen (1), Don Mitchell (1), Barry Mauk (1), Brian Anderson (1), Shin Ohtani (1), Lynn Kistler (2), Doug Hamilton (3), Drew Turner (4), Bern Blake (4), Joe Fennell (4), Allison Jaynes (5), Trevor Leonard (5), Andy Gerrard (6), Lou Lanzerotti (6), and Jim Burch (7)

(1) The Johns Hopkins University Applied Physics Laboratory, Laurel, MD, United States (ian.cohen@jhuapl.edu), (2) Space Science Center, University of New Hampshire, Durham, NH, United States, (3) University of Maryland, College Park, MD, United States, (4) The Aerospace Corporation, El Segundo, CA, United States, (5) Laboratory for Atmospheric and Space Physics, University of Colorado-Boulder, Boulder, CO, United States, (6) New Jersey Institute of Technology, Newark, NJ, United States, (7) Southwest Research Institute, San Antonio, TX, United States

Despite the extensive study of ring current ion composition, little exists in the literature regarding the nature of energetic ions with energies >200 keV, especially in the outer magnetosphere (r > 9 RE). In particular, information on the relative fluxes and spectral shapes of the different ion species over these energy ranges is lacking. However, new observations from the Energetic Ion Spectrometer (EIS) instruments on the Magnetospheric Multiscale (MMS) spacecraft have revealed the dominance of heavy ion species (specifically oxygen and helium) at these energies in the outer magnetosphere. This result is supported by prior but previously unreported observations obtained by the Geotail spacecraft, which also show that these heavy ion species are primarily dominated by multiply-charged populations from the solar wind. Using additional observations from the inner magnetosphere obtained by the RBSPICE instrument on the Van Allen Probes suggest, we will investigate whether this effect is due to a preferential loss of protons in the outer magnetosphere.