Geophysical Research Abstracts
Vol. 16, EGU2014-8018, 2014
EGU General Assembly 2014

Simultaneous Observation of Plasma Waves Detected by the Van Allen Probes Spacecraft During Close Spacecraft Separations

George Hospodarsky (1), Ondrej Santolik (2,3), Terrance Averkamp (1), Scott Bounds (1), William Kurth (1), Craig Kletzing (1), John Wygant (4), and John Bonnell (5)

(1) University of Iowa, Physics and Astronomy, Iowa City,IA, United States, (2) Department of Space Physics, Institute of Atmospheric Physics, Prague, Czech Republic, (3) Faculty of Mathematics and Physics, Charles University, Prague, Czech Republic, (4) Department of Physics and Astronomy, University of Minnesota, Minneapolis, Minnesota, USA, (5) Space Sciences Laboratory, University of California, Berkeley, California, USA

The twin Van Allen Probe spacecraft launched in August 2012 includes the Electric and Magnetic Field Instrument Suite and Integrated Science (EMFISIS) Wave instrument that simultaneously measures three orthogonal components of the wave magnetic field and, with the support of the Electric Fields and Waves (EFW) instrument sensors, three components of the wave electric field at two locations in Earth's magnetosphere. Measuring all six wave components simultaneously allows the wave propagation parameters, such as the wave normal angle and Poynting vector, of the plasma wave emissions to be obtained. The orbit of the spacecraft are designed such that they "lap" each other roughly every 69 days, allowing observations over a range of spacecraft separations, with the closest separations on the order of 100 km. Simultaneous measurements at a range of distances between the two spacecraft provide an opportunity to investigate the scale, size and propagation characteristics of a number of plasma wave emissions associated with the Van Allen radiation belts, including whistler mode chorus. We examine these characteristics of the emissions detected by both spacecraft during separation distance of < 1000 km. Very similar small scale chorus wave packets were detected by both spacecraft when separation distances were the smallest. The similarities and differences detected by both spacecraft and their relation to separation distances will be discussed.