

R006-15

A 会場 : 9/25 PM2 (15:45-18:15)

17:45~18:00

サブストーム時の地球近傍プラズマシートにおけるイオンの加速率のエネルギー、ピッチ角、質量、電荷依存性

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Energy, pitch angle, mass and charge dependent acceleration of ions in the near-Earth plasma sheet during substorms

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The energetic ions are known to be abruptly enhanced in the near-Earth plasma sheet during the substorm expansion. Recent studies have shown that the enhancements of the ions depend on energy, mass and charge, but the reason is not well known. We have investigated energy, pitch angle, mass and charge dependent acceleration of H, He and O ions in the near-Earth plasma sheet during substorms by tracing the ions backward in time in time-dependent magnetic and electric fields obtained by the global magnetohydrodynamics (MHD) simulation. When the dipolarization of the geomagnetic field lines takes place, the ions are accelerated adiabatically and nonadiabatically. The significant acceleration occurs near the equatorial plane where the curvature radius of the magnetic field line is small. The acceleration is found to depend entirely on the location in the near-Earth plasma sheet. "Void structures" (Nakayama et al., 2016) appear in energy-time spectrograms in particular regions, in which acceleration of the ions does not occur at low energies. The degree of the acceleration in the void structures is found to depend on mass and pitch angle. We will discuss the dependence of the acceleration of the ions, or furthermore, the dependence of the differential flux of the ions which are correlated with the acceleration, and compare with satellite observations.