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サブストーム発生時における酸素イオンの加速
Energization of oxygen ions in the inner magnetosphere

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Rapid enhancements of energetic ions during a substorm are one of the unsolved issues in the magnetospheric research. Previously, two distinct processes have been suggested to explain the enhancements. The first one is transport from the near-earth plasma sheet, and the other one is local acceleration. To test the latter process, we traced oxygen ions under the electric and magnetic fields that are self-consistently obtained by the global MHD simulation developed by Tanaka et al. (2010, JGR). Test particle simulation shows the ions with non-adiabatic motion are efficiently accelerated under the presence of the electric field. Simulation also suggests this non-adiabatic acceleration depend on their initial position, energy, and pitch angle. We will discuss in detail the pitch angle and energy distributions of the accelerated ions as a function of time.
Keywords: Substrom, Magnetic moment