Plasma pressure distribution of ions and electrons in the inner magnetosphere during CIR driven storms observed by Arase satellite

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Enhancement of the ring current is a typical feature of the geomagnetic storm and a global decrease in the *H* component of the geomagnetic field is observed during the main phase of the geomagnetic storm. The ring current represents a diamagnetic current driven by the plasma pressure in the inner magnetosphere. The inner magnetosphere is the region where the plasma pressure is highest in the near-Earth space during magnetic storms. The plasma pressure is mainly contributed by protons in an energy range of a few to a few hundreds of keV. However, the O^+ contribution increases and sometimes become dominant over H^+ during the geomagnetically active period. Recently, we showed that the electron pressure also contributes to the depression of ground magnetic field during the storm time by comparing **R**ing current **A**tmosphere interactions **M**odel with **S**elf **C**onsistent magnetic field (RAM-SCB) simulation, Arase in-situ plasma/particle data, and ground-based magnetometer data [*Kumar et al.,* 2021]. Plasma pressure gradients play a very important role in plasma dynamics and the generation of electric currents in the inner magnetosphere. Thus, it is essential to understand the plasma pressure variation and the dynamic changes in the spatial structure of ring current ions and electrons in the inner magnetosphere. In this study, we will examine statistically the spatial and temporal distribution of ions and electrons energy spectrum and pressure in the inner magnetosphere during selected CIR storms using Arase in situ plasma/particle data.

Keywords: Inner Magnetosphere, Ring Current

