

Relationships between the ring current structure and the electric potential distribution deduced from ENA data assimilation

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ENA data from the IMAGE satellite were assimilated into a kinetic ring current model (CRCM) by Fok et al. (2001) using the merging particle filter algorithm. In this study, the electric potential distribution, plasmashet ion density, and plasmashet ion temperature were assumed to be unknown, and they were estimated through data assimilation. The trend of their temporal variations were assumed to be linear to time and updated every hour of simulation time. On the basis of the estimates of those parameters, the ring current ion distribution in the inner-magnetosphere is consequently estimated. Using this technique, we investigated ring current evolution for some magnetic storms. The relationship between the electric potential structure and the ring current evolution is discussed for each storm.