

## Variation of the radiation belt electron during the October 2003 storms

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We examined variation of the energetic particles in the geospace during the intense magnetic storms known as the 'Halloween storm'. Three NOAA satellites successively observed electron flux variation and showed that the outer radiation belt was strongly displaced toward the earth during the main phase. The electron flux enhancement occurred at  $L=2.5$  where the slot region is before storm commencement. During the recovery phase, the outer radiation belt was rebuilt around  $L=4$ . It is known that magnetic reconnection occurred in earthward region of  $X=-8R_E$  and inner edge of plasma sheet moved to the region less than  $L=3$  during the storms. Therefore, it is suggested that the inner magnetosphere was deformed strongly during the event. The plasmopause location and ULF/Pc5 waves during the storms are examined using the data from FAST and CPMN ground based magnetometers, and the relationship with displacement of outer radiation belt and acceleration process are discussed.