# Ring current intensifies by enhanced earthward convection during tail-like field reconfiguration at nightside geosynchronous orbit

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## Abstract

In this study, we explore the possibility of monitoring the magnetic storm and substorm activities by the changes on the tilt angle of magnetic field measured at the geosynchronous orbit in the night-time sector. The magnetic tilt angle is a measure of thinning by magnetospheric convection and dipolarization associated with substorms. To determine the contribution of substorms to the storm time ring current is essential in the study of storms-substorms relationship. The geosynchronous energetic particle data and the AL index are used to determine time interval of substorm dipolarization. The contribution of substorm injections to the geomagnetic storm is estimated by the depolarized magnetic tilt angle at geosynchronous orbit averaged over the storm main phase. Results show that the averaged tilt angle contributed by enhanced earthward convection excluding dipolarization effect is found to be almost a linear function of the minimum value of the magnetic storm index SymH. This relationship has no obvious change as the dipolarization effect associated with substorms to be included. We suggest that the ring current intensifies mainly by enhanced earthward convection during tail-like magnetospheric field reconfiguration.