



Correlation between the variations of injected particle flux at geosynchronous orbit and SYM-H/ASY-H indices during intense geomagnetic storms

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Many studies had noted that the storm time ring current is built up by both substorm injections and enhanced magnetospheric convection. However, it is still an open issue to determine which mechanism to dominate the evolution process of a geomagnetic storm. To understand the contribution weighting of substorm injections in the evolution of strong geomagnetic storms, we examine the correlation between particle injections observed at geosynchronous orbit and higher time resolution geomagnetic activity indices (SYM-H and ASY-H). Intense geomagnetic storms are selected with their minimal Dst less than -150 nT. Both the cross correlation comparing and spectral analysis methods are applied. The temporal variations for the main and recovery phases of storms are analyzed separately. Upstream solar wind conditions related to these events are included to investigate their effects.