

Plasma environment and spacecraft charging at geosynchronous orbit: analysis and forecast

Masao Nakamura[1]

[1] Osaka Prefec. Univ.

Plasma environment at the geosynchronous orbit (GEO) is closely related to spacecraft charging, that would cause spacecraft anomalies with induced electrostatic discharging (ESD). Intense fluxes of hot electrons with energy in the range of several to several tens of keV, injected into GEO during substorm activities, are responsible for spacecraft surface charging. For spacecraft charging forecast to mitigate the spacecraft anomalies due to ESD, it is important to predict the variation of the plasma environment at GEO. We will discuss features of the variation of the plasma environment during substorm activities and a recent effort to predict the plasma environment at GEO using the real-time three-dimensional magneto hydrodynamic magnetosphere simulation.