

## Analysis of spacecraft charging environment in geosynchronous orbit

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Plasma environment in geosynchronous earth orbit (GEO) is closely related to spacecraft charging, that would cause spacecraft anomalies with induced electrostatic discharging (ESD). During magnetospheric substorms, intense fluxes of hot electrons with energy in the range of several to several tens of keV, injected from the geomagnetotail into the night and morning regions of GEO are mainly responsible for spacecraft surface charging. On the other hand, it is rare but not negligible that the electron sudden density enhancements with temperature of a few to several keV in the pre-noon region also cause spacecraft surface charging. We will discuss these hazardous GEO plasma environments and the possibility for spacecraft charging forecast.