
[EE] Evening Poster | P (Space and Planetary Sciences) | P-EM Solar-Terrestrial Sciences, Space Electromagnetism & Space Environment

[P-EM12]Space Weather, Space Climate, and VarSITI

convener:Ryuhō Kataoka(National Institute of Polar Research), Antti A Pulkkinen (NASA Goddard Space Flight Center), Kanya Kusano(名古屋大学宇宙地球環境研究所, 共同), Kazuo Shiokawa(Institute for Space-Earth Environmental Research, Nagoya University)

Thu. May 24, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)

Past, Present, and Future of Solar-Terrestrial Environment is the keynote of this session. We share the latest scientific papers to understand how the solar-terrestrial environment changes in various time scales, and discuss the necessary international collaboration projects associated with VarSITI. More specifically, welcomed papers include space climate studies using tree rings and ice cores; cutting-edge observational and modeling studies of geospace, heliosphere and the sun; simulation and statistical studies to predict the future space weather and space climate.

[PEM12-P07]Development of an estimation method of spacecraft surface potential for a real-time spacecraft risk assessment

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Keywords:Spacecraft surface charging, Space weather, Spacecraft risk assessment

Spacecraft anomalies are often induced by surface charging and resultant discharging arcs. We are developing a quick estimation method of spacecraft surface potential for the Space Environment Customized Risk Estimation for Spacecraft (SECURES) of the space weather forecast Project for Solar-Terrestrial Environment Prediction (PSTEP). We create lookup tables of the surface potential of the target spacecraft for combinations of plasma temperatures and densities using a spacecraft charging analysis software in advance and/or observational results. By interpolation from the lookup tables, we can estimate the surface potential on demand for any given on-orbit plasma environment. The spacecraft risk assessment can be accomplished by additional information about the experimental discharging differential potential of the surface materials. We will introduce the current status of development of our method.