
[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: Ryuho 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-P20]Response of the middle atmosphere in the southern hemisphere to energetic particle precipitation in the latest reanalysis data

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Keywords: Energetic particle precipitation, Reanalysis, multiple regression

Research on the effects of energetic particle precipitation (EPP) on earth's atmosphere is rapidly growing. However, these effects have not been well distinguished from those of other climate forcings. This study extracts EPP effects on the middle atmosphere in the southern hemisphere from the latest reanalysis datasets using multiple regression analysis and composite analysis. Statistically significant temperature anomalies in the winter polar upper stratosphere and lower mesosphere are found, but a simple dynamical signature explaining the anomalies is not evident. On the other hand, it is found that a negative temperature anomaly extending from the polar lower mesosphere to the midlatitude upper stratosphere in July is driven by anomalous Eliassen-Palm flux divergence in the midlatitude lower mesosphere. This result suggests that EPP effects are distinguishable from other climate forcings in the latest reanalysis data.