[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

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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-P04]IMF dependence on solar wind plasma

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Keywords:IMF, Dst index, solar wind plasma

It is usually believed that IMF is determined independently of solar wind plasma. However, the Bz component of IMF becomes smaller depending upon decrease of the solar wind dynamic pressure as shown in Figure A. This property has been found from the scatter plot of Dst index versus the square root of solar wind dynamic pressure (Pd^0.5, Figure B). There are two boundaries in Figure B. The upper boundary which linearly increases with increasing Pd^0.5 shows the minimum level of the ring current. For a fixed value of Pd, Dst (ring current) decreases with decreasing negative Bz. The lower boundary which linearly decreases with increasing Pd^0.5 is produced by decreasing negative IMF- Bz seen in Figure A. The scatter plot of Dst index versus the square root of the solar wind density (N^0.5) shows the similar pattern as Figure B. When Pd or N becomes smaller, IMF-Bz approaches to zero value while the Bx- and By-component converges to a finite value of 3-4 nT. This means that IMF shows a typical spiral pattern for rare solar wind.