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

[P-EM19]Heliosphere and Interplanetary Space

convener:Ken Tsubouchi(Tokyo Institute of Technology), Masaki N Nishino(Institute for Space-Earth Environmental Research, Nagoya University), Yasuhiro Nariyuki(富山大学人間発達科学部)
Thu. May 24, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)
This session aims to secure comprehensive insights into physical processes of plasmas and fields in the heliosphere. Presentations of the recent studies from any approaches (integrated observation/theoretical modeling/massive numerical simulation) are welcomed. Topics are not restricted to any specific issues: phenomenological studies on solar flares/CME/solar wind, and related fundamental physics problems such as shocks/waves/turbulence/particle transport and acceleration can be the main target, including heliospheric high-energy phenomena and their impact on the Earth's environment.

[PEM19-P01]The role of photospheric source field in solar flare occurrence

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The deviation of observed magnetic field from the potential field is generally believed to be associated with the energy storage and release processes in solar flares. Our previous results demonstrate that the total source field strength on the photosphere has a good correlation with the flare activity in complex active regions. We thus suggest that the photospheric source field strength can be regarded as the proxy of photospheric magnetic free energy, likely serving as the lowest threshold for the occurrence of intense flares. In this study, we attempt to further clarify the dependence of photospheric source field on the flare initiation. The AIA 1600 Å ribbons in the early impulsive phase are used as the signature of flare initiation. Based on the processed HMI vector magnetograms, the source-field distributions in the flaring active regions are analyzed systematically to investigate the spatial relationship between strong source-field regions and the flare initiation. In addition, the temporal variations of source field strength at the localized regions as well as the related electric currents are then compared with the GOES/RHESSI lightcurves to characterize the different types of strong source-field regions.

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