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

[P-EM13]Study of coupling processes in solar-terrestrial system

convener:Mamoru Yamamoto(Research Institute for Sustainable Humanosphere, Kyoto University), Yasunobu Ogawa(National Institute of Polar Research), Satonori Nozawa(名古屋大学宇宙地球環境研究所, 共同), Akimasa Yoshikawa(Department of Earth and Planetary Sciences, Kyushu University)
Sun. May 20, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)
The Earth accepts vast input of energy and material from the Sun. The Earth's environment is maintained by the balance between their inputs and outputs. It is important to study energy and material transport of the Earth. This is an international session that discusses studies of the coupling processes in the Sun-Earth system based on the project "Study of coupling processes in solar-terrestrial system" that was approved by the Master Plan 2017 of Science Council of Japan. The facilities and networks included are the Equatorial MU Radar (EMU) in Indonesia to study the whole equatorial atmosphere, the EISCAT_3D radar in northern Scandinavia to study detailed structures and elementary processes of the magnetosphere-ionosphere coupling in the polar region, and global networks of various ground-based instruments and observation data. We will show current status of the project and discuss sciences by soliciting variety papers. This session is open to the world, and we strongly encourage submission of papers related to other facilities and projects, i.e., atmospheric or incoherent scatter radars, observation networks, satellites, and simulation or theoretical studies, etc.

[PEM13-P10]Conjugate observations of the evolution of polar cap arcs in both hemispheres

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We report results from the analysis of a case of conjugate polar cap arcs (PCAs) observed on February 5, 2006 in the northern hemisphere by the ground based Yellow River Station all-sky imager (Svalbard) and in both hemispheres by the space based DMSP/SSUSI and TIMED/GUVI instruments. The PCAs motion in dawn-dusk direction shows a clear dependence on the interplanetary magnetic field (IMF) B_y component and presents a clear asymmetry between southern and northern hemispheres, i.e., formed on the duskside and moving from dusk to dawn in the northern hemisphere and vice versa in the other hemisphere. The already existing PCAs’ motion is influenced by the changes in the IMF B_y with a time delay of ~70 minutes. We also observed strong flow shears/reversals around the PCAs in both hemispheres. The precipitating particles observed in the ionosphere associated with PCAs showed properties of boundary layers plasma. Based on these observations, we might reasonably expect that the topological changes in the magnetotail can produce a strip of closed field lines and local processes would be set up conditions for the formation and evolution of PCAs.