

[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

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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-P11]Multi-instrument observations of periodic poleward moving polar arcs

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We report results based on a study of periodic poleward moving arcs observed by multi ground-based and space-based instruments on January 3, 2014. The instruments include the all-sky imagers at Resolute Bay (RSB), the spaced-based SSUSI imager onboard DMSP spacecraft, GPS receivers at RSB, Resolute Bay Incoherent Scatter Radar-North (RISR-N) and SuperDARN radars. The observation periodic features of polar arcs from individual instruments are consistent with each other. The ASI imagers showed the polar arcs were repeatedly detached from the dawnside auroral oval and then moved poleward under positive IMF B_y conditions. Furthermore, some periodic spatial arcs are observed from the DMSP SSUSI imagers, and some periodic structured significant E-region plasmas are observed from the RISR-N data, together with periodic TEC variations observed from GPS receivers. We also observed strong flow shears around these arcs with boundary layers precipitating particles. Based on these observational results, we suggest that these periodic poleward moving arcs may be triggered by local processes associated with flow shears at the boundary layer regions.