

International Session (Oral) | Symbol P (Space and Planetary Sciences) | P-EM Solar-Terrestrial Sciences, Space Electromagnetism & Space Environment

[P-EM06_30PM2]Study of coupling processes in Sun-Earth system with large radars and large-area observations

Convener:*Mamoru Yamamoto(Research Institute for Sustainable Humanosphere, Kyoto University), Yasunobu Ogawa(National Institute of Polar Research), Satonori Nozawa(Solar-Terrestrial Environment Laboratory), Hiroyuki Hashiguchi(Research Institute for Sustainable Humanosphere, Kyoto University), Chair:Hiroyuki Hashiguchi(Research Institute for Sustainable Humanosphere, Kyoto University)

Wed. Apr 30, 2014 4:15 PM - 6:00 PM 312 (3F)

The Earth accepts huge 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 projects of large radars and large-area observation network. The facilities and networks included are the Equatorial MU Radar (EMU) in Indonesia to study the whole equatorial atmosphere, the EISCAT_3D radar system to study detailed structures and elementary processes of the magnetosphere-ionosphere in the polar region, and global observation networks of magnetometers and radio and optical instruments to study the coupling processes with the global scale. We will show outline 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.

5:15 PM - 5:30 PM

[PEM06-P02_PG]Development of a configurable digital receiver for atmospheric radars

3-min talk in an oral session

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Keywords:atmospheric radar, wind profiler radar, digital receiver, software-defined radio technique, Universal Software Radio Peripheral (USRP)

Recent progress in radar imaging techniques enables high-resolution measurements of wind and turbulence by atmospheric radars. In order to implement radar imaging techniques to existing atmospheric radars, a cheap multi-channel receiver needs to be developed. Further, for improving and verifying radar imaging techniques, a digital receiver which can change its real-time signal processing is highly useful. We are now developing a low-cost configurable digital receiver. Because the digital receiver comprises a general-purpose software-defined radio receiver and a personal computer, its purchase cost is low and its real-time signal processing is easy to be implemented. In the presentation, we report the current development status of the digital receiver.