

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

[P-EM15]Dynamics in magnetosphere and ionosphere

convener:Yoshimasa Tanaka(National Institute of Polar Research), Tomoaki Hori(Institute for Space-Earth Environmental Research, Nagoya University), Aoi Nakamizo(情報通信研究機構 電磁波研究所, 共同), Mitsunori Ozaki(Faculty of Electrical and Computer Engineering, Institute of Science and Engineering, Kanazawa University)

Mon. May 21, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)

This session provides an opportunity to present recent results from satellite and ground-based observations and theoretical and simulation studies on the magnetosphere, ionosphere, and their coupling system. We invite contributions dealing with various phenomena related to the magnetosphere-ionosphere system: solar wind-magnetosphere interaction, magnetosphere-ionosphere convection, field-aligned current, magnetic storms/substorms, neutral-plasma interaction, ionospheric ion inflow and outflow, aurora phenomena, and so forth. Discussions on planetary and satellite ionosphere and magnetospheres, future missions and instrument developments are also welcome.

[PEM15-P12]Energetic electron precipitations during magnetic storms of 7-8 September, 2017 using LF/VLF standard radio waves

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During geomagnetic storms, a lot of studies have been reported energetic electrons precipitate into the atmosphere at the high latitudes. It is known that the low-latitude limit of the particle precipitations is $L \sim 4.0$ (Berkey et al., 1974). However, several studies reported that the particle precipitations occurred at the mid and low latitudes ($L \sim 1.3-2.8$) (Kikuchi and Evans, 1989; Clilverd et al., 2008). In this study, we investigate the precipitations of energetic electrons into the atmospheres during the geomagnetic storms of 7-8 September, 2017, using a network of LF/VLF standard radio waves from the low and high latitudes. The transmitters are NRK (Iceland, 37.5 kHz), NPM (Hawaii, 21.4 kHz), and JJI (Japan, 22.2 kHz), while the receivers are NYA (Ny-Alesund, $L = 15.55$) and PKR (Poker Flat, $L = 5.95$). The geomagnetic storms occurred on 7-8 September, 2017. The minimum Dst value was -142 nT at 02:00 UT on 8 September, 2017. A substorm onset was 19:40 UT on 7 September, 2017. On the NRK-NYA propagation path (the path length: 2002.2 km, night propagation), variations in the LF intensity and phase due to precipitations were seen from 23:20 UT on 7 September to 01:00 UT on 8 September. The amplitudes of the variations in the intensity and phase were about 7 dB and 70 degrees, respectively. Based on wavelet spectra, the NRK-NYA intensity and phase had periods of 10 min. and 30-40 min. The periods of 10 min. would correspond to Pc5 modulation. At the mid-point of the NRK-NYA path (jan: Jan Mayen, Norway), magnetic D component had similar period of 30-40 min. during the LF variations, while the H and Z components had 50-80 min. Similarly, on the NRK-PKR path (4999.0 km, night-day propagation), variations in intensity and phase were seen from 23:24 UT on 7 September to 01:00 UT on 8 September. The amplitudes of the intensity and phase were about 4 dB and 40 degrees, respectively. The periods of the intensity and phase were same (10 min. and 30-40 min.) with those of the NRK-NYA path. At the mid-point of the NRK-PKR path (thl: Qaanaaq, Greenland), magnetic H, D, and Z components had 30-80 min. In the presentation, we will show LF/VLF variations on other paths of NPM-NYA and JJI-

NYA in more detail.