[P-EM28_29PM1] Magnetosphere-Ionosphere Coupling
Convener:*Shin'ya Nakano(The Institute of Statistical Mathematics), Yoshimasa Tanaka(National Institute of Polar Research), Tomoaki Hori(Nagoya University Solar Terrestrial Environment Laboratory Geospace Research Center), Chair:Shin'ya Nakano(The Institute of Statistical Mathematics), Yoshimasa Tanaka(National Institute of Polar Research), Tomoaki Hori(Nagoya University Solar Terrestrial Environment Laboratory Geospace Research Center)
Tue. Apr 29, 2014 2:15 PM - 4:00 PM  413 (4F)
This session targets the comprehension of phenomena stemming from magnetosphere-ionosphere coupling processes. We invite presentations which focus on understanding of multi-scale coupling in the context of compound system, investigation of coupling between high latitude and middle/low latitude, and elucidations of coupling processes from the viewpoint of elementary process. Suggestions for innovative observational/data-analysis techniques, simulation, and theory are most welcome.

2:15 PM - 2:30 PM
Time Variability of Characteristics of Pc5 during Passage of CIRs
3-min talk in an oral session
*Kentarou KITAMURA1, Satoko SAITA2, Yoshimasa TANAKA3, Akira KADOKURA3, Hisao YAMAGISHI3
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In this study, we analyzed the magnetic data observed at the high-latitude magnetic stations in Antarctica, H057 (-66.42, L=6.25), and Skallen (-66.42) to compare with the >2Mev electron flux observed by GOES 10 satellite. The pair of stations is located at the same latitude and within 1.7 degrees in longitude, which are quite suitable to estimate the azimuthal wave number. We statistically analyzed the wave characteristics of the Pc5 pulsations by the superposed epoch (SPE) analysis for 14 magnetic storm events caused by the passage of CIRs (Corotating Interaction Region). The epoch time is defined as days from the passage of the stream interface (SI) of the CIR. The Pc5 power suddenly increases at 3-6 MLT sector from 0 day which is much stronger than that at dusk sectors. During 1-2 days, which is correspond to the recovery phase of the storms, the Pc5 power at the afternoon sectors (12-21 MLT) increases with the peak frequency of 2.5-3 mHz, whereas the Pc5 power at the morning sector does not become stronger. On the other hand, the phase delay between the Pc5s at H057 and SKAL also shows the local time dependence especially during the epoch time of 1-2 day. At the noon and afternoon sectors, the Pc5 shows the eastward propagation and the phase lags between H057 and SKAL are less than 5 seconds. In contrast, at the morning sector, the Pc5 shows westward propagation with small azimuthal wave numbers. These features indicate that the sources and generation mechanisms of Pc5 in the two periods (0-1 day and 1-2 day) are quite different. The premiere intensification of the Pc5 corresponds to the main phase of the moderate magnetic storm and can thought to be the forced oscillation caused by the strong disturbance of the solarwind dynamic pressure. In this case, the local time dependence of the phase structure does not show the obvious regularities. In the latter intensification of the Pc5 corresponds to the recovery phase of the storm (1-2 days). The westward (eastward) propagation at the morning (afternoon) sector and local time distribution of the Pc5 power could well correspond with the previous perception which could explain the Pc5 pulsations caused by the
KH instability on the magnetopause. The present result implies that the difference of the wave characteristics of Pc5s closely related the drift bounce resonance with the relativistic electrons. The drift bounce resonance might occur at the afternoon sector during the recovery phase of the moderate magnetic storm by the KH instability due to the passage of the high speed solar wind.