[구SE-13] Local time dependent Pi2 frequencies observed by THEMIS spacecraft near dawn and dusk in the inner magnetosphere

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We report an example of Pi2 pulsation exhibiting different frequency between dawn and dusk. This Pi2 pulsation occurred around 1932 UT on February 14, 2008, and was observed at low-latitude Bohyun (BOH, L = 1.35, MLT = 3.8) and Hermanus (HER, L = 1.83, MLT = 20.1) stations. The pulsation starts simultaneously at both stations but the frequency is higher at BOH than at HER. At the time of the Pi2, THEMIS-A (THA) and THEMIS-D (THD) were on dawn (L = 2.9, MLT = 5.3) and dusk (L = 2.8, MLT = 18), respectively, in the inner magnetosphere. We find a nearly identical waveform and period between THA δBz and BOH δH and between THD δBz and HER δH with a near 0° phase delay. This observation implies that Pi2-associated fastmode wave in the inner magnetosphere is not excited globally as a single frequency at all longitudes. We suggest that the different frequency between dawn and dusk is due to dawn-dusk asymmetry of the plasmasphere.

[구SE-14] Comparsion of Dst forecast models during intense geomagnetic storms (Dst ≤ -100 nT)

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We have investigated 63 intense geomagnetic storms (Dst ≤ -100 nT) that occurred from 1998 to 2006. Using these events, we compared Dst forecast models: Burton et al. (1975), Fenrich and Luhmann (1998), O'Brien and McPherron (2000a), Wang et al. (2003), and Temerin and Li (2002, 2006) models. For comparison, we examined a linear correlation coefficient, RMS error, the difference of Dst minimum value (△peak), and the difference of Dst minimum time (△peak_time) between the observed and the predicted during geomagnetic storm period. As a result, we found that Temerin and Li model is mostly much better than other models. The model produces a linear correlation coefficient of 0.94, a RMS (Root Mean Square) error of 14.89 nT, a MAD (Mean Absolute Deviation) of △peak of 12.54 nT, and a MAD of △peak_time of 1.44 hour. Also, we classified storm events as five groups according to their interplanetary origin structures: 17 sMC events (IP shock and MC), 18 SH events (sheath field), 10 SH+MC events (Sheath field and MC), 8 CIR events, and 10 nonMC events (non-MC type ICME). We found that Temerin and Li model is also best for all structures. The RMS error and MAD of △peak of their model depend on their associated interplanetary structures like; 19.1 nT and 16.7 nT for sMC, 12.5 nT and 7.8 nT for SH, 17.6 nT and 15.8 nT for SH+MC, 11.8 nT and 8.6 nT for CIR, and 11.9 nT and 10.5 nT for nonMC. One interesting thing is that MC-associated storms produce larger errors than the other-associated ones. Especially, the values of RMS error and MAD of △peak of SH structure of Temerin and Li model are very lower than those of other models.