[구SE-34] Characteristics of mid-latitude field-aligned irregularities observed with VHF coherent scatter ionospheric radar over Korea

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The 40.8-MHz VHF coherent scatter ionospheric radar, located in South Korea (Gyeryong, 36.18°N, 127.14°E), has been operating since December 2009 to investigate ionosphere E- and F-region field-aligned irregularities (FAIs) of mid-latitude. During the observation, we found E- and F-region FAIs appeared frequently: continuous echoes during the post-sunrise period and Quasi-Periodic (QP) echoes at nighttime for E region ; strong post-sunset and pre-sunrise FAIs for F region. The characteristics of E- and F-region FAIs are presented in terms of seasonal and local time variations of occurrence during December 2009 to August 2012. In addition, to investigate the correlation with geomagnetic activity to FAIs occurrence, we compared K-index variations to local time occurrence. It is worth to note our occurrence result since long term observation over several years in the mid-latitude has not yet been carried out.

[포SE-35] A Study to Derive Energetics of Coronal Magnetic Structures

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Space weather prediction related to flares and CMEs is an important issue these days. It is, however, hard to estimate magnetic energy of invisible coronal magnetic structure. The virial theorem is one of the ways to determine the magnetic energy. In this study, we performed a series of MHD simulation of an emerging flux tube and apply the virial theorem to the simulation results and derive energetics of coronal structures. We then analyze real observational data on NOAA 11302 to derive the distributions of physical quantities, such as density, temperature, velocity and magnetic field. We also use knowledge form simulation analysis to estimate the magnetic energy of NOAA 11302.