[포SE-48] Observational determination of the electron flux boundary conditions of the radiation belt as a function of solar wind condition

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The radiation belt structure can be approximately reproduced by a form of diffusion equation, which takes into account the radial diffusion process as well as those in pitch angle and energy. The solution of the equation depends on several factors including initial and boundary conditions, diffusion coefficients, and plasmapause location. In this paper, we have attempted to determine a set of approximate functions for the energetic electron fluxes near the outer edge of the outer belt in terms of solar wind variable. We used the electron flux data from SST onboard the THEMIS spacecraft and determined its correlation with solar wind conditions in a systematic way. The functions were determined separately for different energy channels from ~30 keV up to 719 keV. Our determination of these functions allows us to predict the radial boundary condition for the electron flux, which can be implemented in a forecast model.

[포SE-49] Far ultraviolet observations of diffuse, monoenergetic, and broadband auroras

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Discrete auroras, with unique shapes embedded in diffuse auroras, are generally associated with precipitating electrons that originate from the plasma sheet and are accelerated on the way as they travel to polar regions along the field lines. Two acceleration mechanisms have been proposed: quasi-static electric fields and dispersive Alfven waves, which are believed to yield monoenergetic peaks and broadband features in the particle spectra, respectively. Hence, it should be interesting to see how the two different mechanisms, through their characteristic spectra of the accelerated electrons, produce distinct auroral images and spectra, especially in the far ultraviolet (FUV) wavelengths as the long and short Lyman-Birge-Hopfield (LBH) bands exist as well as the strong absorption band of molecular oxygen in the FUV band. In fact, we have previously shown, using the simultaneous observations of precipitating electrons and the corresponding FUV spectra, that the discrete auroras associated with inverted-V events have a stronger relative intensity of the long LBH to the short LBH compared to diffuse auroras, especially when the peak energy is above a few keV. In this paper, we would like to focus on the differences in the FUV images and spectra between the two discrete auroras of the monoenergetic and broadband cases, again based on the study using the dataset of simultaneous observations of particles and FUV spectral images.