R006-40
Zoom meeting B ：11/2 PM2 (15:45-17:30)
16:00-16:15

Spatio-temporal characteristics of the precipitating electron energy of pulsating aurora estimated by optical observation

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Pulsating aurora (PsA) is characterized by quasi-periodic intensity modulation with ~2 -20 s intervals as a main modulation. Electrostatic Cyclotron Harmonic waves and whistler-mode waves cause the pitch angle scattering of energetic electrons in the magnetosphere, and PsA is generated by the precipitating electrons with energies of several to 100 keV. In particular, whistler-mode chorus waves play a crucial role in the pitch angle scattering of the electrons. The lower-band chorus causes precipitation of electrons more than several keV, and the upper-band chorus causes steady precipitation of less than 1 keV [Miyoshi et al., 2015]. Previous studies have estimated the precipitating electron energy of pulsating auroras from the ground-based optical observations. Ono et al.[1993] observed the emission intensities of pulsating auroras at wavelength of 427.8 and 844.6 nm using photometers, and estimated the energy of the precipitating electron by combining the ratio of the two emission intensities and the model calculation. However, Ono et al.[1993] conducted observations using the instrument with narrow field-of-view, and the energy estimation using all-sky imagers has not been performed. In Tromsoe, Norway, several high-sensitivity EMCCD cameras have been operated, which have simultaneously observed the all-sky image of the emission intensity of the two-wavelength at a sampling frequency of 10 Hz. In addition, a five-wavelength photometer has been also operated. In this study, we investigate spatio-temporal variations of precipitating electron energy using these EMCCD cameras. The optical data taken from EMCCD cameras have been calibrated simultaneous measurements of the photometer. We estimated the precipitating electron energy of the pulsating aurora by comparing the emission intensity ratio of the two emission lines using the all-sky image and the emission intensity calculation results obtained by the GLOW model [Solomon, 2017]. In this presentation, we show the spatio-temporal characteristics of the precipitating electron energy of the pulsating aurora.