R006-15
A 会場 ：11/27　AM1 （9:00-10:15）
10:00〜10:15

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2D distribution of the low-energy electron precipitation derived from 630-nm all-sky auroral images and its characteristics

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The discrete red aurora near the nightside polar cap boundary frequently exhibits dynamic motion. This type of dynamic feature is the manifestation of the rapid deformation of two-dimensional spatial distribution of the intense low-energy electron precipitation, which is believed to be accelerated by the Alfvén waves along the magnetic field lines connected to the plasma sheet boundary layer. Previous studies utilizing satellite data have shown the energy distribution and spatial characteristics of the low-energy electron precipitation. However, the characteristics of the temporal evolution of the low-energy electron precipitation, which play an important role in the rapid deformation of the spatial distribution of the intense low-energy electron precipitation, have not yet been clarified. To understand the temporal characteristics of the intense low-energy electron precipitation, we have established an automated method that can estimate the two-dimensional distribution of the energy flux of the precipitating low-energy electrons by combining 630-nm all-sky auroral image data with the Global Airglow (GLOW) model. Specifically, we have constructed a model in which GLOW can be applied to a three-dimensional domain up to an altitude of 500 km along the magnetic field lines within the imager's field of view so that the auroral intensity calculated from GLOW can be compared with the auroral intensity observed by the all-sky imager at Longyearbyen, Svalbard. We have applied our method to a large number of continuous all-sky images obtained near the nightside polar cap boundary. The processes responsible for the temporal characteristics revealed by this method are discussed.