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A 会場 ：9/25　PM1 （13:45-15:30）
15:00〜15:15

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Intense low-energy electron precipitation associated with poleward expansion of red auroras near the nightside polar cap boundary

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Auroras often show poleward expansion near the nightside polar cap boundary, some of which are accompanied with clear red emission. This type of emission is caused by the rapid motion of intense low-energy electron precipitation, which is believed to be accelerated by Alfven waves that are occurring along the magnetic field lines connecting to the plasma sheet boundary layer. Previous studies based on satellite observations have unveiled the detailed energy profiles of that low-energy electron precipitation, and their spatial features. However, how the low-energy precipitation develops, which plays a crucial role in the dynamic poleward motion of the red aurora is still unknown. In this study, to understand the temporal characteristics of the low-energy electron acceleration, we created a group of models to derive the 2-D distribution of the low-energy electron flux from the 630-nm all-sky imager data obtained at Longyearbyen, Svalbard, by utilizing the Global Airglow model. We also tested the validity of those models by using examples of the conjugate observation of red auroras by the all-sky imager at Longyearbyen and low-energy electron precipitation by the DMSP satellite. We report on the characteristics of the variability of the intense low-energy electron precipitation revealed by applying our models to a large number of all-sky image data that captured the poleward expansion of red auroral arcs near the nightside polar cap boundary, and discuss what they imply for the injection of the Alfven waves along the magnetic field lines connecting to the plasma sheet boundary layer.