

## A fine-scale modulation of meandering aurora observed by REIMEI satellite, ground-based all-sky camera, and EISCAT radar

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Ground-based observations have revealed that the aurora often consists of fine-scale structures showing rapid time variation. Modulations of aurora emission with frequency of a few Hz have been often observed in the pulsation structure of aurora [e.g., Sato et al., 2004]. However, the generation mechanisms of this rapid modulation are far from understood. In order to investigate where and how the fine structures of the particle precipitation as well as auroral emissions are created, simultaneous observations of global and local auroral emissions, and precipitating particles with enough time and spatial resolution are important.

In this study, we report on the simultaneous observations of auroral emissions from the Reimei satellite and ground-based NIPR all-sky camera (ASC) together with the electron precipitation both by Reimei and EISCAT radar. The Reimei satellite is launched in August 2005 aiming at the simultaneous observations of emissions and particles of auroral fine-scale structures. The EISCAT and ASC ground-based observation data were taken in Tromso (69 deg. 35' N, 19 deg. 14' E). During EISCAT-Reimei campaign observations on Nov 24, 2006, a characteristic meandering structure in auroral emissions is observed both by ASC and Reimei in the post-midnight region. ASC observation indicates that the meandering structures moving eastward. The auroral structure corresponds to the precipitation region of high-energy (~10 keV) isotropic electrons around IB (isotropic boundary) of plasma sheet electron precipitation. It is consistent with EISCAT data. Inside the discrete aurora, poleward moving oscillation in the auroral emission with a period of ~0.3-0.6 s was observed. Particle flux modulation with a period of ~0.3-0.5 s was also observed by Reimei. The modulation is caused by the change in the pitch angle distribution of high-energy electrons between double and single loss-cone signatures. The results of detailed comparison between particle and emission data will be reported in the presentation.