Fine-auroral structure obtained from REIMEI image and particle observations

Takeshi Sakanoi[1]; Yasuyuki Obuchi[2]; Tomohiro Ino[1]; Kazushi Asamura[3]; Yasumasa Kasaba[4]; Masafumi Hirahara[5]; Atsushi Yamazaki[6]; Shoichi Okano[7]

[1] PPARC, Grad. School of Sci., Tohoku Univ.; [2] Planet Plasma Atmos,Tohoku Univ; [3] ISAS/JAXA; [4] JAXA/ISAS; [5] Department of Physics, Rikkyo University; [6] Planet. Plasma and Atmos. Res. Cent., Tohoku Univ.; [7] PPARC, Tohoku Univ.

http://pparc.geophys.tohoku.ac.jp/˜tsakanoi/

Japanese micro-satellite 'REIMEI' was launched successfully in the last August, and started auroral observations using a multi-spectral aurora camera (MAC) at three wavelengths and electron/ion energy-spectrum analyzers (ESA and ISA) from late in October. Three emissions of N2+ first negative band (427.8 nm), OI (557.7 nm) and N2 first positive band (670 nm) are independently obtained by the MAC with typical spatial and time resolutions of 2 km and 120 ms, respectively. Simultaneous measurements between in-situ particles and auroral images at the magnetic footprint have been carried out so far. Further, we have tried to obtain auroral height distributions and resonant fluoresces of molecular nitrogen ions occurred in the sunlit region, by pointing the field-of-view of MAC toward the earth's limb.

In this presentation, we will report the recent results of fine-auroral structures and their dynamical variations obtained from REIMEI satellite observations. Particularly, we found the 'narrow pulsating aurora' whose widths are about 5km in magnetic latitude and several tens km in magnetic longitude, respectively. In addition, simultaneous image-particle observations of active discrete aurora and black aurora will be presented.