vertical drift velocity of the ionosphere significantly changes just after sunset and the nighttime ionospheric morphologymay be affected by this drift after sunset.In this study, we will investigate the temporal variation of the phase of the longitudinal density structure and vertical plasma drift by analyzing the ROCSAT-1, TIMED/GUVI, and DMSP data and verify the role of the vertical drift after sunset in the change of the phase of the longitudinal density structure.

[VI-1-3] Can relativistic electrons be accelerated in the geomagnetic tail region?

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While some observations in the geomagnetic tail region supported electrons could be accelerated by reconnection processes, we still need more observation data to confirm electron acceleration in this region. Because most acceleration processes accompany strong pitch angle diffusion, if the electrons were accelerated in this region, strong energetic electron precipitation should be observed near earth on aurora oval. Even though there are several low altitude satellites observing electron precipitation, intense and small scale precipitation events have not been identified successfully. In this presentation, we will show an observation of strong energetic electron precipitation that might be analyzed by relativistic electron acceleration in the confined region. This event was observed by low altitude Korean STSAT-1, where intense several hundred keV electron precipitation was seen simultaneously with 10 keV electrons during storm time. In addition, we observed large magnetic field fluctuations and an ionospheric plasma depletion with FUV aurora emissions. Our observation implies relativistic electrons can be generated in the small area where Fermi acceleration might work.

[VI-1-4] Simultaneous Observation of FUV Aurora with Precipitating Electrons on STSAT-1

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We present the results offar ultraviolet (FUV, 1350–1750 Å) auroral observations made by the Far-ultraviolet IMaging Spectrograph (FIMS) instrument on the Korean microsatellite STSAT-1. The instrument was capable of resolving spatial structures of a few kilometers with the spectral resolution of 2-3 Å. The observations were carried out simultaneously with the measurement of precipitating electrons using an electrostatic analyzer (ESA, 100 eV–20 keV) and a solid state telescope (SST, 170 keV–360 keV) on board the same satellite. With a careful mapping of the field lines, we were able to correlate the particle spectrum to the corresponding FUV spectrum of the footprints of the FIMS image that varied significantly in fine scales. We divided the FIMS spectral band into the LBH long (LBHL, 1640–1715 Å) and LBH short (LBHS, 1380–1455 Å) bands, and compared the electron energies with the intensities of LBHL and LBHS for the well-defined inverted-V structures. The result shows a strong correlation between the total LBH intensity and the energy flux measured by ESAwhile the peak energy itself does not correlate well with the LBH intensity. On the other hand, it was observed that the ratio of the LBHL intensity to that of LBHS increased significantly as the peak electron energy increased, primarily due to a smaller absorption by O2 at LBHL than at LBHS.

■ Session Ⅶ–1 : Invited Talk
Thursday, 23 October [13:30–14:30]

[VII-1-1] China Mobile SLR system & China-Korea Close Cooperation

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Satellite laser ranging (SLR) system which measures the round trip time of laser to satellites is one of the important techniques in space geodesy. SLR system gives a powerful tool to determine the precise orbit of satellites, the center of mass of the Earth, and etc because it provides instantaneous range measurements of millimeter level precision. China Transportable Ranging Observation System (TROS) was built in 1999 and other four SLR stations were founded in China. TROS has been upgraded to the new electronic system capable of KHz ranging since last year, and succeeded in KHz SLR technology. TROS has been operated in KASI headquarter for research of space geodesy since August 2008, which will be operated for 12 months by August 2009. Now ISCEA and KASI keep strong relationship in SLR field.

[VII-1-2] Microwave Radiometer for Space Science and DREAM Mission of STSAT-2

Y. H. Kim