

Initial results of ion outflow observations: auroral height distribution obtained by multi-spectral auroral camera onboard REIMEI

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REIMEI was launched successfully in August 2005 by Russian Dnepr rocket as a piggyback satellite into a noon-midnight polar-orbit at an altitude of 640 km. Auroral images at emissions of N₂⁺(427.8 nm), OI(557.7 nm), N₂ (670 nm) are obtained by three independent channels of the Multi-spectral Auroral Camera(MAC) with maximum time and spatial resolutions of 2 km and 120 msec, respectively. MAC observes auroras mainly in the two modes as follows: 1) simultaneous observation between plasma particles and auroras around the magnetic footprint direction (Mode-S), 2) observation of auroral height distribution in the limb direction (Mode-H).

Recent MSX and Coriolis measurement data showed the existence of molecular nitrogen ion emission which is produced by resonant fluorescence in the sunlit region, and its strong dependence on magnetic activities. In order to observe molecular nitrogen ion emission above the topside ionosphere, the field-of-view of MAC was directed toward the earth's limb with the Mode-H. In addition, simultaneous observations with EISCAT Svalbard radar have been carried out since last December. Coordinated REIMEI and EISCAT/ESR measurement data provide us a unique opportunity to study the heavy ion outflow event. In this paper, we will present initial results of the molecular nitrogen ion emission in the sunlit region and auroral height distribution obtained by REIMEI/MAC.