

Current status and operation strategy of micro-satellite mission `INDEX' ready for the launch in August, 2005

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This presentation reports the current status and operation strategy of the INDEX mission, which is a piggyback-type payload and the first Japanese micro-satellite mission for the exploration of fine meso-scale auroral structures in the Earth's polar region. The INDEX team has been preparing the comprehensive ground operation system consisting of antenna, telemetry receiver/transmitter, operation software as well as the satellite system including a number of hardware components and onboard software on the basis of their in-house techniques. The launch is being planned abroad in the early August of 2005. The auroral phenomena are characterized by photon emissions over a wide wavelength range, associated with distinctive energy and pitch-angle distributions of electrons and ions, as reported from previous polar-orbiting satellite results. Three scientific instruments will be carried by the INDEX satellite into a sun-synchronous orbit in the noon-midnight meridian of 700-km altitude. One is the multi-spectral auroral imaging camera (MAC) with three channels of CCD and interference filter for obtaining monochromatic images of visible auroras. The second is the low-energy auroral particle instrument consisting of two top-hat type sensors: electron and ion energy spectrum analyzers (ESA/ISA). The other is the electric current monitor (CRM), based on the detection principle of the Langmuir probe. The most important scientific purpose of the INDEX mission is the observations performed by the high time and spatial resolutions of auroral emissions, particles, and plasma properties. This novel observation platform will provide us with crucial opportunities to investigate the scientific properties and reveal the essence of auroras.