

PEM032-P24

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## Visible airglow observation by VISI on ISS-IMAP: Current status of development and simulation of airglow measurement (4)

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The ISS-IMAP mission is one of the Japanese Experiment Module (JEM) 2nd stage plan which will be launched in January 2012 onto the International Space Station (ISS) with HTV (Konotori). The main scientific subject of this mission is to clarify the energy and physical transfer processes in the boundary region between earth's atmosphere and space with the visible spectrometer and extra ultraviolet imagers.

We have been developing a visible imaging spectrometer instrument (VISI) on ISS-IMAP. VISI will measure three nightglow emissions; O (630 nm, altitude 250 km), OH Meinel band (730 nm, altitude 87km), and O<sub>2</sub> (0-0) atmospheric band (762 nm, altitude 95 km) with the two field-of-views which enable us to make a stereoscopic measurement of the airglows looking forward (+45 deg.) and backward (-45 deg.) to subtract contaminations from clouds and ground structures. We designed a bright (F/0.9), wide-angle (field-of-view 90 degrees) objective lens. VISI have a two-line-slit on the first focal plane to perform the stereoscopic measurement. Each slit, i.e., field-of-view, is faced perpendicular to the orbital plane, and its width is about 550 km mapping to an altitude of 100 km. The phase velocity of airglow wave structure is also estimated from the difference between forward and backward data. We will obtain a continuous line-scanning image for all emissions line from + 51 deg to -51 deg. in geographic latitude by the successive exposure cycle with a time interval of 1 - several sec.

Over the last year, we manufactured the flight model of optical system and electronics of VISI, carried out the optical test including the adjustment of focus and alignment, intensity calibration, function check, vibration and vacuum thermal tests. We finally evaluated the accomplishment of the VISI instrument. At this moment, VISI and other instruments were installed on the Multi-mission Consolidated Equipment (MCE) to make integration tests. We present the evaluated specifications of VISI, operation plan and the current status of tests.

Keywords: ISS, airglow, thermosphere, ionosphere, development