

ISS-IMAP ミッションの現状と今後

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Current status and observational plan of the ISS-IMAP mission

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The current status and the observational plan of the ISS-IMAP (Ionosphere, Mesosphere, upper Atmosphere, and Plasmasphere mapping) mission are presented. ISS-IMAP is a space-borne mission on the international space station (ISS) to elucidate the mesoscale structures in the ionosphere, the mesosphere, and the plasmasphere by imaging observations. It consists of two imaging instruments on the Exposed Facility of Japanese Experiment Module of the International Space Station, EF of ISS-JEM. Visible-light and infrared spectrum imager (VISI) observes the Mesosphere and the Ionosphere. Extra ultraviolet imager (EUVI) observes the Ionosphere and the Plasmasphere. The objective of this mission is to clarify the energy transport process by the structures whose horizontal scale is 50-500km in the Earth's upper atmosphere, and the effect of the structures and disturbances on the space-borne engineering system. ISS-IMAP measures the following three parameters in the lower latitude region than 50 degrees: (1) distribution of the atmospheric gravity wave in the mesopause (87km), the ionospheric E-region (95km), and the ionospheric F-region (250km) (2) distribution of the ionized atmosphere in the ionospheric F-region (3) distribution of O⁺ and He⁺ ions in the ionosphere and plasmasphere. After the initial check outs, its observation was started in October 2012. VISI observes the airglow of 730nm (OH, Alt. 85km), 762nm (O₂, Alt. 95km), 630nm (O, Alt. 250km) in the Nadir direction. The global distributions of the airglow structures whose scale size is 50-500km in the nightside of the Mesosphere and the Ionosphere have been obtained by the VISI observation. EUVI measures the resonant scattering of 30.4nm [He⁺] and 83.4nm [O⁺]. Its field-of-view is 15 degrees, and points the limb of the Earth to observe the vertical distribution of the ions. The preliminary results of the ISS-IMAP mission by VISI and EUVI will be introduced in the presentation.