Imaging observation of the Earth's upper atmosphere by ISS-IMAP mission

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ISS-IMAP (Ionosphere, Mesosphere, upper Atmosphere, and Plasmasphere mapping) mission will make the imaging observation of the Earth's upper atmosphere from the Exposed Facility of Japanese Experiment Module on the International Space Station (EF of ISS-JEM). It was selected as one of five missions for the sharing-port mission of EF of ISS-JEM. The objective of this mission is to clarify the physical mechanism of the following three processes: (1) the energy transport process by the atmospheric structures whose horizontal scale is 10-100km in the upper atmosphere (2) the process of the plasma transport up to 20,000km altitude (3) the effect of the upper atmosphere on the space-borne engineering system. ISS-IMAP will measure 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. VISI and EUVI are designed for the scientific instruments. VISI will measure the airglow of 630nm [O], 650nm [OH], and 762nm [O2] in the Nadir direction, and EUVI will measure the resonant scattering of 30.4nm [He+] and 83.4nm [O+]. In the presentation, the outline of the ISS-IMAP mission, the scientific objectives, and instruments will be presented.