

Data processing and quality-control of the ISS-IMAP mission data

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Data processing and quality-control of the ISS-IMAP (Ionosphere, Mesosphere, upper Atmosphere, and Plasmasphere mapping) mission has been carried out to improve the data quality and reliability. Two ISS-IMAP instruments, Visible-light and Infrared Spectrum Imager (VISI) and Extreme UltraViolet Imager (EUVI), made observation of the Earth's upper atmosphere from the Exposed Facility of Japanese Experiment Module of the ISS between August 2012 and August 2015. VISI made imaging observations of the airglow and aurora from 500 nm to 900 nm of wavelength in the nadir direction. The airglow of 730 nm (OH, Alt. 85km), 762 nm (O₂, Alt. 95km), and 630 nm (O, Alt. 250km) were mainly observed besides the other airglow, such as 589nm (Na) and 557 (O). There are several observational mode in VISI, such as peak mode, calibration mode, and spectrum mode. The calibration of the pixel sensitivity has been made based on both of pre-flight experiment data and on-orbit data. Error of the measurement is also estimated. Several types of noises, such as city-light, moon light scattering from tropospheric clouds, cosmic rays, and reflection from the solar panel of ISS, are identified to improve the quality of data especially for the statistical analysis. Data is stored in NetCDF file format. EUVI made imaging observation of the resonant scattering from ions, He⁺ in 30.4 nm, and O⁺ in 83.4 nm in the limb direction. In the presentation, the quality and reliability of ISS-IMAP data will be discussed.

Keywords: airglow, resonant scattering, aurora, mesosphere, ionosphere, ISS