

Simulation of ISS-IMAP EUVI imaging to optimize the operating plan

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We simulate ISS-IMAP EUVI imaging to optimize its operation. ISS-IMAP (Ionosphere, Mesosphere, upper Atmosphere, and Plasmasphere mapping) mission is an imaging mission of the Earth's upper atmosphere from Kibo, the Exposed Facility of Japanese Experiment Module on the International Space Station (ISS). It is scheduled to start observation in 2012. The Extreme Ultra Violet Imager (EUVI) on ISS-IMAP will measure the resonant scattering light of 30.4nm from He⁺ and 83.4nm from O⁺. EUVI points the backward limb direction of ISS to observe the vertical distributions of the ions with 15 degrees field-of-view. The main objective of ISS-IMAP EUVI observation is to reveal the detail of characteristic plasma structures, such as traveling ionospheric disturbance, plasma bubble and plasma filament. In order to evaluate spatial and time resolutions of EUVI imaging and optimize the operating plan, we developed the EUVI simulator. The EUVI simulator takes into account resonant scattering of the ions, intensity of solar radiation, maneuver of ISS and instrumental noises. We estimate how plasmaspheric structure EUVI can detect by using this simulator. Besides, we seek the best timing and exposure period of EUVI imaging for plasmaspheric observation.