

Highlights of the 2014 Jupiter observing campaign by multi-spectral remote sensing using space telescopes

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Abstract

From January to April 2014, two observing campaigns by multi-wavelength remote sensing from X-ray to radio were performed to uncover energy transport process in Jupiter's plasma environment using space telescopes and ground-based facilities. These campaigns were triggered by the new Hisaki spacecraft launched in September 2013, which is an extremely ultraviolet (EUV) space telescope of JAXA designed specifically for planetary observations.

In the first campaign in January, Hubble Space Telescope made imaging of far ultraviolet (FUV) aurora with a high spatial resolution (0.08") through two weeks while Hisaki continuously monitored aurora and plasma torus emissions in EUV wavelength with a high temporal resolution (1 min<). We discovered new magnetospheric activities from the campaign data: e.g., internally-driven type auroral brightening associated with hot plasma injection, and plasma and electromagnetic field modulations in the inner magnetosphere externally driven by the solar wind modulation.

The second campaign in April was performed by Chandra X-ray Observatory, XMM newton, and Suzaku satellite simultaneously with Hisaki. Relativistic auroral accelerations in the polar region and hot plasma in the inner magnetosphere were captured by the X-ray space telescopes simultaneously with EUV monitoring of aurora and plasma torus.

In this presentation, we show remarkable scientific results obtained these campaigns mainly focusing on Jupiter's aurora.

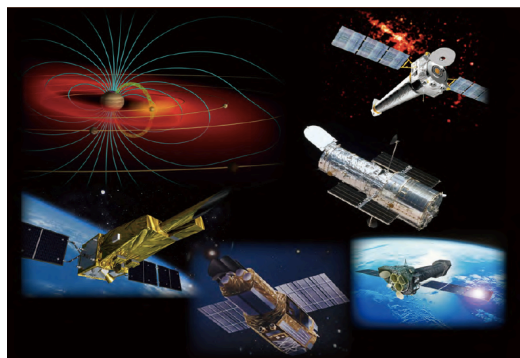


Figure 1: Jupiter's plasma environment, the Hisaki satellite, Chandra X-ray Observatory, Hubble Space Telescope, XMM newton, and Suzaku Satellite (copyright: J. Spencer, NASA / CXC / Curtin University / R. Soria et al., NASA, D. Ducros, XMM Team, ESA, JAXA).

Acknowledgements

This research was supported by a grant-in-aid for Scientific Research from the Japan Society for the Promotion of Science (JSPS). This work is based on observations made with the NASA/ESA Hubble Space Telescope, obtained at the Space Telescope Science Institute, which is operated by AURA, Inc. for NASA.