

## Ground-based telescopic observations of Jupiter

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There are some emissions such as airglow and aurora on Jupiter's atmosphere. Although the emissions have been observed by spacecrafts and Hubble Space Telescope in space, it is difficult to observe continuously the emissions and the variations in time. It is generally believed that ground-based observation of emission in visible wavelength is difficult because of strong reflection of sunlight on Jupiter's surface. Therefore we tried to build a technique of ground-based observation in visible wavelength to understand the emission mechanism on Jupiter.

We have built a observational system with a CCD camera and a narrow band pass filter in H-alpha wavelength. Note that the Jupiter's airglow and aurora contain the emission of the first Balmer line of atomic hydrogen, H-alpha(656.3 nm). We observed Jupiter from November 1999 to November 2001 by using 115-cm telescope of Ginganomori Observatory, Hokkaido and 60-cm of the Iitate Observatory, Fukushima. We obtained fringes of H-alpha emission by using hydrogen lamp, H-alpha images of Jupiter in H-alpha wavelength and Background images in neighbor wavelength. We made a composite image from short exposure images to reduce the influence of wavered atmosphere of Earth. Using this new technique, we detected faint emissions in H-alpha wavelength by subtracting the background image from the H-alpha image. The ratio of signal to background in intensity is about 5 %.

We will show the results of analysis of data acquired on October 29 - November 1, 2001 because the atmosphere of Earth was steady for ground-based observation.

We obtained a H-alpha emission in Jupiter's northern region. Spatial distribution of the emission is broad in a few pixel in comparison with actual distribution of aurora oval.

Our technique may be applied to other observations such as faint emissions on planetary atmosphere and faint luminous bodies.