The global variation of Venus cloud investigated from AKATSUKI 1-μm camera

*Seiko Takagi[1], Naomoto Iwagami

1. Hokkaido University, Graduate School of Science

Venus is our nearest neighbor, and has a size very similar to the Earth’ s. However, previous observations discovered an extremely dense (90 bar at the surface) and CO_2-rich atmosphere, with H_2SO_4 thick clouds. The Venus cloud consists of H_2SO_4 main cloud deck at 40 −70 km, with thinner hazes above and below.The upper haze on Venus lies above the main cloud surrounding the planet, ranging from the top of the cloud (70 km) up to as high as 90 km.
Near infrared (0.986 μm) dayside image of Venus has taken by solid state imaging (SSI) of the Galileo spacecraft (NASA). It appears almost flat, there are some small scale features with a contrast of 3 % [Belton et al., 1991]. In Takagi and Iwagami. (2011), it may be calculated that the source of the contrast of the order of 3 % in near infrared Venus dayside image is due to variation in the cloud optical thickness.
On December 7, 2015, AKATSUKI (JAXA) approached Venus and the Venus orbit insertion was successful. After the Venus orbit insertion, many 0.90 μm Venus dayside images were taken by the 1 μm near infrared camera (IR1) onboard AKATSUKI.
In this study, Venus cloud variations are investigated from 0.90 μm Venus dayside images taken by IR1 cameraglobally. Further, meteorological some changes that contribute to cloud variation are examined with radiative transfer calculation including high-altitude cloud model [Takagi et al., 2019]. Furthermore, I will introduce Venus observation plan using the 1.6 m Pirka telescope and Multi-Spectral Imager (MSI) [Watanabe et al., 2012] mounted on the Cassegrain focus of the telescope at the Nayoro Observatory of Hokkaido University.

Keywords: AKATSUKI, IR1, cloud

