

Stationary features at the Venus cloud top seen in Akatsuki/IR2 2.02- μ m dayside images

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The first sequential images acquired by Longwave Infrared Camera (LIR) onboard Akatsuki after its insertion into Venus orbit on December 7, 2015 provide a new insight on atmospheric dynamics of Venus. A planetary-scale bow-shaped structure seen in the LIR images has been fixed in a position above Aphrodite Terra against westward super-rotation reaching ~ 100 m/s at the cloud top level. This structure has been considered to result from an upward-propagating mountain gravity wave generated by the interaction of atmospheric flow with the topography (Fukuhara et al., 2017).

In order to obtain a better understanding of the newly discovered stationary structure, we have analyzed 2.02- μ m dayside images taken by 2- μ m Camera named IR2. Since a wavelength of 2.02 μ m locates in a CO₂ absorption band, the images enable us to monitor the spatiotemporal variation of cloud top altitude. Up to the present, we have detected three stationary features in the images taken on (a) April 25, (b) May 15-25, and (c) June 21-22. Although these features are spatially localized compared with the planetary-scale bow-shaped structure by LIR, interestingly, all of them have bow-like structure and appear in a position above highlands (i.e., Atta Regio, Beta Regio, and Alpha Regio for cases (a), (b), and (c), respectively). Local time of their occurrence is in 11-14 h, which is different from each other.

In this presentation, we will show the stationary features detected in the 2.02- μ m dayside images ever before and initial results using a cloud-tracking method, and also report on whether such features are also seen in simultaneously-obtained images by the other cameras.

Keywords: Venus, atmosphere, Akatsuki, Stationary feature