

あかつき IR1, IR2 位相曲線観測による金星雲層構造の推定

Venus' clouds as inferred from the phase curves acquired by IR1 and IR2 on board Akatsuki

佐藤 毅彦^{1*}, 大月 祥子¹, 岩上 直幹², 上野 宗孝¹, 上水 和典¹, 鈴木 睦¹, はしもと じょーじ³, 坂野井 健⁴, 笠羽 康正⁴, 中村 良介⁵, 今村 剛¹, 中村 正人¹, 福原 哲哉⁶, 山崎 敦¹, 山田 学¹
SATO, Takehiko^{1*}, OHTSUKI, Shoko¹, IWAGAMI, Naomoto², UENO, Munetaka¹, Kazunori Uemizu¹, SUZUKI, Makoto¹, HASHIMOTO, George³, SAKANOI, Takeshi⁴, KASABA, Yasumasa⁴, NAKAMURA, Ryosuke⁵, IMAMURA, Takeshi¹, NAKAMURA, Masato¹, FUKUHARA, Tetsuya⁶, YAMAZAKI, Atsushi¹, YAMADA, Manabu¹

¹ 宇宙航空研究開発機構, ² 東京大学, ³ 岡山大学, ⁴ 東北大学, ⁵ 産業技術総合研究所, ⁶ 北海道大学

¹Japan Aerospace Exploration Agency, ²University of Tokyo, ³Okayama University, ⁴Tohoku University, ⁵National Institute of Advanced Industrial Science and Technology, ⁶Hokkaido University

We present phase curves for Venus in the 1-2 micron wavelength region, acquired with IR1 and IR2 on board Akatsuki (February - March 2011). A large discrepancy with the previously-published curves was found in the small phase angle range (0° - 30°). Through analysis by radiative-transfer computation, it was found that the visibility of larger (~ 1 micron or larger) cloud particles was significantly higher than in the standard cloud model. Although the cause is unknown, this may be related to the recently reported increase in the abundance of SO_2 in the upper atmosphere. It was also found that the cloud top is located at ~ 75 km and that 1-micron particles exist above the cloud, both of these results being consistent with recent studies based on the Venus Express observations in 2006 - 2008. Further monitoring, including photometry for phase curves, polarimetry for aerosol properties, spectroscopy for SO_2 abundance, and cloud opacity measurements in the near-infrared windows, is required in order to understand the mechanism of this large-scale change.

キーワード: 金星, 位相曲線, 雲層構造, あかつき, IR1, IR2

Keywords: Venus, phase curve, cloud structure, Akatsuki, IR1, IR2