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Venus' Clouds as Inferred from the Phase Curves Acquired by IR1 and IR2 on board Akatsuki

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We present phase curves for Venus in the 1-2 μm 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^o-30^o). Through analysis by radiative-transfer computation, it was found that the visibility of larger ($\sim$1 μm 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 $\sim$75 km and that 1-μm 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.