

Microphysics Implications of the Venus Bow Wave seen by LIR on Akatsuki

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The first scientific discovery by Akatsuki following its successful Venus Orbit Insertion in December, 2015 was of a global-scale "bow wave" feature seen in data from the Longwave Infrared Bolometer. This instrument senses the region of the cloud tops at about 65 km altitude in thermal infrared in a 4 micron wide band centered at 10 microns. This feature (and others like it subsequently observed) was found to be stationary with respect to the surface topography. Work by others has demonstrated that the wave is likely very large orographically-launched buoyancy wave (sometimes referred to as planetary gravity wave). Here, we present a microphysics modelling analysis of the long-term and short-term influence that such a wave would have as it propagates through the deeper cloud decks between 50 km and 65 km.

Keywords: Venus, Clouds, Microphysics, Atmospheric Dynamics