

Principal Components of UV Albedo Variability in Venus' Atmosphere as seen at 283 nm

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We explore the dominant modes of variability in the observed albedo at the cloud tops of Venus using the Akatsuki UVI 283 nm observations over the period Dec 2016 to May 2018. The observations consist of images of the dayside of Venus, most often observed at intervals of 2 hours, but interspersed with longer gaps. The orbit of the spacecraft does not allow for continuous observation of the full dayside, and the unobserved regions cause significant gaps in the dataset. The missing data are interpolated and the dataset is then subjected to a principal component analysis (PCA) to find six oscillating patterns in the albedo. Some of the spatial patterns and the time scales of these modes correspond to well known physical processes in the atmosphere of Venus such as short period atmospheric waves and the overturning circulation, while others defy a simple explanation. We also find a hemispheric mode that has not been identified before and discuss its implications.

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