

# Periodical variation of the small-scale UV contrast at the cloud top of Venus

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Images of Venusian clouds at ultraviolet wavelengths frequently exhibit small-scale (<1000 km) cellular structures at low latitudes. The origin of these structures has been unclear, and the condition where they are enhanced is unknown. Here we explore the temporal variation of the contrast of small-scale structures using ultraviolet images taken by UVI onboard Akatsuki spacecraft to search for possible periodicities. The 283-nm channel of UVI provide the sulfur dioxide distribution at the cloud top and the 365-nm channel visualizes UV absorbers of unknown composition. Periodicities of planetary-scale UV contrasts associated with planetary-scale waves were also investigated to study the relationship between small-scale structures and planetary-scale waves.

We discovered quasi-periodical oscillations of the standard deviation of small-scale UV structures with periods of around 4 and 5 Earth days. Planetary-scale oscillations with similar periods were also seen. This apparent synchronization suggests that the generation of small-scale structures is influenced by planetary-scale waves. We also found that small-scale structures tend to be enhanced when the UV albedo decreases in the course of the propagation of planetary-scale waves. This correlation might suggest that the heating of clouds by solar radiation feeds small-scale convection, which appear as cellular structures.

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