

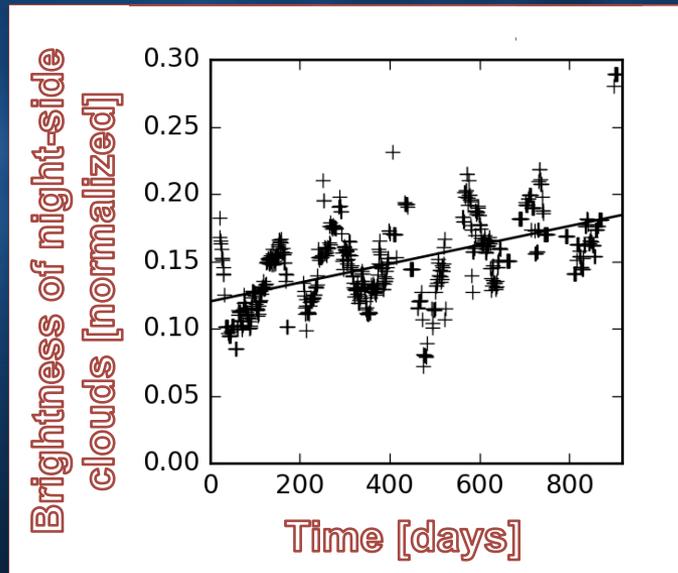
The discovery of a 150 day period in the clouds at mid-latitudes lends insight to the mysteries of the Venus atmospheric circulation

Discovery of a 150 day period in the Venus clouds

- Venus is becoming slightly less cloudy. Not in the sense of clearing skies after a storm, but more in the sense of “Gray Cloud weather” and “White Cloud weather” to indicate a noticeable brightening of a still-overcast sky.
- This clearing is occurring at the same time that other scientists found that the winds at the cloud tops are growing stronger.
- One way to both decrease the cloud cover and increase the wind speed is for upward-moving waves in the atmosphere to “break” in the clouds, like ocean waves break on a beach. The inherent motion of the waves converts into wind speed, while the energy of the waves converts into a temperature increase (which causes the cloud to partly evaporate).
- Where might the waves come from? Possibly from air being pushed over the mountains on the surface, as suggested by other researchers. The waves will only break in the clouds if convection is occurring there.



LIR (10 micron) Image from Akatsuki courtesy of ISAS/JAXA



- The cloudiness of Venus is also varying with a period of 150 days. This shows that the clouds are supported by convection that is produced by cooling at their tops and heating at their bases.
- If the clouds become much less thick, then this heating and cooling occurs more slowly, and the convection ceases. If the convection ceases, then the waves will propagate through the clouds, almost unnoticed. They will break much higher in the atmosphere, where their effects will be much harder to see in data like this.
- How long is this timescale between waves breaking in the clouds versus elsewhere? All we can say now is that it is longer than the 2.5 years that VIRTIS-M-IR was able to observe Venus, and more than the approximately eight years that the wind speeds were seen to be increasing.
- The Japanese Akatsuki mission – currently orbiting Venus and monitoring its clouds and winds and temperatures for the next several years – might soon be able to provide the answer.