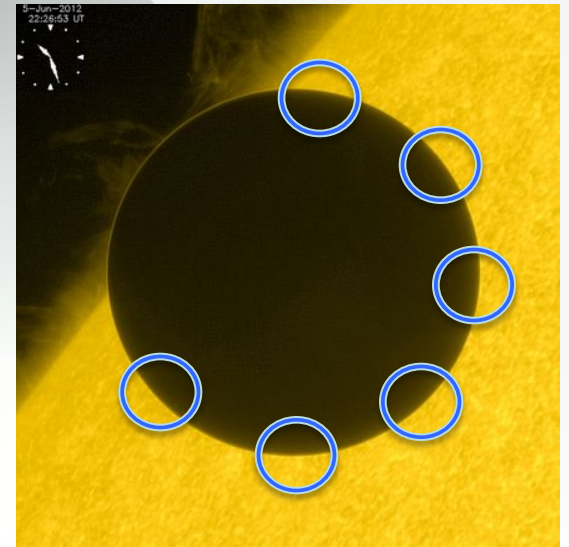


# Super Sonic Winds Seen in the Upper Atmosphere of Venus as Day Turned to Night

- NASA researchers used the James Clerk Maxwell telescope (JCMT) on Mauna Kea, HI to view Venus during a rare transit of the Sun on June 5, 2012.
- Their just completed analysis is extremely important for potential use on exoplanets atmospheres.
- From the Earth, the global day-night terminator is seen encircling the night-side disk of Venus.
- As Venus passed in front of the Sun, its atmospheric edge was backlit by intense solar radiation.
- Strong absorption lines of carbon monoxide (CO) in the Venus atmosphere were observed over the night side disk and around this terminator region, and Doppler shifts of those absorption lines were a measure of wind speed.
- Extreme, super sonic winds were measured across the terminator from day into night on Venus. These winds drive a chaotic night side circulation in the Venus upper atmosphere.
- It was critical to test this technique out since the next Venus transits of the Sun will not occur again until 2117.



Venus Solar Transit Image from  
JAXA Hinode spacecraft

JCMT fields-of-view (blue circles) pointed around the Venus disk where super sonic winds were measured during the ~5 hour Venus transit. This technique pioneers a new approach to the study of exoplanet atmospheres.