

Venus Express observations during the 2012 Venus transit

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Abstract

Venus Express will be, at least until 2117, the only spacecraft in history to have been operating in orbit around Venus during a Venus transit. VEX will be operating their scientific instruments to take benefit of this unique and advantageous point of view, simultaneously and in collaboration with worldwide ground based observations and by satellites orbiting the Earth.

1. Venus Express Observations

Venus Express will operate 4 instruments at the time of the transit: VMC, VIRTIS, Spicav and SOIR. The goal of these observations is to characterize the upper atmosphere of Venus during the transit for comparison with ground-based observations.

- The VMC camera (Venus Monitoring Camera) will obtain sequences of images of Venus in UV, visible and IR covering a wide range of latitudes (South to North).

- The VIRTIS instrument (Visible and Infrared Thermal Imaging Spectrometer) will obtain data through its visible channel, covering high to mid southern latitudes.

- The SOIR instrument (Solar Occultation in the InfraRed) will take benefit of another Venus transit, not the one seen from Earth, but from the VEX spacecraft itself. VEX will go into Sun occultation by the Venus disk in this period. SOIR will record a set of CO₂ spectra on the whole altitude range, from which temperature and aerosol absorption will be investigated.

- The SPICAV instrument (SPectroscopy for the Investigation of the Characteristics of the Atmosphere of Venus) will also perform a full Sun disk Scan just before the transit starts.

In this paper we will present what observations were performed during the transit and will present, if available, their preliminary results.

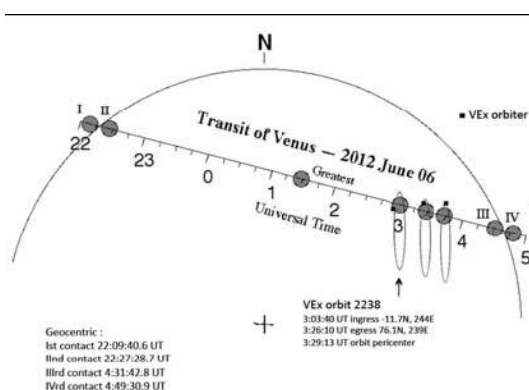


Figure 1: Geometry of the VEX orbit and Sun (to scale) during the Venus transit (courtesy T. Widemann)

