

Further multi-wavelength measurements of Venus winds with VEX

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Abstract

After 6 years orbiting Venus the Venus Express mission has provided a large database of visual and infrared observations of the Venus clouds at different layers with the VMC and VIRTIS instruments. We present further measurements of cloud motions in the South hemisphere of Venus obtained from observations at different wavelengths and atmospheric altitudes covering 6 years for the visible observations (VIRTIS-M visible channel and VMC) and 2.5 years for the infrared observations (VIRTIS-M infrared channel). These measurements were obtained with a semi-automatic cloud correlation algorithm that largely avoids spurious measurements and is robust enough to be used in images of very different characteristics in terms of signal to noise ratio, spatial resolution and time separation between images. We present wind retrievals in classical observing windows for wind retrievals during the day-side: UV (top of the upper cloud) and 980 nm (base of the upper cloud); but also in observation windows not explored before for analysis of wind motions due to the low signal to noise ratio (visible and 1.2 microns in day-side images). We explore the temporal variability of the winds in the upper cloud in various levels (top of the cloud in UV and approximately 5 km below in 980 nm and other wavelengths), i.e. its spatial structure and the mean meridional motions. We also compare the UV wind measurements with those obtained from analysis of VMC images with the same methodology and with previous analysis of both datasets [1- 3].

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References

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