

## Cloud level winds from UV and IR images obtained by VMC onboard Venus Express

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During eight years Venus Monitoring Camera (VMC) [1] onboard the Venus Express orbiter has observed the upper cloud layer of Venus. The largest set of images was obtained in the UV (365 nm), visible (513 nm) and two infrared channels – 965 nm and 1010 nm. The UV dayside images were used to study the atmospheric circulation at the Venus cloud tops [2], [3]. Mean zonal and meridional profiles of winds and their variability were derived from cloud tracking of UV images. In low latitudes the mean retrograde zonal wind at the cloud top ( $67 \pm 2$  km) is about 95 m/s with a maximum of about 102 m/s at 40-50°S. Poleward from 50°S the zonal wind quickly fades out with latitude. The mean poleward meridional wind slowly increases from zero value at the equator to about 10 m/s at 50°S. Poleward from this latitude, the absolute value of the meridional component monotonically decreases to zero at the pole. The VMC observations suggest clear diurnal signature in the wind field. They also indicate a long term trend for the zonal wind speed at low latitudes to increase from 85 m/s in the beginning of the mission to 110 m/s by the middle of 2012. The trend was explained by influence of the surface topography on the zonal flow [4]. Cloud features tracking in the IR images provided information about winds in the middle cloud deck ( $55 \pm 4$  km). In the low and middle latitudes (5-65°S) the IR mean retrograde zonal velocity is about 68-70 m/s. In contrast to poleward flow at the cloud tops, equatorward motions dominate in the middle cloud with maximum speed of  $5.8 \pm 1.2$  m/s at latitude 15°S. The meridional speed slowly decreases to 0 at 65-70°S. At low latitudes the zonal and meridional speed demonstrate long term variations. Following [4] we explain the observed long term trend of zonal and meridional components by the influence of surface topography of highland region Aphrodite Terra on dynamic processes in the middle cloud deck through gravity waves.

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