Geophysical Research Abstracts, Vol. 9, 08880, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-08880

Morphology and apparent motions of oxygen airglow features in Venus viewed by VIRTIS-VEX.

R. Hueso (1), A. Sánchez-Lavega (1), L. Zasova (2), I. Khatuntsev(2), P. Drossart (3), G. Piccioni (4), S. Lebonnois (5), and the VIRTIS-Venus Express Team

(1) Universidad del País Vasco (Bilbao, Spain), (2) IKI Moscow (Russia), (3) LESIA (Paris, France), (4) IASF-INAF (Rome, Italy), (5) LMD (Paris, France)

Oxygen airglow in Venus is produced by the recombination of oxygen atoms dissociated by photolysis of CO2 on the sunlit hemisphere. The newly formed molecules emit radiation that produces the airglow in the nigh-side hemisphere at 1.267 microns at an approximate altitude of 95-100 km. Images obtained by the VIRTIS-M channel instrument onboard Venus Express have been used to retrieve maps and apparent motions of these oxygen airglow cloud-like features. The observations show spectacular variability of the airglow activity and also intense meridional and zonal motions largely variable in time. Tracking the thermal emission features allowed us to obtain the zonal and meridional velocities. The zonal velocity changes its sign around midnight, keeping the same direction as the superrotation before midnight and changing the direction to the opposite after midnight. The zonal component varies between -50 and +60 m/s. The meridional velocities found from the O2 tracking vary from -30 to +30 m/s with an estimated error of +/-10 m/s. The meridional flow changes its character for different orbits. As an example, the flow was found to be converging for orbit 84 and diverging for orbit 96 at around 50 deg S. In most cases the brightest features appear at latitudes where there is a strong meridional convergence of the motions which may be an indication of downwelling. Although the apparent motions of the oxygen airglow features can not be directly interpreted as a tracer of the global dynamics, the potential raised by these observations to constrain the global scale circulation of the mesosphere will be discussed.