Geophysical Research Abstracts,
Vol. 11, EGU2009-10862-1, 2009
EGU General Assembly 2009

Altimetry of the Venus cloud tops from the Venus Express observations

N. Ignatiev (1), D.V. Titov (2), G. Piccioni (3), P. Drossart (4), W.J. Markiewicz (2), V. Cottini (3), Th. Roatsch (5), M. Almeida (6), and N. Manoel (2)

(1) Space Research Institute or Russian Academy of Sciences (IKI RAN), Moscow, Russia, (2) Max Planck Institute for Solar System Research, Katlenburg-Lindau, Germany, (3) Istituto di Astrofisica Spaziale e Fisica Cosmica (IASF-INAF), Rome, Italy, (4) LESIA, Observatoire de Paris, Meudon, France, (5) Institute of Planetary Research, German Aerospace Center (DLR), Berlin, Germany, (6) ESA/ESAC, Villanueva De La Cañada, Madrid, Spain

Spectrometer (VIRTIS) and Venus Monitoring Camera (VMC) onboard the Venus Express spacecraft are used to map the cloud top altitude and to relate it to the UV markings. The cloud top altitude is retrieved from the depth of CO2 absorption band at 1.6 μm. In low and middle latitudes the cloud top is located at 74$\pm$1 km. It decreases poleward of $\pm$50º and reaches 63–69 km in the polar regions. This depression coincides with the eye of the planetary vortex. Cloud top altitude experiences fast variations of about 1 km in tens of hours, while larger long-term variations of about several kilometers have been observed only at high latitudes. UV markings correlate with the cloud altimetry, however the difference between adjacent UV dark and bright regions do not exceed several hundred meters. Surprisingly, CO2 absorption bands are often weaker in the dark UV features, indicating that the clouds may be located there even few hundred meters higher. Dark UV spiral arms, which are often seen at about –70 º, thus formally, correspond to higher altitudes or to the regions with strong latitudinal gradient of the cloud top altitude. Cloud altimetry in the polar region reveals the structure that correlates with the thermal emission maps but is invisible in UV images. This implies that the UV optically thick polar hood is transparent in the near IR.