EPSC Abstracts,
Vol. 4, EPSC2009-593, 2009
European Planetary Science Congress,

Mesospheric wind on Venus according to VMC images

I.Khatuntsev (1), Limaye S.(2), Moissl R.(3), Ignatiev N.(1), Patsaeva M.(1), Titov D.(1,2) and Markiewicz W.(2)

(1) Space Research Institute (IKI), Moscow, Russia, (2) Space Science and Engineering Center, University of Wisconsin-Madison, Madison, Wisconsin, USA, (3) Max-Planck-Institut fuer Sonnensystemforschung, Katlenburg-Lindau, Germany (nip@irn.iki.rssi.ru / Fax: +7-495-3332102)

Abstract

We present results of wind speed measurements at the cloud top level of Venus derived from manual and automated cloud tracking in the UV channel (365±10 nm) of the Venus Monitoring Camera Experiment (VMC) [1] on board the Venus Express mission.

More then 65 orbits have been processed. More then 20000 manual vectors for UV details were obtained. The period of the observation covers more than 3 venusian year. Zonal wind speed demonstrates the local solar time dependence. Possible diurnal and semidiurnal components are observed.

According to averaged latitude profile of winds at level of the upper clouds:

- The zonal speed is slightly increasing by absolute values from 90 on the equator to 105 m/s at latitudes ~-47 degrees;

- The period of zonal rotation has the maximum at the equator (~5 earth days). It has the minimum (~3 days) at altitudes ~-50 degrees. After minimum periods are slightly increasing toward the South pole;

- The meridional speed has a value ~0 on the equator, then it is linear increasing up to ~ 10 m/s (by absolute value) at 50 degrees latitude. "-" denotes movement from the equator to the pole.

- From 50 to 80 degrees the meridional speed is again decreasing by absolute value up to 0.

Also the availability of the IR (365±10 nm) day side images for resolving of moving cloud details is considered. The obtained speed of the zonal wind in low and middle latitudes are systematically less than the wind speed derived from the UV images. The average zone speed obtained from IR images in the low and average latitudes is about 60 m/c.

References

[1] Markiewicz W. J. et al. (2007) *Planet. Space Sci.* V.55(12). P.1701-1711.