

## **Cyclostrophic wind in the Venus mesosphere from the VIRTIS temperature sounding**

A. Piccialli (1), D.V. Titov (1), D. Grassi (2), G. Piccioni (3), R. Moissl (1), W. Markiewicz (1), I. Khatuntsev (4)

(1) MPS, Katlenburg-Lindau, Germany, (2) Observatoire de Paris, Meudon, France, (3) IFSI-INAF, Rome, Italy, (4) Space Research Institute (IKI), Moscow, Russia

(piccialli@mps.mpg.de / Fax: +49-5556-979-240/ Phone: +49-5556-979-212)

The mesosphere of Venus (60-100 km) is the region where transition between two regimes of atmospheric circulation (super-rotation and solar-antisolar) occurs. Earlier observations showed that its lower part is characterized by a strong retrograde zonal flow (super-rotation) with wind speed reaching  $\sim 120$  m/s at the cloud top ( $\sim 70$  km). The circulation within and above the clouds is supposed to be governed by the cyclostrophic balance characterized by approximate equality between the centrifugal force and the pressure gradient. This assumption permits to infer the zonal wind field from the mesospheric temperature field. VIRTIS (Visible and Infrared Thermal Imaging Spectrometer) on board Venus Express is providing new observations of the mesospheric temperature structure with a very good spatial and temporal coverage of Venus' southern hemisphere. Here we present the first results of thermal wind retrievals using VIRTIS temperature sounding, with the aim of checking the validity of the cyclostrophic approximation and the range of its applicability. We also pay particular attention to the sensitivity of the model to the lower boundary conditions. The thermal winds are compared to those derived from tracking of the UV markings in the Venus Monitoring Camera images.