RESULTS FROM VENUS EXPRESS. H. Svedhem[1] and D. Titov[1], [1]ESA/ESTEC (PB 299, 2200AG Noordwijk, The Netherlands, H.Svedhem@esa.int), [2]ESA/ESTEC (PB 299, 2200AG Noordwijk, The Netherlands, dmitri.titov@esa.int).

Introduction: After six years in orbit Venus Express has provided a data set of more than 4 Tbit of scientific data of our enigmatic planetary neighbour and twin planet. The mission has addressed a wide scope of topics ranging from surface brightness temperatures and surface emission anomalies, indicative of active volcanism, through dynamics, structure and chemistry of the middle atmosphere, to upper atmosphere processes and solar wind interaction. A topic of particular interest to this meeting may be the dynamics of the mesosphere, including the global winds and the superrotation, the polar vortex characteristics and the temperature distribution in threee dimensions.

The mission was developed in a reecord time of less than four years from selection to launch, as a follow-up to the Mars Express mission, re-using a large part of the spacecraft platform and several elements of the payload [1]. The main differences are in the area of thermal contrl, solar cells/solar panels and the communication antennas.

The payload is made up of seven instruments, a four band camera (VMC), an imaging spectrometer (VIRTIS), a fouries spectrometer (PFS, non operational since launch), a high resolution spectrometer for stellar and solar occulatation measurements and nadir observations (SpicaV/SOIR), a magnetometer (MAG), an energetic neutral and ion/electron instrument (ASPERA), and an ultrastable oscillator in support of the radio science observations (VeRa).

Results related to dynamics and structure of the atmosphere: Wind vectors have been derived from tens of thousands of pairs of points identified in the contrast features in the cloud patter at different altitudes in images from the VMC and Virtis instruments. Windspeeds range from a few tens of m/s at the lowest accessible altitudes to more than 100 m/s at the top of the cloud layer at about 70 km altitude [2]. The most remarkable finding may be the strong variability in the waind speed. This is the case at all altitudes and latitudes.

The polar vortex has been studied in great detail, both with respect to its temporal variation and to its structure. The vortex centre is typically shifted from the geographical pole with about 3 degrees [3] and rotates at a perion between 2.5 and 3.6 days and the priod of the precession around the geographical pole varies from 5 to 10 days. The structure can change in only a few hours and can take appearances of a very regular symmetric dipole or tripole or can be completely irregular.

Temperature and pressure profiles of both the day side and night side of the atmosphere have been provided through measurements by VeRa, Virtis and SpicaV/SOIR, together covering an altitude range from 40 km to 150 km, albeit at variable spatial sampling intervals. Recently additional density measurements have been carried out by drag measurements by the spacecraft itself in the altitude range 165km to 200 km.

A general observation valid for all observables in the field of the atmospheric dynamics is the high variability in almost all measured parameters.

References: [1] Svedhem H. et al. (2007) *PSS, 55*, 1636–1652. [2] Markiewics, W., et al. (2007) *Nature, 450*, 633-636. [3] Luz, D., et al . (2011) *Science, 332*, 577-580.