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Venus wind regime in the lower mesosphere

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An international campaign of wind measurements has been set up for ground observations of Venus in support of Venus Express between May 23 and June 9, 2007 during eastern (evening) elongation. Instruments aboard address the problem of mesospheric dynamics from extensive mapping of the temperature fields above the clouds from CO_2 4.3- and 15-micrometers absorption (VIRTIS) and occultations (Spicav/SOIR). Winds at 70 km (and as well near 50 km) will be measured from cloud motion monitoring by both VIRTIS-M and VMC, and a qualitative description of the circulation at 95 – 110 km will be obtained from the morphology of the $O_2$and CO_2 emission mapped by VIRTIS. However, none of the previous experiments will be able to directly measure wind velocities above cloud level, which can be only performed from the ground. We measured the Doppler winds on the daylight hemisphere with OHP/1.93m/Sophie spectrograph between May 28 and June 1, 2007 (R = 75000, 0.38-0.69 micrometers), and CFHT/3.60m/ESPaDOnS high-resolution, fiber-fed spectrograph on July 2-3, 2007 (R = 80000, 0.37-1.05 micrometers). Lines in the visible (solar Fraunhofer lines and Venus atmospheric CO_2 absorption lines) dynamically probe altitudes at or immediately above cloud tops (68-75 km) where zonal superrotating winds decrease but are also subject to intense, rapid temporal variations (Widemann et al., 2007). I will present the first results of this international campaign of measurements above the clouds in the visible range.

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