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New measurements of vertical thermal structure and wind velocities in the Venusian mesosphere

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The Venus mesosphere is a highly variable transition region, in latitude, local time and over short time scales, between the zonal circulation of the lower atmosphere and the diurnal, sub-solar to anti-solar circulation in the upper atmosphere. In the framework of European Space Agency's second campaign of ground-based observations (Feb 8-22, 2009) in support of the Venus-Express mission, we coordinated new observations sampling a large range of altitudes in the Venus mesosphere on Feb. 7-8 and Feb. 14-15 : (1) James Clerk Maxwell Submillimeter Telescope (JCMT) submillimeter lines observations of mesospheric CO spectral lines measurements of temperature, CO mixing ratio and winds over the 95-115 km altitude range (Clancy et al., 2008), while SO2, SO and HDO observations were also probed in the 70-100 km range ; (2) Canada-France-Hawaii Telescope (CFHT) optical spectropolarimeter ESPaDOnS observations of visible Solar Fraunhofer lines measuring the winds at cloud tops near 70 km and visible CO2 lines 1-2 scale heights above (Widemann et al., 2007, 2008). Synchronization of wind measurements helps characterize possible correlation patterns between wind variations in the lower and middle mesosphere over a day time scale. Preliminary results will be presented at the meeting.

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