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Climatology of the Venus upper haze as measured by SOIR on board Venus Express

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We recently demonstrated the potential of the SPICAV/SOIR suite of instruments onboard the Venus Express spacecraft to characterize the aerosols in the mesosphere of Venus from a data set of three selected orbits [1]. The wavelength dependence of the continuum is primarily due to the extinction caused by the aerosol particles of the upper haze and is directly related to the effective particle radius of the particles.

Recent advances are presented here, showing that careful selection of diffraction orders (i.e. spectral windows) during solar occultations performed by the SOIR instrument [2, 3] could allow using only the SOIR channel to obtain information on the particle's size. The continuum of the SOIR spectra was obtained with the ASIMAT retrieval code [4].

The possibility to use the SOIR channel alone, instead of in combination with the SPICAV channels is important as it offers a larger data set, although less informative in terms of microphysical properties. Therefore, temporal and geographical variations of the vertical profiles of the aerosol extinction were investigated for a particular diffraction order. This spectral window was measured in many solar occultations and over a period of 3 years leading to good spatial and temporal coverages.

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