



Neutral atmosphere composition from SOIR measurements on board Venus Express

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The SOIR instrument performs solar occultation measurements in the IR region (2.2 - 4.3 μm) at a resolution of 0.12 cm^{-1} , the highest on board Venus Express. It combines an echelle spectrometer and an AOTF (Acousto-Optical Tunable Filter) for the order selection [1,2].

The wavelength range probed by SOIR allows a detailed chemical inventory of the Venus atmosphere above the cloud layer with an emphasis on vertical distribution of the gases. Measurements of HDO, H₂O, HCl, HF, CO and CO₂ vertical profiles have been routinely performed, as well as those of their isotopologues [3,4].

We will discuss the improvements introduced in the analysis algorithm of the SOIR spectra. This discussion will be illustrated by presenting new results of retrievals of minor constituents of the Venus mesosphere, in terms of vertical profiles and geographical distribution.

CO₂ is the major constituent of the Venus atmosphere and was therefore observed in many solar occultations, leading to a good geographical coverage, although limited by the geometry of the orbit. Depending on the abundance of the absorbing isotopologue and on the intensity of the band measured, we will show that the SOIR instrument is able to furnish CO₂ vertical profiles ranging typically from 65 to 150 km, reaching in some conditions 185 km altitude. This information is important in the frame of compiling, in collaboration with other teams, a new Venus Atmosphere Model.

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