



A Venus atmospheric model at the Venus terminator obtained from SOIR solar occultations 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.

The wavelength range probed by SOIR allows a detailed chemical inventory of the Venus atmosphere at the terminators in the upper mesosphere and lower thermosphere (70 to 170 km) with an emphasis on vertical distribution of the gases. In particular, measurements of CO_2 density and rotational temperature vertical profiles have been routinely performed. Using the Asimat algorithm, CO_2 density, temperature, total density and total pressure are derived from the SOIR data. Depending on the wavenumber region scanned, CO_2 density profiles were obtained from 170 km down to 70 km from a subset of 70 occultations, that allowed to build an atmospheric model only valid at the Venus terminator for different latitudinal regions. This terminator model is described, and the atmospheric dynamics that it implies are investigated. The model is also compared to previous models.