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Influence of line parameters on H_2O and HCl retrievals from VEX/SOIR spectra.

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The SOIR instrument, a channel of the SPICAV instrument suite onboard Venus Express (VEX), performs solar occultation measurements in the IR region (2.2 – 4.3 μm) at a resolution of 0.12 cm^{-1}, the highest onboard the spacecraft [1]. It combines an echelle spectrometer and an Acousto-Optical Tunable Filter for 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 (CO_2, CO, H_2O, HCl, HF, ...).

Thanks to the sensitivity of the SOIR instrument it may be possible to study line profiles. Broadening parameters for H_2O, HDO and HCl bands have recently been published, by Gamache et al. [2] and Tudorie et al. [3]. Those parameters have been implemented to fit SOIR spectra, using the ASIMAT code [4]. The results in terms of retrieved densities will be compared with those obtained using HITRAN2008 [5], the spectroscopic database developed mainly for the Earth's atmosphere.

References

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