

Interactive comment on “A sensitivity study for far infrared balloon-borne limb emission sounding of stratospheric trace gases” by J. Xu et al.

Anonymous Referee #4

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Summary and Comments: The paper by Xu et al. is a sensitivity study of the OH retrieval from TELIS data using the PILS retrieval code. The inversion methodology, the software used, the instrument and channels used for the observations are presented. Then, a study the sensitivity of the inversion to the different sources of error (instrumental and physical – temperature and density profiles) is performed. Finally, this work studies the advantages of using a multi-band inversion scheme for HCl, and studies its sensitivity, showing improvements over older techniques.

This paper is a clear explanation of the model and the inversion/sensitivity study scheme used for this instrument. It gives an explanation of the different sources of uncertainties that need to be studied in such observations. However, the reader should

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be aware that, in more general cases, the physical uncertainties (uncertainty in the molecular energy levels) can also have an important contribution. Based on these observations, I recommend this paper for publication in GI.

Detailed comments: p 252 L 22: "emission observations are independent of sunlight" should be replaced by "the considered emissions observations are independent of sunlight". (Since this is not true when NLTE emissions are considered).

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