

Interactive comment on “

Retrieval of temperature and pressure using broadband solar occultation: SOFIE approach and results” by B. T. Marshall et al.

Anonymous Referee #1

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The paper of Marshall et al describes in detail the retrieval of the stratospheric/mesospheric temperature-pressure relationship (e.g. $T(p)$), using the broadband transmittance of the CO_2 absorption bands at 4.3 and 2.7 μm .

An extensive sensitivity study referring to the physical mechanisms and using three different flavors of onion peeling has been performed. Finally, the method has been applied to the SOFIE instrument and compared to measurement of three other instru-

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ments (SABER, ACE, MLS).

This is a well structured, quite complete analysis and description of the method. I just miss at some points a few additional information or clarification for readers which are not so familiar with the topics:

- SOFIE instrument: I would like to see some more specific information about the instrument characteristics, just a few sentences: Detectors, band information for the used bands, SNR, Field of view, vertical sampling (2km, as used in the simulations?). And a link of this information to the settings used for the simulations, if necessary.
- Frequently the term broadband is used. This has to be specified: Which exact wavelength windows are actually used in the retrieval simulations for the O₂-A Band and the CO₂ bands? Do they agree with the ones of SOFIE/HALOE? And if not, do you expect implications?
- Usage of the described algorithm: Is the algorithm described here the one used for the operational SOFIE instrument (v 1.03 (?), as indicated in chapter 6?). Or will it be part of a future version? This should be clarified in the paper. I would like to see this information also in the summary.
- Frequently, the application of this algorithm to HALOE measurements is mentioned in the text. Please clarify the relationship of the HALOE retrieval mentioned here to the operational available ones.

I found only a technical corrections necessary:

- p.5747, l.18 : which transition from → with transition from .
- p.5755, l.29 ff : from cloud top or 5 km, whichever is lower → from cloud top or 5 km, whichever is higher : right?

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