

## ***Interactive comment on “Stratospheric isotopic water profiles from a single submillimeter limb scan by TELIS” by A. de Lange et al.***

### **Anonymous Referee #2**

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On the whole this paper is a sound piece of work showing the capabilities of the TELIS instrument to measure the isotopologues of water vapour. There are however some points that should be addressed before publication. I have not separated these in order of importance rather followed the manuscript row numbers.

Row 34: A reference to Ridal et al. (Ridal, M., A. Jonsson, M. Werner, and D. P. Murtagh (2001), A one-dimensional simulation of the water vapor isotope HDO in the tropical stratosphere, J. Geophys. Res., 106(D23), 32,283–32,294.) might be appropriate here.

Row 45: “contribute in solving” should be “contribute to solving”

Rows 63-64: the word respectively should be moved to are “are introduced”

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Row 69: Acronyms should be explained. (preferably in their own language)

Row 103: Acronym IREE = ?

Row 113: It should probably be noted here or elsewhere that these are the lines used by Odin

Row 135: “or halfway the limb sequence” would read better as which is the middle of the limb sequence”

Rows 175 -180: should not equation 7 have  $r$  instead of  $y$  :  $y$  is never introduced as the measurement vector – A clean up of the notation and its use is needed so as to not confuse the reader.

Row 190: “This makes that solving” would read better as “ As a result...”

Row 216: “depart” should read “departure”

Row 255: Since HDO is depleted by 30-80% in the stratosphere this approach is over estimating the amount. This should at least be noted but it would be preferable to check the calculations with a smaller amount HDO. It would also be nice to have the altitude of the tropopause noted for this atmosphere.

Rows 265-280: It is unclear here how the retrievals were carried out. What initial profile was used? what other retrieval parameters were tuned.

Rows 320-350: It is unclear here what sort of pointing “offsets” are applied. In the text it is said that pointing is retrieved for each spectrum but the rest of the discussion sounds like a single pointing offset is applied to all views. In that case then it is unnecessary to retrieve for each spectrum. This needs to be clarified.

The later points are perhaps the most important. It was at times difficult for the reader to follow exactly what had been done.

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Interactive comment on Atmos. Meas. Tech. Discuss., 2, 857, 2009.

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