

## ***Interactive comment on “Tropospheric water vapour isotopologue data ( $\text{H}_2^{16}\text{O}$ , $\text{H}_2^{18}\text{O}$ and $\text{HD}^{16}\text{O}$ ) as obtained from NDACC/FTIR solar absorption spectra” by Sabine Barthlott et al.***

### **Anonymous Referee #1**

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The manuscript "Tropospheric water vapour isotopologue data ( $\text{H}_2^{16}\text{O}$ ,  $\text{H}_2^{18}\text{O}$  and  $\text{HD}^{16}\text{O}$ ) as obtained from NDACC/FTIR solar absorption spectra" presents the technique for retrieving water vapor isotopologue measurements from FTIR data. It's a well-developed framework at this point, and a very important one, so I think the point of this manuscript is to serve as a basic reference for the technique. I am primarily a user of the data rather than a connoisseur of retrieval techniques, so I hope that someone more well-versed in the mathematics can check over the details. My only concern about the manuscript is that the mathematical framework is presented without a lot of hand-holding or examples that can help a non-specialist to understand the technique. This has been a general problem I have had with remote sensing papers - I really

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want to understand the underlying techniques, but the papers are presented in a fairly abstract way with few meaningful examples. It's almost certainly my own fault rather than the authors, but I wonder if they could add some more descriptive text and some examples that can help the lay reader better make the connections between the mathematical foundations and the ultimate applications to atmospheric sciences. It would increase the impact of the manuscript if the paper were more accessible to a broader audience. That may not really be the goal of the paper, which is OK, but I would love for some group (and this group of authors is as well-qualified as any) to write a tutorial paper that can help someone like myself better understand how to use FTIR and other remote sensing data.

Overall, this paper represents an important development in our ability to use FTIR datasets. I would hope the authors can add some small amount of additional material to make it more accessible, but basically I think this is a fine manuscript.

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