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Atmospheric Chemistry and Physics Discussions

Interactive comment on "A semi-empirical potential energy surface and line list for $H_2^{16}O$ extending into the near-ultraviolet" *by* Eamon K. Conway et al.

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We thank the reviewer for the feedback on our theoretical article. Below we try to address the comments on an individual basis.

1. *The cited literature is extensive, well chosen and mostly quite representative for the current state of research. However, literature about water vapour retrievals from other (older) satellites such as GOME, GOME2 and SCIAMACHY comes a bit short, at least Wagner et al AMT 2013 and references therein could be mentioned.*
The recent work by Borger et al. AMT (2020) using TROPOMI products was missed by us on submission but this has been added. References to retrievals using data from

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GOME, GOME-2 and SCIAMCHY have been added.

2. *Figure 3 could be extended by the upper limits on water vapour absorption cross-section values inferred from measurements by Lampel et al 2017 ACP, shown there in Table 4.*
We entirely missed this table from Lampel et al 2017 ACP but it is an important set of results to include in our study. We have added the upper limit using their 2nd order polynomial fits to Figure 4 with the other measurements. Their upper limit assumes a 0.7 nm resolution, which, like the 1nm resolution we initially used, is very coarse. We have used a 0.2 nm resolution instead, which preserves the structure and is still below their upper limit, which proves this upper limit is adhered to by our calculations. This is explained in the article.

3. *The data from the publication which is reduced to a spectral resolution of 1nm could be sampled better, it seems to be quite coarse at the moment.*
We addressed this above in comment (2). It is now 0.2 nm and the structure is well preserved.

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