

Atmos. Meas. Tech. Discuss., referee comment RC2
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Comment on amt-2021-48

Anonymous Referee #3

Referee comment on "Are elevated moist layers a blind spot for hyperspectral infrared sounders? A model study" by Marc Prange et al., Atmos. Meas. Tech. Discuss., <https://doi.org/10.5194/amt-2021-48-RC2>, 2021

Review of "Are elevated moist layers a blind spot for hyperspectral infrared sounders? – A model study" by Prange et al.

The authors demonstrated that mid-tropospheric water vapor information is dependent on knowledge about atmospheric temperature. I enjoyed reading the paper but question its basic premise. The fact that water vapor information from hyperspectral sounder measurements is dependent on a-priori knowledge of surface and air temperature is a well established fact.

At first I prepared a detailed review, but I decided to focus this response on my main question to the authors instead: **Who is your target audience?** I see no reference to any of the excellent papers on IR information content from either the retrieval or data assimilation communities, whether for AIRS, CrIS or IASI. Except for Rodgers, the authors communicate no awareness of any of the operational or research algorithms successfully retrieving mid-tropospheric moisture across the globe on a daily basis. Not to mention the excellent studies on channel selection, error estimation, a-priori selection and least squares fitting. I can provide a long list of references if needed.

Except for responding to Stevens et al. 2017 (which I haven't read, but the authors stated in their motivation throughout), I am not convinced this paper has scientific merit.