

Atmos. Meas. Tech. Discuss., referee comment RC2  
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## Comment on amt-2022-40

Anonymous Referee #3

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Referee comment on "An improved vertical correction method for the inter-comparison and inter-validation of integrated water vapour measurements" by Olivier Bock et al., Atmos. Meas. Tech. Discuss., <https://doi.org/10.5194/amt-2022-40-RC2>, 2022

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The paper introduces a vertical correction method for the IWV. The paper is of interest for the community, well written and from my point of view ready for publication. I just have the following comments/questions:

You assume that the 'standard procedure' for the vertical interpolation follows the simple exponential law provided in the introduction of the manuscript, i.e., 2km scale height for IWV. Who defined this to be the 'standard procedure'? In literature (also see next comment) I find different 'standard procedures'. E.g. you may use weather model data, and calculate the interpolation coefficients or lapse rates from there. That's it. In fact in the end of the manuscript you mention that you are going to make use of ERA5.

Your procedure could be useful for the vertical correction of the so called zenith wet delay, right? In some processing schemes a priori zenith wet delays are applied (they are typically provided from gridded numerical weather model data) but a vertical correction is required. Can you comment on this in the introduction. Here are some useful papers:

Böhm, J., Möller, G., Schindelegger, M. et al. (2015) Development of an improved empirical model for slant delays in the troposphere (GPT2w). GPS Solut.

Dousa, J., and Elias, M. (2014), An improved model for calculating tropospheric wet delay, Geophys. Res. Lett.