

Earth Syst. Sci. Data Discuss., referee comment RC1
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Comment on **essd-2022-57**

Anonymous Referee #1

Referee comment on "Tropospheric water vapor: A comprehensive high resolution data collection for the transnational Upper Rhine Graben region" by Benjamin Fersch et al., Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2022-57-RC1>, 2022

Review of Fersch et al.: Tropospheric water vapor: A comprehensive high resolution data collection of the transnational Upper Rhine Graben region

Water vapor is a crucial constituent of the atmosphere, not least because of its importance for severe weather events and climate change. The authors describe GNSS and InSAR datasets as input for assimilation in atmospheric models, along with the applied methods for merging. The datasets encompass the Upper Rhine Graben Region. The data are valuable and an interesting contribution for the scientific community.

The article is not always easy to read, but I understand that this is due to the fact that different communities (GNSS, InSAR, WRF, ..) are coming here together for this joint work. Moreover, some abbreviations are not understandable at first reading. There is an appendix with the explanations, but it would be appreciated if more explanations are added in the text.

Other comments:

line 12: What is meant with 2.5 mm global mean water equivalent? Average precipitable water? If yes, I would have expected a larger value.

185: are applied

Equation 1: I suggest adding the gradient mapping function to $\text{grad}(a,e)$

277: Where is Figure S4?

Equation 3: is there a certain reason to use * instead of . ?

466: derived

Figure captions 9 and 10, and others: please provide all the information in the figure caption, which is necessary to understand the figure.

493: datasets

Equation A1, and other equations in the appendix: please add units

Equations A8 and A9 denote the ZWD delay as a pure "wet" delay. On the other hand, A3 refer to a non-hydrostatic delay (not wet in the strict sense). Does this (small) difference cause any inconsistencies?