

Earth Syst. Sci. Data Discuss., referee comment RC1
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Comment on **essd-2021-15**

Anonymous Referee #1

Referee comment on "The three-dimensional groundwater salinity distribution and fresh groundwater volumes in the Mekong Delta, Vietnam, inferred from geostatistical analyses" by Jan L. Gunnink et al., Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2021-15-RC1>, 2021

Dears Authors,

Please find my comments on your manuscript.

The subject matter fits the aims of the journal.

Overall the quality of the paper is good, data and method are well presented and the results can be used both for groundwater management and further research (i.e. groundwater modelling) in the Mekong area.

I agree with the fact that working on delta scale requires assumptions and simplifications. The biggest assumption that could affect the results and uncertainty associated to all interpolations is the one related to domestic extraction wells, considering the amount of data for each aquifer, especially for aquifer qp2-3 (fig.6). This is my main concern that would require more explanation (see attached pdf).

The appendixes are fundamental to fully understand the methodological approach. There are some parts (i.e. hydrogeological profile in Fig. A1 and formation factor in Appendix B) that I would include in the main text.

Uncertainty associated to the interpolations is well explained. The comparison against previous hydrogeological model (Minderhoud et al., 2017) could be improved by given more information about the main differences on drainable porosity and estimate of fresh

groundwater volume between the 2 models. Some important discussion is currently reported in the appendix (C and D), but I would include part of that in the main text.

The length of the paper looks appropriate considering the complexity of the dataset and methods.

By reading the article and downloading the data set, it would be possible to (re-)use the data set in the future. I am not able to open the two NetCDF files available as dataset, but I am sure it's my fault. I tried with ArcGIS Pro and QGIS, I did not try by python.

Some other small comments and technical correction are reported in the attached revised version of the paper (pdf file).

Hope this could help in improving the paper.

Best regards

Please also note the supplement to this comment:

<https://essd.copernicus.org/preprints/essd-2021-15/essd-2021-15-RC1-supplement.pdf>