

Comment on essd-2021-315

Anonymous Referee #2

Referee comment on "Spatial and seasonal patterns of water isotopes in northeastern German lakes" by Bernhard Aichner et al., Earth Syst. Sci. Data Discuss.,
<https://doi.org/10.5194/essd-2021-315-RC2>, 2022

Aichner et al (2021) present a dataset of O and H stable isotope measurements in samples collected from lakes in NE Germany in 2020. Such data are much needed if one is to understand (eco)hydrological processes in the water cycle. However, the dataset offered here by the authors lacks in several aspects, making difficult to be used as potentially intended. As provider and user of similar data I find this dataset lacking several important assets which I highlight below.

- The variability of isotopologues in lake waters, similar to that in precipitation for example, follow a clear annual cycle. In order to understand these dynamics, at least one full yearly cycle needs to be covered by sampling. The authors collected waters mostly during the (extended) warm season, with several cases in which only two samples/year (warm season) were collected. In the absence of winter samples, it is impossible for the data to "give information about the seasonal isotope amplitude (page1, line 26). I am not sure I understand how this can be done with the present dataset. Further, in the absence of samples collected in winter (except for one case), it is virtually impossible to understand 1) the links between stable isotopes in lake waters on one hand, and stable isotopes in precipitation and weather/climate on the other hand, 2) recharge patterns and their timing.
- The stable isotope data is not accompanied by any physical, chemical or hydrologic data so understanding their temporal and spatial dynamics is almost impossible to understand (are these caused by hydrological processes? climatic ones?). For example, seasonal amplitude (see my comment above on seasonality) "can be attributed to multiple catchment characteristics and processes" (page 6, lines 157-158). Of course they can, these are the factors affecting the O and H stable isotope values in all lakes across the Globe, but nothing can be said on the investigated lakes here.

In my view, the sentence quoted above summarizes the maximum value that can be obtained from the dataset as it is now. I don't know if more data is available, but if not, I suggest the authors write a scientific article analyzing their data and append the data to the article. It would better served the wider scientific community.

