

Editor comments on the proposed revision of hess-2019-228

Dear Dr. Boehrer

Thank you for providing detail responses to the two reviews and the comments by C. Quinn during the interactive discussion.

I mostly agree with your replies and explanations and suggest that you revise the manuscript accordingly.

However, there is the issue of the trace metals where I do not follow your arguments but support the views of both reviewers.

First, both reviewers criticised that the trace metal topic wasn't related to the methane story and you share this view (Your response to Rev. 1: "We agree fully; the gas story does not rely on the measurements of trace elements. Removing this section would shorten the paper. ")

To include the trace metal results despite this disconnect to the core topic of the manuscript you argue as follows: "However, as we want to document the situation at the start of industrial exploitation, we feel the chemical situation should remain part of the manuscript. Previous publications deviated from our measurements in several cases "noticeably" (as written in our manuscript). As we are convinced of the quality (reliability) of our measurements, we see the need to have them published in a respected journal."

This is not convincing for including the results into a paper devoted to another topic. If the trace metal issue seems of sufficient importance you should consider to present it in a dedicated manuscript. This is essential for adequate scientific quality and peer review. Such a procedure ensures a proper context including presenting the state-of-the-art regarding these trace metals and possible deficiencies in available data. It also will influence the selection of reviewers.

For these reasons, I fully support the comments by the two reviewers and ask for removing the trace metal part from the manuscript.

Below I additionally list a few specific comments where I have specific recommendations (including those aspects where you explicitly asked for my opinion).

Comments related to the comment by C. Quinn (hess-2019-228-AC2)

Comment 1: Data sharing

Editor comment: Making data available is of essential importance. This is also clearly stated in data policy of HESS, see:

https://www.hydrology-and-earth-system-sciences.net/about/data_policy.html

You may make the data available through Supplementary information (e.g., in tabular form) but also use recognised data repositories (see e.g., <https://repositoryfinder.datacite.org/>) . Given these repositories I cannot follow your argument “The display of values of probe profiles is not possible as each profile has around 10000 lines.”. Repositories can handle such data sets.

Please make the data sets available as requested by C. Quinn including the probe profiles unless you can provide convincing arguments that this is not feasible.

Comment 3: Details on pressure estimates

Author response : « Response “However, we felt a connection between the measured gases and gas pressures should be presented to prove that the data are consistent.” “We will NOT present coefficients which are not optimal for calculating gas pressures.”

Editor comment: If you provide numerical values in the manuscript for testing the plausibility of your results (comparing measured and estimated pressures) it is not acceptable to decline the wish of a reader to present the assumptions (incl. numerical values) on which your result are based.

Whether or not such a description has to go into the manuscript is a different question. However, I expect that you provide more information about your calculation (incl. the Henry coefficient used) in your response.

Comments related to the specific responses to M. Kusakabe (hess-2019-228-AC3-supplement)

p.3, L. 13 – 14: Please refer explicitly to Bärenbold et al.

p. 12, L. 2: Response: “It is not the purpose of this paper”

Editor comment: This holds true. Nevertheless, this piece of information may be of interest to readers and should be given if it’s possible to do so in a one sentence.

p. 20, L. 21: Response: “beyond the scope of this paper.”

Editor comment: This may be true, but it may help readers who are not so familiar with the topic to know about the basic process. Therefore, I suggest to simply add a sentence giving a short explanation (biogenic methane production in the sediment) and refer to respective literature.

Comments related to Rev. 2 (hess-2019-228-AC4)

Reviewer: “P2 L17-19: Sentence not clear, please reformulate”

Author response: “Not clear which sentence”

Editor: There is only one sentence here: *To avoid any endangerment for the population, a management prescription for withdrawal depth and deposition of partially degassed deep water and*

wash water needed to be developed to avoid damage to the lake ecology and endangerment of the local population. However, I consider the sentence as sufficiently clear.

Reviewer: "P11 L7-10 : In the results section, you must not reference other studies. Referencing the literature is a discussion, not results"

Author response: "o.k if this is bothering the reviewer, we will find another place to list references on meromixis."

Editor: If you can find another meaningful place to mention that the lake is meromictic, it's fine. However, you can also leave it as it is because the statement and the references are not part of a discussion but provide an explanation for proper understanding the results.

Reviewer: "P12 L10-11: Please better describe your results. Example: "CH4 concentrations reached 18 mmol/l at 450m"

Author response: "If the reviewer wishes a few descriptive sentences about the findings here, we can add them easily (we leave this to the editor)"

Editor: It is indeed a matter of taste. I suggest adding a few sentences to put the values into a broader context such that readers who are not very familiar with the topic can better appreciate the findings

Reviewer: "P13 L1: Please put letters for identify panels, it is easier for the reader (upper panel =A; middle panel = B, etc)

Author response: "In more complex depictions, we label the panels, but here, it is easier to refer to upper , middle and lower panel. We believe readers can easily distinguish (editor's choice)."

Editor: Again, this very much a matter of taste. It can remain as it is.