

Interactive comment on “Physical and chemical consequences of artificially deepened thermocline in a small humic lake – a paired whole-lake climate change experiment” by M. Forsius et al.

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I would thank the two referees for their valuable contributions. Overall, both coincided that the data presented in this paper is of potential interest for HESS. However a mayor revision is necessary before to resubmit it to HESS. I would suggest to consider in depth the two most relevant critiques from referee #2. I totally agree with him that the discussion is, by far, the weakest section. It is essential that authors re-orientate this section discussing their results and successively to scan in detail their findings with that report in literature (i.e. Norwegian THERMOS lake experiment). Within this

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general context it is essential that authors make an effort to explain and to argue why “the manipulation did not give a completely realistic picture of the expected changes in physical conditions” or the “unusual hydrological conditions” introduced uncertain in the results evaluation.

Here some my additional more specific comments:

Abstract: The authors should remove the sentence “Changes in mercury processes and in the aquatic food web were also introduced” because this study is not focused on mercury and food webs. Furthermore at pag. 2918 authors state that “The aims of this experiment”, are to study “. . .on biogeochemical cycles (including Hg), foodweb structure and productivity, and biodiversity. . .”. However, data on mercury are missing in the text and tables and information about food webs and biodiversity appear sporadically in the discussion and come from other studies . . .The, the reference to “mercury”, “food webs” and “biodiversity” should disappear from the study aims.

Pag. 2922 Chemical analysis. Authors indicate that methodological details are available in others papers (Arvola et al., 2010; Rask et al., 2010 and Verta et al., 2010). Nevertheless, two of these papers are in preparation or submitted. Therefore it is necessary to explain analytic methods (perhaps in a synthetic table). Recall section 2.4 “Physical and chemical methods” Furthermore: the acronymous “TOC” stand for. . .(T= total, dissolved or particulate?)

It is not appropriate to cite “Verta et al., 2010”. According the reference list, this paper is under revision process. Use the formula “submitted” or “in press” if it concern.

Pag. 2929 line 27: “80 ml” of rain is a strange unit. . .convert it in “l/m²” or “mm”

Pag. 2930, line 22. The reference to DOC increase in surface waters is well documented in northern European areas, but not in the entire Europe.

Figures 4 and 5. Insert the labels “a”, “b” and “c” in the panels. Furthermore contour plots from figure 5 are not described in the text. Does these figure are relevant?. If not

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remove then, otherwise insert clear explanation in the result section.

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