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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Biogeochemical processes controlling density stratification in an iron-meromictic lake" *by* E. Nixdorf and B. Boehrer

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Evaluation 1. Does the paper address relevant scientific questions within the scope of HESS? Yes 2. Does the paper present novel concepts, ideas, tools, or data? Yes 3. Are substantial conclusions reached? Yes 4. Are the scientific methods and assumptions valid and clearly outlined? Yes 5. Are the results sufficient to support the interpretations and conclusions? Yes 6. Is the description of experiments and calculations sufficiently complete and precise to allow their reproduction by fellow scientists (traceability of results)? Yes 7. Do the authors give proper credit to related work and clearly indicate their own new/original contribution? Yes 8. Does the title clearly reflect the contents of the paper? 9. Does the abstract provide a concise and complete summary? Yes 10.

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Is the overall presentation well structured and clear? Yes 11. Is the language fluent and precise? Yes 12. Are mathematical formulae, symbols, abbreviations, and units correctly defined and used? Yes

13. Should any parts of the paper (text, formulae, figures, tables) be clarified, reduced, combined, or eliminated? Yes , details in separate comments

14. Are the number and quality of references appropriate? Yes 15. Is the amount and quality of supplementary material appropriate? Yes

General remarks

The authors examine the stability of meromictic lakes in the example of a acidic Waldsee Lake in the Muskau Arch. They proposed a very simple method for monitoring the dynamics of changes mixolimnion and monimolimnion. Despite the simplicity, the method is laborious and needs good bathymetric data, known from previous investigations. Additionally, the authors supported their field observations in laboratory experiment and simulation of natural process of mixing.

From biological point of view, authors should add to Chapter 2.2. important parameter: visibility of Secchi disk. This parameter allow to estimate depth of light penetration and possibility of oxygen production by phytoplankton. It is important for iron oxidation.

Specific remarks.

In the chapter 4.3, page 5613 line 5): Authors discussed correlation coefficient 0.71 whereas on fig 8 this value is has coefficient of determination R2. See comment to fig 8.

In the Chapter 5 (page 5613line 15). Is: “this result confirmed that the permanent stratification of Lake Waldsee was preserved by the presence of conductivity gradients”. Comment: shorthand, slang. Rather dissolved compounds.

Technical remarks.

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The paper needs some minor technical corrections:

Figure 1. Right map, Change colour of letters “Waldsee” suggestion: white. Fig 2, Rearrange drawings and increase the size of letters and add identification by letters a, b, c, d, e. In the text Figure 2 is cited as 2a, 2b, c,d,e. Figure 3.lack of citation in the text Figure 5. letters of legend and axis tags should be greater Figure 8. Value 0.71 given on the figure is the value coefficient of determination (R2). Then correlation coefficient in the figure caption should be 0.84, (square root of 0.71).

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 12, 5601, 2015.