

Interactive comment on “Hydrologic controls on DOC, As and Pb export from a polluted peatland – the importance of heavy rain events, antecedent moisture conditions and hydrological connectivity” by T. Broder and H. Biester

Anonymous Referee #1

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General comments: The manuscript presents a one year dataset of DOC, As and Pb concentrations and fluxes from an ombrotrophic peatland bog influenced by historical mining. The dataset supports the transport of all three from the acrotelm during hydrologic effects, and infers impacts of seasonality, antecedent moisture and redox conditions on the timing and magnitude of transport. While a number of other publications address similar transport dynamics in bogs, the addition of pore water and peat sampling helps draw inferences on the sources and timing of constituent transport. The paper needs some additional editing, but is worthy of publication.

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Specific comments: 1) The paper would benefit from additional editing to address numerous grammatical issues and significant digits. Some of those are noted below (but not all). The paper could also be shortened and focused. 2) Some additional detail on the sampling would be useful. In addition, it would be helpful to mention the analysis of samples for Fe in the abstract. 3) The authors note that they are assessing the importance of temp, pH and redox as well as precip for transport. The first two were only occasionally measured, and the third (redox) was inferred, not measured. 4) The “Years until exhaustion” in Table 2 doesn’t appear to be in the text and is confusing. Presumably the calculation is based on the assumption of no new inputs and the measured rates of transport. This obviously doesn’t make sense for DOC as production will continue. I’d cut it from the table.

Technical issues: P. 5016, line 5: “one year of continuous”... P. 5016, line 25: %, not ‰ (see also P. 5036, line 24) P. 5018, line 21: over the past centuries P. 5022: Please note the total number of discrete samples used for load calculations p. 5036, line 2: is that +- really 43%, or supposed to be 43 kgC ha? p. 5036: These should be referred to as yields rather than fluxes given that they are normalized by area. p. 5027, line 26: That might be “very low” DOC for the bog, but it’s high for most places. p. 5027, line 5: Do you mean “Pb and As. . .”? Or is it DOC and supposed to be mg/L? line 29 as well. Figure 3. The plots are difficult to see. I’d suggest making it a multi-panel plot by storms instead. Figure 7. Plots are difficult to see. Consider different colors for constituents.

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