Biogeosciences
Discussions

Interactive comment on "Trace metal concentrations in acidic, headwater streams in Sweden explained by chemical, climatic, and land use variations" *by* B. J. Huser et al.

Anonymous Referee #2

Received and published: 18 August 2012

General remarks.

The paper utilizes water monitoring data from Sweden that has received far too little attention in the peer review literature. The narrowing in on specific acidic waters feels well motivated, especially since they are spread out over the whole country from south to north. The cited literature shows that the authors are well aware of the current research. My comments are mainly of minor/moderate character and they potentially require a minor revision.

- The division into northern/southern areas based on vegetation feels a little bit vague. For sure there are vegetational changes but shouldnt the change be more of a gradient

than a cut-off?

- p1797-1798 The samples have all been filtered (0.45 μm?) This should be mentioned. For sure there are differences in the results between this fraction and several of the studies dealing with more dissolved fractions (ultrafiltered). The authors mention and discuss ultrafiltered results of other authors, but the connection between those results and the authors results could be more clearly mentioned or discussed (point is: don't avoid these problems, every hydrochemist have their issue with colloids).

- p1799 Setting below detection values to half values is common, but very far from the best option. For instance Dennis Helsel has written many papers on this issue. For instance one can search for the truer values with regression (or PCA, since you are well into multivariate statistics). And lets say that you would have one value below detection, then it is much fairer to set it to the detection limit concentration rather than half, which seems unlikely.

- p1800-1803. Multivariate statistics. Handling of this part seems to be ok (although one easily longs for some more figures with raw data when everything is "hidden". It wouldn't harm if the reader, in the future, would have the possibility to follow data handlings of multivariates and simila step-by-step from screen recordings, for reproducibility purposes).

- p1802 The authors discuss some potential problems in sampling that may or may not have caused problems for Pb, for example. Problems in this kind of data is more than expected, but the cause of this quality change could have been sorted out. The analyses are not that old and there should be good potential in finding out what was the cause.

- 1808 Seasonal variability: Inflow of ground-water is an interesting and plausible hypothesis (yet it is a suggestion that is picked up every time there are stream water patterns that cannot be explained). Another factor that could be searched for for some elements is plant litter decay. In late autumn after the growth season there is a initial

decay of fresh plant litter. The break up of plant cells releases potassium, for instance, that is not directly taken up by plants and that is also relatively mobile compared to Ca and Mg, this potassium could perhaps be detected in stream waters, depending on hydrological conditions.

END OF REPORT