

Interactive comment on “Manganese redox cycling in Lake Imandra: impact on nitrogen and the trace metal sediment record” by J. Ingri et al.

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We agree with the comment that the paper has too many rather complicated figures. Furthermore, the novelty of the work was questioned. We have therefore excluded the historical sediment data that to some extent has been discussed previously. Furthermore, we have changed the references, more clearly pointing out previous and recent pollution studies in Lake Imandra. We have reduced the number of figures from 13 to 7. The information in each figure has also been reduced, by excluding the seasonal variations. The paper is now focused on element cycling in the suboxic zone, using only water column data and porewater data from April. Although many lakes have been analysed for trace elements, it is not that common to measure both dissolved and suspended trace metals, including also major elements, and interpret them together as

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we do in this study. We believe that without the suspended data it would not have been possible to clearly reveal the important role of manganese redox cycling. Furthermore, suspended and dissolved data for trace metals in subarctic-arctic lakes are not common. To explain the double Mn-peaks in the water column it is necessary to discuss the interactions between manganese and the nitrogen redox cycle. The lack of data from lakes made it necessary to review the marine literature on the subject. Hence, we have more clearly explained why we think it is important to discuss the coupling between manganese and the nitrogen species, using simplified reactions, in spite of the fact that bacterial activity not was measured. We have modified the sampling and analytical section, more clearly pointing out the sampling and analytical protocols used for the profile in April.

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