

Interactive comment on “Remobilisation of uranium from contaminated freshwater sediments by bioturbation” by S. Lagauzère et al.

Anonymous Referee #1

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General Comments: I reviewed the manuscript by Lagauzère and coworkers about the remobilization of uranium in sediments as a result of the bioturbation of *Tubifex tubifex*. The authors describe a three part study where they followed the flux of uranium into the overlying water with time, the profile of uranium and a suite of other nutrients from the water column and into the sediment, and finally develop a model across the different phases. This study was done in contaminated and uncontaminated sediments as well as sediments with and without the presence of a bioturbation agent. Overall the study is interesting, has been thoroughly executed, and contains all the appropriate controls. The authors have thoroughly compared and considered the significance of their work in the context of others.

The authors should significantly reduce the total manuscript text. This should be

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achieved in two ways. First the authors should employ an English language service to provide grammatical editing. There is often wordy or awkward sentence construction present. Second the authors should carefully consider their main message and attempt to streamline their manuscript text to reflect that message. As the title indicates, the manuscript focuses on the biogeochemistry of uranium with the other biogeochemical components or factors serving as reference points. A significant amount of text is dedicated to discussing the profiles of the non-uranium biogeochemical components (page 17015 line 18 through page 17017 line 5 and late 17013 line 11 through page 17014 line 11). For example the final paragraph of the introduction sets up a nice outline for the authors follow in the results section. The percentage of text should reflect the proportion of each of these specific aims.

I would also recommend the authors rework the discussion. Please present the most exciting results first and in a succinct manner. For example the first 2 pages are dedicated to unimpacted sediments. While, the authors do a thorough evaluation of their results the manuscript would read better if this section was shorter, moved, or removed to a supplementary section.

Specific comments: In light of the comments above it is more difficult to provide specific comments however:

Please clarify the section from page 17014 line 26 through 17015 page 10. This section should be written in a more straightforward manner.

I recommend the authors combine figure 3 - figure 6 into 2 large figures. One figure with the profiles and the other one with the PROFILE predictions. This would make it easier for one to cross compare.

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