Review of ***Sediment and nutrient budgets are inherently dynamic: evidence from a long-term study of two subtropical reservoirs*** by Katherine R. O’Brien, Tony R. Weber, Catherine Leigh and Michele A. Burford

**General comments**

The revised paper by O’Brien et al. has been substantially improved. Especially more focus has been directed towards elaborating and underlining the importance of the study, beyond the importance of major flood events in estimating sediment budgets. I also find the changed title more descriptive. Therefore I find that the paper has increased its relevance for the general readership of HESS.

Generally I find that the authors argue well in their reply, and only leave a few points not clarified. Therefore I have three remaining comments that the authors could consider:

*Regarding the supplementary material*: I acknowledge that there is a substantial dataset as well as modelling work behind this paper which has also, as you state, led to the substantial supplementary material that you have included. Therefore I fully accept that for this particular paper you do not intend to condense the supplementary material. However, I maintain my critic that the amount of supplementary material is really on the edge of what is acceptable. At least I did not manage to read the paper without consulting the supplementary material. For instance I would much rather have had figure s3 or table s4 in the paper instead of table 1. In the guideline for manuscript writing to HESS it is stated (Point 2 under guidelines for supplement): “The supplement **shall contain only complementary information** but no scientific interpretations or findings/messages that would go beyond the contents of the manuscript.” I think this goes for most journals and therefore I think that you should critically consider your use of supplementary material in future papers. If it gets too extensive and evolves to tell its own “story” it might be a better idea to split the study into two shorter and more concise papers. It is much easier for the reader which is ultimately the one you want understands your findings

***Response: We take the reviewers point that Figures S3 and Table S4 both contain important results, rather than just supporting material. Given that there are already 7 figures and 3 tables in the main body of the paper, we moved Figure S3 into the paper (now titled Figure 5, and other figure numbers and references adjusted accordingly). We have left Table S4 in the Supplementary Material because Figure 5 shows of the important points of Table S4.***

*Table 1*: There is no reply from the authors to the comment made about this table. For future papers I give the advice that the authors explain their reasons for either following or not following the reviewer’s recommendations rather than referring to the editor. This will save time, both for the editor and the reviewer. Since you have not argued why you prefer to keep the table as it is, I would like to repeat the comment: I find that table 1 is rather confusing. There is a lot of information and it is written in entire sentences which makes it hard to read. I think you give a quite comprehensive description of data in the text which makes the table redundant. I advise the authors to restructure the table using headings and cues rather the sentences or simply leave out the table, since the information is repeated in the text. Or explain why they think that this table extends the reader’s understanding.

***Response: We apologize for this oversight. We have now removed the table. The remaining tables have been renumbered, and references to these tables updated throughout the paper.***

*Manuscript conclusions*: About the last two sentences in the Conclusion section the authors reply: “As outlined earlier, we differ from the reviewer’s opinion on this matter, and await the Editor’s decision”. As far as I can see there is not an earlier statement about disagreement and you also changed the conclusion section to be more true the common understanding of a conclusion: that is should conclude on the findings and main implications of the study and not elaborate on the findings. Therefore I am not sure what you mean with your reply, so just a few general words about conclusions that you might find useful for future work: Many journals, including HESS, do not require a conclusion, and you can either simply stop with the discussion or write a small summary if you do not like the repetition required in a conclusion. However, if you do choose to include a conclusion you should conclude in it and not use it as a perspectives section.

Generally I think that the conclusion is so widely used in scientific papers because it is actually a really good help for the reader to get an overview and recapture the main findings of often very complex studies. I agree that conclusions can be rather tedious for the authors to write but remember that they are very useful for the readers.

***Response: After we submitted our modified manuscript and response to the reviewer, the editor requested that we change the Conclusion. Thus we did change the Conclusion in line with the reviewer’s suggestion (and we agree that it is an improvement), but the “Response to reviewer” document was not updated to reflect this change. We apologize for this oversight.***

**Technical corrections:**

Page 4, line 26: Please use “does not” instead of “doesn’t”.

***Response: this has been corrected***

Page 7 line 18: Please delete “be” after “was not”.

***Response: this has been corrected***

Page 15 line 12: I believe that “alternatives” should be singular?

***Response: this has been corrected***

Page 15 line 16: Please delete the last “.” in the sentence.

***Response: this has been corrected***

***We have also made some additional minor corrections to the manuscript, which were not in response to reviewer comment:***

* Additional affiliation added for the third author, Catherine Leigh;
* Lines 18-20 in the Abstract have been modified so that the figures quoted in the abstract are consistent with those reported in the paper;
* On pages 1, 5 and 6, a number of citations have been reordered so that they are now written in correct chronological order;
* Page 10 paragraph two: some of the percentages given in the paragraph have been modified to fractions, and re-written to ensure consistency with Table 1 (formerly Table 2) and the numbers given in the Abstract;
* Small formatting change in Table 2 (formerly Table 3) because the units were previously written ambiguous;
* “Factor of 40-50” changed to “Factor of 30-50”on P10 L6, and the phrase “ than on average during the non-flood year” added for clarity;
* P11 L3 the following text has been added for clarity: “, had historical mean concentrations been used to estimate the outputs during January 2011.”
* “Factor of 2-10” changed to “3-7” on P12, L20 to ensure consistent with Table S4
* Reservoir volumes on p3 were previously given in km3 only, but are now given in ML, since the results are expressed in ML and GL. In Table 3 (formerly Table 4), change in storage volume is now given in ML for ease of comparison, and m3 are removed from labels in Table 1 (formerly table 2) so that all volumes are now defined in ML or GL throughout the paper;
* A numerical error in the volumes has been corrected in Table 3 (formerly Table 4). The change in storage volume was correct, and has not been altered; this error in the change in storage volume and an error in the reference to Leigh et al. 2010 have both been corrected in the text (p15, L6-15), and the change is storage volume is now referred to in ML for consistency with the rest of the paper;
* The number of significant figures in Table S4 has been increased for some entries, to ensure consistency across the table;