

Interactive comment on “Numerical modelling of Glacial Lake Outburst Floods using physically based dam-breach models” by M. J. Westoby et al.

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The authors have posted replies to the reviewer comments and to my own previously posted comment, which pointed out the similarity between the major concerns of the two reviewers (although as the authors noted, the tone of the two reviews differed significantly) and summarized my assessment based on their common points. In my previous comment, I noted that the concerns of the reviewers regarding both the study design and its presentation were major and that the scientific contribution of the work was unclear. The authors elected to reply to the referee and editor comments, and indicated that they intend to submit a revised manuscript addressing these issues.

Here I make clear what is required for the paper to proceed to final publication. Specifically, in addition to improving the clarity of the paper presentation, the authors will

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need to submit a revised manuscript and accompanying Author Comment detailing where and how each of the points have been addressed with specific changes in the revised paper. This will aid in any further peer review of the revised paper that may be required.

From the authors' previous replies, it is not clear precisely how they plan to address each of the major concerns of the reviewers and editor. The authors' reply to the editor is incomplete, concluding with: "Many of the problems that are highlighted by the reviewers are not, in our view, fundamental, and our reasons for this are discussed below. We hope that our responses to their comments and a significantly revised manuscript will satisfactorily address these concerns," but no further text follows. The new Author Comment that is submitted with the revisions must detail where and how each point has been addressed with specific changes in the revised paper. For some points, a clear and well-justified rebuttal in the Author Comment may be sufficient; but for the vast majority of points, each issue must be addressed in the revised paper. The authors should disregard comments from Reviewer 1 regarding promoting the software. There is good agreement in substance between the two Reviewers on many of the rest of the points, including the need for better explanation and justification of the model and statistics. Justifying and detailing the model and its inherent strengths and limitations is critical for the revised paper to avoid the impression that the model is more or less taken as "correct" and then knobs are turned to examine the sensitivity.

The study addresses an interesting and important topic. Another point that must be addressed in the revisions is clear articulation of the scientific contribution of the study to this topic, and more clear presentation of what was done in the study. In the following paragraphs I suggest how revisions to the Introduction will help in this regard, and comment on a few other issues of paper organization.

The introduction explains the significance of GLOF hazard. It also needs to (1) clearly and concisely state and explain the problem you are attempting to address in the study, (2) clearly and concisely describe your specific approach to addressing the problem in

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language the broad readership of ESURF can understand, and (3) give a brief “road map” so the reader knows what to expect from the rest of the paper. After providing the background on GLOF hazard, include a paragraph describing the problem or gap in understanding, and conclude by stating what you plan to do in this study about the problem/gap, specifying how and where (i.e., mentioning the study site and moraine dam failure and GLOF event in Nepal). Paragraph 3.1 in the Discussion paper is a great start for this. As minor points of writing style, it would be useful to mention the subject of your study earlier in the Introduction, and it would help the reader to more smoothly link ideas in one paragraph to the next. For example, the first paragraph talks about glacier recession and moraines, and you could end this paragraph with a sentence mentioning that moraines can dam up lakes and become unstable, representing significant hazard. This would help lead to your next paragraph about moraine-dammed lakes, and the next paragraph about moraine breaching.

Revision of the paper organization will make the presentation of the study more clear. For example, the revised paper could discuss background on uncertainty/statistics in dam-breach modeling after the Introduction, since this is related to the motivation of the study. It might make more sense to detail the numerical model (HR BREACH) setup and justification for its use before discussing the study site, which comes into play only later as a place to apply the model. The rest of the paper organization will depend on how the authors choose to address each of the points in the reviewer comments.

We look forward to receiving a revised paper and accompanying Author Comments that address each of these points fully so the paper can proceed to final publication.

Interactive comment on Earth Surf. Dynam. Discuss., 2, 477, 2014.