Peer Review Report

Review Report on Suyyas's Flood: Numerical Models of Kashmir's Medieval Megaflood and ancient Lake Kerewa drainage events

Original Research, Earth Sci. Syst. Soc.

Reviewer: Robert Wasson
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EVALUATION

Q 1 **Please summarize the main findings of the study.**

That much larger floods than those gauged can occur, although the comparison with gauged records needs to be added.
Earth science and historical methods can add great value to risk assessments, but once again a finding that needs to be added.
That the medieval flood has not been exceeded, a conclusion that needs to be considered within a risk assessment framework.

Q 2 **Please highlight the limitations and strengths.**

Strengths: Good use of observations, an appropriate modelling strategy, honest account of uncertainties.

Limitations: Insufficient information about lithologies, little attempt to quantify uncertainties, insufficient referencing.

Q 3 **Please comment on the methods, results and data interpretation. If there are any objective errors, or if the conclusions are not supported, you should detail your concerns.**

The methods are appropriate, the results and data interpretation are OK but could be a little better. No objective errors and the conclusions are supported although I would like to see a little more detail.

Q 4 **Check List**

Is the English language of sufficient quality?
Yes.

Is the quality of the figures and tables satisfactory?
Yes.

Does the reference list cover the relevant literature adequately and in an unbiased manner?
No.

Are the statistical methods valid and correctly applied? (e.g. sample size, choice of test)
Not Applicable.

If relevant, are the methods sufficiently documented to allow replication studies?
Yes.

Are the data underlying the study available in either the article, supplement, or deposited in a repository? (Sequence/expression data, protein/molecule characterizations, annotations, and taxonomy data are required to be deposited in public repositories prior to publication)
Yes.

Does the study adhere to ethical standards including ethics committee approval and consent procedure?
Not Applicable.

If relevant, have standard biosecurity and institutional safety procedures been adhered to?
Not Applicable.

Q 5 **Please provide your detailed review report to the editor and authors (including any comments on the Q4 Check List):**

This is a very worthwhile paper that should be published, but after some modification as follows:
1.There is reference to the elevation of Karewa shorelines in Figure 2 (a) and in the text and the only citation is to de Terra and Paterson (1939). Much more work has been done on these sediments since that time and reference should be made to some of that work. Also, uplift and tectonic deformation of the lacustrine sequence is not mentioned as a possible complicating factor.
2. Line 50. Add the standard error for this (?mean) annual discharge. This can be used to provide additional error estimates for the time to fill the palaeolake,
Line 54 Add a comma after 'flood'.
3. Lines 91-93 provide information about the rock types that can provide 'fuel'.
4. Line 110 It would be helpful to provide some approximate quantification of the mentioned uncertainty. I realise that this is difficult but some attempt should be made.
5.Figure 3a. Correct spelling to Muzaffarabad.
6. Lines 146-148 If the flood was a hyper-concentrated flow then the discharge estimates need to be adjusted, as suggested. Add a relevant citation to such an adjustment.
7. Line 164 While interesting, the relevance of death from an arrow is not clear.
8. Line 179 if we were told the lithology of both the boulders and their possible source then at least there would be some useful information on this point. Surely somebody knows these things.
9. Line 213 Correct spelling to Muzaffarabad.
10. Line 217 Cotter (1929) is Potter in the references. Which is it?
11. Line 229 Please provide a reference for this statement about all the rivers.
12. Line 242. This conclusion also depends upon the availability of rock types that can produce mega boulders. Add a little more detail please.
13. Line 248 What would be the risk to the structural integrity of Mangla Dam?
14. I would also like to see a comparison between the estimated peak flood flow and the gauged peaks. This would provide input to a risk assessment for Mangla Dam.
15. In addition, a sentence or two needs to be added to explain how the methods of earth science and history employed here can be of assistance in risk assessment.
16. Please show the 98m level on Fig. 3 to be consistent with the other annotations.
17. On Fig. 3 there are levels at 174m and 274m but in Table 1 they are 173m and 273m. Please correct.

QUALITY ASSESSMENT

Q 6	Originality	■■■■■
Q 7	Rigor	■■■■□
Q 8	Significance to the field	■■■■□
Q 9	Interest to a general audience	■■■■■
Q 10	Quality of the writing	■■■■■
Q 11	Overall quality of the study	■■■■■

REVISION LEVEL

Q 12 What is the level of revision required based on your comments:

Moderate revisions.