Response File for
The 2024 cascading glacial lake outburst flood in the Thame Valley of Everest region, Nepal: process, impacts and implications

Anonymous Referee #1
Response to RC1

The authors analyze the multi-lake outburst flood which occurred in the Thame Valley in the Everest region of Nepal in August 2024. The study includes a comprehensive analysis of the triggering, initiation, and dynamics of the event. It is of high scientific and practical relevance and perfectly fits to the scope of the journal. The figures are of generally high quality, whereas the quality of the language varies throughout the manuscript.

The methods and findings are clearly presented and critically discussed. Triggering of the GLOF, which is controversially assessed in the scientific community (mass movement impact versus increased lake level), is clearly and critically discussed based on the available documentation, though with a different outcome than in previous studies (*Munch, J., Steiner, J., Huggel, C., Basniat, A., Pandey, V. P., Adhikari, B. R., Aaron, J., Mergili, M., and Allen, S. K.: Modeling Cascading Hazards in High Mountain Environments: Challenges and Approaches from the Thame Case Study, Nepal, EGU General Assembly 2026, Vienna, Austria, 3–8 May 2026, EGU26-17163, https://doi.org/10.5194/egusphere-egu26-17163, 2026*). The process chain is simulated with the r.avaflow software, based on both triggering scenarios. The simulation results are critically evaluated, also in regard to possible limitations.

Response: We would like to thank the reviewer for the careful evaluation of our manuscript and for the positive comments. In the revised version, we have addressed all comments and suggestions. In addition, the language of the manuscript has been thoroughly polished with the assistance of one of our native English-speaking co-authors.

Based on our field investigations, satellite observations, and interpretation of the available evidence, we reached a different conclusion regarding the triggering factor compared with some previous reports. However, we acknowledge the possibility that a sudden rockfall or rock avalanche may have occurred, as reported by the ICIMOD team and others, which visited the lake site earlier than led by ours. Such differences in observation may arise because conditions can change rapidly following an event. Furthermore, the eastern side of the upper lake is characterized by vertical slopes composed of highly fragmented rock. Therefore, we cannot completely rule out the possibility of a rockfall or rock avalanches. However, from the available evidence, we are unable to clearly determine when such a failure may have occurred and its volume.

Considering these uncertainties, we have revised the manuscript accordingly. Importantly, as noted by the reviewer, the process chain of our study is not substantially affected by the specific triggering mechanism.

I would certainly like to see this work published and recommend **minor revisions**. I have some few specific comments which hopefully help to further improve the manuscript:

- L75f: Better replace "cascading breach of" by "cascading GLOFs from". It is a dam that breaches, not the lake.

  Response: Thank you. Replaced.
- L205f: Maybe better do not mention the thermo-mechanical model of r.avaflow, it is still very experimental and not yet fully functional.

  Response: We have revised the text by deleting the thermos-mechanical model of r.avaflow.
- L216f: "… which is primarily based on GRASS GIS …" Please reformulate, the r.lakefill function is a script that only works within GRASS GIS.

  Response: Thank you for the clarification. We have revised the sentence to clarify that r.lakefill is a GRASS GIS script used within the r.avaflow workflow.

  Figure 3: Maybe it could be useful to show the lake outlines, as the lakes are not so clearly visible in all of the images, and lakes could be mixed up with shadows or other features.

  Response: Following the suggestion, we have updated the image with lake outline.
- L300: I think that "autumn season" should be replaced by "spring season"?

  Response: Thank you for your observation, we have corrected it.
- In general: replace "Icimod" by "ICIMOD" in citations.

  Response: Revised accordingly throughout the manuscript.

In addition to that, language needs to be thoroughly checked and improved.

Response: Language has been thoroughly checked and improved in the revised version.