** Please find our point-by-point response highlighted in blue to the reviewer's comments.

**Response to Referee #1: Adam Emmer**

I thank the authors for the revisions of their manuscript and their detailed replies to my comments. While I understand why some of my comments were not reflected in the revised version, it is in particular disappointing to see that the authors refused to take into account dam geometry which controls breach depth and so released volume, and which can be obtained easily from digital elevation models. The assumption of up to 100% water release is not justified if the dam geometry is not considered and I'm very reluctant to arbitrarily calling it "the worst-case scenario". It does not justify it. An effort should be made to set the boundary conditions of a "worst case scenario" (otherwise you can model collapses of whole mountains, calling it WCS; such outcomes, however, have little utilisation as the probability of their occurrence in human-relevant timeframes is unknown). And considering the dam geometry is one of the ways how a boundary conditions for the DRR-relevant worst case scenario definition can be set up. And this also aligns with my comments about "typical extremity" which can be expressed - for instance - as % of total lake volume that is released during the GLOF. My experience is that GLOFs from moraine-dammed lakes typically do not involve 100% of lake water, suggesting boundary conditions for a WCS. To sum up, I ask the authors to justify their assumption that a WCS for any lake means a release of the 100% of the lake water (I'm not sure there is a data-driven evidence and justification for that), or consideration of dam geometry.

Response: Thank you very much for the reviewer's comments. Although considering dam geometry to set up the worst-case scenarios would require re-simulating all scenarios, which involves substantial work, we fully agree with the reviewer's suggestion. We have contacted the authors (Bajracharya et al., 2020), who assessed GLOF hazard factors related to dam characteristics for the 21 identified PDGLs and have obtained the maximum depth of the moraine dams for these lakes. To account for the most severe GLOF scenarios, we have considered the breach depth to reach the maximum depth of the moraine dams. Additionally, we have also accounted for less severe conditions by simulating scenarios where 25%, 50%, and 75% of the maximum dam depth are breached. The main revisions can be found in the Methodology subsection 2.2.1 (lines 196–219), the data in Table 1 (lines 306–307), and the Results subsections 4.2 and 4.3.

**Response to Referee #2**

Dear authors,

Thanks for the detailed responses to my comments.

I read both original and the revised version. The authors have addressed my main concerns and made great improvements on the initial submission. The paper is more clearly written and more concise. But I still have three concerns for the paper although much more minor than the first submission.

Response: Thank you very much for the reviewer's overall positive feedback.

First, the authors have deleted the introduction of the three categories of glacial lakes in the text but the classification still remains in Fig. 2. I suggest to remove the classes of the lakes in this figure. Instead, the authors can mark the lake numbers in Fig. 2, if possible. The risk classification of the lakes is also seen somewhere in the text, e.g., in section 4.3.3. The authors need to go through the paper to remove the classification in the text.

Response: Figure 2, shown below, has been improved based on the reviewer's comments. The risk classification of the lakes has been reviewed and removed from the draft.

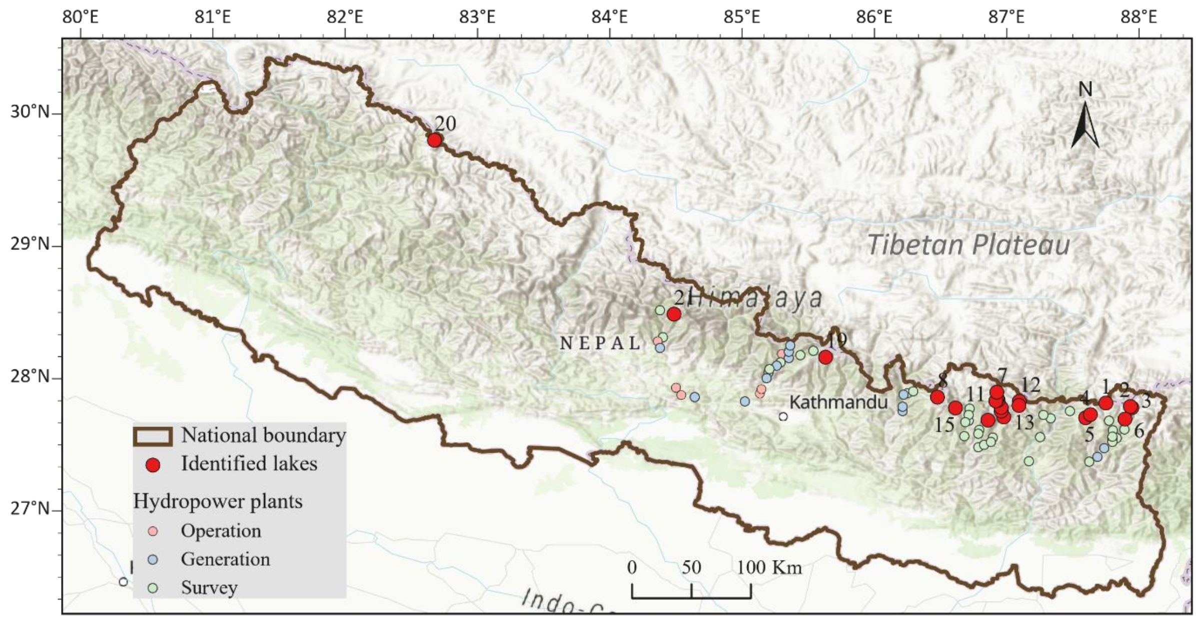


Fig 2. Study area and 21 identified dangerous glacial lakes each with a unique lake number, and potentially impacted hydropower plants.

The second issue is related to the hydropower plants. It is unclear how the hazard and damage to the hydropower stations was evaluated. It seems that the authors only considered whether the GLOFs would inundate the hydropower plants downstream. I believe the reality is more complicated. Inundation, flow impact, and sediment deposition may all cause damage to the hydropower stations. The influence of GLOF on the operation of the plants can also lead to economic loss although the dam and plant remain intact in the flood. The damage curves were utilized for buildings and roads but it seems that no damage curve was there for the hydropower stations. Whether and how the damage of the hydropower engineering was considered needs to be clarified.

Response: Thank you to the reviewer for highlighting this important point that we did not address. We have added clarification below in lines 503–513.

“In this study, we have identified 49 existing and planned hydropower projects that could potentially be impacted by GLOFs originating from the 21 PDGLs; however, we did not assess the specific impacts of GLOFs on these hydropower projects. To our knowledge, there are no readily available damage curves that correlate the potential impact on hydropower plants with flood depth and other flood characteristics. Furthermore, hydropower plants typically comprise multiple components, including the dam and reservoir, powerhouse and auxiliary facilities, among others. The spatial extent of a hydropower plant can vary significantly, ranging from a few square kilometres to several hundred square kilometres. Accurate assessment would require detailed spatial information and mapping of hydropower plants, which is currently lacking. Consequently, this study focuses exclusively on identifying whether a hydropower plant is potentially at risk from GLOFs, without engaging in a detailed assessment of the specific damages that may be incurred.”

Besides, the hydropower stations listed in Table 4 can also be shown in Fig. 2 to visualize the exposure of these hydropower stations to GLOFs. Further information is better to be shown in Table 4, e.g., capacity, commission/issue date, corrected longitude and latitude, how impacted by nearby glacier lake(s). Lines 425-429 should be moved to the methods section, combined to the paragraph from line 256 to line 272. The paragraph in lines 425-429 also needs to be shortened. For instance, the sentence in lines 430-433 can be rewritten if the information is shown in Table 4 somehow.
Response: These hydropower stations have been added to Figure 2, and detailed information such as capacity, commission/issue date, corrected longitude and latitude, and the lake(s) that may pose risks have been included in Table S1 of the supporting document. The original lines 425–429 have been moved to lines 270–272. The paragraph in lines 425–429 has been shortened as follows.
“In addition to the high potential for human settlements to be exposed to GLOFs, hydropower projects are increasingly vulnerable to these events. A total of 49 hydropower plants have been identified as being in close proximity to GLOF flow channels, thereby rendering them potentially vulnerable to GLOFs associated with the 21 PDGLs. Among these, 5 plants are currently operational. Additionally, 44 hydropower plants, for which generation or survey licenses have been issued, are also exposed to the risk of GLOFs from these 21 PDGLs. When examining the potential impact of lakes on operational hydropower plants and those holding generation licenses, it is observed that Thulagi and Tsho Rolpa pose a risk of inundating 5 plants (3 operational and 2 licensed) and 3 plants (all licensed), respectively. Moreover, it is noteworthy that lakes Anonymous 12, Anonymous 1, and Anonymous 2 have the potential to inundate 7 plants (2 operational and 6 licensed), 2 plants (both licensed), and 2 plants (both licensed), respectively.”

Last, the authors showed the statistics on the damage to buildings, roads and agriculture land caused by GLOFs, but did not visualize the spatial distribution of this damage in the areas subjected to GLOFs. Maybe this has been shown in previous work of the authors, but providing some examples of the damage maps will make the advantages of the advanced hydrodynamic simulating technique clearer to the audience. The authors can consider to provide such examples in appendices or supplementary material if putting them in the main text is inappropriate.

Response: An example figure has been added. Figure 8 uses Lake Anonymous 12 to illustrate the spatial distribution of damage to buildings, roads, and agricultural land caused by GLOFs.

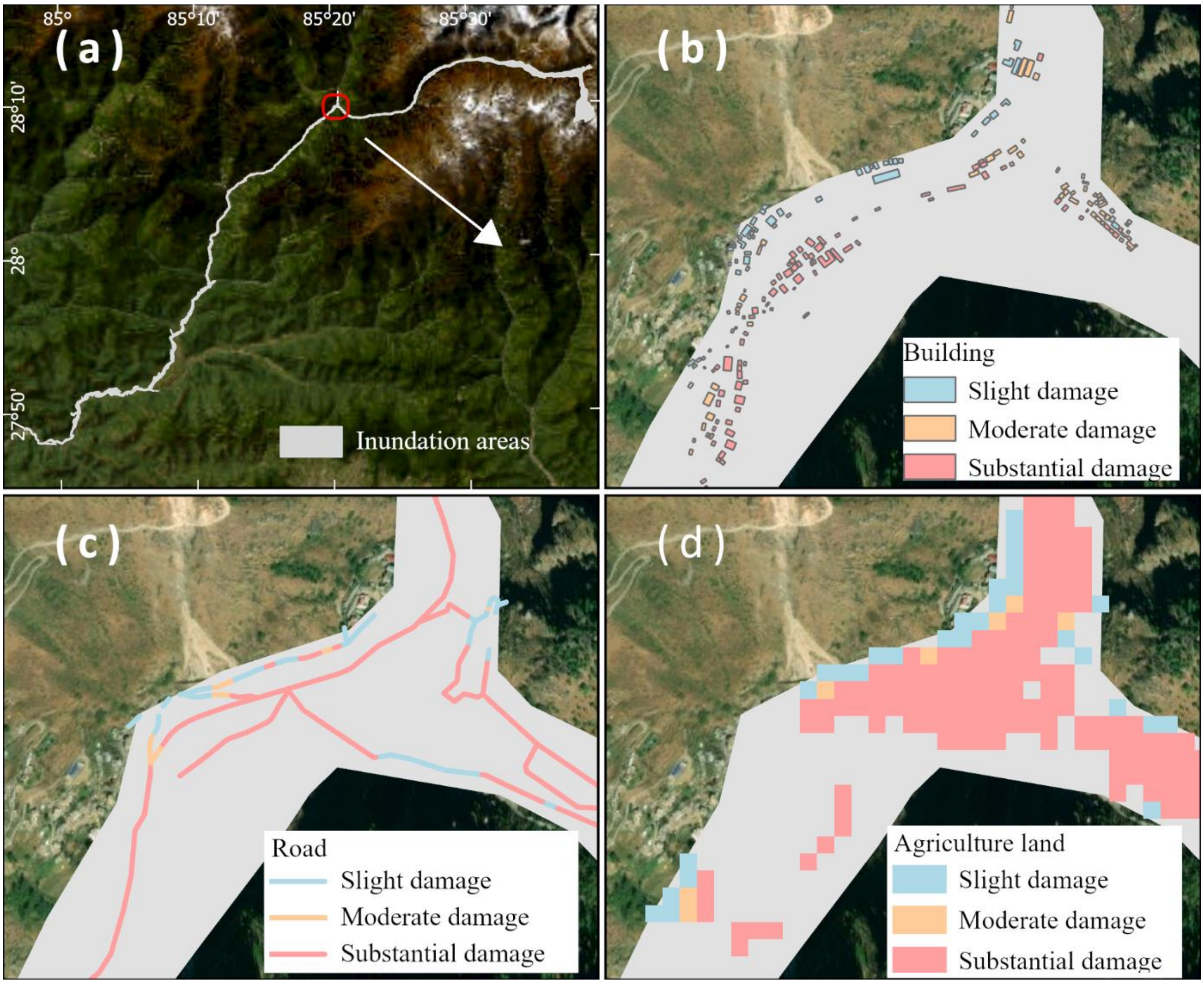

Fig 8 Damage to buildings, roads, and agricultural land caused by the most serious GLOF due to Lake Anonymous 12