

Review to the revised manuscript

„New method for assessing the susceptibility of glacial lakes to outburst floods in the Cordillera Blanca, Peru“

submitted by A. Emmer and V. Vilímek

Reviewer: Martin Mergili

In general, the authors have well responded to my comments and submitted a substantially improved version of the manuscript. There are a few issues which should be improved before the paper is finally published. Therefore I recommend a **minor revision**, my comments and suggestions are provided in detail below.

General comments

- Maybe it should be emphasized even more clearly that the approach is a subjective one, even though it is reproducible and repeatable (see also specific comments below).
- It is not mentioned which DEM with which pixel size is used. In my opinion, the maximum slopes which are employed in the equations are expected to depend on the DEM – this is an issue which has to be at least mentioned in the discussion.
- It could be interesting to discuss at least shortly the applicability of the method to other mountain areas.

Specific comments

1, 11 (and a few other places): if you refer to GLOFs (or other types of mass movements) in general, you don't need the article "the" before

1, 18: The use of decision trees does NOT limit subjectivity – these trees may be highly subjective, even though they make the approach repeatable and reproducible.

2, 24f: Maybe the higher number of reported GLOFs in recent years is also a consequence of an increased level of awareness and reporting?

3, 20: better: "... highly complex issue, ..."

4, 17: Also the method introduced in this paper is subjective: many of the equations do neither build on physical laws nor on statistically derived relationships, they are derived from the experience/opinion of the authors. However, the method is reproducible and repeatable.

4, 28: "... cannot ever be completely eliminated ..."

5, 9f: The text in the bracket is very long, better reformulate the sentences.

6, 6: "... assessment of the ..."

6, 25 (and several other places): As far as I understand, "maximum" would be better than "maximal".

8, 25: Formatting of Lw has to be updated.

11, 23f: The last part of this sentence does not seem to be correct, please reformulate.

13, 28: What does “moraine dam x bedrock dam” mean?

17, 11: There are two sub-chapters named “Input data” (2.4 and 3.2) – either rename the title of 2.4 or merge the two subchapters.

20, 1 (and some other places): “lakes which have yet to produce GLOFs” – better: “lakes which have not yet produced GLOFs”

20, 19 “... large lakes ...”

23, 19 and 27: Instead of talking about advantages and disadvantages, I would suggest to use the terms “potentials” and “limitations”.

24, 10f: “... fluvial as well as geomorphological ...” – this is not correct as also fluvial processes are geomorphological processes. Better write: “... fluvial or fluvio-gravitational ...” or something comparable.

Table 1: Horizontal lines separating the scenarios could be helpful to clearly assign the last two columns to the scenarios

Table 2: Lake perimeter: “connecting line”

Table 4: add the Scenario numbers to the column headers (Scenario 1, Scenario 2 etc.)

Captions of Figures 1-5: mention the Scenario numbers

The authors are invited to contact me at martin.mergili@boku.ac.at in case they disagree with my comments or wish to discuss the one or the other issue.

With best regards

Martin Mergili