Response to the reviewer's comment

We would like to thank the editor and the reviewer for reviewing our manuscript and taking our work into account. In this revised version, we have responded point-by-point to the three main comments made by the sole reviewer. We have thus made all the necessary changes to the text requested by the reviewer and offer a clearer version of our manuscript. We hope that both the reviewer and the editor will agree with us so that the publication of our paper is not unnecessarily delayed.

Please find below the details of our point-by-point responses to the reviewer.

Reviewer Comment - Major Revision：
“The authors put great efforts to response to the comments, however, some critical issues still exist and need to be addressed before the manuscript could be accepted.
（1）based on the revised main text, the current title is not appropriate. The main contribution is a new comprehensive understanding of aquifer systems in catchments headed by temperate glaciers based on new collected data. I could hardly get the information on how the model was developed, calibrated, and validated and how the proposed model performs.”

Response to the reviewer: Since the initial evaluation of our manuscript, the reviewer has disagreed with our title. However, our objective is to present the hydrogeological functioning of a glacierised catchment based on existing and newly collected data. In the scientific literature, it is commonly referred to as a “conceptual hydrogeological model”. For example, this technical term was used for a previous paper published in HESS, entitled “Hydrogeological conceptual model of andesitic watersheds revealed by high-resolution heliborne geophysics” (Vittecoq et al., HEES 2019, https://doi.org/10.5194/hess-23-2321-2019). We respectfully disagree with the reviewer's comment and wish to retain the title as it accurately reflects our objective.
In the discussion of the previous version submitted in February 2024, we included some information on a numerical modeling project in progress. We recognize that this may have caused confusion regarding the use of the technical term "model". Therefore, this paragraph has been removed in the new version, as its added value is minimal.

(2) Is Section 4 part of the results? Section 4.4 is more like a method; it should be something like "Hydraulic conductivities." The authors should take more efforts to re-organize the structure of the manuscript.

Response to the reviewer: We concur that section 4 is part of the results based on new data acquisition. To avoid any confusion, the structure of the manuscript has been reorganized. The subtitle “4.4 - slug-tests” has been replaced by “Hydraulic conductivities” in subsection 4.1.2. Please find below the new plan for the manuscript. The changes are highlighted in yellow for those made in response to the “n-1” comments and in green for those made in response to the “n” comments:

A hydrogeological conceptual model of aquifers in catchments headed by temperate glaciers
1. Introduction
2. The study area
2.1. Climate context
2.2. Glaciers context
2.3. Geological context
3 Methodology
3.1 New Data
3.1.1. Aquifers geometry

3.1.1. Aquifers dynamics and properties
3.2 Data Analysis
3.2.1. Hydrodynamic properties of aquifers
3.2.2. Glacier melt and effective rainfall
4. Results
4.1. Aquifers characteristics
4.1.1. Geometry
4.1.2. Aquifers hydraulic conductivity
4.1.3. Aquifers storage coefficients
4.2. Aquifers dynamics
4.2.1. Groundwater level
4.2.2. Temperature
4.2.3. Electro-conductivity
4.3 Recharge rates estimation
4.3.1 Estimation of subglacial water flows and spatial distribution
4.3.2 Estimated effective rainfall in the proglacial area
5. Hydrogeological conceptual model of glacierized catchments
6 Conclusion

(3) The authors should provide the main revised part directly under each comment, currently, the revised part is highlighted without a mark (response to comment X), I could hardly get the how the authors revised to each individual comment.

Response to the reviewer: In the previous resubmission (February 2024), a highlighted version was uploaded to the EGUSPHERE server. Changes to the manuscript were highlighted in yellow. The current highlighted version shows the changes made in response to the “n-1” comments in yellow and the ones to the “n” comments in. Marks have also been added to indicate which comment each change responds to. As the manuscript has been reorganized, it may indeed be difficult to identify all the changes made. However, at the same time, the current and previous comments remain rather vague. We did our best to use them in a constructive way.