

## Response to Editor

Dear Dr. Hauck,

Thank you very much for your continued handling of our manuscript and for giving us the opportunity to submit this further revised version of our manuscript egosphere-2025-3628.

In this revision, we have addressed the remaining minor issues raised by the reviewer, mainly concerning the consistency of the lake-classification terminology, the clarification of the distinction between contemporary glacial lakes and other lakes, and the removal of unnecessary subtype-level descriptions. We hope that the revised manuscript is now suitable for publication in *The Cryosphere*.

Thank you again for your time and consideration.

Best regards,

Jinhao Xu, on behalf of all authors

## Response to Referee

thank you for your revision and the update of your definition. We are almost there now.

Thank you for picking up my suggestion for the definition. Two things need to be modified:

**Response:** Thank you very much for your positive assessment and for your continued patience in helping us refine the terminology and classification framework. We sincerely appreciate your careful reading and constructive guidance throughout this revision process.

1. Please update Figure 1 - Lake classification. This still has non-glacial lakes.

**Response:** We have updated Figure 1 by replacing “non-glacial lakes” with “other lakes”, so that the figure is now consistent with the terminology used in the main text.

2. I think a line on the difference between glacial and non-glacial lakes is required. Around L 160 Ch 2.2 - "Glacial lakes are lake located in a catchment with contemporary glacier presence" "Non-glacial lakes don't have glaciers under current conditions, but may have been formed by past glacier activity or other non-glacial processes". Something in this way would be helpfull.

**Response:** We agree that a clear distinction between contemporary glacial lakes and other lakes is needed here. To make the definition clearer and more explicit, we have added the following sentence in **Lines 160–163**: “In this study, contemporary glacial lakes refer to lakes influenced by contemporary glaciers or formed by contemporary glacial processes, whereas other lakes collectively refer to lakes originating from past glacial activity or non-glacial processes.”

Just another comment: You description of the lakes type with respect to remote sensing is not required, because you do not map or differentiate them in your study.

**Response:** We agree that the detailed remote-sensing descriptions of individual lake subtypes are not necessary, as these subtypes were not mapped or differentiated in this study. We have therefore removed this part from Section 2.2.

I think after resolving these issues the manuscript can be accepted.

**Response:** Thank you very much for your positive assessment. We sincerely appreciate your careful review and constructive suggestions, which have helped us improve the manuscript and

move it toward publication.