

Hydrol. Earth Syst. Sci. Discuss., author comment AC1  
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## Reply on RC1

Tom Müller et al.

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Author comment on "Towards a hydrogeomorphological understanding of proglacial catchments: an assessment of groundwater storage and release in an Alpine catchment" by Tom Müller et al., Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2022-110-AC1>, 2022

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## Comment on hess-2022-110 - Anonymous Referee #1

### General comment

Comment #1:

The work from Müller and colleagues offers a meta-analysis and a research work on the hydrological dynamics of proglacial areas, with a particular focus on the role of distinct landforms. This topic is overlooked in alpine hydrological research, although the importance and pervasive role of proglacial dynamics under rapid glacier recession

I found the outcomes of the research work interesting. Likewise, the manuscript cannot be accepted in its current version, because of some major and several minor issues. The revisions to be addressed are many, and would also result in a complete reshaping of the work. Thus, I would suggest a rejection with resubmission. As this option is absent in the referee's portal, I suggest a major revision instead of rejection. I am sure that the work will be worth of being published after the suggested amendments will be addressed by the authors.

Answer #1:

*We thank the referee for his careful review of our paper and his/her detailed, constructive comments. We believe that a clearer and more concise manuscript can be achieved by addressing the comments of the referee. In the next part we will discuss the major revisions points suggested by the referee. At this stage, and after an in-depth assessment of the required revisions, we believe that the modifications will not lead to a complete reshaping of the manuscript, i.e. that it would not require a resubmission as a new manuscript. As also pointed-out by the reviewer, the outcomes of the current version of the manuscript are useful for alpine research and most of the referee's comments highlight flaws in the structure of the paper rather than the core messages and outcomes. We therefore would like to propose a new revised manuscript where some parts of the manuscript are reshaped and made clearer, a large part of the review in the introduction is discarded and chapters are better organized.*

### Major revisions

Comment #2:

The work is too long and fair-winded. Some parts are not essential, and can be condensed, moved to supplementary or just removed (see suggestions below). I suggest to shorten the work of at least 1/3, to get it more readable

Answer #2:

*We agree that the manuscript was unusually long and some parts were redundant. We will make a large effort to be more concise, take care of better assigning the relevant information to the different sections and remove any unnecessary repetition or details. We plan to reduce the current 13043 words to about 9000.*

Comment #3:

The work has a weird structure, being a combination of a review paper (with several drawbacks as written) and a research work (which is better presented and written). I suggest to discard the review part, and shift to a research paper offering a brief meta-analysis in the discussions. Also, the review part do not offer a particularly innovative view when compared with other works (e.g., Hayashi 2020), and the text as well as the main figure could be improved. Under my suggested reshaping, I suggest discarding Figure 1, in part redundant with Figure 11, and move table 1 to discussions (because part of your meta-analysis)

Answer #3:

*We admit that the combination of the review and the case study may be too long. We plan to shorten the review part, in particular to discard the review part on the geomorphology. We will assess how to shorten the whole introduction but keep the main information concerning the hydrological behavior of the different landforms as this is the core topic of the paper. Concerning Figure 1, we admit that it may be discarded while we still believe that it may help a non-expert reader to better comprehend the manuscript. We will assess after reviewing the entire document if the figure should be removed. Finally, concerning the meta-analysis, we will try to move it to the discussion, without introducing too much external information to it. We propose to include the Figure 11 to the results section as it is based on this table where we calculate the recession coefficients for each landforms, which are then used in the model.*

Comment #4:

Methods and results parts can be condensed quite a lot. Also, some parts of the results belong to methods or discussion, i.e., the description and discussion of chosen models and tools in methods and data interpretation in the discussion. I highlighted only some of these parts in the pdf file but please shorten and move the text to its correct position in the manuscript

Answer #4:

*We agree that some parts were not ideally placed within the manuscript and we thank the reviewer for highlighting some of them in the pdf. We will reorganize these parts in a more concise version and provide a detailed overview of how the structure of the manuscript has changed. We will in particular make sure that all methods are concisely described in the methods section. Finally, we will provide some additional information concerning the field methods (in particular ERT) as we realized that the Zenodo repositories containing all the detailed field data were not referred properly in the document.*

Comment #5:

The work has some typos. I highlighted some of these, but please carefully read the work to check these errors before sending for review

Answer #5:

*We thank again the reviewer for going through the whole document and pointing out typos. We will make a careful check after writing the revised version of all left out errors.*