

Interactive comment on “The importance of glacier and forest change in hydrological climate-impact studies” by N. Köplin et al.

Anonymous Referee #3

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The authors present a ‘classic’, but still potentially interesting study on the effect of climate change and land-use / cover change on runoff. The preceding two reviews have already listed a number of important points. I agree with many points, especially those of reviewer #1. My own major concerns are the following:

1) Uncertainty of the hydrological model has not really been addressed. I might be true, that in comparison to climate scenarios/models, these uncertainties are smaller, but I doubt that this still holds when land-use effects are considered. Running a model like PrevaH with different parameters for different land-use classes, implies that there might be many different solutions for current conditions (because of compensation effects), but these can have largely different consequences when a changed land-use distribu-

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tion is considered. I therefore strongly recommend evaluating parameter uncertainty effects of the hydrological model!

2) The Penman Montheith approach is used for potential evaporation (p5993). However, it remains unclear how this has been done for the climate scenarios. If one looks at vegetation change effects and assumes that these are mainly caused by different evaporation rates (directly or indirectly through storage), as it is done in this study, evaporation seems to be central. If for the scenarios evaporation is assumed to be unchanged (which I assume is the case in this study), then this should at least be clearly stated. However, I also would like to recommend to consider a potentially changed potential evaporation for the scenarios.

Minor comments: The use of (only) a delta change approach for the scenarios is certainly a limitation. As the authors correctly state this means that mean values should be evaluated rather than extremes. For the present study using only the delta change approach might be ok, but for future studies I would, however, strongly recommend to consider also other approaches. It would be useful to state the limitation of a delta change approach even more clearly. The limitations of the delta change approach are well-known within the climate impact community, but should also be communicated clearly.

P5992, l23: where exactly comes this number of 10 cm from? And how do these 10 cm translate into changed values of the soil storage?

The authors should be more careful with a consequent use of past tense for their own work. On page 5987, for instance, both past tense, present tense and future are used (We extended We only assess we will analyze).

Abstract, l20, catchments instead of catchment P5994, l8: this sentence reads as if Bronstert (2004) stated something about PrevaH, he, however, did not use PrevaH at all. Please reformulate

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