

Interactive comment on “Future high-mountain hydrology: a new parameterization of glacier retreat” by M. Huss et al.

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This very well written manuscript provides hydrological modellers with an interesting solution to parametrize glacier surface evolution for transient hydrologic simulations in glacier-influenced catchments. The suggested scaling approach based on a number of well studied Alpine glaciers seems promising and offers an alternative to existing, oversimplified approaches to update glacier surface.

I think, however, that the usefulness of the presented method could be increased by slightly extending the discussion and by showing some additional results:

- Since such a parameterization approach will be particularly useful for hydrologic prediction, it would be interesting to evaluate the performance of the approach in terms

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of "water", i.e. what is the water equivalent of the differences between the results obtained of the ice-flow model and the delat parametrization?

- the relationships derived for three different glacier size types seems promising for ungauged catchments; however, it would be nice to have more information about the data behind these relationships (ideally, it would be nice to see all the 34 lines): how many glaciers per class, what is the spread around the mean relationships? are the signatures really significantly different or do the underlying individual signatures for glaciers from different classes overlap?

- since the authors are specialists in the field, it would be nice to have a discussion of these signatures, which would make them even more relevant for prediction in ungauged basins; is it possible to explain the different signatures? what is their relationship to the typical features of the altitudinal distribution of mass balance? for Rhone and Silvretta, in general? if you were to work in a really ungauged area, what strategy would you adopt to come up with a parametrization? do you think the approach also works for very different climates (Himalaya...); could the ice-flow model not be used to better understand the sensitivity of these relationships to climate / physical environment ?

And finally, a small detail: since this paper is in a hydrology journal, I would like to have an idea of the main hydrological model parameters (degree-day factors etc).

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