Hydrol. Earth Syst. Sci. Discuss., 2, S114–S115, 2005
www.copernicus.org/EGU/hess/hessd/2/S114/
European Geosciences Union


Hydrology and Earth System Sciences Discussions

# *Interactive comment on* "A conceptual glacio-hydrological model for high mountainous catchments" *by* B. Schaefli et al.

**J. Seibert (Editor)**

jan.seibert@natgeo.su.se

Received and published: 13 April 2005

The paper presents the development and testing of a conceptual model for high-alpine catchments. I find the paper very interesting and the discussion brought up some important issues. Consideration of the good comments of the reviewers and incorporating (parts of) the responses to comments in the final text will certainly make this paper to a valuable contribution to HESS. In addition to the reviewers I have a few short points as listed below:

1) Threshold for rainfall/runoff I agree with your arguments that it is difficult to specify a range because this range depends on many things such as different elevations within a zone, aspect, time step, ... . BUT one could say that all these points would motivate to use some range, i.e., transition rather than a single step. Would not any range (say 0 to 2 degree) be less arbitrary than the decision to not use any transition at all? (Honestly

I have been using the single step myself in most studies, but recently got convinced that the transition might be more appropriate)

2) Model efficiency and bias In theory bias and model efficiency should not be conflicting objective functions, but obviously this is often the case. What does this tell us about the model structure? I would also like to mention Lindström (1997) who suggests a straight forward way to combine model efficiency and bias. There is of course also an important distinction when using multiple objectives; one can use additional data (e.g., glacier mass balance) or make more use out of data already in use (e.g., using bias additionally to model efficiency). Both are valid approaches but the second one is probably often "easier for the model".

Lindström, G. (1997) A Simple Automatic Calibration Routine for the HBV Model. Nordic Hydrology, Vol. 28, No. 3, pp. 153-168.

3) Model efficiency Please do not use R2. The model efficiency (even when using ln-transformation) should not be confused with the coefficient of determination (r2). It also can get negative which makes the 2 (i.e., square) notation strange.

---

Interactive comment on Hydrology and Earth System Sciences Discussions, 2, 73, 2005.