

***Interactive comment on “Multi-variable evaluation of hydrological model predictions for a headwater basin in the Canadian Rocky Mountains” by X. Fang et al.***

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Dear Authors, I have read with interest this paper, which is in general quite well written and structured. The Reviewers have pointed out some relevant issues, which you should consider carefully in presenting your revised version.

My own recommendation is to carefully consider the following issues.

1) This paper is essentially a case study. It is clear that your paper will be of interest for future research on the selected study area. Can you please clarify any relevance of your work outside the scope of the hydrological research on the Canadian Rocky Mountains?  
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Mountains?

2) Given the large body of research on the selected study area and on the modelling tools used in this paper, it is not clear to me what this paper brings in addition. For example, you state that objective (i) is to "propose a comprehensive physically based model...". But to my understanding, the model already exists, it is here only being applied. Objective (ii) is to "evaluate the model performance against the field observations...". Is this something new, and why?

3) With respect to the analysis. Together with the table listing model parameters and their values, it would be good to add a description of how they were estimated (e.g. in situ measurements, literature, ...), and some "degree of confidence" on the parameter values.

4) It is difficult to judge whether the application of this model was successful or not, because there are no terms of comparison. It would be interesting, for example, to compare the simulation at Cabin creek with the parametrizations used for the other locations, to check if indeed the parametrization of Cabin creek works better than that of, e.g., Marmor creek.

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