

## ***Interactive comment on “Sub catchment Assessment of snowpack and snowmelt change by analyzing elevation bands and parameter sensitivity in the high Himalayas” by Vishal Singh et al.***

### **Anonymous Referee #2**

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#### General comments

The study aims to improve simulation of snowmelt runoff generation in Himalayas and to estimate its future changes.

The topic is interesting and relevant from both – scientific and water resources management perspective. The manuscript in its current form, however, does not clearly formulate the novel scientific contribution. There are numerous studies presenting variability and change in snow accumulation and melt in Himalayas, including future projections, however it is not clear in which aspects is this study new. The calibration of

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a model and applying it then for simulations of future projections is by no means novel. The discussion of the results is missing, but this would be an opportunity to clearly show the contribution of the study with respect to existing results. More importantly, the justification of the model selection (used in the study) is not clear. I wonder how the SWAT model (CN approach) represents the dominant runoff processes in Himalayas. How does it account for glacier melt, snow accumulation and melt on steep slopes, the snow drift, energy balance, etc (i.e. processes and their changes related to snow melt generation)? Is the surface runoff really contributing more than 40% of annual runoff (table 1) in such large basin? I really missed to see some time-series (observed versus simulated) and process-based interpretation (with justification) of results.

I'm sorry, but I do not recommend to publish the study in its current form. At least a significant revision is needed.

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