

## ***Interactive comment on “Elevational dependence of climate change impacts on water resources in an Alpine catchment” by S. Fatichi et al.***

**K. Rahman**

kazi.rahman@unige.ch

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The authors developed a hydrological model for upper Rhone river watershed. Which has paramount importance in Swiss economy since the river drains into the Lake Geneva. However I found some serious limitations. First of all in the Introduction part [P 3747 L.9] It is written: “Because the technical data of existing infrastructure are not always available, we adopted a very pragmatical engineering approach for simplifying the representation of hydraulic infrastructures whenever this was the case” Which is completely wrong!!

After having a literature review I found two existing work in the same watershed with the similar objective : “

C948

[1] Modèle de prévision et de gestion des crues optimisation des opérations des aménagements hydroélectriques à accumulation pour la réduction des débits de crue” Written by Jordan.F

Moreover, there is another recent paper from ALPIQ hydropower company (which gives very detail information about the watershed :

[2] Rahman, K., Maringanti, C., Beniston, M., Widmer, F., Abbaspour, K., and Lehmann, A., 2013, Streamflow Modeling in a Highly Managed Mountainous Glacier Watershed Using SWAT: The Upper Rhone River Watershed Case in Switzerland: Water Resources Management, v. 27, no. 2, p. 323-339.

Therefore, please make sure that your model provided some “added value” to the exiting literature not the first time that you did.

I believe there is a mistake in the release point of G.Dixens: there are three outlet functioning from 2002 they are [Nandez-Fionnay-Chandoline] please make sure you are using the updated information

I do not see much discussion about ‘future energy driven scenario’ Only it is written in the Discussion [P 3768 L26] This is mostly related to the fact that flow in these catchments is controlled by river diversions and reservoirs that are assumed to operate similarly in the future and buffer the climate variability to a certain extent. New management rules or a significantly different energy demand might, however, reduce this effect

That makes very little sense! Future energy demand should have very significant impact! So there should be a section on how the future energy demand will affect. Nothing discussed about Land-use change. I believe Landuse also has severe effect in such watershed. shrinking of glacier will lead more surface flow and vegetation type is changing in such watershed. Please discuss how the land use change will impact simultaneously with climatic change or clearly mention that your analysis is only for

C949

meteorological variable.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 10, 3743, 2013.

C950