

## ***Interactive comment on “Predictability of Western Himalayan River flow: melt seasonal inflow into Bhakra Reservoir in Northern India” by I. Pal et al.***

**Anonymous Referee #1**

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This manuscript uses generalised linear models to predict future dam inflow using lagged snow depth, streamflow, rainfall and temperature data. Generally, the manuscript is well written. Importantly, hurdles such as dataset size, non-linearity and distributional assumptions, that may require special attention have been tested for or considered. Model parameter selection in the face of multicollinearity has also been dealt with using the *r* package *bestglm* which has been shown to outperform more dated stepwise approaches by the authors of this package. In all, the methods applied are proven and robust and are appropriate for use in this study. One assumption being made in the model is that the relationship between streamflow and snowmelt is stationary in time. It is good that some consideration was given to where this was not true (step change). However, the manuscript would benefit from a more in-depth discussion

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of this assumption and how it may affect the model accuracy and/or prediction intervals. While step changes caused by the construction of a dam may be obvious, more subtle changes such as changes in land use or timing of snowmelt due to climate variability/change may also significantly change the relationship between lagged snowmelt and streamflow. For example, this may explain why the models perform better during certain periods as compared to others such as Figure 7, setting 1, a and b pre 1995 versus post 1995. Following are a number of corrections or suggested changes to the text: p8140 lines 5-8 sentence is awkward please rewrite p8140 line 20 insert "the" in between "In" and "Iberian" p8141 line 8 remove s from exhibits and line 9 remove s from skills p8141 line 17 insert and before locally and line 18 remove "etc." p8148 lines 1 to 5 do you need this detail even though you don't use this criteria? p8148 line 7 change "the table" to Table 3. p8149 line 15 change "were done in" to "was done using" p8150 lines 4 to 7 sentence is awkward please rewrite p8153 line 13 change "as was also" to "and is" Figure 1 the points indicating snow and rain stations are exactly the same? The small map of India is hard to read text the plot label size needs to be increased Figure 5 titles too small and the caption is very long, could this be incorporated into a table which can be referred to in the text and figure caption?

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