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Interactive comment on "Climate change and runoff contribution by hydrological zones of cryosphere catchment of Indus River, Pakistan" *by* Kashif Jamal et al.

Anonymous Referee #1

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SRM is fundamentally a temperature index model, that is calibrated on the relationship between runoff and air temperature. While it may be the only type of model that can be applied to the Hindukush, due to limited data, it is - in my opinion - totally inappropriate to use this type of model for a climate scenario assessment. My recommendation is rejection. If the authors want to do this sort of assessment, they should use a physics based snow model, like CHRM, JULES, SnoPack (Alpine 3D), or perhaps iSnobal (though iSnobal currently does not have a hydrology or streamflow component). Addressing this sort of analysis with SRM shows an inherent lack of understanding about the relationship between climate, snow deposition and melt, and hydrology. The relationship between temperature and climate is not simple... Warming also changes

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Discussion paper

humidity, wind, and precipitation. The complexity of that interaction will change and alter the relationship between air temperature, snow deposition and melt. My greatest concern is that a paper like this gets published, resulting in quasi-legitimization of the approach, and then we have to fight that battle again and again. This approach is not appropriate for a journal like HESS.

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