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Interactive comment on "The role of precipitation for high-magnitude flood generation in a large mountainous catchment (upper Rhône River, NW European Alps)" *by* Florian Raymond et al.

Anonymous Referee #3

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The manuscript discusses how flood events can be categorized into a typology based on an understanding of the processes that dominated in a catchment. The authors considers a mountainous area in the Alps for their study. The authors uses a long series of daily rainfall records, re-analysis of this data, and flow records from three gauges in the catchment.

The manuscript is difficult to follow. The flow data are first described as coming from three catchments, then two, and finally one catchment, being runoff from a heavily regulated catchment where the considered flow is the combined flow from two of the smallest catchments. The data are described as being adjusted for seasonal variation,

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Discussion paper

but all results are reported as flow values. With respect to the precipitation two sources are available, station data and ERA-20. I have not worked with ERA-20, but I expect that it - like the other ERA reanalysis products - to some extend are based on measured station data for precipitation, at least for some of the years. Hence the study most likely uses and compares different data products on which on is based on the other. Please clarify what data sources are used in the study and how they are used. I dont understand how Figure 2 can be used to deduct exactly which data are used in the clusster analysis and how.

I also find it questionable that the author selects as a proxy for flood the maximum daily flow rates from a catchment that has a concentration time of about 1 day (line 193), after which they conclude that the main type of flood generation mechanism is precipitation. This seems to follow from the design of the study rather than a finding. The delayed response is hence more likely a result of the operation of the dams in the catchment.

There may be value in the manuscript that I overlook. But in its present form I cannot recommend publication, nor can I give good guidance on how the authors should improve the paper.

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