

Hydrol. Earth Syst. Sci. Discuss., referee comment RC2
<https://doi.org/10.5194/hess-2022-404-RC2>, 2023
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Comment on hess-2022-404

Anonymous Referee #2

Referee comment on "Beyond precipitation: diversity of drivers of high river flows in European near-natural catchments" by Manal Lam'barki et al., Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2022-404-RC2>, 2023

This paper presents a study about identifying different drivers of extreme flows over Europe by using observations from 250 near-natural catchments. It is well-written though; it basically uses some traditional and simple statistical approaches such as regression or correlation to conduct some basic analysis between extreme flow and potential drivers or factors. Also, the paper did not transfer any new findings or new approach development. And no in-depth physical mechanisms have been introduced. Given that, it is not recommended for publication in this high-ranking journal.

Concerns:

Line 15, it goes "Therefore it is imperative to understand their underlying physical mechanisms". After reading the paper, there is no information or analysis about the physical stuff.

Line 20. The paper goes like "And in these 11 articles the focus is mainly on regional and/or modelling studies, and they use some drivers for an explanation of the results rather than including them in the actual analysis.", which induces a justification of the current like "This leaves a knowledge gap in the joint understanding of a variety of observation-based controls of high river flows across continental-scale areas.". In fact, many existing studies have focused on identifying the possible contribution of extreme flow over the globe, including Europe as well. This paper should give a better explanation of why the current study should be done and why it is important.

The section of 3.2 attribution analysis is quite loose and hard to explain. tree over fraction is the most important in explaining spatial patterns of the relevance of precipitation. This result is not new. While about the elevation and slope, the paper has no in-depth explanation about the potential relationship of the streamflow. And the basin area is of important to affect the effect of elevation and slope to flow. This also needs more physical explanations.

This paper in fact did some basic statistical analysis, while all paper gives an impression about trying to link the physical mechanisms to the changes of flows. Yet, this is no physical analysis across the paper and no physical explanations but some statistical analysis.

Also see Fig. 6, the correlations of different time scales seem to be not consistent, even the direction (some positive or negative), this should be fully discussed.