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Discussions

Interactive comment on "Flood design recipes vs. reality: can predictions for ungauged basins be trusted?" *by* A. Efstratiadis et al.

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The manuscript discusses some "recipes" for design flood estimation in ungauged basins, providing some comments on the use of Rational Formula, Regionalization techniques and event-based approaches.

The manuscript is well written, easy and pleasant to read.

Mixing discussion and analyses makes the paper stimulating and open to a wide audience.

My evaluation is positive and I suggest to publish the paper. In the following I will list some comments either on the topic in general and specifically on the manuscript trying

to give a contribution to improve it.

I am particularly satisfied on this paper since I devoted last few years on the same topic and I am glad to see that my view on design flood estimation in ungauged basin is similar to the view of other distinguished colleagues.

I found this kind of paper particularly useful since, although the successfully PUB decade [1], the ungauged basin (I would say also "small") is still source of problems (or better a nightmare) for hydrologists. Even more recently, indeed, at least in Europe there was a renewal interest in simplified or empirical hydrology since the flood risk mapping was requested to be extended to the secondary drainage network that usually (or better always) is lack of observations. So, it is important to refresh the warning on the blindly application of empirical equation that could provide uncontrolled bias in the estimation.

Concerning Section 2.1, 2.1.1, 2.1.2, and 2.1.4 I agree, indeed the concepts of these sections are in line with [2,3] where we underlined similar critical issues. I would add, eventually, the importance of the "subjectivity" concept we introduced, that is different to the concept of uncertainty. Indeed, in my opinion, it is important that the an hydrological analysis would provide similar results if it is developed by two practitioners in two different moments. The runoff coefficient, since it is given as a range of values, can provide different results just for a different feeling of the analyst. This can be problematic in practice.

Concerning Section 4.1. Authors mention that the continuous approach is still not preferred to the event-based one. I would emphasize this aspect. Indeed, the advantages of considering continuous frameworks are multiple: among others, it is possible either to perform uncertainty analysis (as mentioned by the authors in the conclusion - lines 23-24) and, above all, to have a reasonable estimation of the design hydrograph volume, that is dramatically underestimated in the event-based approach [4,5,6].

Concerning the Section 4.3. In order to better evaluate the results shown in Figure 1,

It would be useful to include in the paper all the related information (net rainfall figure, adopted parameter values like lambda, CN, the watershed DEM, the IUH shape, etc.). I am curious to see if the behavior underlined by the authors is also due to some sub-steps of the event-based approach. Indeed, since the SCS-CN is wrong when it is applied at sub-daily resolution [7,8] and it provides an underestimation of the net rainfall peaks, I expected to see different hydrograph shapes.

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