

Hydrol. Earth Syst. Sci. Discuss., referee comment RC1
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Comment on hess-2022-292

Félix Francés (Referee)

Referee comment on "Accounting for hydroclimatic properties in flood frequency analysis procedures" by Joeri B. Reinders and Samuel E. Munoz, Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2022-292-RC1>, 2023

I totally agree with the importance of the objective of this paper trying to shed some light on the distribution selection for flood frequency analysis, and with the main conclusion that "probability model selection can be improved when it is based on the hydroclimatic properties of the basin". It is a concise paper and I have enjoyed reading it. Some questions from my side:

In Fig 2 and its derivations in terms of Kopen index and Psc, the WMA clearly helps to see the potential similarities with the theoretical L-moments of the 3 distributions, but what do the WMA confidence limits really provide?

In all figures (or in one representative) I am missing some "better uncertainty", such as that of the sample L-moments, in order to explain their dispersion. However, they are a function of the sample size, so it will be difficult to deal with it. What is your opinion?

In section 4.2 authors define the following steps in their research, but it would not be very complex to advance part of them. I particular

- Why only these 3 distributions with 3 parameters? Excluding the 4-parameter ones and mixed distributions (I would mention also the TCEV), I am curious about the potentiality of the 3-parameter Generalized Pareto.

- You have used as explanatory variables the Kopen and the Psc and I totally agree with the conclusions in section 3. Did you try the catchment area, as mentioned its importance in L50 and 69?

Very minor comments:

L17. (log-)Pearson 3 (P3) or Pearson 3 (P3)? I.e., (log-) is confusing.

L25 and 26 are not needed. Too often authors (myself included) try to give a general framework that is too general and unnecessary.