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Discussions

Interactive comment on "On the quest for a pan-European flood frequency distribution: effect of scale and climate" *by* J. L. Salinas et al.

Anonymous Referee #4

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I found this is an interesting article, which provides a valuable insight on the evaluation of various frequency distributions for flood estimation. I have only a few minor comments detailed below.

1. Title: I found the title a bit too general given the actual content of the article. Only mean annual precipitation is investigated as climate descriptor. Maybe the title could be more specific, e.g. writing "effect of catchment size and mean precipitation"

2. p. 6324: Write: "Two Component Extreme Value (TCEV)"

3. p. 6326, section 2.1: The homogeneity of the samples on the 4105 sites could be shortly commented, especially in terms of sample length.

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4. p. 6326, section 2.2: Maybe the information of advised distributions in each country could be added to Table 1, to give a more systematic overview.

5. p. 6327, l. 5: Is there any reference on the DIST software?

6. p. 6333: The authors could shortly explain why these three countries were selected here.

7. p. 6333: If available, it would be good to have a bit more information on the catchment sample used, especially in terms of hydrological regime. Which proportion of catchments are Mediterranean? Snow dominated?, etc.

8. p. 6333: Do the authors have information about the median altitude of catchments and fraction of snowfall in total precipitation? If yes, this could be added in Table 3. If snow plays a major role in some catchments, do the authors have information on the uncertainty linked to the MAP estimates (MAP may be underestimated in snowy catchments due to snow under-catch and/or low raingauge density in high altitudes).

9. p. 6333, l. 14: Why only 282 gauges from Italy were used while Table 1 indicates that 373 were available?

10. p. 6334: The choice of catchment area and mean annual precipitation could be shortly justified. What motivated the authors for this choice (a priori hydrological relevance? previous studies? descriptor availability?). Actually one may question the use of MAP since other descriptors of rainfall may be more relevant (precipitation quantiles, quantiles of cumulated precipitation over a given time window, seasonal variability of precipitation, etc.). Was this analyzed in a prior study?

11. p. 6334: As rightly mentioned by the authors, the categories made according to size and mean annual precipitation are relative to the sample used. Therefore the terminology may be less ambiguous if the authors used relative terms: “smaller” / “larger” and “drier” / “wetter”. This would avoid confusion with more absolute scales based on worldwide classifications.

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10, C3206–C3208, 2013

12. Discussion: Would the graphs provided by the authors bring additional information if they had been done on sub-samples made by typical climate conditions (Mediterranean, continental, snow-dominated, etc.)? Would this help further explaining the quite large variability shown on some of the graphs?

13. Conclusion: The authors could more precisely discuss which other specific climate or physical descriptors could be useful to consider, if available, to better characterize flood generating process. For example, could the occurrence of some weather patterns based on geopotential be useful to consider?

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 10, 6321, 2013.

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