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Hydrology and Earth System Sciences Discussions

Interactive comment on "Effects of intersite dependence of nested catchment structures on probabilistic regional envelope curves" *by* B. Guse et al.

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Editor comment:

" The paper has received 3 review comments, all of which essentially say the same thing: while the content of the paper is satisfactory and interesting, there needs to be substantial improvement in the presentation (also English). The reviewers give detailed comments and suggestions about how to improve the manuscript. The authors should take heed, and come up with a strategy to improve the readability and impact of the paper, including detailed point-by-point responses to the reviewers' comments. I look

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Discussion Paper

forward to seeing their responses and reading the revised manuscript, which will then be considered for publication in HESS."

Reply:

We thank the Editor for his kind summary of the three reviews. The Editor pointed out that we should improve the readability and the impact of the paper. We briefly describe our strategy to fulfil these requests below. We refer to the point-by-point replies to the three Referees for a detailed description.

Our core idea in this study was an estimation of the impact of different parameter sets of the cross-correlation function on the effective sample years of data and the recurrence interval of the probabilistic regional envelope curve (PREC). On the basis of the three reviews, we realised that the aim of our study was not presented clearly enough. Therefore we have revised the manuscript accordingly by focussing more strongly on our core idea and by only presenting our main and most relevant outcomes.

By doing so, we emphasised the relevance of our study in the introduction. We restructured the introduction to get a more precise description of the regional flood frequency methods recommended by Referee#1 and the relevance of intersite correlation on regional frequency studies as demanded by Referee#1 and #2. The relevance of our study was emphasised by enhancing the link between these studies and the method of probabilistic regional envelope curves.

The readability of our manuscript, especially the methodological part (section 2) was criticised by the Referees. During the revision of Section 2, we focussed on two main points. First, we gave more structure to sections 2.1 and 2.2 as recommended by Referee#1 and #3 by explaining the method of PREC in a more detailed way with a step-by-step presentation and a meticulous description of the equations. We referred to the original PREC studies by Castellarin et al. (2005) and Castellarin (2007) for the backgrounds of the PREC method. Second, the description of the pooling scheme (section 2.3) was expanded to improve the clarity of the presentation of the adopted

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procedure and to stress the relevance of homogeneous pooling groups for the PREC concept as asked by Referee#1. In the Results section, we clarified the aims of our study results as asked by Referee#1. The central issues of our study were emphasised by focusing the presentation of the results on our core idea as asked by Referee#2 and #3. We decided to reduce significantly the presentation of the effect of different thresholds of the heterogeneity measure, which is not directly related with the core idea of the manuscript as raised by Referee#2. And we reduced the number of figures (from 13 to 8) and tables (from 6 to 4) to the most relevant ones as recommended by Referee#2 and #3. That should enable the reader to better understand the main results of our study and to follow the red line through the manuscript. We modified the section 5 "Discussion" to get a more focused discussion of our study results. As a final step, we are improving the English language of the manuscript as recommended by Referee#1 and #3, also with the help of an expert.

These were our main revisions according to the three reviews. We think that these modifications and also the consideration of the specific comments of the Referees should have improved the manuscript significantly and removed the shortcomings indicated by the three Referees.

References:

Castellarin, A.: Probabilistic envelope curves for design flood estimation at ungauged sites, Water Resour. Res., 43(4), W04406, doi:10.1029/2005WR004384, 2007.

Castellarin, A., Vogel, R. M. and Matalas, N. C.: Probabilistic behaviour of a regional envelope curve, Water Resour. Res., 41, W06018, doi:10.1029/2004WR003042, 2005.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 6, 2845, 2009.