

Interactive comment on “Controls on hydrologic similarity: role of nearby gauged catchments for prediction at an ungauged catchment” by S. Patil and M. Stieglitz

Anonymous Referee #3

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This manuscript presents a study of runoff interpolation based on a simple spatial proximity method. The authors then attempt to analyze the results related to gauge density and hydrologic similarities. Although they are using a rather simple method for evaluating the hydrologic similarity, the results seem valid. The paper is interesting and addresses on a large scale a type of methods that have generally been applied on more regional scale. I think some small modifications are necessary before publication, most of them already addressed in the authors' responses to the two first reviewers.

First of all, it should be clarified that the analysis in this manuscript only refers to meth-

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ods based on the direct transfer of runoff data, not to spatial interpolation of catchment parameters.

Second, IDW is extremely simple and not a method I would have applied for runoff interpolation as it only takes distance to donor gauges into account and not spatial distribution and the connectivity between gauges. However, I think the overall conclusions are valid and that the analyses give a relatively good indication of the regions where the more advanced methods are likely to perform well or not. I would still like to see a discussion on the choice of method and how that could influence the results.

The rest are minor comments

- Equation 1 does not take timing of the floods into account, also mentioned by Referee #1. I agree with the authors that it might have a small impact, but they should also give the justification for not including this in the manuscript.

- I assume the limitation of the number of five donor catchments is based on the principle of simplicity, again the authors should justify their choice in the text.

- Section 4.4 looks at the impact of gauge density, which is highly correlated with the catchment proximity in 4.3. It should therefore not be presented as a completely different factor.

P9328, L20 Make it clear that the discharge value refers to runoff per unit area or something similar.

P9332, L8 “the” is missing before “majority”

P9335, L16 “have” is missing before “not been”

P9336 L28 “of” is missing at the end of the line

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