

Interactive comment on “Scaling down hyporheic exchange flows: from catchments to reaches” by Chiara Magliozzi et al.

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This manuscript presents a novel perspective on multiscale drivers of hyporheic flow. No previous study has attempted to address spatially, hydroclimatic, hydrogeologic, topographic, anthropogenic and ecological factors across catchments, valleys, and reaches. Indeed, to date, there is fragmentary information on how those factors interact to drive hyporheic exchange at larger scale than bedforms. Therefore, this manuscript aims at adding value to existing hyporheic literature by inferring scale relationships between a selection of factors and the hyporheic exchange flow.

The manuscript has a hierarchical structure from catchments to reaches as also stated in the “Concept and terminology” section. Each section is populated by hydroclimatic, hydrogeologic, topographic, anthropogenic and ecological factors that are discussed in

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detail in each spatial scale. Yes, it is long and we recognize that some sections can be shortened and we welcome suggestions how to better structure the description of the factors. On consideration of your feedback about the general structure, we will revise the paper to make the approach and strategy easier to understand to the reader. We believed the format of the paper by scale allows to conceptually “classify” processes at each spatial scale, but we understand that a better use of the figure and of specific pointers will make easier for the readers to identify relevant material and relate the information in other sections.

Most of the figures (7/9) are new and created by the first author. Specifically, two figures (Figure 8 and 9) are from already published studies, as stated in the caption; for those, publisher permission has been requested. The use of previous figures is accepted in a review of this extent.

Thanks for drawing attention to the need of highlight more the importance of the tables in the main text. The three tables were intended to summarize the scales and factors, the expected hyporheic responses, and the case study. We are happy to review how these are cross-referenced in the main text to maximizing their impact.

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