

Interactive comment on “Toward a conceptual framework of hyporheic exchange across spatial scales” by Chiara Magliozzi et al.

Anonymous Referee #2

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General comments This is an extremely detailed review paper that addresses the scientific community's relevant and current scientific understanding of the drivers of hyporheic exchange flows across spatial and temporal scales. The authors do a thorough job demonstrating the rationale and importance of different controls on hyporheic exchange flows. Overall, this review-style manuscript is suitable for HESS and would contribute nicely to the scientific body of literature after a thorough read-through and edit by the authors to address word choice, grammar and typo issues. Currently, although the manuscript does a great job summarizing the state of the science, it suffers from a range of typo, missing words, and incorrect forms of grammar that distract from the manuscript's message. Further, some of the explanations are not clear and would benefit from more descriptive terminology. See the Specific Comments section for sev-

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eral examples.

Specific comments 1. There are a range of typos, incorrect forms of grammar. I marked some of them in the technical corrections section, but please take care to read through the manuscript carefully.

2. Some of the explanations are not clear. More descriptive terminology would help with this. I provided some examples of where terminology is not clear, but I encourage the authors to read closely through the manuscript to address all confusing terminology. Title for Section 3.2 is confusing – in a large scale what? Also, what does “large” refer to? Perhaps catchment scale would be more descriptive? Though, after reading this section, it seems this section is encouraging researchers to take the context of the landscape into consideration for reach-scale research. Thus a more suitable title may be something like: “Reach scale HEF in the context of the larger landscape” P 8 L 1: The language in this sentence is a little unclear. Please clarify what “water table is continuous on the bedrock” means. P L 22: This sentence is confusing - As valley confinement what? Perhaps the authors meant “As similar to valley confinement”. Please clarify language.

3. Section 4.2 L 22-24: Quite a bit of field research has been conducted around partially submerged bedforms from the Lautz research group, specific to investigating HEF around restoration structures that mimic natural bedforms. See Gordon et al.2013, Lautz and Fanelli, 2008, Zimmer and Lautz, 2014 for examples.

4. Is there a citation that can back up the P 12 L 6-7 statement?

5. Section 7.2: It should be noted that dams (and many of the anthropogenic changes) can occur on small (Fanelli and Lautz, 2008) and much larger sized (Fritz and Arntzen, 2007) rivers. It would be interesting to explore the relative control of dams on such different sized systems, relative to channel slope, etc.

Technical corrections P 2 L 2: remove first “and” P 2 L 3: Replace “HEF but less” to

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“HEF, but are less” P 2 L 18: Add “the” before “catchment scale” P 3 L 25 – Change reach scale to “the reach scale” or “reach scales”. There are several instances like this throughout the manuscript, please address them all. E.g. P 3 L 28: change “HZ” to “the HZ”. P4 L 21 – Missing a word after “at a larger” P 5 L 21 – change “though” to “through” P 7 L 21: change “his study” to “this study” or “their study”.

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