

Interactive comment on “In situ investigation of rapid subsurface flow: Identification of relevant spatial structures beyond heterogeneity” by C. Jackisch et al.

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In this brief comment I wish to highlight two issues that require revision and that have not been mentioned by the previous three reviewers.

1) Incomplete and biased selection of literature. Given the vast amount of literature from small and heavily instrumented catchments, statements such as: a) “very few studies actually examine rapid subsurface flow from the plot to the hillslope and resolve the respective flow paths” (P2 L14-15) and, b) “our current theories are mainly shaped by rather few experiments in experimental basins” (P2 L18-19) rather reflect an insufficient literature search than a lack of field studies. In fact, the authors almost completely ignore data from Asia (particularly Japan) (e.g. Gerke et al., 2015; Sidle

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et al., 2000). Furthermore, relevant studies from the tropics and subtropics are neglected as well (e.g. Negishi et al., 2007; Schellekens et al., 2004). As a start, a recent meta-analysis (Barthold and Woods, 2015) of studies on stormflow generation in small forested catchments provides insights which data is actually available. Another issue linked to the selection of the references is the number of self-citations. A brief check revealed that more than 25 % of the citations are self-citations. Such an excessive citation of own work should be avoided.

2) Insufficient description of experimental design. The study by Jackisch et al. has a strong experimental focus. The authors should therefore provide a detailed description of the experimental approach. Unfortunately this is not the case. In fact, the description of the hydrological measurements (Section 2.1) gives the impression that the study lacks a well-defined experimental design. For instance, there is no information on the selection of the sampling sites. Did the authors choose the sites at random (i.e. according to a simple random sampling design)? On P4 L16, a nested design is mentioned without providing any further detail. This information is not sufficient to assess the applied sampling design (and the reference to Zehe et al. (2014) does not contain the information either). Please note that the way how the sites are selected is of utmost importance for the statistical inference (see de Gruijter et al., 2006 for details). To improve the description of the experimental approach the authors should provide the type of the sampling design, number of samples (this information is e.g. missing for the soil cores, P4 L31), extent of sampling area, support of the measurements, and a map of the sampling sites.

To summarize, I believe that the manuscript would greatly benefit from a more thorough analysis of the available literature, a more balanced selection of references, and a better description of the sampling design.

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[Interactive comment on Hydrol. Earth Syst. Sci. Discuss., doi:10.5194/hess-2016-190, 2016.](#)