

## ***Interactive comment on “On the value of high density rain gauge observations for small Alpine headwater catchments” by Anthony Michelon et al.***

**Marie-Claire ten Veldhuis (Editor)**

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Received and published: 6 April 2020

This paper presents a study of the effect spatial rainfall distribution on hydrologic response, based on a dense ( $\sim 1/\text{km}^2$ ) network of rainfall sensors in a small alpine catchment. The question of how spatial rainfall distribution affects hydrologic response has been addressed in many previous studies, several based on multiple catchments and longer series of rainfall events. The novelty of this study in its current set-up is therefore not convincing. Both reviewers point out that the indicators used to characterize rainfall variability are rather simplistic compared to what has been presented in previous studies. Furthermore, the results are not put in context of the literature (which should be done in the Discussion section), to show what new findings were achieved. The reviewers have provided multiple suggestions for the use of more elaborate indica-

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tors to develop the analysis, which are recognized in the authors response and some first examples are already shown. Given the amount of additional work that is foreseen, the results of which may change conclusions that were obtained, the work is likely to differ substantially from the original manuscript.

Based on these considerations and the assessment of the reviewers I encourage the authors to revisit the (valuable) dataset they have collected, to extend their methodology as discussed in the reviewer comments and author replies, in order to develop a substantially more in-depth analysis. Additionally, a more critical discussion in view of the existing literature for small-scale rainfall variability and hydrologic response (in small rural but also urban catchments, as pointed out by one of the reviewers) is warranted. The authors are welcome to submit the manuscript that will be developed based on the new outcomes as a new manuscript.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2019-683>, 2020.

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