

Interactive comment on “Evaluation of Low Impact Development and Nature-Based Solutions for stormwater management: a fully distributed modelling approach” by Yangzi Qiu et al.

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Received and published: 5 September 2019

Dear Referee,

We first would like to highly acknowledge your prompt actions after accepting to review our manuscript (No.hess-2019-347). However, we are quite surprised by the generality of your brief comment on it and by lack of any specific comment or suggestion, in particular constructive ones. For instance, we would have appreciated to have some indications on what in the presentation of our paper could have helped you believe that it is “near to be consultant report rather than academic research”. It seems that you overlooked our statement that “most studies on modelling the hydrological impacts

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of LID/NBS practices are based on semi-distributed hydrological models and design storms”, whereas our paper has the (academic) originality to focus on the coupling effects of variability of spatial distributions of precipitation and land uses by a fully distributed modelling approach, as well as with the help of high resolution radar data. This paradigm shift from homogeneous modelling and data to extremely heterogeneous ones is achieved with the help of the fully distributed hydrological model (Multi-Hydro). It enables us to investigate the hydrological performances of LID/NBS practices by using three sets of high resolution distributed rainfall data from ENPC X-band radar as the meteorological inputs. The Multi-Hydro model considers the land uses at 10 m scale (each land use class was presented by a 10 m x 10 m pixel, and the whole catchment includes 104500 pixels in total), which far exceeds the limitation of semi-distributed hydrological model in reflecting complicated urban catchments (e.g., SWMM averages land uses and precipitations for each sub-catchment (Burszta-Adamiak and Mrowiec, 2013, Rossman et al. 2010). The spatial resolution of ENPC X-band radar data is 250 m, which reflects the spatial variability of the precipitation at a very high resolution. To the knowledge of the authors, this is the first time that high resolution X-band radar data applied for evaluating the hydrological performances of LID/NBS practices. The other researches usually use homogeneous rainfall, which did not consider the rainfall variability in space (Ahiablame and Shakya, 2016; Hu et al., 2017; Bloorchian et al., 2016; Zahmatkesh et al., 2015; Sun et al., 2014; Qin et al., 2013; Peng et al., 2019). Last but not the least, we also find a new way of presenting the results that makes their interpretation much more general and easily scalable for other studies.

Obviously, we will be happy to seriously take into account any concrete suggestion which helps improve our manuscript.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2019-347>, 2019.

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