

## ***Interactive comment on “Calibration event selection for green urban drainage modelling” by Ico Broekhuizen et al.***

**Anonymous Referee #1**

Received and published: 7 April 2019

General Comments: The Authors propose a suitable procedure for selecting calibration events of a hydrodynamic model of a predominantly green urban catchment. A two-stage calibration procedure is used for calibrated first the parameters related to impervious areas, using a set of rainfall events, followed by the pervious area parameters using another set of rainfall events. The selection of calibration events was carried out based on some characteristics such as precipitation intensity, runoff flow rate, flow volume, flow volume as percentage of rain and precipitation duration. The overall ranking of the different calibration scenarios in the validation period is estimated using the statistics of both NSE (Nash-Sutcliffe Efficiency) and RMSE (Root Mean Square Error). The paper address scientific questions within the scope of HESS even if it does not present new concepts or ideas but a rather useful procedure. The scientific meth-

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ods and assumptions are clearly outlined and the overall presentation is well structured and clear.

**Specific Comments:** While the calibration strategies (single- and two stage) was already presented by the Authors in a previous paper (1), the different metrics for selecting calibration events from a larger group of candidate events is rather innovative and well described. The risk of using rainfall multipliers is to attribute to the rainfall all the errors due to an incorrect estimate of the model parameters as well as of the model itself. The Authors indicate that the rainfall multipliers compensate for discrepancies between the observed and best-fitting rainfall, rather than for other aspects of catchment runoff modelling by using the baseline model but it is not clear how they reach this conclusion. It should however be considered that rainfall multipliers tend to treat the spatial variability of rain, which has a dynamic effect on the outflow, through a positive or negative variation of rainfall considered uniform on the single watershed and therefore treated in a static way. Figure 5 is not clear and should be conceived in a new way.

**Technical Corrections:** Table 8 does not contain bold characters as indicated in the text

(1) Ico Broekhuizen I., Leonhardt G., Marsalek J., and Viklander M. (2019). Selection of Calibration Events for Modelling Green Urban Drainage. In: *New Trends in Urban Drainage Modelling: UDM 2018* / [ed] Giorgio Mannina, Cham: Springer, 2019, p. 608-613

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2019-67>, 2019.

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