

Hydrol. Earth Syst. Sci. Discuss., referee comment RC1 https://doi.org/10.5194/hess-2021-99-RC1, 2021 © Author(s) 2021. This work is distributed under the Creative Commons Attribution 4.0 License.

Comment on hess-2021-99

Anonymous Referee #1

Referee comment on "Advanced sensitivity analysis of the impact of the temporal distribution and intensity of rainfall on hydrograph parameters in urban catchments" by Francesco Fatone et al., Hydrol. Earth Syst. Sci. Discuss.,

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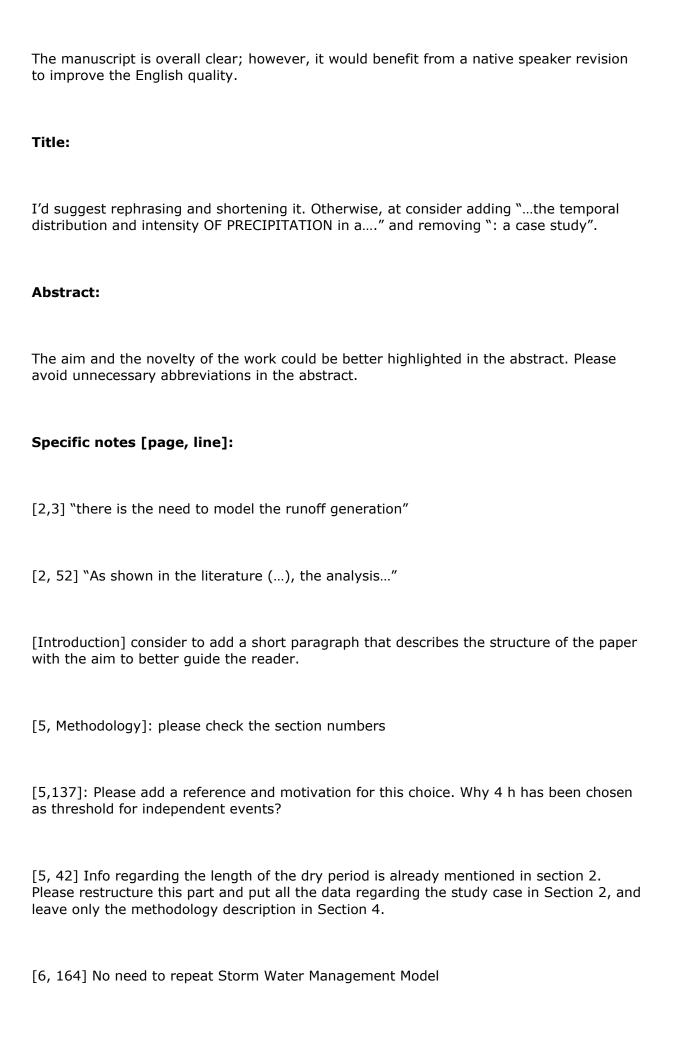
Manuscript: HESS-2021-99

General notes:

The manuscript: "Advanced sensitivity analysis of the impact of the temporal distribution and intensity in a rainfall event on hydrograph parameters in urban catchments: a case study" proposed by Fatone et al., introduces a sensitivity coefficient to study the impact of the variability of hydrodynamic model parameters depending on rainfall distribution and intensity. Results, determined for a SWMM model of an urban catchment in Kielce (Poland), show the influence of rainfall distribution and intensity on the sensitivity factors

Although the paper is quite interesting and it has the potential to be published in HESS, it needs some minor adjustments. In particular, the novelty and innovative aspects of the work could be better highlighted in the abstract and introduction. Moreover, only the temporal rainfall variability is evaluated, without considering the strong connection with the spatial rainfall distribution, especially in a small urban environment (see Schilling, 1991, Berne et al., 2004; Ochoa-Rodriguez et al., 2015, Cristiano et al. 2017). This aspect should be at least discussed in the conclusions.

The methodology needs to be restructured. Elements like SWMM and the GLUE are described only at the end of the methodology section, while they should be moved to the introduction or in an additional section "Theoretical background" before the study case description. The sections Methodology and Results would benefit from a short intro describing the structure of the section, to guide the reader.



[7, 165] Sentence not clear. Please rephrased it.
[7, 171] GLM is defined only in page 9, line 214. Please add here the extended name.
[8, 172] The GLUE is well described only in Section 4.5. Here it is mentioned as abbreviation without description before. Please fix this issue and refer to section 4.5 and to some references for a description.
[17, 387-389] I assumed these lines are related to the table? In case, please include them in the caption (and rephrase them).
[Methodology, 5.4] please avoid brackets in the titles of the subsections.
[23, 516] representS
[23, 516-517] why? Please justify this sentence
[Conclusions] Please add in the first paragraph of this section the motivation and the questions that this study aimed to answer, and include a discussion about the possible limitations, impacts and possible improvements.
References:
Berne, A., Delrieu, G., Creutin, G., and Obled, C.: Temporal and spatial resolution of

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Cristiano, E., ten Veldhuis, M.-C., and van de Giesen, N.: Spatial and temporal variability of rainfall and their effects on hydrological response in urban areas – a review, Hydrol. Earth Syst. Sci., 21, 3859–3878, https://doi.org/10.5194/hess-21-3859-2017, 2017.

Ochoa-Rodriguez, S., Wang, L., Gires, A., Pina, R., Reinoso- Rondinel, R., Bruni, G., Ichiba, A., Gaitan, S., Cristiano, E., Assel, J., Kroll, S., Murlà-Tuyls, D., Tisserand, B., Schertzer, D., Tchiguirinskaia, I., Onof, C., Willems, P., and ten Veldhuis, A. E. J.: Impact of Spatial and Temporal Resolution of Rainfall Inputs on Urban Hydrodynamic Modelling Outputs: A Multi- Catchment Investigation, J. Hydrol., 531, 389–407, 2015.

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