

Review of the Paper Szlag et al. (2019), Hess 2019-271
Hydrology and Earth System Sciences

Common comments

Please consider, the reviewer is not a native speaker. Therefore all editorial remarks and recommendations should be checked. It cannot be excluded, that some editorial recommendations are not correct.

Nevertheless the reviewer has the impression, that some improvements are possible or even necessary. Has the paper been checked by a native speaker?

Some formulations could be more comprehensible. Especially some long sentences are difficult to read. Often it is better to split such sentences into two sentences.

Variables and symbols

The authors have used some variables. It would be useful to add a table with the most important variables, their meaning and unit.

In line 9-11 P_{tot} and t_r are mentioned, but defined later in line 9-29. There it would be better to write $q = P_{\text{tot}} / t_r = 166.7 \dots$

In table 1 and figure 8 the terms "frontal, type I" and "frontal, type II" are used, but they are defined first in line 18-2. Why do the authors not use the terms "cold front" and "warm front"?

The reviewer knows q as specific discharge or runoff rate, but not as rain intensity. In English papers for rain intensity stands often I or i (sometimes PI for precipitation intensity).

In table 1 the symbol M is used, but nowhere declared.

In line 7-25 CDF's "describe the probability of exceeding the flow number of storm overflow discharges." But in the paper CDF is used generally, as customary. On the contrary in picture 8b) CDF is the distribution of the rain intensity. Beside "exceeding" seems to be not correct, since CDF's represent the probability of undershooting!

Tables and Figures

Table 1: The sequential arrangement of the variables is not perfect. The order could be all P_{tot} , t_r , q , and M ore all annual values, convective frontal . . .

Figures: Partly the units and symbols are missed. The caption of figures should be understandable and clear enough without reading the text.

Figure 6 and 7: It would be favourable, if the both axes would have the same range. Not every reader is experienced in such analysis. One sentence or two sentences would be useful to explain, what the background of such pictures is. Instead of "Observed Value" (y-axis) it is recommended to write "Empirical Quantile". The caption could be: "Comparison of empirical and theoretical quantiles concerning the number of rainfall episodes and distinguishing rainfall types"

Figure 6: Is it right, that the sum of the highest values of b), c) and d) = 55 should be equal to the highest value of a)?

Figure 8 (a): p is the probability of overflow discharge. But for wich variable stands CDF here? The reviewer has not found any remarks. Therefore he don't understand in line 18-5 why "the percentiel value $p = 0,50$ is as high as $0,90$ "? It looks like that the CDF-value $0,50$ is as high as $0,90$? But what means CDF here?

Comments concerning the content

Line 1-15: The Model is innovative, formulate more clear, what the reasons are.

Line 1-24 and 7-21: The generator should be mentioned as first element.

Line 2-14: write "such discharges". Mostly the words "overflow discharge" are used, but in some further cases only the word "discharge" (for example 8-4 and 18-29), while "overflow discharge" is meant. Please check such cases.

Line 5-22: write better "It concerns events with high intensity and short duration."

Lines 7-7 to 7-11: this paragraph seems to be a repeat.

Lines 8-9 to 9-2: Both sentences sound similar.

Line 9-5: What is meant by “in the ranks of”

Lines 9-9 to 9-18: this paragraph seems to be a repeat.

Line 9-24: “simulate objects” sounds strange, write better “simulate the influence of constructions on flow processes”

Line 10-14: The investigation period is 1961 to 2000 (page 5). Here the years 2012-2014 are discussed?

Line 10-14: What is meant by “period separating subsequent rainfall events”?

Line 11-15 to 11-24: This part concerns not methods. Similar discussions are in the first parts of the paper.

Lines 12-8 to 12-11: These sentences are nearly a repeat of pages 7/8, but the steps are not denominated identical. Here 4 steps are listed, but the chapter consists of the two parts 5.1 and 5.2 only.

Line 13-19: The reviewer don't know what “values of free words” are? Possibly other readers will have the same problem.

Editorial notes

Line 1-16: The text within the brackets should be formulated as sub-clause or as an additional sentence.

Line 1-21: write “great” instead of “big”

Line 1-29: two times determine

Line 1-31: the results are suited for implementation

Line 2-2: three times the word “of” in series

Line 2-29: **what** was not taken into account when rainfall generators **were used** to simulate

Line 2-32: “concern simulations” sounds strange, write perhaps better “consider”

Line 3-1: “course of precipitation phenomena” sounds strange

Line 3-4: "forecasting the operation" sounds strange, write "basis for the control of systems"

Line 3-11: Sometime it is written "model of the rainfall generator". The generator is a model, the word "model" seems to be unnessecary.

Line 3-22: a space is missed

Line 3-23: better "height difference", cancel "of ordinates"

Line 4-10: "generated" better as "shaped"

4-11: write "A third", since before only two mechanism are announced

4-11: write "which include both above mentioned components"

4-16: write at the end "are" instead of "is"

5-2 and 5-13: line break (new paragraph)

5-17: "convergence zone" is not a type of precipitation, write better "generated in convergence zones"

5-19: write "only these data were"

5-33: "variable" instead of "varied"

6-12: "precipitation emitted" sounds strange

7-25: overflow discharges per year

10-10: Write "The second variant is a simplification. It considers only a single"

10-18: set methods before the brackets

10-30: write better "should be consistent"

13-16: write "are valid" instead of "take place"

13-19: write "of this relationship" and cancel the "(eq. 5 and eq. 6)"

15-8: expressed better by

18-3: Write "distinguished" instead of "made".

18-6: line break (new paragraph)

Following words seems to be unnessecary

Line 1-20: was demonstrated

Line 1-31/32: knowledge concerning

2-10: collecting

2-19: in the work

Line 2-22: of simulation

Line 2-27: in its modeling

3-26: the work

4-6: article

4-17: in many areas (this mechanism is independent of the area)

5-3: of the phenomenon

9-6: in the paper

10-10: in the analysis performed

11-13: in the rainfall episode

11-14: better "seasonal differences"

13-1: using the model