

Review of **The impact of hydrological model structure on the simulation of extreme runoff events**
by Van Kempen et al.

The study of Van Kempen et al. evaluates the role of model structure on the modelling of extreme events, and they concluded it varied for different climate zones. This revision of the paper shows many improvements, and I am happy that my previous comments were found useful. I am especially happy that the authors decided to increase the benchmark sample size to 5000, which should better reflect the true distribution. It is still not really high, but acceptable. Then, I still have some comments, that are all more text-related, and I believe relatively minor and easy to correct.

First, the explanation about the timing of events is a lot clearer now. However, there are still a few confusing issues here. If I understood correctly now, each bar in Figure 7 relates to an event. In that case, the x-label is quite confusing, as it implies a cumulative and active selecting of events when moving to the right. “Event number”, or just “Events” would cover it better probably. The gray theoretical maximum also confuses here, as these are displayed at a high event number, whereas these four bars could be displayed at any location in the chart, correct?

The authors renamed one section now also to Discussion, which is good, but there are sometimes paragraphs in the results that are part of the discussion (for example P13.L285 and onwards). So I suggest to go over the manuscript once more, and make a more distinct separation of results and discussion elements, or merge it under Results and Discussion.

To conclude, I like the paper and hope these comments are useful again. I am looking forward to the final version of the manuscript.

Minor comments

Throughout the paper: significance is stated with $p < 0.05$ and $p > 0.05$, for full correctness, this should be $p \leq 0.05$ and $p > 0.05$.

P3.L.76. To capture the complete parameter space → please rephrase, you don’t capture the full parameter space with 100 samples, but sample in a smart way to *represent* the full parameter space.

P6.L141-145. Please also mention the modelling resolution and cellsize, this matters especially regarding routing and peak flows.

P10.L238. As depicted in Figure 3a → Maybe better to stress that 3a is merely an example showing the principle.

P11.L244-252. Please be specific when discussing Figure 6, as it shows all climate zones, whereas Figure 5 just shows the tropical climate zone.

P12.L275. In most climate zones, formulations → you mean changing the formulations, correct?

P12.L279. What you describe here is not really a hydrological process.

P13.L285. From here it seems more a discussion. This is fine, but then call it Results and Discussion, but as there is now a section Discussion, I think you may need to move these paragraphs there too.

P13.L285-287. This is a repetition of the results presented before.

P14.L304-305. The magnitudes...formulations. → What do you mean exactly? How are they similar?

P14.L310. This depends also on the scale that you are modelling. In a small catchment, it is relevant, in a really big catchment, it is not, as it may re-infiltrate.

Caption Fig4. The coloured...as shown in panel (c). → I am still confused, don’t you mean that each row in (c) represents one color in the bar of (d)? Instead of just the blue row?

Fig5. It looks really nice, but is it correct that the figure labels (a)-(d) all have a different color?