The impact of hydrological model structure on the simulation of extreme runoff events
Response to Reviewers

Dear editor,

Thank you for organising the review process once again. Both reviewers recognise the improvement of the manuscript after the major revisions and are happy to see that their comments were taken seriously. In the new reviews, they provided useful text-related comments, which were corrected in this new manuscript. The main adaptations to the manuscript are:

- Summarizing parts of the Results section were moved to the Discussion section
- The same format was used for all figures (labels and panels)
- All text-related comments were addressed

Please find below a point-by-point discussion, where our answers to the reviewers are indicated in blue.

Yours sincerely,

Gijs van Kempen
Lieke Melsen
Karin van der Wiel

Reviewer 1

The authors took great effort to implement the previous review comments and in my opinion the manuscript got much clearer. I have only some technical (mostly wording) comments to add that the authors might want to consider.

We would like to thank the reviewer once again for the careful evaluation of our revised manuscript.

Text-related comments

- L28 replace "frequently" by "most of the times"
- L123 please add a short summary how this choice was made by Kustas et al.
- L439 remove "now"

All text-related comments were changed and a short method description for the value of the degree-day factor was added (Lines 123-124 in the modified manuscript)

Figure 3 Change "Discharge" in x-axis of (d) to "Runoff" to keep the terminology consistent.

Thanks for this useful comment. We changed the figure accordingly, and therefore, the consistency of the terminology was improved.

Figure 4 caption: remove "conducted"

We changed this in the revised manuscript as well.

We want to thank the reviewer for these text-related comments, which improved the manuscript.

Reviewer 2

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.

We would like to thank the reviewer for taking the time to review our revised manuscript. We are happy to read that the reviewer appreciates our effort and recognises the improvement. We agree that increasing the benchmark leads to a better reflection of the true distribution.

Main points

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?

Thanks for this suggestion, we changed the x-label of both Figure 4d and 7 to "Event number". The theoretical maximum is clarified in lines 233-234 in the modified manuscript, these lines explain that the theoretical maximum is always on the right side of the figure due to the fact that the events are sorted based on occurrence.

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.

We have moved the summarizing paragraphs in section 3.1 to the discussion section as suggested by the reviewer. Results and discussion are well separated now.

Text-related 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 $p > 0.05$.

That is correct, we changed this throughout the paper.

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?

We clarified this in the caption of Figure 4, by further elaborating on the method.

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

That is correct, the colours of the labels match the boxes in Fig 6, and help to guide the reader. An explanation of this is provided in the figure caption. If journal policy doesn't allow coloured labels, we will provide a figure version with black labels to the copy-editors.

All minor textual suggestions and required clarifications have been implemented.

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

Thank you!