

## Point-by-point response to the reviews: October 2024

Report #1

Submitted on 01 Jul 2024

Anonymous referee #2

### Suggestions for revision or reasons for rejection

(visible to the public if the article is accepted and published)

Dear authors,

I appreciate all the work done and see that the manuscript has been improved a lot. All my comments are addressed, yet a few of them remain up for discussion. Therefore, I recommend that the following issues should be addressed upon consideration for publication.

- The addition of a flowchart is much appreciated, however the output of the manuscript is not a EWS. The authors rightfully argue that the output can be used for EWS, but now the flowchart is misleading. The EWS part can be for the discussion but is not part of the methodology and not an end product.

Answer

Thank you for your comment, because this is indeed an extremely assertive reminder. In fact, the methodology adopted results in a combination of threshold values being exceeded. The graph has been updated accordingly.

- I see indeed that the annual maxima has been removed from the manuscript. The authors now argue to only include real cases of heavy rainfall. The same question holds here as well. How has this been selected? What criteria has been used? And why?

Answer

In years without records of torrential floods, the precipitation values needed to analyse the relationship between daily precipitation and antecedent precipitation were obtained using the maximum annual precipitation technique for various durations.

However, when constructing these extreme value series for years with records of torrential floods, multiple values per year can be utilized. This becomes particularly

relevant when two heavy rainfall events followed by floods occur within the same hydrological year.

The identification of critical thresholds requires a statistical analysis of precipitation data from years with and without torrential flood records, to detect the existence of a clear separation in precipitation behaviour between both samples.

- To understand correctly, the authors selected 24 hour max rainfall to be the highest value of the hours after having applied the 24 hour moving statistics. Is this a moving average? If so, this measure highest rainfall amount in 24 hours time window if taking the max. However, response time of catchments appear to be 2 hours, which makes for an interesting discussion as it brings the question, what determines added values of 24h peak. How important is the contribution of a wetter system and how system memory can contribute to the results. Such a discussion or analysis would be an interesting addition. In addition, Table 3 is difficult to compare and I would suggest standardizing the values somehow for easier comparison.

Answer

In fact, it is always the sliding sum of the 10-minute rainfall records over a 24-hour period. After applying this calculation, the maximum in 24 hours is automatically obtained.

To understand the response time of catchments, we needed to look at the sub-daily variation in rainfall and in particular the hourly peaks. Figure 8 shows the results of this comparative analysis (hyetographs).

- Lastly I noticed that not all the clarifications, the authors nicely did in their author response, was added in the manuscript. Those clarification might also guide other readers that have the same questions (for example K values explanation, discharge patterns, and reliability HEC-HMS)

Answer

In fact, it makes perfect sense to insert all the clarifications regarding K values explanation, discharge patterns, and HEC-HMS reliability. It was an inadvertent failure

on our part not to insert them. The new version of the manuscript already includes these clarifications.

Report #2

Submitted on 19 Sep 2024

Anonymous referee #3

### **Suggestions for revision or reasons for rejection**

(visible to the public if the article is accepted and published)

I have been invited to review the revised version of the manuscript. Here are my suggestions. The authors have prepared a point-by-point response to the reviewer's comments but did not mention where they have made the changes in the revised manuscript. It is essential to note the line number or at least the page number below each response so that reviewers can easily follow the amendments in the revised manuscript.

In addition, the revised manuscript and the track changes version both look identical to me. I cannot trace the changes made to the original manuscript in response to the comments by reviewers. I request the authors to prepare a track changes version of the manuscript highlighting the changes they made. I would be happy to review the revised version again. Thanks!

### **Answer**

With regard to this issue, the main changes made compared to the original version have been signalled in the new version of the manuscript, and all the changes resulting from the new comments from the two reviewers have also been signalled.

However, we ask for your understanding on this matter. It's difficult to identify all the changes made to the original document because the second version of the manuscript has undergone a profound change in its structure.