Response to Reviewers – HESS-2021-156

Oscar M. Baez-Villanueva, Mauricio Zambrano-Bigiarini, Pablo A. Mendoza, Ian McNamara, Hylke E. Beck, Joschka Thurner, Alexandra Nauditt, Lars Ribbe, Nguyen Xuan Thinh

Dear Jim Freer (Associate Editor), Juraj Parajka, Anonymous Reviewer 2, and Elena Toth,

We hereby provide the responses to the reviewer comments for our article *"On the selection of precipitation products for the regionalisation of hydrological model parameters"*. The revised manuscript is attached, including a tracked-changes version. The changes to the manuscript are as follows:

1. Addition of units to Figures 2 and 3;

2. Addition of literature related to the implementation in R of the TUWmodel and comparison of different HBV-like models;

3. Description of the blue line in Figure 11; and

4. Correction of the typo in L541.

We would like to thank all reviewers for their constructive comments and suggestions. We firmly believe that the quality of the manuscript has increased substantially by implementing all your suggestions. Please find in the following pages our detailed responses to your comments, including the modifications we have made to the manuscript. We hope that all the points you raised have been clarified and thank you again for your time and effort.

Sincerely,

Oscar Manuel Baez-Villanueva and M. Zambrano-Bigiarini, on behalf of all authors

Reviewer comments

Juraj Parajka (JP)

JPC1: Fig.2: perhaps plotting the panels of seasonal distribution in one column (following the order of zones in the map) will allow a more clear linkage between maps and panels

Thank you for the suggestion. We have rearranged the figure and we agree that it is easier to follow.

JPC2: Fig.3 – units are missing in the legend

Thank you! The units have now been added to Figures 2 and 3.

JPC3: I do not want to self-cite works where I'm a co-author, but may be for the readers it can be useful to see some links to more details about the tuwmodel implementation in R (Astagneau et al., https://doi.org/10.5194/hess-25-3937-2021) and/or the comparison of different models entitled as hbv-type (Jensen et al., 10.1029/2020WR029143). I fully accept If you are aware about these papers, and do not want to cite them.

Thank you for this suggestion. We agree that the readers can benefit from tese literature and therefore, we added the following between L216–217: *For more details about the TUWmodel implementation in R and the comparison of different HBV-like models, the readers are referred to Astagneau et al. (2021) and Jansen et al. (2021) , respectively.*

JPC4: Fig.11 – is the blue line needed? what does it represent?

The blue line represent the optimum KGE' value. This has been added in the caption of Fig. 11: *...and the blue line represent the optimum KGE' value.*

Referee 2 (R2)

R2C1: Line 541: Replace "the" with "The" after full stop.

Thank you for this observation. The typo has been corrected in the new version of the manuscript.

References

Astagneau, P. C., Thirel, G., Delaigue, O., Guillaume, J. H., Parajka, J., Brauer, C. C., Viglione, A., Buytaert, W., and Beven, K. J.: Hydrology modelling R packages–a unified analysis of models and practicalities from a user perspective, Hydrology and Earth System Sciences, 25, 3937–3973, 2021.

Jansen, K. F., Teuling, A. J., Craig, J. R., Dal Molin, M., Knoben, W. J., Parajka, J., Vis, M., and Melsen, L. A.: Mimicry of a Conceptual Hydrological Model (HBV): What's in a Name?, Water Resources Research, 57, e2020WR029 143, 2021.