

## **Exploring the ability of LSTM-based hydrological models to simulate streamflow time series for flood frequency analysis**

We would like to thank the reviewer for their valuable and constructive feedback. We appreciate the time and effort that was put into the review. All concerns have been carefully addressed. Detailed responses to each of the reviewer's comments are presented below. For clarity, the reviewer's comments are presented in black font, with our responses in blue.

Sincerely,

Jean-Luc Martel, on behalf of all authors.

### **Editor:**

Reviewer provided positive comments on the paper. Authors are required to have a thorough editing on the revision (all sections) for conciseness (if possible, reduce a number of tables and figures).

Thank you for handling our paper. We have made efforts to reduce the length of some sections where possible without altering the meaning or clarity of the manuscript, which proved challenging. However, we have moved Tables 2 and 3, as well as Figure 5, to the Supplementary Materials (now referred to as Tables S1 and S2, and Figure S5) in order to reduce the number of tables and figures in the main text, as requested. We hope these addresses your comments.

### **Reviewer 1:**

The authors have addressed all the points raised in the first round of review, substantially improving their manuscript. Congratulations! In particular, they have strengthened the Methods section by clearly explaining the rationale behind their choices related to the flood frequency analyses. Furthermore, they have expanded the Results and Discussion section, offering a more in-depth analysis of the performances of the LSTM and HYDROTEL models for flood frequency analysis (FFA) and improved their figures. Finally, they have thoroughly revised the manuscript to better highlight its main objective: determining whether LSTM-based hydrological models can generate peak streamflow for FFA. In my opinion, the manuscript is ready for publication and will be a valuable contribution to the field of hydrology. I consider it suitable for publication in HESS as it is.

Thank you for your comments and for the thorough review of our paper.