Dear editors:

Thank you very much for your letter and for the respected reviewers' comments concerning our manuscript entitled "An improved dynamic bidirectional coupled hydrologic-hydrodynamic model for efficient flood inundation prediction" (ID: egusphere-2023-1106). Those comments that the respected editor proposed are all valuable and very helpful for revising and improving our paper, as well as important guiding significance to our research. We have studied comments carefully and have revised the article which we hope meet with approval. There were new lines and page numbers in the revised manuscript. All the changes were marked using red bold in the revised manuscript. We also responded point by point to the reviewers' comments as listed below, along with a clear indication of the revision. Hope these will make it more acceptable for publication.

1. Comment: However, the second comment, which I also emphasized in my editor's decision, is not addressed sufficiently. The comment asks for a validation of your inundation modelling results (spatial extent and depth of flooding) with independent data. You provide evidence that the discharge hydrographs are reproduced well by the model. The key output of your model is inundation maps, and this is precisely the information that should be validated using independent real-world data. This is necessary to demonstrate that your model works for the intended purpose.

Response to comment: Thank you very much for your valuable comments. In the Section 3.3 of the revised manuscript, we have simulated the flood processes in a natural watershed, Goodwin watershed. In addition to the discharge hydrographs, we have also showed the spatial distribution of water, as shown in Figure 12 in the revised manuscript. The probability of flooding and inundation increases with increasing water depth. If you want to learn more about this, please review it in the revised manuscript, from lines 580 to 594. However, the inundation maps were not validated due to the lack of real-world flood inundation data. Future work may involve collecting remote sensing data of inundation maps for validation purposes.

The proposed model has a relatively short timeframe, typically spanning two to three years. The widespread promotion and application, like Mike series, necessitate a protracted timeframe. Our ultimate objective is to disseminate our research findings through scientific publications, thereby broadening the accessibility and comprehension of the proposed model to a wider audience. Engaging with distinguished international experts and scholars, we strive to continually refine and enhance our models. We eagerly anticipate your continued provision of insightful feedback.

Our research team is currently engaged in flood control projects funded by the Asian Development Bank (ADB), Loan 3485-PRC: Flood control and Environmental Improvement Project in Kongmu River watershed, Xinyu city, Jiangxi province, China. Several lakes, such as Xianglong Lake and Yudai Lake, are located on one side of the Kongmu River, as shown in Figure 1.

Assuming that the lakes are initially dry, ICM2D simulation results show that some

lakes remain dry under rainstorm frequency with 20-year, as shown in Figure 2. This is inconsistent with the actual situation, as rainfall runoff first flows into the 1D river channels and then into the lakes from the 1D river channels. However, the M-DBCM has demonstrated superior accuracy in simulating flood inundation in low-lying areas outside the river channel (see Figure 3), a capability that is lacking in existing coupling models. Given that the simulation of the Kongmu River watershed pertains to a real-world flood control project, its progress is contingent upon the pace of engineering design. Moreover, the design of flood control infrastructure, including embankments and sponge city facilities, within the Kongmu River watershed has undergone multiple revisions. Consequently, the demands for data collection and processing are comparatively high. Substantial work remains before the model simulation results are ready for publication in academic journals. The flood control project in the Kongmu River watershed is an actual project currently underway in Xinyu city, Jiangxi Province. The results cannot be published without enough discussions and evaluation. Following your suggestions, after further in-depth research, it is our pleasure to submit this application results to the journals.

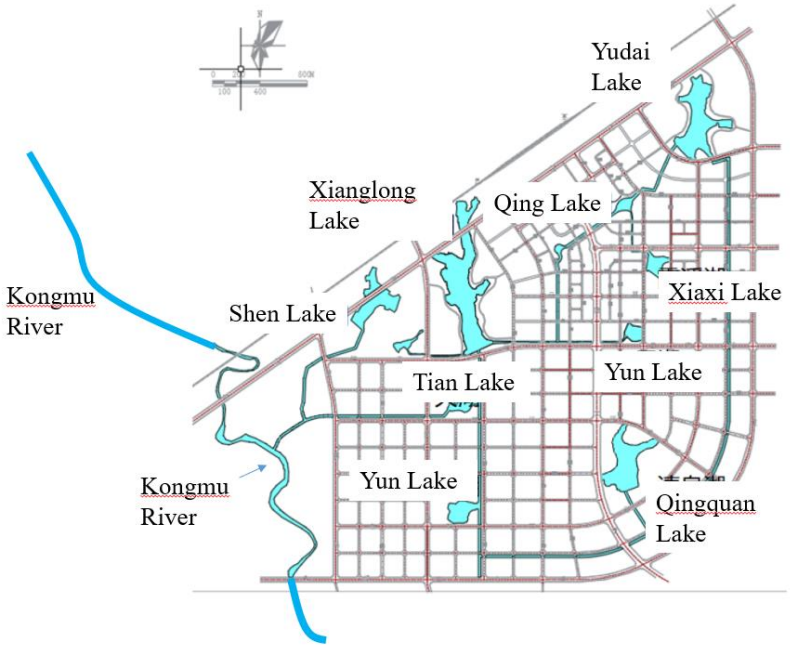

Figure 1 The location of lakes in the Kongmu river watershed

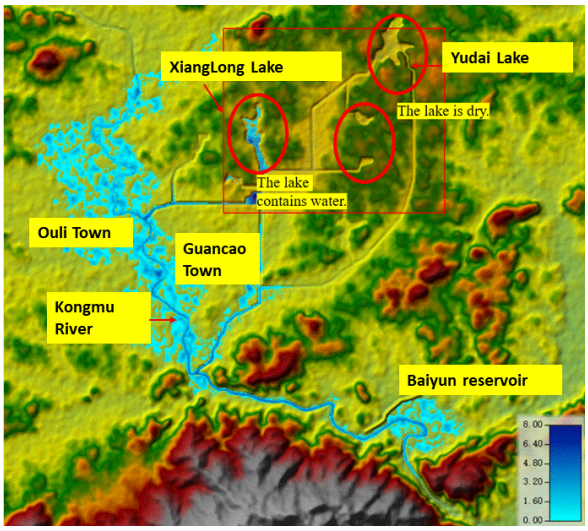

Figure 2 Preliminary results of flood inundation range obtained from the ICM2D in Kongmu River Watershed, Xinyu City, Jiangxi Province

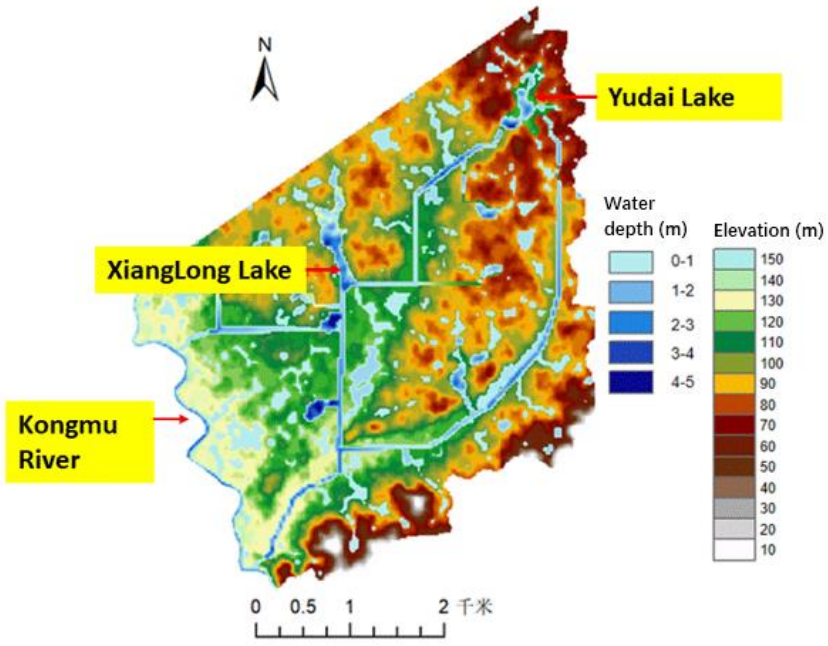

Figure 3 Preliminary results of flood inundation range obtained from the M-DBCM