Review of "Model study on potential contributions of the proposed Huangpu Gate to flood control in Taihu Lake basin"

Overall Recommendation: Major Revision

General Comments:

This manuscript conducted model simulations to investigate the potential contribution/effects of the proposed Huangpu gate for flood control in Taihu Lake basin under various flooding scenarios. Results demonstrate that the proposed gate is more effective to reduce the lake levels compared to the natural channel when the tidal water enters the upper estuary. Based on the scenario analysis, the authors found that the potential contribution of the gate mainly depends on how long the gate operates. In general, the results obtained are well elaborated and the overall conclusions are sound. However, the description of the methodology still needs improvement as the authors did not mention how the model was modified to consider the effects of the proposed gate. Will the simulation results be parameter dependent? What's more, a very important aspect but the authors did not address in the manuscript is the uncertainty analysis. Is it possible to assess the uncertainty for the existing results?

Figures in this paper did not meet the publication quality. It is very difficult to get relative information from figures due to their low resolution. In addition, the writing of this paper is not satisfying and still needs to be improved as there are a lot of grammar errors/typos and inappropriate wording, which make part of this paper difficult to understand. These are enumerated at the end of this review. It is necessary for the authors to ask a native speaker to professionally proofread the manuscript before submission for next round review.

Based on the above considerations, the current form of this paper is not qualified for publication and requires substantial work to improve both the writing and analysis. I recommend to return this manuscript for major revision.

Specific Comments:

(1) Page 1 Line 26: what is the meaning of 327? Is it the page number? Please consider changing the format of the citation. Please also check other places (e.g., Page 3 Line 9).

(2) Page 2 Line 5: "Balica et al., 2012" cannot be found in the reference list.

(3) Page 2 Line 25: "Yao & Chen, 1999" cannot be found in the reference list.

(4) Page 3 Line 22: the author mentioned the long-term average. Please specify which period was used to calculate the long-term average.

(5) Page 3 Line 32: flux is defined as the flow per unit area per time, but the unit here for flux is "m^3".

(6) Page 4 Line 10: "Duinker and Greig (2007)" cannot be found in the reference list.

(7) Page 4 Line 20: please add the reference for the HOHY model.

(8) In the model description section, the authors mentioned that the original HOHY model was modified to consider the effects of the proposed estuary gate. But there is no information regarding how the modification has been done on the model and what is the main difference between the modified and original model. Please provide more details on this point. In addition, there is no description on which parameters in the model need to be tuned for the calibration.

(9) Page 4 Line 27: please provide more details on the runoff-generation processes for different surface types.

(10) Page 5 Line 3-4: please provide more details on how the water-engineering works are taken into account in the simulation.

(11) The calibration period in this study is from 1984 to 1987, but the verification period is 1995 and 1996. Does the model consider the changes of the underlying surface conditions? e.g., the land use land cover change.

(12) Page 5 Line 17: please specify which period is used to calculate "the peak value of lake level".

(13) Most of the analysis in this study focused on the simulation of lake levels. Is it possible to show how the inundation area is reduced due to the proposed gate?

(14) Figure 1: The quality is very low and it is difficult to figure out the location of stations.

(15) Figure 2 & 3: please (1) increase the resolution of the figures; (2) provide some metrics (e.g., RMSE and R^2) to evaluate the model performance; (3) give the unit for the y-axis; (4) in the figure caption, as the observation and simulation have different colors, I prefer to use color instead of "solid"/"dash".

(16) Figure 4 & 5 & 6: please (1) increase the resolution; (2) put a horizontal line indicating the design level in the figure.

(17) Table 2: please specify the date in the caption. Is it 1999?

(18) Table 3: where are these representative stations in Figure 1? What's the unit?

(19) Why chose 7 days in advance for scenario A1? Any particular reasons? Is the number based on some operational rules?

(20) Table 5: (1) how to calculate the times to close the gate? (2) I think the following equation is valid: net outflow = total outflow - tide intrusion. But why the numbers in the table do not meet this equation? Any explanation for this?

Technical corrections:

(1) Page 2 Line 8: change "ageing" to "aging".

(2) Page 2 Line 29: change "researches" to "research".

(3) Page 3 Line 4: there should be a space character between the number (36895) and the unit ("km^2") similar as Line 12. Please keep this format consistent for other places.

(4) Page 3 Line 8: change "sauce" to "saucer".

(5) Page 3 Line 22: please change "long-term average" to "the long-term average".

(6) Page 3 Line 23: please rephrase "far from the current …". "far from" is difficult to understand.

(7) Page 3 Line 28: change "estuary gate" to "the estuary gate".

(8) Page 4 Line 1-2: please change the format of the citation.

(9) Page 4 Line 8-9: please change "They have since been …" to "Since then, they have been …".

(10) Page 4 Line 9: change "a well-known" to "the well-known".

(11) Page 4 Line 21: change "… gate, and the main Fortran codes of the model is …" to "… gate. The main Fortran codes of the model are …".

(12) Page 4 Line 23: change "stand-alone" to "independently". "stand-alone" is an adjective.

(13) Page 5 Line 1: delete "on".

(14) Page 5 Line 16: change "potential" to "Potential".

(15) Page 6 Line 9: change “potential” to “Potential”.

(16) Page 6 Line 15: change “with” to “as”.

(17) Page 6 Line 16: change “represent” to “represents”.

(18) Page 6 Line 25: change “potential” to “Potential”.

(19) Page 6 Line 28: change “was” to “is”.

(20) Page 7 Line 8: change “high” to “higher”.

(21) Page 7 Line 9: change “are” to “is”.

(22) Page 7 Line 13: change “analyses” to “Analyses”.

(23) Page 7 Line 14: change “describe” to “describes”, change “Rivers” to “River”.

(24) Page 7 Line 23: change “describe” to “describes”.

(25) Page 7 Line 30: change “impacts” to “impact”.

(26) Page 8 Line 11: change “on the different topographies” to “on different topographies”.

(27) Page 8 Line 19: change “It is to be noted that …” to “It should be noted that …”.

(28) Page 8 Line 20: please rephrase the sentence “…, which make less trouble to the navigation as soon as possible”.

(29) Page 8-9: Reference format should be consistent.

(30) Page 14 Table 4: change “summary” to “Summary”.