

Answer to Reviewer 2

We sincerely appreciate the thorough evaluation of our manuscript by reviewer 2 and would like to thank them for their comments.

Details outlining these changes, along with other revisions addressing the reviewer's suggestions, are provided below. Below, you will find our responses (in blue) to your feedback (in black bold).

The study presents coupling of a 1D hydrodynamic model with a MS equation for modelling tidally impacted river systems in a data-scarce scenarios. The content of the paper is interesting and novel. However, the paper structure needs to be revised to make the paper more readable and to effectively pass the message to the reader. As such, some of the following points might help improve the paper.

- **The paper title does not correspond to the content of the paper. For example, ‘hydrodynamic models’ cover a range of different types of modelling approaches. Please be more specific to reflect what this paper is about.**

Thank you for this comment. We have changed the title to read :

« Technical Note: Operational calibration and performance improvement for a 1D hydrodynamic model in a data-scarce coastal area »

- **Aims and goals of the study are poorly defined and unclear. Please be more explicit in what this study is trying to achieve and what is out side of the scope of this study. Once this is defined it will help to formulate a more specific title for the paper.**

Thank you for this comment. We have made the aims of this clear in text as follows :

LINES 55-56:

« This paper aims to i. demonstrate the challenges of operating a 1D hydrodynamic model with minimal data and ii. to illustrate the utility of a low-cost modeling effort in understanding flow dynamics in a poorly gauged tidal river network. »

- **Methodology needs to be improved. More details are needed about the model, input data, model structure and outputs, etc. so that the reader could have more understanding about the model itself. Additionally, more details need to be supplied about how the model was applied to the system. Which characteristics of the system were included and which were disregarded and reasons why.**

Thank you for this comment. We fully re-structured section 2 - **Materials and Methods** including more details of the MAGE model under sub-section 2.2 - **1D Hydrodynamic modeling : MAGE**. We have provided more information on the input data used in formulating the the 1D model, namely bathymetry and boundary conditions :

LINES 106-108:

« The river system was built using 83 cross-sections along the Saigon river and 36 cross-sections along the Dongnai river (Camenen et al., 2023). The bathymetry data was extracted from bathymetry surveys conducted by the SYHIMECC in 2016 (Nguyen et al., 2021). »

The primary challenge encountered in this modeling work is the lack of direct measurements of water inputs, not only from the dams but also from tributaries and irrigation canals, which are numerous and significantly influenced by tidal dynamics. These characteristics were left out of the modeling effort. Addressing this limitation in future studies will require improved data collection, particularly on urban canal flows, to enhance model accuracy and better represent the system's hydrodynamics. This was introduced in the text as follows :

LINES 108-110:

« The primary challenge encountered in this modeling work is the lack of direct measurements of water inputs, not only from the dams but also from tributaries and irrigation canals, which are numerous and significantly influenced by tidal dynamics. These characteristics were left out of the modeling effort. »

Furthermore , the outputs relevant to this technical note have been made clearer as follows :

LINES 72-74:

« This coupling is achieved by using the energy slope computed by the model as input to the MS law. The MS law undergoes a secondary calibration phase using the same discharge data as the 1D model, after which the discharge outputs are validated against an independent dataset from non-overlapping periods. »

- **More details about the calibration/validation of the model – especially about the data used, as pointed by the other reviewer.**

Thank you for this comment. Please refer to our answer to the other reviewer's comment on this matter as well as the fully re-structured section 2 – **Materials and Methods**.

- **The results and discussion sections need to be more concise and to the point. At the moment there is too much text, which can be more concise.**

Thank you very much for this comment. This was also pointed out by the first reviewer. Both results and discussion sections have been reduced and improved to be as clear and concise as possible throughout.