

Assessing impacts of dike construction on the flood dynamics in the Mekong Delta

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Overall review of submitted paper:

This paper is about assessing the impacts of dike construction on the flood dynamics in the Mekong Delta. This is an interesting topic, because the number of floods in this region is increasing. However, several aspects in this paper have to be thoroughly revised because it can be published. This is explained below. Therefore, I recommend a major revision before this paper can be published.

- *Readability*; The paper is not to-the-point. This paper is about a 1D-hydrodynamic model that has been calibrated and validated for floods in 2011 and 2013. However, the introduction in Chapter 1 is very long and contains many aspects that are not relevant for this study. The same holds for Chapter 2. Also the discussion in Chapter 5 is much too long and should be made to-the-point. Please rewrite Chapters 1 to 6 in a to-the-point way, so that the number of pages will reduce significantly.
- *Description of model set-up*; A crucial aspect is the flooding in cross-sectional direction in this 1D model. A quasi-2D approach is applied for the flood plains. This is explained very briefly and should be explained in detail, because it has a large impact on the model results.
- *Lack of validation data*; In the abstract and in the conclusions is stated that there is a lack of validation data. However, in Section 3.2 is stated that hourly discharge and water levels are available at 15 locations, of which four locations are even in flood plans. This is a nice validation set. So, there seems to be no lack of validation data.
- *Presentation of model results*; One expects figures with time series of water levels and discharges that contain both numerical results and measurements. However, such plots are missing. Therefore, a reader does not have any insight whether the time behavior of the floods is simulated accurately. Instead, correlation numbers and maximum high water are presented in the figures. However, this is of secondary importance. The authors are strongly advised to add several time history figures with computed and measured results.
- *Description of dykes*; Please clarify the differences between the dyke types (semi-dyke, August dike, high dyke) that are mentioned in this paper.
- *Hinge response*; What is a hinge response? Please clarify.
- *What is new in this paper?* In the discussion (P. 21) is stated that the results are consistent with earlier studies with 1D hydrodynamic models. What is new in this paper? Please add the references of the other studies.
- *Validation for 2000 flood*. Suddenly in the paper the authors start with a validation of the 2000 flood. The results are not very accurate because the geometry of the Mekong Delta was somewhat different in 2000. What is the purpose of this validation? Should this be left out?
- *Accuracy of model results*. In the discussion (P. 25) is stated that the model results are in line with other studies with 1D model, but that that 2D (and possible) 3D modeling is required for an in-depth understanding of the flood

behavior in the Mekong Delta. In other words, do the authors conclude that 1D modeling with a quasi-2D approach for flooding is not suitable for this?