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Natural Hazards and Earth System Sciences
Discussions
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Interactive comment on "Numerical Simulations of the 2004 Indian Ocean Tsunami Deposits Thicknesses and Emplacements" *by* Syamsidik et al.

Syamsidik et al.

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Dear Referee #3,

We thank for your valuable input to our paper. Your comments have been highly considered in the revision process of our manuscript. Three more sediment transport formulas have been incorporated in our simulations that enable us to provide more insightful result and solid arguments on our research results. We appreciate that you have put your comments into two entries and we have incorporated them rigorously enhance the quality of our paper. Now, allow us to respond to the first entry of your comments in more detailed description.

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Discussion paper

COMMENT 1: This paper presents a phenomenon of tsunami-induced sediment transport, in particular for Aceh Besar, to develop a modeling technique from coupled numerical models. The technique provides a reliable and accurate examination of tsunami deposits for location and thickness. The topic is interesting for publication and the method is high quality.

RESPONSE 1: Thank you very much for your appreciation on our research. We humbly offer our efforts to increase our understanding on tsunami hazards, especially on using tsunami-induced sediment transport to reveal more scientific basis for field measurements and disaster mitigation as well.

COMMENT 2: There is insufficient explanation to clarify the method. In addition, it seems that the amount of discussion should be increased according to the standard of this journal.

RESPONSE 2: We appreciate your input to clarify our methods. Taking into accounts of your comments and other referees comments, we will add more explanation on

COMMENT 3: Generally, the English wording and grammar need some improvement. After the revision and improvement, I feel that this paper would be suitable for publication in Natural Hazards and Earth System Sciences.

RESPONSE 3: Thank you for your suggestion. Originally, this manuscript has undergone a professional proof reading process. We ensure that the quality of the english our this paper has been checked by native-english proof reader. Notwithstanding with the proof-read manuscript, we would be improving the wording and grammar of our revised manuscript.

COMMENT 4: I have read this paper considering with the comments from other reviewers. I feel that the author is trying to hide or omit some theoretical background. I encourage the author to provide more explanation in each section including limitation of this numerical study. This is my initial comments and I will post my detailed comments

later.

RESPONSE 4: Thank you for highlighting the important of the theoretical background of our study. Combining your comments with all the referees comments, we have added some explanation on data resolution used in the simulation, on manning roughness coefficient, limitation on bathymetry data used, three additional sediment transport formulae (i.e. Engelund-Hansen 1967, Meyer-Peter-Mueller 1948, and Soulsby 1997) in the simulations, analysis of the results from four sediment transport formulae, and explanation of topography condition of the simulation area. In the original form of our manuscript we presented the result based on van Rijn 1984 Sediment Transport formulae. Detailed documentation of the sediment transport formulae can be seen in Delft Hydraulics (2009). We also highlight the limitation of our study in the discussion section (Section 5) and in the Conclusion (Section 6) in our revised manuscript. Your detailed comments are highly appreciated and we would be addressing our further responses in the next entry of your Comment.

Thank you very much.

REFERENCE

Delft Hydraulics: Delft3D-FLOW Simulation of multi-dimensional flows and transport phenomena, including sediments. Delft, 2009.

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Discussion paper