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Interactive comment on "Mangrove Forest against Dyke-break induced Tsunami in Rapidly Subsiding Coasts" *by* H. Takagi et al.

Anonymous Referee #2

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Revision comments to the paper: Mangrove Forest against Dyke-break induced Tsunami in Rapidly Subsiding Coasts. H. Takagi1, T. Mikami2, D. Fujii1, M. Esteban3 The paper is well written and documented, but there are a few misspellings Page Line Comment 2 5 Correct abstraction by extraction 2 23 Correct dyke by dykes 3 26 Correct m/s by m3/s 6 1 Correct Losada by Losada et al. 6 9 Change "resembling which resembles" by "like" 9 21 Reference Kaneko S., Toyota T. is not commented in the text 10 12 Reference Reed D.J. is not commented in the text

Figure 7 showing the models bathymetry indicate a steady topography descent from the upper part of the domain (where the dyke breach is located) to the opposite side. Despite the poor selection of colours it can be seem that the roads around the breach are at around -1.5 m, while point 7 and beyond in the other side of the domain is about -3 m or more. This is not congruent with the much complex measured topography

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Discussion paper

indicated in figure 3. The velocity figures for the present scenario without mangrove protection and in all cases with it show that by the simulation end (20 minutes) water is flowing at steady pace in all points. As water depth is also stabilised, where is the water flowing?. There are open boundaries?. There is insufficient data on the paper about the boundaries of the numerical domain, so results are of difficult interpretation based on the presented information. The wild oscillations of water level and velocity shown in the case of 2 m subsidence case without mangrove protection are not commented. Could it be related to model instabilities?. A better figure 7, showing clearly the model boundaries and the topography will be welcomed. In relation to the capacity of people to withstand a water flow of a given depth and velocity, the proposition of Wright et al. (2010) of a depth-velocity product of 1.0 m2/s as the safe limit for pedestrians seems optimistic. On that respect, Jonkman, S.N. and Penning-Rowsell, E. (2008) proposed some formulas for both moment and sliding instability of pedestrians, depending on the individual mass, friction factor and flow depth and velocity. Using these formulas, this 1 m2/s limit seems only valid for trained adults. A more recent paper of Cox et al. (2010) provides a much more realistic table about the safe limits for wadding in water flows for people.

References cited:

Cox, R.J., T.D. Shand and M.J. Blacka (2010). Australian Rainfall and Runoff. Revision Project 10: Appropriate Safety Criteria for People. Engineers Australia Engineering House, Water Research Laboratory, The University of New South Wales.

Jonkman, S.N. and Penning-Rowsell, E. (2008). Human Instability in Flood Flows. Journal of the American Water Resources Association, Vol. 44, No. 4, pp 1 – 11.

Please also note the supplement to this comment:
http://www.nat-hazards-earth-syst-sci-discuss.net/nhess-2016-128/nhess-2016-128-RC2-supplement.pdf

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