

Interactive comment on “Developing an early warning system for storm surge inundation in the Philippines” by J. Tablazon et al.

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The authors are very glad to address your comments in our manuscript. Thank you very much!

Referee Comment: I considered the title a little misleading. The “early warning system” in the title leads the reader to expect a warning framework. Instead, the paper focused on developing probabilistic maps for the region based on forecasts.

Authors’ Change in the manuscript: Edited title Probabilistic storm surge inundation maps for Metro Manila based on Philippine Public Storm Warning Signals

Referee Comment: While the frequency analyses and the storm surge methodology

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are very robust and well defined, the description of the 2D Flow modeling framework is a little short and there is not sufficient information for the reader to understand how the coupling of the storm surge model, tides and the 2D overland model is done. This is a complicated issue and need to be better explained.

Authors’ Change in the Manuscript: Add another paragraph in Section 2.3 in Page 6 To simulate an inundation output using FLO-2D flood model, the input data wave height (water level elevation) as a function of time for the coastal grid element is required (Tsunami Warning Centre Reference Guide, 2007). This water level height is one of the outputs produced by JMA Storm Surge Model. The time series charts provided by each of the JMA model observation points were plotted into its corresponding shorelines, creating a base water level elevation necessary for FLO-2D inundation. Time series charts were adjusted to incorporate the tide data derived using WXTide.

Add in references: Tsunami Warning Centre Reference Guide: 2007. US Indian Ocean Tsunami Warning System (US IOTWS). pg.17.

Referee Comment: It could be beneficial to include a sentence regarding the fact that we are neglecting the storm surge and tidal interaction by just adding them after the simulations.

Authors’ Change in the Manuscript: Add after the last sentence of Page 9, Line 23 The tide height was incorporated into the time series storm surge height produced by JMA Storm Surge Model to become the base input for FLO-2D. Although it was the simplest method, discrepancies in the observed and the simulated results might be discerned, since the tidal and storm surge interaction was not considered. Another study might suffice to investigate the relationship between the two, since a tide-surge interaction can influence the generation of higher harmonics and eddy formation in the current field (Lynge, et al., 2013), which might have influenced the result of the final height and thereof the inundation created using the flood model.

Add in references: Lynge, B. K., Hjelmervik, K. and Gjevik, B.: 2013. Storm surge

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and tidal interaction in the Tjeldsund channel, northern Norway. *Ocean Dynamics*, Springer. doi: 10.1007/s10236-013-0625-1.

Referee Comment: Suggestion: What are the impacts of having a probabilistic map that is not related to advisory categories? That could present a more realistic scenario for planning and design. This is just a thought. No need to actually do it for this paper.

We, at DOST-Project NOAH, also have maps that are being released to the public, once we have forecasted that a certain area will possibly be affected by a storm surge. We have readily prepared maps for 2 meters, 3 meters, 4 meters, and 5 meters storm surge heights. We release the storm surge height forecast together with the corresponding storm surge map up until the municipal level. We have done this during Typhoon Hagupit of 2014. This is beneficial, since the public will have an idea of the areas that will be inundated, the flood depths, and the extent of the storm surge to be expected.

Interactive comment on *Nat. Hazards Earth Syst. Sci. Discuss.*, 2, 6241, 2014.