

Interactive comment on “Meso-scale Simulation of Typhoon Generated Storm Surge: Methodology and Shanghai Case Study” by Shuyun Dong et al.

Anonymous Referee #1

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This manuscript investigates the storm surge simulation using meso-scale regional model. A series of numerical simulations showed that reliable result. However, further more detailed analysis is still needed in this manuscript. The manuscript is not generally well written and the figures are not well constructed and clear to understand. In addition, there is no scientific distribution compared with recent storm surge research. The research purpose is not clear. There is nothing of new finding or argument in this paper. Furthermore author didn't show simulation result clearly. There are some issues that need to be resolved before this manuscript can be acceptable for publication, as summarized below.

Major concerns

1. Meso-scale simulations have some advantage for the numerical study. You need

C1

to describe why you choose this method. Because you also used fine grid resolution (under the 1km resolution grid) when using nesting simulation. 2. When you conduct numerical study, you should present the description of model and detailed model setup information. The detail description about numerical model setup is positively necessary. Model description & introduction, Grid information (grid size and shape, ...), bottom drag coefficient, boundary condition, forcing generation information (tidal force, surface forcing, ...). This is basic part for the numerical model research. 3. As an explanation of storm surge model in chapter 3, description about typhoon wind model is recommended. Sample plot of wind & pressure field generation is recommended. In addition I wonder how does the typhoon field move for each 6 hours interval? 4. You need to explain more about blending of simulated typhoon wind field and ECMWF dataset. 5. Furthermore, You need to explain why you choose typhoons Winnie & Wipha. You suggested just two observation station data. I think there are much more tidal station and wave station data available. 6. You need to classify water level data to tide and storm surge component. After finishing well simulation of tide component, you can suggest comparison of surge simulation result. 7. Generally more figures are needed to explain the simulation result. 8. There is no figure and information for inundation modelling. You mentioned Shanghai coastline has been set to 6.37m above MSL. In this study, simulated maximum water level was recorded under the 5m from Figure 3. 9. I cannot understand horizontal axis description in the Figure 3. What time does that mean? And I cannot find surge height clearly in this figure. 10. You need to suggest observed inundation trace map with figure 4. The figure 4 shows just result of simulation 11. I don't understand what you want to say in this research. If the purpose of this research is introduction of meso-scale modelling's advantage, this conclusion does not have scientific distributions. 12. You mentioned this research shows successful agreement of storm surge simulation. However, you need to explain further more description of simulation result. 13. In addition I recommend you suggest spatial distribution of the storm surge and wave distributions. You still does not suggest any meaningful analysis from this figure 3,4.

C2

Other concerns

1. A lot of sentences of manuscript need corrections by a native English speaker. 2. Many part of previous work and model description are repeated in the article. 3. Some sentences in conclusion are repeated at the abstract. Use other expresstion.

Please also note the supplement to this comment:

<http://www.nat-hazards-earth-syst-sci-discuss.net/nhess-2017-34/nhess-2017-34-RC1-supplement.pdf>

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2017-34>, 2017.