

Thank you for your valuable comments and suggestions. Below, we first cite them for reference and make our responses.:

Comments on “Real-time Tsunami Force Prediction by Mode Decomposition-Based Surrogate Modeling” by Kenta Tozato et al. submit to the journal of NHSS. The authors tried to estimate the hydrodynamic force of tsunami acting on building through 2D and 3D FEM. The paper is interesting, and from my personal point of view, the topic of this manuscript fits well with the scope of the journal of NHSS. There are too many figures (snapshots), however few explanations and not ready. Animations or supplementary files may be attached to improve readability. Some other major issues are listed below:

We appreciate your suggestion to provide animations or supplementary files. That is a good idea. Let us consider it.

1. One faulting model of Tohoku Earthquake 2011 is used in this study, however but it may not (and should not) be reactivate at the same location and did not have the same magnitude. So it cannot be applied to other events, nor can it ”predict” damages. Therefore, “real-time” tsunami force predictions may not be useful because the events of 2011 have already occurred. The term ”real time” may change with the reassessment of the power of the tsunami...
2. The method proposed by the authors is a time-consuming task and not taking into account the faulting parameter of individual event. Likewise, the term ”real-time” may not be a suitable term.

Since these two comments suggest that the term “real-time” be changed to a more appropriate one, let us answers to them at once.

As you pointed out, it takes a lot of time to perform numerical simulations for various scenarios. However, all the simulations are conducted in advance to construct a surrogate model. Once the model is completed, the real-time prediction is ready. That is, when an actual tsunami occurs and its fault parameters are determined in some way, the present surrogate model can predict not only inundation heights and areas, but also hydrodynamic forces of tsunami acting on buildings within a very short period of time. Although we applied the proposed method to the Tohoku Eearthquake 2011 in this study, the framework has broad utility and therefore is capable of estimating risks of other events.

Nevertheless, the term ”real-time” may not be suitable for this paper. Indeed, similar comments have been left by other reviewers. In response, we would like to consider the use of the term ”Rapid” or ”Instant” instead of ”real-time” in the revised manuscript. We ask for your understanding.

3. There are too many figures, but similar..., need to be simplified. The wording of the manuscript should be further elaborated so that the reader can understand what the author wants to express, regarding to the figures.
4. Many figures is not ready, and some parts can be unified. E.g. Fig 6, 7, 8, 11, 17 etc.

These two comments also suggest the same amendment and therefore we answer to them at once.

As you pointed out, there may be unnecessarily many pictures in a single figure and some of them can be reduced. For example, although there four pictures in Figure 18(a), two might be enough to illustrate

what we want to explain. Similarly, we would like to consider the reduction of the number of pictures in each of Figure 19, 20, 22, 23, 24, 25, 26, 27.

In addition, since some captions may be too simple to make our intentions clear, we would like to add some explanations so that potential readers easily can understand them.

Moreover, as you pointed out, some of the figures can be combined or merged. For example, Figures 6, 11 and 17 can be combined. Also, Figures 7 and 9 can be merged so that the number of pictures can be reduced.

All of these modifications will be made in the revised manuscript.