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Comment

Interactive comment on “Tsunami response system for ports in Korea” by H.-R. Cho et al.

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Comment-by-Comment for Anonymous Referee 2

First of all, we heartily appreciate your interest and comments. Your comments improve the quality of the manuscript.

This scientific significance and hypothesis of this paper is good. Two issues would improve the scientific quality.

1) Another past earthquake generated a tsunami in 1964: the Niigata earthquake of magnitude estimated at 7.2. The Ulsan tide gage on the Korean coastline recorded a 20 cm tsunami. The epicenter of this event should be added on the map, and information reported in the text, plus reference (NOAA/NGDC). These historical events show that in less than 30 years, 3 tsunamis impacted Korean harbors. Such information

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should be reported in this paper.

Authors Response:

Because there was no loss of human beings and serious property damage, we have excluded the 1964 event. Following the reviewer's comment, however, we have added the event in Figure 1 and added some descriptions in the manuscript.

2) A question related to closer sources. The proposed method is efficient for the 3 past tsunamis observed in the XX century on Korea tide gages and 2 of them damaged several harbors. The question should be: is this method valid for all potential tsunamis that could impact the shore of Korea? What would happen in case of a big earthquake located on the closest Japanese coastlines from Korea? The seismicity in that zone is not very high. Nevertheless the seismicity in the regions close to the 1964, 1983 and 1999 is also very low. To demonstrate this, an estimated travel time map for an epicenter located on the closest Japanese coastlines should be computed. As the hypothesis exposed, boat could need 55 minutes to evacuate some harbor. So to be absolutely adequate for all potential events, the authors should demonstrate that the travel time of a tsunami generated at an epicenter located at the closest Japanese coastlines is larger than 55 minutes. A new map should be added and an explanation of the minimum travel time to the Korean coastlines.

Authors Response:

Every major port located along the eastern coast of Korea has its own tsunami hazard map and an emergency action plan (EAP). The map and EAP were developed based on 11 virtual and 3 historical tsunami events as discussed in Shin et al. (2013). We have estimated all arrival times of leading tsunami for 14 events and include only 1 case in this manuscript.

During last decades, the largest magnitude of the earthquake occurred in the East Sea was 7.8 responsible for the 1993 event. However, the tsunami occurred in 1983 killed 3

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people (death 1, missing 2) in Korea and was recorded as the most devastating event. Figure 2 displays predicted arrival time of leading tsunami of the 1983 event only.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 3, 2025, 2015.

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3, C347–C350, 2015

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C349



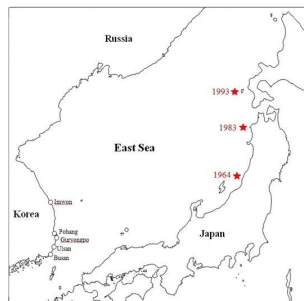


Figure 1. Locations of ports and earthquake sources for three major historical tsunamis

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Fig. 1. Figure 1. Locations of ports and earthquake sources for three major historical tsunamis