Probabilistic Tsunami Hazard Assessment along the Nankai Trough considering the diversity of earthquake fault models

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We have conducted a probabilistic tsunami hazard assessment along the Nankai trough on the baseis of The Earthquake Research Committee(ERC)/HERP, Government of Japan (2013). From the experience of 2011 Tohoku earthquake, ERC(2013) revised their long-term evaluation of the forthcoming large earthquake along the Nankai Trough from specifying earthquake sources and magnitudes to considering the diversity of earthquake source. ERC(2013) exemplified 15 hypothetical source areas which were thought as source areas of historical earthquakes. We constructed characterized earthquake fault models on each of the hypothetical source areas (Toyama et al., 2015) and calculated tsunami hazard curves at every evaluation points on coasts (Hirata et al., 2015; Korenaga et al., 2015).

In this study, we extend the hypothetical source areas from those exemplified by ERC(2013) to every possible source areas including those where eathquake occurrence yet to be identified and update a probabilistic tsunami hazard assessment along the Nankai trough. The total number of the hypothetical source areas is 85 and the number of the characterized earthquake fault models is 3928. We set probabilistic weights for each characterized earthquake fault models as follows:

i) For the 15 hypothetical source areas exemplified by ERC(2013), weights are calculated by following a probability re-distribution concept (ERC,2014).

ii) For the other hypothetical source areas larger than 3 segments, we classify them 15 groups which are recognized as parts of hypothetical source areas exemplified by ERC(2013), and divide the weights.

iii) For the hypothetical source areas smaller than 2 segments, we assume that their occurrence obeys a Gutenberg-Richter model calculated by the past seismic activity around the Nankai trough.

Keywords: tsunami hazard assessment, probability, Nankai trough, long-term evaluation, tsunami simulation

