

Tsunami alarm equipment (3)

*Akio Katsumata¹, Yutaka Hayashi¹, Kazuki Miyaoka¹, Hiroaki Tsushima¹, Toshitaka Baba²

1.Meteorological Research Institute, Japan Meteorological Agency, 2.Tokushima University

We investigated possibility of appliance to alarm tsunami hazard from single site ground motion observation. It is considered that one of the quickest ways of tsunami evacuation is transfer to higher place soon after a strong and long ground shaking. Strong ground motion means that the source area of the event would be close to the current location, and long ground shake or large displacement mean that the event magnitude would be large.

At the first, we limited epicentral distance by setting upper limit of the modified Mercalli seismic intensity of 5.5, which is obtained by converting peak ground velocity. The seismic intensity corresponds to epicentral distance of about 140 km for an earthquake of Mw 8.0. We tried to find a threshold instrumentally observable value which distinguishes earthquakes with tsunami potential from others. Thread score is used to obtain the optimal threshold value. It was found that a suitable value for single site tsunami alarm would be strong-motion duration of long-period peak displacement. Although two threshold magnitude of 7.8 and 8.5 were tried, clear difference was not recognized in the score.

Applying this method to recent major earthquakes, it was shown that this method is partly effective to inform possibility of disastrous tsunami. When the source area is away from the shoreline, such as northern area of the 2011 off the Pacific coast of Tohoku Earthquake, the observed values were lower than the threshold. We expect this method would work as complimentary alarm for evacuation from tsunami.

Keywords: tsunami alarm, instrumental seismic intensity, single station processing

