Geophysical Research Abstracts
Vol. 19, EGU2017-11503, 2017
EGU General Assembly 2017
© Author(s) 2017. CC Attribution 3.0 License.

Numerical tsunami simulations in the western Pacific Ocean and East China Sea from hypothetical M∼9 earthquakes along the Nankai trough

Tomoya Harada, Kenji Satake, and Takashi Furumura
The University of Tokyo, Earthquake Research Institute, Tokyo, Japan (haratomo@eri.u-tokyo.ac.jp)

We carried out tsunami numerical simulations in the western Pacific Ocean and East China Sea in order to examine the behavior of massive tsunami outside Japan from the hypothetical M∼9 tsunami source models along the Nankai Trough proposed by the Cabinet Office of Japanese government (2012). The distribution of MTHs (maximum tsunami heights for 24 h after the earthquakes) on the east coast of China, the east coast of the Philippine Islands, and north coast of the New Guinea Island show peaks with approximately 1.0-1.7 m[U+FF0C]4.0-7.0 m[U+FF0C]4.0-5.0 m, respectively. They are significantly higher than that from the 1707 Ho'ei earthquake (M 8.7), the largest earthquake along the Nankai trough in recent Japanese history. Moreover, the MTH distributions vary with the location of the huge slip(s) in the tsunami source models although the three coasts are far from the Nankai trough. Huge slip(s) in the Nankai segment mainly contributes to the MTHs, while huge slip(s) or splay faulting in the Tokai segment hardly affects the MTHs.
The tsunami source model was developed for responding to the unexpected occurrence of the 2011 Tohoku Earthquake, with 11 models along the Nanakai trough, and simulated MTHs along the Pacific coasts of the western Japan from these models exceed 10 m, with a maximum height of 34.4 m.
Tsunami propagation was computed by the finite-difference method of the non-liner long-wave equations with the Corioli's force and bottom friction (Satake, 1995) in the area of 115-155 ° E and 8° S-40° N. Because water depth of the East China Sea is shallower than 200 m, the tsunami propagation is likely to be affected by the ocean bottom fiction. The 30 arc-seconds gridded bathymetry data provided by the General Bathymetric Chart of the Oceans (GEBCO-2014) are used. For long propagation of tsunami we simulated tsunamis for 24 hours after the earthquakes.
This study was supported by the"New disaster mitigation research project on Mega thrust earthquakes around Nankai/Ryukyu subduction zones", a project of Japan's Ministry of Education, Culture, Sports, Science and Technology (MEXT).