



Tsunami Evacuation Planning by using Evacuation Simulation in Japan

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This paper reports tsunami evacuation planning about middle size city in Japan.

Surrounded by sea on all sides, Japan is highly vulnerable to earthquake generated tsunamis. In reality, there has been severe damage caused by various tsunamis in the past, including the 1896 Meiji Sanriku Earthquake-Tsunami, 1960 Chilean Earthquake-Tsunami, 1983 Nihonkai-Chubu Earthquake-Tsunami, 1993 Off the Southwest Coast of Hokkaido Earthquake-Tsunami, and the 2011 off the Pacific coast of Tohoku Earthquake-Tsunami. Especially, the 2011 off the Pacific coast of Tohoku Earthquake-Tsunami was extremely huge and gave great impact to Japan.

After the 2011 off the Pacific coast of Tohoku Earthquake, disaster management of large tsunamis in Japan was changed from structural measures to non-structural measures. Tsunami evacuation planning is one of non-structural measures. In Japan, after the 2011 off the Pacific coast of Tohoku Earthquake-Tsunami, a law “Act on Regional Development for Tsunami Disaster Prevention” was formulated. This law obligates estimating the tsunami inundation area, depth and arrival time to the prefectures and also tsunami evacuation plan to the cities.

In tsunami evacuation planning, difficult-to-evacuation zone is calculated. This paper introduces the Tsunami evacuation simulation by network model, which is one of the tsunami evacuation simulation methods for calculating difficult-to-evacuation zone. For the analysis, the number of evacuees, the initial location of evacuees, and the simulation result of estimating the tsunami inundation area, depth and arrival time are required. As a result of the tsunami evacuation simulation, the number of victims, difficult-to-evacuation zone and vacancy rate of shelters are calculated. And also tsunami evacuation animation about evacuation process is made. It can help the audience to understand the danger of tsunami.