

DEVELOPING A COMPREHENSIVE TSUNAMI SIMULATOR FOR POSSIBLE TSUNAMI DISASTER PREPAREDNESS IN A COASTAL COMMUNITY

SHUNICHI KOSHIMURA , DISASTER REDUCTION AND HUMAN RENOVATION INST.
TOSHITAKA KATADA , DEPARTMENT OF CIVIL ENGINEERING, GUNMA UNIV.
NORIYUKI KUWASAWA , NIPPON KOEI CO., LTD.

ABSTRACT : Coastal communities along the Pacific coast in Japan are under the threat of gigantic tsunamis accompanied with possible megathrust earthquakes along the Nankai Trough within 30 to 40 years. To protect the coastal communities from the tsunami disaster, it is evident that each coastal community should have its own disaster reduction strategy and tools to evaluate if it works. The aim of the present study is to develop a comprehensive tsunami simulator to evaluate each community's tsunami disaster preparedness and mitigation strategy, that consists of constructing tsunami hazard scenario, issuing warning guidance for evacuation, communication between residents, evacuation planning, and estimation of human casualties. Tsunami hazard scenario is provided by the result of tsunami propagation and inundation modeling based on the non-linear shallow water theory, assuming possible great earthquake of Mw 8.6 along the Nankai Trough. Resident communication analysis is based on the Biased net model, that is one of the network model theories. Evacuation analysis is performed by using one of the functions of Geographic Information System (GIS). The present simulator is applied to Owase City that has a population of approximately 24000 and is one of the most vulnerable coastal communities against the tsunami due to great earthquakes along the Nankai Trough.

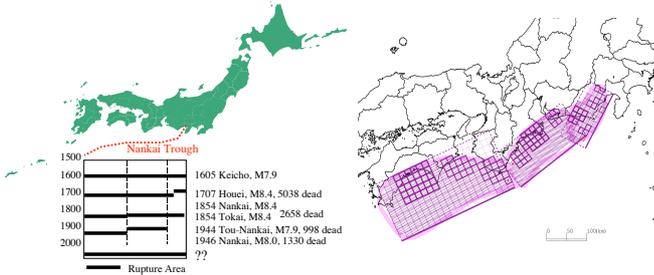


FIG. 1 : Coastal communities along the Pacific coast in Japan are under the threat of gigantic tsunamis accompanied with possible megathrust earthquakes along the Nankai Trough within 30 to 40 years. To protect the coastal residents from the tsunami, it is evident that each coastal community should have its own disaster reduction strategy and tools to evaluate if it works.

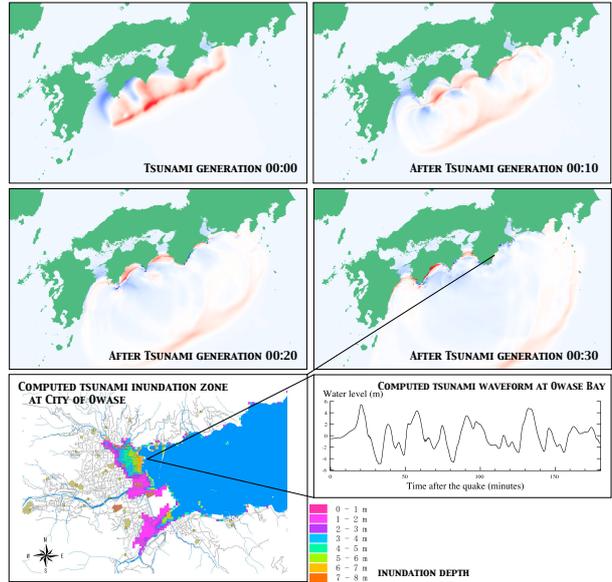


FIG. 4 : Coastal communities along the Pacific coast in Japan are under the threat of gigantic tsunamis accompanied with possible megathrust earthquakes along the Nankai Trough within 30 to 40 years. To protect the coastal residents from the tsunami, it is evident that each coastal community should have its own disaster reduction strategy and tools to evaluate if it works.

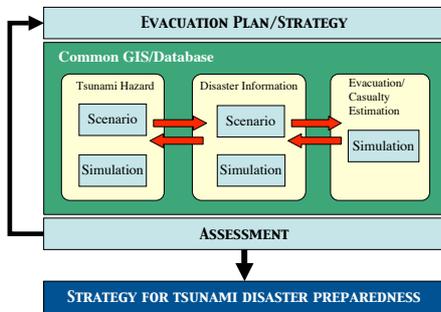


FIG. 2 : Coastal communities along the Pacific coast in Japan are under the threat of gigantic tsunamis accompanied with possible megathrust earthquakes along the Nankai Trough within 30 to 40 years. To protect the coastal residents from the tsunami, it is evident that each coastal community should have its own disaster reduction strategy and tools to evaluate if it works.

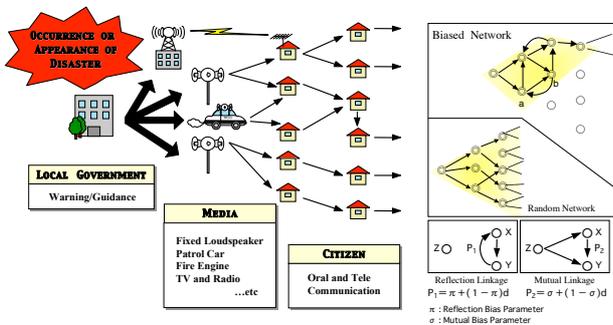


FIG. 3 : Coastal communities along the Pacific coast in Japan are under the threat of gigantic tsunamis accompanied with possible megathrust earthquakes along the Nankai Trough within 30 to 40 years. To protect the coastal residents from the tsunami, it is evident that each coastal community should have its own disaster reduction strategy and tools to evaluate if it works. The aim of the present study is to develop a comprehensive tsunami simulator to evaluate each community's tsunami disaster preparedness and mitigation strategy, that consists of constructing tsunami hazard scenario, issuing warning guidance for evacuation, communication between residents, evacuation planning, and estimation of human casualties.

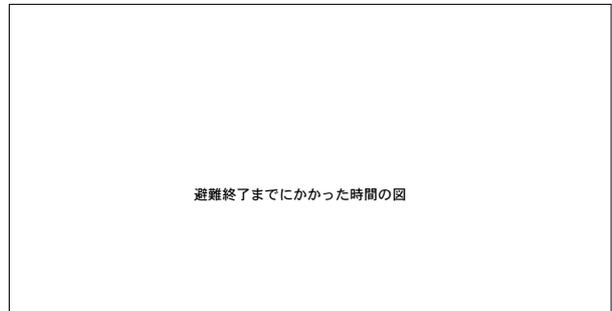


FIG. 5 : Coastal communities along the Pacific coast in Japan are under the threat of gigantic tsunamis accompanied with possible megathrust earthquakes along the Nankai Trough within 30 to 40 years. To protect the coastal residents from the tsunami, it is evident that each coastal community should have its own disaster reduction strategy and tools to evaluate if it works. The aim of the present study is to develop a comprehensive tsunami simulator to evaluate each community's tsunami disaster preparedness and mitigation strategy, that consists of constructing tsunami hazard scenario, issuing warning guidance for evacuation, communication between residents, evacuation planning, and estimation of human casualties.



AUTHORS:

- Shunichi KOSHIMURA, Disaster Reduction and Human Renovation Inst., 1-5-2 Wakinohama Kaigan-Dori, Chuo-Ku, Kobe 651-0073 JAPAN. Email : koshimuras@dri.ne.jp
- Toshitaka KATADA, Department of Civil Engineering, Gunma Univ., 1-5-2 Tenjin-Cho, Kiryu-City, Gunma, 376-8515 JAPAN. Email : katada@ce.gunma-u.ac.jp
- Noriyuki KUWASAWA, Nippon Koei Co., Ltd., 5-4 Koji-Machi, Chiyoda-Ku, Tokyo 102-8539 JAPAN. Email : a5668@n-koei.co.jp