

# **The Possibility of the Real-time Tsunami Inundation Forecast System in the Sabah Coast based on tsunami database**

**<sup>1</sup>Ikuo Abe, <sup>1</sup>Fumihiko Imamura and <sup>2</sup>Zaty Aktar Mokhtar**

<sup>1</sup>Disaster Control Research Center, Graduate School of Engineering, Tohoku University  
Aoba 6-6-11-1104, Aramaki, Aoba-ku, Sendai, 980-8579 Japan  
e-mail: i-abe@tsunami2.civil.tohoku.ac.jp; fax: 81-22-795-7514

<sup>2</sup>Research and Modeling Unit, Geophysics and Tsunami Division  
Malaysian Meteorological Department, 46667 Petaling Jaya, Selangor, Malaysia  
e-mail: zaty@met.gov.my; fax: 6-03-7958 4824

## **ABSTRACT**

The Manila Trench has been identified as a plausible candidate for rupture and being most susceptible to future major earthquakes. The tsunamis triggered by possible future major earthquakes in this subduction zone are also expected to affect Malaysian coastal areas as well as coastlines on the South China Sea, which is now under discussion. This paper is intended to describe the tsunami hazard based on a tsunami database and the possibility of a real-time tsunami inundation forecast system for Malaysia's Sabah coast. Tsunami forecasting systems are of two types: (1) those based on tsunami database with scenarios, and (2) those providing real-time evaluation using seismic information to determine a tsunami source. We try to combine the two to provide tsunami inundation more accurately and rapidly after an earthquake occurs. The seismic information that we can obtain immediately after an earthquake occurs is limited. The only available data are a "Centroid Moment Tensor Solution" reported by the USGS and observation data at some tidal stations. We proposed a tsunami observation network and a method for the improvement of the tsunami forecast to provide a tsunami inundation forecast for the Sabah coast. The system suggests that tsunamis with maximum height of more than 1 m should arrive the northern part of Sabah within approximately 2 hr after an earthquake of  $M_w 9.0$ . After 2 hr, the tsunami should reach other countries. Therefore, sharing of observation data and its prediction is important to obtain more accurate tsunami information for preparations in threatened countries.

**Keywords:** real-time simulation, inundation, accuracy of forecast