

# **TSUNAMI DATABASE FOR THE SOUTH CHINA SEA REGION : STATUS OF DEVELOPMENT AT THE MALAYSIAN NATIONAL TSUNAMI EARLY WARNING CENTRE**

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## **ABSTRACT**

The purpose of this study is to present the status of development of the tsunami database for the South China Sea Region at the Malaysian National Tsunami Early Warning Centre. The source points are located at an interval of 0.5 degree along the trenches of Manila and Palawan with 5 magnitudes ( $M_w$  6.5, 7.0, 7.5, 8.0 and 8.5) and 4 depths (0, 20, 40 and 60 km). The coastal and forecast points are located along the coastal area at 1 and 50 m of bathymetric contour depth with random interval distance, respectively. In numerical simulations, TUNAMI-F1 (Tohoku University's Numerical Analysis Model for Investigation of Far-field tsunami, No. 1) is used to calculate the tsunami waveforms at the outpoint points over the South China Sea. Green's Law calculations are then applied to the tsunami heights at forecast points to estimate the reliable tsunami heights for the coastal points. Tsunami arrival times at the coastal points are calculated by inverse tsunami travel times using the TTT (Tsunami Travel Times) software. Scaling Law equations are then used to determine the fault parameters of earthquake which is controlled by moment magnitude. Tsunami database is then constructed by using MySQL database which combined with 3 major components in Malaysian National Tsunami Early Warning System. This pre-computed tsunami database contains 2480 scenario earthquakes covering Palawan Trench and historically is the most active subduction zone along the Manila Trench. The nearest surrounding data points of the determined hypocenter are then retrieved from the database by simple and interpolation methods. Otherwise, extrapolation method is used when surrounding data is unavailable. To search for the worst scenario case of tsunami at the coastal points, maximum risk method is applied. The threat levels of warning, alert and watch are then issued based on wave amplitude and arrival times of tsunami at the coastal points.

Keywords: Tsunami database, Green's Law, TTT, MySQL, Threat levels.