

## Tsunami sources of the 2009 Papua, Indonesia earthquakes

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We have performed tsunami simulation for the 2009 Papua, Indonesia earthquakes on January 3, 2009 (1st event: 0.408S, 132.886E, Mw7.6 at 19:43:50 UTC, 2nd event: 0.707S, 133.361E, Mw7.4 at, 22:33:40 UTC and found that the calculated tsunami waveforms well explain the observed tsunami waveforms at most of tide gauge stations. At some stations, however, the arrival times or phases of tsunami are not well reproduced. Further investigations of tsunami modellings are needed.

The tsunamis generated by these two earthquakes were recorded at many tide gauge stations located in and around the Pacific Ocean. We have downloaded the tide gauge data including tsunami signals from Japan Coastal Guard's (JCG), University of Hawaii Sea Level Center's (UHSLC) and West Coast/Alaska Tsunami Warning Center's (WCATWC) web sites. The observed tsunami records indicate that the tsunami amplitudes were several cm or less than several tens of cm at most stations. The maximum tsunami of 40 cm was observed at Chichijima, Ogasawara Islands, Japan.

For the preliminary tsunami simulation, we assumed tsunami sources cover the aftershock area during one day after the two mainshocks. The fault sizes are 80 km x 40 km and 60 km x 30 km for the first and second events, respectively. Top depths of the faults are 10 km. The focal mechanism are strike = 112, dip angle = 36 and slip angle = 77 for the first event, and strike = 104, dip angle = 29 and slip angle = 76 for the second event from the USGS's CMT solutions. Average slips on the faults are 2 m and 1.3 m for the first and second events, respectively. As the initial condition for tsunami, static deformation of the seafloor is calculated for rectangular fault models [Okada, 1985, BSSA] using the source models. To calculate tsunami propagation, the linear shallow-water, or long-wave, equations were numerically solved by using a finite-difference method [Satake, 1995, PAGEOPH]. The maximum heights of simulated tsunami indicate that the tsunami energy is concentrating to directions perpendicular to the strikes of faults.