

Simulation of strong ground motions for the earthquake occurring in Tokyo metropolitan area

Takashi Furumura[1]

[1] ERI, Univ. Tokyo

The Tokyo metropolitan area is known to have been struck with large earthquakes due to the subduction of Philippine Sea Plate and Pacific Plate beneath North American plate. The recent damaging earthquakes that occurred beneath Tokyo were the 1855 Ansei Edo earthquake, the 1894 Meiji Tokyo earthquake and the 1923 Kanto earthquake. Whereas the Kanto earthquake is known to have occurred at the top of the subducting Philippine Sea Plate, the other events are considered to have occurred in Tokyo bay but the source depth is unknown. Many researchers have attempted to determine the source mechanism of these earthquakes though analysis of the pattern of seismic intensity distribution in the Kanto area, but the intensity pattern in the center of Tokyo would be considerably affected by the site amplification effect of the shallow, localized structure rather than be related directly to the source itself. In the present paper, we summarize the characteristics of strong ground motions and damage caused by the earthquakes. We then compare the pattern of intensity in local and regional scale for recent earthquakes occurring in Tokyo and corresponding computer simulations using heterogeneous crust and upper-mantle structure model below Tokyo to find referable source models for the Ansei Edo and Meiji Tokyo earthquake.