

Variability of Strong Ground Motions of Tonankai and Nankai Earthquakes due to Source Parameter Changes

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There is high possibility of the occurrence of the Tonankai and Nankai earthquakes which are capable of causing immense damage. During these huge earthquakes, long period ground motions may strike mega-cities Osaka and Nagoya located inside the Osaka and Nobi basins in which there are many long period and low damping structures (such as tall buildings and oil tanks). It is very important for the earthquake disaster mitigation to predict long period strong ground motions of the future Tonankai and Nankai earthquakes that are capable of exciting long-period strong ground motions over a wide area. In this study, we tried to predict long-period ground motions of the future Tonankai and Nankai earthquakes using 3D finite difference method. And we estimate the variability of strong ground motion due to source parameter changes.

Resultantly, we can point out that the predominant periods of pseudo-velocity response spectra differ according to location of basin, and maximum velocity distributions in the Osaka and Nobi basins increase with the rupture velocity. These characteristics of the long-period ground motions are related with the thicknesses of the sediments of the basins. These results are very useful for the earthquake disaster mitigation of long period structures such as tall buildings and oil tanks.