

Characterized Source Model for Strong Ground Motion Prediction of Crustal Earthquake Scenarios

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Abstract

From recent developments based on waveform inversion of strong ground motion data for estimating the rupture process during large earthquakes, we understand that strong ground motion is related to the slip heterogeneity rather than the average slip over the entire rupture area. Asperities are characterized as regions that have large slip relative to the average slip on the rupture area, and the area scale with the seismic moment. In this study, they found that the source model for the prediction of strong ground motions can be characterized by three kinds of parameters: outer, inner, and extra fault parameters. The outer fault parameters are defined as the rupture area and total seismic moment. The inner fault parameters are defined the slip heterogeneity within the seismic source. The extra fault parameters are used to characterize the rupture nucleation and termination. Finally, they have examined the validity of the earthquake sources constructed by their recipe by comparing simulation and observation from crustal earthquakes, such as the 1995 Kobe and 2005 Fukuoka earthquakes.

Reference

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