



Procedure of evaluating parameters of inland earthquakes caused by long strike-slip faults for ground motion prediction

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We proposed a procedure of evaluating fault parameters of asperity models for predicting strong ground motions from inland earthquakes caused by long strike-slip faults. In order to obtain averaged dynamic stress drops, we adopted the formula obtained by dynamic fault rupturing simulations for surface faults of the length from 15 to 100 km, because the formula of the averaged static stress drops for circular cracks, commonly adopted in existing procedures, cannot be applied to surface faults or long faults. The averaged dynamic stress drops were estimated to be 3.4 MPa over the entire fault and 12.2 MPa on the asperities, from the data of 10 earthquakes in Japan and 13 earthquakes in other countries. The procedure has a significant feature that the average slip on the seismic faults longer than about 80 km is constant, about 300 cm.

In order to validate our proposed procedure, we made a model for a 141 km long strike-slip fault by our proposed procedure for strike-slip faults, predicted ground motions, and showed that the resultant motions agreed well with the records of the 1999 Kocaeli, Turkey, earthquake (Mw 7.6) and with the peak ground accelerations and peak ground velocities by the GMPE of Si and Midorikawa (1999).