Characterization of Heterogeneous Source Model of Intraslab Earthquakes for Strong Ground Motion Prediction (2)

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We study on characterized source model for strong motion prediction of intraslab earthquakes, same as for crustal earthquakes (Somerville et al., 1999) and interplate earthquakes (Murotani et al., 2009). We characterized these heterogeneous slip distributions of 10 events with Mw6.6-8.3 and extracted rupture area (S), asperity (Sa), and average slip (D) with following the procedure proposed by Somerville et al. (1999). Assuming power of 2/3 dependency of S and Sa on seismic moment and that of 1/3 for D, we got the following empirical relationship.

S(kmˆ2)=6.57x10ˆ(-11)xMoˆ(2/3), Sa(kmˆ2)=1.04 x10ˆ(-11)xMoˆ(2/3), and D(cm)=2.25 x10ˆ(-5)xMoˆ(1/3), respectively with unit of seismic moment of Nm.

The average size of total rupture area and combined area of asperities of intraslab earthquakes are 67% and 50% of those of crustal earthquakes under the same seismic moment. The ratio of the combined area of asperities to the total rupture area is 9-21% and it is almost the same for the crustal events. The stress drops on the asperity area distribute 10-65MPa, which is larger than that of inland crustal earthquakes.

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