

A heterogeneous SMGA model for plate boundary earthquakes

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Seismic waves in the frequency range 0.1–10 Hz are mainly radiated from strong motion generation areas on a source fault. A heterogeneous SMGA (Strong Motion Generation Area) model was constructed inspired by the area-stress drop relationship of SMGAs of plate boundary earthquakes. The relationship shows large scatter of average stress drop for small SMGAs and small scatter for large SMGAs. The relationship was well modeled by adopting k^{-1} spatial spectrum and lognormal probability distribution for the stress drop distribution, and tuning the parameters of those distributions. This model may make it possible to predict the strong short-period pulse amongst the SMGA pulse, which has been indicated by forward waveform modeling in previous studies (e.g., Matsushima and Kawase, 2006; Nozu 2012; Kurahashi and Irikura, 2013).

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