

Estimation of strong ground motion using characterized source model of 2007 Nigata-ken Chuetsu-oki earthquake (SE-dip model)

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We developed an characterized source model of the 2007 Niigata-ken Chuetsu-Oki earthquake that have three asperities on a fault plane with the SW-NE strike and SE dip to explain very large accelerations and velocities at the Kashiwazaki-Kariwa nuclear power plant site. Referring to the source model estimated by empirical Green's function method (Kurahashi et al., 2008), we revised source model using theoretical Green's function method. The discrete wavenumber method (Bouchon, 1981) associated with the reflection transmission propagator matrix method (Kennett and Kerry, 1979) was used to calculate theoretical Green's functions. We used 1-D velocity structure models at the strong motion observation sites, which were estimated by microtremors array measurement, borehole data and reflection data. The calculated waveforms, which were calculated from revised source model, agree well with the observed waveforms at the Kashiwazaki-Kariwa nuclear power plant site. We also have good agreement of theoretical and observed waveforms at NIG018(K-NET) and F-net (Kashiwazaki) sites. It is suggested that the reason why the strong ground motions had hit the nuclear power plant is due to the focusing on a source fault.

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