

## Simulations of Strong Ground Motions Near Large-Scale Crustal Earthquakes(Part 1: Case for the 1992 Landers Earthquake)

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After the 1995 Kobe earthquake, the characteristic fault model, which is based on a simple asperity model, has been developed and successfully simulated strong ground motions, especially for modeling the directivity pulses of rather small-scale (M7-class) earthquakes. However, it is probably needed to model more complex faulting process for simulating near-fault strong ground motions for larger-scale earthquakes. To confirm this, the near fault strong ground motions of the two larger earthquakes were simulated using characteristic fault models: the 1992 Landers earthquake (Mw 7.3) in Part 1, and the 1999 Chi-Chi earthquake (Mw 7.6) in Part 2. As for the Landers earthquake, the near source strong motions were simulated using a characteristic fault model based on the source model of Wald & Heaton(1994), and the wave-number integration method (Hisada and Bielak, 2003). It was found that complex faulting process in the asperities was needed, not only for simulating the directivity pulses for the forward direction of the rupture front, but also for the random-type waves for the backward direction. It also needed to model the fling step at the vicinity of the surface fault.