



CHARACTERIZED SOURCE MODEL AND STRONG GROUND MOTION SIMULATION FOR THE 2004 MID NIIGATA PREFECTURE (NIIGATA-KEN CHUETSU) EARTHQUAKE BASED ON EMPIRICAL SITE AMPLIFICATION AND PHASE EFFECTS

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ABSTRACT: In this article, a characterized source model is proposed for the 2004 Mid Niigata Prefecture, Japan, earthquake (MJ=6.8) by using the stochastic Green's function method, taking into account the site specific amplification and phase characteristics. The strong motions are simulated based on the source model with four asperities, referring to the result of waveform inversion. The simulated ground motions are well consistent with the observed records. It is found from the simulation that the large-amplitude velocity-pulses observed at K-NET NIG019 are generated by small asperities nearby the hypocenter. Furthermore, validity of the strong motion simulation technique using site specific phase characteristics is studied. The result indicates the importance of using the site-specific phase characteristics for reliable response analyses of structures.

Key Words: The 2004 Mid Niigata Prefecture earthquake, Characterized source model, Stochastic Green's function method, Site specific amplification and phase characteristics