

3D ground motion simulation of the 2007 Niigata-ken Chuetsu-oki earthquake (Mj6.8)

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The Niigata-ken Chuetsu-oki earthquake (Mj6.8) occurred on July 16, 2007, northwest-off Kashiwazaki in Niigata prefecture, Japan. In this earthquake, in particular, strong ground motions struck the Kashiwazaki-Kariwa nuclear power plant (hereafter KK-site). The amplitude of ground motions exceeded designed amplitudes 2.5 times at the KK1 site. It is very important to explain large amplitudes of pulses of this earthquake at KK-site. From this point of view, we tried to construct the 3D velocity structure model using the JNES (2005) model and the results of the seismic reflection survey. Next, we simulated the ground motions using a 3D finite difference scheme with a non-uniform spacing staggered-grid formulation (Pitarka, 1999). From the simulated peak ground velocity distributions, we pointed out the possibility of the effect of the complicated underground structure to the observed strong ground motions at KK-site.