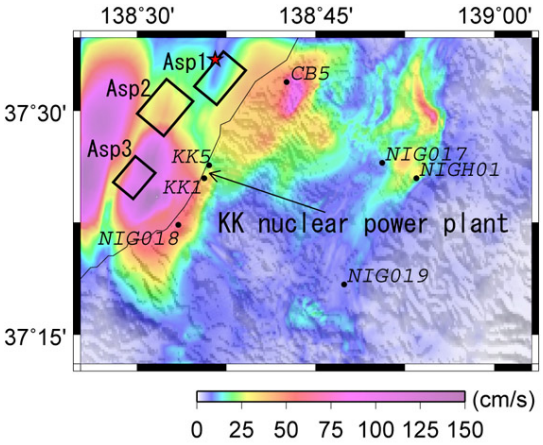
Source modeling and 3D ground motion simulation of the 2007 Niigataken Chuetsu-oki earthquake (Mj6.8)

Hidenori Kawabe[1]; Katsuhiro Kamae[1]

[1] KURRI

The Niigataken 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). It is very important to estimate the source process of this earthquake that radiated the strong ground motion at KK-site. From this point of view, we tried to construct the source model by the forward modeling approach using the empirical Green's function method.

Finally, we proposed the source model composed of three asperities on the fault plane. The stress parameters of the asperities are slightly larger than the averaged one derived from the past inland earthquakes. Furthermore, 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.



Source model and simulated peak ground velocity distribution for the 2007 Niigataken Chuetsu-oki earthquake.