

Detailed 3-D attenuation structure obtained using strong motion data in the Tohoku region and distribution of volcanoes

Ryoichi Nakamura[1], Tomiichi Uetake[2]

[1] TEPSCO, [2] Seismic Design Gr., TEPCO

Nakamura and Uetake (2002) obtained 3-D attenuation structures by using strong motion records on the whole of Japan.

Seismic strong motion records of Japan have increased rapidly by the K-NET and the KiK-NET. At present, we can utilize 70,000 data and more for inversion. Therefore, we used these data and JMA95 data, and try to obtain more precise 3-D structure with limiting calculation area of the Tohoku district, where there are many volcanoes.

The inversion was calculated by using the data in the region of 138-144E in longitude and 36-42N in latitude, and the block size of inversion are 0.2deg in longitude, 0.2deg in latitude and 30km in depth (Nakamura and Uetake used 0.5deg*0.5deg*30km). Other calculation conditions are same as Nakamura and Uetake.

The result of checkerboard test shows good resolution at inland area in the depth range of 0-30km and 30-60km.

The 3-D attenuation structure difference between Low-Q and High-Q at high frequency is clear. Figure shows the result of 10Hz in the depth range of 0-30km. The zone of the volcanic front (VF) is Low-Q and there are Low-Q zone and High-Q zone in the east side of the VF. Although, the Mt. Iwate, the Mt. Kanpu, the Mt. Chokai and the Mt. Gassan are far from VF, there are Low-Q zone around in these Quaternary volcanoes. Therefore, 3-D attenuation structure are relatively complex in the region of east of VF.

Nakamura and Uetake (2002) Zisin, 54, 475-488

