

Microtremor array exploration in focal area of the 2003 Miyagiken-Hokubu earthquake

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Microtremor array explorations were conducted in the focal area of the 2003 Miyagiken-Hokubu earthquake to know S-wave velocity profiles for assessment of local site effects. Vertical microtremors were observed at 8 sites in the area. At each site, two arrays are deployed in cross or triangle shape with station spacing of 0.3 to 1.5km. Phase velocity of Rayleigh waves were estimated from frequency-wavenumber spectral analysis of array records. Then, the phase velocity was inverted to an S-wave profile using genetic algorithms. The basement depth at Ishinomaki is about 0.2km, while those in the focal area is about 1km. The trend of the basement depth is in agreement with gravity anomaly distribution. However, depth to the basement estimated from a seismic reflection survey is different from ours. Several assumptions in the inversion process must be examined to reduce such differences.