

Seismic reflection surveys around the southern part of hypocentral area of 2003 Miyagi-ken Hokubu earthquake (part1)

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We conducted seismic reflection surveys around the southern part of hypocentral area of the 2003 Miyagi-ken Hokubu earthquake in order to clarify sub-surface geological structure in this region. We surveyed along three lines: one was surveyed by using a 17-ton vibrator and others were by using a 4-ton mini-vibrator. This lecture deals with the large vibrator survey.

This large vibrator survey was conducted along a 17km-long survey line, which started at Hebita area of Ishinomaki city, through northern Yamoto town, and reached to Nakayashiki area of Nango town. In the eastern part of the survey line, vibrator source was not so effective due to energy attenuation in thick soft alluvial sediments and due to large traffic and construction noises. In some cases, first breaks never reached beyond 500m in distance. In the western part, however, first breaks were often seen beyond 4km.

At present, the data processing is ongoing, and the final result is not available. However, we have obtained the outline of the geological structure of this region, based on some preliminary stacked sections. A fault-like structure is found beneath the southeastern extension of the eastern margin of Sue hill, where Ishinomaki fault was supposed to extend. Southern extensions of Hirobuchi syncline, Asahiyama flexure and Oshio anticline are also clearly seen. In the west of Asahiyama hill, horizontal strata are seen beyond 2sec in twoway-traveltime. We would like to clarify more detailed structure of this region through careful processing and interpretation.