

Deep crustal structure of the northeastern Japan fore-arc by a seismic exploration using an airgun-array

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In Aug. 1999, we made a large-scale artificial seismic exploration using an airgun-array over the islands-arc/ocean transition zone of the NE Japan fore-arc. We obtained P-wave velocity structure in the crust and upper mantle from the first arrival signals observed at seismic stations both on land and ocean bottom. Using the two-dimensional crustal structure model thus estimated, we mapped deep reflectors corresponding to evident later arrivals that appeared on the record sections obtained at the land stations. The crustal thickness 33 km beneath the coastline is larger by about 5 km than previous studies. There exists a distinct reflector in the lower crustal layer. We also found a reflector corresponding to the plate boundary in the source region of the 1978 Miyagi-oki Earthquake.