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The structure of the shallow crust beneath the eastern part of the Tohoku Backbone Range, using 3-D seismic travel time tomography

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We present the seismic velocity structure of the shallow crust beneath the eastern part of the Tohoku Backbone Range, northern Honshu, Japan. In August 1998, the Research Group for Explosion Seismology (RGES) carried out explosion seismic experiments in this region in order to define the crustal heterogeneous structure. We analysed the first-arrival travel time data obtained from this experiment using a revised three-dimensional (3-D) seismic travel time tomography procedure, which was developed by Onodera (1998).

The mainly results show that, in the northeastern part of this region (the Kitakami Lowland), the seismic velocity is lower than in the southwestern part (the Tohoku Backbone Range).

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The results show that:

(1) In the northeastern part of this region (the Kitakami Lowland), the seismic velocity is lower than in the southwestern part (the Tohoku Backbone Range).

(2) In the northern part of this region, the low velocity region where seismic velocity is 2.1km/s-4.7km/s exists from the surface to about a depth of 2km. This result coincides with that of the seismic refraction profile (Iwasaki et al., 1999).

(3) In the southern part of the Shizukuishi basin, the lower velocity area, which represents the caldera structure, was found at a depth of 0-1.5km.