

## Seismic structure of the source region of the 2007 Niigataken Chuetsu-oki Earthquake revealed by onshore-offshore seismic survey

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The 2007 Niigataken Chuetsu-oki Earthquake occurred at 10:13 on July 16, 2007 (JST) with Japan Meteorological Agency (JMA) magnitude of 6.8. According to JMA, a maximum intensity of 6+ on the JMA scale was observed in Niigata and Nagano Prefecture. To obtain the detailed velocity structure in and around hypocentral region is important to understand the earthquake mechanism.

A seismic survey using 18 ocean bottom seismometers (OBSs), 202 land stations and controlled sources in sea and land was carried out in from August to September 2007. The seismic survey line is about 100km long in offshore, we shot using an airgun array with total volume of 12000 cubic inches from R/V Kairei, Japan Agency for Marine-Earth Science and Technology. The OBS data were used to estimate the crustal velocity structure. The ray tracing method (Zelt and Smith, 1992) was applied to calculate estimated travel times in the 2D velocity model. We used a trial-and-error method to obtain a velocity model, which can explain observed travel times of first and later arrivals. The sedimentary section can be divided into two layers based on velocity changes. the upper sedimentary layer is relatively homogeneous with P wave velocities of 1.6-2.0km/s and a thickness of 2km. The layer with a velocity of approximately 3km/s exists below the upper layer. The P wave velocity change from 3km/s to 4.6km/s in the direction of land. The depth of upper crust surface change from 1km to 7km. The depth of lower crust surface is about 14km. To compare the detailed aftershock distribution (Shinohara et al., submitted) and the obtained seismic structure, the aftershocks located in the upper crust.