

Crustal structure under a high strain rate zone in Central Japan from 2001 refraction/wide-angle reflection data

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The recent GPS measurements revealed a EW trending high strain zone in the northern part of Central Japan (the Niigata-Kobe Tectonic Zone). In order to understand the physical mechanism of this strain concentration, physical properties both in the crust and upper mantle are inevitably important. In this paper, we reinterpret the seismic refraction/wide-angle reflection data collected in 2001. This profile line, 260 km in length, crosses the central Japan, which probably involve important constraints on the structural heterogeneities in and around the high strain rate zone.

In this study, we adopted the hybrid method composing forward modeling and travel time inversion. The latter analysis, we use an extended time-term method and refraction tomography. According to the preliminary result from the forward modeling and extended time-term method, the northern part of the profile is covered by a heavily undulated sedimentary units. The material below these units has a velocity of 5.6-5.8 km/s., showing slight decrease (0.1-0.2 km/s) the high strain rate zone. The velocity gradient in the upper 10 km of the crust is rather high (0.06 s⁻¹), which may cause a significant variety in the upper crustal velocity reported in the previous analyses.