

Westward-dipping crustal reflectors beneath the southern Kitakami: Shear structure of the early Cretaceous lateral faulting?

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Multi-channel deep seismic surveys were conducted in the southern Kitakami area. The surveys covered about 34 km, from Shiwahime town (present Kurihara city) in the Kitakami lowland to Shizugawa town (present Minami-sanriku town) in the Pacific coast. The western 22 km of the line was surveyed by dynamite with the weight of 20-30 kg and the eastern 12 km by four large vibrators. A carefully reprocessed seismic section shows remarkable westward-dipping reflectors in the mid- to lower crust beneath the Kitakami massif. The dipping events correspond to the low-velocity layers found by Iwasaki et al.(1994) beneath Kuji-Ishinomaki explosion seismic line. The intersections between the earth's surface and the upward extensions of the dipping events are situated about 10km, 20km and 30km east of the survey line. These locations correspond to the southward extensions of shear zones of the major early Cretaceous faults with left-lateral displacements, such as the Hizume-Kesenuma fault, the Hayachine Eastern Boundary fault and so on, suggesting the close relationship between the dipping reflectors and the major fault system in the southern Kitakami belt. The southern Kitakami belt is thought to be emplaced around early Cretaceous, but what controlled the emplacement of the body is still controversial: one model is the strike-slip tectonics, and the other is the nappe tectonics. The westward-dipping reflectors found in this study may play a key role to solve the emplacement issue of the southern Kitakami belt.