

## Deep seismic reflection profiling across the northern part of the Itoigawa-Shizuoka Tectonic Line, central Japan

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The Itoigawa-Shizuoka Tectonic Line (ISTL) is one of the major tectonic line in Honshu island, Japan, which divides the SW and NE Honshu and its northern part forms an active fault showing high averaged slip rate (several mm/ year). On-going shortening deformation is observed by GPS measurements along the northern part of ISTL. The northern part of ISTL bounds the western edge of Northern Fossa Magna, which is a Miocene half graben and more than 6 km thick Neogene sedimentary rocks are accumulated. The deep geometry of ISTL active fault system contributes to better understanding for crustal deformation processes and late Cenozoic tectonic evolution of central Japan. To reveal the crustal structure including the geometry of deeper extension of ISTL active fault, the deep seismic reflection profiling was performed in 2002 across the northern part of ISTL along 60-km long seismic line. The seismic reflection profile portrays that the northern part of ISTL active fault system is an east-dipping thrust and its hanging wall thick (3-4 km) folded Neogene sedimentary rocks are distributed. On the footwall, Cretaceous granitic rocks are covered by thin (less than 1 km) Neogene sediments, suggesting that the northern part of ISTL was formed as a large-scale normal fault. On the CMP-seismic reflection section, the deeper extension of ISTL active fault continues to the mid-crustal detachment via shallow (ca. 3-5 km) sub-horizontal detachment and rump. Due to the subsequent shortening deformation since the Pliocene, the low-angle normal fault was reactivated as a thrust producing shortening deformation of hanging wall Neogene rocks, total amount of horizontal shortening is estimated to be 22 km. Lower Miocene of Northern Fossa Magna sedimentary basin is marked by abundant volcanic rocks. Judging from the Miocene volcanic activity and regional tectonics, the existence of shallow low-angle fault was controlled by thermal regime (high heat flow) during the formation of Miocene rift associated the Northern Honshu rift system.