Seismic reflection profiling across the Itoigawa-Shizuoka Tectonic Line in northern Yamanashi Prefecture, central Japan

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The Itoigawa-Shizuoka Tectonic Line (ISTL) in Central Japan is a fault zone with a very high slip rate in Pliocene-Quaternary time. The structure and behavior of ISTL is highly variable along strike, with a prominent segment boundary around Suwa Lake. In order to reveal the overall structure of ISTL, a research project consisting mainly of seismic-reflection and gravity surveys started in 2005. In 2005 we carried out (1) high-resolution seismic reflection profiling along a 12-km line across the southern part of ISTL, (2) wide-angle reflection and refraction seismic surveys along a 40-km line including the high resolution line and its east and west extensions, and (3) gravity survey along the high resolution line. Tentatively processed seismic and gravity data indicate (1) that ISTL here is a west-dipping, low-angle thrust, which separates horizontally-layered basin-fill sediments (total thickness ˜1 km) on the east from highly deformed Miocene rocks on the west, and (2) that the leading edge of the hanging-wall side is likely to be thrust horizontally over the top of basin fills for 1.2-1.3 km, forming an active nappe. Further cooperative analyses of high-resolution seismic reflection data, wide-angle seismic reflection data, seismic refraction data, and gravity data will reveal more detailed and deeper structure of ISTL.