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P and S wave velocity structure of the Tanzawa and Misaka blocks in the Izu collision zone

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In recent years, collision and subduction structure in the Izu Collision Zone has been revealed by intensive seismic experiments of Special Project for Earthquake Disaster Mitigation in Urban Areas. Reflection and refraction analyses of 2005 Odawara-Yamanashi profile provided fine-scale P wave velocity structure of the Misaka and Tanzawa blocks and geometries of the collision boundaries and the subducted Philippine Sea plate (Sato et al., 2006; Arai et al., 2009). S wave first arrivals are also well observed in this expedition. S wave velocity and Vp/Vs provide important information on the geological/petrological structure. Although the low velocity zone were found along Sone Faults located at the northern end of the Misaka block from the P wave velocity structure, geological interpretation for the unit has not been made. So, constraining petrological structure from S wave velocity has a potential to progress the understanding of the collision process of the Miasaka block.
In 2005 Odawara-Yamanashi profile, more than 1600 receivers (50 meter interval) were deployed on approximately 75 km-long profile in Northwest-Southeast direction, crossing collision boundaries such as Kan'nawa-Kozu-Matsuda Faults, Tonoki-Aikawa Tectonic Line and Sone Faults. 18 dynamite and vibroseis shots were conducted, from some of which clear S wave first arrivals were observed. In order to improve S/N ratio, 3-8Hz band-pass filter was applied to the waveform data, and more than 5000 first arrivals were picked. Apparent velocity changes drastically over the whole profile as well as P wave, which is expected to reflect strong heterogeneity in the crust.
We're now carrying out S wave travel time analysis based on forward ray tracing (Iwasaki,1988). Seismic rays cover upper 3 km crust.

Keywords: Izu Collision Zone, Tanzawa Mountains, Misaka Mountains, The Philippine Sea Plate, S wave velocity structure, Refraction/wide-angle reflection analysis