

DEEP SEISMIC PROFILING OF METROPOLITAN: PRELIMINARY RESULTS OF THE ODAWARA-YAMANASHI SEISMIC SURVEY

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The Headquarters for Earthquake Research Promotion Japan determined to start the new program targeting the reduction of seismic hazard in the metropolitan areas. As a part of this program, the project to reveal the regional characterization of metropolitan area, including the deep seismic profiling, began from 2002 in the Tokyo metropolitan area. A long-term goal is to produce a map of reliable estimations of strong ground motion. This requires accurate determination of: source, propagation path, ground motion response. This project focuses on identification and geometry of: source faults, subducting plates and mega-thrust faults, crustal structure, seismogenic zone, sedimentary basins, 3D velocity properties. By the deep seismic profiling in 2002-3, the upper surface of the Philippine Sea plate were imaged by four seismic lines (Sato et al., 2005; Science). In November 2005, deep seismic profiling was carried out along the Odawara - Yamanashi seismic line, this paper provides the results of preliminary processing of this seismic data.

The target of this profiling was the imaging of upper surface of the Philippine Sea plate and its spray faults and also to obtain the velocity structure. The geometry of the Philippine Sea plate is not clearly understood due to lack of seismicity in the north westward of the Hakone volcano.

The seismic line starts from the river mouth of the R. Sakawa at the Ashigara plain and continues north westward to the north of the Kofu basin via Tanzawa and Misaka Mountains for 88 km. For the southern part of the seismic line in the Ashigara plain, the CMP-reflection profiling by relatively dense spacing of vibroseis trucks was carried out. For the northern part, low-fold reflection profiling was undertaken by explosive seismic sources (100 - 300 kg) or many sweeps (larger than 100) of vibroseis trucks at 5 km spacing. The seismic signals were recorded by recording system contains total 2700 channels at 50-m-spacing.

As results of preliminary processing, low-fold stacking section was obtained. On the seismic time section, a group of deep reflections from 9 to 14 seconds in two-way travel time is clearly obtained. Judging from the geologic structure along the seismic line and geophysical characteristics, the gently north dipping reflectors correspond to a mid to lower crust of the Izu-Ogasawara volcanic arc. Namely its upper reflectors can be correlated to the upper surface of the Philippine Sea plate.