

Shallow subsurface structure in the coastal zone of the Sagami Bay area, central Japan

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Though a number of faults are estimated around the coastal zone of the northern Sagami Bay area, central Japan, the spatial distributions of faults are debatable. The purpose of this study is to gain more insight into the spatial distribution of the southern end of Isehara Fault and the northern end of Guzo fault, and the existence of an active structure near the Hanamizu River mouth. We conducted P-wave shallow reflection surveys along two survey lines around Kaname river system in Hiratsuka City, Kanagawa Prefecture, central Japan in January and February, 2017.

The survey Line 1 extends east to west on the One-River and Suzu-River cycling road, which across the gap area between Isehara and Guzo faults. The survey Line 2 extends from the city boundary between Oiso Town and Hiratsuka City to Hiratsuka Birch Park which crosses the Hanamizu River mouth. The length of the survey Line 1 and 2 are about 3000 m and 2000 m, respectively.

The reflection surveys were conducted using JMI-200 hydraulic impactor (JGI, Inc.) and signals were recorded on 28 Hz GS-20DM vertical geophones (Geospace). Both shot and receiver intervals are set to be 2 m and the repeat counts of shot at each point are from 3 to 10 and. Geophones with 96-channels spread moved laterally along each survey line in step of 48-channels and a total number of shot and receiver points at Line 1 and 2 is 1488 and 1033, respectively. We recorded 2-s duration with a 1-ms sampling interval using analog-to-digital converter DSS-12 (Sunco Consultants) and GSX (Geospace). Stacked shot gathers show high signal-to-noise ratio at both survey lines.

CMP stacking with NMO corrections using 1.6 km/s for P-wave velocity reveals the reflections between about 0.1 and 0.3 seconds in a time profile at both survey lines. Distinct phases at about 0.1 seconds at Line 2 which are consistent with the base of Alluvium are undulating at 400 m and 1000 m to the east of the Hanamizu River mouth, suggesting a deformation structure related to fault activities. To clarify this deduction, further analyses need to be executed and the comparison with the drill core data must have key information.

Keywords: reflection survey, shallow structure