Near-surface structure of the Kuwana fault revealed by high-resolution seismic reflection survey using S-wave type Land Streamer

Tomio Inazaki[1]; Toshimichi Nakanishi[2]

[1] PWRI; [2] GSJ, AIST

High-resolution shallow seismic reflection surveying was conducted in Kuwana City, Mie Prefecture. The objective of the survey is to clarify the detailed structure of the near surface sediments at the frontal zone of the Kuwana fault. We utilized SH-wave type Land Streamer which enabled us to apply seismic reflection surveying even at a paved area. The Land Streamer consists of a pair of woven belts, a seismic cable, and geophone units. The tool is featured as the non-stretch woven belts on which geophone units are mounted to form a multichannel geophone array similar to a marine streamer. The tool can be easily towed by hand, or by a vehicle. The geophone units are coupled to the paved surface with the metallic baseplate. Even this non-planted coupling through the baseplate, the tool can receive comparatively clean data on the pavement.

A 400 m long seismic line was deployed to obtain a seismic profile across the Kuwana fault through the main faulted zone to frontal part of the fault. A CMP stacked section clearly profiled the deformed structure and small scaled faulting at the frontal part in the near surface down to 40 m in depth. It is concluded that the Land Streamer tools had high capability of delineating detailed structure of faulted zone and high-resolution shallow seismic reflection surveying provided helpful information regarding seismic zoning near the Kuwana fault for earthquake disaster prevention of infrastructures.