GEORADAR IMAGERY OF A WIDE FRACTURE ZONE OF THE MEDIAN TECTONIC LINE IN SOUTHWEST JAPAN

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Introduction
The Median Tectonic Line (MTL) in western Kii Peninsula, Southwest Japan, is an active fault system. We applied georadar technique to a wide fracture zone survey of the MTL in order to get a high-resolution image of its shallow subsurface structures. It is important to get information on a location and deformation width of an active fault for mitigation of the earthquake disaster.

We chose six sites along the MTL and Negoro fault in western Kii Peninsula. The measurement of GPR exploration used a SIR-2 system with 100MHz, 200MHz, 400MHz and 35MHz frequency antennas. The GPR data were processed with software (RADAN). The general processing is distance normalization, horizontal scaling, range gain, stacking, high-pass filter, low-pass filter and migration.

Conclusions
The following results were obtained: (1) The detected amplitude anomalies with a weakly reflected signal were found at six survey lines across the MTL (main fault) and its subsidiary fault. (2) The zone of weak reflection on the georadar profiles can be imaged as the fracture zone. (3) The detected anomaly (70-120m wide) of the MTL is wider than that (c. 20m wide) of the subsidiary fault. Judging from the GPR and geological data, these detected anomalies can be interpreted as fracture zones of the MTL active fault system. The detected anomaly of the MTL is wider than that the Negoro fault. The structural resolution from the GPR image corresponds to an outcrop scale in order of 1m within the fracture zone. Therefore, it was found that the GPR is an effective tool for investigation of the wide fracture zone of an active fault. The georadar data of high-resolution obtained from the active...