

## Application of the GPR Method to a Concealed Active Fault Study

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Ground-penetrating radar (GPR) was used for concealed active fault study in the urban area of mega-city. We carried out the following three tests for making clear the GPR imagery of the concealed active fault: (a) comparison between it and that of surface rupture faults, (b) correspondence to a result of trench excavation, and (c) combination among the other geophysical methods (e.g., shallow reflection method, resistivity method). We used a GSSI SIR-2 system with 100 MHz and 35 MHz frequency antennas for our GPR surveys. GPR data were processed to accentuate geologic features by high pass filtering, low pass filtering and migration. Concerning the GPR imagery of concealed active fault, the following results were obtained: (1) Detection of an anomalous reflector was found all along the GPR survey lines across the fault. The anomaly is characterized by discontinuity (reflector-break mode) and flexure (reflector-bend mode) on the GPR profile. (2) The locations of the anomaly are well consistent with the results of trench excavation and the other geophysical investigations. (3) More than one discontinuity is found on the GPR profile. (4) Discontinuity is indicated as a wide, nearly vertical, dark band (fracture zone) of no signal return. (5) A strike and dip of the fault and an amount of the strike slip were estimated by using the 3-D GPR imaging techniques. Therefore, we found GPR imaging to be very useful in understanding the near-surface structures of concealed active fault.