



Ground-penetrating radar imagery of active faults on the Absheron Peninsula, Azerbaijan

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The Nov. 25, 2000 earthquakes (Mw 6.2 and Mw 6.1) occurred in the Caspian Sea, 25 km to the south-southeast of mega-city, Baku, Azerbaijan. However, until now, there is not enough information about the accurate location and activity of active faults in Baku. Accordingly, we have a cooperative research project on “the Regenerative study of Urban Infrastructure in Baku, Azerbaijan from the point of disaster prevention” (Representative: Shiro Takada) between Azerbaijan and Japan. On August in 2005, we investigated the active faults in Baku and its vicinity, using a GSSI ground-penetrating radar (GPR) unit, and 100 MHz and 400 MHz frequency antennas. Fifteen GPR profiles and five wide-angle refraction reflection profiles were acquired in this area. The GPR data were processed to accentuate geologic features by high pass filtering, low pass filtering and migration.

We found two SSE-striking active faults on the Absheron Peninsula. One is a hidden fault in the urban area of Baku. Topographic slopes and depression are however recognized along the fault, having the apparent normal fault sense. On our GPR profiles across the fault, discontinuity of the reflected signal was detected. The other is a strike-slip fault with right-lateral offset streams in the Shabandag-Badamdar Mountains, 3-5 km west of Baku. Along this fault, many nearly-vertical fractures are developed in the thick sand bed below the ground surface. Also nearly-vertical zones (10-15 m wide) of an anomalous reflector, interpreted as fracture zones, were found all on the GPR profiles across the fault. And we obtained the ^{14}C age, $34,930 \pm 430$ yr. B.P. from the organic material, contained with the sand bed, at the depth of 30 cm from the ground surface. Judging from them, the latest activity of the strike-slip fault is assumed to be

after the formation of the sand bed. Therefore this active fault is thought to be very important as a scenario fault for mitigation of earthquake disaster in Baku.