[EJ] Evening Poster | S (Solid Earth Sciences) | S-SS Seismology

[S-SS08]Active faults and paleoseismology

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Geologic and historic information on seismic cycles and on the magnitude and source faults of past earthquakes is essential information to understand future large earthquakes. The study of past faulting and seismicity is an important issue for an interdisciplinary community of seismologists, geologists, geomorphologists, archaeologists, and historians.

[SSS08-P05]Gravity survey and subsurface structure across the Aomoriwan-Seigan Fault Zone, Northeast Japan

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Aomoriwan-Seigan fault zone is a zone of NNE-ESE trending western dipping reverse faults, which is composed of Aomoriwan west fault, Nogiwa fault, and Nyunai fault. The fault zone is distributed about 31-km long along the eastern foot of the Tsugaru Mountains from Yomogita village of Aomori prefecture to Aomori city (Headquarters of Earthquake Research Promotion, 2004). According to Ikeda et al. (2002), the Aomoriwan west fault migrated from the Tsugaru fault that is originally generated normal fault in Miocene age. Since tectonic inversion was occurred in Pliocene time, the normal fault has been reactivated as a reverse fault. Seismic reflection survey and CSAMT (Controlled Source Audio-frequency Magnetic Telluric) survey were carried out across the Aomoriwan west fault (Kagohara et al., 2017; Sakashita et al., 2017). Low angle thrust fault of Tsugaru Fault and geological structure deformed by faulting below the 1.5 km from the surface were revealed in these surveys. In this study, to reveal the deeper part of the subsurface structure of the Aomoriwan-Seigan fault zone, we carried out gravity survey across this fault zone.

Gravity survey was conducted with a SCINTREX CG-5 gravimeter from May 25 to June 1, 2017. The length of the gravity survey line was about 7.6 km along the Amida river from the coastline of the Yomogita village to the entrance to a route up Mt. Okura-dake. The standard interval of gravity station is 200 m. Around the active fault trace of the Aomoriwan west fault, we changed the interval of gravity stations into 100 m. To obtain the altitudes of the gravity stations, we also conducted GNSS (Global Navigation Satellite System) survey in the eastern side of the survey line and leveling in the mountainside. The total number of gravity stations in this survey was 60. We applied standard procedures of gravity correction to obtain the Bouguer gravity anomalies. The SPECG1988 (GSJ gravity survey group, 1989) method was applied for terrain correction.

In the result of Bouguer gravity anomaly, we cannot identify the significant gradient change around the surface trace of the Aomoriwan west fault. However, the gradient of Bouguer gravity anomaly was changed at the point where 2 km west from the surface trace. It is supposed that the gradient change reflects a density structure dislocated by the deeper extension of the Aomoriwan west fault.

In this study area, seismic reflection survey, CSAMT survey, and gravity survey (this study) were conducted along the same exploration line. We compared these explorations and estimated the subsurface structure of the Aomoriwan west fault (Aomoriwan-Seigan fault zone).

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