

Seismic exploration in the Oisawa fault

Yosuke Nakamura [1], mio Shimoyama [2], Akiko Hasemi [3], Hisao Tanaka [4]

[1] Earth and Environmental Sci, Yamagata Univ, [2] Yamagata Univ., [3] Earth and Environ. Sci., Yamagata-Univ., [4] Earth and Environ. Sci., Yamagata Univ.

The Oisawa tectonic zone, which is located in Nishikawa Town, Yamagata Prefecture, is thought to be a part of the northern extension of the Tanakuta tectonic line. But the exposures of the Oisawa fault are too few to understand its precise location or the type of fault.

The purpose of this study is to investigate the form of the Oisawa fault by topography, geological survey, and seismic exploration. Reflection survey and refraction survey

were carried out along the woodland path near the Oisawa River's bridge, Megane Bashi, by using a hammer (4.0kg).

The Oisawa tectonic zone, which is located in Nishikawa Town, Yamagata Prefecture, is thought to be a part of the northern extension of the Tanakuta tectonic line. The Oisawa fault, which divides Cretaceous granites (North Asahi type) from Paleogene andesites and andesitic agglomerates (Ryugatake formation), extends along the western margin of the Oisawa tectonic zone. Exposures of the Oisawa fault have been reported by Minagawa et.al(1967) and Yokoyama(1997). But the exposures of the Oisawa fault are too few to understand its precise location or the type of fault.

The purpose of this study is to investigate the form of the Oisawa fault by topography, geological survey, and seismic exploration. The aims of the geological survey were to determine the location of the fault and to reveal the distribution of granites and andesitic agglomerates by fieldwork and interpretation of aerial photographs. Reflection survey and refraction survey were carried out along the woodland path near the Oisawa River's bridge, Megane Bashi, by using a hammer (4.0kg).

Below are the main results obtained by this study.

1. Andesitic dykes are observed in the granites on the west side of the Oisawa fault and are thought to be intrusive rocks.
2. The granites uplifted by about 30 meters are observed at 150 meters down the river from Megane Bashi. The granites might have been uplifted by faulting because there is fault gouge between the andesitic agglomerates and the granites.
3. The P-wave velocity near surface obtained by refraction survey was 2.48 km/s and 1.11 km/s at 170 meters and 120 meters south-east of Megane Bashi, respectively. The low velocity part corresponds to the fault gouge mentioned above.
4. A recording profile obtained by the reflection survey does not indicate a reflection surface corresponding to a fault. A travel time of initial motion is delayed when the wave passes the low velocity part.