Low-angle reverse faulting and timing of the last event on the Kuromatsunai-teichi fault zone in southwestern Hokkaido, Japan

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Our trenching surveys and seismic profile on the Kuromatsunai -teichi fault zone yield the structure and timing of the last event of that fault zone. The Kuromatsunai lowland is a narrow basin with N-S direction and it is filled with Plio-Pleistocene sediment, which deformed by N-S trending folds and reverse faults. Tectonic landforms in that fault zone are recognized as fault (and flexural) scarps and the anticlinal deformations on the Middle to Late Pleistocene terraces. We excavated trenches at Shirozumi (in the northern part of the fault zone) and Warabita (in the middle part) and made a seismic profile at Warabitai.

At Shirozumi, trench was excavated on the east side of the anticlinal ridge on M2 terrace. Main fault is dipping 30 degrees to the west. Layers is flexured near the fault on the hanging wall, whereas many minor faults distributes on the foot wall. Faulting reaches to just beneath the artificial unit, although the timing of the last event is not clear. At Warabitai, trench was excavated from the top to the foot of the flexural scarp, which faces to the east. Main fault is dipping 20 degrees to the west and much lower minor faults distributes in the foot wall. Layers on hanging wall is flexured as same as Shirozumi site. Timing of the last event is between 2000 yrsBP and 4000 yrsBP at this site.

Seismic profile on 500 m north of Warabitai trench shows similar deformation as the structure on trench walls. Around the fault, the reflection surfaces are gently dipping to the west and there are some anticlinal structures, which are estimated as deformation on the hanging wall of low angle faults. Drilling are required in order to correlate the reflection surfaces and calculate the rate of deformation.