

Paleoseismic activity of the Kuromatsunai teichi fault zone, based on fault outcrop observations

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The Kuromatsunai teichi fault zone is a 32 km-long, reverse fault zone which develops into the Kuromatsunai Lowland, southwest Hokkaido. This fault zone consists of a series of reverse faults trending approximately north-south. Individual faults have lengths of 3-4 km and displace middle to late Quaternary deposit, mostly, relatively rising on the west side. The northern portion of the fault zone locates along the eastern mountain front, the southern portion along the western mountain front. In spite of their complex geometries, e.g., en echelon steps and branches and so on, the Headquarters for Earthquake Research Promotion (2005) assessed that the fault zone would move as a whole during an earthquake and that magnitude would be about 7.3.

We found and observed two fault outcrops in the Kuromatsunai lowland. One outcrop which is exposing along the Babasawa River shows that the lower Pleistocene strata are thrusting over the youngest sediment (Holocene strata). The other outcrop, which is exposing at Oshamanbe Park, shows that the most mountainward reverse fault displaces the middle Pleistocene strata (it would correlate with the Chiraigawa Formation) as south-eastward incline. We also recognized similar deformations on Holocene terraces in this area.

There is at least one seismic event during Holocene time at Neppu, Warabitai, and Oshamanbe, respectively. Their timing might be at the same time. However, the active fault distribution of the Kuromatsunai teichi fault zone has complicated manner, and their late Quaternary slip rate has tendency to be small in the north area from Warabitai, and be large in the south area. Therefore the evidences of paleoseismicity which were obtained at Neppu, Warabitai, and Oshamanbe, might be correlated with the respective faulting.

Keywords: Kuromatsunai Lowland, Neppu Plain, Oshamanbe, fault outcrop, active thrust fault, paleoseismic event