Faulting history of the Muikamachi fault zone in the Muikamachi area in the southern part of Niigata Prefecture, Central Japan

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We purposed to identify the timing of the last faulting event by the trench excavation and drilling surveys at several sites along this fault zone. In this presentation, we focus on the last faulting event and slip-rate at the central part of fault zone, where we made trenches and/or drillings at 3 sites, Kakenoue, Noda and Oguriyama.

The Muikamachi fault zone bounds between Muikamachi Basin and Uonuma Hills. This fault is highlighted on by the reason of not only the its length elongated up to ca. 42 km based on recent detailed study, but also the relationship with the earthquake source fault of the 2004 Chuetsu earthquake.

Around Kakenoue, three steps of fluvial terraces are accumulatively displaced by a fault. We excavated a trench on the foot of the fault scarp on the lowest terrace and made 3 drilling (KU-1,2,3) across the trench. On the trench walls, there are several low angle reverse faults dipping to the west with 0-20 degrees. They cut the sand and gravel layers and soil layers deposited at the foot of the fault scarp during the Holocene period. In the drilling core of KU-1 on the up-thrown side of fault, we found a repetition of similar silt layers caused by faulting.

At the Noda sites, we excavated a trench across the flexural scarp on the lower terrace. We couldn’t find clear faults on the trench walls, although the sediments tilt to east corresponding to the surface deformation.

At the Oguriyama site, we made 5 drillings (KG-1 to 5) across the fault. Low angle fault planes and steep bedding planes are recognized in several cores. In the KG-2 core, we found repetition of marker tephra layers. It is possible that we infer the timing of the last faulting event from the youngest age of deformed layer in these cores. Long-term slip rate of this fault can be also obtained from them.

Deduced from the comparison the faulting history at these sites with others at the northern and southern part, we discuss the simultaneity of the activity of this fault zone.