

Holocene activity of the Ibigawa fault, central Japan, revealed by a trenching study

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The Ibigawa fault is a left-lateral strike-slip active fault trending NW-SE direction in northwestern Gifu Prefecture. This fault runs parallel to the surface ruptures associated with the 1891 Nobi earthquake, however, no surface faulting was observed along this fault during the 1891 earthquake. The Active Fault Research Center, GSJ, AIST carried out a trenching survey on the Ibigawa fault to assess the activity of this fault and to make clear the interaction and segmentation of active faults in this area.

Three trenches were excavated at Tsuka area in abandoned Tokuyama Village to reveal the paleoseismic activity of this fault. Trenches are located on terrace surfaces formed in the Latest Pleistocene to Holocene. We divided these terraces into the Lower I, Lower II and Lower III terraces. High angle faults cutting the terrace deposits and the surface soil layers were observed on every trench walls. The calibrated radiocarbon dates from the deformed soil in the trench on the Lower I terrace are 3,700-3,900 cal yBP and 4,100-4,400 cal yBP, and the age of the surface soil covering the fault zone is 1,000-1,200 cal yBP. These dates show that the age of the last event of the Ibigawa fault is about 4,000 to 1,000 years ago. The shape of the base of the Lower III terrace deposit indicate that the amount of offset is estimated to be about 6.5m left-laterally after the formation of the base of the deposit.