

Fault history and Trench survey of separated area from surface ruptures in Futagawa fault zone, Kumamoto Prefecture

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A trench survey was conducted at a location away from the main fault (Jinnai area, Otsu-cho, Kikuchi-gun, Kumamoto Prefecture). At least four faulting events were identified on the trench slope, and it was revealed that there were repeated faulting activities in the past at the surface deformation position due to the subsidiary fault that occurred in the 2016 Kumamoto earthquake.

Event I: A ‘crack with an opening’ reaching the ground surface is confirmed. It was formed by the 2016 Kumamoto earthquake.

Event II: On the trench wall, a ‘structure in which the upper stratum enters into a wedge shape’ can be confirmed. It is estimated that the event time is after 9,820 cal.BP and before 3,410 cal.BP.

Event III: On the trench wall (S-plane), ‘a vertical displacement of about 50 cm’ is given to the base layer. It is estimated that the event time is after 11,240 cal.BP and before 10,450 cal.BP.

Event IV: Events can be identified from the shear structure found only in the basement. The activity date and number of activities are unknown.

Therefore, in the Jinnai Trench, fault activity events prior to the 2016 Kumamoto Earthquake is after 9,820 cal.BP and before 3,410 cal.BP. This age coincides with the time of the faulting event, which is confirmed approximately 4,000 to 9,000 years before the main fault of the Futagawa fault.

Keywords: surface rupture, Futagawa fault zone, active fault, subsidiary fault

