

Age and horizontal offset of the latest faulting event on the Okamura fault of the MTL fault zone in central Shikoku

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In general, information about fault offsets along active faults is one of the important factors to estimate faulting behavior in seismogenic zones. However, it is challenging to determine the information about fault offsets. So far, the average slip-rate and the amount of a single-event offset are obtained only 30 and 6 points on the Median Tectonic Line active fault zone (MTLAFZ) in the Shikoku area (200 km-length), respectively (Tsutsumi and Goto, 2006).

We conducted a trench survey for the Okamura fault which is a part of the MTLAFZ in order to determine the latest faulting event age and the fault offset. The Okamura fault is distributed in a range of 30 km on the central Shikoku. The survey point, Hagioi point, locates on a central part of the Okamura fault. The amount of the fault offset at the latest faulting event is estimated to be below 5.7 m (Tsutsumi et al., 1991). However, this is just one data about fault offset on the Okamura fault. Moreover, the latest event age of the Okamura fault has not been sufficiently constrained by some previous research results; 4-7th century (Okada et al., 1998), 1090-960 yBP (Ehime Prefecture, 1999) and after 16th century (Goto et al., 2001).

The main two results of this trench survey are as following. The latest faulting event age is estimated to be after AD 1490, consisting with after 16th reported in Goto et al. (2001). Moreover, the amount of fault displacement at the latest faulting event is estimated to be below 7.5 m. This value is consistent with the trend of the surface offset information that the surface slip associated with the latest event is greater than 5 m between the Zunden and Okamura faults, and decrease gradually to the east and west.

In taking hypothetical consideration, the fault offset 7.5 m is greater than 5.7 m (Tsutsumi et al., 1991) at 5 km away from this survey site. The recurrence interval (938-1500 years) calculated on the basis of average slip rate (5-8 mm/y) and the fault offset 7.5 m is consistent with the value (1245-1620 years) from the paleoseismological data (Morino and Okada, 2002; Okada et al., 1998). Therefore, the survey result might indicate variety of fault offsets along the Okamura fault, however this fault offset 7.5 m contains estimation errors. Since the fault offset becoming larger toward the fault end is unreasonable, this survey site might not locate on near the end of the Okamura fault and but near the asperity region.

Keywords: latest faulting event age, fault offset, Median Tectonic Line active fault zone, Okamura fault