

Estimation of co-seismic strike-slip offset for the recent event of the Gofukuji fault, Itoigawa-Shizuoka Tectonic Line

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In account for the co-seismic behavioural segmentation on the Itoigawa-Shizuoka Tectonic Line active fault system (ISTL), there is in need of information for timing and nature of seismological event. A series of paleoseismological trench excavation study has clarified the co-seismic faulting events occurred in the last ten thousands years at the Gofukuji fault, the central part of the ISTL.

Gofukuji fault, 8km long, is the most active fault in the ISTL. We found the evidences of the last and other three co-seismic events at the Sengokuzawagawa site. The periods of these events are as follows: (1) the last event: sometimes between 1061 and 1483 cal.y.B.P., (2) the penultimate event: sometimes between 1685 and 1867 cal.y.B.P., (3) the second previous event: sometimes between 2347 and 3894 cal.y.B.P., and (4) the third previous event: sometimes between 4020 and 10910 cal.y.B.P.. Correlation of the two gravel units across the fault trace revealed the last and cumulative strike-slip offsets. The strike-slip offset for the last event is 5.7 meters. Cumulative strike-slip offset during 4500-4800 years is ca. 17 meters. Approximate recurrence interval is considered as one thousands years. Therefore, the average slip rate of the fault is 4.7-5.7mm/yr. These paleoseismological characters of the Gofukuji fault suggest that the estimated magnitude of the large earthquake is up to M 8.0. This is suitable to consider the multiple segments rupturing with the Northern part of the ISTL.

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