

Late Quaternary Slip Rates and Recurrence Interval on the Median Tectonic Line Active Fault Zone in the Eastern Shikoku, Southwest Japan

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The Median Tectonic Line (MTL) active fault zone extends for about 190 km through Shikoku, southwest Japan. Though the MTL is the most significant onshore active tectonic feature in southwest Japan, its Late Quaternary slip rate has been estimated at only a few locations with reasonable references and age. Better information on this feature's recent slip rates is critical to understanding the ongoing tectonic processes in the region and evaluating the seismic risk of this fault system. In this paper, new estimates of the Late Quaternary slip rate are reported from the Ikeda and Chichio faults in the central portion of the MTL. The author mapped offset Late Pleistocene fluvial terrace surfaces and risers and dated them using tephrochronology and radiocarbon dating. The slip vectors of both faults are very similar, as derived from piercing points on the terraces' inner edges. The vertical component of displacement is 8–10% of the horizontal component. Long-term slip rates during the Late Quaternary were calculated as 7.8–9.1 mm/yr, which is more precise than previous studies and represents the highest slip rate in the MTL. This rate is also much faster than previously reported short-term slip rates of elastic strain storage. Based on the amount of slip associated with the most recent surface rupture along the Chichio fault (6–7m; Okada and Tsutsumi, 1997) and the calculated right-lateral slip rate (7.8–9.1 mm/yr) in this study, the recurrence interval was estimated to be about 660–900 years.

Keywords: active fault, geomorphology, slip rate, digital elevation model, Median Tectonic Line, southwest Japan