

Tectonic history of the Gosukebashi and Otsuki faults, southwest Japan

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Tectonic topographies and displacements of basement rocks reveal the tectonic history of the Gosukebashi and Otsuki faults in Rokko active fault zone, southwest Japan. Quaternary drainage systems show progressive displacement along both the fault traces; that is, the longer the upstream from the deflected point is, the larger the amount of offset is. Pre-Cenozoic rocks, however, show constant amount of displacement along the faults. The geological and topographical evidence show that the Gosukebashi fault formed before the Quaternary, whereas the Otsuki fault just formed in middle to late Quaternary time, and both the faults are presently active as dextral faults with slip rates of 1.0-1.5 mm/yr dextrally and 0.3-0.4 mm/yr vertically, respectively.

Tectonic topographies and displacements of basement rocks reveal the tectonic history of the Gosukebashi and Otsuki faults in Rokko active fault zone, which is a major active strike-slip fault zone in southwest Japan. Quaternary drainage systems show progressive displacement along both the fault traces; that is, the longer the upstream from the deflected point is, the larger the amount of offset is. Pre-Cenozoic rocks, however, show constant amount of displacement along the faults. Maximum offset amounts of deflected stream channels are 500 m for the Gosukebashi fault and 400 m for the Otsuki fault, respectively, whereas offsets of the pre-Cenozoic basement rocks are 1.9-2.2 km for the former and 0.2-0.4 km for the later. The geological and topographical evidence show that the Gosukebashi fault formed before the Quaternary, whereas the Otsuki fault just formed in middle to late Quaternary time, and both the faults are presently active as dextral faults with slip rates of 1.0-1.5 mm/yr dextrally and 0.3-0.4 mm/yr vertically, respectively. Details see Japanese abstract.