

Subsurface structure and faulting of the Median Tectonic Line, southwest Japan inferred from GPS velocity field

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Median Tectonic Line (MTL) is a major arc-parallel strike-slip fault system in SW Japan. We constructed a GPS traverse array to estimate deep structure and slip distribution of the MTL. Velocities at 64 sites in a 200x50km area show crustal shortening due to the subduction of the Philippine Sea plate. Residual velocities after removing plate subduction effect show small westward motion of the southern block relative to the northern, consistent with right-lateral slip on the MTL. However, block boundary does not coincide with surface trace of the MTL, clearly displaced 20-30km to the north. The best-fit model to our GPS results suggests a northward dipping MTL with a dip angle of 40 degrees, locking depth of the uppermost part of 15km, and steady slip at the deeper of 5mm/yr.