# Interplate coupling and strain partitioning along the Nankai Trough estimated from GNSS and GPS-A data

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Southwest Japan is located in the subduction margin between the continental Amurian and oceanic Philippine Sea plates. Recent land GNSS (Global Navigation Satellite System) and offshore GPS (Global Positioning System)-Acoustic geodetic measurements were used to clarify the deformation in and around these plate margins. We examined strain partitioning and interplate coupling using a block modeling approach on the observed velocities. Although the main plate boundary is the Nankai and Sagami Troughs, our results suggest that one-third of the relative plate motion between the two plates is accommodated by several block boundaries in the southeastern margin of the Amurian plate. The most active boundaries, with a slip rate of >8 mm/yr, cross southwest Japan from the Okinawa Trough through the Median Tectonic Line (MTL) and Niigata Kobe Tectonic Zone (NKTZ), to the eastern margin of the Japan Sea. A subparallel boundary with a slip rate of 4–5 mm/yr lies along the coastline of Japan. These two boundaries have a right-lateral shear motion that accommodates part of the interplate motion, with a boundary across the Korean Peninsula and Japan Sea. The slip partitioning results in an eastward decrease of relative block motion from 78 to 4 mm/yr along the Nankai and Suruga Troughs. Interplate coupling is moderate to strong at 10–25 km depth along the Nankai Trough, but it is lower at ~132ºE, ~136ºE, and ~137ºE than in the surrounding regions, corresponding to the segment boundaries of past megathrust earthquakes, suggesting that regions of insufficient strain accumulation act as a barrier for earthquake rupture.

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