

## Strain field due to possible preslip of the Nankai earthquake

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<http://www.rcep.dpri.kyoto-u.ac.jp/~hasimoto/Manabu/Index.html>

Groundwater level drops before the 1946 Nankai earthquake were reported in middle and south Kii peninsula and southern coastal region of Shikoku. We assume this change in Kii peninsula is caused by a preseismic slip on the fault plane or its deep extension, and perform forward calculation of dilatation. The deepest segments of the model faults by Sagiya and Thatcher (1999) produce dilation south of the hinge-line, which does not coincide with the distribution of wells of reported anomalous changes. This result suggests that preseismic slip must occur on the deeper extension beneath the middle Kii peninsula.

We established 10 GPS observation sites, which fill the gaps in the GEONET operated by GSI, along two lines nearly parallel to the relative motion between the Philippine Sea and Amurian plates. Resultant average spacing is 5-10km. We have repeated the campaign survey of this traverse across the hinge-line in the Kii peninsula using dual-frequency receivers since March 2001.

The obtained velocities of observation sites are about 3cm/yr in the middle part of Kii peninsula and 4.5cm/yr at its southern tip, respectively, relative to the Amurian plate. Their directions are WNW. The gradient is almost linear, which suggests that the coupling zone is rather wide.

We apply a dislocation model with a uniform slip to this observed velocity field in order to estimate interplate coupling beneath the Kii peninsula. Changing the width of the Ando's(1975) fault model, we compare the fitness of theoretical displacement with the observed one. The calculation indicates that the original Ando's model is too narrow to represent the observed velocities. In order to explain the observed velocities in the middle Kii peninsula, we must double the width of the model fault. This implies the coupling zone between the subducting Philippine Sea and Amurian plates might be extended much deeper than the depth previously suggested from the thermal model and others.