Back-slip Distribution with Triangular Dislocation in the Tokai District Infered from Leveling Data

Tadafumi Ochi[1]; Shin'ichi Miyazaki[2]; Yosuke Aoki[1]; Teruyuki Kato[3]

[1] ERI, Univ. Tokyo; [2] ERI; [3] Earthq. Res. Inst., Univ. Tokyo

In many previous studies, the distributions of coupling between subducting Philippine Sea plate and the continental plate have been estimated in the Tokai district, central Japan, relying fairly on the horizontal data. In this study, we estimated the back-slip distributuion using the leveling data to give constraints of coupling from vertical data. As for the geometry, we utilized a new approximation of the curved plate boundary.

First, we estimated vertical movement of over 100 benchmarks from the leveling data for the period 1990-2000, using the time dependent network adjustment method proposed by El-Fiky et al. [1995] . Then we inverted for the distribution of back-slip rate using the estimated annual vertical velocity of each benchmark.

In this inversion, we used an analytical solution derived for a triangular dislocation (Jeyakumaran et al. [1992]), that was led by superposing three angular dislocations in a linear-elastic, homogeneous, isotropic half space (Comninou and Dundurs [1975]). The triangular dislocation enables us to flexibly approximate the curved plate boundary. In addition, we assumed that the slip distribution is spatially smooth and then we used the scale dependent smoothing method proposed by Desbrun et al. [1999].

We will show the result of this inversion.