

The effect of the plate configuration on the simulation of great earthquakes along the Nankai trough

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We have tried to simulate the great earthquake along Nankai trough. So far, plate configuration for the simulation was made from upper boundary of JMA hypocenter. When we simulated the earthquake on this configuration, slip began in Nankai area. This result was no good, because the historical Syowa and Ansei earthquakes started in Tonankai or Tokai area. So, we tried to simulate with changing friction parameters of the asperities and with another friction law. When composite law was adopted as friction law and the slits of a large characteristic length of friction law were set to locate both between Tonankai area and Tokai area and between Nankai area and Tonankai area, slip started in Tonankai area.

By the way, the plate boundary is shallower than upper boundary of hypocenters by the results of structural survey and tomography. We make new three dimensional plate configuration by the result of DD tomography. Main difference of new and old configuration is as follows.

1. New plate configuration is shallower than old one in almost all area, and asperity area is move to the north from 30km to 50 km.
2. New plate configuration is strongly bended around and off Kii peninsula.

When we simulate the great earthquake along Nankai trough with new plate configuration, slip starts from the Tonankai area in many cases. This result is consistent with the historical earthquake sequence. Large stress rings are observed in Tonankai and Tokai area, and Nankai area. Between these two areas, stress concentrates and slip begins. We think this concentration is caused by strong bending plate configuration around and off Kii peninsula.