

Did the Tokai Slow Slip Event end?

Hisashi Suito[1]; Shinzaburo Ozawa[1]; Tetsuro Imakiire[1]

[1] GSI

Analysis of Global Positioning System (GPS) data shows clear transient crustal deformation in the Tokai region, central Japan, from the beginning of 2001. This transient crustal deformation is considered to be caused by a slow slip event on the plate interface under the Lake Hamana. The transient crustal deformation became gradually small since summer in 2005. There seems to be no southeast displacement and uplift around Lake Hamana in 2006. Hence, the Tokai slow slip event seems to be ended at this stage. In this presentation, we will present the recent state of the Tokai slow slip event estimated from the latest GPS data.

We used east-west, north-south and up-down components at 95 GPS sites in the Izu Islands, Kanto and Tokai regions. Since the GPS analysis results include annual and linear trend components, we remove them from the raw time series by fitting a polynomial function and trigonometric functions to the data for the period between 1998 and 2000, when there were no abnormal events. By extrapolating the estimated linear and annual components to the entire period, we estimate the steady state deformation, and thereby the raw time series is detrended.

Our results show that small displacements lasted for a few months since the occurrence of southeast off Kii peninsula earthquake, September 2004. Southeastward displacements seem to recover in the beginning of 2005. However, the southeast displacements and uplift around Lake Hamana gradually became small again in summer 2005. In this period, large westward displacements were observed in southwest Japan, and their effects might reach in the Tokai region. We do not know the reason for these large westward displacements in southwest Japan. There seems to be very small southeast displacements and uplift around the Lake Hamana in 2006.

Based on these observation results, we estimated the slip distribution on the plate interface using time dependent inversion analysis. Our results show that estimated slip became gradually small since the occurrence of southeast off Kii peninsula earthquake, September 2004. This small slip state lasted for several months. There is almost no slip since summer 2005.