The short-term slow slip in the Tokai Region by using dense GPS observation net data(Follow-up reports)

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We reported at the last JPGU meeting that the crustal movements associated with slow-slip events at Tokai region has detected in December 2004 and July 2005. This is its follow-up report.

Tokai region has a dense GPS network due to the presumed Tokai Earthquake. Abnormal crustal movements were detected by the GPS network after 2000, and it is thought that they were caused by the slow slip and they were stopped now. The Japanese University Consortium of GPS (JUNCO) developed a dense GPS network to investigate the progress of the slow slip by using school building.

We reported that we calculated the mean of the coordinates of about 120 stations in Aichi and Shizuoka Prefectures and we obtained the movements of each station referring to the mean coordinates. And moreover we calculated the running means of 3, 5 and 7 days of the results. We could see the step between the positions before and the slow slip. The RMS from the mean value was less than 1 mm in summer and less than 0.5 mm in winter.

We examined whether we could detect the movements or not by this method for other slow slip events, and also whether we got similar movements or not when no slow slip events occurred.

We processed GPS data from January to December in 2004 for 102 stations. We used GAMIT ver.10.32 software and the ITRF2000 framework in the processing. We know that there were five times slow slip events. (MRI, 2006) We obtained the movement amounted to about 0.5 mm to 1.0 mm, associated with three slow slip events in February, April and December. We also made the fault model for the February event.

On the other hand, we also had some movements even in the periods when no slow slip events occurred.

We are investing the cause of these movements now.