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A long-term slow slip event in central Shikoku in 2013

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A long-term slow slip event in central Shikoku is investigated using the GEONET GNSS data. We estimated the steady deformation rate at each GNSS station from the daily coordinates for the period from January to December 2012. Then the steady deformation rates were subtracted from all the coordinate data. The artificial offsets of the coordinate were corrected using data set shown on the web site of the Geospatial Information Authority of Japan. We can see south-eastern displacements less than 1 cm at GNSS stations in central Shikoku for one year from October 2012. These unsteady displacements are also seen in the time series of the baseline lengths between central Shikoku and Chugoku district.

We estimated slip distribution on the plate boundary, assuming the unsteady displacements were caused by a slip on the plate boundary. The estimated slip is distributed in central Shikoku. Center of the slip is located slightly southeast of the belt of deep low-frequency earthquakes. The size of the slip is equivalent to Mw 6.2, which is smaller than other long-term SSEs along the Nankai Trough.

Keywords: long-term slow slip, GNSS, crustal deformation, central Shikoku