

SCG058-P07

Room:Convention Hall

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Long-term slow slip event around Kochi between 1978 and 1980

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Leveling and sea level data for the period from 1971 to 2010 in Shikoku, southwestern Japan, were investigated to characterize vertical deformation patterns. We estimated the steady deformation rate at each GEONET GPS station by averaging the daily coordinates for the periods from April 1998 to April 2002, and between April 2004 and April 2008, avoiding the period of the long-term SSEs.

First-order leveling surveys have been conducted repeatedly every several years since the 1970s. We determined crustal displacements by comparing leveling data from successive surveys. We subtracted subduction-related steady component derived by the GPS from the distribution of vertical crustal displacements during periods between leveling surveys. If any episodic events have not occurred, they should show little spatial variation around zero vertical displacement. However, the residual data clearly show uplift on the southwestern Shikoku coastal area for all periods, suggesting the long-term slow slip events in Bungo Channel. In addition, uplift around Kochi city between 1979 and 1982 is seen.

We used monthly mean sea level data from the Kochi, Kure, Komatsushima and Hosojima tidal stations. The monthly data were corrected for atmospheric pressures using the theoretical coefficient of 1 cm/hPa according to monthly samples measured at the meteorological observatory closest to each tidal station. We assumed that the difference between the meteorologically corrected sea levels for pairs of stations represents relative vertical crustal displacement. The pairs we used were Kochi and Komatsushima, Kochi and Hosojima, Kure and Komatsushima, and Kure and Hosojima. We can see relative upheaval approximately 10 cm at Kochi, and several to 10 cm at Kure between 1978 and 1980. This relative change is consistent with an upheaval near Kochi deduced from the leveling data. This may be a long-term slow slip on the plate interface.

Keywords: long-term slow slip, sea level, leveling, vertical crustal movement, Shikoku