

## Slip history for the 2011 Boso peninsula slow slip event and the accompanying earthquake swarm

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Around the Boso peninsula, central Japan, slow slip events (SSEs) lasting for one to two weeks that are accompanied by earthquake swarm activity recur every 5-7 years in association with the subduction of the Philippine Sea plate (Sagiya, 2004; NIED, 2003; Ozawa et al., 2003, 2007). In October 2011, the latest episode occurred after the shortest interval of four years and two months in 30 years. The crustal deformations for this episode and the previous episode in 2007 are detected with the GEONET GPS array operated by the Geospatial Information Authority of Japan and the NIED Hi-net high-sensitivity accelerometers (tiltmeters). In order to clarify the relation between these SSEs and the accompanying earthquake swarms, it is important to estimate detailed source processes of the SSEs, and to compare them with the temporal and spatial distribution of the earthquakes. In this study, we investigate the slip source processes for the 2007 and 2011 SSEs based on the Hi-net tiltmeter data and the GEONET data.

The slip histories for both episodes show the following common features in an overall view: (1) slip initiates at the eastern offshore area of Katsuura and the center of the slip migrates to the west direction gradually as the slip accelerates, and (2) the earthquake activity also migrates from the eastern area to the west, corresponding to the slip migration. These evidence strongly suggests that the earthquake swarms are triggered by the slow slip. However, the two episodes have slightly different slip histories. For the 2007 episode, slip initiates at the eastern offshore area and migrates to the northern, deeper part in the initial stage. For the 2011 episode, the northward slip migration seen in the 2007 episode is not resolved significantly, but the slip propagates slightly to the southwestern, shallower area after the slip acceleration and the active phase of the earthquake swarm. Although these differences in the slip histories might be artifacts caused by different station coverages, there is a possibility that the differences show the variation in the slip processes through the cycle of the Boso SSEs. Since the source region of the SSEs is located by the rupture area of the interplate great earthquakes along the Sagami trough, the SSEs are important indicators to study the interseismic preparation process for the megathrust earthquakes.

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