

## The 2007 Boso Slow Slip Event and the associated earthquake swarm

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In the Boso Peninsula, which is located in southeast of the Japan mainland, slow slip events (SSE) have been observed by the GEONET GPS array operated by the Geographical Survey Institute Japan and the NIED tiltmeter network every 6-7 years (Ozawa et al., 2003; NIED 2003). The unique characteristics of the Boso SSE are that earthquake activities have also occurred in association with the SSE. The latest activity of the SSE and the earthquake swarm took place in August 2007. On 13th August, an earthquake began to occur at east off Boso Peninsula and the slow tilt deformations also started. The earthquake sources migrated to the NNE direction, which is the same direction of the relative plate motion of the subducting Philippine Sea Plate with respect to the overriding plate. The largest earthquake in this episode (Mw 5.3) occurred on 16th and the second largest one (Mw 5.2) on 18th. Most of the larger earthquakes show low- angle thrust type focal mechanisms that are consistent with the plate motion and the geometry of the subduction plate interface. The tilt changes seem to stop on 17th and the activity of the swarm rapidly decreases after 19th. The maximum tilt change of 0.8 micro radian with northwest down tilting was observed at KT2H, the nearest station from the source region. Based on the tilt records around Boso Peninsula, we estimate a fault model for the SSE using genetic algorithm inversion to non-linear parameter and the weighted least squares method to linear parameters. As a result, the estimated moment magnitude and the amount of slip are 6.4 and 10 cm, respectively. The size and the location of the SSE are similar to the previous episodes. The estimated fault plane is very consistent with the configuration of the plate interface (Kimura et al., 2006). Most of the earthquakes are located on the deeper edge of the estimated SSE fault area. The coincidence of the swarm and the SSE suggests a causal relation between them and may help us to understand the mechanism of earthquake triggering. On the other hand, in the southwest Japan, tremors which repeat at approximately six months have occurred in association with the SSE. To compare with these two types of SSE may suggest the difference of the boundary conditions on the same subducting plate.