

## Observation of Ocean Bottom Crustal Deformation in Ryukyu trench

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Ryukyu trench is a major convergent plate boundary where the Philippine Sea plate is subducting at a rate of about 8 cm/yr. However no large earthquake has been reported along the Ryukyu subduction for the last 300 years. The GPS measurements by Japan Geographical Survey Institute also show the southward motion of Ryukyu arc, which is due to extensional rifting of Okinawa Trough. Coupling effect between the subducting Philippine Sea plate and the overriding Eurasian plate cannot have been detected.

Observation of sea floor crustal deformation was started to investigate the inter-plate seismic coupling in the central Ryukyu trench (Nakamura et al., 2008). The seafloor reference point was set at about 35 km landward from the axis of the Ryukyu trench. A set of three acoustic transponders has been installed on the seafloor, at a depth of about 2900m. The transponders are placed to form a triangular. Three campaign observations were carried out for the period from January to July 2008. Each epoch consists of three observation days. The RMS of travel time residuals for each campaign analysis is about 70 micro-seconds. Difference of positions between January-February and July epochs indicates an easterly movement of about 19 cm. This is inconsistent with the movement estimated from plate coupling (about 2.5 cm northwestward for a half-year) or decoupling (0cm for a half-year) models. Earthquake swarm had started from 31 May 2008 (maximum  $M_w=4.7$ ) near the trench about 20km trench-ward from the reference point. These events were normal faulting type and occurred in the subducted Philippine Sea plate. The observed easterly movement may indicate a slow-slip (slip of about 0.4m) event in the Philippine Sea plate.