

Real-time monitoring of stress accumulations by the borehole strainmeters in the Nankai trough seismogenic zone, and initial strain data of the C0006 observatory

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In the Nankai Trough seismogenic zone, several large interplate earthquakes with magnitudes of 8 have occurred repeatedly due to a subduction of the Philippine Sea Plate beneath the Eurasian Plate at a rate of 4-6 cm/year. In order to understand the process of earthquake generation, long-term and in-situ monitoring of strain accumulation is necessary just above the seismogenic zone. We installed a borehole strainmeter, as a part of the Long-Term Borehole Monitoring System (LTBMS), in the C0006 observatory at the toe of the accretionary prism off the Kii Peninsula during the IODP Expedition 380 (1/12/2018-2/7/2018). This is a second observatory for monitoring of strain data in the region. The first one is the C0010 LTBMS observatory which was installed at about 20 km landward from the C0006 observatory during IODP Expedition 365 in 2016. The C0010 observatories were connected to the Dense Ocean floor Network for Earthquake and Tsunami (DONET) seafloor cable network, and is currently operating as real-time monitoring observatory. The C0006 LTBMS observatory is planned to be connected to the DONET seafloor cable network in March, 2018. In this presentation, we show initial strain data of the C0006 observatory, and compare the data with that obtained by the C0010 observatory. Monitoring of the strain data by the multiple strainmeter observatories in the seismogenic zone would promote understanding of in-situ spatial distribution of stress accumulations related to the occurrence of large interplate earthquakes.

Keywords: Nankai trough, seismogenic zone, LTBMS, strainmeter, stress accumulation