

Calibration of the DONET pressure sensor network in the Nankai trough seismogenic zone using a mobile pressure gauge

*Yuya Machida¹, Shuhei Nishida¹, Toshinori Kimura¹, Eiichiro Araki¹

1. Japan Agency for Marine-Earth Science and Technology

Monitoring of long-time seafloor displacements in a dense and wide area in a seismogenic zone are key to understand strength of plate coupling related to occurrence of large interplate earthquakes. Precise pressure measurements on the seafloor have been thought to be useful tools for detecting long-time vertical seafloor displacements. However a pressure sensor has inherent instrumental drift at a maximum rate of 10 hPa/year. Therefore we need to calibrate each pressure sensor absolutely on the seafloor using high accuracy pressure gauge. Machida et al. (2017) has laboratory evaluated dependencies of temperature and pressure condition of quartz pressure gauge assuming a transport condition between laboratory and seafloor. Based on their results, we have developed a mobile pressure gauge for calibration of the seafloor pressure sensor (Machida et al., 2018, Nishida et al., 2019). The gauge is designed to decrease uncertainties of the quartz pressure sensor proposed by the Machida et al. (2018), and enables us to calibrate seafloor pressure sensor at accuracy of less than 1 hPa. We performed an in situ calibration of the DONET pressure sensor which are installed in the stations of 2C-10 and 1B-8 in October 2018 and February 2019, respectively. And we plan to recalibrate the DONET pressure sensor in May 2019, and estimate each drift component of the DONET pressure sensor. In the presentation, we show a first light of the calibration of the DONET pressure sensors, and a future plan for calibration of the DONET pressure sensors in the Nankai trough seismogenic zone.

Keywords: Mobile pressure gauge, DONET pressure sensor network, Calibration, Crustal deformation, Nankai trough