[JJ] Evening Poster | S (Solid Earth Sciences) | S-CG Complex & General

[S-CG67]Ocean area observation to detect crustal activity under the seafloor: Present and future

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Recent progress of seafloor observations for earthquake and crustal deformation, such as deployment of submarine cable networks of S-net and DONET, and repeated observations of GNSS/A and acoustic extensometer (direct path acoustic ranging), enable us to evaluate on-going crustal activities in the megathrust regions along the Japan trench and the Nankai trough. We review the present status and the future plans of such seafloor observations, and discuss the future directions of seafloor observation networks, especially for real-time monitoring of crustal activities. Toward these directions, we welcome papers introducing the present status of novel approaches and systems such as optical fiber, laser ranging or seafloor SAR and real-time geodetic observations using mooring buoys or wave glider, and so on. We also welcome future plans to integrate observation for the crustal activity under the seafloor with observation for ocean and climate changes.

[SCG67-P10]Mobile pressure calibrator for ocean bottom pressure gauge of the DONET
Part 2: Development of level adjustment Unit

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In Nankai Trough area, to prepare for the occurrence of large earthquake, DONET (Dense Ocean-floor Network system for Earthquakes and Tsunamis) was developed and installed, which is a submarine cabled real-time observation network for earthquakes and tsunamis monitoring for hypo-central region Tonankai and Nankai earthquake at southwestern Japan.

The ocean bottom pressure measurements in DONET have been expected to detect long-term ocean bottom crustal deformations. However, the pressure values at ocean bottom contains the drifts of the pressure gauges in addition to the pressure changes associated with crustal deformations on the sea bottom. The sensors of DONET have been installed and operated on the seafloor for about eight years in the longest. It is reported that each pressure gauge has different drift characteristics and that it has a displacement of 10 hPa/year at maximum depend on long-term observation. In order to remove the instrumental drift of each pressure gauge which deployed wide area, we have been developing the in-situ calibration technology for ocean bottom pressure gauges of DONET. This calibration system is put near the pressure sensing system of DONET using a ROV. And then, it measure the desired pressure at the pressure gauge level. In order to measure precise pressure, it is necessary to adjust the difference of level between the mobile pressure calibrator and the target pressure sensing system within 1 mm from the position up to 5 m away. The developed mobile pressure calibrator consists of the pressure measurement unit and the level adjust unit. The level adjust unit adjusts the level of the pressure measurement unit to the level of the pressure sensing system of DONET using four motors, inclinometer, camera, and line laser. The adjust range of level is 300 mm, accuracy is about 1 mm.

After adjusting the level, the value of reference pressure sensor is the calibration value of the target pressure sensing system in DONET. We have been carried out onshore tests continuously for the offshore test at early 2018. The proposed calibration method and results on/offshore test will be reported.