

of the In Situ Measurement Using the Modular Design Sea Floor Observatory System

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Two oceanic plates are converged offshore around the Japanese Islands, in which the Philippine Sea plate is subducting at the Nankai trough in southwest Japan. Historically, a mega-thrust earthquake is repeated every 100-150 years along the Nankai trough, and the last earthquake series occurred in the 1940s. For this reason, real time sea floor observatories for earthquake and tsunami monitoring, i.e. the DONETs were installed in 2010. The DONET is capable of adding new sensors with plugging in underwater connectors. Making use of this underwater technology, three borehole observatories, two different typed tilt meters, and one fibre-optic strain meter have been connected with the DONET before. In 2022, two fibre-optic strain meters were additionally installed at the same location of the existing fibre-optic strain meter, making it possible to compare to each other and reduce the ambient noise. In this presentation, we introduce the underwater technologies developed for adding new sensors. Such technologies include tools for thin fibre-optic cable extension, plugging in underwater connectors, etc. worked by a remotely operational vehicle (ROV). It has been shown that our in situ measurement can be performed based on the modular design sea floor observatory system and supported by advanced ROV operations.

Promotional text

Two fibre-optic strain meters have been additionally installed at the same location of the existing fibre-optic strain meter. The extension of the in situ measurement can be performed based on the modular design sea floor observatory system and supported by ROV operations.

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