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achievement of DONET seafloor observatory network

The Dense Ocean-floor Network system for Earthquakes and Tsunamis (DONET) is the real-time seafloor observatory network developed in Japan. In this study, scientific and engineering trends of DONET are addressed, which may contribute to the IMS hydroacoustic network. The large undersea volcano's eruption took place in the central Mariana Islands in the Pacific Ocean in 2010 and series of T-phase from the eruption were recorded by the IMS's water-column hydrophones (e.g., Green et al., 2013; Heaney et al., 2013). The same signals could also be detected by the first deployed DONET hydrophone and its characteristics were similar to the IMS's records. DONET uses the state-of-the-art technologies in the system in order to achieve sustainable seafloor observatory network, for which three major functional components are separated; "backbone cable system", "science node (junction box)", and "observatory". Hybrid wet-mate connectors assemble between each component, which allows us to lead easy maintainability of the DONET by ROV. Science node which plays an important role as a hub-to-spoke function can also make it possible to add/separate stations flexibly. 51 stations in total are now in operation by two DONET systems, and among which two stations have already been replaced successfully without interruption of other stations.

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Track Classification: Technology and engineering trends in Ocean Observatories, with emphasis on technologies and trends pertinent to the IMS hydroacoustic network