



Utilization of the Ocean floor observatory DONET/DONET2 (Dense Ocean Network for Earthquakes and Tsunamis) around the Nankai trough Southwestern Japan

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Abstract After East Japan Earthquake 2011, the real time monitoring system of earthquakes and tsunamis is recognized as very important system for precise early warning. Furthermore, the Ocean floor network equipped with multi kinds of sensors such as seismometers and pressure gauges are very important and significant tool to monitor the broad band phenomena in seismogenic zones. The two days before East Japan earthquake 2011, M7 earthquake occurred near the epicenter of East Japan earthquake, and after slip propagated to the epicenter of East Japan earthquake. This phenomenon is very important information to understand the occurrence system of East Japan. Not only after slips but also slow events such as long period tremors, slow earthquakes and ocean floor deformations are important to understand the system of Nankai trough seismogenic zone, too. To understand seismic linkage around the Nankai trough and improve early warning, we constructed DONET (Dense Ocean floor Network for Earthquakes and Tsunamis) with 20 observatories around the Tonankai seismogenic zone. Multi kinds of sensors such as an accelerometer, a broad band seismometer, a precise pressure gauge, a differential pressure gauge and a precise thermometer are equipped in each observatory. Furthermore we are already developing DONET2 with 31 observatories around the Nankai seismogenic zone. DONET2 system is more powerful rather than [U+3000]DONET to monitor large seismogenic zone area. These networks as real time monitoring systems will be expected to detect earthquakes and tsunamis earlier than land stations. And especially, these offshore real time data will be applied to estimate of tsunami scales. We have to learn the lesson from tsunami damages of East Japan Earthquake 2011, Sumatra Earthquake 2004 etc. Furthermore, as advanced simulation researches, we are developing data assimilation methods to improve the simulation model of mega thrust earthquake recurrence cycle using DONET/ DONET2 data. These simulation approaches are significant and important to precise estimation of next mega thrust earthquakes around the Nankai trough seismogenic zone. We will explain utilizations of DONET data and DONET2 system in details.