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Japan Agency for Marine-Earth Science and Technology

Submarine Cable Installation to Start; for Real-Time Earthquake and Tsunami Monitoring system on Ocean-floor

1. Overview

A project to develop an underwater observation network system that enables dense and precise monitoring of seismic and subseafloor movements has been undertaken by the Japan Agency for Marine-Earth Science and Technology, in the Kumano Basin, Kii Peninsula. The area is considered to be the active seismogenic zone of the Tonankai earthquake, a megathrust earthquake anticipated to occur along the south eastern coast of Japan within the next 30 years at a 60 to 70 percent probability.

The project,titled "Dense Ocean-floor Network for Earthquakes and Tsunamis (DONET, *1)," is a program commissioned by the Japanese Ministry of Education, Culture, Sports, Science and Technology, and has already completed; preliminary surveys, the development and fabrication of underwater cables and instruments, subsequent tests, and necessary adjustments to the instruments. The installation of submarine cables will commence on January 15.

2. Dense Ocean-floor Network System for Earthquakes and Tsunamis (DONET)

The system in the Kumano Basin will involve sensor units being deployed at 20 locations on the ocean floor at water depths of 1,900 to 4.300 meters. The units, each equipped with an ocean bottom seismometer and a pressure gauge, are connected to five nodes (*2), with four units per node. The nodes are arrayed along the cable and provide power and communication through the cable.

Data measured at the each unit will be transmitted in real-time via a land station being built in Furue-cho, Owase City on the Kii Peninsula, to research institutes involved. These include the Japan Meteorological Agency, the National Research Institute for Earth Science and disaster Prevention, and several academic laboratories. The data is expected to help improve the accuracy and speed of the earthquake early warning system and the tsunami warning system, as well as, enhance the prediction models for earthquake generation.

Details of the system are available online at:
http://www.jamstec.go.jp/jamstec-e/maritec/donet/project/index.html

3. Schedule of work

January 15 to early March

·Submarine cable installation using a cable ship

Early March to the end of March

·Installation of nodes and several sensor units, followed by operational tests.

For fiscal 2010 (starting April 2010) and onward

·Installation work will continue. Observed data will be released to the public as they become available.

*1 Development of the Dense Ocean-floor Network for Earthquakes and Tsunamis (DONET)

The earthquake research project aiming to develop a real-time observation network system and sophisticated earthquake prediction models. The project spans four years from fiscal 2006 to 2009 (ending March 2010).

*2 Node

A Node is a downstream cable station that acts as a hub for several observational instruments. Five nodes are used in the DONET system.

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