



September 25, 2012
JAMSTEC

Integrated Ocean Drilling Program (IODP) Deep-Sea Scientific Drilling Vessel *Chikyu* to Set Sail on Expedition 338 - "NanTroSEIZE" Stage 3

The deep-sea drilling vessel *Chikyu*, operated by the Japan Agency for Marine-Earth Science and Technology (JAMSTEC), will embark on her next mission, IODP ([*1](#)) Expedition 338: The Nankai Trough Seismogenic Zone Experiment (NanTroSEIZE) Stage 3 - from 3 October to 13 January 2014, in the northwestern Pacific Ocean.

1. Purpose

The Nankai Trough Seismogenic Zone Experiment (NanTroSEIZE) is a drilling project designed to investigate the role of a megasplay fault on influencing plate boundary slip and subsequent tsunami generation, mechanisms of earthquake and tsunami generation along the Nankai Trough, and the mechanisms controlling the aseismic–seismic transition along the fault system by using boreholes to collect geological samples and conduct in situ measurements of geological properties and monitoring of crustal deformation.

2. Outline

The drilling project consists of four stages in all, with drilling operations planned at several sites along a line orthogonal to the Nankai Trough in the Kumano Basin, offshore of the Kii Peninsula (see [Figure 2](#)).

Stage 1 (Expeditions 314, 315, 316 [FY2007]): Completed

Operations for this expedition included drilling across the shallow part of the megasplay fault and plate boundary fault to clarify the properties of the fault that may have slipped during past earthquakes and to characterize subsurface distribution of strata, deformation structures, and the state of stress.

Stage 2 (Expeditions 319, 322 [FY2009], expeditions 332, 333 [FY 2010]): Completed

In Stage 2, the upper shallow portion of the seismogenic zone was penetrated to decipher its geologic structure and to set up long-term observatories within boreholes to continuously monitor crustal deformation. Also, to characterize the properties of incoming sediment that ultimately influences plate motion in the seismogenic zone,

geological features of the sediment was examined and strata temperatures were measured.

Stage 3 (Expedition 326 [FY2010], current expedition [FY 2012]).

In this stage "ultra-deep" drilling is being performed that can reach the seismogenic zone. Operations include direct core sampling and analysis from the fault on which great earthquakes have repeatedly occurred to understand the geologic characteristics of the seismogenic zone.

Stage 4 (FY2014 and beyond).

In this stage, long-term observatories will be deployed in the ultra-deep borehole to monitor minor changes in the earthquake fault and its surrounding crust. Future goals include connecting the borehole sensors set up in Stage 2 to a monitoring network called Dense Ocean-floor Network for Earthquakes and Tsunamis ([*2](#) DONET), so that real-time data from seismogenic zones can be made available.

3. Upcoming expedition 338

This year riser drilling is being done to extend the bore hole drilled in FY2010 to approximately 3,600 m below the seafloor. In FY2013, our goal is to extend this hole down to the megasplay fault (approx. 5,200 m below the seafloor). This expedition will collect data on direct core samples, while simultaneously drilling and logging holes (Logging While Drilling [LWD])

4. Expedition 338 Science Party

Co-chief Scientists

- Brandon Dugan, Professor, Rice University, USA
 - Kyuichi Kanagawa, Professor, Chiba University, Japan
 - Gregory Moore, Professor, University of Hawaii, USA
 - Michael Strasser, Professor, Swiss Federal Institute of Technology
- And selected 27 scientists from IODP member countries.

*1. The Integrated Ocean Drilling Program (IODP).

IODP is an international marine research-drilling program dedicated to advancing scientific understanding of the Earth by monitoring and sampling subseafloor environments. Through multiple platforms, scientists explore IODP's principal themes: the deep biosphere, environmental change, and solid Earth cycles. IODP has been in operation since October 2003, funded jointly by the Japan Ministry of Education, Culture, Sports, Science and Technology and by the U.S. National Science Foundation. The 18-member European Consortium of Ocean Research Drilling (ECORD), the People's Republic of China, the Republic of Korea, India, Australia and New Zealand (ANZIC), Federative Republic of Brazil provide additional support.

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

DONET is an ocean-floor observatory network established to achieve real-time monitoring of seismic and tsunami activities and to provide better earthquake prediction models in the focal region of the Tonankai earthquake in the Kumano Basin, off the Kii peninsula. DONET will allow for simultaneous and

real-time measurements at multiple points on the deep sea floor, which had not been possible with conventional observatory networks. Since March 2011, real-time data from nearly all observation instruments have been transmitted to the Japan Meteorological Agency and National Research Institute for Earth Science and Disaster Prevention (transmitted from all observation points starting from August 2011).

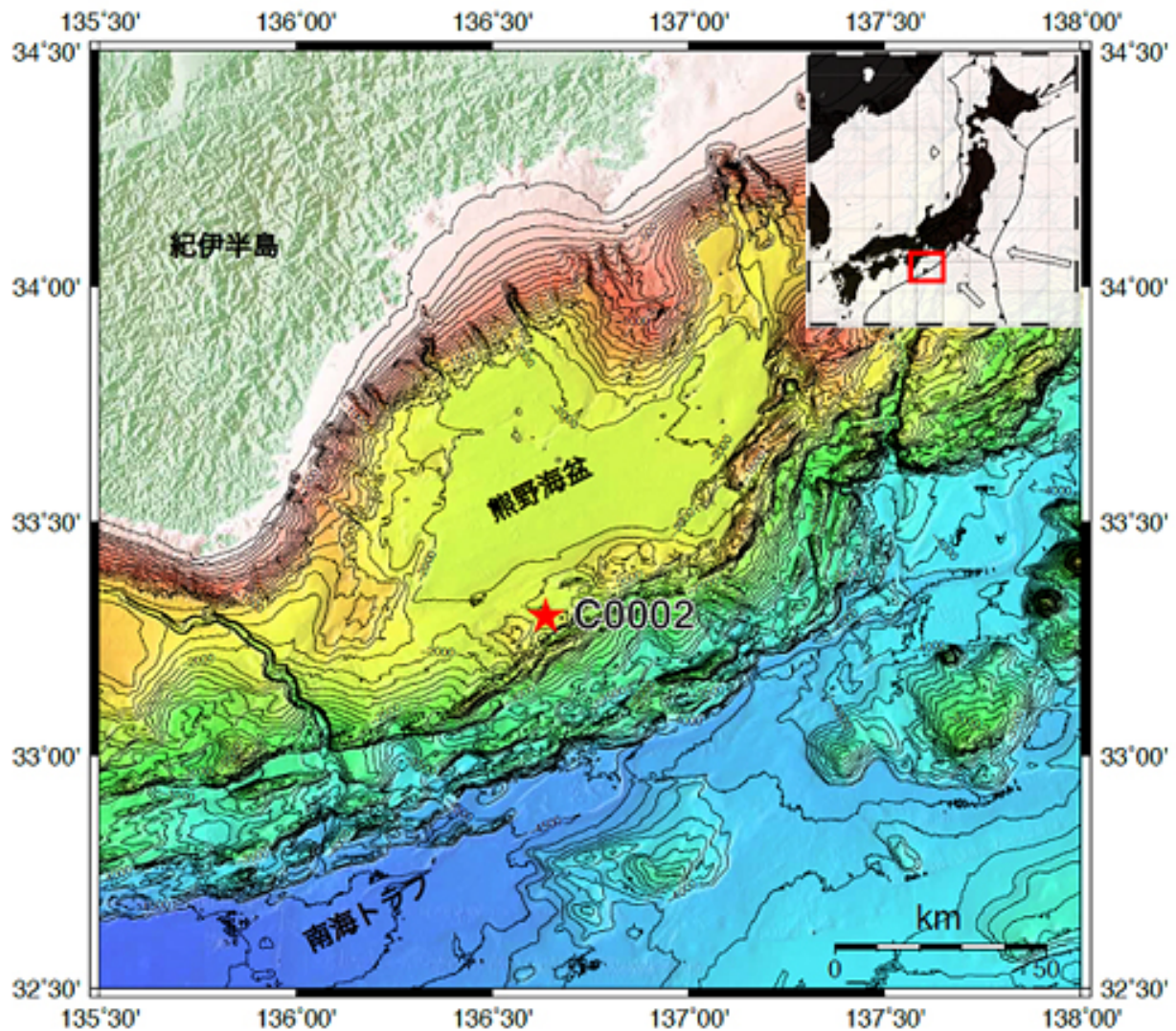


Figure 1. Study area

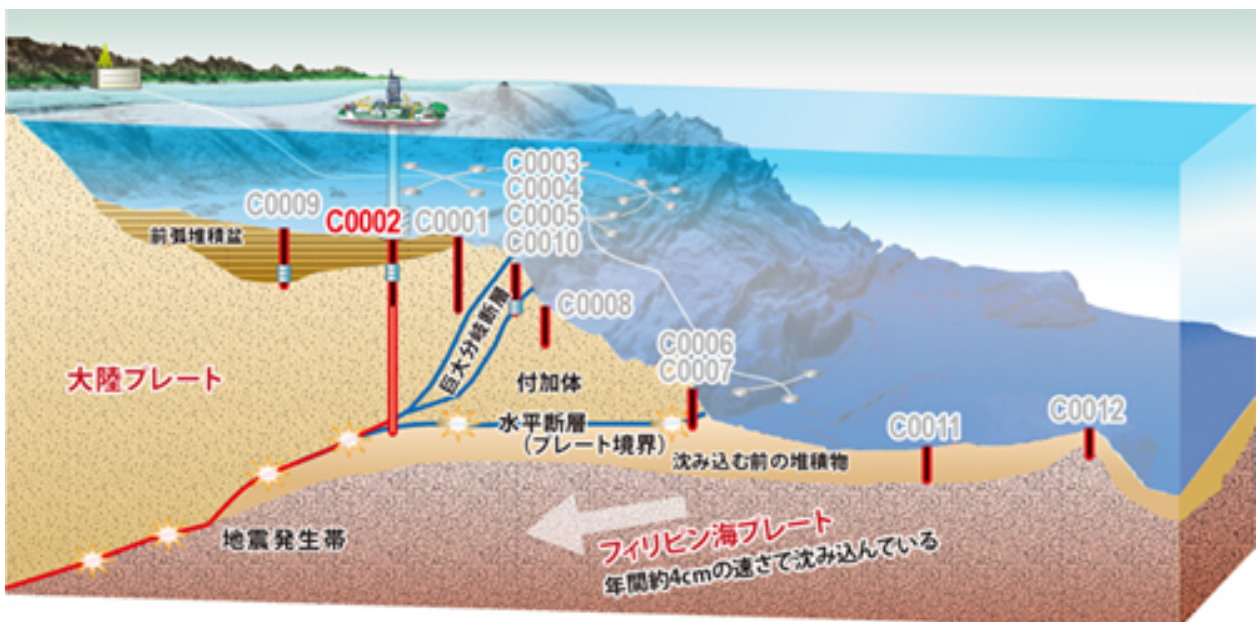


Figure 2. Drill sites

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