May 25, 2012
JAMSTEC

Integrated Ocean Drilling Program (IODP)
Chikyu Completes Expedition 343: Japan Trench Fast Drilling Project (JFAST)

The Deep-Sea Scientific Drilling Vessel *Chikyu*, operated by Japan Agency for Marine-Earth Science and Technology (JAMSTEC: Asahiko Taira, President), has completed the Integrated Ocean Drilling Program (IODP)*1 Expedition 343: Japan Trench Fast Drilling Project (JFAST), from 1 April to 24 May, 2012.

1. Operation summary

The scientific objective of this expedition was to reveal the frictional properties of the plate boundary fault which caused the Tohoku Earthquake and the associated tsunami. The drill site was offshore Ojika Penninsula, Miyagi Prefecture (Figure 1), where a large displacement of the seafloor during the earthquake was inferred from the previous research. In this location, we conducted logging-while-drilling (LWD)*2 to the depth of the plate boundary (850.5 m below seafloor) to obtain physical properties of the formations and recovered the core samples from the depth of 648 m to 844.5m across the fault zone. (Figure 2)
However, installation of a long-term borehole temperature monitoring system to detect a frictional heat anomaly due to fault movement of the Tohoku Earthquake, was postponed because of the mechanical failure of transmitter cable of the Underwater TV System (UWTV)*3. This operation will be retried this summer (see press release on 17 May, 2012).

2. Future plans

The obtained data and samples (LWD and core) in this expedition, as well as long-term temperature (instruments to be installed in this summer) data will be analysed comprehensively to delineate the slip characteristics (physical and chemical properties that define the frictional properties of the fault) and deformation mechanisms at the toe of the plate boundary.
These studies are fundamental investigations for understanding fault properties and mechanisms of a tsunamigenic faults near the trench axis. Such understanding is expected to contribute to mitigation of disasters caused by megaquakes and the associated tsunamis.

3. Upcoming schedules of D/V *Chikyu*

- 30 May – late June: Azimuth thruster repair and annual inspection at dockyard

(Sasebo Heavy Industries Co., Ltd.)
- Late June – early July: Entrusted drilling contract (Offshore Atsumi Penninsula)
- IODP Expedition 337 (Deep Coalbed Biosphere Off Shimokita) (Schedule to be determined)

***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. Additional support is provided by the 18 - member European Consortium of Ocean Research Drilling, the People's Republic of China, the Republic of Korea, Australia, India, and New Zealand.

***2: Logging-while-drilling (LWD)**
Various logging measurements while drilling the hole using tools integrated near drill bit. This LWD measurement set the world record of total drillpipe length in scientific drilling (7,740 meters total depth including 6,889.5 meter water depth below sea level)

***3: Underwater TV System (UWTV)**
Real-time monitoring the seabed and drillpipe operations from ship through optical fiber cable

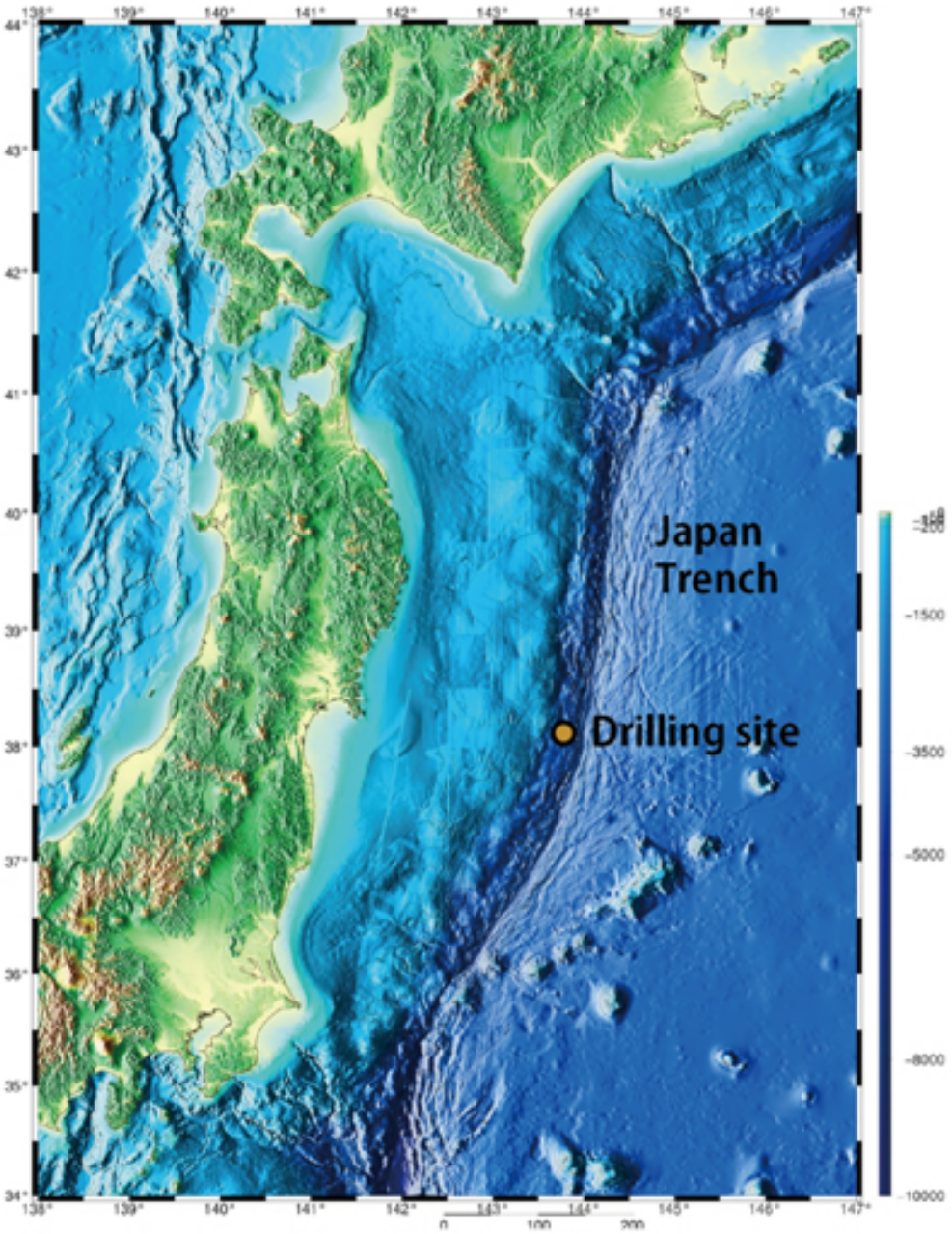

Figure 1: Drilling site

Figure 2: The core sample recovered from the Japan Trench fault zone

Contacts:
Japan Agency for Marine-Earth Science and Technology (JAMSTEC)
(For *Chikyu*)
Yasuo Yamada, Director
Planning and Coordination Department
Center for Deep Earth Exploration (CDEX)
Email: cdex@jamstec.go.jp

(For publication)
Kazushige Kikuchi, Director
Planning Department, Press Office
Email: press@jamstec.go.jp