



CENTER FOR DEEP EARTH EXPLORATION
Japan Agency for Marine-Earth Science and Technology
3173-25 Showa-machi, Kanazawa-ku, Yokohama Kanagawa 236-0001 Japan
<http://www.jamstec.go.jp/chikyū/>



**Additional Call for Participation in IODP Exp 337:
Deep coalbed biosphere off Shimokita**

CDEX/JAMSTEC

20th Oct. 2011

CDEX currently plans to implement IODP Expedition 337: Deep coalbed biosphere off Shimokita, starting in 6th July, 2012. The expedition has been re-scheduled after the postponement due to the Tohoku earthquake and tsunami on March 11, 2011. The expedition will focus on microbial and biogeochemical processes, as well as basic studies on geobiological aspects and physical properties, in and around the Eocene coalbed at ~2000 mbsf. We welcome applications to sail for five open slots in the science party.

2011 Tohoku Earthquake and Tsunami disaster

On March 11, 2011, the earthquake and tsunami hit the area when Chikyū was docked in the port of Hachinohe for loading before the Expedition 337. Chikyū lost one of her six thrusters and got damages on the ship body during emergency evacuation from the tsunami. Due to the damages and many logistical problems, it was decided that the Expedition 337 was postponed until further notice. Chikyū was back on the sea in June, 2011, and is currently committed to a commercial operation. By the start of the Expedition 337 next summer, Chikyū will have finished the replacement of the lost thruster in dry-dock.

IODP Complementary Project Proposal

Complementary project proposal is a scientifically motivated expedition having a commitment from a third party source of at least 70% funding for the platform operating costs of the expedition. This expedition will be funded by Japan Society for the Promotion of Science (JSPS), as a part of the Strategic Fund for Strengthening Leading-edge Research and Development to JAMSTEC (PI: F. Inagaki). The expedition will follow the normal IODP rules for designation of co-chief scientists, scientific staffing, and the IODP Sample, Data and Obligations Policy that defines data moratorium, data access and publication responsibilities.

Scientific Objectives of the expedition

The objective of this expedition is to deepen a hole and recover core samples down to the target Eocene lignite coalbed. The core samples will be used to investigate geological, geophysical, (bio-)geochemical and (geo-)microbiological features of the formation, with a view to expand our knowledge on coalbed subseafloor hydrocarbon system and the deep biosphere.



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Particular focus will be made on deep seafloor life and the biosphere down to 2200 mbsf, in a habitat that has never been reached by previous scientific ocean drilling. We will investigate active microbial communities and geobiological processes in the thermally immature coalbed at great burial depths.

Operation Plan

The proposed site has already been drilled in part during the *Chikyuu* shakedown cruise CK06-06 in 2006: the hole C9001D was cased to a depth of 511 mbsf. As the initial step of the riser drilling down to the coalbed, we will first re-enter and deepen the hole by riser drilling to reach at 1220 mbsf. Spot coring will be conducted at selected intervals, and 13-3/8" casing will be installed to that depth after the first series of wireline logging runs. Then, the riser drilling will continue with spot coring through Oligocene marine sediments and Eocene terrigenous/lacustrine sediments to the depth of 2200 mbsf. Second series of wireline logging will be performed before casing and suspending the riser hole.

For the better recovery of high priority target material, we will switch the coring system from the standard RCB coring to industry-type large diameter coring system, equipped with special device of either full closure core catcher or jam-prevention mechanism. The large diameter (10 cm) coring system uses 27 m long core barrel retrieved by a pipe trip. Three runs of the large diameter coring are planned at two intervals; one for regional unconformity found at about 1700 mbsf, including marine-terrestrial sedimentary interfaces, and the other two for Eocene coalbed and porous sandy layers.

Wireline logging program includes standard set of resistivity, density, porosity, formation image, and zero-offset VSP experiment, as well as *in-situ* geophysical and geochemical measurements (e.g., pH, pCO₂, hydrocarbons) and sampling of pristine formation fluids from permeable layers.

Note that the planned pressure core sampling (PCS) has been removed from the operation plan due to budgetary reasons. The operation plan is still subject to change depending on budgetary conditions.

Expedition Schedule

Current plan is that the expedition starts on 6th July at the port of Hachinohe, Japan, and ends on 15th September at Shingu, Japan. This includes 5 days of port call at Hachinohe, 1 day for transit to the site, 62 days of offshore operation, and 4 days of transit to the port of Shingu. Science Party will get onboard *Chikyuu* in mid July, spend no more than 60 days onboard, and disembark before *Chikyuu* moves to Shingu. Boarding and off-boarding will be provided via helicopter transfer from and to the city of Hachinohe.

This schedule is still subject to change. Update and latest information will be available at CDEX website (<http://www.jamstec.go.jp/Chikyuu/eng/>).



Science party

We will organize a full science party to conduct a standard core analysis flow. The invited scientists as of March 2011 have been re-invited for the new schedule. There are five open slots available for additional applications to sail. We welcome applications, in particular, from sedimentologists, microbiologists/biogeochemists, and micropaleontologists to conduct age determination mainly from drill cuttings, and any other speciality that fits to the scientific purpose of the expedition.

Nobu Eguchi

CDEX Expedition Manager

Table 1

D/V Chikyu Schedule for FY11

Exp.#	Expedition Name	Schedule	Duration	Co-chief Scientists	EPM
337	Deep coalbed biosphere off Shimokita	6th July to 15th September, 2012 ⁽¹⁾	72 days ⁽²⁾	Fumio Inagaki ⁽³⁾ Kai-Uwe Hinrichs ⁽³⁾	Yusuke Kubo

Remarks:

- (1) All expedition schedules are subject to change based on FY budgetary situation and site conditions.
- (2) This includes port call at Hachinohe (5 days) before departure and transit to Shingu (4 days) at the end. Onboard period of science party will be around 60 days and boarding/off-boarding will be provided via helicopter transfer from and to Hachinohe, Japan.
- (3) Tentative assignment before official assignment