



**Call for Participation in IODP Exp 365:
NanTroSEIZE Shallow Megasplay
Long-Term Borehole Monitoring System
(LTBMS)**

CDEX/JAMSTEC
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CDEX currently plans to implement IODP Expedition 365: NanTroSEIZE Megasplay Borehole Observatory, beginning on 26 March 2016. The main expedition goal is to install instruments for long-term monitoring of formation pore pressure, temperature, strain, tilt, and seismicity in (non-riser) Hole C0010A. This Call for Participants solicits a pool of scientists to potentially staff Expedition 365.

IODP NanTroSEIZE Complex Drilling Project

The IODP Complex Drilling Project (CDP), known as the Nankai Trough Seismogenic Zone Experiment (NanTroSEIZE) Project, comprises multiple expeditions over a multi-year period aimed at sampling and instrumenting the up-dip edge of the subduction seismogenic zone. Hole C0010A was previously drilled during IODP Expedition 319 as part of a planned array of observatories along the NanTroSEIZE transect. A long-term borehole monitoring system (LTBMS) will be deployed in the cased hole, which intersects the shallow up dip terminus of the mega splay fault at ~400 mbsf. Expedition 365 will follow current IODP guidelines for designation of co-chief scientists, scientific staffing, and follow the IODP Sample, Data and Obligations Policy, which defines data moratorium, data access and publication responsibilities.

Scientific Objectives of the expedition

The Expedition 365 goals are to:

1. Recover a set of temporary monitoring and geochemical sampling instruments from Hole C0010A that were emplaced in December 2010 at the same level as casing screens spanning the megasplay fault as part of IODP Expedition 332,
2. Drill out the cement at the casing shoe and deepen the hole to ~656 mbsf, and,



3. Install a permanent LTBMS that includes geodynamic, hydrologic, and thermal monitoring equipment.

Hole C0010A currently contains a suite of temporary monitoring and sampling instruments termed the “GeniusPlug”, which will be recovered before the permanent observatory is installed. The GeniusPlug includes: sensors monitoring seafloor and formation pressures at 1 min sampling rate; four independent temperature sensors monitoring the fault zone; an osmotic fluid sampling coil (OsmoSampler) that is collecting pore fluids from the fault zone for geochemical analysis; and a flow-through osmotic colonization system for microbiological study.

The planned permanent observatory (LTBMS) consists of an array of sensors designed to monitor slow crustal deformation (e.g., strain, tilt, and pore pressure as a proxy for strain), seismic events including very low frequency earthquakes, hydrologic transients associated with strain events, ambient pore pressure, and temperature. To ensure the long-term and continuous monitoring necessary to capture events occurring over a wide range of timescales, this borehole observatory will be connected to submarine cabled observation network called DONET (<http://www.jamstec.go.jp/jamstec-e/maritec/donet>), which is currently deployed in and around the NanTroSEIZE study area, and with a node in close proximity to Hole C0010A.

Operations Plan

Operations planned for Expedition 365 include:

- Recovery of the GeniusPlug.
- Extending the borehole TD by ~100 m to ~656 mbsf.
- Deployment of the LTBMS.

Expedition Schedule

Expedition 365 is tentatively planned for ~30 days of offshore operations, beginning on 26 March 2016, and finishing 27 April. The science party will stay on board for recovery of the GeniusPlug, deepening of the existing hole, and the LTBMS deployment. There will be a short 3-4 day shore-based “writing party” to complete the



expedition reports. Updates and the latest information on this expedition are on on the CDEX website: (<http://www.jamstec.go.jp/Chikyu/eng/>).

Science Party

Specialties that will be required for the shipboard science party include organic and inorganic geochemistry, microbiology, hydrogeology, and observatory scientists.

Data Sharing

All data collected from the GeniusPlug will be shared between the shipboard science party and the 3rd Party GeniusPlug PI's. The LTBMS data will be publicly shared once it is connected to the DONET network.

Nobu Eguchi

CDEX Science Manager

Table 1. D/V Chikyu Schedule for FY15

Exp.#	Expedition Name	Schedule	Duration	Co-chief Scientists	EPM
365	NanTroSEIZE Shallow Megasplay LTBMS	26 March 2016 – 27 April 2016	30 days	Achim Kopf, Demian Saffer	Sean Toczko

Remarks:

- (1) All expedition schedules are subject to change based on FY budgetary situation, engineering considerations, and site conditions.