Call for Participation in IODP Exp. 405:
JTRACK
Tracking Tsunamigenic Slip Across the Japan Trench
Outreach Officers

MarE3/JAMSTEC

21 May 2024

The Japan Agency for Marine-Earth Science and Technology (JAMSTEC) & the Institute for Marine-Earth Exploration and Engineering (MarE3) are preparing to implement International Ocean Discovery Program (IODP) Expedition 405: JTRACK - Tracking Tsunamigenic Slip Across the Japan Trench, beginning on 6 September 2024.

Expedition Scientific Objectives

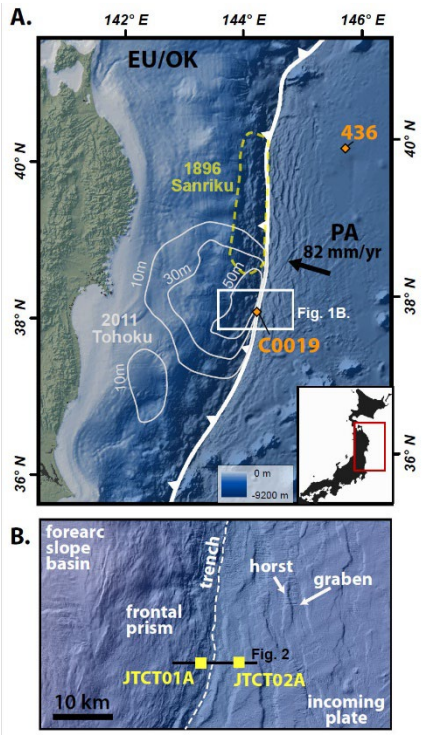
The goal of IODP Expedition 405 is to establish the properties, processes, and conditions within subduction zones that promote large slip to the trench and lead to the generation of giant earthquakes and associated tsunamis. Therefore, Exp. 405 will follow a coordinated strategy of Logging While Drilling, coring, and borehole observatory installation to achieve the following objectives:

1) Determine the stress and strain conditions within and around the fault zone and their variation over space and time,
2) Constrain subsurface geology including the physical rock properties affecting fault slip behavior and strain localization, as well as the geologic record of past earthquakes and tsunami,
3) Understand the hydrogeology of the fault zone – including the hydrogeologic structure of faults, fractures, and permeable zones around the plate boundary and their influence on effective stress and earthquake mechanics and the variation of conditions over time.

Together, these objectives will allow a comprehensive description of the mechanical properties and conditions relevant to fault slip during giant earthquakes.

Secondary science objectives include carrying out other geological, geochemical, and microbiological observations to the greatest extent possible.

IODP Expedition 405 will visit two sites (Figure 1) comprising a transect across the trench from undisturbed sedimentary rocks on the Pacific Plate (JTCT-02A) to a site within the overriding plate that will access the fault zone in the region of large, shallow slip during the 2011 Tohoku-oki earthquake (JTCT-01A). Site JTCT-01A is located ~6 km landward of the trench, in the frontal prism, and is co-located with IODP Exp 343 Site C0019 (Figure 1). Site JTCT-02A is located on the incoming plate, ~8 km seaward of the trench. Logging While Drilling and coring operations at this site will provide critical information on the physical, chemical, and mechanical properties of input materials to the subduction zone, as well as on the amounts of fluids entering the subduction zone. A detailed operation plan and schedule can be found below.



Please read the IODP Expedition 405 Prospectus for further details (http://publications.iodp.org/scientific_prospectus/405/).

Who Should Apply:

MarE3 is making an open call for Outreach Officers to take part in the expedition. We seek enthusiastic artists, videographers, teachers, media specialists, journalists, researchers, etc. with skills in storytelling, infographics, animation, photography, video production, podcasting, and other media. A background in Earth Science would be beneficial but is not required.

The successful applicants will have an interest in developing an outreach project about and aboard *D/V Chikyu* during the scientific ocean drilling expedition. They will work and learn alongside a team of international scientists and technicians aboard *Chikyu* for a period of 1–2 weeks during the expedition. Outreach Officers will need to be creative, flexible, friendly, and collaborative. The Outreach officers will operate under the Expedition Co-Chief Scientists (CCs), Expedition Project Managers (EPMs), and MarE3.

Outreach Officers should create a plan(s) that will promote:

- Scientific Ocean Drilling (SOD)

- SOD data use (by researchers, students, and the interested public)
- Understanding of the drivers and barriers to international cooperative research
- DV *Chikyu* and other SOD platforms
- Interest from the general public in natural hazard research
- Earth Science & STEM learning
- Fresh approaches to guiding, assisting and improving the engagement between scientists and a wide range of stakeholders

Application Requirements:

- CV
- Letter of Recommendation
- Contact information for Referees
- One-page proposed outreach plan that aligns with at least 3 of the concepts listed under the plan, above. Include any requirement for funding from your PMO, or if you have outside funding support for your proposal.

Submitting Your Application:
Please check the IODP website (https://iodp.org/about-iodp/program-member-offices) for details regarding to which Program Member Office (PMO) you should submit your application. Once received, all applications will be evaluated and reviewed for creativity, interest, scope, and practicality. Successful applicants will be contacted by their relevant PMO.

Support levels for successful applicants will be determined by the relevant PMO, which may include travel to/from the vessel, HUET certification, post-expedition production and/or research costs, and other ancillary costs. The commitment levels expected of Outreach Officers is dependent on their proposed program, and the level of support from their respective PMO. Applicants may need to source any additional funding that their project requires. Helicopter travel to the ship and all onboard costs (meals, Personal Protective Equipment, etc.) will be provided by JAMSTEC/MarE3.

Applications should be submitted to your PMO by (15 June 2024). Successful applicants will be notified by (30 June 2024).

For further information, please contact the appropriate PMO (https://iodp.org/about-iodp/program-member-offices)

Outreach Officer Routine:

The Outreach Officers will obey all rules and regulations and conduct aboard DV *Chikyu*. The Outreach Officers work closely with the expedition scientists, and report to the CCs and EPMs. Regular updates on project progress and milestones will be shared with them and with MarE3. All materials and outcomes will be held under the copyright of JAMSTEC/IODP, and will require a release from MarE3 before being made public.

Pre-expedition requirements

The Science Party members and Outreach Officers will embark and disembark by helicopter, requiring OPITO-approved Helicopter Underwater Escape Training (HUET) certification for all onboard personnel.

Further information on IODP Expedition 405 JTRACK

Operational Plan

The operational sequence to be completed during IODP Expedition 405 consists of:

1. Drilling an 8-1/2-inch hole with logging while drilling (LWD)/measurement while drilling (MWD) to a planned total depth (TD) of 950 mbsf at Site JTCT-01A and 450 mbsf at Site JTCT-02A.
2. Coring a 10-5/8-inch hole with the Rotary Core Barrel (RCB) system to 950 mbsf at Site JTCT-01A and to 450 mbsf at Site JTCT-02A.
3. Jetting a 20-inch casing and wellhead, drilling 10-5/8-inch hole to 950 mbsf and installing 4-1/2-inch Tubing (TBG) with a multi-sensor temperature measurement string at Site JTCT-01A.

Expedition Schedule

Current plans have the expedition leaving the Port of Shimizu, Japan, on 6 September 2024, and upon finishing, returning to the same port on 20 December 2024. This schedule is subject to change. Updates and the latest information can be found on the MarE3 website:

https://www.jamstec.go.jp/chikyu/e/exp405

The offshore operations are planned to total 106 days. While the Science Party will be divided into two teams of about 25 scientists each, and will be onboard around 8 weeks, the Outreach Officers will not be aboard the entire expedition, but instead during a series of shorter intervals (e.g. 1-2 weeks), to be determined.

Table 1. D/V *Chikyu* Schedule for FY24

Exp.#	Expedition Name	Schedule	Duration	Co-chief Scientists	EPM
405	JTRACK - Tracking Tsunamigenic Slip Across the Japan Trench	6 Sept 2024 – 20 Dec 2024	106 days	Shuichi Kodaira Marianne Conin Patrick Fulton Jamie Kirkpatrick Christine Regalla Kohtaro Ujiie	Lena Maeda Natsumi Okutsu Nobu Eguchi Sean Toczko

Remarks:

(1) All expedition schedules are subject to change based on operation requirements, site conditions and budgetary constraints.