


**WHAT HAPPENS TO CREATE AN  
IODP EXPEDITION?  
WHAT HAPPENS DURING AN  
IODP EXPEDITION?  
WHAT HAPPENS AFTER AN  
IODP EXPEDITION?**

# WHAT IS THE “INTERNATIONAL OCEAN DISCOVERY PROGRAM” (IODP)?

International research collaboration that addresses important questions in Earth, Ocean, Environmental and Life sciences based on drill cores, borehole imaging, observatory data, and related geophysical imaging obtained from beneath the ocean floor using specialized ocean-going drilling and research platforms

# GUIDING PRINCIPLES FOR IODP EXPEDITIONS

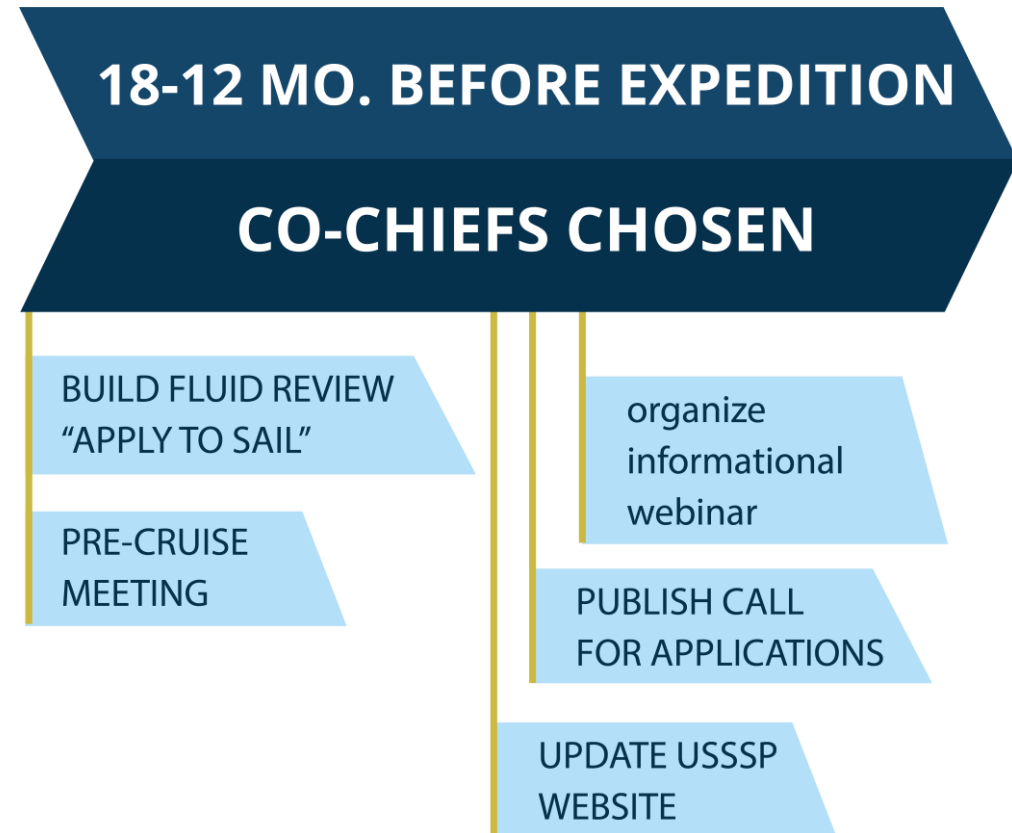
- based on research proposals that address objectives described in the program's guiding document, the IODP Science Plan Illuminating Earth's Past, Present, and Future, or other outstanding new research ideas
- proposals are reviewed by advisory panels composed of international representatives
- Decisions on the scheduling of expeditions are made by Facility Boards that provide operational and management oversight of the IODP drilling platforms
- intellectual property of any scientific proposal submitted to the program belongs to the proposal authors (proponents) until a proposal is scheduled for drilling as part of an IODP expedition. At that time, the program acquires the right to publish the proposal and conduct the science.

- 
- expeditions will be undertaken by international teams of scientists selected by the platform operator
  - expeditions are intended to have no significant environmental impact and are carried out in conformance with the highest accepted levels of environmental sensitivity
  - provide open access to all expedition samples and data once the members of the expedition science party have had a reasonable opportunity to complete their initial studies within an established moratorium period (typically one year).
  - After the expiration of the data moratorium, the program will publish a detailed account of all findings, core and borehole details, data acquired during the expedition, and make all samples and cores (working halves) available to any scientist with a sound scientific proposal and proven facilities to conduct the proposed science in accordance with the IODP Sample, Data, and Obligations Policy.

# WHAT'S NEEDED TO CREATE AN IODP EXPEDITION?

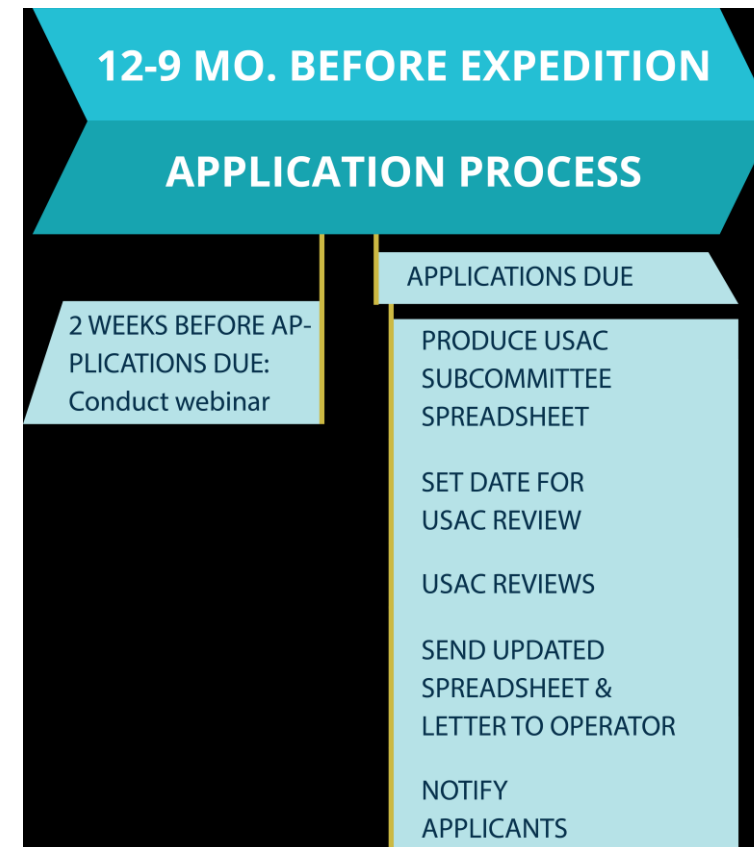
18 – 12 months before an Expedition:

- Co-Chiefs are selected through a peer-review process from all proposals, with consideration of where the JR will be at that time
- Organize informational webinars
- Begin “Apply to Sail” announcements
- Pre-Cruise meetings
- Update the USSSP website



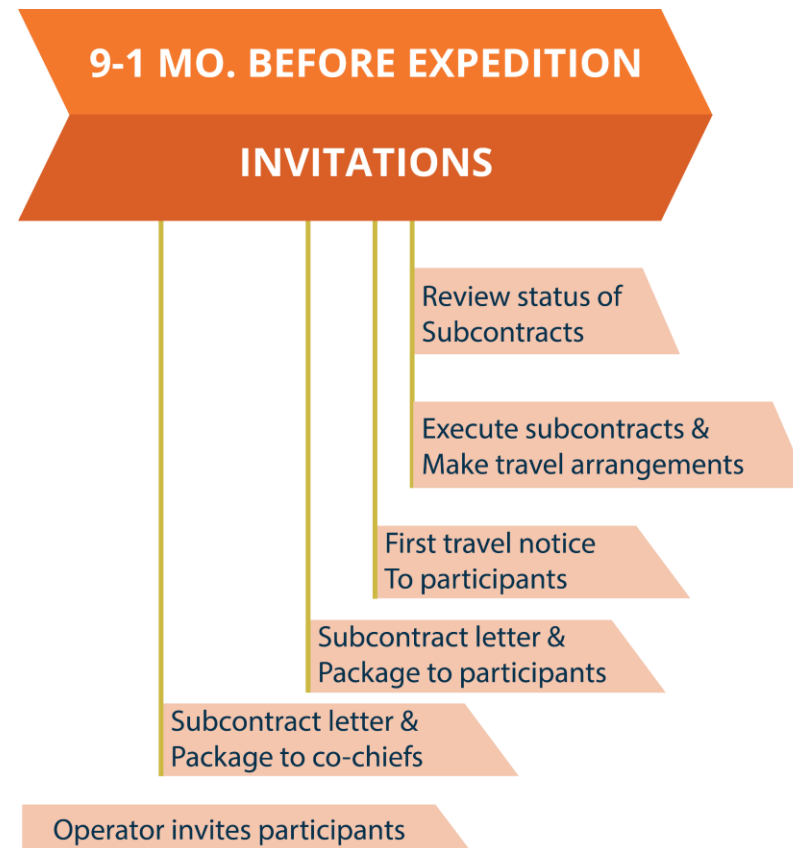
# 12 – 9 MONTHS BEFORE EXPEDITION

- Webinar 2 weeks before applications due
- Applications due and received
- Subcommittee spreadsheet
- Applications reviewed
- Participants selected
- Applicants notified



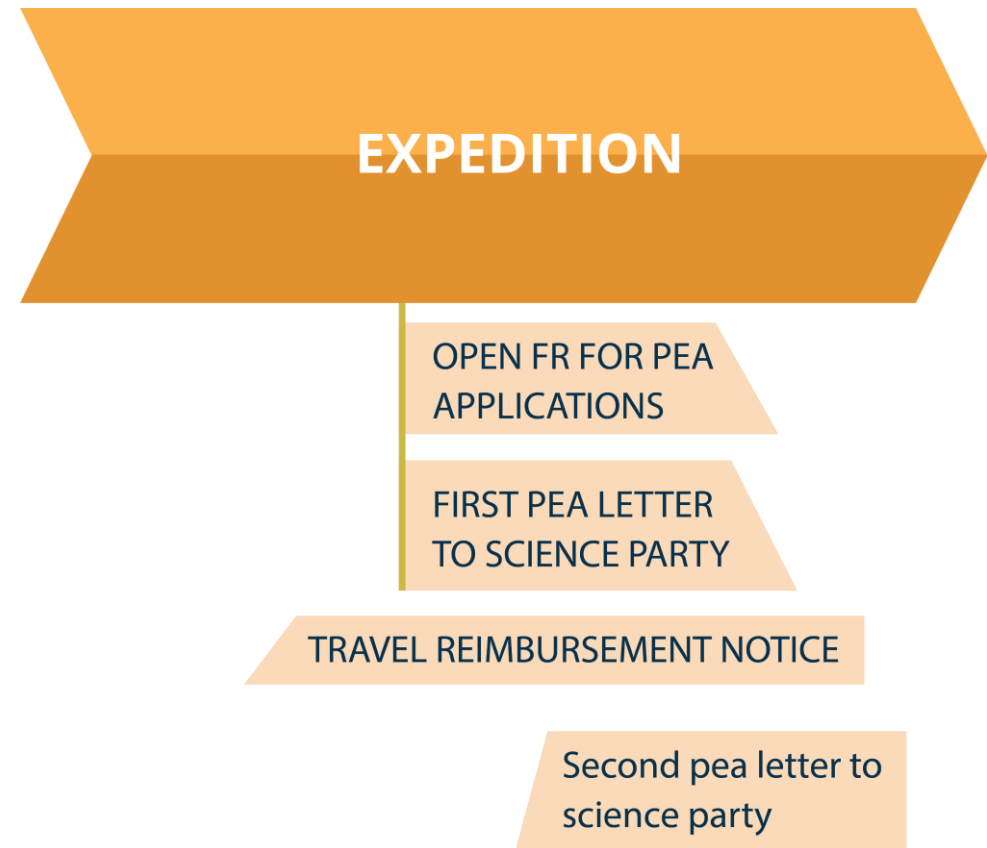
# 9 – 1 MONTHS BEFORE THE EXPEDITION

- Selected participants are invited
- Subcontract letters & packages sent to Co-Chiefs
- Subcontract letters & packages sent to participants
- First travel notice to participants
- Subcontracts signed and travel arrangements made
- Review of all subcontracts



# EXPEDITION

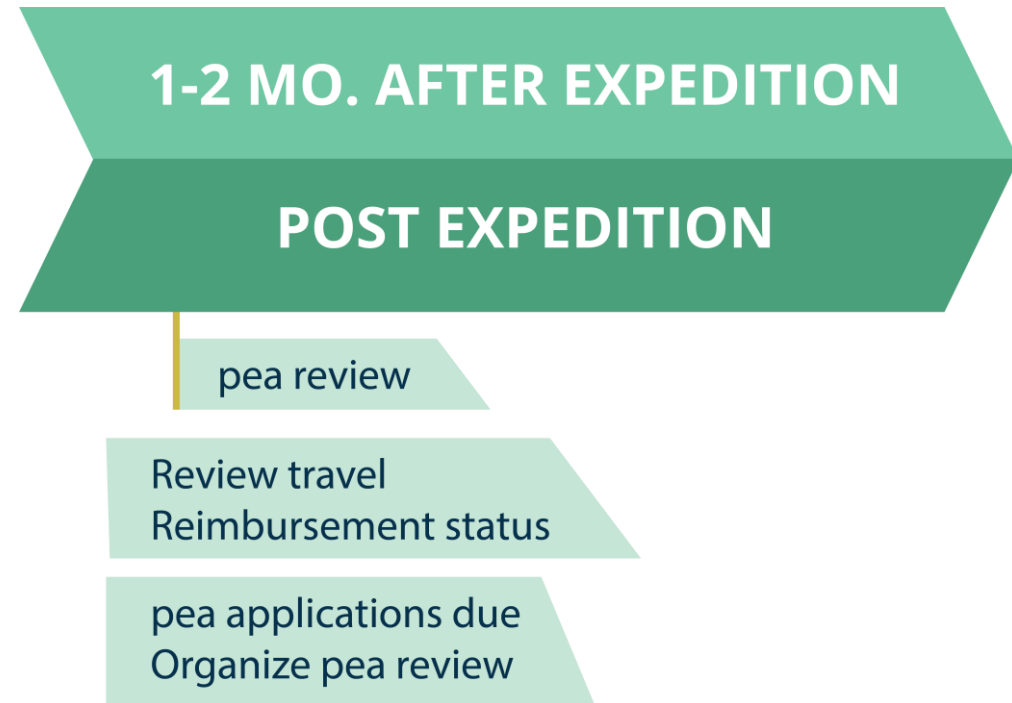
- Join shipboard party
- Carry out plans (or adjust in case problems arise)
- Begin preliminary analyses of samples and data
- Start applications for Post-Expedition Awards (PEA) to support continuing analyses





# 1 – 2 MONTHS AFTER EXPEDITION (POST EXPEDITION)

- Participants continue analyses of samples and data
- Begin writing scientific papers
- Travel reimbursements paid
- Post-Expedition Awards reviewed and decided



## ■ 2 – 12+ MONTHS AFTER EXPEDITION

- Continue/complete sample and data analyses
- Submit scientific papers for peer-reviewed publications
- Assemble for Post-Cruise Meeting
- Share results with colleagues
- Revise/continue scientific analyses and publications
- Moratorium (sole rights to data and samples) usually end after 1 year
- Samples archived in Texas, Germany, or Japan
- “Working samples” become available to other scientists
- Results shared in scientific meetings
- New proposals developed”

# EXAMPLES OF RECENT IODP EXPEDITIONS

EXP. 377T TE KURA KOHATU SCHOOL OF ROCK 2018  
[HTTP://JOIDESRESOLUTION.ORG/EXPEDITION/SOR2018/](http://joidesresolution.org/expedition/sor2018/)



Pacific Rim geology and the science research of the *JOIDES Resolution*

Field trips explore geological history of the Auckland region, including arc and intraplate volcanism (Rangitoto Volcano above), and deep sea sedimentary processes

# EXP. 376 BROTHERS ARC FLUX (5 MAY – 5 JULY 2018)

[HTTP://JOIDESRESOLUTION.ORG/EXPEDITION/376/](http://joidesresolution.org/expedition/376/)

Submarine volcanic arcs between New Zealand and Tonga

Kermadec-Tonga Arc one of most hydrothermally-active regions on Earth

Brothers Volcano 400 km northeast of North Island, 1.2 km deep

Window into hydrothermal systems and metal transport inside volcano

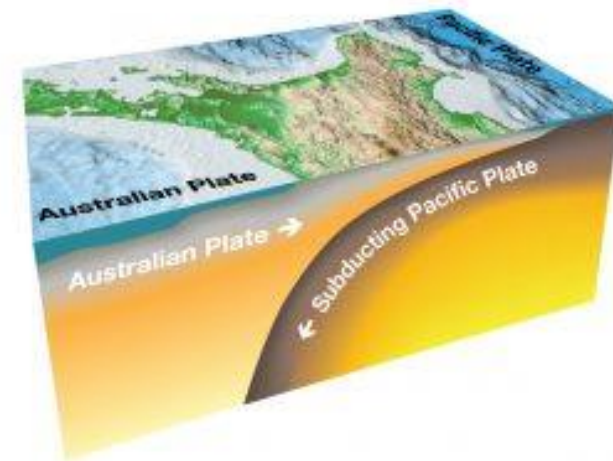


## EXP. 375 HIKURAMGI SUBMARINE MARGIN

[HTTP://JOIDESRESOLUTION.ORG/EXPEDITION/375/](http://joidesresolution.org/expedition/375/)

8 Mar – 5 May 2018

Earthquakes and tsunamis in subduction zone  
affecting NZ



EXP. 374 ROSS SEA WEST ANTARCTIC ICE SHEET  
HISTORY

[HTTP://JOIDESRESOLUTION.ORG/EXPEDITION/374/](http://joidesresolution.org/expedition/374/)

4 Jan – 8 Mar 2018

Look back in time 20 million years ago to see how West Antarctic Ice Sheet (WAIS) experienced climate change and what it could mean for a warmer world in the future.



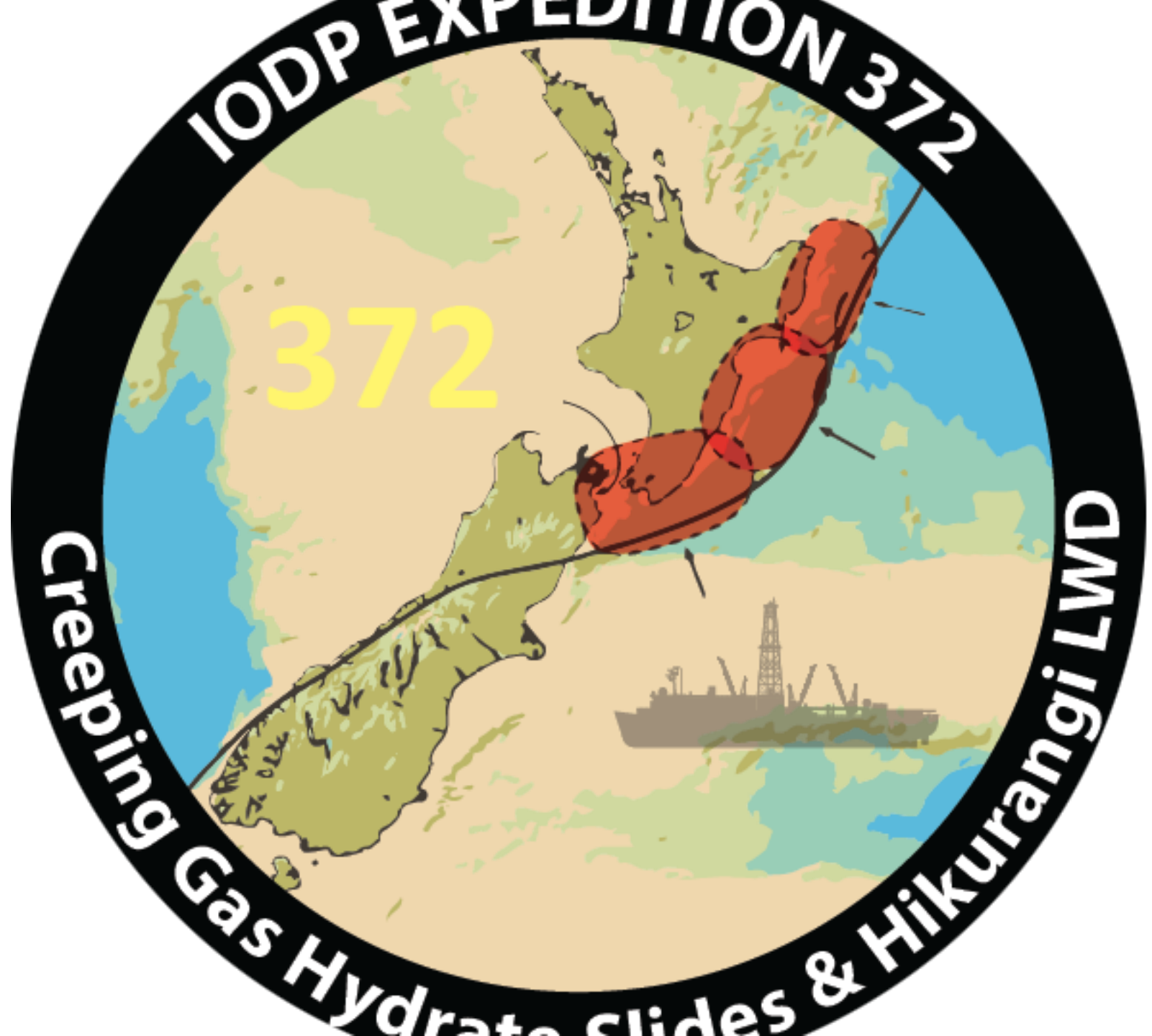
# EXP. 372 CREEPING GAS HYDRATE SLIDES & HIKURANGI LWD (LOGGING WHILE DRILLING)

Better understanding of causes for  
earthquakes and tsunamis off NZ  
coast

Underwater slides causes by gas  
hydrates

27 Nov 2017 – 4 Jan 2018

<http://joidesresolution.org/expedition/372/>





## EXP. 371 TASMAN FRONTIER SUBDUCTION INITIATION AND PALEOGENE CLIMATE

27 Jul – 26 Sep 2017

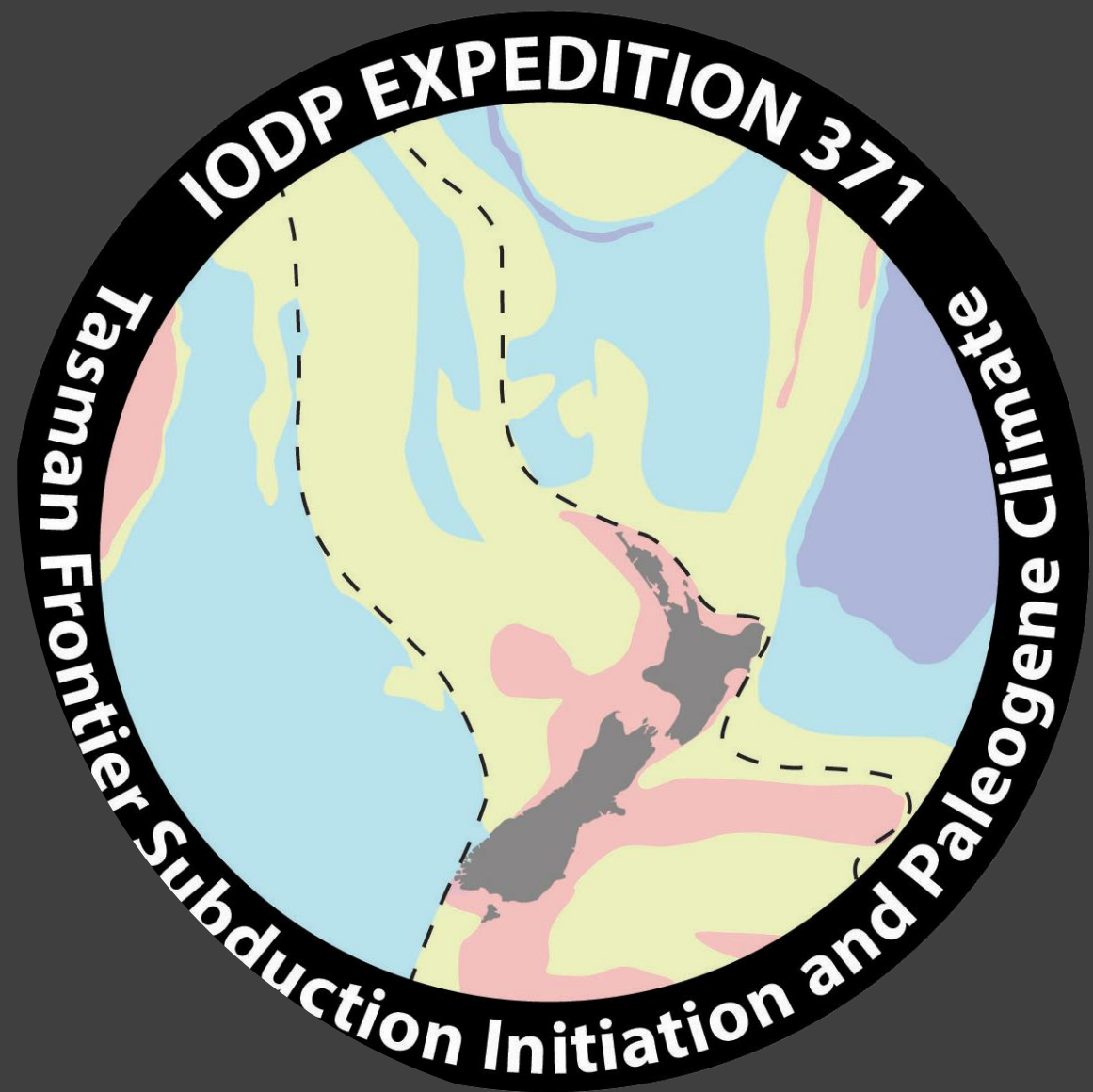
Improve understanding of role of plate tectonics in global climate evolution over past 60 my

Obtaining precise date of uplift/ subsidence associated with the Tonga-Kermadec subduction initiation

Allow testing of alternate geodynamic models

Thought that this tectonic event may have coincided with the maximum “greenhouse” climate of the Cenozoic era

<http://joidesresolution.org/expedition/371/>



# EXP. 371T SCHOOL OF ROCK 2017

## 9 JUL – 27 JUL



“Expanding The Geoscience Pipeline By Connecting Educators With Early Career IODP Scientists.”

encouraging early career scientists and secondary-level educators from communities that remain poorly represented in STEM fields, and particularly geosciences, to participate.

showcasing and educating about JR/IODP capabilities.

increasing the diversity of the talent pool that will apply to sail on IODP and related expeditions in the future.

building a diverse mentoring pool for undergraduate STEM/geoscience students.

creating local partnerships to bolster the STEM/geoscience pipeline.

<http://joidesresolution.org/expedition/sor2017/>

## EXP. 369 AUSTRALIA CRETACEOUS CLIMATE AND TECTONICS

[HTTP://JOIDESRESOLUTION.ORG/EXPEDITION/369/](http://joidesresolution.org/expedition/369/)

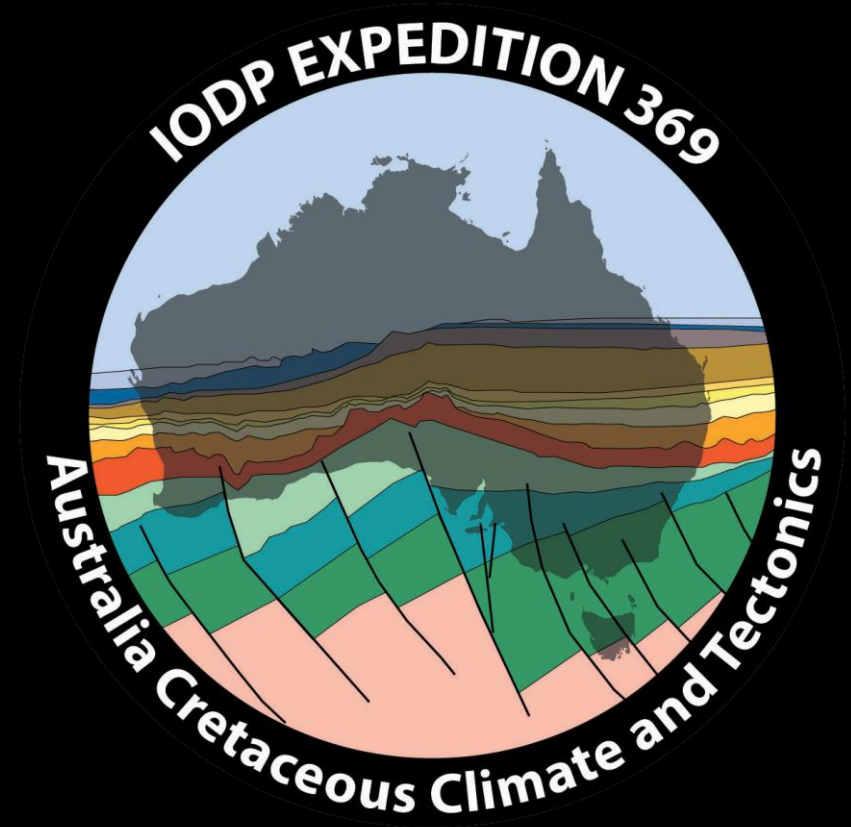
26 Sep – 26 Nov 2017

Generate new data for Cretaceous period in Southern Hemisphere

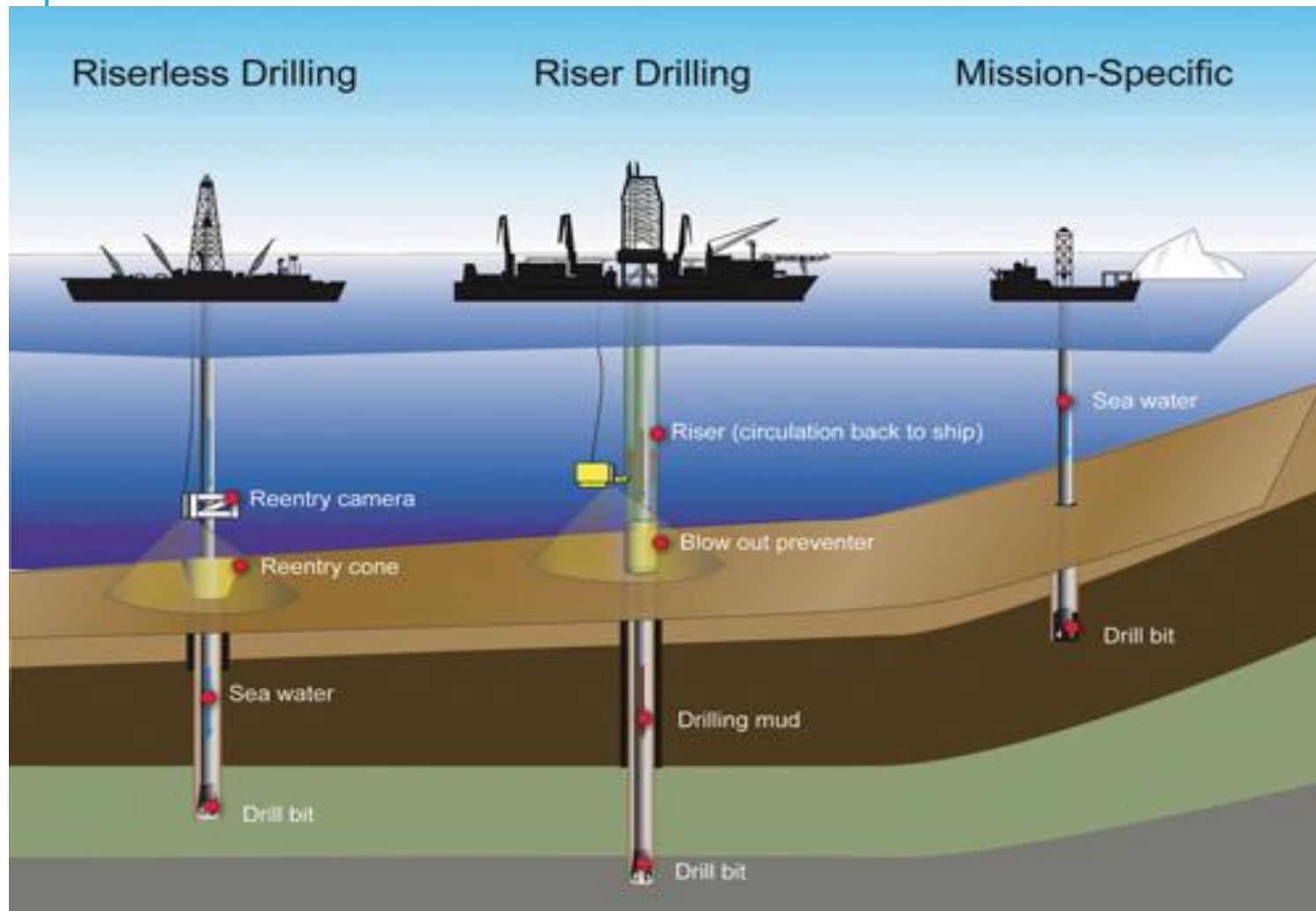
Obtain stratigraphic records for rise and fall of the Cretaceous hothouse period;

Learn more about history of plate tectonic movement in the region

Cristiane Delfino's educational resources

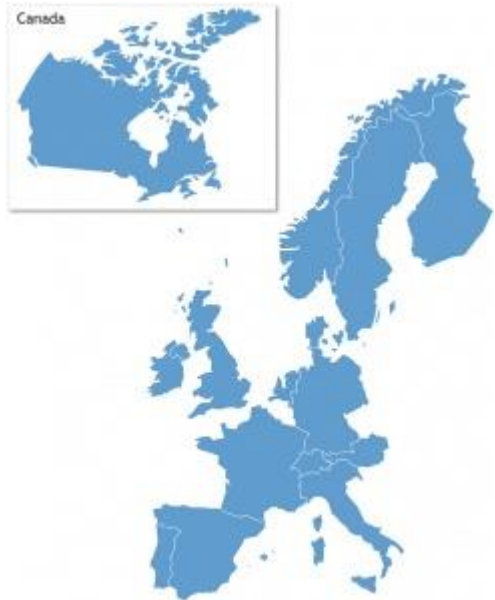


# 3 MAIN VESSEL TYPES



# ECORD — EUROPEAN CONSORTIUM FOR OCEAN RESEARCH DRILLING

[HTTP://WWW.ECORD.ORG/](http://www.ecord.org/)



14 European Countries + Canada

Part of IODP

**Climate and ocean change,**

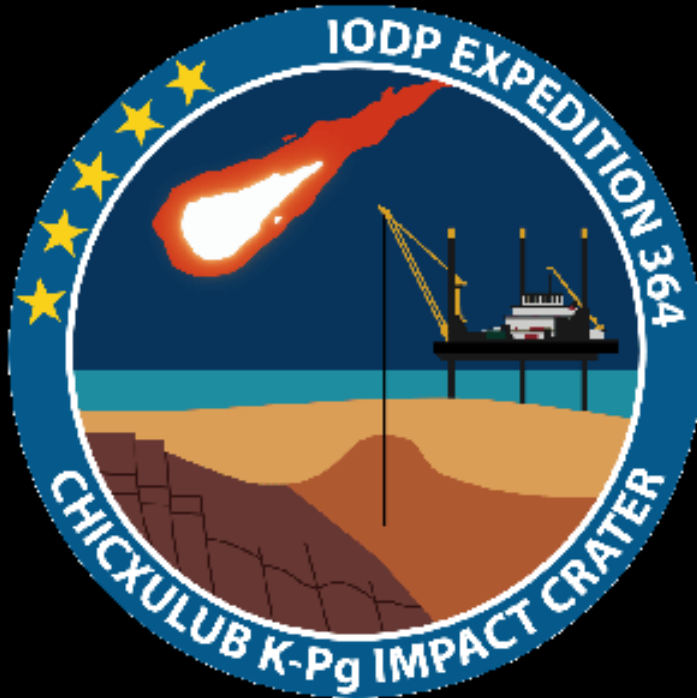
**Biodiversity and origin of life**

**Earth in motion** including the study of earthquakes processes

**Earth structure and dynamics** in relation with its surface environment.

# EXP. 364 CHICXULUB K-PG IMPACT CRATER

[HTTP://WWW.ECORD.ORG/EXPEDITION364/](http://www.ecord.org/expedition364/)



Chicxulub impact crater in Mexico is unique.

Only known terrestrial impact structure that has been directly linked to a mass extinction event

Only terrestrial impact with a global ejecta layer.

Only known impact structure with intact, unequivocal topographic “peak ring.”

Chicxulub’s role in the Cretaceous/Paleogene (K-Pg) mass extinction and its exceptional state of preservation make it an important natural laboratory for the study of both large impact crater formation on Earth and other planets and the effects of large impacts on Earth’s environment and ecology.



EXP. 361 CORINTH ACTIVE RIFT DEVELOPMENT  
[HTTP://WWW.ECORD.ORG/EXPEDITION381/](http://www.ecord.org/expedition381/)

23 Oct – 18 Dec 2017

Continental rifting is fundamental for formation of ocean basins, and active rift zones are dynamic regions of high geohazard potential.

This project proposes **drilling within the active Corinth Rift, Greece** where deformation rates are high, the syn-rift succession is preserved and accessible, and a dense, seismic database provides a high resolution fault network and seismic stratigraphy for the recent rift history.

Access to sedimentary sequences that enable an unprecedented level of precision of timing and spatial complexity of rift-fault system development and rift-controlled drainage system evolution in the first 1-2Myr of rift history.





**JAMSTEC** 国立研究開発法人  
海洋研究開発機構  
JAPAN AGENCY FOR MARINE-EARTH SCIENCE AND TECHNOLOGY

[HTTP://WWW.JAMSTEC.GO.JP/E/](http://www.jamstec.go.jp/e/)

“Chikyu”

Completed in July 2005

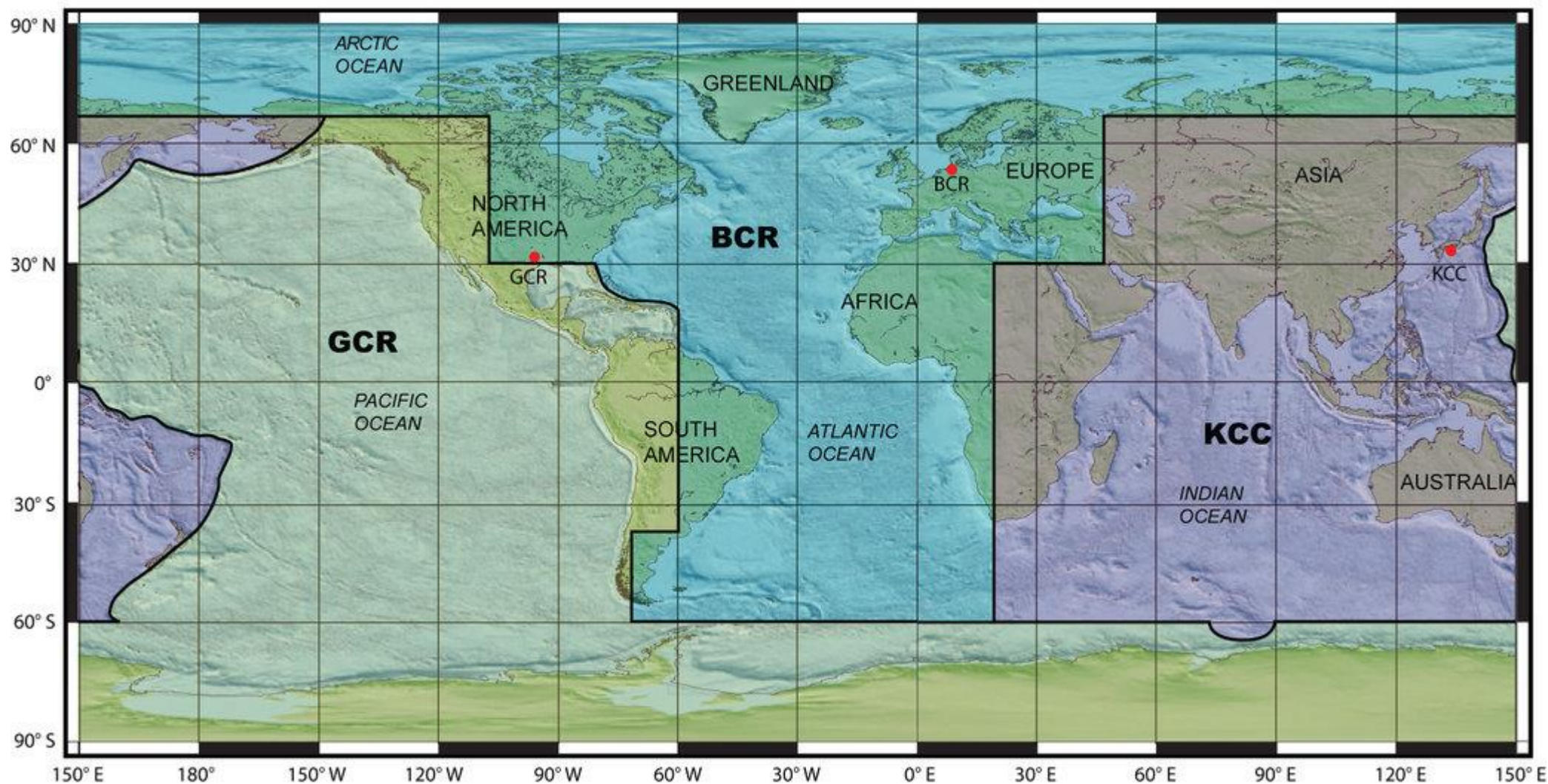
Most advanced drilling capabilities  
in the world (7,000 m below the seafloor)

Allows drilling of the previously unreachable  
mantle and seismogenic zone





# CORE REPOSITORIES



# ARCHIVED CORES AVAILABLE FOR LATER STUDIES



<https://www.ldeo.columbia.edu/core-repository/facilities>

<https://www.marum.de/en/Infrastructure.html>

# SCIENTIFIC SPECIALTIES ABOARD THE *JR*

Co-Chief Scientists

Expedition Project Manager

Stratigraphers

Geochemists (inorganic, organic)

Paleontologists (nannofossils, foraminifer)

Physical Properties specialist

Paleomagnetists

Downhole logging specialists

Petrologists

Onboard Outreach Officers

12-hour shifts (12 am – 12 pm, 12 pm – 12 am)





# TECHNICAL SUPPORT

X-ray laboratory officer

Marine instrumentation specialist

Senior Imaging specialist

Thin section laboratory

Paleomagnetism laboratory

Core laboratory

Marine computer specialist

Logging Engineer

Physical Properties laboratory

Curatorial Specialist

Underway Geophysics Laboratory

Chemistry Laboratory

Applications Developer

Operations Superintendent

Publications Specialist

# *JR* CREW MEMBERS (2-MONTHS, 12-HR SHIFTS)

Captain

1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> Mates

Seamen

Marine Engineers

Cooks

Housekeeping & Laundry

Ship Doctor

Drilling specialists & technicians







(Credit: William Crawford, IODP JRSO) [Photo ID: exp369\_152]



Smooth sailing!

Obrigado!

