CALL FOR SCIENTISTS
IODP Expedition 373
Antarctic paleoclimate and ice history from George V Land and Adélie Land shelf sediments

An IODP Mission Specific Platform Expedition organised by the

ECORD Science Operator (ESO)
www.eso.ecord.org

DEADLINE 31st August 2016

Applications are invited from scientists in countries participating in IODP to join the Science Party for IODP Expedition 373: Antarctic Cenozoic Paleoclimate. Any scientists from IODP countries who feel that their expertise is relevant to the objectives of the proposal may apply.

The proposal upon which this expedition is based was submitted as IODP Proposal #813 ‘Greenhouse to Icehouse Antarctic paleoclimate and ice history from George V Land and Adélie Land shelf sediments’. The full proposal and the addendum which describes the primary drill sites, as well as up-to-date expedition information, can be found on the Expedition 373 webpage http://www.eso.ecord.org/expeditions/373/373.php.

The Co-chief Scientists for this Expedition are Dr. Trevor Williams, Texas A&M University, and Dr. Carlota Escutia, Instituto Andaluz de Ciencias de la Tierra, Granada, Spain.

Background and Objectives

The George V and Adélie Land continental shelf of East Antarctica contains a record of Antarctica’s climate and ice history from the warm and vegetated landscapes of Eocene greenhouse climates to latest Eocene glacial inception and the dynamic ice sheet margins of the Oligocene. Because of the gently dipping strata and glacial erosion, sediments of a wide age range reach close to the sea bed and are accessible through shallow drilling by robotic seafloor drills.

The history of this Antarctic margin includes warm-world high-CO₂ environments, which will help to understand Antarctic climate and the limits of ice sheet stability under future global warming. Up to now there are extremely few well-recovered Eocene sediment sequences from Antarctica, and we aim to fill this gap in knowledge.

Drilling will investigate: 1. Antarctica’s climate during Early/Middle Eocene greenhouse warmth, including cyclicity, temperatures, and vegetation, to address the pole-equator temperature gradient and find possible evidence for DeConto’s permafrost hypothesis for hyperthermals; 2. Climate cooling over the late Eocene in advance of main glacial inception -
were there precursor glaciations? What conditions led to Antarctica becoming the ice-covered continent we see today? 3. The timing, environmental conditions, and extent of major ice advance at the Eocene/Oligocene boundary (~34 Ma), and the role of glacial isostatic adjustment (GIA) - e.g., relative sea level rise adjacent to expanding ice sheets; 4. Oligocene ice and climate conditions, which are only poorly known. It should be noted that the recovery of Oligocene sediments is uncertain at this time. If the primary sites are inaccessible due to ice conditions, partly equivalent strata can be drilled at alternate sites. Also, Cretaceous and Miocene to Pliocene sediments are available at alternate sites that could address additional objectives, such as to enable dating of strata bounding major unconformities that can result from glacial advances and GIA-related vertical crustal motion.

The expedition aims to drill, core, and log between eight and eighteen 50-m-deep boreholes on the George V Land and Adélie Land continental shelf of East Antarctica, using the British Geological Survey Rockdrill 2 (RD2), deployed from the RVIB Nathaniel B. Palmer, operated by the Lockheed-Martin Antarctic Support Contract (ASC) for the U.S. National Science Foundation’s United States Antarctic Program (USAP).

Timing

The offshore phase of the expedition will last 60 days from 24 December 2017 to 22 February 2018, with only a subset of the Science Party participating. Offshore activities will focus on core recovery, curation, sampling for ephemeral properties and biomarkers, biostratigraphy (in particular, palynology), physical properties, preliminary lithostratigraphy (whole core observed at core ends and through plastic liners), and downhole logging. The cores will not be split at sea. Please see http://www.eso.ecord.org/expeditions/msp.php for an overview of Mission Specific Platforms in IODP.

Subsequently, an Onshore Science Party (OSP) will be held at the MARUM - Center for Marine Environmental Sciences, University of Bremen, Germany, in Summer 2018 (exact dates to be confirmed), where the cores will be split. The OSP will be a maximum of 4 weeks long, the exact length dependent on core recovery. All members of the Science Party must attend the Onshore Science Party. Please see http://www.eso.ecord.org/expeditions/osp.php.

Successful applicants will be invited either as an offshore-onshore participant, or as an onshore-only participant.

Expertise sought

Opportunities exist for researchers (including graduate students) in all specialties. While other expertise may be considered, specialists in the following fields are required: paleontology, sedimentology, organic geochemistry, inorganic geochemistry, structural geology, paleomagnetics, physical properties, geophysics and petrophysics/downhole logging.
**Information webinar**

To learn more about the scientific objectives of this expedition, life at sea, and how to apply to sail, please join us for a web-based seminar on **Monday 29th August 2016 at 2pm BST (1pm GMT)**.

To participate in the webinar, you will need access to the internet with a computer equipped with a microphone and speaker. To register, please visit [https://www.surveymonkey.co.uk/r/IODP373](https://www.surveymonkey.co.uk/r/IODP373).

**Where to apply - IODP Program Member Offices**

Applications for participation must be submitted to the appropriate IODP Program Member Office – please see [http://www.iodp.org/expeditions/apply-to-sail](http://www.iodp.org/expeditions/apply-to-sail).

Applications should reach the appropriate Program Member Office no later than **Wednesday 31st August 2016**; candidates shortlisted by the Program Member Offices will be considered by ESO in winter 2016.

**For further details from ESO, please contact:**

David McInroy, ESO Science Manager, [dbm@bgs.ac.uk](mailto:dbm@bgs.ac.uk)