International Ocean Discovery Program

CALL FOR APPLICATIONS

Apply to participate in *JOIDES Resolution* Expeditions

Application deadline: 15 October 2017

Amundsen Sea West Antarctic Ice Sheet History
Expedition (379) 18 January to 20 March 2019

The West Antarctic Ice Sheet (WAIS) is largely marine-based, highly sensitive to climatic and oceanographic changes, has had a dynamic history over the last several million years, and if completely melted, could result in a global sea-level rise of 3.3-4.3 m. Expedition 379 will obtain records from the continental shelf and rise of the Amundsen Sea to document WAIS dynamics in an area unaffected by other ice sheets as well and that currently experiences the largest ice loss in Antarctica. The primary objectives include (a) reconstructing the Paleogene to Holocene glacial history of West Antarctica, (b) correlating the Amundsen Sea WAIS-proximal records with global records of ice volume changes and air/seawater temperature proxy records, (c) constraining the relationship between incursions of warm water masses onto the continental shelf and the stability of marine-based ice sheet margins, and (d) reconstructing major WAIS advances onto the middle and outer shelf, including the first ice sheet expansion onto the continental shelf of the Amundsen Sea Embayment and its possible control by the uplift of Marie Byrd Land.

Iceberg Alley Paleoceanography and South Falkland Slope Drift
Expedition (382) 20 March to ~20 May 2019

Expedition 382 aims to recover 600 m long Late Neogene sedimentary sequences from the Scotia Sea to reconstruct past variability in Antarctic Ice Sheet (AIS) mass loss, oceanic and atmospheric circulation and to provide the first spatially integrated record of variability in iceberg flux from Iceberg Alley, where a substantial number of Antarctic icebergs exit into the warmer Antarctic Circumpolar Current (ACC). This will (a) constrain iceberg flux during key times of AIS evolution since the Middle Miocene glacial intensification of the East Antarctic Ice Sheet, (b) provide material to determine regional sources of AIS mass loss, address interhemispheric phasing of ice-sheet and climate events, and the relation of AIS variability to sea level, (c) provide information on Drake Passage throughflow, meridional overturning in the Southern Ocean, water-mass changes, CO2 transfer via wind-induced upwelling, sea-ice variability, bottom water outflow from the Weddell Sea, Antarctic weathering inputs, and changes in oceanic and atmospheric fronts in the vicinity of the ACC, and (d) provide dust proxy records to reconstruct changes in the Southern Hemisphere westerlies to evaluate climate-dust coupling since the Pliocene, its potential role in iron fertilization and atmospheric CO2 drawdown during glacials. Expedition 382 will also core a sediment drift on the Falkland slope to obtain subantarctic multi-proxy intermediate water depth records of millennial to orbital scale variability in the ocean, atmosphere, nutrients, productivity and ice-sheet dynamics in the SW Atlantic through at least the last 1 Ma.

For more information about the expedition science objectives and the *JOIDES Resolution* Expedition Schedule see http://iodp.tamu.edu/scienceops/ - this includes links to the individual expedition web pages with the original IODP proposal and expedition planning information.

WHO SHOULD APPLY: Opportunities exist for researchers (including graduate students) in all shipboard specialties – including but not limited to sedimentologists, micropaleontologists, paleomagnetists, inorganic/organic geochemists, petrologists, petrophysicists, microbiologists, and borehole geophysicists.

WHERE TO APPLY: Applications for participation must be submitted to the appropriate IODP Program Member Office – see http://iodp.tamu.edu/participants/applytosail.html