



CALL FOR APPLICATIONS

IODP Expedition 357: Atlantis Massif Serpentinization and Life

An IODP Mission Specific Platform Expedition

Organised by the

ECORD Science Operator (ESO)

The European Consortium for Ocean Research Drilling (ECORD) Science Support and Advisory Committee (ESSAC) is accepting applications from scientists in ECORD member countries to join the Science Party for IODP Expedition 357: Atlantis Massif Serpentinization and Life. **EXTENDED DEADLINE to apply: 16 January 2015**

Background and objectives:

IODP Expedition 357 will address two exciting discoveries in mid-ocean ridge research: off-axis, serpentinite-hosted hydrothermal activity, exemplified by the Lost City Hydrothermal Field (LCHF) on the Atlantis Massif oceanic core complex (30°N, Mid-Atlantic Ridge); and the significance of tectono-magmatic processes in forming and exposing heterogeneous mafic and variably serpentinized ultramafic lithosphere that are key components of slow and ultraslow spreading ridges. Serpentinization is a fundamental process that controls rheology and geophysical properties of the oceanic lithosphere and has major consequences for heat flux, geochemical cycles and microbial activity in a wide variety of environments. However, we currently have no constraints on the nature and distribution of microbial communities in ultramafic subsurface environments.

This expedition will utilize seabed rock drill technology (MeBo and BGS Seafloor Rockdrill 2) to core a series of shallow (50-80 mbsf) holes along two profiles across the Atlantis Massif, where detachment faulting exposes both mafic and ultramafic lithologies on the seafloor, with the aim to:

1. explore the extent and activity of the subsurface biosphere in young ultramafic and mafic seafloor;
2. assess how abiotic and biotic processes change with aging of the lithosphere and with variations in rock type;
3. quantify the role of serpentinization in driving hydrothermal systems, and in sustaining microbiological communities, and in the sequestration of carbon in ultramafic rocks; and
4. characterise tectono-magmatic processes that lead to lithospheric heterogeneities and the evolution of hydrothermal activity associated with detachment faulting.

Timing:

It is anticipated that the offshore phase of the expedition will last 46 days in the period October-December 2015 (exact dates to be confirmed), with only a subset of the Science Party participating. Offshore activities will focus on core recovery, curation, sampling for ephemeral properties including

microbiological sampling and downhole logging. The cores will not be split at sea. Please see <http://www.eso.ecord.org/expeditions/msp.php>.

Subsequently, an Onshore Science Party (OSP) will be held at MARUM, University of Bremen, in early 2016 (exact dates to be confirmed), where the cores will be split, described and sampled. The OSP is expected to be 2-3 weeks long, the exact length dependent on core recovery. All members of the Science Party must attend for the whole duration of 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. The full proposal, as well as up-to-date expedition information, can be found on the Expedition 357 webpage <http://www.eso.ecord.org/expeditions/357/357.php>.

Expertise sought:

While other expertise may be considered, specialists in the following fields are required: sedimentology, microbiology, organic geochemistry, inorganic geochemistry, structural geology, igneous petrology, metamorphic petrology, paleomagnetism, geophysics and petrophysics/downhole logging.

Application Process for all ECORD member scientists: *Please send the ESSAC Office by email (essac.office@erdw.ethz.ch) the following documents, preferably as one PDF file:*

- The Apply to Sail general information form, which should be downloaded from the ESSAC webpage: http://www.essac.ecord.org/flyer/Apply_to_sail_webform_357.doc. Please fill out all applicable fields and save as PDF;
- A letter of interest outlining your specific expertise, previous involvement in DSDP/ ODP/ IODP expeditions, research interests, primary research goals of your proposed participation, and funding scheme/support from your institution or national funding agencies;
- CV and publication list.

Young researchers must additionally provide a letter of support from their host institution including information on post-cruise science support.

In addition to the ESSAC application, all applicants are required to inform their national office/ delegate and send a copy of the application documents. The national offices/delegates can also provide information regarding travel support, post-cruise funding opportunities, etc. See <http://www.essac.ecord.org/index.php?mod=about&page=ESSAC> for national contact information.

Applications should reach the ESSAC Office no later than **Friday 16th January 2015**; shortlisted candidates will be considered by ESO in February 2015.

For further details from ESO, please contact:

David McNroy, ESO Science Manager, dbm@bgs.ac.uk
Sophie Green, Expedition Project Manager, soph@bgs.ac.uk
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Or please contact the ESSAC Office:

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