

CALL FOR APPLICATIONS

for scientists based in ECORD Member Countries to participate in

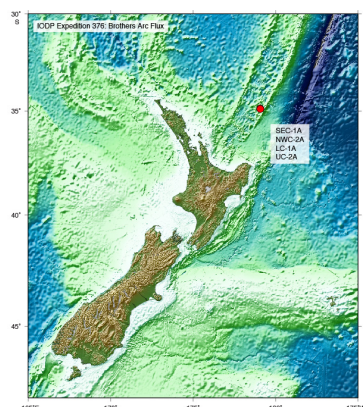
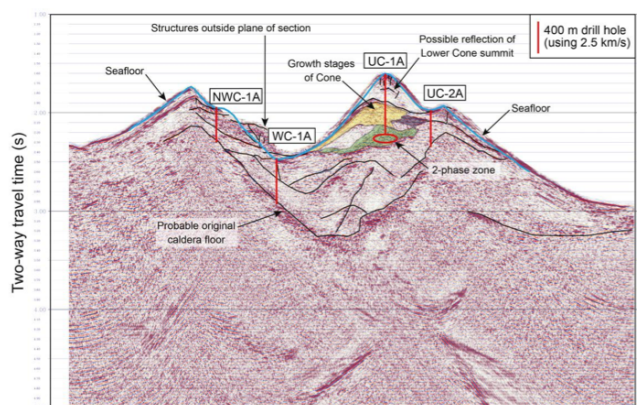
IODP EXPEDITION 376: Brothers Arc Flux

Gateway to the Sub-Arc Mantle: Volatile Flux, Metal Transport, and Conditions
for Early Life

on board the *JOIDES Resolution* May-July 2018

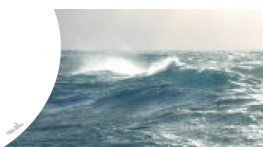
DEADLINE to apply: 1 April 2017

The European Consortium for Ocean Research Drilling (ECORD) offers you the unique opportunity to sail on Expedition 376 onboard the *JOIDES Resolution* in the framework of the International Ocean Discovery Program (IODP), an international research program for drilling at sea.



Expedition 376 will investigate the fundamental, interrelated processes governing subseafloor hydrothermal activity at Brothers volcano, southern Kermadec arc (IODP proposal 818-Full2). The primary objectives are to (1) Characterize the subsurface, magma-derived volatile phase for testing models predicting the existence of either a single-phase gas or a two-phase brine-vapor; (2) Explore the distribution of base and precious metals and metalloids at depth as well as the reactions that have taken place during their precipitation along fluid migration pathways to the seafloor; (3) Quantify the mechanisms and extent of fluid-rock interaction, and what this implies for the mass flux of metals and metalloids to the ocean as well as the role of magma-derived carbon and sulfur species in acting as agents for those fluxes; and (4) Assess the diversity, extent, and metabolic pathways of microbial life in an extreme, acidic, and metal-toxic (sub)volcanic environment.

The ultimate scientific goal of Expedition 376 is to discover the key processes that distinguish submarine arc-hosted hydrothermal systems from those linked to spreading centers, which results from the flux of magmatic fluid commonly being much higher in volcanic arcs. As a consequence of their shallow water depths and high volatile contents, the magmatic-hydrothermal arc signature gives rise to different fluid compositions and thus mineralization compared to submarine extensional settings. This likely also has consequences for the associated biota. Additionally, given the very acidic fluids and high metal concentrations, submarine arc hydrothermal systems are thought to be important analogs to porphyry copper, epithermal gold, and various volcanic rock-hosted massive sulfide deposits mined on land. Drilling Brothers volcano will provide essential information for understanding the formation of those mineral deposits and will also reconstruct the volcanic stratigraphy of this arc volcano.



Operations will focus on discharge zones of geochemically distinct fluids in and around the caldera of Brothers volcano by drilling and logging to 100s of m. The drill sites show variable impact of magmatic volatiles, which will enable the expedition to directly study the implications of magma degassing for the transport of metals to the seafloor and how this affects the functioning of microbial life.

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 that provide the original IODP proposal and expedition planning information.

Who should apply: Opportunities exist for researchers (including graduate students) in all specialties – including but not limited to sedimentologists, petrologists, structural geologists, paleontologists, biostratigraphers, paleomagnetists, petrophysicists, borehole geophysicists, microbiologists, and inorganic/organic geochemists.

The Application Process is open to scientists in all ECORD member countries. Please download the *Apply to Sail* general application forms from the ESSAC webpage:

- Form Expedition 376: <http://www.ecord.org/expeditions/apply-to-sail/>

Please, fill out all applicable fields and send it to the ESSAC office by email (essac@geomar.de) with the following additional documents until **1 April 2017**:

1. **A letter of interest** outlining your specific expertise, previous involvement in DSDP/ ODP/ IODP expeditions, research interests, primary research goals of your proposed participation.
2. **CV and publication list.**
3. **Young researchers** must additionally provide a **letter of support** from their host institution, including information on post-cruise science support.

All applications should state how you intend to achieve the proposed scientific objectives, with information on the funding scheme and support from your institution or national funding agencies. More information can be found under: <http://www.ecord.org/expeditions/apply-to-sail/>

In addition to the ESSAC application, all applicants must inform their national office or national delegate and send a copy of the application documents. The national offices or national delegates can also provide information regarding travel support, post-cruise funding opportunities, etc.

See <http://www.ecord.org/about-ecord/about-us/> for a list of the national contact persons.

For further information or questions, please contact the ESSAC Office:

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