SPECIAL CALL FOR APPLICATIONS

for **physical properties specialist** based in ECORD member countries to participate in

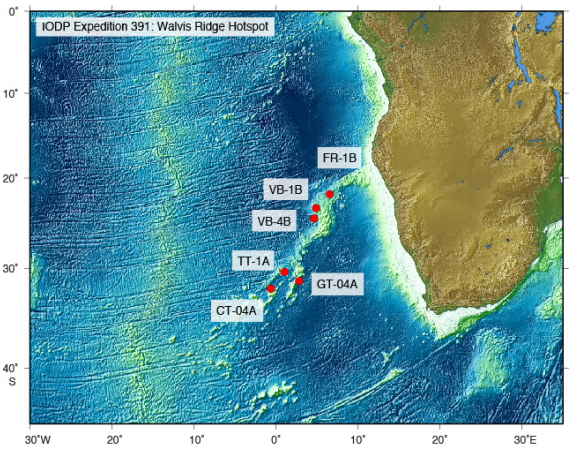
IODP Expedition 391: Walvis Ridge Hotspot
6 December 2021–5 February 2022

on-board the *JOIDES Resolution*

DEADLINE 6 August 2021

The European Consortium for Ocean Research Drilling (ECORD) offers you the unique opportunity to sail on Expedition 391 on-board the *JOIDES Resolution* in the framework of the International Ocean Discovery Program (IODP), an international research program for drilling at sea.

Background and Objectives



Expedition 391 is looking for a **physical properties specialist** to join the shipboard science party. We encourage applications from all qualified scientists, including graduate students. The JOIDES Resolution Science Operator (JRSO) is committed to a policy of broad participation and inclusion, and to providing a safe, productive, and welcoming environment for all program participants. Good working knowledge of the English language is required.

Walvis Ridge Hotspot Expedition 391 is a scientific ocean drilling project that seeks to understand the geodynamic significance and origin of the Walvis Ridge (WR), a long-lived hotspot trail that began ~132 Ma at the opening of the South Atlantic Ocean. Because of its duration and volcanic expression, WR is the most influential of Atlantic hotspots and is thought to have a deep mantle plume source that can be projected to the edge of the African large low shear wave velocity province (LLSVP), a hypothesized plume generation zone. The hotspot displays long-lived (since ~70 Ma) isotopic zonation, a characteristic thought to originate at the LLSVP edge, and may be the first example of a hotspot split into three isotopically distinct seamount

chains. The hotspot interacted with the Mid-Atlantic Ridge (MAR) for most of its early history, producing both the WR and Rio Grande Rise (RGR). Valdivia Bank, a WR plateau, may have formed with the RGR around a microplate, and this added complexity raises questions about simple plume models and the geodynamic implications of this hotspot trail.

Primary questions are **(1)** whether the chain splitting and isotopic zonation are consistent with magma sourced at the LLSVP edge and what are the implications for the plume generation zone; **(2)** whether the chain is strictly age-progressive or whether there were plume pulses, microplates, or continental fragments involved; and **(3)** what do the expected large shifts in paleolatitude tell us about the fixity and geodynamics of this hotspot.

Expedition 391 is based on IODP Proposals 890-Full2 and 890-Add and will primarily target basaltic lava flows at six primary sites along the older portion of the ridge (~60, ~85, ~110 Ma) to test hypotheses about mantle plume zonation, hotspot drift, and the formation of Walvis Ridge. Basalt samples will be analyzed to document the geochemical and isotopic evolution of Walvis Ridge, especially its division into three isotopically distinct zones after ~60-70 Ma. High-precision geochronology will test models of ridge-hotspot interaction and examine the duration and stages of volcanism at individual sites. Finally, paleomagnetic measurements on igneous samples will constrain paleolatitude changes of seamounts along Walvis Ridge, allowing for more rigorous testing of models of hotspot motion and true polar wander.

For more information about the expedition science objectives, please see the Scientific Prospectus and its Addendum: http://publications.iodp.org/scientific_prospectus/391/index.html
and http://publications.iodp.org/scientific_prospectus/391/391SPADD/index.html

Expertise sought

We encourage applications from researchers (including graduate students) that could fill the role of an on board physical properties specialists. The JOIDES Resolution Science Operator (JRSO) is committed to a policy of broad participation and inclusion, and to providing a safe, productive, and welcoming environment for all program participants. Opportunities exist for Good working knowledge of the English language is required.

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:

http://www.ecord.org/expeditions/apply-to-sail/

Please, fill out all applicable fields and send it to the ESSAC office by email (essac@plymouth.ac.uk) with the following additional documents by the deadline of **6 August 2021**:

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. Early career 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 your 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 them a copy of their 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.

COVID-19 PROTOCOL: The JRSO has created a protocol to safely operate during the COVID-19 pandemic. If pandemic conditions have not improved by mid-2021, the expedition may need to sail with a reduced shipboard contingent. However, all participants will maintain their designation as science party members regardless of whether they sail or not, and will have equal access to all expedition data and core materials. The protocol is available here:
http://iodp.tamu.edu/scienceops/JR_COVID-Mitigation-Protocols.pdf

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

ECORD Science Support & Advisory Committee
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