


CHALLENGER 150

Year 2 Highlights

CELEBRATING

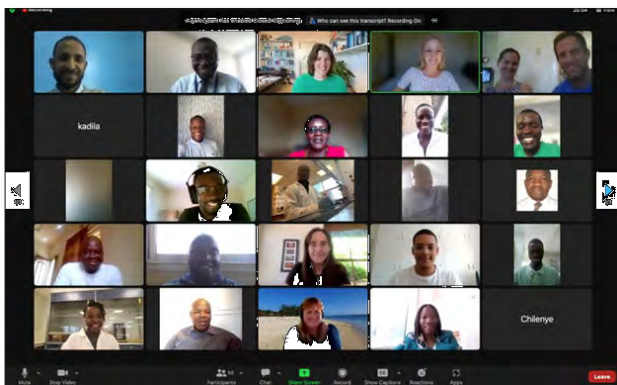
RESEARCH
27
CRUISES



OCEAN
15
BASINS

This year the Challenger 150 cooperative has focused its efforts on training and capacity building, while continuing to make new biological observations of the global deep ocean. Our amazing network of scientists is growing and supporting one another to build understanding of deep-sea ecosystems. Our Regional Scientific Research Working Groups are reviewing the state of knowledge of the deep-sea in each ocean basin, and developing coordinated research plans to fill data gaps.

The African Network of Deep-water Researchers was launched with a vision to advance deep-sea research in Africa through collaboration, coordination, knowledge exchange, capacity development and fair partnerships. To date there are 231 members from 27 African nations, representing over 140 institutions and 76% early career researchers! The network will work together to produce a strategy for developing capacity in deep-sea research in Africa. [Click here](#) to learn more!



The deep Arctic Ocean is one of the least studied and fastest warming regions on Earth. Reduced sea-ice and better access for new human activities is predicted to impact the arctic marine ecosystem. The Arctic Scientific Regional Working Group and partners organised a Deep Arctic ecosystems for a Sustainable Central Arctic Ocean

(DASCAO) workshop in March 2023, gathering an international team of natural and social scientists to discuss the current knowledge on the deep Central Arctic Ocean and plan for future actions to promote a thorough understanding of the composition and processes that support a healthy deep Arctic Ocean.



The megafaunal image-based working group published “An Ecologists Guide to BIIGLE”, to help people get started using the free online annotation software BIIGLE. An online training session gave people hands-on experience and suggested a standard way to analyse benthic imagery. The session supported 62 people from 19 countries, and from all career stages. The group plans to hold further sessions in Year 3, as well as workshops to help establish and agree standards in morphospecies classification.





MEET SOME OF THE TEAM

WORKING TOGETHER ACROSS FIVE OCEAN BASINS



1 Western Tropical Atlantic and Eastern Tropical Pacific

Prof. Elva Escobar-Briones (RSR-WG Co-coordinator) is based at the Universidad Nacional Autonoma de Mexico. Elva has led long-term ecological research in the central Gulf of Mexico and investigates deep-sea life in active seafloor areas.



Prof. Erik Cordes is at Temple University in Philadelphia PA and studies the ecology and management of cold-water coral and cold-seep ecosystems.



2 North Atlantic

Prof. Louise Allcock (RSR-WG co-ordinator) is a deep-sea biologist based at University of Galway in Ireland. Louise's expertise in molecular systematics informs faunal identification in support of all aspects of deep-sea conservation.



SELECTION OF EXPEDITIONS

4 AleutBio

In July 2022, a team led by **Prof. Dr Angelika Brandt** boarded the German research vessel *RV Sonne* for the AleutBio (Aleutian Trench Biodiversity Studies) expedition. Their mission was to study the biodiversity associated with the soft sediment floor and deep-water column, in the Aleutian Trench itself and along the north and south ridges of this canyon.



This expedition collected new scientific data from the poorly studied South Atlantic deep sea. The aim of the research cruise was to investigate how key habitats and species found within the biodiverse and near pristine Exclusive Economic Zones (EEZs) and Marine Protected Areas (MPAs) of Ascension and St Helena islands function.

the Northwestern Hawaiian Islands (NWHI) and the Emperor Seamount Chain (ESC) were explored with the *ROV Jason II* on board the *RV Kilo Moana* as part of an NSF-funded research cruise.



knowledge for better management of South Africa's oceans. The aims of this cruise were for young researchers and postgraduate students from South Africa and Namibia to develop skills in offshore research, collect data to support their studies and to build the research teams needed to solve the changes associated with developing a sustainable oceans economy. The cruise established the record for the deepest lander dive in South Africa, reaching a depth of 1036 meters. Learn more [here](#).

also conducted ecosystem research in submarine canyons, at dense glass sponge habitats and in unexplored slope habitats on south Africa's eastern margin.

return the seafloor and the water column. Read more about the project [here](#).

9 Corals and Sponges as Biological Hotspots of Reactive Oxygen Species in the Mesophotic to Deep Sea

Led by **Colleen Hansel, Santiago Herrera, Ann Tarrant, Scott Wankel**, this Schmidt Ocean Institute partner cruise focused on evaluating reactive oxygen species production by mesophotic and deep-sea corals, and its role in mediating ecological interactions. The data collected will provide key insight into the controls on coral health and how corals defend themselves from stress.



3 Blue Belt DY159



5 Defying Dissolution: Unravelling the Enigma of North Pacific Deep-Sea Scleractinian Reefs in Under-saturated Water

This expedition led by **Amy Baco-Taylor, Brendan Roark, and Katie Shamberger** aimed to learn more about how deep-sea scleractinian reefs can exist under the harsh carbonate chemistry conditions of the North Pacific. Newly discovered in



6 Capacity building for deep-sea science in South Africa

SANBI and the One Ocean Hub project undertook a research expedition to advance capacity, technology, and multidisciplinary



7 Deep Connections

The Deep Connections project is led by **Dr Kerry Sink** of the South African National Biodiversity Institute. This most recent cruise focused research at Sodwana Bay and Pumula where coelacanths have been observed. In addition to the coelacanth, the cruise

8 Advancing knowledge of methane in the Arctic (AKMA 3)



Led by **Giuliana Panieri** and in partnership with REV Ocean, this research cruise focused on understanding how methane is produced, consumed and utilised by benthic organisms and how it affects in





BUILDING GLOBAL CAPACITY FOR DEEP-OCEAN SCIENCE

Capacity building for deep-ocean science in Costa Rica



To contribute meaningfully to transformative change in Central America, an intensive two-week Deep Ocean course was held at the University of Costa Rica in 2023. Aimed at graduate and undergraduate students from different disciplines, and conducted in Spanish, those attending appreciated the mentorship and interaction in their own language, feeling motivated and informed while sharing deep-sea knowledge. The Scientific Committee on Oceanic Research's (SCOR) Visiting Program funded this event, recognising the course's linkage with its own Roadmap for a Standardised Global Approach to Deep-Sea Biology for the Decade of Ocean Science for Sustainable Development (SCOR Working Group 159), as well as with the Challenger 150 UN Ocean Decade programme. The University of Costa Rica is among partners committed to the UN Ocean Decade project 136.2: 'Enhancing capacity development in the TAC Region', in association with the Joint Exploration of the Twilight Zone Ocean Network (JETZON) programme.



Capacity building for deep-ocean science in Canada working with coastal First Nations

Cooperation is essential for capacity building, ensuring the resulting co-created science and policy advice reflects jointly made priorities and discoveries, traditional ecological knowledge, and different ways of knowing (such as Indigenous oral history and art). In June 2022, an expedition team consisting of the Council of the Haida Nation, the Nuu-Chan-Nulth Tribal Council, Fisheries and Oceans Canada, and Ocean Networks Canada, visited ecologically and culturally significant seamounts and hydrothermal vents within the Tang.gwan – ɥačxwíqak – Tsigis and SGaan Kinghlas-Bowie Marine Protected Areas. This collaborative expedition was endorsed by the UN Ocean Decade and Challenger 150. The team was especially proud of the progress they made during this expedition on their joint mapping project, where new discoveries were named by coastal First Nations in their Indigenous languages, honouring the UN Declaration on the Rights of Indigenous Peoples and the International Decade of Indigenous Languages. [Click here](#) to learn more.



To learn more about the Challenger 150 Ocean Decade Programme and its Global Activities, scan the QR code or contact:

Prof. Kerry Howell at the University of Plymouth, UK (kerry.howell@plymouth.ac.uk)

Dr Ana Hilário at the University of Aviero, Portugal (ahilario@ua.pt)

