December 2025

Challenger Wave

Monthly newsletter of the Challenger Society for Marine Science (CSMS)

NEWS

Ocean in coastal areas becoming more acidic than previously thought

New research from the university of St Andrews has found that some coastal areas will become much more acidic than previously anticipated. As a result of the tight coupling between atmospheric CO_2 and ocean pH (acidity), the more CO_2 that is released into the atmosphere, the more is absorbed by seawater, making the ocean progressively more acidic. However, in a paper published in Nature Communications, researchers, using the California Current as an example, show that oceanic upwelling systems actually amplify ocean acidification.

Upwelling systems are among the most productive systems on our planet and support much of the world's fisheries. Understanding how they respond to rising CO_2 is therefore not only critical for ocean science, but also carries major implications for fisheries and their potential vulnerabilities. Co Author Dr Hana Jurikova,

Senior Research Fellow in the School of Earth and Environmental Science, said: "Predicting how upwelling systems will respond to climate change is highly complex, as anthropogenic influences interact with natural sources of ocean acidification. Our research shows that such interactions can amplify environmental change in the California Current System, highlighting the need for similar studies in other regions to better anticipate future change."

Upwelling is where nutrient rich and already acidic waters from deep in the oceans rise along the coast. When organic matter from the surface ocean sinks to the deep ocean, microbes gradually break it down in a chemical reaction that releases CO_2 and increases seawater acidity. When this deep water upwells, it brings the acidity to the surface, where it further reacts with the atmospheric CO_2, which makes these water masses even more acidic. The researchers used historic coral samples and boron isotope signatures recorded in their skeletons to reconstruct how acidity changed over the 20th century, and then applied a regional ocean model to predict how acidity will change during the 21st century. The study showed that in these upwelling regions of the ocean, ocean acidification outpaces the level "expected" from rising atmospheric CO_2 alone. This is because the upwelled water masses are acidic to start with and anthropogenically rising CO_2 exacerbates the acidity.

The California Current can be used as an example of other upwelling systems. Other important areas of coastal upwelling around the world include the Humbold Current off the coast of Peru or the Benguela and Canary Currents off the coast of west Africa. Co Author Professor

James Rae, School of Earth and Environmental Science, said "the ocean becoming more acidic poses major risks to marine ecosystems and the communities and economies they support. The solutions we now have for climate change, like heat pumps and electric vehicles, also fix ocean acidification, so it's critical that we support them".

New Deep-Sea Coral Found Living on Nodules Targeted for Mining

An international research team led by Dr. Guadalupe Bribiesca-Contreras from the National Oceanography Centre (NOC) and Senckenberg scientist Dr. Nadia Santodomingo

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have discovered a new species of deep-sea coral that lives attached to polymetallic nodules, the same mineral-rich rocks that are the focus of growing international interest for deep seabed mining. The coral, *Deltocyathus zoemetallicus* now described in a new study published in the Zoological Journal of the Linnean Society, was found more than 4,000 metres below the surface in the Clarion–Clipperton Zone (CCZ) of the Pacific Ocean. This is the first known hard-coral species to live directly on these nodules. The nodules grow extremely slowly, only a few millimetres over thousands of years. If mining were to remove them, this newly discovered species could lose its only known habitat, potentially before we fully understand its biology or ecological role.

Deltocyathus zoemetallicus Abb1_PM Tiefseekoralle Bribiesca-Contreras et al, 2025

The deep ocean floor was once thought to be flat, muddy, and largely lifeless, however we now know it hosts a wide range of habitats and rich biodiversity. But the deep sea is also increasingly under threat, from challenges such as climate change, pollution and deep-sea mining, underscoring the importance of continued research on deep-sea habitats and the species that reside within them. The team of researchers have described this new species of azooxanthellate scleractinian coral in the deep eastern Pacific Ocean.

Its name, *Deltocyathus zoemetallicus*, reflects the unique habitat of this animal, living directly attached to polymetallic nodules (*zoemetallicus*: *zoe* = life, *metallicus* = metal). The coral was discovered at depths between 4,150 and 4,250 meters in the CCZ, a vast stretch of seafloor between Hawaii and Mexico. The CCZ holds the world's largest known deposits of polymetallic nodules, potato-sized lumps rich in manganese, nickel, cobalt, and other critical metals used in electric vehicle batteries and renewable energy technologies.

"This tiny coral is a hidden gem of the abyss," says Dr. Nadia Santodomingo, the Head of Marine Invertebrates Section at the Senckenberg Research Institute and Natural History Museum Frankfurt and one of the researchers behind the discovery. "It lives directly on the nodules that mining companies are preparing to extract. If these nodules are removed, we risk wiping out an entire species we have only just found."

Unlike shallow-water corals that often host symbiotic algae, who in return provide nutrients for the coral via sun-dependent photosynthesis, *Deltocyathus zoemetallicus* survives in total darkness. This species is an azooxanthellate scleractinian, meaning it lacks an algal partner to provide nutrients, instead feeding on particles that are drifting through the water. Using box corers during three expeditions onboard the OSV *Maersk Launcher* and one expedition on board the RRS *James Cook*, scientists carefully collected the new coral specimens and their nodule homes. The team then analyzed the animals using high-resolution imaging and 3D micro-CT scanning to confirm that it represents a species new to science.

Scleractinian corals, also known as stony corals, are marine animals that build hard skeletons made of calcium carbonate. While most people associate them with shallow tropical reefs, many species, such as *Deltocyathus zoemetallicus*, live in the deep sea, where sunlight never reaches. The deepest specimens of this new species were collected at a depth where calcium carbonate dissolves, known as the carbonate compensation depth. This means that they have to have special adaptations to be able to actively maintain their hard skeletons in waters this deep. Corals of the genus *Deltocyathus* are found in every ocean basin except the Arctic and around Antarctica. They typically inhabit depths between 200 and 1,000 meters, with the deepest known species recorded at 5,080 meters. Most *Deltocyathus* species are free-living, meaning they sit lightly atop the seafloor sediments, with the exception of the Atlantic species *Deltocyathus halianthus*

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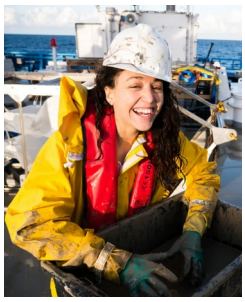
and now *Deltocyathus zoemetallicus* which attach to hard substrates. The newly discovered coral's attachment to polymetallic nodules marks a unique ecological relationship, the first of its kind documented for any deep-sea scleractinian. Because nodules grow only a few millimeters over thousands of years, removing them through mining would not only destroy the coral's habitat but also eliminate the possibility of recolonization.

"This discovery underscores how little we know about life in the deep sea," says Dr. Guadalupe Bribiesca-Contreras, lead author and Applied Scientist at NOC. "Every new species we find reminds us that the ocean floor is a living ecosystem and we still have so much research to do to explore and understand it fully." As governments and companies move closer to authorizing commercial mining in the CCZ, the discovery of *D. zoemetallicus* adds to the growing evidence that these abyssal ecosystems host unique, vulnerable, and still largely undiscovered biodiversity. "Protecting these habitats is not just about saving one coral," adds Dr. Santodomingo. "It's about preserving an entire world of deep-sea life that may vanish before we even know it exists."



The seamounts of Cabo Verde, hotspots of biodiversity and a priority for marine conservation in the central-eastern Atlantic

An international team led by Dr Covadonga Orejas, a senior researcher at the Gijón Oceanographic Center of the Spanish Institute of Oceanography (IEO-CSIC), Prof Veerle Huvenne, a Research Leader at the National Oceanography Centre (NOC), and Prof Jacob González-Solís, a professor at the University of Barcelona, has published the first focused study integrating all existing knowledge about the seamounts of the Cabo Verde archipelago, including biodiversity, ecological role, and socio-economic relevance.

These volcanic formations, comprising at least fourteen large seamounts and numerous smaller elevations, stand out as true oases of life in the deep ocean by concentrating nutrients and shaping current circulation, thereby supporting exceptional biological diversity from microorganisms to deep-sea coral sponge communities, sharks, sea turtles, seabirds, and cetaceans. Their position between the temperate North Atlantic and the tropical South, further enhances their productivity and ecological connectivity, reinforcing their role as hotspots of marine life.

"The seamounts of Cabo Verde are essential refuges for many species, and this study highlights the importance of a multidisciplinary approach to understanding the relationships between geology, oceanography, and biology, as well as the need to include socio-economic aspects in this type of review work," explains Dr Covadonga Orejas.

Humpack Whale SalRei Boavista Jacob Gonzalez-Solis 2022

"Understanding how seamounts function is key to planning their protection and ensuring the sustainable use of their marine resources," adds Prof Veerle Huvenne, a senior author on the paper.

"From the perspective of a Civil Society Organisation, knowledge about seamounts is crucial to strengthening marine spatial management and promoting the conservation of natural resources in Cabo Verde. These deep-sea ecosystems act as key biodiversity areas and provide strategic information to guide public policies and marine spatial planning. In a country where protected areas are currently limited to coastal zones, the study of seamounts paves the way for more integrated and comprehensive conservation efforts. This knowledge also enhances the capacity of organisations and local communities to actively participate in the governance and sustainable protection of ocean resources.", notes Herculano A. Dinis, Executive Director Associação Projecto Vitó in Cabo Verde.

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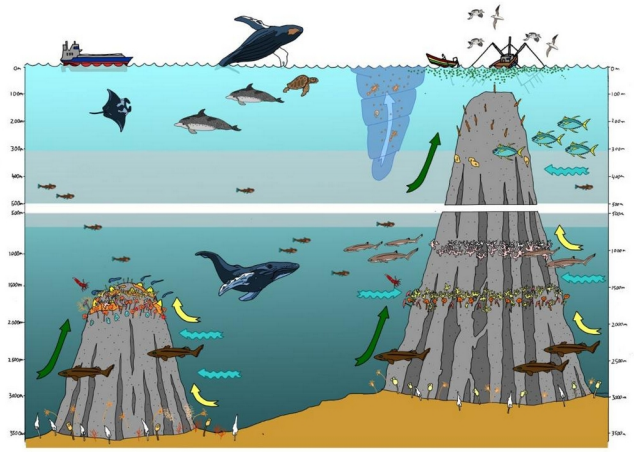
The article analyses not only the biological richness of these ecosystems but also the associated human uses, especially artisanal and industrial fishing, and the emerging risks linked to maritime traffic and the potential expansion of deep-sea mining. “These seamounts are critical to the health and wellbeing of Cabo Verde’s oceans and people. Their cultural and economic importance is reflected in strong community support for their conservation which underlines the necessity for Cabo Verde’s Government to develop a sustainable blue economy and achieve its international treaty targets” noted Gillian Ainsworth, Postdoctoral Researcher based in the EqualSea- CRETUS Lab at the University of Santiago de Compostela.



Benthic communities of Cadamosto Seamount by Autun Purser

The seamounts of Cabo Verde thus represent enclaves of exceptional ecological and strategic value for marine conservation. In this context, the study underlines the importance of incorporating them into national marine spatial planning strategies and the country's networks of marine protected areas. Several studies have demonstrated that many of these seamounts meet the international criteria for recognition as Vulnerable Marine Ecosystems (VMEs) and Marine Ecologically or Biologically Significant Areas (EBSAs), due to their key role in productivity, ecological connectivity, and the maintenance of ocean biodiversity.

The study involved over 40 researchers from 20 institutes across Europe, Africa, and the Americas, and was supported by a wide range of funding sources. IEO-CSIC, the main coordinator of the work, was primarily funded by the European projects iAtlantic, which concluded in 2024, whereas the UB coordination was mainly funded by the European project REDUCE. The Hanse Wissenshaftskolleg Institute for Advanced Study, through its Study Group led by Covadonga Orejas and Veerle Huvenne, also contributed to this review. “As a State Party to the 30 x 30 Commitment for Biodiversity and the High Seas Treaty, Cabo Verde has the opportunity to position these seamounts as priority areas for conservation and sustainable management, thus reinforcing its regional leadership in the protection of the marine environment and in compliance with international objectives for biodiversity conservation and sustainable development,” explains the other senior author on the publication, Jacob González-Solís, Professor at the Biodiversity Research Institute (IRBio) and the Department of Evolutionary Biology, Ecology and Environmental Sciences, University of Barcelona.

New research connects ocean salinity to atmospheric pressure and storm patterns

Led by Dr Jeremy Grist at the National Oceanography Centre, researchers have uncovered how changes in ocean salinity could create ripples in the atmosphere and impact weather patterns. They found that increased freshwater in the subpolar gyre leads to colder sea surface temperatures, lower atmospheric pressure over the eastern North Atlantic and East Asia, and causes more storms and rainfall across parts of Eurasia.

The team, which includes scientists from the University of Southampton, University of Exeter, and the Indian Institute of Technology, have published their findings in the Journal of Climate in a new paper, ‘The impact of a North Atlantic freshwater anomaly on a Eurasian winter climate’.

Dr Grist said: “The results here have established that in a complex climate model, a freshwater anomaly in the subpolar gyre can lead to significant downstream weather impacts on a seasonal timescale. This highlights that it is important to have accurate estimates of not just ocean temperature, but also ocean salinity when initiating coupled seasonal forecasts. The results are also particularly relevant as, in the future, melting of Arctic Sea-ice or the Greenland Ice Sheet could lead to large salinity reductions in the subpolar gyre.”

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Tidewater glacier calving into Alaskan Bay

The study, funded by UKRI project ArctiConnect, tested the theory in experiments conducted using a version of the UK's climate model, which involved artificially imposing a large autumn reduction in salinity to the subpolar gyre at the start of a six month model simulation. This enabled the team to clearly identify the chain of events that resulted from this North Atlantic freshwater anomaly.

Study measuring the impacts of a deep-sea mining machine finds the abundance of animals at the site decreased by 37%

The team also found that the trial of a deep-sea mining machine caused a 32% reduction in species richness, the number of different species in a particular area. The seafloor communities were also found to change naturally over time, likely caused by changes in the amount of food reaching the seafloor. The study, led by scientists from the Natural History Museum, University of Gothenburg and National Oceanography Centre, used the largest species-level macrofaunal dataset yet published for any abyssal region. The results of the study provide critical new evidence for forthcoming policy decisions on deep sea mining.

This new report reveals the results of a study exploring biodiversity in a region targeted for seabed mining, capturing baseline data, tracking natural changes and assessing the impacts of a polymetallic nodule mining machine. This represents the largest study of the impacts of deep-sea mining on seafloor animals. Taking into consideration natural fluctuations, the study found that after the trial, there was a 37% reduction in the number of macrofaunal animals living within the sediment directly impacted by the tracks of the deep-sea mining machine. Macrofaunal animals are organisms visible to the naked eye (0.3 mm – 2 cm in size) such as polychaete worms, crustaceans, snails and clams. No impact on animal abundance was detected in regions covered by a sediment plume from the mining machine.

The research was led by scientists from the Deep-Sea Research Lab at the Natural History Museum and co-led by the University of Gothenburg and National Oceanography Centre. The project took five years to complete, with the team spending over 160 days at sea in the Pacific and three years of careful analytical work in the laboratory. Eva Stewart, lead author and PhD student at the Museum and University of Southampton, said, "Being able to study these remote and poorly known deep-sea regions is extremely important as we consider the potential impacts of deep-sea mining. Finally, we have good data on what the impacts of a modern commercial deep-sea mining machine might be. We have also discovered many new species and shown how the abyssal ecosystem changes naturally over time."

The paper, 'Impacts of an industrial deep-sea mining trial on macrofaunal biodiversity' is published in the journal Nature Ecology and Evolution. DOI: 10.1038/s41559-025-02911-4. The research team collected this information to ensure vital biodiversity data is available to everyone who has a stake in decisions on the sustainability of deep-sea mining, from the regulator to environmental pressure groups. The study was primarily funded by a contractor, required to commission independent research for all stakeholders, with additional funding from the UK Government (Natural Environment Research Council) for the co-funding of a PhD studentship award. All data in this paper is freely available for all stakeholders to study.

Merging science and local knowledge to tackle climate adaptation

That's according to research conducted by scientists from the National Oceanography Centre (NOC) together with research partners from Africa and the Pacific, who have published their collaborative study in 'Regional Environment Research'. The paper 'The ethno-oceanography of Tanzanian coastal fisherman: implications for coastal management' integrates climate science, oceanography and anthropology

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to understand where indigenous and local ecological knowledge aligns with or diverges from scientific interpretations, highlighting pathways for more inclusive and effective coastal management.

By combining community insight with research, the findings show how planning can become more relevant, culturally grounded, and widely supported. The study also reveals that local communities respond best to practical solutions tackling immediate threats like destructive fishing, habitat loss, and dwindling catches. NOC's Katya Popova, a senior research fellow, co-authored the paper which is based on research funded by the Global Challenges Research Fund Project 'SOLSTICE'. She said: "This work exemplifies the spirit of the UN Ocean Decade, demonstrating how combining natural and social sciences with locally embedded understanding can lead to more inclusive and effective pathways for sustainable ocean governance.

Members of the project team interview local fishermen in Tanzania

Research for the paper included participatory mapping, interviews, and household vulnerability surveys across several Tanzanian communities. The team then compared local observations of environmental change with ocean and climate models, including El Niño and Indian Ocean Dipole events, in addition to emerging signs of anthropogenic climate change. The results show that fishers are highly attuned to seasonal and multidecadal variability but may not yet distinguish longer-term anthropogenic climate trends, which are expected to become more visible in coming decades.

Landmark Global Environment Outlook 7 Report launches at UNEA-7

The United Nations Environment Programme (UNEP) has unveiled 'The Global Environment Outlook, Seventh Edition: A Future We Choose (GEO-7)' at the United Nations Environment Assembly (UNEA-7). This flagship report is designed to inform strategic decision-making across governments, industries, and civil society and represents the most comprehensive scientific assessment to date focusing on the current state and future trends of the global environment.

The National Oceanography Centre (NOC)'s Dr Catia Domingues contributed to the report's chapter on 'Oceans and Coasts' – providing vital insights into the ocean, which is considered the Earth's greatest climate regulator. The GEO-7 report reinforces concern that the ocean is reaching critical limits, which will have long-lasting impact on the planet we know today. Catia, a senior researcher at NOC, said: "The ocean is undergoing unprecedented physical and biogeochemical transformation. The GEO-7 report emphasises the urgent need to take action. Rapid emission reduction is essential to decrease changes and to limit the resulting impact. This will help to safeguard marine life, stabilise the climate and protect human livelihoods."

The GEO-7 report brings together the voices of 287 experts from 82 countries, with contributions from more than 800 reviewers worldwide. This includes scientists, industry leaders and, for the first time, Indigenous and local people. While it highlights environmental and climate challenges, it has also outlined practical pathways for action and explores future scenarios to consider and illustrate the benefits of taking proactive action.

Roger Bamber Research Grant 2026

The Porcupine Marine Natural History Society is pleased to announce an opportunity to apply for funding for small research projects. Up to £1000 is available for small standalone projects to be undertaken during the 2026 field season. Applications will be considered for any small project which falls within the objectives of the Society. Projects may be field-based or pursued in a laboratory or museum. The projects could

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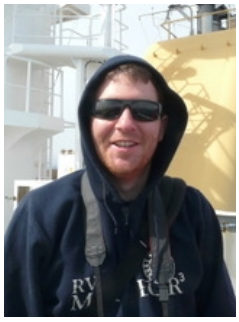
vary from a detailed study of a particular taxon of interest to conservation or monitoring study of a particular site or habitat. The purpose of any project would be to make information more accessible to the wider community, and therefore a written summary (e.g. a report for the Bulletin) of any work undertaken will be expected. The fund may be used for research costs (e.g. travel, subsistence, bench fees, consumables). We do not fund staff costs or the purchase of large items of equipment. See the Application Guidance document for more information.

Applicants should be members of the Porcupine Marine Natural History Society (you may join the society to be eligible). These grants are open to all, irrespective of employment status and experience. All proposals will be assessed by an experienced panel. The Council reserves the right not to grant any projects in any one round of applications. Applications must be submitted by **31st January 2026**, late applications will not be admitted. Please send applications or any queries to the Porcupine Marine Natural History Society via email to grantsawards@pmnhs.co.uk

The Chris Daniels Award

The Chris Daniels award is dedicated to the memory of a talented scientist and dedicated young researcher whose career never reached its full potential because he passed away in November 2018 at the age of 31. Chris joined GEOTRACES at the British Oceanographic Data Centre in January 2017 and was tasked with addressing how best to approach significant updating of the GEOTRACES dataset. Chris became ill shortly afterwards and was unable to complete the task himself, but even in this short time, he brought a new approach, with dedication and enthusiasm.

Chris had interests outside of his role within GEOTRACES, and during his Ph.D and postdoctoral work he participated in large UK projects such as Ocean Acidification and Shelf Sea Biogeochemistry, and took part in a number of research cruises. He had an outstanding publication record for an early-career researcher. Through his contribution to the Challenger Society, Chris consistently advocated for early-career researchers. He was involved in setting up the first Challenger 'Diversity in Marine Science' event, which aimed to tackle some of the issues around early career researchers and diversity in marine science. He was a very active member of the Challenger Society, attending every biennial conference and every relevant special interest meeting that took place during his career. His main academic passion was studying coccolithophores and calcite production; he was particularly fond of *Coccolithus pelagicus.*



The Chris Daniels Early-Career Grant aims to provide an opportunity for motivated early-career researchers (ECRs) to create or establish a forum to discuss specific challenges and resources relevant to ECRs in the field of marine science. The award will fund to up to £1000 to the successful applicant to organise a stand-alone early-career workshop or to attach an event to an already existing conference. The funding can go towards covering the costs of the space and/or catering services and/or travel support. It is expected that the successful applicant will advertise the Challenger Society at the event, and provide a report of the event to be published and publicised through the Challenger Society within three months of the event. This opportunity is open to Challenger Society members inside and outside the UK. For more information go to https://challenger-society.org.uk/awards-and-grants/chris-daniels-early-career-grant/.

Join the MAST Scotland Board as a Trustee

The marine environment is facing unprecedented pressure, from climate change and biodiversity loss to pollution and resource exploitation. As these challenges intensify, the need for informed, agile, and well-rounded leaders in marine science has never been greater. The next generation of ocean professionals must be equipped not only with deep scientific expertise, but also with the interdisciplinary, digital, and collaborative skills required to navigate a rapidly changing world. The Marine Alliance for Science and Technology Scotland (MASTS) recognises that the future of marine research demands new capabilities and approaches. We are committed to nurturing a resilient, innovative, and inclusive community of researchers who can respond to evolving environmental, societal, and technological demands.

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Could your experience in fundraising or investment help secure long-term support for Scotland's next generation of ocean leaders ? Help shape the future of marine research and education in Scotland. MASTS is seeking to appoint two new Trustees to join the Board of its registered charity and Company Limited by Guarantee, MAST-Scotland, in **Spring 2026**. This is a unique opportunity to contribute to the long-term sustainability of marine research and education in Scotland by supporting the development of a new Endowment Fund to secure the future of the MASTS Graduate School.

We encourage anyone interested in applying to first contact the MASTS Directorate for an informal conversation. Following these initial discussions, the MASTS Directorate and members of the MAST-Scotland Board will review expressions of interest. Suitable individuals will then be invited to submit a covering letter outlining their motivations and relevant experience. If you are interested, please email MASTS@st-andrews.ac.uk. We anticipate welcoming our new board members early spring 2026.

Recruitment Notice for DSIT College of Experts

The Department for Science, Innovation and Technology (DSIT) has opened applications to join its College of Experts, a prestigious, independent network that provides impartial, strategic scientific and technical advice to shape national policy and programmes.

- Members contribute up to 5 days per year to support DSIT's research and evidence needs.
- Information session: Monday 15 December 2025, 16:00.
- Apply / learn more: https://www.civilservicejobs.service.gov.uk/csr/jobs.cgi?jcode=1979112
- Deadline: **Friday 16 January 2026.**

Please share this opportunity across your networks and consider applying if you have relevant expertise. If you have questions, please use the contact details on the application page.

Distance Learning, Delve Deeper with Newcastle University

A distance learning course in Marine Biology. This six-month programme explains the biology and ecology of marine organisms. Five monthly internet based modules cover the coasts of the UK, open oceans, polar seas, tropical coral reefs, creatures of the deep and other topics. Participants can download and work through content, and complete online assessments. The sixth module is a five-day field course that will take place in Newcastle and its surrounds.

This course runs every year, starting in March. It lasts a total of six months, with a new module released each month. You can progress through the materials at your own pace, and do not need to complete the module within any particular month. This format is to ensure the course is accessible to people with busy lives and careers. You will have access to the materials and assessments until the end of October, with plenty of time to complete them. The cost of the course is £750, and includes all internet delivered tuition and ongoing support, lunches during the field course, and transport during the field course week. There will be some assessment, and a Certificate of Participation will be awarded to those successfully completing the assignments. The course is designed as a taster of more formal marine biology study leading to a degree.If you have any queries, please e-mail: marinecourse@ncl.ac.uk

Bridging the Skills Gap: Computer Vision Training for Marine Ecologists

10th to the 11th March 2026 at the British Antarctic Survey (Cambridge). This 2-day in-person workshop will introduce the core computer-vision concepts, tools and workflows needed to turn raw marine imagery into ecological insight. Participants will leave with reproducible, reusable workflows they can apply directly to their own datasets. Free to attend (with limited travel/accommodation support) and open to UK-based researchers, with priority for PhD students and ECRs in benthic ecology. No prior programming or machine-learning experience required. Application deadline: **5pm, 30 January 2026.** More information and application link: https://sams-tom.github.io/marine-workshop-site/.

NOC Association Annual General Meeting 2026, Save the date

The 15th AGM of the NOC Association will be held on Tuesday 19th and Wednesday 20th May 2026. This free, online event will take place on Zoom, across two consecutive mornings, each starting at 10:00 and ending at 12:30. The

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registration page and details of the agenda will be available shortly and all are warmly welcome to participate. For any enquiries, either about the AGM or the NOC Association, please contact Jackie Pearson, Secretary to NOCA: jfpea@noc.ac.uk

VIEWS

Phytoplankton cards for charity

After a couple of years off, I have picked up the digital paints again to bring you an imagined scene from the Arctic night. A polar bear sits on an ice floe; we can only imagine what she is thinking while the Mirrie Dancers (Aurora borealis) light up the sky overhead. In the calm Arctic Ocean below, phytoplankton endure the long, cold, polar night and wait for the first light of spring.

Some of you may know of me or be aware of the motivation behind this series of cards from 2017-2023, but here's a very quick introduction for those who don't. I'm Helen Smith, an oceanographic technician at the Scottish Association for Marine Science, SAMS (Oban, UK), with a biogeochemistry background, and I enjoy creating art inspired by the ocean and the wonderful world of phytoplankton. This is my seventh (not consecutive) year of designing festive ocean science inspired greeting cards, in memory of my friend and ocean scientist, Dr Chris Daniels who passed away in 2018. The Challenger Society also has 'The Chris Daniels Early Career Grant' in his memory to support Early Career researchers.

I appreciate budgets are really tight but if you'd like to send a non-traditional Christmas card, share some phytoplankton joy this festive season I encourage you to have a look at the cards. All profits from these cards go to PLANETS cancer charity, who supported my friend Chris and gave him good quality of life in his last year. So far, we've raised over £6000 for the charity. You can find the cards on my website, drheks.co.uk/shop, packs of 6 cards for £10 and individual cards are £2.50. Limited quantities of previous years' designs are also available. You can also contact me directly via the link on my website, thank you.

Uncrewed technology: a new standard for observing deep ocean currents

A new way to monitor previously hidden, but disruptive, deep ocean currents in near-real-time has been proven, thanks to a recently completed uncrewed technology collaboration in the US Gulf of Mexico. In a science-industry first, marine technology companies Sonardyne and SeaTrac Systems used advanced sensors and uncrewed surface vehicles (USVs) to deliver science-ready deep ocean current data on the Gulf's Loop Current System, direct to scientists' desks in near real-time. The project, commissioned and in collaboration with the University of Rhode Island (URI), opens the door to reliable, on-demand and sustained high-resolution observations of powerful and dynamic ocean systems, without the need to send people offshore. In turn, this boosts scientists' ability to improve predictive models, helping industry and science understand and mitigate the hazards posed by disruptive deep ocean currents, like the Loop Current System (LCS).

The project was completed during Fall 2025 and funded by the U.S. National Academies of Sciences, Engineering and Medicine's Gulf Research Program. "Sustained deep-ocean measurements remain rare despite their importance," said Randy Watts, Professor of Oceanography, URI. "This project demonstrates how commercially available instruments and uncrewed vehicles can deliver science ready data in strong current systems, overcoming the dual challenges of station-keeping where most

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USVs fail and cost-effective deployment without expensive research vessels."

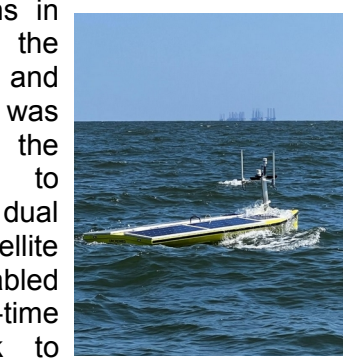
"With SeaTrac, we've proven that long-term, persistent monitoring of powerful and dynamic ocean systems with USVs instead of traditional vessels is now a reality," said Michelle Barnett, Business Development Manager for Ocean Science at Sonardyne. "Remote-commanded systems can reliably deliver the high-quality oceanographic data researchers and industry need, when they need it with lower operational costs than traditional vessels."

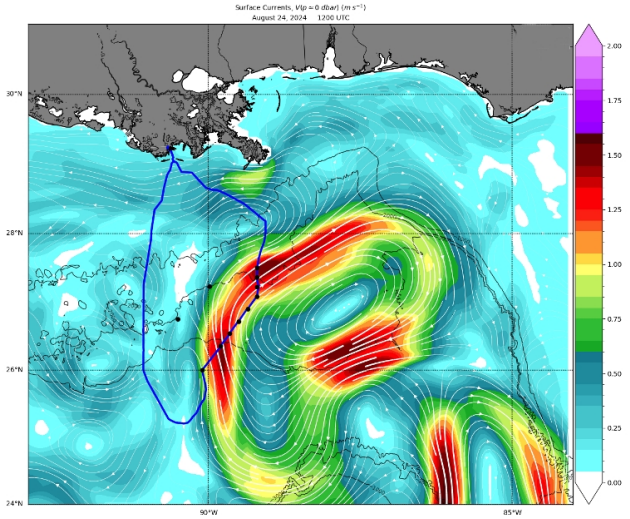
"This mission has demonstrated a new global precedent for using USVs to make critical, sustained ocean data accessible, consistently, with zero crew risk, zero emissions and a repeatable approach we can scale to other regions," added Hobie Boeschenstein, Director of Operations and Business Development at SeaTrac. The collaboration used Sonardyne's advanced Origin 65 seabed acoustic Doppler current profilers (ADCPs) and SeaTrac's SP-48 USV to gather near-real-time current profile data from the LCS.

Retrieval of one of the Origin 65s aboard the R/V Pelican.

Over 18 months, four Origin 65s and five pressure inverted echosounders were deployed in 1,800 to 3,200 m water depth, in the heart of the LCS, 200 nm off the coast of Louisiana. Origin 65 is a 4,100 m-rated, low frequency, deepwater profiling ADCP. It can profile up to 800 m range in time aligned, high resolution and also comes with pressure inverted echo sounder (PIES) functionality. Thanks to Origin 65's integrated Edge processing capability and acoustic modem, data could be acoustically harvested from the surface by SeaTrac's remotely piloted USV, using a Sonardyne HPT 7000 transceiver.

The solar and battery powered SP-48 was tasked with navigating variable ocean currents and weather conditions in the Gulf to reach the sensor locations and harvest the data. It was then able to send the science-ready data to shore through its dual iridium and Starlink satellite links, which also enabled high-data rate and real-time communications back to shore. In total, three deployments covering more than 30 days, the SP-48, which can sustain 2 to 3 kt operations and sprints up to 5 kt, covered around 1,500 nm. During this time, more than 135 GB of high-resolution ocean currents and related parameter data at up to 800 m above the bottom were harvested.





The SP-48's track during one of its data harvesting missions.

Going forward, data gathered during the mission will improve models that forecast currents such as topographic Rossby waves, providing critical insights for science and safety in the region and opening new avenues for future research. The project demonstrates a scalable model for autonomous ocean observation around the world. This includes showing how marine autonomy can deliver near real-time data to enhance the prediction of, and safety against, disruptive deep currents such as topographic Rossby waves, which can threaten offshore

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infrastructure, while also improving scientific understanding of ocean circulation and climate processes.

“Completion of this project marks another successful demonstration of USVs in offshore data collection and marine science,” Boeschenstein said. “Deploying advanced technologies like those from SeaTrac and Sonardyne is key to deepening our understanding of the world’s oceans. There is still so much to explore, and our teams are proud to help scientists safely reach and study some of the most challenging marine environments on Earth.”

SALTS

Inside the Arctic Gateway: Tracking Ocean Change with Autonomous Sensors

Each summer, scientists from across Europe set sail into the high Arctic for the annual Fram Strait expedition, one of the world’s longest-running and most important climate observatories. Here they monitor the exchange of water masses across the only deep gateway between the Arctic Ocean and the North Atlantic, and with them the transport of heat, freshwater, and salt, each critical to regulating global ocean circulation and regional climate. In July 2025, aboard the Norwegian research icebreaker RV *Kronprins Haakon*, the National Oceanography Centre (NOC) team had a specific mission at hand, to deploy a new suite of state-of-the-art autonomous Lab-on-Chip (LoC) sensors on the long term moorings in the East Greenland Current and provide novel year-round biogeochemical data not previously available.

It's part of a decades-long effort, led by the Norwegian Polar Institute (NPI), to monitor one of the global ocean’s most important transport gateways, and in particular the East Greenland Current (EGC), where cold, fresh Arctic waters flow southward into the subpolar North Atlantic. Fram Strait is critically important to ocean research, but year round observations are difficult to make due to the area’s remoteness and harsh conditions. To overcome this, the use of subsurface tall moorings has enabled measurements to be made throughout the water column at all times of year, but, until very recently, they have focused on physical characteristics (temperature, salinity, current speed) and limited biogeochemical parameters.

NOC’s cutting-edge autonomous technology will now usher in a step-change in our abilities to measure long term variability across a suite of biogeochemical tracers in these waters exiting the Arctic. The compact LoC biogeochemical sensors have been deployed in the Fram Strait Arctic Outflow Observatory and will measure key indicators of ocean health year round, including:

- pH and total alkalinity to track Arctic Ocean acidification and carbonate cycling; and
- Nitrate and phosphate to monitor nutrient fluxes and variations in nutrient stoichiometry that shape ecosystem dynamics.

Deploying the LoCs in the Fram Strait. Image: Laura de Steur (NPI)

NOC’s LoC sensors have been developed to be robust, low-power and deep water rated, which makes them ideal for polar environments. They will allow researchers to monitor Arctic change as it happens, even through the long, dark polar winter. The data collected will fill gaps in our understanding of how Arctic biogeochemistry is changing and the downstream impacts it has on ecosystems and carbon fluxes in the subpolar North Atlantic. This year’s work has been the most ambitious and collaborative yet, with researchers from institutions in the UK, Norway, Poland, Denmark and France working together to investigate how changes in the Arctic are reshaping our oceans, ecosystems and climate.

NOC’s contribution is part of the international EPOC project (Explaining and predicting the ocean conveyor), a major Horizon Europe project focused on improving carbon cycle observations,

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and BIOPOLE, a UKRI-funded programme exploring the connections between polar biogeochemistry and global change. By contributing advanced sensing systems alongside scientific leadership, NOC is helping to position the UK as a key partner in international Arctic research.

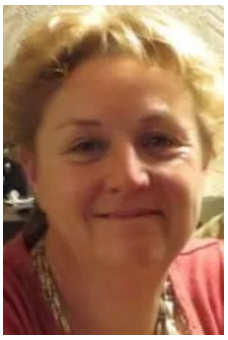
National Oceanography Centre joins UK-led HydroGNSS 'New Space' mission for Global Science

Scientists at NOC have played a key role in developing the technology behind HydroGNSS, a pioneering satellite mission that embodies the 'New Space' ethos of achieving major scientific advances with smaller budgets and faster delivery schedule. Designed and built by Surrey Satellite Technology Ltd (SSTL) and backed by £26 million in funding from the UK Space Agency, it is the first mission in the European Space Agency (ESA) Scout initiative within the FutureEO Earth Science programme. HydroGNSS is a twin-satellite mission that will collect reflected signals from multiple GPS and Galileo navigation satellites to measure Essential Climate Variables related to the Earth's water cycle over the land, and provide global observations of ocean surface winds and sea ice extent.

The HydroGNSS satellite. Photo: ©ESA

Launched on Friday 28 November onboard a SpaceX rocket from Vandenberg Space Force Base in California, HydroGNSS marks a major milestone in environmental monitoring by demonstrating how innovative, low-cost missions can deliver sustainable observing systems from space. At the heart of the mission is a cutting-edge sensing approach known as GNSS Reflectometry, which captures signals from existing navigation satellites after they bounce off the Earth's surface. NOC scientists have collaborated with SSTL and partners from ESA, Italy, Spain, Finland and UK over many years to develop this technology. It offers significant advantages in satellite mass, power efficiency, and cost, while enabling all-weather, day-and-night observations, even through heavy rain or dense forests.

Professor Christine Gommenginger, who leads NOC's research in GNSS Reflectometry, said: "Missions like HydroGNSS will give us access to more detailed and more frequent measurements, which will be crucial to understanding processes involved in extreme weather events like hurricanes, and interactions between the ocean, atmosphere, cryosphere and land that relate to changes in the global water cycle. This mission marks the success of a long-term collaboration and celebrates the achievements of strong industry-academia partnership fostered between NOC, SSTL and the wider international science community. As the first ESA Scout mission to be launched, HydroGNSS represents the start of the new era of 'New Space', where affordable innovative technology can deliver high-value environmental data to help scientists better understand our planet's rapidly changing climate system." The HydroGNSS mission highlights the UK's industrial and scientific excellence in satellite innovation and climate monitoring.



CALENDAR

28th January 2026: Marine Measurement Forum 2026

Winchester, UK

The Ocean Business team are delighted to be hosting the 70th edition of the Marine Measurement Forum, fondly known as the MMF, taking place on the 28th January 2026. The conference will bring together professionals from across the marine sector under the spectacular dome of one of the UK's leading science engagement venues, the Winchester Science Centre & Planetarium. Powerfully connecting two largely unexplored realms, particularly as the need for satellite and space technology for navigation and remote data collection is ever increasing.

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January's event will highlight how knowledge-sharing between ocean and space science is essential to providing answers, and to help us better understand our planet. The call for speakers will be issued shortly, contributors from all corners of the marine and space sectors are encouraged to apply. For event updates make sure you sign-up here. Your Ocean Business Team, looks forward to seeing you there.

22nd-27th February 2026: Ocean Sciences Meeting 2026
Glasgow, Scotland
The OSM is the flagship conference for the ocean sciences and the larger ocean connected community. Every two years, the Ocean Sciences Meeting unifies the oceans community to share findings, connect scientists from around the world, and advance the impact of science. The Ocean Sciences Meeting 2026 is co-sponsored by the American Geophysical Union (AGU), the Association for the Sciences of Limnology and Oceanography (ASLO), and The Oceanography Society (TOS). This time we look forward to seeing you in Glasgow, Scotland in February 2026. Visit the Ocean Science Meeting website for up to date information.

Session OT004: Autonomous observing technologies and methods for sustained ocean carbon observations and climate mitigation research. Topic Area: Ocean Technology and Observatories.

Oceanic carbon data and information are needed for accurate assessment of the ocean's carbon uptake rate and capacity. These insights are vital for shaping national and international climate policies and guiding mitigation strategies. Our ability to observe and model the oceanic carbon cycle depends strongly on the availability of sustained high-quality observations enabled by fit-for-purpose observing tools and methods. Such observations are also critical for evaluating current and future marine Carbon Dioxide Removal (mCDR) applications building the backbone of global Measurement, Monitoring, Reporting and Verification (MMRV) schemes.

Advancements in material science, ocean technology and evaluation of new sensing techniques are paramount in enabling ocean measurements on wide spatio-temporal scales necessary to: a) understand past, present and future changes in the global carbon cycle, and b) evaluate the feasibility, durability and efficiency of mCDR methods currently being investigated. We invite submissions from academic and government researchers, nonprofits and the ocean technology industry developing and evaluating novel tools and methodologies for direct observations of the seawater's carbonate system. The session aims to showcase the current state-of-the-art in ocean carbon observing and highlight new observing strategies using autonomous sensors and platforms. Technology performance evaluations in laboratory studies and field deployments are especially welcome.

Session PI010: Unraveling physical–biological interactions at meso- and submesoscales, https://agu.confex.com/agu/osm26/prelim.cgi/Session/253850.

Mesoscale and submesoscale structures, such as cyclonic and anticyclonic eddies, filaments, and fronts, play a fundamental role in shaping marine ecosystems. These dynamic features have been demonstrated to impact the distribution of nutrients and enhance biological activity across trophic levels. They influence key processes including phytoplankton blooms, larval dispersal, and the biological carbon pump. Despite the growing recognition of their importance, the complexity and scale of these interactions are still not well understood, limiting our ability to quantify their regional and global impacts.

Technological advancements, such as higher-resolution ocean models and new generations of satellites like PACE and SWOT, are creating unprecedented opportunities to study these fine-scale processes, while also posing new

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challenges for data interpretation and integration. This session invites contributions investigating the interplay between physical processes and biological responses at meso- and submesoscales. We aim to bring together observationalists, modellers, and theorists working at the interface of physics and biology to deepen our understanding of how ocean dynamics at these scales influence marine life.

Session AI006: Philippa Rickard (Heriot Watt University) is delighted to be co-chairing Session AI006, The Influence of Marine Biota on Air-Sea Exchange Processes alongside Dr Theresa Barthelmeß and Prof Dr Anja Engel (GEOMAR Helmholtz-Zentrum für Ozeanforschung Kiel), and Dr Ryan Pereira (The Lyell Centre for Earth and Marine Sciences).

Session CC006: Kate Fraser (SAMS) is co-chairing a session called "Climate Change in the Deep Sea: Impacts, Interventions, and Cumulative Stressors" in preparation for the IPCC AR7 process.

Session HC001: Jack Laverick (University of Strathclyde) is cohosting a session on "Advances in Marine Conservation for Local-to-Global Sustainability". This session will complement a new "Advances in marine conservation for local-to-global sustainability" special issue in the journal Aquatic Conservation: Marine and Freshwater Ecosystems.

Session HC003: Bahareh Kamranzad (University of Strathclyde) is chairing a session on Arctic Maritime Safety, Climate Impacts, and Human–Environment Interactions. As Arctic sea ice rapidly retreats and ocean conditions evolve, maritime activities in the region are increasing, leading to complex environmental, operational, and societal challenges. This interdisciplinary session aims to explore the impacts of Arctic climate change on oceanic conditions, navigational safety, and human interactions.

Session CM006: Heather Hyewon Kim, Alicia Karspeck , Cristina Schultz and David Keller are hosting **"**Modeling approaches for marine Carbon Dioxide Removal (mCDR)". There is growing interest in marine carbon dioxide removal (CDR) approaches, including ocean alkalinity enhancement, direct ocean capture, nutrient fertilization, biomass sinking, macroalgae cultivation, and artificial upwelling, as a portfolio of approaches aiming to remove 10–20 gigatons of atmospheric CO_2 annually by mid- to late-century. Modeling these approaches offers insights that enable assessment of carbon sequestration efficacy, permanence, and ecological impacts across broad spatial and temporal scales under various scenarios. These tools are critical for aligning mCDR deployments with climate goals and environmental safeguards.

Session OB015: Sarah Cryer (Heriot Watt University) is co-chairing a session on Marine life and Carbon cycling in a changing ocean: Integrating observations, AI, and models (OB015) which relates to the joint BIO-Carbon – MASTS international data workshop on the role of marine biology in helping the ocean store carbon.

Session OB029: Alex Poulton (Heriot Watt University) is chairing a session on The Open Ocean Carbonate Pump: From Alkalinity to Ecology (and Back Again) (OB029). This session will explore different aspects related to pelagic carbonate biogeochemistry that underpins the magnitude and functioning of the carbonate pump.

10th–11th March 2026: Bridging the Skills Gap: Computer Vision Training for Marine Ecologists

Cambridge, UK

This 2-day in-person workshop at the British Antarctic Survey will introduce the core computer vision concepts, tools and workflows needed to turn raw marine imagery into ecological insight. Participants will leave with reproducible, reusable workflows they can apply directly to their own datasets. Free to attend (with limited travel/accommodation support) and open to UK based researchers, with priority for PhD students and ECRs in benthic ecology. No prior programming or machine-learning experience required. **Application deadline: 5pm, 30 January 2026.** More information and application link: https://sams-tom.github.io/marine-workshop-site/.

10th-12th March 2026: Oceanology International

London, UK

Registration is now open for Oceanology International. Bringing together more than 8,000 professionals and 500 exhibitors, this is the

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leading platform for the ocean technology and marine science community.

See cutting-edge innovations, grow your network, and learn from industry leader like Gardline, Saab, Oceaneering, Teledyne Marine, Kongsberg, and more; all in one place. Register today and stay ahead in this dynamic industry.

13th-17th April 2026: Environmental Interactions of Marine Renewables conference

Oban, Scotland, UK

The Scottish Association for Marine Science (SAMS) is organising the next Environmental Interactions of Marine Renewables (EIMR2026) conference. This event will bring together marine renewable energy experts from across the globe. It will represent all disciplines that form the landscape of marine energy research, a foundation that continues to stimulate new and exciting discoveries. Registration is currently open. Details of the conference are available online.

3rd-8th May 2026: European Geophysical Union General Assembly 2026

Vienna, Austria and Online

The EGU General Assembly brings together geoscientists from all over the world to one meeting covering all disciplines of the Earth, planetary, and space sciences. The EGU aims to provide a forum where scientists, especially early career researchers, can present their work and discuss their ideas with experts in all fields of geoscience. The abstract submission deadline is **Thursday, 15 January 2026, 13:00 CET**. Please follow our instructions for how to submit your abstract. EGU26 offers two ways to help you finding the best session where to submit your abstract within the programme; either browse the programme or keywords. The registration for the EGU General Assembly 2026 is now open.

ITS1.19/AS4.8 Advancing Environmental sciences with Innovation and Research Infrastructures. Co-Convened by the GEORGE and the ENVRINNOV EU projects; read the full description: https://www.egu26.eu/session/57671
This dedicated session at EGU 2026 will focus on innovation across environmental domains atmospheric, marine, terrestrial, and solid earth sciences. It will cover topics on the role of emerging technologies and service-oriented approaches in shaping the future of environmental monitoring. The session is aimed at all industry professionals, researchers, and students interested in innovation in environmental sciences, including Research Infrastructures (RIs), private companies offering scientific instrumentation or services, industrial end-users and policymakers. Abstract submission is open until **15 January 2026 13:00 CET.**

19th-20th May 2026: NOC Association Annual General Meeting 2026

Online

The 15th AGM of the NOC Association will be held on Tuesday 19th and Wednesday 20th May 2026. This free, online event will take place on Zoom, across two consecutive mornings, each starting at 10:00 and ending at 12:30. The registration page and details of the agenda will be available shortly and all are warmly welcome to participate. For any enquiries, either about the AGM or the NOC Association, please contact Jackie Pearson, Secretary to NOCA: jfpea@noc.ac.uk

25th-29th May 2026: Liège Colloquium

Liège, Belgium

Dear colleagues,
The call for abstracts for the 57th International Liège Colloquium "Submesoscale Processes in the Ocean" is now open. Please visit https://www.ocean-colloquium.uliege.be for more information. The colloquium will be in hybrid mode, but we would really like to see you here in person. Deadline for submissions: 31 January 2026. Direct link to abstract submission page: https://www.ocean-colloquium.uliege.be/abstract-submission. Link to terms of reference: https://www.ocean-colloquium.uliege.be/overview
We are looking forward to seeing you in Liège.

19th - 24th July 2026: International Coral Reef Symposium 2026

Auckland, New Zealand

ICRS is the largest conference for coral reef science, run by the International Coral Reef Society every four years, this time hosted by Victoria University of Wellington, New Zealand. Please visit the conference website for further information. The following sessions may be of

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particular interest for UK marine scientists engaged in coral reef research:
Session 10: From knowledge to action: Tools and stories to tackle water pollution
Session 19: Modelling coral reef ecosystems across scales
Session 21: Plastic pollution in coral reefs: from emerging evidence to future solutions
Session 52: Exploring the sustainability and resilience of coral reef fisheries
Session 60: Pelagic reefs: how oceanic inputs shape the structure and function of coral reefs
Session 67: A window on future oceans: forecasting multi-scale impacts of the Anthropocene on coral communities using extreme systems as natural laboratories
Session 99: Cross-habitat linkages and coral reef integrity in connected coastal seascapes
Session 116: Biodiversity and transformation in Indian Ocean coral reefs
Session 117: Understanding mesophotic coral ecosystems: The way forward
Session 128: Exploring the new, blue frontier: Coral reef science of the South Pacific

8th-10th September 2026: Challenger Society for Marine Science Conference
Bangor, UK
Save the dates for the next biennial Challenger conference, which will be in Bangor, 42 years on from the first modern Challenger conference which was also held in Bangor; then organised by John Simpson, Paul Linden, Steve Thorpe and Roy Chester, and run by amongst others a very junior Ed Hill and Bill Turrell. Further information to follow. We can also accommodate Special Interest Group (SIG) meetings around the conference (on the 7th and 11th September) please contact Tom Rippeth for further information, t.p.rippeth@bangor.ac.uk. If you are interested in sponsoring events at the conference please contact Terry Sloan, terry@planet-ocean.co.uk.

28th-30th October 2026: Global eDNA Conference
Seattle, USA
Hosted in partnership with the Marine Technology Society's MTS eDNA Committee and the University of Washington's eDNA Collaborative, the conference will convene a global community of eDNA enthusiasts from across economic sectors to build connections, learn from one another, and further advance eDNA science. The conference will feature three days of concurrent sessions, focusing on a diverse array of eDNA-related topics (e.g., conservation applications, quantitative analysis, community engagement, policy-relevant communication, technological development, and many others), as well as a set of plenary speakers and plenty of unstructured time to make connections on your own.

7th-9th April 2027: 2027 Ocean Decade Conference
Rio de Janeiro, Brazil
Co-organized by the Intergovernmental Oceanographic Commission (IOC) of UNESCO, Brazil's Ministry of Science, Technology and Innovation (MCTI), and the City of Rio de Janeiro, the 2027 edition will build on the outcomes of the 2024 Ocean Decade Conference in Barcelona, Spain, and carry forward the ambitions and milestones of the Ocean Decade; UN Decade of Ocean Science for Sustainable Development 2021-2030 ('Ocean Decade').

The CSMS email address is challenger.society@gmail.com. Contributions for next month's edition of Challenger Wave should be sent to: john@myocean.co.uk by the 31st December.

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JOBS and OPPORTUNITIES

PhD opportunity at the British Antarctic Survey

We have an exciting PhD opportunity hosted at the British Antarctic Survey (Cambridge, UK) investigating the use of autonomous platforms to study Antarctic krill. The project is part of a new Net Zero for Polar Science doctoral training partnership.

Project link:
https://www.findaphd.com/phds/project/studying-antarctic-krill-with-autonomous-platforms-to-reduce-research-emissions-ref-2624-nzps-bas-dornan/?p192121

Feel free to email me, Tracey Dornan tarna70@bas.ac.uk, to arrange an informal chat or find out more.

Coastal Internship Opportunity

This week, the Marine Alliance for Science and Technology Scotland (MASTS) and the Chief Scientific Advisor Marine launched a call for a paid 3 month internship to address Scotland's need for a dedicated coastal monitoring programme, as identified by the Committee on Climate Change. This opportunity is available for a PGR or ECR from a MASTS partner HEI. Find out more here.

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There are jobs in the MASTS newsletter

New vacancies:

Visit our Vacancy Webpage to find all the positions listed below.

- ✔ Senior Editor for Journal of Applied Ecology - apply by 21/12/25
- ✔ Marine Ornithology Advisor - NatureScot - apply by 21/12/25
- ✔ 2 x Marine Enforcement Officer - Welsh Government - apply by 30/12/25
- ✔ Marine Technology and Instrumentation Technician - AFBI - apply by 2/1/26
- ✔ Ocean Environment Scientist – Oceanography & Ice - UK Hydrographic Office - apply by 7/1/26
- ✔ MASTS Admin Assistant - apply by 12/1/26
- ✔ Lecturer in Zoology - Aberysthwyth University - apply by 15/1/26
- ✔ Fisheries Partnership Officer - CWT - apply by 19/1/26
- ✔ IFREMER postdocs - apply by 22/1/26
- ✔ Senior Environmental Consultant (offshore renewables) - Haskoning - apply now
- ✔ Senior Marine Taxonomist - APEM - apply now
- ✔ Volunteer Assistant Ranger - SWT - apply by 30/1/26

New PhD studentships

PhD: Utility of eDNA and serological approaches to model proliferative kidney disease (PKD) exposure of Scottish farmed rainbow trout

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