

Challenger Wave



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

NEWS

New Year Honours

The Marine Alliance for Science and Technology Scotland (MASTS) joins the Armatus Oceanic team and their partners in congratulating Professor Alan Jamieson, Director of the Deep-Sea centre at the University of Western Australia and former MASTS Lecturer/Convener of the Deep-Sea Forum, for making the New Year OBE Honours list for services to marine biology, subsea engineering and exploration.



Digital twin of glider observations will optimise ocean forecasting

Five innovative projects launched in January will harness the potential of digital twinning technology to transform environmental science. The projects will share a total of £2.8 million in funding delivered by the Natural Environment Research Council (NERC) as part of the Twinning Capability for the Natural Environment (TWINE) programme. The digital twin pilot projects will demonstrate how research using Earth observation data and emerging digital twinning technologies can transform environmental science across priority areas including climate change, biodiversity and ecosystems, and natural hazards.

The five projects are led by scientists at National Oceanography Centre (NOC), University of Cambridge, University of Hull and University of Plymouth. NOC will lead the MAS-DT project that looks at ocean glider observations for ocean models which underpin weather forecasts. Dr Justin Buck, NOC Principal Robotics Engineer commented, "This project will develop a digital

twin to optimise ocean glider observations to maximise their impact on oceanographic research and ocean models which underpin NERC research priorities and weather forecasts. The demonstrator digital twin will combine Earth Observations with sub-surface ocean glider data and operational ocean models. The resulting four-dimensional picture, which will be presented within a user interface, allowing scientists to plan ocean glider observations to maximise utility. This feedback between scientists, Earth Observation data and glider operations in near real-time will maximise the value of the observations collected and their impact on ocean forecasting along with NERC research."



A glider at the water surface

NOC also contributes expertise to two more of the TWINE funded projects, SyncED-Ocean and SPLASH. Synchronising Earth observation and modelling frameworks towards a digital twin ocean (SyncED-Ocean) is led by Matthew Palmer, Plymouth Marine Laboratory. This project will deliver a digital twin pilot demonstrator that combines data from satellite Earth observations and marine autonomous robots for assimilation to marine system models to provide an optimised virtual coastal ocean ecosystem. It will focus on significantly improving the current predictive capability of harmful algal blooms (HABs) and their subsequent impacts on

ocean oxygen concentration in UK coastal areas, both of which present serious risk to ocean health, biodiversity and productivity. The demonstrator utilises artificial intelligence techniques to couple real and virtual systems to create an agile, adaptive digital twin framework. This framework can be used to support future research, policy and commercial applications that seek to improve understanding and the management of our natural environment.

SPLASH, digital approaches to predict wave hazards is led by Nieves Valiente, University of Plymouth. This project will create a digital twin of a wave overtopping in order to build a deployable coastal warning tool that predicts wave hazards. It will establish a method to analyse coastal wave fields from Earth observations alongside unique measurements of wave overtopping. This allows us to better understand how processes such as wind, tides, coastal sheltering and swells interact across an area to change the coastal wave hazard. The project will also use projections to assess future changes in wave hazard frequency. The ultimate aim is to transform weather and climate research and improve operational hazard management to increase UK resilience.

Dr Jenny Brown, NOC Coastal Oceanographer, commented, "This is a great opportunity to add value to an existing dataset. SPLASH builds on a previous wave overtopping project 'CreamT'. It will use the observations made available through the British Oceanographic Data Center (BODC) to develop Machine Learning tools. At the same time satellite image analysis techniques will be developed to demonstrate how different sources of coastal observations can be combined to better understand variability in coastal wave hazard."



The TWINE programme is part of a £200 million portfolio of 17 Earth observation investment package (EOIP) projects which were announced in November 2022. The aims of the TWINE programme and the successful projects collectively are to:

- Harness the UK's leading position at the nexus of environmental, observational and computational sciences, and bring together multidisciplinary teams to realise the value of

digital twinning technology to address environmental challenges.

- Improve the understanding, modelling and prediction of events, inform future decision-making, and test the impacts of different scenarios and interventions to help make better decisions on improving our environment.
- Build the foundations of a coherent and lasting landscape of digital twins for environmental science, with a high level of cross-fertilisation of learning and a focus on design for interoperability with current and future activities.

Preserving our ocean's ecosystems: New IMCA Guidance supports industry to take action

Invasive species are organisms that spread to areas outside their native range posing a threat to native flora and fauna and are seen as a major cause behind the global decline in biodiversity. Marine invasive species can negatively impact ecosystems in several ways. They can:

- Eat or parasitise often defenceless native species which in some cases, can lead to their extinction.
- Outcompete native species for food, light, or spawning sites and, if left unchecked, can dominate habitats and smother native species.
- Bring new diseases and alter habitats.
- Trigger ecosystem change.
- Cause negative economic impacts.

The transfer of marine invasive species through the movement of vessels from one region to another has long been recognised as a significant environmental risk, with the International Maritime Organization's (IMO) first guidance on the issue published in 2004. More recently, the UN Biodiversity Conference to support the Implementation of Sustainable Goal 14 has emphasised the urgent need for enhanced protection and conservation of marine ecosystems, and the topic of ballast water management, has formed part of the [80th session of the IMO's Marine Environment Protection Committee \(MEPC\) last summer](#).

To support Members to take proactive measures to mitigate the harm caused by invasive species on marine environments, The International Marine Contractors Association (IMCA) has

produced new Guidance, [Mitigation of Marine Invasive Species: Biofouling and Ballast Water \(IMCA ES002\)](#), which aims to minimise transmission, and highlights best-practices to follow through detailed case studies from DeepOcean, Fugro, TechnipFMC, and SBM Offshore. Representatives of these companies, along with Global Maritime, made up the *Life Below Water* workgroup which helped IMCA to draft the document.



Green Crab ([Wikimedia](#))

Commenting on the publication of the new IMCA Guidance, Mary Ntamark, Technical Adviser, Environmental Sustainability, said: “Through the vessels they own and work with, IMCA Members are in a unique position to positively address challenges to oceanic biodiversity from invasive species and minimise the impact of biofouling and poor ballast water management. I’d like to thank the *Life Below Water* workgroup for their input into the document, and for their support throughout the drafting process. The end-result is Guidance which not only outlines practical and tangible steps, but one which will enable the creation of company-wide strategic approaches.



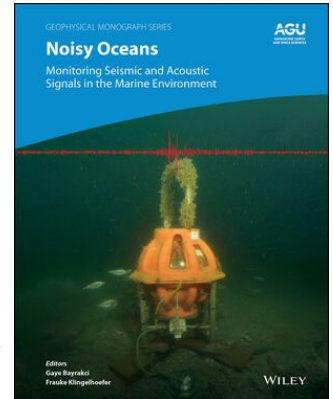
The challenges to global biodiversity in our seas are both urgent and significant, and our Guidance will help Members to play their part and mitigate their environmental impact.”

Brand-new book uncovers the sounds of the ocean

A brand-new [textbook](#) “Noisy Oceans: Monitoring Seismic and Acoustic Signals in the Marine Environment” has brought to life the diverse soundscape of the ocean and its impacts on

marine life and human society. The book, published by AGU/Wiley & Sons and edited by Dr Gaye Bayrakci from the National Oceanography Centre (NOC) and Frauke Klingelhoefer from the French National Institute for Ocean Science (IFREMER) delivers a comprehensive guide to understanding the marine soundscape.

The impact of sounds within the Ocean can often be overlooked. But with its depths teeming with diverse life and dynamic natural events, the Ocean is anything but silent. Special measuring devices such as ocean bottom seismometers and hydrophones were designed to detect earthquakes but picked up many other unexpected signals. These were previously ignored as background noise from unknown sources, but advanced technology now gives scientists insight into the noise created by everything from [underwater landslides](#), icebergs, ships and hydrothermal vents to whales, rain, marine engineering, and more.



Dr Bayrakci says “In recent times, anthropogenic sound sources, such as marine engineering and construction, seismic experiments, and marine traffic, have been increasingly part of the mix. With growing concern about the impact of human activities in the ocean, understanding the changing marine soundscape and its impact on life in the oceans and human societies is becoming increasingly important”.



Emperor penguin colonies discovered by scientists through bird poo on satellite imagery

New satellite imagery reveals four previously unknown emperor penguin colonies in Antarctica. The penguins move as the sea ice they use as hatching grounds becomes more unstable because of warming oceans. The loss of sea ice is harming emperor chicks' chances of survival, reports the [Associated Press](#) (AP). “Because of the warming oceans, there will be less sea ice,”

Daniel Zitterbart, a penguin researcher at the Woods Hole Oceanographic Institution, told USA Today. "And less sea ice means less stable breeding sites for emperor penguins" Zitterbart was not involved in the study, but works closely with Peter Fretwell, a geographic information officer at the British Antarctic Survey (BAS) and the researcher who discovered the new colonies.



Two young emperor penguin chicks in Antarctica – Peter Fretwell, BAS

Fretwell carried out an overall count of emperor penguins globally in 2012. "Since then, Peter has been scrounging through satellite imagery and he keeps finding emperor penguin colonies that have done this before," said Zitterbart. Fretwell told AP that satellite images showed reddish-brown smears on the otherwise colorless ice. The guano, which is dark enough to see from space, inspired the scientists to use the streaks of excrement to track down the colonies. "It's a very important result scientifically, even though it's a light-hearted method," Fretwell said.

If a colony disappears from its usual spot, it doesn't necessarily mean it met its fate. "If the penguins go away or they're not where we thought they were supposed to be we might think, 'Oh they're doing really bad here because we don't see them anymore,'" said Zitterbart. "But what happened was they just moved." The discovery brings the number of known penguin colonies to 66, wrote Fretwell in the journal, [Antarctic Science](#).

Baleen whales may sniff out their meals

Scientists investigating how baleen whales have become such effective feeders believe that the giant marine mammals may be able to sniff out the best opportunities, through their blowholes. Baleen whales are a grouping that include blue, humpback and right whales and feed on huge quantities of zooplankton, such as krill and fish to

maintain their bulk. Their ability to accurately locate an abundance of zooplankton in the vast ocean has puzzled scientists, but a team led by Dr Conor Ryan, Honorary Research Fellow at the Scottish Association for Marine Science (SAMS) in Oban, may have uncovered one of their secrets.

When zooplankton are grazing on microscopic plant-like phytoplankton, a chemical called dimethyl sulfide is released into the sea and then into the air. The scent from this chemical is already known to attract seabirds to a feeding frenzy. It may also be a signal to baleen whales too, which might be able to smell in stereo on account of having two nostrils (unlike dolphins which have a single nostril). The findings highlight an urgent need for further research into whether the same feeding strategy is encouraging whales to ingest plastic debris. Fouling that grows on plastic floating at sea also emits dimethyl sulfide, which whales may mistakenly associate with food.

Dr Ryan collaborated with an international team of scientists working in every major ocean and used drone images of 14 different species of baleen whale to measure the spacing between the two nostrils on each blowhole. Their findings, [published in Biology Letters](#), show that those whales with a preference for eating more zooplankton than fish, such as the northern right whale, have wider nostril spacing and are therefore better equipped to potentially sniff out the location of grazing zooplankton.

Dr Ryan said: "Whales have massive bodies, but how do they meet that huge demand for calories? The methods some use to feed, such as lunge-feeding, are also very energetically expensive, so they need to find high densities of prey to make eating worthwhile. Phytoplankton emit a gas as they're being fed on by zooplankton, 'the smell of the sea' as we know it, and it is possible that the whales can detect this, a bit like how some birds are attracted by the smell from freshly cut grass. Whales that have their nostrils wider apart are better equipped to smell 'in stereo' and could potentially locate feeding opportunities by homing-in on the source of a smell."

While the findings are not yet definitive proof that whales can smell, it is the first time the stark correlation between feeding preference and the

distance between nostrils has been shown. Dr Ryan says the new discovery is a crucial step to discovering more about how whales find food, but also how they may fall foul to threats in their environment such as plastic debris.

Dr Ryan added: "If indeed whales do locate food by smelling dimethyl sulphide, there is a heightened risk of them eating plastic, because



the fouling that grows on plastic floating at sea smells like plankton. This is why some seabirds cannot resist eating plastic and feeding it to their chicks. Understanding whales' ability to smell

could help us figure out why some species are so prone to plastic ingestion."

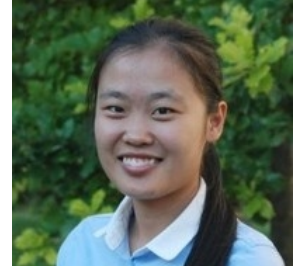
The analysis was carried out in Scotland (SAMS and University of St Andrews) and Ireland (National University of Ireland, Galway) in collaboration with scientists based in the USA (Woods Hole Oceanographic Institution, University of Hawaii, African Aquatic Conservation Fund, SR3 SeaLife Response, University of California, University of Wisconsin and Stanford University), Canada (Dalhousie University & LGL Ltd. Ontario), Mexico (Universidad Autónoma de Baja California Sur) and Falkland Islands (Falklands Conservation). Fieldwork was conducted in the Arctic, Indian, North Pacific, North Atlantic, South Atlantic and Southern Oceans. For more on SAMS' marine mammal research, check out our [.#WhaleTalk campaign](#)

Study says ice age could help predict oceans' response to global warming

A team of scientists led by a Tulane University oceanographer and the Woods Hole Oceanographic Institution (WHOI) has found that deposits deep under the ocean floor reveal a way to measure the ocean oxygen level and its connections with carbon dioxide in the Earth's atmosphere during the last ice age, which ended more than 11,000 years ago. The findings, published in [Science Advances](#), help explain the role oceans played in past glacial melting cycles and could improve predictions of how ocean carbon cycles will respond to global warming.

Oceans adjust atmospheric CO₂ as ice ages transition to warmer climates by releasing the greenhouse gas from carbon stored within the deep ocean. The research demonstrates a striking correlation between global ocean oxygen contents and atmospheric CO₂ from the last ice age to today, and how carbon release from the deep sea may rise as the climate warms.

"The research reveals the important role of the Southern Ocean in controlling the global ocean oxygen reservoir and carbon storage," said



[Yi Wang](#), lead researcher and an assistant professor of Earth and Environmental Sciences at [Tulane University School of Science and Engineering](#). Wang specializes in marine biogeochemistry and paleoceanography.

"This will have implications for understanding how the ocean, especially the Southern Ocean, will dynamically affect the atmospheric CO₂ in the future," she said. Wang conducted the study with colleagues from WHOI including [Sune Nielsen](#), [Kassandra Costa](#), [Sophie Hines](#), and [Wanyi Lu](#).

The team analyzed seafloor sediments collected from the Arabian Sea to reconstruct average global ocean oxygen levels thousands of years ago. They precisely measured isotopes of the metal thallium trapped in the sediments, which indicate how much oxygen was dissolved in the global ocean at the time the sediments formed. "Study of these metal isotopes on glacial-interglacial transitions has never been looked at before, and these measurements allowed us to essentially recreate the past," Wang said.

The thallium isotope ratios showed the global ocean lost oxygen overall during the last ice age compared to the current warmer interglacial period. Their study revealed thousand-year global ocean deoxygenation during abrupt warming in the Northern Hemisphere, whereas the ocean gained more oxygen when abrupt cooling occurred during the transition from the last ice age to today. The researchers attributed the observed ocean oxygen changes to Southern Ocean processes.

"This study is the first to present an average picture of how the oxygen content of the global oceans evolved as Earth transitioned from the



last glacial period into the warmer climate of the last 10,000 years," said [Sune Nielsen](#), associate scientist at WHOI and co-author of the research.

"These new data are a really big deal, because they show that the Southern Ocean plays a critical role in modulating atmospheric CO₂. Given that high latitude regions are those most affected by anthropogenic climate change, it is troubling that these also have an outsize impact on atmospheric CO₂ in the first place."

Policy engagement training programme

Announcing a training programme designed to support researchers in making a demonstrable difference to evidence-informed public policy with their research. The course is being delivered by the Institute for Methods Innovation, Fast Track Impact and Walcott Communications on behalf of NERC and ESRC. See the [full event details on the Institute for Methods Innovation website](#).

You must be:

- an environmental, economic or social science researcher at postdoctoral level or higher
- based at an organisation which is eligible to apply to ESRC or NERC

Participants will:

- learn from experts in policy engagement and research impact
- gain policymaker insights through direct interaction with policymakers
- have the opportunity to join an alumni network for continued support, collaboration, and professional growth post-training

The programme consists of a self-paced online training course and live virtual training or in-person training sessions at different locations in the UK. There are four modules. We encourage you to attend the full training course. However, you can pick and choose which modules to attend (and whether to attend virtually or in person).

Marine Science: Enabling the UK community to come together

The UK's marine science community organisations include the Marine Alliance for Science and Technology for Scotland (MASTS), the National Oceanography Centre (NOC) Association of Marine Science National Capability Beneficiaries (NOCA) and the Challenger Society for Marine Science.

The membership of the [NOCA Steering Board](#) have created an overview of these organisations to help clarify their remits and explain how they work together. It's your shortcut to understanding who's who, what they're up to, and how they're teaming up. Dive into the details in the [linked document](#) from the NOC for a closer look at the exciting world of marine science collaboration.

FMRI: Science Requirements Framework webinar

The Future Marine Research Infrastructure programme (FMRI) aims to develop and deliver the Natural Environment Research Council's (NERC) strategic investment in the next generation of large-scale, marine research infrastructure. The programme is working towards a high-value UKRI Infrastructure Fund bid and is part of the UK Government's Major Projects Portfolio.

The FMRI programme is currently in business case development phase, building the strategic and economic case to identify a preferred option in line with the HM Treasury Green Book process. FMRI is also coordinating activity to engage the marine science community while building capabilities that will de-risk the transition. The Webinar will explain the scope and goals of the FMRI programme, overall timeline and how the Science Requirements Framework will be developed along with details of how to engage and contribute.

There will be an open Question and Answer section at the end of the presentations. Date & Time: **1000hrs – 1200hrs Friday, 8th March 2024**. To participate in this webinar, please [register now](#) by visiting [FMRI: Science Requirements Framework Webinar Registration | noc-events.co.uk](#). For enquiries, please contact the FMRI team at fmri@noc.ac.uk.

Marine Data Management, Governance and the MEDIN toolset, 2024 training dates

The Marine Environmental Data and Information Network (MEDIN) and OceanWise are delighted to invite you to attend the popular free online training workshop: Marine Data Management, Governance and the MEDIN toolset. This training course features interactive training and discussion sessions, quizzes, and assignments to help attendees:

- **Learn** about data management principles, including the data lifecycle and quality, the role of vocabularies (or data dictionaries) and the importance of creating, maintaining, and publishing metadata.
- **Explore** the resources and tools provided by MEDIN and receive practical instruction in the use of the MEDIN data guidelines, metadata standard and controlled vocabularies.
- **Discover** how to access existing datasets available through the MEDIN portal and network of Data Archive Centres (DACs).
- **Understand** the importance of data archiving, sharing, publishing, and re-use.

Registration is now open for the workshop on the following dates:

- 18th–22nd of March 2024
(<https://classroom.oceanteacher.org/course/view.php?id=999>, enrolment key: MEDIN032024)

Provisional dates for future training workshops are as follows, email Roseanna to be added to the waiting list to be notified when registration opens:

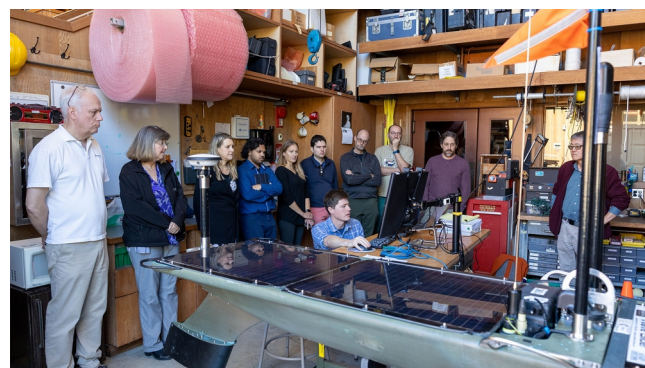
- 3rd-7th of June 2024
- 2nd-6th of September 2024
- 4th-6th November 2024

The training is split into manageable pieces and spread over five days with live lessons in the morning and independent learning in the afternoons, which can be completed flexibly around your other work commitments. See the [MEDIN website](#) for more information on the workshops, or contact Roseanna Wright (roswri@noc.ac.uk), if you have any questions.

VIEWS

Monitoring the seabed and cultivating a community

It's not often you get all the right people in one room. At the end of last year, we managed just that. Sonardyne held a two day Seabed Deformation Technical Workshop bringing together some key members of the Sonardyne academic user community in the USA and Canada to share insights, experiences and how our GNSS-A and AZA instruments can be further improved to meet their future needs. These included; Ocean Networks Canada, U.S. Geological Survey (USGS), Georgia Institute of Technology, Woods Hole Oceanographic Institution and the University of Washington, as well as our hosts Scripps Institution of Oceanography in California. As well as providing the stunning backdrop for this event, they furnished instruments for the workshop from the large pool of our equipment with which they support this community.



A technical workshop demonstration

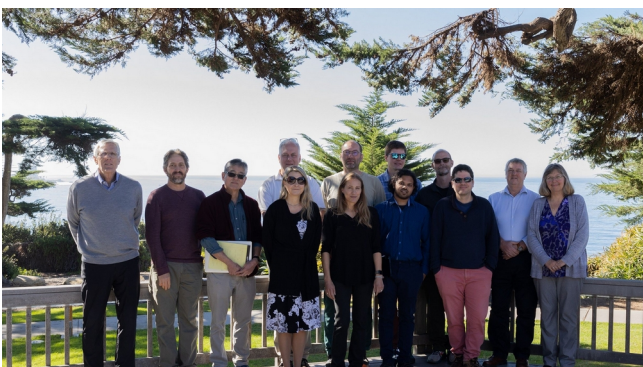
GNSS-A and AZA are two independent technologies that are providing scientists with a ground-breaking new toolset for measuring seabed deformation caused by plate tectonic movements:

- GNSS-A involves accurate (centimetric) global reference framework (principally horizontal) positioning of Fetch transponders on the seabed using an Uncrewed Surface Vehicle (USV).
- AZA is a technique to accurately measure pressure (and thus vertical elevation) of a Fetch transponder. It does this by correcting for the inherent drift of the pressure sensor. This is also being increasingly used by scientists studying ocean circulation, for whom long term pressure measurements are critical.

Each attendee shared their latest research projects and plans with the group, helping the attendees cross pollinate ideas and discuss the challenges they are facing. The core of the workshop, comprising in-depth technical insights and demonstrations was supplied by Sonardyne's, Nick Street and Guy Hebden our Queens Award winning seabed deformation technology from inception and Guy, from our applications group, has first-hand experience of product deployment and managing remote operations.

This kind of community interaction is invaluable to ensure that our technology continues to push forward to meet the demanding needs of our scientific users into the future. The USA and Canada academic sectors provide many collaborative partnerships for us and they are some of the most prolific and high profile users of our products across a wide range of research fields.

"It's humbling and very rewarding to see how key our technology is to answer some of the most critical questions about seabed deformation and how this relates to earthquake and tsunami risks. It was no mean feat to pull this collection of world-leading institutions from the US and Canadian academic community together for two days, but the feedback has been so positive that we're already being asked when we'll do it again. In fact, it's encouraging us to look across other parts of our technology portfolio to identify other workshop opportunities that will help foster a collaborative community between us and our academic users." Geraint West. Head of Science. Sonardyne International.



The workshop drew academics from across the USA and Canada

The high volume of interactive Q&A and discussion between the attendees provided valuable insight for us into how our products are

currently used and how they can be developed to further enhance future research. As a result, we are investigating the potential for further workshops to foster more user collaboration and communities in future.

Ocean temperatures are reaching new highs

New data reveals that sea surface temperatures (SST) have already exceeded the record highs of 2023. Commenting on the news, Dr Joel Hirschi, Associate Head of Marine Systems Modelling at the National Oceanography Centre (NOC) said: "not only have we have seen record high sea surface temperatures, but the data show that these temperatures are appearing earlier than their usual peak of March. This means there is a



high chance of seeing an increase in global SSTs over the next 1-2 months that markedly exceeds the 2023 record. Higher SSTs, if they persist towards spring lead to a higher likelihood of a very active global hurricane

season in the Atlantic. Around the UK specifically, SSTs are abnormally warm. As these affect the majority of our weather systems, the warmer winds increase the chance of heavy rainfall with the potential for heavy snowfall if this mild maritime air collides with cold air masses from the Arctic and/or Northern Europe."

This data comes from [Climate Reanalyzer](#) which provides daily updates on sea surface temperatures across the world. The data show average SST is now 21.1C which already exceeds the previous record high recorded in August 2023. Primary responsibility for this increase can be attributed to:

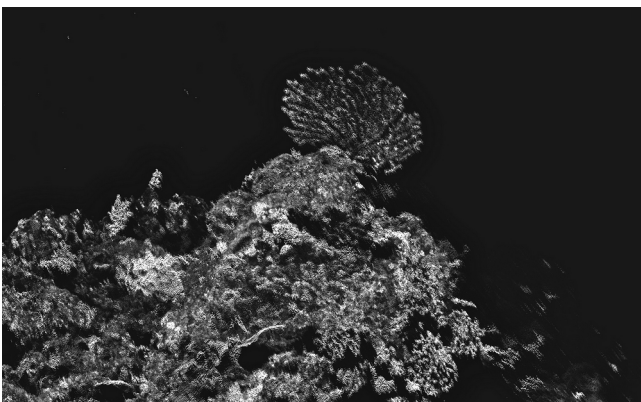
- Ongoing climate warming
- The El Nino phenomenon
- Widespread warm anomalies across the Atlantic, Indian Ocean and Northwest Pacific

Dr Hirschi expects the El Nino phenomenon to wane from spring and early summer which should lead to average SSTs dropping from summer and early autumn in 2024. El Nino waning however, increases the likeliness of a more active hurricane season as it acts as a break on Atlantic hurricanes.

SALTS

Voyis Empowers Memorial University's Galápagos Coral Expedition

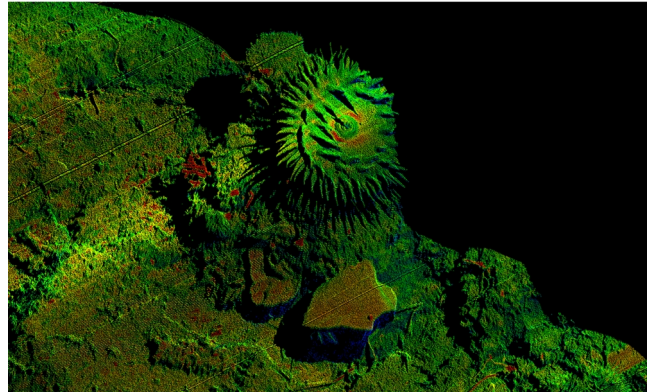
Voyis, a pioneer in cutting-edge technology solutions, is proud to announce its work with Memorial University of Newfoundland on an extraordinary scientific expedition to the Galápagos Islands funded by Schmidt Ocean Institute, and with the participation of the Charles Darwin Foundation and the Galápagos National Park. This initiative, led by Chief Scientist Katleen Robert, represents a groundbreaking effort to explore and document the enigmatic world of cold-water coral ecosystems thriving on the cliffs of this UNESCO World Heritage site.



The Galápagos Islands, renowned for their unique biodiversity, are home to a multitude of cold-water corals, including those residing in vertical habitats. These deep-dwelling corals, shrouded in mystery due to their inaccessibility, hold vital ecological significance. The expedition, taking place from September 18 to October 19, 2023, is equipped with advanced technology, including [Voyis' Insight Micro laser scanner](#), to unlock the secrets of these vertical coral reefs.

Cold-water corals on cliffs have long presented challenges to researchers due to their depth and inaccessibility to ship-based sensors. The [Insight Micro laser scanner](#), known for its capability to capture high-resolution 3D data and crisp still images with low power consumption, is poised to play a pivotal role in overcoming these obstacles. The Galápagos Marine Reserve, one of the world's largest marine protected areas, ensures that these coral ecosystems have remained untouched by destructive human activities. This pristine environment provides an unprecedented

opportunity for Chief Scientist Katleen Robert and her team to study undisturbed ecosystems. The resulting baseline data will be shared with local colleagues and used in regional conservation efforts.



All image credits: expedition FKt230918 funded by the Schmidt Ocean Institute with participation of the Charles Darwin Foundation and the Galapagos National Park.

While tropical and shallow-water corals are well-documented, cold-water corals constitute approximately half of the global coral population. Yet, the vertical environments where many thrive remain largely unexplored. This knowledge gap, especially in the southern hemisphere, underscores the significance of this expedition in contributing to a more comprehensive understanding of global coral ecosystems. Cold-water corals, which lack symbiotic algae found in shallow-water corals, rely on passing currents for sustenance. The team's research will shed light on the intricate relationship between water column dynamics, physical reef features, and coral survival. Additionally, the connection between geology and coral fine-scale distribution will be examined to better comprehend the environmental conditions shaping these vertical reefs.

The heart of this expedition lies in the deployment of the ultra-high-resolution laser scanner, which will create a detailed 3D reconstruction of the coral habitat, including cliff morphology and biological layers. Using the ROV SuBastian as a survey vehicle, the team will map these vertical reefs with unparalleled precision, allowing for the study of organism distribution, biodiversity, coral growth, and the identification of individual species. This digital reconstruction will provide accessible insights for scientists and the public alike. The insights gained from this expedition will not only advance our

understanding of these understudied ecosystems but also provide a critical reference point for evaluating human impact and shaping future conservation efforts. Voyis is honored to contribute its cutting-edge technology, the Insight Micro laser scanner, to support this vital research mission in the Galápagos Islands.

PICCOLO photo diary: 30-day scientific expedition in Antarctica

UK scientists are currently in Antarctica, on an ambitious 30-day scientific expedition onboard the RRS *Sir David Attenborough*. In this [update](#), we share some of the photos and videos taken by the shipmates on board for the [#AntarcticPICCOLO](#) project, to explore the carbon secrets of the Southern Ocean, one of the least explored parts of the global Ocean.



"We woke at 5:30am today to watch our passage through Antarctica Sound, such a contrast to 48 hours ago. We've arrived in Antarctica and this will live long in my memory." - Dr Will Homoky, Associate Professor at the University of Leeds. Photo Credit: Dr Will Homoky.



'PICCOLO' stands for "Processes Influencing Carbon Cycling: Observations of the Lower limb of the Antarctic Overturning". 'Overturning' circulation is the name for the global network of ocean currents that redistribute heat, carbon, and nutrients across the world's oceans. In Antarctica specifically, it involves the sinking of dense, carbon-rich water from the surface, which then spreads along the sea floor, before it rises to the surface hundreds of years later, thousands of kilometres away.

The PICCOLO cruise is part of the NERC (Natural Environment Research Council) funded [RoSES \(Role of the Southern Ocean in the Earth](#)

[System](#)) programme. The project is being led by PML and the University of East Anglia (UEA), alongside the British Antarctic Survey (BAS) (which operates the RRS *Sir David Attenborough*), the University of Plymouth, the University of Leeds, and the University of St Andrews.

CALENDAR

12th-14th March 2024: Oceanology International 2024
London, UK



Topics on the agenda for 2024 include:

- Asset Integrity & Monitoring
- Coastal Zone & Shallow Water
- Data Interpretation & Ai
- Hydrography, Geophysics & Geotechnics
- Marine Pollution Mitigation & Environmental Stressors
- Plus, many more.

Oceanology International 2024 is just around the corner and we're inviting you to explore new products and connect with all those involved in exploring, protecting and sustainably operating in the world's oceans and waterways. What you'll see there:

- **Dockside Demonstrations & Moored Vessels:** live on-water technology demonstrations of some of the latest acoustics, imaging, survey, and vehicles solutions.
- **450+ Exhibitors:** network with them by discovering cutting-edge payloads, technologies and access insights and knowledge.
- **Catch the Next Wave Premium Conference:** returns to Oi with a conference focusing on the climate and biodiversity crisis.

- **5 Star Conferences:** Technical Sessions and Ocean Futures content from industry, government, and academic thought leaders.

For a full list, see the [Exhibitor Directory](#).

26th March 2024: ASSW 2024 Science Day
Edinburgh, Scotland

The Arctic Science Summit Week (ASSW) 2024 Science Day will be held at the Dynamic Earth, www.dynamicearth.co.uk/. The day's theme of "Arctic Coasts" encompasses all International Arctic Science Committee (IASC) Working Group areas, iasc.info/our-work/working-groups.

There will be a mixture of invited talks on the day's theme from each working group, panel discussions on net zero arctic research aspirations and on effects of arctic environmental change on coastal communities, and a public facing Keynote presentation.



"Our Dynamic Earth" is a public facing science centre focussed on the natural history of planet Earth. Alongside the IASC working group talks and panel discussions, there will be public displays related to scientific community research activities in the Arctic. We invite ASSW participants to get in touch with the local organising committee about bringing their displays to this space, assw.info/program/science-day-2024.

10th-12th April 2024: UN Ocean Decade Conference
Barcelona, Spain

Three years after the start of the UN Decade of Ocean Science for Sustainable Development (2021-2030), oceansdecade.org/, this global conference will bring together the Ocean Decade community and partners to celebrate achievements and set joint priorities for the future

of the Decade. Hosted by Spain and co-organized with UNESCO's Intergovernmental Oceanographic Commission (IOC/UNESCO), it will be a 3 day, in-person event co-led with a range of partners: Government of Catalonia and the Barcelona City Council through the Barcelona Capital Náutica Foundation, and the Spanish National Ocean Decade Committee, which is led by the Ministry of Science and Innovation through the Spanish Research Council (CSIC).



This three-day, in-person event will be a key moment for a wide range of stakeholders to take stock of the achievements of the first three years of the Ocean Decade and formulate a shared vision for the years ahead. We express our heartfelt gratitude to all the amazing individuals who have shown tremendous enthusiasm and interest in participating. Whether you are from governments, maritime sectors, philanthropy, universities, private sector, NGOs and more, your support and commitment have left us truly inspired.

We are now delighted to invite you to take the next step and submit your request for registration, oceansdecade-conference.com/registration.php. By participating in this pivotal event of the Ocean Decade journey, you will play a crucial role in shaping the future of our ocean and making tangible strides towards a sustainable planet. Please note that, due to the high expected demand and the limited number of places in the Conference venue, you should wait for confirmation that your registration has been approved before advancing with any travel plans.

The conference will be a key moment for governments, leaders, maritime sectors, philanthropy, universities, private sector, NGOs and more, to take stock of the achievements of the first three years of the Ocean Decade and define a collective vision for the coming years.

Participants will benefit from concrete examples and best practices in ocean science to deliver “the science we need for the ocean we want”. A key outcome of the 2024 UN Ocean Decade Conference will be the publication of a set of white papers related to the 10 Decade Challenges, oceandecade.org/challenges/, that will identify future priorities for the Ocean Decade to generate the knowledge needed for science-based solutions related to global challenges, such as climate change, food security, biodiversity conservation, sustainable ocean economy, pollution and natural hazards.



A number of related high-level national and international events will take place before and after the main conference and there will also be scope for partners to propose and lead side events, exhibitions and networking events relevant to the conference themes on the days before the conference and in the sidelines of the conference itself. For more information, please contact, the Ocean Decade Team at oceandecade@unesco.org.

14th-19th April 2024: EGU General Assembly 2024

Vienna, Austria

To keep you up to date, we will be sending you important EGU24, egu24.eu, information 'EGU24 Updates' at least once per month, at the beginning of the month. You will still receive direct emails when tasks have a specific deadline, so make sure you check your spam folders and settings so that you don't miss

anything. The Programme is online, meetingorganizer.copernicus.org/EGU24/provisionalprogramme.

For conveners

- [Session organization](#) of 'SOIII - Presentation selection' must be completed between **16–26 February 2023**.
- If you are convening a [Union Symposia \(US\)](#), [Great Debate \(GDB\)](#), or a [Short Course \(SC\)](#), it is time to update your session description with the list of your speakers or presenters. You can add the speakers to the session description using the "[Session Modification](#)" tool. Please ensure that your panel is, at the minimum, following our recommendations for [speaker diversity](#). Have a question about being a convener? Find all [convener guidelines and rules](#) on our website!
- [Registration for EGU24 is now open!](#) View all the registration fees and options on the EGU24 website. Early-bird registration is available until **18 March 2024, 13:00 CET**.
- [Become a mentor](#) at EGU24 and support your colleagues! Apply by **15 March 2024**.
- Take the opportunity to connect on a specific topic by applying for a [Splinter Meeting!](#)
- Prepare your calendar with all the EGU24 important dates by checking our [Deadlines and Milestones](#) page.

For authors

- The EGU24 Letters of Acceptance/Rejection for all abstracts will be sent out on **16 February 2023**.
- [Registration for EGU24 is now open!](#) View all the registration fees and options on the EGU24 website. Early-bird registration is available until **18 March 2024, 13:00 CET**.
- Take the opportunity to connect on a specific topic by applying for a [Splinter Meeting!](#)
- [Become a mentor](#) at EGU24 and support your colleagues! Apply by **15 March 2024**.
- Prepare your calendar with all the EGU24 important dates by checking our [Deadlines and Milestones](#) page.

For attendees

- [Registration for EGU24 is now open!](#) View all the registration fees and options on the EGU24 website. Early-bird registration is available until **18 March 2024, 13:00 CET**.

- [Become a mentor](#) at EGU24 and support your colleagues! Apply by **15 March 2024**.
- Take the opportunity to connect on a specific topic by applying for a [Splinter Meeting](#)!

7th-8th May 2024: Arctic Circle Berlin Forum

Berlin, Germany

The Arctic Circle Secretariat introduces the 2024 Arctic Circle Berlin Forum, hosted by the Federal Ministry of Education and Research and co-organized with the German Arctic Office at the Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research. Please direct any further inquiries about the Berlin Forum to berlin@arcticcircle.org.

14th–16th May 2024: Third Annual Conference for the Sustainable Management of UK Marine Resources (SMMR)

Bristol, UK

We look forward to welcoming you to the Third Annual SMMR Conference; focusing on the delivery of tools and interventions to inform policy, regulation and management, this conference will be held as a hybrid event. For those able to attend in person, we invite you to join us at the [M-Shed](#) in Bristol, and for those wishing to participate remotely, we will welcome you to the conference via our online Platform. This transdisciplinary conference brings together members of the UK marine science community, funders, policy makers and practitioners: for more information, visit <https://www.smmr.org.uk/conference/>.

The first day and the afternoon of the third day will be devoted to workshops, and more details will be available soon. The second day and the morning of the third day will bring together expert plenary speakers and contributed talks and posters outlining the latest research and management practices that address key topics related to the sustainable management of UK marine resources. You will also be able to enjoy networking with your peers and making new contacts across the UK marine science research and practitioner community.

Abstracts are now invited for ten-minute presentations. Presentations demonstrating interdisciplinary research relevant to the management of marine resources are welcome, and we are particularly interested in abstracts across SMMR's three main themes (see details

below) as well as presentations that showcase transdisciplinary tools and interventions that can or are being used to inform policy, regulation, and management of marine resources. You don't have to be involved in a SMMR funded project to submit an abstract. Presenters are encouraged to reflect on knowledge gaps and future research directions in this field. Presentations should be accessible to other disciplines, recognising that the audience will represent a broad spectrum of interests and specialisms.

Each presentation session will be composed of a small number of presentations, followed by a live Q&A session with the speakers as panel members. We also welcome abstracts for paper poster submissions (Format portrait, AO). Part of the conference will be dedicated to posters and networking. The deadline for abstract submission is 16.00 on Monday 4th March 2024. Please submit your abstract using the conference abstract form [here](#). Decisions on abstracts will be issued before the end of March.

15th-18th May 2024: 6th Euro-Mediterranean Conference for Environmental Integration (EMCEI)

Marrakesh, Morocco

In partnership with the editorial office of the Euro-Mediterranean Journal for Environmental Integration (co-published by Springer and University of Sfax, Tunisia) and in collaboration with the Cadi Ayyad University (Morocco), Mohammed VI Polytechnic University (UM6P), and other Euro-Mediterranean universities, Performer organizes the 6th EMCEI.



The 6th EMCEI will focus on a wide range of research topics. Visit our website, www.emcei.net, to learn more about the event.

- EMCEI is one of the largest international gatherings of environmental science in the Mediterranean (400-500 participants).
- EMCEI aims to provide a forum where scientists, especially early career

researchers, will present their findings and discuss their ideas with experts in all fields of environmental sciences.

10th-14th June 2024: The 9th EGO meeting International Underwater Glider Conference Gothenburg, Sweden

The International Underwater Glider Conference aims to bring together leading researchers, innovators, and experts from around the globe to exchange knowledge, share discoveries, and foster collaborations in the exciting realm of underwater gliders.

The conference promises to be an engaging platform for sharing insights, addressing challenges, and shaping the future of this field. We plan for presentations, workshops, poster sessions, and networking opportunities. The planning team will return to you with event registration, hotel suggestions, and more information about financial support during the coming months. In the meantime, I encourage you to mark the dates in your calendar.



SAVE THE DATE

We are excited to announce that we will be part of hosting the next International Underwater Glider Conference.

 **Gothenburg, Sweden**
June 10 - 14 / 2024

- ▶ Registration form to be sent out separately
- ▶ Call for abstract open on **September 2023**

 **Got excited by:**

- Cutting edge science
- Plenary, workshops, and training sessions
- Scientists and industry gathered in one place

If you have any questions, don't hesitate to contact:

louise.biddle@voiceoftheocean.org -or- vturpin@ocean-ops.org



February 2024

8th-12th July 2024: AMEMR Conference 2024 Plymouth, UK

Welcome to the 7th AMEMR conference; full details at www.amemr.com/. The AMEMR (Advances in Marine Ecosystem Modelling Research) Symposium series provides an opportunity to present, discuss and learn about a wide variety of marine modelling challenges, methods, applications and outcomes.



Over the years AMEMR has grown into the forum to present and absorb the latest developments in marine (eco)system modelling and discuss new challenges and opportunities. It is a great place to develop networks and we encourage Early Career Researcher involvement. Check out the Themes and sessions for AMEMR 2024 at www.amemr.com/themes-and-sessions.html.

You can also follow us on Twitter [@amemr_updates](https://twitter.com/amemr_updates).

10th-12th September 2024: ICOS Science Conference 2024, from GHG observations through science to services.

Versailles, France

ICOS (Integrated Carbon Observation System) is pleased to open the Call for Abstracts with the overarching theme "From GHG observations through science to services", the sessions cover ICOS's three domains, Atmosphere, Ecosystem and Ocean.

The Call for Abstracts is open until Monday, 8th April, 13:00 CET. More information can be found here: <https://www.icos-cp.eu/news-and-events/science-conference/icos2024sc/call-for-abstracts>.

Please consider submitting an abstract and spread the message in your networks. The ICOS Science Conference logo can be downloaded for this purpose [here](#). Keep up-to-date with the latest ICOS Science Conference news on our channels:

- ICOS Science Conference website: <https://www.icos-cp.eu/news-and-events/science-conference/icos2024sc>
- ICOS Science Conference newsletter: <https://www.icos-cp.eu/news-and-events/newsletters>
- X (formerly Twitter): https://twitter.com/ICOS_RI
- LinkedIn:

<https://linkedin.com/company/integrated-carbon-observation-system>

- Instagram:
<https://www.instagram.com/icosri/>

23th-26th September 2024: IMBIZO7, Transitioning towards Sustainable Ocean Governance by 2030, Commitments and Challenges

Rabat, Morocco

IMBeR will hold its seventh IMBIZO (the Zulu word for 'a gathering') at the Institut Agronomique et Vétérinaire Hassan II (IAV) in Rabat, Morocco. IMBeR aims to promote and enable transdisciplinary marine research towards ocean sustainability and its governance. Topics addressed during IMBIZO7 will showcase current and emerging research, and explore potential solutions towards sustainable ocean governance by 2030, the target of multiple global sustainability initiatives.



We will follow the usual IMBIZO format of three distinct but interacting workshops. To optimise discussions, the number of IMBIZO7 participants will be limited to about 120 people (around 40 per workshop). Submit an abstract to one of the three workshops to be considered as a participant in IMBIZO7. Attendees will be selected on the relevance of their abstracts to the workshop topic. The workshop topics are:

1. Science based adaptive management and policy responses to the causes and consequences of eutrophication.
2. A framework for development of social-ecological models of transformative change for sustainable ocean management.
3. Governance transformations for resilient fisheries and aquaculture: Progressions, challenges and opportunities, [imber.info/imbizo7-workshop-3/](https://www.imber.info/imbizo7-workshop-3/).

Plenary keynote presentations and poster sessions will enable you to learn about the work

of participants in other two workshops. So, choose a workshop and submit an abstract by the 19th February, [imber.info/event/imbizo-7-transitioning-towards-sustainable-ocean-governance-by-2030-commitments-and-challenges/](https://www.imber.info/event/imbizo-7-transitioning-towards-sustainable-ocean-governance-by-2030-commitments-and-challenges/).

14th-18th October 2024: 43rd CIESM Congress: Marine and Cultural Heritage in the Heart of the Mediterranean

Sicily, Italy

Join us after a 2-year hiatus imposed by the global pandemic and subsequent issues, we are excited to resume our traditional marine research showcase. This event will foster scientific excellence and promotes peaceful dialogue across the Mediterranean and Black Sea basins. Sicily, the chosen location for our next congress, offers a stunning backdrop, combining marine science with rich coastal heritage in a region steeped in cultural and historical significance.



Our 2024 CIESM (The Mediterranean Science Commission, headquartered in Monaco) Congress will explore a wide range of marine disciplines, featuring multidisciplinary scientific sessions and contextual side events that will immerse you in the unique Sicilian atmosphere. Save the date and stay tuned for regular updates on the rich scientific and cultural programme throughout 2024.

17th-19th October 2024: Arctic Circle 2024 Assembly

Reykjavik, Iceland

The call for session proposals is now open, the deadline is the 1st May. Diversity among speaker backgrounds, affiliations and nationality is strongly encouraged. To submit, please visit www.arcticcircle.org/assemblies/2024-arctic-circle-assembly-call-for-proposals, following the

guidelines provided. For more information, <http://www.articcircle.org>.



February 2024

25th-28th November 2024: The 4th Mediterranean Geosciences Union Annual Meeting.

Barcelona, Spain

The 4th MedGU Annual Meeting will be held this year in-person and online. Visit our website (www.medgu.org) to learn more about the event. On this occasion, we are pleased to invite you to take part in the conference and share/discuss your latest research findings. Your participation in-person or virtually will support MedGU's mission of ensuring a sustainable future for humanity in the region and for the planet. The abstract submission deadline is the 30th June, download the [call for papers](#).

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 29th February.

JOBS and OPPORTUNITIES

Senior PDRA Physical Oceanography, Scottish Association for Marine Science (SAMS), Oban

Ocean boundary processes dictate how changes in climate-scale ocean circulation impact conditions at the coast. Recent advances in ocean observation, instrumentation and theory have greatly enhanced the potential for understanding these processes.

The Scottish Association for Marine Science (SAMS) is seeking a researcher to harness new observations and theory for investigating the dynamics at the sloping boundary and its causal interactions with both the deep ocean and the continental shelf. In particular, the postholder will investigate the impacts of large-scale ocean circulation on coastal sea level. The postholder will join our strong multi-disciplinary team working in the subpolar North Atlantic and northwest European continental shelf.

The postholder will deliver an exciting programme of research under projects already funded by UKRI-NERC. They will have the opportunity to conduct ship-based fieldwork in the eastern subpolar North Atlantic, utilise autonomous surface and subsurface observing platforms, and spearhead the implementation of novel drift-free bottom pressure recorders for ocean/climate research. Informal enquires to Dr Neil Fraser, neil.fraser@sams.ac.uk.

Closing date for application is 1st March 2024. Interviews to be held in March 2024. Full details can be found here: [Senior PDRA in Physical Oceanography - Job Description](#)

The University of East Anglia (UEA) are currently advertising a professorship in Coastal System Dynamics and Climate Change

The “Sir Anthony Habgood Professor of Coastal Systems Dynamics in Climate Change” provides a unique opportunity for a leading academic to shape UK coastal research.

This exciting position has arisen due to the benefaction of Sir Anthony Habgood. The successful candidate will hold a Professor (Chair) or Associate Professor position at the Tyndall Centre for Climate Change Research and the School of Environmental Sciences at the University of East Anglia.

Coastal areas in East Anglia, nationally and beyond are experiencing significant changes, this is expected to continue and likely accelerate due to climate change and sea-level rise. Join us in leading research on improving our understanding of coastal system dynamics. We are looking for a leader to develop a strong coastal research group with a focus on impact and innovative solutions. You will take a prominent leadership role in the research life of the Tyndall Centre and School of Environmental Sciences. You will produce high-quality research publications and proposals to secure relevant external funding on coastal research. You will also supervise, co-supervise and examine PhD dissertations. You will be expected to maintain a high profile as a leader in your academic field and promote enterprise and engagement at UEA.

The closing date is the 11th March 2024. For further information visit <https://vacancies.uea.ac.uk/vacancies/642/professor-associate-professor-of-coastal-system-dynamics-in-climate-change-atr1678.html>. For an informal discussion about the post please contact Professor Robert Nicholls, Director of the Tyndall Centre and Professor of Climate Adaptation via robert.nicholls@uea.ac.uk.

There are jobs in the MASTS newsletter

New vacancies:

- Marine Ecosystem Modeller – [University of Strathclyde](#) – 05/03/24
- Swash Zone Sediment Transport On Mixed Sand-Gravel Beaches – [Aberdeen University](#) – 08/03/24
- RCL Technician – [University of Glasgow](#) – 19/02/24
- Project Manager – SAMS – 11/03/24

Still open vacancies:

- Senior PDRA Physical Oceanography – [SAMS](#) – 01/03/24
- Senior PDRA Physical Oceanography – [SAMS](#) – 01/03/24
- Geospatial Specialist – [JNCC](#) – 03/03/24
- Assistant Scientist (Marine Ecology) – [SEPA](#) – 18/02/24
- Assistant Scientist (Marine Ecology) – [SEPA](#) – 18/02/24
- Director Of Aquaculture & Ecosystem Services – [FWB Park Brown](#) – 02/2024
- Senior Research Fellow – [University of St Andrews](#) – 23/02/24
- Research Fellow – [University of St Andrews](#) – 29/02/24
- Open Position for Director of the [Biological Marine Station](#) In Roscoff – 29/02/24
- Thematic Research Lead On Climate And Environment – [House Of Commons](#) – 03/04/24

PhD Opportunities:

- **NEW:** Fully Funded EPSRC PhD Scholarship In Improving The Accessibility Of Offshore Wind Infrastructure – [Harriot Watt University](#) – 19/02/24
 - Doctoral Candidate (M/F/D) In Paleoceanography / Isotope Geochemistry – [University of Oldenburg, Germany](#) – 29/02/24
 - Global Doctoral Scholarship (Geography And Earth Science) – [University Of St. Andrews](#) – 31/03/24
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There are jobs on the IMBER web site

<https://imber.info/category/news/>

- [PhD: Chemical Oceanography, National Taiwan University, Teipei, Taiwan. Apply by **19 February**](#)
- [Training course: Ocean carbon, eDNA or coastal resilience, NF-POGO Centre of Excellence 2024-2025, St John's NL, Canada. Apply by **21 February**](#)
- [Team Leader: Ocean Management and Literacy, Pacific Community, Suva, Fiji. Apply by **25 February**](#)
- [Postdoc: Effects of environmental changes on European blue carbon ecosystems, Villefranche-sur-Mer, France. Apply by **28 February**](#)
- [Track-tenure Prof: Marine Science, University of North Carolina, Wilmington, NC, USA. Apply by **29 February**](#)
- [Call for funding proposals: Risk, Response and Responsibility in Latin America and the Caribbean, Future Earth's PEGASuS VI. Submit by **29 February**](#)
- [Marine scientific advisor: Wildlife Conservation Society, Antananarivo/Nosy BeMadagascar. Apply by **29 February**](#)
- [Research technician: Manage data from biogeochemical profiling floats, MBARI, Moss Landing CA, USA. Apply **now**. No deadline given](#)
- [Postdoc: Saltmarsh carbon biogeochemistry, University of Georgia, Athens, USA. Apply now. Reviewed as received](#)
- [Asst Prof: Marine invertebrate ecology, California State University, Monterey Bay, CA, USA. Apply now. Open until filled](#)
- [Asst Prof: Marine education and outreach, California State University, Monterey Bay, CA, USA. Apply now. Open until filled](#)
- [Computational scientist: Natural carbon capture, Yale, New Haven, CT USA. Apply now. Open until filled](#)
- [Director: School of Ocean Science and Engineering, University of Southern Mississippi, Long Beach, MI USA. Apply now. Open until filled](#)
- [Prof/Assoc Prof/Director: National Center for Integrated Coastal Research. University of Central Florida, FL USA. Open until filled](#)
- [Asst. Prof: Marine Chemistry. University of Southern Mississippi, Stennis Space Center, MI, USA. Apply by **1 March** \(reviewed as received\)](#)
- [Asst Teaching Prof: Marine Biology and Undergrad Program Coordinator: Marine Science. University of Southern Mississippi, Stennis Space Center, MI, USA. Apply by **1 March**\(reviewed as received\)](#)
- [Asst Prof: Carbonate chemistry/ Biogeochemistry. University of Southern Mississippi, Stennis Space Center, MI, USA. Apply by **1 March** \(reviewed as received\)](#)
- [Bermuda Institute of Marine Sciences Summer Courses: Applications are open. Apply by **30 April**](#)
- [Assist/Assoc Prof: Microbial ecology, Louisiana State University, Baton Rouge LA, USA. Apply now. Open until filled](#)

In case you missed it...

- Programme specialist (Tsunami resilience), UNESCO Ocean, Perth Australia. Apply by **19 February**
 - Postdoc (Gender and Development): WorldFish, Nairobi, Kenya. Apply by **25 February**
 - Assistant Prof.: Microbial oceanographer, University of Hawai'i, Mānoa, USA. Apply by **1 March**
 - Researcher/Senior Researcher: Maritime history, National Museum of Denmark, Copenhagen, Denmark. Apply by **1 March**
 - Research scientist: Marine and fisheries ecosystems, CFER, Memorial University, Newfoundland, Canada. Apply by **1 April**
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