

# Challenger Wave



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

## NEWS

### Professor Penny Holliday awarded the Challenger Medal

The National Oceanography Centre's (NOC) Chief Scientific Officer, Professor Penny Holliday, was presented with the Challenger Medal at the Challenger Society Conference hosted by the Scottish Association of Marine Science (SAMS) this year.

Professor Holliday's Challenger Medal Lecture, entitled "Changing North Atlantic Ocean: science, fun and persistence", took up the ocean observation theme on Thursday the 5th of September. Professor Holliday says that understanding the way the Atlantic Ocean changes over time is both compelling to scientists and also now recognised as being crucial for our future wellbeing.



Professor Penny Holliday with the Challenger Medal.

"I will trace a selected history of the past 50 years of observing and understanding of physical changes in the North Atlantic, told through the personal lens of my own research," she said ahead of the event. "Along the way I'll be reflecting on the fun and the challenges that science has given me, and highlighting how the

way that we do our work is just as important as the work itself."

### Microbe Dietary Preferences Influence the Effectiveness of Carbon Sequestration in the Deep Ocean

The movement of carbon dioxide (CO<sub>2</sub>) from the surface of the ocean, where it is in active contact with the atmosphere, to the deep ocean, where it can be sequestered away for decades, centuries, or longer, depends on a number of seemingly small processes. One of these key microscale processes is the dietary preferences of bacteria that feed on organic molecules called lipids, according to a journal article, "[Microbial dietary preference and interactions affect the export of lipids to the deep ocean](#)," published in *Science*.

"In our study, we found incredible variation in what the different microbes preferred to digest. Bacteria seem to have very distinct diet preferences for different lipid molecules. This has real implications for understanding carbon sequestration and the biological carbon pump," said journal article co-author [Benjamin Van Mooy](#), a senior scientist in the Marine Chemistry and Geochemistry Department at the Woods Hole Oceanographic Institution (WHOI). "This study used state-of-the-art methods to link the molecular composition of the sinking biomass with its rates of degradation, which we were able to link to the dietary preferences of bacteria." The biological carbon pump is a process where biomass sinks from the ocean surface to the deep ocean.

About 5 to 30% of surface ocean particulate organic matter is composed of lipids, which are carbon-rich fatty acid biomolecules that microbes use for energy storage and cellular functions. As the organic matter sinks to the deep sea, diverse communities of resident microbes degrade and make use of the lipids, exerting an important control on global CO<sub>2</sub> concentrations.

Understanding this process is vital for improving our ability to forecast global carbon fluxes in changing ocean regimes. Geographic areas where more lipids reach the deep ocean undegraded could be hotspots for natural carbon sequestration.



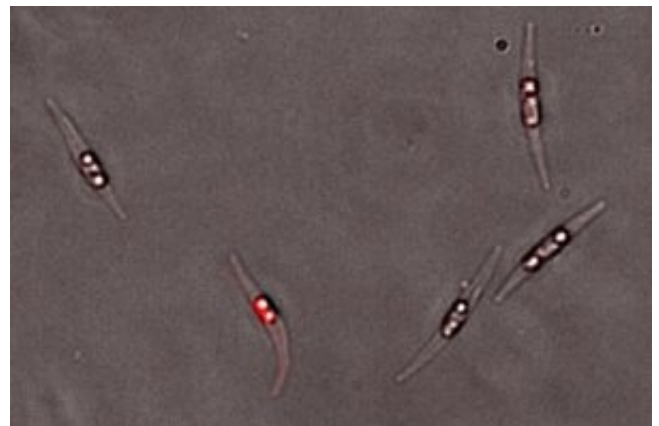
Co-lead authors Lars Behrendt (left; ETH-Zürich) and Jon Hunter (right; WHOI) aboard the R/V Neil Armstrong, sampling sinking particles for lipid analysis. (Image credit: Helen Fredricks, ©Woods Hole Oceanographic Institution)

"Bacteria isolated from marine particles exhibited distinct dietary preferences, ranging from selective to promiscuous degraders," the article states. "Using synthetic communities composed of isolates with distinct dietary preferences, we showed that lipid degradation is modulated by microbial interactions. A particle export model incorporating these dynamics indicates that metabolic specialization and community dynamics may influence lipid transport efficiency in the ocean's mesopelagic zone." The mesopelagic zone extends about 200-1000 meters below the ocean surface.

"I was thrilled to see how much there is to learn about the functioning of the ocean by combining two technologies, high-end chemical analysis and microscale imaging, that have historically never been used together", said co-author [Roman Stocker](#), professor at the Institute of Environment Engineering, Department of Civil, Environmental and Geomatic Engineering, ETH

Zurich, Switzerland, "I believe that work at the interface between the exciting technologies we now have available in microbial oceanography will continue to yield important insights into how microbes shape our oceans, now and into the future."

"Scientists are starting to understand that lipids in the ocean can vary significantly depending on different environments, such as the coast versus the open ocean, and the season," said Van Mooy. "With this information, researchers can start to consider whether there are places in the ocean where lipids sink and are sequestered very efficiently, while there may be other locations where lipids are barely sequestered at all or are very inefficiently sequestered."



Cells of phytoplankton (*Phaeodactylum tricornutum*, a diatom) with lipid droplets inside each cell, which appear as faintly yellow spheres. (Image credit: Steven Smriga, ETH-Zürich)

"What excites me about this paper is that it shows bacteria are not just eating any type of lipid, but are very specialized and, like us, have specific food preferences," said article co-author [Lars Behrendt](#), associate professor and SciLifeLab fellow at the Science for Life Laboratory, Department of Organismal Biology, Uppsala University, Sweden. "This changes how we think about how microorganisms consume food in their natural environment and how they might help each other or compete for the same resource. It also supports the idea that combinations of bacteria better break down specific compounds, including lipids, or to achieve other desired functions."

In addition to studying specific bacteria species in isolation, the researchers also looked at how dietary preference affects degradation rates by multispecies communities of bacteria, which they

stated is ecologically more relevant than species in isolation. The researchers found that simple synthetic co-cultures exhibited different degradation rates and delay times when compared to monocultures. The researchers also noted that the degradation of particulate organic matter in the natural environment is even more complex than what is described in the study.

"Phytoplankton are the main reason the ocean is one of the biggest carbon sinks. These microscopic organisms play a huge role in the world's carbon cycle, absorbing about as much carbon as all the plants on land combined," said co-author [Uria Alcolombri](#), senior lecturer, Alexander Silberman Institute of Life Sciences, Department of Plant and Environmental Sciences, The Hebrew University of Jerusalem. "It's fascinating that we can study tiny microbial processes under the microscope while uncovering the biological factors that regulate this massive 'digestive system' of the ocean."

Major funding for this research was provided by the Moore Foundation, Simons Foundation, and National Science Foundation. Additional support was provided by the European Molecular Biology Organization, Natural Sciences and Engineering Research Council of Canada, Canada Foundation for Innovation, Human Frontier Science Program, Canada Research Chair from the Canadian Institutes for Health Research, Independent Research Fund Denmark, Swedish Research Council, Science for Life Laboratory, European Union's Horizon 2020 Research and Innovation Programme, and Swiss National Science Foundation :- [Sourced from the Woods Hole Oceanographic Institution](#)

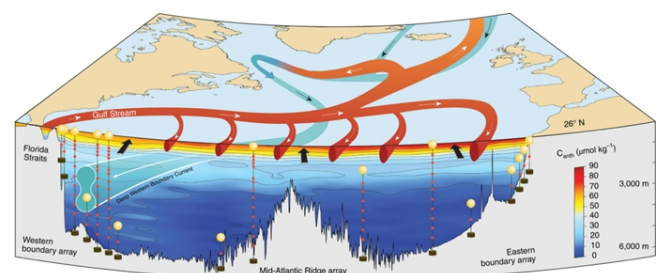
### The Florida Current: New insights from 40 years of observations

A [new study](#), co-authored by scientists at the National Oceanography Centre (NOC), has found that a key component of a major system of ocean currents that keeps the Northwest European climate mild has remained stable for the past four decades. The study of the Florida Current, which forms a major part of the Atlantic Meridional Overturning Circulation (AMOC), bringing heat from the tropics to north-west Europe, counters previous reports, which have showed both to be slowing down.

Scientists say that this could be because a slowing AMOC, predicted in models, hasn't yet

impacted the Florida current or that four decades isn't long enough to show changes. The study was led by the US National Oceanic and Atmospheric Administration's [Atlantic Oceanographic and Meteorological Laboratory](#) (AOML), alongside NOC and the University of Miami's [Cooperative Institute for Marine and Atmospheric Studies](#) (CIMAS).

"There is growing interest in the AMOC, a complex system of ocean currents and eddies that form a huge vertical loop spanning the whole length of the Atlantic Ocean," says study co-author, Dr Ben Moat, senior scientist at NOC. "By moving heat, freshwater, carbon, nutrients and other properties around, it can have a major impact on our weather systems and climate. Most current climate models, predicting its behaviour, suggest its strength could decline by up to 45% towards the end of this century. However, there is limited observational evidence. Our latest study, using observations of the Florida Current, which feeds the Gulf Stream and is a major part of the AMOC, shows that it has remained remarkably stable over the past 40 years and reduces our estimate of the reduction of the AMOC over the last 20 years. If climate models are correct that the AMOC is slowing or will slow down, this study indicates that such a slowdown has not yet been reflected in the Florida Current or that the observational records are still too short to detect it with confidence."



*Schematic of the RAPID\_MOCHA\_WBTS Array in relation to meridional overturning circulation pattern. Image credit University of Miami.*

This latest study re-assessed data from NOAA's Western Boundary Time Series (WBTS) project and its predecessors, which date back to 1982, and use a 120-km long subsea telecoms cable and data gathered by research vessels to monitor the Florida Current. Previous studies

hadn't accounted for the gradual change in the Earth's magnetic field over time, which impacts the cable data. After correcting for this, the authors found that a previously reported weakening in the Florida Current was cancelled out and that it has remained stable for the past four decades. This result in turn reduces a weakening also previously observed in the AMOC, between 2004–2022, by about 40%, due to the cable data also contributing to AMOC calculations. "Although the AMOC observing system at 26.5N has 20 years of observations, the time series is still too short to draw definitive conclusions," Ben adds.

"Our study focuses on the long-term change in the Florida Current strength, which is an important component of the AMOC," says Denis Volkov, CIMAS scientist and lead author of the study. "However, it is possible that the AMOC is changing without a corresponding change in the Florida Current. The AMOC may still be weakening and/or what we are observing is just part of the interdecadal variability, we still need to find out."



The WBTS project is part of an international collaboration which partners include AOML's WBTS, which is funded by NOAA's Global Ocean Monitoring and Observing (GOMO) Program, the University of Miami's Rosenstiel School of Marine, Atmospheric, and Earth Science (UM/RSMAS) Meridional Overturning Circulation and Heat-flux Array (MOCHA) Program (funded via the National Science Foundation, NSF), and NOC's [Rapid Climate Change \(RAPID\) Programme](#) (funded by the [Natural Environment Research Council](#)). The corrected Florida Current transport time series is made freely available through the [WBTS project's webpage](#).

### **SAMS Director to lead university-wide research**

The Director of the Scottish Association for Marine Science (SAMS), Professor Nick Owens, will head up research activity at UHI (University of the Highlands and Islands) after being appointed to the university's senior executive team as Vice-Principal for Research and

Innovation. Prof. Owens, who has been Director of SAMS since 2015 and will continue in the role, has previously led the British Antarctic Survey and brings considerable experience in managing complex research organisations. He will play a crucial role in shaping the research strategy of UHI, of which SAMS is a partner.



*SAMS Director Professor Nick Owens has been appointed UHI Vice-Principal for Research and Innovation*

Prof Owens said: "I am excited to assume the role of Vice-Principal for Research and Innovation. During my nine years at SAMS and UHI, I have witnessed the university's positive impact on our region and its people. UHI is not only a force for good in education but also in the research and innovation we foster. As Chair of the Research Ethics Committee, I have seen the diverse, high-quality research our colleagues across UHI produce, which has been truly mind-expanding. In this new role, I look forward to further exploring our world-leading research and elevating the importance of research and innovation within UHI."

Meanwhile, Professor Jane Lewis, Principal of UHI Shetland, will take on the role of Vice-Principal for Strategic Projects. The University of the Highlands and Islands (UHI) said the appointments of two esteemed leaders from its partnership to the senior executive team reinforced its commitment to collaborative excellence. These strategic appointments align with UHI's 2030 Strategic Plan, which aims to create a 'fully integrated, sustainable, and people-oriented organisation'.

Vicki Nairn, UHI's Principal and Vice-Chancellor who is leading UHI's transformation, said: "Our primary focus is to ensure that every decision we make as an institution aligns with our 2030

strategic objectives of achieving operational excellence and financial sustainability. “By fostering greater collaboration across the partnership, we will become a more efficient and effective tertiary organisation. The unique expertise that Professors Lewis and Owens bring to the senior executive team will be invaluable as we navigate this critical phase of transformational change. I am looking forward to welcoming them to the team and working closely with them on strategic initiatives.”

Both professors will continue in their current roles at their respective institutions, with Professor Lewis dedicating 0.5 Full-Time Equivalent (FTE) and Professor Owens 0.2 FTE to their vice-principal responsibilities. The appointments are set for a 12 month term. The UHI senior executive team is set to undergo further changes with the upcoming retirement of University Secretary Sheena Stewart, who will be stepping down later this year.

### Scottish built light sensor reveals ocean discovery

New technology built at the Scottish Association for Marine Science (SAMS) that can measure the tiniest trace of light beneath the ocean surface has revealed photosynthesis occurring at greater depths than previously believed. The discovery is part of a new international [study](#) published in Nature Communications that shows how the photosynthetic potential of phytoplankton in the global ocean may have previously been underestimated. The study was carried out as part of the MOSAiC expedition at 88° northern latitude and revealed that even in the Arctic far north, phytoplankton can build up biomass through photosynthesis as early as the end of March. At this time, the sun is barely above the horizon, so it is still almost completely dark under the snow and ice cover of the Arctic Ocean.

Photosynthesis converts sunlight into biologically usable energy and thus forms the basis of all life on our planet. However, previous measurements of the amount of light required for this have always been well above the theoretically possible minimum. Fieldwork during the MOSAiC expedition deployed three OptiCAL sensors built at SAMS that can measure light almost down to photon level and showed how photosynthesis can occur with a quantity of light that is close to this minimum.

SAMS scientist Dr Phil Anderson, who designed and built the OptiCAL sensors, said: “The sensors picked up photosynthetic activity at conditions 10 times dimmer than previously modelled, so this was an exciting discovery. Photosynthesis in the ocean plays a huge part in producing oxygen and capturing carbon, so it is important to know if we have underestimated this process. Through this study, we’ve discovered that tiny ocean organisms respond to light in underwater conditions that humans would consider utter darkness. They are remarkably efficient in harnessing all of the light physically possible to make energy. We were delighted that the sensors worked so well, continuing to send data after the fieldwork team had left. We’re currently working on a new OptiCAL that is 100 times more sensitive to light in order to explore even darker layers of the ocean.”



*The MOSAiC project conducted a year-long fieldwork campaign in the Arctic that included measurements taken during the so-called ‘polar night’ when the sun barely reaches the horizon in winter time.*

As part of the MOSAiC expedition, the German research icebreaker *Polarstern* was frozen into the icepack of the central Arctic for a year in 2019, in order to investigate the annual cycle of the Arctic climate and ecosystem. The team led by Dr Clara Hoppe from the Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research (AWI) focused on studying phytoplankton and ice algae. These are responsible for the majority of photosynthesis in the central Arctic. Unexpectedly, the measurements showed that just a few days after the end of the month-long polar night, plant biomass was built up again, for which

photosynthesis is absolutely essential. The results were particularly surprising because photosynthesis in the Arctic Ocean takes place under snow-covered sea ice, which only allows a few photons of sunlight to pass through. As a result, microalgae only had about one hundred thousandth of the amount of light of a sunny day on the Earth's surface available for their growth.

"It is very impressive to see how efficiently the algae can utilise such low amounts of light. This shows once again how well organisms are adapted to their environment" says Dr Hoppe. "Even though our results are specific to the Arctic Ocean, they show what photosynthesis is capable of. If it is so efficient under the challenging conditions of the Arctic, we can assume that organisms in other regions of the oceans have also adapted so well."



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### **UK becomes first country to map and estimate carbon stored in seabed habitats**

Over the past few decades, we've made great strides in recognising the importance of carbon storage to regulate climate in habitats on land, such as forests and peatlands. New, groundbreaking research has now confirmed that marine habitats also store vast amounts of carbon and must be protected.

The Blue Carbon Mapping Project, led by the [Scottish Association for Marine Science](#) (SAMS) on behalf of [WWF](#), The Wildlife Trusts and the [RSPB](#), provides a detailed estimate of the amount of carbon captured and stored in UK seas, including Marine Protected Areas (MPAs). The [series of reports](#) uses the best available data on coastal and marine habitats that capture and/or store carbon (known as 'blue carbon'). It estimates that 244 million tonnes of organic carbon are stored in just the top 10 centimetres of seabed sediments and vegetated habitats, with over 98% of it stored in seabed sediments such as mud.

Blue carbon is captured and/or stored in coastal and marine habitats including saltmarshes, seagrass meadows, kelp forests, biogenic reefs and in sediments such as mud on the seabed, as

well as microscopic algae in our seas. Protecting blue carbon habitats from damage can prevent the release of carbon into the atmosphere, helping to limit climate change, as well as safeguard vital areas for wildlife. These habitats are also important for the future of UK fisheries and coastal communities. Blue carbon must be considered in planning activities at sea (e.g. fishing and developments), to avoid and minimise damage to these special habitats. Marine Protected Areas must be protected from destructive activities. If properly protected, these areas could help safeguard blue carbon and marine wildlife.

### **The Life and Works of Ernest W. L. Holt 1864–1922: context, connectedness and content**

Ernest W. L. Holt was one of the founders of the Challenger Society and the first exponent of the discipline of Fishery Science in the UK. The book written by Noël P. Wilkins, now in press, is expected in January 2025 in a very limited print run. For more information email [junoebooks@gmail.com](mailto:junoebooks@gmail.com).

### **Early Career Ocean Professionals (ECOPs) invited to pay tribute to Professor Mário Ruivo through their outstanding projects**

UNESCO's Intergovernmental Oceanographic Commission (UNESCO-IOC), Portugal and EurOcean Foundation are inviting Early Career Ocean Professionals (ECOPs) to apply to the 2nd edition of the [Mário Ruivo Memorial Lecture Series](#)

The Memorial Lecture Series pays tribute to the legacy of Professor Mário Ruivo, former Executive Secretary of the UNESCO-IOC, and Portugal's greatest champion of ocean science and its contribution to sustainable development. Endorsed by the [UN Decade of Ocean Science for Sustainable Development](#), this initiative intends to stimulate and recognise ECOPs who are contributing in a substantive way to the United Nations' 2030 Agenda, particularly [Sustainable Development Goal 14](#), 'Life below water' and to the vision and mission of the Ocean Decade.

Professor Mário Ruivo's inspiring work, lifelong commitment to ocean science and sustainability, and foundational contributions to the development of the UNESCO-IOC will be

honoured through a lecture on the winning project, to be delivered by a distinguished ECOP during the IOC Assembly in June 2025. Empowering new generations of ECOPs and their projects is key to ensuring we can co-design and co-deliver "The Science We Need For The Ocean We Want" within the framework of the Ocean Decade.



Applications are open to ECOPs, born in 1984 or later, who are leading projects as Principal Investigators (PI) or co-PIs. The [submission deadline](#) is on 2 February 2025.

**Celebrating computing heroines: from Ada Lovelace to today's tidal modellers**

Did you know that the term "computer" originally referred to people who performed calculations and computations, rather than machines. Not only that, many of the early "computers" were women, with about half of all computers being women in 1944. Going further back, it was a woman, born just under 200 years ago, that's known as the first computer programmer. Ada Lovelace is her name and the 8th October, was a [celebration of her](#) and, more widely, women in science, technology, engineering and mathematics (STEM).



A team of "computers" from 1953.

It's a subject close to our hearts, especially at the NOC's Liverpool site where, until around the 1960s and the advent of digital computers, women "computers" were fundamental to predicting the world's tides. It was mostly women "computers" that programmed the pioneering [tide prediction machines](#) developed by the Liverpool Tidal Institute (LTI), now part of the NOC, then based at Bidston Observatory on Merseyside. Their work helped support safe navigation, coastal and port operations. They also played a vital role in events such as the D-Day landings, where tidal predictions were critical to the successful pivotal World War II operation.

**IEWS**

**Marine Robotics gather data from the Gulf of Mexico Loop Current System**

Important oceanographic data from Atlantic Ocean currents in the U.S. Gulf of Mexico has been gathered fully remotely, thanks to [Sonardyne](#) technology and an uncrewed surface vehicle (USV) supplied by [SeaTrac Systems](#). A number of Sonardyne [Origin 65](#) Acoustic Doppler Current Profilers (ADCPs) and Current [Pressure Inverted Echo Sounders](#) (CPIES) are positioned on the seabed in the Gulf of Mexico gathering long term data on the Loop Current System (LCS).

Understanding the LCS is important for oceanographers as it has a wide-reaching impact on many areas including the disruption of subsea operations, hurricane intensity and changes to nutrient and food cycles important to marine life. However, sending manned vessels offshore to gather this LCS data incurs risk to crews and high operational costs, as well as generating greenhouse gas emissions.

SeaTrac recently launched its SP-48 USV from the Louisiana Universities Marine Consortium (LUMCON) in Cocodrie, LA and remotely piloted it 580 nautical miles with an [HPT 7000L](#) transceiver onboard to acoustically gather the data from the ADCPs and CPIES. The use of the solar and battery powered USV reduced the environmental impact and cost of sending a crewed vessel for the mission whilst allowing for 24hr operations with no manual intervention or personnel onboard.



*A SeaTrac SP-48 USV at work in the Gulf of Mexico*

Aidan Thorn, Business Development Manager for Marine Robotics at Sonardyne, commented: "The use of a fully solar powered USV for a data gathering operation of this scale is a key moment in marine robotics. The Gulf of Mexico presents some of the most challenging ocean currents for any vessel, not-least an uncrewed one. One of the key reasons SeaTrac was chosen to partner with us on this project was their willingness to rise to the challenge and we are delighted with the results. USV's are a great platforms for collecting data from our seabed nodes and profilers through the integration of our acoustic communication technologies. We look forward to continued work with SeaTrac on this project and hopefully many others."

Three further sets of data will be gathered over the next 18 months using the same uncrewed methods before the project completes. Hobie Boeschstein, Director of Operations and Business Development, at SeaTrac said: "We're delighted to be working with Sonardyne on this project. Our SP-48 USV provides a complete system for maritime observation, data collection and reconnaissance."

Powered by the sun with high-reserve batteries, it can operate in both near-shore and offshore environments through varying weather and sea conditions, as this mission has demonstrated. It can undertake missions lasting from several hours to several months and is designed to support a wide range of customer payloads. Sonardyne's technology and company ethos is a great fit for ours and we look forward to supporting them in many future missions."

## **NOR Offshore Rental Expands UK Operations with Major Sonardyne Technology Investment for Construction Survey.**

NOR Offshore Rental (NOR) has made a further, multi-million-pound, investment in Sonardyne products for their rental pool as part of their expansion at NOR Ltd, their UK subsidiary office in Aberdeen. This investment comes as result of increased demand for NOR's services and equipment globally. NOR has ambitions to outfit their Aberdeen office with the same services as their headquarters in Norway.

The investment includes stocking their rental pool with additional tooling and survey equipment including SPRINT-Nav, Compatt 6+ and Fusion 2 systems to support the offshore construction industry. Welcoming the investment, Sonardyne's Aberdeen Sales Manager, Colin Sutherland commented; "It's great to see NOR's confidence in our technology confirmed by this further investment in products for their rental pool. The NOR Ltd. expansion is beneficial for all involved; NOR, their customers, Aberdeen and of course us. We look forward to working with them as they continue to serve the North Sea marine industry."



*NOR's investment includes several Sonardyne Compatt 6+ LBL and USBL transponders. This image shows Compatt 6+ units being manufactured at Sonardyne's Headquarters in Hampshire, UK.*

With duplicate services in Aberdeen, NOR can increase speed and efficiency when it comes to mobilising their services and equipment from both sides of the North Sea. To accommodate the expansion, NOR LTD will be moving to a new facility which is triple the size of their current location. Jostein Jansen, CCO, NOR Offshore Rental, says; "The investment in Sonardyne



equipment is a part of our global growth strategy, to meet our customer needs globally. It is a very exciting time for NOR, and we are looking forward to seeing our UK subsidiary in Aberdeen grow to its full potential with the support of valued suppliers such as Sonardyne.”

## SALTS

### National Oceanography Centre trialling fossil-free marine fuels

Use of hydrotreated vegetable oil (HVO), made from used vegetable oils and fats and non-food crops, is able to significantly reduce net CO<sub>2</sub> vessel emissions, compared to conventional diesel fuel. The trial is funded by the UK’s Natural Environment Research Council (NERC), which owns the Royal Research Ships (RRS) *James Cook* and *Discovery*, in support of a UK Research and Innovation (UKRI) goal to achieve net zero emission operations by 2040.

HVO can be used as a “drop-in” replacement in marine engines and because it’s made from already used products and non-food crops, its life-cycle CO<sub>2</sub> emissions are much lower than fossil fuels. Kevin



Williams, Head of Research Ships Engineering at NOC, says, “As a research organisation, NOC is focused on understanding and protecting our ocean. Reducing our own environmental footprint is a key part of that and the carbon emissions from our vessels is a major part of that.”

During the trial, HVO is replacing the low sulphur marine gas oil (LSMGO) NOC normally uses. HVO is one of the more stable biofuels, which means it’s suitable for the different conditions NOC vessels operate in, from high temperature regions to the Arctic. However, there are some challenges around its use, such as cost and availability, especially in the remote places NOC operates, says Williams. The HVO trial is part of wider [emissions reduction work at NOC](#). For the vessels, this includes assessing the use of batteries onboard, to reduce the use of the engines during scientific operations, and a focus on marine operations planning, to reduce transit

time and more efficient routing based on weather.

## CALENDAR

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

Reykjavik, Iceland

For more information, <http://www.articcicle.org>.



A new initiative, the [Business Forum](#) will be announced at this assembly. Participants will benefit from a wide range of connections, opportunities and networking events, along with discussions on future trends, entrepreneurship and finance. [Registration](#) is open, and for special hotel rates visit [the assembly rates](#). The general programme is available [here](#) and the business programme [here](#).

### 18th-20th October 2024: ‘Archwiliwch ein planed - Explore our planet’ public event

Cardiff, UK



In partnership with the Natural Environment Research Council (NERC) and Techniquet,

Cardiff, we are excited to announce a free public event 'Archwiliwch ein planed - Explore our planet'. The event will offer a blend of hands-on attractions and in-person talks led by the UK's leading environmental scientists, and we're even bringing one of our world-leading research vessels RRS *James Cook*.

'Archwiliwch ein planed - Explore our planet' will include free, ticketed access to Techniquet, the Cardiff based science discovery centre: focused on exploring the world of science, technology, engineering and mathematics for schools, families and adult visitors. Dr John Siddorn, NOC CEO, said: "This is a unique opportunity for the public to visit a working research ship and understand what life on the ocean is like for our researchers and crew. Our scientists and technologists can be at sea for weeks at a time, carrying out critical research under difficult conditions. It takes great skill across a range of disciplines to understand the ocean. Adults and children can see first-hand what it's like on the ship, and we may even inspire some to become the oceanographers of the future".

### **5th-7th November 2024: Marine Alliance for Science and Technology, Scotland (MASTS), annual science meeting**

*Glasgow, Scotland*

The MASTS ASM will take place at the Technology & Innovation Centre. Stay up to date with all the latest news on our [ASM webpage](#). Limited online attendance options are also available. Go straight to our [events page](#) to get your ticket.

### **Special sessions**

We are pleased to confirm our first special session for the 2024 MASTS ASM. Pitcairn's MPA (Marine Protected Area) is the 3rd largest in the world, is a platinum level Blue Park Award winner, and its purity as a fully intact marine ecosystem provides an important scientific reference point in measuring the impact of climate change. The session will cover the ambition of the new Marine Science Base on Pitcairn, scientific evidence on the health of marine biodiversity through recent science expeditions and the efforts of the Pitcairn Islands Government in protecting such a large MPA, with the support of the Blue Belt Programme.

As part of the MASTS Annual Science Meeting, Prof William Austin (University of St Andrews)

and Prof Hilary Kennedy (Bangor University, Emeritus) are hosting a workshop on "Filling knowledge gaps and identifying priorities for Blue Carbon". A current grouping of BC ecosystems (BCE), based on the evidence available to support climate mitigation, are termed "actionable" and include seagrass, tidal marsh, and mangrove. Another group of BCEs, termed "emerging" include macroalgae, tidal flats and subsurface sediments, while a third grouping are termed "non-actionable" (sometimes also referred to as "supporting" BCEs) and include corals, shellfish and maerl.

We are pleased to announce that MEDIN Marine Data will be running a workshop at this year's Annual Science Meeting on "Marine Data Management, Governance, and the MEDIN Toolset". With data management being such a critical skill, underpinning the integrity, efficiency, and impact of research, this workshop will enhance attendees' knowledge and skills in marine data management as well as introducing MEDIN's catalogue of useful resources. This is an open workshop, but particularly aimed at PGRs. Find out more below and check MEDIN's website for more workshops; [find out more here](#).

"Linking conservation/restoration projects with community empowerment". The purpose of this workshop is to start a discussion regarding how to transition existing marine conservation/restoration research projects into ongoing community-led environmental projects through community empowerment. It will include short presentations by those working with communities on conservation/restoration projects, detailing lessons learned and best practice. This will be followed by a facilitated session to identify a generic theory of change.

"Tracking top predators in marine renewable energy development areas". An opportunity for the marine wildlife tracking community (i.e., academia and industry) to come together to identify key knowledge gaps and provide "best practice" guidance on the advantages and limitations of tracking data in the context of assessing effects of marine renewables on wildlife.

"Innovations in sea lice monitoring". Scotland is undergoing a new approach to sea lice management through the new sea lice risk assessment framework. The framework calls for

improved sea lice monitoring methods, both targeting the in-water larval stages as well as automation of sea lice counting on farms. This workshop will look at innovations in methods for monitoring sea lice.

Abstracts are invited for 12-minute presentations or 5-minute speed talks, for a special session that will explore the theme: 'Marine mammals in an Ocean of Change'.

"Designing multiple driver experiments". This workshop is aimed at students and ECRs new to multiple driver experiments. It is focused on the design of manipulation (laboratory or field) experiments, though many of the concepts are applicable to observational data.

### **5th-7th November 2024: Marine Autonomy and Technology Showcase**

*Southampton, UK*

MATS [registration](#) is open. MATS has proudly grown over the last decade to become one of the foremost events in the marine technology calendar, attracting presenters and delegates from around the world. Huw Gullick, Managing Director of NOC Innovations, said: "This will be our 10th MATS and whether you are joining us for the first time or are an event regular, we are looking forward to celebrating the occasion with you."

Keynote speakers include NOC CEO Dr John Siddorn, Dr Katherine Hill, Lead Scientist on NERC's Future Marine Research Infrastructure (FMRI) programme, and special guest, Conrad Humphreys, to bring his unique inspirational insight as a British yachtsman, business owner, adventurer and explorer to this year's MATS.

### **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](http://www.medgu.org)) to learn more about the event. On this occasion, we are pleased to invite you to attend 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.

### **26th-27th February 2025: The first OCEAN DECADE International Coastal Cities Conference**

*Qingdao, China*

Coastal cities are among the fastest-growing human settlements in the world. They are on the frontline to benefit from the growth of a sustainable ocean economy, but also to face escalating threats from climate change, ocean pollution, and other environmental risks. The Ocean Decade presents a unique opportunity to harness ocean science and knowledge to address these challenges, enhance the resilience of coastal cities to global change, and improve the living conditions and well-being of their inhabitants. Happening ahead of the 2025 [United Nations Ocean Conference](#), this event will accelerate the co-design of ocean science for the sustainable development of coastal cities. Join us to build a better ocean for better cities; [Registration](#) is open until 20th November 2024.

### **11th-13th March 2025: The 4th Ocean Visions Biennial Summit.**

*Vancouver, Canada*

We're thrilled to announce that the 4th [Ocean Visions Biennial Summit 2025](#) will be held in March in Vancouver, Canada. This action-oriented event will bring together scientists, policymakers, innovators, funders, students, and others to explore solutions and strengthen partnerships to help restore our ocean and stabilize the climate. We invite you to [be part of the movement](#). Join a multidisciplinary community focused on advancing solutions to the ocean's most pressing challenge, climate disruption.

Programming will be highly interactive and include ample opportunities for collaboration. Participants can look forward to:

- **Sharing & Learning:** Gain insights from inspiring keynote speakers and panel discussions on the forefront of ocean-climate research and innovation.
- **Workshops:** Dive deeper with fellow attendees on challenges and issues of mutual concern.
- **Networking:** Connect with leading experts, industry pioneers, and decision-makers shaping the future of ocean-climate health through time devoted to building and strengthening relationships.

- **Collaborating:** Forge partnerships and collaborations to accelerate the impact of your work in ocean-based climate solutions through interactive, action-oriented sessions and activities.

We're excited to announce that registration for the Ocean Visions Biennial Summit 2025 is now open. The Summit is designed to be highly interactive. A diverse set of session types and events will engage scientists, policymakers, innovators, funders, students, and others around innovative approaches and solutions to restore our ocean and stabilize the climate. The Summit will also help build and strengthen the multisector partnerships that are needed to make complex solutions real. [Register Now](#) and contribute to the Program.

Ocean Visions is seeking proposals for portions of the Summit's programming, which will include thematic sessions, focused workshops, plenaries, and idea pitches. If you have ideas for relevant and innovative content that could be featured, we ask that you [submit idea](#) by Friday, November 8th. We will review all submissions and share outcomes by mid-December.

The Summit is designed to welcome and engage a multidisciplinary community. The event will feature a mix of session types as well as ample opportunities to collaborate. Summit participants will share and discuss cutting-edge advancements in ocean sciences, engineering, policy, governance, and economics, and coordinate action on key priorities to advance innovative solutions for ocean-climate

restoration. We invite you to be [part of the movement](#). Help us advance solutions to the ocean's most pressing challenge – climate disruption.

### **27th April-2nd May 2025: European Geophysical Union General Assembly.**

*Vienna, Austria*

The EGU General Assembly 2025 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 Call for Abstracts will open on **23rd October 2024**. The abstract submission deadline is **15th January 2025, 13:00 CET**. If you are looking for a head start the [Provisional Programme](#) is now online, though keep in mind that this list is not finalized until after the start of the Call for Abstracts. The [EGU25 Artists in Residence](#) scheme is now open for applications until **25th October 2024**, [Find out more and apply](#). GeoCinema will once again be accepting submissions from **23 October 2024**. Prepare your calendar with all the EGU25 important dates by checking our [Deadlines and Milestones](#) page. Curious about who organizes the EGU25 General Assembly? Meet the [Programme Committee](#).

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

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# ***JOBS and OPPORTUNITIES***

The Scottish Association for Marine Science (SAMS) are currently advertising two PI positions in physical oceanography and three postdoc positions across marine physics and biogeochemistry.

Vacancies — Scottish Association for Marine Science, Oban UK ([sams.ac.uk](https://sams.ac.uk))

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## **Senior Research Associate in Shelf Sea Oceanography**

An exciting opportunity has arisen for a senior researcher in shelf sea oceanography to join the Centre for Ocean and Atmospheric Sciences in the School of Environmental Sciences in order to undertake research into physical and biogeochemical processes around offshore wind turbines. Dr Hall's research (<https://research-portal.uea.ac.uk/en/persons/rob-hall>) is on ocean dynamics in regions of complex topography using both autonomous vehicles and conventional at-sea observations.

The post is linked to the research project eSWEETS3 (Enabling sustainable wind energy expansion in seasonally stratified seas), which will investigate the possibility of enhanced thermocline mixing caused by tidal currents flowing past floating offshore wind turbines, and the effects that the mixing has on biogeochemistry. The post will involve a 6-month autonomous ocean glider campaign and a major research cruise (3 weeks in summer 2025). You will be responsible for processing, calibrating and quality control of physical and biogeochemical ocean glider data (Slocum and Seagliders), then lodging the data with the British Oceanographic Data Centre. Following the glider campaign and cruise, you will analyse and interpret the glider data and take the lead on writing publications. The project is in collaboration with leading marine scientists at multiple UK institutions and offers an excellent opportunity to further develop your career.

You should hold (or have submitted before commencing in role) a PhD in physical or biogeochemical oceanography or have equivalent independent research experience and have led publications in respected international scientific journals. You should be able to demonstrate research experience relevant to the project, have excellent communication skills, and have presented results at scientific conferences.

This full-time post is available from 6 January 2025 on a fixed term basis for 22 months.

For more information and to apply, <https://vacancies.uea.ac.uk/vacancies/1091/senior-research-associate-in-shelf-sea-oceanography-ra2248.html>

Closing date: 25th October 2024

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**There are jobs in the IMBeR newsletter**

- Lecturer in Environmental Science, School of Science, RMIT University, Melbourne. Apply now.
- Open Rank Faculty Positions in Carbon Neutrality and Climate Change Thrust, Hong Kong University of Science and Technology (Guangzhou). Review of applications will continue until all positions are filled.
- Humboldt Research Fellowship for postdoctoral researchers and experienced researchers. 6-24-month research stay in Germany. Apply by **31 October 2024**.
- Full Scholarship for Master's in Marine & Lacustrine Science, Cook Islands Investment Corporation, Avarua, Cook Islands. Apply by **19 November 2024**.
- 2024 NF-POGO Open Call for Shipboard Training Fellowships. Apply by **30 November 2024**.

**If you would like to put some recruitment information in the IMBeR monthly newsletter, please contact us through [imber@ecnu.edu.cn](mailto:imber@ecnu.edu.cn).**

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**There are jobs in the MASTS newsletter**

**New vacancies:**

- Science Officer (seasonal) – [HWDI](#) – 28/10/24
- Senior Science Officer – [HWDI](#) – 28/10/24
- [Call for co-chair of the GOOS Expert Panel on Biology and Ecosystems](#) – 30/10/24
- SCS2 Chief Scientific Adviser – [Foreign, Commonwealth & Development Office](#) – 20/10/24

**Still open vacancies:**

- Fisheries Research Assistant – UHI Shetland – 30/11/24
- NERC Deputy Executive Chair – UK Research and Innovation – 23/10/24
- Transmission Consents & Environment Graduate Programme 2025 – SSE – 03/11/24
- Director, UN Ocean Decade Coordination – UNESCO – 31/10/24
- Mapping underwater noise in the English Channel – [University of Le Havre](#) – 31/10/24
- Environmental Compliance Specialist – [MOWI Scotland](#) – 31/10/24

**PhD and Masters Opportunities:**

- Master of Science by Research scholarship on the development of rapid, low-cost tools to quantify soil organic carbon – [University of St Andrews](#) – 21/10/24