

Challenger Wave



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

NEWS

PML's Dr Shubha Sathyendranath appointed MBE in the King's Birthday Honours

Plymouth Marine Laboratory (PML) is delighted by the announcement that Dr Shubha Sathyendranath, www.pml.ac.uk/People/Dr-Shubha-Sathyendranath, has been made a Member of the Order of the British Empire (MBE) in the King's Birthday Honours. Dr Shubha



Sathyendranath is a highly-respected Merit Scientist at PML, where she is part of the remote sensing team. Her work is focused on ocean colour modelling, spectral characteristics of light penetration

underwater, bio-optical properties of phytoplankton, modelling primary production, biogeochemical cycles in the sea, climate change, water-borne diseases, biological-physical interactions in the marine system, ecological provinces in the sea, ecological indicators and phytoplankton functional types.

The MBE for her services to oceanography is further recognition of Shubha's outstanding contribution to marine science. In 2021 she was awarded the A.G. Huntsman medal, www.pml.ac.uk/News/A-G-Huntsman-Medal-for-Dr-Shubha-Sathyendranath, in recognition of her research achievements in the development of the use of optics and satellites in marine science. More recently, in November 2022, she was awarded Knight of the Order of Cultural Merit, [www.pml.ac.uk/News/PML's-Dr-Shubha-Sathyendranath-Receives-Prestige-\(1\)](http://www.pml.ac.uk/News/PML's-Dr-Shubha-Sathyendranath-Receives-Prestige-(1)), the fourth highest Order of the Principality of Monaco, awarded to those who have made a distinctive contribution to the arts, letters or science through their work or teaching.

www.challenger-society.org

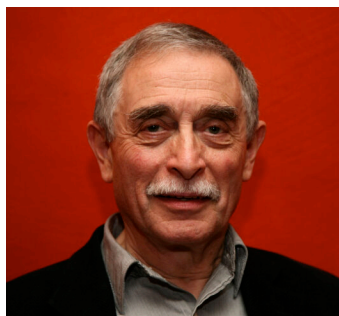
Having worked at PML since 2006, and part-funded by the National Centre for Earth Observation (NCEO), www.nceo.ac.uk/, she has created significant impact on many aspects of biological oceanography and was one of the first oceanographers to see the potential of ocean-colour satellite observations to study various aspects of biological oceanography at both global and regional scales. Furthermore, Shubha's work with the Partnership for Observation of the Global Ocean (POGO), pogo-ocean.org/, and other international initiatives, such as the International Ocean Colour Coordinating Group, ioccg.org/, is recognized as having advanced international collaborations in remote sensing.

Professor Peter Liss appointed Interim NERC Executive Chair

Professor Liss, distinguished environmental chemist and Emeritus Professor at the University of East Anglia, took up the role on the 12th June. Professor Peter Liss will serve as Interim Executive Chair of the (NERC). Current NERC (Natural Environment Research Council) Executive Chair Professor Sir Duncan Wingham is standing down following 11 years in the role.

UK Research and Innovation (UKRI) Chief Executive Professor Dame Ottoline Leyser said "Sir Duncan has provided exceptional leadership of NERC and played a key role in capturing the benefits of the creation of UKRI. His achievements span major advances in our capability, including bringing the RRS Sir David Attenborough into service, significant cultural improvements in the sector such as leading work to deliver our Open Access approach, and leveraging expertise from across UKRI to lead our Building a Green Future strategic theme. I would like to thank Sir Duncan, on behalf of the organisation and the community, for his many contributions to research and innovation in the UK and beyond."

Professor Liss will take up the Interim Executive Chair post until the appointment of a permanent replacement. An open recruitment campaign is currently in process. Specialising in biogeochemical interactions and the processes of air-sea gas exchange, Professor Liss is a Fellow of the Royal Society. He is a recipient of



the Royal Society of Chemistry's John Jeyes medal, has held a number of international roles and was made a CBE in 2008 for services to science.

He has served as a NERC council member, chaired the International Geosphere-Biosphere Programme, and is a former member of the Department for Environment Food and Rural Affairs' Scientific Advisory Council and former chair of the European Research Council's Earth System Science Advanced Grants Panel. Dame Ottoline said "Professor Peter Liss is a hugely respected research leader and we are delighted to be able to benefit from his experience and expertise to provide strong direction during this period."

In Memory of Lieutenant Commander Tom McAndrew M.B.E., R.N.

Who died peacefully at home on the 2nd of May 2023 aged 85 years. Tom entered Britannia Royal Naval College as a Naval Cadet in January 1954, passing out as a sub-lieutenant in July 1957. Tom saw various general service appointments, which included that of First Lieutenant of the inshore survey craft *Egeria* on commissioning in 1958. He also saw service in the Persian Gulf on the frigate HMS *Loch Inch*. Eventually specialising as a hydrographic surveyor serving in HM ships *Dampier*, *Egeria* (in command) and *Hecla*, he later became the Oceanographic Liaison Officer for the Admiralty before retiring in 1987. Tom retired to Peebles in the Scottish Borders and he is survived by his wife Anne and their 3 daughters and 6 grandchildren.



New EU project launched to evaluate mechanisms for using the ocean to remove atmospheric CO₂

The National Oceanography Centre (NOC), noc.ac.uk/, is the scientific and technical lead on the four-year interdisciplinary Horizon Europe (EU) funded project, Strategies for the Evaluation and Assessment of Ocean based Carbon Dioxide Removal (SEAO2-CDR); which is co-ordinated by Uniresearch, uniresearch.com, and involves 13 organisations who will provide scientific, economic, legal, political, social, and ethical expertise. The project has been launched to enhance our understanding of the effects, benefits, and feasibility of capturing carbon dioxide (CO₂) from the atmosphere and storing it in the ocean.

The project will evaluate whether ocean-based carbon dioxide removal (OCDR) can be used as an effective method of removing CO₂ from the atmosphere. This comes at the same time that scientists warn we are likely to hit the 1.5°C limit set by the Paris climate agreement by just 2027, with excess carbon in the atmosphere a major contributor to the higher temperatures, www.metoffice.gov.uk/about-us/press-office/news/weather-and-climate/2023/global-temperatures-set-to-reach-new-records-in-next-five-years. Businesses around the world are already beginning to embrace OCDR in a variety of forms, including increasing the amount of CO₂ that can be absorbed into seawater by countering the effects of ocean-acidification, increasing the productivity of algae that consume CO₂ during photosynthesis, and sinking seaweed into the deep ocean where the carbon can be locked within the sediments.

The SEAO2-CDR project will address critical gaps in our technical understanding of these OCDR approaches by defining the areas in which they are environmentally and economically viable. It will also help develop the frameworks needed to support responsible and effective implementation of OCDR and support robust monitoring, reporting and verification (MRV) strategies using cutting-edge sensor technologies.

Dr Christopher Pearce, Principal Marine Geoscientist at NOC, said: "Whilst decreasing the amount of greenhouse gas that we emit is the main requirement for achieving Net Zero targets, active removal of CO₂ from the



atmosphere is a key element in the IPCC's climate projections. Marine environments can be highly efficient carbon sinks that offer the potential to support climate mitigation strategies, but greater understanding of their impacts and effective

monitoring structures are required before OCDR techniques can be implemented at scale. By working with policy makers, businesses, stakeholders and the public, this project aims to provide the information needed to enable informed decisions to be made on the future use of the oceans in this manner."

Dr Willem van Dorp, Project Coordinator and Senior Consultant at Uniresearch, added: "In our challenge to limit global warming, it is likely that

we will need to use all the tools we have to emit less CO₂, as well as to actively remove CO₂ from the atmosphere. The ocean has immense potential to store carbon, this may be an important factor in managing CO₂ levels.



However, we need more knowledge on which measures can be implemented, what their effects and impacts are, and how they can be measured. The SEA02-CDR project is in an ideal position to address these issues, and to provide public information for everyone involved in exploring the safe and responsible use of our oceans for capturing CO₂."

Carbon Dioxide Removal (CDR) approaches seek to remove CO₂ from the atmosphere and upper ocean and securely store it in marine, geological or ground reserves. The effectiveness of a CDR approach depends on the amount of carbon that can be removed from the atmosphere and the amount of time that it is locked away for. The 2019 IPCC special report, www.ipcc.ch/sr15, stated a need to actively remove up to 1,000 billion tonnes by 2100 in

order to limit warming to 1.5°C. Many factors influence whether a CDR technique can be implemented at scale, including cost, legal frameworks, and the availability of appropriate monitoring and accounting techniques.

SEA02-CDR is an interdisciplinary project involving 13 European organisations: NOC (UK); Uniresearch (Netherlands); University of Cambridge (UK); Heriot Watt (UK); University of Leipzig (Germany); Kiel Institute for the World Economy (Germany); University of Leiden (Netherlands); GEOMAR Helmholtz Centre for Ocean Research (Germany); Center for Social and Economic Research (Poland); Comillas Pontifical University (Spain); LUISS University (Italy); Kiel University (Germany) and the World Ocean Council (France). For more information Visit the SEA02-CDR website, seao2-cdr.eu.

Scientists in first global underwater sound experiment

On World Ocean Day (8th June), scientists from SAMS (Scottish Association for Marine Science) joined marine scientists from across the world in the first ever global experiment to record the underwater sounds of animals in our ocean, lakes and rivers. The World Ocean Passive Acoustic Monitoring (WOPAM) project will see and has seen around 150 researchers from 92 research institutes in 32 countries deploy underwater recording devices and use a technique known as passive acoustic monitoring to record biological sounds underwater.

The aim is to gain a better understanding of the distribution of sound levels and types of sound in those areas around the world, that occur at the same time. The recordings will also identify any man made sounds, revealing our potential impact on the underwater environment. The SAMS deployment, was also part of the institute's #WhaleTalk campaign, <https://www.sams.ac.uk/whaletalk/>, and was co-ordinated by SAMS marine mammals expert Dr Nienke van Geel, www.sams.ac.uk/people/researchers/van-geel-dr-nienke/, who deployed a hydrophone (underwater microphone) near to the SAMS seaweed farm off the isle of Lismore. The SAMS team is particularly interested in marine mammal sounds around the Scottish coast.

Dr van Geel said: “Passive acoustic monitoring can be our eyes in the deep ocean. By listening



to the various marine mammal sounds, and detecting how regular and loud they are, we can build up an underwater image of what is present. Ideally, our recorders are in the water for a long period of time, so that we can make comparisons, but

the WOPAM project was a snapshot from all corners of the globe, which I believe will be extremely informative. Marine mammals are some of the best-loved creatures in our ocean, yet there is much to learn about their migrations, feeding behaviours and communication. We also need to understand the threats they face from factors such as climate change, underwater noise, and entanglement in fishing gear. Science can provide advice to policy makers in these sectors to secure the conservation of these species.”

Passive acoustic monitoring has already benefited from advancements in artificial intelligence. Algorithms can be developed to recognise marine mammal frequencies in a large data set, increasing the speed at which scientists can identify the presence of a particular species. The WOPAM project was expected to include 300 sites, and organisers hope this shared data can help to progress passive acoustic monitoring research around the world. It has been co-ordinated through the Global Library of Underwater Biological Sounds (GLUBS), the world’s first library of underwater biological sounds to monitor changing marine life.

Project co-leader Dr Miles Parsons from the Australian Institute of Marine Science (AIMS) said, “All of these recordings will be shared as part of a collaborative study and stored in the GLUBS. The collection will help us to compare sounds in various parts of the world, including in shipping channels and quiet bays. The dataset will also build our knowledge of interesting and unusual unidentified sounds; these are a major component of underwater soundscapes.” More information on WOPAM can be found here: <https://www.iqoe.org/articles/world-oceans-passive-acoustic-monitoring-day-wopam-day>.

PML’s Professor Lindeque joint winner of prestigious Blue Planet Prize

We are delighted to announce that Prof. Penelope Lindeque (Plymouth Marine Laboratory), Prof. Richard Thompson (University of Plymouth) and Prof. Tamara Galloway (University of Exeter) have been awarded the 32nd Blue Planet Prize, www.af-info.or.jp/en/blueplanet/, for their highly regarded research into microplastic pollution. This international environmental award is sponsored by the Asahi Glass Foundation, www.af-info.or.jp/en/about/, and chaired by Takuya Shimamura, Director of AGC Inc, www.agc.com/en/.



The trio demonstrated the existence of microplastics in the ocean, and have since charted the presence of plastics from the deep ocean to the highest mountains. They revealed microplastics are ingested by zooplankton and other marine species, and have made major advances in understanding the effects of microplastics on a wide range of marine organisms and ecological processes.

They have influenced global policy, legislation and action, calling on the international community to develop solutions that will help to address the growing problem of plastic pollution in the ocean, and helped inform the United Nations Treaty on Plastic Pollution that was signed by 175 nations in March 2022, www.pml.ac.uk/News/Leading-UK-marine-scientists-welcome-the-move-towa. Furthermore, they have also raised public awareness and alerted industry about the dangers of microplastic pollution, through television documentaries and

other media, policy briefings and high-level presentations.

Professor Lindeque, Head of Science for Marine Ecology and Biodiversity at Plymouth Marine Laboratory, said, “I’m deeply honoured and extremely grateful to the Asahi Glass Foundation for this award. Receiving the 2023 Blue Planet Prize highlights the plastics issue which continues to present an increasing threat to our marine life and ecosystems. As someone who is passionate about understanding the impact of plastic pollution and finding new ways to tackle it, I do believe there are huge opportunities for industry and society to start turning the tide on plastic pollution, supported by science. But, to achieve that, we need concerted action at local, national and international levels, not least in terms of the Global Plastics Treaty that is the subject of ongoing UN talks.”



Professor Lindeque added, “Plastic is a huge benefit to society, and we can continue to use it if we are much more clever in the way we design, use and manage it. Levels of plastic pollution are growing every day so time is really of the essence if we want to ensure a sustainable ocean for future generations. Receiving the Blue Planet Prize is such wonderful recognition of my on-going work, and that of all my colleagues and students, without whom this would not have been possible. The prize will allow us to continue our important work to evidence the impact of plastic pollution and to work towards more sustainable use of innovative plastics and solutions.”

New Ascension Island tide gauge providing unique sea-level insight

The National Oceanography Centre (NOC) has installed a new tide gauge on the remote Ascension Island through the Climate Linked Atlantic Sector Science project (CLASS) programme, projects.noc.ac.uk/class-project/, providing a unique record of sea-level in the remote ocean.

As sea levels rise, low-lying coastal regions all over the world will be subject to ever more frequent extreme coastal flooding, putting millions of people and properties at risk. NOC scientists and engineers are at the forefront of sea level monitoring technology, having installed monitoring solutions across the globe, supporting capacity development initiatives. Ascension Island is uniquely located in the middle of the Atlantic Ocean 1,000 miles from the coast of Africa and 1,400 miles from the coast of South America. The data from the upgraded tide gauge will provide scientists with open-access high frequency observations on the region which has historically been under sampled. The South Atlantic Ocean has no dedicated warning system for coastal hazards such as tsunamis, meaning the data will also be vital for operational monitoring.

With Ascension Island known to be a notoriously harsh monitoring environment, NOC scientists overcame many installation challenges including a closed airport runway and extended COVID restrictions. Although the Ascension government had lifted COVID restrictions in early 2023, airport restrictions remained in place meaning only flights from the neighbouring island of St Helena were permitted. Using local contacts built over many years, NOC scientists were able to remotely design and co-ordinate the installation, which was successfully completed in March 2023.



Given the remote location, the innovative tide gauge has also been specially adapted with this in mind, powered solely by renewable energy and utilising the latest non-contact radar sensors. This will ensure the gauge can operate for long periods of time with little or no maintenance required. The tide gauge uses cutting

edge communications technology to provide a near real-time data feed which now meets the

tsunami monitoring standard, set down by the 'Global Sea Level Observing System' (GLOSS).

The gauge forms part of the South Atlantic Tide Gauge Network, which was originally set up in 1985 as part of the ACCLAIM (Antarctic Circumpolar Current Levels from Altimetry and Island Measurements) programme. The tide gauge is now fully operational, transmitting 1-minute averaged sea-level data back, every six minutes to the IOC's Sea Level Station Monitoring Facility, www.ioc-sealevelmonitoring.org/station.php?code=ascen.

Challenger Society Student Awards

We are looking for submissions for the Challenger Society for Marine Science student award. The Society offers an annual award for undergraduate students who have demonstrated excellence in Marine Science research through final year undergraduate dissertations or projects. University departments in the UK are invited to submit suitable dissertations from final year undergraduate students. More information about the award and submission criteria can be found at www.challenger-society.org.uk/Student_award.

The winning student will receive a cheque for £500. In exceptional circumstances, the Award may be shared. All winning students will receive one year's complimentary membership of the Society. The deadline for submissions for this year is 29th August 2023. The submission should be in the form of an email submission of a nominating letter from the Convenor accompanied by a digital copy of the student's dissertation report. Documents should be submitted to kathen@bas.ac.uk using "Challenger Society Student Award" in the email subject line. We encourage you to share this widely with your networks. - **Chelsey Baker, Membership Portfolio Officer**

Royal Society Photography Competition

The Royal Society Publishing Photography Competition celebrates the power of photography in capturing scientific phenomena happening all around us, and the role great images play in making science accessible to a wide audience. We're excited to announce that the 2023 competition is now open for entries. We invite scientists from across the world to send in their images in the categories of Astronomy, Behaviour, Earth Science and Climatology,

Ecology and Environmental Science, and Micro-imaging. The winners of these categories will be narrowed down by our judges to our overall winner.



To enter the 2023 competition, please submit your image here, photocompetition.royalsociety.org/, before 18th August 2023. The Royal Society Publishing Photography Competition is sponsored by the journals of the Royal Society. Visit our journals homepage, royalsociety.org/journals, to view the full portfolio and read our published research.

United Nations World Ocean Assessment III call for experts

As the human population grows, the oceans are facing an unprecedented challenge to maintain the vital services they support, from oxygen, food and water, to the rich biodiversity of animals and plants. Managing the uses of these oceans is vital. The successful management of human pressures requires an adequate understanding of the activity and of the context in which it takes place. Broad scale assessments of the status of our oceans have highlighted marine ecosystems which are vulnerable, and focussed on unsustainable human pressures, yet our ability to act is often hampered by incomplete data.

Following a recommendation by the Johannesburg World Summit on Sustainable Development, in 2016, the United Nations (UN) completed the first global integrated assessment of the state of the worlds' ocean. This first Assessment established a baseline for measuring the marine environment, and highlighted the scale of the challenges that we face, including on climate change, marine living resource exploitation, biodiversity, use of ocean space, inequalities in ocean benefits, and problems of delay in implementing known solutions among others. The Second assessment took place from 2016-2020 and

updated the assessment from the first cycle, including evaluating trends and identifying gaps in knowledge and in capacity- building that need to be overcome if we are to deal with these challenges and integrating environmental, economic, and social aspects. Additional details can be found in the Second World Ocean Assessment, www.un.org/regularprocess/woa2launch.

The third assessment was agreed by the UN General Assembly to run from 2021 to 2025. This third cycle will focus on the state of the marine environment (including socioeconomic aspects) in light of the trends since the baseline of World Ocean Assessment I and the update of World Ocean Assessment II. In addition to the scientific assessment and update on the status of global marine ecosystems, new topics include a stronger focus on human use of the marine ecosystem and resulting pressures, as well as One Health and advancing technologies. A stronger emphasis on outcome communications is also expected.

We now need to identify a pool of experts who are willing to draft the necessary chapters, and also for peer-reviewers to review the content. There are many opportunities to contribute, particularly in topics such as ocean and human health, pollution and ecotoxicology, or marine genomics, but also around ocean governance or science communication. All applications are welcome. Having a range of experiences and backgrounds in the Pool of Experts better reflects the communities involved and brings in different perspectives to the Assessment. We particularly welcome applications from experts who have not previously engaged in the World Ocean Assessment, experts from all backgrounds and circumstances regardless of disability, gender, age, ethnicity, LGBT+ identity and socio-economic status, and from experts whose geographical research focus is in the Indian Ocean, Arabian Sea, Bay of Bengal, Red Sea, Gulf of Aden, and Persian Gulf.

Contributing to WOAIII will be a great opportunity to bring your science to a global audience. If you want your science to have a documented impact on the world stage, then you should get involved in one of the drafting teams. The UK National Focal Point (NFP) to the UN for the WOA-III, Dr Marta Soeffker (scienceoffice@cefas.co.uk) is looking for individuals to fill the Pool of Experts

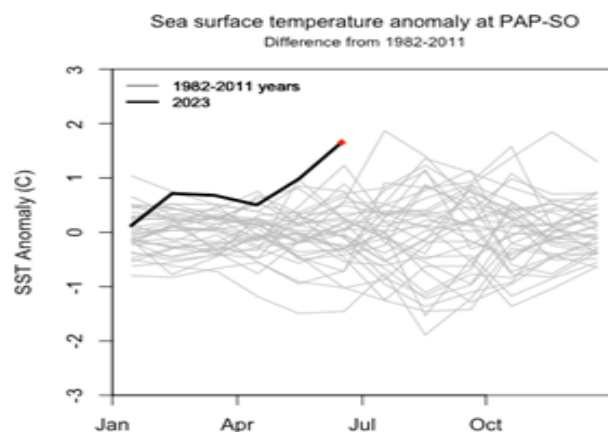
by the 31st of August 2023. Work will begin in September 2023 and the final draft will be completed by mid-2024 with publication in 2025. If you are interested in contributing or just want to find out more, please contact your NFP and ask for more details.

VIEWES

Near real-time data shows record rise in North Atlantic sea surface temperatures

Record-breaking high sea surface temperatures are being felt around the UK, the Atlantic Ocean and in oceans across the globe. The fast heating of the sea surface is being measured at the Porcupine Abyssal Plain Sustained Observatory (PAP-SO). This open-ocean observatory in the northeast Atlantic Ocean is operated by the National Oceanography Centre (NOC), in collaboration with the Met Office. The mean June sea surface temperature in 2023, presently 16.52°C, is more than 1.6°C above the mean of 14.86°C between 1982 and 2011 obtained from the Met Office data set 'HadISST', www.metoffice.gov.uk/hadobs/hadisst, for the site. The rapid warming started about six weeks ago, much earlier in the year than normal.

Dr Jennifer Durden, part of the PAP-SO science team, said, "This is an unusual and concerning rise in temperature for June so far. If the sea surface temperature continues to rise for the rest of the month, the June mean would be even higher than the current estimate.", shown by the red dot in the main figure.



Climatic change has far-reaching implications for global ecosystems and climate. Substantial changes in climatic conditions have previously been connected to changes in upper ocean biogeochemistry and plankton, and to the types of seabed organisms measured at the observatory. Sea surface temperature increases also lead to changes in the atmospheric circulation, impacting European weather. At global scales, changes in ocean temperature affect the ocean circulation, the amount of carbon being sequestered to the deep sea, and the distribution of heat and nutrients in the ocean.

The PAP-SO is currently the only long-term time series site in the world that monitors the ocean from the surface to the abyssal seabed, and it has been operational for more than 30 years. Near real-time measurements from the surface portion of the observatory are available online, projects.noc.ac.uk/pap/outputs/current-live-data.

ITV News visits Plymouth Marine Laboratory (PML) to find out more about the marine heatwave

The film crew visited the laboratory and the PML research vessel *Plymouth Quest* to discuss the effects of changing temperatures on the marine environment, www.itv.com/watch/news/unprecedented-marine-heatwave-in-the-atlantic-recorded/x32s8rz. The crew from both ITN and ITV Westcountry interviewed Plankton Ecologist Claire Widdicombe, www.pml.ac.uk/People/Claire-Widdicombe, in the laboratory, to examine samples of plankton under the microscope, and to hear about how rising temperatures can affect these microscopic organisms at the base of the marine food web; “Species that are more akin to the Mediterranean are actually starting to track up towards us. So, we’re on the lookout for new species that may come and may disappear, or they may come and be established.”



Claire Widdicombe with the ITV News film crew.

Having also interviewed Dan Smale from the Marine Biological Association (MBA) on his work to understand the effects of marine heatwaves, the crew came out for sampling on PML’s research vessel *Plymouth Quest*, to record the temperature of the ocean at different depths. As part of our ongoing work in the Western Channel Observatory, www.westernchannelobservatory.org.uk/, we have recorded ocean temperature and a range of other parameters for over 30 years, making it one of the best understood areas of Ocean in the world.



Steve Widdicombe speaking to ITV News

Whilst onboard the vessel, ITV News spoke to PML’s Director of Science Professor Steve Widdicombe, www.pml.ac.uk/People/Professor-Steve-Widdicombe, about how rising sea temperatures can disrupt vital marine processes, contributing to marine deoxygenation, and also potentially reducing the amount of carbon stored in the ocean. Steve said: “The Ocean is affected by many different complex factors. Organisms and ecosystems are extremely sensitive to changes in temperature and PH so it’s vital we monitor them closely to understand the effects.”

Call for Executive Committee members for the Global ONCE (Ocean Negative Carbon Emissions) programme

Expressions of interest are solicited for members of the executive committee (EC) of the UN Ocean Decade for Ocean Sustainability (UNDOS) programme Global ONCE (Ocean Negative Carbon Emissions), oceansdecade.org/actions/global-ocean-negative-carbon-emission/, which is co-led by Nianzhi Jiao (University of Xiamen, China) and Carol Robinson (UEA, UK). It is envisaged the EC would consist of around 12-15 members covering the disciplinary themes of the programme as well as having a

representative geographic, career stage and gender balance.

The Global ONCE secretariat at Xiamen University is underpinned with research funding from the Chinese Ministry of Science and Technology (MOST) for a national programme MOST ONCE which has missions aligned with those of the UNDOS Global ONCE. MOST require the governance of MOST ONCE to include 3 committees. Hence, we will have an international advisory committee, co-chaired by Sarah Cooley and Jean-Pierre Gattuso, a management committee for funders, partners and sponsors and an executive committee, co-chaired by Nianzhi and Carol; and these three committees will contribute to the governance of both Global ONCE and MOST ONCE.

The outcomes of Global ONCE will be:

- Construction of a network of coastal and ocean study sites and experimental infrastructure.
- Provision of the science, technology and governance frameworks for assessment, implementation, monitoring, reporting and verification of adaptation and mitigation approaches.
- Improved technical and personnel capacity and ocean literacy.
- Improved ocean-climate mitigation and adaptation strategies, policies and governance.

The missions of MOST ONCE are :

- 1 Conducting innovative research
- 2 Construction of research platforms, including mesocosms and time series stations
- 3 Demonstration of ecological engineering approaches
- 4 International communication
- 5 Education

The MOST ONCE missions align with or contribute to the 4 outcomes of Global ONCE and so can financially and logistically contribute to the progress of Global ONCE

The role of the Executive Committee is to :

- Be responsible for the overarching leadership and scientific direction of Global ONCE
- Develop a tractable implementation plan to achieve the MOST and Global ONCE outcomes

- Effectively carry out the implementation plan to achieve the MOST and Global ONCE outcomes
- Keep up to date with international activities in this arena and suggest potential collaborators and collaborative activities to progress the MOST and Global ONCE outcomes
- Represent Global ONCE to the international scientific and policy arena

Membership will be for up to 3 years with the potential to renew once for up to a further 3 years. The role is expected to involve 12 - 20 days work per year, although several activities are likely to overlap with the activities that members are already undertaking within their own projects.

Members are expected to :

- Champion the progress of at least one of the MOST and Global ONCE outcomes. We anticipate there will be 2-4 members per outcome who will liaise with Global ONCE partners, collaborators and contributing projects
- Together with the management committee and Global ONCE partners, produce an implementation plan to achieve the MOST and Global ONCE outcomes
- Together with the management committee and Global ONCE partners, produce an annual progress report on the ONCE outcome you are championing, to be submitted at least 2 weeks before the annual meeting
- Together with the management committee and Global ONCE partners, produce a presentation on the progress of the ONCE outcome you are championing and present this to the annual meeting
- Attend an annual programme review meeting of 3-5 days. We anticipate the annual meeting will be in-person at least once during the 3 year term of office. We will balance the advantages of meeting in person with the significant carbon footprint involved in meeting in-person and hold some meetings virtually or at least alongside a conference that many members might already be attending
- Attend a virtual meeting after the annual meeting to discuss feedback from the advisory committee and update the implementation plan as necessary
- Attend a virtual progress meeting

approximately 6 months after the annual programme review meeting

Partners in Global ONCE include ICES, PICES, IMBeR, SOLAS, WCRP-CHINA, several of the European and German funded CDR projects including OceanNETS as well as links to Ocean Visions and the new Decade Collaborative Center for Ocean-Climate Solutions. We are in the process of building a secretariat in Xiamen and appointing a project manager and communications officer in the UK. Once we have the three committees in place one of our first tasks will be to produce an implementation plan.

If you are interested in becoming a member of the EC, please contact Carol Robinson, Carol.Robinson@uea.ac.uk. Perspectives from S America, Africa, early career researchers, lawyers, policy makers, and researchers in governance practice related to ocean based CDR would be especially welcome. To Learn more about Global ONCE please visit www.global-once.org/#/home.

Call for new IMBeR endorsed projects in 2023
IMBeR (Integrated Marine Biosphere Research) are pleased to announce that several applications for new endorsed projects are currently being reviewed, and we will soon reveal the selected projects. If you are interested in submitting an application, please take note that the deadline for the second round of applications this year is **September 30th**, 2023. We strongly encourage all interested parties to submit their applications before the deadline. IMBeR aims to provide an open, flexible framework to encourage national, regional, and international participation in its scientific activities, to achieve its objectives as outlined in the IMBeR Science Plan and Implementation Strategy, imber.info/science/imber-science-plan-and-implementation-strategy-spis/. Endorsement of marine research projects and activities is one way of becoming part of the IMBeR community. For more information, please visit imber.info/science/endorsed-projects/.

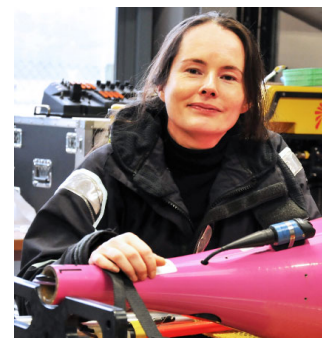
SALTS

When compliance searched for science

In March 2023, the search and rescue skills of colleagues from the Marine Directorate of the

Scottish Government on board our Marine Protection Vessel (MPV) *Jura* were called on to help locate and recover a lost scientific seaglider. This was equipment from the Scottish Association for Marine Science's (SAMS) Climate Linked Atlantic Sector Science Programme (CLASS) project, www.sams.ac.uk/science/projects/class/.

Seagliders are relatively small, underwater autonomous vehicles and are often deployed for months at a time. This particular glider, named *Denebola*, had been carrying out measurements of warm water flow from Atlantic to Arctic waters across the Scottish shelf break when it experienced a technical failure. SAMS Marine Robotics Technical Manager, Estelle Dumont, explained, "The underwater glider *Denebola* was deployed in November as part of the international CLASS project, studying the North Atlantic

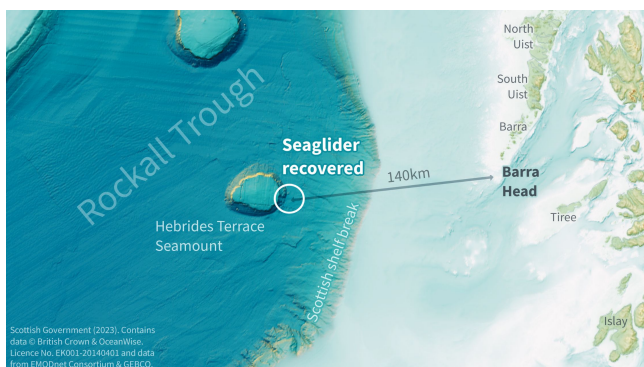


climate and circulation. The glider had been carrying out key oceanographic measurements when the technical failure stopped it being able to dive or manoeuvre, and it began to drift off towards the Rockall Trough."

MPV *Jura* was deployed on routine duties along the West Coast and was asked to assist in the recovery operation. The challenge was not only looking for a small seaglider in a vast and open sea area, but also its recovery due to a sizeable sea swell, caused by ocean waves, in poor weather conditions. However, a window of opportunity opened on the 10th March and MPV *Jura* was re-tasked to depart at 6 am from Barra Head, Hebrides, in search of *Denebola*.

The seaglider's position pinged every four hours so the crew of MPV *Jura* set their course towards its last known position. With a swell of between two and three metres, the seaglider was constantly being jostled and was nowhere to be seen. Employing some search and rescue techniques the crew embarked on an expanding box search, where a start point is chosen and the vessel plots a track in an outward square spiral; within 45 minutes the seaglider had been spotted and the rigid inflatable boat (RIB) was launched.

The seaglider was successfully recovered and returned to SAMS.



Commanding Officer of the Scottish Government Marine Directorate, Mark Warnop, recalled, “The conditions were far from perfect with a two to three metre swell but we knew we could just about launch and recover. The recovery itself wasn’t exactly textbook due to the conditions but it was done without incident, thankfully.”

Denebola was taken for repairs at the National Oceanography Centre in Southampton to re-join the national pool of seagliders. Estelle said, “We are extremely grateful for the Marine Directorate of the Scottish Government crew of MPV *Jura* for recovering our faulty seaglider and meeting us on our doorstep at Dunstaffnage. *Denebola* will hopefully be in working order soon but we are pleased to say that a replacement seaglider, *Eltanin*, has been deployed for the project.” You can follow *Eltanin*’s journey through this project on the SAMS website, gliders.sams.ac.uk/.

CALENDAR

5th-6th September 2023: Challenger Ocean Modelling Special Interest Group (SIG)
Southampton, UK

The Ocean Modelling SIG meeting is being held on the at the National Oceanography Centre in Southampton. Registration is now open, www.challenger-society.org.uk/Ocean_Modelling

6th-8th September 2023: Advances in Marine Biogeochemistry (AMBIO) SIG
Plymouth, UK

The AMBIO SIG meeting is being held at the Plymouth Marine Laboratory. Registration will open very soon www.challenger-society.org.uk/Advances_in_Marine_Biogeoche

mistry. We will hold the conference from lunchtime-to-lunchtime, to assist with travel logistics. We will have sessions with talks in addition to networking, a poster session, poster flash talks, and an ECR event. Lastly, we will be holding our annual Town Hall/AGM over the Friday lunchtime.

Convened by:
Kate Hendry (BAS)
Sarah Reynolds (Portsmouth)
Andy Rees (PML)

Sponsored by:



We now have a full list of sessions:

- Biogeochemistry and Marine Autonomy;
- The Cutting Edge of Biogeochemical Observations and Modelling;
- The Future of GEOTRACES; and
- Marine Biogeochemistry at the Sediment-Water Interface.

For now, keep the date in your diary. If you have any questions or suggestions, please don’t hesitate to contact us kathen@bas.ac.uk and sarah.reynolds@port.ac.uk.

13th-20th September 2023: Biodiversity, Ecology, and the Biological Carbon Pump in the Ocean Twilight Zone, a sustainable future in the face of human exploitation and climate change.

Woods Hole, USA

Woods Hole Oceanographic Institution will be hosting this international mesopelagic conference in collaboration with JETZON. There will be two main plenary sessions.

Session 1 will focus on how we determine biomass in the mesopelagic, looking at the architecture of mesopelagic food webs, and understanding diel vertical migration.

1. What is the biomass and distribution of the mesopelagic: how do we know ? Who are the major contributors to biomass ? How is biomass distributed ?
2. Diel vertical migration and biodiversity: who's migrating, how often, how does this change seasonally, annually ?
3. Food web architecture: what fuels the mesopelagic biomass, how are the epipelagic and mesopelagic connected, what are the predator prey relationships ?

Session 2 will focus on the biological carbon pump, seeking to establish a benchmark figure for its magnitude now and to understand how it may change in the future.

4. How large are the fluxes due to gravitational sinking and how well do we understand its drivers to predict their future magnitude ?
5. How significant is the transport of organic carbon to depth due to the physical circulation and how will anticipated changes in properties such as stratification affect this?
6. How significant are the carbon fluxes associated with the vertical migration of organisms and how will these respond to changes in temperature and oxygen ?
7. What biogeochemical constraints are there on the magnitude of the biological carbon pump and what do they tell us about its future strength ?

This conference is possible through the generous support from WHOI's Ocean Twilight Zone project, the NERC CUSTARD project, and the Grantham Foundation. Registration closed on June 1st, but please email kbaltres@whoi.edu to be added to an email list for virtual participation. For conference details, visit twilightzone.whoi.edu/otz-symposium/.

2nd-5th October 2023: 5th Euro-Mediterranean conference for Environmental Integration

Rende (Cosenza), Italy

The editorial office of the Euro-Mediterranean Journal for Environmental Integration, www.springer.com/journal/41207, in collaboration with the University of Calabria (UNICAL), www.unical.it/?lang=en, organizes this year's the EMCEI. On this occasion, we are pleased to invite you to take part in the conference (in person or virtually) and share/discuss your latest research findings from various fields of environmental sciences. Visit our website, www.emcei.net, to learn more about the event.

The MedGU Annual Meeting is one of the largest international geoscience meetings in the Mediterranean region. It aims to provide a forum where geoscientists, especially early career researchers, can present and discuss their findings with experts in all fields of geosciences. It will feature talks and panels covering a diverse range of geoscience and geoscience-society topics.

The EMCEI series is one of the largest international gatherings of environmental science in the Mediterranean (400-500 participants). The EMCEI aims to provide a forum where scientists, especially early career researchers, can present their findings and discuss their ideas with experts in all fields of environmental sciences. Contact us, if you need more information: contact@emcei.net.

19th-22nd October 2023: Arctic Circle Assembly 2023

Reykjavik, Iceland

Breaking previous records, over 280 session proposals have been received and hundreds of speakers have already confirmed from more than 27 countries. Attended by more than 2000 participants from over 60 countries last time, the Assembly is the largest international gathering on Arctic, Climate, Energy, Oceans, Geopolitics and more. Registration is now open, www.arcticcircle.org/assemblies/2023-assembly-registration, and help finding hotel accommodation is available, www.arcticcircle.org/hotels. For more information and booking activities, visit www.arcticcircle.org/.

7th November 2023: Beyond the Ocean's Depths: Revisiting the Challenger Expedition

Call for papers, revisiting the Challenger Expedition (1872-1876) Interdisciplinary Conference, www.rmg.co.uk/whats-on/national-maritime-museum/beyond-oceans-depths-revisiting-challenger-expedition-1872-1876. This event is in part sponsored by the Challenger Society for Marine Science and the UCL Department of Science and Technology Studies, www.ucl.ac.uk/sts/science-and-technology-studies.

With the environmental threat of global warming, rising seas and biodiversity loss, knowledge of the ocean is more important than ever. The Challenger Expedition, www.rmg.co.uk/stories/topics/hms-challenger-expedition-oceanography-trailblazer, named after the British Royal Navy vessel *HMS Challenger* which circumnavigated the globe from 1872 to 1876 with the aim to explore the deep sea, has been celebrated as a foundational moment in the history of modern oceanography. Data and specimens obtained from the expedition are actively studied by scientists today, and provide a historical benchmark for climate change and species distribution. Meanwhile, historians are increasingly calling for the voyage's imperial context to be recognised, and are bringing attention to people and places that have previously been given little attention in the expedition's historiography. How do we tell more inclusive and holistic histories of *Challenger*, while engaging with its scientific importance today? Looking forwards, what can we learn from the past while considering the future of ocean science?

'Beyond the Ocean's Depths' will provide a welcoming interdisciplinary forum for historians, scientists, museum curators, and coastal and island communities to share ideas and their work. The day will bring together a variety of perspectives, and resources. Papers are encouraged on a range of topics related to *Challenger*, 19th-century ocean science and voyages of exploration in a broad sense, especially:

- The use of *Challenger* materials in modern scientific research
- *Challenger*-related objects in museum collections
- Public engagement and education
- Colonial legacies

- Untold histories
- Local knowledge and expertise
- Links between oceanography past, present and future

This one-day conference will be held in person at the National Maritime Museum, Greenwich and online. It will consist of four panels, each consisting of three 15-minute papers and a Q&A, and a guided visit to the Caird Library, www.rmg.co.uk/collections/caird-library, to view *Challenger* archives, photographs and ship plans. We will also have a keynote talk and time to view relevant gallery spaces.

Please send abstracts of 150 words for a 15-minute paper, presentation or creative provocation, along with a biography of no more than 100 words to research@rmg.co.uk by **5:00pm on Monday 31st July**. Participation is free for speakers, including lunch and refreshments. Limited travel funds are available for UK travel; please indicate if you would like to be considered. We particularly encourage submissions from speakers with lived experience, Early Career Researchers, independent scholars, and scholars from typically under-represented or under-resourced institutions / countries. We look forward to receiving your submissions, and anticipate confirming successful papers by mid-August. If you have any queries, please contact the organisers at research@rmg.co.uk.

7th-9th November 2023: The Nansen Legacy symposium, Towards a new Arctic Ocean – Past, Present, Future

Tromsø, Norway

During this science conference, www.nansen-legacy-symposium.com, the current understanding of the Arctic Ocean across disciplines and regions will be presented and discussed. In the mornings we will have plenary sessions with invited key-note presentations, dedicated presentations on the use of science for societal needs, and panel discussions to stimulate interdisciplinary discussion and involve user perspectives.

During the afternoons, we welcome the pan-Arctic research community across the natural science disciplines, and stakeholder representatives interested in knowledge status and future perspectives, to contribute to a vibrant symposium to build bridges across disciplines,

regions, and from natural sciences to societal needs.

Details about registration are here: <https://www.nansenlegacy-symposium.com/registration/> Feel free to also check out the program overview <https://www.nansenlegacy-symposium.com/program/program-overview/> (more details will be added soon) and our compilation of practical details <https://www.nansenlegacy-symposium.com/practicalities/>.

15th-17th November 2023: The 11th Annual World Congress of Ocean

Sapporo, Hokkaido, Japan

Following the success of the previous events, we are honored to launch The 11th Annual World Congress of Ocean-2023 (WCO-2023). WCO-2023 is intended to provide a platform for professionals around the world to exchange state-of-the-art research and development and identify research needs and opportunities in the field of the Oceans. It covers a wide range of topics related to Ocean Economy, Maritime Law, Ocean Engineering, Ocean Energy, Green Port, Shipping and Modern Shipbuilding, Marine Management and Environment Protection, Ocean Science, etc. Over the conference period, you will have opportunities to share information and come face to face with business leaders, academic researchers and government agents around the world. It serves as a great opportunity to find global partners and build up research and business relations.

The three-day conference has an effective series of activities such as plenary lectures, parallel symposiums, oral communications and lively poster sessions etc. Currently Programmed activities at a glance include:

- Opening Ceremony and Keynote Forum
- Track 1: Ocean Economy and Finance
- Track 2: Maritime Law
- Track 3: Coastal and Ocean Engineering
- Track 4: Ocean Energy Development and Utilization
- Track 5: Emerging Ocean Science and Technology
- Track 6: Marine Management and Environment Protection
- Track 7: Smart Port, Green Shipping & Shipbuilding
- Track 8: Marine Biotechnology
- Track 9: Aquaculture and Fisheries

Sapporo, the capital of Hokkaido, Japan's northernmost island, draws international visitors for its annual Snow Festival and its world-famous ramen. Those seeking out the full diversity of Japanese cuisine will want to visit: a city with a ramen-inspired theme park is one that embraces and pampers foodies. For more information about the conference, please visit www.bitcongress.com/wco-2023/default.asp.

27th-30th November 2023: 3rd Mediterranean Geosciences Union annual meeting

Istanbul, Turkey

The annual meeting of the Mediterranean Geosciences Union, association.medgu.org/, will be held this year at the Congress Center of Istanbul Technical University. 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 either in person or virtually, and share/discuss your latest research findings.

Following numerous requests, the deadline for submitting short abstracts has been extended until the 20th July 2023, medgu.org/.

The MedGU Annual Meeting is one of the largest international geoscience meetings in the Mediterranean region. It aims to provide a forum where geoscientists, especially early career researchers, can present and discuss their findings with experts in all fields of geosciences. It will feature talks and panels covering a diverse range of geoscience and geoscience-society topics. Contact us, if you need more information, contact@medgu.org.

12th-14th March 2024: Oceanology International 2024

London, UK

Build your personal and corporate brand. Be a speaker at Oi 2024. We're delighted to let you know that the Call-for-Papers for Oceanology International is open for you to submit your abstracts. Use this link, www.oceanologyinternational.com/london/en-gb/landing-pages/call-for-papers.html, to discover more. If you, or someone else in your company has a paper, research, or case study to share, then Oi is the ideal stage for you. The Call-for-Papers closes on the 12th, Sept and all applicants will be notified on the 10th October whether their talk has been accepted.



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 is one of the largest ocean tech, science, and engineering conferences globally. “Speaking at Oi provides you with a perfect platform to connect with new and exclusive contacts, it’s like a VIP pass to your part of the ocean science and technology community.”, Dr. Ralph Rayner, Conference Chairman.

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. Abstract submission for poster presentations will be open to all ASSW attendees.



“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/, a 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).



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, oceansdecade.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.

Registration for the 2024 Ocean Decade Conference will take place in two steps:

- Pre-registration which will be open from 8 June to 30 September 2023.
- Full registration which will take place from 30 September to 30 October 2023.

To pre-register for the 2024 Ocean Decade Conference, visit oceandecade-conference.com/registration.php. Deadline for pre-registration is 30th September 2023.

On-site Satellite Events will take place at the Conference venue on 10th-12th April 2024 during the lunch breaks of the Conference, while off-site Satellite Events will be organized in a variety of locations around Barcelona starting from 8th April. To learn more about Satellite Events and to submit your application, please visit oceandecade-conference.com/satellite-events.php. Deadline for submission is 30th

October 2023.

To provide partners with the opportunity to present their activities, foster knowledge-sharing and strengthen collaboration, a small number of booths will also be available at the Conference venue. Stay tuned for information on calls for posters and for presentations during the parallel sessions. If you would like to receive updates, please sign up here, www.surveymonkey.com/r/OceanDecade24_updates. For more information, please contact, the Ocean Decade Team at oceandecade@unesco.org.

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

Vienna, Austria

The EGU hereby invite you to take an active part in organizing the scientific programme of the conference, from now until the 14th September 2023, by suggesting sessions with conveners and a description in your preferred programme group, meetingorganizer.copernicus.org/EGU24/provisionalprogramme. Prior to suggesting a session, we strongly encourage you to review the guidelines. Please check with all conveners that they agree to take part in the proposed session and refer to the convener guidelines and rules for detailed information of what to expect.

Please find convener guidelines and rules at, egu24.eu/guidelines/conveners.html, education & outreach session guidelines at, www.egu24.eu/guidelines/eos.html, inter- and transdisciplinary session guidelines at, www.egu24.eu/guidelines/its.html, union symposia and great debate guidelines at, www.egu24.eu/guidelines/us_and_gdb.html, and short course guidelines at, www.egu24.eu/guidelines/sc.html.

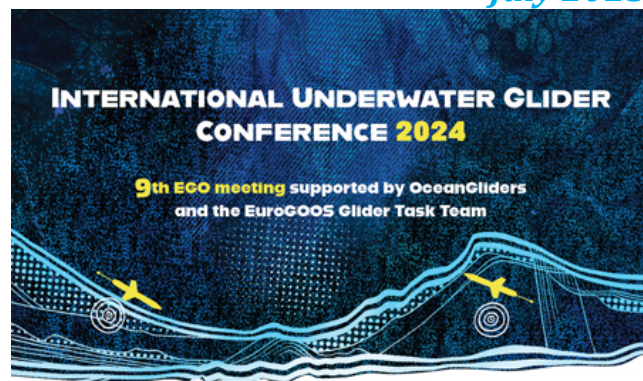
We create a new programme every year, and the programme groups therefore do not show sessions from last year. This means that all session proposals need to be submitted even if similar sessions were run in previous years. When making suggestions, explore the programme groups and place your proposal only into the PG that is most closely aligned with the proposed session's subject area. Please avoid submitting session proposals that are similar to sessions already suggested. In this case, it is possible to suggest modifications to an earlier session proposal. If the subject area of your proposal is strongly aligned with two or more PGs, it is possible to request a co-organization

between PGs. You will be able to indicate PGs that you believe should be approached for co-organization in the session submission form. However, you can only put your session proposal into one lead PG.

The programme committee will take into account all suggested sessions and use them to compile the final session programme as the basis for the call-for-abstracts. Then, conveners of approved sessions will be asked to actively promote their sessions and the public will be invited to submit their abstracts. This will be announced by a separate email. If you have questions about the appropriateness of a specific session topic, you may contact the programme group chair and/or the officers of the specific programme group, www.egu24.eu/about/programme_committee_composition.html.

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.



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



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.

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

JOBS and OPPORTUNITIES

There are jobs on the IMBER web site

<http://www.imber.info>



Integrated Marine Biosphere Research

Jobs and opportunities

New

- Postdoc: Assess the demographic impact of conservation measures for African penguins, University of Cape Town, Cape Town, South Africa. Apply by **21 July**
- Program Manager: Science and Policy, WIOMSA, Zanzibar, Tanzania. Apply by **21 July**
- Research Position: Enhancing wellbeing of coastal communities, Nordland Research Institute, Mo i Rana, Norway. Apply by **31 July**
- PhD Research Fellow: Marine fish genomics metabarcoding, University of Agder, Norway. Apply by **31 July**
- Postdoc: Marine Sciences. University of Namibia and One Ocean Hub, Windhoek, Namibia. Apply by **31 July**
- Call for applications: Research grants on inclusive early warning early action. Apply by **31 July**
- Postdoc: eDNA metabarcoding of freshwater and marine aquatic biodiversity in southern Africa, University of Stellenbosch, Cape, South Africa. Apply by **13 August**
- Call for applications: Future for Nature Foundation Awards 2024. Apply by **25 August**
- Project Manager: Marine Science, ICM-CSIC, Barcelona, Spain. Apply by **1 September**
- Save the date: Call for applications for Azrieli International Postdoc Fellowships in Israel opens on **1 September**
- Call for proposals: MSCA Marine Science Postdoc Fellowships 2023. Apply by **13 September**

In case you missed it...

- Data management experts, affiliated with (inter)national data centres, networks and scientific data programmes, SOOS DMSC. Apply **now**

imber@imr.no