

# Challenger Wave

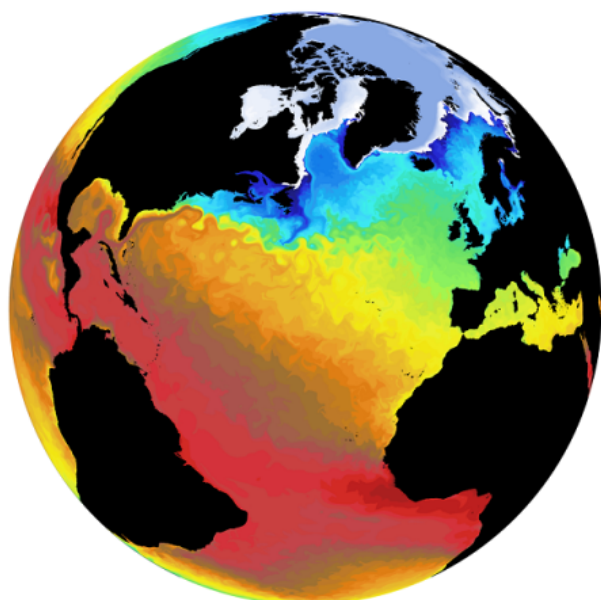


Monthly newsletter of the Challenger Society for Marine Science (CSMS)

## NEWS

### UK institutions join forces to put science at forefront of climate solutions

The UK's leading climate science organisations have joined forces to develop a new national alliance focused on climate solutions for society. Seven Natural Environment Research Council (NERC) supported centres, British Antarctic Survey, British Geological Survey, the National Centre for Atmospheric Science, the National Centre for Earth Observation, the National Oceanography Centre, Plymouth Marine Laboratory and the UK Centre for Ecology & Hydrology, will work together with the Met Office as the new UK National Climate Science Partnership (UKNCSP) to respond to threats posed by a rapidly changing climate; by putting climate science at the forefront of the solutions agenda.



Global-scale modelling at the National Oceanography Centre will help to understand how storage and transport of heat by the oceans will influence climate change.

Recognising the urgency of accelerating action towards the goals of the Paris Agreement and UN Framework Convention on Climate Change, the UKNCSP will play a leading role in the development of an end-to-end climate strategy.

### Ocean Decade Webinar, 24th November 19:00-20:30 (GMT)

Supporting Action in Small Island Developing States (SIDS), Least Developed Countries (LDCs) and Land-Locked Developing Countries (LLDCs) in the Ocean Decade.

The United Nations Decade of Ocean Science for Sustainable Development (2021-2030) ('the Ocean Decade') has a strong focus on ensuring that Decade Actions engage and benefit stakeholders across geographies, genders and generations. Small Island Developing States (SIDS), Least Developed Countries (LDCs) and Land-Locked Developing Countries (LLDCs), including Africa, are considered privileged partners of the Ocean Decade. They play a key role in the sustainable management of ocean and coastal resources owing to their central relationship with the ocean at all levels. The results of the first Call for Decade Actions No. 01/2020 revealed that while several endorsed Decade Actions are taking place in SIDS, LDCs and LLDCs, few are led by institutions from these countries.

Following up on the outcomes of the previous webinar 'Fostering innovative ocean science partnerships for SIDS' that took place in December 2020 as part of the Ocean Decade Virtual Series, this online exchange will provide guidance on the approach, steps and resources required for co-designing a Decade Programme. It will serve as a platform for SIDS, LDCs and LLDCs to share experiences on partnership-based approaches to ocean science for sustainable development. The aim is to provide guidance for submissions to the Second Call for

Decade Actions (No. 2/0201), and to identify the key challenges and opportunities for promoting lead applicants by SIDS, LDCs and LLDCs partners in future Calls. To register, please visit [unesco.us15.list-manage.com/track/click?u=75c69bf185fb2be069850f6ee&id=1b84d5a514&e=7e66fb83d6](https://unesco.us15.list-manage.com/track/click?u=75c69bf185fb2be069850f6ee&id=1b84d5a514&e=7e66fb83d6). For more information, please contact Claudette Spiteri, [c.spiteri@unesco.org](mailto:c.spiteri@unesco.org).

### **NOC contributes to climate recovery research**

Research conducted at Mainz University, recently published in Science Advances, has shown that it took the climate 20,000 to 50,000 years to stabilize after the rise in global temperatures of five to eight degrees Celsius 56 million years ago.

With climate change causing temperatures to rise and increasing the likelihood of storms, heavy rain, and flooding, the research, led by Professor Philip Pogge von Strandmann of Johannes Gutenberg University Mainz (JGU), Germany, set out to investigate how quickly the climate can recover from the warming caused by an increase in carbon dioxide in the atmosphere.

Dr Christopher Pearce, a Principal Marine Geoscientist within the Marine Biogeochemistry subgroup at the NOC whose research includes characterisation of the global weathering response to intervals of past climatic change, supported the interpretation of the new isotopic data presented in this paper.



Commenting on the results, Chris said: “Whilst we have known for a while that Earth has experienced multiple episodes of global warming throughout its history, pinpointing the causes and

recovery mechanisms for those events has been a harder task due to the complex interactions between natural feedback processes. In this study we used the lithium isotopic composition of marine sediments to demonstrate that a rapid acceleration of the global hydrological cycle occurred during the Paleocene-Eocene Thermal Maximum (PETM) event ~56 million years ago, increasing silicate weathering and erosion rates, which in turn helped to stabilize climate. Understanding and quantifying these types of response to past climatic events is important for characterising how Earth may respond to future climate change, with enhanced weathering one of several potential climate change mitigation strategies currently being considered by the scientific community.” The full paper is available at [www.science.org/doi/10.1126/sciadv.abh4224](https://www.science.org/doi/10.1126/sciadv.abh4224).

### **Discover the newly endorsed Ocean Decade actions**

The Ocean Decade has endorsed ninety-four new Decade Actions across all ocean basins, building global momentum for ocean knowledge-based solutions ahead of major upcoming global summits on climate and biodiversity, [www.oceandecade.org/news/ocean-decade-endorses-new-wave-of-actions-across-the-globe/](https://www.oceandecade.org/news/ocean-decade-endorses-new-wave-of-actions-across-the-globe/).



While you discover the newly endorsed Ocean Decade Actions, take one minute to join our brand new Ocean Decade Global Stakeholder Forum, <https://forum.oceandecade.org/>

The community of Ocean Decade Actions is growing rapidly and creating a global web of positive and collective efforts to create the Ocean We Want. Creating a truly global array of Argo floats extending pole- to-pole and to the full depth of the ocean; revolutionizing real-time warning systems for earthquakes and tsunamis through environmental sensors integrated into submarine telecommunications cable; redesigning and implementing public policies to adapt coastal

cities exposed to sea level rise: These are just glimpses from the mass of collective ocean action embodied in the Decade Actions.

The latest endorsement of 94 additional Actions brings the total number of endorsed Decade Actions to 335 since the start of the Decade on 1st January 2021. This includes initiatives at different levels: stand-alone Decade Activities (events, publications, training, etc.); shorter more focused Decade Projects; contributions of in-kind or financial resources, and at the highest level, large-scale, multi-year and multi-country Decade Programmes. No matter their size or scale, the endorsed Ocean Decade Actions all share a firm belief that the ocean is key to reversing the planet's major challenges, from climate change to hunger, and threats to biodiversity through improved ocean knowledge. All these Actions contribute to the collaborative design of the science we need to deliver a healthy and resilient ocean by 2030.

#### **Open call for applications for Chair or two Co-Chairs of the IMBeR Scientific Steering Committee**

Integrated Marine Biosphere Research (IMBeR, [www.imber.info](http://www.imber.info)) seeks applications either from one person for the role of Chair or from two people willing to act as Co-Chairs of its international Scientific Steering Committee (SSC) for a three-year term from 1st January 2022.

The SSC Chair or Co-Chairs will be responsible for the overarching leadership and future scientific direction of IMBeR including the successful completion of the scientific and capacity building objectives in the IMBeR Science Plan and Implementation Strategy 2016-2025, and the appropriate positioning of the IMBeR community to take advantage of future funding and scientific opportunities after 2025. Considering the current funding landscape, the new IMBeR Chair would have expertise in natural sciences such as marine ecology or biogeochemistry, whereas the joint expertise of the Co-Chairs could span these natural sciences and a social / interdisciplinary science.

The position(s) require(s) scientific excellence, and a high level of commitment to IMBeR's goals. To apply, please send a brief curriculum vitae and a personal statement to the IMBeR Director, Dr. John Claydon, [john.claydon@dal.ca](mailto:john.claydon@dal.ca), by Wednesday 1st December 2021. Co-Chair

applications can be submitted by individuals interested in being considered as a potential Co-Chair, or a joint application by a potential Co-Chair team.

If you have any questions or wish to know more about the position, the current SSC Chair and Chair of the Appointments Committee, Prof. Carol Robinson, [carol.robinson@uea.ac.uk](mailto:carol.robinson@uea.ac.uk), will be happy to help.

#### **Current Vacancies on Challenger Council**

The Challenger Society is looking for its next Honorary Secretary, to take up the post at the AGM in September 2022. The Secretary normally serves a 4-year term on council. The Secretary's tasks include (but are not necessarily limited to)

- Act as one of the Officers of the society and ensure the society's records with the Charity Commission and Companies House are up to date
- Act as the holder of the official postal address of the society
- Organising council meetings three times per year
- Organising and leading the Annual General Meeting
- Keep minutes of the council meetings
- Supporting council with general administration

This is an excellent opportunity to gain insight into the functioning and working of the Council and develop connections and oversight across the breadth of activity that Challenger undertakes. It would suit an organised and positive society member who seeks to expand their sphere of vision across the full range of UK marine science. The role will be especially prominent as we approach the Challenger 150 celebrations in 2022.

The Challenger Society is working towards being a fully equitable and inclusive organisation (see EDI statement, [www.challenger-society.org.uk/EDI\\_Statement](http://www.challenger-society.org.uk/EDI_Statement)). The Society encourages applicants from underrepresented and/or diverse backgrounds to apply for the role of Secretary.

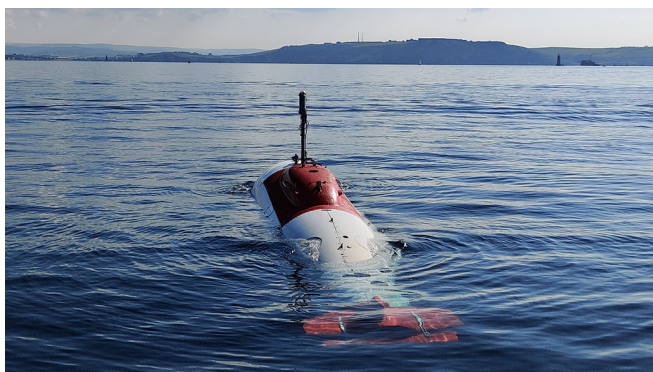
To apply, please submit a 1-page document outlining your background and motivation for the position. Applications are accepted until 18th December 2021.

Please send your application, or any queries, to the current Secretary, Mattias Green, at [m.green@bangor.ac.uk](mailto:m.green@bangor.ac.uk).

## VIEWS

### Sonardyne and Wavefront demonstrate obstacle avoidance capability on UK's test XLUUV

Underwater obstacle avoidance technology from maritime defence technology companies, Sonardyne and Wavefront, has been successfully demonstrated on board an extra-large, uncrewed, underwater vehicle (XLUUV) built and operated by Plymouth-based MSubs Ltd. The demonstration of the Vigilant forward looking sonar was part of the first phase of the UK's Defence and Security Accelerator's (DASA) 'Uncrewed Underwater Vehicle Testbed, Opportunity to Integrate' competition, run jointly with the Royal Navy and the Defence Science and Technology Laboratory (Dstl).



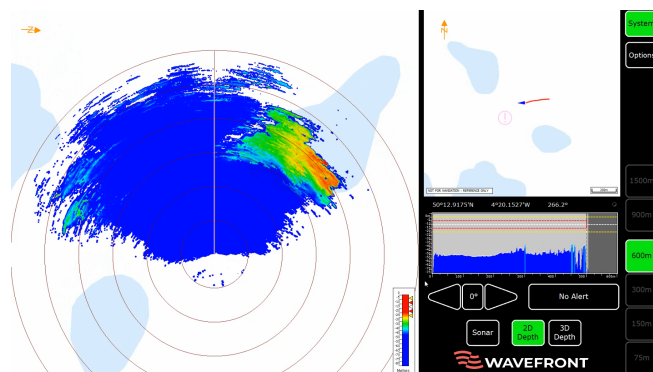
*The MSubs S201 XLUUV is being trialled by the UK's Royal Navy to explore the potential capabilities of large uncrewed underwater vehicles for its future missions.*

The DASA competition is focused on testing and validating commercial, off the shelf technologies (COTS), sensors and payloads, like Vigilant, to help the Royal Navy understand the future roles for XLUUVS for surveillance, reconnaissance and anti-submarine warfare, and deliver new capabilities to the Royal Navy years earlier than otherwise be possible.

Vigilant, developed by Wavefront and manufactured and commercialised by Sonardyne, is a navigation and obstacle avoidance sonar for ships, uncrewed surface vessels (USVs) and underwater vehicles. It provides crews with

automated long-range detection of objects in the water column, showing them where it is safe to navigate and alerting them to potential underwater dangers that could result in a collision or grounding.

The system has two operating modes. In 3D mode, Vigilant produces accurate 3D bathymetry and colour-coded depth imagery out to 600 m and to depths down to 100 m. In Sonar mode, Vigilant processes the intensity of the acoustic data to extract long-range positional data out to 1.5 km and over a 120-degree field of view. The sonar returns are used to generate alerts highlighting the presence of a navigationally relevant obstacle. For the trial, the system's sonar projector and receiver array were mounted in the bow of the 9 m long MSubs' S201 XLUUV. At just 31 cm wide and weighing only 14 kg in air, Vigilant is easy to retrofit on a wide range of platforms including ships, USVs or, as in this case, an XLUUV. As part of the demonstration, the XLUUV was programmed to travel beyond the breakwater outside Plymouth sound. Vigilant was used to create a bathymetric map that was used by the XLUUV to navigate. The data was also overlaid over existing charts of the area, demonstrating the higher resolution provided by Vigilant.



*50 m deep, 16 km south of Plymouth, the vehicle can be seen navigating around an area of shallow water to the north.*

Ioseba Tena, Head of Defence at Sonardyne, said: "We're delighted to be playing a role in helping the Royal Navy and programme partners to test and evaluate technologies that will help the UK stay ahead of her adversaries in the underwater battlespace. Seaborne collision avoidance is a vital consideration for autonomous and uncrewed naval platforms. Vigilant can be integrated into these ocean robots to provide essential information to autopilots and command

and control systems, to aid safe navigation and manoeuvres around hazardous obstacles.”

Bret Phaneuff, Managing Director at MSubs, said: “The data from Vigilant is truly impressive and transformative. It provides our XLUUV with instant situational awareness, which will help it avoid obstacles and, with some further integration, help optimise navigation trajectories to improve our performance and increase our endurance.”

## SALTS

### No news from sea this month I'm afraid

I know that this is a favourite section for many readers, where we get the inside information about life at sea, its thrills and spills. So please the next time you are at sea or carrying out any fieldwork, please remember that a simple paragraph or two will get you published here. – Ed

## CALENDAR

### 9th September - 9th December 2021: The Challenger Society Virtual Conference 2021 Online

*Let's talk about the Oceans !*

Instead of our usual biennial meeting, the Challenger Society kindly invites all UK marine scientists to a series of discussion sessions to explore current topics in marine science. The format will be short talks, guided discussions and networking breaks. The Society welcomes members and non-members, with early career researchers especially encouraged to attend and contribute. Attendance to the sessions is free but a suggested donation of £5 per session can be made via the donate button on our membership page found here, [www.challenger-society.org.uk/Members](http://www.challenger-society.org.uk/Members), (please note that members must be logged out to see the button). All sessions will be run on Zoom with links sent to those who have registered. Further details and calls for the sessions will be circulated in due course.

*Save the Dates:*

**18th November 2021 - 13:00-14:30**

[www.challenger-society.org](http://www.challenger-society.org)

### Science for the UN Decade of the Ocean

Further information including abstract submission guidelines can be found at [challenger-society.org.uk/Decade\\_of\\_the\\_Ocean\\_Event](http://challenger-society.org.uk/Decade_of_the_Ocean_Event). Abstract submission deadline 18th September 2021 and the Registration Link is [www.eventbrite.co.uk/e/science-for-the-un-decade-of-the-oceans-registration-160752124933](http://www.eventbrite.co.uk/e/science-for-the-un-decade-of-the-oceans-registration-160752124933).

**9th December 2021 - 13:00-14:30**

### Defining Challenger Society's Role in Marine Science

The Registration Link is [www.eventbrite.co.uk/e/defining-the-challenger-societys-role-in-marine-science-registration-160750648517](http://www.eventbrite.co.uk/e/defining-the-challenger-societys-role-in-marine-science-registration-160750648517).

### 22nd-25th November 2021: IMBeR West Pacific Symposium

*China–Japan–Korea (CJK) online*

IMBeR will hold its West Pacific Symposium 2021 “Changing West Pacific Ocean: Science and Sustainability” as a virtual event.



The China-Japan-Korea IMBeR Symposium on the marine ecosystem has been held eight times over the period from 2002 to 2018 to review the achievements and to set the future directions of international ecosystem research in the western North Pacific as a part of the past GLOBEC and the IMBeR regional activities. Responding to the growing needs, the CJK IMBeR community changed its name to the West Pacific Symposium to better represent the entire West Pacific Ocean, as outlined in the *IMBeR Science Plan and Implementation Strategy 2016-2025*. This kick-off symposium centres around the marine biosphere and its biogeochemistry in the West Pacific Ocean from the Subarctic in the North to the Pacific sector of the Southern Ocean and its connectivity with the Arctic, Southern Ocean, and the Indian Ocean to deepen a holistic hemispheric view. All marine habitats including coastal areas (estuaries, salt marshes, coral reefs, etc.), continental shelf to the deep ocean and their seafloors are of interests. Participants in the IMBeR Regional Programmes, Working

Groups, Endorsed Projects, and others are welcome to the symposium.

The symposium is organized into the following thematic sessions:

- Session 1: Coastal Blue Carbon: Measurements, Modeling, and Assessment
- Session 2: Strengthening Coral Reef Resilience to Climate Change and Human Impacts
- Session 3: Dried Small Fish: Ecology, Value Chains and Nutrition
- Session 4: Ecosystem-Social Interactions in the Coastal Sea
- Session 5: Towards the Sustainable Indo-Pacific Region (IPR): Marine Biogeochemistry and Biodiversity
- Session 6: Marine Extreme Events: Impacts, Forecasting, and Risk Management
- Session 7: Connectivity of the West Pacific and Southern Ocean: The Importance of Oceanic Top Predators
- Session 8: Ecosystem, Biogeochemistry, and Interventions in the Western Pacific and its Marginal Seas: Beyond the Disciplinary Borders

The outcome of the symposium will be published as a special volume of a renowned peer-reviewed international journal. *Please note, there is no charge for this online event.*

### **25th-26th November 2021: UN Ocean Decade Kickoff Conference for the Western Pacific and its Adjacent Areas**

#### *Online*

The UN Decade of Ocean Science for Sustainable Development (2021-2030), is upon us. The UN Ocean Decade provides a once-in-a-lifetime opportunity to strengthen international cooperation needed to develop scientific research and innovative technologies that can connect ocean science with the needs of society.



You are cordially invited to join the UN Ocean Decade Kickoff Conference for the Western Pacific and its Adjacent Areas. The Conference will mark the launch of the UN Ocean Decade in the Western Pacific and its adjacent areas, and represent the beginning of the region-wide efforts in a substantive development and implementation of Decade Actions. It aims to catalyze partnerships among various ocean stakeholder communities in the region, and initiate co-design of transformative ocean science solutions to the Ocean Decade Challenges in order to achieve the Ocean Decade Outcomes.

The two-day conference will be composed of: a high-level segment featuring commitments from UN agencies, governments, business and private sectors, and other stakeholder groups; and a series of interactive side events entitled “Decade Action Incubator” aiming to facilitate the development of potential Decade Actions such as Decade Programmes and Projects, and key cross-cutting issues including capacity development and Early Career Ocean Professionals (ECOPs). For more information please visit [www.ioc-westpac.org/decade-kickoff-conference/](http://www.ioc-westpac.org/decade-kickoff-conference/).

### **13th-17th December 2021: AGU fall meeting 2021**

#### *New Orleans, USA*

The AGU (American Geophysical Union) Fall Meeting, [www.agu.org/Fall-Meeting](http://www.agu.org/Fall-Meeting), is the primary gathering for earth and space scientists, students, and those in affiliated fields to share scientific findings and identify innovative solutions. Join Hans Fernandez and Candace Smith at the RBR booth #1023. Contact [info@rbr-global.com](mailto:info@rbr-global.com) to pre-arrange a meeting or let us know you will be visiting.

### **18th-19th January 2022: Arctic Circle Abu Dhabi Forum**

#### *Abu Dhabi, United Arab Emirates*

Organized in association with the United Arab Emirates Ministry of Climate Change and Environment; governments, universities, research institutions, organizations, associations, companies and other partners are invited to submit proposals for Sessions to the Arctic Circle Secretariat. Submit your proposal before the 15th December, [www.arcticcircle.org/proposal-guidelines-for-the-abu-dhabi-forum](http://www.arcticcircle.org/proposal-guidelines-for-the-abu-dhabi-forum); Accepted Sessions will be notified before the 20th December. For more information, visit

[www.arcticcircle.org/forums/arctic-circle-abu-dhabi-forum](http://www.arcticcircle.org/forums/arctic-circle-abu-dhabi-forum).

### 14th–16th February 2022: International Ocean Data Conference 2022 - The Data We Need for the Ocean We Want

*Sopot, Poland*

Since IODE-XXII (2013) every Session of the IOC Committee on International Oceanographic Data and Information Exchange (IODE) has been preceded by a Scientific Workshop or Conference. This was also planned for IODE-XXVI in 2021 but due to the Covid19 pandemic this was not possible: the IODE-XXVI Session was held as a fully online event.

The original host of IODE-XXVI (Poland) has kindly offered to host instead the "**International Ocean Data Conference 2022 - The Data We Need for the Ocean We Want**". The Conference will be held as a hybrid event with a number of participants on-site while others will participate through video conference.



All presentations, papers and posters should be made available by the authors by mid to end of December 2021. For more information visit [www.iode.org/index.php?option=com\\_content&view=article&id=645:first-international-ocean-data-conference&catid=74&Itemid=100407](http://www.iode.org/index.php?option=com_content&view=article&id=645:first-international-ocean-data-conference&catid=74&Itemid=100407).

### 27th February – 4th March 2022: Ocean Sciences Meeting 2022

*Honolulu, Hawaii, USA*

The session list for the Ocean Sciences Meeting 2022 scientific program is now available, [www.aslo.org/osm2022/scientific-sessions/](http://www.aslo.org/osm2022/scientific-sessions/).



The Ocean Sciences Meeting 2022 will be held in Honolulu, but with virtual components. Attendees will have the option of participating in-person or remotely.

[www.challenger-society.org](http://www.challenger-society.org)

### 15th–17th March 2022: Oceanology International (OI)

*London, UK*

Oceanology International (OI) is the leading global event connecting industry, academia and government with the ocean technology community. It has a 50 year legacy as market leader in the oceanographic sector. A Truly global event with 8,000 attendees from 90 countries representing 15 diverse end-user sectors. It is the largest exhibition/trade show in this sector, with 480+ exhibiting companies.

Oceanology International London 2022 will connect you with 7,500 buyers and influencers from more than 80+ countries looking for innovative solutions to improve strategies for exploring, monitoring, developing and protecting the world's oceans. For 50 years, no other event has provided such a perfect global platform to showcase your solutions, from technical to strategic professionals from academia, government and over 15+ key industries, all unified by their use of ocean technology.

Demonstrate and promote your company's capabilities, generate qualified leads and strengthen and develop your networks both face-to-face in London, and digitally throughout the year. For more information and register, please visit [www.oceanologyinternational.com/london/en-gb.html](http://www.oceanologyinternational.com/london/en-gb.html).

### 9th–12th May 2022: Fourth ICES PICES Early Career Scientist Conference

*St. John's, Newfoundland, Canada*

Hosted by Fisheries and Oceans Canada (DFO), [www.dfo-mpo.gc.ca/index-eng.html](http://www.dfo-mpo.gc.ca/index-eng.html), The International Council for the Exploration of the Sea (ICES), [www.ices.dk/about-ICES/Pages/default.aspx](http://www.ices.dk/about-ICES/Pages/default.aspx), and North Pacific Marine Science Organization (PICES), [meetings.pices.int](http://meetings.pices.int), welcome you the fourth conference of this series, where early career scientists will have the opportunity to meet colleagues from around the globe who share similar interests and an enthusiasm to improve equality and diversity in marine science. The conference aims to foster the development of contacts, collaborations, and associations among early career scientists that will persist for decades and to establish personal and institutional networks that will help to advance our understanding of the marine environment.

The scientific sessions will be organized around the following themes:

### Ecosystem and ocean processes

1. Biodiversity and ecosystem functions
2. Understanding food webs and biogeochemical cycles
3. Developments in taxonomy and systematics
4. Connecting biological, oceanic, and atmospheric processes of different scales

### Inclusive, interdisciplinary, and transparent ocean sciences

1. Human–ocean interactions
2. Science, management, and policy for a sustainable and productive Blue Economy
3. Science communication, inspiration, and engagement

### Emerging technologies and techniques for ocean science

1. Using remote and *in situ* technologies to inform marine science
2. Advances in techniques and technologies: from 'omics to gear modifications to data analysis
3. Towards open-source science: freely available methods and data in the marine research

Visit the ECSC4 website, [www.ices.dk/events/symposia/ecsc4/Pages/default.aspx](http://www.ices.dk/events/symposia/ecsc4/Pages/default.aspx), to read more about the conference and the theme sessions and stay up-to-date by following us on Twitter [@ECSC\\_4](https://twitter.com/ECSC_4) for announcements of keynote speakers, the programme, and important dates. Registration and call for abstracts will open in October 2021.

### 16th–20th May 2022: 53rd International Liège colloquium on Ocean Dynamics, and GO2NE oxygen conference

#### Liège, Belgium

Oxygen is critical to the health of the planet. It affects the cycles of carbon, nitrogen and other key elements, and is a fundamental requirement for marine life from the seashore to the greatest depths of the ocean. Nevertheless, de-oxygenation is increasing in the coastal and open ocean. This is mainly the result of human activities that are increasing global temperatures (CO<sub>2</sub>-induced warming) and increasing loads of nutrients from agriculture, sewage, and industrial waste, including pollution stemming from power generation using fossil fuels and biomass.

The 53rd Liège colloquium will investigate new developments and insights related to de-oxygenation in open and coastal waters. It is jointly organized with the Global Ocean Oxygen Network (GO2NE) and is a contribution to the Global Ocean Oxygen Decade (GOOD) program endorsed by IOC-UNESCO. The following sessions are considered:

- De-oxygenation: understanding causes and attributing changes
- Assessing open ocean and coastal de-oxygenation variability and trends
- De-oxygenation: observing and modelling
- De-oxygenation and ocean life
- De-oxygenation and co-stressors: understanding, monitoring and mitigating deoxygenation in the context of multiple stressors
- Ocean De-oxygenation - how the past can inform the future?
- Microbial Communities and their controls on biogeochemical feedbacks and interactions
- De-oxygenation, water quality and the climate system: understanding processes and feedbacks and developing actionable indicators
- De-oxygenation: ecosystem services, economic and societal consequences.
- Confronting de-oxygenation and its impacts: translating science to management and policy



Deadline for Abstract submission: January 16th 2022. Further details (scientific committee, submission, registration, deadlines, venue etc...) are available on the web site <https://www.ocean-colloquium.uliege.be/>.

**5th - 9th September 2022: Challenger Society Biennial Meeting – celebrating the 150<sup>th</sup> anniversary of the Challenger Expedition**  
London, UK

To be hosted by the National History Museum, | just a 'date for the diary', stay tuned.

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The CSMS email address is [info@challenger-society.org.uk](mailto:info@challenger-society.org.uk). Contributions for next month's edition of Challenger Wave should be sent to: [john@vectisenvironmental.com](mailto:john@vectisenvironmental.com) by the 30th November.

*We continue to send printed copies of Challenger Wave to members of the CSMS without email addresses. However it is in everybody's interest to send your email address to Jennifer Jones, [jxj@noc.ac.uk](mailto:jxj@noc.ac.uk), as soon as possible*

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## ***JOBS and OPPORTUNITIES***

### **PhD studentship, University of Hull**

The University of Hull is recruiting for September 2022 start for a NERC-funded PhD position. The project is to build and validate a 3D numerical model of the Humber Estuary in the UK, and to initially use this model to investigate unusual aspects of the area's estuarine morphology and to evaluate possible flood management scenarios.

The project will be based at the University of Hull with additional involvement from York University and the Environment Agency (EA), which is the organisation with responsibility for water and flood management in England.

Full details at <https://panorama-dtp.ac.uk/research/estuarine-morphology-understanding-atypical-behaviour-and-evaluating-flood-management-scenarios/>  
And instructions on how to apply at <https://panorama-dtp.ac.uk/how-to-apply/>

Please contact Simon Waldman ([s.m.waldman@hull.ac.uk](mailto:s.m.waldman@hull.ac.uk)) with queries or for an informal chat.

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## There are jobs on the IMBER web site

<http://www.imber.info>



Integrated Marine Biosphere Research

### Jobs and opportunities

#### New

- Postdoc: Observations and modelling of polar aerosols, Marine and Antarctic Research Centre for Innovation and Sustainability, University of Cape Town. Open until filled; **apply now**
- Senior Consultant: Environmental Policy, ICF, UK. No deadline given; **apply now**
- Tenure-track faculty position: Marine Chemistry, University of Southern Mississippi, Stennis Space Center, MI, USA. Open until filled; **apply now**
- Operations Manager: Ocean Visions, work remotely across east and west US time zones. Apply by **19 November**
- Scientist/Postdoc: Climate change and ocean modelling, Helmholtz-Zentrum Hereon, Geesthacht, Germany. Apply by **19 November**
- Masters degree: Applied Ocean Sciences, University of Cape Town. Apply by **30 November**
- Postdoc: Deep-sea taxonomy, ISA-Ifremer, Brest, France. Apply by **30 November**
- Postdoc: Ocean Chemistry, Ecological Change, and Coastal Communities, University of California - Davies. apply by **31 December**
- PhD: Autonomous technologies and the marine carbon cycle: impacts of coastal processes on ocean acidification and blue carbon. University of Exeter, Exeter, UK. Apply by **10 January**
- Masters scholarship: TROPIMUNDO call open for botany, zoology and integrative ecosystem approaches in the tropics. Apply by **15 January**

#### In case you missed it...

- PhD: autonomous detection of marine benthic resources, Memorial University of Newfoundland, Canada. Open until filled; **apply now**
- PhD: Ocean biogeochemistry, University of New Hampshire, Durham, NH, USA. Open until filled; **apply now**
- Postdoc: Coastal and ocean modelling, University of Washington, Seattle, WA, USA. No deadline given, **apply now**
- Postdoc: Cross-Kingdom chemical signaling in marine microorganisms, University of Washington, Seattle, WA USA. Applications considered as submitted; **apply now**
- Postdoc: Ocean biogeochemistry and chemical-microbial networks, University of Virginia, Charlottesville, VA, USA. Review of applications has begun; **apply now**
- Postdoc: Fisheries oceanography, East Carolina University, Greenville, NC. Screening of applications has started; **apply now**
- Call for nominations: Ocean Carbon Biogeochemistry (OCB) Scientific Steering Committee. Submit by **19 November**
- Postdoc: Physical oceanography, Columbia University, New York, USA. Apply by **19 November**
- Two Postdocs: US GO-SHIP, University of California, San Diego, CA, USA. Apply by **19 November**
- Scientist/Postdoc: Climate Change and Ocean Modelling, Helmholtz-Zentrum Hereon, Geesthacht, Germany. Apply by **19 November**
- SCOR 2022 Visiting Scholar program. Apply by **15 December**

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