

Challenger Wave



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

NEWS

Challenger Society Biennial Meeting Photo Prize

Don't forget to submit your pictures for the highly competitive Photo Competition, to be judged at the Challenger Society Conference, 5th-9th September at the Natural History Museum, London. This time, the subject is 'Ocean Challenges'. For more details, the Conference web site is, www.nhm.ac.uk/our-science/science-events/the-challenger-society-conference-2022-in-london.html.

Advice for posters and talks at the Challenger Society Biennial Meeting

Some dos and don'ts for posters and presentations

If you have your eye on the prizes to be won for posters and talks at the Challenger Society Anniversary Conference, here are some tips. The poster prize honours Cath Allen, a researcher in fluid dynamics at the University of Lancaster, who died in 1991. The Challenger Society introduced the prize to combat the idea that contributing to a conference poster session is a second best alternative to delivering a paper, even though a poster needs to be at least as well thought-out as a talk. The prize for the best talk honours Norman Heaps, a shelf-sea modeller who died in 1986. He was a particularly clear speaker, with an enthusiastic, lively and entertaining way of delivering a talk.

The Cath Allen Poster Prize

- A poster is a chance to use your skill in presentation of data, in layout, and in distilling the essence of your message. **It is not an abbreviated paper.**
- **A poster needs to be attractive**, with an interesting title that is visible from a distance. If a poster doesn't draw attention to itself, it could be overlooked, and all the work put into it could be wasted.
- **A poster needs to be easily readable**, and not just by someone standing really close to it. For the main text, take care to choose a clear type-face at sensible point size. Avoid long complex sentences.
- **Avoid large slabs of text** and overlong line-lengths; the optimal line-length for readability is considered to be 50-65 characters per line, including spaces. For consistent spacing between words, use unjustified text.
- **Ensure your diagrams are large enough** to be seen clearly, and that the line weights of graphs etc. aren't too spindly.
- **Ensure that you have explained your symbols and acronyms**, and have put scales on figures if necessary.
- **Try not to have more than about five figures** (diagrams and photos). Remember that a well-chosen picture can be worth a thousand words.
- **Diagrams need to be close to the text** that relates to them, or very easily found.
- **Make use of colour** to enliven the poster and help direct the reader where to look.
- **Don't be tempted into over-complicating the appearance of the poster**, and obscuring your message.
- **Try to convey why your research is so exciting.**
- **Be there by your poster** to answer questions.

The Norman Heaps Prize

- **Time your talk beforehand.** There is nothing more upsetting than having to leave the podium without getting to your conclusion.
- **Beware of overload.** It's not advisable to have more than about half-a-dozen pieces of 'hard' information (diagrams, maps, tables) per 15 mins of presentation. **That's still only 2.5 minutes per picture.** (This doesn't preclude any scene-setting photos.)
- **Don't forget that your time slot includes 2-3 minutes for questions.**
- **Everyone uses their Powerpoint slides as memory prompts, but try not to find yourself just reading from them or you will lose spontaneity.**
- **In particular, reading through introductory slides that show the title, the aims, methods, results and even conclusions, takes up valuable time and isn't necessary**, as the Chair will have already introduced you, and the audience has the compilation of abstracts. **If you are determined to have an introductory slide, make it brief and interesting.**
- **Your results may be fascinating**, but that's irrelevant if they can't be read from further back than the first two rows. **Graphs and diagrams are easier for an audience to take in than tables.** If you do use tables, highlight the numbers you are talking about.
- **Make use of colour** to enliven your graphics and help convey your storyline.
- **Use variety – switch between text, diagrams and photos.** If you use visuals from a number of sources, ensure that they use the same conventions for symbols etc.
- **Remember who your audience are.** Challenger conferences are attended by marine scientists from all disciplines, each with their own vocabulary, so try to explain any specialist terms so that everyone can follow your talk.
- **Try to convey why your research is so exciting.**

Winners of the 10th Anniversary of European International Human-Powered Submarine Race announced

IMarEST and QinetiQ are delighted to have completed this year's European International Submarine Races (eISR), in Europe's largest freshwater tank, QinetiQ's Ocean Basin, at Haslar Marine Technology Park, Gosport, UK. Organised by IMarEST and hosted by QinetiQ, the "human-powered submarine" race, which runs every other year, is in its tenth year and saw teams of students from the Universities of Southampton and Warwick in the UK, and Universities from the US, Canada, Germany and Taiwan competing against each other.



The winning team from Rhein-Waal University of Applied Sciences, Germany.

This year's overall winner was Rhein-Waal University of Applied Sciences, Germany, and the runner-up was the University of Michigan, US. The École de Technologie Supérieure from Montreal, Canada, won the BMT Award for Innovation, and Rhein-Waal also took home the UKNEST Agility Award.

Over two weeks, the teams design, build and race their underwater vehicles using pedal power to propel them as they navigate the challenging underwater slalom course. To win the competition, teams must demonstrate creativity and comprehensively document their work with the aim of achieving sporting prowess. Points are

awarded for speed, maneuverability, reliability, endurance and perseverance. Especially important in the scoring is the team's ability to rise to the unexpected challenges of the underwater environment.



Runners up from University of Michigan, US.

IMarEST Race Director, William Megill said: "When the IMarEST and QinetiQ created the eISR, the goal was to provide university students with an opportunity to apply their classroom knowledge to the design and actual production of real underwater machines. The practical experience they obtain in their preparation, the teamwork they demonstrate at the competition, and the reflection of their successes (and failures) afterwards, uniquely prepare them for exciting careers in the maritime sector. The proof is in the pudding: of the approximately 1,500 students who have taken part in the submarine races over the last 10 years, many are now in positions of significant responsibility at marine engineering companies in the UK and worldwide. As we head into the second decade of the eISR, we look forward to working with young minds to solve the challenge of getting around in the Ocean of Tomorrow."

QinetiQ Submarine Business Manager, Andy Dinsdale says, "This is a fantastic STEM event and follows on from QinetiQ's recent Schools Powerboat challenge, www.qinetiq.com/en/blogs/powerboat-challenge-2022. It's a real privilege to host the event in Haslar and to see so many teams competing again. The "buzz" around the teams has been amazing. This event is truly unique, enabling university students from multiple nations to design and build an underwater vehicle having identified suitable funding. The event replicates many of the challenges of designing and testing a "real submarine" and aligns very closely to QinetiQ's activities delivering Underwater Test and Evaluation (T&E), so is a great event for us to

host. We need to make sure that the event continues to inspire the next generation of submarine designers and builders. If what we've seen over the past two weeks is an indication of future capabilities, then our future should be in safe hands! We look forward to seeing the event back in the UK in two years' time."

Glider experts share knowledge to improve global ocean health data

A brand new Standard Operating Procedure (SOP) for the use of oxygen sensors in autonomous vehicles has been released, bringing together expert knowledge from across the glider community, to make valuable oxygen sensor data more accessible to scientists. The production of the document, co-led by scientists from the National Oceanography Centre (NOC) and endorsed by the Global Ocean Observing System (GOOS) and its glider component, www.oceangliders.org, brought together over 20 collaborators to ensure data collected by gliders in Europe and around the globe is comparable, and therefore of use to the wider global science community.

It's estimated that 50–80% of the oxygen production on Earth comes from the ocean, however levels of dissolved oxygen can be reduced due to warming ocean temperatures, and eutrophication, a process which leads water to become overly enriched with nutrients. Using sensors integrated on autonomous vehicles, such as gliders, to measure dissolved oxygen, helps scientists to better understand the processes driving oxygen depletion and the ecosystems' health. Whilst the use of gliders improves the coverage of data collection, a standardised procedure was required to bring together knowledge from around the world to enable better data sharing. Glider experts, sensor developers and end users collaborated on the open platform GitHub to produce the SOP titled 'OceanGliders Oxygen SOP v1.0.0: A good example of open collaborative scientific work', oceangliderscommunity.github.io/Oxygen_SOP/README.html.

The SOP is a further step forward in sensor data collection, and has paved the way for the production of similar collaborative procedures for ocean variables including salinity and nitrates, which are currently underway. The SOP was supported by H2020 EuroSea, eurosea.eu, and H2020 GROOM II, www.groom-ri.eu/, projects

and the EuroGOOS Glider Task Team, eurogoos.eu/gliders-task-team/.

Dr Patricia Lopez-Garcia, Sensor Science Delivery Lead at the NOC, and a co-lead of the SOP said: "It's been a pleasure to be part of this



initiative that includes experts from all around the world. A great opportunity to learn from the best, and share information in a very open and constructive way.

Constructive feedback by anyone is welcome. We encourage both experts and new

gliders users who want to start observing oxygen to feedback on the document. Experts are welcome to critically assess the specific methods and uncertainty ranges outlined in the SOP. New users can help to improve the SOP by providing a feedback from the user perspective."

Dr Soeren Thomsen, lead of SOPs for the Glider community said: "We designed a best practice development and maintenance process which is fully transparent and open. This will help to democratize knowledge in the spirit of open science!"



Co-lead Dr Julius Busecke from Columbia University and Lamont-Doherty Earth Observatory said: "This project was very dear to



me because of my past work as an observational oceanographer. These best practices, created by the world experts in the field, will make it much easier for students and people new to their platforms to produce high quality

results. This living document will grow the

community around glider observations, and help to drive new scientific discoveries".

IMBeR Welcomes the New Scientific Steering Committee Chair

We are very happy to welcome Prof. Diana Ruiz-Pino as the new Chair of the IMBeR Scientific Steering Committee (SSC). She officially took over as chair at the SSC meeting on 3 August 2022.



Diana is an Associate Professor at Sorbonne Université, Paris, France, and has more than 30 years' teaching and research experience in marine biogeochemistry and climate change. Her other interests include blue justice and incorporating different sources of knowledge into science.

Call for nominations: African and Adjacent Island States Ocean Decade Taskforce

Following the launch of the UN Ocean Decade Africa Roadmap, www.oceandecade.org/news/new-roadmap-sets-out-nine-priority-actions-for-the-implementation-of-the-ocean-decade-in-africa/, a new Call for Nominations opened for members of the African and Adjacent Island States Ocean Decade Taskforce; A multi-stakeholder body to oversee and promote the implementation of the Africa Roadmap across the region. The Ocean Decade Africa Roadmap, unveiled at the African Conference on Priority Setting and Partnership Development for the UN Decade of Ocean Science for Sustainable Development (10th-12th May 2022), provides an aspirational vision and solid plan for diverse stakeholders to convene around a common set

of priorities to implement the Ocean Decade at the African continental level and in adjacent island states.

Building on this momentum, a new Taskforce is being established to engage diverse African partners in the Ocean Decade. The mandate of the African and Adjacent Island States Ocean Decade Taskforce is to oversee and promote the implementation of the Africa Roadmap as well as the enabling environment necessary for its success. This will help ensure that ownership of the Ocean Decade Africa Roadmap is systematically reconfirmed and strengthened among African nations, research institutes, NGOs, industry and philanthropic partners, and regional and indigenous organizations.

The Taskforce will:

- Provide strategic vision, direction, and coordination of specific actions
- Provide advice on measures and initiatives required to create the appropriate enabling environment for translating the Africa Roadmap into co-designed Ocean Decade Actions at multiple levels from resource mobilisation, development of new partnerships, coordination, to research and policy initiatives
- Facilitate and provide support to the development of co-designed programmes, projects and initiatives for submission in response to Calls for Decade Actions
- Continue socialization/communication on the Ocean Decade in Africa and Africa Roadmap with existing networks, institutions, experts and stakeholders
- Identify multisector/multistakeholder engagement and outreach activities to engage further regional stakeholders outside the Taskforce and raise awareness of the Ocean Decade. This will include specific mechanisms to engage priority groups, including indigenous and local knowledge holders, Early Career Ocean Professionals, ports authorities and maritime services, business and industry or philanthropy
- Provide guidance and support on the mobilisation of financial and in-kind resources to support Roadmap implementation
- Establish specific/thematic working groups as deemed necessary

The Taskforce will comprise up to 15 expert members drawn from government, private sector, philanthropy, civil society and the scientific community, plus five members representing regional organizations (UN agencies, regional intergovernmental organization and NGOs).

Expert members will be selected for a two-year term with due consideration to expertise, geographic, generational and gender balance, and will serve on a voluntary, non-remunerated basis in their personal capacities. The full Terms of Reference are available at oceanexpert.org/document/30713. If you are interested in becoming a Member of the African and Adjacent Island States Ocean Decade Taskforce, submit an application through www.surveymonkey.co.uk/r/J7XLXHF, by the 25th August 2022 at 23.59h CET.

Thank you for celebrating another wonderful United Nations World Oceans Day with us

This year's hybrid event brought together, virtually and in-person, over 86,000 people from 143 United Nations Member States to celebrate our blue planet and this year's theme, Revitalization: Collective Action For The Ocean, unworldoceansday.org/un-world-oceans-day-2022/. The programming featured over 30 global thought-leaders, celebrities, community voices, private sector and cross-industry experts, and ocean managers who shed light on the ideas, solutions, and communities that are working together to help revitalize the ocean and everything it sustains.

IMBeR OC-PC Study Group, Brief Overview on Ocean Colour Sensors and Their Data Access Released

IMBeR Ocean Colour-based Plant species identification and Carbon flux in the Indo-Pacific oceans (OC-PC) Study Group has released the manual "Ocean Colour Sensors and Their Data Access: A Brief Overview" in July 2022. This manual can be downloaded from imber.info/ or imber.ecnu.edu.cn/OCPC/list.htm.

The manual presents a summary of the ocean colour sensors and their data access. It aims to provide a starting material for early career researchers (ECRs) and a wider audience who are not ocean colour specialists. It will be updated as new sensors or new products become available.



The IMBeR OC-PC Study Group, co-chaired by Professor Young-Je Park and Professor Fang Shen consists of experts from seven institutions in five countries. Its work program (2022-2032) contains:

1. Algorithms development to identify marine plant species and quantify carbon fluxes mediated by marine biosphere.
2. Ocean color synthesis for the East Indian and the West Pacific Ocean.
3. Capacity development for the ECR in the Indo-Pacific regions.

Climate Linked Atlantic Sector Science, CLASS, project opportunities

Berths available on CLASS expeditions

The sustained observation expeditions have berths available for students and early career researchers (ECRs) to join them and make measurements or collect samples for projects in collaboration with CLASS researchers. Students and ECRs will receive support in collecting their data and samples at sea, gain experience in a range of seagoing activities and benefit from working closely with CLASS researchers.

ECRs can apply for a berth on a CLASS research cruise through one of three options:

- a) A berth funded by the ECR's own project, to collect data and/or samples to carry out research that will enhance CLASS objectives.
- b) A berth associated with a CLASS ECR Fellowship (see below) or a PhD with a CLASS Principal Investigator
- c) A berth as a volunteer for the core science team. Some, but not all, CLASS cruises need volunteers for their core team of people who take samples and process data.

Details of CLASS cruises and deadlines for applications can be found in the Application Form on the CLASS website. ECRs considering applying for a berth on a CLASS cruise should contact the Principal Investigator (PI) to discuss

their ideas and plans first. More information, including contact details for the PI, what you need to know, and where to send your form, is given in the Application Form, projects.noc.ac.uk/class-project/academic-engagement. Applications can be submitted at any time.

CLASS Fellowships for Early Career Researchers

CLASS has an ECR Fellowship scheme to support extended visits by graduate students or postdocs to NOC and SAMS. The purpose of CLASS ECR Fellowships is to support the career development of ECRs by enabling collaborative working with CLASS researchers, as well as access to CLASS facilities, data sets, model output and tools, and berths on CLASS cruises.

The research carried out by the ECR during the Fellowship should enhance the CLASS objectives and build on the project's observations and/or modelling and/or technology development. Applications are invited for CLASS Fellowships at NOC and SAMS. The deadlines are given at projects.noc.ac.uk/class-project/academic-engagement.

Call for Papers deadline extended to 26th August 2022: DSR-II Special Issue on IMBeR West Pacific Symposium

The IMBeR West Pacific Symposium, 'Changing West Pacific Ocean: Science and Sustainability', was held between 22nd-25th November 2021 in Shanghai. This online event drew more than 900 participants and more than 160 presentations to provide new scientific observation results and perspectives on the changing marine biosphere in the West Pacific Ocean and its neighboring Indian and Southern oceans. It also brought many notable success stories about how scientific research activities empower us to cope with changing oceans due to global warming and harness the ocean's wealth sustainably. The symposium topics covered coastal blue carbon, coral reefs, dried small fish, ecosystem-social interactions in the coastal sea, marine biogeochemistry and biodiversity in the Indo-Pacific Region, marine-extreme events, oceanic top predators, tropical ocean ecosystem, and ocean interventions. It forged a camaraderie amongst the scientists and stakeholders interested in the West Pacific and its neighboring oceans from more than 70 countries.

We are delighted to announce that the Deep-Sea Research II special issue, two volumes, stemming from the IMBeR West Pacific Symposium are under development. All presenters at the symposium are kindly entitled to submit manuscripts for the special issue. The manuscripts generated through/by/from/during the West Pacific Symposium are all welcomed according to the IMBeR publication policy. If you have developed manuscripts that fit into the Symposium over the course of time and are interested in submitting ones, please follow the submission guidelines here, imber.info/wp-content/uploads/2022/03/Special-Issue-guidelines-for-IMBeR-WPS-V2.pdf, or contact IMBeR IPO-China (imber@ecnu.edu.cn); new deadline 26th August 2022.

VIEWS

EGU23 Call-for-session proposals

The EGU General Assembly 2023 will be held on site at the Austria Center Vienna (ACV), Austria, with online components provided to enable virtual attendance, from 23rd to 28th April 2023. EGU23 invites you to take an active part in organizing the scientific programme of the conference, from now until 19 September 2022, by suggesting sessions with conveners and description in your preferred programme group. You have the possibility of proposing either physical oral/poster sessions with a hybrid component or hybrid vPICO sessions, meetingorganizer.copernicus.org/EGU23/provisionalprogramme.

When suggesting a session, Short Course, or Townhall Meeting, as a general guideline, we strongly encourage considering and promoting under-represented demographics, in particular including: (i) multiple countries and institutes, (ii) different career stages, with particular attention to the participation of Early Career Scientists, (iii) different genders and all other forms of diversity, and (iv) diverse scientific approaches. Please check with all conveners that they agree to take part in the proposed session. Please see the convener guidelines and rules for further information, egu23.eu/guidelines/conveners.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 (PG) 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, co-organization is possible and encouraged between PGs. You will be able to indicate PGs that you believe should be approached for co-organization in the session submission form. Only put your session proposal into one PG.

From 1st November 2022 until 20th January 2023 you can apply for Townhall Meetings. Townhall Meetings offer an active discussion platform that is open to all interested participants to inform them of new opportunities and initiatives. Rooms for a splinter meeting can be booked for smaller, targeted discussion groups. Splinter Meeting booking is open from 1st November 2022.

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, please contact the programme group chair and/or the officers of the specific programme group, www.egu23.eu/about/programme_committee_composition.html.

UK Met Office selects Sonardyne acoustic releases for mooring weather buoys

Acoustic release transponders from ocean science technology company Sonardyne have been chosen by the UK's Met Office to secure its network of moored buoy Marine Automatic Weather Stations (MAWS) in the North Sea and Atlantic Ocean. Under a call-off agreement, Sonardyne's RT 6s and deck topside command units will be used to support deployment and retrieval of the MAWS buoys from their locations as far north as the Faroe-Shetland Channel and

down to the southwestern approaches and the English Channel in the south.

The Met Office's MAWS buoys are a key part of its Marine Observing Network, which gathers essential observations, including wind speed, air and water temperature, and wave height and period. They contribute to an international network of World Meteorological Organisation (WMO) and the International Maritime Organisation (IMO) coordinated marine observations, which provide critical data for weather forecasting, atmospheric modelling and work on climate science, by the Met Office and other organisations.



Weather buoy E1 off south-west England. Photo courtesy of Plymouth Marine Laboratory.

Because many of the buoys are moored in more harsh North Atlantic waters, they have to be designed to withstand extreme conditions, including significant wave heights recorded at above 18 m. They also have to be serviced every two years, so the Met Office needs a safe and reliable mechanism to allow for easy release from and then redeployment to their seabed moorings. Sonardyne's RT 6 family of release transponders, operate using a secure acoustic signal from the sea surface, to activate a release mechanism connected to a seabed anchor. Moored instrument strings and oceanographic buoys can then be retrieved onboard a vessel for servicing or redeployment.

To support the MAWS deployments, each buoy will be fitted with two releases installed in a load amplification frame, providing a working load limit (WLL) of 15 tonnes. This configuration provides both equipment redundancy and the WLL needed to withstand harsh ocean conditions. Operators will command and control their RT 6s

using Sonardyne's newly developed Deck Topside. Rugged and portable, Deck Topside features a high brightness screen, inbuilt GPS receiver for recording deployment locations and a battery life of eight hours. A cabled, over-the-side dunker provides the secure acoustic communication link between the surface and RT 6s.

The Met Office expects the first deployment using their new Sonardyne equipment to be on the 'K7' buoy, which will be reinstalled about 150 km west of the Shetland Islands in 700 m water depth by the Northern Lighthouse Board's lighthouse tender NLV Pharos. Mark Hemnell, Marine Engineering Manager at the Met Office says, "The Met Office open ocean buoy network is often where forecast weather systems meet our measurement systems. Data from the buoys are used along with observations from many other sources to initiate model runs from which the UK's weather forecasts are derived. Met Office buoy moorings are designed to withstand the worst that the Atlantic can throw at them for deployments of four to six years. They take advantage of the properties of synthetic materials to do this, and it is our intention to remove all these materials from the ocean at the end of a deployment. Tandem release assemblies will ensure that this can be done reliable and safely, reducing our impact on the marine environment."

"Deployed far from shore in deep water, at significant operational cost, and exposed to some of the severest weather that the North Atlantic can generate, it's vital that the Met Office's buoys are moored securely for years at a time. Consequently, the selection of our RT 6 acoustic releases is a significant vote of confidence in our technology," adds Geraint West, Head of Science at Sonardyne. "Acoustic release transponders have featured in Sonardyne's product portfolio throughout our 50 years, so we're delighted that, in our 50th year as a company, the UK's national weather service has invested in UK technology, manufacturing and through-life support to help deliver their vital services."

Challenger Society merchandise store on Teemill

Please visit challengersociety.teemill.com/ where you can browse, and even purchase items if you like. Please feel free to provide feedback in the help section.

Buy your Challenger Society T-shirts now!



To get your *Challenger* clothing in time for the conference, go to: <https://challengersociety.teemill.com/>
T-shirts and hoodies for men and women are available in a variety of colourways, with large *Challenger Expedition* 150th anniversary celebration logos as in the photos, or with smaller Challenger Society logos.
Women's T-shirts and hoodies are available in both fitted and loose-fitting styles.

T-shirts for children and Challenger tote bags are also available.



The Teemill website states that their products are made from organic cotton and printed in the UK in a factory powered by renewable energy.

Note that the black T-shirts being sold on the Natural History Museum Challenger 150 Conference website are not the Society T-shirts.

SALTS

Yelkouan Season II is on

Season I of our CIESM (International Commission for Scientific Exploration of the Mediterranean Sea) Seabird Program last year revealed that Yelkouan Shearwaters nesting in the northern Adriatic were able to fly as far as the northeastern Black Sea, driven there obviously by the highly productive spawning grounds of anchovies.



Yelkouan shearwater at sea (photo credit: Daniele Occhiato)

This year we shifted our operation further south with two nesting sites, one in north-eastern Malta, the other in the Zembra Archipelago north of Tunis, where we equipped juveniles (and parents whenever possible) with light GPS-GSM trackers. Our main questions this time are focused on the juveniles: will they all take the same north-eastern direction as last year? Are they flying solo or accompanied by their parents?

We are pleased to share with you the first live maps of their travels; they will allow you to follow in real time the progress of our fellows and discover some preliminary answers, ciesm.org/marine/programs/seabirds/track-seabirds-live/?step=5.

CALENDAR

27th–29th August 2022: Arctic Circle Greenland Forum

Nuuk, Greenland

Greenland in the global Arctic, climate and prosperity, geopolitics and progress, organised in association with Naalakkersuisut, the Government of Greenland.

The programme for in excess of 50 sessions is now available from the website. Participants are also invited to book special tours for August 29th by visiting www.arcticcircle.org/fjord-adventure. The Forum will be held at the Katuaq Cultural Centre in Nuuk, and will bring together Governments, universities, research institutions, organizations, associations, companies and other partners. For more information, visit www.arcticcircle.org.



29th August – 2nd September 2022: SWOT-AdAC and CLIVAR conference on submesoscale (fine scale) ocean dynamics

Paris, France; Providence, USA; Hobart, Tasmania and Qingdao, China

The Earth system has complex dynamics, characterized by feedbacks among biophysical processes occurring at a wide range of spatiotemporal scales. Disentangling these

complex feedbacks is at the core of our capacity to predict climate change scenarios at high accuracy. This knowledge forms also the base for planning effective adaptation and mitigation strategies, as well as sustainable environmental policies, in particular over the decadal timescale. Due to their size, the fine scales (i.e. mesoscale and smaller, spatial scales of 1–100 km) are not resolved in most Earth System Models and provide a major challenge for global observing systems. Nevertheless, they play a pivotal role in climate dynamics, by storing and directing the flow of energy across the ocean scales, and by strongly modulating the ocean biogeochemical cycles as well as air-sea and ice-sea interactions. The fine scales affect the distribution and behavior of marine biota, forming the skeleton of the open ocean seascape where major conservation programs are planned in the incoming years under international initiatives like “Biodiversity Beyond National Jurisdiction” and “High Ambition Coalition”. Understanding these dynamics is also critically important in the early phase of marine pollution accidents, during which the fate of the pollutants is controlled by horizontal stirring.

The workshop “From filaments to climate change: recent advancements and future challenges in finescale ocean dynamics” aims at understanding the role of fine scale ocean dynamics on feedbacks among biophysical processes, increasing accuracy of climate predictions, assisting in improving Earth System Models, and discussing how knowledge of the finescale can be integrated in management and conservation efforts. The workshop will bring together scientists from different disciplines in oceanography; geophysical fluid dynamics, biophysical interactions, model parameterization, observational oceanography, climate modelling, and societal applications. Special emphasis will be given to the synergies between models and observations, with a focus on emerging inversion/assimilation techniques, Lagrangian methods, and on the opportunities opened by next-generation in situ and remote sensing finescale platforms, like the forthcoming SWOT satellite mission. For more information, follow the workshop website at finescales2022.sciencesconf.org/.

5th-8th September 2022: ECSA 59: Using the best scientific knowledge for the sustainable management of estuaries and coastal seas

www.challenger-society.org

San Sebastian, Spain

ECSA 59 will bring together a global multi-disciplinary community of researchers, educators and practitioners to address issues of outstanding importance in the science (both natural and social) and management of estuaries and coastal seas in this rapidly changing world.

Main topics include:

Changing physical settings and processes

Biogeochemical processes and fluxes at the land sea interface

Shifting ecosystem structures and functions

The human dimension: impact, management, governance

For our full list of topics, special sessions, and conference programme please visit the website at www.estuarinecoastalconference.com/conference-program.asp.

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

This is a once in a lifetime opportunity to have dinner in the spectacular surroundings of the Natural History Museum Hintze Hall, underneath ‘Hope’ the Blue Whale. Guests will be allowed to circulate the galleries including a new display of Challenger art and specimens in the Images of Nature gallery prior to the dinner.



Conference: 6th-8th September 2022

Side events: 5th and 9th September 2022

Hosted by the Natural History Museum and Imperial College, London, UK, the Challenger Society Conference will mark the 150th anniversary of HMS Challenger setting off on her

round the world voyage. The meeting will be held in person at the Royal Geographical Society, Natural History Museum and Imperial College in South Kensington, London.

Don't forget to start taking your pictures for the Photo Competition, to be judged at the Challenger Society Conference. This time, the subject is to be 'Ocean Challenges': more details coming soon. The Conference web site is, www.nhm.ac.uk/our-science/science-events/the-challenger-society-conference-2022-in-london.html. If you have any questions regarding the conference please email challenger150@nhm.ac.uk.

13th-14th September 2022: SHAREMED International Workshop; Connecting marine research and boosting benefits to society University of Malta, Malta

The SHAREMED project is actively assessing and addressing common and emerging challenges on trans-boundary marine environmental threats and pollution in the Mediterranean, and the shared, effective observing systems needed to monitor them and support informed decisions and actions. The workshop builds on the project achievements to propose collective marine research, improved networking, strengthened governance and a future vision for the Mediterranean scale. A strong participation is expected from all the riparian countries with a focus on participants from the southern and eastern Mediterranean shores.



The SHAREMED framework declaration will be presented and discussed for wider uptake and endorsement. You can register free at shortsea.us1-list-manage.com/track/click?u=6342f5c1b2b14b319b4098ff3&id=d9cc2c6343&e=9a6129df5d, with

www.challenger-society.org

the 31st August as the deadline for Registration. Remote participation will also be available. For further information please contact Prof. Aldo Drago (aldo.f.drago@gmail.com).

19th-23rd September 2022: Open Science Conference on Eastern Boundary Upwelling Systems (EBUS): Past, Present and Future and the Second International Conference on the Humboldt Current System Lima, Peru



The meeting will bring together PhD students, early career scientists and world experts to understand, review, and synthesize what is known about dynamics, sensitivity, vulnerability and resilience of Eastern Boundary Upwelling Systems and their living resources to climate variability, change and extreme events. For more information, visit www.ebus-lima2022.com/.

25th September-2nd October 2022: Ramon Margalef Colloquium 2022, Past, present and future of a living ocean Barcelona, Spain

A workshop hosted by the Institut de Ciències del Mar (ICM-CSIC). We have a limited understanding of the long physicochemical and biological evolution of the ocean. In a context of climate change, it is crucial to better understand the paleo-ocean and how it has evolved into the present ocean. That information would allow us to generate better predictions of the future ocean.

Thus, the main aim of this workshop is to bring together scientists from different disciplines, paleoceanographers, biogeochemists, conservation biologists, microbial ecologists, ecosystem modellers, geologists and physical oceanographers, in order to develop improved perspectives on the future ocean, based on knowledge from the past and present.

The RMSC2022 will promote synergies and dialogues between different disciplines as well as networking and knowledge exchange between senior, junior and next-generation researchers

from different disciplines. Registration is now open and all information can be found at ramonmargalefcolloquia.com.

5th-19th October 2022: Ocean Best Practices System (OBPS) Workshop VI

Virtual

The OBPS announces that the Ocean Practices Workshop VI will take place virtually with plenaries on the 5th (opening plenary 1A), 6th (opening plenary 1B), and 19th (closing plenary) of October 2022 (each three hours long). Working Group sessions will meet in between, at times of their own choosing.

The Workshop will cover a broad range of topics proposed and selected by session leads and the workshop coordinators. For the plenaries, there are two general themes: 1) Guiding technology evolution and use, and 2) Capacity development and sharing, with an emphasis on developing countries. Let us know if you are interested in participating, or in proposing a theme or session for a Working Group, by filling out the Interest to Participate short form at docs.google.com/forms/d/e/1FAIpQLSc5MEiuWVNa5JXah47qoldhKrDopmcY2bEzBcVu2MLrAATHJQ/viewform.

Please circulate this invitation to colleagues who may be interested in focused discussions; those who may want to learn more about developing, curating and sharing Ocean Practices; and to help plan the next three to five years of OBPS and its Ocean Decade programme: "OceanPractices". Should you have any questions, please e-mail us at info@oceanbestpractices.org. We look forward to hearing from you, Frank Muller-Karger, Chair, OBPS Workshop VI; On Behalf of the Ocean Best Practices System Steering Group

11th-13th October 2022: 7th Argo Science Workshop

Brussels, Belgium



We are pleased to announce that the call for abstracts is open for the 7th Argo Science Workshop.

This international workshop is hosted by Euro-Argo and will take place in the Royal Belgian Institute of Natural Sciences, Brussels, as a hybrid event with in-person and virtual attendance options. You will find further information on the workshop webpage, www.euro-argo.eu/News-Meetings/Meetings/Others/7th-Argo-Science-Workshop-October-2022. Registration open until the 4th September.

13th-16th October 2022: Arctic Circle Assembly

Reykjavik, Iceland

Arctic Circle, www.arcticcircle.org, provides an open, democratic platform for discussion and cooperation on Arctic Affairs, for Governments, universities, research institutions, organizations, associations, companies and other partners.



Attended by more than 2000 participants from over 60 countries, the Assembly is the largest international gathering on the Arctic. Every year, participants can attend over 150 Sessions, receptions, art exhibitions, film screenings and more with various networking opportunities provided throughout the Assembly days.

8th-10th November 2022: 12th MASTS Annual Science Meeting: Supporting the Blue Economy Vision

Glasgow, Scotland

Scotland's blue economy includes the marine, coastal and the inter-linked freshwater environment of Scotland, the different marine and maritime sectors it supports, and the people connected to it. It also encapsulates the legislation, policies, programmes and international commitments that determine its

management, as well as the under-pinning scientific research that provides data and information for evidence-informed policy development and is used to evaluate our success.

Join us as we celebrate our twelfth annual conference and discuss how to support the blue economy vision. The MASTS Annual Science Meeting is a cross-disciplinary event that brings together members of the marine science community, with the aim of promoting and communicating research excellence and forging new scientific collaborations. After hosting the ASM online for the past two years, Early bird registration will open in August.

The first two days will bring together expert plenary speakers and contributed talks, panel sessions and e-posters outlining the latest research and management practices that address key topics related to marine science and management in the face of global climate change. Alongside our general science sessions, the event will include special topic sessions, and plenty of opportunity to enjoy networking with your peers and making new contacts.

The third day will be devoted to workshops. Confirmed workshops to date include Scottish marine invasive non-native species workshop; and Improving Diversity & Inclusivity in Aquaculture. MASTS also look forward to co-hosting with the SUT, their annual "Decommissioning & Wreck Removal" workshop. This workshop will be open to all, and will take place on Thursday 10th November. However, there are more workshops in development, so more details will be coming soon.

Abstracts for talks and e-posters are now invited for our general science sessions or one of our four special sessions. Talks will be followed by a live group Q&A session within which all the speakers will be panel members. All presenters are encouraged to not solely focus on past and current research but reflect on gaps of knowledge and future research directions. Talks should be accessible to other disciplines, by avoiding jargon and keeping technical details simple.

Abstracts are invited to sessions on:

- 1 General Science sessions (any field of study related to marine science and supporting the

blue economy vision, www.gov.scot/publications/blue-economy-vision-scotland/)

- 2 Multiple Aquatic Stressors
- 3 Artificial Intelligence
- 4 Marine policy and management- linking current and future research to policy and impact,
- 5 The influence of large scale offshore renewable developments on bottom-up ecosystem processes

The deadline for abstract submission is 16.00 on **Friday 19th August 2022**. For further details about the sessions and the abstract submission template, please visit our dedicated webpage at masts.ac.uk/annual-science-meeting/.

We are delighted that IMarEST have kindly agreed to sponsor the student prizes for the 2022 ASM. Don't forget to stay up to date on the ASM by following us on Twitter or LinkedIn [#MASTSasm2022](https://twitter.com/MASTSasm2022). If you would like to get involved or have a query about the ASM, please drop us an email, masts@st-andrews.ac.uk. We would love to hear from you if you would like an exhibit space at the ASM.

27th–30th November 2022: 2nd Springer MedGU Annual Meeting 2022

Marrakech, Morocco

The Mediterranean Geosciences Union, association.medgu.org/, in collaboration with Springer and Ibn Tofail University (Morocco) organizes the 2nd MedGU. 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 (in-person or virtually) and share/discuss your latest research findings. The MedGU Annual Meeting is one of the largest international geoscience meetings (200 attended in-person the MedGU-21 in Istanbul and 250 online). The MedGU Annual Meeting 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 MedGU-22 encourages submissions of research works from all regions of the world. The

MedGU-22 Proceedings will be published in Springer ASTI Series (indexed in Scopus & SCImago). Contact us, if you need more information, contact@medgu.org.

23rd-28th April 2023: EGU General Assembly 2023

Vienna, Austria

EGU23 invites you to take an active part in organizing the scientific programme of the conference, from now until 19 September 2022, by suggesting sessions with conveners and description in your preferred programme group. You have the possibility of proposing either physical oral/poster sessions with a hybrid component or hybrid vPICO sessions, meetingorganizer.copernicus.org/EGU23/provisionalprogramme.

When suggesting a session, Short Course, or Townhall Meeting, as a general guideline, we strongly encourage considering and promoting under-represented demographics, in particular including: (i) multiple countries and institutes, (ii) different career stages, with particular attention to the participation of Early Career Scientists, (iii) different genders and all other forms of diversity, and (iv) diverse scientific approaches. Please check with all conveners that they agree to take part in the proposed session. Please see the convener guidelines and rules for further information, egu23.eu/guidelines/conveners.html.

From 1st November 2022 until 20th January 2023 you can apply for Townhall Meetings. Townhall Meetings offer an active discussion platform that is open to all interested participants to inform them of new opportunities and

initiatives. Rooms for a splinter meeting can be booked for smaller, targeted discussion groups. Splinter Meeting booking is open from 1st November 2022.

If you have questions about the appropriateness of a specific session topic, please contact the programme group chair and/or the officers of the specific programme group, www.egu23.eu/about/programme_committee_composition.html.

4th – 6th November 2023: Arctic Circle Japan Forum

Tokyo, Japan

The Arctic Circle is collaborating with the Sasakawa Peace Foundation in organizing the Forum. Governments, universities, companies, research institutions, organizations, associations and other partners were invited to submit proposals for Sessions. For more information visit www.arcticcircle.org/forums/arctic-circle-japan-forum.



The CSMS email address is info@challenger-society.org.uk. Contributions for next month's edition of Challenger Wave should be sent to: john@vectisenvironmental.com by the 31st August.

JOBS and OPPORTUNITIES

There are jobs on the IMBER web site

<http://www.imber.info>



Integrated Marine Biosphere Research

Jobs and opportunities

New

- Science Officer Position: UNESCO, France. Deadline **26 August**
- Junior Biogeochemist: PML, Plymouth, UK. Apply by **26 August**
- Postdoc: Food web ecology, Memorial University of Newfoundland, Canada. Apply by **1 September**
- Postdoc: Biogeography, Macroecology or Aquatic Ecology, University of Helsinki, Finland. Apply by **9 September**
- PhD and Postdoc: Model the marine biological carbon cycle, University of Bern, Switzerland. Apply by **20 September**
- Postdoc: UMR MARBEC, France. Apply by **25 September**
- Postdoc: Royal NIOZ COS, The Netherlands. Apply by **26 September**
- Senior scientist: Digital technologies, PML, Plymouth, UK. Apply by **5 May 2023**

In case you missed it...

- PhD: Doctorates available at the Marine Conservation and Integrated Governance Interdisciplinary Unit at Macau University of Science and Technology. No deadline given; **contact Dr Chen Mingbao now**
- Postdoc: Collaborative intelligence and marine ecosystem modelling, CSIRO, Hobart Tasmania. Apply by **31 August**
- Assistant Professor (tenure): Climate change mitigation/adaptation, Carleton University, Canada. Apply by **15 September**
- Funding: Sea Changes 2022 Innovation Fund open for applications. Apply by **18 September**
- SCAR Visiting Scholar Scheme. Apply by **28 September**

imber@imr.no