April 2023

Challenger Wave

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

NEWS

"Briny", a new collection of poems by Mandy Haggith

Red Squirrel Press launched the latest collection of poems from Mandy Haggith, last month, www.redsquirrelpress.com/product-page/briny-mandy-haggith. *Briny*, reflects her passion for the sea, whether lapping the shores of the northwest Highlands where she lives or afloat on the wild waters of the Minch. The poems throng with sea-life, from barnacles to bowhead whales, charting sailing passages and swims, drawing deeply on intimate lived experience of the marine world. A sharp, clear lyrical voice sings here with seabirds and seals.

Mandy Haggith, www.mandyhaggith.net/, teaches Literature and Creative Writing at the University of the Highlands and Islands. Her previous publications include five poetry collections, a poetry anthology, a non-fiction book and five novels. She is a RYA-qualified yacht skipper.

Polyester microfibres shown to inhibit growth in mussels by about a third in 'first-of-its-kind' experiment.

A new study has demonstrated, for the first time, the effect of exposing juvenile mussels to polyester and cotton microfibres at environmentally relevant concentrations over a prolonged timescale. The young mussels subjected to higher levels of plastic microfibres showed restricted growth, which could have compounding effects throughout the marine ecosystem as well as potential commercial implications. The team, consisting of scientists from Plymouth Marine Laboratory, University of East Anglia and the University of Plymouth, exposed juveniles of the mussel species *Mytilus* to three treatments of microfibre, which reflects both current and predicted future concentrations of polyester and cotton microfibres in the natural environment.

Fibres that are less than 5 mm are termed microfibres and these tiny fibres are predominantly generated from the fragmentation of textiles, stemming from the day-to-day use and washing of clothes, and from the weathering and abrasion of marine infrastructure, such as netting and rope. Microfibres are typically composed of polyester, polypropylene or nylon. However, numerous studies also report the presence of naturally derived and semi-synthetic microfibres (e.g. cotton, bioplastic) in environmental samples, which have received relatively little attention compared to their plastic counterparts. Studies suggest that as much as 4.8 to 12.7 million metric tons of plastic enters

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the global ocean every year and this is expected to rise as plastic manufacturing rates are forecast to increase. Fibres are one of the most common forms of microplastic identified in environmental studies, accounting for up to 91% of the total identified microplastics in some studies.

Microfibers of 10–500 µm (0.01 mm - 0.5 mm) in size were used in this experiment, which was conducted within a controlled temperature laboratory with night and day cycles. Mussels were exposed to polyester microfibres at two concentrations, 8 and 80 microfibres per litre, and to cotton microfibres at 80 microfibres per litre. Mussels exposed to 80 polyester microfibres per litre were significantly smaller than the control mussels after 32 days exposure, and their growth rate was on average 36% lower than the control mussels. Mussels exposed to cotton microfibres did not show a statistically significant decrease in growth in this experiment.

The team hypothesise that the observed reductions in mussel growth in response to microfibres could stem from a shift in their energetic budget. These changes could be caused by individuals either altering their feeding behaviours to avoid consuming microplastics, diverting energy away from growth into processing ingested microfibres or repairing damage caused by these microfibres. Additionally, other toxicity studies show that microplastics can cause adverse health effects at the molecular and cellular level in adult *Mytilus* and therefore, energy may be diverted away from growth and reproduction to compensate.

These results highlight the importance of conducting longer experiments when considering the impacts of microplastic on marine life. While the impact of microplastics on certain aspects of biological function can become evident over short timescales, the impact of environmentally-relevant concentrations of microplastics on growth, reproduction, and survival, which have the greatest relevance to populations and communities, require far longer observation periods.

Christopher Walkinshaw, pml.ac.uk/People/Chris-Walkinshaw, PhD student at Plymouth Marine Laboratory and the University of East Anglia, and lead author of the study, commented: "As microfibres are so prevalent in the marine environment it is vital we try to understand their impact on different indicator organisms, such as the blue mussel which is a key marine species important for global food security. Reduced growth rates could alter the energetics of food webs, as smaller mussels are less nutritionally valuable, both to their predators in the natural environment and to us as consumers of seafood. Microfibres and other microplastics expose marine animals, such as mussels, to an additional risk in an environment already at risk from other challenges such as climate change."

Read more at www.pml.ac.uk/News/Microfibres-shown-to-stunt-mussel-growth or to access the full paper, please visit doi.org/10.1186/s43591-023-00052-8.

New branding for the National Oceanography Centre (NOC)

In March, the National Oceanography Centre launched new branding to reflect its role as an independent research organization, noc.ac.uk/. The new brand will tell a more compelling, differentiating story with clarity of purpose and a distinctive look that takes inspiration from the ocean to enthuse, engage and enrol. The expanded colour palette is taken from nature in all its glory, and the new illustrations trace the heritage back to the early pioneers of oceanography. The essence of NOC's new brand has been captured in a short film that can be seen here, https://www.youtube.com/watch?v=aMmIczHhvPI&t=1s.

Missed the Upscaling Autonomy Working Group webinar ?, not to worry

Thank you to those who were able to take part in the recent webinar about the Upscaling Autonomy Working Group. The following is a link to the webinar recording, zoom.us/signin?_x_zm_rtaid=LAw4YL-ZTum-VScZHIy2PQ.1680802817511.faa8c5464ed8730f81b72d7c95d71f12&_x_zm_rhtaid=682 - /login,

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and to access, please use the passcode inside, but not including, the brackets, (=d805tFt).

As a reminder, here is the web page containing background information, noc.ac.uk/partnerships/our-national-role/coordinating-uk-marine-science/noc-association, and the accompanying survey, forms.office.com/pages/responsepage.aspx?id=1LH6uCPtgEGZAC0qeIDpulbVF6wJj5hEuvuU8oUj3g9UMDcySDg4SFAxUkpYOTNCVFFFNEkwOTVNOC4u. If you have any questions, please don't hesitate to contact Kristian Thaller, kthall@noc.ac.uk, or Jackie Pearson, jfpea@noc.ac.uk.

A new member for the Challenger Society History Special Interest Group

We welcome Philip Pearson to the Ocean History Special Interest Group (SIG). Philip's great grandfather, Charlie Collins, was the chief stoker aboard HMS *Challenger*. Philip has recently published a book entitled, "A Challenger's Song", https://a-challengers-song.co.uk/. He also has a wider interest in the social context of other expeditions of that era. ***- John Gould, History SIG***

Philip Pearson grew up in Brighton, within sight of the sea. He studied geography at college and developed a lifelong interest in environmental issues. This drew him to the fascinating story of the voyage of the Challenger and its astonishing achievements. The idea for a narrative of the life of his great grandfather, Charlie Collins, one of the Challenger's crew, was inspired by the creative writing classes at the Mary Ward Centre, London. He sings with the London Sea Shanty Collective choir, and the narrative is doubtless influenced by the stories and rhythms of these working songs of the sea. ***– Austin Macauley Publishers***, www.austinmacauley.com

Monsters of the Deep take a trip to Chatham

The celebrated travelling exhibition of the *Discovery Collections* was unveiled on the 1st April 2023 at The Historic Dockyard, Chatham, thedockyard.co.uk/whats-on/monsters-of-the-deep/. Described as the most technically sophisticated and lavish sea monster-themed showcase ever produced, it breathes life into the supernatural and shows how the fantastical co-exists with science as we try to make sense of what lives down in the depths of the ocean.

Originally opened at the National Maritime Museum Cornwall in Falmouth (2020) *Monsters of the Deep* shares creatures from the *Discovery Collections* (first started in 1925) which aim to record life at the darkest depths of the ocean. You can also see a replica of the famous autonomous underwater vehicle Boaty McBoatface.

Launch of EMB Future Science Brief on Offshore Renewable Energy

MASTS (Marine Alliance for Science and Technology Scotland) member, Professor Beth Scott was one of the contributing authors to a new EMB report that outlines the main gaps in our knowledge that could prevent the offshore renewable energy sector from developing in a sustainable, equitable and responsible manner.

The new EMB (European Marine Board) Future Science Brief No. 9 "European offshore renewable energy: Towards a sustainable future" was launched on the 4th April. The need to decrease carbon emissions urgently and dramatically is high on scientific political, and societal agendas. Extraction of energy from offshore renewable energy sources is seen as a key measure to achieving this decrease in carbon emission. To achieve the EU Green Deal vision, the amount of installed offshore

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renewable energy generating capability in Europe must increase 30-fold compared to current installed capacity. However, in the rush to develop and install new offshore renewable energy devices across the European sea basins, we cannot ignore the potential environmental and societal impacts that they could have. This document highlights which steps need to be taken to ensure that the expansion of this sector is managed sustainably, responsibly and equitably.

The document presents the technical, environmental, and socioeconomic state of the art of the offshore renewable sector, with a focus on European development. It presents the key knowledge, research, and capacity gaps that must be addressed to ensure sustainable delivery of the EU Green Deal and closes with key policy, research, capacity, and data recommendations to take the sector forward. This publication can be downloaded from our website, www.marineboard.eu/publications/european-offshore-renewable-energy-towards-sustainable-future, and a news release can be found at www.marineboard.eu/launch-offshore-renewable-energy-publication.

The University of Essex becomes the 18th partner of MASTS

As of March 2023, MASTS (Marine Alliance for Science and Technology Scotland) is proud to announce that the University of Essex has successfully applied to become their 18th partner institute. MASTS Executive Director Professor David Paterson said "The MASTS organisation is absolutely delighted to welcome the University of Essex into the MASTS network. On reviewing Essex's application, the MASTS Governing Council and the Directorate were impressed with the quality and depth of their submission, and it was clear that as academic participants, they would be a fantastic addition to the MASTS team."

Research at Essex covers many marine systems, from deep sea corals and offshore sediments to oyster restoration and coastal habitats across tropical, temperate and polar regions. Their research spans from genes, proteins, and cells, to species, communities and ecosystems. Specific research topics at Essex include genomics, pollution (such as petroleum hydrocarbons, microplastics and nanoparticles, biofouling, bioaerosols, antimicrobial resistance), alongside biogeochemistry (blue carbon, nutrient cycling), ecology (microbial, macrofauna), evolution, synthetic biology and big data analysis. To read further about this announcement from MASTS and find out more about the University of Essex's research visit, masts.ac.uk/news/the-university-essex-becomes-the-18th-partner-of-masts/.

VIEWS

Outreach opportunity sent via the Challenger website

Dear challenger society, We are a team of Digital Direction students from the Royal College of Art. Currently, we are undertaking an immersive project that explores the fundamental role of water in our society, its representations, and functions. Your organization's work in this field has piqued our interest, and we would appreciate the opportunity to seek your insights on these topics. We are currently collecting stories from people with interesting perspectives on the present role of water, and its future development. We would appreciate your sharing a brief narrative on how water embodies your worldview, ideology, and personal life if applicable. We are eager to explore potential collaboration opportunities with your organization to delve deeper into the subject of water, its uses, and its function within the current climate. Kindly inform us if you would be interested in this prospect. We look forward to hearing from you, Hadar Vishne, Madhavi Bhagwat, Shuyue Li, hadarvishne@gmail.com.

If anyone is interested please do reply to Hadar et al. using the email above and please also copy your email to Chelsey Baker, chelsey.baker@noc.ac.uk.

SALTS

Polar Science Trials onboard the RRS *Sir David Attenborough*

From the 31st January to 20th March 2023, Britain's new polar research ship, the RRS *Sir David Attenborough* (*SDA*), embarked on its polar science trials in the Southern Ocean; the first time the ship's science capabilities were tested in deep, polar waters. The trials

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encompassed a multidisciplinary range of marine science areas, from benthic biology to trace metal chemistry. The aim of the trials was to test the scientific capability of the *SDA* in the polar environment, where the majority of its future scientific research cruises will be conducted. The outcome of the research cruise would have been successful even if it had not included the trials element. Each project involved, achieved its core aims, as well as additional tasks. The *SDA* coped well with the science demands, which included over the side deployments of nine different instrument platforms, while simultaneously facilitating 24-hour lab work.

The RRS Sir David Attenborough in the Prince Gustav Channel. Photo by Tom Langbehn.

Science on board the *SDA* began shortly after departing from the Falkland Islands: we added the thirtieth year of a hydrographic timeseries collected across the Drake Passage. These long-term observations allow us to track the transport of heat, salt, carbon and nutrients in the Antarctic Circumpolar Current, processes that shape Southern Ocean ecosystems and influence our global climate. This was the beginning of a busy few weeks for the physics team: throughout the cruise 181 CTDs were taken around the clock, with samples needing to be analysed and the data processed. Waking at 4 am on land would result in being sleepy for a while, but at sea we would immediately check our messages to find out if the CTD is nearly back on deck. If so, we jump out of bed and get into our personal protective equipment (warm clothes, waterproofs, steel toe capped boots, hard hat and three pairs of gloves !). A group of around eight people gather around the CTD, curious about whether all the bottles look like they closed properly, bringing back water from as deep as 5 km below the sea surface. We were well organised, and always sampled in the same order: gases such as oxygen or CO_2 first, then nutrients, salinity, and chlorophyll. It is a serious task, but the environment is relaxed, sometimes with background music, jokes, creating a good atmosphere and making the 4 am work a nice way to start the day. After all samples are taken and stored safely in the lab, we gather again at breakfast, because if time collecting samples is precious in terms of science, time spent socialising is precious for keeping us happy and our morale high.

Sorting the RMT25 catch. Photo by Alice Fremand.

The Drake Passage is a notoriously treacherous stretch of water, where gale-force winds uninterrupted by any landmass whip up the sea making each crossing a gamble. What better place to test the *SDA*'s (and no less the deck- and science crews') capabilities than to deploy pelagic trawls down to 1500 m. We used a rectangular mid-water trawl with a net opening of 25 m^2 (or RMT25). This type of trawl has two different nets that can be opened and closed remotely at distinct depths. The aim was to collect organisms from the ocean twilight zone (or mesopelagic zone) across the different frontal regions along the Drake Passage transect. What we saw was an amazing variety of critters, as well as a change in species composition across the different water masses with increasing latitude. A total of 421 fish from 20 different taxa, Antarctic krill, a variety of zooplankton, squid, and jellyfish were individually measured and preserved. This may not seem a lot, but the midwater zones over water columns deeper than 4000 m (like the Drake Passage) are the least sampled of all ocean regions. For comparison, for each midwater sample, we have about 10,000 to 100,000 samples from the upper 200 m of the oceans.

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After our transect across the Drake Passage, we finally saw land and the Race:TRAX project could begin. This project aims at understanding the cycling of trace metals in shelf environments along the Antarctic Peninsula, and we are especially interested in iron as it supports primary production in the oceans. However, sampling seawater for trace metals while on a ship made of metal can get a bit tricky. Thankfully, the *SDA* is equipped with state-of-the-art clean lab facilities and a titanium frame CTD, which means we can eliminate most contamination. We deployed the titanium CTD along a transect across the shelf-break into the Weddell Sea and started hoarding litres of water that we spent hours filtering in the clean lab. Along with iron, we are also interested in radium isotopes that will provide temporal information necessary to constrain the iron supply from oxic sediments. This is when we took our water hoarding skills to the next level and with support from the incredible crew and technicians, we collected over 8000 litres of seawater in order to get a few thousand radium atoms and trap them on hairy-like fibres. The things we do for science ey !

Next, we steamed into the Weddell Sea to kick off the fieldwork of the long-awaited PICCOLO project. A win for PICCOLO, and for everyone on board, as we were treated to spectacular views of icebergs and sea ice. We headed into the ice to deploy a profiling float and a mooring, and take some samples around it to characterise the area. We want to collect data over the winter months when the region is covered by sea ice to be able to measure the overturning Antarctic circulation and processes taking carbon into the deep ocean. We found a spot where we hoped the mooring would be protected from pesky scouring icebergs, with the top buoy at 300 m below the surface. The mooring was equipped with sensors to measure the physical and chemical properties of the water column, as well as a sediment trap and water sampler to collect physical samples. Fingers crossed it will be there next year with lots of data and samples when the PICCOLO process cruise happens. Around the study site we also took lots of water samples and did 71 CTD's in a row, like a yo-yo, to get an understanding of tides in the region. Big thanks to the winch operators for managing to stay mostly sane during that process, you can do anything fuelled by infinite biscuits and magnum ice-creams !

Deploying the top mooring buoy. Photo by Huw Griffiths.

After having spent lots of time in the wavy and turbulent Drake Passage, we settled into the calm, turquoise waters between two fjords of King George Island at the tip of the Antarctic Peninsula. There we were surrounded by breath-taking views of thick, steep, and highly crevassed glaciers that were overlaying the island's bedrock and meeting the edge of the water. With the changing climate, Antarctica's glaciers have been retreating, creating new fertile spaces for life to colonize. The new phytoplankton blooms and kelp forests support growing carbon sinks that can be sequestered in the fjords seabed. Our camera, QBeRCS (Quantitative Benthic Research Camera System), helped us to take high resolution snapshots of the benthic marine life along a transect within these fjords. This required lots of team effort and patience, and thanks to our deft winch operators, the camera was able to nearly glide along the seabed, taking beautiful photos of the benthic community. These images uncovered a clear gradual proliferating pattern of benthic colonization closer to the fjord's mouth, where water has been freed from glaciers the longest. We were also interested in how this colonization effect translated into the seabed and how the debris from marine life were sequestered into the seabed. We therefore collected sediments with the help of a multicorer. The QBeRCS and the multicorer both featured impressive live camera footage which was projected onto the screens in the communal rooms. It was wonderful to hear from colleagues and friends as they watched each deployment and cheered for us during successful photo captures of the seabed.

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Watching the live stream of the QBeRCS camera in the communal room: Photo by Tom

Another goal of the trials was to test the deployment of sampling gear to the deep sea. The deep-sea benthic ecology team used an Agassiz trawl and an epi-benthic sledge to collect animals from the seafloor, 5.5 km below the sea surface. The area chosen to do this was Hesperides Deep, an area to the west of the South Orkney Islands and to our knowledge, this is the first time any animals have been collected from this location. Each deployment took over six hours, as over 7.5 km of cable had to be winched out and back again each time and when sampling at such depths there are never any guarantees of success (as we found out several times). Added to which, the deep sea is such a harsh environment that life tends to be sparse. However, the dedication and hard work of the crew in getting the equipment to the bottom (and some Antarctic luck) meant we uncovered some remarkable life. We discovered that starfish, sea anemones, brittle stars, sea cucumbers, burrowing sea urchin and clams all call this deep alien world home, and there is a good chance that some will be new to science.

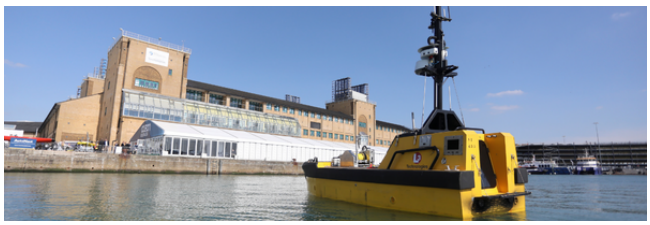
The science party cruise photo in the Weddell Sea. Photo by Rich Turner

As well as the *SDA* acting as a vessel that allowed us to carry out ground-breaking science, it also served as our home for almost eight weeks. We spent our free time playing cards, watching films and exercising in the gym. It was very comfortable despite being tested by 80 knot winds in the Drake Passage and ice breaking in the Weddell Sea. We all greatly enjoyed our time onboard and are grateful to the crew for such a successful and enjoyable Polar Science Trials. ***- Anna Belcher (BAS), Milo Bischof (The University of Edinburgh/BAS), Lisa Friberg (University of Bristol), Theresa Gossmann (BAS/WWF), Tom Langbehn (UiB/BAS), Jamie Maxwell (University of Galway), Daisy Pickup (UEA), Isabel Seguro (UEA), Xiangming Shi (Jimei University)***

CALENDAR

18th-20th April 2023: Ocean Business 2023

Ocean Business returns to the National Oceanography Centre, Southampton UK. Register for your free ticket, www.oceanbusiness.com/, to see, in person, the scientific and technological developments from the industry. Connect with thousands of the industry's brightest minds, and share ideas to help define the future of ocean technology.



Your ticket to Ocean Business gives you free access to the Sustainability for our Oceans Conference. Take away recommendations from MTS, GOOS and NOAA as they share key findings from 'Dialogues with Industry'. Discover new ways to inspire and promote the future workforce. Or get up to speed on autonomous systems safety and regulations. Have your questions answered by 25+ ocean science and technology thought- leaders. The conference will take place on Tuesday 18th April in the Henry Charnock Lecture Theatre, Level 4, National Oceanography Centre. Sessions are free to attend and open to everyone. Visit www.oceanbusiness.com/conference-programme/ to see the conference programme.

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Here's a taster of some of the newest technology you'll find at the event:

- **BeeX** will showcase their vehicle that can autonomously inspect platform structures
- **Chelsea Technologies** will present their next generation instrumentation, LabSTAF, to measure phytoplankton primary productivity
- **Maritime Robotics** will demo its fleet of Otter Pros, with both the Norbit and Kongsberg multibeam systems
- **Teledyne's** marine interconnect technology advancements and **EdgeTech's** 3D sub-seabed imaging sonar, eBOSS

Take a look at the full exhibitor list, exhibitor manual.oceanbusiness.com/, and start planning your visit to Ocean Business, www.ocean business.com/, today. See the full demo programme here, www.oceanbusiness.com/ training-and-demonstrations-programme-day-1/. It's free to attend so register for your ticket, we can't wait to see you in April.

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

Vienna, Austria

The EGU General Assembly 2023 will bring back many of the features the EGU community enjoyed before the pandemic, including: orals, posters, and, PICO sessions, in a new hybrid format, as well as a wide variety of networking opportunities, blogs.egu.eu/geolog/2023/03/15/ egu23-has-something-for-everyone-sessions-on-networking-policy-mentoring-jobs-careers/. At the same time, we are very keen to improve the experience for our virtual attendees, and are working hard to connect the virtual and on-site experiences as much as possible. Learn more about the planned format for EGU23 on our website, egu23.eu/about/ meeting_format.html.

16th–18th May 2023: 2023 Sustainable Management of UK Marine Resources (SMMR) Conference

Bristol, United Kingdom

Building on the success of our inaugural conference in 2022, this year's event will feature presentations, discussions, and workshops exploring the varied work underway in the SMMR programme, both from our funded project teams and across the SMMR Network. We invite you to register for the conference here, hopin.com/events/smmr-conference-2023. In-person and online tickets are available, with early bird options available until the end of March. Further details about the conference, including an agenda, will be published in due course.

4th-9th June 2023: ASLO Aquatic Sciences Meeting 2023, Resilience and Recovery in Aquatic Systems

Palma de Mallorca, Spain

Concepts of resilience and recovery do not only apply to aquatic ecosystems but also to societies when faced with disruptions and crises. Past events have shown that adaptability and decisiveness are important keys to resilience and recovery. Disruptions are opportune moments for setting up strategies for management and recovery. Faced with the COVID-19 pandemic, ASLO meetings have adapted by transforming the ASM 2021 Palma meeting to virtual with a positive attitude that in 2023 we will recover and meet in-person. Positivity is also an important factor. We do not dwell on problems, but we try to look for solutions and get united for whatever crisis we face.

We will incorporate the theme of resilience and recovery in aquatic systems into the plenary sessions. We look forward to having a dynamic meeting. This will be an in-person meeting, beginning on Sunday with an opening plenary and reception, then conclude on Friday, with the scientific program scheduled Monday through Friday. There will be a small virtual component for those unable to travel to Spain. The programme is available at www.aslo.org/palma-2023/.

19th–22nd June 2023: Ecosystem Studies of the Subarctic and Arctic Seas (ESSAS) 2023 Annual Science Meeting

Bergen, Norway

This meeting, entitled Ecological, social and economic dynamics of high-latitude coastal systems, will be a Hybrid in-person / online meeting. Arrangements have been made for an in-person meeting for those who are able to attend, but remote attendance and presentations from anyone interested in participating are also catered for. We hope to make the hybrid conference format work as effectively as possible.

There will be a workshop on 19th June, AnalogueART – Using natural analogues to investigate the effects of climate change on

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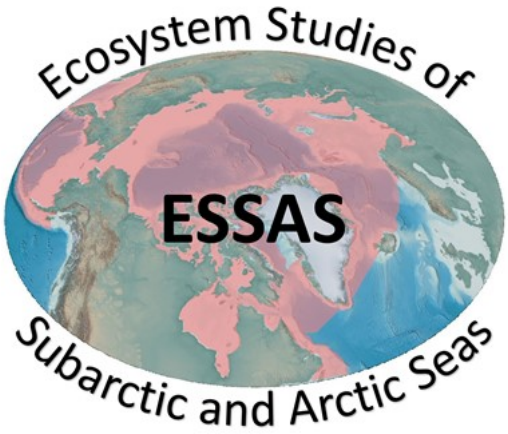
northern ecosystems; moving from gradient to mosaic approaches.



Conference sessions include:

1. Cooperative studies of coastal ecosystems engaging local communities in the sub-Arctic and Arctic
2. Natural disasters, multiple stressors and cumulative impacts along sub-arctic and arctic coasts
3. Blue Carbon, mariculture and climate change mitigation and adaptation in the Subarctic and Arctic
4. Cod and climate change at the coastal interface

For more information, please visit the web page at essas.arc.hokudai.ac.jp/what_s_new/2023-essas-annual-science-meeting-in-bergen-norway/.

26th–30th June 2023: MARE Conference People & the Sea XII, Blue Fear, navigating ecological, social and existential anxieties during the Anthropocene

Amsterdam, Netherlands

In addition to regular paper-based panels, we have encouraged panel proposals with innovative formats that stimulate interaction and dynamism. These include formats such as roundtables, workshops, brainstorm sessions, debates, artistic interventions, exhibition (virtual excursion), documentary film (photo essay/story) screenings with discussion, meet the author sessions, book presentations etcetera.

To present a paper in the MARE conference, the participant must be physically present in Amsterdam. Online participants can observe all conference sessions, but will not be able to present themselves. Please, regularly visit this page, https://marecentre.nl/, for updates and important information about the 12th MARE People and the Sea conference.

28th June 2023: Structures in the Marine Environment (SIME) 2023 conference

Glasgow, Scotland

MASTS (Marine Alliance for Science and Technology Scotland) is assisting with this year's SIME 2023 conference which will be held in person in Glasgow at the Studio. The call for abstracts is now open and we invite abstracts for 15min presentations or a paper poster. To find out more and download the abstract template document, visit our webpage, masts.ac.uk/events/structures-in-the-marine-environment-conference/. The deadline for submiting abstracts is 12:00 on Friday 12th May 2023.

Academics, stakeholders, industry and government representatives and interested parties are invited to come together for talks, posters, networking and discussion about the environmental effects of artificial structures already within the marine ecosystem, and the rapid expansion of new infrastructure over the coming decades.

In response to our societal need to generate energy, artificial structures have been placed into our coastal and marine environments. The structures range from oil and gas installations, associated pipelines and seabed infrastructure, as well as offshore wind farms and other renewables that, as part of an energy transition, are rapidly scaling up to meet the needs of the Government's Energy Strategy as well as tackling the world's climate crisis. Inevitably, these structures host communities by providing habitat and shelter, and potentially serve as stepping-stones for the spread of some species. In addition to deliberately placed structures, shipwrecks can also serve a similar function. In turn, the biodiversity that develops on these structures can affect biological, hydrodynamic and biogeochemical processes from the water column to the seafloor, either directly (e.g. food-webs, scouring) or indirectly (e.g. biorefugia, displacement of fisheries) and, hence, ecosystem functioning, ecosystem services and benefits to society are also affected at various spatial and temporal scales.

Science plays a critical part in understanding these effects as well as the role they play in our

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society and any opportunities they create, for example for environmental restoration, marine net gain and environmental credit trading markets. Ambitions for more integrated decision making across marine planning, fisheries, nature conservation and energy sectors, rely on the scientific evidence base to develop suitable polices and decisions where multi-sectoral considerations are increasingly important. Within an international context, SIME2023 will focus on developing a better understanding of the role artificial marine structures have in a changing seascape, supporting ecological best practice in relation to the energy transition, marine environmental management and a changing climate.

Let's talk about the effects, benefits and implications of structures, and discuss how we can accelerate our understanding to support decisions for the benefit of the environment and society.

9th-14th July 2023: Goldschmidt Conference
Lyon, France
Let's Talk about #DEI @goldschmidt2023. Tell us about obstacles that contribute to the under-representation of marginalized groups in geochemistry, conf.goldschmidt.info/goldschmidt/2023/cfp.cgi.

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. Abstract submissions (max. 350 words) will be accepted until **31st May 2023**. The EMCEI encourages submissions of research works that aim to bring solutions to the most pressing environmental issues and to ensure more societal welfare in the Mediterranean and surrounding regions. Case studies from other regions of the world could also be submitted.

Before submission, please read the guidelines, emcei.net/index.php?p=author-guidelines. Read more details about our 5th EMCEI Publication Plan here, emcei.net/index.php?p=special-issue. Contact us, if you need more information: contact@emcei.net.

19th-22nd October 2023: Arctic Circle Assembly 2023
Reykjavik, Iceland
2023 assembly sessions proposal deadline less than a month away www.arcticcircle.org/assemblies/2023-arctic-circle-assembly-call-for-proposals. Attended by more than 2000 participants from over 60 countries, the Assembly is the largest international gathering on the Arctic - Climate - Energy - Oceans - Geopolitics and more. Participation will be granted based on Session topic, area of focus, goals, and room availability in the Assembly Area; Harpa Concert Hall and Conference Centre and the Reykjavík EDITION Hotel, www.arcticcircle.org/.

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.

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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.

Abstract submissions (max. 350 words) will be accepted until **10th June 2023**. The MedGU-23 encourages submissions of research works not only from the Mediterranean region, but from all regions of the world. Before submission, please read the guidelines, medgu.org/index.php?p=author-guidelines.

The MedGU-23 Proceedings will be published in the Springer/IEREK ASTI Series, www.springer.com/series/15883, (indexed in Scopus & SCImago). Selected papers will be published in some Springer and Elsevier journals Special Issues, medgu.org/index.php?p=special-issue. Contact us, if you need more information, contact@medgu.org.

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), oceandecade.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, oceandecade.org/challenges/, that will identify future priorities for the Ocean Decade to generate the knowledge needed for science-based solutions related to global challenges, such as climate change, food security, biodiversity conservation, sustainable ocean economy, pollution and natural hazards.

A number of related high-level national and international events will take place before and after the main conference and there will also be scope for partners to propose and lead side events, exhibitions and networking events relevant to the conference themes on the days before the conference and in the sidelines of the conference itself. More details about the programme, registration process and calls for proposals for side events will be available soon. If you would like to receive updates, please sign up here, www.surveymonkey.com/r/OceanDecade24_updates.

The CSMS email address is challenger.society@gmail.com. Contributions for next month's edition of Challenger Wave should be sent to: john@vectisenvironmental.com by the 28th April.

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JOBS and OPPORTUNITIES

Head, Ocean Technology & Engineering Group, National Oceanography Centre

Are you a leader passionate about the development of novel technology for oceanographic research?

We are seeking a head for NOC's Ocean Technology & Engineering Group, which comprises around 35 research engineers and scientists. The group has a strong history of developing novel technology for marine research, working closely with scientists locally and internationally to enable cutting edge scientific research.

Closing date: 30 April 2023

For more information visit careers.noc.ac.uk/vacancy/head-ocean-technology-engineering-group-476465.html.

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There are jobs on the IMBER web site

http://www.imber.info

IMBeR Integrated Marine Biosphere Research

Jobs and opportunities

New

- Postdoc: Statistical analyses and modelling of bottom trawl survey data, Gulf of Maine Research Institute, Portland Maine. Apply now, applications reviewed immediately
- PhD Opportunity: Marine ecology, University of Adger, Kristiansand, and IMR, Flødevigen, Norway. Apply **now**
- Call for EoI: For collaborative, multidisciplinary research using R/V Falkor (too), Schmidt Ocean Institute. Submit EoI **now**
- SOLAS Masters Program: Ocean, Atmosphere and Climate , University of Galway, Ireland. Apply **now**
- Postdoc: Social science projects. Too Big to Ignore (TBTI), Memorial University, St John's NL, Canada. Apply by **15 April**
- Postdoc: Ecosystem-based adaptation, SANBI, Cape Town, South Africa. Apply by **17 April**
- Fishery Officer: Fisheries Management, FAO, Rome, Italy. Apply by **17 April**
- PhD: Isolation and characterization of marine bacteria, HOTBIO, Apply by **20 April**
- PhD: Putting People First: Tools for Incorporating Wellbeing into Coastal Infrastructure Planning and Design, Heriot-Watt University, Orkney campus, UK. Apply by **30 April**
- Call for applications: International Interdisciplinary School for the Blue Planet (ISblue) post-doctoral fellowship program, France. Apply by **30 April**
- Pivot Fellowship program: One year training fellowship. Apply by **15 May**

In case you missed it...

- Observation of the Global Ocean (POGO) Shipboard Fellowship. Deadline: open-ended call
- Fisheries Scientist (Finfish): Falkland Islands Government, Stanley, Falklands. Apply by **14 April**
- Call for applications: OCB Working Group on Marine Carbon Dioxide Removal (mCDR). Apply by **14 April**
- Postdoc: Small scale fisheries as solutions, Too Big To Ignore Global, Memorial University, St. John's, NL, Canada. Apply by **15 April**
- Simons Postdoc Fellowships in Marine Microbial Ecology. Apply by **5 May**
- Call or applications: Global Ocean Observing System's Task Team: OceanGliders. Apply by **15 May**
- Postdoc: Marine population genomics, University of Washington, Seattle, USA. Apply now. Open until filled
- Call for proposals: Long-term scientific working groups, EuroMarine Consortium. Apply by **14 October**

imber@imr.no

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