

Challenger Wave

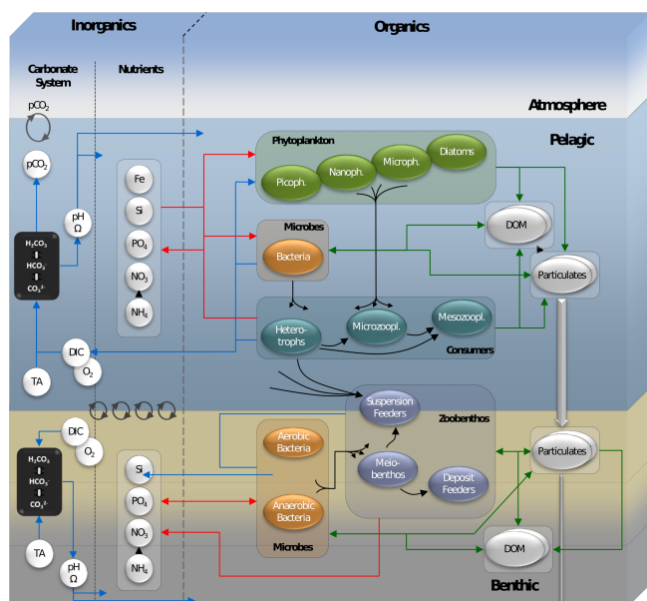


Monthly newsletter of the Challenger Society for Marine Science (CSMS)

NEWS

ERSEM 2022 model version release: Plymouth Marine Laboratory share enhanced model for open use

Scientists at Plymouth Marine Laboratory have released the latest open source version of ERSEM, the European Regional Seas Ecosystem Model, [pml.ac.uk/science/Projects/ERSEM-\(European-Regional-Seas-Ecosystem-Model\)](http://pml.ac.uk/science/Projects/ERSEM-(European-Regional-Seas-Ecosystem-Model)). The Marine Systems Modelling team, pml.ac.uk/science/Marine-Systems-Modelling, have shared the updated version of the model, which is currently used both for regional applications around the world, from the Northwest European shelf to South East Asia, as well as at a global scale, to address pressing issues related to the current status and the future changes of the marine environment and its resources.



An ecosystem model is an abstract, usually mathematical, representation of an ecological system, which is studied to gain understanding of the real system. Such models are a vital

resource to predict the future direction of ecosystems, and identify the best approaches to ensure their sustainability, which continue to be threatened by pollution, over exploitation of resources and ongoing climate change.

ERSEM, which was originally developed by a large European consortium, including Plymouth Marine Laboratory (PML), addresses biogeochemical and ecological systems in many applications worldwide, engaging in a range of problem solving, predictive and impact studies. Originally created back in the early 1990s, ERSEM has since been a critical tool for many organisations across the globe to analyse, predict and advise on a range of climate-related issues. It has been continuously developed over this time to keep up with evolving understanding of marine systems and the demands to address the varying threats that the environment faces, from plastic pollution to ocean acidification, and to support the management of marine resources, from aquaculture to carbon capture and storage. It supports a host of projects, www.pml.ac.uk/science/projects, both at national and international scales.

ERSEM is currently one of the most detailed lower trophic level models in use and its philosophy is to include parameterisations of all processes that may significantly influence ecosystem dynamics. Dr Gennadi Lessin, pml.ac.uk/People/Dr-Gennadi-Lessin, Marine System Modeller at PML, said of the new release: "We've been busy working behind the scenes on the latest model release, improving performance and advancing ERSEM's capabilities based on up-to-date process understanding to pave the way for



more accurate and informative biogeochemical and ecological modelling predictions. The tool is free to use and open-access, and we'd like to remind the community that feedback on their usage experience can help to guide the direction for future ERSEM development and improve model capabilities. We are open for collaborations with individuals and organisations, which again, help us to continuously improve the model code and its usability in a rapidly increasing number of applications for the benefit of the environment and society." Visit Plymouth Marine Laboratory's website to access ERSEM: <https://pml.ac.uk/ERSEM>.

NERC appoints new BIO-Carbon champion

In November, the Natural Environment Research Council (NERC) announced that Dr Adrian Martin, Ocean Biogeochemist at NOC, will lead the five year Biological influence on future ocean storage of carbon (BIO-Carbon) programme,



www.ukri.org/what-we-offer/browse-our-areas-of-investment-and-support/biological-influence-on-future-ocean-storage-of-carbon-bio-carbon/.

Research funded by this new programme will improve understanding of biological processes and provide robust predictions of future ocean carbon storage in a changing climate.

BIO Carbon: Biological influence on future ocean storage of carbon

NERC is pleased to announce the indicative timing of some key dates associated with a forthcoming call for proposals to address the fieldwork component of the BIO Carbon programme. BIO Carbon is a £10.3m research programme. The aim of the programme is to provide new insights into the role of marine life in ocean carbon storage and robust predictions of future ocean carbon storage in a changing climate. The planned timetable for key activities as part of the upcoming funding round are as follows:

18 January 2023: Release of Funding Opportunity for outline proposals

17 February 2023: Deadline for Notification of Intent

Early March 2023: Community workshop

29 March 2023: Deadline for outline proposals.

Late April 2023: Outline proposal review panel and applicants informed of outcome

Mid June 2023: Deadline for full proposals

July 2023: Full proposal interview assessment panel

Late July/early September 2023: Projects recommended for funding invited to develop joint fieldwork plan

Mid/late September: Awards made

This information on the planned timetable is provided in good faith to help researchers prepare to respond to this funding opportunity. However, this timetable may be subject to change and timings will not be confirmed until the Funding Opportunity is published.

Megacities out-shine the moon in coastal environments according to the first quantification of artificial light at night

An interdisciplinary team of scientists from Plymouth Marine Laboratory (PML), the Universities of Plymouth and Strathclyde have, for the first time, quantified the dose of artificial light at night (ALAN) from coastal megacities reaching the marine environment.

Their models show that coastal megacities, such as Los Angeles, New York, Buenos Aires, Shanghai and Mumbai, could be illuminating the marine environment up to six times more than the moon but often not considered when reviewing stressors on coastal ecosystem. Read more at pml.ac.uk/News/Megacities-out-shine-the-moon-in-coastal-environme.

The wide-ranging impacts of ALAN on marine ecosystems include:

- altering the bodily processes and function of animals
- changes in ecological communities
- reducing reproductive success in fish and turtles, and delaying the production of gametes in corals
- disrupting migration in zooplankton, sandhoppers and highly photosensitive species
- altering recruitment in marine rock-living communities
- shifting cross-species interactions in estuarine fish, symbiotic reef building

- corals and intertidal invertebrates
- changing phytoplankton abundance
- decreases in the effectiveness of camouflage at night for prey species

If you have any questions or would like to speak with one of the authors then please do not hesitate to contact Dan Jones, dajo@pml.ac.uk, Head of Marketing and Communications at Plymouth Marine Laboratory.

Call for nominations for new members of the IMBeR Scientific Steering Committee

Integrated Marine Biosphere Research (IMBeR, www.imber@info) invites nominations for new members of its Scientific Steering Committee (SSC) for a term beginning on 1st January 2023.

The SSC is responsible for the development, planning and implementation of IMBeR science. The current IMBeR science plan (2016-2025) is available at: imber.info/science/imber-science-plan-and-implementation-strategy-spis/. Nine Priority Research Objectives have been identified to guide IMBeR's work through the final phase of this plan.

SSC members serve for a period of three years, with the potential of renewing for an additional 3-year term. The IMBeR SSC and sponsors, the Scientific Committee on Oceanic Research (SCOR) and Future Earth, will select the new SSC members based on expertise, and contribution to the geographic and gender balance of the SSC. Nominations from South America, Central America, the Caribbean and Africa, which are currently under-represented, are especially welcome.

More information about the SSC is available at imber.info/about/who-we-are/ssc-current/. We seek nominations from individuals with the expertise to address aspects of the IMBeR Science Plan and the nine priority research objectives, in particular with experience in at least one of the following:

1. Ocean interventions, geoengineering, marine carbon dioxide removal
2. Mariculture / aquaculture
3. Knowledge mobilization
4. Small-scale fisheries
5. Use of traditional knowledge in ocean management, decision making and policy development

Nominations should include the following information: name of the nominee, affiliation, contact information, email, website, expertise keywords, up to ten relevant publications, nominated by (optional), short, one-page CV, and a brief description (200 words max.) of what/how the nominee would contribute to the IMBeR science plan and the nine priority science objectives. Please submit nominations by 19th December 2022 to john.claydon@dal.ca.

IMBeR 'Fellows' launched

IMBeR is delighted to announce that we have launched our IMBeR Fellows programme, imber.info/imber-fellows/.

We have appointed 11 'Fellows' and they form a diverse group of experts which act as an additional advisory board. IMBeR is intentionally broad and interdisciplinary, and we recognise that strategic decision-making can be improved by having additional experts to draw upon. The Fellows have therefore been chosen specifically because their expertise complements that which is already represented by our Scientific Steering Committee, imber.info/about/who-we-are/ssc-current/.



Many of the Fellows have served in various roles for IMBeR, such as being on the Scientific Steering Committee, being involved in IMBeR's Regional Programmes and Working Groups, and giving keynote presentations at IMBeR conferences. Please join us in welcoming the new IMBeR Fellows, full details of whom can be found at imber.info/imber-fellows/.

The Challenger Society for Marine Science Council currently has 3 vacancies to be taken up in early 2023

If you are interested in applying for a council role please email kathen@bas.ac.uk with a short statement of interest (1 page of A4 maximum) by **January 15th 2023**. We are looking to fill the Education and Outreach Portfolio, the Honorary Treasurer role and the Publications and Website Portfolio. The roles and responsibilities of each portfolio are detailed below. The Challenger Society is working towards being a fully equitable and inclusive organisation (see www.challenger-society.org.uk/EDI_Statement). The Society encourages applications from individuals from under represented and/or diverse backgrounds. Those in the early stages of their career are encouraged to apply for the roles. The Challenger Society definition of ECR can be found at www.challenger-society.org.uk/ecr_definition, but please note that those in non-research focused roles are also encouraged to apply.

Education and Outreach Portfolio

The Objectives of the Challenger Society include:

- To advance the study of Marine Science through research and education.
- To disseminate knowledge of Marine Science with a view to encouraging a broader interest in the study of the seas and an awareness of the need for their proper management.
- To contribute to the public debate on the development of Marine Science.

The Education and Outreach portfolio aims to further these objectives in various ways. We have defined "Education" as broadly referring to efforts involving the formal education system in marine science and "Outreach" as encouraging wider public interest in the subject, although these are not necessarily exclusive and the incumbent will have the freedom to choose which directions to follow. In the past, some effort has been put into preparing materials for schools e.g. Ocean Literacy and Teen Tech. Public engagement may include promoting marine science at scientific conferences e.g. as a Challenger Ambassador or contributing to the wider public debate on the oceans and climate.

We have set up some merchandising for 2022, using the opportunity of celebrating the 150th

anniversary of the ground-breaking Challenger Expedition (1872-1876). We have commissioned a Challenger 150 logo, used Vista Print for souvenir mugs and set up a Teemill shop for clothing. The new E&O Officer will need to look after these activities and can choose to develop this further if they wish. The duties of the E&O Officer are as follows:

- Attend the quarterly Challenger Council meetings (in person or remotely)
- Draw up a list of activities, in conjunction with other members of the Council, e.g. the Early Careers Research Officer for training opportunities for young scientists and PhD student
- Manage the E&O budget
- Manage the merchandise activities

The role will require less than 1 hour on an average week and there is a lot of flexibility in how the new incumbent interprets the role. If you have any questions about the role please contact Judith Wolf (jaw@noc.ac.uk).

Honorary Treasurer

The Challenger Society is looking for its next Honorary treasurer, to take up the post in early 2023. The treasurer normally serves a 4-year term on the council. If you have any questions about the role please contact Ed Mawji (ezm@noc.ac.uk). The Treasurer's tasks include (but are not necessarily limited to):

- Organising the annual audit of the CSMS accounts which are then submitted to Companies House and the charity commission.
- Invoice the CSMS sponsors
- Liaise with SCOR to organise the payment of the UK annual SCOR fees.
- Act as one of the Officers of the society and ensure the society's records with the Charity Commission and Companies House are up to date
- Arrange payment of all awards (Travel awards/Stepping stones etc)
- Report financial updates to the Challengers committee at the meeting. Present the accounts at AGMs.
- Arrange the CSMS yearly insurance and make payments associated with Ocean Challenger.
- Handle the UK Polar Network account, including reimbursements and invoices

Publications and Website Portfolio

The Challenger Society for Marine Science Council is searching for a new Publications and Website Portfolio Officer. This is an exciting opportunity to join the Challenger Society council, which is a great way to expand your network and raise your profile within the Challenger marine science community. The responsibilities within the role are as follows:

- Update webpages and liaise with co-opted Website Development Lead
- Upload and circulate Challenger Wave
- Upload and circulate Ocean Challenge
- Upload and circulate news items
- Upload travel and stepping stones reports
- Circulate communications to members via our mailing lists

The role will require approximately 1 hour during an average week. Full training will be provided and no specialist knowledge is required for the website or mailing list. If you have any questions regarding the role, please email chelsey.baker@noc.ac.uk.

Marine Facilities Advisory Board (MFAB) Membership Vacancies

The role of the Marine Facilities Advisory Board (MFAB) is to acquire views from the UK's marine science community, to provide advice to the Chief Executive of the National Oceanography Centre (NOC), on current capability and future development of the Natural Environment Research Council's (NERC) National Marine Equipment Pool (NMEP).

The NMEP is co-ordinated through and lead by the NOC, on behalf of NERC. MFAB sits within a governance framework which reviews the performance of NOC and is a subcommittee of the NOC Association of Marine Science National Capability Beneficiaries (NOCA). The Chair of MFAB sits on NERC's Cruise Programme Executive Board (CPEB), to provide assurance to the CPEB Chair, NERC's Director of Research and Skills, that the strategic investments made by the NOC are prioritised, to benefit the UK's marine science community.

We are looking to recruit five new members from the UK marine scientific user community who are keen to provide vital insight into the potential future needs of the National Marine Equipment

Pool (NMEP). For more information please see the terms of reference, [noc.ac.uk/files/documents/about/ispo/Marine Facilities Advisory Board October 2022.pdf](https://noc.ac.uk/files/documents/about/ispo/Marine_Facilities_Advisory_Board_October_2022.pdf), and / or contact MFAB Secretary, Jackie Pearson, jpea@noc.ac.uk.

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.

VIEWS

Yachts For Science

Do you have a science-led research project but no access to a vessel ?. Yachts For Science cover a range of areas provided by collaborating vessels in regions around the world including: the Caribbean, the Mediterranean and Antarctica. The goal of Yachts For Science is to bring together yacht owners and crew with marine scientists, researchers and content creators and provide access to the oceans. This is achieved by utilising the thousands of yachts that are travelling the globe as platforms for research.

Do you have a yacht that you would like to be part of this initiative ?. These partnerships will provide the vital information required for decision-makers to bring about the protection and recovery of our oceans. In either case, visit yachtsforscience.com/ to get started and to learn more.

European Geophysical Union meeting EGU 23, session ITS3.6/BG8.5, Nature Based Carbon Management Solutions (NBCMS)

Submit an abstract to the NBCMS session at EGU23, meetingorganizer.copernicus.org/EGU23/session/46870, by the 10th January 2023, 13:00 CET (12:00 GMT), egu23.eu/programme/how_to_submit.html. Empowering the natural primary production capacity of the Earth System Carbon Cycle, without the risks of engineering the composition of the environment itself, to remove excess atmospheric CO₂, is the subject of this Session. Activities and mechanisms that decrease CO₂, without increasing acidification, and which, importantly, allow the economies of the world to continue to grow and prosper are encouraged; particularly global Nature Based Carbon Management Solutions (NBCMS)

effecting an efficiency gain in the natural capture and storage of carbon, enabling the control and regulation of CO₂ levels in the atmosphere via natural mechanisms. NBCMS should provide no mechanism for a preferential pressure on naturally determined biodiversity.

The Earth has a carbon cycle, where carbohydrate and hydrocarbon structures produce carbon dioxide (CO₂), through respiration and combustion just below or at the Earth's surface. The CO₂ released into the atmosphere is then taken up by biological primary production, through photosynthesis, and converted back into carbohydrates and hydrocarbons. There is a growing consensus that this carbon cycle has a natural balance in carbon mass of around 210 billion tonnes annually; considerably less than 0.5% of the combined terrestrial and marine carbon reservoirs. We have unbalanced this cycle through our harvesting of locked up fossil carbon at a rate much greater than that at which it is being laid down. This was at the heart of the industrial revolution; which as a result of, and possibly partly a cause of, both a once exponentially growing global population and an unprecedented rate of innovation, meant the burning of fossil fuels has, until recently, been increasing at an exponentially growing rate.

We have become so accustomed to being instructed that there is no 'silver bullet' to the anthropogenic climate crisis that most of us have begun to accept it as an irrefutable fact. However, there are no published papers demonstrating this, if indeed it is something that could be demonstrated. In a more simple thought process having worked out how to supercharge the combustion side of the Earth's carbon cycle it doesn't seem too far fetched to imagine that there are NBCMSs for supercharging the photosynthetic side of this natural cycle and rebalancing the system. – ***your Wave Editor is one of the convenors of this session***

SALTS

No news from sea this month I'm afraid

I know that this is a favourite section for many readers, where we get the inside information about life at sea, its thrills and spills. So please the next time you are at sea or carrying out any

fieldwork, please remember that a simple paragraph or two will get you published here. –
Ed

CALENDAR

18th-20th April 2023: Ocean Business 2023

The last few months for the Ocean Business team have been a whirlwind. We've welcomed our new Sales Executive, Annabelle Harrison, we've been back out on the road, what a great feeling, at both Oceans 2022 in Virginia Beach and at the National Oceanography Centre for MATS, we've programmed all of the demo sessions for the show next year, and we've been inundated with enquiries for exhibit space, which now leaves us with only 5 stands remaining.

If you're interested in one of the last remaining stands for Ocean Business 2023, then get in touch with Annabelle, Aharrison@divcom.co.uk.

Watch this space in January to see the launch of registration and the exciting Training and Demonstration programme. In just a few weeks you can start planning your visit to Ocean Business 2023, we can't wait to welcome you back, www.oceanbusiness.com/.

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. 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.

EGU23 invites you to take an active part in organizing the scientific programme of the conference. 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, meetingorganizer.copernicus.org/

EGU23/provisionalprogramme.

When suggesting a 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 meeting. Please see the convener guidelines and rules for further information, egu23.eu/guidelines/conveners.html.

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

For conveners

- a) The call for abstracts, meetingorganizer.copernicus.org/EGU23/programme, is open, so advertise your session. The abstract submission deadline is 10 January 2023, 13:00 CET.
- b) Have a question about being a convener? Find all convener guidelines & rules on our website egu23.eu/guidelines/conveners.html.

For authors

- a) Submit your abstract to the session format of your choice by 10 January 2023, 13:00 CET, meetingorganizer.copernicus.org/EGU23/programme.
- b) Looking for tips on how to submit your abstract? Find instructions on how to submit on the EGU23 website, egu23.eu/programme/how_to_submit.html.
- c) If you are unsure which session or format to submit to, find out more about the planned format for EGU23 on our website.

For attendees

- a) Learn more about the planned format for EGU23 on our website, egu23.eu/about/meeting_format.html.
- b) If you need a registration fee waiver to attend EGU23, apply for financial support with your abstract submission by 1 December 2022, 13:00 CET, egu23.eu/guidelines/supports_and_waivers.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 challenger.society@gmail.com. Contributions for next month's edition of Challenger Wave should be sent to: john@vectisenvironmental.com by the 30th December.

JOBS and OPPORTUNITIES

New PhD Studentship Opportunities at PML

We are delighted to share four new PhD studentship opportunities at Plymouth Marine Laboratory:

- Climate-linked microbial interactions in green tide causing seaweed
- Testing the potential of seaweeds and sea grasses to improve water quality
- Current and future ecosystem services provided by sand eels in the Celtic Sea
- How do natural and ship emissions influence marine atmospheric sulphur, aerosol composition and acidity ?

For more information and to apply, visit pml.ac.uk/News/PhD-Studentship-Project-Opportunities-with-Plymouth.

EGS International Ltd hiring Head of Geosciences

EGS are looking for a dynamic motivated individual to manage the day to day running of the Geosciences Department. You will head up a dedicated team working on complex projects across a broad spectrum of market sectors.

Visit www.oceanbusiness.com/job-posts/job-advert-egs-international-ltd-hiring-head-of-geosciences/ to find out how to submit your application.

Marine Biology PhD studentship at Plymouth University

I am advertising a fully-funded PhD to develop expertise in molecular and geochemical techniques for measuring habitat quality for juvenile fish, as part of the Natural Environment Research Council (NERC) ARIES DTP, www.aries-dtp.ac.uk/about-us/. This expertise enables the role of coastal areas in sustaining fish populations to be understood and can therefore inform marine management and policy actions to support fish biodiversity and fisheries production EFH. The student would develop and advance methods and then work with management authorities (IFCA, Cyfoeth Naturiol Cymru / Natural Resources Wales) and environmental consultants to understand the importance of habitats in the Severn Estuary for juvenile sole. Flatfish are fascinating creatures, and the Severn is an extreme and poorly understood coastal system. I am excited to work with a student on this important topic, which is right at the centre of my research interests / expertise. I am also looking forward to working with some excellent collaborators Anna Sturrock (University of Essex), Dr Emma Sheehan (University of Plymouth), Dr James Stewart (Devon Severnifca) and Ross Griffin (Ocean Ecology Ltd). International applicants welcome. Please share and consider applying if of interest to you: <https://lnkd.in/eTGq6h9P>



PhD studentships in oceanography at UEA

We welcome applications for funded PhD studentships in ocean science to start in October 2023 at the University of East Anglia, available through the NERC-funded ARIES doctoral training programme, www.aries-dtp.ac.uk/.

- The sea ice carbon pump in Antarctic waters, www.uea.ac.uk/course/phd-doctorate/the-sea-ice-carbon-pump-in-antarctic-waters-bakker-uenv23aries
- Ocean-atmosphere-ice interactions on the Antarctic continental shelf, www.uea.ac.uk/course/phd-doctorate/ocean-atmosphere-ice-interactions-on-the-antarctic-continental-shelf-heywood-uenv23aries
- Leaky ocean eddies, www.uea.ac.uk/course/phd-doctorate/leaky-ocean-eddies-zhai-uenv23aries
- The Antarctic Circumpolar Current and the role of bathymetry, eddies and sea ice, www.uea.ac.uk/course/phd-doctorate/the-antarctic-circumpolar-current-and-the-role-of-bathymetry-eddies-and-sea-ice-stevens-umth23aries

Please apply online, www.uea.ac.uk/apply/postgraduate/research, (emailed applications cannot be considered, sorry). The deadline is 11th January 2023. If you have any questions, please feel free to email Karen at k.heywood@uea.ac.uk. Professor Karen J. Heywood OBE FRS, Centre for Ocean and Atmospheric Sciences, School of Environmental Sciences, University of East Anglia, Norwich, NR4 7TJ, United Kingdom

The Important Shark and Ray Areas (ISRAs) team, sharkrayareas.org/, are hiring again



They need postdocs and research assistants to work on the Important Shark and Ray Areas (ISRA) project. This is an exciting opportunity to map critical habitats for sharks, rays, and chimaeras around the world. Details are available at sharkrayareas.org/resources/job-careers/ and the closing date for applications is December 20th.

There are jobs on the IMBER web site

<http://www.imber.info>



Integrated Marine Biosphere Research

Jobs and opportunities

New

- South Africa oceans program manager: The Nature Conservancy, Cape Town. Apply by **19 December**
- Senior marine climate change scientist: Cefas, United Kingdom. Apply by **19 December**
- Executive in Residence: DESIGN Climate Program, Duke University, Durham, NC, USA Apply by **14 January 2023**
- PhD: Deep sea biology, University of Bergen, Norway. Apply by **20 December**
- Postdoc: Benthic macrofauna and biodiversity, University of Cádiz, Cádiz, Spain. Apply by **21 December**
- International consultant, HABs and marine biotoxins, FAO. Apply by **23 December**
- Training course: Integrated, multidisciplinary oceanography. NF-POGO Centre of Excellence at AWI, Bremerhaven, Germany. Apply by **31 December**
- Project manager: EMBRC, Paris, France. Apply by **31 December**
- Two postdocs: Marine ecosystem modelling: Pacific Community (SPC), Noumea, New Caledonia. Apply by **15 January 2023**
- Second round of funded PhD studentships (starting 1 October) now open, CDT SuMMer . Apply by **17 January 2023**
- Faculty position: Marine geophysics, KAUST, Thuwal, Saudi Arabia. Apply by **31 January 2023**

In case you missed it...

- Mentoring Program (Mesopelagic respiration) for ECRs, postdocs and postgraduate students. Apply by 16 December
- Post-doc: Habitat modeller, Associação Biopolis, Portugal. Apply by **16 December**
- Call for 2023 SCOR Visiting Scholars. Apply by **23 December**
- Post-doc: Eelgrass wasting disease research, Old Dominion University, Norfolk, Virginia, USA. Apply **now**

imber@imr.no