

Challenger Wave



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

NEWS

In Memory of Professor Roy Chester, 1936 – 2018

Roy Chester, Professor of Oceanography in the Department of Earth Sciences from 1991 to 2001 died on the 20th March 2018 after a short illness, aged 81. Roy graduated with a BSc in Geology in 1959 and was then awarded an Imperial Oil Company Scholarship for research into sedimentary geochemistry and gained his PhD in Manchester in 1963. In 1962 he came to Liverpool as an Assistant Lecturer in the Department of Oceanography, being promoted to Lecturer in 1965, Senior Lecturer in 1973, Reader in 1976 and Professor in 1987. He took over the established Chair of Oceanography from Professor John Riley in 1989.



Roy had many research interests in the geochemistry of marine and lacustrine waters, sediments and marine aerosols. He published over 125 research papers, many of which were very highly cited. Roy started research working on deep-sea sediments in the early 1970s and then, recognising the role of atmospheric deposition in supplying the terrigenous clays to the abyssal sediments, began a series of pioneering studies of atmospheric inputs to the ocean. His innovative work helped to create the whole field of research on atmospheric inputs to the oceans. He developed a novel sampler and his early work (with Harry Elderfield, FRS, and others) on the Saharan dust plume set the scene for much that followed in this field. He first considered the clay content of aerosols, but an important component of his research was his pioneering work on atmospheric particulate matter including Saharan Dust as an external source of trace metals and other chemical species to the Mediterranean Sea (with Peter Statham, Malcolm Nimmo and others). Scientists realised that there had to be major amounts of Saharan dust impinging on the adjacent Mediterranean, but there were almost no measurements of the nature and amount of such inputs. Roy collected samples from some fixed stations in the Western Mediterranean and during cruises through the Mediterranean. He made measurements of total and leachable trace metals, determining for the first time the nature of the major sources of trace metals to this important inland sea and the relative amounts of supply from Europe and from Saharan Africa. His novel methods of determining the solid-state speciation of trace metals were also important in the understanding of their solubility and biogeochemical impact in the oceans. Roy went on to show the important contributions of continental dust to the Atlantic Ocean. The significance of his work was not just in understanding how these transport pathways operate, but also in the realisation that the continental aerosol could be an important supply

of nano-nutrients, such as iron to fertilizing oceanic surface waters. The trace metal fertilization of the oceans remains a very active area of research and Roy would have been delighted that colleagues at the University of Liverpool continue to excel in this field.



Staff and Students of the Oceanography Laboratories, Department of Earth Sciences, circa 2000.

As a teacher, Roy Chester was a firm believer in the principle of allowing cutting edge research to influence teaching. His collaboration with John Riley and Geoffrey Skirrow initially resulted in the research level two-volume book on Chemical Oceanography published in 1965, but realising that this was beyond the reach of undergraduates, he and Riley distilled the key components into the "Introduction to Marine Chemistry" published in 1971. This was a key resource for the BSc teaching at Liverpool for many years and was widely adopted internationally as an accessible and authoritative overview of the subject. Through his research and teaching Roy developed his description of the oceans as a unified system linked by a variety of pathways. He used this approach to develop his *magnum opus* textbook "Marine Geochemistry", which ran for three editions (the third with Tim Jickells) and is still one of the most comprehensive and well-written marine chemistry textbooks to this day. Roy was keen to maintain its relevance and was talking to Tim Jickells about another edition only a few months before he died.

I remember Roy as an excellent colleague with a wonderful sense of humour. He led the Oceanographers through some difficult times but cared for all of the staff and was prepared to stand up for us when necessary. His PhD

students and Post-doctoral researchers benefitted from his careful and close supervision. Many of them were international students, and now hold academic posts all over the world. Roy had more strings to his bow than most. He was a prolific novelist, penning murder mystery and thrillers including "The Toy Breaker", "Pagan" and "Vengeance", a member of the Mental Health Tribunal and an active member of the Round Table. He was also a mad Liverpool fan, who never tired of ribbing me about my support for West Ham United F.C. and delighting in the inevitable thrashing that we got every season at Anfield ! I missed Roy when he retired and will certainly miss him now. - **George Wolff (Liverpool) with help from Tim Jickells (UEA), Mike Krom (Leeds) and Martin Preston (Liverpool)**

New NERC Arctic Office website

The new [website](#) is now up and running. The brief we gave ourselves, and that the community has echoed, is for a site that is visually stronger and clearer; where it is easier to find important and timely information; and which acts as a stronger and more meaningful source of detailed information on UK-based researchers and their research in the Arctic. Whilst the third part of that brief, the 'projects database', is not quite ready yet, a few more weeks of testing is needed, we think the new website already makes a big improvement in how we engage. We hope you like it. As always, your feedback is very welcome (arctic@bas.ac.uk).

We will be using the News and Blog features of the website, in combination with Twitter posts, to provide much more regular updates on how the Arctic Office is supporting the UK Arctic research community, details of upcoming opportunities and international events. This Blog will be open to researchers and we are keen to use it to highlight the huge range and depth of work that the community is engaged in. If you would like to write a Blog or have a News item that you would like to be added, please let us know by contacting us at arctic@bas.ac.uk.

As well as the website, we will continue with the emailed Bulletins on a more regular basis. However, in order to comply with data protection legislation, you will need to give your consent if you want to receive the Bulletin in future. You can do this via the [subscribing for updates](#) page on the new website. This is a very quick process.

The data collected (which includes name and email address) will only be used in order to send you updates relevant to the UK Arctic Research Community. Please see the revised [Privacy Policy](#) for further details. From the end of May we will not be able to e-mail you the Bulletin, or any other e-mail updates, unless you have subscribed as outlined above. – *The NERC's Arctic Office team*

JERICO NEXT Summer School on Operational Oceanography for Blue Growth

JERICO-NEXT announce a summer school held between the 9th and 14th July 2018 at the Department of Geosciences of the University of Malta.

Are you interested in oceanographic data exploration, elaboration and product creation? Do you wish to improve your skills in the sourcing, interpretation and merging of available data for the creation of knowledge and added value products? Are you a marine industry player keen to indulge in smart innovative applications? This course is then your opportunity to meet with peers and to avail yourself of the experience and viewpoints of an international range of renowned experts that will be showcasing how data and information in the digital age are spearheading the evolution of marine services to serve the stakeholder demands and boost R&I applications, such as within the ambit of Blue Growth; which is the European Commission's initiative to further harness the potential of Europe's oceans, seas and coasts, for sustainable growth, jobs and value.

The course will adopt a practical and hands-on approach. It will be delivered in a state-of-the-art computer lab environment offering the participants an individualised learning experience through practice. Dedicated sessions in the programme will link to the CMEMS and EMODnet, and together with the JERICO-NEXT Virtual Access portals will be used to showcase the relevance of their data streams through dedicated hands-on practical sessions.

The last day of the course will take the form of a mini-hackathon, giving the opportunity to participants to work in groups where each group would propose, plan and develop a prototype solution to an agreed blue growth 'challenge'. For more details, contact the course coordinator: Prof. Aldo Drago (aldo.drago@um.edu.mt), and consult

the course website: <http://www.jerico-ri.eu/events/operational-oceanography-for-blue-growth/>.

Deadline for applications is 7th June 2018. Full or partial support is available for a number of selected applicants, especially those who are in a position to disseminate the experience gained from the school to others. We also plan to sponsor participants with skills in software development to have leading roles in the mini-hackathon. Applicants from non-EU countries are welcome. [Apply now!](#)

Making marine data available to the global scientific community: the UG-MESA marine services case

The Coastal and Marine Resources Management Centre at the University of Ghana (UG) started a project in 14 coastal West African countries with the aim of improving the coastal and marine information management, decision-making and capacity planning of the [Economic Community of West African States \(ECOWAS\)](#), by enhancing access to and exploitation of relevant Earth Observation (EO) data.

Among other services, the project provides daily maps of potential fishing zones (PFZs) and vessel traffic information in the sub-region to fisheries managers, and maps of ocean condition forecasts to marine operators and other interested stakeholders. Information on PFZs are provided to policy makers of beneficiary countries, enabling them to better manage their fishery resources. Additionally, daily forecasts of ocean conditions are sent via an SMS early-warning system to artisan fishermen; which enables them to increase their efficiency, reduce their costs and above all, avoid venturing out to sea when conditions are too dangerous.

As part of the services provided, the University of Ghana deployed a wave rider buoy near the Cape Verde islands for collection of in-situ data on ocean parameters such as wave height and sea surface temperature for validation purposes.

In order to make this data available to the global scientific community, collaboration was established [EMODnet-Physics](#) to host this data on their distribution platform. The impact of this collaboration has been tremendous, as the data is made easily accessible to both African and European partner institutions, as well as other users.

The [Monitoring for Environment and Security in Africa \(MESA\)](#) project was a continent-wide project aimed at using Earth Observation data to support African decision makers and planners in implementing national, regional and continental policies and development plans towards sustainable development and management of environmental resources.

New book "Ocean Science and the British Cold War State"

Dr Sam Robinson (University of York) has just published a book, "Ocean Science and the British Cold War State". Based on his PhD work at the University of Manchester, the book focuses on the development of UK oceanography, particularly the role of Sir George Deacon and the Wormley laboratory in the immediate post WWII era. For more information from the publishers: <https://www.palgrave.com/gp/book/9783319730950>. - **John Gould**

Nominate the best geoscientists from around the world

The EGU is currently accepting nominations for the [2019 EGU awards and medals](#). To promote the best deserving geoscientists from around the world and increase diversity in the group of EGU awardees and medallists, we encourage the EGU membership to consider gender, geographical, and cultural balance when nominating outstanding Earth, planetary and space scientists at various career stages. Please consider submitting a nomination by 15th June.

Challenger Conference 2018

Please publicise and advertise the Challenger Conference 2018 through your departments and amongst your colleagues: <https://conferences.ncl.ac.uk/challenger-2018/>. Registration is open and we need to ensure as much publicity is raised as possible.

NERC funding opportunities, Bay of Bengal

NERC are inviting applications to a Ganga Delta - Bay of Bengal Interactions sandpit event; <https://reg.nerc.ac.uk/ganga2018/>, register by 22nd May.

VIEW

EGU2018 news, and information for EGU2019

I hope you have all returned home safely after a

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great week in Vienna. Thank you so much to all our session conveners for all their hard work in organising all the excellent sessions this week. It's great that the numbers of OS sessions and talks is so healthy, and this is all down to you, as well as our division officers. And thank you too, to everyone who participated, presented talks, posters and PICOS. Well done on presenting great science.

For those who weren't at the Division Meeting on Thursday, the presentation I gave will soon appear on the OS Division webpage <https://www.egu.eu/os/home/>. This will update you on things like future changes to the general assembly. Please sign up there to the OS Division email list for future OS Division news.

We welcome the new members of the OS Division team, Marcus Dengler (OS1), Sandro Carniel (OS2), Bill Austin (OS3) and Gwyn Evans (ECS). Their contact details will soon be available on the OS webpage together with the updated structure. I am very pleased that Aida Alvera Azcarate continues to lead OS4, and that Johan van der Molen is continuing as Deputy President. A great team. Big thanks again to Maribel García-Ibáñez, Boris deWitte and Daniela Turk who rotated off this year.

Thinking ahead to 2019, while it is fresh in our minds. Note that no sessions will be carried over. This is a change to the previous way of working, and ensures that the suggestions for sessions are bottom-up. Everyone is encouraged to suggest sessions, to volunteer as a convener or co-convener. Of course, if you convened or enjoyed a session this year and would like to continue the momentum, please suggest it again! We do not want to lose valuable sessions. We are keen to include Early Career Scientists as conveners and co-conveners of sessions, so don't be shy.

It is good that the PICO sessions are growing in OS. Our three sessions this week were very well attended and I heard nothing but positive feedback about them. Do consider suggesting/organising a PICO session for next year.

I welcome any feedback (positive and negative) you have about how everything went, and how it might be improved for next year. Please send me an email (os@egu.eu) sometime in the next week so I can collate it and submit it to the Programme

Chair. Please also respond to the online feedback survey you will receive from EGU. Council really does try to make changes in response to this feedback.

Finally, do consider publishing the excellent work we heard about this week in our open access peer-reviewed journal Ocean Science. You could consider whether your session could be a good Special Issue ? You could be the Guest Editor perhaps ? http://www.ocean-science.net/special_issues/how_to_apply.html. And please do think about volunteering as a Topic Editor for Ocean Science; contact John Huthnance to find out more about the role, jmh@noc.ac.uk. I look forward to working with you all to make next year's conference as good as this year's and to strengthen our OS Division science community !
- **Karen Heywood** (k.heywood@uea.ac.uk)

Earliest oceanographic measurements ?

I came across an interesting history of oceanography paper by Professor Nadia Pinardi on Mediterranean hydrography carried out by Count Luigi Ferdinando Marsili in the 17th century; just a few years before Argo !.

ABSTRACT

The first in situ measurements of seawater density that referred to a geographical position at sea and time of the year were carried out by Count Luigi Ferdinando Marsili between 1679 and 1680 in the Adriatic Sea, Aegean Sea, Marmara Sea, and the Bosphorus. Not only was this the first investigation with documented oceanographic measurements carried out at stations, but the measurements were described in such an accurate way that the authors were able to reconstruct the observations in modern units. These first measurements concern the "specific gravity" of seawaters (i.e., the ratio between fluid densities). The data reported in the historical oceanographic treatise *Osservazioni intorno al Bosforo Tracio* (Marsili) allowed the reconstruction of the seawater density at different geographic locations between 1679 and 1680. Marsili's experimental methodology included the collection of surface and deep water samples, the analysis of the samples with a hydrostatic ampoule, and the use of a reference water to standardize the measurements. A comparison of reconstructed densities with present-day values shows an agreement within 10%–20% uncertainty, owing to various aspects of the measurement methodology that are difficult to reconstruct from the documentary evidence. Marsili also measured the current speed and the depth of the current inversion in the Bosphorus, which are consistent with the present-day knowledge. The experimental data collected in the Bosphorus enabled Marsili to enunciate a theory on the cause of the two-layer flow at the strait, demonstrated by his laboratory experiment and later confirmed by many analytical and numerical studies.

It's reference is "Pinardi et al., J of Physical Oceanography, April 2018, DOI: 10.1175/JPO-D-17-0168.1.", and it can be downloaded from the American Meteorological Website. - **Phil Woodworth**

Validation of SAR satellite based information products (wave height) in combination with EMODnet station data (Significant Wave Height HS)

DLR's German Remote Sensing Data Center (DFD) and Remote Sensing Technology Institute (IMF) pool their expertise in the domain of satellite-supported real-time applications in the Maritime Security Labs in Bremen and Neustrelitz.

A large amount of information relevant to

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maritime safety and security can be derived from Synthetic Aperture Radar (SAR) data. This includes information about ship location and velocity, oil spills, sea ice cover, wind, waves, rough seas and surges, underwater topography, and surface currents. Another thematic focus is data fusion. It is often useful and beneficial to combine or merge satellite-based information products with different types of supplementary data in order to increase their information content. With data from the [EMODnet Physics portal](#), DFD is validating the wave parameter of significant wave height HS (which is derived from satellite imagery e.g., from Sentinel-1) at DFD's ground station in Neustrelitz.

Currently the validation chain for SAR derived wind and wave products based on the EMODnet measurement station network is being developed. First results show the benefit for the service validation in general. To enable the integration of EMODnet data into near real time applications developed at DLR, the provision of the EMODnet platform data in near real time would be required. Nevertheless EMODnet data could be merged with the satellite-based information product, generated based on archived satellite images. (SAR-derived information + EMODnet measurement information). The integration of the EMODnet data for the purpose of product validation could be seen as a first step. Further development of merged products will be taken into account based on the user requirements.

EMODnet supports the DFD with provision of in-situ data from their platforms (fixed stations, moorings, buoys, tide gauges, surface drifters, ferryboxes, argo floats, gliders). The data are delivered via ftp-serverware and are updated 3 times a day. The update interval and the content of this ftp-service are still in development and optimization. EMODnet data of wave height are used for the validation of SAR derived maps of significant wave height, i.e., analysis of the accuracy and reliability of the satellite based information products.

The [German Aerospace Center \(DLR\)](#) is the national aeronautics and space research center of the Federal Republic of Germany. Its extensive research and development work in aeronautics, space, energy, transport, digitalisation and security is integrated into national and international cooperative ventures. In addition to its own research, as Germany's space agency,

DLR has been given responsibility by the federal government for the planning and implementation of the German space program.

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

24th May 2018: 61st Marine Measurement Forum

Teddington, UK

The Steering Group for the non-profit making Marine Measurement Forum (MMF) series of twice yearly, one day networking seminars is delighted to announce details for the forthcoming MMF61. The event will be hosted by the National Physical Laboratory (NPL) in Teddington, Middlesex. Detailed information on the day's proceedings, can be found at <http://www.npl.co.uk/events/24-may-2018-the-61st-marine-measurement-forum-mmf>

28th May to 1st June 2018: 50th International Liege Colloquium on Ocean Dynamics: Long-term studies in oceanography – a celebration of 50 years of science at the Liege Colloquium

Liège, Belgium

In 2018 we arrive at the 50th edition of the International Liège Colloquium of Ocean Dynamics, a perfect reason to celebrate and review the advances made in studying the oceans during the last several decades. In particular, this edition will be dedicated to long-term studies in oceanography. Our knowledge about the ocean has changed dramatically over these past 50 years, as has the availability and quality of data and tools to study the ocean. The ocean plays a crucial role in the regulation of the Earth's climate. As climate change poses an unprecedented threat to the Earth environment, studies that focus

on the long-term variation of the ocean and its response to climate change have therefore become essential to understand and monitor the Earth climate.

Sessions:

Ocean dynamics & climate change

Studies addressing the impact of climate change on ocean dynamics, and the influence of the ocean on climate.

Oceanic climate records (datasets, methods and comparisons)

Generic studies about model-based and observation-based datasets (reanalyses, reconstructions), their validation and intercomparisons, and studies about specific methods for multidecadal reanalyses and reconstructions (assimilation, bias corrections and drift corrections). Reprocessing and intercalibration of multi-mission datasets.

Coastal and regional processes

Studies focusing on long-term variability and local trends of specific regions, including downscaling of large scale climatic processes.

Trends in polar regions

Abstracts on the trends of ocean and sea ice dynamics of polar regions, influence of climate on their variability and the impact of these regions on the global climate system.

Biogeochemical processes

Studies about oceanic long-term ecosystem changes induced by climate variability.

Long-term trends in oceanography (open session)

An open session for all studies on the multidecadal study of the ocean. Abstracts that do not fit in other session can be submitted here.

Further details are available at: <http://labos.ulg.ac.be/gher/home/colloquium/colloquium-2018/>.

We are looking forward to welcoming you in Liège in the name of the Organizing Committee:

Aida Alvera Azcarate, ULG, Belgium

Jean-Marie Beckers, ULG, Belgium

Hugues Goosse, UCL, Belgium

4th-8th June 2018: 4th International Symposium on The Effects of Climate Change on The World's Oceans

Washington D.C., USA

* REGISTER: On-line

<http://meetings.pices.int/meetings/international/2018/climate-change/registration>

• Check sessions:

<http://meetings.pices.int/meetings/international/2018/climate-change/Program>

A good IMBeR relevant session is S13: Multiple stressors at multiple scales: ecosystem based management in the face of changing ocean conditions

* APPLY: Financial Support

<http://meetings.pices.int/meetings/international/2018/climate-change/support>

We look forward to seeing you in Washington D.C. - ECCWO Symposium Convenors

12th-14th June 2018: ESSAS Annual Science meeting

Fairbanks, Alaska, USA

A primary focus of the meeting is on remote sensing applications in the study of climate change impacts on high-latitude ecosystems. Additional sessions and workshops focus on ocean acidification and other stressors; the biology, ecology and paleoecology of Arctic Gadids, and the use of Integrated Ecosystem Assessments (IEA) as a framework for understanding and managing subarctic and Arctic marine ecosystems. The meeting is intended to attract an interdisciplinary group of scholars, including remote sensing experts, who are interested in innovative approaches to studying subarctic and arctic waters and their living marine resources in both the North Atlantic and the North Pacific during a time of rapid changes. Please go to the ESSAS website for more information: http://essas.arc.hokudai.ac.jp/what_s_new/first-announcement-for-the-2018-essas-annual-science-meeting/

15th-26th June 2018: POLAR2018 - Where the Poles come together, a SCAR/IASC Conference

Davos, Switzerland

The Scientific Committee on Antarctic Research SCAR and the International Arctic Science Committee IASC invite the international polar and high altitude community to their joint meeting POLAR2018, hosted by WSL and SLF.

Program overview

15 - 18 June 2018: SCAR and IASC/ASSW Business & Satellite Meetings

19 - 23 June 2018: SCAR/IASC Open Science Conference, including the COMNAP Symposium

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24 - 26 June 2018 SCAR Delegates Meeting & 2018 Arctic Observing Summit

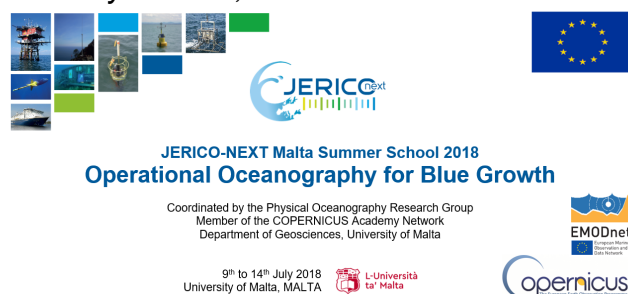
The goal of POLAR2018 is to bring together excellent research from both poles, as well as from high altitude areas, focusing on the similar challenges those regions face. The program features 65 different sessions, structured into 12 categories. In addition to the parallel sessions, central elements of the Open Science Conference (OSC) will be keynote presentations, mini-symposia, extended poster sessions, and exhibitions. The annual COMNAP symposium will be held during the OSC, as well as a plenary lecture from the 2018 Arctic Observing Summit as an opening to this biennial summit immediately after the OSC. A range of excursions and trips will allow participants to make the most of coming to the Swiss Alps and enjoy science, nature, culture, and sports.

Davos

POLAR2018 will be held in the Swiss mountain town of Davos, which can easily be reached by train from Zurich Airport. Davos, Europe's highest city, is situated in the Eastern part of the Swiss Alps at 1560 meters above sea level. It offers an advanced congress infrastructure and a wide range of accommodation for all budgets. The stunning alpine environment will ensure your visit is an enjoyable experience. We are looking forward to welcoming you in Davos in June 2018.

9th - 14th July 2018: JERICO NEXT Summer School on Operational Oceanography for Blue Growth

University of Malta, Malta



Are you interested in oceanographic data exploration, elaboration and product creation ?. Do you wish to improve your skills in the sourcing, interpretation and merging of available data for the creation of knowledge and added value products ?. Are you a marine industry player keen to indulge in smart innovative applications ?. This course is then your opportunity to meet with peers

and to avail yourself of the experience and viewpoints of an international range of renowned experts that will be showcasing how data and information in the digital age are spearheading the evolution of marine services to serve the stakeholder demands and boost R&I applications, such as within the ambit of Blue Growth; which is the European Commission's initiative to further harness the potential of Europe's oceans, seas and coasts, for sustainable growth, jobs and value.

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The last day of the course will take the form of a mini-hackathon, giving the opportunity to participants to work in groups where each group would propose, plan and develop a prototype solution to an agreed blue growth 'challenge'.

For more details, contact the course coordinator: Prof. Aldo Drago (aldo.drago@um.edu.mt), and consult the course website: <http://www.jerico-ri.eu/events/operational-oceanography-for-blue-growth/>.

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3rd - 12th September 2018: 1st ODYSSEA Summer School, Operational Oceanography in the era of Blue Growth

Kavala, Greece

The call for applications for the 1st ODYSSEA Summer School "Operational Oceanography in the era of Blue Growth" is now open (closing date: 20th May 2018). The Summer school will be held at the Akontisma Hotel, Nea Karvali, Kavala, Greece.

The overall objective of the 1st ODYSSEA Summer School is to stimulate a scientific dialogue and create a learning experience about operational oceanography in the Mediterranean context. More precisely, after the end of the program, the trainees, coming from both sides of the Mediterranean Sea basin, will be able to:

- Understand the concept of operational oceanography
- Use the ODYSSEA project platform for retrieving, managing and processing oceanographic and environmental data of the Mediterranean Sea
- Explore the Copernicus Marine Environment Monitoring Service (CMEMS) products, learn the data and parameters provided, download and process these datasets
- Retrieve and use satellite datasets and explore databases on the marine environment
- Learn about the modern developments on marine instruments and sensors used in field sampling for operational oceanographic monitoring
- Get acquainted with the use of operational forecasting mathematical models e.g., hydrodynamic, wave, water quality models, etc.

Monitoring and forecasting of the marine environment is a challenge for oceanographers, as in the last few decades marine ecosystems have been subject to intense human pressure (pollution, extensive fishing and aquaculture, coastal erosion, tourism, etc.), coupled with climate change. Therefore, the protection and sustainable economic exploitation of these ecosystems requires real-time monitoring and operational prognostic modeling. In parallel, the volume of data concerning the marine environment collected both by satellites and on-site monitoring instruments is enormous and can be categorised as "Big Data". All these data need to be retrieved, processed, interpreted and then fed into numerical models for reanalysis and forecasting.

The 1st ODYSSEA Summer School introduces trainees to all stages of operational oceanography, aiming towards the Blue Growth of the Mediterranean Sea. Full details and registration: <http://odysseaplatform.eu/events/operational-oceanography-for-science-business-and-society/>

10th-13th September 2018: 18th Biennial Conference of the Challenger Society

Newcastle upon Tyne, UK

Registration is now open for the 18th Biennial Conference of the Challenger Society for Marine Science: conferences.ncl.ac.uk/challenger-2018/registration/. For a list of available sessions, to submit an abstract or check for details and news please visit our website conferences.ncl.ac.uk/challenger-2018/. We look forward to seeing you in Newcastle upon Tyne in September - **Dr Alan Jamieson**, Challenger Conference 2018: Organising committee chair.



The biennial Challenger conference attracts over 400 leading UK marine scientists and science managers. As well as showcasing cutting edge marine science and technology, the conference is noted for its training of young scientists and networking events, including a public lecture by an eminent authority on relevant societal marine issues.

2018 Mini-Expo

This year we are privileged to welcome as special keynote speaker, His Serene Highness Albert II, Sovereign Prince of Monaco - The Prince Albert II of Monaco Foundation who will be present on the final day.



The mini-expo will run over 3 days (10th, 11th and 13th) The conference normally rotates between the major UK marine research establishments, but 2018 sees the first visit to the University of Newcastle. The Venue is impressive and the exhibition space for sponsors is large, and co-located with the refreshments and close to posters and lecture rooms with good access for exhibitors.

The society is now the adhering body for the Scientific Committee on Oceanic Research (SCOR) providing yet more exposure for participating companies.

Sponsorship packages will give local, national and international companies the chance to support UK marine scientific research and the training of young marine scientists, whilst a targeted exhibition and careers fair will also enable companies to self promote and recruit new staff. Spaces will be limited so please book early.

Take this early opportunity to help make the UK's premier marine science conference in 2018 the most successful ever.

The range of sponsorship opportunities are listed below. The conference organiser is Dr Alan Jamieson School of Natural and Environmental Sciences and commercial exhibition organiser Terry Sloane will be happy to discuss any requirements that you may have.

Terry Sloane by email: terry@planet-ocean.co.uk or phone 01276 427 971

<http://conferences.ncl.ac.uk/challenger-2018/> www.challenger-society.org.uk

Sponsorship Packages

Individual sponsorship opportunities:

Sponsors of individual elements of the event will be acknowledged in the lecture theatres, abstract book, on the conference website and on posters. Those sponsors with manned exhibition stands are able to upgrade to the **Gold package**, where they will have the opportunity to have a 5 minute speaking slot at the start of the plenary sessions.

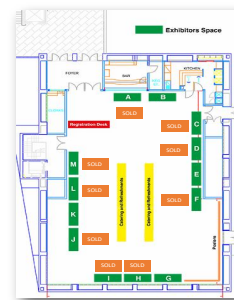
- Manned exhibition stand 3m x 2m £600
- "Gold Upgrade" (only five slots available) £100
- Co-sponsorship of conference dinner £750
- Co-sponsorship of ice breaker reception £700
- Co-sponsorship of poster session £500
- Co-Sponsorship of public lecture £500
- Sponsorship of keynote speaker £550
- Exhibition banner unmanned £200
- Brochure in delegates bag £200
- ¼ Page advert in conference handbook £150
- ½ Page advert in conference handbook £300
- One A4 leaflet in delegates bag £100

Corporate society members benefit from a 15% discount



The refreshments, and posters will be held in the Lindisfarne Room.

Stand positions are taken on a first come first served basis, preference will be accommodated if possible.



17th -19th September 2018: 8th China - Japan - Korea IMBeR Symposium

Shanghai, China

This symposium will be hosted by the State Key Laboratory of Estuarine and Coastal Research <http://english.sklec.ecnu.edu.cn/> (SKLEC), East China Normal University <http://english.ecnu.edu.cn/> (ECNU).

Marine science researchers from China, Japan, and Korea have been working actively at the frontier in the areas of Global Ocean Ecosystem Dynamics (GLOBEC) and Integrated Marine Biogeochemistry and Ecosystem Research (IMBER) since the early 1990s. Various scientific workshops and/or training activities have taken place among the three neighbouring countries since then. Starting in 2002, the China-Japan-Korea GLOBEC/IMBER symposia have been an important venue for scientific exchange across focused marine science disciplines in the West Pacific region. IMBER became the core project under Future Earth in 2016 and changed its name to "IMBeR (Integrated Marine Biosphere Research)", IMBeR has focussed on interdisciplinary research in the ocean, atmosphere, and continental shelf. This interdisciplinary approach contributes to the combination of natural sciences and social sciences in order to achieve the greatest effect of ocean management and policy development and to achieve sustainable development of the ocean.

The 8th China-Japan-Korea IMBeR Symposium will focus on analyzing the impact of climate change and anthropogenic forcing on physical processes and biogeochemical cycles, ecosystem structure and functions, and fisheries in the West Pacific region; particularly how these complex interactions in combination, influence marine ecosystems and human society.

The following topics will be included in this

symposium:

1. Advances in observation and modelling of physical and biogeochemical processes in the West Pacific region
2. The response of marine ecosystems to natural and anthropogenic forcing: past, present and future
3. The Response of Society to global change in marine systems: ways forward

The Scientific Program Committee invite all experts, young scientists and students working on the West Pacific region to the forum. For online Registration and Abstract Submission visit: <http://mform.imr.no/view.php?id=78294>. The deadline for abstracts is the 15th June 2018.

17th-21st September 2018: 53rd European Marine Biology Symposium

Ostend, Belgium

The Flanders Marine Institute (VLIZ) and LifeWatch Belgium are organizing the 53rd edition of the European Marine Biology Symposium (EMBS53). The EMBS53 Organizing and Scientific Committee are pleased to welcome your abstract submissions for oral papers and scientific posters. We particularly welcome papers on 'Marine Biology from a Historical Perspective', 'Science in a Modern Era', 'Marine and Coastal Citizen Science' and 'Science in the North Sea'. The deadline for abstract submissions is the 15th April 2018.

Please note that no extensions to the deadline will be granted and that presenting authors are responsible for registration, travel and accommodation costs. Presenters who are unable to attend should arrange for another qualified individual to present the paper or poster in question (with notification to the Organizing Committee). All abstract submissions should be submitted via our abstract submission form <http://www.embs53.org/submit>.

We are glad to announce that the Journal of the Marine Biological Association (JMBA) kindly offers to publishing a special issue of the EMBS53 conference (scheduled for October 2019). Everyone who contributes a poster or an oral presentation at the EMBS53 is invited to submit a manuscript by 7th December, 2018. All manuscripts will go through a peer-review process.

Important dates:

- Deadline abstract submission (there will be NO extension of the deadlines): 15th April 2018
- Notification of abstract acceptance: 15th May 2018
- Deadline early bird registration: 31st May 2018
- Deadline late registration: 31st August 2018

For more information: <http://www.embs53.org/>.
 - **Leen Vandepitte**, on behalf of the EMBS53 Organizing Committee.

18th-20th September 2018: Connecting glider data flow in Europe and beyond - an international conference on glider data management

Genova, Italy

Supported by EMODnet Physics, EMODnet Data Ingestion and EuroGOOS, we are pleased to announce that the registration for the glider data management meeting is [open](#). The conference will be held in the auditorium of the [Acquario di Genova](#).

« Connecting glider data flows in Europe and beyond »

Genova – 18-20/09/2018

An international conference on glider data management



<https://www.ego-network.org/dokuwiki/doku.php?id=public:egodmmeeting:september2018>, or contact us at webmaster@ego-network.org.

15th-19th October 2018: 4th CLIOTOP Symposium, Oceanic biodiversity under climate change

Keelung, Taiwan

Oceanic biodiversity under climate change and shifts in natural and human systems. Registration and abstract submission are open. [Submit abstracts](#) before 31 May !

19th-21st October 2018: 6th Arctic Circle assembly
 Reykjavik, Iceland



CALL FOR PROPOSALS

ARCTIC CIRCLE

2018 ASSEMBLY BREAKOUT SESSIONS

Proposals are now being accepted for Breakout Sessions at the Sixth Arctic Circle Assembly to be held October 19 – 21, 2018 in Reykjavik, Iceland.

Participation will be granted based on session topic, area of focus, goals, and room availability at the Harpa Reykjavik Concert Hall and Conference Center. When proposals are submitted, 50% of speakers need to be confirmed.

SUBMISSION DEADLINE: MAY 15th, 2018

Submit proposals to Secretariat@ArcticCircle.org

Over 120 sessions were held at the 2017 Arctic Circle Assembly, with more than 600 speakers. Programs from previous Assemblies, which list all past breakout sessions, may be found at www.arcticcircle.org. The Arctic Circle provides an open, democratic forum for discussion and cooperation on Arctic Affairs.

31st October-2nd November 2018: MASTS 8th Annual Science Meeting 2018, "Challenges and innovative solutions for sustainable seas"
 Glasgow, UK

The 2018 ASM will examine the modern challenges that face our marine waters, and identify ways and means to conserve and sustainably use the oceans, seas and marine resources for sustainable development. This cross-disciplinary meeting brings together members of the marine science community, with the aim of promoting and communicating research excellence and forging new scientific collaborations. The cross-disciplinary nature of the event as well as the high calibre of the selected talks means that scientists can broaden their knowledge in marine science as well as benefit from expertise and ideas gained in a range of fields other than their own.

Science presentations and e-poster sessions will take place on the first two days (Wednesday 31st October and Thursday 1st November), together with Plenary Speakers and opportunities to network. A call for abstracts will be issued in late

April. Please get in touch if you would like to host a special session on one of the first two days.

On the third day of the MASTS Annual Science meeting (Friday 2nd November 2018), MASTS provide the facilities for people to run workshops or meetings. We have a variety of rooms of differing sizes that can be set up as you need, and you would be responsible for the content and running of the workshop itself. Previous workshops have included invited talks, the provision of training, proposal writing, project meetings, discussion groups etc - the choice is yours. **Please get in touch if you would like to host a workshop on day three.**

Anyone interested in exhibiting at the 2018 event, or anyone wishing to showcase or demonstrate a piece of kit/equipment should also get in touch.

We are delighted that IMarEST is sponsoring the student prizes for the 2018 ASM. Best Presentation - £200 first prize and a £100 second prize & Best Poster - £130 first prize and a £70 second prize.

5th-7th November 2018: International Conference on Marine Data and Information Systems
 Barcelona, Spain



IMDIS
 International Conference on Marine Data and Information Systems

Save the dates for IMDIS 2018 conference!
 Barcelona, 5-7th November 2018

The IMDIS 2018 conference will be held in Barcelona (Spain) from Monday 5 November to Wednesday 7 November 2018. It will be organized by CSIC (Consejo Superior de Investigaciones Científicas, Spain), jointly with IFREMER, OGS and IOC/IODE, in the frame of the SeaDataCloud project (EU H2020 - Grant Agreement 730960).

The conference website is under construction and will be available at the end of November 2017. Abstract submission for oral or poster presentations will be available in January 2018.

For more information, do not hesitate to contact imdis2018@seadatanet.org.

Best regards,
 IMDIS 2018 Organising Committee

SeaDataCloud UTM CSIC Ifremer OGS IODE

13th-15th November 2018: Marine Autonomy and Technology Showcase 2018

Southampton, UK

MATS Abstracts Submission Opens

We are seeking submissions under the following themes,

- Current Applications
- Aspirational applications
- Enabling technology
- Collaborative technologies
- Security of assets.



Full details of these themes can be found by [clicking here](#). Presentations including questions will be 20 minutes in length and technical in nature. The technical review committee will not accept any presentations that are overtly sales pitches. For further information please email NOCEvents@noc.ac.uk

19th-23rd November 2018: MICRO2018 - All you ever wanted to know about "Microplastics" in five days.

Arrecife, Lanzarote, Spain

The title for this year's conference is **"Fate and Impact of Microplastics: Knowledge, Actions and Solutions"** and the main topics include:

- Marine Ecosystems
- Freshwater bodies
- From Macro to Nano
- Social change and behaviour
- Human health
- Policy

Registration for the conference is now open and organisers are accepting abstract submissions for the conference (deadline 21 June), [so find out more and register for the event](#).

21st November 2018: Joint meeting of the Challenger Society History SIG and the Royal Met Soc History Group

NOC, Southampton, UK

A meeting is being planned, sponsored jointly by the Challenger Society History SIG and the Royal Met Soc History Group. It will focus on how our ability to collect ocean temperature and salinity profiles has developed from the era of the Challenger Expedition (1870s) to the present day when the Argo array of profiling floats now provides global coverage. It will also highlight the products derived from these data and will look towards future developments. More information will be circulated as it becomes available.

17th – 21st June 2019: IMBeR 2nd Open Science Conference

Brest, France

IMBeR^{2nd} Open Science Conference
Integrated Marine Biosphere Research

Ocean sustainability for the benefit of society: Understanding, challenges, and solutions

17-21 June 2019, Brest, France

Call for Sessions and Workshops

The Integrated Marine Biosphere Research (IMBeR) project is planning its second Open Science Conference that will focus on themes related to:

- Understanding and quantifying the state and variability of marine ecosystems
- Improving scenarios, predictions and projections of future ocean-human systems at multiple scales
- Improving and achieving sustainable ocean governance

The marine research community is invited to contribute proposals for sessions and workshops related to the Conference themes. Workshops and topical sessions focused on the IMBeR Grand and Innovation Challenges outlined in the [IMBeR Science Plan](#), results from IMBeR Working Groups and Regional Programmes, and IMBeR-relevant research at the interface of natural and human sciences are especially encouraged.

Session and workshop proposals should include a short description of the proposed topic, convener(s) names and affiliations, format (e.g., oral, poster, discussion with panel, world cafe), and potential number of participants. Workshop proposals should indicate whether they are intended to be a full- or half-day, and include clearly defined outputs, such as a research paper, special issue in a high impact peer-reviewed journal, or a position paper. Innovative formats that promote strategic thinking and new ideas are welcome.

Proposals should be sent to IMBeR@imr.no by **Friday 23 April 2018**. Proposals will be evaluated by the Conference Scientific Steering Committee and notification of proposal acceptance will be in late May 2018. The open call for abstract submission to the selected sessions and workshops will be distributed in June 2018.

[More information on the IMBeR Open Science Conference](#)

Please distribute this message widely via your networks!

[Visit the IMBeR Website](#)

imber@imr.no


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 May.

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

JOBS

There are jobs on the IMBER web site

<http://www.imber.info>



Integrated Marine Biosphere Research

Jobs and opportunities

- [Postdoc: Microplastics in seafood, AIMS, Townsville, Australia. Apply by 14 May](#)
- [Updated Ocean Acidification-International Coordination Centre database available online](#)
- [PhD: Development of molecular methods to detect fish fraud and food integrity. Ostend, Holland. Apply by 30 June](#)
- [Postdoc: Bioinformatics of marine microbes, Roscoff, France. Application deadline N/A](#)
- [PhD: Trajectories of change in marine megafauna in Australia and UK. Apply by 26 May](#)
- [Postdoc: Ocean circulation dynamics at meso- and submesoscale. Apply by 31 May](#)
- [Postdoc: Biological pump and transport processes, Bar-Ilan University, Israel. Apply by 1 June](#)

[Visit the IMBeR Website](#)

imber@imr.no