



**The NOC Association of Marine Science  
National Capability Beneficiaries**

**Annual General Meeting  
11th and 12th May 2021**

**UK Marine Science 2021:  
New Opportunities for the Future**

*"The sea, the great unifier, is man's only hope. Now, as never before, the old phrase has a literal meaning: we are all in the same boat."*

Jacques Yves Cousteau

**Welcome by Professor David Thomas,  
Chair, NOC Association of Marine Science National Capability Beneficiaries  
(NOCA)**

Welcome to the 10<sup>th</sup> Annual Meeting of the NOCA, my first as Chairman. We had to postpone the 2020 AGM due to the pandemic and even now, continue to manage the many challenges of a COVID-19 world. Potentially, the ways in which we conduct research, may have changed for ever.

I am pleased to welcome guest speakers Leigh Storey, Dr Alex Phillips, Dr Ekaterina Popova and Dr Katy Hill from the National Oceanography Centre, Dr Kate Hendry from the University of Bristol, Professor Lesley Yellowlees from the University of Edinburgh, Professor Sheila Heymans, Executive Director, European Marine Board, Professor Serge Guillas, University College London, Dr Tania Mendo, University of St Andrews, Professor Melanie Austen, University of Plymouth, Dr Emma McKinley, University of Cardiff and Dr Iain Williams from the Natural Environment Research Council.

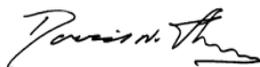
Topics include the Net Zero Oceanographic Capability Scoping Project, autonomous underwater vehicles, the COVID-19 legacy, Equality, Diversity and Inclusion, the UN Decade of Ocean Science for Sustainable Development, the UN Climate Change Conference COP26, the UK G7 Presidency, global oceanography programmes, inspiring the next generation and the funding landscape for UK marine science.

In putting together the AGM programme, I'd like to thank the members of the NOCA Board (details on page 14), NOC Chief Executive, Professor Ed Hill and NOC Director of Science and Technology, Professor Angela Hatton. Thanks also to the NOC Events Team, for enabling us to conduct the AGM virtually.

There are opportunities to ask questions and presentations will be on-line afterwards. Questions about the NOCA are welcome anytime. Please feel free to contact me or the NOCA Secretary, Jackie Pearson - our contact details are below.

I hope that next year, we will be able to meet again in person. For now, the community can be proud of all that has been achieved in 2020, despite the challenges and, as we continue through 2021, let us take every opportunity to raise the profile of UK marine science!

Best wishes,



Professor David Thomas  
Chairman, NOC Association  
[david.thomas@helsinki.fi](mailto:david.thomas@helsinki.fi)

Jackie Pearson  
NOCA Secretary  
[jfpea@noc.ac.uk](mailto:jfpea@noc.ac.uk)

**10th Annual Meeting of the NOC Association of Marine Science National  
Capability Beneficiaries**

**UK Marine Science 2021: New Opportunities for the Future**

**Timings: 09:30 – 12:30**

**Tuesday 11<sup>th</sup> May 2021**

09:30 Delegates invited to log on

10:00 Welcome from Professor David Thomas

**Session One - The Net Zero Oceanographic Capability Scoping Project (NZOC)  
and development work on Autonomous Underwater Vehicles (AUVs).**

10:05 The Net Zero Oceanographic Capability Scoping Project (NZOC) – Leigh Storey

10:15 Questions

10:25 Development in Autonomous Underwater Vehicles – Dr Alex Phillips

10:40 Questions

11:00 Break

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**Session Two - The COVID-19 legacy & Equality, Diversity and Inclusion**

11:15 Impact of Covid-19 on the community – Dr Kate Hendry

11:25 Discussion: the legacy of COVID-19;  
new ways of working

11:35 Equality, Diversity and Inclusion - Professor Lesley Yellowlees

11:45 Discussion

12:00 Closing questions from the floor

12.30 Close

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**Wednesday 12<sup>th</sup> May 2021**

**Timings: 09:30 – 12:30**

09:30 Delegates invited to log on

### **Session Three – 2021, the ‘Super Year’**

- 10:00 Welcome from Professor David Thomas
- 10:05 UN Decade of Ocean Science for Sustainable Development  
- Professor Sheila Heymans
- 10:15 UN Climate Change Conference COP26 – Dr Katy Hill
- 10:25 UK G7 Presidency – Dr Katy Hill
- 10:35 Discussion – how the UK will contribute;  
the cost of global oceanography programmes.

### **Session Four – Global Oceanography Programmes - selected case studies**

- 10:45 Introduction by Professor David Thomas
- 10:50 **Presentation One, including questions**  
Tsunami risk for the Western Indian Ocean: steps toward the integration  
of science into policy and practice - Professor Serge Guillas
- 11:00 **Presentation Two, including questions**  
Sustainable Oceans, Livelihoods and food Security Through Increased  
Capacity in Ecosystem research in the Western Indian Ocean -  
Dr Ekaterina Popova
- 11:10 **Break**
- 11:30 **Presentation Three, including questions**  
Protecting Covid-hit fishing communities in Peru - Dr Tania Mendo
- 11:40 **Presentation Four, including questions**  
Blue Communities - Professor Melanie Austen

### **Session Five: The next generation of marine scientists & the Funding Landscape**

- 11:50 How to encourage the next generation of marine scientists  
– Dr Emma McKinley
- 12:00 Discussion
- 12:10 The funding landscape for UK marine science - Dr Iain Williams
- 12:20 Questions from the floor
- 12:30 Close of meeting

## **Our Chair and Speakers**

### **Professor David Thomas, Chair of the NOC Association**

David Thomas is Professor of Arctic Ecosystem Research in the Faculty of Biological and Environmental Sciences, University of Helsinki in Finland.

He completed his PhD at the University of Liverpool in the 1980s where he studied seaweed physiology, before spending seven years in Germany working on experiments into cold tolerance of algae and oceanographic projects in the Antarctic, Arctic, North Sea and Red Sea.



David returned to the UK where he established groups working on sea ice biogeochemistry, land-ocean interactions, and the production of biofuels from algal bioreactors in the School of Ocean Sciences, Bangor University (1996 to 2020). He is a member of the NERC Science Committee (2017 to 2020). He Chaired the Programme Advisory Group for the previous NERC Arctic Research Programme.

From 2013 to 2019 he was Director of the Sêr Cymru National Research Network for Low Carbon Energy and the Environment. From 2009 to 2013 he held an Academy of Finland Distinguished Professorship and spent 2.5 years living in Helsinki while working at the Finnish Environment Institute (SYKE), where he was a Research Professor until 2019. In 2013 he held a Chair in Arctic Marine Biology at the Arctic Research Centre, Aarhus University, Denmark for 10 months.

### **Leigh Storey, Associate Director, National Marine Facilities**



Leigh Storey is the Associate Director, National Marine Facilities at the National Oceanography Centre (NOC). Leigh has a first degree in Marine Engineering and a Masters Degree in Business Administration. He is a Fellow of the IMarEST and a Member of the Honourable Company of Master Mariners. The majority of his career was spent in the Royal Navy as a Submariner. He joined the NOC in 2014 and has responsibility for the operation of the Royal Research Ships, the National Marine Equipment Pool and the associated structures that ensure it is available to support the UK Marine Science community.

## **Dr Alex Phillips, NOC Head of Marine Autonomy and Robotics (MARS) Development and Oceanids Principal Investigator**

Alex Phillips is a qualified Naval Architect with ten years' experience in the unmanned marine industry. Upon graduating from the University of Southampton, Alex spent two years in the offshore industry before returning to Southampton to complete a PhD in hydrodynamics of underwater vehicles. On completion of his PhD, he continued to research in the field of underwater robotics. In 2015 he joined the National Oceanography Centre as Head of Marine Autonomous Systems Development within the [Marine Autonomous and Robotic Systems](#) (MARS) group. In 2018 he became Head of the MARS Development Group where he is responsible for the development of a range of new Autosub Autonomous Underwater Vehicles.



## **Dr Kate Hendry, University of Bristol**



Kate Hendry is a biogeochemist and chemical oceanographer at the University of Bristol, interested in understanding nutrient cycling in the modern ocean, and the link between past climatic change, ocean circulation, nutrient supply and biological productivity.

Kate did her PhD at Oxford University, working on trace metal cycling in coastal Antarctic waters and was then awarded a Doherty Scholarship to work at Woods Hole Oceanographic Institution.

Over the last few years, Kate has worked on the stable isotopes of silicon in seawater and biogenic opal, a substance produced by some kinds of algae (diatoms), some protists (radiolarians, for example) and deep-sea sponges. She currently has a number of projects working on silicon isotope biogeochemistry, and will be working on silica cycling during the **ChAOS** project.

Kate has been on many field expeditions, migrating further north every time, with trips to the Southern Ocean, the Equatorial Atlantic, and the Labrador Sea.

## **Professor Lesley Yellowlees CBE HonFRSC FRSE, University of Edinburgh**

Lesley Yellowlees completed her BSc in Chemical Physics and her PhD in Inorganic Electrochemistry at the University of Edinburgh. After completing research positions in Brisbane, Australia and Glasgow she returned to an academic position in Edinburgh in 1986 and gained a personal chair in Inorganic Electrochemistry in 2005. Her current research interests are inorganic electrochemistry and spectroelectrochemistry, epr spectroscopy, synthesis and characterisation of potential solar energy dyes, utilisation of CO<sub>2</sub>, public engagement of science and promoting women in science.



Lesley completed five years as Head of the School of Chemistry at Edinburgh and Director of EaStCHEM (the joint research school of the universities of Edinburgh and St Andrews) in 2010. She then became Vice-Principal and Head of the College of Science and Engineering at the University of Edinburgh, stepping down from that position in 2017. Lesley has worked with the Royal Society of Chemistry for many years, chairing their Science and Technology Board, sitting on the Publishing Board, working with the Scottish Education section and chairing the editorial Board of Chemistry World. She became their first woman President in July 2012. Lesley was awarded an MBE in 2005 for services to science, a CBE in 2014 for services to chemistry and was elected as a Fellow of the Royal Society of Edinburgh in 2012 and an Honorary FRSC in 2016. She has honorary degrees from Aberdeen, Bristol, Edinburgh Napier, Heriot-Watt, Huddersfield, Queens Belfast, St Andrews, The Open and Strathclyde Universities.

## **Professor Sheila Heymans, European Marine Board**



Sheila JJ Heymans is the Executive Director of the European Marine Board (EMB) – the leading European marine science policy think tank - and Professor in Ecosystem Modelling at the University of the Highlands and Islands (UHI). She has 30 years' experience in research on the environmental impacts of ecosystem change and has published > 90 peer-reviewed publications. Previously she was the Head of the Science Department (2016-2017), Head of the Ecology Department (2013-2016) and Leader of the "People and the Sea" research theme (2012-2013) at the Scottish Association for Marine Science (SAMS). Sheila is Co-Chair of the EOOS Steering Group, sits on the Gender and Diversity Board of the EuroSea project, the External Advisory Board for EMBRsea, EuroFleetsPlus and the EU Blue Cloud project. She has

edited 10 EMB Policy documents (<http://www.marineboard.eu/publications>) and she her google scholar account here: <http://tinyurl.com/zf8wrcb>

### **Dr Katy Hill, UK G7 Marine Science Co-ordinator**

Dr Katherine (Katy) Hill is an experienced science manager with a strong background in marine and climate science and the delivery of collaborative projects and programmes at the National, Regional and International levels.



As UK G7 Marine Science Coordinator, she is responsible for:

- Co-ordinating UK and wider G7 ocean observation activities with the Global Ocean Observing System (GOOS) and other relevant international bodies, through co-location and close working relationships.
- Coordinating and supporting broader global aims and working at the global scale to deliver UK and G7 initiative priorities.
- Supporting co-ordination of UK and wider G7 investment in existing and new observational technologies for sustained observations, e.g. biogeochemical sensors.
- Working with GOOS to identify gaps in the global observational network, and how best to fill them, e.g. application of new technology and/or increasing use of vessel underway data.
- Identifying opportunities to develop and sustain the GOOS going forwards, including opportunities for long-term sustained funding.

### **Professor Serge Guillas, University College London**



Serge Guillas is Professor of Statistics at UCL. He is also the Met Office Joint Chair in Data Sciences for Weather and Climate since 2020. He obtained his PhD (Paris 6 Pierre-et-Marie-Curie, France) in 2001. Then he was Postdoctoral Research Associate (Centre for integrating Statistical and Environmental Science) at the University of Chicago, USA over 2002-2004, Assistant Professor (Georgia Institute of Technology, USA) over 2004-2007, and joined UCL as Lecturer 2007-2009, Reader 2009-2016, and Professor since 2016.

He was vice-Chair of the SIAM activity group on Uncertainty Quantification over 2015-2016.

He is currently UK representative and Chair of the Working group on Uncertainties in the EU COST action “Accelerating Global science In Tsunami Hazard and Risk analysis” (AGITHAR, 25 countries).

Serge is investigating Environmental Statistics, and Uncertainty Quantification of complex computer models. Applications to tsunami and climate are carried out with his PhD students and a postdocs. He is currently leading a project with the Universities of Exeter, Oxford and Warwick on Uncertainty Quantification of multi-scale and multi-

physics computer models at the Alan Turing Institute. He also founded the Uncertainty Quantification interest group of the Alan Turing Institute. Serge has been leading multiple projects on tsunami risk for India, Indonesia, USA and Canada.

### **Dr Ekaterina (Katya) Popova, National Oceanography Centre**

Katya Popova is an ocean modeller with expertise in the impact of climate change on ocean dynamics, ecosystems and society. She leads the ocean biogeochemistry modelling team at the National Oceanography Centre and has published over 80 peer-reviewed publications.



During the past ten years, Katya has been working with challenges of the Global South, focusing on the African regions highly dependent on the ocean for economic stability, food security, and social cohesion.

Katya is a co-director of the GCRF [SOLSTICE](#) project which brings together recent advances in marine technologies, local knowledge and research expertise to address challenges facing the Western Indian Ocean region.

Katya is actively working at the interface of science and policy: from fisheries and blue economies of the developing nations to the UNCLOS BBNJ negotiations. She is a lead educator of the NOC Massive Open Online Course “Ocean Science in Action: Addressing Marine Ecosystems and Food Security”.

### **Dr Tania Mendo, University of St Andrews**



Tania Mendo is researcher at the Scottish Oceans Institute. She has worked in fisheries related science focusing mainly on marine invertebrates for more than 10 years. Her work has focused on the integration of biology and ecology into fisheries management strategies. She has worked on applied science projects for the scallop, lobster and crab fishing industries. Her latest research has focused on developing and refining methods to gather spatio-temporal information of fishing activities, catch and bycatch in small-scale fisheries operating in the North Sea and South America. She is currently working on a GCRF-funded project to increase the resilience of fisheries to COVID in Peru.

## **Professor Melanie Austen, University of Plymouth**

Mel Austen is Professor of Ocean and Society at the University of Plymouth. For over 20 years she has been leading and delivering a broad spectrum of interdisciplinary research projects and programmes in a marine context within the UK, EU and internationally. She has undertaken and led research across the multiple and interacting sectors of the blue economy and the broader marine natural capital, ecosystem services and their benefits including the natural science underpinning these, their social and economic importance, the impacts and risks of their exploitation, and management and regulatory options.



Mel aims to support policy development, regulation and management for sustainable ecosystems in the UK and internationally. Her research therefore integrates natural, economic, social, and public health sciences to examine and quantify societal consequences and policy relevance of changes to the marine environment and its ecosystems.

Mel is currently a member of the UK Government's Natural Capital Committee and of its Joint Nature Conservation Committee, Chair of the Partnership of the UNESCO Biosphere Reserve in North Devon, and a member of the Board of Canadian Healthy Oceans Network (CHONe2). She served a three year term as the first Chief Scientific Advisor to the UK's Marine Management Organisation. Mel was previously Head of Biodiversity at Plymouth Marine Laboratory and Head of Science for its Sea and Society area which she built up from 2011-2020.

Mel currently leads UKRI GCRF funded research in support of coastal communities of developing countries in SE Asia ([www.blue-communities.org](http://www.blue-communities.org)), and has a leadership role in UKRI NERC funded [SWEEP](#) which creates impact from research in support of the economy and environment of SW England. She has had leadership roles in several EU projects.

Mel has a degree and a PhD in marine biology and ecology and over 100 peer reviewed publications.

## **Dr Emma McKinley**



Dr Emma McKinley (@EmmaJMcKinley) is currently a Research Fellow at Cardiff University. Her research focuses on understanding the complex relationship between society and the sea, taking account of diverse types of perceptions, attitudes and values held by different communities and audiences, and considers how this insight can be used to support effective ocean governance. In September 2018, Emma founded the [Marine Social Science Network](#), a global, interdisciplinary community of researchers and practitioners working across marine social sciences, which she chairs. Emma is the current Chair of the

Royal Geographic Society's Coastal and Marine Research Group and is Co-Chair of the Marine Social Science Task Group of the UK's Marine Science Coordinating Committee.

**Dr Iain Williams, Director of Strategic Partnerships, NERC**

Iain Williams is Director of Strategic Partnerships at NERC, a post he has held since January 2020, where he is responsible for national environmental science capability and capital programmes; interdisciplinary capability and programme delivery; and, the digital environment.

Iain joined NERC after 20 years in numerous scientific roles in central government, including most recently Deputy Chief Scientific Adviser at the Department for Environment, Food and Rural Affairs (Defra), where he was responsible for Defra's science and research strategy and funding, domestic and international partnerships, independent scientific advice, and the use of emerging and disruptive technologies and methods, including leading on Earth Observation policy. Iain was previously the Home Office Science and Technology Counsellor in the British Embassy in Washington DC, Chief of Staff to the Home Office Chief Scientific Adviser, Head of Science Quality in Defra and held various research programme manager roles.

Iain's research background is entomology, epidemiology and population dynamics having held research posts at Imperial College, London and a PhD from the University of East Anglia.



## Links for discussion topics

### [The Net Zero Oceanographic Capability Scoping Project \(NZOC\)](#)

NZOC (Net Zero Oceanographic Capability) is a £250k scoping project funded by NERC to inform planning for the future low carbon oceanographic research capability in line with UKRI's objectives of becoming a net zero organisation by 2040. NOC's National Marine Facilities (NMF) division has been selected to lead a team of national experts investigating the drivers and enablers of future oceanographic research.

### [Oceanids](#)

The Oceanids programme underpins NERC's continued investment in marine autonomy as provided to the UK oceanographic community by the National Oceanography Centre. Delivered through UKRI's Industrial Strategy Challenge Fund (ISCF) and World Class Labs funding, Oceanids is building towards the provision of a low emission oceanographic research infrastructure ([Net Zero Oceanographic Capability](#)) as UKRI strives to become a carbon neutral organisation by 2040. Oceanids technologies are pushing the boundaries of marine autonomy, thereby enabling the UK to maintain its position as a global leader in sustainable, oceanographic science, delivering cost-effective public benefit and driving innovation for the growing blue economy.

Since 2016, Oceanids has been providing new and exciting autonomous capabilities with innovative vehicle, autonomy, data and sensing solutions opening new areas of opportunity for UK researchers and commercial marine technology users/developers. 2021 will see Oceanids continue to augment the capabilities of the NOC's 6-strong fleet of Autosub Long Range (ALR) high-endurance Autonomous Underwater Vehicles (AUVs) and complete trials of an all-new work class AUV for the National Marine Equipment Pool, Autosub 2000m Under-Ice (A2KUI) that will open new areas of ocean science to the research community. In partnership with the Scottish Association for Marine Science, the NOC will also continue to release updates of its C2 integrated command-control and data ecosystem that is providing a national standard for the operation of large AUVs and glider fleets.

### **2021, the 'Super Year'**

2021 is set to be a significant year, and hopefully a turning point, for climate change, and ocean science. The UK is taking on the [Presidency of the G7](#) at a critical time for the world, and as we prepare to co-host the 26th [UN Climate Change Conference of the Parties \(COP26\)](#) in November. The COP26 summit will bring parties together to accelerate action towards the goals of the Paris Agreement and the UN Framework Convention on Climate Change.

### [2021 is also the start of the UN Decade of Ocean Science for Sustainable Development 2021 – 2030](#)

The UN Decade of Ocean Science for Sustainable Development was born out of the recognition that much more needs to be done to reverse the cycle of decline in ocean health and create improved conditions for the sustainable development of the ocean, seas and coasts.

The [First World Ocean Assessment](#) released in 2016 notes the cycle of decline in the ocean health, with changes and losses in the structure, function and benefits obtained from marine systems. Over the coming decades, a changing climate, growing global population and multiple environmental stressors will have significant impacts. Science-informed mitigation and adaptation policies to global change are urgently needed.

Through stronger international cooperation, the 'Decade' will bolster scientific research and innovative technologies to ensure science responds to the needs of society:

- A clean ocean where sources of pollution are identified and removed
- A healthy and resilient ocean where marine ecosystems are mapped and protected
- A predictable ocean where society has the capacity to understand current and future ocean conditions
- A safe ocean where people are protected from ocean hazards
- A sustainably harvested ocean ensuring the provision of food supply
- A transparent ocean with open access to data, information and technologies
- An inspiring and engaging ocean where society understands and values the ocean.

The [International Working Group \(IWG\)](#), a subgroup of the [Marine Science Co-ordination Committee \(MSCC\)](#), will oversee the UK National Decade Committee (NDC). The specific terms and membership formation of the NDC are currently being reviewed, so more information will be released in due course about how to get involved. The IWG also plays a crucial role in coordinating UK marine science on the global stage, is a forum for assessing engagement with international initiatives and ensures that the UK Government has world leading advice and experts to support global marine science policy.



[The NOC Association of Marine  
Science National Capability  
Beneficiaries](#)

### **Members of the NOCA Steering Board**

Prof. David Thomas, Chair University of Bangor

Prof. Teresa Fernandes, Heriot Watt University

Dr Kate Hendry, University of Bristol

Dr Kerry Howell, University of Plymouth

Prof. Mark Inall, Scottish Association for Marine Science

Prof. Claire Mahaffey, University of Liverpool

Prof. Martin Solan, University of Southampton

Prof. Ros Rickaby, Challenger Society

Dr Simon Brockington, Marine Science Coordination Committee

### **The following attend meetings alternately:-**

Dr Mark James, Marine Alliance for Science and Technology for Scotland

Prof. David Paterson, Marine Alliance for Science and Technology for Scotland

### **In attendance**

Prof. Ed Hill CBE, National Oceanography Centre

Prof. Angela Hatton, National Oceanography Centre

Prof. Icarus Allen, Plymouth Marine Laboratory

### **Secretary**

Jackie Pearson, National Oceanography Centre

[jfpea@noc.ac.uk](mailto:jfpea@noc.ac.uk)

### **Images:**

Cover: Sarah Kay, Outdoor Swimming Society

NOCA image: Fishing boats on the Solent, Howard Marson