

MARINE AUTONOMY & TECHNOLOGY SHOWCASE



**National
Oceanography Centre**
NATURAL ENVIRONMENT RESEARCH COUNCIL

conference.noc.ac.uk/matshowcase

Tuesday 13 November 2018



Prof Ed Hill OBE
Executive Director NOC

Email: ehill@noc.ac.uk

Professor Ed Hill has served as Executive Director of the National Oceanography Centre (NOC) since 2010, previously holding the position of Director at NOC since 2005 and the Proudman Oceanographic Laboratory (NERC) in Liverpool 1999-2005.

Professor Hill's research background is in physical oceanography, specialising in the circulation of continental shelf seas and participated in over 20 research ship expeditions, half of these as Principal Scientist. During his years of research, Professor Hill authored numerous publications in learned journals.

Professor Hill has made a significant contribution by serving on numerous government, national and international advisory bodies. Including, the International Steering Group of the Global Climate Observing System (GCOS), the European Marine Board (EMB), the cross-Government UK Marine Science Coordination Committee (MSCC), and numerous International Advisory Boards. He heads the UK delegation to the Intergovernmental Oceanographic Commission of UNESCO.

Professor Hill BSc in applied mathematics from the University of Sheffield received his MSc and PhD degrees in oceanography from Bangor University and was subsequently recognised by both universities with the award of an Honorary Fellowship (Bangor) and an Honorary Doctorate of Science (Sheffield). He was appointed OBE in 2010 for services to environmental sciences.



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Major General R A Magowan (Rob) CB CBE Assistant Chief of Naval Staff (Capability) & Chief of Staff Navy Command HQ

Major General Rob Magowan CBE joined the Royal Marines in 1989 after reading Chemistry at Southampton University. On completion of Young Officer training he conducted a number of troop Command jobs, including a tour of Northern Ireland for a short period. He then commanded R Company, Comacchio Group and went on to be the Naval Assistant to Commander in Chief Fleet. He was then posted to Quantico where he attended the USMC Command and Staff Course, also gaining a Masters degree.

On returning from the US, he was posted to HQ 3 UK Division as a Plans Officer, during which time he deployed to Afghanistan on Operation FINGAL, the first ISAF deployment to Kabul. On promotion to Lt Col in 2002, he returned to 42 Commando as Second in Command, deploying to Kuwait and Iraq for Operation TELIC 1.

In late 2003 he began a three-year stint in London, beginning in the Cabinet Office Assessments Staff, working to the Joint Intelligence Committee. In 2005 he was promoted Acting Col, assuming the Deputy Head position in the Afghan Drugs Inter-Departmental Unit, based in the Foreign and Commonwealth Office. He assumed command of 30 Commando Information Exploitation Group Royal Marines in late 2006, deploying immediately on Operation HERRICK 5 to Helmand province. He was promoted to Col in early 2009 to take up a Deputy Head post in Defence Intelligence. He completed Higher Command and Staff Course in Jan 2011 and on promotion to Brigadier became Chief of Staff to the National Contingent Commander in Kabul for a year. He took up the post of Commodore Naval Personnel Strategy in early 2013 before becoming Commander Joint Forces Intelligence Group in Jan 2015.

On promotion to Major General in Jun 2016 he became Commandant General Royal Marines (CGRM) and Commander United Kingdom Amphibious Forces (COMUKAMPHIBFOR). He also took over as the Operation Commander of the European Union Naval Force (EUNAVFOR) Somalia. He assumed the current position as ACNS(Cap) and COS HQ in November 2017.

Married to Charlotte, he has two young daughters and is an active mountaineer who continues to lead expeditions across the world. He is also an avid reader of European political history and a keen, albeit amateur, cook.



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Aidan Thorn
Marine Robotics Innovation Centre Manager (MARSIC) NOC
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Aidan Thorn is the Manager of the NOC's Marine Robotics Innovation Centre, he has 17 years' experience of working for the NOC, largely in industry facing roles primarily focused around the centre's technology-related work. He became Innovation Centre Manager in May 2018. Aidan has an excellent track record of working with industry, academic and government partners to secure funding for collaborative R&D projects as well as commissioned research work for the NOC. He is the Chair of the NOC's Marine Autonomy and Technology Showcase Delivery Group, a member of the Marine Measurement Forum steering group and an elected member of the MASG Council.



Dr Maaten Furlong,
Head of MARS facility NOC
maaten.furlong@noc.ac.uk

Maaten Furlong joined NOC in 2005 as an AUV development engineer and has been involved in many aspects of research, development and operation of the Autosub AUV fleet. In 2013 he became the head of the MARS facility where he now oversees the operations and development of the AUV, subsea glider, unmanned surface vehicle, and ROV fleet. He is actively involved in improving the operational efficiency of the fleet, has won Innovate UK funding to develop the next generation of marine autonomous systems, and is technical advisor for the £16M Oceanids Programme



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Dr Ekaterina Popova
Principal Scientists SOLSTICE Project NOC

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I am a global ocean modeller with 60+ peer-reviewed publications in the area of modelling biophysical interactions. I lead the ocean biogeochemistry modelling sub-group.

My main area of expertise is in the impact of climate change on ocean dynamics and ecosystems.

I am particularly interested in two regions:

- The Arctic Ocean and its transition to the seasonally ice-free state under continuous global warming and
- Western Indian Ocean and climate impacts on its living marine resources.

As well as my scientific research, I am interested in policy and industry uptake of global high resolution modelling



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Dr Bett

Senior scientist National Oceanography Centre bjb@noc.ac.uk

Obtained a first class honours BSc degree and PhD in marine biology from Heriot-Watt University (Edinburgh, UK). He joined the Institute of Oceanographic Sciences in 1989 and relocated to the Southampton Oceanography Centre in 1995; later renamed the National Oceanography Centre (NOC). The deepseas group's research effort covers a broad span of science (taxonomy, biology, ecology, genetics, biochemistry and physiology), environments (shelf seas, continental margins, abyssal plains,), geographic regions (Atlantic, Pacific, Indian, Arctic and Antarctic Oceans) and funding modes (NERC, UK Government, EU, Industry, and NGO). Dr Bett has extensive field experience, participating in over 50 oceanographic research cruises (12 as Principal Scientist), and has published over 200 scientific articles. He has particular expertise in quantitative ecology and biometry (biological statistics), a broad knowledge of deep-sea zoology and habitats, and extensive experience of the field operation of a broad range of sampling and surveying technologies. Brian has worked with NOC's AUVs Autosub2, Autosub3, Autosub6000, and GEOMAR's AUV *Abyss* (REMUS 6000), and is currently planning *Gavia* AUV missions in the Indian Ocean for 2019.



Sarah Jane Brown

Product Manager, Surface Ship Systems

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ATLAS ELEKTRONIK UK LTD

Sarah is a chartered mathematician with over 20 years' experience in the maritime defence industry, principally in mine countermeasures (MCM) research and operational analysis. Having worked since graduation for DRA, DERA and QinetiQ, Sarah is currently Product Manager within AEUK's Surface Ship Systems Division, with a portfolio covering MCM product sales with projects including the UK Sweep Capability. Previously Sarah managed AEUK's MOD research for MHC, Autonomous Systems and AEUK's modelling capability.



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Matthew Brannan
Senior Surveyor EIVA
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Matthew has over 11 years' experience in the offshore subsea, survey & positioning industry. After graduating from Aberdeen University, he started his career at Subsea 7 working offshore as a Senior Data Processor before moving onshore to support projects as a Geomatics Specialist.

Matthew has worked for EIVA since 2015 and is the UK & Ireland EIVA sales representative, supplying hardware and software to their Clients. In his support capacity he provides training & technical support to EIVA users, develops the suite of offline eLearning modules as well as being involved in software development and improvements. He is also one of EIVA's data processing experts. In his career he has manually processed thousands of km's of pipeline inspection campaigns, so understands the need for increased automation within our industry.



Dr Jonathan Evans
Director / Founder MarynSol
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Founded MarynSol in 2016 with the aim to bring the advantages of marine autonomy to new industry sectors, including marine renewables and aquaculture. Over 20 years of experience in marine technology and autonomous systems, including the new technology lifecycle from development, de-risking field-tests to product sales and support. Personally responsible for several "world's firsts" in the use of autonomous marine systems.



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Auguste Bourgois
Research Engineer Forssea Robotics & ENSTA Bretagne
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Auguste Bourgois received his French engineering diploma in mobile robotics from ENSTA Bretagne and his MSc in autonomous robotics from Heriot-Watt University in 2017.

Since then, he is working as a research engineer at Forssea Robotics and is doing a PhD at ENSTA Bretagne. His main fields of research are control theory applied to marine robots, underwater localisation and interval analysis. He is currently developing the docking algorithms used by Forssea's underwater robot, Atoll.



Mark Wood
Ocean Sonics Limited, Canada
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Architect, problem solver and renegade. Mark has been designing acoustic systems for more than 2 decades. Acoustic positioning, calibration, low frequency, high frequency and occasionally quirky, such as the bovine EKG processing system based acoustic processing principles. Mark has logged many months at sea testing systems & gathering data, and this experience drives the overall form of products now being developed. All instruments must be deployable, usable & durable. With a background in electronic engineering, and an MSc in instrumentation & control, he is a hands-on person, equally at home in the field or with users telling them about the things they can do with their Smart Hydrophones



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Dr Eleanor Frajka-Williams
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Associate Professor in Physical Oceanography, Ocean and Earth Science, University of Southampton (2016-2018)
Lecturer in Physical Oceanography, Ocean and Earth Science, University of Southampton (2012-2016)
Senior Research Fellow, National Oceanography Centre, (2009-2012)
PhD Physical Oceanography, University of Washington, USA (2009)
MSc Applied Mathematics, University of Washington, USA (2009)
MSc Oceanography, University of Washington, USA (2005)
AB Applied Mathematics, Harvard University, USA (2002)



Prof Karen Heywood
University of East Anglia
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Karen Heywood is a physical oceanographer at the University of East Anglia. In 1995 she became the UK's first (and still the only?) female professor of physical oceanography. She leads research into marine physics, ocean circulation, and ocean processes that are important for understanding climate, marine ecosystems and biogeochemical cycling. She focuses on ocean observations, with a particular interest in Antarctic processes and the interactions between ocean and ice. She is an enthusiastic early adopter of new technologies. Since 2009 she has led UEA's ocean glider research group, owning and operating a fleet now numbering 10 gliders, with campaigns worldwide.



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Dr Gordon Clark
**Chief Engineer for Autonomous Undersea Systems for General
Dynamics Mission Systems, Quincy, MA**

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Dr. Gordon Clark is the Chief Engineer for Autonomous Undersea Systems for General Dynamics Mission Systems, Quincy, MA. Dr. Clark serves as primary liaison to the technical community for GDMS Bluefin vehicles, and is responsible for architecture assessment and development, for providing subject matter expertise to customers, and for technical oversight of engineering functional teams. Dr. Clark has over 15 years of experience in autonomy research and development, mine countermeasures analysis, engineering management, and DoD consulting, as well as over 10 years of experience as a software engineer, and an additional 7 years of experience as a research mathematician. Dr. Clark is the author of 7 peer reviewed scientific journal articles in mathematics and one conference proceedings article in computer science, and holds a Doctor of Philosophy degree in Mathematics from the University of Texas at Austin.



Mr Joe Tidball
Survey Manager Rovco

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Joe Tidball is Survey Manager of Rovco, a subsea survey and technology company based in Bristol. He has a Masters in Hydrographic Survey and a wealth of survey experience. Joe is part of the team behind SubSLAM, Rovco's newest innovation that sees live 3D, machine learning, and artificial intelligence combined for a far higher standard of survey.

