

# 2020 | BIG DATA IN MARINE SCIENCE

7<sup>TH</sup> EMB FORUM

European  
**MARINE BOARD**  
Advancing Seas & Ocean Science

📍 WEBINAR

SPEAKERS | 23 OCTOBER 2020

10.00 – 11.00  
OPENING SESSION



### GILLES LERICOLAIS

Gilles is Chair of the European Marine Board and was elected to this role in June 2019. He is presently acting as Scientific Officer for the French Prime Minister General Secretariat for the Sea. From 2011 to 2020 he was the European and International Director of Ifremer. He received his PhD (1997) and Professorship (2009) in marine geology. He has been chief scientist of more than 10 scientific cruises. From 2007 to 2013, he was nominated Vice-Chair and then Chair of the Site Survey Panel for IODP and Chair of the ECORD Facility Board for IODP from 2016 to 2018, and is now acting as Vice-Chair. He is a member of the Internal Advisory Committee of JPI Oceans and Vice-Chair of the French Committee for the IOC of the UNESCO and is a member of the Board of Trustees of POGO since January 2019.



### ANDREEA STRACHINESCU

Andreea is Head of Unit for Maritime Innovation, Marine Knowledge and Investment in the Directorate General for Maritime Affairs and Fisheries of the European Commission. She is responsible for promoting innovative and emerging technologies and solutions, and ensuring broad dissemination of marine knowledge and research. The Unit fosters innovation and provides policy input to Horizon 2020, future Horizon Europe and to smart specialisation strategies and it aims to create a better understanding of ocean resources and advocate for their sustainable use. Prior to this position, Andreea was Head of Unit responsible for New Energy Technologies and Innovation in the Directorate General for Energy, European Commission.



### LIONEL GUIDI

Lionel Guidi, is a CNRS Oceanographer/Biogeochemist at the Laboratoire d'Océanographie de Villefranche since 2013. He was awarded a PhD in 2008 both at the Université Pierre et Marie Curie (France) and at Texas A&M University (USA). His research interests span from plankton diversity to the Ocean Carbon Cycle with a focus on the Biological Carbon Pump (BCP) linking the two topics. Over the past 10 years, he has been using standard biogeochemical approaches as well as innovative methods in imaging and genomics to look at plankton and particle dynamics across spatial and temporal scales and their relative importance in the BCP. He is one of the Coordinator of Tara Oceans, since 2016 and has also been actively involved in the French node of the European Research Infrastructure EMBRC-France since 2017 as member of the CoPil committee.



## LINWOOD PENDLETON

Linwood is the Conservation and Innovation Advisor at the Ocean Data Foundation and REV Ocean, and is the Global Ocean Lead Scientist at WWF. He also holds the International Chair of Excellence at the European Institute for Marine Studies, a Senior Fellowship at Duke's Nicholas Institute for Environmental Policy Solutions (NIEPS), and an Honorary Professorship at the University of Queensland's Global Change Institute. Linwood has broad experience in marine conservation science with degrees in biology (William and Mary), ecology/evolution/behavior (Princeton), public administration (Harvard), and environmental economics (Yale). Linwood served as the Acting Chief Economist for NOAA from 2011-2013, and is an Adjunct Associate Professor at the Duke University Marine Laboratory. He has also collaborated with conservation organizations worldwide including WWF, The Nature Conservancy, Environmental Defense Fund, NRDC, and he served for nearly ten years on the Board of the Conservation Strategy Fund. He currently serves on the Executive Planning Group of the United Nations Decade of Ocean Science for Sustainable Development, the MarineGeo Advisory Council, the GEO Blue Planet steering committee, and the Marine GEOBON RCN.



## NATALIJA DUNIC

Natalija has been a EMB Young Ambassador since 2020. She has a MSc in Physics from the University of Split, Croatia, and a PhD in Geophysics from the Faculty of Sciences at the University of Zagreb, Croatia. Her PhD research was conducted at the EMB Member the Institute of Oceanography and Fisheries in Split (IZOR), where she investigated the Adriatic Sea thermohaline circulation using several regional climate models. Currently, she is undertaking a postdoctoral programme at IZOR granted by the Ministry of Science and Education in Croatia, in which her main research will be the impact of different climate change scenarios on the Adriatic Sea thermohaline properties, the latter conditioning the life of marine habitants, in particular of those who have low tolerance levels for temperature and salinity changes.



## ALBA GONZÁLEZ VEGA

Alba has been a EMB Young Ambassador since 2019. She holds a BSc in Biotechnology from the University of Salamanca, Spain, and a MSc in Oceanography from the University of Las Palmas de Gran Canaria (ULPGC), Spain. She is currently undertaking a PhD programme in Oceanography and Global Change (ULPGC), developing her research at the Spanish Institute of Oceanography (IEO), a EMB member institution. She is working on a multidisciplinary study of the submarine volcano Tagoro (Canary Islands, Spain), which erupted in 2011 and still remains active in a degassing stage. Her work intends to assess the impact of the hydrothermal emissions from this shallow volcano on the physical, chemical and biological properties of the local marine environment.



## LIAM LACHS

Liam has been a EMB Young Ambassador since 2019. He has a diverse background in marine science from his bachelor degree (National University of Ireland Galway) and Erasmus Mundus masters in Tropical Biodiversity and Ecosystems (Vrije Universiteit Brussel), receiving the VLIZ MSc Thesis Award for his collaborative thesis entitled “Sewage-derived resort runoff threatens coral reefs? a pilot isotopic assessment of nitrogen at Pulau Redang, Malaysia”. He has experience in aquaculture and fisheries, has worked as an Erasmus+ Trainee on demographic modelling of coral bleaching, and is starting his PhD on scaling-up assisted evolution as a method of coral reef restoration under the ERC project CORALASSIST at Newcastle University. His research is funded by EMB member NERC.

11.30 – 12.30

## THE EUROPEAN GREEN DEAL



## JEROEN STEENBEEK

Jeroen is a classically trained software engineer with over 25 years of experience in industrial and academic software development. He is a core programmer of the Ecopath with Ecosim (EwE) food web modelling approach since 2005. His main research interest is solving ecosystem-modeling challenges by simplifying the interactions between science and technology using state-of-the-art computing paradigms, programming languages, GIS, and serious gaming. He participates in ecosystem modeling research projects around the globe, and has authored over 60 research papers in scientific journals. Jeroen holds an MSc in GIS, and recently started a PhD in marine ecology to address the global need to better fit and validate spatial-temporal marine ecosystem models for policy uptake. Within the MSP Challenge he focuses on the integration of the Ecopath with Ecosim integration into serious game play.



## ANTONIA LEROY

Antonia is Head of Ocean Policy at the WWF European Policy Office. WWF is a member of several advisory councils concerning EU policy preparation, including the Market Advisory Council (MAC) and the Long distance Advisory Council (LDAC). The mission of the WWF European Policy Office is to ensure that policies are adopted and implemented for the sustainable management and use of our seas, and to secure the protection of marine wildlife and habitats for the benefit of people and nature. Antonia leads the implementation of WWF’s objectives to secure healthy ocean ecosystems and sustainable fisheries at EU level. She is an expert on ocean governance and has worked for many years on in IUU fishing issues, including those related to geopolitical instability and security.





### CLEA PARCERISAS

Clea received her Master of Industrial Engineering at the Polytechnic University of Catalonia (UPC), where she specialized in automatics and robotics. Her Master Thesis introduced her to the marine field, where she simulated the propagation of shipping noise from AIS data. She is currently doing her PhD at the Flanders Marine Institute (VLIZ) together with the waves group of University of Gent. Her main topic is marine soundscape characterization.



### ONDREJ SOCUVKA

Ondrej is currently serving as Public Policy and Government Affairs Manager for Google Europe in Brussels, following his previous role with Google CEE. Ondrej has more than fifteen years of EU policy and international public affairs experience. Before Google, Ondrej worked as Economic Advisor to US Ambassador in Slovakia and as a Member of the Advisory Team of the Prime Minister of the Slovak republic. Ondrej holds a Masters Degree in Business Administration from the University of Economics in Bratislava and PhD in online marketing and communication from Constantine the Philosopher University in Nitra. He studied in Italy, at Georgetown University in Washington DC and in Rotterdam. He is co-founder of Slovak Alliance for Internet Economy and is a member of Slovak chapter of the Fund for American Studies.



### FELIX LEINEMANN

Felix is Head of Unit for Blue Economy Sectors, Aquaculture and Maritime Spatial Planning in the European Commission's Directorate General for Maritime Affairs and Fisheries. He and his team promote a sustainable blue economy for the benefit of humankind and the oceans. Felix has worked for the European Commission since 2003 in various fields including fisheries and maritime policy, shipping, aviation and urban transport, as well as the EU's global navigation satellite system Galileo. His previous positions include being a member of cabinet of the Transport Commissioner, as well as a posting as Transport Counselor in the EU Delegation in Washington, DC, between 2012 and 2014. Mr Leinemann holds a PhD from the University of Freiburg, Germany, following law studies in Germany and Italy. Before joining the Commission, he worked as a lawyer and advocacy officer in Germany, France and Belgium.

14.00 – 15.00

## THE EU BIODIVERSITY STRATEGY



### SAKINA-DOROTHÉE AYATA

Sakina-Dorothee is a marine ecologist, Associate Professor at Sorbonne University (SU), France. She is a former student at the École normale supérieure (ENS) in Paris where she studied both ecology and computer sciences. She uses numerical tools (including statistics and modelling) to better understand the structure and the functioning of life in the ocean. She is currently a visiting researcher at CNRS to work on plankton genomic data. She is now co-head of the FORMAL team (From ObseRving to Modelling oceAn Life) of the Institute of Computing and

Data Science (ISCD) of SU. FORMAL aims to develop new methods to analyse and combine high throughput data in oceanography, including omics, imaging, acoustics, and satellite data, and to improve existing marine ecosystem models based on these data.



### PATRICK ROOSE

Patrick has been Director of the Operational Directorate Natural Environments of the Royal Belgian Institute of Natural Sciences (RBINS) since 2013. As its director, he is responsible for the general management of OD Nature's 3 key roles: policy support in the field of biodiversity in general and marine management in particular, providing scientific services including management of RV Belgica, and fundamental and applied scientific research. The directorate is responsible for the practical and scientific follow-up of national monitoring obligations

(MSFD, OSPAR, WFD, ...), in close collaboration with the cabinet of the Secretary of State for the North Sea, DG Environment and Belgian scientific institutes and universities. Patrick has a PhD in environmental analytical chemistry from the Free University of Amsterdam and more than 29 years of experience in the fields of marine chemistry, marine monitoring and marine management.



### ANNE TELLER

Anne is a senior expert in the Directorate-General for Environment of the European Commission. She graduated as a Forest Engineer from the University of Brussels and completed her Master of Science in Forest and its relation to Land Management at Oxford University. Anne has more than thirty years of experience in European environmental policy. She has worked at regional, national and European level. Her specific domain of interest is the improvement of the knowledge and evidence base for environment policy. Anne coordinated the first EU

wide ecosystem assessment to support biodiversity policy.



### PATRICIA MARTIN-CABRERA

Patricia is a marine biologist with experience in biodiversity projects, both at the scientific level and project management. She is a member of the Data Centre in the Flanders Marine Institute (VLIZ), where her work focuses on the integration of new types of biological observations in the European marine infrastructures. She is leading the phyto-zooplankton Essential Ocean Variables (EOV) demonstrator, which will demonstrate the potential of the thematic European Open Science Cloud (EOSC) project Blue-Cloud.



### WARD APPELTANS

Ward is the marine biodiversity focal point at UNESCO's Intergovernmental Oceanographic Commission (IOC) and coordinates the Ocean Biodiversity Information System (OBIS), a global data platform that integrates, quality controls and provides access to over 60 million records of any marine organism. OBIS is built by the contribution of thousands of scientists who collaborate with data managers to make scientific data available for research, management and public awareness. Ward has a MSc in Environmental Biology (Free

University of Brussels). He was the manager of the World Register of Marine Species database, council member/secretary of the Society for the Management of Electronic Biodiversity Data (SMEBD) and was involved in the biological component of the European Marine Observation and Data Network (EMODnet) and the LifeWatch taxonomic backbone.

15.30 – 16.30

## THE DIGITAL TWIN OCEAN



### NEIL DAVIES

Neil is Director of the University of California's Gump South Pacific Research Station on Moorea (French Polynesia), which hosts the only coral reef site in the U.S. National Science Foundation's Long-Term Ecological Research (LTER) network. As a Senior Fellow at the Berkeley Institute for Data Science, his research addresses social-ecological systems from genes to satellites, and the collective intelligence needed for sustainable development. Through the Island Digital Ecosystem Avatar (IDEA) Consortium, he is working to develop Polynesian islands,

and their massive Exclusive Economic Zones, as model systems for sustainability science. Davies graduated in Zoology from the University of Oxford and has a PhD in Genetics from University College London. He serves on the boards of the Genomic Standards Consortium and Tetiaroa Society. He is co-author of the book "Biocode: The New Age of Genomics" (Oxford University Press, 2015).



## CHRISTIAN KIRCHSTEIGER

Christian works within the European Commission's Directorate-General for Communications Networks, Content and Technology. His e-infrastructure and Science Cloud is responsible for initiatives in relation to developing more convergent European high performance computing, cloud and artificial intelligence infrastructures, notably the Green Deal "Destination Earth" initiative. He holds a PhD in Nuclear Physics and was, before joining the European Commission in 1996, working in industry and research in South Africa, Japan and Germany in the areas of nuclear safety and energy systems modelling. He has previously worked at the European Commission's Joint Research Centre and the European Commission's Directorate-General for Energy. Since 2017 he is responsible for policies and initiatives integrating cloud computing with advanced systems modelling for the purpose of EU policy support.



## MARILAURE GRÉGOIRE

Marilaure is FNRS Research Director and Professor of marine ecosystem modelling at University Liège, Belgium. She graduated in physical engineering and has a PhD in Applied Sciences on the development of three-dimensional numerical models that couple physics and biogeochemistry. As head of the Modelling for Aquatic SysTems (MAST) research group, she leads the development of modelling approaches targeted towards the understanding and prediction of the impact of human activities on health of the marine environment. The MAST group is currently involved the Copernicus Marine Environment and Monitoring Service (CMEMS). Marilaure is currently coordinating an ESA research initiative (EO4SIBS) on the use of Earth Observations for supporting marine applications, is co-chairing the Global Ocean Oxygen Network (GO2NE) of the Intergovernmental Oceanographic Commission and is member of the Scientific and Technical Advisory Committee of the Copernicus Marine Environment and Monitoring Service.



## SERGE SCORY

Serge is the Head of the Belgian Marine Data Centre (BMDC, the Belgian federal National Oceanographic Data Centre). The BMDC is a unit within Operational Directorate "Natural Environments" of the Royal Belgian Institute of Natural Sciences. Serge graduated as a Constructions Engineer at the University Liège, with a specialization in hydraulic structures and marine engineering. Serge also holds a complementary Master degree in Oceanology. In 1988, Serge's Department got the opportunity to develop its own IT infrastructure, welcoming the first "supercomputer" in a public agency in Belgium, and Serge was in charge of managing this infrastructure. Since last year, Serge chairs the SeaDataNet Association, a newly created legal entity that represents the partners of the SeaDataNet infrastructure.



## KATE LARKIN

Kate is Head of Marine Knowledge and Research at Seascope Belgium and Deputy Head of the Secretariat of the European Marine Observation and Data Network (EMODnet), a long-term marine data sharing initiative of the European Commission Directorate-General for Maritime Affairs and Fisheries. Together, the EMODnet network consists of more than 120 organisations assembling marine data, and metadata, and creating added value data visualisations and data products to make these fragmented resources more available to public and private users.

A deep-sea biogeochemist by training, Kate started her career at the National Oceanography Centre in Southampton, UK. She moved to Belgium in 2012 to join the European Marine Board Secretariat, serving as Acting Head of the Secretariat in 2017. She joined the EMODnet Secretariat as Deputy Head in 2019, and plays a leading role in EMODnet's coordination activities and strategic partnerships, including the Copernicus Marine Service, Marine Research Infrastructures and the wider marine and maritime community.



## FABIENNE JACQ

Fabienne brings her expertise to the European Commission as part of the Copernicus unit of the Directorate-General for Defense Industry and Space. The unit is in charge of the marine service, the evolution of the services at mid-term and the monitoring of Sentinel ocean missions such as Sentinel3 and Sentinel6. She graduated in solid state physics in 1988. She initially worked in the space sector as a system architect and then specialized in interfaces with users for the development of Earth Observation missions. She joined the GMES and then Copernicus

programme in 1999 and took responsibility for follow the development of the Copernicus services including in the emergency service within Airbus and then the marine environment service in CLS, a subsidiary of the French Space Agency specialized in marine and maritime space-based services, and partnering with Mercator-Ocean international. She was both deputy director of the space oceanography division and director of data collection division at CLS. In 2016, she joined EUMETSAT to keep working on the future of Copernicus on the public side, working in the Strategy Division.

16.30 – 16.45  
CLOSING SESSION



### RICARDO SERRÃO SANTOS

Ricardo is the Portuguese Minister of Maritime Affairs, and was an MEP between 2014 and 2019. He has a background in Biology and Animal Ecology, and is Principal Researcher at the University of the Azores, Pro-Rector of the University of the Azores and President of IMAR – Institute of Marine Research. Ricardo has been dedicated to the study of marine biodiversity and ocean ecosystems and has more than 400 published works of which more than 200 papers. He holds positions in several scientific advisory bodies and committees among

which the Oceanographic Institute of Paris. He is Specialty Chief Editor of *Frontiers in Marine Science/ Deep-Sea Environments and Ecology*, and is a member of the Portuguese Academy of Sciences and Emeritus Member of the Portuguese Navy Academy. He has received several honourable mentions and awards, among which a «Gift to the Earth» by WWF in 2002, the “Insignia Autônômica de Reconhecimento” awarded by the Legislative Parliament of the Azores and the Azores Government in 2012, commended “Chevalier de l’Ordre de Saint Charles” by SAS Prince Albert II of Monaco in 2013, awarded the Prize “Excellence Mare” awarded by PwC Portugal in 2017.



### SIGI GRUBER

Sigi is Head of the Healthy Oceans & Seas Unit, in the Directorate General for Research and Innovation of the European Commission. The Unit is supporting the transition to a healthy planet, which is climate neutral by 2050, and operating within safe planetary boundaries, and provides the Secretariat to the future Horizon European Mission Ocean. Sigi started to work for the European Commission in 1991, with different responsibilities in the area of Education and Training as well as Research, the European Institute of Technology and International

Cooperation. Prior to joining the European Commission, she worked in the public and private sector in Italy and Germany.



# 20 | BIG DATA IN <sup>7<sup>TH</sup></sup> EMB 20 FORUM MARINE SCIENCE

The European Marine Board Biennial Open Forum acts as a platform to bring together a wide range of marine science stakeholders to discuss and share knowledge, identify common priorities, develop common positions and collaborate. The 7<sup>th</sup> EMB Forum will foster discussion and collaboration to advance the role of big data, digitalization and artificial intelligence in marine science to support the European Green Deal, the post-2020 EU Biodiversity Strategy, and the development of a Digital Twin Ocean.

Big data is rapidly transforming our society and is leading to a paradigm shift in the way we face major challenges including climate change and the sustainable management of marine resource use. With the expansion of the scale and scope of ocean observing systems and other data sources, there is an increasing flood of highly complex ocean data being generated, often in near real-time. Data need to be integrated and readily available to support decision-making, which can be assisted by artificial intelligence. Find out more in the EMB Future Science Brief No. 6 'Big Data in Marine Science'.



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