

Annual Report 2015

EUROPEAN MARINE BOARD

The European Marine Board provides a pan-European platform for its member organizations to develop common priorities, to advance marine research and to bridge the gap between science and policy, in order to meet future marine science and societal challenges and opportunities.

The European Marine Board was established in 1995 to facilitate enhanced cooperation between European organizations involved in marine science. Today, EMB represents 35 member organizations (research funding bodies, research institutes and nationally-based consortia of third-level institutes). Through the EMB, these organizations work together to develop a common European vision on the research priorities and strategies for marine science.

The EMB provides the essential components for transferring knowledge from the scientific community to decision makers, promoting Europe's leadership in marine research and technology. Adopting a strategic role, the EMB provides a unique forum within which marine research policy advice to national agencies and to the European Institutions is developed, with the objective of promoting the establishment of the European Marine Research Area.

www.marineboard.eu



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Highlights 2015

1. **EMB working group Training 2nd meeting**, 14-15 January, Brussels (page 20)

2. **EuroMarine workshop**, 23 February, Naples

3. **Stakeholder Group meeting for the Galway Statement**, 23 February, Brussels

4. **AtlantOS General Assembly**, 10-12 June, Brussels (page 25)

5. **EMB Spring Plenary**, 29-30 April, Ghent (page 15)

6. **EU H2020 Sea Change kick-off meeting**, 12-14 May, Plymouth (page 26)

7. **EMB-EuroGOOS joint workshop on EOOS**, 12-13 May, Brussels (page 22)

8. **European Maritime Day (EMD)**, 28-29 May, Piraeus (page 29)

9. **EMD workshop 'How innovative training can support Blue Growth'**,
28 May, Piraeus (page 30)

10. **EMD workshop 'Maritime Cultural Heritage and Blue Growth:
What's the Connection?'**, 28 May, Piraeus (page 32)

11. **14th International Deep Sea Biology Symposium**, 31-2 September, Aveiro

12. **Launch of Position Paper 22, Delving Deeper**, 1 September, Aviero (page 19)

13. **EMB Autumn Plenary**, 14-15 October, Split (page 17)

14. **EMB 5th Forum, the Ocean-Climate Nexus**, 21 October, Brussels (page 27)

15. **Ocean Leadership Members' Meeting**, 27-30 October, Washington D.C.

16. **Launch of Policy Brief 2, Delving Deeper**, 11 November, Brussels (page 19)

17. **COP21 UNESCO**, 3 December, Paris (page 27)

18. **The Oceans Day COP21**, 4 December, Paris (page 27)

Images from some of these highlight events are shown on the left (page 4) and throughout the report.

Message from the Chair



Our appreciation and understanding of the complex links between social and ecological systems has advanced significantly in the last decade. Science is transforming into a multidisciplinary endeavour and our scientific community is adapting to this shift, but it is not a simple process and there is still much progress to be made. We need to continually innovate in how we train young scientists, providing them with a core expertise but complementing this with a broader, multidisciplinary skill set. There needs to be a cultural shift too, in the way we measure performance and success among scientists – this remains rooted in an older system.

More than ever, we need collaborative and strategic organizations like the European Marine Board. EMB provides a valuable platform for our members to identify trends, challenges and opportunities, both scientific and societal, and to provide independent strategic advice to European and national policymakers and research funding agencies on the priorities and needs for future seas and ocean research. Europe may have several networks dedicated to marine and maritime science and innovation, but the EMB is one of the few with an exclusively strategic role and the only one that addresses the full spectrum of marine science. That means we continue to provide a crucial service to science and to society.

Our 2015 Annual Report provides a summary of the important work that the Board has been doing and some of the highlights and successes we have enjoyed. Our members' meetings are especially important and I had the privilege to host the 2015 spring plenary meeting in the historic Het Pand buildings at Ghent University. The meeting was a great success, helped by the introduction of a new format to enhance the scientific interest of the meeting. We held a special session on the changing legal and policy framework for the study and utilization of marine biodiversity and implications for marine scientific research. We also acknowledged the importance of connecting to young researchers by organizing a programme of flash presentations by UGhent PhD researchers. Finally, we had, for the first time, a plenary evening lecture provided by Professor Mike Depledge of the University of Exeter.

This very successful format was repeated at the Autumn plenary which was held in the beautiful city of Split in Croatia, hosted by the Croatian Institute of Oceanography and Fisheries (IZOR). The special session in Croatia focused on *New Paradigms in Fisheries Management* and our evening lecture, provided by EMB delegate for CoNISMa (Italy), Nando Boero, took a look at the science needs for achieving Good Environmental Status in European marine waters. I would like to thank Ivica Vlibic, EMB delegate for IZOR, and Nedo Vrgoč, Director of IZOR, for their wonderful hospitality in Split.

Towards the end of 2015, climate change was high on the global political agenda. The United Nations Framework Convention on Climate Change (UNFCCC) COP21 meeting was held in Paris in December and two days in the parallel conference were dedicated to the ocean. The ocean has traditionally been absent from the UNFCCC discussions and the EMB membership had agreed in 2014 that our members should provide a collective voice on the critical links between the ocean and climate (change). Working with the U.S. Consortium for Ocean leadership, we put in place European/U.S. expert working group chaired by EMB Delegate, Michael Schultz, to prepare a short statement on the critical role of the ocean in the climate system and climate change. The excellent statement that resulted was launched on 21 October at the 5th EMB Forum hosted in the European Parliament by MEP and former EMB vice-Chair, Ricardo Santos. The EMB Secretariat and colleagues in the U.S. worked hard to communicate and disseminate the statement in the six weeks between our Brussels Forum and the COP21 meeting in December. There is still much more for the ocean community to do in this area. Since our Forum event, EMB has been invited to join the Ocean Climate Platform to progress this issue in a collaborative way within a broader global community of scientific and environmental advocacy organizations (further details can be found on pages 28-29 of this report).

By the end of 2015 it had become clear to our membership that the future of EMB will be best served by taking full control of our own affairs through the formation of an independent legal entity. Preparations for the founding of a new international non-profit-making association under Belgian law were well underway by the end of the year. It has been a long road towards this decision and, since our establishment in the 1990s, we have enjoyed a fruitful and beneficial partnership with the European Science Foundation. Our separation from ESF, which has itself transformed into a new and different organization, will take time, but the process has started. I would like to already express my appreciation to ESF on behalf of the full EMB membership for its long-standing support to the EMB. EMB would not be possible without this support and we are grateful to the ESF governance and our colleagues in Strasbourg for providing a stable platform for EMB to grow and develop into what we are today. I also wish ESF colleagues well in their own journey of transformation.

Finally, I would like to thank and pay tribute to the EMB Secretariat. As always, the Secretariat is at the heart of EMB success and the team has performed to its usual excellent standard in 2015, ensuring products, events and meetings of the highest quality. So long as we continue to enjoy this level of professional support for EMB operations, our affairs will be in good hands.

Prof. Jan Mees, EMB Chair

Executive Secretary's report



Preparing the EMB Annual Report each year is a valuable exercise, not just to communicate to our members and stakeholders about the activities and achievements of the previous calendar year, but also to ensure that we have a long-term record of progress and change. We have been publishing our Annual report since 2007, so the series is developing into a historical record for EMB, albeit with a gap for the early years. Hence, it gives me great pleasure to present the 2015 Annual Report, the next in this EMB science policy “time-series”. 2015 was an immensely successful year, which saw some flagship publications and events. Here I will reflect on just a few.

European Maritime Days in 2015 were held on 28-29 May in Athens and Piraeus. EMB had a strong presence at these events with an exhibition stand and leading the organization of two Stakeholder workshops, addressing marine graduate training and submerged cultural heritage (see pages 30-33 for further details). During the conference, we were delighted to welcome Karmenu Vella, EU Commissioner for Environment, Maritime Affairs and Fisheries, at the EMB stand and have a discussion with him about some of the science policy priority areas that have been the focus of EMB activities. The Commissioner expressed a genuine interest in the work of the EMB and a wish to visit our offices in Oostende. Working with his Cabinet we were not able to find a suitable date for this visit in 2015, but this is still very much on the agenda for 2016.

In 2015 we published our 22nd position paper, *Delving Deeper: Critical challenges for 21st century deep-sea research*. This is a substantial report that takes an in-depth look at some of the most important societal trends and opportunities that will have implications for the deep sea, that component of our global ocean with a depth greater than 200m. The EMB working group Deep Seas was set up in 2014 in response to a recognition by the EMB members that the level of commercial interest in exploiting deep sea resources is rising rapidly, creating a need for a greater scientific knowledge and understanding of deep sea systems which can provide the basis for environmental baselines and impact assessments.

Two months after publication of the position paper, we published a summary of its main messages as EMB Policy Brief No. 2. This was launched at the 3rd EC Ocean of Tomorrow Conference in Brussels on 11 November. We are grateful to Mrs. Sigi Gruber, Head of the Marine Resources Unit at DG Research & Innovation, for providing time for a special launch event during the course of this conference. I also thank my Secretariat colleagues, Kate Larkin and Karen Donaldson, for their excellent efforts in coordinating the work of the Deep Seas working group and Alex Rogers for his leadership and commitment as the working group Chair.

Our 5th EMB Forum took place in the European Parliament on 21 October 2015 and is described in detail on pages 28-29 of this report. The Forum provided the opportunity to work together with the Consortium for Ocean Leadership. As a network of U.S. and Canadian marine science institutions, Ocean Leadership plays a similar role in North America that EMB does in Europe. This collaboration involved experts from Europe and the U.S. working together to deliver a consensus statement on the links between ocean and climate and the important role of research and ocean observing as part of the societal response to climate change. The statement effectively represented the voice of the marine science communities in Europe and North America, adding additional weight to its message. I thank my colleague, Nan-Chin Chu, for her dedication in helping to deliver a highly professional event and a strong consensus statement.

The EMB is a partner in two new EU Horizon 2020 projects which got underway in 2015: AtlantOS and Sea Change. While our work in AtlantOS will come a little later in the four-year project, the EMB contribution to Sea Change is mostly in the first 12 months of the project. EMB Science Officer, Veronica French, has delivered some outstanding communication products which will help to promote to a wide audience the need for Ocean Literacy and the complex linkages between the ocean and human health and wellbeing. This work has already received very positive feedback, not just in Europe but from users in North America.

I am grateful to my Secretariat colleagues, Kate Larkin, Nan-Chin Chu, Veronica French and Karen Donaldson, for their hard work and dedication and thank them for making 2015 a very strong year for EMB. I also thank Noemie Wouters who left the Secretariat in November to take up a new post with Ghent University. I wish Noemie all the very best in her new role. Looking ahead to 2016, we have many new challenges. We will establish a new legal entity for EMB and begin properly the process of separating from ESF. The main aim is to achieve these operational objectives with the minimum of disruption so that we can concentrate on our strategic work. Several new projects await, but one is worth noting: in 2016 we will begin the planning process for Navigating the Future V. That is certainly something to look forward to.

Dr. Niall McDonough, EMB Executive Secretary

EMB mission, structure and governance

MISSION

The European Marine Board (EMB) provides an independent platform for organizations involved in supporting, delivering and using marine research and technology to promote common positions on research priorities and strategies in Europe.

EMB is a unique marine science forum which develops scientific foresight by initiating state-of-the-art analysis and studies and translating them into clear policy recommendations to national agencies and governments as well as to European institutions.

Where the EMB identifies a topic of strategic interest as the basis for a new activity, it applies one of a range of instruments to deliver a tailored impact. Targeted at European and national research programme managers, strategy developers, policymakers and the marine research community, EMB outputs drive future European and national marine research agendas, programmes and supporting strategies and policies.

EMB acts as a science-policy interface, transferring and translating scientific knowledge to policy makers, and channelling policy needs back to the research community.

STRUCTURE AND GOVERNANCE

The European Marine Board is a pan-European partnership of national organizations which are either research funding organizations, RFOs (e.g. research councils or ministries), research performing organizations, RPOs (e.g. national marine research institutes) or nationally-based consortia of third-level institutes. EMB activities and the operation of its secretariat are funded through annual member contributions and EMB external contracts. In 2015, EMB represented 36 organizations from 19 European countries. A full list of EMB member organizations and delegates is available on the website: www.marineboard.eu/members, and in Annex 1 of this report.

EMB DELEGATES

Representing the major organizations involved in marine research in Europe, the Board's member organization delegates (i) provide a high-level overview of national science policy priorities, (ii) guarantee a multidisciplinary and high-quality scientific expertise for the Board's activities, and (iii) ensure a high-level uptake of the Board's strategic recommendations at national and European levels.

The EMB's mixed membership of RPOs, RFOs, and national university consortia ensures its unique capacity to deliver science policy advice on issues of identified strategic importance and to influence European marine research agendas.

EMB delegates meet twice a year at plenary meetings to share knowledge, to define common priorities, and to agree on activities and outputs. The European Commission and the UNESCO's Intergovernmental Oceanographic Commission are permanent observers to EMB plenary meetings.



EMB Spring 2015 Plenary Meeting (29 April, Ghent, Belgium)

EXECUTIVE COMMITTEE

EMB operations are overseen by the Executive Committee (ExCom). The ExCom meets three times per year to follow up on the implementation of the actions agreed by the Board at plenary meetings, make operational and financial decisions, and give strategic guidance to the Board and Secretariat.

ExCom members and their mandates as of December 2015:



Jan Mees – Chair
Flanders Marine Institute/Research
Foundation – Flanders, Belgium
May 2014-May 2017



Alessandro Crise - vice-Chair
National Institute of Oceanography and
Experimental Geophysics (OGS), Italy
May 2015-May 2017



Jan-Stefan Fritz – vice-Chair
Konsortium Deutsche Meeresforschung
(KDM), Germany
May 2015-May 2018



Mark James – vice-Chair
Marine Alliance for Science
and Technology Scotland
(MASTS), United Kingdom
May 2015-May 2018



Gilles Lericolais – vice-Chair
French Research Institute for the
Exploration of the Sea (Ifremer),
France
October 2013-October 2016



Erlend Moksness - vice-Chair
Institute of Marine Research,
Norway
May 2014-May 2017



Tarmo Soomere - vice-Chair
Estonian Academy of Sciences,
Estonia
May 2015-May 2017



**Niall McDonough - Executive
Secretary**
Head of EMB Secretariat
ex officio member

SECRETARIAT

The strategic and operational decisions and activities of the Board and ExCom are implemented by the Secretariat, based at the EMB offices in Ostend, Belgium. The EMB offices are housed within the InnovOcean facility in the harbour of Ostend which is also home to several Flemish and international marine research and development organizations. The Secretariat is hosted there with the generous support of the Flemish government and is also provided with a range of additional support services by the Flemish Marine Institute (VLIZ). A full list of the current EMB Secretariat team is available on the website: www.marineboard.eu/about/secretariat and in Annex 2 of this report.



Credit: Trevor Waldron

European Marine Board Secretariat team from left to right: Kate Larkin, Karen Donaldson, Noémie Wouters, Nan-Chin Chu, Veronica French, Dina Eparkhina and Niall McDonough





Plenary meetings 2015

European Marine Board plenary meetings, held twice a year in spring and autumn, gather EMB member organizations to reflect and agree on topical marine science and technology issues, and propose future strategic actions. During these meetings, EMB delegates also benefit from interactions with invited speakers and guests and with plenary observers from the European Commission and the UNESCO's Intergovernmental Oceanographic Commission.

SPRING PLENARY MEETING (29-30 APRIL, GHENT, BELGIUM)

The Spring Plenary Meeting was hosted at Ghent University by the Research Foundation Flanders, represented on EMB by the EMB Chair, Jan Mees, Director of the Flemish Marine Institute (VLIZ). The meeting was attended by 28 EMB delegates, 2 observers, 3 invited speakers and 5 guests; the EMB Communications Panel joined the science session of the meeting (see participants list in Annex 4).

At the Spring Plenary, Alessandro Crise (OGS, Italy) and Tarmo Soomere (Estonian Academy of Sciences) were re-elected as vice-Chairs for a second two-year term, and Jan-Stefan Fritz (KDM, Germany) and Mark James (MASTS, Scotland), were elected as new vice-Chairs for a three-year term.

Governance

- The Board considered options for creating its own legal entity;
- The 2015 budget was approved;
- The membership application from the Klaipėda University, Lithuania was approved.

Science activities

- The Board discussed the development of EMB Position Paper 22 on deep-sea research;
- Future developments for EOOS in collaboration with EuroGOOS;
- The Board discussed the development of two new Working Groups: Citizen Science and the Biological Component of Ocean Observing.

The open session of the meeting welcomed representatives of EMB stakeholders, observers and partners.

The programme included:

- Welcome by Jan Mees
- EMB – Driving the European Marine Research Agenda, Niall McDonough, EMB Executive Secretary
- Training the next generation of marine scientists, Tim Deprez, University of Ghent and member of WG Training
- Strategic Orientations for the Next Years, Sigi Gruber, Head of Unit F/4 Marine Resources, DG RTD, EC

Special Session: The changing legal and policy framework for the study and utilization of marine biodiversity – implications for marine research in Europe.

- The Nagoya Protocol and EU ABS Regulation and their relevance to marine research, Arianna Broggiato, University of Leuven, Belgium.
- Protecting biodiversity in ABNJ through a new UNCLOS Implementing Agreement, John Brincat, Unit B/1 International Affairs, Law of the Sea and Regional Fisheries Organizations; DG MARE.
- Implications for collection and utilization of marine biological samples, Marcel Jaspers, Director Marine Biodiscovery Centre Aberdeen/EU FP7 PharmaSea project leader/University of Aberdeen, UK.

Flash-presentations from early-career researchers, University of Ghent.

Spring Plenary Evening Lecture: *Sustaining our Seas - how can we identify emerging issues and trends?* Michael Depledge, Chair of the Board of the European Centre for Environment and Human Health, University of Exeter Medical School, UK



AUTUMN PLENARY MEETING (14-15 OCTOBER SPLIT, CROATIA)

The Autumn Plenary Meeting was hosted by the Institute of Oceanography and Fisheries (IZOR), represented by EMB delegate, Ivica Vlibic. The meeting was attended by 25 EMB delegates, 2 observers, the Chair of EMBCP, and 5 invited guests (see participants list in Annex 5).

Governance

- The Board discussed the pros and cons of creating its own legal entity and the updates on the transformation of the European Science Foundation towards its new business model due to take place at the beginning of 2016;
- The 2016 budget was approved.

Science activities

- The Board approved the launch of a new EMB Working Group activity on Citizen Science;
- The Board approved the Ocean-Climate Nexus Statement of the 5th EMB Open Forum.

The open session of the meeting welcomed representatives of EMB stakeholders, observers and partners.

The programme included:

- Welcome by Jan Mees
- European Marine Board Communications Panel, Jan Seys, Communications Manager, Flanders Marine Institute and EMBCP Chair

Special Session: New paradigms in science-based fisheries management

- Adriatic fisheries: from science, through policy to management, Nedo Vrgoč, Institute of Oceanography and Fisheries, Croatia.
- Science Support to the Common Fisheries Policy – perspectives of the European Commission, Kenneth Patterson, Senior Expert on fisheries science in Directorate A, DG Mare, EC.
- ICES Integrated Assessments underpinning an Ecosystem Approach to Management, Yvonne Walther, Chair of ICES Science Committee.
- Fishing industry science: unlocking the real potential of fishing industry data, knowledge and curiosity, Martin Pastoors, Chief Science Officer, Pelagic Freezer-trawler Association.
- Global Fisheries – what role in future food security? Serge Garcia, Chair of the Fisheries Expert Group of the IUCN Commission on Ecosystem Management.

Flash-presentations from early-career researchers, Institute of Oceanography and Fisheries, Croatia

Autumn Plenary Evening Lecture: *GES revolutions*, Ferdinando Boero, University of Salento, Italy





Thematic science policy activities

DELVING DEEPER: CRITICAL CHALLENGES FOR 21ST CENTURY DEEP SEA RESEARCH

Beyond the continental shelf lies the vast open ocean spanning surface waters to the deep seafloor and sub-seafloor. It comprises the major part of Earth's biosphere and holds a substantial and valuable repository of the biological diversity and geological resources of the planet. Deep-sea environments provide us with important goods and services that include fish, mineral resources, oil and gas, and a source of bioactive compounds extracted from deep sea organisms with potential for use in the development of new drugs, nutraceuticals and industrial products and processes. Furthermore, the deep sea plays a major role in the regulation of global biogeochemical and nutrient cycles that are crucial to the functioning of the planet. However, gaining access to deep sea environments is difficult and costly and this immense last frontier on planet Earth remains poorly understood and largely unexplored.

In the last decade there has been a rapid increase in commercial interest and capability to exploit deep ocean resources. The EMB member organizations identified a strong need for an up-to-date assessment of the major scientific challenges necessary to ensure that expanding commercial activities are developed and implemented according to the ecosystem approach, minimizing environmental damage and maintaining good environmental status in the deep sea. The EMB working group Deep Sea was launched in January 2014 as a platform for cross-sector interdisciplinary dialogue to deliver recommendations for future deep-

sea research in the context of societal challenges and policy needs. In the course of its activities, this EMB working group engaged with industry (e.g. deep-sea mining, oil and gas, marine biotechnology and fisheries) and wider stakeholders through dedicated consultative workshops.





Pictured at the launch of EMB position paper 22, *Delving Deeper*, from left to right: Tiago Pitta e Cunha, Special Advisor on Marine Affairs to the President of Portugal; Ricardo Santos, Member of the European Parliament; Alex Rogers, Chair of Conservation Biology at the University of Oxford, UK, and Chair of the EMB Deep Seas working group.

In support of this activity, the EMB Secretariat conducted a stakeholder survey on public and private investment in deep-sea research, spanning basic research to commercial activities. The consultation demonstrated a clear need for fundamental scientific knowledge for establishing baselines, informing Environmental Impact Assessments and monitoring impacts on deep-sea ecosystems. The results and recommendations of the working group were presented in EMB Position Paper 22, *Delving Deeper: Critical challenges for 21st century deep-sea research*. The paper was launched at a dedicated session at the 14th Deep Sea Biology Symposium in Aveiro, Portugal on 01 September 2015. To complement the position paper, a short policy brief was published and launched at the 3rd European Commission Ocean of Tomorrow conference in Brussels on 11 November 2015.



Credit: MARUM



Credit: Adam Corney, Marine Training Alliance, UK

TRAINING THE NEXT GENERATION OF MARINE SCIENTISTS

The EU has set strong targets for growth in the maritime economy - also known as “Blue Growth” - but managing human activities in the marine environment presents unique challenges. For Europe to realize the potential of a sustainable blue economy, skilled marine and maritime graduates are required with a specialized knowledge across multiple fields. There is increasing debate about whether the type of training currently offered at MSc and PhD levels in Europe is fit-for-purpose. Policy makers and educators have begun to examine the current European training landscape across marine sciences and engineering and to question whether the kind of training offered in higher education institutes at MSc and PhD level is suitable to support the Blue Growth strategy objectives.

The European marine science community itself has recognized this issue. The Rome Declaration, adopted on 8 October 2014 at the EurOCEAN 2014 Conference, calls for “innovation in the provision of undergraduate and postgraduate training and enhancing skill sets and career pathways for marine professionals”. The Declaration also stresses the need for education and training to encompass and foster cross-disciplinary research. In fact, across the broad range of marine and maritime sectors, there is currently no clear connection between marine graduate training priorities and the needs and expectations of future employers.

In Europe, marine graduate programmes and career pathways also lack the coordination and visibility that is crucial to inspire and recruit the next generation of marine and maritime professionals. Young graduates interested in an MSc or PhD training in marine sciences are presented with a highly fragmented array of specialized and generalist courses, some of which are explicitly marine or maritime, while other opportunities are often hidden within other graduate disciplines (e.g. biology, geography, physics, ecology).

It is in this context that the European Marine Board established a dedicated Working Group on Marine Graduate Training in 2014. The Working Group met on two occasions in 2014 and 2015. The 2015 meeting also included a session with invited external stakeholders including policy makers and potential employers of marine graduates. By the end of 2015, an EMB Future Science Brief was at an advanced stage with publication planned for mid-2016. The paper aims to identify and draw attention to both the challenges and opportunities that characterize the training-employment mismatch in marine and maritime sciences and to provide high-level recommendations on actions needed to advance the quality and relevance of training in these sectors, all in the context of Blue Growth.

CITIZEN SCIENCE

Advancing Citizen Science for Seas and Ocean Research

Citizen science refers to the involvement of volunteers, people without formal scientific training, in science. Currently, citizen science is predominantly associated with terrestrial projects. However, it is also being implemented, albeit to a lesser extent, for the purposes



of marine research. The EMB working group, *Advancing Citizen Science for Seas and Ocean Research*, has been formed with the purpose of exploring new ideas and providing direction for marine citizen science.

During 2015, the EMB launched a call for experts to be part of the working group. From the nominations received, a group of 12 experts have been chosen, with Carlos Garcia Soto of the Spanish Institute of Oceanography and Gro I. van der Meeren of the Institute of Marine Research, Norway, selected as Chair

and co-Chair of the working group, respectively.

Taking a broad perspective, the EMB working group aims to identify types of marine research that are most amenable to citizen science input and assess the benefits and constraints involved in increasing marine citizen science in the future. This will be achieved by learning from successes in other disciplines and taking into consideration both the framework for public participation in scientific research projects and the current challenges and opportunities provided by citizen science. The output of the working group will be a future science brief on marine citizen science.



EMB working group Citizen Science kick-off meeting (18-19 February, Ostend, Belgium)

OCEAN OBSERVING

There is a growing recognition of the need to build a comprehensive, end-to-end European Ocean Observing System (EOOS) to coordinate the currently fragmented and complex ocean observing capacity across Europe. This concept was first formally endorsed at the EurOCEAN 2010 conference where the resulting Ostend Declaration called for policy makers to *“Support the development of a truly integrated and sustainably funded European Ocean Observing System to establish Europe’s global leading role in marine science and technology.”* EMB has identified Ocean Observing as a strategic area and has developed a number of publications and initiatives to further this area.



Credit: Sybille d'Orgeval, CNRS, France

EOOS Workshop

In 2015, EMB and EuroGOOS launched a joint activity on EOOS as a framework for advancing Europe’s coordination in the field of ocean observation. On 12-13 May 2015, a joint workshop was held in Brussels bringing together experts from the marine scientific and operational oceanographic communities to develop a roadmap, time-line and governance structure for EOOS. This was convened with the long-term goal of implementing a flagship initiative building on existing resources and commitments and aligning with international developments such as the Framework for Ocean Observing¹.



EOOS workshop (12-13 May 2015, Brussels, Belgium)

¹ <http://www.oceanobs09.net/foo/>

New Working Group: Strengthening Europe's capability in biological ocean observation (WG BIO OBS)

Marine scientists currently utilize a wide array of biological ocean observing infrastructures, tools and techniques. These range from marine stations and taxonomic analyses to autonomous sensors, hydrophones, animal platforms, state-of-the-art laboratory facilities and -omics technologies. Flagship projects such as the European FP6 MarBEF network, the Census of Marine Life and the Millennium Ecosystem Assessment have contributed to progress on the understanding of marine biodiversity, ecosystem functioning, and the goods and services they provide. Marine ecosystem and biodiversity observations are now considered crucial for understanding ecosystem change and the impacts of human and natural pressures on marine ecosystems.

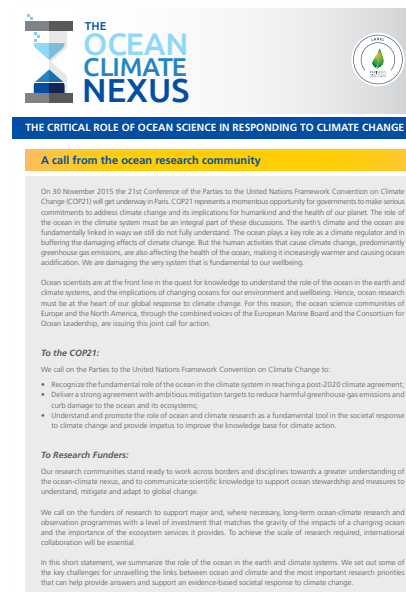
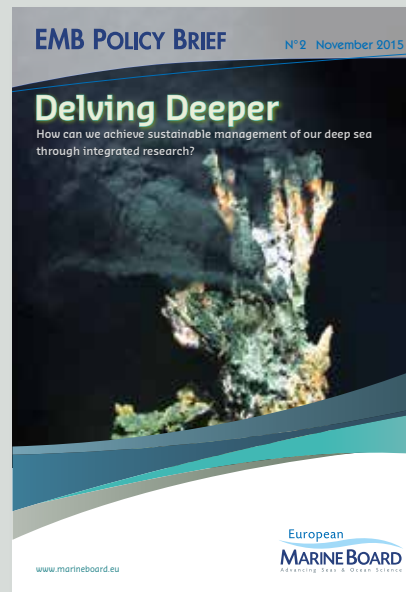
In 2015, EMB Delegates approved a Terms of Reference for a new Working Group, whose goal will be to produce a roadmap for strengthening Europe's biological ocean observing capacity, assessing gaps and recommending actions to achieve a multi-purpose integrated biological ocean observing capacity for Europe. The working group will start in 2016.



Credit: Ferdinando Boero

EMB PUBLICATIONS IN 2015

Download at:
www.marineboard.eu



European projects



AtlantOS (*Developing in-situ Atlantic Ocean Observations for a better management and sustainable exploitation of the maritime resources*) is a €20.65m project funded under the EU Horizon 2020 programme.

Coordinated by GEOMAR Helmholtz Centre for Ocean Research Kiel, Germany (Prof. Dr. Martin Visbeck), the project involves 62 partners from 18 countries (13 EU & 5 non-EU).

The overarching objective of AtlantOS is to achieve a transition from a loosely coordinated set of existing ocean observing activities to a sustainable, efficient, and fit-for-purpose Integrated Atlantic Ocean Observing System (IAOOS). The four year (2015-2019) project will aim to achieve this by defining requirements and systems design, improving the readiness of observing networks and data systems engaging stakeholders around the Atlantic, and leaving a legacy and strengthened contribution to the Global Ocean Observing System (GOOS), the Global Earth Observation System of Systems (GEOSS), and the emerging European Ocean Observing System (EOOS). AtlantOS will fill existing *in-situ* observing system gaps and will ensure that data are readily accessible and useable.

The European Marine Board, through its Secretariat, is a partner in AtlantOS, with responsibility for Task 10.6, *IAOOS in the Context of a European Ocean Observing System*. The task will eventually deliver a strategic foresight paper on the contribution of AtlantOS towards the EOOS. The paper will build on work achieved in AtlantOS to inform the European research agenda and drive forward ocean observation as a priority area for the Transatlantic Ocean Research Alliance agreed by the EU, USA and Canada. The aim is to further develop the vision for an integrated and sustained ocean observing system as articulated in the publications of the European Marine Board, including the strategic foresight paper *Navigating the Future IV* (2013) and the joint EMB and EuroGOOS publication (2008) *EMODnet: A vision for an end-to-end, integrated, interoperable and user-oriented network of European marine observation and data systems*.



The AtlantOS project officially started on 01 April 2015 and the Kick-off meeting was held in Brussels on 10-12 June 2015 (pictured above). For EMB, Kate Larkin has an additional role in as a member of the Executive Board of AtlantOS.

SEA CHANGE



OUR OCEAN | OUR HEALTH

Sea Change is an EU Horizon 2020-funded project (Blue Growth Call 13-2014) focused on Ocean Literacy. The overarching goal of the project is to raise European citizens' awareness of the intrinsic links between the ocean and human health, and to empower us, as Ocean Literate citizens, to take direct and sustainable action towards a healthy ocean and seas, healthy communities, and ultimately a healthy planet. Coordinated by the Marine Biological Association, UK, the project consortium comprises 17 European and international organizations and includes an international advisory group made up of North American and European experts, ensuring a strong transatlantic cooperation throughout the project. The Sea Change project officially started on 1 March 2015 and held its kick-off meeting in Plymouth on 12-14 May. Since then, the Sea Change partnership has been designing Ocean Literacy related activities and materials focused on education, community, and governance actors, and at citizens.



EMB holds a place on the Sea Change steering group and leads one of nine project work packages, with a focus on reviewing aspects of Ocean Literacy and providing dynamic communication materials to be used throughout the project. During 2015, EMB delivered an animation and accompanying booklet explaining the concept of Ocean Literacy, tracing its history and introducing the Sea Change project. The animation and booklet highlights the importance of protecting the ocean by making choices that are more "ocean-friendly". In addition, EMB delivered a review, demonstrating to what extent Ocean Literacy is currently embedded in European maritime policy and providing recommendations on how to increase its representation. Six policies were included as case studies in the review: the Blue Growth Strategy; the Marine Strategy Framework Directive; the Marine Spatial Planning Directive; the Common Fisheries Policy; the Birds Directive; and the Habitats Directive. The EMB deliverables are available on the Sea Change project website at www.seachangeproject.eu.

WWW.SEACHANGEPROJECT.EU



Ocean Literacy

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THE 5TH EMB FORUM 'THE OCEAN-CLIMATE NEXUS'

The end of 2015 saw a landmark climate agreement delivered by the United Nations Framework Convention on Climate Change (UNFCCC) COP21. On 21 October 2015, six weeks prior to the COP21, the European Marine Board organized its 5th Forum, *The Ocean-Climate Nexus*, to deliver a consensus from the marine research community on the critical role of ocean science as part of the societal response to climate change as and to outline the key research priorities on climate change and the ocean.



The Forum was awarded the official COP21 label by the French government and was hosted at the European Parliament by former EMB vice-chair, MEP Ricardo Serrão Santos. A consensus statement was drafted by a group of scientific experts nominated jointly by the European Marine Board and the U.S. Consortium for Ocean Leadership². The Statement calls for recognition of the ocean in a post-2020 climate agreement and support for a long-term ocean-climate research and observation programme. It also sets out the key challenges for unravelling the links between ocean and climate and the most important research priorities that can help provide answers and support an evidence-based societal response to climate change.

Following the Forum, the EMB Secretariat continued to actively promote the important role of ocean research in understanding and addressing climate change. EMB representatives promoted the statement at a number of international meetings including a lecture at the European Academy of Sciences (EURASC) (27 October 2015; Safer Seas Conference, Brest, France), a speech at the U.S. Council on Foreign Relations (28 October 2015, Washington D.C., USA), a panel discussion at the EP Intergroup "Seas, Rivers, Islands & Coastal Areas" Conference, and a presentation at an UNESCO workshop 'Understanding the History of Climate Change and Sea-Level Rise' as part of the civil society initiatives during the COP21 (3 December, Le Bourget, Paris, France).

Further information on the Forum, the consensus statement, webcast recording and a summary film can be found at: <http://www.marineboard.eu/ocean-climate-nexus/>



² <http://oceanleadership.org/>



5th EMB Forum at the European Parliament



The 5th EMB Forum panel (left to right) Dr. Andrea Tilche (European Commission), Prof. Mojib Latif (GEOMAR, Germany), Prof. Ricardo Serrão Santos (MEP), Dr. Ceri Lewis (Univ. Exeter, U.K.), Prof. Jan Mees (EMB Chair), Prof. Michael Schulz (MARUM, Germany) and Dr. Vladimir Ryabinin (IOC/UNESCO). Special video messages were provided by Sherri Goodman, Ocean Leadership President, and HSH Prince Albert II of Monaco.

EUROPEAN MARITIME DAY 2015

European Maritime Days in 2015 were held in Athens and Piraeus, Greece, on 28-29 May. With five members of the EMB Secretariat in attendance, EMB had a strong presence throughout the two days, including an exhibition stand to disseminate EMB publications and to act as a focal point to interact with stakeholders and delegates.

During the event, EU Commissioner for Environment and Maritime Affairs and Fisheries, Karmenu Vella, visited the EMB stand with a delegation of EC and Greek political representatives. This provided an excellent opportunity to inform Commissioner Vella about the work of the EMB and present him with a selection of EMB publications. The Commissioner expressed his wish to visit the EMB offices in Oostende.

EMB was lead organizer of two EMD Stakeholder workshops based on current or recent EMB strategic activity areas. These are described in the following pages.



Tim Deprez, University of Ghent and member of the EMB Marine Graduate Training working group, addressing the EMB stakeholder workshop, *How Innovative Training can Support Blue Growth*, at European Maritime Day, Athens, 28 May 2015.



EMB's Niall McDonough and Kate Larkin meet with EU Commissioner for Environment, Maritime Affairs and Fisheries, Karmenu Vella, at the EMB stand at European Maritime Day 2015, Athens.

EMD WORKSHOP: HOW INNOVATIVE TRAINING CAN SUPPORT BLUE GROWTH

Attended by approximately 50 delegates, this workshop was organized by the European Marine Board and co-organized by EuroMarine and JPI Oceans. The workshop was designed to address the mismatch between academic marine training and future employment. The workshop had three key objectives:

- Offer a platform for cross-sector stakeholder dialogue on marine graduate training in the context of the EC Blue Growth and wider marine and maritime activities.
- Assess if the current training of marine and maritime graduates meets the needs of prospective employers and wider society and what can be done to enhance training of next generation scientists and technologists to realize the potential of a sustainable blue economy.
- Present draft recommendations from ongoing initiatives and facilitate a best practice exchange to identify hurdles, solutions and mechanisms to innovate training to better meet the needs of society, policy, industry and young scientists themselves.

The opening statements set the context of the workshop referring to the EC Communication on Innovation in the Blue Economy³ and the Rome Declaration (2014) which called for innovation in marine graduate training across Europe. Progress on the European Marine Board expert group on marine graduate training was also presented. Stakeholders from higher education, research and business presented perspectives on current training practices, innovative training instruments and academic-industry partnerships which could help address the blue economy skills gap.

In the period after the workshop, the EMB Secretariat produced a report of the workshop and summarised three key messages arising from the discussions:

Marine graduate training needs:

- active partnership between academia, policy and industry through co-design of marine graduate courses, internships, work experience and practical training;
- to bridge the culture gap between disciplines, marine and maritime sectors, to create an interdisciplinary and adaptable workforce that can tackle holistic ocean issues;
- greater coordination, harmonization and visibility across Europe to connect and align marine training with the needs of employers, particularly in the context of Blue Growth.

The outputs and key messages of the workshop have been taken up in the finalization of the EMB Future Science Brief on Marine Graduate Training, due for publication in 2016.



Panel discussion at the European Maritime Day workshop, *How Innovative Training Can Support Blue Growth Athens*, 28 May 2015. From left to right: Niall McDonough, EMB Executive Secretary (Workshop Chair), Paris Sansoglou, European Dredging Association, Steve Hall, National Oceanography Centre, and Institute of Marine Engineering, Science and Technology (IMarEST), UK; Óscar Gómez, Director Técnico Aclunaga, Spain, and SEA Europe; Pierpaolo Campostrini, JPI Oceans Management Board; Eric Thiébaud, EuroMarine, Université Pierre & Marie Curie, Station Biologique de Roscoff, France; and Tim Deprez, University of Ghent, Belgium / EMB WG Training / European Marine Biological Resource Centre (EMBRC).

³ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. Innovation in the Blue Economy: realising the potential of our seas and oceans for jobs and growth. COM(2014) 254 final of 8 May 2014

EMD 2015 WORKSHOP: MARITIME CULTURAL HERITAGE AND BLUE GROWTH: WHAT'S THE CONNECTION?

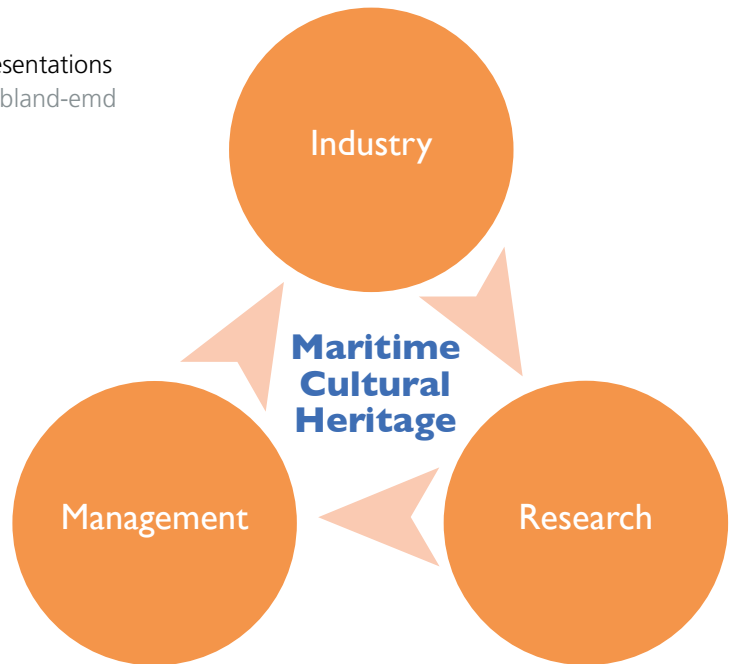
In the EMB Position Paper 21 and Policy Brief 1, published in 2014, the issue of studying and safeguarding the submerged cultural heritage found in Europe's shallow shelf seas was addressed in detail. Coastal tourism is the largest sector in the European maritime economy and developing public interest around the discoveries of ancient human settlement remains found in shallow coastal seas has enormous tourism potential and is an area that is only recently gaining attention. However, many sites and artefacts are being lost as a result of natural erosion and human disturbance. The role of maritime industry in discovering the submerged archaeological sites has been crucial.



The European Marine Board, together with the European Dredging Association and the Cultural Heritage Agency of the Netherlands, organized a workshop at the European Maritime Day (28 May 2015, Athens, Greece). Speakers at the EMD maritime cultural heritage workshop (from left to right) Prof. Geoff Bailey (University of York, UK), Dr. Dimitris Sakellariou (HCMR, Greece), Dr. Nena Galanidou, (University of Crete, Greece), Dr. Henk Weerts (Cultural Heritage Agency of the Netherlands), Mr. Euan McNeill (Wessex Archaeology on behalf of British Marine Aggregate Producers' Association) and Prof. Tiedo Vellinga (Maasvlakte 2, Port of Rotterdam, The Netherlands.)

A key issue addressed in this workshop was to provide an insight into how industry can benefit from interacting with the research community and cultural heritage agencies to ensure that archaeological finds are correctly managed to avoid unnecessary delays for commercial activities. It is imperative to both safeguard this unique European cultural asset through research, training, communication and management; and to maximize its potential as a tourist attraction.

Report of the workshop and its presentations
<http://www.marineboard.eu/wg-subland-emd>



Exploring and managing maritime cultural heritage, i.e. that which is found on or beneath the seabed, presents particular challenges and requires innovative approaches and tools. The offshore industrial sector has demonstrated that it is possible to turn obstacles posed by archaeological finds and project delays into a benefit, through the generation of public support and added value. It is very important, therefore, for maritime operators to ensure inter-disciplinary collaboration and to maximize the positive benefits that come from communicating and engaging with a wider public.

European Marine Board Communication Panel

MISSION STATEMENT:

The European Marine Board Communication Panel (EMBCP) provides a pan-European platform for marine science communicators to promote European Marine Board activities, to synergize outreach activities and to advocate for Ocean Literacy. During 2015, the EMBCP welcomed three new members from the Italian organizations of the National Institute of Oceanography and Experimental Geophysics (OGS), the National Research Council, Institute of Marine Sciences (ISMAR-CNR) and the National Inter-University Consortium for Marine Sciences (CoNISMa), increasing EMBCP membership to 21.

The EMBCP was well represented at the EMSEA 2015 conference (European Marine Science Educators' Association), 28 September – 1 October 2015, the held at the Hellenic Centre for Marine Research, Crete. EMSEA 2015 focused on how Ocean Literacy is being incorporated into formal and informal education and shaping the way forward for Ocean Literacy in Europe and beyond. As part of the conference, the EMBCP ran a marine science communication workshop. Titled, 'Speed Course in Marine Science Communication,' the workshop was targeted at young marine scientists who are tasked with communication activities that they have often not been trained for. The aim of the workshop was to provide instruction on some highly effective science communication methods including organizing public events, dealing with the media, the use of social media, and citizen science. In addition, the EMBCP chair, Jan Seys, represented the EMBCP in a panel dealing with global Ocean Literacy at the NMEA (National Marine Educators' Association) conference in Rhode Island, USA, on 29 June – 2 July 2015.

The EMBCP has decided to organize a 2nd International Marine Science Communication Conference (IMSCC) to be held in Belgium in December 2016. This follows the success and positive feedback from the 1st IMSCC, which was launched by the EMBCP and organized in the first instance by its Portuguese partners (CIIMAR) together with Ciência Viva in Porto in 2014.



Members of EMBCP at the meeting in Crete, 27 April 2015. Picture features from left to right: Anouck Hubert (Marine Universities of France, France), Francesca Petrera (National Institute of Oceanography and Experimental Geophysics, Italy), Martha Papatthanassiou (Hellenic Centre for Marine Research, Greece), Kim Marshall-Brown (National Oceanography Centre, UK), Veronica French (EMB), Kjartan Mæstad (Institute of Marine Research, Norway), Thomas Isaak (French Research Institute for Exploitation of the Sea, France), Lisa Fitzpatrick (Marine Institute, Ireland), Ferdinando Boero (National Inter-University Consortium for Marine Sciences, Italy), Jan Seys (EMBCP Chair), Marco Faimali (National Research Council, Institute of Marine Sciences, Italy).



Communication and Outreach

The European Marine Board uses a variety of channels to reach its stakeholders, including disseminating publications at conferences, media campaigns for EMB events, and social media outlets including a twitter feed and website.

In 2015, the European Marine Board twitter account gained 644 new followers and had 5,846 visits, with a monthly average of 487. The twitter feed is used to announce and promote EMB activities, as well as announce updates from the marine science community. Twitter was also instrumental in promoting EMB's 5th Forum on the Ocean-Climate Nexus. The hashtag '#OCNexus' was created for the event, to better follow and track the conversations surrounding the event, especially during the event itself.

The twitter feed was also successfully used to disseminate the stakeholder consultation on current and future deep-sea research investment, which contributed to WG Deep-sea research. The results of the consultation can be found in position paper 22' *Delving Deeper: Critical challenges for 21st century deep-sea research.*

Due to discussions arising from EMB's role in Sea Change, the Horizon 2020 project on Ocean Literacy, the decision was made to update the tagline of EMB's logo from 'Advancing Seas and Oceans Science' to 'Advancing Seas and Ocean Science' (i.e. with "Ocean" in singular). This change reflects the importance of considering the earth has having one global ocean which is entirely interconnected.

The website was also updated to better demonstrate the variety of strategic areas in which the European Marine Board is involved. In 2015, the website was visited almost 72,500 times, with over 37,000 unique visitors from more than 100 countries. The 5th Forum Statement, *The Critical Role of Ocean Science in Responding to Climate Change*, was the most downloaded publication.

Twitter: 870 followers



	Monthly average	Total 2015	Peak number/month
Number of new followers	53.66	644	84/October
Number of visits	487.16	5846	923/September

Finances

The EMB annual budget is based on member organization contributions and external contracts, e.g. EU Horizon 2020 projects. The Flemish Government of Belgium provides an in-kind contribution to the Board through the provision of office space and running costs and equipment at the InnovOcean site in Ostend, as well as the employment cost of one Secretariat staff member. Member organizations also provide in-kind contributions through support for participation of national experts in EMB activities, i.e. travel and subsistence to attend meetings.

The figures used to prepare the financial report provided below were supplied by the ESF Department of Administration and Finance and at the time of publishing are subject to final audit and closure of 2015 accounts.

AVAILABLE FUNDS 2015

All figures in Euro '000s

Member Contributions ³	426.0
Drawdown on employment costs allocated to EC projects	68.4
Total available funds 2015	494.4

EXPENDITURE 2015

Secretariat employment costs	399.2
Meeting costs Staff travel and meeting logistics	39.6
Publication and dissemination	43.5
Running expenses	6.7
Overhead to the ESF	21.7
Other	33.5
Total estimated expenditure 2015	544.2

RESERVE FUND⁴

Available funds 2015	494.4
Expenditure 2015	544.2
Total 2015 balance	-49.8
2014 carry over	524.8
Total reserve fund as of 31/12/2015	475.0

³ In 2015, MASTS also paid its contributions for 2016 and 2017. These additional payments have not been presented in the 2015 accounts.

⁴ In 2010, the EMB created a reserve fund by setting aside any annual balance of income over expenditure, designed to provide a contingency against any future reduction of income.

Annexes

ANNEX 1:

Marine Board member organizations, delegates and alternates

BELGIUM

Belgian Science Policy Office (BELSPO)
David Cox

Fonds National de la Recherche Scientifique (FNRS)
National Fund for Scientific Research
Jean-Marie Beckers

Fonds voor Wetenschappelijk Onderzoek -
Vlaanderen (FWO)
The Research Foundation - Flanders
Jan Mees (Chair)

CROATIA

Institut za oceanografiju i ribarstvo (IZOR)
Institute of Oceanography and Fisheries
Ivica Vilibic

Institut Ruđer Bošković (IRB)
Ruđer Bošković Institute
Sandi Orlić

DENMARK

Institut for Akvatiske Ressourcer (DTU Aqua)
National Institute for Aquatic Resources
Fritz Köster

ESTONIA

Eesti Teaduste Akadeemia
Estonian Academy of Sciences
Tarmo Soomere (vice-Chair)

FRANCE

Centre National de la Recherche Scientifique
(CNRS)
National Centre for Scientific Research
Jean-Marie Flaud

Institut Français de Recherche pour l'Exploitation
de la Mer (IFREMER)
French Research Institute for Exploitation of the Sea
Gilles Lericolais (vice-Chair)

Universités Marines
Marine Universities of France
Yves-Marie Paulet

GERMANY

Deutsche Forschungsgemeinschaft (DFG)
German Research Foundation
Michael Schulz

Helmholtz Gemeinschaft (HGF)
Helmholtz Association
Peter Herzig

Konsortium Deutsche Meeresforschung (KDM)
German Marine Research Consortium
Jan-Stefan Fritz (vice-Chair)
Rolf Peinert

GREECE

Ελληνικό Κέντρο Θαλάσσιων Ερευνών
Hellenic Centre for Marine Research (HCMR)
Vasilios Lykousis

IRELAND

Marine Institute
Fiona Grant

Irish Marine Universities Consortium
Anthony Grehan
Jeremy Gault

ITALY

Consiglio Nazionale delle Ricerche (CNR)
National Research Council
Enrico Brugnoli

Istituto Nazionale di Oceanografia e di Geofisica
Sperimentale (OGS)
National Institute of Oceanography and Experimental
Geophysics
Alessandro Crise (vice-Chair)

Consorzio Nazionale Interuniversitario per le
Scienze del Mare (CoNISMa)
National Inter-University Consortium for Marine
Sciences
Ferdinando Boero

Lithuania

Klaipėda University
Artūras Razinkovas-Baziokas

THE NETHERLANDS

Nederlandse Organisatie voor
Wetenschappelijk Onderzoek (NWO)
Netherlands Organisation for Scientific Research
Josef F. Stuefer

Koninklijk Nederlands Instituut voor Onderzoek
der Zee
Royal Netherlands Institute for Sea Research (NIOZ)
Henk Brinkhuis

NORWAY

Havforskningsinstituttet
Institute of Marine Research (IMR)
Erlend Moksness (vice-Chair)
Tore Nepstad

Norges forskningsrad
The Research Council of Norway (RCN)
Lars Horn

Universitetet i Bergen (UiB)
Marine Strategic Board | University of Bergen
Helga Flesche Kleiven

POLAND

Instytut Oceanologii Polskiej Akademii Nauk
(IO-PAN)
Institute of Oceanology of the Polish Academy of
Sciences
Slawomir Sagan

PORTUGAL

Centro de Investigação Marinha e Ambiental
(CIMAR)
Centre of Marine and Environmental Research
Vitor Vasconcelos

Fundação para a Ciência e a Tecnologia (FCT)
Science and Technology Foundation
Mario Ruivo
Telmo Carvalho

ROMANIA

Institutul National de Cercetare - Dezvoltare
Marina "Grigore Antipa"
National Institute for Marine Research and
Development "Grigore Antipa"
Vasile Patrascu

SPAIN

Consejo Superior de Investigaciones Cientificas
(CSIC)
Spanish National Research Council
(Withdrew in 2015)

Instituto Espanol de Oceanografía (IEO)
Spanish Institute of Oceanography
Carlos Garcia-Soto

TURKEY

Türkiye Bilimsel ve Teknik Arastirma Kurumu
(TUBITAK)
Scientific and Technological Research Council of
Turkey
Leyla Tolun

UNITED KINGDOM

Marine Alliance for Science and Technology
Scotland (MASTS)
Mark James (vice Chair)
David Paterson

National Oceanography Centre (NOC)
Edward Hill

Natural Environment Research Council (NERC)
Stephen Hall (from March 2015)
Mike Webb

ANNEX 2: Secretariat

Niall McDonough, Executive Secretary

Kate Larkin, Senior Science Officer

Dina Eparkhina, Administration and Coordination Officer (until July 1 2015)

Nan-Chin Chu, Science Officer

Veronica French, Science Officer

Noémie Wouters, Science Officer (until November 1 2015)

Karen Donaldson, Scientific Administrator (from March 2015)

ANNEX 3: Publications in 2015

- Schulz, M. *et al.* (2015) **The Ocean-Climate Nexus: The Critical Role of Ocean Science in Responding to Climate Change.** Chu, N.-C., McDonough, N. (Eds). European Marine Board, Ostend, Belgium. Coordinating Author: Michael Schulz; Contributing Authors: Hugues Goose, Eileen Hofmann, Pierre-Yves Le Traon, Susan Lozier, Baris Salihoglu, Isabel Sousa Pinto.
- Larkin, K.E., Wouters, N., Caetano, AT., McDonough, N. (Eds). 2015. **EurOCEAN 2014 Conference Report and Rome Declaration. EurOCEAN 2014 – Connecting Science, Policy and People.** CNR, Rome, Italy, 7-9 October 2014.
- McDonough, N., Eparkhina, D. **European Marine Board Annual Report 2014.** European Marine Board, Ostend, Belgium. 2014. ISBN: 9789079528288, 52pp
- Larkin, K.E., Donaldson, K., McDonough, N., Rogers, A.D. (2015) **Delving Deeper: How can we achieve sustainable management of our deep sea through integrated research?** EMB Policy Brief No.2, European Marine Board, Ostend, Belgium.
- Rogers A.D. *et al.* (2015) **Delving Deeper: Critical challenges for 21st century deep-sea research.** European Marine Board Position Paper 22. Larkin, KE, Donaldson K, McDonough, N (Eds). European Marine Board, Ostend, Belgium, 2015. Coordinating author: Alex D. Rogers; Contributing authors: Andy Brierley, Peter Croot, Marina Cunha, Roberto Danovaro, Colin Devey, Alf Haakon Hoel, Henry Ruhl, Pierre-Marie Sarradin, Seline Trevisnaut, Helena Viera, Martin Visbeck

ANNEX 4: Participants of EMB plenary meetings 2015

Spring 2015 Plenary Meeting, 29-30 April 2015, Ghent, Belgium

EMB DELEGATES

Representative	Member Organization
JAN MEES – CHAIR	Research Foundation – Flanders (FWO), Belgium
ROBERTO AZZOLINI	National Research Council (CNR), Italy
JEAN-MARIE BECKERS	National Fund for Scientific Research (FNRS), Belgium
FERDINANDO BOERO	National Inter-University Consortium for Marine Sciences (CoNISMa), Italy
ALESSANDRO CRISE	National Institute of Oceanography and Experimental Geophysics (OGS), Italy
DAVID COX	Belgian Science Policy Office (BELSPO), Belgium
JAN DE LEEUW	Royal Netherlands Institute for Sea Research (NIOZ)
JEAN-MARIE FLAUD	National Center for Scientific Research (CNRS), France
JAN-STEFAN FRITZ	German Marine Research Consortium (KDM), Germany
STEPHEN HALL	Natural Environment Research Council (NERC), UK
FIONA GRANT	Marine Institute, Ireland
ANTHONY GREHAN	Irish Marine Universities Consortium (IMUC)
ED HILL	National Oceanography Centre (NOC), UK
EIMUTIS JUZELIŪNAS	Klaipeda University, Lithuania
HELGA F. KLEIVEN	University of Bergen (UiB), Norway
GILLES LERICOLAIS	French Research Institute for Exploitation of The Sea (Ifremer)
VASILIS LYKOUSIS	Hellenic Centre for Marine Research (HCMR), Greece
ERLEND MOKSNESS	Institute of Marine Research (IMR), Norway
YVES-MARIE PAULET	Marine Universities of France
DAVID PATERSON	The Marine Alliance for Science and Technology for Scotland (MASTS), UK
ROBERT PRECALI	Ruđer Bošković Institute, Croatia
MARIO RUIVO	Fundação Para a Ciência e Tecnologia (FCT), Portugal
SLAWOMIR SAGAN	Institute of Oceanology Polish Academy of Sciences (IO-PAN), Poland
MICHAEL SCHULZ	German Research Foundation (DFG), Germany
TARMO SOOMERE	Estonian Academy of Sciences, Estonia
KIRSTEN THOMSEN	National Institute for Aquatic Resources (DTU Aqua), Denmark
LEYLA TOLUN	Scientific and Technological Research Council of Turkey (TÜBİTAK)
IVICA VILIBIC	Institute of Oceanography and Fisheries (IZOR), Croatia

OBSERVERS, SPEAKERS AND GUESTS

Name	Organization
JOHN BRINCAT	European Commission DG MARE
ARIANNA BROGGIATO	University of Leuven, Belgium
VIRGINIE CIERS	Nautadutilh Legal Firm
MICHAEL DEPLEDGE	European Centre for Environment and Human Health, UK
TIM DEPRez	EMB Working Group Training / University of Ghent
SIGI GRUBER	European Commission DG R&I
MARTIN HYNES	European Science Foundation
MARCEL JASPARS	Marine Biodiscovery Centre / EU FP7 Pharmasea / University of Aberdeen, UK
ANN-KATRIEN LESCRAUWAET	Flanders Marine Institute (VLIZ), Belgium
VLADIMIR RYABININ	Intergovernmental Oceanographic Commission of Unesco
PETRA SARAPATKOVA	European Commission DG MARE
SOPHIE SEEYAVE	Partnership for Observation of The Global Oceans (POGO)
GERT VERREET	Flemish Government, EWI, Belgium
JACKY WOOD	JPI Oceans
EMB SECRETARIAT	
NIALL MCDONOUGH	EMB Executive Secretary
NAN-CHIN CHU	EMB Secretariat
KAREN DONALDSON	EMB Secretariat
DINA EPARKHINA	EMB Secretariat
VERONICA FRENCH	EMB Secretariat
KATE LARKIN	EMB Secretariat
NOEMIE WOUTERS	EMB Secretariat

Autumn 2015 Plenary Meeting, 14-15 October 2015, Split, Croatia

EMB DELEGATES

Representative	Member Organization
JAN MEES – CHAIR	Research Foundation – Flanders (FWO), Belgium
ROBERTO AZZOLINI	National Research Council (CNR), Italy
FERDINANDO BOERO	National Inter-University Consortium for Marine Sciences (CONISMA), Italy
TELMO CARVALHO	Fundação Para a Ciência e Tecnologia (FCT), Portugal
DAVID COX	Belgian Federal Science Policy Office (BELSPO), Belgium
ALEXANDRA DROSSOU-BERENDES	Geomar Helmholtz Centre for Ocean Research Kiel, Germany
JEAN-MARIE FLAUD	National Center for Scientific Research (CNRS), France
JAN-STEFAN FRITZ	German Marine Research Consortium (KDM), Germany
CARLOS GARCIA-SOTO	National Institute of Oceanography (IEO), Spain
FIONA GRANT	Marine Institute, Ireland
ANTHONY GREHAN	Irish Marine Universities Consortium (IMUC)
STEPHEN HALL	Natural Environment Research Council (NERC), UK
LARS HORN	Research Council of Norway (RCN), Norway
MARK JAMES	The Marine Alliance for Science And Technology for Scotland (MASTS), UK
HELGA F. KLEIVEN	University of Bergen (UiB), Norway
GILLES LERICOLAIS	French Research Institute for Exploitation of The Sea (Ifremer)
ERLEND MOKSNESS	Institute of Marine Research (IMR), Norway
YVES-MARIE PAULET⁵	Universités Marines, France
ROBERT PRECALI	Ruđer Bošković Institute, Croatia
ARTŪRAS RAZINKOVAS-BAZUIKAS	Klaipeda University, Lithuania
TELMO CARVALHO	Fundação Para A Ciência E Tecnologia (FCT), Portugal
SLAWOMIR SAGAN	Institute Of Oceanology Polish Academy Of Sciences (IO-PAN), Poland
MICHAEL SCHULZ	German Research Foundation (DFG), Germany
TARMO SOOMERE	Estonian Academy of Sciences
IVICA VILIBIC	Institute of Oceanography and Fisheries (IZOR), Croatia

⁵ Dominique Simon also attended for the French Marine Universities

OBSERVERS, SPEAKERS AND GUESTS

Name	Organization
NED DWYER	Eurocean
SERGE GARCIA	Chair of the Fisheries Expert Group of the IUCN Commission on Ecosystem Management
MARTIN PASTOORS	Chief Science Officer, Pelagic Freezer-Trawler Association
KENNETH PATTERSON	Senior Expert on fisheries science in Directorate A, DG MARE, European Commission
JAN SEYS	Communications Manager, Flanders Marine Institute & EMBCP Chair
NEDO VRGOČ	Institute of Oceanography and Fisheries (IZOR), Croatia
YVONNE WALTHER	Chair of the ICES Science Committee
JACKY WOOD	JPI Oceans

EMB SECRETARIAT

NIALL MCDONOUGH	EMB Executive Secretary
NAN-CHIN CHU	EMB Secretariat
KAREN DONALDSON	EMB Secretariat
VERONICA FRENCH	EMB Secretariat
KATE LARKIN	EMB Secretariat
NOEMIE WOUTERS	EMB Secretariat

ANNEX 5: Working group members 2015

Working Group Valuing Marine Ecosystems (WG VALMARE)

Working Group Members:

- Melanie Austen, Plymouth Marine Laboratory (PML), UK - WG Chair
- Peder Andersen, University of Copenhagen, Denmark
- Claire Armstrong, University of Tromsø, Norway
- Ralf Döring, The Thünen Institute of Sea Fisheries, Germany
- Stephen Hynes, National University of Ireland, Galway, Ireland
- Harold Levrel, French Research Institute for Exploitation of the Sea (Ifremer), France
- Adriana Resurreição, University of the Azores, Portugal
- Soile Kulmala, Finnish Environment Institute (SYKE), Finland

EMB Secretariat Support:

Science Officer: Veronica French
Manager: Niall McDonough

Working Group Deep-Sea Research (WG Deep-Sea)

Working Group Members:

- Alex Rogers, University of Oxford, UK - WG Chair
- Antje Boetius, Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research (AWI), Germany
- Andy Brierley, University of St. Andrews, UK
- Peter Croot, National University of Ireland, Galway, Ireland
- Marina Cunha, University of Aveiro, Portugal
- Roberto Danovaro, Stazione Zoologica Anton Dohrn, Italy
- Colin Devey, GEOMAR Helmholtz Centre for Ocean Research Kiel, Germany
- Alf Haakon Hoel, Institute of Marine Research (IMR), Norway
- Henry Ruhl, National Oceanography Institute (NOC), UK
- Pierre-Marie Sarradin, French Research Institute for Exploration of the Sea (Ifremer), France
- Seline Trevisanut, University of Utrecht, Netherlands
- Helena Vieira, University of Lisbon - formerly at Bioalvo (SME), Portugal
- Martin Visbeck, GEOMAR Helmholtz Centre for Ocean Research Kiel, Germany
- Sybille van den Hove, MEDIAN SCP (SME), Spain

EMB Secretariat Support:

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Manager: Niall McDonough

Working Group Marine Graduate Training (WG Training)

Working Group Members:

- Magda Vincx, Marine Biology Section, University Ghent, Belgium - WG Chair
- Øyvind Fiksen, University of Bergen, Norway
- Guillaume Rouillet, Université de Bretagne Occidentale - IUEM, France
- Avan Antia, University of Kiel, Germany
- Marja Koski, Technical University of Denmark, Denmark
- Pauhla McGrane, Galway-Mayo Institute of Technology, Ireland
- Bev Mackenzie, Institute of Marine Engineering, Science & Technology, UK
- Luís Menezes Pinheiro, University of Aveiro, Portugal
- Maurizio Ribera d'Alcalà, Stazione Zoologica Anton Dohrn, Italy
- Jeanine Olsen, University of Groningen, Netherlands
- Tim Deprez, Marine Biology Section, University Ghent, Belgium

EMB Secretariat Support:

Science Officer: Noémie Wouters

Manager: Niall McDonough, Kate Larkin

ANNEX 6: Panel members 2015

European Marine Board Communications Panel (EMBCP)

Panel Members:

- Jan Seys, Flanders Marine Institute (VLIZ), Belgium - Panel Chair
- Ferdinando Boero, National Inter-University Consortium for Marine Sciences (CoNISMa), Italy
- Jan Boon, Royal Netherlands Institute for Sea Research (NIOZ), The Netherlands
- Anne Ditlefsen, Research Council of Norway, Norway
- Marco Faimali, National Research Council, Institute of Marine Sciences (ISMAR, CNR), Italy
- Géraldine Fauville, University of Gothenburg, Sweden
- Lisa Fitzpatrick, Marine Institute, Ireland
- Albert Gerdes, Centre for Marine Environmental Sciences (MARUM), Germany
- Anouck Hubert, Marine Universities of France, France
- Thomas Isaak, French Research Institute for Exploitation of the Sea (Ifremer), France
- Sigrid Maebe, Royal Belgian Institute of Natural Sciences (RBINS), Belgium
- Kjartan Mæstad, Institute of Marine Research (IMR), Norway
- Kim Marshall-Brown, National Oceanography Centre (NOC), United Kingdom
- Martha Papathanassiou, Hellenic Centre for Marine Research (HCMR), Greece
- Francesca Petrera, National Institute of Oceanography and Experimental Geophysics (OGS), Italy
- Joanna Piwowarczyk, Institute of Oceanology of the Polish Academy of Sciences (IO-PAN), Poland
- Line Reeh, National Institute of Aquatic Resources (DTU Aqua), Denmark
- Ralf Roechert, Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research (AWI), Germany
- Joana Saiote, Centre of Marine and Environmental Research (CIIMAR), Portugal
- Yianna Samuel-Rhoads, Cyprus Oceanography Centre, Cyprus
- Andreas Villwock, Helmholtz Centre for Ocean Research Kiel (GEOMAR), Germany

EMB Secretariat Support:

Veronica French

European Scientific Diving Panel (ESDP)

Panel Members:

- Martin Sayer, National Environment Research Council (NERC), United Kingdom - panel chair
- Jean-Pierre Feral, National Centre for Scientific Research (CNRS), France
- Philipp Fisher, Alfred Wegener Institute for Polar and Marine Research (AWI), Germany
- Giorgio Caramanna, Italian Association of Scientific Divers (AIOSS), Italy
- Jouni Leinikki, Finnish Scientific Diving Steering Association, Finland
- Maria Asplund, Sven Loven Center for marine research, Sweden
- Alain Norro, Management Unit of the North Sea Mathematical Models (MUMM) - Royal Belgian Institute of Natural Sciences (RBINS), Belgium

EMB Secretariat Support:

Noémie Wouters and Karen Donaldson

ANNEX 7: Meetings and events organized in 2015 (including jointly)

Date	Event and Venue
14-15/01/2015	EMB WG Training 2 nd meeting, Brussels
15/01/2015	Joint EMB-EuroGOOS workshop on EOOS preparatory meeting, Brussels
20/01/2015	EMB ExCom, Brussels
4/02/2015	EMB ESDP plenary meeting, Stuttgart
26/03/2015	EurOCEAN 2014 report - meeting with EC designer, Brussels
27/04/2015	EMBCP plenary meeting, Athens
28/04/2015	EMB ExCom, Ghent
29-30/04/2015	EMB Plenary, Ghent
12-13/05/2015	EOOS Workshop, Brussels
28-29/05/2015	European Maritime Day, Athens (two stakeholder workshops)
9/06/2015	OCNexus Consensus Statement drafting group 1 st Meeting, WebEx
9/07/2015	OCNexus Consensus Statement drafting group 2 nd Meeting, WebEx
29/07/2015	OCNexus Consensus Statement drafting group 3 rd Meeting, WebEx
1/09/2015	Launch of PP22 'Delving Deeper', Aviero
13/10/2015	EMBCP meeting, Split
13/10/2015	ExCom meeting, Split
14-15/10/2015	Autumn Plenary meeting, Split
20/10/2015	15 th ESDP Plenary, Brussels
21/10/2015	5 th EMB Forum, Brussels
11/11/2015	3 rd Oceans of Tomorrow Conference, Brussels

ANNEX 8:

Presentations to meetings by EMB Secretariat, ExCom and WG members in 2015

Date	Event and Venue	Speaker(s)
28/01/2015	POGO 16 th Annual Meeting, Tenerife	Jan Mees
6/02/2015	JPI Oceans Secretariat visit to InnovOcean, Oostende	Niall McDonough
23/02/2015	Transatlantic Ocean Research Alliance, Galway Stakeholders' Meeting, Brussels	Niall McDonough
16/03/2015	UNESCO IOC IODE project office - 10th Anniversary Conference, Brugge	Jan Mees
24/03/2015	EU H2020 Sea Change Steering Committee Meeting, London	Veronica French
7-9/04/2015	Conference for Research Programme on the Oceans and Coastal Areas, Norway	Niall McDonough
16-17/04/2015	The Atlantic – Our Shared Resource, Brussels	Niall McDonough
7/05/2015	JPI Oceans conference, Brussels	Niall McDonough
26-27/05/2015	Kostas Nittis conference on operational oceanography, Athens	Kate Larkin
10-12/06/2015	AtlantOS KoM, Brussels	Kate Larkin
16/06/2015	ESF Governing Council meeting, Frankfurt	Jan Mees, Niall McDonough
31/08/2015	14 th Deep Sea Biology Symposium, Aveiro – DOSI meeting	Karen Donaldson
1/9/2015	14 th Deep Sea Biology Symposium, Aveiro	Alex Rogers
1/09/2015	DGRM science-policy panel on Management of deep-sea ecosystems, Aveiro	Kate Larkin
1/09/2015	Launch of PP22 Delving Deeper Aviero	Alex Rogers, Niall McDonough
14/09/2015	Sea Change Steering Committee meeting, Galway	Veronica French
21/09/2015	Film-Debate Surfrider Campus Tour, Brussels	Nan-Chin Chu
8/10/2015	Presentation to Jebsen Foundation, Norway (by skype)	Niall McDonough
13/10/2015	EMBCP meeting, Split	Veronica French
27/10/2015	European Academies of Sciences (EurASC) meeting, Brest	Jan Mees
28/10/2015	Ocean Leadership Members' Meeting, Washington D.C.	Niall McDonough
29/10/2015	Seas, Rivers, Islands and Coastal Areas, EU Parliament Intergroup meeting on Climate Change, Strasbourg	Nan-Chin Chu
29/10/2015	US Council on Foreign Relations Round-table on Climate Change, Washington D.C.	Niall McDonough
11/11/2015	3 rd Oceans of Tomorrow Conference, Launch of EMB Policy Brief 2, Brussels	Alex Rogers, Niall McDonough
18/11/2015	Sea for Society event in the European Parliament	Niall McDonough
19/11/2015	EuroOCEAN Steering Committee meeting, Oostende	Niall McDonough

ANNEX 9: Member contributions 2015

EMB Member	Country	Contribution 2015 / €
National Centre for Scientific Research, CNRS	France	17.000
French Research Institute for Exploitation of the Sea, IFREMER	France	17.000
Universités Marines	France	17.000
German Research Foundation, DFG	Germany	17.000
Association of National Research Centres, HGF	Germany	17.000
German Marine Research Consortium, KDM	Germany	17.000
National Research Council, CNR	Italy	17.000
National Institute of Oceanography and Experimental Geophysics, OGS	Italy	17.000
National Inter-University Consortium for Marine Sciences, CoNISMa	Italy	17.000
Natural Environment Research Council, NERC (+ NOC)	UK	34.000
Marine Alliance of Science and Technology Scotland, MASTS*	UK	17.000
National Fund for Scientific Research, FNRS	Belgium	12.000
Fund for Scientific Research – Flanders, FWO	Belgium	12.000
Belgian Science Policy Office, BELSPO	Belgium	12.000
DTU Aqua	Denmark	12.000
Marine Institute, MI	Ireland	12.000
Irish Marine Universities Consortium	Ireland	12.000
Netherlands Organisation for Scientific Research, NWO	Netherlands	12.000
Royal Netherlands Institute for Sea Research, NIOZ	Netherlands	12.000
University of Bergen, UiB	Norway	12.000
Research Council of Norway, RCN (+IMR)	Norway	24.000
Spanish Institute of Oceanography, IEO	Spain	12.000
Council for Scientific Research, CSIC	Spain	12.000
Cyprus Oceanography Centre**	Cyprus	0
Estonian Academy of Sciences	Estonia	8.000
Hellenic Centre for Marine Research, HCMR	Greece	8.000
University of Klaipeda***	Lithuania	4.000
Institute of Oceanology - Polish Academy of Sciences, IO-PAN	Poland	8.000
Science and Technology Foundation, FCT	Portugal	8.000
Centre of Marine and Environmental Research, CIMAR	Portugal	8.000
National Institute for Marine Research and Development "Grigore Antipa"	Romania	8.000
Scientific and Technological Research Council of Turkey, TÜBİTAK	Turkey	8.000
Institute of Oceanography and Fisheries, IZOR	Croatia	3.000
Institute Ruđer Bošković, IRB	Croatia	3.000
Total Call for Contributions 2015		€ 426.000

* In 2015 MASTS also paid its contributions for 2016 and 2017. These additional payments are not shown here.

** Withdrew from EMB in 2015 and made no contribution

*** Joined EMB as a new member in 2015 and made 50% contribution = 4,000 euro

ANNEX 10: Full list of EMB publications

POSITION PAPERS:

- Rogers A.D. *et al.* (2015) **Delving Deeper: Critical challenges for 21st century deep-sea research.** European Marine Board Position Paper 22. Larkin, KE, Donaldson K, McDonough, N (Eds). European Marine Board, Ostend, Belgium, 2014.
Coordinating author: Alex D. Rogers; Contributing authors: Andy Brierley, Peter Croot, Marina Cunha, Roberto Danovaro, Colin Devey, Alf Haakon Hoel, Henry Ruhl, Pierre-Marie Sarradin, Seline Trevisnaut, Helena Viera, Martin Visbeck
- Flemming N.C. *et al.* (2014) **Land beneath the waves: State of the art, key opportunities and recommendations to advance the European Continental Shelf Prehistoric Research.** European Marine Board Position Paper 21. McDonough N, Chu, NC (Eds). European Marine Board, Ostend, Belgium, 2014.
Coordinating author: Nicholas C. Flemming; Contributing authors: M. Namık Çağatay, Francesco Latino Chiocci, Nena Galanidou, Gilles Lericolais, Hauke Jöns, Tine Missiaen, Fionnarr Moore, Alar Rosentau, Dimitris Sakellariou, Birgitte Skar, Alan Stevenson, and Henk Weerts.
- European Marine Board (2013). **Navigating the Future IV.** Position Paper 20 of the European Marine Board, Ostend, Belgium. ISBN: 9789082093100
- Moore M., *et al.* (2013). **Linking Oceans and Human Health: A Strategic Research Priority for Europe.** Position Paper 19. McDonough N., Evrard M., Calewaert JB., French V. (Eds). European Marine Board, Ostend, Belgium. 2013.
Contributing authors: Michael N. Moore, Craig Baker-Austin, Michael H. Depledge, Iora Fleming, Philipp Hess, David Lees, Paul Leonard, Lise Madsen, Richard Owen, Hans Pirllet, Mathew White, Vitor Vasconcelos, Nicholas Boase, Nicholas Osborne, Aldo Viarengo
- Olsen E. M., *et al.* (2013). **Achieving Ecologically Coherent MPA Networks in Europe: Science Needs and Priorities.** Marine Board Position Paper 18. Larkin, K. E. and McDonough N. (Eds.). European Marine Board, Ostend, Belgium. ISBN 978-9-079528-19-6. 84pp.
Contributing authors: Luciano Fonseca, Raquel Goñi, David Johnson, Stelios Katsanevakis, Enrique Macpherson, Esben Moland Olsen, Dominique Pelletier, Marijn Rabaut, Marta Chantal Ribeiro, Phil Weaver, Tania Zaharia
- Haugan, P. (2013). **Getting ready for an ice-free Arctic.** McDonough, N. & Larkin, K. E. (Eds.) Marine Board Science Commentary 1, European Marine Board, Ostend, Belgium.
- Heip, C., & McDonough, N. (2012). **Marine Biodiversity: A Science Roadmap for Europe.** Marine Board Future Science Brief 1, European Marine Board, Ostend, Belgium. ISBN: 978-2-918428-75-6.
- Glöckner, F. O. *et al.* (2012). **Marine Microbial Diversity and its role in Ecosystem Functioning and Environmental Change. Marine Board Position Paper 17.** McDonough N., Calewaert J-B. (Eds.). Marine Board-ESF, Ostend, Belgium.
Contributing authors: Lucas J. Stal, Ruth-Anne Sandaa, Josep Maria Gasol, Fergal O’Gara, Francisco Hernandez, Matthias M. Labrenz, Elena Stoica, Marta Varela Rozados, Adriano Bordalo, Paraskevi Pitta.
- Roose, P. *et al.* (2011). **Monitoring chemical pollution in Europe’s Seas - programmes, practices and priorities for research.** McDonough N., Calewaert J-B. (Eds.). Marine Board-ESF, Ostend, Belgium.
Contributing authors: Joan Albaigés, Maria João Bebianno, Kees Camphuysen, Margot Cronin, Jan de Leeuw, Geir Wing Gabrielsen, Thomas Hutchinson, Ketil Hylland, Colin Janssen, Bo Jansson, Bjørn Munro Jenssen, Patrick Roose, Detlef Schulz-Bull, Piotr Szefer.
- Querellou J. *et al.* (2010). **Marine Biotechnology: A Vision and New Strategy for Europe. Marine Board Position Paper 15.** McDonough N., Calewaert J-B. (Eds.). Marine Board-ESF, Ostend, Belgium. ISBN 978-2-918428-26-8, 94pp.
Contributing authors: Torger Borresen, Catherine Boyen, Alan Dobson, Manfred Hofle, Adrianna Ianora, Marcel Jaspars, Anake Kijjoa, Jan Olafsen, Joel Querellou, George Rigos, Rene Wijffels. Special contributions: Chantal Compere, Michel Magot, Jeanine Olsen, Philippe Potin, Filip Volckaert.

- Rice J. *et al.* (2010). **Science Dimensions of an Ecosystem Approach to Management of Biotic Ocean Resources, SEAMBOR. Marine Board Position Paper 14.** McDonough N., Carbonnière A. (Eds). Marine Board-ESF, Ostend, Belgium. ISBN 978-2-918428-10-7, 90pp.
Contributing authors: Maria de Fátima Borges, Anthony Grehan, Andrew Kenny, Harald Loeng, Francesc Maynou, Jake Rice, Ricardo Serrão Santos, Hein Rune, Skjoldal, Olivier Thébaud, Vassiliki Vassilopoulou, Filip Volckaert. External contributions: Olivier Curtil, Harold Levrel.
- Boyd I. *et al.* (2008). **The Effects of Anthropogenic Sounds on Marine Mammals. Marine Board Position Paper 13.** Connolly N., Calewaert J-B. (Eds). Marine Board-ESF, Ostend, Belgium. ISBN 2-912049-85-7, 94pp.
Coordinating authors: Ian Boyd, Bob Brownell, Doug Cato, Chris Clark, Dan Costa, Peter Evans, Jason Gedamke, Roger Gentry, Bob Gisiner, Jonathan Gordon, Paul Jepson, Patrick Miller, Luke Rendell, Mark Tasker, Peter Tyack, Erin Vos, Hal Whitehead, Doug Wartzok, Walter Zimmer.
- Robinson I.S. *et al.* (2008). **Remote Sensing of Shelf Sea Ecosystems. Marine Board Position Paper 12.** Connolly N., Walter N., Calewaert J-B. (Eds). Marine Board-ESF, Strasbourg, France. ISBN 2-912049-77-6, 62pp.
Contributing authors: David Antoine, Mirosław Darecki, Patrick Gorringe, Lasse Petterson, Ian S. Robinson, Kevin Ruddick, Rosalia Santoleri, Herbert Siegel, Patrick Vincent, Marcel R. Wernand, Guy Westbrook, Giuseppe Zibordi.
- Connolly N. *et al.* (Eds) (2007). **Marine Board Responses to the European Commission's Green Papers: (i) Towards a future Maritime Policy for the Union: A European vision for the oceans and seas and (ii) The European Research Area: New Perspectives EC's Green Papers on: Maritime Policy, and the ERA. Marine Board Position Paper 11.** Marine Board-ESF, Strasbourg, France. ISBN 2-912049-73-3, 46pp.
Developed from existing Marine Board-ESF publications and discussions with Marine Board Delegates and Executive Committee.
- Binot J. *et al.* (2007). **European Ocean Research Fleets – Towards a Common Strategy and Enhanced Use. Marine Board Position Paper 10.** Connolly N., Carbonnière A. (Eds). Marine Board-ESF, Strasbourg, France. ISBN 2-912049-62-8, 62pp.
Contributing authors: Jacques Binot, Juanjo Da obeita, Thomas Muller, Per Wilhelm Nieuwejaar, Marieke J. Rietveld, Paul Stone. Special contributions: Massimiliano di Bitteto, John Breslin, Klaus von Broeckel, Joao Coimbra, Dimitris Georgopoulos, Mick Gillooly, Hannu Gronvall, Jan Piechura, Frans Veenstra.
- Philippart C.J.M. *et al.* (2007). **Impacts of Climate Change on the European Marine and Coastal Environment – Ecosystems Approach. Marine Board Position Paper 9.** Connolly N., Walter N. (Eds). Marine Board-ESF, Strasbourg, France. ISBN 2-912049-63-6, 84pp.
Contributing authors: Ricardo Anadón, Roberto Danovaro, Joachim W. Dippner, Kenneth F. Drinkwater, Stephen J. Hawkins, Geoffrey O'Sullivan, Temel Oguz, Catharina J.M. Philippart, Philip C. Reid.
- Minster J-F., Connolly N. *et al.* (Eds) (2006). **Navigating the Future III. Marine Board Position Paper 8.** Marine Board-ESF, Strasbourg, France. ISBN 2-912049-59-8, 69pp.
Contributing editors: Aurélien Carbonnière, Niamh Connolly, Jan de Leeuw, Maud Evrard, Jan Mees, Jean-François Minster, Kostas Nittis, Geoffrey O'Sullivan, Nicolas Walter.
- Prandle D. *et al.* (2005). **Modelling in Coastal and Shelf Seas – European Challenges. Marine Board Position Paper 7.** Connolly N., Walter N. (Eds). Marine Board-ESF, Strasbourg, France. 30pp.
Contributing authors: João Gomes Ferreira, Wolfgang Fennel, Michael Hartnett, Peter Herman, Michiel Knaapen, Hans Los, Morten Pejrup, Thomas Pohlmann, David Prandle, Roger Proctor, Yann-Hervé de Roeck, Karline Soetaert, Takvor Soukissian, Tapani Stipa, Georg Umgiesser, Waldemar Walczowski.
- Mantoura F., Boissonnas J., d'Ozouville L., Connolly N. (2003). **Navigating the Future II - Summary of Integrating Marine Science in Europe. Marine Board Position Paper 6.** Minster J-F. *et al.* (Eds). Marine Board-ESF, Strasbourg, France. 24pp.

Editors: John Marks, Jean-François Minster, Mario Ruivo, Silvana Vallerga; Other Contributors: Avan Antia, Laura Castellucci, Juanjo Dañobeitia, Jens Degett, Bob Dickson, Graham Edgar, Paul Galvin, David Griffith, Gwyn Griffiths, Harlyn Halvorson, Carlo Heip, Jean-Pierre Henriët, Catherine Jeandel, Frank Lamy, Jacques Legrand, Han Lindeboom, Karin Lochte, Jens Meincke, Geoffrey O’Sullivan, Nadia Pinarði, Gérard Riou, Douglas Wallace, Gerold Wefer, John Woods.

- Mantoura F., Boissonnas J., d’Ozouville L., Connolly N. (2002). **Integrating Marine Science in Europe. Marine Board Position Paper 5.** Minster J-F. *et al* (Eds). Marine Board-ESF, Strasbourg, France. 148pp.
Editors: John Marks, Jean-François Minster, Mario Ruivo, Silvana Vallerga; Other Contributors: Avan Antia, Laura Castellucci, Juanjo Dañobeitia, Jens Degett, Bob Dickson, Graham Edgar, Paul Galvin, David Griffith, Gwyn Griffiths, Harlyn Halvorson, Carlo Heip, Jean-Pierre Henriët, Catherine Jeandel, Frank Lamy, Jacques Legrand, Han Lindeboom, Karin Lochte, Jens Meincke, Geoffrey O’Sullivan, Nadia Pinarði, Gérard Riou, Douglas Wallace, Gerold Wefer, John Woods.
- Halvorson H. *et al.* (2001). **Marine Biotechnology – A European Strategy for Marine Biotechnology. Marine Board Position Paper 4.** Mantoura F. (Ed). Marine Board-ESF, Strasbourg, France. ISBN 2-912049-29-6, 30pp.
Contributing authors: Maria Alexis, Grant Burgess, Joao Coimbra, Yves le Gal, Maura Grealy, David Gutnick, Harlyn Halvorson, Manfred Höfle, Zuzana Smolenicka, Bernt Walther, Roman Wenne; Special consultant: Jan A. Olafsen.
- Boissonnas J., d’Ozouville L. *et al.* (2001). **Navigating the Future – Towards a Marine European Research Area. Marine Board Position Paper 3.** Marine Board-ESF, Strasbourg, France. 14pp.
Core Drafting Group: J. Boissonnas, O.R. Godø, C. Jeandel, J.W. de Leeuw, K. Lochte, R.F.C. Mantoura, J. Marks, J.F. Minster, G. O’Sullivan, L. d’Ozouville, S. Vallerga, G. Wefer; Other contributors: H. Halvorson, C. Heip, B. B. Jørgensen.
- Boissonnas J., d’Ozouville L. *et al.* (2000). **Towards a European Marine Research Area. Marine Board Position Paper 2.** Marine Board-ESF, Strasbourg, France. 54pp.
Core Drafting Group: J. Boissonnas, O.R. Godø, C. Jeandel, J.W. de Leeuw, K. Lochte, R.F.C. Mantoura, J. Marks, J.F. Minster, G. O’Sullivan, L. d’Ozouville, S. Vallerga, G. Wefer; Other contributors: H. Halvorson, C. Heip, B. B. Jørgensen.
- Heip C., Hummel H. (2000). **Establishing a Framework for the Implementation of Marine Biodiversity Research in Europe. Marine Board Position Paper 1.** Mantoura F. (Ed). Marine Board-ESF, Strasbourg, France. ISBN 2-912049-13-X, 50pp.

FUTURE SCIENCE BRIEFS :

- Heip C., McDonough N. **Marine Biodiversity: A Science roadmap for Europe.** Marine Board Future Science Brief 1. European Marine Board, Ostend, Belgium. 2012. ISBN 978-2-918428-75-6, 32pp.

POLICY BRIEFS:

- Larkin, K.E., Donaldson, K., McDonough, N., Rogers, A.D. (2015) **Delving Deeper: How can we achieve sustainable management of our deep sea through integrated research?** EMB Policy Brief No.2, European Marine Board, Ostend, Belgium.
- Chu, N.-C., McDonough, N., Flemming, N.C. (2014) **How did our ancestors adapt to sea-level change? Safeguard European underwater heritage through Continental Shelf Prehistoric Research,** EMB Policy Brief No.1, European Marine Board, Ostend, Belgium. ISSN 0778-3590

SCIENCE COMMENTARIES:

- Schulz, M. *et al.* (2015) **The Ocean-Climate Nexus: The Critical Role of Ocean Science in Responding to Climate Change.** Chu, N.-C., McDonough, N. (Eds). European Marine Board, Ostend, Belgium. Coordinating Author: Michael Schulz; Contributing Authors: Hugues Goose, Eileen Hofmann, Pierre-Yves Le Traon, Susan Lozier, Baris Salihoglu, Isabel Sousa Pinto.
- Haugan P. **Getting Ready for an Ice-Free Arctic.** European Marine Board Science Commentary 1. European Marine Board, Ostend, Belgium. (2013)

VISION DOCUMENTS:

- Le Boulluec M. *et al.* (2010). **Marine Renewable Energy – Research Challenges and Opportunities for a New Energy Era in Europe. Marine Board Vision Document 2.** McDonough N., Evrard M. (Eds). Marine Board-ESF, Ostend, Belgium. ISBN: 978-2-918428-27-5, 12pp.
Contributing Authors: Augusto Barata da Rocha, Cibran Camba Rey, Marc Le Boulluec, John Dalen, Henry Jeffrey, Finn Gunnar Nielsen, Geoffrey O’Sullivan, Nathalie Rousseau, Eoin Sweeney, Judith Wolf.
- Dosdat A., Ryder P. *et al.* (2008). **Marine Board – EuroGOOS Vision Document on EMODNET, The European Marine Observation and Data Network. Marine Board Vision Document 1.** Ryder P., Connolly N., Evrard M. (Eds). Marine Board-ESF, Ostend, Belgium. 10pp.
Contributing authors: Patrick Berthou, Taco de Bruin, Howard Cattle, Franciscus Colijn, Antoine Dosdat, Michael Gillooly, Johnny Johannessen, Juha Markku Leppanen, Giuseppe Manzella, Geoffrey O’Sullivan, Sylvie Pouliquen, Roger Proctor, Peter Ryder, Dick Schaap.

SPECIAL REPORTS:

- Heip C., *et al.* (2011). **Climate Change and Marine Ecosystem Research: Synthesis of European Research on the Effects of Climate Change on Marine Environments. Marine Board – CLAMER Special Report.** Calewaert J.B., Heip C., McDonough N., Philippart C. (Eds). Marine Board, Ostend, Belgium. 154pp.
Coordinating author: Carlo Heip. CLAMER Scientific Expert Panel Contributors: Carlo Heip, Manuel Barange, Roberto Danovaro, Marion Gehlen, Anthony Grehan, Filip Meysman, Temel Oguz, Vangelis Papathanassiou, Catharina Philippart, Jun She, Paul Treguer, Rachel Warren, Paul Wassmann, Phil Weaver, Rita Yu. Other Contributors: Justus van Beusekom, Philip Boyd, Andrew Cooper, Hein de Baar, Henk de Haas, Felix Janssen, Wolfgang Ludwig, Leif Toudal Pedersen, Michael Tsimplis, Hans Von Storch.

FORUM PROCEEDINGS:

- McDonough N., Vrench F., Chu N. -C., Larkin, K.E., Eparkhina, D. (Eds) (2014). **4th EMB Forum Arctic 2050: Towards ecosystem-based management in a changing Arctic Ocean** (12 March 2014, Brussels). **Forum Proceedings.** European Marine Board, Ostend, Belgium
Forum rapporteurs: Veronica French, Dina Eparkhina, Kate Larkin, Nan-Chin Chu, Noémie Wouters
- McDonough N., Vrench F., Chu N. -C., Larkin, K.E., Eparkhina, D. (Eds) (2014) **3rd EMB Forum, New Technologies for a Blue Future** (18 April 2012, Brussels). **Forum Proceedings.** European Marine Board, Ostend, Belgium.
Forum rapporteurs: Dina Eparkhina, Jan-Bart Calewaert, Nan-Chin Chu, Kate Larkin
- McDonough N., Larkin, K.E., Evrard, M., Calewaert, J-B, Eparkhina, D., Carbonnière, A. (Eds) (2012). **2nd Marine Board Forum Towards a European Network of Marine Observatories for Monitoring and Research** (16 September 2010, Brussels). **Forum Proceedings.** Marine Board-ESF, Ostend, Belgium.
Forum rapporteurs: Dina Eparkhina, Jan-Bart Calewaert, Maud Evrard, Kate Larkin
- Connolly N., Evrard M. (Eds). (2009) **1st Marine Board Forum Marine Data Challenges: from Observation to Information (15 May 2008, Ostend).** **Forum Proceedings.** Marine Board-ESF, Ostend, Belgium. ISBN 2-912049-97-0, 36pp.
Forum rapporteurs: Erlend Moksness, Jacky Wood

ANNUAL REPORTS:

- McDonough, N., Eparkhina, D. **European Marine Board Annual Report 2014.** European Marine Board, Ostend, Belgium. 2014. ISBN: 9789079528288, 52pp
- McDonough, N., Eparkhina, D. **European Marine Board Annual Report 2013.** European Marine Board, Ostend, Belgium. 2014. ISBN: 9789079528226, 64pp.
- McDonough, N., Eparkhina, D. **Marine Board Annual Report 2012.** Marine Board, Ostend, Belgium. 2013. ISBN: 9789079528196, 64pp.

- McDonough, N., Eparkhina, D. **Marine Board Annual Activity Report 2011**. Marine Board, Ostend, Belgium. 2012. ISBN: 9789079528141, 64pp.
- McDonough N., Eparkhina D. **Marine Board Annual Activity Report 2010**. Marine Board-ESF, Ostend, Belgium. 2011. ISBN: 9789079528141 72pp.
- McDonough N., Eparkhina D., Calewaert J-B. **Marine Board Annual Activity Report 2009**. Marine Board-ESF, Ostend, Belgium. 2010. 50pp.
- Connolly N., Eparkhina D., Calewaert J-B. **Marine Board Annual Activity Report 2008**. Marine Board-ESF, Ostend, Belgium. 2009. 44pp.
- Connolly N. **Marine Board Annual Report 2007**. Eparkhina D., Evrard M., Calewaert J-B., Carbonnière A. (Eds). Marine Board-ESF, Ostend, Belgium. 2009. 28pp.

EMAPS REPORTS:

- Heip C., Warwick R., d'Ozouville L. (Eds) (1998). **A European Science Plan on Marine Biodiversity. EMaPS Position Paper 2**. European Marine and Polar Science Secretariat, European Science Foundation, Strasbourg, France. ISBN 2-903148-97-X, 22pp.
- **EMaPS Annual Report 1997**. European Marine and Polar Science Secretariat, European Science Foundation, Strasbourg, France. 1998. 20pp.
- **European Initiatives in Science and Technology for Deep-sea Coring and Drilling. An EMaPS Position Paper**. European Marine and Polar Science Secretariat, European Science Foundation, Strasbourg, France. 1997. 34pp.

EUROCEAN CONFERENCE REPORTS:

- Larkin, K.E., Wouters, N., Caetano, AT., McDonough, N. (Eds). 2014. **EuroOCEAN 2014 Conference Report and Rome Declaration. EuroOCEAN 2014 – Connecting Science, Policy and People**. CNR, Rome, Italy, 7-9 October 2014.
- McDonough, Niall and Jan-Bart Calewaert (Eds). 2010. **EuroOcean 2010 Conference Report and Ostend Declaration. EuroOCEAN 2010 – Grand challenges for marine research in the next decade**. Thermae Palace, Oostende, Belgium, 12-13 October 2010. Belgian Science Policy Office (BELSPO), Brussels. VLIZ Special Publication 49 – Flanders Marine Institute (VLIZ). Oostende, Belgium. ISSN 1377-0950
- O'Sullivan G., Angell-Hansen K., Connolly N. (Eds). **EuroOCEAN 2007 (22 June 2007, Aberdeen, Scotland). Conference Report and Aberdeen Declaration**. Marine Institute, Ireland. 2007. 18pp.
Conference rapporteurs: Charlotte Jagot, Jacky Wood, Niall McDonough, Stephan Hall.
- Cieslikiewicz, W., Connolly, N., Ollier G., O'Sullivan G. (Eds). **Proceedings of the EuroOCEAN 2004 European Conference on Marine Science and Ocean Technology (10-13 May 2004, Galway, Ireland)**. Luxembourg: Office for Official Publications of the European Communities. 2007. ISBN 92-894-7727-X, 420pp.

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