

European

MARINE BOARD

Advancing Seas & Ocean Science

**25 years of enabling
marine science in Europe**

Sheila Heymans

12 June 2020

Air Centre - Net Fridays

<http://www.marineboard.eu/>

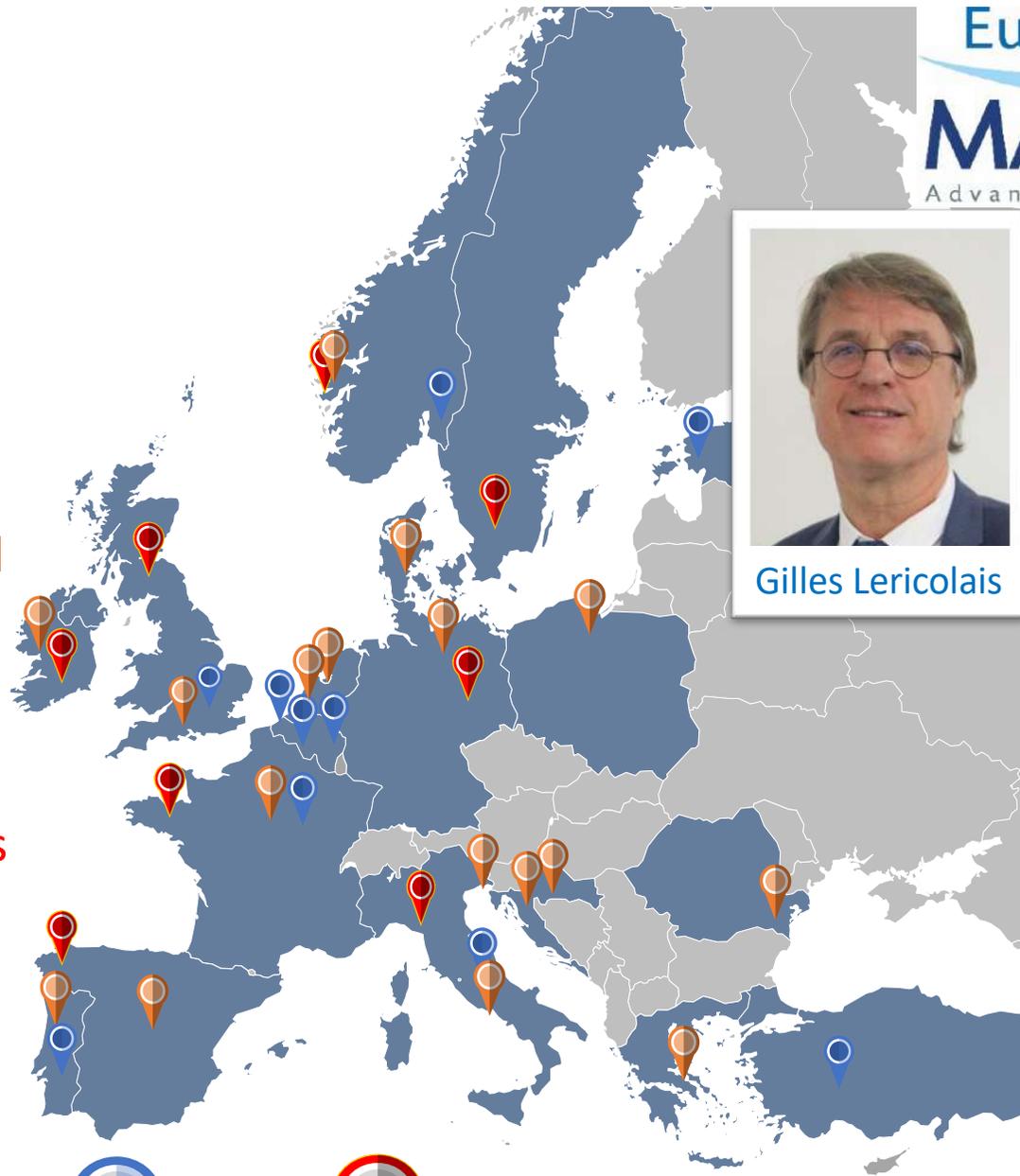


[@sheilaheyman](https://twitter.com/sheilaheyman)



[@EMarineBoard](https://twitter.com/EMarineBoard)

A unique European partnership of major marine and oceanographic institutes, research funding agencies and national networks of universities



Gilles Lericolais



Paula Kellett Joke Coopman



Britt Alexander Ángel Muñiz



RESEARCH PERFORMING
INSTITUTES



RESEARCH FUNDING
ORGANIZATIONS



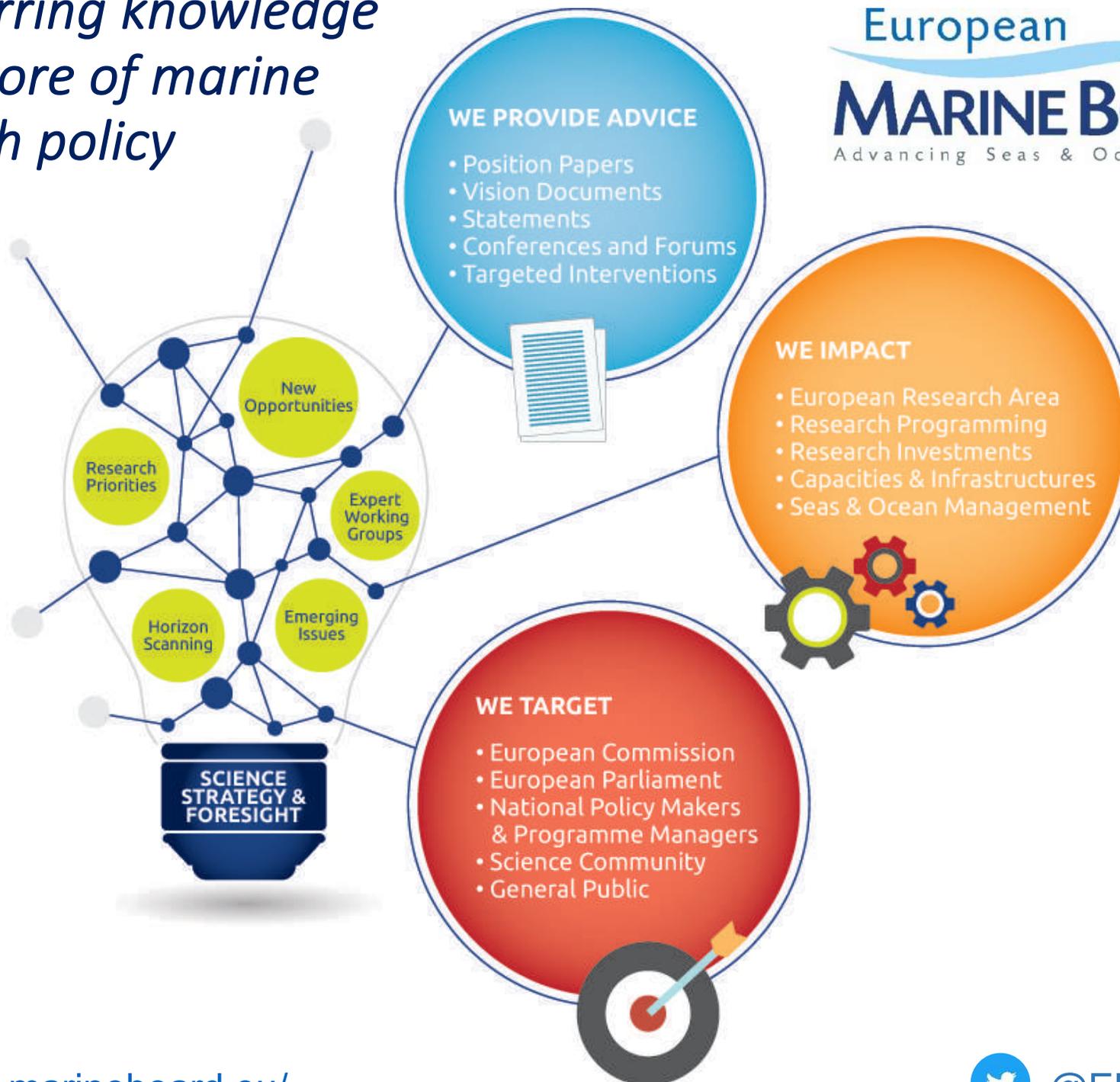
NETWORKS AND
UNIVERSITY CONSORTIA

35 MEMBERS FROM

18 COUNTRIES



Transferring knowledge to the core of marine research policy



1989: EC (DGRTD) + ESF establish European Committee for Ocean and Polar Sciences

Chair: Gotthilf Hempel

Conference at AWI (Germany)
12-16 September 1994

Hempel G. 1995. The Ocean and the Poles: Grand Challenges for European Cooperation. Jena, Germany 381pp.

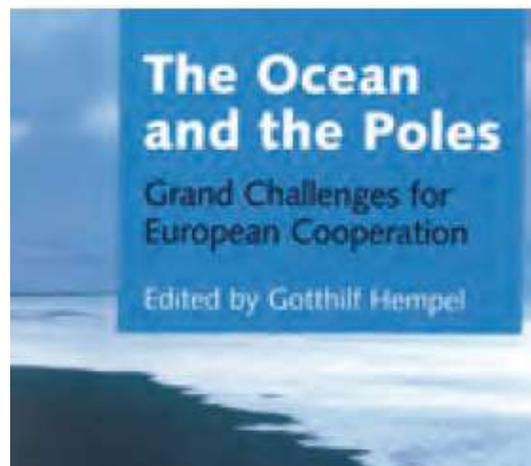
To identify the 'Grand Challenges' in ocean and polar science:

1. Operational Forecasting of the oceans and coastal seas
2. Variability of the deep sea floor
3. The Arctic Ocean
4. European Programme on Ice coring in Antarctica
5. Coastal zones
6. Biodiversity

1995: ESF sets up the Marine and Polar Sciences Board (EMaPS)

To coordinate specific marine, polar and joint activities.

Members: ESF member organizations, major national marine/polar scientific institutions or groups of these.



Whose research is it anyway: New Scientist 30 March 1996

<https://www.newscientist.com/article/mg14920235-800-forum-whose-research-is-it-anyway/>



1998: Independent review ->
European Polar Board +
Marine Board

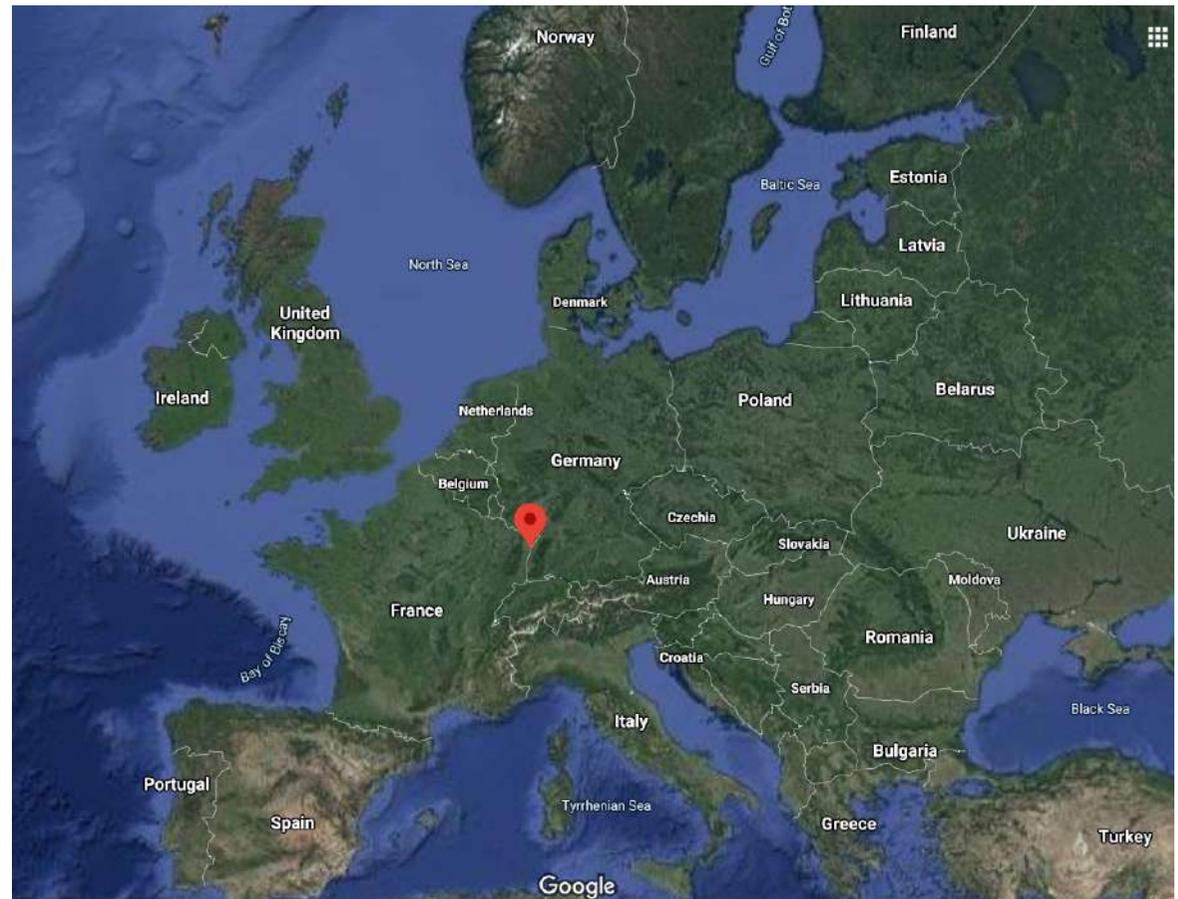
**Self-funded non-governmental
body**

Members: 24 organisations from
16 countries: major national
marine science institutes +
national funders.

Executive Secretary – Niamh Connolly



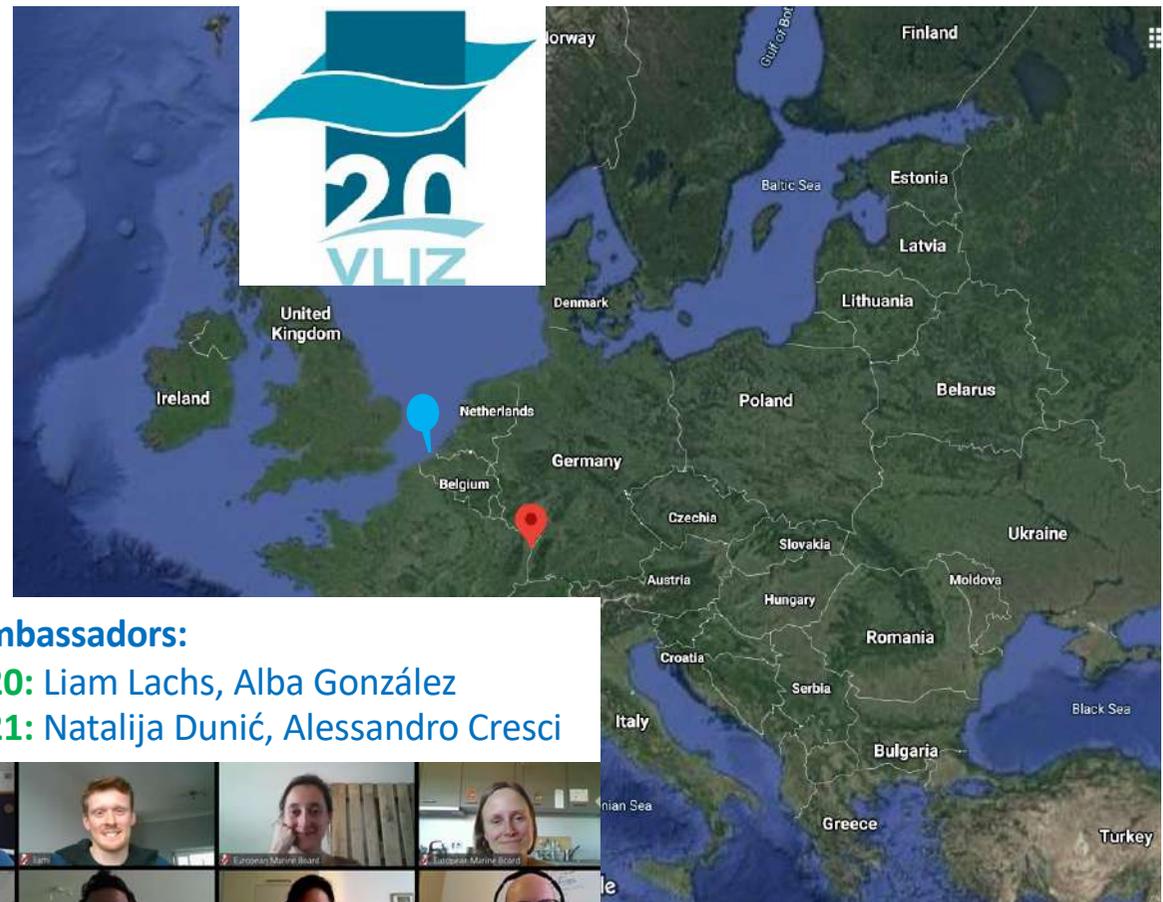
Secretariat in Strasbourg



Executive Secretary/Director –
1998-2007: Niamh Connolly
2007-2017: Niall McDonough
2018 → : Sheila Heymans



2007: EMB Secretariat moved to Ostend



Young Ambassadors:
2019-2020: Liam Lachs, Alba González
2020-2021: Natalija Dunić, Alessandro Cresci



2013: Marine Board becomes
European Marine Board

Expands members to include
national consortia of universities
with strong marine focus.

2016:
European Marine Board ivzw
establishes own legal entity

8 Founding members

2017: fully independent from ESF



1989: European Committee for Ocean and Polar Sciences

Chair: Gotthilf Hempel

Members:

Biology (2)

Research Administration (4)

Physical oceanography (4)

Geology (6)

1995: Marine and Polar Sciences Board (EMaPS)

Strasbourg: 14-15 October 1996

Southampton: 7-9 November 1996

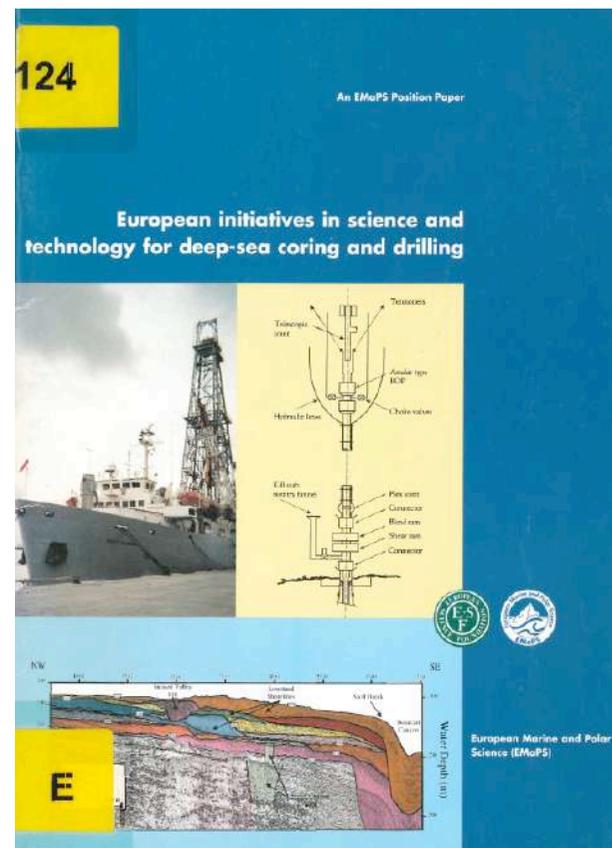
D'Ozouville et al. 1997. European initiatives in science and technology for deep-sea drilling. ESF Marine Board Position Paper No. 1

<http://www.marineboard.eu/>

Position Paper 1: 1997

Deep-sea coring and drilling in Europe

- Identify drilling capabilities
- Define long-term science strategy for ocean drilling
- Promote European technologies



1998: split->

2020

Geohazards working group



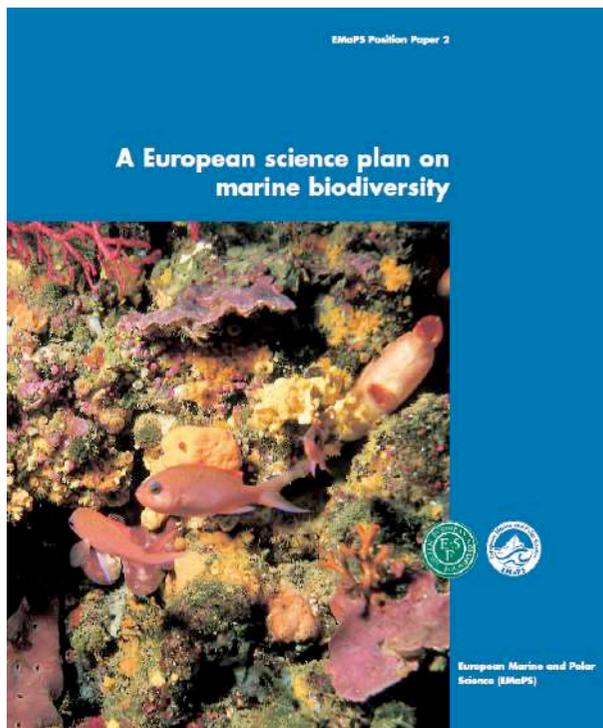
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1998: split->

European Polar Board +
Marine Board

Position Paper 2: 1998

Heip et al.

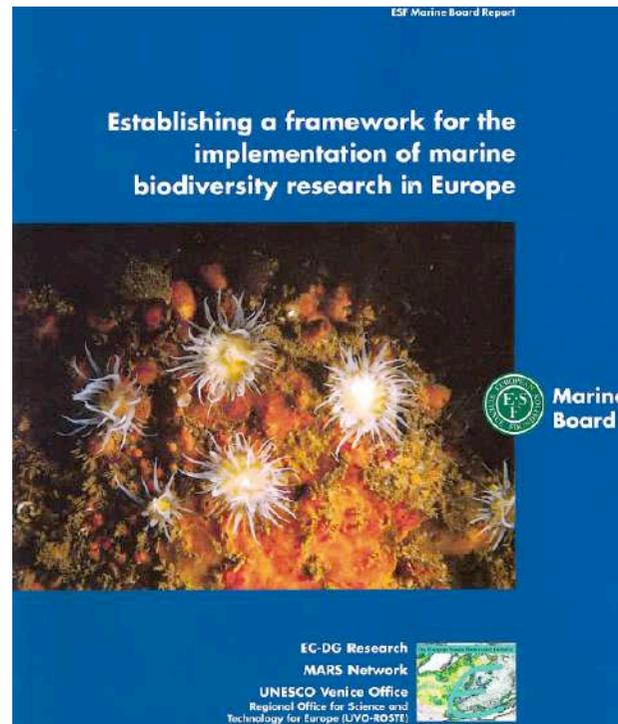


Workshops: Yerseke (NL)

16-18 Dec 1997

22-24 April 1999

Heip and Hummel, **2000**



FP6: NoE 2004-8



 CENSUS OF MARINE LIFE

2000-2010



2002: Convention on Biological Diversity – to:

- support approaches to marine management by 2010;
- facilitate establishment of MPAs and networks by 2012;
- maintain productivity and biodiversity of important and vulnerable marine and coastal areas, including ABNJs.

2010: CBD – Aichi Target 11:

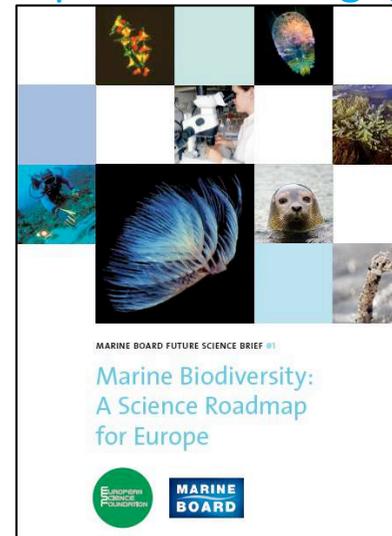
“by 2020, at least 10% of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved ...systems of protected areas ...”

2012: Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services

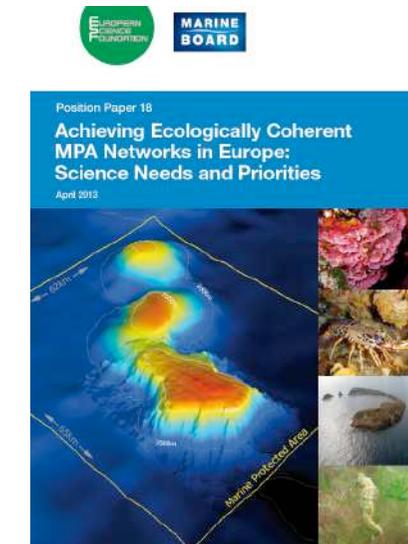


<http://www.marineboard.eu/>

Future Science Brief: 1
Heip & McDonough, 2012



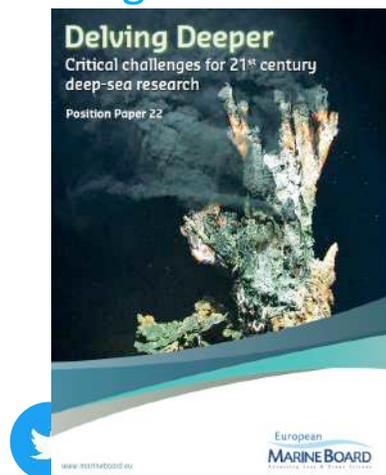
Position Paper: 18
Olsen et al. 2013



Position Paper 17:
Glöckner et al. 2012



Position Paper 22:
Rogers et al. 2015



Heip and McDonough, 2012



nature climate change

Letter | Published: 04 March 2019

Marine heatwaves threaten global biodiversity and the provision of ecosystem services

Dan A. Smale, Thomas Wernberg, Eric C. J. Oliver, Mads Thomsen, Ben P. Harvey, Sandra C. Straub, Michael T. Burrows, Lisa V. Alexander, Jessica A. Benthuyssen, Markus G. Donat, Ming Feng, Alistair J. Hobday, Neil J. Holbrook, Sarah E. Perkins-Kirkpatrick, Hillary A. Scannell, Alex Sen Gupta, Ben L. Payne & Pippa J. Moore

Nature Climate Change 9, 306–312(2019) | Cite this article

9494 Accesses | 80 Citations | 1016 Altmetric | Metrics

for Europe



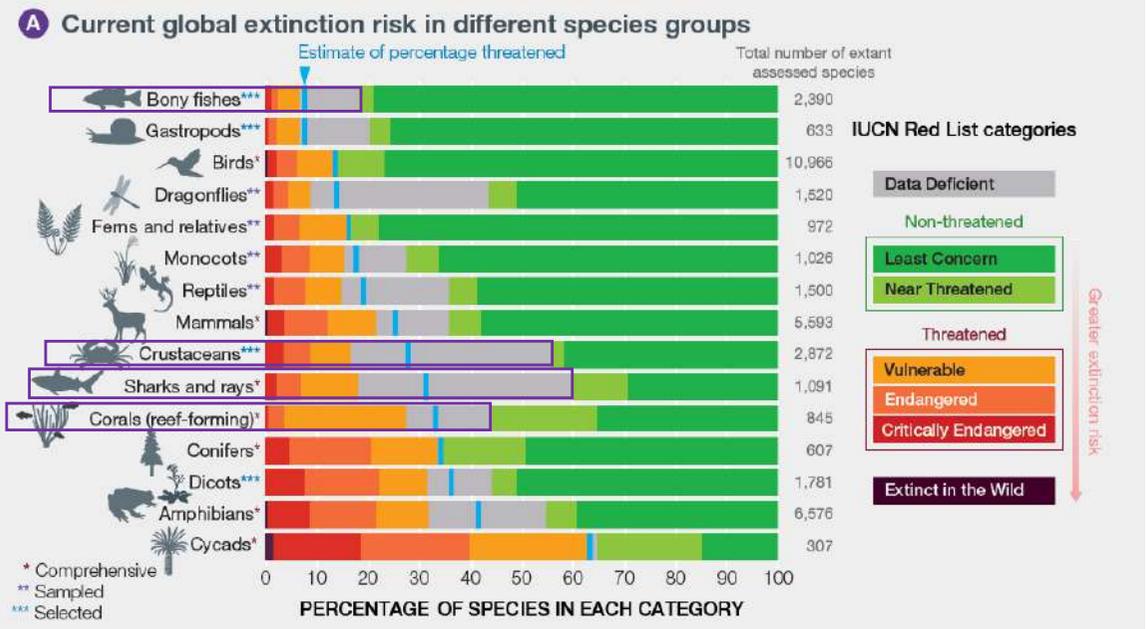
Recommendations:

- Better understanding of the factors which drive, maintain and deplete biodiversity in ecosystems,



IPBES Global Assessment Report

FSB 4: 2018



1995:

Grand challenges
Hempel et al.



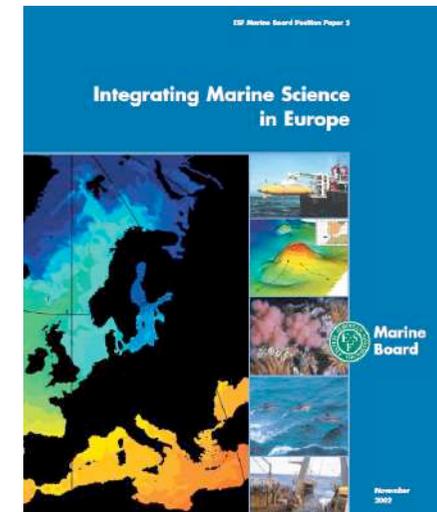
2000: Hamburg

EurOCEAN conference
Boissonnas & d'Ozouville



Position Paper 3: 2001
Navigating the Future 1
Towards a marine
European Research Area.

Position Paper 5: 2002



2004-2009: FP6: Facilitating
Cooperation between
National Marine Research
Programmes in Europe



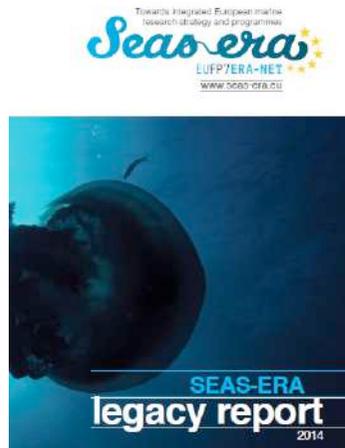
Position Paper 11: 2007
Response to green papers..

2010-2014:

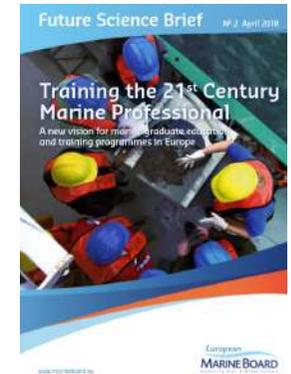




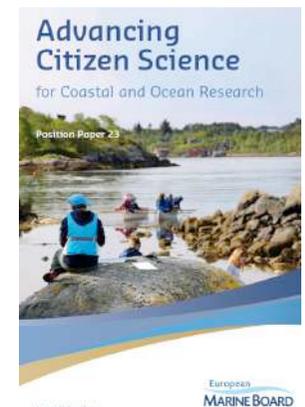
European Marine Research Area...



FSB 2: 2018



PP 23: 2017



- Recommendations for strengthening Human Capacity Building, in particular by facilitating the completion of PhD fellowships ...
- Enhance public awareness towards marine and maritime scientific and policy issues in Europe....

Partnerships? Mission?

<http://www.marineboard.eu/>



Review of Ocean Literacy in European Maritime Policy



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Position Paper 4: 2001
Feasibility Study Report.



..outline R&D priorities in marine biotechnology to strategically refocus Europe's extensive but dispersed infrastructure ... This initiative could benefit from catalytic and directed funding from EU's FP6.

<http://www.marineboard.eu/>

Position Paper 15: 2010
Querellou et al.



Vision: by 2020 – European marine biotechnology sector be organised, integrated, globally competitive

3rd EMB Forum: 2012
New Technologies for a Blue Future



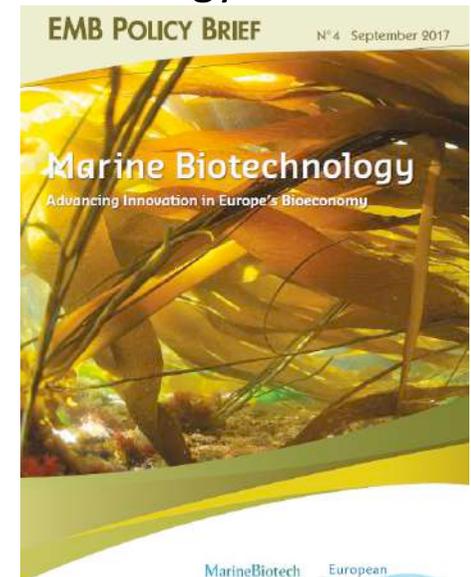
PROCEEDINGS

"We are entering a new era of engineering – engineering... Rapid advancements in areas"



..highlight innovation hotspots for the European marine sector, showcase emerging technologies for growth, novel applications for human well-being and tools for next generation marine knowledge

Policy Brief 4: 2017
EMB & Marine Biotechnology ERANET (FP7 funded)
... strategy to 2030



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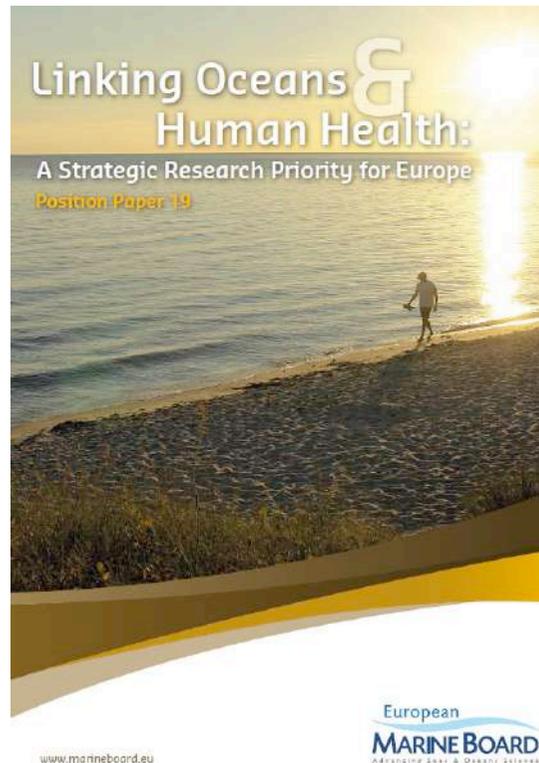
3rd EMB Forum: 2012 New Technologies for a Blue Future



.. novel applications for human well-being and tools for next generation marine knowledge ...

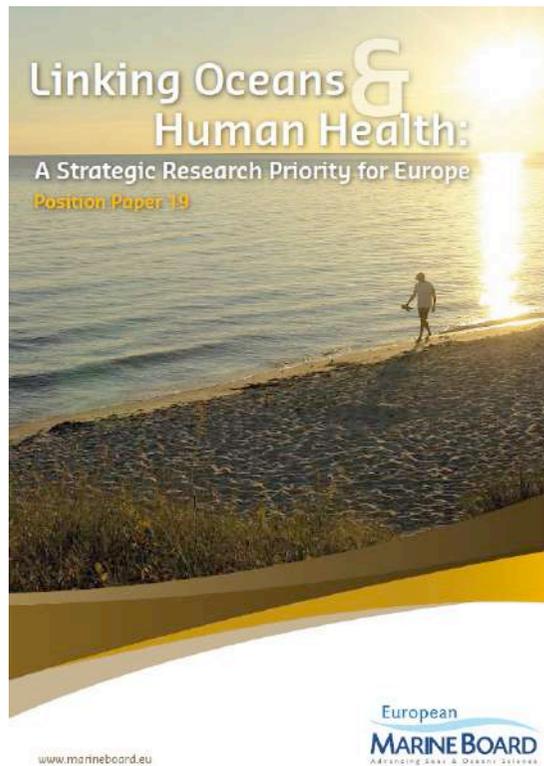
Technology .. driving bio-inspired breakthroughs... some of the latest bio-based polymers with multiple applications for marine and maritime sectors ...

... access to the deep-sea and innovative molecular techniques, such as molecular studies of sponges ... noted as driving new opportunities for bio-prospecting, leading ...applications of marine biological resources.



Position Paper 19: Moore et al. 2013.
Linking Oceans & Human Health: A strategic Research Priority for Europe

Position Paper 19: Moore et al. 2013. Linking Oceans & Human Health: A strategic Research Priority for Europe



H2020: 2017-2020



Seas, Oceans & Public Health in Europe

Linking oceans and health research

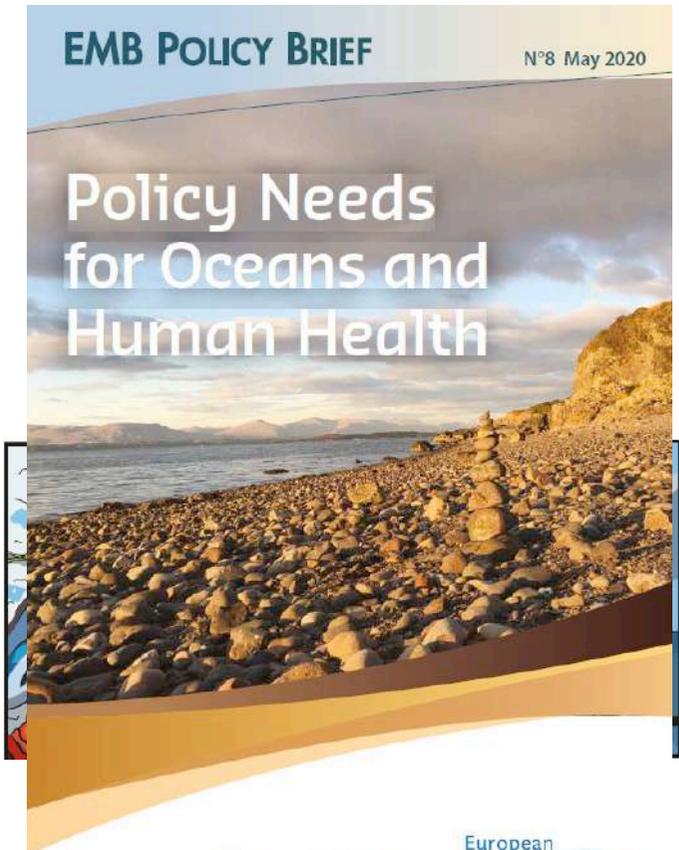
Coordinator: Lora Fleming U of Exeter
€2 million Euros; 8 partners (academia, SMEs, government)



SOPHIE webinar:

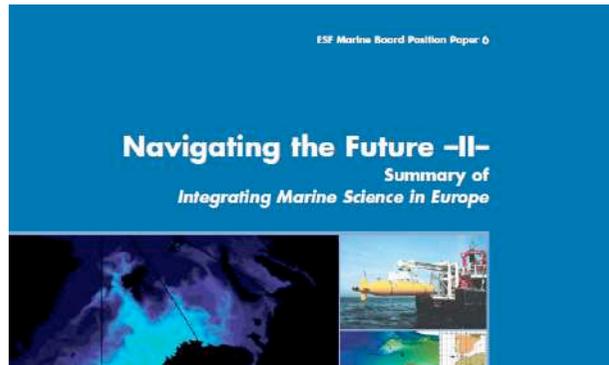
<http://www.marineboard.eu/> <https://www.youtube.com/watch?v=M7drxxnbHrY>

Policy Brief No 8: 2020



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Position Paper 6: 2003 Navigating the Future 2



“Europe needs to move towards sound and **true governance** of its oceans and seas, integrating all components for a **comprehensive and responsible management** of its marine assets”

<http://www.marineboard.eu/>

Position Paper 8: 2006 Navigating the Future 3



Position Paper 8
Navigating the Future -III
November 2006

Galway statement & Green paper on Maritime Policy, ...the need for **regional marine resource management** ..A **forum** of marine **scientists, policy makers**, representatives from **industry, coastal stakeholders** convened regularly to ensure **effective communication** and synergy between sectors.”

Position Paper 11: 2007 Response to green papers...

EU Green paper on maritime policy ... should be supported by excellent scientific research...



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Vision Document 2: Da Rocha et al. 2010



Marine Renewable Energy requirements:

- An European policy on Marine Renewable Energy;
- A governance framework relying on sound research and based on:
 - The development and consolidation of enabling policies ...;
 - The alignment of competing policy objectives;
 - ...



<http://www.marineboard.eu/>

Position Paper 20: 2013 Navigating the Future 4



13 thematic chapters -> science policy briefing documents:

- ...
- Safe and sustainable use of marine and coastal space
- Sustainable harvest of food from the sea
- Linking oceans and human health
- ...
- An integrated and sustained European Ocean Observing System
- Effective European marine science-policy interfaces
- ...



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2016-2018: Meetings with DG MARE Commissioner Vella



2019-2021:



<https://webgate.ec.europa.eu/maritimeforum/en/frontpage/1469>

<http://www.marineboard.eu>



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EMB Panel on EMODNET

EurOCEAN: 2008

Aberdeen



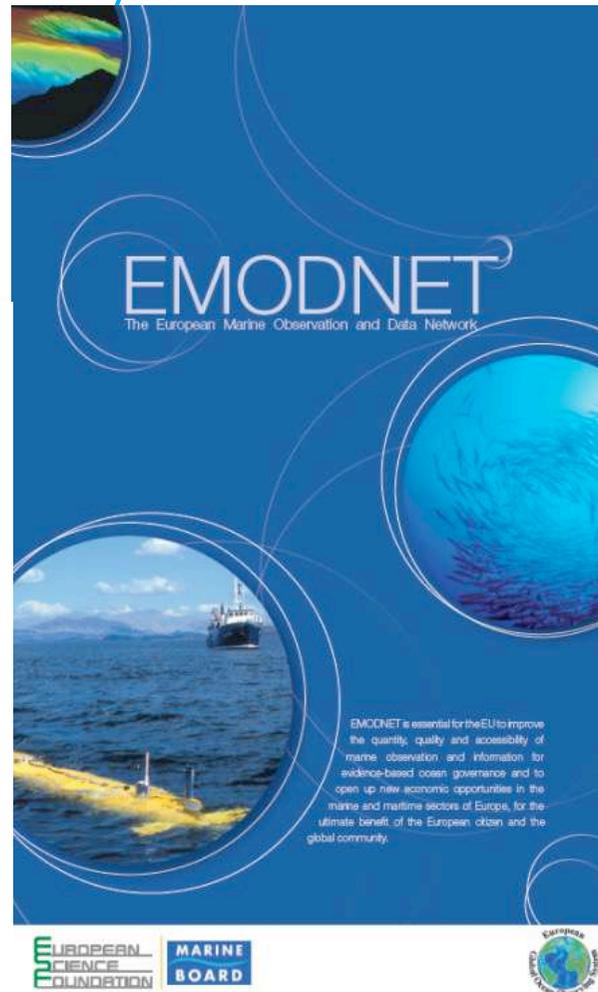
*..support the importance of long-term data series to ensure adequate baselines to facilitate assessment, modelling and forecasting. Initiatives such as the proposed **EMODNET** and the EU Atlas of the Seas will provide significant contributions to addressing these needs.*

EU Commissioner Joe Borg

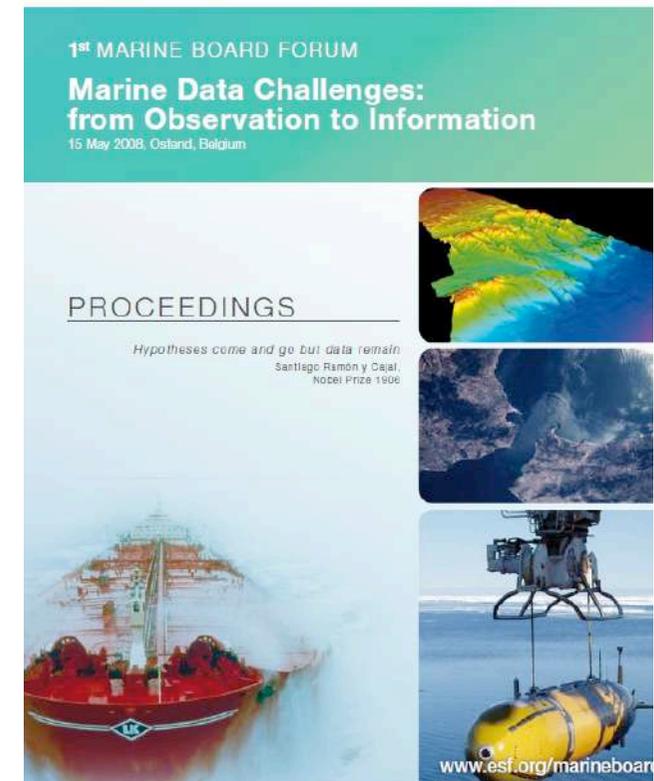
<http://www.marineboard.eu/>

EMODNET: 2008

Ryder et al.



1st MB Forum: 2008



2nd MB Forum: 2010



2ND MARINE BOARD FORUM

**Towards a European Network of Marine
Observatories for Monitoring and Research**
16 September 2010, Brussels, Belgium

PROCEEDINGS

*"A Long-term, stable and integrated
network of strategic marine observatories...
providing consistent in situ data from the seas
and oceans... as a driver for smart, sustainable
and inclusive growth in Europe..."*

Extract from 2nd Marine Board Forum/Vision Statement



Driving science and technology frontiers
for observing our changing ocean:
From discovery and exploration in the
15th Century to new frontiers in ocean
observation in the 21st Century



www.marineboard.eu

Vision: *"A long-term, stable and integrated network of strategic marine observatories, installed and operated through multi-national cooperation and support, providing consistent in situ data from the seas and oceans in support of the EU Integrated Maritime Policy ..."*

Calls for A European strategy on the development of an integrated network of marine observatories:

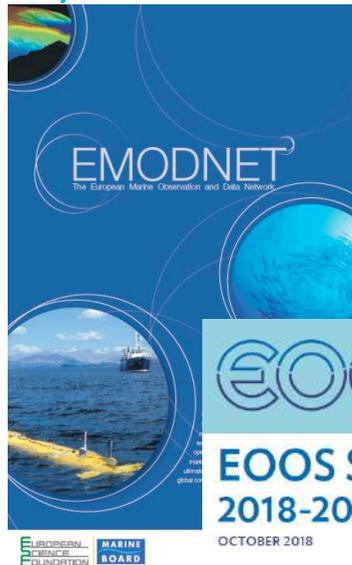
..Innovative and long-term funding mechanisms combining EU and Member and Associated State funding streams **to support development** of a full network and its continued operation;

...

Use of **advanced e-infrastructure framework** to gather and make available **consistent and quality- controlled datasets** from distributed observing systems.

EMODNET: 2008

Ryder et al.



2014:

EMODnet financed by the EU DG MARE European Maritime and Fisheries Fund.

EOOS (European Ocean Observation System) to align, integrate and promote Europe's ocean observing capacity.



EOOS Strategy 2018-2022

OCTOBER 2018



Implementation 2018-2022

OCTOBER 2018



FSB 3: 2018

FSB 6: 2020





Observation value chain: Remote sensing



Workshops: Brussels
24 May 2006,
31 Aug 2006,
30 Nov 2006

Position Paper 12: 2008
Robinson et al.

FP7 MyOcean (2009-12),
FP7 MyOcean2 (2012-14)

Project information

MERSEA

Grant agreement ID: 502885

Start date: 1 April 2004
End date: 30 September 2008

Funded under:
FP6-AEROSPACE

Overall budget:
€ 24 320 809

EU contribution
€ 13 997 699



Coordinated by:
INSTITUT FRANCAIS DE RECHERCHE POUR
L'EXPLOITATION DE LA MER
France



Position Paper 12
**Remote Sensing of Shelf Sea
Ecosystems**
State of the Art and Perspectives
February 2008

Wider uptake of satellite
ocean colour data requires
that users are given **easy,
unrestricted and free
access** to the processed
data products, using
on-line web-based scene
selection according
to user-specified criteria.



EMODnet



FR, BE, CA, CY, DE, DK, ES, FI,
GR, IE, IT, NL, NO, TR, UK

<http://www.marineboard.eu/>

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Observation value chain: Research Fleets

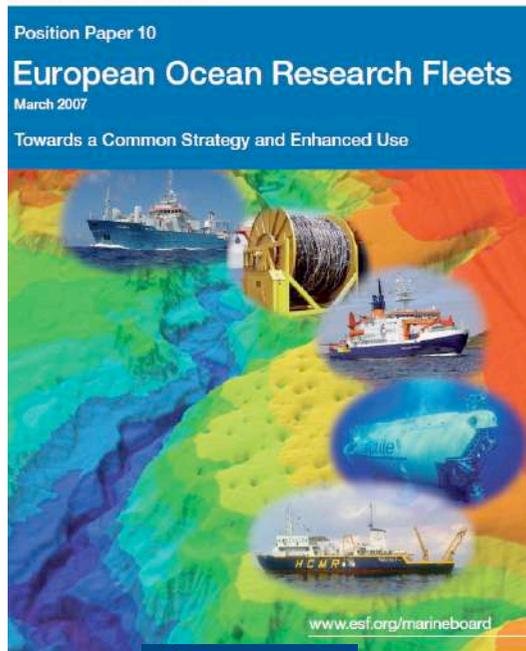


1999-2005: European Research Vessel Operators - ERVO Panel



Position Paper 10: 2007

Binot et al.



<http://www.marineboard.eu/>

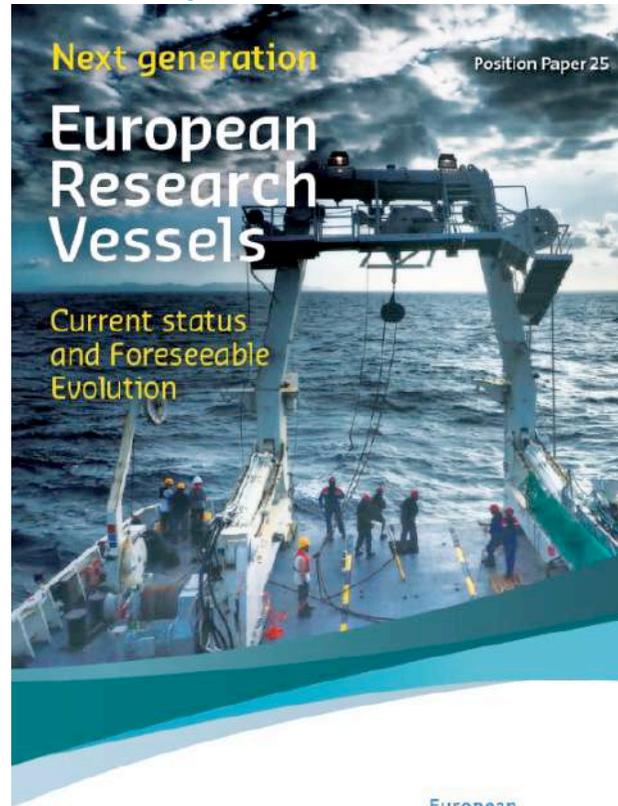
Workshops:

Bergen & Barcelona **2018**,

Galway **2019**

Position Paper 25: 2019

Nieuwejaar et al.

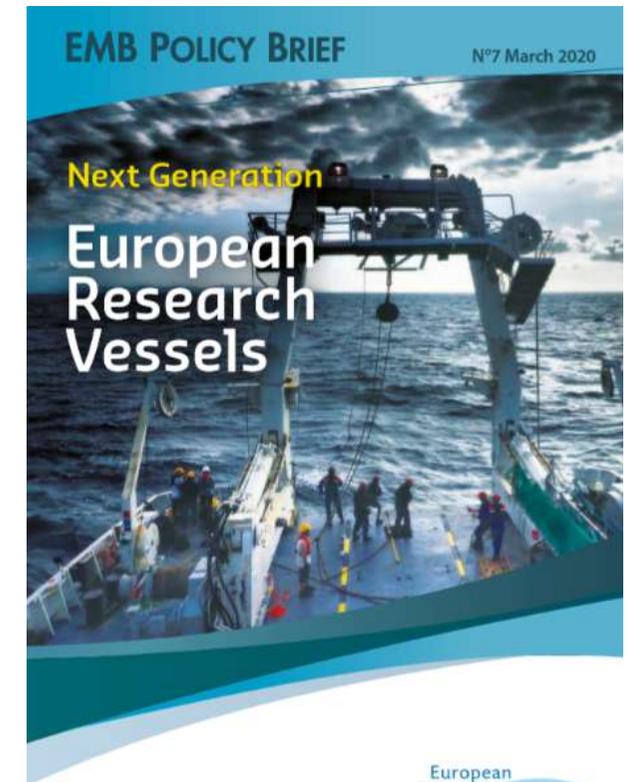


www.marineboard.eu



Policy Brief 7: 2020

...European RV fleet ageing and should continue to be modernized and renewed...



www.marineboard.eu



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Workshops:

Nice (2003)
London (2003)
Galway (2004)

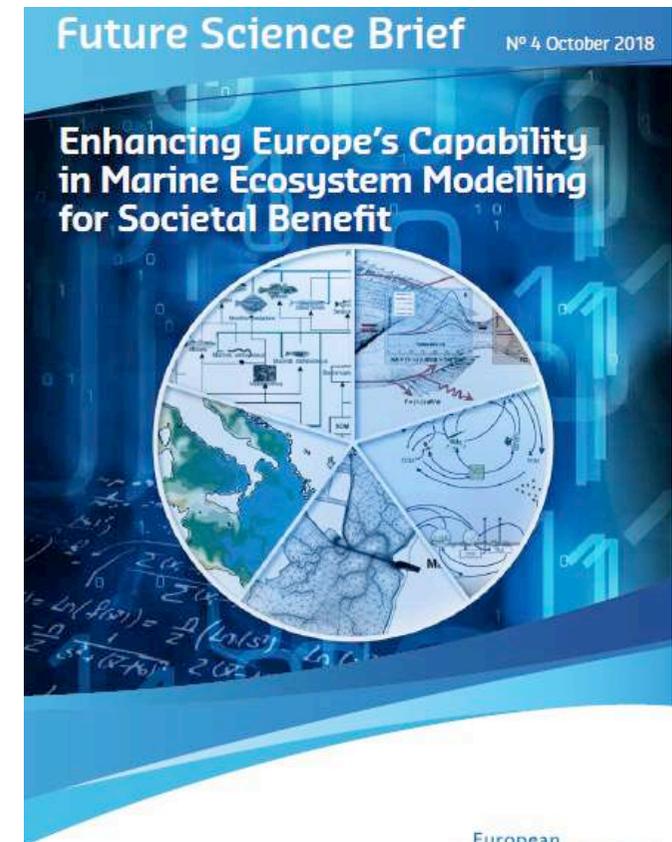
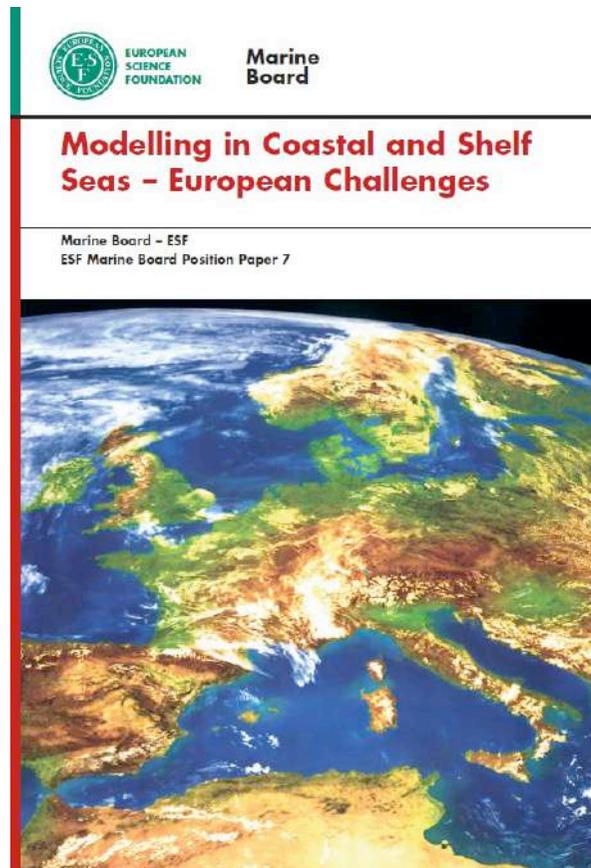
Position Paper 7: 2005
Prandle et al.

Workshop: Plymouth 2017
Future Science Brief 4: 2018
Heymans et al.

Hydrodynamic modelling:

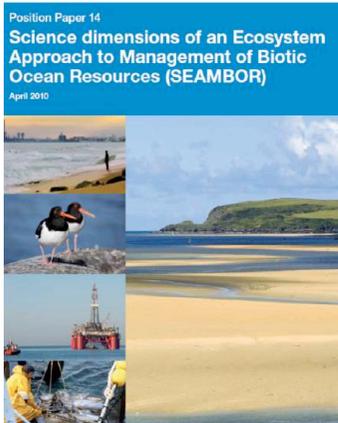
... need for a wide range of models with different characteristics to provide genuine ensemble envelopes and cater for a range of environments...

A systems approach is needed, capable of integrating marine modules and linking these into holistic simulators (geological, socio-economic etc.).



Position Paper 14: 2010

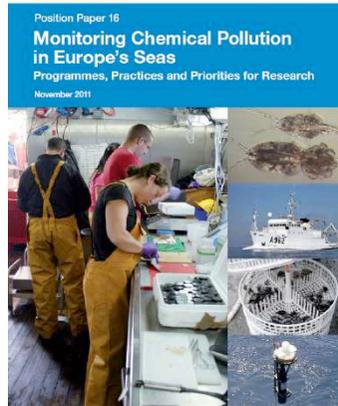
Rice et al.
Ecosystems...



... calls for more, and better managed data!

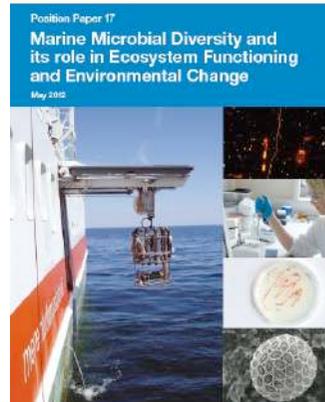
Position Paper 16:

Roose et al. 2011
Chemical pollution...



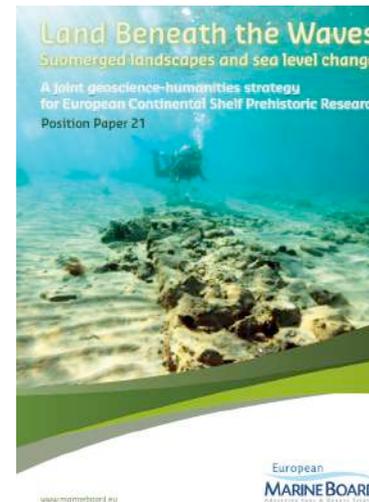
Position Paper 17:

Glöckner et al. 2012
Microbial diversity...



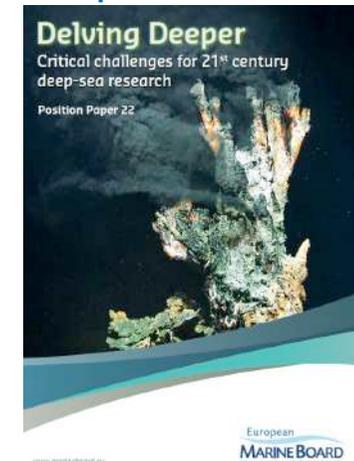
Position Paper 21:

Flemming et al. 2014
Archaeology ...



Position Paper 22:

Rogers et al. 2015
Deep-sea...



Position Paper 14: 2010

Rice et al.



Position Paper 14
Science dimensions of an Ecosystem Approach to Management of Biotic Ocean Resources (SEAMBOR)
April 2010



Workshops:

EMB+NSF (USA): London, 2004

EMB WG: Oxford, 2005



Critical Science priorities:

1. Develop **integrated policy evaluation tools** to improve decision-making ...;
2. Improve knowledge of **how ecological support systems** (food webs, physical-biological coupling) are linked to provision of goods & services;
3. Assess **consequences of ecosystem changes** for economies /societies, and investigate and develop mitigation and/or adaptation options;
4. Evaluate the **advantages and limitations of alternative ecosystem conservation policies**, ...;
5. ...
6. Take measures to **improve data management** and inter-operability of data.

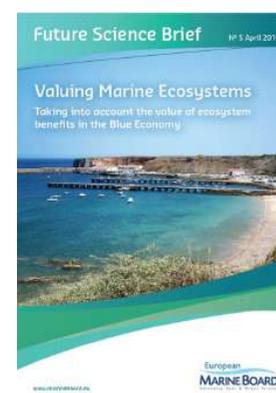
PB 3: 2017



FSB 4: 2018



FSB 5: 2019





Human Impacts: Climate change



Position Paper 9: 2007

Philippart et al.



Science Commentary 1: 2013

Haugan et al.



Getting ready for an ice-free Arctic

A major increase in our capacity to observe and study the Arctic Ocean ecosystem is urgently required before the region is transformed by rapid environmental change and commercial exploitation.

<http://www.marineboard.eu/>

Special Report: 2011

Heip et al. www.clamer.eu



Science Commentary 2: 2017

Clark et al. 2016

Science Commentary – April 2017



The ticking time bomb of climate change and sea-level rise:

Why human actions in the next 10 years can profoundly influence the next 10,000

5th EMB Forum: 2015

The critical role of ocean science in responding to climate change



THE CRITICAL ROLE OF OCEAN SCIENCE IN RESPONDING TO CLIMATE CHANGE

A call from the ocean research community

On 30 November 2015 the 21st Conference of the Parties to the United Nations Framework Convention on Climate Change (COP21) will get underway in Paris. COP21 represents a momentous opportunity for governments to make serious commitments to address climate change and its implications for humankind and the health of our planet. The role of the ocean in the climate system must be an integral part of these discussions. The earth's climate and the ocean are fundamentally linked in ways we still do not fully understand. The ocean plays a key role as a climate regulator and in buffering the damaging effects of climate change. But the human activities that cause climate change, predominantly greenhouse gas emissions, are also affecting the health of the ocean, making it increasingly warmer and causing ocean acidification. We are damaging the very system that is fundamental to our wellbeing.

Ocean scientists are at the front line in the quest for knowledge to understand the role of the ocean in the earth and climate systems, and the implications of changing oceans for our environment and wellbeing. Hence, ocean research must be at the heart of our global response to climate change. For this reason, the ocean science communities of Europe and the North America, through the combined voices of the European Marine Board and the Consortium for Ocean Leadership, are issuing this joint call for action.

To the COP21:

We call on the Parties to the United Nations Framework Convention on Climate Change to:

- Recognize the fundamental role of the ocean in the climate system in reaching a post-2020 climate agreement;
- Deliver a strong agreement with ambitious mitigation targets to reduce harmful greenhouse gas emissions and curb damage to the ocean and its ecosystems;
- Understand and promote the role of ocean and climate research as a fundamental tool in the societal response to climate change and provide impetus to improve the knowledge base for climate action.

To Research Funders:

Our research communities stand ready to work across borders and disciplines towards a greater understanding of the ocean-climate nexus, and to communicate scientific knowledge to support ocean stewardship and measures to understand, mitigate and adapt to global change.

We call on the funders of research to support major and, where necessary, long-term ocean-climate research and observation programmes with a level of investment that matches the gravity of the impacts of a changing ocean and the importance of the ecosystem services it provides. To achieve the scale of research required, international collaboration will be essential.

In this short statement, we summarize the role of the ocean in the earth and climate systems. We set out some of 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.

Statement to COP21: 2015

Schulz et al.



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Workshops:

EMB+NSF (USA): London, 2004

EMB WG: Oxford, 2005

Position Paper 13: 2008

Boyd et al.

New: Underwater Noise (May 2020)

Chair: Frank Thomsen, DHI, Denmark

Co-Chair: Sonia Mendes, JNCC, UK

Future Science Brief

- **Update** Position Paper 13
- Broaden scope to **all marine organisms**,
- Raise awareness of the **current knowledge and research gaps**,
- **Highlight the conflicts** that exist relative to underwater noise.



<http://www.marineboard.eu/>

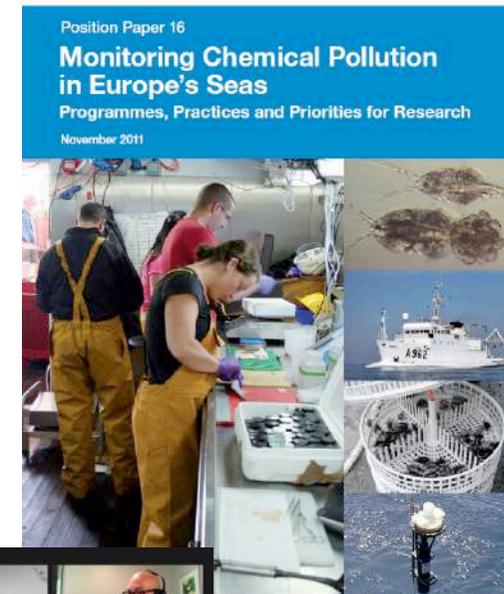
Workshops:

Brussels & Ostend 2008

Brussels & Oslo 2009

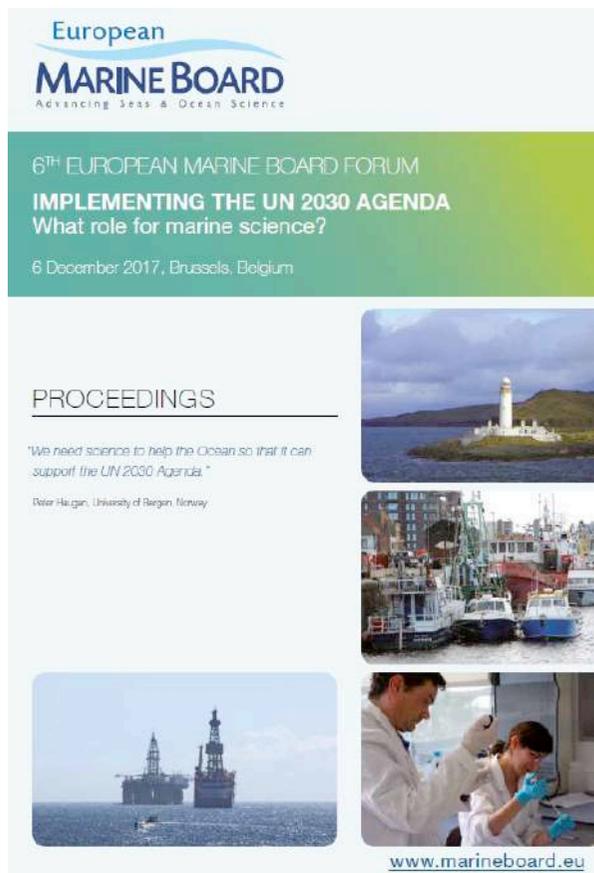
Position Paper 16:

Roose et al. 2011

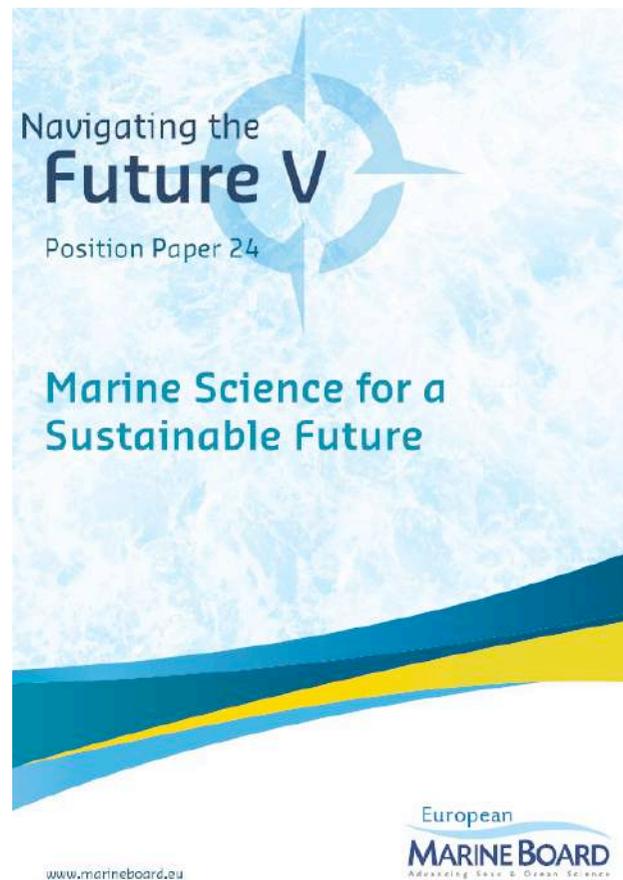


@EMarineBoard

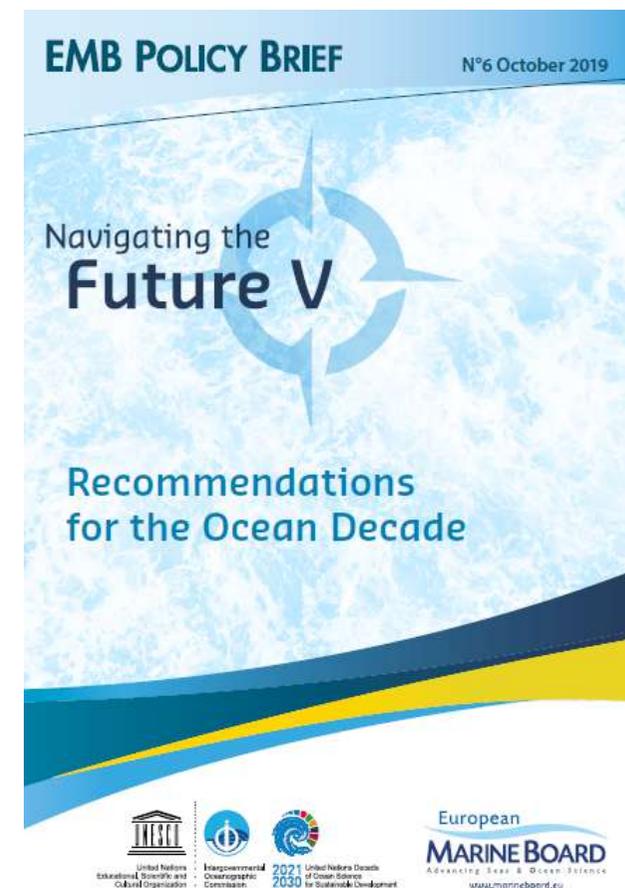
6th EMB Forum: 2017
Implementing UN 2030
Agenda



Position Paper 24: 2019
Navigating the Future V
EurOCEAN2019



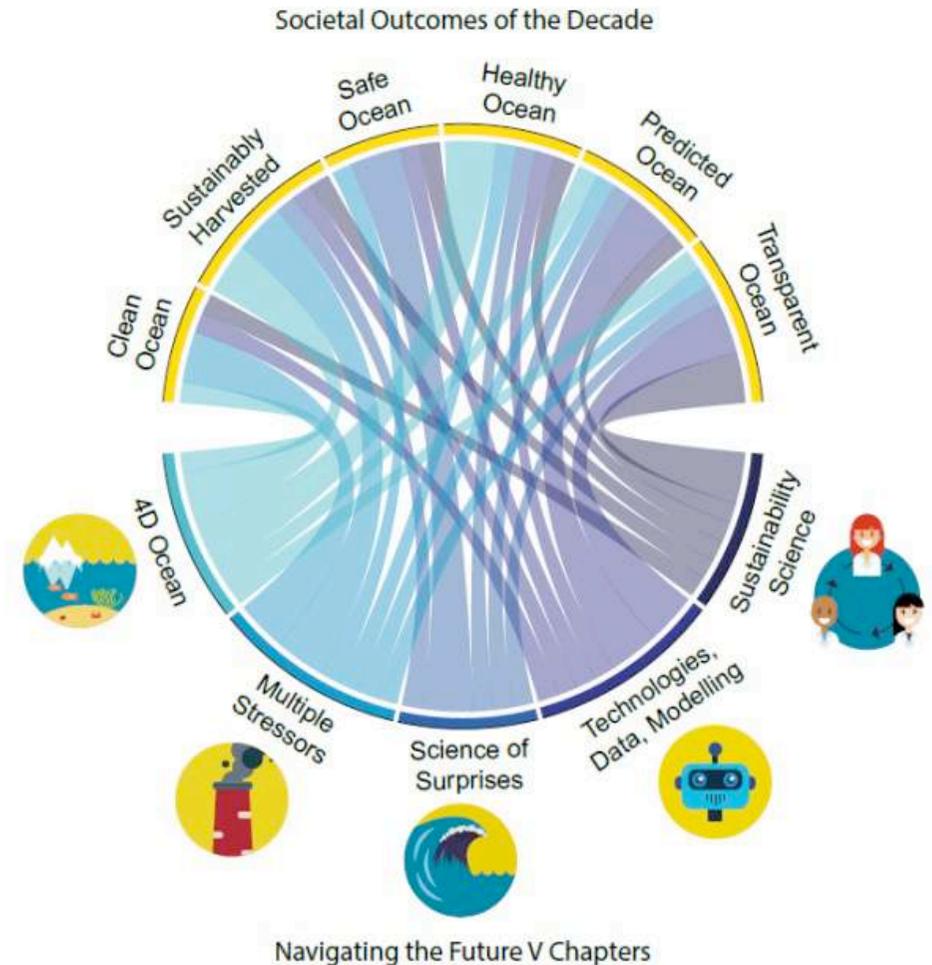
Policy Brief 6: 2019



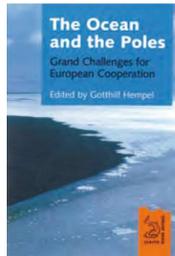
NFV Recommendations for the Ocean Decade:

Key scientific questions:

- **4-Dimensional Ocean** (3D plus time);
- **Impacts of multiple** and cumulative human **stressors**;
- How to predict **extreme events**, natural hazards & climate;
- Advances in **ocean technologies**, modelling & Artificial Intelligence; and
- Foster **sustainability science**.



From 1995 to the future...

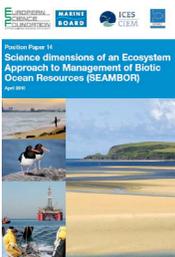


Hempel 1995: 'Grand Challenges'

Coastal zones ... **new EMB working group on Coastal Resilience**

...

Operational Forecasting of the oceans and coastal seas



PP14 Ecosystem approach: Develop **integrated policy evaluation tools** to improve decision-making ...linked to the provision of goods and services which benefit humans;

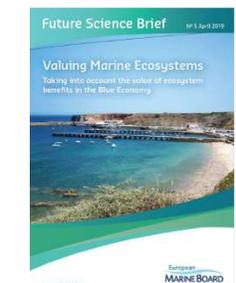


PP21 Marine Archeology: **Expand predictive modelling** for areas where direct observation is difficult and as an effective tool to **facilitate MSP**



Vision 2: Renewable energy: Position **MSP** at the core of the sustainable development of MRE in Europe

PP24 Navigating the Future V: Virtual Ocean ...



European
MSP Platform



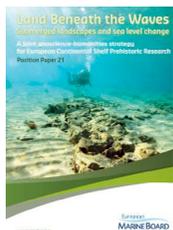
EU call – strengthening our knowledge in support of the European Green Deal

Topic 3: A transparent and accessible ocean – Towards a digital twin of the ocean!

From 1995 to the future...



European Research Area: Enhance public awareness towards marine and maritime scientific and policy issues in Europe...

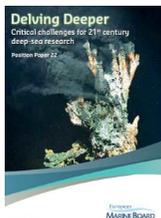


PP21 Marine Archeology: Communicate scientific results to the public through outreach activities

... **EMB Communication Panel** working on a **FSB on Marine Science Communication in Europe: a way forward**



EU Mission: Healthy Oceans, Seas, Coasts and Inland waters



PP22 Deep Sea: Promote cross-disciplinary research and collaboration



PP24 Navigating the Future V: Foster sustainability science



2021-2030: UN Decade of Ocean Science for Sustainable Development



Thank you and questions?

