European

MARINE BOARD

Advancing Seas & Ocean Science

Launch event:

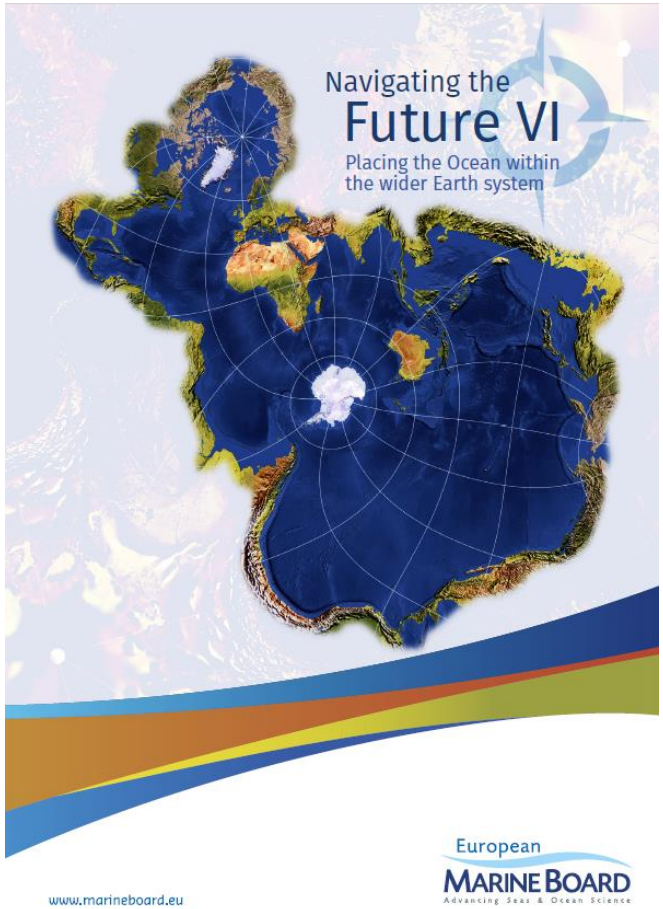
Navigating the Future VI

Fiona Grant

Chair of European Marine Board

Launched today:

European MARINE BOARD
Advancing Seas & Ocean Science



https://www.marineboard.eu/publications/nfvi

http://www.marineboard.eu/

@EMarineBoard

Talk C.E.C:

European MARINE BOARD
Advancing Seas & Ocean Science

Independent space dedicated to cultural and artistic experiences

Located in former Demeuldre-Coché porcelain factory, a listed heritage site

Laboratory for ideas and experimentation, bringing together art, science, history and contemporary issues

Event agenda:

Item	Speaker
Welcome and opening	**Fiona Grant**, Chair of EMB
Presentation of the EMB, the NF series, and NFVI and its recommendations	**Gilles Lericolais,** Working Group Chair and former EMB Chair & **Sheila Heymans**, Working Group Co-Chair Executive Director, EMB
Discussion and questions from the audience	Moderator: **Sheila Heymans**, EMB Executive Director
Response to the document by the key stakeholders	- **Delilah Al Khudhairy**, Director Maritime Policy and Blue Economy, DG MARE - **Elizabetta Balzi**, Head of Oceans, Seas and Waters Unit, DG RTD - **Niall McDonough**, Chair, JPI Oceans
Closing words	**Fiona Grant**, Chair of EMB
In-person networking reception	

European MARINE BOARD
Advancing Seas & Ocean Science

Navigating the Future

Gilles Lericolais
Chair of EMB NFVI Working Group &
Former Chair of EMB

European
MARINE BOARD
Advancing Seas & Ocean Science

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

Chair

Fiona Grant

Fernanda Bayo Ruiz

Maria Teodosio

Sheila Heymans

Paula Kellett

Ana Rodriguez

Britt Alexander

Ángel Muñiz Piniella

RESEARCH PERFORMING INSTITUTES

RESEARCH FUNDING ORGANIZATIONS

NETWORKS AND UNIVERSITY CONSORTIA

38 MEMBERS FROM

19 COUNTRIES

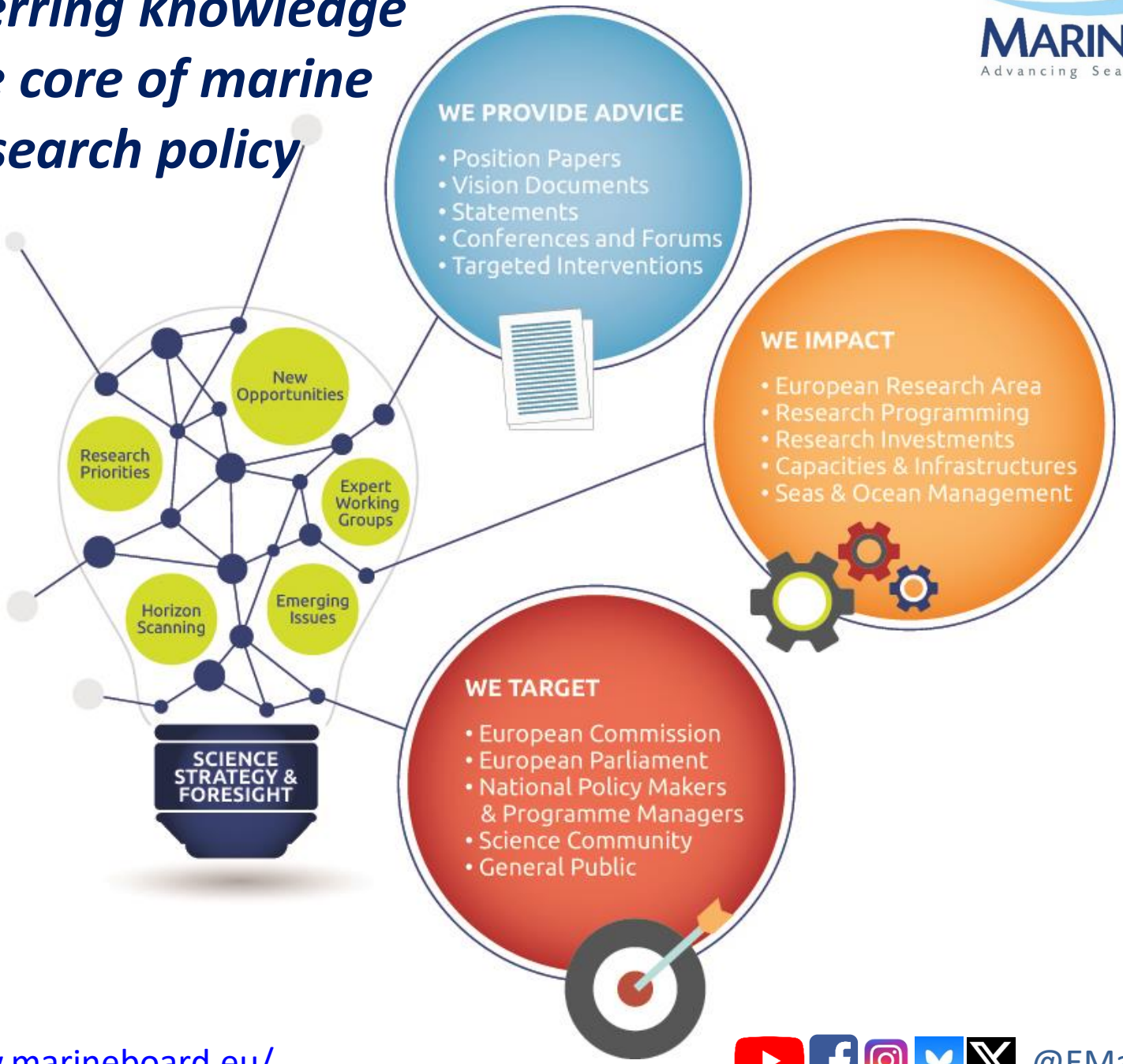
http://www.marineboard.eu/members

@EMarineBoard

The European Marine Board bridges the gap between science and policy by providing high-quality advice

Transferring knowledge to the core of marine research policy

European MARINE BOARD
Advancing Seas & Ocean Science



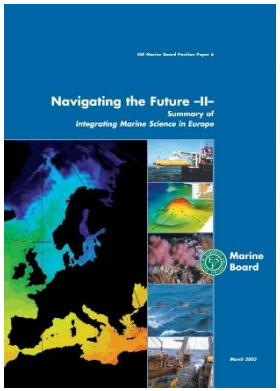
http://www.marineboard.eu/

@EMarineBoard

Navigating the Future:

Navigating the Future I: Towards a Marine European Research Area

2001



Navigating the Future II: Integrating Marine Science in Europe

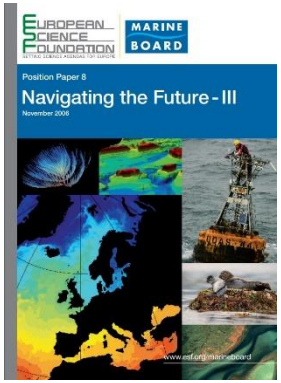
2003

Calls for governance of European seas…

https://www.marineboard.eu/navigating-future

@EMarineBoard

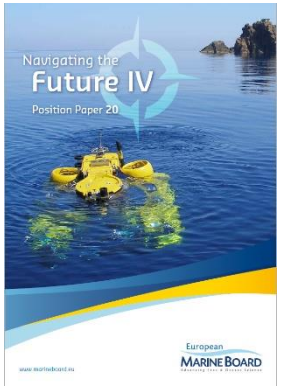
Navigating the Future:



Navigating the Future III: Updated Synthesis of Perspectives on Marine Science and Technology in Europe

2006

Future challenges, (e.g. climate change) and solutions (e.g. ecosystem-based approach) …



Navigating the Future IV: Grand Challenges and Cross-Cutting Enablers

2013

European MSP Platform
European Commission

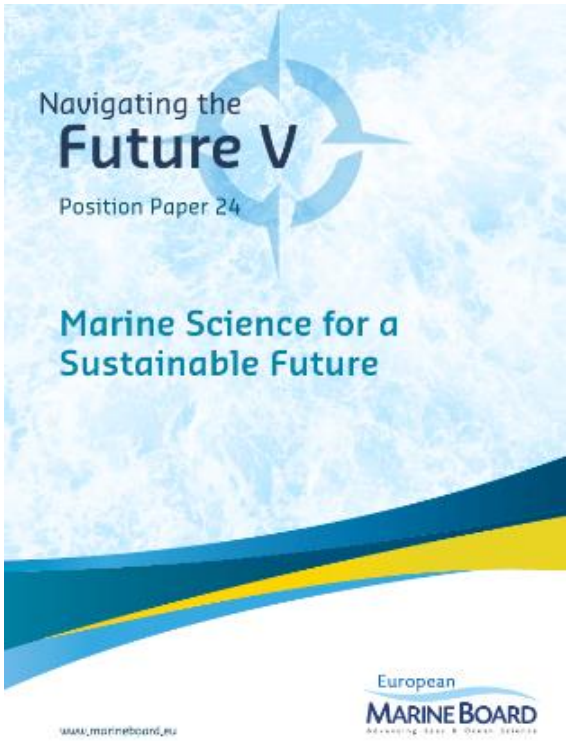
EUROPEAN BLUE FORUM
Building Europe's Blue Community

The European Blue Forum

https://www.marineboard.eu/navigating-future

@EMarineBoard

Navigating the Future V:



1. Role and relevance of the Ocean
2. A **four-dimensional** and connected Ocean
3. A **multi-stressed** and rapidly changing Ocean
4. Science of surprises
5. **Sustainability science** for the Ocean
6. **Novel technologies, data and modelling** for Ocean research
7. **New frontiers** gaps and the unknown

Main recommendations around need for transdisciplinary working and breakout out of silos in research, moving beyond marine science sphere

https://www.marineboard.eu/navigating-future

@EMarineBoard

Navigating the Future VI:

Considers the Ocean's place in the wider Earth system

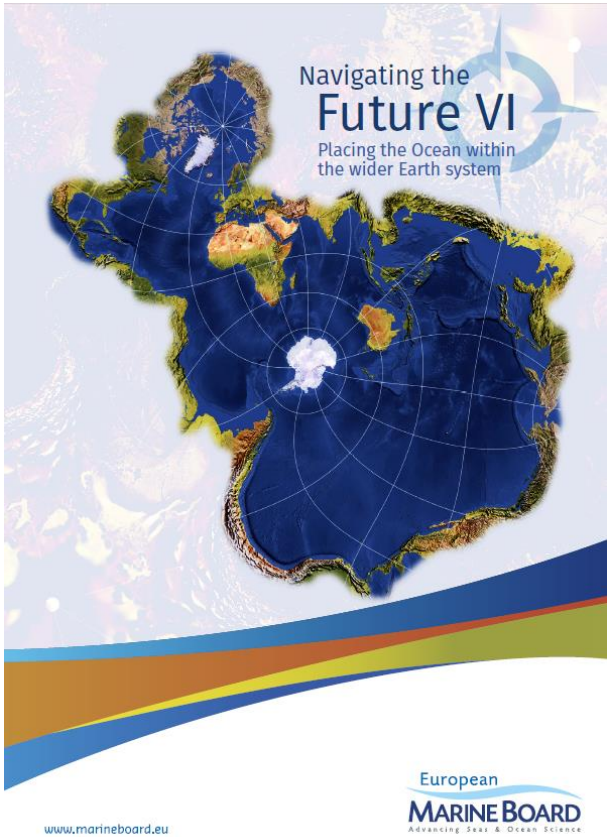
Covers topics and challenges that cannot be addressed by one science field alone

Includes four main chapters:

1. Ocean and People
2. Ocean and Climate
3. Ocean and Fresh Water
4. Ocean and Biodiversity

Provides policy and management, and research and monitoring recommendations per chapter

Closing chapter on overarching requirements



https://www.marineboard.eu/navigating-future-vi

@EMarineBoard

NFVI Working Group:

Kicked off in October 2022

Working group included one representative from each EMB Member Organisation

Included all career levels, including ECOPs

Chair: Gilles Lericolais, Ifremer, France and former EMB Chair, Co-Chair: Sheila Heymans, EMB Executive Director

Contributing Authors: Nicola Beaumont, Juliette Aminian Biquet, Enrique Blanco Gonzalez, Julia Calderwood, Renske de Winter, Tainá Fonseca, João Frias, Antonia Giannakourou, Fiona Grant, Kerstin Johannesson, Silja Klepp, Peter Kraal, Christophe Lejeusne, Lucía López-López, David Lusseau, Joke Lübbecke, Francesco Marcello Falcieri, Slavica Matijević, Loïc Michel, Geir Ottersen, Carlos P. Dopazo, Ruth Plets, Ekaterina Popova, Baris Salihoglu, Jean-Baptiste Sallée, Katrin Schroeder, Cosimo Solidoro, Beata Szymczycha, Núria Teixidó, Olivier Thébaud, Ivica Vilibić

Additional Working Group Members: Christine Edwards, Tarmo Soomere

European MARINE BOARD
Advancing Seas & Ocean Science

Navigating the Future VI: Placing the Ocean within the wider Earth system

Sheila Heymans
Co-Chair of EMB NFVI Working Group &
Executive Director of EMB

Ocean and People Contents:

European MARINE BOARD
Advancing Seas & Ocean Science

- Exploring the dynamic relationship between humans and the Ocean
- Collaboration (multi-, inter-, cross-, inter-, and transdisciplinary work)
- Blue economy and the Ocean's contribution to people
- Understanding the governance of maritime activities
- Socio-ecological transformation and transformative adaptation
- Tools and enablers
- Recommendations

https://www.marineboard.eu/navigating-future-vi

@EMarineBoard

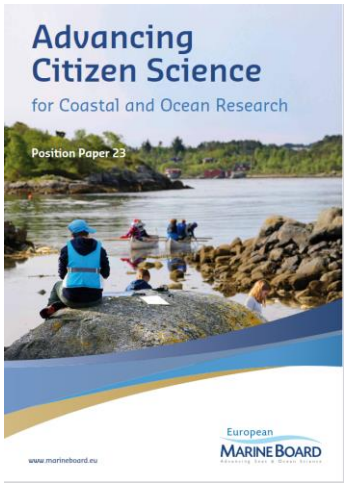
Ocean and People:

- Blue economy – economic activity related to the Ocean, including:
  - fisheries
  - aquaculture
  - clean energy
  - coastal tourism
  - …




- Governance of maritime activities:
  - Common Pool resources
  - Equity, justice and power
  - ….
- Tools - Citizen science:
  - research conducted with the help of the general public…





https://www.marineboard.eu/navigating-future-vi

@EMarineBoard

Recommendations: Ocean and People

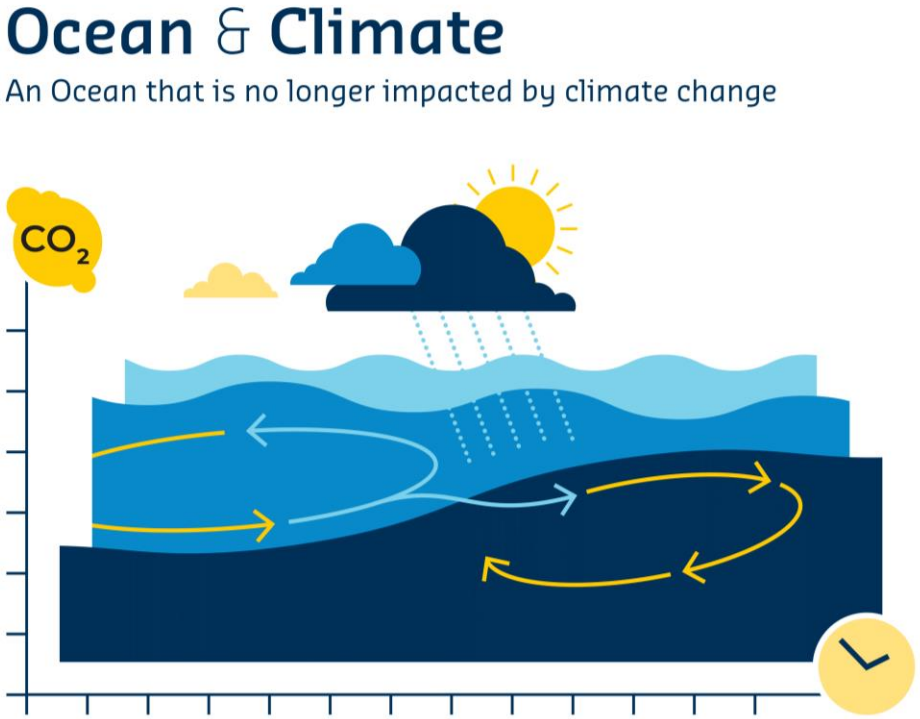
European MARINE BOARD
Advancing Seas & Ocean Science

- Understand different **Ocean narratives** and views;
- **Integrate** cross-, inter- and transdisciplinary working;
- Understand **how the blue economy will evolve**;
- Understand how **human activities interact** with ecosystem-based management and **future adaptation / mitigation scenarios**;
- Understand how **meeting multiple marine societal goals** will impact communities;
- Explore more **transparent, just, equitable and sustainable** approaches to **governance**; and
- Explore diverse public-based data collection and collaboration opportunities.

Ocean and Climate Content:

European MARINE BOARD
Advancing Seas & Ocean Science

- The Ocean as part of the climate system:
  - A climate mitigator and its major driver
- The Ocean impacted by climate change
- The Ocean as a tool for climate action
- Recommendations



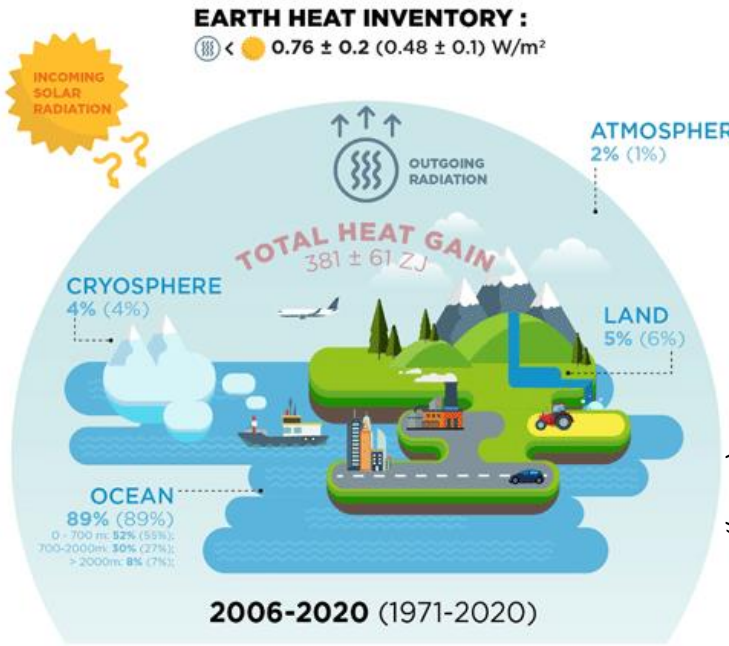
https://www.marineboard.eu/navigating-future-vi

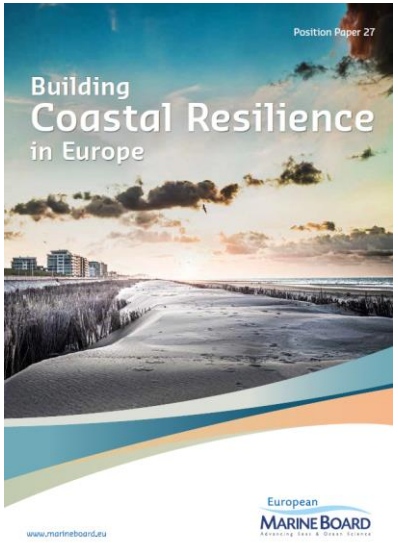
@EMarineBoard

Ocean and Climate:

European MARINE BOARD
Advancing Seas & Ocean Science

- The Ocean is part of the climate system:
  - A climate mitigator and a major driver of climate
- The Ocean impacted by climate change:
  - Marine heatwaves, Sea level rise, less oxygen in the Ocean, becoming more acidic, …
- The Ocean as a tool for climate action…
  - Nature based solutions… (coastal resilience)…





https://www.marineboard.eu/navigating-future-vi

@EMarineBoard

Recommendations: Ocean and Climate

European MARINE BOARD
Advancing Seas & Ocean Science

- Understand processes and **changes in Greenland and Antarctic ice sheets**, and severity of potential issues;
- Understand how **local-scale processes affect large-scale Ocean circulation**;
- **Map natural CO_2 and methane reservoirs** and understand impacts of release;
- Develop scientific **Ocean indicators for social adaptation** tipping points;
- Conduct specific **research on topics that IPCC identified as low confidence**;
- Enable **long-term monitoring** of Essential Climate Variables (ECVs) and Essential Ocean Variables (EOVs); and
- Research and regulation to **support Ocean-based climate solutions** and drive maritime sectors to become more climate-friendly.

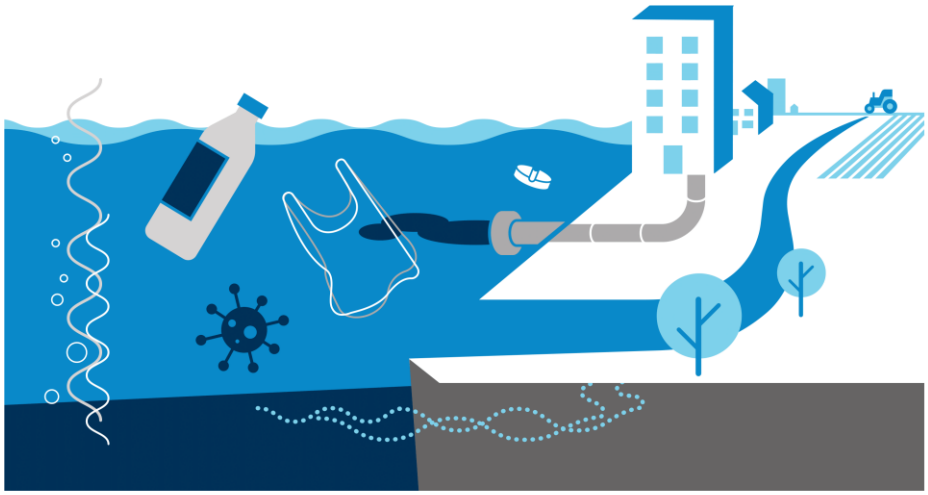
Ocean and Fresh Water Content:

European MARINE BOARD
Advancing Seas & Ocean Science

- Ocean and groundwater interactions
- Human impacts on freshwater fluxes into the Ocean
- Cumulative impacts of multiple stressors on aquatic systems
- Recommendations

Ocean & Fresh Water

Clean and safe waters available to all communities



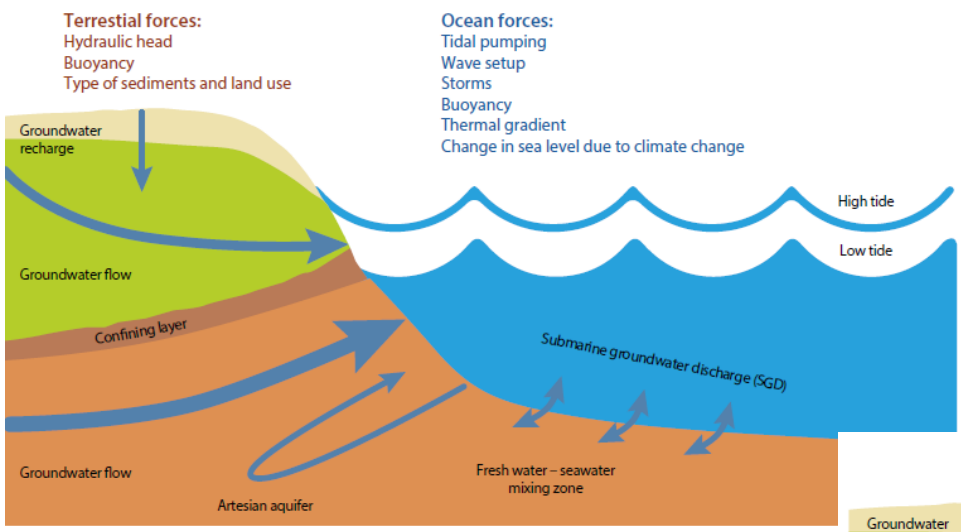
https://www.marineboard.eu/navigating-future-vi

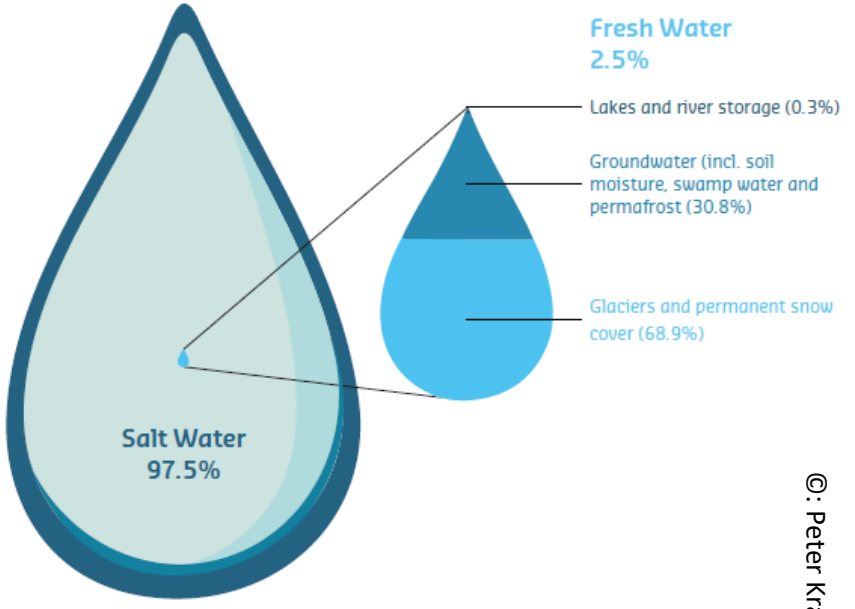
@EMarineBoard

Ocean and Fresh Water:

European MARINE BOARD
Advancing Seas & Ocean Science

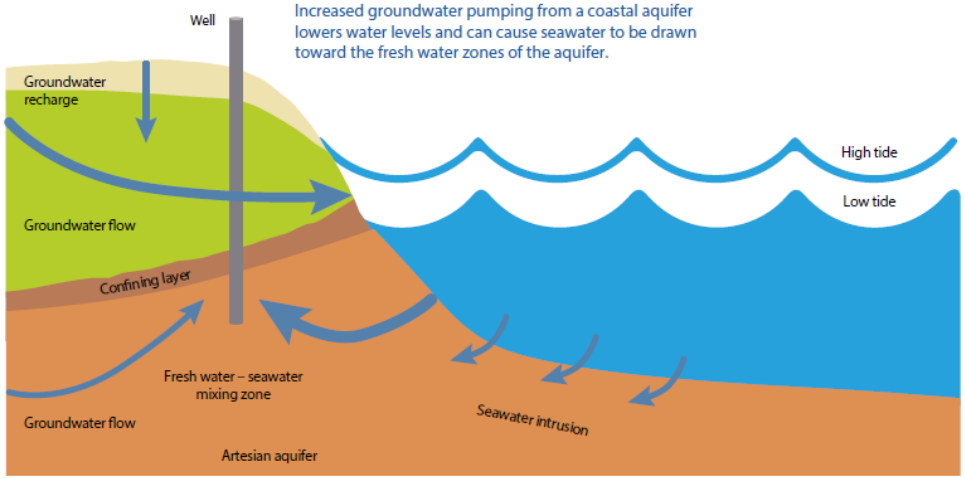
- Ocean and groundwater interactions





©: Peter Kraal

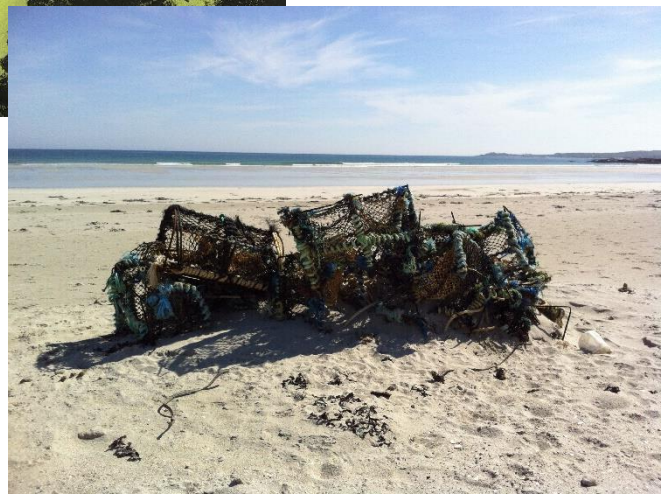
- Humans impact the freshwater fluxes into the Ocean

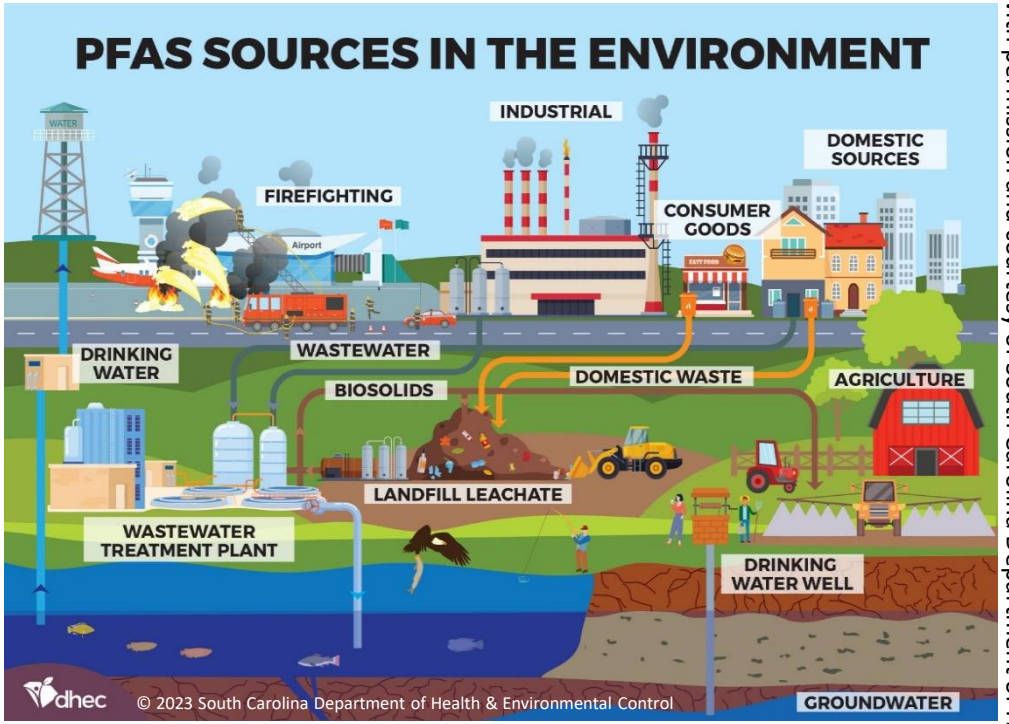


Ocean and Fresh Water:

European MARINE BOARD
Advancing Seas & Ocean Science

- Cumulative impacts of multiple stressors on aquatic systems





PFAS = Per- and poly-fluoroalkyl-substrates

Recommendations: Ocean and Fresh Water

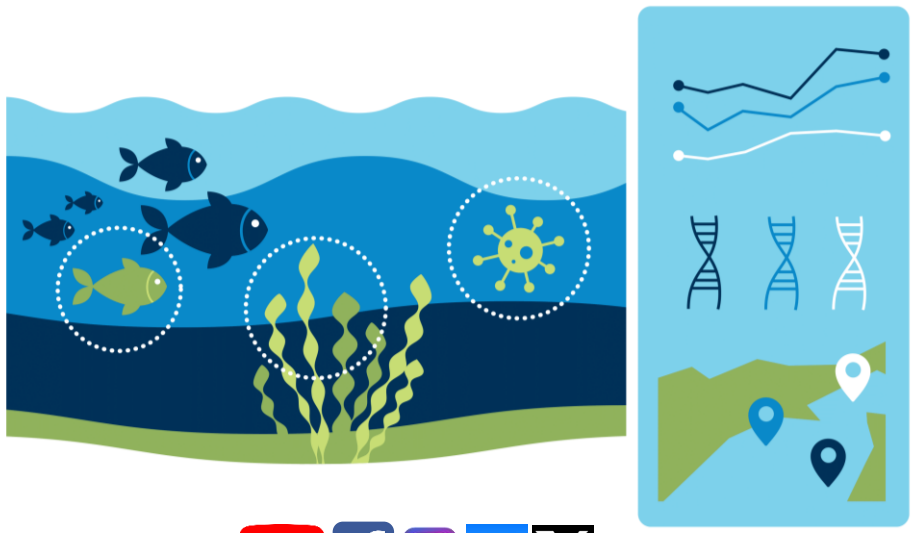
European MARINE BOARD
Advancing Seas & Ocean Science

- Develop **monitoring approaches** to study the **impacts of saltwater intrusion** of coastal fresh water;
- Understand impacts of **release of matter, contaminants, pathogens** and gases because of climate change, and their impacts;
- Understand the impacts of **releasing frozen pandemics**;
- Develop **adaptive pollutant policies** to deal with emerging substances;
- Explore **intermediate reuse of pollutants in circular economy** approaches; and
- Explore **poorly understood pathways for pollutants and pathogens**.

Ocean and Biodiversity Content:

European MARINE BOARD
Advancing Seas & Ocean Science

- What is biodiversity?
- Biodiversity, ecosystem functioning and ecosystem services
- Activities and stressors affecting Ocean biodiversity
- Biological invasions as an increasing concern
- Changes in species distributions
- Biodiversity conservation and restoration
- Tools to fill knowledge gaps
- Recommendations



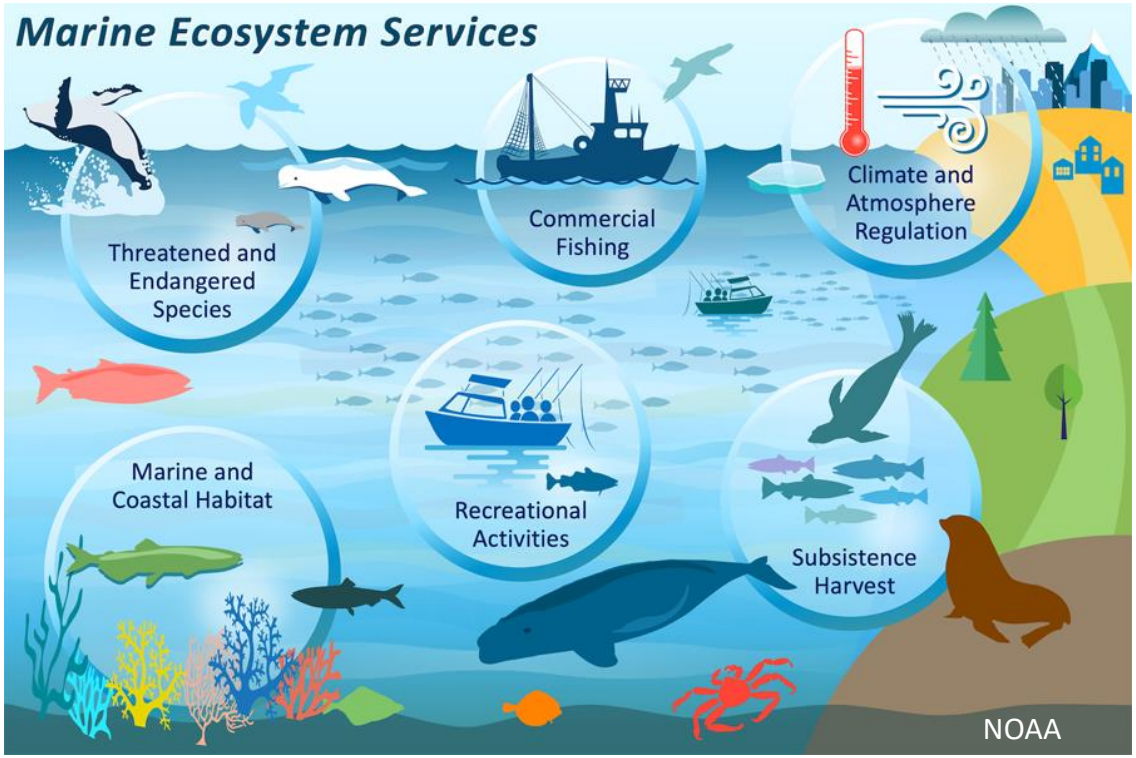
https://www.marineboard.eu/navigating-future-vi

@EMarineBoard

Ocean and Biodiversity:

European MARINE BOARD
Advancing Seas & Ocean Science

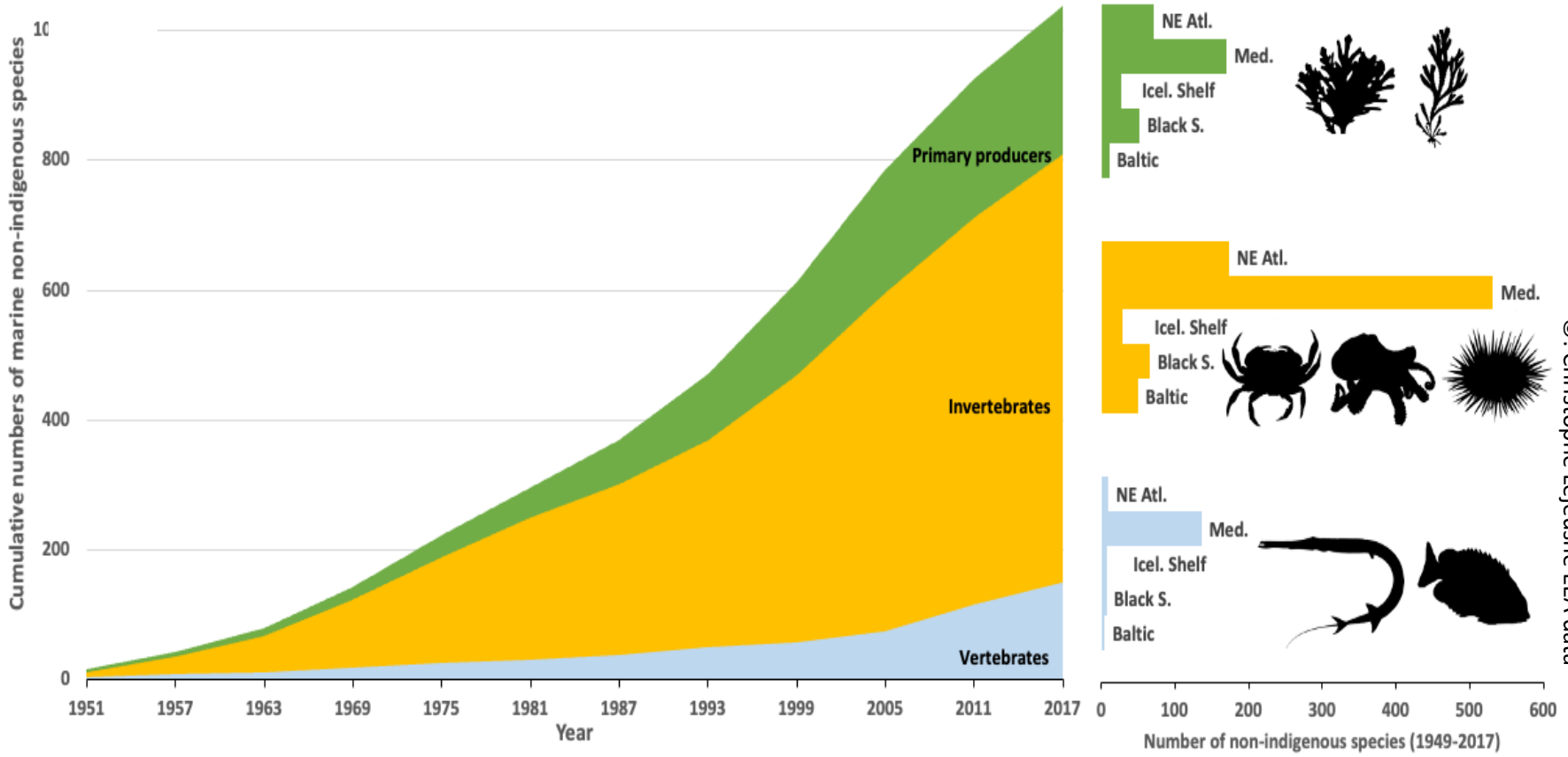
- **Biodiversity**, ecosystem **functioning** and **ecosystem services**
  - **Ocean biodiversity** is the different living organisms that reside in the Ocean
    we have described less than ~10% of all the living organisms in the Ocean
  - **Function** of the ecosystem depends on the biodiversity
  - **Services** the system provide depend on its function …



Ocean and Biodiversity:

European MARINE BOARD
Advancing Seas & Ocean Science

- **Biological invasions** as an increasing concern
  - Species invasions impacts the function of the ecosystem, and the services the system provide



©: Christophe Lejeusne EEA data

Recommendations: Ocean and Biodiversity

European MARINE BOARD
Advancing Seas & Ocean Science

- Understand **ability of marine species to adapt to climate change**;
- Understand **impacts of human activities on biodiversity** and invasive species;
- **Map pathogenic microorganisms** to understand future epidemic risks;
- Explore how **climate change-driven species movements** could lead to **governance issues** and conflicts;
- Study key **success factors to improve conservation and restoration** initiatives;
- Integrate **traditional taxonomic and new genomic methods** to speed up species' identification; and
- Conduct **training to ensure taxonomic expertise** is not lost.

Closing Chapter Main Messages:

- Marine science needs to **operate in a more sustainable and equitable manner**;
- Need for **sustained Ocean observations** and **open, FAIR and digitized data**;
- Need for **sustained and long-term research funding**;
- Need for **substantial and sustainable Ocean finance** and investment;
- Need to **consider impact of multiple stressors**;
- **Train people to work in cross-, inter- and transdisciplinary** ways;
- **Harmonise** across **interfaces, standards, policies and monitoring** strategies;
- Balance **need for monitored parameters against resources** and technologies;
- **Politicians must also listen and engage** in science-policy interfaces.

https://www.marineboard.eu/navigating-future-vi

@EMarineBoard

Thank you for your attention!

European MARINE BOARD
Advancing Seas & Ocean Science

Subscribe to our newsletters

@EMarineBoard