EOOS: EMB role and ensuring an end-to-end ecosystem-based approach to observations

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www.marineboard.eu

www.eoos-ocean.eu

What is the European Marine Board (EMB)?

– a think-tank operating on the marine science-policy interface
- Secretariat of 5 people based in Oostende

EMB plenary meeting, Tenerife, April 2017

EMB Member Organizations, October 2017

The European Marine Board is a partnership of major national marine research institutes, funding organisations and national consortia of universities which aims to facilitate cooperation and coordination in marine science both in Europe and internationally.

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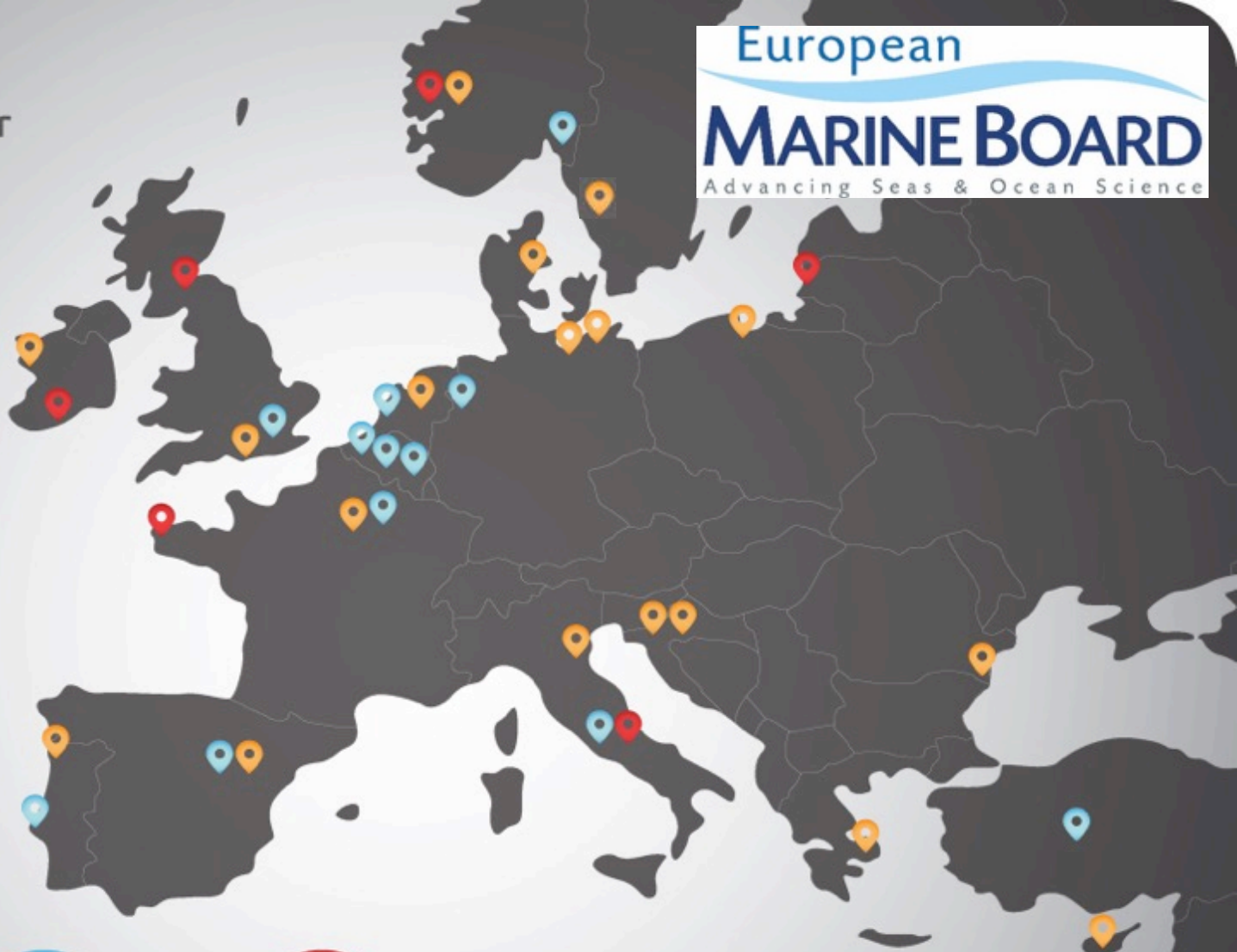
European MARINE BOARD
Advancing Seas & Ocean Science

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



Research Performing Institutes

Research Funding Organizations

National University Networks

22 members from

19 countries

What is EOOS?

EOOS is an inclusive, community-driven coordinating framework for Europe's ocean observing capability:

- End-to-end: Physics to biogeochemistry and biology;
- From automated monitoring to citizen science (and everything in between);
- Driven by stakeholders, for stakeholders/users;
- Building and aligning with existing efforts.

Strategic development by EMB and EuroGOOS

www.eoos-ocean.eu

EMB role in EOOS: Strategy, foresight and dialogue

- **EMB and EuroGOOS co-Chair EOOS Steering Group**
- **Stakeholder Consultation:** Expert workshop, May 2015; Survey and analysis Dec 2016 - 2017;
- **European Parliament event**, 8 September 2016
- **Database** for national ocean observation and marine monitoring: Call through EMB, EuroGOOS and JPI-Oceans networks.
- **Strategy and implementation plan** (in development for 2018)
- **EOOS Forum**, 8 March 2018 and **EOOS Conference**, Nov. 2018

Credit: ERVO

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EuroGOOS
European Global Ocean Observing System

Credit: EMB

EMB core activities for EOOS

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EMB WG Biological observations (June 2017 -): Towards an end-to-end ecosystem-based approach to observations

Main objective: To recommend gaps and priorities for enhancing the current biological ocean observing capacity and coordination within the EOOS framework

WG Chair Lisandro Benedetti-Cecchi (Univ. of Pisa, IT)
WG vice-Chair Tasman Crowe (UCD, IE)

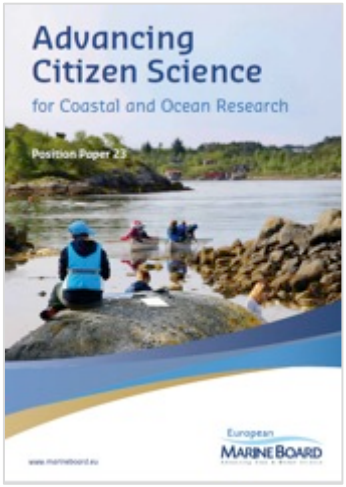
Working Group members, Kick-off meeting, 22-23 June 2017, Pisa IT

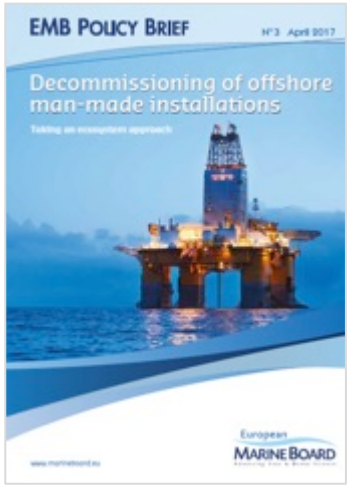
EOOS European Ocean Observing System

EMB core activities: End-to-end EOOS

Other core activities:

- **Citizen Science** (Position Paper 23; launched EMD2017)
- **Decommissioning** (Policy Brief 3; launched EMD2017)
- **European Research Vessels** (To start Spring 2018)
- **Marine Ecosystem Modelling** (June 2017 - Spring 2018)





Credit: Lars Boehme

Credit: ERVO

EMB role in EOOS: Strategy, foresight and dialogue

- **EMB and EuroGOOS co-Chair EOOS Steering Group** and jointly drive developments (e.g. Stakeholder consultation and analysis, EOOS Forum, 8 March 2018, Strategy and implementation plan)
- **EMB core activities** e.g. WG Biological Observations (ongoing), WG Research Vessels (Spring 2018 start, in collaboration with ERVO)
- **H2020 AtlantOS:** Foresight analysis for AtlantOS in the context of EOOS coordinating framework for integrated ocean observing Task 10.6, deliverable 10.11 (July 2018)
- **EMODnet Phase 3 – WP4 supporting EOOS development** (EMB role in EOOS Conference, Autumn 2018 and developing structured dialogue between EOOS – EMODnet – wider initiatives

EuroGOOS
European Global Ocean Observing System

European MARINE BOARD
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AtlantOS

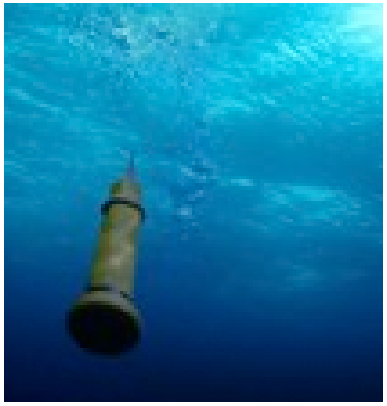
EMODnet

EMODnet Secretariat

Phase 3 main tasks (started September 2017)

- Task 1 - Promote coherence in EMODnet
- Task 2 - Monitor output
- Task 3 - Disseminate information on EMODnet
- Task 4 - Support the development of a European Ocean Observing System (EOOS)
- Task 5 - Maintain and further develop the European Atlas of the Seas (MARATLAS)

WP4 – EOOS Tasks



- ***Task 4.1: Analyse the results of the sea basin checkpoints stress tests***

- ***Task 4.2: Organisation of* joint multi-day *EOOS Conference Autumn 2018***
  - present in an integrated way the results CHPTS & other studies to deliver recommendations for future priorities for ocean observation; and
  - provide a wider perspective and forward look on the development of EOOS. **(EMB role)**

- ***Task 4.3: Aligning EMODnet and EOOS processes (EMB lead)***
  - establish a Structured EMODnet-EOOS Dialogue (SEED)
  - explore and identify specific joint actions of mutual benefit

EOOS Next steps

EOOS Strategy and Implementation
(Spring 2018)

Stakeholder events in 2018
-EOOS Forum (8 March, 2018, Brussels)
-EOOS Conference (November 2018)

Both events will be co-organized by EMB, EuroGOOS within input from EOOS stakeholders.

Rome Declaration

Setting a vision for seas and ocean science

EurOCEAN2014

The Rome Declaration was adopted on 8 October 2014 at the EurOCEAN 2014 Conference (7-9 October 2014, Rome).

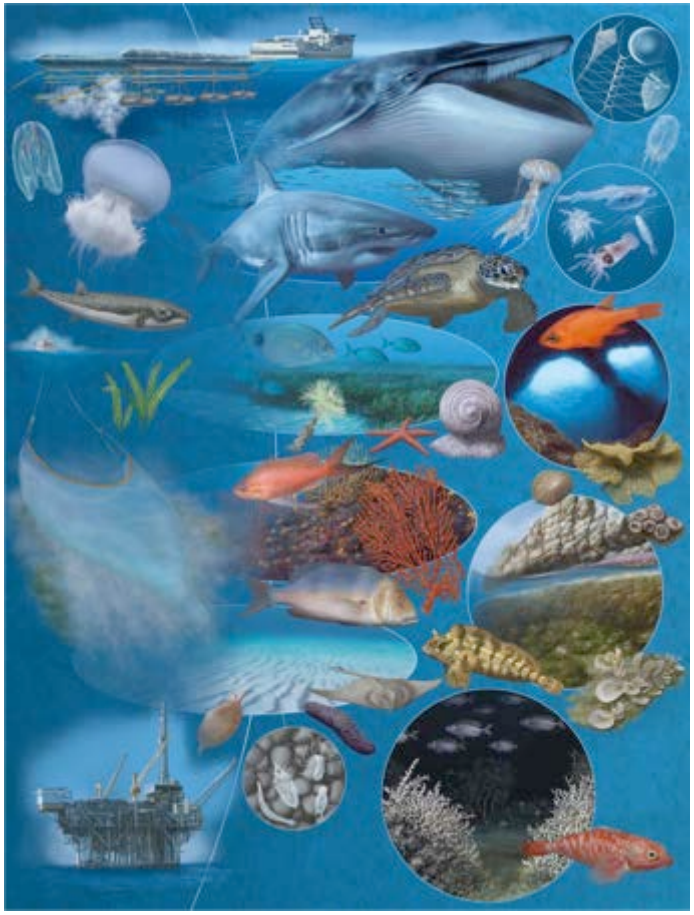
3. ADVANCING OCEAN KNOWLEDGE

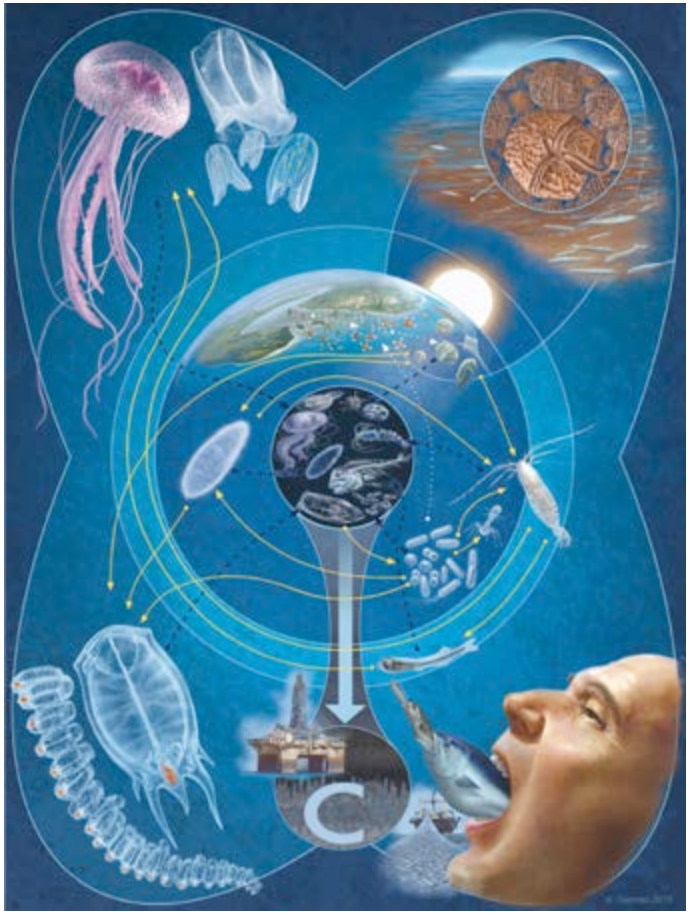
Goal: Building a greater knowledge base through ocean observation and fundamental and applied research.

impacts resulting from human and natural pressures. Moreover, actions are needed to address the rapidly-growing opportunities and challenges in advanced ocean measurement technology and effective management of increasing volumes and diversity of information, including physical, chemical and biological data from marine observing systems that are fit for purpose and capable of informing assessments of Good Environmental Status.

- **Descriptor 1**. Biodiversity is maintained
- **Descriptor 2**. Non-indigenous species do not adversely alter the ecosystem
- **Descriptor 3**. The population of commercial fish species is healthy
- **Descriptor 4**. Elements of food webs ensure long-term abundance and reproduction
- **Descriptor 5**. Eutrophication is minimised
- **Descriptor 6**. The sea floor integrity ensures functioning of the ecosystem
- **Descriptor 7**. Permanent alteration of hydrographical conditions does not adversely affect the ecosystem
- **Descriptor 8**. Concentrations of contaminants give no effects
- **Descriptor 9**. Contaminants in seafood are below safe levels
- **Descriptor 10**. Marine litter does not cause harm
- **Descriptor 11**. Introduction of energy (including underwater noise) does not adversely affect the ecosystem

Marine Biodiversity and Ecosystem Functioning are the pillars of Good Environmental Status



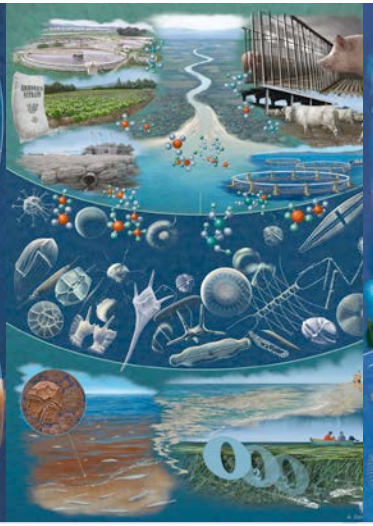


the rest of GES

aliens

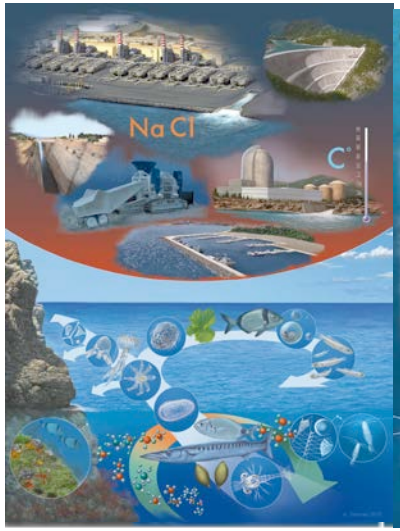
fisheries

Food webs

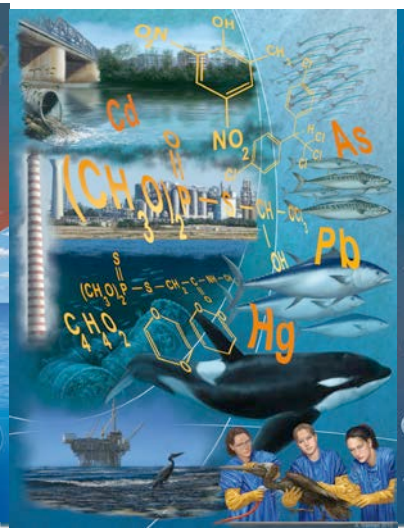


Eutrophication

Sea bottom



Hydrology



Contaminants

Contaminants2

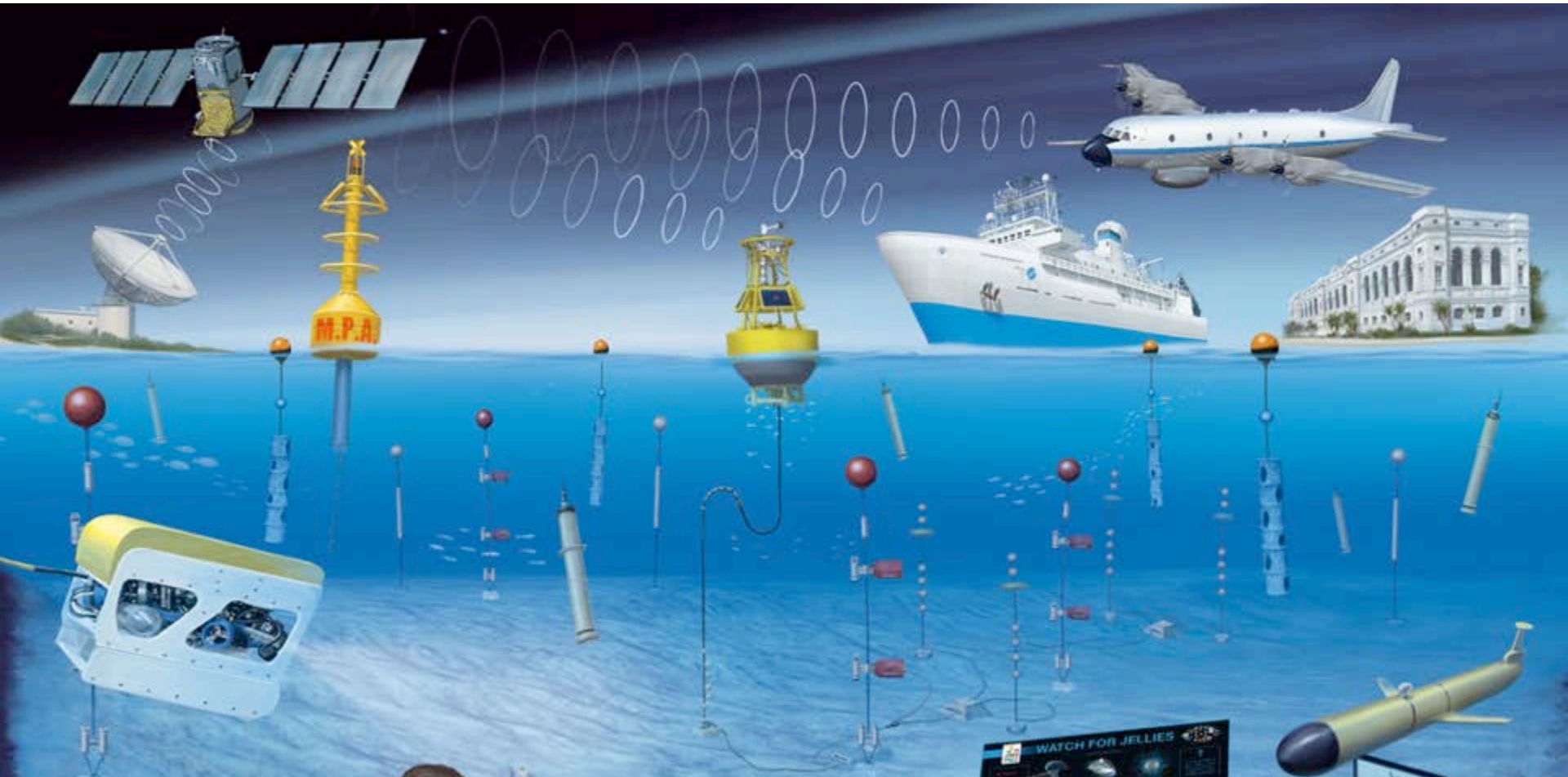
Litter

Energy

The present

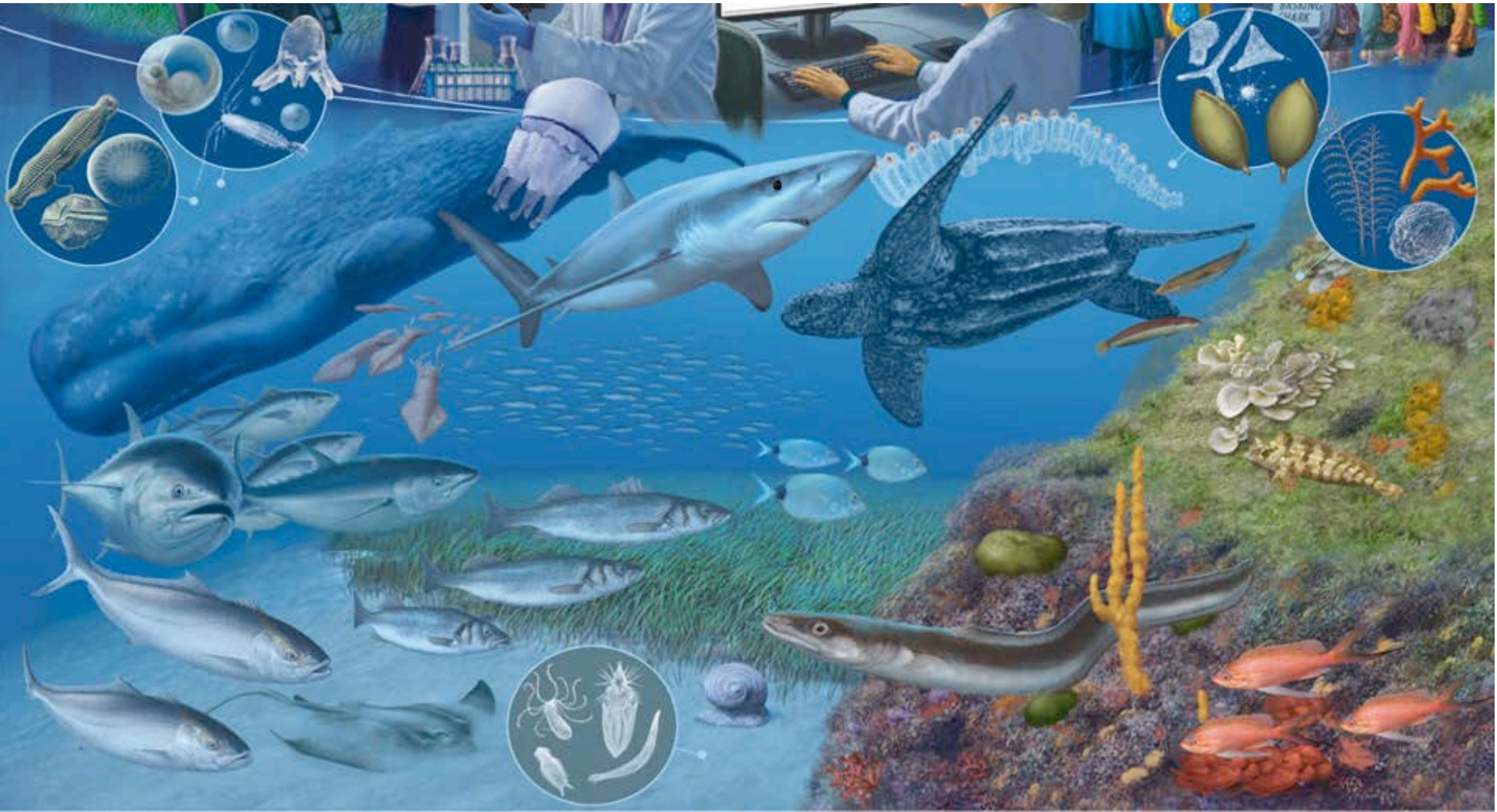
These are current observation systems and this is what they “see”

There is something missing



The future

The MSFD and GES are telling us that physics, chemistry and biogeochemistry are necessary but not sufficient. Not on a planet characterized by the diversity of life!!!!



Observation systems must be upgraded

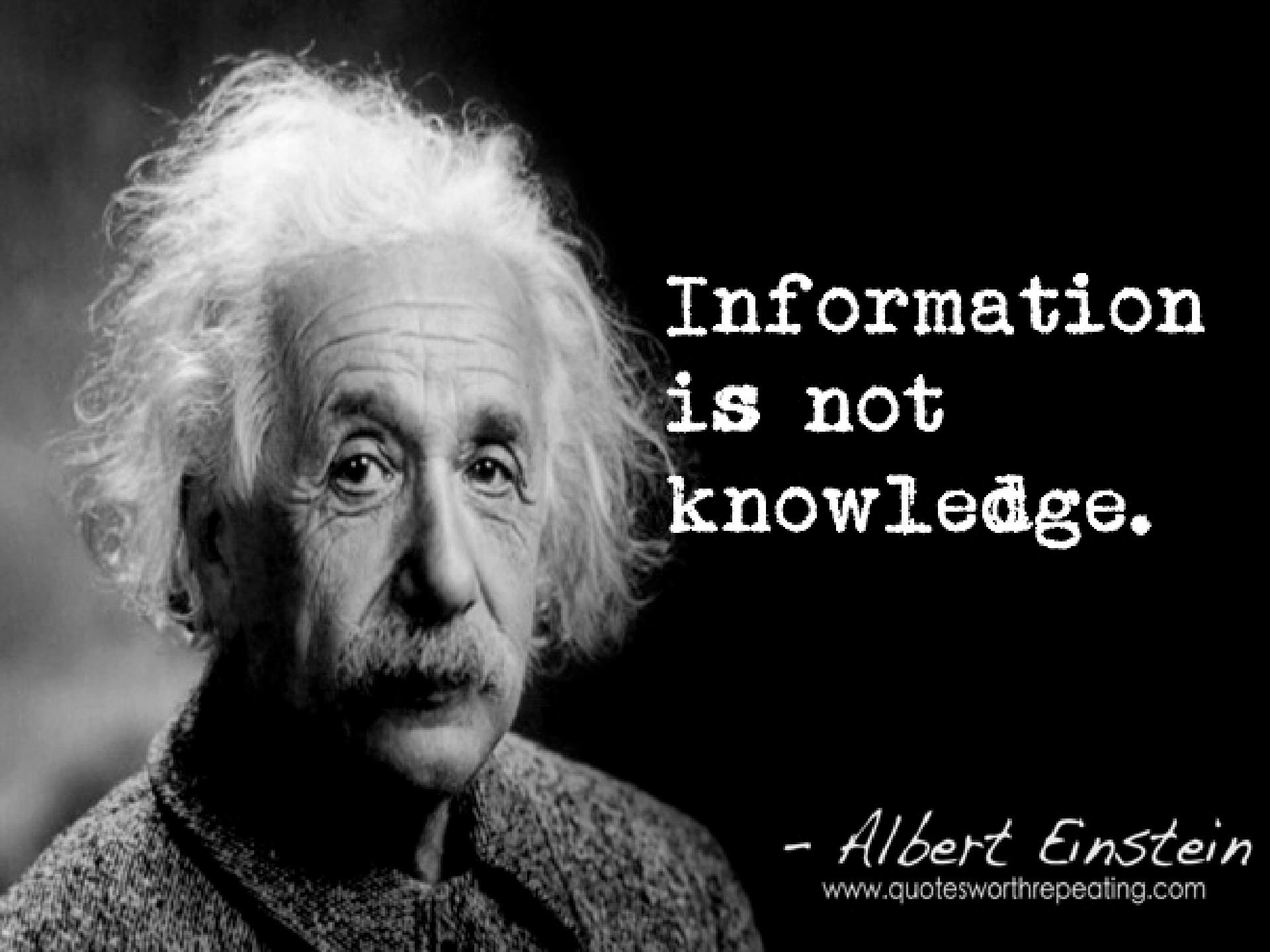
we need humans to perform observations. And we need to develop new sensors to measure the descriptors of GES in the MSFD

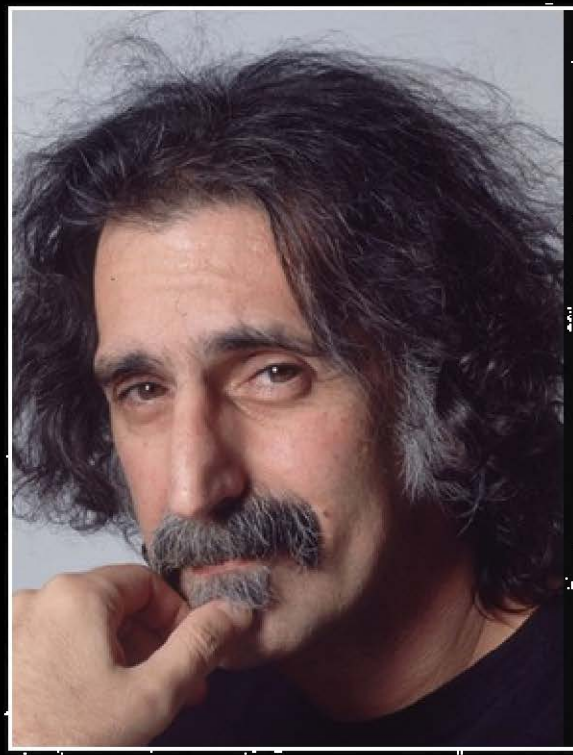
There is no sensor for biodiversity….

We need LTS

To truly progress this knowledge, European scientists across a broad range of disciplines and domains must make a quantum leap towards holistic approaches and integrated research on a scale which will help us to much better understand, protect, manage and sustainably exploit the seas and oceans which surround us. This is a Grand Challenge; not just Europe, but for human society as a whole.

This is the challenge for the observation Systems of the future!!!


Information is not knowledge.
- Albert Einstein
www.quotesworthrepeating.com



Information is not knowledge. Knowledge is not wisdom. Wisdom is not truth. Truth is not beauty. Beauty is not love. Love is not music. Music is THE BEST.

— Frank Zappa —

AZ QUOTES

The music metaphor

If each instrument (measured variable) plays in isolation from the others, we cannot hear the music!!!

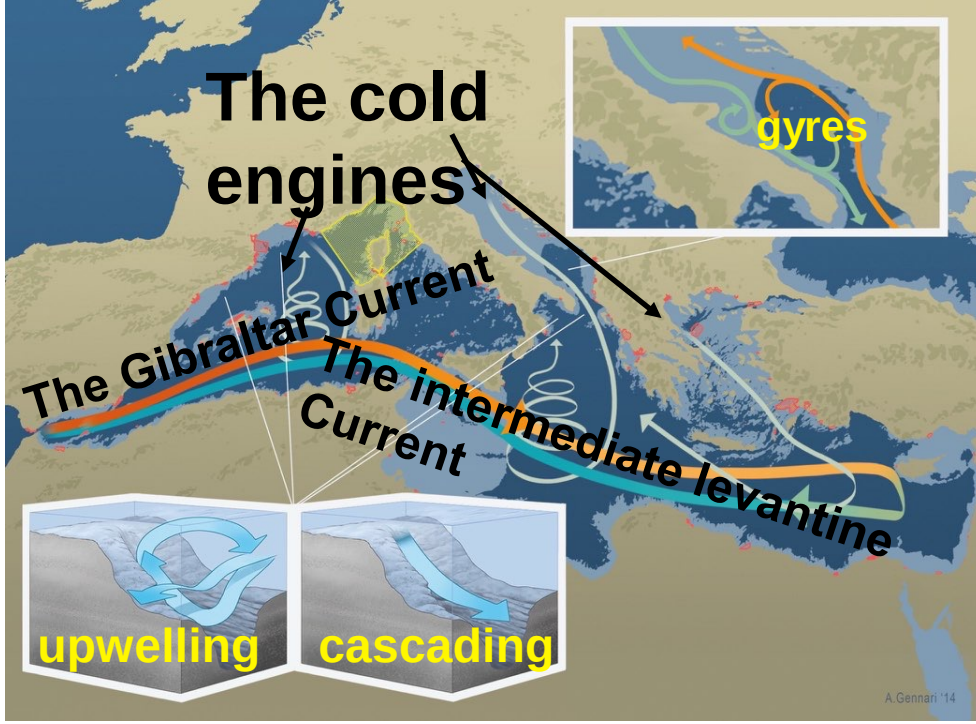
The instruments must be played by the whole orchestra!

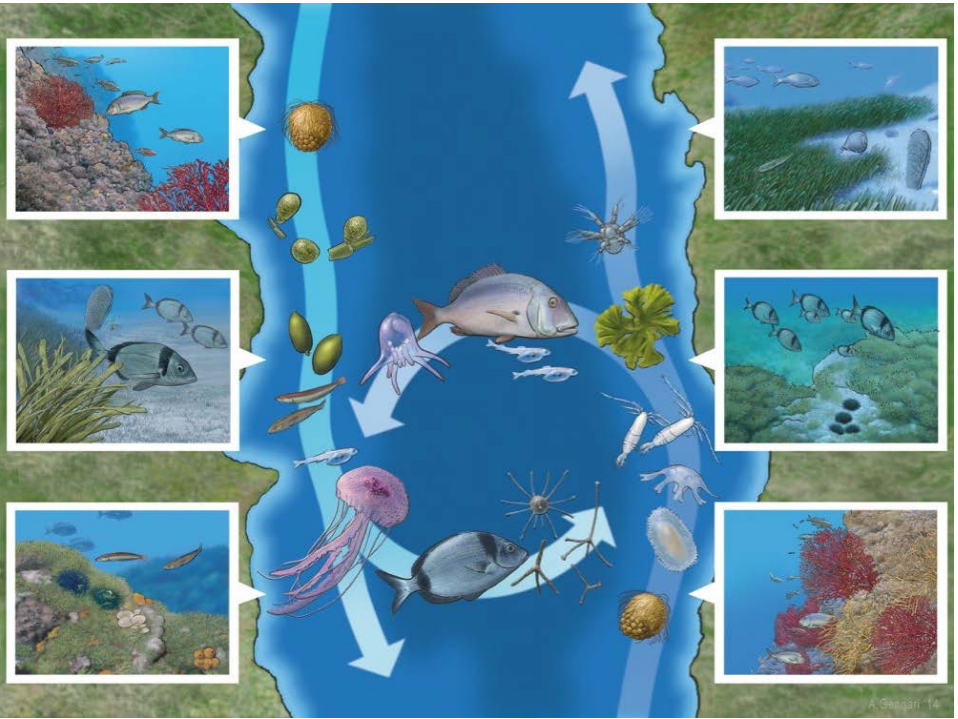
Holistic approaches transform science into music.

THE CELLS OF ECOSYSTEM FUNCTIONING

Ecosystem mapping: from patterns to patterns and processes

Areas whose internal connectivity is in average higher than the connectivity with neighboring areas





GYRES, EDDIES, FRONTS, UPWELLINGS, DOWNWELLINGS ARE ALL CONDUCIVE TO THE ENHANCEMENT OF ECOSYSTEM FUNCTIONING AND ARE UNITS OF MANAGEMENT CONSERVATION AND OBSERVATION

Thank you

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