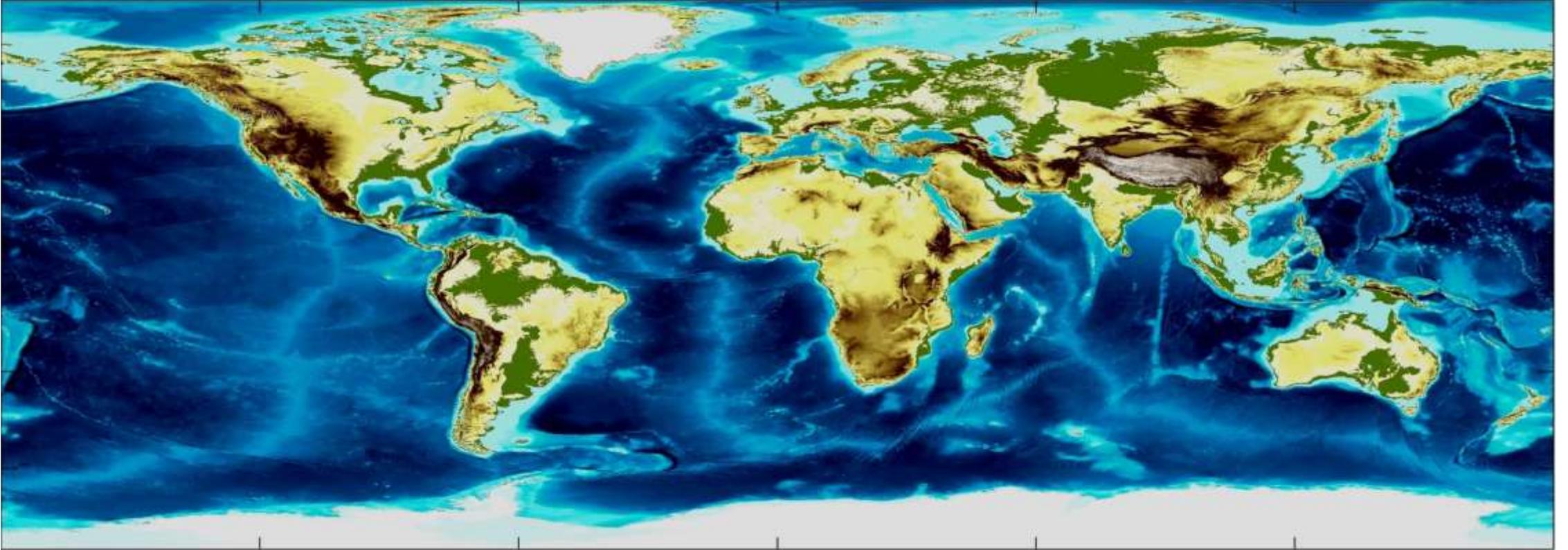


The CNR contribution to marine Research and the Blue Economy in the Mediterranean Sea

Enrico Brugnoli

*Dipartimento Scienze del Sistema Terra e
Tecnologie per l'Ambiente*

World is blue



- To protect the marine environment (healthy seas and Oceans)
- Sustainable use of marine resources
- Mitigation of impacts and hazards



Italy and its coasts, some numbers



8000 km of coasts
7 coastal national parks
27 protected marine areas
51 RAMSAR zones
378 communitarian interest sites 114 areas
with special protection

> 30% (>30 millions) of Italians live in coastal areas

More than 250 millions of tourists in coastal areas (2005)





Italy and its coasts, some numbers



>50% of coasts are affected by erosion processes

It is urgent an efficient and sustainable management of seas and coastal areas.

The scientific community is prepared to play this crucial role

- 1 beach resort every 350 m
- 1 harbour every 14 Km

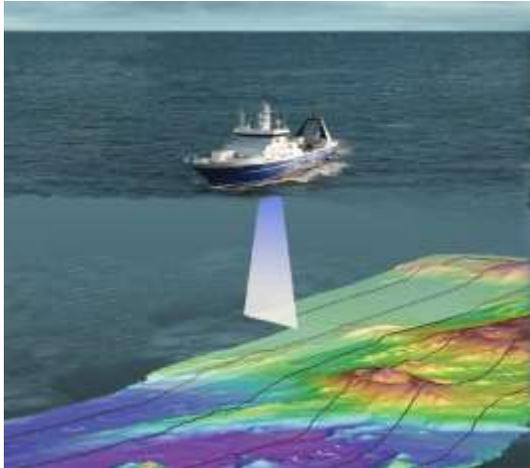




Marine Research @ CNR



*Data:
Multibeam System
with Geo-referred acquisition*



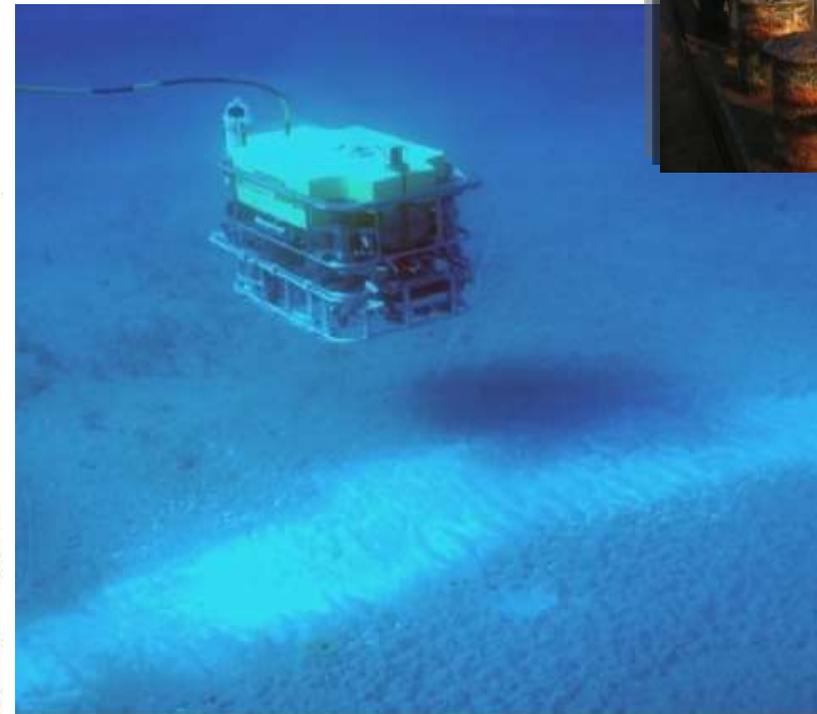
Remotely Operated Vehicle



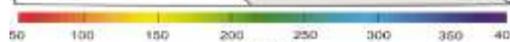
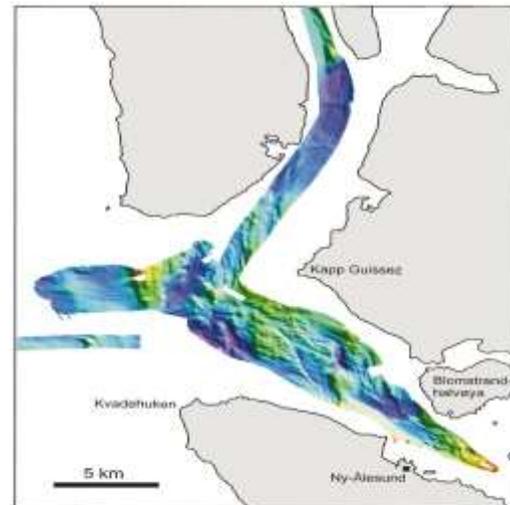
High Frequency Vibro-Corer



High frequency seabed study of Arctic fjord



In situ observing systems





Consiglio Nazionale delle Ricerche

CNR Institutes with significant marine and maritime activities:

ISMAR

IAMC

ISAC

IGAG

INSEAN, ISSIA, IBF, IBIMET, IREA, ...

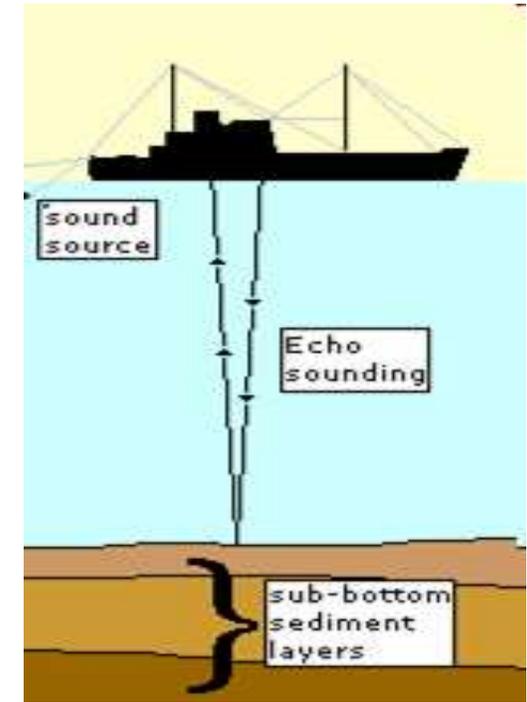
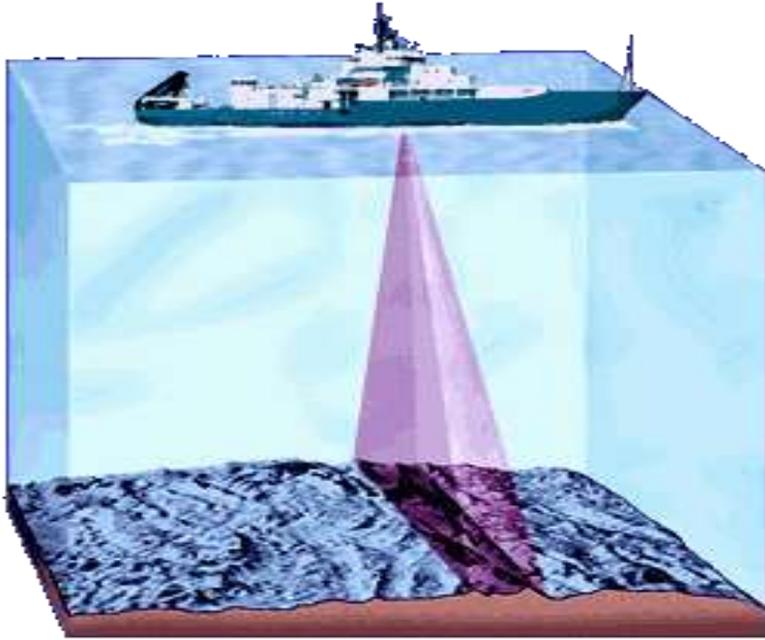
METHODS

Our research vessels are equipped with DGPS positioning

Kongsberg EM710 and EM3002D multi-beam bathy

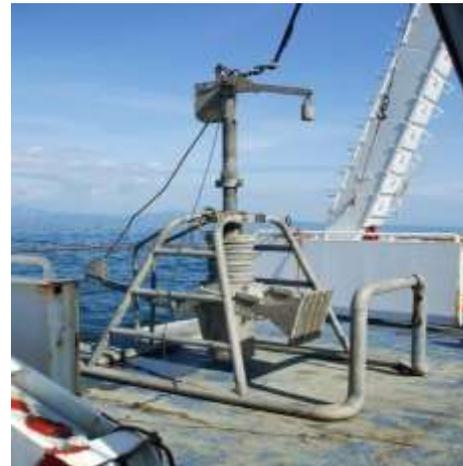
Benthos CHIRP profiler

Digital Terrain Models at the resolution of also 0.5m in shallow water



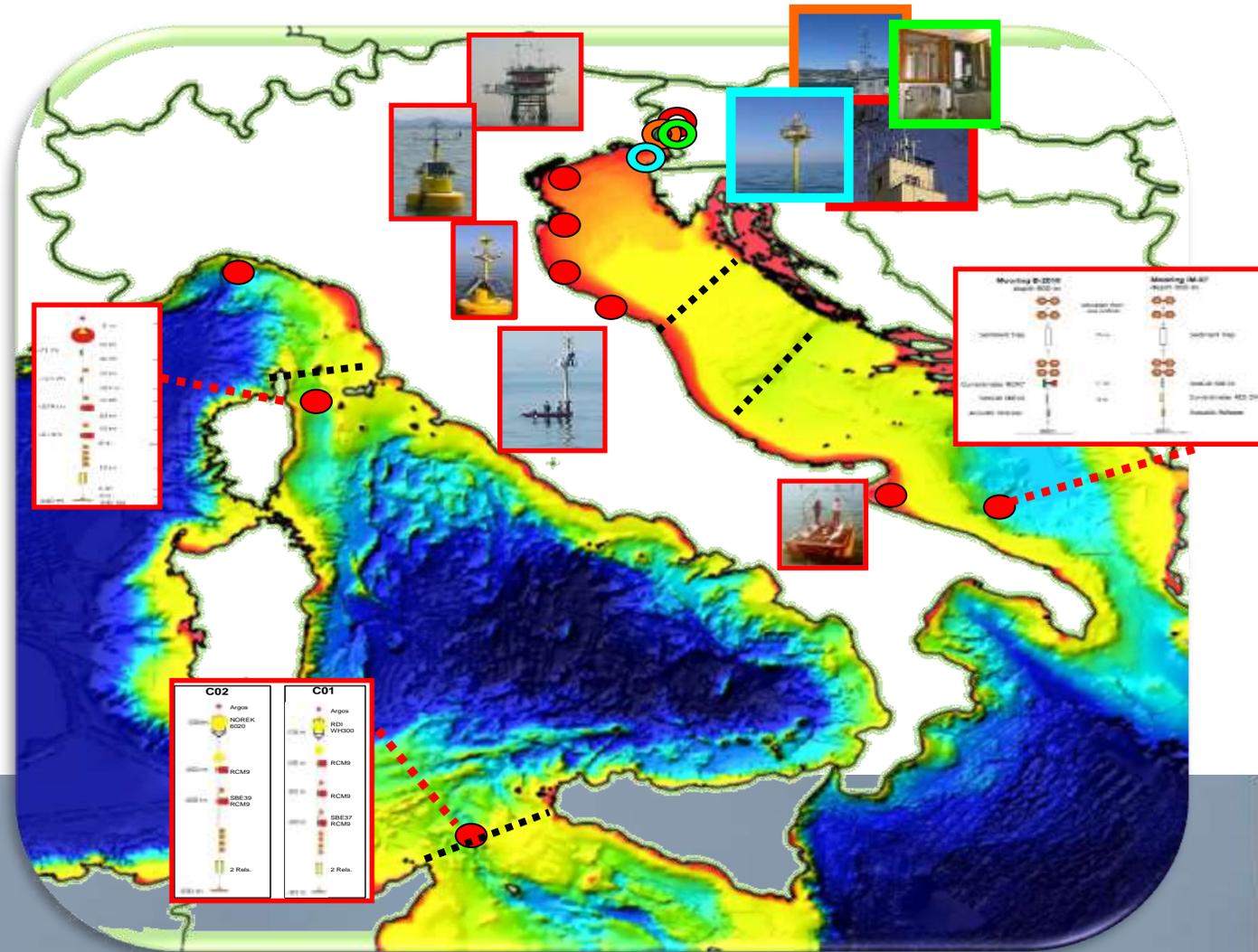
Sediment sampling

- **box corer**
- **gravity corer**
- **grab**



Mediterranean *in situ* observing system

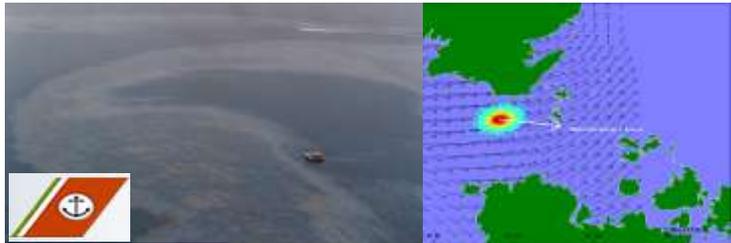
- Buoys, platforms, moorings and other fixed sites
- Repeated hydrological transects
- Fishery Observing System
- LTER stations (North Adriatic, Antartica, Venice Lagoon)





Oceanography

Operational Oceanography & Modelling



Oil-Spill emergencies



Coastal environment assessments

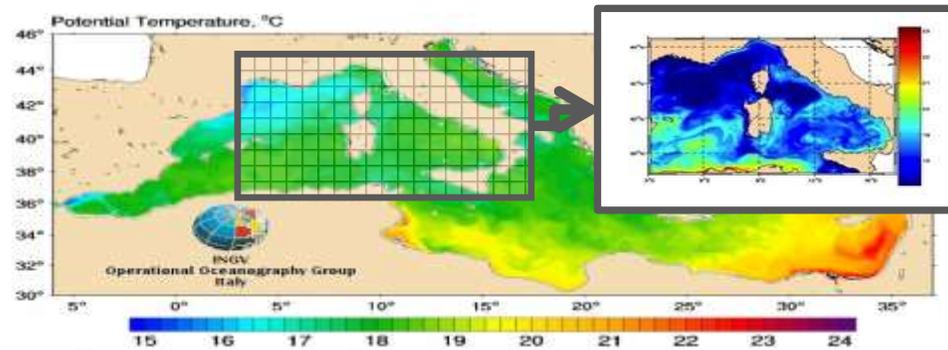
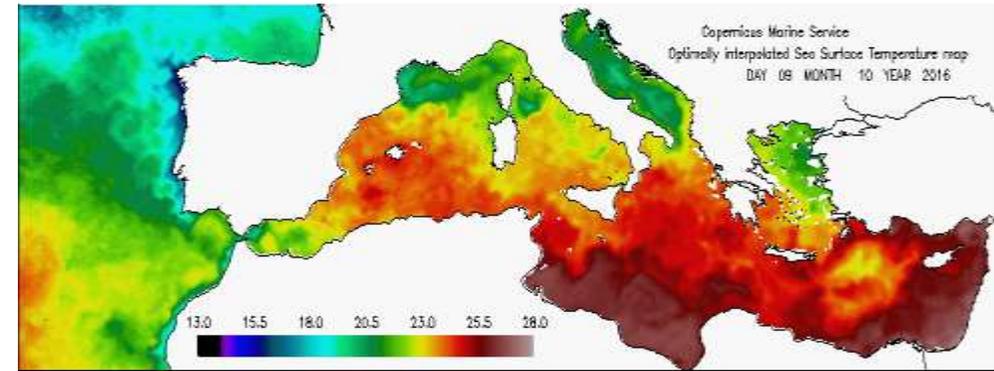


Search and Rescue



Sustainable Fisheries

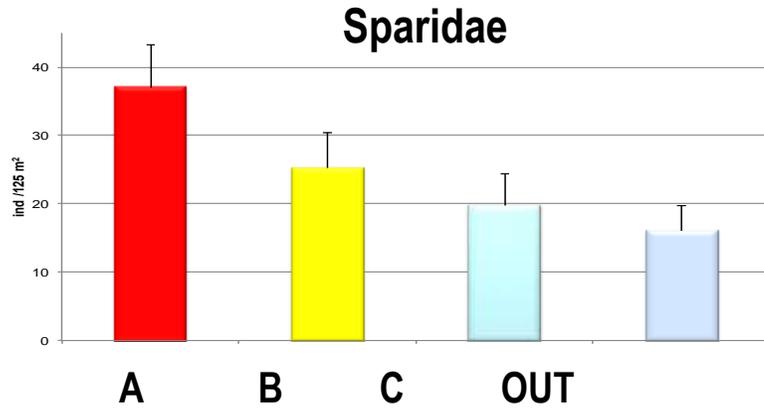
*Satellite Ocean monitoring
Ocean Forecasting for...*



REA & support to military operations



Management & Conservation Marine Protected Areas



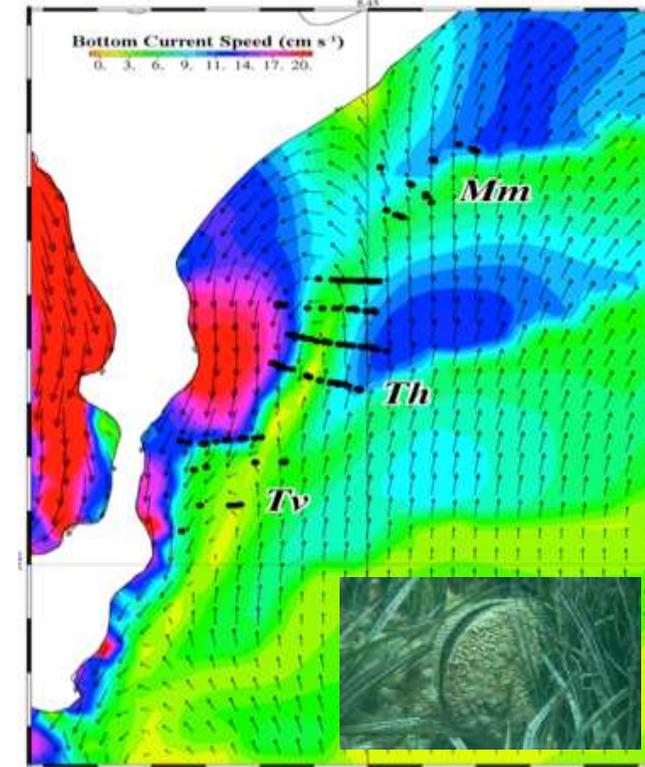
Evaluation of the effectiveness of MPA
(Reserve Effect, Spillover Effect, trophic cascade effect)

Human influence on marine environment
(e.g. effect of accessibility)

Support activities for **sustainable management** (e.g. MPA Regulation)

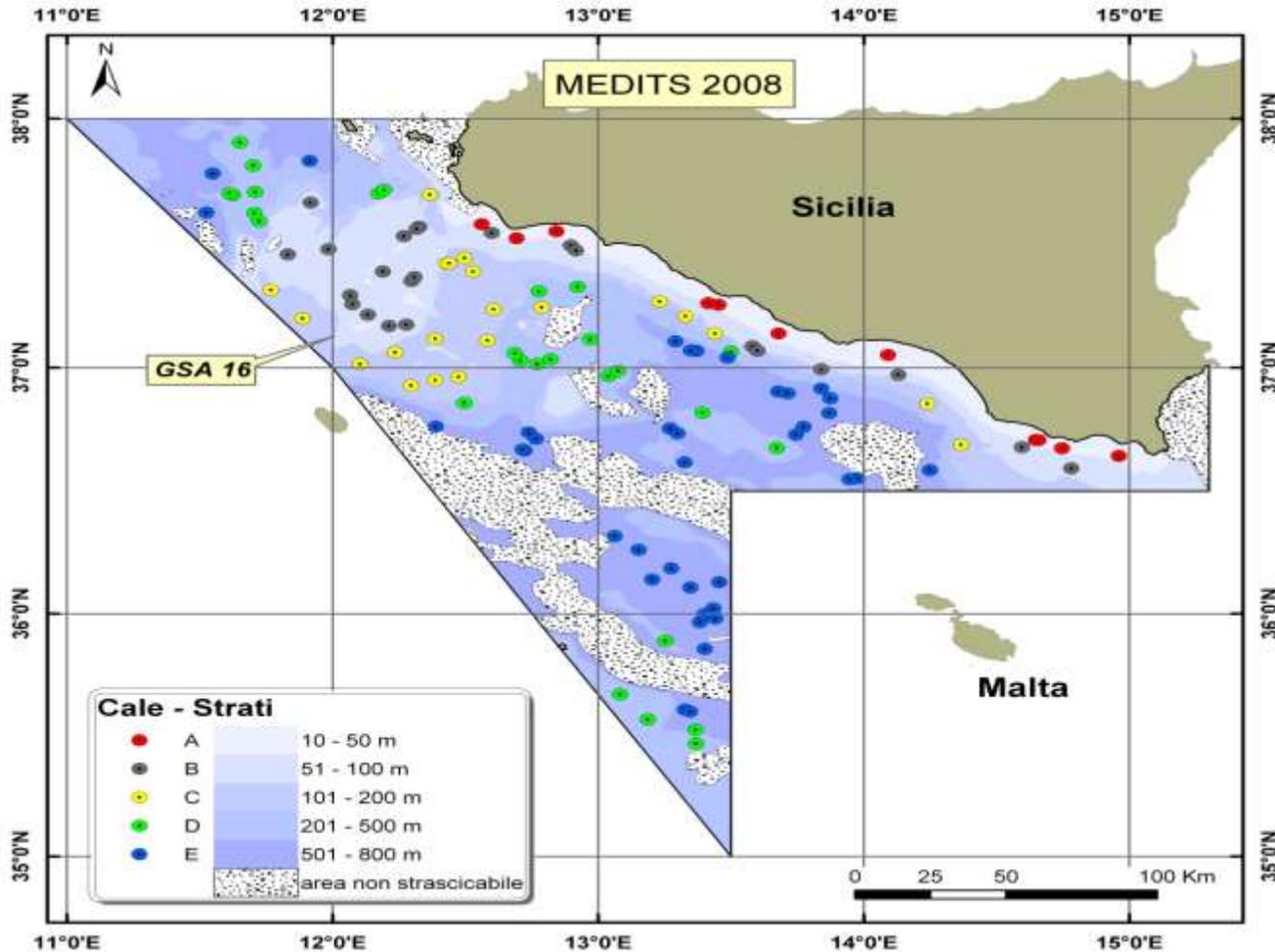
Management of biological resources (e.g. fish fauna, sea urchins)

Biodiversity evaluation (checklist draft and implementation, biocenosis mapping)





Demersal fish population in the Sicily Channel: Trawl Surveys



MEDITS survey (May-June). A total of 120 hauls have been carried out yearly, at depth comprised between 10 and 180 m with a stratified random design and haul allocation proportional to stratum width.

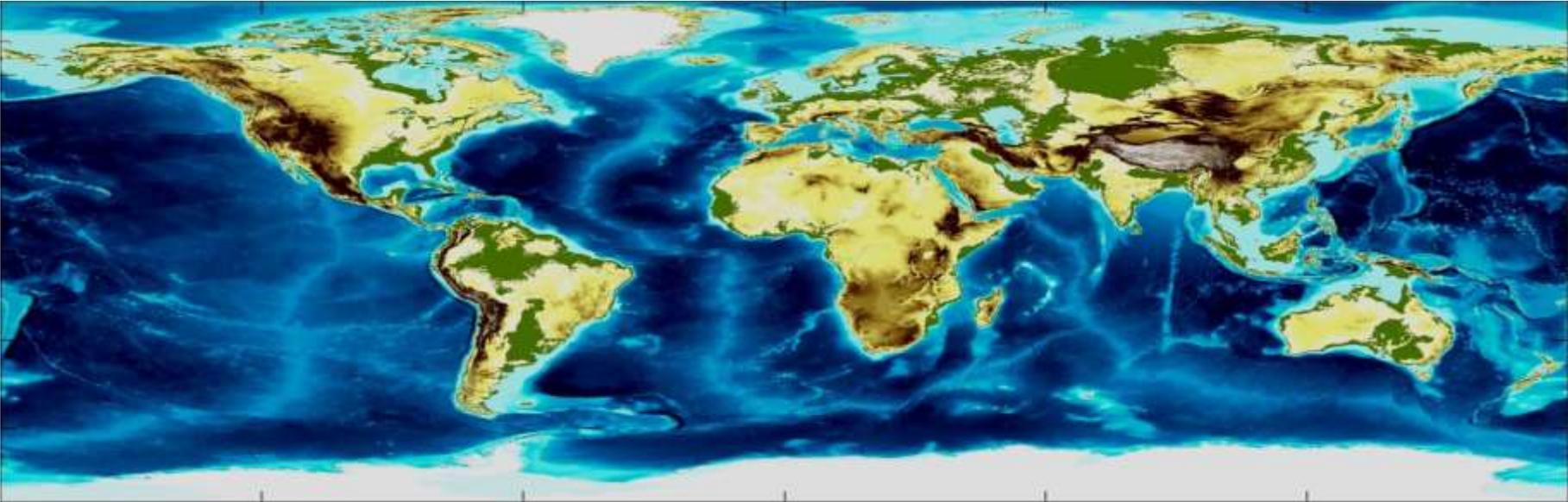


The BLUEMED initiative

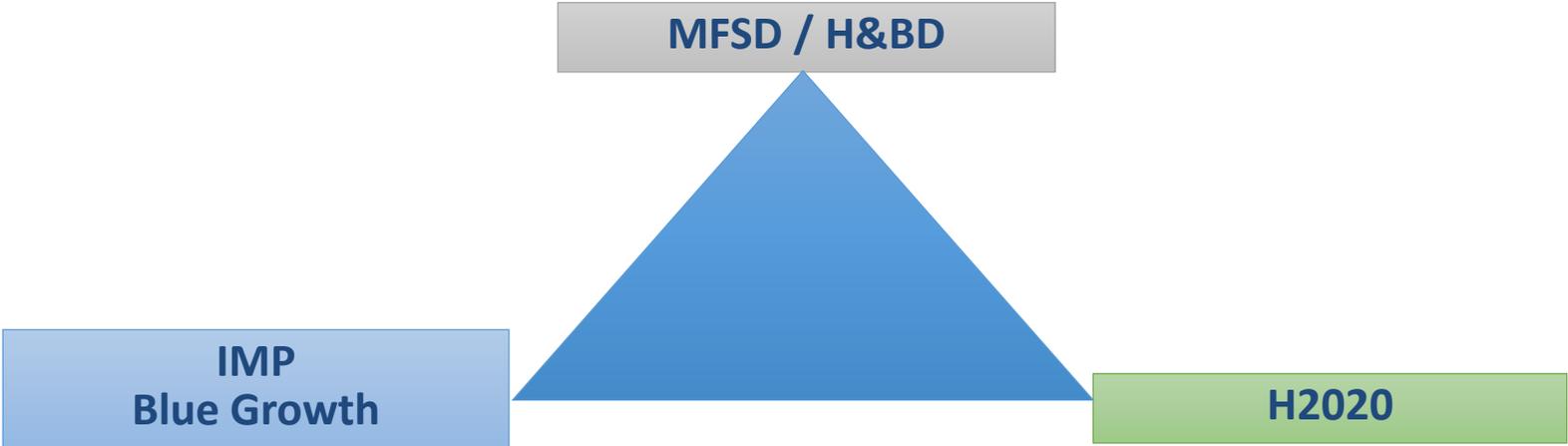
The **prominent challenges of the Mediterranean basin** (i.e. climate change, increased pollution, overfishing, etc.) as well as the **major local opportunities of blue growth** (biodiversity and deep sea resources, sustainable tourism, renewable energy production, etc.), **require a common and shared Vision and a Strategic R&I Agenda (SRIA)**



THE FRAMEWORK



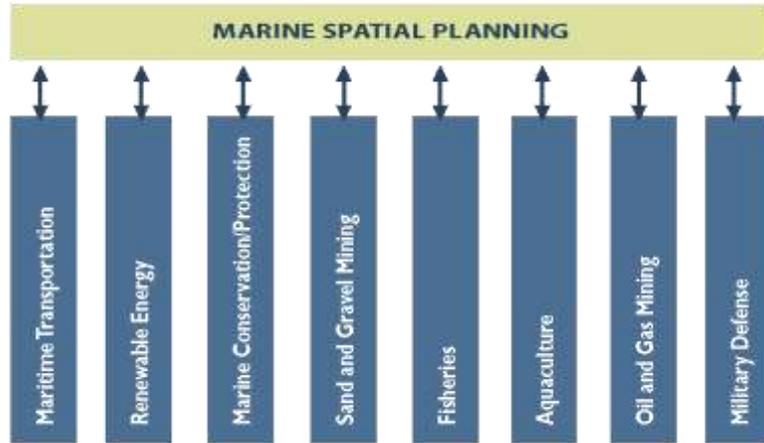
Protect marine ecosystems - Mitigate natural risks - Exploit marine resources



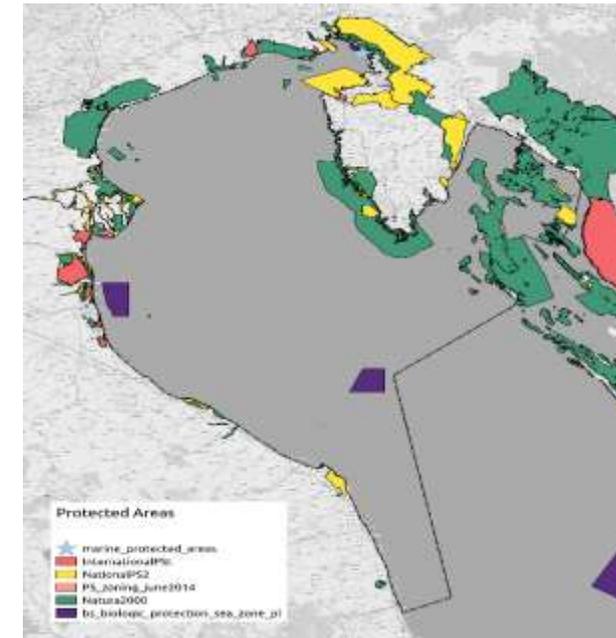
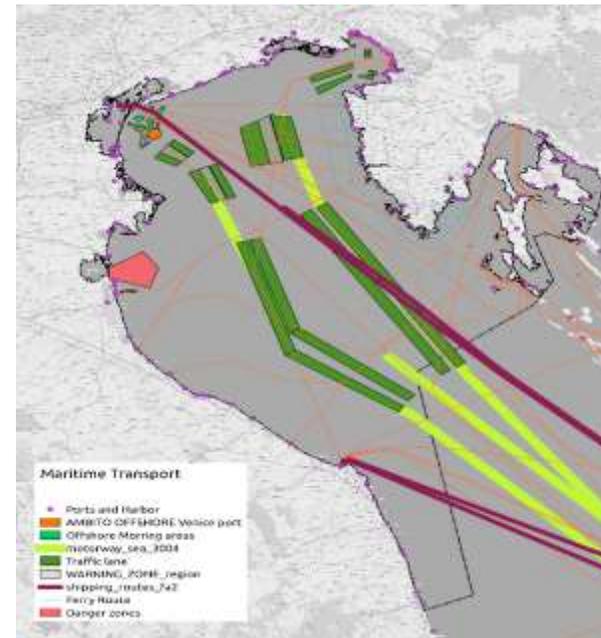
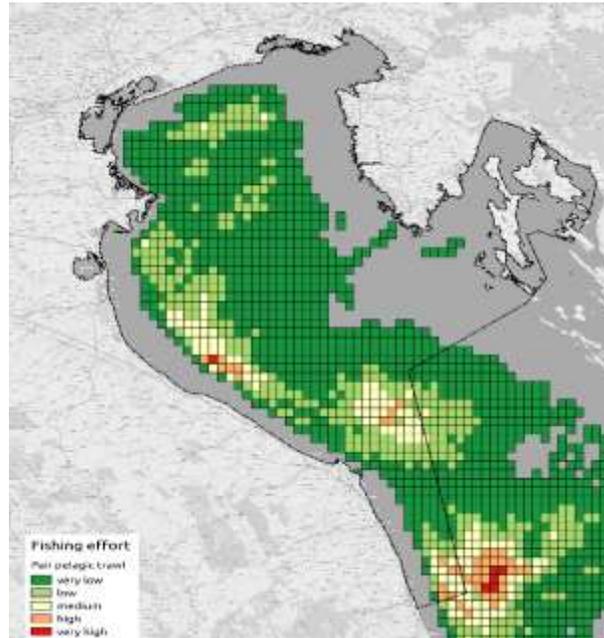
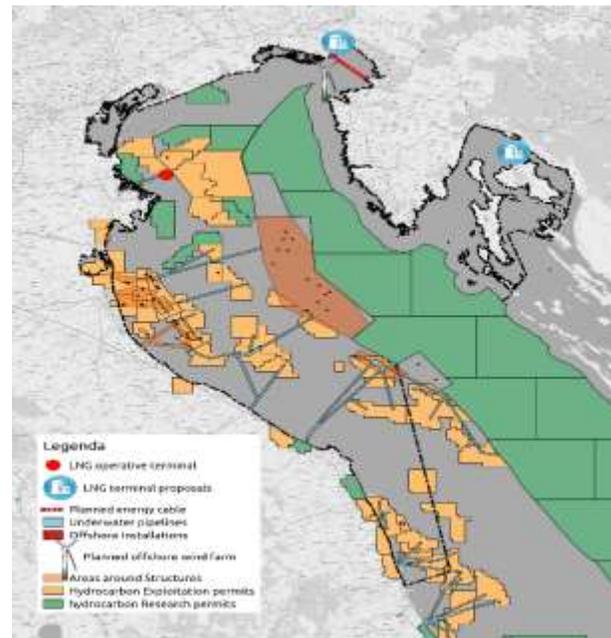


USES OF OUR SEA

Today



MSP is a practical way to create and establish a more **rational organization of the use of marine space** and the **interactions between its uses**, to **balance demands for development** with the need to **protect marine ecosystems**, and to achieve social and economic objectives in an open and **planned way**.
(Ehler & Douvère, 2009)





USES OF OUR SEA

Tomorrow



**offshore
aquaculture**



deep sea mining

**multipurpose
platforms**



Vision & SRIA

- **June-August 2014 >> National mapping of R&I projects** (about 900!) via stakeholders consultations; merging of information and **identification of R&I needs & gaps, opportunities and boundary conditions for their implementation**
- **September - December 2014 >>** Consultation with scientific communities and industrial associations at EU level, finalization of a **Vision Document** and its **endorsement by the Italian Presidency of the EU Council** and presentation at the Competitiveness Council (04-05 December 2014)
- **January - September 2015 >>** Drafting and finalization of the **BLUEMED Strategic Research and Innovation Agenda (SRIA)**

Endorsement

- **October 2015 >>** 10 Member States signed the Venice Declaration on Mediterranean Sea Cooperation launching a Strategic Marine and Maritime Research and Innovation Agenda for Blue Growth. The **BLUEMED SRIA presented at the high level conference held on October 16** at the “Aquae Venice 2015” Pavillion

The BLUEMED initiative

The BLUEMED Initiative fosters integration of knowledge and efforts of EU member states of the Mediterranean Basin to jointly create new 'blue' jobs and a sustainable industrial growth in the marine and maritime sectors of the area.

It was a priority of the Programme of the Italian Presidency of the Council of the European Union: “....., the Presidency will organise specific events and work with the Commission and Member States to define a Blue Growth flagship initiative for the Mediterranean”.

Work goes on **under the Italian coordination** with 8 other EU Member States (except Portugal, all bordering the Mediterranean): **Cyprus, Croatia, France, Greece, Malta, Slovenia, Spain and - since July 2014 – also Portugal.** The process is supported and facilitated by the European Commission (DG R&I, DG MARE, DG JRC).

BLUEMED SRIA objectives

The BLUEMED R&I Agenda (SRIA) aims at addressing the challenges outlined and facilitate to exploit opportunities into blue jobs and growth. EU Member States can achieve this by:

- ❑ Exploiting of the existing knowledge and filling R&I gaps;**
- ❑ Integrating marine and maritime sectors, and public researchers, industry (i.e., mining, aquaculture, fishery, shipbuilding, maritime transportation, tourism, etc.), and policy makers, and**
- ❑ Aligning funding strategies/integration of R&I funds and infrastructures at regional (structural and investment funds), national and EU level, by avoiding duplication, with an effective and efficient use of resources and the maximisation of the leverage effects.**

The Strategic R&I Agenda (SRIA) @ goo.gl/ZbJTWB: 12 Key Challenges

Key enabling knowledge for the Mediterranean

- *Mediterranean Sea ecosystems: services, resources, vulnerability and resilience to natural and anthropogenic pressures*
- *Mediterranean Sea dynamics as to develop services for sustainable adaptation to climate change and plans for mitigation*
- *Hazards and protection of coastal areas in the Mediterranean*

Key sectorial enablers in the Mediterranean

- ***Innovative marine bio-resources based enterprises in the Mediterranean***
- *Ecosystem based management of Mediterranean aquaculture and fisheries*
- *Sustainable tourism in the Mediterranean*
- ***Maritime clusters in the Mediterranean***
- *Maritime Spatial Planning and Integrated Coastal Zone Management in the Mediterranean*

Enabling technology and capacity creation for the Mediterranean

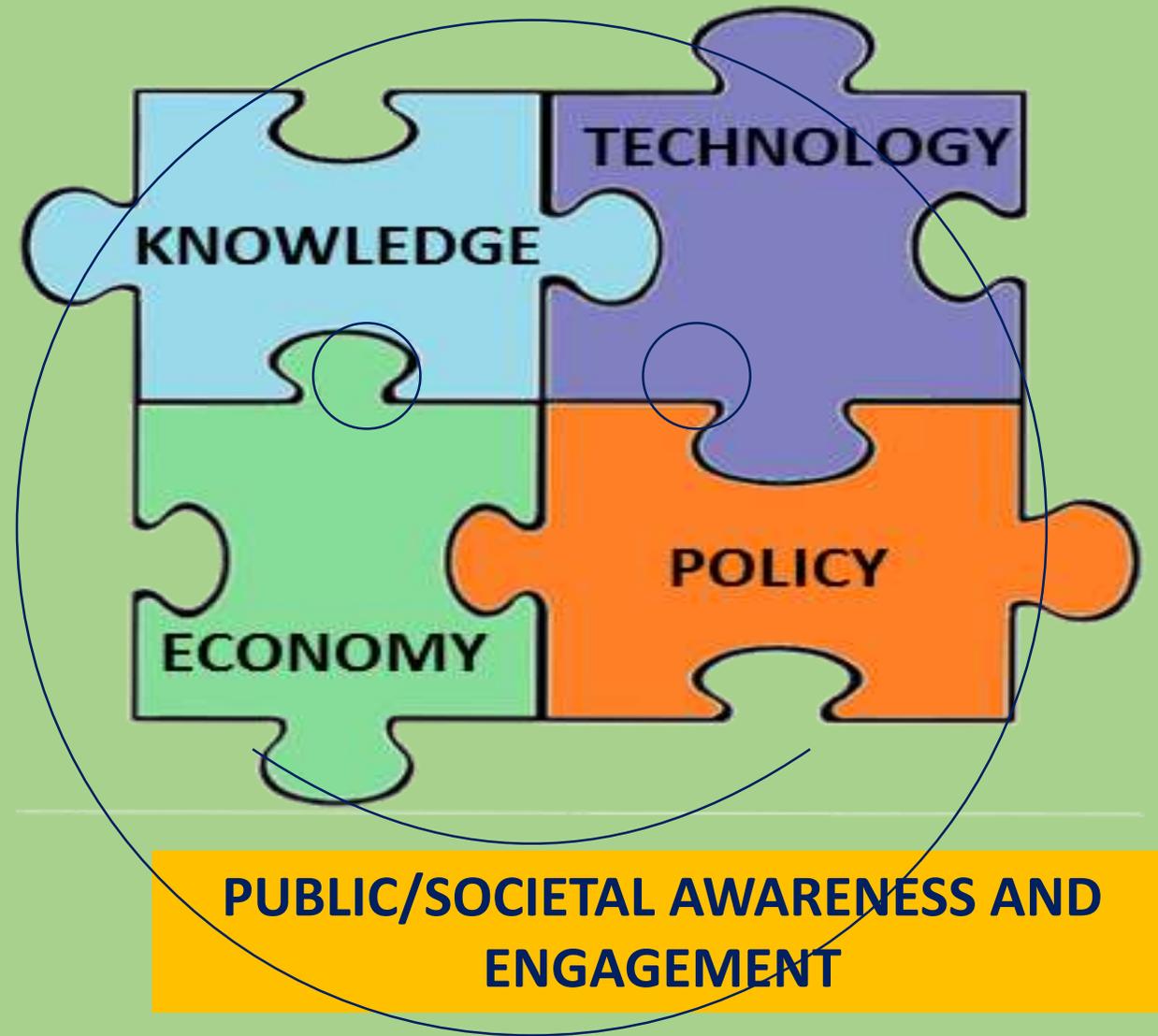
- ***Smart greener maritime transport and facilities in the Mediterranean***
- *Observing systems and operational oceanography capacities in the Mediterranean*
- *Multi-purpose off-shore platforms in the Mediterranean*
- ***Marine and coastal cultural heritage in the Mediterranean: unveiling, protecting and valuing***

Impacts so far

- EC calls for the Med on marine and maritime topics (ca 40 M€)
- Positive feedback from the coordinated mobilization of national communities

What's next

- BLUEMED Initiative implementation
- EC H2020 Project **CSA BLUEMED (lead by CNR)- Support to the BLUEMED Initiative: Coordination of marine and maritime research and innovation activities in the Mediterranean** (involvement of non-EU Med countries)
- National Cluster on Blue Growth (National Research Plan strategic area)



Grazie per l'attenzione

enrico.brugnoli@cnr.it

