Consiglio Nazionale delle Ricerche

ISMAR

La ricerca scientifica per la pianificazione dello spazio marittimo

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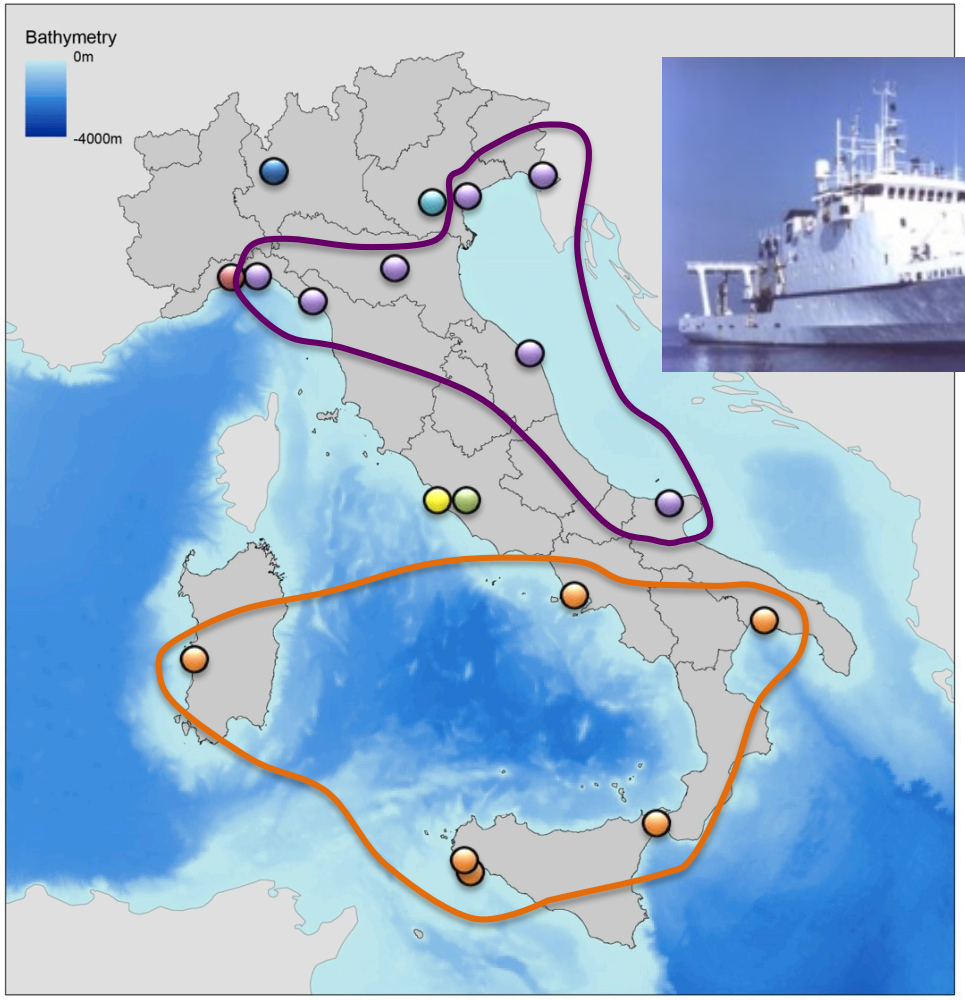
[2] Director of RITMARE

Main Institutes performing Marine Research



- ISMAR
- IAMC
- IREA
- IGG
- ISSIA
- INSEAN
- IGAG
- ISAC

800 people working on Marine Research

The CNR investment on a fleet is key to all activities

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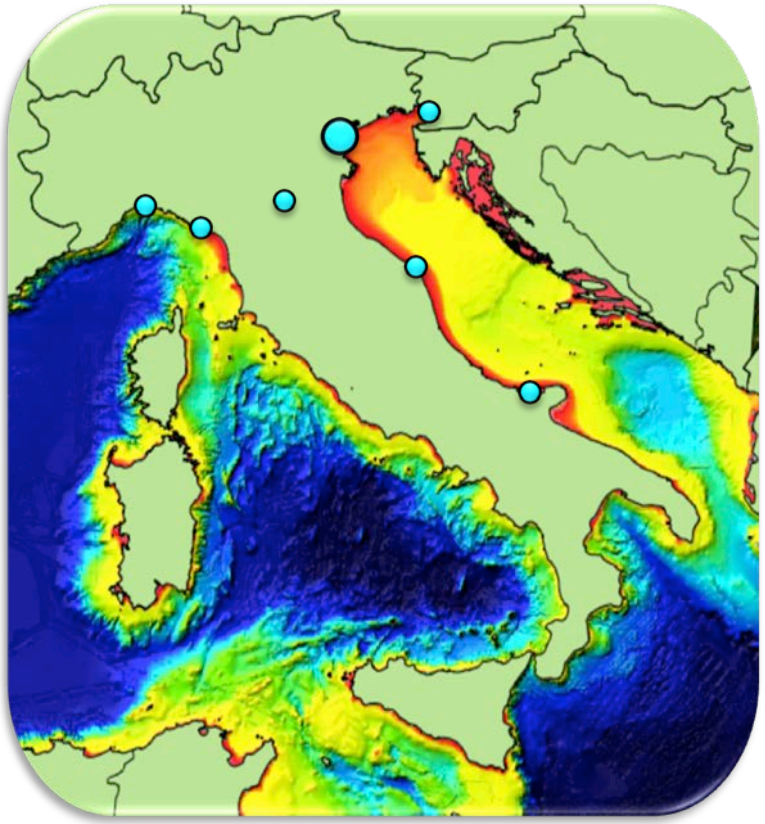
- **Public Research Institute**
- Headquarters in **Venice** and **6 regional sections (Ancona, Bologna, Genova, La Spezia, Lesina, Trieste)**
- **192** Units of Permanent Staff (**115** researchers)
- About **90** people in training (PhD, postdoctoral)
- About **160 ISI publications each year**
- **6** Marie Curie fellowships
- Average external funding: 7.0 M Euro



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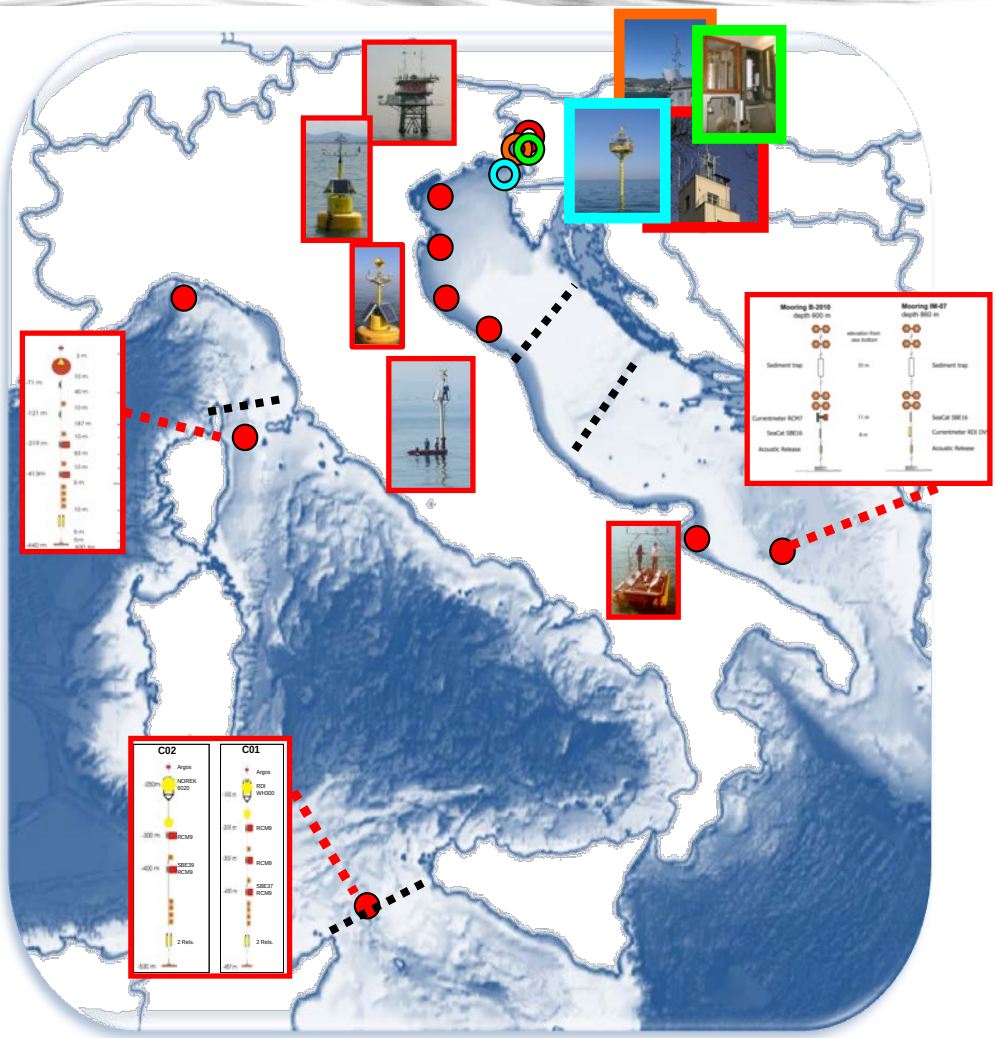
- Fixed buoys
- Re-deployable mooring stations
- Repeated transects
- Fishery observing system
- Satellite
- Radar

- Real time data transmission
- Interoperable data structures
- Long Term Ecological Research
- Modeling and forecast



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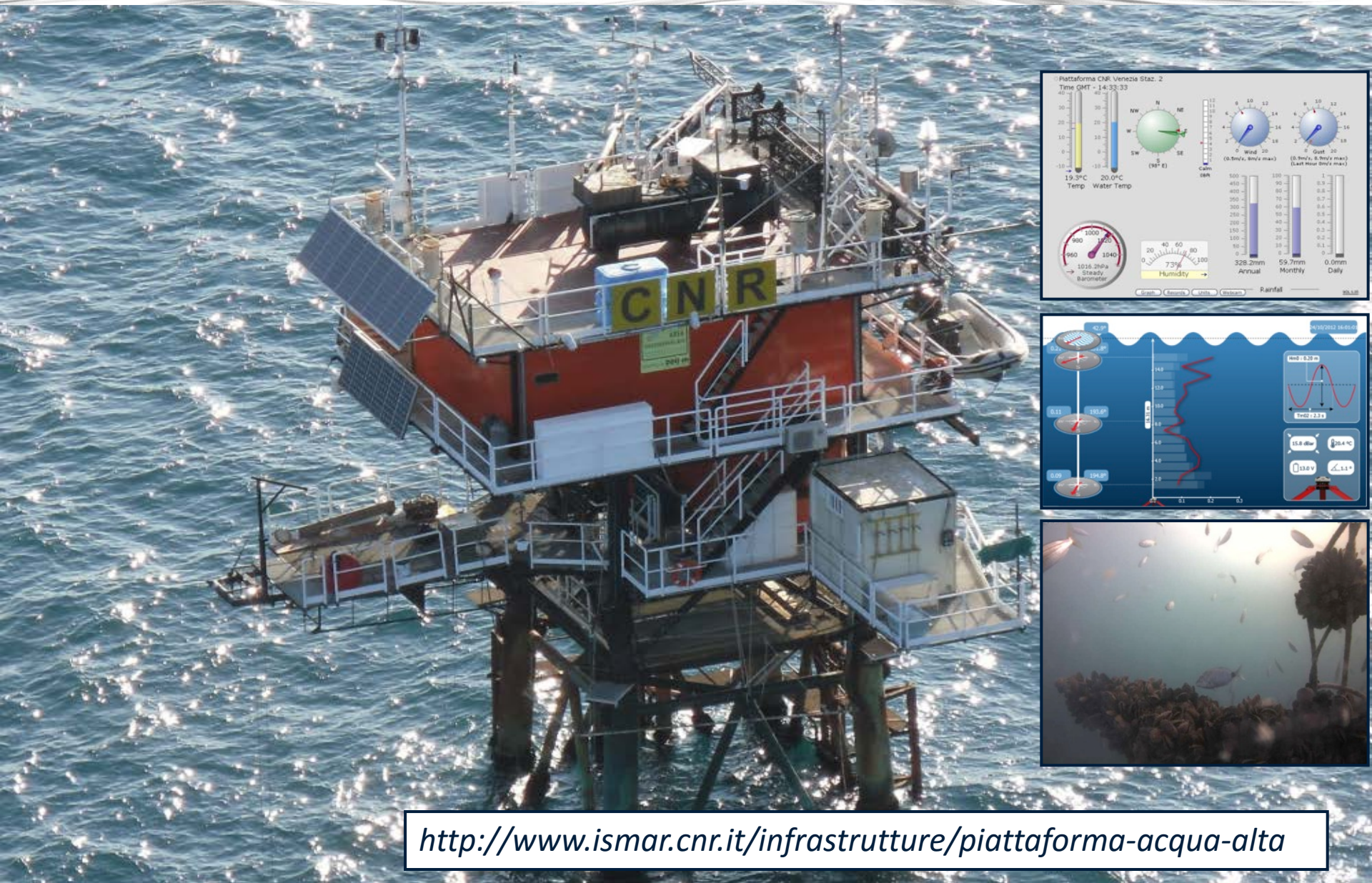
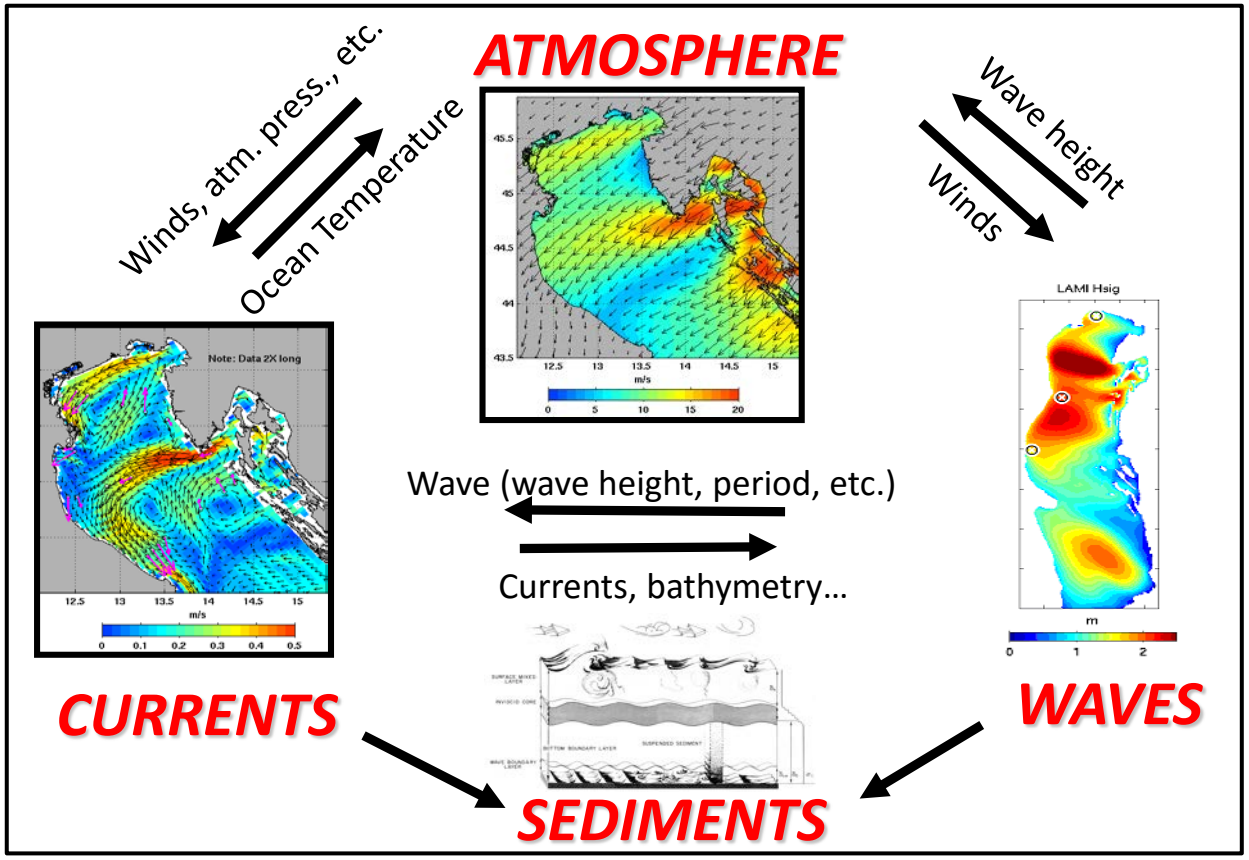
National Research Council

Institute of Marine Sciences



http://www.ismar.cnr.it/infrastrutture/piattaforma-acqua-alta

ISMAR state-of-the-art modelling



- *Balanced modeling chain (no weak rings)*
- *Designed for nested runs (large to small areas)*
- *Optimized for in/out interoperability (plug-in data)*

- *Model-driven monitoring strategy*
- *Open data policy (e.g. Thredds Data Server TDS)*

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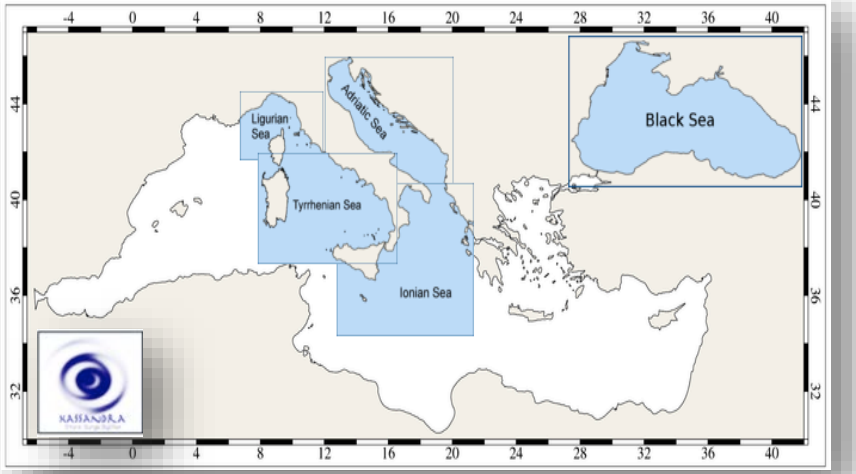
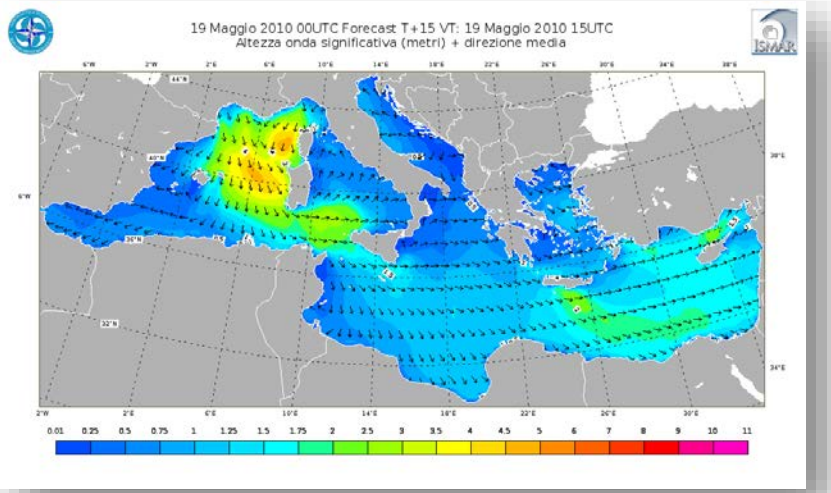
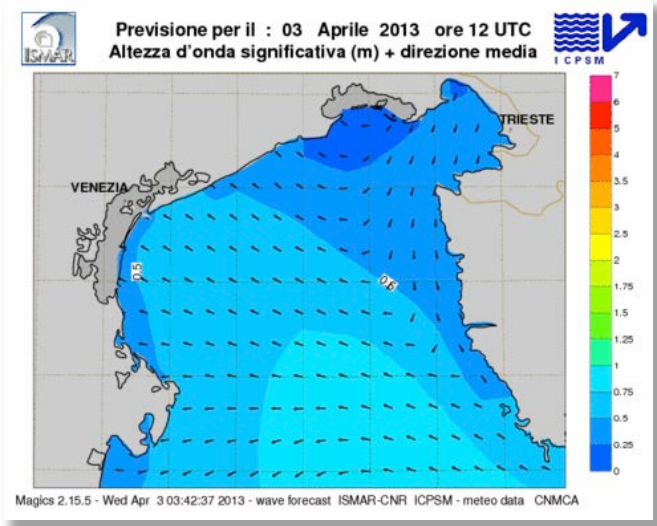
KASSANDRA ONDE, LIVELLO DEL MARE, CORRENTI



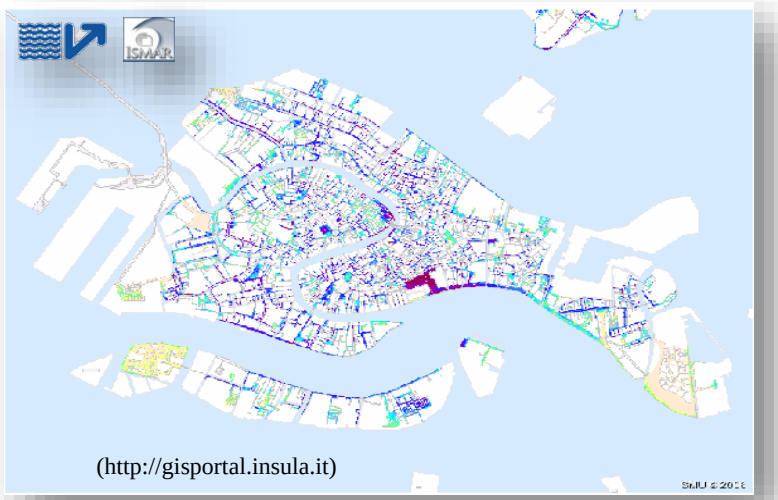
NETTUNO ONDE IN MEDITERRANEO



ISMAR-CENTRO MAREE ONDE IN NORD ADRIATICO



ISMAR-CENTRO MAREE ACQUE ALTE A VENEZIA



ISMAR's mission: increase the knowledge of natural & anthropogenic processes, support blue growth and help solve societal problems

- **Natural processes**
  (geological, oceanographic, biological), ecosystems, productivity of the seas, natural hazards.
- **Mechanisms / effects of global change**
  ocean circulation, productivity, warming and acidification (including polar regions); sea level change and coastal erosion.
- **Human impacts**
  current and pre-industrial pollution, impacts on the coasts and in the deep sea, exploitation of resources, alien species

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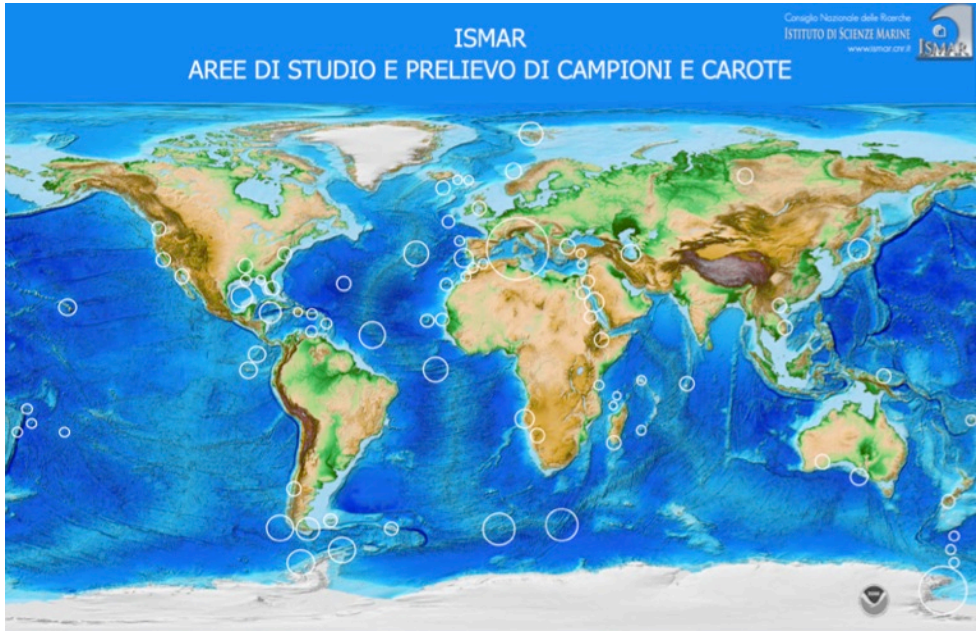
ISMAR cooperation within CNR



ISMAR's study areas worldwide

- Con **ISE, IREA, IBAF** in LTER LIFEWATCH, ENVEUROPE
- Con **IGAG e IAMC** in MAGIC e Batimetrie
- Con **ISAC** per accoppiamento Oceano-Atmosfera
- Con **IGG** per Stratigrafia e Paleoclima
- Con **IAMC e ISAC** per DSS Pesca
- Con **ISAC e IAMC** per Marine Strategy (MSFD)

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Sources of external funds

- EU Projects coordinated by (or involving) ISMAR
- EU Projects through DTA
- Regions
- Ministries (including RITMARE)
- Industry
- ISPRA (MSFD, Geological Mapping of Italian Seas)
- Depart. Civil Protection (MAGIC)

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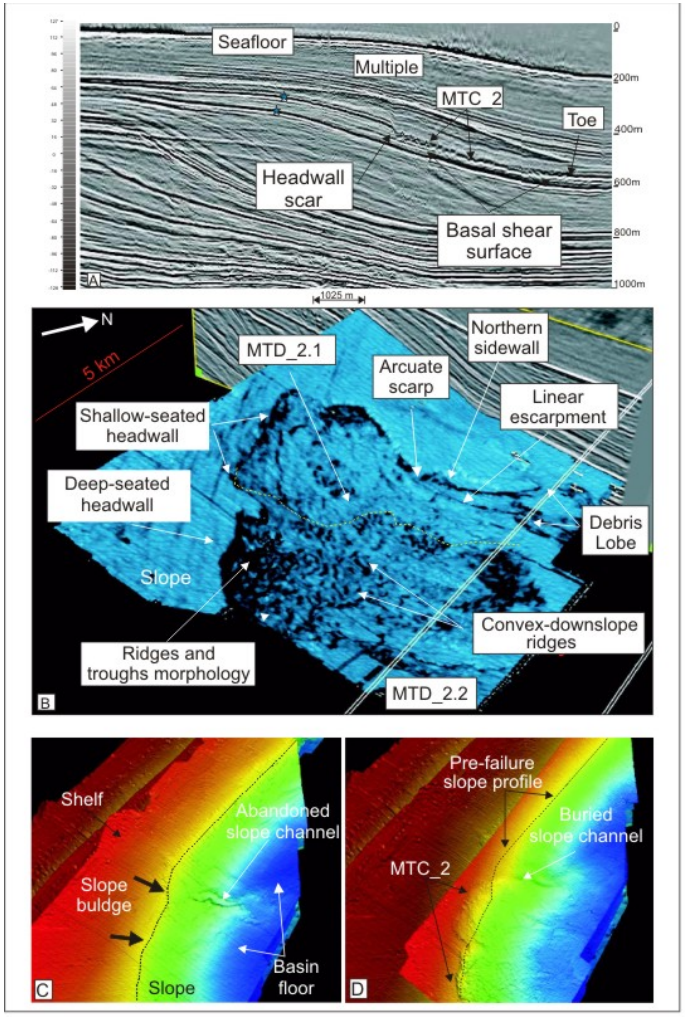

Fig. 8

FUNDING FROM INDUSTRY ARE INCREASING

CHEVRON
Development of new instruments for detecting freak waves (that impact offshore infrastructures)

ENI
3D seismic interpretations at basin to reservoir-scale

SHELL
Organic matter accumulation and decay in “tight” shale

EXXON
Source to sink reconstruction of the Po low-stand delta of the last Glacial and hydrocarbon potential

GALSI, SNAMPROGETTI:
Geological hazard assessments

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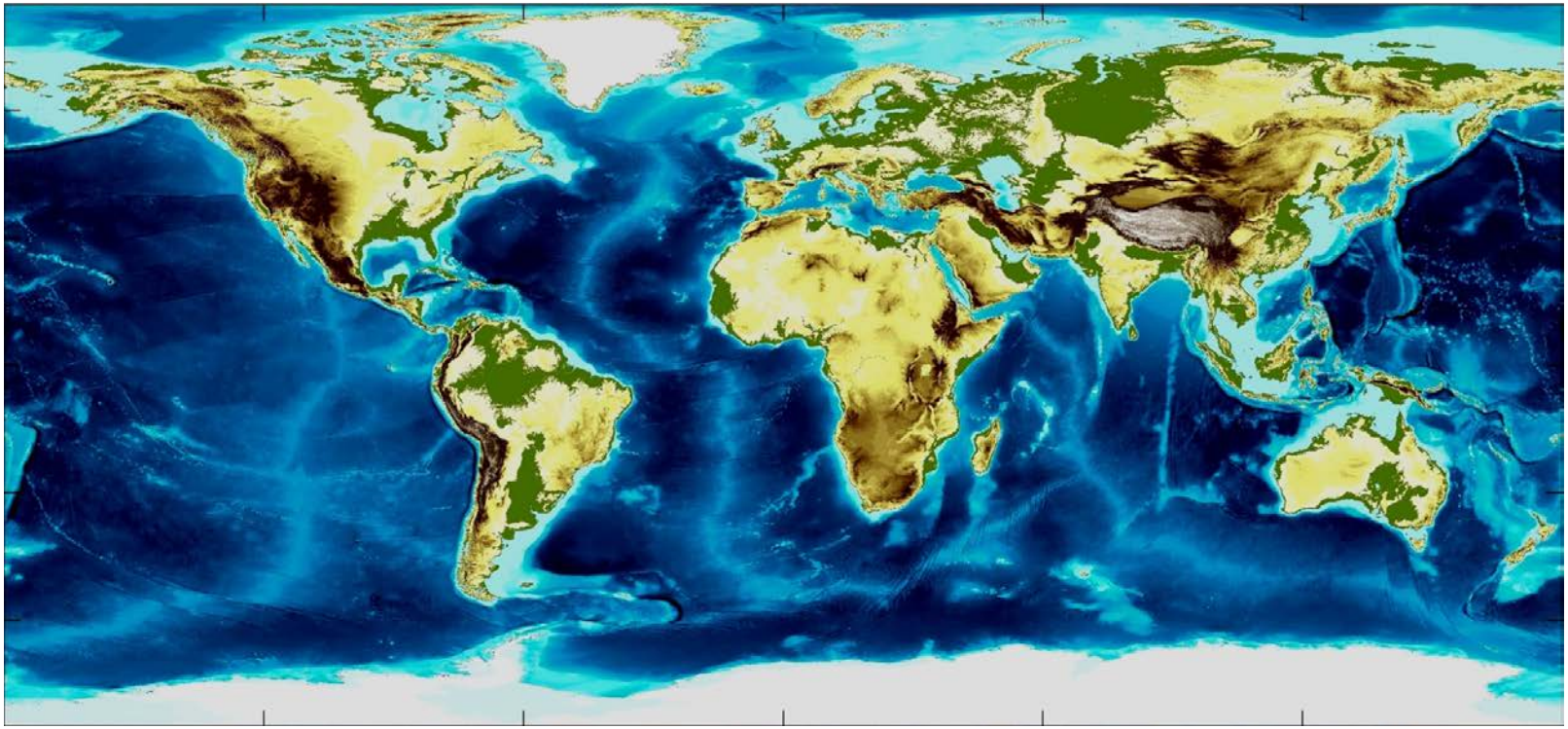
L'economia del mare



- Proteggere l'ambiente: la "**salute**" del mare
- Utilizzare le risorse: il mare come sistema di "**produzione**"
- Mitigare gli impatti naturali: il mare come fattore di "**rischio**"

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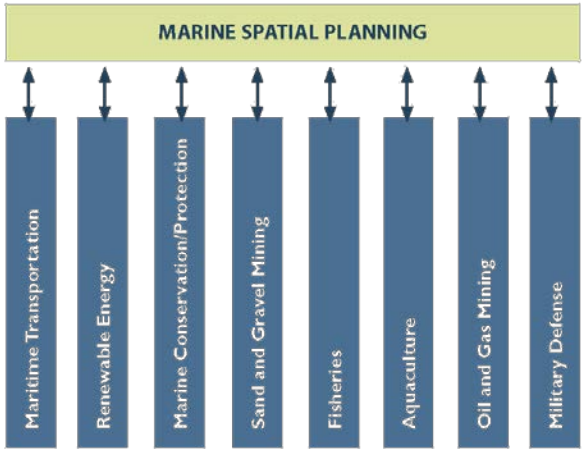
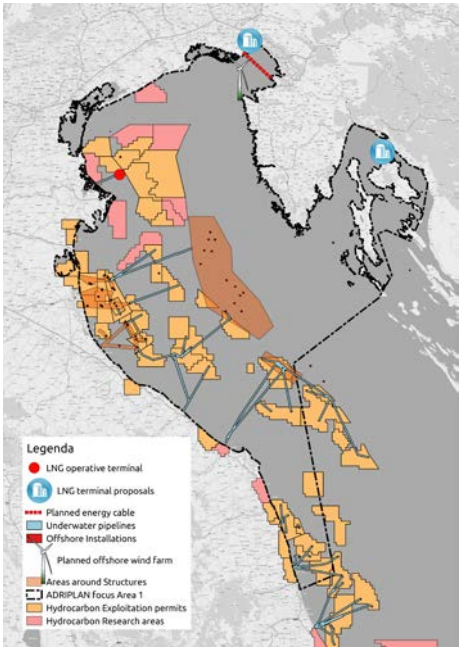
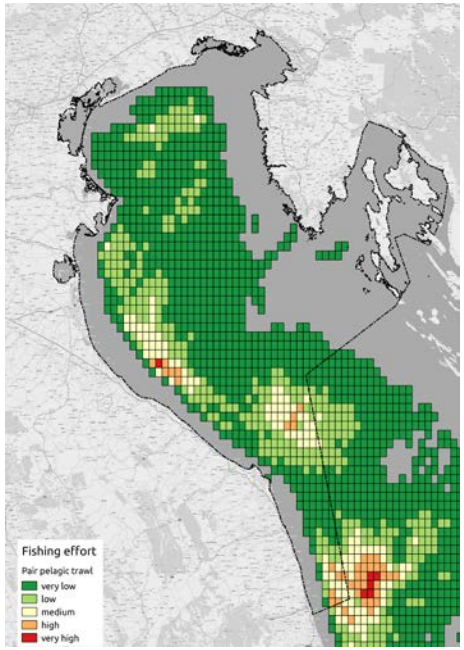
Uses of our seas

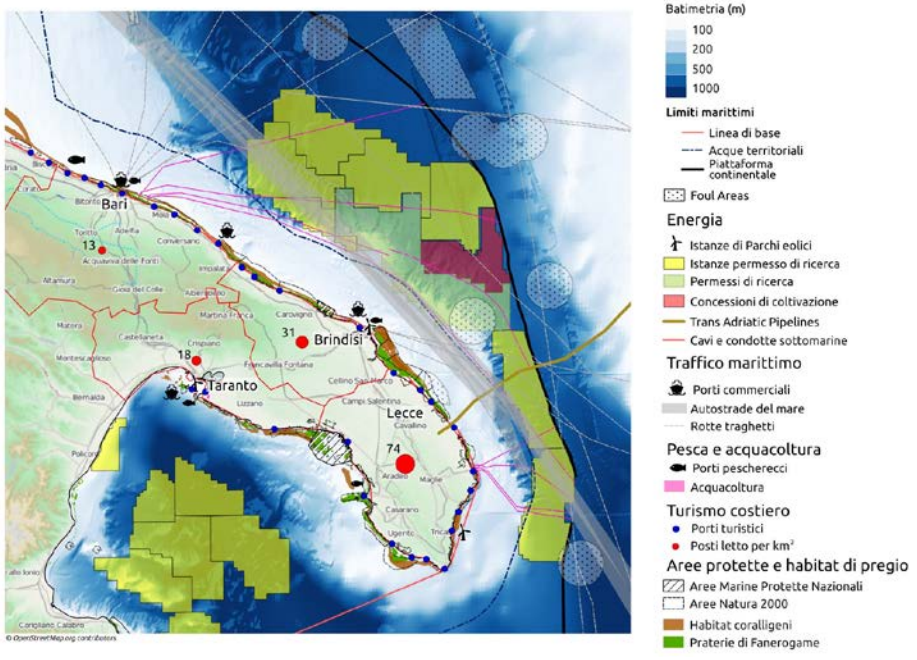
Today



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 & Douvere, 2006)

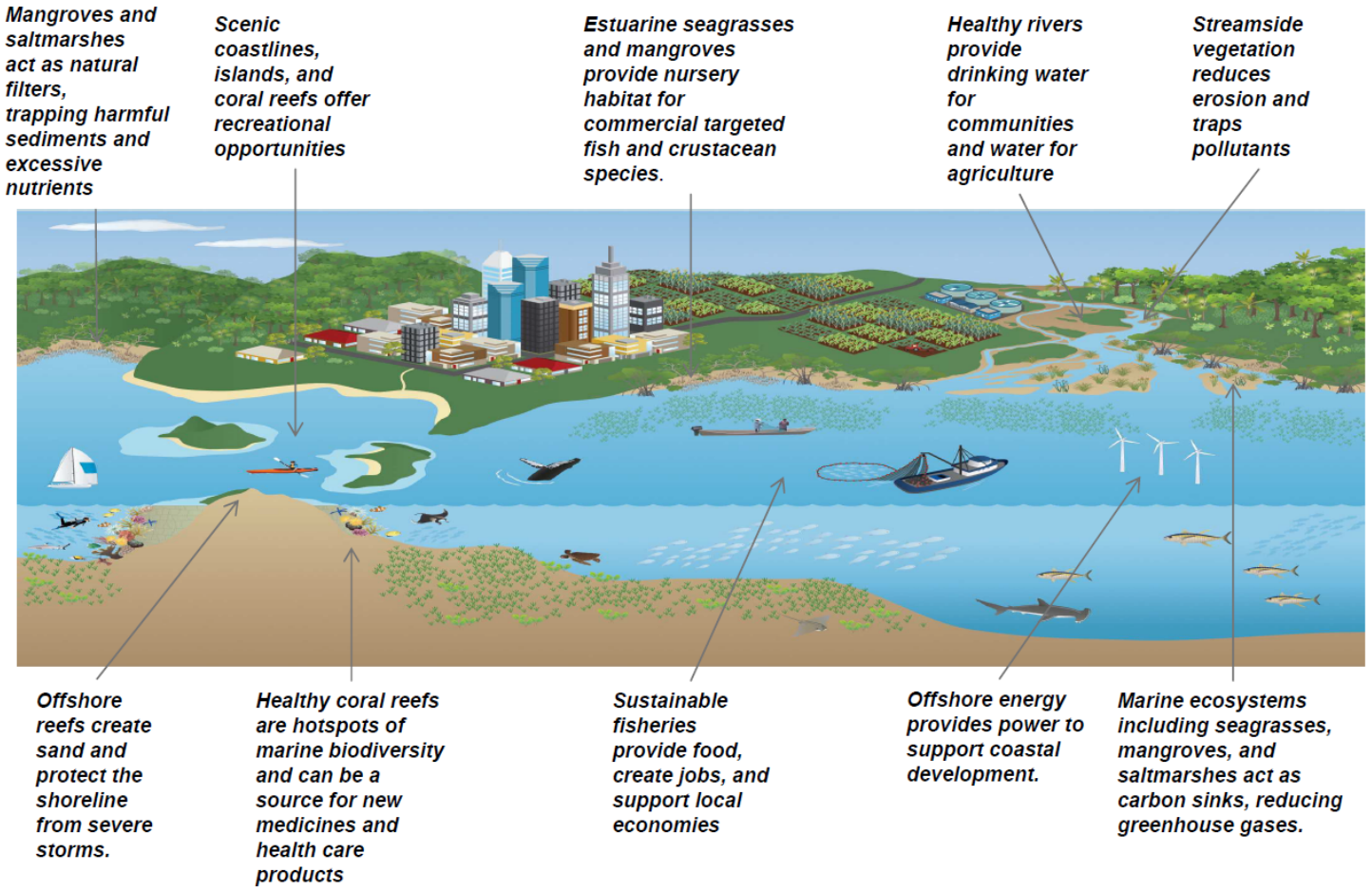






Ecosystem-Based Management

EBM shall provide sustainable delivery of ecosystem services in an equitable way

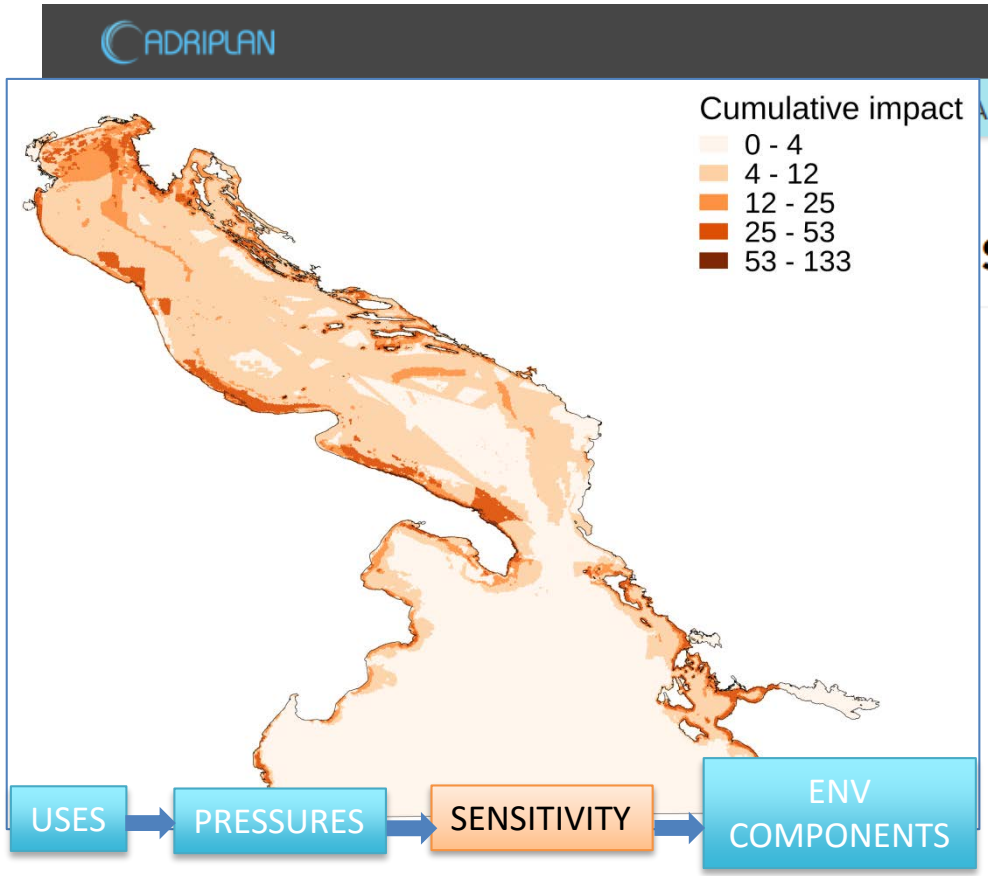


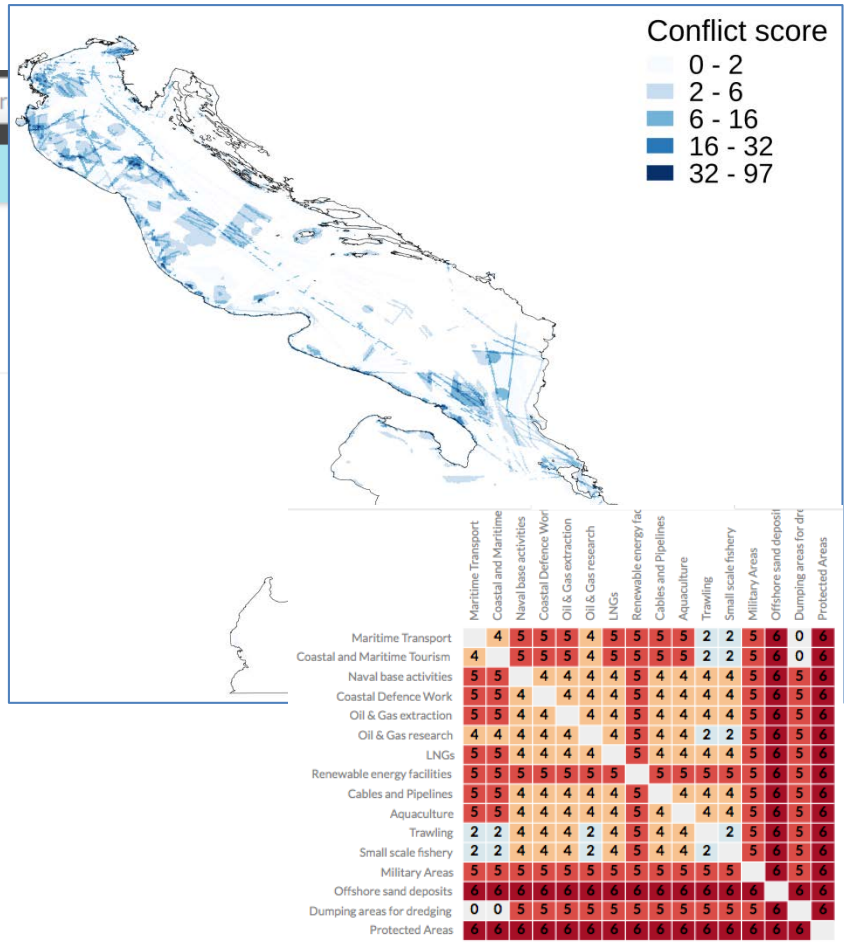
(Angelidis, 2012)

National Research Council

Pianificazione dello spazio marittimo

Moving from data inventory, to integration within the ADRIPLAN methodology, to supporting tool for MSP planning





CNR-ISMAR - IUAV – Methodologies adapted from Halpern et al., 2008 and COEXIST Project

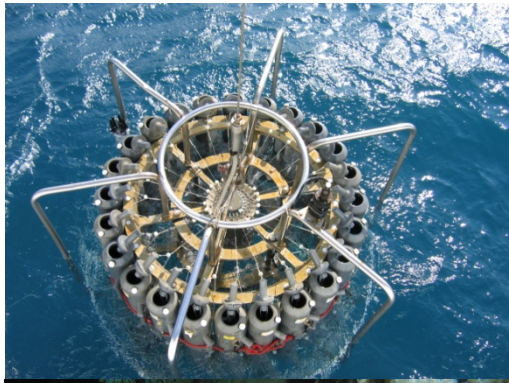
Work in progress..

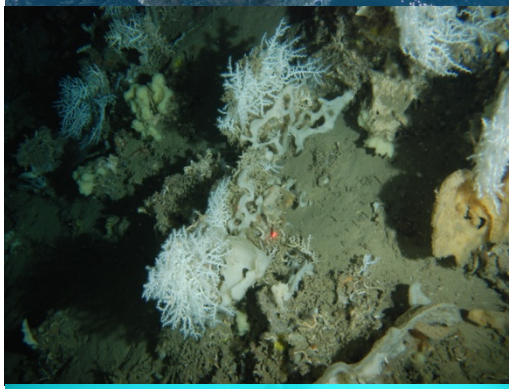
Uses of our seas

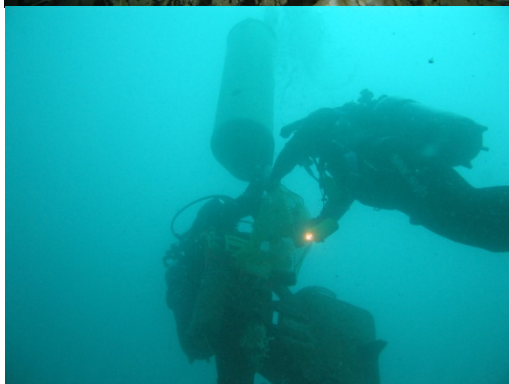
DIRETTIVA 2014/89/UE – UN QUADRO PER LA PIANIFICAZIONE DELLO SPAZIO MARITTIMO

- Gli SM devono mettere in vigore le disposizioni legislative, regolamentari e amministrative necessarie per conformarsi alla direttiva entro il ***18 settembre 2016***
- Ogni SM deve designare le autorità competenti entro il ***18 settembre 2016***
- I Piani di gestione dello spazio marittimo dovranno essere stabiliti non oltre il ***31 marzo 2021***
- I Piani devono essere rivisti almeno ogni ***10 anni***

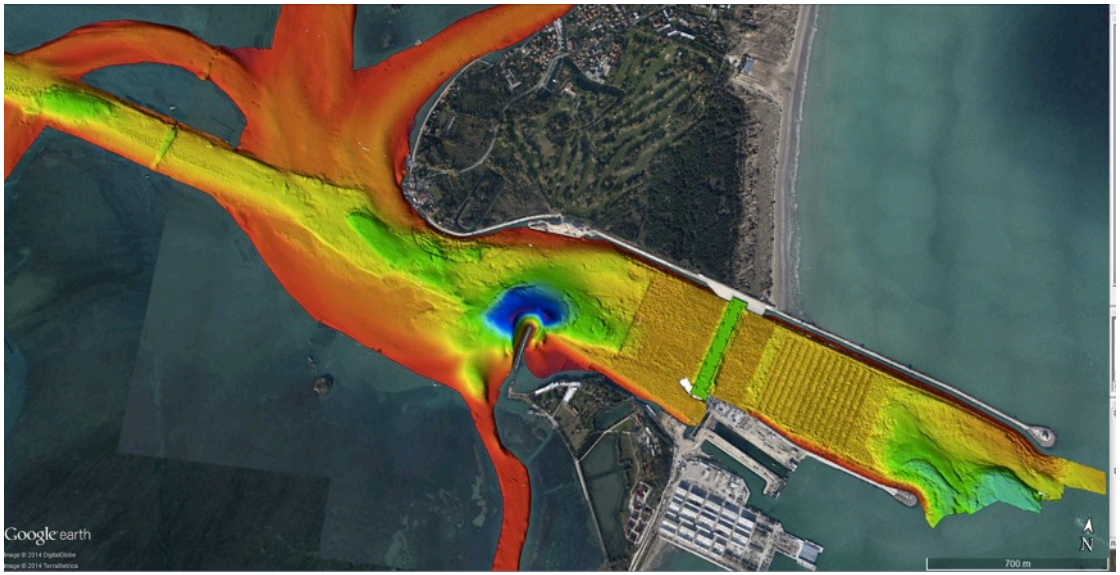
- I piani dovranno tener conto delle ***interazioni terra – mare*** e degli ***aspetti ambientali, economici e sociali*** e di sicurezza
- Art 8 individua attività, usi e interessi da considerare: ***acquacoltura, pesca, infrastrutture per lo sfruttamento e l'estrazione del petrolio, gas e altre risorse energetiche, trasporti, zone militari, siti di conservazione della natura, estrazione di materie prime, ricerca, cavi e condutture, turismo, patrimonio culturale***
- ***cooperazione*** tra SM e paesi terzi e la ***partecipazione*** delle parti interessate







Toward an open data approach



Example: ISMAR provides the first full-coverage reference bathymetry of the entire Venice Lagoon (the first regulated lagoon in the world)
Cooperation with MMI

Tackle societal problems:

- **Uses of the marine and coastal environment**
- **Quantification and exploitation of resources (blue growth)**
- **Impacts of global change on marine ecosystems**
- **Maintain long term records of marine environments**
- **Multi-risk assessments related to natural and human-induced factors**

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Toward an open data approach

RE-USE AND RE-ANALYSIS

SHARED KNOWLEDGE (*EXAMPLE THE ATLAS OF THE VENICE LAGGON*)

PARTICIPATED DECISION MAKING

SUPPORT TO ADMINISTRATIONS

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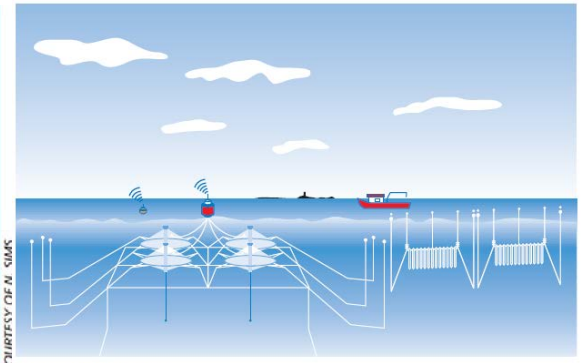
Uses of our seas

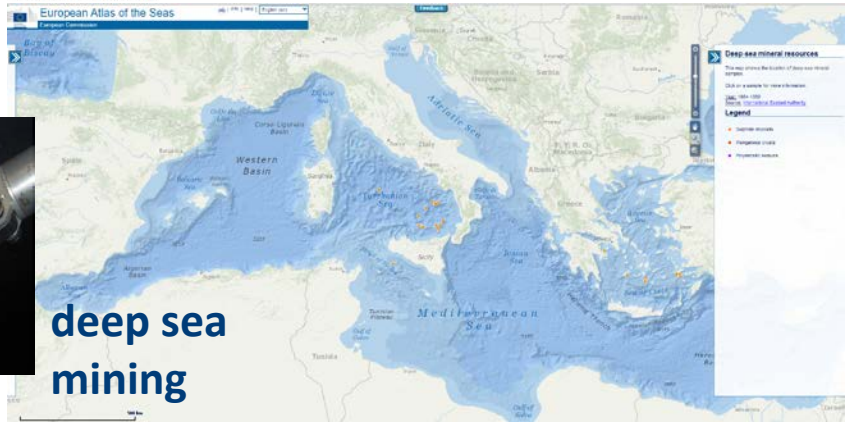
Tomorrow



multitrophic and offshore aquaculture

Source: NOAA (2011).

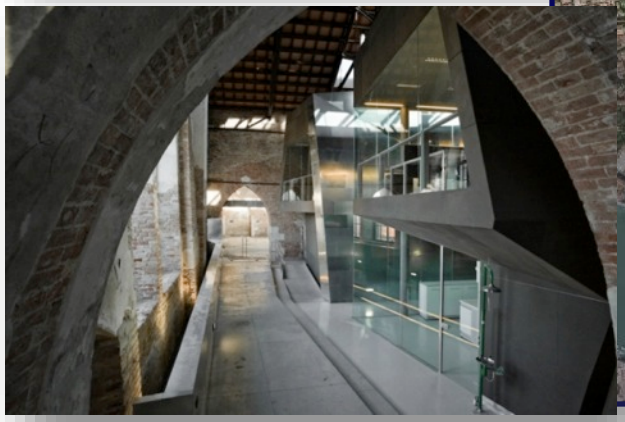
floating cities



deep sea mining

multipurpose platforms

artificial islands



ARSENALE

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