



# NATIONAL INSTITUTE OF OCEANOGRAPHY AND APPLIED GEOPHYSICS



Contributing to blue growth through development of skills and research: an ecosystem approach to fisheries and aquaculture for sustainable exploitation of marine resources



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Research support unit ([mghribi@ogs.trieste.it](mailto:mghribi@ogs.trieste.it))





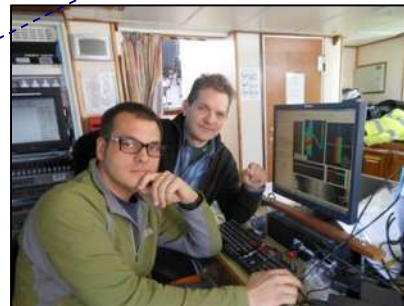
OGS is an **internationally-oriented** public research institute funded and monitored by the Italian Ministry of Education, Universities and Research (MIUR).

OGS' roots date back to the **School of Astronomy and Navigation** founded in Trieste by empress Maria Theresa of Austria in 1753.





# OGS is located in Trieste (Borgo Grotta Gigante - Marina di Aurisina – Miramare ICTP Campus) and Udine





The Institute operates and develops its mission within the **European Research Area** and at international level with particular focus on the basic and applied research fields such:

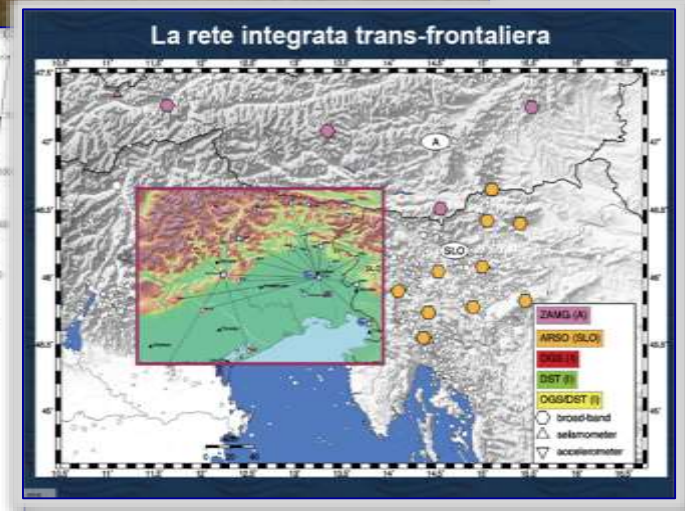
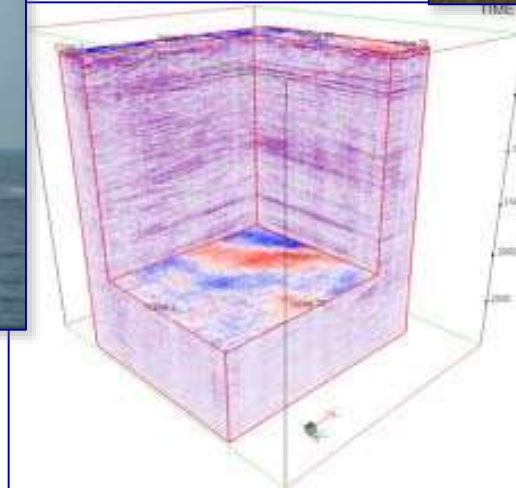
- Oceanography (physics, chemistry and biology);
- Applied & exploration geophysics and marine geology;
- Siesmology.

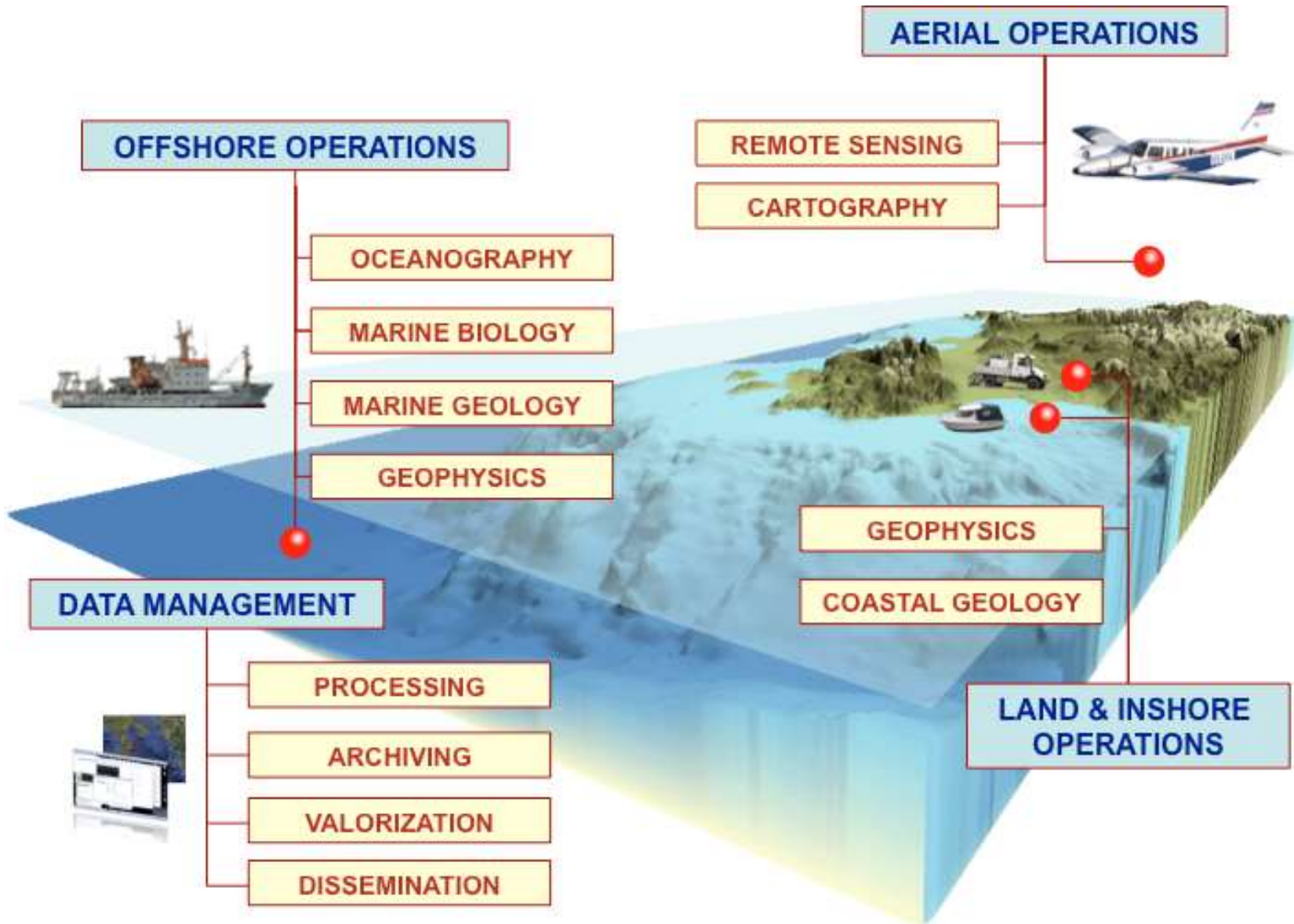




# Research Units

- Geophysics
- Oceanography
- Seismology
- Infrastructures

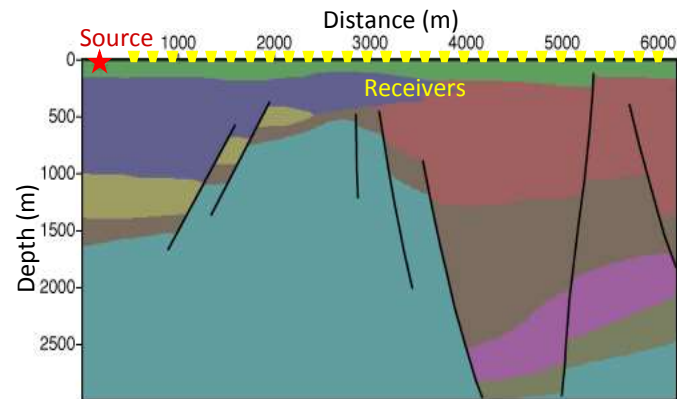
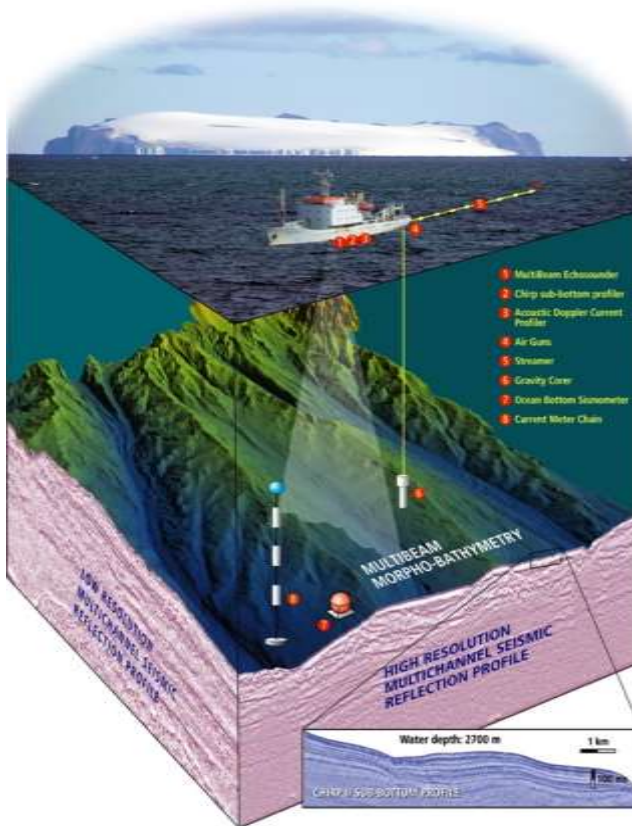
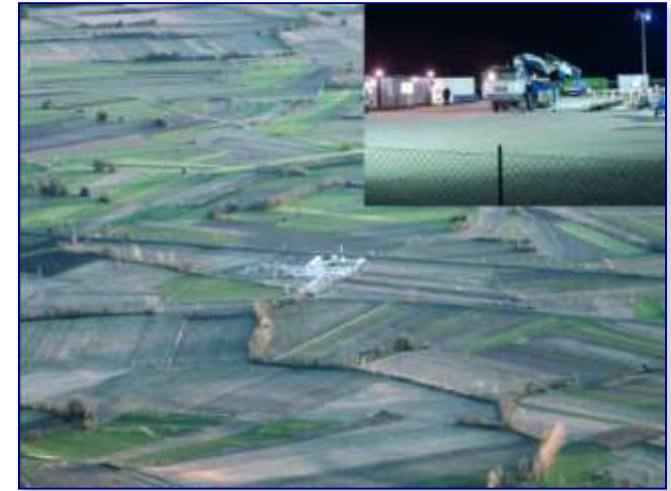




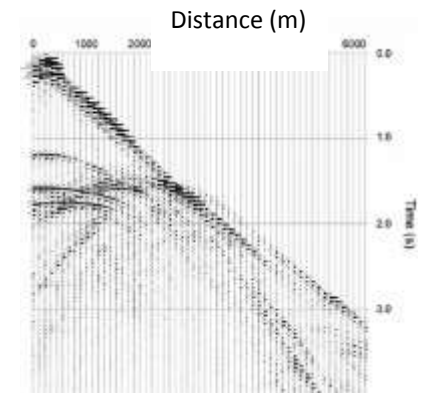




- Borehole Geophysics
- Geosciences
- Geophysical Applications and new Technologies



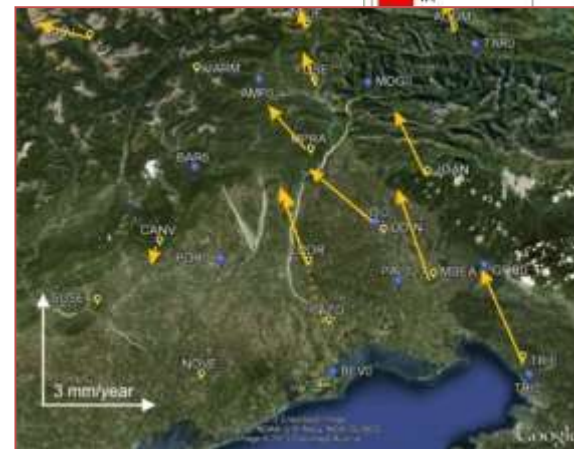
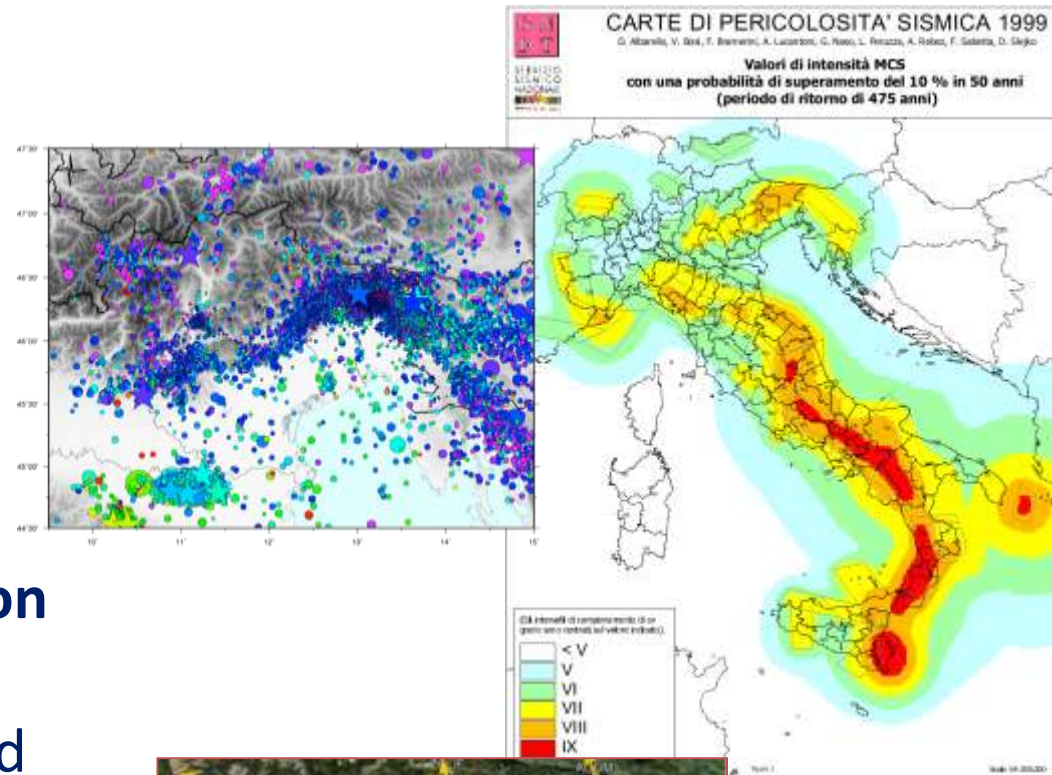
Geological model



Shot gather



- Seismic monitoring and a service of real-time seismic alert in N-E Italy
- Research in the fields of earthquake ground shaking simulation, engineering seismology, site amplification
- Installation, management and maintenance of the **Friuli Regional Deformation Network FReDNet**. Management and maintenance of the real-time GNSS



Centro Ricerche Sismologiche RealTime Seismology

**News**

Aggiornamento della configurazione delle stazioni sul sito web  
2011-04-04 00:00:00

[→ archivio news](#)      [→ continua](#)




[HOME](#)   [STAZIONI](#)   [SHAKEMAP](#)   [TENSORE MOMENTO](#)   [CONTATTI](#)

**Ricerca**

Period from  to

Lat. from  to

Lon. from  to

Mag. from  to

Insert code:  **93**

     [→ ricerca avanzata](#)

- ▶ [Sismogrammi in tempo reale](#)
- ▶ [Webcam a stazioni sismometriche](#)
- ▶ [Bollettini](#)
- ▶ [Monitoraggio geodetico](#)
  
- ▶ [Centro Nazionale Terremoti – INGV](#)
- ▶ [Centro Sismologico Euro-mediterraneo](#)
- ▶ [USGS - ultimi terremoti nel mondo](#)
- ▶ [Altri links](#)

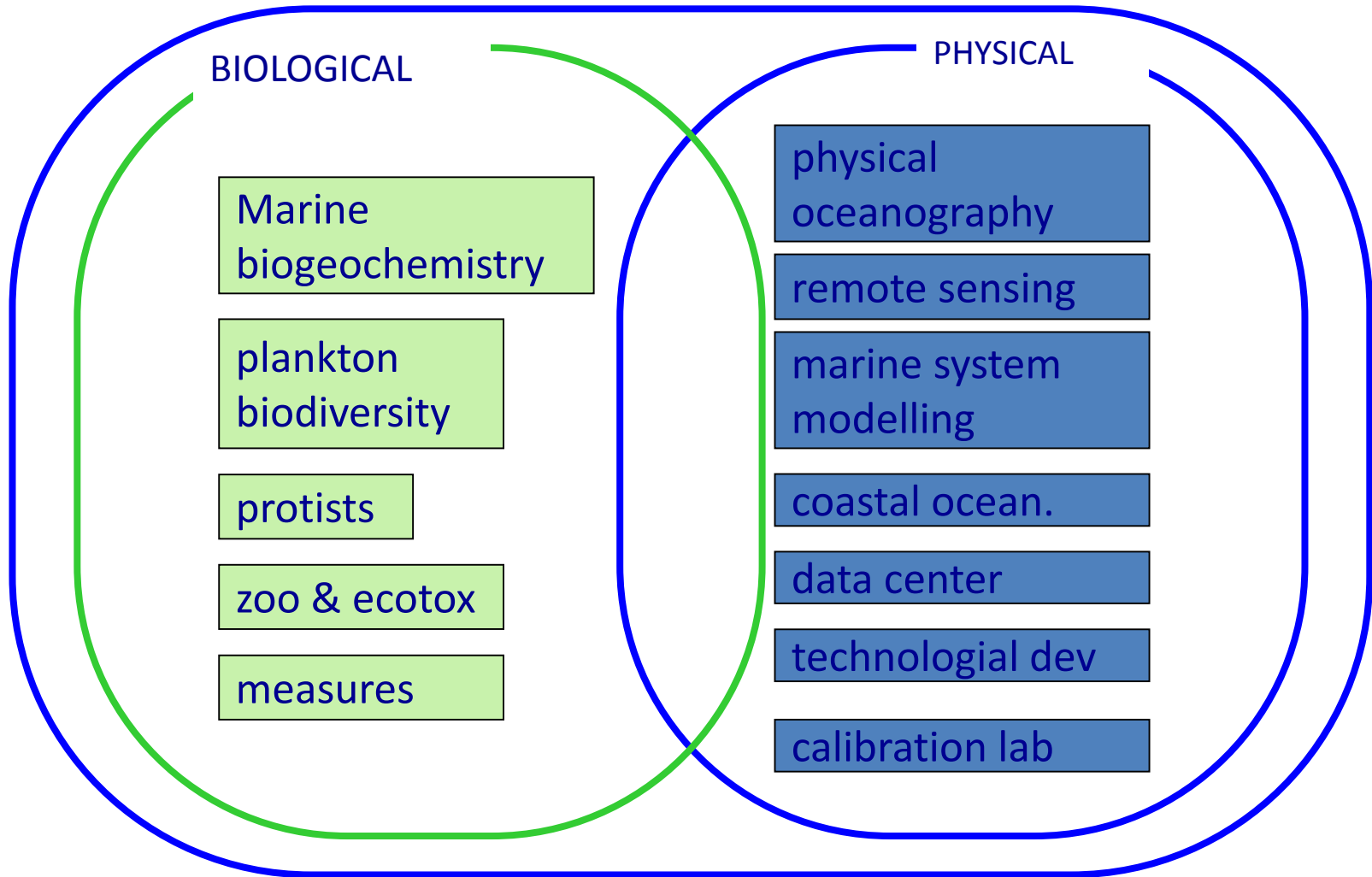
ultimo aggiornamento 2012-09-12 05:13:17



- lista eventi**
- ▶ 2012-09-12 03:03:09 MI: 2.7
  - ▶ 2012-09-11 17:16:00 MI: 1.3
  - ▶ 2012-09-10 18:20:43 MI: 2.3
  - ▶ 2012-09-10 06:28:28 MI: 2.7
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  - ▶ 2012-09-08 08:49:04 MI: 2.8
  - ▶ 2012-09-08 01:12:36 MI: 1.5
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  - ▶ 2012-09-07 02:47:07 MI: 1.9
  - ▶ 2012-09-06 11:28:14 MI: 3.0
  - ▶ 2012-09-06 11:23:10 MI: 1.2
  - ▶ 2012-09-06 06:55:34 MI: 1.3
  - ▶ 2012-09-06 03:42:24 MI: 1.1
  - ▶ 2012-09-05 10:35:15 MI: 2.6
  - ▶ 2012-09-03 11:01:22 MI: 2.7
  - ▶ 2012-09-02 16:25:29 MI: 2.3



## PROMOTE SYNERGY AND MULTIDISCIPLINARITY

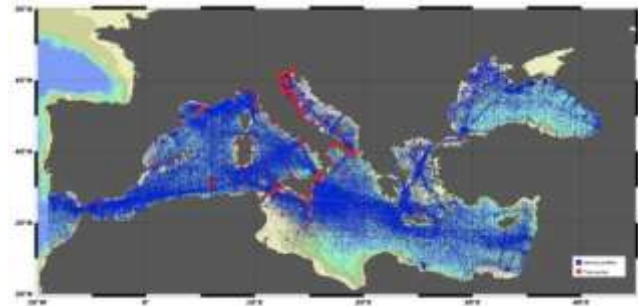
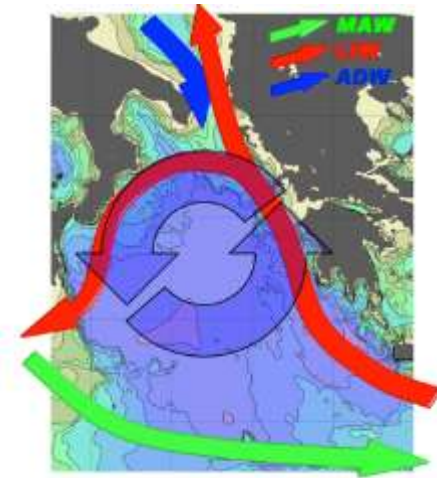
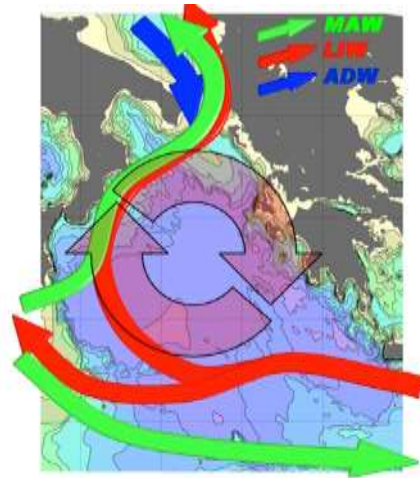
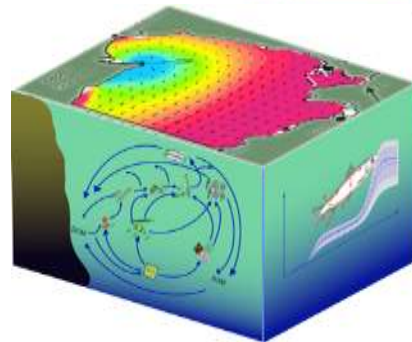


maintain visibility, priorities, critical mass, of each discipline

**STATE OF THE ART  
OBSERVING TECHNOLOGIES**

Argo floats (EuroArgo)  
 Surface drifters (GDP)  
 Gliders (EGO)  
 HF radar (codar wera)  
 Ships of opportunity (SOP)

- **PROCESS STUDIES**
- **MARINE BIOLOGY (benthic-pelagic interactions)**
- **ECOSYSTEM MODELING**
- **OPERATIONAL OCEANOGRAPHY**
- **NATIONAL OCEANIC DATA CENTRE**





# Services for civil defence and protection of the environment

- Isola del Giglio
- Earthquake Emilia
- Trieste harbour
- Polluted natural sites (Laguna di Grado-Marano, Trieste)



# Projects

- CO2-GeoNet
- LTER (Long Term Ecological Research)
- ENERGYCITY (7 città europee)
- HYPERDEM Sri Lanka
- ENHYGMA Ungheria
- Seismic network of the Antarctic Peninsula
- ECCSEL (European carbon dioxide capture and storage laboratory)
- Infrastrutture di ricerca paneuropee ESFRI e FP7
- Campagne della R/V OGS Explora

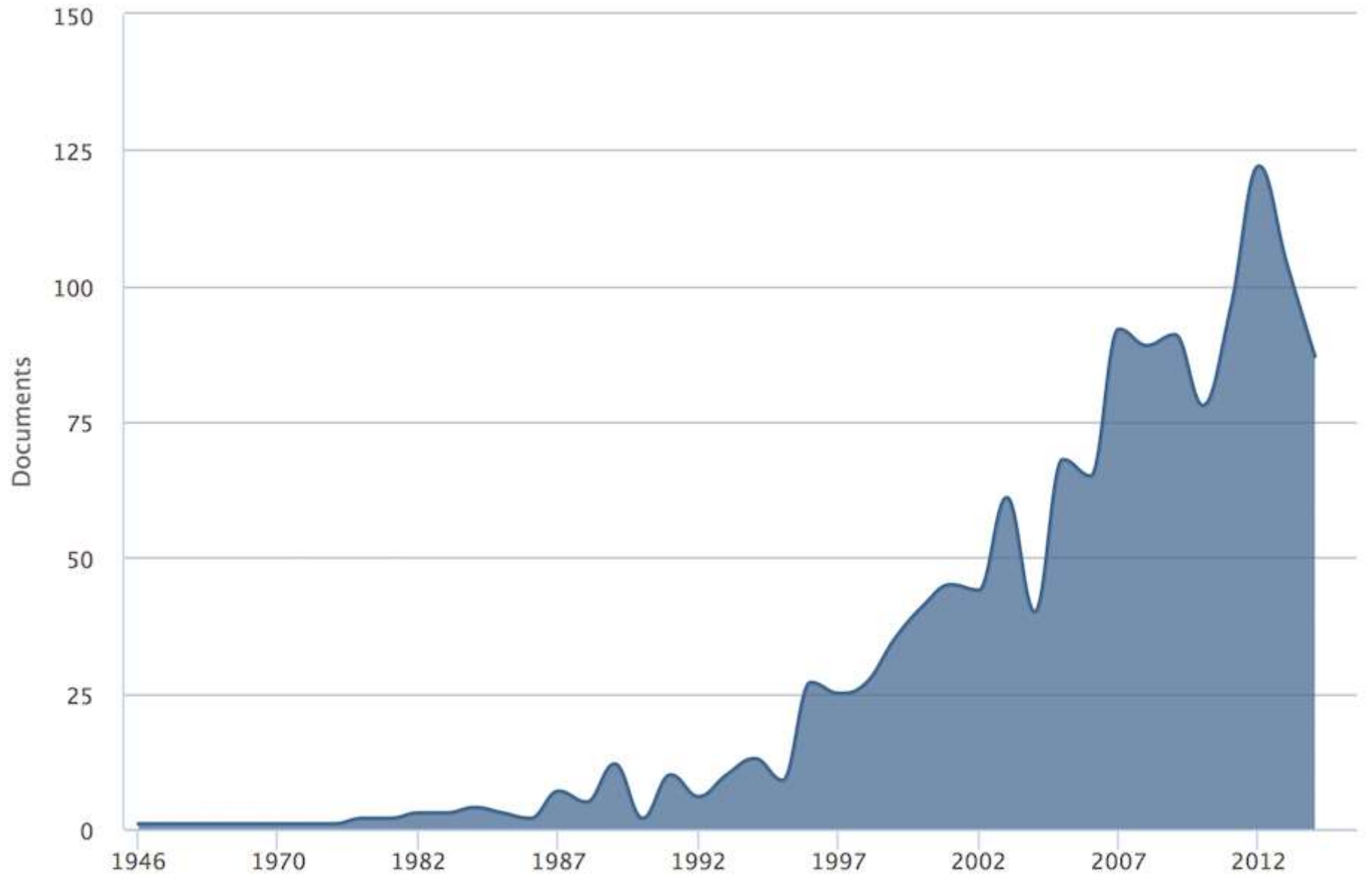


## Other initiatives

- Sea/Ocean - Blue Growth
- The Gulf of Trieste Platform
- Prevention and safety in schools
- Virtual visit to the Grotta Gigante



# Number of publications



# International collaborations (2013)

1. France
2. Germany
3. United Kingdom
4. Spain
5. Norway
6. Greece
7. Netherlands
8. Slovenia
9. Israel
10. United states

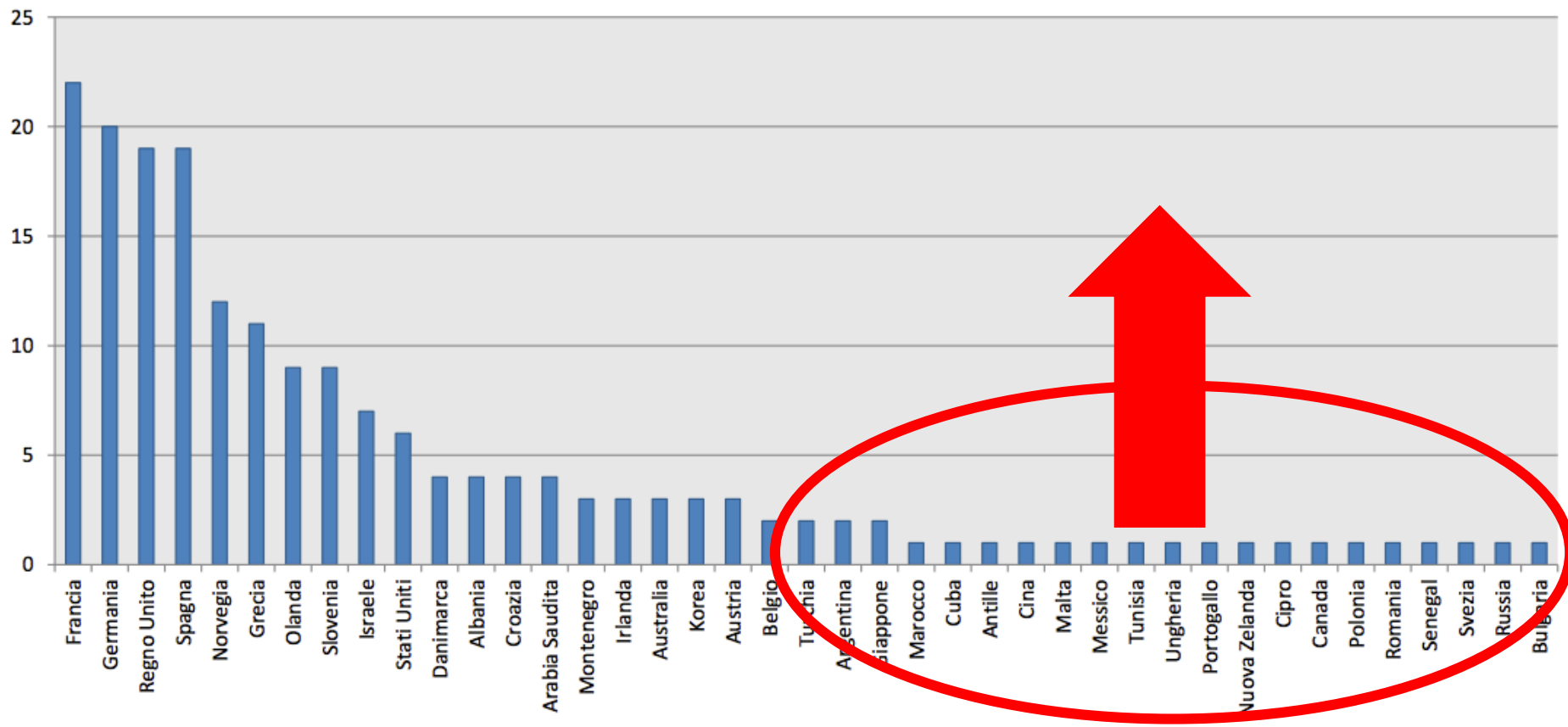


11. Denmark
12. Albania
13. Croatia
14. Saudi Arabia
15. Montenegro
16. Ireland
17. Australia
18. Korea
19. Austria
20. Belgium



# OGS international collaborations (2013)

**Principali collaborazioni internazionali  
Attività a bilancio anno finanziario 2013**





# Development of skills through training opportunities

- ❑ Attraction and circulation of talents
- ❑ International mobility
- ❑ International doctorate research in collaboration with universities
- ❑ Summer schools





Training and Research in Italian Laboratories

# TRIL

Joint project OGS-ICTP

During the period 1985-2013, 49 fellows (13 females and 36 males) from 26 countries have been granted TRIL fellowships and supported by OGS. Two fellows from Cuba are hosted by OGS-CRS.

<http://www.ictp.it/tril>



# SUMMER SCHOOLS IN SUSTAINABLE BLUE GROWTH



Human resources' development and strengthening of professional skills (Summer Schools, 14-18 July 2014 and 20-24 July 2015).

# BLUE GROWTH

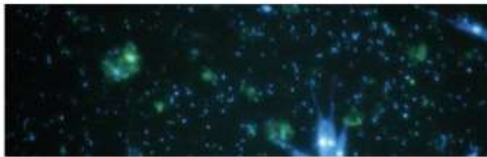
Long term strategy to support smart, sustainable and inclusive growth in the marine and maritime sectors



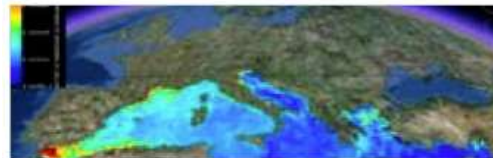
**Fishing and aquaculture**



**Marine knowledge**



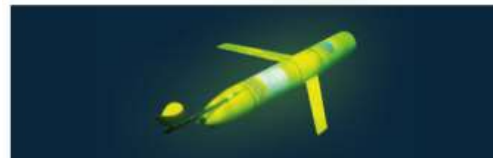
**Marine biotechnology**



**Maritime spatial planning**



**Coastal and maritime tourism**



**Integrated maritime surveillance**



**Sea-bed mining**



**Sea basin strategies**



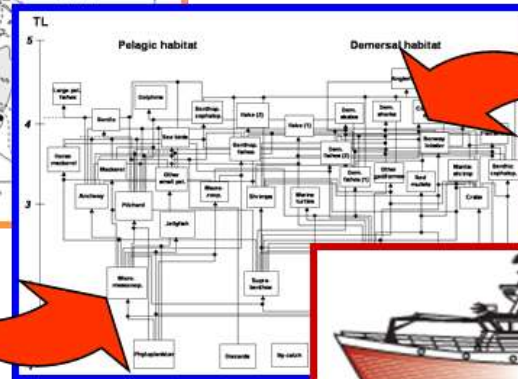
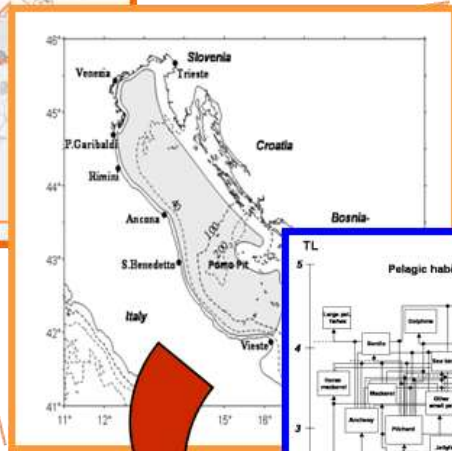
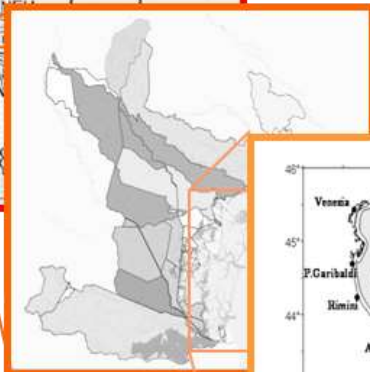
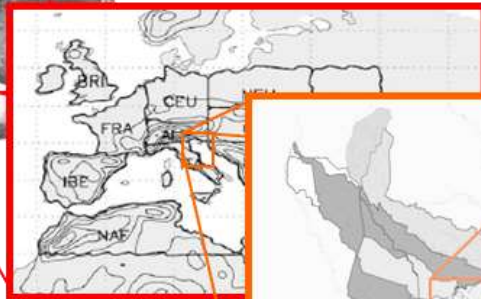
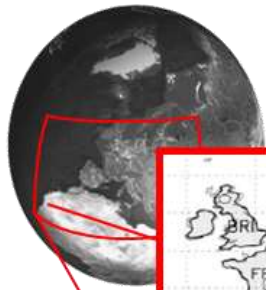
**Ocean energy**

# Ecosystem approach to fisheries and aquaculture under climate change

Downscaling global climate  
(temperature, rainfall, wind...)

to local conditions  
(e.g., nutrient loads...)

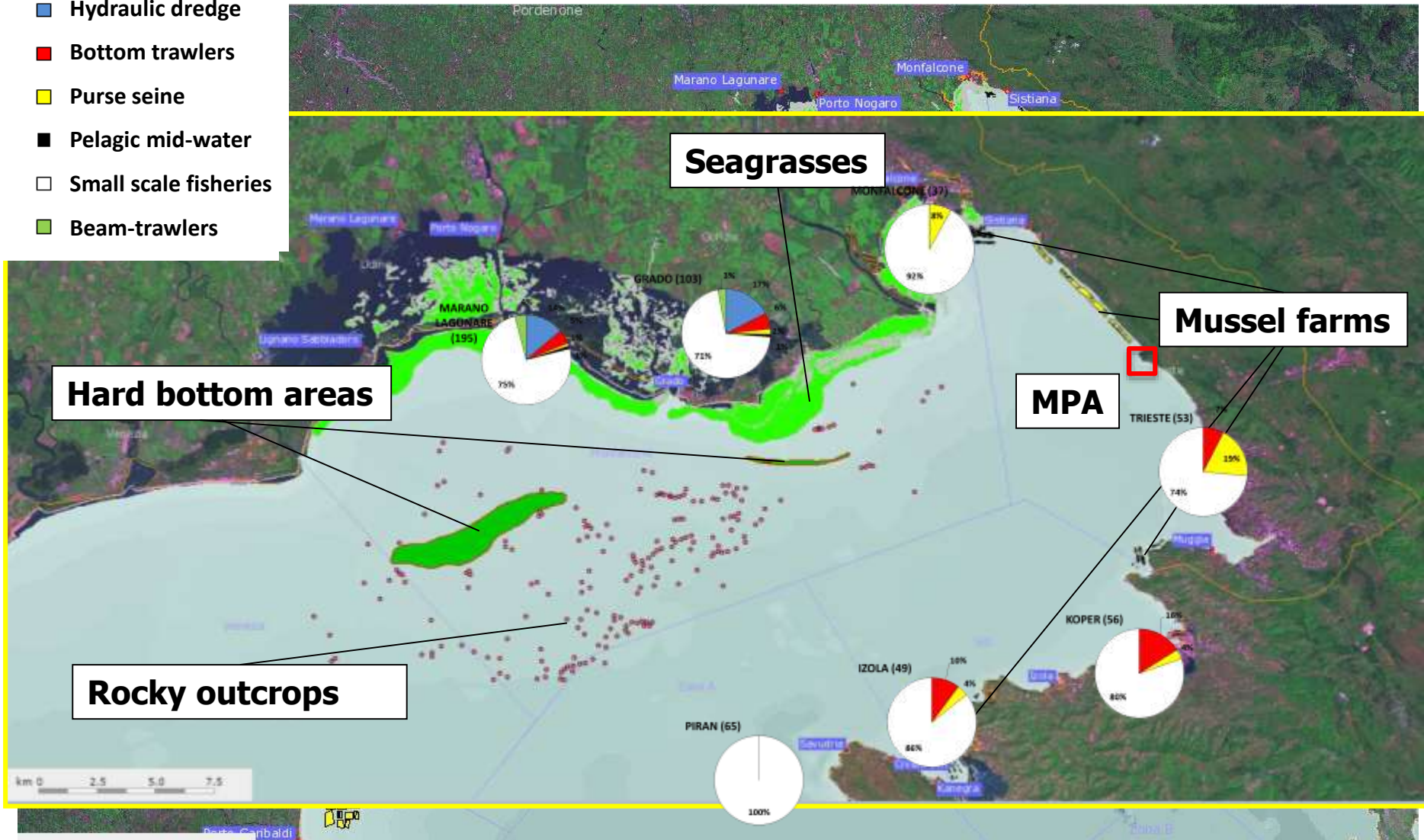
Integrating with complex  
ecosystem processes and  
exploitation patterns



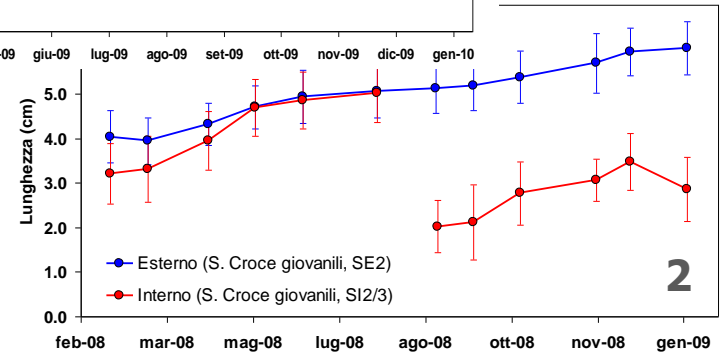
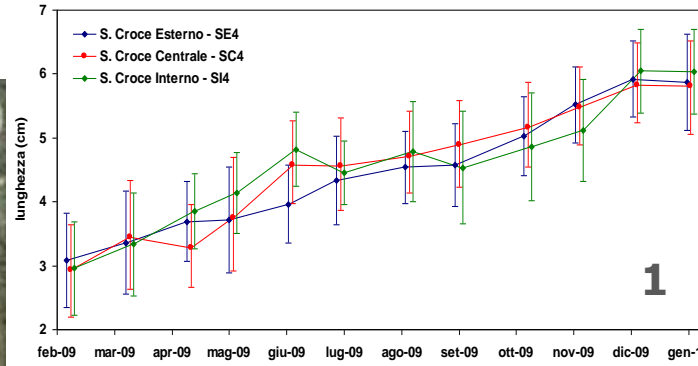
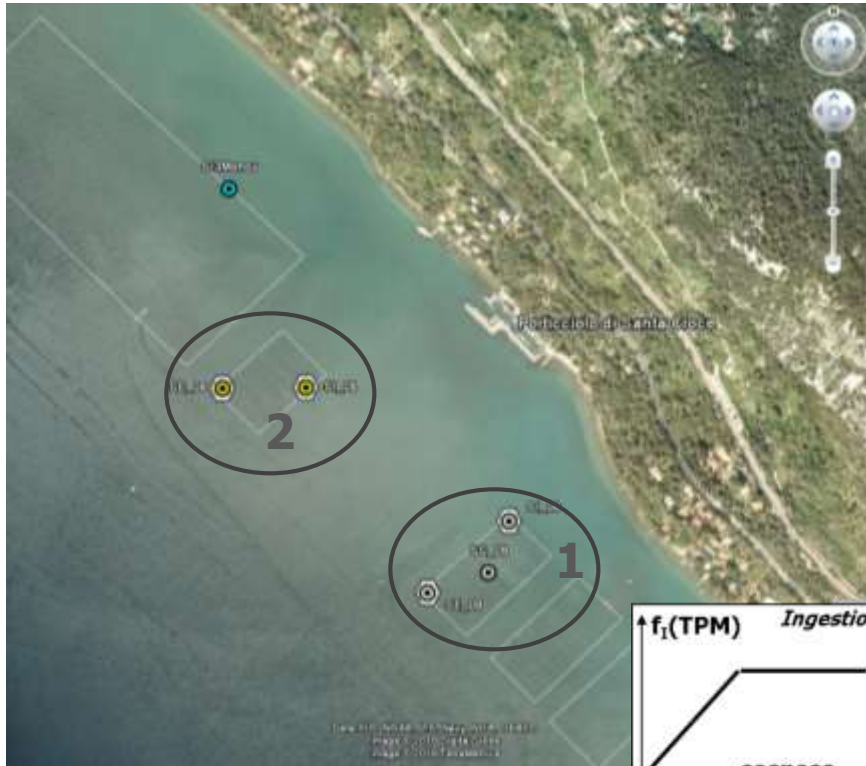


# An example: integrated approach in the Gulf of Trieste

- Hydraulic dredge
- Bottom trawlers
- Purse seine
- Pelagic mid-water
- Small scale fisheries
- Beam-trawlers



# Field measurements and quantification of processes

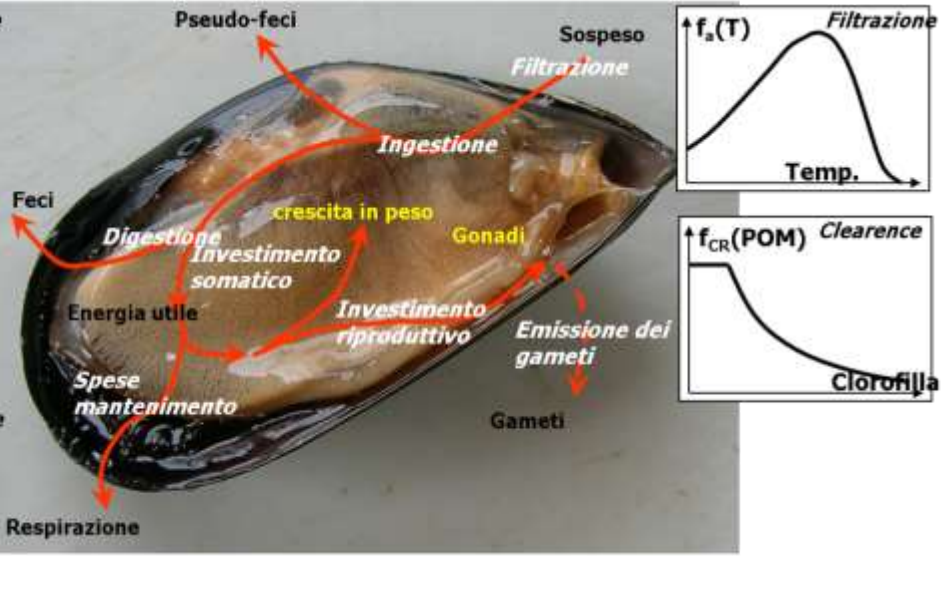
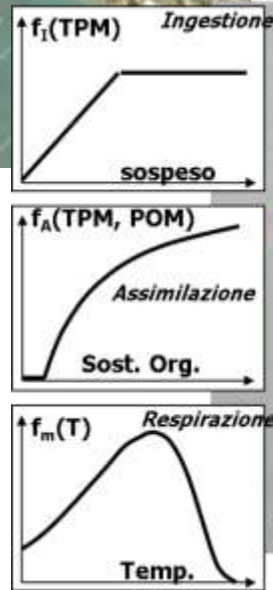


## SOSTENIBILITA' DELLA MITILCOLTURA TRIESTINA

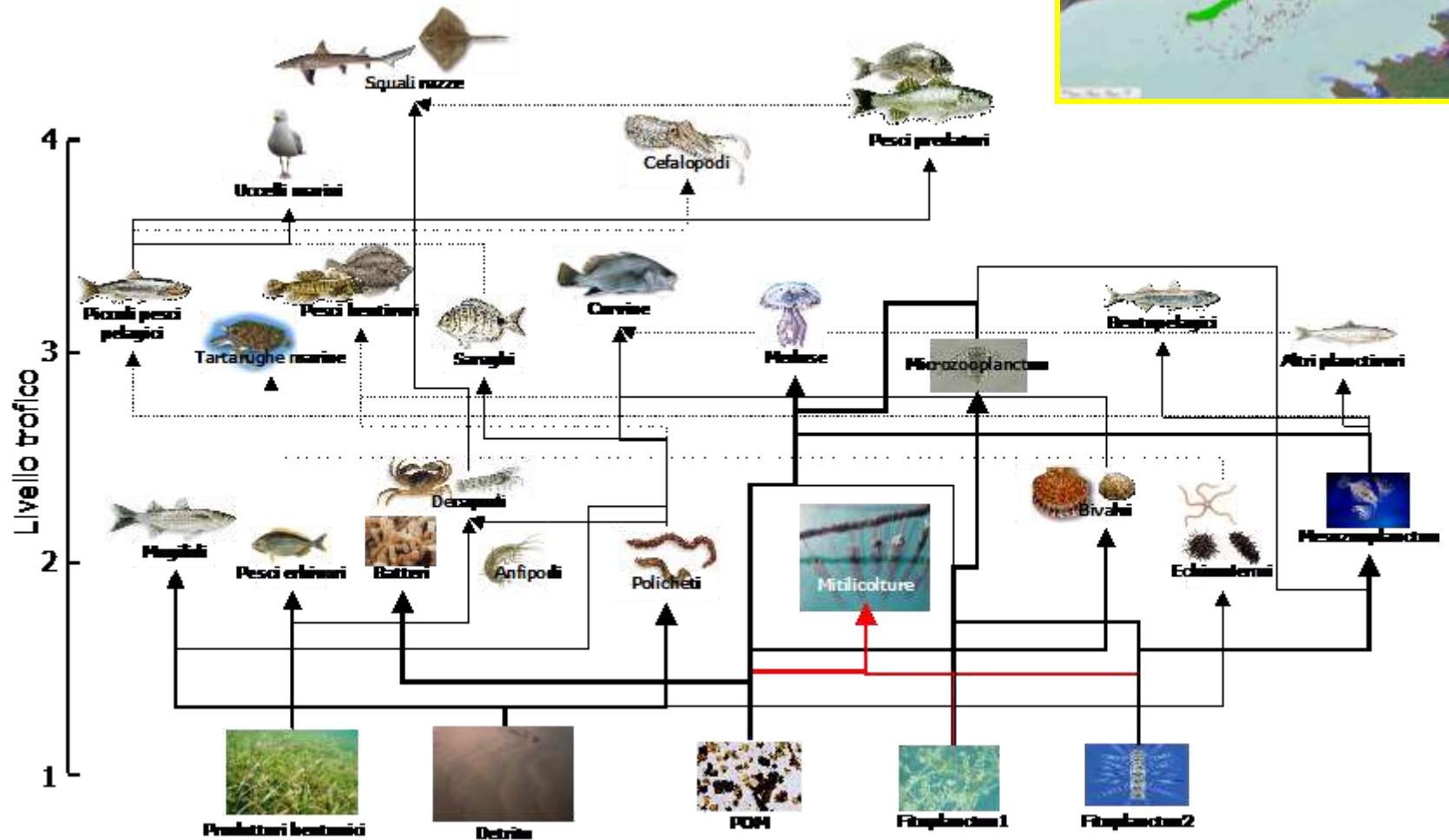
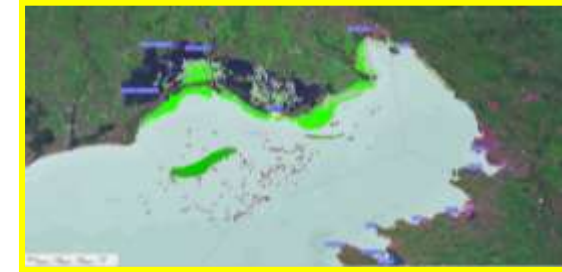


Raccolta dati di base ed elaborazione di un modello di gestione ambientale per l'attività di mitilicoltura in Friuli del approvvigionamento di piani di gestione integrata delle zone costiere del Nord Adriatico.

Evo\*innovazione



# Integration of processes in ecosystem





# Scenario analysis: from climate to exploitation



## fishing scenarios

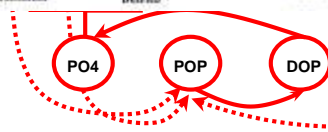
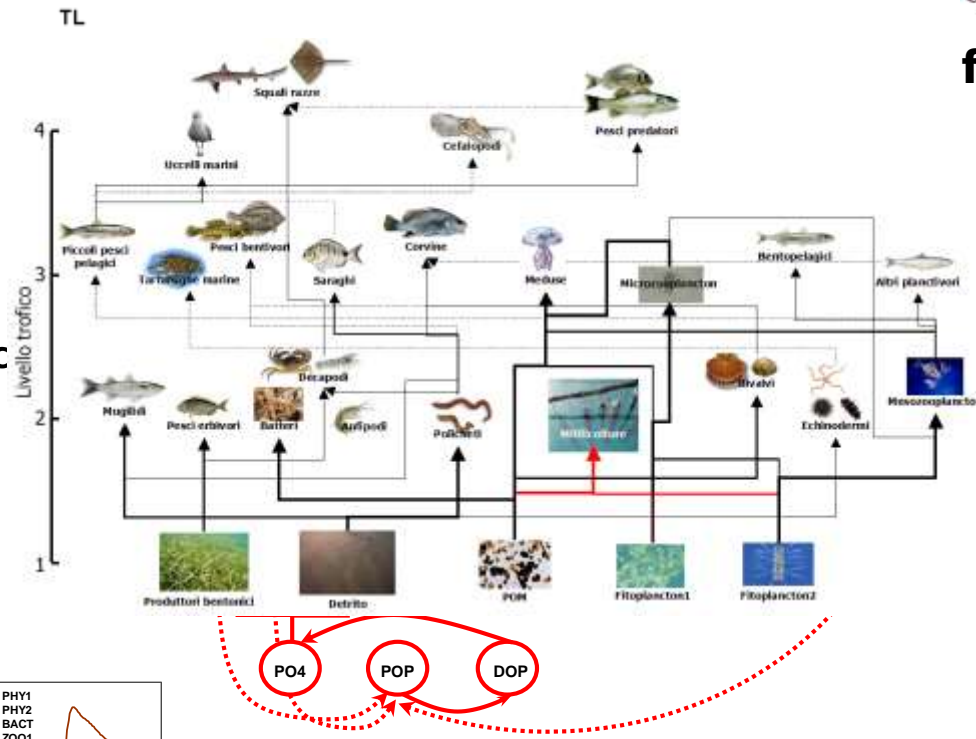
### 1 baseline scenario

**management scenarios by single commercial species**

(Anchovy, Sardine, Hake, Red Mullet)

**management scenarios by fleet**

(changes in effort for bottom trawl, beam trawl, purse seine, mid water trawl, Tuna fleets)

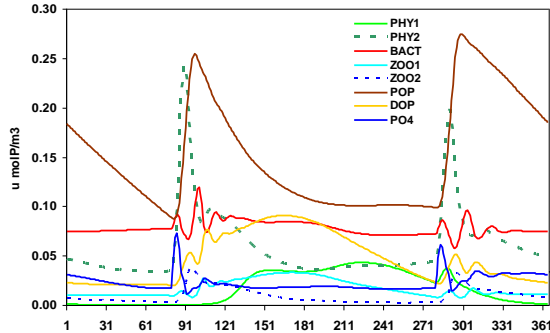
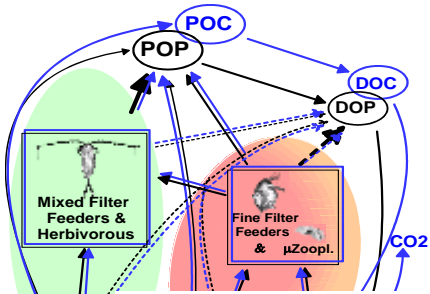


## 3 Climate scenarios

RF - Reference

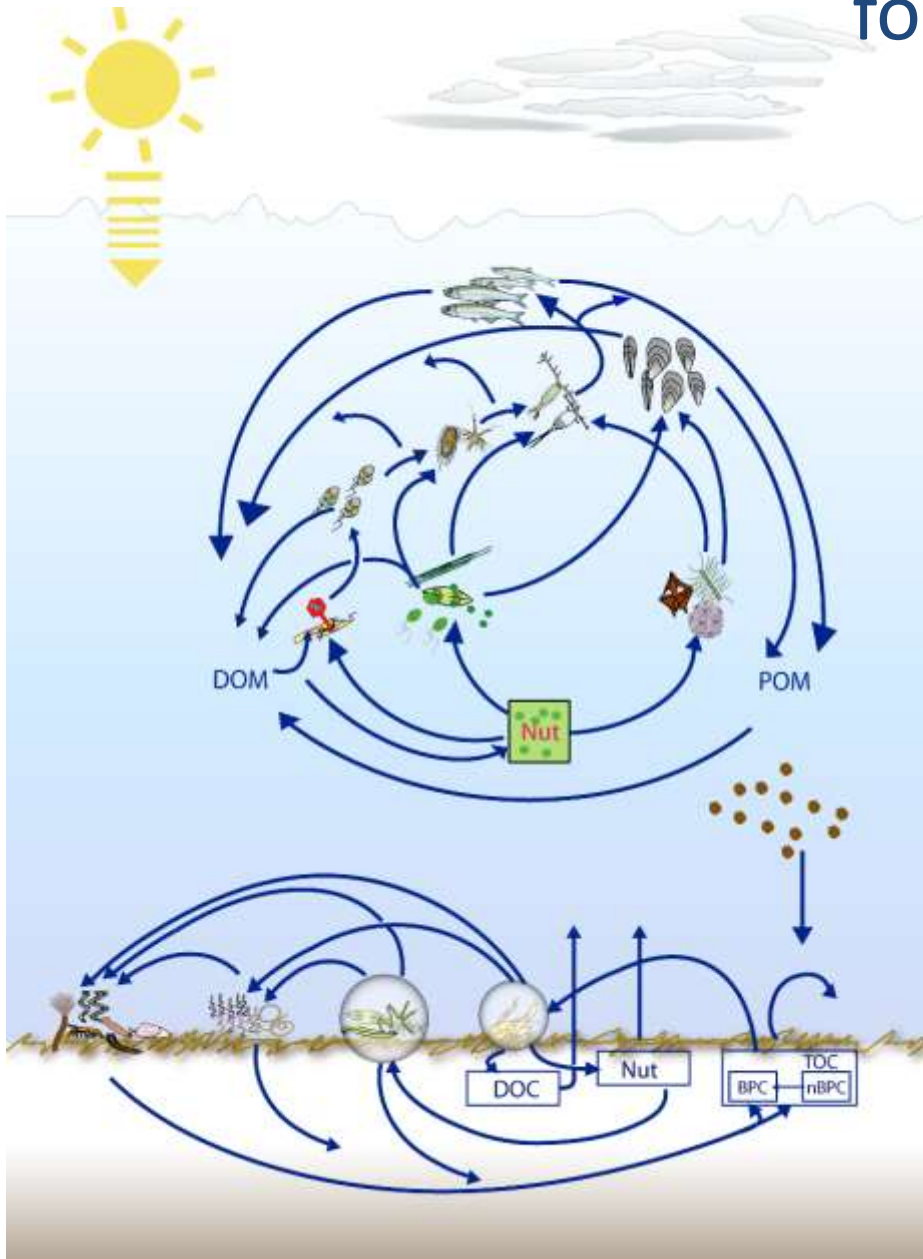
B2 - Local sustainability (~ -25% inputs; ~IPCC B2)

A2 - Market oriented (mod. precipitation pattern; ~IPCC A2)



Yearly pool dynamics in P

# Insights for sustainability of food provision from the sea



Quantified effects of climate change on natural resource productivity

Simulate effects of management actions (protection, MPAs, EU regulations, new farms ...)

Tools for management strategy evaluation (ecology+economy+social) to find optimal solutions for sustainable exploitation





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