

**Giuseppe M.R. Manzella**

Commissione Oceanografica Italiana

e

ENEA

# **IN-SITU BASED OBSERVATION SYSTEMS**

Coastal observing and forecasting systems  
Today and Tomorrow



# Content

- *The Italian and European framework*
- *The Mediterranean Forecasting System and the EC initiatives*
- *The present systems*
- *EMODnet PP*
- *Conclusions*





Intergovernmental  
Oceanographic  
Commission

# IOC UNESCO AND COI



Promote strategies, methodologies for an integrated observing system, analysis, data management and information systems



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Istituto Superiore per la Protezione  
e la Ricerca Ambientale



**CNR**  
Consiglio Nazionale  
delle Ricerche



**CoNISMa**

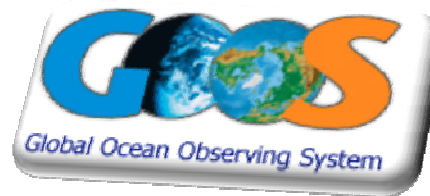
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**INGV**



**EMODnet**  
European Marine  
Observation and  
Data Network



# *THE SEA AND EUROPE*

- The sea is an integral part of the European identity and of the continent's economy. Among the 27 Member States of the European Union, 22 have a coast and two thirds of the European frontiers are set by the sea.
- In light of this, it is essential to develop an integrated policy that acknowledges the inter-linkages that exist between the different domains and functions of its seas, oceans and coastal areas.





# EUROPEAN INTEGRATED MARITIME POLICY



*"the particular need for an all-embracing maritime policy aimed at developing a thriving maritime economy, in an environmentally sustainable manner. Such a policy should be supported by excellence in marine scientific research, technology and innovation"*

President of the European Commission

- Knowledge built on extended use of data
- Maritime Spatial Planning

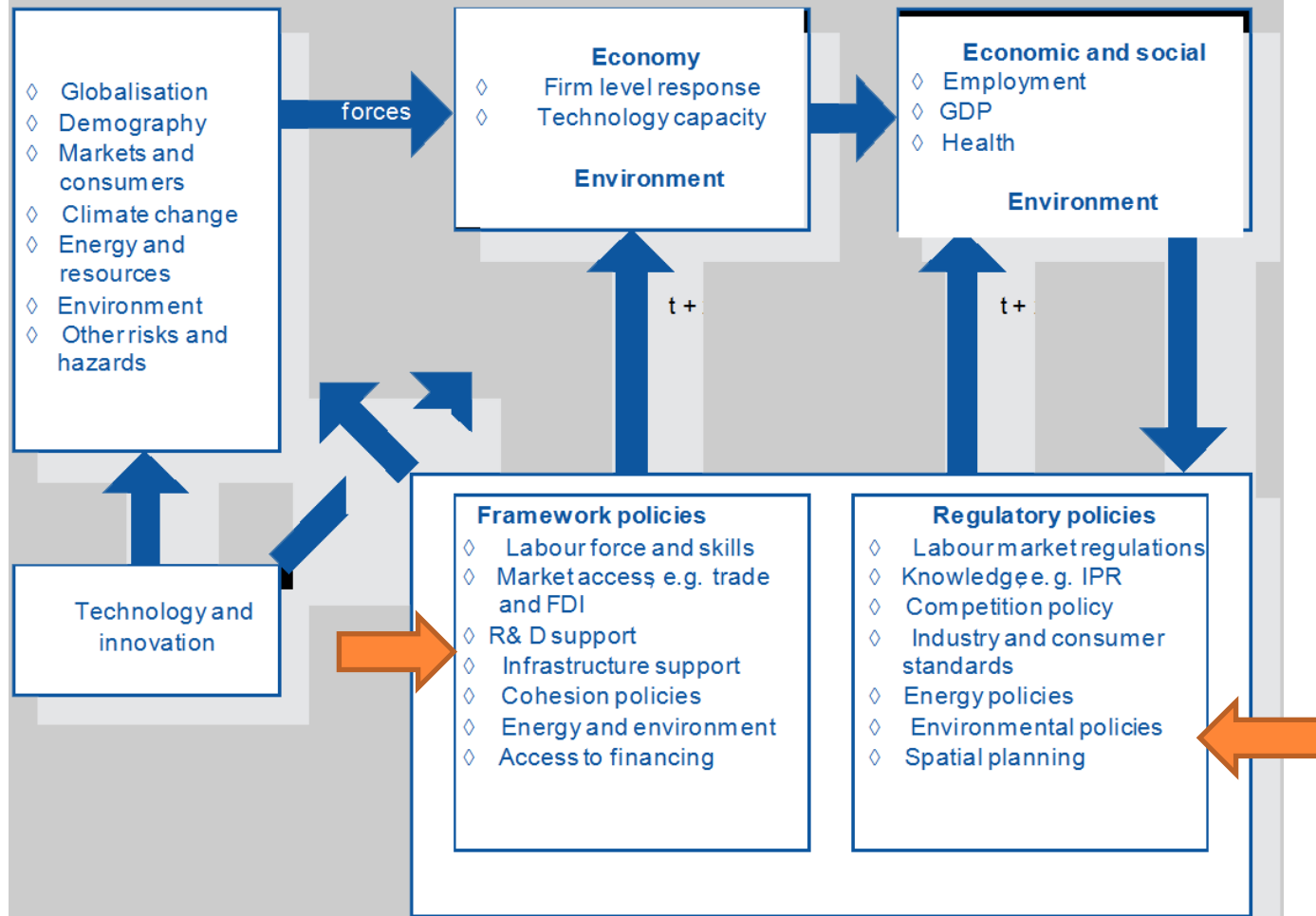


# *MARINE KNOWLEDGE 2020*

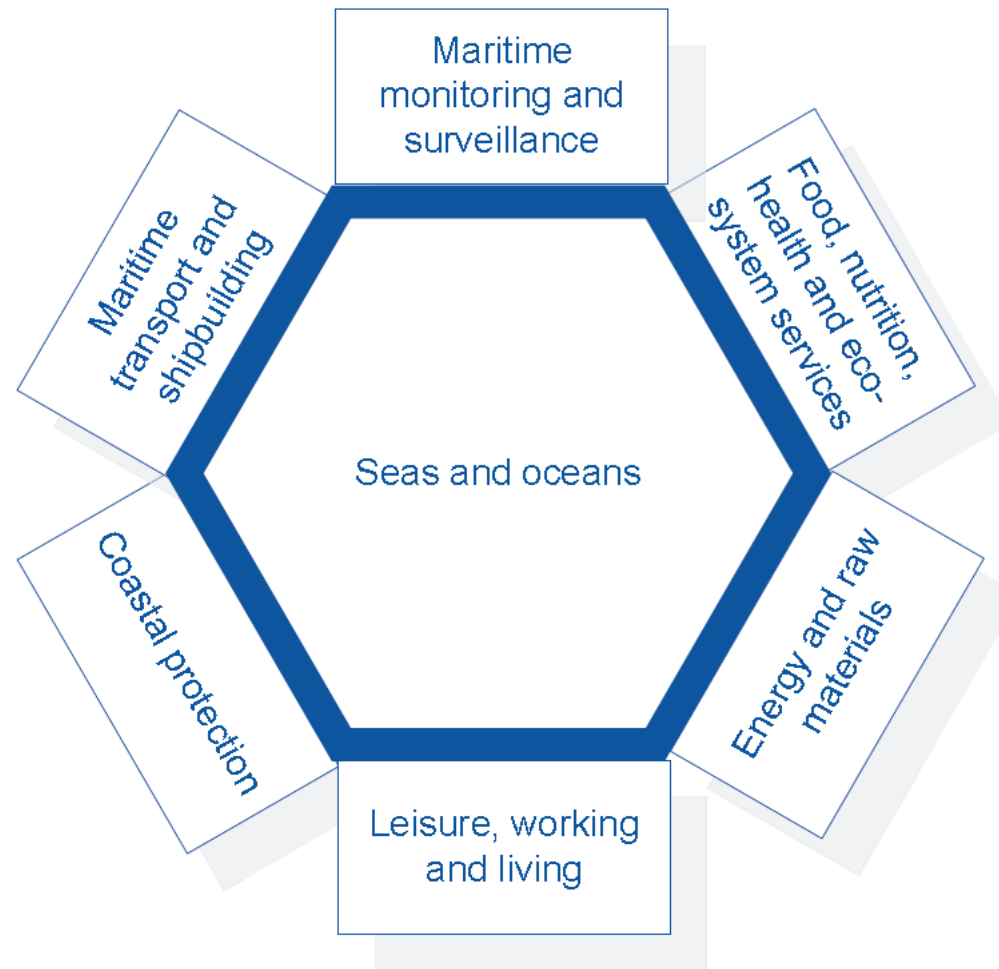
- The Blue Growth project thereto:
  - provides insight into the state of the art within maritime sectors;
  - presents knowledge of innovation and technological developments that influence these sectors;
  - creates an understanding of key external drivers that influence their potential;
  - identifies key economic areas for the future sustainable growth of oceans, seas and coasts; and;
  - assesses the impacts of policy interventions that may contribute to reaping the existing potential.



# THE BLUE GROWTH ANALYTICAL FRAMEWORK



# THE BLUE GROWTH MARITIME FUNCTIONS





The European framework

**MARIA DAMANAKI,  
COMMISSIONER FOR  
MARITIME AFFAIRS AND  
FISHERIES**

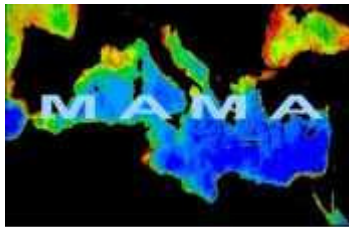
(..) the data collected through ... observations can only generate knowledge and innovation if Europe's engineers and scientists are able to find, access, assemble and apply them efficiently and rapidly. At present this is often not the case.



# A FIRST COORDINATED SYSTEM

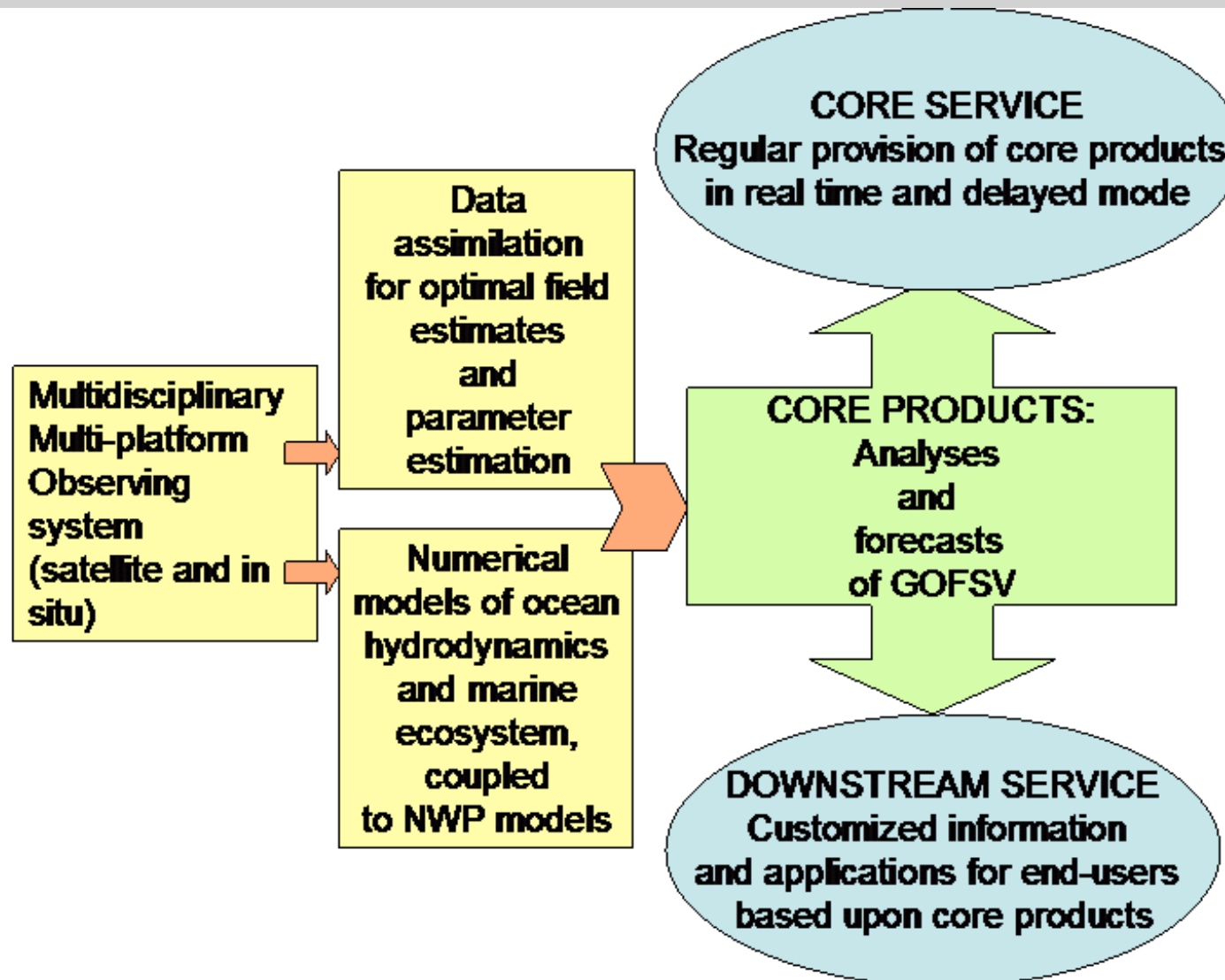


*Mediterranean Forecasting System:  
Toward Environmental Predictions*

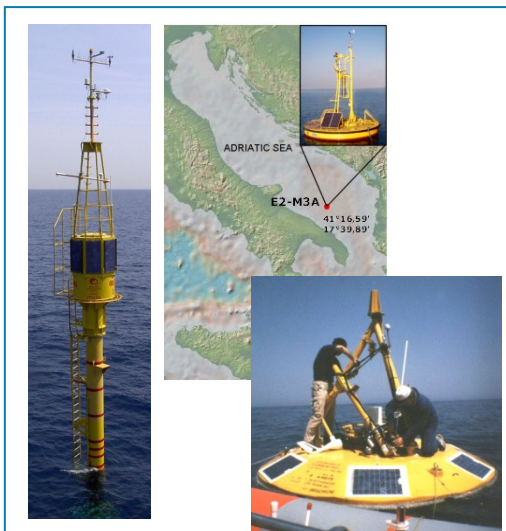


**Mediterranean Network to Assess and Upgrade  
Monitoring and Forecasting Activity  
in the Region**

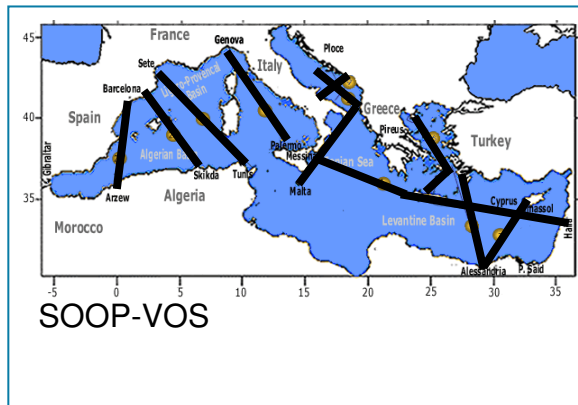
# THE MEDITERRANEAN FORECASTING SYSTEM



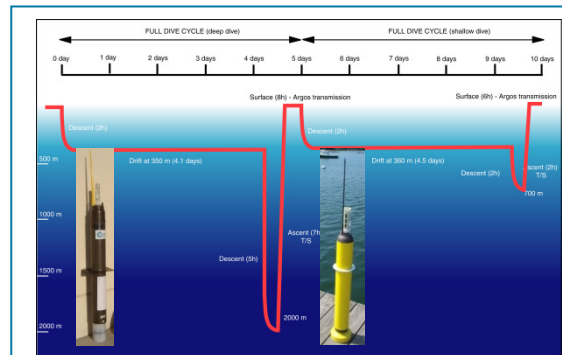
# THE MFS OBSERVING SYSTEM



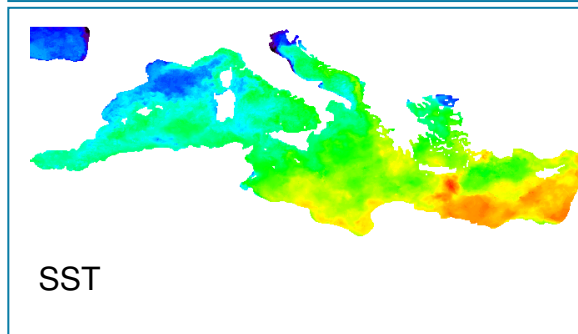
M3A system



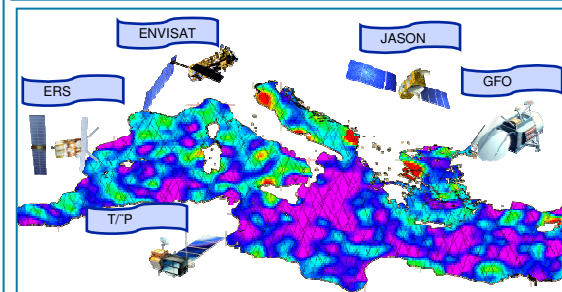
SOOP-VOS



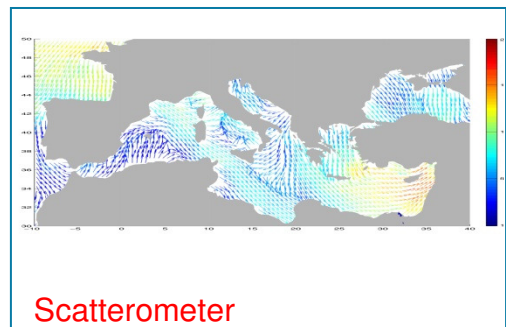
MedARGO



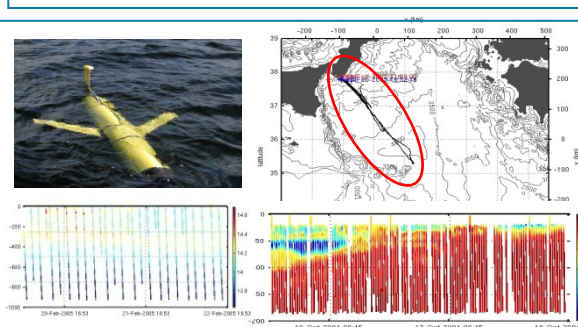
SST



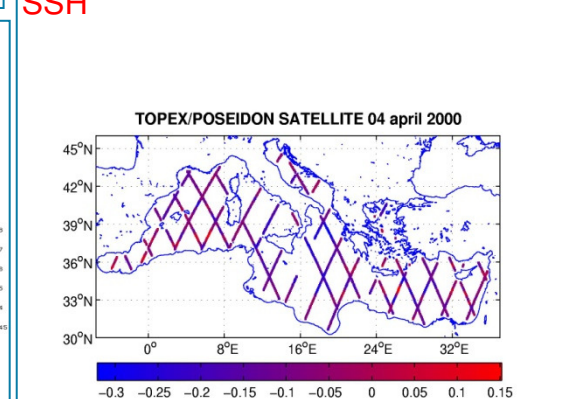
SSH



Scatterometer



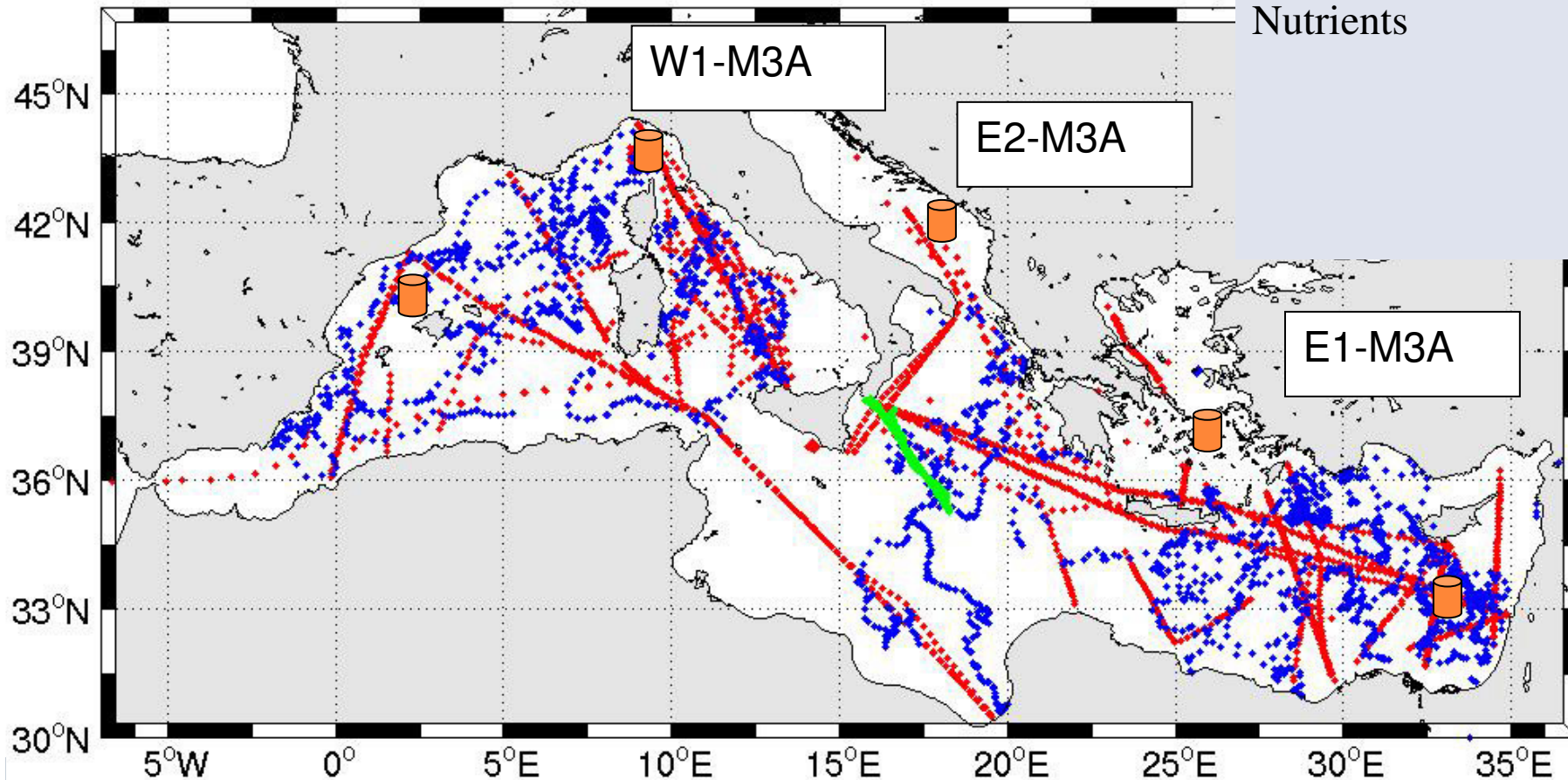
Gliders





# *MFS-TEP INSITU 2004-2007: A COORDINATED OBSERVING SYSTEM*

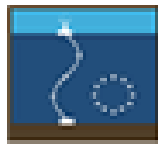
Water level  
SST  
Salinity  
T and S profiles  
Currents  
Waves  
Surface meteo  
Nutrients



# THE PRESENT SYSTEMS



**MARINE ENVIRONMENT AND SECURITY  
FOR THE EUROPEAN AREA**  
Ocean and Marine Applications for GMES



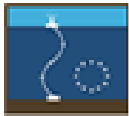
**EuroSITES**  
European Ocean  
Observatory Network



**Eurofleets**

Towards an Alliance  
of European Research Fleets





**EuroSITES**  
European Ocean  
Observatory Network



**EMODnet**  
European Marine  
Observation and  
Data Network





# EUROARGO

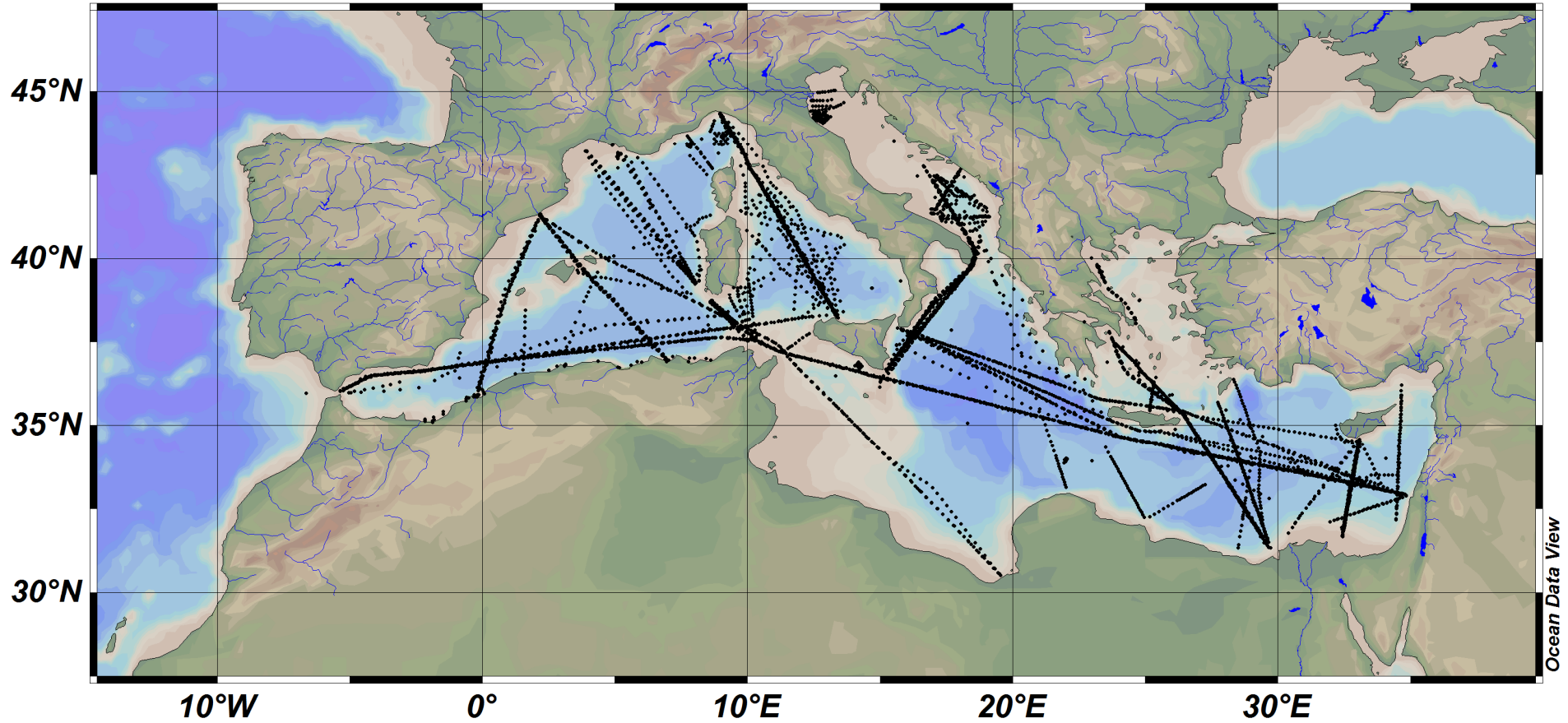
The screenshot shows a web browser window with the URL <http://www.euro-argo.eu/>. The page features a blue header with the text "Euro-Argo RI" and "European contribution to Argo program". Below the header is a navigation menu with links: "About Euro Argo", "News & Events", "Governance & Funding", "Floats", "Data System", "Users & Applications", and "Outreach".

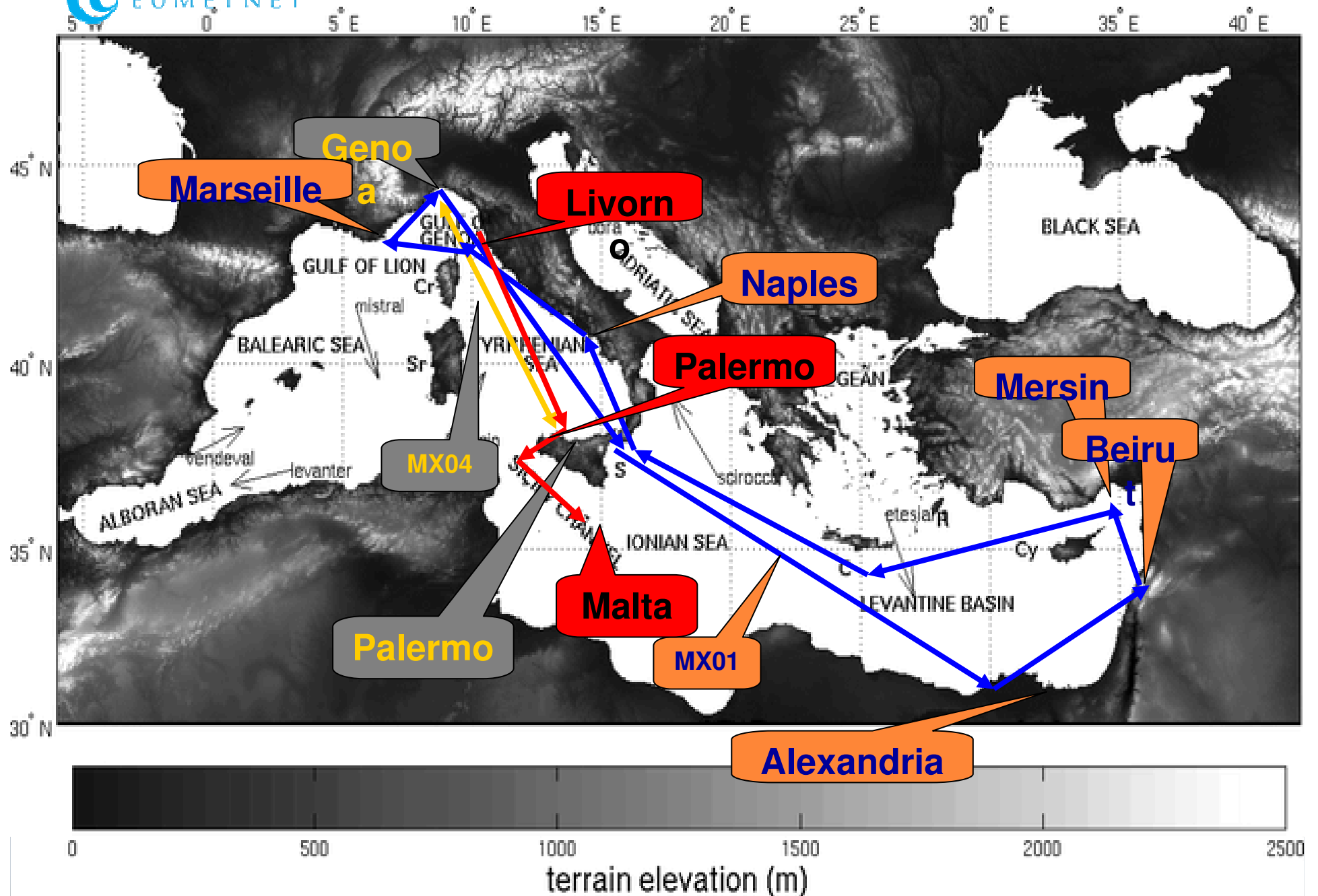
The main content area is divided into several sections:

- Latest news:** A news item titled "ARGO - 10 YEARS OF PROGRESS A NEW DECADE TO PREPARE" and "4th Argo Science Workshop - Sept. 2012". It includes a map of the Atlantic Ocean and text stating the workshop will be held in Venice-Lido, Italy, from September 26-28, 2012.
- Image gallery:** A section titled "Arvor deployment" showing a ship's deck with a large instrument being hoisted.
- Zoom:** A large video player area with a play button and the text "Towards a sustained European contribution to Argo" and "Euro-Argo movie in English".
- Contact:** A section providing contact information for Pierre-Yves Le Traon (Project Coordinator), including an address in France and an email address: [euroargo@ifremer.fr](mailto:euroargo@ifremer.fr).
- Login:** A login form with fields for "User" and "Password", and an "OK" button.

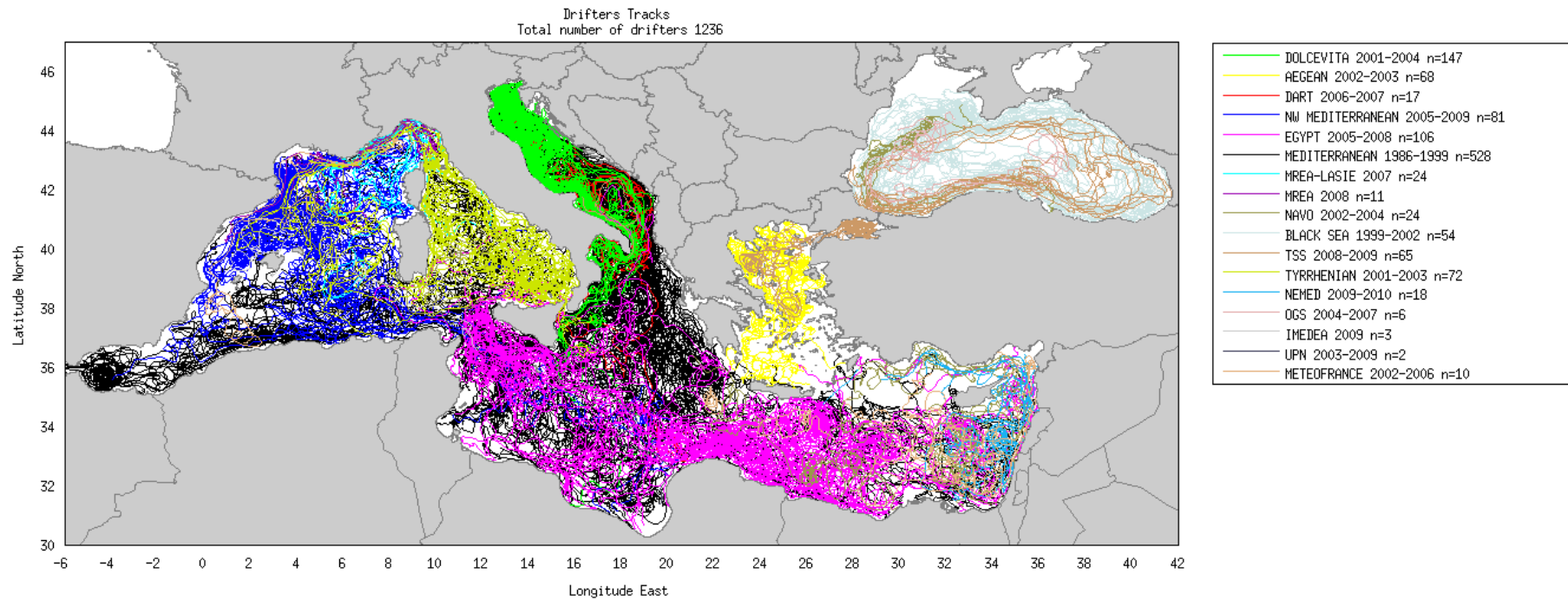
The browser's address bar shows "http://www.euro-argo.eu/" and the search bar contains "euro argo". The browser interface includes standard navigation buttons (back, forward, refresh) and window controls.







# SURFACE DRIFTERS



# THE DG MARE INITIATIVE



# EMODnet



European Marine  
Observation and  
Data Network



# SETTING EMODNET

*Green Paper on a Future Maritime Policy for the Union:*

- **Good data** are also of importance for maritime economic operators. However, there are still major problems of **harmonisation and reliability of data, as well as insufficient and geographically imbalanced monitoring in EU marine regions**. These gaps must be addressed if we are to devise a sound and sustainable EU Maritime Policy.
- The EU could consider setting up a **European Marine Observation and Data Network** which would provide a sustainable focus for improving systematic observation

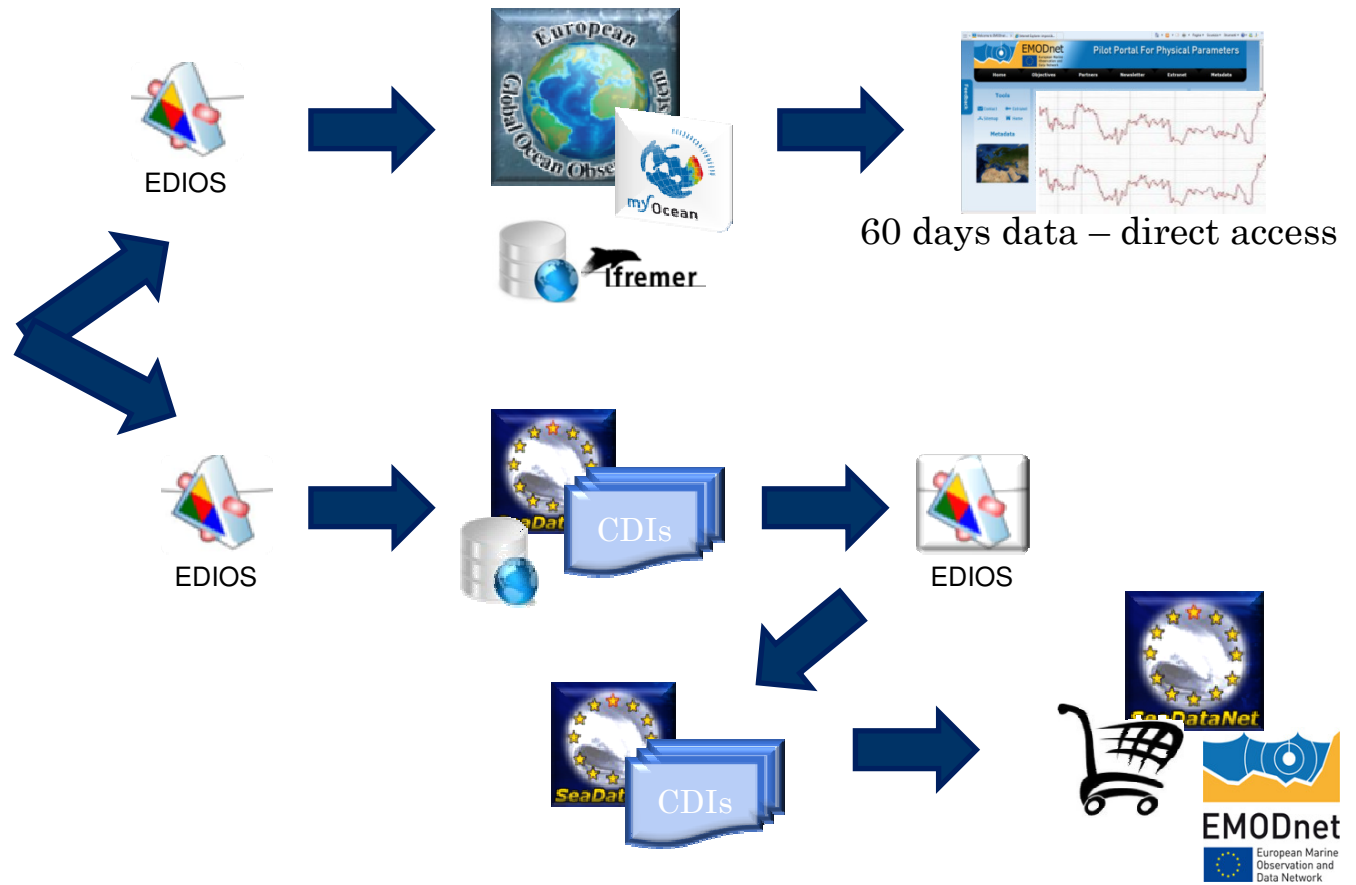


# EMODnet PP – Data Access

Near Real Time



Archived Data



# EMODNET PP – THE PARAMETERS

Measurements from **fixed stations** that should cover :

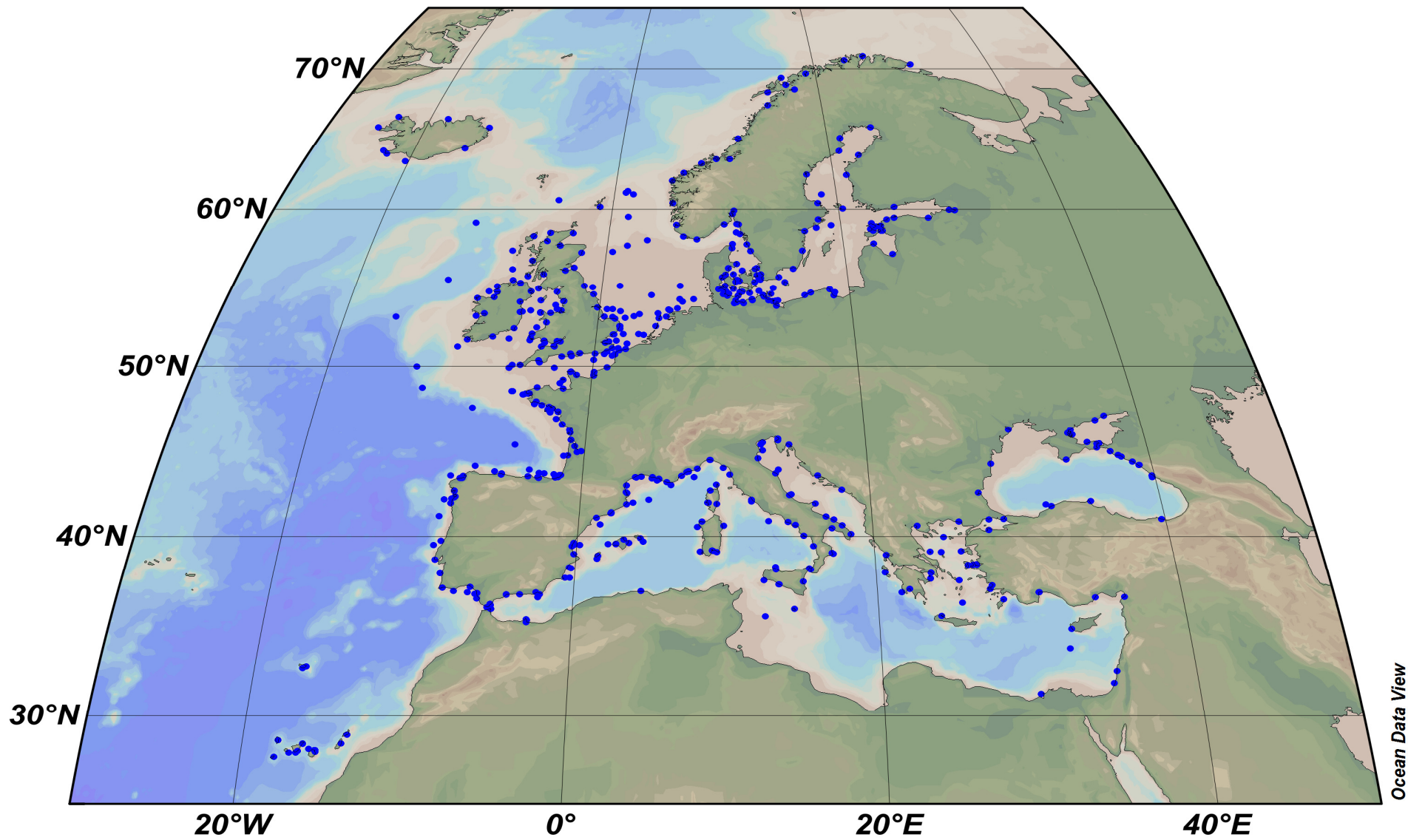
- wave height and period
- temperature of the water column
- wind speed and direction
- salinity of the water column
- horizontal velocity of the water column
- light attenuation
- sea level

Measurements from **ferryboxes** that should cover :

- temperature of the water column
- salinity of the water column







MOMAR Livorno 18-19 April 2012



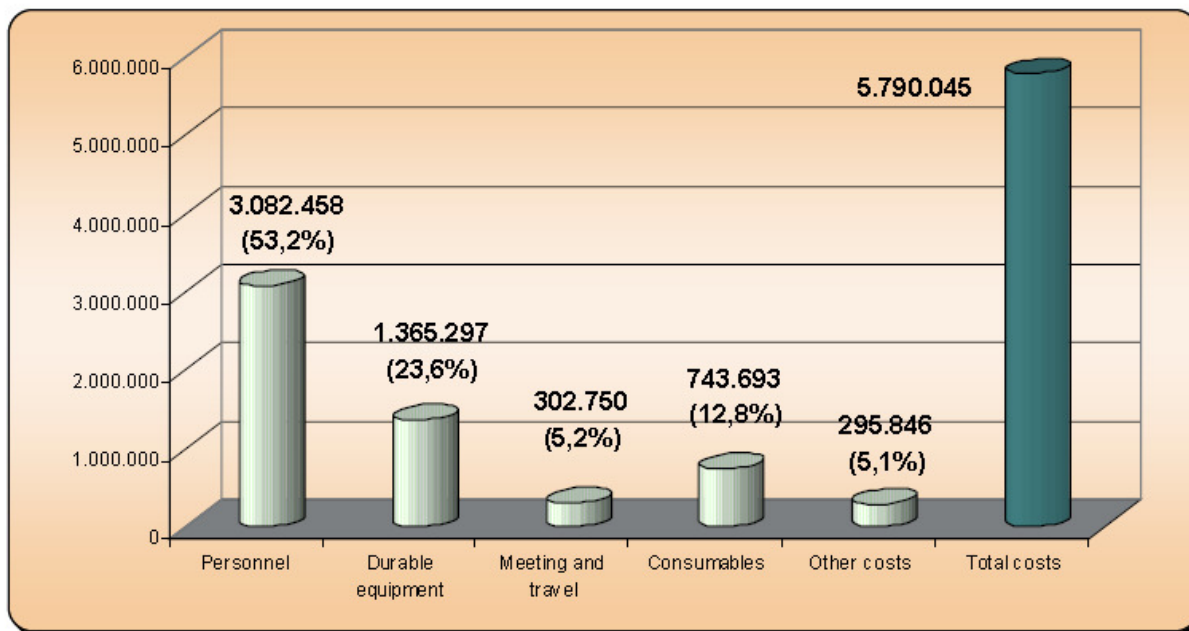
# CONCLUSIONS

A shift from coordinated observing –  
forecasting system to  
Opportunistic platform based  
communities

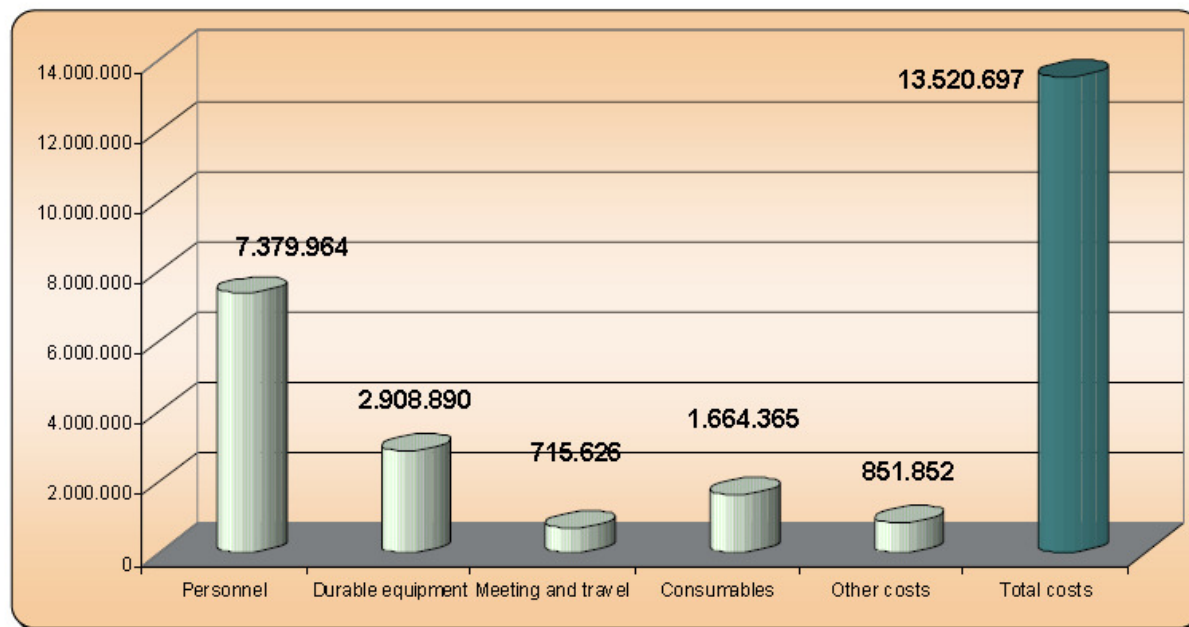


# COSTS FOR A MED OBSERVING SYSTEMS

Platforms	Capital Cost	Annual Cost
5 Deep Sea Buoys	2150 k€	1043 k€
2 VOS-SOOP	30 k€	287 k€
20 coastal buoys	1610 k€	1096 k€
10 gliders	800 k€	355 k€
5 HF Radars	750 k€	290 k€
10 ARGO	170 k€	235 k€
1NEMO	4333 k€	263,2 k€
26 Sea Level	2366 k€	761 k€
20 Waves	2175 k€	1381 k€
Acqua Alta	5490 k€	2927 k€
60 Drifters	90 k€	168 k€
<b>TOTAL</b>	<b>19441 k€</b>	<b>8747 k€</b>



**FIG. 4. MFSTEP (total three years costs, in €)**



- How to assure the sustainability of an ‘essential’ observing system?
- How integrate the different systems managed by different communities?

*Thank you for your  
attention*

