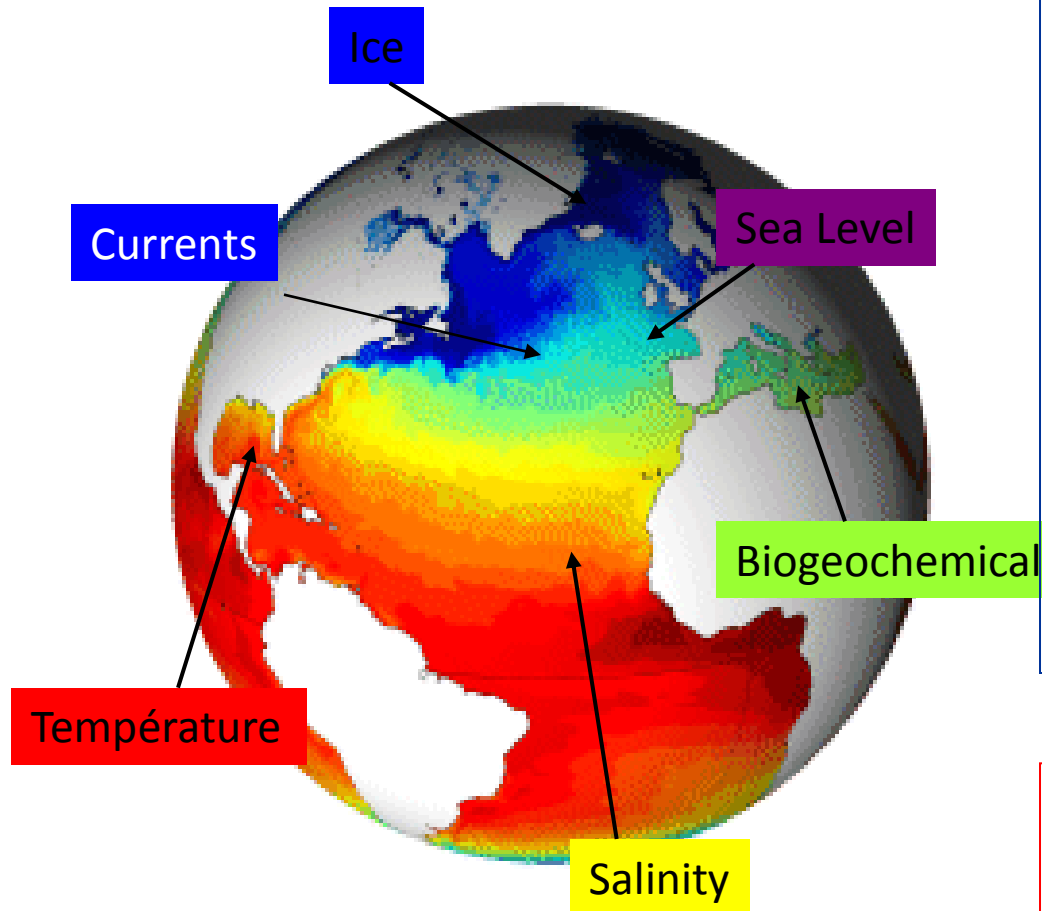


# EEA Workshop In-situ data requirements for GMES MCS

Summary of the past 2 Workshops  
June 2010- Nov 2011

EEA, Copenhagen

# Ocean Monitoring and Forecasting



- Currents,
- Temperature,
- Salinity,
- Sea Level,
- Ice,
- Biogeochemistry

- Anywhere (global & 3D)
- At any time (past, present, future)
- Real time & long period

A 3D and dynamic  
vision of the ocean

# GMES MCS and the in-situ ocean observing system

- In situ global and regional measurements **are mandatory for operational oceanography** and GMES MCS (including climate aspects).
- **Requirements for a permanent, global and real time observing system** have been detailed in the OceanObs 1999 conference and have been endorsed by GOOS and JCOMM (IOC/WMO). **There is a wide consensus on the system to sustain.** Were revisited at the Oceanobs09 conference.
- **Regional enhancements** have been detailed and are implemented through EuroGOOS and member states.

# In-situ infrastructure for GMES MCS

## A (small) part of the overall infrastructure for marine observations

- **Global and regional** scales (coastal data are often useful for the MCS but they are mainly needed for / driven by downstream services)
- **Real time data** transmission capabilities
- **Limited number of parameters** : physical state (T, S, currents, Sea level, waves) and (when feasible) biogeochemistry (Chla, nutrients, oxygen)

## **Starting point : Main priorities of the MCS IG report**

The GMES MCS IG identified a list of priorities (MCS IG report):

- sustain the Argo network ~ 800 new floats to be deployed each year. The European 'fair share' of this is about 250 units.
- encourage the deployment of and collection of near real time data from automated observing systems such as XBTs, Ferry-box & CPR on research vessels and Ships of Opportunity.
- encourage Member States to continue to make marine observations that are useful for national purposes and, if shared in near real-time, would help sustain the MCS and downstream services. Specific examples include data from the tide gauge network and moorings.
- investment is needed in carefully chosen well equipped observatories at locations where data would provide valuable constraints on models.

# June 2010 Workshop objectives

- **Review and update the main requirements** from the GMES Marine Core Service and the main gaps compared to the present situation.
- **Analysis** carried out for the different **EuroGoos regional systems** and for the **global ocean**.
- **Involvement of EuroGoos, ROOSes leaders, MyOcean** and representatives from the main in-situ infrastructure components in Europe.
- Based on the requirements and scientific/technical/organization feasibility, **define a first list of implementation priorities**.

***The workshop organized by EEA with support from EuroGOOS***

# What are the main gaps ?

1. Organisation and coordination
2. Consolidating (sustainability)
3. Improving the system

Long term funding is an issue for 1/ and mainly 2/ and 3/

# What are the main gaps ?

## Coordination issues

*Defining the overall coordination and organization of the in-situ infrastructure requires more work. Some general ideas are given here*

- The coordination should rely on existing bodies and consolidate them when needed
- An organization and coordination of the regional seas and global component should be also consolidated and sustained through EuroGOOS and GMES (EEA).
- A European link with international coordination bodies (JCOMM, IOC, GOOS, GCOS, GEOSS) should be formally established (Europe should reinforce this international cooperation)
- Coordination of transverse networks: Euro-Argo component is already well organized (Euro-Argo ERIC). Euro-Sites could also rapidly evolve towards a more stable organization. Same holds for FerryBoxes. Work in progress for gliders.
- One should in parallel strongly encourage the near real time transmission of data from open sea and coastal research vessels. This should be worked out through the EuroFleets EU project. Need an R&D project on HF radars.
- Common (open) data policy.



# What are our main gaps ?

## 2. Consolidating (sustainability)

- One of the key **main gaps in marine observations is the lack of sustained funding**. An inter-governmental coordination to define and monitor **long-term commitments at member states and European Union (EU) levels** for the in-situ data needed by the GMES MCS as well as other uses is required. A **co-funding mechanism (EU and member states)** could be set up for the pan-European components of the in-situ observing systems and to address common issues as well as to evolve the technologies.
- Moreover, there is a need **for clarifying and streamlining the EU funding approach**, especially regarding the transition between initial funding through EU research infrastructure mechanisms and sustainable approach ensuring the long-term maintenance and continuity of observations.

## What are our main gaps ?

3. Improving the system (sampling, new parameters, new instrumentation)

⇒ improvements for better sampling (e.g. increase European contribution to Argo, new EuroSites moorings or FerryBox lines)

⇒ new measurements (e.g. more biogeochemical observations).

**WE CRITICALLY NEED MORE DATA!**

# Preliminary propositions for European short-term or mid-term funding

If a direct EU funding is set up through GMES, it should be used to co-fund transnational (pan-european) systems for the most important priorities. The following list provides a series of preliminary propositions:

- Short-term (from 2011)
  - Euro-Argo: 3.4 Meuros/year (40% of the total cost).
  - Euro-Sites: 1 to 3 Meuros/year depending on national commitments.
  - Support for new or improvement (new parameters incl. CPR) of Ferrybox transnational lines (co-funding): 1 to 2 Meuros/year depending on national commitments.
  - MCS in-situ TACs (co-funding of 50%): 2 Meuros/years
- Mid-term (from 2013)
  - Euro-Argo, Euro-Sites, FerryBox and in-situ TAC (see above)
  - Contribution to E-Surfmar (drifters)
  - 10 to 20 glider transnational lines (co-funding)

# Costs

- A precise costing estimation for a given regional sea is a difficult task as it involves many actors and the maturity and level coordination differs among regions and countries.
- Costs of the in-situ observing system for **a given EuroGOOS region range from 5 to 15 Meuros/years with a total cost for all EuroGoos regions of about 40 Meuros/year**. A significant part of the existing funding is not sustained. Analyses carried out by EuroGOOS suggest that **an additional funding of 10 to 15 Meuros/year** is required to fulfill GMES MCS needs.
- **Costs for components** (Euro-Argo, EuroSites, Gliders, FerryBoxes, CPR, E-Surfmar) are easier to derive and are thus more reliable, in particular, for well defined components such as Euro-Argo, EuroSITES and CPR. **The overall cost is estimated to about 25 Meuros/year with a future requirement of about 40 Meuros/year**. Given Euro-Argo and EuroSITES estimations, it is estimated that **the European contribution to the global international system should be augmented by about 10 Meuros/year**.
- Taking into account that some of the costs of the different components are also included in the cost estimations for the regional seas, **the overall cost for the observing system required by the GMES MCS is estimated to be about 50 to 60 Meuros with a future requirement of 70 to 80 Meuros**.

COSTS AS OF TODAY	Equipment Cost/year	Personnel Costs*	Total costs
IBIROOS	6525	5460	11985
NOOS	5400	4300	9700
BOOS	3186	1910	5096
MOON	4757	1366	6123
Black Sea	412	2960	3372
Arctic	2630	1315	3945
<b>TOTAL EuroGOOS Regions</b>	<b>22909</b>	<b>17311</b>	<b>40221</b>
Euro-Argo	2300	2500	4800
Euro-Sites	1632	2013	3645
EGO	1500	1100	2600
E-SURFMAR	6712	1132	7844
CPR	500	2700	3200
FerryBox	470	1500	1970
Central data management (in-situ TAC)		2000	2000
<b>TOTAL Components</b>	<b>13114</b>	<b>10945</b>	<b>24059</b>
REQUIREMENTS	Equipment Cost/year	Personnel Costs*	Total Cost
IBIROOS	9321	7800	17121
NOOS	5940	4730	10670
BOOS	4253	2540	6793
MOON	6795	1952	8747
Black Sea	1022	3750	4772
Arctic	3250	1625	4875
<b>TOTAL EuroGOOS Regions</b>	<b>30581</b>	<b>22397</b>	<b>52978</b>
Euro-Argo	4700	3500	8200
Euro-Sites	2331	2876	5207
EGO	3000	2200	5200
E-SURFMAR	6800	1200	8000
CPR	500	2700	3200
FerryBox	940	3000	3940
Central data management (in-situ TAC)		5350	5350
<b>TOTAL Components</b>	<b>18271</b>	<b>20826</b>	<b>39097</b>

\*Personnel to operate the equipment, for data processing and for coordination

For personnel costs, we used 1 man month = 10 keuros or one Full Time Equivalent = 100 keuros

Costs do not include Ship Time and repeat hydrography (e.g. Rapid, Ovide)

See details in the position papers (annexes)

## COSTs/year of in-situ infrastructure required by GMES MCS

- Estimation of existing and future costs (per year) for in-situ observing systems required by the GMES Marine Core Service.
- Does not include ship time and research vessel costs.
- Total cost for regional seas and global ocean is about 50 Meuros/year

# November 2011 Workshop objectives

- **Review of priorities of in-situ elements** (in- situ TAC, Euro-Argo, Ferry Boxes, EuroSites), proposed organisation, decision making mechanisms and links to global networks
- **Discuss the future role of EuroGOOS** and its members, including ROOS's, in the GMES marine service
- **Explore data architecture and governance** model for GMES marine in-situ component

*The workshop organized by EEA with support from EuroGOOS*

## Main outcomes

- EEA and EuroGOOS should now work together to develop and strengthen the in-situ component of the marine service.
- The long-term organization of the GMES in-situ component needs to address the following issues:
  - analyze requirements,
  - define priorities,
  - analyze implementation issues (feasibility, costs, and operators),
  - decide on implementation priorities and on funding,
  - implementation and evaluation



## Main outcomes

- This long term organization should include different levels and different components
  - **A governance level** which should have the capability to **decide on the evolution** of the observing systems needed for the GMES Marine Service and to **take measure (including funding) to implement them**. This should involve both member states and European Union. **EEA should play a leading role** here with links with the European Commission and member states as part of the overall GMES governance. **A European link with international coordination bodies** (JCOMM, IOC, GOOS) should also be formally established.



# Main outcomes

- **A scientific/technical/operational level for the coordination, implementation and monitoring of observing systems.** There is first a need for coordination per geographical area (global and regional seas). **EuroGOOS (with its ROOSes) is the main body** for providing such a European coordination at regional level.
  - a formal coordination for the European contribution to the global ocean observing system is needed and EuroGOOS could take this role in the future (including interactions with GOOS, IOC and JCOMM).
  - There is also a need for coordination for specific components of the global and regional ocean observing systems such as Euro-Argo, Euro-Sites and FerryBoxes.
- **A scientific and operational evaluation of the observing system with respect to GMES Marine Service needs.** This should be primary **the role of MyOcean (and a future ECOMF)** in interaction with EuroGOOS and specific components such as Euro-Argo.

## Main outcomes

- As EuroGOOS is going to evolve into a more stable structure, it is now urgent to agree on the long term relationship between EEA and EuroGOOS.
  - A MoU between EEA and EuroGOOS should be drafted where the respective role should be agreed.
- EEA could develop a similar agreement with the Euro-Argo ERIC legal structure

# Next Steps

A number of actions for the EEA with support from participants have been identified:

- Investigate the INSPIRE implementation for the marine service.
- Explore the link between GISC in-situ coordination and EMODnet
- Continue to engage with the GMES Bureau on marine in-situ co-ordination issues, particularly on governance and funding.
- Contribute to the user requirement definition process to ensure that the GMES marine service will evolve in a direction to be able to meet societal/policy needs for the marine domain
- Preparation of a MoU to define the respective role of EEA, EuroGOOS and individual components such as Euro-Argo for the coordination of the in-situ component of GMES.

It is crucial that, in parallel, participants lobby their national representatives in the GMES Committee to strengthen the importance of in-situ observations for GMES.