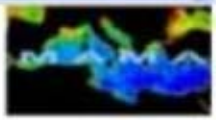
Mediterranean network to Assess and upgrade the Monitoring and forecasting Activity in the region

MAMA
The First MedGOOS Project



The role of non-EU Mediterranean countries in MedGOOS and MAMA

Aldo Drago
MedGOOS Executive Secretary
IOI – Malta Operational Centre
University of Malta
aldo.drago@um.edu.mt
Tel/Fax : +356 – 2123 2493

What is operational oceanography?

Not a new concept …
…study the sea with a purpose

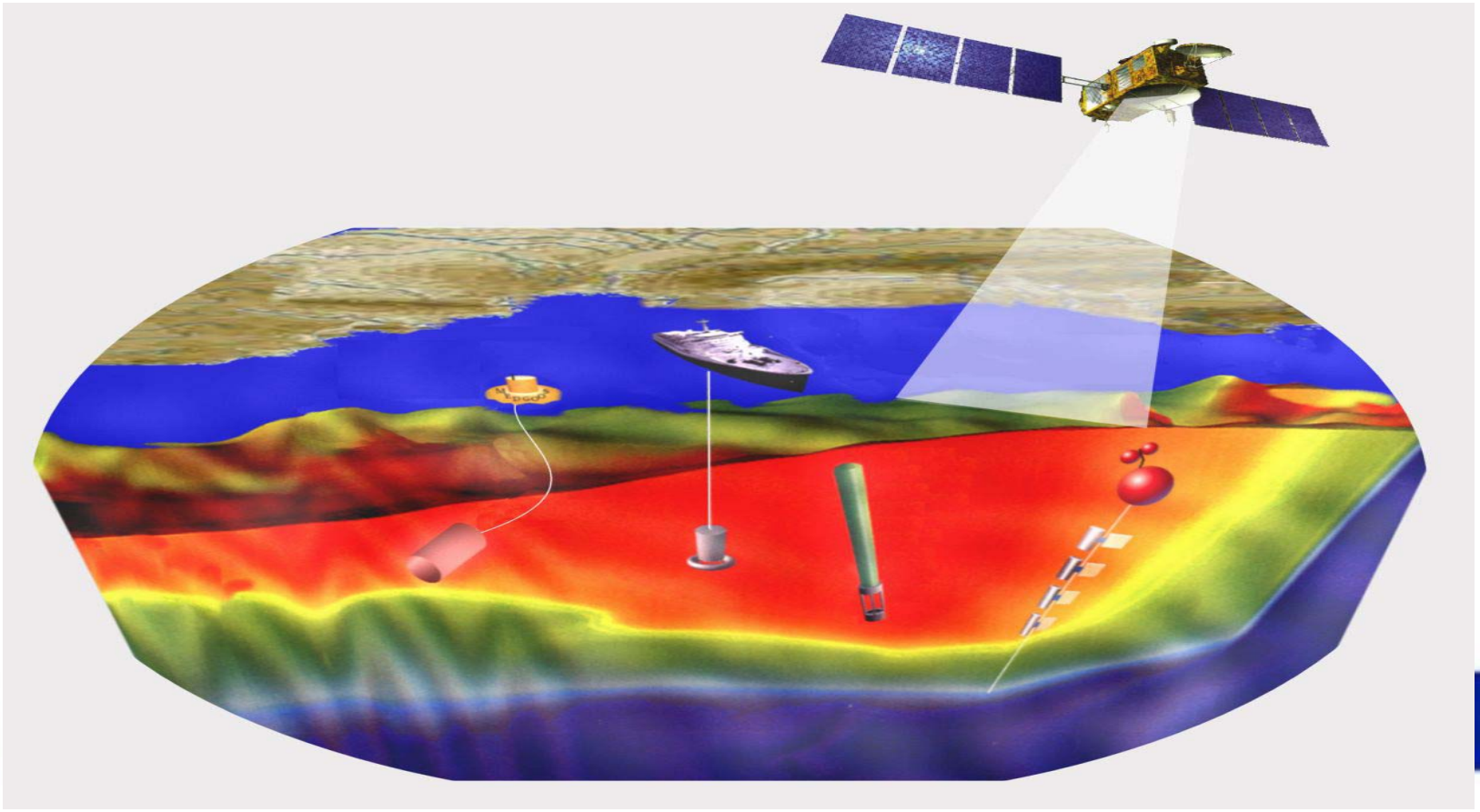
In time …. routine + long term

In space…

….synoptic + basin scale + coastal

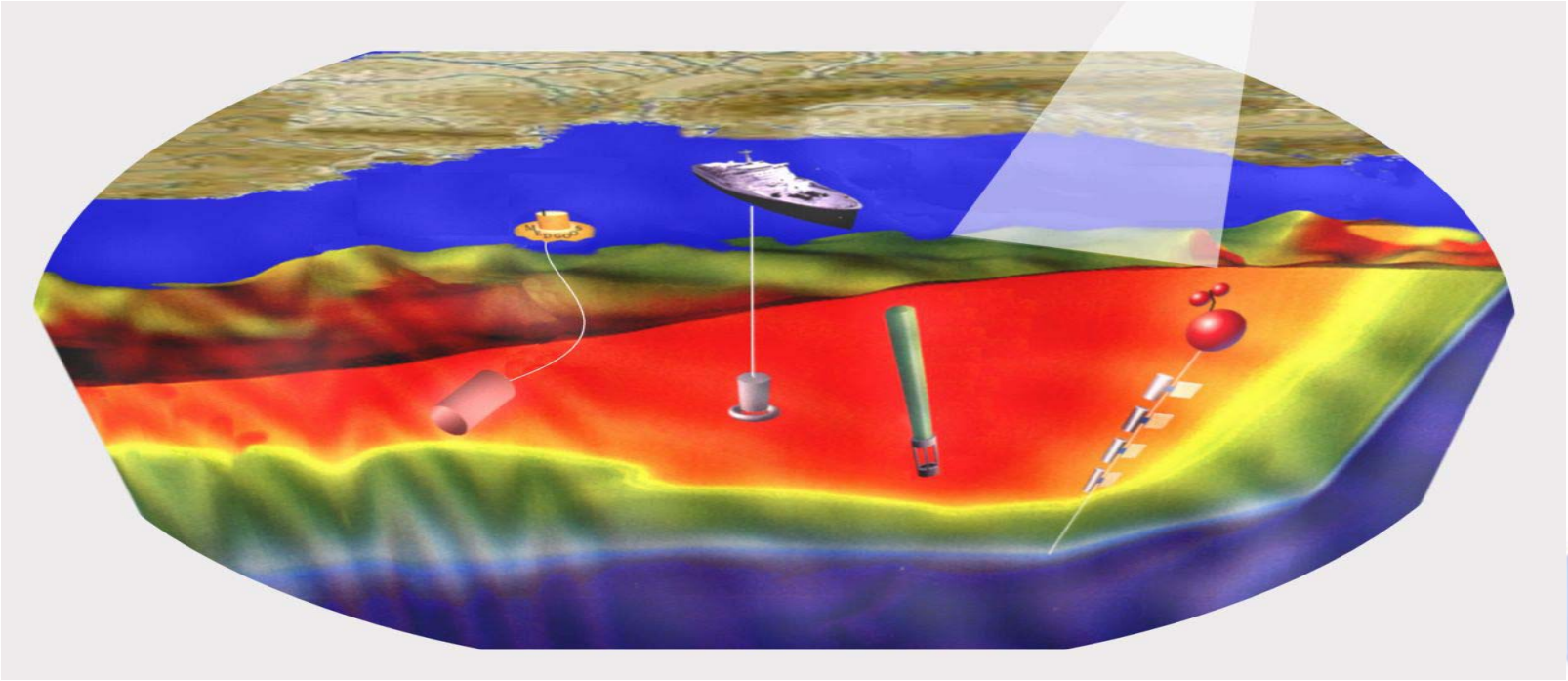
Delivery in near real time

The observing system



The observing system

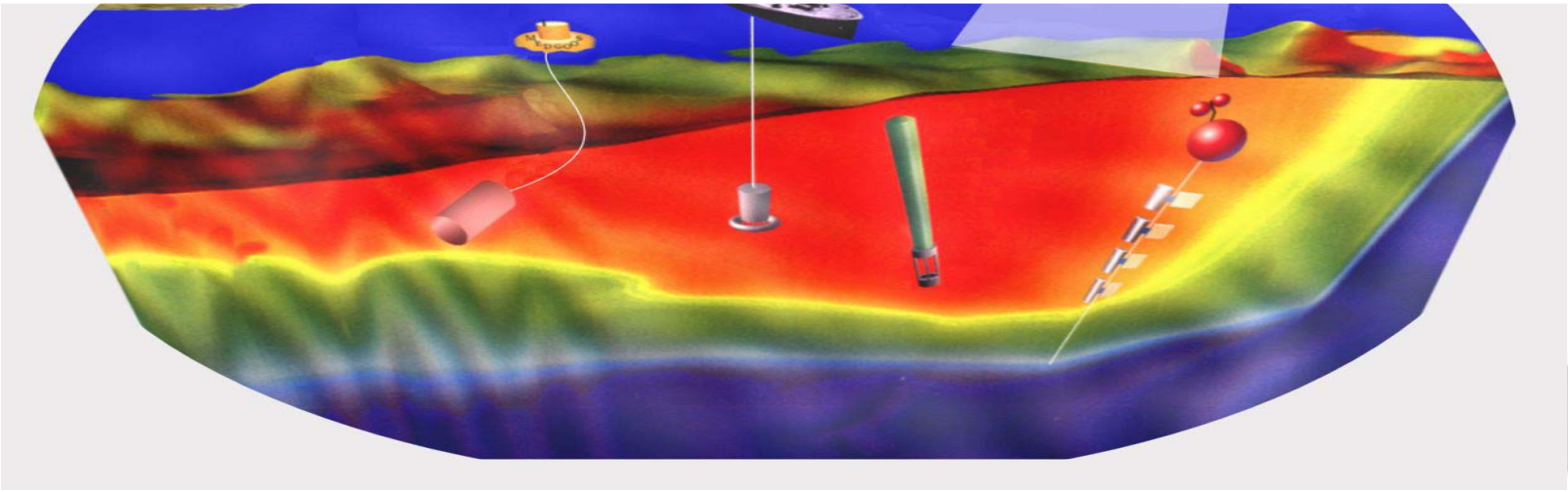
in situ + remote



The observing system

in situ + remote

Ecosystem observations …
…not only physics

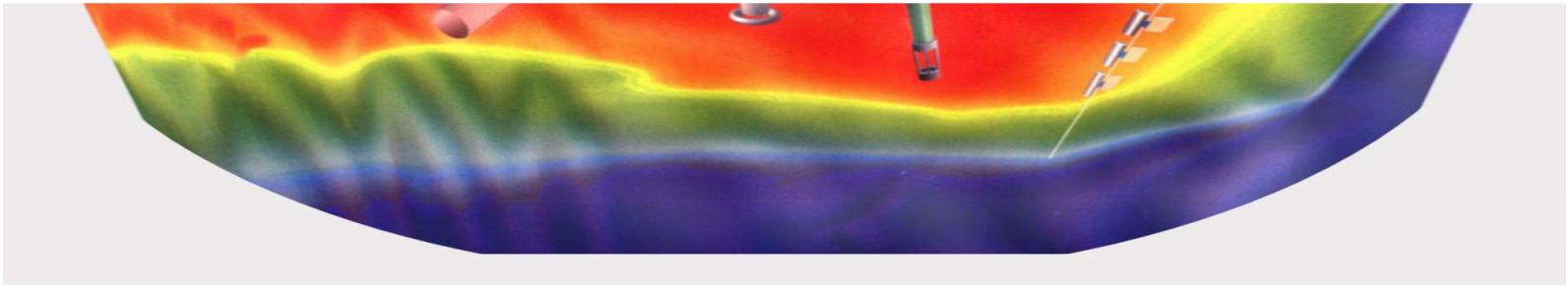


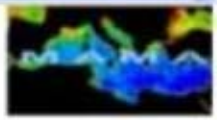
The observing system

in situ + remote

Ecosystem observations …
…not only physics

Use new technologies
Coastal radar - LIDAR - Drones - AUVs





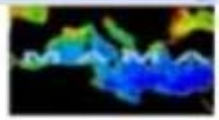
The observing system

in situ + remote

Ecosystem observations …
…not only physics

Use new technologies
- Coastal radar - LIDAR - Drones - AUVs

-QC + D&M + NRT transmission



The ocean prediction system

Meld observations into numerical models

Full 3D description of the state of the ocean (nowcasts)

Predict the future state of the sea (forecasts)

MedGOOS

The Mediterranean Global Ocean Observing System

WHY OBSERVE THE SEA?

climate change

health of the ocean

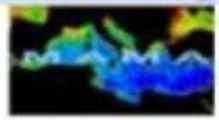
services and products

mitigating marine hazards

operational forecasting system


MedGOOS
The Mediterranean
Global Ocean Observing System
Informed decisions
Monitor state of health of the sea
Safeguard an economic resource
Public health, well-being and safety
Improve marine services

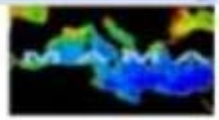
Specificity of the Mediterranean Sea



Need for regional cooperation

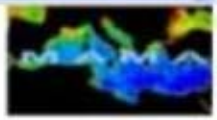
One ocean for all …
… different spatial scales of observation …
… national jurisdictions for coastal observations

Demanding infrastructural and human resources



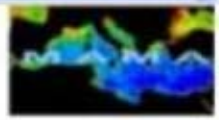
What is MedGOOS?

MedGOOS is an informal association founded under the auspices of the UNESCO/Intergovernmental Oceanographic Commission (IOC) to provide a concerted approach to the planning and implementation of an operational ocean monitoring system for the benefit of all coastal states in the region.



Brief history of MedGOOS

- Started within the EuroGOOS Mediterranean Task Team
- IOC-UNESCO initiates MedGOOS as a regional GOOS activity (Malta, 1997)
- 19 Institutions from 16 countries signed the MoU (since Rome, March 1999)
- The vast majority of Mediterranean countries approve the strategy (Rabat, 1999)
- The implementation plan is designed (2000)
- MAMA – the first MedGOOS project (2002)
- Building the future



Philosophy of MedGOOS

Co-sharing and co-development

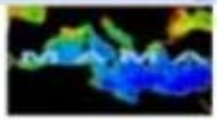
Sharing of expertise and transfer of knowledge

Awareness in all countries

Identify and prioritise the real needs

Mediterranean network to Assess and upgrade the Monitoring and forecasting Activity in the region

MAMA
The First MedGOOS Project

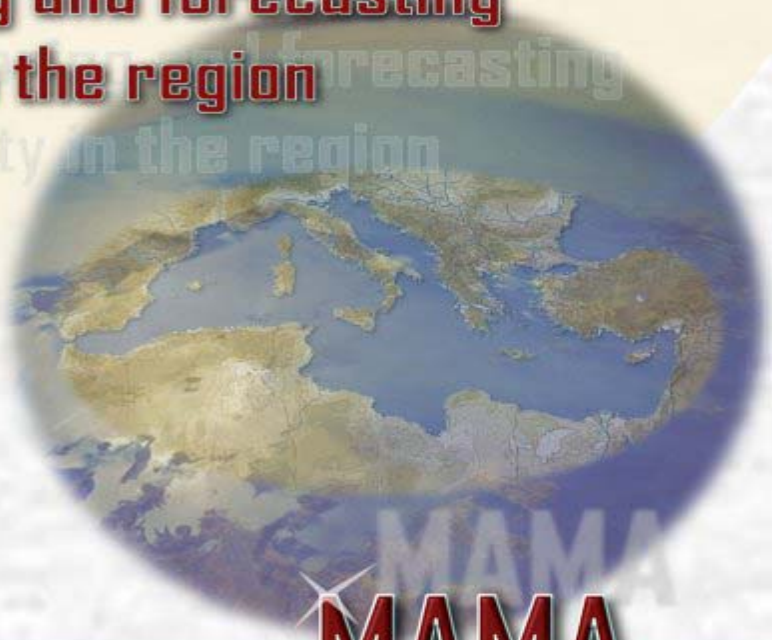


Mediterranean network to Assess and upgrade the Monitoring and forecasting Activity in the basin

- **thematic network**, EU Programme Environment & Sustainable Development
- **31 partners,** all Mediterranean Countries & International organisations
- **duration** 2002-2004

Mediterranean network to Assess and upgrade Monitoring and forecasting Activity in the region

the first MedGOOS project



MAMA

assess existing ocean/coastal observing systems

trans-national pooling of S & T resources

demonstration products

regional network for operational ocea

plan & design the initial observing and forecasting system

sharing ocean data and information

interact with end-users

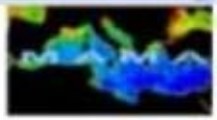
raise awareness on MedGOOS

tools for sustainable development

consensus on MedGOOS

sharing experiences and transfer of expertise

added-value products for improved marine services



Involvement in MAMA

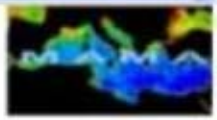
All partners

- WP1 – NOW
- WP3 CAPACITY BUILDING
- WP6 – WWW
- WP7 - AWARENESS

- WP4 –MODELLING… selected models

Receivers

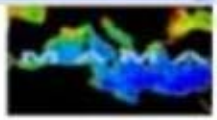
- WP2 – OBSERVING SYSTEM
- WP5 – MAMA–NET
- WP8 – DISSEMINATION & PRODUCTS



MAMA Workpackage 1

MAMA - NOW

- identification of the current situation to monitor and assess the state of coastal waters and the availability of viable forecasting techniques

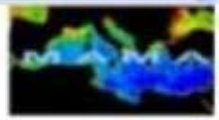


MAMA Workpackage 1

WP1 Activities (1)

Surveys and meetings with experts to collect information on :

- **Present capacities of existing institutions dealing with the research and monitoring of the marine environment,**
- **Availability of technological infrastructure and equipment,**
- **Human resources and funding capabilities,**
- **Existing national /international initiatives.**



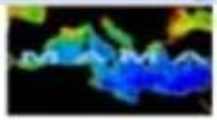
MAMA WP1
WHY?

- Identify gaps and capacity building needs

- identify existing infrastructure/expertise/activities/capacities that can provide building blocks to the initial observing system

- design the ocean monitoring and forecasting system that addresses the needs of the region

- target the niche for operational oceanography



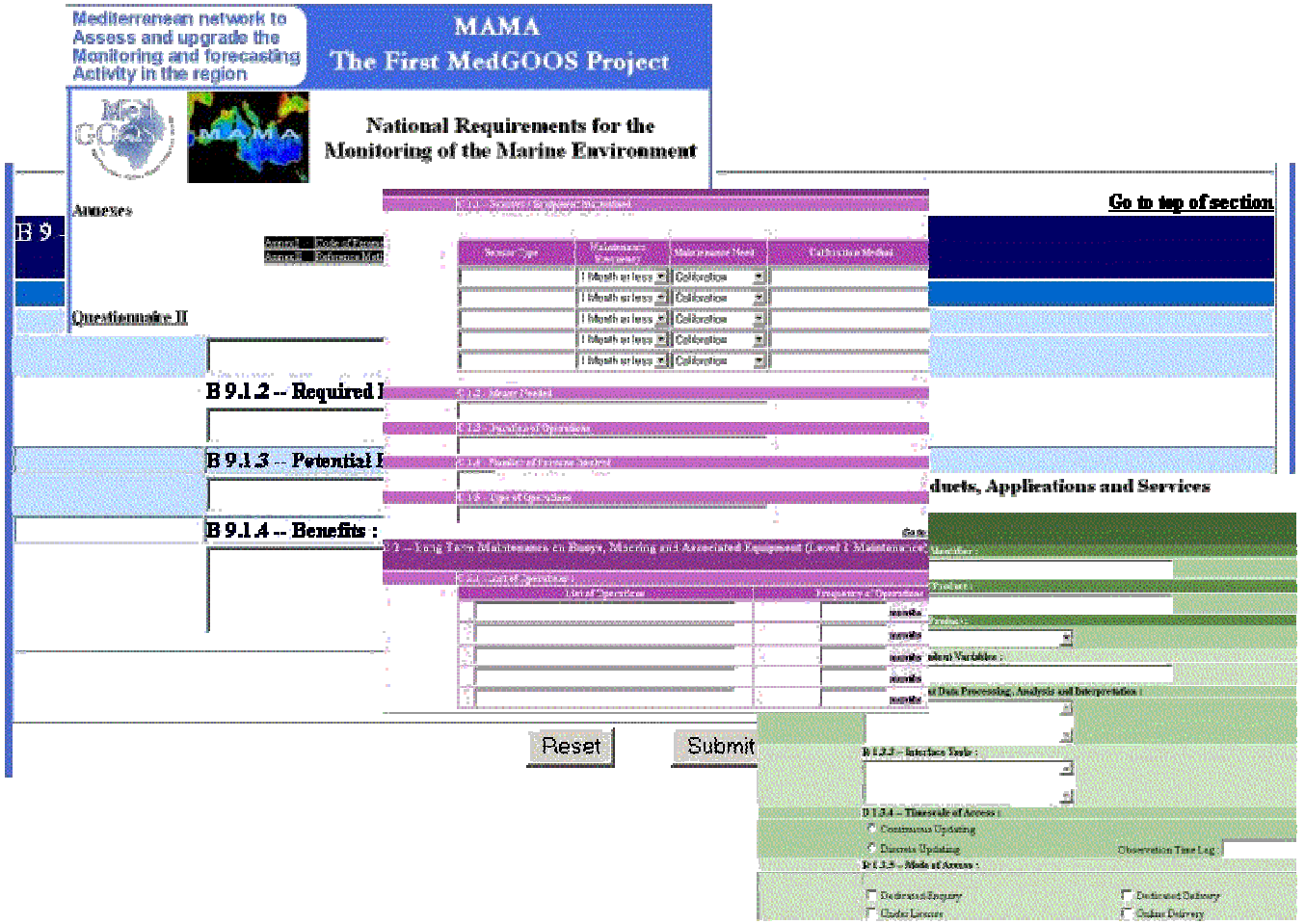
MAMA Workpackage 1

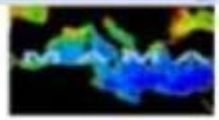
WP1 Activities (2)

- Establish **country profiles** on:
  - Key national institutions/organisations dealing with operational ocean/coastal observation and forecasting,
  - The organisational and supportive structures for routine marine monitoring
  - Potential benefits to the marine economic sector
- **Inventory on the existing marine monitoring activities** in the Mediterranean, and the current related applications.

Mediterranean network to Assess and upgrade the Monitoring and forecasting Activity in the region

MAMA
The First MedGOOS Project

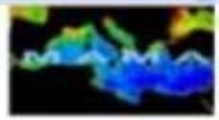




MAMA WP1

WHAT DELIVERABLES?

- Regional report on the current capabilities in pre-operational ocean forecasting in the Mediterranean
- Baseline info for the design of the initial observing system (WP2)
- Compile info for the Medir-OP web-based directory/database (WP6)
- Country profiles as a framework for NAW Meetings
- Forward look to how individual countries can benefit from operational oceanography
- Target how individual countries can benefit from future plans to implement ocean forecasting in the region



Preliminary results from CPs

Overall number of institutes/entities = 81

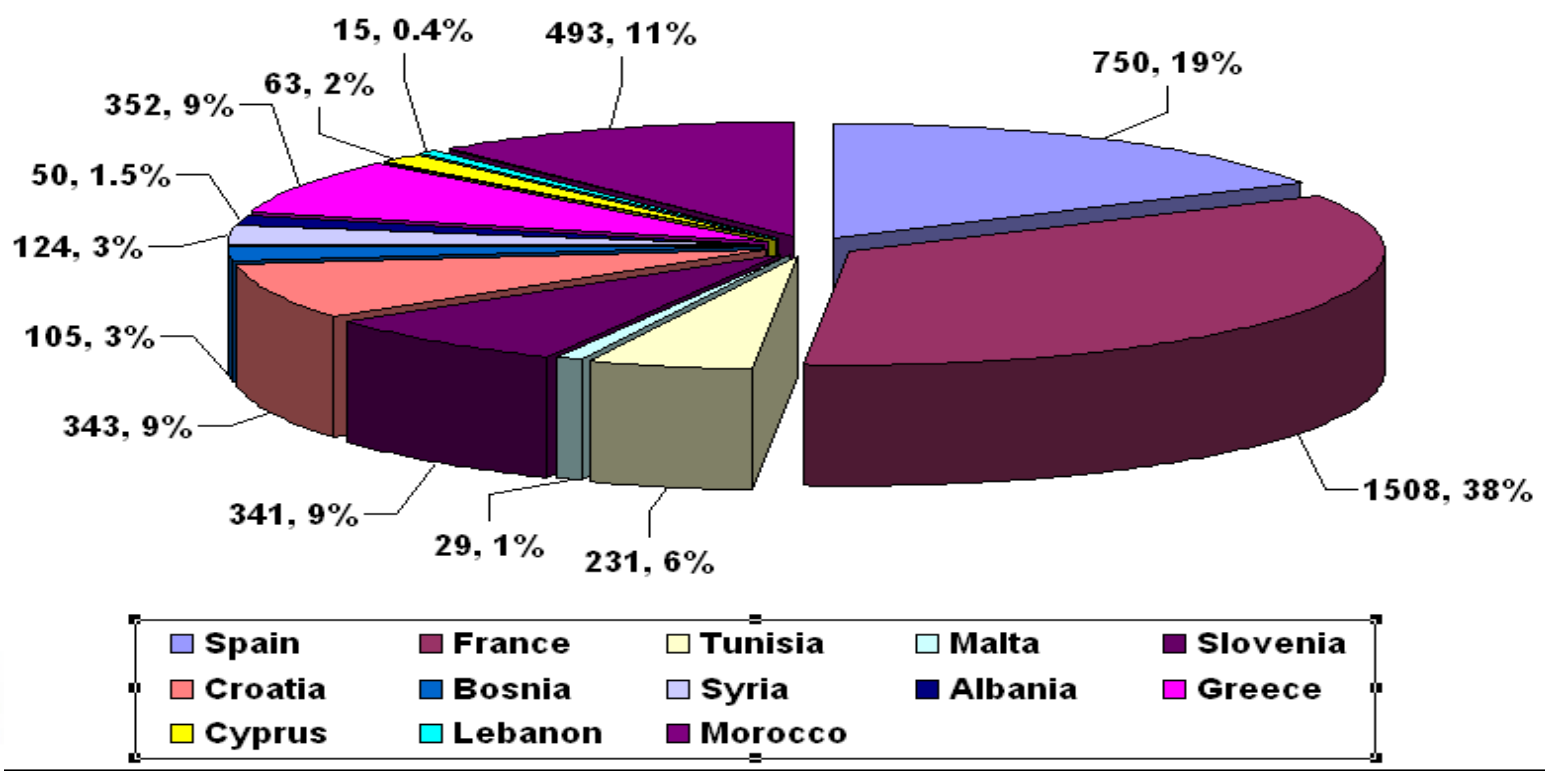
Type

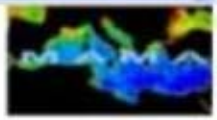
20 public 1 commercial 2 private 27 governmental
29 research 2 industry 6 academic 2 military

Activities

36 Research + operational monitoring/forecasting
12 research but not monitoring/forecasting
14 undertaking monitoring/forecasting but not research
18 recipients (potential users)

Staff (Res. + Monit. + Mod.)



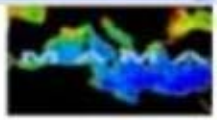


Human resources: Main points

4404 in marine research + op. oceanography
(from 13 countries 6 EU; 7 non-EU [4SE])

31% in non-EU countries
19% in SE Med. Countries

11% monitoring
2.5% modelling and forecasting



Human resources: Main points

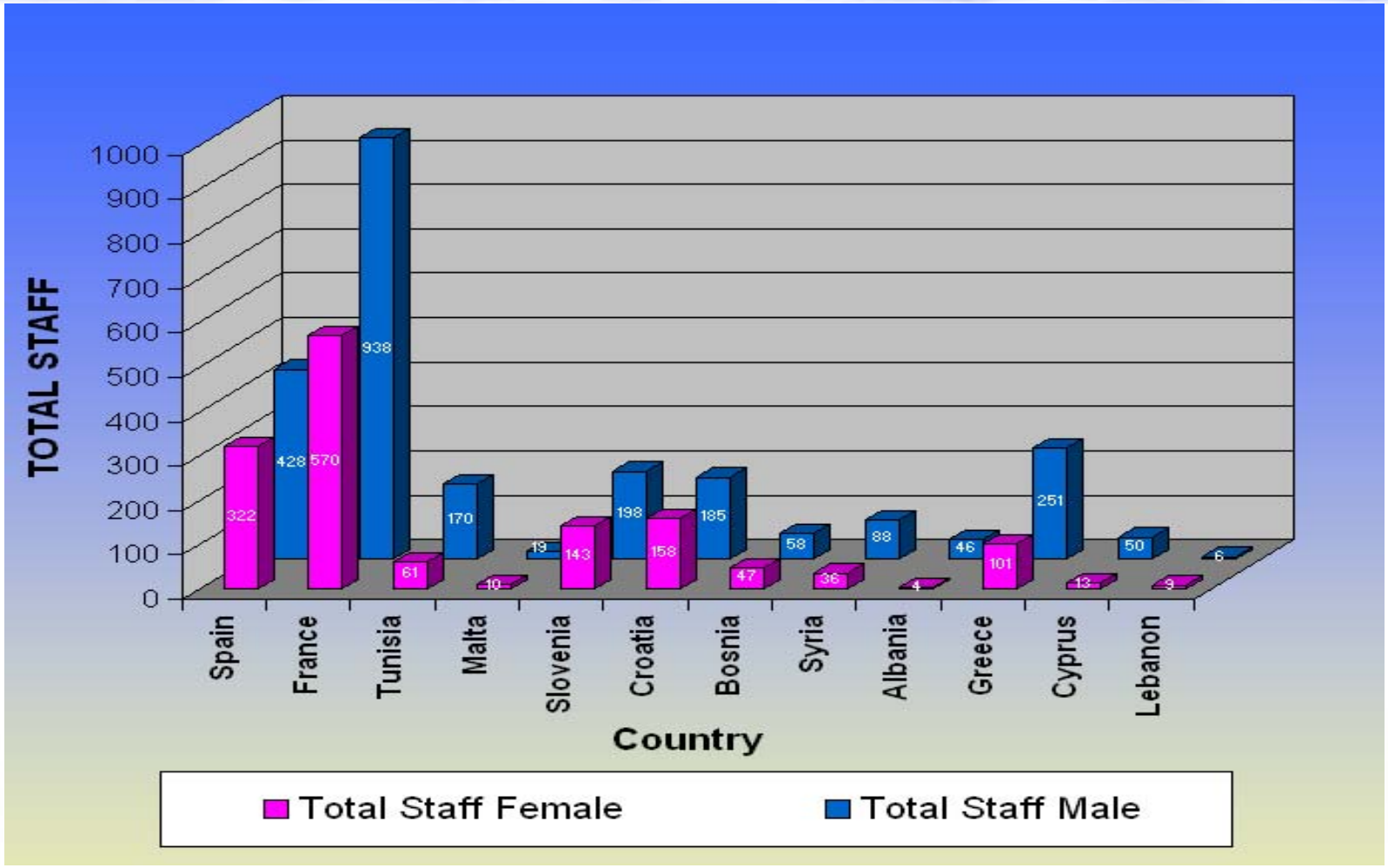
Max in France with 1508 in IFREMER alone

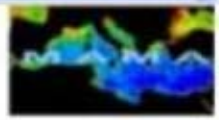
Less than 5% (Malta, B&H, Syria,Albania,Cyprus,Lebanon)

Less than 60 (Malta, B&H(?), Albania, Lebanon, Libya)

PhD (24.7%); non-PhD (24.9%); Technical (25.5%)
Support staff (20.4%); managerial (4.5%)

Total Staff (Male vs Female)





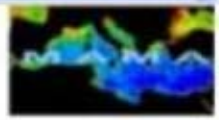
Section C

Relevance of the marine sector to the economy

- **Ranking of 7 areas**

(Transport, Tourism & Leisure, Fisheries & Aquaculture, Oil & Gas, Ship building/Repair, shipping, sand & gravel)

- **Potential for each area**



Ranking index definition

J=nos. of sector areas

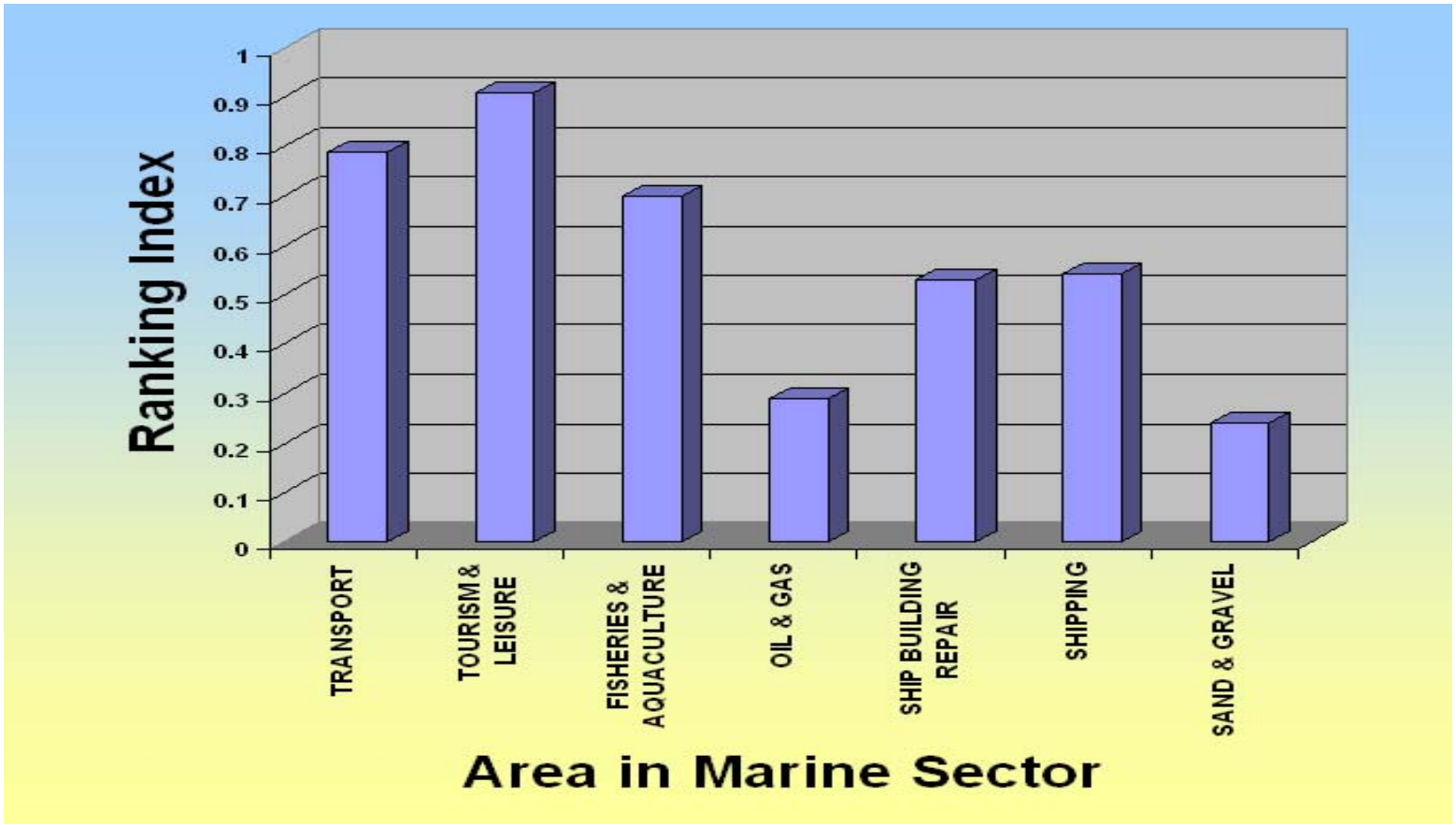
n_i = overall nos. of entries with ranking i where i=1,J

N=nos. of countries

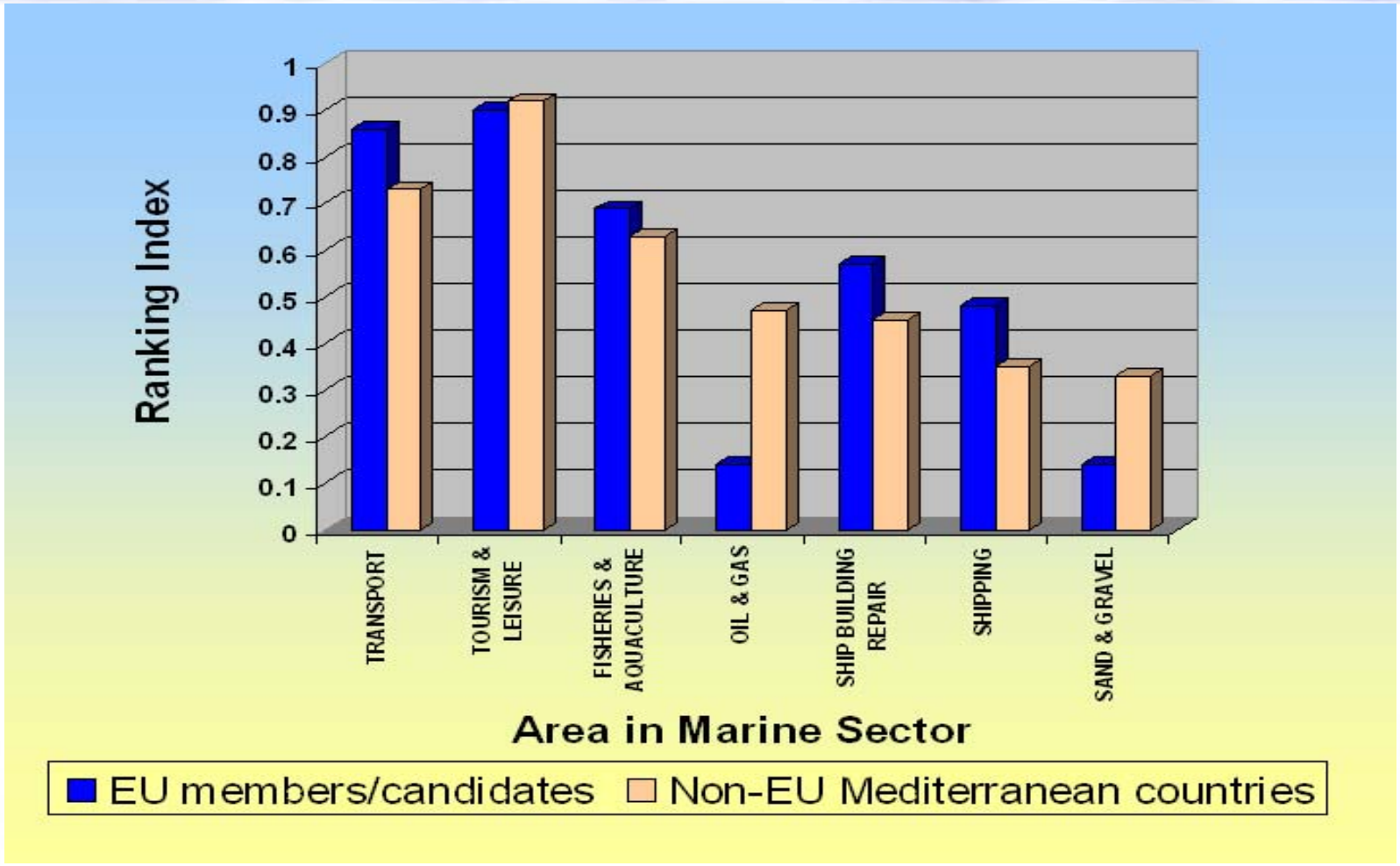
Ranking index r ε [0, 1]

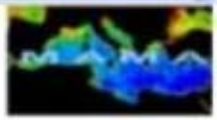
$$r = \left[\sum_{(i=1,J)} n_i(J+1-i)\right]/(J \times N)$$

Ranking indices in key areas of marine economic activities



Comparison EU/non-EU





Potentiality index definition

n_i = overall nos. of entries with potentiality i where i=1,2 or 3

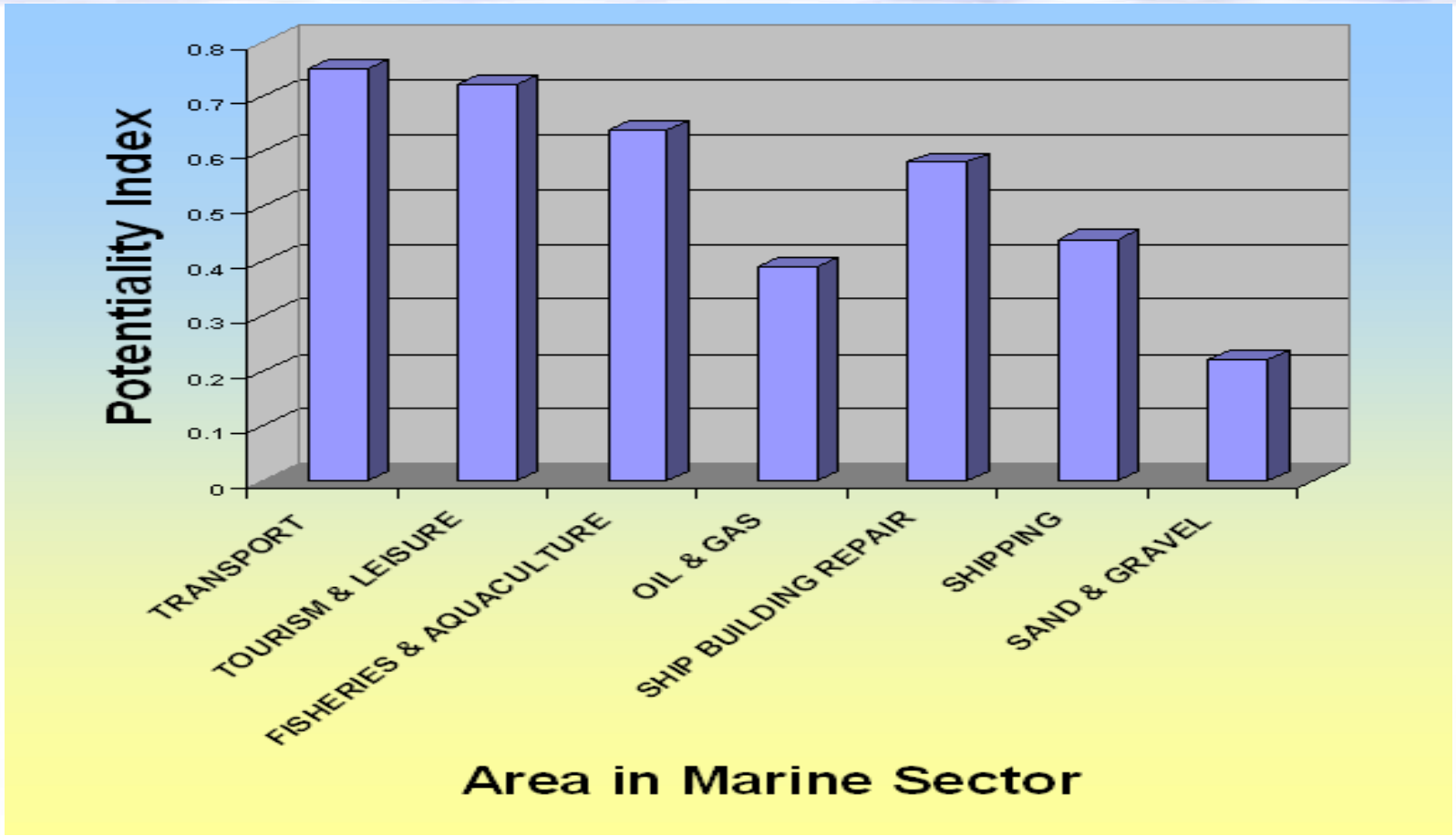
N=nos. of countries

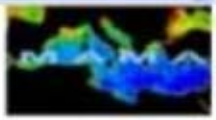
Ranking index $P \in [0, 1]$

$$P = \left[\sum_{(i=1,3)} n_i(4-i)\right]/(3N)$$

P=0 area not applicable
P=1/3 (lowest)
P=2/3 (medium)
P=1 (highest)

Potentiality indices in key areas of marine economic activities





WP1 Questionnaire

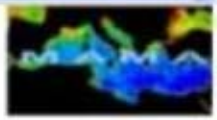
TYPE of programmes

National vs international
Level of funding
Human resource deployment
Infrastructural resources

Traditional vs ship-based surveys vs automated

(manual sampling, lab. analysis, near coast, bottle sampling, bio-monitoring, heavy metals)

(waves, multi-par. buoys, sea level)



WP1 Questionnaire

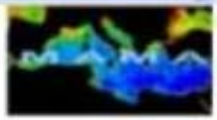
TYPE of programmes

Open-ended vs limited period

(intention to continue) (ending date)

Coastal zone vs coastal sea vs open sea

(land + sea) (nearshore) (beyond coastal limits)



First Analysis

Sea level observations

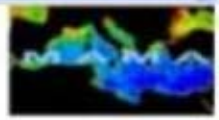
Spain (3), Italy, Malta, Slovenia, Croatia(2), Albania, Greece (2), France(?), Cyprus, Israel, Tunisia, Morocco
NOT in Syria, Lebanon, Egypt, Libya, Algeria

Oceanographic surveys by research vessel

Spain, France, Italy, Croatia, Cyprus, Tunisia, Morocco

Waves

Spain, Italy, Malta, Albania, Greece



First Analysis

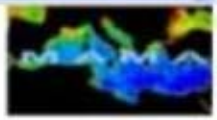
Multi-parameter buoys

Spain (several from 2 programmes), Italy (4), Greece (several from POSEIDON and MFSTEP), France (2)

Traditional monitoring programs

(water quality/bio-monitoring/pollution/heavy metals)

France (several), Italy (several), Malta, Slovenia, Egypt, Croatia, Albania, Cyprus, Greece, Syria, Lebanon, Tunisia, Libya, Morocco



First Analysis

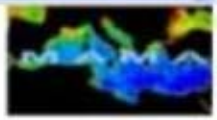
Internet connection

7 countries still rely on dial-up connections …inadequate for uninterrupted data flow

Standard PCs with MS Windows most common

Common data exchange protocols are based on HTTP/FTP

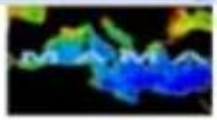
MS Internet Explorer most commonly used



MAMA Workpackage 3

MAMA - CAPACITY BUILDING

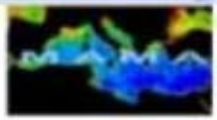
- development of the basic expertise required to participate in the GOOS, 30 person/months training



MAMA Workpackage 4

MAMA - MODEL

- development of numerical modelling and data assimilation capabilities for the design of local forecasting systems.
- extend experience of MFSPP in test areas of the South Mediterranean
- Coastal/shelf model implementations in Morocco, Algeria, Tunisia and Lebanon.



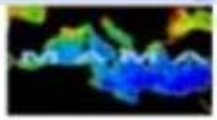
MAMA Workpackage 6

MAMA - WWW

- **Establish the MAMA WWW as a tool to harmonise activities, enhance exchanges,**

and as a means of visibility.

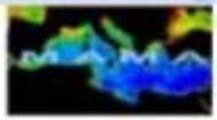

Mediterranean network to Assess and upgrade the Monitoring and forecasting Activity in the region
MAMA
The First MedGOOS Project
Funded under the EC Programme, Environment and Sustainable Development, Vth Framework Programme
Map Contacts Links Glossary
What is MAMA ?
Work Packages
BSCW Server (members only)
Public Documents
Meetings
Partner pages
MAMA consortium
Medir
MedGOOS Secretariat
Links
Search
go
Welcome to the MAMA website
The Mediterranean network to Assess and upgrade Monitoring and forecasting Activity in the region (MAMA) is a 3-year EU-funded project, with a partnership from all the riparian countries, that aims to establish the multi-national network and regional platform for routine marine observations and forecasts in the Mediterranean
MAMA focuses on the trans-national pooling of scient and technological resources in the basin, through sharing of experiences and the transfer of bring capacities in operational oce comparable levels.
MAMA intera internation
will provide guidance to the es to shape an integrated effort towards and design of the long term sustained ocean ring system in the region.
www.mama-net.org
775x610
MAMA Consortium with a representation from all the Mediterranean countries
News on MAMA
3rd MAMA Meeting 1st, 2nd and 5th December 2002, ATHENS, Greece
News Item 2
News Item 3
Designed by Alphonse Carlier (IFREMER) & Martin Galea De Giovanni (IOI - Malta)
Webmaster
Ifremer
Click below to send email to the website editors
International Marine Centre Italy
International Ocean Institute Malta Operational Centre



MAMA Workpackage 7

MAMA - AWARENESS

- Set up an awareness campaign addressing a full hierarchy of stakeholders to promote the understanding of the benefits of ocean forecasting in the Mediterranean

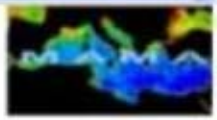


MAMA Workpackage 7

WP7 Activities(1)

Awareness campaign addressing

- Governmental agencies and authorities
- Policy makers
- Leading marine scientists
- The marine research management community
- The marine industries and services sector
- The general public

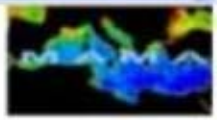


MAMA Workpackage 7

WP7 Activities(2)

MAMA National Awareness Meetings to:

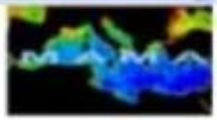
- **Promote the concepts and benefits of operational ocean monitoring**
- **Provide an opportunity for direct consultation with key stakeholders**
- **Identify national needs for capacity building, infrastructure and local organisational frameworks.**
- **Enhance/initiate between the scientific community involved in preparing the basis of operational oceanography, and the policy community committed to securing a sustainable society.**
- **Serve as a catalyst to establish national commitments in favour of MedGOOS.**



MAMA Workpackage 5

MAMA - NET

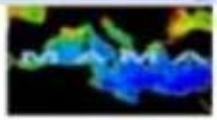
- To initiate a data and information exchange system that will support:
  - Exchange of operational data / metadata between agencies
  - Access to operational products for MAMA partners



MAMA Workpackage 5

Metadata / data to be included:

- NRT Buoy data (meteo, waves, T,S,etc) M3A
- and Poseidon networks – NCMR
- NRT VOS data (XBT) - ENEA
- NRT Sea Level - IOLR, IMBC, IOI-MOC
- NRT R/S data - ICM/CSIC
- Archived R/S Data - IMBC
- Archived Hydrology – IFREMER
- NRT Forecasting Products: NCMR + …
- CYCOFOS - Cyprus Coastal Ocean Forecasting & Observing System



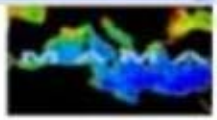
MAMA Workpackage 5

- **Workshop on Marine Data and Information Management in the Mediterranean**

- Presentation of IOC/IODE system

- Evaluation of data management and exchange functionality in the Mediterranean

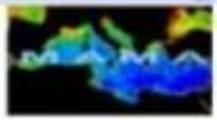
- Resource kit for oceanographic data and information management



MAMA Workpackage 8

MAMA - DISSEMINATION &PRODUCTS

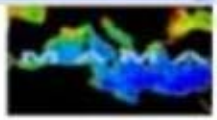
- **Establish links with the end-user communities to identify their needs and priorities**
- **Prove the usefulness of MAMA through a demonstration tool for information on coastal erosion protection and user friendly products**



MAMA Workpackage 8

WP8 Activities

- Develop a web based demonstrator (CEROSPIG) providing guidance and information on protection from coastal erosion and ICZM through the use of operational ocean/coastal observations and products.
- Development of a user-friendly interface and provision of tools (software) for viewing and using ecosystem forecasts results.
- Development of value-added products on the basis of merged data sets.



Contacts

Silvana Vallerga
MedGOOS Chairperson
MAMA Coordinator
CNR & IMC
ITALY
vallerga@nameserver.ge.cnr.it
Tel: +390783 22027/22136/22032
Fax: +39 0783 22002

Aldo Drago
MedGOOS Executive Secretary
MAMA Asst. Coordinator
IOI – Malta Operational Centre
University of Malta
MALTA
aldo.drago@um.edu.mt
Tel/Fax : +356 2123 2493

MAMA Website: www.mama-net.org

MedGOOS Website : www.capemalta.net/medgoos