

# Marine Data at the service of multiple activities

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# Key messages .....

- Why data?  
*'Data provides the tools to manage our relations with the oceans'*
- Which data?.....integration of data from various domains/sectors
- Data vs information....
- How to best use and manage data to achieve the goals of the maritime policy?..... Competitiveness; decouple economic growth from impacts on the environment; needs to monitor the ecosystem and mitigate climate change; provide new impetus for marine industries; achieve a holistic approach by merging layers of information from different sectors
- Which are the impediments/challenges?

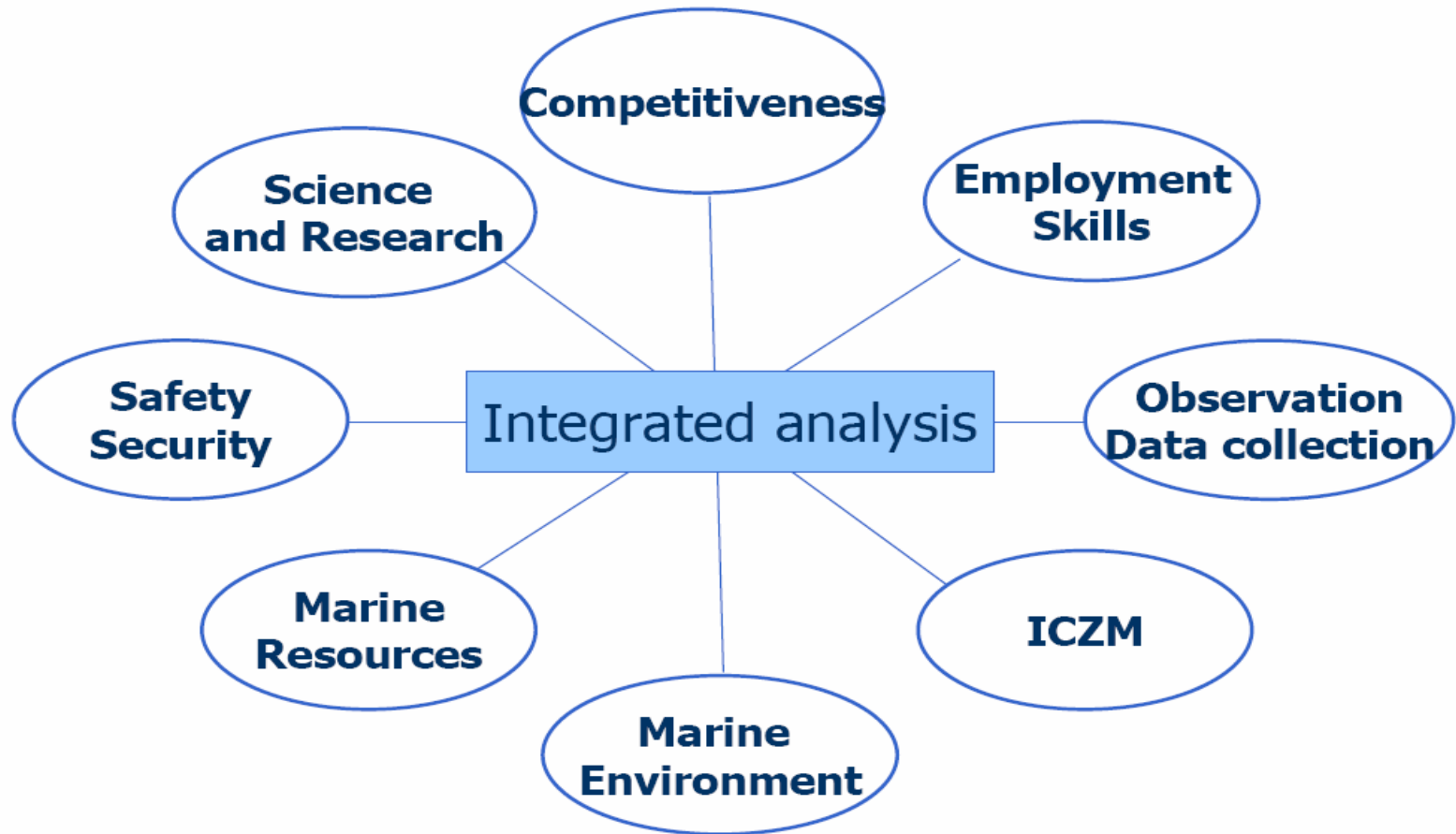


# Basic Data for an Integrated Maritime Policy

- Basing policy formulation and sound management on evidence; Compliance to Conventions/Directives.....requires research and operational information services to produce numerate descriptions of :
  - the economic, social and environmental drivers,
  - the temporal & spatial characteristics of the domain
  - their interdependencies
- Data to deliver effective, safe, efficient, profitable & sustainable operations
  - monitoring the health of the coastal sea and safeguarding resources
  - protection from disasters/hazards
  - supporting marine safety
  - supporting marine industries by added-value products and specialised services



# Subjects of the Integrated Maritime Policy



# The relevance of marine data

**...not just for monitoring**

**.....not just for research**

## The basis for achieving the maritime policy

**....provision services**

**.....provide knowledge for informed decisions**

**and support coastal/ocean policies**

**.....support economic activities**

**.....safety, security and surveillance**

**.....improve quality of life of citizens**

**.....preserve and restore healthy marine ecosystems**





# Meeting the principles of the Maritime Policy

- Monitoring the threats and mitigating hazards
  - Ecosystem-based approach
- Incentivate marine research as a multi-faceted and targeted activity
- Embrace linkages between the economic, social and environmental dimensions of sustainable development
- Promote a knowledge-based society as the ingredient for growth and wealth



# Cross-border cooperation is needed

Since globalisation is increasingly linking national economies into intricate dependencies and even more so for the marine economic sectors....

Since each country's territorial or jurisdictional waters are part of a dynamic global system connected by shifting winds, seasonal currents and migrating species, analysing the processes that govern their present state and future behaviour cannot rely on data collected only within its own jurisdiction.....

Since no country can make it on its own and there is need for synergies building on trust and through co-development and sharing of resources....



# Cross-sector cooperation is needed

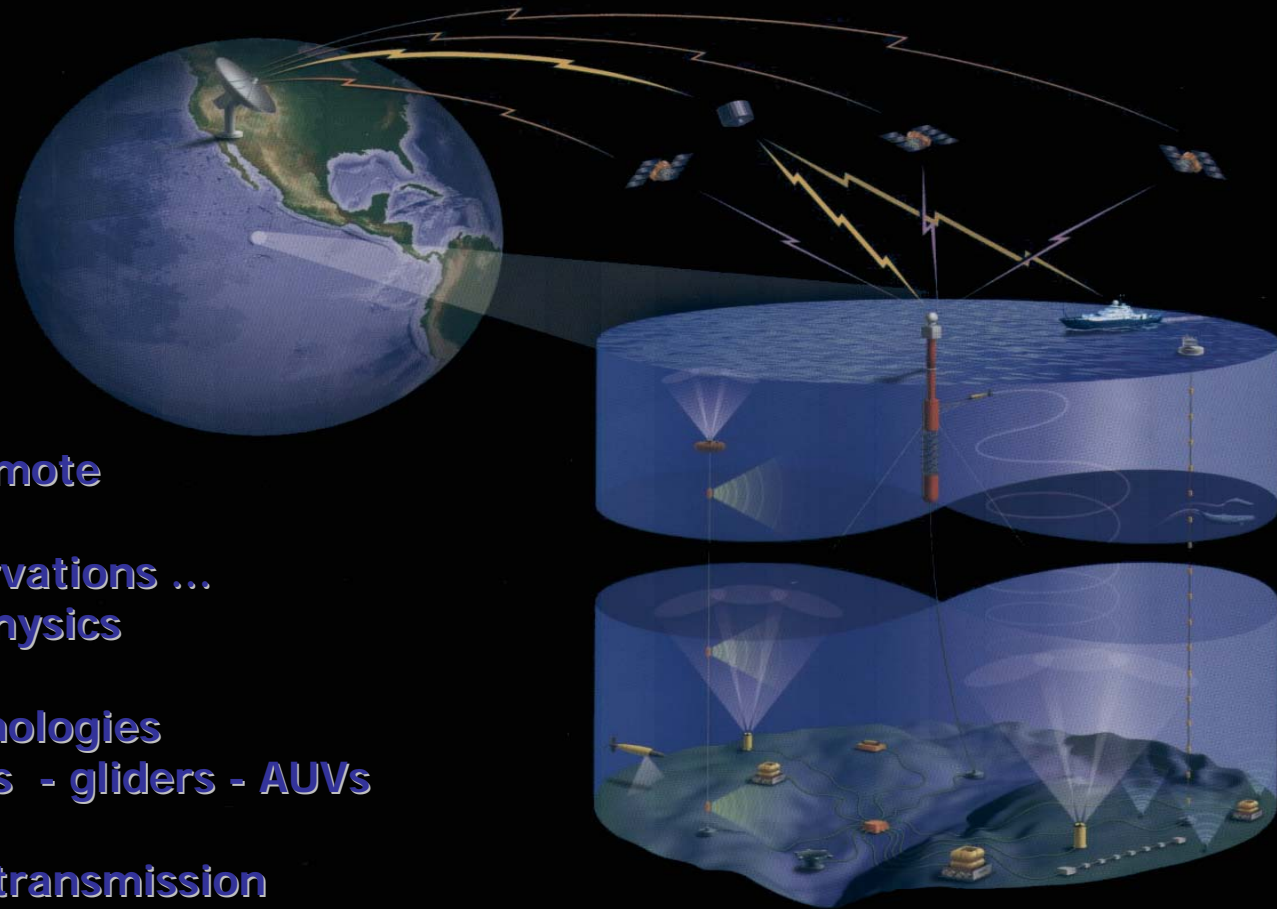
Since atmospheric processes influence ocean currents which influence species abundance which influences fishing practices which influence ecosystem health, scientists working in different disciplines – meteorology, oceanography, marine science – need to access and understand data collected and distributed by scientists from other disciplines.....

Since many applications need multi-disciplinary inputs and a holistic approach embracing the social, economic, scientific and environmental dimensions.....





# The Observing System .....data from the sea



in situ + remote

Ecosystem observations ...  
...not only physics

Use new technologies

- Coastal radar - drifters - gliders - 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)



# Basic Data for an Integrated Maritime Policy

holistic approach for oceanography

research → operational → service oriented

.....addressing social concerns

.....targeting to support economic activities

.....providing a tool for decision making

.....application for sound policy development



# An evolving chain.....

DATA → INFORMATION → KNOWLEDGE

OBSERVATION → ADDED-VALUE → APPLICATIONS  
PROJECTS

Integration of information

cross scales: global – regional – local

across fields: climate – geophysical – fisheries - other

across sectors: environment – social - economical

**information networks  
for integrated services**





# Challenges

- Many environmental processes have high variability; and changes are episodic, requiring sustainable, near-real-time data capture
- Technology :
  - Well developed for automated physical measurement
  - Capable for chemical (nutrient & pollutant) measurement,
  - Limited, difficult, & underdeveloped for biological measurement
- Platforms
  - Satellite -high res. 'swath' data, excellent for ocean surface, very costly; a capable, well organised industry
  - *In situ* – sparse, costly ships or platforms of opportunity, towed sensors/collectors, moorings, floats, gliders, deployed for global monitoring mainly for climate...or for local needs; large vs small scale...need to fill gap and link the two scales



# Challenges

- Substantial under sampling of the sea floor and sub-sea coastal/shelf areas
- No strong commitment to data exchange – unlike meteorology
- Lack of interoperability
  - Adoption of international standards in data exchange, archiving and display
  - Use of regional access portals with discovery catalogues, viewing and download capabilities
  - Implementation of the **EMODN** proposal



# Challenges

- Long term archives exist, but are often not accessible for multiple uses **SeaDataNet** trying to integrate national databases through the development of a European virtual oceanographic data centre
- Value addition to data addressing user needs and maximising benefits
- Multi-purpose observing platforms designed to share environmental observing systems with requirements for surveillance, security, safe navigation, hazard detection.....etc
- Merging of data across environmental, scientific, social, economic domains to quantify interdependencies as well as to activate a holistic and integrated approach



# Challenges

- Significant underfunding and lack of integration of *in situ* networks
- Currently responsibility for collecting data in Europe's seas and oceans is shared between a fragmented patchwork of regional, national, public and private organisations. Assembling this data into a coherent framework is a fundamental first step in planning new economic activities on the sea or monitoring ecosystem health
- create a sustainable EMODN, based on existing networks...  
.... those requiring data for a particular marine sea basin should be able to extract a complete datastream of interoperable data of known quality for that basin from one unique source.
- legislation, institutional and financial framework required
- joint long term EU and MS funding required





# Main objective of EMODNET

to facilitate long-term and sustainable access to the interoperable, high-quality data necessary to understand biological, chemical and physical behaviour of seas and oceans.

The development of EMODNET will follow the fundamental principle that marine data should be a **public good**. This means that EMODNET does not aim to provide services for end-users – be they public or private. Rather it aims to set up a publicly-funded information infrastructure that competitive, market-driven commercial services can draw on in providing the services that are needed.



# Benefits of EMODNET

Easier access to marine data

.....opens up new economic opportunities for high technology commercial enterprises in the maritime sector

.....improve the efficiency of public institutions including European marine research laboratories and academic bodies

.....significantly reduce the current uncertainty about global environmental change

.....bring forward the introduction of effective seasonal and multi-annual climate or weather forecasts which would be of benefit to nearly all economic activities – e.g. energy provision, agriculture, fisheries, tourism, etc.

.....integrate a number of currently fragmented or limited duration initiatives and thus enhance their usefulness.



# Prospective Outcomes

Sustainable, reliable, ready access to integrated data are essential to elaborate and put in practice policies; for assessments and monitoring in an era of climate change and growing pressures on the environment; for improving maritime operations and sustaining competitiveness, efficiency and growth in the maritime industries.

Greater certainty and growth on the data supply side will encourage and sustain investment in innovative solutions in data capture, collection and information service delivery for value addition to data, with attendant business opportunities.....and most importantly to support knowledge-based economies, networked societies and an integrated approach across sectors and across countries.



# A Policy Combining

The lessons of the past



And

the promise of the future





# The sea – an asset for Mediterranean states



**-In 2000, the Mediterranean coastal zone had 584 coastal towns, 175 million tourists (32% of international tourism), 750 yacht harbours, 286 trade ports, 248 energy plants, 238 desalinization plants, 112 airports and numerous high-traffic roads**

**-Tourism is currently the first foreign currency source in the Mediterranean region and its contribution to GNP can average up to 22%, as is the case for Cyprus, or 24% for Malta.**

**- Population is currently 450 million - 7% of the world's population; in 1950, northern countries 2/3 of the total population, today it is only 50% and expected to be 1/4 by 2050.**

**- Transport, tourism and industrial infrastructures are mainly concentrated in the coastal zone**



# The sea – an asset for Mediterranean states

- The aquaculture industry has expanded its production in a number of countries
- Over 360 million tonnes of oil are transported annually in the Mediterranean
- 30% of international maritime freight traffic and some 20 – 25% of oil maritime transport transit through the Mediterranean



- 90% of the total oil traffic is from east to west (Egypt-Gibraltar), passing between Sicily and Malta and following closely the coasts of Tunisia, Algeria and Morocco

