Kostas Nittis, courtesy mongoos.eu

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Copernicus Marine Core Service: State of the art and challenges for the future

Pierre Bahurel, Mercator Ocean

Kostas Nittis scientific and strategic workshop,
HCMR, Perseus, Athens, 26-27 May 2015

Outlines

1. The discussions we had **before** Copernicus
2. What is the Copernicus Marine Service **today**
3. Sharing views about the **future**

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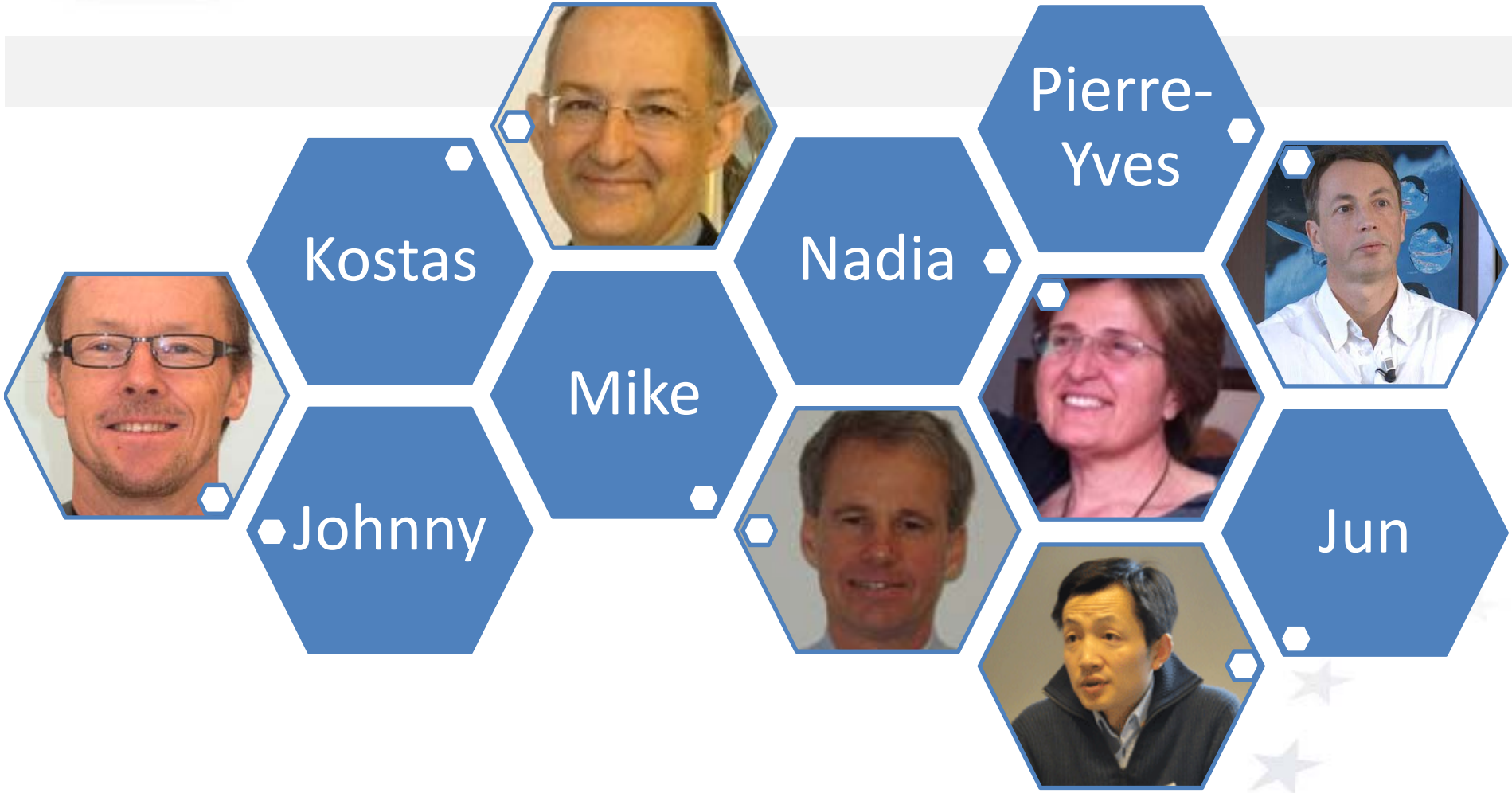
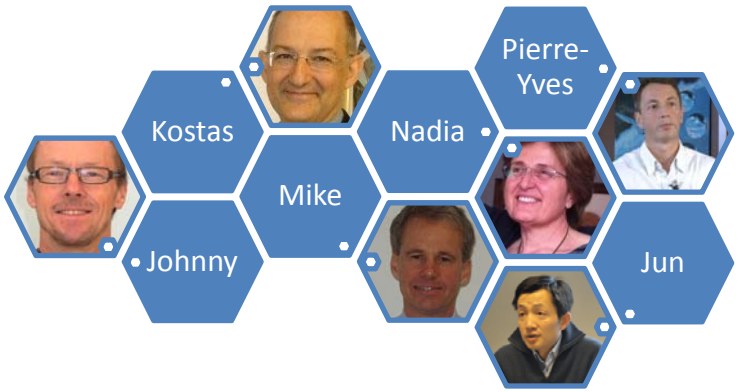
The discussions we had before Copernicus

The «MyOcean Board »,
a group of friends working together



Designing the Copernicus Marine Service, and make it possible



***Developing capacities*: MFSPP, MFSTEP, Topaz, Foam, Mercator, …**

***Working together at the EU level:* Mersea Strand 1, Mersea**

MyOcean, MyOcean2, MyOceanFollowOn

***Structuring communities:* EuroGOOS, GOOS, GODAE Ocean View, …**

***Supporting EU in the design and decision:* A Marine Service Strategic Plan for EU in 2005, a successful demonstration achieved and a decision in 2015**

What we said 10 years ago
BEING AMBITIOUS

An EU Marine Service with a clear ambition

- Operational AND scientifically assessed
- Observations AND models
- Worldwide AND European-wide coverage
- Designed for long-term sustainability
- Generic but used by thousands of users

What we said 10 years ago
BEING OPEN

A service « open to all » and built on a pan-European cooperation

- An open and free data policy
- A network of producers throughout Europe
- A modular organization to welcome regular evolutions

What we said 10 years ago
BEING SIMPLE

Add value by simplifying

- A « core » service delivering a generic information
- A limited number of products
- A single point of access
- Common standards

What is the Copernicus Marine Service today

Copernicus, EU program with a strong marine component

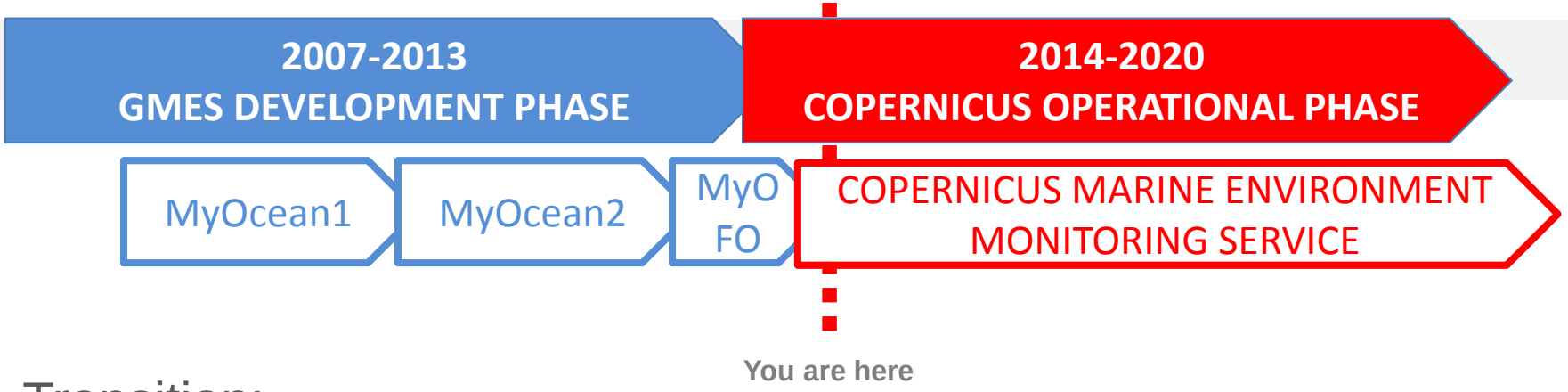
SATELLITES

IN SITU

SERVICES

- MARINE
- ATMOSPHERE
- LAND
- SECURITY
- EMERGENCY
- CLIMATE

A new service, a new framework



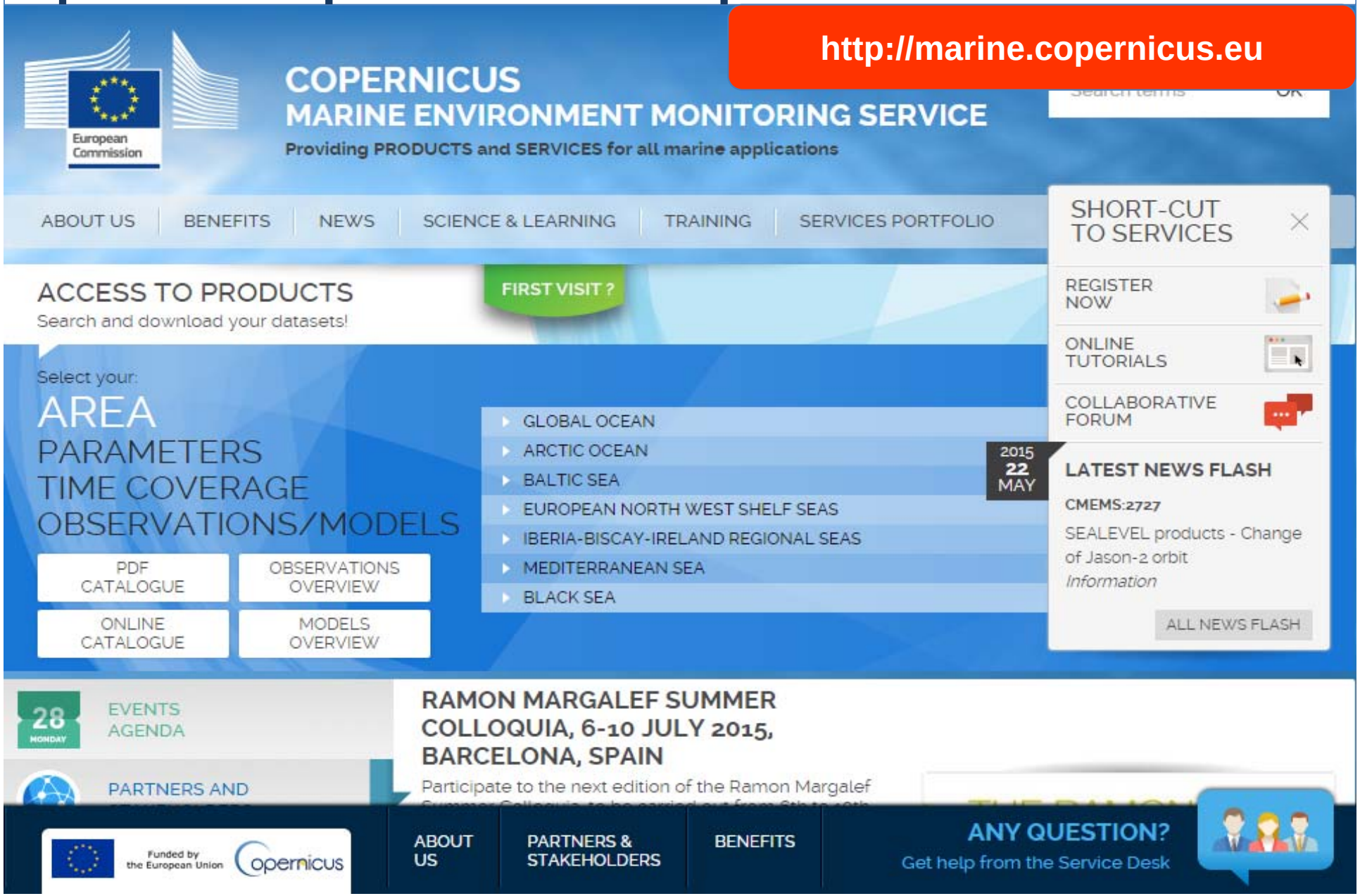
Transition:

2013: EU **Regulation** for the operational « Copernicus »

2014: EC **negotiation** of the different Copernicus service contracts

2015: Kick-off of the **operational** « Copernicus Marine Service »

Early this month, Mercator Ocean started the operational phase of the Copernicus Marine Service.



Transition from MyOcean to CMEMS

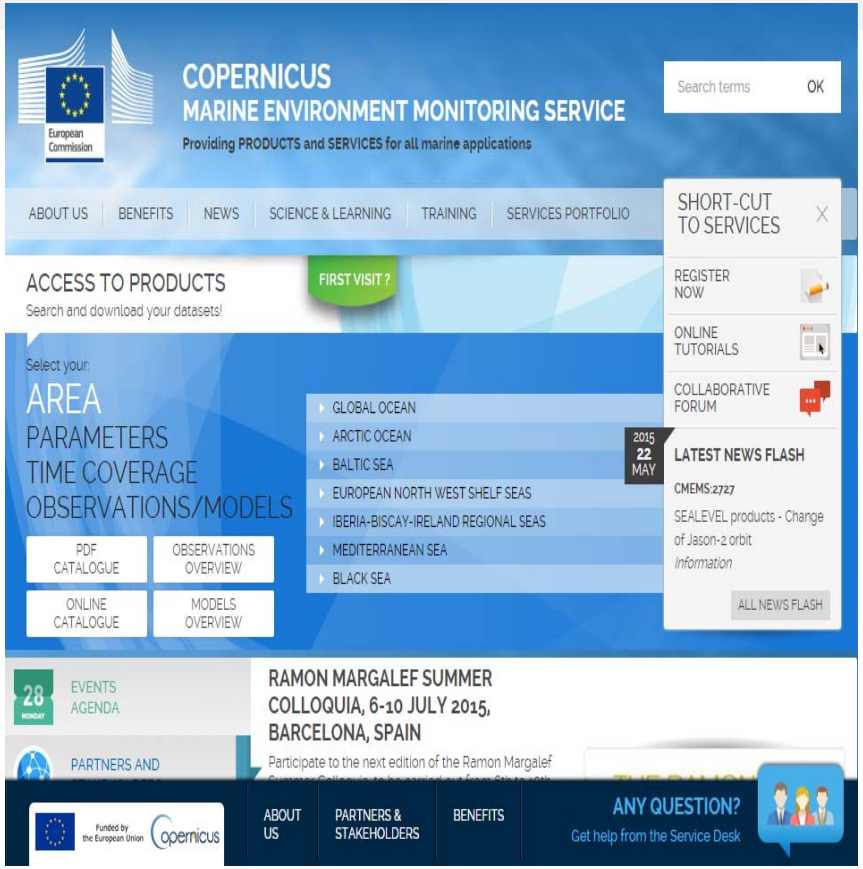
- **November 2014: Mercator Océan entrusted** by EU to implement the « Copernicus Marine Environment Monitoring Service » (CMEMS).
  - Delegation Agreement signed : Nov 2014 – March 2021

- **January 2015: Mercator Océan opens tenders** to select contractors for the 9 critical components of the service
  - 4 Thematic Assembly Centres ; 5 Monitoring and Forecasting Centres
  - Open procurement procedure ; publication / competition / evaluation / selection
  - Contracts awarded mid-April

- **May 2015: Mercator Océan starts CMEMS** operations, and stops MyOcean operations
  - Seamless transition for users ; MyOcean v5 = CMEMS v1

Copernicus Marine Service
1) a unique service

marine.copernicus.eu



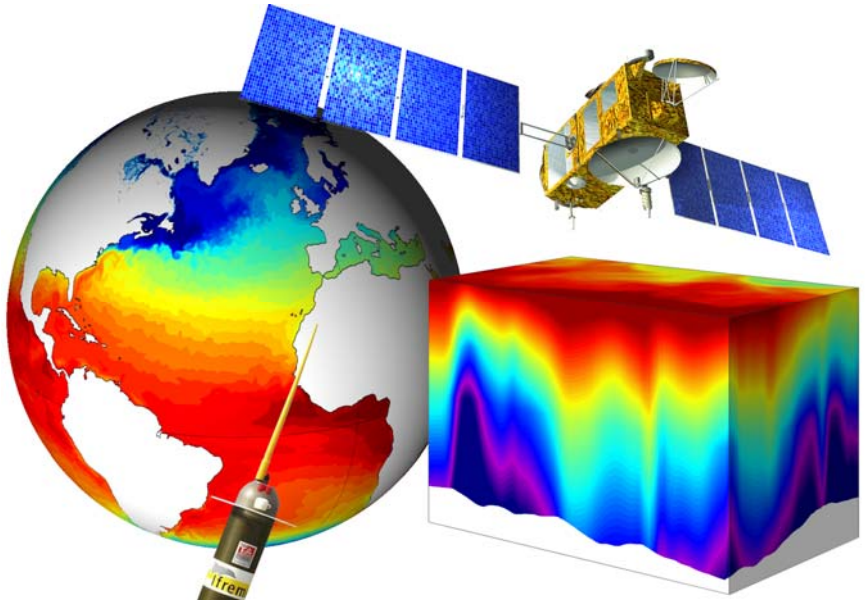
EASY ACCESS TO OPERATIONAL OCEANOGRAPHY PRODUCTS FOR ANYONE

ONE-STOP-SHOP-WINDOW

WORLD OCEAN / EUROPEAN SEAS

MARINE ESSENTIAL VARIABLES

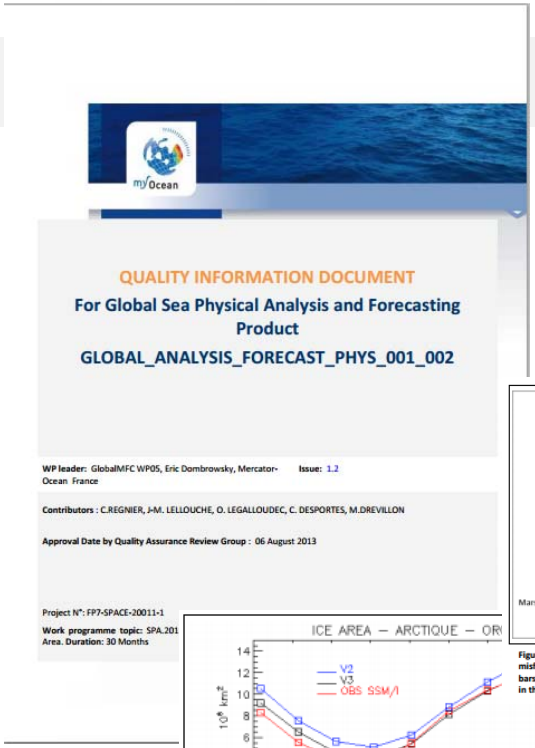
Copernicus Marine Service
2) an integrated information



OPERATIONAL OCEANOGRAPHY BUILT UPON MULTIPLE SOURCES OF INFORMATION

OBSERVATIONS AND MODELS
PHYSICS AND BIOGEOCHEMISTRY
REAL-TIME AND REANALYSES

Copernicus Marine Service
3) a fully assessed information


QUALITY INFORMATION DOCUMENT

For Global Sea Physical Analysis and Forecasting Product

GLOBAL_ANALYSIS_FORECAST_PHYS_001_002

WP leader: GlobalMFC WP05, Eric Dombrowsky, Mercator-Ocean France Issue: 1.2

Contributors : C.REGNIER, J-M. LELLOUCHE, O. LEGALLOUDEC, C. DESPORTES, M.DREVILLON

Approval Date by Quality Assurance Review Group : 06 August 2013

Project N°: FP7-SPACE-20011-1

Work programme topic: SPA.201
Area. Duration: 30 Months

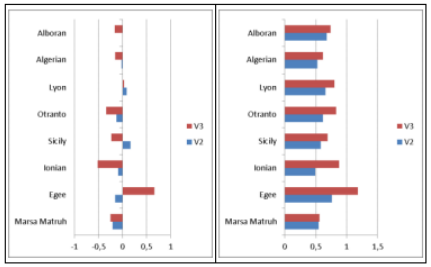


Figure 11: Comparison of SST data assimilation forecast scores (left: average misfit in K, right: RMS misfit in K) averaged on calibration period in the Mediterranean MED region. For each region, the bars refer respectively to V2 (blue) and V3 (red). The geographical location of regions is displayed in the annex

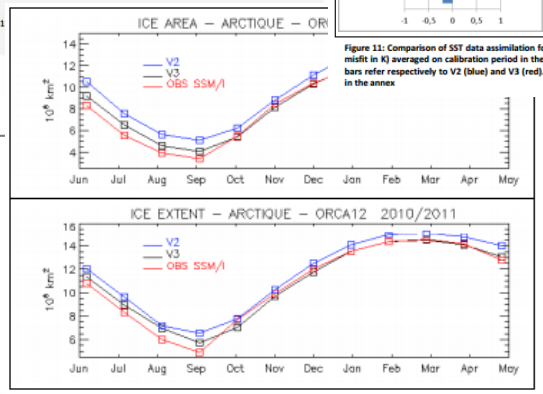


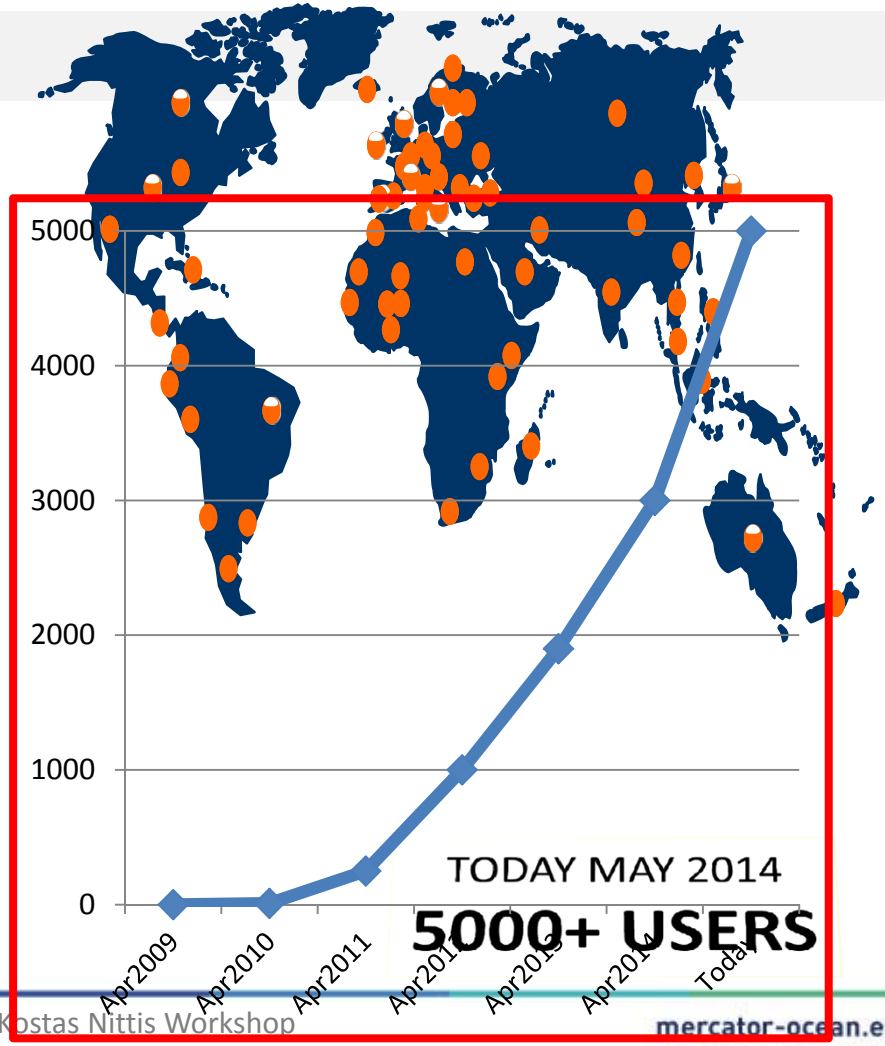
Figure 23: Sea ice area (upper panel, 10^3 km2) and extent (lower panel, 10^3 km2) in the Arctic in HR global products V2 (blue line), HR global products V3 (black line) and SSM/I observations (red line) for a one year period ending in June 2011

METHODS FOR ASSESSING OPERATIONAL OCEANOGRAPHY

INTERNATIONAL METRICS

QUALITY INFORMATION DOC ATTACHED TO EVERY PRODUCT

Copernicus Marine Service
4) a sincere focus on users



A UNIQUE SERVICE DESK
WITH A USER SATISFACTION 4.8/5

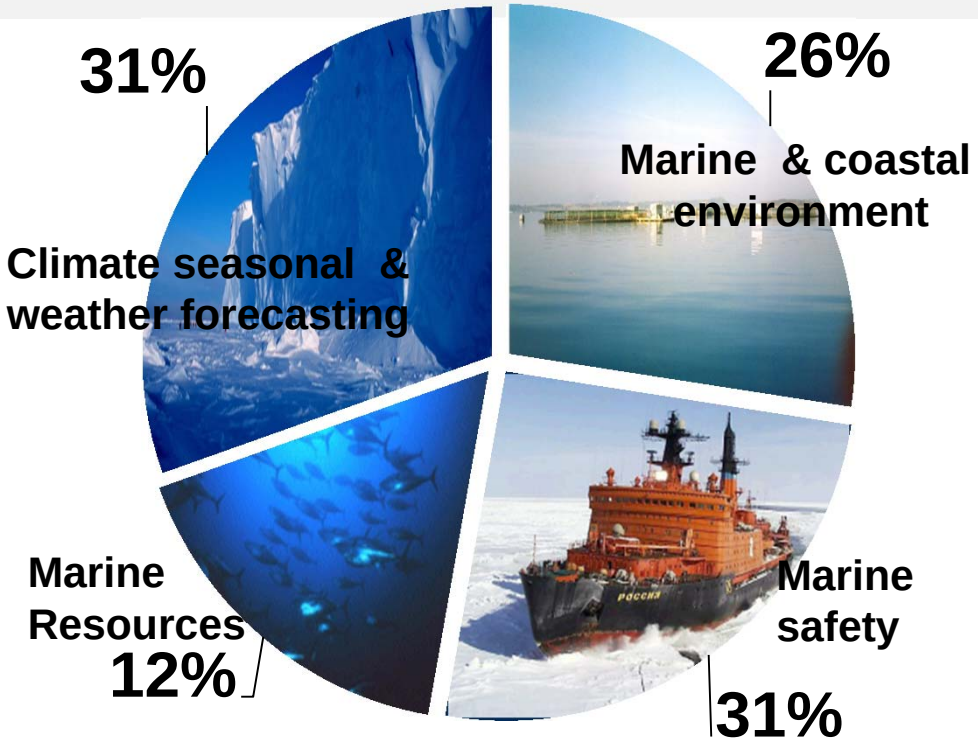
5000+ USERS OF THE MARINE SERVICE, AND +130 EVERY MONTH

0 IN 2009
1000 AFTER 3 YEARS (MYOCEAN)
4000 AFTER 5 YEARS (MYOCEAN2)

50% RESEARCH / 50% OPERATIONAL

113 DIFFERENT COUNTRIES

Copernicus Marine Service
5) a user base widely opened



A CLEAR RESPONSE FROM OUR 4 TARGETED AREAS

MARINE & COASTAL ENV.
MARINE SAFETY
MARINE RESOURCES
CLIMATE & WEATHER

What are the priorities in 2015

1st Semester : service continuity for operations

→ Setting up of « operational service elements »

→ seamless transition for users from MyOcean (ending at the end of April) and CMEMS (starting 1st of May)

→ ***Achieved***.

2nd Semester : engagement of stakeholders for innovations

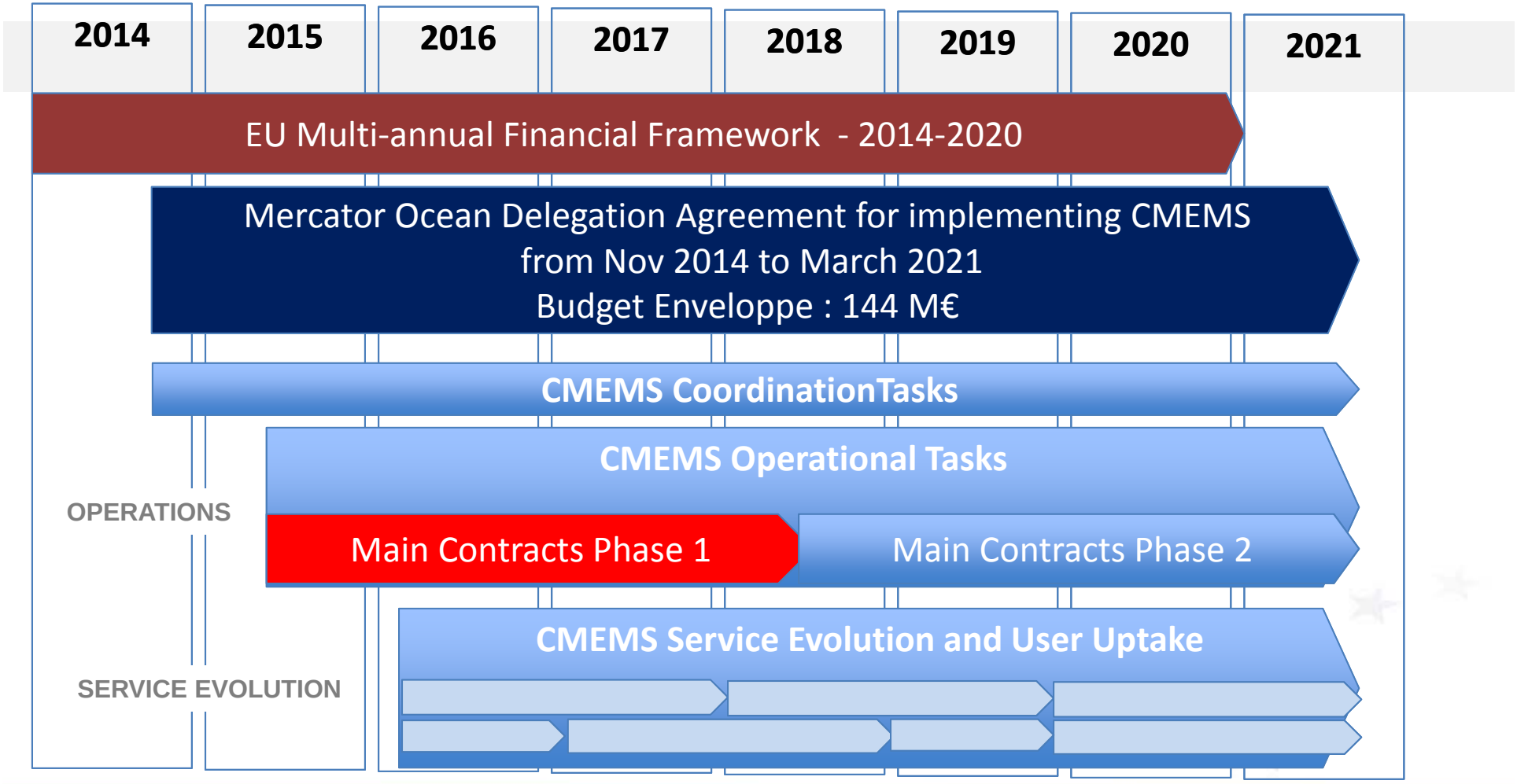
→ Setting up of « framework service elements »

→ « service evolution » for bringing S&T innovations

→ « User uptake » for bringing user innovations

→ ***In preparation.***

Timelines


2014
2015
2016
2017
2018
2019
2020
2021
EU Multi-annual Financial Framework - 2014-2020
Mercator Ocean Delegation Agreement for implementing CMEMS
from Nov 2014 to March 2021
Budget Enveloppe : 144 M€
CMEMS CoordinationTasks
CMEMS Operational Tasks
OPERATIONS
Main Contracts Phase 1
Main Contracts Phase 2
CMEMS Service Evolution and User Uptake
SERVICE EVOLUTION

The main building blocks: priority on MFC/TAC for operations

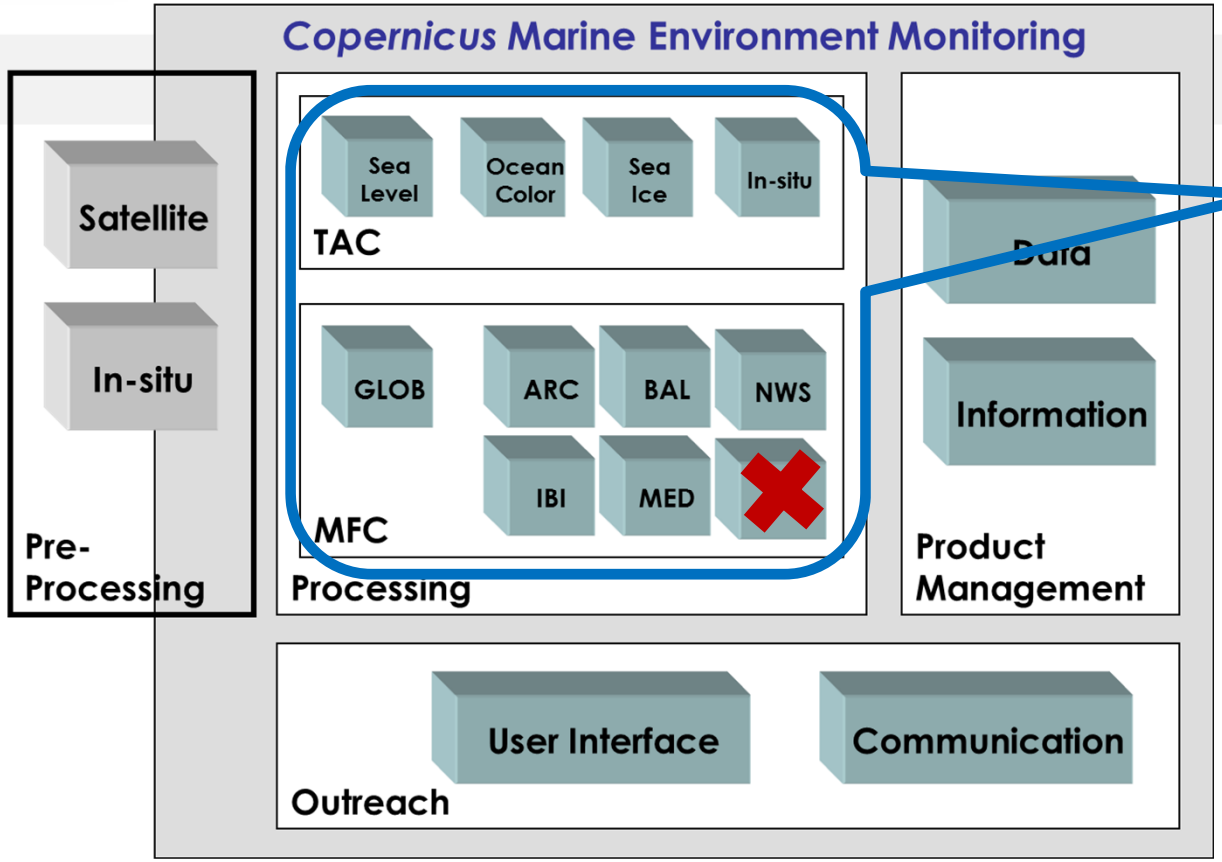


Figure 1: System overview of *Copernicus* Marine Environment monitoring service chain as presented by the European Commission to the GMES/Copernicus User Forum.

From the Technical Annex of the Delegation Agreement between the EU and Mercator Ocean

Contract #4
Operators for the In Situ TAC

- Sea Level TAC
- Ocean Color TAC
- Ocean & Sea Ice TAC
- **In Situ TAC**
- Arctic MFC
- Baltic MFC
- Atl. NWS MFC
- Atl. IBI MFC
- Med Sea MFC

Led by Ifremer (S.Pouliquen)

A group of 16 contractors: ACRI (France), BSH (Germany), CLS (France), CNRS (France), EuroGOOS office (EU), HCMR (Greece), Ifremer (France), IMR (Norway), IOBAS (Bulgaria), Met Office (UK), NIVA (Norway), OGS (Italy), Puertos del Estado (Spain), SMHI (Sweden), SYKE (Finland)

Contract #9
Operators for the Med Sea MFC

- Sea Level TAC
- Ocean Color TAC
- Ocean & Sea Ice TAC
- In Situ TAC
- Arctic MFC
- Baltic MFC
- Atl. NWS MFC
- Atl. IBI MFC
- **Med Sea MFC**

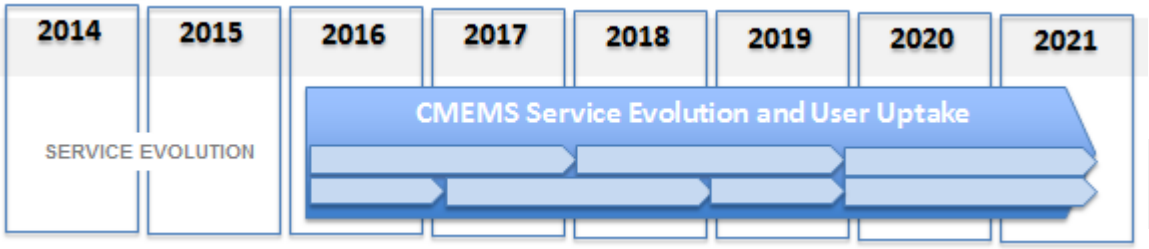
Led by CMCC (G.Coppini)

A group of 4 contractors CMCC (It), INGV (It), OGS (It), HCMR (Gr)

With sub-contractors : CLS (Fr), SOCIB (Es), ORION (Cy), CINECA (It)

Sharing views about the future

Short-term : engaging our community in innovation



Opening a series of tenders to bring innovations in the service:

1) Service evolution activities aim at preparing the future versions of the service by taking into account the relevant **scientific and technological advances**

2) User uptake activities aim at increasing satisfaction and confidence of existing users and at fostering the service uptake by new users.

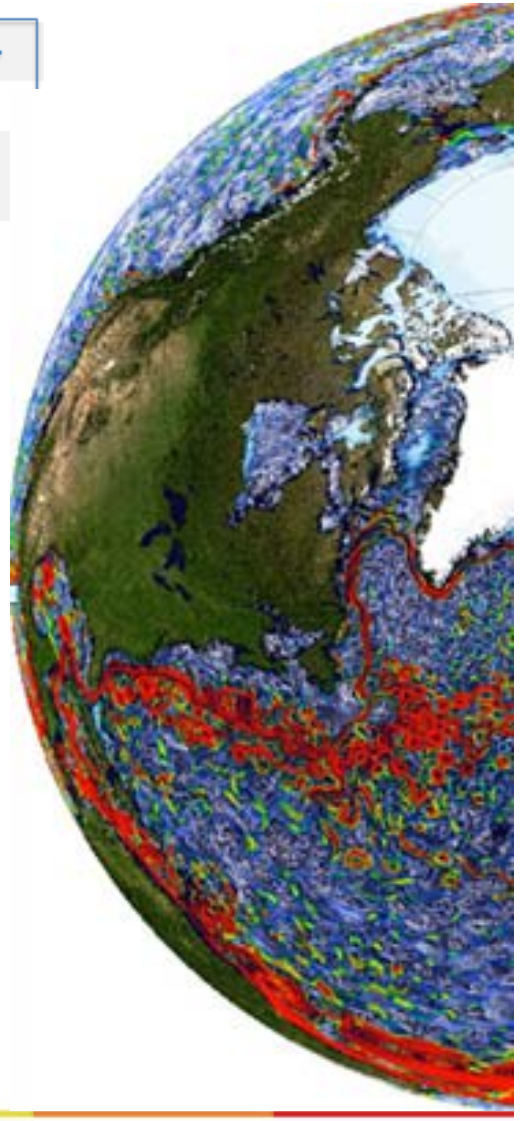
Preparatory Workshop
Brussels, 7-8 September 2015
Save the date

Sharing views: (1) what we have when starting the Marine Service

2014	2015	2016	2017	2018	2019	2020	2021

A unique opportunity to set up a Marine Service for EU

- sustained for the future decades to entrench the existence of a European Marine Service
- based on the vision, skills and needs of the marine community
- a framework with, for the first time, 6 years ahead of us
- a challenge and a responsibility



Sharing views: (2) what we plan for the Marine Service in 2020

Being AMBITIOUS

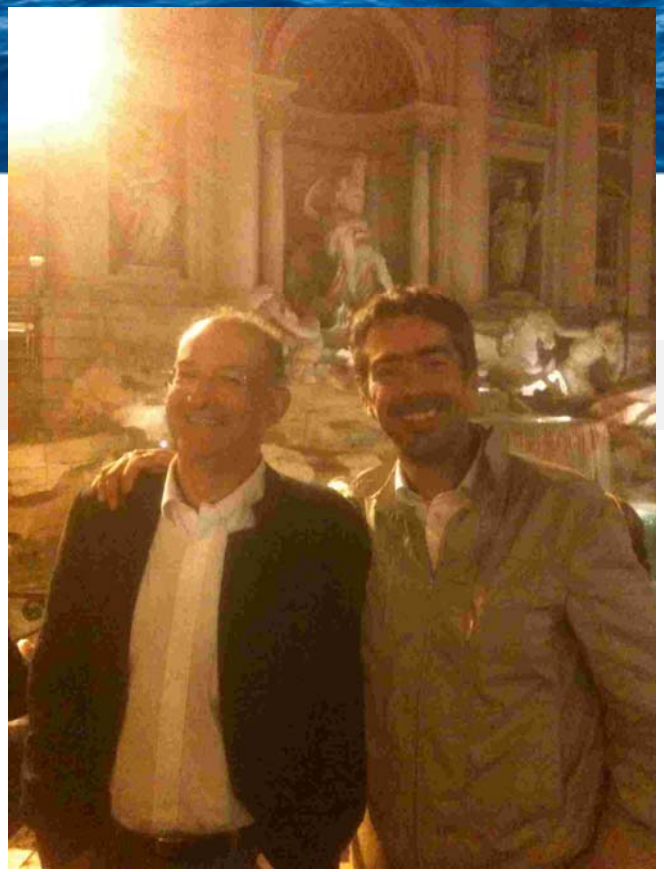
- A reference for ocean information service in the **world**
- An **operational** service but constantly **improved**
- A **solid** EU foundation for future **challenges**

Being OPEN

- To new **skills** (observations, ecosystems, …)
- To new **communities** (industry, users, …)
- To new **methods** for producing **information**

Being SIMPLE

- A Marine Service entirely devoted to « **marine** »
- A Marine Service **serving** the users
- A Marine Service **adaptative** and **focussed**



Conclusion

The **Copernicus Marine Service** has started its operational phase, after a decade of successful R&D demonstrations.

The **success** is not only made of scientific and technical achivements: without **a solid vision** of what we want, where we go, and how we want to reach this point, this is not possible.

Kostas Nittis was indeed a forward-looking person, and also able to efficiently pave the way for the future.
Beyond the ambition (target), the openness (cooperation) and the simplicity (reality), he was adding **another value**: working for a community beyond your own interest.

This is **how we shall continue** implementing the Copernicus Marine Service.