Copernicus Marine Environment Monitoring Service (CMEMS) and Polar regions monitoring

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Mercator Océan

European Commission

Copernicus
Europe's eyes on Earth

Implemented by

MERCATOR OCEAN

Outlines

1. Copernicus Marine Service
2. Polar monitoring

Copernicus

Marine Environment Monitoring

Service

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(1) A European Service part of

SATELLITES

IN SITU

SERVICES

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

European Commission

GROWTH
Internal Market, Industry, Entrepreneurship and SMEs

2007-2013
GMES DEVELOPMENT PHASE

2014-2020
COPERNICUS OPERATIONAL PHASE

(2) Entrusted to Mercator Ocean by the European Commission

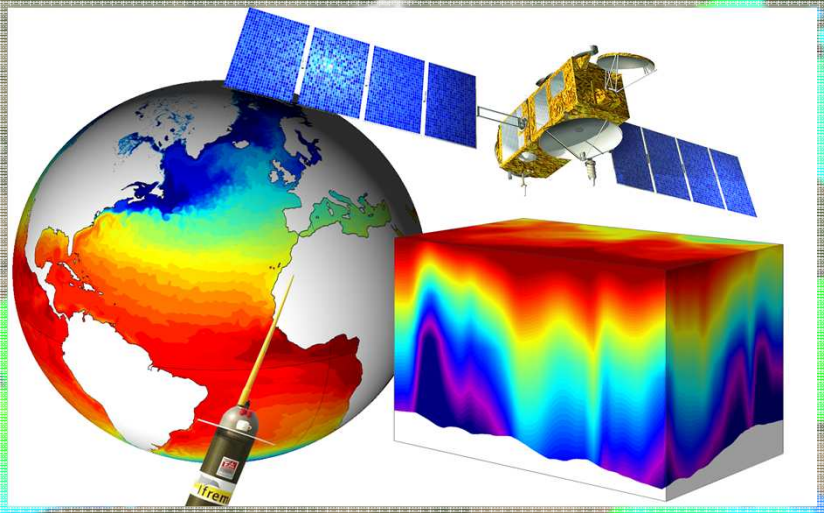
- ✓ MyOcean legacy (2009/2015)
- ✓ Delegation agreement (2014/2021)
- ✓ To implement and operate the Copernicus Marine Service.

(3) Networking ocean data producers

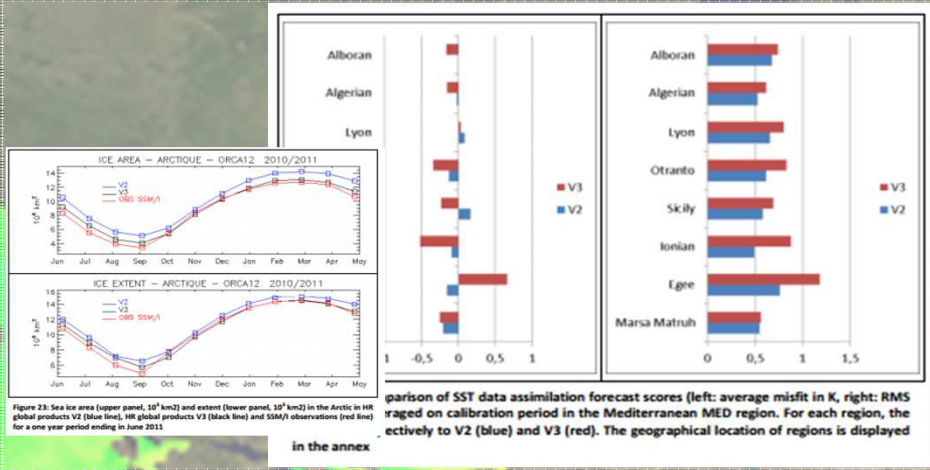
- ✓ A network of European data providers
- ✓ State-of-the-art scientific knowledge
- ✓ Unique products portfolio

European Commission | Copernicus Europe's eyes on Earth | MERCATOR OCEAN OCEAN FORECASTERS

(4) Combining Observations and Models



Combining observations from space and from in situ with Ocean/assimilation models



Assessing carefully the information content and accuracy with state-of-the art science

(5) Full open and Free , accessible via a single portal

marine.copernicus.eu

(6) Providing reliable Ocean information

REANALYSES
10 to 45 years

REAL-TIME
Daily, hourly

FORECAST
2 to 10 days

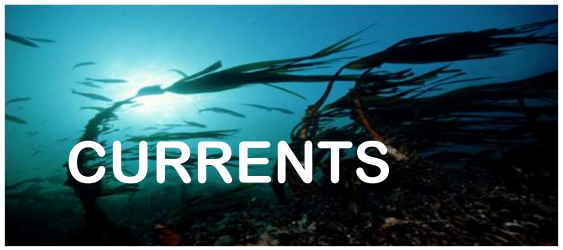
DISCOVER

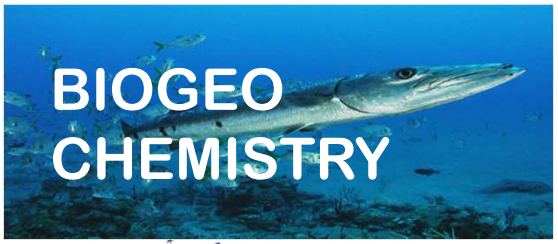
VIEW

DOWNLOAD

Open & Free

ESSENTIAL OCEAN VARIABLES





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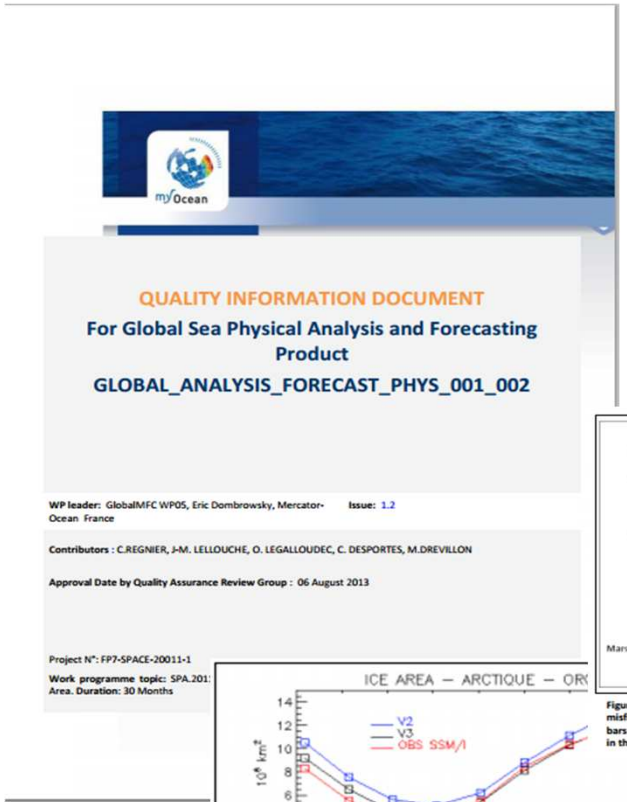
(7) Scientifically assessed



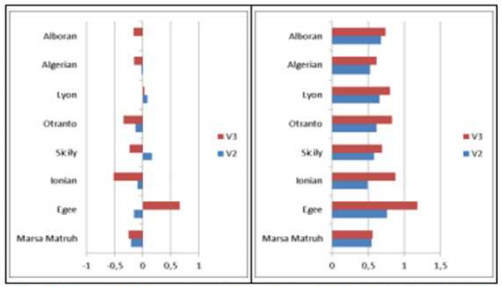


Figure 11: Comparison of SST data assimilation forecast scores (left: average misfit in K, right: RMS misfit in K) averaged on calibration period in the Mediterranean MED region. For each region, the bars refer respectively to V2 (blue) and V3 (red). The geographical location of regions is displayed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

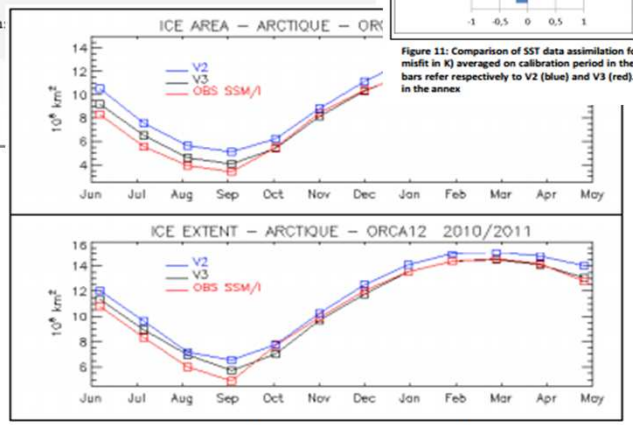


Figure 23: Sea ice area (upper panel, 10^3 km2) and extent (lower panel, 10^3 km2) in the Arctic in HR global products V2 (blue line), HR global products V3 (black line) and SSM/I observations (red line) for a one year period ending in June 2011

METHODS FOR ASSESSING OPERATIONAL OCEANOGRAPHY

INTERNATIONAL METRICS

QUALITY INFORMATION DOC ATTACHED TO EVERY PRODUCT

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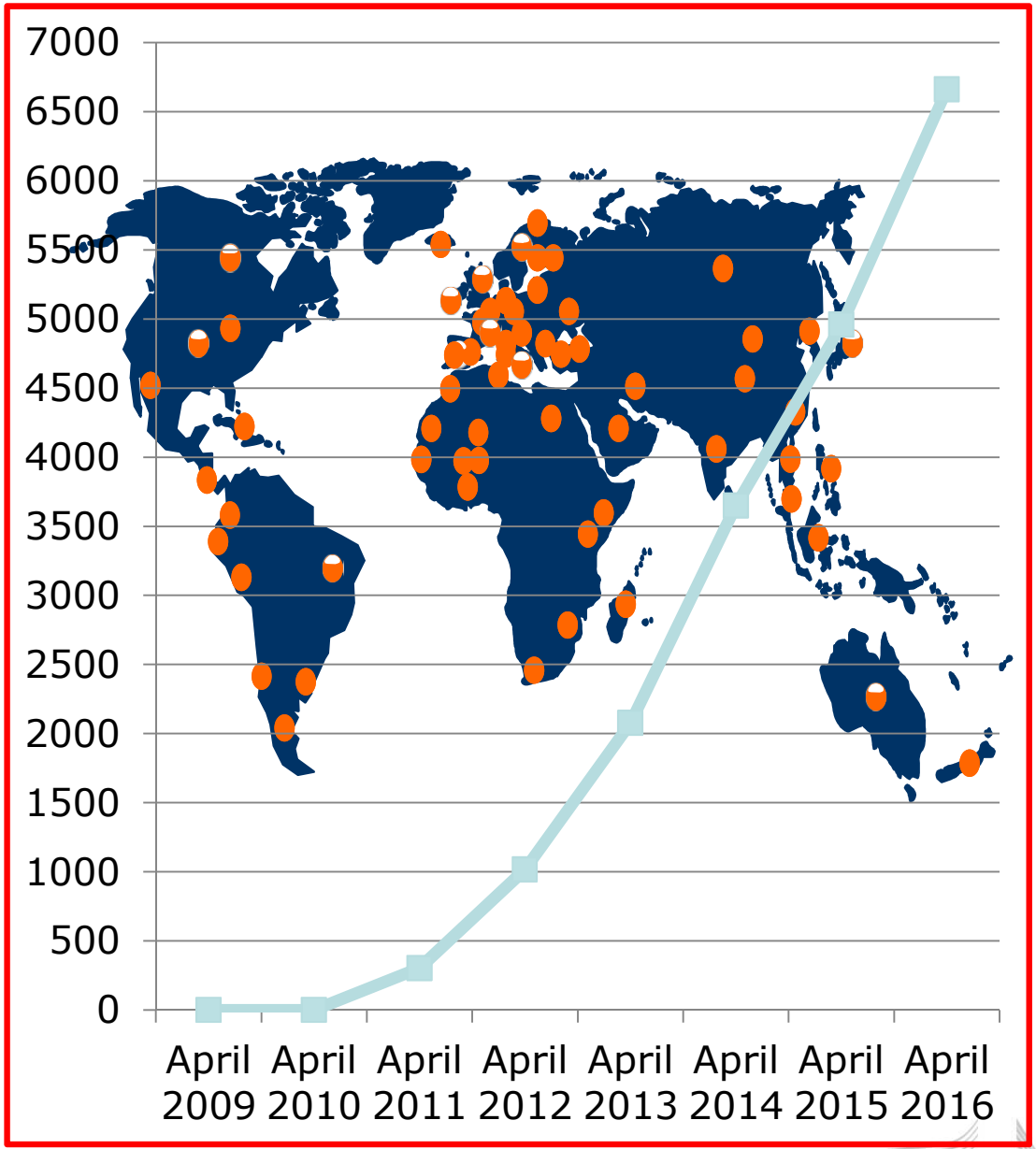
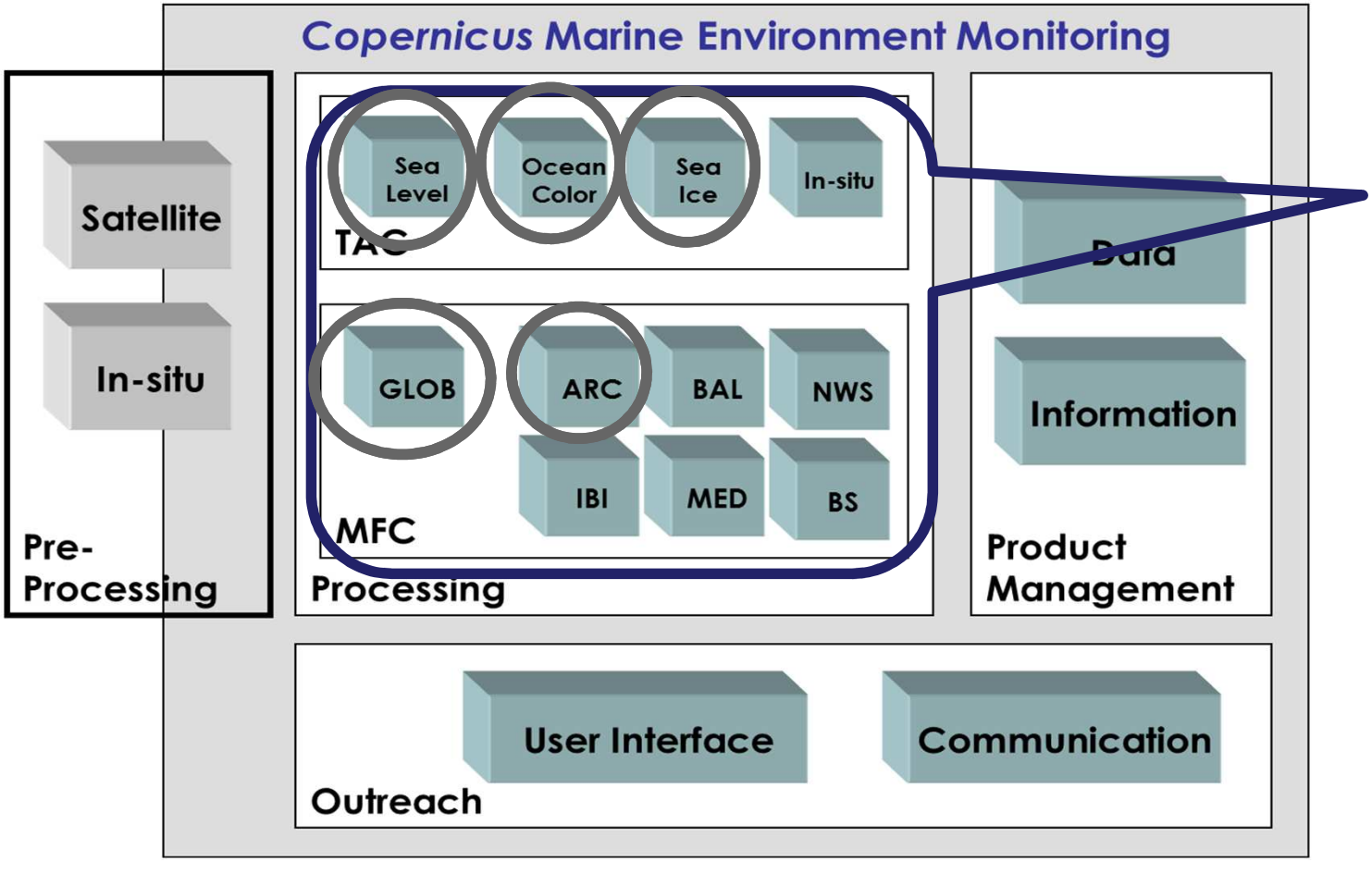
(8) To many users worldwide



- ✓ **Close to 7000 Subscribers**
- ✓ **+120 EVERY MONTH**
- ✓ **120 COUNTRIES**
- ✓ **150 Tb disseminated worldwide per year**
- ✓ **98% availability of data**
- ✓ **4.8/5 user satisfaction metric**

Polar Monitoring

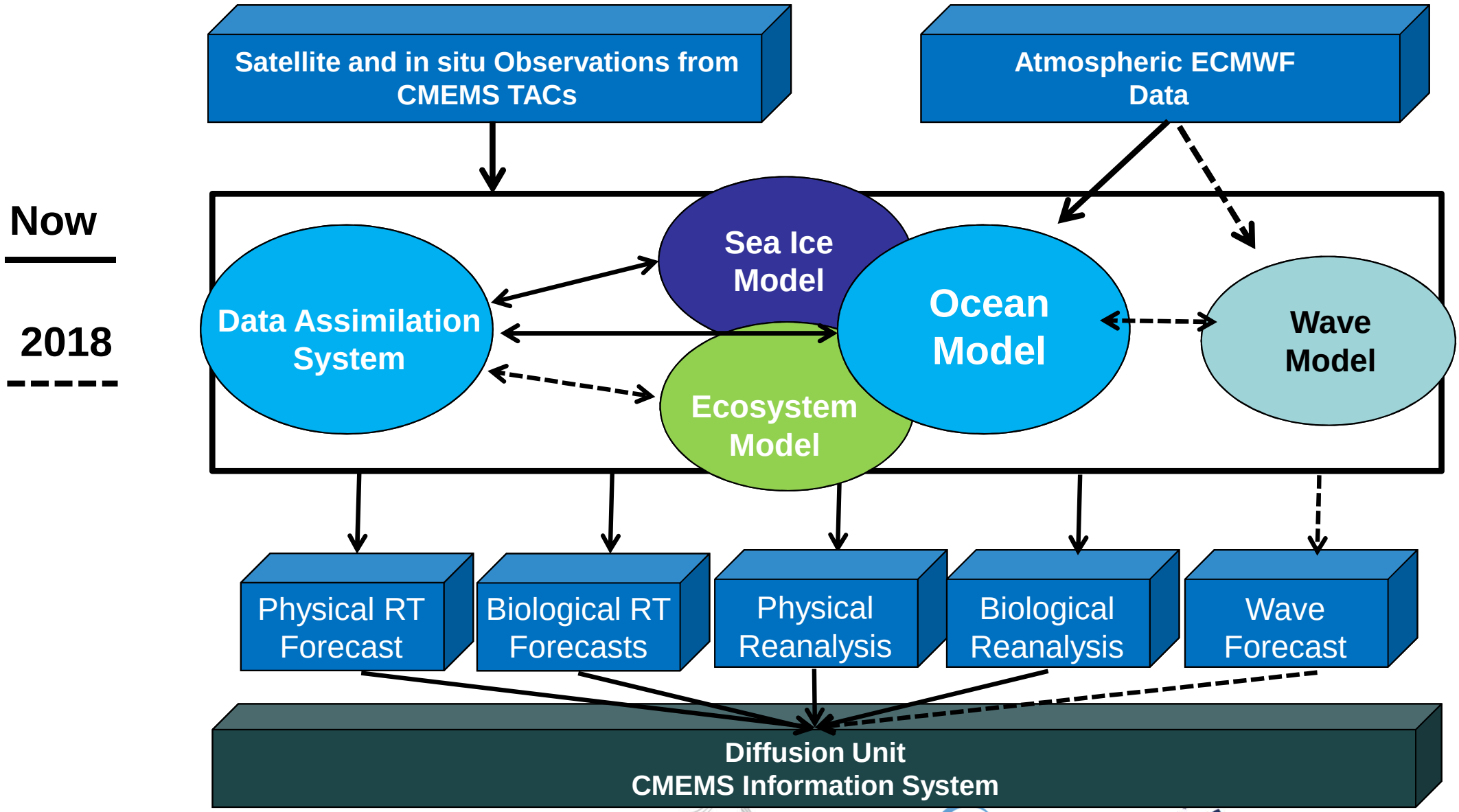
CMEMS technical « internal » Framework: building blocks



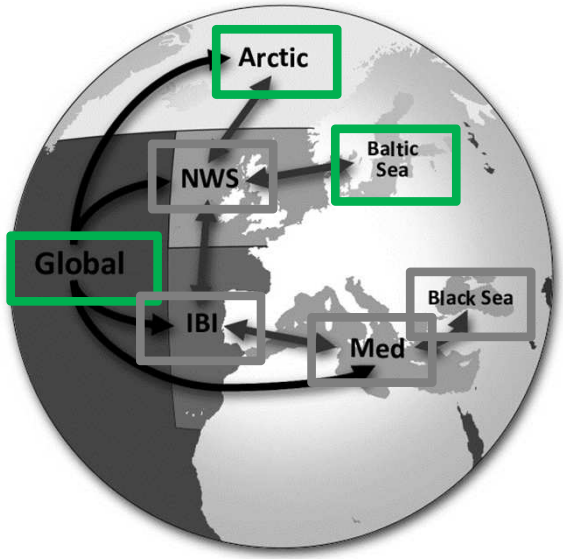
Polar (Sea Ice) Products

The Copernicus Marine Environment Monitoring Service (CMEMS) provides regular and systematic reference information on the physical state, variability and dynamics of the ocean and marine ecosystems for the global ocean and the European regional seas with a free open

Arctic and Global MFC



Catalogue of Products



Model products

SEA ICE COVERAGE, THICKNESS, DRIFT, SURFACE TEMPERATURE

Surface

NRT, Forecast and analysis

Source: 3 MFCS (Arctic, Baltic and Global)

In Situ Observation products

Satellite Observation products

SEA ICE COVERAGE, THICKNESS, DRIFT, EDGE, TYPE, ICEBERG DENSITY

Surface

NRT and Reprocessing

Source: OSI TAC

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Ice products in CMEMS

MFC/TAC

Sea Ice Drift

METno:ARC,ARC_RAN;MO : GLO,GLO_RAN ; UkMet : GLO_CPL,GLO_RAN; CMCC: GLO_RAN; LGGE :GLO_RAN; CERSAT : ARC ; FMI: BAL; METno : ARC & ANT ; DTU : ARC &ANT

Sea Ice Thickness

METno:ARC,ARC_RAN;SMHI:BAL,BAL_RAN;DMI: BAL_RAN ; MO: GLO, GLO_RAN ; UkMmet : GLO_CPL,GLO_RAN; CMCC : GLO_RAN ; LGGE: GLO_RAN; FMI : BAL+SAR; METno : GLO

Snow Thickness

METno : ARC, ARC_RAN
LGGE : GLO_RAN

Sea Ice Concentration

METno : ARC,ARC_RAN ; MO: GLO,GLO_RAN ; UKMet : GLO_CPL,GLO_RAN ; CMCC : GLO_RAN ; DMI : BAL,BAL_RAN ; LGGE : GLO_RAN ; Metno : ARC, GLO ; DMI : ARC ; FMI : ARC; DMI : SST_BAL; MEF : SST_EUR ;UKMet : SST_GLO

Sea Ice Edge

Metno : ANT,GLO

Sea ice albedo

METno : ARC

Sea Ice Type

METno :GLO

Density of icebergs

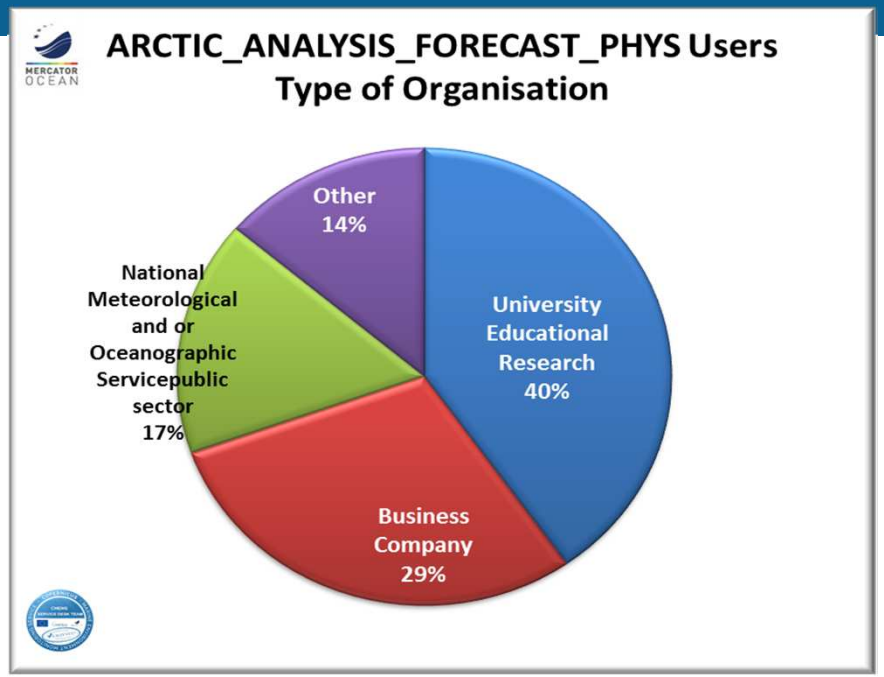
DMI : ARC

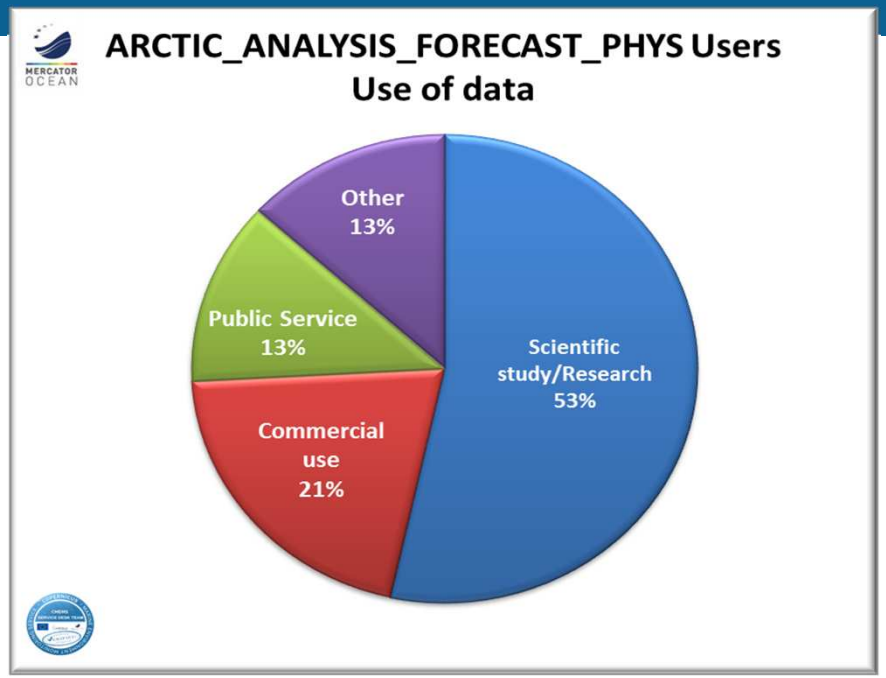
Ice surface temperature

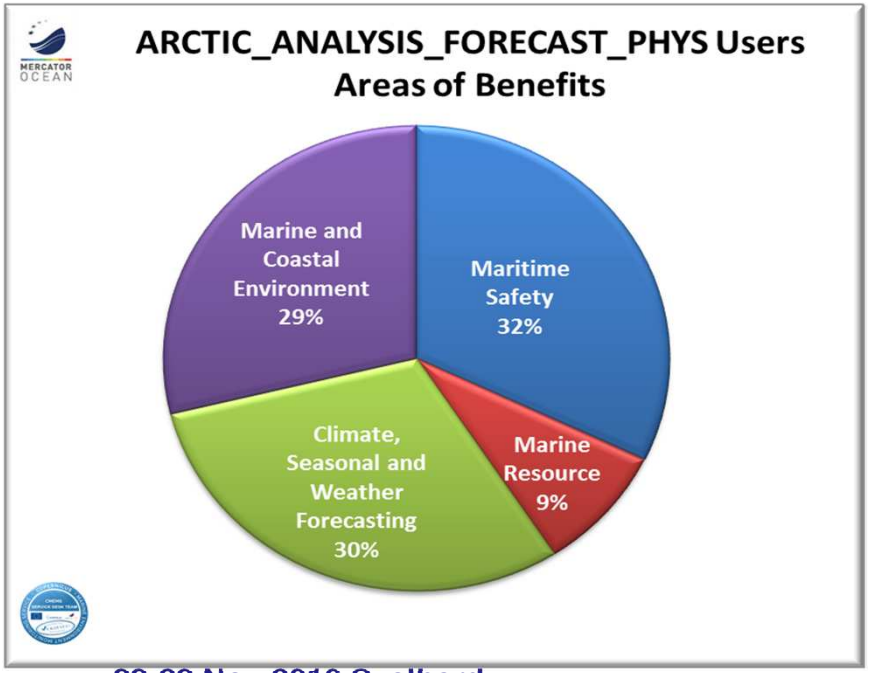
DMI : ARC

See catalog : http://marine.copernicus.eu/web/69-interactive-catalogue.php

ARCTIC_ANALYSIS_FORECAST_PHYS Users







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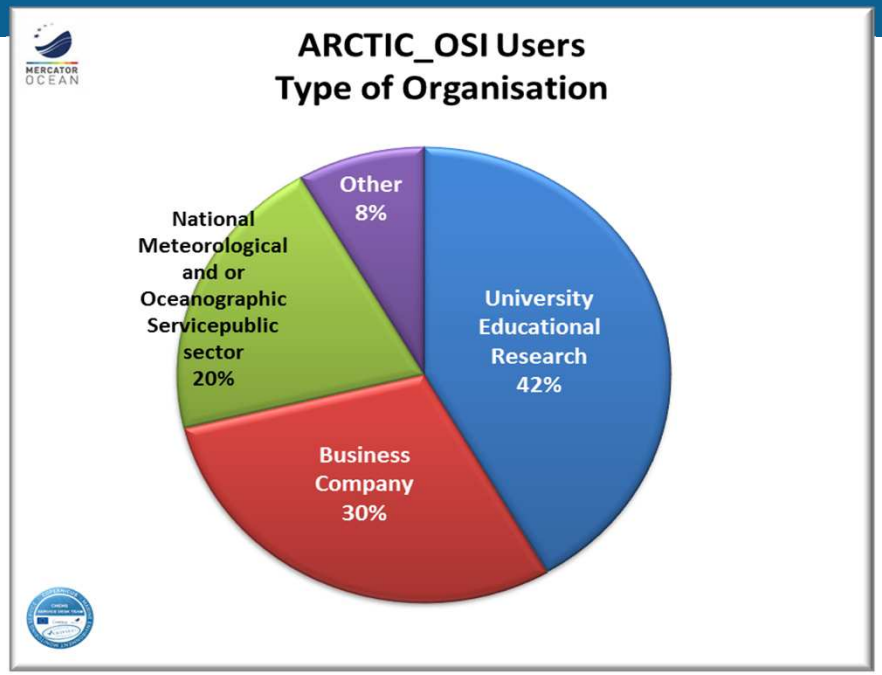
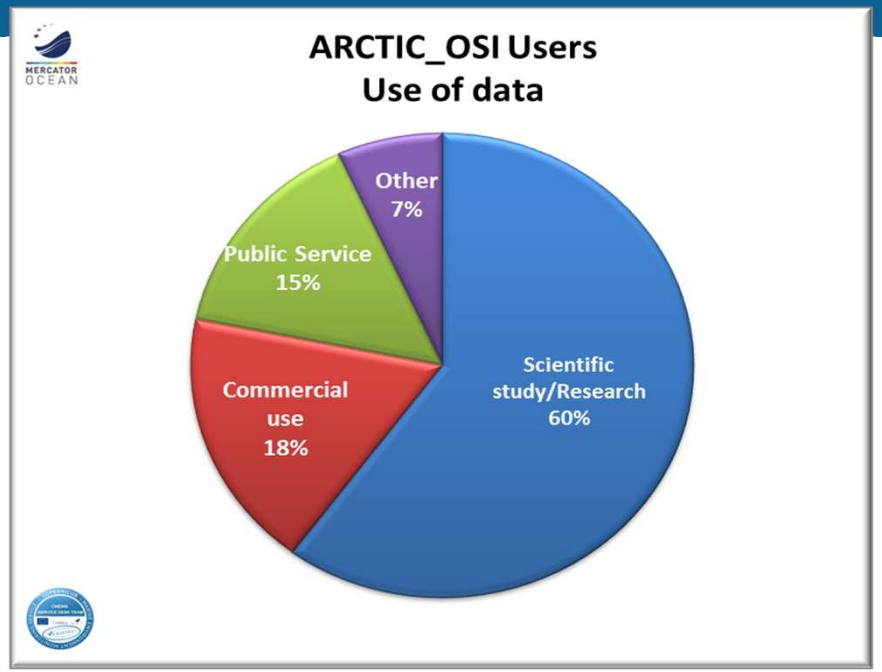
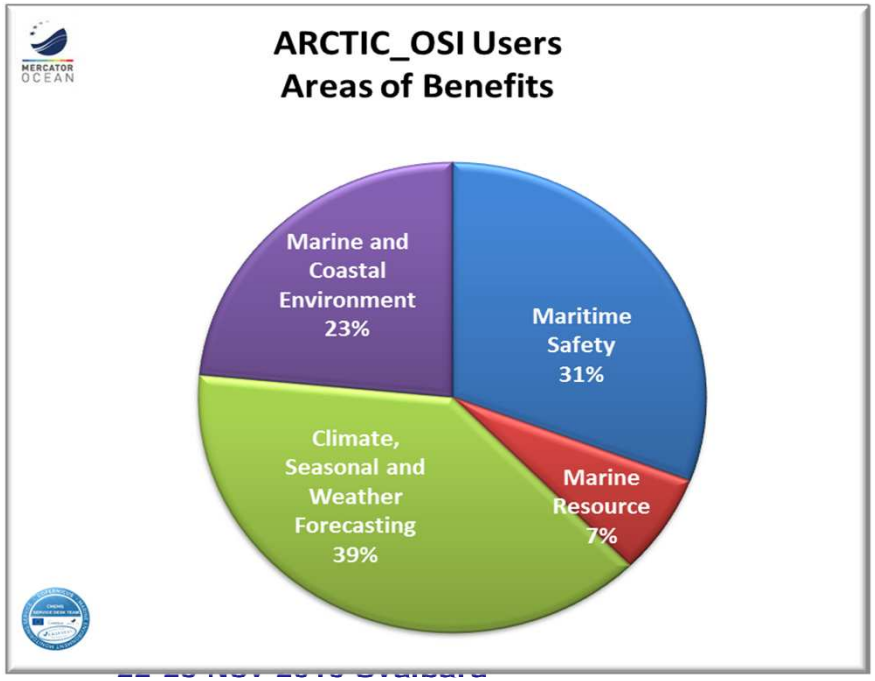
ARCTIC_OSI DATA Users







153 distincts Users
1,5 Tb downloaded