

EU COPERNICUS MARINE SERVICE

**AN ESSENTIAL EU MARINE DATA CORE SERVICE
FOR BLUE GROWTH**

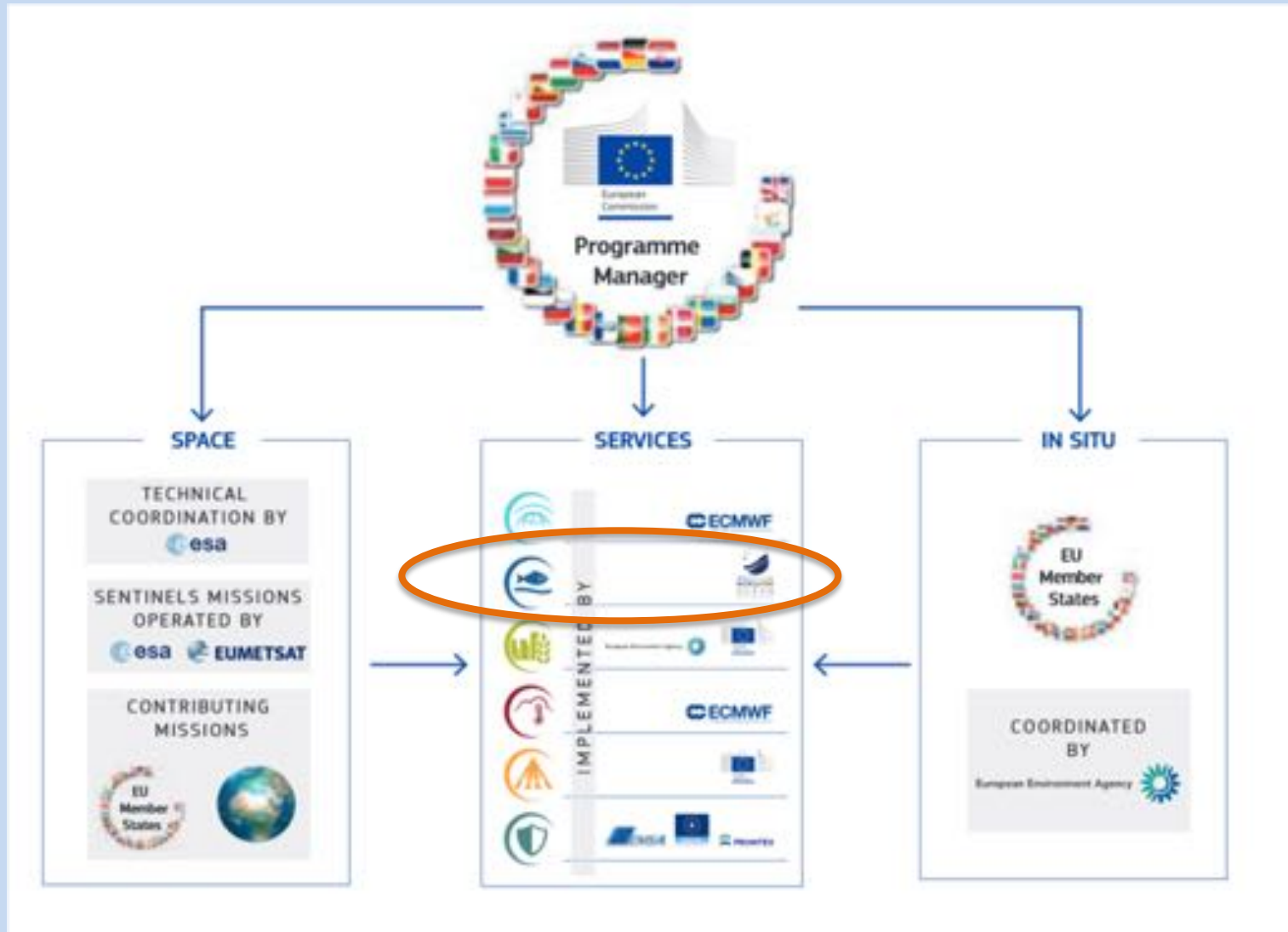
Presented by Prof. A. Drago



Implemented by



EU Copernicus Programme: a constellation of actors



Entrusted to Mercator Ocean by the EC

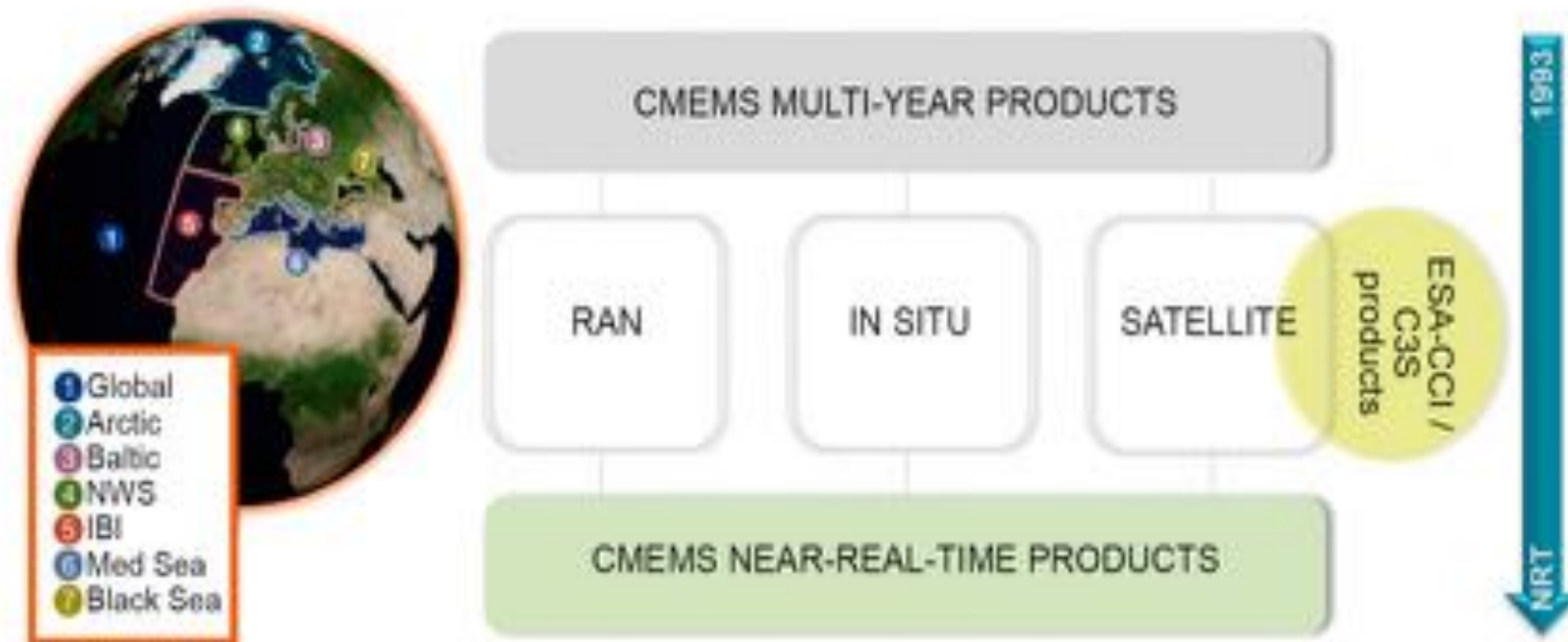


- **Non-profit company based in France** (*MyOcean legacy 2009/2015*)
- **So far owned by 5 national agencies**
- **Global Ocean Analysis and Forecasting center**
- **20 years expertise in Operational Oceanography** (*science-based producer, Service provider with International leadership and network*)
- **Delegation agreement** (2014/2021) for implementing and operating the Copernicus Marine Service

The Copernicus Marine Service in a nutshell



<http://marine.copernicus.eu/>



CMEMS Subscribers update 2017



- **10 000 subscribers**
 - *50% Science*
 - *20% National Services*
 - *20% Commercial*
- **98% on-time deliveries**
- **4,7/5 User Satisfaction Rate**

COPERNICUS MARINE SERVICE CONTRIBUTION TO BLUE GROWTH

1. Networking / Contracting Expert producers
2. Offering State-of-the-Art products
3. Targeting downstream services
4. Listening to User needs for a diversified and evolving offer

1. A Network of Expert Ocean Information Producers



- Expert Producers are contracted by Mercator Ocean for CMEMS.
- State-of-the-art scientific knowledge
- Unique products portfolio

**10 EXPERT PRODUCERS
OF MED SEA PRODUCTS**
(observations, models)

ITALY : CNR, OGS, CMCC, INGV
SPAIN : SOCIB, PUERTOS del
ESTADO
FRANCE: ACRI, CLS, IFREMER
GREECE: HCMR

140 products out of which
29 in the Mediterranean Sea

- InSitu products
- Satellite-based products
- Modelling products
- Physical & Biogeochemical variables



- Areas
1. Global
 2. Arctic
 3. Baltic
 4. NWS
 5. IBI
 6. Med Sea

4 Mediterranean Sea products among the “TOP20” downloaded:

- MED Forecasting (Model)
- Sea Surface Temperature (Obs)
- MED Reanalysis (Model)
- Ocean Colour (Obs)

Sea Level
Biogeochemistry

3. CMEMS UPTAKE OF MED SEA PRODUCTS IN 2016

1500 USERS

**x 3
since
2012**

38 TERABYTES DOWNLOADED

**x 20
since
2012**

≈ 3 Millions TRANSACTIONS

**x 30
since
2012**

SHIPPING COMPANIES HAVE 3 OPTIONS:

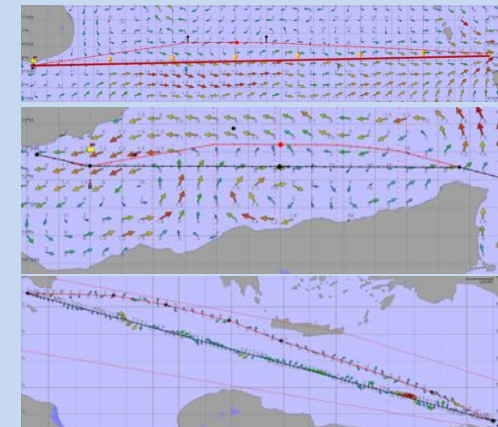
- ✓ Optimize engines, propellers, hulls...
- ✓ Improve organization...
- ✓ Take benefit of Meteorology/ Operational Oceanography(current observations and forecast)

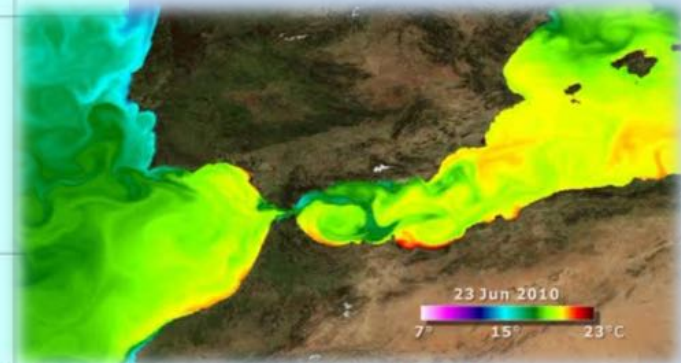


**RELIABLE FORECAST OF CURRENTS AT CMA CGM =
60 000t fuel saving and 180 000t CO2 emission decrease.**



By courtesy CMA CGM





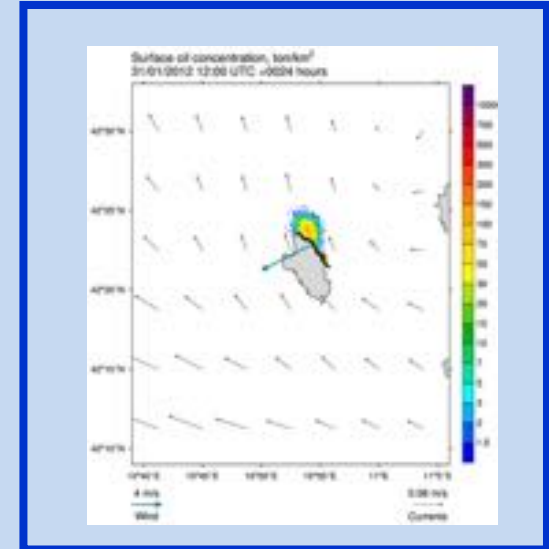
POSITIVE RELIABILITY ASSESSMENT OF COPERNICUS MARINE SERVICE 's CURRENT FORECASTS DURING A SAR EXERCISE.



By courtesy of Italian Coast Guard

COSTA CONCORDIA , January 2012

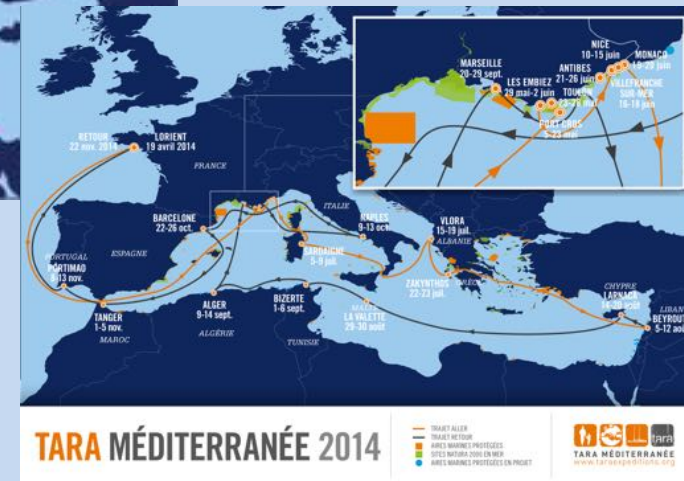
FORECAST OF CURRENTS IN THE MED SEA WERE USED BY AN OIL SPILL MODEL (MEDSLIK-II) TO SIMULATE SCENARIOS OF OIL DISPERSION IN THE SEA (RISK MITIGATION PLAN OF COAST GUARDS)





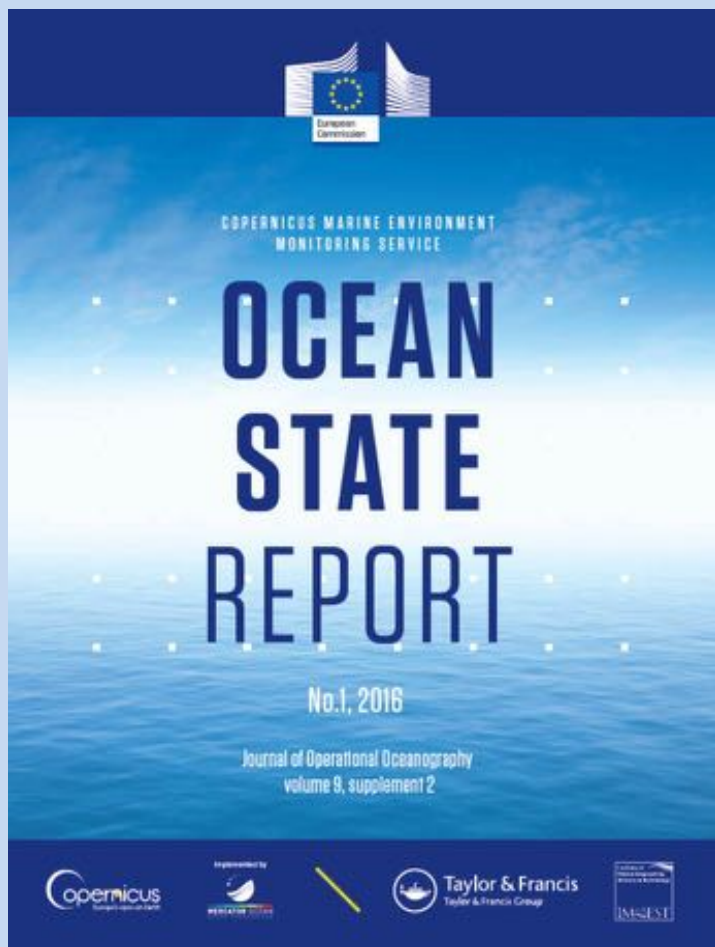
PARTICLE DRIFT COMPUTATION OVER ONE YEAR BASED ON CMEMS REANALYSIS SHOWS THE DRAMATIC POLLUTION POTENTIAL FROM RIVER MOUTHS INTO THE MEDITERRANEAN SEA.

Used by Tara Expeditions Outreach campaign





The image displays a screenshot of the SEA CONDITIONS website, which provides marine expert information. The main content area shows a map of the Eastern Mediterranean region, including Greece and Turkey, with surface current data overlaid in a color-coded format (ranging from 0.0 to 2.0). The website header includes the title "SEA CONDITIONS" and navigation options like "DISCOVER" and "HELP". A sidebar on the left contains a "Settings" menu with options for "Coastline", "Bathymetry", "Aerial Rock", and "Opacity: 100%". A search bar is located at the bottom left. On the right side, there is a "Services" dropdown, a "Login" button, and a section for "Time" and "Local Time" with a table showing dates and times for different days. Below this, there is a "Preferences" section with various marine data options like "Sea Forecast", "Sea Level", "Sea Temperature", "Surface Currents", "Sign, Wave Height and Direction", "Wave Period and Direction", "Sea Satellite Observations", and "Weather Forecast". At the bottom of the page, there are logos for various partners and organizations, including Links, cmcc, IAMC, INGV, and NSRF. A mobile app interface is overlaid on the right side of the map, featuring a smartphone icon surrounded by colorful app icons and the text "E-Services".



REFERENCE EU ANNUAL REPORT BASED ON COPERNICUS MARINE SERVICE PRODUCTS, FOR :

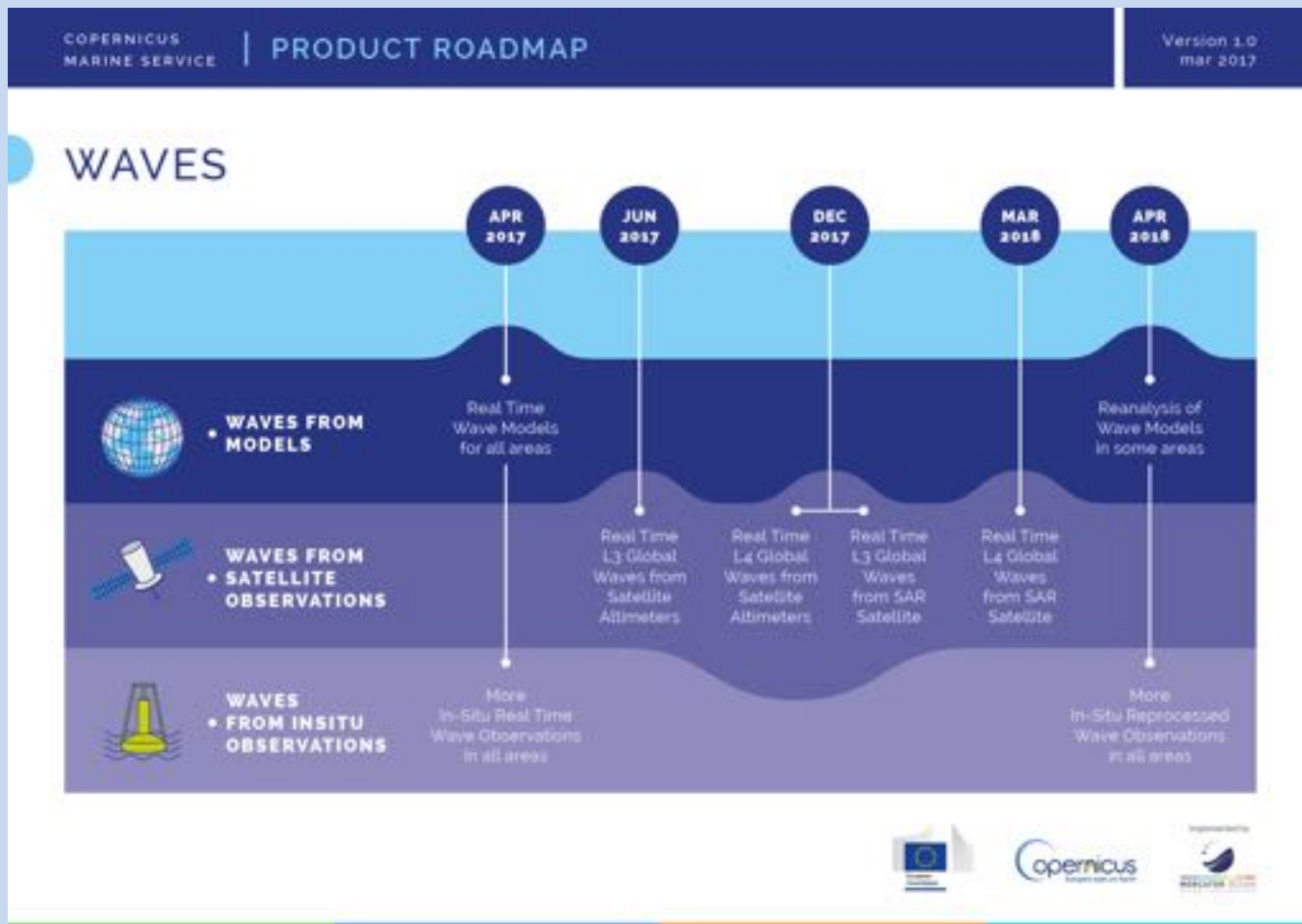
- EU and Member States policy makers,
- Environmental agencies,
- Regional Sea Conventions ,
- International organizations (e.g. IPCC, UN SDG14, OECD...)

MEDITERRANEAN SEA IS ADDRESSED IN :

- *Chap 1 Essential Variables*
- *Chap 2 Large Scale changes*
- *Chap 3 Focus on Regional Seas*
- *Chap 5 Synthesis*

Full report and summary : marine.copernicus.eu

5. WAVE PRODUCTS ENTER CMEMS CATALOGUE FROM 19/4/2017



COPERNICUS Marine Service and the PO – Research Group

- **historical partner** in the MyOcean series of projects
- **direct user of CMEMS** especially to derive boundary conditions for its meteo-marine forecasting models, and for the delivery of added value products and services targeted to the local stakeholders and coastal users
- **local broker** to promote the uptake of CMEMS data by local users

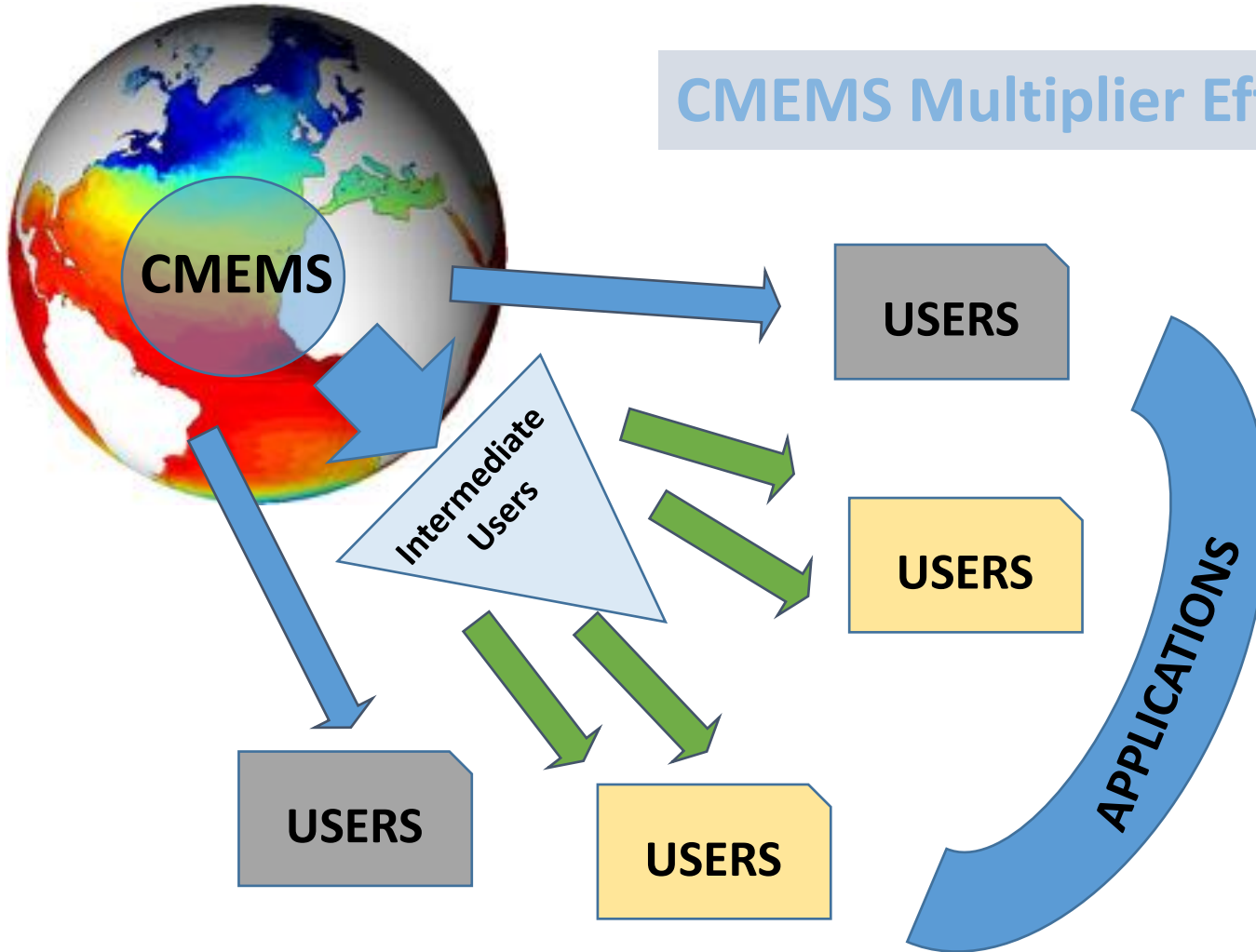


MyOCEAN first steps leading to CMEMS

The MyOcean network involved partners from **all European maritime countries**



CMEMS Multiplier Effect



capemalta.net

PHYSICAL OCEANOGRAPHY ONLINE

As of April 2015, the Physical Oceanography Unit (PO Unit) joined the Department of Geosciences within the Faculty of Science of the University of Malta. The same services are now being offered by the Physical Oceanography Research Group (PO Res Group) within this Department.

Ocean Tidings

- COMOS releases Ocean State Report
- Position paper on MPAs
- Subscribe to MEDESS40US Newsletter

- Home
- ICE-MDOC
- MedDOCs
- Marine Affairs
- Directory
- Oceanographic Database
- PO Unit
- Publications
- Focus & Events
- Glossary
- Feedback
- FAQs

www.capemalta.net

MALTA CMEMS SERVICE PLATFORM

<http://ioi.research.um.edu.mt/cmemsmalta/index.php/welcome/index>

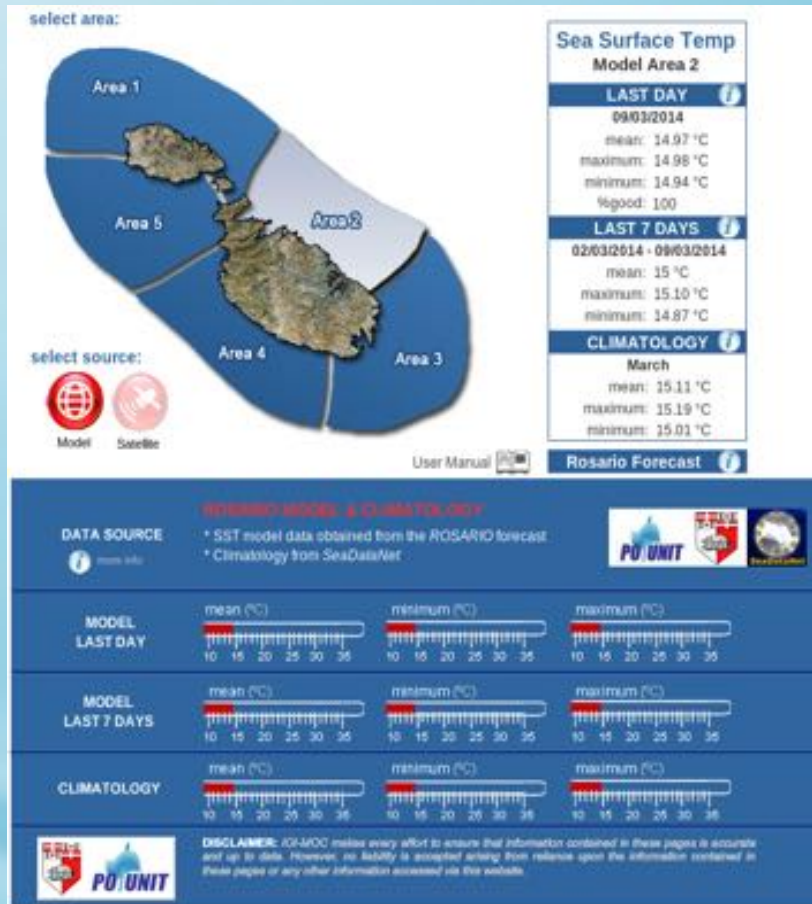
A dedicated CMEMS Service Platform intended to serve local as a local online facility for the delivery of dedicated downstream services that make use and integrate CMS data with local marine observations and higher resolution meteo-marine forecasts to address needs of local users.

Services include the:

- SST Dashboard
- Ocean Colour Dashboard
- Chlorophyll Forecast
- Ocean SeaViewer
- Adding more.....



SST and Ocean Colour Dashboards



Merges satellite-derived and numerical model data into useful operational statistical descriptors.

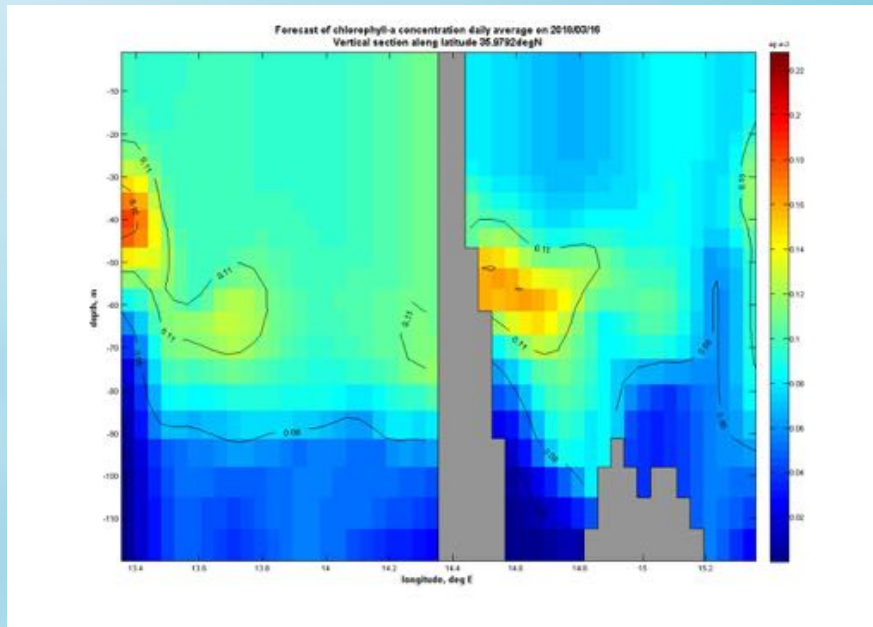
Provides information over five pre-defined coastal sub-areas around the Maltese Islands.

Compares current conditions to climatology

Has been developed for:

- Sea Surface Temperature
- Sea Surface Chlorophyll-a

Chlorophyll Forecast



Provides 7-day averaged Chlorophyll-a forecast maps in the region around the Maltese Islands

Maps derived from the biogeochemical model run by the Istituto Nazionale di Oceanografia e di Geofisica Sperimentale (OGS) in Trieste (Italy)

2D maps are selected at different depths

Vertical plots are provided along E-W and N-S transects across the Maltese Islands

Chlorophyll-a Forecast

7 day averaged forecast (starting every Tuesday)

2014 March

MON	TUE	WED	THU	FRI	SAT	SUN
24	25	26	27	28	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	1	2	3	4	5	6

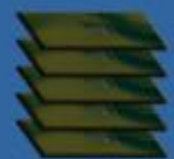
start date: 08/03/2014 end date: 14/03/2014

Go to current forecast

Link to full OGS forecast

Zeta Level Maps

Select 2-level to view corresponding 2D map.




selected depth: -

Vertical Transects

Select NS transect at longitude: 14.34°E latitude: 35.34 - 36.59°N

Select EW transect at latitude: 35.97°N longitude: 13.34 - 15.34°E



selected transect: North - South

Ocean SeaViewer

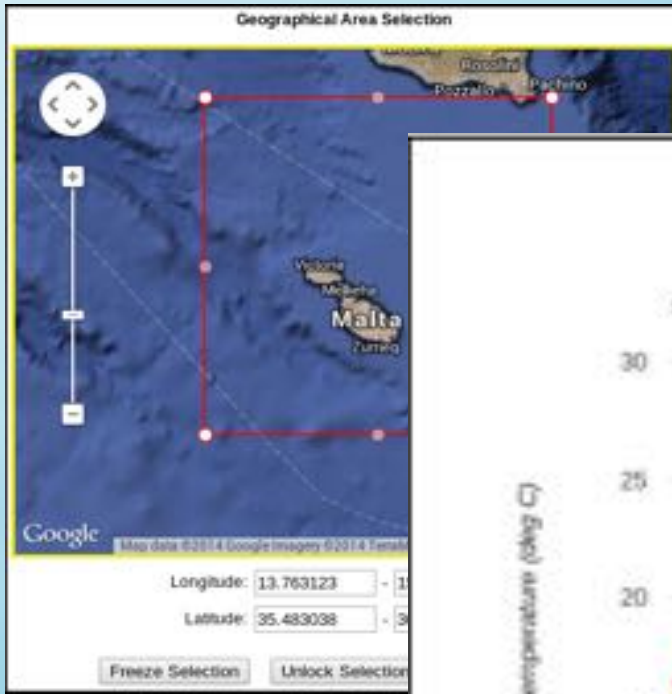


Time Period Selection			
Start Month:	January ▼	2006 ▼	
End Month:	December ▼	2010 ▼	


Viewing of plots using Google Charts and download of domain averaged sea surface parameters over user-selected geographic areas and time periods.

- Med Sea Physics (1999-2016) INGV
- Med Sea BioGeoChemistry (2001-2016) OGS

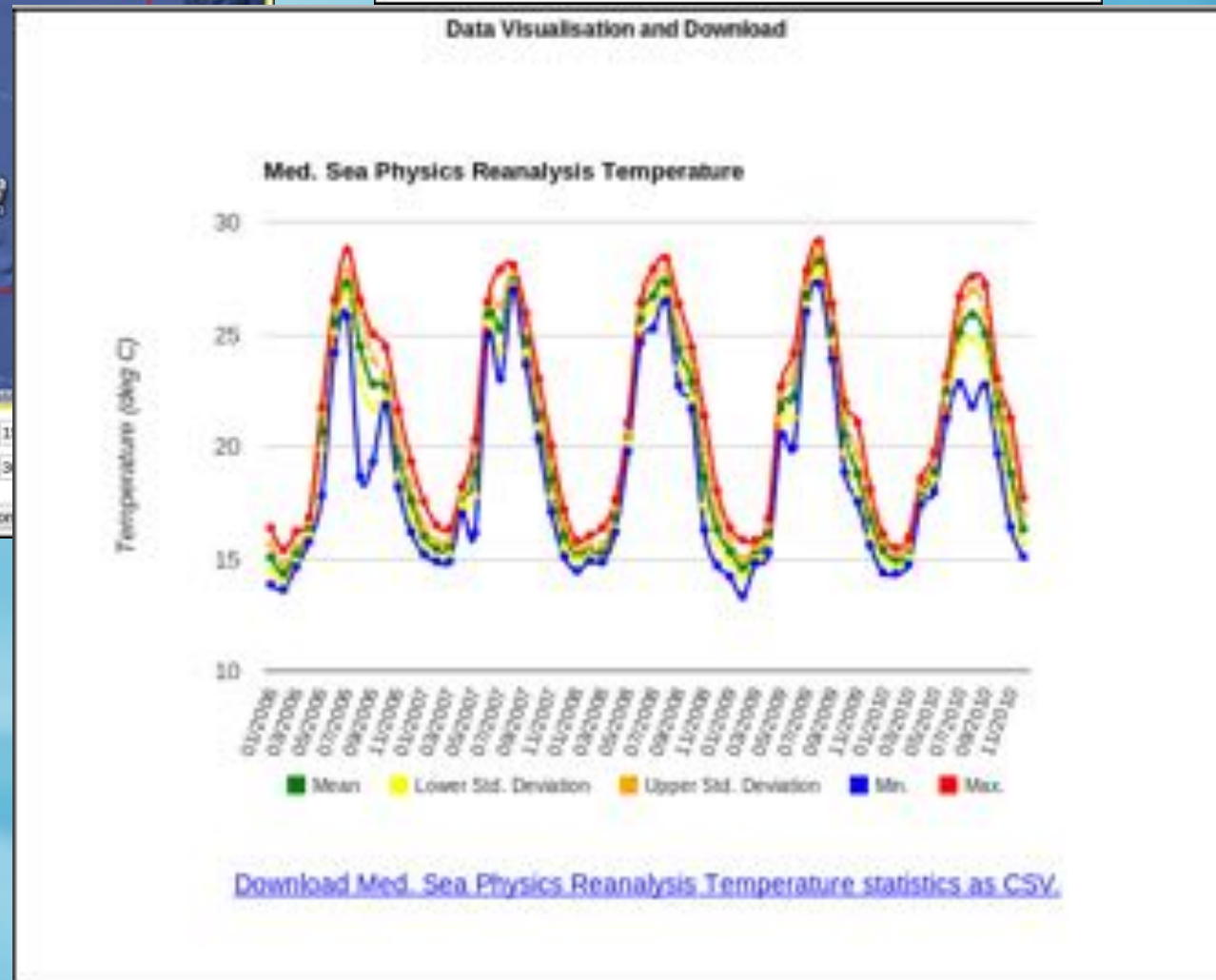
Ocean SeaViewer



Parameter Selection

Dataset: 

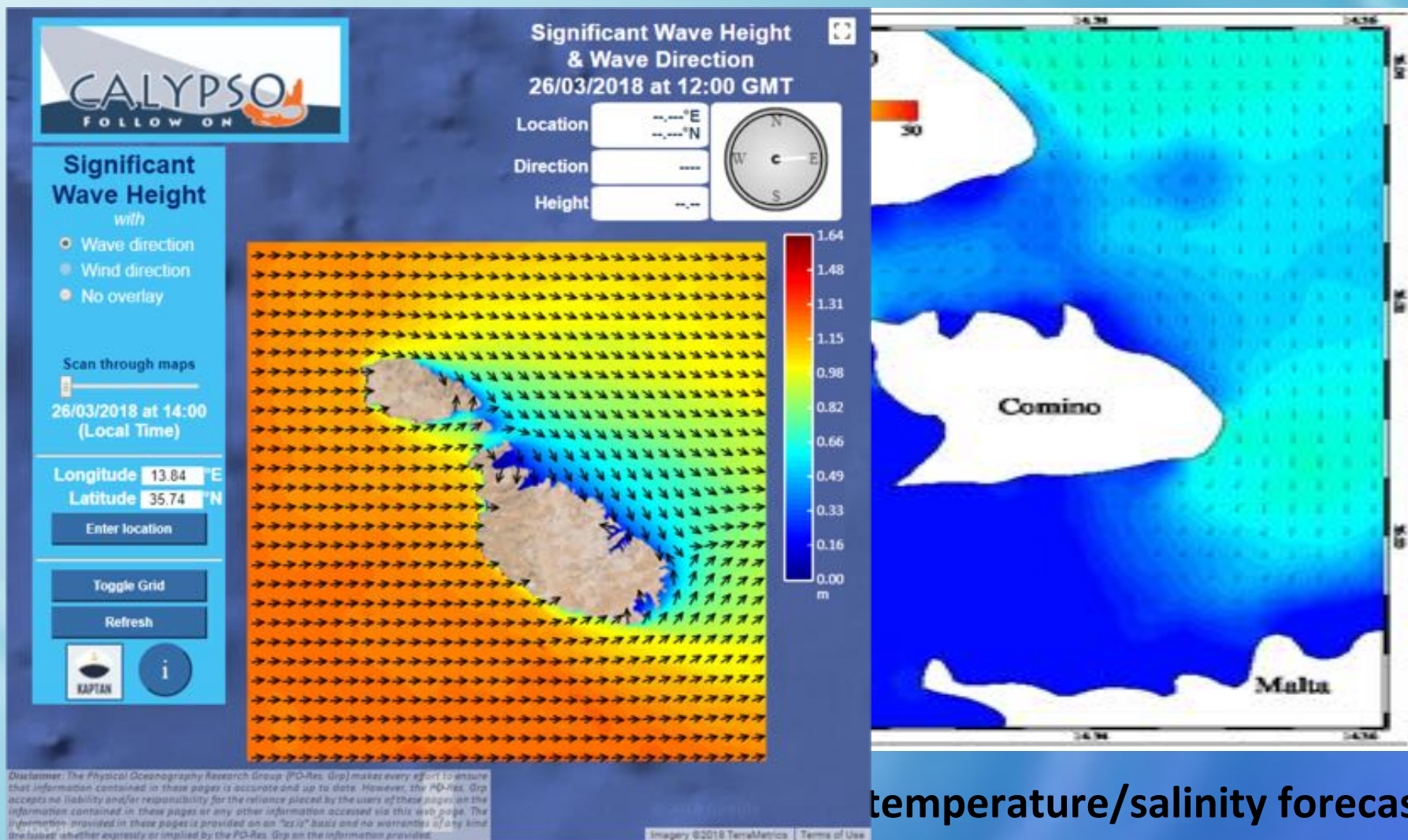
Parameter:



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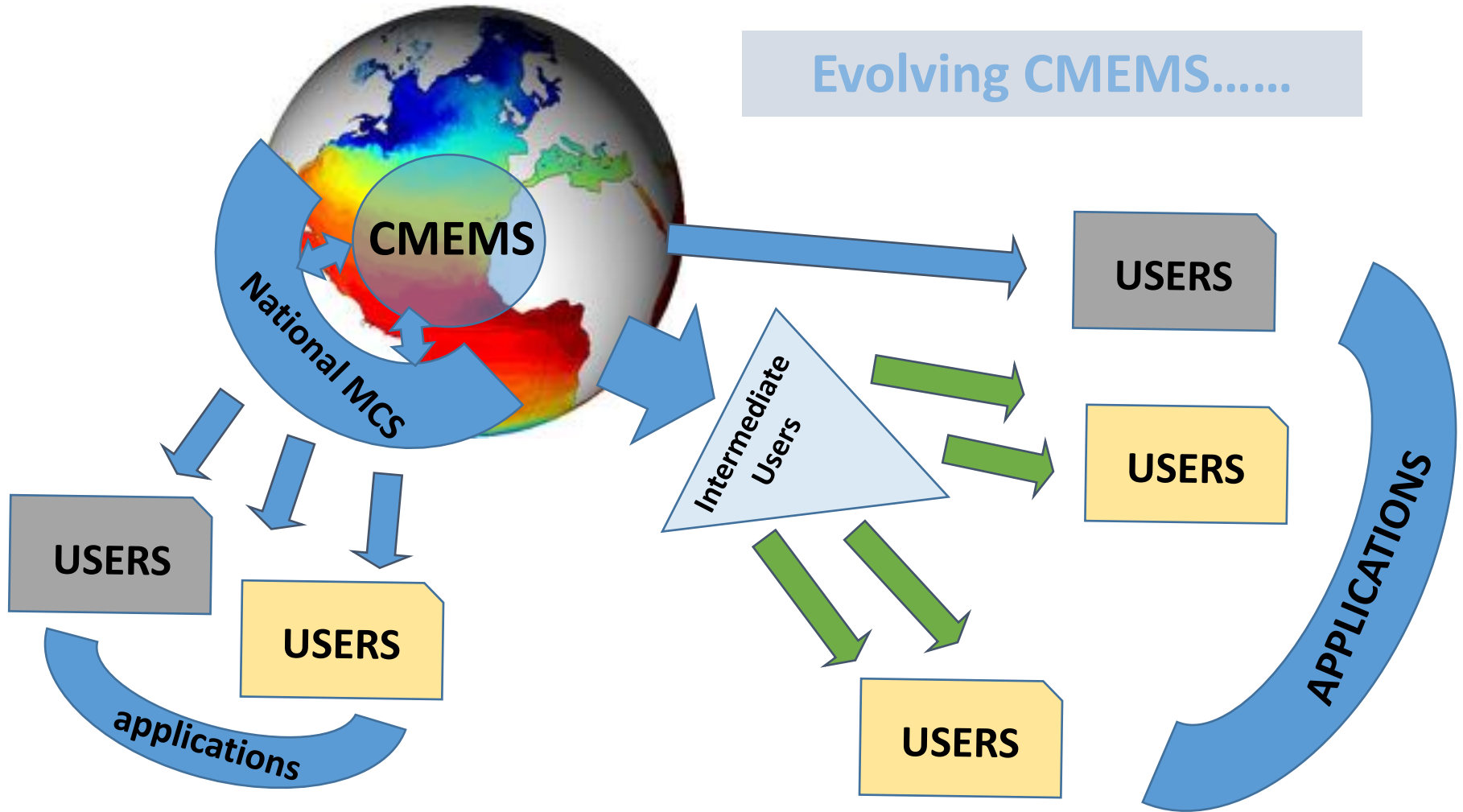
- Med Sea Physics (1999-2016) INGV
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Higher resolution downstream forecasts



temperature/salinity forecasts

Higher resolution wave forecasts







KAPTAN

Smartphone application
delivering meteo-marine
data to the public



L-Università
ta' Malta

PHYSICAL OCEANOGRAPHY RESEARCH GROUP




CALYPSO FOLLOW ON

Scan through maps

28/02/2018 at 13:00
(Local Time)

Longitude: 15.82° E
Latitude: 35.74° N

Enter location

Refresh

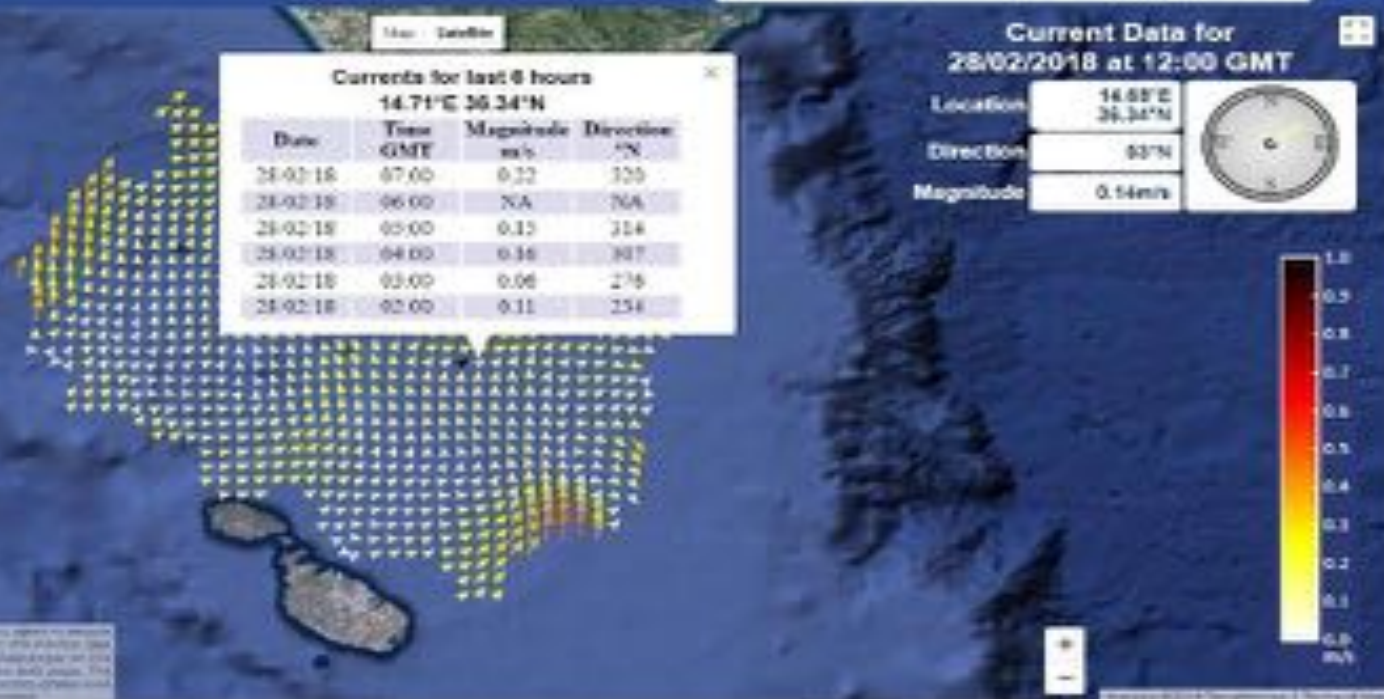
Toggle Grid

On/Off

3 arrows

MAP

i





KAPTAN MOBILE APPLICATION

- **Sea Surface Currents**
Hourly 2D plots | Surface currents across a transect | Trajectory generated by surface currents
- **Sea Surface Temperature**
Observed satellite data | 3-hourly forecast maps
- **Sea Wave Conditions**
Wave direction and height | Peak period | Mean period
- **Atmospheric Forecasts**
3-hourly forecasts for: air temperature | wind | precipitation | atmospheric pressure

HOW TO JOIN THE COPERNICUS MARINE BLUE COMMUNITY ?

- <http://marine.copernicus.eu/>
- Contact servicedesk.cmems@mercator-ocean.eu
- Ask or Share on <http://forum.marine.copernicus.eu/>
- Discover on <https://www.facebook.com/MercatorOcean>
- Follow : [@MercatorOcean](#) [#CMEMSLike](#)

THANK YOU FOR YOUR ATTENTION