Dr. Pierre-Yves Le Traon

Scientific Director
GEO Blue Planet EU Office/ EU4OceanObs
Mercator Ocean International
The EU Copernicus Earth Monitoring Programme
Mercator Ocean International

International Ocean Prediction Center, Toulouse, France - about 100 people


- In charge for the EC of the European offices of the G7 FSOI and GEO Blue Planet. 2020.

- In charge of the development of the first EU Digital Twin Ocean. 2022

- UN Decade Collaborative Centre for Ocean Prediction. 2022.


- New European shareholders (Italy, Spain, UK, Norway). 2017

- Towards an intergovernmental organization by the end of 2024. Germany and Portugal to join.
The Copernicus Marine Service
Global and regional ocean monitoring and forecasting
Access to products: marine.copernicus.eu
Integrated cloud based platform to better service marine users and benefit from advanced digital services

Integration of WEKEO services in Copernicus Marine Services (VREs, Notebooks)

Synergy with Digital Twin Ocean et Destination Earth initiatives
Users, applications and User Uptake

A wide range of applications (environment, society, economy)

Support to EU policies (Green Deal)

- >45,000 subscribers (+ 30% per year)
- 450,000 single visitors per year on the web portal in 2021
Coastal Zone Monitoring – Drivers

Coastal Zone:
• Tremendous social, economic & biological value but high level of pressure
• User needs for a wide range of applications
• Needs of European Policies (Green Deal, WFD, MSFD, MSP)
Coastal users: the Copernicus Marine Offer

Waves, sea level, sea surface temperature, winds, ocean colour, sea-ice

Coastal buoys, tide gauges, HFR, biogeochemical data

3D models with tides, waves, biogeochemistry, currents... provide boundary conditions for coastal models
**Objective:** developing a proof-of-concept for the 1st flood forecasting and management system for EU coastal zones, leveraging on Copernicus services

**Deliverable:** a web platform to inform on coastal flood risk

**Period:** 2021-2022
Operational & state-of-the-art 3D regional forecasting systems, network of producers, 1.5 to 4.5 km resolution, freely distributed

Dataset of 5-day forecasts of hourly total water level (TWL) along EU coasts (incl. mean sea level, tides, storm surge, wave setup)
Updated daily since April 2021 - Compliant with user requirements

Storm Gloria @ Valencia, Spain: Tide gauge & Copernicus Marine model

Irazoqui et al. 2022, submitted
Building on Copernicus Marine 1 successes for a new ambition:

A competitive Copernicus Marine based on (1) continuity, (2) enhanced information & service (3) digital integration, (4) re-enforced links with the other Copernicus services (land, climate, emergency, CO2) and EMODnet

User/policy needs, observation/science/technology advances
Copernicus Marine Service in COPERNICUS 2:
Continuity of the Blue/White/Green Offer
+ a series of major evolutions developed depending on priorities & budget

Coastal | Arctic | Marine Biology | Ocean Climate | Digital services
Towards a new offer for coastal marine

Improved coastal zone monitoring:

- **Improved** (sea level, SST, ocean colour, winds, waves) or **new** (time evolving bathymetry) **satellite products**.
- Improved access to **in-situ data**.
- Towards standardized (freshwater, nutrients, particulate and dissolved matter) **modelled river discharges**.
- Cooperation with EMODnet, JERICO, Copernicus Emergency and Land Services.

Co-design/co-production with EU Member States:

- **Coupling** between Copernicus Marine and a series of **coastal models (physics and biogeochemistry)** operated by EU Member States.
- To be extended to **international partners** (e.g. GMES Africa).
MOi leads the development of a **Copernicus Thematic Hub for Coastal Zones**. Collaboration with other Copernicus Services. First demonstration web portal will be launched by mid-2023, and will include all existing coastal Copernicus data (marine, land, climate, emergency). It will be based on WEkEO platform.
Conclusions

- Copernicus Marine provides free and open and operational access to in-situ and satellite observations and models required for coastal hazard monitoring and forecasting.

- Improved coastal zone (marine) monitoring and forecasting is one of the top priorities for Copernicus Marine in Copernicus 2 (2021-2028):
  - Improved (sea level, SST, ocean colour, waves, winds) and new (time evolving bathymetry) coastal satellite products.
  - Improved access to coastal in-situ data.
  - Stronger / operational interfaces with coastal monitoring and forecasting systems operated by EU Member States (co-production/co-design). Re-enforced interfaces with international partners (e.g. GMES Africa).

- Copernicus Coastal Thematic Hub (marine, land, emergency, climate).
Thank You.
Medaase.
Oyiwaladon.