



Forecasting and observing the open-to-coastal ocean
for Copernicus users



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FOCCUS Project Introduction

Maria – Emanuela MIHAILOV, Maritime Hydrographic Directorate –
Constanța / Romania (MHD FOCCUS Project Partner leader)

Adeline SOUF, Service hydrographique et océanographique de la
marine, Brest / France (SHOM FOCCUS Project Partner)

14TH MEETING OF THE IENWG (IENWG-14): 29th May 2024



- | | |
|---------------|-------------|
| 1. HEREON | Germany |
| 2. MOi | France |
| 3. CMCC | Italy |
| 4. SHOM | France |
| 5. CLS | France |
| 6. SOCIB | Spain |
| 7. CNR | Italy |
| 8. Deltares | Netherlands |
| 9. NERSC | Norway |
| 10. MET.NO | Norway |
| 11. SMHI | Sweden |
| 12. +ATLANTIC | Portugal |
| 13. RBINS | Belgium |
| 14. MHD | Romania |
| 15. EUROGOOS | Belgium |
| 16. BC | Germany |
| 17. DMI | Denmark |
| 18. Ifremer | France |
| 19. SSBE | Belgium |

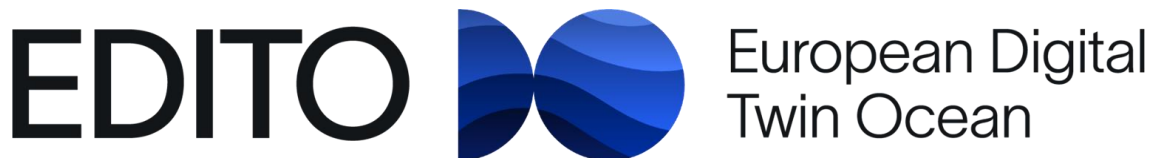
Program Relationships



FOCCUS will link to several European programs and networks, in addition to several selected [European Horizon 2020 \(H2020\)](#) and [Horizon Europe \(HE\)](#) projects.



2021
2030 United Nations Decade
of Ocean Science
for Sustainable Development



Coastal zones are:

- heavily used and impacted areas of the global ocean
- diverse human pressures and anthropogenic stressors
- particularly vulnerable



Efforts still needed to reinforce coastal capabilities to:

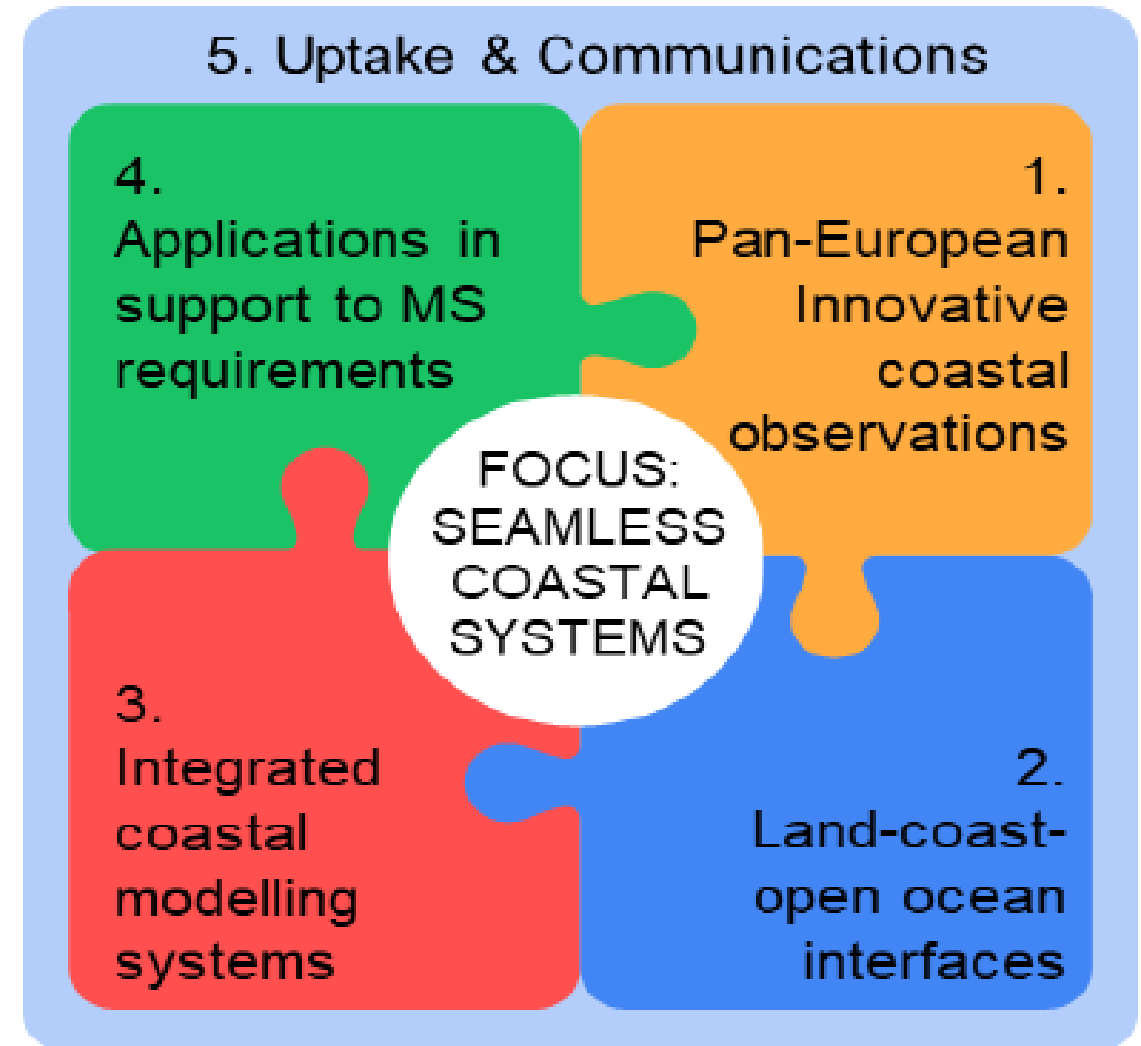
- innovate with the related marine knowledge value chain towards seamless delivery
- tailor the information products and solutions to meet policy needs and wider user requirements

To improve and advance the coastal dimension of CMEMS

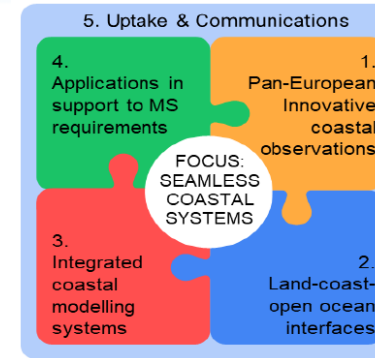
- coupling of CMEMS and MSCS
- co-design between MS services and reinforced CMEMS

Develop advanced, seamless coastal monitoring and forecasting systems

- joint effort based on novel approaches
- better constrain coastal applications and models developed at national and local levels



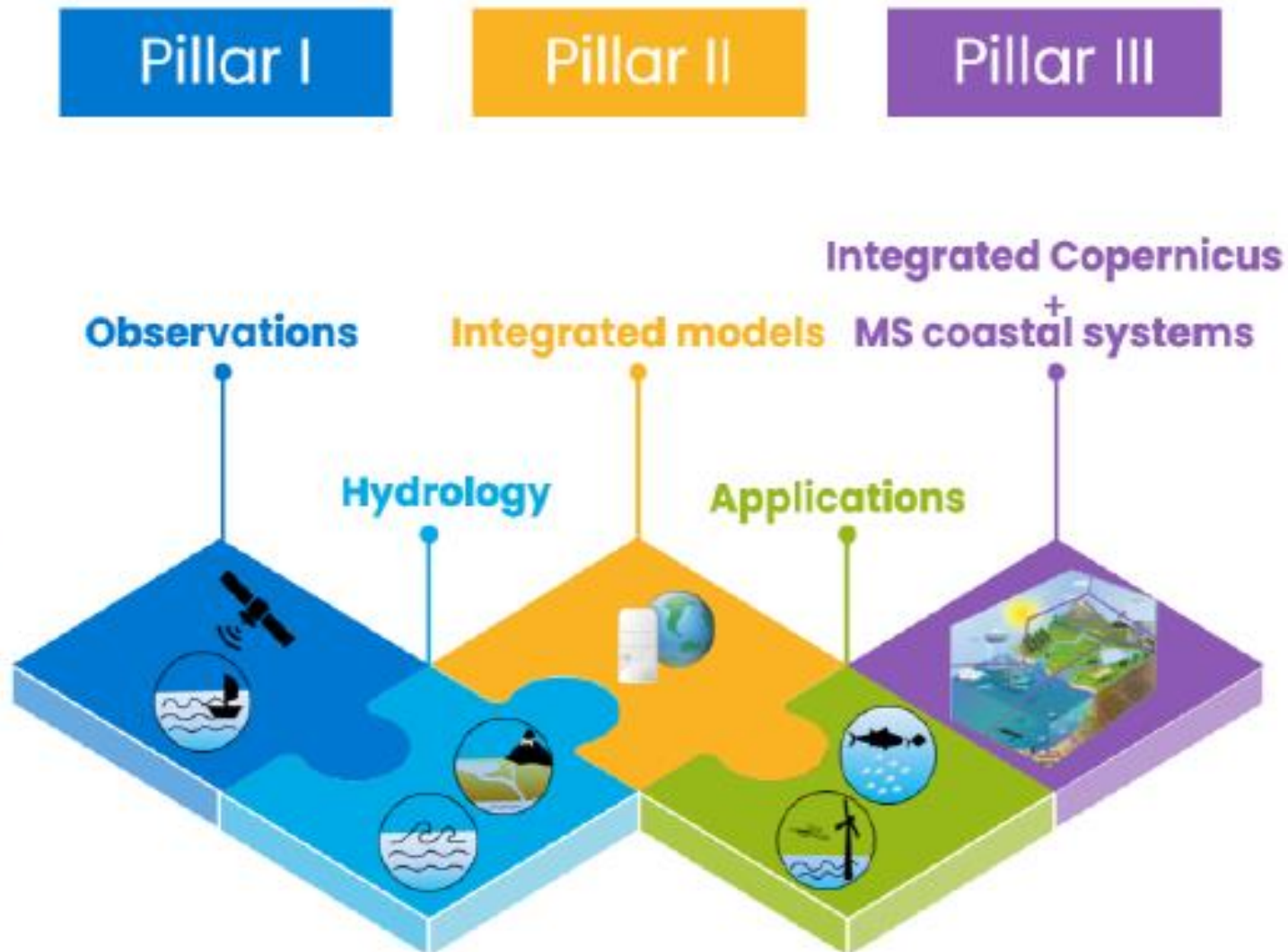
- Address and enhance coastal extension of Copernicus Marine Environment Monitoring Service (CMEMS)--> better serve coastal users and Member States
- Objectives selected to specifically **innovate and evolve CMEMS coastal products** where limitations are identified, or where services not yet sufficient:
 - near coastal borders
 - areas with high socioeconomic pressures



Copernicus
Marine Service



Implemented by
**MERCATOR
OCEAN**
INTERNATIONAL



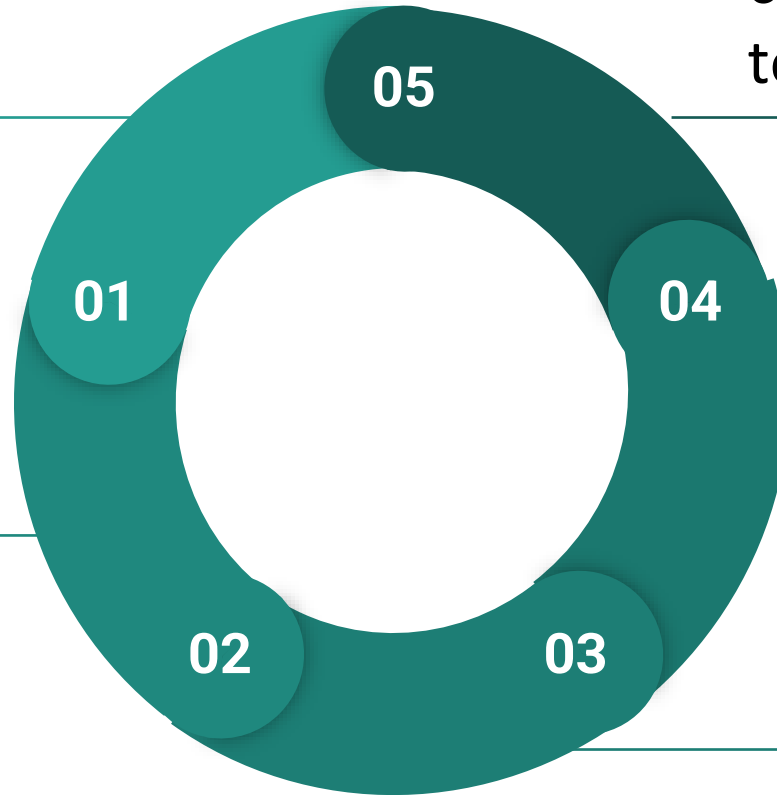
Achieve a seamless monitoring and forecasting of the ocean by:

- applying and improving methods
- development of new coastal products co-production with MSCSs

→ operational, fit-for-use coastal information service for Europe

Improve coastal variables and create new/fusion coastal products using in-situ/remote sensing data and AI

Advance framework of land-ocean continuum (LOC) by improving inputs of freshwater/rivers for coastal ocean models



Communicate potential combination of CMEMS with MSCSs to a variety of user groups

Co-design, co-develop and test **applications**, demonstrate value in different sectors (policy, blue economy, human activities)

Implement new, seamless methods in coastal ocean forecasting production chains

Enhanced quality and efficiency of the current service to respond to:

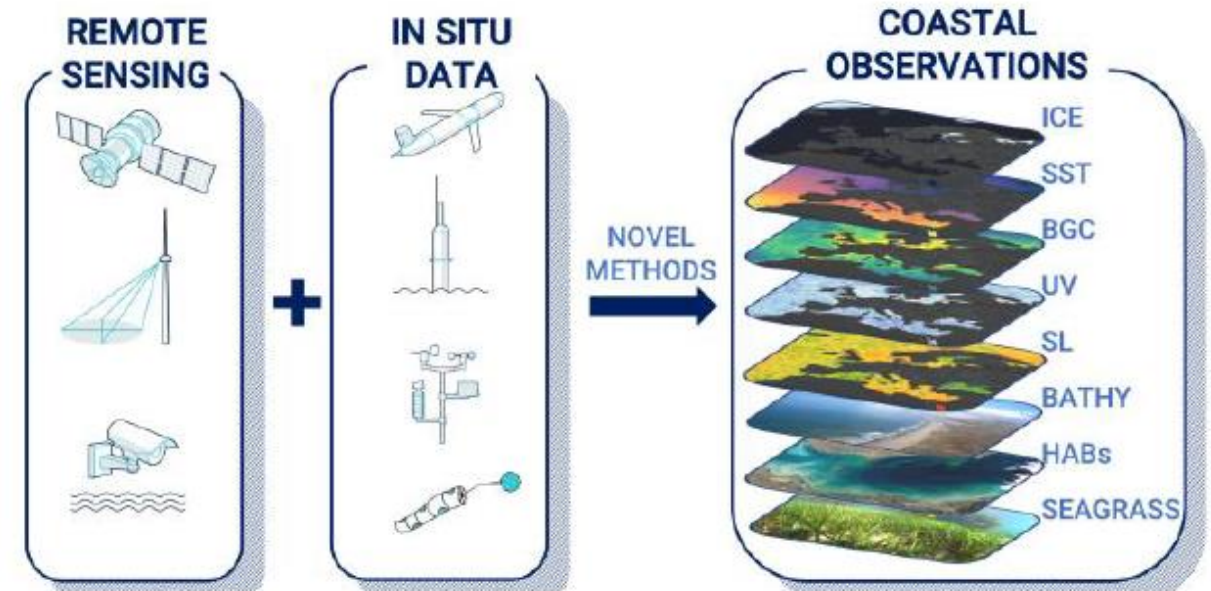
- policy and/or user requirements
- technological developments for space regulation
- complementing challenges for related initiatives

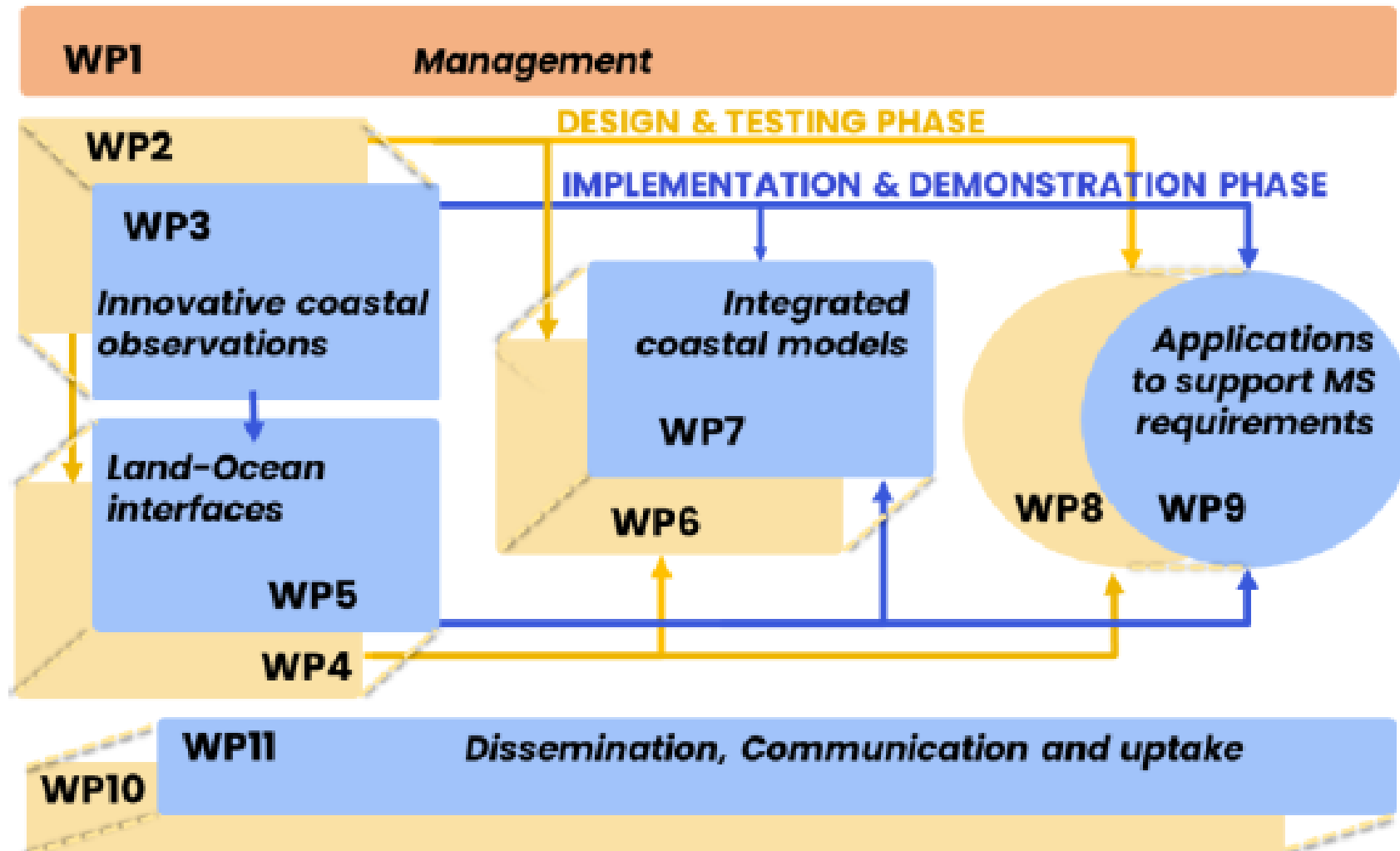
Development of efficient and reliable new products chains

- new paradigms in data fusion, processing and visualisation
- handle more high-volume satellite data sets
- evolving user-driven service, preserving continuity of service

Development of new algorithms and processing chains

- preparing use of new types of space observation data (new Sentinels, other contributing missions)
- development of new products or improvement of existing products

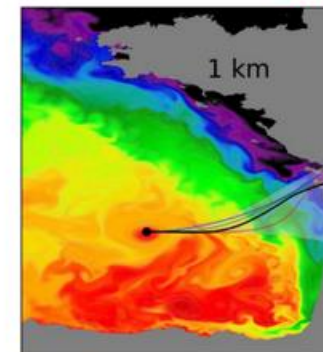




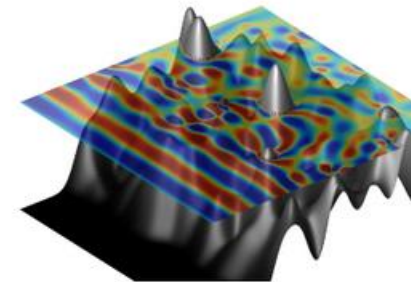
- **Shom's Research Department interests:**
 - **Understand** and **describe** the physical marine environment in its relations with the **atmosphere**, the **seabed** and **coastal areas**
 - Focus on coastal to open ocean **dynamics** and **hydrography**, **extreme events** and underwater **acoustics**
 - Develops **coastal** and **regional** ocean modelling systems, from **research** to **operational** levels 4 regions of interest: **Manche-Gascogne**, Med. sea, NO Indian Ocean, GIUK
- **In FOCCUS:**
 - Check the validity of the models TOLOSA (2D on detailed water level) and CROCO (3D) and downscaling of CMEMS.
 - Extreme events: storm surge
 - Stakeholders workshop to discuss on future applications



Participation in FOCCUS



<https://www.croco-ocean.org/>

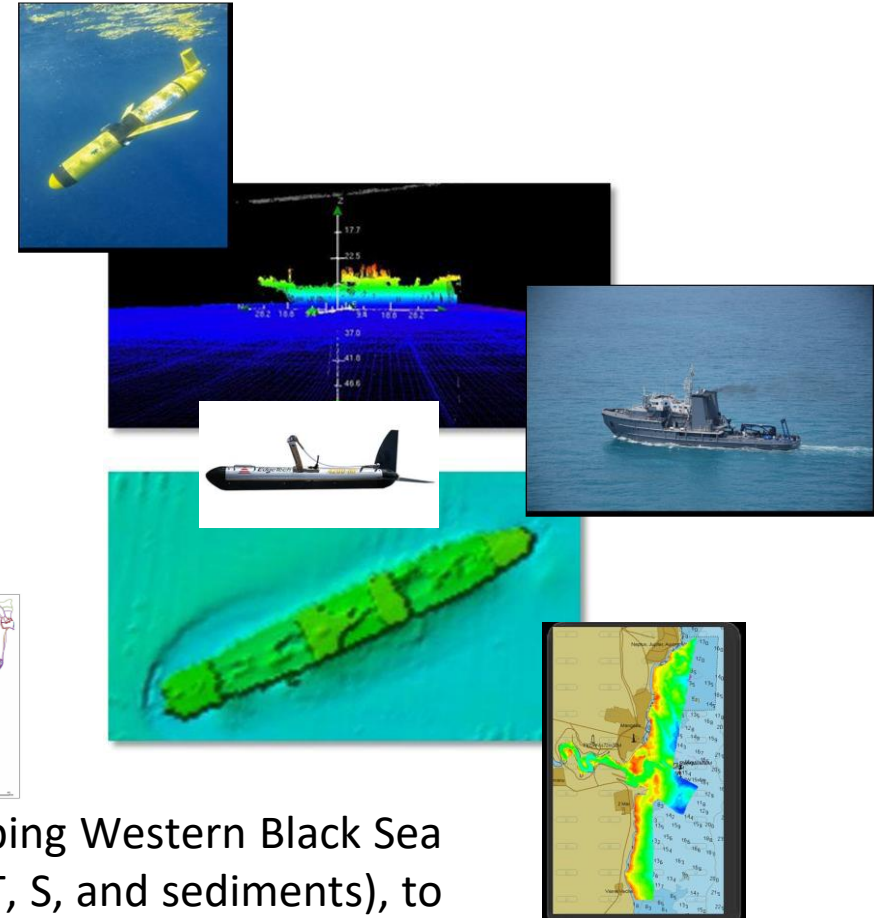
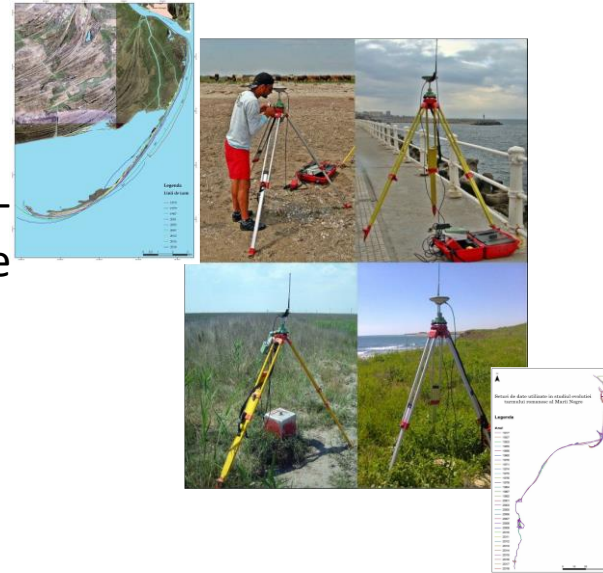


<https://tolosa-project.com/>

MHD's Research - Development and Innovation Center is involved in several national and international project related to physical oceanography, marine GNSS, climate change and security, coastal application using ML / AI, acoustics.

In FOCCUS:

- Oceanographic Research Laboratories, Topo-Geodesy Laboratory, RDI and Mine Warefare Data Center.



In **FOCCUS**, our efforts will be centred on improving and developing Western Black Sea data fusion (sea-level, coastal waves and currents, bathymetry, T, S, and sediments), to develop coastal applications and enhance forecast resolution and computation time.



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