SHAREMED

aring and enhancing capabilities to address environmental threats in the Mediterranean sea

Presentation by Prof. Aldo Drago – *Malta (aldo.f.drago@gmail.com)*
SHAREMED partners - *Italy (PL); France; Spain; Portugal; Slovenia; Croatia; Montenegro*

10th UfM Working Group on Blue Economy, 23 March 2022, Brussels

Interreg Mediterranean

EUROPEAN UNION

Strategic MED Programme Project

PANORAMED cross cutting axis 4 Enhancing **Mediterranean Governance** on marine environment and environmental risks
'top-down' project (only pre-qualified institutes chosen partners)

OGS (Italy) **Lead Partner**
CSIC (Spain); UM (Malta)
MIO (France) (& IFREMER)
IPMA (Portugal); NIB (Slovenia)
LAMMA (Italy) (& CNR)
KIP (Croatia)
UM (Montenegro)
Valencia Foundation (Spain)

SHAREMED consortium

Italian Env ministry; Ita Env agency (ISPRA);
Ita regional Env & (arpaL); Env Protec agencies (pc FVG)
INFO/RAC; Slovenian Env Agency (ARSO)
Malta Env Agency (MEPA); Univ of Palermo
Eur Int Office (Montenegro)

UfM; UNEP; BlueMED; WWF; WestMED

Interreg
Mediterranean
EUROPEAN UNION

https://sharemed.interreg-med.eu/

CHALLENGE: The need to assess and address the increasing presence of coexisting environmental threats, that propagate in space and time also across political boundaries, calls for transnational coordinated actions based on evidence-rooted common understandings

OBJECTIVE: the project is endeavouring to increase the capability of the Mediterranean regional, sub-regional and local authorities, and of the research community to assess and address hazards related to pollution and environmental threats in the Mediterranean transnational waters

HOW:

- enhancing observation capabilities
- sharing knowledge, data and technologies
- building common frameworks, tools
    and services
- preparing roadmap and action plans

Interreg Mediterranean

EUROPEAN UNION
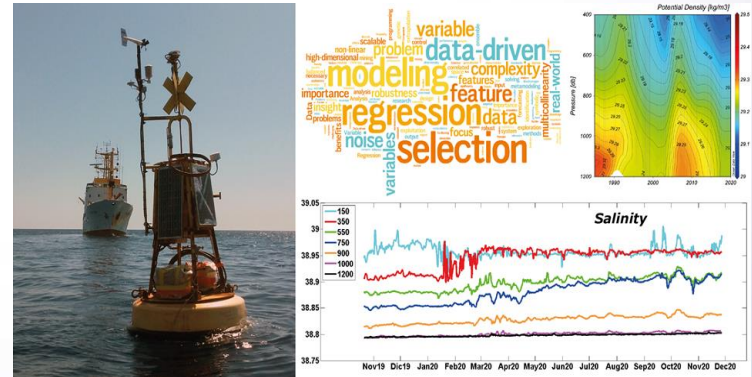
Capitalisation

Small ³ = BiG

WHAT IS IT: Entails the apprehension of existing capital, namely knowledge, expertise, human resource and infrastructures, to merge and complement initiatives, building further momentum and critical mass through joint efforts and collaborations, and through the sharing of ideas, assets and commitments towards common goals.

CAPITALISATION

Small wheels make large machines

CAPITALISE ON WHAT AND FOR WHAT:

Other projects
Connecting people
Beyond partner expertise
Existing networks and initiatives

RESULTS: - Connect research and target higher benefits to society

- Propose new concepts and match challenges
- Redesign governance frameworks to improve the way we do things

EXPLOIT FOR COMMON BENEFITS

Interreg
Mediterranean

EUROPEAN UNION

Engaging with whom?

Users (*general public; education; scientists/research; responsible entities; environmental agencies; decision makers/managers*)   **NATIONAL**

Advisors/Experts/Service Providers (Scientific personalities; not only scientists - leading VIPs/heads/coordinators of relevant organisations; observation and forecasting system operators; product suppliers of added value services)
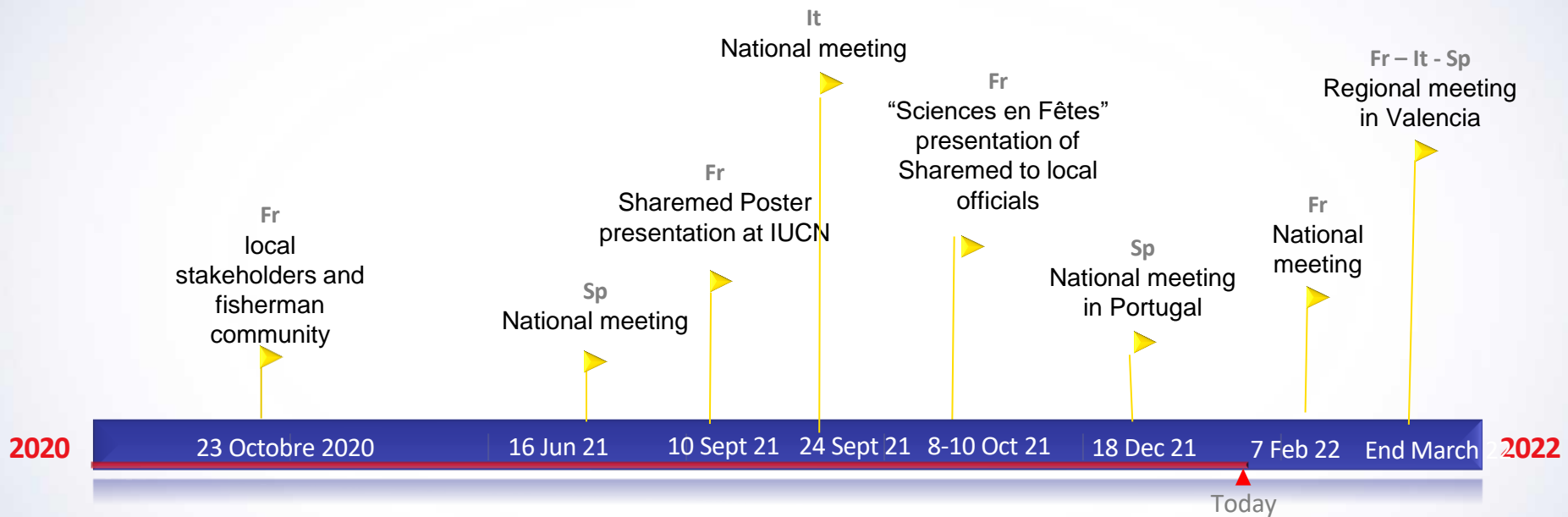
REGIONAL

Authorities & Institutions (local/regional; funding/regulators/planners; ministerial/EU)

Projects/Initiatives/Programmes (Networking groups like EuroGOOS, MonGOOS; EOOS, JERICO S3, RIs; PANORAMED, JPI-Oceans; CMEMS, EMODnet)

PROJECT

Interreg
Mediterranean

EUROPEAN UNION

Capitalization

National and Regional meetings

It
National meeting

Fr
"Sciences en Fêtes" presentation of Sharemed to local officials

Fr – It - Sp
Regional meeting in Valencia

Fr
Sharemed Poster presentation at IUCN

Fr
local stakeholders and fisherman community

Sp
National meeting

Sp
National meeting in Portugal

Fr
National meeting

2020

| 23 Octobre 2020 | 16 Jun 21 | 10 Sept 21 | 24 Sept 21 | 8-10 Oct 21 | 18 Dec 21 | 7 Feb 22 | End March |

2022

Today

Interreg
Mediterranean
EUROPEAN UNION

SHAREMED Action sites

three transnational sites:
NorthAdriatic ,
NorthWestMeD,
Sicily Channel

plus Mediterranean scale

FRAMEWORKS for *sharing, consolidation, integration, harmonization* of existing information, data, technology, infrastructure and expertise

regional strategies
multilevel agreement

Shared portals

share procedures

Shared database

DESIGN transnational systems of observing systems and marine modelling frameworks, building and implementing on <u>existing elements</u>

Interreg
Mediterranean
EUROPEAN UNION

SHAREMED: Web portal for North-west Med

https://sharemed-websig.mio.osupytheas.fr/

Web-GIS on North-west Mediterranean

1) To develop a webGIS **in order to visualize marine operational data** (with simple and intuitive interface)

2) To add results from SHAREMED modelling activities on NWMED

3) To add maps from the SHAREMED Atlas activities
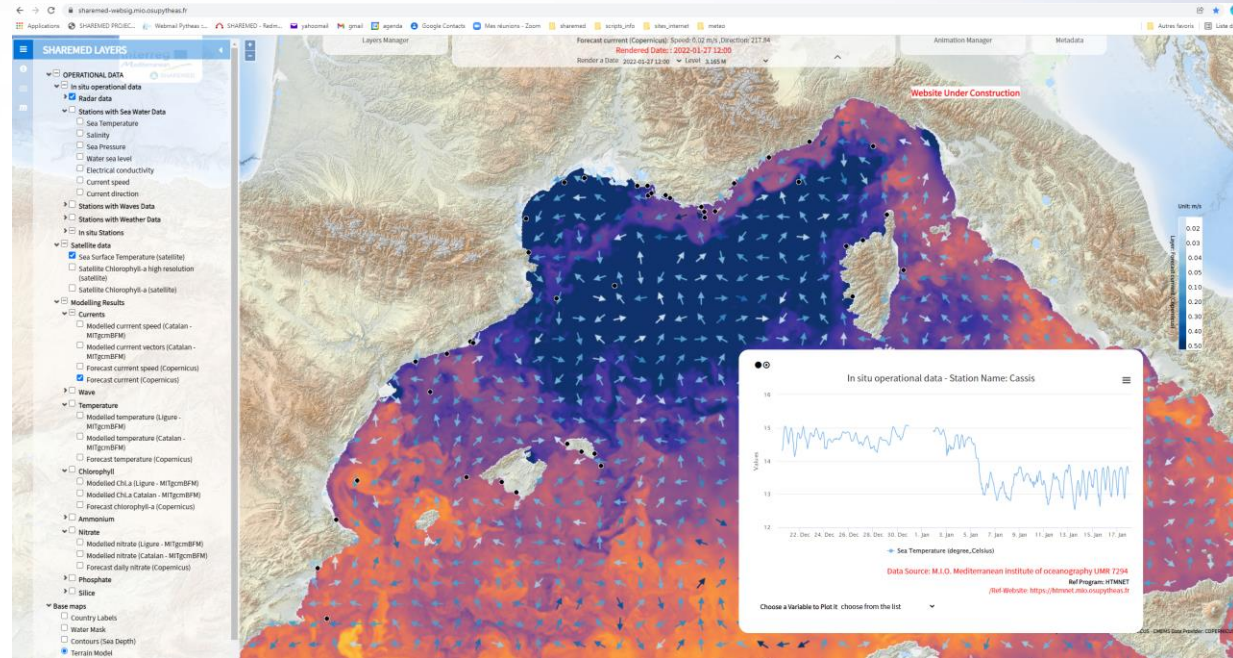
- *Near-real time data from **in situ marine buoys***
- *Currents from **coastal radar-HF***
- *Near-real time **satellite products***
- *Simulations outputs from **forecast models**, including SHAREMED models*

Interreg
Mediterranean
EUROPEAN UNION

HF radar network combining expertise, experiences and joint efforts

- developing specific software and techniques to exploit the HF data basis acquired in the last 9 years
- Implementation of an eddy tracking algorithm (-> eddy atlas)
- coordinate the efforts and share these techniques with the Sharemed partners
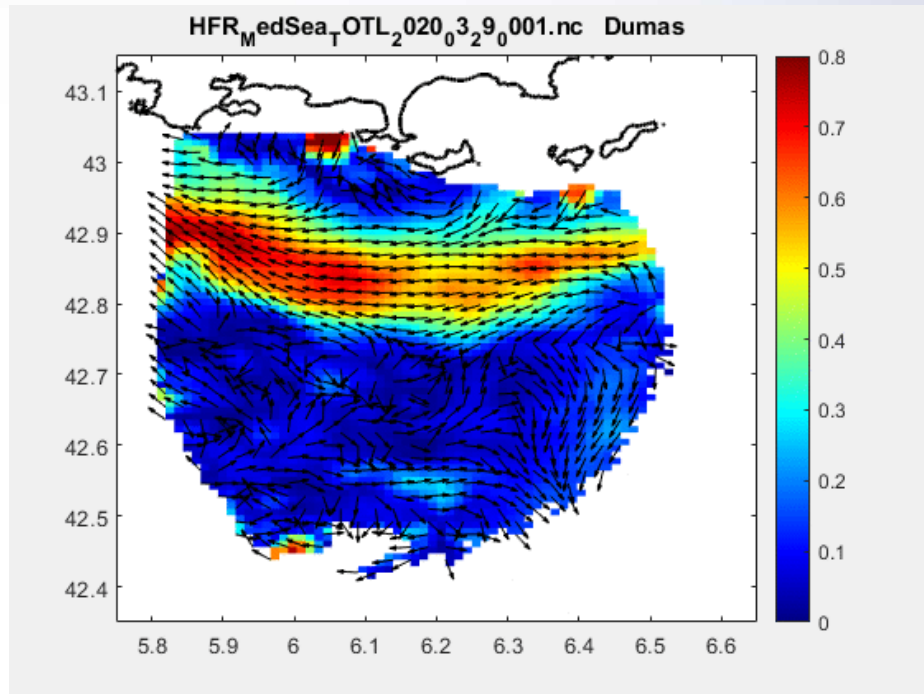
http://hfradar.univ-tln.fr/

Interreg
Mediterranean

EUROPEAN UNION

Development of a strategy to acquire time series of organic and inorganic contaminants

The objective is to test the strategy of measuring time series of contaminants and develop a specific and adapted protocol as part of improvement of new observation technologies and make them ready for operational use

Site MISTRAL

Rhône mouth and Gulf of Fos

HAP
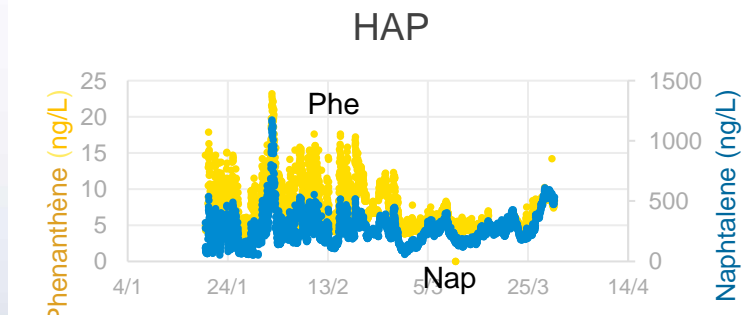
# Modeling system based on the **coupled MITgcm-BFM** model
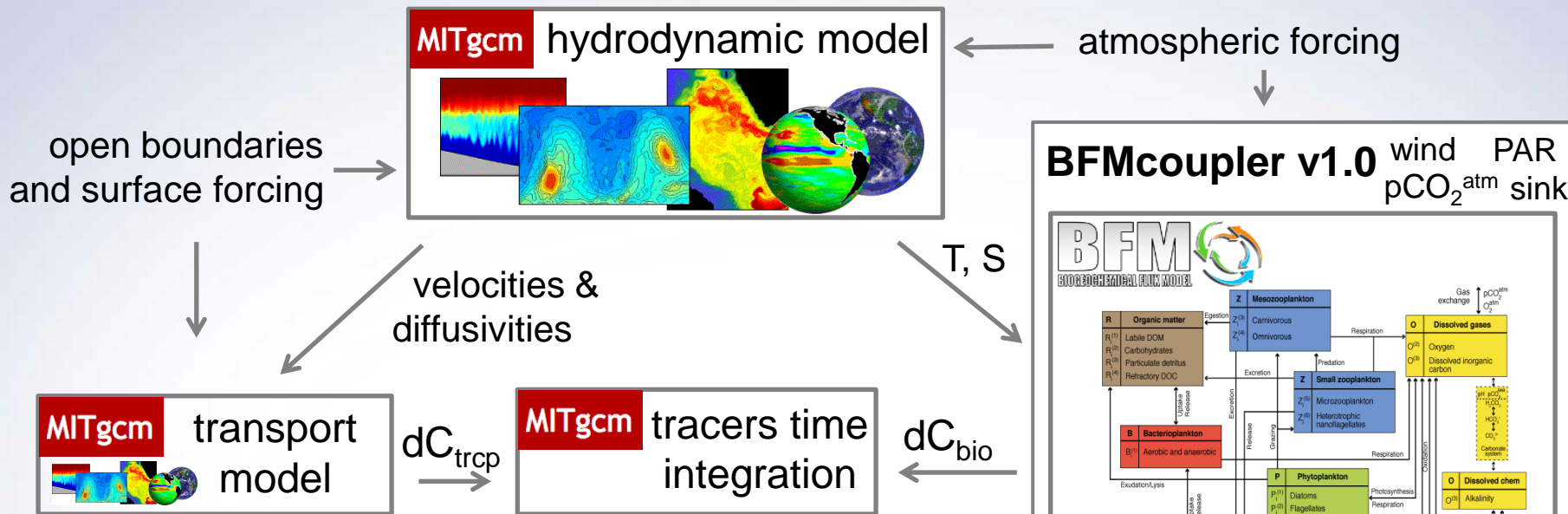
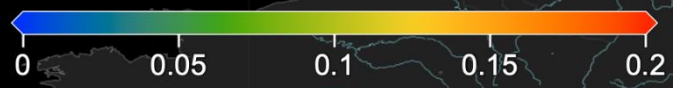**MITgcm:** "state-of-the-art" hydrodynamic model

BFM: official biogeochemical model of the CMEMS Med-MFC community

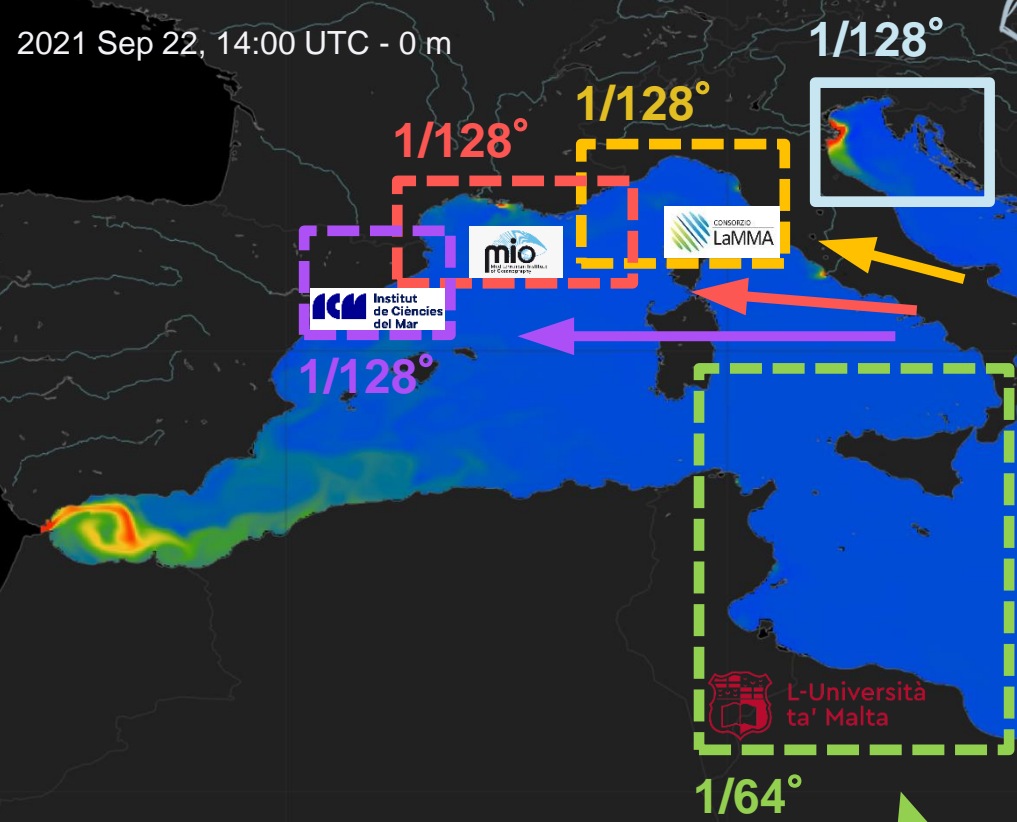**BFMcoupler v1.0**: new online coupling (**possible two-way feedback**), modular approach, optimized integration schemes, open source

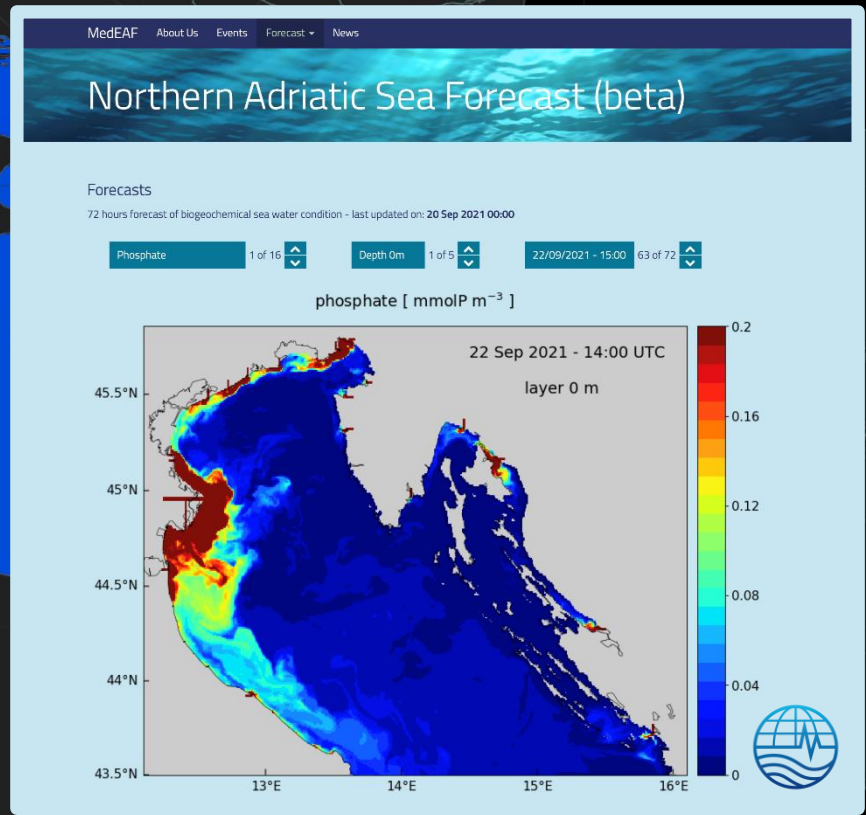**NUDGING:** assimilation of sea surface temperature and coastal data of nutrients
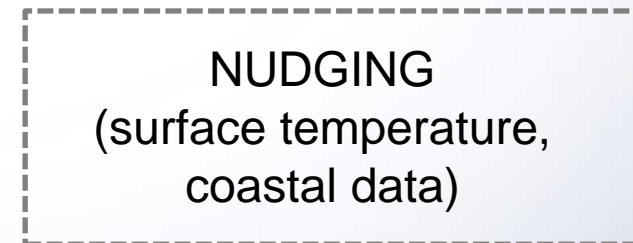
Mole concentration of phosphate in sea water [mmol/m^3]

0   0.05   0.1   0.15   0.2

2021 Sep 22, 14:00 UTC - 0 m

background image credit: *My Ocean* by Copernicus Marine Service

1/128°

1/128°

1/128°

1/128°

1/64°

mio

CONSORZIO LaMMA

Institut de Ciències del Mar

L-Università ta' Malta

Development of a relocatable short-term forecasting system for coastal areas

MedEAF   About Us   Events   Forecast ▾   News

Northern Adriatic Sea Forecast (beta)

Forecasts

72 hours forecast of biogeochemical sea water condition - last updated on: **20 Sep 2021 00:00**

Phosphate   1 of 16   Depth 0m   1 of 5   22/09/2021 - 15:00   63 of 72

phosphate [mmolP m^{-3}]

22 Sep 2021 - 14:00 UTC
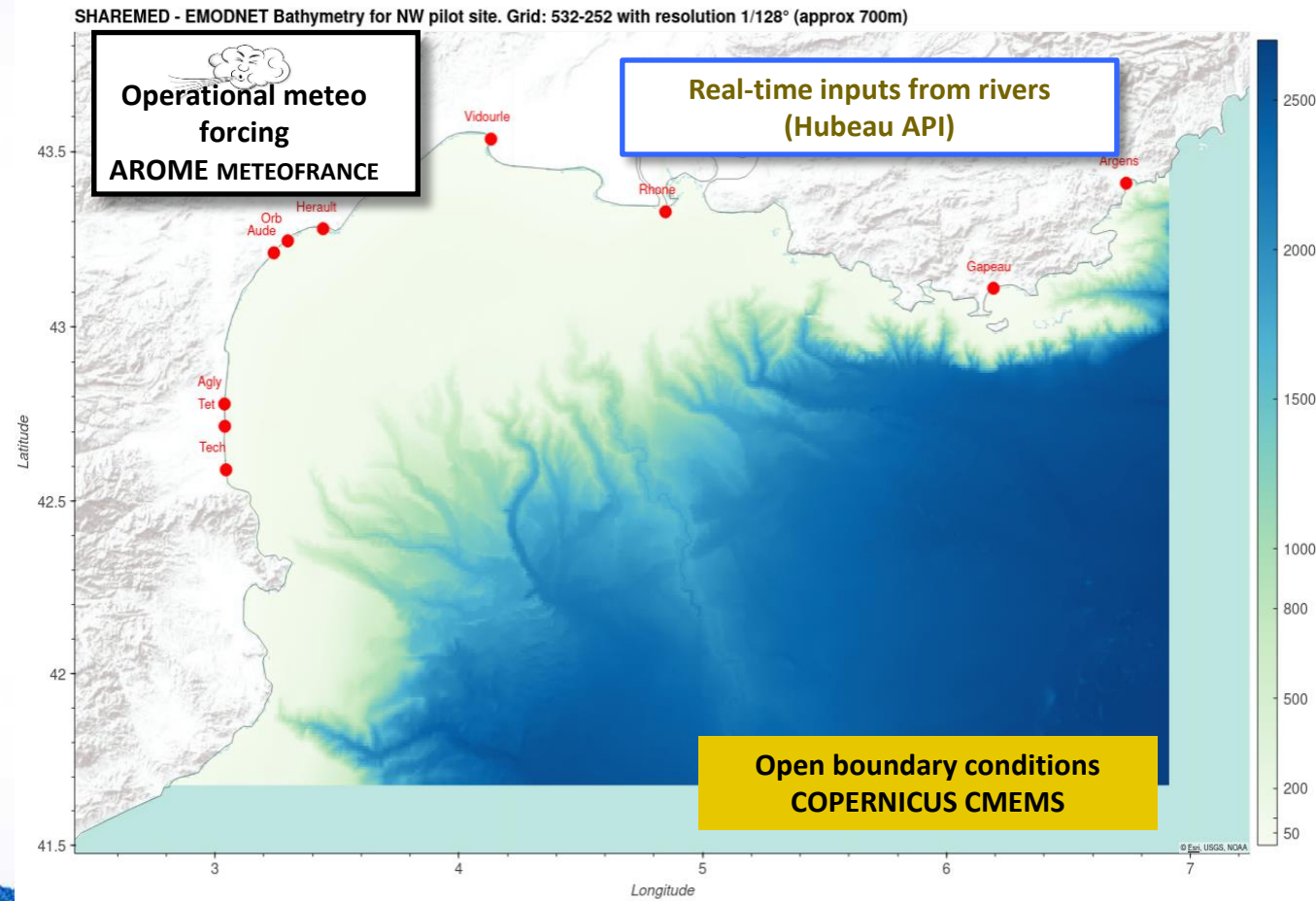layer 0 m

http://medeaf.ogs.it/adriatic

Interreg *Mediterranean*   SHAREMED

OGS

# Operational physical-biogeochemical modelling on Gulf of Lion

- MITgcm-BFM model from OGS (WP3.1 - WP4.5)

- Operational chain on HPC mesocentre AMU (126 or 256 cores)

- Results available on web portal Nwmed for H-5 to H+2 each day.

SHAREMED - EMODNET Bathymetry for NW pilot site. Grid: 532-252 with resolution 1/128° (approx 700m)

Operational meteo forcing AROME METEOFRANCE

Real-time inputs from rivers (Hubeau API)

Open boundary conditions COPERNICUS CMEMS

Interreg Mediterranean

EUROPEAN UNION

SHAREMED: Forecast system in North-west Mediterranean Pilot site (WP 5.1)

Operational physical-biogeochemical modelling on Gulf of Lion

- MITgcm-BFM model from OGS (WP3.1 - WP4.5)

- Operational chain on HPC mesocentre AMU (126 or 256 cores)

- Results available on web portal Nwmed for H-5 to H+2 each day.
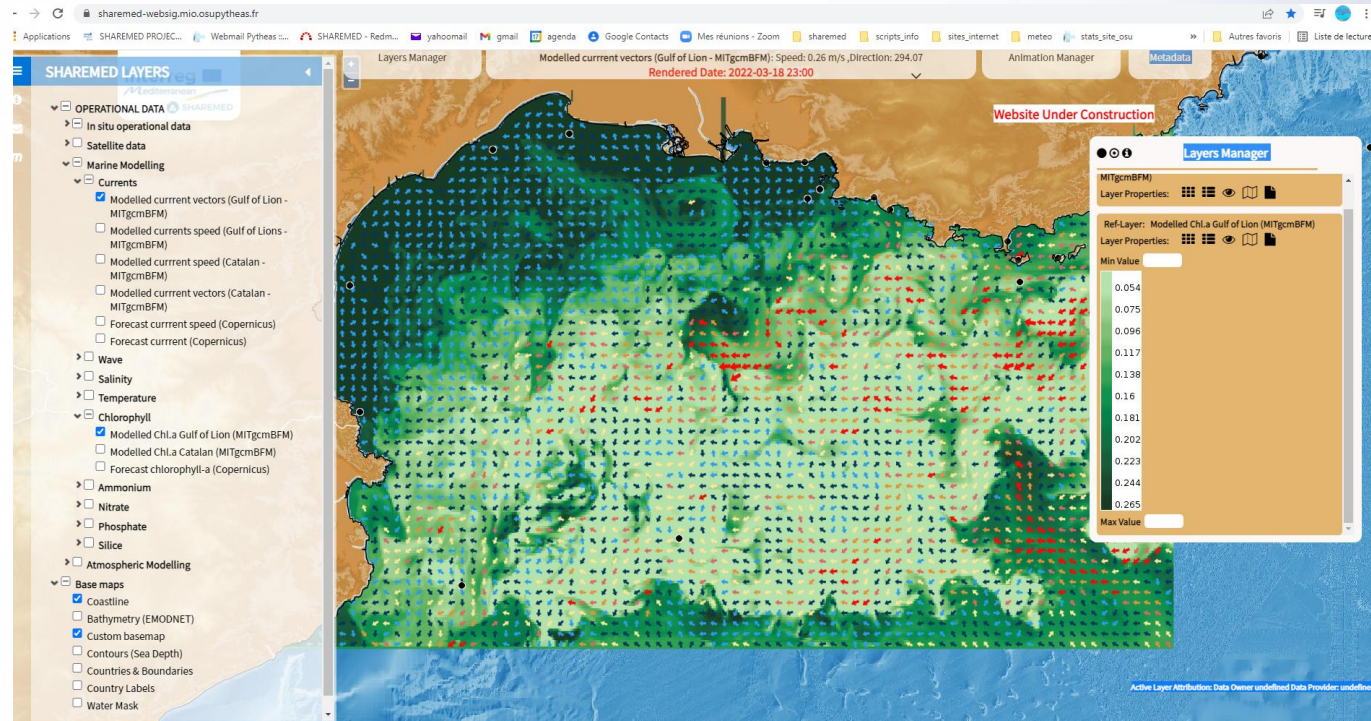
Example : Modelled Chlorophyll-a and currents (Surface) for the 18 March 2022 (run of the 17/03/22). It shows the impact of rivers inputs due to heavy rains in the south of France at that period.

Interreg Mediterranean

EUROPEAN UNION

Atlas of ecosystem status, pressures and hazard index

Atlas integrates information generated at the best available resolutions by 1) in-situ sampling, 2) remote observations, 3) numerical models, and 4) focusing on target ecosystems and habitat forming species. Information includes origins, mechanism of spreading and potential hazards related to pollution and environmental threats.

Atlas data ayers include **model outputs**, such as pollution connectivity matrices and climate projections.

Management units are identified by (sub)regionalisation of the domain, based on 1) **spatial influence** of the impacts of **pollution hot-spots**; 2) physical, biogeochemical and ecological properties; 3) the design of possible **observing network**

PRESSURES

HAZARD

EXPOSURE

VULNERABILITY

RISK

Hazard Exposure Vulnerability and Risk maps and statistics

HAZARD - H_P

Hazard assessment aggregates metrics and scenarios of climate, ocean, bio-geochemical and anthropogenic pressures

- Oil spill hazard from main shipping routes

- Potential hazard from major rivers discharge

- Thermal shocks and occurrence of marine

  heatwaves

- Distrophic events

- Chemical contamination

OUTCOMES:
Provision of maps of hazard
for each pressure: H_P
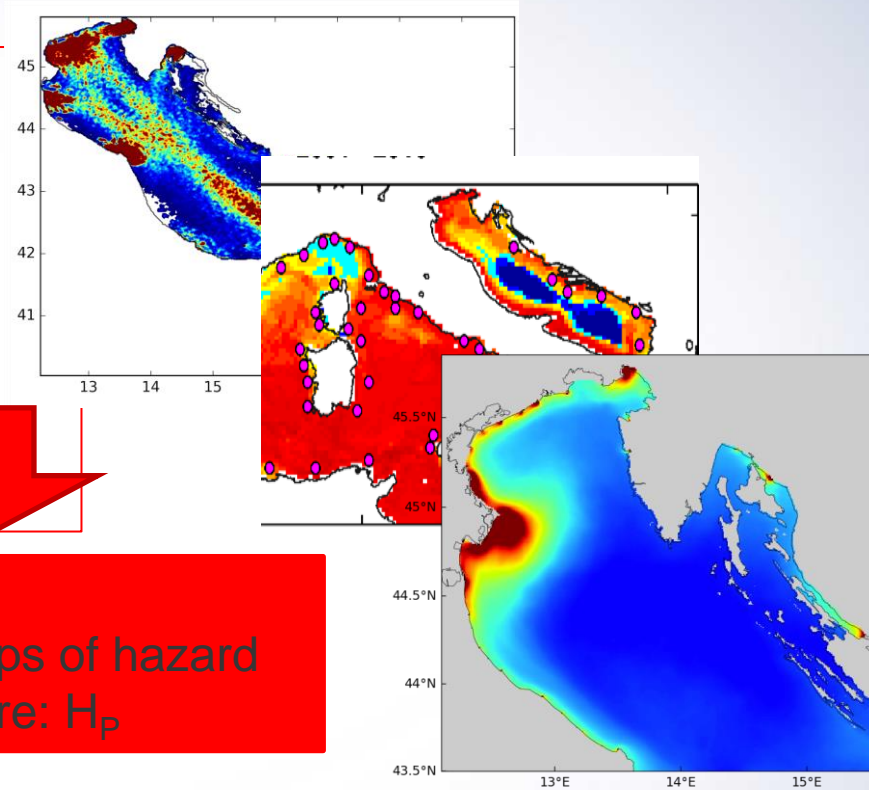
Representing:

Occurrence, presence, concentration of hazard: **layer of hazard**
Expressed using a Index of hazard

Interreg
Mediterranean

EUROPEAN UNION

Transnational
On-Demand Access Actions

Joint collaborative on-demand actions capitalising on existing assets to share technology, methods, expertise, facilities and knowledge on marine threats, hazards and observations in the Mediterranean Sea

Major innovative and practical capitalisation endeavour through joint sub-projects offered by donors to Mediterranean recipients, consisting of doable joint actions to implement and set up systems at the recipient sites, or to train, or to undertake joint observations and assessments.

What is on offer

Closing date 31st March 2022

Various offers by competent donors

Eligible applicants should be qualified professionals formally engaged within a legal entity in the Mediterranean region

Closing date of 2nd call: 31st March 2022

Apply at:
www.capemalta.net/sharemed-on-demand

Activity Coordinator:
Prof. Aldo Drago

For further information:
Tel: +356 99832830
Email: aldo.f.drago@gmail.com

•Applicants are expected to fill in an online application form
•letter of intent by the applicant/s
•letter of recommendation by the responsible of the legal entity to which the applicant/s pertain
•list of resources made available by the applicants for the execution of the activity
•letter of commitment from the part of the applicants

Thematic EXPERT GROUPS

A6.2.1 Expert meetings on the transnational marine ecosystem observing system of systems

Core group set up (EOOS, EuroGOOS, UfM, JERICO, experts, UN Decade); bi-lateral meetings in progress; first meeting in January

A6.2.2 Expert meetings on transboundary sources of pollution

Action is starting

Recommendations for the future transnational system of observing systems	Design & prepare recommendations for an integrated system of systems to observe and monitor the marine ecosystem in all its components, resolving coastal scales (merging models, EO and in situ data), and fitting the challenge of coupling the growing marine economic sector to sustainable development, securing ecosystem services to future generations; workplan considers international governance frameworks for a combined effort across countries
Action plan on marine environmental threats and pollution	A collaborative effort to systematise existing knowledge and sustain a common understanding of environmental threats and pollution, including those of transboundary origin, for long term strategies and common action plans jointly with stakeholders.

CREDIT https://www.bing.com/images/

Interreg Mediterranean

EUROPEAN UNION

Capitalisation Groups build on one another

Project Capitalisation Group

Task 6.2 Expert Groups

Capitalisation Regional Groups

TARGET

FRAMEWORK DOCUMENT

GUIDELINES, RECOMMENDATIONS, PRACTICES and ACTION PLANS at national, regional and Mediterranean scale

Capitalisation National Groups

SHAREMED LEGACY

Plan is to propose mainstreaming actions endorsed by governments at regional level

SHAREMED
Framework Declaration
for thr Mediterranean Sea

MAIN TARGETS

- an organised sharing of efforts and responsibilities
- more rapid, timely responses to sustainability issues and challenges and
- the intelligent, equitable and calculated benefits that need to be more deeply ascertained to all

THANKS FOR YOUR ATTENTION !!

Prof. Aldo Drago

aldo.f.drago@gmail.com