



SHAREMED

First Capitalisation Workshop

*Designing the future system of observing systems to assess and address threats to the Mediterranean marine ecosystem
- State-of-the-art, needs and future direction*

Webinar: 14-15th December, 2020



Caroline Cusack
CoCliME

Predicting & Managing Harmful Algal Bloom (HAB) Impacts in Coastal Seas

HABs impact shellfish harvesting, fish farming, tourism and human health
Climate change affects HABs occurrence in time and space

Project name: **CoCliME** “Co-developing Climate Services for Adaptation to Changing Marine Ecosystems”

Project coordinator: **Caroline Cusack**

Project duration: **3 years** [with a 5 month null-cost extension]

Funding authority: **JPI Climate ERA4CS** “European Research Area for Climate Services”

Project CoCliME is part of ERA4CS, an ERA-NET initiated by JPI Climate, and funded by EPA (IE), ANR (FR), BMBF (DE), UEFISCDI (RO), RCN (NO) and FORMAS (SE), with co-funding by the European Union (Grant 690462).

Geographic extension: **European Seas including the Mediterranean**

Other useful information? **Transdisciplinary project**

Partners include climate and social scientists, marine ecosystem experts, economists and users from regional authorities and industry



❑ What are the main environmental threats or risks that your project is addressing?

Identifying and managing harmful algal bloom risks in a changing climate

❑ What kind of contribution to the above listed threats/risks does your project provide (e.g. monitoring/observations, scientific knowledge, guidelines, regulations, service, networking,...)?

New monitoring programmes: Mediterranean & Norwegian Sea

Numerous data products: 19 datasets (historical, statistical model outputs, downscaled numerical hindcast & climate models)

Software: to manipulate and visualise the datasets

Scientific knowledge: Scientific papers on HAB drivers and prediction, phytoplankton activity, impact of climate change on the state of the ocean, best practice for ocean monitoring and prediction

>22 publications and a Special Issue in the journal "Harmful Algae"

Training services: qPCR molecular biology training for NMP scientists, Sampling approaches for co-developers

Prototype services: Ranges from TRL 2 to 5

Example: Mediterranean - Predicted maps of present and future abundances of *Ostreopsis cf. ovata* along western Mediterranean shores (TRL 3)

❑ What kind of information/data is your project able to provide?

- At what spatial scale? **Metres to kilometres**
- At what temporal scale? **Weekly, to decadal, to end of century** [depends on case]
- What are the main gaps/needs from a scientific and technological point of view?

Gaps: Understanding of oceanographic and ecosystem processes; downscaled regional models (statistical and numerical)

Needs: Investigations of the biological complexities (life cycle, predator/prey dynamics) and biological-physical interactions to inform models; A deeper understanding of the co-developers institutional processes to ensure products and services are aligned with customer needs; More Economists, Social Scientists and Scientific Communicators dedicated to work with Natural Scientists; Long term sustained funding of ocean observing initiatives (biological, chemical, physical ECVs).

- Is your project addressing specific EU, international or regional regulations (e.g. MSFD, WFD, Ballast waters, MARPOL, ...)?

No

- Which main bottlenecks need to be addressed in connection with environmental threats or pollution risks **in the Mediterranean**? (e.g. lack of data on specific variables, lack of knowledge about interaction mechanisms of pollutants with the ecosystem, low coordination, lack in data management and interoperability, technology, temporal continuity, spatial scale, limited uptake by society/authorities,...)

Bottlenecks: Continuity of environmental monitoring; *in-situ* measurements biogeochemical and physical variables (ECVs/EOVs); FAIR data policy in some cases

- How did your project contribute to solve such bottlenecks **in the Mediterranean**?
Set-up a monitoring programme with training sessions for the co-developers; Datasets documented; Research carried out into a potential chemical hazard produced by the microalgae; Collaborated with external groups who provided downscaled regional climate modelled data to the project

- ❑ Which governance frameworks are needed to address such challenges more extensively?

Suggestion....

Globally: Establish cooperation between the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services ([IPBES](#)) and IOC-SCOR [GlobalHAB](#) programme

- ❑ Main take home messages from your project and suggestions for future project trajectories and/or integration with other research programs

Partners should commit to the transdisciplinary approach [communicating between biologists – chemists – oceanographers – modellers – economists – social-scientists – stakeholders is a learning process]

Time is needed to define a common language and understanding; exposure to new concepts and terminology facilitates learning and innovation

Flexibility is important

Long term commitment is required from governments to allow the advancement of ecologically focused ocean climate services, and their continuity

Experts in 6 different disciplines, from 12 Partner Institutions, across 7 EU Countries

6 Case Studies & 5 target marine sectors

- **Atlantic** - Aquaculture, Sea Food Safety, Tourism (FR, IE);
- **Baltic Sea** - Water Quality, Tourism, Aquaculture (DE, SE)
- **Black Sea** - Health, Fisheries, Tourism (RO)
- **Mediterranean** - Tourism, Health (ES, FR)
- **North Sea** - Fisheries, Aquaculture, Tourism (DE, NO, SE)
- **Norwegian Sea** - Fisheries, Aquaculture (DE,NO)

6 Disciplines

- **Social scientists & knowledge brokers** (FR, IE, NO, SE)
- **Economists** (FR)
- **Modellers** - climate, numerical, statistical (IE, FR, SE)
- **Biologists** - taxonomists, molecular (DE, ES, FR, IE, NO, RO, SE)
- **Chemists** (DE, FR)
- **Oceanographers** (DE, ES, FR, IE, NO, RO, SE)

Countries: Germany (DE), Spain (ES), France (FR), Ireland (IE), Norway (NO), Romania (RO) and Sweden (SE).

