



# EuroSea

**EuroSea** brings together 53 organizations working across the **European seas** (Baltic Sea, North Sea, Mediterranean Sea, and Black Sea) and the **Atlantic Ocean**.

**EuroSea** partners are oceanographic institutes, met offices, hydrographic agencies, universities, associations, panels, and private companies. Through **EuroSea**, these organisations **improve the coordination of Europe's ocean observing and forecasting** and **deliver information and solutions to support decision-making** in the areas of climate, ocean health, and maritime activities.



 @Euro\_Sea

 EuroSea H2020

 [www.eurosea.eu](http://www.eurosea.eu)



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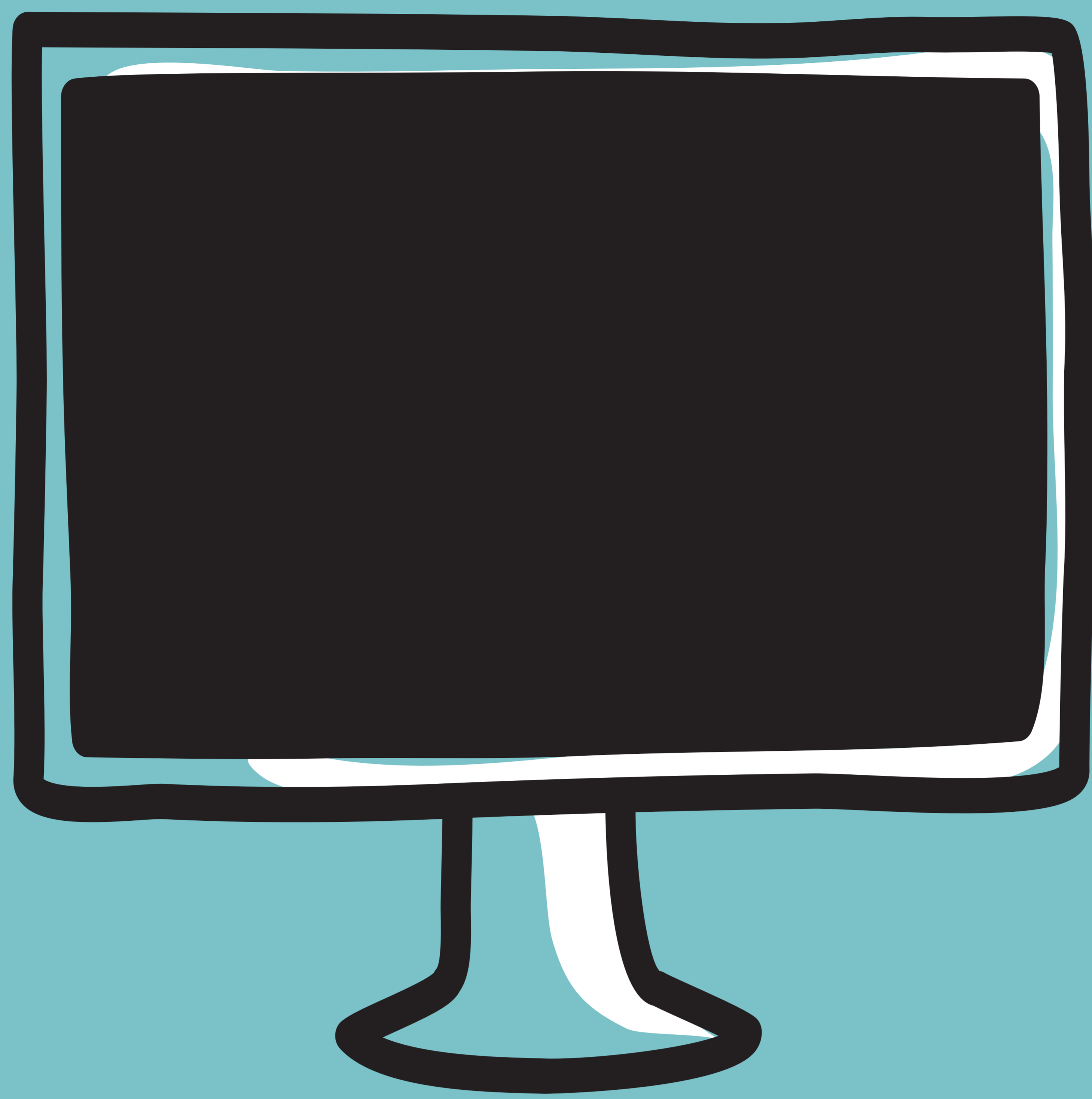


# EuroSea: Improving and integrating the European Ocean Observing and Forecasting System

## PARTNERS







# EUROSEA IN FIGURES



12 Languages

16 Countries

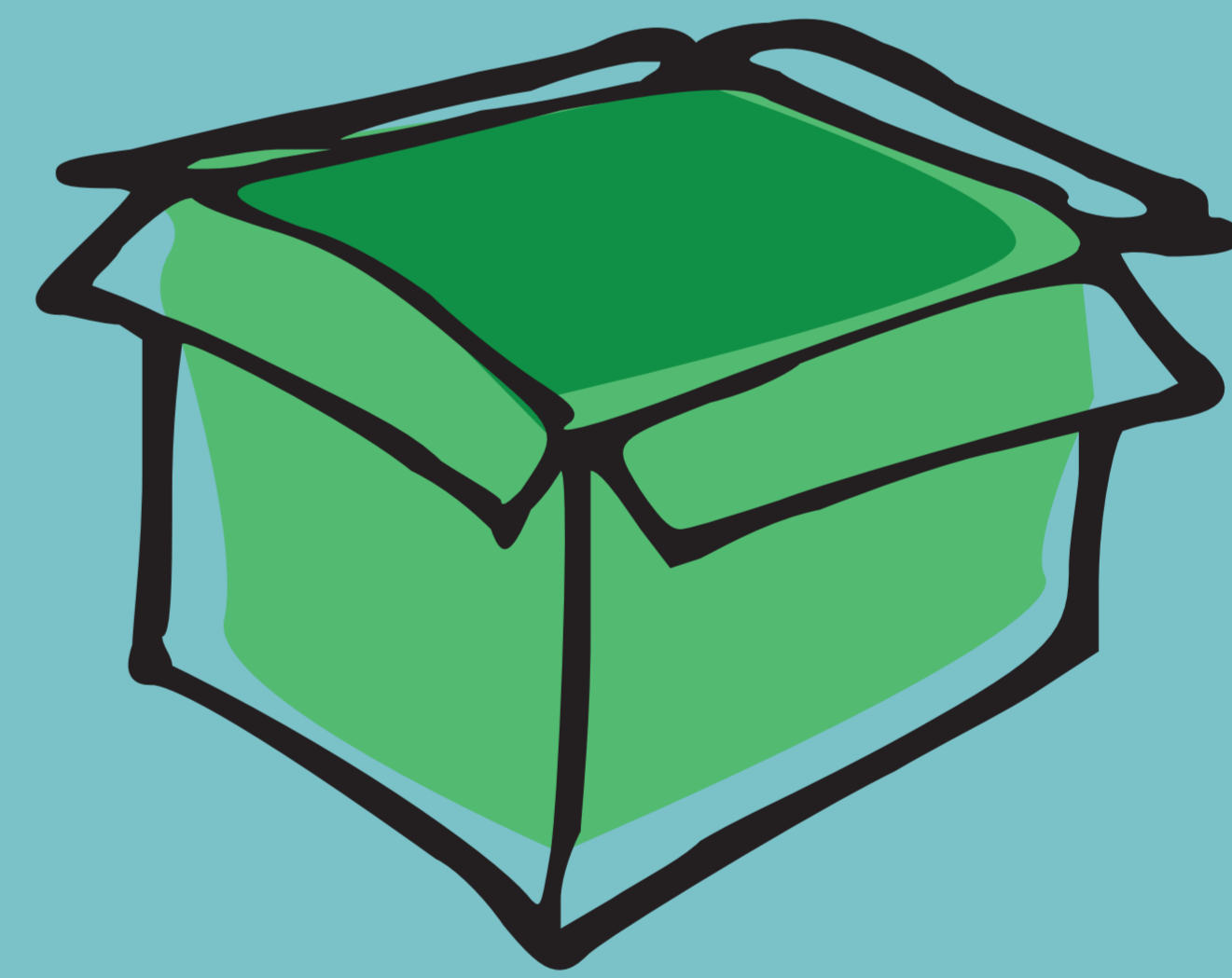
158  
Members



98



60



10  
Work  
Packages



53 Partners



31

Milestones



63

Tasks

85



Deliverables



Budget



12.3M€





# INNOVATION ACTION

**EuroSea** is advancing research and innovation towards a **user-focused, truly interdisciplinary, and responsive European ocean observing and forecasting system**, that delivers essential information for **human wellbeing and safety, sustainable development, and blue economy** in a changing world.

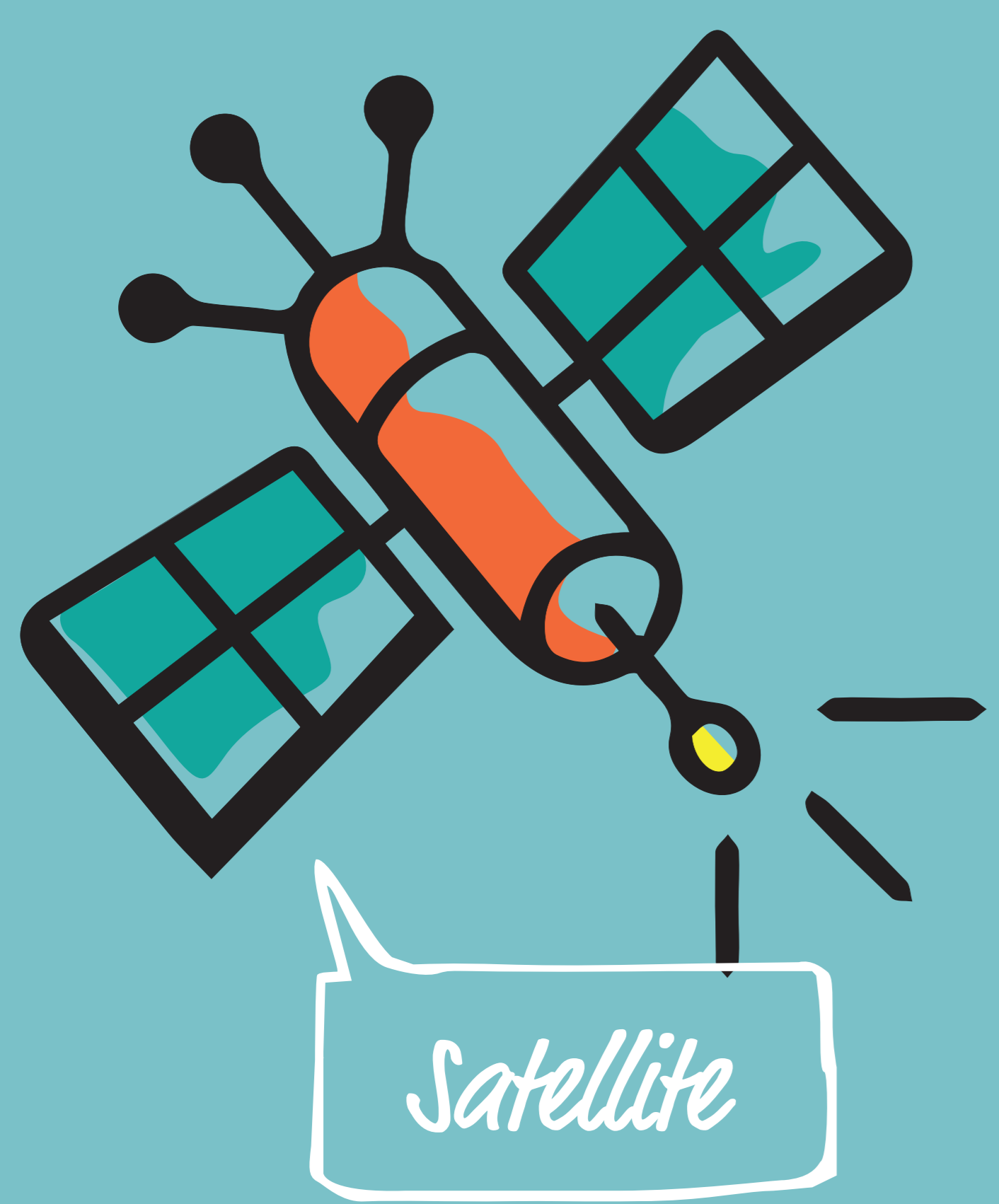
**Ocean observing and forecasting systems** are needed to **advance scientific knowledge** about our climate, marine ecosystems and their vulnerability to human impacts, **predict the ocean conditions, and underpin decisions and policies**. We simply cannot have a viable economy and healthy environment without them!





# IMPROVE THE EUROPEAN OCEAN OBSERVING

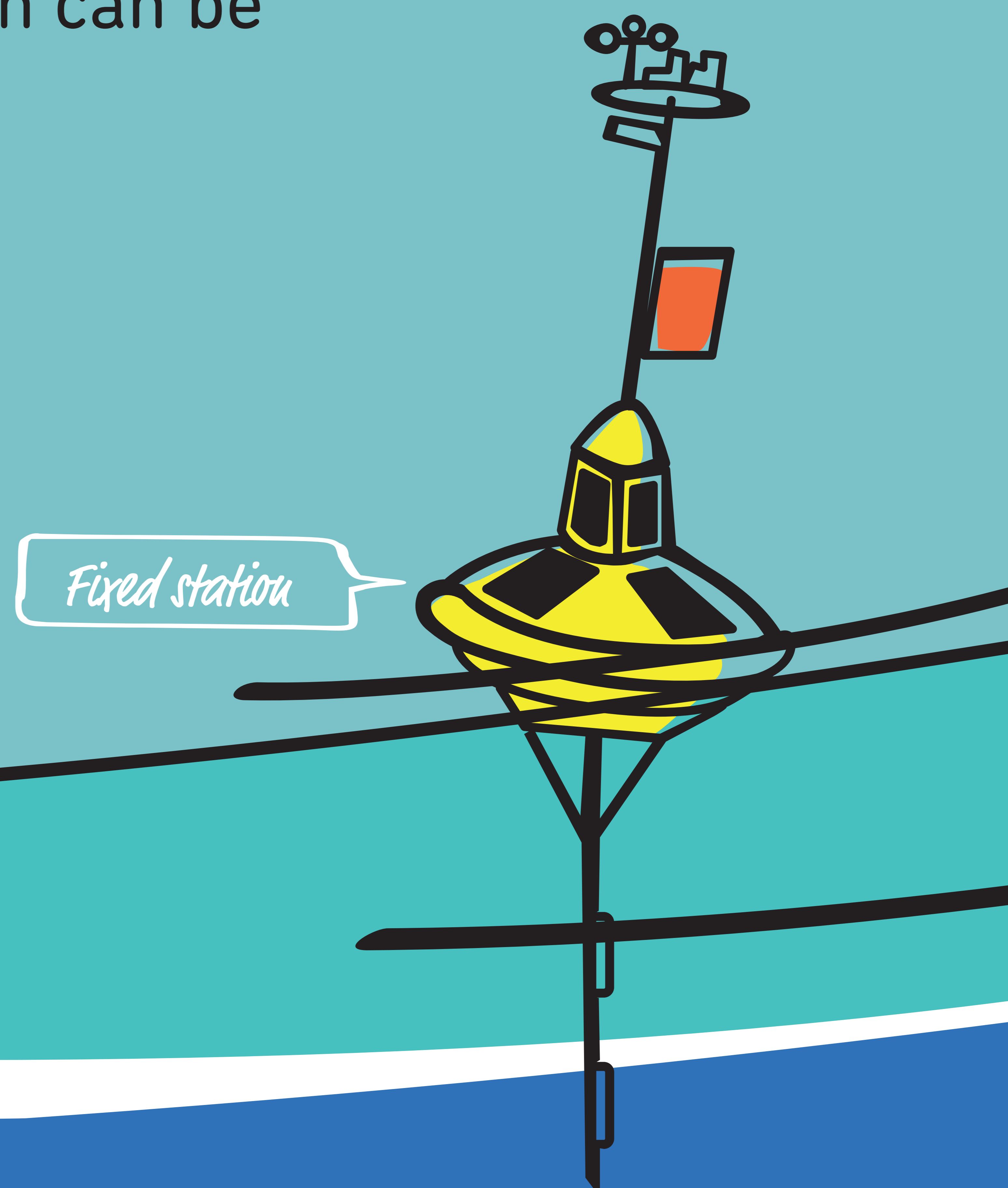
*Connecting ocean data, understanding the ocean*



From ancient times, the fascination with the sea has driven humanity to travel and observe the ocean. From the 1980s onwards, oceanography underwent a radical transformation, long campaigns aboard oceanographic vessels gave way to permanent monitoring of the ocean through new instruments and observation technologies, on the coast or from space via satellites. Innovative measurement techniques appeared, along with more efficient methods of data analysis and processing.

**EuroSea** improves the **ocean observing system**: Argo profilers, underwater gliders, eulerian observations, sea-level platforms, high-frequency radars, and autonomous surface vehicles. These oceanographic instruments obtain a wide range of data related to the **Essential Ocean Variables**, which help us to interpret the connection between the ocean and elements such as the atmosphere, biosphere, hydrosphere, cryosphere, and anthroposphere.

**EuroSea** is improving the **ocean knowledge** and **information**. An important element of this work is the promotion of **Findable, Accessible, Interoperable, and Reusable (FAIR) ocean data** which can be available for all users, spanning policymakers, industry, scientific community, and society.






# ESSENTIAL OCEAN VARIABLES




## PHYSICS

- Sea state
- Ocean surface stress
- Sea ice
- Sea surface height
- Sea surface temperature
- Subsurface temperature
- Surface currents
- Subsurface currents
- Sea surface salinity
- Subsurface salinity
- Ocean surface heat flux



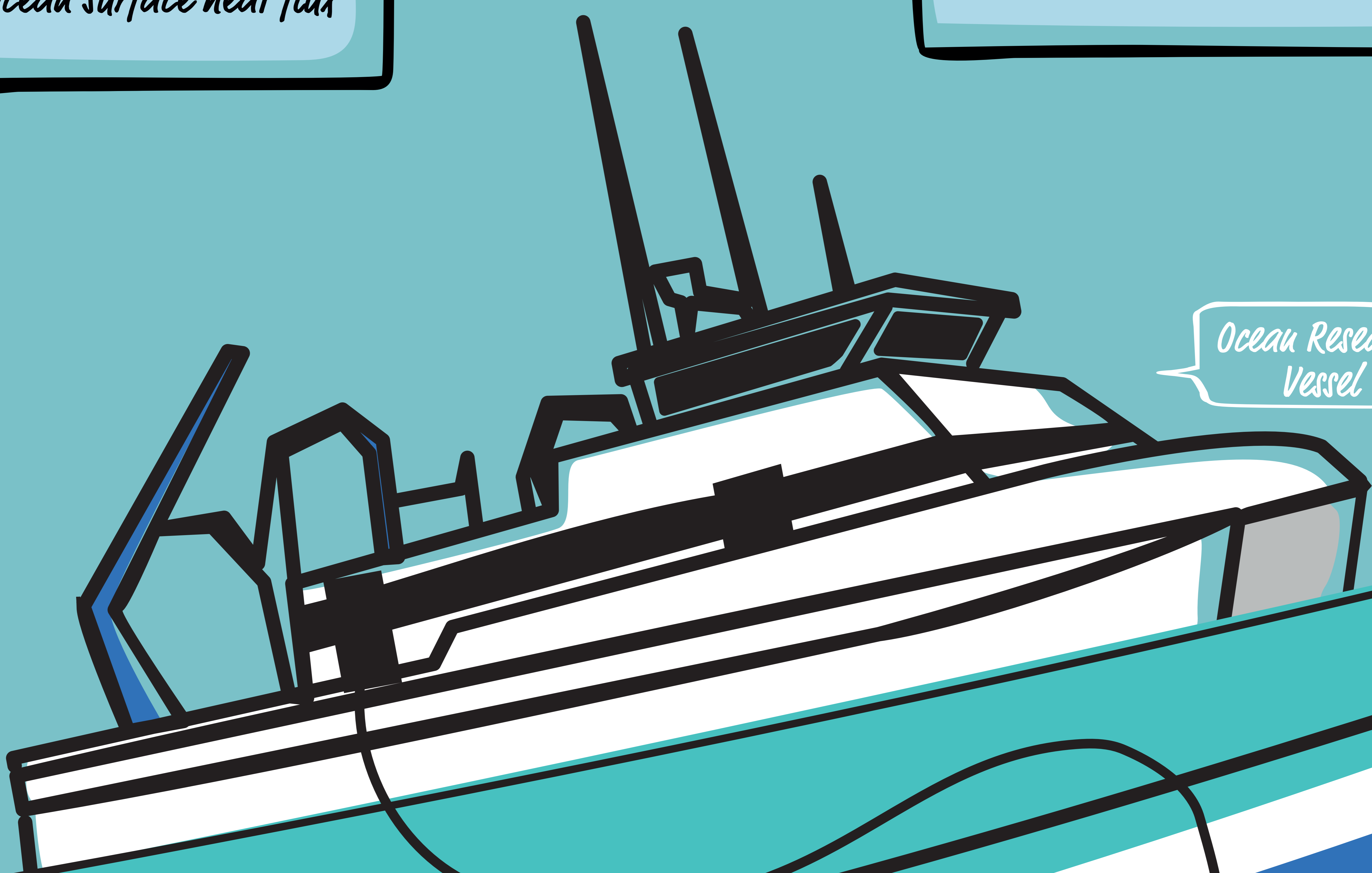
## BIOCHEMISTRY

- Oxygen
- Nutrients
- Inorganic carbon
- Transient tracers
- Particulate matter
- Nitrous oxide
- Stable carbon isotopes
- Dissolved organic carbon

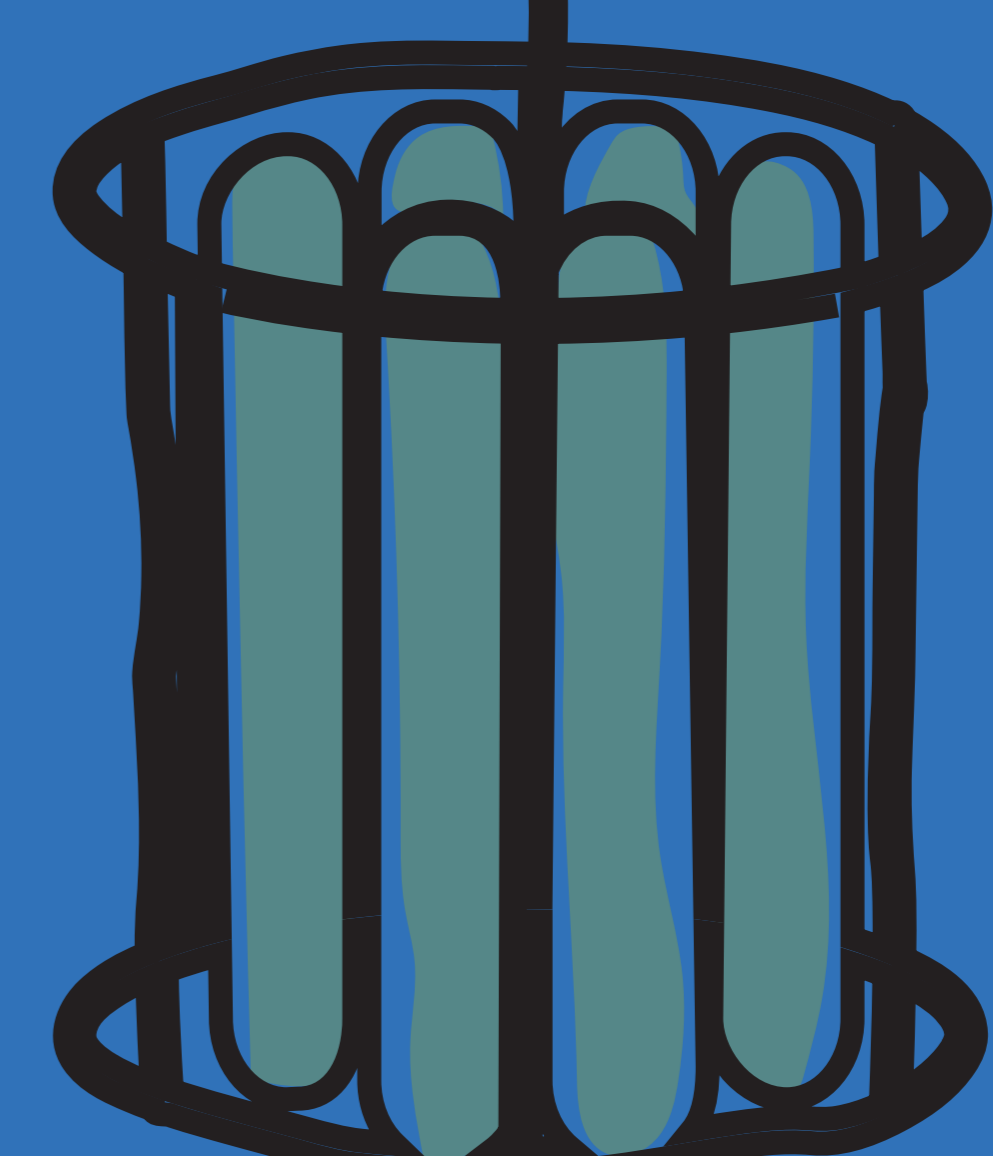


## BIOLOGY AND ECOSYSTEMS

- Phytoplankton biomass and diversity
- Zooplankton biomass and diversity
- Fish abundance and distribution
- Marine turtles, birds, mammals abundance and distribution
- Hard coral cover and composition
- Seagrass cover and composition
- Macroalgal canopy cover and composition
- Mangrove cover and composition



Ocean Research Vessel





# BOOST CAPACITY IN OCEAN FORECASTING

*Modelling for the future*

The study of the ocean is complex. **EuroSea** is combining the data from the sea with satellite observations, integrating physical, biological, and biogeochemical observations and forecasting models. Furthermore, scientific production or evidence-based expert advice, as well as communication, are part of the day-to-day work of EuroSea members. **Multidisciplinary teams** of researchers, technicians, computer scientists, managers, and communicators contribute to **EuroSea**, working at sea onboard research vessels or on land in laboratories, technical facilities, and offices. They all work collaboratively in a network, united by their passion for the ocean.

**EuroSea** intends to show how **ocean observation and forecasting** address pressing issues facing our society, the environment, and the world while fostering public understanding of the ocean's value.

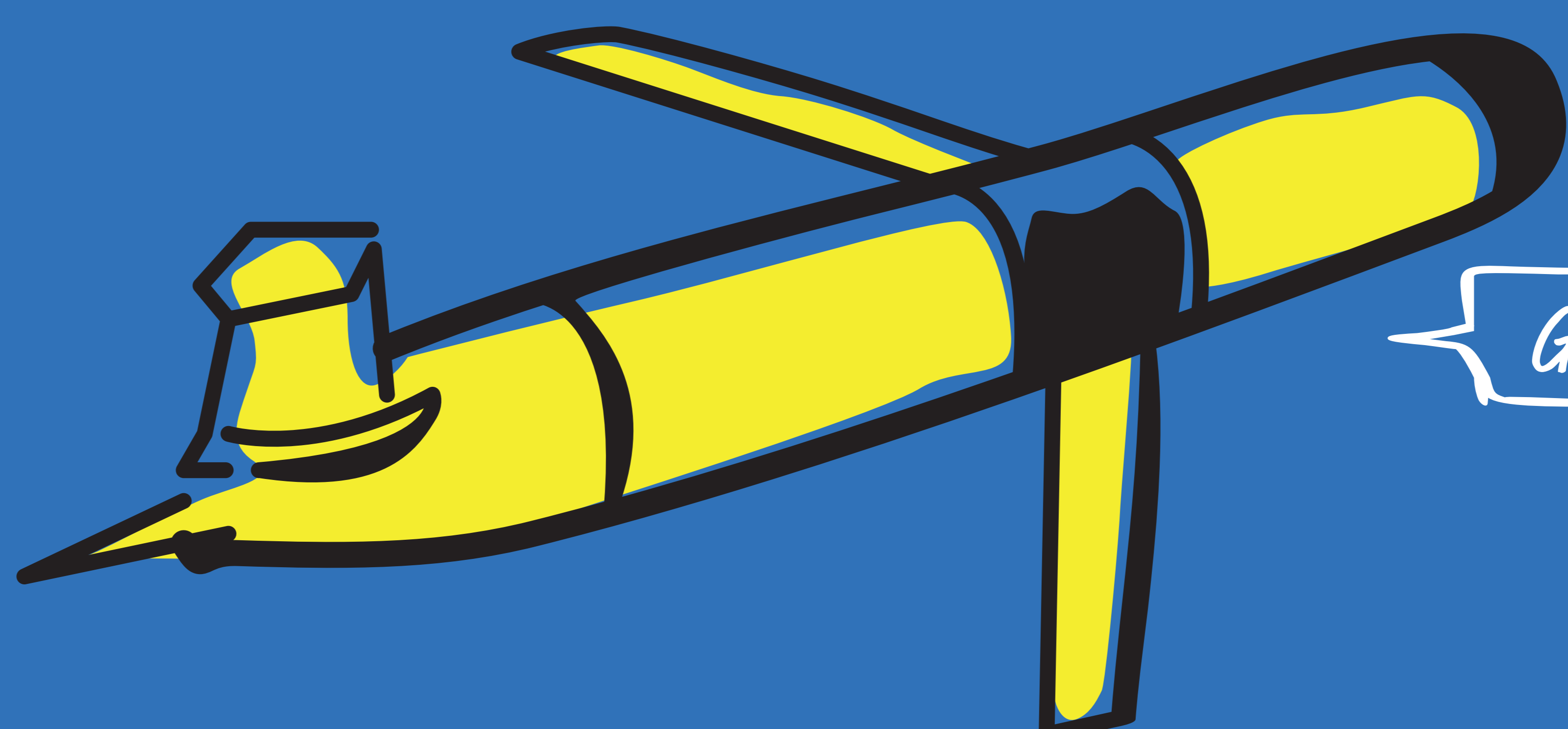
*Forecasting Model*



*Lagrangian platform*



*Glider*



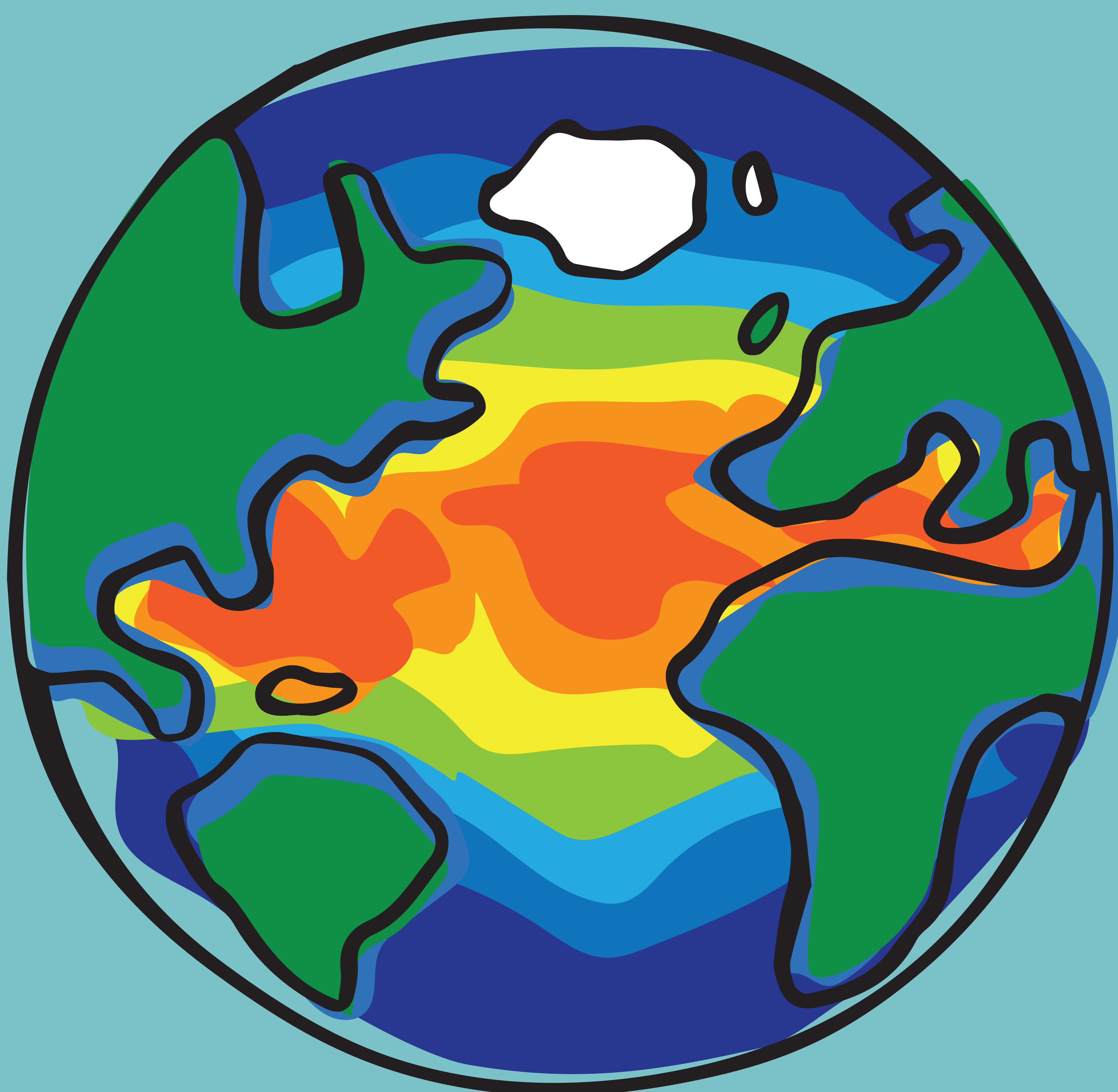


# RESPONDING TO CLIMATE CHANGE

Human activities are threatening ocean health and putting enormous pressure on its ecosystems and services. Climate change impacts (ocean warming, sea-level rise, and acidification, for example), as well as pollution and overfishing, are causing unprecedented changes that can irreversibly jeopardize our environmental well-being and economic vitality.

**EuroSea** assesses the **ocean's role in climate** through new **ocean climate indicators** in order to better support **sustainable management** and the **protection of the ocean and its resources**. Ocean indicator monitoring enables tracking changes in ocean properties that are essential to understand the ocean state, variability, and changes at different scales.

**EuroSea** delivers information about ocean indicators, such as coastal sea level and marine productivity, among others, that are useful for **aquaculture** and **fisheries**, **tourism** and **transport services** as well as **maritime spatial planning** and management.



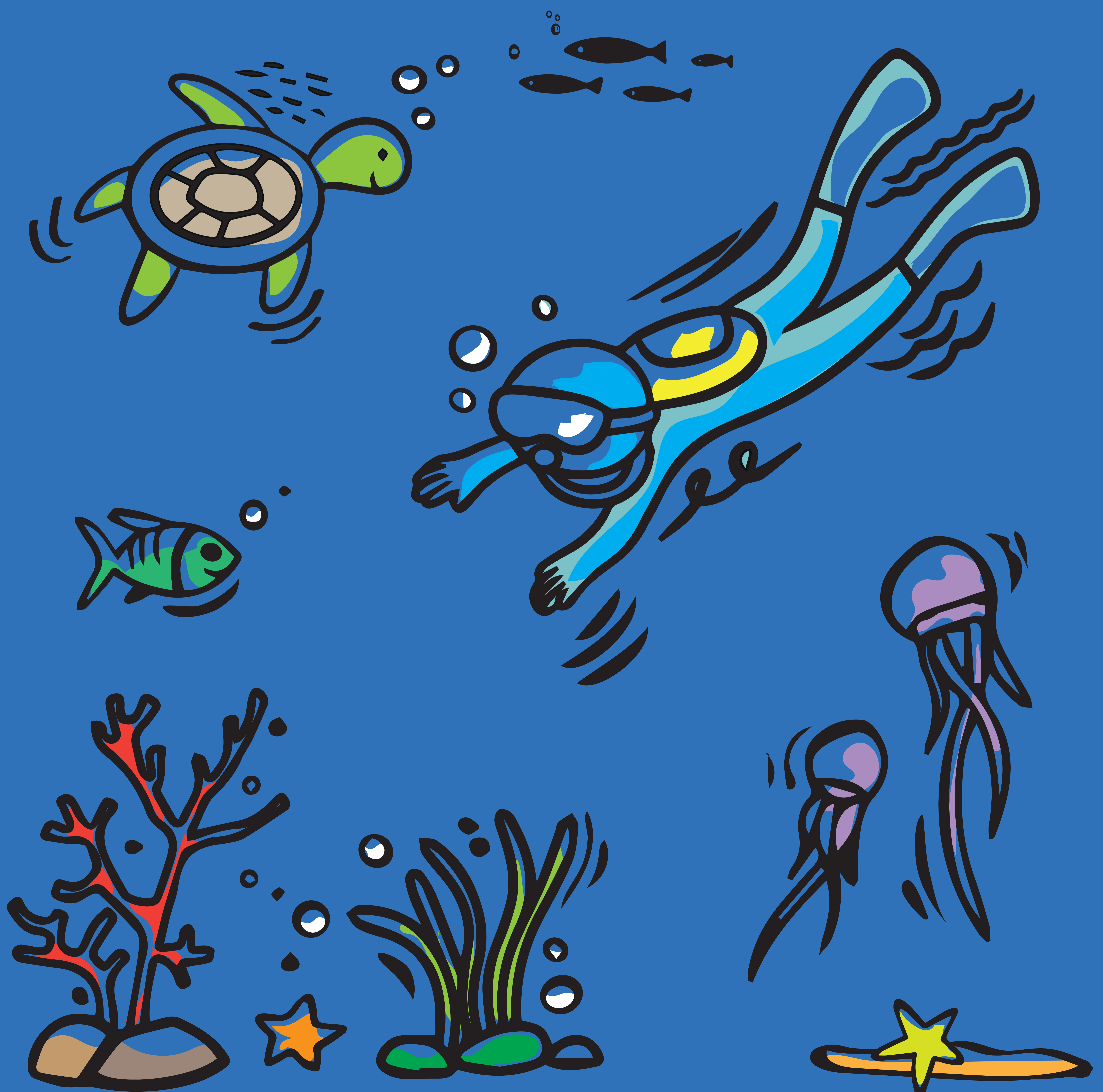


# OCEAN HEALTH

Extreme marine events are threatening marine ecosystems, resources, food security, and related businesses.

**EuroSea** develops **services** and **tools** to assess **marine ecosystem health** and to provide **early warnings** related to extreme marine events (low oxygen level or Marine Heat Waves) for users in **aquaculture, fisheries, tourism,** and **environmental agencies**.

**EuroSea** shares knowledge and seeks science-based solutions to achieve a **more sustainable** and **inclusive economic model**.





# BLUE ECONOMY

The ocean is the basis of prosperity, providing important benefits to the economy and society that contribute to our well-being and quality of life. In this context, the **blue economy**, which considers the ocean as the engine of sustainable and profitable economic development, is gaining relevance.



**EuroSea** works to supply **operational oceanographic services** for ports and cities in order to minimize risks and improve environmental management, such as assessing water quality inside the port, managing beaches, and detecting and mitigating accidents such as oil spills. All these services can be used by **port operators, planning authorities, and local governments.**





# EuroSea





*Observing and understanding  
the ocean is key for our future!*

*Join the #EuroSea Community!*

 @Euro\_Sea

 EuroSea H2020

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