

WHY ObsSea4Clim?

The **ocean** has a profound impact on the **climate** and its dynamics over time. The observations of ocean physical variables gather insights about the state of the ocean's condition, making them essential for understanding and projecting climate-related developments.

It is key for these observations to be sustained and continued long-term, but also to be integrated in a **"multi-purpose" ocean observing system** that is able to deliver suitable information to operational services such as weather services, ocean forecasts, and early warning systems.

Information on dynamics in ocean physical variables also constitutes the baseline for drafting state-of-the-art **ocean and climate assessments**. A set of ocean physical variables are regarded as Essential Ocean Variables (EOVs) and Essential Climate Variables (ECVs). EOVs help us interpret the connection between the ocean and the atmosphere, biosphere, hydrosphere, cryosphere, and anthroposphere. ECV provide the empirical evidence needed to understand and predict the evolution of climate, guide mitigation and adaptation measures, assess risks and enable attribution of climate events to underlying causes. ECVs and EOVs form the basis of the Global Climate Indicators, a set of **parameters that describe the changing climate**.

ObsSea4Clim aims to deliver an **advanced framework for sustainable ocean observation**, improving the EOVs and ECVs and paving the way for better ocean and climate assessments.



IMPACTS

ObsSea4Clim contributes to the following impacts:

- Improved capacity to understand, predict, respond and adapt to climate change
- Advancement of science and technology to support adaptation and resilience
- Efficient monitoring, assessment, modelling and data-driven decision-making support systems and projections related to climate change impacts, mitigation and adaptation potential
- Better understanding and strengthening of mitigation potential of ecosystems and sectors based on the sustainable management of natural resources
- Increased climate change mitigation in primary sectors

OBJECTIVES

ObsSea4Clim aims to deliver an improved framework for nations' contributions to European ocean observations of EOV/ECVs in support of regional and global climate assessments, projections and actionable indicators for sustainable development.

- To develop ocean indicators, provide improved EOV/ECVs and evolve European ocean observing
- To advance the use of EOV and ECVs for improved Earth System Models (ESM) and reduced uncertainty in projections
- To create an interoperable data ecosystem serving multidisciplinary needs
- To develop best practices and standards for interoperable in-situ and satellite observing
- To place Europe at the forefront of the global coordination of the broader ocean-climate nexus

PROJECT SNAPSHOT

Project Title: Ocean observations and indicators for climate and assessments

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Funding Programme

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Project Coordinator: Danish Meteorological Institute

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OUR APPROACH

The World Meteorological Organization (WMO) employs what is known as the WMO Rolling Review of Requirements (RRR) in their sustainable multi-purpose weather and climate observation system. At its core, this approach evaluates global observation needs by consolidating nations' regional **requirements for observations**, validating them against current and emerging **observing capabilities**, undertaking a **critical review** to assess their adequacy, and providing a **statement of guidance** recommending fit-to-purpose observation systems for nations, ensuring sustainability in multi-purpose weather and climate observations.



ObsSea4Clim approach is based on the RRR methodology. The project will adopt four methodological steps (light blue boxes) and apply them to six application areas (in the center of the diagram).

PROJECT PARTNERS

- Danish Meteorological Institute (DMI)
- Ecole Normale Supérieure (ENS)
- Mercator Ocean (MOI)
- Havstovan (HAV)
- ETT S.p.A (ETT)
- European Global Ocean Observing System (EUROGOOS)
- IEEE France Section (IEEE)
- Ilmatieteen Laitos (FMI)
- Toulouse School of Economics (TSE)
- National University of Ireland Maynooth (NUIM)
- Hellenic Centre for Marine Research (HCMR)
- Helmholtz-Zentrum für Ozeanforschung Kiel (GEOMAR)
- Stiftelsen Nansen Senter for Miljø og Fjernmåling (NERSC)
- Alma Mater Studiorum - Università di Bologna (UNIBO)
- +Atlantic Associação para um Laboratório Colaborativo Atlântico (+ATL)
- Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC)
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