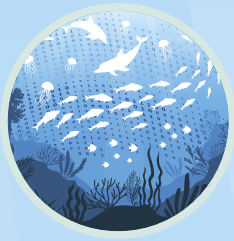

DTO-BioFlow

Integration of biodiversity monitoring data into the Digital Twin Ocean

dto-bioflow.eu

Unlocking the Potential of Marine Data

Powering the EU Digital Twin Ocean (DTO) for a Sustainable Future

The DTO-BioFlow project has been funded to address significant gaps in marine biodiversity data availability and their integration into the biodiversity component of the EU Digital Twin Ocean (DTO), to provide a **comprehensive digital replica of marine ecological processes.** A myriad of actors (researchers, public bodies, blue economy operators, NGOs and citizen science groups) are collecting marine biodiversity data for various purposes and using a diverse set of collection methods.

Yet, despite significant advancements in Europe to collect, harmonize, and make these marine biodiversity data available through initiatives like EMODnet, Copernicus Marine, MBON, OBIS, and GOOS, **a large portion of data remains unavailable or inaccessible, limiting its societal value and the effectiveness of digital twins as conservation and policy development support tools.**

That's where DTO BioFlow steps in.

DTO-BioFlow **aims to unlock and integrate "sleeping" marine biodiversity data** by making it publicly available through the **European Marine Observation and Data Network (EMODnet)**, Europe's central hub for marine in situ data. The project will mobilize and build capacity among biodiversity monitoring actors in Europe to increase the sustained flow of **FAIR data** into EMODnet and the DTO.

Engagement
Workshops, matchmaking events, and webinars to involve potential users.

Demonstrator Use Cases
Developed to maximize uptake and demonstrate the value of sustained data flows.

From data source to user application in the DTO:

DTO-BioFlow workflow

1

Identification of unavailable data sources and new data types

HOW

- Identification of unavailable data sources, **barriers** to their integration, and **establish priorities** for integration.
- Open calls **to engage data holders** to establish workflows and procedures that promote and facilitate the sharing of critical missing marine biodiversity data
- Definition of **automated data flows** from monitoring networks producing new biodiversity data type

2

EMODnet European Marine Observation and Data Network · EurOBIS

Integration of the collected biodiversity data with sustainable procedures and agreed formats

HOW

- **Capacity Building** workshops for data standardisation, quality control and shared communication protocols among providers
- Design of **re-usable data models & ingestion procedures**, towards harmonized pipelines of data products

3

DTO-BioFlow

Demonstrate the end-to-end approach and user application in the DTO-BioFlow

HOW

Several **demonstrators** use cases will be developed to utilise new data flows in the DTO, by **integrating and assimilating them in existing models** using the harmonised protocols

EDITO European Digital Twin Ocean

Empowering Communities, Shaping Policy

By fostering community action and working with marine biodiversity data providers and users, **DTO-BioFlow will make biodiversity data more accessible and usable and inform policy development.** This will enhance the overall understanding and management of marine biodiversity, contributing to **sustainable ocean governance.**
The project aligns with the EU's Biodiversity Strategy and the Mission "Restore our oceans and waters by 2030." It supports efforts **to protect and restore marine ecosystems**, which are critical components of EU environmental policy.
Ultimately, DTO-BioFlow will contribute to:

Significant progress towards an **operational and fully functional** EU DTO marine biodiversity component.

Advanced biodiversity and ecosystem monitoring capacity and infrastructure enabling **comprehensive biodiversity mapping and monitoring.**

Mobilised and empowered biodiversity monitoring community.

Increased knowledge of biodiversity understanding, monitoring, and prediction skills **to analyse and assess the performance of EU ocean policy.**

DTO-BioFlow

Integration of biodiversity monitoring data into the Digital Twin Ocean

Consortium

VLIZ COORDINATOR

AARHUS UNIVERSITY

ciimar Centro Interdisciplinar de Investigação Marinha e Ambiental

cnrs

Fondazione COISPA ETS

COMMpla Communication Platforms and Online Solutions

CSC

CSIC Consejo Superior de Investigaciones Científicas

Danmarks Tekniske Universitet DTU

EMBL

EMBRC EUROPEAN MARINE BIOLOGICAL RESOURCE CENTRE

GEOMAR

GÖTEBORGS UNIVERSITET

hcmr ΕΛΚΕΘΕ

Helmholtz-Zentrum hereon

ICES International Council for the Exploration of the Sea CIEM Conseil International pour l'Exploration de la Mer

INSTITUUT NATUUR- EN BOSONDERZOEK EIGEN VERMOGEN

IT4I

LifeWatch ERIC

Marine Biological Association

MARIS

MarSens MARINE OPTICS & REMOTE SENSING

MERCATOR OCEAN INTERNATIONAL

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