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European Digital Twin Ocean platform: an innovative platform for making ocean knowledge readily available

Marina Tonani¹, Alain Arnaud¹, Lennert Tyberghein², Quentin Gaudel¹, Jerome Gasperi¹, Julia Vera³, Conor Delaney³, and Frederic Leclercq²

¹Mercator Ocean International, Toulouse, France

²Flanders Marine Institute, Oostende, Belgium

³Seascope Belgium, Brussels, Belgium

The European Digital Twin Ocean is a central component of the Digital Ocean Knowledge System under the EU Mission "Restore our Ocean and Waters." The EU Digital Twin Ocean aims to make ocean knowledge accessible to all—from international policymakers, national governments, and researchers to businesses, entrepreneurs, activists, and citizens. It provides a comprehensive set of user-driven, interactive, and decision-making tools, all supported by scientific data.

The European Commission launched the DTO's development at the One Ocean Summit in February 2022. To support this, EDITO-Infra project was launched to develop the EU Digital Twin Ocean platform prototype, creating a unified, cloud-optimized gateway to Europe's marine information assets, including EMODnet and Copernicus Marine. The platform is equipped with cutting-edge tools, marine models, and applications that enable users to build "what-if" scenarios, facilitating informed decision-making.

Closely aligned with EU policies under the European Green Deal, the platform contributes to initiatives such as the Marine Strategy Framework Directive, the Biodiversity Strategy to 2030, and other key environmental policies. Through advanced data integration and cloud computing, EDITO-Infra is driving digital transformation in ocean science, positioning the EU Digital Twin Ocean as a vital asset for the sustainable management and protection of Europe's marine environments.

In 2025, the project will enter its second phase, transitioning from a prototype to an operational platform with enhanced capabilities. The platform aspires to provide broad public access to an extensive range of ocean observations and data, models, cloud and high-performance computing resources, and a collaborative environment where users can integrate their own data and models, as well as develop their own applications.

The EU DTO platform is designed in accordance with international standards, enabling interoperability with other digital twins and supporting the integration of digital twins developed by a diverse range of communities. This is made possible through contributions to and participation in international initiatives such as the Digital Twins of the Ocean (DITTO) under the UN Decade Programme.