

The EOSC Node | European Digital Twin Ocean enters production as part of the EOSC Federation

The EOSC Node European Digital Twin Ocean is moving into production, making its services available through the EOSC Federation and opening new opportunities for cross-border and cross-disciplinary research.

8 October 2026—The EOSC Node European Digital Twin Ocean has entered production as part of the [EOSC Federation](#), marking the transition from developing and prototyping the Node to delivering operational services and resources for researchers. This moment marks the culmination of a decade of [European](#), [national](#) and [organisational](#) investment in the development of EOSC.

The Node brings together leading European ocean and marine data and knowledge services, research infrastructures and e-infrastructures, and contributes computing, storage, analytical and generic services, and aggregates over 10 million datasets. Through the Federation, these resources can be discovered and used alongside complementary capabilities provided by [other EOSC Nodes](#) across Europe.

The EOSC Federation as a whole will mark the entrance into its operational phase at the [EOSC Symposium 2026](#) in Florence on 14–16 October. The EOSC EU Node and the Federation’s 27 national, thematic and e-infrastructure Nodes—supported by 218 European research organisations—are creating a distributed European research environment in which data, services and computing resources can be used across institutional, disciplinary and national boundaries. This month’s transition into operations ushers in a growth phase for the Federation that will see an expansion of Nodes, data and services year over year. The milestone comes at the right time for the marine research community, as the EOSC Marine project, which supports the operationalisation of the EOSC Node European Digital Twin Ocean, is starting its work with a [kick-off meeting in Pisa](#), Italy, on 12–13 October 2026, right before the EOSC Symposium.

From infrastructure to science

The Federation is designed to make high-quality research data and services easier to find, access and reuse while supporting FAIR and open science, provenance, security and trusted access. Across EOSC, ongoing [scientific use cases](#) already span areas including climate and marine science, infectious-disease surveillance, cancer research, advanced imaging and AI-supported discovery.

The EOSC Node European Digital Twin Ocean is contributing to research in marine science through the [biological sequestration of carbon in the ocean](#) scientific use case. This scientific use case addresses the ocean’s critical role in mitigating climate change through biological carbon sequestration, a process by which marine microorganisms capture atmospheric carbon dioxide and store it in the deep ocean for centuries.

Despite its global importance for climate modelling, this mechanism remains poorly represented in current models, which still rely on simplified representations of marine ecosystems. The use case seeks to fill this knowledge gap by integrating genomic, environmental, and modelling data within a unified, open, and interoperable framework provided by the EOSC Federation.

The use case enables distinct scientific domains—genomics, oceanography, and climate modelling—to interconnect seamlessly across distributed infrastructures. Connecting with other EOSC Nodes, such as France’s Data Terra EOSC Node and Poland’s national Node, offers future opportunities for regional scale modelling as well as the integration of imaging with genomic data.

A growing European research capability

EOSC embodies an important [European approach](#) to research-data governance designed to counter global pressures on European data sovereignty. This is achieved through distributed ownership, institutional autonomy, interoperability and cooperation under shared rules.

Within this proven framework, the EOSC Node European Digital Twin Ocean will continue to improve its services for researchers, expand the resources available through the Federation and develop new connections with scientific communities and other Nodes.

“Entering production means that the EOSC European Digital Twin Ocean Node is moving from preparation to delivery. Marine researchers can now access data, services and virtual research environments through a single, trusted European entry point, with federated authentication and shared catalogues. As the Open Science component of the European Digital Twin of the Ocean, our Node connects research outputs to the operational services that support ocean science and policy. By working with other EOSC Nodes, we can integrate these resources into cross-domain workflows, so that marine knowledge contributes to science well beyond our own community.”

Pasquale Pagano, Coordinator, EOSC European Digital Twin Ocean Node, CNR

Experience the EOSC Federation via the EOSC Node European Digital Twin Ocean at <https://eosc-dto.d4science.org>

Explore the EOSC Federation’s Nodes and scientific use cases, and learn more about how the Federation is being built and by whom: <https://eosc.eu/building-the-eosc-federation>

EOSC and FP10: <https://eosc.eu/eosc-and-fp10>

About the EOSC Node European Digital Twin Ocean

The European DTO Node evolves the Blue-Cloud Marine Thematic Node into the Open Science and research component of the European Digital Twin of the Ocean (EDITO). It links the EOSC Federation with EDITO through interoperable services, FAIR marine data and collaborative research environments.

Run by leading European marine data services, research infrastructures and e-infrastructures, the Node federates multidisciplinary marine data and offers Virtual Research Environments (VREs), Virtual Labs (VLabs), and computing, storage and analytical services. These are combined with a wide range of data resources to build and run analytical workflows for specific applications.

About EOSC

The [European Open Science Cloud](#) is a federated European environment for research data and services. It connects distributed national, thematic and infrastructure resources through common technical and

governance arrangements, enabling researchers to access and reuse data and services across institutional and national boundaries.

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