





Let's talk about Marine Biodiversity

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 Inspire Area – European Digital Ocean Pavilion

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Abstract

The NECCTON project: predicting marine ecosystems operationally

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The ocean's biodiversity supports the livelihoods of over three billion people, providing essential services such as food and nutrient cycling. However, marine policy and resource management often lag behind the latest scientific advances—even when state-of-the-art operational models, such as those provided by the European [Copernicus Marine Service](#), are available.

The vision of the [NECCTON](#) project is to inform marine biodiversity conservation and ocean resource management by enabling the integration of novel models and products into operational monitoring and prediction services. This is achieved by merging new data into innovative ecosystem models that incorporate biological and abiotic components, habitats, and stressors affecting marine ecosystems.

NECCTON is building advanced capabilities to simulate higher trophic levels, benthic habitats, and pollutants, and to deliver projections of climate impacts on marine ecosystems in an operational context. The project is developing new data-processing pipelines to harness novel ecosystem observations—including forthcoming hyperspectral satellite data, as well as existing acoustic, pollution, and omics datasets. Machine-learning algorithms are being employed to enhance models and data assimilation methods.

These developments are being tested and applied in thirteen case studies, co-designed with fisheries and conservation managers, as part of NECCTON's impact pathway toward influencing policy and resource management.

Upon completion, NECCTON will equip the Copernicus Marine Service with the scientific and technical capacity to deliver 27 new products in its operational portfolio. This will ultimately support more informed decision-making on the sustainable use of marine resources and the protection of marine biodiversity.

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