



## IBIRYS: a Regional High-Resolution Reanalysis (physical and biogeochemical) of the last 30 years (1993-2023) over the European Northeast Shelf

Reanalyses provide past predictions of the ocean, combining observations and models. Mercator-Ocean has developed a regional reanalysis over the Northeast Atlantic (IBI: Iberia, Biscay and Irish), called IBIRYS. The reanalysis was first delivered in 2015 in the framework of the MyOcean project, and has since been regularly updated, now delivered on the Copernicus Marine Service datastore. It also contributes to the annual Copernicus Ocean State Report, and Ocean Monitoring Indices are calculated from the reanalysis to monitor the health of the ocean. The ocean dynamics and thermodynamics are resolved by the NEMO modelling platform, and the lower trophic levels' ecosystem dynamics is simulated by the PISCES biogeochemical model. The two components are coupled "online". The data assimilation system (Mercator Ocean assimilation system SAM2) allows constraining the physical model in a multivariate way with Sea Surface Temperature, together with all available satellite Sea Level Anomalies, and with in-situ observations. In addition to SAM2, a large bias correction is also applied. The new release of the reanalysis, expected to be on Copernicus products' catalogue in 2025, is now at  $1/36^\circ$  resolution, and benefits from updates of the models (for physics and biogeochemistry), of the data assimilation system, and input data. In this presentation, we present the last evolution of the reanalysis, as well as the assessment of the results for both physical and biogeochemical components. We compare the new reanalysis to the former one, and to the Mercator Ocean global reanalysis GLORYS. We also assess physical and biogeochemical components in confrontation with classical observations (SST, in-situ profiles, etc).

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