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Scientific advances of the MyOcean projects underpinning the transition towards the Marine Copernicus service

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The MyOcean projects supported by the European Commission period have been developed during the 2008-2015 period to build an operational service of ocean physical state and ecosystem information to intermediate and downstream users in the areas of marine safety, marine resources, marine and coastal environment and weather, climate and seasonal forecasting.
The "core" information provided to users is obtained through the combination of satellite and in situ observations, eddy-resolving modelling of the global ocean and regional european seas, biochemistry, ecosystem and sea-ice modelling, and data assimilation for global to basin scale circulation.
A comprehensive R&D plan was established in 2010 to ensure the collection and provision of information of best possible quality for daily estimates of the ocean state (real-time), its short-term evolution, and its history over the past (reanalyses). A service validation methodology was further developed to ensure proper scientific evaluation and routine monitoring of the accuracy of MyOcean products.
In this presentation, we will present an overview of the main scientific advances achieved in MyOcean using the NEMO modelling platform, ensemble-based assimilation schemes, coupled circulation-ecosystem, sea-ice assimilative models and probabilistic methodologies for ensemble validation. We will further highlight the key areas that will require additional innovation effort to support the Marine Copernicus service evolution.