



## **Monitoring and long-term assessment of the Mediterranean Sea physical state**

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The near real time monitoring and long-term assessment of the physical state of the ocean are crucial for the wide CMEMS user community providing a continuous and up to date overview of key indicators computed from operational analysis and reanalysis datasets. This constitutes an operational warning system on particular events, stimulating the research towards a deeper understanding of them and consequently increasing CMEMS products uptake.

Ocean Monitoring Indicators (OMIs) of some Essential Ocean Variables have been identified and developed by the Mediterranean Monitoring and Forecasting Centre (MED-MFC) under the umbrella of the CMEMS MYP WG (Multi Year Products Working Group). These OMIs have been operationally implemented starting from the physical reanalysis products and then they have been applied to the operational analyses product.

Sea surface temperature, salinity, height as well as heat, water and momentum fluxes at the air-sea interface have been operationally implemented since the reanalysis system development as a real time monitoring of the data production. Their consistency analysis against available observational products or budget values recognized in literature guarantees the high quality of the numerical dataset. The results of the reanalysis validation procedures are yearly published in the Quality Information Document since 2014 available through the CMEMS catalogue (<http://marine.copernicus.eu>), together with the yearly dataset extension.

New OMIs of the winter mixed layer depth, the eddy kinetic energy and the heat content will be presented, in particular we will analyze their time evolution and trends starting from 1987, then we will focus on the recent time period 2013-2016 when reanalysis and analyses datasets overlap to show their consistency beside their different system implementation (i.e. atmospheric forcing, wave coupling, nesting). At the end the focus will be on 2016 sea state and circulation of the Mediterranean Sea and its anomaly with respect to the climatological fields to early detect the 2016 peculiarities.