OPERATIONAL ASSESSMENT OF THE REAL-TIME MERCATOR OCEAN ANALYSES AND FORECASTS

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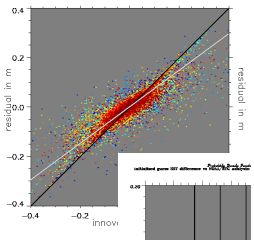
Real-time Mercator-Ocean products

Since the beginning of GODAE and also in the framework of the European projects MERSEA and now Kopernikus/MyOcean, Mercator-Ocean has been designing a hierarchy of ocean analysis and forecasting systems based on numerical models of the ocean and data assimilation systems. Since April 2008, Mercator runs a **global ocean configuration at ¼° horizontal resolution and a North Atlantic and Mediterranean zoom at 1/12°**. The real time operation of these systems produces each week realistic 3-dimensional oceanic conditions including a hindcast, a nowcast and forecasts. Moreover, the **regional zoom is operated daily to produce 7-day forecasts with daily updates of the atmospheric ECMWF forcing**. (Please contact products@mercator-ocean.fr to have more details on the Mercator products)

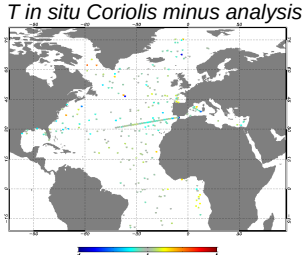
Assimilation performance

The assimilation performance is monitored in the observations space (in situ Coriolis profiles, ½° SST RTG, and altimeters) and the delivery quality of the input data sets is supervised.

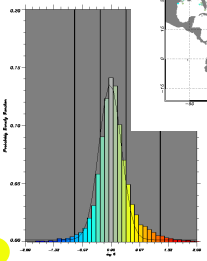
Residual vs Innovation in SLA



Temperature residual
T in situ Coriolis minus analysis



Probability density function : Guess SST difference vs NOAA/RTG SST



Qualibration/validation procedure

Before the distribution of its real-time products, Mercator-Ocean checks the quality with a qualibration/validation procedure. This assessment procedure is operated automatically. It includes comparisons with independent observations and monitoring of the assimilation performance.

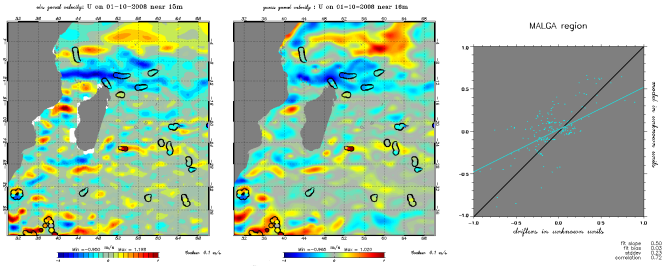
Independent observations

Outputs are compared to independent observations (Cersat Sea Ice concentration and drifts, Odyssea High resolution SST, Coriolis drifters, T/S climatology, historical data sets…). Hindcast, nowcast and forecasts are inter-compared to check the consistency of the production. Some MERSEA metrics (mooring points and 2D oceanic sections) are also used.

Comparisons of zonal velocities with some drifters from the Coriolis Database

Drifters vs SURCOUF

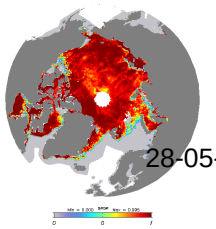
Drifters vs ¼° Hindcast Global system : 2D map (left) and dispersion diagram (right)



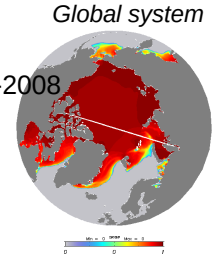
SURCOUF : CLS analysed gridded velocity product from altimetry and drifters

Sea Ice

Observed Cersat Sea Ice Concentration



Hindcast Sea Ice Concentration from ¼° Global system



1300 graphics per week

To fulfil this operational assessment of the system outputs, more than 1300 graphics per week are produced and visualised by a **team of operators** through web pages. A step-by-step document guides them through the validation process. It contains expected nominal values, description of oceanographic structures/water masses, …

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