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# Global Ocean Reanalysis Simulations at Mercator Océan GLORYS1: the Argo years 2002-2009

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Since a decade ago, Mercator Océan develops and operates different ocean forecasting systems based on OGCM models and advanced data assimilation schemes using in situ and remotely sensed data. In the framework of the European GMES MyOcean project (FP7, 2009-2011), Mercator Océan will become a main contributor for the delivery of regular and systematic information to intermediate users & downstream service provider. Conjointly to this operational activity, the generation of global reanalysis simulations is a growing priority to satisfy scientist demands for climate studies.

During this presentation, we will expose the results of the first global eddy-permitting (1/4°) ocean reanalysis simulation performed by Mercator Océan. It covers the 2002-2009 time period, which benefits from the ARGO float measurements. This significant improvement of the Global Ocean Observing System tends to indicate that the last decade is the primary test bed period for the development and the validation of any ocean reanalysis system.
The "reanalysis system" is based on the current operational global ocean forecasting system, available since April 2008: the ocean and sea ice model NEMO is coupled with the SAM2 (Système d'Assimilation Mercator V2) data assimilation system, a reduced order extended Kalman filter with the capability to manage various and high number of observations and specially designed for expensive configurations. Dedicated altimetry database (from CLS) and in situ database (from CORIOLIS data center / Ifremer) have been used for the integration of this reanalysis simulation and the temporal continuity is assured by the IAU (Incremental Analysis Updates) method.

An overall assessment of this reanalysis simulation will be given, with its strengths, its limitations and its necessary update in order to obtain a better depiction of the ocean state along the 2000's or the Altimetry years (1992-today).