



The CMEMS IBI-MFC Forecasting Service in 2017: Evolution and Novelties associated to the CMEMS service release

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The IBI-MFC (Iberia-Biscay-Ireland Monitoring & Forecasting Centre) has been providing daily ocean model estimates and forecasts of diverse physical parameters for the IBI regional seas since 2011, first in the frame of MyOcean projects and later as part of the Copernicus Marine Environment Monitoring Service (CMEMS).

By April 2017, coincident with the V3 CMEMS Service Release, the IBI-MFC will extend their near real time (NRT) forecast capabilities. Two new operational IBI forecast systems will be operationally run to generate high resolution biochemical (BIO) and wave (WAV) products on the IBI area. The IBI-NRT-BIO forecast system, based on a 1/36° NEMO-PISCES model application, is run once a week coupled with the IBI physical forecast solution and nested to the CMEMS GLOBAL-BIO solution. On the other hand, the IBI-NRT-WAV system, based on a MeteoFrance-WAM 10km resolution model application, runs twice a day using ECMWF wind forcing.

Among other novelties related to the evolution of the IBI physical (PHY) solution, it is worthwhile mentioning the provision, as part of the IBI-NRT-PHY product daily updated, of three-dimensional hourly data on specific areas within the IBI domain. The delivery of these new hourly data along the whole water column has been achieved after the request from IBI users, in order to foster downscaling approaches by providing coherent open boundary conditions to any potential high-resolution coastal model nested to IBI regional solution.

An extensive skill assessment of IBI-NRT forecast products has been conducted through the NARVAL (North Atlantic Regional VALidation) web tool, by means of the automatic computation of statistical metrics and quality indicators. By now, this tool has been focused on the validation of the IBI-NRT-PHY system. Nowadays, NARVAL is facing a significant upgrade to validate the aforementioned new biogeochemical and wave IBI products. To this aim, satellite derived observations of chlorophyll and significant wave height will be used, together with in-situ wave parameters measured by mooring buoys.

Within this validation framework, special emphasis has been placed on the intercomparison of different forecast model solutions in overlapping areas in order to evaluate models' performances and prognostic capabilities. This common uncertainty estimates of IBI and other model solution is currently performed by NARVAL using both CMEMS forecast model sources (i.e. GLOBAL-MFC, MED-MFC and NWS-MFC) and non-CMEMS operational forecast solutions (mostly downstream application nested to the IBI solution).

With respect to the IBI multi-year (MY) products, it is worth mentioning that the actual biogeochemical and physical reanalysis products will be re-run along year 2017, extending its time coverage backwards until 1992. Based on these IBI-MY products, a variety of climatic indicators related to essential oceanographic processes (i.e. western coastal upwelling or the Mediterranean Outflow Water) are currently being computed.