



Novelties in the CMEMS IBI-MFC Service: Performance and quality assessment of recent updated IBI forecast and multi-year products.

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The CMEMS IBI-MFC (Iberia-Biscay-Ireland Monitoring & Forecasting Centre) delivers ocean model forecasts and reanalysis of different physical and biogeochemical parameters for the Atlantic façade, supporting all kind of marine applications.

Today, the IBI-MFC runs three IBI forecast services, including wave, ocean and biogeochemical components and delivers multi-year products derived from a physical re-analysis and a non-assimilative biogeochemical hindcast. The IBI products are generated by model applications able to deal with a large range of physical processes (from tidal to seasonal timescales). Since March 2018 (CMEMS V4 release), the temporal coverage of the IBI Multi-year products has been extended back to 1992. To generate these products, a new physical/biogeochemical run (with updated models, data assimilation scheme and observational data sources) together with a wave hindcast have been performed.

With respect to the near-real-time forecast update, the most relevant V4 novelty is the generation of IBI ocean regional analysis in weekly basis. To generate these weekly regional analyses for the IBI waters, an IBI data assimilation scheme (based on SAM2 and constrain the model in a multivariate way with Sea Surface Temperature, together with all available satellite Sea Level Anomalies, and with in situ observations) has been implemented. Furthermore, the IBI ocean forecast product is upgraded, being delivered to users from V4 a new 3-D dataset with hourly frequency for coastal and shelf IBI areas. This new tailored product has been developed to foster downscaling approaches by providing coherent open boundary conditions to nested high-resolution coastal models.

Significant IBI-MFC efforts are in progress to define meaningful skill scores and statistical metrics to validate model systems and to estimate accuracy of IBI model products. To evaluate prognostic capabilities in operations, the NARVAL skill assessment software routinely compares IBI forecast products against in-situ and remote-sensing measurements. Moreover, the IBI-MFC performs different pre-operational qualification activities focused on testing improvements in terms of product quality of new IBI model systems with respect to previous versions and including comparison with independent and quasi-independent observational data sources. This contribution presents the new V4 IBI operational modeling systems and part of the skill assessments performed.