operational modelling and forecasting of the Iberian shelves ecosystem

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There is a growing interest on physical and biogeochemical oceanic hindcasts and forecasts from a wide range of users and businesses. In this contribution we present an operational biogeochemical forecast system for the Portuguese and Galician oceanographic regions, where atmospheric, hydrodynamic and biogeochemical variables are integrated. The ocean model ROMS, with a horizontal resolution of 3 km, is forced by the atmospheric model WRF and includes a NPZD biogeochemical module. In addition to oceanographic variables, the system predicts the concentration of nitrate, phytoplankton, zooplankton and detritus (mmolN m-3). Model results are compared against radar currents and remote sensed SST and chlorophyll. Quantitative skill assessment during a summer upwelling period shows that our modelling system adequately represents the surface circulation over the shelf including the observed spatial variability and trends of temperature and chlorophyll concentration. Additionally, the skill assessment also shows some deficiencies like the overestimation of upwelling circulation and consequently, of the duration and intensity of the phytoplankton blooms. These and other departures from the observations are discussed, their origins identified and future improvements suggested.

The forecast system is the first of its kind in the region and provides free online distribution of model input and output, as well as comparisons of model results with satellite imagery for qualitative operational assessment of model skill.