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A modelling study of phytoplankton growth along the NW coast of the Iberian Peninsula under coastal upwelling

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The northwestern coast of Iberian Peninsula is a region of large biophysical activity, where seasonal coastal upwelling is considered as the main responsible for the high biological diversity in the region. Coastal upwelling shows a well-defined seasonality along this region with active and persistent conditions, which promote high levels of phytoplankton, prevailing from June to September. Biophysical models are important tools to understand physical and biogeochemical interactions in eastern boundary upwelling regions, allowing the comprehension and quantification of different coastal processes. In this context, the main aim of this work is to use a biophysical model along the northwestern coast of Iberian Peninsula and establish the dynamic link between circulation, water temperature, nutrients and phytoplankton distribution during a coastal upwelling event. Model predictions were evaluated through comparison with satellite and *in situ* data during this event, showing high accuracy in reproducing the main physical and biological features of the study region, either on the surface or along the water column. The exploitation of model predictions demonstrated an inverse relation between sea surface temperature and chlorophyll-a concentration as well as the development of a poleward flow near coast. This promotes the retention of nutrients along the coast and therefore high levels of chlorophyll-a concentration are found (>5 mg m^{-3}).

Keywords: coastal upwelling, chlorophyll, biophysical models