



Effect of the river discharge implementation in an operational model for the West Iberia coastal area.

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In the Iberian Peninsula, most of the largest rivers discharge on the Atlantic coast draining almost two thirds of the territory. It is an important source of nutrients and sediments to these coastal areas. Rivers discharges in the Atlantic area when compared with the ones in the Mediterranean side present the particularity that their water before is released into the ocean is previously mixed in their estuaries in a different ratio depending of the estuarine residence time and the discharged flow.

In order to evaluate the relative importance of the inland waters in the circulation patterns of Western Iberia, the rivers discharges were implemented in the PCOMS model application (Portuguese Coast Operational Modelling System). To reproduce the water continuum including the different spatial and temporal scales, a methodology consisting in a system of integrated models using the Mohid model was designed. At the watershed level, the Mohid Land model calculated operationally water flow and properties, including nutrients, for the main river catchments of Western Iberian with a 2 km horizontal resolution. Downstream, several operational hydrodynamic and biological estuarine applications used those outcomes as model inputs, filling the gaps in the observation network. From the estuarine models, the tidally modulated water and properties fluxes to the coast were obtained. These fluxes were finally imposed in the Portuguese Coast Operational Modelling System (PCOMS), a fully 3D baroclinic hydrodynamic and ecological regional model that covers the Iberian Atlantic front.

The fate of the rivers discharges were analysed by integrating model results in boxes, comparing the climatologies obtained with and without rivers and the rivers area of influence was obtained by lagrangian tracers simulations.