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An Operational Coastal Forecasting System in Galicia (NW Spain)

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The Galician coast (NW Iberian Peninsula coast) and mainly the Rias Baixas (southern Galician rias) are one of the most productive ecosystems in the world, supporting a very active fishing and aquiculture industry. This high productivity lives together with a high human pressure and an intense maritime traffic, which means an important environmental risk. Besides that, Harmful Algae Blooms (HAB) are common in this area, producing important economical losses in aquiculture. In this context, the development of an Operational Hydrodynamic Ocean Forecast System is the first step to the development of a more sophisticated Ocean Integrated Decision Support Tool.

A regional oceanographic forecasting system in the Galician Coast has been developed by MeteoGalicia (the Galician regional meteorological agency) inside ESEOO project to provide forecasts on currents, sea level, water temperature and salinity. This system is based on hydrodynamic model MOHID, forced with the operational meteorological model WRF, supported daily at MeteoGalicia . Two grid meshes are running nested at different scales, one of $\sim$2km at the shelf scale and the other one with a resolution of 500 m at the rias scale. ESEOAT (Puertos del Estado) model provide salinity and temperature fields which are relaxed at all depth along the open boundary of the regional model ($\sim$6km). Temperature and salinity initial fields are also obtained from this application.

Freshwater input from main rivers are included as forcing in MOHID model. Monthly mean discharge data from gauge station have been provided by Aguas de Galicia. Nowadays a coupling between an hydrological model (SWAT) and the hydrodynamic one are in development with the aim to verify the impact of the rivers discharges.

The system runs operationally daily, providing two days of forecast.

First model verifications had been performed against Puertos del Estado buoys and Xunta de Galicia buoys network along the Galician coast. High resolution model results were validated against a CTDs profiles campaign carried out during an oil spill exercise in the Ria de Vigo in April 2007.

During EROCIPS INTERREG IIIB and EASY INTERREG IVB projects, a Galician oceanographic observation network were built. Three stations located inside the Rias Baixas allow to collect meteorological and oceanographic data at different depths to calibrate and validate the modelization of the rias. To complete this network and to create a common data platform a new project emerged (RAIA INTERREG IVA). It will provide MeteoGalicia more scientific data to improve the study of the rias. Furthermore, MeteoGalicia is also involved in DRIFTER AMPERA project which allows to improve the capability of modelling and monitoring the trajectory of hazardous substances and inerts.