

Using Operational models and bidirectional tools for management support of water quality monitoring programs: The example of the Guia long sea outfall monitoring program.

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The Guia Long Sea Outfall Monitoring Program was implemented 16 years ago to survey the impact of the effluent disposal on the marine environment. The program was put into practice to monitor physical, chemical, biological and microbiological parameters in the effluent and in the receiving waters (Santos, et al., this issue). The MOHID Water System model has been an important tool since the beginning of this program, providing support to monitoring tasks and serving as a useful management tool for decision makers.

During this period the MOHID model underwent significant technological improvements to keep up with the demands of managing such complex a system. Under the EASY project, started in January 2007, the MOHID model became an operational hydrodynamic model forecasting 3D current fields and wave height and direction for the Atlantic Iberian coast. In its currents setting, the model runs on a daily basis and provides wind and currents forecast for a period of 3 days, and the wave model supplies 7-days forecasts. The forecasts are available for the general public through the project website (<http://www.project-easy.info>).

In February 2009, the follow up of EASY project started with the new project EASYCO (<http://www.project-easy.info>). Using the Iberian Atlantic operational regional model, previously developed under EASY project, an operational biogeochemical model was set for the same area running on a pre operational configuration, and is expected to become fully operational by 2010.

Using downscaling techniques, the results of these models are being used in Guia long sea outfall monitoring program to force local hydrodynamic and biogeochemical models for the Tagus mouth area with a 1-2 km (0.01°-0.02°) grid resolution. The model includes the Guia long sea Outfall and is now running with a pre operational setup, and is also expected to move to a fully operational setup by 2010. This will allow a significant improvement in the management and decision policies, by providing daily forecast of the plume evolution.

Other important management tool also developed under the project was a bidirectional tool. This tool based on the operational model forecasts permits to do on line simulations. Any user with access to the internet (<http://www.project-easy.info>) can simulate the impact of a punctual discharge or to follow the trajectory of an object in the sea.