



Downscaling of CMEMS forecasts for added value products in the Spanish coast

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The CMEMS Analysis and Forecast products provide 7-day forecasts of 3D ocean currents updated daily. These provides initial and boundary conditions to develop more specific (local) products for a variety of end users (i.e. ports, fisheries, beaches), which can be related to scientific studies, management plans, construction-engineering projects or operational systems (OS). OS constitute a convenient tool to reinforce the short-term response capability and to improve the general port turn-out. The SAMOA project (and its evolution SAMOA2), launched by Puertos del Estado (PdE), is the latest initiative to promote the delivery of customized operational met-ocean information to Spanish Port Authorities in order to improve their decision-making in issues related to port safety, exploitation, and environmental management. Within this initiative, an advanced design of high-resolution coastal OS (nested to CMEMS models) for the prediction of oceanic circulation in restricted domains such as ports and their adjacent coastal waters has been prepared and will be here presented.

In this contribution, a set of different applications directly or indirectly linked with the SAMOA project are presented. First, two applications for the SAMOA database of daily forecasts are shown: a) analysis of potential tidal energy resources in the Ria de Ferrol and b) the development of new contingency plans for the Barcelona harbour based on a probabilistic approach. Second, a set of applications in the two Ebro Delta coastal bays is also explained. In Alfacs bay (southern delta), a "SAMOA" off-line system has been implemented for the year 2014. The results and comparison with a set of twin experiments have revealed the importance of land discharges on controlling residence times and, consequently, improving the water quality. On the other hand, in Fangar Bay (northern delta), a downscaling from CMEMS products (both IBI and MEDSEA configurations) is tested and the importance of the coupling effects with waves in the dynamics of the inner bay are analyzed (CURAE project). Finally, a quick review of the set-up and performance improvement for the recently started SAMOA2 project is shown.