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Understanding and forecasting the Portuguese marine environment: the activity of Instituto Hidrográfico in the area of physical oceanography.

Instituto Hidrografico is a Portuguese State Laboratory founded in 1960 which have as main mission the monitoring and study of the marine environment in order to support the Portuguese Navy and to contribute to the national development in the areas of Marine Sciences and Marine Technologies. The activity of Instituto Hidrografico covers domains such as hydrography/cartography, physical oceanography, marine geology, marine chemistry and pollution and safety to navigation. In this contribution we focus on the area of physical oceanography view as an excellent example of the commitments, challenges and opportunities faced today by Instituto Hidrografico. Central in the activity developed in this area is the operation of a large real-time monitoring infrastructure covering the Portuguese marine area, which includes observing systems installed both in land as well as offshore the coast. These different systems generate a large flow of data that is received daily at Instituto Hidrografico and from here disseminated to different users. In addition to this permanent effort of observation other more time-limited programs of observations are conducted, namely during multidisciplinary surveys onboard hydrographic vessels. The observation activity is complemented and extended by numerical modelling activities. Numerical models are used at Instituto Hidrografico to provide in-depth understanding of the oceanographic processes, to allow that a comprehensive 3(4)D picture of the marine environment be built from the observations and to forecast the future evolution of oceanographic conditions from the knowledge of the present state of the ocean. These different areas of activity are supported in a number of infrastructures installed at Instituto Hidrografico, namely computer clusters for parallel computing. They all have benefit from the inclusion of Instituto Hidrografico as partner in different national and Europeans projects such as (among the most recent) the JERICO-NEXT (H2020-INFRAIA), MARISK (INTERREG) or MYCOAST (EU INTERREG Atlantic Area).

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