

Operational Modeling Capacity in European Seas : Assessment and Recommendations from the EuroGoos coastal working group

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A wide variety of operational models are currently used in European Seas, exploiting different softwares, resolving a disparate range of spatial and temporal scales, using diverse forcing data sources and relying, or not, on data assimilation methods. In view of such a heterogeneous landscape, an assessment of the current marine operational modeling capacity in Europe is needed in order to perform a requirements and gap analysis, aiming at enhancing that capacity at a European scale.

We compiled, from a survey, an overview of the current European capacity in terms of operational modeling of marine and coastal systems. It analyses the purposes, context and technical specificities of 104 operational modeling systems, as described during 2018–2019 by 49 organizations around Europe, members of EuroGOOS and its related network of Regional Operational Oceanographic Systems.

The analysis of contributions highlights the strengths and weaknesses of the current capacity from an operational point of view. In particular, it highlights the heterogeneity of the European operational modeling capacity in terms of atmospheric and land boundary conditions, its limited deployment for biogeochemical phenomena, and a restricted use of data assimilation methods.

In order to improve the accuracy of their simulations, model operators aim toward a further refinement of spatial resolution, and identify the quality and accessibility of forcing data and the suitability of observations for data assimilation as restricting factors. Such requests call for institutional integration efforts promoting the homogenization of external forcing datasets delivery, and the adequation of observation networks for assimilation purposes.