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Simulations with the oceanographic model AdriaROMS: sensitivity to the horizontal resolution and sea surface forcing

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The coastal forecasting system of the Emilia-Romagna region managed by ARPAE-SIMC is composed by a chain of meteorological, oceanographic, wave and coastal numerical models in order to provide the regional Civil Protection Department with weather and marine warnings.
The ARPAE oceanographic forecasting model AdriaROMS is an implementation of the Regional Ocean Modeling System (ROMS) for the Adriatic Sea. The model is driven at the southern boundary by the oceanographic fields of the Mediterranean Ocean Forecasting system (MFS) and forced at the sea surface by the fields of the atmospheric model COSMO-I7.
In order to evaluate the model forecasting performance, a couple of selected marine storms occurred on the Emilia Romagna coasts during the winter 2015-2016 are investigated. In particular, the attention is focused on the influence of the meteorological forcing on the model output. AdriaROMS is run at both 1 and 2 km of horizontal grid resolution and the sensitivity of the model results to the resolution changes is analysed.
For a selected case, a more detailed study is carried out by running AdriaROMS in ensemble mode, forced by the 16-member meteorological ensemble COSMO-LEPS. Discussions about model uncertainties and sensitivity to the meteorological forcing are presented.