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Tools and technologies for NEMO models: the case of the Generic Interfaces developed in the framework of IMMERSE

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Setting new model configurations based on NEMO requires the definition of initial/boundary condition and the validation of numerical solutions. In the framework of IMMERSE H2020 project, CMCC is developing new tools and technological capacities for handling in easy and reliable way external products, such CMEMS or coastal ocean data, for research-to-operations applications. Generic Interfaces for NEMO (InterNEMO) allow for 3 main scopes: 1) to access and discover the CMEMS catalogue, including both model and observational data; 2) to manipulate accessed datasets, including coastal ocean data, to extract relevant physical information to use for setting initial/boundary conditions for a new NEMO-based configurations; 3) to prepare NEMO set of upstream files and to validate NEMO solution by using CMEMS observational datasets. InterNEMO implements also technologies to connect a NEMO user to Wekeo DIAS (https://www.wekeo.eu/) for the interoperable accessing and processing of CMEMS data. In this contribution, we present the InterNEMO architecture developed in Python via Jupyter Notebooks, to support the user/researcher to easily discover, design and configure modeling components required by the new NEMO-based configuration. InterNEMO is tested for the Black Sea hydrodynamical model configuration, developed by CMCC in the framework of the Black Sea Monitoring and Forecasting Centre (BS-MFC) for CMEMS a) to show how to access CMEMS observations through Wekeo DIAS and use them to validate numerical solutions and b) to define open boundary conditions from an unstructured grid model configuration based on Shyfem, developed for the Marmara Sea.