



## Incorporating the Framework for Aquatic Biogeochemical Models (FABM) into the ocean modelling framework NEMO v4.2.1

The latest release of the forecasting products provided by the Baltic Monitoring Forecasting Centre (BAL MFC) as part of the Copernicus Marine Service is based on an overall updated model system. Specifically, the 3D ocean model NEMO has been upgraded to version 4.2.1 in combination with the sea ice and thermodynamic model SI3 and is one-way coupled to an updated version of the biogeochemical model ERGOM. This coupling is now handled via the Framework for Aquatic Biogeochemical Models (FABM), which itself has been coupled to NEMO v4.2.1 by modifying the relevant routines in the NEMO tracers engine “Tracers in Ocean Paradigm” (TOP). The use of FABM enables an independent development of both ocean and biogeochemical models. Thus, for example, the biogeochemical model ERGOM can be enhanced and updated without having to directly modify the NEMO code. For the current release, three new variables were included in ERGOM, namely iron phosphates, hydrogen sulfide and coloured dissolved organic matter (CDOM). For future releases, FABM could be used to incorporate additional biogeochemical models for certain processes, for example when a certain light model is required or a different model is needed to incorporate higher trophic levels. The presentation will highlight the key points that needed consideration to couple FABM to NEMO v4.2.1, in particular with respect to the already existing NEMO-FABM releases for NEMO versions 3.6 and 4.0. Furthermore, we will present first results from the combined and updated NEMO-FABM-ERGOM system for the BAL MFC, with a special focus on the biogeochemistry, in particular in the anoxic regions of the Baltic Sea.

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