



## **Modeling seasonal variability of carbonate system parameters at the sediment -water interface in the Baltic Sea (Gdansk Deep)**

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A one-dimensional fully-coupled benthic pelagic biogeochemical model BROM (Bottom RedOx Model) was used for simulations of seasonal variability of biogeochemical parameters in the upper sediment, Bottom Boundary Layer and the water column in the Gdansk Deep of the Baltic Sea. This model represents key biogeochemical processes of transformation of C, N, P, Si, O, S, Mn, Fe and the processes of vertical transport in the water column and the sediments. The hydrophysical block of BROM was forced by the output calculated with model GETM (General Estuarine Transport Model).

In this study we focused on parameters of carbonate system at Baltic Sea, and mainly on their distributions near the sea-water interface. For validating of BROM we used field data (concentrations of main nutrients at water column and porewater of upper sediment) from the Gulf of Gdansk. The model allowed us to simulate the baseline ranges of seasonal variability of pH, Alkalinity, TIC and calcite/aragonite saturation as well as vertical fluxes of carbon in a region potentially selected for the CCS storage.

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