Implementation of the NEMO model for estimating the spread of leakage from chemical munitions in the Baltic Sea - the first approach

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After the Second World War, during the Potsdam Conference a decision about demilitarization of Germany was made, and as a consequence, ammunition including chemical warfare agents (CWA) was dumped into the basins of the Baltic Sea. This type of weapon was stored in metal barrels that were under strong influence of electrochemical oxidation, also known as corrosion. Several tens years later, scientists were wondering what consequences for marine ecosystem could a leakage from this weapon bring. Although over 70 years passed since the Second World War, the influence of potential leakage of the CWA has not been properly estimated. Thus, the main goal of this work is to estimate dangerous area caused by potential leakage using the NEMO (Nucleus for European Modelling of the Ocean) ocean model. The NEMO ocean model is developed by the European Consortium including research institutes from France, England and Italy. The first step of this work is to implement the model for the area of the Baltic Sea. It requires generation of horizontal and vertical grid, bathymetry, atmospheric forces and lateral boundary conditions. Implemented model will have to be checked – it means it will have to pass a validation process. The Baltic Sea is one of the best measured sea in the World – as a consequence a lot of data are freely available for researchers. After validation and tuning up the model, implementation of passive tracer is planned. Passive tracer is the prognostic variable that could represent concentration of potential leakage and does not have influence on the density of the model. Based on distribution of the passive tracer, dangerous areas in the locations of dumpsites will be assessed.