



Copernicus Marine Environment Monitoring Service demonstration for the Baltic Sea region - Present the present

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In year 2004 visualisation software of operational atmosphere and ocean forecasts for the Baltic Sea was developed by Laboratory for mathematical modelling of environmental and technological processes (LMMETP), University of Latvia as proprietary information system FIMAR - national operational oceanographic service.

Initially it was an operational service to Coastal Guard of Latvian Navy. Further a subregional OO model for waters of Latvian jurisdiction was established. The development has been continuous since then - widening the scope of end users and delivering regular upgrades of the system. The present end users of FIMAR information system are: Marine Search and Rescue Coordination Centre Riga (under Latvian Coast guard), Hydrometeorology and Geoinformation department of HQ of Latvian Armed Forces, HQ of Latvian Ground Force, HQ of Latvian Air Force, HQ of Latvian Navy, Fleet of Latvian Navy.

Software includes functionality of visualization, animation, decision support in resource allocation, route planning, search and rescue operations. It includes module for modelling of the fate of marine pollution (oil, chemical) and floating objects. FIMAR's drift modelling interface has been successfully implemented for decision support in search and rescue operations and combating of oil and other chemicals pollution in the Baltic sea since its initial version in 2004.

The service is an example of CMEMS data demonstration for the Baltic Sea.

Since year 2018 free web service and its demonstration activity Present the present - has been developed. The service is accessible via www.water.lv/fimarweb. Its alpha release contains operational hourly forecast (up to +48 h) of scalar parameters: water level, current velocity, water temperature, wind speed, salinity, wave height, ice thickness and air temperature and vector fields: current velocity, wind speed and wave direction. Its updated every 6 hours. The object drift solver will be added in the next release of the service in May 2019.

Wind speeds are acquired from HARMONIE model driven by Danish Meteorological Institute. Oceanographic data implementations from Copernicus Marine Services data are used. Implementation of sub grid precision for oceanographic data in the vicinity of certain areas are planned via running UL_HBM OO setup. Sea surface satellite data are used for boundary conditions in UL_HBM.

Inclusion of the drift solver in the free service will allow paying attention to distances the object entered the sea travels with the surface current. Promotional activity the contest related to the distances and trajectories of drifting objects that enter the Baltic Sea is launched since autumn 2019. More about the activity can be found in www.water.lv/present. Visualisations that are showing trajectories of the floating objects in the Gulf of Riga are planned to be regularly published in the designated web page of the project.

The first obtained visualisation show the closed nature of the Gulf of Riga – only 2 of 45 regularly spaced drifters initially placed in the Gulf of Riga were found outside it after 1 month of travel with the surface current. The characteristic relative travel distance for drifters that have not washed ashore during 1 month period (29 drifters) - 46 km.