



Modeling Fronts Over the Sea and the Effect of Grid Size

Tija Sile, Juris Sennikovs, and Uldis Bethers

University of Latvia, Laboratory for Mathematical Modelling of Environmental and Technological Processes, Riga, Latvia
(tija.sile@lu.lv)

Winter storms cause heavy economic damage. The ability to correctly forecast the location and magnitude of high wind speeds is essential for many forecast users. Despite multi-faceted progress in Numerical Weather Prediction (NWP) models, the perfect forecast of extreme events is still in the future.

One of the possible explanations is the discrepancy between the necessity to increase the grid resolution that comes from basic principles of numerical methods on one hand and the fact that the performance of the parametrization schemes for arbitrary grid resolution is an open question.

This study explores the question of the ability of the Weather Research and Forecast (WRF) model to correctly reproduce the location and dynamics of fronts over the Baltic Sea. Numerical experiments using different domain setups with different horizontal resolutions are carried out for selected high-impact events where model results have shown place for improvement. The effect of the Planetary Boundary Layer (PBL) parametrization scheme is assessed.

This work is part of the project “Atmosfēras modeļproģnožu pēcapstrādes metožu izstrāde”, vienošanās Nr. 2013/0058/2DP/2.1.1.0/13/APIA/VIAA/008.