

VERIFICATION OF THE AIR QUALITY MODEL AGAINST FLIGHT MEASUREMENT OF SHIP PLUMES (CORRIDORS)

Halenka, T. and Huszar, P.

Abstract: The impact of emission from transportation on climate change is being quantified in EC FP6 Integrated Project QUANTIFY. In Activity 2 the analysis of the dilution and transformation of the emission from microscale at exhausts and plumes till mesoscale distribution will be provided from all modes of transportation. In this contribution the mesoscale simulations of ship emission impact on atmospheric pollution in selected region are provided with emphasis to compare the simulation with reality analyzed by means of flight measurement during the field campaign. The sensitivity of the impact on air quality and composition is analyzed with respect to ship emissions resolution. Results of couples MM5-CAMx and RegCM-CAMx are used for this purpose, covering the domain of campaign planned for the project, i.e. the Channel, with outer domain with resolution 36x36 km, first inner one with resolution 12x12 km and the second nested domain with resolution 4x4 km placed with respect to the location of ship for individual ship plumes experiments. Emissions from EMEP 50 km x 50 km database are interpolated and represent average ship emissions in the Channel, other emissions are combination of EMEP and UAEI (United Kingdom Atmospheric Emission Inventory). High resolution ship emissions of 10x10' are tested as well. CB-IV chemistry mechanism is used in CAMx for this study in default settings, some changes are tested with regard to the introduction of the concept of effective emission indices to include the effect of nonlinearity of chemical reactions under the high concentration conditions in early stage of the plumes.