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Comparison of OMI NO_2 tropospheric columns with an ensemble of global and European regional air quality models

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The European GEMS project aims at developing a pre-operational system for forecasting the chemical composition of the atmosphere, both on a global scale and on a regional scale. One specific aim of GEMS is to develop a regional air quality forecasting system for Europe (the GEMS-RAQ subproject). Here NO_2 is one of the key chemical variables. Up to 10 Chemical Transport Models (CTMs) are running independently to deliver forecasts of trace gases up to three days ahead, on a daily basis. Some of the regional models obtain their boundary conditions from a global model: MOZART 3. In this study the tropospheric NO_2 columns derived from these regional models are validated against OMI satellite data from june 2008 onwards. The OMI data is also compared with MOZART 3 and a reanalysis with the TM5 model for the same period.

The first comparisons indicate that on average all models are performing very well. Some of the regional models have difficulties to capture the high concentrations above the western European region. This also counts for the global CTM's. The quality of prediction after a three forecast days decreases only moderately. For some of the models the results indicate too low concentrations eastwards from the emission regions. Further results will be presented in our contribution.