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Assimilation of Ground Based Ozone Measurements to Improve the Air Quality Forecasts For Austria

Marcus Hirtl (1), Bernd C. Krüger (2), Erwin Petz (1), and Claudia Flandorfer (1)

(1) ZAMG, Environmental Meteorology, Vienna, Austria (marcus.hirtl@zamg.ac.at), (2) BOKU – University of Natural Resources and Life Sciences, Vienna, Austria

The regional weather forecast model ALADIN-Austria of the Central Institute for Meteorology and Geodynamics (ZAMG) is used in combination with the chemical transport model CAMx (www.camx.com) to conduct forecasts of gaseous and particulate air pollutants over Austria. The forecasts which are done in cooperation with the University of Natural Resources and Applied Life Sciences in Vienna (BOKU) are supported by the regional governments since 2005.
During summer 2009 the model forecasts over-predicted the respective ozone measurements at Austrian Air Quality stations by far during certain periods. Analysis shows that the daily values of the initial conditions of the ozone concentrations are already too high compared to the observations. To account for such an over-prediction of the initial fields an optimum interpolation scheme was implemented at the ZAMG to assimilate continuously available data from about 120 Austrian Air Quality stations.
The influence of the initial conditions of ozone and NO2 is shown in this study and the evaluation of the new data assimilation scheme for a selected episode demonstrates the improvement of the model forecasts.