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Evaluation and comparison of O_3 forecasts of ALARO-CAMx and WRF-Chem

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ZAMG runs two models for Air-Quality forecasts operationally: ALARO-CAMx and WRF-Chem.
ALARO-CAMx is a combination of the meteorological model ALARO and the photochemical dispersion model CAMx and is operated at ZAMG by order of the regional governments since 2005. The emphasis of this modeling system is on predicting ozone peaks in the north-east Austrian flatlands. Two modeling domains are used with the highest resolution (5 km) in the alpine region. Various extensions with external data sources have been conducted in the past to improve the daily forecasts of the model, e.g. data assimilation of O_3- and PM10 observations from the Austrian measurement network (with optimum interpolation technique); MACC-II boundary conditions; combination of high resolved emission inventories for Austria with TNO and EMEP data. The biogenic emissions are provided by the SMOKE model. The model runs 2 times per day for a period of 48 hours.
The second model which is operational is the on-line coupled model WRF-Chem. Meteorology is simulated simultaneously with the emission, turbulent mixing, transport, transformation, and fate of trace gases and aerosols. 2 domains are used for the simulations. The mother domain covers Europe with a resolution of 12 km. The inner domain includes the alpine region with a horizontal resolution of 4km. 45 model levels are used in the vertical. The model runs 2 times per day for a period of 72 hours and is initialized with ECMWF forecasts.
The evaluation of both models is conducted for summer 2014 with the main focus on the forecasts of ozone. The measurements of the Air-Quality stations are compared with the punctual forecasts at the sites of the stations and with the area forecasts for every province of Austria. Beside the evaluation a comparison of the forecasts of ALARO-CAMx and WRF-Chem is done. The summer 2014 was the coldest and the dullest in the last 9 years. Due to this only two exceedances of the information threshold were measured (June 2014).
In addition, data from summer 2013 is used to compare the forecasts of both models. In July and August 2013 the information threshold has been exceeded several times during a heat wave.