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Impacts of traffic emissions on ozone production over Europe

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Estimate of the impact of traffic emissions on ozone production in the present-day over Europe has been studied. The new framework of the Environment-Climate-Chemistry model 'EnvClim' which based on ICTP-RegCM3 have been used in this work. Two sets of simulations has been performed using EnvClim model based on the newly IPCC-RCP developed global emission inventories for road, ship and aircraft emissions. Emissions are implemented as flux boundary conditions into the model framework. The year 2005 was chosen as reference year, since complete emission data and atmospheric observations were available.

The model performed sensitivity simulations by removing and adding the traffic emissions. We investigated the impact of NOX and CO emissions from road traffic and estimated relative contribution of such emissions to ozone concentrations near the surface over Europe.

The preliminary result shows that a significant impact is found in the industrialized regions which can be extended far from the sources with a reduction 15% in ozone production. In our work we considered the impact of NMHC emissions from road traffic as well.

In the forthcoming work we will focus on the change of ozone production and the related impact on climate due to the reduction in traffic emission.