



Climate change impacts on air quality over Europe

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We use the regional air quality model CHIMERE driven by meteorological fields from regional climate change simulations (RegCM) to investigate changes in air quality over Europe under increased greenhouse gas (GHG) forcing. The 6-hourly meteorological fields from RegCM are extracted for several years (at least 6 years). Some of them are dedicated to study the present day (1960-1990) and, future air quality is analysed following two IPCC scenarios, with 30 years for A2 and B2, respectively. Then, they are passed to CHIMERE, for present days and future days runs with the same boundary conditions and with the same emissions. The objective is to isolate the effect of the regional climate change on the ozone concentrations and aerosol contents over Europe.

Especially, we find that daily peak ozone amounts as well as average ozone concentrations substantially increase during the summer in future climate conditions due to higher temperatures and reduced cloudiness and precipitation. This leads to a higher number of ozone events exceeding information and warning thresholds. Summer ozone levels in future climate projections are similar to those found during the exceptionally warm and dry European summer of 2003. First results about the climate change impacts on particulate matter will be presented as well, considering the aerosol speciation evolutions, such as the secondary organic and inorganic components.

Our results suggest that in future climate conditions air quality might pose a serious threat to human health, agriculture and natural ecosystems in Europe if more stringent

pollutant emission control measures are not taken.