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Air quality – Climate Interaction in Urban Environment by RegCM/CAMx Couple for MEGAPOLI Project in High Resolution

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Recent studies show considerable effect of atmospheric chemistry and aerosols on climate on regional and local scale. This can be of a great importance especially in large urban areas with high density of population or highly industrialized areas with heavy sources of emission. For the purpose of the climate forcing assessment due to interaction of climate change and atmospheric chemistry/aerosols on regional scale, the couple of regional climate model (RegCM) and air quality model (CAMx) is used in high resolution simulations covering most European "megacities" regions. The domain have been settled for MEGAPOLI purpose in 10km resolution including all the European "megacities" regions, i.e. London metropolitan area, Paris region, industrialized Ruhr area, Po valley etc. Meteorological fields generated by RegCM drive CAMx transport, chemistry and a dry/wet deposition in off-line non-interactive version, sensitivity to resolution and emission inputs has been studied. An off-line interactive simulation with radiative impacts of air quality changes improves the model couple performance. Near future scenario simulation will be presented providing an estimate of further development with rather a negligible contribution of climate change in addition to the emission development effects.