Geophysical Research Abstracts
Vol. 12, EGU2010-9452-4, 2010
EGU General Assembly 2010

A joint modelling exercise designed to assess the respective impact of emission changes and meteorological variability on the observed air quality trends in major urban hotspots.

Augustin Colette, Bertrand Bessagnet, Ariela Dangiola, Massimo D'Isidoro, Michael Gauss, Claire Granier, Øivind Hodnebrog, Hermann Jakobs, Maria Kanakidou, Fahim Khokhar, Kathy Law, Alberto Maurizi, Frederik Meleux, Michael Memmesheimer, Agnes Nyiri, Laurence Rouil, Frode Stordal, and Francesco Tampieri
INERIS, Verneuil-en-Halatte, France (augustin.colette@ineris.fr)

With the growth of urban agglomerations, assessing the drivers of variability of air quality in and around the main anthropogenic emission hotspots has become a major societal concern as well as a scientific challenge. These drivers include emission changes and meteorological variability; both of them can be investigated by means of numerical modelling of trends over the past few years.

A collaborative effort has been developed in the framework of the CityZen European project to address this question. Several chemistry and transport models (CTMs) are deployed in this activity: four regional models (BOLCHEM, CHIMERE, EMEP and EURAD) and three global models (CTM2, MOZART, and TM4).

The period from 1998 to 2007 has been selected for the historic reconstruction. The focus for the present preliminary presentation is Europe. A consistent set of emissions is used by all partners (EMEP for the European domain and IPCC-AR5 beyond) while a variety of meteorological forcing is used to gain robustness in the ensemble spread amongst models.

The results of this experiment will be investigated to address the following questions:
- Is the envelope of models able to reproduce the observed trends of the key chemical constituents?
- How the variability amongst models changes in time and space and what does it tell us about the processes driving the observed trends?
- Did chemical regimes and aerosol formation processes changed in selected hotspots?

Answering the above questions will contribute to fulfil the ultimate goal of the present study: distinguishing the respective contribution of meteorological variability and emissions changes on air quality trends in major anthropogenic emissions hotspots.