Geophysical Research Abstracts
Vol. 13, EGU2011-6071, 2011
EGU General Assembly 2011

Quantification of air pollution levels and its sources in the Eastern Mediterranean: A megacity perspective

Ulas Im (1) and the CITYZEN East Mediterranean Team

(1) Nikos Daskalakis, Nikos Mihalopoulos, Maria Kanakidou, University of Crete, Environmental Chemistry and Processes Laboratory (ECPL), Heraklion, Greece (ulasim@chemistry.uoc.gr, mariak@chemistry.uoc.gr +30-2810545166), (2) Kostas Markakis, Aristotle University of Thessaloniki, Department of Physics, Laboratory of Atmospheric Physics, Thessaloniki, Greece, (3) Ulrike Doering, Climate Change Unit, Environment Institute, JRC, Varese Italy now at Federal Environment Agency (UBA) Germany,Wörlitzer Platz, D-06844 Dessau, Germany, (4) Alper Unal, Tayfun Kindap, Istanbul Technical University, Eurasia Institute of Earth Sciences, Istanbul, Turkey, (5) Evangelos Gerasopoulos, Institute of Environmental Research and Sustainable Development, National Observatory of Athens, Athens, Greece, (6) Mustafa Kocak, Nilgun Kubilay, Middle East Technical University, Institute of Marine Sciences, Erdemli, Mersin, Turkey, (7) John van Aardenne European Environment Agency, Kongens Nytorv 6, 1050 Copenhagen K, Denmark

Eastern Mediterranean has a population over 200 million with two major Megacities, Cairo and Istanbul [1]. In order to quantify the air pollutant levels and the sources, a modeling study is performed as part of the CityZen project.
The applied regional modeling system consists of the Weather Research and Forecasting (WRF) meteorological model and the Community Multi-scale Air Quality (CMAQ) chemistry and transport model. The model domain covers Europe, western Asia and northern Africa on a 30 km resolution. The regional anthropogenic emission inventory has been compiled from a number of different sources: two high resolution emission inventories developed for Istanbul and Athens at 2 km resolution; 10 km resolution emission inventory of INERIS covering Europe; and the emission inventory of CIRCE at 10 km resolution to cover the remainder of the domain including Middle East and North Africa. These inventories have been processed to prepare 30 km gridded emissions using MOSESS emission model. MOSESS model was also used to process emissions data to provide CMAQ ready data. Regional biogenic and dust emissions are calculated at each time step using the online MEGAN and GOCART modules of WRF-CHEM model. The TM4-ECPL global chemistry model produces the necessary boundary and initial conditions on monthly basis.
First results of the simulations for the year 2008 are presented and discussed. Focus is put on the seasonal variation of air pollution levels over the Eastern Mediterranean area, mainly on ozone and particulate matter as well as major source contributions and impacts.

[1] Kanakidou et al., 2010. Megacities as hot spots of air pollution in the East Mediterranean. Atmospheric Environment, doi:10.1016/j.atmosenv.2010.11.048