Geophysical Research Abstracts
Vol. 17, EGU2015-3231, 2015
EGU General Assembly 2015

Co-benefits of air quality and climate change policies on air quality of the Mediterranean

Luca Pozzoli (1), Ozan Mert Gokturk (1), Alper Unal (1), Tayfun Kindap (1), and Greet Janssens-Maenhout (2)

(1) Istanbul Technical University, Eurasia Institute of Earth Sciences, Istanbul, Turkey (pozzoli.ist@gmail.com), (2) European Commission, Joint Research Centre, Institute for Environment and Sustainability, Ispra, Italy

The Mediterranean basin is one of the regions of the world where significant impacts due to climate changes are predicted to occur in the future. Observations and model simulations are used to provide to the policy makers scientifically based estimates of the necessity to adjust national emission reductions needed to achieve air quality objectives in the context of a changing climate, which is not only driven by GHGs, but also by short lived climate pollutants, such as tropospheric ozone and aerosols. There is an increasing interest and need to design cost-benefit emission reduction strategies, which could improve both regional air quality and global climate change. In this study we used the WRF-CMAQ air quality modelling system to quantify the contribution of anthropogenic emissions to ozone and particulate matter concentrations in Europe and the Eastern Mediterranean and to understand how this contribution could change in different future scenarios. We have investigated four different future scenarios for year 2050 defined during the European Project CIRCE: a “business as usual” scenario (BAU) where no or just actual measures are taken into account; an “air quality” scenario (BAP) which implements the National Emission Ceiling directive 2001/81/EC member states of the European Union (EU-27); a “climate change” scenario (CC) which implements global climate policies decoupled from air pollution policies; and an “integrated air quality and climate policy” scenario (CAP) which explores the co-benefit of global climate and EU-27 air pollution policies. The BAP scenario largely decreases summer ozone concentrations over almost the entire continent, while the CC and CAP scenarios similarly determine lower decreases in summer ozone but extending all over the Mediterranean, the Middle East countries and Russia. Similar patterns are found for winter PM concentrations; BAP scenario improves pollution levels only in the Western EU countries, and the CAP scenario determines the largest PM reductions over the entire continent and the Mediterranean basin.