Geophysical Research Abstracts
Vol. 16, EGU2014-9986, 2014
EGU General Assembly 2014

Chemical speciation and source apportionment of gaseous precursors observed at a remote site in the Mediterranean basin

Vincent Michoud (1), Stéphane Sauvage (1,2), Sébastien Dusanter (1,2,3), Thierry Leonardis (2), Nadine Locoge (1,2)

(1) Mines Douai, SAGE, F-59508 Douai, France, (2) Univ Lille Nord de France, F-59000, Lille, France, (3) School of Public and Environmental Affairs, Indiana University, Bloomington, IN, USA

Models of atmospheric chemistry suggest that aged anthropogenic air masses still contain significant levels of reactive trace gases such as mono- and multi-functional oxygenated volatile organic compounds, even after several days of oxidation. These air masses can significantly impact the oxidative capacity and the formation rate of secondary pollutants (ozone, SOA…) at remote locations. However, large uncertainties still remain about chemical processes occurring during long range transport that leads to the oxidation of anthropogenic pollutants.
Long term measurements of volatile organic compounds and inorganic species are being conducted since July 2012 at a remote site in Cape Corsica, a receptor site experiencing events of long range transport of air masses from different urbanized areas (south of France, Spain, Italia, North of Africa). In addition to the long term monitoring, an extended suite of trace gases and aerosols was acquired as part of the 2013 ChArMEx field campaign at Cape Corsica. One of the objectives was to better understand chemical and physical processes occurring during long range transport of anthropogenic plumes.
In this presentation, we will first apportion primary and secondary sources of VOCs observed at this remote site using an analysis of spatial and temporal variations of their concentrations, ratios of chemical tracers, and air mass trajectory clustering. We will then present the results from a concentration field approach. This statistical method, based on a large set of data, consists in redistributing the concentrations of selected VOCs to the trajectories in order to identify potential source areas influencing the receptor site. The results of these two approaches will provide relevant information to study chemical processes occurring in different types of plumes transported over the Mediterranean basin.