Geophysical Research Abstracts
Vol. 17, EGU2015-8729, 2015
EGU General Assembly 2015

Source apportionment of VOCs and aerosols at Cap Corsica during the ChArMEx field campaign

Stephane Sauvage (1), Vincent Michoud (1), Sébastien Dusanter (1,2), Thierry Leonardis (1), Jean Sciare (3), Nicolas Marchand (4), Helen Langley DeWitt (4), and Nadine Locoge (1)

(1) Mines Douai, SAGE, F-59508 Douai, France, Douai, France, (2) School of Public and Environmental Affairs, Indiana University, Bloomington, IN, US, (3) Laboratoire des sciences du climat et de l'environnement, IPSL, CEA et Université de Versailles, CNRS, Saint-Quentin, France, (4) Aix-Marseille Université, CNRS, LCE FRE 3416, 13331 Marseille, France

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 (VOCs), even after several days of oxidation. These air masses can significantly impact the oxidative capacity and the formation rate of secondary pollutants, especially of Secondary Organic Aerosol (SOA), at remote locations. However, large uncertainties still remain about chemical processes occurring during long range transport that lead to the oxidation of anthropogenic pollutants.

An extended suite of trace gases and aerosols was acquired as part of the 2013 ChArMEx field campaign at a remote site in Cape Corsica, a receptor site experiencing events of long range transport of anthropogenic plumes from different urbanized areas (south of France, Spain, Italy, North of Africa). In this presentation, the VOC dataset is used to provide a better description of VOC sources at this remote site, as well as a better understanding of chemical processes occurring during long range transport of anthropogenic plumes.

We will present a source apportionment of primary and secondary VOCs based on an analysis of time series and air mass trajectories. We will also present the results from a Concentration Field (CF) analysis to identify potential source areas influencing the receptor site. Finally, a Positive Matrix Factorization (PMF) analysis will be presented to highlight co-variation factors of the measured species that are representative of primary emissions, but also of physico-chemical transformations occurring during long range transport. These results provide relevant information to study chemical processes occurring in different types of plumes transported over the Mediterranean basin and to investigate gas-aerosol coupling.