



A modelling perspective of the summer 2013 CHARMEX chemistry intensive campaign : origin of photo-oxidant and aerosol formation

Matthias Beekmann (1), Arineh Cholakian (1), Guillaume Siour (1), Benoit Laurent (1), Agnes Borbon (1), Augustin Colette (2), Pierre Durand (3), Paula Formetti (1), Evelyne Freney (4), Valerie Gros (5), Corinne Jambert (3), Nicolas Marchand (6), Karine Sartelet (7), Stephane Sauvage (8), Jean Sciare (5), Karine Sellegri (4), Alexandre Armengaud (9), Pierre Kermen (10), Eric Hamonou (5), and François Dulac (5)

(1) univ. Paris 7 and 12, CNRS, LISA, Créteil, France (beekmann@lisa.univ-paris12.fr), (2) INERIS, Verneuil-en-Halatte, France, (3) Laboratoire d'Aérodologie, LA, France, (4) Laboratoire de Météorologie Physique, LaMP, Clermont-Ferrand, France, (5) Laboratoire des Sciences du Climat et de l'Environnement, LSCE, Orme-les-Mérisiers, France, (6) Centre d'Enseignement et de Recherche en Environnement, CERE, Marne la Vallée, France, (7) Laboratoire Chimie Environnement, LCE, Marseille, France, (8) Ecole de Mines de Douai, Douai, France, (9) Air Paca, Marseille, France, (10) Université Joseph Fourier, Grenoble, France

During summer 2013, a three week intensive campaign took place over the western Mediterranean basin in order to investigate photo-oxidant and aerosol sources over the region. Within the frame of the MISTRAL/CHARMEX program, this campaign included an extensive experimental set-up based on ground based, balloon borne and ship and aircraft measurements.

In this paper, a modelling perspective of the campaign is given, based on simulations with the regional CHIMERE chemistry-transport model in a configuration shaped for the Mediterranean region. Major sources of photo-oxidants (in particular ozone), and aerosol are addressed: long range transport from continental Europe, pollution build-up from shipping emissions, specifically organic aerosol formation from biogenic and anthropogenic VOC emissions, dust emissions. The simulations are evaluated with measurements at places and during periods when these particular sources were predominant. This will give a first overview of driving forces of the pollutant variability over the domain during the campaign. In addition, we will address, how well model forecasts (CHIMERE run by INERIS, Polyphemus run by CERE) used for campaign planning agree with measurements.