Geophysical Research Abstracts
Vol. 15, EGU2013-10777-1, 2013
EGU General Assembly 2013

Modeling birch pollen emission and transport with the chemistry-transport model CHIMERE

Aurelie Potier (1), Dmitry Khvorostyanov (1), Laurent Menut (1), Mikhail Sofiev (2), Nicolas Viovy (3), Robert Vautard (3), Michel Thibaudon (4), and Phikune Tao (1)

(1) LMD/IPSL, CNRS UMR8539, Ecole Polytechnique, 91128 Palaiseau Cedex, France, (2) Finnish Meteorological Institute, Erik Palmenin aukio, FI-00560 Helsinki, Finland, (3) Laboratoire des Sciences du Climat et de l'Environnement, IPSL, CEA, Orme des Merisiers, Gif sur Yvette, France, (4) Réseau National de Surveillance Aérobiologique (R.N.S.A.), Lyon, France

Among pollen species, birch pollen is recognized to have one of the highest allergenic effects. Its emission as well as its transport with air masses depend on several meteorological parameters. If the conditions are favourable (typically sunny and windy days), the pollen can travel at distances of hundred kilometers in only one day. For analysis and source-oriented forecast, the chemistry-transport models are promising tools to simulate emissions and concentrations over large domains such as Europe.

In addition to pollution gaseous and particulate species, the birch pollen related processes were recently added in the chemistry-transport model CHIMERE. This first includes an emission module based on a double-threshold temperature sum concept which describes the onset of the flowering season as well as its propagation using a birch pollen source emission. The parameterization is defined following Sofiev *et al.* (2012). Second, the processes such as transport, turbulent vertical mixing, dry deposition, wash out and resuspension were updated in CHIMERE to account for the specificities of the pollen grains.

In this study, we present a simulation of pollen emissions and transport over Europe with an horizontal resolution of 15km. The CHIMERE model is driven by the WRF meteorological fields and the simulation covers the complete spring of 2008. The modeled pollen concentrations are compared to the R.N.S.A. french national aerobiological survey network measurements. The strength and weaknesses of the modeled results are discussed in terms of emissions data available, meteorology and all specific processes added in the model.