



## Evolution of the composition of the troposphere over the past 10 years

Claire Granier (1,2,3), Aude Mieville (1), Augustin Collette (4), Bertrand Bessagnet (4), Alex Guenther (5), Angelika Heil (6), Cornelia Richter (6), Michael Gauss (7), Andreas Hilboll (8), Andreas Richter (8), and the other members of the modeling/observations Team

(1) CNRS and University Pierre and Marie Curie, LATMOS, Paris, France (claire.granier@latmos.ipsl.fr, +33-(0)144-273776), (2) CIRES, University of Colorado, Boulder, CO, USA, (3) NOAA/ESRL Chemical Sciences Division, Boulder, CO, USA, (4) INERIS, Verneuil-en-Halatte, France, (5) National Center for Atmospheric Research, Boulder, CO, USA, (6) Forschungszentrum Juelich, Juelich, Germany, (7) University of Oslo, Oslo, Norway, (8) University of Bremen, bremen, Germany

A global and a regional chemistry transport model were used to simulate the evolution of the lower atmosphere over the 1997-2007 period. The simulations were performed using different datasets for the emissions resulting from anthropogenic, biomass burning and natural processes. We will describe the different datasets we have used: the anthropogenic emissions are based on the emissions inventory developed for the IPCC AR5 report. The regional emissions are based on the most recent release of the EMEP emissions. We will discuss the consistency between the global and regional emissions. The evolution of the biomass burning emissions, which are provided on a monthly basis will be discussed. Different sets of emissions of biogenic hydrocarbons have been used in the simulations. We will discuss the evolution of several tropospheric species over the considered period, and the impact of the different types of emissions.

First results on the comparison of model results from this retro-analysis with air pollutant observations available for the last decade including satellite measurements of tropospheric NO<sub>2</sub> columns will be presented, as well as discussions on the expected impact of emission reductions.