

PhD student:

Boris VANSEVENANT

Title:

From emission to evolution in ambient atmosphere of the particles and their precursors, emitted by the fleet in circulation in urban and peri-urban areas.

Abstract

The pollution due to transportation is a societal and regulatory stake. The contribution of road traffic to atmospheric particles is however poorly quantified, because of metrological and methodological difficulties to estimate the emissions and evolutions of the particles. This contribution depends highly on gaseous precursors, on the size and nature of the emitted particles, on atmospheric conditions and on the diversity of the fleet. In the state of current knowledge, it is very difficult to accurately describe the emissions and transformations of pollutants with air quality models, and to estimate the actual contribution of road traffic to atmospheric pollution.

This thesis aims to develop knowledge on pollutant fast transformation in near-field, close to vehicle exhausts, and on formation of secondary organic aerosols. Measurement campaigns will be done *in situ* in different contexts (urban and peri-urban areas, near-road), accounting for the fleet in circulation. A methodology will be developed to measure near-road emission factors of particles and particle precursors, and to study their evolution in an ageing chamber in different atmospheric conditions. This research will help to better understand the actual contribution of vehicular emissions to atmospheric pollution.