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Mobile measurements of air pollutants with an instrumented car in populated areas

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Detailed mobile measurement of gases and fine particulate matter has been reported in the literature to be suitable to exhibit the air pollutants concentration in populated areas. This concentration is linked to the increase of number of cars, construction areas, industries and other emission sources. However, fixed measurement stations, mostly operated by environmental agencies, are limited in numbers and cannot cover a large area in monitoring.
For this reason, to overcome this drawback, mobile measurements of the variability of gases (such as O_3, NO, NO_2) and particulate matter concentration were carried out during this study using an instrumented car. This car was able to deliver measurement results of all these compounds in a large area.
The experimental results in this work demonstrate a large spatial variability of gases and fine particulate matters mainly depended on the traffic density and the location. These effects are especially obvious in the city core and the high traffic roads. In terms of fine particulate matter, this becomes evident for PM 10 and PM 2.5, where the mass and number concentration increases with arriving these zones.