



## **Seasonal spatial distribution of PM<sub>1</sub> and health impacts in the greater Athens area**

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### **ABSTRACT**

Study of PM<sub>1</sub> particles in Athens' atmosphere is the goal of this paper. This research consists of five thousands sporadic samples of PM<sub>1</sub> collected by a detector (light scattering method, MetOne Instruments, US.) from nine vital points in high traffic peak roads, (during spring, summer, autumn and winter) in and out of the city center. The collected PM<sub>1</sub> samples concern the same hours of the day, in absence of wind and minimal peaks of humidity as possible.

As we know, systematic mapping studies of PM<sub>1</sub> have never been carried out in our city. Using the GIS technique, we constructed relevant maps with respect to the seasonal spatial distribution of PM<sub>1</sub>. In order to find out the impacts on health, we analyzed epidemiological data collected by the physicians, (oculists, cardiologists, Internists) of the Social Security Institute at the daily time external ambulatories. The results demonstrate a significant correlation of PM<sub>1</sub>, especially with eyes irritation and general fatigue. It is already known that PM<sub>1</sub> represent the main hazard in car-

dio respiratory syndromes in the most polluted cities of Europe, which confront high traffic problems, due to the enormous number of vehicles in circulation. Our team is under a continuous epidemiological investigation concerning multiplied symptoms, as eye irritations and nasopharyngeal inflammations, upper respiratory infections associated with headache, dizziness and generalized symptoms as catapsois and general malessereof the organism.

In conclusion we wonder whether the European Health Organizations should set new safety standards and restrictions for the  $PM_{10}$ , as they have already done for other PM for the correct promotion rule of public health in European continent.