

MEASUREMENTS AND MODELING POLLUTION FROM TRAFFIC IN A STREET CANYON Assessing and Ranking the Influences

by

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More than half a century, the scientific community is trying to understand the mechanisms and conditions of pollution dispersion within urban areas. Thereat, special attention has been focused on specific areas, such as a street canyon, in which harmful concentrations higher than allowed are more likely registered. However, there is still a controversy about the conditions of occurrence and impact of the individual air pollution components due to fluctuations of key contributions. Given that OSPM is a well-known semi-empirical model specializing in the assessment of air quality within a street canyon. After its testing and validation, the results of subsequent simulations were used as a basis for planning a special experiment in order to implement 48 full factorial designs. Using the response surface methodology, as the final objective, an answer was precisely given on the impact and contribution of urban air pollution components. In addition to the main objective of this study, as a secondary, but not less important result defining emission factors for CO and NO_x can be emphasized, which to date have not been determined for the fleet of Serbia.

Key words: vehicle emission, street canyon, COPERT, OSPM

Introduction

Urban areas are not seen as a homogeneous entities, and the largest air pollution concentration occur in the streets canyons. A street canyon is generally a basic geometric unit of urban labyrinth of the city center at most, *i. e.* relatively narrow street lined on both sides with the buildings along the roadway [1]. Given that in such environments emission dispersion occurs in relatively isolated areas and in the vicinity of vehicles, modeling can explain the processes at the level of the street [2]. Also, it is necessary to better understand the influence of meteorology, city topography, background air pollution, and direct contribution from vehicles emissions. Further, the turbulence of traffic flow is an additional mechanism of emission dispersion, *i. e.* plays an important role in the fluctuations of harmful concentrations values.

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