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Nitrogen dioxide spatial distribution in a southeastern Spanish city: a passive sampler study

S. Caballero (1), J. Crespo (1), **N. Galindo** (1), J. L. Galindo (1), E. Mantilla (2) and C. Pastor (1)

(1) Miguel Hernández University, Elche, Spain (ngalindo@umh.es)

(2) Fundación Centro de Estudios Ambientales del Mediterráneo, Valencia, Spain

The important industrial expansion beginning in Spain in the mid-1970s has noticeably increased the production and deposition of nitrogen compounds. This is mainly a consequence of vehicular traffic, and so this increase in NO emissions (and subsequent NO_2 transformation) has mostly affected urban environments. These gases, in addition to themselves being contaminants, are directly involved in grave atmospheric problems, such as photochemical smog and acidic deposition.

Because of the unique characteristics of urban areas, important differences in atmospheric pollutant concentration gradients can exist. As such, a complete characterization of different zones in a city requires an elevated number of sampling points.

Passive samplers are an economically viable option when an elevated spatial resolution is desired and they have been widely utilized to carry out these types of studies.

In the present work the results of two NO_2 measurement campaigns using passive samplers are shown. The campaigns took place in a large city in southeastern Spain during the months of April, 2003, and April, 2004. The structural characteristics of the city, as well as the vehicular traffic emissions, determine the spatial distribution of the pollutant. The spatial patron of both field campaigns was very similar.

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