

NITROGEN DIOXIDE SPATIAL DISTRIBUTION IN ELCHE, A CITY ON THE SPANISH MEDITERRANEAN COAST

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Background and Aims: Because of the unique characteristics of urban areas, important gradients in atmospheric pollutant concentrations can exist. As such, a complete characterization of different zones in a city requires an elevated number of sampling points. The use of diffusive sampling techniques (Ferm & Svanberg, 1998) is an attractive and potentially effective complement to conventional air quality monitoring networks around urban conurbations. This allows adequate spatial resolution to reflect the peculiarities of such a complex environment (Stevenson *et al.*, 2001).

Methods: Eighty-two sampling sites were distributed within the city of Elche (Valencian Community) at locations with different characteristics (vehicular emissions, ventilation, etc.). Systematic samplings of NO₂ concentration measurements (each exposure period was five days) were carried out during winter 2009. To gain an understanding of the meteorological conditions in the city, various meteorological parameters were measured, including wind direction and wind speed, temperature, and solar radiation.

Results: A comparison of the measurements performed under different environmental conditions shows a similar relative behaviour between NO₂ dosimeters, indicating that the relative level of each point is characteristic of the site where it is placed (highly polluted areas, etc.), and therefore characteristic of the specific urban structure.

Conclusions: The behaviour of the measured contaminants shows that the changes in concentration depend mainly on the prevailing environmental conditions (the meteorological conditions dilute and disperse emitted compounds).

References:

Ferm, M., & Svanberg, P.-A. (1998). *Atmos. Environ.*, 32, 1377-1381.

Stevenson, K., Bush, T., & Mooney, D. (2001). *Atmos. Environ.*, 35, 281-287.