



## **Meteorological and chemical analysis of the air pollution in an urban site under industrial and maritime influences**

C. Leroy, M. Fourmentin, P. Augustin and H. Delbarre

Laboratoire de Physique et Chimie de l'Atmosphère (CNRS/UMR 8101), Université du Littoral-Côte d'Opale, Dunkerque, France (celine.leroy@univ-littoral.fr / Fax : + 33 (0) 3 28 65 82 44 / Phone + 33 (0) 3 28 76 26 17)

To forecast atmospheric pollution episodes, it's necessary to understand how pollutants are transported and scattered as a function of the meteorological conditions and site characteristics. In this work, a phenomenological approach is used to identify distinctive meteorological events responsible for pollution peaks in the urban site of Dunkirk in northern France which is subject to significant industrial and maritime influences. In this region, the predominant wind is Westerly with frequent occurrence of sea breezes on sunny days.

Dunkirk (51°N, 2°20'E) is located on the Flanders coastline of the North Sea. To the north and the west of the town, there is a dense industrial area essentially devoted to metallurgical and petrochemical activities. Furthermore, Dunkirk is an European exchanges centre, in the centre of three European capitals (London, Brussel, Paris). Consequently, by these polluting activities, Dunkirk contributes to the significant regional pollution emissions.

An experimental campaign in this town, from February to September 2006, combining micro-meteorological and BTEX (Benzene, toluene, ethyl benzene and xylenes) measurements will be presented. BTEX were chosen because of their presence in urban and industrial emissions and their impact on healthy. Four ground stations were instrumented for monitoring the BTEX. Turbulence measurements, in the surface layer, were realized with an ultrasonic anemometer. The turbulent heat flux and the friction

velocity were used to highlight the vertical and horizontal dilution capacity of the atmosphere. By analysis from season to the hourly scales, the atmospheric dispersion mode during different meteorological events and their impact on pollutants concentration in the ground was studied.