

PRELIMINARY EXPERIMENTS WITH GAUSSIAN (OSPM) AND NUMERICAL (MIMO) MODELS FOR STREET AIR QUALITY SIMULATIONS: MADRID CITY CASE

R. San Jose¹, J.L. Pérez¹, R.M. González²

¹Environmental Software and Modelling Group - UPM/ Computer Science School / Campus De Montegancedo, Madrid, Spain

²Department Of Meteorology And Geophysics / UCM Ciudad Universitaria, Madrid, Spain

Local pollution is becoming an important issue on local urban environments. The increased interest on local authorities, scientists and urban planning managers on the spatial and temporal distribution of air pollution is a clear fact. This contribution (developed as part of the OSCAR EU project) focuses on the determination of the air pollution concentrations at street level by using Gaussian models (OSPM, Berkowicz, R. (1998)) and numerical models (MIMO, Ehrhard J. Et al. (2000)). We have used the MM5-CMAQ air quality modelling system (PSU/NCAR and EPA, USA) for providing the boundary and initial (BC and IC) conditions. The system incorporates the output of an advanced version of an emission model, EMIMO, (San José R. et al. 2001) to provide the traffic emission information in time and space. CORINAIR emission factors are used for calculating the corresponding emission data. Results show that the both approaches obtain reliable results when comparing with observational data although the numerical schemes can describe where the so call “hot-spots” appear in the complexity of a street map. Computer times for numerical models continue to be quite high in comparison with the Gaussian approach. The BC conditions provided by the MM5-CMAQ seem to play an essential role on describing the total final air pollution concentrations at lee and windward sides.