

MULTI-SOURCE DISPERSION MODELLING: ASSESSING UNCERTAINTIES**B. Owen, L. Lim, H. Peace***Department of Environment and Geography, Manchester Metropolitan University, Manchester, UK*

NO_x concentrations have been modelled in the large urban area of Greater Manchester in the North West of England. The ADMS-Urban dispersion model has provided current and future estimates of NO_x and NO₂ concentrations for comparison with the UK and EU objective values. This study uses emissions data from a comprehensive emissions inventory and data from 13 automatic continuous monitoring sites in the area. In UK air quality management studies, using multi-source models such as ADMS-Urban, a simple comparison of long term ensemble averages is the usual form of model output calibration used. This approach does not provide a true measure of the uncertainty or identify the likely relative contributions to the overall uncertainty. Most studies relating to model uncertainty in the literature consider single source models, typically industrial source models or road traffic models. Clearly, the task of trying to quantify or more clearly determine uncertainties and sensitivities of multi-source models is less straightforward. However, in view of the increasing use of these types of models to characterise ambient urban air quality a more formal assessment of the uncertainties and sensitivities involved is crucial. By detailed investigation of the temporal and geographical variations and patterns in the emissions, concentration modelling and monitoring this study examines the performance of the emission inventory and the dispersion modelling tools in detail. Parametric analysis of a number of model input parameters has also been undertaken and the results of these analyses are presented.