EVALUATION OF THE OPEN ROAD SOURCE MODEL OML-HIGHWAY FOR SEVERAL FIELD DATASETS

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Abstract: In this paper we present an evaluation of the latest GIS-based version of OML-Highway for both NO_2 and NO_x for various datasets from Denmark and Norway

Key words: *Open Road Source Model, OML-Highway, traffic produced turbulence*

INTRODUCTION

Assessment of air pollution is a requirement in environmental impact assessments (EIA) of new major roads or major alteration of existing once according to EU directive on EIA. To enhance information about air pollution in EIAs of major road projects the Danish Road Directorate has supported the development of the OML-Highway model. Apart from modelling of vehicle emissions the OML-Highway model also enables modelling of air quality along roads at user specified receptor points for $PM_{2.5}$, PM_{10}, NO_x, NO_2, O_3, and CO. The model is also able to assess the impacts of noise barriers on air quality.

OML-Highway is a local-scale Gaussian air pollution model specially designed to describe the dispersion of air pollutants along roads within an open roadside environment (Jensen et al. 2010). It is based on the OML model (Olesen et al., 2007) which is designed for air quality assessment based on point and area sources. The parameterisation for the initial dispersion from the traffic produced turbulence (TPT) is based on the formulation in the OSPM model (http://ospm.dmu.dk) but is slightly modified with regard to highways. In the OML-Highway model TPT is not assumed constant as in the OSPM model but decays in an exponential manner in time. An earlier version of OML-Highway has been successfully evaluated against measurement datasets from Denmark and Norway for the pollutant of NO_x (= $NO+NO_2$) and it has also been compared to other similar models (Berger et al., 2010).

In this paper we present an evaluation of the latest GIS-based version of OML-Highway for both NO_2 and NO_x for various datasets from Denmark and Norway including one that has not been used for evaluation so far (Wang et al. 2010). The evaluation is using the plotting and analysis tools from the openair project (http://www.openair-project.org/) that comprises statistical evaluation and exploratory data analysis.

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