OML-Highway
An Air Pollution Model for Highways in a GIS Environment

Abstract
NERI has developed a user-friendly air pollution model, designed to assess and map air pollution along roads in open areas. (Jensen et al.; 2010)

Model
OML-Highway is a local-scale Gaussian air pollution model specially designed to describe the dispersion of air pollutants along roads with an open roadside environment (Jensen et al.; 2004). It is based on the OML model (Olesen et al., 2007) which is designed for air quality assessment based on point sources. OML-Highway estimates dispersion from point and area sources. In OML-Highway, road sources are approximated as area sources. The parameterisation for the initial dispersion is based on the formulation in the Operational Street Pollution Model (Berkowicz, R., 2000), but is slightly modified with regard to highways.

OML-Highway has been successfully evaluated against datasets from Denmark and Norway for the pollutant NO\textsubscript{x} (= NO+NO\textsubscript{2}) and it has also been compared to other similar models (Berger et al., 2010).

Methods
- integration into SELMAGIS as extension of ArcGIS (Lorentz and Düring; 2008)
- interface to the emission module of WinOSPM, which is based on COPERT4
- possibility to aggregate traffic emissions from road networks into area sources
- consideration of the influence of noise barriers on the dispersion of air pollutants
- evaluation against datasets including NO\textsubscript{x}, PM\textsubscript{2.5}, PM\textsubscript{10} and particle number

Results
- guided operating of the model (wizard)
- full control at any time over input data
- input data generation using GIS capabilities
- data visualisation and editing via custom GUI
- build-in data conversion tools

Fields of Application
- Systematic Mapping of Air Quality and Human Exposure
- EU Ambient Air Quality Limit Values
- Environmental Impact Assessment
- “What if” Scenario Analysis

References
see extended abstract

OML-Highway within the GIS environment

Comparison of measured and modelled concentrations. Distance of 3m from the outer traffic lane; Wind direction (DD>= 240 or DD<=60)

Effect of noise barriers of 3m and 6m height compared to a situation without noise barrier at a motorway

Receptor points along the motorway, showing NO\textsubscript{2} concentrations