

AIRVIRO ON THE WEB – SEPTEMBER 2009

DYNAMIC EMISSION DATA BASE (EDB)

THE USER INTERFACE)

The power of the user interface is not only due to the easy to use menus in the X-Windows environment or the graphical input/output facilities. The database includes structures designed to maximize the easy with which you knowledge of emission sources can be included in the system. The tables provided enable you to describe emission factors, time variation, weather impact on emission as well as other features that help you to convert obtainable information to emissions.

A STRUCTURED WAY OF STORING EMISSION DATA HELPS YOU TO SIMULATE WHAT HAPPENS IF SCENARIOS

If you follow our recommendations and fully utilize the functions within the EDB you will find that the data is well structured, so that you can easily simulate consequences of a hypothetical measure to be taken such as: what will happen if heavy vehicles are removed from the city center?

INTEGRATION WITH DISPERSION MODELS

Within the Airviro environment, the dynamic EDB is directly linked to the dispersion models, allowing you to combine the different emission scenarios with various

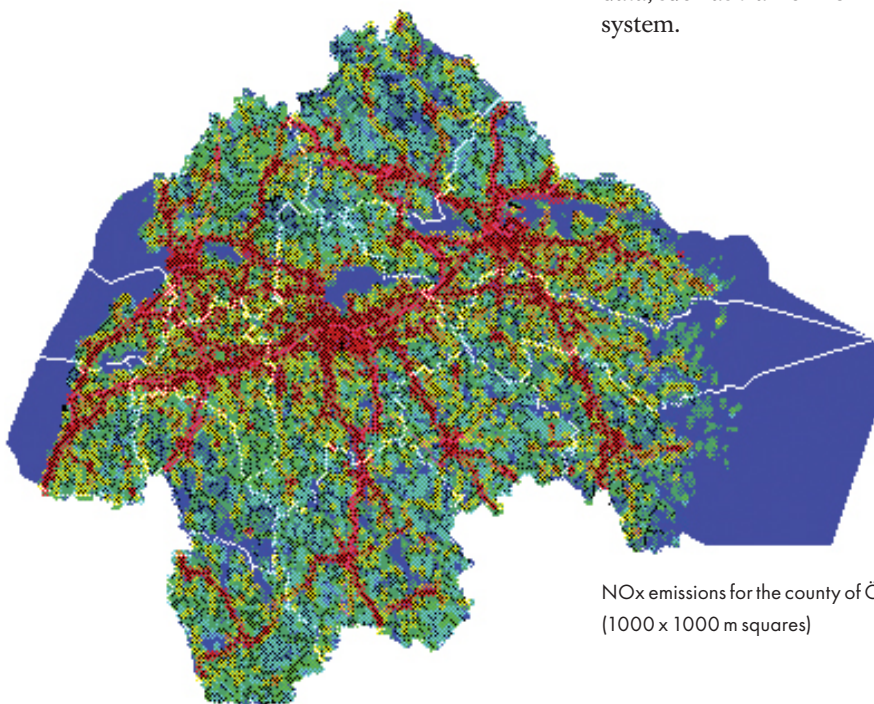
dispersion scenarios. Given the weather and the calendar date/hour, relevant emissions will be used as input data to the dispersion calculation. Your final simulation result will thus rely on realistic descriptions of both emissions and weather conditions.

THE REPORT GENERATOR

The report generator can be used to extract information from the EDB and present it graphically on the screen as well as alphanumerically in a separate window, or to write it to a file. You can display selected static data such as source locations, dynamic information such as time series of emissions in a specific area.

INTERFACE TO OTHER SYSTEMS/COMPUTERS

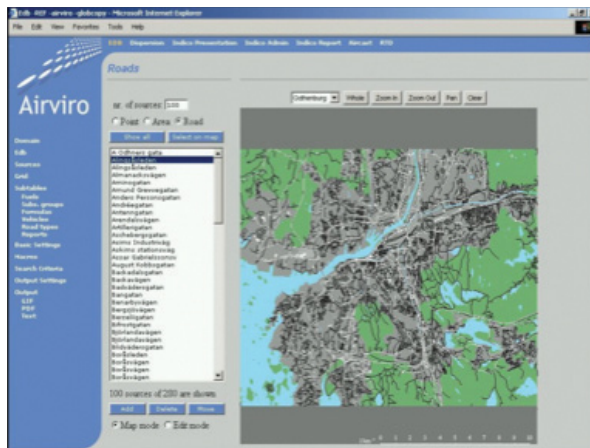
Airviro EDB has a Excel interface, Webbed, that enables import and export of a whole emission database to/from Airviro. Using the report generator, you can write your output in different formats than can be used for direct presentation in the other software applications such as Microsoft Excel. Furthermore, you can export the output to any computer system and software by utilizing the output ASCII format. The Airviro dynamic EDB also provides an ASCII interface for importing data, such as traffic information from a traffic simulation system.



NOx emissions for the county of Östergötland displayed as a grid layer (1000 x 1000 m squares)

The benefits of an EDB can be very comprehensive, but the outcome very much depends on the objectives and level of ambition of the user. In its most simple form, the EDB can be used as a register in which emission sources can be stored as a point-, area-, line- or grid source in a digital map together with additional information about the sources. The emission information stored in the database is searchable based on a potent system of search keys and code strings which allows the EDB-user to design the search possibilities to fit his different needs and objectives. If the search system is configured in the right way it will allow the user to search for aggregated or disaggregated source information in combination with a specific source type, geographical area or substance etc. The search result can be presented as figures, grid net and as a report. The information can be exported to other applications as Excel and different types of GIS software. With higher ambition the system can be used for more advanced calculations of the emission (E) based on modification of the Emission factors (EF) and the Emission Explaining variables (EEV). The calculations can be used for presentation of "what-if-scenarios" e.g. describing a future Emission

situation based on changes in emission factors due to technical development and /or a change of the use of a specific technology due to economical factors or policy decisions. Typical examples are emission calculations for description of the contribution of emissions from a new road and emission scenarios describing the effect of introduction of a new fuel or technology e.g. catalytic converters. This type of calculations can in the EDB module be applied for a mixture of different sources describing a very complex change in the emission pattern. In its most advanced form the emission information stored within the EDB module can be used as input to the Airviro Dispersion module. This module hosts different dispersion models in order to calculate emission concentrations out of the emission quantity information. The EDB allow the user to feed the system with additional information describing dispersion conditions as stack height, gas flow, inner and outer stack diameter, etc to be used in the dispersion calculation. It is also of greatest importance that within the EDB there are possibilities to describe the emission variation over time in order to be matched with the meteorological conditions on a high resolution.



För mer information kontakta:

Namn Namnsson
tel 031-251 8987
e-post namn.namnsson@smhi.se

Namn Namnsson
tel 011-495 8333
e-post namn.namnsson@smhi.se