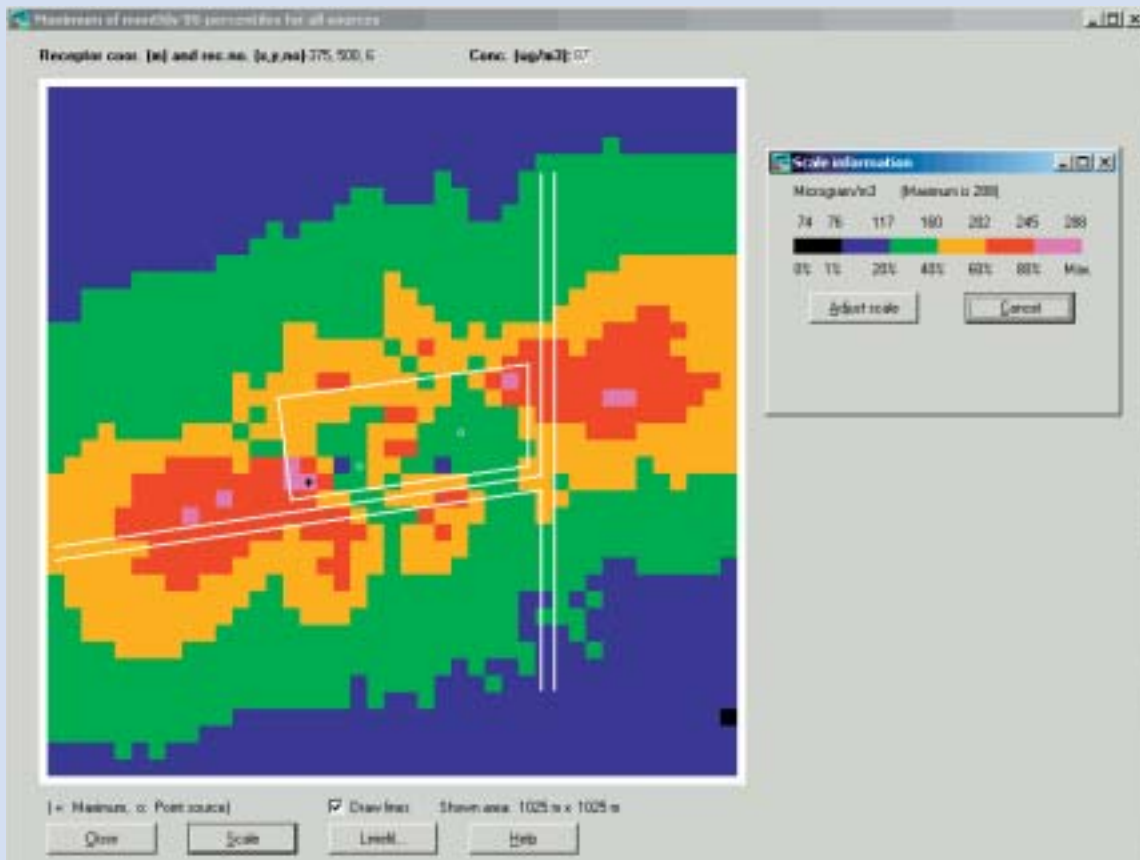


OML-Multi – an atmospheric dispersion model for regulation and planning

NERI



Field of application

OML-Multi is an atmospheric dispersion model, used to assess air pollution from sources such as stacks and area sources. It can be used at distances up to around 20 km from the source. OML-Multi is a modern Gaussian plume model, based on boundary layer scaling instead of relying on Pasquill stability classification such as older models do. The model has been developed by the National Environmental Research Institute (NERI) in Denmark. The OML model is frequently applied for regulatory purposes. Thus, it is the recommended model to be used for environmental impact assessments when new industrial sources are planned in Denmark. It is further used to demonstrate that planned facilities comply with the Danish Guidelines for Air Emission Regulation. Besides such studies on compliance, the model can be used for environmental assessments, where air pollution has to be mapped for an entire urban area.

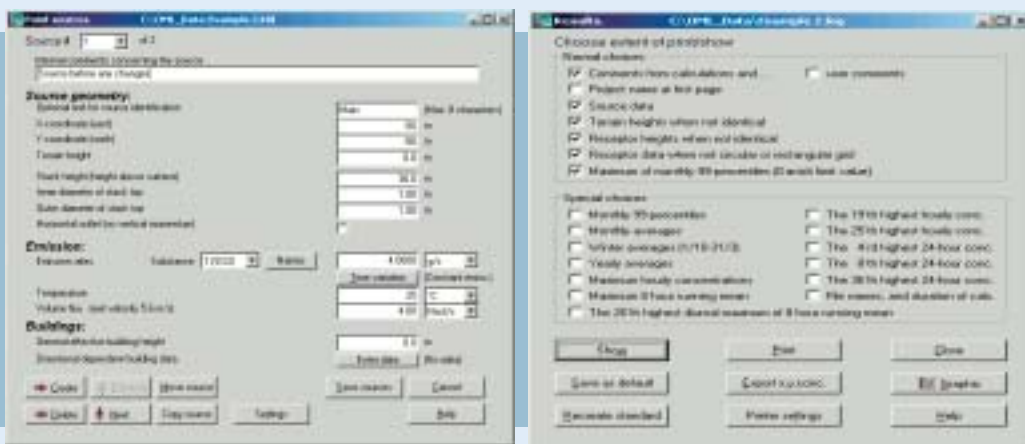
Features of OML-Multi 5.0

- The model can be used for both high and low sources in flat or moderately sloping terrain.
- The model requires information on emission and meteorology on an hourly basis. It computes a time series of concentrations at user-specified receptor points, from which statistics are extracted and presented to the user.
- OML-Multi performs computations for arbitrarily placed sources and receptors. The model can handle up to 3000 sources.
- Most often, the receptors are placed in a set of concentric rings or in a rectangular grid. A concentric net of receptors can have up to 15 rings (540 receptors) and 1681 (41 x 41) receptors in a rectangular grid (this is suitable for a subsequent graphical presentation). It is also possible to use specially constructed receptor grids.
- OML-Multi can handle emissions of a maximum of 3 substances within the same calculation.
- OML-Multi handles area sources, meaning sources whose emission can be considered evenly distributed within a rectangle of arbitrary dimensions and orientation.

- Computations are organised in projects, so the user can conveniently manage the files he uses for a certain set of calculations.
- Mapping: The model can be used to map air pollution over greater domains such as cities, so air quality can be compared to EU requirements.
- Graphics: The result of model computations can be presented graphically. If the user requires a more sophisticated graphical presentation than OML-Multi itself allows, he can easily export the results of calculation to a file, which can subsequently be used by a GIS program or another third-party graphics software package.
- Data import: Source data can be imported from external files in CSV format (such files can be converted from Excel).
- Flexible output: The user can choose between a wide range of statistics when he designs his printed output. Most of the statistical parameters are related to various EU limit values. The output can include a range of parameters based on 8-hourly moving averages, on hourly averages, or on daily averages. This flexibility is useful when model results are compared to EU limit values for SO₂, NO_x, NO₂, O₃, CO, particulate matter and other substances.
- Time variation for emission: For each point source it is possible to prescribe a time variation of the emission strength

through weighting factors for month, day of week, and hour. Alternatively, the user can supply emission data given directly as a time series. For area sources, a time variation can be prescribed through weighting factors.

- Background concentrations and chemical reactions: It is possible to account for measured background concentrations of NO_x, NO₂ and ozone, and to account for chemical reactions. This is of particular interest when performing calculations over entire urban areas. The model can also handle background concentrations for other substances.
- Data dump: It is possible to dump computed concentrations for every hour in receptors of the user's choice.
- Meteorology: Before being used by the model, meteorological measurements must be processed by a pre-processor. For use in Denmark, processed meteorological data are available off-the-shelf for many locations. Users outside Denmark will normally need processed meteorological data from local stations. If no off-the-shelf data are available, a processed data set can be generated, based on hourly meteorological measurements from a synoptic surface station and on twice-daily vertical profiles of temperature from a nearby radiosonde station. The pre-processing of meteorological data is a rather specialised task, which may require expert assistance, but once the met data are in place, using the model is straightforward.



Price

The price for OML-Multi is 2100 Euro (excluding VAT). A special rate applies to educational institutions.

Licensing conditions

The licensing conditions for OML-Multi gives the licensee the right to use any number of copies of the program on any number of PC's, as long as they are physically present at the address of registration. Also included by the license are portable and home computers for employees working at the specified address. Note that a company having branches at several physical locations is required to have separate licenses for each branch where the program is applied.

Ordering and information

The OML model can be ordered at:



National Environmental Research Institute, Department of Atmospheric Environment
Post Box 358, DK-4000 Roskilde., Tel. +45 4630 1200, Fax +45 4630 1114, e-mail: pl@dmu.dk

A time-limited demonstration version is available upon request. OML web page: <http://oml-international.dmu.dk>