# SOFTWARE SOLUTIONS

## ADMS urban
ATMOSPHERIC DISPERSION MODELING SYSTEM

# AIR QUALITY MODELING ON AN URBAN SCALE

*ADMS-Urban is an air quality modelling system incorporating several models designed specifically to calculate urban air pollutant concentrations. Designed to work at a range of scales, from street-scale to city-wide scale, ADMS-Urban is the benchmark system for quantifying population exposure to urban pollution sources, i.e. road traffic and transport, industry, domestic/commercial, etc.*

## A flexible, easy-to-use tool

- User-friendly interface.
- Has links to visualize systems and GIS packages, i.e. Surfer®, MapInfo®, ArcGIS®.
- Import/export of emissions databases.
- Internal SIG (Mapper).
- Converts meteorological data and topography datasets.

## A validated model with global recognition

- Worldwide recognition; several model/measurement comparisons have been published.
- Used in several european (SATURN, HEAVEN, EDEN, Air4EU, HEARTS, FUMAPEX, PROMOTE, etc.) and international (PRAISE-Hong Kong) research projects.
- Used in France and in 20 countries over 200 cities worldwide including London, Beijing, Johannesburg, San Diego, New Dehli, Budapest, Rome, Casablanca, etc.

## Air quality in urban and peri-urban environments

- Air quality at the scale of a road, a neighbourhood or a town.
- City-wide quantification of point exposure to pollutants.
- Reconstruction of pollutant concentrations from traffic or urban background emissions.
- Production of city-scale annual mappings covering a range of pollutants, including $NO_2$, benzene, particulates, ozone, etc.
- Calculation of exposure to pollutants around industrial facilities.
- Environmental and health impact studies.
- Monitoring and forecasting of air quality at urban scale (incorporated into the Urban Air® operational system).
- Link to regional and national modelling systems.



NO$_2$ concentrations at city-wide scale.

## A decision support and communication tool for local government authorities

- Impact assessment of urban development on air quality.
- Production of mapping documents.
- Air Protection Plans.
- Urban development and urban travel plans.
- Information to urban populations on town-wide air quality (real-time and forecast).
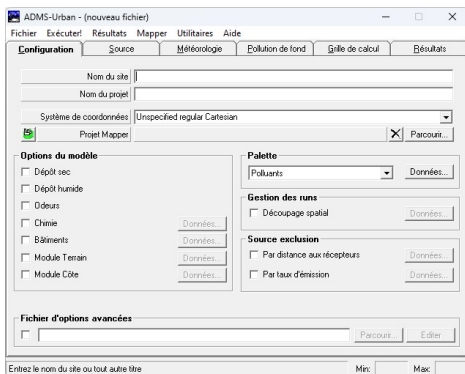
# numtech
ENVIRONMENTAL INTELLIGENCE

6 allée Alan Turing • CS 60242 • Parc Technologique de La Pardieu • 63178 Aubière Cedex • France
Tél : +33 (0)4 73 28 75 95 • Email : numtech@numtech.fr • www.numtech.fr

**ADMS** urban
ATMOSPHERIC DISPERSION MODELLING SYSTEM

## A comprehensive modelling platform
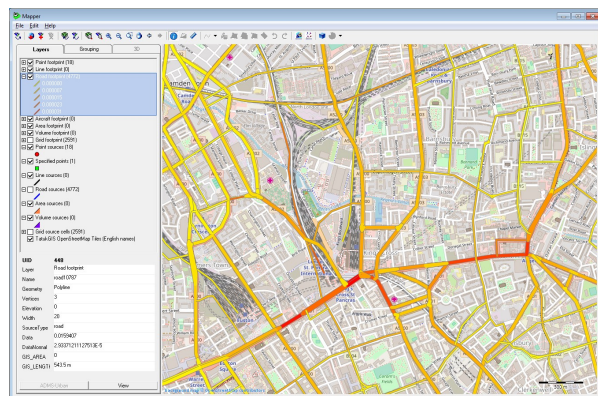
### Meteorology

- Vertical and continuous representation of the atmospheric boundary layer (meteorological processor based on the similarity theory).
- Use of statistical or hourly sequential meteorological data. Data can be collected from observed ata or from regional met models (WRF, AROME, etc.).

### Models tailored to urban-scale calculations

- Simple (based on OSPM) or advanced "Street Canyon" model.
- Pollutant dispersion assessments take into account complex terrain and land use.
- Urban photochemical model covering NOx, ozone and VOC.
- 3-D wind field and turbulence predictions using the FLOWSTAR diagnostics model.
- Modelling of the ground deposition of gases and particulates.
- Integral modelling of plume trajectories from industrial sources.
- "Building" model designed to take into account the effect of obstacles on the dispersion of industrial plumes.
- "Urban canopy" module allowing to adjust flow depending on urban occupation.
- Effect of noise barriers and tunnels on pollutants dispersion.
- Integration of background pollution at the hourly resolution: observations or output of regional/national models.
- The resolution of the calculation grid near road sources is automatically adjusted to improve mapping results ("intelligent gridding").
- Statistical post-processing module for numerical output: annual averages, rolling averages, percentiles, number of threshold exceedences, etc.

### Extended capabilities

- No limit on the number of sources that can be modeled. Simultaneous calculation on 3000 roads (i.e. up to 150,000 road links), 1,500 point, line, area or volume sources, and on a global emission inventory containing up to 3,000 grid cells.
- For large areas of study, tools facilitating the division into several sub-domains of calculation.
- Option of placing receptor points (houses, sensitive buildings, air quality measurement stations, etc.).
- Emission factor time profiles.
- Estimation of the simultaneous dispersion of several gaseous and particulate pollutants, i.e. $NO_2$, particulates, benzene, metals, PAH, VOC, etc.
- Incorporation of user emission data or direct link to the EMIT emission management system.

## Technical support

*Our engineers provide online technical support, tutorials, and customized advice on how to conduct even the most complex of your studies.*



A user-friendly interface.



High resolution modelling on the scale of a neighbourhood and until street level.

## Recommended configuration

*The ADMS-Urban model runs under Windows 8, 10 et 11.*
*RAM: 4 Go.*

ADMS-Urban is developed by CERC Cambridge Environmental Research Consultants Ltd.



Display of modelled sources via the GIS link.

**numtech**
ENVIRONMENTAL INTELLIGENCE