SOFTWARE
SOLUTIONS

ADMS Airport

MODELLING SYSTEM FOR THE ASSESSMENT OF AIRPORTS' IMPACT ON AIR QUALITY

Designed for airport managers, air quality monitoring organizations, and engineering offices, ADMS-Airport is the benchmark system for modelling air quality at airports.

A tool that has been comprehensively tested and validated through several international air quality campaigns

ADMS-Airport has been validated through the model intercomparison study run by the International Civil Aviation Organization, Committee on Aviation Environmental Protection (ICAO, CAEP) over London Heathrow International Airport, and during the study carried out by Schiphol Airport, in Amsterdam, in 2011.

Users

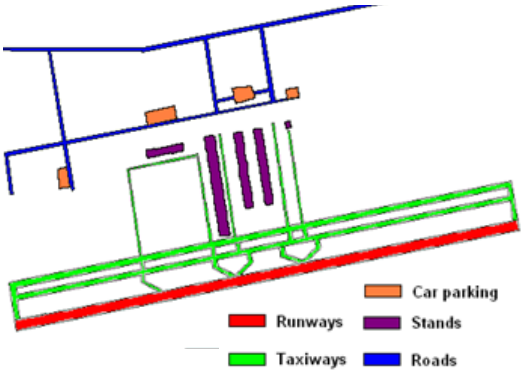
- Airport managing bodies: Aéroports de Paris (Charles-de-Gaulle, Paris-Orly, Paris-Le Bourget - FR), Budapest (HU), London Heathrow and Gatwick (UK), etc.

- Public bodies: Ministry of Transport (CN), Beijing Environmental Monitoring Centre Municipal Government (CN), Harvard School of Public Health (US), Onera Research Institute in Toulouse (FR), etc.

- Engineering offices: Ricardo-AEA (UK), RESEAUX Research for Environmental Applications using Experiments and Simulation (IT), Parsons Brinckerhoff (UK), etc.

Comprehensive modelling of pollution sources

- Emissions linked to airport activities: air traffic (LTO cycles), electricity generators, goods handling equipment, aircraft and runway maintenance, etc.
- Emissions linked to ancillary airport activities: power plants, wastewater treatment plants, fuel storage facilities, etc.
- Emissions from transport infrastructures serving the airport: roads and motorways, taxi ranks, trains.
- Emission sources in the vicinity of an airport: industrial sources, urban pollution, agricultural areas, etc.



Example of modelled emission sources for a small airport.

An operational tool designed for real-world applications

- Environmental and health impact of emissions from an existing airport, an airport development, an airport expansion project or a completely new airport.
- Decision support and management tool covering emissions in and around airports.
- Assessment of the relative contribution of each different pollution source.
- Communication support targeting the impact of airport activities on air quality.
- In option, real-time monitoring and forecasting of air quality at the scale of airports and their neighbouring urban areas (AIRPORT AIR, based on the operational system URBAN AIR® developed by NUMTECH).

NUMTECH
L'ATMOSPHÉRIQUE

6 allée Alan Turing - Parc technologique de la Pardieu
CS 60242 - 63178 AUBIÈRE CEDEX - FRANCE
Tél. (33) 4 73 28 75 95 - Fax (33) 4 73 28 75 99
Email : numtech@numtech.fr - Web : www.numtech.fr

SOFTWARE
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ADMS Airport

A flexible, easy-to-use tool

User-friendly interface.

Internal GIS (Mapper) :

- Creation, edition, display of emission sources, buildings (possible 3D display), calculation grid and receptors (sensitive sites).

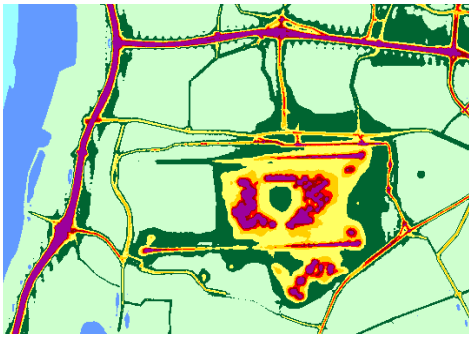
- Creation and display of concentrations maps.

- Import of a large number of formats for the background map (including AUTOCAD format) and direct link to OpenStreetMap.

- Export of data in various SIG formats and for Google Earth display.

Links to visualization and GIS software, i.e. Surfer®, MapInfo®, ArcVIEW®, ArcGIS®.

Import/export of emission databases.



Cartographie de la concentration moyenne annuelle en NO_x sur l'aéroport international de Londres Heathrow (GB).

Technical support

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

Recommended configuration

The ADMS-Airport model runs under Windows 7, Windows 8 and Windows 10.

RAM: 1 Go.

Available disk space: 60 Go.

ADMS-Airport was developed by CERC, Cambridge Environmental Research Consultants Ltd.

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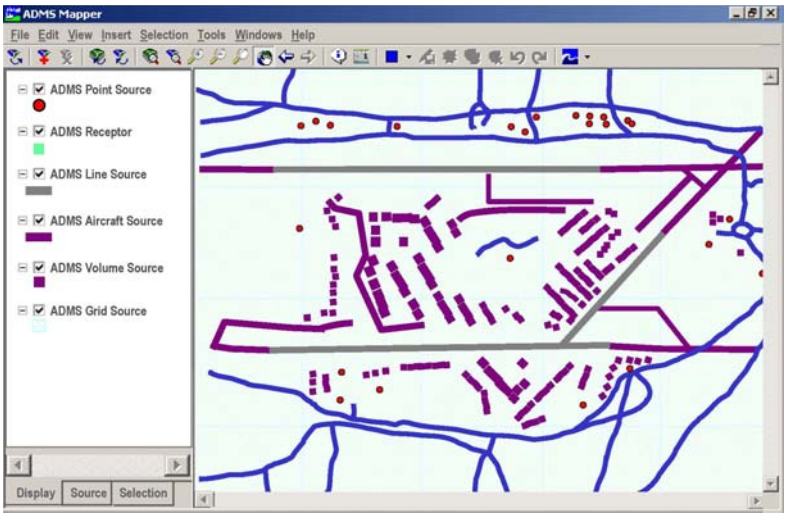
Technical features of the ADMS Aiport model

Specific modules

- Specific modelling of aircraft engine exhausts (moving jet sources) factoring in the effects of turbulence, buoyancy and heat.
- Temporal modulation of emissions to take into account the airport's flight plans, especially in relation to wind direction.
- Specific models for modelling road sources and industrial sources.
- A new-generation met. processor: vertical and continuous representation of the atmospheric boundary layer.
- Intelligent gridding: automatic increase of grid resolution close to sources.
- Photochemical computation covering the gases NO, NO_2, O_3, COV, SO_2.
- Factors in dry and wet deposition processes for gases and particulates.
- Incorporation of background pollution in order to compare the results against regulatory and measured values.

Capabilities and functionalities tailored to the modelling of major airport hubs

- Up to 500 moving jet sources (aircraft).
- Up to 1,500 point, line, area or volume sources.
- Up to 3,000 road/rail sources.
- A global emissions inventory containing up to 3,000 grid cells.
- Simultaneous dispersion of several gaseous and particulate pollutants.
- Up to 500 emission factor time profiles.
- Manual integration of emissions data via an interface or direct import from a database through Microsoft Access or EMIT (software developed by CERC and distributed by NUMTECH). EMIT is a tool calculating emissions, which incorporates the latest ICAO emissions factors. It also allows to manage emissions inventories, generate easily emissions scenarios and compare them.
- Option of specifying emission characteristics for each type of aircraft: ejection speed according to thrust, temperature, number of jet engines and their location, etc.
- Option of specifying unit emissions for each type of aircraft according to the type of motion involved (LTO cycle).



Mapper interface with the definition of emission sources at London Heathrow (GB).

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