CERC ADMS-Urban & ADMS-Roads News Autumn 2017

Contents

Latest model releases: version 4.1, March 2017

ADMS-Urban and ADMS-Roads News

ADMS-Urban & ADMS-Roads User Group Meeting

The 2017 ADMS-Urban & ADMS-Roads User Group Meeting, held in Birmingham in November, was attended by over 80 delegates. The packed and varied programme of presentations included a preview of the new EFT emission factors, advice on modelling buildings in urban areas and recent case studies. The presentations are available to download from the CERC website User Area (login required; you can register here). Special thanks to our guest speakers: Jamie Clayton (Bureau Veritas), Xiangyu Sheng (Capita) and Julija Doktorova (ELLE).

Emissions Factors Toolkit v8 published by Defra

Defra has released a new version of the Emissions Factors Toolkit (EFT). Details of the updates in this new version are given on page 5 of the EFT user guide.

ADMS-Airport, ADMS-Urban and ADMS-Roads incorporate the EFT emission datasets so that emission rates can be calculated from available traffic and speed data. CERC are currently working hard to process the new EFT datasets for inclusion with ADMS-Airport, ADMS-Urban and ADMS-Roads ADMS-Roads, with release expected in early 2018 to users with current support. When we have a more exact date we will publish an updated news item on our website. As well as including the new version of the EFT, these model releases will include a number of user experience enhancements to help you with your work. Details will follow, closer to the release date.

We will also be updating EMIT in early 2018 with EFT 8. This will occur after the ADMS-Airport, ADMS-Urban & ADMS-Roads releases, and once again we will publish more details closer to the release date.

Surfer 14 supported

Golden Software's Surfer 14 is now supported for use with all CERC models. A full list of supported third party software may be found on our website.

CERC News

New: ADMS model feature comparison web page

The CERC website now has a useful ADMS model feature comparison web page where you can compare the source types, modelling options, output options and utilities available in ADMS 5, ADMS-Screen, ADMS-Roads, ADMS-Urban and ADMS-Airport.

Run Manager 1.8 released

CERC's model run management software has been updated and is available to download from the User Area.

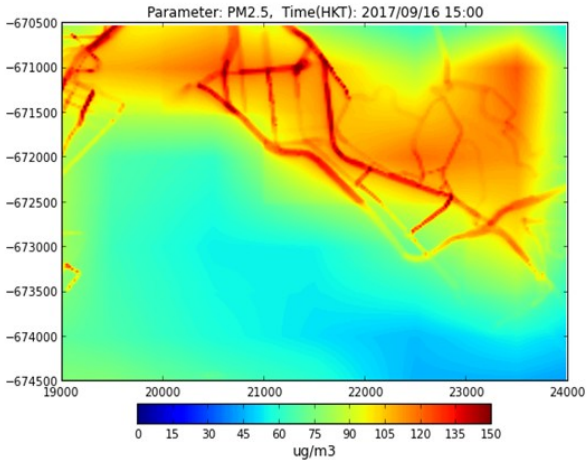
Run Manager enables users to manage their model runs and make the most of their CERC software licence(s). You can run it on your local network allowing multiple modellers to submit, monitor progress and completion time estimates, and retrieve output from finished runs. Run Manager will queue runs and, in typical set ups, distribute them over a number of dedicated licensed runs machines, freeing up your own PC for other work.

Version 1.8 includes the following updates:

- Manages runs from ADMS 5, ADMS-Urban, ADMS-Roads, ADMS-Airport, FLOWSTAR-Energy, ADMS-Puff and GASTAR
- Improved distribution of runs across available runs machines
- Extended model definition options, including the maximum number of runs on a per-model basis
- Supports zipped output files greater than 4GB

Consultancy News

CERC presented high-resolution forecasting for Hong Kong at CMAS 2017



High-resolution forecast $PM_{2.5}$ concentrations

Dr Christina Hood from CERC presented the latest developments to the ADMS-Urban Regional Model Link (RML) system and its use in a high-resolution air quality forecasting system for Hong Kong at the CMAS conference. The integrated regional and local forecasting system has been developed in collaboration with researchers from the Hong Kong University of Science and Technology (HKUST) as part of the PRAISE-HK project. The extended abstract is available on our website.

Professor Jimmy Fung from HKUST also talked about this project in his Plenary presentation.

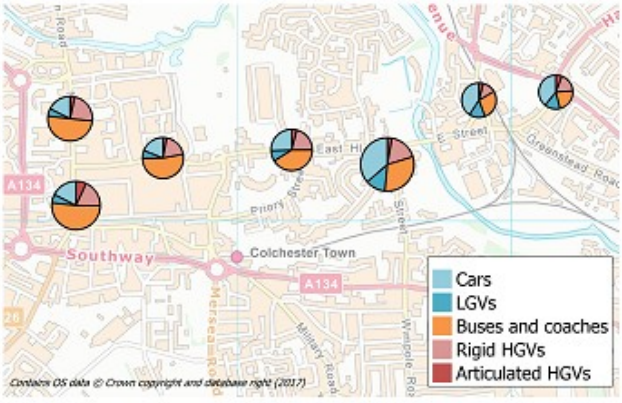
Clean Air Zones

On 5 May 2017 the UK government published the principles for setting up new Clean Air Zones in England, which can include charges for older vehicles that do not meet emission standards such as Euro 6. Local authorities who propose Clean Air Zones must consider the sources of vehicle pollution in their area to ensure the zone design is appropriate to meet the air quality challenge.

CERC's ADMS-Urban and EMIT software are invaluable aids in these assessments, allowing:

- Source apportionment of emissions and concentrations, for instance to determine the relative contributions from diesel cars below Euro 6 standard.
- Assessment of the impact of measures, including changes in emissions and concentrations due to changes in road traffic flows and fleet composition.

The map below is from a recent study by CERC's consultancy team, who have extensive experience in assisting local authorities to assess air quality measures on challenging timescales. The ADMS-Urban and EMIT software tools are available for use in assessments by local authorities or consultants. For more information please contact CERC.



NO_x concentration source apportionment

China-UK Urban Air Quality Management Workshop in Beijing

CERC, in partnership with the School of Environment, Beijing Normal University, held a China-UK Urban Air Quality Management Workshop in Beijing in June 2017. There were 20 speakers at the event, with over 90 participants. The topics covered air quality forecasting, urban air quality management, urban traffic pollution, air quality and climate change, air quality modelling at regional and local scales, source apportionment and shipping emissions. Speakers also shared their experiences of the Swiss and the Asian air quality management experience. CERC Director Dr David Carruthers presented CERC's regional and local scales nested modelling approaches. Local fine scale models such as ADMS-Urban are particularly important when pollution mitigation scenarios are tested.

Modelling tips

UGM spotlight – Sensitivity testing

When setting up complicated sites, especially when pollutant concentrations are near to limit values, conducting sensitivity tests can be very helpful. It can help quantify model uncertainty, refine the model configuration and identify the most conservative estimate. A presentation at the recent ADMS 5 User Group Meeting contains useful information on when, what and how to sensitivity test many model options; many of these options are also applicable to ADMS-Roads and ADMS-Urban modelling scenarios.

UGM spotlight – Modelling deposition

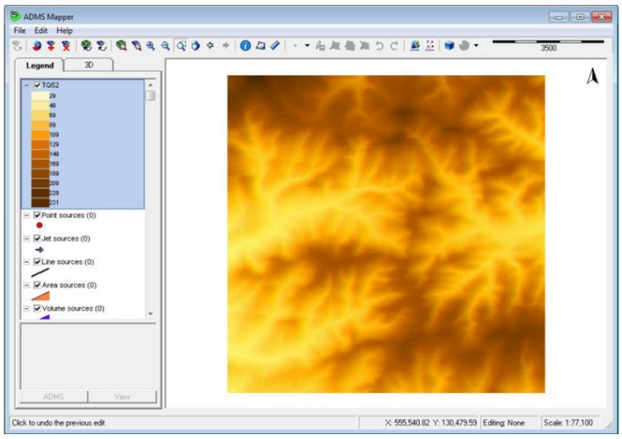
Deposition rates of pollutants are assessed against habitat-specific critical loads, for example when assessing impacts at nature conservation sites, making assessment of deposition a more complex task than for concentrations. The Environment Agency's Habitats Directive AQTAG06 guidance and the APIS web site are useful resources. The 2017 ADMS 5 User Group Meeting presentation on Modelling Deposition at Nature Conservation Sites includes some helpful advice.

Using the ADMS-Urban and ADMS-Roads Mapper

Terrain files can be converted from raster data such as OS Terrain 50 and global SRTM data to *.ter* format using the Extract Data tool. Full details are given in Section 5.6 of the Mapper User Guide.

To view map data, map images can be dragged into the Mapper legend. Alternatively, the Add background map button can add seamless Web Mapping Service data. The default is Open Street Map data, but alternative WMS background maps can be used: see Helpdesk Note 112. For best results match the map view coordinate system to that of the web service you are using.

The width of advanced street canyons can be visualised in the Mapper, see Helpdesk Note 103.



Mapper layers, including sources and buildings, can be exported to shapefiles or Google Earth format, see Section 5.12 of the Mapper User Guide.

UGM spotlight – Modelling building effects

Buildings can significantly affect dispersion, by deflecting airflow, increasing turbulence and entraining material, as outlined in a recent ADMS-Urban & ADMS-Roads User Group Meeting presentation.

When using the **Buildings** model option (in ADMS-Urban and ADMS-Roads Extra only) to model point sources, specific output building (*.bld* and *.bef*) files are produced, which provide information on the effective building dimensions and entrained material. Carrying out sensitivity tests and interrogating outputs using these building files can be very useful in deciding on the best way to represent your buildings.

Exporting specified points to ASP

You can add up to 50 receptor points to the Specified points table in the interface. One of the easiest methods of doing this is graphically by using the Mapper with a background map included. Having defined multiple points of interest, you might find it more convenient to export these to a separate file, so that you can easily edit or reuse the same points in multiple APL files. The interface has an **Export** button above the Specified points table that allows you to save the entire table to an *.asp* file. These files are comma separate text files that can be easily appended to or edited in a text editor or spreadsheet package.

Spatial truncation

To use the spatial truncation model option, make sure that at least one non-aircraft source type is selected for truncation.

Exporting model set-up data to SPT

ADMS-Roads and ADMS-Urban have two methods of importing and exporting model set-up data: the older emissions inventory database and the newer text-based SPT system. We are phasing out emissions inventories, but the good news is that the text-based system is simpler, more flexible and is shared by ADMS 5, ADMS-Roads and ADMS-Urban. To export to SPT, choose **Export** from the **File** menu on the interface, then select whether to save sources (broken down by type), buildings and pollutants. The data is written to a set of comma-separated text files, the key file having a *.spt* extension; other data will automatically be added to associated files using different extensions for vertices, emissions etc. See the User Guide for specific details about the different files and their formats. These files are compatible with multiple CERC models, making it much simpler to transfer data between different products. Being comma-separated text files they are easily manipulated in programs such as Excel. Furthermore, the format allows the columns to be in any order and import will ignore any unrecognised columns, making construction of these files from other data sources much easier.

Recent publications

Aktas YD, Stocker J, Carruthers D and Hunt J, 2017: *A Sensitivity Study Relating to Neighbourhood-scale Fast Local Urban Climate Modelling within the Built Environment*. Procedia Engineering. Article online

A comprehensive list of all our publications may be found on the publications section of our website.

Training News

Discount on CERC training courses

A 20% discount applies to scheduled CERC training courses, if purchased at the same time as a software annual licence or support renewal. This discount also applies to one-day refresher courses. Training must be booked within 12 months of purchase.

Upcoming training courses

Our training courses focus on giving users the knowledge and expertise to efficiently apply CERC software to real-life air quality problems. CERC holds regular 2-day courses at its Cambridge offices. The table shows scheduled training dates for 2018.

Course	Feb	Jun
ADMS-Roads	20 - 21	19 - 20
ADMS-Urban	27 - 28	26 - 27

Courses may also be arranged at alternative locations and/or dates and can be customised to particular user requirements; for further details, see www.cerc.co.uk/training or contact CERC.

Products and Services

CERC has been developing world-leading air dispersion and complex flow modelling solutions since 1985. Our consultancy team was established to apply our expertise to a wide variety of applications for a diverse client base.

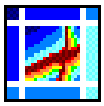
Other software solutions

ADMS 5

Local scale air quality modelling for industrial sources

GASTAR

Modelling emergency releases of dense gases



ADMS-Urban Regional Model Link

Automated nesting of ADMS-Urban within a regional air quality model

FLOWSTAR-Energy

Modelling wind energy and airflow at high spatial resolution for wind farm planning and other airflow-related applications

ADMS-Airport

Urban scale modelling with detailed treatment of aircraft emissions

ADMS-STAR

Short-term accidental release modelling

For custom-made software solutions, see www.cerc.co.uk/research or contact CERC.

Consultancy services

Our consultancy services include:

- Air quality assessments, e.g. odours, LAQM, planning and permitting
- Specialised modelling, e.g. dioxins, accidental releases, wind energy
- Compilation of emissions inventories and forecasting for large urban areas
- Project support and review services
- Research with complex atmospheric flows and air quality

For more details, see www.cerc.co.uk/consultancy or contact CERC.

Contacting the helpdesk

The CERC helpdesk is on hand to provide model support. Contact us:

- From the ADMS-Urban or ADMS-Roads interface, select Help, Email CERC
- Email help@cerc.co.uk
- Phone +44 (0)1223 357773