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Latest model release: version 5.2.2, Oct 2017

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ADMS 5 and ADMS-Screen News

ADMS 5 User Group Meeting



The 2017 ADMS 5 User Group Meeting, held in Birmingham in November, was attended by over 60 delegates. The packed and varied programme of presentations included a talk about optimising modelling for permit applications by the Environment Agency and various ADMS 5 modelling tips, which are highlighted below in the **Modelling Tips** section. The presentations are available to [download](#) from the CERC website User Area (login required; you can register [here](#)).

Special thanks to our guest speakers: Jessica Hernandez (Environment Agency), Neil Haines (Tata Steel), Christelle Escoffier (Wood) and Chris Hazell-Marshall (ERM).

ADMS 5.2.2 Released

A minor model update to ADMS 5.2 was released in October and is available to [download](#) as a patch or a full install from the user area of the website.

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

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 larger than 4GB

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, 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.

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.

Consultancy News

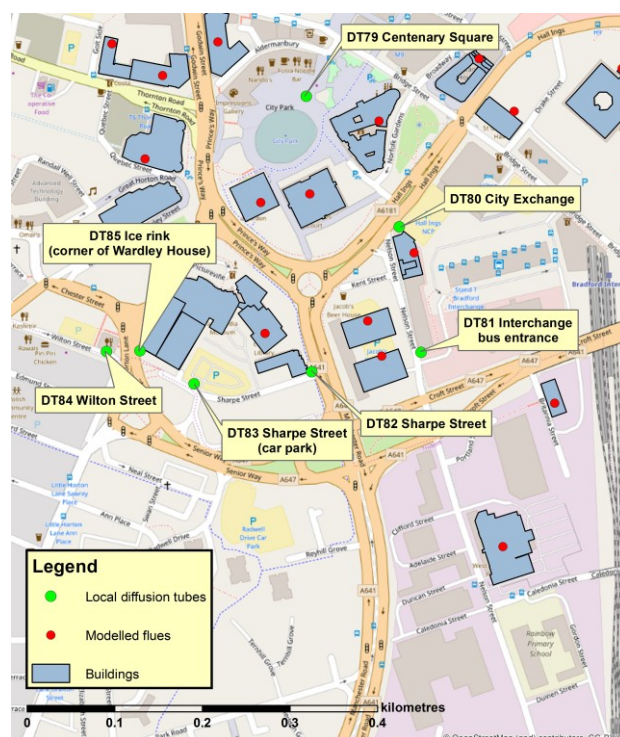
Air quality impact of a district heat network in Bradford

The [CERC Consultancy team](#) investigated the air quality impact of a proposed district heat network in Bradford city centre, intended to replace boiler plants within individual buildings.

In work commissioned by Sustainable Energy Ltd, ADMS 5 was used to carry out dispersion modelling of emissions from flues for three scenarios: current; counterfactual (without the proposed heat network) and future (with the proposed heat network).

A complex arrangement of multiple sources and buildings was modelled to calculate pollution concentrations at ground-level and elevated locations, representing residential building facades. The impact was also assessed at Bradford Metropolitan District Council's four city centre AQMAs.

For each modelled scenario, hourly varying emission parameters and pollutant emissions were calculated for each source, based on fuel use and/or energy demand. The damage cost was also calculated.



China-UK Urban Air Quality Management Workshop in Beijing

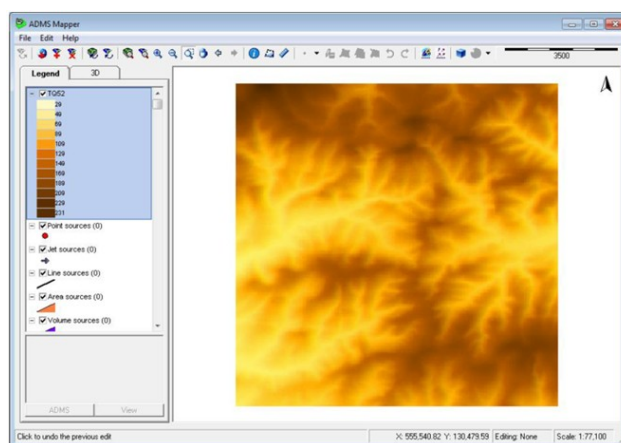
CERC, in partnership with the [School of Environment](#), Beijing Normal University, held a China-UK Urban Air Quality Management Workshop in Beijing in June 2017. There were 20 speakers at the event, with over 90 participants. The topics covered air quality forecasting, urban air quality management, 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

Using the ADMS 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.



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 – 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.

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.

UGM spotlight – Modelling building effects

Buildings can significantly affect dispersion, by deflecting airflow, increasing turbulence and entraining material, as outlined in a recent ADMS 5 User Group Meeting [presentation](#).

When modelling building effects, 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.

Modelling non-vertical releases

ADMS 5 can model non-vertical pointing jet source releases, for instance from vents on the side of a building. However, as the effects of buildings cannot be accounted for when jet sources are modelled, the importance of building downwash on the release needs to be considered. Based on the results of model evaluation undertaken as part of a [non-point source project](#) for [ADMLC](#), CERC recommend that non-vertical releases with large initial momentum and/or buoyancy (i.e. high exit velocity and/or temperature) should be modelled as jets. Other non-vertical releases can be modelled as point sources, to allow for buildings, but with an exit velocity equal to the vertical component of the velocity; for horizontal point source releases, the exit velocity should be set to 0.1 m/s to ensure plume rise is modelled in order to account for plume buoyancy. As usual, it is a good idea to do sensitivity testing to find what impact different modelling inputs may have.

Modelling ambient emissions

Name	Cp J/°C/kg	Mol. mass (g)	Density (kg/m ³)	T, RHO or Ambient?	Actual or NTP	Efflux	Source type
Source001	1012	28.966	1.225	Ambient	Actual	Exit V.	Point

For most source types, the release temperature or density must be specified as either a constant temperature (**T**), a constant density (**RHO**) or **Ambient** conditions. Time variation of all three options may be used in a time-varying emissions .var file, where the ambient option allows temperatures to be set relative to ambient, meaning a value of 5°C would indicate an emission temperature 5°C above ambient.

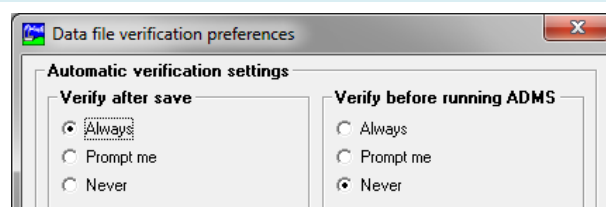
Examples where ambient conditions are appropriate include modelling poultry units or sewage works. Using a constant, low emission temperature may cause a modelling error stating that the *'plume is too dense to model'* when ambient temperatures rise above the emission temperature.

Exporting model set-up data to SPT

There is a simple and flexible way to export model set-up data which is shared by ADMS 5, ADMS-Roads and ADMS-Urban. When you choose **Export** from the **File** menu on the interface, you are presented with options 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.

Model input verification

By default, ADMS 5 will verify the model setup every time it is saved to check for any errors or missing data before the model can be run. It is possible to turn this verification off by selecting **File > Preferences > APL Verification** and changing the **Verify after save** option.



Exporting specified points to ASP

You can add up to 100 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 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.

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 dates for 2018.

Course	Feb	Jun
ADMS 5	6 - 7 13 - 14	5 - 6

Courses may also be arranged at alternative locations and/or dates and can be customised to particular user requirements. For more information, visit 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-Roads and Roads-Extra](#)

Local scale air quality modelling including road and industrial sources



[GASTAR](#)

Modelling emergency releases of dense gases



[ADMS-Urban](#)

Urban scale modelling including roads, industrial and diffuse sources



[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, visit 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, visit www.cerc.co.uk/consultancy or [contact CERC](#).

Contacting the helpdesk



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

- From the ADMS 5 interface, select Help, Email CERC
- Email help@cerc.co.uk
- Phone +44 (0)1223 357773