

What's New in ADMS-Screen 6?

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ADMS-Screen 6 is the latest general release of CERC's state of the art screening model for the dispersion of pollutants. ADMS-Screen 6 contains a number of new features and model options, most notably:

- Enhancements to the modelling of a building, including changes to the way the effect of the building is modelled for an upwind source;
- Many new usability features in the Mapper and ADMS-Screen interface including functionality to export data in the Mapper to *.spt* files for import into ADMS-Screen and the ability to calculate on-site or off-site maxima of model output.

This document contains details of the new features, scientific improvements and model corrections implemented since the last release of ADMS-Screen 5.2 (November 2016). Also contained in this document are instructions for installing ADMS-Screen 6 and upgrading from previous model versions.

In this release

This version of ADMS-Screen includes an updated user interface, model, utilities and User Guides. The ADMS-Screen User Guide and supplementary User Guides can be found in the '*Documents*' sub-directory of the ADMS-Screen install directory.

Installation

Before installing ADMS-Screen 6

Log on to your computer as Administrator, and uninstall any previous version of ADMS/ADMS-Screen by selecting **Programs and features** from the Windows Control Panel.

Installing ADMS-Screen 6

If you have not already done so, log on to your computer as Administrator.

ADMS-Screen 6 will have been supplied by download link. Extract the downloaded .zip file to a local directory. In Explorer, browse to this directory and double-click on the file 'setup.exe'.

Follow the instructions on the screen. Further details are given in Section 2.2 of the ADMS-Screen 6 User Guide which can be downloaded from the CERC website.¹

You should also have been provided with a new licence file, which is required in order to run the model. To install the licence rename the file to *A-Screen.lic* and then copy it to the directory in which the model is installed.

The first time that you launch the model after installation, it is important that you are connected to the internet so that your licence can be registered.

New versions of the GIS links you require (ArcGIS, MapInfo) can be installed by following the instructions in the ADMS-Screen User Guide.

¹ <https://www.cerc.co.uk/UserGuides>

New Features and Major Changes

Mapper

Full details on using the Mapper can be found in the Mapper User Guide.

1. Layers containing source information, e.g. a shape file of point source data, can be exported for *.spt* format so that they can be easily imported into ADMS-Screen. See Section 5.12.2 of the Mapper User Guide for more details.
2. A new 'Clip layer to polygons' tool allows individual features from one layer to be 'clipped' to the polygon(s) from a separate layer. The resulting set of clipped features are saved to a new shape file rather than replacing the original layer. See Section 5.13 of the Mapper User Guide for more details.
3. Statistics about a particular layer can be viewed using the new 'Layer statistics' tool. Namely, the minimum, maximum and X, Y location are reported for each numerical field in the layer. Up to five filters can also be applied to the layer to constrain the number of features/data points on which to calculate the statistics. See Section 5.14 of the Mapper User Guide for more details.
4. Two new gridding methods have been added to the Interpolator to generate contour layers – triangulation and natural neighbour.
5. When a contour layer is created, a separate layer that displays the contour lines is also added.
6. The transparency of individual contour levels can now be altered. This can be useful for 'seeing through' certain regions of a contour plot.
7. Information tool:
 - a. Holding down **AltGr** ensures that only features in the currently selected layer can be clicked.
 - b. Raster layer (e.g. contour plot) values are now displayed in the status bar as you move your cursor across the layer, or displayed in the attributes table if you click on a particular point.
8. There have been various changes to improve usability:
 - a. There have been several changes to the main and right-click menus.
 - b. It is now possible to move the output grid and rotate a building.
 - c. There are now three tabs in the layer panel; the Layers tab shows the layer order hierarchy while the Grouping tab shows which group each layer belongs to.
9. When attempting to export a layer in a coordinate system which differs from the map coordinate system a choice of coordinate systems to export to will be given.



10. Mapper layer settings are now stored in *.ttkstyle* files rather than *.ini* files.
11. When adding a layer to the Mapper from a comma separated variable file, polylines and polygons can now be imported in addition to points and single-segment lines. See Section 5.5.3 of the Mapper User Guide for details on the format of the header to use for each of these options.
12. An option to ‘Use Map coordinate system’ has been added to the ADMS-Screen interface. This option can be used when using a custom coordinate system for the input data.

Interface

13. There have been changes to the format of the *.spt* file (and related files) for data import/export (see Section 5 of the ADMS-Screen User Guide for full details):
 - a. Parameters which are not required can now be left blank (or ‘n/a’ or ‘na’)
 - b. Old format files can still be imported, and data can still be exported in the old format using the ‘Use legacy format’ tick box
14. Various limits have been increased:
 - a. The maximum length of all names (source, building, pollutants, receptors) has increased from 20 to 30 characters
 - b. The maximum number of pollutants in the palette has increased from 30 to 100
 - c. The maximum number of pollutants emitted per source has increased from 10 to 80
 - d. The maximum number of entries in the pollutant output table has increased from 30 to 80
15. The table columns in the Source screen and Output screen are now resizable. The order of the columns in the sources table has also changed.
16. Right-click menus have been added to various screens in the ADMS-Screen interface and utilities to allow for the following additional functionality:
 - a. Set the start date and time to that of the met. file or to the end date and time, and vice versa, when using a subset of met. data.
 - b. Choose the application with which to open an input file (Notepad, Wordpad, Excel, Other) on the View buttons
 - c. Create a copy of a specified point
 - d. Delete all but the selected entry in the specified points table
 - e. Invert the selection of variable grid coordinates

- f. Refresh the list of files in the 2-D Output Plotter
17. Multiple copies of the interface can be used simultaneously. This is particularly useful for comparing two *.apl* files side by side.
 18. It is now possible to open an *.apl* file from Explorer by right-clicking on it and selecting **Open with ADMS-Screen**. Also, double-clicking on an *.apl* file in Explorer will cause it to open in the most recently used model interface.

If .apl files were previously associated with another program, such as a text editor, on your computer, then this new feature may not be available to you. In this case, please contact CERC for advice on how to change the association of .apl files.

19. Additional information about your model licence is available from the **Licence details** screen on the **Help** menu. The licence file path and licence number can be copied and pasted into other documents using the **Copy**  buttons. The licence can be located in Explorer using the **Find**  button. The number of sources and buildings that can be modelled with your licence can be seen by clicking **Details**.
20. It is now much easier to enter percentiles and exceedance thresholds in the **Output** screen. New values can be entered by typing the number and then pressing **Enter**. The full table of entries can be opened via the drop down arrow and closed via a right-click menu.

Building effects

21. There have been several enhancements to the way the effects of a building are modelled, particularly in the case of a source which is upwind of the building.
 - a. When a plume upwind of the building impacts onto the face of the building, the plume will now split into up-to three parts going round and over the building. These plumes will then be used for the calculation of entrainment into the cavity region and for the dispersion of the non-entrained material in the main wake. Previously a single plume was modelled for this case.
 - b. The secondary plume emanating from the cavity region is now modelled as a line source element. Previously this was modelled as a virtual point source. The use of a line source better represents the distribution of concentration emanating from the well-mixed recirculation region, in particular immediately downwind of the recirculation region.

Meteorology

22. The minimum valid value for surface sensible heat flux (FTHETA0) in the meteorological input data has been changed from -100 W/m^2 to -200 W/m^2 .
23. The time used in the calculation of solar elevation, and hence the solar radiation, has been altered to use the time in the middle of the hour rather than at the end.

Output

24. The option to specify output locations based on a polar coordinate system has been removed from the Grids screen of the interface.

25. A new 'validity threshold (%)' column has been added in the **Output** screen. This specifies the threshold percentage of met. lines that need to be valid within a given averaging period for that averaging period to be considered valid. See Section 3.6.1 of the ADMS-Screen User Guide for more details.
26. Specified points in an *.asp* file can now be imported directly into the specified points table.

Minor Changes

27. The page numbering in the various User Guides has been altered so that the printed page numbers match up with those displayed in electronic PDF viewing applications.
28. A correction has been made to the calculation of the effective source height to ensure the ambient density at the source height is used rather than a default value. Note that this effective source height calculation is only used to determine if the plume is able to escape the cavity region behind a building.