



What's New in ADMS 4.2?

February 2010

A number of improvements are included in this release of ADMS 4, version 4.2. Details of changes since the release of the previous version of ADMS 4, version 4.1.0, in May 2008, are given below.

This version of ADMS 4 includes an updated model, interface, GIS links and user documentation. The ADMS 4.2 User Guide, guides to using the GIS links and the new Surfer Automation and Slideshow Creator Tools User Guide can be found in the *Documents* sub-directory of the ADMS 4.2 install directory.

Upgrading your input files

Model input (*.apl*) files that were set up using ADMS 4.1 will not automatically run with ADMS 4.2. To run an ADMS 4.1 file with ADMS 4.2, the file must first be saved in ADMS 4.2 format, as follows:

- In Explorer, make a backup copy of the file.
- Load the file into the ADMS 4.2 interface. A warning message will be issued indicating that the file will be updated to ADMS 4.2 format. Click 'Yes' to continue.
- Save the file, with a new name.
- If your run uses a *.v4* file, refer to the section below for details on upgrading the *.v4* file to the new *.aai* file format.

Upgrading the auxiliary input file (.v4 file)

If you are upgrading an *.apl* file that used a *.v4* file, you will have to make changes to the *.v4* file in order for it to be used with ADMS 4.2. In ADMS 4.2, the path of the additional input file (previously the *.v4* file) is entered in the Setup screen of the ADMS 4 interface. **By default this file now has the extension *.aai*.** When upgrading an *.apl* file from a previous version of ADMS 4, if a *.v4* file with the appropriate name is present, then this will automatically be added to the interface during the upgrade process. You will then need to modify your file as described on the following page.

*For full details of the format of the *.aai* file, please refer to Section 4.20 of the ADMS 4 User Guide.*

- The first line of the file should contain the following line

AAIFileVersion1

- If you are using the DRYDEP section to specify a *.vdp* or *.rsp* file, or the MESO section to specify a 3D flow field data file, then the line containing the file name should be altered to become:

PATH = "<filename>"

where <filename> is the full path to the file.

- If you are using the CALMS section and specifying the minimum value of the wind speed, then you now also need to specify:
 - the value of the wind speed below which only the radial solution is calculated, and
 - a parameter used in the calculation of the critical wind speed above which only the Gaussian solution is used.

For more details please refer to Sections 4.17 and 4.20.8 of the ADMS User Guide.

New Features

1. New tools are supplied for automating the creation of contour plots using Surfer and for creating a slideshow (animation) from ADMS model output. Further details of these tools can be found in the Surfer Automation and Slideshow Creator Tools User Guide, which can be found in the *Documents* subdirectory of your model install directory.
2. The ArcGIS and MapInfo links contain new options for importing ADMS results files and locating off site maxima. Details of these are in the ArcGIS and MapInfo User Guides, which can be found in the *Documents* subdirectory of your model installation directory.
3. The *.v4* file is now referred to as the *.aai* file and the path to this file is specified on the Setup screen of the ADMS 4 interface. If you are upgrading an *.apl* file from a previous version of ADMS then if an appropriate *.v4* file is present, this will automatically be specified in the interface. Note that there are several changes to the format of this file; more details of these can be found in the previous section and Section 4.20 of the ADMS 4 User Guide.
4. The full path of the *.asp* file is now specified on the Grids screen of the ADMS 4 interface (rather than being picked up automatically if it had the same name as the *.apl* file, and was located in the same directory). If you are upgrading an *.apl* file from a previous version of ADMS then if an appropriate *.asp* file is present, this will automatically be specified in the interface.
5. It is now possible to run more than one instance of the model simultaneously. In previous versions of ADMS 4 this was not possible.
6. It is now possible to get gridded output at more than one height from a single run. Using this option creates *.levels.gst* and/or *.levels.glt* files that include separate columns for each output height. Please refer to Section 3.5 of the ADMS 4 User Guide for further details.
7. It is now possible to model spatially varying roughness without having to also specify a file of spatially varying terrain height. Please see Section 4.10 of the ADMS 4 User Guide for further details.
8. It is now possible to use an internal FLOWSTAR grid of 128 by 128 points; previously the maximum size was 64 by 64.
9. It is now possible to model spatially varying dry and wet deposition parameters. In addition, when considering a single pollutant with dry deposition, it is possible to model both the spatial and temporal variation of the dry deposition velocity. These options are described for dry and wet deposition in Sections 4.2 and 4.3 of the ADMS 4 User Guide respectively.
10. It is now possible to calculate deposition fluxes without the plume depletion being applied. This is described in more detail for dry and wet deposition in Sections 4.2 and 4.3 of the ADMS 4 User Guide respectively.
11. It is now possible to calculate short-term temperature output with a single downstream jet source. This option is described further in Section 4.5 of the ADMS 4 User Guide.

12. Additional parameters controlling the calm conditions option can now be user defined via the *.aai* file; further details can be found in Section 4.17 and 4.20.8 of the ADMS 4 User Guide. If you are upgrading a run that contains the **CALMS** option then you will need to update the *.aai* file to include this option.

Complex terrain

13. There have been improvements to the way in which regions of reverse flow are modelled, in particular with line, area and volume sources.
14. There have been several improvements to the way calculations are carried out if spatially varying surface roughness is modelled. These changes may have a significant effect on results.
15. In previous versions of ADMS 4, there was an issue if complex terrain (without spatially varying roughness) was modelled in conjunction with the surface roughness values entered in the met file. In these cases, the surface roughness entered in the interface was, incorrectly, still used for some of the calculations. This has now been fixed.
16. In previous versions of ADMS 4, if spatially varying roughness was modelled and a met line had a wind direction of -999 entered, then if all other meteorological parameters were valid for this met line, it would still have been modelled but with a wind direction of 81°; this was incorrect. This has now been corrected so that the met line will no longer be modelled if a wind direction of -999 is entered.
17. Above boundary layer calculations are now always carried out with complex terrain. This improves consistency of results between runs with and without wet deposition modelled.
18. Several of the messages written to the screen during the complex terrain calculations have been removed in order to decrease run time.

Other Changes

19. On the Meteorology screen, there has been a change in behaviour if Use advanced options at the Met. Measurement site is not selected. In the previous version of ADMS 4, if the Use advanced options at the Met. Measurement site was not selected, each of the parameters would use the default value. Now, if Use advanced options at the Met. Measurement site is not selected, each of the parameters will use the dispersion site value. Note that *.apls* upgraded from a previous version of ADMS 4 will have the Use advanced Options at the Met. Measurement site option selected with the appropriate settings chosen to maintain the previous model behaviour.
20. There have been several improvements if chemistry is being modelled:
 - a. If some but not all of the chemistry pollutants (NO_x, NO₂, NO and O₃) were being output then additional outputs of NO_x or NO₂ may have been reported in the *.rpt* file. This has now been fixed.

- b. If chemistry was being modelled and the Outputs table on the Output screen of the ADMS interface contained some pollutants that were not included in the run, then checks on the averaging times for the chemistry pollutants may have been incorrect. This has now been fixed.
 - c. There may previously have been a crash if buildings and chemistry were modelled together; this has now been corrected.
21. An improvement has been made to the buildings module in the way tall, thin buildings are modelled.
 22. Previously, in model runs that contain more than one line, area or volume source, at least one of which is relatively high level, the vertical plume spread parameter may have been calculated incorrectly, which resulted in incorrect model predictions of concentration. This has now been corrected.
 23. An issue with the way the model determines a new main building if the user-selected main building is not suitable has been corrected.
 24. Previously, if buildings and calm conditions were modelled together, then the results for met lines for which only the radial solution was being used may have been incorrect. This has now been fixed.
 25. The marine boundary layer calculations have been improved. In particular, an issue with the interaction between the marine boundary layer option and calms option has been corrected.
 26. A couple of issues with line, area or volume sources being modelled with calm conditions have been fixed. Previously, the model may have crashed or produced erroneous error messages.
 27. Concentration results for line sources that are almost perpendicular to the wind direction have been improved.
 28. An issue with the combine sources option being used in runs with both short and long term output has been fixed. Previously, the model may have crashed in verification mode.
 29. An issue with point source fluctuations calculations in cases where plume lofting occurs has been corrected. Previously, the model may have crashed.
 30. Improvements have been made to the way fluctuations are modelled with line, area and volume sources.
 31. Previously, if gamma dose was being modelled, erroneous gamma dose results may have been reported for invalid met lines. Values of -999 will now be reported for the gamma dose in these circumstances.
 32. When dry and wet deposition and chemistry were previously modelled together, the *.dep* file may have been formatted incorrectly. This has now been corrected.
 33. It is now possible to specify up to 30 outputs in the Output screen of the ADMS interface. The maximum number of outputs that may be included in any run is still 10.
 34. World Health Organisation (WHO) and French air quality objectives have been added to the Output screen of the interface. The EU, UK and USA air quality objectives have been updated.