Works 2013

Roadway pollutants

Version 7.0.0

USER GUIDE

TECHNO logismiki
Advanced Technical Software

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Roadway pollutants

TechnoLogismiki

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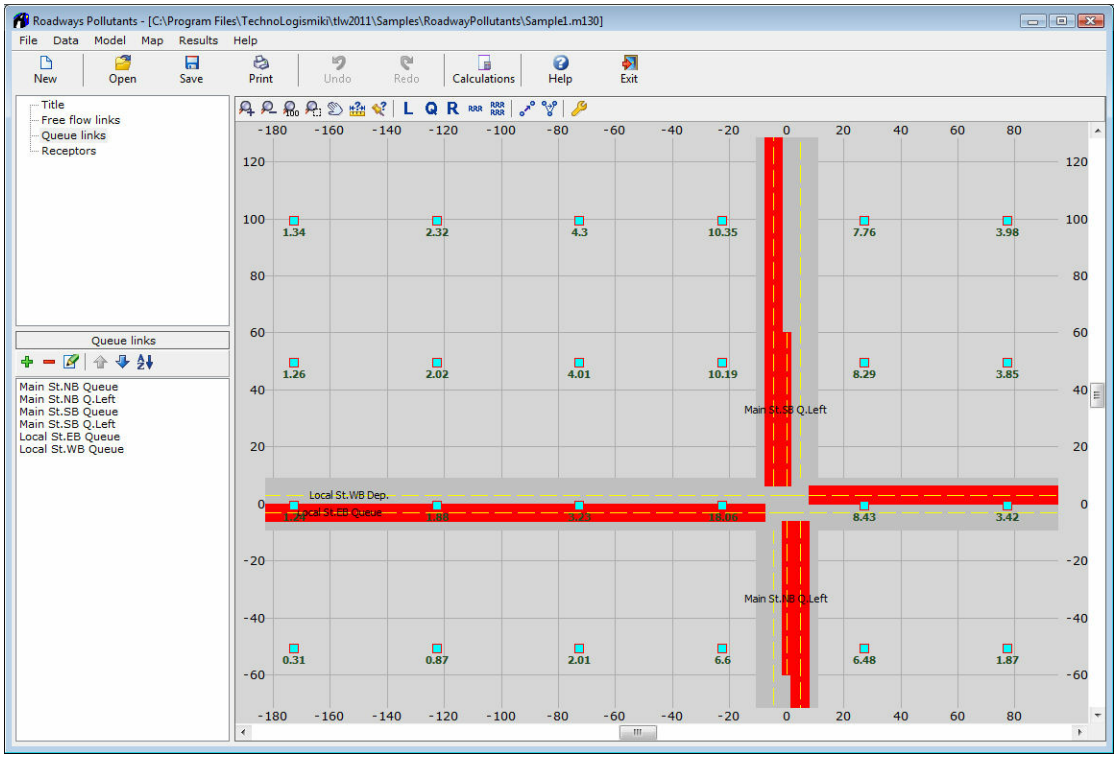
1 About the program

1.1 What does the program do?

This program implements a dispersion model for predicting air pollutant concentrations near roadways, taking into account various meteorological and topological data as well as air pollutant and vehicle characteristics.



The program can handle any number or combination of links, queues and receptors. A receptor is a point where the air pollutant concentration is calculated.

The calculations are based on one of the following well-known EPA Gaussian models of air pollutant dispersion:

- Caline 3 QHCR
- Caline 3 QHC
- Caline 3
- Caline 4

You can select one of the above models and perform the calculations. The results are displayed analytically or graphically (by a pollution contour) or both.

1.2 Minimum requirements

The minimum requirements for the usage of the programs are the following:

- Windows 2000/ XP/ 2003/ Vista/ 7 (for each case, the latest service packs, updates & patches must be installed)

- Pentium III 800 MHz
- 800x600 with 256 color palette
- 700 MB free disk space
- CD-Rom

If your system does not meet one or more of the above requirements, it is highly recommended that you upgrade it before installing the programs. The recommended system configuration is the following:

- Windows 2000/ XP/ 2003/ Vista/ 7 (for each case, the latest service packs, updates & patches must be installed)
- Pentium IV 2.0 GHz
- 1280x768 with 16-bit color palette
- 1.2 GB free disk space
- CD-Rom
- Internet connection

1.3 Technical support

Support through the Internet

TechnoLogismiki offers technical support 24 hours per day, 365 days per year, through the web site where you can get information on the latest programs and services.

Support by e-mail

Please use the dedicated e-mail addresses for better customer service:

- for questions regarding sales: sales@technologismiki.com
- for questions regarding the usage of programs: support@technologismiki.com
- for any other question or comment: info@technologismiki.com

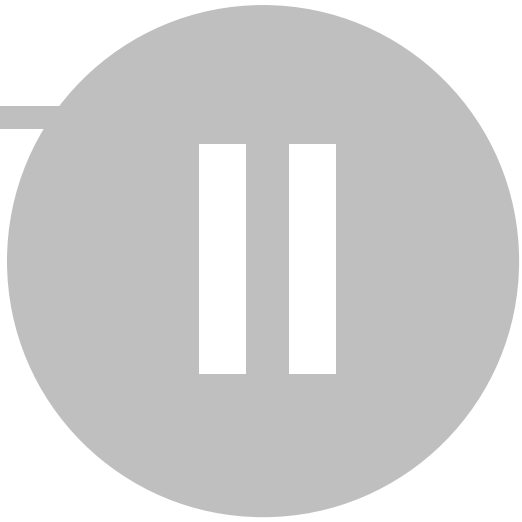
The normal response time is within two business days. If your inquiry cannot be answered by e-mail, a customer service representative will contact you by telephone.

Interactive Support

Business days, 09:00 - 17:00 Eastern European Time:

- Telephone [3 lines]: ++30-210-656-4147
- Fax: ++30-210-654-8461
- Address: 5, Imittou street, Cholargos, 15561, Athens, Greece.

Chapter



2 File

2.1 File menu

With this menu, you can perform file operations and print reports. In the **File** menu you can select one of the following options:

- New project
- Open project
- Save project
- Save project as
- Import
  - Project from Breeze Roads input file
  - Project from Caline 3 QHCR input file
  - Project from Caline 3 QHC input file
  - Project from Caline 4 input file
  - Project from Caline 3 input file
  - Links from DXF file
  - Links from ArcView Shapefile
  - Receptors from REC file
  - Receptors from DXF file
  - Receptors from ArcView Shapefile
  - Background map from DXF file
  - Pollution Bitmap to Bitmap file
  - Pollution Contours to DXF file
  - Satellite image
- Export
  - Project to Breeze Roads input file
  - Project to Caline 3 QHCR input file
  - Project to Caline 3 QHC input file
  - Project to Caline 4 input file
  - Project to Caline 3 input file
  - Links to DXF file
  - Links to ArcView Shapefile
  - Receptors to REC file
  - Receptors to DXF file
  - Receptors to ArcView Shapefile
  - Background map to Bitmap file
- Print setup
- Print
- Print to
  - Print to file
  - Print to Word
  - Print to Word (Formatted)
  - Print to Excel
- Exit

2.2 New project

With this option, a new project is started. All data, results, graphs, titles etc. of the previous project are erased.

To create a new project:

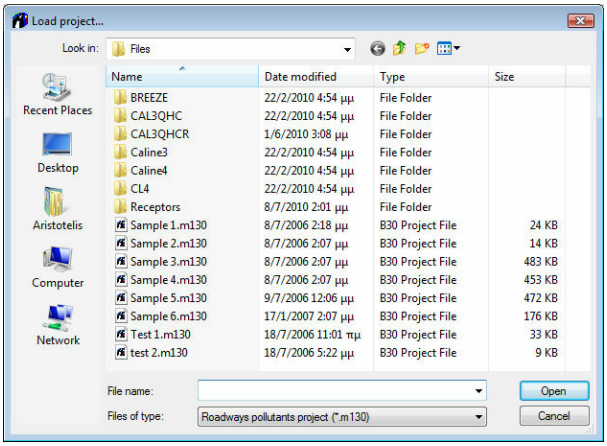
1. Select **New project** from the **File** menu.
2. If a project is already loaded and changes have been made, a warning message will appear that asks the user whether to save the changes or not.
3. The current project is erased and a new project is started.

2.3 Open project

With this option, an existing project is loaded. The project may be located locally, in a network or in an external media device such as a CD-Rom. If a project is already loaded and changes have been made, a warning message will appear that asks whether to save the changes or not. When a project is loaded, all data of the previous project are lost.

To open an existing project:

1. Select **Open project** from the **File** menu.
2. Select the path of the file.
3. Select the file type from the **Files of type** drop-down list. The default option is "Roadway pollutants project" with the extension .m30.
4. Select the file by clicking on it.
5. Select **Open** to open the selected file. Select **Cancel** to cancel the operation.



NOTE: You can find sample projects in the installation folder of the program:
C:\Program Files\TechnoLogismiki\TLW2013\Samples\RoadwayPollutants

Supported file types

- **M30** (Roadways pollutant project): Files created by version 2012 and 2013 of Roadway pollutants.
- **M130** (Roadways pollutant project): Files created by versions 2011, 2010, 2009, 2008 or 2007 of Roadway pollutants.
- **BCK** (Backup files): If you have selected from program options the creation of backup copy when a file is loaded, then the file can be loaded by selecting Backup

files (*.bck) from the Files of type drop-down list.
- ***.*** (All files): Displays all files in the current folder.

NOTE: If a message "Could not load project. File may be corrupt or saved by an unknown or incompatible version of the program" then either you are trying to load a project that does not belong to this program or the file is used (and locked) by another process in your computer.

2.4 Save project

With this option, you can save all data of a project into a file. The file may be saved locally, in a network location or in an external media device such as a disk.

The filename and path will be asked only the first time you are saving a project. When the filename and path are set, all subsequent saves will be made to the same file.

When you want to rename a file or save it in a new location, use Save project as... from the **File** menu.

To save the current project:

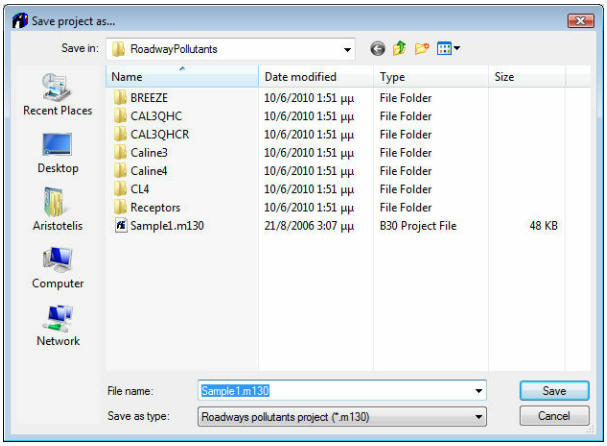
1. Select **Save project** from the **File** menu.
2. If the location of the file is already set, the project is saved to this file without any messages. If the filename is not set, a dialog box will appear that allows the selection of the filename and path.

2.5 Save project as

With this option, the current project is saved just as in the case of Save project, but with the difference that the name and/or location of the file can be changed. In this way, you can create backup files or move a project to another media device.

To save a project with another name and/or to another location:

1. Select **Save project as** from the **File** menu.
2. Select the path of the file.
3. Type the filename in the **File name** text box.
4. Select **Save** to save the project with the selected filename and path. Select **Cancel** to cancel the operation.



NOTE: If a file with the same name and in the same path already exists, a warning message will appear that asks whether to overwrite the file or not. If you answer Yes, then the existing file is erased and the new file takes its place. If you answer No, the existing file remains intact but NO changes of the current project are saved.

2.6 Import

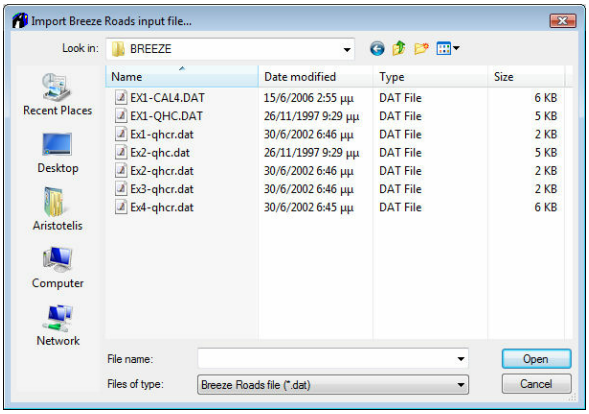
2.6.1 Project from Breeze Roads input file

With this option, you can import data from a .dat file created by Breeze Roads. Any existing data will be overwritten. The file may refer to one of the following models:

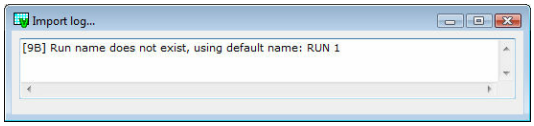
- Caline 4
- Caline 3 QHC
- Caline 3 QHCR

To import data from a .dat file created by Breeze Roads:

1. Select **Import** from the **File** menu.
2. Select **Project from Breeze Roads input file** from the **Import** menu.
3. Select the path of the file.
4. Select the file type from the **Files of type** drop-down list. The default option is "Breeze Roads file" with the extension .dat.
5. Select the file by clicking on it.
6. Select **Open** to open and analyze the file.



In case one or more problems or comments arise during importing, a log with the corresponding descriptions will appear. Hit ESC to close the form:



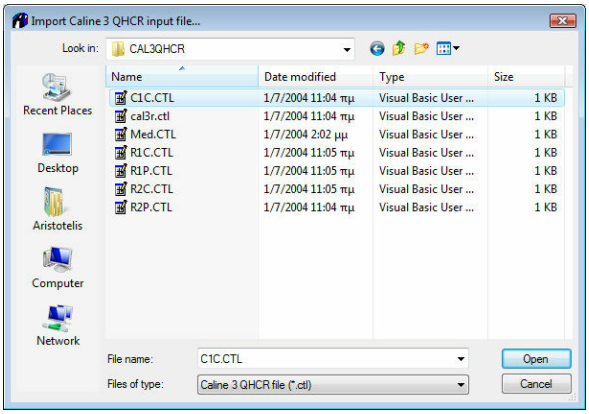
NOTE: Caline 3 model is not supported by Breeze Roads.

2.6.2 Project from Caline 3 QHCR input file

With this option, you can import data from a .ctl file created by Caline 3 QHCR. Any existing data will be overwritten.

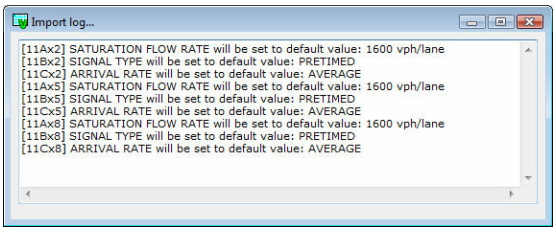
To import data from a .ctl file created by Caline 3 QHCR:

1. Select **Import** from the **File** menu.
2. Select **Project from Caline 3 QHCR input file** from the **Import** menu.
3. Select the path of the file.
4. Select the file type from the **Files of type** drop-down list. The default option is "Caline 3 QHCR file" with the extension .ctl.
5. Select the file by clicking on it.
6. Select **Open** to open and analyze the file.



In case one or more problems or comments arise during importing, a log with the

corresponding descriptions will appear. Hit ESC to close the form:

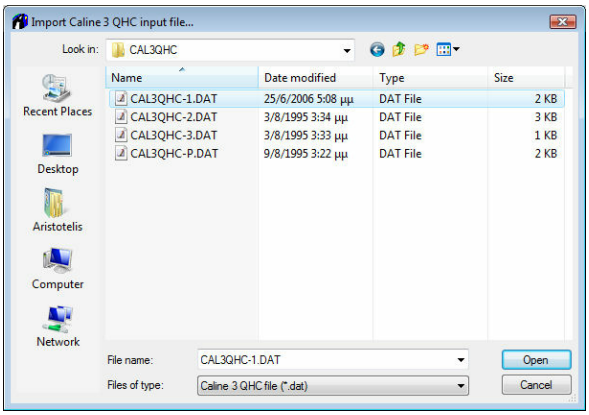


2.6.3 Project from Caline 3 QHC input file

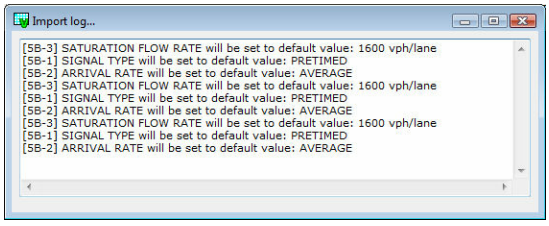
With this option, you can import data from a .dat file created by Caline 3 QHC. Any existing data will be overwritten.

To import data from a .dat file created by Caline 3 QHC:

1. Select **Import** from the **File** menu.
2. Select **Project from Caline 3 QHC input file** from the **Import** menu.
3. Select the path of the file.
4. Select the file type from the **Files of type** drop-down list. The default option is "Caline 3 QHC file" with the extension .dat.
5. Select the file by clicking on it.
6. Select **Open** to open and analyze the file.



In case one or more problems or comments arise during importing, a log with the corresponding descriptions will appear. Hit ESC to close the form:

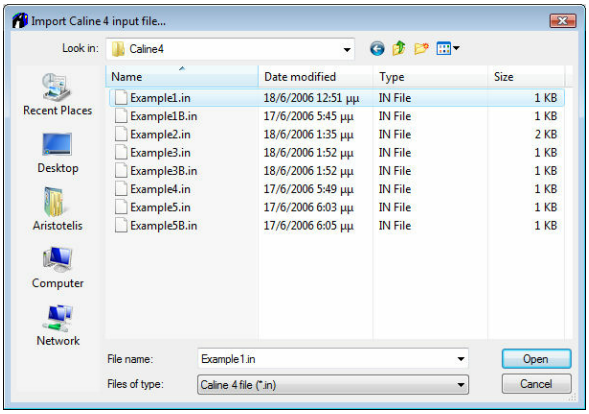


2.6.4 Project from Caline 4 input file

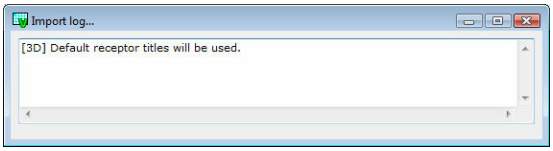
With this option, you can import data from a .in file created by Caline 4. Any existing data will be overwritten.

To import data from a .in file created by Caline 4:

1. Select **Import** from the **File** menu.
2. Select **Project from Caline 4 input file** from the **Import** menu.
3. Select the path of the file.
4. Select the file type from the **Files of type** drop-down list. The default option is "Caline 4 file" with the extension .in.
5. Select the file by clicking on it.
6. Select **Open** to open and analyze the file.



In case one or more problems or comments arise during importing, a log with the corresponding descriptions will appear. Hit ESC to close the form:

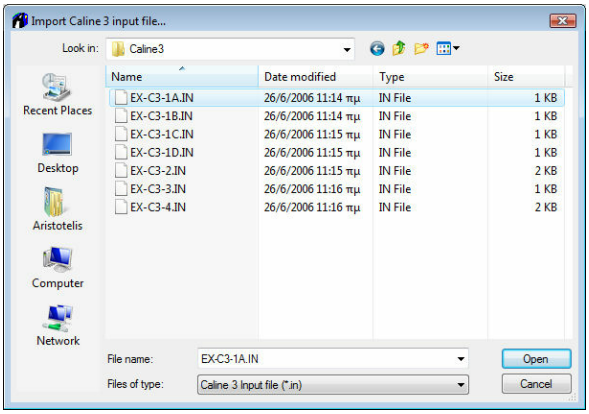


2.6.5 Project from Caline 3 input file

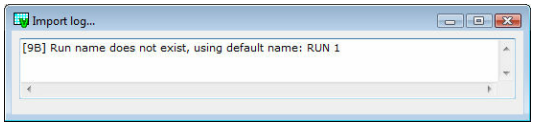
With this option, you can import data from a .in file created by Caline 4. Any existing data will be overwritten.

To import data from a .in file created by Caline 3:

1. Select **Import** from the **File** menu.
2. Select **Project from Caline 3 input file** from the **Import** menu.
3. Select the path of the file.
4. Select the file type from the **Files of type** drop-down list. The default option is "Caline 3 file" with the extension .in.
5. Select the file by clicking on it.
6. Select **Open** to open and analyze the file.



In case one or more problems or comments arise during importing, a log with the corresponding descriptions will appear. Hit ESC to close the form:

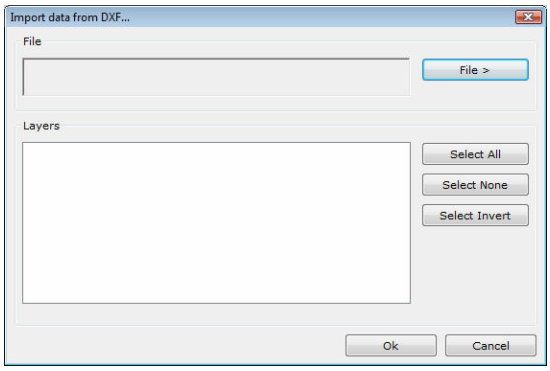


2.6.6 Links from DXF file

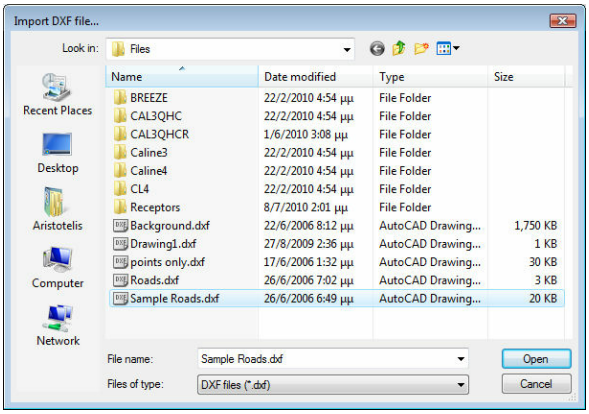
With this option, you can import link data from a DXF file.

To import link data from a DXF file:

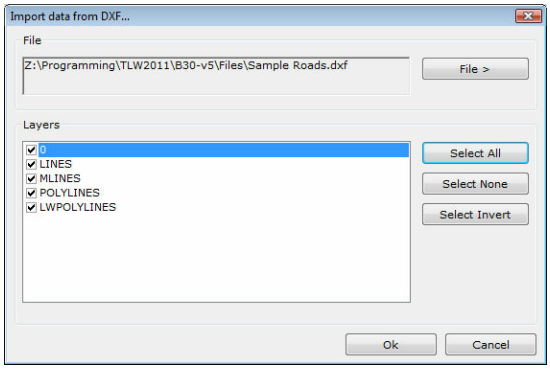
1. Select **Import** from the **File** menu.
2. Select **Links from DXF file** from the **Import** menu. The DXF import dialog box appears:



3. Click **File >** to select the DXF file. The file selection dialog box appears:



4. Select the path of the file.
5. Select the file type from the **Files of type** drop-down list. The default option is "DXF file" with the extension .dxf.
6. Select the file by clicking on it.
7. Select **Open** to open and analyze the file. The list in the **Layers** frame of step 2 is loaded with the layers contained in the DXF file:



8. Select one or more layers containing the data. The links must be represented by polylines, mlines, lwpolylines and/or lines. The lines need not be connected. The quick keys (**Select all, Select None, Select Invert**) can be used to quickly select all objects, deselect all objects and invert the current selection.
9. Select **Ok** to import the data and close the dialog box. Select **Cancel** to close the dialog box without applying any changes.

NOTE: The DXF driver recognizes the following entities:
- Lines
- LWPolylines
- Mlines
- Polylines

NOTE: If the existing project contains links, the program will ask if you wish to delete them before importing the new data.

2.6.7 Links from ArcView Shapefile

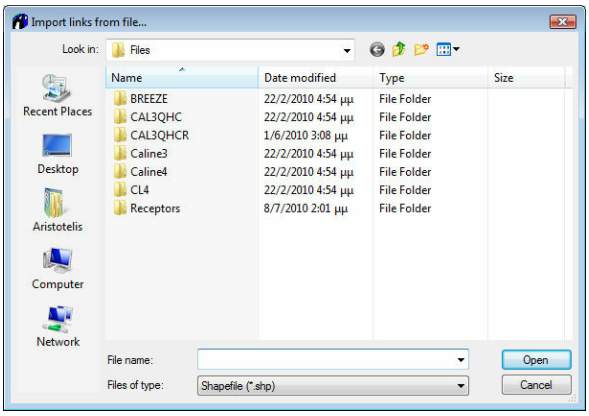
With this option, you can import link data from an ArcView Shapefile. Shapefiles can be created by several programs such as ArcView GIS, MapInfo, GPS Trackmaker etc. In reality, this "file" consists of three files with the extensions shp, shx και dbf. The

GIS driver recognizes the following shapefile types:

NOTE: The ArcView Shapefile driver recognizes the following entities:
- Nullshapes
- Point/PointM/PointZ
- Multipoint/MultipointM/MultipointZ
- Polyline/PolylineM/PolylineZ

To import link data from an ArcView Shapefile:

1. Select **Import** from the **File** menu.
2. Select **Links from Arcview Shapefile** from the **Import** menu.
3. The file selection dialog box appears:



4. Select the path of the file.
5. Select the file type from the **Files of type** drop-down list. The default option is "Shapefile" with the extension .shp.
6. Select the file by clicking on it.
7. Select **Open** to open and analyze the file.

NOTE: If the existing project contains links, the program will ask if you wish to delete them before importing the new data.

2.6.8 Receptors from REC file

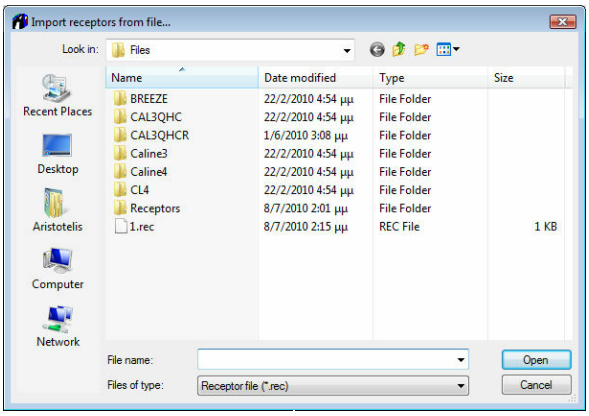
With this option, you can import receptor data from a REC file. A REC file is used by other programs (such as Breeze Roads) and contains the following information:

- Name and description of the receptor
- Receptor coordinates
- Receptor Z coordinate (optionally)

The file does not contain information on whether the receptor is active or not.

To import receptor data from a REC file:

1. Select **Import** from the **File** menu.
2. Select **Receptors from REC file** from the **Import** menu.
3. The file selection dialog box appears:



4. Select the path of the file.
5. Select the file type from the **Files of type** drop-down list. The default option is "Receptor file" with the extension .rec.
6. Select the file by clicking on it.
7. Select **Open** to open and analyze the file.

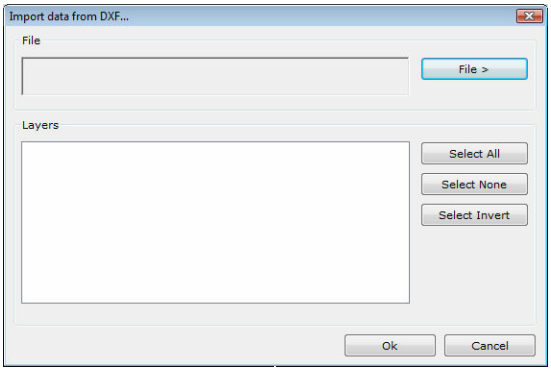
NOTE: If the existing project contains receptors, the program will ask if you wish to delete them before importing the new data.

2.6.9 Receptors from DXF file

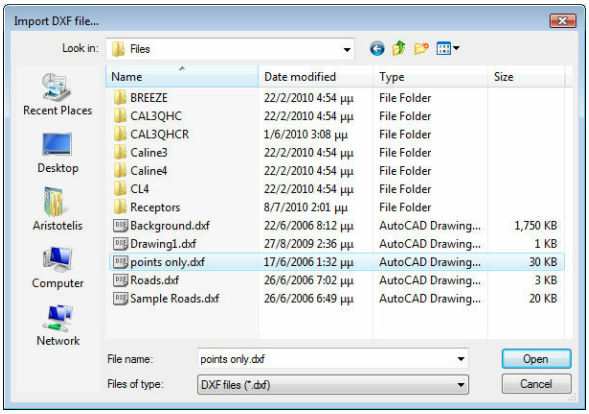
With this option, you can import receptor data from a DXF file.

To import link receptor from a DXF file:

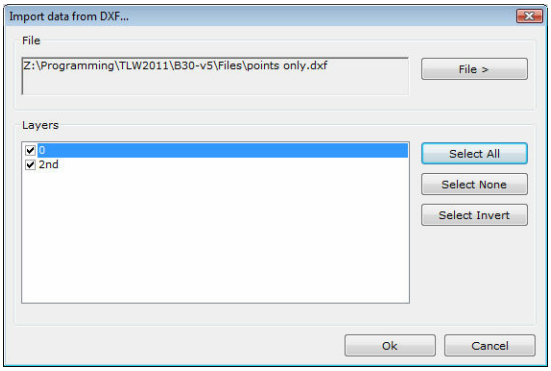
1. Select **Import** from the **File** menu.
2. Select **Receptors from DXF file** from the **Import** menu. The DXF import dialog box appears:



3. Click **File >** to select the DXF file. The file selection dialog box appears:



4. Select the path of the file.
5. Select the file type from the **Files of type** drop-down list. The default option is "DXF file" with the extension .dxf.
6. Select the file by clicking on it.
7. Select **Open** to open and analyze the file. The list in the **Layers** frame of step 2 is loaded with the layers contained in the DXF file:



8. Select one or more layers containing the data. The links must be represented by points. The quick keys (**Select all, Select None, Select Invert**) can be used to quickly select all objects, deselect all objects and invert the current selection.
9. Select **Ok** to import the data and close the dialog box. Select **Cancel** to close the dialog box without applying any changes.

NOTE: The DXF driver recognizes the following entities:
- Points

NOTE: If the existing project contains receptors, the program will ask if you wish to delete them before importing the new data.

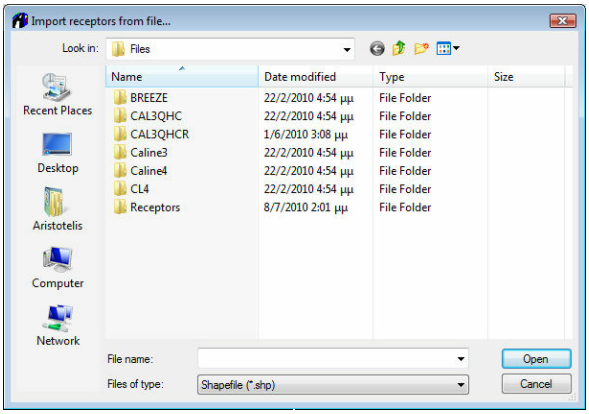
2.6.10 Receptors from ArcView Shapefile

With this option, you can import receptor data from an ArcView Shapefile. Shapefiles can be created by several programs such as ArcView GIS, MapInfo, GPS Trackmaker etc. In reality, this "file" consists of three files with the extensions shp, shx και dbf. The GIS driver recognizes the following shapefile types:

NOTE: The ArcView Shapefile driver recognizes the following entities:
- Nullshapes
- Point/PointM/PointZ
- Multipoint/MultipointM/MultipointZ
- Polyline/PolylineM/PolylineZ

To import receptor data from an ArcView Shapefile:

1. Select **Import** from the **File** menu.
2. Select **Receptors from Arcview Shapefile** from the **Import** menu.
3. The file selection dialog box appears:



4. Select the path of the file.
5. Select the file type from the **Files of type** drop-down list. The default option is "Shapefile" with the extension .shp.
6. Select the file by clicking on it.
7. Select **Open** to open and analyze the file.

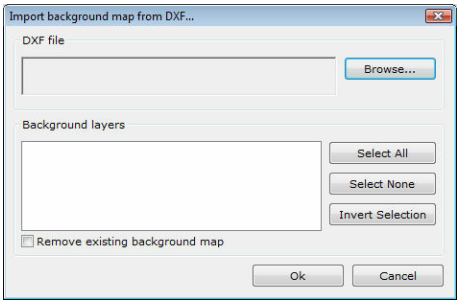
NOTE: If the existing project contains receptors, the program will ask if you wish to delete them before importing the new data.

2.6.11 Background map from DXF file

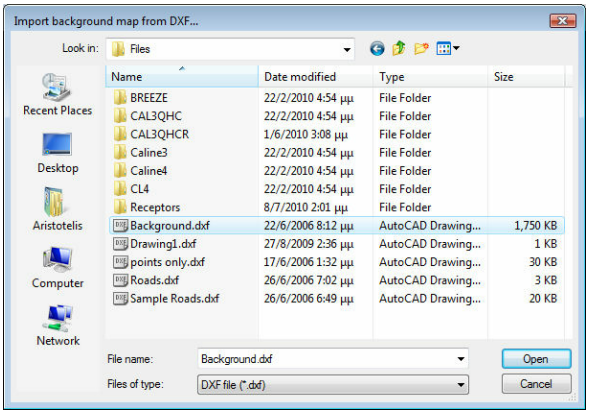
With this option, you can import a background map from a DXF file. The background map is auxiliary and cannot be modified within program. Since the map can be very complex and decrease the performance, only basic entities, such as lines, points, arcs, circles etc are imported.

To import a background map from a DXF file:

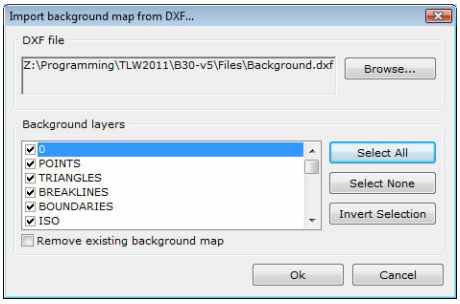
1. Select **Import** from the **File** menu.
2. Select **Background map from DXF file** from the **Import** menu. The DXF import dialog box appears:



3. Click **Browse...** to select the DXF file. The file selection dialog box appears:



4. Select the path of the file.
5. Select the file type from the **Files of type** drop-down list. The default option is "DXF file" with the extension .dxf.
6. Select the file by clicking on it.
7. Select **Open** to open and analyze the file. The list in the **Layers** frame of step 2 is loaded with the layers contained in the DXF file:



8. Select one or more layers containing the data. The quick keys (**Select all, Select None, Invert Selection**) can be used to quickly select all objects, deselect all objects and invert the current selection.
9. Check **Remove existing background map** to remove existing background map data.
10. Select **Ok** to import the data and close the dialog box. Select **Cancel** to close the dialog box without applying any changes.

NOTE: The DXF driver recognizes the following entities:
- Arcs

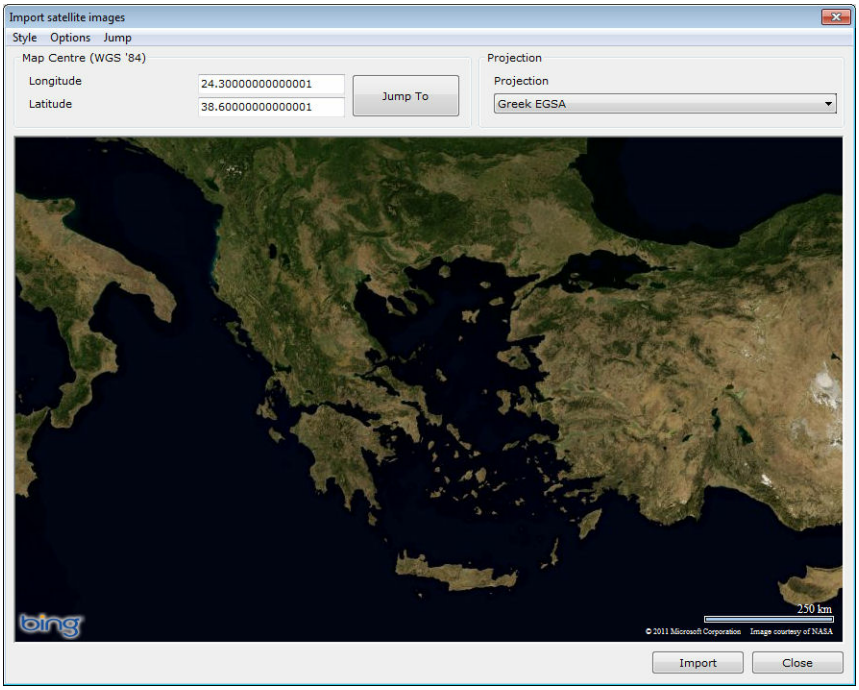
- Lines
- Points
- Circles
- Ellipses
- LWPolylines
- Polylines
- Texts
- Mtexts

2.6.12 Satellite image

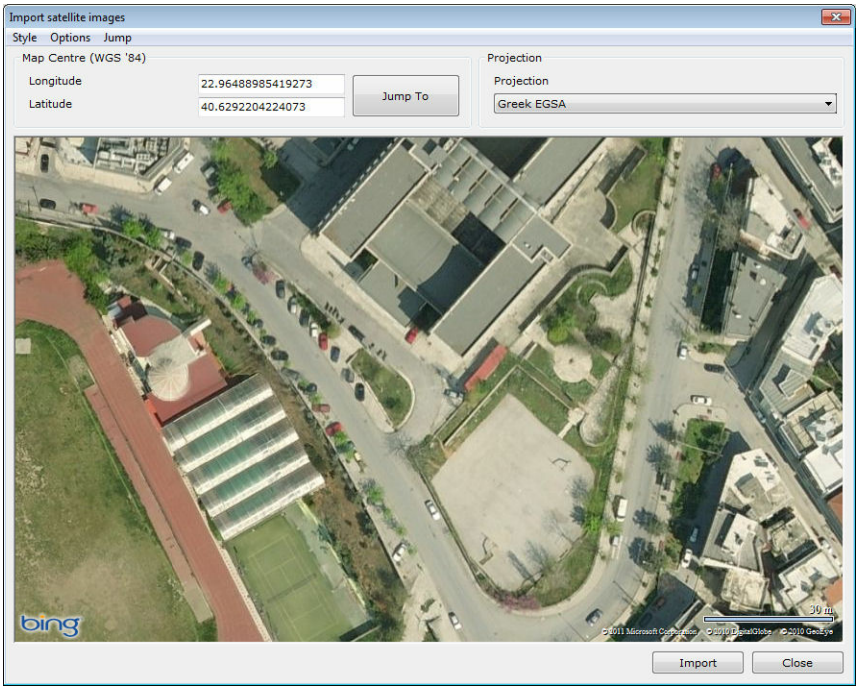
With this option you can insert a satellite image as a background image in plan view. The image is modified accordingly (translation, rotation, skewness) so that it is projected in the specified coordinate system.

To insert a satellite image as a background image in plan view:

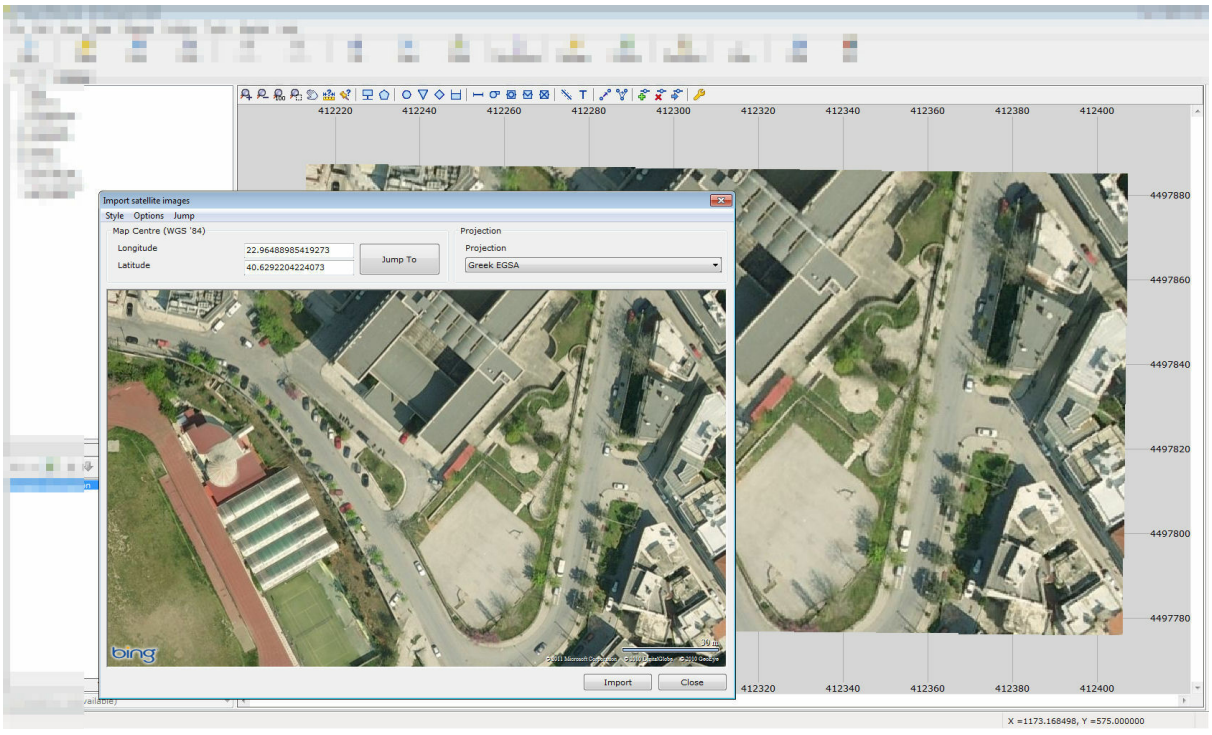
1. Select **Insert > Satellite image** from the **File** menu. The following form appears:



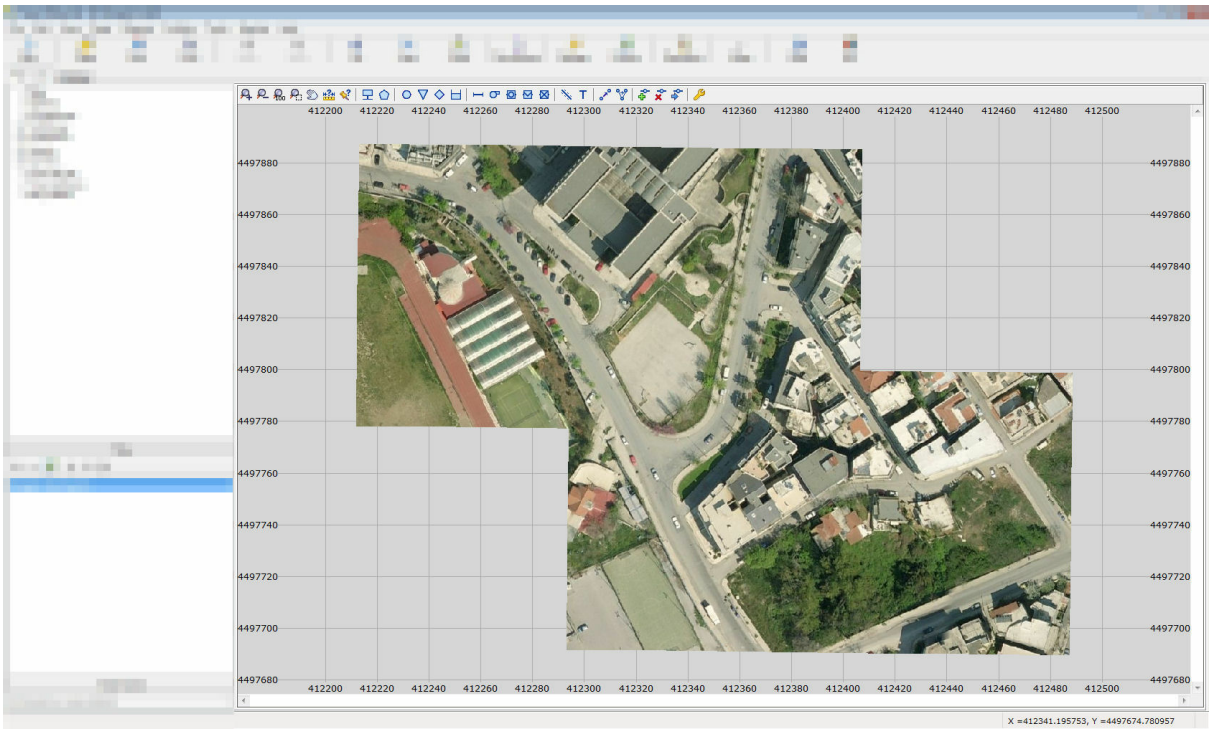
2. Navigate to the area of the project. You can pan the image by holding down the left mouse button. Using the roller you can change the resolution. Alternatively, enter the longitude and latitude in decimal degrees and press **Jump to:**



3. When you locate the area, select the appropriate resolution (the resolution varies, depending on the quality of the satellite image), and press Import. The current viewport is imported as a background image:



4. Without closing the window, pan the viewport and press Import again. A new image is imported, which may overlap with the previous one. When you cover the whole area of interest, press **Close**:



In the satellite image form, the following options are available:

- Style. Some options may not be available, or they may not have an effect, depending on the quality of the satellite image.
  - Roads
  - Shaded
  - Aerial
  - Hybrid
- Options
  - Show navigation tool.
  - Show locator tool.
  - Units
    - Metric
    - English
- Jump. These are quick selections for jumping to:
  - To Athens
  - To Greece
  - To Europe
  - To USA
  - To World

NOTE: The images are saved as TIFF files in the same path as the project. You can delete them selectively using the **View > Background images > Delete** menu.

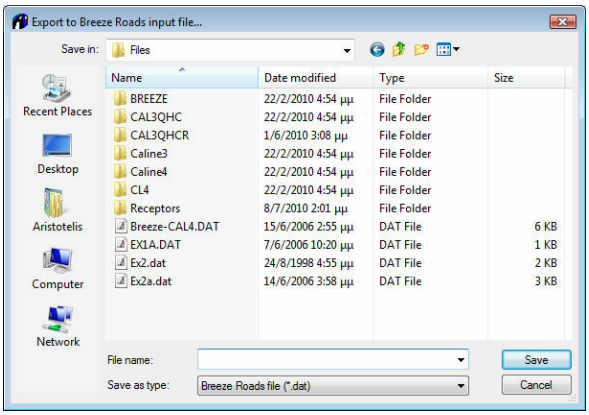
2.7 Export

2.7.1 Project to Breeze Roads input file

With this option, you can create a file that can be used by Breeze Roads. TechnoLogismiki's product has more options that cannot be included in the input file, such as background map, pollution contours, images etc.

To create a file that can be used by Breeze Roads:

1. Select **Export** from the **File** menu.
2. Select **Project to Breeze Roads input file** from the **Export** menu.
3. The file selection form appears:



4. Select the path of the file.
5. Type the filename in the **File name** text box.
6. Select **Save** to create the file. Select **Cancel** to cancel the operation.

NOTE: Breeze Roads does not support Caline 3; therefore, projects that use this model cannot be exported.

NOTE: Breeze Roads does not support infinite number of objects. The following table summarizes the number of objects that can be exported.

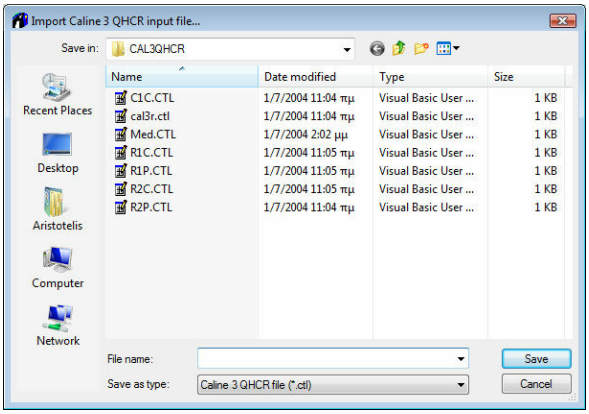
object	Caline 4	Caline 3 QHC	Caline 3 QHCR
Links	120	120	200
Receptors	200	200	1000
Scenarios	10	10	N/A

2.7.2 Project to Caline 3 QHCR input file

With this option, you can create a file that can be used by Caline 3 QHCR. TechnoLogismiki's product has more options that cannot be included in the input file, such as background map, pollution contours, images etc.

To create a file that can be used by Caline 3 QHCR:

1. Select **Export** from the **File** menu.
2. Select **Project to Caline 3 QHCR input file** from the **Export** menu.
3. The file selection form appears:



4. Select the path of the file.
5. Type the filename in the **File name** text box.
6. Select **Save** to create the file. Select **Cancel** to cancel the operation.

NOTE: Caline 3 QHCR does not support infinite number of objects. The following table summarizes the number of objects that can be exported.

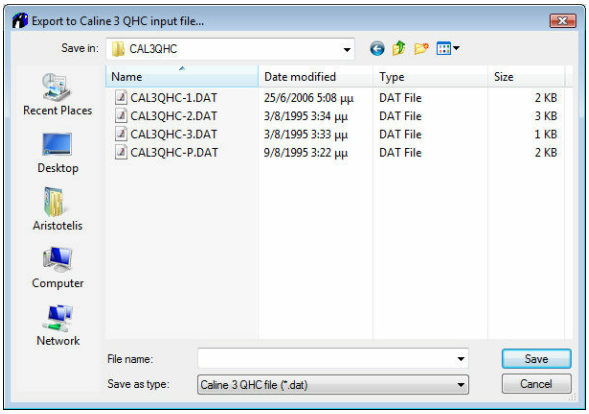
Object	Caline 3 QHCR
Links	60
Receptors	120
Scenarios	N/A

2.7.3 Project to Caline 3 QHC input file

With this option, you can create a file that can be used by Caline 3 QHC. TechnoLogismiki's product has more options that cannot be included in the input file, such as background map, pollution contours, images etc.

To create a file that can be used by Caline 3 QHC:

1. Select **Export** from the **File** menu.
2. Select **Project to Caline 3 QHC input file** from the **Export** menu.
3. The file selection form appears:



4. Select the path of the file.
5. Type the filename in the **File name** text box.
6. Select **Save** to create the file. Select **Cancel** to cancel the operation.

NOTE: Caline 3 QHC does not support infinite number of objects. The following table summarizes the number of objects that can be exported.

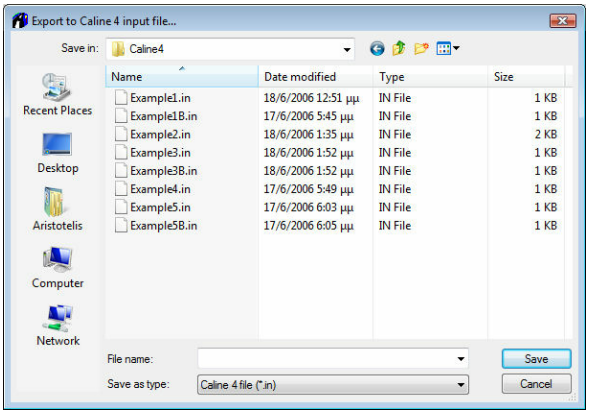
Object	Caline 3 QHC
Links	60
Receptors	120
Scenarios	10

2.7.4 Project to Caline 4 input file

With this option, you can create a file that can be used by Caline 4. TechnoLogismiki's product has more options that cannot be included in the input file, such as background map, pollution contours, images etc.

To create a file that can be used by Caline 4:

1. Select **Export** from the **File** menu.
2. Select **Project to Caline 4 input file** from the **Export** menu.
3. The file selection form appears:



4. Select the path of the file.
5. Type the filename in the **File name** text box.
6. Select **Save** to create the file. Select **Cancel** to cancel the operation.

NOTE: Caline 4 does not support infinite number of objects. The following table summarizes the number of objects that can be exported.

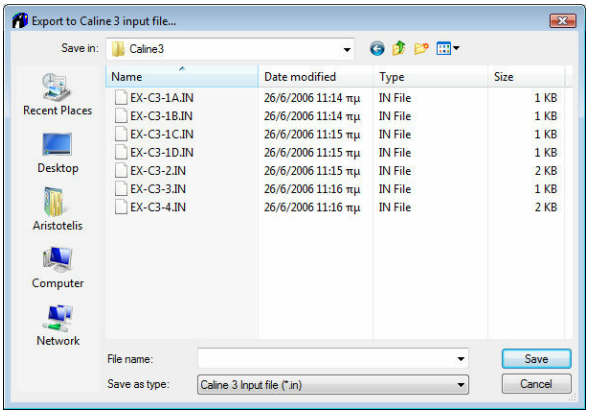
Object	Caline 3 QHC
Links	20
Receptors	20
Scenarios	Unlimited

2.7.5 Project to Caline 3 input file

With this option, you can create a file that can be used by Caline 3. TechnoLogismiki's product has more options that cannot be included in the input file, such as background map, pollution contours, images etc.

To create a file that can be used by Caline 3:

1. Select **Export** from the **File** menu.
2. Select **Project to Caline 3 input file** from the **Export** menu.
3. The file selection form appears:



4. Select the path of the file.
5. Type the filename in the **File name** text box.
6. Select **Save** to create the file. Select **Cancel** to cancel the operation.

NOTE: Caline 3 does not support infinite number of objects. The following table summarizes the number of objects that can be exported.

Object	Caline 3
Links*	20
Receptors	20
Scenarios	Unlimited

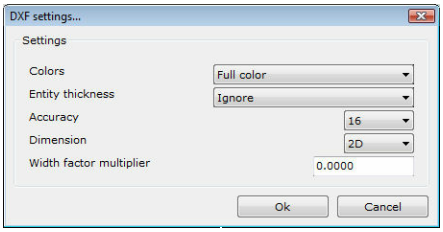
* Queues are not supported

2.7.6 Links to DXF file

With this option, a DXF file containing link data is created. The links are represented by polylines and the file contains information on the elevation as well as the color and width of the links.

To export the links to a DXF file:

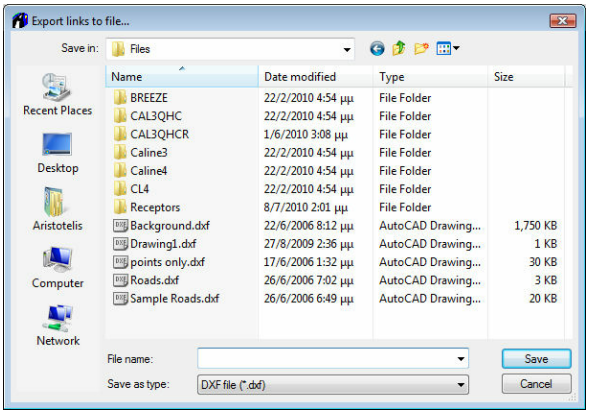
1. Select **Export** from the **File** menu.
2. Select **Links to DXF file** from the **Export** menu.
3. The DXF driver configuration form appears:



- **Colors**: Select one of Full color or Monochrome. If Monochrome is selected, all color preferences are ignored.
- **Entity thickness**: Select one of Ignore or Support, depending on whether you want to have line thickness in the drawing.
- **Accuracy**: Select the number of decimal places (1 to 16) that will be used when exporting the objects.
- **Dimension**: Select one of 2D or 3D, depending on whether you want elevation information to be included in the drawing.
- **Width factor multiplier**: type a value between 0 and 10.0 that will be used when calculating the width of lines.

Select **Ok** to apply the changes and close the dialog box. Select **Cancel** to close the dialog box without applying any changes.

4. The file selection form appears:



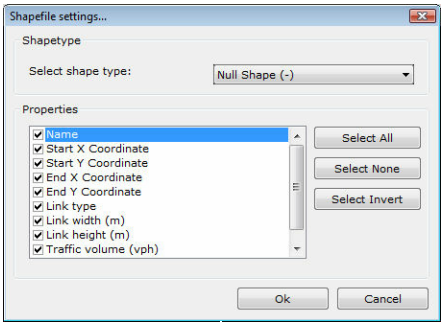
5. Select the path of the file.
6. Type the filename in the **File name** text box.
7. Select **Save** to create the file. Select **Cancel** to cancel the operation.

2.7.7 Links to ArcView Shapefile

With this option, an ArcView Shapefile containing selected link data is created.

To export the link data to an ArcView Shapefile:

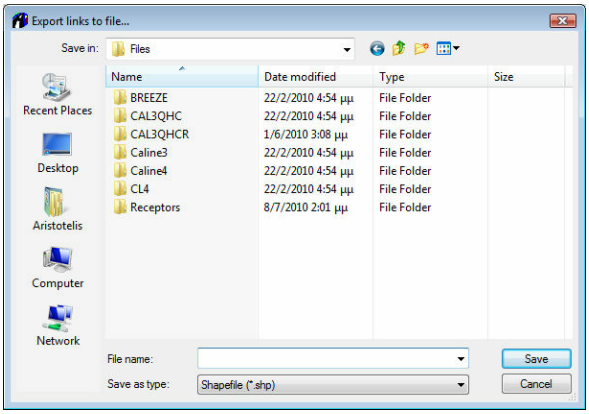
1. Select **Export** from the **File** menu.
2. Select **Links to ArcView Shapefile** from the **Export** menu.
3. The GIS driver configuration form appears:



- **Shapetype**: Select the appropriate shape type (one of Nullshape, Polyline, PolylineM or PolylineZ).
- **Properties**: Select the properties that you wish to be included in the database of the shapefile. The quick keys (**Select all, Select None, Select Invert**) can be used to quickly select all objects, deselect all objects and invert the current selection.

Select **Ok** to apply the changes and close the dialog box. Select **Cancel** to close the dialog box without applying any changes.

4. The file selection form appears:



5. Select the path of the file.
6. Type the filename in the **File name** text box.
7. Select **Save** to create the file. Select **Cancel** to cancel the operation.

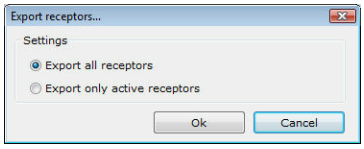
2.7.8 Receptors to REC file

With this option, you can create a REC file containing information on receptors. This file can be used by other programs such as Breeze Roads. Information on whether the receptor is active or not is not included in the file.

To export receptor data to a REC file:

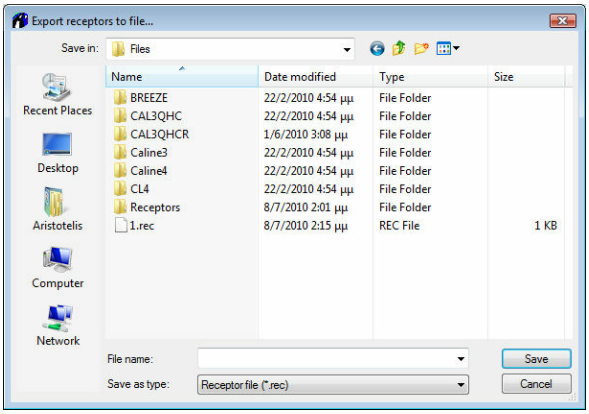
1. Select **Export** from the **File** menu.
2. Select **Receptors to REC file** from the **Export** menu.
3. If one or more receptors is not active:

3.1 The following form appears:



3.2 Select whether you want to export data for all receptors or only for the active ones.
3.3 Select **Ok** to apply the changes and close the dialog box. Select **Cancel** to close the dialog box without applying any changes.

4. The file selection form appears:



5. Select the path of the file.
6. Type the filename in the **File name** text box.
7. Select **Save** to create the file. Select **Cancel** to cancel the operation.

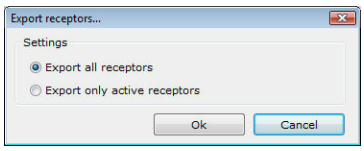
2.7.9 Receptors to DXF file

With this option, you can create a DXF file containing topological information on receptors.

To export receptor data to a DXF file:

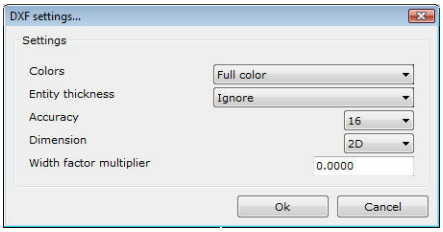
1. Select **Export** from the **File** menu.
2. Select **Receptors to DXF file** from the **Export** menu.
3. If one or more receptors is not active:

3.1 The following form appears:



3.2 Select whether you want to export data for all receptors or only for the active ones.
3.3 Select **Ok** to apply the changes and close the dialog box. Select **Cancel** to close the dialog box without applying any changes.

4. The DXF driver configuration form appears:

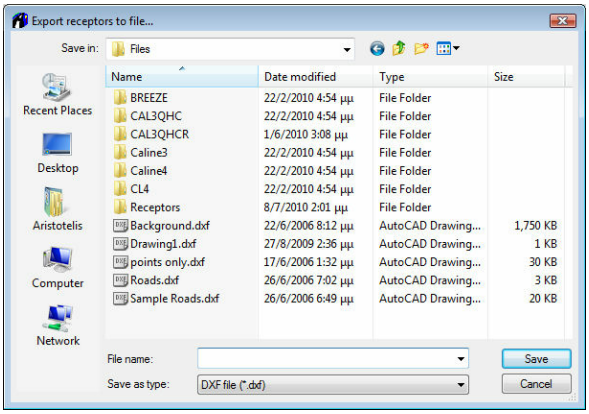


- **Colors**: Select one of Full color or Monochrome. If Monochrome is selected, all color preferences are ignored.

- **Entity thickness**: Select one of Ignore or Support, depending on whether you want to have line thickness in the drawing.
- **Accuracy**: Select the number of decimal places (1 to 16) that will be used when exporting the objects.
- **Dimension**: Select one of 2D or 3D, depending on whether you want elevation information to be included in the drawing.
- **Width factor multiplier**: type a value between 0 and 10.0 that will be used when calculating the width of lines.

Select **Ok** to apply the changes and close the dialog box. Select **Cancel** to close the dialog box without applying any changes.

5. The file selection form appears:



6. Select the path of the file.
7. Type the filename in the **File name** text box.
8. Select **Save** to create the file. Select **Cancel** to cancel the operation.

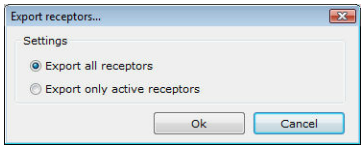
2.7.10 Receptors to ArcView Shapefile

With this option, an ArcView Shapefile containing selected receptor data is created.

To export the receptor data to an ArcView Shapefile:

1. Select **Export** from the **File** menu.
2. Select **Receptors to ArcView Shapefile** from the **Export** menu.
3. If one or more receptors is not active:

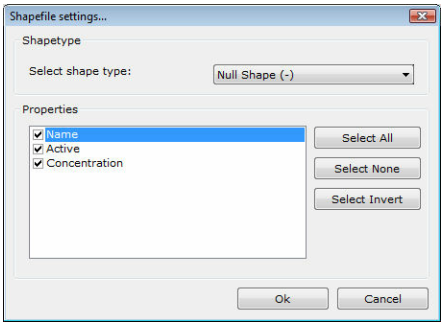
3.1 The following form appears:



3.2 Select whether you want to export data for all receptors or only for the active ones.

3.3 Select **Ok** to apply the changes and close the dialog box. Select **Cancel** to close the dialog box without applying any changes.

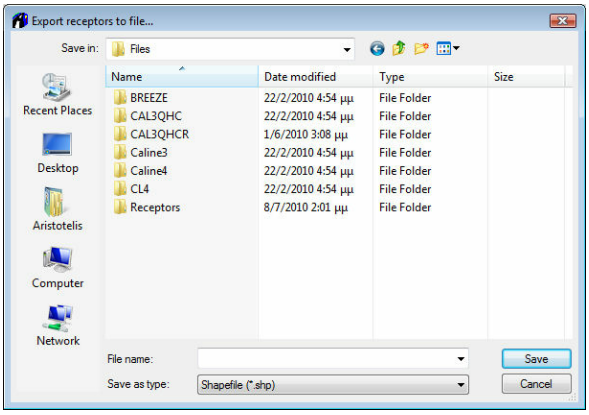
4. The GIS driver configuration form appears:



- **Shapetype**: Select the appropriate shape type (one of Nullshape, Point, PointM or PointZ).
- **Properties**: Select the properties that you wish to be included in the database of the shapefile. The quick keys (**Select all, Select None, Select Invert**) can be used to quickly select all objects, deselect all objects and invert the current selection.

Select **Ok** to apply the changes and close the dialog box. Select **Cancel** to close the dialog box without applying any changes.

5. The file selection form appears:



6. Select the path of the file.
7. Type the filename in the **File name** text box.
8. Select **Save** to create the file. Select **Cancel** to cancel the operation.

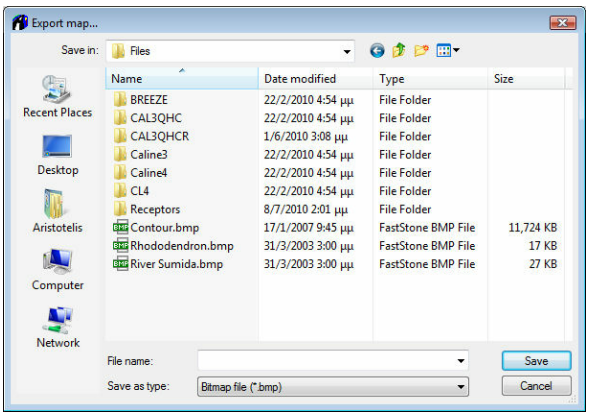
2.7.11 Background map to Bitmap file

With this option, you can export (in BMP format) the plan view as it appears in the main form of the program.

To export the plan view:

1. Select **Export** from the **File** menu.
2. Select **Background map to Bitmap file** from the **Export** menu. The file selection

dialog box appears:



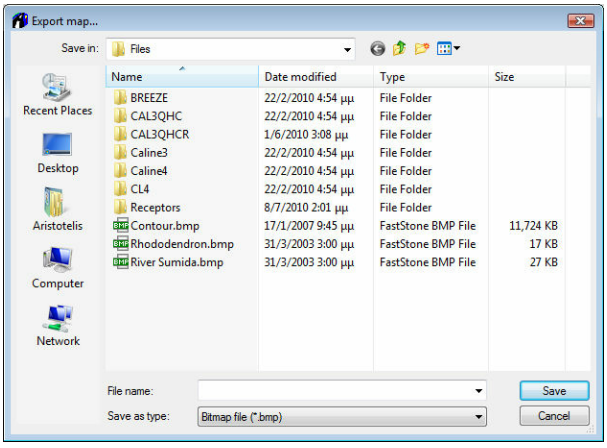
3. Select the path of the file.
4. Type the filename in the **File name** text box.
5. Select **Save** to create the file. Select **Cancel** to cancel the operation.

2.7.12 Pollution Bitmap to Bitmap file

With this option, you can export the pollution contour in .bmp format.

To export the pollution contour in .bmp format:

1. Select **Export** from the **File** menu.
2. Select the **Background map to Bitmap file** menu. The file selection dialog box appears:



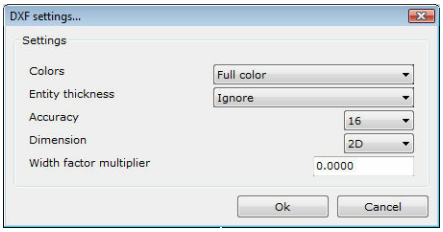
3. Select the path of the file.
4. Type the filename in the **File name** text box.
5. Select **Save** to save the project with the selected filename and path. Select **Cancel** to cancel the operation.

2.7.13 Pollution Contours to DXF file

With this option, a DXF file containing the pollution contours is created. The contours are represented by polylines and the file contains information on the elevation as well as the color and width of the contours.

To export the pollution contours to a DXF file:

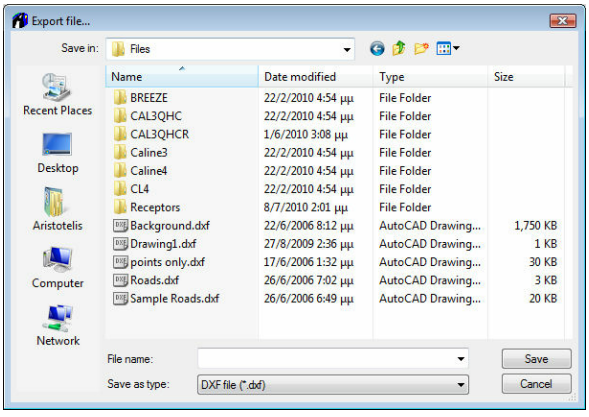
1. Select **Export** from the **File** menu.
2. Select **Links to DXF file** from the **Export** menu.
3. The DXF driver configuration form appears:



- **Colors**: Select one of Full color or Monochrome. If Monochrome is selected, all color preferences are ignored.
- **Entity thickness**: Select one of Ignore or Support, depending on whether you want to have line thickness in the drawing.
- **Accuracy**: Select the number of decimal places (1 to 16) that will be used when exporting the objects.
- **Dimension**: Select one of 2D or 3D, depending on whether you want elevation information to be included in the drawing.
- **Width factor multiplier**: type a value between 0 and 10.0 that will be used when calculating the width of lines.

Select **Ok** to apply the changes and close the dialog box. Select **Cancel** to close the dialog box without applying any changes.

4. The file selection form appears:



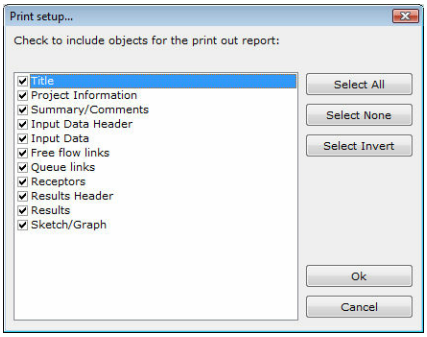
5. Select the path of the file.
6. Type the filename in the **File name** text box.
7. Select **Save** to create the file. Select **Cancel** to cancel the operation.

2.8 Print setup

With this option, you can select which parts of the project will be included in the printouts. When a new project is created, a full report is selected by default.

To modify the print setup:

1. Select **Print setup** from the **File** menu.
2. Select the **sections** (Title, Project information etc) that will be printed for each solution, from the list on the left.
3. Select the **solutions** that will be included in the report from the list on the right.
4. Check **Use new page for each object** if you want to use a new page for each solution in the report.
5. Check **Repeat headers for data/results** if you want to repeat the headers when large tables span multiple pages.
6. Select **Ok** to apply the changes and close the dialog box. Select **Cancel** to close the dialog box without applying any changes.



The quick keys (**Select all, Select None, Select Invert**) can be used to quickly select all objects, deselect all objects and invert the current selection of a list.

NOTE: The changes are saved with the project. The above preferences are used to all printouts, either to the printer or to other formats such as Word file, Excel file etc.

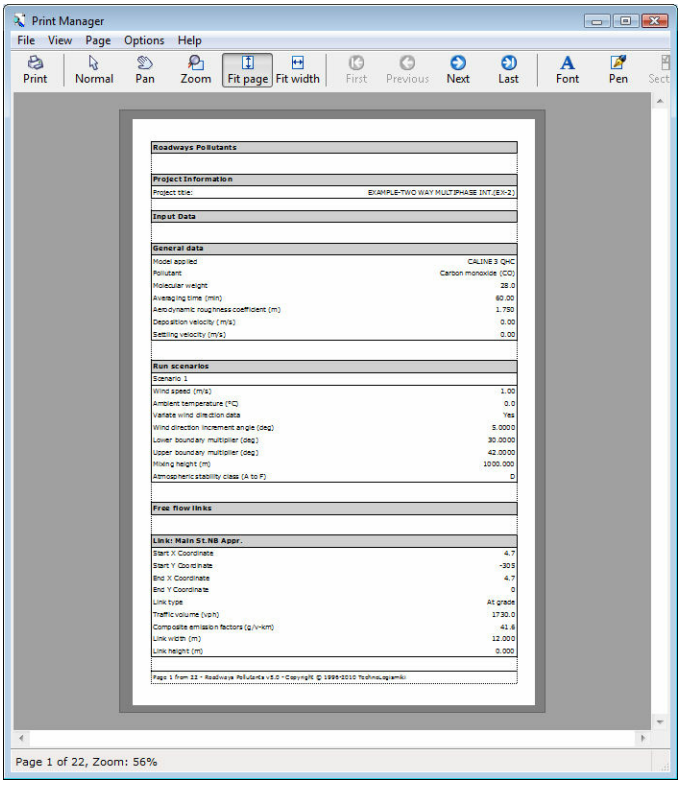
2.9 Print

With this option, you can prepare a report to be printed to a local, network or virtual printer such as Adobe PDF Writer. The parts of the project that will be included in the report are determined from print setup.

By selecting **Print**, the report is not printed directly; instead, a document is prepared and a preview of the printout is created by the **Print manager.** You can print the report by clicking the **Print** button of the toolbar of **Print manager.**

To create a report:

1. Select **Print** from the **File** menu.
2. A report is prepared and sent to **Print manager.** A preview of the document appears.
3. You can print the report by clicking the **Print** button of the toolbar.



NOTE: A complete user manual on the capabilities of **Print manager** can be found in the corresponding help file.

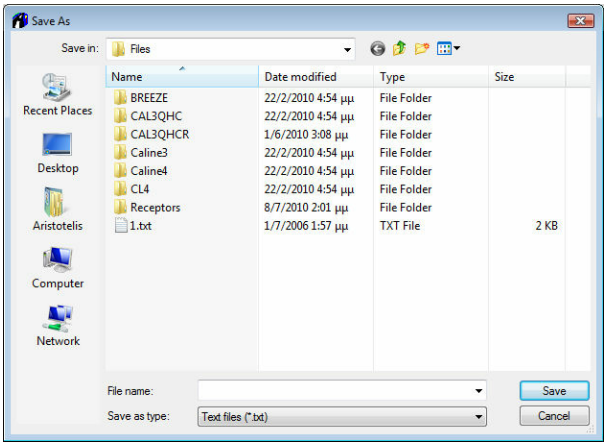
2.10 Print to

2.10.1 Print to File

With this option, you can create a simple text file containing a report of the project. This file is recognized and can be further modified by word processors such as Microsoft Word, OpenOffice Writer etc.

To print to a text file:

1. Select **Print to** from the **File** menu.
2. Select **Print to file** from the **Print to** menu.
3. Select the path of the file.
4. Type the filename in the **File name** text box.
5. Select **Save** to create the file.



The parts of the project that will be included in the report are determined from print setup.

NOTE: If a file with the same name and in the same path already exists, a warning message will appear that asks whether to overwrite the file or not. If you answer Yes, then the existing file is erased and the new file takes its place. If you answer No, the existing file remains intact but the report is NOT printed.

2.10.2 Print to Word

If Microsoft Word (version 97, 2000, XP, 2003 or later) has been installed in the system, then a Microsoft Word file containing the report can be created. Note that Microsoft Word is a separate program and it is not included in TechnoLogismiki's products. Moreover, no technical support is offered regarding the usage of Microsoft Word.

To print the report to a Microsoft Word file:

1. Select **Print to** from the **File** menu.
2. Select **Print to Word** from the **Print to** menu.

The parts of the project that will be included in the report are determined from print setup.

2.10.3 Print to Word (Formatted)

If Microsoft Word (version 97, 2000, XP, 2003 or later) has been installed in the system, then a Microsoft Word file containing the report can be created. Note that Microsoft Word is a separate program and it is not included in TechnoLogismiki's products. Moreover, no technical support is offered regarding the usage of Microsoft Word.

To print the report to a formatted Microsoft Word file:

1. Select **Print to** from the **File** menu.
2. Select **Print to Word (Formatted)** from the **Print to** menu.

The parts of the project that will be included in the report are determined from print setup. This operation is much slower than the regular print to word function. However, the final output requires minimal user intervention as it comes fully formatted with

tables, alignment, font styles, etc.

NOTE: Do not use Copy (CTRL+C) on any of the programs running during this operation. If you do so, it will most likely affect the communication between Microsoft Word and the clipboard and as a result the final document will be corrupt.

2.10.4 Print to Excel

If Microsoft Excel (version 97, 2000, XP, 2003 or later) has been installed in the system, then a Microsoft Excel file containing the report can be created. Note that Microsoft Excel is a separate program and it is not included in TechnoLogismiki's products. Moreover, no technical support is offered regarding the usage of Microsoft Excel.

To print the report to a Microsoft Excel file:

1. Select **Print to** from the **File** menu.
2. Select **Print to Excel** from the **Print to** menu.

The parts of the project that will be included in the report are determined from print setup.

2.11 Exit

With this option, you can exit the program. If there are changes in the current project that have not been saved then the program will:

- either ask the user to save the changes
- or save the changes
- or ignore the changes

depending on what you have selected in General preferences.

To exit the program:

1. Select **Exit** from **File** menu.
2. If you are asked whether to save the changes or not, you can save changes or ignore them.
3. The program is terminated.

Chapter

3 Data

3.1 Data menu

With this menu, you can add and modify data. In the **Data** menu you can select one of the following options:

- Project info
- Undo
- Redo
- Add
  - Links
  - Queue links
  - Receptors
  - Receptor array
  - Receptor grid
- Delete selected objects
- Properties
  - Links
  - Queue links
  - Receptors
- Move selected objects
- Convert
  - Links to queue links
  - Queue links to links
- Select
  - Select all objects
  - Select links only
  - Select queue links only
  - Select receptors only
- Clear selection
- Measure distance
- Resort elements
- Renumber elements
- Default values
- Options
  - General preferences
  - Grid editing
  - Customize toolbar
  - Plan view

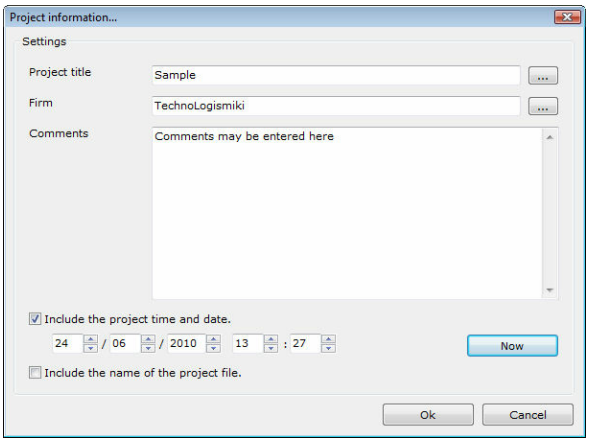
3.2 Project info

With this option, you can add project information that include, optionally, title, author and comments. If you want, this information can be included in the reports. The empty fields are ignored.

To add or modify the project information:

1. Select **Project info** from the **Data** menu.

2. Type the project title, author and comments.
3. Check **Include project time and date** if you want to include the time and date in the project.
3.1. Type the day, month, year, hours and minutes in the corresponding text boxes. Alternatively, you may click on the up/down arrows to increase or decrease the respective value in the text box.
3.2. If you click on **Now** then all text boxes are filled with the current values automatically.
4. Check **Include the name of the project file** if you want the full path and filename of the project to be included in the report.
5. Select **Ok** to apply the changes and close the dialog box. Select **Cancel** to close the dialog box without applying any changes.



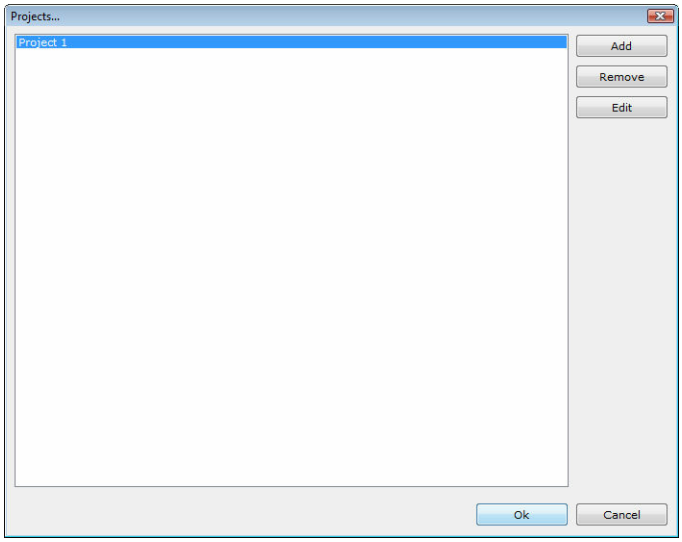
By selecting the buttons with the ellipses (...) next to the project title and author, you can access the corresponding databases.

Project title database

For the completion of a project, more than one programs may be needed. For convenience, you can add the project title to the database and retrieve it from all programs.

To use the project title database:

1. Select the button with the ellipses (...) next to the project title text box. The project title database appears.
2. Select **Add** to add a new title to the database.
3. Select **Remove** to remove the selected entry from the database. You will be asked for confirmation only if you have selected to confirm deletions in the General preferences tab.
4. Select **Edit** to modify the selected entry.
5. Select **Ok** to use the currently selected project title and close the dialog box. Select **Cancel** to close the dialog box without applying any changes.

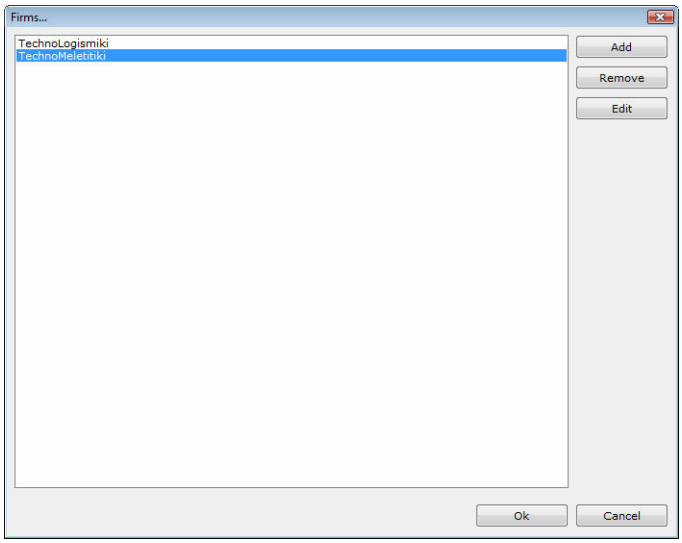


Author database

An engineer may be involved in multiple projects. For convenience, you can add the author name to the database and retrieve it from all programs.

To use the author database:

1. Select the button with the ellipses (...) next to the author text box. The author database appears.
2. Select **Add** to add a new author to the database.
3. Select **Remove** to remove the selected entry from the database. You will be asked for confirmation only if you have selected to confirm deletions in the General preferences tab.
4. Select **Edit** to modify the selected entry.
5. Select **Ok** to use the currently selected author and close the dialog box. Select **Cancel** to close the dialog box without applying any changes.



3.3 Undo

Undo cancels the last committed change in the project.

To cancel the last committed change:

1. Select **Undo** from the **Data** menu.
2. The last committed change is canceled.

To cancel an undo command, you may use the redo function which is described below. Redo becomes available once undo is used.

It is possible to undo more than one recent changes and to redo them, by following the step described above. The number of actions that are kept in memory and may be undone or redone is 20 by default. This means that the program is able to keep track of up to 20 successive changes and undo them. This number may change for all programs, using the option in the main menu. For more information, please consult main menu user guide.

NOTE: Some changes cannot be undone like the new project or the save project functions.

3.4 Redo

Redo cancels the latest undo command.

To redo the latest change that was undone:

1. Select **Redo** from the **Data** menu.
2. The latest undone change is redone.

To undo a redo, you may use the undo command.

It is possible to redo more than one changes that were previously undone by following the steps described above. The number of actions that are kept in memory and may be undone or redone is 20 by default. This means that the program is able to keep track of up to 20 successive changes that are undone and redo them. This number may change for all programs, using the option in the main menu. For more information, please consult main menu user guide.

3.5 Add

3.5.1 Links

With this option, you can add one or more links.

To add a link:

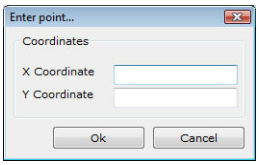
1. Select **Add** from the **Data** menu.
2. Select **Links** from the **Add** menu.
3. Click onto the drawing to define the beginning of the link. Snap and/or OSnap may be active. Alternatively, hit CTRL+2 to provide the coordinates analytically.
4. Click again onto the drawing to define the end of the link. Snap and/or OSnap may be active. Alternatively, hit CTRL+2 to provide the coordinates analytically. The new

link is drawn.

To add more than one links:

1. Select **Add** from the **Data** menu.
2. Select **Links** from the **Add** menu while holding down CTRL key.
3. Click onto the drawing to define the beginning of the first link. Snap and/or OSnap may be active. Alternatively, hit CTRL+2 to provide the coordinates analytically.
4. Click again onto the drawing to define the end of the first link. Snap and/or OSnap may be active. Alternatively, hit CTRL+2 to provide the coordinates analytically. The first new link is drawn.
5. Repeat steps 3 and 4 to add the next link.
6. Hit ESC when you have finished.

When the program expects a point, you can provide the coordinates analytically by hitting CTRL+2. The following form appears:



1. Enter the coordinates by typing into the corresponding text box.
2. Select **Ok** to apply the changes and close the dialog box. Select **Cancel** to close the dialog box without applying any changes. The program resumes the previous action.

NOTE: When selecting points graphically, you can use Snap and / or OSnap. These options can be configured using the menu **Data > Options > Plan View** or by hitting CTRL + 1.

3.5.2 Queue links

With this option, you can add one or more queue links.

To add a queue link:

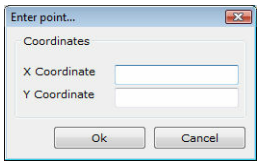
1. Select **Add** from the **Data** menu.
2. Select **Queue links** from the **Add** menu.
3. Click onto the drawing to define the beginning of the queue link. Snap and/or OSnap may be active. Alternatively, hit CTRL+2 to provide the coordinates analytically.
4. Click again onto the drawing to define the end of the queue link. Snap and/or OSnap may be active. Alternatively, hit CTRL+2 to provide the coordinates analytically. The new queue link is drawn.

To add more than one queue links:

1. Select **Add** from the **Data** menu.
2. Select **Queue links** from the **Add** menu while holding down CTRL key.
3. Click onto the drawing to define the beginning of the first queue link. Snap and/or OSnap may be active. Alternatively, hit CTRL+2 to provide the coordinates analytically.
4. Click again onto the drawing to define the end of the first queue link. Snap and/or

OSnap may be active. Alternatively, hit CTRL+2 to provide the coordinates analytically. The first new queue link is drawn.
5. Repeat steps 3 and 4 to add the next queue link.
6. Hit ESC when you have finished.

When the program expects a point, you can provide the coordinates analytically by hitting CTRL+2. The following form appears:



1. Enter the coordinates by typing into the corresponding text box.
2. Select **Ok** to apply the changes and close the dialog box. Select **Cancel** to close the dialog box without applying any changes. The program resumes the previous action.

NOTE: When selecting points graphically, you can use Snap and / or OSnap. These options can be configured using the menu **Data > Options > Plan View** or by hitting CTRL + 1.

NOTE: Caline 3 does not support queue links.

3.5.3 Receptors

With this option, you can add one or more receptors.

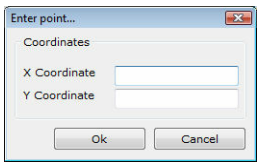
To add a receptor:

1. Select **Add** from the **Data** menu.
2. Select **Receptors** from the **Add** menu.
3. Click onto the drawing to define the position of the receptor. Snap and/or OSnap may be active. Alternatively, hit CTRL+2 to provide the coordinates analytically. The new receptor is drawn.

To add more than one receptors:

1. Select **Add** from the **Data** menu.
2. Select **Receptors** from the **Add** menu while holding down CTRL key.
3. Click onto the drawing to define the position of the receptor. Snap and/or OSnap may be active. Alternatively, hit CTRL+2 to provide the coordinates analytically. The first new receptor is drawn.
4. Repeat step 3 to add the next receptor.
5. Hit ESC when you have finished.

When the program expects a point, you can provide the coordinates analytically by hitting CTRL+2. The following form appears:



1. Enter the coordinates by typing into the corresponding text box.
2. Select **Ok** to apply the changes and close the dialog box. Select **Cancel** to close the dialog box without applying any changes. The program resumes the previous action.

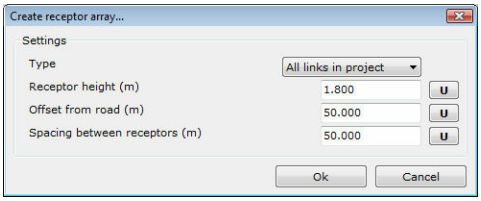
NOTE: When selecting points graphically, you can use Snap and / or OSnap. These options can be configured using the menu **Data > Options > Plan View** or by hitting CTRL + 1.

3.5.4 Receptor array

With this option, you can add an array of receptors.

To add an array of receptors:

1. Select **Add** from the **Data** menu.
2. Select **Receptor array** from the **Add** menu. The following form will appear:



3. Select the link type that will be used using the drop-down list. Some of the following options may not be applicable:
- All links
- All free flow links
- All queue links
- All selected links
- All selected free flow links
- All selected queue links

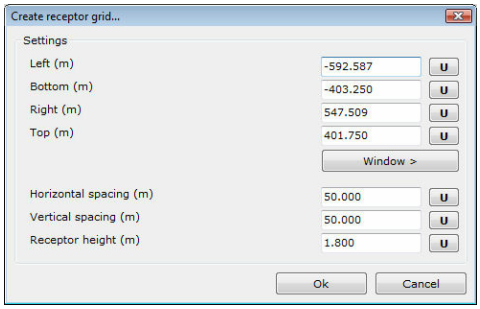
4. Enter the **receptor height** in m.
5. Enter the **offset from road** in m. Although it is not forbidden, it is recommended that you do not use receptors within the road because the results from the models differ significantly from experimental data.
6. Enter the **spacing between receptors** in m. Small spacing will produce a very dense array and many receptors.
7. Select **Ok** to create the array and close the dialog box. Select **Cancel** to close the dialog box without creating the array.

3.5.5 Receptor grid

With this option, you can add a grid of receptors.

To add a grid of receptors:

1. Select **Add** from the **Data** menu.
2. Select **Receptor grid** from the **Add** menu. The following form will appear:



3. Enter the **left, right, top** and **bottom** coordinates of the grid in m. The default values correspond to the current viewport.
4. Enter the **horizontal spacing** in m.
5. Enter the **vertical spacing** in m.
6. Enter the **receptor height** in m. The default value is 1.8 m.
7. Select **Ok** to create the grid and close the dialog box. Select **Cancel** to close the dialog box without creating the grid.

NOTE: If the grid contains more than 1000 receptors, a warning message will appear that states that the process may take some minutes to be completed.

3.6 Delete selected objects

With this option, you can delete the selected objects.

To delete the selected objects:

1. Select **Delete selected objects** from the **Data** menu. You will be asked for confirmation only if you have selected to confirm deletions in the General preferences tab.
2. The selected objects are deleted.

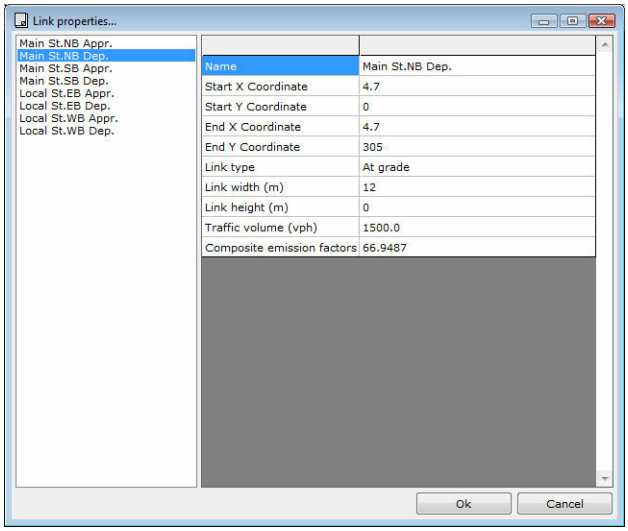
3.7 Properties

3.7.1 Links

With this option, you can view and modify the properties of one or more links.

To view and modify the properties of one or more links:

1. Select **Properties** from the **Data** menu.
2. Select **Links** from the **Properties** menu. The following form will appear:



3. Select the link from the list on the left.
4. Make the appropriate changes.
5. Repeat steps 3 and 4 for all links that need modification.
6. Select **Ok** to apply the changes and close the dialog box. Select **Cancel** to close the dialog box without applying any changes.

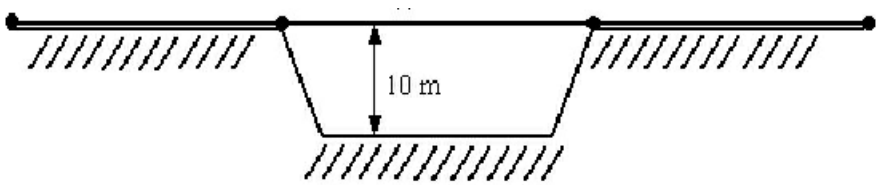
To apply a common property to more than one links:

1. Select more than one links from the list on the left by holding down the CTRL key.
2. The common properties will be displayed in the **value** column. If a cell is empty, then the corresponding property is not common for the selected links.
3. Make the appropriate changes. The properties are assigned to all selected links.

Link properties

The following properties may be applicable, subject to the model selected:

- **Name**: a unique string for each link.
- **Start X coordinate**: the start X coordinate of the link in m.
- **Start Y coordinate**: the start Y coordinate of the link in m.
- **End X coordinate**: the end X coordinate of the link in m.
- **End Y coordinate**: the end Y coordinate of the link in m.
- **Link type**: select one of **at grade**, **bridge**, **fill**, **depressed** or **parking**.
- **Link width**: enter the link width plus 3 meters on each side. For example, the link width for a 6m-wide road is 12m. This must not be less than 10m, with the exception of parking lot links.
- **Link height**: enter the link height in m. For fill and at-grade links, it is always zero. For bridge and depressed links, it is equal to the bridge height and depression depth respectively. It should always take values in the range of -10 to +10m. The following diagram shows an at-grade link, a bridge link and an at-grade link from left to right. The link height is taken equal to zero except from the case of the bridge link, in which it is taken equal to -10m.



- **Traffic volume***: The number of vehicles that use the link within one hour.
- **Composite emission factors***: The mean value of the pollutant emitted, expressed in mg per vehicle per km. This coefficient can be estimated using special software, such as Mobile Emission Model by TechnoLogismiki.
- **Canyon/ bluff left and right mixing width**: (for Caline 4 model only) Caline 4 model is based on two restrictive assumptions. First, the wind has homogenous characteristics throughout the region; second, the meteorological characteristics are constant. These two assumptions do not hold in the case of complex topography, such as is the case of canyons and bluffs. The workaround is to project the emitted pollutant to a distance called left and right mixing width, by making the plausible assumption that the obstacle is located along the road. At the same time, the vertical diffusion curve is modified, so that it includes the effect of heat emission from the vehicles along the breadth of the canyon or bluff. This is very important in the case of narrow roads. In any case, it is recommended that you leave these values equal to zero and thus disable the mixing subroutines of the solver.

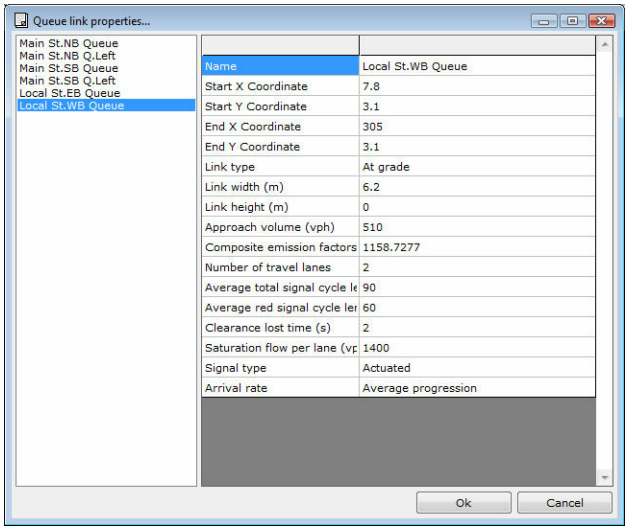
* (for Caline 3 QHCR model only): if one or more traffic patterns that vary in hourly basis are selected, more than one values are required. These are entered in a dedicated form.

3.7.2 Queue links

With this option, you can view and modify the properties of one or more queues.

To view and modify the properties of one or more queues:

1. Select **Properties** from the **Data** menu.
2. Select **Queues** from the **Properties** menu. The following form will appear:



3. Select the queue from the list on the left.
4. Make the appropriate changes.

5. Repeat steps 3 and 4 for all queues that need modification.
6. Select **Ok** to apply the changes and close the dialog box. Select **Cancel** to close the dialog box without applying any changes.

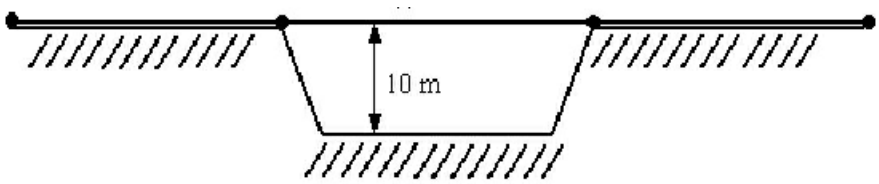
To apply a common property to more than one queues:

1. Select more than one queues from the list on the left by holding down the CTRL key.
2. The common properties will be displayed in the **value** column. If a cell is empty, then the corresponding property is not common for the selected queues.
3. Make the appropriate changes. The properties are assigned to all selected queues.

Queue properties

The following properties may be applicable, subject to the model selected:

- **Name**: a unique string for each link.
- **Start X coordinate**: the start X coordinate of the link in m.
- **Start Y coordinate**: the start Y coordinate of the link in m.
- **End X coordinate**: the end X coordinate of the link in m.
- **End Y coordinate**: the end Y coordinate of the link in m.
- **Link type**: select one of **at grade**, **bridge**, **fill**, **depressed**. For Caline 4, the queue can only be of type **intersection.**
- **Link width**: enter the link width plus 3 meters on each side. For example, the link width for a 6m-wide road is 12m. This must not be less than 10m.
- **Link height**: enter the link height in m. For fill and at-grade links, it is always zero. For bridge and depressed links, it is equal to the bridge height and depression depth respectively. It should always take values in the range of -10 to +10m. The following diagram shows an at-grade link, a bridge link and an at-grade link from left to right. The link height is taken equal to zero except from the case of the bridge link, in which it is taken equal to -10m.



- **Approach volume***: the number of vehicles that approaches the traffic lights per hour.
- **Composite emission factors***: The mean value of the pollutant emitted, expressed in mg per vehicle per km. This coefficient can be estimated using special software, such as Mobile Emission Model by TechnoLogismiki.
- **Number of travel lanes**: enter the number of travel lanes.
- **Average total signal cycle length***: enter the average time in seconds for a full cycle of the traffic lights.
- **Average red signal cycle length***: enter the average time of the red light in seconds.
- **Clearance lost time***: the time that is spent in orange light (if applicable) in seconds. A value of 2 seconds is recommended.
- **Saturation flow per lane***: enter the maximum number of vehicles that can be accommodated by the queue per hour per lane.
- **Signal time***: Select one of **pre-timed,** if the traffic lights make use of a timer,

actuated or semi-actuated, if they feature active or basic traffic sensors.

- **Arrival rate***: enter the arrival rate from 1 (worst progression) to 5 (best progression).
- **Canyon/ bluff left and right mixing width**: (for Caline 4 model only) Caline 4 model is based on two restrictive assumptions. First, the wind has homogenous characteristics throughout the region; second, the meteorological characteristics are constant. These two assumptions do not hold in the case of complex topography, such as is the case of canyons and bluffs. The workaround is to project the emitted pollutant to a distance called left and right mixing width, by making the plausible assumption that the obstacle is located along the road. At the same time, the vertical diffusion curve is modified, so that it includes the effect of heat emission from the vehicles along the breadth of the canyon or bluff. This is very important in the case of narrow roads. In any case, it is recommended that you leave these values equal to zero and thus disable the mixing subroutines of the solver.
- **Distance to stop-line**: enter the distance between the start point of the queue and the stop-line of the vehicles in m.
- **Cruise speed**: enter the mean vehicle speed in km/h.
- **Acceleration time**: enter the mean time required for a stopped vehicle to reach the average cruise speed, in seconds. This defines the increased pollution length: (mean speed) x (acceleration time).
- **Deceleration time**: enter the mean time required for a vehicle cruising at the average speed to stop, in seconds. This defines the mean braking length: (mean speed) x (deceleration time).
- **Vehicle handled per cycle per lane**: enter the number of vehicles that pass through during green light per lane.
- **Vehicles delayed per cycle per lane**: enter the number of vehicles that do not pass through during one green light per lane. More than one cycles are needed for these vehicles.
- **Idle time at stop-line**: enter the time needed for vehicles at the end of the queue to reach the point where they can pass through at the next green light. This is equal to zero in case all stopped vehicles can pass through during the next green light.
- **Idle time at end of queue**: see **Average red signal cycle length**.

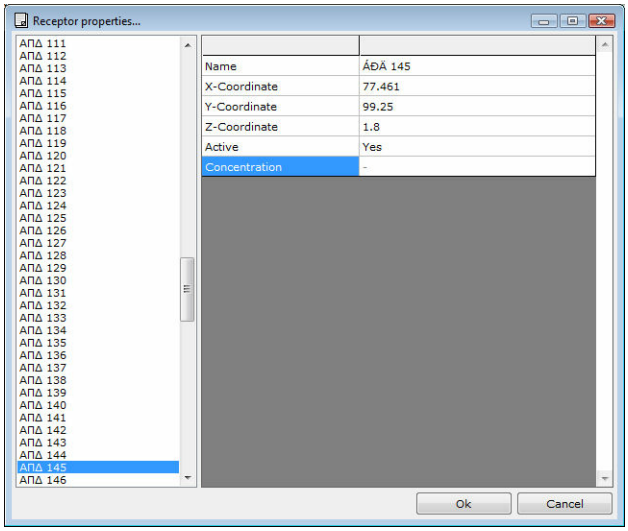
***** (for Caline 3 QHCR model only): if one or more traffic patterns that vary in hourly basis are selected, more than one values are required. These are entered in a dedicated form.

3.7.3 Receptors

With this option, you can view and modify the properties of one or more receptors.

To view and modify the properties of one or more receptors:

1. Select **Properties** from the **Data** menu.
2. Select **Receptors** from the **Properties** menu. The following form will appear:



3. Select the receptor from the list on the left.
4. Make the appropriate changes.
5. Repeat steps 3 and 4 for all receptors that need modification.
6. Select **Ok** to apply the changes and close the dialog box. Select **Cancel** to close the dialog box without applying any changes.

To apply a common property to more than one receptors:

1. Select more than one receptors from the list on the left by holding down the CTRL key.
2. The common properties will be displayed in the **value** column. If a cell is empty, then the corresponding property is not common for the selected receptors.
3. Make the appropriate changes. The properties are assigned to all selected receptors.

Receptor properties

- **Name**: enter a unique name for the receptor.
- **X coordinate**: enter the X-coordinate of the receptor, in m.
- **Y coordinate**: enter the Y-coordinate of the receptor, in m.
- **Z coordinate**: enter the Z-coordinate of the receptor, in m. The use of 1.8m is recommended.
- **Active**:select one of **Yes**, **No.** An inactive receptor is drawn in different color and it is not taken into account during calculations.

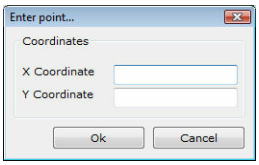
3.8 Move selected objects

With this option, you can move the selected objects.

To move the selected objects:

1. Select **Move selected objects** from the **Data** menu.
2. Click onto the drawing to define the base point. Snap and/or OSnap may be active. Alternatively, hit CTRL+2 to provide the coordinates analytically.
3. Click again onto the drawing to define the end point. Snap and/or OSnap may be active. Alternatively, hit CTRL+2 to provide the coordinates analytically. The selected objects are moved.

When the program expects a point, you can provide the coordinates analytically by hitting CTRL+2. The following form appears:



1. Enter the coordinates by typing into the corresponding text box.
2. Select **Ok** to apply the changes and close the dialog box. Select **Cancel** to close the dialog box without applying any changes. The program resumes the previous action.

You can access the plan view options form at any time by hitting CTRL+1.

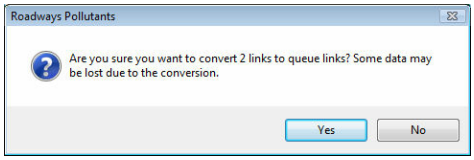
3.9 Convert

3.9.1 Links to queue links

With this option, you can convert existing links to queues.

To convert existing links to queues:

1. Select the links graphically.
2. Select **Convert** from the **Data** menu.
3. Select **Links to queue links** from the **Convert** menu. A confirmation message will appear:



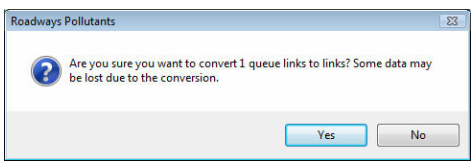
4. Select **Yes** to proceed with the conversion. Select **No** to cancel the operation.

3.9.2 Queue links to links

With this option, you can convert existing queues to links.

To convert existing queues to links:

1. Select the queues graphically.
2. Select **Convert** from the **Data** menu.
3. Select **Queue links to links** from the **Convert** menu. A confirmation message will appear:



4. Select **Yes** to proceed with the conversion. Select **No** to cancel the operation.

3.10 Select

3.10.1 Select all objects

With this option, you can select all objects.

To select all objects:

1. Select **Select** from the **Data** menu.
2. Select **Select all objects** from the **Select** menu.
3. All objects are selected.

3.10.2 Select links only

With this option, you can select all links while de-selecting all other objects.

To select all links while de-selecting all other objects:

1. Select **Select** from the **Data** menu.
2. Select **Select links only** from the **Select** menu.
3. All links are selected. The rest of the objects are de-selected.

3.10.3 Select queue links only

With this option, you can select all queue links while de-selecting all other objects.

To select all links while de-selecting all other objects:

1. Select **Select** from the **Data** menu.
2. Select **Select queue links only** from the **Select** menu.
3. All queue links are selected. The rest of the objects are de-selected.

3.10.4 Select receptors only

With this option, you can select all receptors while de-selecting all other objects.

To select all receptors while de-selecting all other objects:

1. Select **Select** from the **Data** menu.
2. Select **Select receptors only** from the **Select** menu.
3. All receptors are selected. The rest of the objects are de-selected.

3.11 Clear selection

With this option, you can deselect all objects.

To deselect all objects:

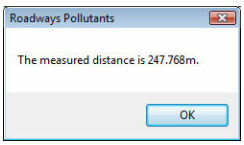
1. Select **Clear selection** from the **Data** menu.
2. All objects are de-selected.

3.12 Measure distance

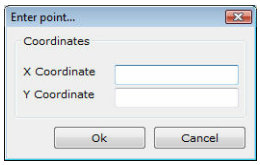
With this option, you can measure the distance between two points.

To measure the distance between two points:

1. Select **Measure distance** from the **Data** menu.
2. Click onto the drawing to define the base point. Snap and/or OSnap may be active. Alternatively, hit CTRL+2 to provide the coordinates analytically.
3. Click again onto the drawing to define the end point. Snap and/or OSnap may be active. Alternatively, hit CTRL+2 to provide the coordinates analytically. The distance is measured and displayed in a message box:



When the program expects a point, you can provide the coordinates analytically by hitting CTRL+2. The following form appears:



1. Enter the coordinates by typing into the corresponding text box.
2. Select **Ok** to apply the changes and close the dialog box. Select **Cancel** to close the dialog box without applying any changes. The program resumes the previous action.

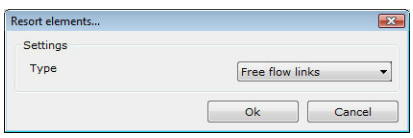
You can access the plan view options form at any time by hitting CTRL+1.

3.13 Resort elements

With this option, you can sort objects alphabetically by name.

To sort objects alphabetically by name:

1. Select **Resort elements** from the **Data** menu. The following form appears:



2. Select the type of object to be sorted. This can be one of the following:
- Links
- Queues

- Receptors

3. Select **Ok** to resort the objects and close the dialog box. Select **Cancel** to close the dialog box without making any changes.

3.14 Renumber elements

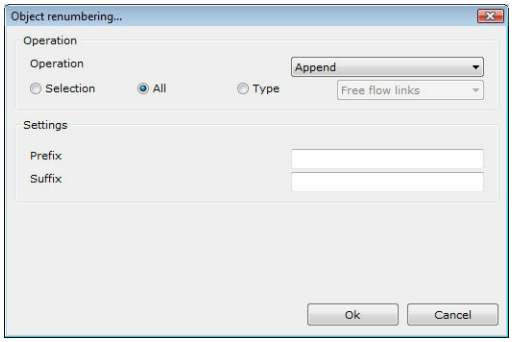
With this option, you can renumber i.e. rename objects. This process is based on the default values and it is not reversible; however, it does not affect calculations. This option is useful when the names of the objects are not continuous. Apart from the names, other settings are also modified, so as to reflect theses changes.

To renumber the objects:

1. Select **Renumber elements** from the **Data** menu.
2. Select the type of operation you wish to perform from the drop-down list. The available options are **Append, Replace** and **Renumber.** Each option is described in detail below.
3. Select the type of objects that you wish to apply. This can be the current **selection** (if applicable), **all** objects or a specific object **type**.

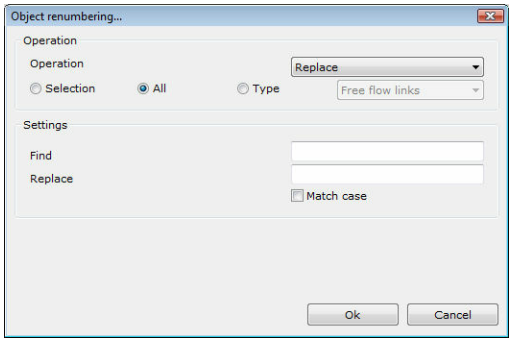
Append

A prefix and/or a suffix is added to the current name of each object:



Replace

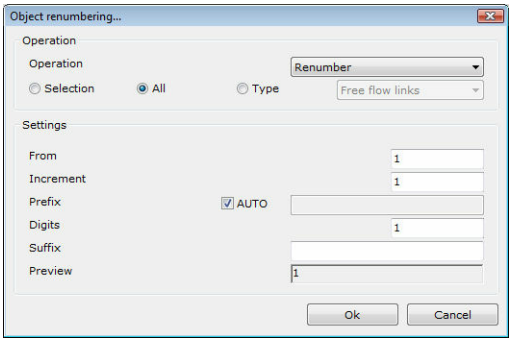
A string is replaced (if found) in the name of each section. You can optionally select case-sensitive search, by checking **Match case**.



Renumber

A full renumbering of the objects is performed. You can preview the result of your selections in the **Preview** label. The settings in this case are the following:

- **From**: the first number, usually 1.
- **Increment**: the number increment, usually 1. For example, if the first number is 1 and the increment is 5, then the second number will be 6.
- **Prefix**: a prefix may be included in the name. Check **AUTO** to use the corresponding default value.
- **Digits**: the number of digits that will be used. For example, if you select 3 digits, the numbering will be in the form 001, 002 etc.
- **Suffix**: a suffix may be included in the name of the object.



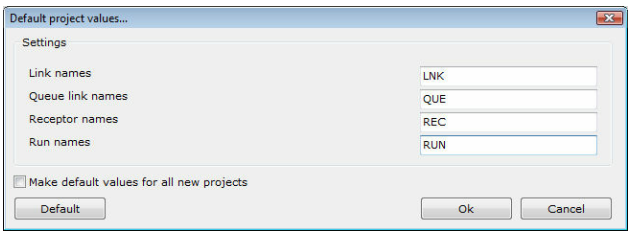
5. Select **Ok** to renumber the objects and close the dialog box. Select **Cancel** to close the dialog box without making any changes.

3.15 Default values

With this option, you can set the default prefixes for new objects.

To set the default prefixes for new objects:

1. Select **Default values** from the **Data** menu. The following form will appear:



2. Make the appropriate changes.
3. If you check **Make default values for all new projects** then these settings will be preselected for all new projects.
4. Select **Default** to restore the default values.
5. Select **Ok** to save the changes and close the dialog box. Select **Cancel** to close the dialog box without saving any changes.

3.16 Options

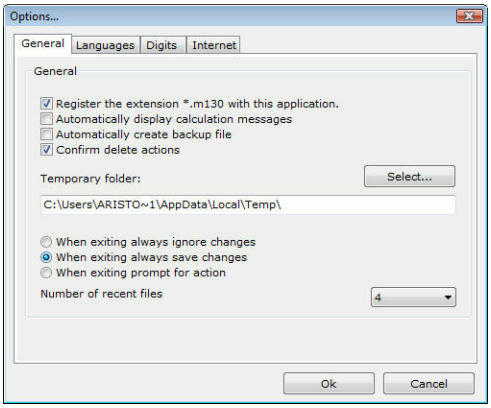
3.16.1 General preferences

With this option, you can modify the general preferences of the program.

To modify the general preferences:

1. Select **Options** from the **Data** menu.
2. Select **General preferences** from the **Options** menu.
3. The general preferences dialog box appears. The preferences are grouped into four tabs. You can select a tab by clicking on its name.

General Tab



This tab contains general preferences regarding the usage of the program.

Check **Register the extension *.m30 with this application** to associate the extension .m30 with this program. This extension is used by the program when saving a project. In this way, you will be able to run the program and load a project by double-clicking on the project filename in Windows Explorer.

Check **Automatically display calculation messages** if you want report details to be automatically displayed when you calculate the results.

Check **Automatically create backup file** if you want a backup file (with the extension .bck) to be created every time a project is loaded. By default, this file is created in the temporary folder of Windows.

Check **Confirm delete actions** if you want to be asked for confirmation each time an object is about to be deleted.

You can also modify the temporary folder that will be used for the creation of backup files. By default, this folder is the temporary folder of Windows.

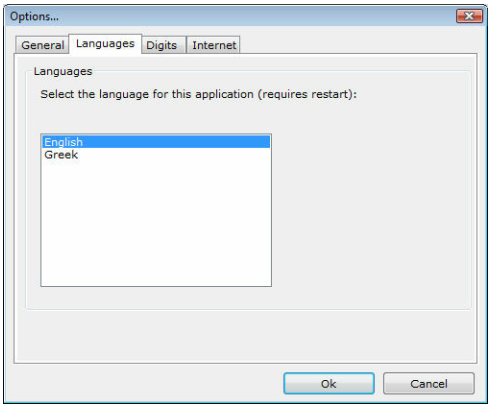
Finally, there are three options regarding the termination of the program:

- **When exiting always ignore changes** - All changes since the last save of the project are ignored.
- **When exiting always save changes** - All changes in the current project are automatically saved. If the filename of the project is not set, a dialog box will appear that allows the selection of the filename, as when selecting Save project

as from the **File** menu.

- **When exiting prompt for action** - If there are changes in the current project, then a dialog box will appear. You can choose to save or ignore the changes. If the filename of the project is not set, a dialog box will appear that allows the selection of the filename, as when selecting Save project as from the **File** menu.

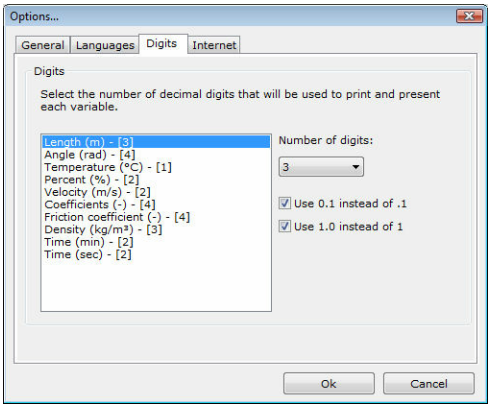
Languages Tab



If more than one language packs have been installed, then you can choose the language of the program. In the above case, there are two language packs; English (that are already selected) and Greek. If you change the language, all forms, menus, messages, help files will reflect the chosen language.

In order for the changes to take effect, you must restart the program.

Digits Tab



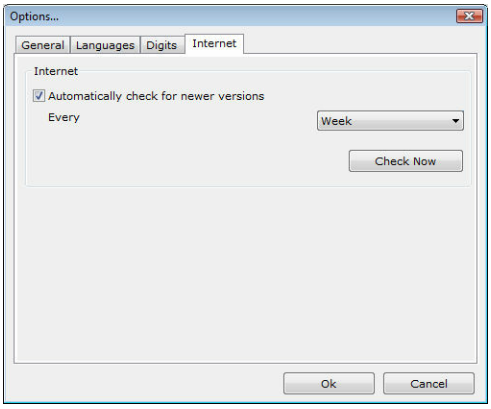
With this tab, you can modify the way the results are presented. All values used in the program are displayed in the list on the left.

For each value, you can select the number of decimal digits using the **Number of digits** drop-down list.

Check **Use 0.1 instead of .1** to use a preceding zero when displaying numbers between -1 and 1, for example -0.08 instead of -.08 and 0.98 instead of .98.

Check **Use 1.0 instead of 1** to use trailing zeros (when necessary) in order to display a number with the decimal digits selected in the **Number of digits** drop-down list, for example 1.1600 instead of 1.16 (when the number of digits is set to 4).

Internet Tab



The program can automatically check for newer versions over the Internet. Check **Automatically check for newer versions** to enable this feature. The check is automatically performed at an interval specified in the **Every** drop-down list. Select **Check now** to manually check for newer versions.

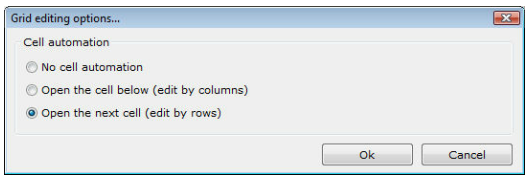
When a newer version is found, you will be prompted to download and install the latest version.

NOTE: TechnoLogismiki protects your privacy. During the check for newer versions, no data is transferred from your computer to the Internet.

Select **Ok** to apply the changes and close the dialog box. Select **Cancel** to close the dialog box without applying any changes.

3.16.2 Grid editing

With this option, you can modify the behavior of grids.



The behaviour of all editable grids is controlled by the preferences in this dialog box.

Select **No cell automation** if you want the active cell to remain the same when hitting ENTER.

Select **Open the cell below (edit by columns)** if you want to activate the cell below when hitting ENTER. This is particularly useful when editing tables by columns.

Select **Open the next cell (edit by rows)** if you want to activate the next cell on the right when hitting ENTER. This is particularly useful when editing tables by rows.

In some cases, the program may automatically fill some missing values (for example, when performing linear interpolation). In this case, you can select a distinctive color in order to recognize these values. You can choose the color by clicking on the button in the **Auto-complete settings** frame.

NOTE: These preferences affect all projects, old and new.

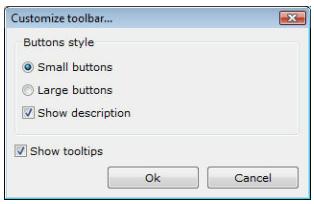
Select **Ok** to apply the changes and close the dialog box. Select **Cancel** to close the dialog box without applying any changes.

3.16.3 Customize toolbar

With this option, you can customize the toolbar of the main form.

To customize the toolbar of the main form:

1. Select **Options** from the **Data** menu.
2. Select **Customize toolbar** from the **Options** menu.
3. Make the appropriate changes.
4. Select **Ok** to apply the changes and close the dialog box. Select **Cancel** to close the dialog box without applying any changes.



The toolbar may contain small or large buttons.

Check **Show description** if you want a small description to be displayed under the buttons.

Check **Show tooltips** if you want tooltips to be displayed when the mouse pointer hovers over a button for 2-3 seconds.

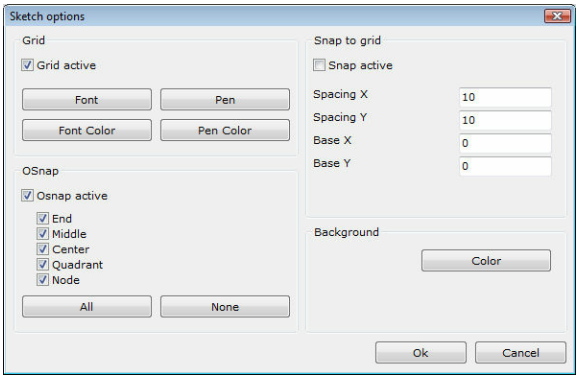
NOTE: These preferences affect all projects, old and new.

3.16.4 Plan view

With this option, you can customize the plan view.

To customize the plan view:

1. Select **Options** from the **Data** menu.
2. Select **Plan view** from the **Options** menu. The following form appears:



3. Make the appropriate changes as follows:
4. In the **Grid** frame:

4.1 Check **Grid active** to activate the grid.
4.2 Select **Font** to modify the font of the grid.
4.3 Select **Font** color to modify the font color of the grid.
4.4 Select **Pen** to modify the line style of the grid.
4.5 Select **Pen color** to modify the line color of the grid.

5. In the **Snap** frame:

5.1 Check **Snap active** to activate the snap.
5.2 Select appropriate values for the spacing in X and Y directions.
5.3 Select appropriate values for the base point. Usually this is 0,0.

5. In the **OSnap** frame:

5.1 Check **OSnap active** to activate the OSnap.
5.2 Select one or more characteristic points that will be used for the OSnap. The quick keys (**All, None**) can be used to quickly select or deselect all options.

6. In the **Background** frame:

6.1 Select **Color** to modify the background color.

7. Select **Ok** to apply the changes and close the dialog box. Select **Cancel** to close the dialog box without applying any changes.

Chapter

4 Model

4.1 Model menu

With this menu, you can select and modify the model. In the **Model** menu you can select one of the following options:

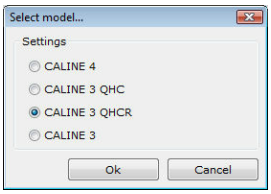
- Select model
- General data
- Site characteristics
- Manage run scenarios
- Traffic patterns
- Background concentrations
  - Nitrogen dioxide concentration
  - Variable concentration
- Meteorological data
  - Add
  - Modify
  - Remove
  - Insert
  - Clear
  - Import
  - Export

4.2 Select model

With this option, you can select the model that will be used during calculations.

To select the model that will be used during calculations:

1. Select **Select model** from the **Model** menu. The following form appears:



2. Select one of the models.
3. Select **Ok** to save the changes and close the dialog box. Select **Cancel** to close the dialog box without saving any changes.

Different data are required for each model. Moreover, some data may not be compatible or applicable to other models. For example, Caline 4 features a parking link, that is not used in other models.

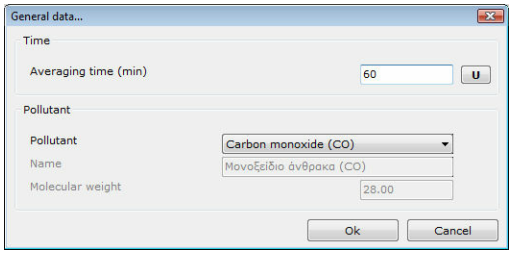
NOTE: The selection of the model should be done at the beginning. In the opposite case, input data may be lost.

4.3 General data

With this option, you can enter general data. The data required is depended on the selected model.

To enter general data:

1. Select **General data** from the **Model** menu. The following form appears:



2. Enter the appropriate data.
3. Select **Ok** to save the changes and close the dialog box. Select **Cancel** to close the dialog box without saving any changes.

The data required are the following:

Caline 4

- **Run type**: select one of **standard run**, or **worst case wind angle**. In the former case, the wind angle is calculated based on meteorological data; in the latter case, the wind angle that produces the worst results is selected.
- **Pollutant**: select the pollutant to be studied. This can be one of carbon monoxide (CO), nitrogen dioxide (NO_2), an inert gas (in which case you need to provide the name and the molecular weight) or particulate matter (in which case you need to provide the molecular weight). It is assumed that the molecular weight of CO and NO_2 is equal to 28 and 46, respectively.

Caline 3

- **Averaging time:** enter the time interval that will be used to export the mean values of the intermediate results. This can take values in the range of 3 to 120 minutes. The default value is 60 minutes.

Caline 3 QHC

- **Averaging time:** as in the case of Caline 3 model.
- **Pollutant:** as in the case of Caline 4 model, but only carbon monoxide and particulate matter is supported.

Caline 3 QHCR

- **Averaging time:** as in the case of Caline 3 model.
- **Site type**: select one of **urban** or **rural**. If urban is selected then the atmospheric stability classes E and F are made equal to class D.

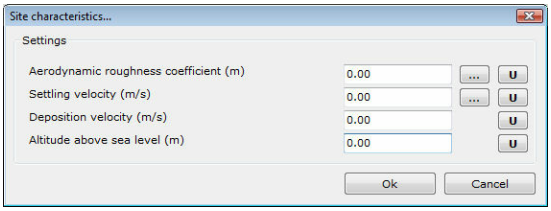
- **Pollutant:** as in the case of Caline 4 model, but only carbon monoxide and particulate matter is supported.

4.4 Site characteristics

With this option, you can enter the site characteristics.

To enter the site characteristics:

1. Select **Site characteristic** from the **Model** menu. The following form appears:

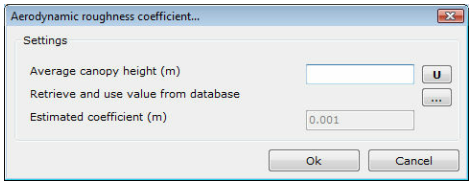


2. Enter the appropriate data, as described below.
3. Select **Ok** to save the changes and close the dialog box. Select **Cancel** to close the dialog box without saving any changes.

The **aerodynamic roughness coefficient** (in m) and the **settling velocity** (in m/s) are entered or calculated based on other parameters, as described below. Enter the **deposition velocity** in m/s (for all models) and the altitude above sea level in m (for Caline 4 only).

To estimate the aerodynamic roughness coefficient:

1. Select the corresponding button with ellipses (...). The following form appears:

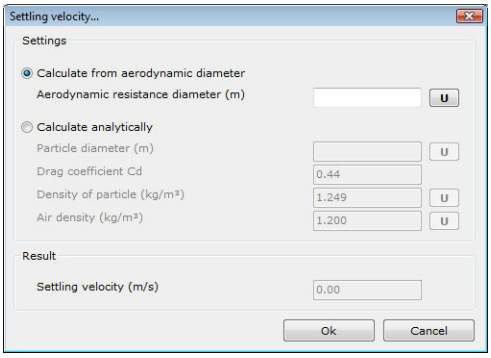


2. Enter the **average canopy height** in m. The estimated coefficient is calculated as you type. Alternatively, click the button with the ellipses to invoke the corresponding database.
3. Select **Ok** to save the changes and close the dialog box. Select **Cancel** to close the dialog box without saving any changes.

NOTE: The aerodynamic roughness coefficient is equal to 15% of the average canopy height (Plate, 1971; Myrup, 1976).

To estimate the settling velocity:

1. Select the corresponding button with ellipses (...). The following form appears:



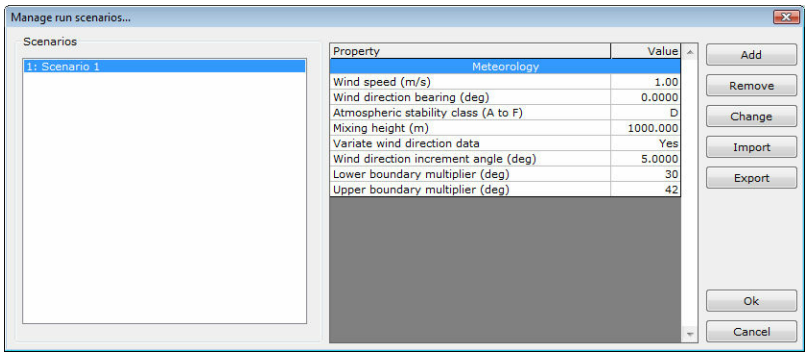
2. Select the method of estimation.
3. For the method that is based on the **aerodynamic diameter**, only the aerodynamic resistance diameter D_{ar} is required. The settling velocity is given by the formula $Vs=2.98x10^{5}D_{ar}^{2}$.
4. For the analytical method, the **particle diameter** is required. It is recommended that you use the default values for the rest of the coefficients.
5. Select **Ok** to save the changes and close the dialog box. Select **Cancel** to close the dialog box without saving any changes.

4.5 Manage run scenarios

With this option, you can enter the meteorological data for all models except Caline 3 QHCR. For this model, the meteorological data have a different form and are entered by selecting **meteorological data** from the **model** menu.

To manage run scenarios:

1. Select **Manage run scenarios** from the **Model** menu. The following form appears:

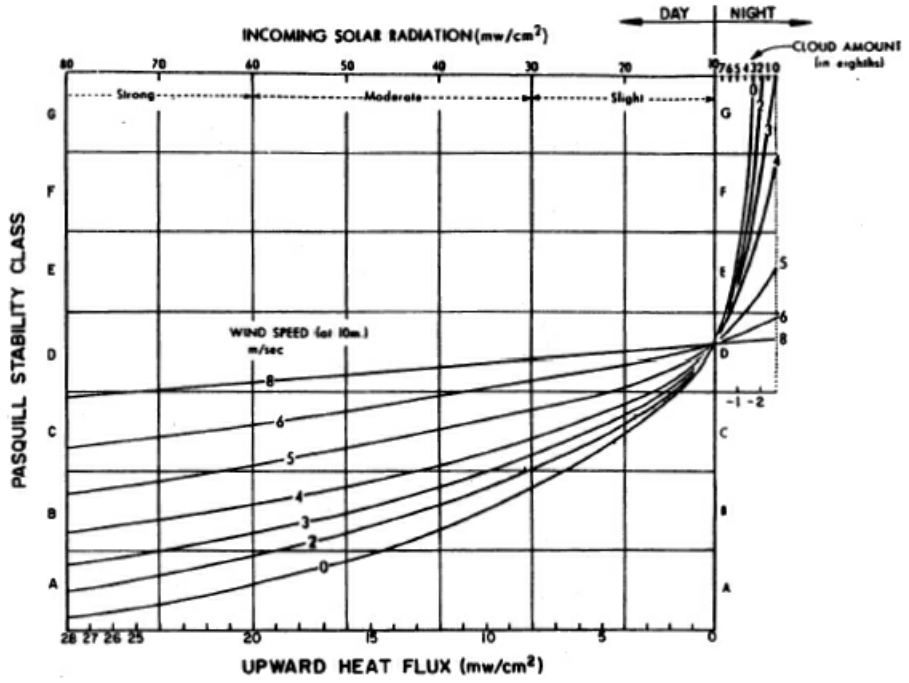


2. Make the appropriate changes.
3. Select **Ok** to save the changes and close the dialog box. Select **Cancel** to close the dialog box without saving any changes.

NOTE: At least one scenario is required.

To add a new scenario:

1. Select **Add.** A customized form will appear.
2. The data vary depending on the selected model. The following may be applicable:
   - **Name**: enter a unique name for the scenario.
   - **Wind speed**: enter the wind speed in m/s.
   - **Wind direction bearing**: the average (dominant) wind direction in degrees.
   - **Wind direction standard deviation**: enter the standard deviation for the wind direction, after having analyzed statistically the data.
   - **Atmospheric stability class**: select a class from A to F (or even G, in case of Caline 4 model) of the atmospheric stability class according to Pasquill (see the nomograph below).
   - **Mixing height**: enter the mixing height in m.
   - **Ambient temperature**: enter the ambient temperature in degrees Celsius.
   - **Variate Wind direction**: if selected then instead of using a single value for the wind direction, a range of values is used, i.e. wind direction = from (LB)x(DD) to (UB)x(DD):
     - **Wind direction increment angle** (DD): a value in the range of 0 to 360 degrees.
     - **Lower boundary multiplier** (LB): defines the lower boundary of the range.
     - **Upper boundary multiplier** (UB): defines the upper boundary of the range.



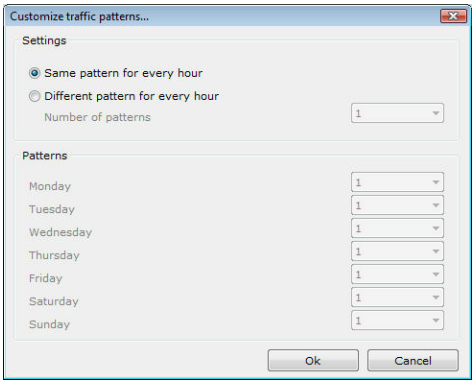
ATMOSPERIC STABILITY NOMOGRAPH (AFTER SMITH, 15)

4.6 Traffic patterns

With this option, you can select the traffic lights pattern. This option is available only when the selected model is Caline 3 QHCR.

To select the traffic lights pattern:

1. Select **Traffic patterns** from the **Model** menu. The following form appears:



2. Select whether the traffic pattern will be the same for every hour, or it will vary.
3. If more than one patterns are selected:
3.1. Select the number of patterns (from 1 to 7).
3.2. Select the pattern that will be applied for each day.
4. Select **Ok** to save the changes and close the dialog box. Select **Cancel** to close the dialog box without saving any changes.

NOTE: It is recommended that you select the traffic patterns prior to entering data regarding links and queues.

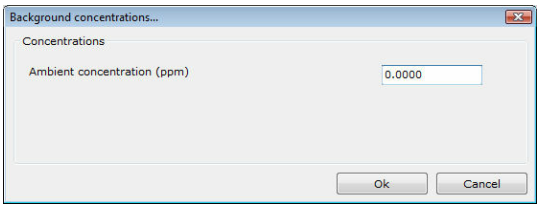
4.7 Background concentrations

4.7.1 General

With this option, you can enter the background concentration of the pollutant selected. This concentration is present regardless of the traffic and it is added to the effect of the traffic. It can be zero.

To enter the background concentration:

1. Select **Background concentration** from the **Model** menu. The following form appears:



2. Enter the **ambient concentration** in ppm.
3. Select **Ok** to save the changes and close the dialog box. Select **Cancel** to close the dialog box without saving any changes.

The above procedure is not applicable in the following cases:

A. If NO_2 is the selected pollutant and the selected model is Caline 4.
B. if Caline 3 QHCR is the selected model and one or more traffic patterns vary in

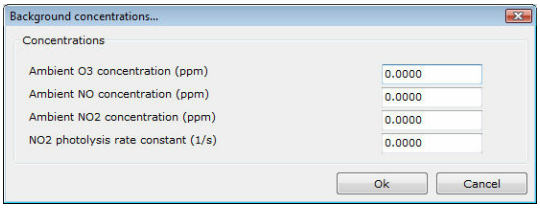
hourly basis.

These two special cases are described next.

4.7.2 Nitrogen dioxide concentration

If Caline 4 is the selected model and nitrogen dioxide is the selected pollutant then:

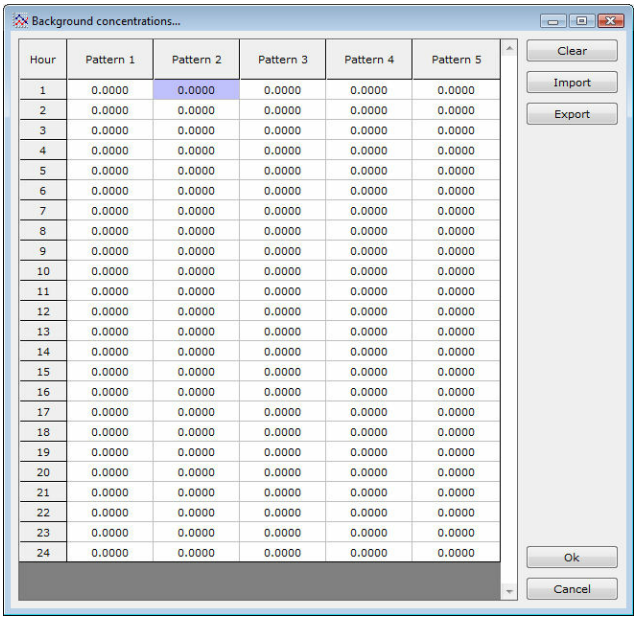
Enter the **ambient O_3 concentration** in ppm, the **ambient NO concentration** in ppm, the **ambient NO_2 concentration** in ppm and the **NO_2 photolysis rate constant** in 1/s.



4.7.3 Variable concenctration

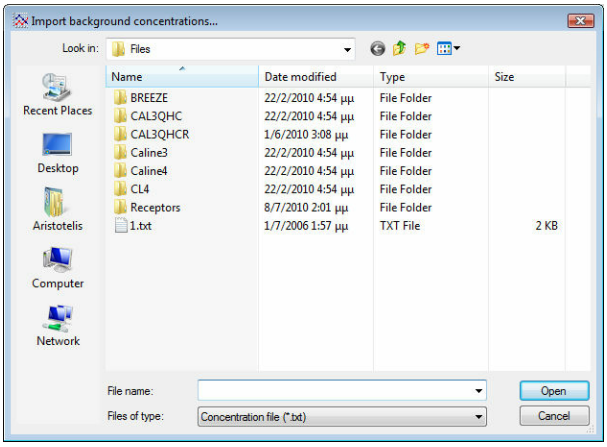
In case Caline 3 QHCR is the selected model and one or more traffic patterns vary then input of varying concentrations must be done in hourly basis per pattern. Therefore, 24 x (number of patterns) values are required. The values may be zero.

1. Enter the data by typing directly onto the grid.
2. Optionally, select the **Clear** button to clear all values.
3. Select **Ok** to save the changes and close the dialog box. Select **Cancel** to close the dialog box without saving any changes.



To import data from an external file:

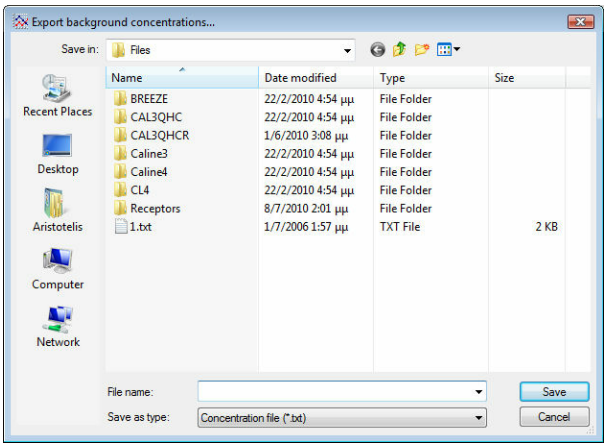
1. Select **Import**. The file selection dialog box appears:



2. Select the path of the file.
3. Select the file type from the **Files of type** drop-down list. The default option is "Concentration file" with the extension .txt.
4. Select the file by clicking on it.
5. Select **Open** to open the selected file. Existing data are erased. Select **Cancel** to cancel the operation.

To export the current data to a file:

1. Select **Export**. The file selection dialog box appears:



2. Select the path of the file.
3. Type the filename in the **File name** text box.
4. Select **Save** to save the project with the selected filename and path. Select **Cancel** to cancel the operation.

4.8 Meteorological data

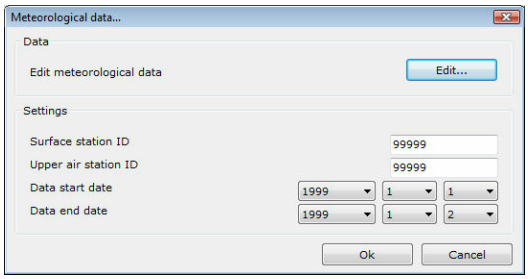
4.8.1 General

With this option, you can enter the meteorological data for Caline 3 QHCR model. For all other models, the meteorological data are entered by selecting **manage run**

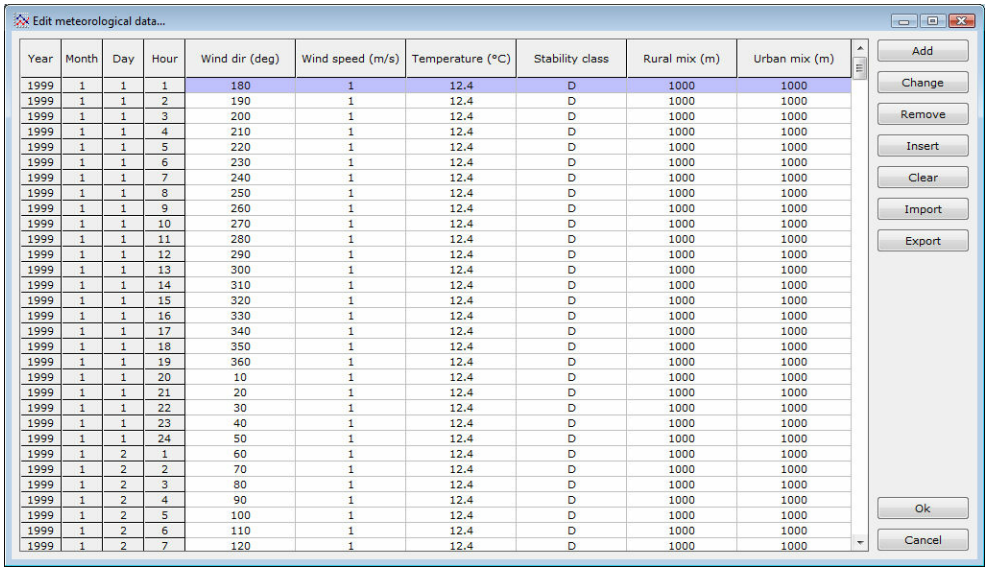
scenarios from the **Model** menu.

To enter the meteorological data for Caline 3 QHCR model:

1. Select **Meteorological data** from the **Model** menu. The following form appears:



2. Select **Edit** to enter the data. The following form appears:



- Select **Add** to add a new entry.
- Select **Change** to change an existing entry.
- Select **Remove** to delete the selected entry.
- Select **Insert** to insert an entry above the current entry.
- Select **Clear** to clear the data matrix.
- Select **Import** to import data from an external file.
- Select **Export** to export the current data to an external file.

3. Enter the **surface station ID**.
4. Enter the **upper air station ID**.
5. Select the **data start date**.
6. Select the **data end date**.
7. Select **Ok** to save the changes and close the dialog box. Select **Cancel** to close the dialog box without saving any changes.

NOTE:

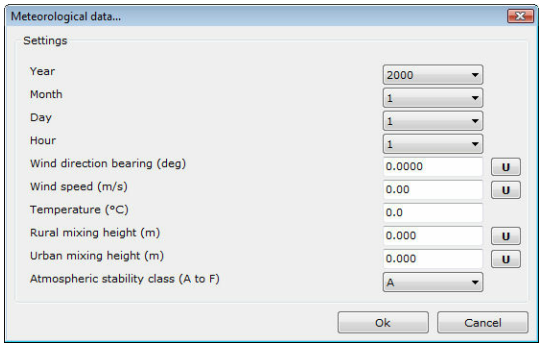
- Although it is not forbidden, it is recommended that you input data for one year at most.
- If you use more data, the analysis may take significantly longer.

4.8.2 Add

With this option, you can add an entry of meteorological data for Caline 3 QHCR model.

To add an entry of meteorological data for Caline 3 QHCR model:

1. Select **Add.** The following form appears:



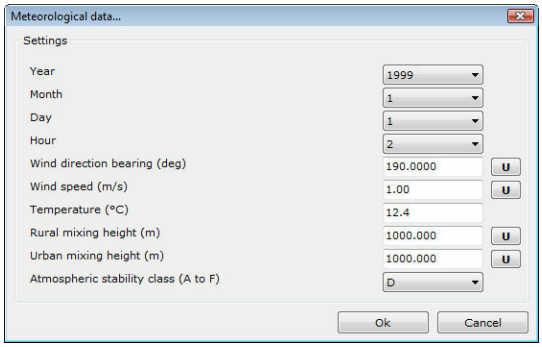
2. Select the **year, month, day** and **time** of the entry. This combination must be unique.
3. Enter the mean **wind direction bearing** in degrees.
4. Enter the mean **wind speed** in m/s.
5. Enter the mean ambient **temperature** in degrees Celsius.
6. Enter the **rural mixing height** in m, to be used when the site is characterized as rural.
7. Enter the **urban mixing height** in m, to be used when the site is characterized as urban.
8. Select the **atmospheric stability class** (from A to F) according to Pasquill.
9. Select **Ok** to save the changes and close the dialog box. Select **Cancel** to close the dialog box without saving any changes.

4.8.3 Change

With this option, you can modify an entry of meteorological data for Caline 3 QHCR model.

To modify an entry of meteorological data for Caline 3 QHCR model:

1. Select the entry from the list.
2. Select **Change.** The following form appears:



3. Make the appropriate changes.
4. Select **Ok** to save the changes and close the dialog box. Select **Cancel** to close the dialog box without saving any changes.

4.8.4 Remove

With this option, you can delete an entry of meteorological data for Caline 3 QHCR model.

To delete an entry of meteorological data for Caline 3 QHCR model:

1. Select the entry from the list.
2. Select **Remove.** You will be asked for confirmation only if you have selected to confirm deletions in the General preferences tab.
3. The entry is removed.

4.8.5 Insert

With this option, you can insert an entry of meteorological data for Caline 3 QHCR model.

To insert an entry of meteorological data for Caline 3 QHCR model:

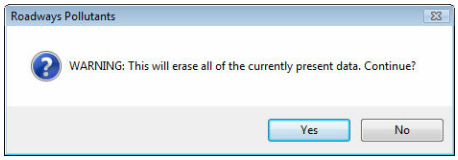
1. Select the entry above which you wish to insert a new entry.
2. Select **Insert.** The new entry form will appear.
3. Enter the data of the new entry.
4. Select **Ok** to save the changes and close the dialog box. Select **Cancel** to close the dialog box without saving any changes.

4.8.6 Clear

With this option, you can clear all entries of meteorological data for Caline 3 QHCR model.

To clear all entries of meteorological data for Caline 3 QHCR model:

1. Select **Clear**. A message will appear that requires confirmation of this action:



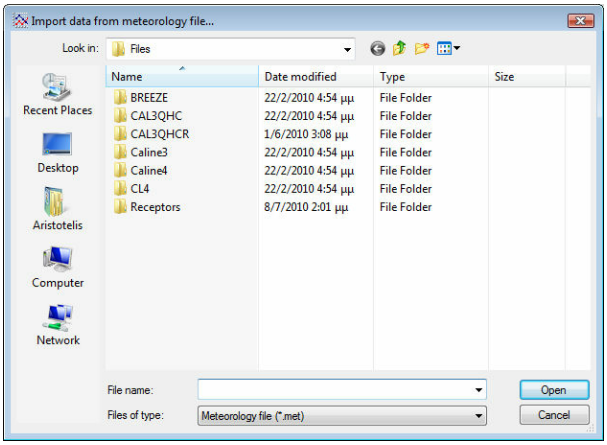
2. Select **Yes** to proceed. Select **No** to cancel the operation.

4.8.7 Import

With this option, you can import meteorological data for Caline 3 QHCR model from an external file.

To import meteorological data for Caline 3 QHCR model from an external file:

1. Select **Import**. The file selection dialog box appears:



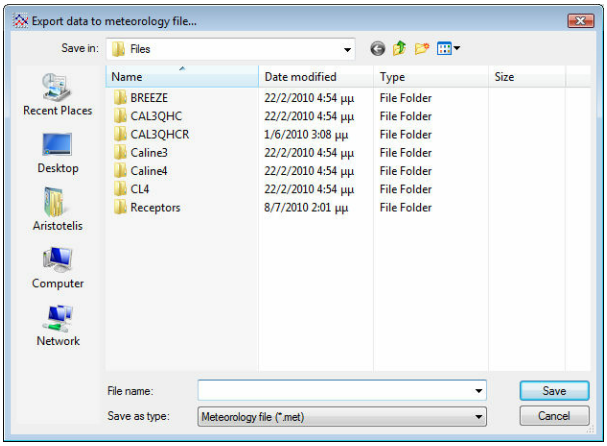
2. Select the path of the file.
3. Select the file type from the **Files of type** drop-down list. The default option is "Meteorology file" with the extension .txt.
4. Select the file by clicking on it.
5. Select **Open** to open the selected file. Existing data are erased. Select **Cancel** to cancel the operation.

4.8.8 Export

With this option, you can export the current meteorological data for Caline 3 QHCR model to an external file. This file can be imported at a later time.

To export the current meteorological data for Caline 3 QHCR model to an external file:

1. Select **Export**. The file selection dialog box appears:



2. Select the path of the file.
3. Type the filename in the **File name** text box.
4. Select **Save** to save the project with the selected filename and path. Select **Cancel** to cancel the operation.

Chapter

5 Map

5.1 Map menu

With this menu, you can modify the background map and pollution contours. In the **Map** menu you can select one of the following options:

- Background map
  - Import from DXF
  - Hide background map
  - Hide background text
  - Monochrome background map
  - Clear background map
- Background pictures
  - Add
  - Edit
  - Delete
- Object labels
  - Links
  - Queue links
  - Receptors
- Customize at grade links
- Customize bridge links
- Customize depressed links
- Customize fill links
- Customize parking lot links
- Customize queues
- Customize receptors
- Move objects

5.2 Background map

5.2.1 Import from DXF

With this option, you can create a background map from a DXF file. This option is also available from the **File > Import** menu and it is described in detail in the corresponding paragraph.

5.2.2 Hide background map

With this option, you can show or hide the background map. In general, the map is very helpful. However, if the map is very detailed, it may decrease the performance of the program.

To show or hide the background map:

1. Select **Background Map** from the **Map** menu.
2. Select **Hide background map** from the **Background Map** menu.
3. If the map is visible then it becomes hidden and a tick (✓) appears before the menu. In the opposite case, the tick is removed and the map becomes visible.

5.2.3 Hide background text

With this option, you can show or hide the text of the background map. Select this option if you only need the lines of the background map and you wish to increase the performance of the program.

To show or hide the text of the background map:

1. Select **Background Map** from the **Map** menu.
2. Select **Hide background text** from the **Background Map** menu.
3. If the text is visible then it becomes hidden and a tick (✓) appears before the menu. In the opposite case, the tick is removed and the text becomes visible.

5.2.4 Monochrome background map

With this option, you can use a gray color for all objects of the background map. Select this option for reasons of clarity, in the case there is confusion with the colors of other objects, such as links, queues and receptors.

To use a gray color for all objects of the background map:

1. Select **Background Map** from the **Map** menu.
2. Select **Monochrome background map** from the **Background Map** menu.
3. If the background map is in color then it becomes gray and a tick (✓) appears before the menu. In the opposite case, the tick is removed and the background map is drawn in color.

5.2.5 Clear background map

With this option, you can use a gray color for all objects of the background map. Select this option for reasons of clarity, in the case there is confusion with the colors of other objects, such as links, queues and receptors.

To use a gray color for all objects of the background map:

1. Select **Background Map** from the **Map** menu.
2. Select **Clear background map** from the **Background Map** menu.
3. The background map is removed.

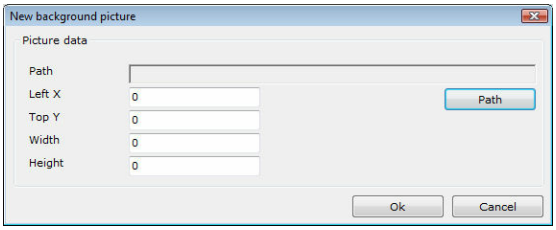
5.3 Background pictures

5.3.1 Add

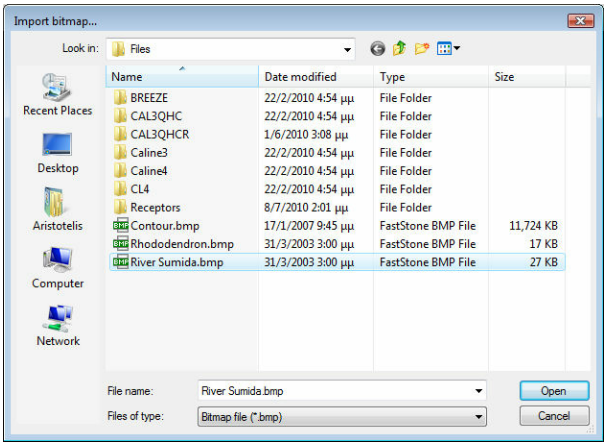
With this option, you can add a picture to the background.

To add a picture to the background:

1. Select **Background Pictures** from the **Map** menu.
2. Select **Add** from the **Background Pictures** menu. The following form will appear:



3. Select **Path.** The file selection dialog box will appear:



4. Select the path of the file.
5. Select the file type from the **Files of type** drop-down list. The default option is "Bitmap file" with the extension .bmp.
6. Select the file by clicking on it.
7. Select **Open** to open the selected file. Select **Cancel** to cancel the operation.
8. Enter the **Left X, Top Y, Width** and **Height** of the picture in drawing units. If you provide only the height or the width, the ratio of the source picture will be used to calculate the missing data.
9. Select **Ok** to save the changes and close the dialog box. Select **Cancel** to close the dialog box without saving any changes.

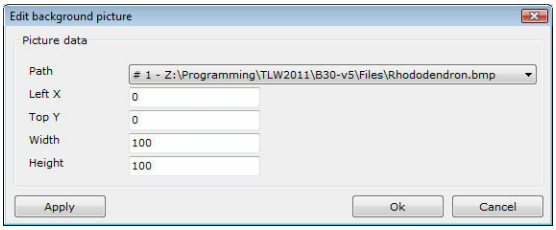
NOTE: The following image file types are supported: bitmaps (.bmp) and JPEG (.jpg).

5.3.2 Edit

With this option, you can modify the position and dimensions of an existing background picture.

To modify the position and dimensions of an existing background picture:

1. Select **Background Pictures** from the **Map** menu.
2. Select **Edit** from the **Background Pictures** menu. The following form will appear:



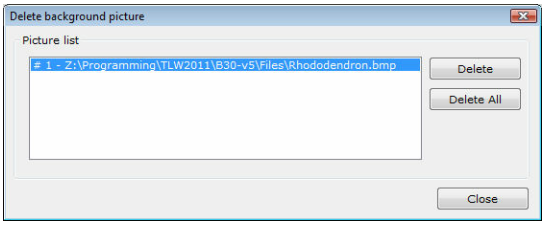
3. Select the picture from the drop-down list.
4. Make the appropriate changes. If you provide only the height or the width, the ratio of the source picture will be used to calculate the missing data.
5. Select **Apply** to apply the changes without closing the form. Select **Ok** to save the changes and close the dialog box. Select **Cancel** to close the dialog box without saving any changes.

5.3.3 Delete

With this option, you can delete one or more existing background pictures.

To delete one or more existing background pictures:

1. Select **Background Pictures** from the **Map** menu.
2. Select **Delete** from the **Background Pictures** menu. The following form will appear:



3. Select the picture from the list.
4. Select **Delete** to delete the selected picture.
5. Select **Delete all** to delete all pictures. You will be asked for confirmation only if you have selected to confirm deletions in the General preferences tab.
6. Select **Close** to close the dialog box.

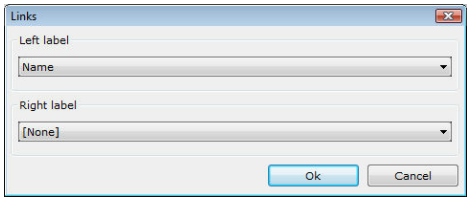
5.4 Object labels

5.4.1 Links

With this option, you can select and modify the labels of the links.

To select and modify the labels of the links:

1. Select **Object labels** from the **Map** menu.
2. Select **Links** from the **Object labels** menu. The following form will appear:



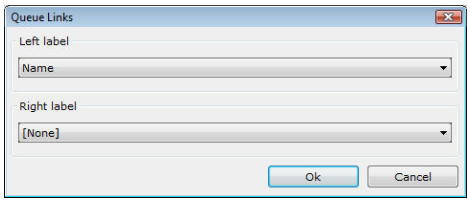
3. Select the left and right label separately by using the corresponding drop-down list. If you select [None] for both the left and right labels, labeling will be disabled for this object. Alternatively you may use only one of the two labels.
4. Select **Ok** to save the changes and close the dialog box. Select **Cancel** to close the dialog box without saving any changes.

5.4.2 Queue links

With this option, you can select and modify the labels of the queue links.

To select and modify the labels of the queue links:

1. Select **Object labels** from the **Map** menu.
2. Select **Queue Links** from the **Object labels** menu. The following form will appear:



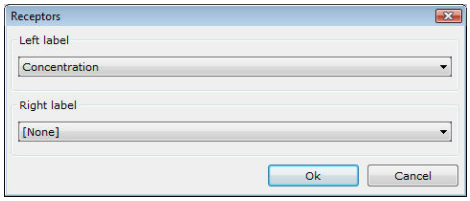
3. Select the left and right label separately by using the corresponding drop-down list. If you select [None] for both the left and right labels, labeling will be disabled for this object. Alternatively you may use only one of the two labels.
4. Select **Ok** to save the changes and close the dialog box. Select **Cancel** to close the dialog box without saving any changes.

5.4.3 Receptors

With this option, you can select and modify the labels of the receptors.

To select and modify the labels of the receptors:

1. Select **Object labels** from the **Map** menu.
2. Select **Receptors** from the **Object labels** menu. The following form will appear:



3. Select the left and right label separately by using the corresponding drop-down list.

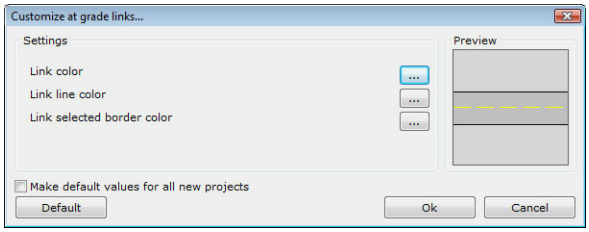
If you select [None] for both the left and right labels, labeling will be disabled for this object. Alternatively you may use only one of the two labels.
4. Select **Ok** to save the changes and close the dialog box. Select **Cancel** to close the dialog box without saving any changes.

5.5 Customize at grade links

With this option, you can modify the appearance of at-grade links.

To modify the appearance of at-grade links:

1. Select **Customize at grade links** from the **Map** menu. The following form will appear:



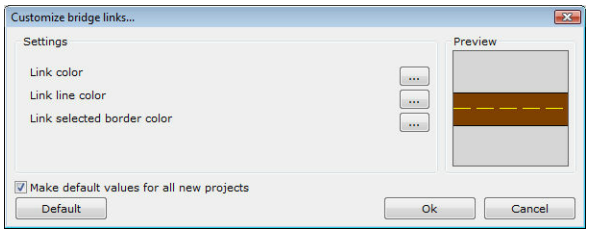
2. Select the link color by selecting the corresponding button with ellipses (...).
3. Select the link line color by selecting the corresponding button with ellipses (...).
4. Select the link border color for the selected objects by selecting the corresponding button with ellipses (...).
5. If you check **Make default values for all new projects** then these settings will be preselected for all new projects.
6. Select **Default** to restore the default values.
7. Select **Ok** to save the changes and close the dialog box. Select **Cancel** to close the dialog box without saving any changes.

5.6 Customize bridge links

With this option, you can modify the appearance of bridge links.

To modify the appearance of bridge links:

1. Select **Customize bridge links** from the **Map** menu. The following form will appear:



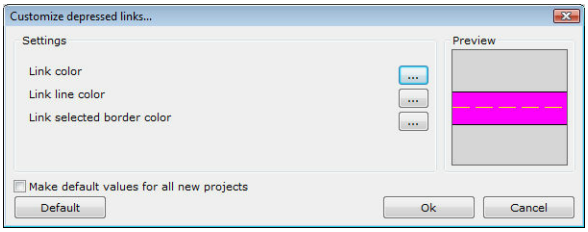
2. Select the link color by selecting the corresponding button with ellipses (...).
3. Select the link line color by selecting the corresponding button with ellipses (...).
4. Select the link border color for the selected objects by selecting the corresponding button with ellipses (...).
5. If you check **Make default values for all new projects** then these settings will be preselected for all new projects.
6. Select **Default** to restore the default values.
7. Select **Ok** to save the changes and close the dialog box. Select **Cancel** to close the dialog box without saving any changes.

5.7 Customize depressed links

With this option, you can modify the appearance of depressed links.

To modify the appearance of depressed links:

1. Select **Customize depressed links** from the **Map** menu. The following form will appear:



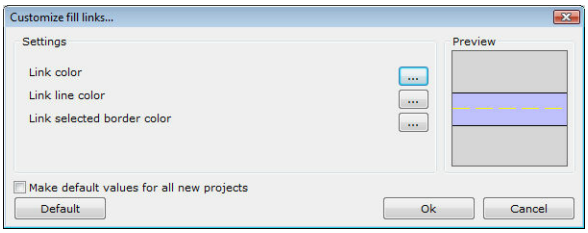
2. Select the link color by selecting the corresponding button with ellipses (...).
3. Select the link line color by selecting the corresponding button with ellipses (...).
4. Select the link border color for the selected objects by selecting the corresponding button with ellipses (...).
5. If you check **Make default values for all new projects** then these settings will be preselected for all new projects.
6. Select **Default** to restore the default values.
7. Select **Ok** to save the changes and close the dialog box. Select **Cancel** to close the dialog box without saving any changes.

5.8 Customize fill links

With this option, you can modify the appearance of fill links.

To modify the appearance of fill links:

1. Select **Customize fill links** from the **Map** menu. The following form will appear:



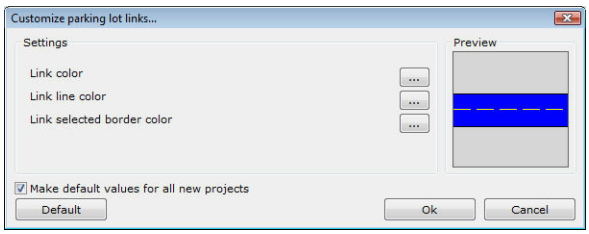
2. Select the link color by selecting the corresponding button with ellipses (...).
3. Select the link line color by selecting the corresponding button with ellipses (...).
4. Select the link border color for the selected objects by selecting the corresponding button with ellipses (...).
5. If you check **Make default values for all new projects** then these settings will be preselected for all new projects.
6. Select **Default** to restore the default values.
7. Select **Ok** to save the changes and close the dialog box. Select **Cancel** to close the dialog box without saving any changes.

5.9 Customize parking lot links

With this option, you can modify the appearance of parking lot links.

To modify the appearance of parking lot links:

1. Select **Customize parking lot links** from the **Map** menu. The following form will appear:



2. Select the link color by selecting the corresponding button with ellipses (...).
3. Select the link line color by selecting the corresponding button with ellipses (...).
4. Select the link border color for the selected objects by selecting the corresponding button with ellipses (...).
5. If you check **Make default values for all new projects** then these settings will be preselected for all new projects.
6. Select **Default** to restore the default values.
7. Select **Ok** to save the changes and close the dialog box. Select **Cancel** to close the dialog box without saving any changes.

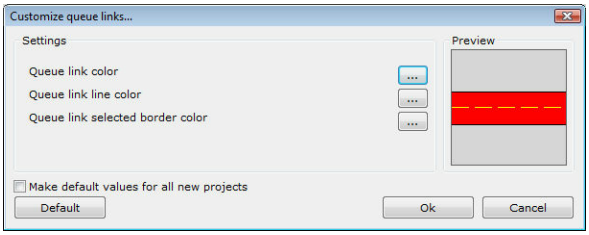
NOTE: Parking lot links are used only in the case of Caline 4 model.

5.10 Customize queues

With this option, you can modify the appearance of queues.

To modify the appearance of queues:

1. Select **Customize queues** from the **Map** menu. The following form will appear:



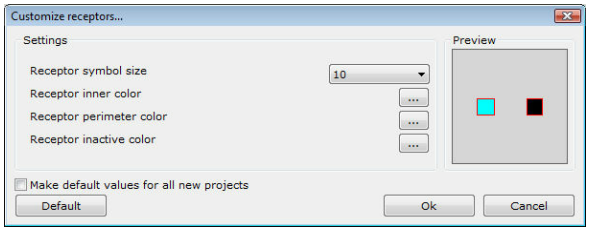
2. Select the queue color by selecting the corresponding button with ellipses (...).
3. Select the queue line color by selecting the corresponding button with ellipses (...).
4. Select the queue border color for the selected objects by selecting the corresponding button with ellipses (...).
5. If you check **Make default values for all new projects** then these settings will be preselected for all new projects.
6. Select **Default** to restore the default values.
7. Select **Ok** to save the changes and close the dialog box. Select **Cancel** to close the dialog box without saving any changes.

5.11 Customize receptors

With this option, you can modify the appearance of receptors.

To modify the appearance of receptors:

1. Select **Customize receptors** from the **Map** menu. The following form will appear:



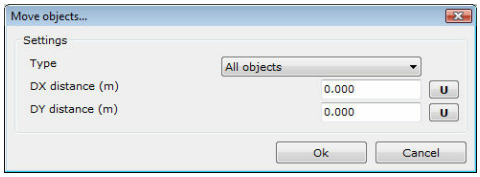
2. Select the symbol size by using the drop-down list.
2. Select the receptor inner color by selecting the corresponding button with ellipses (...).
3. Select the receptor perimeter color by selecting the corresponding button with ellipses (...).
4. Select the receptor inactive color by selecting the corresponding button with ellipses (...).
5. If you check **Make default values for all new projects** then these settings will be preselected for all new projects.
6. Select **Default** to restore the default values.
7. Select **Ok** to save the changes and close the dialog box. Select **Cancel** to close the dialog box without saving any changes.

5.12 Move objects

With this option, you can move all objects or the selected objects only.

To move all objects or the selected objects only:

1. Select **Move objects** from the **Map** menu. The following form will appear:



2. Select one of **All objects, Selected objects only** from the drop-down list. If no objects are selected, the second option is not available.
3. Enter the offset in the X and Y direction in m.
4. Select **Ok** to move the objects and close the dialog box. Select **Cancel** to close the dialog box without moving any objects.

Chapter

6 Results

6.1 Results menu

With this menu, you can perform calculations and view the results. In the **Results** menu you can select one of the following options:

- Perform calculations
- Results table
- Pollution contours
  - Create
  - Delete
  - Settings
- Pollution bitmap
  - Create
  - Delete
  - Bring to front
  - Send to back

6.2 Perform calculations

With this option, you can perform calculations. The results are displayed in the main form.

To perform calculations:

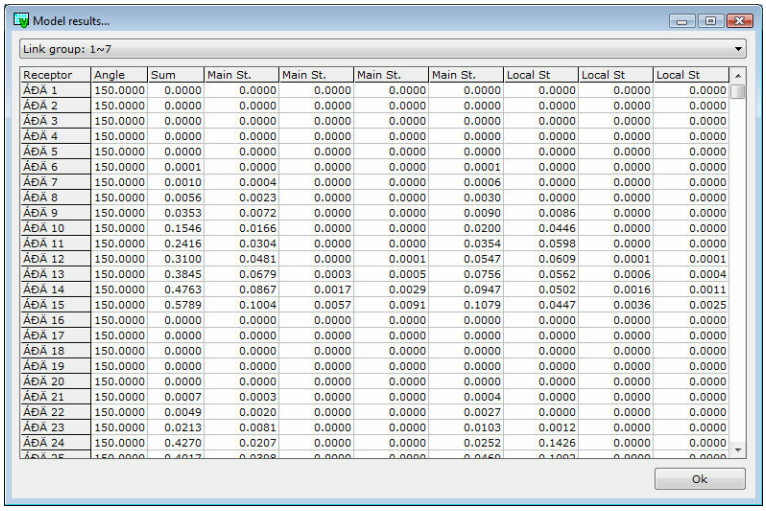
1. Select **Perform calculations** from the **Results** menu.
2. The calculations are performed.

6.3 Results table

With this option, you can view a table containing the results.

To view the results table:

1. Select **Results table** from the **Results** menu.
2. Click **Ok** to close the form.



6.4 Pollution contours

6.4.1 Create

A pollution contour is created based on the results from the calculations. It is obvious that this function will not be available until the calculations are performed. Before you create the pollution contours, you may want to change the settings of this operation.

To create pollution contours:

1. Perform the calculations.
2. Select **Pollution contour** from the **Map** menu.
2. Select **Create** from the **Pollution contour** menu.
4. The pollution contour is generated.

NOTE: The pollution contour requires many receptors in order to be meaningful. The best method is to use a receptor grid.

6.4.2 Delete

With this option, you can delete the existing pollution contour.

To delete the existing pollution contour:

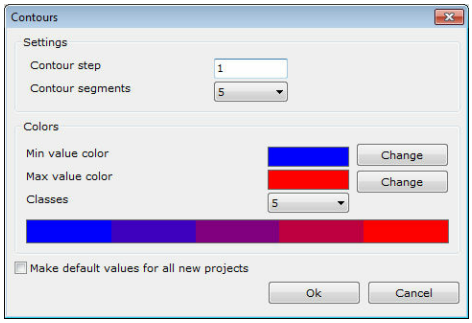
1. Select **Pollution contour** from the **Map** menu.
2. Select **Delete** from the **Pollution contour** menu. You will be asked for confirmation only if you have selected to confirm deletions in the General preferences tab.
3. The contour is deleted.

6.4.3 Settings

With this option, you can change several parameters that will affect the computation and design of the pollution contours. These settings will have effect if invoked prior to generating the pollution contours.

To adjust the settings of the pollution contours:

1. Select **Pollution contour** from the **Map** menu.
2. Select **Settings** from the **Pollution contour** menu. The following form will appear:



3. Enter the z-step of the contours.
4. Select the contour segments (smooth factor) from the drop down list. Bigger values will produce smoother contours but will take longer to compute.
5. Select the colors corresponding to the maximum and minimum values. Also select the color classes.
6. If you check **Make default values for all new projects** then these settings will be preselected for all new projects.
7. Select **Ok** to save the changes and close the dialog box. Select **Cancel** to close the dialog box without saving any changes.

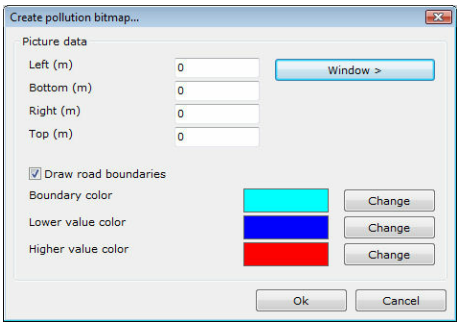
6.5 Pollution bitmap

6.5.1 Create

With this option, you can create a pollution bitmap. This option is available only when calculations have been completed successfully.

To create a pollution bitmap:

1. Select **Pollution bitmap** from the **Results** menu.
2. Select **Create** from the **Pollution bitmap** menu. The following form will appear:



3. Enter the position and dimensions of the bitmap in drawing units. Alternatively, select **Window** to manually select a custom window on the plane view.
4. Check **Draw road boundaries** if you wish to include the road boundaries in the bitmap.

5. Select the color of the road boundaries and the minimum and maximum values of pollutant concentrations by using the corresponding command button.
6. Select **Ok** to create the bitmap and close the dialog box. Select **Cancel** to close the dialog box without creating the bitmap.

NOTE: The pollution contour requires many receptors in order to be meaningful. The best method is to use a receptor grid.

6.5.2 Delete

With this option, you can delete the existing pollution bitmap.

To delete the existing pollution bitmap:

1. Select **Pollution bitmap** from the **Map** menu.
2. Select **Delete** from the **Pollution bitmap** menu. You will be asked for confirmation only if you have selected to confirm deletions in the General preferences tab.
3. The bitmap is deleted.

6.5.3 Bring to front

With this option, you can bring the pollution bitmap to the front, so that it can be fully visible.

To bring the pollution bitmap to the front:

1. Select **Pollution bitmap** from the **Map** menu.
2. Select **Bring to front** from the **Pollution bitmap** menu. The pollution bitmap is brought to front.

6.5.4 Send to back

With this option, you can send the pollution bitmap to the back, so that it does not hide other objects.

To send the pollution bitmap to the back:

1. Select **Pollution bitmap** from the **Map** menu.
2. Select **Send to back** from the **Pollution bitmap** menu. The pollution **bitmap** is sent to back.

Chapter

7 Help

7.1 Help menu

In the **Help** menu you can select one of the following options:

- Contents
- User guide
- Tutorials
- Tip of the day
- Unit conversion
- TechnoLogismiki website
- Buy products
- TechnoLogismiki NOMOS
- TechnoLogismiki Live!
- About the program

7.2 Contents

With this option, you can access the online help which contains detailed information regarding the usage of the program.

To view the online help:

1. Click **Contents** from the **Help** menu.
2. The online help appears.

NOTE: If an error message appears then the online help has not been installed. You can install the online help from the installation CD or the Internet.

7.3 User guide

With this option, you can access the user guide which contains detailed information regarding the usage of the program.

To view the user guide:

1. Click **User Guide** from the **Help** menu.
2. The user guide appears.

NOTE: If an error message appears then the online help has not been installed. You can install the online help from the installation CD or the Internet.

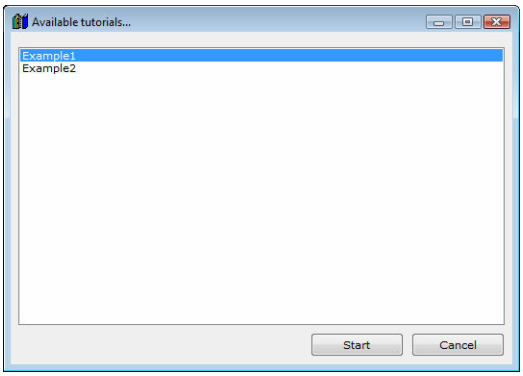
NOTE: Adobe Acrobat Reader or a similar program that can display pdf files is required in order to view or print the user guide.

7.4 Tutorials

With this option, you can access the tutorials of the program. The tutorials are step-by-step examples that allow you to decrease the learning cycle of the programs dramatically.

To access the tutorials:

1. Click **Tutorials** from the **Help** menu.
2. The tutorial selection dialog box appears.
2. Select the appropriate tutorial and click **Start** to proceed. Click **Cancel** to close the dialog box.



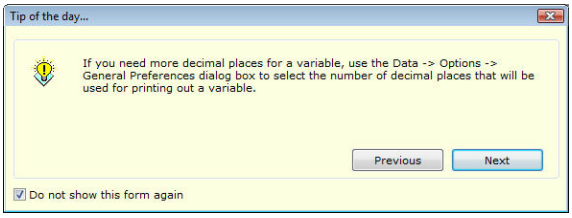
NOTE: The number and content of the tutorials is changed frequently. Use the live update system of TechnoLogismiki's products to download the latest tutorials.

7.5 Tip of the day

With this option, you can access the tip database of the program. The tips are short guidelines regarding the usage of the programs which may be of great help to the user.

To access the tips:

1. Click **Tip of the day** from the **Help** menu.
2. The tip of the day form appears.
3. Check **Do not show this form again** to prevent the program from showing the tip of the day when starting. Press the **Previous/Next** buttons to browse all available tips.
4. Press **Esc** to close the form.



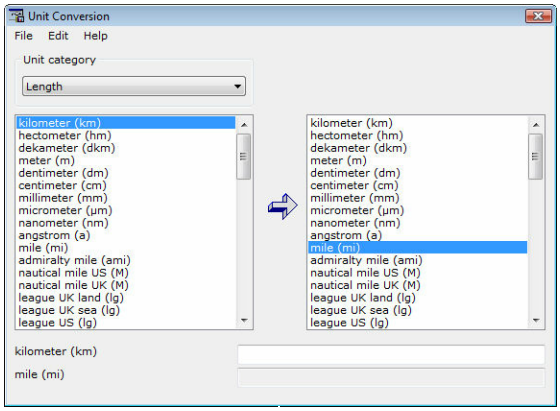
NOTE: The number and content of the tips is changed frequently. Use the live update system of TechnoLogismiki's products to download the latest tips.

7.6 Unit conversion

With this option, you can access the unit conversion tool. You can find more information about its usage in its help system.

To launch the unit conversion tool:

1. Click **Unit conversion** from the **Help** menu.
2. The unit conversion tool is launched.



NOTE: If an error message appears then the unit conversion tool has not been installed. You can install the unit conversion tool from the installation CD or the Internet.

7.7 TechnoLogismiki website

With this option, you can load on your Internet browser the website of TechnoLogismiki's.

7.8 Buy products

With this option, you can load on your Internet browser the main product page of TechnoLogismiki's website.

7.9 TechnoLogismiki NOMOS

With this option, you can load on your Internet browser the **NOMOS** service of Technologismiki.

7.10 TechnoLogismiki Live!

With this option, you can load on your Internet browser the **Live!** service of Technologismiki.

7.11 About the program

With this option, a form containing the name, version and licence information of the program appears.

To show this form:

1. From the **Help** menu, select **About the program**.
2. The form appears.
3. Click anywhere on the form or hit ESC to close the form.

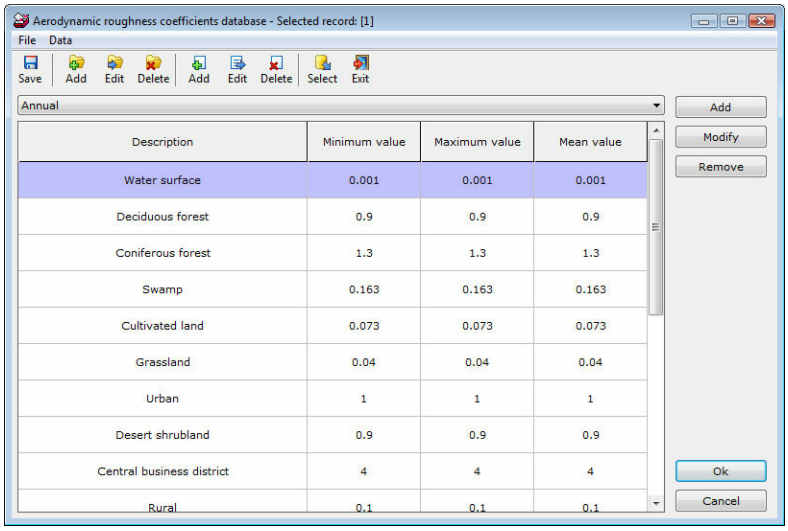
Chapter VIII

8 Databases

8.1 Aerodynamic roughness coefficient

For your convenience, a fully customizable aerodynamic roughness coefficient database is embedded in the program. The database is invoked in various cases within the program. By selecting an appropriate record and clicking **Ok**, the data is transferred to the corresponding fields. Select **Cancel** to close the database without transferring any data.

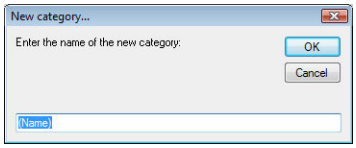
You will be asked to confirm any changes you have made to the database when exiting. The changes will be instantly available to other programs using the same database.



The database consists of several categories.

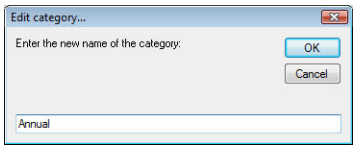
To add a new category:

1. Select **Add category** from the **Data** menu.
2. Type the name of the category in the text box. The name of the category must be unique.
3. Select **Ok** to add the category at the end of the list. Select **Cancel** to cancel the procedure.



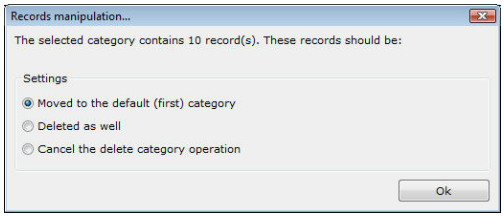
To modify the name of an existing category:

1. Click **Modify** to open the modify category dialog box.
2. Type the name of the category in the text box. The name of the category must be unique.
3. Click **Ok** to save the changes and close the dialog box. Click **Cancel** to close the dialog box without saving the changes.



To remove an existing category:

1. Select the category you wish to remove from the drop-down list.
2. Click **Remove** to remove the category. You will be asked to confirm the deletion.
3. Select Yes to proceed with the deletion. Select No to cancel the deletion.
4. If the category contains records, then the following dialog box appears:

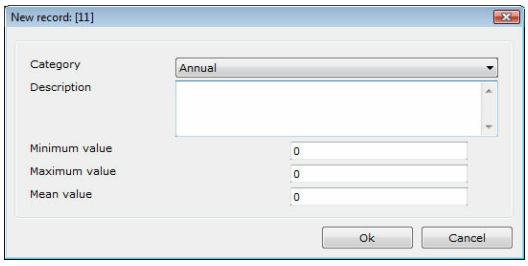


4.1. Select the first option to move the records of the category to the default (first category).
4.2. Select the second option to delete the records.
4.3. Select the third option to cancel the deletion.
5. Click **Ok** to proceed.

NOTE: The database must contain at least one category.

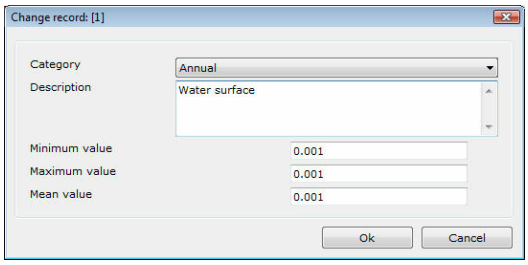
To add a new record:

1. Click **Add** to open the new record dialog box.
2. Select the category of the new record from the drop-down list.
3. Type the description of the record. This field is required.
4. Enter the minimum, maximum and mean value of the friction.
5. Click **Ok** to close the dialog box and add a new record at the end of the list. Click **Cancel** to close the dialog box without making any changes.



To modify an existing record:

1. Click **Modify** to open the modify record dialog box.
2. Make the appropriate changes.
3. Click **Ok** to save the changes and close the dialog box. Click **Cancel** to close the dialog box without saving the changes.



To remove an existing record:

1. Select the record you wish to remove.
2. Click **Remove** to remove the record. You will be asked to confirm the deletion.
3. Select Yes to proceed with the deletion. Select No to cancel the deletion.

Keyword index

- D -

- E -

- F -

- G -

- H -

- I -

- L -

- M -

- N -

- O -

- P -

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- V -

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