QC-TOOL

USER'S GUIDE

EIKON TECHNOLOGIES LTD

2025

for

Windows 11,10,8.1,7 and Vista

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Getting Started

What is QCTool

QCTool provides you with an efficient means of data quality control prior to advanced processing and interpretation. It is not confined to a special type of data and can be used in any scientific field where data analyses and handling are involved. It offersthree modes of data display - tables, grids and plots, which, being interrelated, make the cumbersome job of data checking and editing as easy as a click of the mouse

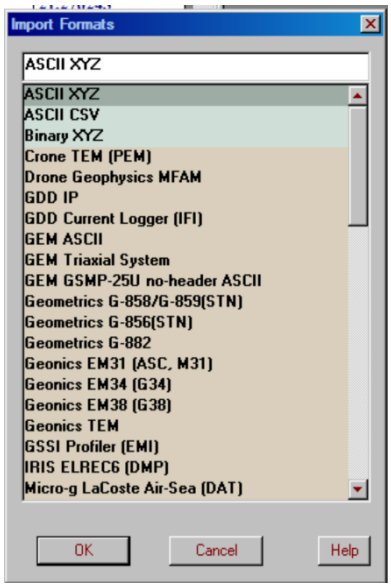
Terms (Notational Conventions)

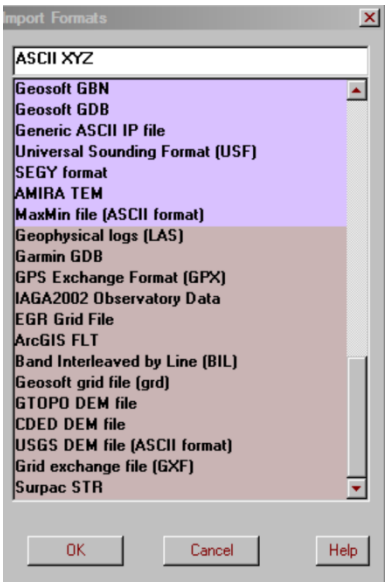
Point	a row of a table (a single data point sample with N associated data channels) more commonly termed a record in a data file
Channel	data representing the same characteristic and forming a column of a table
Line	a data subset in a sequence of measurements represented in a spreadsheet within the file
Fiducial Channel	a channel containing reference information (time of measurement, etc.) arranged in a certain order; as a result each **point** has its own fiducial, an index to be utilized as a basisfor merging different data sets (files)
Grid	a 2D array of data points
Interpolation	the process of estimating data at the vertex of a **grid** based on the data collected at irregular datapoints

Importing Data

How to Import Data to QCTool

1. Select **File/Import File**. The **Import Formats** dialog appears, allowing wide variety of formats:





2. Select a required format and click **OK**. In the Windows-style **Import File** dialog to open, browse for the file to import.

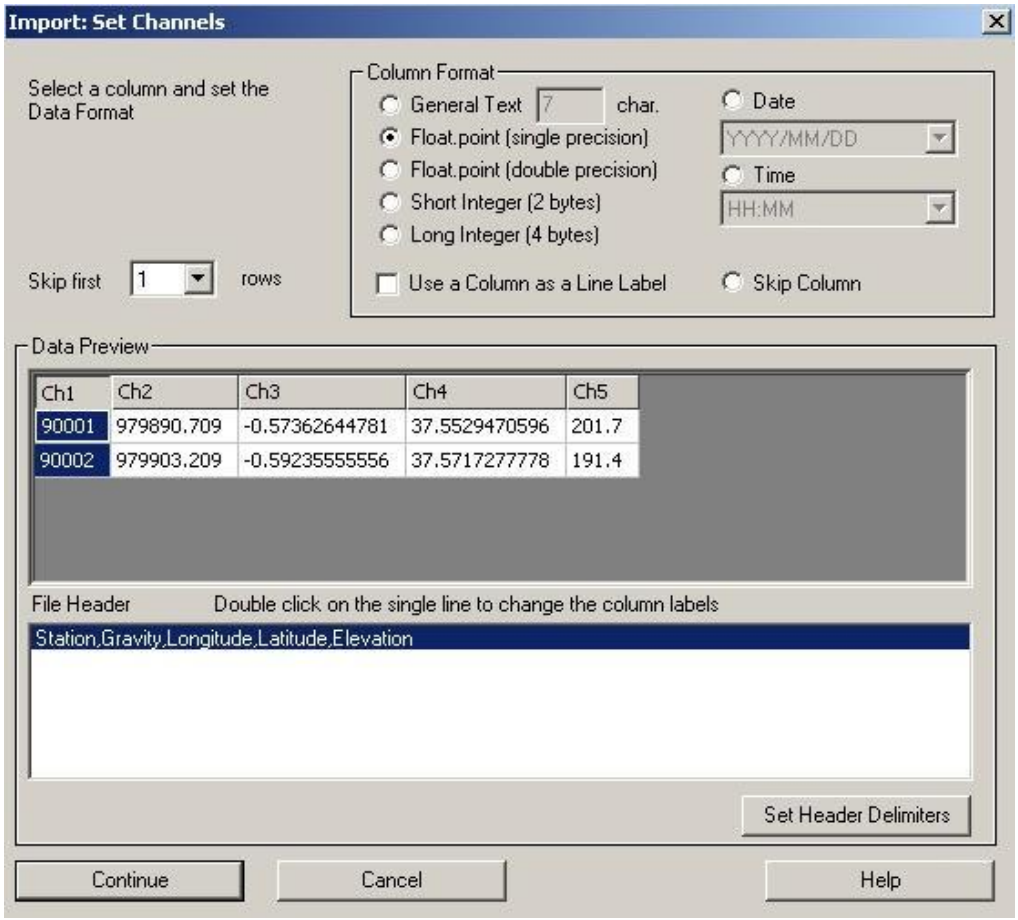
   QCTool permits import of the following data formats:

   - ASCII XYZ(.txt, .xyz,.dat)
   - ASCII CVS(.cvs)
   - Binary XYZ
   - GDD, GEM, Geomtetrics, Geonics, GSSI
   - IRIS, Micro-g, Phoenix, SeaSPY, Zonge, Scintrex
   - EDI, TBL, USF, AMIRA, LAS
   - Geosoft GBN, GDB
   - GARMIN, GPX, IAGA, BIL
   - GTOPO, CDED, USGS DEM,
   - GXF, SURPAC,

3. **Save As** dialog, offering you to save your file as a .qctfile. You can leave the old name of your file or, if desired, rename it.
4. Click **OK** to import.

ASCII Columnar Format

If you are importing the ASCII data, the **Import: Set Channels** dialog appears:



To specify the header line

If a file of data to be imported has a single-line header, the latter is automatically displayed as a header in the **Data Preview** table.

If the initial header consists of two or more lines, each column in the **Data Preview** table is assigned a consequent number (Ch1, Ch2 and so on), whereas the **File Header** field below offers a number of choices.

- Select a header line (preceded by a slash /) in the **File Header** field.

The standard delimiters between columns are a space, a comma, and a tab. If this is the case, skip this paragraph and go to the next step. If you have a different delimiter in your initial file, click the **Set Header Delimiters** button to open the **Delimiters** dialog. Check the **Other** box and specify the kind of the delimiter used in the now active field to the right.

- Double-click the selected header line to incorporate it into the table. A message asks you to confirm the replacement.
- Click **OK** to confirm.

If the **File Header** field does not contain any items, it means that the first line of the file to import is not marked as a comment line (preceded by a slash "/"). In this case:

- If you have one first line, select 1 from the **Skip first rows** dropdown list above the **Data Preview** table. If you have two or more first lines, select the respective number. This removes the first line(s) from the table and places it (them) in the **File Header** field.
- In **File Header** field, double-click a required line to insert it as a header in the **Data Preview** table.
- Click **OK** in the confirmation dialog to appear.

To specify the format of data to import

You can specify the format of each column of your data:

- Select a column in the **Data Preview** table of the dialog. Note that the table contains only a portion of the data to be imported (about 20 rows).

In the **Column Format** section:

- Select the **General Text** button if a column contains text.

The box to the right shows an automatically estimated maximum number of characters per row in this column. Since the estimation is based on the portion of data displayed in the **Data Preview** table, you probably will want to edit it. For example, your data set contains 10,000 points with record numbers from 1 to 10000. The **Data Preview** table displays only 20 first rows with record numbers not exceeding 2 characters. As a result, the **General Text** box contains a 2-character estimate. To provide for your 5-character data, change 2 to 5.

- If your data contains date or time and you want to edit its format, click on the header of the respective column, turn the **Date** or **Time** button on and select the required format from the dropdown list.
- Select **Skip Column** to remove a column from further processing. This option is especially convenient when a column contains text and there is no point to subject it to processing.
- Select between the single- (4-bite) and double- (8-bite) precision and between a short (2-bite) and long (4-bite) integer.
- Repeat the same procedure for other columns.
- Check the **Use a Column as a Line Label** box to have a separate table for each data subset, or line .

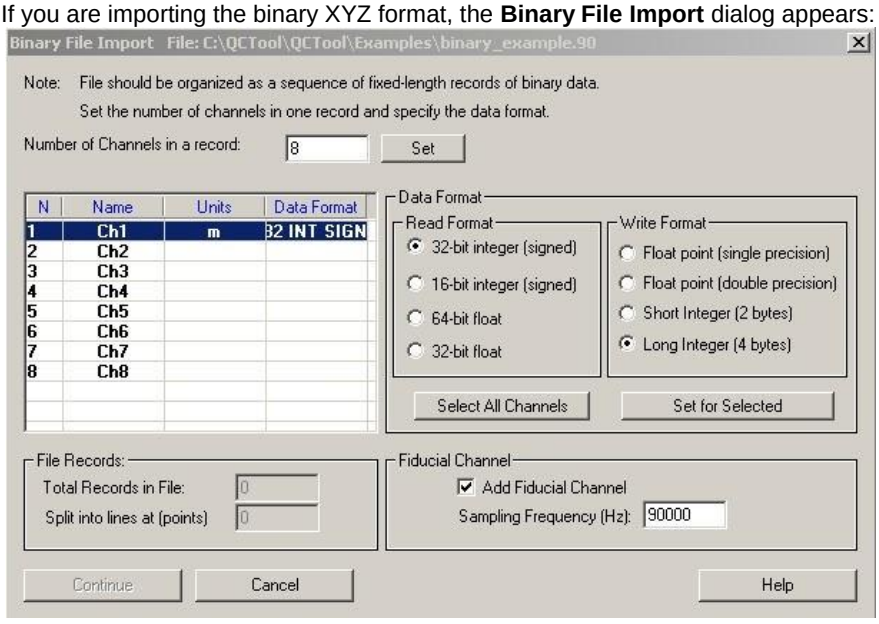
It applies if every row of your initial data contains a line number. In this case all line numbers are imported into a separate column. If you select **Skip Column** to remove it from the table, QC Tool will still use information from this column to perform the subdivision by lines. ***Note****. Currently, this subdivision is possible only if lines in your initial file are identified by the word LINE .*

All above steps performed, click **Continue** to complete data import.

***Note*.** The format adjustments will show only after import.

Binary XYZ Format

If you are importing the binary XYZ format, the **Binary File Import** dialog appears:



- Specify the number of channels in a record in the box at the top of the dialog and click **Set**.

The table below and the **Data Format** section become active.

- Click on the cell in the **Name** column of the table to enter the name of the channel and on the cell in the **Units** column to enter the units of measurement.
- In the **Read Format** section, select between the four options, 16-bit integer, 32-bit integer, 32-bit float, and 64-bit float. The **Write Format** section changes accordingly.
- Click **Set for Selected** to insert the data format in the selected row of the table

OR

- Click **Select All Channels** to select the whole table and then **Set for Selected** to add the same data format to all rows.

All channels having been specified, the **File Records** section in the bottom left-hand corner of the dialog becomes active.

- In this section, check the total number of records in your file and specify, if required, an interval to be used to cut your data into lines.
- In the **Fiducial Channel** section, leave the **Fiducial Channel** box checked to add this channel to your table and insert the value of sampling frequency in the respective field. This sampling frequency could represent any quantity to be used to number or order the data. For example, if the sampling frequency were set to be 1 then the Fiducial would simply be the record number. As pointed out in the Terms section, an important purpose of this channel is to provide basis for merging different data sets.
- Click **Continue** to complete data import.

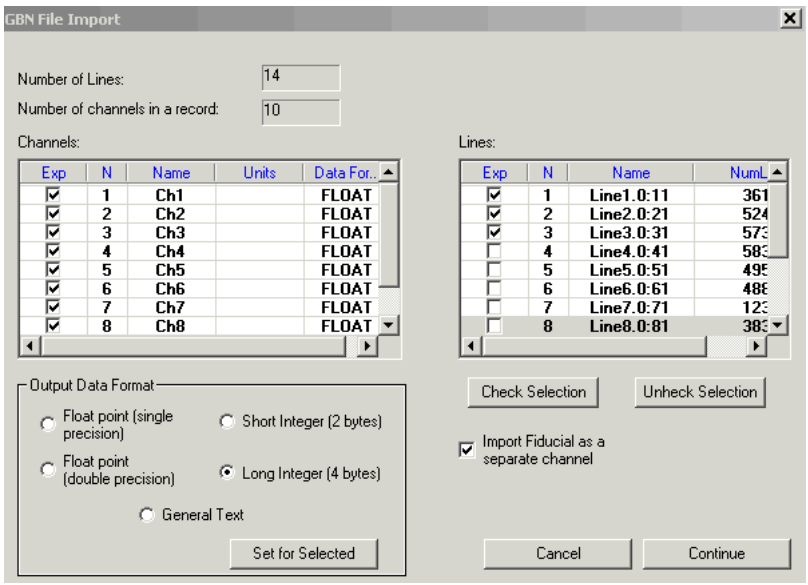
Geosoft GBN,GDB file import

- Select **File/Import** on the QCTool menu. The **Import Formats** dialog appears.
- From this dialog, select **Geosoft GDB/GBN** and click **OK**. In the **Import file** dialog to appear, browse for a required *.gbn/.gdb file and click **Open**.

  The standard Windows-style **Save As** dialog opens, offering you to save your *.gbn file in the *.qct format.

  - Click **OK**.

  The **GDB/GBN File Import** dialog that appears contains general information on your file - the number of lines and the number of channels in a record. The left-hand table below shows all the channels available in your file; the right-hand table showsall the lines available in your file.

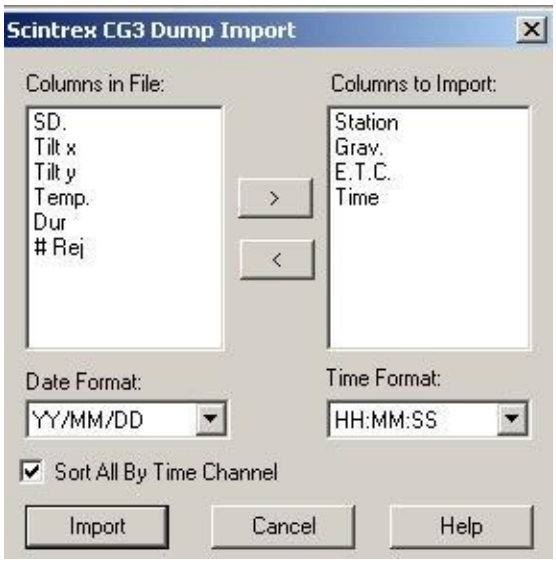


- Select or deselect the channels to import in the **Channels** table. You can do it manually by checking or clearing the boxes in the **Exp** column. Or, you can select one or more channels at a time and use the **Check Selection** and **Uncheck Selection** buttons in the right-hand part of the dialog.
- Specify the output data format for each channel in the respective section. Click on a channel in the table, select a required option from the five available formats below and click **Set for Selected**.
- Select or deselect the lines to import in the **Lines** table. You can do it manually by checking or clearing the boxes in the **Exp** column. Or, you can select one or more channels at a time and use the **Check Selection** and **Uncheck Selection** buttons under the table.
- Check the **Import Fiducial as a separate channel** to provide the respective operation in case your file contains an appropriately ordered column.
- Click **Continue** to complete import into QCTool.

INSTRUMENT MANUFACTURER'S FORMAT EXAMPLES

Scintrex CG3 Dump Format

On selecting **Scintrex CG3 Dump** in the **Import Formats** dialog (see How to Import Data), the **Scintrex CG3 Dump Import** dialog appears:



- In the **Columns in File** field, select columns that you want to import and click the > button. The selected columns will appear in the **Columns to Import** field. To remove a column from the **Columns to Import** field, select this column and click the < button.
- Select a required date and time format from the respective dropdown lists below.
- Leave the **Sort All by Time Channel** box selected to sort your data by time in ascending order. If you de-select this box, you data will appear in the same order as in the raw file.
- Click **Import**.
-

Working With Tables

Tables Overview

Import completed or an existing *.qct file opened, a spreadsheet-like three-dimensional table appears containing data in the format you specified (see How to Import Data to QCTool). This table has depth and can be divided into as many smaller tables as the number of data subsets, or lines , in the initial file. They can be further subdivided inside the application. You may also have a version that allows merging of these subsets or lines . The links between the tables differ from those used in similar applications, like Excel, since QCTool provides a very strict data structuring. The tables, numerous as they may be in a file, all have the same data structure and, therefore, are easy to shuffle through and to work within.

See Also

Change the Format of Data

Change the Colour and Font of your Spreadsheet

Copy and Paste Data in your Spreadsheet

Rename a Column Header

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Delete/Restore a Column

Calculate/Recalculate a Channel, Create Row Indices

View the Channel Statistics

Delete a Single Value

Delete/Restore a Point (a Row)

Delete/Restore a Line (a Table)

Remove Outliers

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Merge Lines

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To change the format of data

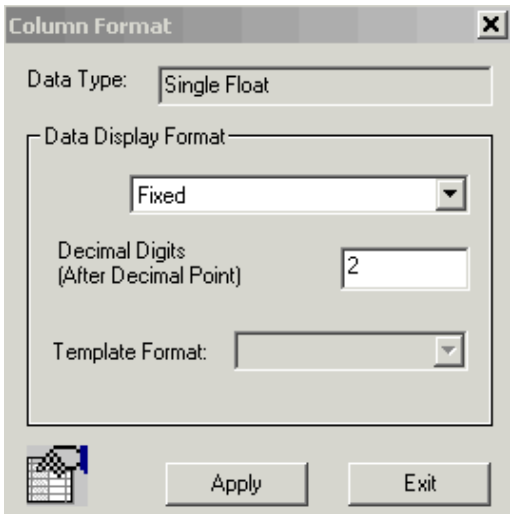
Although you specified the format of your data before import, you may decide to change it during your further work. You can easily do this right from the table.

- Click on the header of the column, the format of which you want to change, and select the **Column Format** button  in the second row of the QC toolbar that is available when you work with spreadsheets

OR

- Right-click on the column header and select **Column Format** from the popup menu to appear.

The **Column Format** dialog appears:

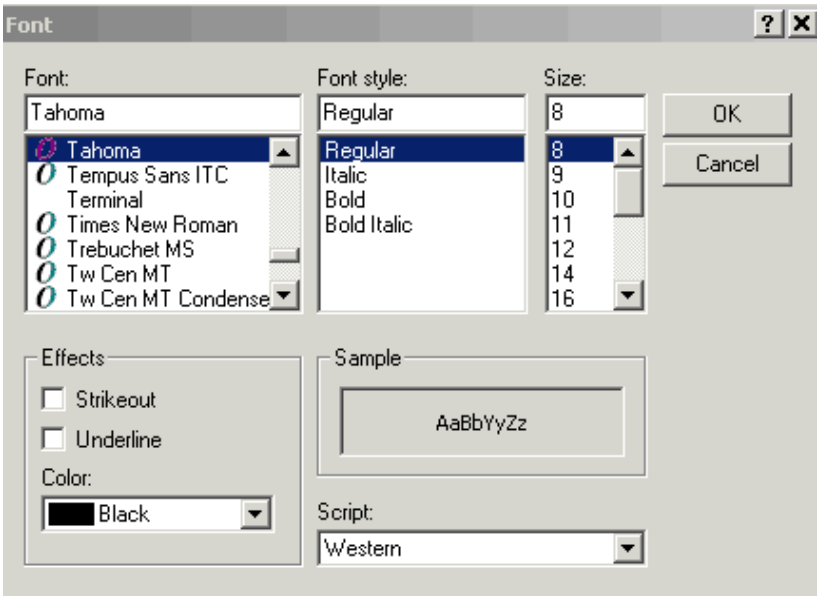


In the **Data Display Format** section of the dialog:

- Select a required format from the dropdown list. For single- or double-precision data, you have the **Fixed** and **Scientific** options. If your data represent **Date** or **Time**, select one or the other from this list. This activates the **Template Format** menu which, depending on your selection, will offer you various formats of date and time.
- Specify the number of digits after the decimal point in the respective box.
- Click **Apply**.

To change the colour and font of your spreadsheet

Select **View/Spreadsheet Font** on the QCTool menu. The standard **Font** dialog opens:



Make your adjustments as required and click **OK**. The changes will apply to the entire spreadsheet. Being saved in your computer, the settings will remain the same even if you switch to another line/data set or close QCTool and open it again.

To copy and paste data in your spreadsheet

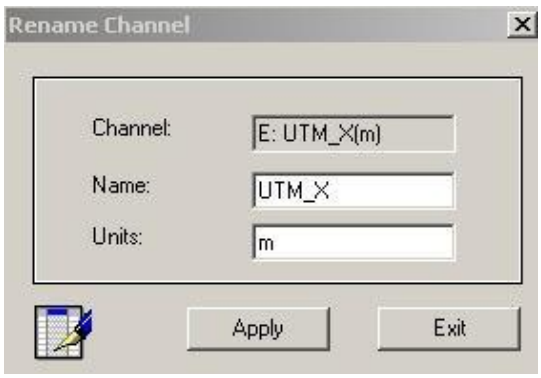
The **Copy** and **Paste** functionalities are similar to those available in all like applications.

- Select the cells/rows/columns you want to copy and click the **Copy** button on the QC toolbar (or press Ctrl+C).
- Place the cursor where you want your data to appear and click the **Paste** button on the toolbar (or press Ctrl+V).

Note. In this version, the Undo button is not available, and you have to delete the pasted data (see Delete a Single Value, Delete a Point (a Row), Delete/Restore a Column).

To rename a column header

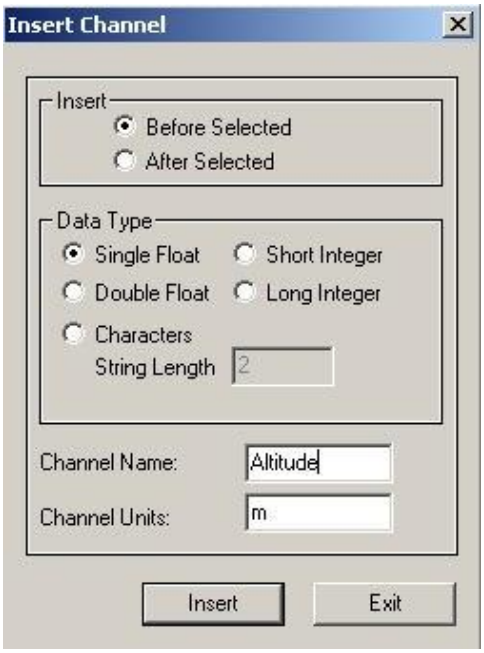
- Right-click on the header to change and select **Rename Channel** from the popup menu to appear. The respective dialog opens:



- Change the name and, if necessary, units in this dialog.
- Click **Apply**.

To insert a new column

- Right-click on the header of the column, next to which you want to create a new column.
- In the popup menu to appear, select **Insert Channel**. The **Insert Channel** dialog opens:



- In the **Insert** section, specify the location of a new column relative to the column selected.
- In the **Data Type** section, specify the format of data this column will contain.
- Specify the header of the column in the **Channel Name** box and the units of measurement in the **Channel Units** box.
- Click **Insert**.

To delete/restore a column

- Right-click on the header of the column to delete.
- In the popup menu to appear, select **Delete Channel**. The column will get highlighted in mauve, which means that it has been removed from processing.
- To restore an earlier deleted column, right-click on its header to bring up the popup menu and select **Restore Channel**.

To calculate/recalculate channels, create row indices (Formula Calculator)

The Formula Calculator is used in the following cases:

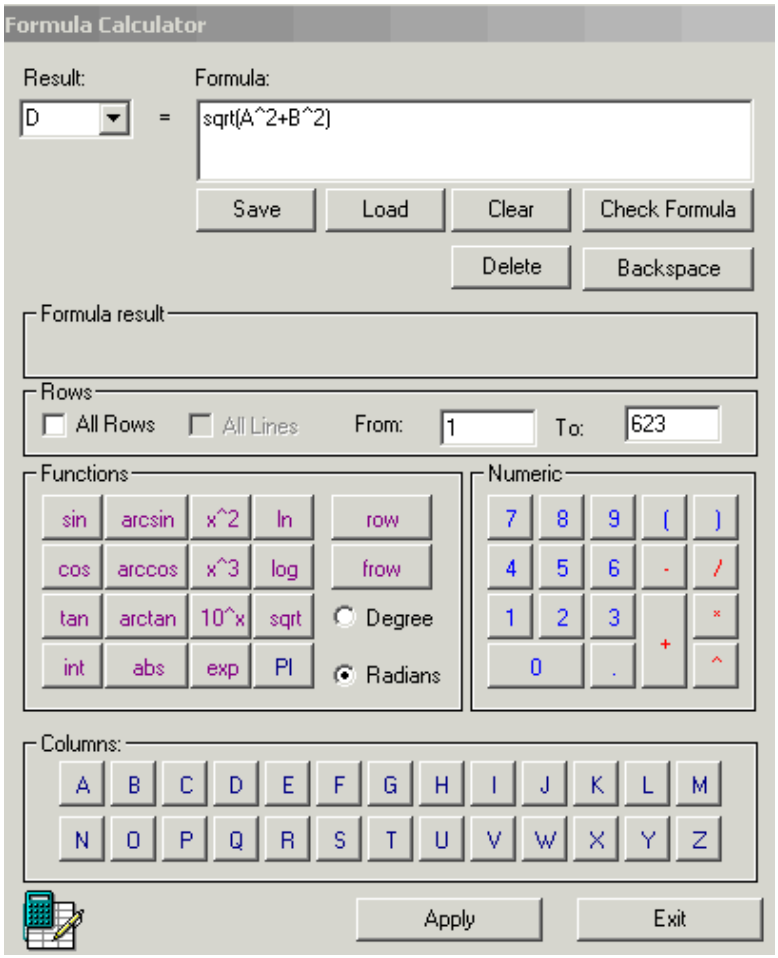
- When you need to recalculate values in a number of cells of a column
- When you need to recalculate a whole column
- When you need to calculate a new column; in this case, prior to the calculation, insert a new column as described in Insert a New Column
- When you need to assign each row an index.

To bring up the **Formula Calculator**:

- Select a required number of cells in the column or double-click on the header of this column to select all the cells in it and click the **Transform Data** button .

OR

- Right-click on the selected cells/column/newly-added column and select **Transform** from the popup menu to appear. The **Formula Calculator** dialog opens:



In this dialog:

- The **Result** dropdown list shows the index (a letter) of the column for the calculated value to appear.
- In the **Formula** section:
  - Work out your formula using the standard **Functions** and **Numeric** keyboards below. The **Columns** keyboard inserts the indices (letters) of the columns and is used if your formula is based on the values from other channels.
  - Use the standard **Backspace** and **Delete** buttons to edit your formula.
  - Click the **Save** button to save your formula as a .fml file, so that in future you can use it again.
  - Click the **Load** button to load a .fml file and use an already available formula.
  - Click the **Clear** button to remove or replace the formula.
  - Click **Check Formula** to make sure that the formula contains no errors. In the **Formula Result** section below, you will see a sample of calculation for the first row or, if your formula is incorrect, an error message.
- In the **Rows** section of the dialog:
  - Specify the range of rows in a new column to contain the calculated parameter. If you have already selected a certain number of rows right in the table, the **From** and **To** fields will contain the first and the last number of these rows, respectively.
  - Check the **All Rows** box to select all rows. The **From** and **To** fields will become disabled.
  - Check both the **All Rows** and **All Lines** boxes to select the same column throughout all of your tables (lines)

    ***Note**. If you specify the first and the last row in the **From** and **To** fields and simultaneously check the **All Lines** box, the number of the rows to be selected in each table (line) will not exceed the range specified, no matter how many more rows the table contains.*
- To create indices for the rows specified in the **Rows** section of the calculator:

- Click **row** in the **Functions** section of the calculator if you want the indices to reset with each new line.
- Click **frow** if you want the indices to continue throughout all of the lines.

♦ Click **Apply** and **Exit** to close the dialog and see the results.

To view the channel statistics

- Select any group of cells in a given column.
- Right-click on this group or on the column header and select **Statistics** from the popup menu to appear.

To delete a single value

- Right-click on the cell containing a value to delete and select **Set Dummy Value** from the popup menu to appear.

  This will replace the value by an asterisk and automatically remove it from further processing.

To delete/restore a point (a row)

- Select the point you want to remove.
- Click the **Delete Point(s)** button  on the QC toolbar

OR

- Right-click on the point number in the first column and select **Delete Point(s)** from the popup menu to appear.

  The whole row will get highlighted in mauve, and the  sign will appear in the first column before the point number.
- To restore a point, right-click on this sign and select **Restore Point(s)** from the popup menu to appear.

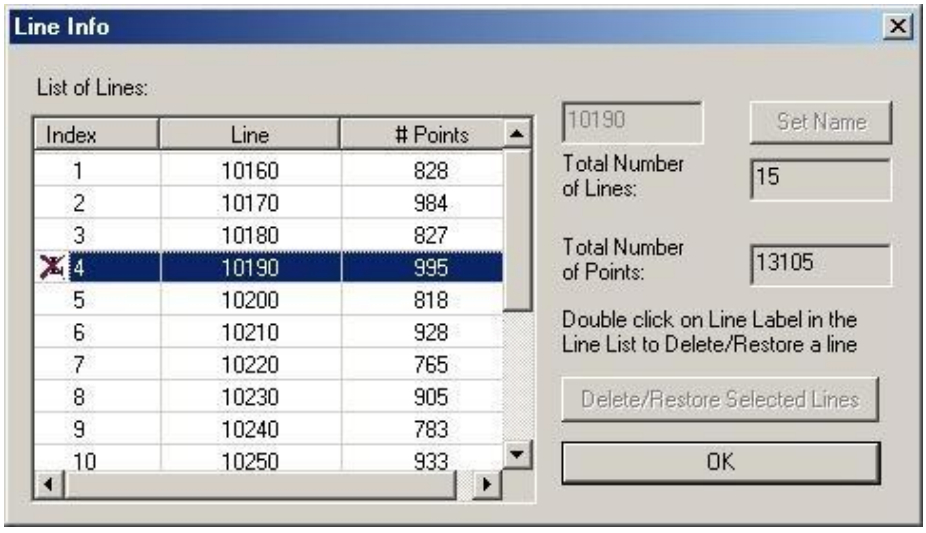
***Note**. You cannot restore a point after you have closed your file and then open it again.*

To delete/restore a line (a table)

Click the **Delete Line** button  on the QC toolbar. The line you are currently in is removed from the dropdown **List of Lines** on the main QC toolbar, whereas your spreadsheet automatically switches to the next line.

However you can always restore the line you deleted:

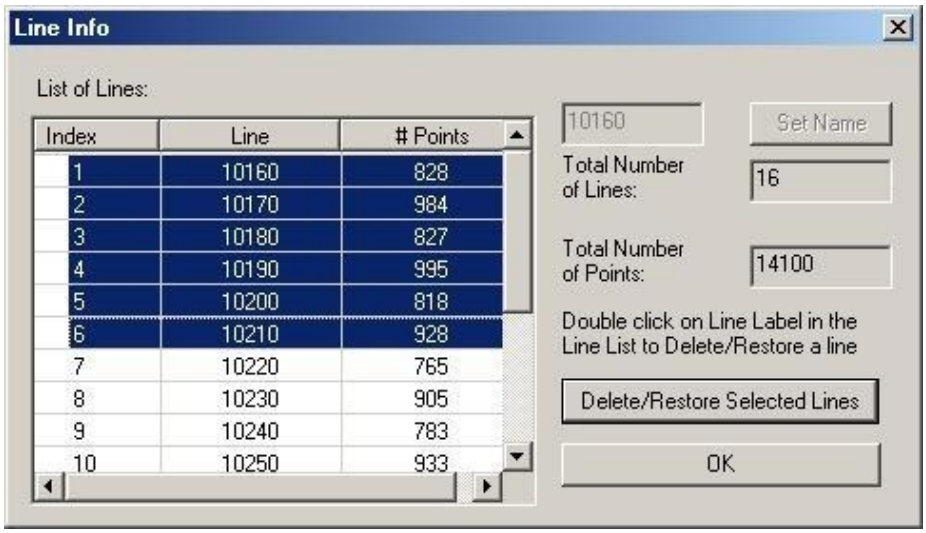
- Click the **Line Info** button  on the QC toolbar to open the respective dialog:

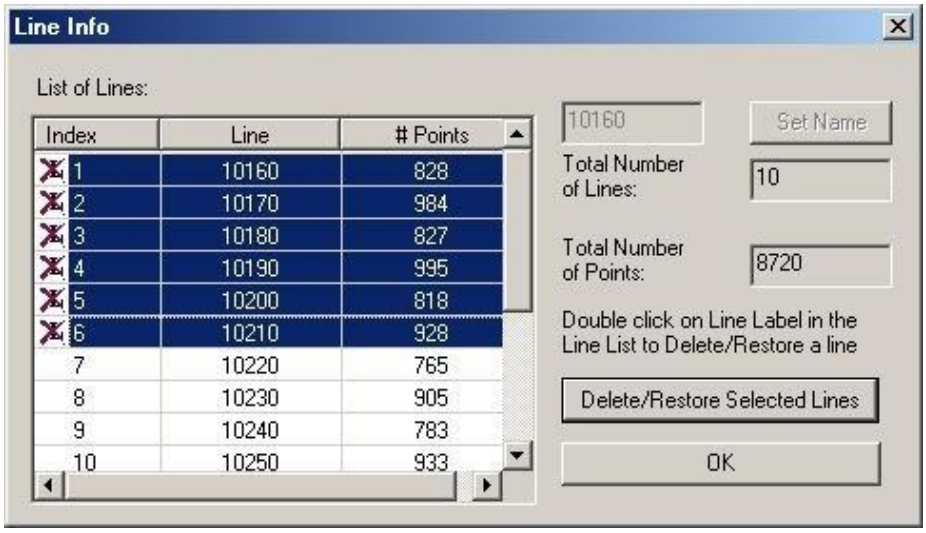


In the **List of Lines**, you can see the sign before the line you deleted.

- Double-click this sign to restore the line.

Use Shift or Ctrl key to select lines. Delete/Restore Selected Lines is enabled automatically. Click the button



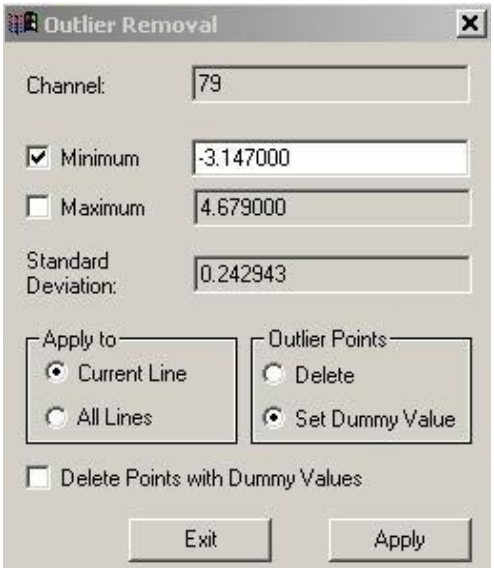


The values in the **Total Number of Lines** and **Total Number of Points** boxes in the right part of the dialog update accordingly to reflect the deletion or restoration of the line(s).

***Note**. You can also delete a line right in the **Line Info** dialog. Double-click on the line you want to delete, and the sign will appear to indicate that the line has been removed.*

To remove outliers

- Right-click on the header of the channel and select **Outlier Removal** from the popup menu to appear. The respective dialog opens:



- The **Channel** field contains the name of the channel you selected.
- Check the **Minimum** and **Maximum** boxes and type in the cutoffs.

In the **Apply to** section, select **Current Line** to remove outliers only from the line you are currently working with and **All Lines** to remove outliers from all available lines.

- In the **Outlier Points** section, select **Delete** to remove the whole rows containing outlier points. The rows highlighted in mauve mean that the respective points have been deleted.
- Select **Set Dummy Values** to replace all the outliers in the column with asterisks and thus remove them from processing. If later you want to delete the whole rows containing the dummy values, check the **Delete Points with Dummy Values** box. The rows highlighted in mauve mean that the respective points have been deleted.

***Note**. To restore the points, select them in the record number column (**N**), right-click, and choose **Restore Point(s)** from the popup menu to appear.*

- Click **Apply**.

To cut a line into two or more parts

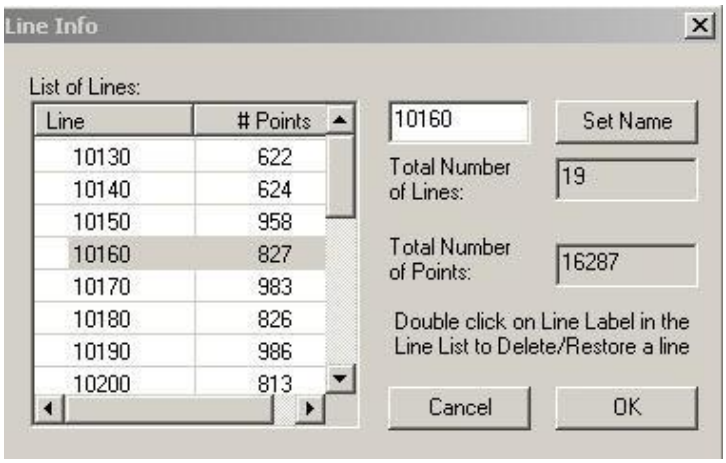
- Select the point where you want to cut your line into two portions.
- Click the **Cut Line** button  on the QC toolbar.

In the dropdown **List of Lines**, both portions retain the original number of the line, with the second portion also having the extension _1 .

- Repeat these steps to make as many cuts as desired.

To rename a line

- Click the **Line Info** button  . The respective dialog appears:

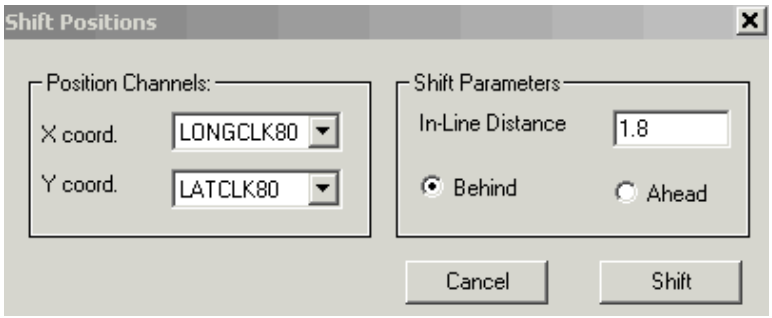


- In this dialog, select the line to rename from the **List of Lines**.
- Type a new name in the box to the right of the **List of Lines** and click the **Set Name** button.

To shift positions

In some cases, you need to shift your coordinates by the distance between the receiver and the GPS station if, during the survey, they were located in different places.

Select **Tools/Shift Positions** on the QCTool menu. The **Shift Positions** dialog opens:

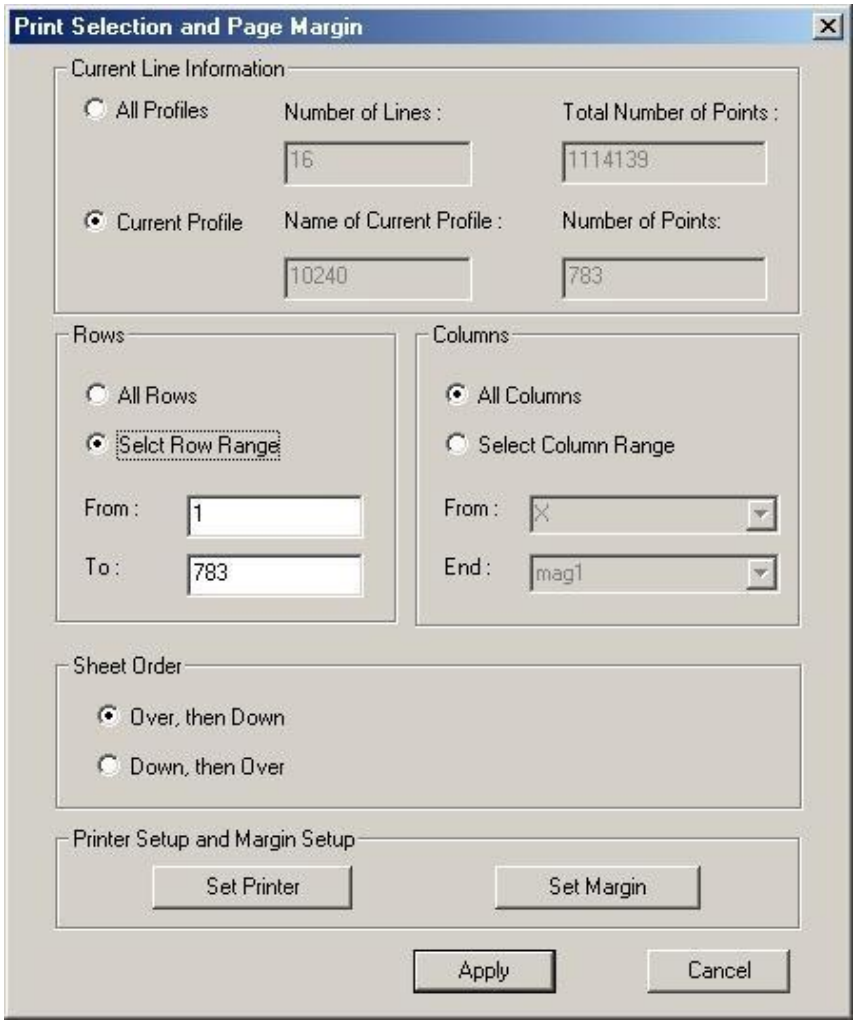


In this dialog:

- Select the coordinates to shift from the **X coord.** and **Y coord.** dropdown lists in the **Position Channels** section.
- Specify the **In-Line Distance** in the respective box in the **Shift Parameters** section and select between the **Behind** and **Ahead** options depending on the receiver position relative to the GPS station.
- Click **Shift**. The results are added to the automatically created columns next to the columns with the former coordinates.

Print Selected data

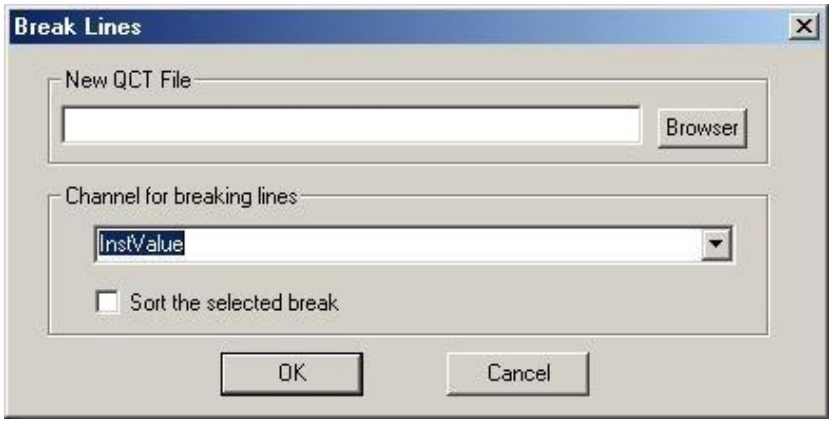
Click File -> Print Selection Area. The dialog appears.



- Select All profiles or current profile
- Select all rows or selected row range
- Select all channels or selected channels
- Select sheet order
- Click Apply to set data selection
- Click File->Print preview or File->print to preview or print selected data

Break Lines

Click the Tools -> Lines -> Break Lines. The dialog appears.



- Input a file name for saving the result
- Select a data channel for breaking lines
- Select the check box of Sort the selected break if you want to sort the name of lines

20 Working With Tables

Plots and Grids

The QC Plot and QC Grid provide a graphical representation of your imported or processed data. They facilitate preliminary estimation of your survey results and allow fast and efficient detection of erroneous data. For your convenience, you can arrange your window (this option is available from the **Window** menu) to simultaneously view your plot, grid, and the respective table. Selecting any point in the plot or grid will automatically highlight its value in the table.

See also

Working with Plots

Plot Data
Switch Between Curves on the Same Plot
Set the Same Scale for All Channels
Display Plots by Segments
Switch Between Lines
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PRINTING GRIDS AND PLOTS

Working With Plots

To plot data

- Click on the header of the channel to be plotted and engage the **Plot Data** button  on the main toolbar

OR

- Right-click on the header and select **Plot Channel** from the popup menu to appear.

The plot is generated automatically. Below the main toolbar, the QCPlot toolbar appears:

To switch between curves on the same plot

You can select as many channels as you like and they all will be displayed in different colors on the same plot. But you can view plots of only one line at a time. To switch between the curves:

- Double-click on the curve you want to switch to

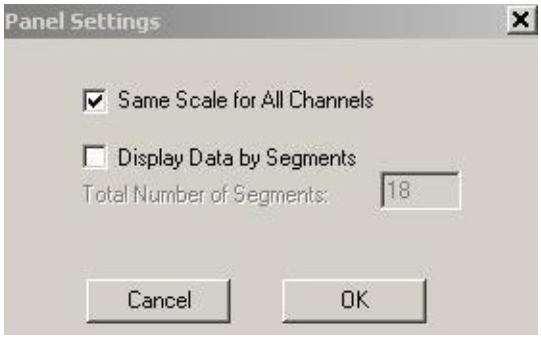
OR

- Select the respective column in the table.

The y-axis labels will change their color to that of the curve you switched to; the scale and units of measurements will also change accordingly.

To set the same scale for all channels

- Click the **Panel Settings** button on the QC Plot toolbar. The respective dialog appears:

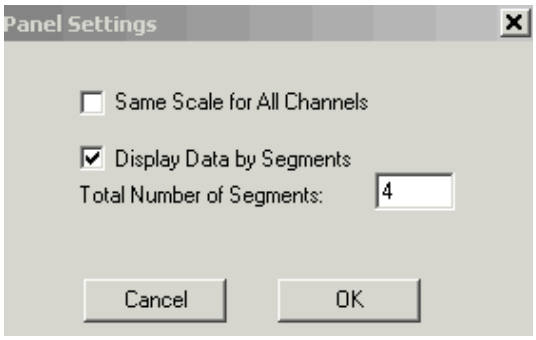


- Check **Same Scale for All Channels** and click **OK**. The Y-axis turns black, which means that it has become general for all the curves.
- De-select this option in the **Panel Settings** dialog to return to the initial view.

To display plots by segments

If your line has too many data points, it is often more convenient to plot it by segments.

- Click the **Panel Settings** button on the QC Plot toolbar. The respective dialog appears:



- In this dialog, check the **Display Data by Segments** box. The **Total Number of Segments** box becomes active.
- Specify the number of segments to divide your plot into and click **OK**. The plot will display first segment by default.
- To toggle through the segments, use the forward and back arrow buttons or select the required segment from the **Current Line Segment** dropdown list on the QC Plot toolbar: 

.

To switch between lines

- Select a required line in the dropdown **List of Lines** on the main QC toolbar:


. The plot automatically switches to the line you selected.

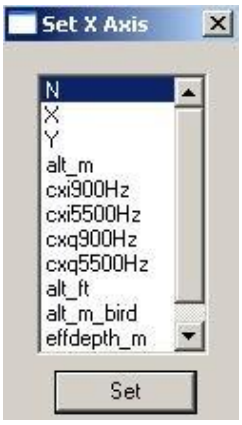
To set a channel as the X-axis

- Click the **Change X Axis Channel** button on the QC Plot toolbar

OR

- Double-click the X-axis label in the bottom right-hand corner of the plot.

The **Set X Axis** dialog opens:



- Select a required channel in this dialog and click **Set**. The X-axis will change to the scale of the selected channel. Its label will be replaced by the name of the selected channel.

To adjust the X-axis settings

Select the **Change X-axis Scaling** button on the QC Plot toolbar or click anywhere on the X-axis. The **X Axis Settings** dialog opens:

To edit data right in the plot

If any error, your plot is distorted.

- Click on the erroneous point.
- To delete this point, click the **Delete Point(s)** button on the main QC toolbar. Repeat it until your plot takes a normal shape.
- To remove the whole line, click the **Delete Line** button . Your display will automatically switch to the next line.
- To split a line into parts, click the **Cut Line** button .

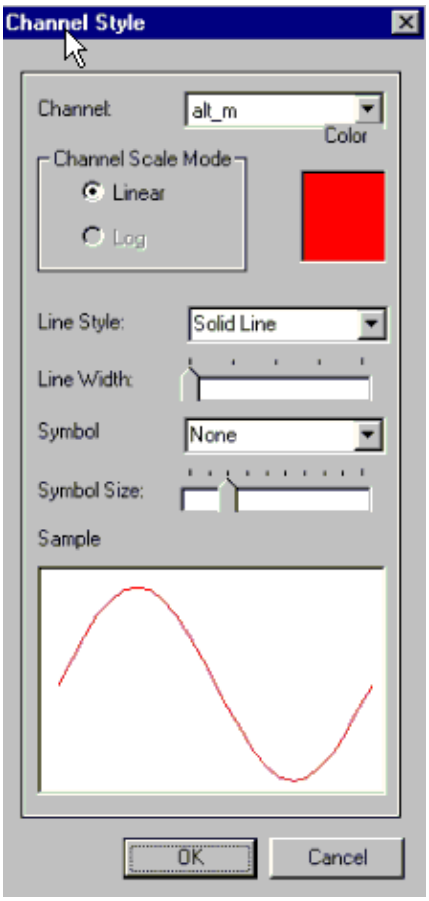
As a result, your line will be cut into 2 portions; with the first to be displayed by default. To display its second portion, select it from the dropdown **List of Lines** on the main QC toolbar: 10130. It will have the same number as the first one and the extension _1 ..

To zoom in on a plot fragment

- Click the **Zooming** button on the QC Plot toolbar.
- Click and drag to select the fragment you want to magnify.
- To return to the initial view, click the **Home View** button on the QC Plot toolbar.

To customize the plot appearance

- Click the **Change Plot Style** button on the QC Plot toolbar to bring up the **Channel Style** dialog:



- Select the channel you want to change the appearance of from the **Channel** dropdown list.
- Select **Linear** or **Log** in the **Channel Scale Mode** section.
- Click the coloured square on the right to adjust the color using the standard Windows-style palette.
- Select the line style from the respective dropdown list.
- The **Line Width** option is applicable only to **Solid Line**. Other styles do not show on the plot unless the minimum line width is selected.
- Choose a required symbol from the respective list and change its size using the slider.

  This functionality is especially useful when you need to view the changes you are making right in the plot. For example, increasing the symbol size allows you to pinpoint deleted points.
- In the **Sample** field below, you can simultaneously view an example of your changes.

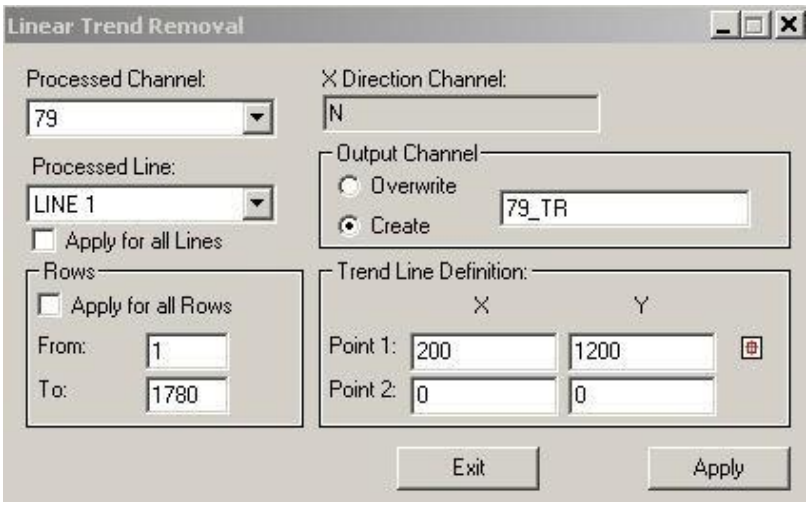
To remove a plotted channel

- In the table, right-click on the header of the channel you want to remove from your plot and select the respective command from the popup menu to appear. The channel will be removed from the plot.

To remove a trend

Your data may often be influenced by various factors and as a result contain trends distorting its actual appearance. If it is the case:

- Click the **Linear Trend Removal** button  on the QC Plot toolbar to bring up the respective dialog:



The **Processed Channel** and **Processed Line** lists show the channel and line you are currently working with. To switch to another channel and line, select them from these two lists.

- To remove a trend from all lines of data, check the **Apply to all Lines** box.
- To remove a trend from the whole line, check the **Apply to all Rows** box in the **Rows** section of the dialog.
- To remove a trend from a certain portion of the line, specify the first and the last point of this portion in the **From** and **To** boxes. You can either type in the values or do the following:

1. Click in the **From** box. The sign appears to the right, indicating that you are about to insert a new value in this box (you will always find this sign next to the boxes you are working with in the **Rows** or **Trend Line Definition** sections of the dialog).
2. Click on the point of your curve which you want to be the starting point of trend removal. The X coordinate of this point appears in the **From** box.
3. Click in the **To** box and then on the point of your curve which you want to be the ending point of trend removal. The X coordinate of this point appears in the **To** box.

- To specify trend direction, enter the X and Y coordinates of the starting and ending points of the trend in the **Trend Line Definition** section. You can either type in these coordinates or insert them automatically by clicking on the respective points on the plot.
- Since the result will appear not only in the plotter but also in the respective spreadsheet, select between the **Overwrite** and **Create** options in the **Output Channel** section of the dialog. If you select **Create**, a new column will be added to your spreadsheet containing the results of trend removal. If you choose the **Overwrite** option, the box to the right will turn into a dropdown list, offering you to select the channel to be replaced with a new one containing these results.
- Click **Apply**.

To save a plot

Click the **Save As** button on the QC Plot toolbar and follow the standard Save operations.

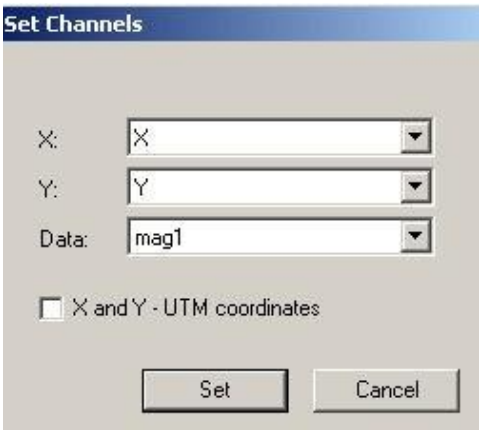
Working With Grids

To grid data

- Click on the header of the channel to be plotted and select the QC Grid button  on the QC toolbar

OR

- Right-click on the header and select **Grid Channel** from the popup menu. The **Set Channel** dialog appears:



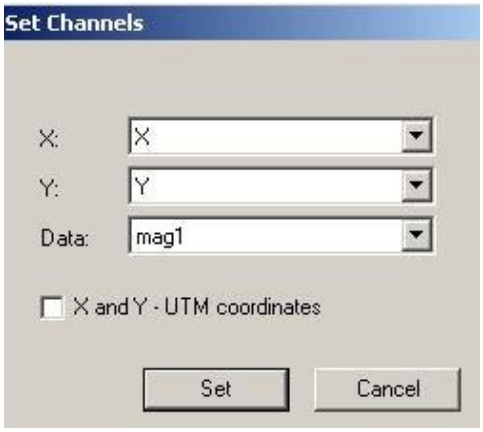
- Select a channel to use as the X coordinate from the **X** dropdown list.
- Select a channel to use as the Y coordinate from the **Y** dropdown list.
- If required, reselect a channel to grid from the **Data** dropdown list. The channel selected by default is the one you specified in the table.
- Check the **X and Y - UTM coordinates** box if the **X** and **Y** columns contain UTM coordinates. This will automatically draw the parallels over your grid.
- Click **Set**.

Your grid is generated. Each data point in the resulting stack of lines is assigned its own color. To see the value in a given point, click on the point and look its value up in the respective table. To move across the grid, you can also use the arrow keys.

To change to another channel

The generated grid uses the channels you specified in the **Set Channels** dialog (see To Grid Data). To change to another channel:

- Select the  button on the QCGrid toolbar and go to the **Lines** tab.
- Click the **Change Channel** button  . The **Set Channels** dialog opens:



- Reselect the channels in the **X** and **Y** dropdown lists.
- Reselect the channel to grid in the **Data** dropdown list.
- Click **Set**.

No matter which display you had prior to or after interpolation, - your new display is not interpolated.

To edit data right in the grid

If any error, your grid display is distorted.

- Click on the erroneous point and use the **Delete Point(s)** button to remove it from the grid. Repeat this operation until you grid display becomes normal.
- Use the **Delete Line** button on the main QC toolbar to remove a whole line.
- Click the **Cut Line** button to cut a line into 2 or more portions.

  In this case, your change does not show on the grid unless you zoom in on the respective fragment (see To zoom in on a grid fragment). You can also check it up in the **List of Lines** on the main QC toolbar, in the respective table or plot, or in the **Line Info** dialog that opens by clicking the **Line Info** button .

To zoom in and out

- Use the **Zoom In** and **Zoom Out** buttons on the QC Grid toolbar under the main QC toolbar.

To zoom in on a grid fragment

- Click the **Pointing** scroll arrow and select **Zoom Selected** from the dropdown list. The cursor will change into a magnifying glass.
- Click and drag to select a fragment to be zoomed.
- To return to the initial scale, select **Home View** from the same **Pointing** list.

***Note**. To change back to the arrow manipulator, select it from the **Pointing** list .*

To zoom in and out

- Use the **Zoom In** and **Zoom Out** buttons on the QC Grid toolbar under the main QC toolbar.

To zoom in on a grid fragment

- Click the **Pointing** scroll arrow  and select **Zoom Selected**  from the dropdown list. The cursor will change into a magnifying glass.
- Click and drag to select a fragment to be zoomed.
- To return to the initial scale, select **Home View** from the same **Pointing** list.

***Note**. To change back to the arrow manipulator, select it from the **Pointing** list*  .

To move grid elements

- Select **Move** from the **Pointing** list  . The arrow cursor changes to the hand manipulator  .
- Click and drag labels, symbols and other objects to the place you need.

  This functionality is especially useful when you need to customize the appearance of your grid (see the Grid Customization section).

***Note**. To change back to the arrow manipulator, select it from the **Pointing** list*  **.**

To measure the distance between different points

- Select **Distance** from the **Pointing** list  . You cursor changes to the ruler  .
- Click on the point to measure the distance from and drag to the point to measure the distance to.
- Check the result in the Status Bar below.

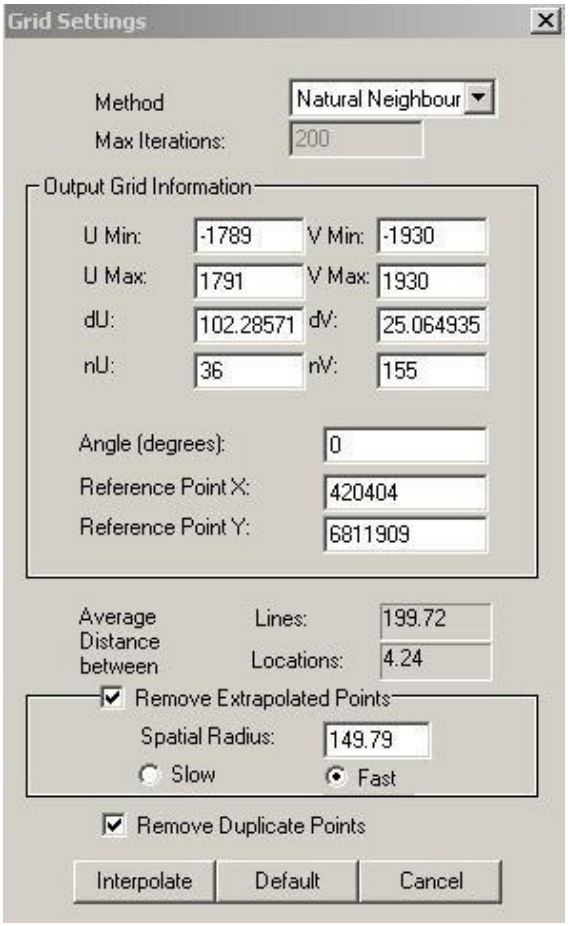
***Note**. To change back to the arrow manipulator, select it from the **Pointing** list*  .

To perform interpolation

During the interpolation process, QCTool interpolates data from data points onto a regular (rectangular) grid. You can interpolate the whole grid or its portion. In the latter case, before interpolation, zoom in on a required fragment as described in To zoom in on a grid fragment.

- Click the **Interpolate**  button on the QC Grid toolbar.

The **Grid Settings** dialog opens:



- Choose the method of interpolation in the **Method** dropdown list.

By default, the **Natural Neighbour** option is selected. If desired, you can change it to **Minimum Curvature**. This enables the **Max Iterations** box below, for you to type the required number of iterations.

- Edit the **U Min**, **U Max**, **V Min** and **V Max** settings as needed.
- Increase or decrease **dU** and **dV** (number of points) or **nU** and **nV** (length of the grid cell side) to provide higher or lower resolution.
- Change the **dU** and **dV** values and click in the **nU** and **nV** fields: the latter is recalculated automatically. You can reach the same effect by changing the **nU** and **nV** values and clicking in the **dU** and **dV** fields.
- Edit the grid angle to examine your display from a different perspective.

The grid has its own coordinate system (u,v) which is rotated from the coordinate system (x,y) chosen for the 2D display. In the example here, the grid is aligned along the x,y direction (angle = 0) and u is parallel to y .

- Edit, if necessary, the **X** and **Y** reference points in the respective boxes.
- If you are not satisfied with your changes, click the **Default** button to change back to the initial settings.
- Check the **Remove Extrapolated Points** box and set a required spatial radius to restrict the area of interpolation. For example, a spatial radius of 55 means that if there are no data in the radius of 55 m around a given point a grid cell center, this cell will be removed from interpolation.

Note. *The interpolation process interpolates data onto the entire regular rectangular grid. However parts of this grid, which are far away from the data, may be overly extrapolated and thus should be removed for careful viewing.*

- Select between the slow and fast algorithms (slow is more accurate, but fast is almost always sufficient).

- Check the **Remove Duplicate Points** box to provide the respective operation.
- Click **Interpolate**.

The interpolation process can take some time depending on such grid settings as the number of initial points, grid dimensions or the interpolation method.

If you interpolated only a grid fragment:

- After interpolation, select **Home View** from the **Pointing** list  on the QC Grid toolbar. You will see the interpolated fragment stand out against the primary grid background.

Customization Dialogs and Menus

You can change the grid appearance using two methods:

- Select the **Show Layers** dropdown menu  on the QC Grid toolbar and toggle on or off various features

OR

- Select the button  on QC Grid toolbar or click right button 

select one for the advanced customization of your grid appearance.

Related topics:

Display and Customize Lines

Change the Draw Mode

Draw and Customize the Mesh Grid

Draw and Customize Contours

Display and Customize the Coordinate Grid

Display Longitudes and Latitudes over a UTM-Based Grid

Display a Grid Proportionally

Use a Map Underlay

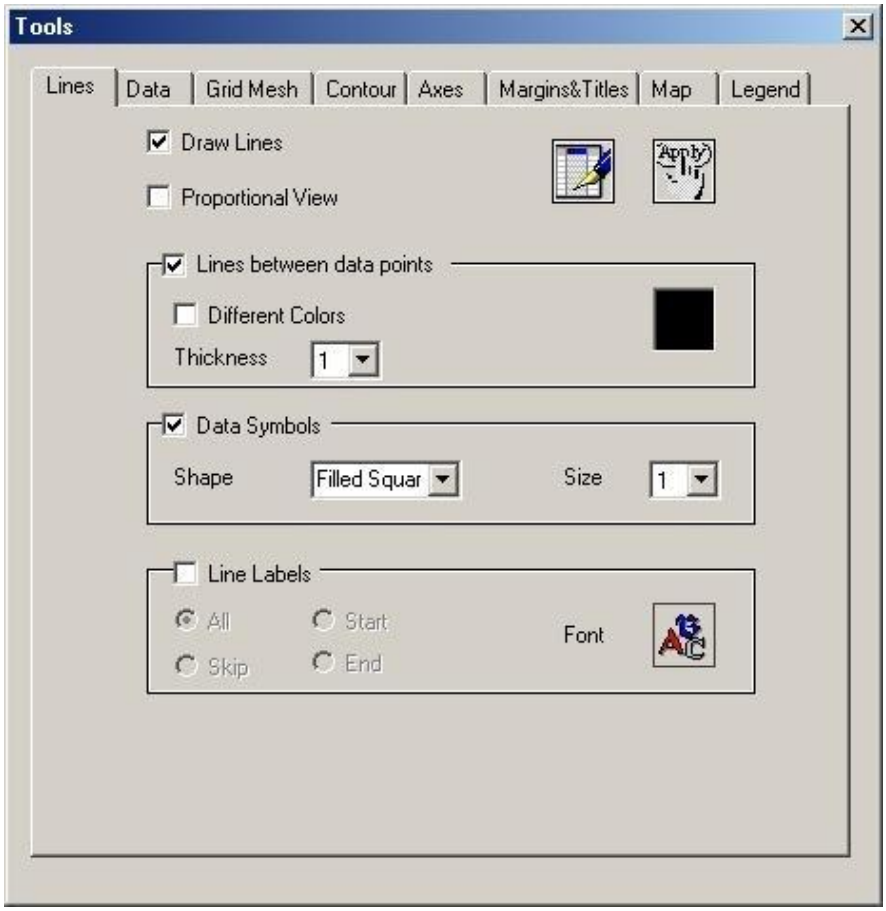
Customize the Legend and Scale

Customize the Grid Layout

To display and customize lines

Click the button  on QC Grid toolbar or click right button 

select Lines. The dialog appears.

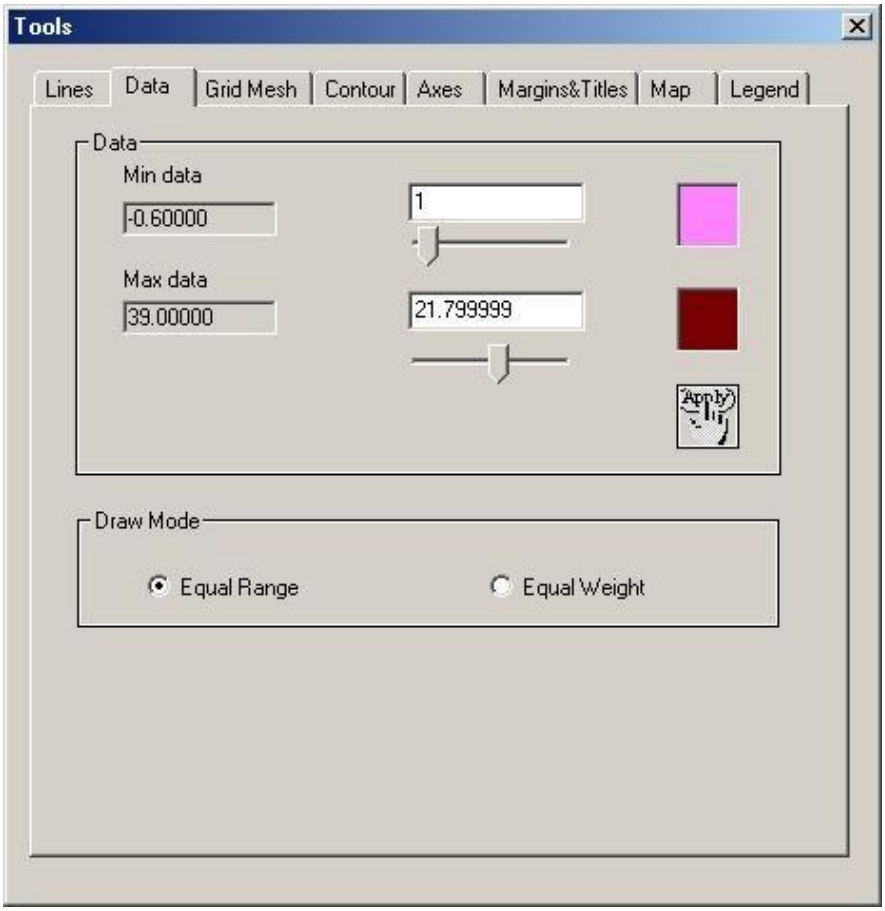


- Check the **Draw** button to switch lines on and off (=**Show Lines** in the **Show Layers** dropdown menu on the QC Grid toolbar).
- To assign the same colour to all of the lines, leave the **Different Colors** box in the **Lines** section unchecked. Select a required thickness of the lines from the respective dropdown list and click on the color square to the right to bring up the standard color palette.
- To assign different colors to the lines, check the **Different Colors** box. Select a required thickness from the respective dropdown list.
- To change the shape and size of symbols (points) on your grid, check the **Data Symbols** box. The **Data Symbols** section becomes active. Select the required shape and size from the respective dropdown lists.
- To display the labels (line numbers), check the **Line Labels** box. Select between the four options below. The **All** button displays all labels, the **Skip** button every second label, the **Start** and **End** options the labels at the beginning and at the end of lines.
- To edit the font and style of the labels, click the **Font** button  in the bottom right-hand corner of the dialog.

To change the draw mode of your grid

Click the button  on QC Grid toolbar or click right button 

select Data. The dialog appears.

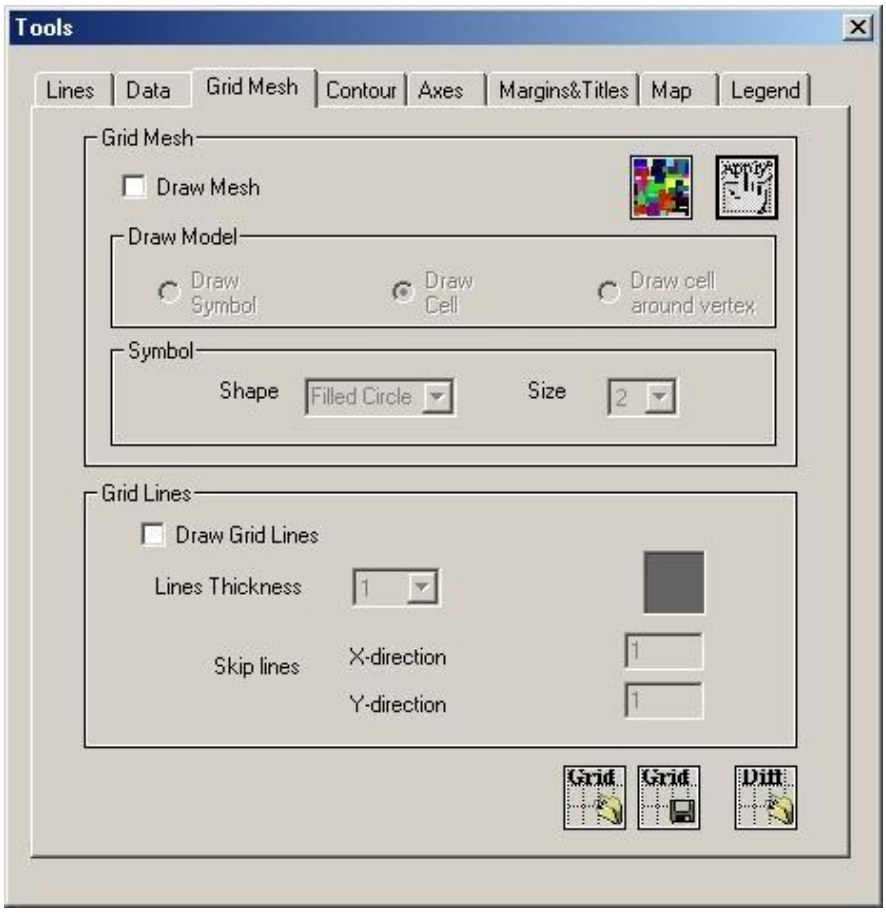


- Select **Equal Range** to assign different colors to equal ranges independently of the number of points in each range or select **Equal Weight** to assign different colors to different ranges covering the same number of points.
- Specify the range of data to be displayed (75% of data are displayed by default) using the sliders to the right of the **Min Data** and **Max Data** fields that show the absolute minima and maxima of your data. Or, type in these values manually. Click **Apply**.
- Click on the colored squares to the right to open the standard Windows-style palette and to specify colors for the start and end of the data range.

To draw and customize the mesh grid

Click the button  on QC Grid toolbar or click right button 

select Grid Mesh. The dialog appears.



- Check **Draw Mesh** to see your grid cells filled with color (=**Show Interpolated Grid** in the **Show Layers** dropdown menu on the QC Grid toolbar). This functionality is accessible only if your data have been interpolated; if not, a message prompts you to carry out interpolation. Click the **Interpolate** button  and follow the steps as described in To perform interpolation.

  The **Draw Grid Symbols** option displays each grid cell as a set of four data (vertices) and assigns a certain color to each data dependending on its value.

  The **Draw Grid Cells** option calculates the average of the data located in the vertices of a grid cell. The cell is filled with the color assigned to this average value.

  The **Draw Cells around Grid Vertices** option displays your grid as a set of cells drawn around each grid vertex and filled with a certain color assigned to the data value in the vertex.

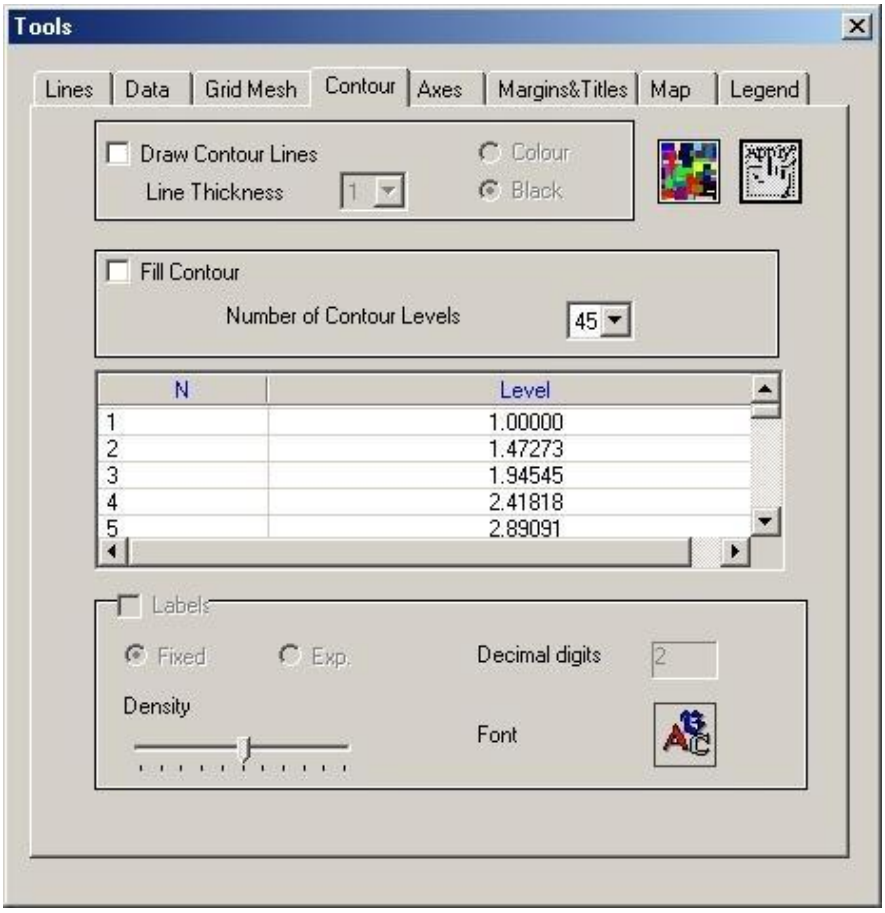
- If you selected the **Draw Symbol** button, select the shape and size of the symbols to be used from the respective dropdown lists in the **Symbol** section of the dialog.
- Select the way for the color to fill the cells (**Draw Symbol**, **Draw Cells**, **Draw Cell Around Vertex**).

- Check the **Grid lines** box to draw the mesh grid. This functionality is available only if your data have been interpolated; if not, a message prompts you to carry out interpolation. Click the **Interpolate** button  and follow the steps as described in To perform interpolation.
- Click the **Load Grid from File** button below to load an already available mesh grid.
- Select the grid line thickness from the respective dropdown list and click on the colored square to the right to specify the color.
- Change the density of your grid as needed both in the X- and Y-directions in the **Skip Lines** section.
- Save your grid to use it later with other data.

To draw and customize a contour display

Click the button  on QC Grid toolbar or click right button 

select Contour. The dialog appears.



- Check the **Draw Contour Lines** box to draw contours (=**Show Contour** in the **Show Layers** dropdown list on the QC Grid toolbar). This functionality is accessible only if your data have been interpolated; if not, a message prompts you to carry out interpolation. Click the **Interpolate** button  and follow the steps as described in To

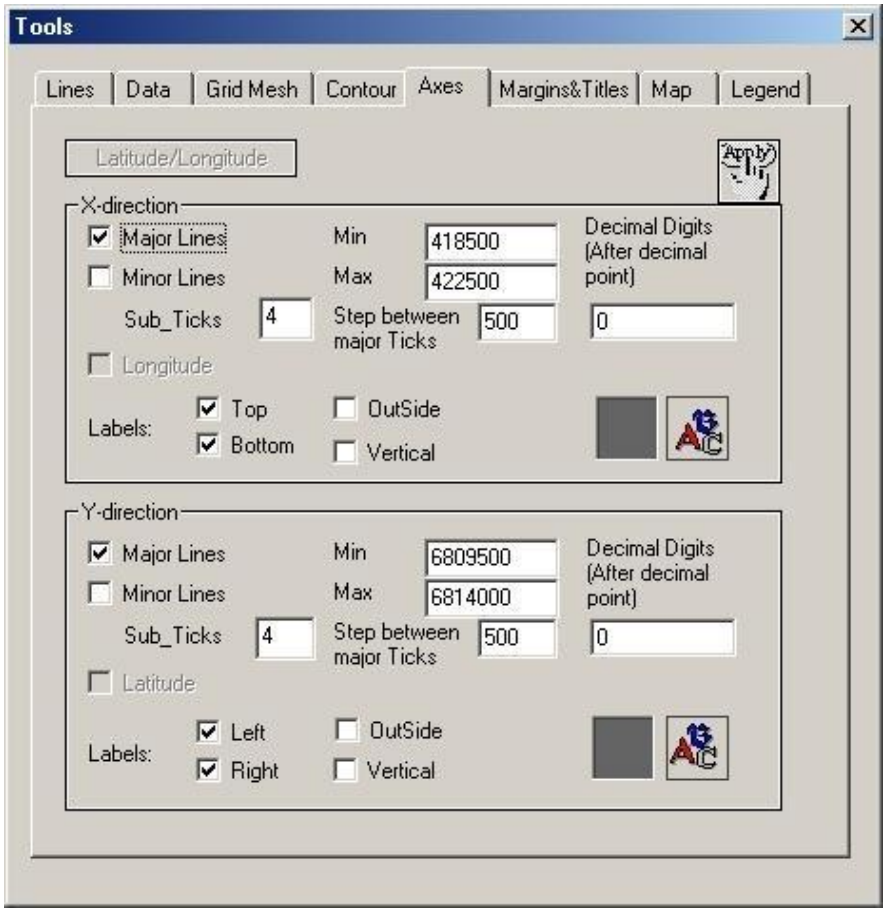
perform interpolation.

- Check the **Fill Contour** box to display filled contours.
- Select between the color and black representation of the contour lines and labels.
- Choose the number of contour levels and line thickness from the respective dropdown lists.
- Check the **Labels** box to display the contour values and specify their format in the respective section (fixed or exponential, the number of decimal digits).
- Use the **Density** slider to increase or decrease the amount of labels to be displayed and click the  button to adjust their font and style.

To display and customize the coordinate grid

Click the button  on QC Grid toolbar or click right button 

select Axes. The dialog appears.



- Check the **Major Lines** and **Minor Lines** boxes in both the **X-direction** and **Y-direction** sections to show the coordinate grid.
- Adjust the minimum and maximum coordinates in the respective boxes to display the portion of your grid you are primarily interested in.
- Change the step between major ticks in the respective boxes to increase or decrease the density of your coordinate grid.

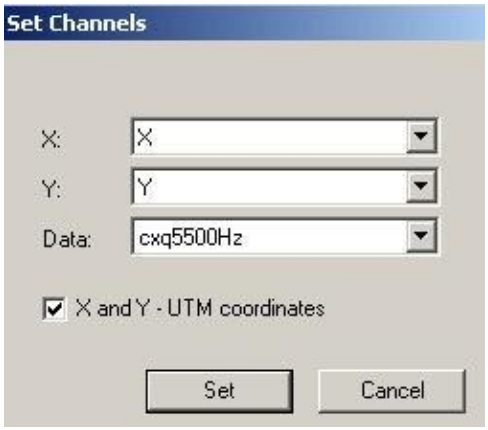
- Click the color square in the bottom right-hand corner of both sections to edit the color using the standard Windows-style palette.
- Select between the **Top** and **Bottom** positions of the labels in the **X-direction** section and between the **Left** and **Right** positions in the **Y-direction** section.
- Select the mode of outside and vertical positions of the labels in the X-direction section and the Y-direction section
- Input thr number of Sub_Ticks of Minor lines in the X-direction section and the Y-direction section
- Click the  button to specify the font and style of the labels in the standard Windows-style **Font** dialog.
- Specify the number of decimal digits to be displayed in the respective box.

***Note**.To switch the coordinate grid off, de-select **Major** and **Minor Lines** or de-select **Show Coordinate Grid** from the **Change Layer** dropdown list on the QC Grid toolbar.*

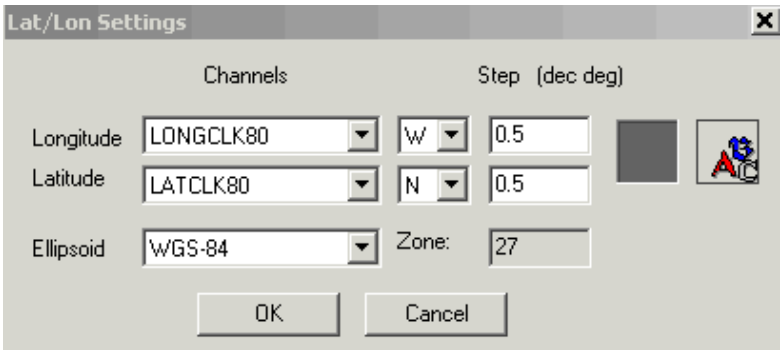
Display latitudes and longitudes over a UTM grid

Click the **Tools** button  on the QCGrid toolbar to open the **Tools** dialog. Pin it and go to the **Lines** tab.

On this tab, click the **Change Channels** button  . In the **Set Channels** dialog that appears:



- Check the **X and Y - UTM Coordinates** box and click **Set**.
- Go to the **Axes** tab of the **Tools** dialog and click the **Lat/Long** button. The **Lat/Lon Settings** dialog opens:



In this dialog:

- Select between the W and E, N and S directions.
- Specify the step in the respective boxes to the right.
- Select a required ellipsoid from the respective list in the bottom of the dialog.
- Click **OK**.

Back in the **Axes** tab, check the **Longitude** box in the **X-direction** section and the **Latitude** box in the **Y-direction** section. Longitudes and latitudes will appear over your grid.

To display your grid proportionally

- Go to the **Lines** tab of the **Tools** dialog.
- Check the **Proportional View** button. The sides of your grid will become of equal length.

To underlay a map

Click the button  on QC Grid toolbar or click right button 

select Map. The dialog appears.

- Check the **Draw Map (bmp)** box.
- Click the  button to open the **Select a .map File** dialog, a standard Windows-style Open dialog. Select and load a required map.

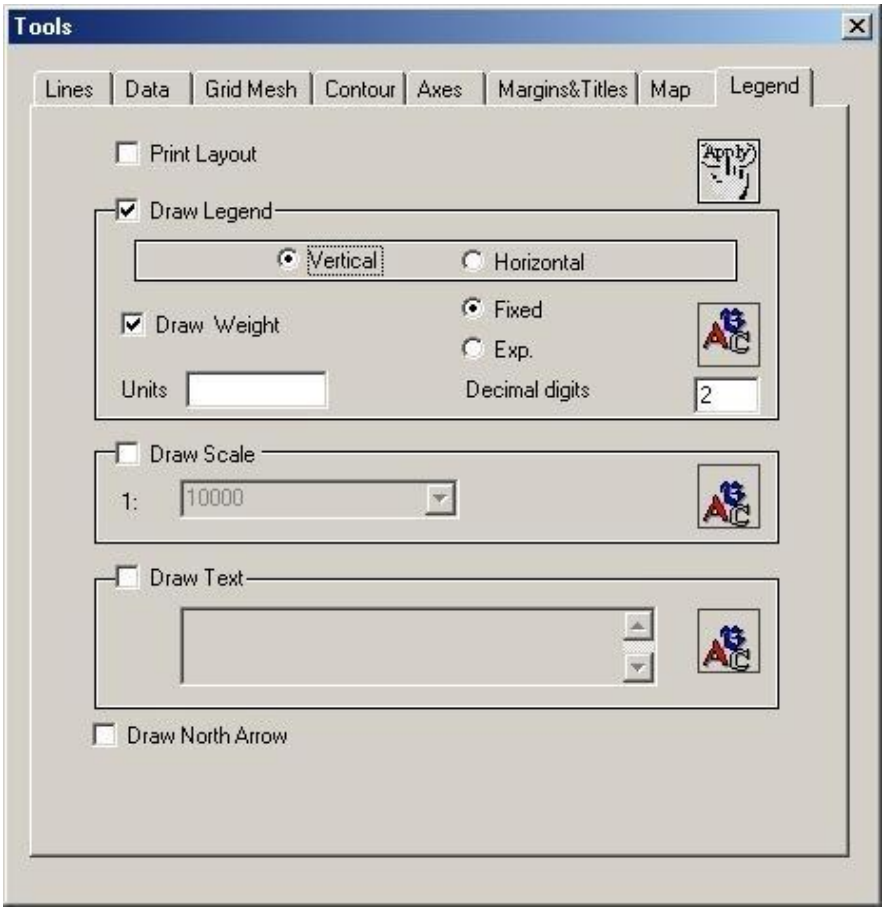
***Note**. This map is to be calibrated before being saved as a .map file. See* **To calibrate a map.**

- Click **Apply** to underlay your grid with the map.
- De-select the **Draw Map** box to remove the map.

To customize the legend and scale

Click the button  on QC Grid toolbar or click right button 

select Legend. The dialog appears.



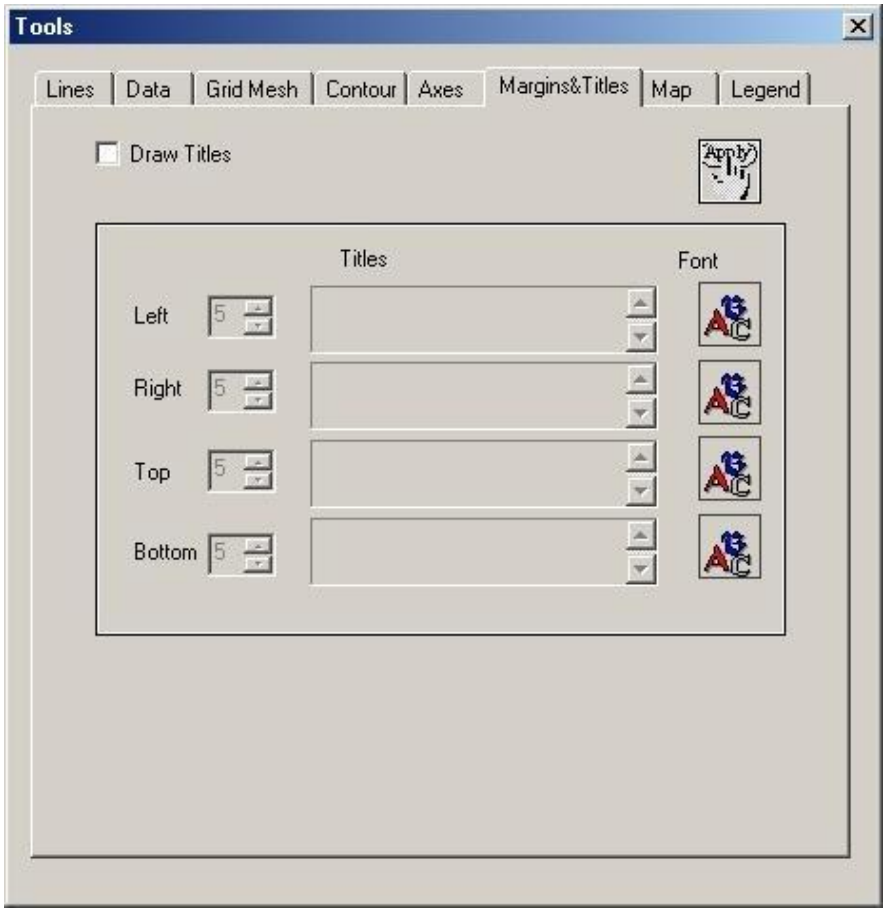
- Check the **Draw Legend** box to display the legend (=**Legend** in the **Show Layers** dropdown menu on the QC Grid toolbar).
- Specify the mode (Vertical or horizantal)
- Specify the format (fixed or exponential), the number of decimal digits, and font ) for the values in the legend.
- To move the legend, click on the legend and move it in a desired direction with the hand manipulator to appear.

- Check the **Scale** box to authorize scale changes and bring up the scale rule.
- Choose a required scale from the respective dropdown list and click **Apply** in the upper right-hand corner of the dialog (or click anywhere in your plot) to view the result. The scale rule will change accordingly.
- Check the **Draw North Arr**ow box in the bottom of the dialog to display an arrow pointing north.

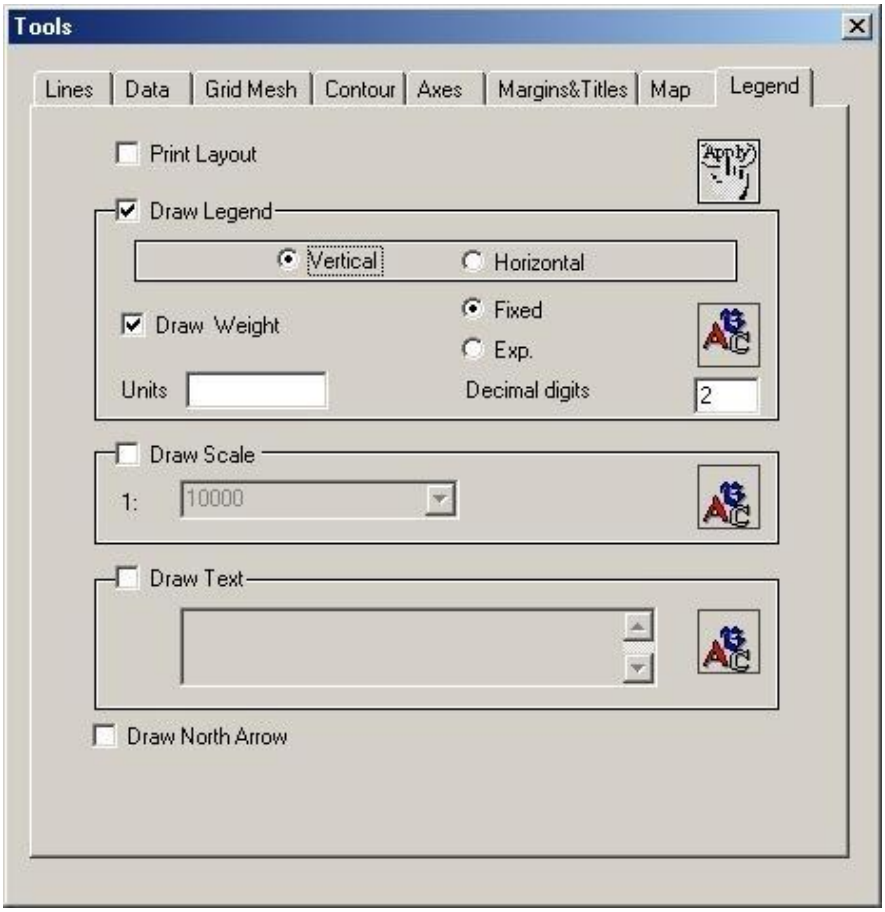
To customize the grid layout

Click the button  on QC Grid toolbar or click right button 

select Margin & Title. The dialog appears.



- Specify the margins around your grid display using the **Left**, **Right**, **Top**, and **Bottom** scroll lists
- Type in the titles, click the  button on the right to specify their font and style, and click **Apply** in the upper right-hand corner of the tab.
- Go the **Legend** tab:



- Check the **Draw Text** box to add comments to your display.

Type in the field below, press **Ctrl+Enter** to insert a carriage return, click the button to adjust the font and style of your labels and texts in the standard Windows-style **Font** dialog.

- Check the **Print Layout** box in the upper part of the tab to switch to the print preview mode. In this mode, you can do any changes you need; for example, insert and move different elements (the legend, scale rule, title, comments) over your display, switch the coordinate grid off, edit margins, etc.

To calibrate a map

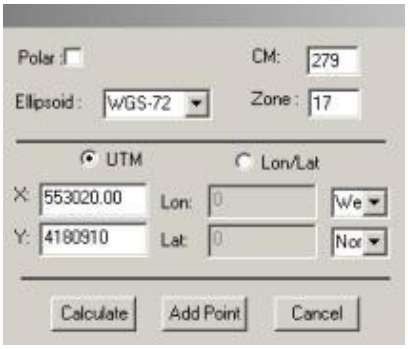
QCTool allows you to calibrate your map before using it as the underlay for a grid.

- Click the **PEGeoMap** button on the QC toolbar.

In the **PEGeoMap** dialog to open:

- Click A Windows-style dialog appears, offering you to select and load a raster format file (.bmp, .jpg, etc.).
- Click A Windows-style dialog appears, offering you to select and load a georeference file (.map,.jpw, .TAB, etc.).

- The map loaded, specify at least three points to calibrate it to.
- Double-click on the first point. The following dialog appears:



- Check the **Polar** box if your map comes from a polar region.
- Select the required ellipsoid datum from the respective dropdown list.
- Specify the central meridian and zone in the respective boxes.
- Select between **UTM** and **Lon/Lat** (as a rule, QCTool recognizes this information). The respective boxes below become active.

- Type in the coordinates of the point to add and click **Add Point**. Repeat this operation for other points.
- To convert your UTM into Lat/Lon or vice versa, click **Calculate**.

***Note**. It is necessary to recalculate Lat/Lon to UTM, since raster transformation is based on the UTM coordinates.*

- To check or change your points, click the **Edit Points** button. The **Edit Entered Points** dialog opens. Select the cell you want to edit and type in a new value.
- Click the **Clear Points** button to remove all points.
- Use the **Shift Coordinates** button to transfer to the local coordinate system.
- Click **Transform** to start raster transformation. Do not forget to save the transformed image (**Save Raster As**). To also keep the previous image, save it with a new name.

You can customize the appearance of the map:

- To change the color to gray, click the **Gray Scale** button .
- To change (diminish) the resolution, specify the pixel width and height in the respective boxes.
- To add a line or any symbol to your map, use the buttons and . If necessary, you can change the style of this line or symbol. Click the **Draw Options** button. Specify the colour, style and width of the line as well as the color, shape and size of the symbol using respective sliders and dropdown lists in the **Change Style** dialog.
- To add an annotation to your map, click the button. In the **Annotations** dialog that opens, write your text. Use the **Font** button to change the appearance of the text.
- The **Undo** button cancels any previous operation.
- To zoom in on your map, click the standard button. To zoom out, click the button.

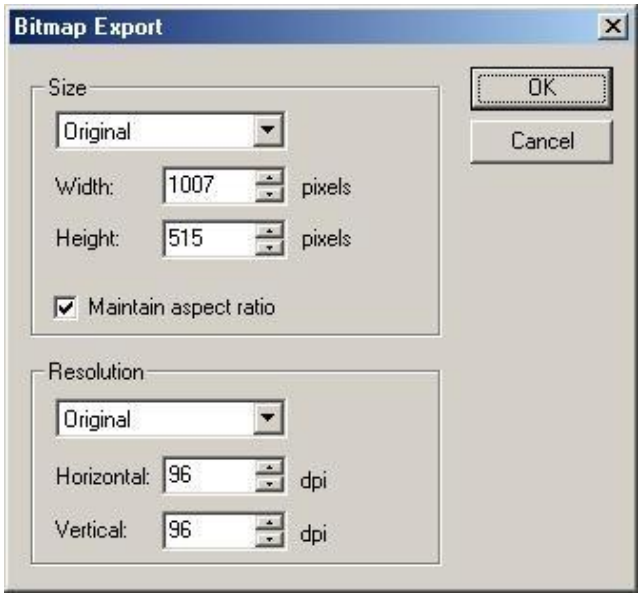
Having finished your work, save the transformed image (**Save Raster As**) as well as a georeferenced file (**Save GepMap**) to keep externals, originals and the name of the image. The geoferenced file(*.map,*.jpw,.TAB) files will then be available to other applications which can use the created raster image as an underlay.

To save a grid

Click the **Save View As** button on the QC Grid toolbar and follow the standard saving operations.

- Select Raster Type

- Select Raster Resolution



- Select GeoMap Format, if chooses raster with georeferenced file

Printing Grids and Plots

To preview a grid/plot before printing:

- Select **Print Preview** from the **File** menu.
- Use the **Next Page** and **Previous Page** buttons on the **Print Preview** toolbar to toggle through available pages.
- Click the **Two Pages** button to preview two pages at a time, click it again to switch back to the **One Page** mode.
- Click the **Zoom In** button to take a closer look at your plot and the **Zoom Out** button to move it away.
- To close the **Preview** mode, click **Close**.

To print a grid/plot:

- Click **Print** in the preview mode to print the grid/plot right away.

OR

- Select **Print** from the **File** menu. In the standard **Print** dialog to open, specify printing properties and click **OK** to start printing.

44 Plots and Grids

Saving Files

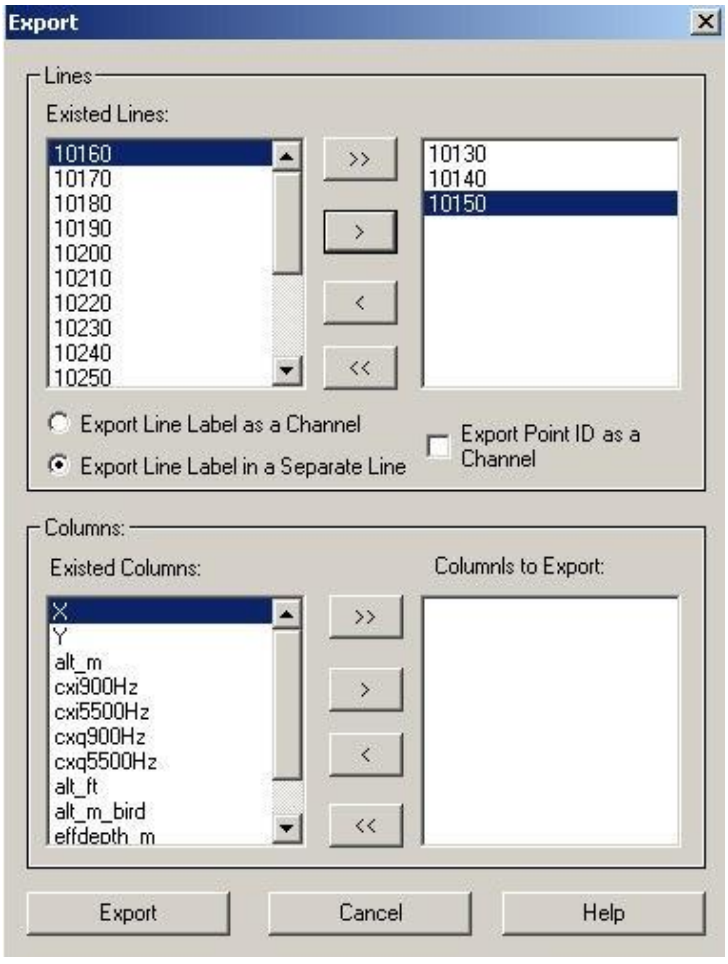
To save a file

- Select **Save File** from the **File** menu (you can also use the standard **Save** button on the QC toolbar) to overwrite your old version.
- Select **Save As** to create a new filename.

To save data in other formats

You can save your file in several formats: .qct (QCTool), .xyz (XYZ ASCII), .xls (Microsoft Excel), and .gbn (Geosoft GBN):

- Select **File/Save As**. The **Save As** dialog appears.
- Select a required format from the **Save as Type** dropdown list and click **Save**. The **Export** dialog opens.



- In the **Lines** section of the dialog:
  - Select a line you want to export and click the > button. The line is moved to the field on the right.
  - To export all lines, click the >> button.
  - To cancel export, click the < and << buttons.
  - Select between the two options offered for the line label export: as a channel or in a separate line.
  - Check the **Export Point ID as a Channel** box to assign a special number (ID) to each row of your data and to export such numbers as a separate column.
- In the **Channels** section, select the columns to export in the **Existing Columns** field and move them to the field on the right using the same method as described for the **Lines** section of the dialog.
- Click **Export.**

***Note**. If not indicated otherwise, the exported file will be saved with the same name, but a different extension.*

Managing Files

Managing Files

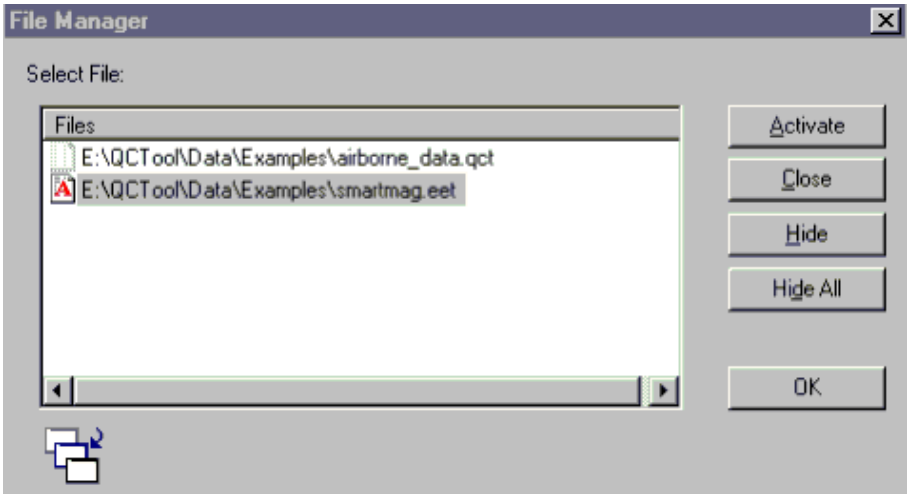
In certain cases, you may need to work with various files simultaneously. To facilitate this task, the QC Tool offers its own **File Manager**.

If you work with one file, have to switch to another, but want the first one to be at hand:

- Close all the files one by one.

  In each case, a message will prompt you to click the **Yes** button if you want to close your file and the **No** button if you want to hide it, i.e. to put it aside for the time being .
- Click **No** and continue your work with other files.
- When you want to open the file you hid, click the **File Manager** button on the main QC toolbar.

The respective dialog appears:



- Select the file from the **Files** list and click **Activate**. The file will open.

You can also use the **File Manager** dialog to hide and close files:

- To hide a file, select it from the **Files** list and click **Hide**.
- To hide all the files, click **Hide All**.
- To close a file, select it from the **Files** list and click **Close**.

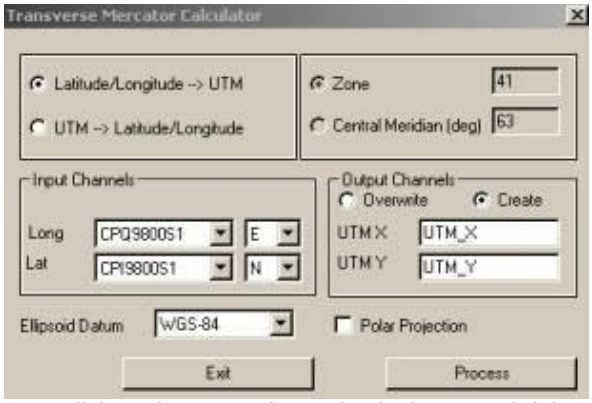
***Note**. When you have a blank screen, click the , and buttons on the main QC toolbar. This will automatically restore the tables, plots and grids you hid last.*

48 Managing Files

Additional Functionalities

Transverse Mercator Calculator

Select **Tools/Transverse Mercator Calculator** to open the respective dialog:



To convert Latitude/Longitude to UTM, click on the respective option in the upper left-hand section of the dialog.

In the **Input Channels** section:

- Select the channels you want to convert from the dropdown lists. As a rule, the Lat and Long channels are recognized automatically.
- Select the axis direction between W and E, N and S in accordance with your data.

As a rule, if longitude or latitude is negative, W and S are selected automatically. Otherwise, the you have to select the appropriate direction yourself proceeding from your data.

- Make sure that the zone and central meridian information is correct. This information appears in the upper right-hand corner of the dialog after you have specified the input channels.

In the **Output Channels** section:

- Select **Overwrite** if you want to replace existing columns in your table. The **UTM X** and **UTM Y** boxes turn into dropdown lists. Choose the columns to overwrite from these lists.
- Select **Create** if you want the results of your conversion to appear in new columns. You can leave the default header names offered by QCTool, **UTM_X** and **UTM_Y**, or change them as desired.

To convert from UTM to Latitude/Longitude:

- Click on the respective option in the upper left-hand section of the dialog.

The names of the dropdown lists in the **Input Channels** section change to **UTM X** and **UTM Y**.

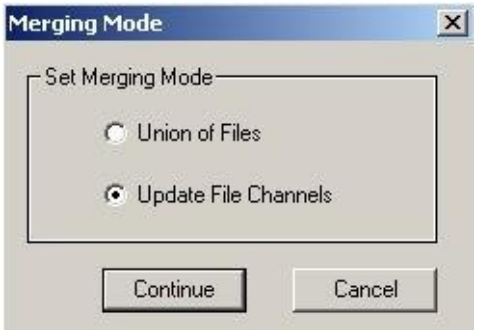
- Select the channels you want to convert from these lists (as a rule, the **UTM X** and **UTM Y** channels are recognized automatically) and select the axis direction between E and W, N and S.
- In the **Output Channel** section, select between **Overwrite** and **Create** as described above for the Lat/Lon to UTM conversion.
- Specify either the zone or central meridian in the respective boxes in the upper right-hand corner of the dialog.
- Click **Process**.

Note. In both cases an ellipsoid datum is to be selected from the respective list in the bottom of the dialog. If your data come from polar areas, you also have to check the **Polar Projection** box.

Merging Files

QCTool allows two ways of merging files: updating one file with the data from another and merging two files using the same base channel (usually, the Fiducial channel). In both cases:

- Close any opened files.
- Select **Tools/Files/Merging Files** on the QCTool menu. The **Merging Mode** dialog opens, with the **Update File Channels** option selected by default:



- Leave the **Update File Channel** option selected if you want to update your file or select **Union of Files** to merge two files, and click **Continue**.

See also:

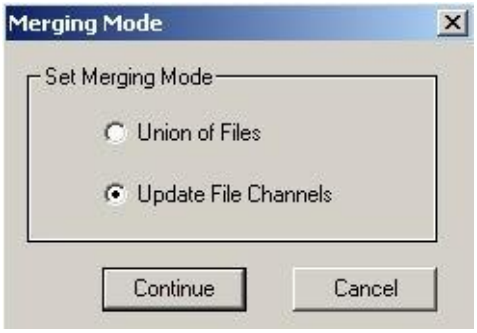
Union of Files

Updating Files

Updating Files

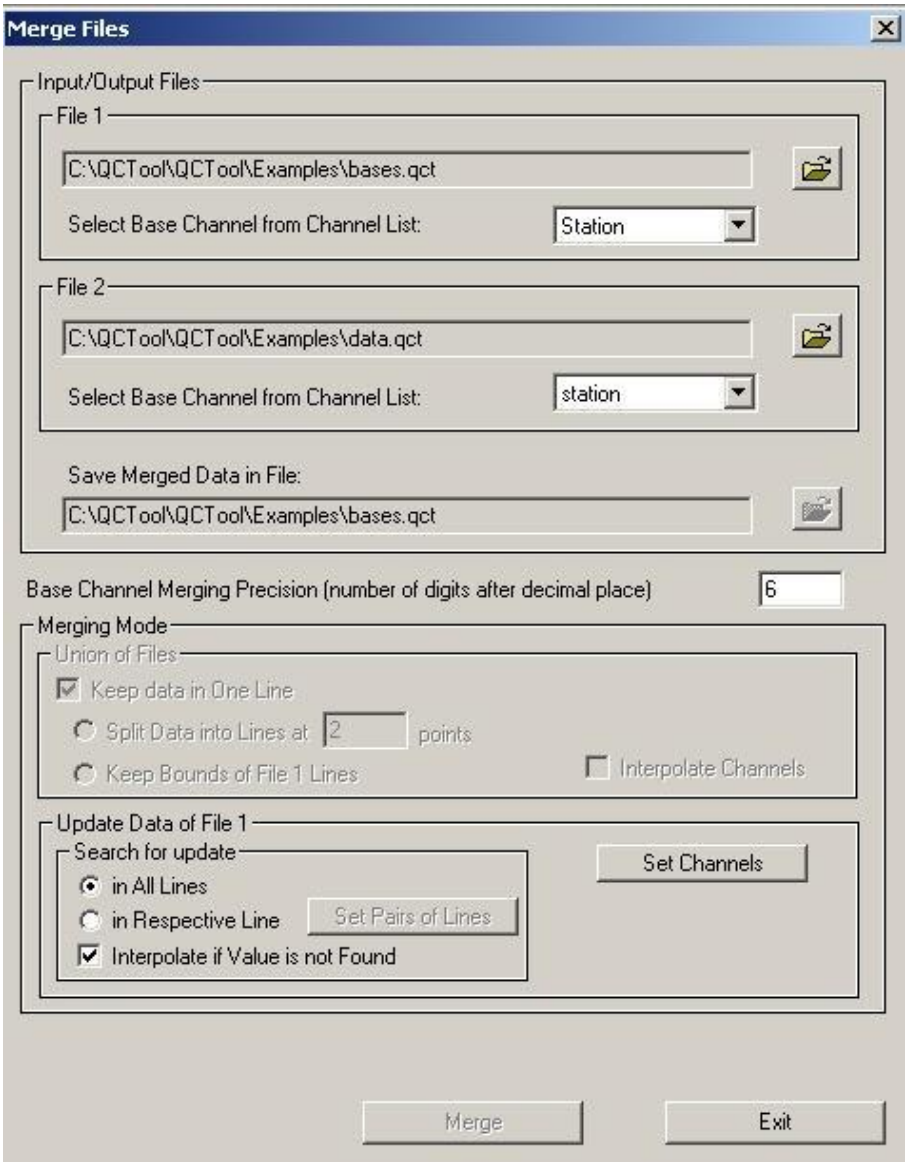
In some cases, you may need import separate columns from one file to another. This option is especially useful when you have two different files containing data of one survey; for example, one of the files contains the coordinates of your measuring stations and the other - the measured data.

- Select **Tools/Files/Merging Files** on the QCTool menu. In the **Merging Mode** dialog that appears:



- Leave the **Update File Channels** option selected and click **Continue**.

The **Merge Files** dialog opens:



In the **File 1** section of this dialog:

- Click the **Open** button to browse for the file to update.
- Select the base channel from the respective list below.

In the **File 2** section of this dialog:

- Click the **Open** button to browse for the file, from which you want to import an update.
- Select the base channel from the respective dropdown list below.

The **Save Merged Data in File** field in the bottom of the **Input/Output Files** section contains the location of the result file.

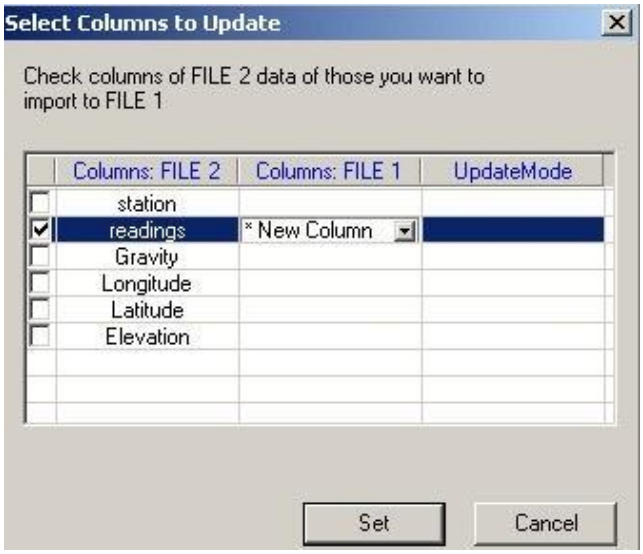
In the box below the **Input/Output Files** section:

- Select the number of digits after the decimal point. This is a precision order QCTool uses to merge base channel data from different files.

In the **Merging Mode** section:

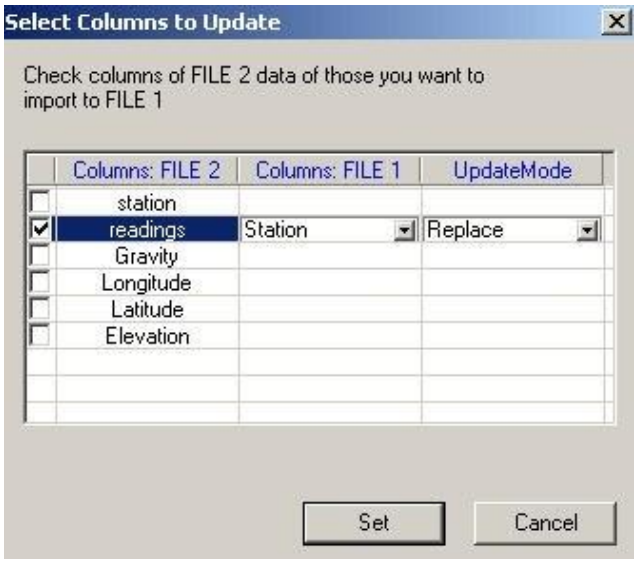
- Click the **Set Channels** button. The **Select Colums to Update** dialog appears, with the first column containing the data from the file to import. There are two ways of import. The first imports data into a new column of the file to be updated and the second updates an existing column.

To import data into a new column:



- Click in the checkbox next to the column to import and leave **New Column** selected in the dropdown list that becomes active in the **Columns: File 1** column.
- Click **Set**

To update an existing column:



- Click in the checkbox next to the column to import and select the channel to update from the dropdown list in the **Columns: File 1** column.
- In the dropdown list that appears in the **Update Mode** column upon your selection, choose between three update modes: **Replace** (overwrites an existing column), **Average** (overwrites an existing column with the average calculated from the respective values in File 1 and File 2), and **Replace No Data** (overwrites only dummy values).
- Click **Set**.

Back in the **Search for Update** section of the **Merge Files** dialog:

- Select between two methods of searching for the update: **In All Lines** (this option searches data in all available lines and sorts them in order) and **In Respective Line** (this option searches and sorts data within each separate line). If you select the second option, you can also specify the pairs of lines from File 1 and File 2.

To do this:

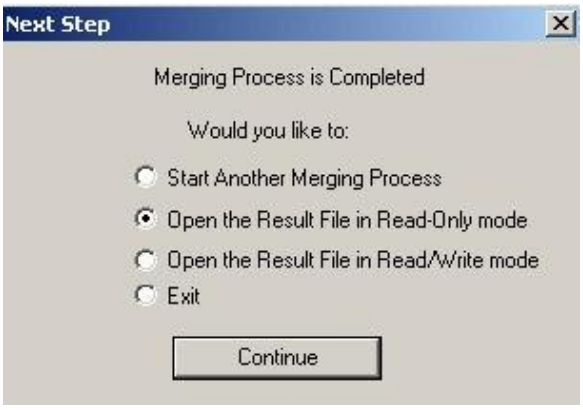
- Click the **Set Pairs of Lines** button. In the **Lines Link Table** dialog that appears:

- Select the line to update in the first (File 1) column. The second column (File 2) now contains a dropdown list with all the lines available in File 2.
- Select a required line and click **OK**.

Back in the **Search for Update** section of the **Merge Files** dialog:

- Check the box next to **Interpolate if Value is not Found** if the column to import lacks a base channel vaue requested by the file to update.
- Click **Merge** in the bottom of the **Merge Files** dialog.

The **Next Step** dialog appears:



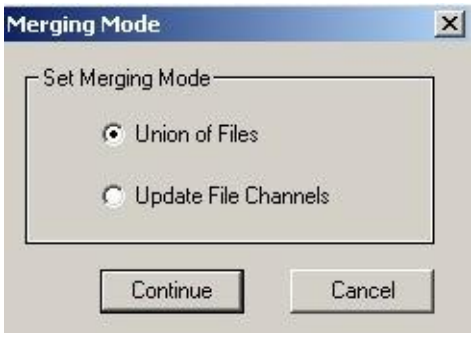
In this dialog:

- Select **Start Another Merging Process** if you want to import new updates into the same file or update another file. This brings the **Merge Files** dialog back. Repeat the steps described above.
- Select **Open the Result File in Read-Only Mode** if you do not want to change the updated file.
- Select **Open the Result File in Read/Write Mode** if you want to change the updated file.
- Select **Exit** to quit the **Merge Files** application.
- Click **Continue** to close the dialog.

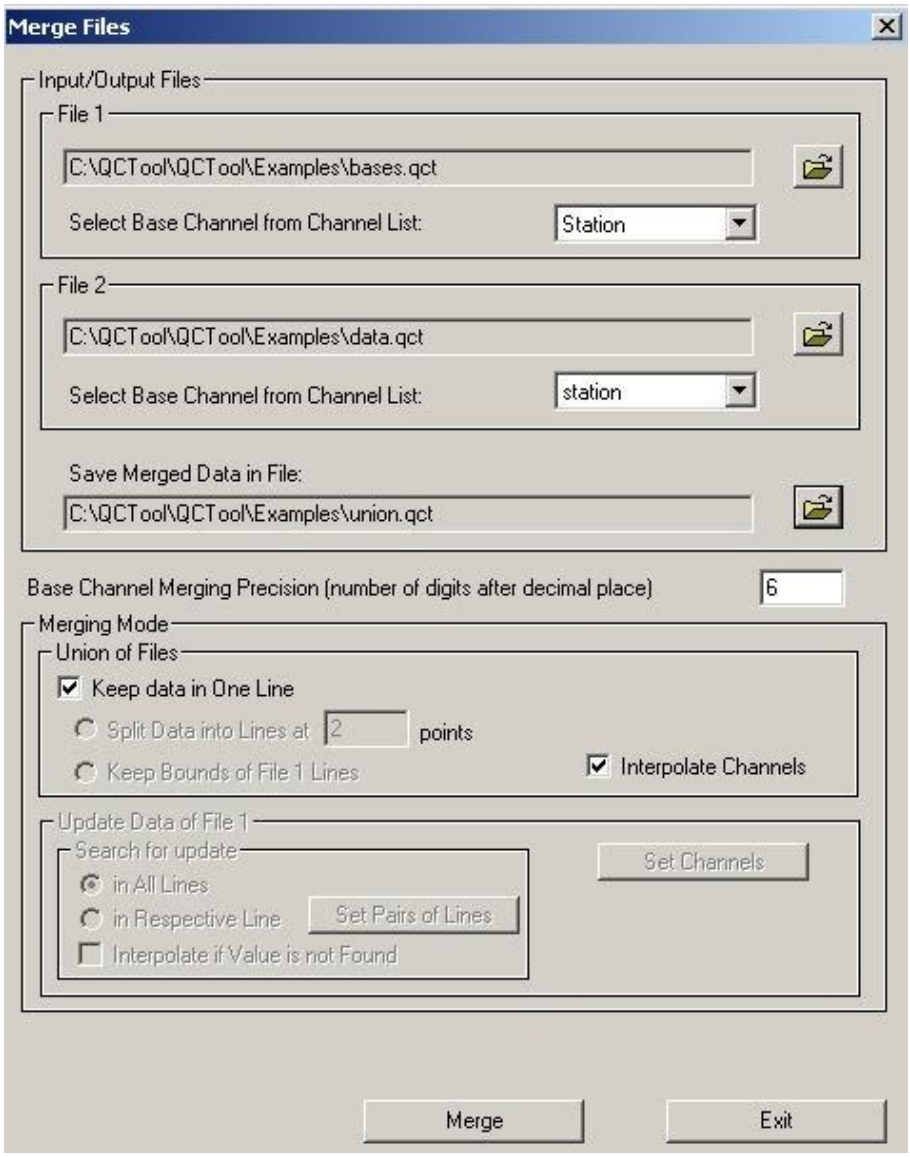
Union of Files

In case your file contains a base channel, which is a column with values sorted in a strictly ascending order (e.g. Fiducial Channel), you can merge it with one or more other similar files. For this purpose, you do not need to open these files.

- Select **Tools/Files/Merge Files**. In the **Merging Mode** dialog that appears:



- Select **Union of Files**. The **Merge Files** dialog opens:



In the **File 1** section of this dialog:

- Click the **Open** button to display the standard **Open** dialog.
- Select the file you want to merge and click **Open**. Its name and path appear in the **File 1** field.
- Select the base channel from the dropdown list below, containing all channels from your file.

In the **File 2** section:

- Click the **Open** button to bring up the standard **Open** dialog.
- Select the second file to merge with the one in the **File 1** section and click **Open**. Its name and path appear in the **File 2** field.
- Select the base channel from the respective dropdown list below.

In the **Save Merged Data in File** field:

- Click the **Open** button to bring up the standard **Save As** dialog, select the folder to save the new (merged) file into, and enter its name in the **File Name** field.
- Click **Save** to return to the **Merge Files** dialog. The name of the new file and its location appear in the **Save Merged Data** field.

In the **Base Channel Merging Precision** field:

- Specify the number of digits after the decimal point for the base channel in the box on the right. This is a precision order QCTool uses to merge base channel data from different files.

In the **Merging Mode** section:

- The **Interpolate Channels** box is checked by default. De-select it to cancel interpolation. The cells, which otherwise would have been filled with the results of linear interpolation, will contain asterisks.
- To merge all data into one table without dividing it into lines, leave the **Keep Data in One Line** box checked (it is checked by default).
- To divide a table into lines, de-select the **Keep Data in One Line** box and specify the number of points per line in the **Split Data into Lines at Points** field.

Click **Merge** in the bottom of the **Merge Files** dialog. In case any of your files has no base channel, a message will warn you that the merging has failed. If the merging is successful, the **Next Step** dialog appears:

In this dialog:

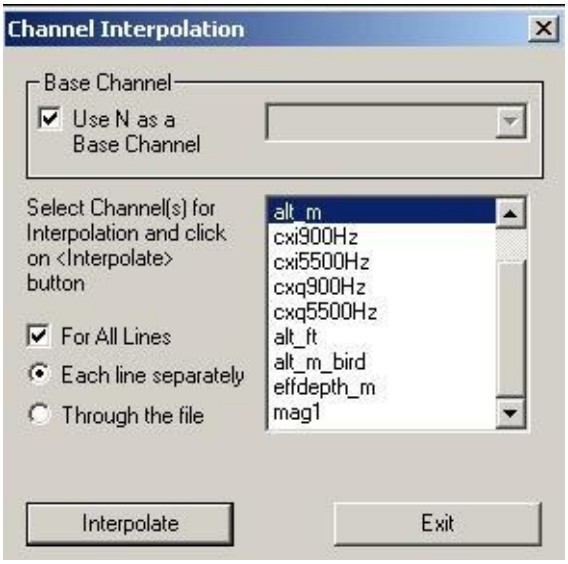
- Select **Start Another Merging Process** if you want to merge one more file with the two already merged or to merge another pair of files. This brings the **Merge Files** dialog back. Repeat the steps described above as many times as needed.
- Select **Open the Result File in Read-Only Mode** if you do not want to change the merged file.
- Select **Open the Result File in Read/Write Mode** if you want to change the merged file.
- Select **Exit** to quit the **Merge Files** application.
- Click **Continue** to close the dialog.

Interpolating Data

This functionality is accessible only if your data contain a base channel (e.g. Fiducial) which may be both in an ascending and descending order. Interpolation is especially useful when you merge two or more files and there are a lot of missing data as a result. You can also use it to replace existing data that you consider doubtful by interpolated. In this case, select

these data, right-click on them, and choose **Set Dummy Values** from the popup menu to appear. This will substitute your data with asterisks.

- Select **Tools/Data Channels/Interpolate Channels**. The **Channel Interpolation** dialog appears:

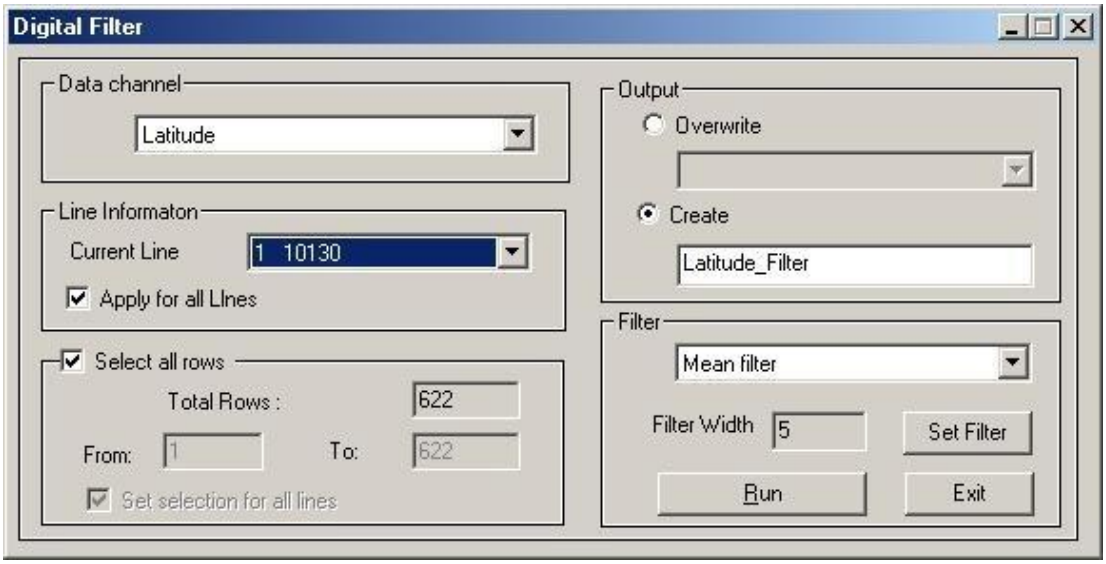


- Choose the base channel from the dropdown list in the upper section. If your data contain the Fiducial channel, it is selected by default. To use the record number **N** as a base channel, check the respective box.
- Select the channel(s) for interpolation from the list below.
- Check the **For All Lines** box to interpolate data in all lines. This box unchecked, your data are interpolated only within the line you are currently working with.
- If you checked the **For All Lines** box, select **Each line separately** if you want interpolation to be line-specific and **Through the file** if you want it to be continuous, throughout all of the lines.

- Click **Interpolate**.

Digital Filter

Click the Processing -> Filters -> Digital Filter. The dialog appears.

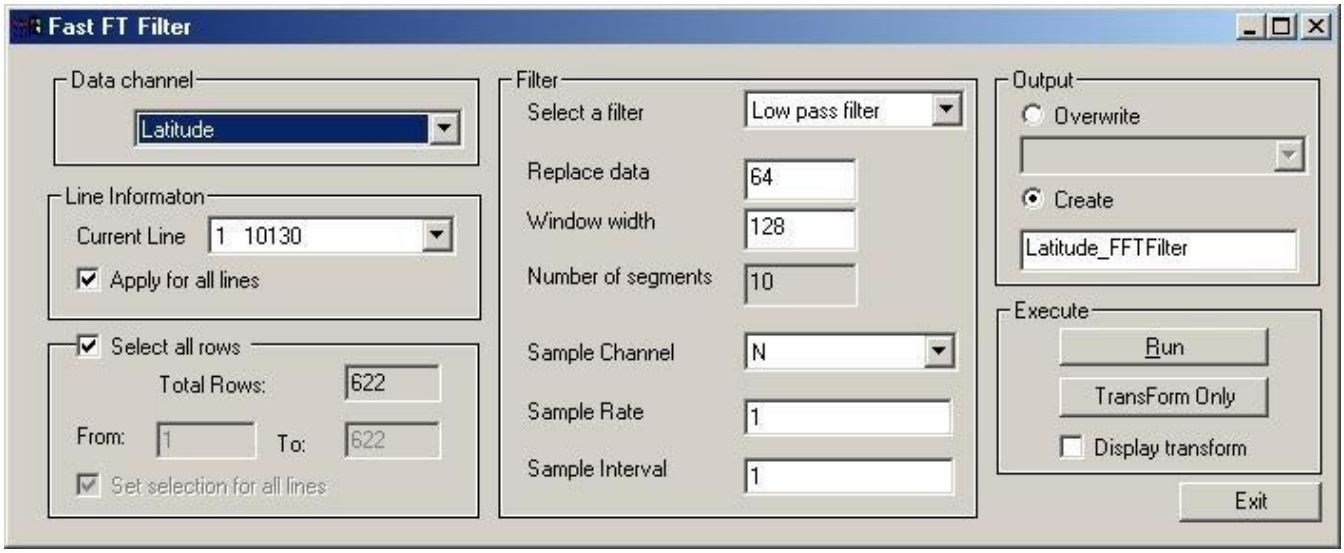


- Select a data channel for filtering

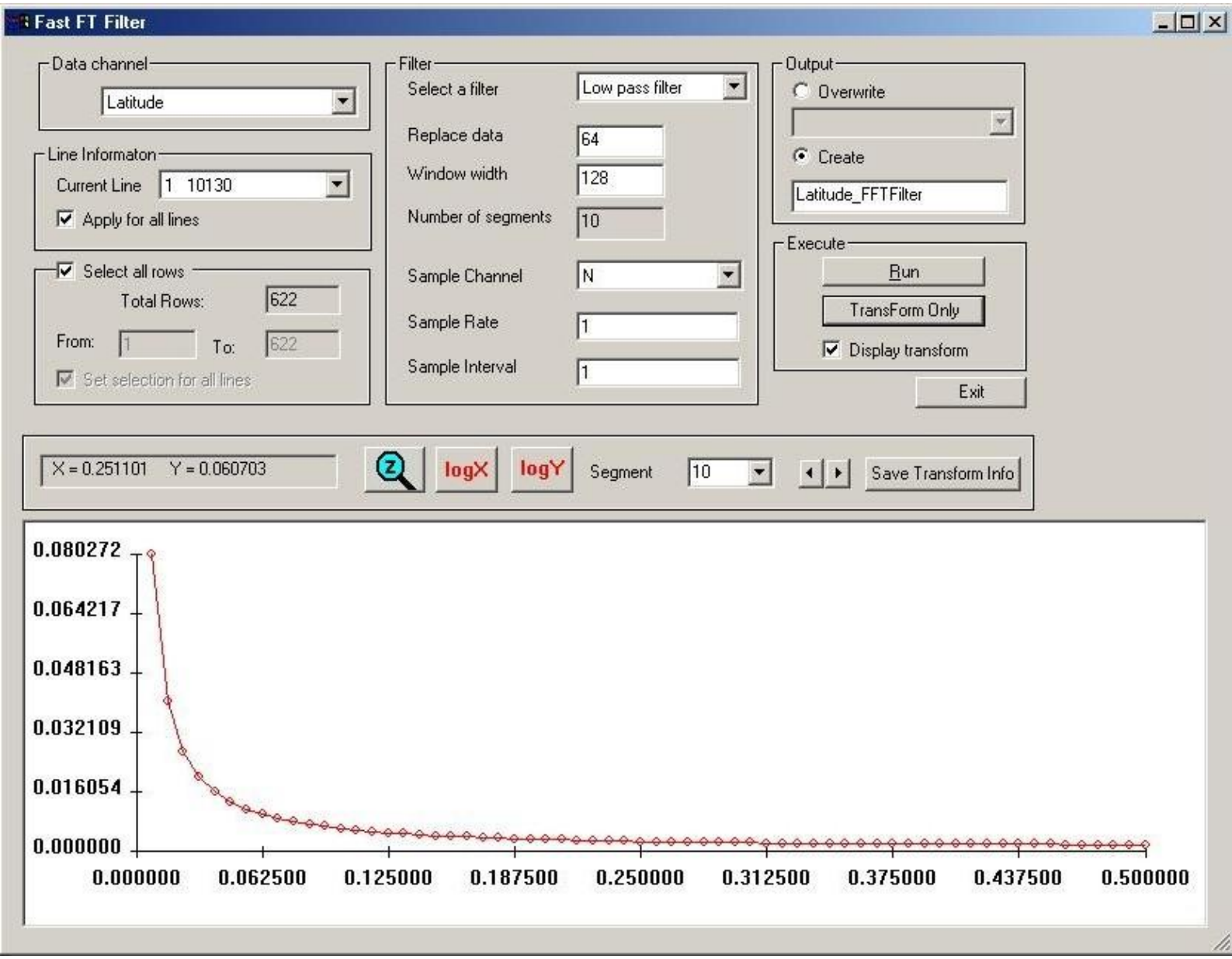
- Select a data range if need
- Select output mode. If create mode is chosen, a new channel will be inserted after base channel
- Select file type: Mean filter, Median filer and Gaussian filter
- Click the Run button to filter data

FFT Filter

Click the Processing -> Filters -> FFT Filter. The dialog appears.



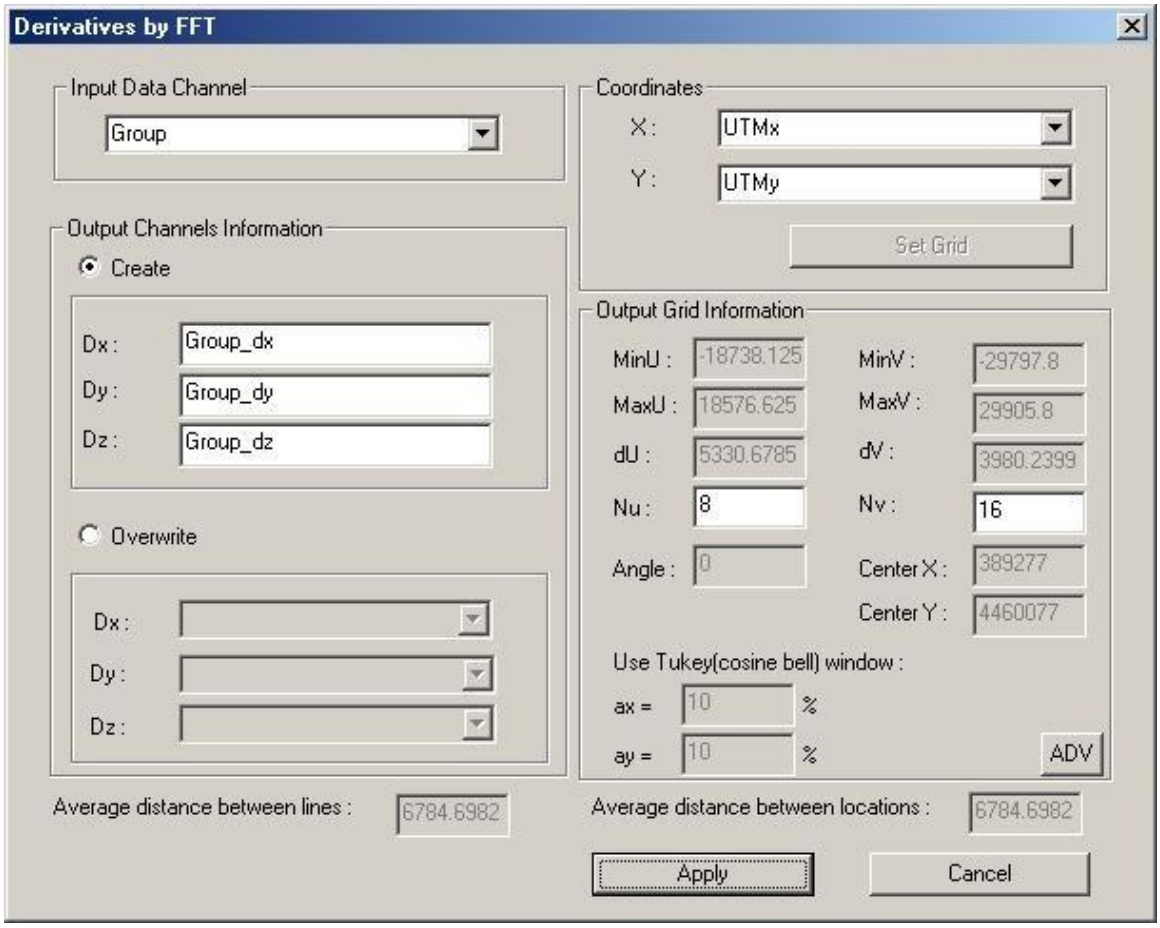
- Select a data channel for filtering
- Select a data range if need
- Select output mode. If create mode is chosen, a new channel will be inserted after base channel
- Select file type: Low pass filter, high pass filter, Band pass and Band remove filter
- Input a number of replace data or window width
- Select a sample channel or input a number of sample rate or sample interval
- Click the Run button to filter data
- Click the Transform only button to transform data
- Check the Display transform. The dialog changes as



- Click Save transform Info to save the transform information to a specified QCT file

Derivatives By FFT

Click the Processing -> Gravity data Processing -> Derivatives by FFT. The dialog appears.

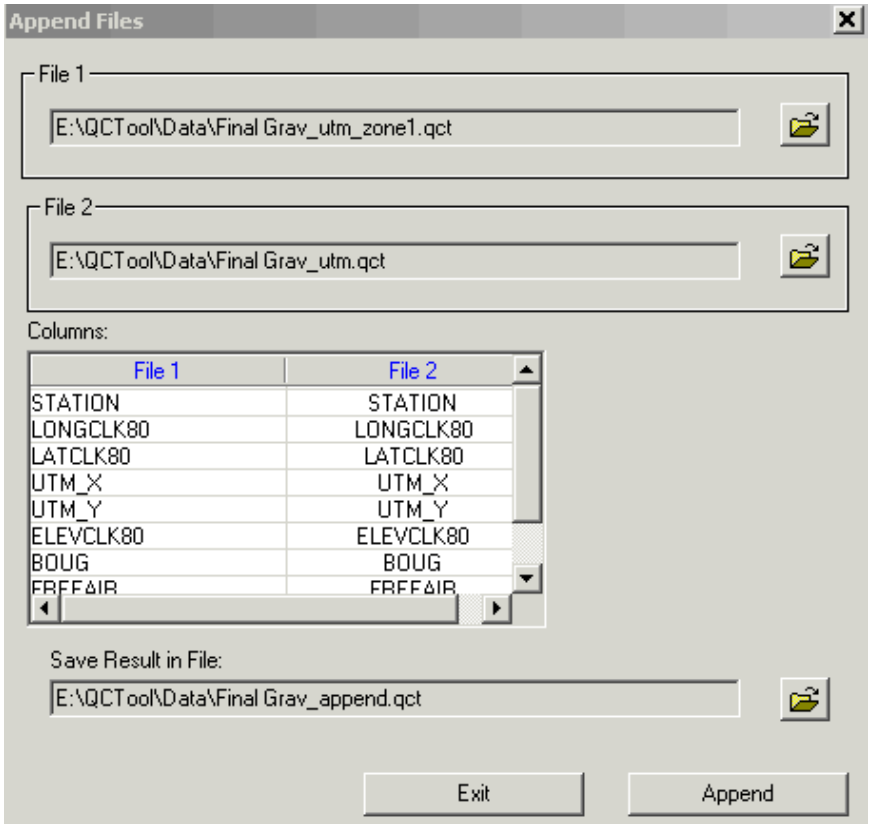


- Select a data channel for derivation
- Select data channels for coordinates
- Click the button of ADV to set the information of Output grid information
- Click Apply to calculate

Appending files

In some cases, you need to append, or attach, one file to another.

Select **Tools/Append Files** on the QCTool menu. In the respective dialog that appears:



- Click the **Open** button in the **File 1** section to browse for the first file.
- Click the **Open** button in the **File 2** section to browse for the file to append.
- Compare the **File 1** and **File 2** columns in the respective table below.

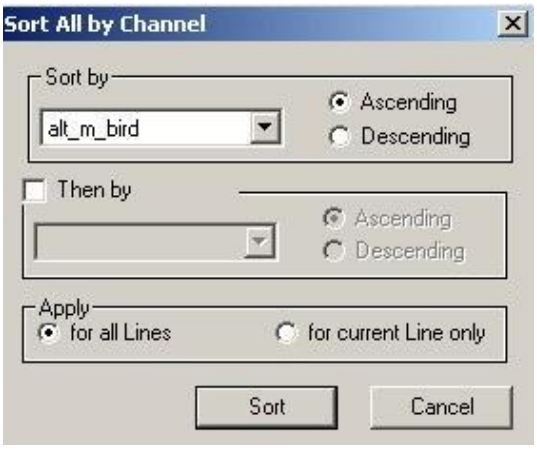
If a **File 2** column does not coincide with a **File 1** column, you can always change the former to match the latter. Click on it and select a required column from the dropdown list to appear.

- Click the **Open** button in the **Save Results in File** section to specify the file to save your newly created data set in.
- Click **Append**. Your new file appears in the current window.

Sorting by Channel

To sort your data by channel:

- Select **Tools/Data Channels/Sort All by Channel**. In the dialog to appear:



- Select the channel to sort your data by from the **Sort by** dropdown list and specify the **Ascending** or **Descending** order on the right.
- To specify the secondary sort order of your data, check the **Then by** box. The section below is activated. Select the channel to sort by from the dropdown list and specify the **Ascending** or **Descending** order on the right.
- In the bottom **Apply** section, select **For all Lines** to sort your data by the specified channel throughout all of the lines and **For the current Line only** to sort data within the line you are currently working with.
- Click **Sort**.

QCTool Reference

File menu commands

The File menu offers the following commands:

	Open QCT File	Opens an existing qct-file.
	Close	Closes an opened qct-file.
	Save QCT file	Saves an opened qct-file using the same file name.
	Save As	Saves an opened qct-file to a specified file name.
	Import File	Import data from a specified file name.
	Print	Prints a map from the Grid Mapping Window 
	Print Preview	Displays the document on the screen as it would appear printed.
	Print Setup	Selects a printer and printer connection.
	File Manager	Invokes a dialog to manage the opened qct-files.
	Exit	Exits QCTool

Open command (File menu)

Use this command to open an existing qct-file in a new spreadsheet window.

Shortcuts

Toolbar: 

Keys:CTRL+O

Close command (File menu)

Use this command to close all windows containing the active file. QCTool suggests that you save changes to your file before you close it. If you close a file without saving, you lose all changes made since the last time you saved it.

Save command (File menu)

Use this command to save the active file to its current name and directory. If you want to change the name and directory or file format of an existing file before you save it, choose the Save As command.

Shortcuts

Toolbar: 

Keys:CTRL+S

Save As command (File menu)

Use this command to save and name the active file. QCTool displays the Save As dialog box so you can name your document.

To save a document with its existing name and directory, use the Save command.

File Save As dialog box

The following options allow you to specify the name and location of the file you're about to save:

File Name

Type a new filename to save a document with a different name. QCTool adds the extension you specify in the Save File As Type box.

Drives

Select the drive in which you want to store the document.

Directories

Select the directory in which you want to store the document.

Network...

Choose this button to connect to a network location, assigning it a new drive letter.

Save As Type

You can choose different file type from the list:

- QCT-file;
- XYZ ASCII file;
- Microsoft Excel;
- Geosoft GBN file.

See Also

Saving Files

Exit command (File menu)

Use this command to end your QCTool session. You can also use the Close command on the application Control menu. QCTool prompts you to save documents with unsaved changes.

Shortcuts

Mouse:Double-click the application's Control menu button.

Keys:ALT+F4

Edit menu commands

The Edit menu offers the following commands:

	Undo	Reverse previous editing operation.
	Cut	Deletes data from the spreadsheet and moves it to the clipboard.
	Copy	Copies data from the spreadsheet to the clipboard.
	Paste	Pastes data from the clipboard into the spreadsheet.

Note: Edit menu functions not implemented in the current version

View menu commands

The View menu offers the following commands:

Toolbar	Shows or hides the toolbar.
Status Bar	Shows or hides the status bar.

Window menu commands

The Window menu offers the following commands, which enable you to arrange multiple views of multiple documents in the application window:

	New Window	Creates a new window that views the same document.
	Cascade	Arranges windows in an overlapped fashion.
	Tile Horizontally	Arranges windows Horizontally.
	Tile Vertically	Arranges windows Vertically.
	Arrange Icons	Arranges icons of closed windows.

Help menu commands

The Help menu offers the following commands, which provide you assistance with this application:

	Help Topics	Offers you an index to topics on which you can get help.
	About	Displays the version number of this application.

Toolbar

The toolbar is displayed across the top of the application window, below the menu bar. The toolbar provides quick mouse access to many tools used in QCTool,

To hide or display the Toolbar, choose Toolbar from the View menu (ALT, V, T).

ClickTo

 Open an existing qct-file. QCTool displays the Open dialog box, in which you can locate and open the desired file.

 Save the active qct-file with its current name.

 Invoke a dialog to manage the opened qct-files. You can close, hide or activate different view windows of the opened file.

 Show/hide the spreadsheet window of active qct-file.

 Show/hide the plotter window of active qct-file. If plotter is called first time the data from selected column will be plotted

 Show/hide the profile viewer of active qct-file.

Indicate a selected line from a list of existed. .

 Invoke a dialog with line information.

 Cut the current line at a selected point.

 Mark the selected line as a deleted.

 Mark the selected points (locations) as a deleted.

 Insert a new point (location).

 Insert points (locations) .

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