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# EMIGMA Plotter Manual

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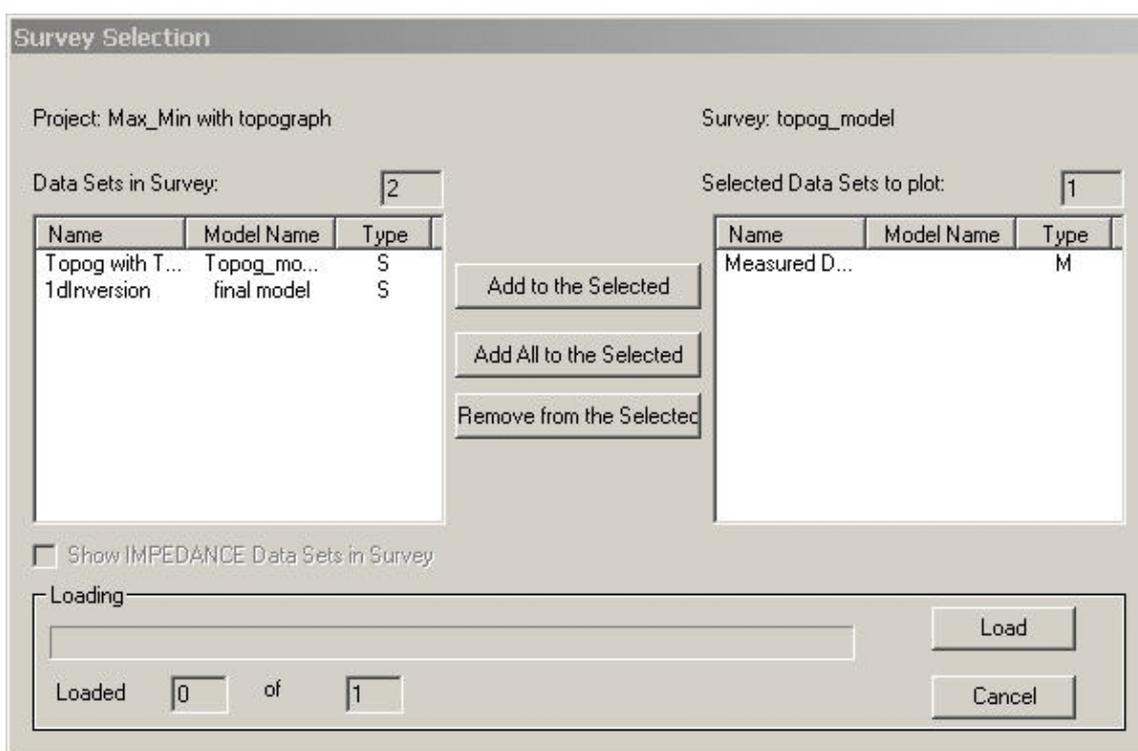
## Plotting

### Select Data Sets to Plot

To plot your data, click the EiKPlot button  on the main toolbar. If your survey contains several data sets, a message will appear asking you whether you want to compare the current data set with the other data sets in the survey:



1. If you click **Yes**, the **Survey Selection** dialog will open offering you to choose data sets to be compared with your current data set:



- Select a data set from the list on the left and click **Add to the Selected**. In case you want to compare all the available data sets, click **Add All to the Selected**
  - To remove a data set from the list on the right, select it and click **Remove from the Selected**.
  - Click **Load**
2. If you click **No** in the message box, the initially selected data set will be plotted automatically.
  3. To load the settings of a previously created plot, click the **Load Settings** button to open the **Get Settings** dialog, select a required file and settings therein and click **Load** (see **Saving Plot Settings**).

## Plot Static, Frequency- and Time-Domain Data

In the case of static, frequency- or time-domain systems, the first available channel of your data will be plotted automatically.

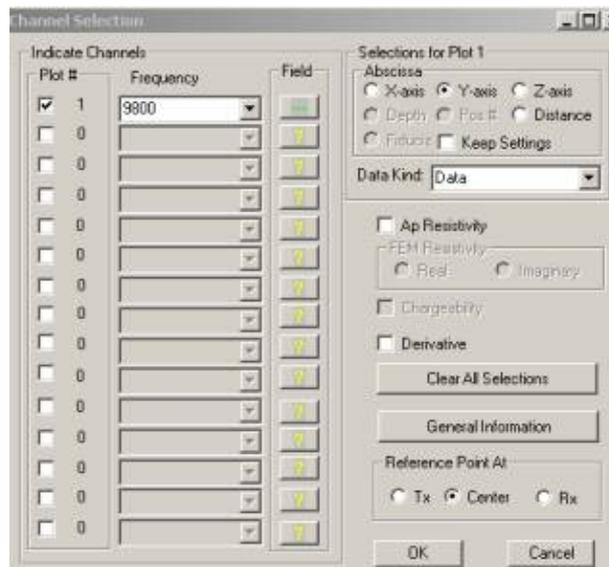
### Related Topics

[Edit Plot Settings](#)

[Switch between the Profile and Spectrum/Decay Display](#)

## Edit plot settings

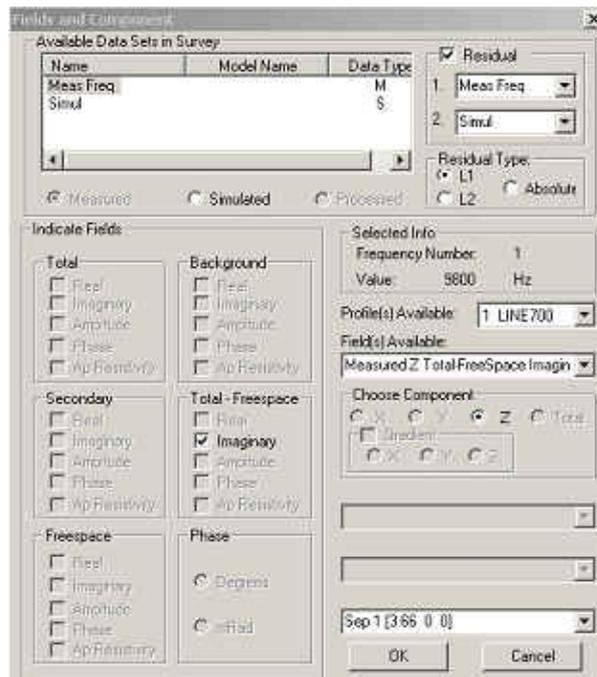
- Click the **Channels** button  on the EiKPlot toolbar or double-click anywhere in your plot. The **Channel Selection** dialog will open:



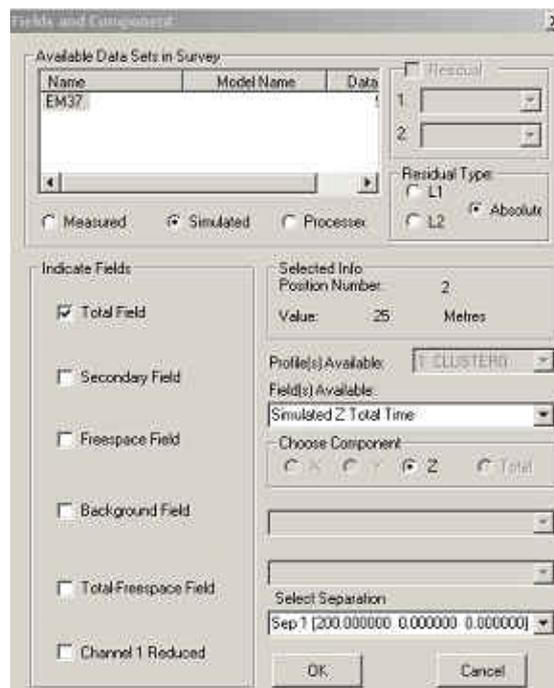
- Select the channel you want to display from the **Frequency (Time (msec)** in the case of time-domain data or **Static** in the case of DC Magnetic or Gravity) dropdown list and click the **Field** button  to specify the fields and components

If you want several channels to be displayed on the same plot, select as many **Plot #** boxes as you need. For example, if two channels are to be plotted at a time, check the second **Plot #** box and select the second channel from the respective dropdown list.

In the case of static or frequency-domain systems, the **Fields and Component** dialog to appear will be as follows:



If your data is time-domain, the **Fields and Components** dialog to appear will differ only in the **Indicate Fields** section:



In both dialogs, the **Available Data Sets in Survey** section shows the name of the data sets and models you loaded and the type of data (Measured, Simulated, Processed) in these data sets. You can see the number of channels you selected and their value in the **Selected Info** section.

- Select the data set(s) to plot if you have loaded several data sets
- Check the fields and phases (for frequency-domain and static) to plot in the **Indicate Fields** section
- Select the X, Y, Z or **Total** components in the **Choose Component** section if your receivers are dipoles
- Select the bipole from the respective dropdown list to become active in the bottom right-hand corner of the dialog above the **Select Separation** list if your receivers are bipoles. In this case, the **Choose Component** section will be disabled.

**Note.** You can also select the field and component from the **Fields Available** dropdown list on the right. This automatically checks the required field and selects the respective component/bipole. *Checking more than one field will display the respective number of responses on the same plot*

- Select a transmitter from the **Select Transmitter** dropdown list to become active above the **Select Separation** list when multiple transmitters are used
- Select a separation to be used by the plotter from the **Select Separation** dropdown list, which becomes active in the case of a moving transmitter survey
- Provided you have both measured and simulated data, check the **Residual** box in the respective section in the upper right-hand corner of the dialog. The two dropdown lists below will be enabled. Select the data sets from these lists. In the **Residual Type** section, select an algorithm to be used for your data recalculation
- In case total derivatives have been measured or modeled (in magnetics and gravity surveys), select **Total** to enable the **Gradient X, Y and Z** buttons. Choose the gradient you want to plot
- Click **OK** to return to the **Channel Selection** dialog

In the **Channel Selection** dialog, you can specify to plot the Apparent Resistivity response:

- Check the **Ap Resistivity** box. This will activate the **FEM/TEM Resistivity** section. Select between **Real** and **Imaginary** for FEM and **Late-T** and **All-Time** for TEM
- Check the **Derivative** box to plot the derivative of the data selected. The derivative is calculated by a simple inline finite difference
- Click **OK** in the **Channel Selection** dialog to view the plot.

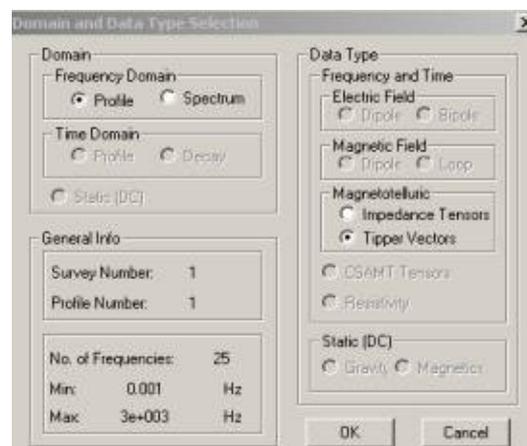
**Note.** The warning *Curves containing non-data only are not plotted* means that your selection cannot be plotted, since it requests data that are not available.

## Switch between the profile and spectrum/decay display

Right click on the plot display and select **Set Spectrum Mode** if viewing frequency-domain data or select **Set Decay Mode** if viewing time-domain data. Right click again and select **Set Profile Mode** to switch back to the profile display.

OR

To specify in more detail the data to be displayed, select **Configure/Domain** or click the **Domain** button  on the EiKPlot toolbar. The **Domain and Data Type Selection** dialog opens:



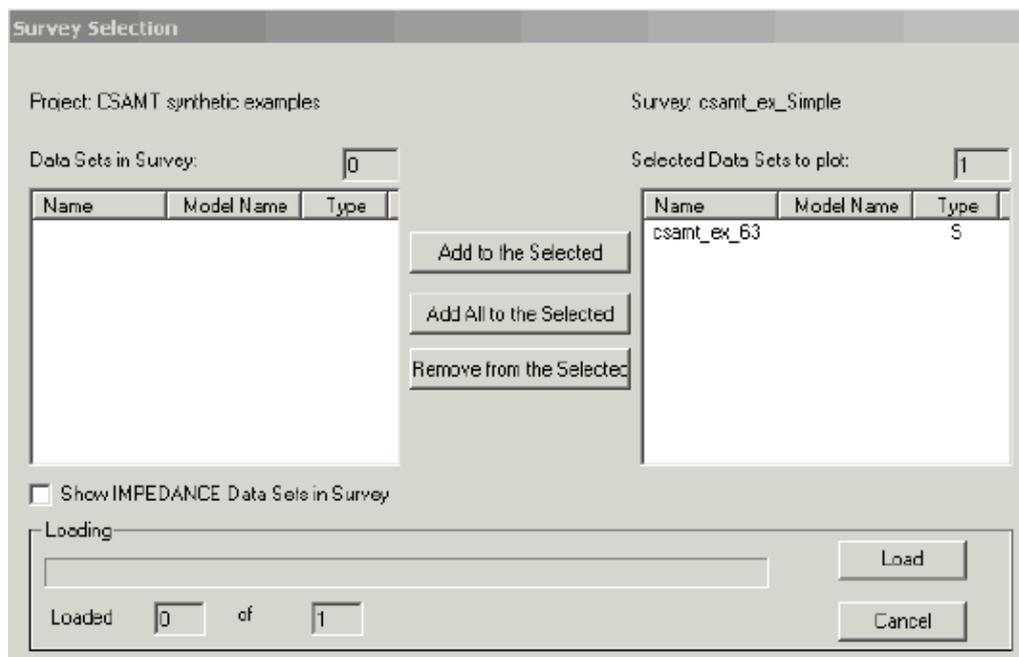
- In the **Domain** section of the dialog, select the **Spectrum** button if your data are frequency-domain or the **Decay** button if they are time-domain
- Click **OK**. The **Channel Selection** dialog appears, with the first profile position selected by default
- Click the **Field** button  to the right of the selected position to display the **Fields and Component** dialog
- Check or edit the previously selected settings and click **OK** to return to the **Channel Selection** dialog
- Click **OK** to close the dialog and view the **Spectrum/Decay** response
- To switch back to the profile display, click the **Domain** button  on the EiKPlot toolbar again, select the **Profile** button in the **Domain** section of the **Domain and Data Type Selection** dialog and repeat follow the steps as described in this section.

*Note.* Use the **Next** and **Previous Channel or Position** buttons (  and  ) on the EiKPlot toolbar to toggle forward and back through the available profile locations. Use the **Next** and **Previous Profile** buttons (  and  ) to toggle forward and back through the available profiles.

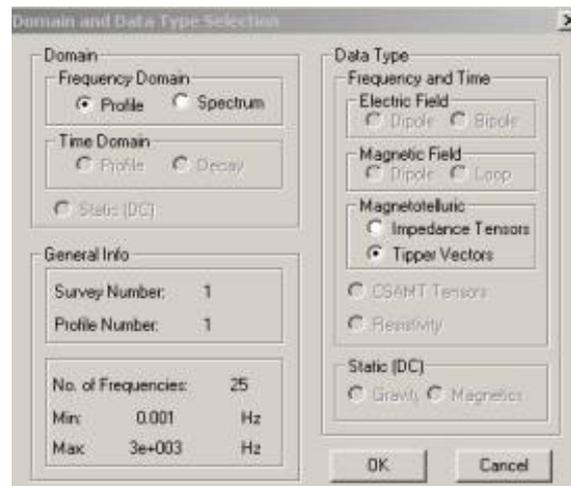
## Plot MT and CSAMT Data

1. If your MT or CSAMT data contain impedance information, the plot will be generated automatically. However you can always view your initial data:

- Click the **Survey** button  on the EiKPlot toolbar. The **Survey Selection** dialog will appear:



- De-select the **Show IMPEDANCE Data Sets in Survey** box below the list of data sets on the left. All initial EM data sets will appear in the list of data sets
- Select a data set (or both data sets) to plot and click **Add to the Selected**. The **Domain and Data Type Selection** dialog will appear offering you to select between the electric and magnetic fields:



2. If your data set contains no impedance information, the **Domain and Data Type Selection** dialog will open prior to plot generation. Select between **Electric Field** and **Magnetic Field** and click **OK** to proceed.

## Related Topics

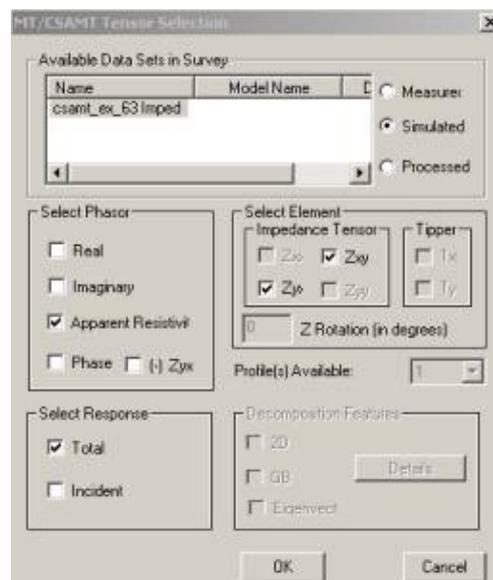
[Edit Plot Settings](#)

[Switch from Impedance Tensors to Tipper Vectors](#)

## Edit plot settings

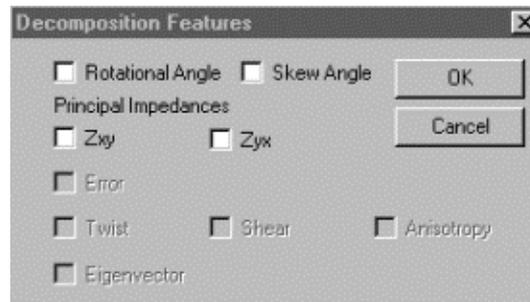
- Click the  button on the EiKPlot toolbar or double-click anywhere in your plot. The **Channel Selection** dialog will appear. Select the channel you want to plot from the **Frequency** dropdown list and click the **Field** button .

This will bring up the **MT/CSAMT Tensor Selection** dialog:



In this dialog, the **Available Data Sets in Survey** section shows the name of the data sets and models you are currently in and the type of data in these data sets. You can see the number of channels you selected and their value in the **Selected Info** section.

- Select a required phasor in the respective section. Checking the **Real** and **Imaginary** phasors will display them both on the same plot. Selecting **Apparent Resistivity** or **Phase** will cancel all other selections
- Check the (-) **Zyx** box to de-select the respective element in the **Impedance Tensor** section
- Check a required response/responses in the **Select Response** section
- Select either one or more elements in the **Impedance Tensor** section, which is active by default
- Specify the rotation angle in the **Z Rotation (in degrees)** field. This option is active when all the **Impedance Tensor** elements are available
- Click in the **2D** box in the **Decomposition Features** section to bring up the respective dialog:



- Select **Rotational Angle** and **Skew Angle** or the principal impedances to calculate and plot

*Note. The **Decomposition Features** section is yet underway. As of now, only a standard Swift 2D decomposition is provided.*

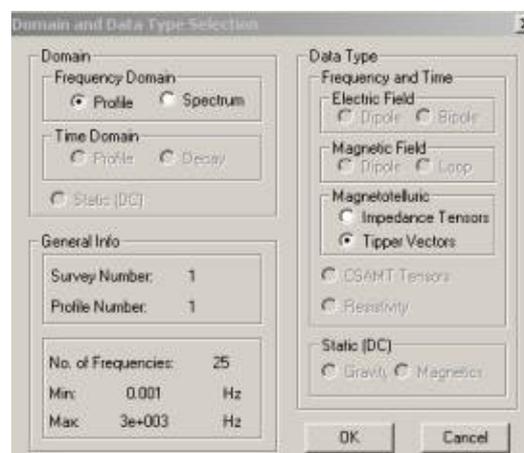
## Related Topics

[Switch from Impedance Tensors to Tipper Vectors](#)

## Switch from Impedance Tensors to Tipper Vectors

In MT, you may need to switch between **Impedance Tensors** and **Tipper Vectors**

- Click **OK** in the **MT/CSAMT Tensor Selection** dialog and then in the **Channel Selection** dialog to close them both
- Select **Configure/Domain** or click the **Domain** button  on the EiKPlot toolbar. The **Domain and Data Type Selection** dialog opens:



- In the **Magnetotelluric** section of the dialog, select the **Tipper Vectors** button and click **OK**. The **Channel Selection** dialog reappears
- Click the **Field** button  to the right of the selected channel to reopen the **MT/CSAMT Tensor Selection** dialog

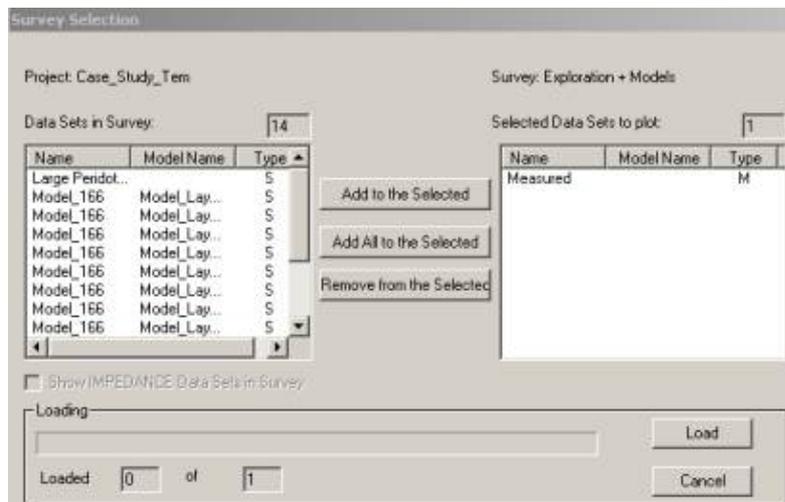
You now have the **Tipper** section activated, whereas the **Impedance Tensor** boxes are disabled. The **Z Rotation** box will be disabled as well, however it may contain an angle setting if one was specified earlier

- Select the **Tipper** vector you want to plot
- Click **OK** to return to the **Channel Selection** dialog
- Click **OK** in the **Channel Selection** dialog to view the plot.

## Loading Additional Data Set(s)

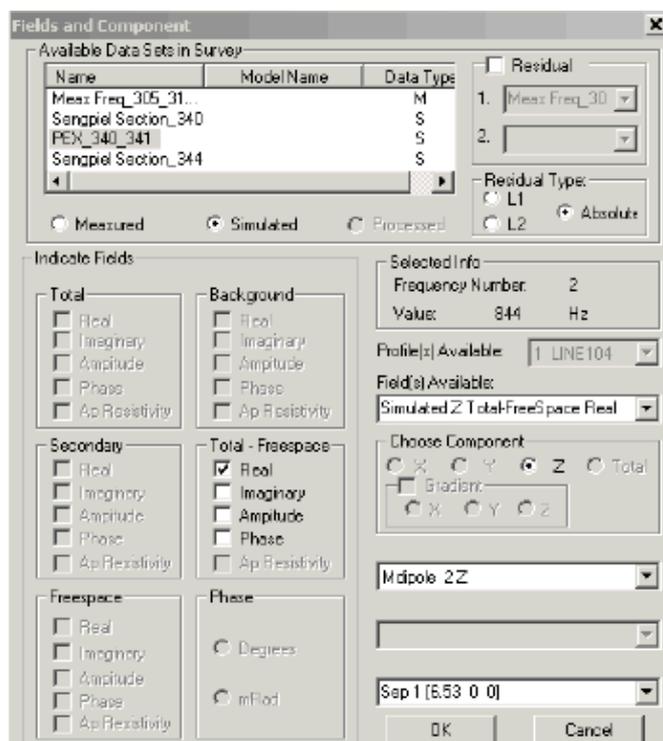
If you have more than one data set in your survey, but you did not load them at the very beginning (see [Select Data Set\(s\) to Plot](#)), you can always do it from your plot display:

- Select **Configure/Survey** or click the **Survey** button  on the EiKPlot toolbar. The **Survey Selection** dialog appears:



- Select the data set(s) from the list on the left and click **Add to the Selected**. The data sets selected will move to the list on the right
- Click **Load**. The **Channel Selection** dialog appears
- Select the channel(s) and click **Field** ()

In the **Fields and Components** dialog to appear:



- Select the data set from the respective list (now containing the data set(s) you added) in the upper left-hand corner of the dialog
- Specify fields and components as described in the **Edit Plot Settings** section in both [Plot Static](#), [Frequency- and Time-Domain Data](#) and [Plot MT and CSAMT Data](#)
- Click **OK** in the **Fields and Components** and then in the **Channel Selection** dialogs to view the plot

**Note.** To plot several data sets at a time, check as many **Plot #** boxes in the **Channel Selection** dialog as the number of data sets you want to display. Select the channels from the activated **Frequency/Time/Static** dropdown lists. Click **Field** across each activated list and specify in each case the data set, field and components in the **Fields and Components** dialog to appear.

## Viewing Plots

Your data having been plotted, you get an easy access to different view options, such as switching between profiles, channels, separations, transmitters and receivers, customizing plot appearance, viewing model properties. All this is available from the EiKPlot menu and its toolbar offering a wide range of buttons. Or, you can also use the hot keys popping up when you hold your mouse cursor over the toolbar buttons.

To view the coordinates of any plot point, click it and hold the button down. You will see the X- and Y-axis values displayed over the cursor.

### Related Topics

[Switch between Profiles](#)

[View Multiple Profiles on the Same Plot](#)

[Switch between Channels, Separations and Transmitters](#)

[View Multiple Plots at a Time](#)

[View Model Properties](#)

[Adjust the Scale of your Plot](#)

[Zoom in on a Fragment of your Plot](#)

[Toggle Grid On and Off](#)

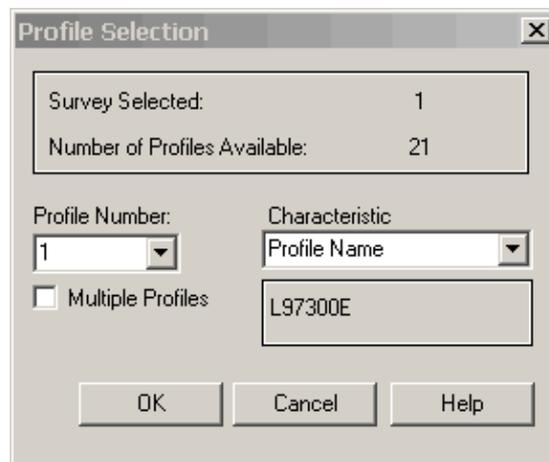
[Customize Plot Appearance](#)

## Switch between profiles

If you have more than one profile, you may need to switch from one profile to another or view multiple profiles at a time. Your first plotted profile is 1 by default.

To switch to another profile:

- Select **Configure/Profile** or click the **Profile** button  on the EiKPlot toolbar. The **Profile Selection** dialog opens:

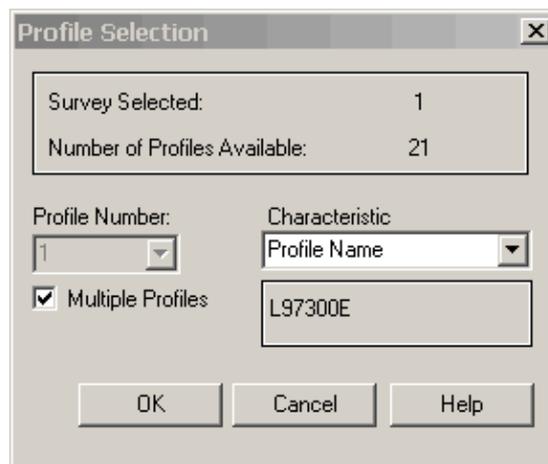


- Select another profile from the **Profile Number** dropdown list. In the **Characteristic** dropdown list on the right, you can select the profile name or the profile (start) X, Y and Z coordinates to view the respective information in the frame below

*Note.* You can also switch to another profile right from the EiKPlot toolbar. Click the **Next Profile**  and **Previous Profile**  buttons to toggle forward and back through all available profiles.

## View multiple profiles on the same plot

- Select **Configure/Profile** or click the **Profile** button  on the EiKPlot toolbar. The **Profile Selection** dialog opens



- Select the **Multiple Profiles** box and click **OK** to close the dialog
- Double-click anywhere in the plot or click the **Channels** button  on the EiKPlot toolbar to open the **Channel Selection** dialog
- In this dialog, check the next **Plot #** box to activate the **Frequency/Time/Static** dropdown list and select the channel
- Click the **Field** button  to display the **Fields and Components** or **MT/CSAMT Tensor Selection** dialog. You now see the **Profile(s) Available** dropdown list enabled
- Select the number of the profile you want to add to your plot from this list
- Click **OK** to return to the **Channel Selection** dialog
- Click **OK** to close the dialog and view the plots.

Repeat all the steps above but the first two to display as many profiles as needed on the same plot.

**Note.** To switch to another set of channels or profiles, use respectively the **Previous** and **Next Channel or Position** buttons (  and  ) or the **Previous** and **Next Profile** buttons (  and  ) on the EiKPlot toolbar.

## Switch between channels, separations and transmitters

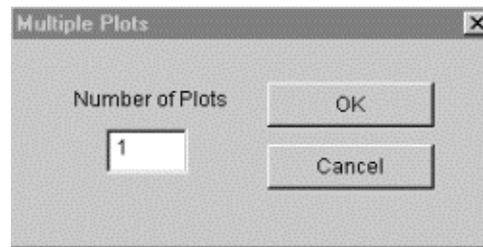
- To switch between available channels, click the **Next Channel or Position**  and **Previous Channel or Position**  buttons on the EiKPlot toolbar.
- To switch between separations use the **Next** and **Previous Separation** buttons (  and  ) on the EiKPlot toolbar.
- To switch between transmitters, use the **Next** and **Previous Transmitter** buttons (  and  ) on the EiKPlot toolbar.

## View multiple plots at a time

Viewing multiple plots at a time is especially convenient when you deal with responses that cannot be displayed on the same plot.

- Select **Settings/Custom/Number of Plots** from the EiKPlot menu

The **Multiple Plots** dialog appears:



- Type the number of plots you want to display and click **OK**

The window will be divided into the respective number of plots. The first plot will be the one you are currently in.

- If you want to check or edit the settings of your current plot, double-click anywhere in it to display the **Channel Selection** dialog. Make necessary changes as described in the Edit Plot Settings sections (see [Plot Static](#), [Frequency- and Time-Domain Data](#) and [Plot MT and CSAMT Data](#))
- Repeat this operation for all the other plots

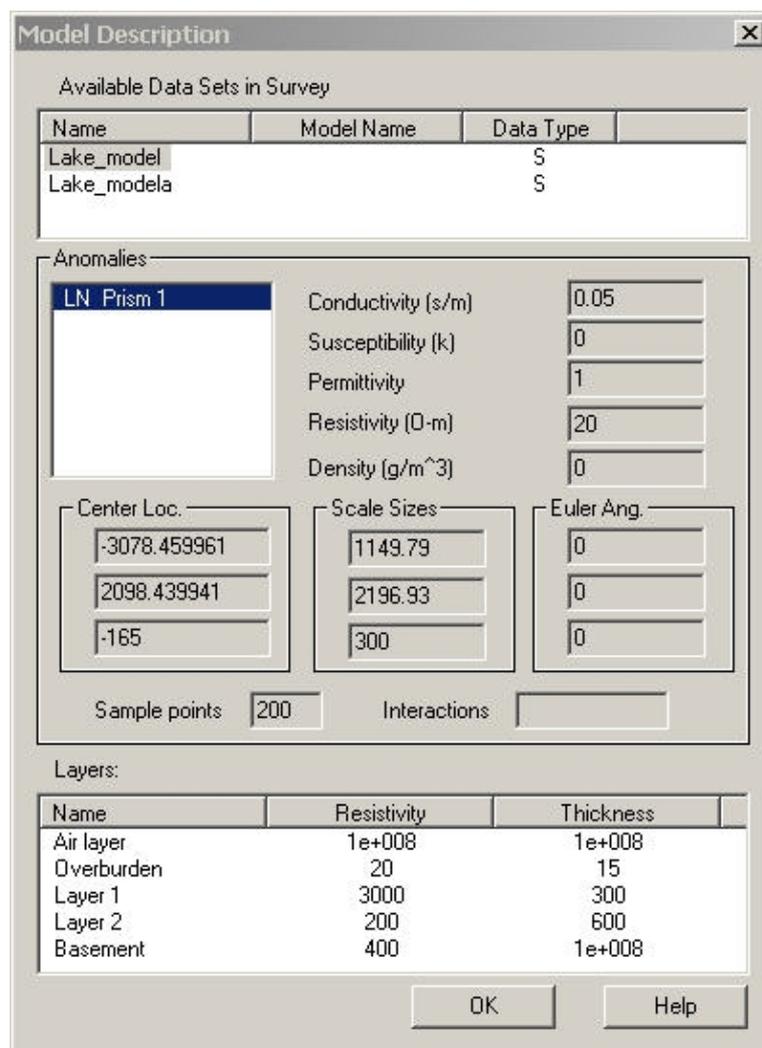
To switch back to the single-plot display:

- Select **Settings/Custom/Number of Plots** from the EiKPlot menu to bring up the **Multiple Plots** dialog
- Change the number of plots to 1 and click **OK**

This will switch you back to the full-screen single-plot view again.

## View model properties

To view model properties without leaving the plotter, click the **Model** button  on the EiKPlot toolbar. You will find the following information in the **Model Description** dialog to appear:



- List of data sets in your survey loaded in EiKPlot. You can select any data set to check the model information therein
- List of Anomalies. Select the target you are interested in to see its parameters (conductivity, permeability, Euler angles, scale sizes, sample points and interactions)
- List of layers with resistivity and thickness information for each layer

If you have loaded several data sets, you can switch between your models using the **Previous**  and **Next**  Model buttons on the EiKPlot toolbar.

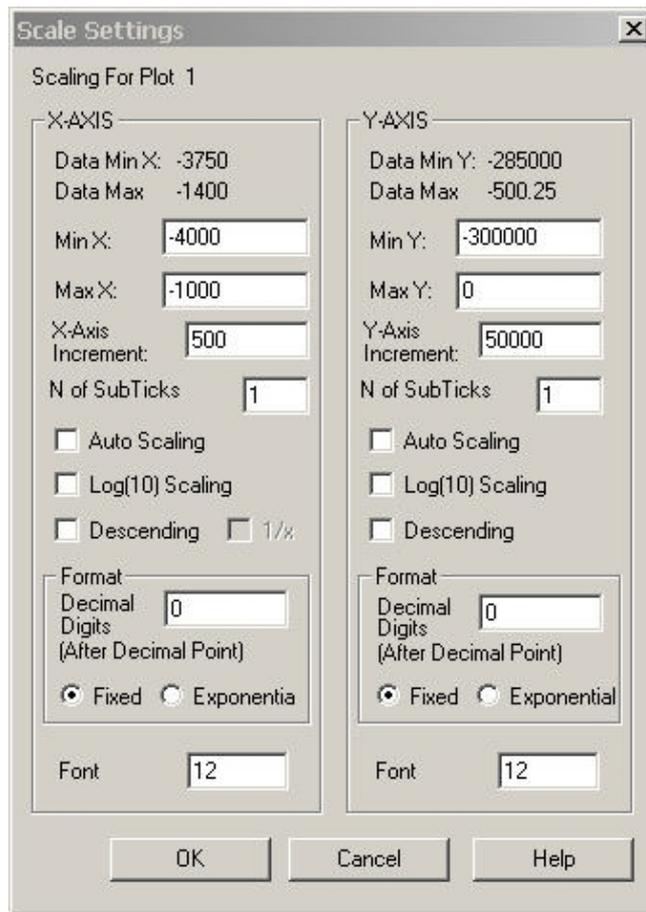
## Adjust the scale of your plot

EiKPlot allows you to customize the scale and to zoom in on a specific fragment of your plot.

To adjust the scale settings:

- Select **Settings/Scaling** or click the **Scaling** button  on the EiKPlot toolbar

The **Scale Settings** dialog appears:



- The minimum and maximum X- and Y-axis settings and the X- and Y-axis increments are generated automatically from your input data. To change these settings, type your values in the respective fields
- To return to initial scaling, select the **Auto Scaling** checkbox. You can also do it later, right from the EiKPlot menu or toolbar. Select **Settings/To Initial Scale** or simply click the **Rescale** button .
- Change to the descending scale by selecting the respective checkbox. De-select to change back
- To customize the appearance of the axis labels, change the number of digits to be displayed after the decimal point, adjust units (fixed or exponential) and set a required font size in the respective fields
- To change to the logarithm scale, select the **Log(10) Scaling** checkbox.

*Note.* If your data contain negative or zero values, you will see a warning message indicating negatives plotted as positives and zeroes not plotted

- Click **OK** in the **Scale Setting** dialog to close the dialog and return to your plot.

### To zoom in on a fragment of your plot:

- Select **Settings/Zoom** or click the **Zoom** button  on the EiKPlot toolbar
- Click in the area of your plot where you want the fragment to start and, without releasing the button, drag right/left and up/down until the required fragment is selected (outlined in green). Release the button
- To zoom in further on, repeat the operation.

The two buttons on the EiKPlot toolbar, **Zoom Back**  and **Zoom Forth**  become active

- Use these buttons to toggle through all the fragments you have zoomed in

- Click the **Rescale** button  to zoom out and return to the initial scaling.

## Toggle grid on and off

- To toggle the grid on and off, select or de-select **Settings/Custom/Grid** or click the **Set Grid** button  on the EiKPlot toolbar.
- To cancel the grid, you can also use the **Default** command from the **Settings** menu.

## Customize plot appearance

EiKPlot offers you a whole set of tools for customizing your plot appearance. You can change the color, style and label of the curve, adjust the appearance of the symbols, edit and move axis labels, mask any of your plots.

### Related Topics

[Change the Color and Style of the Curve](#)

[Change the Curve Label](#)

[Mask a Curve](#)

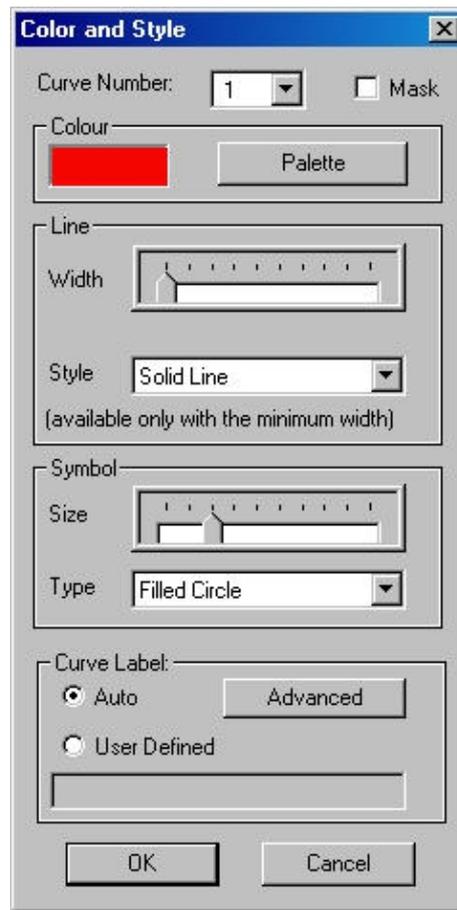
[Adjust Axis Labels and their Font Size](#)

## Change the color and style of the curve

- Select **Settings/Colour and Style** on the EiKPlot menu

OR

- Double-click the curve label (top left corner). The **Colour and Style** dialog appears



In the **Colour** section:

- Click the **Palette** button to open the standard palette of basic and custom colors. Change or add new colors and hues

In the **Line** section:

- Define the width of the line using the slider

This option is applicable only to the **Solid Line** style. Other styles do not show on the plot unless the minimum line width has been selected

- Select the style of your curve from the respective dropdown list

In the **Symbol** section:

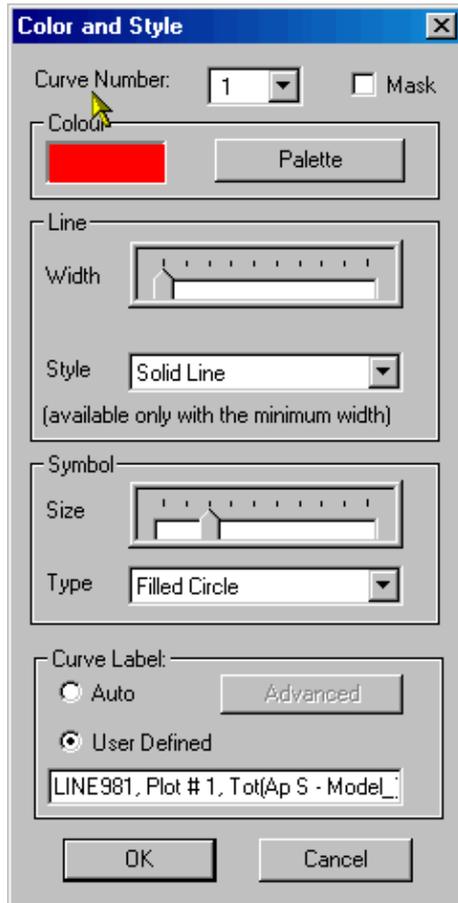
- Use the slider to increase or decrease the size of used symbols
- Select the shape you want to apply from the **Type** dropdown list.

*Note.* To reset all your color and style changes, select **Settings/Default**.

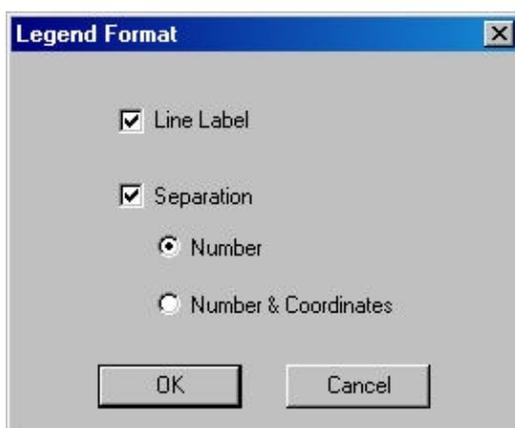
## Change the curve label

- Double-click on the curve label to change

The **Curve Label** field of the **Color and Style** dialog to open will contain this label



- Select **User Defined** and change the label name as desired and click **OK**
- To change back to the former label, open the **Color and Style** dialog again and delete the new curve label from the respective field. Click **OK**. The former label will reappear.
- To apply changes to all the labels, click on **Auto** then **Advanced** to reveal the **Legend Format** dialog:



It is possible to toggle the display of the **Line Label** and the **Separation** in the curve label. You have the option of showing the separation **Number & Coordinates** or just the separation **Number**.

- Sample curve label: LINE9673050, Plot # 1, Tot(Ap S - Model\_)B1 - S1(-50.00, 0.00, 0.00)
  - ◆ Line Label - LINE9673050
  - ◆ Separation Number - S1
  - ◆ Separation Coordinates - (-50.00, 0.00, 0.00)

## Mask a curve

- Double-click on the label of the curve to mask
- Check the **Mask** box in the top right-hand corner of the **Color and Style** dialog to open and click **OK**

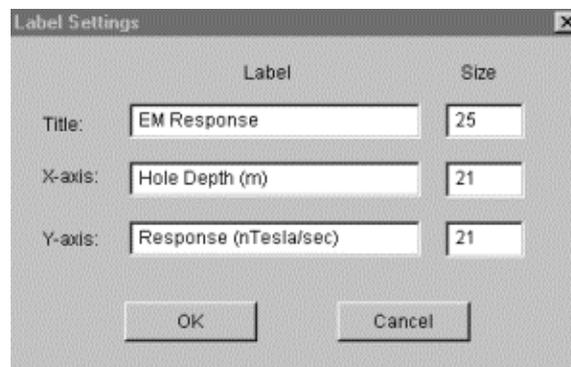
The curve and its label will become gray

- To bring the masked curve back, de-select the **Mask** box

## Adjust axis labels and their font size

- Double-click on the axis label to change (or select **Settings/Labels** or click the **Change Labels** button  on the EiKPlot toolbar)

The **Label Settings** dialog appears:



- Make your adjustments and click **OK** to close the window and view the changes.

**Note.** To change the position of an axis label on the plot, simply click and drag the label wherever you want.

## Converting to various displays

EiKPlot allows you to convert plots to various displays:

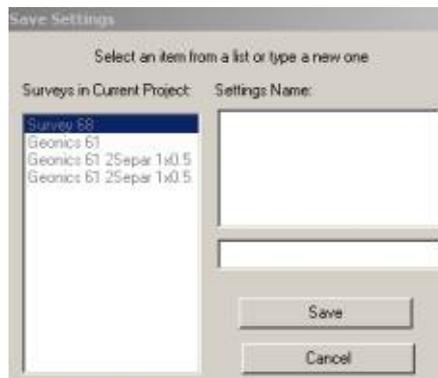
- Select **Settings/Custom/Flip Sim Data** to multiply all simulated data by 1 and thus to flip your plot. De-select this command to switch it back to the initial view
- Select **Settings/Custom/Sim Quad Conv** to flip the simulated quadrature data only
- Select **Settings/Custom/Crone (X,Y)ÜPetRos EiKon (-Y,X)**, if you are the user of Crone systems and need to convert coordinates between Crone and PetRos EiKon formats
- Select **Settings/Custom/Smooth Meas Data** to process your measured data and make the plot less jagged
- Select **Settings/Custom/App Conductivity** to switch between the apparent resistivity and apparent conductivity displays.

## Saving plot settings

This option allows for the rapid plotting of a number of models. For example, you could run a suite of models in batch mode, adjusting your layered earth, target positions, conductivity or size. Plot the first model and save the default settings as a .plt file. Then proceed to the next model and simply open the .plt file. The graph will be plotted for you automatically.

To save the settings of your current plot(s) as default:

- Select **Default/Save As** or click the **Get Settings** button  on the EiKPlot toolbar. The **Save Settings** dialog appears



- Select the survey you want to save the settings file in
- In the field below the **Settings Name** box, type the name of your new .plt filename and click **Save**.

To save changes to an existing setting file

- Select **Defaults/Save** or click the **Save Settings** button  on the EiKPlot toolbar
- In the **Save Settings** dialog, click **Save**, if you want to save the file under the same name, or type a new name if you want to save it as a separate file.

## Loading a default settings file

- Select **Defaults/Get** or click the **Get Settings** button  on the EiKPlot toolbar. The **Get Settings** dialog appears
- In the **Surveys in Current Project** list, choose the survey your settings file is in
- Select the **Settings Name** and click **Load**.

## Printing Plots

EiKPlot offers two output modes: Auto (Full-Screen) and Scaled Graphic. The former automatically makes your printed plot look as you see it on the screen. The latter enables you to change the scale of the plot to be printed and to add an information box.

*Note.* To print your plot in color, select **File/With Colour** or turn the **Colour Print** button  on before setting print properties.

### Related Topics

[Print and Preview in Auto \(Full-Screen\) Mode](#)

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## Add an Information Box to your Plot

### Print and preview in Auto (Full-Screen) mode

To print the plot as you see it on the screen:

- Select **File/Print** to display the **Print** dialog
- In this dialog, specify the printer, the print range and the number of copies in the respective fields
- Click **Properties** to specify the document properties in the dialog to appear and click **OK**
- Click **OK** in the **Print** dialog to start printing

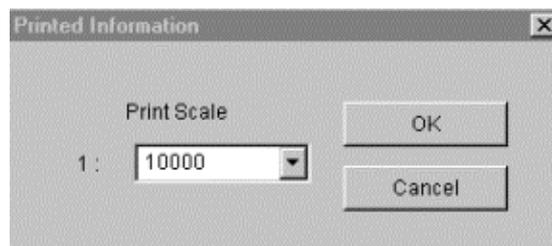
To preview your plot in the Auto (Full-Screen) mode:

- Select **File/Print Preview** (or **File/Output Settings and Preview/Auto**) or click the **Auto Preview** button  on the EiKPlot toolbar
- 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 the plot, click **Print**. In the **Print** dialog to open, specify print properties and click **OK**.

### Print and preview in Scaled Graphic mode

To print your plot in the **Scaled Graphic** mode:

- Select **File/Output Settings and Preview/Scaled Graphic** or click the **Scaled Graphic** button  on the EiKPlot toolbar. The **Printed Information** dialog appears:



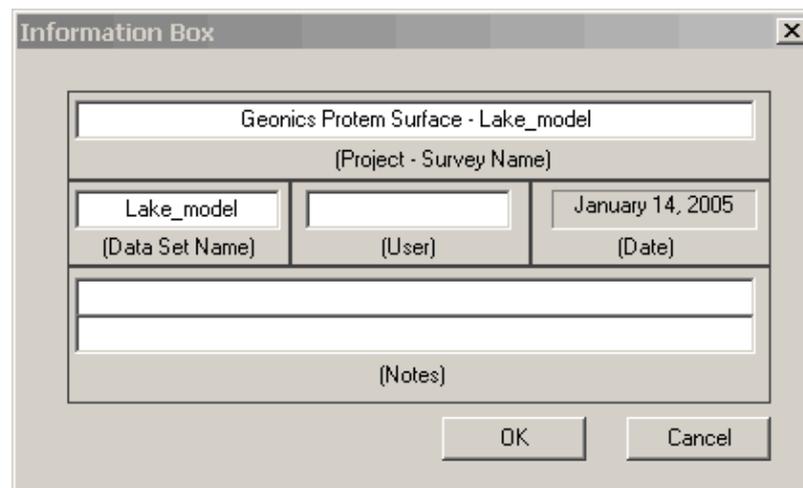
- Select the print scale from the respective list and click **OK**. This will display the **Print Preview** mode, with your plot changed to the scale you selected

*Note.* The **Print Preview** toolbar in the **Scaled Graphic** mode offers the same options as in the **Auto (Full-Screen)** mode.

### Add an information box to your plot

The **Scaled Graphic** mode allows you to add an information box to your plot:

- Click the **Print Information Box** button  on the EiKPlot toolbar. The respective dialog appears:



Information Box

Geonics Protem Surface - Lake\_model  
(Project - Survey Name)

Lake\_model (Data Set Name)    (User)    January 14, 2005 (Date)

(Notes)

OK    Cancel

- Fill in the project name and user in the respective fields. The filename and the date are generated automatically
- Write your comments in the **Notes** field
- Click **OK**. The information box will be printed in the upper right-hand corner of the page.

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