Table of Contents

EMIGMA Contour Manual

Contouring

Loading Data Set(s)

Click the **EM Contour** button ![icon] on the main toolbar of EMIGMA. The **Survey Selection** dialog will open:
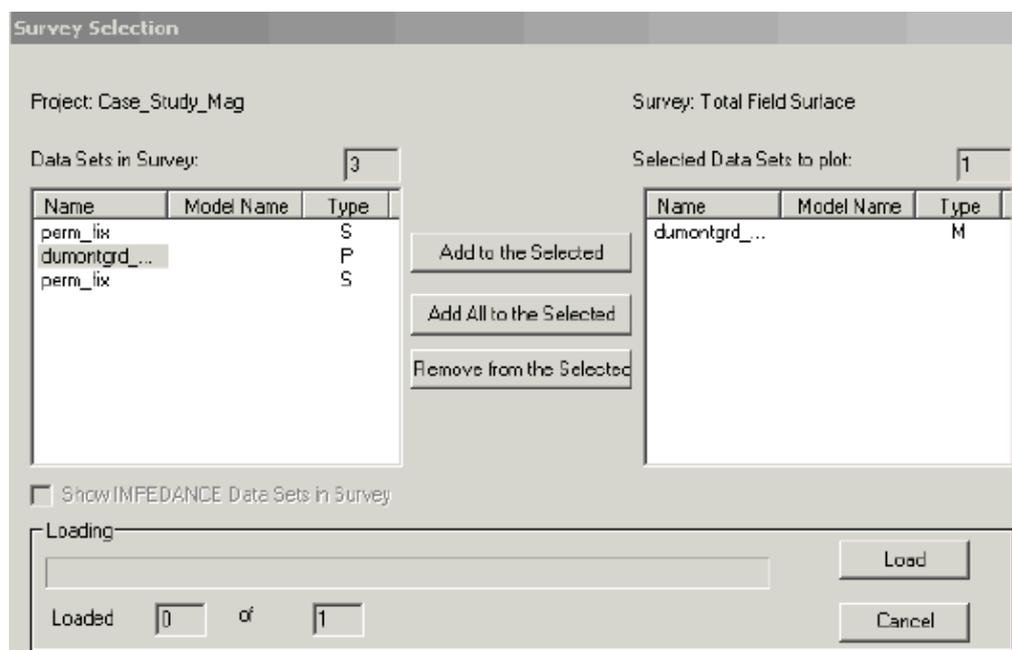
If your survey contains only one data set, the latter will be loaded automatically; if it has two or more data sets:

- To view only the current data set, click **Load**
- To compare your current data set with some other data set in the same survey, select this other data set in the left table, click **Add to the Selected** and **Load**
- To compare your current data set with all the data sets available in your survey, click **Add All to the Selected** and **Load**

Related Topics

Previously Interpolated Data Sets

Previously Interpolated Data Sets

The contour tool will only display data that has already been interpolated. If your data has been interpolated earlier, the **Choose Grid** dialog will open offering you to select the grid to display:
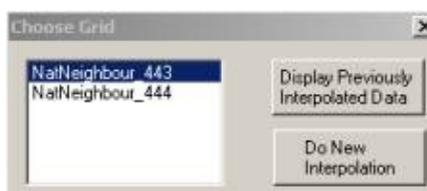
- Select the grid from the list in the left-hand part of the dialog and click **Display Previously Interpolated Data**
- If you wish to switch to a different grid after your selection, you can access the **Choose Grid** dialog by selecting Tools/Gridding/Load Stored Data.

Working with Contour Displays

Your contour displayed, the EM Contour toolbar will appear below the main EMIGMA toolbar:

To the right of your contour display, you will see the **Data Selection** dialog that opens automatically at the same time with contour generation. To close it, disengage the **Select Data** button on the EM Contour toolbar.

Related Topics

Adjust Data Selections

Select the Type of your Contour Display

Switch between 2D and 3D Displays

Display Contour Lines and Intervals

Move and Rotate your Contour Display

Zoom in and out on your Contour Display

Change the Colour of your Contours/Contour Background

Display Profiles

Display Transmitters

Adjust Data Range

Display the Legend

Adjust Axes

Add a Title/Caption

Adjust Data Selections

You can check and adjust your selections in the **Data Selection** dialog to appear simultaneously with your contour display:
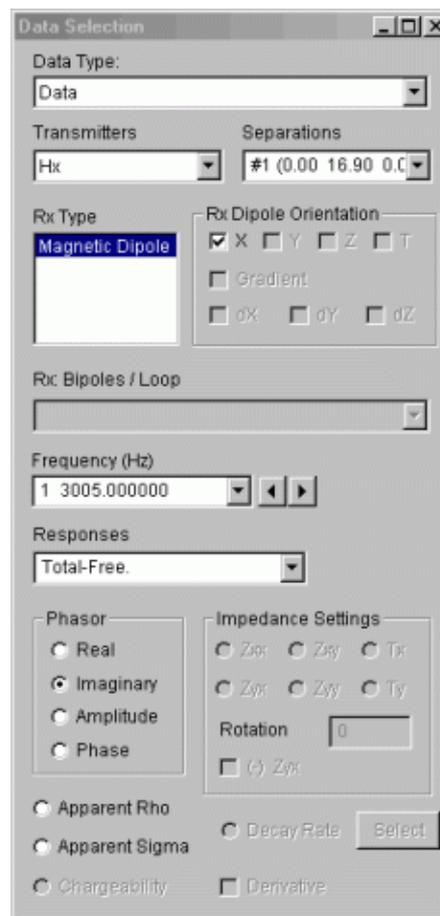
Active fields show default selections. E.g., if there is a choice of channels, the channel selected by default will be the first one

Adjust the selections as needed, viewing simultaneously the changes in your contour display:

- To switch to a different transmitter, separation, receiver or response, select it from the respective dropdown list.
- To switch to a different channel (frequency, time), select it from the respective dropdown list or use the scroll buttons on the right side.

- Depending on your system, make required selections in the **Dipole Orientation**, **Gradient**, **Phasor** or **Impedance Settings** sections
- Select **Apparent Rho**, **Apparent Sigma** or **Chargeability** to switch to respective response

Click the **Decay Rate** button to display a contour of decay rates (for time-domain systems only). In the dialog to open:
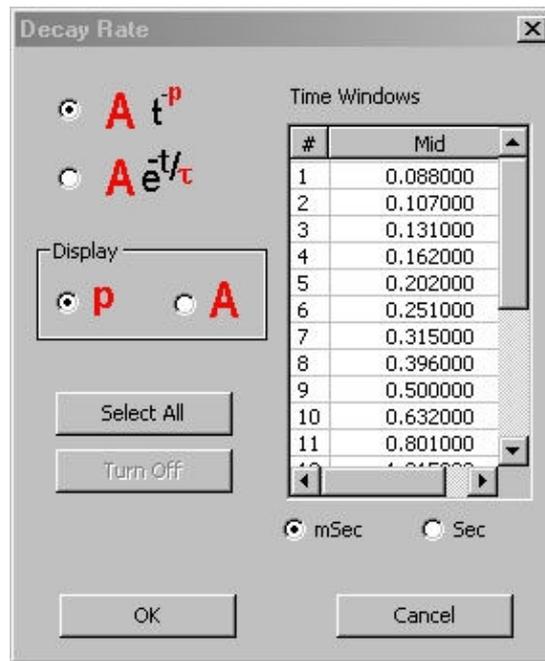
- Select between the two algorithms on the left
- Select the range of decay windows on the right to be used in the decay rate calculation. To select all windows, click the **Select All** button. To cancel selections, click **Select None**

Note. Only multiple selections are applicable.

- Click **OK** to close the dialog and view the **Decay Rate** contour display.

Select the Data Type of your Contour Display

By default, EM Contour generates a 3D display of your first channel or separation of the first measured survey. To specify a different survey, maximize the **Plot Type** dialog (in the bottom left-hand corner of the screen):
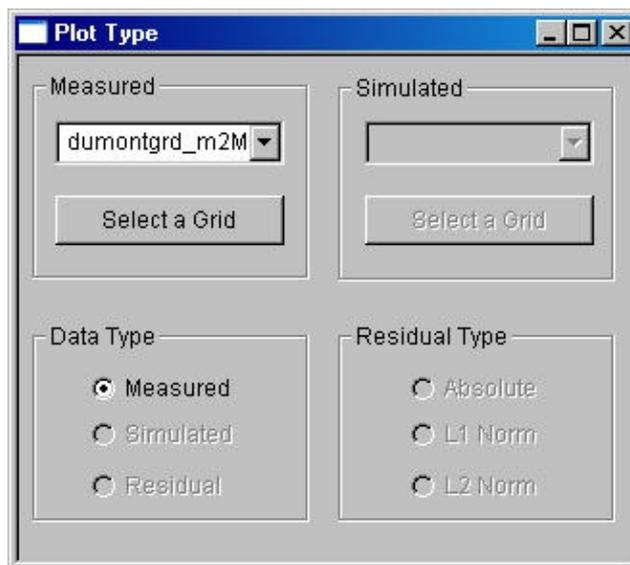
- Select between **Measured** and **Simulated Surveys** if you have loaded both. In case there are a number of grids in the same data set, the **Choose Grid** dialog will appear (see above) offering you to select a required grid.

To force the **Choose Grid** dialog to appear and switch to a different grid, click the **Select a Grid** button.

• In the **Data Type** section, view the type of loaded data sets:

If there is either only measured or simulated data, then respectively the **Measured** or **Simulated** button will be turned on, whereas all the other options will be disabled

If there is both measured and simulated data, the **Residual** option will be enabled. In this case, the **Residual Type** section becomes accessible and the desired algorithm can be selected to be used for your data recalculation.

Switch between 2D and 3D display

There are two modes of contour display: **Plane** (2D) and **Examiner** (3D). To switch to 2D, select **View/Plane** from the menu. To switch to 3D, select **View/Examiner**.

Clicking the button on the toolbar will also switch between the two display modes.

Display Contour Lines and Intervals

To display contour lines, click the **Toggle Contour Lines** button on the EM Contour toolbar. The contour lines will be generated automatically.

You can edit their appearance in the **Set Contour Lines** dialog to open simultaneously in the bottom left corner of the window:
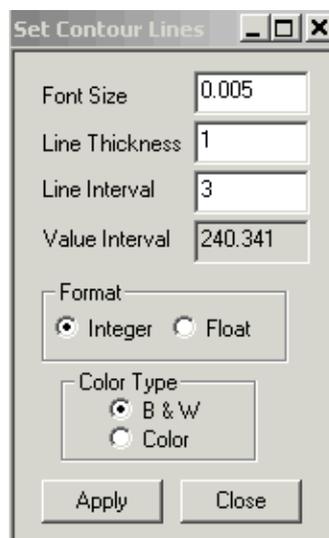
• Type an integer interval between the lines and an integer value of their thickness in the respective fields
• Select between the integer and float formats of contour values in the **Format** section and indicate their font size in the **Font Size** box on top
• Select between the black-and-white and color representation of contour lines in the **Color Type** section
• Click **Apply** to view the changes and **Close** to close the dialog.

Note. To toggle between the black-and-white and color display of your contour lines, use the **Grayed/Color View** button .

Move and Rotate your Contour Display

To move your contour in the **Plane** view:

- Switch to the hand manipulator 🖐
- Ctrl- or Shift-click the contour display and, without releasing the button, drag it right/left and up/down.

To move your contour in the **Examiner** view:

- Switch to the hand manipulator. This will allow you to examine your contour display from various sides.
- Click the **Set Home** button 🏠 on the EM Contour toolbar to define the "home" position of your display, which is the position you can always switch back to from any other positions
- Click on the plot and, without releasing the button, rotate it in any direction. You can also rotate it relative to the X- or Y-axis by using the dial bars in the bottom left-hand corner of the window
- Press the Shift or Ctrl keys to move the plot up/down and right/left

To make the contour rotate by itself:

- Click on the contour display and, holding the button down, move your mouse in the desired direction of rotation
- Release the button while moving the mouse. The contour will continue rotating
- To stop it, click anywhere in the screen.

Zoom in and out on your contour display

To zoom in or out:

- Click anywhere in your contour display and, without releasing the button, move your mouse down to zoom in and up to zoom out

*Note. You can also use the **Zoom** dial bar in the bottom right-hand corner of the window*

To zoom in on a certain area of your contour display:

- Click the **Seek** button on the EM Contour toolbar. The message will prompt you to press "s" on the keyboard to seek
- Click **OK** and press "s" on the keyboard. The hand will change into the crosshairs cursor
- Click the crosshairs cursor over the area you want to examine more closely

The display will move nearer, with the area you clicked shifted to the center of your view.

*Notes. To return your display to the home position, click the **Home** button 🏠 on the EM Contour toolbar. To bring everything into your field of view, click the **View All** button ⊗.*

Change the Color of your Contour and Contour Background

- To switch between the color and black-and-white contour display, click the **Grayed/Color View**

button on the EM Contour toolbar.
- To remove the contour shading, select Examiner view using the button, select Grayed view using the button and then remove the shading using the button on the toolbar.
- To change the color of the background, select **View/Edit Background Color.** This will bring up the standard color palette. Set the color and click **OK**.

Display profiles

Use the **Toggle Profile** button on the EM Contour toolbar to switch the profile display on and off over your contour display.

Display Transmitters

Use the **Toggle Transmitter** button to switch the transmitter display on and off over your contour display.

Adjust Data Range

To adjust the range of data to be displayed:

- Click the **Adjust Legend** button on the EM Contour toolbar.

The **Set Legend** dialog appears:
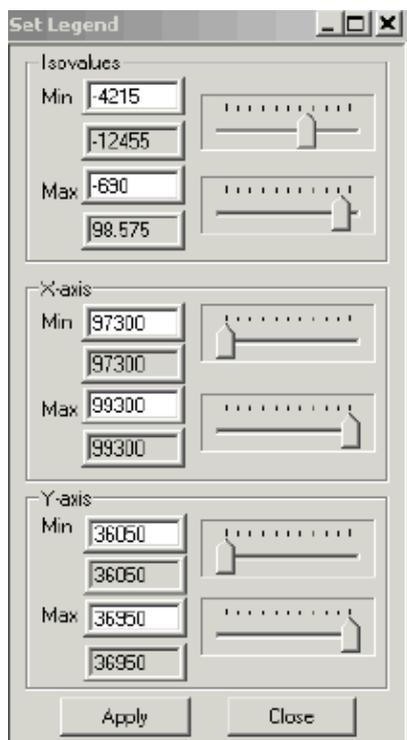
In the **Isovalues** section of this dialog, you can see the maximum and minimum values of your data to be used as cutoffs. By default, this range covers 97.5% of data

- If required, change the maximum and minimum isovalues. You can do it by typing your values in the active **Min** and **Max** boxes or by using the slider on the right. The disabled boxes below show respectively absolute minimums and maximums of your data
- Click **Apply**. The contour display will change accordingly

- To change back to initial settings, click the **Reset Scaling** button [5] on the EM Contour toolbar.

Display the legend

- Click the **Toggle Legend** button [icon] on the EM Contour toolbar to display the legend in the frame on the left of your plot. The range of contour values and colors is generated automatically.

If you have made changes in the **Isovalues** section, this will show in your legend

- To move the legend to a different place on the screen, click and drag it with your hand manipulator
- To switch the legend off, click the **Toggle Legend** button [icon] again.

Adjust axes

The axes are on by default. To turn them off, click the **Toggle Axis** button [icon] on the EM Contour toolbar. Click it again to bring the axes back.

See also

Change the Length of Axes

Change Axis Labels

Change Coordinate Settings

Change the length of axes

·   Maximize the **Axis Scaling** dialog that appears in the bottom left-hand corner of the screen simultaneously with contour generation
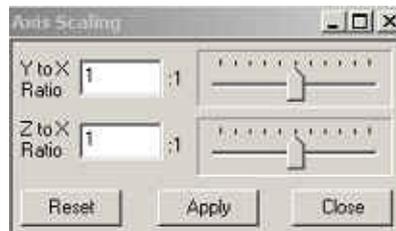
·   Type in the required values of Y to X and Z to X ratios (or use the slider to the right) and click **Apply**

·   To change back to the initial value, click **Reset**

*Note. The **Z-Scaling** button [icon] on the EM Contour toolbar switches the **Axis Scaling** (minimized) dialog on and off*

Change axis labels

- Select **Plot/Plot Settings/Axes** to bring up the **Set Axes** dialog
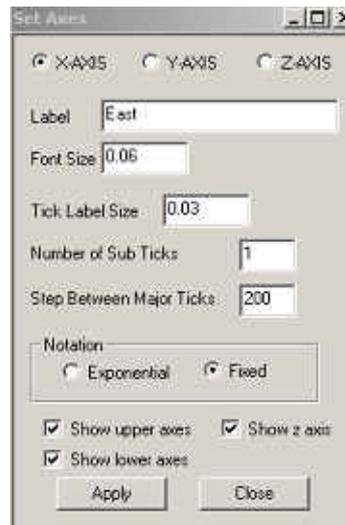
- Type new labels for your plot and edit their font size, determine the step between major ticks and the size of their labels, and specify the number of subticks in the respective boxes
- Click **Apply** to view the changes
- Click **Close** to close the dialog

Change coordinate settings

- Click the **Adjust Legend** button on the EM Contour toolbar.

The respective dialog appears (see Adjust Data Range)

- Edit your settings in the X-axis and Y-axis areas of the dialog to see only a section of the contour.
- Click **Apply** to check your changes without closing the dialog
- Click **Close** to close the dialog when finished

Note. To view the coordinates of any point of your contour display, hold your arrow manipulator over this point. Read the coordinates in the bottom left corner of the window right under the dial bars.

Add a title/caption to your contour display

To add a title/caption to your contour plot:

- Select **Plot/Plot Settings/Title**

The **Set Title** dialog appears:
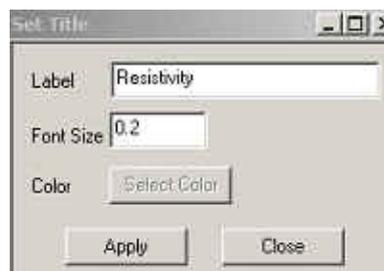
- Type your title in the **Label** field and specify the font size in the box below
- Click **Apply** to view the result
- Click **Close** to close the dialog.

Viewing Inversion Results

On loading a data set with inversion results, it will be possible to choose from displaying the data as Resistivity, Conductivity or Susceptibility(Density for gravity data). Also, the legend can be toggled between a log and linear scale:
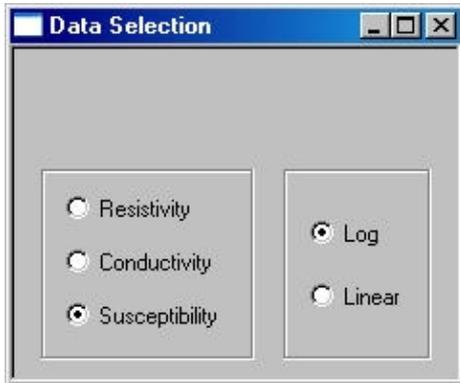
- The display can be further analyzed using the **Section Cutting** tool available by selecting Tools/Section Cutting from the menu.
- Switch to gridded data by deselecting the ⬛ button on the toolbar.

Using the Section Cutting Tool

The **Section Cutting** tool is available by selecting Tools/Section Cutting from the menu:
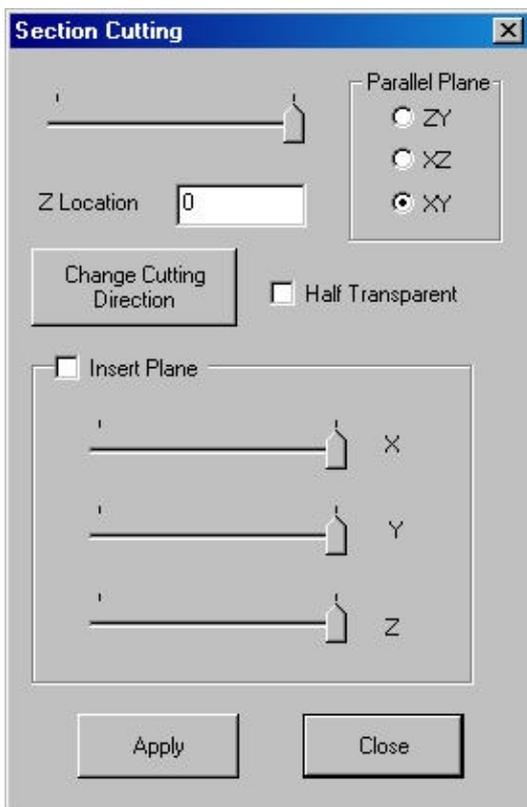
To view only a section of the inversion result:

- Select the axis that the desired cutting plane is parallel to in the **Parallel Plane** section.
- In the **Location** box, enter the location where you want your inversion cut.

- Click **Apply** and the inversion volume beyond the cutting plane you have chosen will disappear.

To dynamically change the location of the cutting plane:

- Move the slider located at the top of the dialog box and the size of the volume will change as you move the slider.

To view the section on the other side of the cutting plane:

- Click **Change Cutting Direction** and then either click **Apply** or move the cutting slider at the top of the dialog.

To make the inversion partially transparent:

- Click the **Half Transparent** checkbox