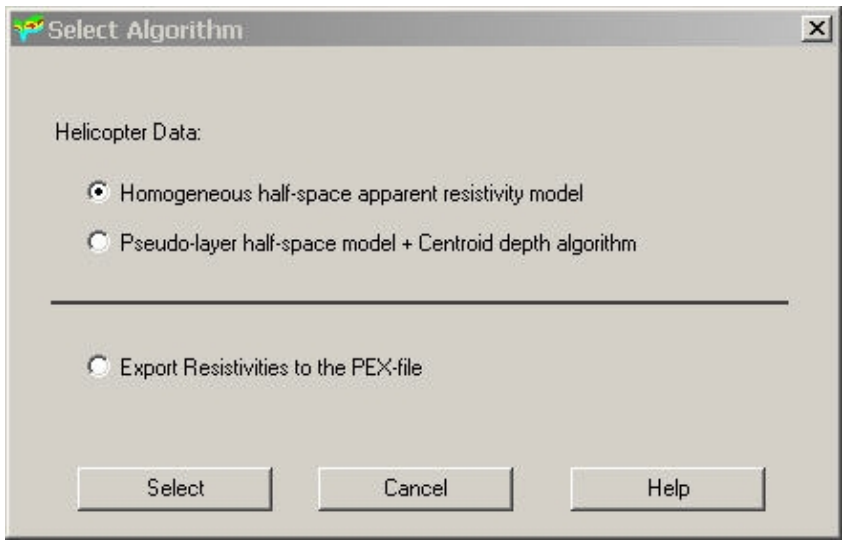
EMIGMA EiKMap Manual

CDI (Conductivity Depth Imaging) - EiKMap

The EiKMap tool allows you to calculate apparent resistivity and depth based on measured or simulated dipole-dipole FEM data. Initially it was designed for the processing of airborne (mainly helicopter) FEM data; at present it has been extended to ground and airborne TEM data as well.

Select a data set on the **Database** dialog and click the **Conductivity Depth Imaging** button 

on the main toolbar. The **Select Algorithm** dialog appears offering you to choose one of the two following models for dipole-dipole FEM data:



Related Topics

Calculate Apparent Resistivity (airborne FEM data)

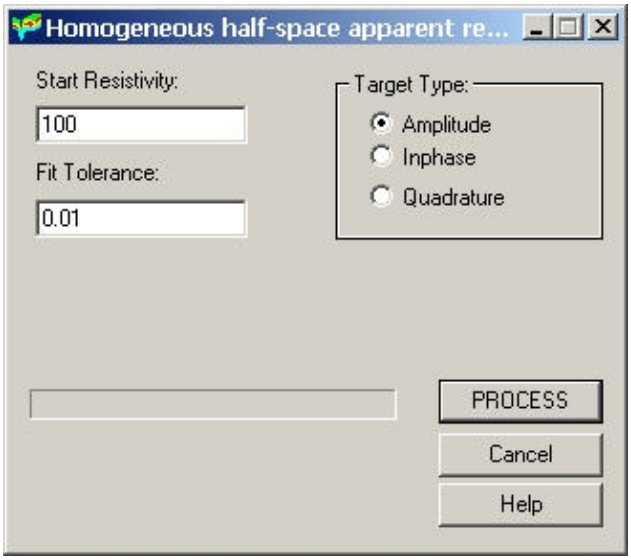
Calculate Both Apparent Resistivity and Depth (Sengpiel Section) (airborne FEM data)

Display Resistivity Processing Results (FEM or TEM data)

Calculate apparent resistivity

- In the **Select Algorithm** dialog, choose **Homogeneous Half-Space Apparent Resistivity Model** and click **Select**.

In the dialog to appear:



- Specify start resistivity and fit tolerance in the respective boxes. These settings depend on the sampling system you use

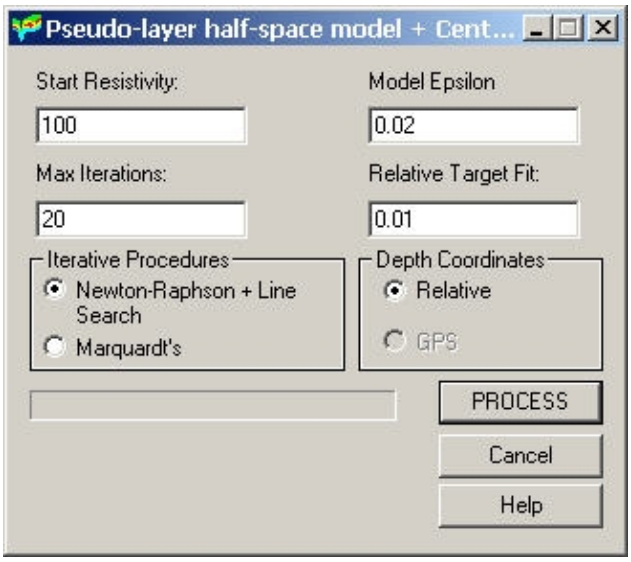
In the example above, the algorithm will search for matching solutions starting with resistivity 100. As soon as it finds a match for the first data within a difference less than the set threshold 0.01, it will stop and move over to the second data (and so on). The number of iterations is not limited

- In the **Target Type** section, select the phasor - Amplitude, Inphase or Quadrature - you are working with
- Click **PROCESS**.

When finished, the program will ask you whether you want to store the obtained resistivity data in a new data set. Click **Yes** or **No** dependently of your requirements. If you choose **Yes**, you will find a new Halfspace Rho_ data set on the **Database** tab. If **No**, your original data set will be overwritten.

Calculate both apparent resistivity and depth (Sengpiel section)

- In the **Select Algorithm** dialog, choose **Pseudo-Layer Half-Space Model + Centroid Depth Algorithm** and click **Select**. The respective dialog appears:



- Specify start resistivity dependently of your system in the respective box.

The algorithm used is similar to the one described in the **Homogeneous Half-Space Apparent Resistivity Model**, however, in this model, the number of iterations for the algorithm to search for a matching solution is limited

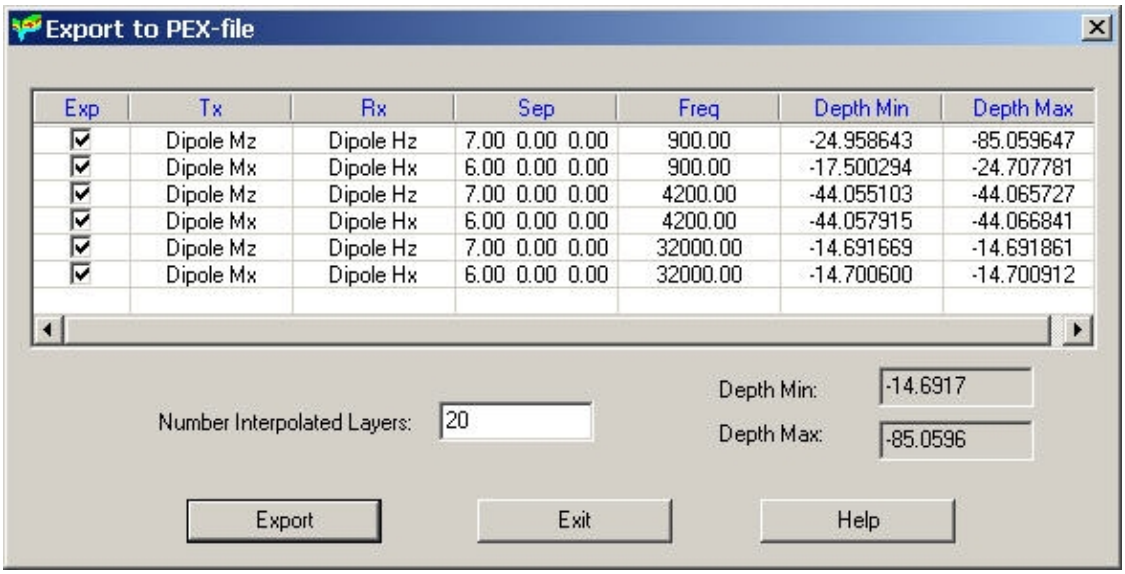
- Specify the number of maximum iterations and select between the two kinds of iterative procedures in the respective section below
- Set the thresholds for the algorithm to stop searching in the **Model Epsilon** and **Relative Target Fit** boxes
- In the **Depth Coordinates** section, select **Relative** if you want to calculate depths relative to sea level and **GPS** if you want to take into account changes in topography
- Click **PROCESS**.

When finished, the program will ask you whether you want to store the obtained resistivity data in a new data set. Click **Yes** or **No** dependently of your requirements. If you choose **Yes**, you will find a new Sengpiel Section_ data set on the Database tab of EMIGMA s main dialog. If **No**, you initial data set will be overwritten.

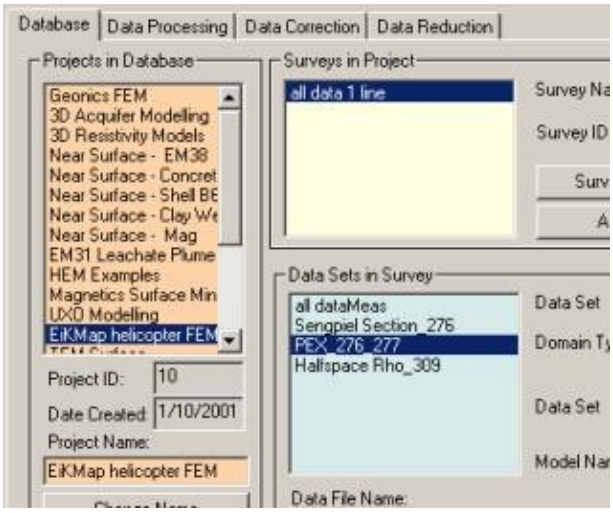
Display the results of resistivity processing

- Select a required data set and click the **Resistivity Processing** button CDI on EMIGMA s main toolbar to bring up the **Select Algorithm** dialog again
- Select the **Export Resistivities to the PEX-file** button and click **Select**.

If your data set contains no depth data (this refers only to the **Homogeneous Half-Space Apparent Resistivity Model**), a message will warn you that this export is not possible. Otherwise, the following dialog will open:



- In the table, de-select the components you do not want to export and specify the number of interpolated layers to divide the depth range into. In the example above, the depth range from 14.6917 to 85.0596 will be divided into 20 interpolated layers.
- Click **Export**. The PEX file will appear in the **Data Set** list of the **Database** tab:



- Select this file and click the **PEXShow** button on EMIGMA s main toolbar (for further details see the **PEXShow** manual).