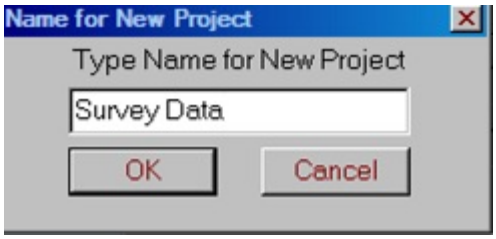
Data Import in EMIGMA: Getting Started

In EMIGMA, you can import raw data of various manufacturer's formats or through QCTOOL formats. QCTOOL has many formats for imports and is very flexible and offers editing and correction prior to importing. In EMIGMA, you are offered a number of import wizards; each being customized for the type of data with which you are dealing.

To import data into EMIGMA:

If you already have a Project into which you wish to import your data then proceed to the next step.

Otherwise, select Create Project on the lower left and the following window appears:



In this window, enter the name of your project and click **OK**. This action adds your new project to the **Projects in Database** list in the **Database** dialog. EMIGMA assigns an internal number to the project (Project ID).

- Click the **Import** button 

Related Topics

Import dialog: Raw Data Formats Tab

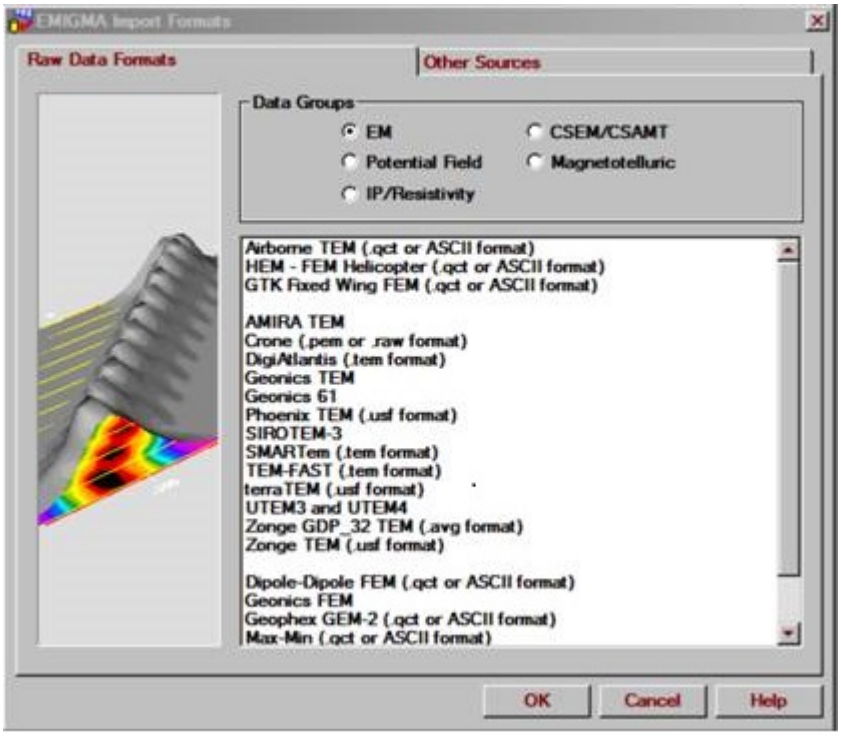
Import Dialog: Other Sources Tab

Import Dialog: Raw Data Formats Tab

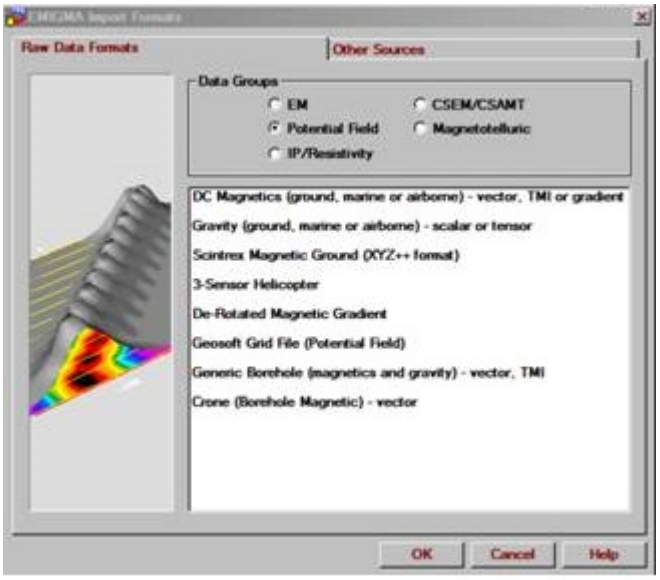
The **Import** dialog opens at the **Raw Data Formats** tab by default. Under this tab, every import procedure is based on a certain manufacturer's format or a qct format or in some cases Ascii formats. All formats are grouped by data type. Five groups are available: EM, Potential Field, IP/Resistivity, CSEM/CSAMT or Magnetotelluric.

- Select one of the groups to update the list of formats below.

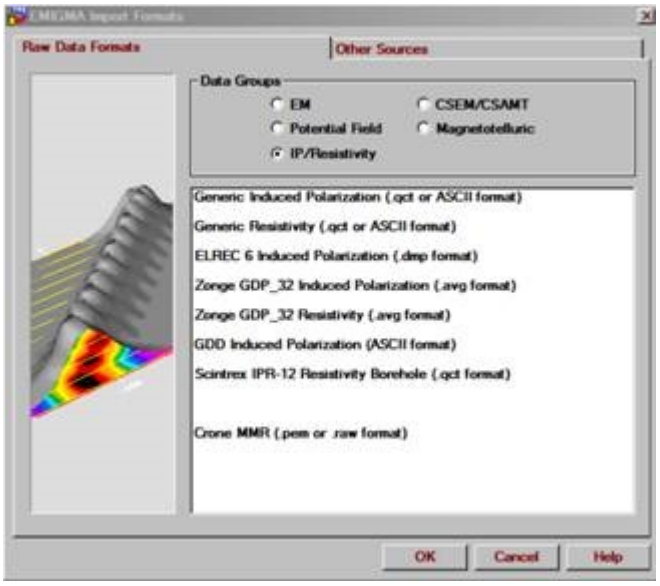
If you select **EM**, the following list appears:



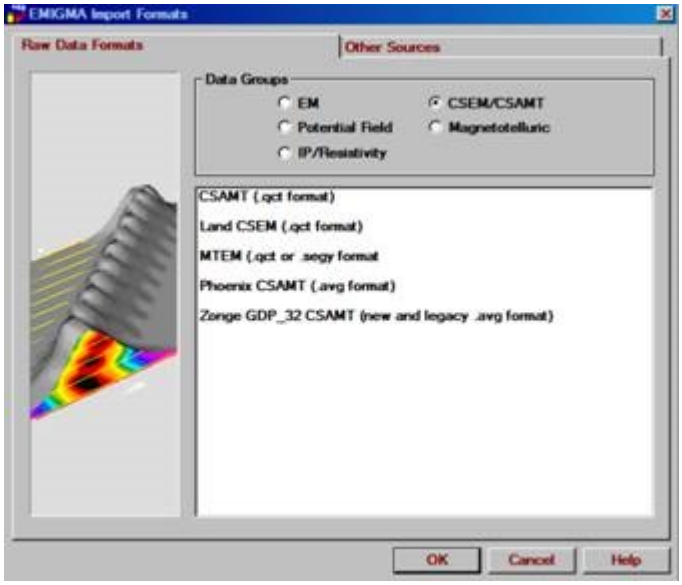
If you select **Potential Field**, the list is as follows:



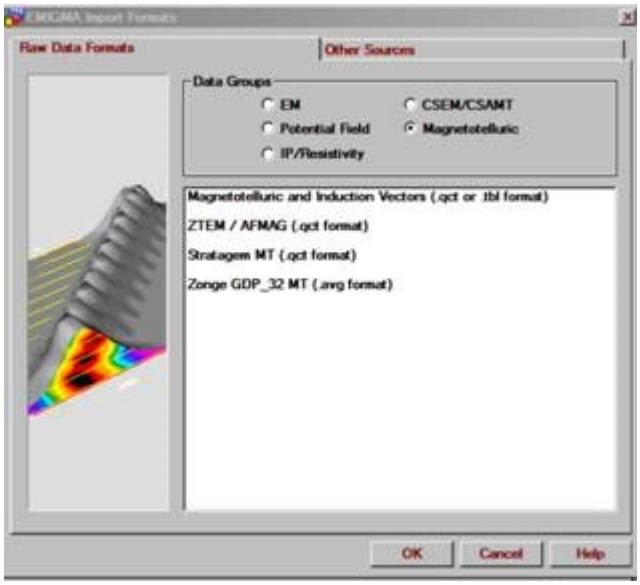
If you select **IP/Resistivity**, the list below contains eight items including MMR:



If you select CSEM/CSAMT, the list below contains 5 items:



And finally, if you select Magnetotelluric, the list contains four items:



- Select a format from the list and click **OK**. The import wizard to follow depends on the format you selected.

Related Topics

EM	Potential Field	IP/Resistivity	CSEM/CSAMT	Magnetotelluric
Airborne	DC	Generic	CSAMT (.qct)	MT Generic

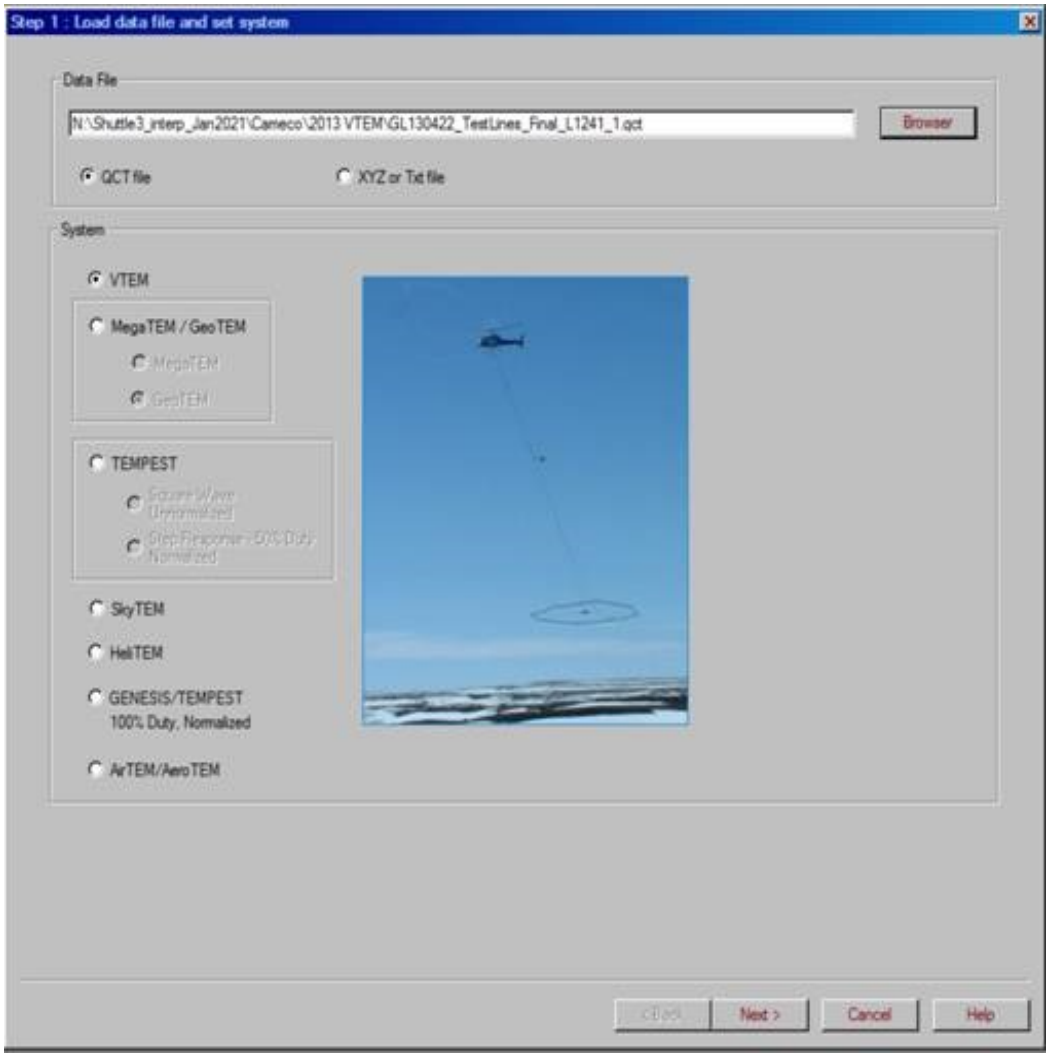
TEM	Magnetics TMI,vector or gradient	Induced Polarization		(.qct,.tbl)
HEM - Airborne FEM	Gravity	Generic Resistivity	Land CSEM	ZTEM/AFMAG
Fixed Wing FEM	Scintrex Magnetic Ground	ELREC6	Phoenix CSAMT	Stratagem MT
AMIRA TEM	3-Sensor Helicopter	Zonge IP Time Domain	Zonge CSAMT (new and legacy)	Zonge MT
Crone	De-rotated Magnetic Gradient	Zonge Resistivity Frequency Domain		
DigiAtlantis	Geosoft Grid (potential field)	GDD IP		
GEONICS TEM	Generic Borehole (Magnetics and Gravity)	Scintrex IPR-12 Borehole		
GEONICS 61	Crone (Borehole Mag)	Crone MMR		
Phoenix TEM (.usf)				
SIROTEM-3				
SMARTEM (.tem)				

TEM Fast				
terraTEM				
UTEM 3 and UTEM4				
Zonge TEM (.avg)				
Zonge TEM (.usf)				
Moving Dipole-Dipole FEM (.qct or Ascii)				
Geonics FEM (.avg)				
Max-Min				
VLF				
VLF-R				

Airborne TEM Import Wizard

Airborne TEM Import . Step 1. Load data file and set system.

We recommend for this import to first import to QCTool, perform preliminary processing and then import to EMIGMA. If your data file is in .gdb format, this is easily imported to QCTool. Also, ascii files are easily imported to QCTool. In QCTool, you can check the data and delete or correct anything that is required.

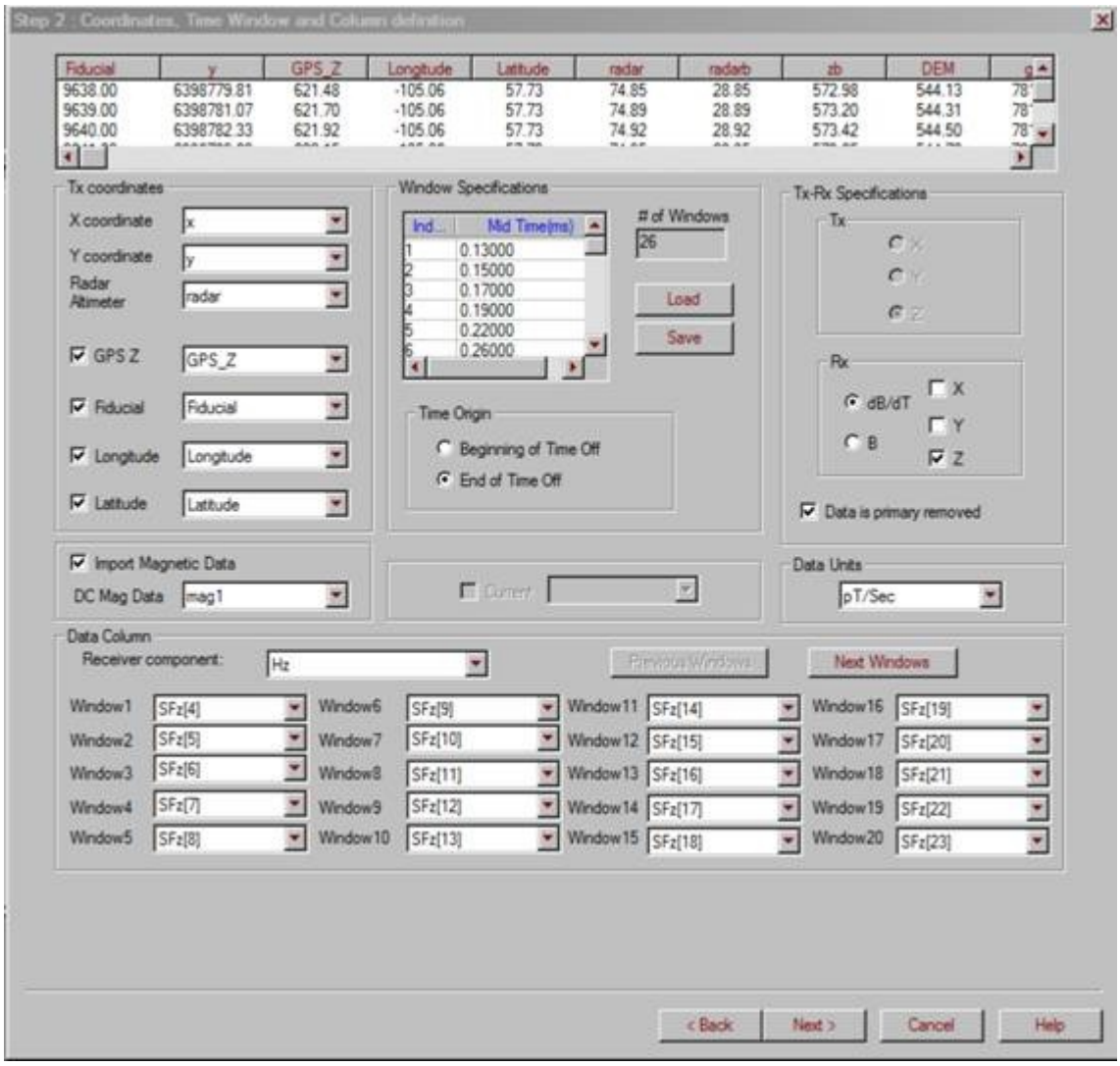


Browser Search for a data file in either QCTool's QCT format or ASCII XYZ format.

System
Select a system type.
Following systems are available:

- VTEM
- SkyTem
- GENESIS
- HeliTEM
- TEMPEST
  As well as older formats
- MegaTEM/GeoTEM
- VTEM
- AeroTEM/AirTEM
  However, other formats may be imported to QCTools and if arranged correctly imported under one of the other systems.
  Choose a system with a waveform that most closely represents your experimental system

Airborne TEM Import . Step 2. Coordinates, Time Window and Column definition.



File column number

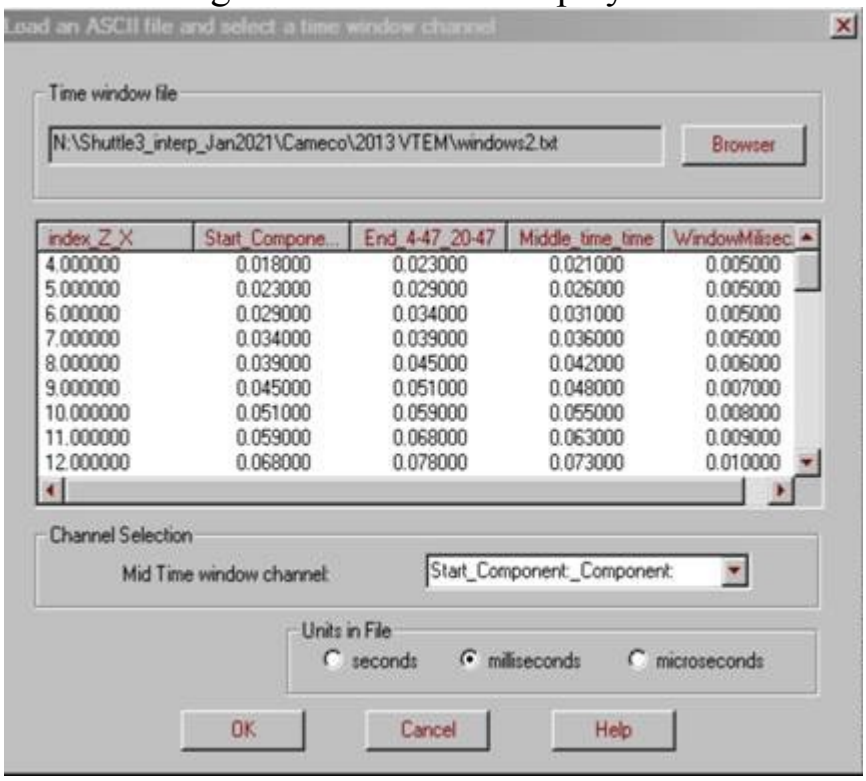
- Specify which column in the file will be assigned to X, Y coordinates, Radar Altimeter and GPS Altimeter by selecting the appropriate column label for each. The column labels along with some data values are displayed at the top of this window.

- If you wish to import Fiducial or your DC magnetic data, Check the Import Fiducial or Import Magnetic Data box and select the column that corresponds to Fiducial or Magnetic data,

Window Specifications

Load

Clicking this button will allow you to browse for a time window file in either our par format or an xyz or txt or csv format.
The following interface will be displayed:



The windows ascii file may contain multiple columns, one of which must be the mid-times of the time windows. Choose the column containing the mid-times under **Mid Time window channel** and well as the units of time. Click **OK** and you will see that the time window information will have been updated.

The par file format is the time window format that is stored in the frequency-to-time domain transform. The format is as follows:
Number of gates
Window1_start

Window1_end Window2_start
Window2_end Window3_start
...
WindowM_end
-1
Total number of windows is M.

OK
The **Mid Time** values for the time windows can be modified by clicking on the value and entering a new one. Click the **Save** button to save modified time windows to a file if this was required.

Time Origin
Set the time origin of the windows that have been chosen. Either with respect to the beginning of the turn off time or the end of the turn off.

Tx-Rx Specifications

Tx
Indicates the orientation of the transmitter. Some systems will be defined and cannot be altered.

Rx
Select the measured components that will be utilized and whether they are in units of magnetic field (B) or the time derivative of the magnetic field (dB/dt.)

Data is Primary Removed
If the data is not normalized, it might be primary removed. When this checkbox is checked, the response will be adjusted to be total minus freespace, otherwise the data will be considered to be the total field.

Data Units
Available options for units are different depending on the system chosen.
Note: pT/sec is equivalent to $pV/m^4/A$

Data Column

Displays the column labels for the first 20 time windows.

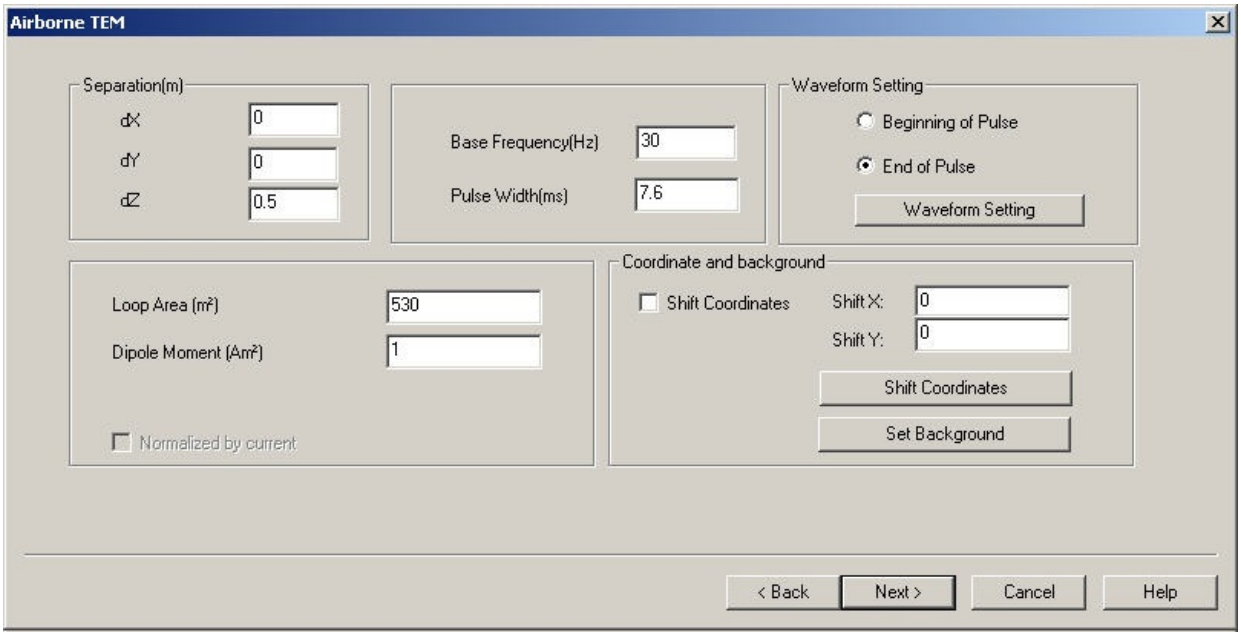
Click the Next Windows button to display the next set of windows if there are more than 20.
Clicking the Previous Windows button will return to the display of Windows 1-20.

When selecting a data column label for a time window, that window becomes the current window and the following message will display:

Choose “Yes” to update the column label settings of all the windows after the current window. Column labels will be assigned to the windows in the same order as they are found in the file using the current window label as the starting point.
Choose “No” to update the current window only.

Receiver component
Displays the component corresponding to the displayed time windows and data column labels.
You must select each available H component (Hx, Hy or Hz) or B component (Bx, By or Bz) and select the data column label for each window.
Note: A different component can only be selected when displaying the last time window. Click **Next Windows** to display the last time window.

Airborne TEM Import



Base Frequency Indicates the frequency of the waveform which describes the transmitter signal.

Pulse Width
The width of the half sine waveform in milliseconds. This is the length of the on-time.

Tx-Rx Specifications

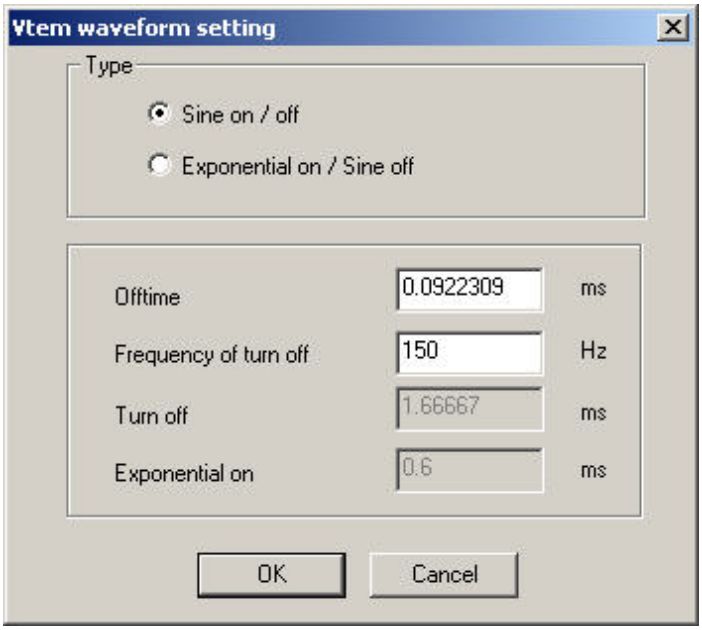
Tx – Rx Separation
Distance between the transmitter and receiver in its x,y and z components

Dipole Moment
Equal to the current in the transmitter loop multiplied by the loop's area.

Waveform Setting

Choose whether the time origin will be at the **Beginning of Pulse** or **End of Pulse**. The waveform type will be set based on the airborne system. For

GEOTEM or MEGATEM, the waveform is set as a half-sine. For AEROTEM it is a triangular pulse. For VTEM, there is a choice of waveform type, as shown below:



Selecting the **Exponential on / Sine off** waveform type will make the **Turn off** and **Exponential on** values available for editing.

Coordinate and background

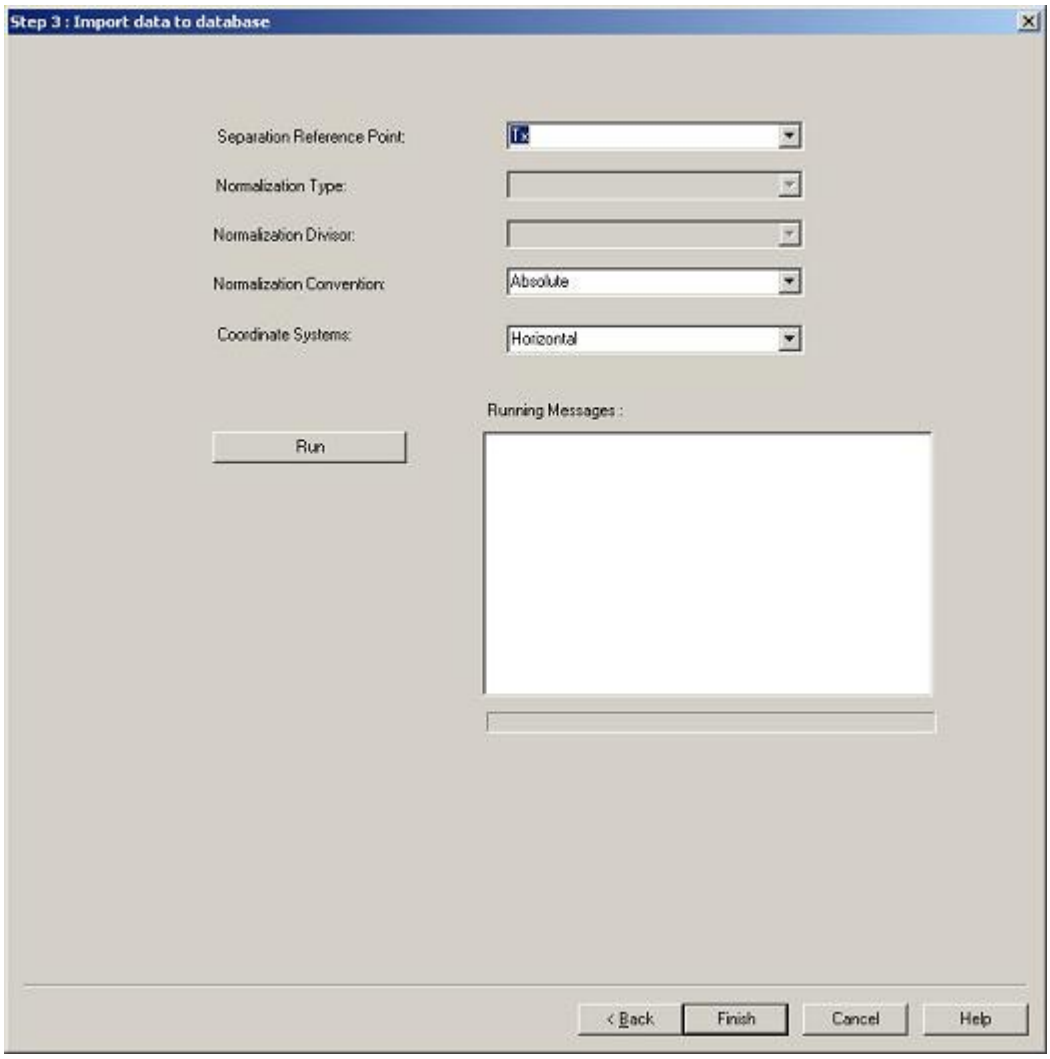
Shift Coordinates

Some GPS values have too many significant digits for EMIGMA to handle so the coordinates can be shifted to a more local coordinate system to correct this problem. If this option is activated, the default values will remove the two highest significant digits.

Set Background

This button is enabled when importing magnetic data. Set the parameters for the Earth's magnetic field. Launches Earth Field interface. See Setting the Background Field for more details about this interface.

Airborne TEM Import . Step 3. Import data to database.



Separation Reference Point Indicates what part of the system is being referred to with the location coordinates. The transmitter is the default selection.

Normalization Type
Choose between point or continuous. Continuous is the default.

Normalization Divisor

Choose Magnitude, Inphase, Quadrature or Complex.

Normalization Convention
Indicate how the data has been normalized. It can be ratio, PPM, percent or absolute(not normalized).

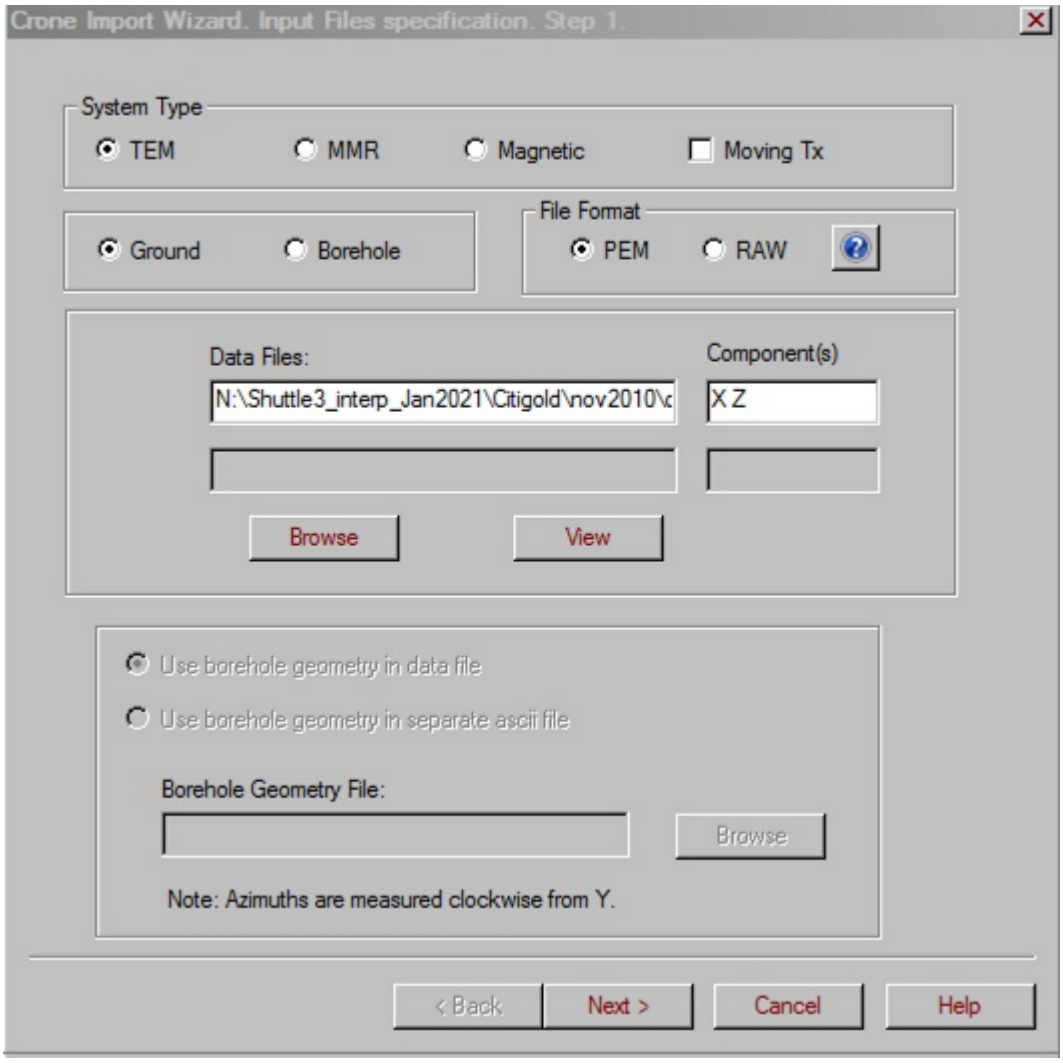
Coordinate Systems
Choose between Horizontal, Absolute and Profile.

Run
Output the input file to a data set in the database using the current settings.

Crone Data Import Wizard

This import is for TDEM surface and borehole, MMR surface and borehole, as well as borehole magnetic data.

Step 1. Input File Specification.

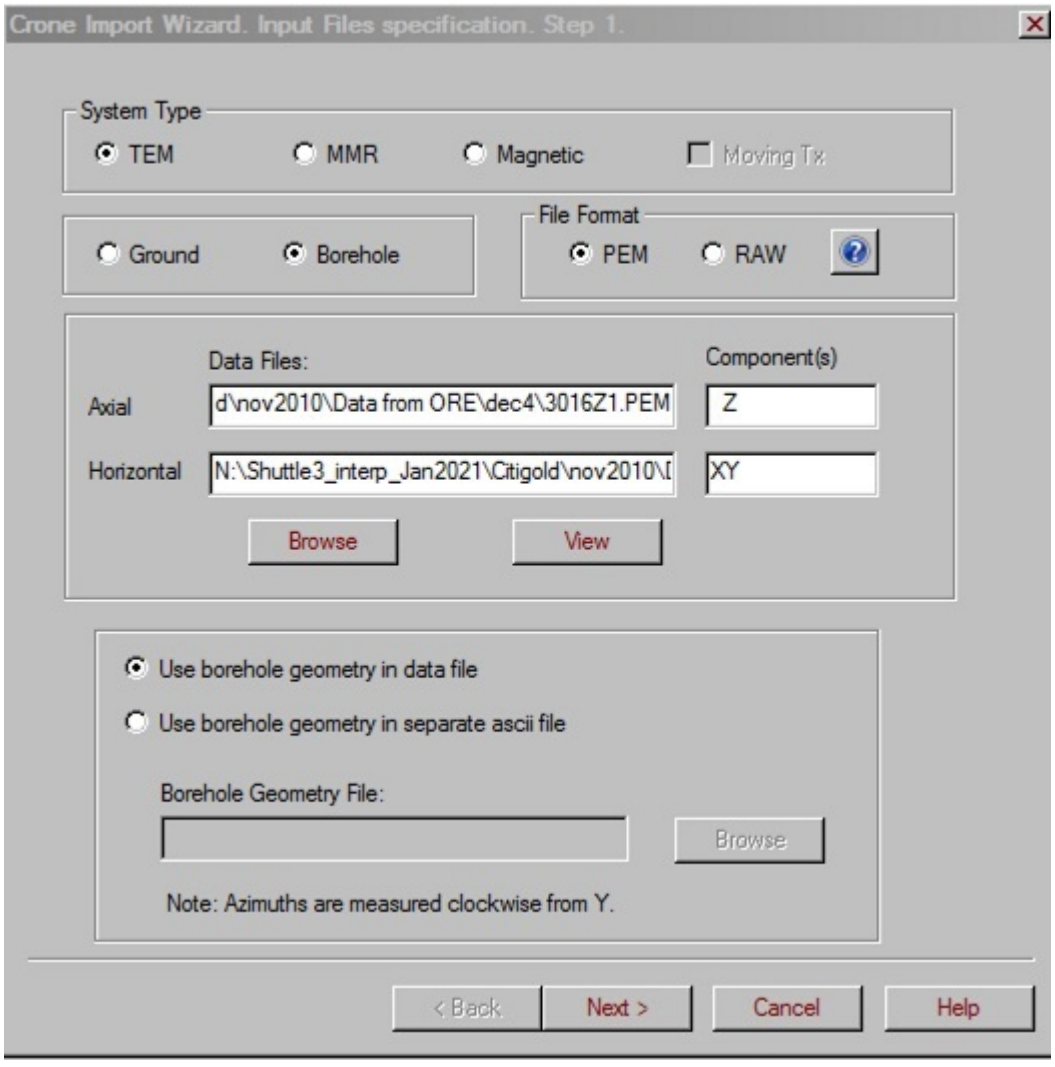


System Type Surface TEM data will normally only have one data file with the X and Z components. Borehole TEM has one file for the axial data(Z) and another file for the components normal to the borehole axis (X,Y), Borehole Magnetic data comes in one file with all 3 components (X,Y,Z). Surface and borehole MMR files also come in a single data file.

If your file contains two types of data, only the data for the system type you have selected will be imported. The **Moving Tx** checkbox will be enabled if **Ground** and **TEM** is selected.

File Format
PEM files contain stacked de-rotated data. RAW files do not contain de-rotated data. There is an option to de-rotate data on the last page of the wizard.

Browse
For borehole data, the XY data is contained in a separate file from the Z data, browse for one file then place your cursor in the second box and browse for the second file.

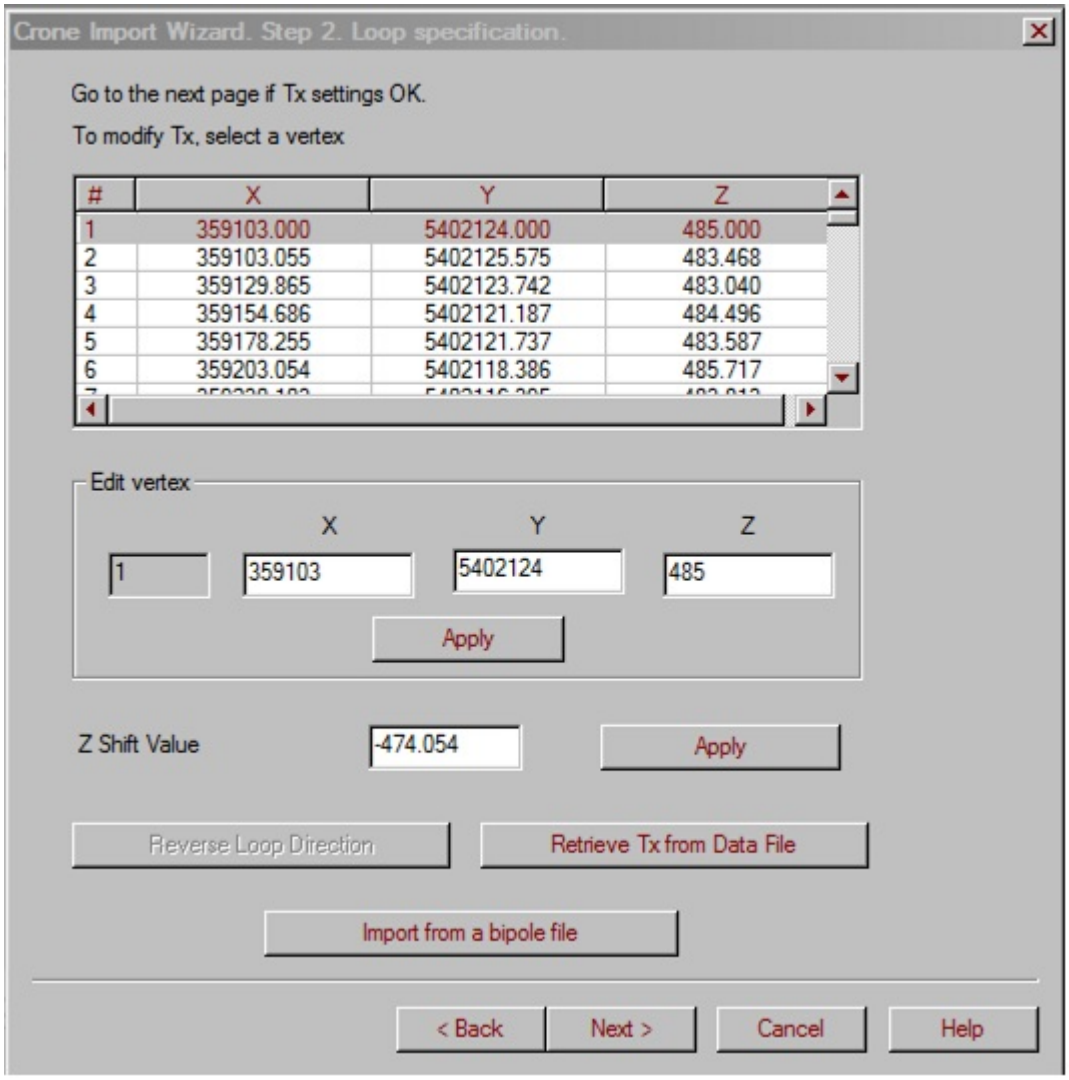


View
Displays the selected file. (Select file by clicking on the file name in the white box).

Component
Displays which components (x, y or z) are contained in the file(s).

Borehole Data
If **Ground** is selected and you have a file with borehole data, select **Borehole**. Additional options at the bottom of the page will be enabled. If you would like to use the borehole geometry defined in a file other than the data file you have selected, select **Use borehole geometry in separate ascii file**. Otherwise, select **Use borehole geometry in data file**. You may specify the **Borehole Geometry File** by clicking the appropriate **Browse** button in this section. You will be asked to describe this file after clicking the **Next** button.

Step 2. Loop Specification.



Displays the source vertices whether a loop or a ground dipole which provide the geometry of the source.

Edit

The source vertices can be modified. To edit a loop vertex, either select the vertex number in the box listing all the vertices or click on the arrows in the **Edit** section until the desired vertex number appears. Enter new values in the x, y and z boxes and click **Apply**. Additional vertices may be added by clicking the down arrow beyond the current number of vertices. A selected

vertex may be deleted by pressing the delete key. These changes may be done once imported to the database.

Z Shift Value
This value will be added to all the z (elevation above ground) values of the loop after clicking **Apply**. This can be applied if necessary once imported to the database.

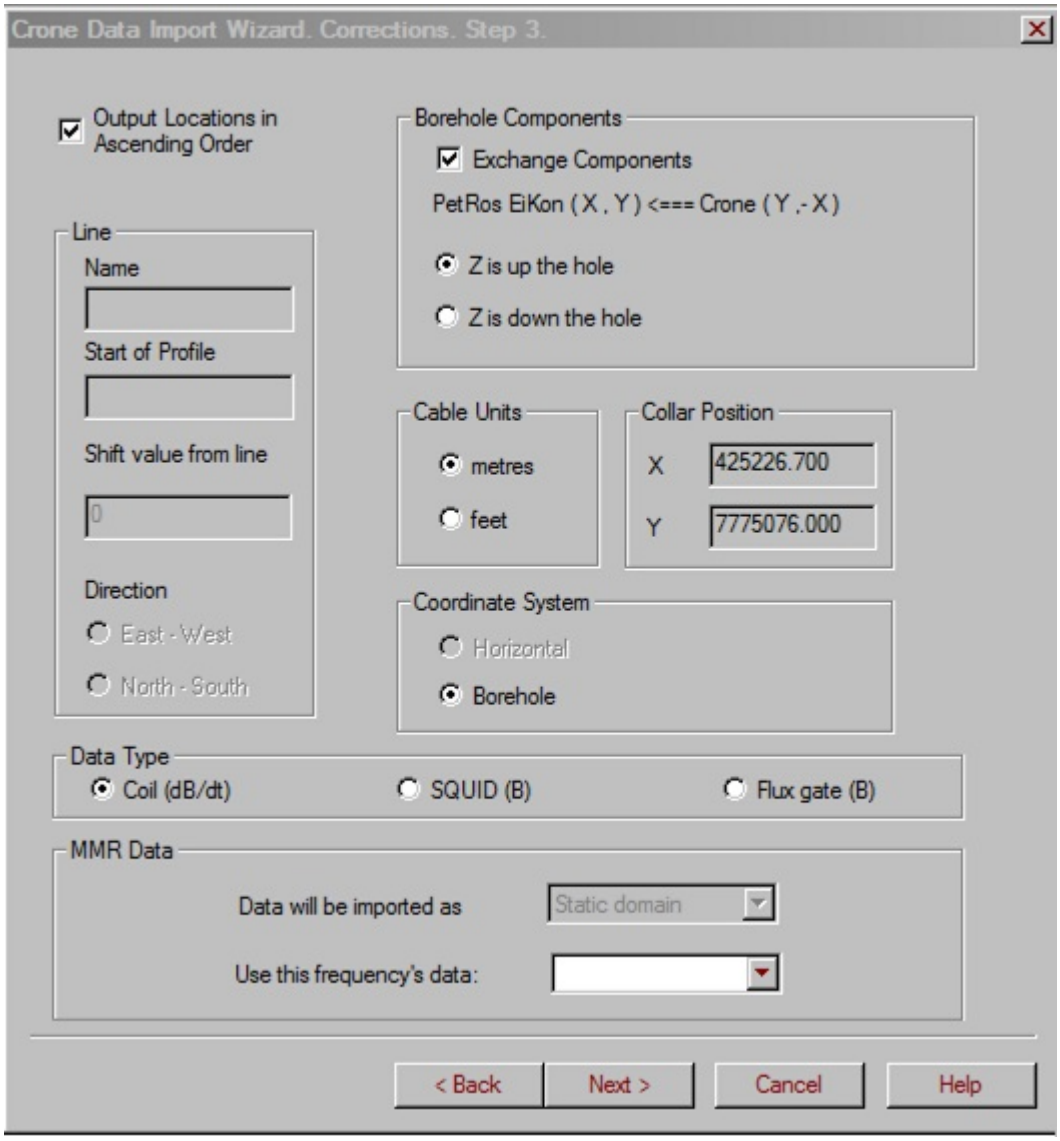
Reverse Loop Direction
This is redundant as the current can be reversed once inside the database.

Note that a maximum of 500 vertices in the loop is allowed.

Retrieve Tx from Data File
This button loads the transmitter information from the data file specified on the first page. This should be done automatically.

Import transmitter geometry from a file
You may load the coordinates of the loop or bipole from a separate file. The format of the file is displayed on the interface.

Step 3. Corrections.



Output locations in Ascending Order This is the default but is not necessary as stations may be ordered in the database.

Coordinate System
For surface systems:
Horizontal - X horizontal along profile, Z vertical

If borehole data is imported, the Borehole coordinate system is

automatically selected.

Borehole Components
Crone uses a convention where Z is up and parallel locally to the axis of the borehole. Y is horizontal and perpendicular locally to the borehole axis while X points up and is orthogonal to both Z and Y. The projection of X onto the horizontal gives the aximuth of the borehole (locally). PetRos EiKon's simulation convention uses the same Z convention (Z is along the axis of the borehole and is positive up). However, our convention is different for both X and Y. PEI's X is perpendicular to the borehole axis and horizontal while Y is perpendicular to the other two and its horizontal projection gives the azimuth of the borehole. In PEI's convention Y (azimuthal component) points down. Please see fig 2:10 of the EMIGMA manual for a diagram of the borehole convention. In other words:

Crone X = PEI [-Y] (Azimuthal Component)
Crone Y = PEI X (Horizontal Component)

In order to directly compare the simulated to the measured data, The default is to switch the measured data to PEI's convention. Should you wish to display your measured data in its original convention, deselect the Component conversion. However, if you chose then to simulate a response, the measured and simulated components will not match.

However, you can now switch between conventions within EiKPlot. Thus, it is suggested that you switch components on import then in EiKPlot you can revert to Crone convention on data display for both measured and simulated data. We will be updating the visualizer to allow this switching of conventions as well.

Select **Z is down the hole** if the z data in your file is oriented downward.

Collar Position
The starting location of the borehole at ground level.

Shift value from line
Specifies the distance profile should be shifted from its displayed line

position. Coordinates of stations may be adjusted once in the database

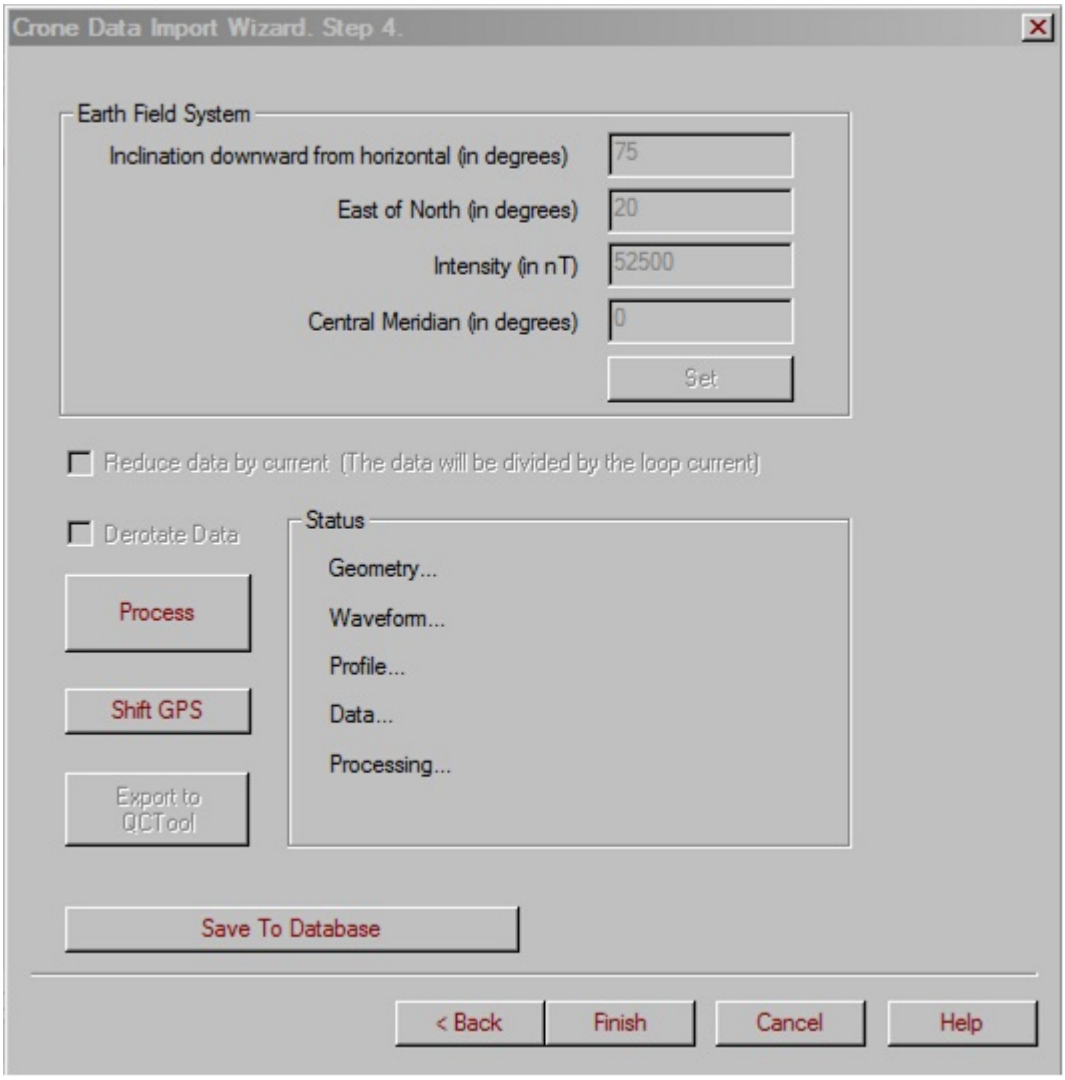
Direction
For surface systems, the direction of the profile is displayed here.

Data Type
Determines the units of the data.

MMR Data
The data is imported as **Static data**. The Inphase channel of the frequency you have selected will be imported.

Separation
Enter the distance between the receiver and transmitter here in the x, y and z directions. **Separation Reference Point** indicates what part of the system is being referred to with the location coordinates.

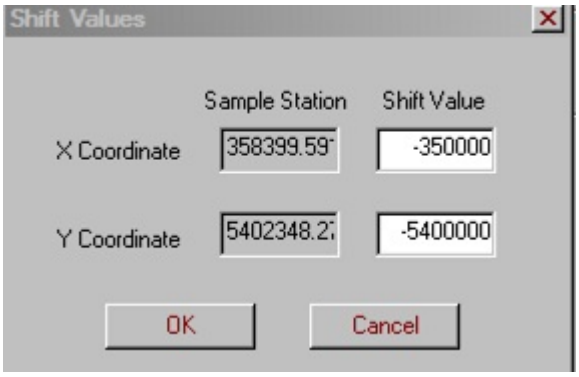
Step 4. Process.



Process Reads in all the information from the file.

Shift GPS
For borehole data, for accuracy of modeling, you may be required to shift the source and stations by the leading digits of the UTMís as the database is only accurate in positioning in single precision. The window that appears upon clicking this button displays sample x and y coordinate values from the survey under the heading **Sample Station**. Enter values under the **Shift**

Value heading that will be added to all of the x or y coordinates then click **OK**.



Derotate data
Select this option for raw borehole files that contain data that has not been derotated.

Export to QCTool
Clicking this button will export the data to a file that can be loaded in QCTool. Depending on what is available, channels can include x,y,z coordinates, h field for all time windows, b field, accelerometer and hole depth.

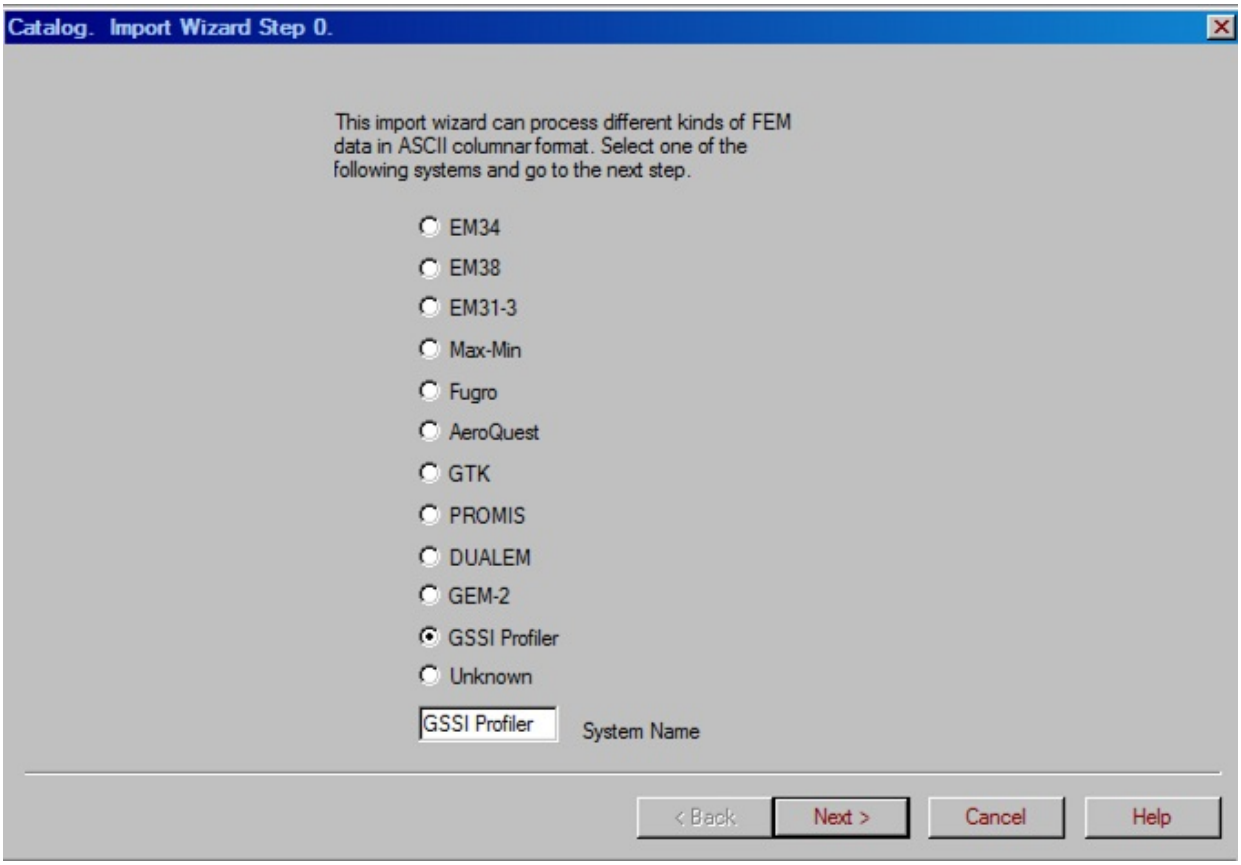
Earth Field System
For magnetic data, you should either set the IGRF here or it can be adjusted once in the database.
Save to Database
Saves file data to the EMIGMA database.

Dipole-Dipole Import Wizard

Specifying a System

EMIGMA allows for importing various kinds of dipole-dipole FDEM data, including GSSI, GEM-2, EM34, EM31/EM38, EM31-3, Max-Min, HEM, GTK and other custom data. In all cases except custom, EMIGMA recognizes the measurement parameters (frequency and separation). In the latter case, these parameters are to be specified manually.

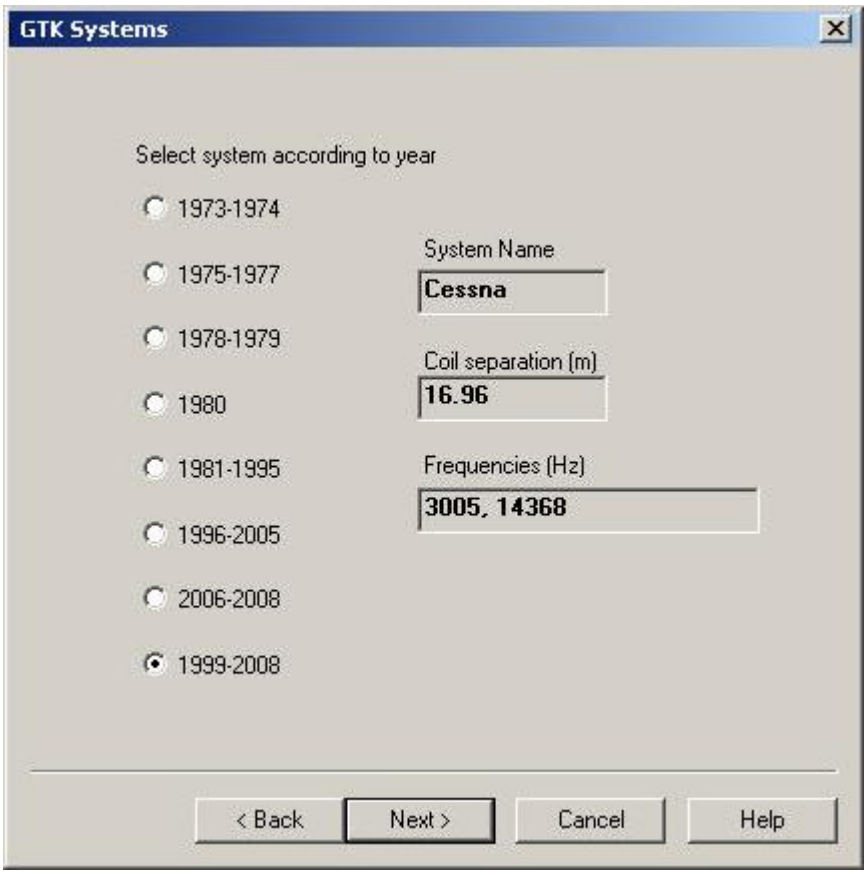
To launch the import wizard, select one of the above-mentioned survey types from the **Raw Data Formats** tab of the **Import** dialog or if not on this list, select **Dipole-Dipole FEM**. The **Catalog** page appears, with the respective option selected:



The system name appears in the respective box below the options. However, if you have selected **Dipole-Dipole FEM**, the **Unknown** option is selected and you may enter your **System Name** in the box.

Specifying a GTK System

The following page appears if you have selected GTK on the initial system menu page:



There are eight systems to choose from according to the years that they were used. Making a selection will display the corresponding system name(type of plane used), coil separation and frequencies.

Click **Next** at the bottom of the dialog to proceed to Step 1 of the import procedure. The appropriate frequency and system geometry parameters will be selected on the page for Step 1.

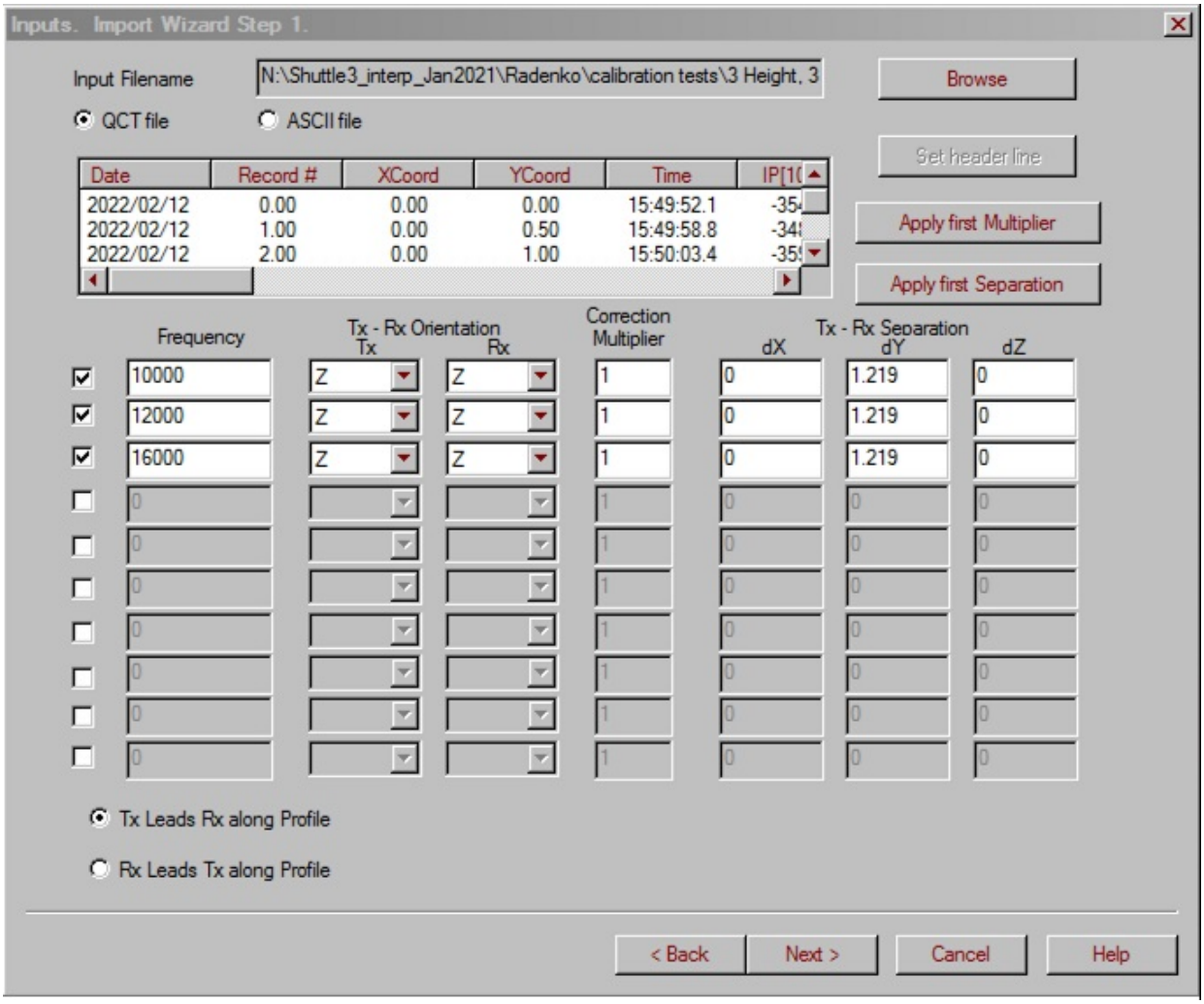
Step 1. Inputs

For most instruments, the settings are set by default but should be checked. Otherwise, you must enter in all the relevant parameters.

You may also import any of these types of data from a QCTool file by selecting the **QCT file** option below the **Input Filename**. We highly recommend first importing your data to QCTool when the data can be corrected and organized before import to EMIGMA.

Otherwise, select **ASCII file**.

Click **Browse** to load the file to import:

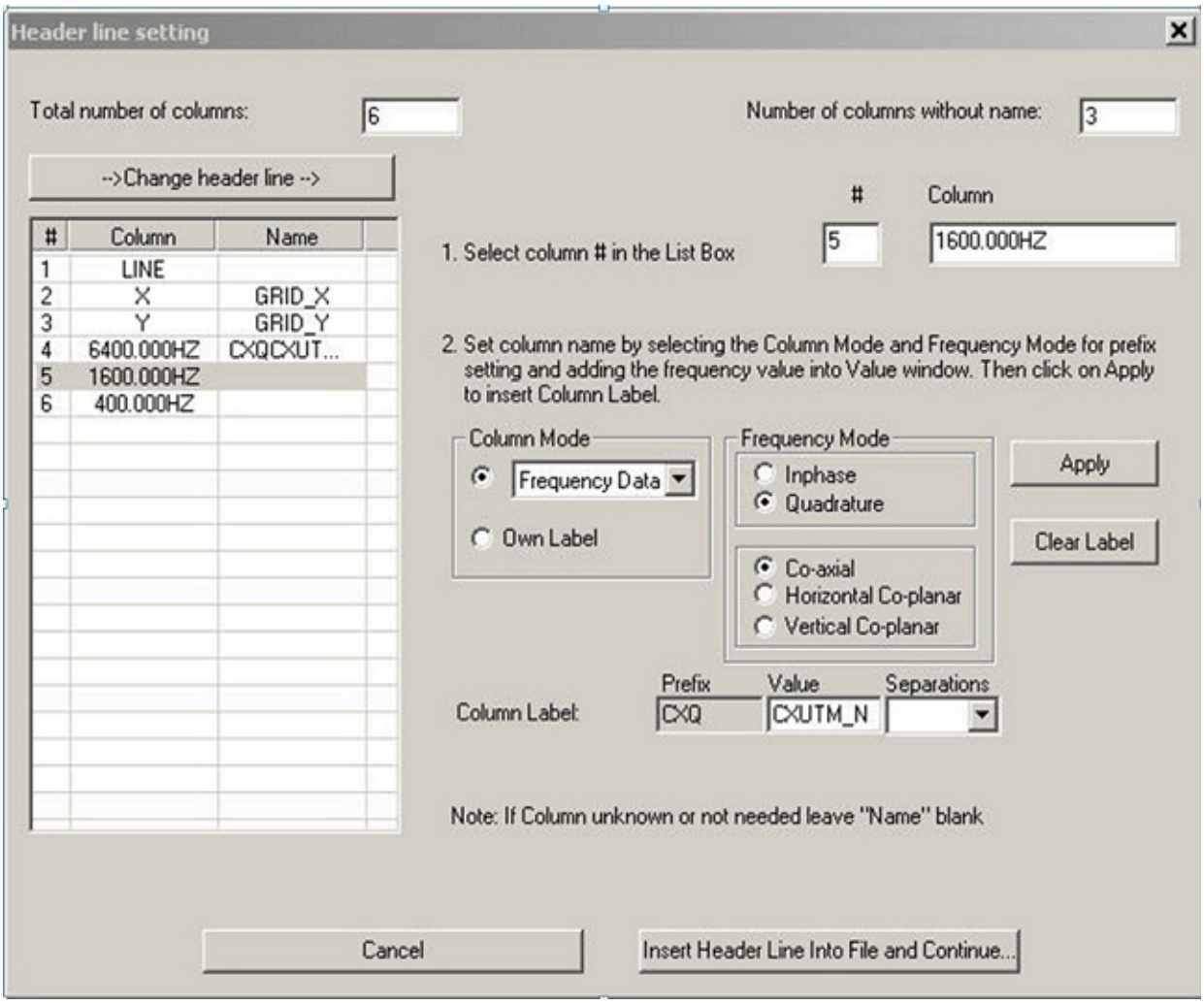


In this case, GSSI Profiler was selected and a QCTool file was used with the channels named and thus the first page was completed by the software.

In the case of columnar Ascii file, a header line should be inserted at the top of the file. If the import wizard does not locate the header line or the header line is not standard, the message notifies you thereof. Click **OK** to the message. The name of the file appears in the **Input Filename** field at the top, and the first 20 rows of data are displayed in the **File View** field.

- Select the header line, if the wizard fails to do so. A message appears, for you to authorize the switch to another header line. Click **OK** to confirm. The wizard reads the header line and tries to parse the input data. If any of the frequencies to import does not exactly match the respective default frequency, a message appears asking you whether you want to use the frequency value from the file instead of the default frequency. Click **OK** to replace the default frequency.

- If the header line is not standard or you want to replace some of the labels, click **Set header line**. The **Header Line Setting** dialog appears:



To edit header labels:

- Click **Change header line**. The current header labels will appear in the **Name** column of the table. ***Note****. If you need to change all of the labels, skip this step, since anyway you have to specify each of the labels manually.*

- Click on the row containing the header label to edit, select the label from the dropdown list in the **Column Mode** section or assign your own label by entering it in the respective box, and click **Apply** in the right-hand part of the dialog. A new label replaces the former one in the **Name** column of the table.

- If it is a frequency column, make your selections in the **Frequency Mode** section. In the case of any data, except EM31_3, the **Prefix** and **Value** boxes of the Column Label are filled automatically. If the data to import are EM31_3, you are required to enter the value manually and to select the separation from the respective dropdown list.

- To clear the label, select it in the table and click **Clear** in the right-hand part of the dialog.

- When finished, click **Insert Header Line into File and Continue**. If you have left any column blank, the message appears asking you to confirm. Clicking **OK** to this message will replace the blank header label by UNKNOWN.

Back in the **Inputs. Import Wizard. Step 1**:

- Check the parameter information parsed by the wizard from the file to import. Usually, no changes are required.

- If a frequency from the file to import is missing, check the box next to a row (channel) which is not in use and enter manually this frequency and other parameters in the now enabled row.

- If the Tx-Rx orientation is not recognized, select it from the respective dropdown list.

- If data to import have previously been altered - normalized for example, - use the **Correction Multiplier** to adjust for this alteration. For instance, dighem vertical co-planar data (ZZ) are divided by 2 in order to be read on the same scale as the axial co-planar data; in this case, you can apply 2 as a correction multiplier and import the data in their initial state. Enter 2 in the box next to the first channel and click **Apply First Multiplier** to apply it automatically to the rest of the channels.

- To apply the same separation to all of the channels, enter a required value (or use the default one) in the box next to the first channel and click **Apply First Separation**.

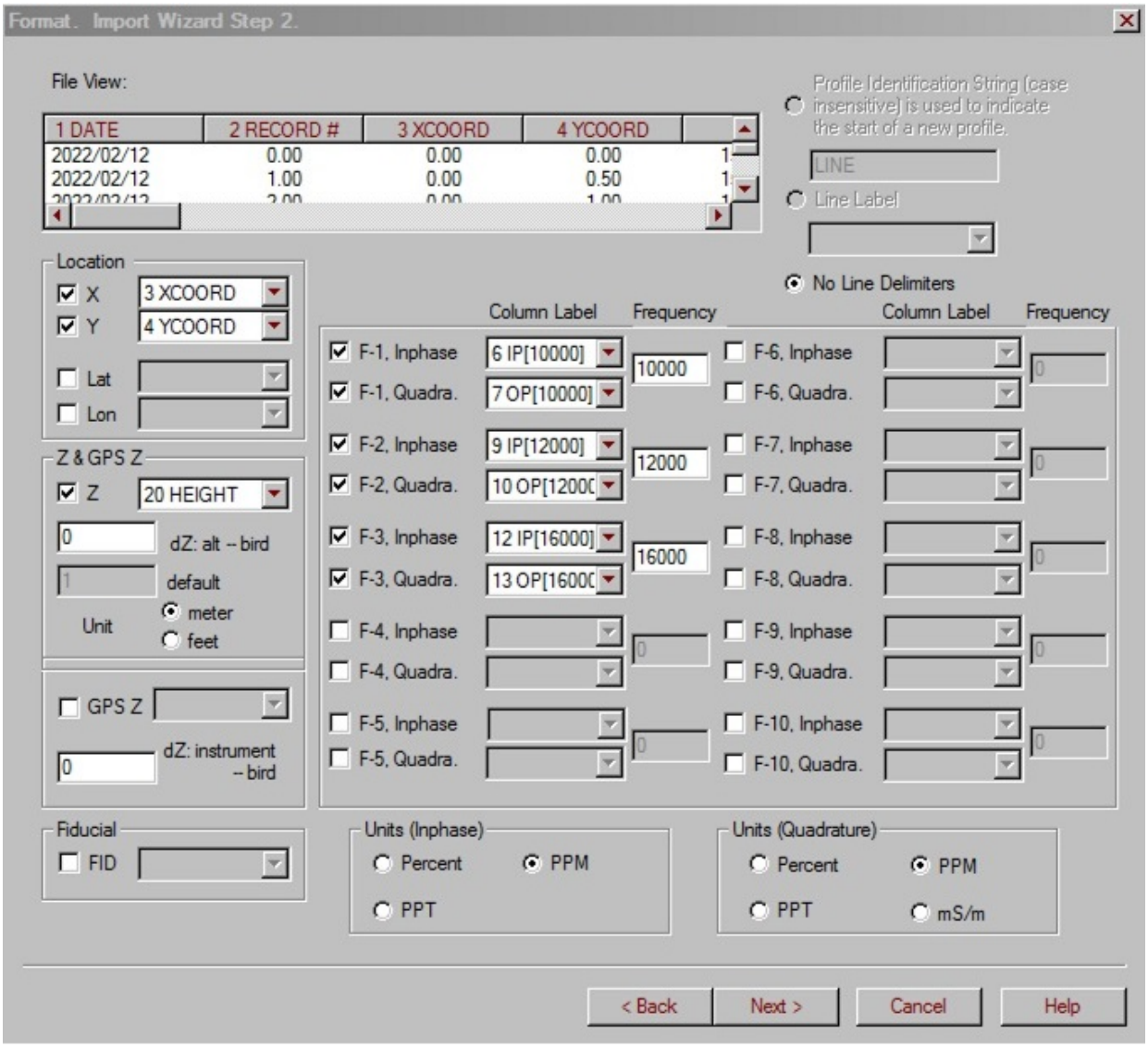
***Note**. If you are importing data from a custom system, the **Frequency**, **Tx-Rx Orientation**, and **Separation** fields will be disabled and no default values will be provided. Check the box next to a channel to activate and enter the parameters manually.*

- At the bottom of thie **Step 1** page, specify where the transmitter and receiver are in relation to each other by selecting: **Tx leads Rx** or **Rx leads Tx**.

- Click **Next** to proceed to Step 2 of the import wizard.

Step 2. Format

Step 2 of the import procedure offers you an opportunity to check and edit the parameters of data to import. The **File View** field contains the header and other descriptive information as well as the first 5 rows of the data:



In the **File View** field:

- The start of a new line is indicated by an identification string, which usually is LINE. If it is other than LINE, type in your own identifier

(case insensitive) into the box under the **Profile Identification String** option to the right of the **File Header View** field. Or, select the **Line Label** option below and choose a column label from the now active dropdown list under this option. For a QCTOOL file, the line labels are automatically extracted from the QCTool file.

- Make sure that the sections below the **File View** field display the correct data. As a rule, these data are detected from the file you are importing. If some of the labels or values are different from what is in the file, reselect them from the dropdown lists or edit them as required. If your system is unknown, provide your settings manually.

In the left-hand part of the page, check or edit coordinate information:

- Make sure the columns in the **Location** section are correct. You may import longitude and latitude data by selecting the appropriate check boxes.

- Check the **Z** box (if it is not checked automatically or your system is unknown) in the **Z&GPS Z** section in the case that the data to import contains GPS information. The **dZ-Alt** box below is activated, for you to specify the height difference between the bird and the helicopter or the elevation of the radar altimeter. If data to import contain no altimeter data, the latter is defined as 1 by default. Edit it as required. Select between meters and feet for the units of measurements.

- Check the **GPS Z** box (if it is not checked automatically or your system is unknown) in the case the data to import contain GPS information. The dropdown list next to this box is activated. Select the channel from this list to specify the location of this information and enter the height difference between the bird and the GPS instrument in the box below.
- Check the **FID** box (if it is not checked automatically or your system is unknown) in the case that the data to import contain a fiducial channel. The dropdown list to the right becomes activated. From this list, select a required channel.

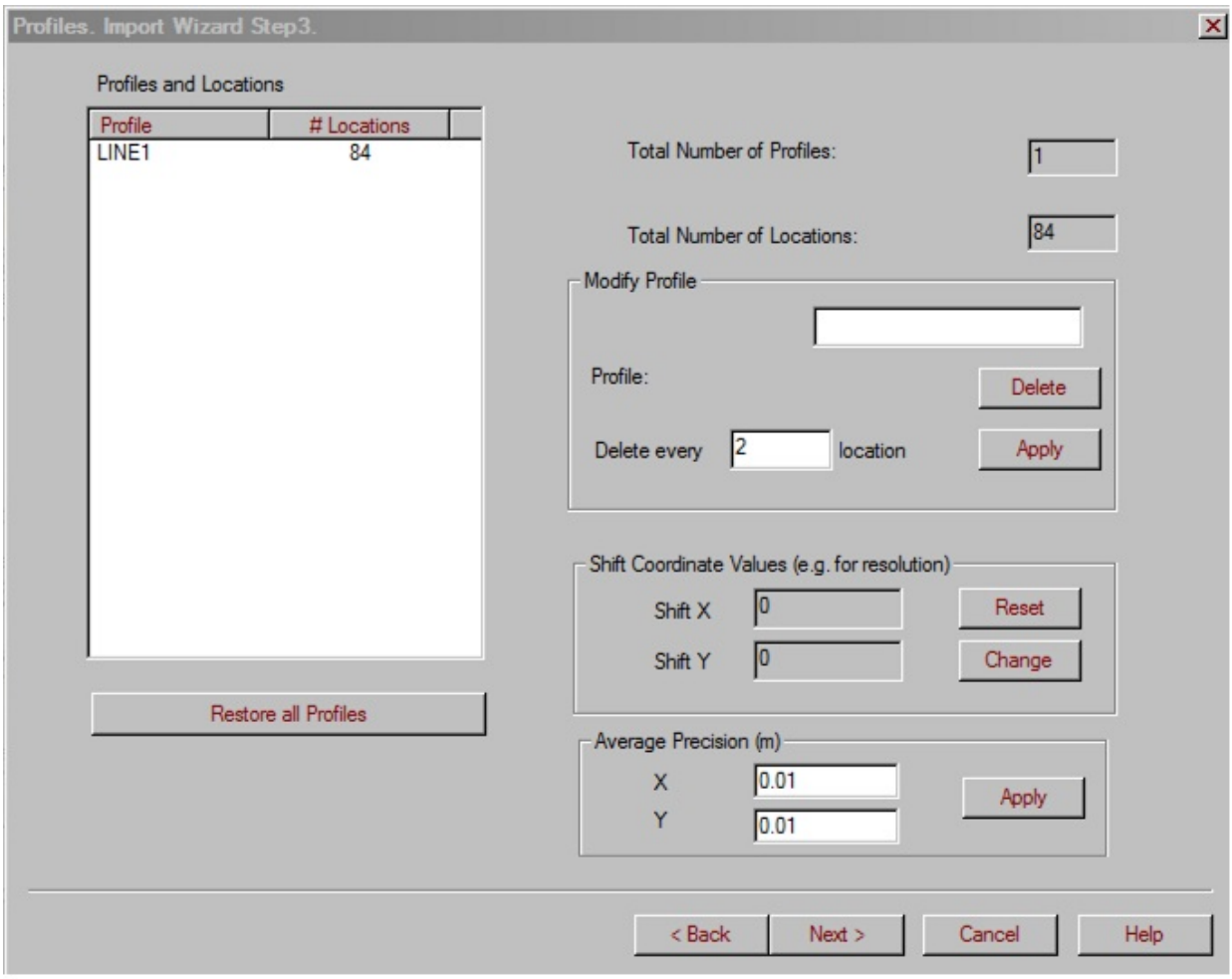
On the right-hand section of the page:

- Make sure that the column of Quadrature and/or Inphase data for each frequency is correct. If the displayed column is incorrect, change the column using the appropriate dropdown list.

- If the data types you are importing are unknown, set the column locations manually. To do this, check the box next to the **InPhase** and/or **Quadrature** channels to activate them and select their location from the dropdown lists to the right. Enter the frequency value in the respective box
- If required, reselect units in the **InPhase** and **Quadrature** sections in the bottom of the dialog and click **Next** to proceed to Step 3 of the import wizard.

Step 3. Profiles

The **Profiles** page offers you an opportunity to modify the profile information before importing it into EMIGMA. But, normally this section can be skipped.



- In the **Profiles and Locations** table, select a profile to modify if desired. Its name appears in the upper box of the **Modify Profile** section.

- To delete the whole profile, click **Delete**. To restore it, click **Restore all Profiles** under the **Profiles and Locations** table .

- To reduce the number of locations per profile, use the **Delete every** box in the **Modify Profile** section. The default value in this box is 2; it means that if you leave it and click **Apply**, each second location of the profile will be deleted.

- To provide a better positioning accuracy, click **Change** in the **Shift Coordinate Values** section. In the **Shift Values** dialog to appear, specify the shift values for the X and/or Y coordinates and click **OK**. To restore the original coordinate values, click **Reset**.

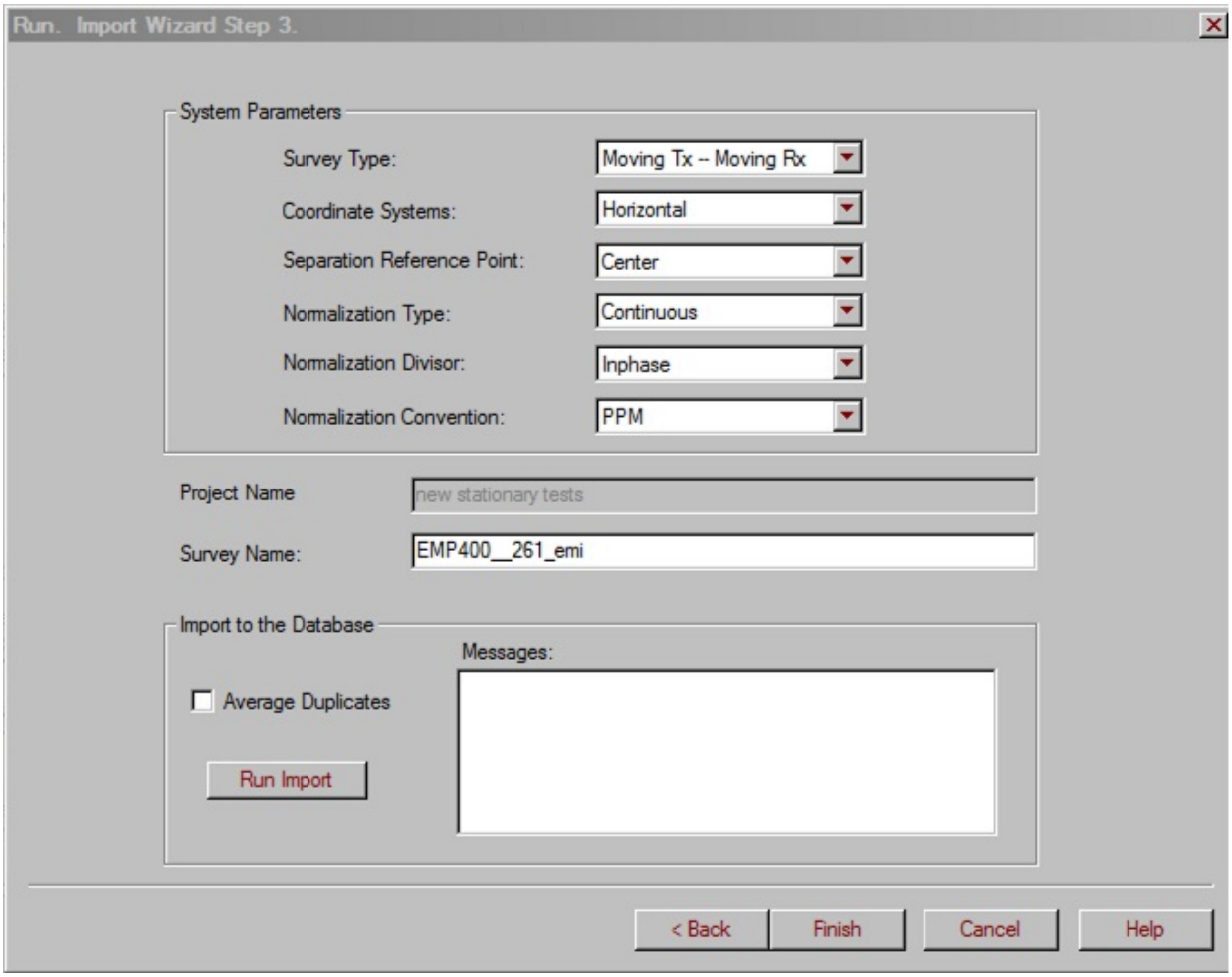
- The Average Precision boxes tell you the average precision of the locations in single precision (float). The data is read in double precision to this stage but is stored in single precision to the database.

This functionality is useful when X and Y are too large to provide a required resolution. For example, if you are using UTMs, but require positioning accuracy for data analyses to a fraction of a metre, strip the first 3 digits that are similar in all of the values. This will create a local coordinate system providing a higher positioning accuracy.

- Click **Next** to proceed to the final step of the import wizard.

Step 4. Run

On the **Run** page, you finalize the import procedure. The upper **System Parameters** section contains information on the survey style and the settings as specified in the previous steps. The meanings of the various System Parameters may be found in the manual or in the introductory EMIGMA information.

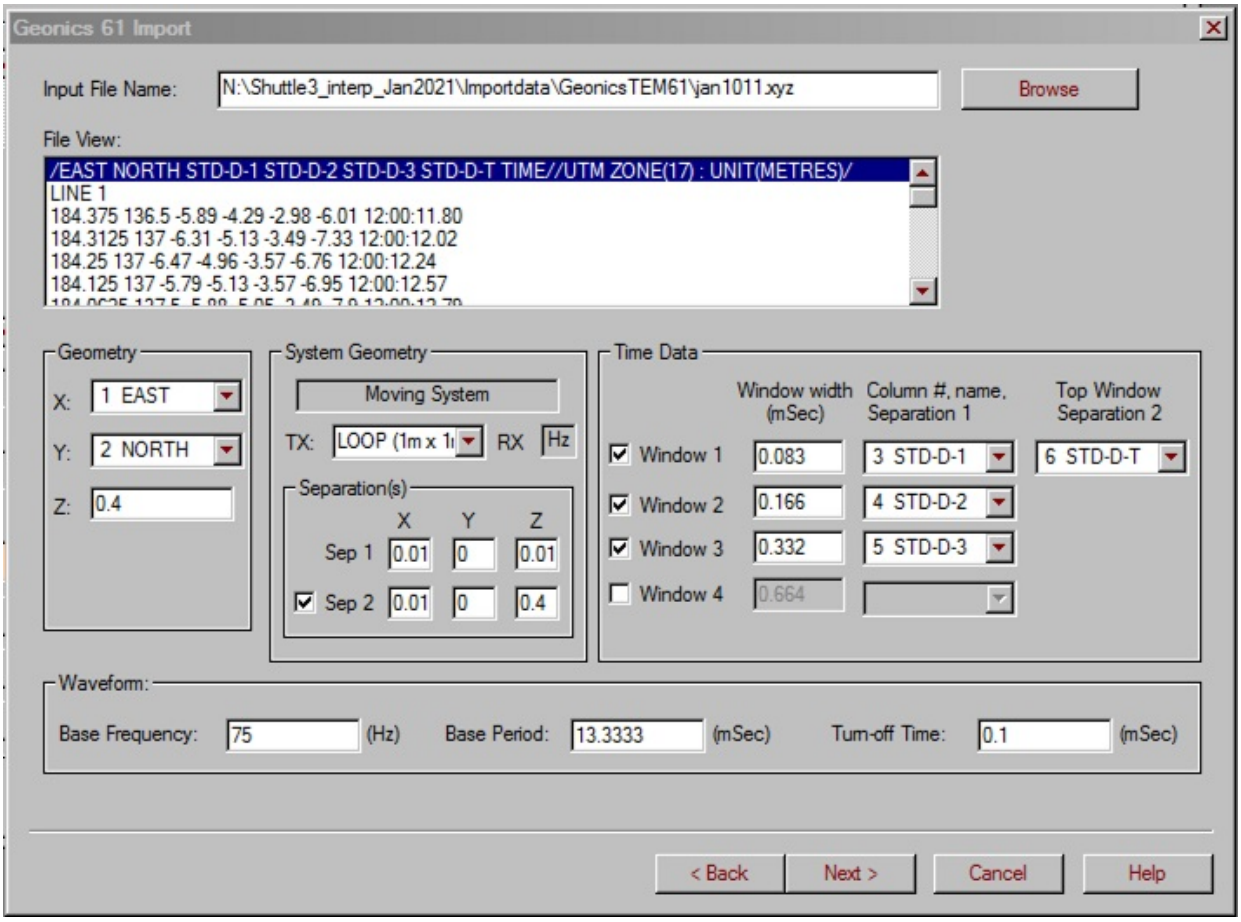


- Check **Average Duplicates** if desired. Averaging may be done later once the data is imported.
- Click **Run Import**. The **Messages** field to the right keeps you updated on the import procedure.

- Click **Finish** when import is completed. The imported data appears in the **Surveys in Project** section of the **Database** dialog, with the name of the survey depending on the system used.

Geonics 61 Import Wizard

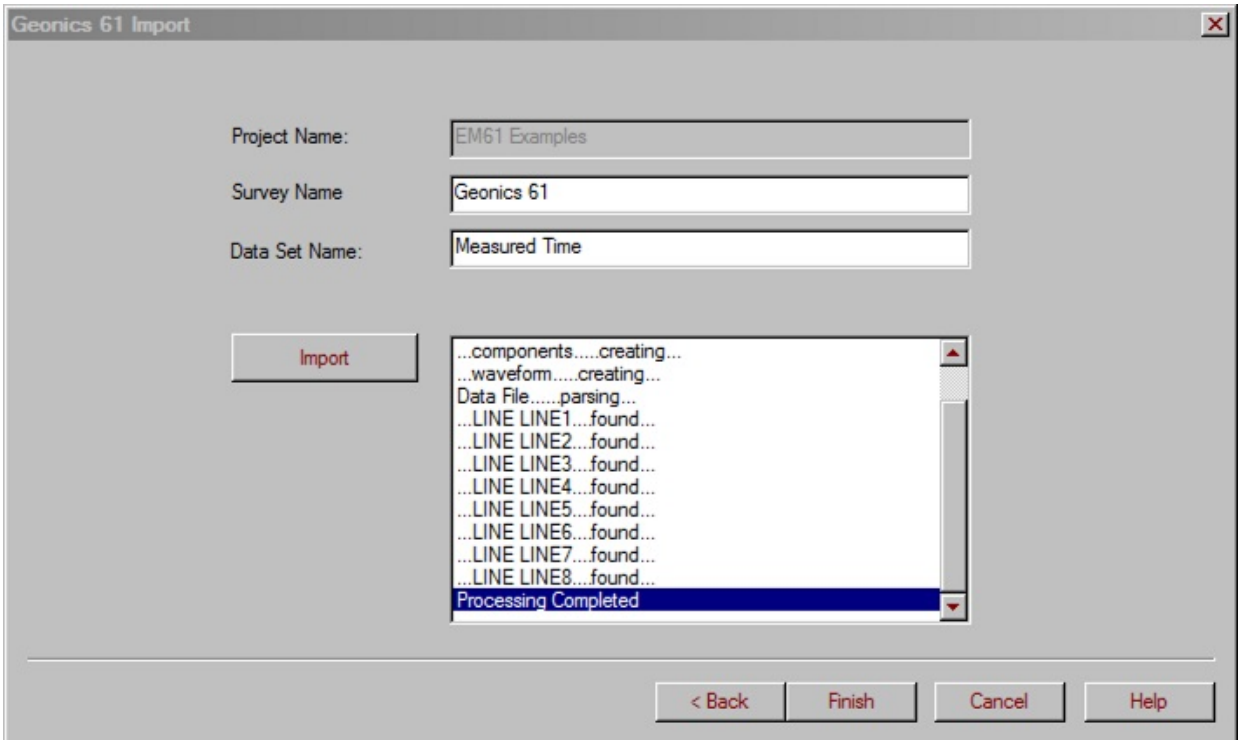
Geonics 61 Import Wizard. Step 1. File and System Geometry Specification.



Input File Name	Name and path of the Geonics file that will be read in.
File View	The loaded file will appear in this box.
Browse	Search for the correct directory for the file you want to import.

Geometry	Specify which columns in the file contain the x and y coordinates. Also indicate the the height of the profile.
System Geometry	Gives the details of the transmitter and receiver. Receiver always measures the z component of the magnetic field. There are two choices of loop transmitter.
Separations	Specify up to two separations.
Time Data	Specify which columns contain time window data. The window width can be entered as well. Up to four windows for the first separation and one window for the second separation.
Base Frequency	Frequency of the signal that the transmitter sends.
Base Period	Period of the signal that the transmitter sends. Inverse of frequency.
Turn-off Time	Transmitter is turned on at 0 and turned off at the Turn Off Time.

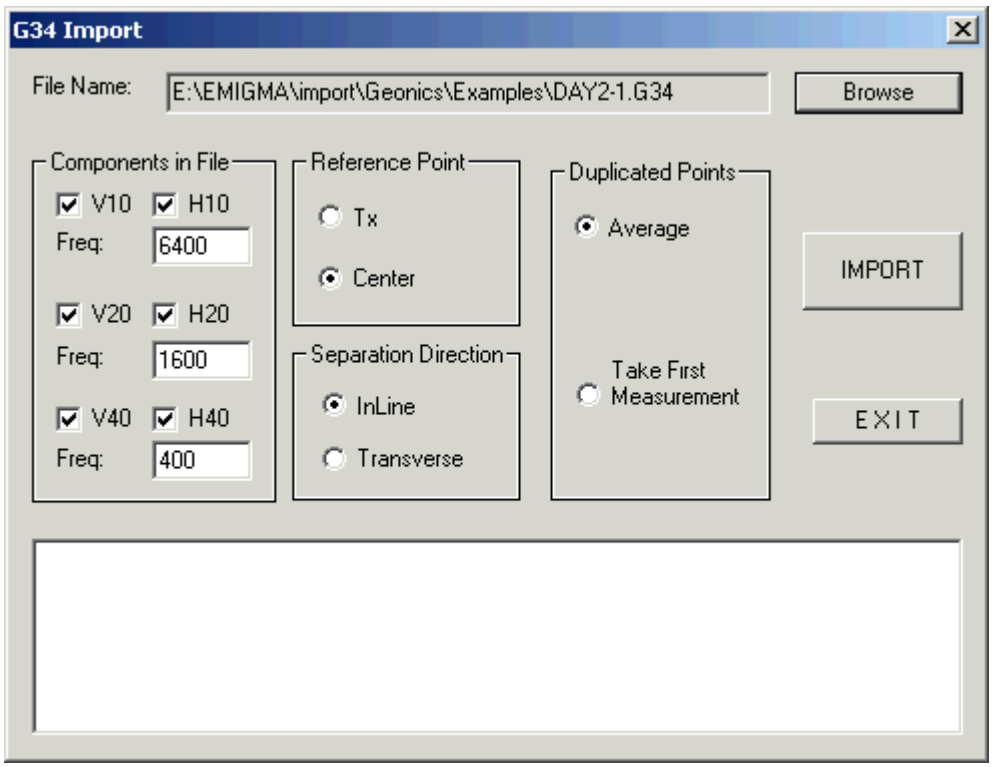
Geonics 61 Import Wizard. Step 2. Import Data.



Project Name	Name of the project that will appear in the database.
Survey Name	Name of the survey that will appear in the project.
Data Set Name	Name of the data set that will appear in the survey.
Import	Start the processing of the raw file and save results to the database.

GEONICS g34 File Import

Select **GEONICS FEM** from the **EM** list under the **Raw Data** tab of the Import interface.
Select **GEONICS G34** from the window to follow.
The following window is then displayed:



To import a file:

- Click **Browse** next to the **File Name** field to specify a file to import.
- The components which will imported from the file will be displayed in the **Components in File** section. Deselect any undesired components and edit the frequency values if necessary.
- **Reference Point** specifies whether the location coordinates refer to **Tx** - the location of the transmitter or **Center** - the middle point between the transmitter and receiver.
- **Separation Direction** specifies whether the separation between the transmitter and receiver is **Transverse** - 90 degrees to the line of

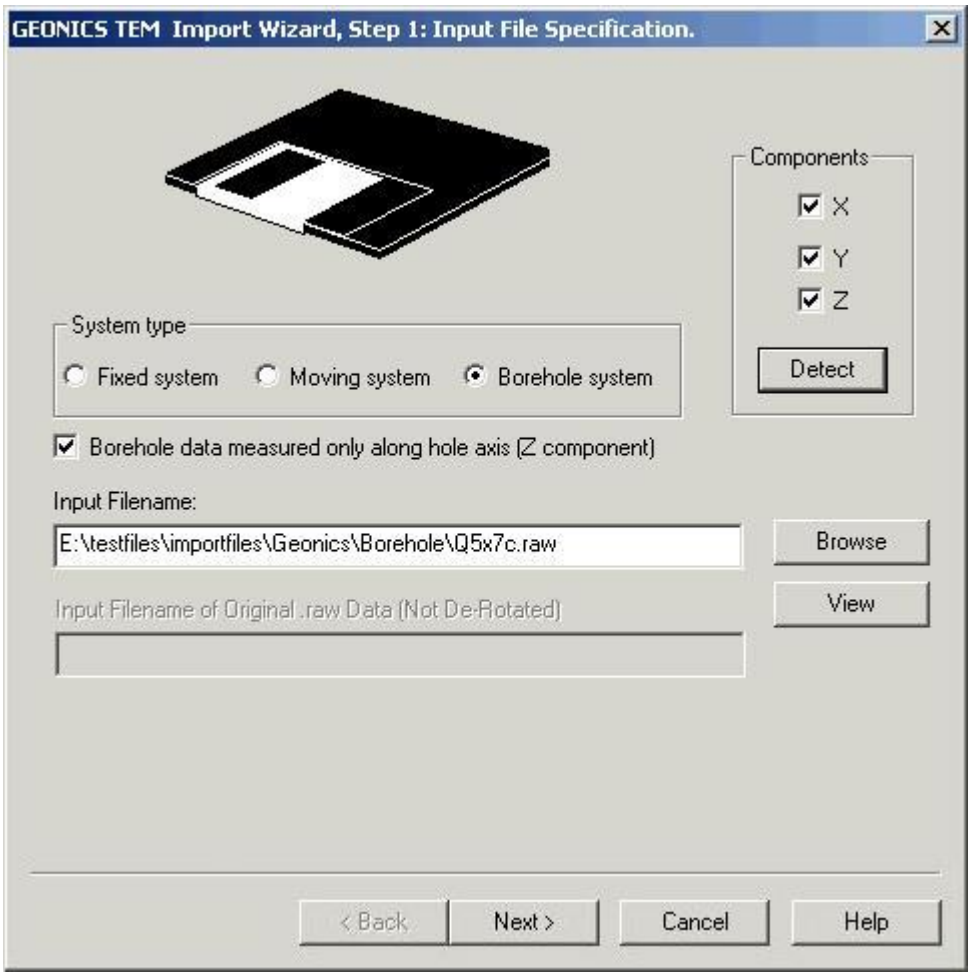
measured data or **InLine** - parallel to the line of measured data.

- Specify what to do with locations which have more than one data value in the **Duplicated Points** section. The values can either be averaged or the first value will be used.
- If parameters displayed are acceptable, click the **IMPORT** button and a data set with the imported data will created in the EMIGMA database.

GEONICS TEM Import Wizard

Step 1. Input File Specification.

Selecting **GEONICS TEM** from the **EM** list under the **Raw Data** tab of the **Import** dialog brings up the **Input File Specification** page:



In this dialog:

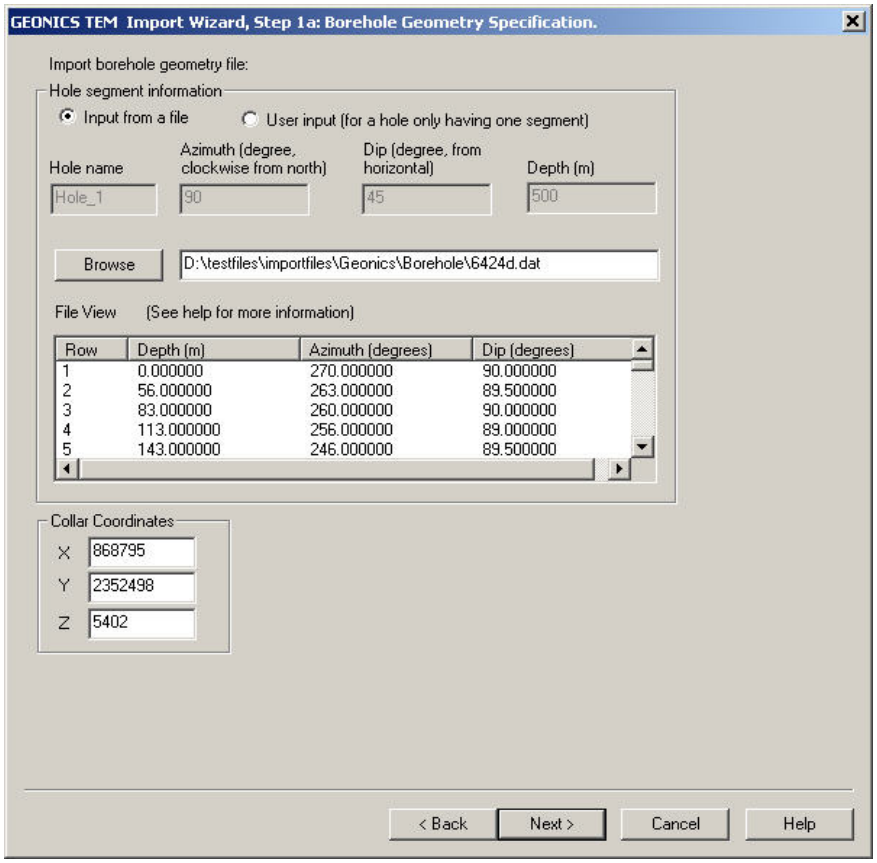
- Select between **Fixed System** and **Moving System** if you are importing surface TEM data or click **Borehole System** if you are importing borehole TEM data.

- If the **Fixed** or **Moving System** option is selected:
    - Place your cursor in the **Input Filename** field and click **Browse** to bring up a standard Windows-style dialog for searching and opening files. Find the de-rotated .raw file and click **Open**. The filename will appear in the **Input Filename** field.
- If the **Borehole System** option is selected:
    - The **Borehole data measured only along hole axis** box is checked by default. In this case only the **Input Filename** field is active. Browse for a processed de-rotated.raw file. Its name and path will appear in the **Input Filename** field.
    - To import additional (unprocessed) information which otherwise might be missing, de-select the **Borehole data measured only along hole axis** box. This activates the **Input Filename of Original.raw Data (Not De-Rotated)**. Place your cursor in this field and click **Browse** to search for a not de-rotated.raw file and click **Open**. The filename will appear in the **Input Filename of Original .raw Data (Not De-Rotated)** field.
- To view the file you are importing, click **View** (if single) or select it from the list in the blue field below and click **View** (if multiple files). The **File View** dialog appears containing this file in the text format.
- To view the components contained in the file to import, click **Detect** in the **Components** section at the top of the dialog.
- Click **Next**.

Next

GEONICS TEM Import Wizard. Step 1a. Borehole Geometry Specification.

If you are importing borehole data, Step 1 will bring you to the **Borehole Geometry Specification** page:



Geonics borehole data files do not contain information on borehole geometry (i.e. dip and azimuth). You can recover this information from an ASCII borehole geometry file or input it manually. In the latter case, your entire hole will be considered as one segment.

- To load borehole geometry information from an existing ASCII file:

  - Select the **Input from a file** button in the upper part of the **Hole Segment Information** section. The **Browse** button will become active. Click this button to search for an ASCII file:

- The borehole file must be in a format such that there is a column for depth, azimuth and dip. A segment length column can be present instead of a depth column. The collar coordinates can appear on a line before the borehole geometry data starts.

  The file name and path will appear in the box across the **Browse** button, whereas the **File View** field will contain the loaded data in the text format

- To manually input the borehole geometry:

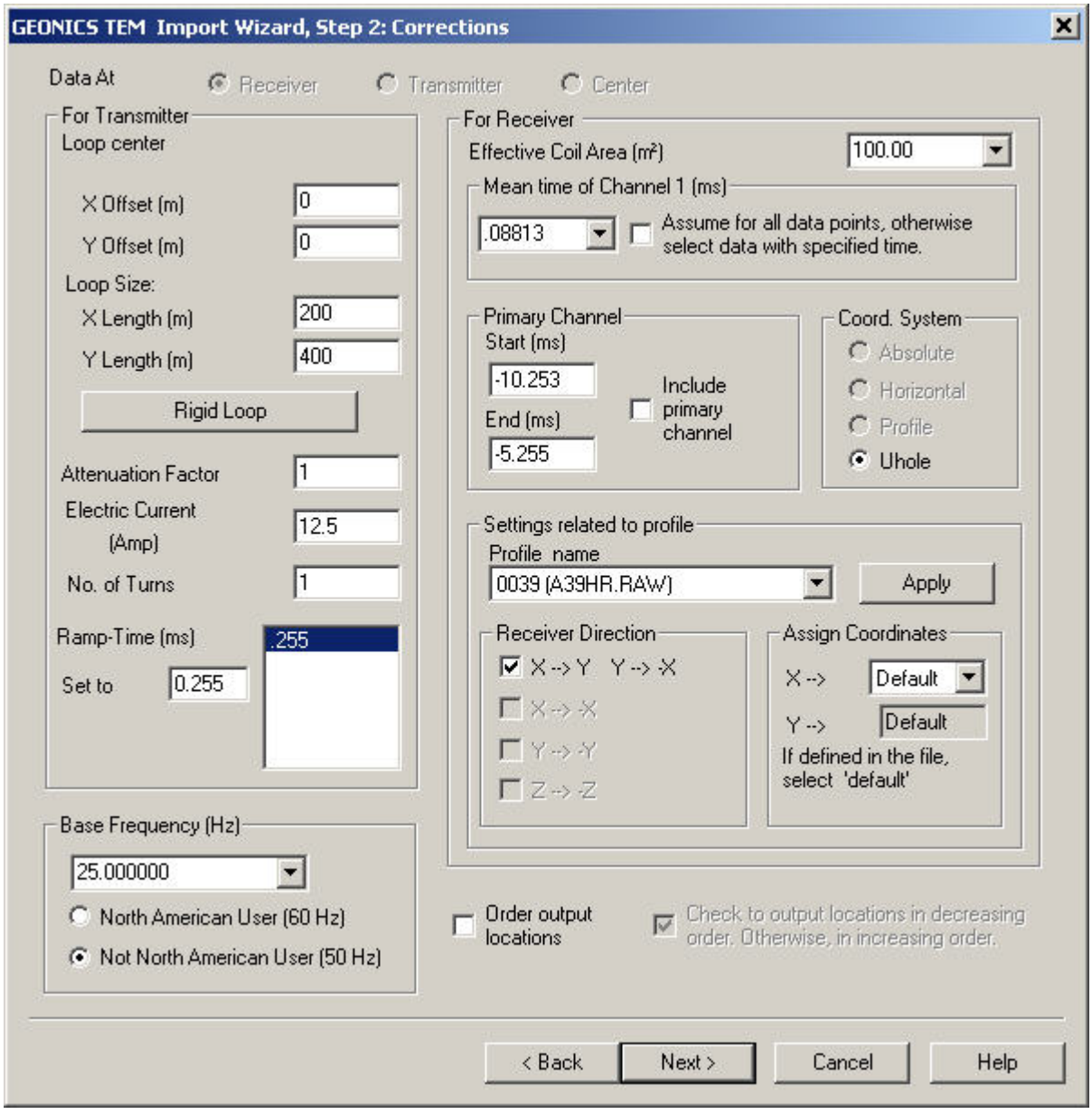
  - Select the **User Input** option. The four boxes below become enabled
  - Input your own values of azimuth, dip and depth in the respective boxes

- Specify the **X** and **Y** coordinates of the collar position if they were not in the file.
- Click **Next** to proceed to Step 2.

Note: A message may appear urging you to specify the receiver coil area; this is a warning that the current Geonics data file contains no coil area information and you will have to input it manually in the step to follow.

GEONICS TEM Import Wizard. Step 2. Corrections.

The **Corrections** page offers you to check or specify the settings related with the system geometry:



- In the **For Transmitters** section:

- If you have a borehole or fixed system, the Geonics data file assumes the loop center to be 0, 0 unless specified otherwise. In the latter case, make sure the correct position is input
- If you have a moving system, the **Loop Center** settings are replaced by the ones for X and Y coordinates of the Tx-Rx separation. The latter are either detected from the Geonics data file or inputted manually
- The loop dimensions are usually detected from the Geonics data file. If they are not, input them manually
- The electric current and ramp time are detected from the Geonics data. Check for errors. If there are multiple ramp times, select one and it will appear in the **Set To** field. You may select more than one ramp time and on the last page you may choose whether a separate data set will be created for each ramp time or only the **Set To** value will be used

- In the **Base Frequency (Hz)** section:
  - Select either the North American or Not North American standard frequency settings to adjust the base frequency. This will cause the start and end times in the **Primary Channel** section of the dialog to also change accordingly
  - In the **Primary Channel** section, check **Include Primary Channel** if you want to import it as well. In the boxes on the left, you can see the start and the end times of the on-time window detected from the Geonics data file

- In the **For Receiver** section:
  - Specify the effective coil area if it is not detected from the Geonics data file. If it is, check it for errors
  - The mean time of **Channel # 1** is detected from the Geonics data file. Select the one you want to use if the file contains more than one.
  - Leave the box to the right checked if you want to apply the mean time detected from the Geonics data file to the entire

Channel 1; de-select the box, if your objective is a certain time gate with the mean value specified by you in the **Mean Time for Channel 1** field

- In the **Coord.System** section:
  - Choose **Absolute**, **Horizontal** or **Profile** for surface systems and **Uhole** for borehole systems. In the latter case, **Uhole** must be selected by default
- In the **Receiver Direction** section:
  - To change the direction of any of the receiver coils, check the respective box. This will in effect change the sign of the response, which becomes necessary when profiles have been surveyed in opposite directions, while the direction of the coil has not been changed at the same time
  - In the **Assign Coordinates** section, leave default in the **X** dropdown list if the coordinates are set in the file to import as Column 1 for X and Column 2 for Y. The import recognizes the directions associated with the coordinate. For example, if it sees 500S in the first column, it will set it as the Y coordinate
- The **Output Locations** checkbox is set to the decreasing order. To organize your output information in the increasing order, de-select this box
- Click **Apply** in the **Settings related to profile** section to save all the changes before proceeding to the next step
- Click **Next**

GEONICS TEM Import Wizard. Step 3. Transmitter Loop Specification.

Previous

The **Transmitter Loop Specification** page offers you to check, edit or import the loop configuration.

- Check the coordinates of the loop vertices in the spreadsheet-like table of the dialog. Their order coincides with the current flow direction, with the last corner repeating the first one to close the loop

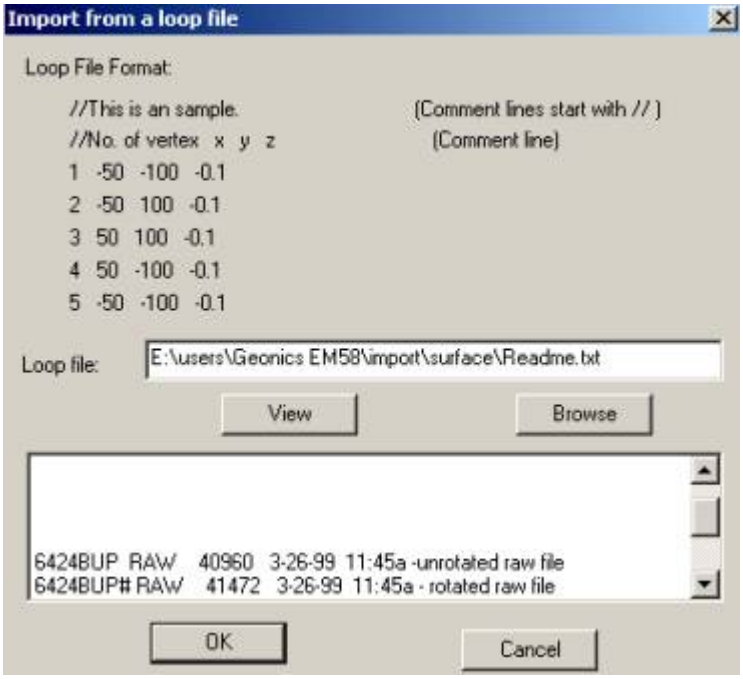
- To add a vertex, specify its number and X, Y and Z coordinates in the boxes of the **Edit Loop Vertices** section and click **Insert**. You will see the vertex in the row you specified

- To edit a vertex, select it in the table, change its X, Y and Z coordinates in the respective boxes of the **Edit Loop Vertices** section and click **Modify**

Note. If after import and simulation the sign of your data is incorrect, re-import using the **Reverse Current Direction** button in this dialog

- To import a loop:

    - Click **Import** from a loop file. The respective dialog will appear:



The loop file to import is required to have a format as shown in the sample

- Click **Browse** to bring up a standard Windows-style dialog and open the required file. Its name and path will appear in the **Loop file** box and related comments will be displayed in the field below
- Click **View** to check the format of the file
- Click **OK** to complete loop import and return to Step 3 of the GEONICS TEM Import Wizard. The spreadsheet-like table will contain the vertices of the imported loop

- Click **Next** to proceed to Step 4.

Next

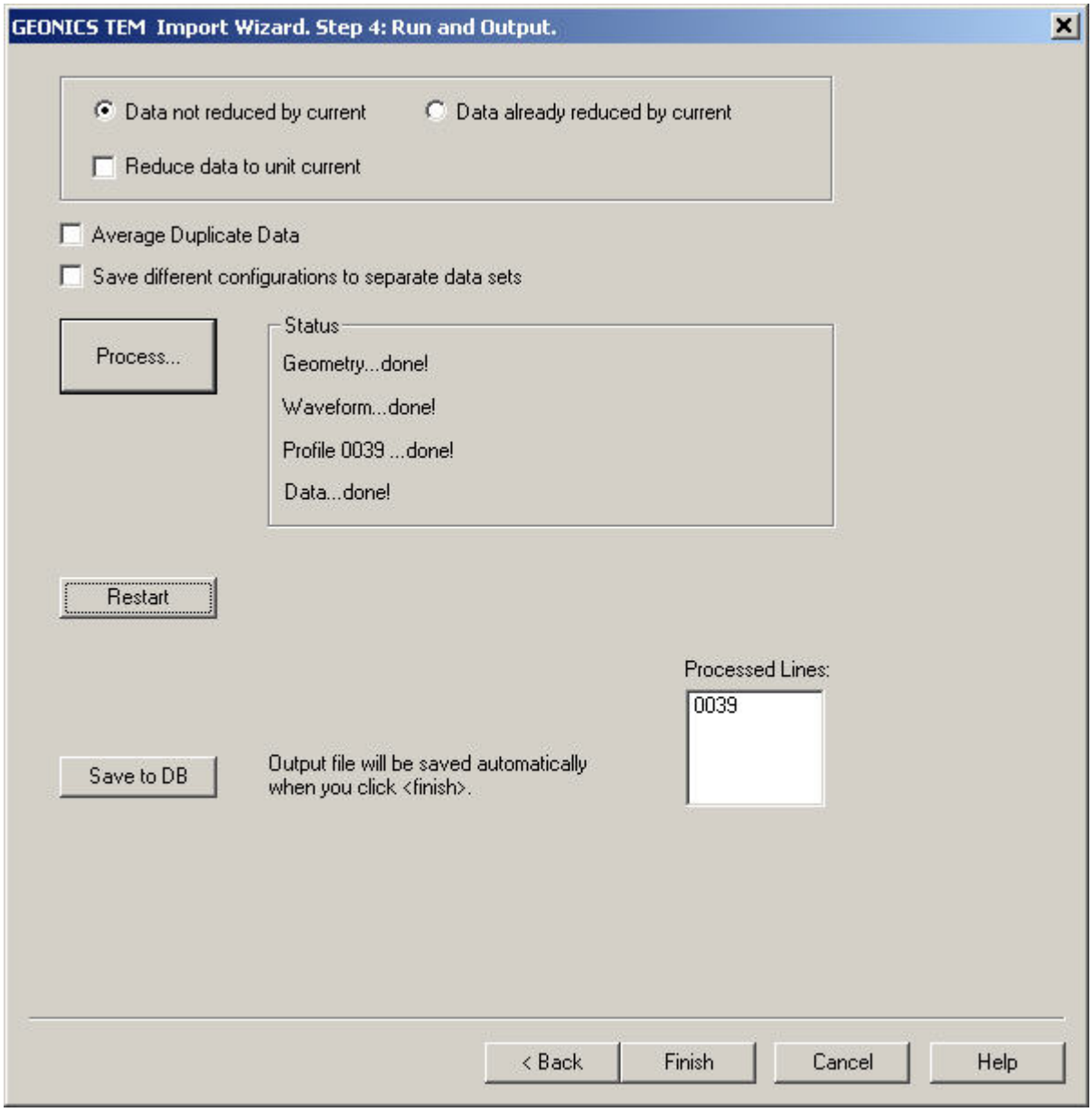
GEONICS TEM Import Wizard. Step 4. Run and Output.

The **Run and Output** page is the concluding stage of the GEONICS TEM data import. It runs your files, saves them to the database, allows you to add loops or profiles to the already available data.

In the upper part of the dialog, when the **Reduce data by current** box is checked, it means that your data values will be divided by the loop current so that they could be directly compared to simulated data. Select **Already reduced** if the data values have already been divided by the loop current.

Uncheck the box labelled **Average Duplicate Data** if you do not want the data values to be averaged when there is more than one data value for a specific location.

When there is more than one ramp time in the file, you can use a single ramp time for all the data in the file or select **Save different configurations to separate data sets** and a data set will be created for each ramp time that was selected on the system parameter page.



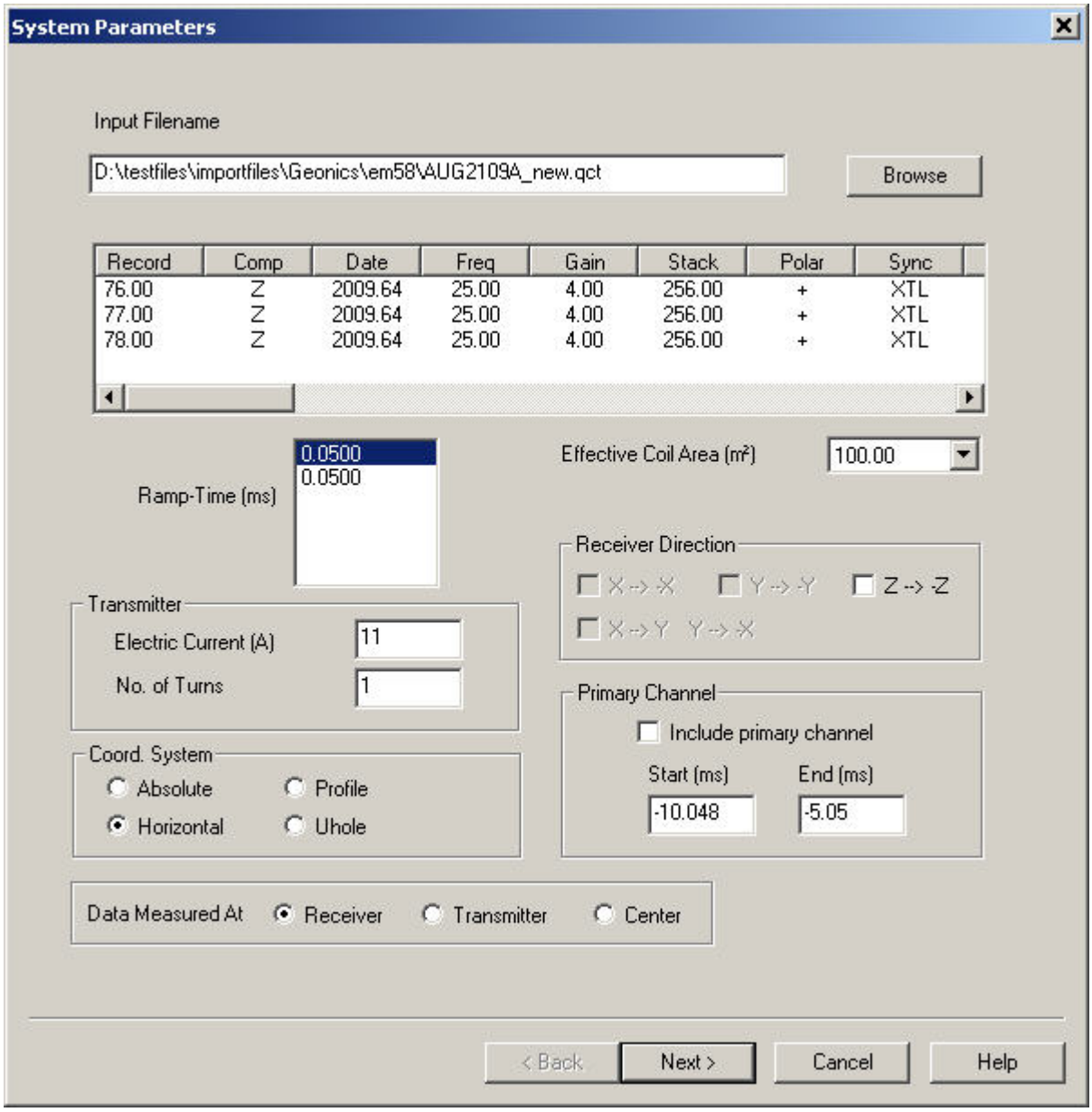
- Click **Process** to run the data file to import

  If you chose to average data, when more than one measurement has been detected for a location, the **Duplicate Data** dialog will warn you that the average of all measurements will be taken. This dialog may appear up to 3 times (for the X, Y and Z components). To ignore it, click **OK**. Otherwise, click **Restart Import**. This will return you to Step 1 of the import procedure, while your previously selected settings will be lost

- All done, click **Finish** in the bottom of the dialog.

GEONICS TEM Import Wizard. QCTool Format Import

Choosing to import the QCTool format leads to the page below:



- The qct file requires the following channels: **Comp, Freq, X, Y, RxArea, LX, LY, Curr, TurnOff, Delay** and either 21 or 31 channels with a name prefixed by Win. **Win0** is the on time channel. **Win1,**

Win2, Win3, ... are the off time channels. A moving system requires a **SepX** and **SepY** channel. A fixed system requires a **LcX** and **LcY** channel. A borehole system requires a **Line** and **Depth** channel.

- The electric current and ramp time are detected from the Geonics data. If there are multiple ramp times, you may select which ones you would like. A separate survey will be created for each ramp time selected.

- In the **Primary Channel** section, check **Include Primary Channel** if you want to import it as well. In the boxes on the left, you can see the start and the end times of the on-time window detected from the Geonics data file

- If the file contains more than one effective coil area, you must choose which area you would like to use and only the data related to that area will be imported

- Moving systems will require you to specify the part of the system that the location of each measurement refers to. Select either **Receiver, Transmitter** or **Center**
- In the **Coord.System** section:

    - Choose **Absolute**, **Horizontal** or **Profile** for surface systems and **Uhole** for borehole systems. In the latter case, **Uhole** must be selected by default

- In the **Receiver Direction** section:

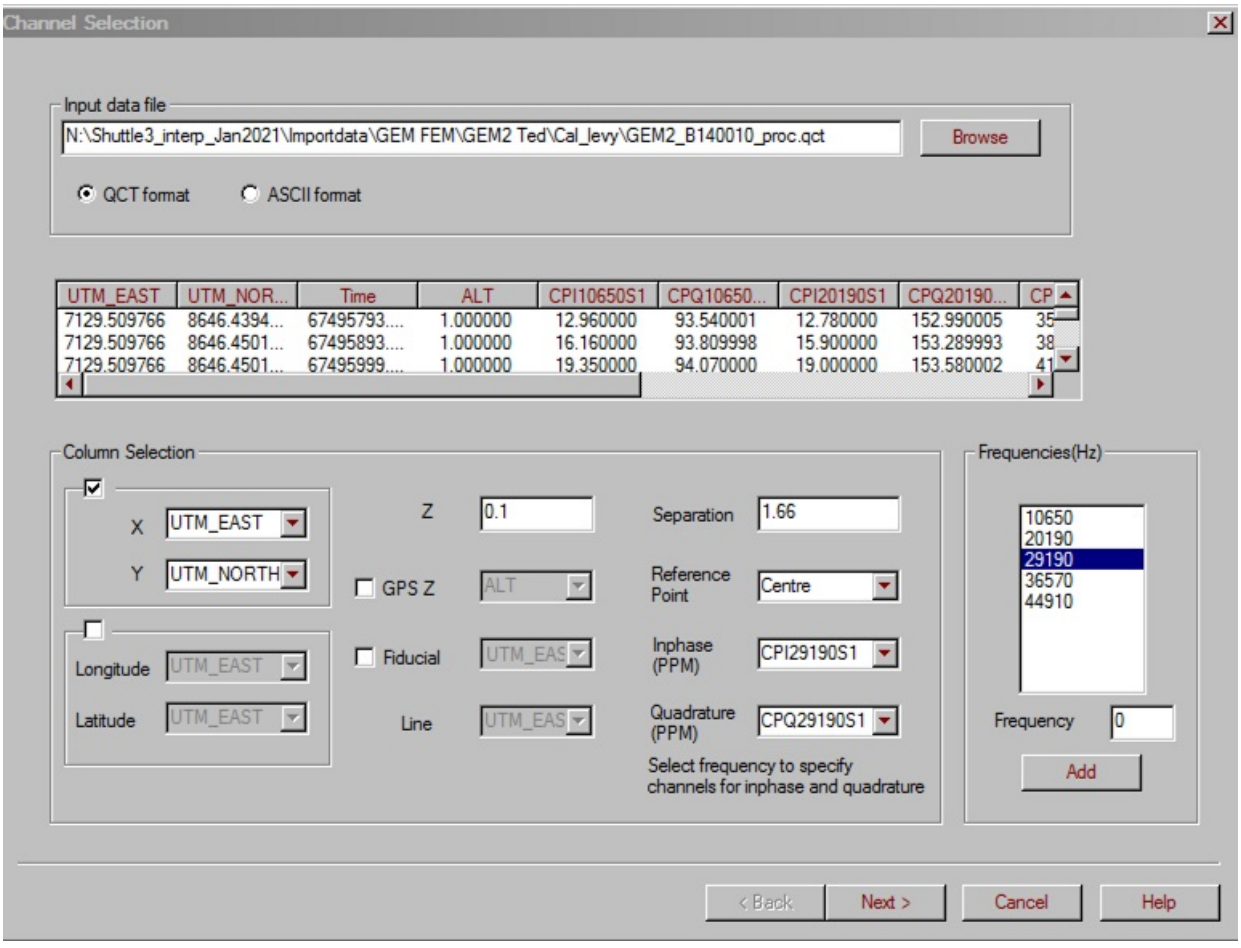
    - To change the direction of any of the receiver coils, check the respective box. This will in effect change the sign of the response.

GEM-2 Import Wizard.

Inputs

You can import GEM-2 data from a qct file or from an ascii file organized in columns such as a csv file. Highly recommended to import to QCTool first to remove outliers and organize the survey.

Click **Browse** to load the file to import:



If the import wizard does not locate the header line or the header line is not standard, generic column names will be assigned. The name of the file

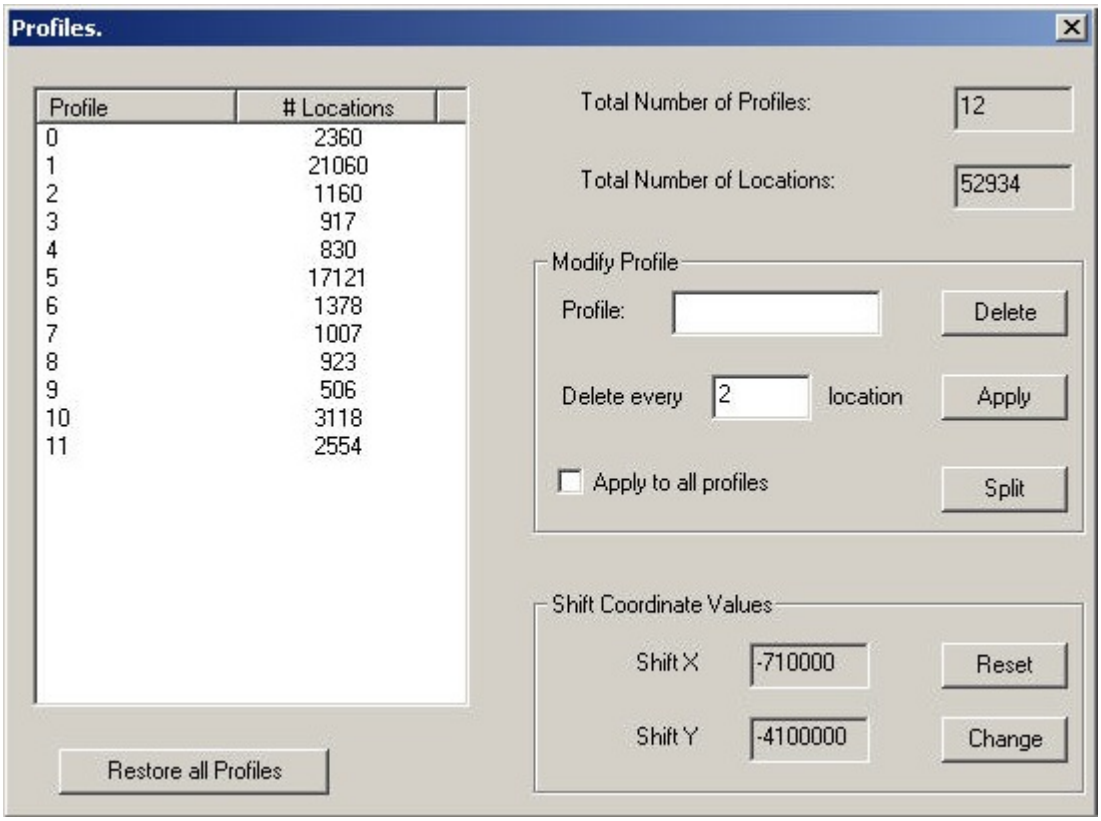
appears in the **Input data file** field at the top, and the first 24 rows of data are displayed in the File View box.

- Check that the selected columns are correct for the various items
- You may enter new values for Z(altitude above ground) and separation although it is recommended not to change them
- You may delete any of the detected frequencies if you do not want to import data for all frequencies. You may add a frequency that was not detected by entering a value in the box labelled **Frequency** and clicking the **Add** button.

  Selecting a frequency will update the selections for inphase and quadrature so you will see which channels are assigned to the selected frequency
- The **Line** channel is only enabled for ascii files. A new profile is created everytime a new value is encountered in this channel
- **GPS Z** and **Fiducial** are optional channels to import. However, either **X** and **Y** or **Longitude** and **Latitude** need to be imported

Profiles

There is a limit of 32000 locations allowed for a profile. The **Profiles** page offers you an opportunity to modify the profile information before importing it into EMIGMA:



- In the **Profiles and Locations** table on the left, select a profile to modify. Its name appears in the upper box of the **Modify Profile** section.

- To delete the whole profile, click **Delete**. To restore it, click **Restore all Profiles** under the **Profiles and Locations** table .

- To split a profile into two, Select a profile in the table. Click **Split**. Each profile will be replaced by two, with the extensions "_0" and "_1".

- To reduce the number of locations per profile, use the **Delete every** box in the **Modify Profile** section. The default value in this box is 2; it means that if you leave it and click **Apply**, each second location of the profile will be deleted.

- Select all the profiles for any of the above operations by checking **Apply for All Profiles**

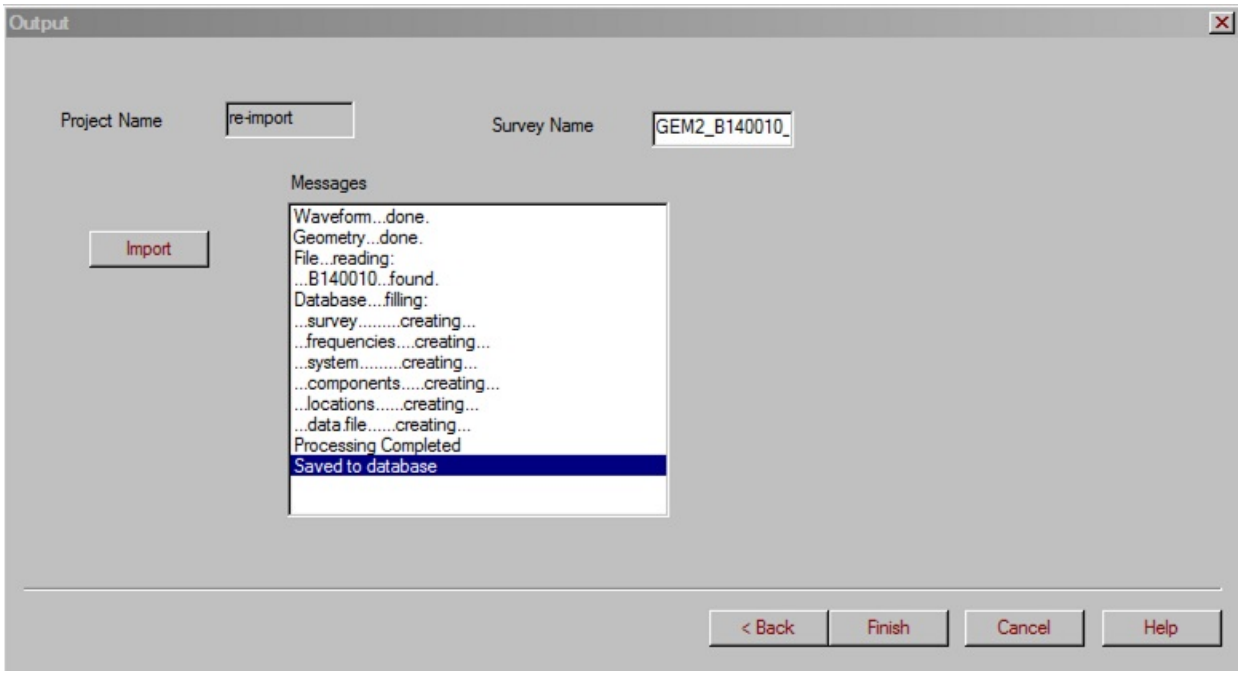
- To provide a better positioning accuracy, click **Change** in the **Shift Coordinate Values** section. In the **Shift Values** dialog to appear, specify the shift values for the X and/or Y coordinates and click **OK**. To restore the original coordinate values, click **Reset**.

This functionality is useful when X and Y are too big to provide a required resolution. For example, if you are using UTMs, but require positioning accuracy for data analyses to a fraction of a metre, strip the first 3 digits that are similar in all of the values. This will create a local coordinate system providing a higher positioning accuracy.

- Click **Next** to proceed to the final step of the import wizard.

Output

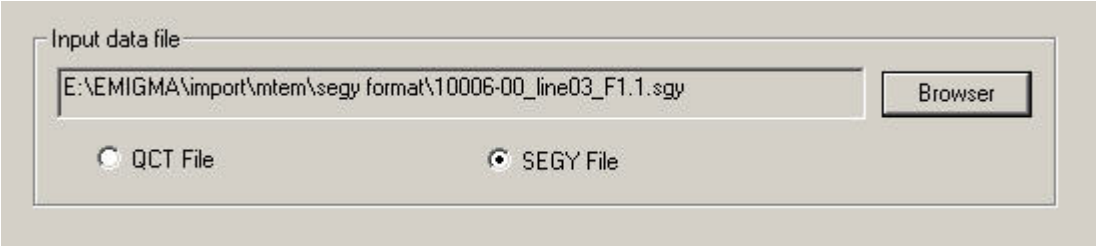
On the **Output** page, you finalize the import procedure. The **Project Name** and **Survey Name** are displayed at the top of the page. Only the **Survey Name** is editable.



- Click **Import**. The **Messages** field to the right keeps you updated on the import procedure.
- Click **Finish** when import is completed. The imported data appear in the **Surveys in Project** section of the **Database** dialog, with the name of the survey chosen.

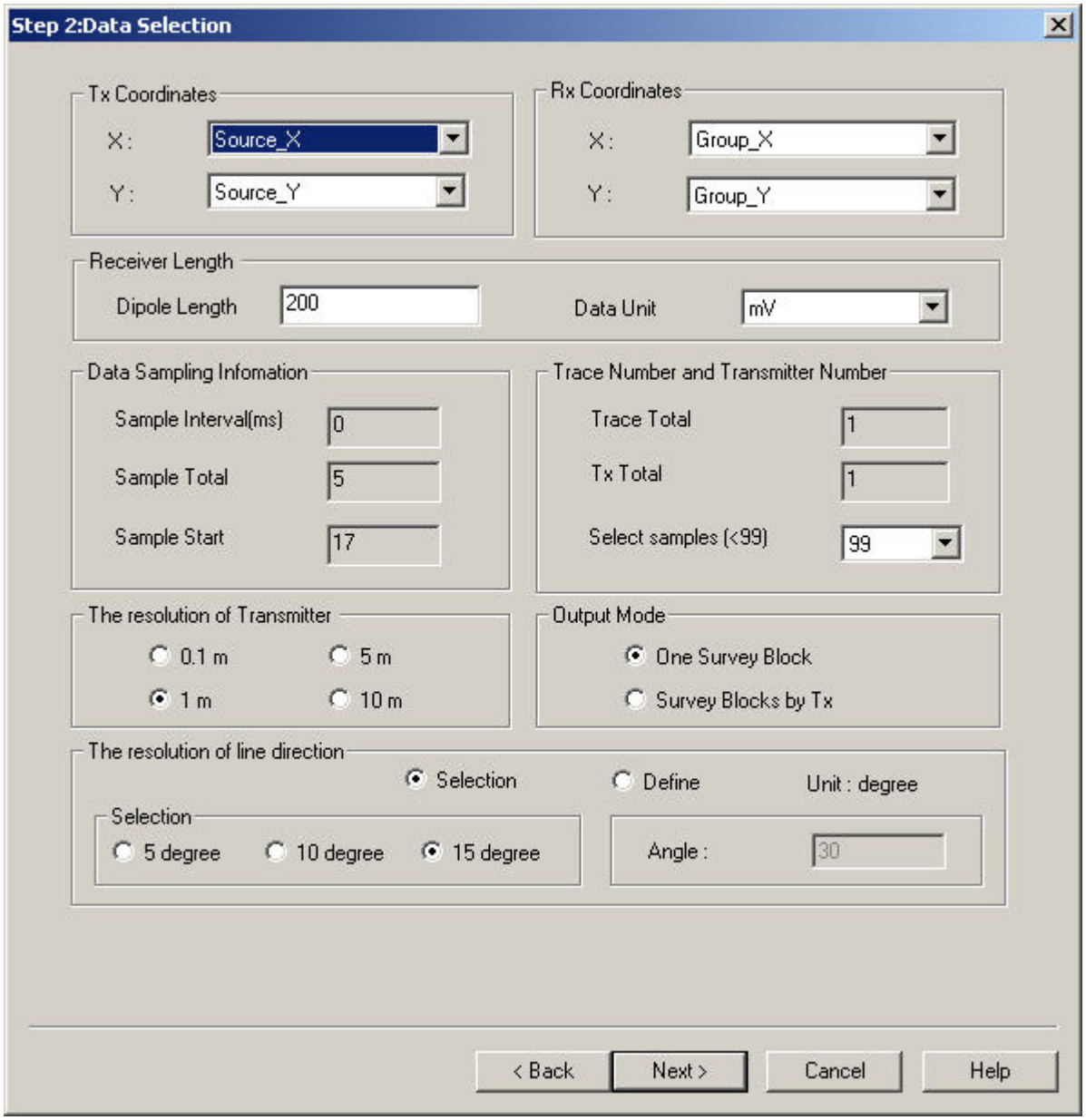
MTEM Import Wizard

MTEM Import. Step 1. File Specification.



Choose the format of the file to be imported. If you select QCT, you need a file generated by QCTool. Otherwise, you need a SEGY file
Click the **Browser** button to search for your file.

MTEM Import. Step 2. Data Selection.



Tx/Rx Coordinates Specifies which columns of data in the file correspond to the x and y coordinates of the transmitter and receiver.

Dipole Length
The length in metres of the receiver dipole.

Data Sampling Information
Sample Interval - The time that has elapsed between each time window in milliseconds
Sample Total - Total number of time windows in the file
Sample Start - The index of the first time window used to measure data

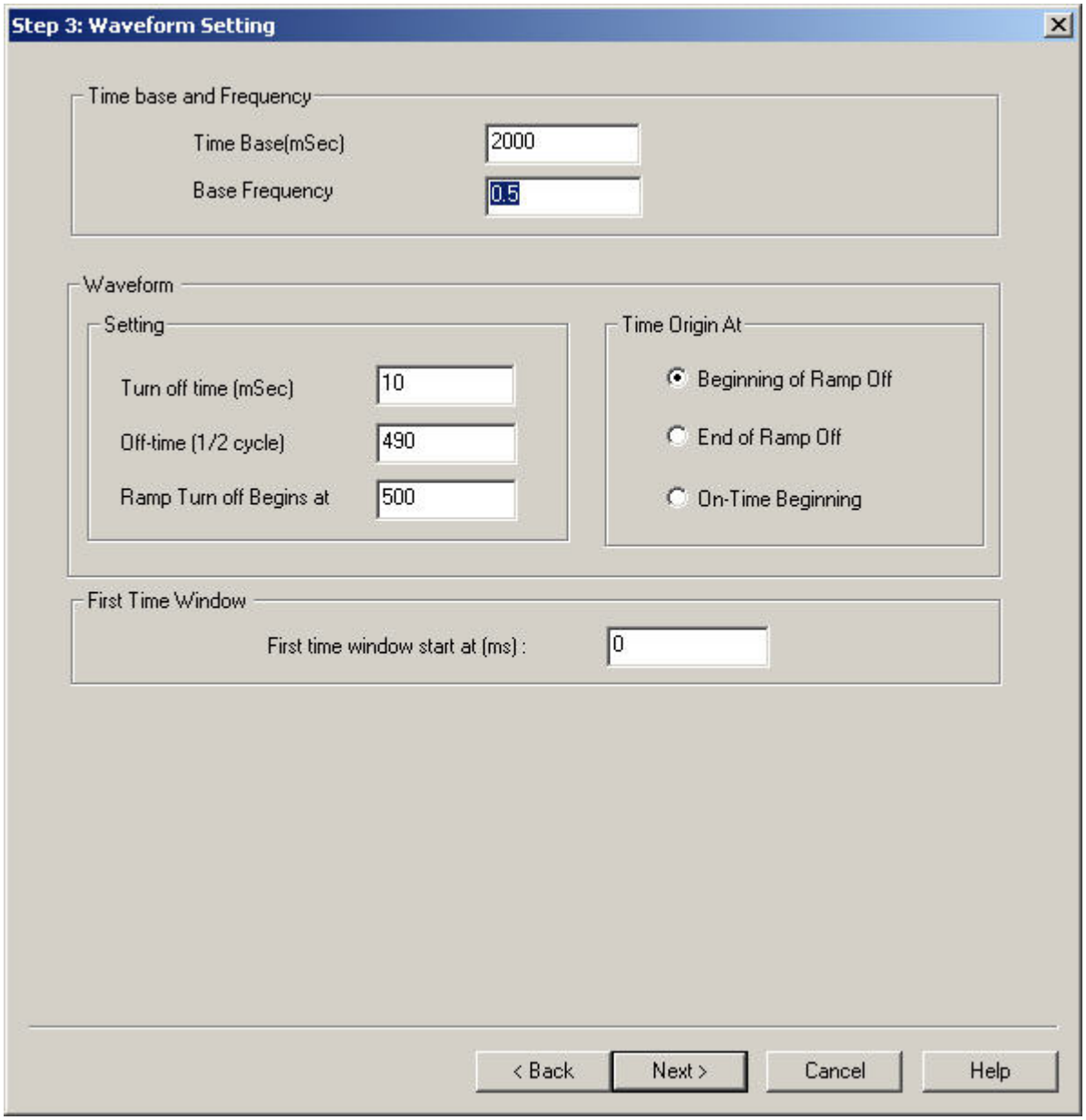
Trace Number and Transmitter Number
Trace Total - Total number of lines
Tx Total - Total number of transmitters used in the survey
Select samples - Number of time windows to be stored in the database. It must be less than 100.

The resolution of the Transmitter
In this section, select the significant digits that will be used to store the transmitter coordinates to the database.
The default setting of 1m will strip any decimal places from the transmitter coordinates

The resolution of line direction
In this section, select the angle two intersecting lines need to have in order to be considered one line. The default setting requires that two lines need make an angle of less that 15 degrees to be stored as one line in the database. Use the **Define** option if you would like a value other than the ones available in the **Selection** box.

Output Mode
One Survey Block - The input file will be saved as one survey in the database
Survey Blocks by Tx - Each transmitter will have its own survey saved to the database

MTEM Import. Step 3. Waveform Setting.



Base Frequency The frequency of the waveform that describes the transmitter signal in Hertz.

Time Base
The inverse of the base frequency.

Turn off time
The amount of time it takes for the transmitter signal to turn off.

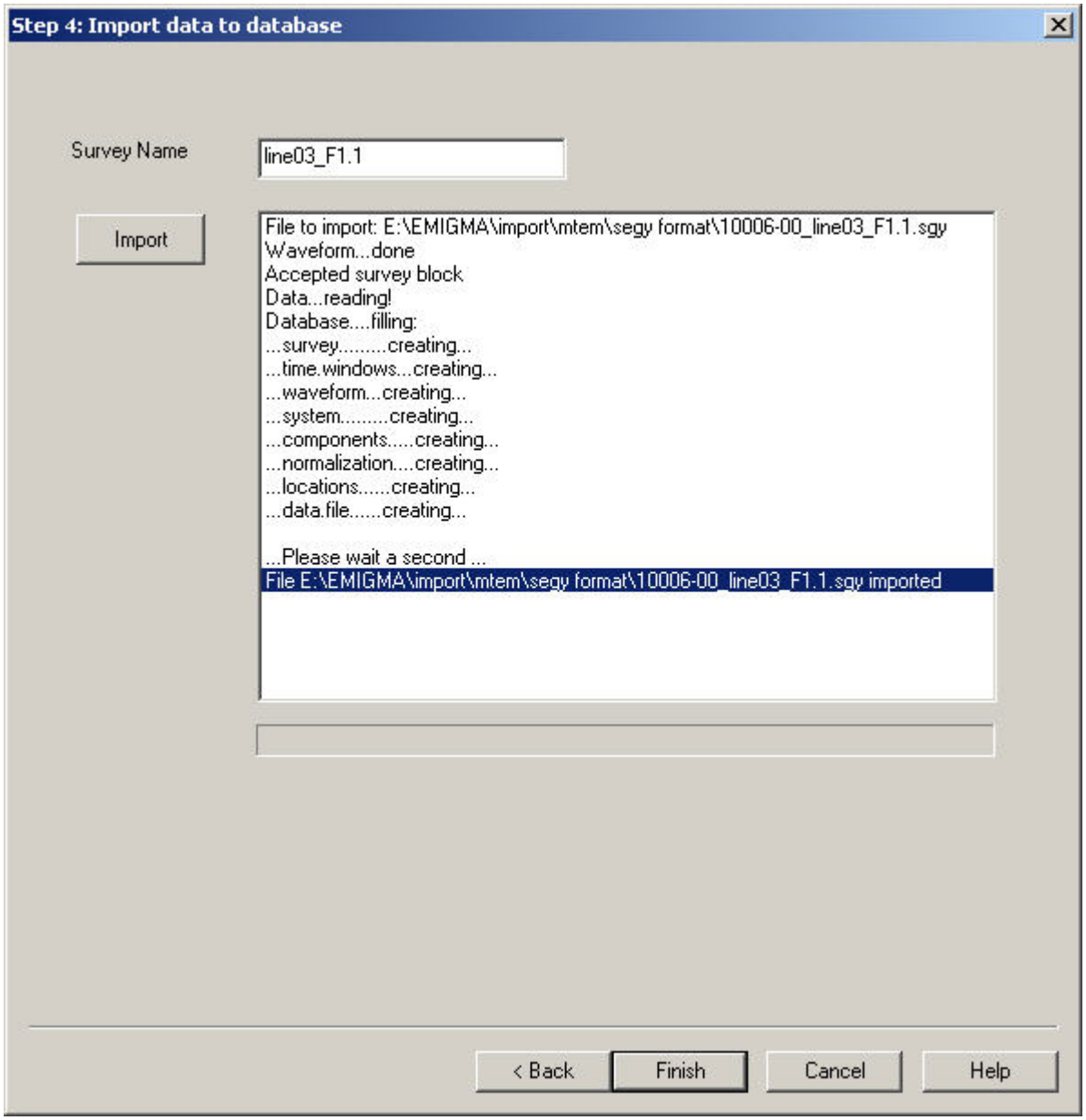
Off-time
The amount of time in a half cycle that the transmitter signal is off.

Ramp Turn off Begins at
This is the amount of time that the transmitter signal is on.

Time Origin
Specifies the point in time that the time window values are measured from. It can be:
Beginning of Ramp Off - the transmitter signal is turned off
End of Ramp Off - the transmitter signal is off
On-Time Beginning - the transmitter signal is turned on

First Time Window
The point in time of the first measurement.

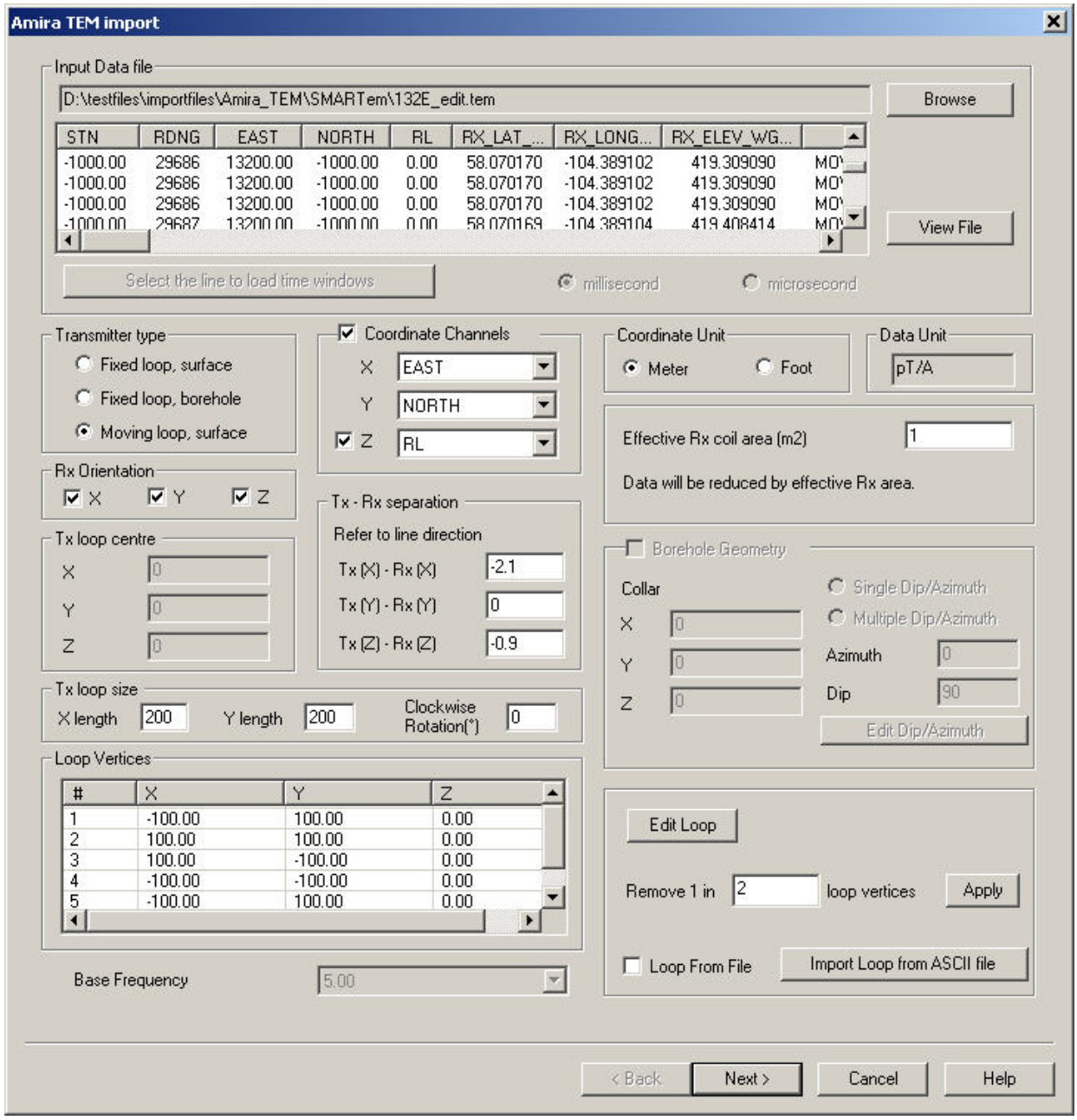
MTEM Import. Step 4. Import data to database.



Survey Name Edit the name you would like to have for this survey in the database in this field.

Import
Click this button to import the data in the file to a data set in the database according to the settings specified on the previous pages.

Step 1. Survey Definition.



Input data file Raw file to be imported. Click **Browse** to select the file. The first several lines of the file will be displayed. In order to see the entire file, click **View File**.

Select the line to load time windows

This button will be enabled if your file has a header line with the text "time gates". You will only need to use this button if your file contains multiple sets of time windows. The first set of time windows is selected by default. If you would like to select a different set of time windows, click this button after selecting the desired "time gates" line in the file preview box and specifying the units of time as either milliseconds or microseconds. The values on the selected line in the file will be used for the survey's time windows. The complete time window information will be displayed on the next page.

Transmitter
Select the type of transmitter used in the system.

Coordinate Channels
If the raw file has channels for coordinates, select the checkbox for this section and select the appropriate headings for the channel. If there is a Z channel, the checkbox associated with the Z channel must be selected as well.

Coordinate Unit
Specify whether the coordinates are in feet or metres. Coordinates in feet will be converted to metres.

Tx loop centre
x, y and z coordinates for the centre of a fixed loop.

Tx - Rx separation
Distance between the transmitter and receiver in a moving system.

Rx orientation
Orientations of receiver to be imported.

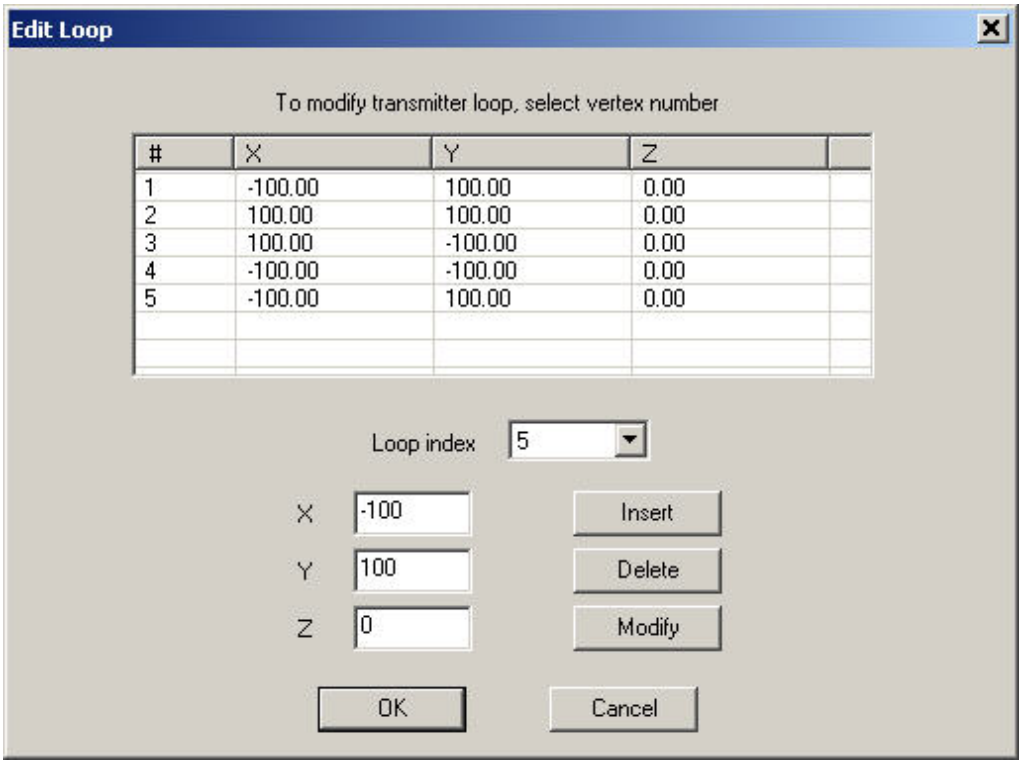
Effective Rx coil area
Size of the receiver coil. Data is reduced by this value.

Tx loop size
Enter dimensions of loop and angle with respect to x if it is rectangular.

EMIGMA has a limit of 100 vertices for a loop. The number of vertices in the currently specified loop can be reduced by entering a value in **Remove 1 in __ loop vertices**. Then click **Apply**.

Tx Loop Editor

A more complex shape for the tx loop is possible by clicking **Edit Loop** at the bottom of this page.



A vertex of the loop can be selected by clicking on the vertex number in the list of loop coordinates or by pushing the up and down arrows beside the box indicating the selected vertex number. Hitting the down arrow at the last vertex will create a new vertex. The coordinates for this vertex can then be modified.

Loop index

Specify the # of a loop vertex. The coordinates will appear below the **Loop index** control to be edited.

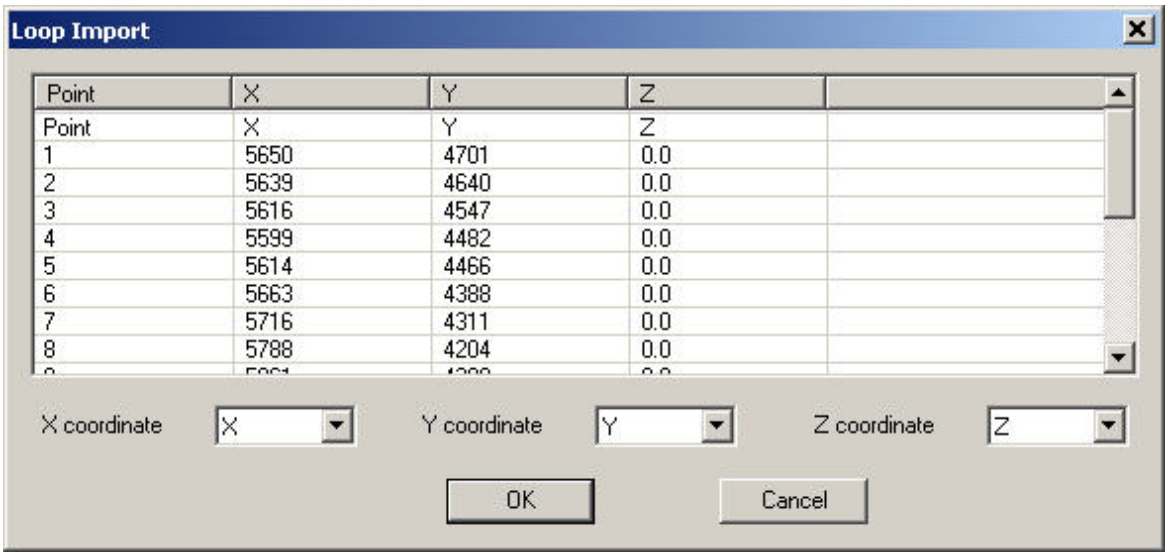
Insert

Insert loop vertex displayed before the vertex with **Loop index**.

Delete
Delete the currently selected loop vertex.

Modify
Change the currently selected loop vertex.

Loop From File
Click the checkbox or the **Import Loop from ASCII file** button to replace the currently specified loop with the loop defined in an ASCII file.



The file may start with a single line with column names. The column header line should start with a forward slash ("/"). Select the columns that apply to the x, y and z coordinates and click OK. The coordinates in the file will be displayed in the loop vertices box on the main window.

Borehole Information

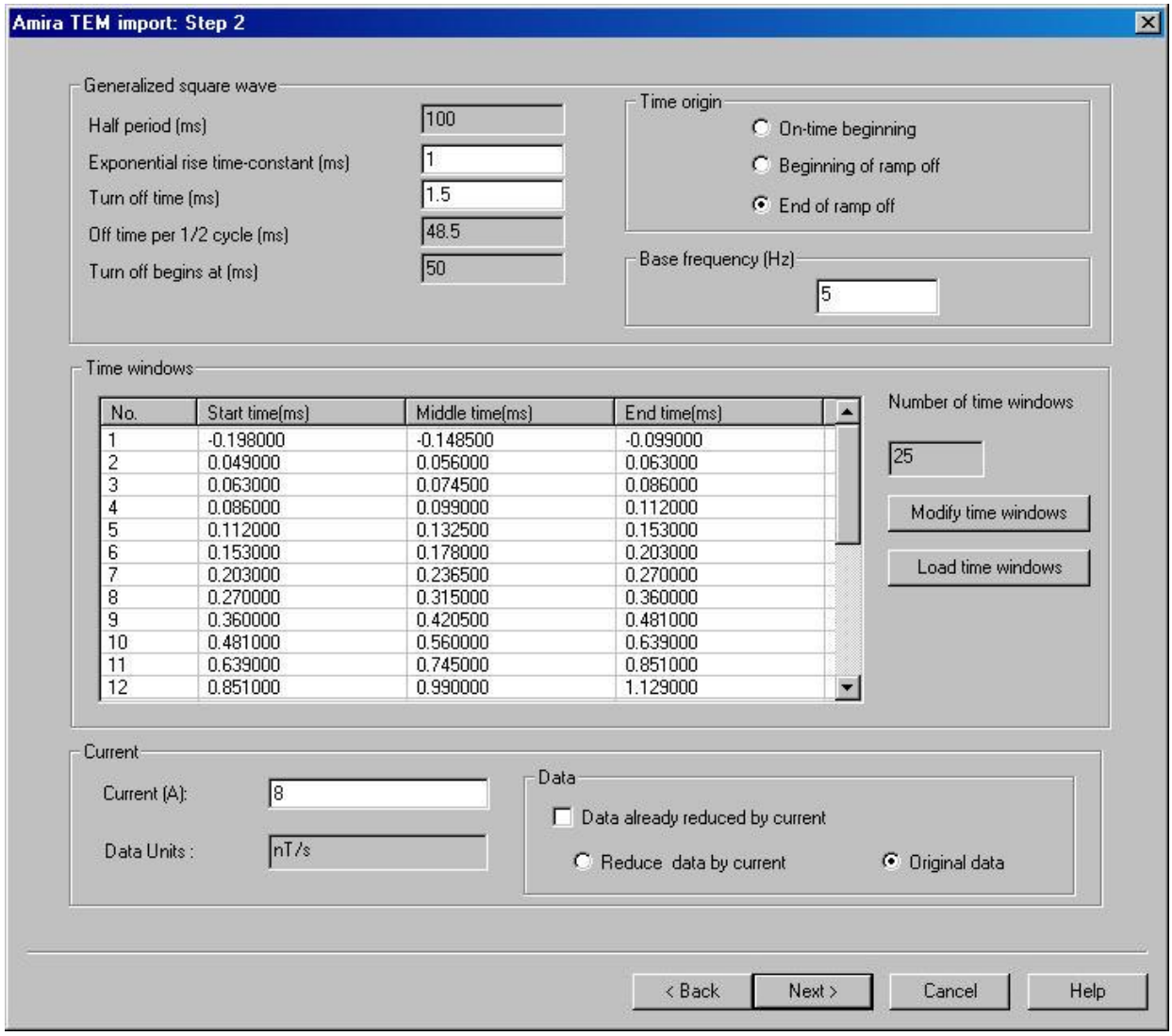
Collar
X, Y and Z coordinates of the point of where the hole starts at ground level.

Single Dip/Azimuth
Select if hole is a straight line. Then, enter dip and azimuth in the appropriate boxes.

Multiple Dip/Azimuth
Select if hole changes direction at any point. Use Edit Dip/Azimuth to enter the parameters for all sections of the borehole.

Base Frequency
When multiple base frequencies are detected in the same file, this control will be enabled. Only the data for one base frequency can be imported at a time. Select the desired base frequency.

Step 2. Waveform information.



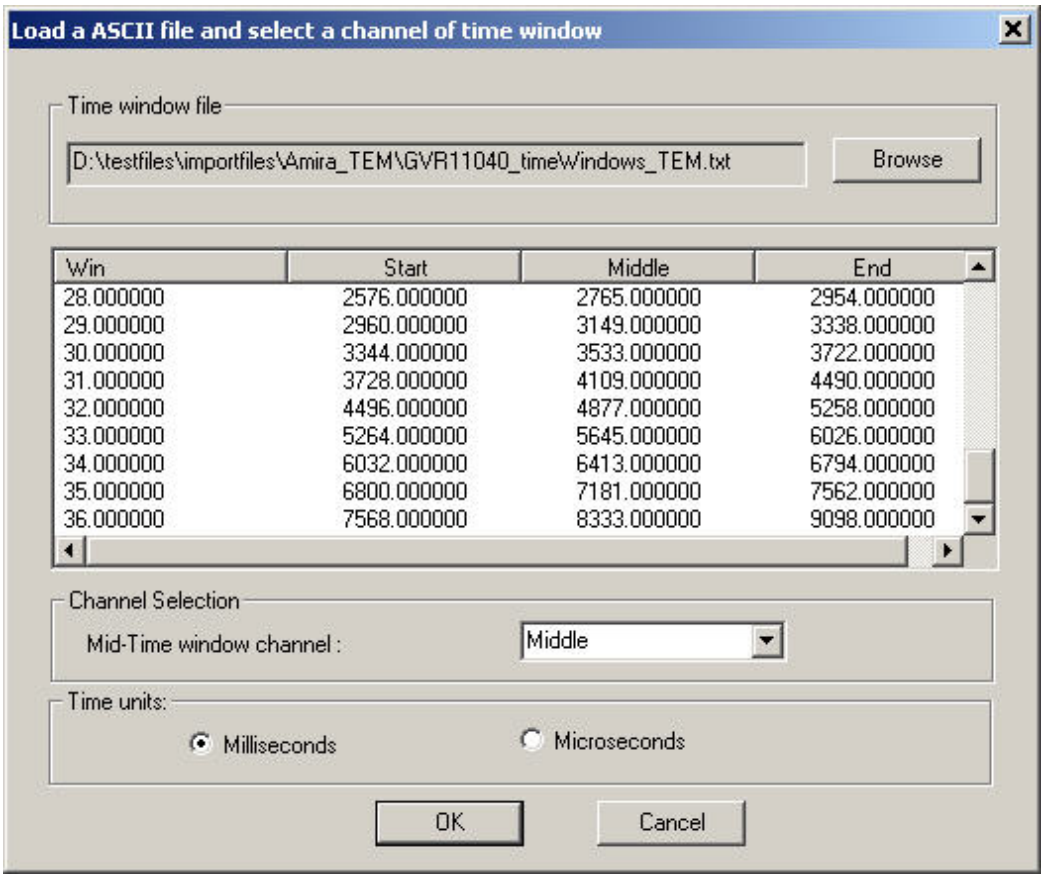
Time Windows The default windows can be used if they were not read from the file. The start, middle and end times are displayed for each time window.

Base Frequency
The frequency for the waveform which describes the transmitter signal.

Time origin
Determines what zero refers to when listing the time window values.

Current
Current in Amperes in the transmitter loop. This value can be used to reduce the data.
Select **Reduce data by current** to divide the data by the current before saving it to the database.
Select **Original data** to leave the data unchanged.
Select **Data already reduced by current** to indicate the data in the file are values that have already been divided by the current.

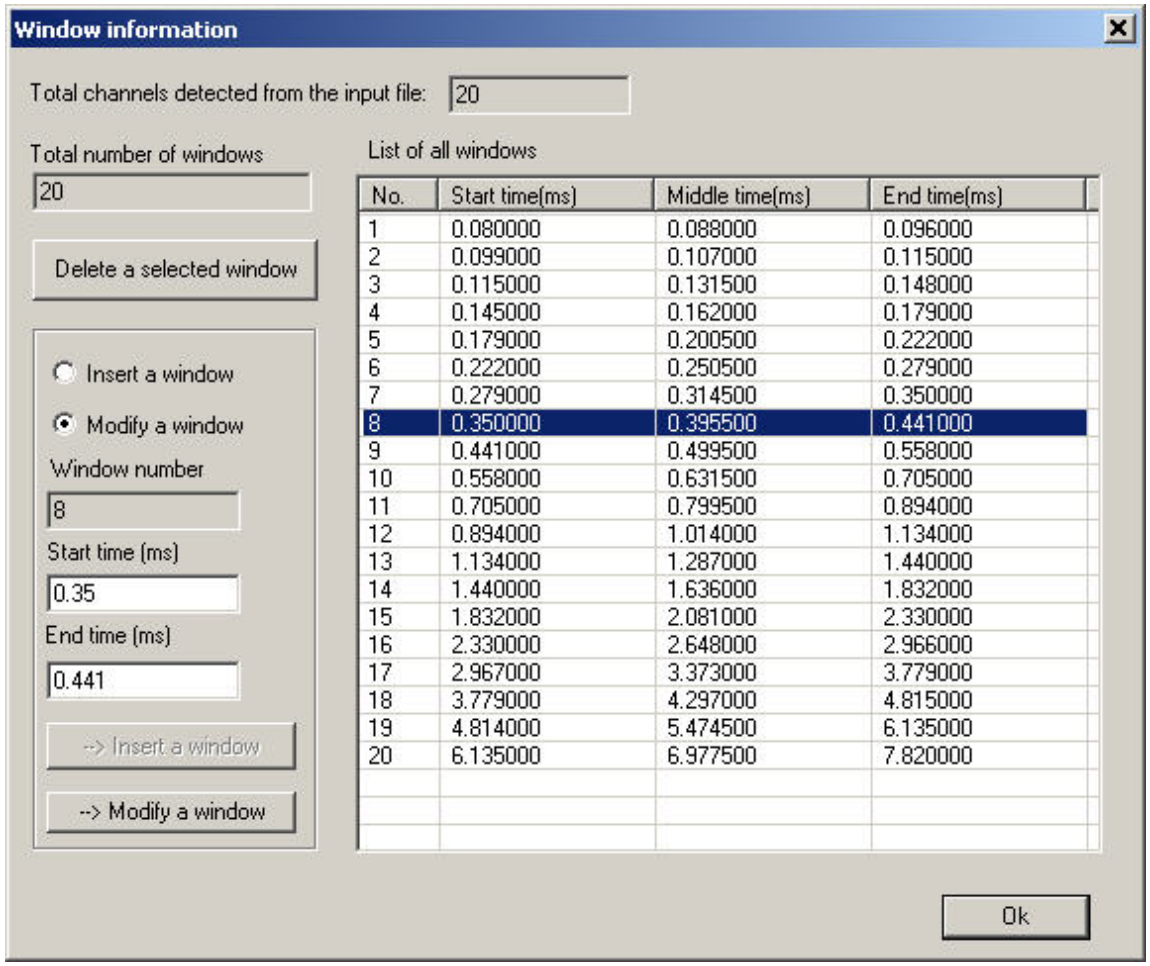
Load time windows
Windows can also be loaded from a file by clicking the **Load time windows** button.



Select the column containing the values for the middle of the time windows.
Select the **Time units**. Click **OK**.

Modify Time Windows

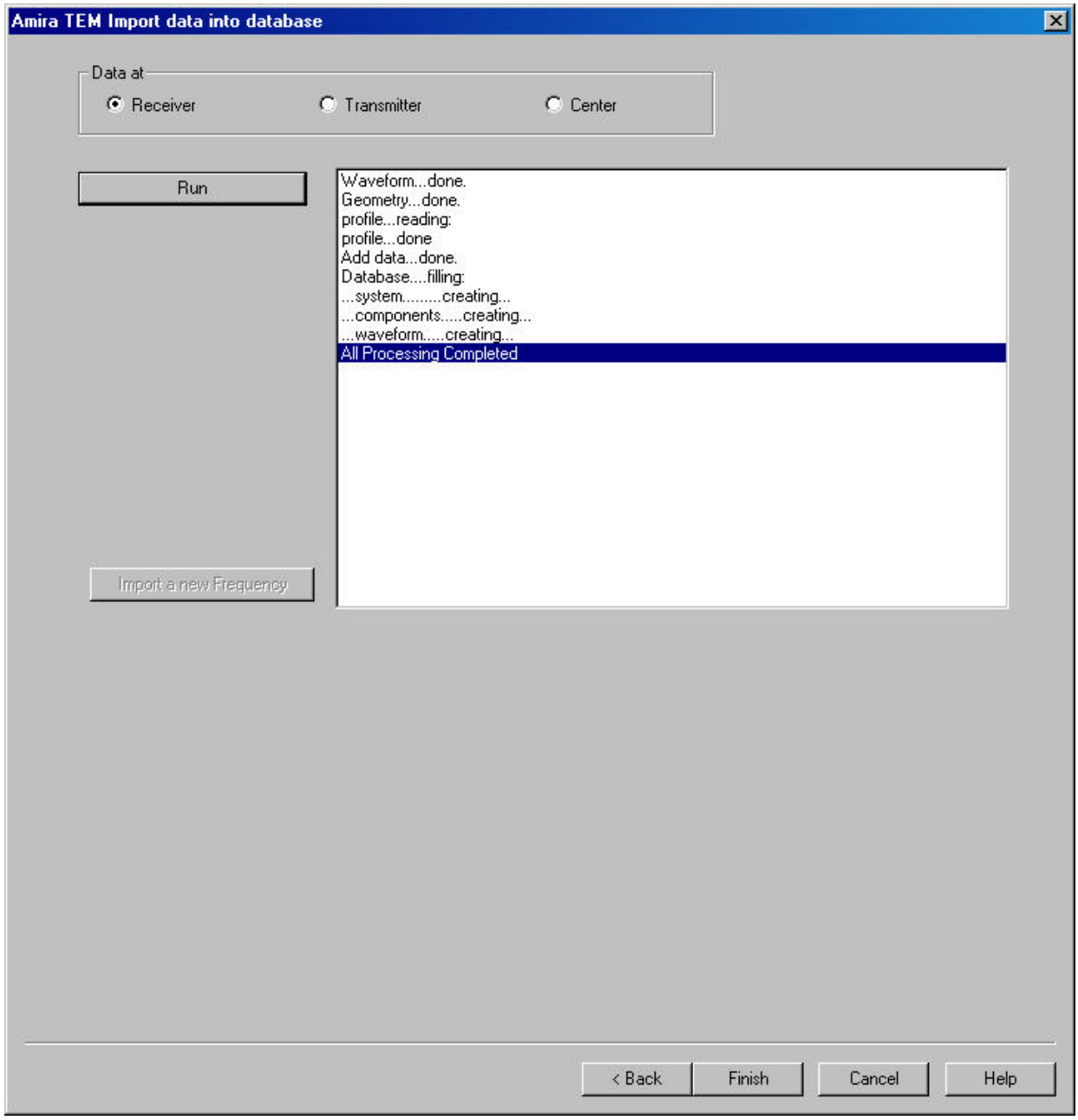
Custom windows can be defined by the user by pressing the **Modify time windows** button.



A new time window can be inserted by selecting **Insert a window**. Specify the insertion point, start time and end time. Then click the **Insert a window** button.

An existing time window can be edited by selecting **Modify a window**. Select the window you would like to edit by clicking the appropriate line in the list of time windows. Enter a new start or end time then click the **Modify a window** button

Step 3. Import data into database



For moving systems, make a selection in the **Data at** section to specify what part of the system the profile coordinates refer to.

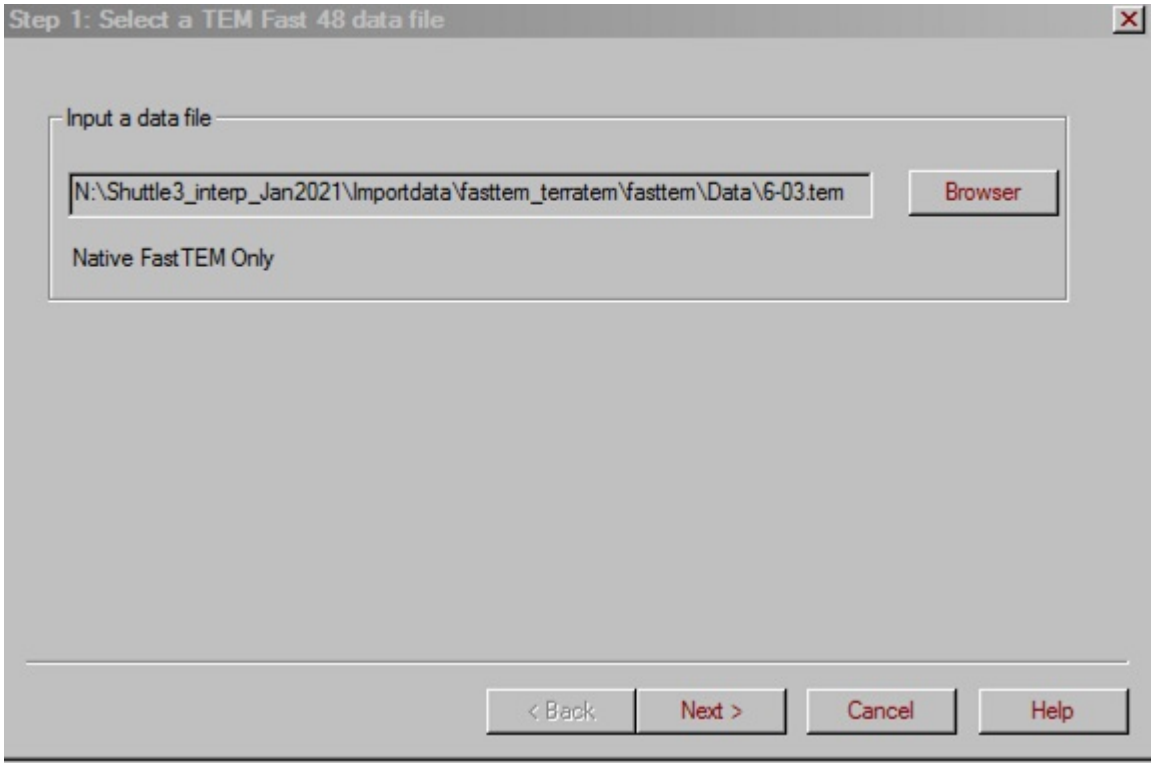
Run Imports data from file into database.

Import a new Frequency
Allows data for a new base frequency to be added to the database. This button will be enabled once the **Run** button has been clicked and data exists for more than one frequency.

TEM Fast Import Wizard

TEM Fast Import . Step 1. Input File Specification.

Browser Search for and load a file with the format of TEMFAST (*.tem). An important issue with the TEM-FAST is the timing of the early windows, this normally requires a high bandwidth of order 0.5MHz or above when simulating.



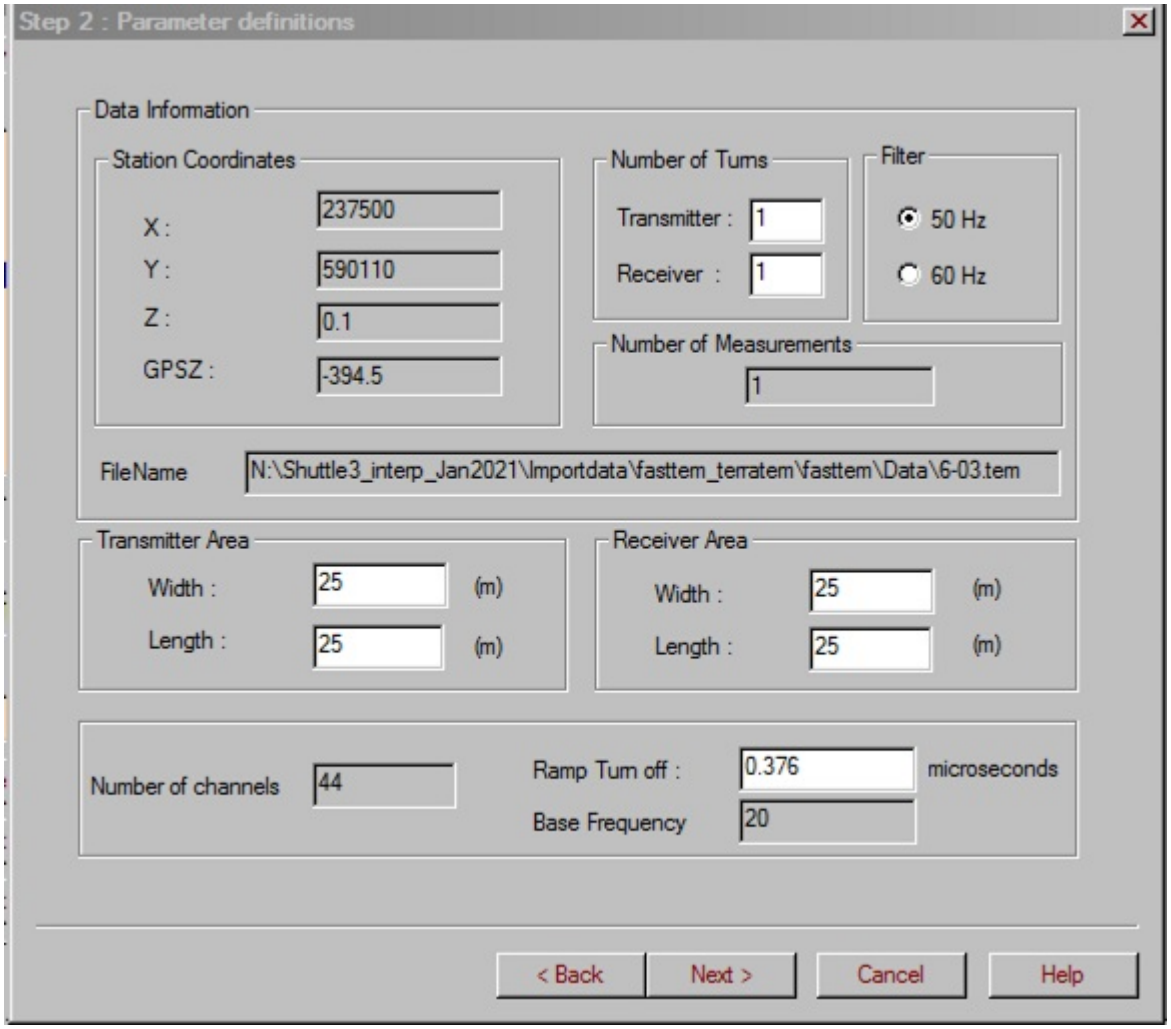
Sample of TEMFAST format

TEM-FAST 48 HPC/S2 Date: Thu Nov 02 22:17:34 2006
Place: NHS, MONITOR
#Set NH-45-25M
Time-Range 9 Stacks 5 deff= 4 us I=1.9 A FILTR=50 Hz

AMPLIFER=OFF
T-LOOP (m) 25.000 R-LOOP (m) 25.000 TURN= 1
Comments: 2.XI.06 CENTER
Location:x= +237162.000 y= +589352.000 z= -394.00

Channel	Time	E/I[V/A]	Err[V/A]	Res[Ohm-m]
1	4.06	7.467e-001	4.725e-004	39.78
2	5.07	8.531e-001	4.327e-004	25.13
3	6.07	7.095e-001	6.547e-004	21.03
4	7.08	7.012e-001	4.041e-004	16.41
5	8.52	5.260e-001	2.864e-004	14.59
6	10.53	4.297e-001	2.254e-004	11.73

TEM Fast Import. Step 2. Survey Definition.



Station Coordinates The location to which the data in the input file applies. If not correct, you could either edit the original file or correct the locations once imported to the database.

Number of Turn
Number of coils in the transmitter and receiver loops

Filter
Frequency of the notch filter of industrial noise

.

Transmitter Area

Width and length of transmitter loop. If incorrect, you may edit it here or later in the database

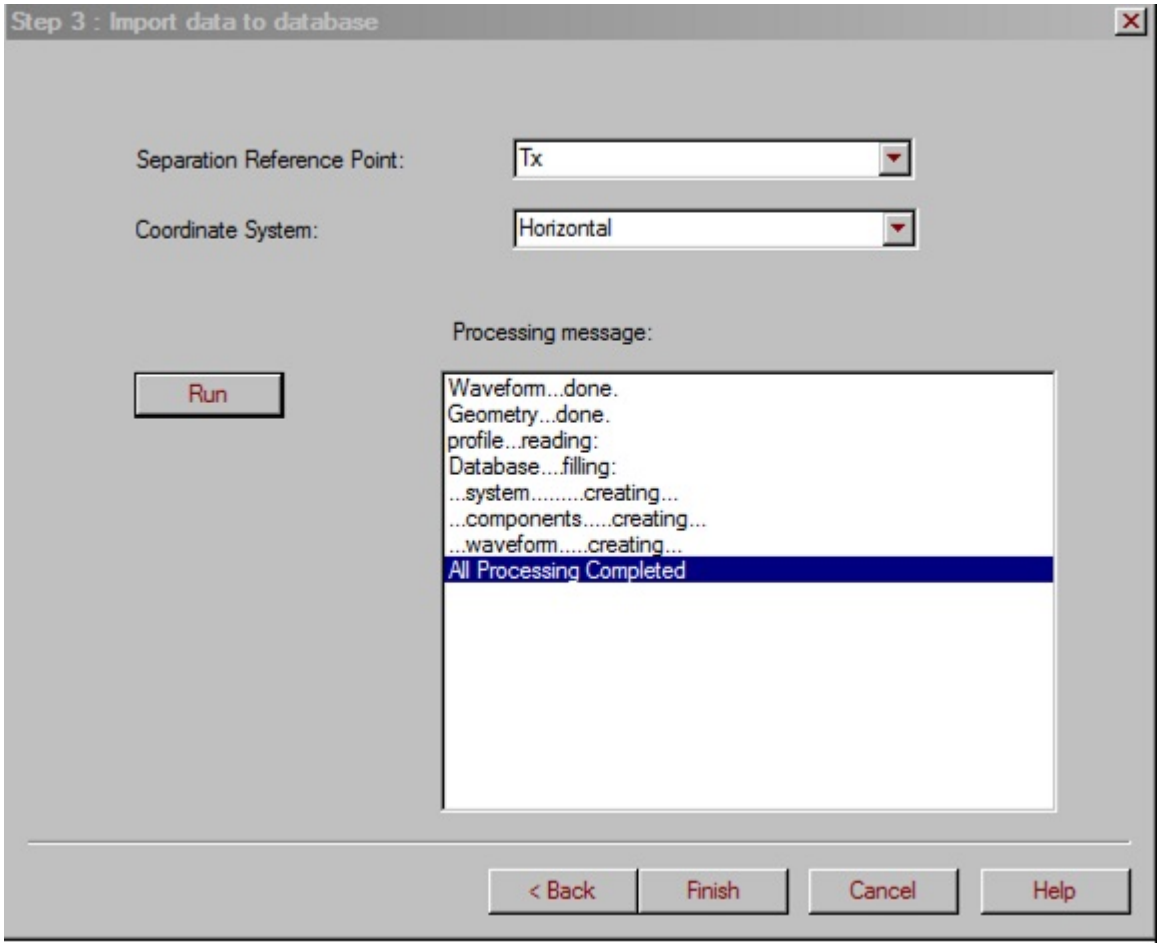
Receiver Area
Width and length of receiver loop. This is critical as it provides the relationship between the data units [V/A] and the units of dB/dt once in the database (nT/sec).

Number of Channels
The number of time windows

Ramp Turn off
Time it takes for the transmitter signal to turn off in microseconds. This can be edited here or later in the database.

Base Frequency
The frequency in Hz of the transmitter current waveform.

TEM Fast Import. Step 3. Processing.



Separation Reference Point Indicates what part of the system is being referred to with the location coordinates. The transmitter is the default selection.

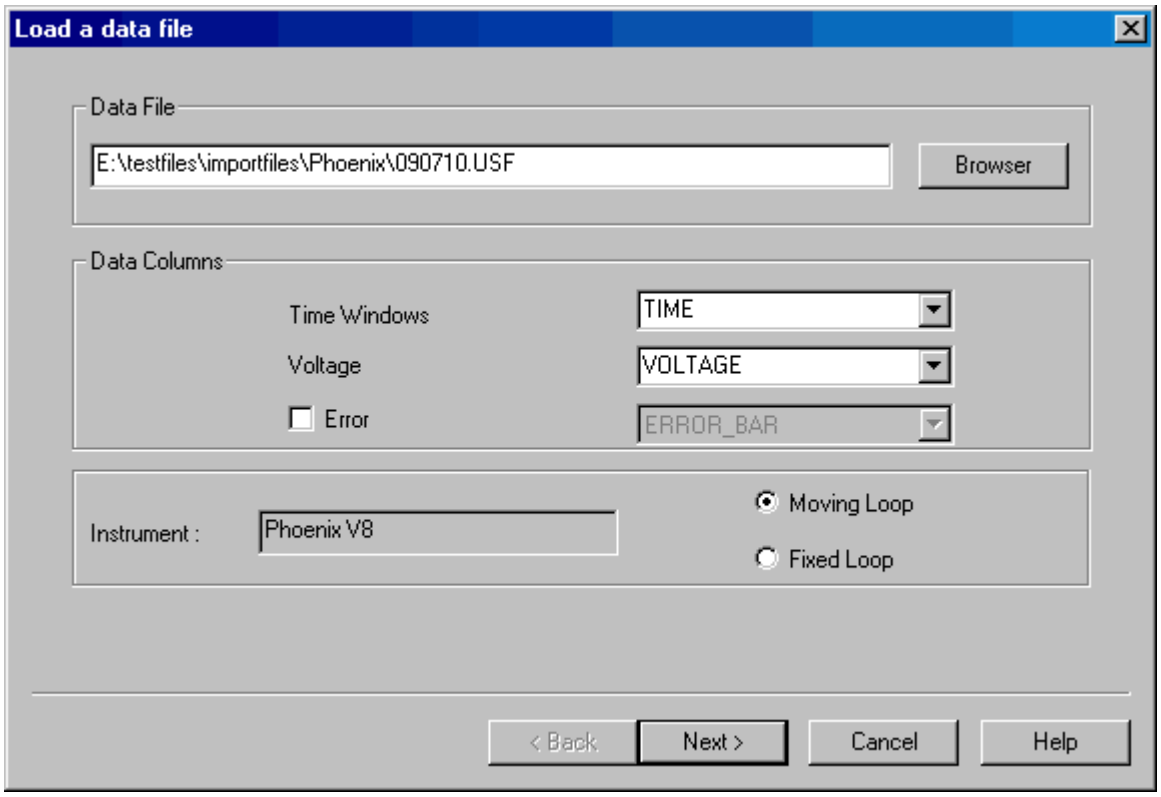
Or this is the reference point for the station locations.

Coordinate Systems
Choose between Horizontal, Absolute and Profile. This is only an issue if there are out of loop data.

Run
Output the input files to data sets in the database using the current settings.

Terra TEM/Phoenix TEM Import Wizard

Step 1. Load a data file.



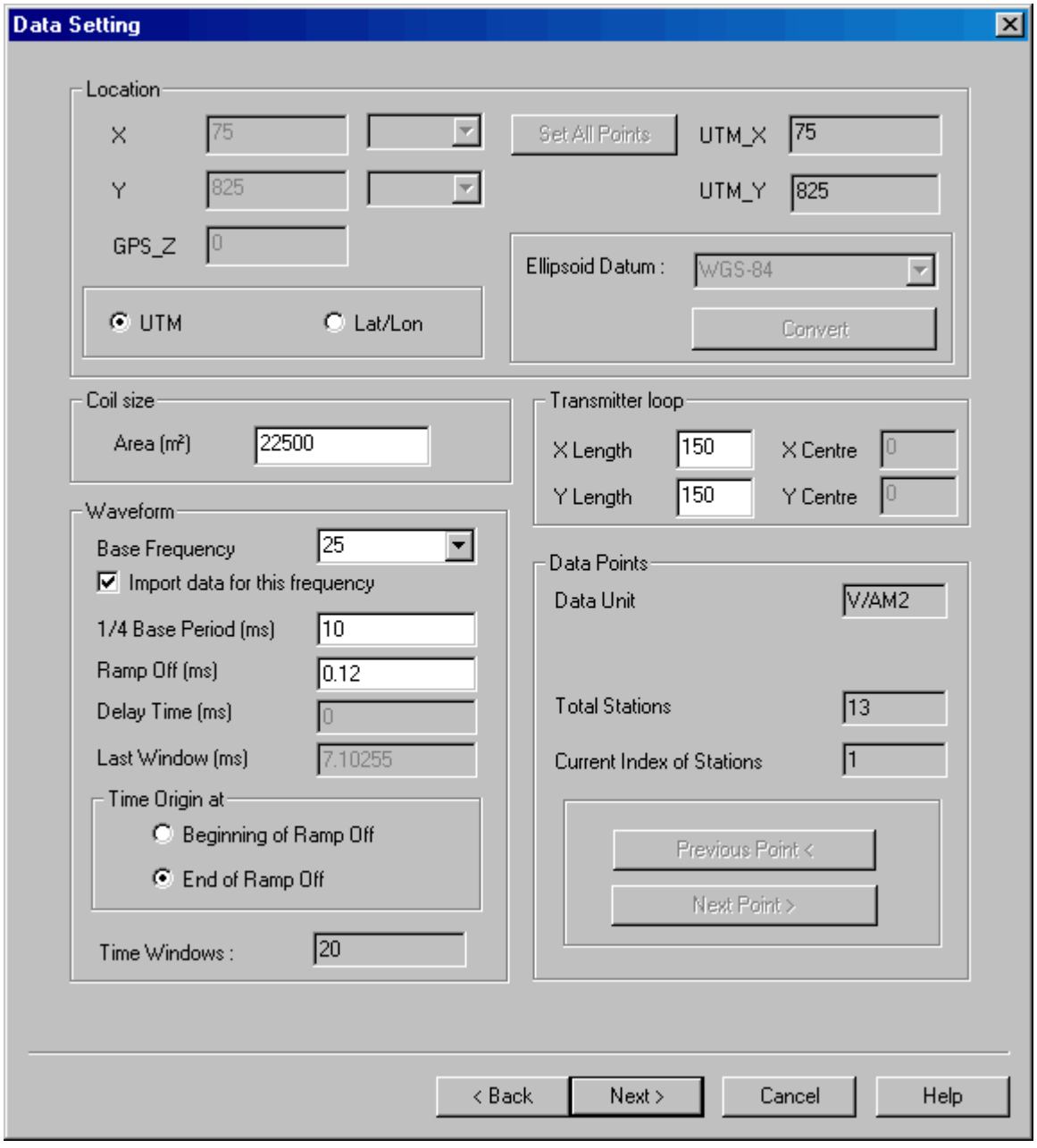
Browse Search for and load a data file in the USF format.

Data Columns
The software attempts to select the correct columns in the file by default. Confirm that the column headings refer to the proper data and make changes if necessary. Specify whether you would like to import an error channel by selecting the **Error** checkbox.
Time is in milliseconds.
Voltage is in volts.
Error is a percentage.

You may also specify whether the transmitter is fixed or moving by selecting **Moving Loop** or **Fixed Loop**.

The **Instrument** used to collect the data is read from the file and displayed on this page as well.

Step 2. Data Settings.



Location Select whether the format of the location values is either UTM or Latitude/Longitude. Selecting **Lat/Lon** will allow the **Ellipsoid Datum** to be available so the latitude and longitude values can be converted to UTM by clicking **Convert**. If the data for more than one data point is being imported, it is possible to click the **Set All Points** button and all data points

will be assigned the displayed location.

Coil size
This is the rx coil area in m^2.

Transmitter loop
Enter the length of the two sides of the transmitter loop in m. Also in this section are the coordinates for the loop centre for fixed loop surveys.

Base Frequency
The frequency for the waveform which describes the transmitter signal. If more than one frequency is detected in the file, you may choose to import data for only certain frequencies. Select a frequency from the drop down list and deselect the **Import data for this frequency** checkbox if you would not like the data associated with the selected frequency to be imported.

1/4 Base Period
The inverse of the base frequency multiplied by one fourth.

Ramp Off
The amount of time it takes for the transmitter signal to turn off.

Delay Time
Value used to correct the time of each window when importing to the database.

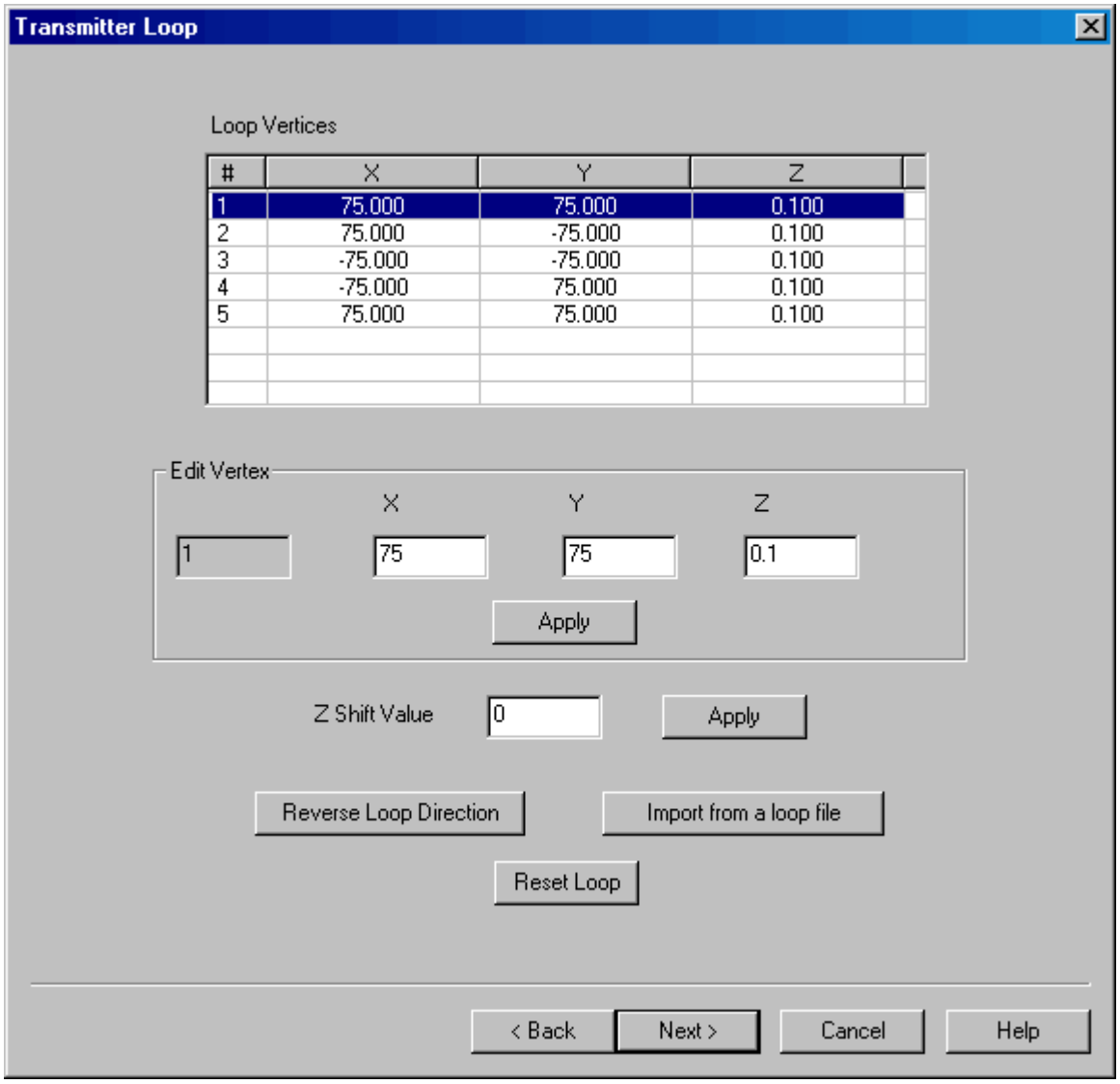
Last Window
The point in time that the last data value was measured for a location.

Time Origin
Determines what zero refers to when listing the time window values.

Data Points
Displays the units of the data as well as the total number of points to imported. Clicking **Previous Point** and **Next Point** will update the values in the **Location** section for each data point. These buttons are only enabled

when there are multiple locations that will be imported into separate data sets.

Loop Specification



Displays the loop corners in the direction of current flow (the last corner is a repeat of the first corner to close the loop).

Edit

The loop vertices can be modified. To edit a loop vertex either select the vertex number in the box listing all the vertices or click on the arrows in the **Edit** section until the desired vertex number appears. Enter new values in the x, y and z boxes and click **Apply**. Additional vertices may be added by clicking the down arrow beyond the current number of vertices. A selected

vertex may be deleted by pressing the delete key

Z Shift Value
This value will be added to all the z values of the loop after clicking Apply.

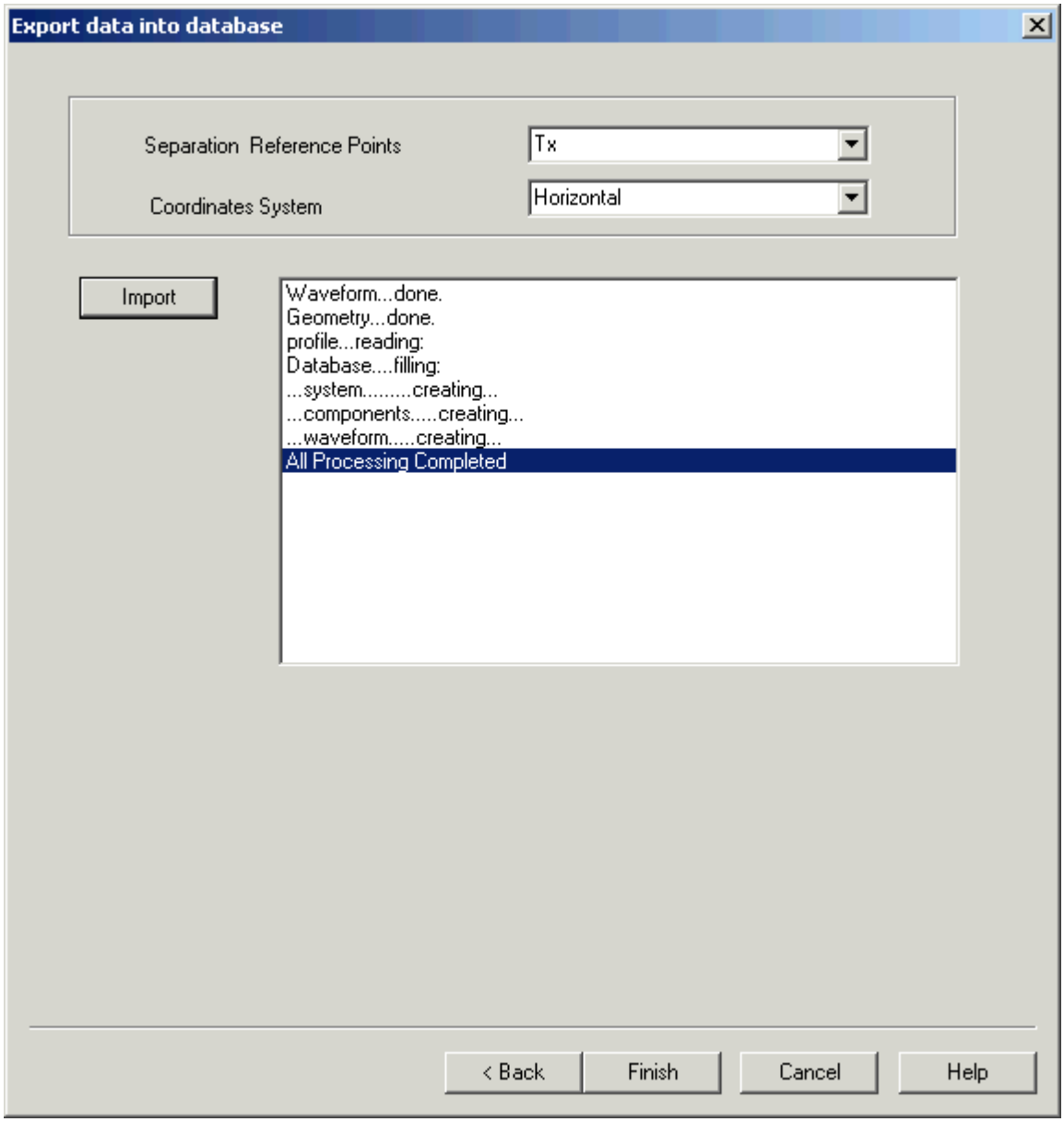
Reverse Loop Direction
If after import and simulation the sign of your data is incorrect, re-import using the reverse Loop Direction option. This will reverse the direction of the vertices of the loop, in effect, changing the sign of your data.

Note that a maximum of 99 vertices in the loop is allowed.

Reset Loop
This button calculates the vertices from the transmitter information on the previous page.

Import from a loop file
You may load the coordinates of the loop from a separate file. The format of the file is displayed on the interface.

Step 3. Import data into database.



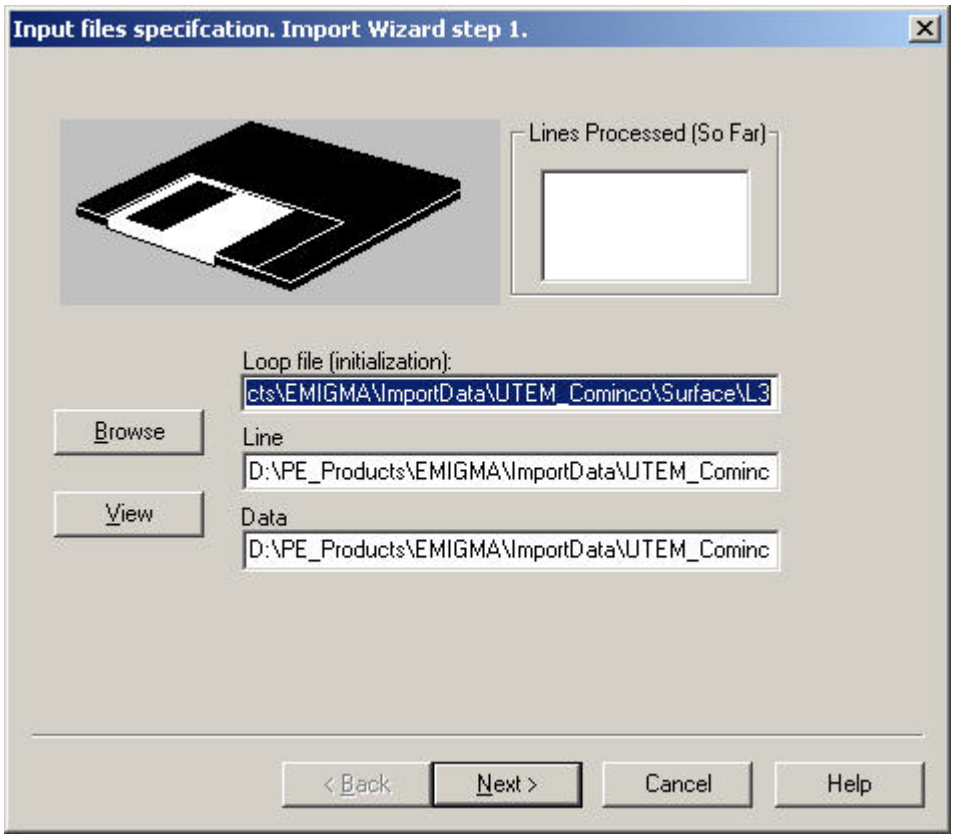
Separation Reference Point Indicates what part of the system is being referred to with the location coordinates. The transmitter is the default selection.

Coordinate System
Choose between Horizontal, Absolute and Profile.

Import
Output the input files to data sets in the database using the current settings.

UTEM (Cominco) Data Import Wizard

Step 1. Input file specification.



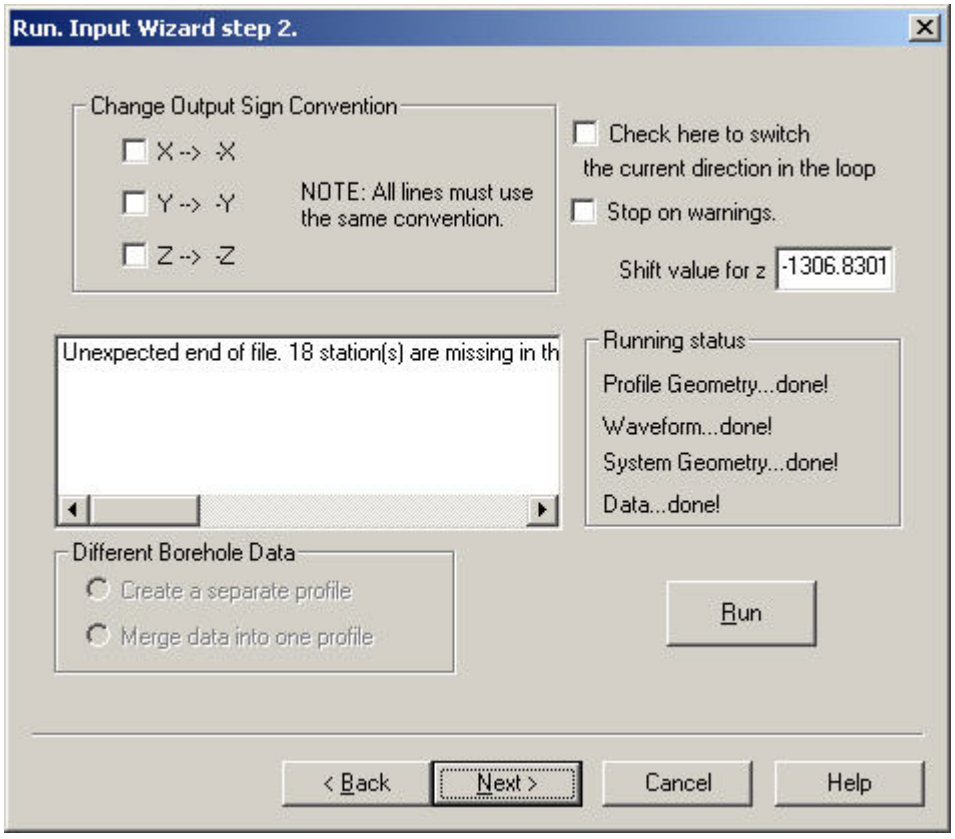
Browser Allows UTEM4 data files to be selected for import into EMIGMA's database.

You will need to bring in a loop geometry file, line file and data file.

View
Displays the selected file. (Select file by clicking on the file name).

Lines Processed (So Far)
Displays the lines previously imported.

Step 2. Run.



Change Output Sign Convention The user may reverse the direction of the receiver coils by changing the sign of the components.

Current Direction
The current direction is detected from imported loop file and is assumed to be in the direction the loop corners are specified. The user may switch the current direction in the loop, effectively changing the sign of the responses by clicking in the box labelled **Check here to switch the current direction in the loop**. This will not change your original loop file. If you want to make the change permanently, then you can edit the order of the loop corners in your original loop file and re-import.

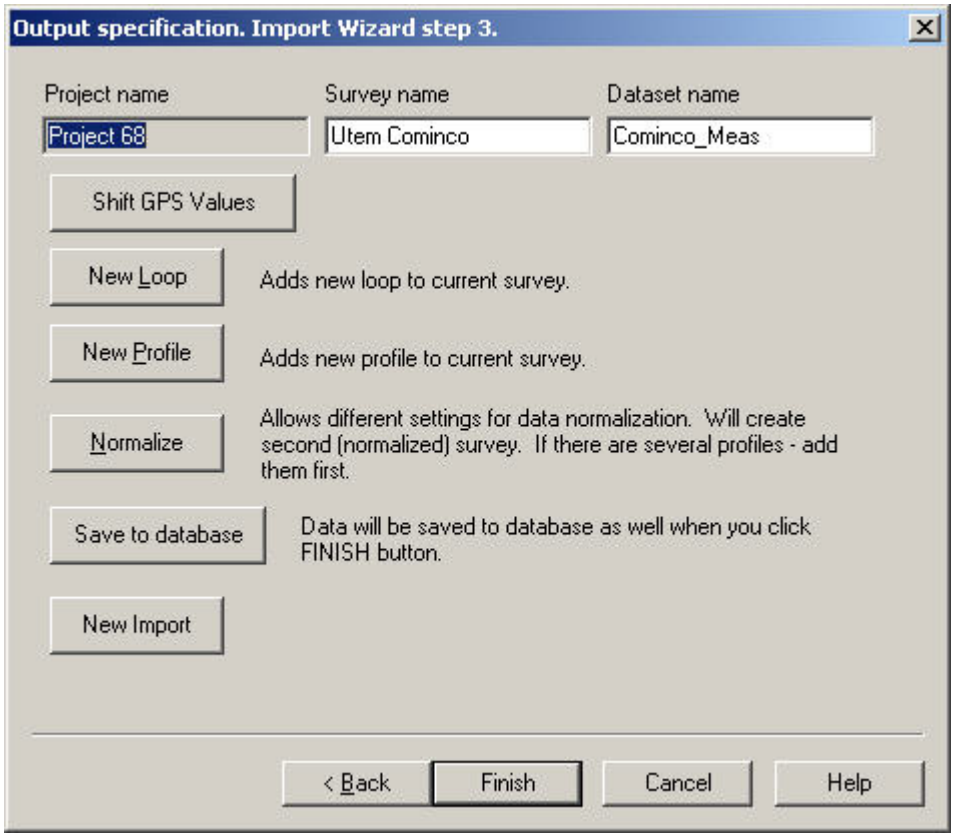
Stop on warnings
Stops running of the program until the user has confirmed each warning.

Shift value for z This value will be added to all the z coordinates.
Different Borehole Data

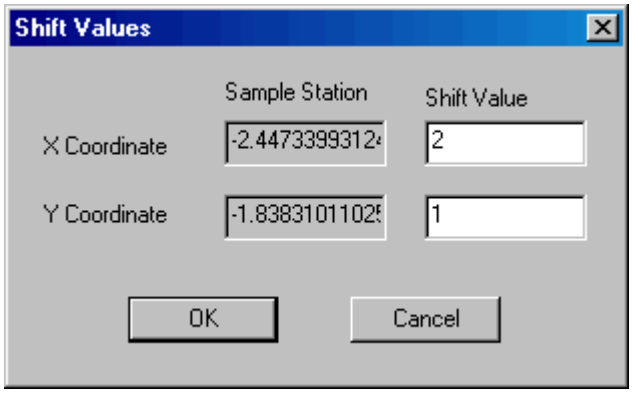
When two different loops with different borehole sample locations are to be selected, the user must choose whether the points on the two boreholes should be combined or treated as separate boreholes. If the holes have the same geometry, selecting combine will avoid duplicating borehole positions.

Run
Reads in all the information from the file.

Step 3. Output specification.



A new **Survey name** and **Dataset name** can be entered in the respective fields. **Shift GPS Values** The window that appears upon clicking this button displays sample x and y coordinate values from the survey under the heading **Sample Station**. Enter values under the **Shift Value** heading that will be added to all of the x or y coordinates then click **OK**.



New Profile After the current file is run, a file with a new profile can be added to the same dataset. The new profile must have the same system settings, i.e. the same loop location.

Normalization
UTEM data is usually looked at normalized. Three different normalization conventions are offered. If you would like absolute unnormalized data, you do not need to go to the normalization page.

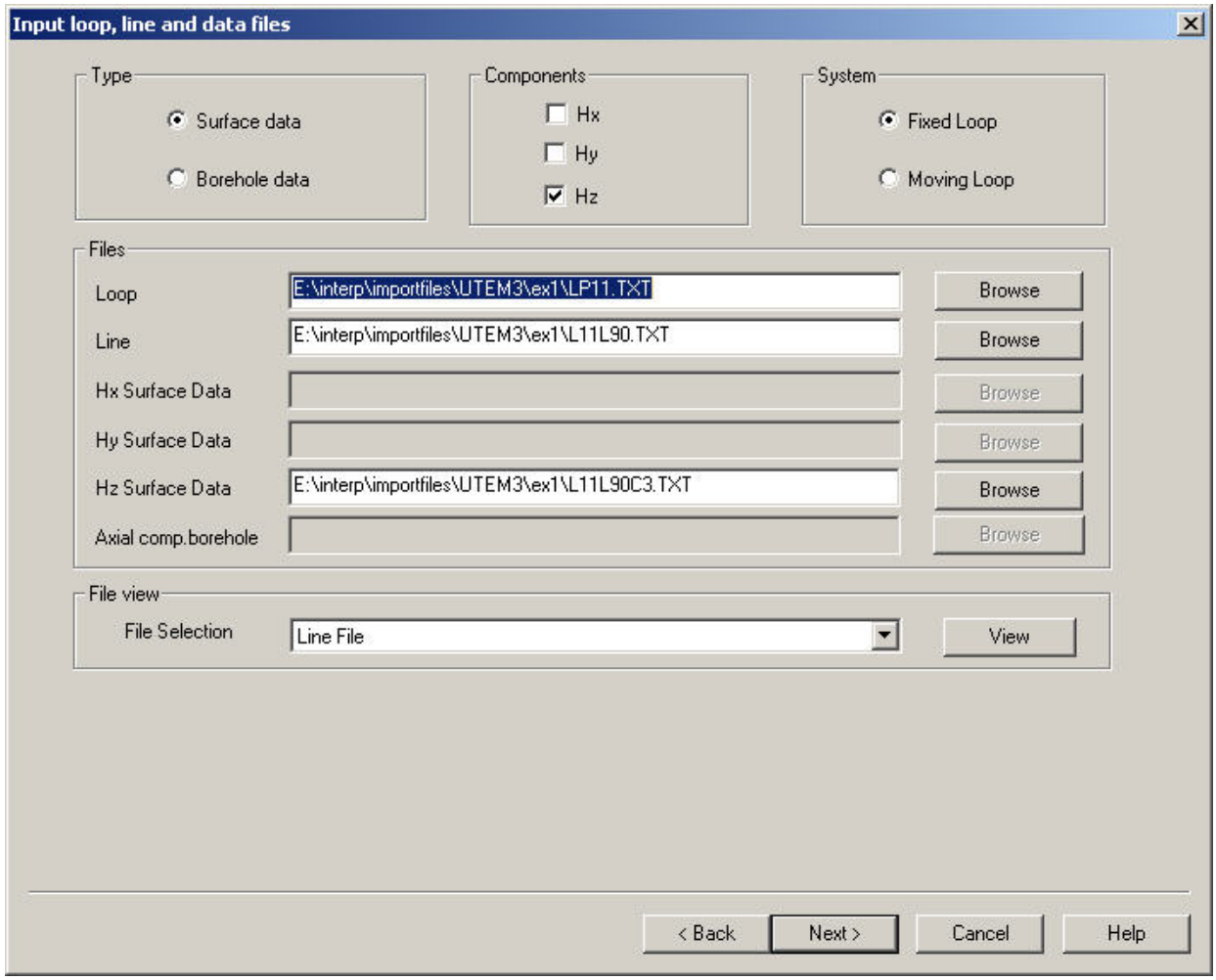
Import all of the profiles before normalizing.
Note: When simulating data make sure that you choose the same normalization type in FSEMTRS

Save to database.
Saves data to the database.

Upon "Sucessfully stored to database", choose **Finish** or go back to import a new UTEM data file using the **New Import** button.

UTEM 3 Data Import Wizard

UTEM 3 Data Import Wizard. Step 1. Input file specification.



Type Select the type of data you are importing, either surface or borehole.

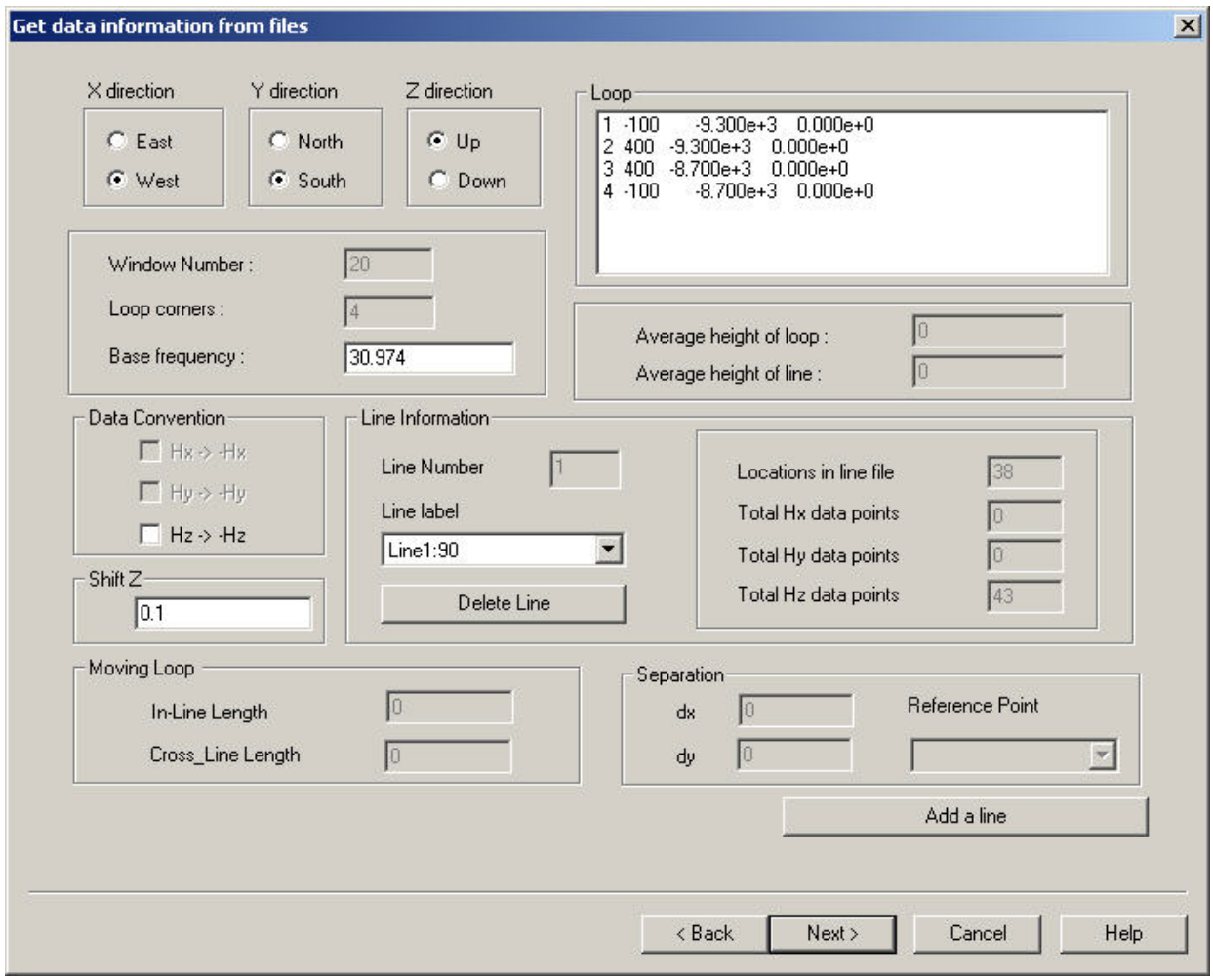
Components
Select the data components to be imported. This is available only for surface data.

System
Specify whether the system has a moving or fixed loop. This is available only for surface data.

Browse
You will need to bring in a line file, loop geometry file and data file(s). The data for each component is contained in a separate file. For moving systems, a loop file is not required. Click the appropriate **Browse** button to specify the corresponding file.

View
Displays the selected file. Select file by choosing the appropriate file from the combo box in the **File View** section.

UTEM 3 Data Import Wizard. Step 2. File Information.



Data Convention The user may apply a change in direction to any of the receivers for surface data. This in effect changes the sign of the response.

X, Y, Z Direction
A positive value for the x, y and z coordinates in the line files corresponds to the direction specified here.

Loop
Lists the coordinates of the loop vertices.

Window Number
The amount of time windows for which there is measured data in the file.

Loop corners
The amount of vertices for the transmitter loop.

Base frequency
The frequency of the transmitter signal.

Line Information
Displayed here are the total data points for each component, the number of locations and the line label for the line that was last added. You may show the information for a different line by selecting the line from the **Line label** combo box. You may delete the currently selected line if it is not the only line by clicking the **Delete Line** button.

Shift Z
This value will be added to the output z coordinates.

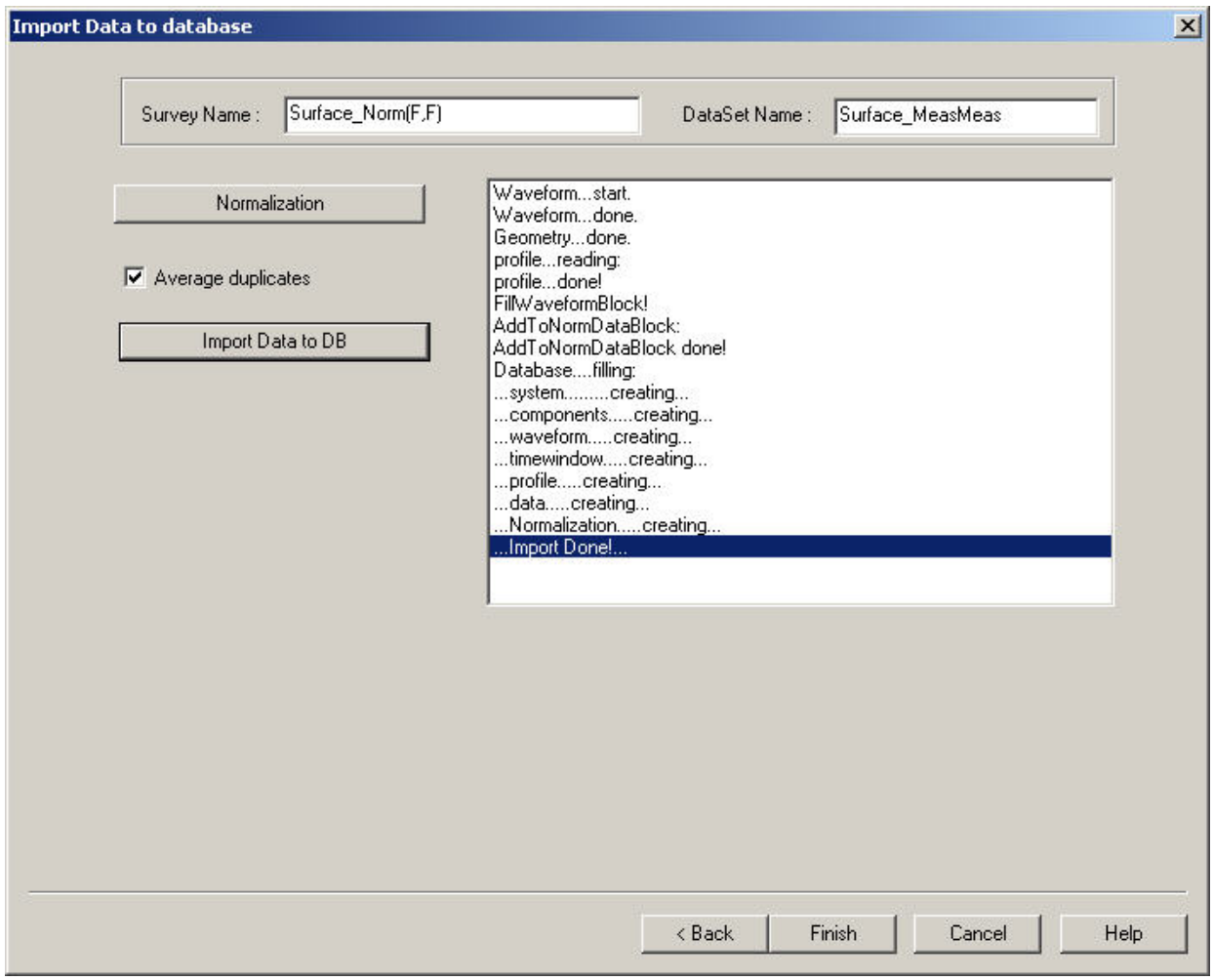
Moving Loop
The size of the loop for a moving system. The **In-Line Length** runs parallel to the line. The **Cross Line Length** runs perpendicular to the line.

Separation
Specifies the distance between the transmitter and receiver for a moving loop system.

Reference Point
Indicates what part of the system is being referred to by the location coordinates. The center point between the transmitter and receiver is the default selection.

Add a line
You click this button to return to the first page and load line and data files for an additional line. The loop file will remain the same.

UTEM 3 Data Import Wizard. Step 3. Import Data to Database.



Survey, Data Set Name
The labels that will be used to identify the survey and data set for the imported data in the database.

Normalization
UTEM data is usually looked at normalized. Three different normalization conventions are offered. An individual data set will be created for each of your selections. If you would like absolute data, go to the normalization page and choose **No normalization**.

Note: When simulating data make sure that you choose the same normalization type when using the transform tool.

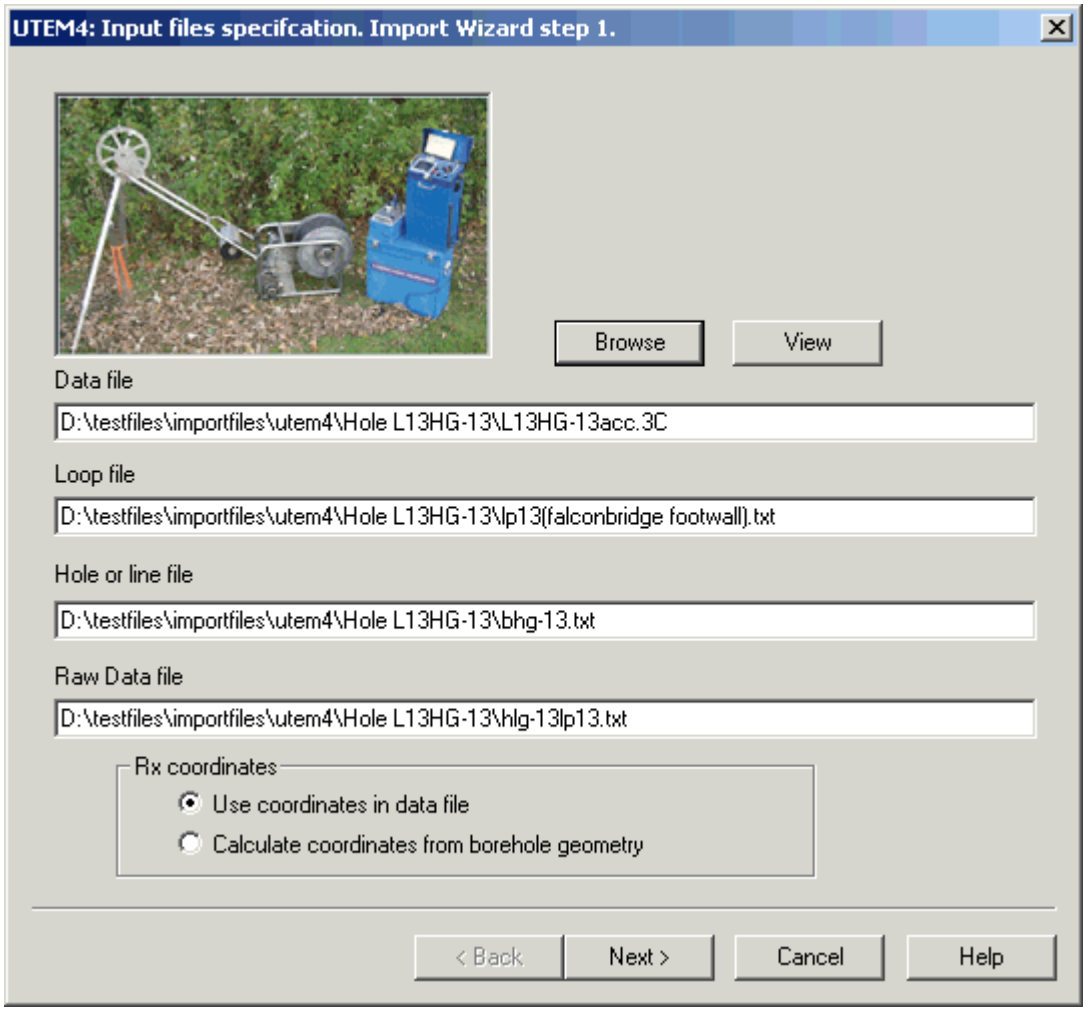
Average Duplicates
Select this option to replace duplicate stations with one station and have the data averaged for those stations. When unselected, the output data set will retain the duplicate stations that are in the original file.

Import Data to DB
Saves imported data to the database.

Upon successful completion, choose Finish or go back to import the data with different settings.

UTEM4 Data Import Wizard

Step 1. Input file specification.

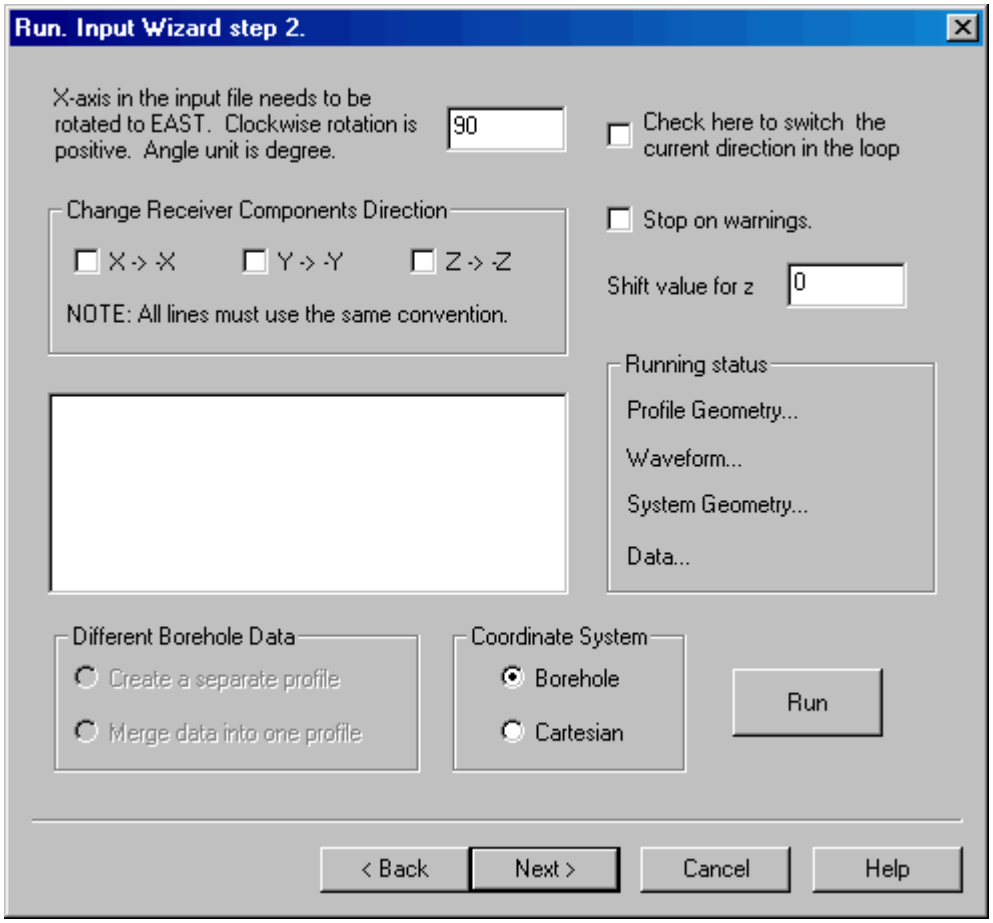


Browse Allows UTEM4 data files to be selected for import into EMIGMA's database.
You will need to bring in a data file, loop geometry file and hole file. The raw file is only needed for the current. If there is no raw file, you can manually enter a value for current on the next page. The last three files are usually specified in the data file and will be displayed automatically. Otherwise, select the field for the required file before clicking **Browse**

View
Displays the selected file. (Select file by clicking on the file name).

Rx coordinates You may use the coordinates given in the data file or calculate the coordinates using the depth in the data file and the borehole geometry defined in the hole file.

Step 2. Run.



Change Receiver Components Direction The user may reverse the direction of the receiver coils by changing the sign of the components.

Axis Rotation
In the field located next to the Current Direction checkbox, enter a clockwise rotation angle in degrees which will make the x-axis of the input file point to East.

Current Direction
The current direction is detected from imported loop file and is assumed to be in the direction the loop corners are specified. The user may switch the current direction in the loop, effectively changing the sign of the responses by clicking in the box labelled **Check here to switch the current direction**

in the loop. This will not change your original loop file. If you want to make the change permanently, then you can edit the order of the loop corners in your original loop file and re-import.

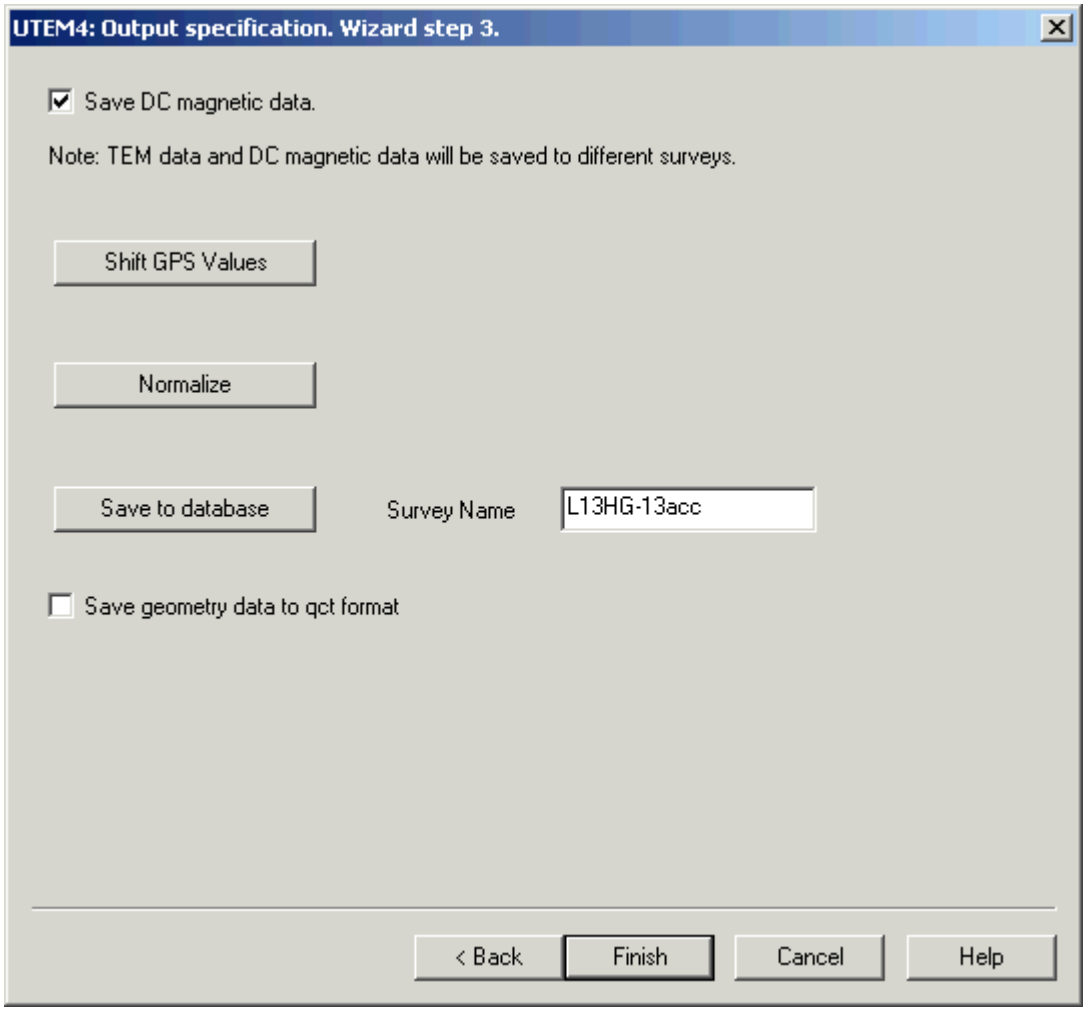
Stop on warnings
Stops running of the program until the user has confirmed each warning.

Shift value for z
This value will be added to all the z coordinates.

Coordinate System
Select **Borehole** to have the z values to be considered the distance along the hole. Select **Cartesian** otherwise.

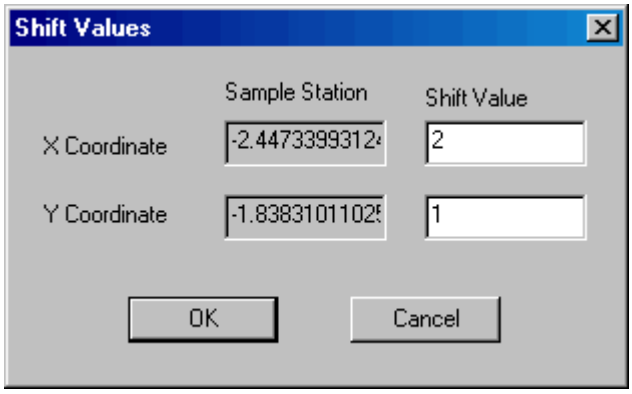
Run
Reads in all the information from the file.

Step 3. Output specification.



Save DC Magnetic data Uncheck this box if you would only like TEM data saved to the database and no magnetic data.

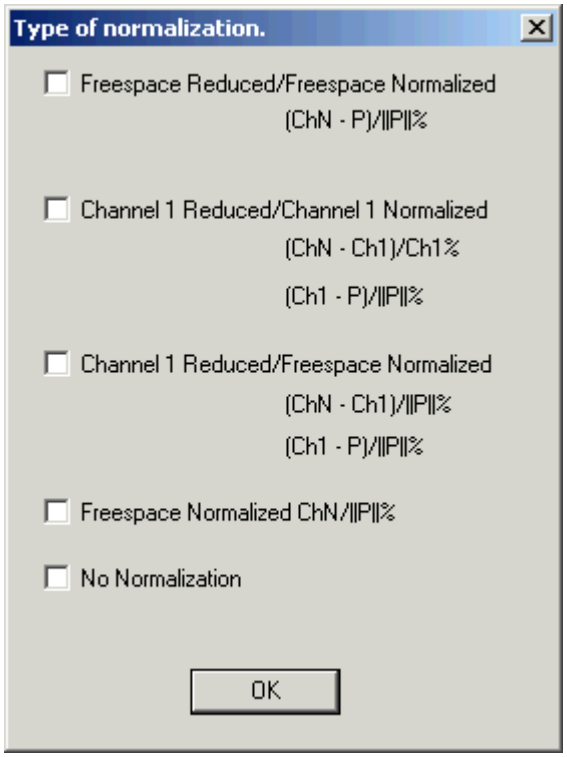
Shift GPS Values
The window that appears upon clicking this button displays sample x and y coordinate values from the survey under the heading **Sample Station**. Enter values under the **Shift Value** heading that will be added to all of the x or y coordinates then click **OK**.



Save to database

Saves data to the database. You will be asked if you would like to normalize the data since UTEM data is usually looked at normalized. Answer No if you would like absolute unnormalized data. Four different normalization conventions are offered. An individual data set will be created for each of your selections.

Note: When simulating data make sure that you choose the same normalization type in FSEMTRS

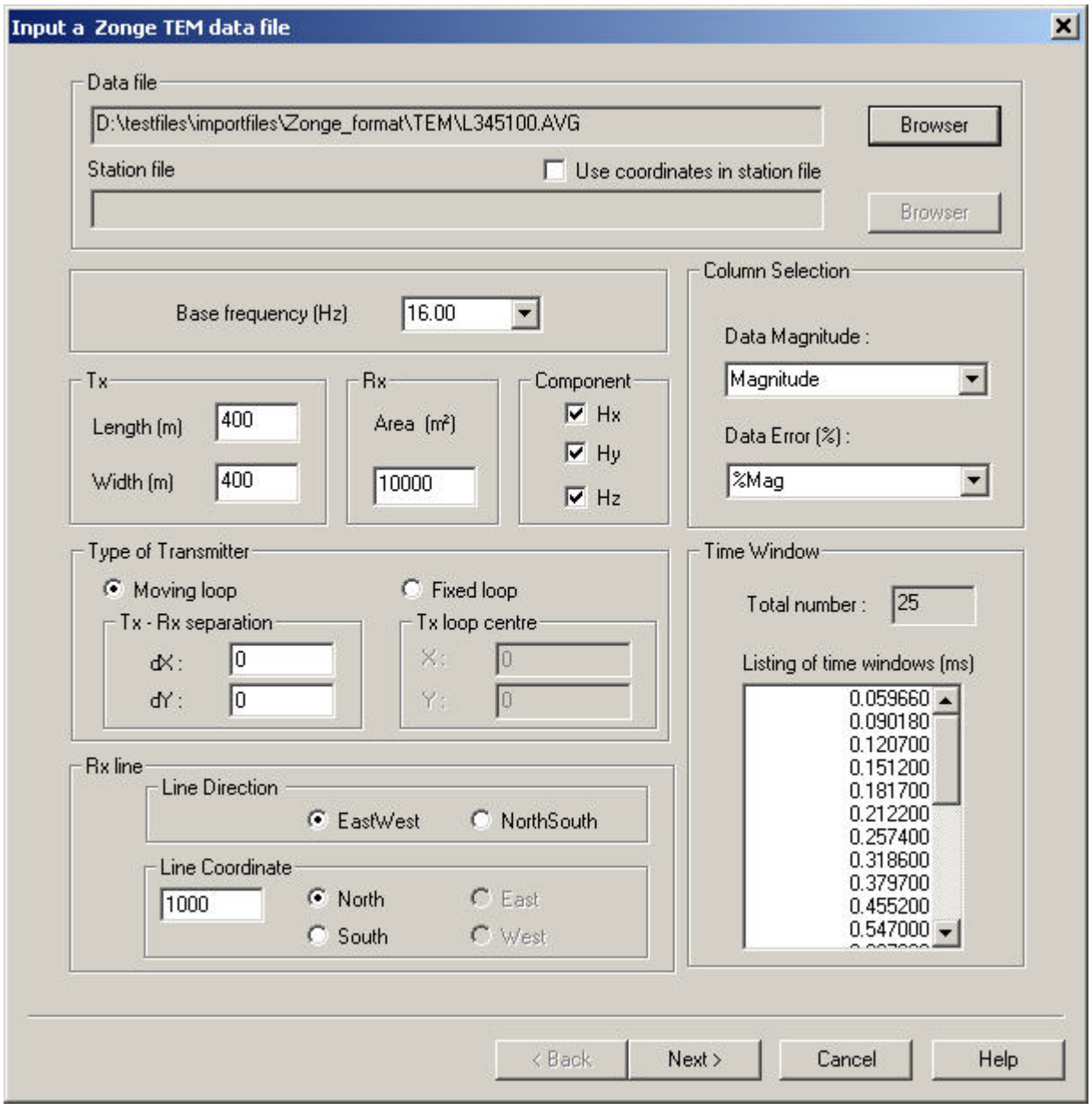


Select **Save geometry data to qct format** before saving to the database in

order to save the geometry data in format that can be loaded with QCTool.
The file will be saved to temp folder of the current database
Upon the message "Successfully stored to database", the window will close

Zonge GDP_32 Import. Load data file.(TEM)

Selecting **Zonge GDP_32 TEM** from the **EM** list under the **Raw Data** tab of the **Import** dialog, and then choosing the TEM data type brings up following interface:



Data file Select a TEM file in the AVG format. Both legacy and new formats are supported.

Station file
After a data file has been chosen, the **Use coordinates in station file** checkbox can be selected. Click **Browser** and a station file can be chosen. The station file will be used to convert the station labels in the data file to x, y and z coordinates. The station file format is as follows:

Station	Easting	Northing	Elevation
1	729628.4	3618823.0	43.6
2	729678.4	3618824.8	43.7
3	729728.4	3618826.6	42.8

The file can be delimited by commas, spaces or tabs. Any line in the file with alphabetical characters are skipped.

Base Frequency
Select a base frequency in the file. If there is more than one base frequency, select the one which you wish to import. You can re-run the import to bring in the data for a different base frequency.

Tx and Rx
Check that the length and width of the transmitter and the effective area of the receiver are read correctly from the file.

Component
All of the components that are available in the file are automatically selected. Deselect any that you do not wish to import.

Type of Transmitter
Choose whether the transmitter is fixed or moving. For a moving transmitter, enter the separation in x and y between the transmitter and receiver. (These separations are in the same co-ordinate system as that chosen on the final page). For a fixed loop, enter the x and y co-ordinates of the centre of the loop

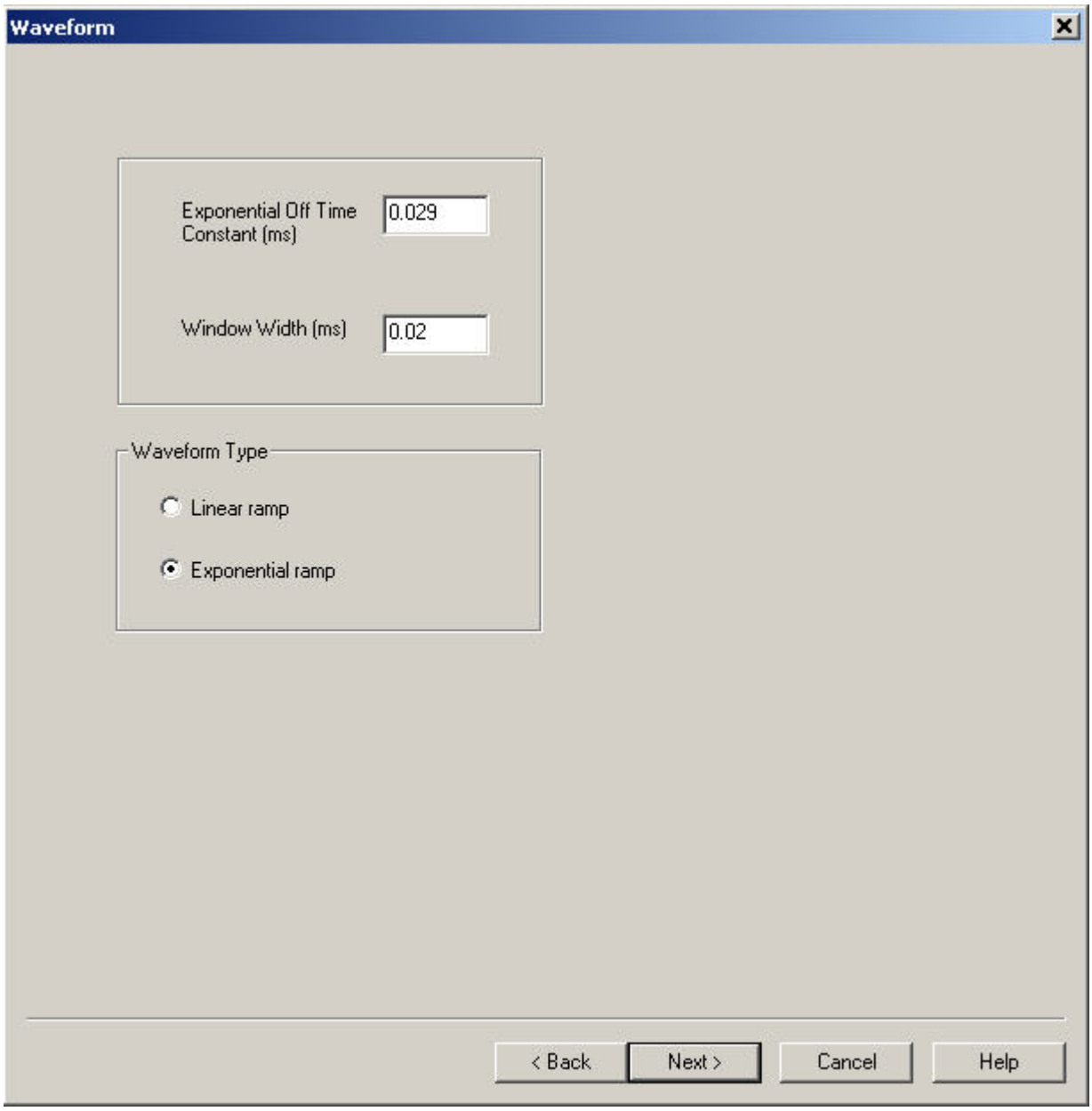
Rx line
Select the direction of the receiver line. For an east-west line, specify the y co-ordinate of the line and whether it is north or south. For a north-south line, specify the x co-ordinate of the line and whether it is east or west. This

section is not used if a station file has been selected.

Column selection
Check that the correct columns are selected for the data and the data error.

Time Windows
This specifies the number of time windows in the file and their mid-times in milliseconds.

Zonge GDP_32 Import. Import data to database. (TEM)



Turn Off Time This is the turn-off time in milliseconds.

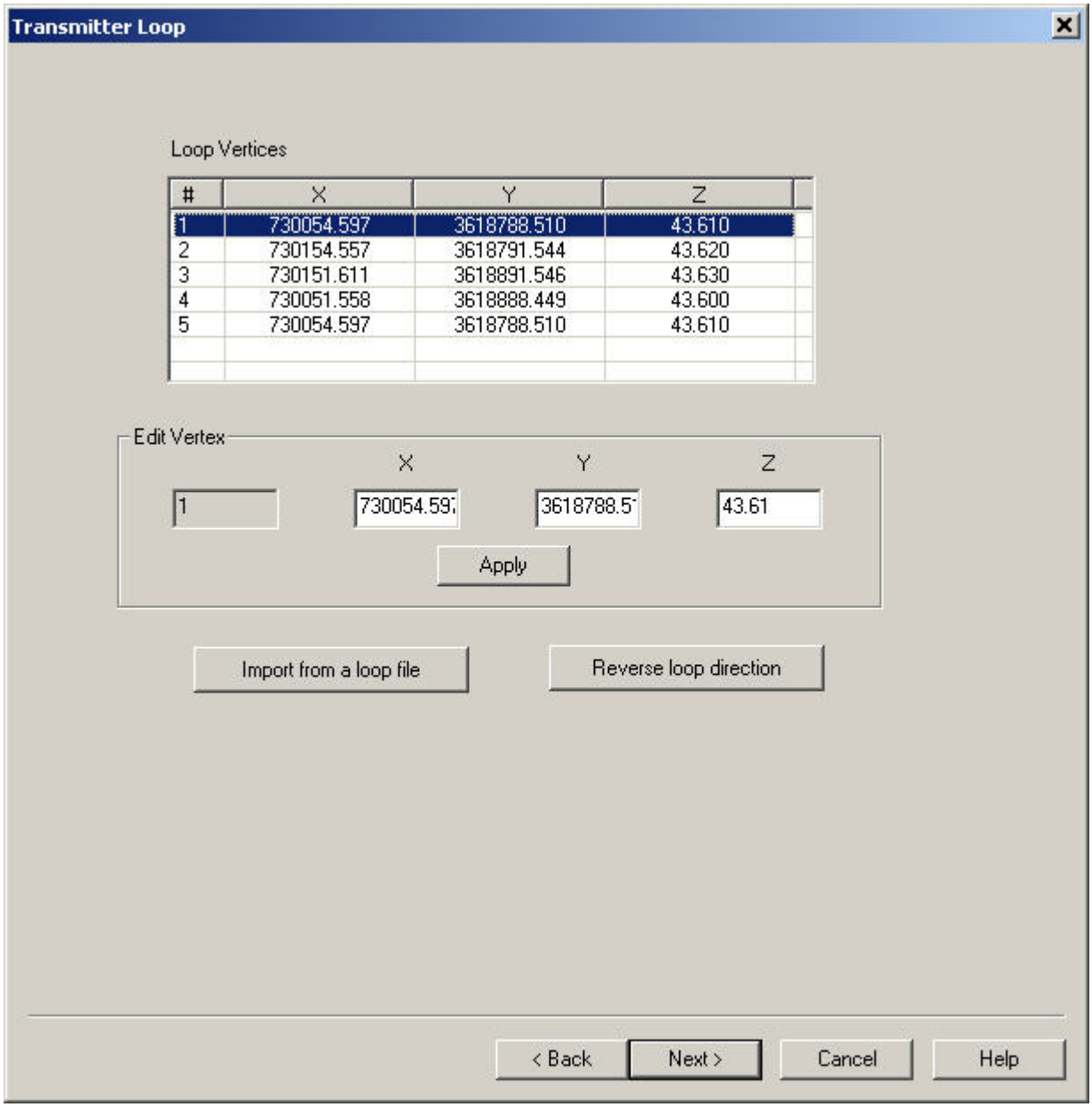
Exponential Off Time Constant
Time constant for the exponential function describing the ramp off.

Window Width
Width of the time windows in milliseconds. Only used for legacy format.

Waveform type
Describes the nature of the ramp off. **Turn off Time** will be displayed for **Linear** and **Exponential Off Time Constant** will be displayed for **Exponential**.

Zonge GDP_32 Import. Transmitter Loop Specification.

Fixed loop systems will display the **Transmitter Loop** page. Here you may check, edit or import the loop configuration.



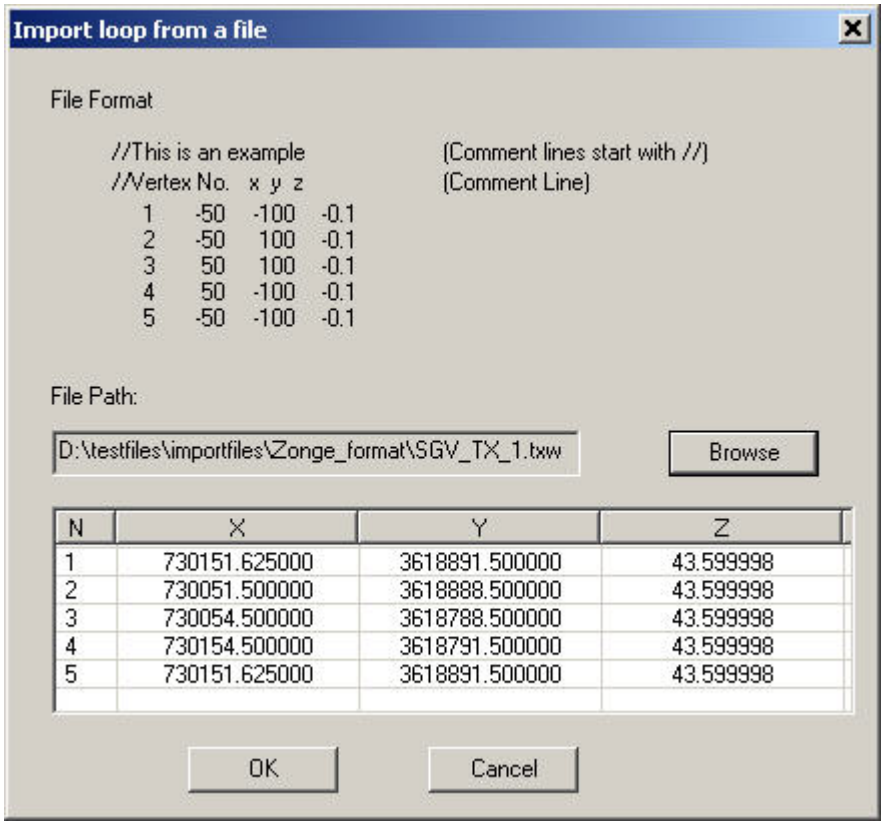
- Check the coordinates of the loop vertices in the spreadsheet-like table of the window. Their order coincides with the current flow direction, with the last corner repeating the first one to close the loop

- To edit a vertex, select the related line in the table, modify the X, Y or Z coordinates in the boxes of the **Edit Vertex** section and click **Apply**. You will see the vertex updated in the row you specified

Note. If after import and simulation the sign of your data is incorrect, re-import using the **Reverse loop direction** button on this window

- To import a loop:

  - Click **Import from a loop file**. The following window will appear:

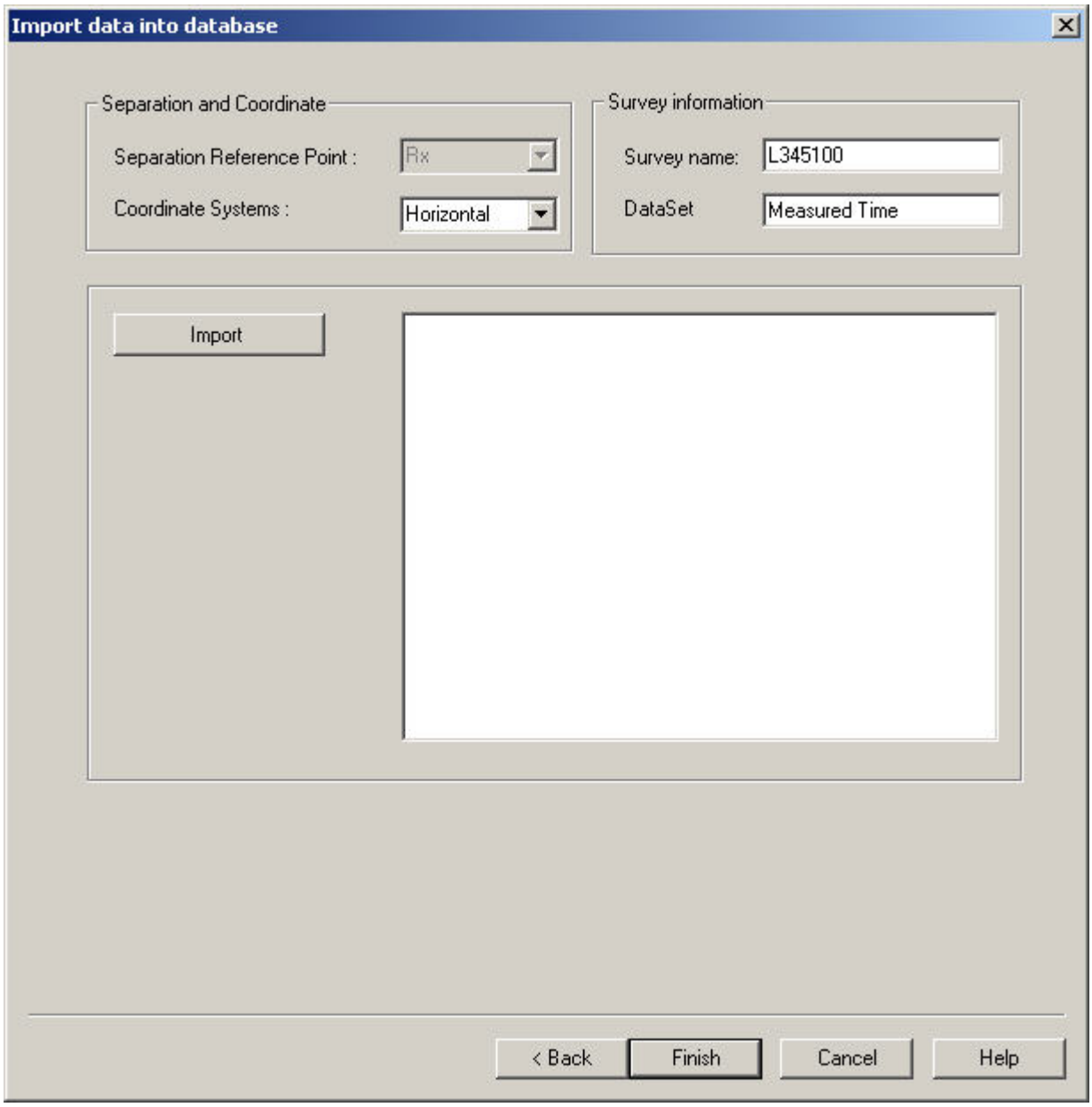


The loop file to import is required to have a format as shown in the sample

- Click **Browse** to open the required file. Its name and path will appear in the **Loop file** box and the file contents will be displayed in the field below

Click **OK** to complete the loop import. The spreadsheet-like table will contain the vertices of the imported loop

Zonge GDP_32 Import. Import data to database. (TEM)



Separation and Coordinates For a moving system, choose the reference point of the data as the transmitter, receiver, or centre point. Choose the co-ordinate system (horizontal, profile, or absolute).

Survey Information
Enter a survey name and data set name, and import the data.

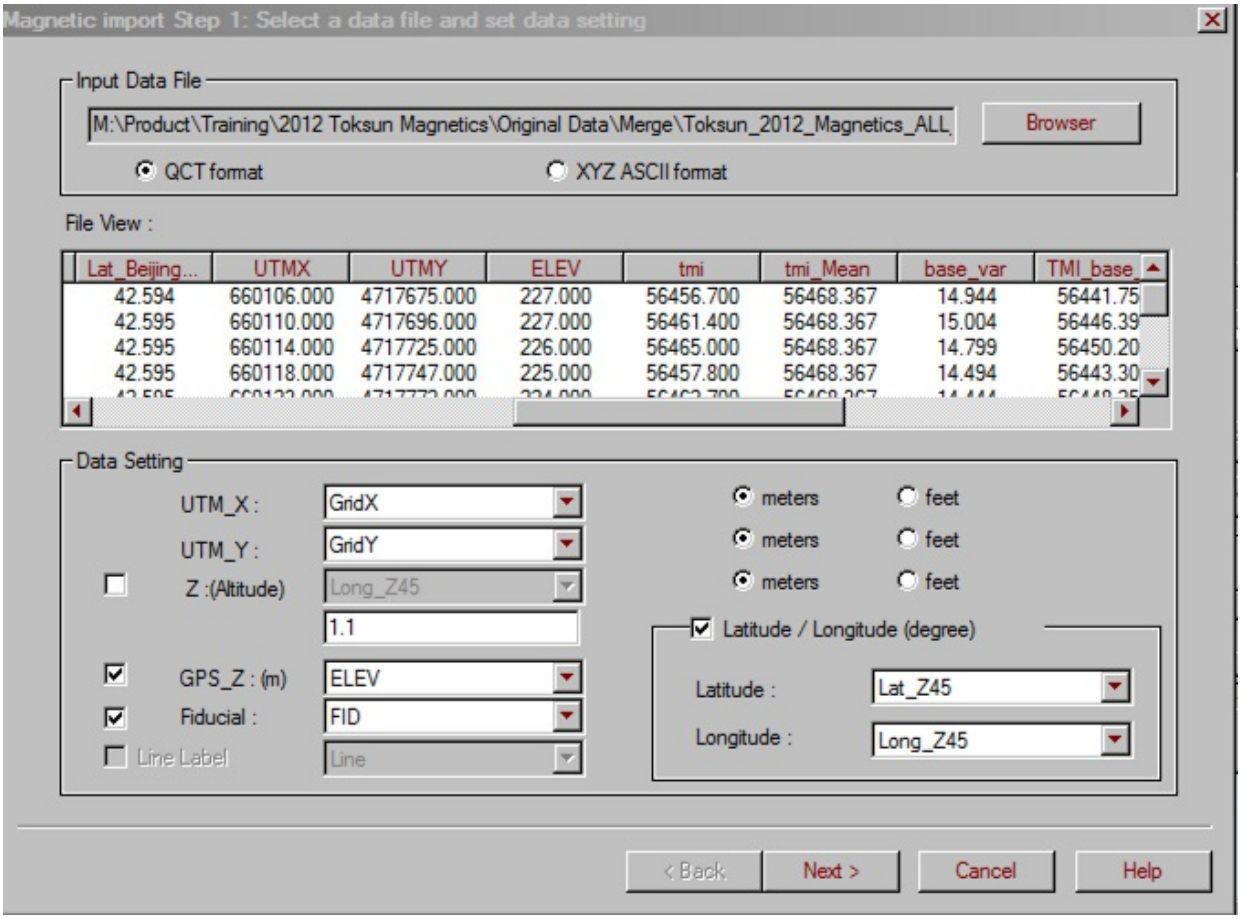
Magnetic Import Wizard

Step 1. Inputs.

We highly recommend importing your magnetic data into your QCTool license for basic QC processing prior to import to EMIGMA rather than the ASCII option. Ensure in the .qct file that all necessary channels are properly named.

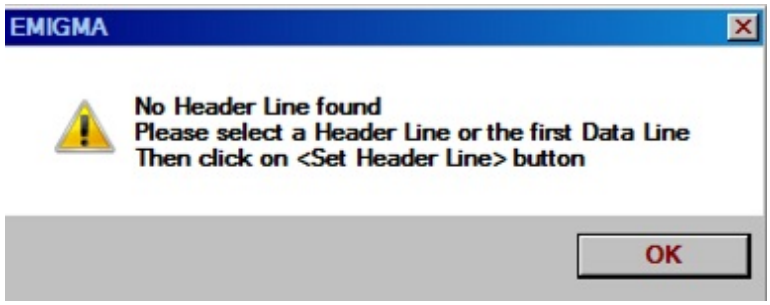
Selecting **DC Magnetic** from the **Potential Field** list under the **Raw Data** tab of the **Import** dialog launches the **DC Magnetic Import** wizard.

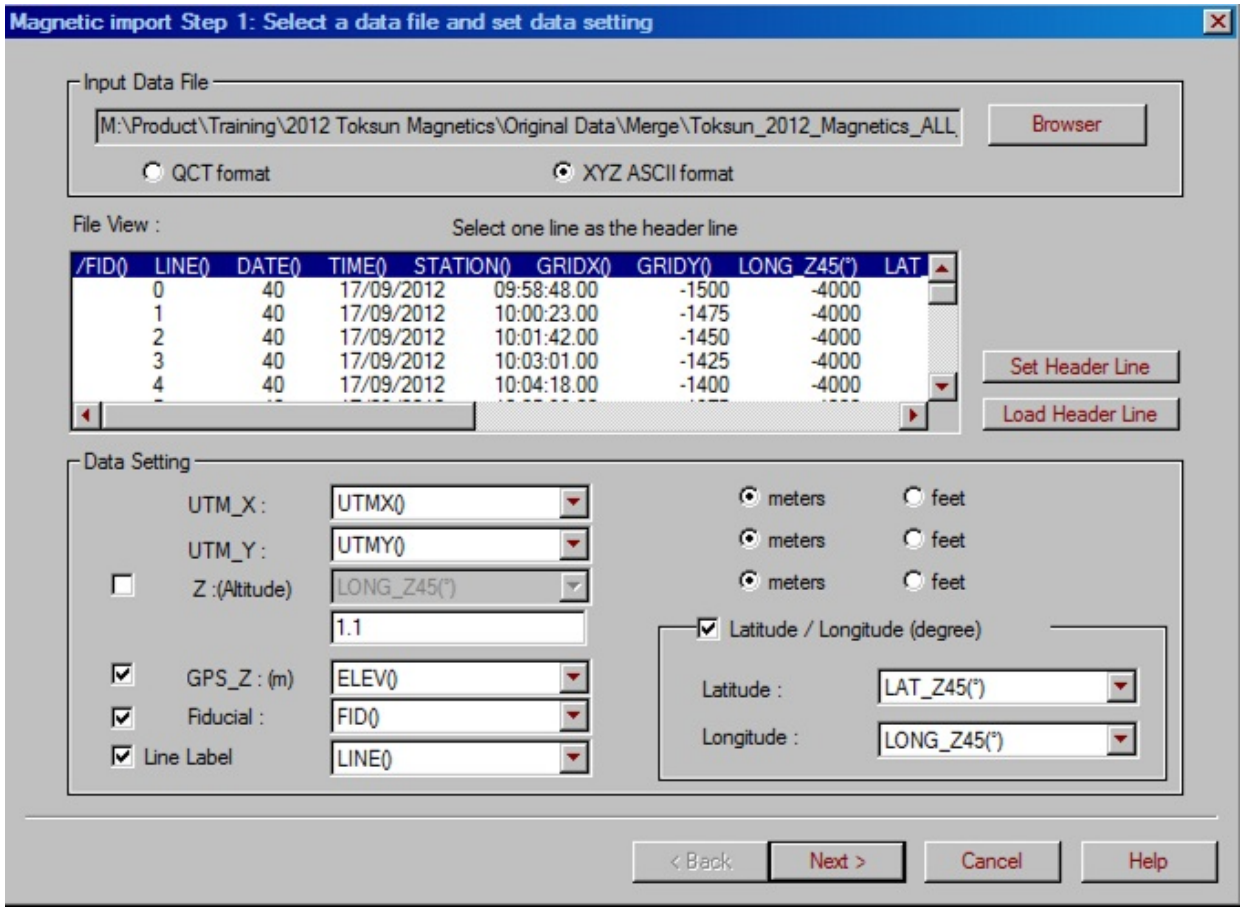
The following page appears:



- Select between QCTool's .qct format or an XYZ ASCII format for your input file.
- Click **Browser** to locate the file. The filename appears in the **Input Data File** field.

If the XYZ file to import cannot find a header line, the following message appears:





- If there is a header line then select it.

- If not, to set a header line, click the **Set Header Line** button to proceed to the respective dialog (see Set a Header Line).
- To load a header line from a file, click **Load Header Line**and browse for a *.hdr file in the **Header Line** dialog to appear.
  The format of the one line *.hdr file is:
  // HEADER1 HEADER2 HEADER3

If the file to import already contains a header line, the latter is selected for you in the **File View** field below. You can always edit this header line or import a new one from another file as described above.

***Note**. The **File View** field contains only the first portion of data from the file to import.*

Data Setting

In the **Data Setting** section, the top two dropdown lists in the section to the left will show the respective channels to be imported as the X and Y coordinates while are normally your UTM coordinates.

If your data also contains latitude and longitude, you can import them as separate channels. To do this:

- Check the **Latitude/Longitude** box in section to the right. This activates two dropdown lists below the checkbox.

- Select the required channels from these lists to import them along with your UTM coordinates.

If you have altitude data, the **Z** box in the middle of the dialog is selected automatically and the dropdown list next to it contains the respective channel. To cancel altitude import, de-select the **Z** box.

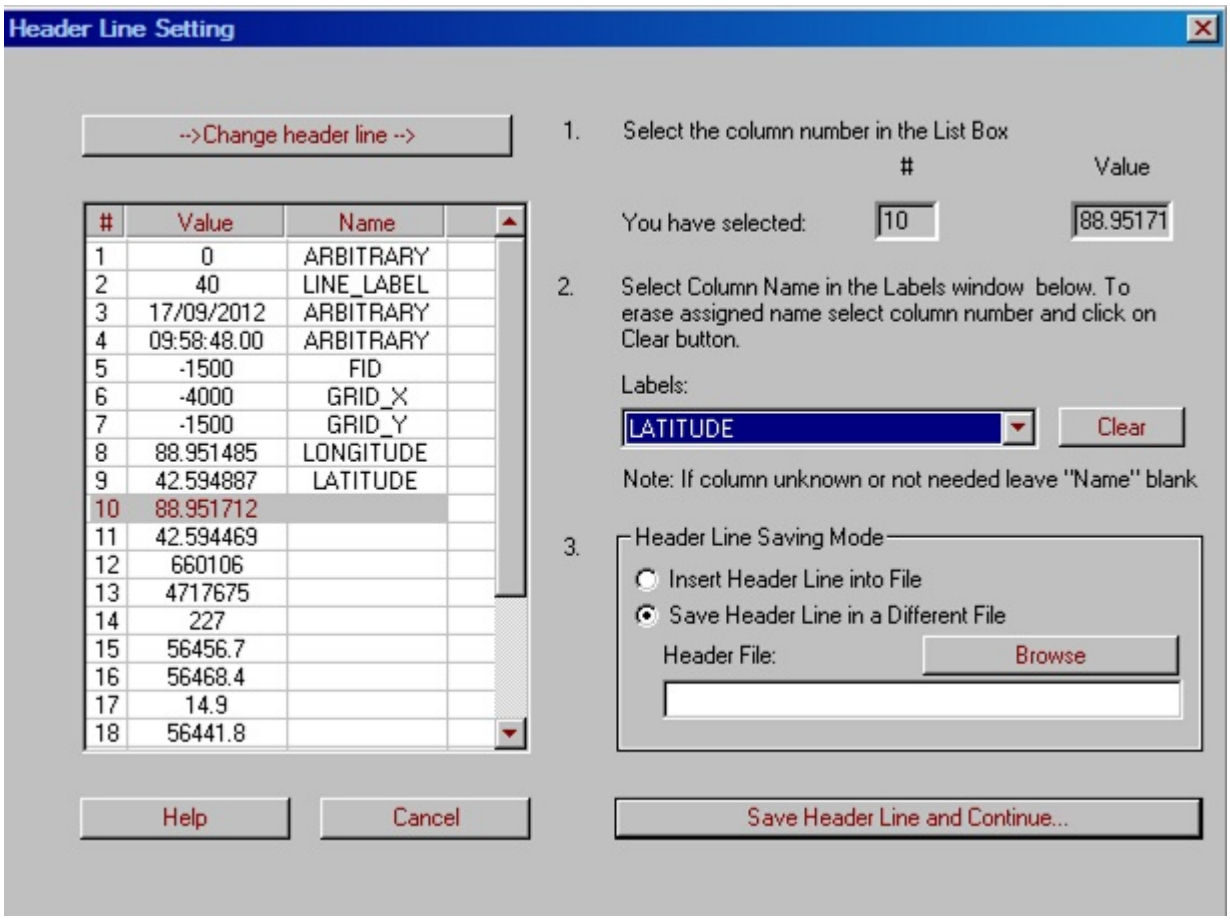
If you have surface data, the **Default Z** field in the middle contains 1.1. If your have airborne data, the **Default Z** field contains 100. You can edit this value as desired and specify the altitude units in the respective section on the right part of the interface.

If you have GPS Z data, the **GPS_Z** box is checked and the dropdown list to the right contains the respective channel. We highly recommend importing GPS_Z with your data as it allows inversion within your topography.

If the file you are importing has a fiducial channel, the respective box is selected and the dropdown list next to it contains this channel. The fiducial is saved to the database thus if you wish this to be your station label then select the STATION column from your original data file.

Set a Header Line.

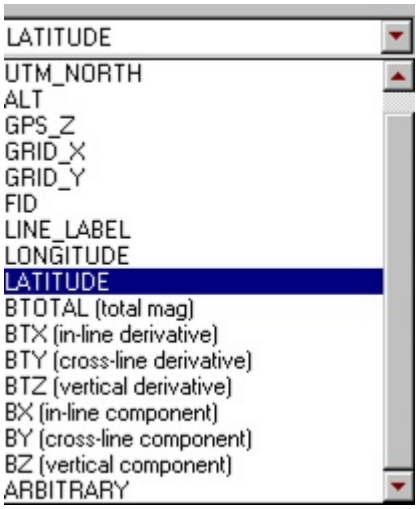
The **Set Header Line** button of the **Inputs, Magnetic Import Wizard Step 1** dialog brings up the **Header Line Setting** dialog:



#	Value	Name
1	0	ARBITRARY
2	40	LINE_LABEL
3	17/09/2012	ARBITRARY
4	09:58:48.00	ARBITRARY
5	-1500	FID
6	-4000	GRID_X
7	-1500	GRID_Y
8	88.951485	LONGITUDE
9	42.594887	LATITUDE
10	88.951712	
11	42.594469	
12	660106	
13	4717675	
14	227	
15	56456.7	
16	56468.4	
17	14.9	
18	56441.8	

In this dialog, the list box on the left contains the values from the header line you selected. To replace these values by the column names:

- Click on the number in the # column of the list box and select a required item from the **Labels** dropdown menu in the right part of the dialog.



- The label selected appears in the **Name** column of the list box next to the number selected.

- Repeat this procedure for the remainder of the columns in your list. All values are to be named. If you do not need one of the columns or you do not know what it contains, leave the **Name** field blank or select **Arbitrary**.

- To replace an inserted label, select it and click **Clear**. The label disappears. Select another label as described above.

You can save the header line both into the current file and into a different file to use it later for other data.

To save the header line into the current file:

- Select the **Insert Header Line into File** button in the **Header Line Saving Mode** section and click **Save Header Line and Continue.**

To save the header line into a different file:

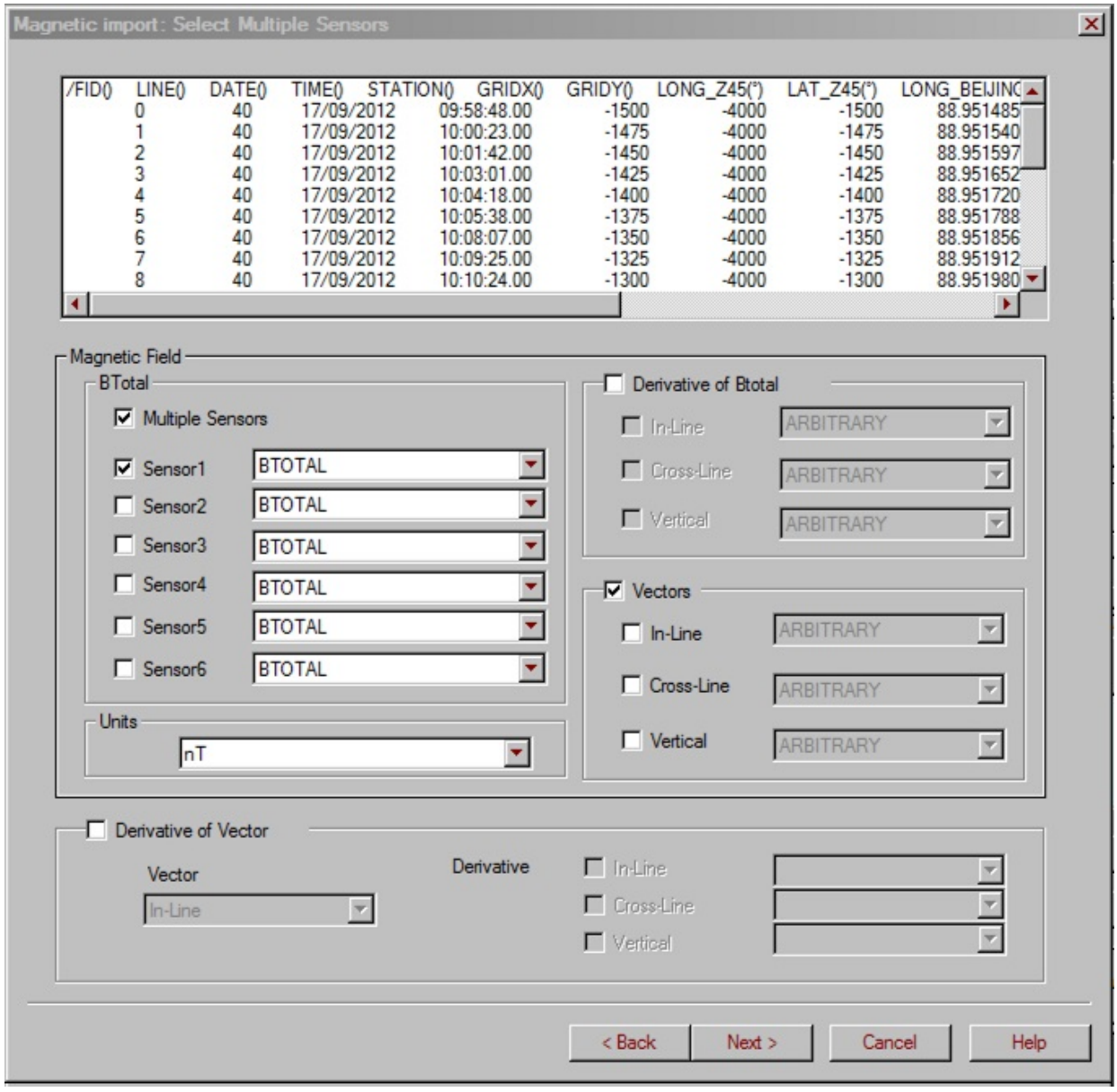
- Select this option in the **Header Line Saving Mode** section and click **Browse**. The Windows-style **Save Header Line in a File** dialog opens, with the **Header Files (*.hdr)** selected as the type of file in the respective dropdown list.

- Enter the name of the file and click **Save**. Back in the **Header Line Setting** dialog, the filename appears in the field in the bottom of the **Header Line Saving Mode** section.

- Click **Save Header Line and Continue**.

Magnetic Import Wizard: Step 2

Selecting Multiple Sensors.



Output

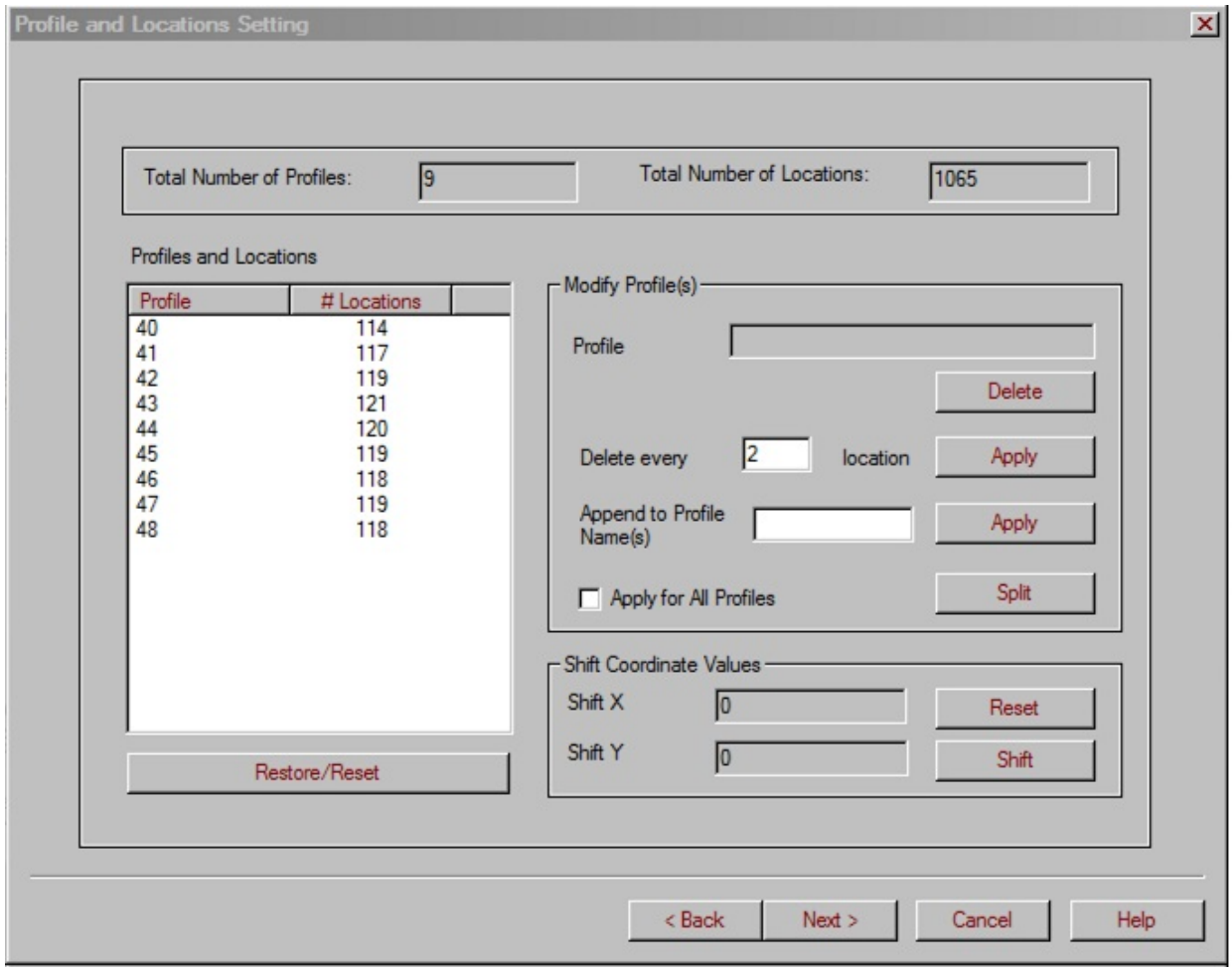
The Sensors selections are for total field data. You may have up to 6 total field measurements. Units may be either nanoTesla or picoTesla.

To import an available gradient channels of total field data:

- Select the **Derivative of Btotal** or **Vectors** checkbox. Check a box in the section you have enabled. The dropdown list next to this box becomes active, containing the gradient channel from the file you are importing. The units are assumed to be Units/m where Units are pT or nT.
- To select vector data, then enable the Vectors checkbox. Check a box in the section you have enabled. The dropdown lists next to this box become active, allowing you to select the vector channels from your datafile.
- You may also import derivatives of vector data but only the derivatives of one vector.
  For gradient and vector data, it is highly recommended that this be properly de-rotated to a consistent coordinate frame. This can be done in QCTool if you have an Advanced Magnetics license.

Step 3. Profiles and Locations.

In the **Profiles and Locations** dialog, the table on the left displays all the profiles and the number of locations (stations) per profile contained in the file you are importing. Normally, you would jump through this stage.



If desired, you can change the number of profiles and/or locations or shift coordinate values.

To delete a profile:

- Select a required profile in the table and click **Delete** in the **Modify Profile(s)** section of the dialog.

- To restore this profile, click the **Restore/Reset** button below the table.

To modify the number of locations per profile:

- Select a required profile in the table or check the **Apply for All Profiles** box in the bottom of the **Modify Profile(s)** section. In the latter case, all the available profiles will undergo the same modification.

- In the **Delete Every** box, enter a number to specify a step for deleting. By default, it is every second location.

- Click **Apply**.

- To restore the original number of locations, click the **Restore/Reset** button under the table.

To add a labelling to the profile number:

- Select a required profile in the table or check the **Apply for All Profiles** box in the bottom of the **Modify Profile(s)** section. In the latter case, all the available profiles will have the same label attached to their number.

- In the **Append to Profile Name** box, enter the label you want to attach and click **Apply**. The label will appear next to the number of the profile.

- To cancel the label, click **Restore/Reset** under the table.

To split a profile into two:

- Select a required profile in the table or check the **Apply for All Profiles** box in the bottom of the **Modify Profile(s)** section. In the latter case, all the available profiles will be split.

- Click **Split**. Each profile will be replaced by two, with the extensions "_0" and "_1".

- To cancel splitting, click **Restore/Reset** under the table.

To shift coordinates:

- Click **Shift** in the **Shift Coordinate Values** section.
- In the **Shift Values** dialog to appear, specify the shift values for the X and/or Y coordinates and click **OK**.

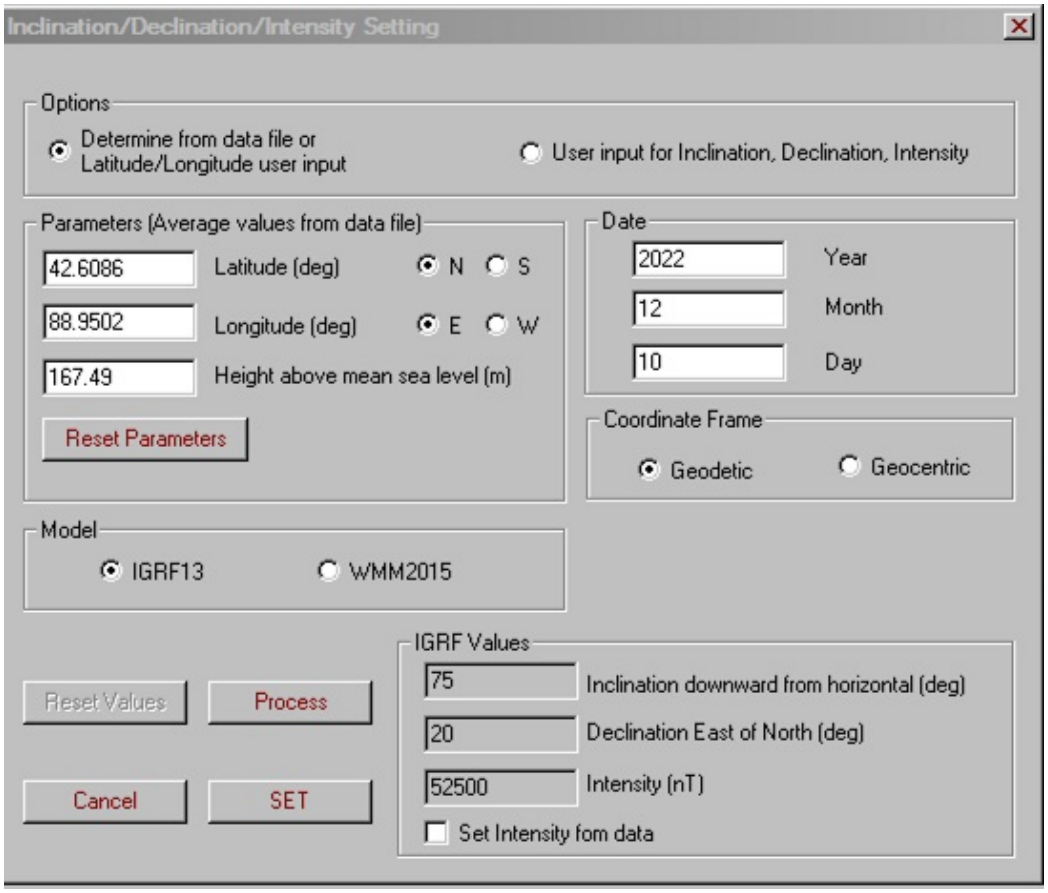
This functionality is useful when X and Y are too large to provide a required resolution. For example, if you are using UTMs, but require positioning accuracy for data analyses to a fraction of a metre, strip the first 3 digits that are similar in all of the values. This will create a local coordinate system providing a higher positioning accuracy.

- To restore the original coordinate values, click **Reset**.

Back in the **Profiles and Locations** dialog, click **Next** to proceed to the **Import** page of the import wizard.

Step 4. Earth Field System. Run and File Output.

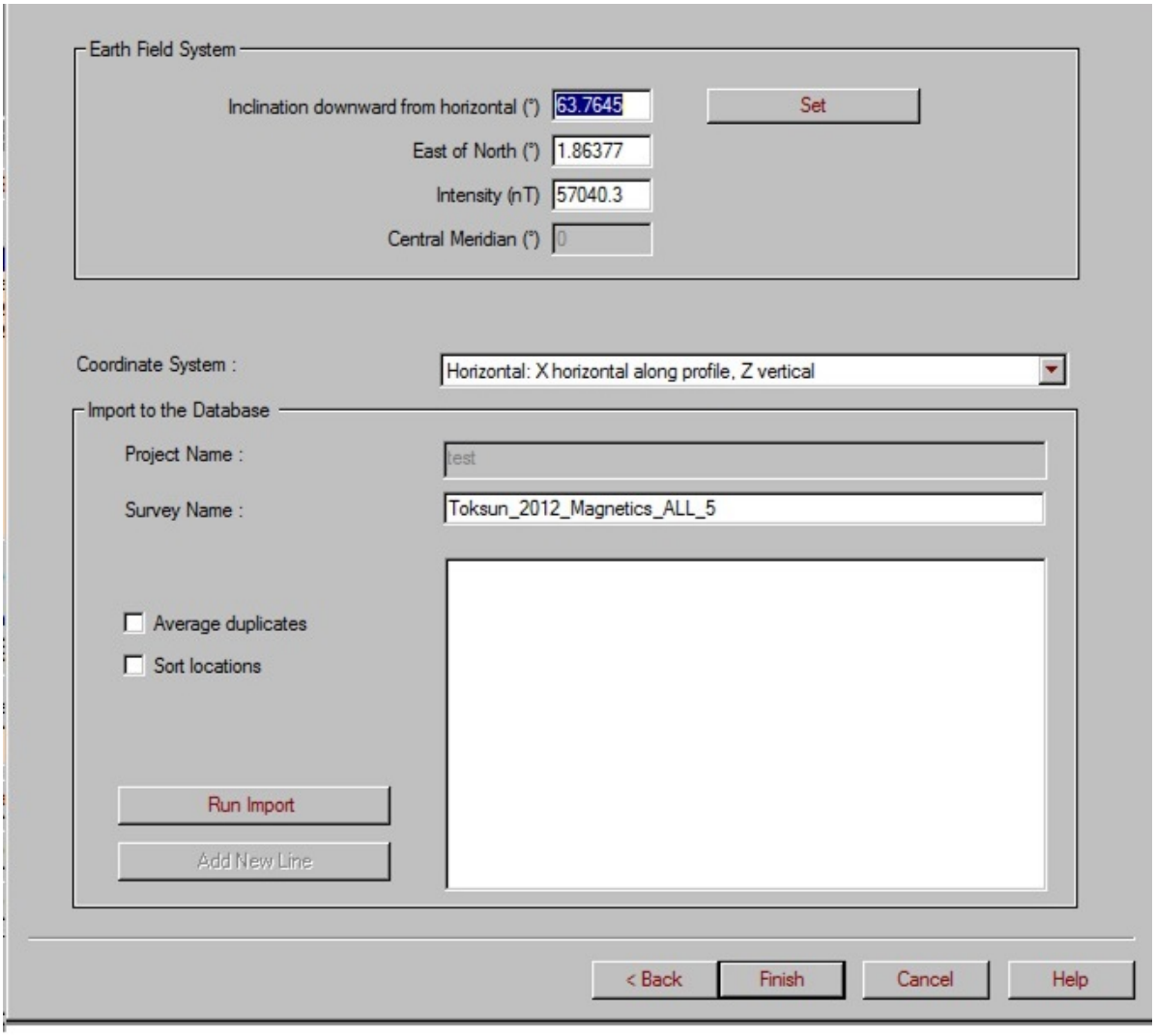
In Step 4 of the Magnetic Import Wizard, you have to specify the earth field system and import the file. The first stage is to set the correct background earth's field. This is important as it affects all modeling and inversion results.



In the **Earth Field System** section:

- Select the **Determine from Data File or Latitude/Longitude User Input** option to activate the **Parameters**, **Date**, and **Coordinate Frame** sections below. The **Parameters** section contains latitude and longitude calculated from the file you are importing. If you are not satisfied with these values, you can change them manually. To recover the initial values, use the **Reset Parameters** button. The **Date** section contains the current date by default.

- Select between **Geodetic** and **Geocentric** in the **Coordinate Frame** section.
- Click **Process.** The **IGRF Values** section updates accordingly. The **Intensity** value is average for given inclination and declination; if desired, you can set this value from the file you are importing. For this purpose, check the **Set Intensity from data** box.
- Click **Set** to return to Step 4 of the import wizard.



Select the coordinate system from the respective dropdown list in the middle of the dialog. Selected by default is horizontal.

If importing vector or gradient data, we suggest - X Grid Azimuth, Y horizontal, Z vertical assuming the data has been properly de-rotated.

In the **Import to the Database** section:

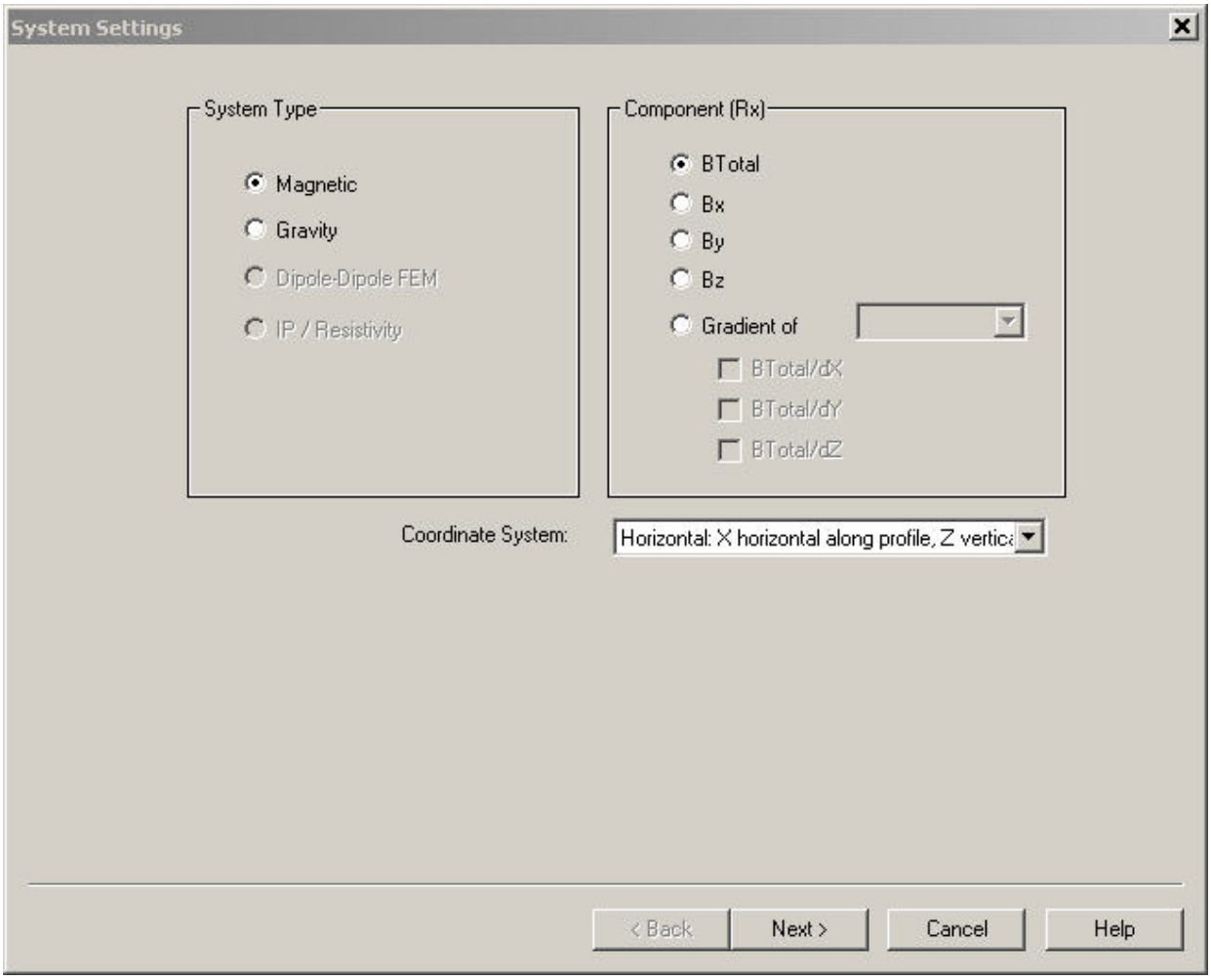
- Check **Average Duplicates** to import an average of duplicate data but this may be done later in the database.
- Check **Sort Locations** to sort your data by a coordinate. Again, this may be done later in the database.
- Click **Run Import**. The **Messages** box will keep you updated during the import procedure.

When the import is completed, click **Finish** at the bottom of the Step 4 page. .

GEOSOFT Grid Import

System Settings

After you have selected **GEOSOFT Grid Import** under the Potential Field, the **System Settings** page opens:



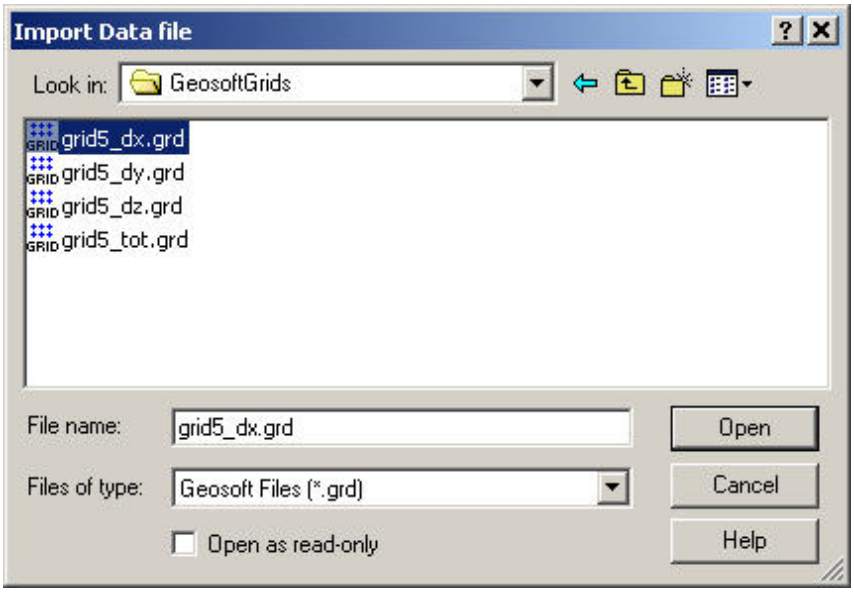
In this page:

- Select **Magnetic** or **Gravity** in the **System Type** section depending on which data you are importing.

- Select a required component in the **Component (Rx)** section. Note, Geosoft grids only contain one data channel and no elevation information.

- Select the coordinate system from the respective dropdown list below. Selected by default is **Horizontal** and for gradients **X Grid azimuth**.

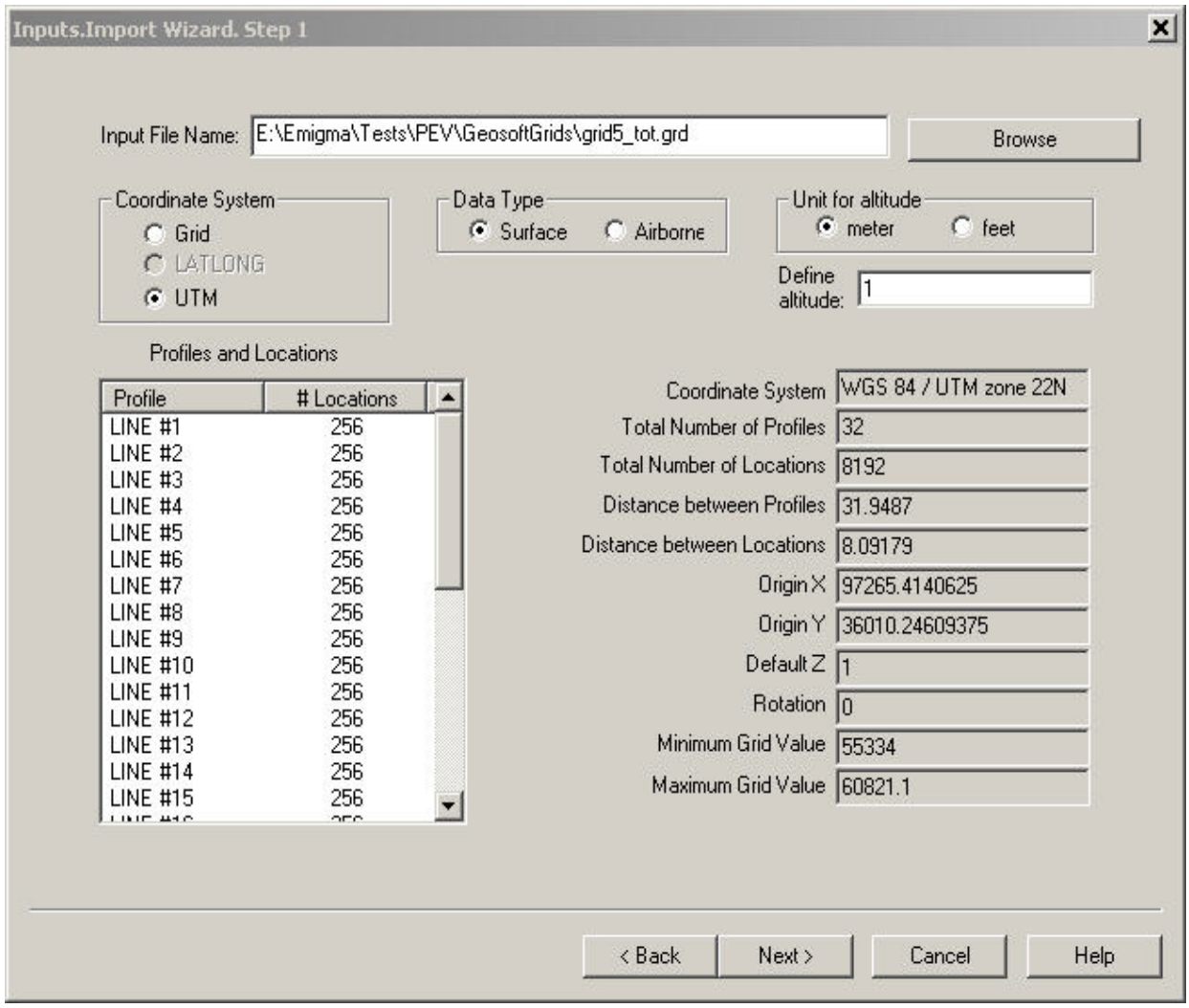
- Click **Next**. The **Import File** window opens offering you to browse for a file to import:



- Select this file and click **Open**. This takes you to the **Inputs** page.

Step 1. Inputs.

The **Input File Name** field of the **Inputs** page contains the file you specified at the previous step:



Note**. To open another *.grd file, click **Browse.

- Select the coordinate system in the respective section (Grid, Lat/Long, UTM). As a rule, the import wizard recognizes this system automatically.

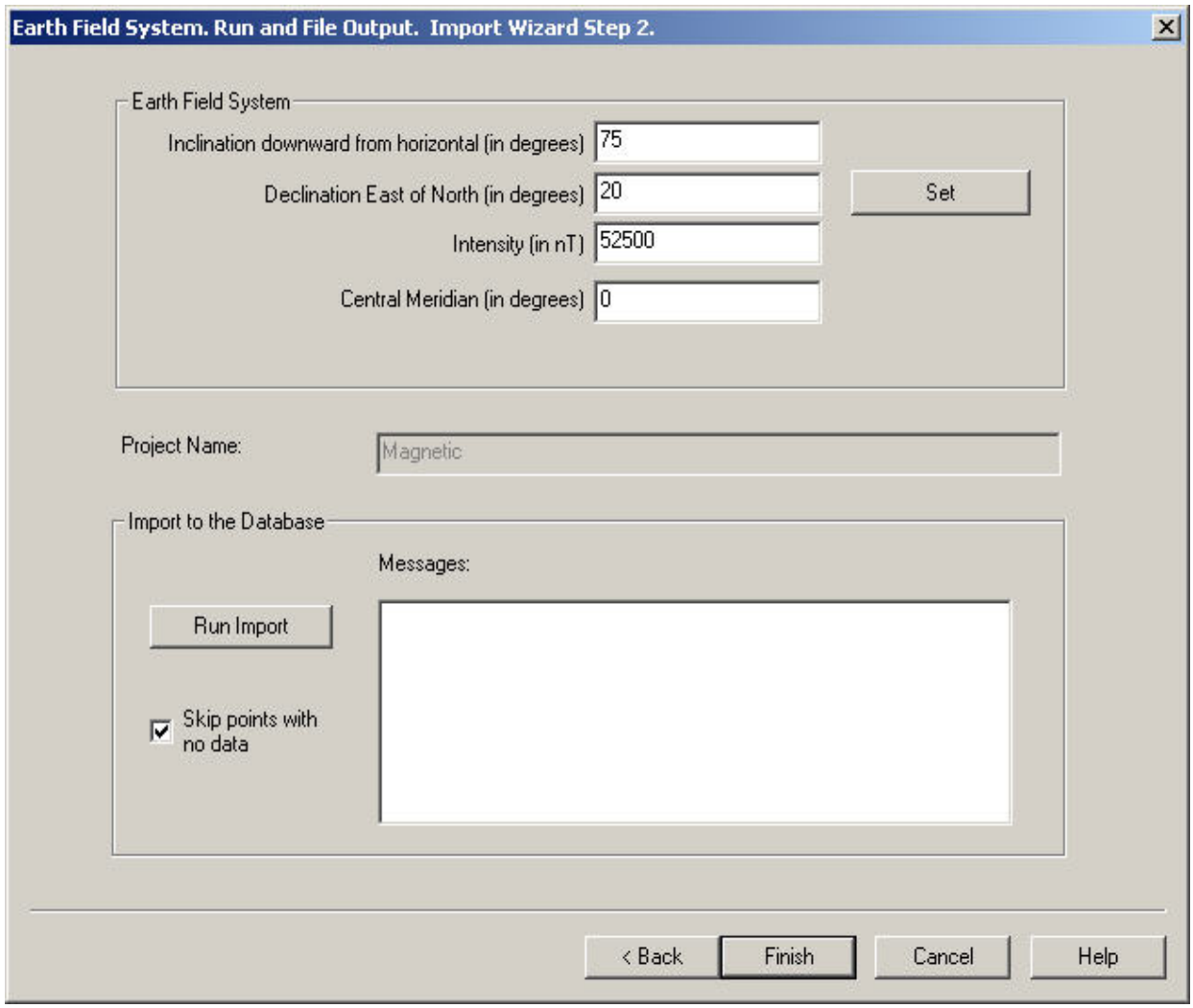
- Select between **Surface** and **Airborne** in the **Data Type** section. If you select **Airborne**, specify the altitude in the **Define Altitude** box.

Otherwise, this box contains 1 by default.

- Select between **Meter** and **Feet** in the **Units for Altitude** section. Some of the data below measured in these units will change accordingly.
- Click **Next** to proceed to Step 2 of the import wizard: **Earth Field System. Run and File Output**.

Step 2. Earth Field System. Run and File Output.

1. If you are importing magnetic data, you have to specify the earth field system. You can do it in the respective section in the upper part of the Step 2 window:



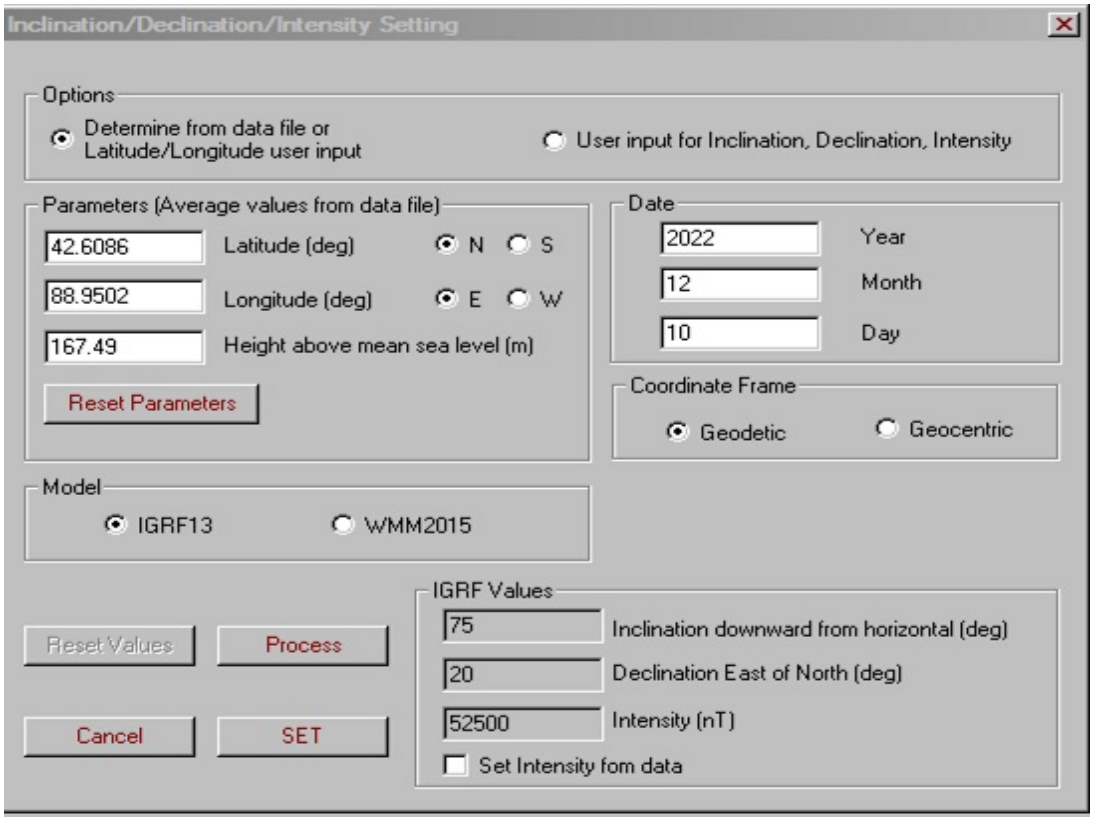
In the **Earth Field System** section:

- Specify the inclination, declination, and intensity in the respective fields

OR

- Click the **Set** button to compute these parameters from the *.grd file being imported. If you know, you can specify the central meridian to include it into the computations.

In the **Inclination/Declination/Intensity Setting** window that appears:



- Select the **Determine from Data File or Latitude/Longitude User Input** option to activate the **Parameters**, **Date**, and **Coordinate Frame** sections below. The **Parameters** section contains latitude and longitude calculated from the *.grd file you are importing. If you are not satisfied with these values, you can change them manually. To return the initial values, use the **Reset Parameters** button. The **Date** section contains the current date.

- Select between **Geodetic** and **Geocentric** in the **Coordinate Frame** section.

- Click **Process.** The **IGRF Values** section updates accordingly. The **Intensity** value is average for given inclination and declination; if

desired, you can set this value from the *.grd file you are importing. For this purpose, check the **Set Intensity from data** box.

- Click **Set** to return to Step 2 of the import wizard.

- In the **Import to the Database** section, deselect the checkbox labelled **Skip points with no data** if you would like locations with no data value to be imported.

- Click **Run Import**. The **Messages** box will keep you updated during the import procedure. When import is completed, click **Finish** in the bottom of the Step 2 dialog. This takes you back to the **Database** dialog.

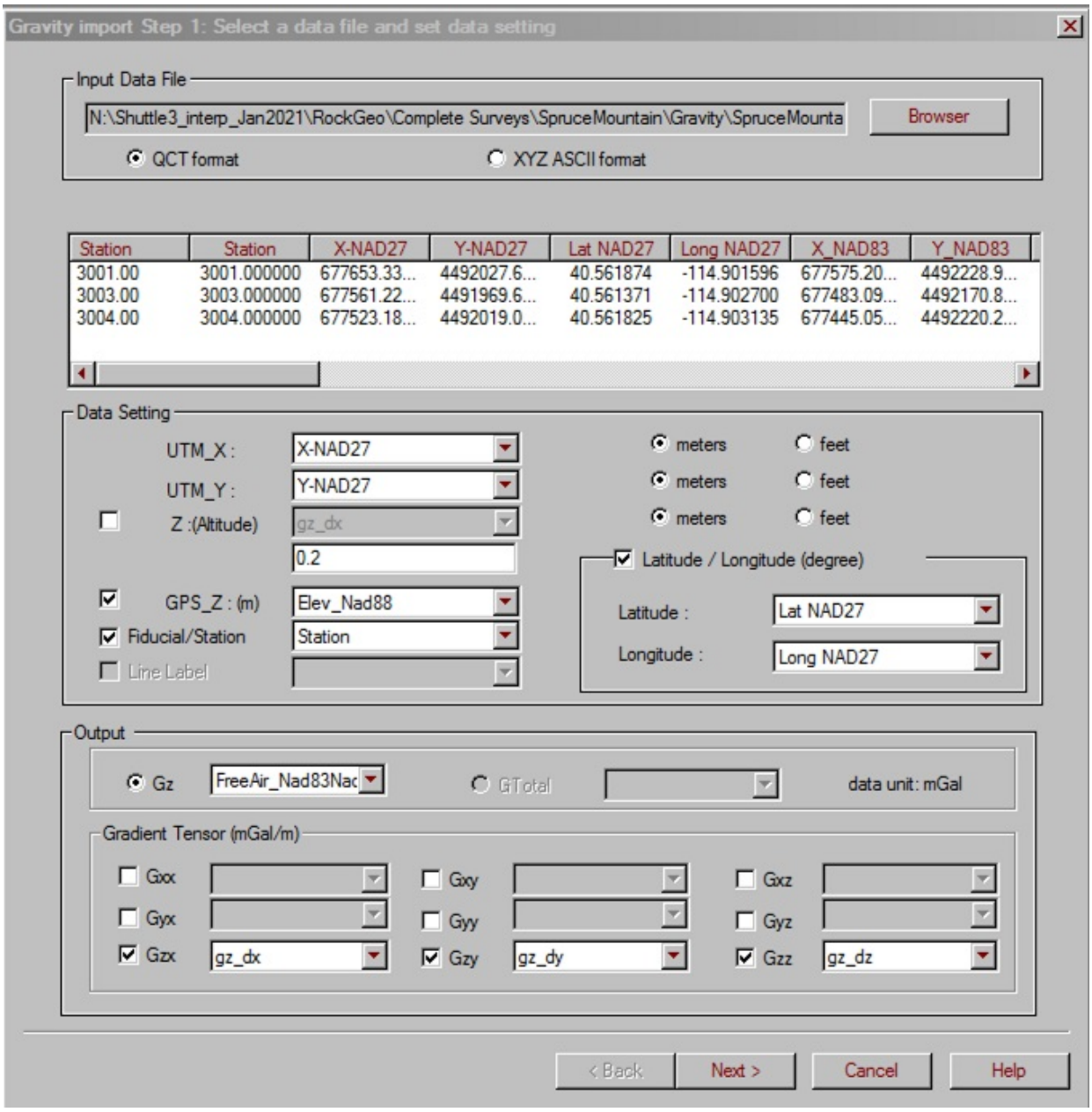
2. If you are importing gravity data, Step 2 of the import wizard will have only the **Import to the Database** section. Click **Run Import** in this section and **Finish** in the bottom of the dialog to complete the import procedure and return to the **Database** dialog.

Gravity Data Import Wizard

Gravity Data Import Wizard. Step 1. Inputs.

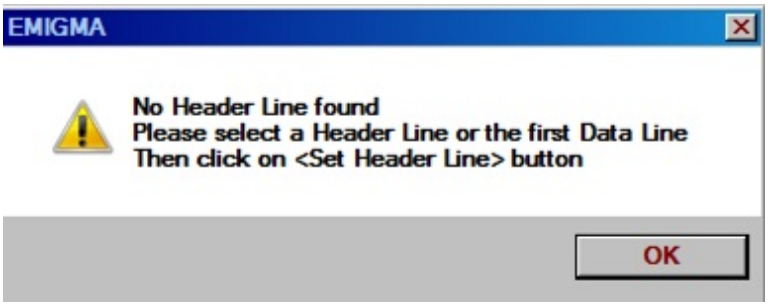
Selecting **Gravity** from the **Potential Field** list under the **Raw Data** tab of the **Import** dialog launches the **Gravity Data Import** wizard.

The following window appears:



- Select between QCTool's QCT format or an XYZ ASCII format for your input file.
- Click **Browser** to locate the file. The filename appears in the **Input Data File** field.

If the XYZ file to import has no header line, the following message appears:



- To set a header line, click the **Set Header Line** button to proceed to the respective dialog (see Set a Header Line).
- To load a header line from a file, click **Load Header Line** and browse for a *.hdr file in the **Header Line** dialog to appear.
  The format of the one line *.hdr file is:
  // HEADER1 HEADER2 HEADER3

If the file to import already contains a header line, the latter is selected for you in the **File View** field below. You can always edit this header line or import a new one from another file as described above.

***Note**. The **File View** field contains the first 20 lines of data from the file to import.*

Data Setting

In the **Data Setting** section, the top two dropdown lists in the section to the left will show the respective channels to be imported as X and Y.

If your data also contain latitude and longitude, you can import them as a separate channel. To do this:

- Check the **Latitude/Longitude** box in section to the right. This activates two dropdown lists below the checkbox.

- Select the required channels from these lists to import them along with your UTM coordinates.

If your data contains altimeter information, the **Z** box in the middle of the dialog is selected automatically and the dropdown list next to it contains the respective channel. To cancel altitude import, de-select the **Z** box.

If your data are surface, the **Default Z** field in the middle contains 1. If your data are airborne, the **Default Z** field contains 100. You can edit this value as desired and specify the altitude units in the respective section in the right part of the dialog.

If your data has a GPS elevation, the **GPS_Z** box in the middle is checked and the dropdown list to the right contains the respective channel. This is important for gravity as it allows the inversion to include topography in the inversion. If not, topography can later be added to the survey in the database.

If the file you are importing has a fiducial channel, the respective box is selected and the dropdown list next to it contains this channel.

Output

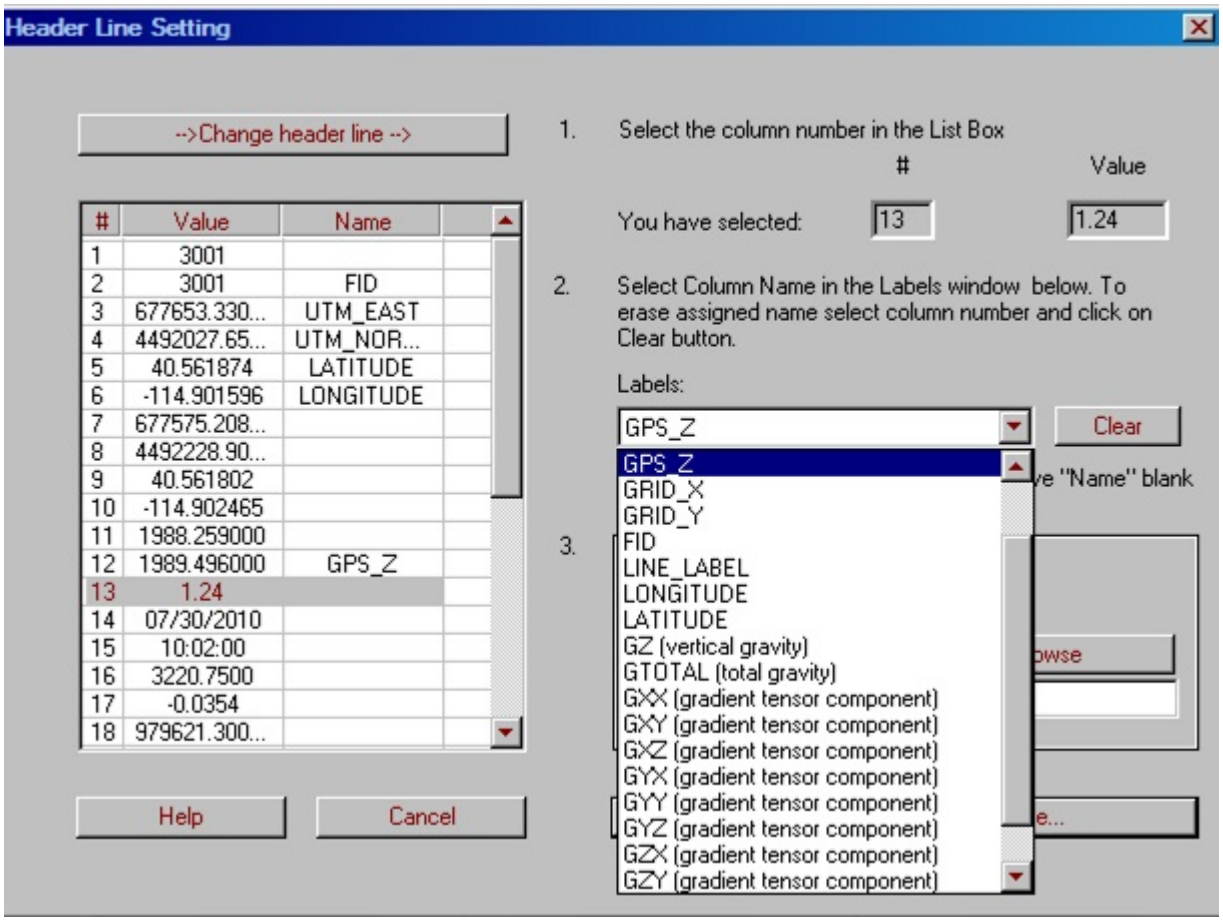
The wizard attempts to automatically recognize the channel containing data and selects it from the **Gz** dropdown list in the left part of the window. If your data contains any gradient channels, you can import this channel along with the selected component.

To import an available gradient channel:

- Check a box in the the **Gradient Tensor** section. The dropdown list next to this box becomes active, containing the gradient channel from the file you are importing.

Gravity Data Import Wizard. Set a Header Line.

The **Set Header Line** button of the **Inputs, Gravity Import Wizard Step 1** dialog brings up the **Header Line Setting** dialog:



#	Value	Name
1	3001	
2	3001	FID
3	677653.330...	UTM_EAST
4	4492027.65...	UTM_NOR...
5	40.561874	LATITUDE
6	-114.901596	LONGITUDE
7	677575.208...	
8	4492228.90...	
9	40.561802	
10	-114.902465	
11	1988.259000	
12	1989.496000	GPS_Z
13	1.24	
14	07/30/2010	
15	10:02:00	
16	3220.7500	
17	-0.0354	
18	979621.300...	

In this dialog, the list box on the left contains the values from the header line you selected. To replace these values by the column names:

- Click on the number in the # column of the list box and select a required item from the **Labels** dropdown menu in the right part of the dialog. The label appears in the **Name** column of the list box next to the number selected.

- Repeat this procedure for the rest of the values in your list. All values are to be named. If you do not need one of the columns or you do not

know what it contains, leave the **Name** field blank.

- To replace an inserted label, select it and click **Clear**. The label disappears. Select another label as described above.

You can save the header line both into the current file and into a different file to use it later for other data.

To save the header line into the current file:

- Select the **Insert Header Line into File** button in the **Header Line Saving Mode** section and click **Save Header Line and Continue.**

To save the header line into a different file:

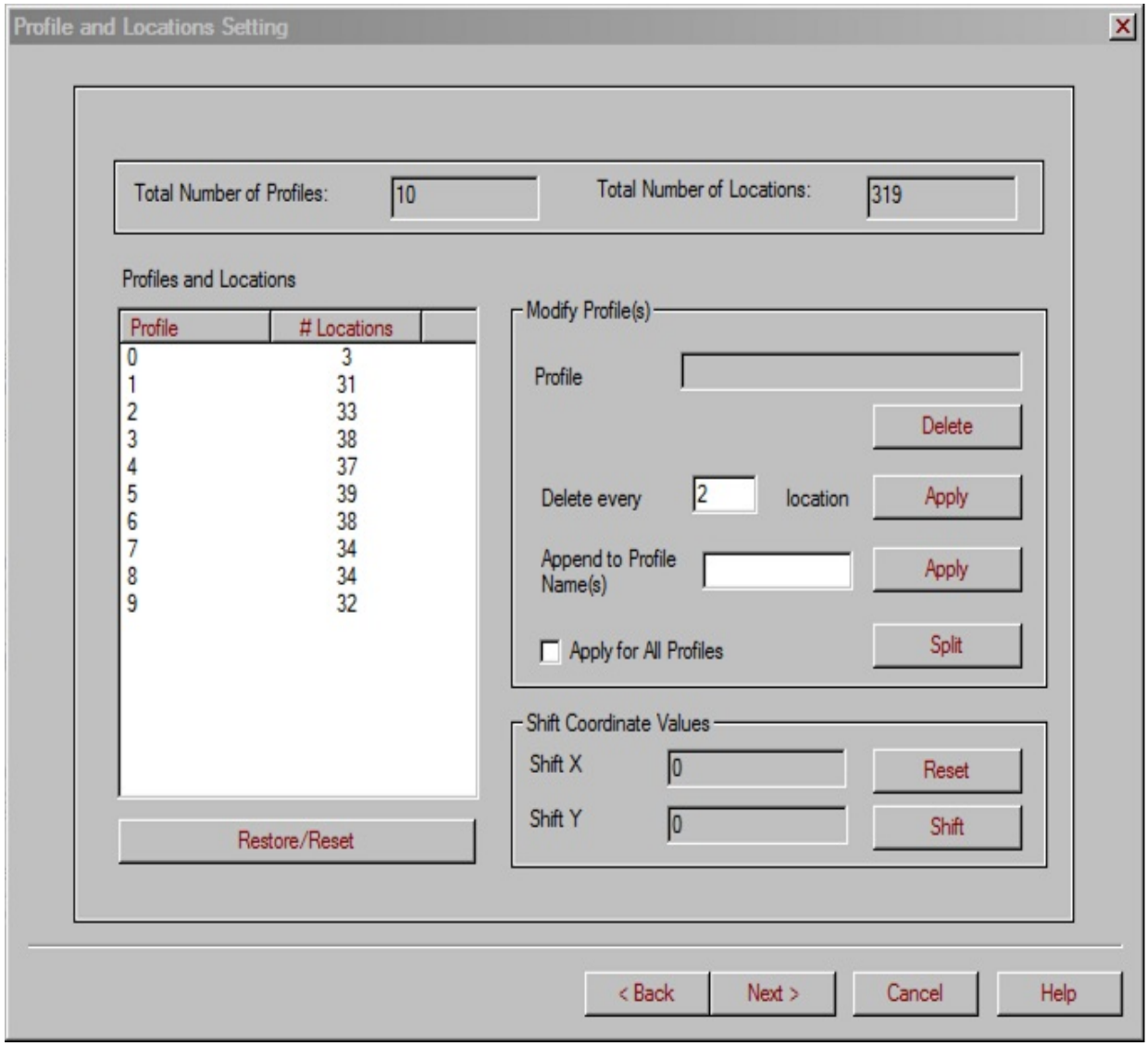
- Select this option in the **Header Line Saving Mode** section and click **Browse**. The Windows-style **Save Header Line in a File** dialog opens, with the **Header Files (*.hdr)** selected as the type of file in the respective dropdown list.

- Enter the name of the file and click **Save**. Back in the **Header Line Setting** dialog, the filename appears in the field in the bottom of the **Header Line Saving Mode** section.

- Click **Save Header Line and Continue**.

Gravity Data Import Wizard. Step 2. Lines and Locations.

In the **Lines and Locations** dialog, the table on the left displays all the profiles and the number of locations per profile contained in the file you are importing:



If desired, you can change the number of profiles and/or locations or shift coordinate values.

To delete a profile:

- Select a required profile in the table and click **Delete** in the **Modify Profile(s)** section of the dialog.
- To restore this profile, click the **Restore/Reset** button below the table.

To modify the number of locations per profile:

- Select a required profile in the table or check the **Apply for All Profiles** box in the bottom of the **Modify Profile(s)** section. In the latter case, all the available profiles will undergo the same modification.
- In the **Delete Every** box, enter a number to specify a step for deleting. By default, it is every second location.
- Click **Apply**.
- To restore the original number of locations, click the **Restore/Reset** button under the table.

To add a label to the profile number:

- Select a required profile in the table or check the **Apply for All Profiles** box in the bottom of the **Modify Profile(s)** section. In the latter case, all the available profiles will have the same label attached to their number.
- In the **Append to Profile Name** box, enter the label you want to attach and click **Apply**. The label will appear next to the number of the profile.
- To cancel the label, click **Restore/Reset** under the table.

To split a profile into two:

- Select a required profile in the table or check the **Apply for All Profiles** box in the bottom of the **Modify Profile(s)** section. In the latter case, all the available profiles will be split.

- Click **Split**. Each profile will be replaced by two, with the extensions "_0" and "_1".
- To cancel splitting, click **Restore/Reset** under the table.

To shift coordinates:

- Click **Shift** in the **Shift Coordinate Values** section.
- In the **Shift Values** dialog to appear, specify the shift values for the X and/or Y coordinates and click **OK**.

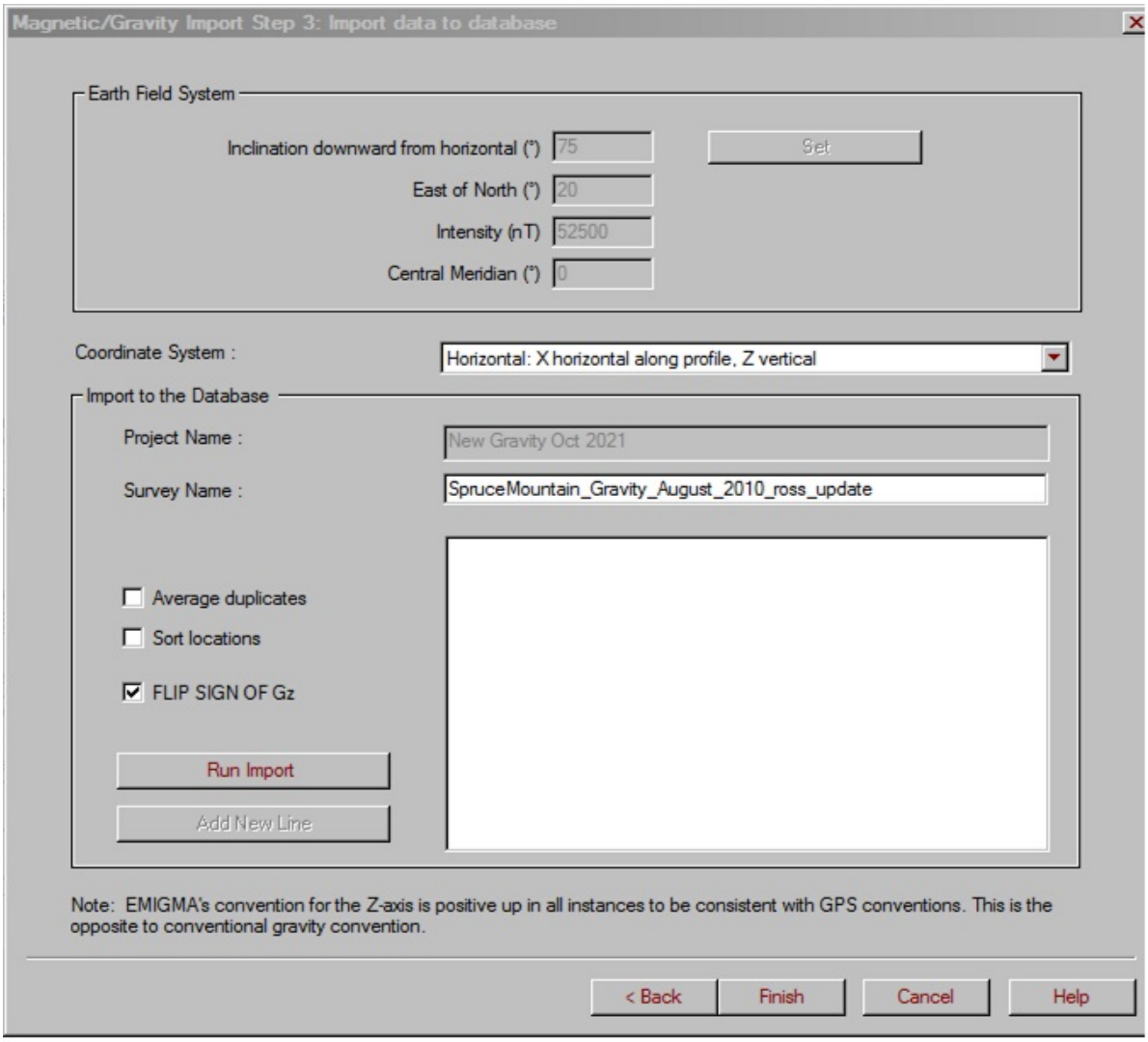
This functionality is useful when X and Y are too big to provide a required resolution. For example, if you are using UTMs, but require positioning accuracy for data analyses to a fraction of a metre, strip the first 3 digits that are similar in all of the values. This will create a local coordinate system providing a higher positioning accuracy.

- To restore the original coordinate values, click **Reset**.

Back in the **Profiles and Locations** dialog, click **Next** to proceed to the final, **Step 3**, dialog of the import wizard.

Gravity Data Import Wizard. Step 3. Run and File Output.

In the Step 3 dialog of the Gravity Data Import Wizard:



Select the coordinate system from the respective dropdown list in the middle of the dialog. Selected by default is horizontal.

In the I**mport to the Database** section:

- The **Survey Name** field shows the project you are importing your data into.

- Check **Average Duplicates** to import an average of mutliple data values measured at one location.
- Check **Sort Locations** to sort your data by coordinate.
- Click **Run Import**. The **Messages** box will keep you updated during the import procedure.

When import is completed, click **Finish** in the bottom of the Step 3 dialog.

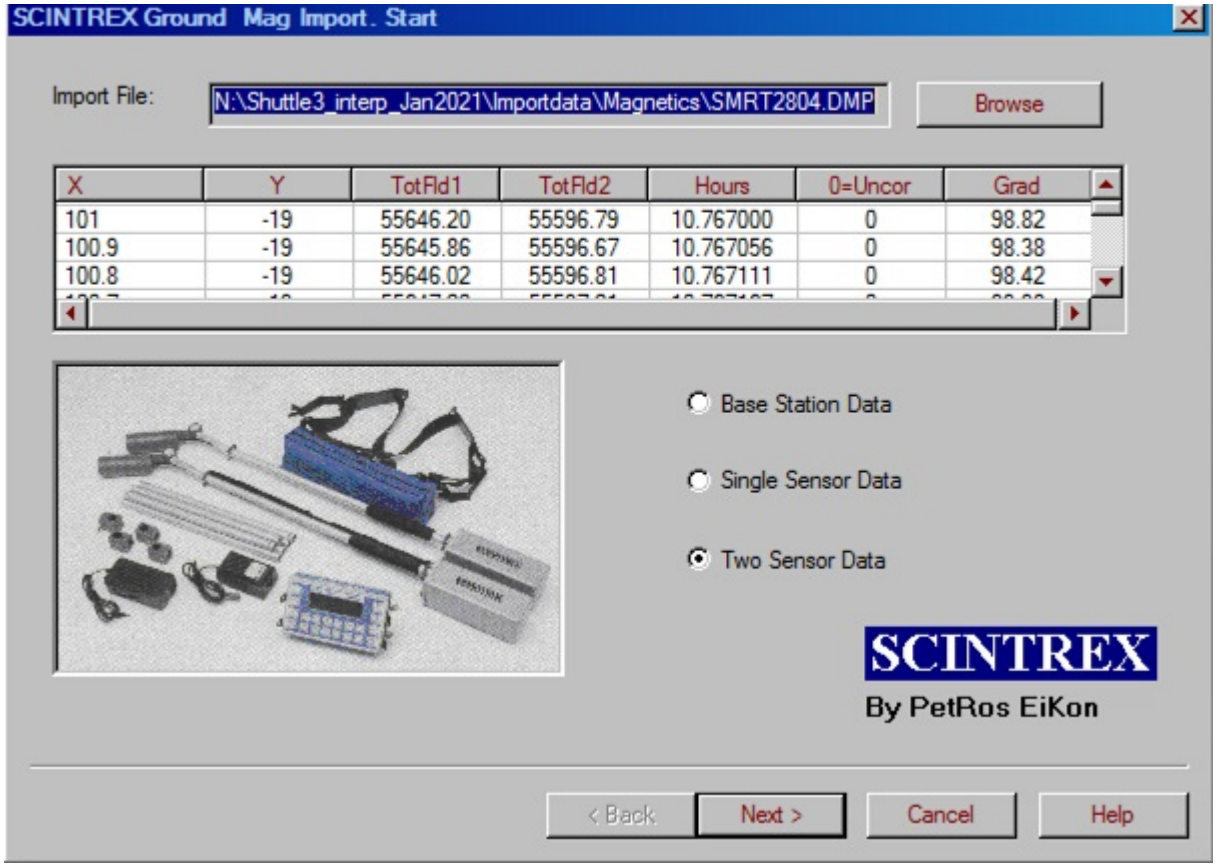
Magnetic Ground (Scintrex) Import

Start Page

You may import magnetic data from Scintrex instruments directly to EMIGMA. But, it is recommended to import to QCTool to perform processing and then import your .qct file using the generic magnetics import.

EMIGMA allows import of Scintrex single-sensor, double-sensor, and base-station data. In the first two cases, the channels containing x and y coordinates, total field(s), and hours are imported; in the latter case, hours and total field are imported. The **Hours** channel is used as a fiducial channel.

Selecting **Magnetic Ground (Scintrex)** from the **Potential Field** list under the **Raw Data** tab of the **Import** dialog, brings up the **Start** page:



In the upper right-hand corner of the dialog, click **Browse** to open a *.dmp file to import. This activates the table and one of the three options below - **Base Station Data**, **Single Sensor Data**, **Two Sensor Data** - which is selected depending on the kind of data you are importing.

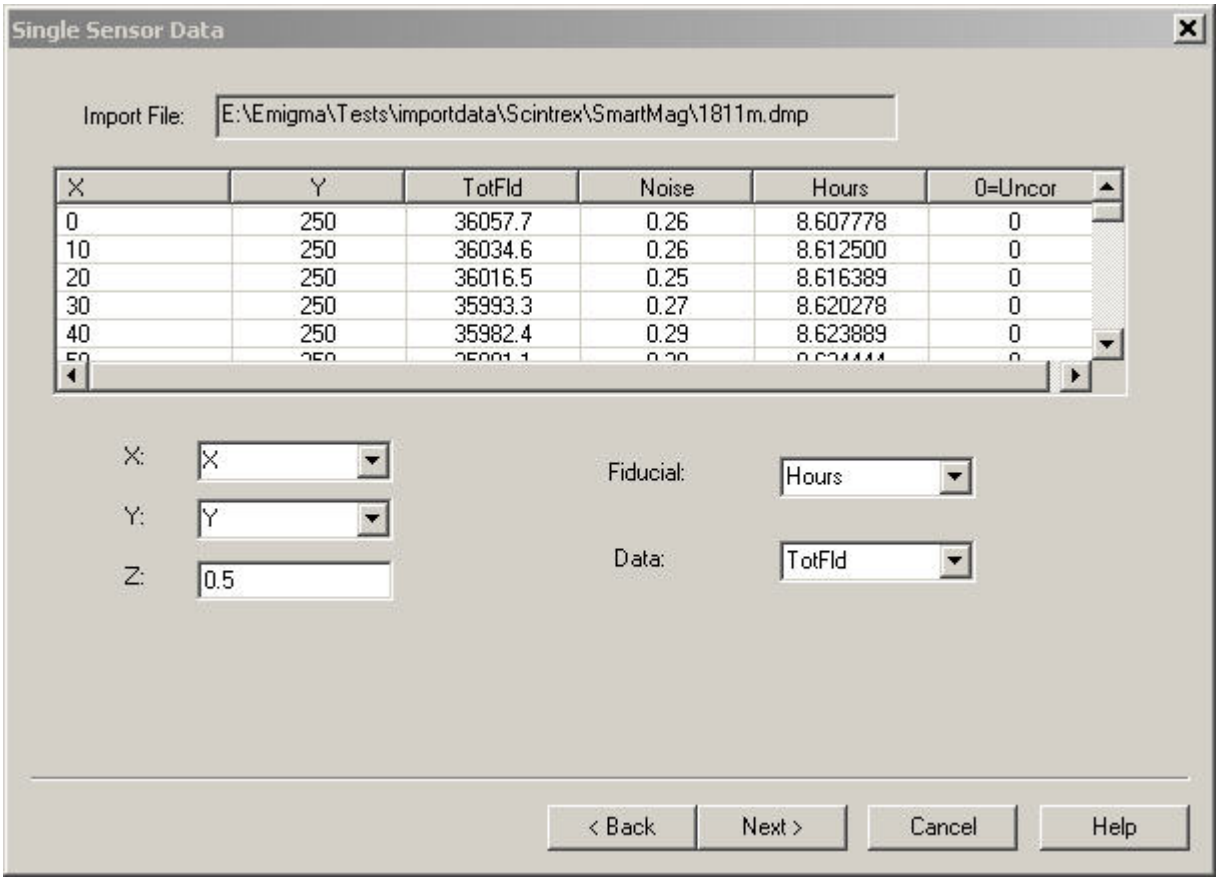
Click **Next**.

***Note**. The base station data imported through this wizard can be used later in EMIGMA for diurnal correction (see Data Decimation and Filtering). If you want to apply diurnal correction on the fly, please refer to the **Import** page of this wizard.*

However, QCTool offers more capabilities for the base station corrections.

Single Sensor Data

In the **Single Sensor Data** dialog, which appears on selecting the respective option on the **Start** page, the table contains the channels from the input data file and the dropdown lists below offer the choice of channels to be imported:

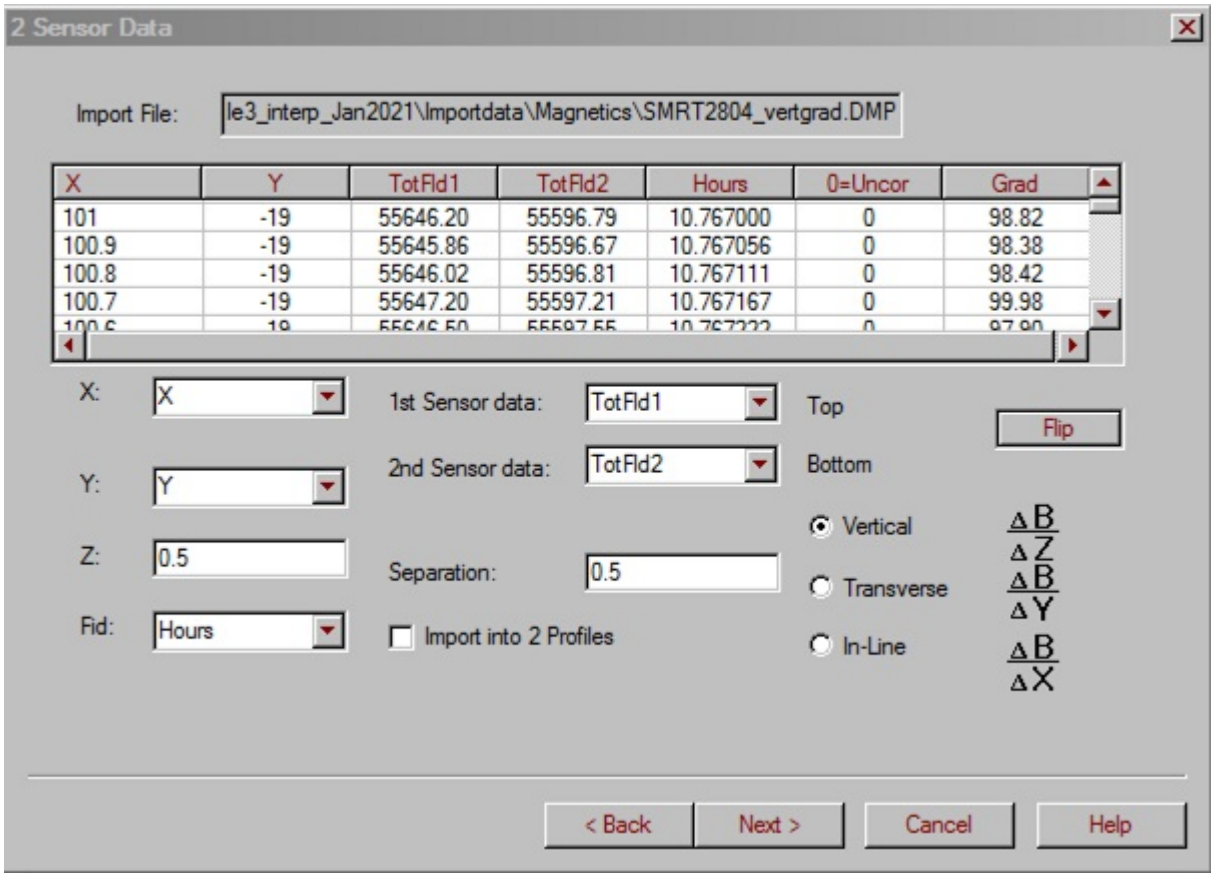


As a rule, EMIGMA recognizes the channels to import; in most cases you only have to confirm these channels by clicking the **Next** button. However, if you are not satisfied with the choice provided by EMIGMA, select other options from the dropdown lists. The **Z** coordinate is 0.5 by default and can be updated manually. If necessary, change it depending on the height of the sensor carrier.

Click **Next** to proceed to the **Profiles and Locations** dialog.

Two Sensor Data

In the **Two Sensor Data** dialog, which appears on selecting the respective option in the **Start** page, the table contains all channels from the input data file and the dropdown lists below offer the choice of channels to be imported. As a rule, EMIGMA recognizes these channels.



In the boxes below the table:

- Specify the separation of the sensors. By default, it is 0.5.
- Specify the position of the sensors relative to the X axis - **Vertical**, **Transverse**, or **In-Line**. The **Vertical** option is selected by default.

  If this position is **Transverse**, you can import each sensor data as a separate profile. In this case, check the **Import into 2 Profiles** box. If

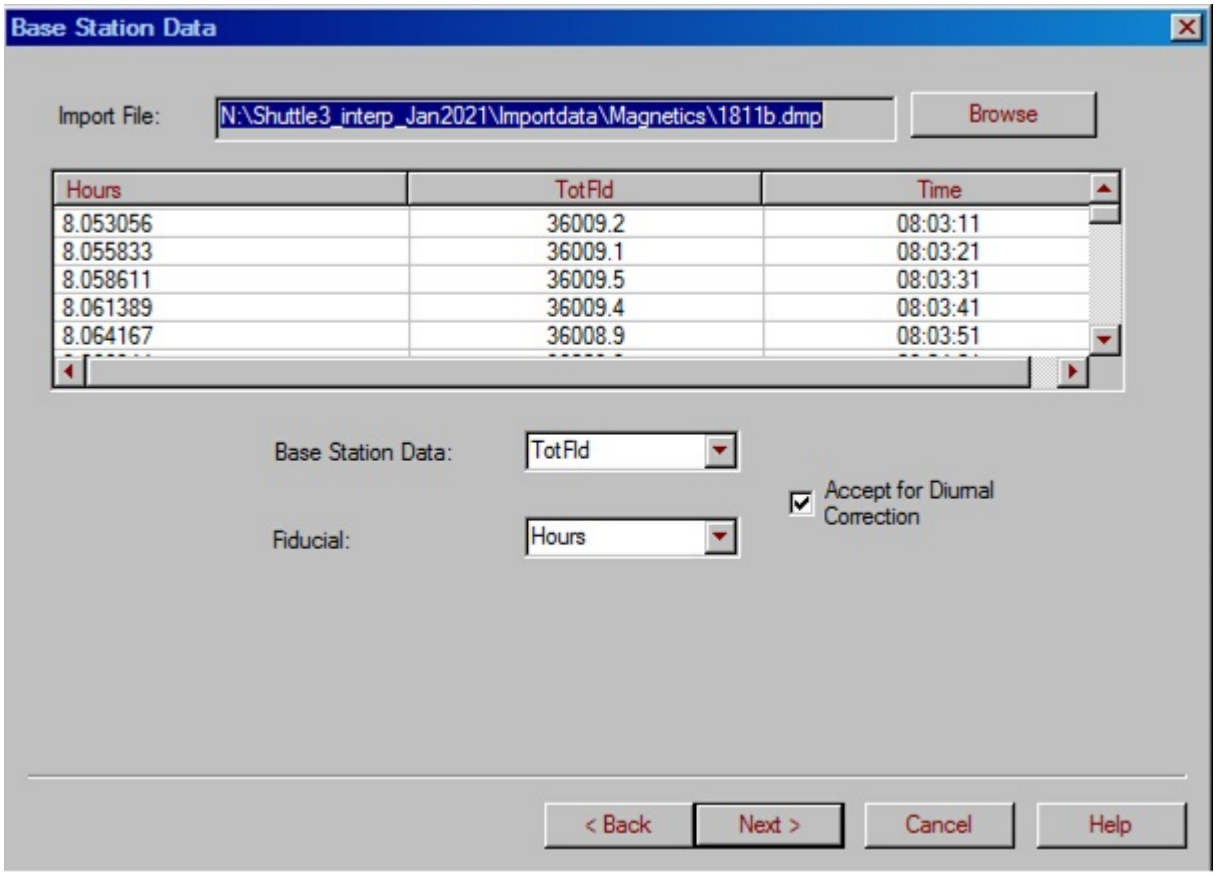
you leave this box unchecked, the X channel of the imported data will contain the X coordinate of the 1st sensor and a new channel - **Gradient** - will appear.

- Click **Flip** to change the position of the sensors relative to each other (Top/Bottom, Left/Right, Front/Back).

- Click **Next** to proceed to the **Profiles and Locations** dialog.

Base Station Data

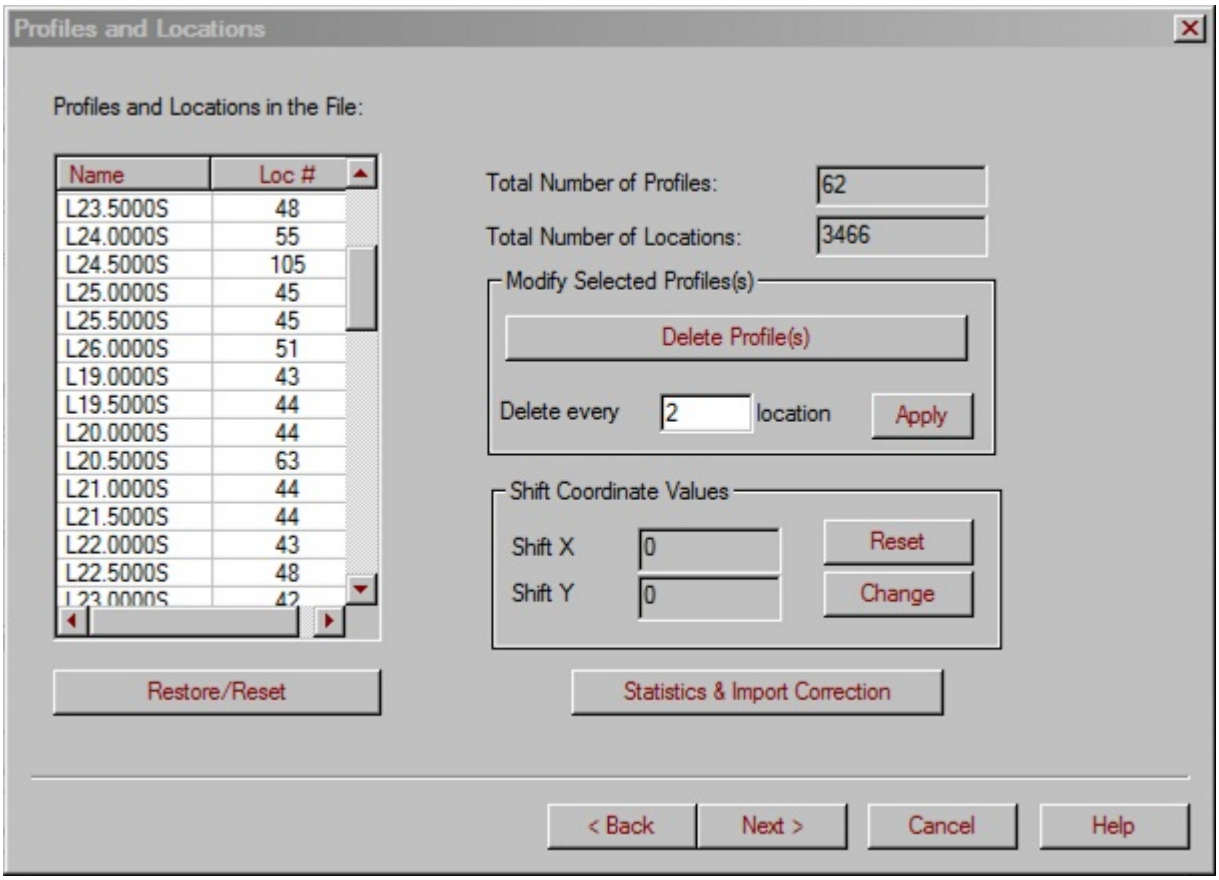
On the **Base Station Data** page, which appears on selecting the respective option on the **Start** page, the table contains the channels from the input data file and the dropdown lists below offer the choice of channels to be imported. As a rule, EMIGMA recognizes these channels:



Click **Next** to proceed to the **Profiles and Locations** page.

Profiles and Locations

On the **Profiles and Locations** page, the table on the left displays all the profiles and the number of locations per profile contained in the file you are importing:



If desired, you can change the number of profiles and/or locations or shift coordinate values. Or, you can correct data if any errors.

To delete a profile:

- Select a required profile in the table and click **Delete Profile(s)** in the **Modify Selected Profile(s)** section of the dialog.
- To restore this profile, click the **Restore/Reset** button below the table.

To modify the number of locations per profile:

- Select a required profile in the table.
- In the **Modify Selected Profile(s)** section, enter the number in the box to specify the step for deleting. By default, it is every second location.
- Click **Apply**.
- To restore the original number of locations, click the **Restore/Reset** button under the table.

To shift coordinates:

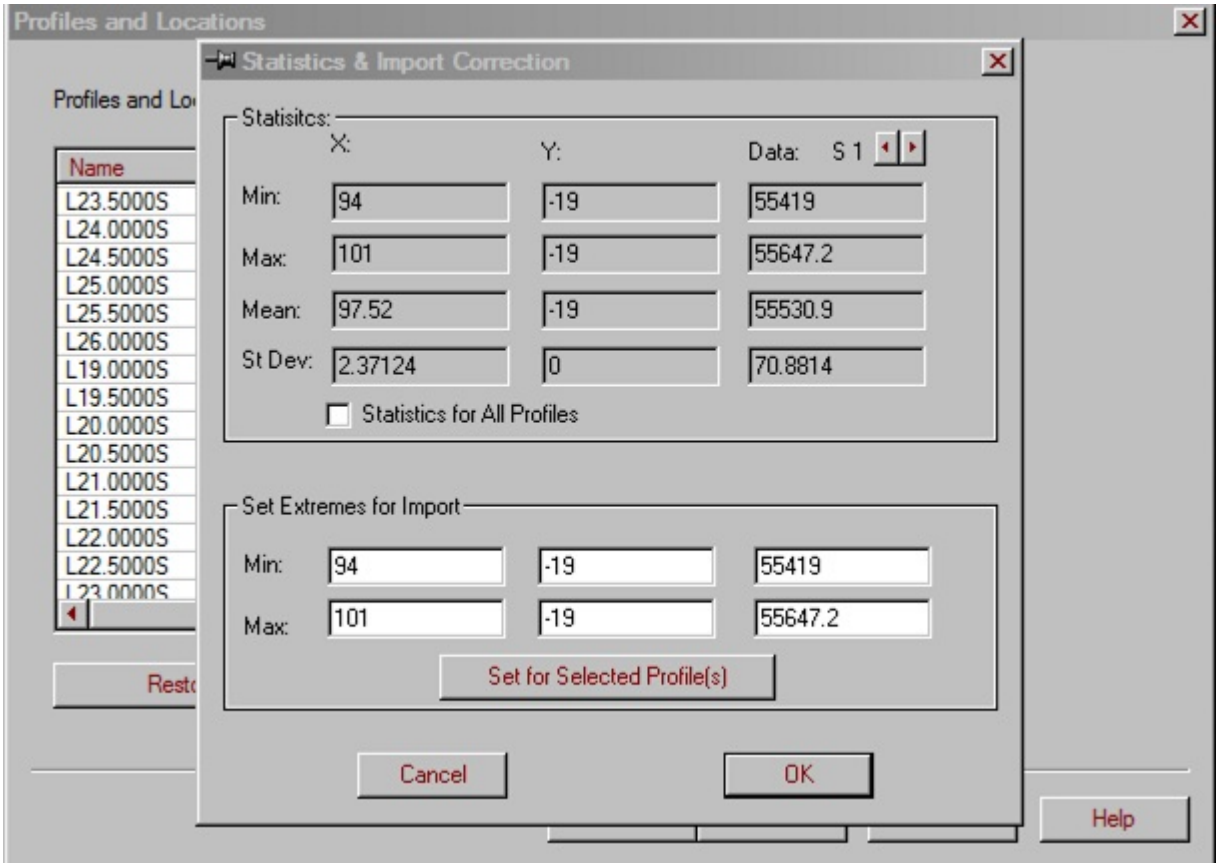
- Click **Change** in the **Shift Coordinate Values** section.
- In the **Shift Values** dialog to appear, specify the shift values for the X and/or Y coordinates and click **OK**.

This functionality is useful when X and Y are too big to provide a required resolution. For example, if you are using UTMs, but require positioning accuracy for data analyses to a fraction of a metre, strip the first 3 digits that are similar in all of the values. This will create a local coordinate system providing a higher positioning accuracy.

- To restore the original coordinate values, click **Reset**.

To view the statistics of a file you are importing or correct erroneous data:

- Click **Statistics & Import Correction** button and its window appears:



- To more easily view the statistics of each profile, move the dialog so that you can simultaneously see the table of the **Profiles and Locations** page.

- Select a profile in the table. The **Statistics** section will show **Min**, **Max**, **Mean**, and **Statistical Deviation** data for the selected profile. To view the statistics for all the profiles, check the **Statistics for All Profiles** box.

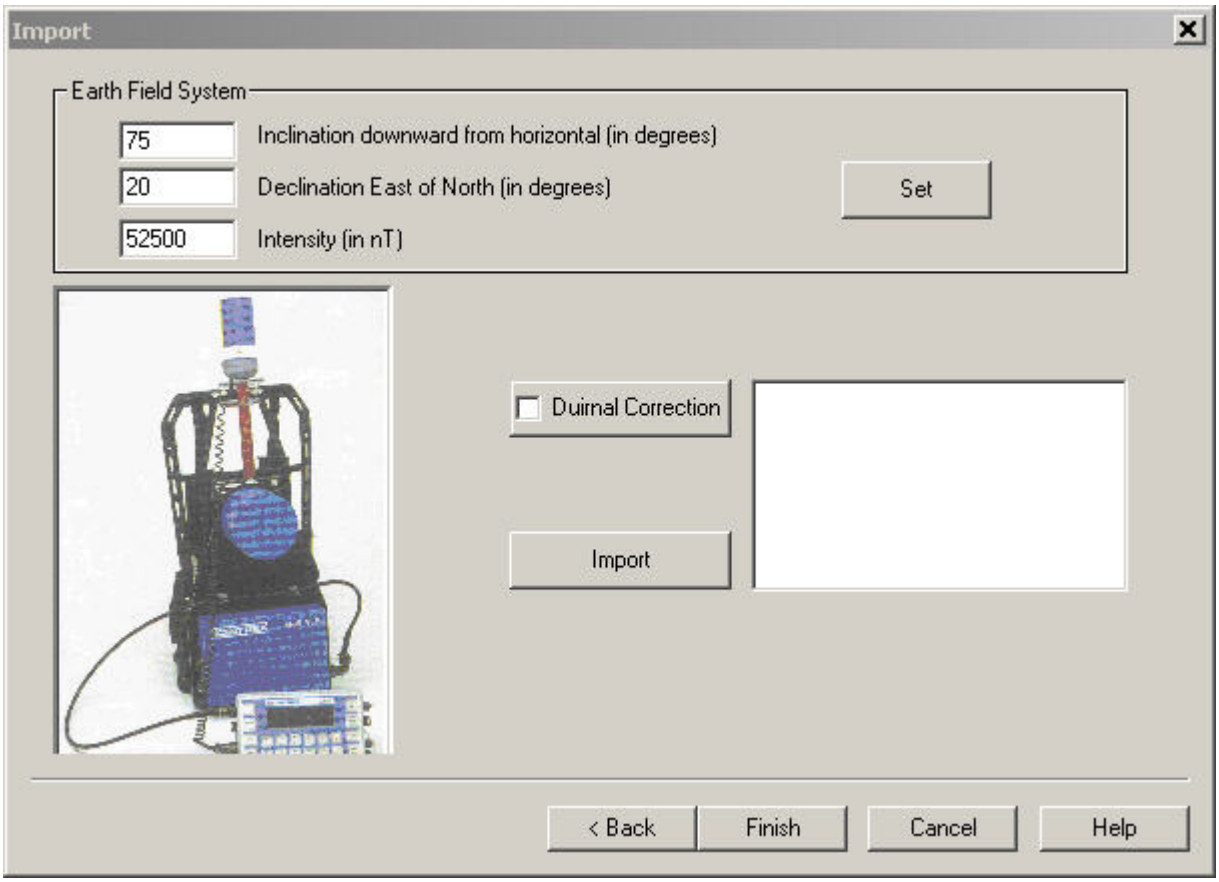
- If you are not satisfied with any of the data, change the **Min** and/or **Max** values in the **Set Extremes for Import** section of the dialog and click **Set for Selected Profile(s)**. The **Loc #** column will reflect the changes you applied.

- Click **OK** to close the **Statistics and Import Correction** dialog.

Back in the **Profiles and Locations** dialog, click **Next** to proceed to the **Import** page of the import wizard.

Importing Data

On the **Import** page, the **Earth Field System** section contains the default values of inclination, declination, and intensity:



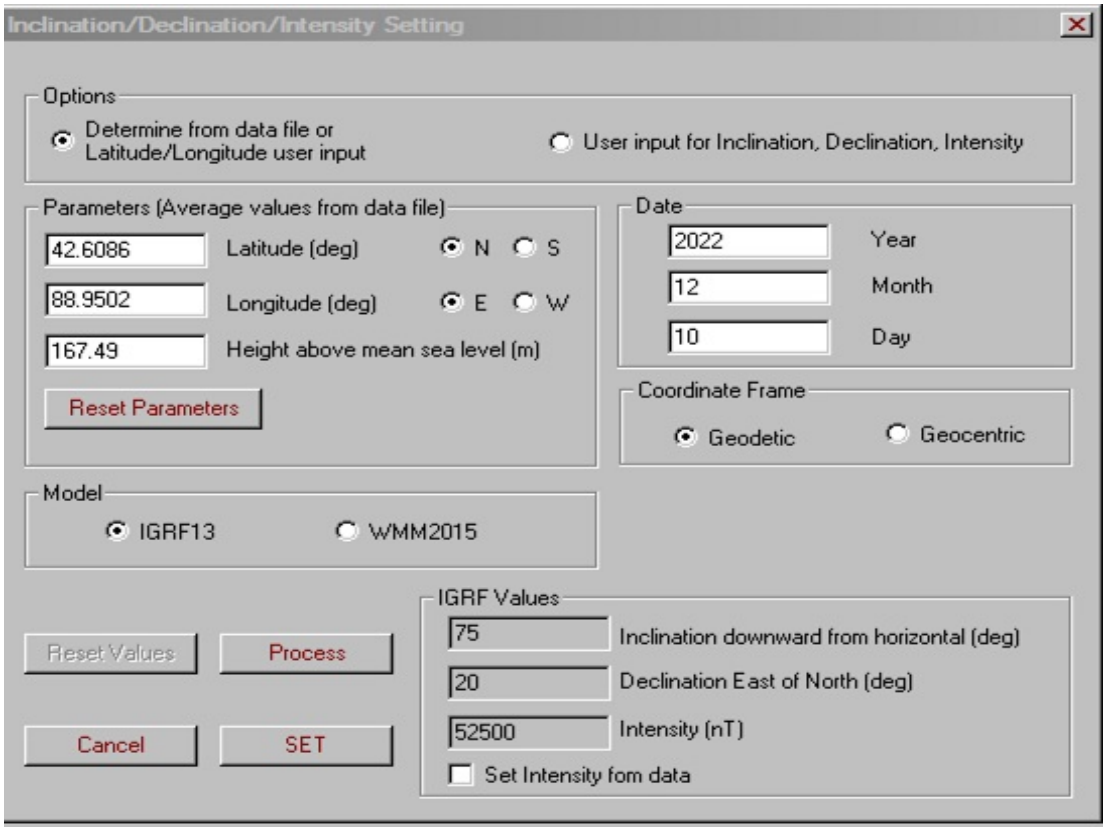
To edit these values:

- Replace them with your own values in the respective boxes

  OR

- Click the **Set** button to compute these parameters from the file you are importing.

In the **Inclination/Declination/Intensity Setting** window that appears:



- Select the **Determine from Data File or Latitude/Longitude User Input** option to activate the **Parameters**, **Date**, and **Coordinate Frame** sections below. The **Parameters** section contains latitude and longitude calculated from the file you are importing. If you are not satisfied with these values, you can change them manually. To restore the initial values, use the **Reset Parameters** button. The **Date** section contains the current date by default.

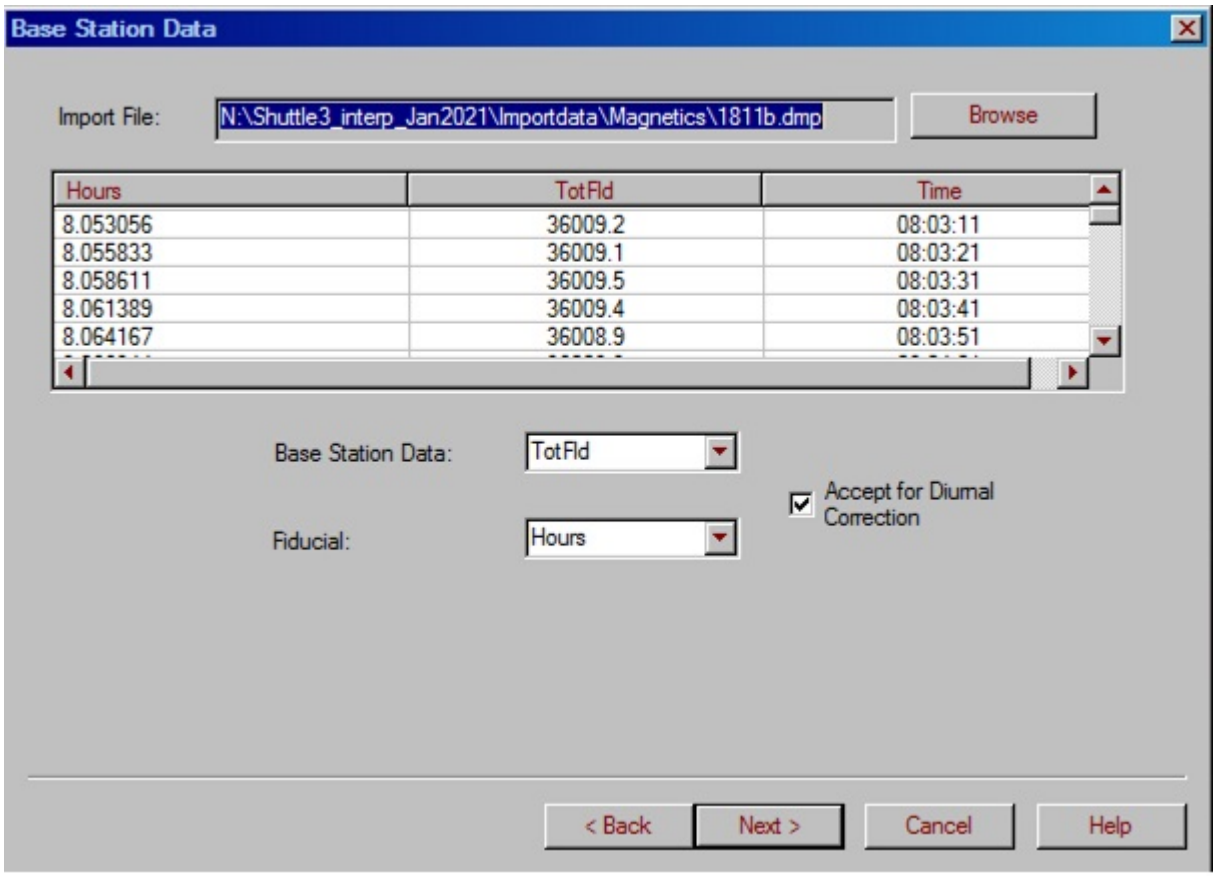
- Select between **Geodetic** and **Geocentric** in the **Coordinate Frame** section.

- Click **Process.** The **IGRF Values** section updates accordingly. The **Intensity** value is average for given inclination and declination; if desired, you can set this value from the file you are importing. For this purpose, check the **Set Intensity from data** box.

- Click **Set** to return to the **Import** page.

To apply a diurnal correction to the data you are importing:

- Check the box on the **Diurnal Correction** button. The **Base Station Data** window opens. Click **Browse** to open a required file containing base station data:



- This activates the table and dropdown lists below and automatically checks the **Accept for Diurnal Correction** box. If satisfied, click **Next** to apply the correction and return to the **Import** page.

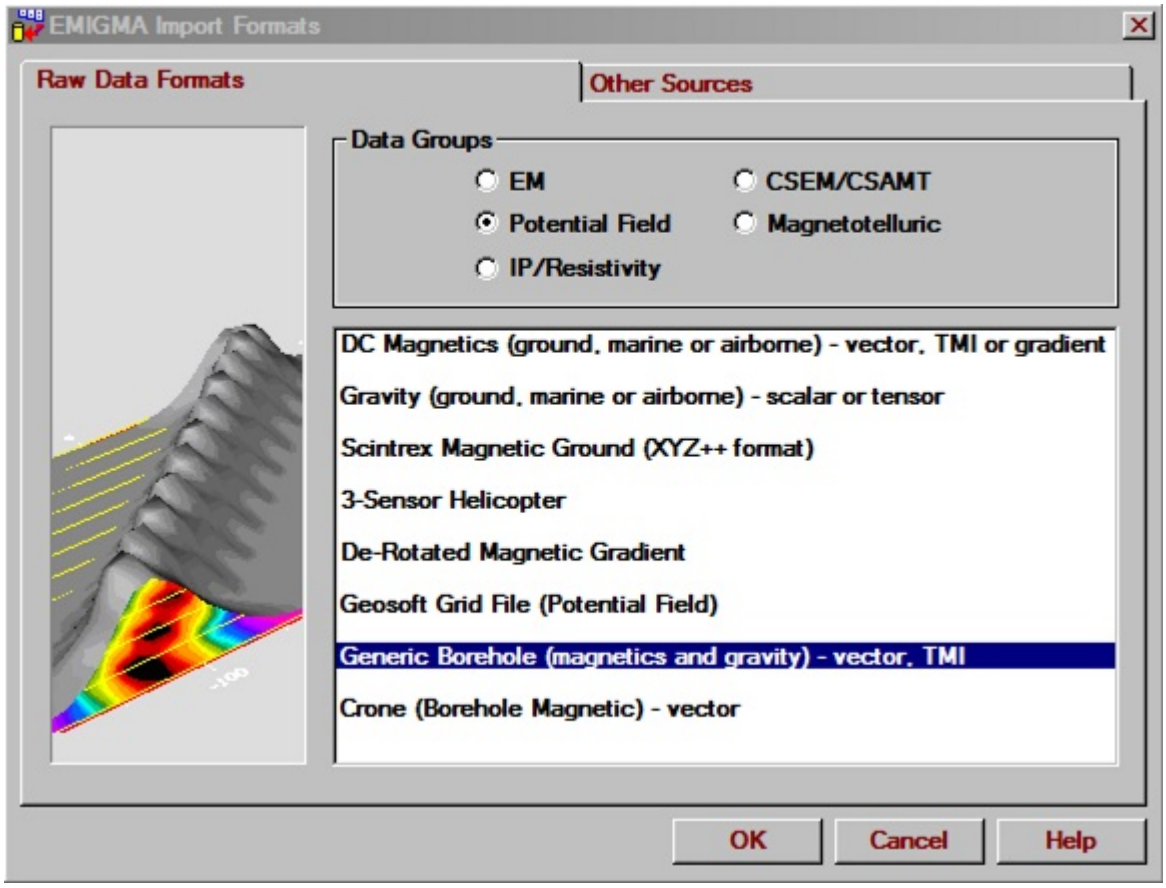
To complete import:

- Click the **Import** button. The field on the right will keep you updated on the import procedure.

- When done, click **Finish** at the bottom of the page.

***Note**. Your newly imported survey will contain two data sets - measured and corrected.*

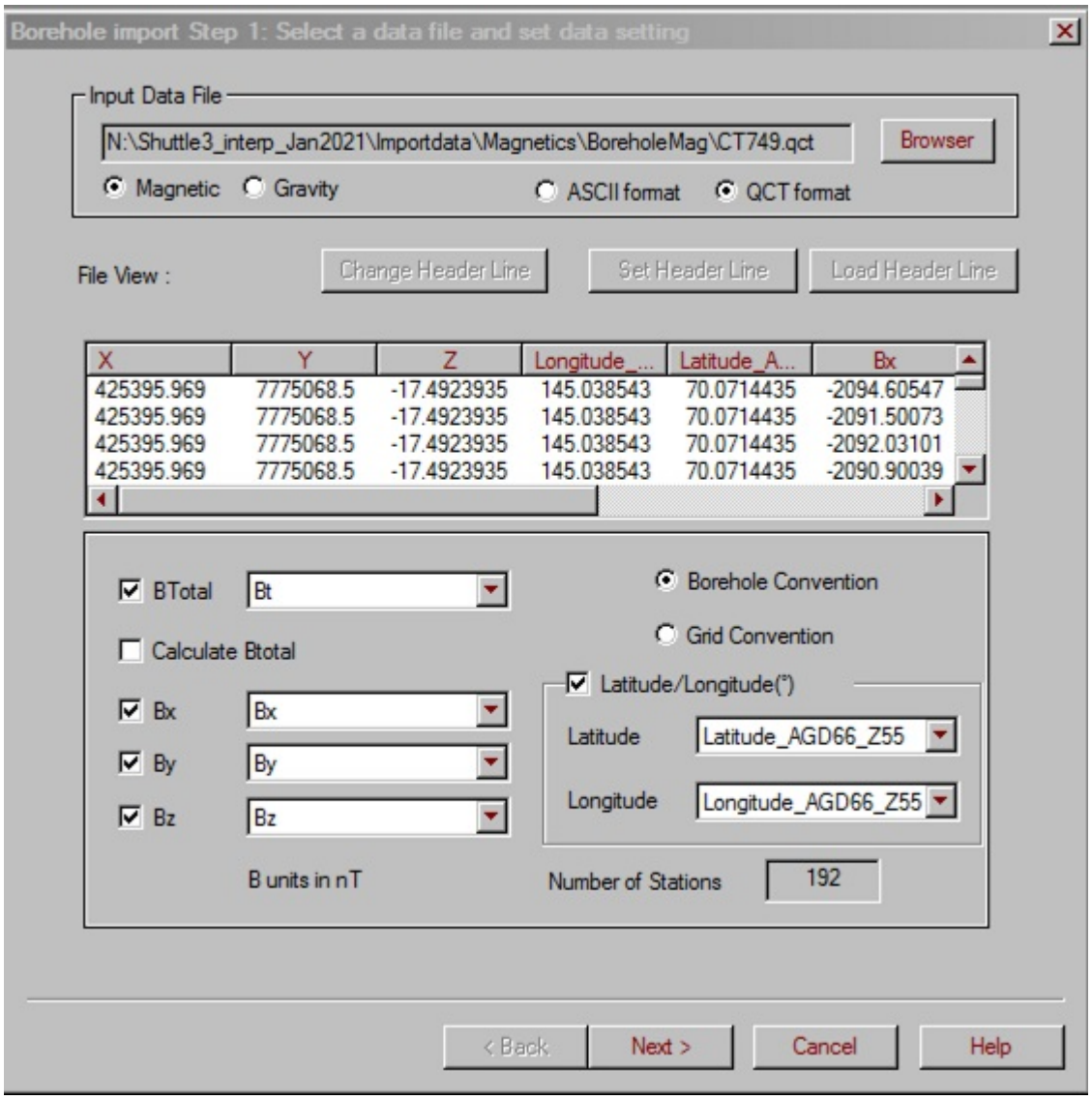
Borehole Import Wizard



Step 1. Inputs.

Selecting **Generic Borehole (Magnetic and Gravity)** from the **Potential Field** list under the **Raw Data** tab of the **Import** dialog launches the **Borehole Import** wizard.

The following page appears:



- Click **Browser** to locate the file. You may import files with extensions txt, xyz or csv with columns separated by tabs, spaces or commas. The

filename appears in the **Input Data File** field.
- But, again we recommend first importing your data to QCTool. There it can be edited as required and the .qct format used for import to EMIGMA.
- Specify whether this is gravity or magnetic data by making the appropriate selection

If the Ascii file to import has no header line, a message appears asking you to select a line in the file and click the **Set Header Line** button.

- See Set a Header Line for instructions on how to use the interface launched by the **Set Header Line** button.
- To load a header line from a file, click **Load Header Line** and browse for a *.hdr file in the **Header Line** dialog to appear.
  The format of the one line *.hdr file is:
  // HEADER1 HEADER2 HEADER3

If the file to import already contains a header line, the latter is selected for you in the **File View** field below. When a header has been selected, the other text lines in the file are hidden. You can always edit this header line or import a new one from another file as described above.

***Note**. The **File View** field contains the first 25 lines of data from the file to import.*

choose a different line in the file to be the header

- Click **Change Header Line** if a header has already been selected and any hidden lines in the file will be displayed.
- Click the line in the file that you would like to be the new header.
- You will be asked if you want to change the header selection.Click yes and the line you selected will be displayed as the header.

The wizard will attempt to detect the depth and data channels from the file. If it cannot, you will have to use the dropdown lists to select the channel to be imported as Depth as well as which data channels are to be imported from the file.

For magnetic data, you will be able to import BTotal or a combination of Bx, By and Bz assumed to be in nTesla. If in picoTesla, you may modify the units in the database. For gravity data, you can only import Gz.

Specify whether the depth in the file is measured in metres or feet. Feet will be converted to metres for use in EMIGMA.

The number of stations contained in the file is displayed at the bottom of the page.

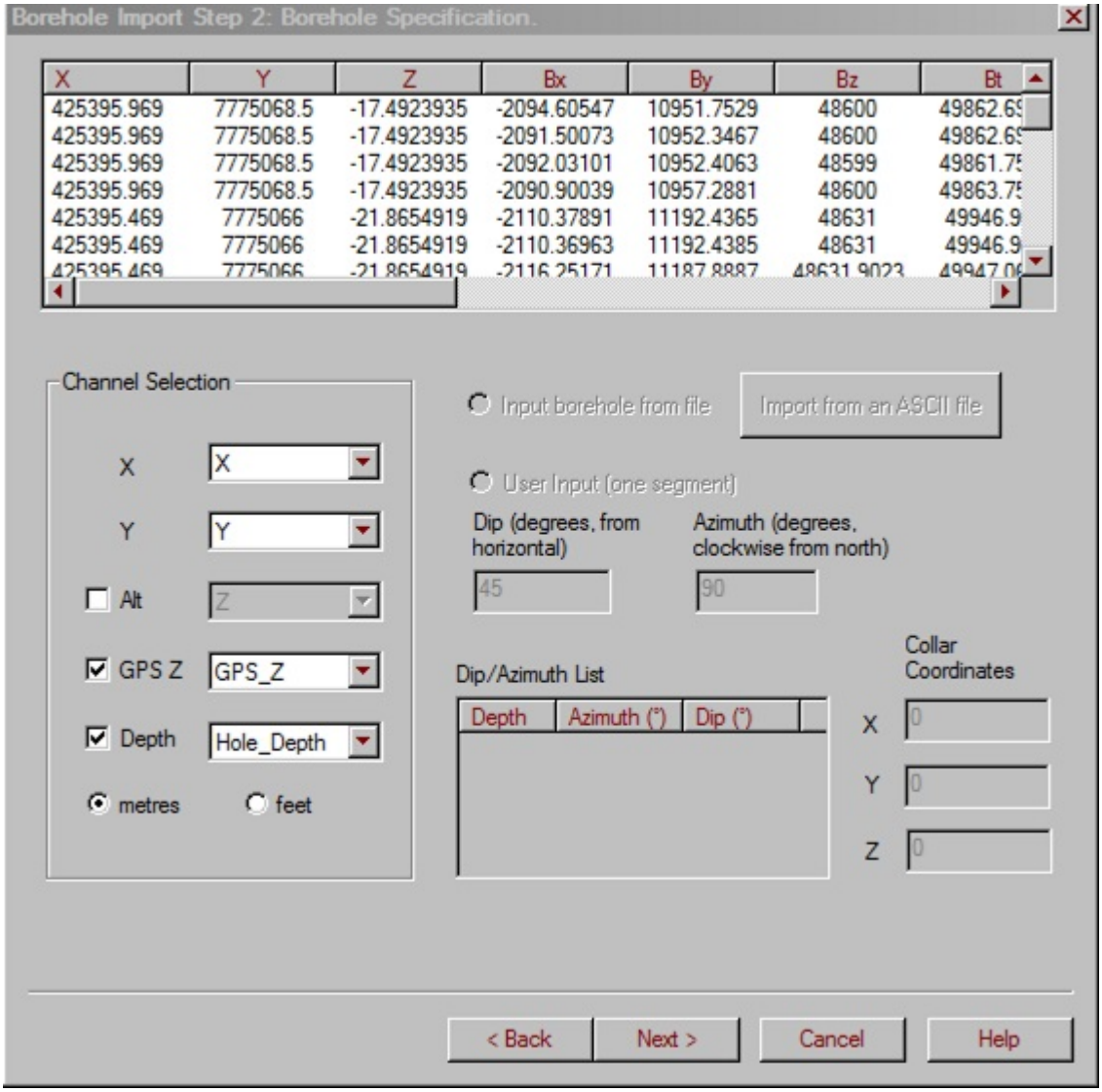
Co-ordinate Conventions

Your data may be organized in standard borehole convention. That is the data is organized by depth and components are Z-axial, X-horizontal and perpendicular to the borehole and Y orthogonal to X and Y. Or you may organize your data in Grid Convention where the components are Z down, X and Y horizontal and their locations are given by x,y and z.

Step 2. Borehole Specification.

There are two different procedures in In Step 2 of the Borehole Import depending on whether you chose Grid or Borehole convention for the organization of your data.

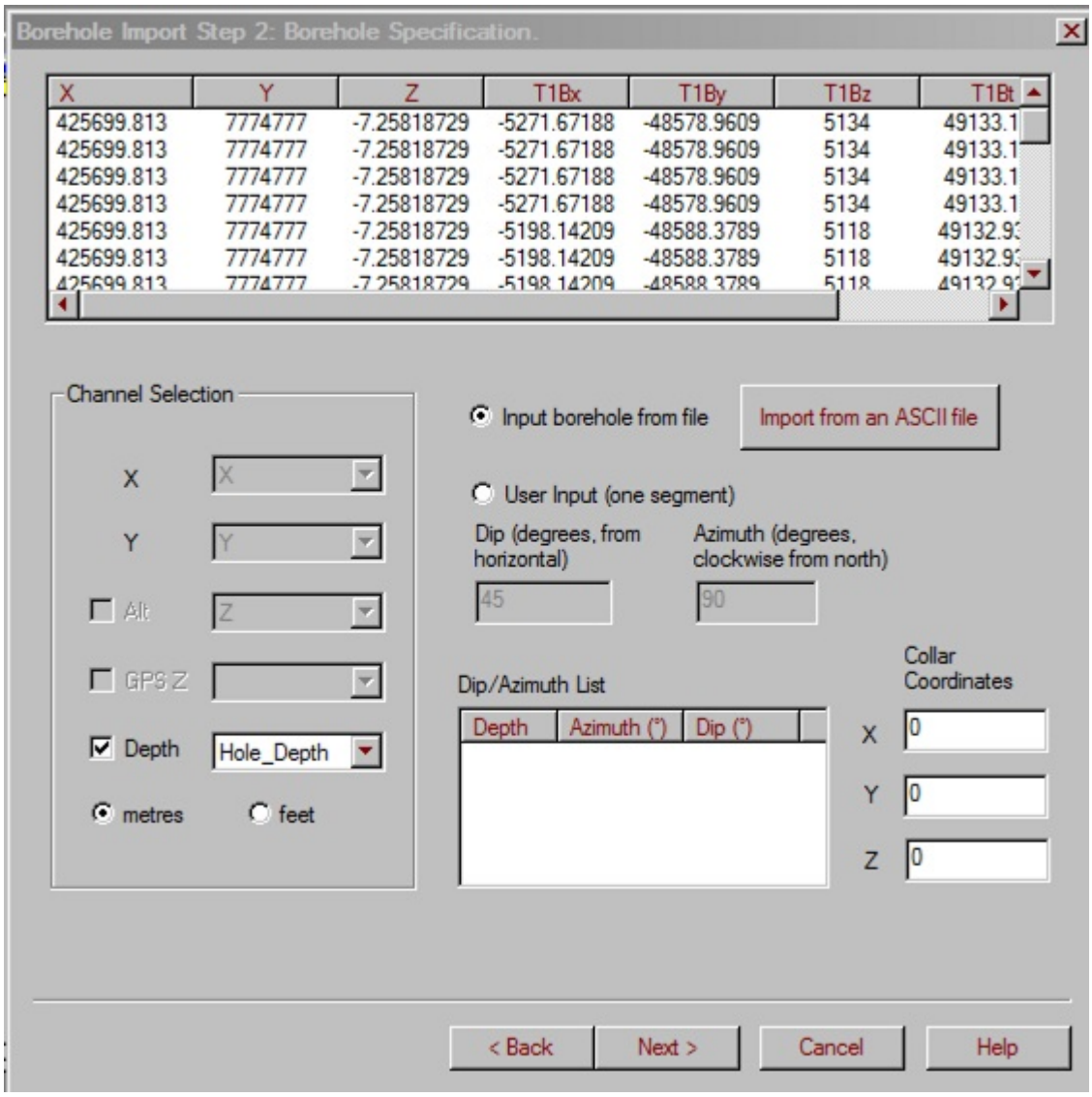
If **Grid** convention was chosen, the following interface appears:



In this case, you will be asked for the specific locations (x,y,z) of your data stations. For elevation, you may either chose GPS_Z or altitude depending upon where you wish to analyze with respect to depth below ground or

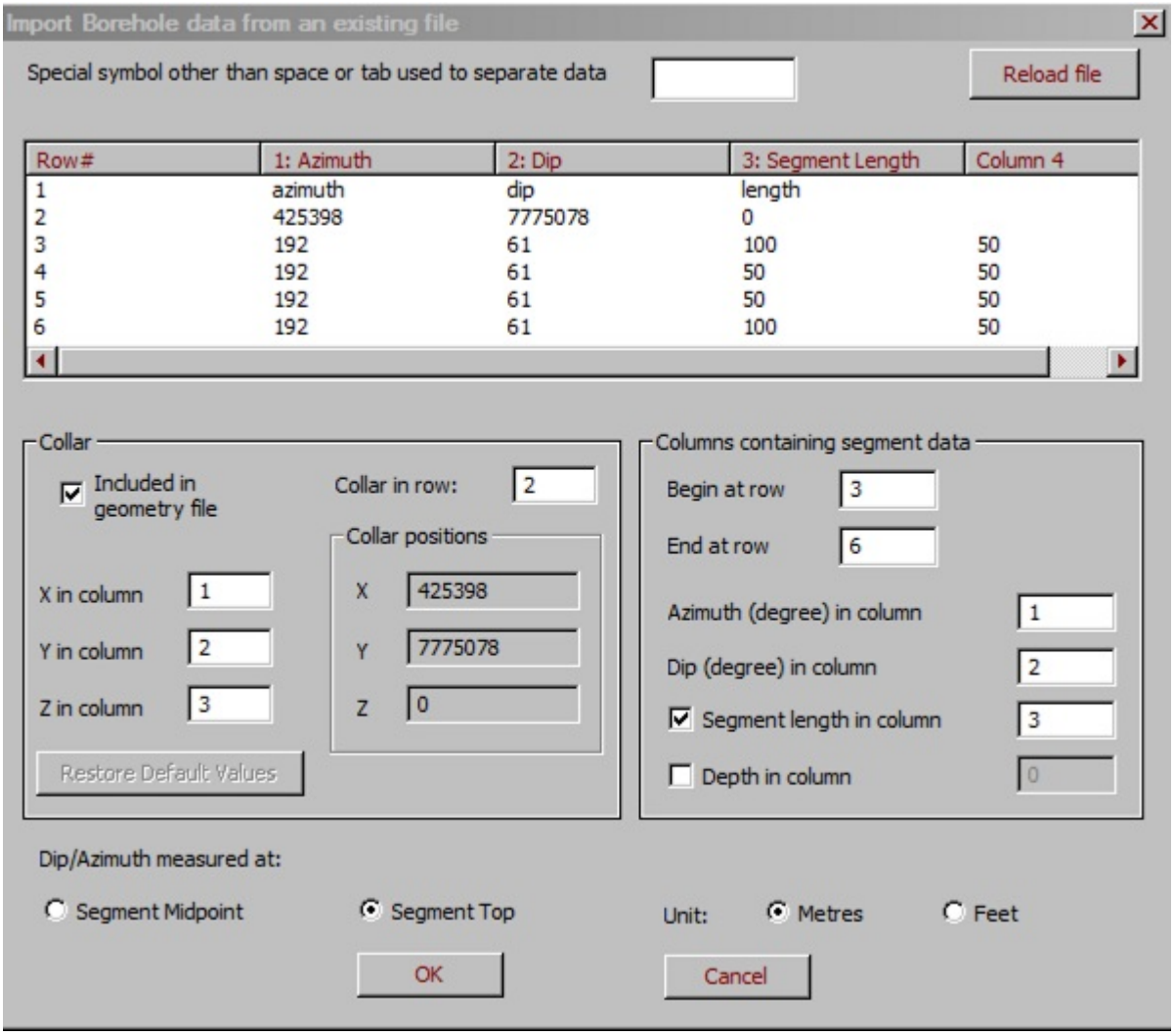
depth below sea level. If you also have the depth down the hole of the stations, this can be selected and is used as the Station label or FID in the database.

If you chose borehole geometry you can either enter each dip/azimuth entry manually or load the information from a file.
In the case, of the borehole convention, the following interface appears:



If specifying manually, you may only create one borehole segment. Click User Input and specify Dip and Azimuth in degrees.

To load geometry information from a file, click **Import from an ASCII file** and the following interface appears:



- If in the file you are importing, a symbol other than a space or tab is used to separate data, specify this symbol in the upper box and click **Reload File.** The table below will show the data you are about to import

In the **Collar** section of the dialog:

- If the file contains collar information, leave checked the **Included in File** box (it is checked by default) and specify the row and columns containing this information

- If the file does not contain collar information, de-select the **Included in File** box and specify the collar position in the respective section

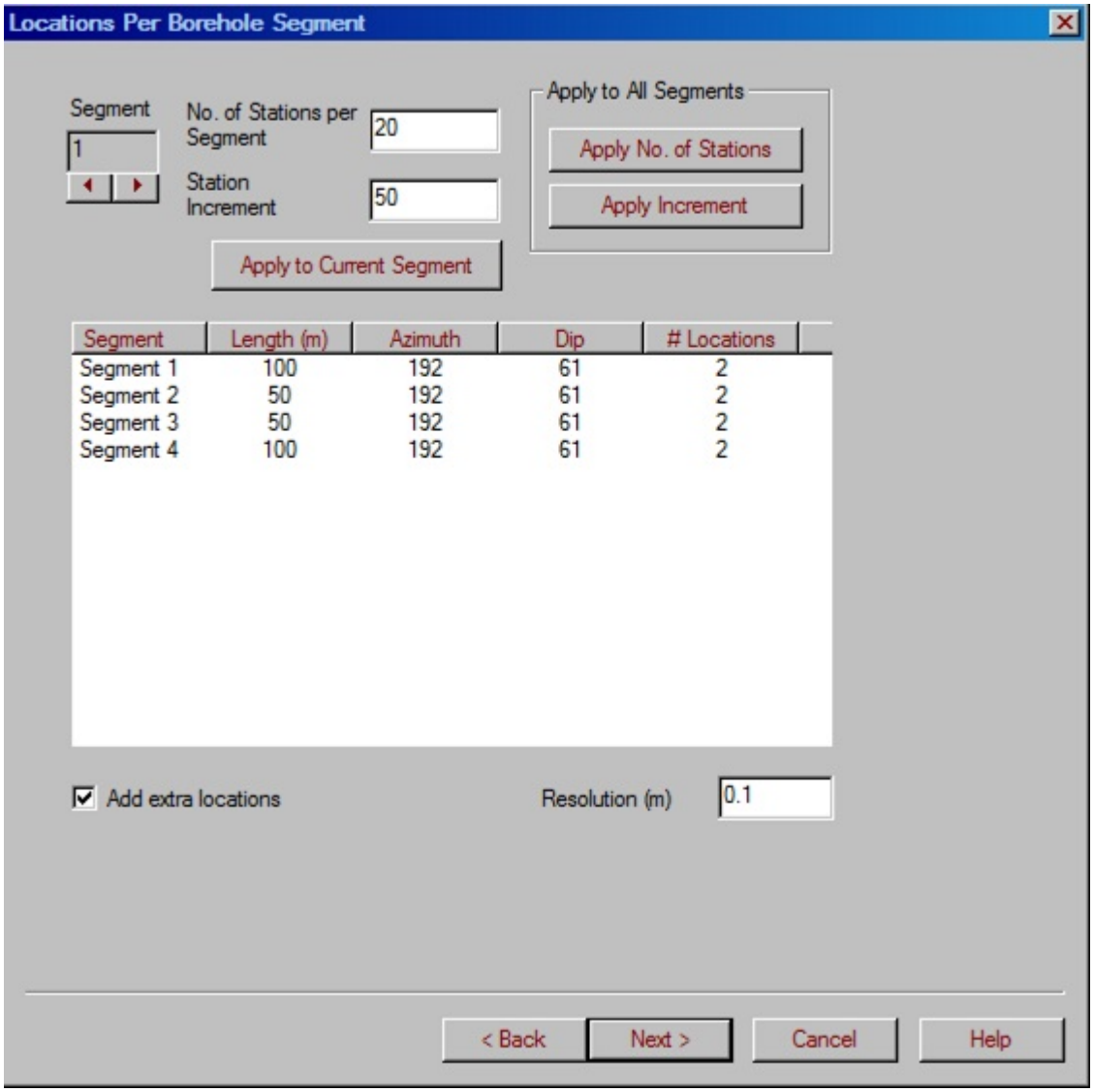
In the **Columns containing azimuth, dip and segment length data** section:

- In the boxes labelled **Begin at row** and **End at row**, enter the line numbers where the dip/azimuth data starts and ends in the file.
- Specify the columns containing azimuth and dip information
- Select between depth and segment length - two ways of determining location coordinates in a borehole. Depth is the topmost point of a segment.
- When depth is selected, you may also select whether the Dip/Azimuth was measured at the **Segment Midpoint** or the **Segment Top**. If you select **Segment Top**, the average dip and azimuth are calculated using the values at the segment ends. Otherwise, the dip and azimuth values in the file are taken to be already average values.
- Specify the units (metres or feet) at the bottom of the dialog, and
- Click **OK**.

The information loaded from the file will appear on the step 2 wizard page for editing, if needed.

Step 3. Borehole Segment Sampling.

This page will determine the profile locations that will be defined regardless of whether there are any associated data values. You will be allowed to include extra stations for the purpose of analyses if desired. This is useful at the top and bottom of the hole and in sections of the borehole which were not sampled sufficienty.



To change the sampling of a segment:

- Select a segment in the table or from the **Segment** box using the scroll arrows
- Specify the number of stations per segment in its box and click **Apply to Current Segment**. The segment data in the table will change accordingly as well as the step in the **Station Increment** box

  You can also choose to edit the station increment, which will lead to an update in the number of stations per segment and the table data.

To change sampling of all segments:

- Specify the number of stations per segment in the respective box and click **Apply No. of Stations** in the **Apply to All Segments** section

  OR

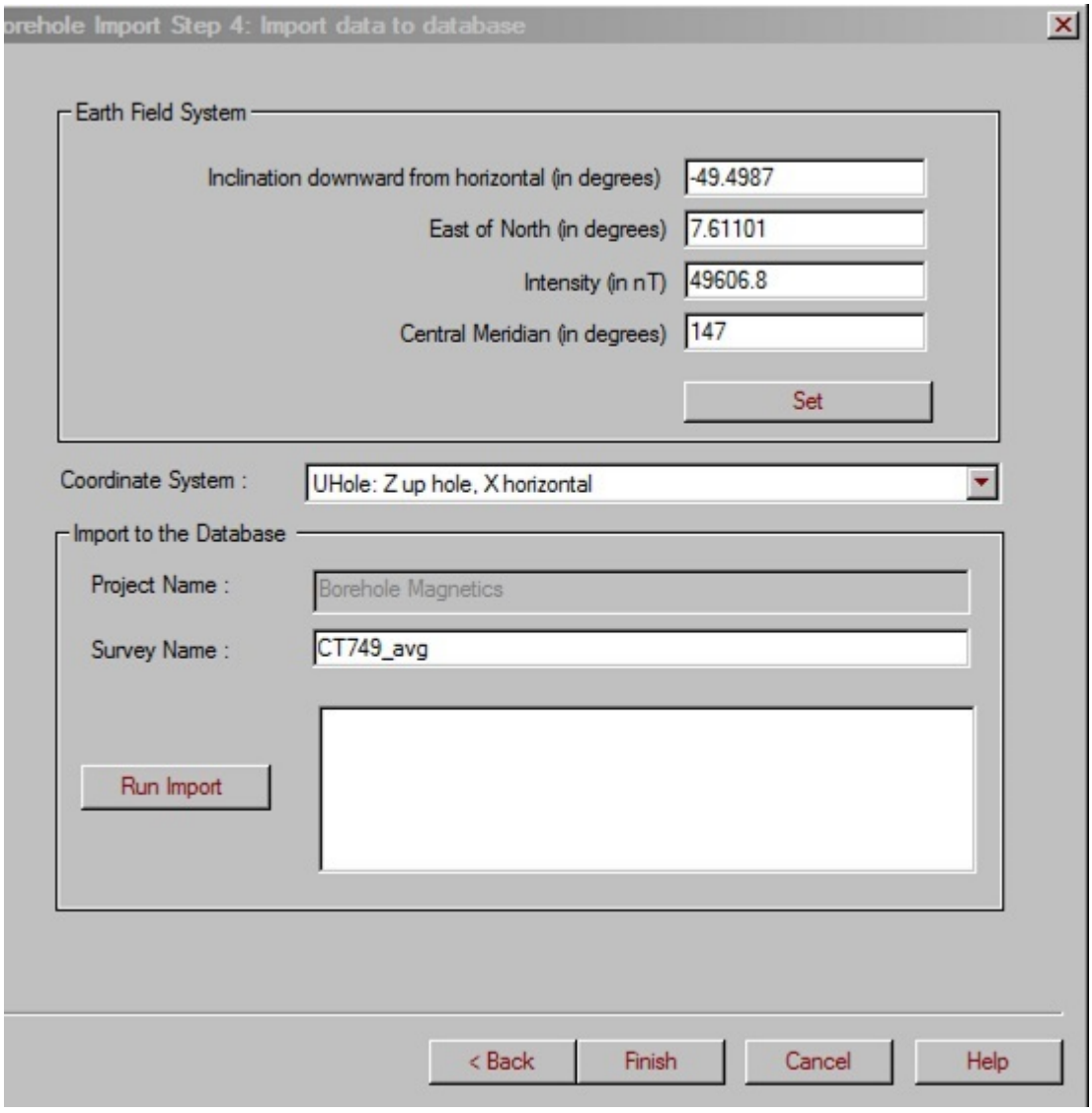
- Specify the station increment in the respective box and click **Apply Increment** in the **Apply to All Segments** section

  As a result all segments will have the same number of locations and step

The value labelled **Resolution** is used to determine whether imported data should be given new locations or a nearby sample points. If the distance from a data point to a sample point is greater than the resolution, a new location will be created. Otherwise, the nearest sample point will be used.

Step 4. Earth Field System. Run and File Output.

In Step 4 of the Borehole Import Wizard, you have to specify the earth field system and import the file if you are importing magnetic data.:



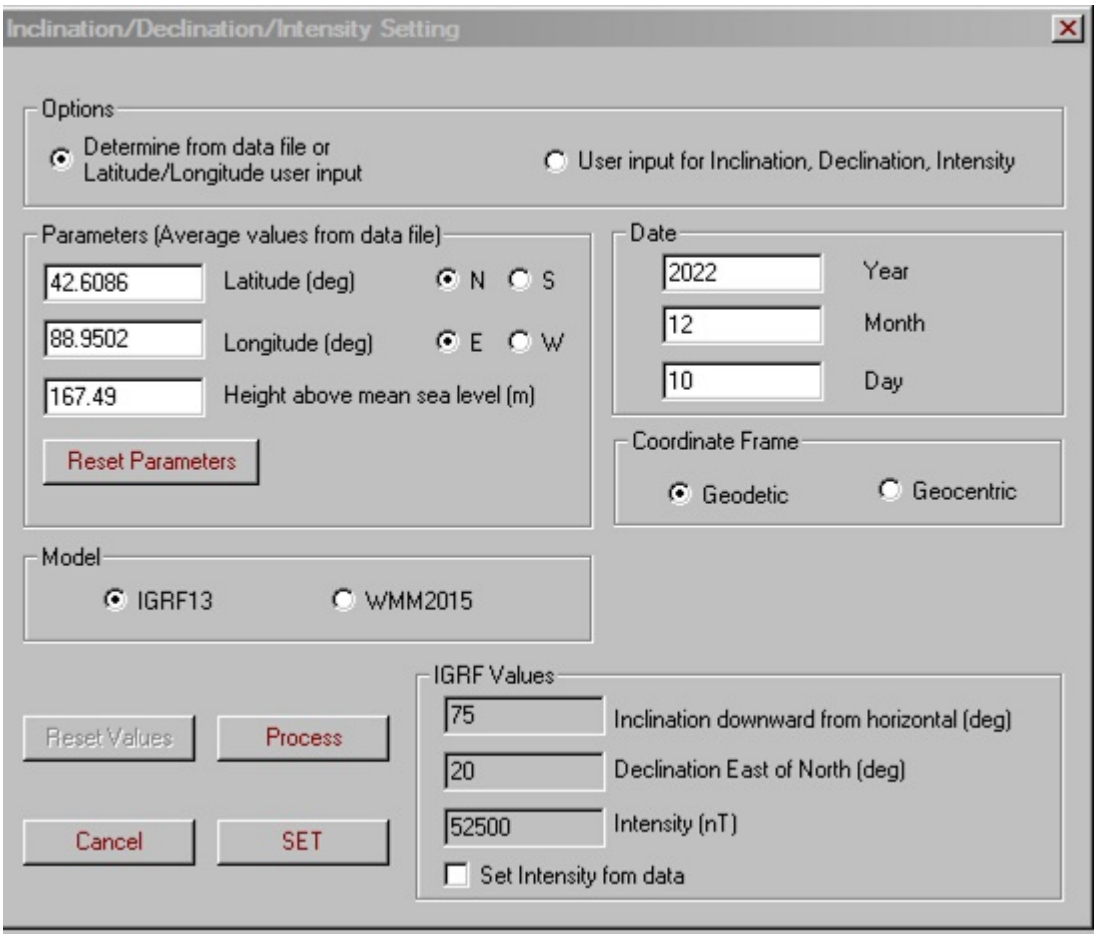
In the **Earth Field System** section:

- Specify the inclination, declination, and intensity in the respective fields

OR

- Click the **Set** button to compute these parameters from the file being imported. If you know, you can specify the central meridian to include it in the computations.

In the **Inclination/Declination/Intensity Setting** dialog that appears:



- Select the **Determine from Data File or Latitude/Longitude User Input** option to activate the **Parameters**, **Date**, and **Coordinate Frame** sections below. The **Parameters** section contains latitude and longitude calculated from the file you are importing. If you are not satisfied with these values, you can change them manually. To return the initial values, use the **Reset Parameters** button. The **Date** section contains the current date.

- Select between **Geodetic** and **Geocentric** in the **Coordinate Frame** section.

- Click **Process.** The **IGRF Values** section updates accordingly. The **Intensity** value is average for given inclination and declination; if desired, you can set this value from the file you are importing. For this purpose, check the **Set Intensity from data** box.

- Click **Set** to return to Step 2 of the import wizard.

Select the coordinate system from the respective dropdown list in the middle of the dialog. Horizontal is selected by default for magnetic data. Absolute will be selected for gravity data.

In the **Import to the Database** section:

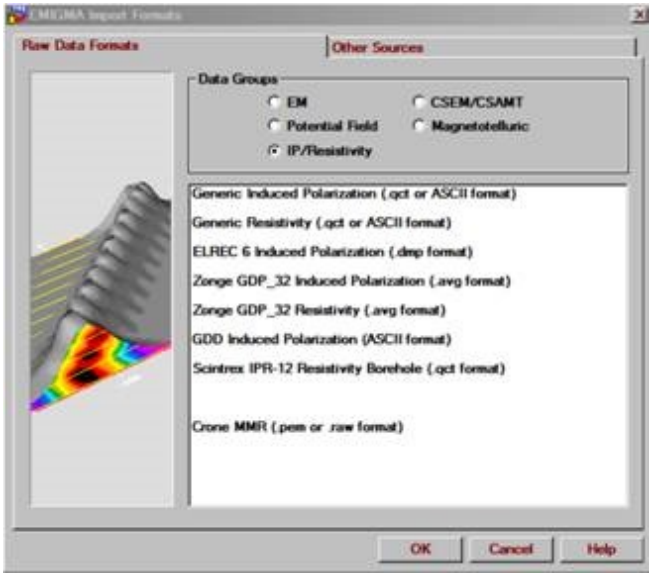
- The **Project Name** and **Survey Name** fields show the project and survey into which you are importing your data.

- Click **Run Import**. The box to the right will keep you updated during the import procedure.

When the import is completed, click **Finish** at the bottom of the Step 4 page. This takes you back to the main **Database** interface.

IP/Resistivity Import

Selecting **IP/Resistivity** under the **Raw Data Formats** tab of the **Import** window displays the various kinds of IP Import available in EMIGMA:



These are **Generic IP**, **ELREC6**, **Zonge GDP_32**, GDD IP, Scintrex IPR-12 Borehole and Crone MMR. QCTOOL can import raw files from **Scintrex-IPR12**, **Zonge**, **GDD**, **IRIS** as well as generic IP and Resistivity files.

Once imported, analyzed and corrected, the .qct files can be imported to EMIGMA through the Generic Resistivity or Induced Polarization formats.

***Note on IRIS IP data: The manufacturer provides software to place the data into a generic form which may imported directly to* EMIGMA *but also to* QCTool.**

(**Generic Resistivity** launches the **Generic IP** Import utility with **Resistivity Only** selected).

The **Generic IP** format looks as follows:

```
PROJECT: WINDOWS:10 MODE:S VALUE:R TIME:2000
LINE:1N  ARRAY:DPDP  DIPOLE:100  UNITS:M T=240,160,160,160,160,160,160,160,160,160,160
      T1X       T2X       R1X       R2X        Vp         I        Sp    IP0    IP1    IP2    IP3
  -100.00      0.00   -300.00   -200.00  1346.624     0.900       235   9.85   7.77   6.41   5.49
  -100.00      0.00   -400.00   -300.00   191.878     0.900       -44   9.24   7.25   5.74   5.03
  -100.00      0.00   -500.00   -400.00    38.31      0.900        30    7.4      6   2.94   3.61
  -100.00      0.00   -600.00   -500.00     7.962     0.900        -5  10.36   7.71    .38   2.81
  -100.00      0.00   -700.00   -600.00     4.245     0.900       -14  15.11  10.03  -3.77    .94
```

The **ELREC6** format looks as follows:

```
#673        May  3  1999          10:02
     dipole 1  trigger 1  domain Time  T wave
     Programmable wind.  Grad. RCTGL array

     V=   25.642 Sp=    1  I= 5500.00 Rs=  1.25
     Ro=     65.1 Ohm.m    M=    8.61 E=  0.0
     M1= 25.79  M2= 22.70  M3= 20.43  M4= 18.77
     M5= 14.33  M6= 11.03  M7=  8.86  M8=  7.20
     M9=  5.52  M10=  4.52

     cycl=   5 Time= 4000  V_D= 2620  M_D=   60
     T_M1=  60  T_M2=  60  T_M3=  60  T_M4=  60
     T_M5= 360  T_M6= 360  T_M7= 360  T_M8= 720
     T_M9= 720  T_M10= 720

     Spacing config. :  Metric
       XP=-1800.0  li.P= -400.0
        D=   25.0    XA=-1000.0
       XB=-2000.0  l.AB= -500.0
```

Selection made, click **OK**.

Related Topics

Generic IP/Resistivity

GDD IP/Resistivity

ELREC6 Import

Zonge IP/Resistivity Time Domain

Zonge IP/Resistivity Frequency Domain

Scintrex IPR-12 Borehole

Crone MMR

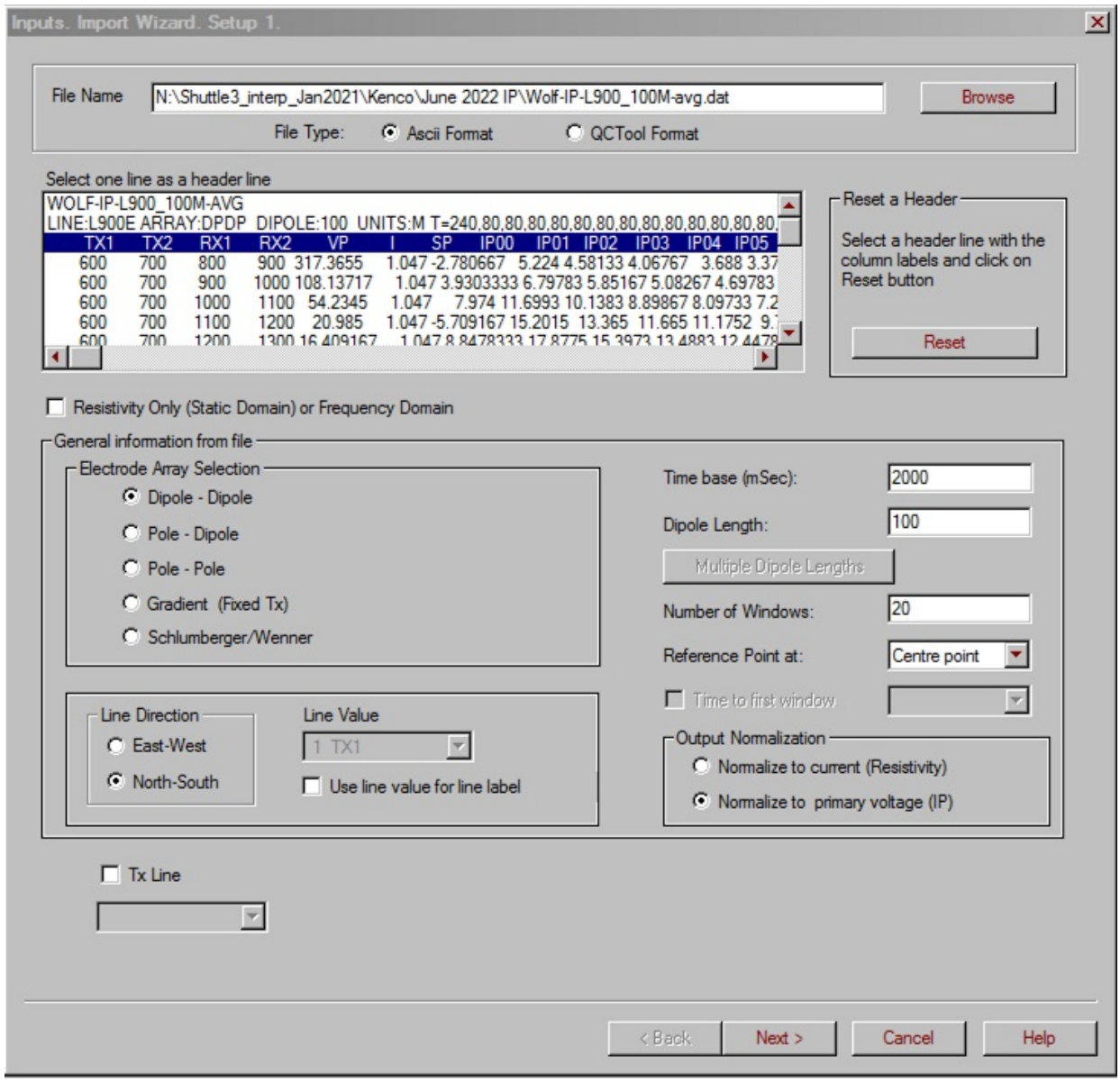
Generic IP Import. Step 1. Inputs.

In the first step of the Generic IP import wizard: An example of the expected format is shown below.

Vp can be in volts or mvolts. Current in amps or mamps. Times are given as first the delay to start of first channel and then the subsequent widths of the channels in seconds or milliseconds

---

```
Project 999-IP-L1111-100m
LINE:L1111E ARRAY:DPDP DIPOLE:100 UNITS:M
T=240,80,80,80,80,80,80,80,80,80,80
Tx1 Tx2 Rx1 Rx2 Vp I Sp Ip00 Ip01 Ip02 Ip03 Ip04
Ip05 Ip06 Ip07 Ip08 Ip09
450 550 250 350 303.706 1.592 -16.44333 5.8867
4.50067 4.038 3.627 3.29133 3.03333 2.802 2.596
2.43933 2.26633
550 650 350 450 329.1235 1.588 -3.1835 6.4745 5.744
5.1455 4.6955 4.3185 3.93 3.701 3.427 3.173 3.0035
650 750 450 550 258.43 1.2116667 -7.556667 4.34633
3.785 3.39033 3.08267 2.819 2.588 2.38133 2.221
2.134 1.95633
```



- Specify the **File Type**. Options available are QCTool or Ascii formats.
- Click **Browse** to open the file containing the data to import. The name of the file appears in the respective field at the top, whereas all the fields and boxes on this window are automatically filled, if possible, with information from the file to import.
- In the file view field, the file to import appears in text format. The ascii files have data preceded by a number of descriptive lines, with a header line selected.

- To edit any of the header labels in an ascii file in the selected header line, click **Reset** in the **Reset a Header** section to the right. In the window to appear, change the header labels of the columns as desired (see Reset a Header).

- If required, edit any of the settings in the **General Information** section which is filled automatically based on the data from the initial file. Just replace values in the boxes, or choose new options from the dropdown lists.
- Select the style of the electrode array.
- Some files may allow you to click the **Multiple Dipole Lengths** so you may select which dipole lengths you would like to import

- Check the respective box in the **Line Direction** section.

- Check the **Resistivity Only (Static Domain) or Frequency Domain** box if you are not importing time domain data.
- Time base is 25% of the period of the cycle
- The number of windows detected is shown. If not the correct number of windows then there is something wrong with the header.
- IP/Resistivity surveys consist of a number of voltage measurements with regard to 4 electrodes, 2 TX and 2RX. In EMIGMA, the data may be analyzed and interpreted when each data is referenced to the standard Centre Point location but also with regard to the TX location of the RX location. The TX location will be the TX electrode closest to a RX electrode and similarly for RX location. We find interpreting with the data referenced at the TX to be quicker and more straightforward.
- Most people interpret IP data such that the offtime data is normalized by the ontime data. The on time data is your resistivity data. One may choose to interpret your data with all the voltages (ON and OFF) normalized to the current or the standard method.
  There are instances where the normalization to current helps reveal important information about the ground structure.
- If you have used the QCTool Generic Ascii import to create the .qct file, then this file has slightly more information to load directly to the import interface.

- Click **Next** to proceed to step 2 of the Generic IP import wizard.

Next

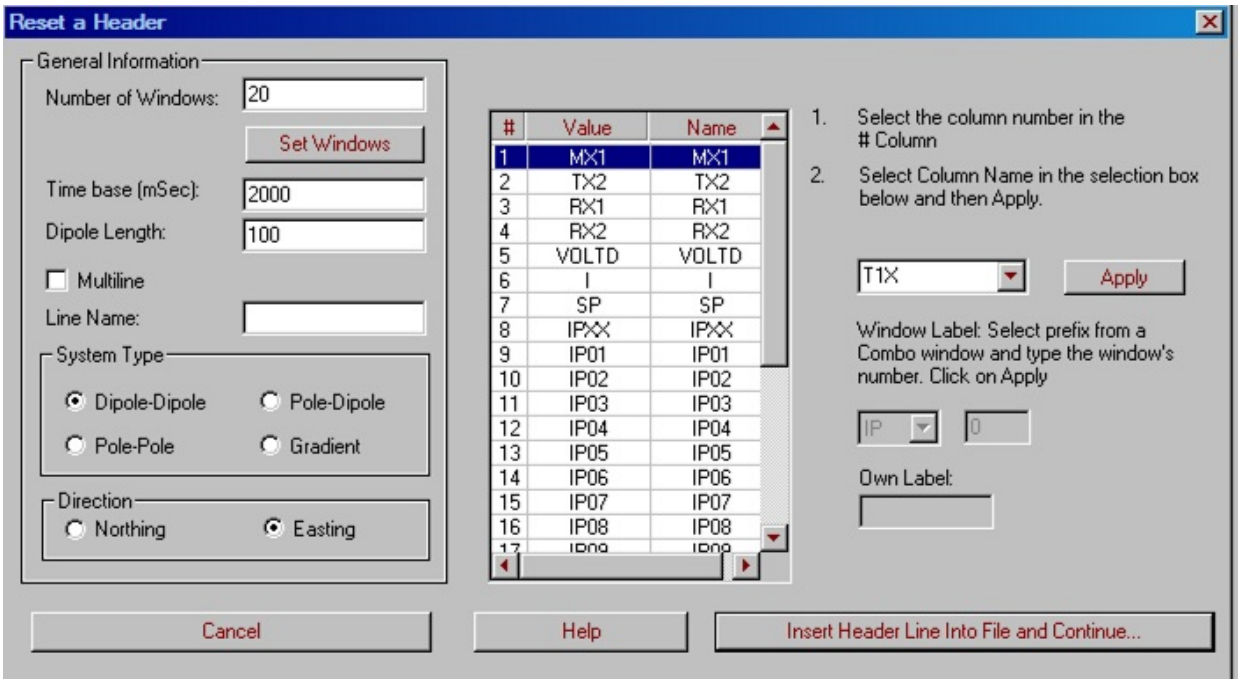
Related Topics

Reset a Header

Edit Window Widths

Generic IP Import. Reset a Header.

In the **Reset a Header** window which is reached from step 1 of the Generic IP Import Wizard (Inputs. Import Wizard. Setup 1):



- Click on the desired column (row of the table) as shown in the example and select a new header label from the Labels dropdown list to the right and then **Apply** to change the label in the Name column.
- If the **IP** column is selected, the prefix list and the window number box below are activated. Use them to specify the prefix and number of the window and click **Apply**. The new label appears in the **Name** column of the table.

- To assign your own label, in case it does not appear on the list, select **Own Label** from the Labels dropdown list. The **Own Label** box below is activated. Enter your label in this box and click **Apply**.

In the left part of the **Reset a Header** window, you can check and edit the main settings, such as the number of windows, time base, dipole length,

system type, and direction. As a rule, these settings are recognized by EMIGMA.

If you need to set or edit the width of windows, click the related button under the **Number of Windows** box (see Edit Window Widths).

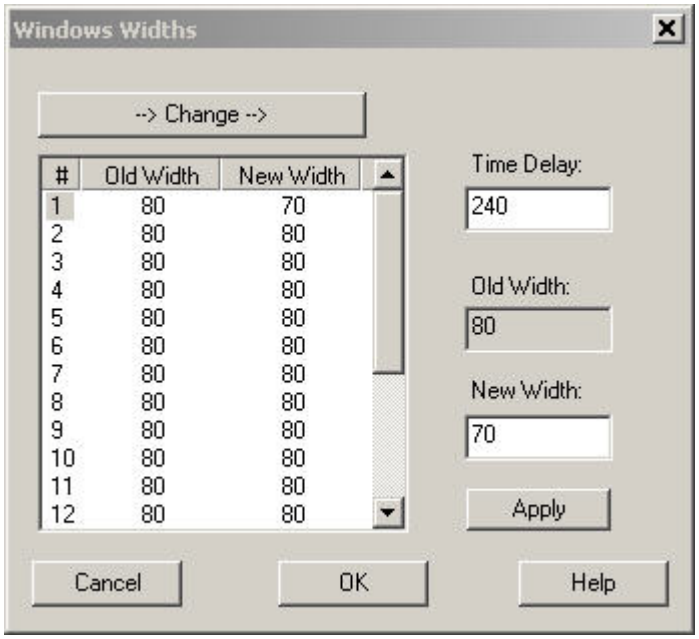
When finished, click **Insert Header Line into File and Continue**. A new file is saved and you are taken back to the **Inputs. Import Wizard. Setup 1** window, where you can see the newly set header line.

Related Topics

Edit Window Widths

Generic IP Import. Edit Window Widths

In the **Window Widths** dialog that can be reached from the **Reset a Header** window by clicking the **Set Windows** button:



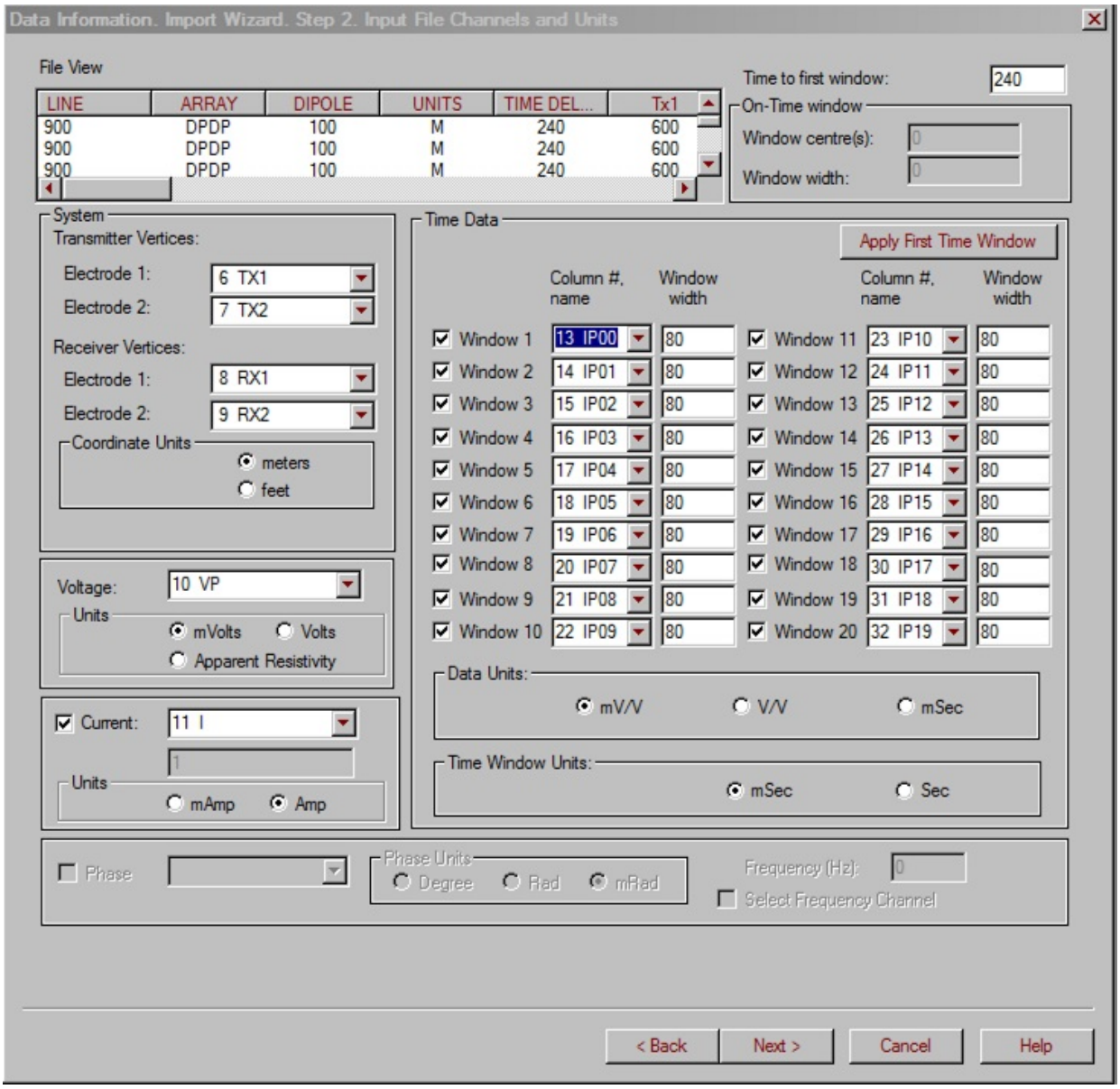
- Select the number (#) of the window and enter a required value in the **New Width** box. Click **Apply**. The new value will appear in the **New Width** column next to the window # you selected.

- To change some of the widths, you can use the **Change** button. The **New Width** column will be filled with the old widths, so that you will be able to edit only specific values while the rest will remain the same.

- Click **OK** to confirm and return to the **Reset a Header** dialog.

Generic IP Import. Step 2. Data Information.

This dialog provides you with information on transmitter and receiver vertices, voltage, current, time delay, on-time window, and units. It also shows all the time gates and their widths:



If required, you can edit any of the settings - just replace values in the boxes or choose other options from the dropdown lists.

If you are importing time-domain IP data, the **Time Data** section is activated, containing the numbers of time gates and their widths as specified at step 1. To remove any of the time gates from being imported, de-select the checkbox next to the respective time gate.

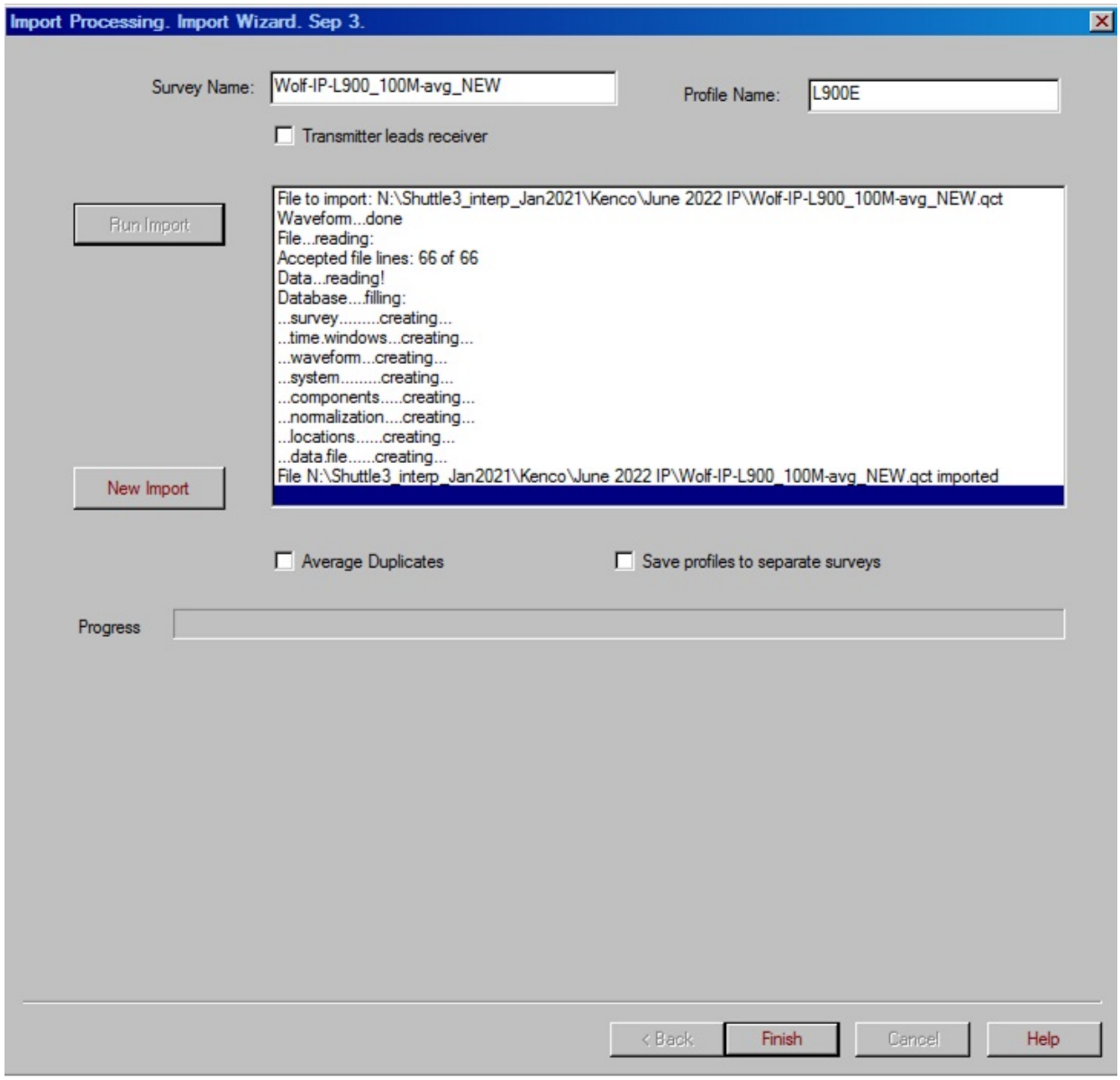
If you are importing Resistivity only (Static Domain) or Resistivity/Phase (Frequency Domain), the **Time Data** section is deactivated, whereas the **Phase** section in the bottom of the dialog is enabled. To specify **Phase** channel, units and frequency, check the **Phase** box. The rest of the section is enabled. Make required selections and enter Frequency in the respective box.

Click **Next** to proceed to the final step of the Generic IP import wizard.

Previous/Next

Generic IP Import. Step 3. Import Processing.

This dialog finalizes the import procedure:



- Specify the profile direction by checking or leaving unchecked the **Transmitter leads Receiver** box otherwise the software will import according to the orders in the file.
- Duplicates are not automatically averaged but this option may be selected.

- By default, all profiles are imported to the same survey but if desired, may be imported as different surveys in your EMIGMA database.
- Click **Run Import**. The field to the right keeps you updated on the import procedure.

  Import completed, the **New Import** button is activated.

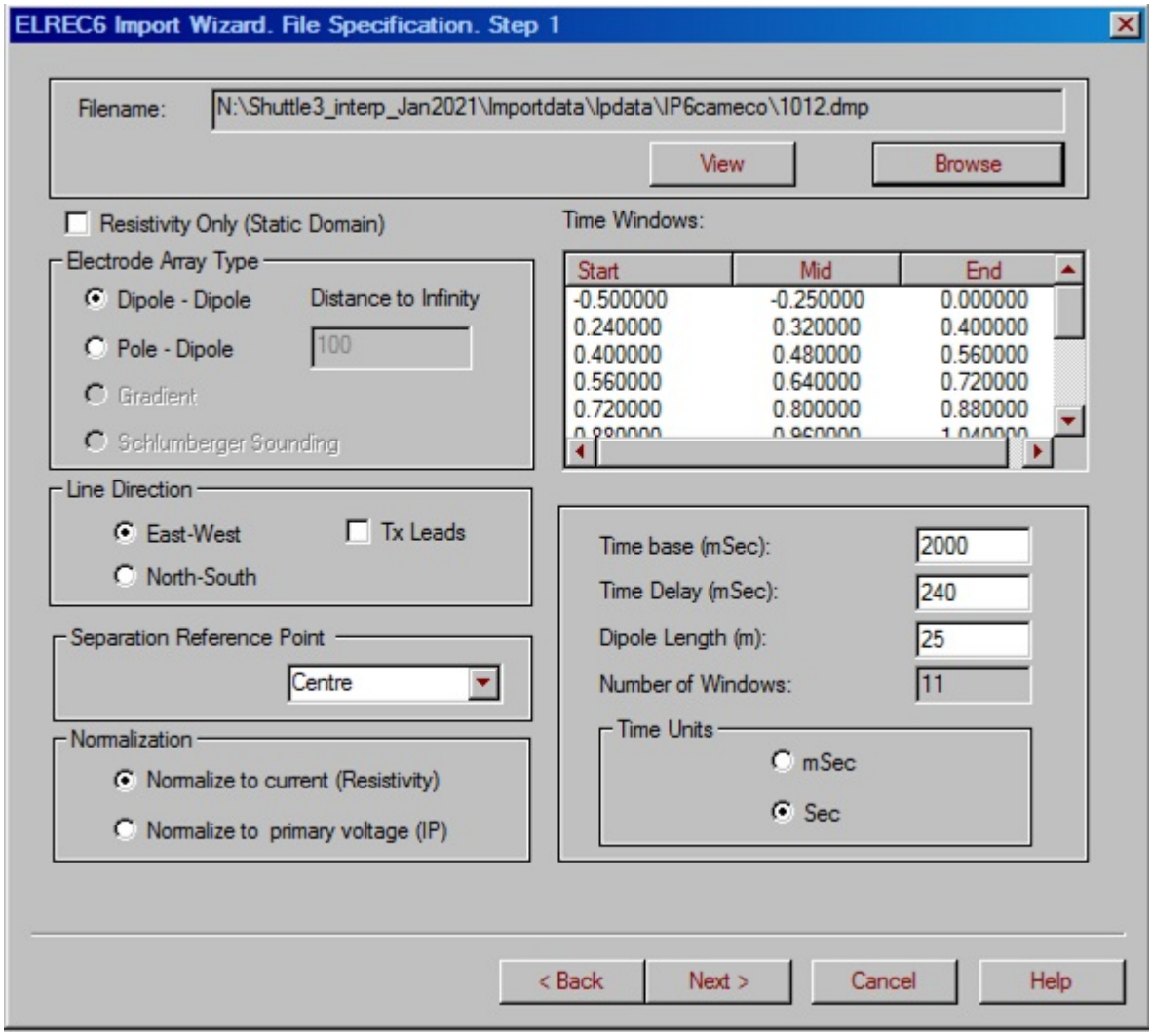
- Click **New Import** to import a new survey. This takes you back to the **Inputs. Import Wizard. Setup 1** window. Follow all the three steps of the wizard as described. The new survey will be added to the **Surveys in Project** section of the main **Database** dialog.
- When finished, click **Finish** to close the import wizard and return to the main **Database** dialog.

Previous

ELREC6 Import Wizard. Step 1. File Specification.

ELREC 6 data may come in a manufacturer's specific format (*.dmp) or in a standard XYZ format (.dat). For the latter format, please use the generic IP/Resistivity imports. Later versions of the ELREC system always are supported by a standardized XYZ format which is supported under the generic imports.

From the main import dialog, chose IP/Resistivity and then selecting **ELREC6 Induced Polarization** brings up the first step of the ELREC6 import wizard:



- Click **Browse** to open the **IP Data File** dialog and browse for the file to import data from. When the file is specified, its name appears in the **Filename** field above and you are able to view it in text format by clicking **View**.

  As a rule, EMIGMA recognizes the settings and fills them into the sections and boxes of the dialog. However you can always change them by simply re-selecting buttons or editing the values in the boxes.

- **Line Direction:** This format only contains station labels and not UTM's and thus you must specify if the line is an EW line or a NS line. By default, the import assumes that the Rx leads along the survey. If not, select **Tx Leads**.

- **Reference Point:** The data is stored in the database relative to the Reference point of the moving system which may be either **TX**, **RX** or **Centre** point.

- In the **Normalization** section, specify how you want to normalize your data - divide them by current or primary voltage. The data in the **Time Windows** table in the right-hand part of the dialog will change accordingly.

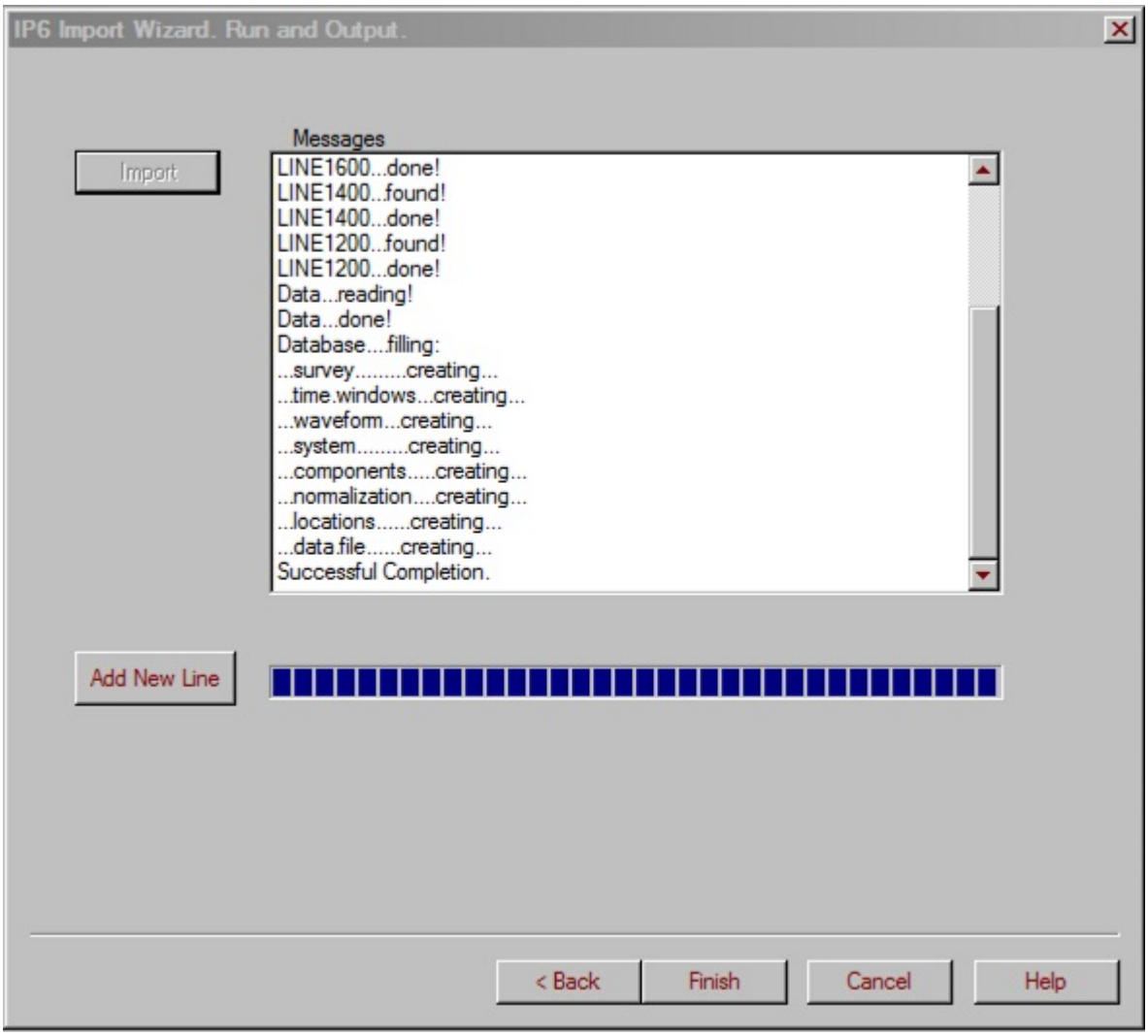
- Select between **mSec** and **Sec** as Time Units; this will change the values in the table accordingly.

- To import only the data of the first window, check the **Resistivity Only (Static Domain)** box. In this case, the **Normalization** section, the **Time Windows** table, and all the other boxes and options related with time domain are deactivated.
- Click **Next** to proceed to Step 2 of the ELREC6 Import Wizard.

Next

ELREC6 Import Wizard. Step 2. Run and Output

In the **ELREC6 Import Wizard. Run and Output** dialog, you finalize the IP Import procedure:



- Click **Import** to launch the import procedure. The **Messages** field will keep you updated on all the operations being carried out. If import is completed successfully, the respective message notifies you thereof. Click **OK** to this message.

- You may add additional lines at this stage. However, we suggest importing each line to the database for analyses and checking. Then,

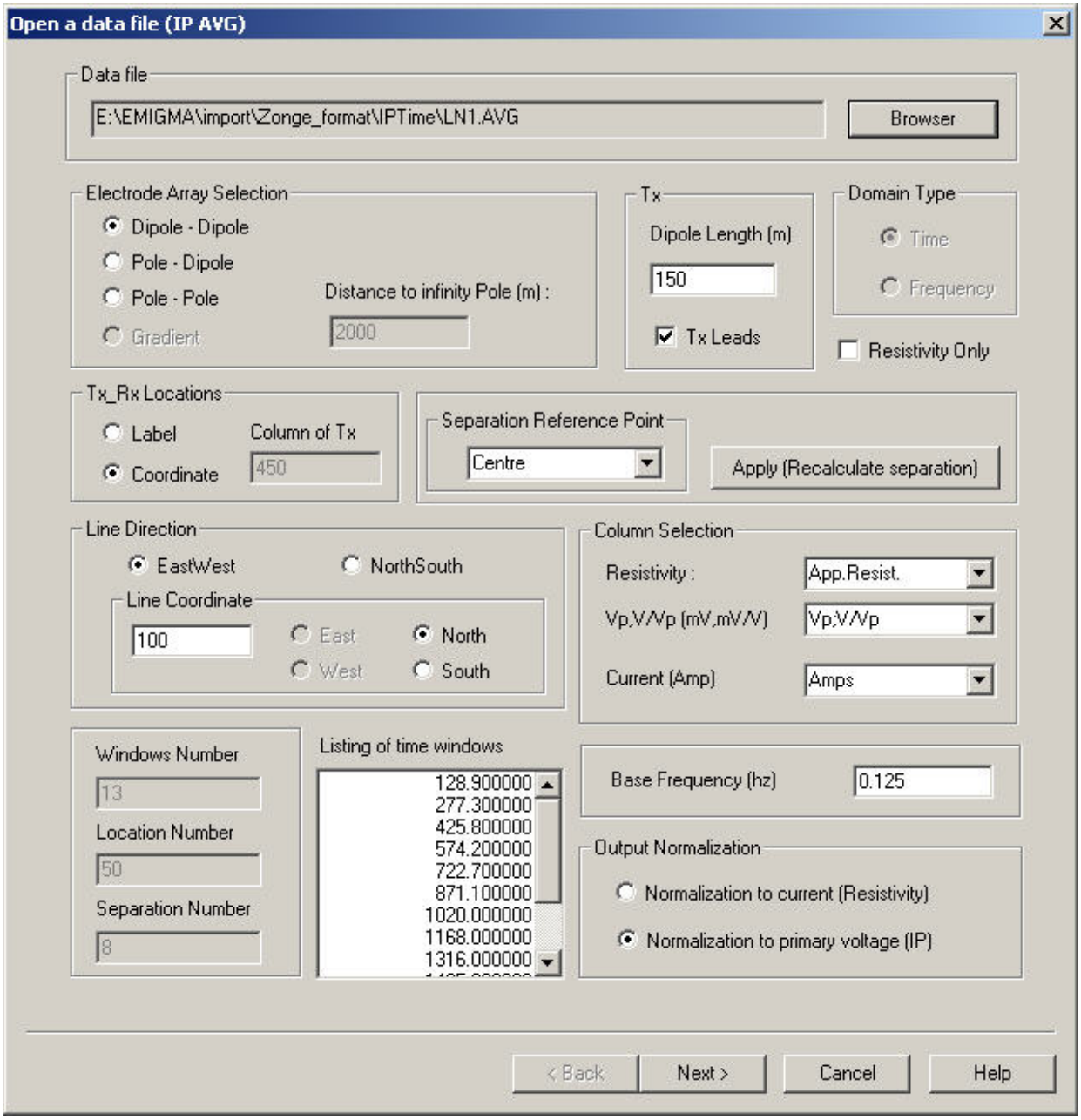
the lines may be merged in the database. However, to add a new line at this stage, click the **Add New Line** button, which becomes activated on the completion of the first import. This brings up the **IP Data File** dialog, for you to browse for a new ELREC6 file to import. Select a required file and click **OK**. This takes you back to the first step of the ELREC6 Import Wizard, with the **Filename** field containing the selected file. The rest of the boxes and sections, except for the **Normalization** section, are disabled, since your data, to be imported into the same survey, should feature the same system geometry and settings.

- Finalize the import procedure as described above. You can add as many lines as required.
- When finished, click **Finish** at the bottom of the window. Back in the **Database** dialog, the new survey will have the name by the filename which was imported.

Previous

Zonge IP/Resistivity Time Domain Data Import. Step 1.

Selecting **Zonge GDP_32** from the **IP/Resistivity** list under the **Raw Data** tab of the **Import** dialog, and then choosing the **IP/Resistivity (Time Domain)** data type brings up the following interface:



Data file Select a time domain file in the AVG format. The file may contain a single line only, not multiple lines.

Electrode Array Selection
Specify the manner in which the transmitter and receiver are set up. The **Distance to infinity Pole** value can be edited for the **Pole-Dipole** and **Pole-Pole** options.

Tx
Specify the length of the transmitter in meters in the box labelled **Dipole Length**. Specify the transmitter's position with respect to the receiver by giving the **Tx Leads** checkbox the appropriate setting.

Resistivity Only
Select this option to import only the primary voltage as static data.

Tx_Rx Locations
A sample value from the Tx column in the file is displayed in the box labelled **Column of Tx**. Select **Coordinate** if this value is the coordinate of the Tx. Select **Label** if this is a station label. If **Label** is selected, the appropriate coordinates will then be calculated using the specified dipole length.

Separation Reference Point
Specify where the reference point for each measurement will be located: **Tx** - the location of the transmitter, **Rx** - the location of the receiver or **Centre** - the midpoint between the transmitter and receiver. Click **Apply** to calculate the new coordinates.

Line Direction
Select the direction of the receiver line. For an east-west line, specify the y co-ordinate of the line and whether it is north or south. For a north-south line, specify the x co-ordinate of the line and whether it is east or west.

Column selection
Check that the correct columns are selected for the Resistivity, Primary/Window Voltage and Current. The units of the primary voltage

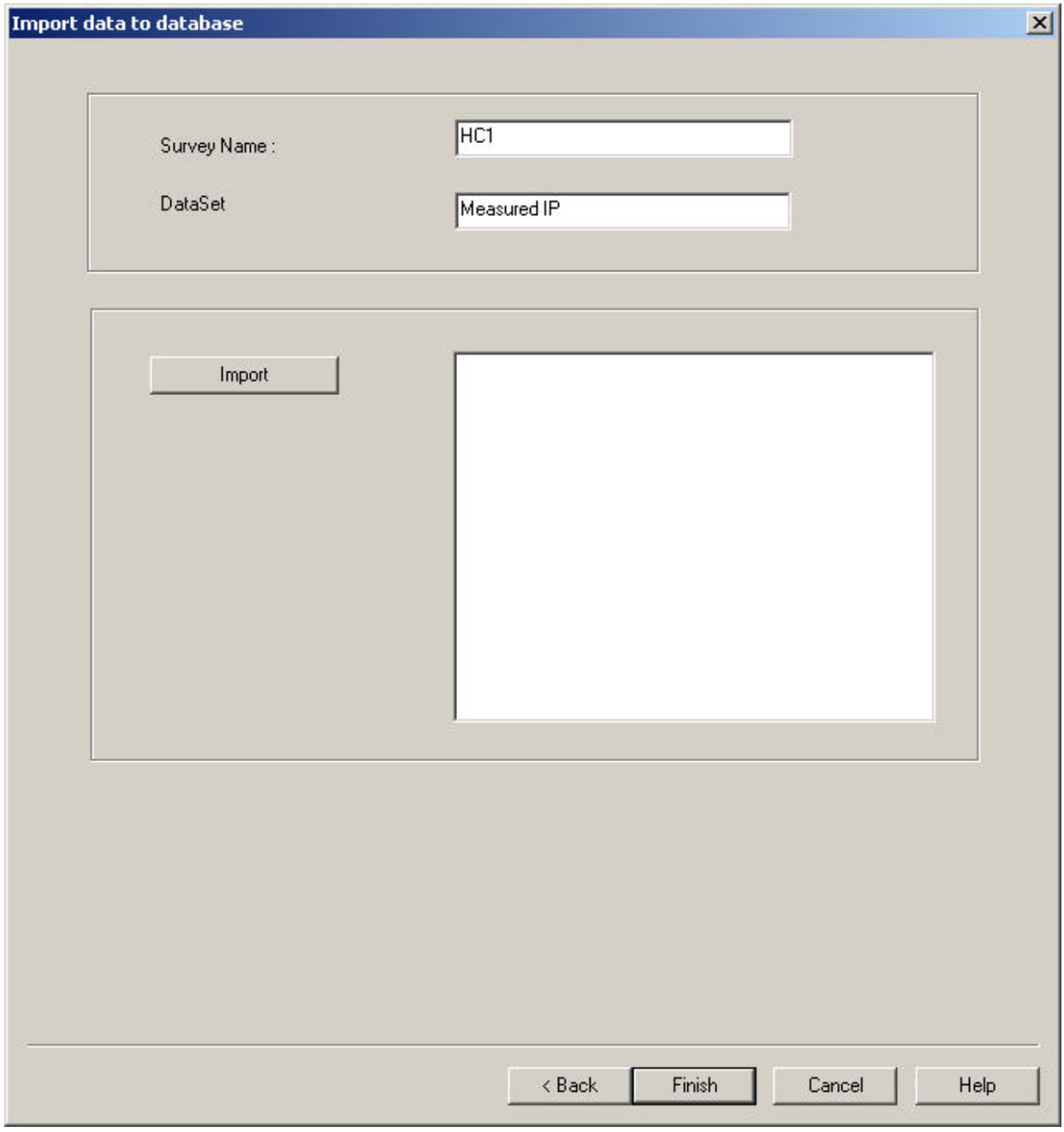
(when time is zero) are mV and the units of the IP data (when time is not zero) are mV/V. The units of current are Amps.

Base Frequency
This is the base frequency in Hertz at which the data was measured.

Listing of time windows
This is a list of the mid-times of the time windows in the file. The units used are milliseconds. The number of time windows is displayed in the box to the left labelled **Windows Number**.

Output Normalization
Specify whether the data saved to the database should be normalized by the current (stored in mV) or primary voltage (stored as a ratio).

Zonge IP/Resistivity Data Import. Step 2.



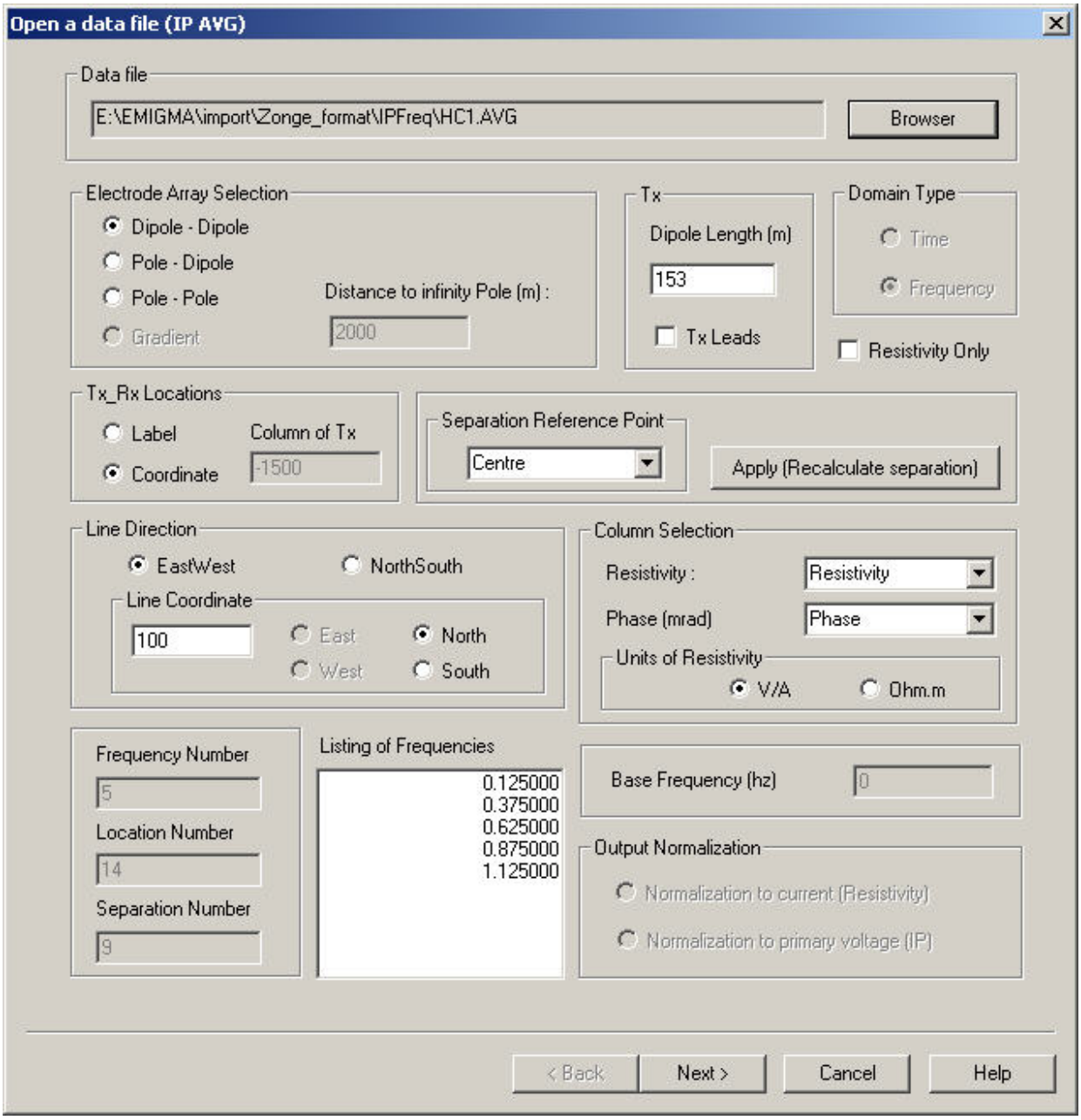
Click the **Import** button to save your data to the EMIGMA database.

The default names displayed for **Survey Name** and **Data Set** will be used

when saving to the database. Edit these names before clicking the **Import** or **Finish** button if you prefer different ones.

Zonge IP/Resistivity Frequency Domain Data Import. Step 1.

Selecting **Zonge GDP_32** from the **IP/Resisitivity** list under the **Raw Data** tab of the **Import** dialog, and then choosing the **IP/Resistivity (Frequency Domain)** data type brings up the following interface:



Data file Select a frequency domain file in the AVG format. Files from either the CRAVG or RPAVG processing programs may be used. The file may contain a single line only, not multiple lines.

Electrode Array Selection
Specify the manner in which the transmitter and receiver are set up. The **Distance to infinity Pole** value can be edited for the **Pole-Dipole** and **Pole-Pole** options.

Tx
Specify the length of the transmitter in meters in the box labelled **Dipole Length**. Specify the transmitter's position with respect to the receiver by giving the **Tx Leads** checkbox the appropriate setting.

Resistivity Only
Select this option to import only the resistivity data when the frequency is zero.

Tx_Rx Locations
A sample value from the Tx column in the file is displayed in the box labelled **Column of Tx**. Select **Coordinate** if this value is the coordinate of the Tx. Select **Label** if this is a station label. If **Label** is selected, the appropriate coordinates will then be calculated using the specified dipole length.

Separation Reference Point
Specify where the reference point for each measurement will be located: **Tx** - the location of the transmitter, **Rx** - the location of the receiver or **Centre** - the midpoint between the transmitter and receiver. Click **Apply** to calculate the new coordinates.

Line Direction
Select the direction of the receiver line. For an east-west line, specify the y co-ordinate of the line and whether it is north or south. For a north-south line, specify the x co-ordinate of the line and whether it is east or west.

Column Selection

Check that the correct columns are selected for the Resistivity and Phase. Also specify whether the Resistivity units are V/A or Ohm.m when the frequency is not zero. When the frequency is zero, the units are assumed to be Ohm.m.

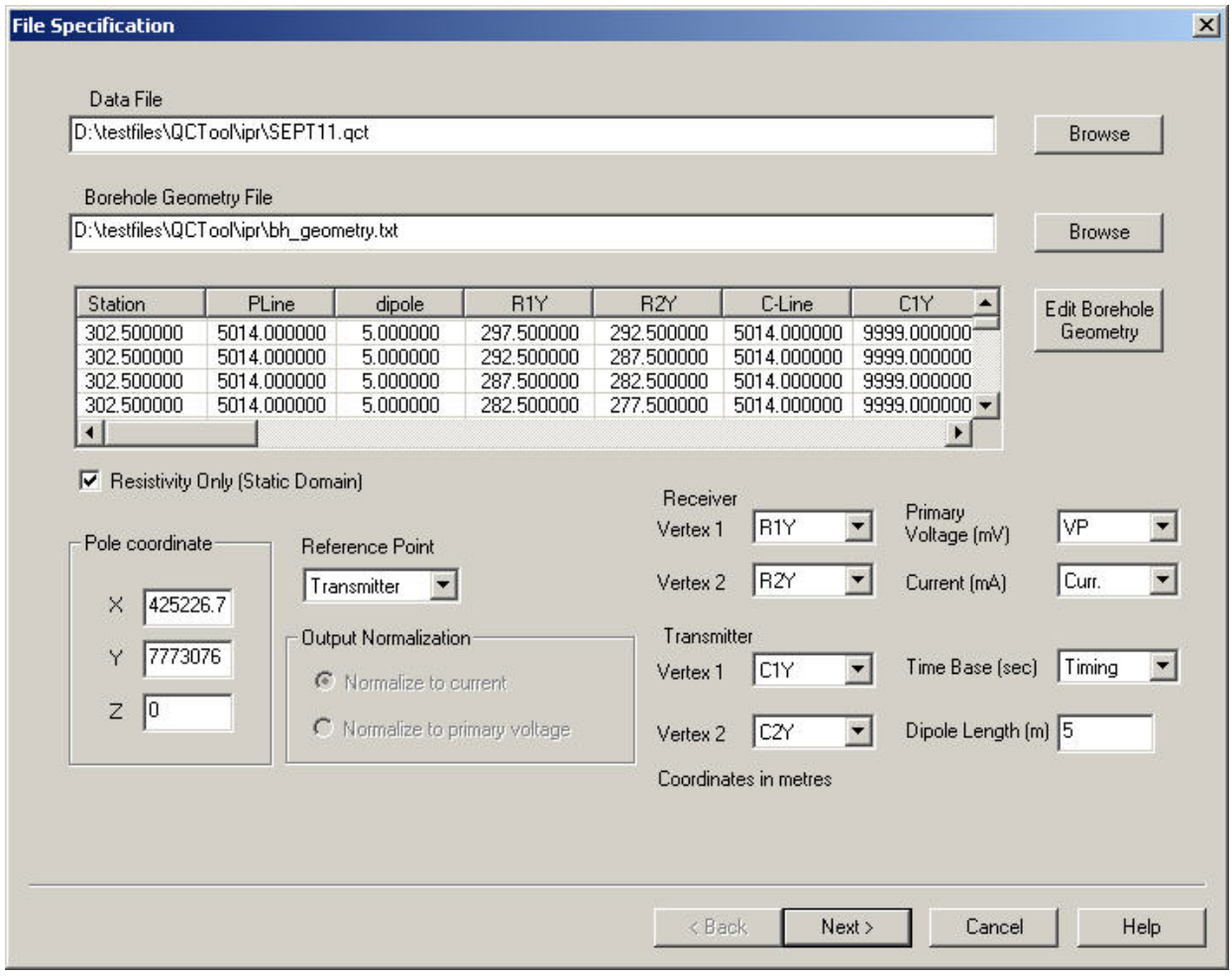
Listing of Frequencies

This is a list of the frequencies in the file. The units used are Hertz. The number of frequencies is displayed in the box to the left labelled **Frequency Number**.

IPR-12 Borehole Import Wizard

IPR-12 Borehole Import. Step 1. Load data file.

Selecting **Scintrex IPR-12 Resistivity Borehole** from the **IP/Resistivity** list under the **Raw Data** tab of the main **Import** menu brings up following interface:



Data file Choose a ipr borehole file that has been saved in the qctool format

Borehole Geometry File
Click the browse button to select an ascii file describing the borehole

geometry. The file requires columns for azimuth dip and depth. Segment length can be used instead of depth. Collar coordinates can be on the first line of the file.

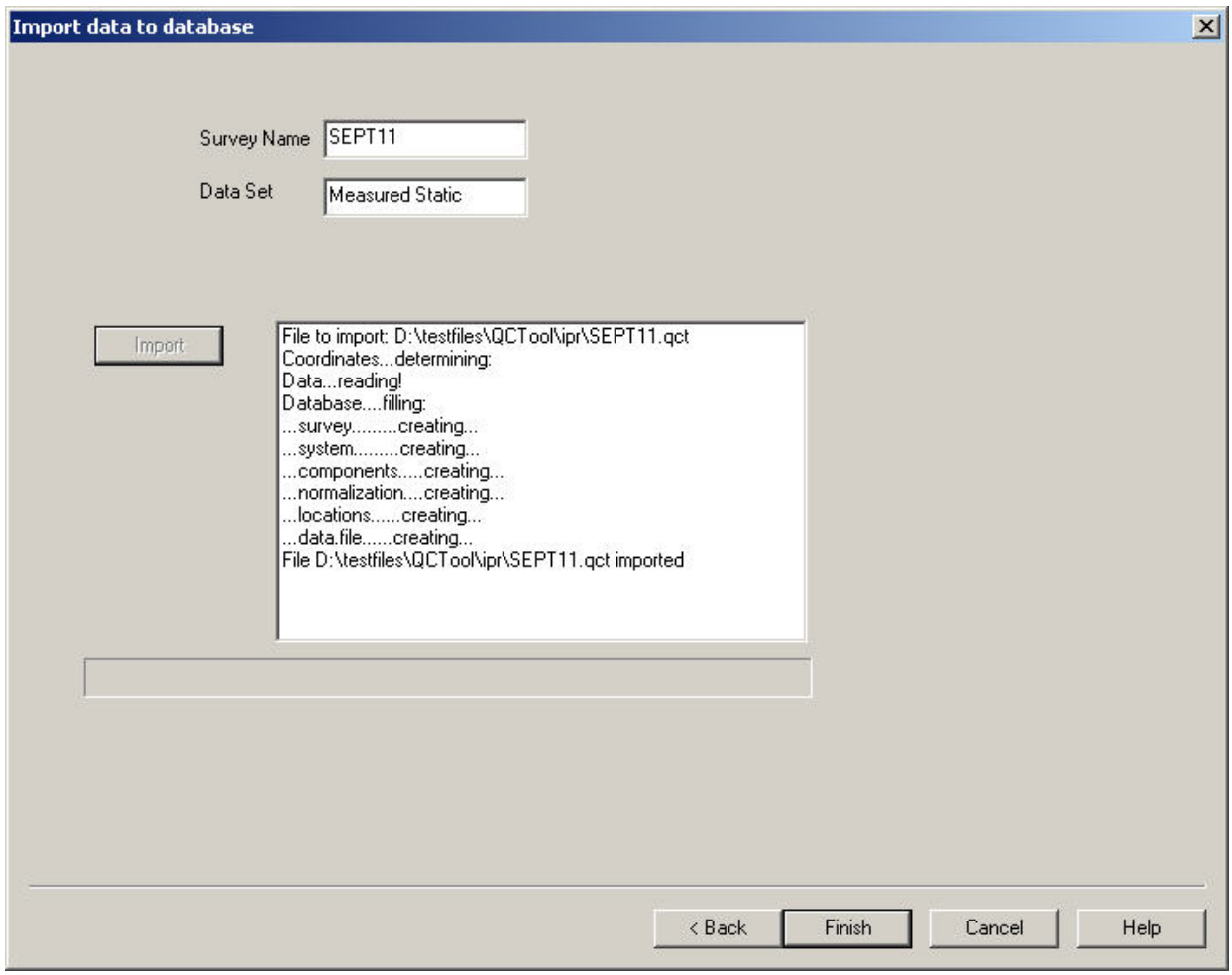
Pole coordinate
One vertex of the transmitter is a fixed coordinate that is entered here.

Reference Point
The selection in this combo box specifies what part of the system the output coordinate refers to. Transmitter, Receiver or halfway between the receiver and transmitter's closest electrodes.

Dipole length
This is the length of receiver dipole in meters. Check that it has been read correctly from the file.

Column selection
In the botom right section of the window, select the correct columns for the receiver and transmitter vertices, the primary voltage, current and time base.

IPR-12 Borehole Import. Step 2. Import data to database.

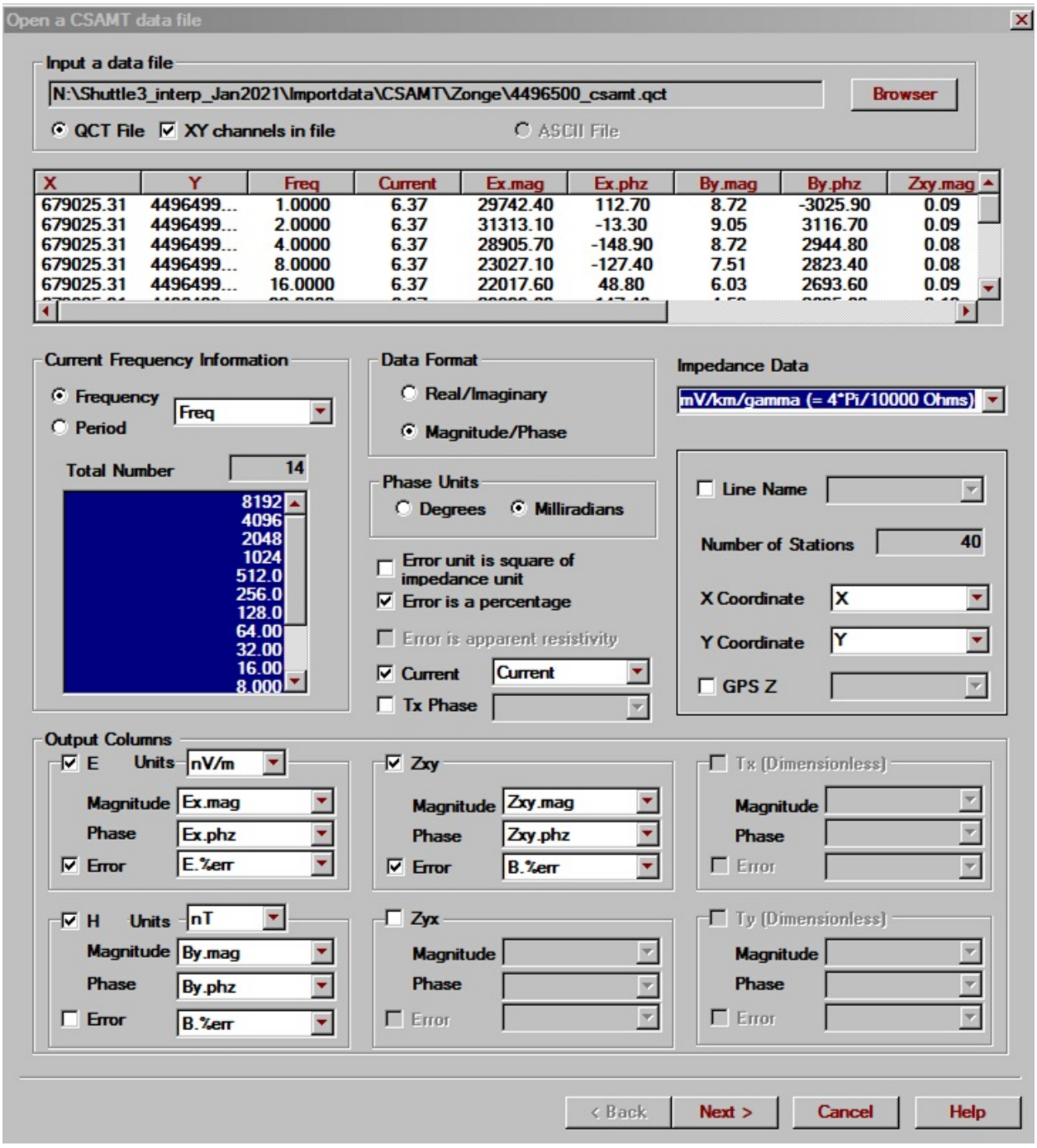


Survey Information Choose a survey name and data set name, and import the data by clicking the **Import** button.
Import progress details will appear in the large text box.

Generic CSAMT Import Wizard

Importing a file with a single station per worksheet

Select the CSEM/CSAMT list on the Import dialog. Then select **Generic CSAMT**. This requires .qct format. You may import your data to QCTool and arrange, edit and organize for input. Each CSAMT station should be in its own spreadsheet within the .qct file. The import is designed for a single impedance and if desired the electric and magnetic fields.

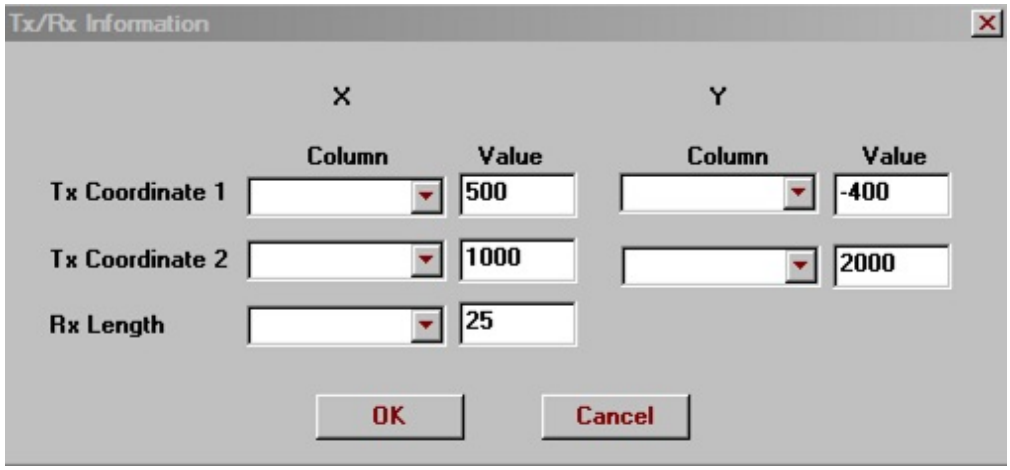


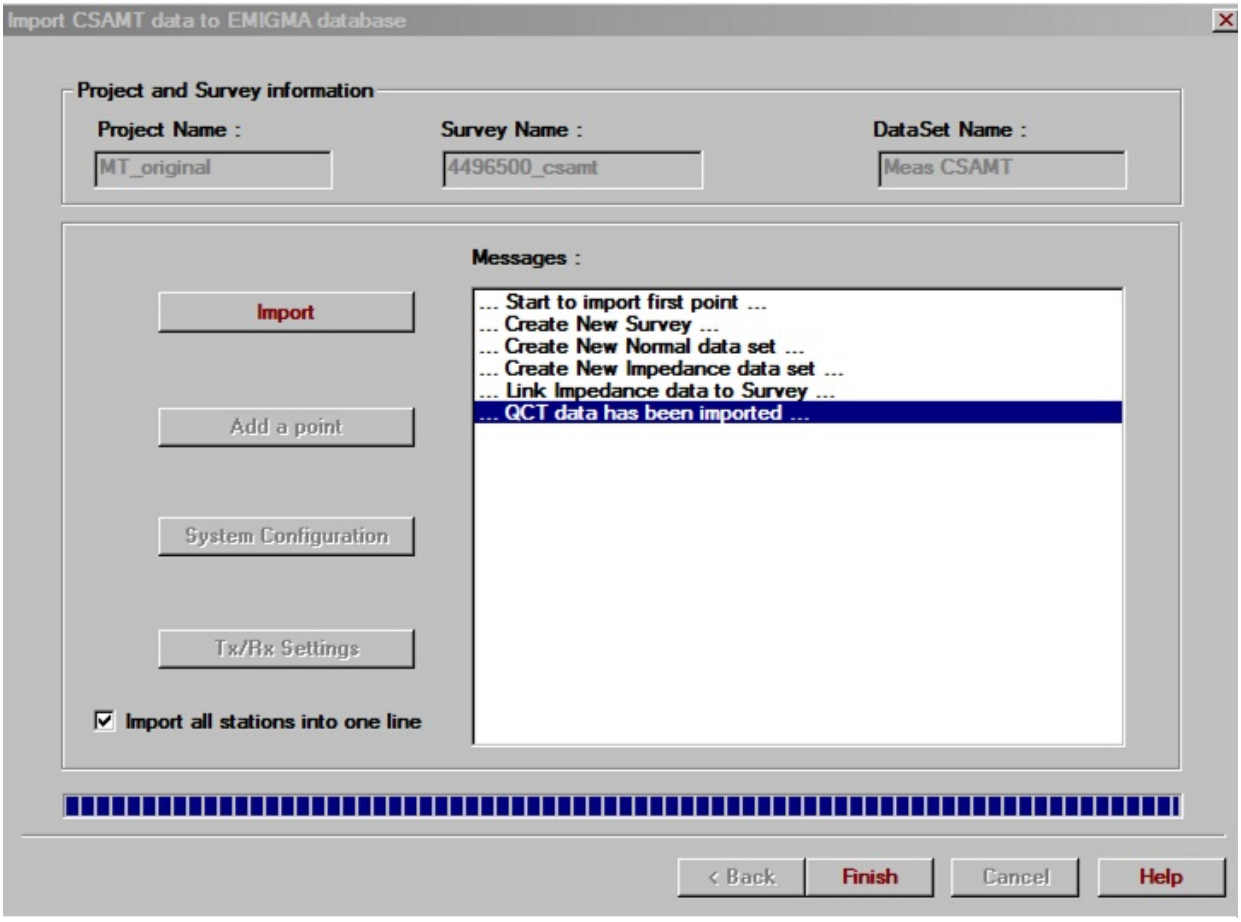
Current Frequency Information	Displays the frequency values and the number of frequencies for the current data point.
Coordinate	Choose the x and y values of the

	location to which the data applies or specify the columns of the qct file which contain the x and y values.
Output Columns	Choose data columns that you want to save to the database. You will need to specify the real and imaginary columns or magnitude and phase columns for the impedance element. Select the appropriate **Error** checkbox and error channel if you would like to import error.
Impedance Data Unit	Choose the units of the data values in the import file. The impedance tensor data will be recalculated to be units of V/A in the database.
Data Format	You may read real and imaginary channels from the qct file or magnitude and phase channels. The **Phase Units** area will be enabled when **Magnitude/Phase** is selected.
Current	Select the channel for current.

Importing CSAMT Data

TX/RX Settings: You may import the end vertices of your transmitter wire at this point but it may also be done in the database once imported. If you have the coordinates in the .qct file you may select the appropriate columns or merely fill in the X,Y coordinates of the electrodes.





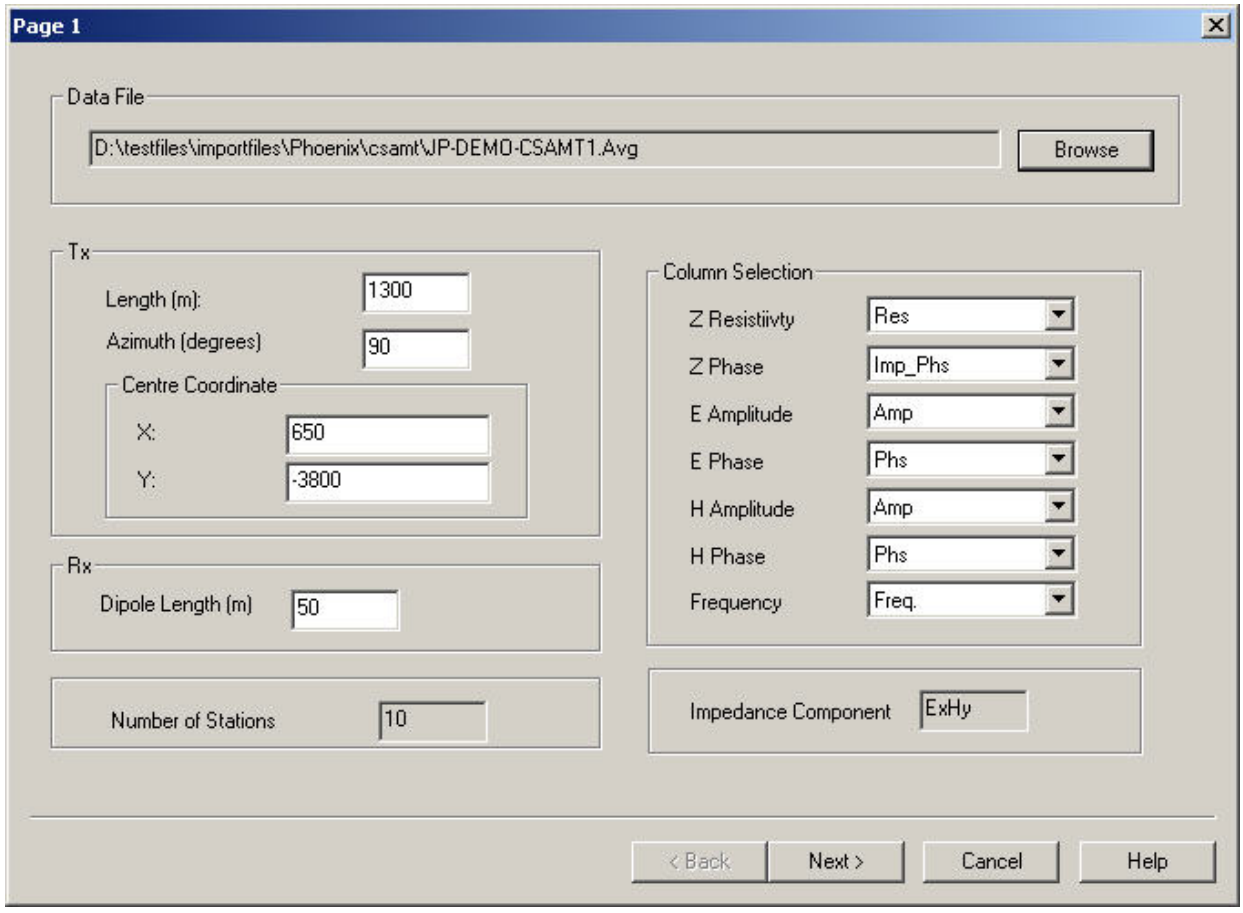
Import	Start processing of saving the data set into the database.
Project Name	Name of the project that will appear in the database.
Survey Name	Name of the survey that will appear in the project.
Data Set Name	Name of the data set that will appear in the survey.
Tx/Rx Settings	When importing CSAMT data, you may specify the coordinates of the transmitter endpoints as well as the length of the receiver.
Import all stations into one line	When the multiple stations option

	has been selected, the stations may be imported into a single line or each station may be imported into its own line.

Phoenix CSAMT Import Wizard

Phoenix CSAMT Import. Step 1. Load data file. (CSAMT)

Selecting **Phoenix CSAMT** from the **EM** list under the **Raw Data** tab of the main **Import** menu brings up following interface:



Data file Select the Phoenix CSAMT file by clicking the **Browse** button

Tx
Specify the properties of the transmitter. Enter the length of the transmitter (meters) and its azimuth (degrees from North). Enter the location of the centre of the transmitter.

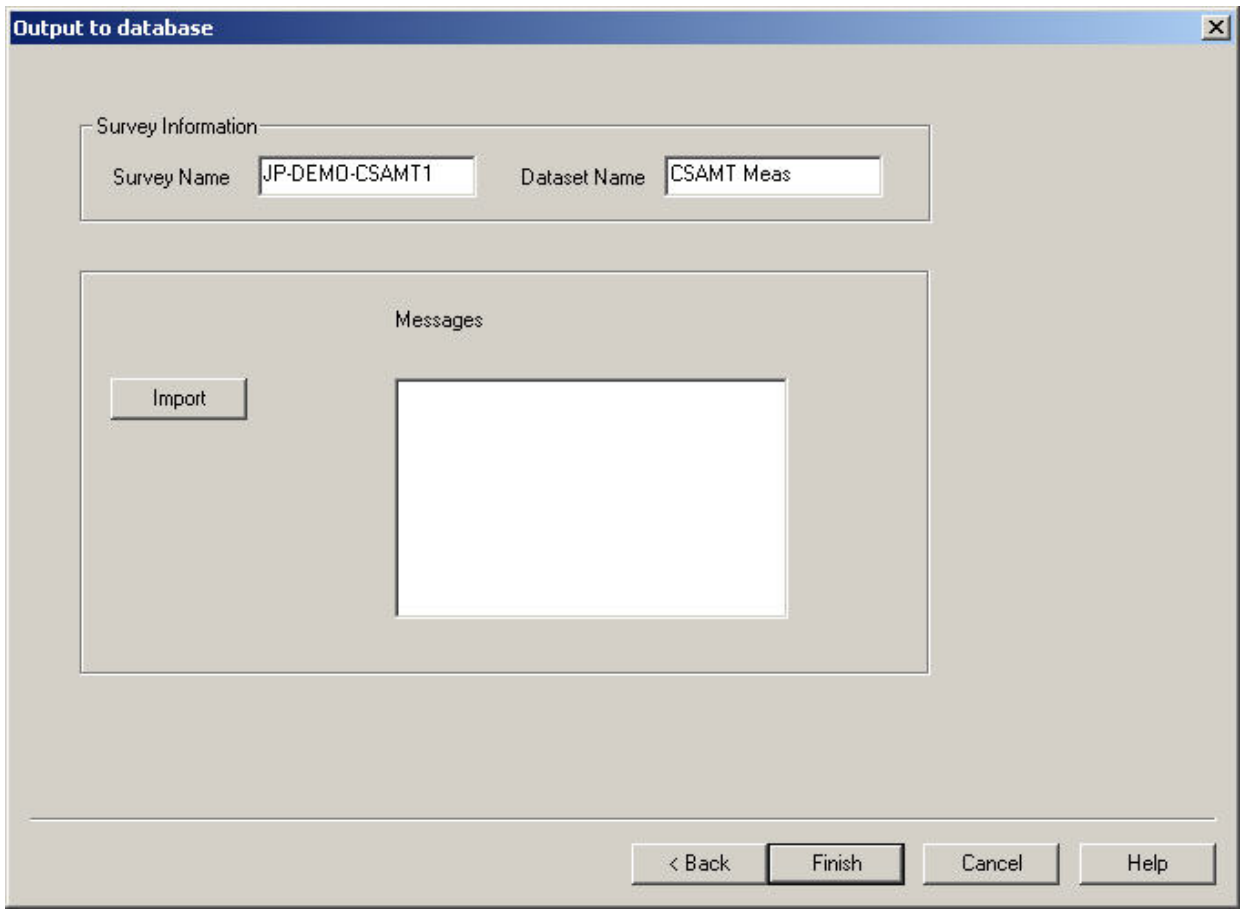
Rx Dipole length
This is the length of receiver dipole in meters. Check that it has been read correctly from the file.

Column selection
Select the correct columns for the magnitude and phase of the resistivity, E-field, and H-field as well as the column for the frequency.

Number of Stations
This is the number of stations in the file.

Impedance component
This specifies which components of E and H will be imported (eg. Ex and Hy).

Phoenix CSAMT Import. Step 2. Import data to database. (CSAMT)

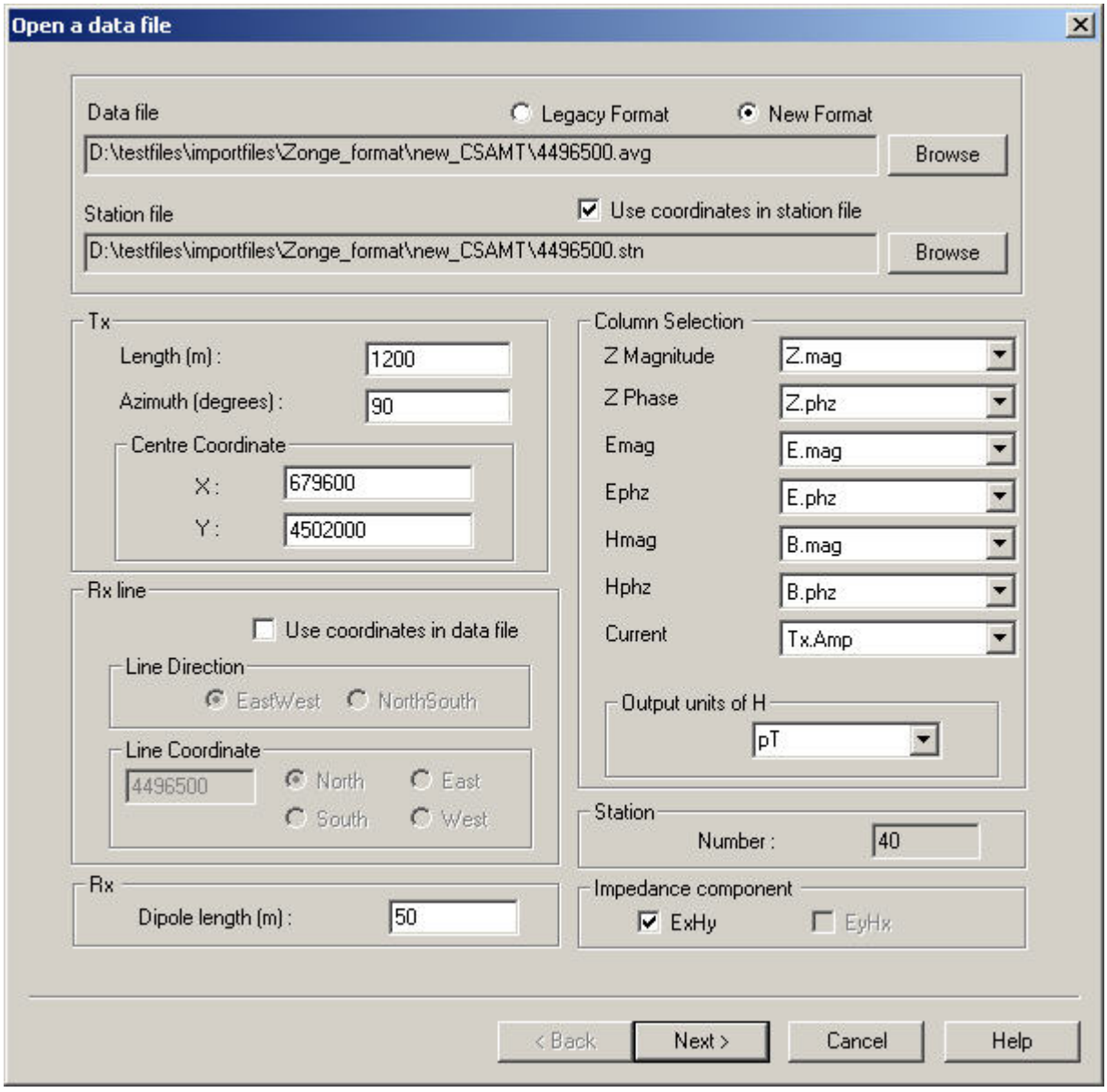


Survey Information Choose a survey name and data set name, and import the data.
Import progress details will appear in the **messages** box.

Zonge GDP_32 Import Wizard

Zonge GDP_32 Import. Step 1. Load data file. (CSAMT)

Selecting **Zonge GDP_32 CSAMT** from the **EM** list under the **Raw Data** tab of the main **Import** menu, and then choosing the data type as CSAMT brings up following interface:



Data file Choose a CSAMT file in either **Legacy Format** or **New Format**

Station file

Each group of data in the new format of the avg file has both a station label and xyz coordinates associated with it. Select **Use coordinates in station file** and select a station file to convert the station labels to coordinates. Otherwise select **Use coordinates in data file**. The station file is an ascii file organized in columns for station label, x, y, and z in that order. Any file lines beginning with a forward or back slash will be considered a comment and skipped.

Tx
Specify the properties of the transmitter. Enter the length of the transmitter (meters) and its azimuth (degrees from North). Enter the location of the centre of the transmitter.

Rx Line
This section is only needed for the legacy format. Select the direction of the receiver line. For an east-west line, specify the y co-ordinate of the line and whether it is north or south. For a north-south line, specify the x co-ordinate of the line and whether it is east or west.

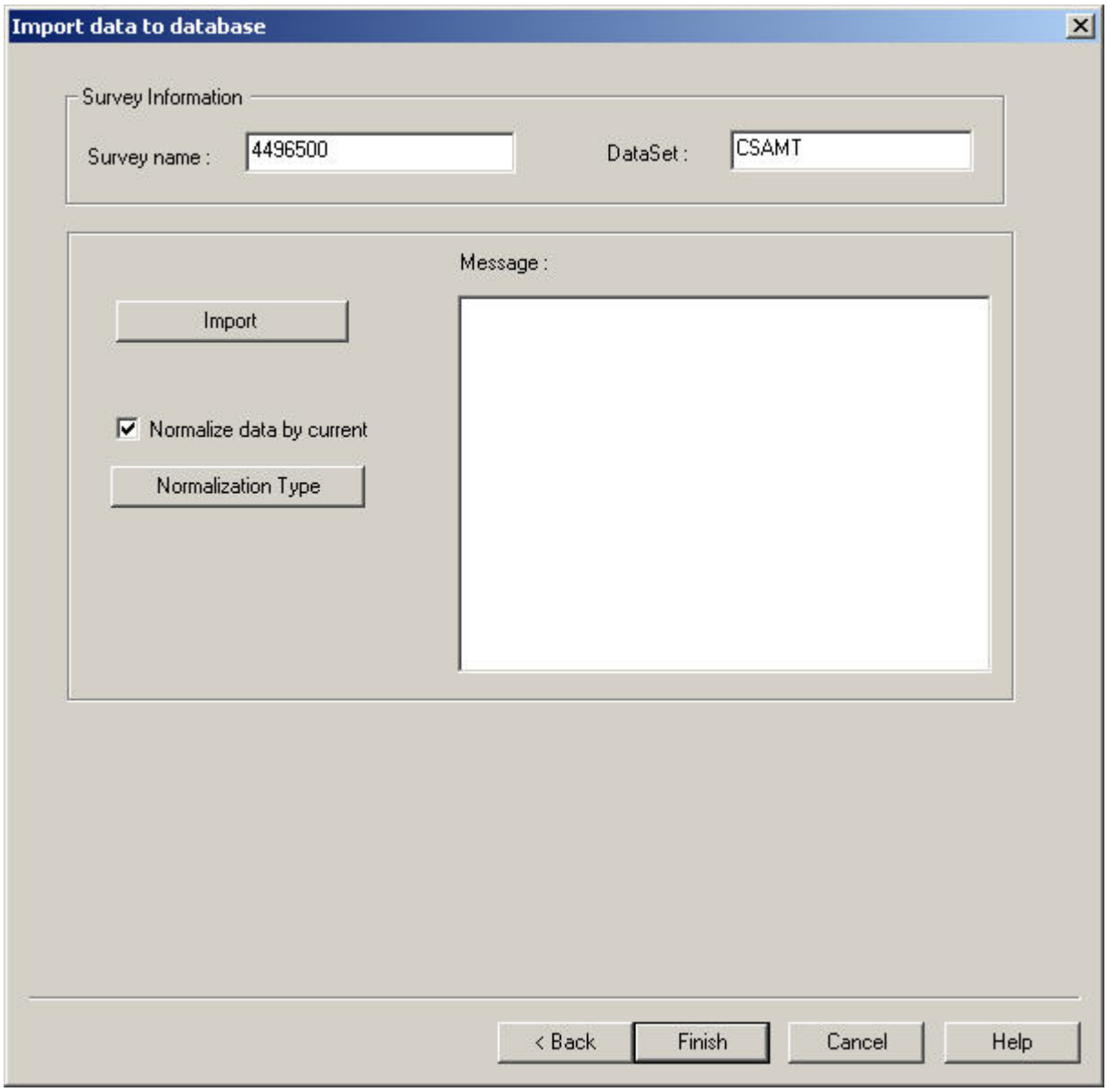
Rx Dipole length
This is the length of receiver dipole in meters. Check that it has been read correctly from the file.

Column selection
Select the correct columns for the magnitude and phase of the resistivity, E-field, and H-field. (The magnitudes of resistivity, E and H should be in Ωm, μV/(kmA) and pT/A respectively. The phases should be in mrad.) Select the output units of H: choose between pT or A/m. These are the units in which H will be stored in the EMIGMA database.

Station
This is the number of stations in the file.

Impedance component
This specifies which components of E and H will be imported (eg. Ex and Hy).

Zonge GDP_32 Import. Step 2. Import data to database. (CSAMT)



Survey Information Choose a survey name and data set name, and import the data.

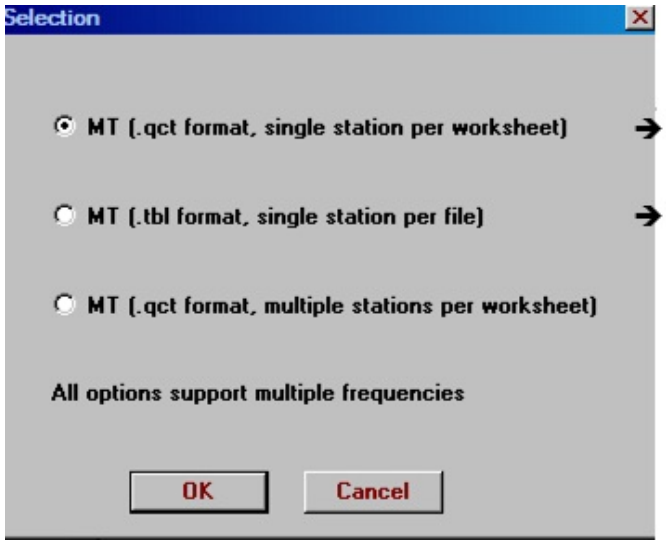
Normalization
If the data has not already been normalized by current, you may choose

whether or not the data will be normalized by clicking the checkbox labelled **Normalize data by current** Click the **Normalization Type** button to specify the current that will be used to normalize the data. The options available are:
Unit Current - The current at a specific frequency and station
Low Frequency Current - The current measured at the lowest frequency
Average Current - The average of all the currents measured

MT Import Wizard

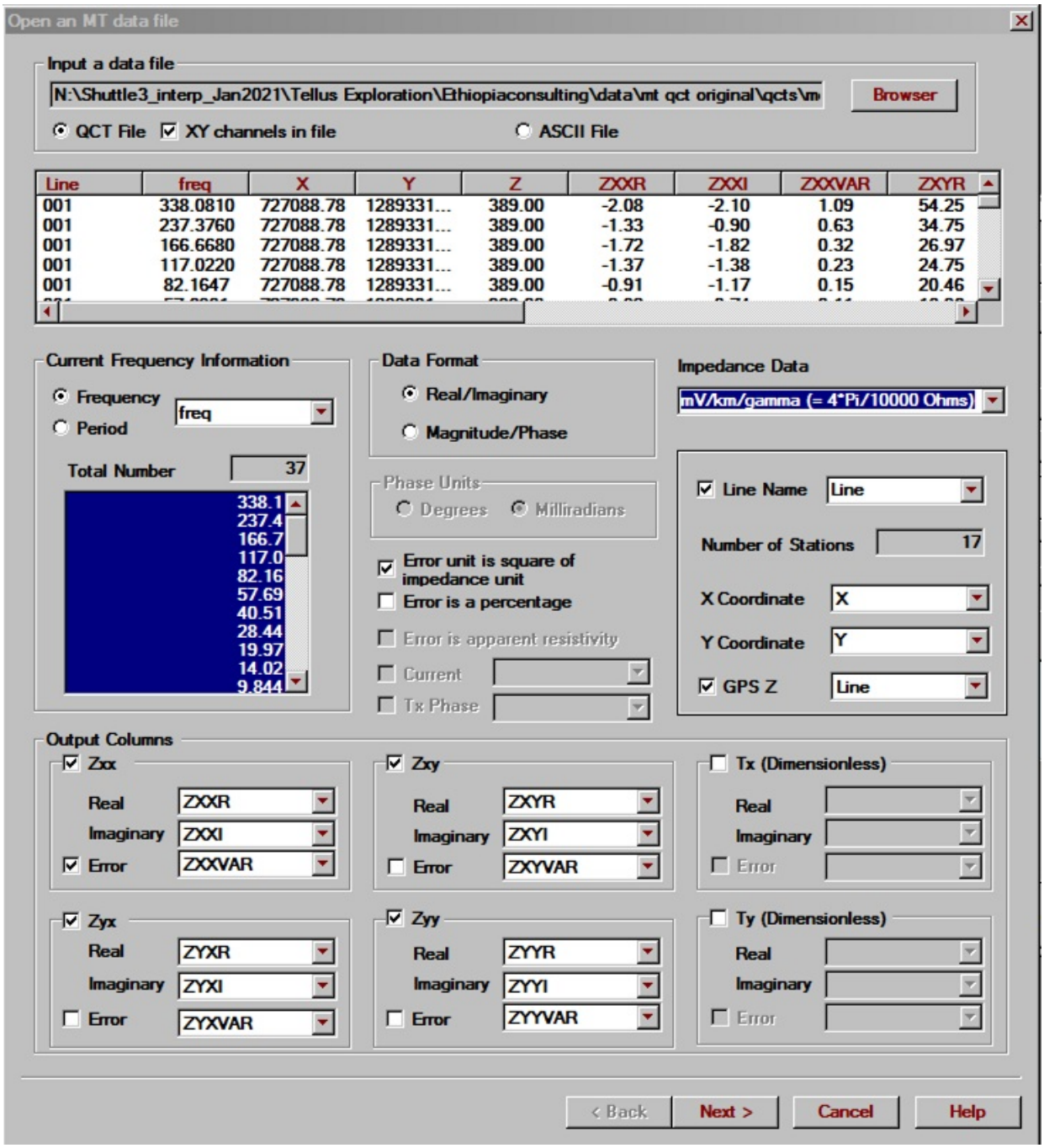
Importing a file with a single station per worksheet

Select **Magnetotelluric and Induction Vectors** or **Stratagem MT** from the Magnetotelluric list on the Import dialog. You may also reach this interface by selecting **CSAMT** from the **CSEM/CSAMT** list. If you chose Magnetotelluric and Induction Vectors, you will see this window. This help page is for the top or second choice below:



→ Used for single station or multiple station files

→ Chose Ascii in the interface below



QCT File	If you select QCT, you need a file generated by QCTool. This file requires channels for frequency and the impedance tensors. There may be tipper vector channels as well. If the

	XY channels in file checkbox is selected, x and y coordinate channels are also required and there should be only one station per worksheet.
ASCII File	If you select ASCII, you need a tbl file. The ASCII format can only be used for an MT data file with a single station and multiple frequencies. This format is described further below.
Current Frequency Information	Displays the frequency values and the number of frequencies for the current data point.
Coordinate	Choose the x and y values of the location to which the data applies or specify the columns of the qct file which contain the x and y values.
Output Columns	Choose data columns that you want to save to the database. You will need to specify the real and imaginary columns for each impedance tensor or tipper vector if you are importing a qct file. Select the appropriate **Error** checkbox and error channel if you would like to import error. There are also checkboxes to specify whether the error refers to apparent resistivity and if the error is a percentage.
Impedance Data Unit	Choose the units of the data values in the import file. The impedance tensor data will be recalculated to be units of V/A in the database. Tipper data values are not recalculated.
Data Format	You may read real and imaginary channels from the qct file or

	magnitude and phase channels. The **Phase Units** area will be enabled when **Apparent Resistivity/Phase** is selected. Apparent resistivity units will always be ohm m.

Magnetotelluric Table Format (.tbl)

The table format is, as its name implies, a simple column formatted file with spaces separating the columns. It consists of a SITE header, a line with the number of frequencies (N) and then a header line consisting of the real and imaginary parts of the 4 elements of the impedance tensor (variable units) with their variances plus a column for the frequency value and another for the rotation angle of the tensor.

SITE:e33ex

N= 33
Frequency ZRot Zxxr Zxxi Zxx Var Zxyr Zxyi Zxy Var Zyxr Zyxi Zyx Var Zyyr Zyyi Zyy Var
238.2800 0.0000 -7.3268E+01 -2.7087E+01 5.1406E+00 3.6457E+02 2.4236E+02 2.8585E-01 -3.3214E+02 -3.0558E+02 5.5588E+00 2.6749E+01 -1.9779E+01 3.0910E-01
167.9700 0.0000 -8.0286E+01 -3.2320E+01 3.7215E-01 3.1567E+02 2.0165E+02 2.5130E-02 -2.6584E+02 -2.4745E+02 3.1111E-01 3.2803E+01 -1.7926E+01 2.1008E-02

....

Multiple sites are allowed but each site must have its own table file and the import allows you to successively add points. The sites may have different set(s) of frequencies.

In addition the table file allows a section below the impedances for the tipper elements.

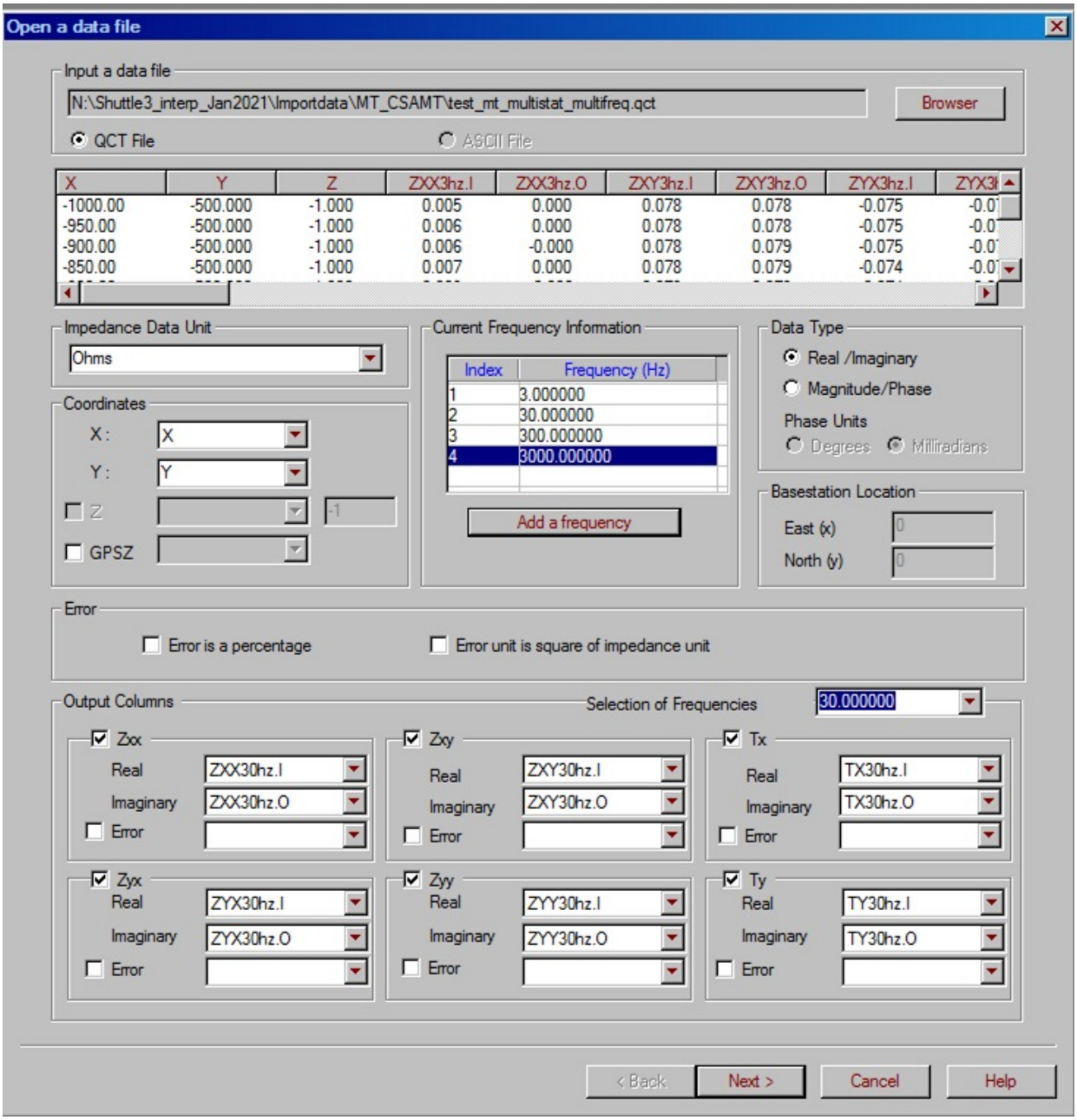
SITE:e33ex

N= 33

Frequency	Txr	Txi	Tx Var	Tyr	Tyi	Ty Var
238.2800	2.5344E-02	-9.8063E-02	5.3988E-07	7.0199E-03	-2.1500E-02	3.0021E-08
167.9700	5.5662E-02	-8.6406E-02	1.6794E-07	1.8160E-02	-2.2349E-02	1.1340E-08
113.2800	7.7976E-02	-8.0721E-02	4.4951E-07	2.9027E-02	-1.6366E-02	3.7224E-08

Importing a file with multiple stations

Select **Magnetotelluric and Induction Vectors** from the Magnetotelluric list of the Import dialog, then choose **MT (multiple stations per worksheet)** to launch the following interface.
You may also reach this interface by selecting **ZTEM/AFMAG**.
In this import, the software expects all of the data in a single spreadsheet. Each data element is a separate channel.
In the example below, ZXX3hz.I and ZXX3hz.O are the real and imaginary parts of ZXX for 3Hz and so on for the other data.



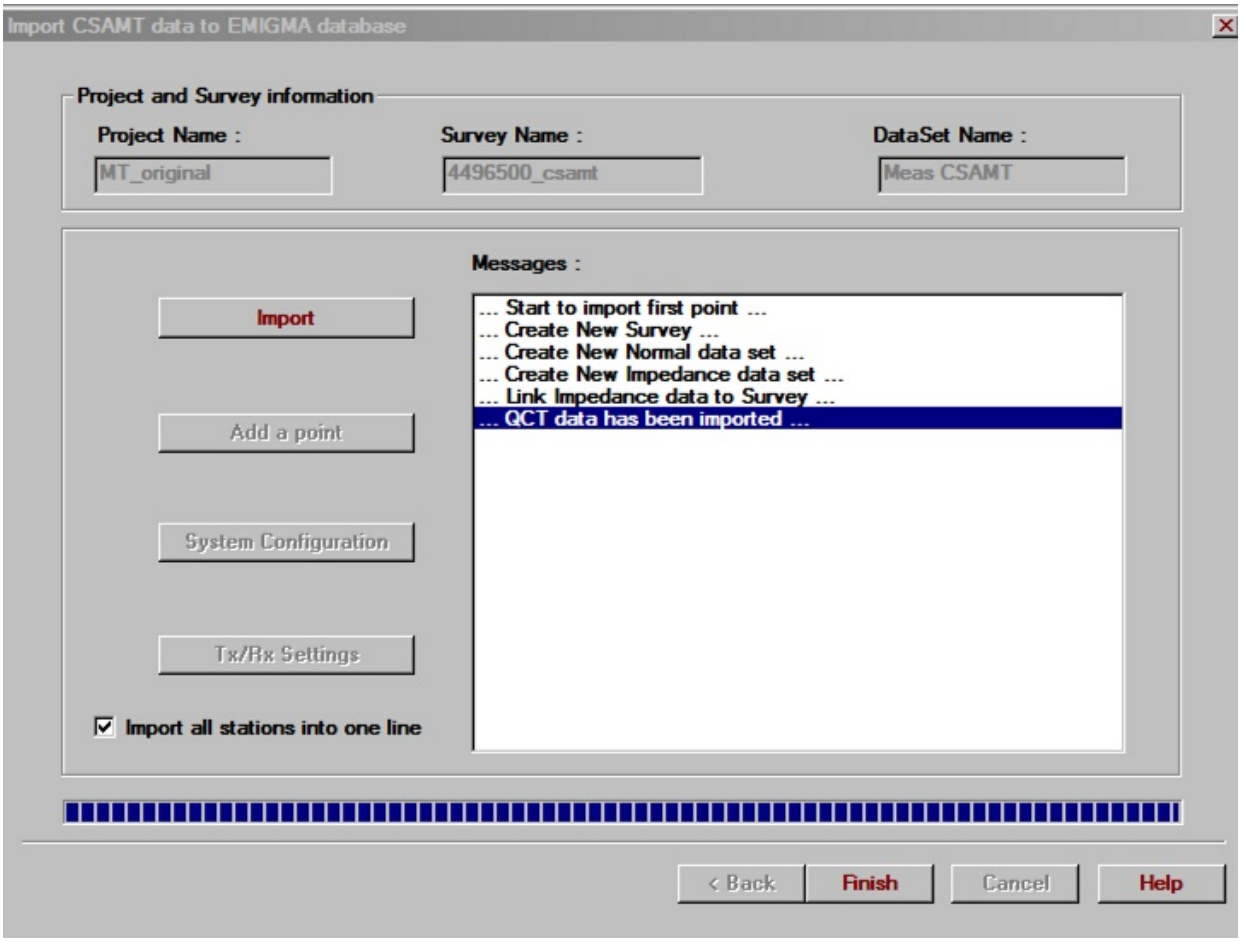
The user adds the frequencies required to the Current Frequency Information box and at the bottom for each frequency, the channels for the each component are selected. For example, Zxx, Zxy, Zyx, Zyy and the tippers Tx and Ty if available.

QCT File	The QCT file requires columns for X and Y coordinates and impedance tensors or tippers. There requires a separate column for each impedance

	tensor element or tipper for each frequency.
Current Frequency Information	Displays the number of frequencies for the data to be imported.
Add/Remove a frequency	Click the **Add a frequency** button until the number of frequencies you would like to import has appeared in the list of frequencies to the left of the **Add** button. To remove a frequency, select the frequency and use your delete key.
Coordinate	Specify the columns of the qct file which contain the (X, Y, Z) and GPS_Z values. Z and GPSZ values do not need to be imported for ground data but Z is the altimeter data or radar data for the bird for airborne data and must be imported.
Output Columns	Choose data columns that you want to save to the database. You will need to specify the real and imaginary columns for each impedance tensor or tipper vector. The data columns displayed apply to the frequency in the **Selection of Frequencies** box.
Selection of Frequencies	Make a selection from **Selection of Frequencies** to show the data columns for a specific frequency in the **Output Columns** section.
Data Units	Choose the units of the data values in the import file. The impedance tensor data will be recalculated to be units of V/A. Tipper data values are not recalculated and are assumed dimensionless.

Basestation Location	The x and y coordinates of the base station for ZTEM data.

Importing Data



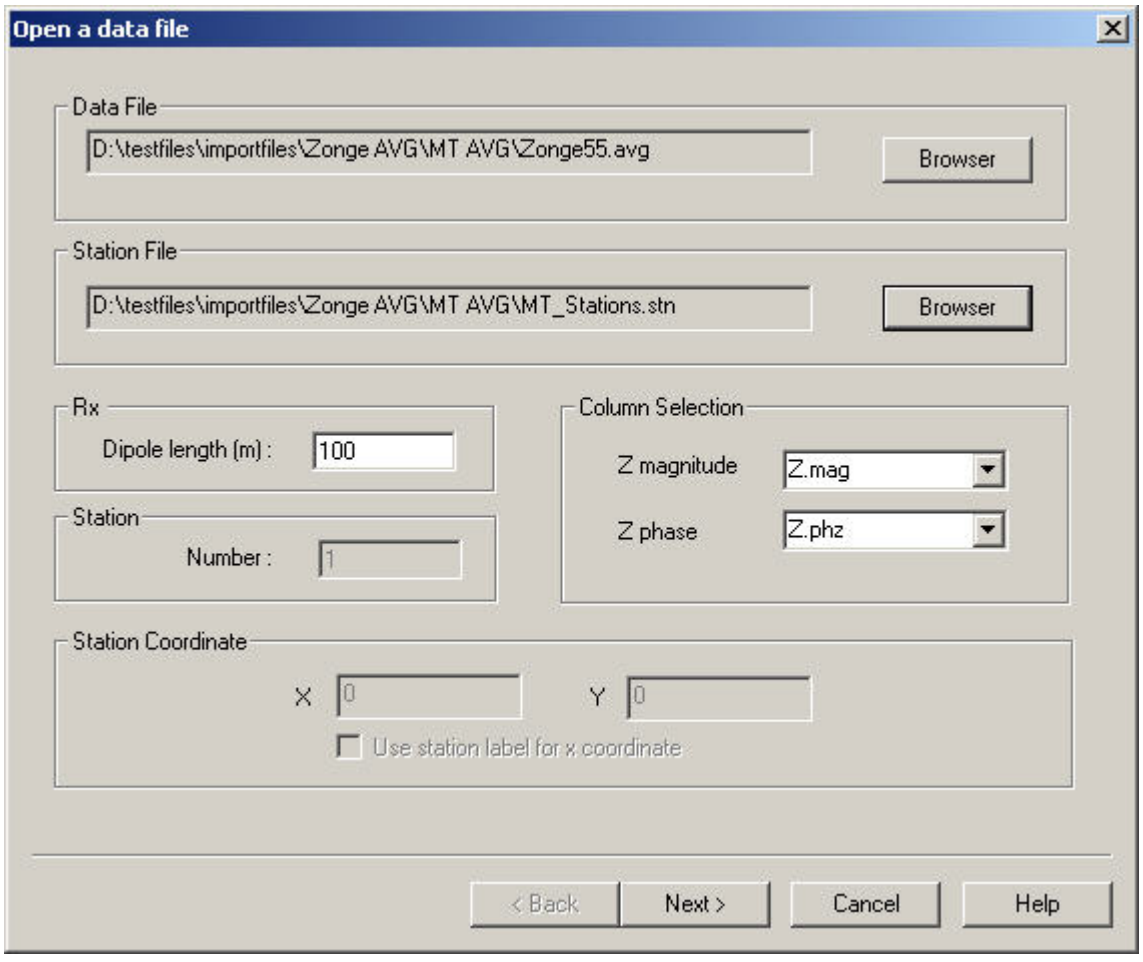
Import	Start processing of saving the data set into the database.
Project Name	Name of the project that will appear in the database.
Survey Name	Name of the survey that will appear in the project.
Data Set Name	Name of the data set that will appear in the survey.
Add a Point	After the data set has been saved, the

	other point data can be added from a different data file and the data set will be appended into same survey block.
System Configuration	Set following values: Declination of the E polarization (in degrees) Declination of the H polarization (in degrees) Declination of the Receiver X axis (in degrees) Length of the first E field dipoles (in m) Length of the second E field dipoles (in m)
Tx/Rx Settings	When importing CSAMT data, you may specify the coordinates of the transmitter endpoints as well as the length of the receiver.
Import all stations into one line	When the multiple stations option has been selected, the stations may be imported into a single line or each station may be imported into its own line.

Zonge GDP_32 Import Wizard

Zonge GDP_32 Import. Step 1. Load data file. (MT)

Selecting **Zonge GDP_32 MT** from the **EM** list under the **Raw Data** tab of the **Import** dialog, and then choosing the data type as MT brings up following interface:



Data file Choose a MT file by clicking the **Browser** button

Station file

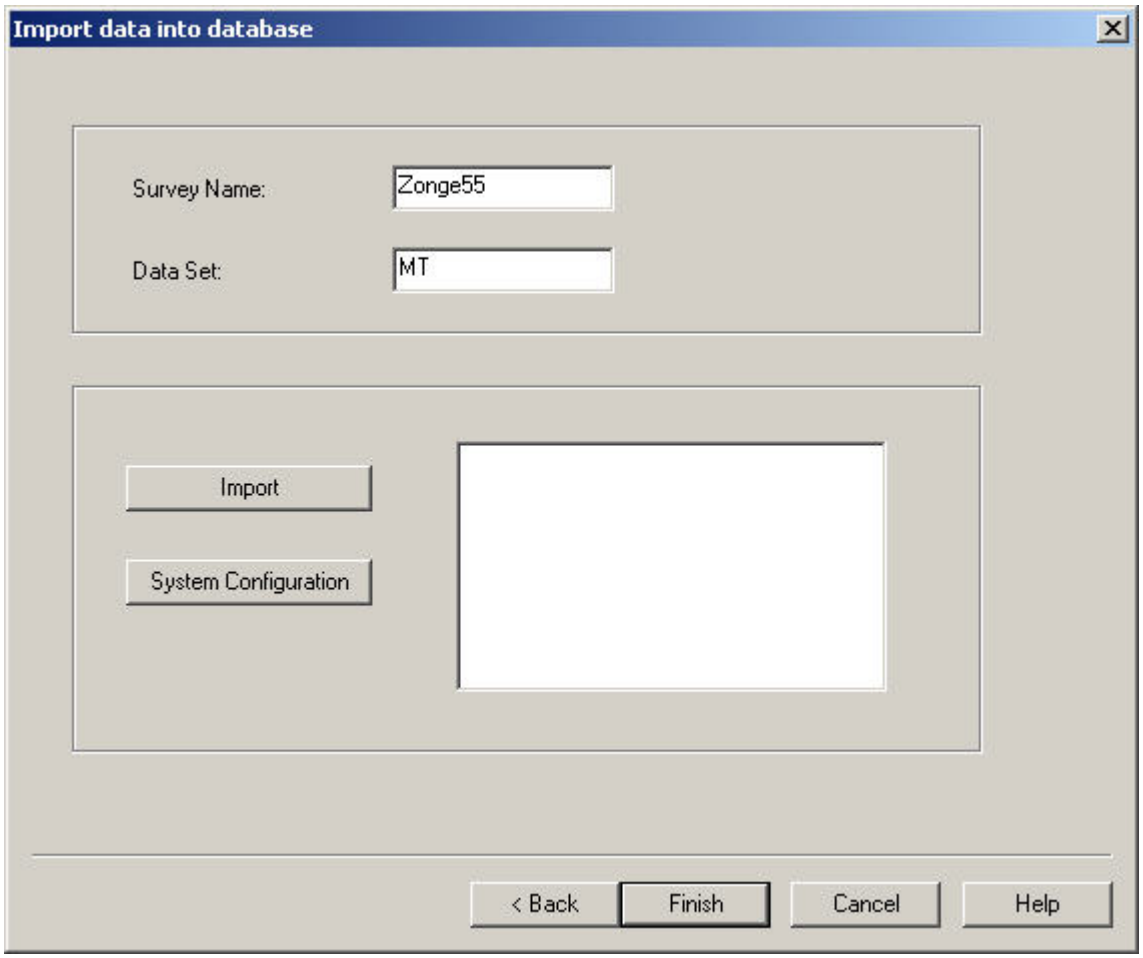
Each group of data in the Zonge file has a station label associated with it. To convert the station labels to coordinates, click the **Browser** button in the **Station File** section and select a station file. The station file is an ascii file organized in columns for station label, x, y, and z in that order. Any file lines beginning with a forward or back slash will be considered a comment and skipped.

Rx Dipole length
This is the length of receiver dipole in meters. Check that it has been read correctly from the file.

Column selection
Select the correct columns for the impedance magnitude and phase.

Station Coordinate
If a station file is not available, you may enter values for the x and y coordinates here. The station label in the file can be used for the x coordinate by selecting the checkbox in this section.

Zonge GDP_32 Import. Step 2. Import data to database. (MT)

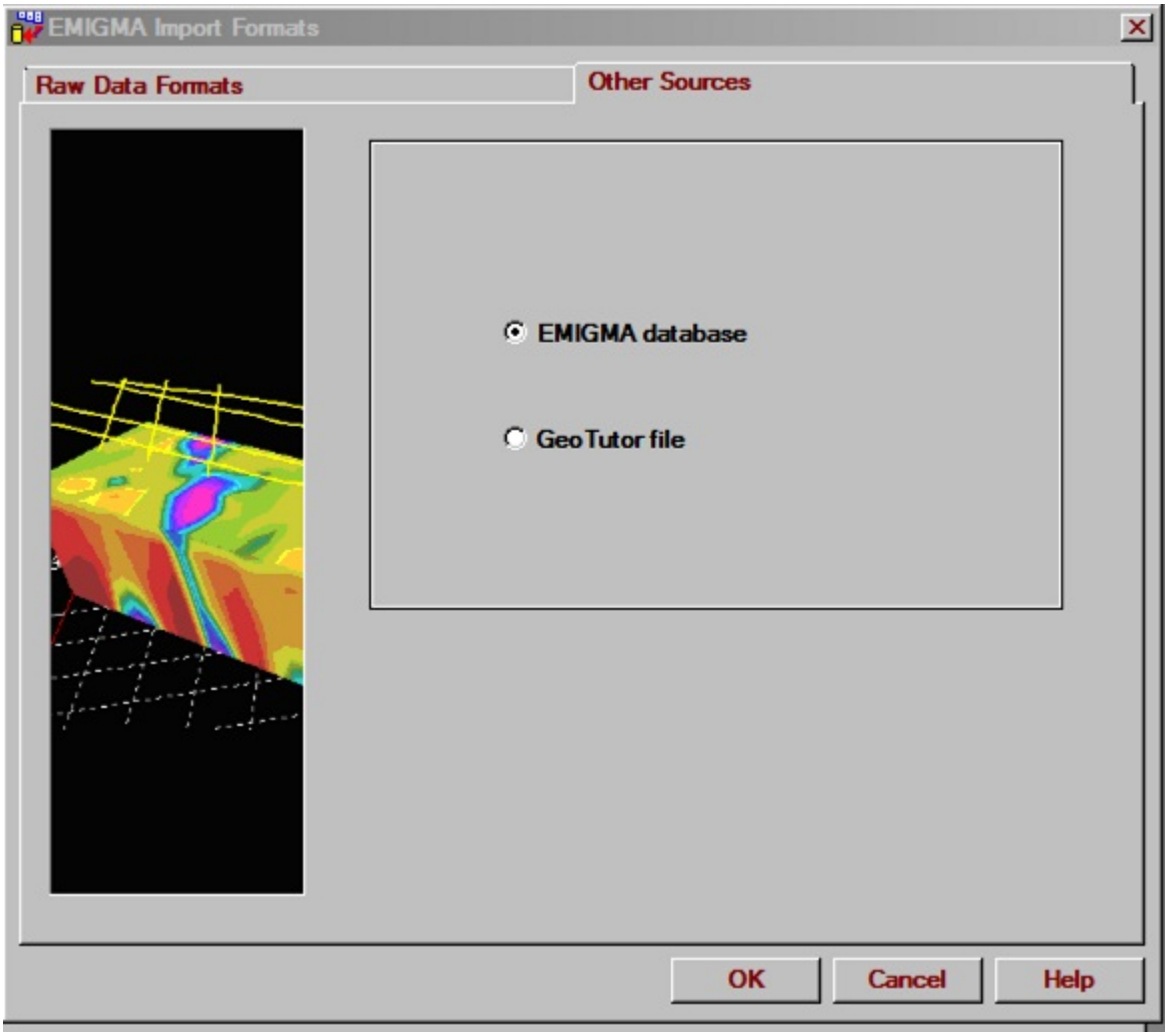


Survey Information Choose a survey name and data set name, and import the data.

System Configuration
Clicking the **System Configuration** button allows you to modify the declination of the E polarization as well as the declination of the receiver x axis.

Import Dialog: Other Sources Tab

Under the **Other Sources** tab, you can import two kinds of files - files from other databases in EMIGMA and GeoTutor files



- Select one of the two file types and click **OK**.

Related Topics

Import of GeoTutor Files

Import of EMIGMA Database

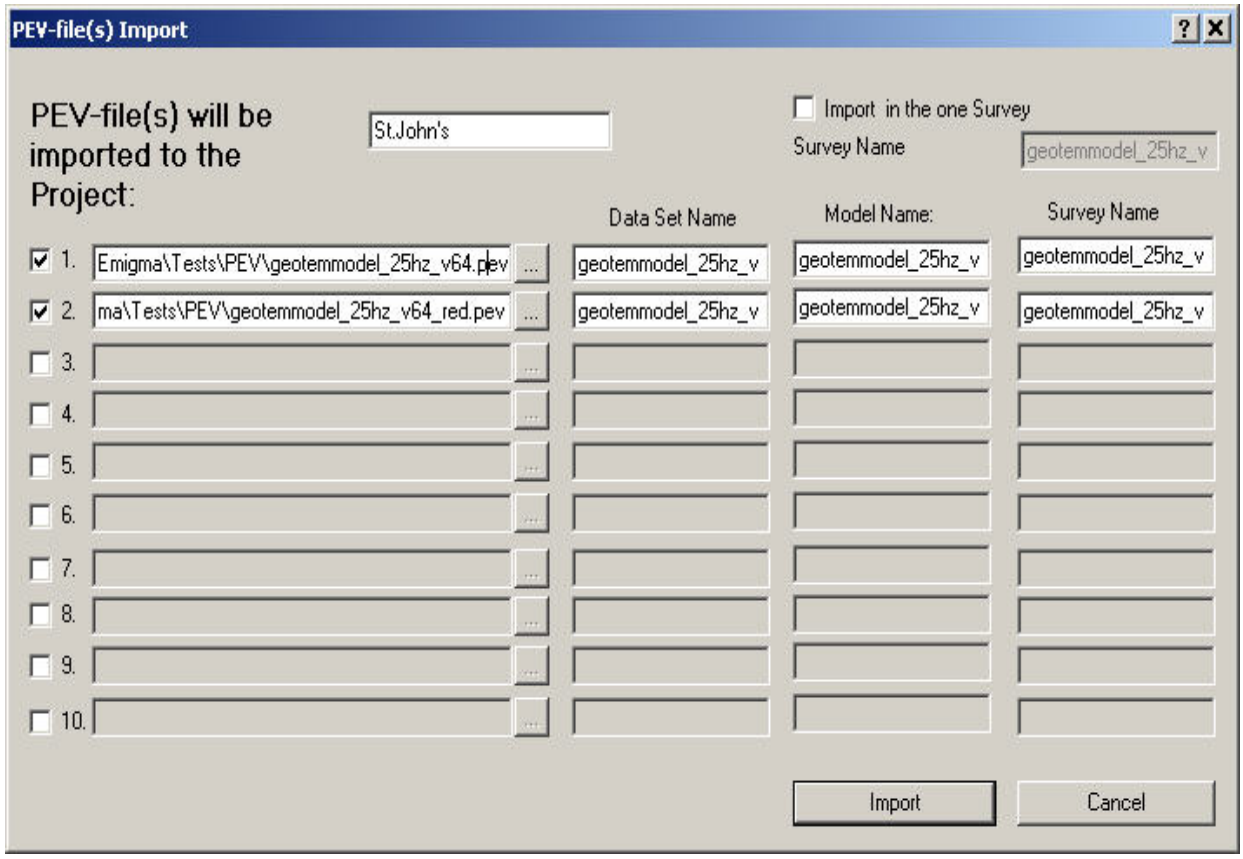
Import of GeoTutor Files

Selecting the **GeoTutor file** option under the **Other Sources** tab of the **Import** window takes you to the **PEV file(s) Import** window.

Note. *If you are importing data into an existing project, before you proceed to the* ***PEV file(s) Import*** *dialog, a message asks you whether you want to create a new survey. Clicking* ***Yes*** *creates a new survey in your project. Clicking* ***No*** *imports data into an already available survey; the latter being possible only if the data file you are importing has the same structure (system geometry and locations) as the survey you are importing into.*

To import a file/files into separate surveys:

- De-select the **Import in one Survey** box selected by default in the right upper-hand corner of the **PEV file(s) Import** dialog:



- Check the box next to the first row in the table below to activate it. Click the ellipsis button in this row to browse for a file to import. After having loaded this file, you can see its path as well as other details in the four columns of the table. Repeat this procedure for other files to import.
- Click **Import**. This takes you back to the **Database** dialog. The **Surveys in Project** field contains as many surveys as you have specified in the **PEV file(s) Import** dialog.

To import a file/files into the same survey:

- In the **PEV file(s) Import** dialog, leave the **Import in one Survey** box checked.
- Check the box next to the first row in the table below to activate it. Click the ellipsis button in this row to browse for a file to import. After having loaded this file, you can see its path as well as other details in the four columns of the table. Repeat this procedure for other files to import.
- Click **Import**. If a file/files to import differs/differ in system geometry or locations, a message appears indicating failure of the operation. If a success, you are taken back to the **Database** dialog. In the case of importing multiple files into one survey that has already existed, the **Surveys in Project** field of this dialog contains only this survey, whereas the **Data Sets in Survey** field will show as many files as you have specified in the **PEV file(s) Import** dialog. In the case of importing multiple files into one survey that is new, the **Surveys in Project** field of the **Database** dialog contains the name of the first file you have specified in the **PEV file(s) Import** dialog. To change this name, see **Rename a Survey**.

Transferring Data Between EMIGMA Databases

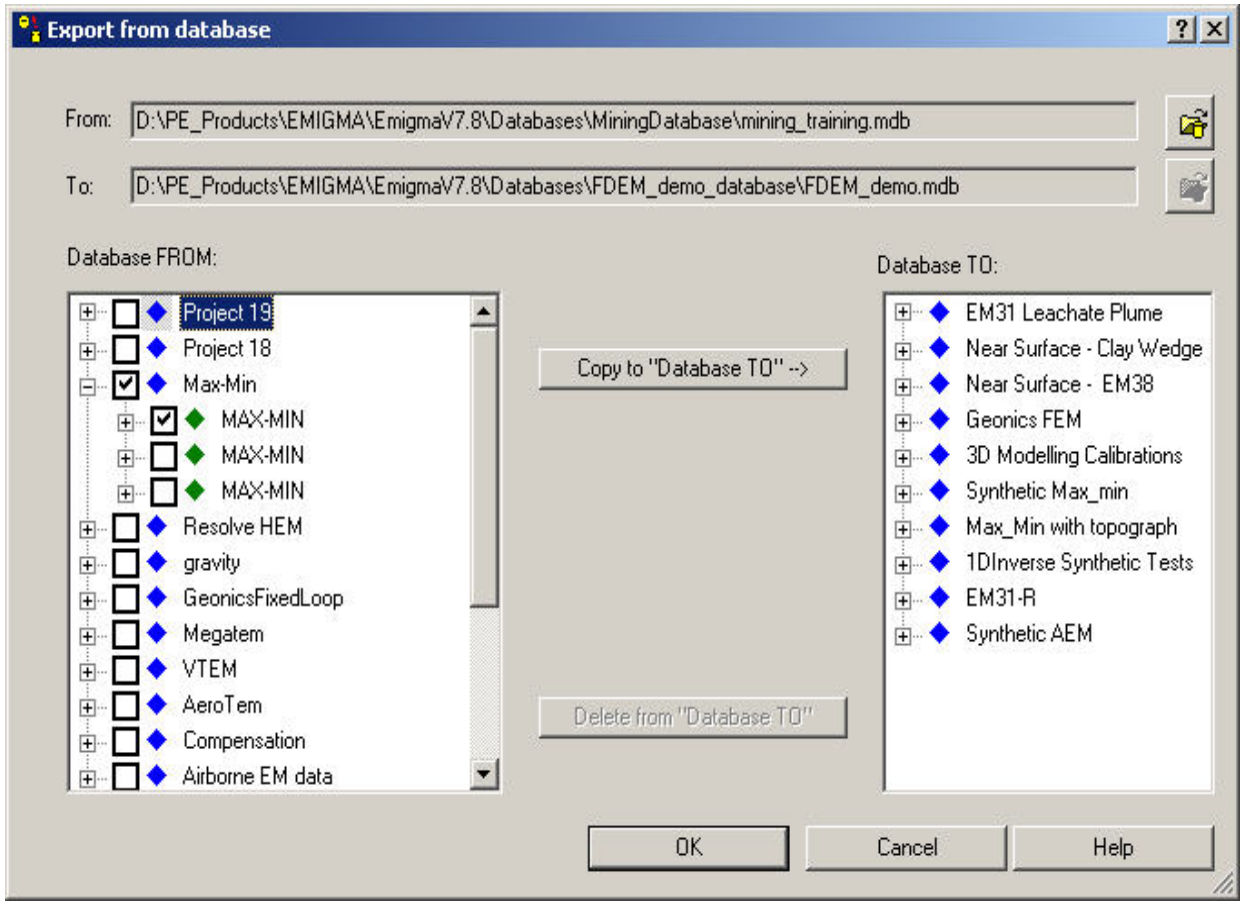
To import data sets to the current database from a different one:

- Select **EMIGMA database** under the **Other Sources** tab of the **Import** window.

To export data sets from the current database to a different one:

- Click the  button and select **.MDB EMIGMA database** from the list of export formats on the window that appears.

Below is the interface used to transfer a data set between databases:



- The path of your current database will be in either the **To** or **From** field of this window depending on whether data sets are being imported or

exported from the current database. All the projects available in your current database will be displayed in the corresponding Database list below the two fields.

- Click **Browse** next to the field that is empty in the upper part of the window. Browse for the database with which you would like to exchange a project/survey/data set. After you have specified the database, all the projects available in it will appear in the corresponding Database list on the lower part of the window.

  ***Note**. Projects have a blue diamond next to them, surveys have a green diamond next to them, and data sets have a red diamond.*

To transfer a project:

- Select the checkbox next to the desired project from the **Database FROM** list.

- Click **Copy to Database TO**. The project appears in the **Database TO** list on the right, including all the surveys and data sets it originally contained.

To import a data set into a new project:

- Expand a required project and survey in the **Database FROM** list. Select a data set to import.

- Click **Copy to Database TO** . The project appears in the **Database TO** list. It contains only the survey and data set that you selected in the **Database FROM** list.

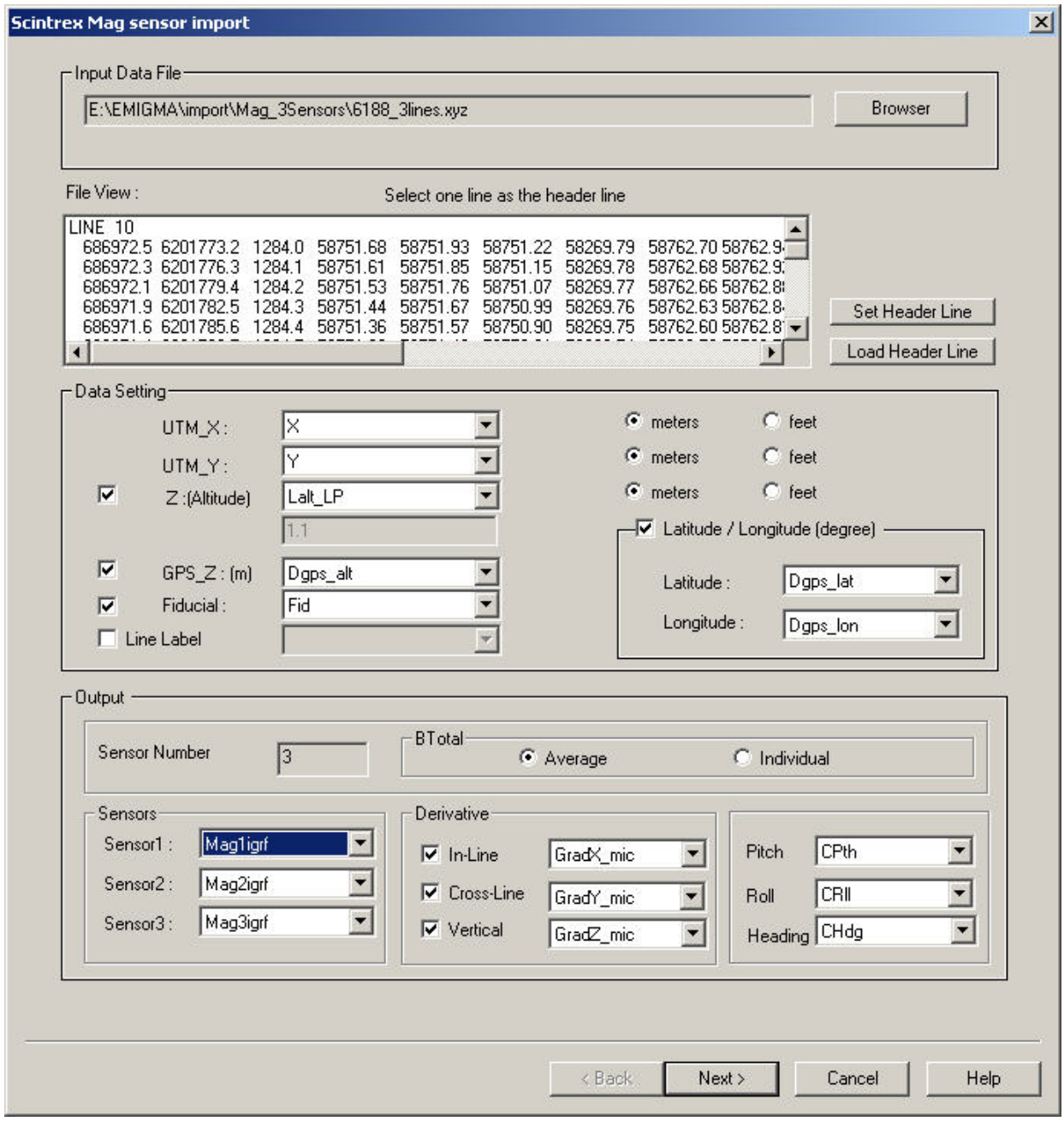
To remove any project/survey/data set from the **Database TO** list:

- Select a project/survey/data set from the list and click **Delete from Database TO**.

3 Sensor Helicopter Data Import

Step 1. Data Column Specification

Selecting **3-Sensor Helicopter** from the **Potential Field** list under the **Raw Data** tab of the **Import** dialog launches the following window:



- Click **Browser** to locate the XYZ ASCII file. The filename appears in the **Input Data File** field.

If the XYZ file to import has no header line, you may load a header file:

- To load a header line from a file, click **Load Header Line**and browse for a *.lbl file.
- The format of the file is:
  Column1 Label: Description
  Column2 Label: Description
  ...
  e.g.
  X: X position (meters)
  Y: Y position (meters)
  Fid: Fiducial

***Note**. The **File View** field contains the first 20 lines of data from the file to import.*

Data Setting

In the **Data Setting** section, the top two dropdown lists in the section to the left will show the respective channels to be imported as X and Y.

If your data also contain latitude and longitude, you can import them as a separate channel. To do this:

- Check the **Latitude/Longitude** box in section to the right. This activates two dropdown lists below the checkbox.

- Select the required channels from these lists to import them along with your UTM coordinates.

If you have altitude data, the **Z** box in the middle of the dialog is selected automatically and the dropdown list next to it contains the respective channel. To cancel the import of altitude data, de-select the **Z** box.

If you have surface data, the **Default Z** field in the middle contains 1. If you have airborne data, the **Default Z** field contains 100. You can edit this value as desired and specify the altitude units in the respective section in the right part of the dialog.

If you have GPS Z data, the **GPS_Z** box is checked and the dropdown list to the right contains the respective channel.

If the file you are importing has a fiducial channel, the respective box is selected and the dropdown list next to it contains this channel.

Output

The wizard automatically recognizes the channel containing data and selects it from the **Sensors** dropdown lists in the left part of the window. If your file contains a gradient channel, you can import this channel as well.

To import an available gradient channel:

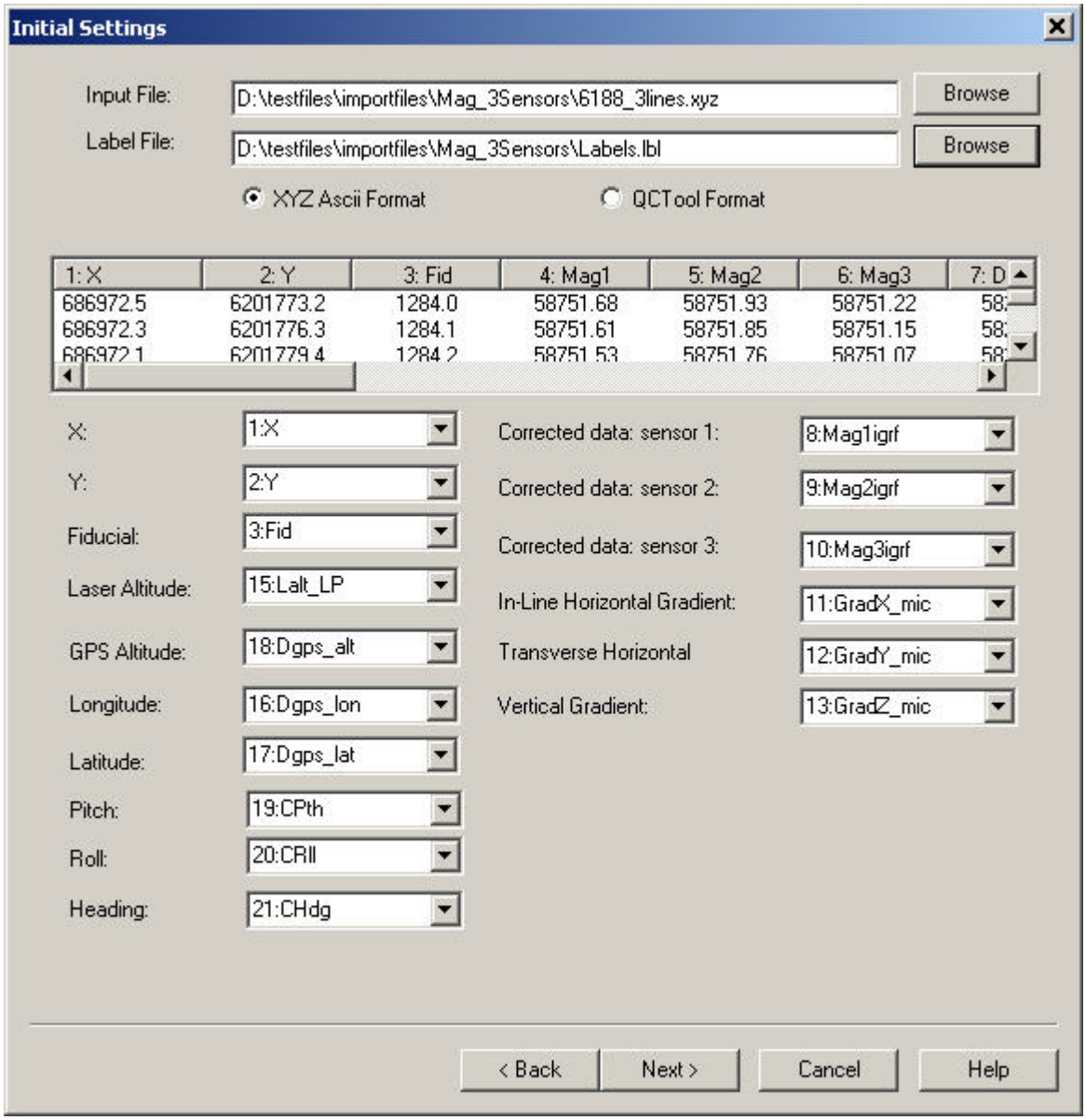
- Check a box in the the **Derivative** section. The dropdown list next to this box becomes active, containing the gradient channel from the file you are importing.

In section labelled **BTotal**, you can choose to import the data of the three sensors as three separate channels by selecting **Individual**. Select **Average** to import an average of the data for the three sensors into only one channel.

De-Rotated Magnetic Gradient Data Import

Step 1. Data Column Specification

Selecting **De-Rotated Magnetic Gradient** from the **Potential Field** list under the **Raw Data** tab of the **Import** interface launches the following window appears:



Select between the QCTool QCT format or an XYZ ASCII format for your input file.

Click **Browse** to locate the **Input File**.

For XYZ ASCII files, you need to also select a **Label File** that assigns names to each column by clicking the related **Browse** button. and browsing for a *.lbl file.

- The format of the file is:

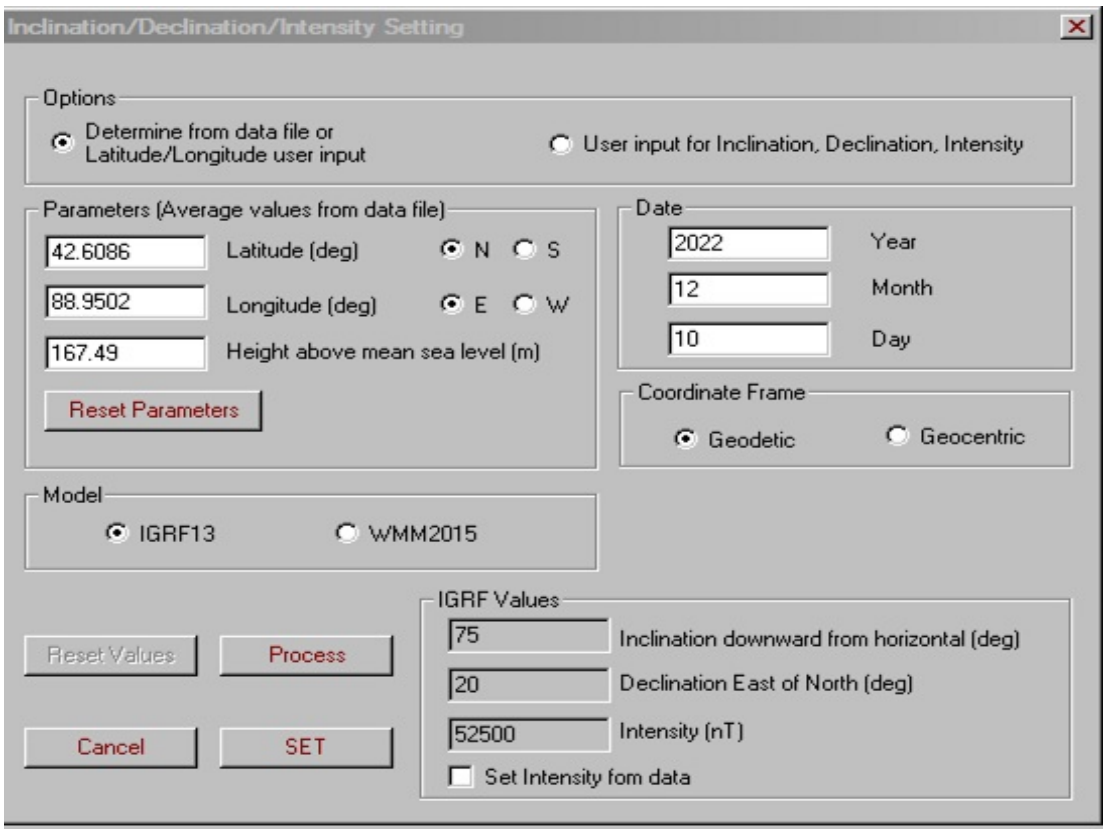
Column1 Label: Description

Column2 Label: Description
...
e.g.
X: X position (meters)
Y: Y position (meters)
Fid: Fiducial

The channels will be automatically detected if possible. Any channels that have not been detected will need to be selected manually. Magnetic sensor measurements are in nanoTesla. Gradient values are in nanoTesla/m

Setting the Background Field

Click the **Set Background Field** button. The following window appears:



- Select the **Determine from Data File or Latitude/Longitude User Input** option to activate the **Parameters**, **Date**, and **Coordinate Frame** sections below. The **Parameters** section contains latitude and longitude calculated from the file you are importing. If you are not satisfied with these values, you can change them manually. To return the initial values, use the **Reset Parameters** button. The **Date** section contains the current date.

- Select between **Geodetic** and **Geocentric** in the **Coordinate Frame** section.

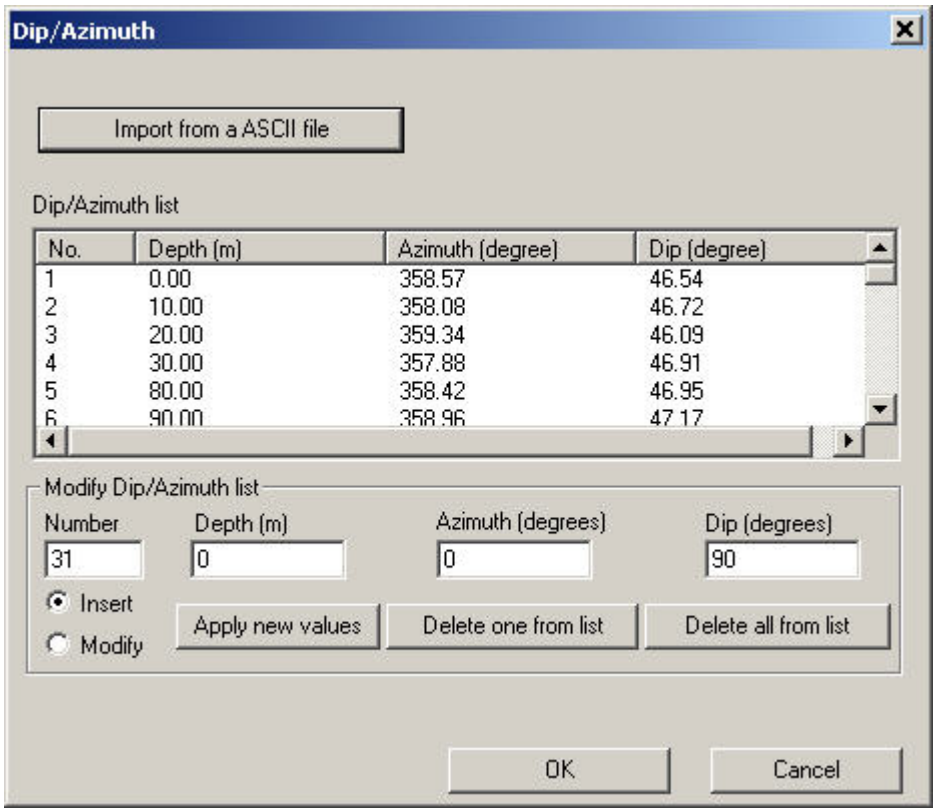
- Click **Process.** The **IGRF Values** section updates accordingly. The **Intensity** value is average for given inclination and declination; if

desired, you can set this value from the file you are importing. For this purpose, check the **Set Intensity from data** box.

- Click **Set** to return to the previous window.

Edit Dip/Azimuth

Click the **Edit Dip/Azimuth** button or **Multiple Dip/Azimuth** option to display the Dip/Azimuth editing interface. On this window, a borehole with multiple segments can be defined.



Any previously defined borehole segments will appear in the **Dip/Azimuth list**.

Modify Dip/Azimuth list
To insert a new borehole segment, select **Insert** then enter values for **Depth**, **Azimuth** and **Dip**. **Number** refers to the row number where the values should be inserted. Click **Apply new values** and the segment will be inserted to the list.

To modify an existing borehole segment, select **Modify** then click on an existing borehole segment in the list. Enter new values for **Depth**, **Azimuth**

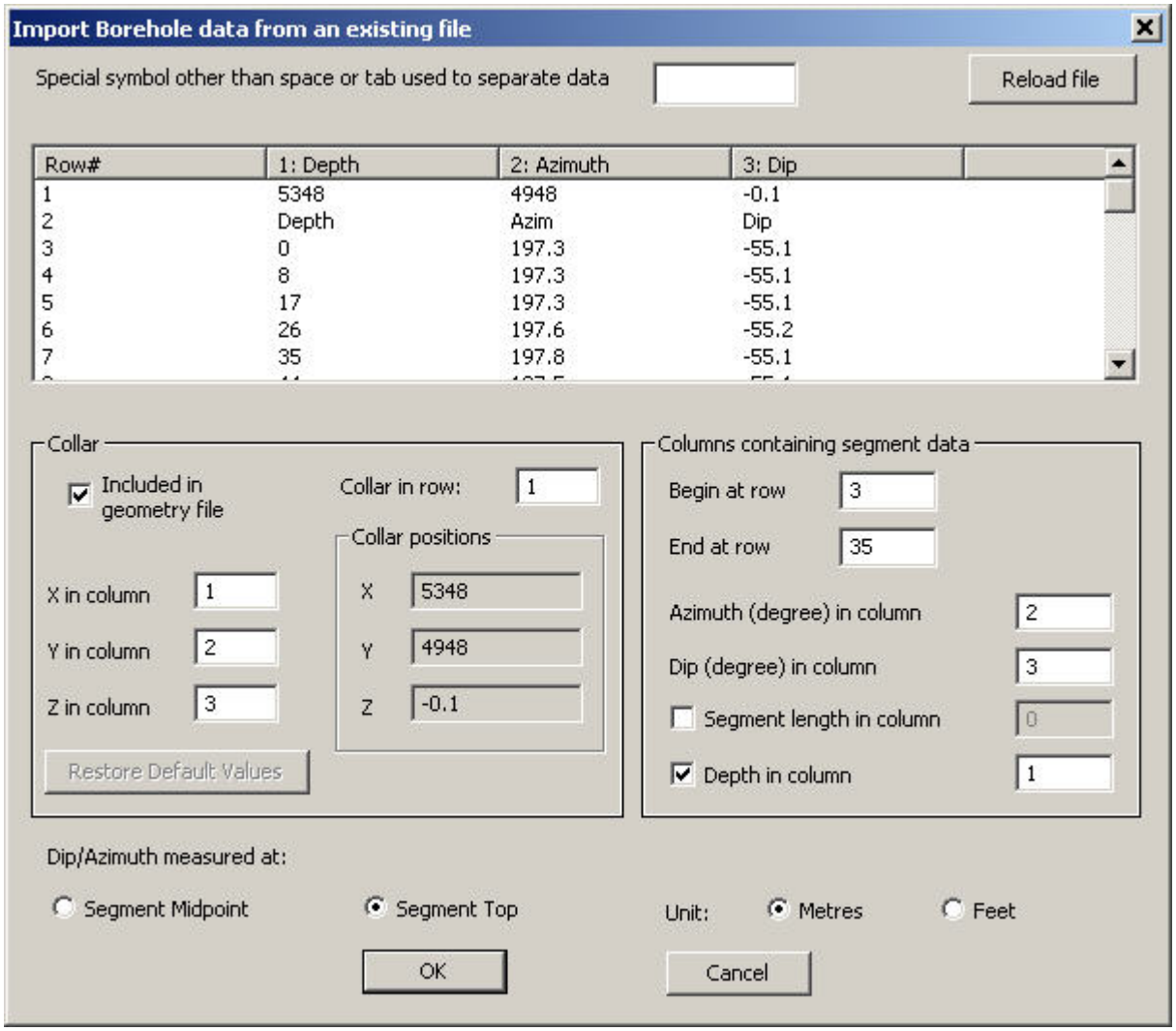
or **Dip** then click **Apply new values**.

To delete a single borehole segment from the list, click the segment in the list you would like delete. Then, click **Delete one from list**.

To clear the segments from the list, click **Delete all from list**.

Import from an ASCII file
Click this button at the top of the window to import the borehole geometry from an ASCII file.

The ASCII borehole file may have the x, y and z values of the collar on the first line.
All following lines need to contain the azimuth, dip and either segment length or depth of the segment.
There are a maximum of 300 segments allowed.
Azimuth is measured clockwise from north in degrees.
Dip is measured down from the horizontal in degrees.
Segment length and collar location are in metres or feet.



- If in the file you are importing, a symbol other than a space or tab is used to separate data, specify this symbol in the upper box and click **Reload File.** The table below will show the data you are about to import

In the **Collar** section of the window

- If your file contains collar information, select the **Included in File** box and specify the row and columns containing this information
- If your file does not contain collar information, deselect the **Included in File** box and specify the collar position in the respective section. The original collar coordinates can be displayed after a change by clicking **Restore Default Values**.

In the **Columns containing azimuth, dip and segment length data** section:

- Specify the columns containing azimuth and dip information
- Specify the starting and ending rows of the file that contain this information
- Select between depth and segment - two ways of determining location coordinates in a borehole
- Specify the units (meters or feet) in the bottom left-hand corner of the window.
- Indicate whether the dip and azimuth values were measured at the **Segment Top** or **Segment Midpoint**
- Click **OK**.