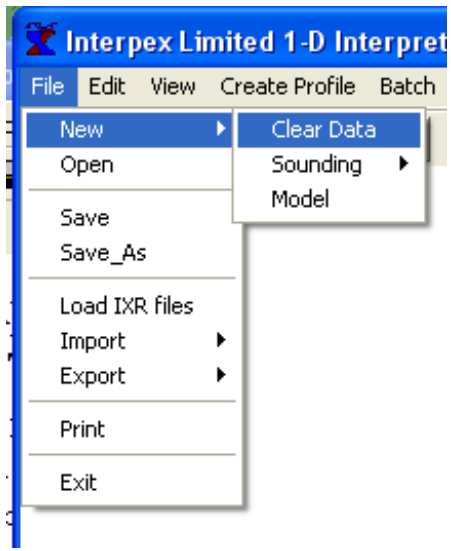
Importing Data into IX1D v 3 – A Tutorial

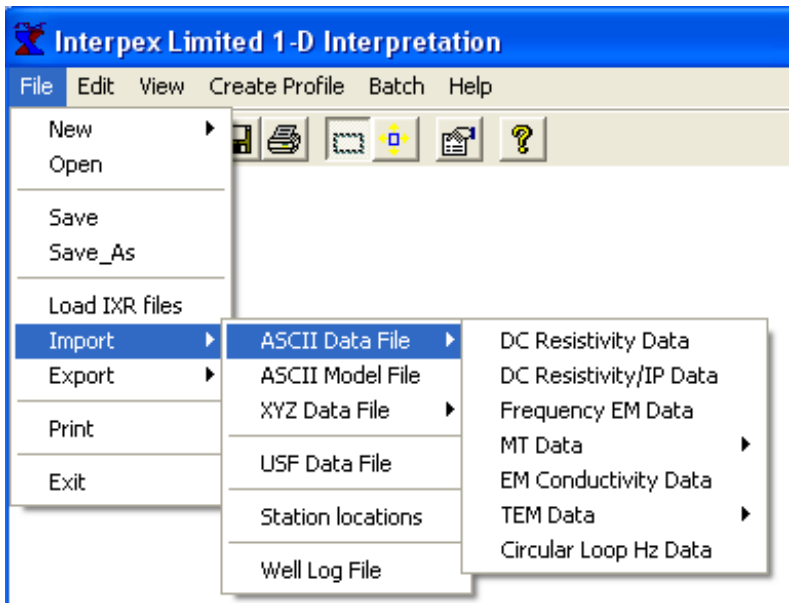
Version 1.0

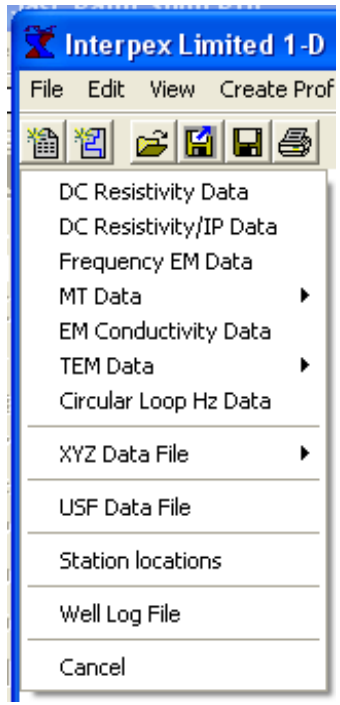
If a database is already loaded, Clear Data to start with a blank database



Use File/New/Clear Data to clear database, unless you want to add data to an existing database.

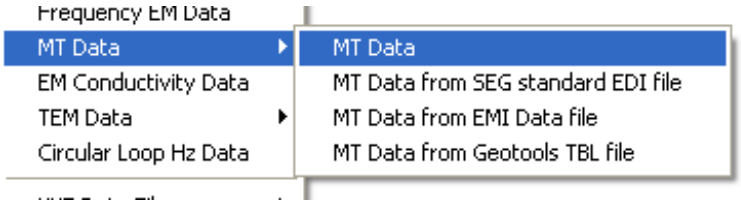
Next Select File/Import or press 



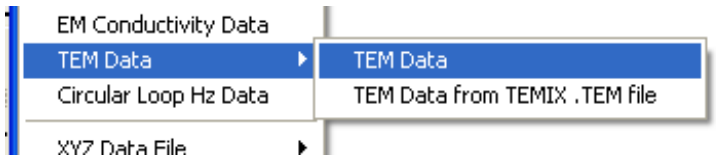


Select the type of data you wish to import from Flat ASCII file.

For MT and TEM Data, there are options

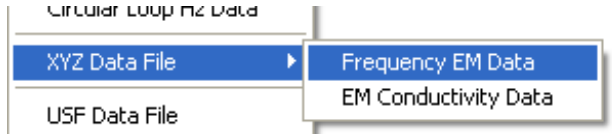


MT data can be imported from Flat file, SEG standard EDI file, EMI data file or GeoTools TBL data file.



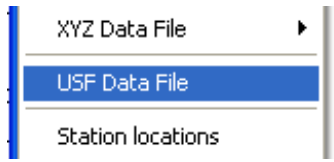
TEM data can be imported from Flat file or from TEMIX compatible .TEM files.

Profile data are best imported from XYZ files



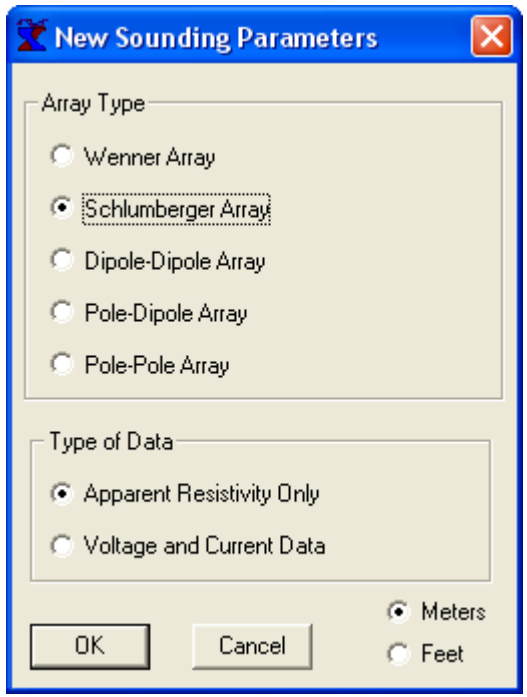
XYZ file format is currently supported for EM Conductivity and Frequency EM data.
Importing from XYZ files creates profiles from the soundings as they are imported.

Universal Sounding Format can be used to import any of the data types



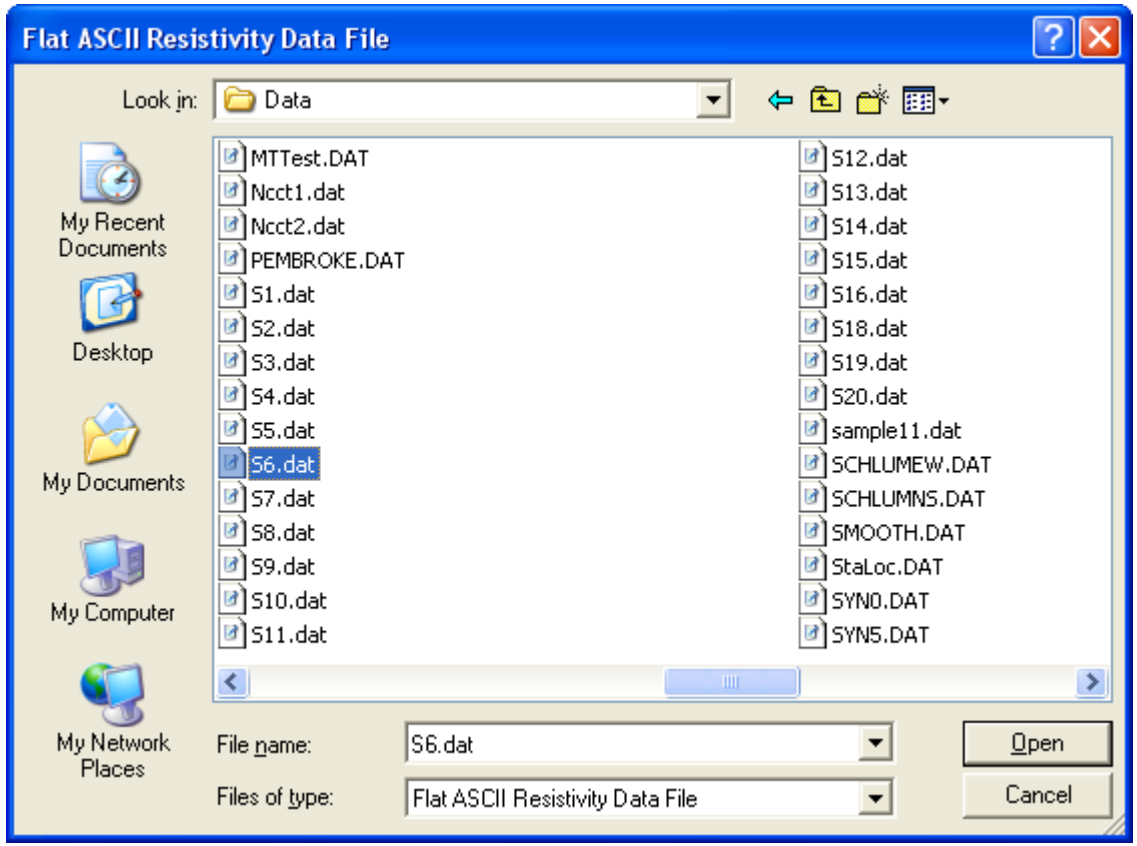
USF files can contain one or more data types in the same file!

Import DC Resistivity Data



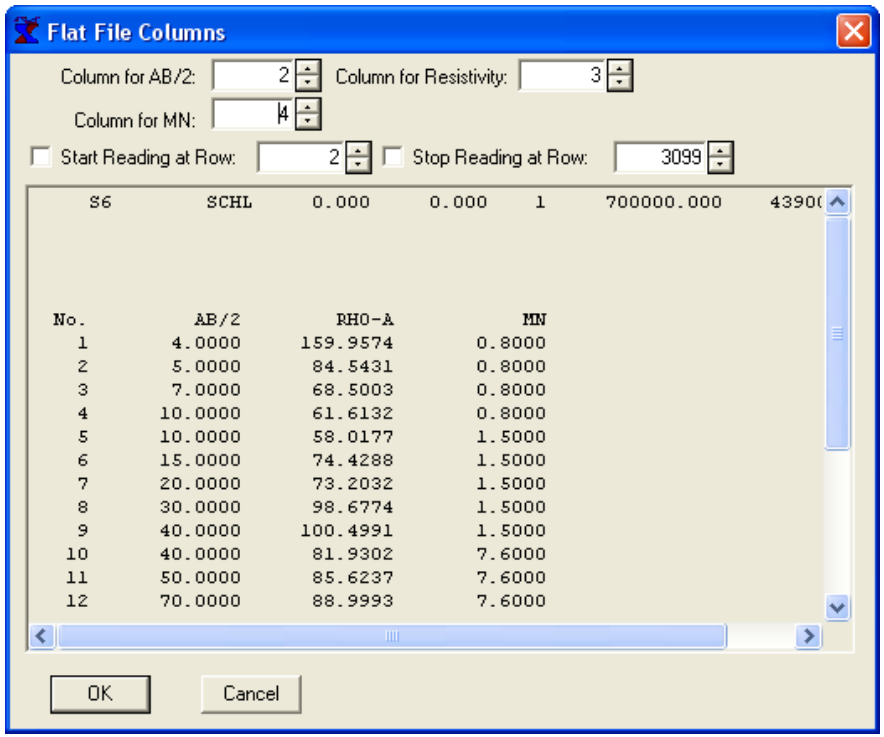
First select the array type, length units and data type.

Import DC Resistivity Data



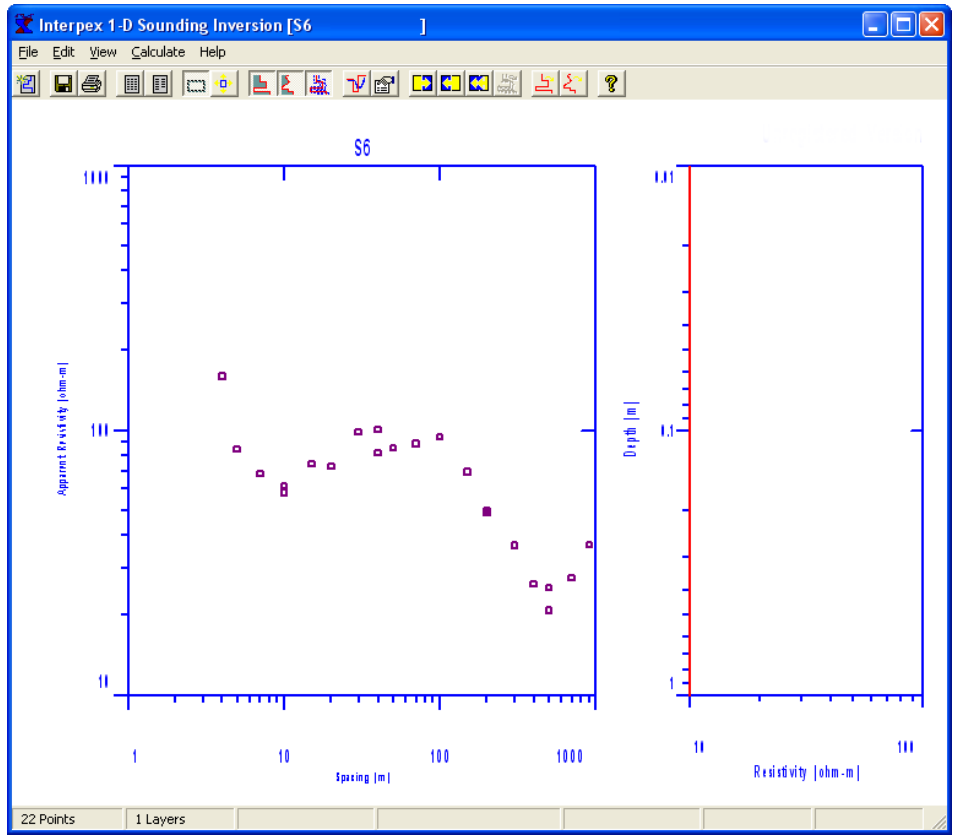
Next select the file to be imported.

Import DC Resistivity Data



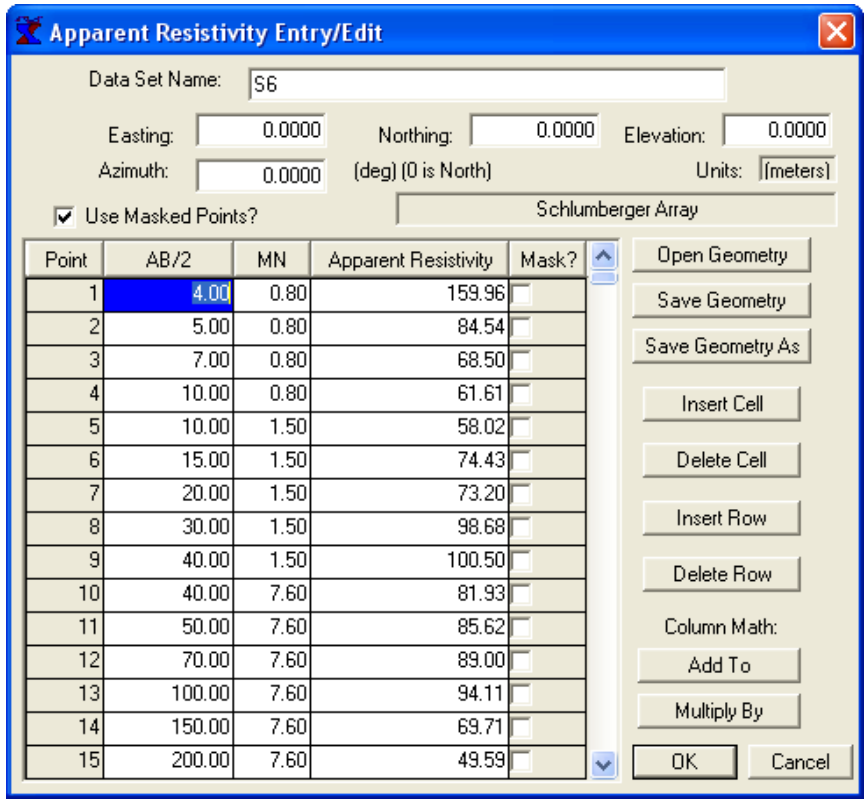
Then identify the columns in the data. For this file, AB/2 is in column 2, Rho-A is in column 3 and MN is in column 4. There is no need to control the rows which are read because unreadable rows are automatically bypassed.

Import DC Resistivity Data



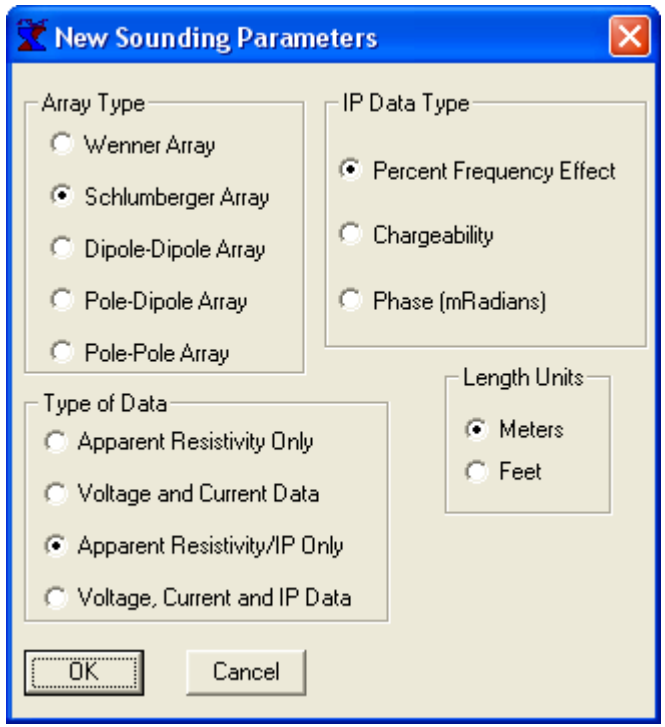
Finally press OK to import the data and see the sounding displayed in the sounding window.

Editing DC Resistivity Data



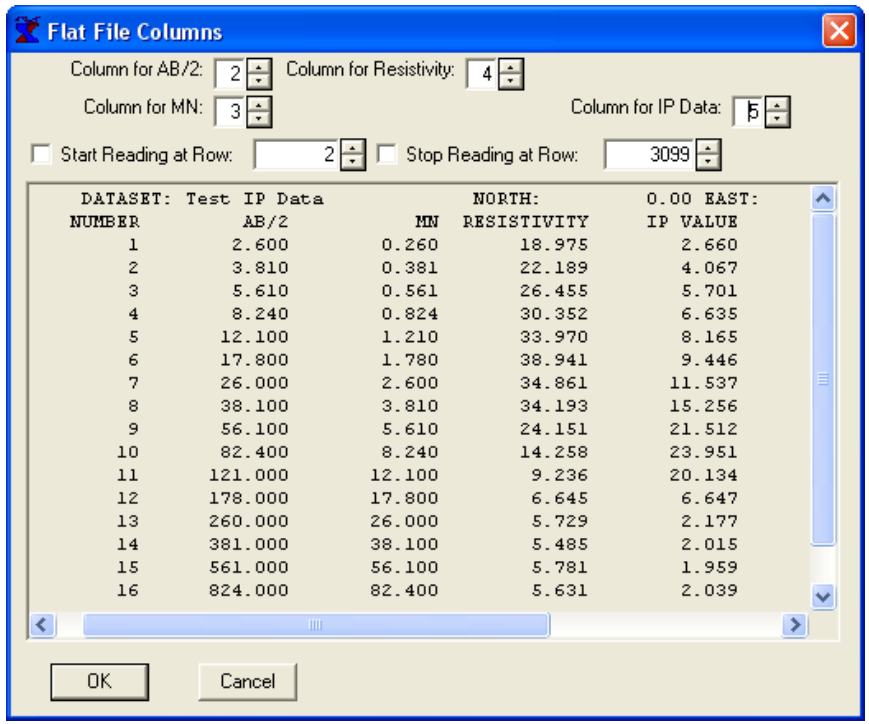
You may want to edit the data after import, since the location, elevation and other header information is not imported and thus not correct. Use Edit/Data or press  to access the editing spreadsheet.

Import DC Resistivity/IP Data



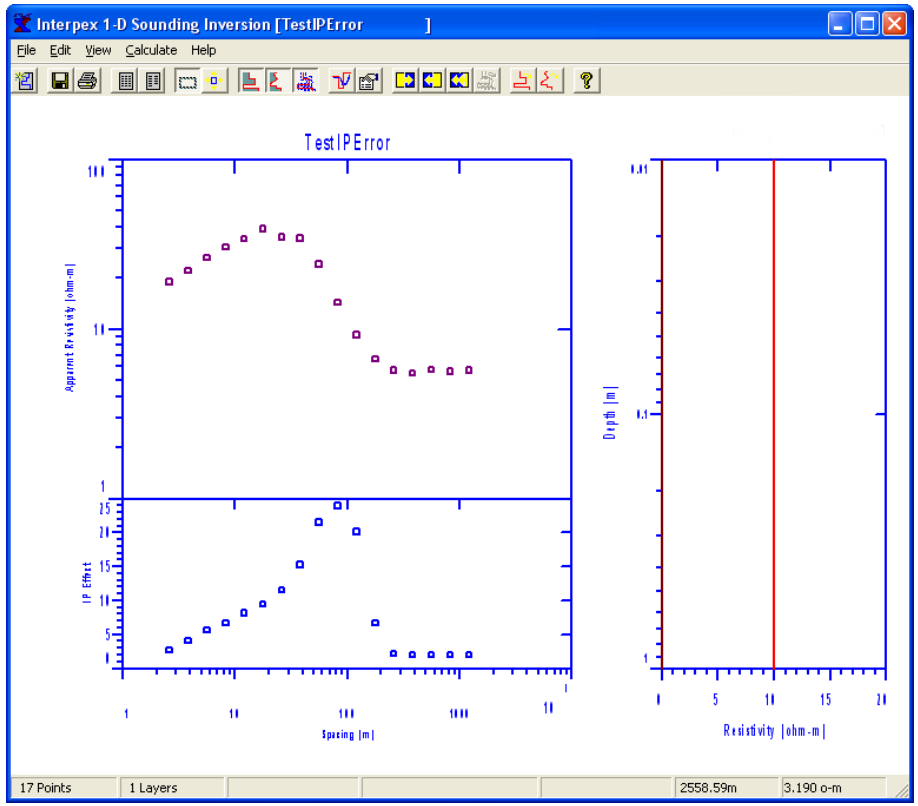
For DC Resistivity with IP, there is an additional selection for the type of IP Data. All IP data are treated basically alike, but this does control the name of the IP parameter.

Import DC Resistivity/IP Data



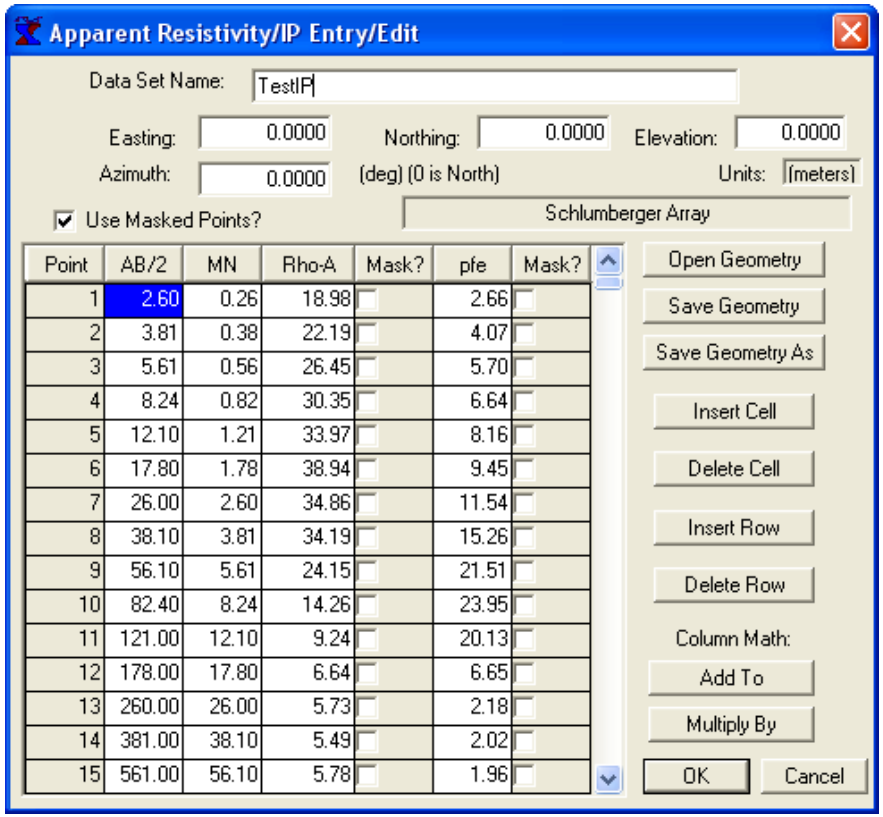
For DC Resistivity with IP, there is an additional column used to read the IP values. Note that the MN and Rho-A columns are switched compared to the previous example.

Import DC Resistivity/IP Data



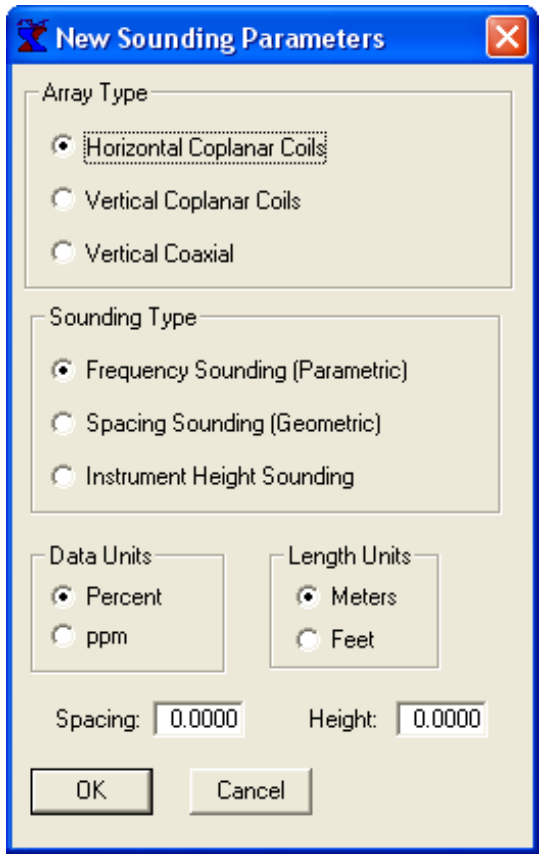
Finally press OK to import the data and see the graph in the sounding window. Note there are now two graphs for both data and model.

Editing DC Resistivity/IP Data



You may want to edit the data after import, since the location, elevation and other header information is not imported and thus not correct. Use Edit/Data or press  to access the editing spreadsheet.

Import Frequency EM Data



Soundings can be made vs. frequency, spacing or instrument height. Frequency soundings are the most common.

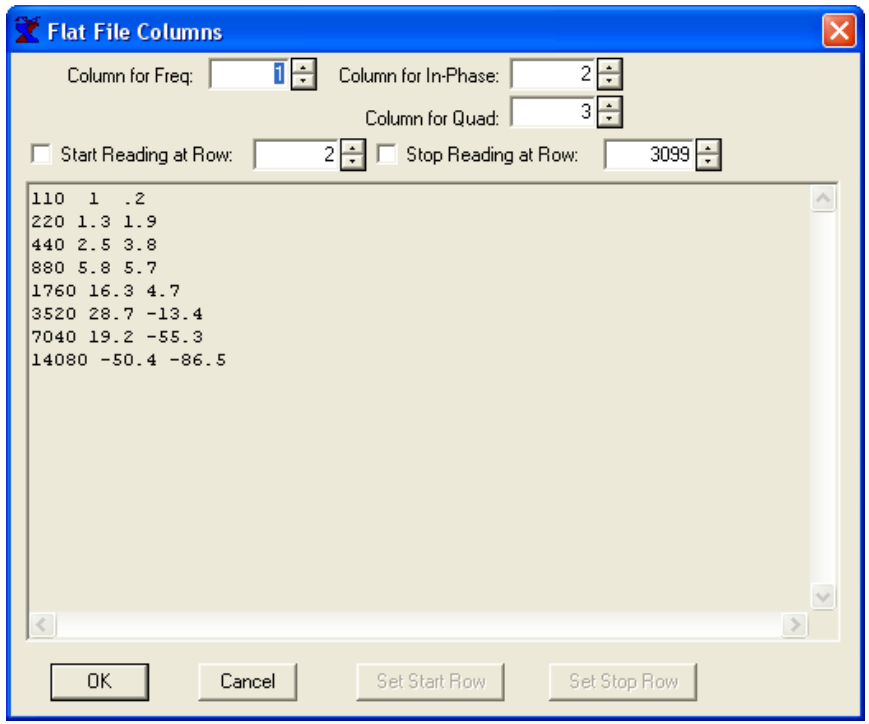
For Frequency soundings, the coil spacing and height from the ground need to be entered.

For Geometric soundings, the constant frequency and height must be entered.

For height soundings, the frequency and spacing are required.

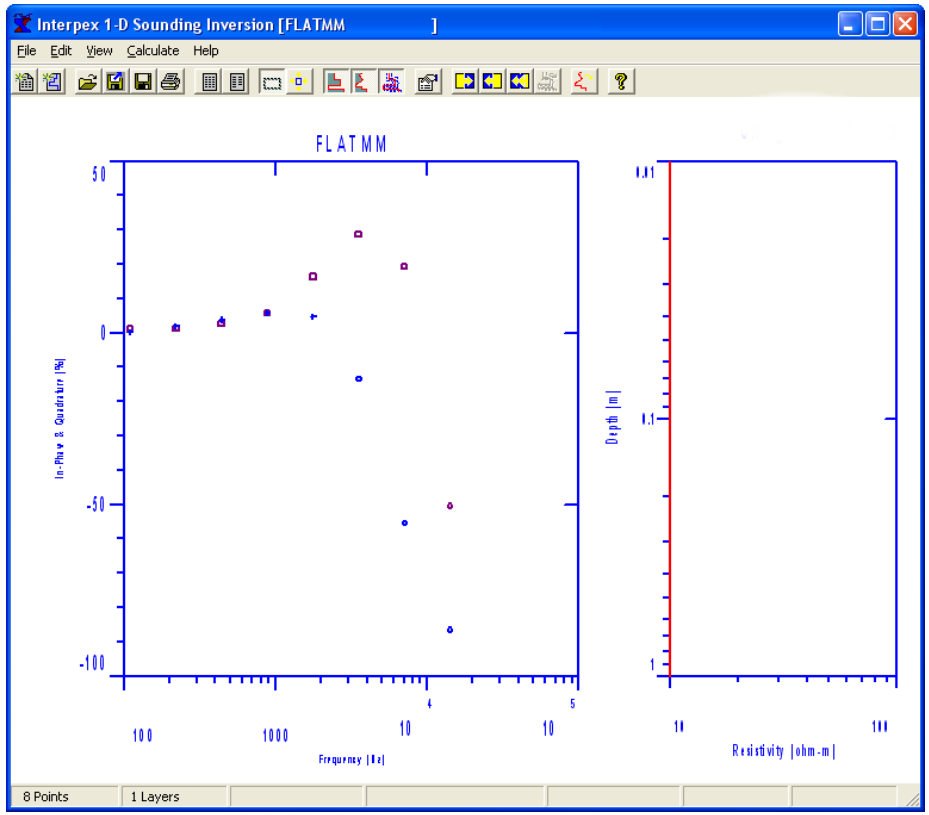
Frequency EM data are best imported as profiles from an XYZ file, but a single sounding can be imported if desired. Here we need to choose coil orientation, sounding type, length and data units. The sample is from the MaxMin instrument.

Import Frequency EM Data



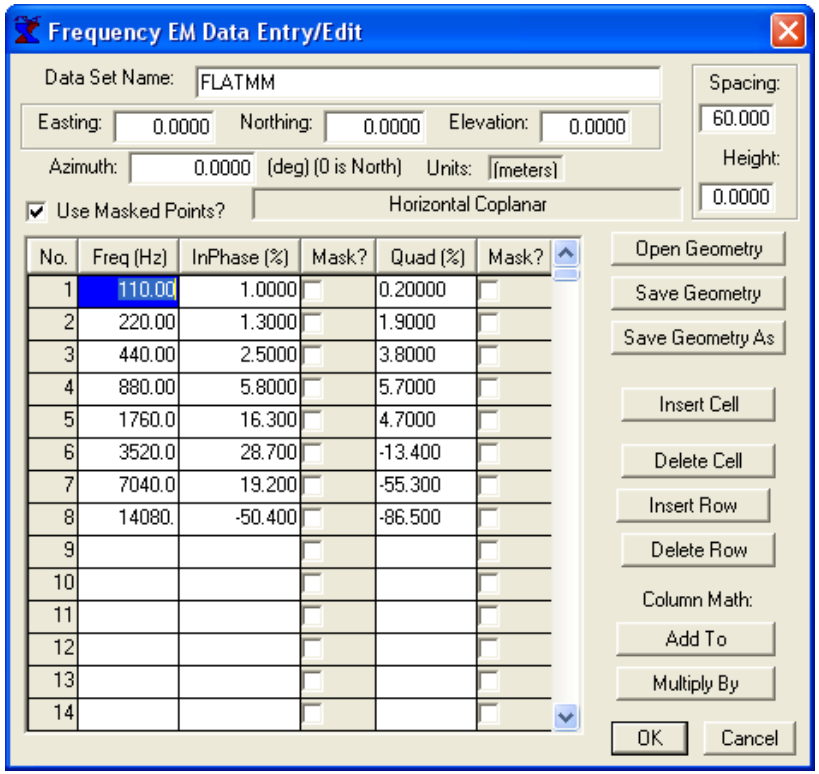
Then identify the columns in the data. For this file, Frequency is in column 1, in-phase in 2 and quadrature in column 3. There is no need to control the rows which are read because unreadable rows are automatically bypassed.

Import Frequency EM Data



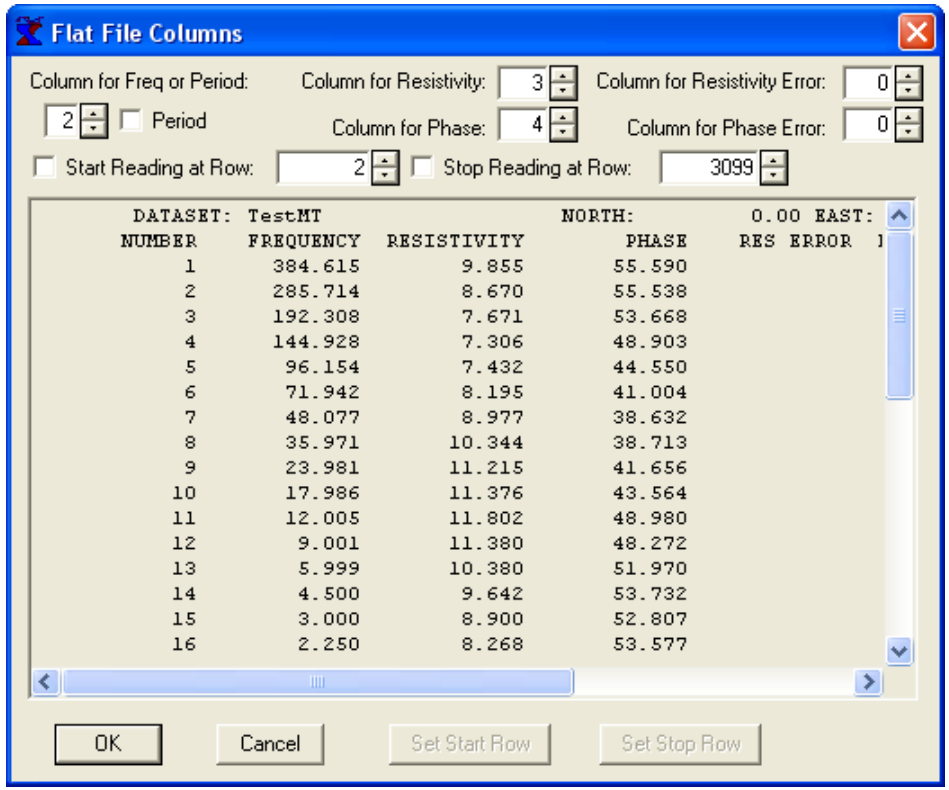
Finally press OK to import the data and see the graph in the sounding window. Note both data curves are plotted on a single graph.

Editing Frequency EM Data



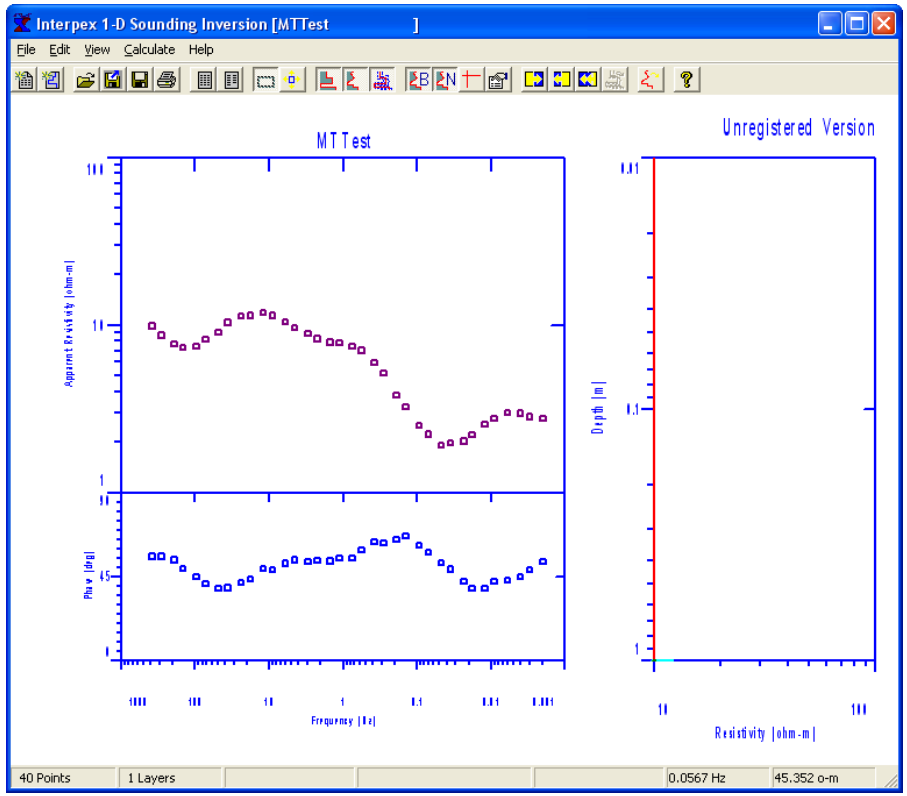
You may want to edit the data after import, since the location, elevation and other header information is not imported and thus not correct. Use Edit/Data or press  to access the editing spreadsheet.

Import Magnetotelluric (MT) Data



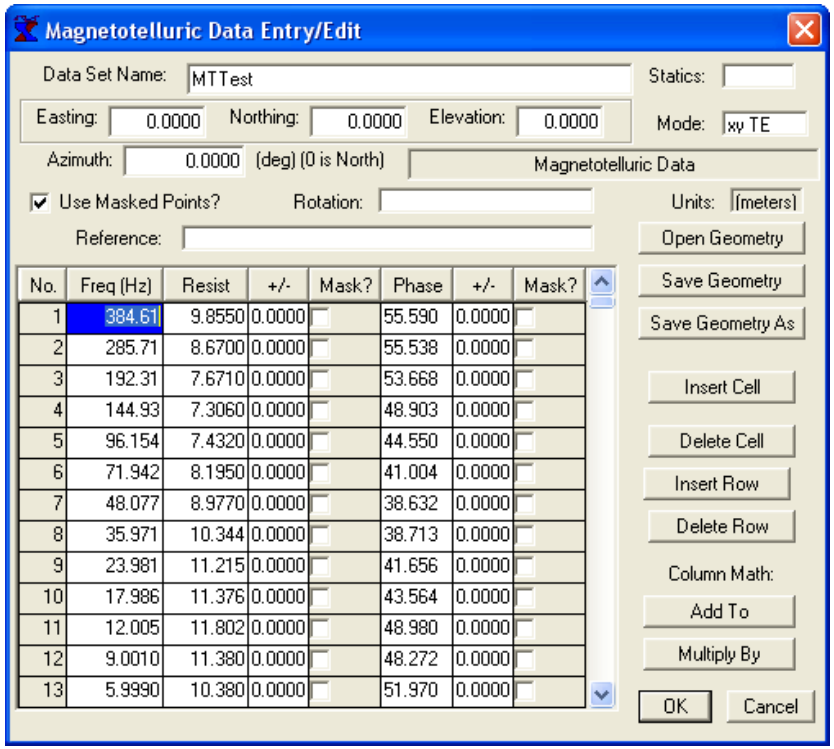
For MT data, there are no options to choose before importing and the first dialog after selecting the file is the column selection. If phase or error bars are not available, set the appropriate column to 0. If the abscissa is period instead of frequency, check the “Period” check box.

Import Magnetotelluric (MT) Data



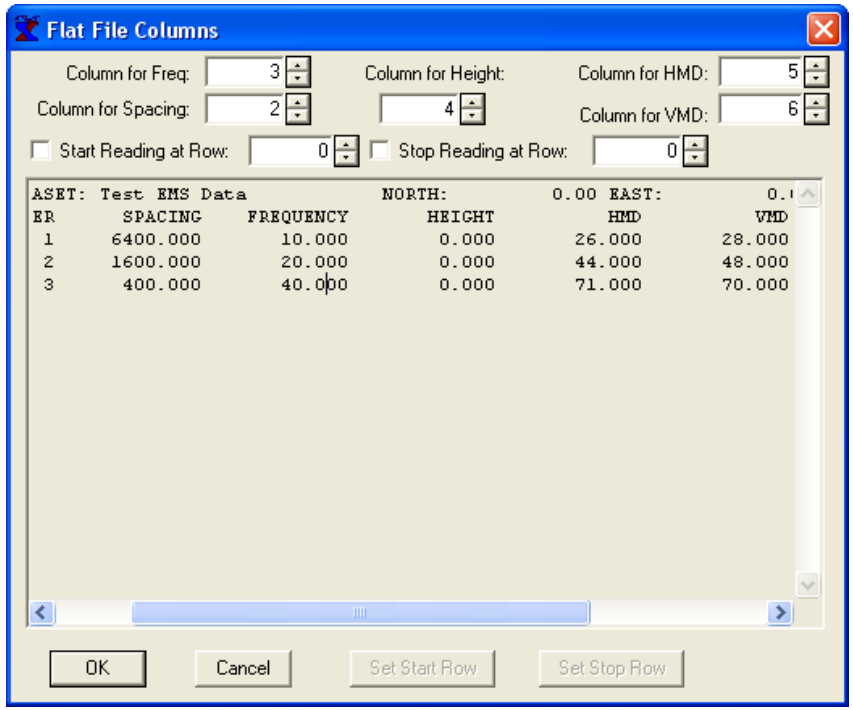
Finally press OK to import the data and see the graph in the sounding window. Note two graphs for data but only one for the model.

Editing Magnetotelluric (MT) Data



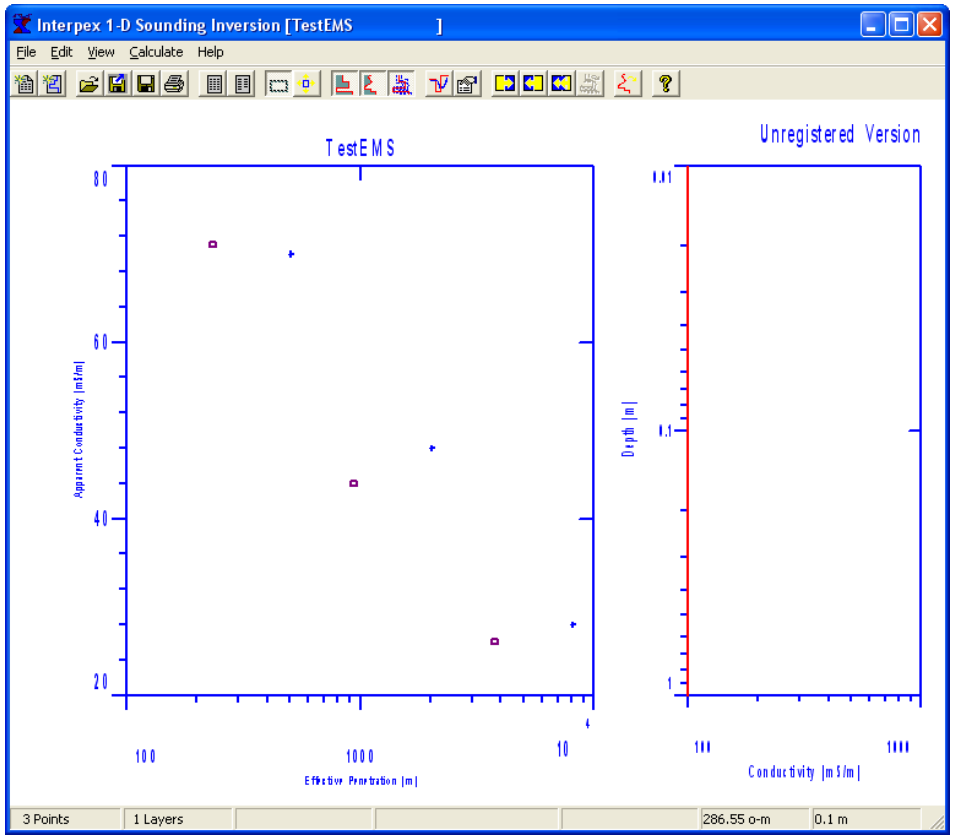
You may want to edit the data after import, since the location, elevation and other header information is not imported and thus not correct. Note additional parameters for MT: Rotation, Reference, Mode, Statics. Press 

Import EM Conductivity Data



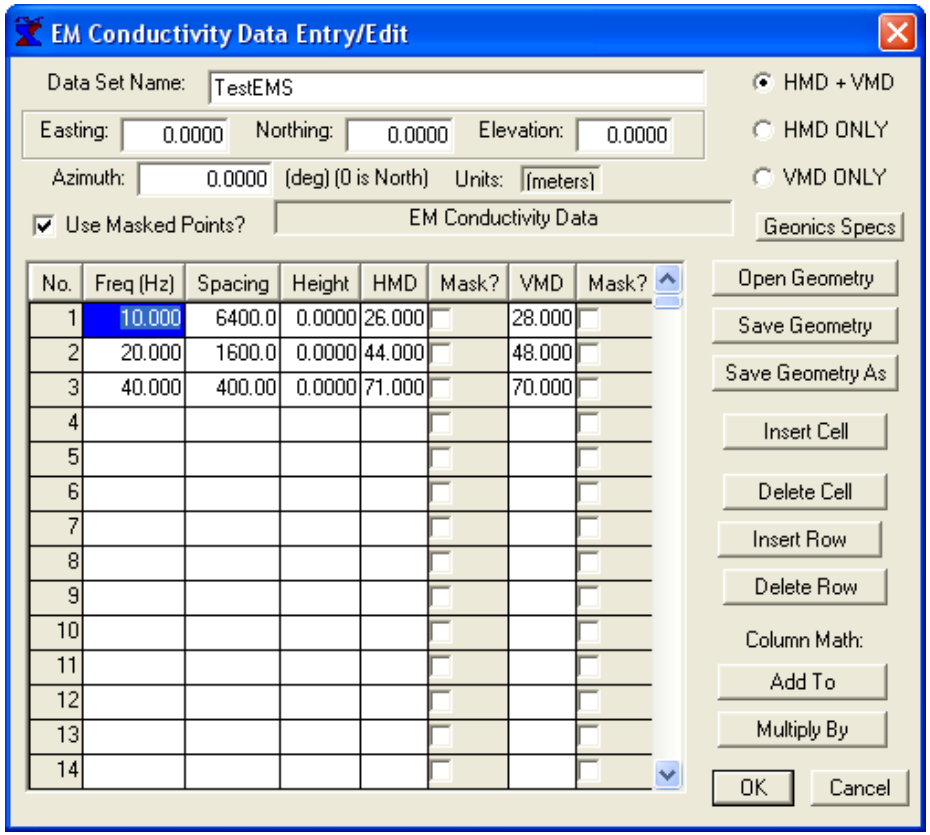
For EM Conductivity data, there are no options to choose before importing and the first dialog after selecting the file is the column selection. If HMD or VMD data are not available, set the appropriate column to 0.

Import EM Conductivity Data



Finally press OK to import the data and see the graph in the sounding window. Note both data curves are plotted on a single graph.

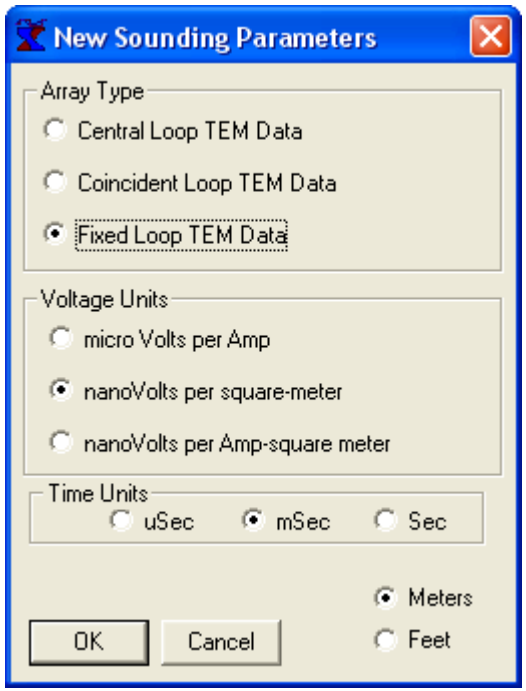
Editing EM Conductivity Data



No.	Freq (Hz)	Spacing	Height	HMD	Mask?	VMD	Mask?
1	10.000	6400.0	0.0000	26.000		28.000	
2	20.000	1600.0	0.0000	44.000		48.000	
3	40.000	400.00	0.0000	71.000		70.000	
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							

You may want to edit the data after import, since the location, elevation and other header information is not imported and thus not correct. Note the radio buttons for selecting VMD, HMD or both orientations. Press 

Import TEM Data



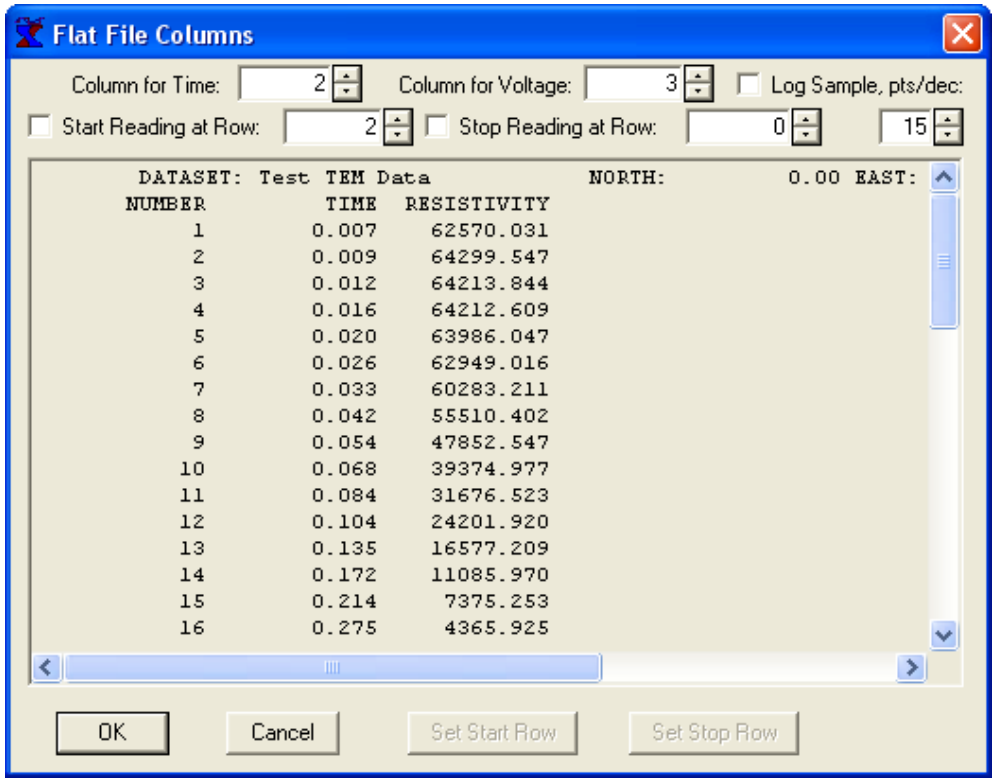
Central loop soundings utilize a small receiver coil inside a large Transmitter loop.

Coincident loop soundings often utilize the same loop for Transmitter and Receiver. Alternatively, separate loops are used but they are coincident or nearly so

Fixed loop soundings utilize a small receiver coil and a large Transmitter loop. The coil can be placed most anywhere, inside or outside the Transmitter loop.

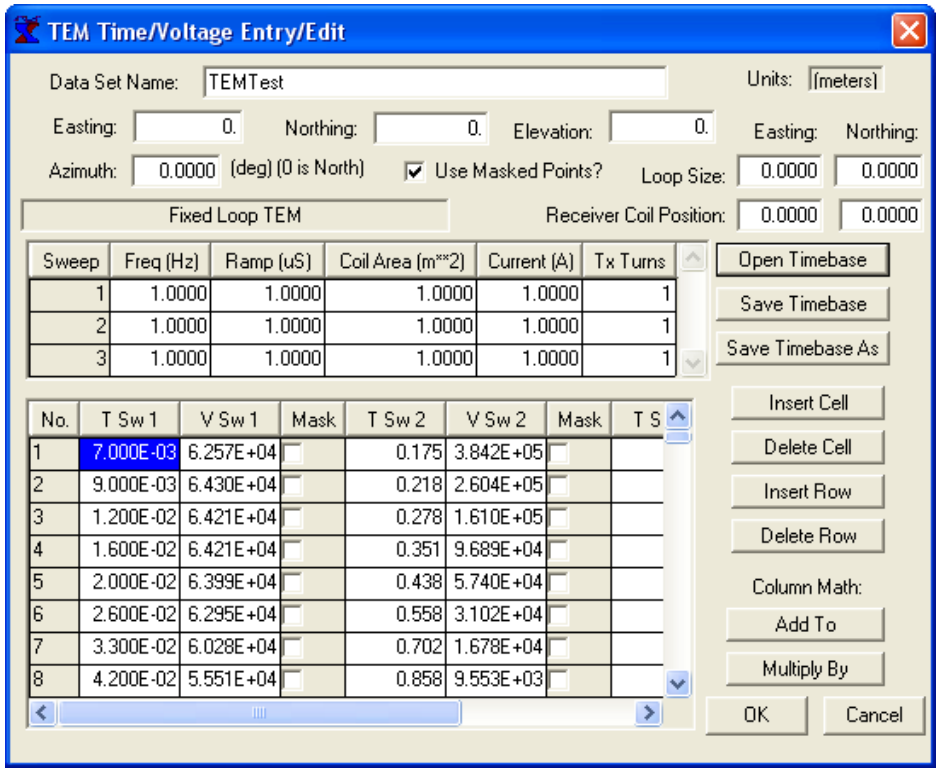
TEM data require the selection of array type, voltage units, time units and length units.

Import TEM Data



Then identify the columns in the data. For this file, Time is in column 2 and Voltage is in column 3. A new sweep starts when time decreases. There is an option to log sample the file for cases where the data are linearly sampled time series with many points.

Editing TEM Data



The editor for TEM data is more elaborate than the others.

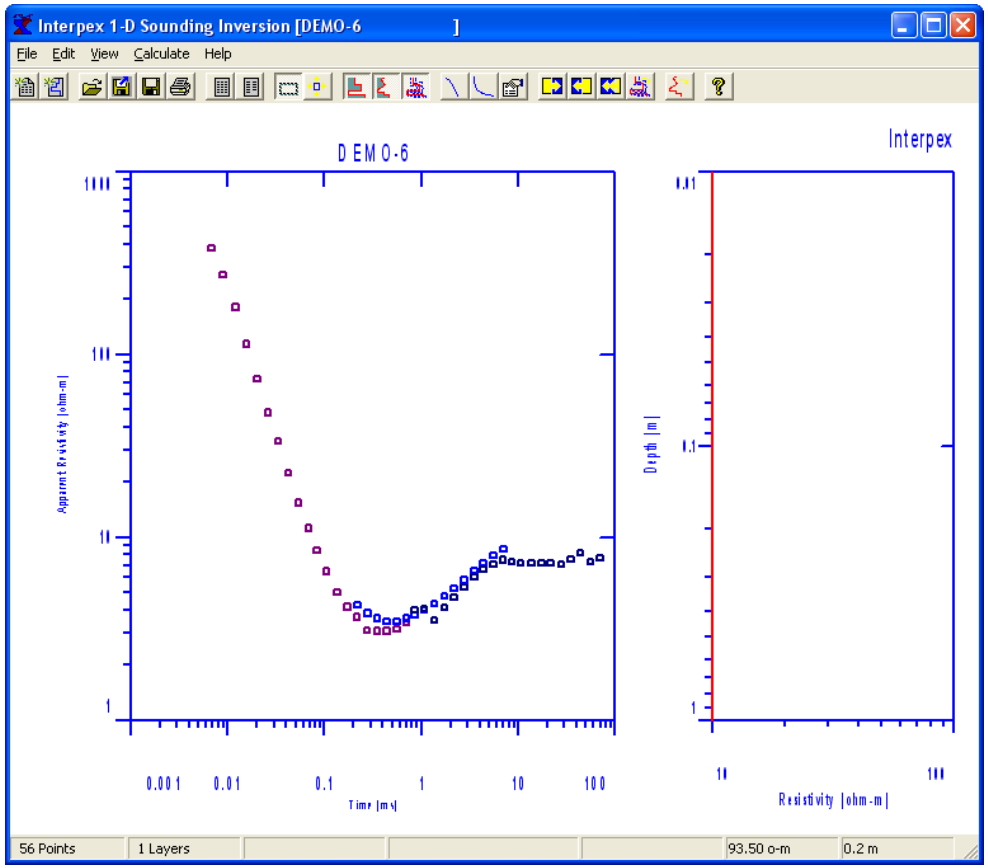
The loop size cannot be zero.

If the receiver coil position is zero, this is the same as a central loop sounding.

For each sweep, there are 3 columns in the lower grid and one row in the upper grid. The upper grid contains sweep parameters: Repetition frequency, Ramp turn-off, Receiver coil area, Current and number of turns in the Tx loop.

When TEM data are imported from a flat ASCII file, the editor is automatically invoked after the data are read. Whenever the time value decreases, a new sweep is created. The spreadsheets in the TEM editor scroll horizontally.

Import TEM Data



When finished editing, press OK to view the TEM data. Notice the different sweeps are shown in different colors.

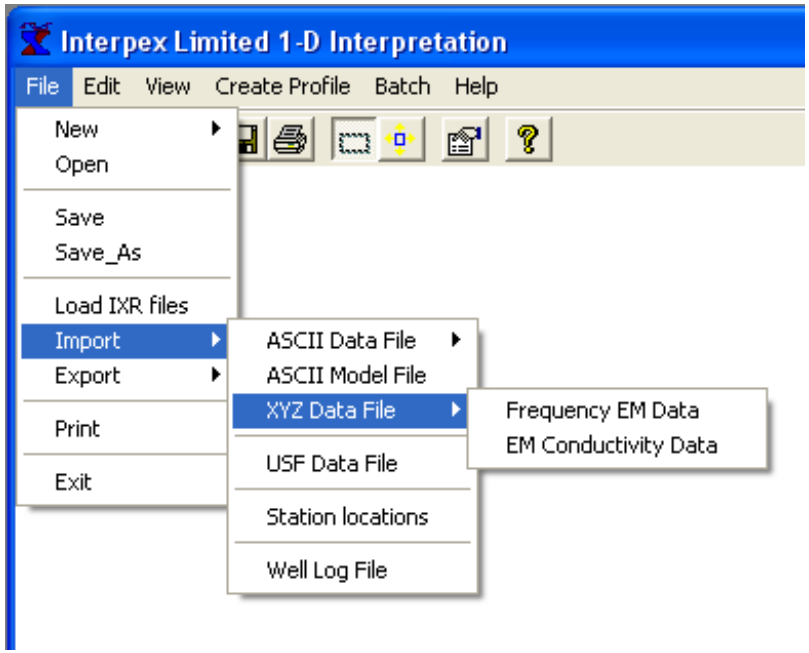
Entering Data into IX1D from Field Notes

To enter data from written field notes, select File/New Sounding and the type of data. This will bring up a dialog similar to the Import Data as appropriate. DC Resistivity and IP data, Frequency EM data and TEM data have this dialog as shown on previous slides. EM Conductivity and MT soundings do not have this dialog.

The file selection and column specification dialogs will not appear as they do in the File/Import/ASCII Data File sequence.

Instead, you will immediately go to the data editor where you will enter all data from the written field notes using the keyboard.

Importing Data from XYZ files



Data in the XYZ file consist of Easting (X), Northing (Y) and Elevation (Z) coordinates, Station or Profile coordinate and data.

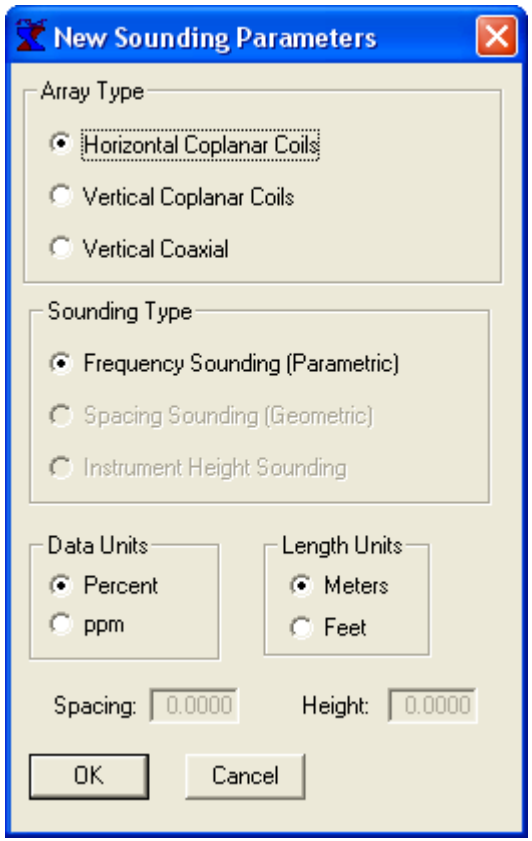
Columns can be separated by blanks, commas or tabs. Two commas do not constitute a skipped value.

Columns can be skipped if additional data columns are interspersed with data.

Unknown values are represented by a series of one or more asterisks ("***")**

Data can be imported from XYZ files which contain one sounding per line of data. At present, only Frequency EM and EM Conductivity data can be imported in this manner. Select File/Import/XYZ Data File and then either Frequency EM Data or EM Conductivity Data.

Import Frequency EM Data from XYZ file



At present, only Frequency EM soundings made vs. frequency can be imported from an XYZ file.

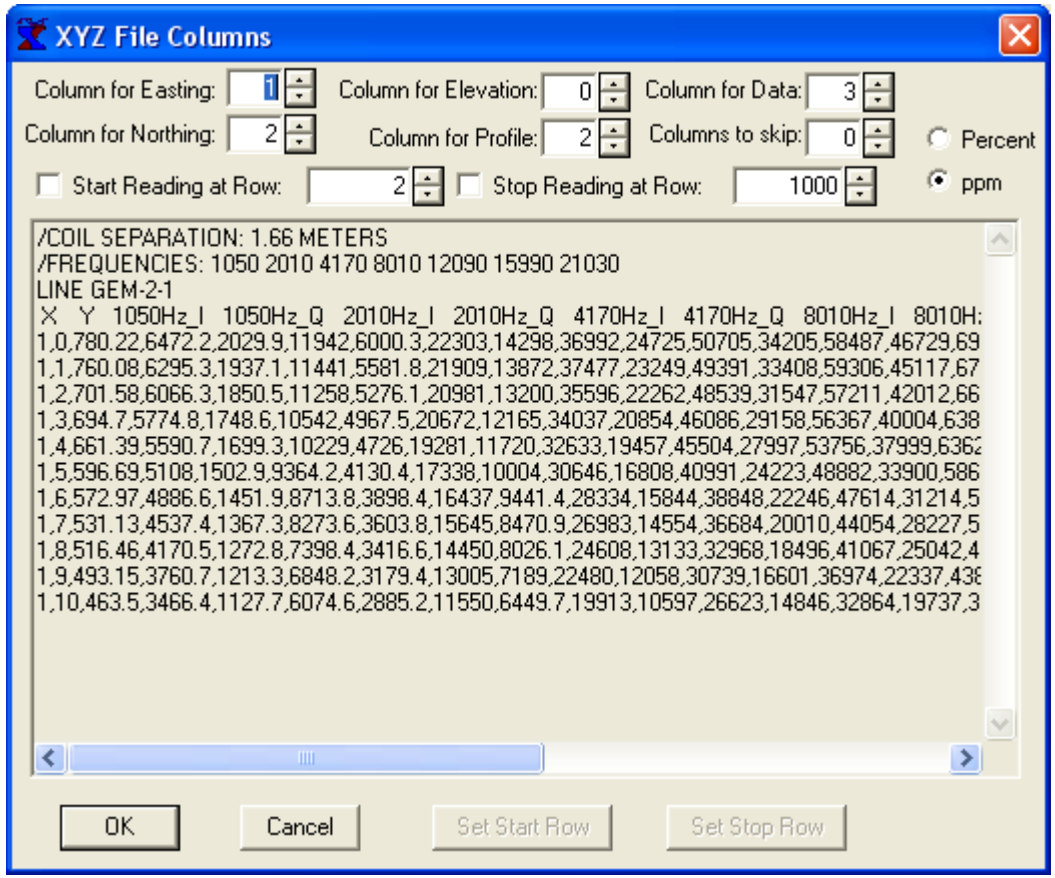
Coil orientations can be Horizontal Coplanar, Vertical Coplanar or Vertical Coaxial.

Data units are in percent of primary field (Apex MaxMin) or ppm of the primary field (GEM-2)

Height and Spacing are read from the header in the XYZ file.

Frequency EM data can be imported as profiles from an XYZ file. The first dialog allows the user to select the coil configuration, the data units and the length units. Height and Spacing are read from the header in the XYZ file.

Import Frequency EM Data from XYZ file



Easting and Northing are map coordinates. If column is 0, all values set to 0.

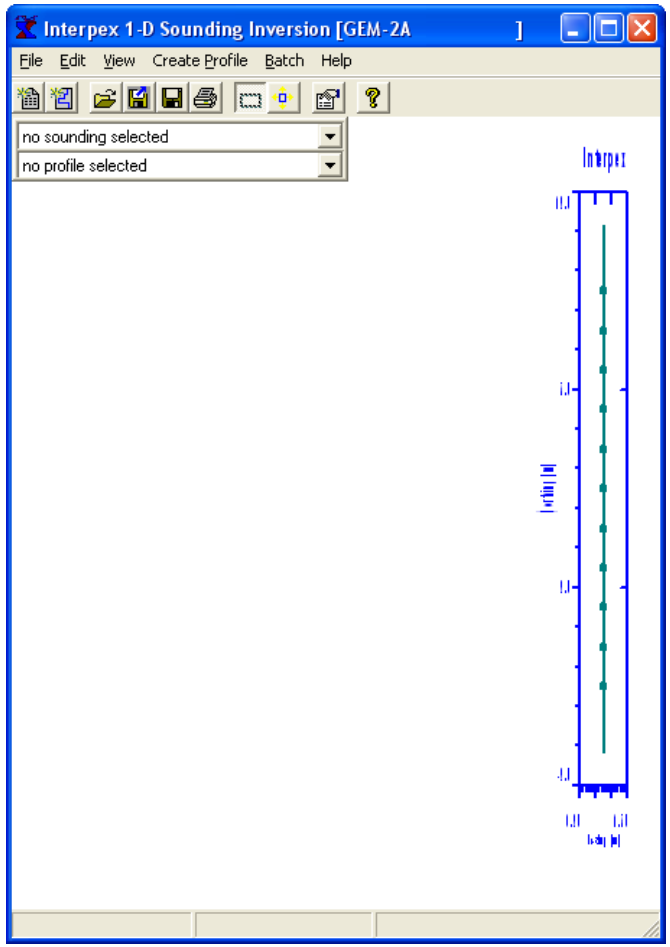
Profile coordinate (or Station) is distance along profile line. If column is 0, distance is calculated from map.

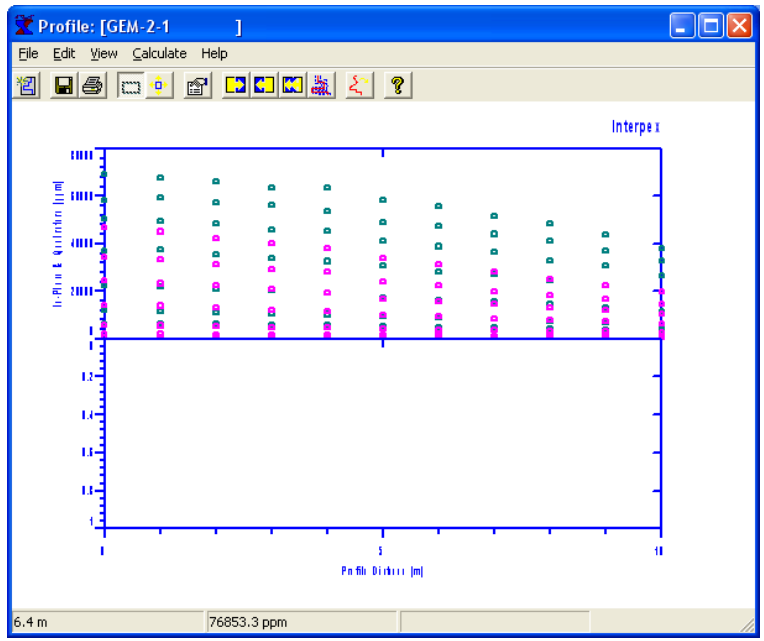
If elevation column is 0, elevation values 0.

Column for data is first data value. Columns to skip is nonzero if other data are interspersed with in-phase and quadrature values.

Header information begins with slash (“/”) and gives coil separation and frequency values. LINE keyword starts and names profiles. File can contain multiple profile lines, each having its own LINE keyword.

Import Frequency EM Data from XYZ file



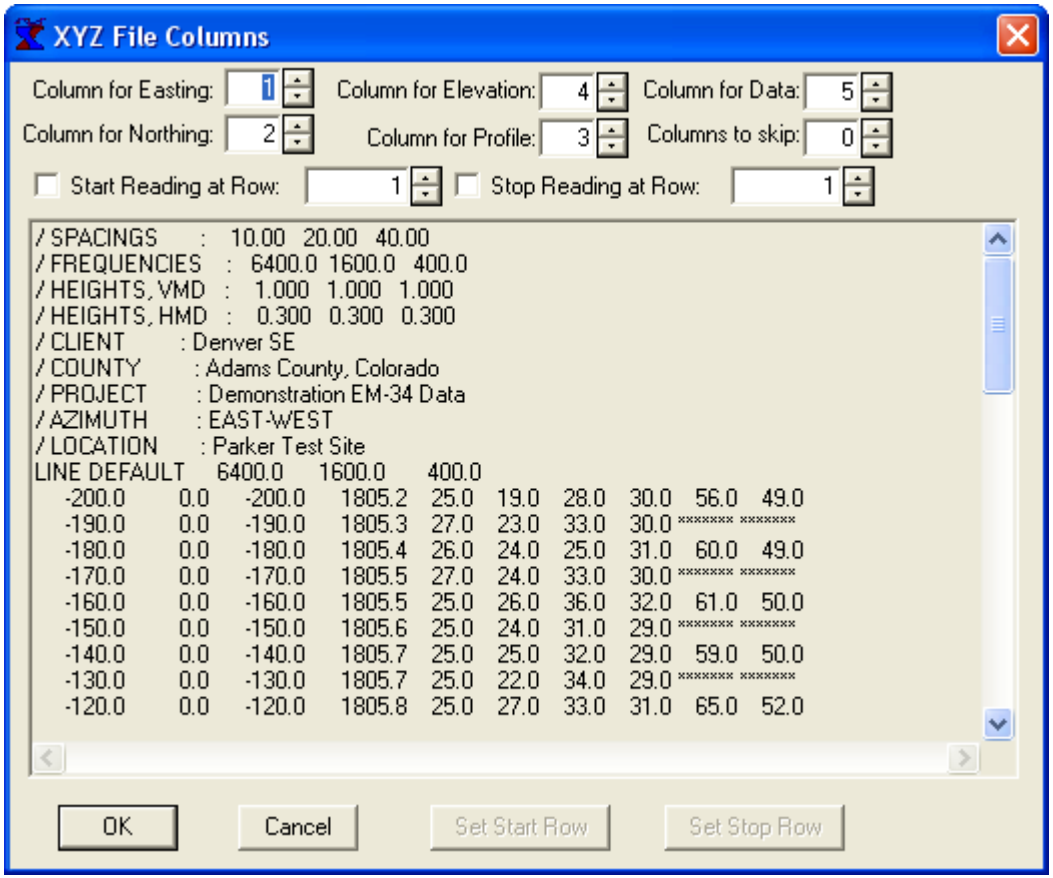


When finished editing, press OK to view the profile line on the map display. Point at the profile and click to display data.

Import EM conductivity Data from XYZ file

EM Conductivity import from XYZ file requires selection of coil orientations and which orientation comes first in the data listing. VMD is horizontal coplanar coils (Vertical Magnetic Dipole), HMD is vertical coplanar coils (Horizontal Magnetic Dipole).

Import EM conductivity Data from XYZ file



Easting and Northing are map coordinates. If column is 0, all values set to 0.

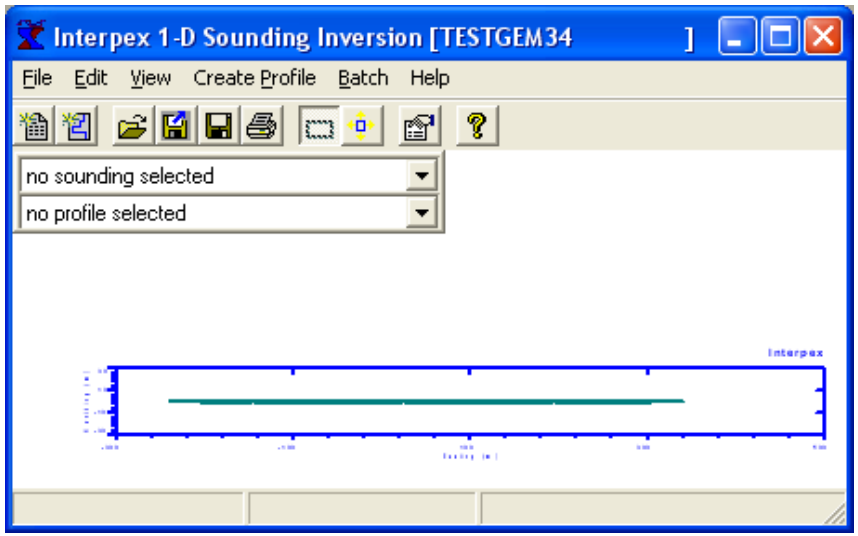
Profile coordinate (or Station) is distance along profile line. If column is 0, distance is calculated from map.

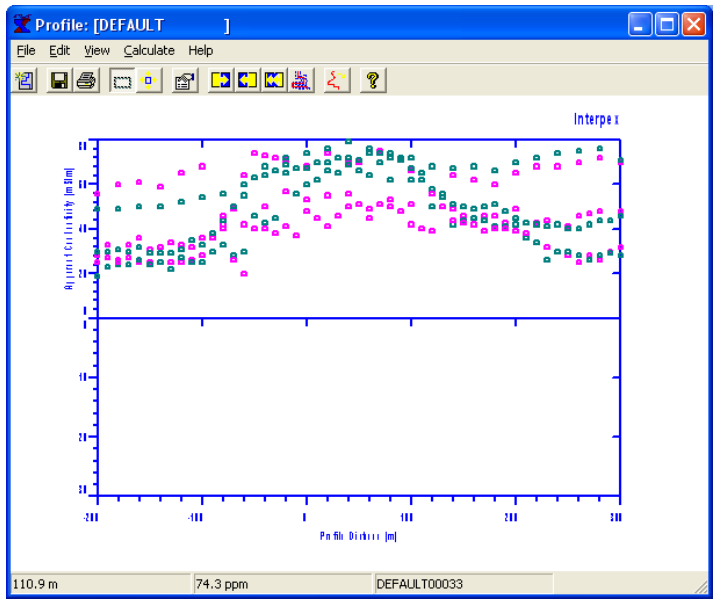
If elevation column is 0, elevation values 0.

Column for data is first data value. Columns to skip is nonzero if other data are interspersed with in-phase and quadrature values.

Header information begins with slash (“/”) and gives spacings, frequency values and instrument heights. LINE keyword starts and names profiles. File can contain multiple profile lines, each having its own LINE keyword.

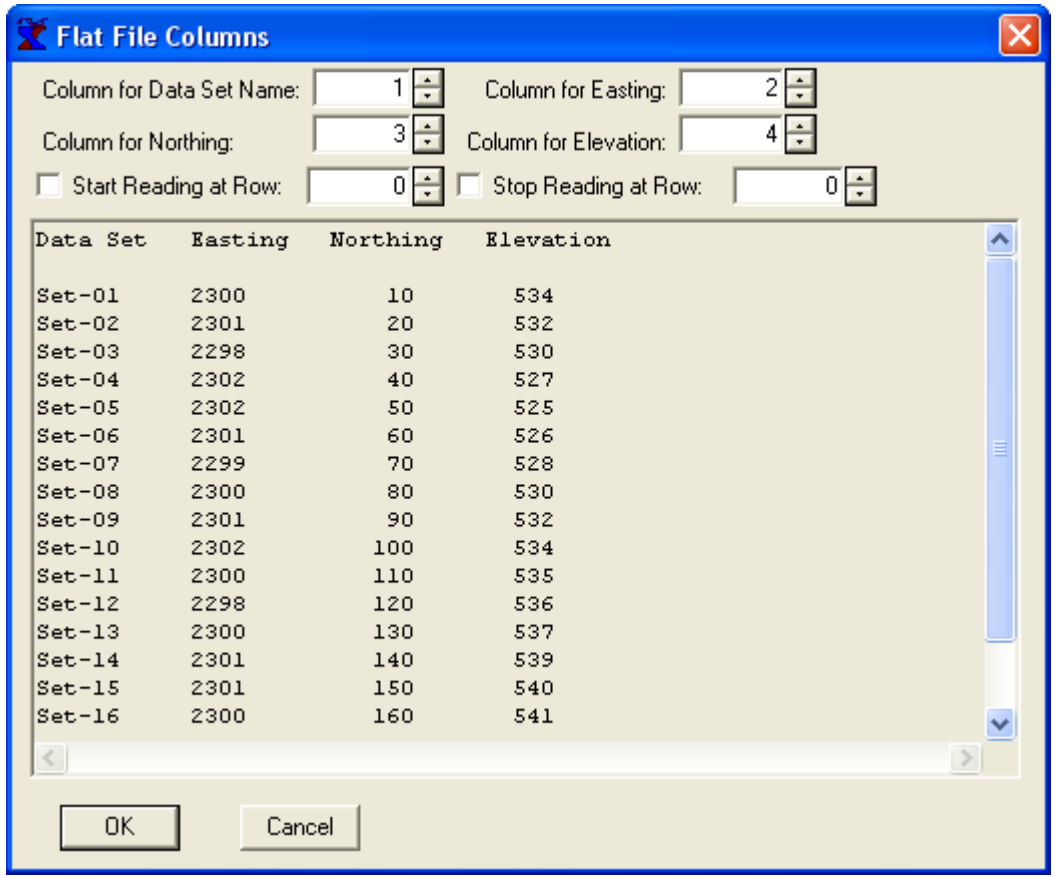
Import EM conductivity Data from XYZ file





When finished editing, press OK to view the profile line on the map display.
Point at the profile and click to display data.

Import Station Locations from Flat ASCII File



Easting and Northing are map coordinates. If column is 0, no data are imported and existing values are used.

If elevation column is 0, no elevation values are imported and existing values are used.

After import, statistics are shown in a dialog indicating number of values assigned, not assigned, duplicates and not matched.

Values assigned should equal number of soundings, other values should be 0.

Each line in station location file is read and matched up with the data set name in the current database. When matched, new data read replace existing data.