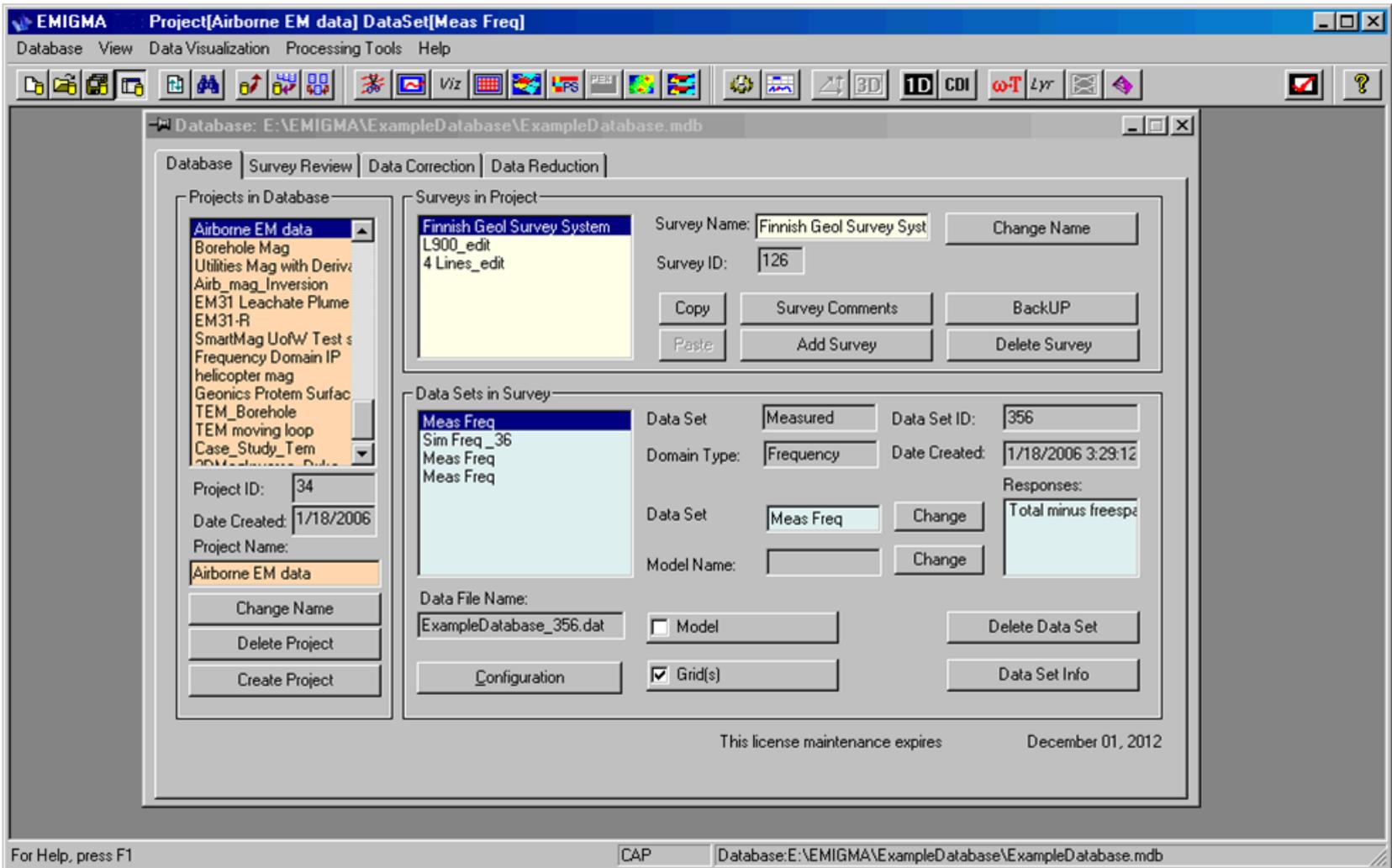
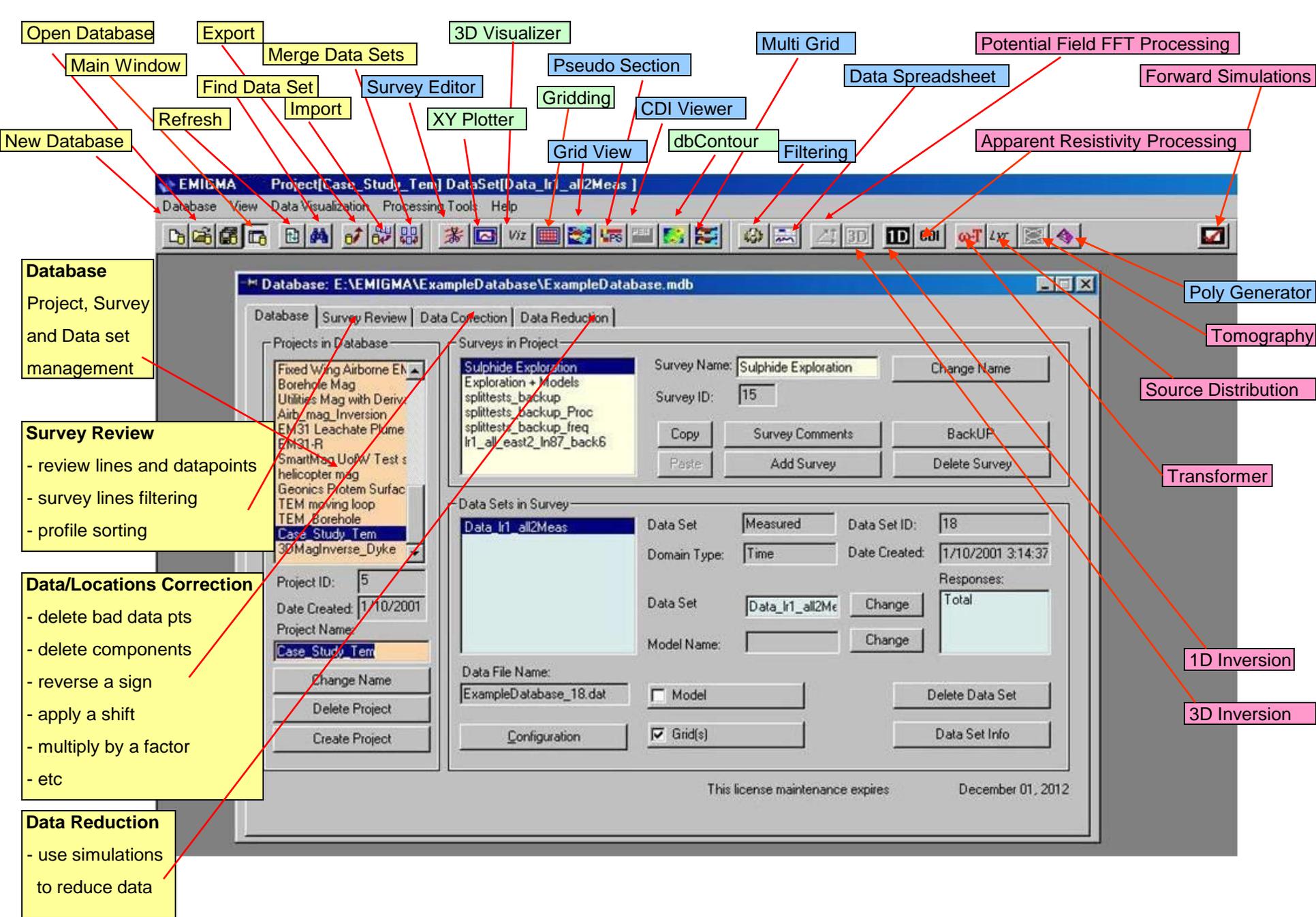


# EMIGMA – Airborne FEM Premium edition





Open Database

Export

3D Visualizer

Multi Grid

Potential Field FFT Processing

Main Window

Merge Data Sets

Pseudo Section

Forward Simulations

Find Data Set

Survey Editor

Gridding

CDI Viewer

Data Spreadsheet

Refresh

Import

XY Plotter

Grid View

dbContour

Filtering

Apparent Resistivity Processing

New Database

**Database**  
Project, Survey and Data set management

**Survey Review**  
- review lines and datapoints  
- survey lines filtering  
- profile sorting

**Data/Locations Correction**  
- delete bad data pts  
- delete components  
- reverse a sign  
- apply a shift  
- multiply by a factor  
- etc

**Data Reduction**  
- use simulations to reduce data

Poly Generator

Tomography

Source Distribution

Transformer

1D Inversion

3D Inversion

EMIGMA Project[Case\_Study\_Ten] DataSet[Data\_lr1\_all2Meas]

Database View Data Visualization Processing Tools Help

Database: E:\EMIGMA\exampleDatabase\exampleDatabase.mdb

Database | Survey Review | Data Correction | Data Reduction

Projects in Database

- Fixed Wing Airborne EM
- Borehole Mag
- Utilities Mag with Deriv
- Airb\_mag\_Inversion
- EM31 Leachate Plume
- EM31-R
- SmartMag UofW Test s
- helicopter mag
- Geonics Protem Surf
- TEM moving loop
- TEM Borehole
- Case Study Tem
- 30MagInverse\_Dyke

Surveys in Project

Sulphide Exploration

Exploration + Models  
splittests\_backup  
splittests\_backup\_Proc  
splittests\_backup\_freq  
lr1\_all\_east2\_lr87\_backup6

Survey Name: Sulphide Exploration Change Name

Survey ID: 15

Copy Survey Comments BackUP

Paste Add Survey Delete Survey

Data Sets in Survey

Data\_lr1\_all2Meas

Data Set Measured Data Set ID: 18

Domain Type: Time Date Created: 1/10/2001 3:14:37

Data Set Data\_lr1\_all2Me Change Responses: Total

Model Name: Change

Data File Name: ExampleDatabase\_18.dat  Model Delete Data Set

Grid(s) Data Set Info

Configuration

This license maintenance expires December 01, 2012

# Importing Airborne FEM Data

EMIGMA imports Airborne FEM data including:

- IMPULSE HEM

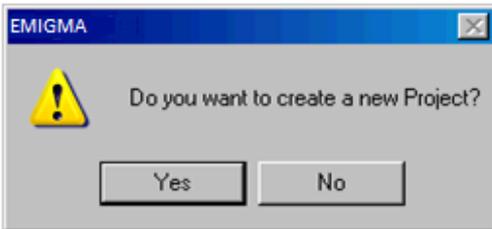
Data is imported in ASCII columnar format. Data files must have X, Y, Z (altimeter) and frequency data (inphase and quadrature). Data files must have a line header, but if you do not have one you will be able to build a header inside the import wizard. Line labels are required to identify each line of data in the file.

# Data Imports

Select the Data Import button

You will be asked if you want to create a new Project.

Select **Y**es



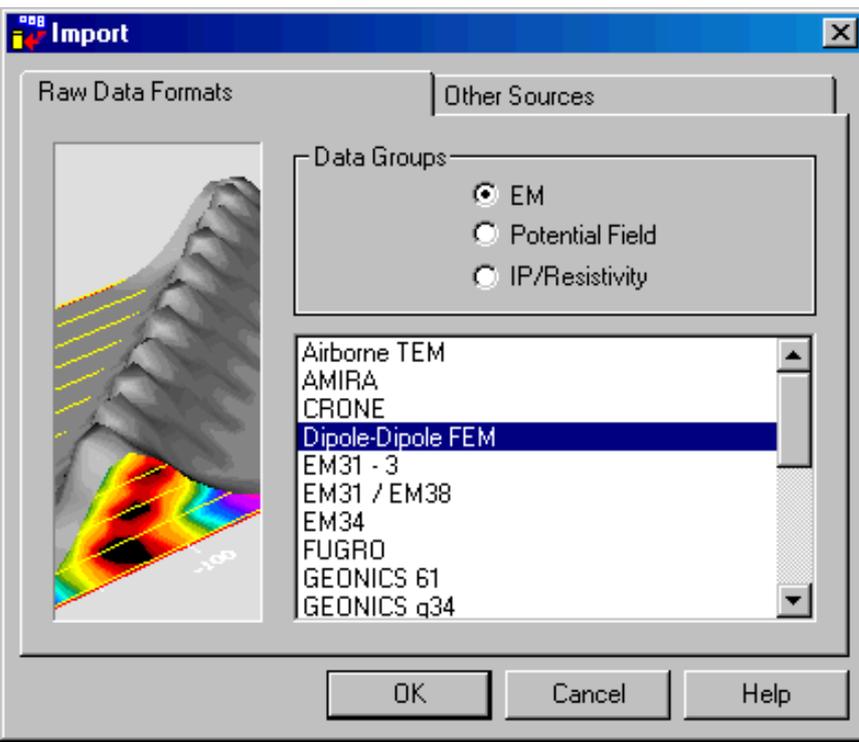
Type in the name of the New Project e.g. Airborne FEM.

Select **O**K



Select the data type from the Import Utilities.  
Select **DIPOLE-DIPOLE FEM**. This is a generic data import that will allow you to select the appropriate parameters for any FEM data set.

Select **I**mport file



# Data Imports

This import wizard can process different kinds of FEM data in ASCII columnar format. Select one of the following systems and go to the next step.

- Em34
- Em31/Em38
- EM31-3
- Max-Min
- Fugro
- AeroQuest
- Unknown

Impulse HEM System Name

Select your data type from the list or select Unknown if it does not exist on the list and type in the name of your System.

Select **Next**

Input Filename  Browse

File View  Select one line as the header

Set header line

Apply first Multiplier

Apply first Separation

Import Wizard Step 1

**Browse** for your data file

	Frequency	Tx - Rx Orientation		Correction Multiplier	Tx - Rx Separation		
		Tx	Rx		dX	dY	dZ
<input type="checkbox"/> 1	0	<input type="text"/>	<input type="text"/>	1	0	0	0
<input type="checkbox"/> 2	0	<input type="text"/>	<input type="text"/>	1	0	0	0
<input type="checkbox"/> 3	0	<input type="text"/>	<input type="text"/>	1	0	0	0
<input type="checkbox"/> 4	0	<input type="text"/>	<input type="text"/>	1	0	0	0
<input type="checkbox"/> 5	0	<input type="text"/>	<input type="text"/>	1	0	0	0
<input type="checkbox"/> 6	0	<input type="text"/>	<input type="text"/>	1	0	0	0
<input type="checkbox"/> 7	0	<input type="text"/>	<input type="text"/>	1	0	0	0
<input type="checkbox"/> 8	0	<input type="text"/>	<input type="text"/>	1	0	0	0
<input type="checkbox"/> 9	0	<input type="text"/>	<input type="text"/>	1	0	0	0
<input type="checkbox"/> 10	0	<input type="text"/>	<input type="text"/>	1	0	0	0

# Data Imports

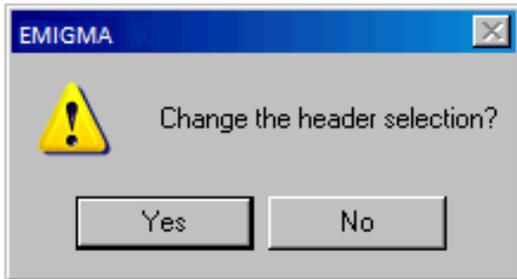
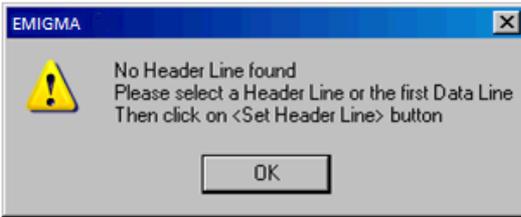
You may get the following messages:

No Header Line found.

You will be asked to chose an appropriate line as a header - Select **OK**

Select the header line. If you do not have a header line, select the first line of data and the **Set header line** button. Also press this button, if you need to modify a header.

You will be asked if you want to change the header selection - Select **Yes**

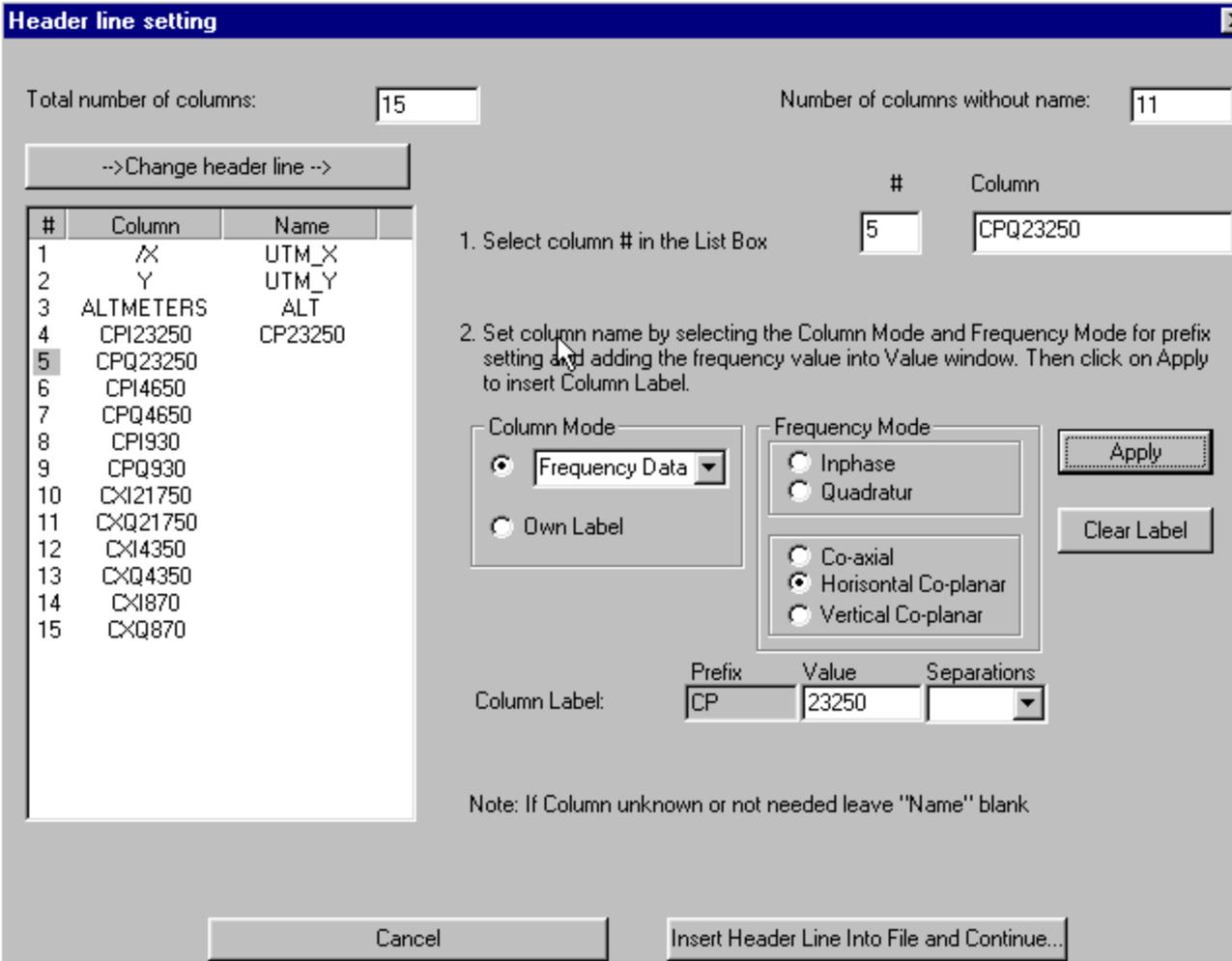


The frequencies, Tx-Rx orientation, and Separation will be set for you and can be modified.

ZZ=Vertical Coplanar and  
XX=Horizontal Coaxial

If you need to modify the Tx-Rx Separation, you can type in the separation for the first frequency and then use the **Apply first Separation** button.

	Frequency	Tx - Rx Orientation		Correction Multiplier	Tx - Rx Separation			
		Tx	Rx		dX	dY	dZ	
<input checked="" type="checkbox"/>	1	23250	Z	Z	1	6.5	0	0
<input checked="" type="checkbox"/>	2	4650	Z	Z	1	6.5	0	0
<input checked="" type="checkbox"/>	3	930	Z	Z	1	6.5	0	0
<input checked="" type="checkbox"/>	4	21750	X	X	1	6.5	0	0
<input checked="" type="checkbox"/>	5	4350	X	X	1	6.5	0	0
<input checked="" type="checkbox"/>	6	870	X	X	1	6.5	0	0
<input type="checkbox"/>	7	0			1	0	0	0



# Data Imports

## Changing Header Line

Select the **Column #** the selected column will be blue.

Chose the appropriate label under **Column Mode**

**Apply**

To set a frequency:

Select **Frequency Data** in the Column Mode section

Select the **Frequency Mode**:

Inphase or Quadrature

Co-axial, Horizontal Co-planar or Vertical Co-Planar

**Apply**

If you have a column that is not being used in the import, give it a label of **UNKNOWN** and the EMIGMA program will know to ignore this column.

You can also type in your **Own Label**.

When you have changed all the columns, select **Insert Header Line Into File and Continue**. You will have the option of overwriting your original survey or giving it a new file name.

# Data Imports

## Location

The X and Y columns will be detected. If they are incorrect, you can select the appropriate column with the combo box. You can also specify whether the coordinates are UTM or Latitude/Longitude.

**Z & GPS Z** The altimeter column will be selected

Set the **dZ** = the height of the altimeter instrument minus the height of the bird housing the Tx and Rx

Select the **units** for altimeter from meters or feet.

**GPS Z** if you have GPS Z data you can select the column and input the dZ = height of the GPS instrument minus the height of the bird.

File Header View: Select the suitable line to define data format

Profile Identification String (case insensitive) is used to indicate the start of a new profile.

LINE [21470] [|||||]

530351|7212493|31|-5.4|11.3|-0.5|1.4|-0.8|-1|-3.24|6.78|-0.7|1.9|-0.2|0.4

530348|7212493|31|-5.5|11.3|-0.5|1.4|-0.8|-1.1|-3.3|6.78|-0.6|2|-0.2|0.4

530345|7212495|31|-5.7|11.2|-0.5|1.4|-0.8|-1.1|-3.42|6.72|-0.6|2|-0.2|0.4

Location (column#, name)

UTM  Lat/Lon

X [ ]

Y [ ]

Z & GPS Z

Z [ 3 ALTR ]

[ 0 ] dZ: alt -- bird

[ 30 ] default

Unit  meter  feet

GPS Z [ ]

[ 0 ] dZ: instrument -- bird

Fiducial

FID [ 11 FID ]

Frequency	Column#	Frequency	Column#, name	Frequency	
<input checked="" type="checkbox"/> F-1, Inphase	4 CPI2325C	23250	<input checked="" type="checkbox"/> F-6, Inphase	14 CXI870	870
<input checked="" type="checkbox"/> F-1, Quadra.	5 CPQ2325		<input checked="" type="checkbox"/> F-6, Quadra.	15 CXQ870	
<input checked="" type="checkbox"/> F-2, Inphase	6 CPI4650	4650	<input type="checkbox"/> F-7, Inphase	[ ]	[ ]
<input checked="" type="checkbox"/> F-2, Quadra.	7 CPQ4650		<input type="checkbox"/> F-7, Quadra.	[ ]	[ ]
<input checked="" type="checkbox"/> F-3, Inphase	8 CPI930	930	<input type="checkbox"/> F-8, Inphase	[ ]	[ ]
<input checked="" type="checkbox"/> F-3, Quadra.	9 CPQ930		<input type="checkbox"/> F-8, Quadra.	[ ]	[ ]
<input checked="" type="checkbox"/> F-4, Inphase	10 CXI2175	21750	<input type="checkbox"/> F-9, Inphase	[ ]	[ ]
<input checked="" type="checkbox"/> F-4, Quadra.	11 CXQ2175		<input type="checkbox"/> F-9, Quadra.	[ ]	[ ]
<input checked="" type="checkbox"/> F-5, Inphase	12 CXI4350	4350	<input type="checkbox"/> F-10, Inphase	[ ]	[ ]
<input checked="" type="checkbox"/> F-5, Quadra.	13 CXQ4350		<input type="checkbox"/> F-10, Quadra.	[ ]	[ ]

Units (Inphase)  Percent  PPT  PPM

Units (Quadrature)  Percent  PPT  PPM  mS/m

**Frequencies** – the columns containing your frequency data will be selected for you. If they are incorrect, you can select the appropriate column with the combo box.

**Units** Select the units for the Inphase and Quadrature. For the Impulse HEM system the units should be PPM for both phases.

Profile	# Locations
LINE 21470	295
LINE 21480	401
LINE 21490	268
LINE 21500	383
LINE 21510	244
LINE 21520	256

Total Number of Profiles: Total Number of Locations: 

Modify Profile

Profile: 

Delete

Delete every  location

Apply

Shift Coordinate Values (e.g. for resolution)

Shift X

Reset

Shift Y

Change

Average Precision (m)

X

Apply

Y

Restore all Profiles

## Data Imports

**Profiles and Location** - The profiles being imported and the number of locations per profile will be displayed.

**Total number of Profiles** as well as **Total Number of Locations** are displayed for your information.

**Average Precision** - Specifies how close two locations need to be before they are considered the same location.

**Deleting Profiles** – Select the profiles you wish to delete from the Profile and Location Box. To multiple select, use your shift and Ctrl keys. Then select **Delete**.

**Decimation** – You can delete every nth position from your data by selecting the profile(s) you want to modify from the Profile and Location Box, select the n value in the Delete every box and **Apply**.

*Note – You can delete and decimate your data as well as apply a number of other more advanced compression techniques once you have imported your data into your EMIGMA database, so it is a good idea to import all of your data.*

**Shift Coordinate Values** – You can apply a shift to your X and/or Y coordinates. This is useful to shorten your UTM coordinates for ease of display, or if you are providing proprietary data to others and want to remove the true coordinate values you can apply a shift to X and Y.

# Data Imports

The screenshot shows a software dialog box for data imports. It is divided into three main sections:

- System Parameters:** A group box containing six dropdown menus:
  - Survey Type: Moving Tx -- Moving Rx
  - Coordinate Systems: Horizontal
  - Separation Reference Point: Center
  - Normalization Type: Continuous
  - Normalization Divisor: Inphase
  - Normalization Convention: PPM
- Project Name:** A text input field containing "Airborne FEM".
- Import to the Database:** A group box containing:
  - An unchecked checkbox labeled "Average Duplicates".
  - A "Run Import" button.
  - A "Messages" list box showing the following text:
    - ...frequencies....creating...
    - ...system.....creating...
    - ...components.....creating...
    - ...locations.....creating...
    - ...data.file.....creating...
    - Processing CompletedThe "Processing Completed" message is highlighted in blue.

**System Parameters** The system parameters for the system you chose will be displayed and can be modified.

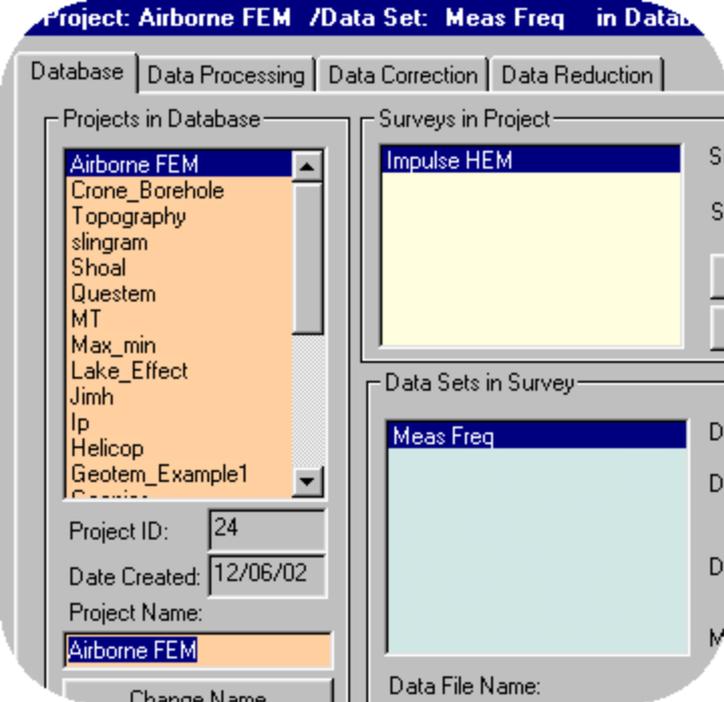
**Project Name** The Project Name you entered earlier will be displayed and can be modified.

**Average Duplicates** Select this option to have the data values averaged for duplicate locations.

Select **Run Import**

**Messages** The status of the import will scroll before you. When you see Processing Completed, you know that the import has successfully completed.

Select **Finish**



# Data Imports

## System Parameters

Your data will be imported into your EMIGMA database as a new Survey and Data Set ready to plot, model and invert.

**Technical Documents** Included on your EMIGMA CD-ROM is a suite of tutorials, Power Point presentations, technical abstracts, newsletters and manuals. Most of these materials will be copied to your machine during installation.

\*.\EMIGMAv10\Documents

\Manual

\Tutorials

\Technical

These files are also available by on the Downloads page at <http://www.petroseikon.com/resources/index.php>

## **Technical Support**

Support Department

Tel: 519.787.0177

[support@petroseikon.com](mailto:support@petroseikon.com)

**Feedback** Your comments and feedback are always welcome and are helpful in making a better product for all users.

[www.petroseikon.com](http://www.petroseikon.com)