Importing TEM Data into IX1D v 3 using TEM2IX1D– A Tutorial
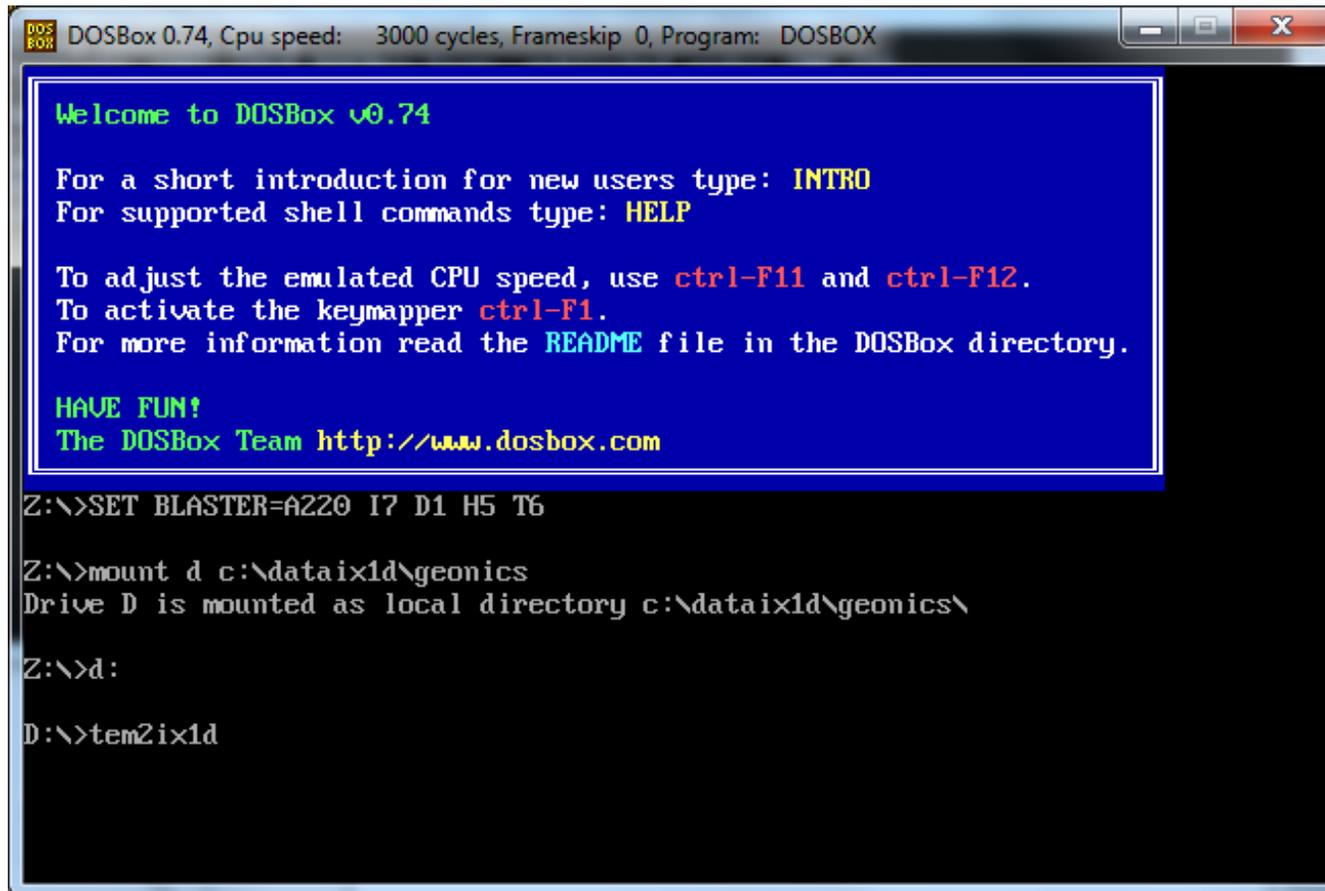
Version 1.0

TEM2IX1D is the Import and Export codes from TEMIX

In the early days of Interpex, we provided codes to import proprietary formats for all instruments. There were many of them, especially for DC Resistivity. When moving to Windows, we decided to develop a generic sounding format and require instrument manufacturers to use this. However, we decided later to keep the import engine from TEMIX for historic instrument formats and for Geonics data files.

Now with this in mind, we execute TEM2IX1Dinside of DOSBOX (dosbox.sourceforge.net).

NOTE: Never, never edit the Geonics file or it will become unreadable. Although it appears to be ASCII text, it is binary.

Next Run TEM2IX1D

First, run DOSBOX and mount the directory containing your data and the TEM2IX1D.EXE program as a drive. Next, switch to that drive and run TEM2IX1D.

Pass the Welcome Screens
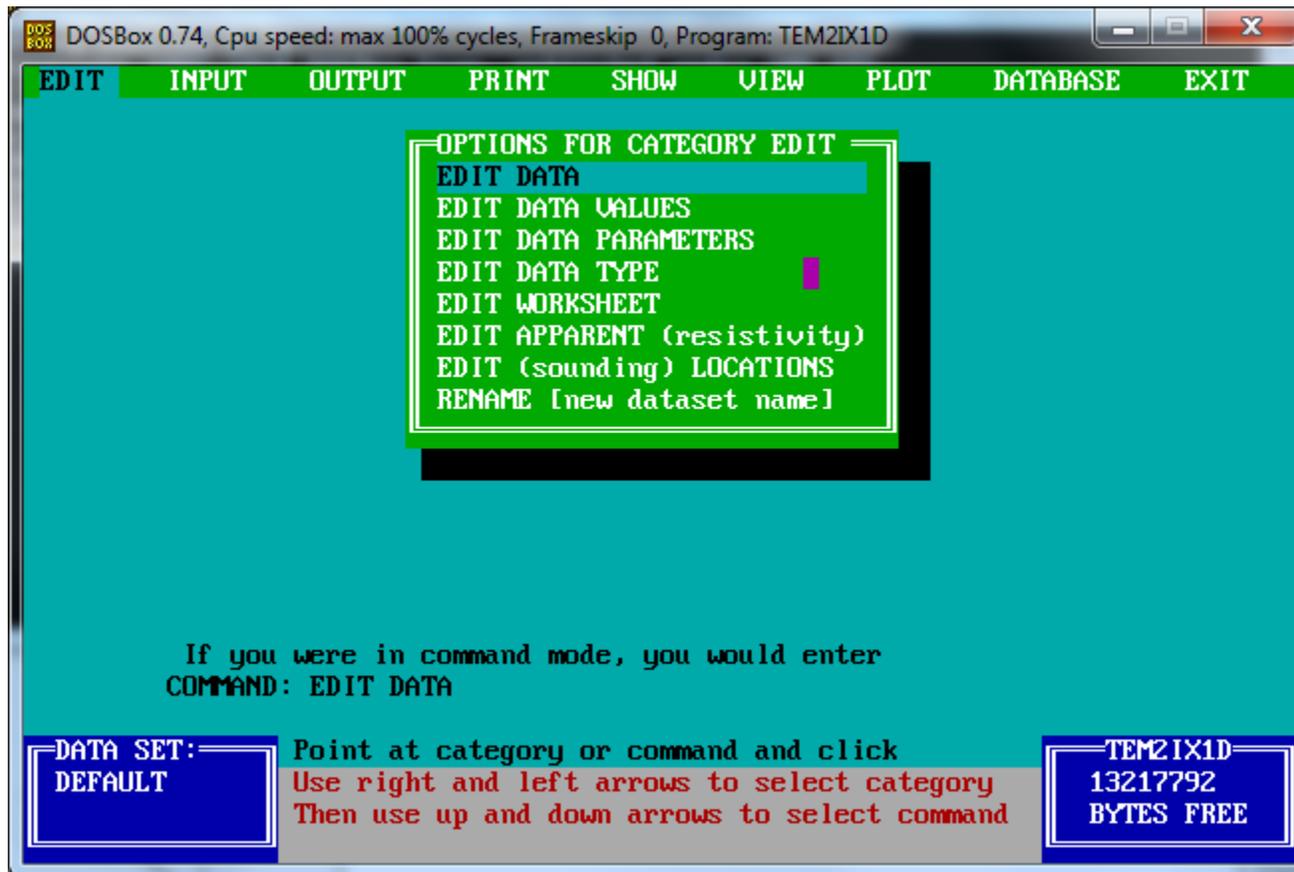
Press <enter> twice to pass welcome screens and get to the menu.

Select INPUT/LOAD (from) GEONICS

Select the INPUT menu and then select LOAD (from)
GEONICS

Next Enter the File Name and Press <enter>

```
ENTER FILE NAME (name.RED): *.RED
Use "?" or "*" to select
from directory.

NAME OF FILE CREATED BY GEONICS
 PROTEM INTERFACE

<enter> - Default, <esc> - Abort
```
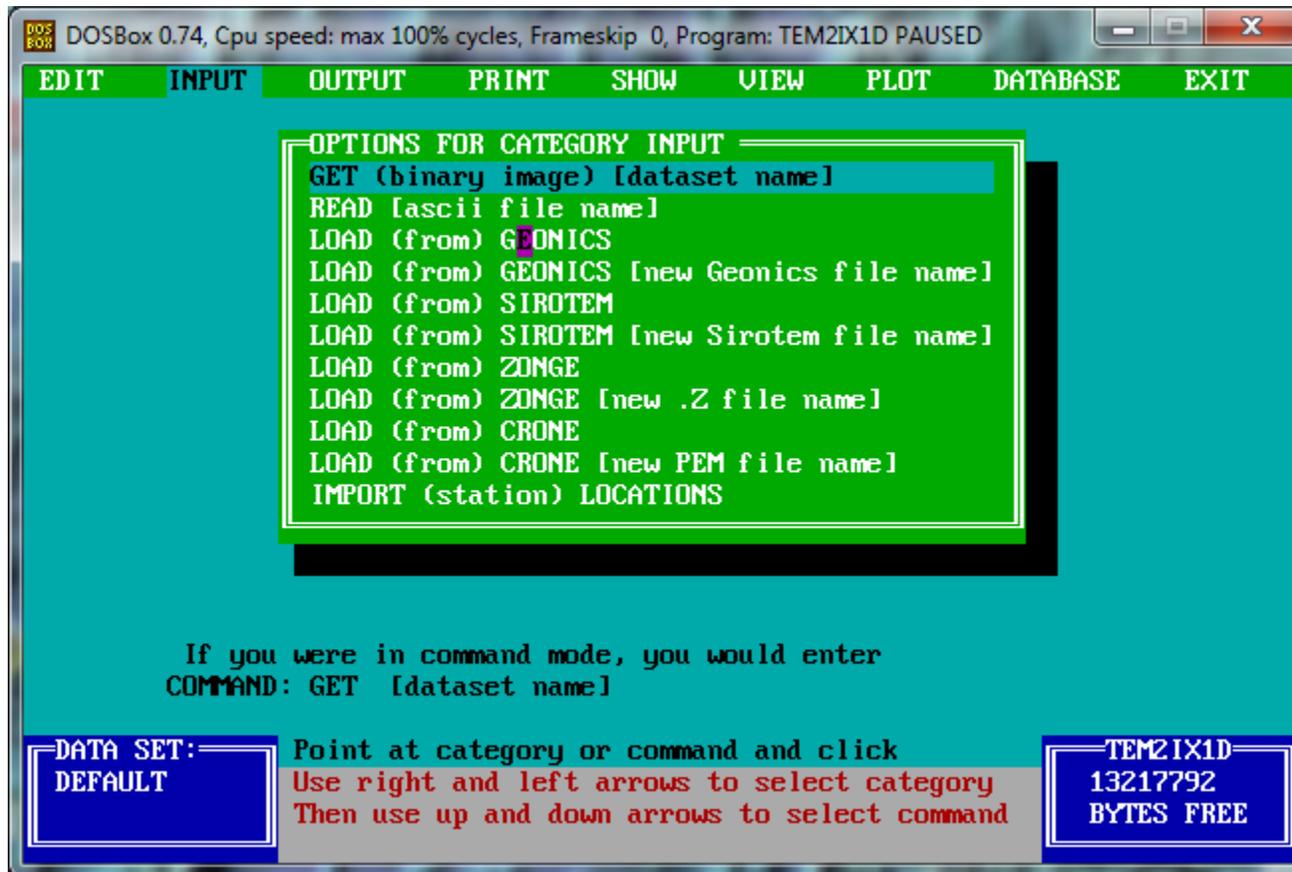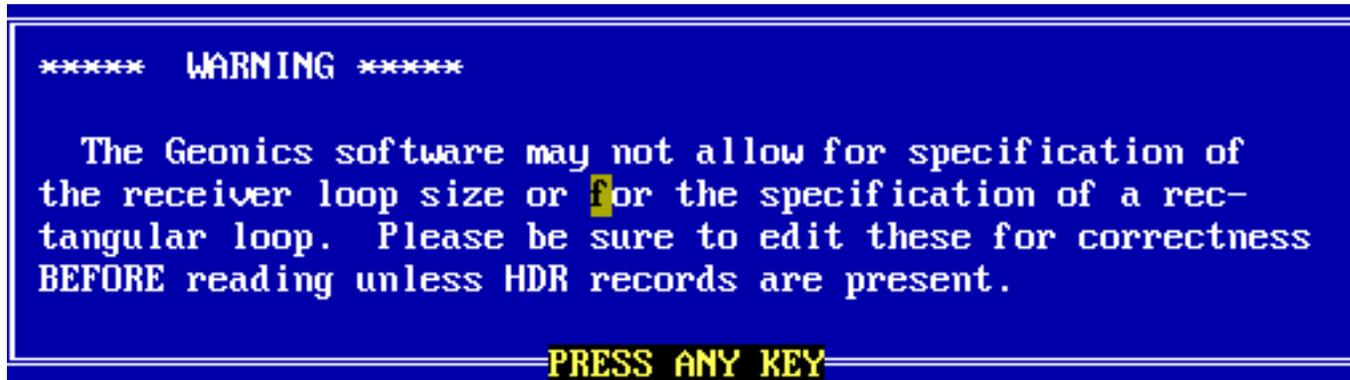
You can now enter the file name or do a search by entering a name that contains an asterisk or question mark. Newer Geonics files seem to have the extension GX7, so entering *.GX7 would bring up all files with that extension in the present directory.

Next see the Warning Screen

```
*****   WARNING *****

   The Geonics software may not allow for specification of
the receiver loop size or for the specification of a rec-
tangular loop.  Please be sure to edit these for correctness
BEFORE reading unless HDR records are present.


                        PRESS ANY KEY
```

The warning screen lets you know that all geometry data
may not be present in the Geonics data file. For this reason,
you need to check the data parameters editor at the end of
the load session to be sure, or better yet edit the header
before loading data (EDIT DATA PARAMETERS in the
EDIT menu) if your soundings use a consistent geometry.

Select the Recording Parameters


```
Select frequency by number or radio button:

Frequency:        ( ) u - 250/300 Hz, EM-47
u: Sweep 1        ( ) v - 62.5/75 Hz, EM-47
H: Sweep 2        ( ) h - 25/30 Hz, EM-47
L: Sweep 3        ( ) H - 25/30 Hz, EM-37/57
                  ( ) x - 25/30 Hz early windows
RX AREAS:         ( ) M (or m) 6.25/7.5 Hz, EM-37/57
1:      31.4      ( ) w - 6.25/7.5 Hz early windows
2:       100      ( ) L - 2.5/3 Hz, EM-37/57
3:       100      ( ) l - 2.5/3 Hz early windows
SATURATION        ( ) K - .625/.75 Hz
LEVEL:            ( ) k - .625/.75 Hz early windows
    5000          ( ) J - .25/.3 Hz
POLARITY ON       ( ) j - .25/.3 Hz early windows
CHANNEL:  1       ( ) I - .0625/.075 Hz
50 Hz             ( ) i - .0625/.075 Hz early windows
TIMEBASE: NO      ( ) UNUSED SWEEP

Northing coords: add:        0 multiply by          1
 Easting coords: add:        0 multiply by          1

<end> to end edit, <esc> to abort loading sequence
```
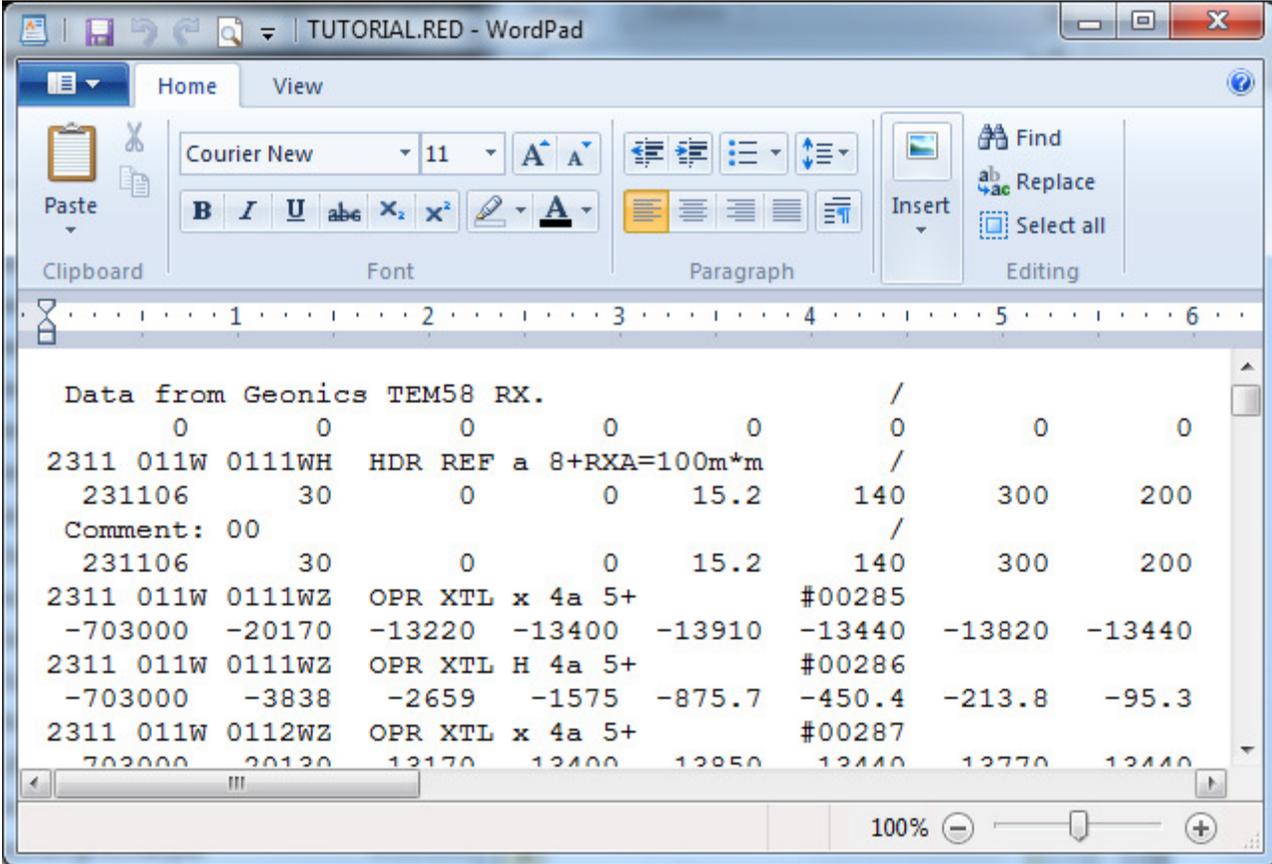
You will need to look at the Geonics data file to determine what data it contains. TEM2IX1D can read only 3 sweeps, which should be enough for most surveys. If the data contains more than 3 sweeps (frequencies) you will lose some of the sweeps.
You need to specify the frequency and Rx area for each sweep.

Examine the Data File

Each record shows up as two lines in the file (turn off the wrap). Here we see the first record contains no data. The second record is a header (HDR) record. The third is a comment and the fourth is the first data record (OPR). The frequency is designated by the letter after XTL. This file contains frequencies x and H. Letters are case sensitive.

Open the data file in Notepad or WordPad (be sure not to save it) and scroll through the data. Close the window when finished.

Next Enter the Correct Data Parameters

Set the frequencies to x and H, areas to 31.4 and set the addition and multiplication parameters for the location coordinates if desired.

Press <end> to select instrument type for each sweep:

Press <end> to continue

Next we see the Dialog showing Records

Now there is a list of the records in the file with the data shown on the right side. Use arrow or page keys to scroll or click on a record with the mouse to select. As mentioned before, the first and third record contain no data as you can see.

Click on the HDR Record


```
<Up>═══FILE: TUTORIAL.RED═══════<PgUp>═      SIDE X:
  1  Data from Geonics TEM58 RX.                       300
  2 2311 011W 0111WH  HDR REF a 8+RXA=100    SIDE Y:
  3  Comment: 00                                       200
  4 2311 011W 0111WZ  OPR XTL x 4a 5+        X-LOCAT:
  5 2311 011W 0111WZ  OPR XTL H 4a 5+                    0
  6 2311 011W 0112WZ  OPR XTL x 4a 5+        Y-LOCAT:
  7 2311 011W 0112WZ  OPR XTL H 4a 5+                    0
  8 2311 011W 0113WH  HDR REF H 4a 8+        RX AREA:
  9  Comment: 00                                      100
 10 2311 011W 0113WZ  OPR XTL x 4a 5+        MODEL #:
 11 2311 011W 0113WZ  OPR XTL H 4a 5+                  57
 12 2311 011W 0114WZ  OPR XTL x 4a 5+
 13 2311 011W 0114WZ  OPR XTL H 4a 5+
 14 2311 011W 0115WZ  OPR XTL x 4a 5+
 15 2311 011W 0115WZ  OPR XTL H 4a 5+
 16 2311 011W 0115WZ  OPR XTL x 4a 5+
<Down>                            <PgDn>
        COMMENT: =100m*m        /          LOADED:
Point mouse at record - click to select    FQ # REC
<S>: Search <H>: read Header <A>: Autoload  x      0
<R>: Read record <+>: add record <?>: help  H      0
<end> to end loading, cursor pad to move           0
```

Selecting the HDR record shows the header information with the loop side lengths and the receiver position, Receiver area and model number. Press <H> or click on it to read the header record.

Click on the First OPR Record

Selecting the first OPR record shows the voltage values, the ramp time, first time channel, current and Tx area. Note this contains the early times (first 10 gates) from a 30-gate recording.

Click on the Second OPR Record

Selecting the second OPR record shows the voltage values, the ramp time, first time channel, current and Tx area. Note this contains the late times (last 20 gates) from a 30-gate recording.

Next Load the Data


```
Point mouse at record - click to select
<S>: Search <H>: read Header <A>: Autoload
<R>: Read record <+>: add record <?>: help
<end> to end loading, cursor pad to move
```

The menu at the bottom of the screen shows most options. One option not shown is <alt-A>. Holding down the <alt> key and pressing <A> will load all of the data, combining and averaging data which has the same coordinates.

Pressing <A> will load the record currently selected and all records below it with the same coordinates.

Pressing <+> will load the currently selected record. This is used to add one record at a time.

We are going to select a record with multiple recordings to illustrate the editing capability of the TEM2IX1D program. Records 14 through 17 have the same coordinates 011 and 0115. So select record 14 and press <A> and then press Y to terminate averaging and show the graph of the data.


```
14 2311 011W 0115WZ   OPR XTL x 4a 5+
15 2311 011W 0115WZ   OPR XTL H 4a 5+
16 2311 011W 0115WZ   OPR XTL x 4a 5+
17 2311 011W 0115WZ   OPR XTL H 4a 5+
```

See the Graphic Data Screen
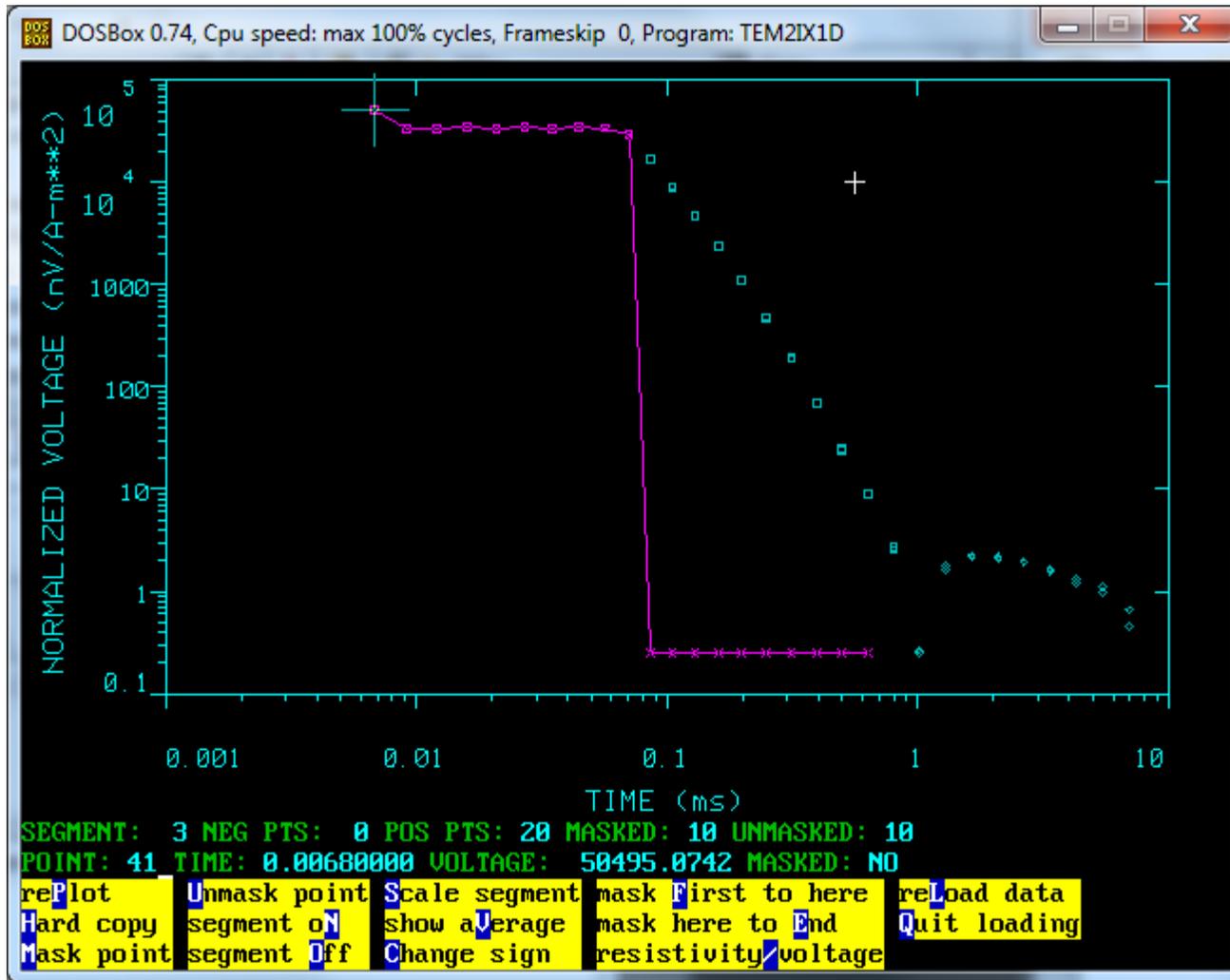
All of the recordings for each frequency are shown separately on the graph. You can select a point on the segment using left/right arrow, select a segment using up/down arrow mask points or segments that are noisy and finally average the data and quit loading.
X denotes masked points, diamonds are negative.

Edit the Data Parameters

```
                    DATA SET: DEFAULT

    CLIENT: Any Interested Party              DATE: 01-DEC-92
  LOCATION: Investigation Site            SOUNDING: 2
    COUNTY: Jefferson County, Colorado   ELEVATION:          0 m
   PROJECT: California Demonstration Data EQUIPMENT: Geonics PROTEM
 LOOP SIZE:          300 m by         200 m   AZIMUTH:
  COIL LOC:            0 m (X),          0 m (Y) TIME CONSTANT:        0
SOUNDING COORDINATES:   E:          -115 N:          11 SLOPE:        0

Enter new data,use <f2> to edit, <esc> to Abort <alt-W> to clear data,
point at data and click or use Cursor pad to move, <end> to end edit
```

After you press <Q> to quit you will have a chance to edit the data parameters. Be sure to check the geometry carefully. The client, location, county and project will not be transferred to IX1D. Be sure to give the new sounding a unique name.
Press <end> to close the dialog, then select the VIEW menu and select VIEW (screen graphics) to view the data.

Output the Data

There are two options for data output to interface with IX1D.

IX1D can read .TEM files which are output using WRITE [ascii file name] from the OUTPUT menu. This is one sounding per file for both output and input.

You can SAVE (new binary image) to save all the soundings in the data set to a .TX3 file which can hold up to 200 soundings. REPLACE will write back to the same file after editing or loading more soundings.

If you use SAVE, you will need to use DOStoWIN.EXE to convert the .TX3 file to a number of .IXR files, one for each sounding. IX1D can load several IXR files with one command.