



COMPASS - View

Interactive Weak and Strong Motion Data Processing Software

Rev 2008.11.19 Document Rev C

2011.02.22

This COMPASS manual provides an outline for manipulation of seismogram preview settings for the user to view and plot traces.



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Revision History:

Revision	Date	Reason for change	Pages
C	2008.12.01	Update to Compass-08Nov19	All
B	2008.07.08	Updated for COMPASS	All
A	2007.05.05	Update for REF TEK SM	All
0.1	2007.02.23	Initial Draft	All

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Printed in USA

Software Version:

Current software and documentation is available on our web site. Some early units may require hardware modifications to use the latest software. Contact REF TEK if you have any queries on the compatibility of your unit(s) and the current software release.

Notation Conventions

The following notation conventions are used throughout REF TEK documentation:

Notation	Description
ASCII	Indicates the entry conforms to the American Standard Code for Information Interchange definition of character (text) information.
Binary	Indicates the entry is a raw, numeric value.
Hex	Indicates hexadecimal notation. This is used with both ASCII characters (0 – 9, A – F) and numeric values.
BCD	Indicates the entry is a numeric value where each four bits represents a decimal digit.
FPn	Indicates the entry is the ASCII representation of a floating-point number with n places following the decimal point.
<n>	Indicates a single 8-bit byte. When the contents are numeric, it indicates a hexadecimal numeric value; i.e. <84> represents hexadecimal 84 (132 decimal). When the contents are capital letters, it represents a named ASCII control character; i.e. <SP> represents a space character, <CR> represents a carriage return character and <LF> represents a line feed character.
MSB	Most Significant Byte of a multi-byte value.
MSbit	Most Significant Bit of a binary number.
LSB	Least Significant Byte of a multi-byte value.
LSbit	Least Significant Bit (bit 0) of a binary number.
YYYY	Year as a 4-digit number
DDD	Day of year
HH	Hour of day in 24-hour format
MM	Minutes of hour
SS	Seconds of minute
TTT	Thousandths of a second (milliseconds)
IIII	Unit ID number

n, nS	nano, nanoSecond; $10^{-9} = 0.000000001$
u, uS	micro, microSecond; $10^{-6} = 0.000001$
m, mS	milli, milliSecond; $10^{-3} = 0.001$
K, KHz	Kilo, KiloHertz; $10^3 = 1,000$
M, MHz	Mega, MegaHertz; $10^6 = 1,000,000$
G, GHz	Giga, GigaHertz; $10^9 = 1,000,000,000$
Kb, KB	Kilobit, KiloByte; $2^{10} = 1,024$
Mb, MB	Megabit, MegaByte; $2^{20} = 1,048,576$
Gb, GB	Gigabit, GigaByte; $2^{30} = 1,073,741,824$

Related Manuals:

130-SMA System Documents	Number	PDF file
130-SMA Startup (Command Line)	Doc-SMA-Ops	130SMA_startup.pdf
Data Utilities Users Guide	Doc-Datautils	130_utilities.pdf
130-SMA Command Interface	Number	PDF file
130 Cmd Line - Theory of Operations	Doc-CmdL-Theory	130_CLtheory.pdf
130 Cmd Line - Release Notes	Doc-CmdL-Release	130_CLRN.pdf
130 Cmd Line - Reference	Doc-CmdL-Ref	130_CLcmd.pdf
130 Cmd Line - Recording Format	Doc-CmdL-Record	130_CLrecord.pdf
130-SM GUI Users Guide	Doc-130-SMGui	RT130SM.pdf
Optional Manuals	Number	PDF file
SNDP Installation and Users Guide	SNDP-OP-003	SNDPUser.pdf
SNDP Reference Guide	SNDP-S-002	SNDPRef.pdf
RTCC Command / Control Users Guide	RTCC-S-006	RTCC.pdf
RT_Display Users Guide	RTD-S-007	RTDisplay.pdf
RT_View Users Guide	RTV-S-005	RTView.pdf
RTPMonitor Installation and Users Guide	RTPM-S-008	RTPM.pdf
RTPD Installation and Users Guide	RTPD-OP-005	RTPD.pdf
(part of RTPD manual) RTP Protocol		
Accelerometers		
131A-02/3 3G Triaxial Accelerometer	Doc-131A-03/2	131A023.pdf
131A-02/2 3G Triaxial Accelerometer	Doc-131A-02/2	131A022.pdf
131A-01/3 4G Triaxial Accelerometer	Doc-131B-01/3	131B013.pdf
131B-01/1 4G Unixial Accelerometer	Doc-131B-01/1	131B011.pdf

REF TEK Support and update notifications

As a valued user of REF TEK equipment we would like to provide the best support possible by keeping you up to date with our product updates.

If you would like to be notified of any REF TEK product updates please spend a couple of minutes to register with the REF TEK customer support team.

To register, enter your company information through the [Register](http://support.reftek.com) link on our website at <http://support.reftek.com> .

Our website team will send you a unique Username and Password allowing secured access to all product documentation and software sold to your company.

Once we register your contact we will only send necessary notifications via email. The same notifications will be shown on our website <http://support.reftek.com> notifications page

Thanks,

Your REF TEK support team

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3 Using the View Menu

3.1 View Menu Commands Overview

This menu provides for manipulation of seismogram preview settings for the user.



Figure 3-1 View Menu Options

3.2 Select Channels Command

The Select Channels command is for selection of channels of interest and arranging the order they can appear on the display.

3.2.1 To select components for display:

1. Select the **Select Channels** menu item

-OR-

Use the hot key s

-OR-

Use the **Shift, Ctrl** and mouse cursor to highlight components.

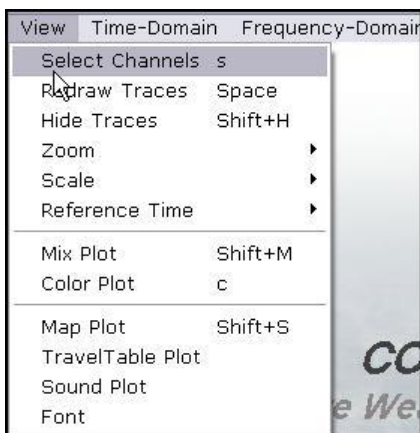
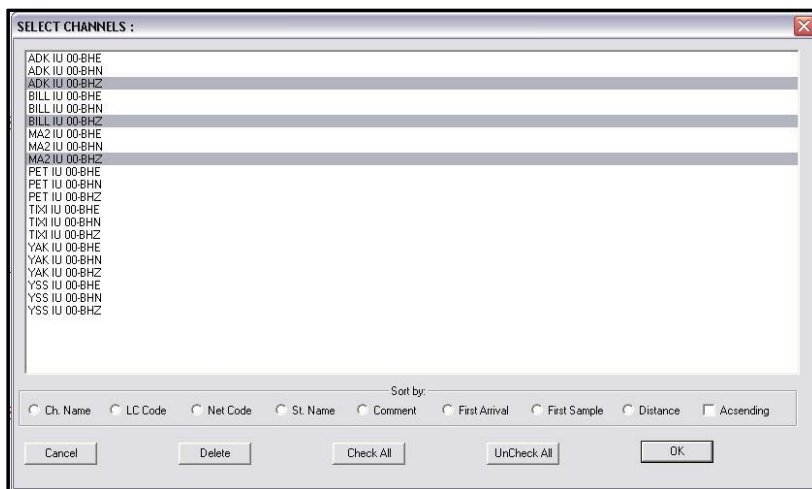


Figure 3-2 View and Select Channels

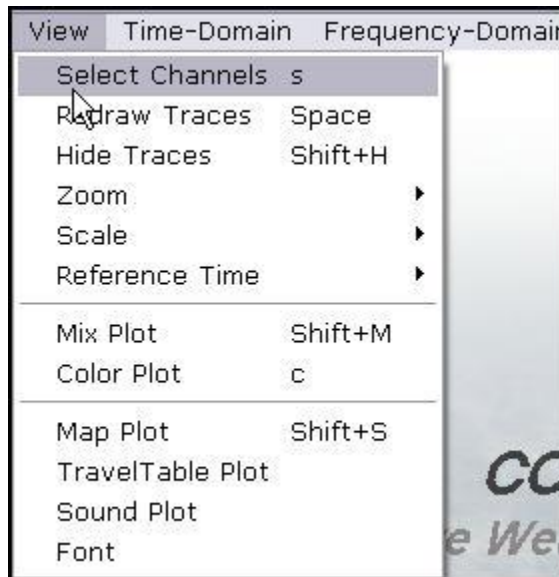
Note: If a trace is altered by filtering or component rotation or the corresponding comment is added to the channel name the original trace is saved in memory. It can be recovered using the Select Channels command.

2. To arrange the traces in the display in different order, click the corresponding check box.
3. To delete unnecessary channels from program memory highlight them and click **Delete** button
4. Select the **OK** button when selections are complete.



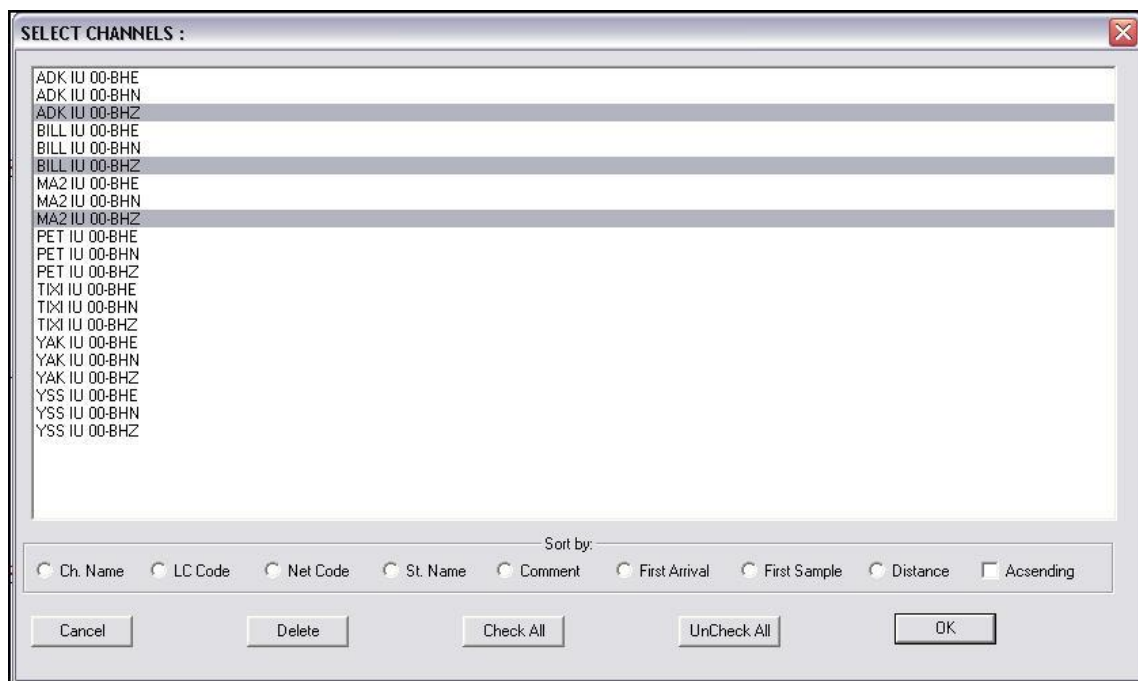
3.2.2 To select channels in memory and compare:

1. Use the **Select Channels** menu.



2. The display opens to select the channels.
3. Approve the selection with the OK button.

The display updates to show the selected channels.



3.3 Trace Redraw

Use the Trace Redraw command -OR- the space hotkey to return back to the trace plot from Map, PSD, 3D FFT and other screens.

3.3.1 To use the Trace Redraw:

1. Select the **Trace Redraw** command from the **View** menu.

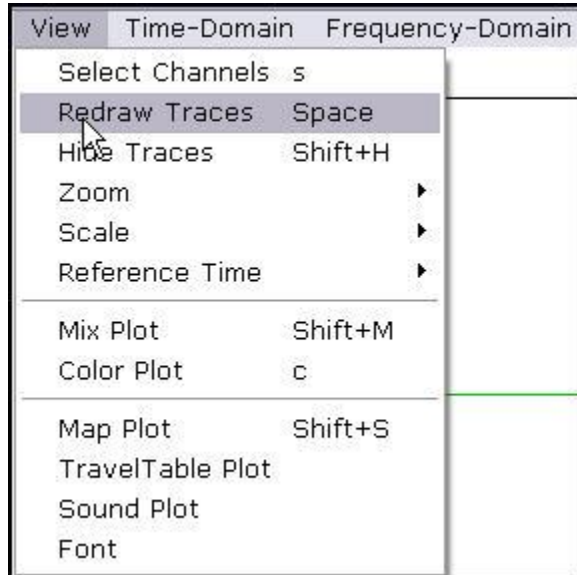


Figure 3-3 Trace Redraw

3.4 Hide Traces

Use the **Hide Traces** command

-OR- h hotkey

to remove time series plots from Map, PSD, 3D and other screens.

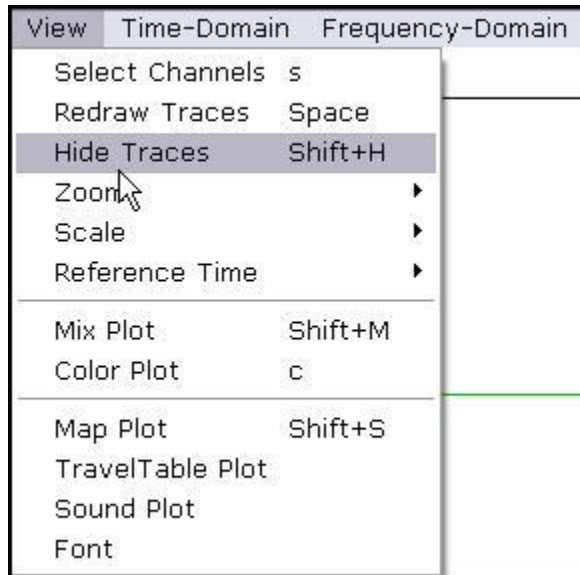


Figure 3-4 Hide Traces

3.5 Zoom

Zoom is for selecting a smaller interval of time for preview and for return to the whole record plot if desired.

3.5.1 To zoom in or enlarge a waveform:

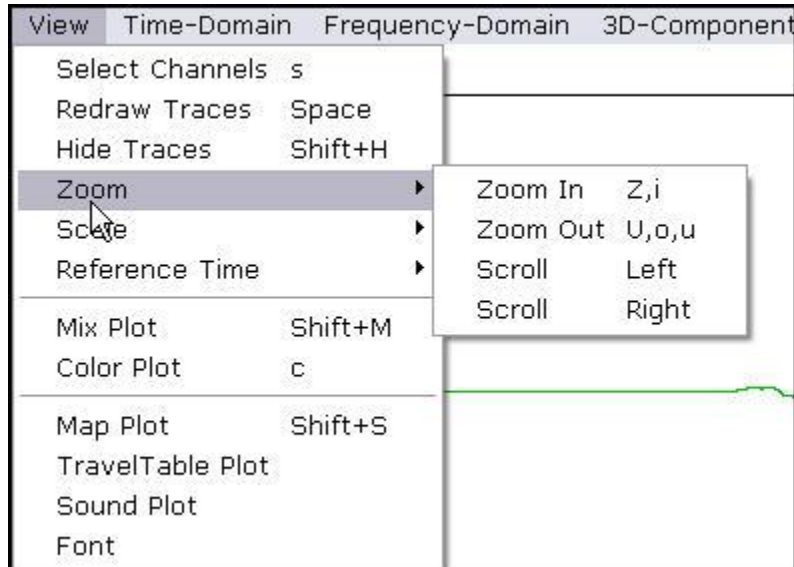


Figure 3-5 View and Zoom

To return to a whole plot use the **Select Channels** command after a **Zoom** operation.

3.5.2 Zoom In

1. To view an enlarged display of a segment of data, select the **Zoom In** menu

-OR-

Use the z hot key.

2. Select the time segment on the seismogram by clicking the mouse button with cursor on the left endpoint (L).

3. Then select on the (R) "L<R"; right endpoint of the desired time segment as shown on picture below.

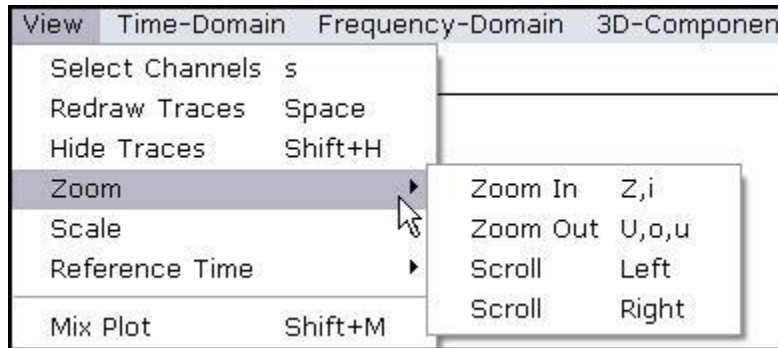
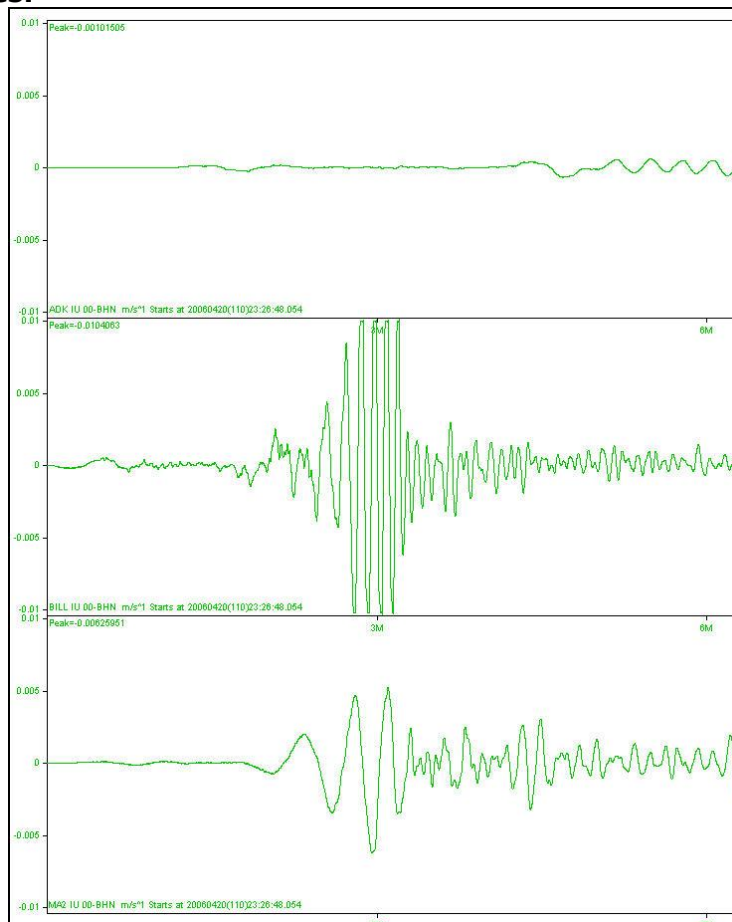


Figure 3-6 Zoom In

Note: Use Right-Double-Click to return to previous zoom operations. Dependent on the number of previous operations and if its stack is reset when the user selects New Traces.



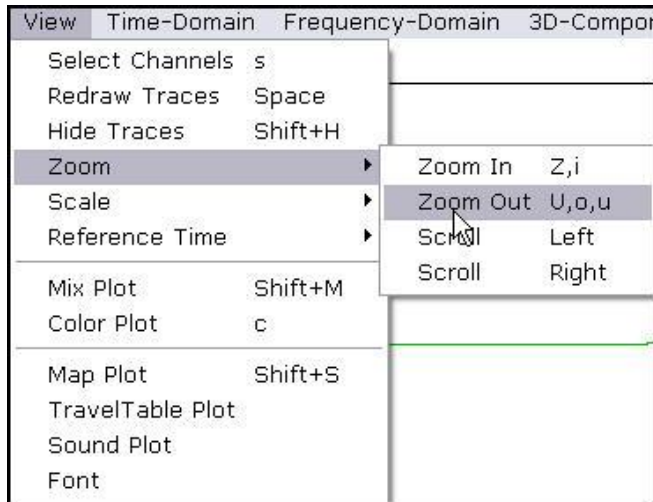
3.5.3 Zoom Out

After viewing a segment of the waveform data in an enlarged view with the Zoom In command:

1. Return to the previous view by selecting **Zoom Out**.

-OR-

Using the u hot key.



2. Selecting **Zoom Out** will return the display to the initial state, with all waveform data displayed, regardless of how many **Zoom In** operations have been selected.

Note: Use Right-Double-Click to return to previous zoom operations. Dependent on the number of previous operations and if its stack is reset when the user selects New Traces.

3. Once the display is at its initial state, additional **Zoom Out** operations have no effect.

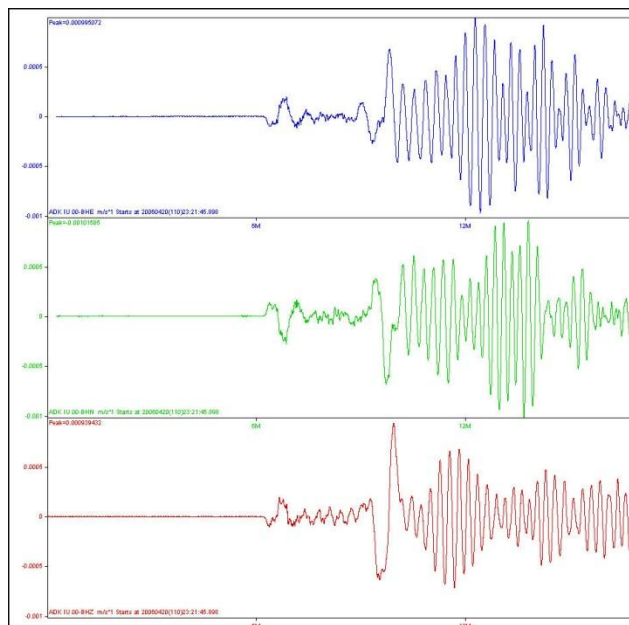


Figure 3-7 Zoom Out

3.5.4 Scroll Left

After a **Zoom In** operation view the data to the left 1/2 of the segment that you have selected (i.e., earlier time segments):

1. Select **Scroll Left**

-OR-

Use the left arrow hot key.

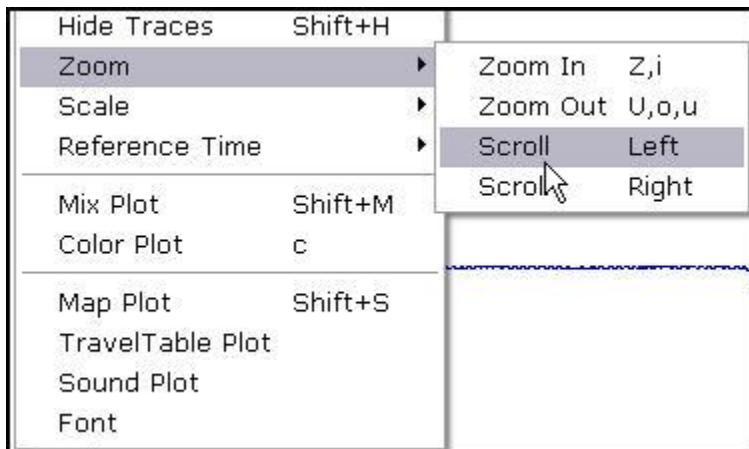
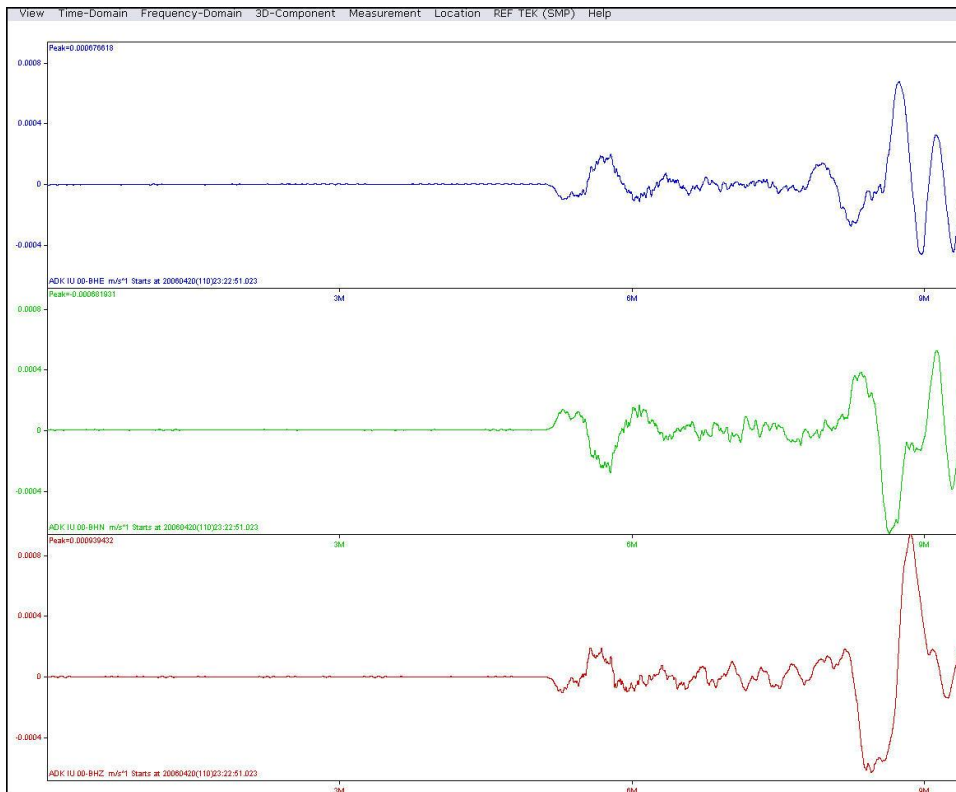


Figure 3-8 View and Scroll Left

2. Select the new area to view.
3. The display updates to show the new view.



3.5.5 Scroll Right

After a **Zoom In** operation, view the data to the right 1/2 of the segment that you have selected (i.e., later time segments):

1. Select **Scroll Right**

-OR-

Use the right arrow hot key.

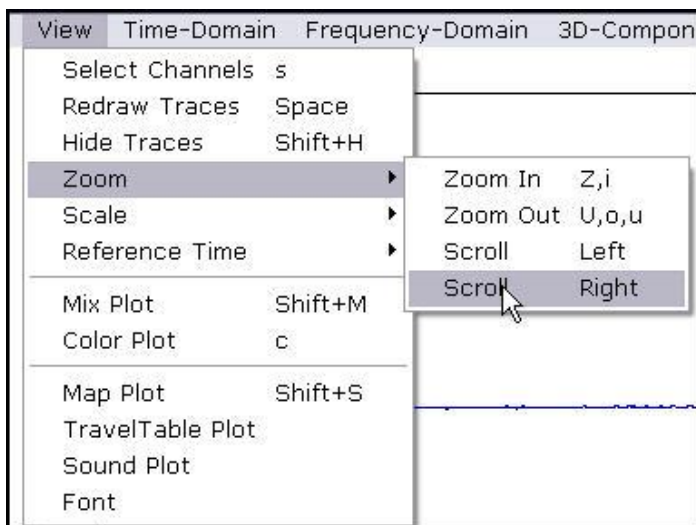
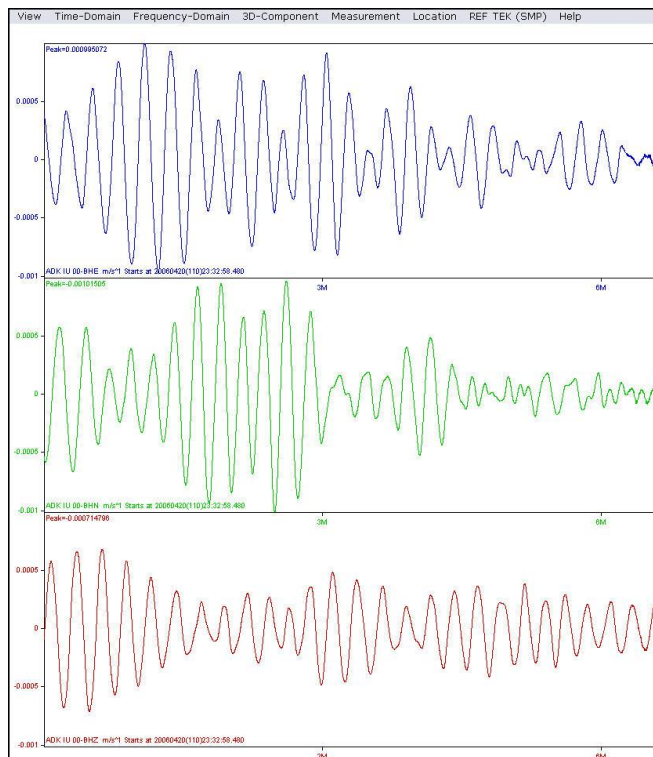


Figure 3-9 View and Scroll Right

2. Pick a new area to view.
3. The updated display shows the new adjusted view.



3.6 Scale

Use the Scale commands to display individual or all traces to the maximum amplitude.

Scale is used for changing vertical axes limits.

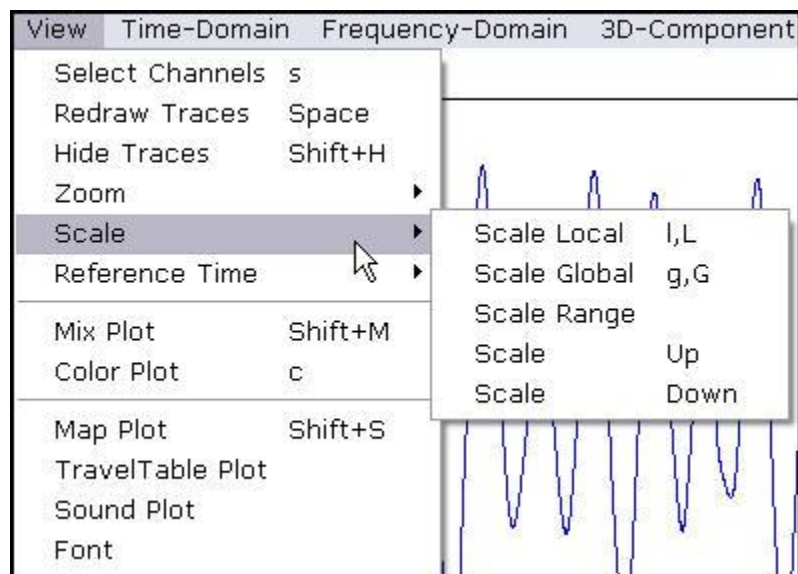


Figure 3-10 View and Scale

3.6.1 Scale Local

To display each individual trace scaled to the maximum amplitude of that trace:

1. Select **Scale Local**

-OR-

Use the hot key Shift-L.

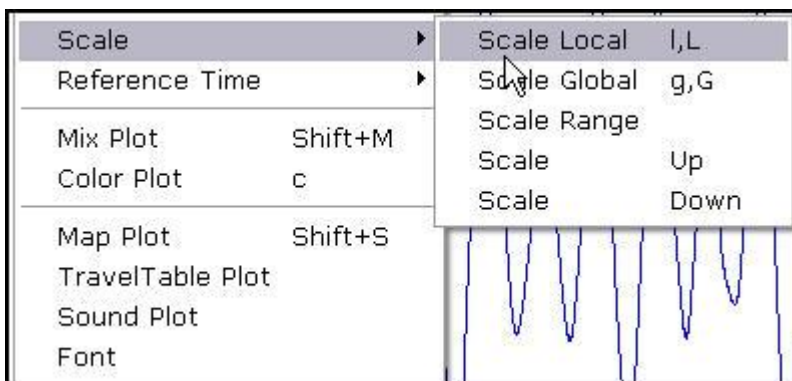


Figure 3-11 Scale Local Menu

2. The view changes to show the trace(s) scaled

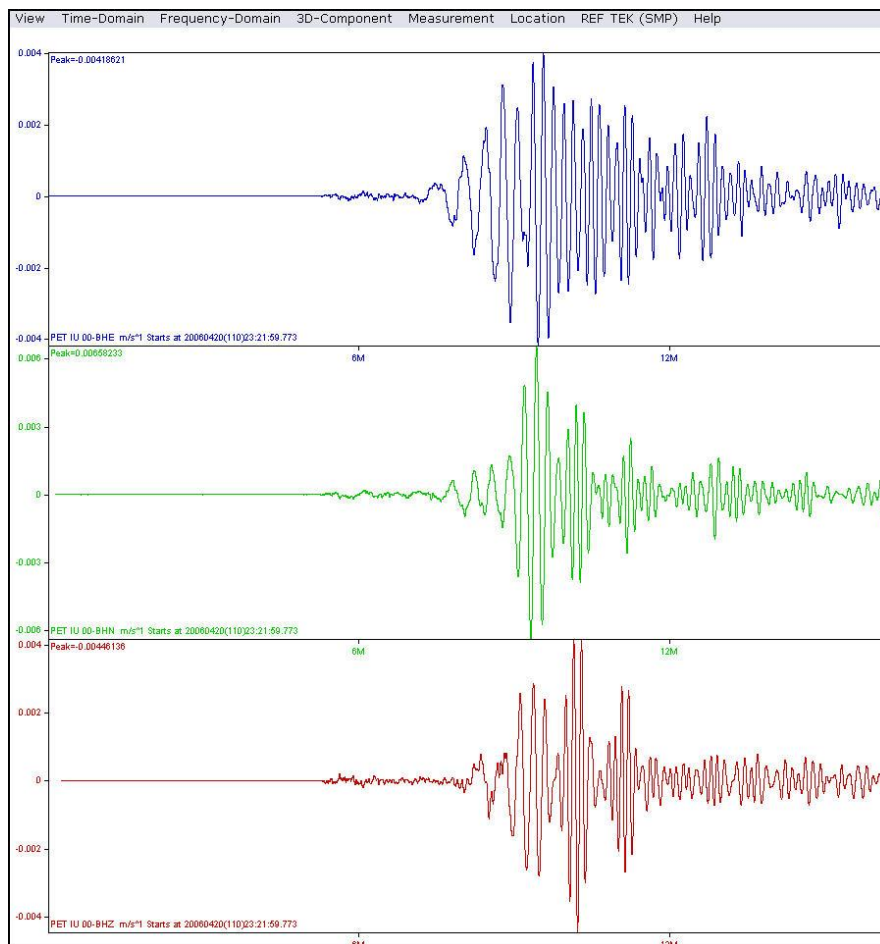


Figure 3-12 Scale Local Applied

3.6.2 Scale Global

To scale all traces to the largest amplitude in any trace:

1. Select the **Scale Global** command from the **View Scale** menu

-OR-

Use the hot key Shift-G.

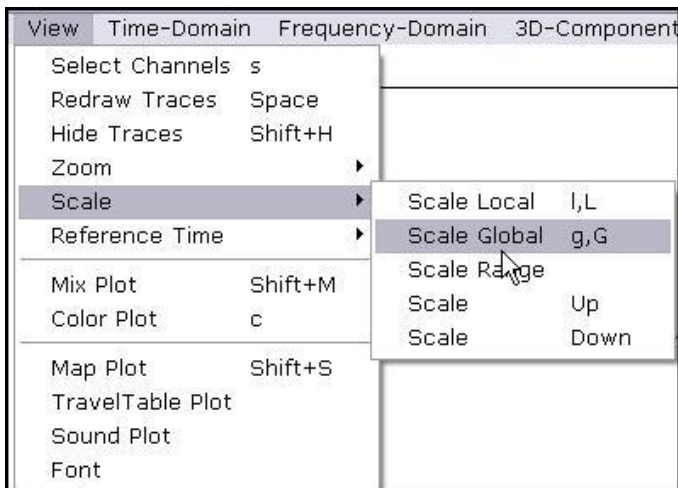
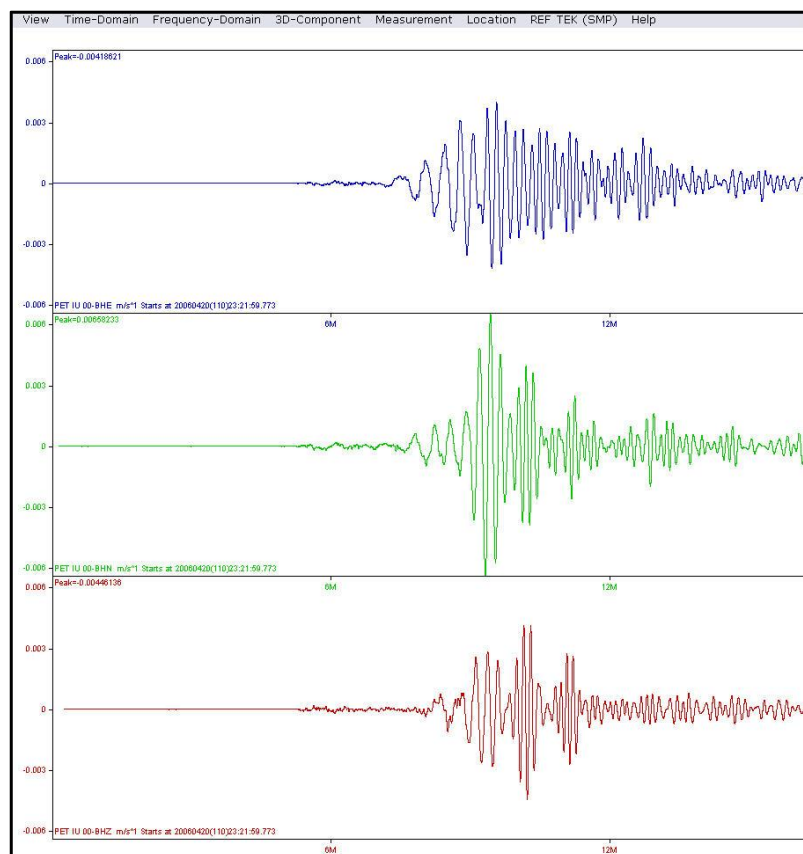


Figure 3-13 Scale Global

2. The display redraws to show the updated scale.



3.6.3 Scale Gravity Range

To scale all traces to the largest range in any trace:

1. Select the **Scale Range** command from the **View** menu.

-OR- SHIFT-R hotkey

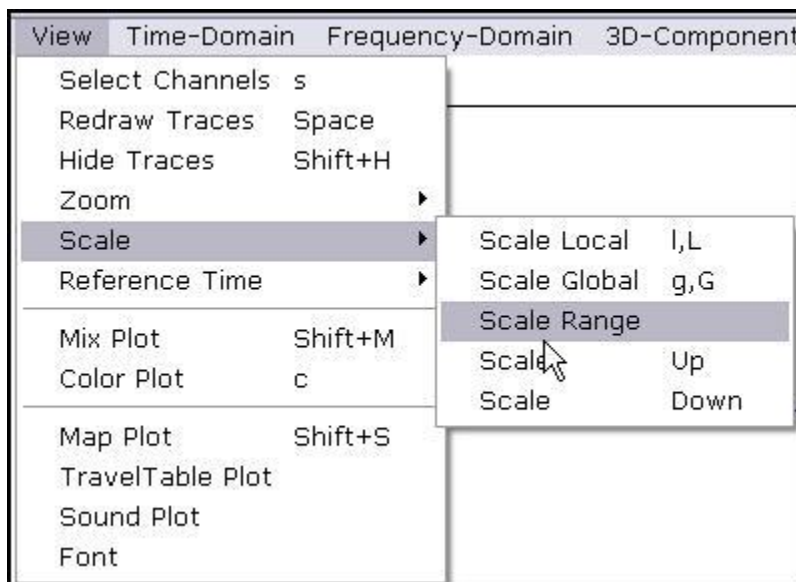


Figure 3-14 Scale Range Command

2. The display redraws to show the updated results.

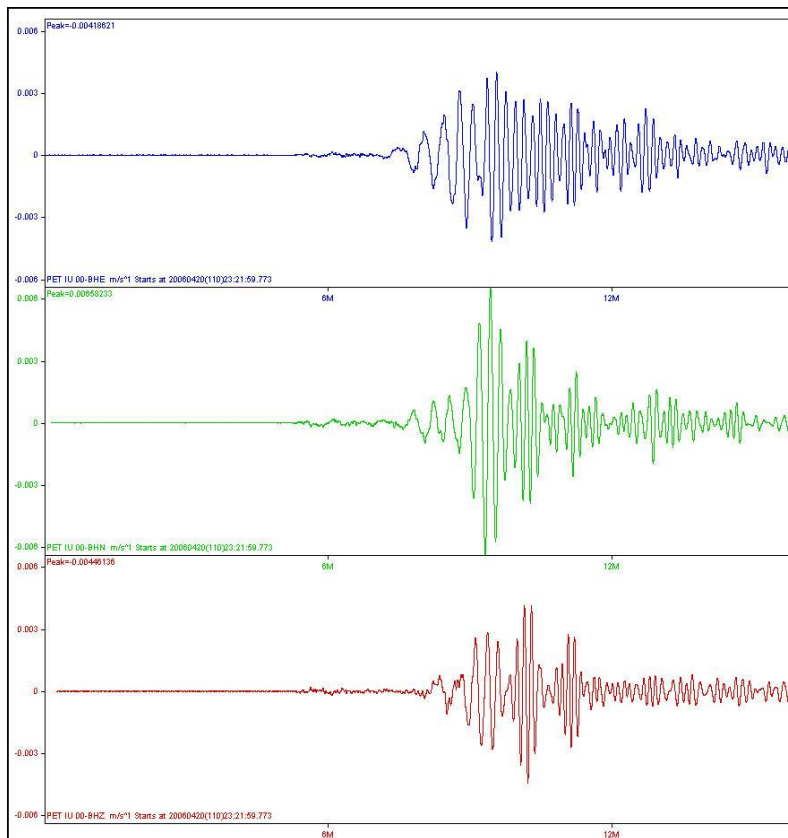


Figure 3-15 Scale Range Displayed

3.7 Scale Up

To increase the amplitude of the traces in the display by 50%:

1. Select the Scale Up command from the Scale menu

-OR-

Use the hot key Up Arrow.

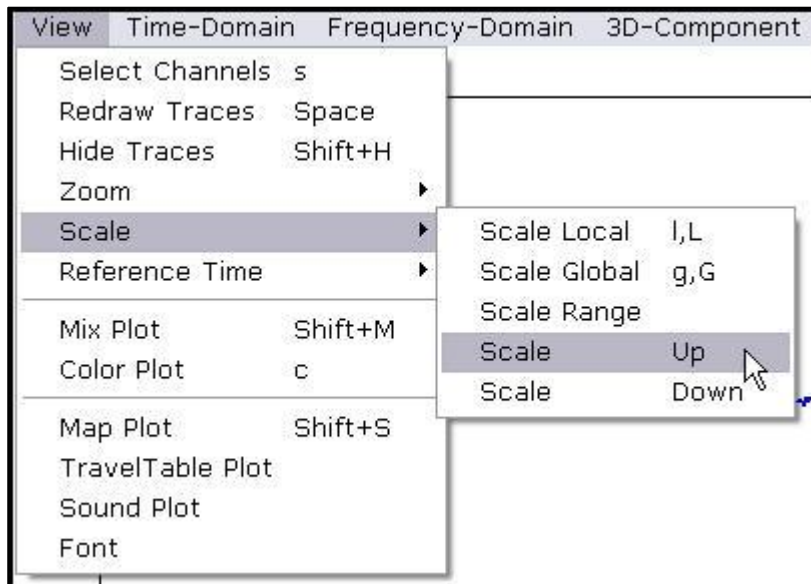
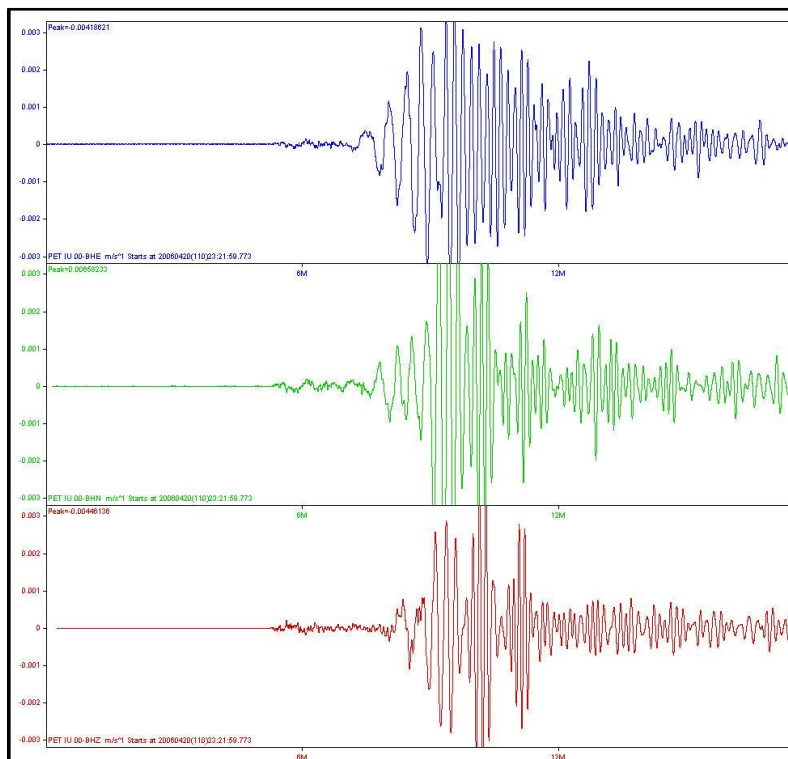


Figure 3-16 Scale Up

2. The display redraws to show the updated scale.



3.7.1 Scale Down

To decrease the amplitude of the traces in the display by 50%:

1. Select the **Scale Down** command from the **Scale** menu

-OR-

Use the hot key Down Arrow.

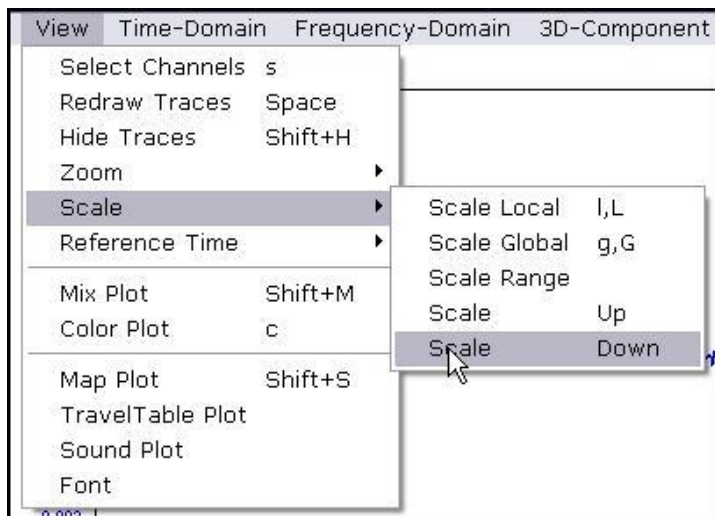
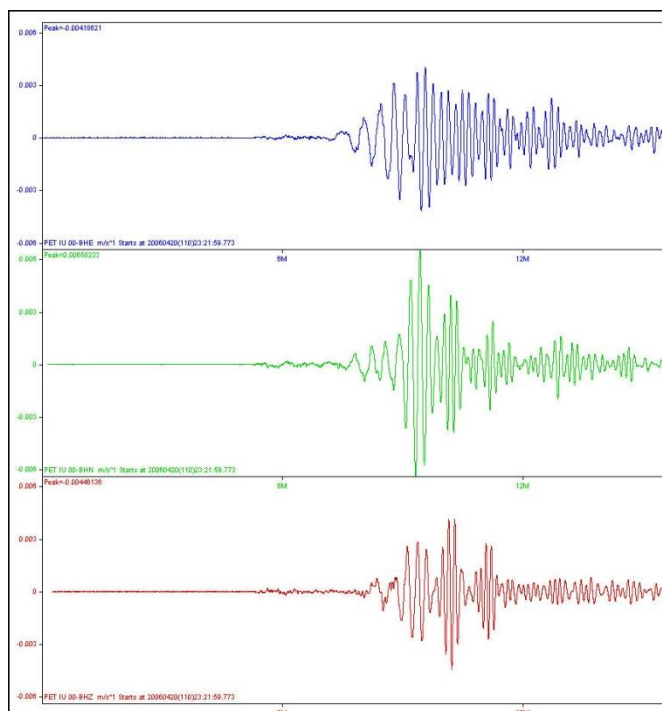


Figure 3-17 Scale Down

2. The display redraws to show the updated scale.

Note: When using the **Scale Up** or **Scale Down** options the signal can go out from the view of the display. This is typical for unipolar signals. To avoid that remove DC-OFFSET on the signal.



3.8 Reference Time

Reference Time is for changing time axes limits in different ways so the user can get a better view for traces when they belong to different time segments. The **Reference Time** commands control the type and time axes on the display.

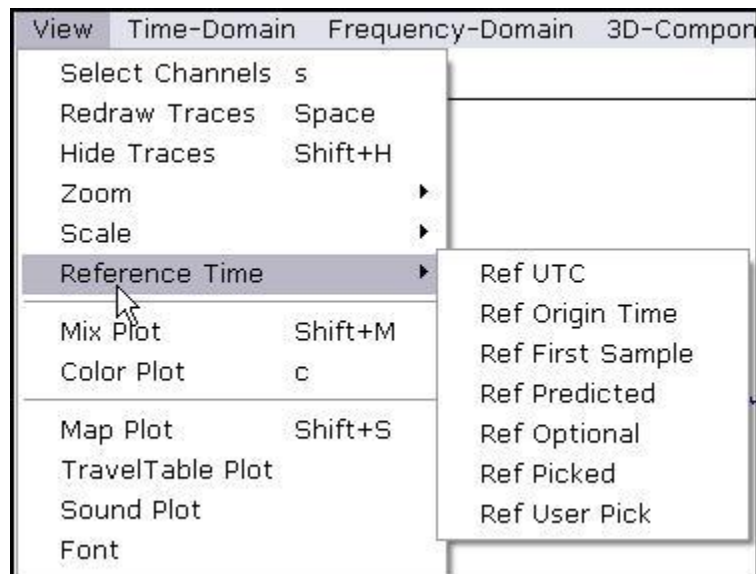


Figure 3-18 Reference Time

3.8.1 Ref UTC

By default all channels are displayed in the same UTC time axes. For different users needs several options were added to the program. These are explained in the following sections.

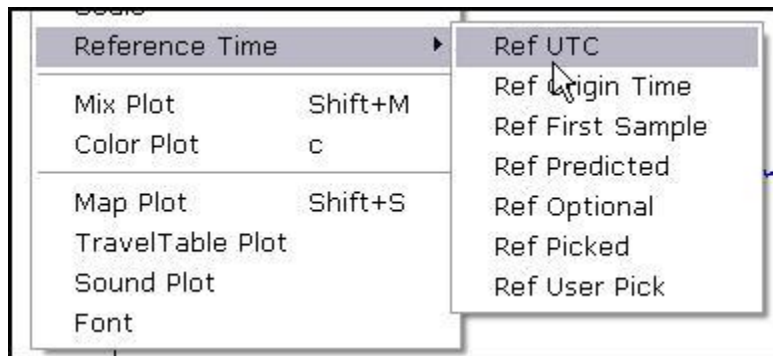
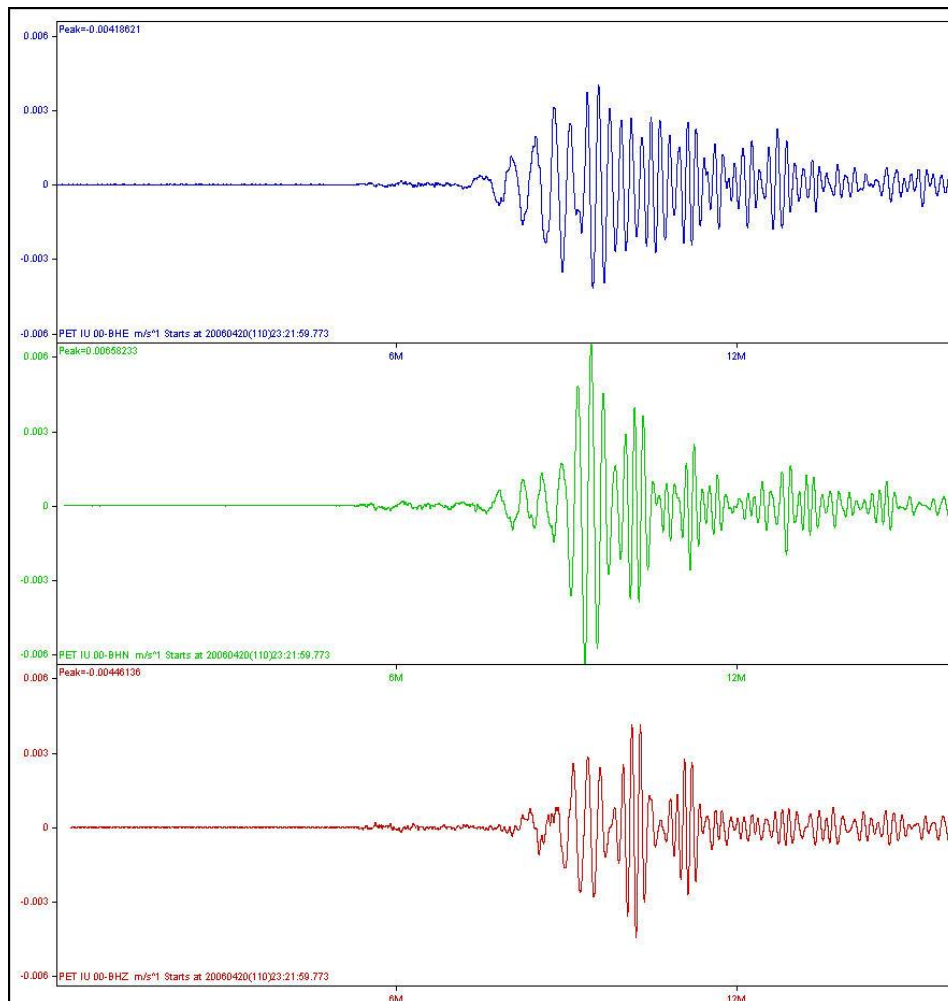


Figure 3-19 REF UTC



3.8.2 Ref Origin Time

To study the signals from different predefined earthquake sources use this option.

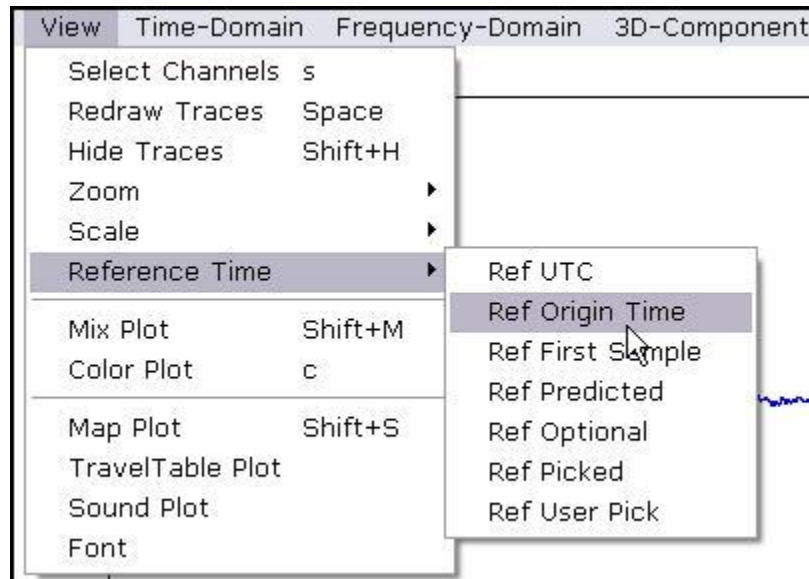


Figure 3-20 Ref Origin Time

3.8.3 Ref First Sample

This option is useful to display signals which are not overlapped in time.

1. Select **Ref First Sample** from the **Reference Time** menu to display results.

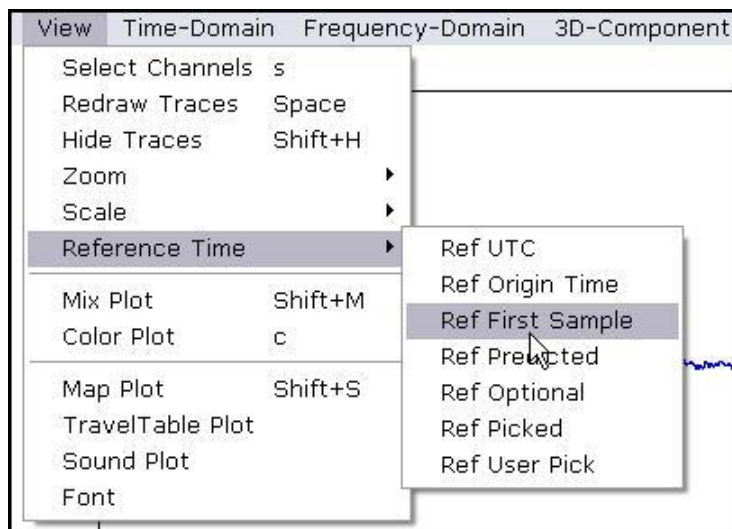
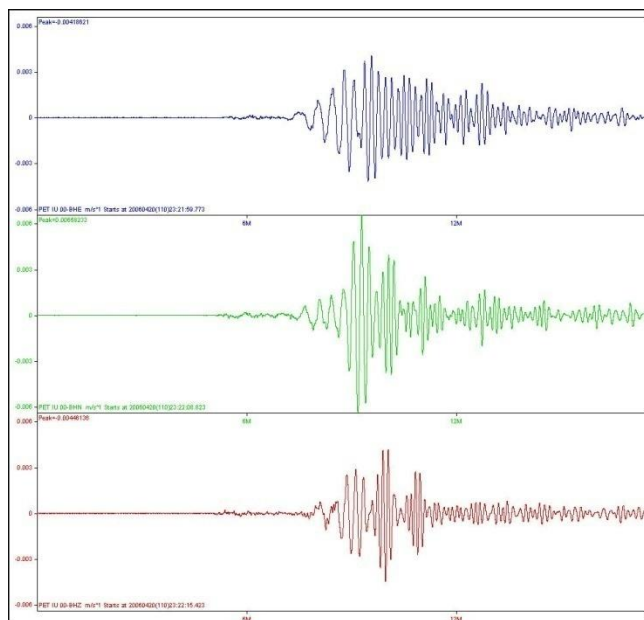
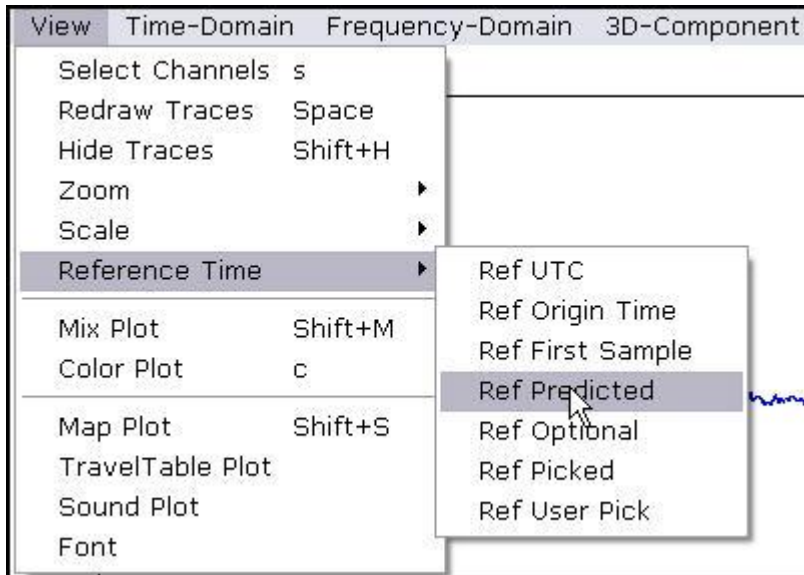


Figure 3-21 Ref First Sample



3.8.4 Ref Predicted

This option is used for predefined or computed earthquake source location. The reference time can be adjusted for predicted wave arrival based on Travel Time Tables.



1. Select **Ref Predicted** from the **Reference Time** menu.
2. Select the corresponding IASP91 wave name from the dialog to change time display settings.

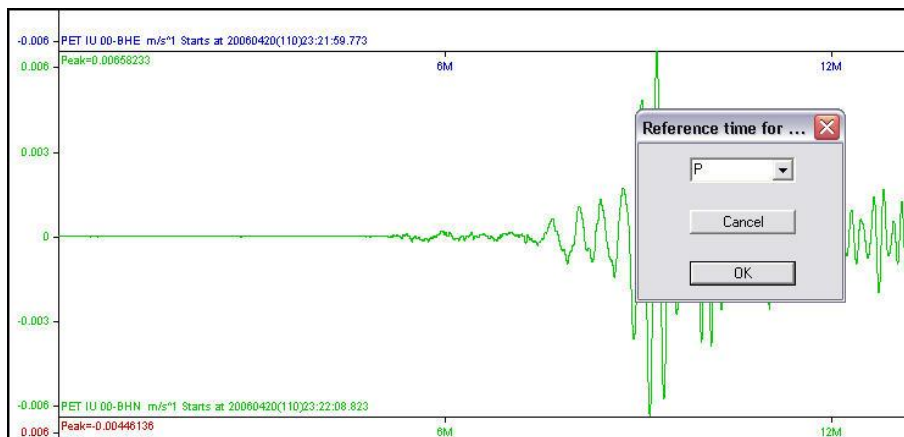


Figure 3-22 Ref Predicted

3.8.5 Ref Optional

This option is used for predefined or computed earthquake source location. The reference time can be adjusted for optional wave velocity or corresponding value of (Ts-Tp) difference.

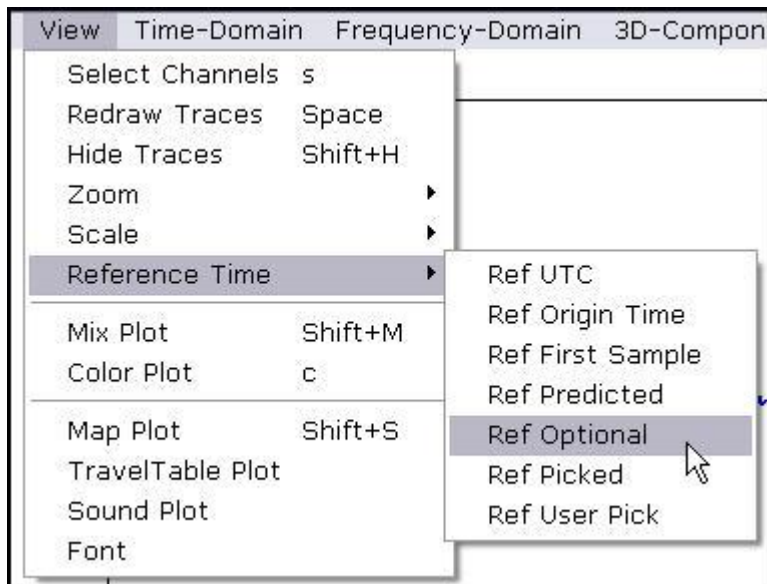
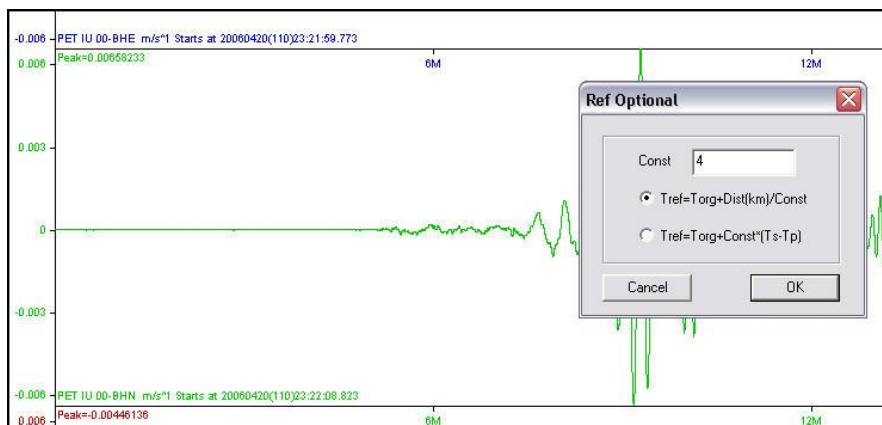


Figure 3-23 Ref Optional

1. Select **Ref Optional** from the **Reference Time** menu.
2. This option is controlled by the following dialog box:



3.8.6 Ref Picked

Use the **Ref Picked** command (during phase picking) to edit wave names in a corresponding dialog box.

1. Select **Ref Picked** from the **Reference Time** menu.
2. Use this option to display channels using reference time from selected time picks.
3. The name of the pick is selected.
4. Select the **OK** to approve.

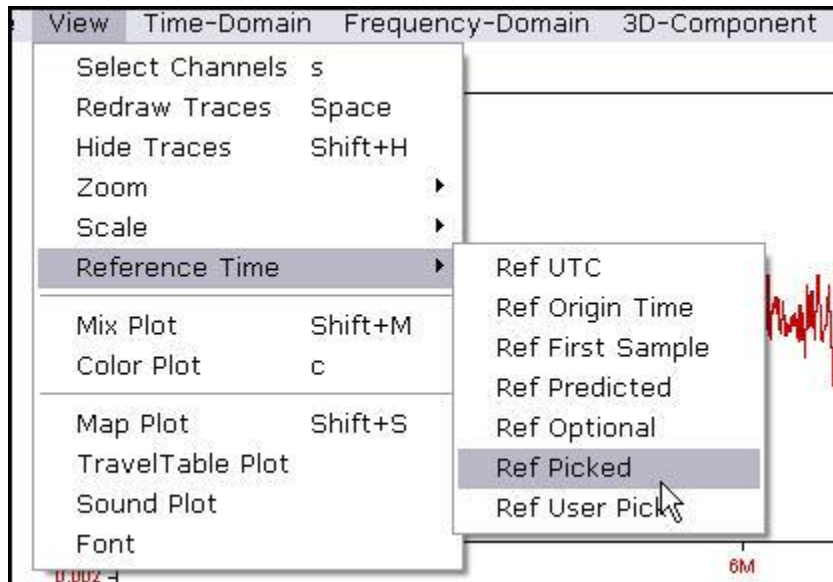


Figure 3-24 Ref Picked display

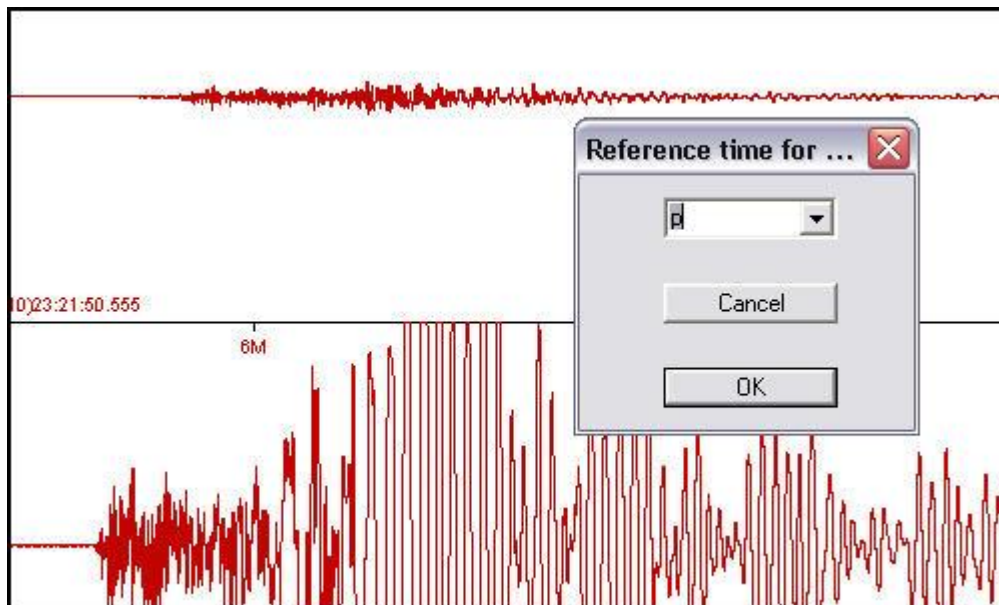


Figure 3-25 Ref Picked

3.8.7 Ref User Pick

This command gives the user the ability to manipulate with time adjustment.

1. For all the selected channels on a display pick wave arrival with the tip name U. This option does not create any arrival and is used only for program needs.
2. When finished select this item menu and all traces will be adjusted to the U time on the display.

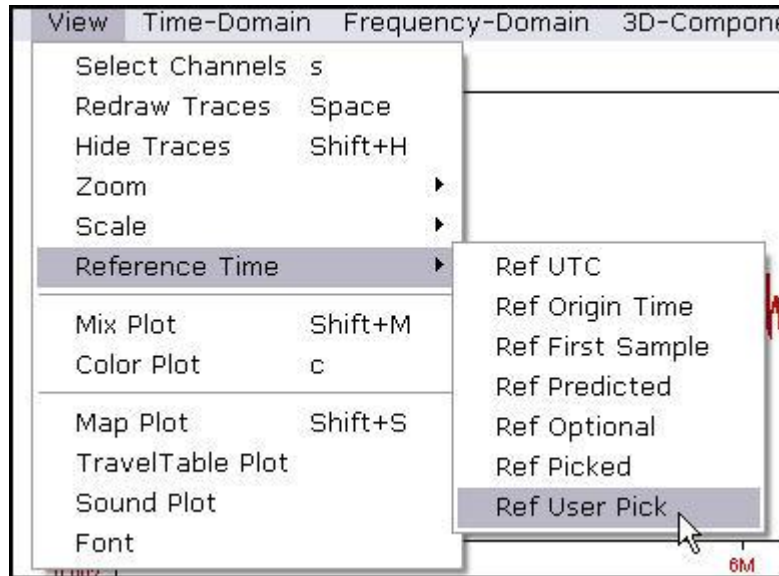


Figure 3-26 Ref User Pick

3.9 Mix Plot

This command allows a color plot of all the waveforms superimposed in one plot.

The following three plot states are options that can be cycled and viewed by selecting the Mix Plot command several times:

- Displays All channels in different rectangles (Figure 70).
- Displays All traces are one over another in one rectangle (Figure 71).
- Display the "same-channel" traces in one rectangle. Some time data can contain gaps so the program creates two or more continuous traces in memory which belong to the same channel.

1. Select the **View** menu command **Mix Plot** to display.

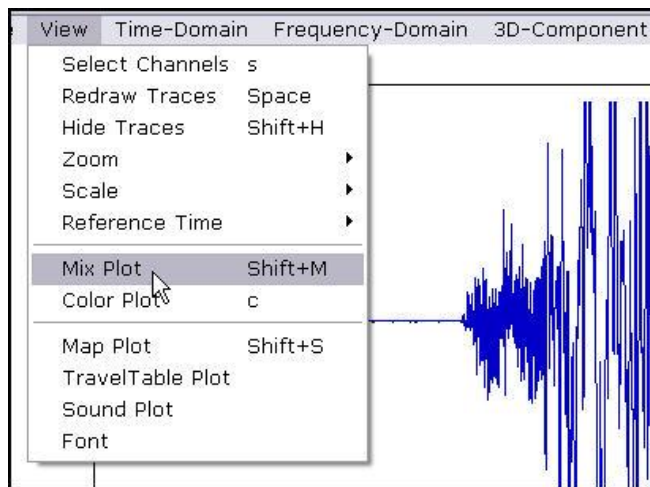


Figure 3-27 Mix Plot

2. The results are shown on the display.

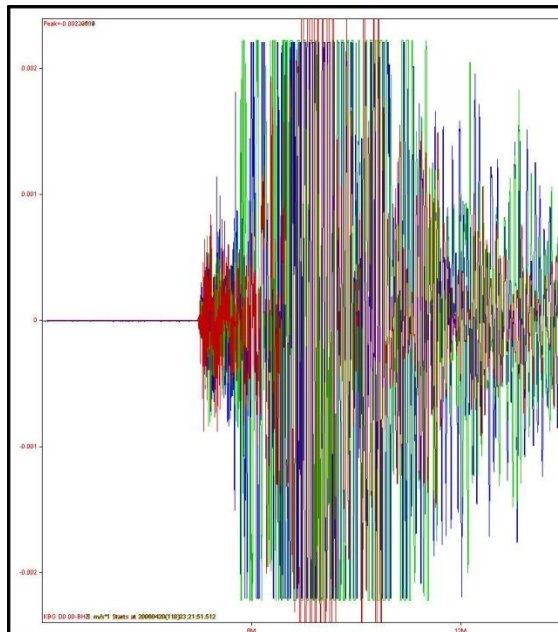


Figure 3-28 Overlap Mix

3.10 Color Plot

To display all active channels in different colors and back in black:

1. Use the **Color Plot** command from the **View** menu.

-OR-

Use the hot key Shift-C.

The following three plot states are options that can be cycled and viewed by selecting the **Color Plot** command several times:

- Display all traces in Black
- Display channels ending with "Z" in Red, "N" in Green and "E" in Blue (below)
- All traces are in random color

1. Select the **View** menu command **Color Plot** to display.

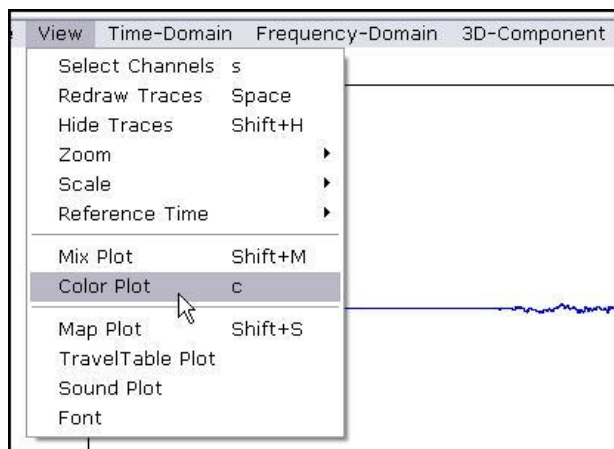
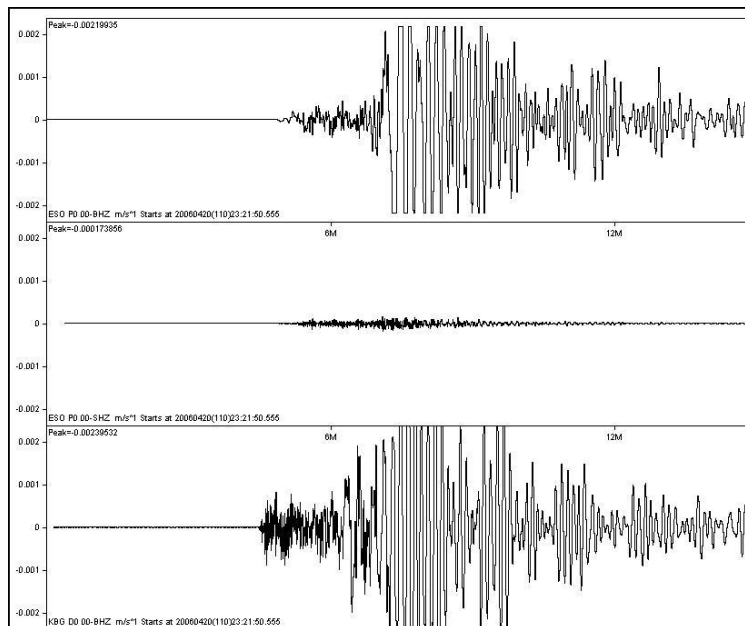
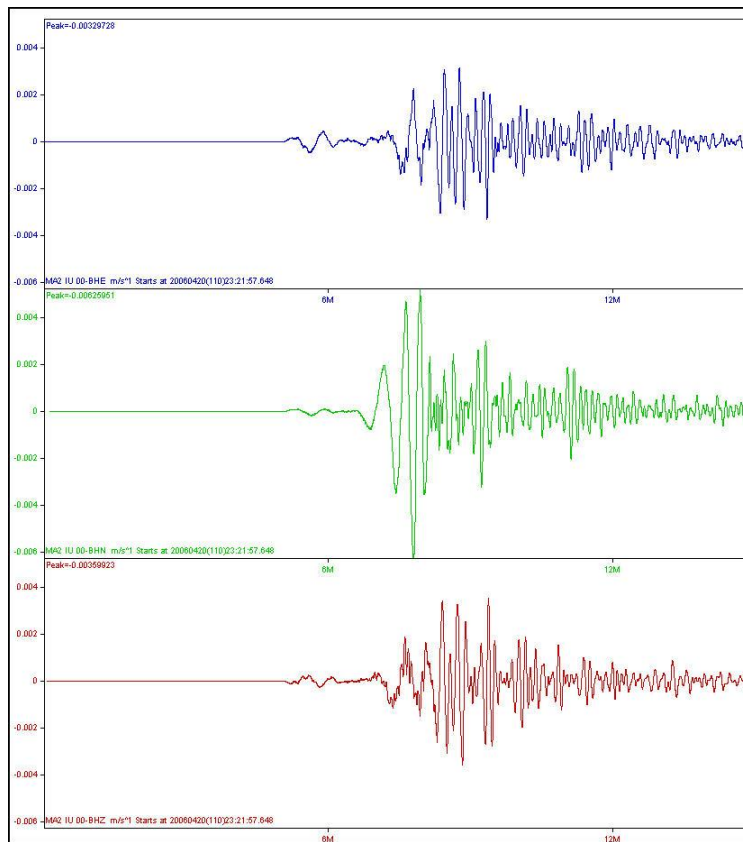


Figure 3-29 Color Plot Command

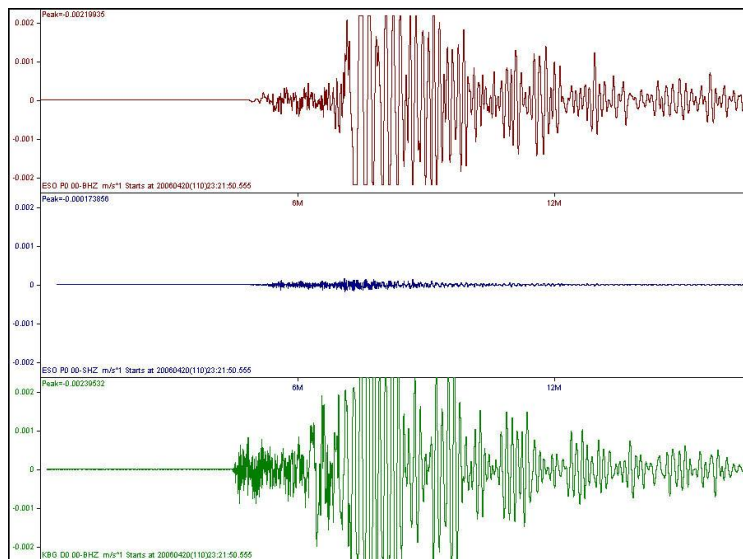
2. Results of the 1st command (All traces in black) are shown below:



3. Results from selecting the command with Z N and E traces shows this option:



4. Results for selecting the command a 3rd time (shows random colors):



3.11 Map Plot

If an earthquake was previously located it is possible to display the channels together with a map.

1. Select the **View** menu and **Map Plot** command.

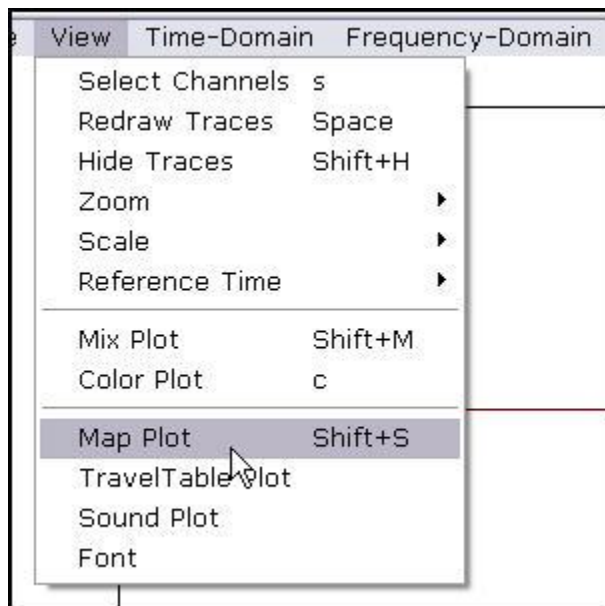


Figure 3-30 Map Plot Command

In the opening dialog box enter information:

- The central map position is defined by Central Latitude ,Central Longitude and Map Orientation angles.
 - To display rivers, coastline and relief image on the map check the corresponding check boxes.
 - To select the initial base map select **Global** Or **User**.
 - To change the map scaling use the **Map Scale Slider**.
2. Select the **OK** box to approve the settings.

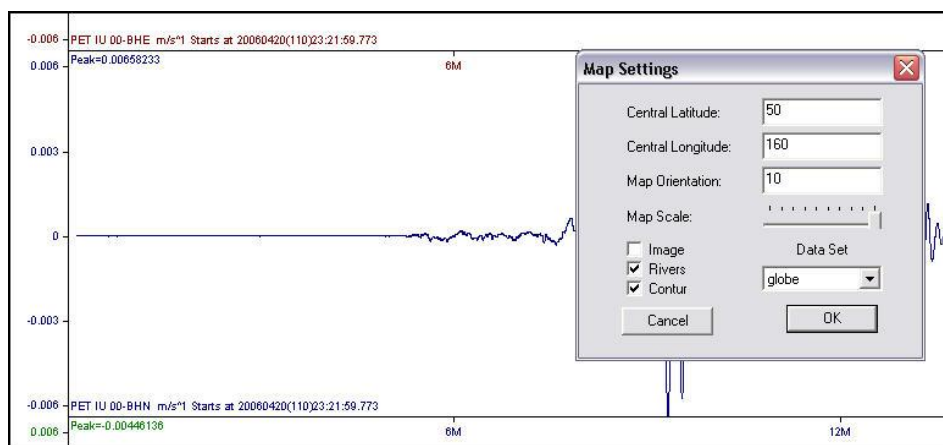


Figure 3-31 Map Plot Dialog

On the map the following information will be present.

- Stations position
- Earthquake source position
- The predicted travel time distances for picked arrivals

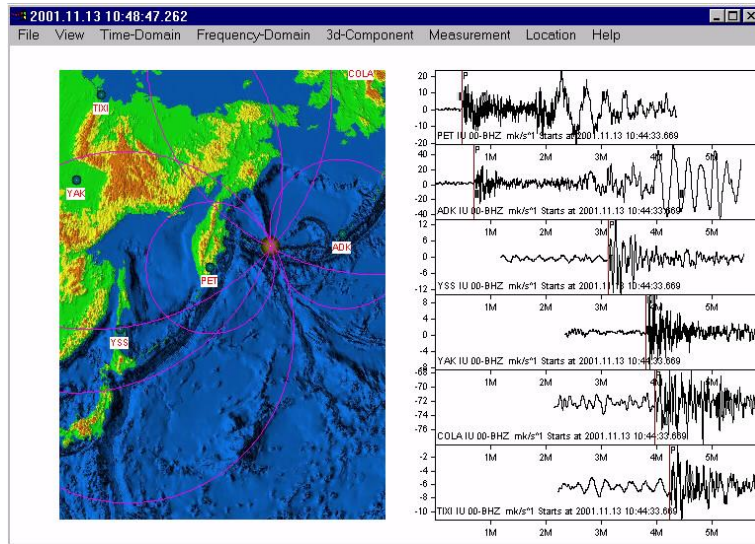
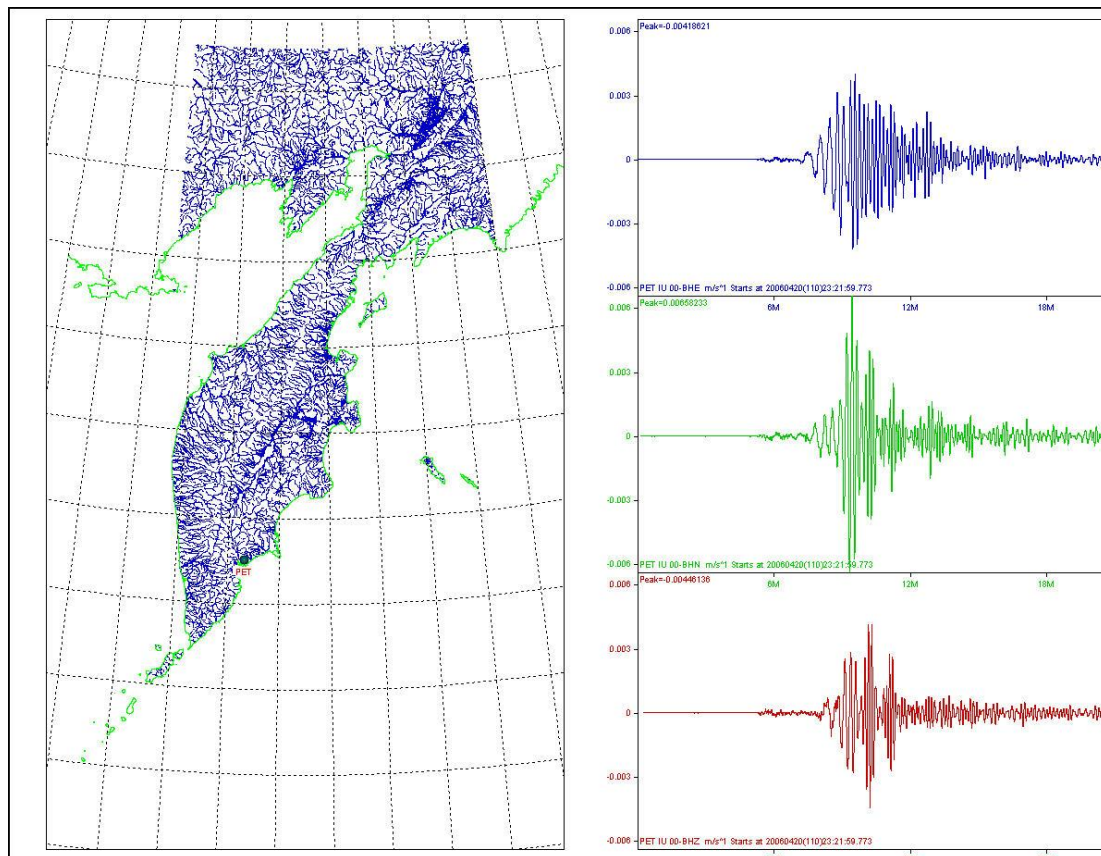


Figure 3-32 Map



3.12 TravelTable Plot

This menu will display Travel Time Table's curve for a selected dialog phrase, depth and distance range.

1. Select the **TravelTable Plot** command from the View menu.

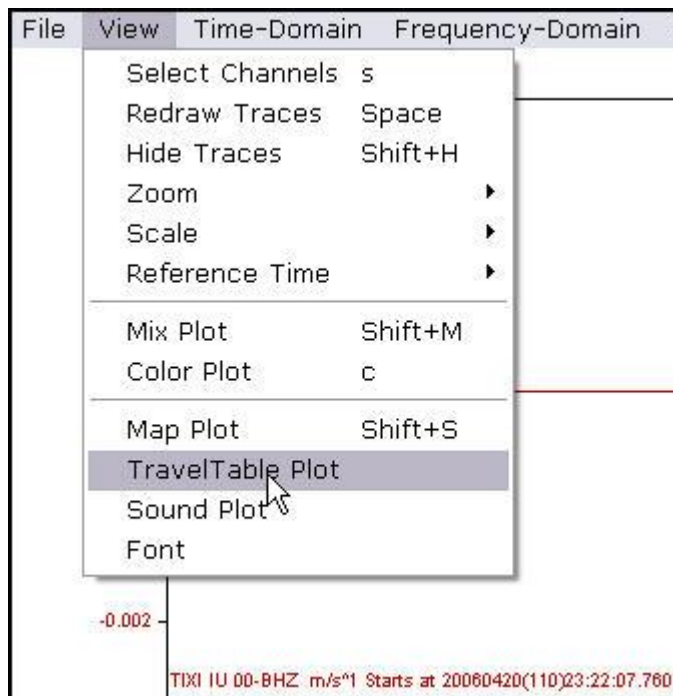


Figure 3-33 TravelTable Plot

2. Enter Phase, depth and distance.

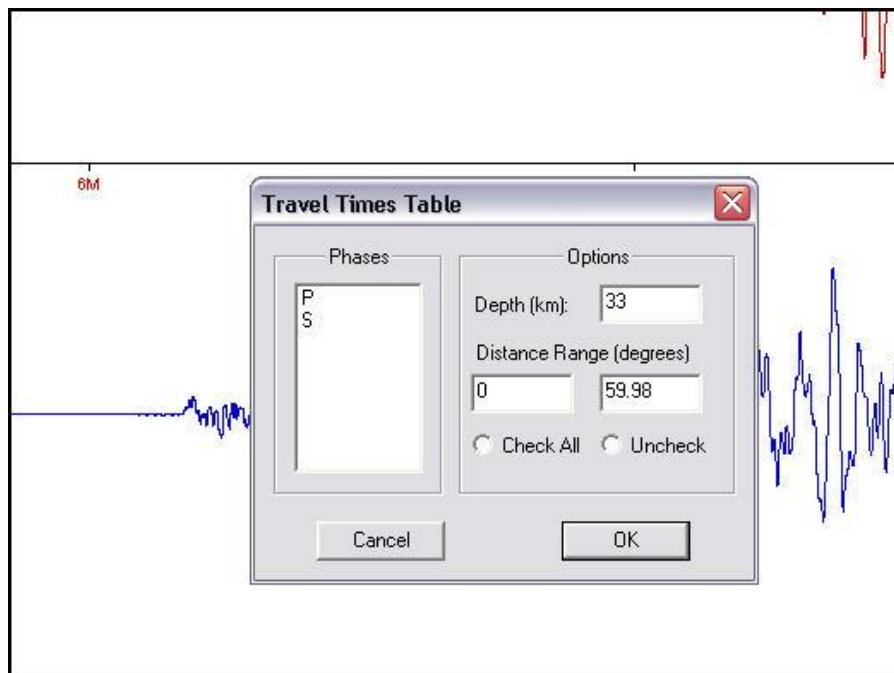


Figure 3-34 Plot Dialog Box

3. For predefined earthquake location the predicted waves arrivals will be plotted over the active channels in blue vertical lines.

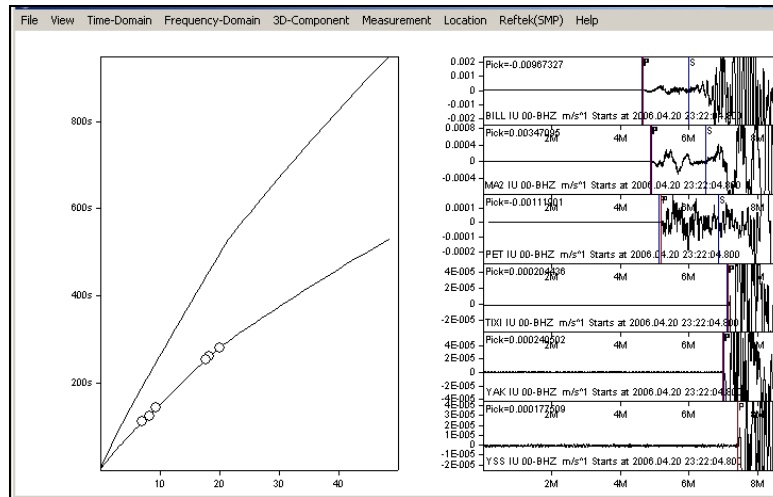


Figure 3-35 Plot

3.13 Sound Plot

Will play all active channels one after another on sound device at 22kHz sample rate.

1. Select the **Sound Plot** command from the **View** menu.
2. Enter the **Play Rate**.

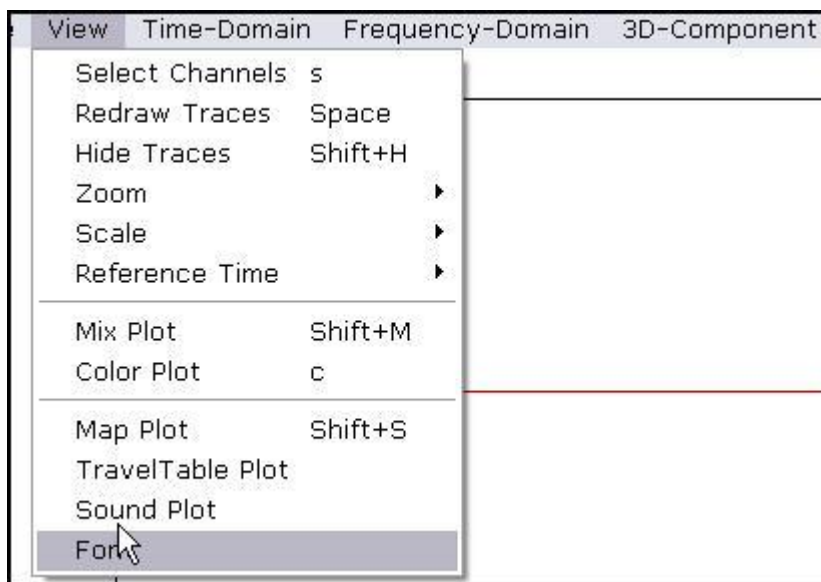
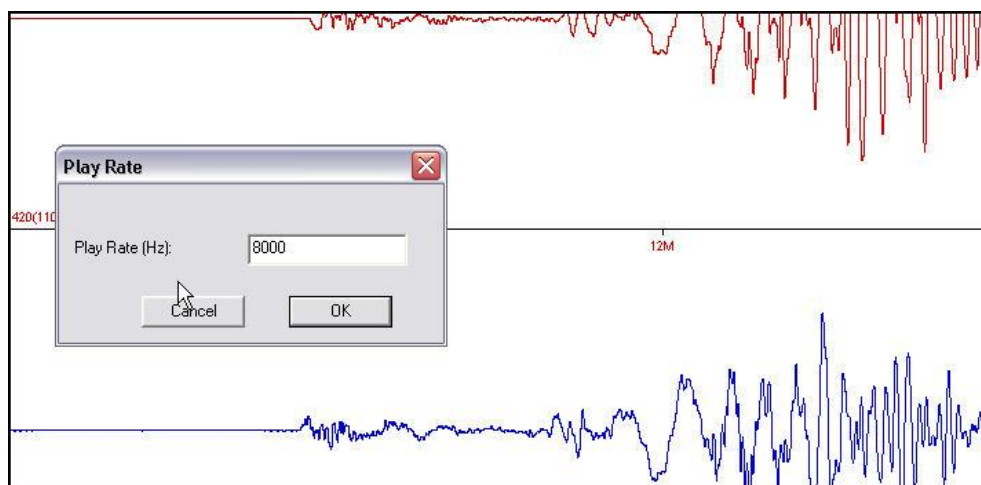


Figure 3-36 Sound Plot



3.14 Font

Activate Font selection dialog. Use this menu item to change the font type and size used in the current display.

To change fonts on the display:

1. Select the Font command from the View menu.

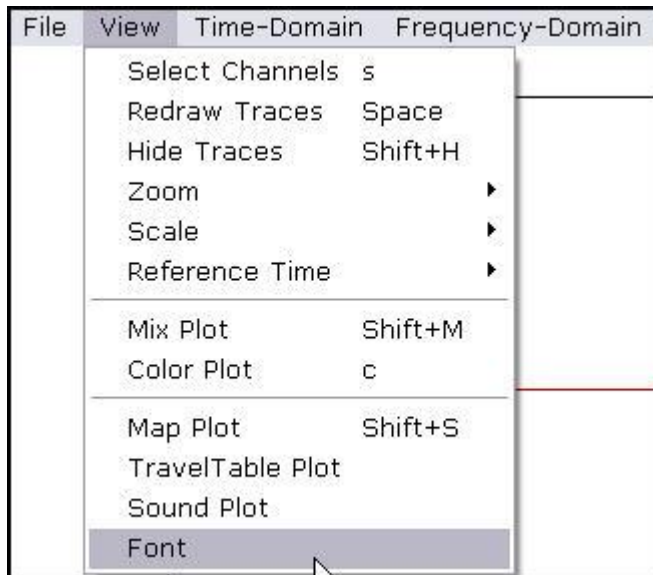
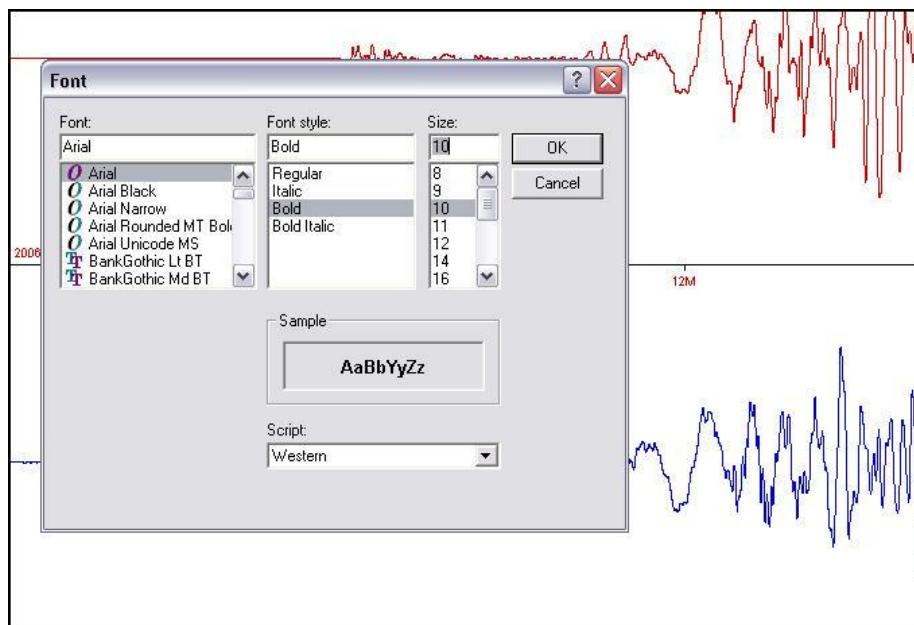


Figure 3-37 Font

2. Adjust font characteristics on the menu.
3. Select **OK** to accept the changes and redraw the screen.



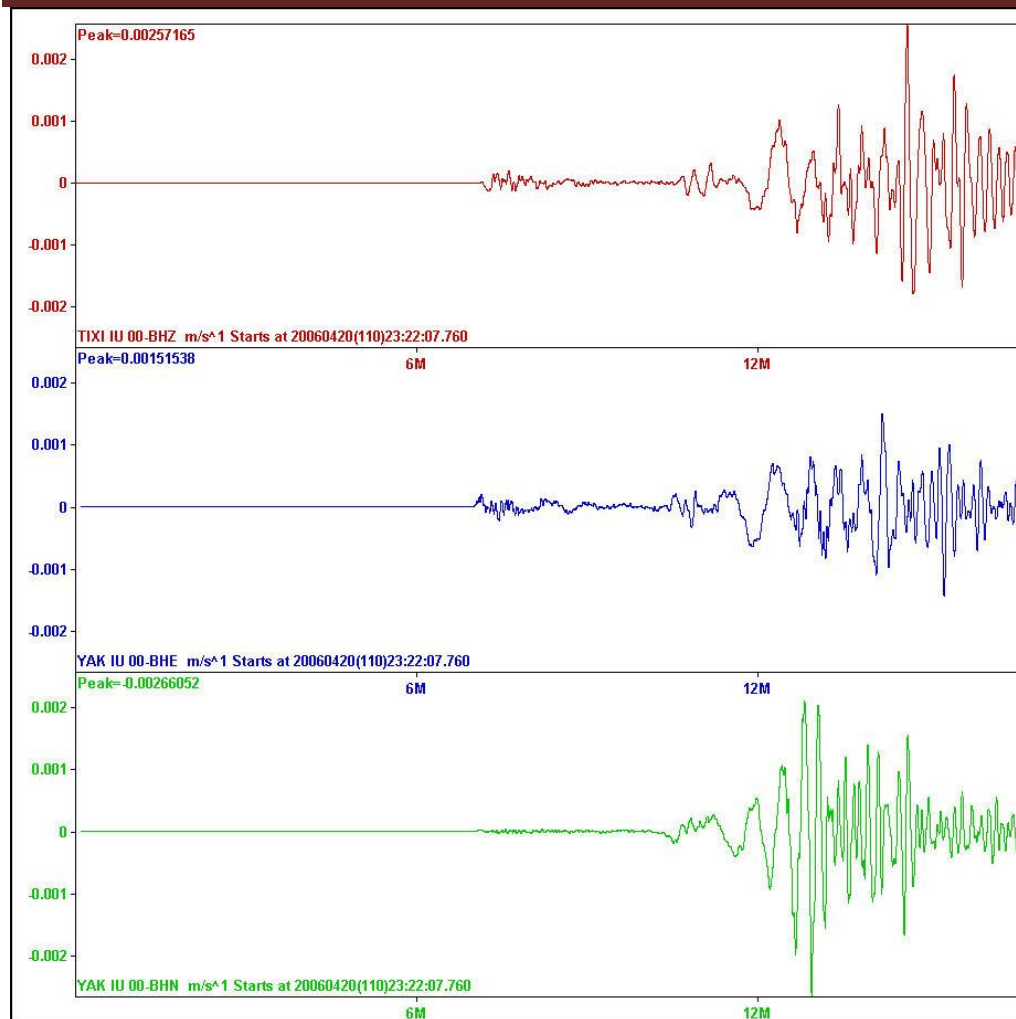


Figure 3-38 Font Update

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