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Program HPLT

An Interactive Hypocenter Plotting Program for the Eclipse Computer

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An interactive hypocenter plotting program for the Eclipse computer.

Introduction

HPLT is designed for rapid display and examination of seismicity data in the form of earthquake summary cards or files. The selection of earthquakes, map area, cross section, space-time parameters, and symbols used can be changed interactively to display particular aspects of the data. Some basic features of the program are:

1) HPLT can be "programmed" to read commands from an external file for automatic operation, get commands from the operator for interactive operation, or a combination of both.

2) The commands are used mostly to set up parameters for a plot and to change the flow of the program, but all the real work is done by the commands PLOT (for a map), XSEC (for a vertical cross-section), STPL (for a horizontal position versus time plot), and ZTPL (for a depth versus time plot), any of which make a plot using the currently defined parameters and options.

3) In addition to defining the data set and map area, commands are available to plot stations, linear data such as coastlines or faults, a kilometer distance scale, and a symbol key.

4) The plot symbols and their sizes can be set to depend on depth, magnitude or origin time. The location errors in principal coordinates can also be plotted.

5) Events may be deleted from the plot based on magnitude, depth, origin time, or location error.

6) All parameters and options necessary to recreate a plot may be output to a file (in command format). Any number of such files, or others pre-programmed by the user can be executed to recreate a plot or sequence of instructions.

7) The map projection is rectangular, i.e. latitude and longitude are scaled independently and linearly. Azimuths and distances are reasonably accurate over map areas of few degees.

8) Summary data may be in either HYPOELLIPSE or HYPOINVERSE format. Station data may be in either HYPO71 or HYPOINVERSE format.

9) A command is available to use the cursor to digitize and write out to a file a series of coordinates from the map. These can then define a cross section or region within which events can be isolated using the program SELECT.

10) Each plot is labeled with a sequence number keyed to a printed listing which gives all details and parameters of the plot.
11) The program runs mapped and may be executed from either console.

Summary of Available Commands

All command words are 4 letters long and must begin in the first space or column.

Interactive commands which prompt the user for input:

The commands in this group take no arguments. Details of the information which these commands request can be found in later sections.

GSCL Get the map scale from the user. Be sure to include decimal point.

GCTR Get the coordinates of the map center (in degrees and minutes) from the user.

SCTR Set the center coordinates using the cursor. Move the cursor to the new map center (must be within present map area) and hit any character followed by a carriage return.

GSHF Get the shift of the map center (in km relative to the present position) from the user.

GFIL Get the filename of summary data to be plotted from the user.

GSTA Get the filename from which stations are to be plotted from the user. Also get label flag, symbol type and symbol size.

GSIZ First display then get from the user any changes in symbol sizes.

GSYM First display then get from the user any changes in symbol types including error plotting option.

GEND Get the cross-section endpoints from the user.

GVEX Get the vertical exaggeration from the user.

GWID Get the near and far plotting limits relative to the section plane from the user.

GTOP Get from the user the depth of the top axis on vertical cross-sections and depth-time plots.

GERH Get the horizontal error cutoff above which earthquakes will not be plotted.

GERZ Get the vertical error cutoff above whish earthquakes will not be plotted.

GBEG Get the beginning time of space-time plots from the user. If the starting year is zero, the program begins the plot at the date of the first earthquake.

GLEN Get the length of the time window in days for space-time plots.

SHOW Display the current scale, center, summary filename, and error cutoffs.

SHOX Display the current section endpoints, vertical exaggeration and width limits.

SHOT Display the current start time and time window for space-time plots.

Formatted commands equivalent to those above.

These commands are self-contained and require no user responses. The remaining commands are formatted, and the positions and lengths of values are significant. Spaces are denoted by $_{\Delta}$.

SCAL$_{\Delta}$AAAAAA.

Set the plotting scale A, a dimensionless number greater than 1 giving the map sacle of the final hard copy. 15 spaces are allotted for A following the blank. Be sure to include the decimal point. Default is 400000. (Note: The full hardcopy plot size in inches XIN and YIN must be data initialized inside the program for exact scaling). (Format is A4, 1X, F15.2).

CNTR$_{\Delta}$AAA.AABBB.BBCCC.CCDDD.DD

Set the latitude A and B, (in deg. and min.) and longitude C and D, (in deg. and min.) of the map center. North and west are positive, and south or east are entered with both degrees and minutes negative. (Format is A4, 1X, 4F6.2). There are no default values.

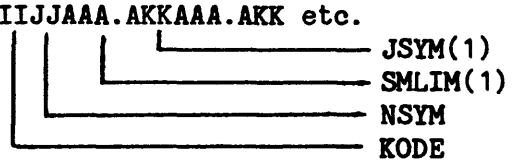
SHIF$_{\Delta}$AAA.ABBB.B

Shift the plot center. Supply the northward shift A and eastward shift B in km. South and west are negative shifts. (Format is A4, 1X, 2F5.0).

FILE$_{\Delta}$XXXXXXXX

Define the file name of summary data to be plotted. 8 characters maximum. Default is SUMMIN. If a nonexistent filename is given, no earthquakes will be plotted. (Format is A4, 1X, 4A2).

SYMB$_{\Delta}$IIJJAAA.AKKAAA.AKK etc.



Define the symbol type dependence. Arguments are:

KODE = 1. Symbol depends on magnitude (greater of amp and dur magnitudes).
= 2. Symbol depends on depth.
= 3. The three principal standard errors are plotted as error bars viewed from above (or from the side in a section).
= 4. A symbol depending on depth is plotted with error bars.
= 5. Symbol depends on time in days after the date of the first earthquake read for this plot.

NSYM = Number of symbols to cover total range of depth/magnitude/time (ignored if KODE=3). 10 different symbols maximum.

SMLIM,JSYM

Paired values (repeated NSYM times) of lower limit of magnitude/depth/time range and the symbol code for that range. Events with magnitude, depth, or time smaller than SMLIM(1) will not be plotted, and all events above SMLIM(NSYM) will be plotted with symbol number JSYM(NSYM).

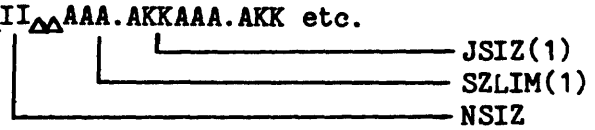
Format for SYMB command is (A4, 1X, 2I2, 10 (F5.1, I2)).

Defaults are KODE=2, NSYM=4, DEPTHS=0., 5., 10., 20. are the lower limits for symbols 5, 2, 3, 1.

Symbol type code:

Ø No symbol (blank)
1 Square
2 'X'
3 Diamond
4 Octagon
5 Plus
6 Square and 'X'
7 Diamond and plus
8 Triangle (point up)
9 Triangle (point down)

SIZE$_{\Delta}$II$_{\Delta\Delta}$AAA.AKKAAA.AKK etc.



Define symbol sizes, which always depend on magnitude.

Agruments are:

NSIZ: Number of sizes to cover total range of magnitude.

SZLIM, JSIZ: Paired values (repeated NSIZ times) of lower limit of magnitude range and corresponding size in screen units (full screen is 1024 units). Events with magnitude smaller than SZLIM(1) will not be plotted. Ten different sizes maximum. Symbols of size less than 0 are not plotted, and symbols of size 0 plot as a dot. Format is (A4, 1X, I2, 2X, 10 (F5.1, I2)).

Defaults are NSIZ = 7, with lower magnitude limits of Ø, 1, 2, 3, 4, 5, 6 and symbol sizes 1, 3, 5, 8, 12, 16, 20.

ENDP$_{\Delta}$AAA.AABBB.BBCCC.CCDDD.DDEEE.EE etc. to H

Define the cross-section endpoints.

A and B are the latitude of the left endpoint in degrees and minutes.
C and D are the longitude of the left endpoint in degrees and minutes.
E and F are the latitude of the right endpoint in degrees and minutes.
G and H are the longitude of the right endpoint in degrees and minutes.

There are no default values. (Format is A4, 1X, 8F6.2).

VTEX$_{\Delta}$AAA.A
Define the vertical exaggeration of the cross-section. Default is 1 (no exaggeration).

SWID$_{\Delta}$AAAA.ABBBB.B
Define the near (A) and far (B) limits relative to the section plane within which events are to be plotted. Zero is the section plane itself.

For example, values of (-5, 5) plot all hypocenters within 5 km of the section plane. Default values are (-900, 900).

ZTOP$_{\Delta}$AAA.A
Define the depth in km of the top of the depth axes used in cross-sections and depth-time plots. For example, use 10.0 to plot hypocenters below 10 km. The default is 0. Since HPLT suppresses plotting events very close to the plot borders, a value such as -1.0 must be used to include surface events in a section plot. (Format is A4, 1X, F5.1).

SERH$_{\Delta}$AAA.AA
If a horizontal projection of any of the three principal standard errors exceeds the value specified, the event will not be plotted. Any value larger than 90 causes all events to be plotted. Default is 99. (Format is A4, 1X, F6.2).

SERZ$_{\Delta}$AAA.AA
If a vertical projection of any of the three principal standard errors exceeds the value specificed, the event will not be plotted. Any value larger than 90 causes all events to be plotted. Default is 99. (Format is A4, 1X, F6.2).

TBEG$_{\Delta}$IIJJKKLLMM
Set the beginning date and time of space-time plots. Specify the year, month, day, hour and minute (eg. 7710250000). If the beginning year I is zero, then the plot starts on the date of the first event. The defaults for all values are zero. Format is (A4, 1X, 5I2).

TLEN$_{\Delta}$AAAA.AA
Set the length of the time window in days for space-time plots. Up to 15 spaces are alotted for A. The format is (A4, 1X, F15.2) and the default value is 30.

Commands which make plots

The commands PLOT and PLHD take no arguments:

PLOT Plots a complete map using current instructions. If the input summary data has imbedded 80 col. records which are blank in the first 4 col.'s, a separate plot will be made each time a blank record is encountered and when the end of file is reached. Thus several plots of different data can be made with one plot command.

PHLD Has the same effect as the PLOT command, but a hard copy is made after each plot is completed.

XSEC$_{\Delta}$X Plot a cross section using the currently defined parameters. If only the command XSEC in given, the currently defined endpoints are used. If the command XSEC$_{\Delta}$X is given, where X is any character, the file CURSOUT is searched for a pair of coordinates whose one letter code match the character X. The first matching point found in CURSOUT is the left endpoint, and the second is the right endpoint. Any third occurrence of the character X is ignored. This allows section endpoints to be defined directly on a map with the cursor using the CURS command and the file CURSOUT. If the section is too long to fit on the screen at the specificed scale, the left endpoint remains fixed and the right side of the section is truncated. Tick marks in km are plotted along both axes.

XSHD$_{\Delta}$X Has the same effect as the XSEC command, but a hard copy is made after each plot is completed.

STPL$_{\Delta}$X Make a horizontal distance versus time plot using the currently defined parameters. The character X is optional, and plays the same role in defining the endpoints of the space axis as with the XSEC command. If the distance axis is too long to fit on the screen at the specified scale, the left endpoint remains fixed and the right side of the plot is truncated. Time increases from top to botton of the plot. Tick marks are plotted along the time axis every day. Successively larger ticks are plotted on the 10th and 20th days of the month, at the start of a month, and at the start of a year. If the time window is six days or less, a short tick (3) is plotted every hour. Tick marks every km are plotted along the distance axis.

STHD$_{\Delta}$X Has the same effect as the STPL command, but a hard copy is made after each plot is completed.

ZTPL Make a depth versus time plot using the currently defined parameters. Depth increases from left to right, with a tick mark plotted every km. The depth scaling is the same as that of a cross section, and depends only on the ratio of SCALE/VERTICAL EXAGGERATION. Time increases from top to bottom, and tick marks are plotted as described under the STPL command.

ZTHD Has the same effect as the ZTPL command, but a hard copy is made after each plot is completed.

Commands which invoke other outputs

PRNT Print one line of information on the printer for each plot produced. (Give this command once at the beginning of a session.) The PRNT command takes no arguments.

LINE$_{\Delta}$XXXXXXXX

Define filename containing coastline or other linear data to be plotted (8 characters maximum). The coordinates of the linear data to be plotted must be in format (6(F5.3, 1X, F6.3, 1X)) with 6 latitude-longitude pairs per record. Coordinates are in decimal degrees. A coordinate point of (Ø,Ø) will be interpreted as a seperator or jump without drawing a line. Blanks or (Ø,Ø) points should fill out the card after the last point of a line segment. If the last coordinate of a line is the sixth on a card, a blank card should be inserted. In other words, the first coordinate of a new line segment must always begin in col. 1 of a record. Line plotting terminates when an end of file is reached. If a nonexistent filename is given, no lines will be plotted. Only one file of linear data may be plotted on any one plot, but the filename may be changed at any time.

STAS$_{\Delta}$XXXXXXXXIIJJKK

Plot stations on the map. The arguments are:

X - Filename of station cards (HYPO71 or HYPOINVERSE format)

I - Label flag. Set = 1 to label station symbols with their names. Set = Ø to plot only symbols.

J - Symbol type (see codes above).

K - Symbol size in absolute screen units.

Format (A4, 1X, 4A2, 3I2). If a nonexistent filename is given, no stations will be plotted.

KBAR$_{\Delta}$II

Plots a bar with ticks every 1 km (large ticks every 10 km) in lower left corner of map. Supply the bar length in km. If the length is 0, no bar is plotted.

SKEY$_{\Delta}$IIJJKK

Plots a key of symbols on the right side of the plot. If a key is plotted, no earthquakes will be plotted in the right hand 10% of the plot. Supply I, J and K (if necessary) in (A4, 1X, 3I2) format. I is a control code as follows:

I = Ø	No key
I = 1	Plots NSYM symbols of size J, of types JSYM, and Labels them with the values of SMLIM.
I = 2	Plots NSIZ symbols of type J, of sizes JSIZ, and labels them with the values of SMLIM.
I = 3	If NSYM = NSIZ, plots NSYM symbols of sizes JSIZ and types JSYM and Labels them with the values of SMLIM.
I = 4	Plots NSYM symbols of size J in the upper right corner, and NSIZ symbols of type K in the lower right corner.

CURS

After all parameters have been defined and a map plotted, CURS will activate the cursor to record coordinates from the screen and write them out to the file CURSOUT. Successive uses of the CURS command append new coordinates to the end of CURSOUT. The operator positions the cursor, then types a one letter code to identify the point followed by carriage return. A period exits the cursor mode. The format of the coordinates in CURSOUT is identical to the station card format, so that points with their labels can be plotted at any time using the STAS command.

Commands which program the flow of HPLT

The commands in this group take no arguments.

COMD Prompt the user by printing "COMMAND?" to enter any command from the keyboard.

REPT Repeat the current command file from the beginning (by rewinding it).

STOP Stops the program.

PAUS Pause the program and restart it by striking any key.

Commands which save a plot and recreate it or another preset sequence of commands.

SAVE$_{\Delta}$XXXXXXXX

Write out to the filename specified all the commands necessary to recreate the current parameters and plot. The commands saved are SCAL, CNTR, FILE, SYMB, SIZE, SERH, SERZ, STAS, LINE, KBAR, VTEX, SWID, ENDP, TBEG and TLEN . The file saved is terminated with a 'JUMP HPLTLOOP' command.

JUMP$_{\Delta}$XXXXXXXX

Close the current command file and jump to the command file specified. The jump command can set up a combined automatic and interactive program. HPLINST can define parameters such as symbol sizes which will remain unchanged, and terminate with a JUMP command. A loop can be set up over the COMD command in the second file to accept new commands from the operator. Other files can be set up to define frequently used combinations of parameters. The use of these commands should become clear after studying the example below.

Example of combined automatic and interactive useage.

The command file EPLINST is where the program always begins execution:

```
SYMB 02040.0   055.0   0210.   0320.   01
SIZE 07  0.0   011.0   032.0   053.0   084.0   125.0   166.0   20
PRNT
CNTR 19.00026.000155.0025.000
SKEY 040501
KBAR 20
SCAL 600000.
LINE COAST
JUMP HPLTLOOP
```

These instructions define the plot symbols, request printed output, define the plot center and scale and ask for a symbol key, distance scale, and coastline on the plot. In this example the four symbols types depend on hypocentral depth. A plus is used for depths beginning at 0.0, X symbols begin at 5.0 km depth, diamonds begin at 10 km, and squares begin at 20 km. Seven symbol sizes are use, one for each whole magnitude unit from Ø to 6.0 and above. The symbol sizes for each range are 1, 3, 5, 8, 12, 16, and 20. Command control then passes to the file HPLTLOOP, which is a loop that keeps requesting commands from the user:

```
COMD
REPT
```

The only way out of this loop is with a JUMP command, and at some point we will want to jump out and execute some preset commands in the file STAMAP:

```
FILE NONE
SKEY ØØ
STAS NEWSTA  010804
JUMP HPLTLOOP
```

These instructions eliminate the earthquakes and symbol key from the plot and define how stations are to be plotted. The plot scale, center, etc. remaim unchanged by this file.

What follows now is the command dialogue which produces the four accompanying plots. All statements ending in ? or : were typed by the program. Lower case phrases are comments.

```
HPLT                Execute the program HPLT.
COMMAND?
GFIL                Enter the summary filename.
SUMMARY INPUT FILENAME?
SUM75A
```

```
COMMAND?
PLOT                Make plot #1.
COMMAND?
JUMP STAMAP         Execute the commands in file STAMAP.
COMMAND?
PLOT                Make plot #2.
COMMAND?
STAS NONE           Eliminate station plotting.
COMMAND?
FILE SUM75A         Define summary filename.
COMMAND?
SKEY 040501         Request plotting of symbol key.
COMMAND?
GSCL                Set plot scale.
SCALE? 200000.      Be sure to include the decimal point.
COMMAND?
GSHF                Shift the plot center.
ENTER SHIFTS OF CENTER IN KM:
NORTH? - 18
EAST? 10
COMMAND?
PLOT                        Make plot #3
COMMAND?
CURS                        Enter the cursor mode to define section end
                            points.
COMMAND?
GWID                        Enter the section limits.
NEAR SECTION LIMIT? -3
FAR SECTION LIMIT? 3
COMMAND?
GVEX                        Enter the vertical exaggeration.
VERTICAL EXAGGERATION?  2
COMMAND?
XSEC D                      Plot the cross-section defined by points labeled
                            D. (Plot #4).
COMMAND?
SAVE SWRIFT                 Write all current parameters to file SWRIFT.
COMMAND?
STOP                        Stop the program.
```

The SAVE command was used to save the current plot parameters in a file called SWRIFT. These parameters can be re-executed at any time by typing JUMP$_{\Delta}$SWRIFT. The file SWRIFT contains:

```
SCAL      200000.00
CNTR 19.00   16.28155.00 19.28
FILE SUM75A
SERH  99.0
SERZ  99.0
SYMB  2 4    .0 5   5.0 2 10.0   3 20.0 1
```

```
SIZE  7     .0 1  1.0 3  2.0  5  3.0 8  4.012  5.016  6.020
STAS NONE     0  0 0
LINE COAST
SKEY  4 5 1
KBAR 20
VTEX   2.0
SWID   -3.0   3.0
ENDP  19.00 16.93155.00 25.55 19.00 22.28155.00 17.52
TBEG  0 0 0 0 0
TLEN       30.00
JUMP HPLTLOOP
```

The file CURSOUT contains:

```
D    19 16.93 155 25.55
D    19 22.23 155 17.51
```

Now suppose that in a later session we wish to plot the same data in some space-time diagrams. What follows is the command dialogue that produces two more plots:

HPLT	Execute the program HPLT.
COMMAND?	
JUMP SWRIFT	Process all the commands necessary to recreate the parameters of the first example.
COMMAND?	
TLEN 3.0	Set the time window to 3 days.
COMMAND?	
STPL	Make a distance-time plot (Plot #5) with the space axis identical to that of Plot #4.
COMMAND?	
ZTPL	Make a depth-time plot. (Plot #6).
COMMAND?	
STOP	Stop the program.

If the PRNT command was given before any plots were made, then the following information will be printed for each plot made:

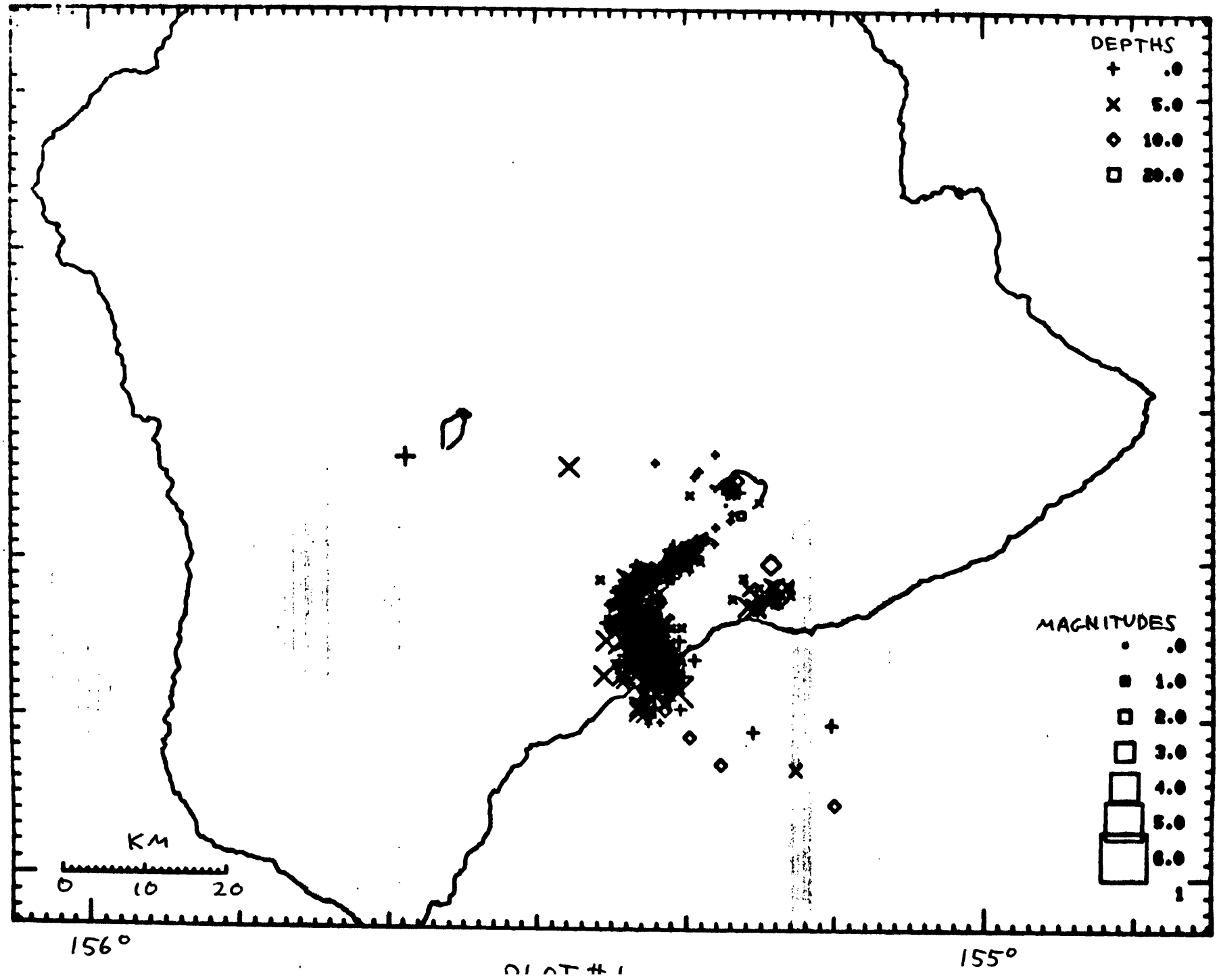
PLOT NO.	Sequence number keyed to number in lower right corner of plot.
SCALE	Horizontal distance scale. Depth scale (if used) is SCALE/VERTICAL EXAGGERATION.
AREA-X	Length covered by the plot, right to left, in km.
AREA-Y	Length covered by the plot, top to bottom, in either km or days as appropriate.
CENTER	Latitude and longitude of plot center (map only).
PLOT EDGES	Latitude and longitude of map borders or endpoint coordinates for cross-sections or distance-time plots.
FILENAME	Filename of earthquake summary data.
NUM EQS	Number of earthquakes plotted.
ERH CUT	Horizontal error cutoff of events plotted.

ERZ CUT	Vertical error cutoff of events plotted.
NEAR CUT	Cutoff relative to section plane or horizontal axis in front of which earthquakes are not plotted.
FAR CUT	Cutoff relative to section plane or horizontal axis behind which earthquakes are not plotted.
BEGINNING	Time of beginning of space-time plot given as year, month, day, hour, and minute. If the beginning year as specified using the TBEG or GBEG commands was zero, the date printed is that of the first earthquake plotted.
PLOT TYPE	May be map, section, horizontal distance versus time, or depth versus time.

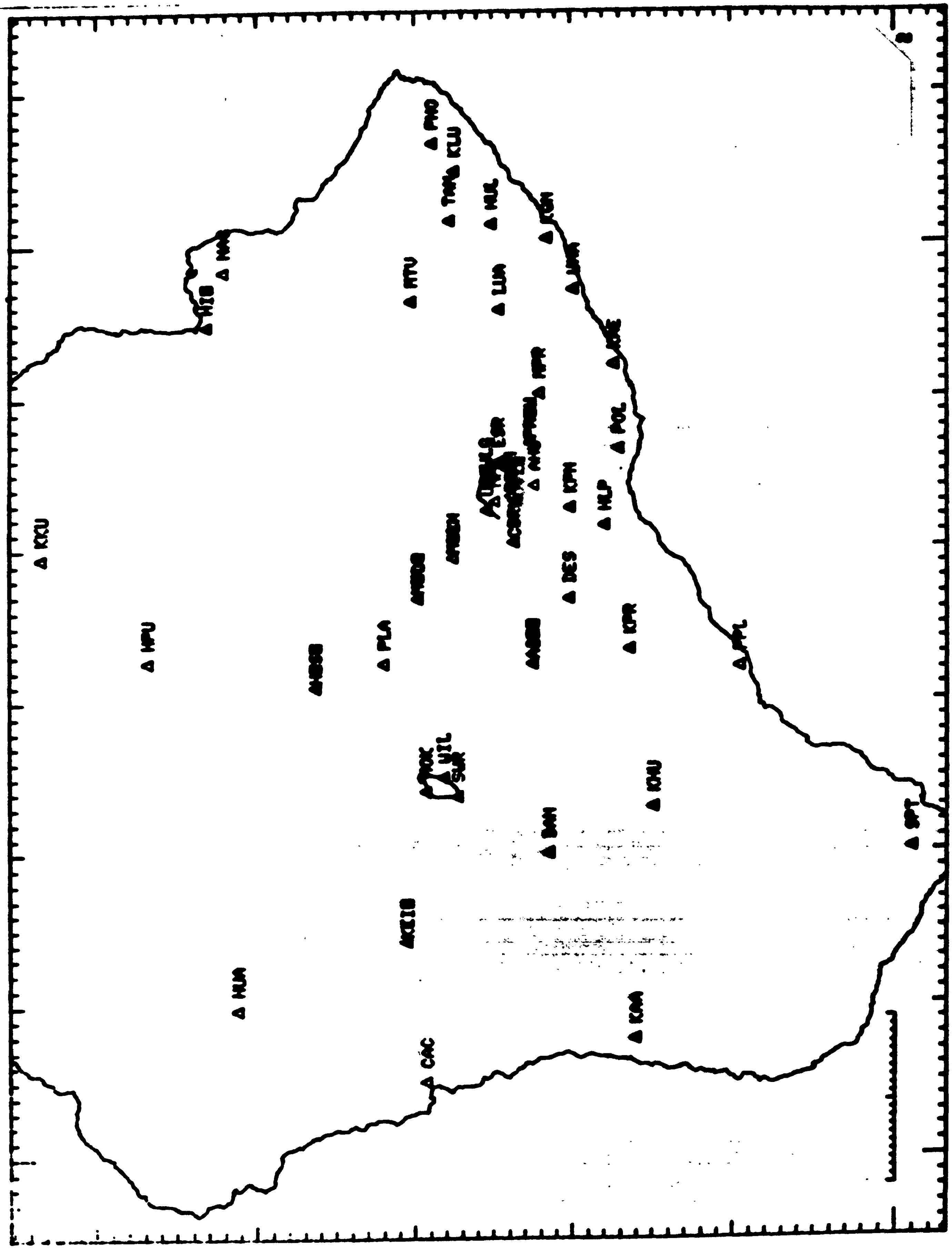
PL	SCALE	(---AREA---) X(KM)	Y(K,D)	(-----CENTER-----) LAT	LON	(----------PLOT EDGES----------) TOP(L)	BOT(R)	LEFT	RIGHT	FILENAME	NUM EQS	ERH CUT	ERZ CUT	NEAR CUT	FAR CUT	BEGINNING DATE	TIME	PLOT TYPE
1	600000.	140.5	107.9	19. 26.0	155. 25.0	19 55.1	18 56.9	156 5.2	154 44.8	SUM75A	818	99.0	99.0			75 1 1/	0 0	MAP
2	600000.	140.5	107.9	19. 26.0	155. 25.0	19 55.1	18 56.9	156 5.2	154 44.8	NONE	0	99.0	99.0			75 1 1/	0 0	MAP
3	200000.	46.8	36.0	19. 16.3	155. 19.3	19 26.0	19 6.6	155 32.7	155 5.9	SUM75A	811	99.0	99.0			75 1 1/	0 0	MAP
4	200000.	17.2	18.0			19 16.9	19 22.2	155 25.5	155 17.5	SUM75A	464	99.0	99.0	-3.0	3.0	75 1 1/	0 0	SEC

PL	SCALE	(---AREA---) X(KM)	Y(K,D)	(-----CENTER-----) LAT	LON	(----------PLOT EDGES----------) TOP(L)	BOT(R)	LEFT	RIGHT	FILENAME	NUM EQS	ERH CUT	ERZ CUT	NEAR CUT	FAR CUT	BEGINNING DATE	TIME	PLOT TYPE
1	200000.	17.2	3.0			19 16.9	19 22.2	155 25.5	155 17.5	SUM75A	462	99.0	99.0	-3.0	3.0	75 1 1/	0 0	X-T
2	200000.	23.4	3.0							SUM75A	728	99.0	99.0			75 1 1/	0 0	Z-T

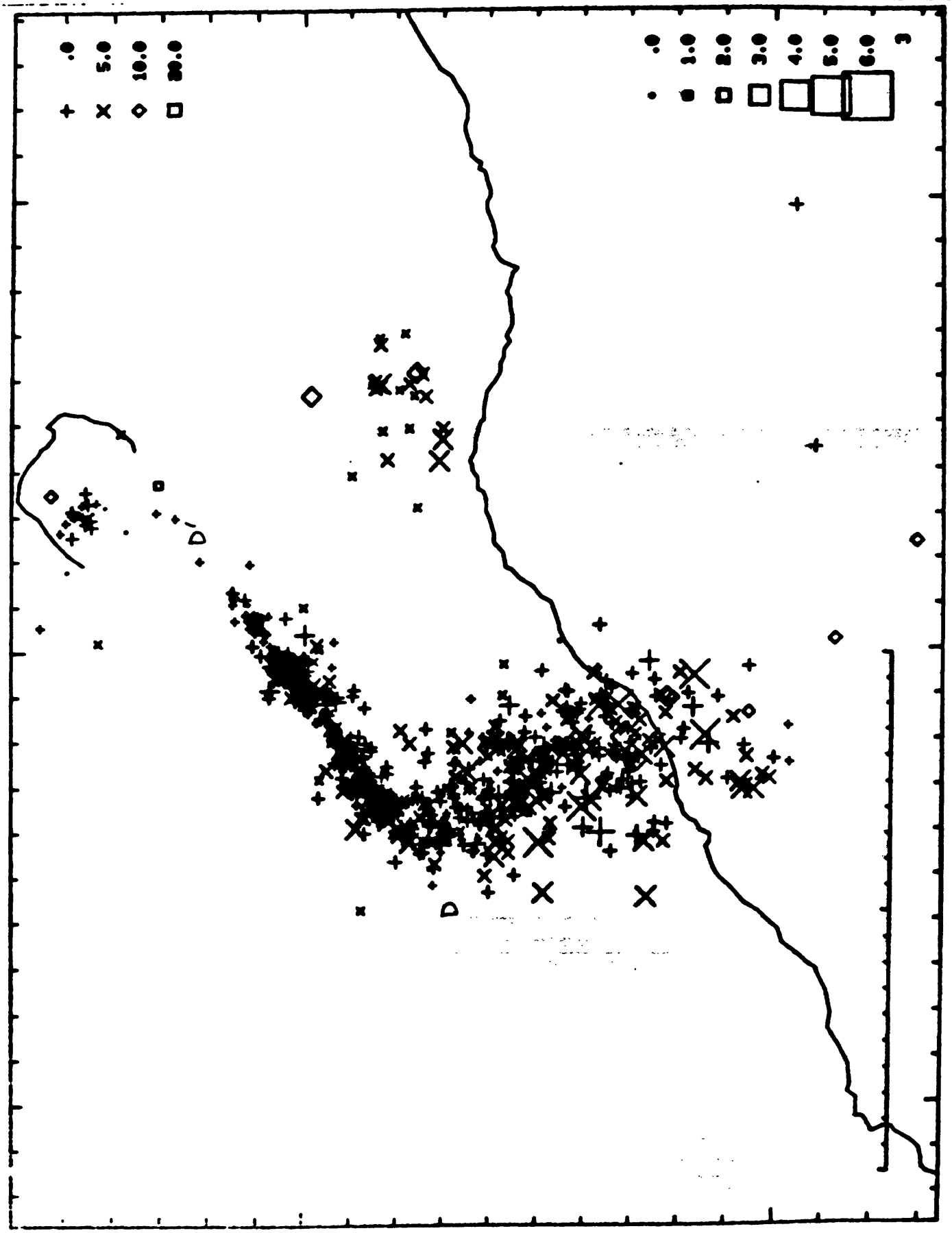
Printed output from example.


DEPTHS
.0
5.0
10.0
20.0
MAGNITUDES
.0
1.0
2.0
3.0
4.0
5.0
6.0
KM
0
10
20
156°
155°
19°30'
19°
PLOT #1

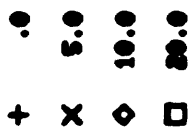
PLOT #1

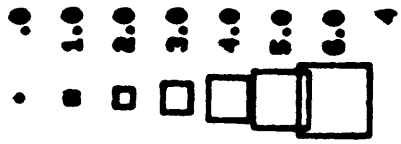


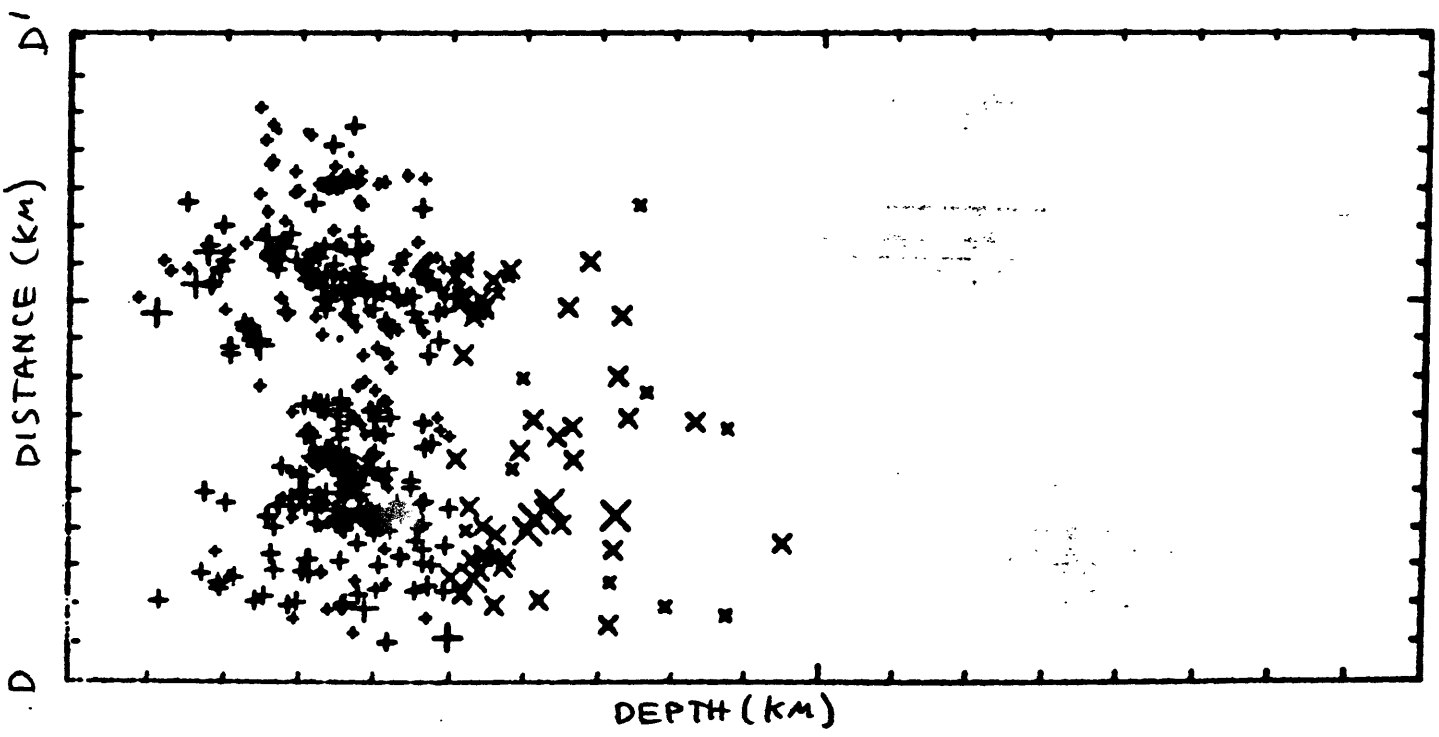
PLOT #2



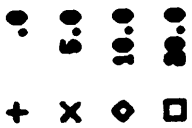
PLOT #3

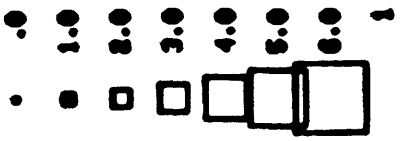


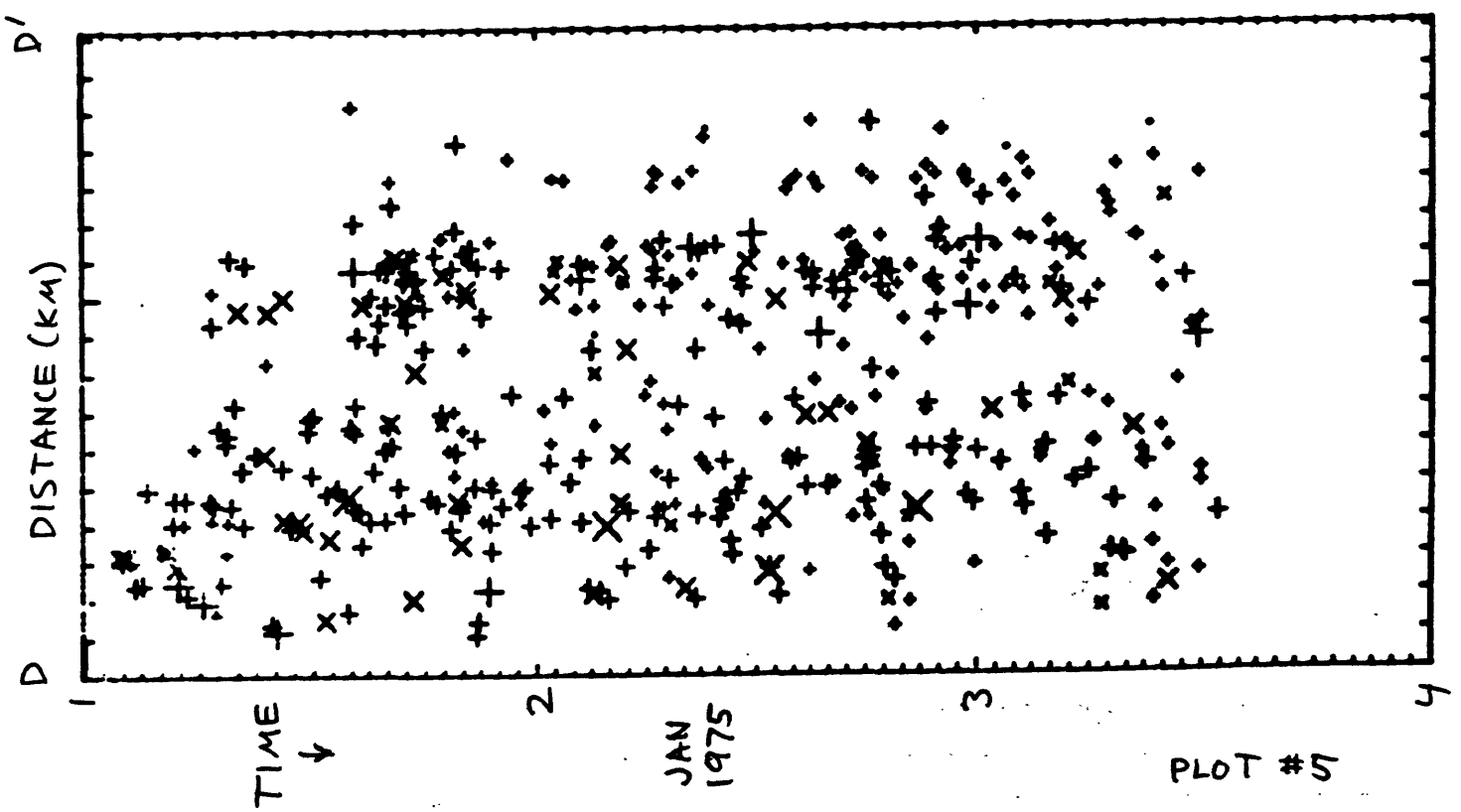


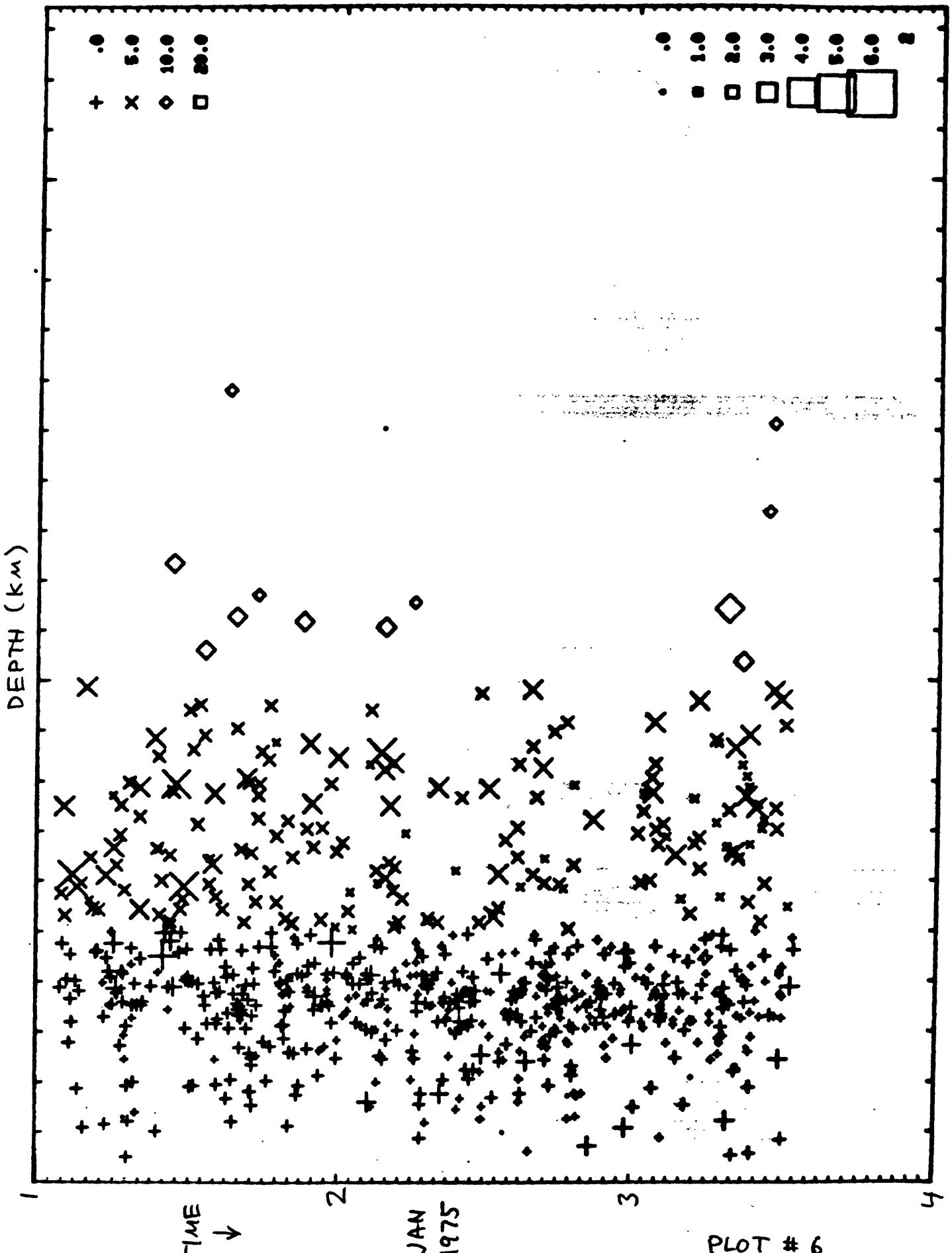


PLOT #4






D'
DISTANCE (KM)
D
1
2
3
4
TIME →
JAN
1975
PLOT #5


DEPTH (KM)
TIME →
1
2
3
4
JAN
1975
PLOT # 6

Brief listing of commands.

Interactive commands which prompt the user:

GSCL	Get map scale.
GCTR	Get center coordinates.
SCTR	Set the map center using the cursor.
GSHF	Get the relative shift of map center.
GFIL	Get the summary filename.
GSTA	Get the station filename and symbol parameters.
GSIZ	Display then get symbol sizes.
GSYM	Display then get symbol types.
GEND	Get the section endpoints.
GVEX	Get the vertical exaggeration.
GTOP	Get the depth of the top of depth plots.
GERH	Get the horizontal error cutoff.
GERZ	Get the vertical error cutoff.
GWID	Get the near and far plotting limits for the section.
GBEG	Get beginning time of space-time plots.
GLEN	Get length of time window for space-time plots.
SHOW	Display current scale, center, etc.
SHOX	Display current cross-section parameters.
SHOT	Display current start time and time window.

Formatted commands equivalent to those above.

SCAL$_{\Delta}$AAAAAA.
Set scale.

CNTR$_{\Delta}$AAA.AABBB.BBCCC.CCDDD.DD
Set center latitude (in degrees and minutes) and longitude

SHIF$_{\Delta}$AAA.ABBB.B
Northward and eastward shifts of center in km.

FILE$_{\Delta}$XXXXXXX
Define summary filename.

SYMB$_{\Delta}$IIJJAAA.AKK etc.
Define symbol dependence (KODE), number of symbols, and pairs of magnitude/depth/time limits and symbol type codes.

SIZE$_{\Delta}$II$_{\Delta\Delta}$AAA.AKK etc.
Define the number of symbol sizes and pairs of lower magnitude limits and symbol sizes.

ENDP$_{\Delta}$AAA.AABBB.BB etc. to H
Define cross-section endpoints.

VTEX$_{\Delta}$AAA.A
Define vertical exaggeration.

SWID$_{\Delta}$AAAA.ABBBB.B
Define near and far limits relative to the section plane.

ZTOP$_{\Delta}$AAA.A
Define the top depth used on depth plots.

SERH$_{\Delta}$AAA.AA
Set horiztonal error limit.
SERZ$_{\Delta}$AAA.AA
Set vertical error limit.
TBEG$_{\Delta}$IIJJKKLLMM
Set beginning date and time in years, months, days, hours and minutes.
TLEN$_{\Delta}$AAAA.AA
Set the length of the time window in days for space-time plots.

Commands which make plots.

PLOT	Plot a map using current parameters.
PLHD	Plot a map and make a hardcopy.
XSEC$_{\Delta}$X	Plot a cross section.
XSHD$_{\Delta}$X	Plot a section and make a hard copy.
STPL$_{\Delta}$X	Make a distance-time plot.
STHD$_{\Delta}$X	Make a distance-time plot and a hard copy.
ZTPL	Make a depth-time plot.
ZTHD	Make a depth-time plot and a hard copy.

Commands which invoke other outputs.

PRNT	Print one line of information for each plot.
LINE$_{\Delta}$XXXXXXXX	Define filename containing linear data.
STAS$_{\Delta}$XXXXXXXXIIJJKK	Set station filename, label flag, symbol size, and symbol flag.
KBAR$_{\Delta}$II	Set length of km scale in km.
SKEY$_{\Delta}$IIJJKK	Define type of symbol key.
CURS	Use the cursor to digitize points on the screen.

Commands which program the flow of EPLT.

COMD	Get any command from the user.
REPT	Repeat the current command file.
STOP	Stop the progrm.
PAUS	Pause the program.

Commands which save and re-execute commands.

SAVE$_{\Delta}$XXXXXXXX	Specify a file and write the current plot parameters into it.
JUMP$_{\Delta}$XXXXXXXX	Jump to the specified command file.