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USER'S MANUAL FOR STATMAP

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has not been reviewed for conformity
conformity with U.S. Geological Survey
standards and nomenclature.

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INTRODUCTION

This is the user's manual for the program statmap. Statmap creates the two Multics segments that are required by the Multics program z_mp. Together with z_mp, statmap allows the user to plot sample location maps from data contained in a STATPAC file. The program z_mp is described by Carlson (1982). The STATPAC SYSTEM is described by VanTrump and Miesch (1977). Consult these references for additional information. This section describes the features of statmap. The next section gives step by step procedures for using statmap. The following section contains a listing of statmap in the BASIC computer language. A bibliography completes this manual.

Statmap has these features:

o   Automatically creates the dictionary segment and the map
    data segment required by z_mp from a STATPAC file.

o   Uses Universal Trans-Mercator coordinates (UTM's) or
    similar rectangular coordinates coordinates. They
    must be present in two columns of the STATPAC file.

o   Uses any STATPAC column selected by the user to control
    the selection of symbols to be plotted on the map.

o   Uses any of four pen colors.

o   Plots symbols of varying sizes and shapes depending on
    the values of the data in the controlling STATPAC column.

o   Plots an optional label adjacent to each symbol. If chosen,
    the label can either be the value present in the controlling
    column or the sample number contained in a special column
    in the STATPAC file.

o   Optionally rejects samples for plotting when the value in
    the controlling column is qualified with one of up to six
    qualifying codes. See VanTrump and Miesch (1977) for an
    explanation of qualifying codes.

o   Optionally divides the range of the values in the controlling
    column into up to 30 intervals with a different symbol and
    symbol size for each interval. It will also produce the files
    necessary to compose composite symbols as described by Carlson
    (1982); and

o   Optionally plots sample locations controlled by additional
    columns on the same map.

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OPERATING INSTRUCTIONS

Follow these steps to use statmap.

STEP 1. Type: asr >udd>WMinRes>CCarlson>zeta -after working_dir

STEP 2. Type: statmap

Multics prints: This is statmap.
What is the name of the statpac file?

STEP 3. Type the name of the statpac file containing the data.
The name must be less than 33 characters long. Statmap
will use the first data set on the indicated statpac
file. To use a data set that is not the first one on
the file, you can use the program edstat to create a
suitable new file. Edstat is a self documented program
in the STATPAC SYSTEM.

Multics prints: What is the name you want to give your
dictionary?

STEP 4. Type your choice for a dictionary name, e.g. kalm.dic.
Statmap will create a segment with this name. A segment
with this name should not already exist.

Multics prints: What is the name you want to give your
map data?

STEP 5. Type your choice for a map data name, e.g. kalm.md.
Statmap will create a segment with this name. A segment
with this name should not already exist.

Multics prints: What title do you want to give the map?

STEP 6. Type a title of less than 41 characters.

Multics prints: What map scale do you want?

STEP 7. Type a scale, e.g. 24000 for 1:24000.

Multics prints: Enter boundary points. Stop with 0,0.

STEP 8. Type the coordinates to a point on the boundary of the
map, e.g. 325000, 4560000 . These boundary points will
usually be in UTM's. UTM's can be read from U.S.G.S.
topographic maps. This step will repeat until you enter
0,0. Z_mp will use these points to plot a boundary
around the map.

Multics prints: the name of the statpac file.
Multics prints: There are xx rows and yy columns.
I will use xx rows and zz columns.
(Note zz equals the minimum of yy and 250)

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Multics prints: What are the column numbers of the x and
y coordinates?

STEP 9. Type the numbers of the columns in the STATPAC file which
contain the x and y coordinates of each row. These coordinates
are usually UTM's. Latitudes and longitudes contained in
STATPAC files can be converted to UTM's using the undocumented
STATPAC program geocon. Seperate the two column numbers with a
comma, e.g. 41,42 .

Multics prints: What is the number of the column you want
to plot?

STEP 10. Type that number of the column in the STATPAC file
whose contents you want to control the selection of map
symbols. For example, to plot a map about copper abundances
recorded in column 20, type: 20 . You can use the self-
documented STATPAC program edstat to identify the contents
of each column.

Multics prints: Enter a two letter name for the values in
this column.

STEP 11. This will be the symbol name contained in the dictionary and
in the map data segments. Any two letters will do, e.g. for
copper you might want to use cu .

Multics prints: What pen color? 1=bk 2=red 3=blue 4=gr

STEP 12. Type a chosen pen number. You might want to check the plotter
to verify that the pens are installed from left to right in
the given order.

Multics prints: What size do you want to make the symbols?

STEP 13. Type a symbol size in inches. A good choice is .07 inches.
This size will be recorded in the map data segment. The size
will be interpreted as described by Carlson (in preparation).

Multics prints: Do you want to print a label for each point?
Enter yes or no.

STEP 14. You have the option of plotting a label adjacent to each
plotted symbol. Type yes, or no. If you type yes, follow
optional steps 14A and 14B below. Otherwise go to step 15.

Multics prints: Do you want to label with the 1) value or
2) record number?

STEP 14A. Type a 1 if you want to label each point with the value in
the STATPAC column, e.g. the copper abundance in the sample.
Type a 2 if you want to label each point with the sample
number for the sample being plotted, e.g. 172KP78 .

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Multics prints: At what angle do you want the label printed (degrees)?

STEP 14B. The label can be plotted at any angle. Measure the angle in degrees counter-clock-wise from the 3 oclock position. Carlson (in preparation) explains how this angle will be interpreted.

Multics prints: Do you want to reject qualified data? Enter yes or no.

STEP 15. STATPAC data may be qualified as described by VanTrump and Miesch (1977). You can chose to exclude qualified values from the plot. If you type no, continue with Step 16.

Multics prints: How many kinds of qualifiers do you want to exclude?

STEP 15A. Type the chosen number. For example to exclude all qualified values, type 6.

Multics prints: Enter the next rejection symbol.

STEP 15B. Type the qualifier that you want to exclude, e.g. B . This step will repeat until you have typed the promised number of qualifiers. The six possible codes are B, G, L, N, H, and T.

Multics prints: Do you want to plot group symbols? Enter yes or no.

STEP 16. You can plot a single symbol for every sample, or you can divide the range of abundances into intervals and plot a different symbol for each interval. This latter option is called grouped symbols. Type yes or no. If you type no, continue with Step 17. If you type yes, you must continue to answer this question with yes until this run of the program is completed. If you type yes continue with Steps 15A and 15B.

Multics prints: Into how many intervals do you want to divide the data? Count each interval you don't want plotted as an interval.

STEP 16A. Type the chosen number of intervals.

Multics prints: Enter the upper limit on each interval. Begin with the lowest. Follow each limit with a comma and the code for the desired symbol. use a code of 32 for intervals you want left blank. If you wish, you can follow each code with a comma and a symbol size. This symbol size will superceed the one given above.

Upper limit, code

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STEP 16B. Type your choices. The optional symbol size given in this step
will prevail only for this interval. See Carlson
(in preparation) for a list of symbol codes. For
example:

```
1.0,32
2.5,201,.05
10.0,202,.1
1000.0,203,.125
```

This would specify four intervals:

```
<=1.0     Dont plot anything.
<=2.5     Plot a small square.
<=10.0    Plot a medium sized octogon.
<=1000.0  Plot a large sized triangle.
```

This step will repeat until you have typed the promised number
of intervals. Now go to Step 18.

Multics prints: What is the symbol code for this column?

STEP 17. Type the chosen symbol code.

Multics prints: Do you want to plot more columns.

STEP 18. If you are done, type no. Otherwise, type yes and go to
Step 10.

PROGRAM LISTINGS

```
10 print"This is statmap."
11 rem    ****************************************************
12 rem    *   PROGRAM TO WRITE DICTIONARY AND MAP DATA FILES   *
13 rem    *          FOR z_mp FROM DATA ON STATPAC FILES        *
14 rem    ****************************************************
15 rem......GET THE NAMES OF THE DICTIONARY, MAP DATA AND STATPAC FILES
20 print"What is the name of the statpak file?"
30 input a$
40 let a$=seg$(a$&"                              ",1,30)
50 print"What is the name you want to give your dictionary?"
60 input al$
70 file #11:al$
80 print"What is the name you want to give your map data?"
90 input a2$
100 file #12:a2$
110 call "front": #12
120 dim r$(10),1(30),c(30),w(30),n$(30),r(30),d(30)
130 call "par":n4,m,a$
140 call "ft_get":-1,i$,v,x,y,m,q$,n3,n1,n2,a$
150 print"There are ";n4;" rows and ";m;" columns."
160 print"I will use ";,n4;" rows and ";min(250,m);"columns."
170 print"What are the column numbers of the x and y coordinates?"
180 input n1,n2
190 let i1=0
191 rem..........COLUMN NUMBER
200 print"What is the number of the column you want to plot?"
210 input n3
220 let i1=i1+1
221 rem..........NAME FOR THE MAP KEY
230 print "Enter a two letter name for the values in this column."
240 input n$(i1)
241 rem..........PEN COLOR
250 print"What pen color?  1=bk  2=red  3=blue  4=gr"
260 input w(i1)
270 if w(i1)>1 goto  290
280 let w(i1)=1
290 if w(i1)<5 goto  310
300 let w(i1)=1
310 print"What size do you want to make the symbols?"
320 input s
321 rem..........PRINT A LABEL
330 print"Do you want to print a label for each point?  Enter yes or no."
340 input b$
350 if b$="no" goto  400
360 print"Do you want to label with the 1) value or 2) record number?"
370 input n5
380 print"At what angle do you want the label printed(degrees)?"
390 input r(i1)
391 rem..........REJECT QUALIFIED DATA
400 print"Do you want to reject qualified data?  Enter yes or no."
410 input c$
420 if c$="no" goto  490
```

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430 print"How many kinds of qualifiers do you want to reject?"
440 input n6
450 for i=1 to n6
460  print"Enter the next rejection symbol."
470  input r$(i)
480  next i
481 rem...........ENTER THE CODES ETC FOR GROUP SYMBOLS
490 print"Do you want to plot group symbols?  Enter yes or no."
500 input d$
510 if d$="no" goto 890
520 print"Into how many intervals do you want to divide the data?"
530 print"Count each interval you dont want plotted as an interval."
540 input n7
550 print"Enter the upper limit on each interval.  Begin with the lowest."
560 print"Follow each limit with a comma and the code for the desired"
570 print"symbol.  Use a code of 999 for intervals you want left blank."
580 print"If you wish you can follow each code with a comma and a"
590 print"symbol size.  This symbol size will superceed the one given"
600 print"above."
610 let g$=n$(1)
620 for i=1 to n7
630  print"Upper limit,code"
640 linput m$
650 let d1=pos(m$,",",1)
660 let d2=pos(m$,",",d1+1)
670 let d3=80
680 if d2=0 goto 700
690 let d3=d2
700 let l(i)=val(seg$(m$,1,d1-1))
710 let c(i)=val(seg$(m$,d1+1,d3-1))
720 let d(i)=s
730 if d2=0 goto 750
740 let d(i)=val(seg$(m$,d2+1,80))
750  let h$=str$(i)
760  let n$(i)=g$&h$
770 let b1=pos(n$(i)," ",1)
780 let n$(i)=seg$(n$(i),1,b1-1)&seg$(n$(i),b1+1,10)
790  next i
791 rem...........WRITE DICTIONARY FOR GROUP SYMBOLS
800 for i=1 to n7
810 let i2=w(i1)
820 let m$=n$(i)
830 let c9=c(i)
840 let r1=r(i1)
850  call "dic" :i,m$,c9,i2,#11,r1
860  next i
870 print #11: "     999"
880 goto 950
881 rem...........ENTER THE CODE FOR NON-GROUP SYMBOLS
890 let m$=n$(i1)
900 let i2=w(i1)
910 let r1=r(i1)
920 print "What is the symbol code for this column?"
930 input c9
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```
931 rem..........WRITE DICTIONARY FOR NON-GROUP SYMBOL
940 call "dic": i1,m$,c9,i2,#11,r1
941 rem..........WRITE MAP DATA FILE
950 for i=1 to n4
960 let i$="........"
970 let q$="...."
980 call "ft_get": i,i$,v,x,y,m,q$,n3,n1,n2,a$
990 let p2=len(q$)
1000 let p1=pos(q$," ",1)
1010 if p1=0 goto 1040
1020 let q$=seg$(q$,1,p1-1)&seg$(q$,p1+1,p2)
1030 goto 990
1040 let t$=""
1050 if b$="no" goto 1090
1060 let t$=str$(v)
1070 if n5=1 goto 1090
1080 let t$=i$
1090 if c$="no" goto 1130
1100 for j=1 to n6
1110 if q$=r$(j) goto 1230
1120 next j
1130 if d$="no" goto 1200
1140 for j=1 to n7
1150 if v<=l(j) goto 1180
1160 next j
1170 goto 1240
1180 let i1=j
1190 let s=d(j)
1200 let f$=" -.##<##      <#######                        -######.# -"
1210 let f$=f$&"######.#"
1220 print #12: using f$,s,n$(i1),t$,x,y
1230 next i
1240 call "ft_get": -2,i$,v,x,y,m,q$,n3,n1,n2,a$
1250 print"Do you want to plot more columns."
1260 input i$
1270 if i$="no" goto 1310
1280 if d$="no" goto 200
1290 print #12: "     NEXT"
1300 goto 190
1310 call "ft_get":0,i$,v,x,y,m,q$,n3,n1,n2,a$
1320 end
1321 rem  ******************************************
1322 rem  *   SUBROUTINE TO WRITE A DICTIONARY LINE  *
1323 rem  ******************************************
1330 sub "dic" : i,n$,c,w,#11,r1
1340 print #11: using "<##-### -## -##",n$,c,w,r1
1350 subend
1351 rem  ****************************************************************
1352 rem * SUBROUTINE TO WRITE THE MAP PARAMETERS INTO THE MAP DATA FILE *
1353 rem  ****************************************************************
1360 sub "front": #12
1370 print "What title do you want to give to the map?"
1380 linput a$
1390 print #12: using "<################################",a$
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1400 print "What map scale do you want?"
1410 input b
1420 print #12: using "-########",b
1430 print "Enter boundary points.  Stop with 0,0"
1440 for i=1 to 24
1450 print "X,Y"
1460 input x,y
1470 print #12: using "-#######.-#######",x,y
1480 if x<>0 goto  1510
1490 if y<>0 goto  1510
1500 goto  1530
1510 next i
1520 print #12
1530 subend
```

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