

UR1986-24

1986/24. GRQUAD - A Fortran program to plot survey locations in 35 km x 35 km quadrangles.

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Abstract

GRQUAD creates quadrangles 35 km by 35 km covering the station locations of the input file. For each quadrangle a station location plotfile is created.

INTRODUCTION

This program was written to provide documentation complementing that provided by GRVDOC, which creates plotfiles by identifier rather than by quadrangle. All plotfiles are created in one run. The only operator intervention required is to prepare the input file and to start the run. It is not necessary to specify the quadrangles as these are set up by the program to fit the data set. The program is written in PE Fortran 77 and runs on the Tasmania Department of Mines Perkin Elmer 3200 computer. The program may be easily adapted to produce location plotfiles by quadrangle for any other similar data base file.

GRQUAD

To commence a GRQUAD run, type "GRQUAD" to start a .CSS of that name. No other operator action is required. The input file is read and the maximum and minimum of eastings and northings for the data set are established. The minimum easting line and minimum northing line are established by taking the nearest 5000 m line less than the minimum easting and minimum northing respectively. The minimum lines serve as baselines upon which to construct a grid of 35 km by 35 km square quadrangles.

Similarly, the maximum easting and northing lines are the respective 35 000 m easting and northing quadrangle grid lines which are just greater than the maximum easting and maximum northing.

The program then searches the file for stations occurring in each 35 km side square. If a square contains no station locations, then it is ignored. If a square contains at least one station location then it is given a (sequential) number and a plotfile of scale 1:250 000 is created. The program starts by examining the south-west square of the grid and works north along the west column of squares. Columns are worked within from south to north and columns are taken in order from west to east. The last grid square examined is hence the north-east square. Stations found to have different identifiers within the one square are kept separate and marked on the plot with different symbols. The total number of station locations per plot and the number for each identifier present are detailed in the plot title. The program runs automatically to completion and it is not necessary to specify the number of station locations in the file. Each record must, of course, be in the format expected by the program. The program read format statements may be easily altered to suit particular databases. However, the type of read (sequential or random access) should not be altered.

[2 April 1986]

APPENDIX 1
GRQUAD.FTN program listing

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C*****
C   A PROGRAM TO PLOT LOCATION MAPS FROM THE GRAVITY DATA BASE
C   BY QUADRANGLE.
C
REAL NORTH(4000),NMAX,NMIN,EAST(4000),EMAX,EMIN,ELAT,NLON
INTEGER DUM,IT1,IT2,TYPE(4000)
DIMENSION IL(4),IS(6),ISX(3),ISY(4),IS1(25),IS2(25),IMA(7)
1,KTYPE(25)
DATA ISX/4HMETR,4HES ,4HEAST/
DATA ISY/4HMETR,4HES ,4HNORT,4HH /
DATA IL/4HAMG ,4HGRID,4H ,4H 1:/
DATA IS/4HSTAT,4HION ,4HLOCA,4HTION,4HS, ,4 /
DATA IMA/4HA ,4HB ,4HC ,4HD ,4HE ,4HF ,4HG /
CHARACTER*3 CDUM
CHARACTER*4 TITLE(60),CDENT
CHARACTER*8 RTITLE,TTEST
CHARACTER*10 FNAME
CDENT='Q000'
IDENT=0
C*****
C FIRST READ THROUGH FILE TO SET UP QUADRANGLES
C***
C READ FIRST RECORD VALUES AND PUT EQUAL TO MAX AND MIN
C***
READ(2,30) ELAT,NLON
30 FORMAT(10X,2F9.1)
EMIN=ELAT
EMAX=ELAT
NMIN=NLON
NMAX=NLON
C****
C READ EACH RECORD TO DETERMINE MAX AND MIN VALUES
C****
120 READ(2,30,END=200) ELAT,NLON
IF(NLON.GT.NMAX) NMAX=NLON
IF(NLON.LT.NMIN) NMIN=NLON
IF(ELAT.GT.EMAX) EMAX=ELAT
IF(ELAT.LT.EMIN) EMIN=ELAT
GO TO 120
C*****
C SET ORIGIN AT NEXT LOWEST 5000 METRE LINES EAST & NORTH
C SET UP FOR PLOT, LOCAL MAX & MIN
C SCALE 1:250000
C*****
200 ISCALE=250000
INC=ISCALE/50
XMIN=INC*INT(EMIN/INC)
YMIN=INC*INT(NMIN/INC)
XMAXL=XMIN+7.0*INC
YMAXL=YMIN+7.0*INC
XMINL=XMIN
YMINL=YMIN
FACTOR=39.37/ISCALE
CDEBUG WRITE(5,210) FACTOR
CD210 FORMAT(1X,'FACTOR ',F10.3)
C*****
C LOOP READ THROUGH FILE - A QUADRANGLE PLOTFILE CREATED
C EACH PASS (PROVIDED IT CONTAINS SOME STATIONS)
C*****
C*****

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C INITIALISE FOR NEXT QUADRANGLE
C*****
  290 N=0
      KOUNT=1
      NT=0
      DO 295 JK=1,25
        KTYPE(JK)=0
  295 CONTINUE
      READ(2,310,REC=1) ELAT,NLON,RTITLE
      GO TO 315
C*****
C READ LOOP TO SEARCH INPUT FILE FOR QUADRANGLE LOCATIONS
C*****
  300 READ(2,310,END=375) ELAT,NLON,RTITLE
  310 FORMAT(10X,2F9.1,44X,AB)
  315 IF(ELAT.GE.XMINL.AND.ELAT.LT.XMAXL
      1.AND.NLON.GE.YMINL.AND.NLON.LT.YMAXL) THEN
      N=N+1
      IF(NT.GT.0) THEN
        DO 320 J=1,NT
          TTEST=TITLE(2*J-1)//TITLE(2*J)
          IF(TTEST.EQ.RTITLE) GO TO 330
  320 CONTINUE
          ENDIF
          NT=NT+1
          TITLE(2*NT-1)=RTITLE(1:4)
          J=NT
          TITLE(2*NT)=RTITLE(5:8)
          READ(2,326,REC=KOUNT) IS1(NT),IS2(NT)
  326 FORMAT(72X,2A4)
  330 EAST(N)=ELAT
          NORTH(N)=NLON
          TYPE(N)=J
          KTYPE(J)=KTYPE(J)+1
          ENDIF
          KOUNT=KOUNT+1
          GO TO 300
C*****
C END READ LOOP. IF ANY STATIONS, CREATE PLOTFILE
C*****
  375 IF(N.NE.0) THEN
      IDENT=IDENT+1
      CDUM=ITOC(IDENT,IDE)
      CDENT=CDENT(1:4-IDE)//CDUM(1:IDE)
      FNAME='GR'//CDENT//'.GTQ'
      WRITE(5,378) FNAME
  378 FORMAT(1X,'PLOTFILE NAME ',A12,25X,I4,' LOCATIONS')
      CALL PLTOUT(FNAME)
      CALL INITAL(9,200,36,0,0,0)
      XOFF=0.5
      YOFF=4.25
C*****
C DRAW GRID
C*****
      X1=XOFF
      X2=XOFF+14.0/2.54
      DO 440 J=1,8
        Y=YOFF+(J-1)*2.0/2.54
        CALL PLOT(X1,Y,3)
        CALL PLOT(X2,Y,2)

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440 CONTINUE
Y1=YOFF
Y2=YOFF+14.0/2.54
DO 460 J=1,8
X=XOFF+(J-1)*2.0/2.54
CALL PLOT(X,Y1,3)
CALL PLOT(X,Y2,2)
460 CONTINUE
DO 470 K=1,8
X=XOFF+(K-1)*2.0/2.54
Y=YOFF-0.1
INUM=XMINL+INC*(K-1)
FNUM=1.0*INUM
CDEBUG WRITE(5,468) XMINL,INC,INUM,FNUM
CD468 FORMAT(1X,'XMINL,INC,INUM,FNUM ',F9.1,I6,I8,F9.1)
CALL NUMBER(X,Y,.07,FNUM,270.0,-1)
470 CONTINUE
DO 480 K=1,8
Y=YOFF+(K-1)*2.0/2.54
X=XOFF+0.1+7*2.0/2.54
INUM=YMINL+INC*(K-1)
FNUM=1.0*INUM
CALL NUMBER(X,Y,0.07,FNUM,0.0,-1)
480 CONTINUE
C*****
C WRITE TITLE
C*****
X=XOFF+0.2
Y=YOFF-1.55
CALL SYMBOL(X,Y,0.28,IL(1),0.0,16)
X=X+9*0.28*6.0/7.0
FIDENT=IDENT*1.0
CALL NUMBER(X,Y,0.28,FIDENT,0.0,-1)
X=XOFF+0.2+16*0.28*6.0/7.0
FSCALE=1.0*ISCALE
CALL NUMBER(X,Y,0.28,FSCALE,0.0,-1)
AN=1.0*N
Y=Y-0.5
X=XOFF+1.0
CALL NUMBER(XOFF,Y,0.21,AN,0.0,-1)
CALL SYMBOL(X,Y,0.21,IS(1),0.0,24)
X=XOFF+2.2
Y=YOFF-0.75
CALL SYMBOL(X,Y,.07,ISX(1),0.0,12)
X=XOFF+6.25
Y=YOFF+3.2
CALL SYMBOL(X,Y,.07,ISY(1),90.0,16)
XADD=0.0
YADD=0.0
C*****
C WRITE NOS. OF STATIONS BY IDENTIFIER UNDER TITLE
C*****
DO 498 J=1,NT
IF(J.GE.9) THEN
XADD=3.2
YADD=1.6
ENDIF
X=XOFF+XADD
Y=YOFF-2.1-0.2*J+YADD
IT1=IS1(J)

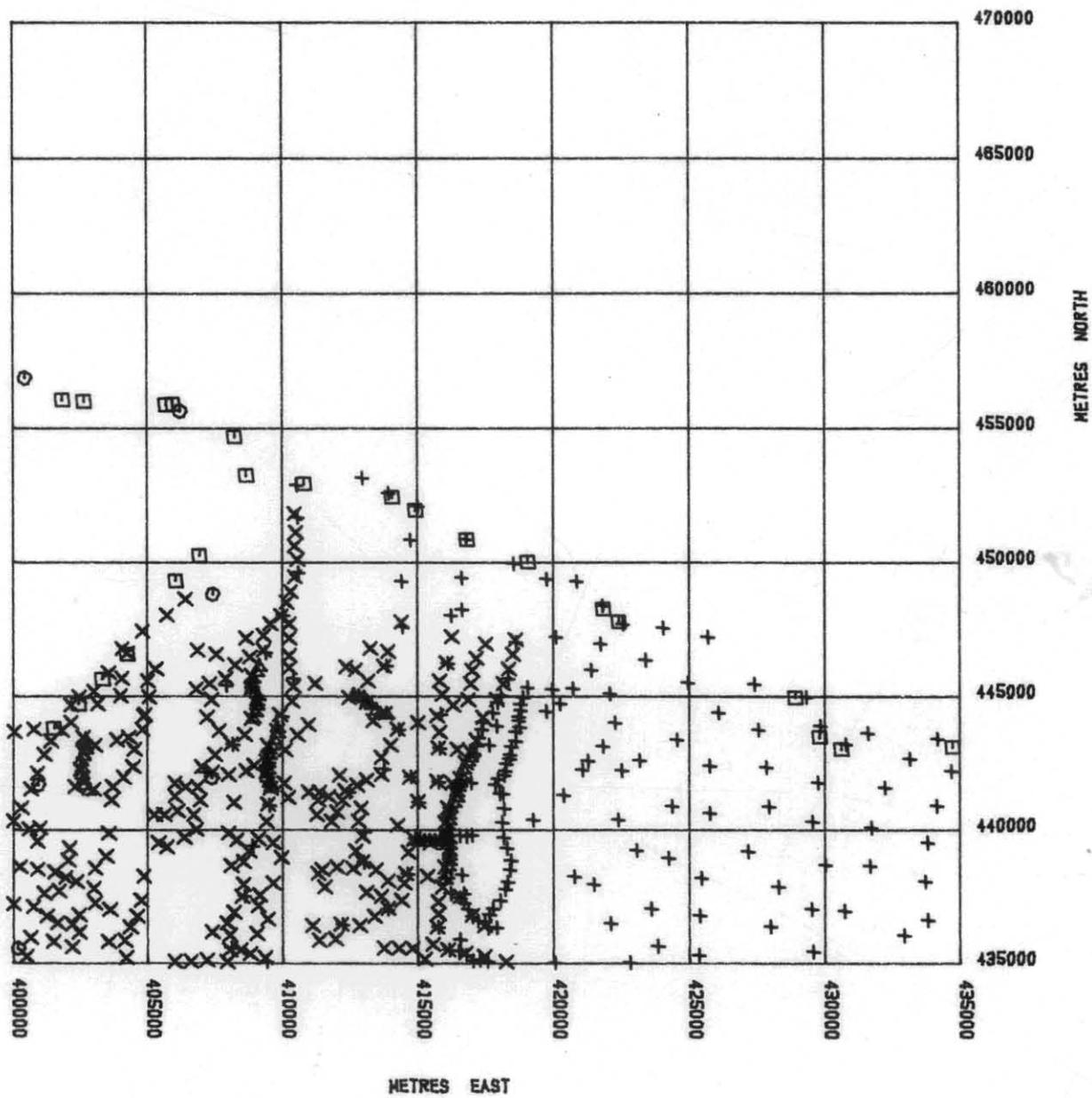
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CALL SYMBOL(X,Y,.07,IT1,0.0,4)
IT2=IS2(J)
X=X+0.24
CALL SYMBOL(X,Y,.07,IT2,0.0,4)
X=XOFF+0.75+XADD
C*****
C PLOT MARKER SYMBOL, HAVING IF REQUIRED
C DEFINED MARKER SYMBOLS IN ADDITION TO 14 STANDARD
C*****
IF(J.GT.14) THEN
JMA=J-14
CALL SYMBOL(X,Y,.07,IMA(JMA),0.0,4)
ELSE
Y=Y+0.03
CALL PLOT(X,Y,3)
CALL MARKER(J)
Y=Y-0.03
ENDIF
X=XOFF+1.0+XADD
FTYPE=KTYPE(J)
CALL NUMBER(X,Y,.07,FTYPE,0.0,-1)
X=XOFF+1.3+XADD
CALL SYMBOL(X,Y,.07,IS(1),0.0,20)
498 CONTINUE
C*****
C PLOT STATION LOCATIONS
C*****
DO 520 K=1,N
X=XOFF+FACTOR*(EAST(K)-XMINL)
Y=YOFF+FACTOR*(NORTH(K)-YMINL)
CDEBUG WRITE(5,416) K,EAST(K),NORTH(K),TYPE(K),X,Y
CD416 FORMAT(1X,I3,2F9.1,I5,2F10.2)
C*****
C PLOT MARKER SYMBOL, HAVING DEFINED SYMBOLS IN ADDITION TO THE
C STANDARD 14, IF NECESSARY
C*****
IF(TYPE(K).GT.14) THEN
XM=X-0.03
YM=Y-0.03
JMA=TYPE(K)-14
CALL SYMBOL(XM,YM,.07,IMA(JMA),0.0,4)
ELSE
CALL PLOT(X,Y,3)
CALL MARKER(TYPE(K))
ENDIF
520 CONTINUE
WRITE(6,530) N,FNAME
530 FORMAT(1X,I4,' STATION LOCATIONS',8X,
1' PLOTFILE NAME ',A12)
CALL RSTR(2)
ENDIF

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C*****
C END PLOTFILE CREATION. GO TO NEXT QUADRANGLE
C*****
      IF(YMAXL.LT.NMAX) THEN
        YMINL=YMAXL
        YMAXL=YMAXL+7.0*INC
      ELSE
        IF(XMAXL.GT.EMAX) GO TO 900
        YMINL=YMIN
        YMAXL=YMIN+7.0*INC
        XMINL=XMAXL
        XMAXL=XMAXL+7.0*INC
      ENDIF
      GO TO 290
C*****
C LAST QUADRANGLE DONE. TERMINATE JOB
C*****
900 CONTINUE
      WRITE(6,910)
910 FORMAT(1X)
      END
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AMG GRID 32 1:250000

562 STATION LOCATIONS,

- **STLAKE □ 23 STATION LOCATIONS,
- *BMR7300 ⊙ 6 STATION LOCATIONS,
- MARCHDBS ▲ 71 STATION LOCATIONS,
- **HD6750 + 183 STATION LOCATIONS,
- H0USEDBS × 279 STATION LOCATIONS,

Figure 1.

