

III.8-MAT MEAN AREAL TEMPERATURE PROGRAM (MAT)

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Purpose

The Mean Areal Temperature (MAT) program provides techniques and procedures for computing estimates of mean areal temperature from station maximum-minimum temperature data.

Chapter III.2 [\[Hyperlink\]](#) describes how to obtain the historical station data.

Program MAT can be used to:

1. Check the consistency of the maximum-minimum temperature data as described in Chapter II.7-CALB-MAT [\[Hyperlink\]](#).
2. Estimate temperatures at dummy stations (hypothetical station with all missing data). Dummy stations are typically used to represent the temperature at the mean elevation of a mountainous subarea.
3. Estimate missing data.
4. Check the accuracy of the data estimating procedure at a given station (TEMPCK run) as described in Chapter II.7-CALB-MAT [\[Hyperlink\]](#).
5. Compute MAT for basins using computed grid point or $1/d^{**power}$ weights for each station or user input predetermined station

weights. Grid point weights are computed using basin boundaries input as a series of latitude-longitude pairs.

Program MAT is currently dimensioned for the following maximum values:

- o 50 basins
- o 3000 basin boundary points per basin
- o 200 maximum-minimum temperature stations
- o 10 changes in observation time per station
- o 10 corrections to maximum-minimum temperature per station
- o 100 years of data
- o 5 groups of stations for consistency check

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Program Input

The program uses free format input for all cards except the Station Time Series Input File Information.

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Free Format Input Rules

See Chapter I.3-FREEFMT-UFIELD [\[Hyperlink\]](#) for a description of the general syntax rules.

Syntax rules specific to program MAT are:

1. The '@' indicates a card label. Card labels can be on the same line or the line above the fields of the card. For example:
@A 10 1965 10 1966
can be specified as
@A
10 1965 10 1966
2. If a card is not needed for a particular run then the label and all fields must be omitted.
3. Not all letters are used as card labels. For example there is no card K.
4. Character fields containing commas and embedded blanks must be enclosed by apostrophes. Note that station names (card F field 1) and area descriptions (card I fields 1 and 2) often contain blanks.
5. All fields are required. Null fields (double commas) must be used to denote single fields for which default values are to be used. If N consecutive fields use default values then N+1 commas must be used. The following input implies that defaults are to be used for the first two fields on card B:
@B , , ,
6. Not all fields have valid defaults. If the documentation does not specify a default then the input must be specified.

7. Consecutive commas at the end of a card can be omitted. For example:

@C GRID,,,
can be specified as
@C GRID

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Input Data

<u>Card</u>	<u>Field</u>	<u>Format</u>	<u>Contents</u>
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Cards A through F and card Q are required in all cases.

PERIOD OF RECORD

A	1		'@A'
	2	I	First month
	3	I	First year (four digits)
	4	I	Last month
	5	I	Last year (four digits)

RUN OPTIONS

B	1		'@B'
	2	I	Number of areas where MAT is to be computed: 0 = TEMPCK or consistency check without MAT
	3	I	Station sequence number of station to be checked for TEMPCK run (based on card F order): 0 = MAT or consistency check
	4	A	Units in which MAT is to be calculated and printed; default is 'METR': 'METR' = metric system 'ENGL' = English system
	5	A	Enter 'MNT'
	6	A	Temperature corrections option; default is no temperature corrections: 'CTMP' = temperature corrections to be read
	7	A	Observation time correction option; default is no time corrections: 'CTIM' = time corrections to be read

<u>Card</u>	<u>Field</u>	<u>Format</u>	<u>Contents</u>
	8	A	Consistency check option; default is no consistency check: 'CONS' = consistency check to be run
	9	A	Stop option; default is 'CONT': 'STOP' = terminate program after printing station weights 'CONT' = continue program to calculate MAT

AREAL WEIGHTING OPTIONS

Card C is ignored for TEMPCCK runs and consistency checks without MAT.

C	1		'@C'
	2	A	Station weighting options; default is grid point weighting: 'GRID' = compute grid point station weights for each area 'PRE' = read predetermined station weights 'DP' = compute 1/d**power station weights for each area
	3	R	Power in 1/d**power station weights (ignored if 'GRID' or 'PRE' specified); default is 2.0
	4	R	Minimum station weight; default is 0.01

OUTPUT OPTIONS

Card D is ignored for TEMPCCK runs and consistency checks without MAT.

D	1		'@D'
	2	A	Option to print the daily maximum and minimum temperature input data; default is to not print: <u>1/</u> [<u>Bookmark</u>] 'PRNT' = print input data
	3	A	Not used; enter null field
	4	A	Option to output MAT data; default is to not output to file and print: <u>2/</u> [<u>Bookmark</u>] 'OUT' = output to file and do not print 'OUTP' = output to file and print 'OUTN' = do not output to file and do not print
	5	A	Units in which MAT results will be written into output file; default is 'METR':

<u>Card</u>	<u>Field</u>	<u>Format</u>	<u>Contents</u>
			'METR' = metric system 'ENGL' = English system
6			Forecast Group directory name; this name will become part of the directory name into which MAT results will be written; embedded blanks are not allowed <u>3/</u> [<u>Bookmark#1</u>]
7	A		Station summary table option; default is not to print table: 'SUMT' = print a summary table of average maximum and average minimum temperatures for each month for each station; these values are computed from the input data after corrections are applied; dummy stations retain original input values
8	A		Option to output station summary cards; default is not to output cards: <u>4/</u> [<u>Bookmark</u>] 'SUMP' = output summary data of average maximum and average minimum temperatures for each month in F, G and H card formats

STATION INFORMATION

E	1		'@E'
	2	I	Number of maximum-minimum temperature stations <u>5/</u> [<u>Bookmark</u>] <u>6/</u> [<u>Bookmark</u>]

Repeat cards F through H for each maximum-minimum temperature station. Dummy stations can be placed anywhere. In the case of a TEMPK run dummy stations are not needed. Input order determines station sequence number.

F	1		'@F'
	2	A20	Station name (single quotes are required if the name contains a blank or comma)
	3	R, I or I-I	Station latitude <u>7/</u> [<u>Bookmark#1</u>]
	4	R, I or I-I	Station longitude <u>7/</u> [<u>Bookmark#2</u>]
	5	R	Observation time for initial month in local standard time (hours 1 to 24) <u>8/</u> [<u>Bookmark</u>]
	6	R	Station elevation in meters or feet; default

<u>Card</u>	<u>Field</u>	<u>Format</u>	<u>Contents</u>
			is 0.0 <u>9</u> / [<u>Bookmark</u>]
	7	A7	Station identifier or 'DUMMY' if dummy station <u>24</u> / [<u>Bookmark</u>]

Units of temperature and FE must agree with the input units parameter (card B field 3).

G	1		'@G'
	2	R	Elevation weighting factor (FE) for maximum temperature (default is 0.0) <u>10</u> / [<u>Bookmark#1</u>]
	2	R	Mean maximum temperature for each month (January through December) <u>11</u> / [<u>Bookmark#1</u>] <u>12</u> / [<u>Bookmark#1</u>]
H	1	R	Elevation weighting factor (FE) for minimum temperature (default is 0.0) <u>10</u> / [<u>Bookmark#2</u>]
	2	R	Mean minimum temperature for each month (January through December) <u>11</u> / [<u>Bookmark#2</u>] <u>12</u> / [<u>Bookmark#2</u>]

AREA INFORMATION AND PREDETERMINED WEIGHTS

Omit cards I, J and L for TEMPCCK run or consistency check without MAT. Repeat cards I, J and L for each area in the run.

I	1		'@I'
	2	A12	Area identification
	3	A20	Area description
	4	R	Area size in square kilometers or square miles
	5	A	Area units: 'KM2' = square kilometers 'MI2' = square miles
	6	A12	Basin name(optional); if specified then this name will become part of the directory name and file name into which MAT results will be written (./basin_name/basin_name.MAT); if omitted then the area identifier is used as part of the filename and the additional directory level is omitted (./area_id.MAT) <u>3</u> / [<u>Bookmark#2</u>]
	7	A12	File name (optional); if specified then the

Card Field Format Contents

MAT output will be written to that file
(./basin_name/file_name.MAT); if omitted then
the file name will be set to the basin name 3/
[Bookmark#3]

Omit card J if using predetermined weights.

The format of card J is the same as for the PPINIT program DEFINE
BASIN command. 13/ [Bookmark]

J	1		'@J'
	2	A	'BASN' or 'BASN (units)'
	3	A8	Basin identifier
	4	A20	Descriptive information
	5	(R,R)	Latitude/longitude pairs defining basin boundary <u>14</u> / [Bookmark] <u>15</u> / [Bookmark] or Latitude-longitude pair defining basin centroid <u>16</u> / [Bookmark]

Omit card L if not using predetermined weights.

L	1		'@L'
	3-n	R	Predetermined station weights (order determined from card F)

OBSERVATION TIME CHANGES

Card M is needed only if changes are to be made to observation
times.

Repeat card M for each change. A maximum of 10 changes can be made
for each station. A station sequence number of '999' indicates the
end of changes. 17/ [Bookmark]

M	1		'@M'
	2	I	Station sequence number <u>18</u> / [Bookmark#1]
	3	I	Month of time change
	4	I	Year (four digits)
	5	R	New observation time in hours (1 through 24)

TEMPERATURE CORRECTIONS

Card O needed only if corrections are to be made to maximum-minimum

Card Field Format Contents

temperature data..

Repeat card O for each change. A maximum of 10 changes can be made for each station. A station sequence number of '999' indicates the end of changes. 19/ [Bookmark]

O	1		'@O'
	2	I	Station sequence number <u>18/ [Bookmark#2]</u>
	3	I	Month in which correction starts
	4	I	Year (four digits)
	5	R	Correction to maximum temperature
	6	R	Correction to minimum temperature

STATION TIME SERIES INPUT FILE INFORMATION

Repeat card Q for each station.

Q	1		'@Q' <u>20/ [Bookmark]</u>
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CONSISTENCY CHECK INFORMATION

Cards R and S are needed only for a consistency check.

If English system units were specified in field 3 of card B then data values are plotted in DEGF.

R	1		'@R'
	2	I	Number of groups (maximum is 5)
	3	I	Number of stations in each group

Repeat card S for each group.

S	1		'@S'
	2-n	I	Sequence number of each station in the group <u>21/ [Bookmark]</u>

TEMPCK RUN INFORMATION

Cards T and U are needed only for a TEMPCK run.

If English system units are used then plots are in units of DEGF.

T	1		'@T'
	2	R	EMAX; when the estimated temperature varies by

Card Field Format Contents

more than EMAX degrees from the observed a message is printed listing the observed temperature then the estimated temperature and the date of occurrence

3	I	Initial ordinate for observed versus estimated maximum temperature plot 22/ [Bookmark#1]
4	I	Initial ordinate for observed versus estimated minimum temperature plot 22/ [Bookmark#2]

Card U is optional input for a TEMPCK run. [23/](#) [[Bookmark](#)]

Repeat card U for each set of FE values.

U	1	'@U'
	2	R New FE value for maximum temperature
	3	R New FE value for minimum temperature

Notes:

- [1/](#) Maximum-minimum temperature data for each station are printed after they are read and corrected. [\[Back\]](#)
- [2/](#) MAT data for each area are printed as they are calculated for the entire period designated on card A. [\[Back\]](#)
- [3/](#) If the Forecast Group directory name is blank then a Forecast Group name will not be part of the full pathname. [\[Back\]](#)

The full pathname is created by concatenating the Forecast Group directory name to a pathname generated by .Apps_defaults tokens (see Chapter I.2-UNIX-CALB [[Hyperlink](#)]). The directory defined by this full pathname must be created by the user.

The Forecast Group directory name can be specified as:

name1
or
name1/name2

- [4/](#) Cards are not produced for mountainous areas. [\[Back#1\]](#) [\[Back#2\]](#) [\[Back#3\]](#)
- [5/](#) Add 1 to this number for a TEMPCK run. [\[Back\]](#)
- [6/](#) This number must include all dummy stations. [\[Back\]](#)
- [7/](#) The station location can be input in decimal degrees or degrees and minutes. For example specifying 50.5 indicates decimal degrees and is equivalent to 50-30 or 5030 which indicates degrees and minutes. Valid values for minutes are 0 to 59. [\[Back\]](#)

If degrees and minutes are input and the optional '-' is omitted then 2 characters must always be used to specify the minutes. For example 5003 would be a valid input field to specify 50 degrees and 3 minutes.name1/name2

[[Back#1](#)] [[Back#2](#)]

8/ If the F, G and H cards are created with program DLYTRAN then the user must supply the observation time (which cannot be zero) on card F field 4.

[[Back](#)]

9/ Units must agree with input units parameter (card B field 3).

[[Back](#)]

10/ FE is used in mountainous areas when elevation difference as well as distance should be used to select stations to use when estimating missing data values. If FE is zero then estimator stations are selected solely based on distance. In English units FE must be expressed in miles/1000 feet. In Metric units FE must be expressed in kilometers/1000 meters. Suggested values for FE are 20 (English units) and 100 (Metric units).

[[Back#1](#)] [[Back#2](#)]

11/ The mean monthly maximum and minimum temperatures are used in the estimation of missing data. They are required for historical analysis because they are required for operational MAT computations.

[[Back#1](#)] [[Back#2](#)]

12/ In English units temperatures must be expressed in DEGF. In Metric units temperatures must be expressed in DEGC.

[[Back#1](#)] [[Back#2](#)]

13/ See Section VI.3.3B-DEFINE-BASIN [[Hyperlink](#)] for a description of the input data. The first three and last two optional fields are not used by MAT. These fields do not need to be included. If they are included then they will be ignored.

[[Back](#)]

14/ Pairs must be entered in clockwise order and in decimal degrees. The first value must be preceded by an opening parenthesis. The last value must be followed by a closing parenthesis.

[[Back](#)]

15/ The basin boundary must have at least 3 pairs.

[[Back](#)]

16/ If only one latitude-longitude pair is entered then it is assumed to be the basin centroid. The pair must be enclosed in parentheses.

[[Back](#)]

17/ Time changes for each station must be in order by date (earliest first). All changes for one station can be first followed by changes for the next station, etc. or all the changes for the first month at all stations can be followed by changes in subsequent months.

[[Back](#)]

18/ The '999' indicates the end of the data. The field following the '999' must contain a card label.

[[Back#1](#)] [[Back#2](#)]

19/ Corrections to each station must be in order by date (earliest first). Corrections remain in effect until the date of the next correction. If English system units are used then corrections must be in DEGF.

[Back]

20/ The @Q card must be on a separate line preceding the Station Time Series Input File Information cards.

Include one TAMX and one TAMN card for each station using the following format:

<u>Columns</u>	<u>Format</u>	<u>Contents</u>
1-4	A4	Code for data type ('TAMX' or 'TAMN')
6-29	A24	File name

See Chapter I.2-UNIX-CALB [[Hyperlink](#)] for a description of the directory structure.

No Time Series File Information card is needed for a DUMMY station.

The Q cards must be in order by station sequence numbers except that no card Q are used for dummy stations.

If the period of record is totally outside the period needed by the MAT calculations then the station is treated as a dummy station. However the period of record of the data for each time series does not have to correspond to the MAT period of record.

For each station the Q card for the maximum temperature time series must precede that for the minimum temperature time series. If a card is missing or out of order (a TAMN card precedes a TAMX card for the same station) an error statement is issued and the program stops after the remainder of the Q cards are processed.

[Back]

21/ Every station must be in a group. However no station can be in more than one group.

Stations with positive sequence numbers make up the group base and are plotted against other stations in the group base. Stations with negative sequence numbers are plotted against the group base. Station order does not matter.

For example group one contains 5 stations. Sequence numbers are 3, 5, 6, 9 and 12. Card S input for group one is:

6 5 9 -12 -3

The group base consists of stations 6, 5 and 9. Station 6 is plotted against the average of stations 5 and 9, station 5 against the average of 6 and 9, station 9 against the average of 5 and 6. Stations 12 and 3 are each plotted against the average of the group base stations.

[Back]

22/ Plots are 70 DEGC by 70 DEGC or 120 DEGF by 120 DEGF. Thus if the initial ordinate is -30 DEGC then observed and estimated values from -30 DEGC to +40 DEGC will be plotted.

[Back#1] [Back#2]

23/ Card U is needed if different values of FE are to be entered for

the station being checked. For each different value the program will print statistics values and plot observed versus estimated temperature. The program terminates after the last set of FE values.

[\[Back\]](#)

24/ The station identifier is used by program IDMA and is entered as the state and station number. The state can be entered as the 2 character state abbreviation or the NCDC state number (see Chapter I.6 [\[Hyperlink\]](#)). For example AL0001 and 010001 would be entered for station 0001 in Alabama.

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Program Execution Information

See Chapter I.2 [\[Hyperlink\]](#) for information about how to execute the program.

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Output Data

Mean areal temperatures can be written to an output time series file. Preliminary runs are usually needed in order to determine the consistency of individual stations.

For each MAT area calculated a summary table of the basin's average areal temperatures for each month is automatically produced. This table also includes monthly averages, annual averages for complete years and an overall average for the period of run.

A printout of the maximum and minimum temperature data for each station is optional.

Optional station summaries for average maximum and average minimum temperatures for each month can be produced in both a table format and F, G and H card formats.

Consistency plots of individual station maximum or minimum temperatures against a group mean are optional.

Printing of 6 hour MAT values can be done with either the consistency check or the transfer of the MAT time series file. In either case printing can be suppressed.

When the temperature estimation check (TEMPCK) is run, mean areal temperatures cannot be computed but the consistency check can be run.

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Sample Input and Output

Figure 1 [\[Bookmark\]](#) is sample program input.

Figure 2 [Bookmark] is sample program output.

Figure 1. Sample input for program MAT

```

$ SAMPLE INPUT FOR PROGRAM MAT

@A 10 1959 9 1961
@B 1 0 METR MNT CTMP CTIM CONS CONT ,,
@C PRE
@D ,,, OUTF METR serfc SUMP
@E 7

@F 'BREVARD, NC' 35.23 82.73 18. 660.
@G 50. 9.5 11.9 14.9 21.2 25.0 27.5 29.1 29.0 25.8 21.0 15.5 10.3
@H 50. -4.5 -2.5 -0.0 5.1 9.6 13.5 15.7 15.4 12.2 5.5 -0.2 -4.0

@F 'PISGAH FOREST 1N, NC' 35.27 82.70 18. 640.
@G 50. 8.9 10.8 14.1 20.4 24.5 26.8 28.4 28.3 25.4 20.8 15.3 9.8
@H 50. -4.5 -2.7 -0.2 5.2 9.5 13.2 15.4 15.1 12.0 5.3 0.0 -3.8

@F 'CAESARS HEAD, S.C.' 35.10 82.62 18. 950.
@G 50. 6.9 8.9 11.9 18.3 22.1 24.4 26.0 25.8 22.6 17.8 12.6 7.6
@H 50. -2.1 -0.9 1.6 7.7 12.4 15.3 17.3 17.1 14.3 8.8 3.6 -1.1

@F 'HENDERSONVILLE, NC' 35.33 82.44 18. 655.
@G 50. 8.8 11.2 14.3 21.2 25.2 27.6 29.1 29.0 25.7 20.3 14.7 9.9
@H 50. -4.1 -2.5 0.2 5.6 9.9 13.5 16.1 15.4 12.2 5.4 0.5 -3.2

@F 'WAYNESVILLE 1E, NC' 35.48 82.47 18. 810.
@G 50. 8.4 10.8 13.7 20.2 23.8 26.3 27.7 27.7 24.9 20.0 14.5 9.3
@H 50. -4.3 -2.3 0.2 5.6 9.2 12.8 15.1 14.4 11.3 4.9 0.1 -3.4

@F 'CULLOWHEE, NC' 35.33 83.10 19. 640.
@G 50. 10.2 12.3 15.3 21.6 25.6 27.8 29.4 29.4 27.0 22.2 16.5 10.7
@H 50. -4.0 -1.9 0.4 5.5 9.7 13.8 16.4 15.9 12.6 5.7 -0.1 -3.3

@F 'HIGHLANDS 2S, NC' 35.06 83.30 18. 1015.
@G 50. 7.0 8.7 11.4 17.8 21.5 23.3 24.9 24.9 22.0 17.4 12.6 7.7
@H 50. -2.7 -1.2 0.9 6.3 10.8 13.9 15.8 15.7 13.3 7.0 2.3 -1.9

@I 03443000-MAT 'FRENCH BROAD,BLANTYE' 188. MI2 french_broad $ ,,
@L .30 .15 .30 .05 .05 .05 .10
@M 2 2 1962 8.
@M 999

@O 2 2 1962 0.0 1.0
@O 999

@Q
TAMX Brevard_NC_TAMX
TAMN Brevard_NC_TAMN
TAMX PisgahForest1N_NC_TAMX
TAMN PisgahForest1N_NC_TAMN
TAMX CaesarsHead_SC_TAMX
TAMN CaesarsHead_SC_TAMN
TAMX Hendersonville_NC_TAMX
TAMN Hendersonville_NC_TAMN
TAMX Waynesville1E_NC_TAMX
TAMN Waynesville1E_NC_TAMN
TAMX Cullowhee_NC_TAMX
TAMN Cullowhee_NC_TAMN
TAMX Highlands2S_NC_TAMX
TAMN Highlands2S_NC_TAMN

@R 1 7

@S 1 2 3 4 5 6 7

```

Figure 2. Sample output from program MAT

```

NWSRFS CALIBRATION SYSTEM - PROGRAM MAT      (VERSION: 3.2.8   - 01/20/99)      DATE=Feb 24, 1999 - 08:12:46

>>>>>>>> $ SAMPLE INPUT FOR PROGRAM MAT
>>>>>>>> @A 10 1959 9 1961
>>>>>>>> @B 1 0 METR MNT CTMP CTIM CONS CONT ,,
>>>>>>>> @C PRE
>>>>>>>> @D ,,, OUTP METR serfc SUMP
>>>>>>>> @E 7

      MAT          CONSISTENCY      INPUT          MULTIPLE
      OPTION      CHECK              UNITS          CALB FILES
      -----      -----          -----          -----
      ON          ON                  OFF            OFF

      ELEVATION    TEMPERATURE      TIME           SUMMARY        CARDS
      OPTION      CORRECTION        CORRECTION    TABLE         @F @G @H
      -----      -----          -----          -----          -----
MOUNTAINOUS      ON                  ON             OFF            OFF

      INPUT        TEMP          HEADER        MAT           MAT           MAT           OUTPUT
      OPTION      PRINT        PUNCH        OUTPUT        OUTPUT        PRINT         UNITS
      -----      -----          -----          -----          -----          -----          -----
      OFF          OFF          OFF          ON            serfc         ON            METRIC

      MINIMUM      TYPE          OF
      STATION      STATION      OF
      WEIGHT        WEIGHT
      -----      -----          -----
      .010        PREDETER

>>>>>>>> @F 'BREVARD, NC' 35.23 82.73 18. 660.
>>>>>>>> @G 50. 9.5 11.9 14.9 21.2 25.0 27.5 29.1 29.0 25.8 21.0 15.5 10.3
>>>>>>>> @H 50. -4.5 -2.5 -0.0 5.1 9.6 13.5 15.7 15.4 12.2 5.5 -0.2 -4.0
>>>>>>>> @F 'PISGAH FOREST 1N, NC' 35.27 82.70 18. 640.
>>>>>>>> @G 50. 8.9 10.8 14.1 20.4 24.5 26.8 28.4 28.3 25.4 20.8 15.3 9.8
>>>>>>>> @H 50. -4.5 -2.7 -0.2 5.2 9.5 13.2 15.4 15.1 12.0 5.3 0.0 -3.8
>>>>>>>> @F 'CAESARS HEAD, S.C.' 35.10 82.62 18. 950.
>>>>>>>> @G 50. 6.9 8.9 11.9 18.3 22.1 24.4 26.0 25.8 22.6 17.8 12.6 7.6
>>>>>>>> @H 50. -2.1 -0.9 1.6 7.7 12.4 15.3 17.3 17.1 14.3 8.8 3.6 -1.1
>>>>>>>> @F 'HENDERSONVILLE, NC' 35.33 82.44 18. 655.
>>>>>>>> @G 50. 8.8 11.2 14.3 21.2 25.2 27.6 29.1 29.0 25.7 20.3 14.7 9.9
>>>>>>>> @H 50. -4.1 -2.5 0.2 5.6 9.9 13.5 16.1 15.4 12.2 5.4 0.5 -3.2
>>>>>>>> @F 'WAYNESVILLE 1E, NC' 35.48 82.47 18. 810.
>>>>>>>> @G 50. 8.4 10.8 13.7 20.2 23.8 26.3 27.7 27.7 24.9 20.0 14.5 9.3
>>>>>>>> @H 50. -4.3 -2.3 0.2 5.6 9.2 12.8 15.1 14.4 11.3 4.9 0.1 -3.4
>>>>>>>> @F 'CULLOWHEE, NC' 35.33 83.10 19. 640.
>>>>>>>> @G 50. 10.2 12.3 15.3 21.6 25.6 27.8 29.4 27.0 22.2 16.5 10.7
>>>>>>>> @H 50. -4.0 -1.9 0.4 5.5 9.7 13.8 16.4 15.9 12.6 5.7 -0.1 -3.3
>>>>>>>> @F 'HIGHLANDS 2S, NC' 35.06 83.30 18. 1015.
>>>>>>>> @G 50. 7.0 8.7 11.4 17.8 21.5 23.3 24.9 24.9 22.0 17.4 12.6 7.7
>>>>>>>> @H 50. -2.7 -1.2 0.9 6.3 10.8 13.9 15.8 15.7 13.3 7.0 2.3 -1.9

PERIOD OF RECORD: 10/1959 THROUGH 09/1961

      STATION      STATION      LATITUDE      LONGITUDE      OBSERVATION
      NUMBER      NAME          COORDINATE    COORDINATE    TIME          ELEVATION      FE (MAX)      FE (MIN)
      -----      -----          -----          -----          -----          -----          -----
      1          BREVARD, NC      35.2300        82.7300        18.00        660.0          50.0          50.0
      2          PISGAH FOREST 1N, NC 35.2700        82.7000        18.00        640.0          50.0          50.0
      3          CAESARS HEAD, S.C. 35.1000        82.6200        18.00        950.0          50.0          50.0
      4          HENDERSONVILLE, NC 35.3300        82.4400        18.00        655.0          50.0          50.0
      5          WAYNESVILLE 1E, NC 35.4800        82.4700        18.00        810.0          50.0          50.0
      6          CULLOWHEE, NC   35.3300        83.1000        19.00        640.0          50.0          50.0
      7          HIGHLANDS 2S, NC 35.0600        83.3000        18.00        1015.0         50.0          50.0

      *** MEAN TEMPERATURES USED TO ESTIMATE MISSING DATA ***

      STATION NAME      MAX/MIN      JAN      FEB      MAR      APR      MAY      JUN      JUL      AUG      SEP      OCT      NOV      DEC
      -----          -----          -----          -----          -----          -----          -----          -----          -----          -----          -----          -----
      BREVARD, NC          MAX          9.5      11.9     14.9     21.2     25.0     27.5     29.1     29.0     25.8     21.0     15.5     10.3
      BREVARD, NC          MIN          -4.5     -2.5      .0        5.1      9.6     13.5     15.7     15.4     12.2     5.5     -0.2     -4.0
      PISGAH FOREST 1N, NC MAX          8.9      10.8     14.1     20.4     24.5     26.8     28.4     28.3     25.4     20.8     15.3     9.8
      PISGAH FOREST 1N, NC MIN          -4.5     -2.7     -0.2      5.2      9.5     13.2     15.4     15.1     12.0     5.3     0.0     -3.8
      CAESARS HEAD, S.C.  MAX          6.9      8.9     11.9     18.3     22.1     24.4     26.0     25.8     22.6     17.8     12.6     7.6
      CAESARS HEAD, S.C.  MIN          -2.1     -0.9     1.6      7.7     12.4     15.3     17.3     17.1     14.3     8.8     3.6     -1.1
      HENDERSONVILLE, NC MAX          8.8     11.2     14.3     21.2     25.2     27.6     29.1     29.0     25.7     20.3     14.7     9.9
      HENDERSONVILLE, NC MIN          -4.1     -2.5      .2        5.6      9.9     13.5     16.1     15.4     12.2     5.4     .5     -3.2
      WAYNESVILLE 1E, NC MAX          8.4     10.8     13.7     20.2     23.8     26.3     27.7     27.7     24.9     20.0     14.5     9.3
      WAYNESVILLE 1E, NC MIN          -4.3     -2.3      .2        5.6      9.2     12.8     15.1     14.4     11.3     4.9     .1     -3.4
      CULLOWHEE, NC        MAX          10.2     12.3     15.3     21.6     25.6     27.8     29.4     29.4     27.0     22.2     16.5     10.7
      CULLOWHEE, NC        MIN          -4.0     -1.9      .4        5.5      9.7     13.8     16.4     15.9     12.6     5.7     -0.1     -3.3
      HIGHLANDS 2S, NC     MAX          7.0      8.7     11.4     17.8     21.5     23.3     24.9     24.9     22.0     17.4     12.6     7.7
      HIGHLANDS 2S, NC     MIN          -2.7     -1.2     0.9      6.3     10.8     13.9     15.8     15.7     13.3     7.0     2.3     -1.9
  
```


Figure 2. Sample output from program MAT

```

11 4. 11. 15. 9. / 5. 10. 13. 9. / 6. 15. 20. 10. / 6. 12. 16. 12. / 10. 14. 16. 6. /
16 1. 7. 11. 4. / 1. 5. 8. 4. / 3. 7. 9. 0. / -4. 2. 5. -4. / -8. -2. 1. -6. /
21 -10. -3. 0. -6. / -9. -5. -2. -9. / -13. -4. 1. -6. / -9. -3. 0. -7. / -10. -1. 4. -2. /
26 -6. 6. 12. 4. / 0. 6. 9. 5. / 2. 8. 12. 6. / 4. 8. 10. 6. / 5. 6. 7. 5. /
31 4. 8. 11. 4. /

MAT FOR: AREA=03443000-MAT DATE=02/1960 UNITS=DEGC
DAY
1 0. 9. 13. 4. / 0. 9. 15. 5. / 0. 7. 11. 3. / -1. 2. 3. 2. / 1. 5. 7. 4. /
6 3. 7. 9. 1. / -3. 3. 7. -2. / -7. 4. 11. 5. / 2. 7. 11. 9. / 8. 10. 11. 5. /
11 2. 8. 11. 0. / -5. 3. 8. 1. / -2. 3. 6. -3. / -8. -3. -1. -9. / -13. -2. 4. -2. /
16 -5. 2. 7. 2. / -1. 6. 9. 3. / 0. 5. 7. -2. / -6. -1. 2. -5. / -9. 0. 6. 1. /
21 -1. 2. 5. 1. / -1. 3. 6. -3. / -7. 3. 9. 0. / -3. 5. 10. 5. / 2. 6. 8. 0. /
26 -3. 3. 6. -3. / -7. 0. 5. 1. / -1. 5. 8. 1. / -2. 5. 8. -2. /

MAT FOR: AREA=03443000-MAT DATE=03/1960 UNITS=DEGC
DAY
1 -7. -1. 3. -3. / -7. -1. 2. -4. / -6. -1. 2. -6. / -10. -4. -1. -12. / -16. -9. -5. -11. /
6 -15. -6. -1. -6. / -9. -3. 1. -8. / -12. -3. 2. -4. / -7. -3. 0. -5. / -7. 0. 5. -2. /
11 -5. 1. 4. -4. / -8. -3. -1. -8. / -12. -2. 4. -5. / -10. 0. 6. 1. / -2. 1. 3. 0. /
16 -1. 1. 2. -1. / -2. 6. 10. 2. / -1. 5. 8. -1. / -6. 2. 7. 0. / -4. 1. 3. -4. /
21 -8. -2. 2. -1. / -3. 5. 9. -2. / -7. 2. 8. 2. / -1. 8. 14. 2. / -3. 5. 11. 4. /
26 1. 10. 15. 5. / 0. 11. 18. 10. / 6. 15. 20. 12. / 9. 13. 17. 13. / 11. 15. 16. 8. /
31 5. 13. 17. 8. /

MAT FOR: AREA=03443000-MAT DATE=04/1960 UNITS=DEGC
DAY
1 4. 13. 19. 12. / 8. 14. 18. 13. / 11. 14. 16. 13. / 12. 14. 15. 6. / 3. 9. 12. 4. /
6 -1. 10. 17. 11. / 8. 16. 21. 9. / 4. 13. 19. 11. / 7. 13. 16. 4. / -2. 6. 10. 0. /
11 -4. 8. 15. 8. / 4. 16. 23. 12. / 7. 18. 24. 14. / 8. 18. 23. 13. / 9. 16. 21. 13. /
16 9. 18. 23. 14. / 9. 18. 23. 13. / 9. 15. 19. 7. / 2. 12. 18. 10. / 7. 14. 19. 13. /
21 10. 16. 19. 12. / 9. 19. 25. 15. / 10. 21. 27. 16. / 11. 21. 27. 17. / 12. 22. 27. 17. /
26 12. 20. 25. 16. / 11. 17. 21. 13. / 10. 15. 18. 9. / 5. 13. 18. 12. / 9. 15. 18. 14. /

MAT FOR: AREA=03443000-MAT DATE=05/1960 UNITS=DEGC
DAY
1 12. 16. 19. 8. / 3. 11. 15. 8. / 5. 14. 18. 9. / 5. 14. 20. 10. / 6. 13. 18. 11. /
6 8. 14. 18. 13. / 11. 15. 17. 9. / 5. 11. 14. 6. / 2. 11. 16. 7. / 3. 11. 16. 8. /
11 4. 10. 14. 7. / 4. 7. 8. 3. / 0. 9. 14. 6. / 2. 13. 20. 11. / 7. 18. 24. 14. /
16 10. 20. 26. 16. / 12. 22. 28. 19. / 14. 23. 28. 19. / 14. 21. 25. 17. / 13. 20. 25. 19. /
21 16. 22. 26. 16. / 11. 21. 27. 16. / 11. 20. 26. 17. / 12. 23. 29. 18. / 14. 22. 27. 18. /
26 13. 22. 27. 18. / 14. 19. 22. 14. / 10. 17. 22. 15. / 12. 20. 25. 16. / 12. 21. 26. 16. /
31 12. 20. 25. 15. /

MAT FOR: AREA=03443000-MAT DATE=06/1960 UNITS=DEGC
DAY
1 11. 19. 25. 17. / 13. 20. 24. 17. / 13. 20. 24. 19. / 16. 21. 24. 18. / 15. 21. 24. 18. /
6 15. 22. 26. 19. / 15. 21. 25. 19. / 16. 19. 22. 16. / 13. 19. 22. 15. / 11. 18. 22. 16. /
11 13. 20. 25. 19. / 16. 24. 28. 21. / 17. 23. 27. 20. / 17. 22. 26. 17. / 14. 21. 26. 16. /
16 11. 21. 28. 20. / 17. 23. 26. 18. / 14. 22. 27. 18. / 14. 23. 28. 21. / 17. 24. 28. 21. /
21 17. 22. 25. 19. / 16. 22. 25. 19. / 16. 22. 26. 21. / 18. 24. 28. 21. / 17. 23. 26. 18. /
26 14. 20. 23. 17. / 14. 20. 24. 18. / 15. 19. 22. 19. / 17. 23. 27. 20. / 17. 24. 28. 21. /

MAT FOR: AREA=03443000-MAT DATE=07/1960 UNITS=DEGC
DAY
1 18. 25. 29. 23. / 20. 26. 30. 22. / 18. 25. 30. 21. / 17. 23. 27. 20. / 17. 23. 27. 21. /
6 18. 21. 23. 18. / 16. 21. 24. 19. / 16. 21. 25. 20. / 17. 22. 24. 19. / 17. 21. 23. 19. /
11 17. 22. 25. 19. / 16. 22. 26. 20. / 17. 23. 27. 21. / 18. 24. 27. 19. / 15. 21. 25. 20. /
16 17. 22. 24. 18. / 15. 22. 26. 19. / 16. 22. 26. 19. / 16. 23. 27. 21. / 18. 24. 28. 20. /
21 16. 23. 27. 21. / 18. 24. 28. 21. / 18. 23. 27. 20. / 17. 23. 27. 21. / 18. 24. 28. 22. /
26 19. 24. 27. 21. / 19. 23. 26. 20. / 17. 22. 25. 20. / 17. 23. 26. 18. / 15. 22. 27. 20. /
31 16. 24. 28. 21. /

MAT FOR: AREA=03443000-MAT DATE=08/1960 UNITS=DEGC
DAY
1 17. 24. 28. 21. / 18. 24. 28. 22. / 19. 25. 28. 22. / 19. 25. 28. 22. / 19. 24. 27. 20. /
6 17. 24. 27. 21. / 19. 23. 26. 21. / 18. 24. 27. 21. / 18. 25. 28. 21. / 18. 24. 27. 21. /
11 18. 21. 24. 19. / 18. 21. 23. 19. / 18. 22. 25. 19. / 17. 23. 27. 20. / 17. 23. 27. 20. /
16 16. 23. 27. 20. / 17. 22. 25. 19. / 16. 21. 24. 19. / 17. 22. 25. 19. / 17. 22. 26. 20. /
21 18. 23. 26. 20. / 18. 23. 26. 21. / 18. 23. 26. 19. / 16. 22. 26. 19. / 16. 20. 23. 17. /
26 15. 21. 25. 20. / 18. 23. 26. 20. / 17. 24. 27. 21. / 18. 24. 27. 21. / 17. 25. 29. 22. /
31 19. 24. 27. 21. /

MAT FOR: AREA=03443000-MAT DATE=09/1960 UNITS=DEGC
DAY
1 18. 23. 26. 20. / 17. 23. 27. 20. / 16. 23. 27. 21. / 18. 24. 27. 20. / 17. 24. 28. 21. /
6 18. 25. 29. 22. / 19. 23. 25. 20. / 18. 22. 25. 20. / 18. 23. 26. 20. / 18. 23. 26. 20. /
11 17. 21. 24. 18. / 16. 20. 22. 14. / 11. 18. 21. 12. / 7. 14. 18. 13. / 10. 16. 19. 16. /
16 15. 18. 20. 16. / 14. 16. 18. 17. / 16. 21. 23. 19. / 17. 23. 26. 18. / 15. 22. 26. 18. /
21 14. 21. 25. 19. / 16. 19. 21. 16. / 14. 19. 22. 15. / 12. 18. 21. 15. / 12. 17. 20. 13. /
26 10. 16. 20. 14. / 11. 15. 17. 14. / 12. 15. 17. 15. / 13. 18. 20. 16. / 14. 20. 23. 16. /

MAT FOR: AREA=03443000-MAT DATE=10/1960 UNITS=DEGC
DAY
1 12. 19. 23. 17. / 15. 19. 21. 15. / 13. 20. 24. 16. / 12. 19. 23. 15. / 12. 17. 20. 16. /
6 14. 19. 22. 18. / 16. 18. 19. 16. / 14. 17. 18. 15. / 13. 18. 21. 16. / 13. 19. 22. 14. /
11 11. 18. 22. 13. / 9. 18. 23. 15. / 12. 19. 23. 15. / 12. 18. 22. 15. / 12. 17. 20. 14. /
16 12. 18. 22. 15. / 11. 18. 21. 13. / 10. 17. 21. 13. / 10. 15. 18. 12. / 9. 13. 16. 6. /
21 1. 8. 13. 6. / 2. 10. 14. 8. / 6. 14. 19. 10. / 6. 14. 18. 6. / 0. 10. 16. 7. /
26 3. 9. 12. 8. / 6. 11. 13. 8. / 6. 11. 14. 8. / 5. 12. 17. 10. / 7. 13. 17. 10. /
31 7. 11. 13. 7. /

MAT FOR: AREA=03443000-MAT DATE=11/1960 UNITS=DEGC
DAY

```

Figure 2. Sample output from program MAT

```

1 4. 11. 15. 6. / 2. 12. 18. 8. / 3. 11. 15. 4. / -1. 9. 15. 4. / -1. 11. 18. 5. /
6 -1. 7. 12. 2. / -3. 4. 8. -2. / -6. 2. 7. 2. / -1. 6. 10. 7. / 5. 10. 13. 4. /
11 0. 5. 8. 1. / -2. 8. 14. 4. / -1. 8. 14. 4. / 0. 11. 18. 7. / 3. 12. 17. 10. /
16 6. 12. 16. 9. / 6. 12. 15. 6. / 2. 9. 13. 4. / 0. 9. 14. 2. / -3. 7. 14. 6. /
21 2. 11. 16. 6. / 1. 11. 17. 12. / 9. 12. 14. 9. / 7. 10. 12. 7. / 5. 11. 14. 7. /
26 4. 11. 15. 8. / 4. 12. 16. 9. / 5. 13. 19. 13. / 10. 14. 16. 2. / -4. 4. 9. -1. /

MAT FOR: AREA=03443000-MAT DATE=12/1960 UNITS=DEGC
DAY
1 -6. 0. 3. -5. / -9. 1. 7. -3. / -7. 5. 12. 1. / -4. 8. 15. 5. / 0. 10. 16. 6. /
6 2. 11. 17. 7. / 3. 10. 14. 5. / 1. 7. 10. -1. / -6. 2. 6. -3. / -7. 4. 10. 3. /
11 0. 4. 7. -2. / -7. 1. 5. -6. / -11. -6. -3. -8. / -11. 2. 9. 2. / -1. 3. 5. -1. /
16 -4. 1. 3. -5. / -9. 0. 6. -4. / -9. 0. 6. -2. / -6. 2. 7. 0. / -3. 3. 6. -2. /
21 -6. 0. 2. -10. / -16. -9. -5. -10. / -13. -6. -1. -5. / -7. -2. 1. -4. / -6. 3. 8. 0. /
26 -3. 5. 10. 2. / -1. 5. 9. 2. / -1. 3. 6. 3. / 1. 6. 9. 4. / 2. 7. 10. 2. /
31 -1. 3. 6. 3. /

MAT FOR: AREA=03443000-MAT DATE=01/1961 UNITS=DEGC
DAY
1 1. 6. 9. 1. / -3. 4. 8. -2. / -6. 0. 4. -4. / -8. 2. 9. 0. / -5. 4. 10. 1. /
6 -4. 5. 11. 1. / -3. 5. 10. 3. / 0. 4. 7. -3. / -8. 1. 6. -3. / -8. 2. 8. -1. /
11 -5. 5. 12. 1. / -4. 7. 14. 2. / -4. 5. 10. 6. / 4. 7. 9. 6. / 5. 7. 8. 4. /
16 2. 4. 6. 0. / -3. 5. 10. 1. / -3. 6. 11. 3. / -1. 4. 7. -3. / -8. -2. 2. -6. /
21 -10. -6. -4. -13. / -17. -8. -2. -5. / -6. 2. 6. 0. / -2. 5. 10. -4. / -11. -3. 1. -5. /
26 -8. -3. 0. -6. / -8. -4. -2. -8. / -11. -5. -1. -6. / -8. 0. 4. -5. / -9. 0. 5. -2. /
31 -6. 5. 11. 1. /

MAT FOR: AREA=03443000-MAT DATE=02/1961 UNITS=DEGC
DAY
1 -3. 5. 10. 0. / -5. 3. 8. -2. / -6. -3. -1. -6. / -9. -1. 4. -4. / -8. 0. 6. -3. /
6 -6. -1. 2. -2. / -4. 0. 3. -1. / -2. 3. 6. 1. / -2. 2. 4. -2. / -5. 3. 8. 0. /
11 -3. 5. 11. 4. / 1. 12. 19. 7. / 2. 10. 16. 9. / 5. 13. 18. 10. / 6. 12. 16. 7. /
16 2. 13. 19. 8. / 3. 11. 16. 11. / 8. 11. 13. 11. / 10. 12. 13. 9. / 7. 10. 12. 7. /
21 5. 8. 11. 7. / 6. 10. 12. 11. / 10. 16. 18. 9. / 4. 12. 17. 5. / -1. 9. 15. 3. /
26 -2. 8. 14. 5. / 1. 11. 17. 9. / 5. 14. 19. 8. /

MAT FOR: AREA=03443000-MAT DATE=03/1961 UNITS=DEGC
DAY
1 3. 12. 17. 5. / -1. 7. 12. 4. / 0. 10. 16. 10. / 7. 15. 19. 14. / 12. 18. 21. 16. /
6 14. 17. 19. 15. / 13. 16. 18. 15. / 13. 17. 18. 4. / -2. 7. 13. 1. / -4. 4. 10. 2. /
11 -2. 8. 14. 6. / 3. 11. 16. 8. / 4. 11. 15. 9. / 6. 11. 14. 4. / -1. 11. 18. 10. /
16 7. 12. 15. 4. / -2. 8. 13. 4. / -1. 5. 8. 3. / 1. 13. 20. 9. / 4. 12. 16. 8. /
21 4. 8. 11. 5. / 2. 7. 10. 5. / 3. 8. 11. 4. / 0. 6. 9. 2. / -1. 10. 16. 6. /
26 1. 12. 19. 11. / 7. 14. 19. 12. / 8. 13. 16. 8. / 5. 14. 20. 10. / 5. 13. 18. 12. /
31 9. 13. 15. 9. /

MAT FOR: AREA=03443000-MAT DATE=04/1961 UNITS=DEGC
DAY
1 6. 9. 11. 3. / -1. 6. 11. 3. / 0. 8. 13. 5. / 2. 6. 9. 1. / -2. 9. 16. 8. /
6 4. 11. 15. 5. / 0. 8. 13. 3. / -2. 7. 13. 7. / 4. 8. 11. 6. / 4. 9. 12. 2. /
11 -2. 9. 15. 8. / 4. 10. 13. 7. / 4. 8. 11. 2. / -2. 10. 17. 10. / 6. 12. 15. 6. /
16 2. 9. 12. 5. / 2. 9. 13. 7. / 4. 9. 12. 4. / 0. 9. 15. 5. / 0. 10. 16. 8. /
21 4. 12. 16. 11. / 8. 17. 22. 15. / 11. 20. 26. 18. / 15. 22. 26. 18. / 14. 20. 24. 18. /
26 15. 20. 23. 12. / 7. 14. 18. 9. / 5. 15. 20. 8. / 2. 11. 16. 6. / 2. 10. 14. 9. /

MAT FOR: AREA=03443000-MAT DATE=05/1961 UNITS=DEGC
DAY
1 7. 14. 18. 11. / 8. 14. 16. 6. / 2. 12. 18. 10. / 6. 14. 19. 12. / 9. 13. 17. 11. /
6 9. 14. 18. 15. / 14. 20. 23. 18. / 15. 21. 24. 17. / 14. 18. 21. 13. / 10. 13. 15. 12. /
11 11. 16. 19. 13. / 10. 12. 14. 11. / 10. 17. 21. 14. / 11. 19. 24. 17. / 13. 19. 22. 15. /
16 12. 19. 23. 13. / 9. 17. 22. 17. / 14. 18. 20. 15. / 12. 19. 23. 14. / 10. 18. 22. 15. /
21 11. 17. 21. 12. / 8. 15. 19. 13. / 10. 15. 18. 9. / 5. 15. 21. 12. / 8. 15. 19. 13. /
26 11. 15. 17. 6. / 1. 10. 16. 5. / 1. 13. 20. 10. / 5. 16. 23. 14. / 10. 18. 23. 13. /
31 8. 18. 24. 15. /

MAT FOR: AREA=03443000-MAT DATE=06/1961 UNITS=DEGC
DAY
1 11. 21. 27. 18. / 13. 22. 28. 18. / 14. 23. 28. 19. / 16. 21. 25. 17. / 14. 20. 23. 18. /
6 15. 22. 26. 18. / 15. 22. 26. 19. / 15. 22. 26. 19. / 16. 22. 25. 20. / 17. 23. 26. 19. /
11 16. 23. 27. 20. / 17. 23. 27. 20. / 16. 23. 27. 20. / 16. 23. 28. 21. / 18. 23. 25. 14. /
16 9. 16. 21. 14. / 11. 16. 18. 13. / 10. 17. 20. 12. / 7. 17. 23. 15. / 11. 17. 21. 16. /
21 14. 18. 21. 17. / 15. 21. 24. 16. / 13. 20. 24. 16. / 12. 19. 24. 17. / 13. 21. 25. 17. /
26 14. 19. 23. 17. / 15. 19. 22. 16. / 14. 20. 23. 17. / 14. 21. 24. 18. / 14. 22. 27. 19. /

MAT FOR: AREA=03443000-MAT DATE=07/1961 UNITS=DEGC
DAY
1 16. 23. 27. 18. / 14. 22. 27. 19. / 16. 22. 26. 18. / 14. 22. 27. 18. / 14. 23. 28. 20. /
6 16. 23. 27. 21. / 18. 21. 23. 18. / 16. 22. 25. 17. / 13. 19. 22. 13. / 9. 18. 23. 14. /
11 10. 17. 21. 16. / 13. 18. 21. 17. / 15. 21. 24. 18. / 15. 22. 27. 20. / 16. 23. 26. 19. /
16 16. 22. 26. 19. / 16. 22. 26. 20. / 17. 21. 24. 19. / 16. 22. 26. 18. / 15. 23. 28. 21. /
21 18. 24. 27. 20. / 17. 23. 27. 20. / 17. 23. 27. 21. / 18. 24. 27. 20. / 17. 24. 28. 21. /
26 17. 24. 27. 20. / 17. 24. 27. 20. / 17. 24. 28. 20. / 17. 24. 29. 21. / 18. 24. 28. 21. /
31 17. 25. 29. 22. /

MAT FOR: AREA=03443000-MAT DATE=08/1961 UNITS=DEGC
DAY
1 19. 25. 29. 22. / 18. 25. 28. 21. / 18. 24. 28. 22. / 19. 22. 25. 19. / 17. 23. 27. 20. /
6 17. 23. 27. 19. / 16. 22. 25. 19. / 16. 22. 25. 19. / 17. 22. 25. 19. / 17. 22. 26. 20. /
11 18. 24. 28. 21. / 17. 24. 28. 21. / 18. 22. 25. 17. / 14. 20. 23. 17. / 13. 19. 23. 16. /
16 12. 21. 26. 18. / 15. 22. 26. 18. / 15. 21. 25. 18. / 15. 20. 23. 18. / 15. 18. 21. 15. /
21 12. 19. 24. 17. / 14. 20. 24. 17. / 14. 20. 24. 19. / 16. 19. 21. 17. / 16. 19. 22. 18. /
26 17. 22. 24. 19. / 17. 22. 25. 21. / 19. 24. 27. 21. / 19. 25. 28. 21. / 18. 24. 27. 21. /
31 18. 23. 26. 21. /

```

Figure 2. Sample output from program MAT

MAT FOR: AREA=03443000-MAT DATE=09/1961 UNITS=DEGC

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31				
1	18.	23.	25.	20.	/	18.	24.	27.	20.	/	17.	24.	28.	21.	/	18.	24.	28.	21.	/	18.	24.	27.	21.	/	18.	24.	27.	21.	/	18.	24.	27.	21.	/
6	18.	23.	26.	21.	/	18.	24.	27.	20.	/	17.	23.	26.	20.	/	18.	22.	25.	19.	/	16.	22.	26.	21.	/	16.	22.	26.	21.	/	16.	22.	26.	21.	/
11	18.	23.	25.	20.	/	18.	23.	26.	20.	/	17.	22.	25.	19.	/	16.	20.	22.	14.	/	11.	16.	19.	9.	/	11.	16.	19.	9.	/	11.	16.	19.	9.	/
16	5.	13.	18.	10.	/	6.	13.	17.	10.	/	7.	13.	17.	14.	/	13.	16.	18.	16.	/	15.	21.	24.	16.	/	15.	21.	24.	16.	/	15.	21.	24.	16.	/
21	13.	20.	23.	16.	/	12.	21.	26.	19.	/	16.	23.	27.	21.	/	17.	24.	27.	19.	/	15.	23.	28.	19.	/	15.	23.	28.	19.	/	15.	23.	28.	19.	/
26	16.	22.	26.	16.	/	12.	19.	24.	15.	/	10.	19.	23.	14.	/	10.	18.	22.	15.	/	11.	17.	21.	14.	/	11.	17.	21.	14.	/	11.	17.	21.	14.	/

MAT SUBAREA SUMMARY FOR 'FRENCH BROAD,BLANTYE' (ID: 03443000-MAT) PERIOD OF RECORD 10/1959 TO 9/1961

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEARLY AVERAGE
1959	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	-999.0	14.2	6.8	4.4	-999.0
1960	3.5	2.5	1.0	13.4	15.0	20.1	21.6	21.8	18.7	14.0	7.7	1.0	11.7
1961	.5	6.0	9.4	9.5	14.4	19.0	20.7	20.7	19.2	-999.0	-999.0	-999.0	-999.0
MONTHLY AVERAGE	2.0	4.3	5.2	11.4	14.7	19.6	21.1	21.2	19.0	14.1	7.2	2.7	TOTAL AREA 11.9

CONSISTENCY CHECK FOR MAT PROGRAM

STATIONS WITH POSITIVE RUN NUMBERS CONSTITUTE GROUP BASE AND ARE PLOTTED AGAINST THE OTHER STATIONS IN THE GROUP BASE

STATIONS WITH NEGATIVE RUN NUMBERS ARE PLOTTED AGAINST THE GROUP BASE

STATIONS IN GROUP 1

STA. RUN NO.	STATION NAME
1	BREVARD, NC
2	PISGAH FOREST 1N, NC
3	CAESARS HEAD, S.C.
4	HENDERSONVILLE, NC
5	WAYNESVILLE 1E, NC
6	CULLOWHEE, NC
7	HIGHLANDS 2S, NC

DEVIATION OF STATION ACCUMULATED MEAN FROM GROUP ACCUMULATED MEAN-----GROUP=1 TEMP=MAX

STA. RUN NO.	STA. PLOT NO.	STATION NAME
1	1	BREVARD, NC
2	2	PISGAH FOREST 1N, NC
3	3	CAESARS HEAD, S.C.
4	4	HENDERSONVILLE, NC
5	5	WAYNESVILLE 1E, NC

ASTERISKS INDICATE ZERO DEVIATION UNITS ARE DEGREES C

MO/YR	-78.0	-66.0	-54.0	-42.0	-30.0	-18.0	-6.0	6.0	18.0	30.0	42.0
10/593	52	.	.	.
11/59	3	5	21	.	.
12/59	3	54	2	1	.
1/60	3	5*4	2	1	.
2/60	3	.	5*4	2	1	.
3/60	3	.	5*4	.2	1	.
4/60	3	.	5*	4	2	1
5/60	3	.	5*	4	2	1
6/60	3	.	5*	4	2	1
7/60	3	.	5*	4	2	1
8/60	3	.	5*	4	2	1
9/60	3	.	5*	4	2	1
10/60	3	.	.	5*	4	2	1
11/60	3	.	.	5*	4	2	1
12/60	3	.	.	5*	4	2	1
1/61	3	.	.	5*	4	2	1
2/61	3	.	.	5*	4	2	1
3/61	3	.	.	5*	4	2	1
4/61	3	.	.	5*	4	2	1
5/61	3	.	.	5*	4	2	1
6/61	3	.	.	5*	4	2	1
7/61	3	.	.	5*	4	2	1
8/61	3	.	.	5*	4	2	1
9/61	3	.	.	5*	4	2	1

DEVIATION OF STATION ACCUMULATED MEAN FROM GROUP ACCUMULATED MEAN-----GROUP=1 TEMP=MIN

STA. RUN NO.	STA. PLOT NO.	STATION NAME
1	1	BREVARD, NC
2	2	PISGAH FOREST 1N, NC
3	3	CAESARS HEAD, S.C.
4	4	HENDERSONVILLE, NC
5	5	WAYNESVILLE 1E, NC

ASTERISKS INDICATE ZERO DEVIATION UNITS ARE DEGREES C

MO/YR	-32.2	-25.2	-18.2	-11.2	-4.2	2.8	9.8	16.8	23.8	30.8	37.8
10/59	4523	.	.	.	.	.
11/59	45	2	.3	.	.	.
12/59	54	2*	3	.	.	.
1/60	5	142*	3	.	.	.
2/60	5	142*	3	.	.	.
3/60	5	1	4*	3	.	.
4/60	5	1	42*	3	.	.
5/60	5	1	24*	3	.	.

Figure 2. Sample output from program MAT

```

6/60 . . . . . 5 1 . 24 * . . . . 3 . . . . .
7/60 . . . . . 5 1 . 2 4 * . . . . 3 . . . . .
8/60 . . . . . 5 1 . 2 4 * . . . . 3 . . . . .
9/60 . . . . . 5 1 . 2 4 * . . . . 3 . . . . .
10/60 . . . . . 5 1 . 2 4 * . . . . 3 . . . . .
11/60 . . . . . 5 1 . 2 4 * . . . . 3 . . . . .
12/60 . . . . . 5 1 . 2 4 * . . . . 3 . . . . .
1/61 . . . . . 5 1 . 2 4 * . . . . 3 . . . . .
2/61 . . . . . 5 1 . 2 4 * . . . . 3 . . . . .
3/61 . . . . . 5 1 . 2 4 * . . . . 3 . . . . .
4/61 . . . . . 5 1 . 2 4 * . . . . 3 . . . . .
5/61 . . . . . 5 1 . 2 4 * . . . . 3 . . . . .
6/61 . . . . . 5 1 . 2 4 * . . . . 3 . . . . .
7/61 . . . . . 5 1 . 2 4 * . . . . 3 . . . . .
8/61 . . . . . 5 1 . 2 4 * . . . . 3 . . . . .
9/61 . . . . . 5 1 . 2 4 * . . . . 3 . . . . .
    
```

DEVIATION OF STATION ACCUMULATED MEAN FROM GROUP ACCUMULATED MEAN-----GROUP=1 TEMP=MAX

STA. RUN NO.	STA. PLOT NO.	STATION NAME
6	1	CULLOWHEE, NC
7	2	HIGHLANDS 2S, NC

ASTERISKS INDICATE ZERO DEVIATION UNITS ARE DEGREES C

MO/YR	-79.3	-66.3	-53.3	-40.3	-27.3	-14.3	-1.3	11.7	24.7	37.7	50.7
10/59	2.* 1	.	.	.	.
11/59	2	1	.	.	.
12/59	2	1	.	.	.
1/60	2	1	.	.	.
2/60	2	1	.	.	.
3/60	2	1	.	.	.
4/60	2	1	.	.	.
5/60	2	1	.	.	.
6/60	2	1	.	.	.
7/60	2	1	.	.	.
8/60	2	1	.	.	.
9/60	2	1	.	.	.
10/60	2	1	.	.	.
11/60	2	1	.	.	.
12/60	2	1	.	.	.
1/61	2	1	.	.	.
2/61	2	1	.	.	.
3/61	2	1	.	.	.
4/61	2	1	.	.	.
5/61	2	1	.	.	.
6/61	2	1	.	.	.
7/61	2	1	.	.	.
8/61	2	1	.	.	.
9/61	2	1	.	.	.

DEVIATION OF STATION ACCUMULATED MEAN FROM GROUP ACCUMULATED MEAN-----GROUP=1 TEMP=MIN

STA. RUN NO.	STA. PLOT NO.	STATION NAME
6	1	CULLOWHEE, NC
7	2	HIGHLANDS 2S, NC

ASTERISKS INDICATE ZERO DEVIATION UNITS ARE DEGREES C

MO/YR	-18.0	-15.0	-12.0	-9.0	-6.0	-3.0	.0	3.0	6.0	9.0	12.0
10/59	2 * 1	.	.	.	.
11/59	2	2	.	.	.
12/59	1*	2	.	.	.
1/60	1*	2	.	.	.
2/60	* 1	2	.	.	.
3/60	* 1	2	.	.	.
4/60	1 *	2	.	.	.
5/60	1 *	2	.	.	.
6/60	1 *	2	.	.	.
7/60	1*	2	.	.	.
8/60	1	2	.	.	.
9/60	* 1	2	.	.	.
10/60	* 1	2	.	.	.
11/60	1	2	.	.	.
12/60	1	2	.	.	.
1/61	*	2	.	.	.
2/61	*	2	.	.	.
3/61	1	2	.	.	.
4/61	1	2	.	.	.
5/61	1	2	.	.	.
6/61	1	2	.	.	.
7/61	1	2	.	.	.
8/611	2	.	.	.
9/61	1.	2	.	.	.

```

*****
COMPLETION CODE = 0
CPU TIME USED = 0 MINUTES, 5 SECONDS
CLOCK TIME USED = 0 MINUTES, 6 SECONDS
*****
    
```

[[Top](#)]