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NASA CR·

147744

TECHNICAL MEMORANDUM

ACCURACY OF SATELLITE DERIVED RADIOMETRIC DATA
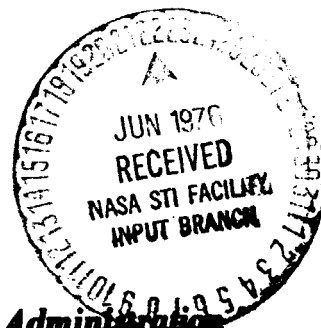
Job Order 92-105

Prepared By

Life Sciences Applications Department
Lockheed Electronics Company, Inc.
Aerospace Systems Division
Houston, Texas

Contract NAS 9-12200

For

HEALTH APPLICATIONS GROUP
LIFE SCIENCES DIRECTORATE

National Aeronautics and Space Administration

LYNDON B. JOHNSON SPACE CENTER

Houston, Texas

April 1976

LEC-8545

TECHNICAL REPORT INDEX/ABSTRACT
(See instructions on reverse side.)

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13. ABSTRACT

Plotting of the mean errors of daily mean air temperature estimates suggests that water vapor is a possible factor in the high standard errors of estimate obtained.

14. SUBJECT TERMS

Water Vapor	Air Temperature	
Meteorological Sat.		
NOAA-4 Satellite		

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TECHNICAL MEMORANDUM

ACCURACY OF SATELLITE DERIVED RADIOMETRIC DATA
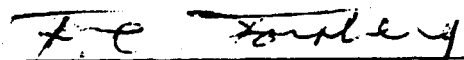
By

Willy V. Abeele

Approved By

LEC   NASA

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LYNDON B. JOHNSON SPACE CENTER
HOUSTON, TEXAS

April 1976

CONTENTS

INTRODUCTION

A processing system, the Screwworm Eradication Data System (SEDS),
was designed to provide space technology techniques to support an
eradication program. Among the important environmental factors
affecting screwworm population dynamics, daily mean air tempera-
tures (DMAT) play a dominant role.

The SEDS performance was investigated over a period running from
the 88th to the 164th Julian day, 1975. In order to do so, the
estimated DMAT was plotted against ground truth data. The mean
error (DMAT-TMET) and the standard error of estimate were calcu-
lated for the overall SEDS performance and also for each method
used to obtain it. These methods are the ones used when (1) day
radiometric data only is available, (2) night radiometric data
only is available, (3) both radiometric data are available, and
(4) missing radiometric data is filled in with ground truth data.

MEAN ERROR AND STANDARD ERROR OF ESTIMATE

The mean error reflects the mean deviation that the DMAT obtains
over a given period of time vis-a-vis the ground truth tempera-
ture. This deviation can build up to the point that the esti-
mated DMAT is not representative of the actual temperature
anymore. As a result of this shift, the DMAT coefficient will
have to be re-evaluated. This is fairly simple to do by means
of multiple regression analyses, using the radiometric tempera-
ture above the stations at satellite passage as an independent
variable and the recorded ground truth temperature at the
stations as the dependent variable.

In July 1975, regression studies performed at the Johnson Space
Center showed that the inclusion of altitude as a variable
improved the standard error of estimate considerably. Since

1

water vapor is the common atmospheric constituent whose concentration is most subject to variation, further improvements were suspected if a way could be found to include moisture as a variable instead of a constant correction. The day-to-day variations of recorded radiometric temperatures causes the DMAT estimates to fluctuate back and forth. This is recorded in the standard error of estimate and is much more difficult to control since it is governed by some presently unrecognized atmospheric parameters.

When the mean error of each individual station was plotted on a map (see appendix A), a definite general pattern developed. The drier areas were the ones showing the biggest positive errors, while the wetter areas showed the biggest negative errors. This pattern seems to be one more clue that the inclusion of a measurement of moisture in the atmosphere would contribute to day-to-day (or station-to-station) reliability of the DMAT estimates.

Since the standard error of estimate does not show any significant geographical pattern, it was decided to list the stations in order of increasing standard error of estimate for the overall SEDS performance instead of plotting them on a map (see appendix B).

If any of the stations included less than 30 data points, or if one of the methods used involved less than 5 data points, the resulting statistical data would have been completely meaningless. Indeed, some meaningful results might be misinterpreted by comparison. Consequently, it was decided not to plot such data on the map or list it. However, if that particular information is needed for whatever purpose, it is conveniently attached to each station's graph (see appendix C).

RESULTS

One of the four methods used to obtain the overall SEDS perform-
ance (where missing radiometric data is filled in with ground
truth data) had the lowest mean standard error of estimate. The
method using both radiometric data was next, followed by the one
using night radiometric data only. Finally, the method using day
radiometric data only had the highest mean standard error of
estimate, with the method using both radiometric data next, fol-
lowed by night radiometric data only. This seems to confirm
what had been discovered in previous studies.

No good correlation was found between standard error of estimates
using the four different methods. The highest one found was
between ground truth and night and amounted to 0.31. The lowest
one was found between night and day (0.15). This means that
for a certain station a high standard error of estimate for the
night radiometric data does not necessarily mean a high standard
error of estimate for the day radiometric data (or any other).
As pointed out before, standard error of estimates do not follow
any geographical pattern.

From the maps in appendix A, it is noted that the overall mean
error (DMAT-TMET) covers a 13.9°C range (from -11.5°C to +2.4°C)
with the highest positive errors in the arid areas, while the
highest negative errors were to be found in the humid tropics.
This leads to the conclusion that the action of moisture as an
atmospheric attenuator to the satellite observed spectral radi-
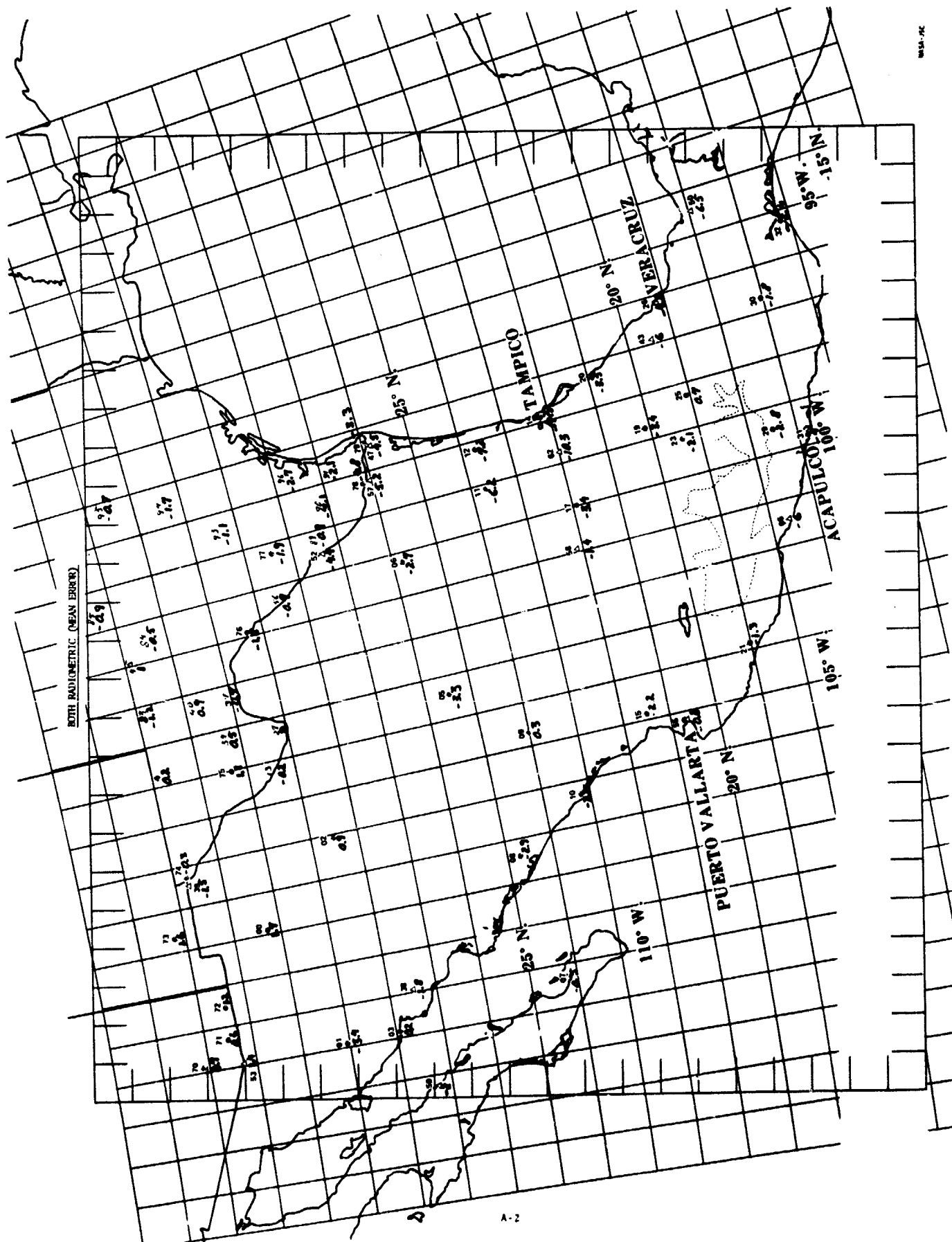ance is extremely important.

CONCLUSION

The ability to gather meteorological information has expanded
greatly with the advent of the satellites. Instrumentation
advances have made monitoring of total water vapor content in
the atmosphere possible. Water vapor and other atmospheric
constituents such as ozone and carbon dioxide will attenuate
the emitted radiation before it reaches the satellite sensor
system. Correcting for these atmospheric attenuations is a
major problem in measuring temperatures by way of remote sensing.
From the general pattern that develops on the mean error map,
it seems obvious that the inclusion of atmospheric moisture, as a
a variable in the computation of the DMAT by means of regression
analysis, could only improve the system.

REFERENCES

1. Abeele, W. V.: Water Vapor as an Atmospheric Attenuator
    to the Satellite Observed Spectral Radiance. LEC-8478,
    JSC-11163, 10 pages, April 1976.

2. Arp, G. K.; Forsberg, F. C.; Giddings, L. E.; and Phinney,D.:
    System Development of the Screwworm Eradication Data System
    (SEDS) Algorithm. LEC-7646, 50 pages, January 1976.

APPENDIX A

MEAN ERROR (°C) OF INDIVIDUAL STATIONS

BOTH RADIOMETRIC (MEAN ERROR)

VERACRUZ

TAMPICO

ACAPULCO

PUERTO VALLARTA

20° N.

25° N.

20° N.

25° N.

15° N.

95° W.

100° W.

105° W.

110° W.

A-2

NIGHT RADIOMETRIC (MEAN ERROR)

TAMPICO

VERACRUZ

ACAPULCO

PUERTO VALLARTA

25° N.

20° N.

15° N.

95° W.

100° W.

105° W.

110° W.

A-3

OVERALL MEAN ERROR (DMAT - TMET)

TAMPICO

VERACRUZ

ACAPULCO

PUERTO VALLARTA

25° N

20° N

15° N

25° N

20° N

110° W

105° W

100° W

95° W

DAY RADIOMETRIC (MAY 1300HR)

TAMPICO

VERACRUZ

ACAPULCO

PUERTO VALLARTA

25° N.

20° N.

25° N.

20° N.

15° N.

95° W.

100° W.

105° W.

110° W.

A-5

STATION PAIRING FOR ΔT STUDY

TAMPICO
VERACRUZ
ACAPULCO
PUERTO VALLARTA

25° N.
20° N.
15° N.
20° N.
25° N.

95° W.
100° W.
105° W.
110° W.

---- Low standard error of estimate
——— Low seasonal shift

APPENDIX B

REGRESSION ANALYSIS—TEMPERATURE DIFFERENCES

OF PAIRED STATIONS VS. TIME

REGRESSION ANALYSIS—TEMPERATURE DIFFERENCES OF PAIRED STATIONS VS. TIME

| TT_{con} TT_{sub} (30 Min)	Mean Error of Estimate	Standard Error of Estimate	Regression Equation Y =
97-96	-1.272	1.322	0.016X -3.334
84-76	-2.841	2.342	0.024X -5.891
84-83	0.424	1.638	-0.017X +2.602
84-85	1.029	1.357	0.003X +0.628
84-95	-0.023	2.378	-0.005X +0.578
70-72	1.833	2.141	0.035X -2.58
31-29	4.046	1.952	0.045X -1.577
31-30	4.491	2.218	0.049X -1.644
31-46	-2.339	1.651	0.003X -2.738
25-19	1.419	2.139	0.034X -2.951
25-23	-0.61	1.765	0.023X -3.563
12-14	1.171	1.685	0.007X +0.25
12-79	0.954	1.890	-0.026X +4.263
7-8	-2.200	2.296	0.001X -2.318
7-59	-0.903	2.819	-0.053X +5.829
1-38	0.908	1.785	0.022X -1.849
1-53	6.367	1.998	-0.023X +9.326
25-43	-2.928	1.948	0.018X -5.239
10-9	2.382	2.338	0.042X -2.902
77-93	2.487	1.550	-0.010X +3.691
77-96	-0.905	1.957	0.006X -1.697
75-83	-4.451	2.819	-0.008X -3.418
20-19	8.093	2.858	0.078X -1.796
20-26	-2.259	1.831	-0.010X -0.964
94-95	1.153	1.466	-0.026X +1.482
25-29	-4.28	1.612	-0.000X -4.268
25-30	-3.881	1.376	0.003X -4.319
10-8	-2.304	1.469	-0.003X -1.973
10-5	-2.696	2.909	0.019X -5.053
15-55	-2.516	1.744	-0.025X +0.651
10-15	1.513	2.206	0.058X -5.835
5-6	0.362	3.710	-0.042X +5.706
2-39	-1.267	3.600	-0.101X+11.523
2-75	5.333	2.826	-0.073X+14.542
17-62	-6.583	3.085	-0.019X -4.178
12-11	0.000	2.102	0.046X -5.923
77-76	0.951	2.138	-0.018X +3.205
21-55	2.188	1.693	-0.031X +6.213
3-59	-1.010	1.866	-0.011X +0.354
20-14	-0.221	1.868	-0.009X +0.909
26-43	5.858	2.622	0.081X -4.499
71-53	-0.086	1.496	0.011X -1.523
30-32	-5.377	1.940	0.006X -6.079
79-78	0.159	1.638	-0.011X +1.514
79-96	0.663	1.745	-0.028X +4.193
25-26	-8.788	2.262	-0.065X -0.604
93-84	1.312	2.467	-0.033X +5.474
75-76	-7.78	3.22	0.037X-12.975
9-55	-3.347	2.241	-0.009X -2.193

APPENDIX C

INDIVIDUAL STATION'S OVERALL SEDS PERFORMANCE

HERMOSILLO
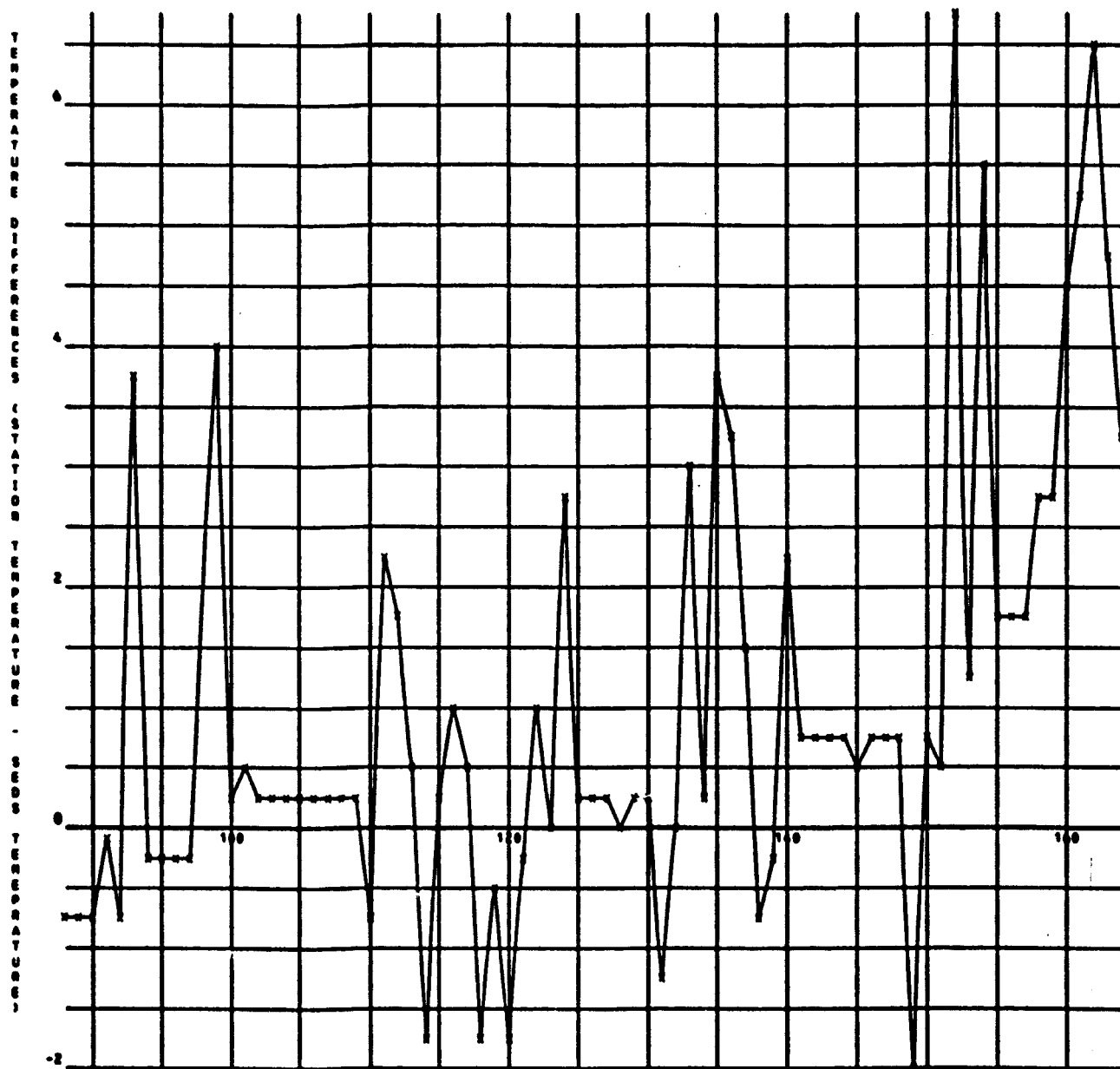
OVERALL SEDS PERFORMANCE FROM   JULIAN DAY   STATION 01   PAGE 3.
    MISSING DATA =   0
    BIAS ERROR = 1.002
    RMS ERROR ABOUT MEAN = 1.872
    SAMPLE SIZE =   76

NIGHT RADIOMETRIC ONLY
    BIAS ERROR = 1.042
    RMS ERROR ABOUT MEAN = 2.118
    SAMPLE SIZE =   22

GROUND TRUTH DATA ONLY
    BIAS ERROR =   .414
    RMS ERROR ABOUT MEAN =   .770
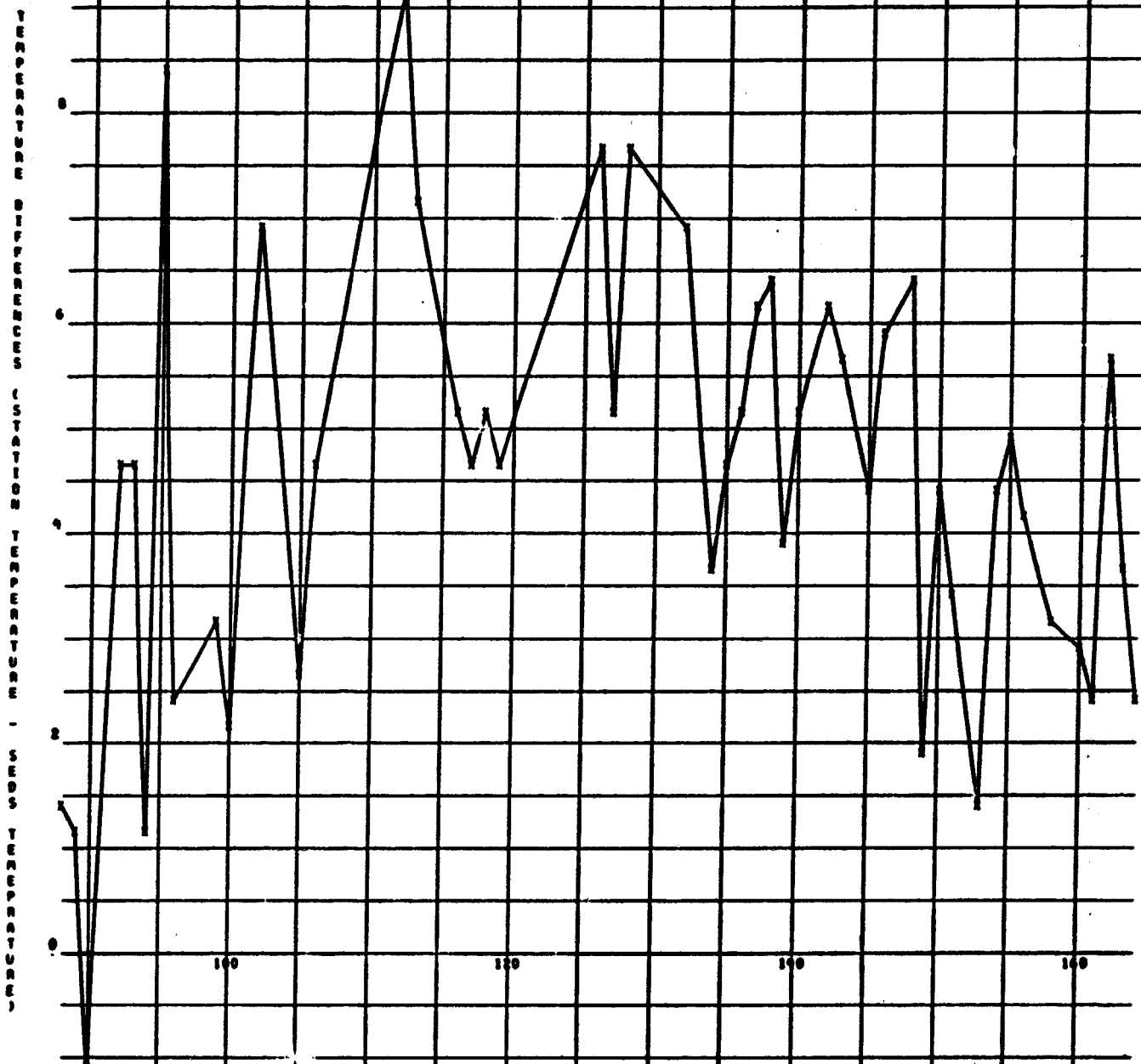   SAMPLE SIZE =   38

DAY RADIOMETRIC ONLY
    BIAS ERROR =   .964
    RMS ERROR ABOUT MEAN = 2.054
    SAMPLE SIZE =   7

BOTH RADIOMETRIC USABLE
    BIAS ERROR = 3.417
    RMS ERROR ABOUT MEAN = 2.640
    SAMPLE SIZE =   9

TEMPERATURE DIFFERENCES (STATION TEMPERATURE - SEDS TEMPERATURE)

OVERALL SEDS PERFORMANCE   JULIAN DAY   STATION 57   PAGE 18.
      MISSING DATA =   0
      BIAS ERROR =   4.402
      RMS ERROR =   2.374
      SAMPLE SIZE =   43

                                           NIGHT RADIOMETRIC ONLY
                                                 BIAS ERROR =   3.910
      GROUND TRUTH DATA ONLY   RMS ERROR =   3.909
            BIAS ERROR =   4.159   SAMPLE SIZE =   3
            RMS ERROR =   2.127
            SAMPLE SIZE =   23

                                           DAY RADIOMETRIC ONLY
                                                 BIAS ERROR =   4.935
      BOTH RADIOMETRIC USABLE.   RMS ERROR =   1.031
            BIAS ERROR =   5.196   SAMPLE SIZE =   10
            RMS ERROR =   1.434
            SAMPLE SIZE =   7   C-3

CIUDAD OBREGON
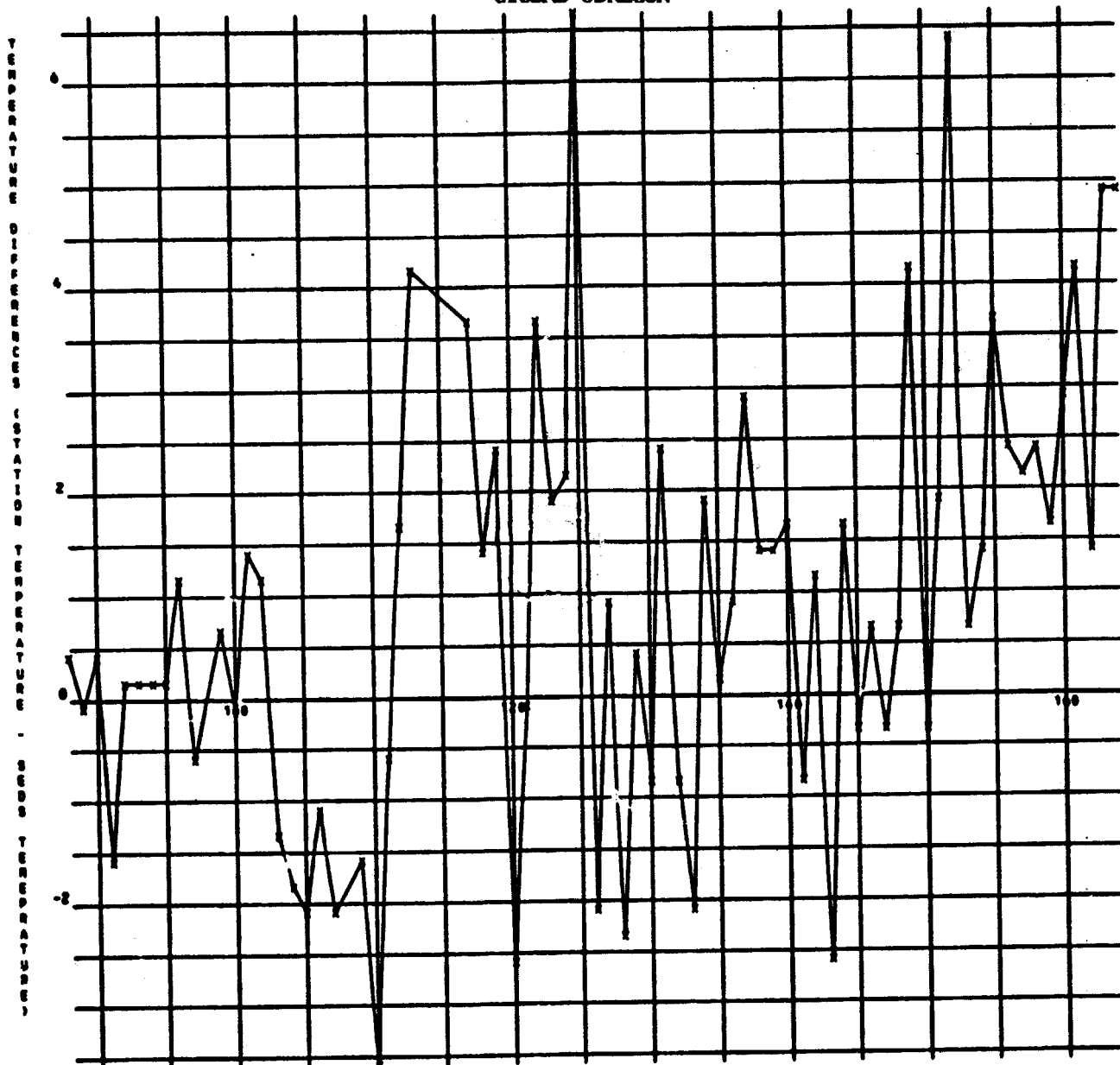
OVERALL SEDS PERFORMANCE FROM   JULIAN DAY   STATION 38   PAGE 12.
```
   MISSING DATA =      0
   BIAS ERROR =    .903
   RMS ERROR ABOUT MEAN =   2.131
   SAMPLE SIZE =    72
```
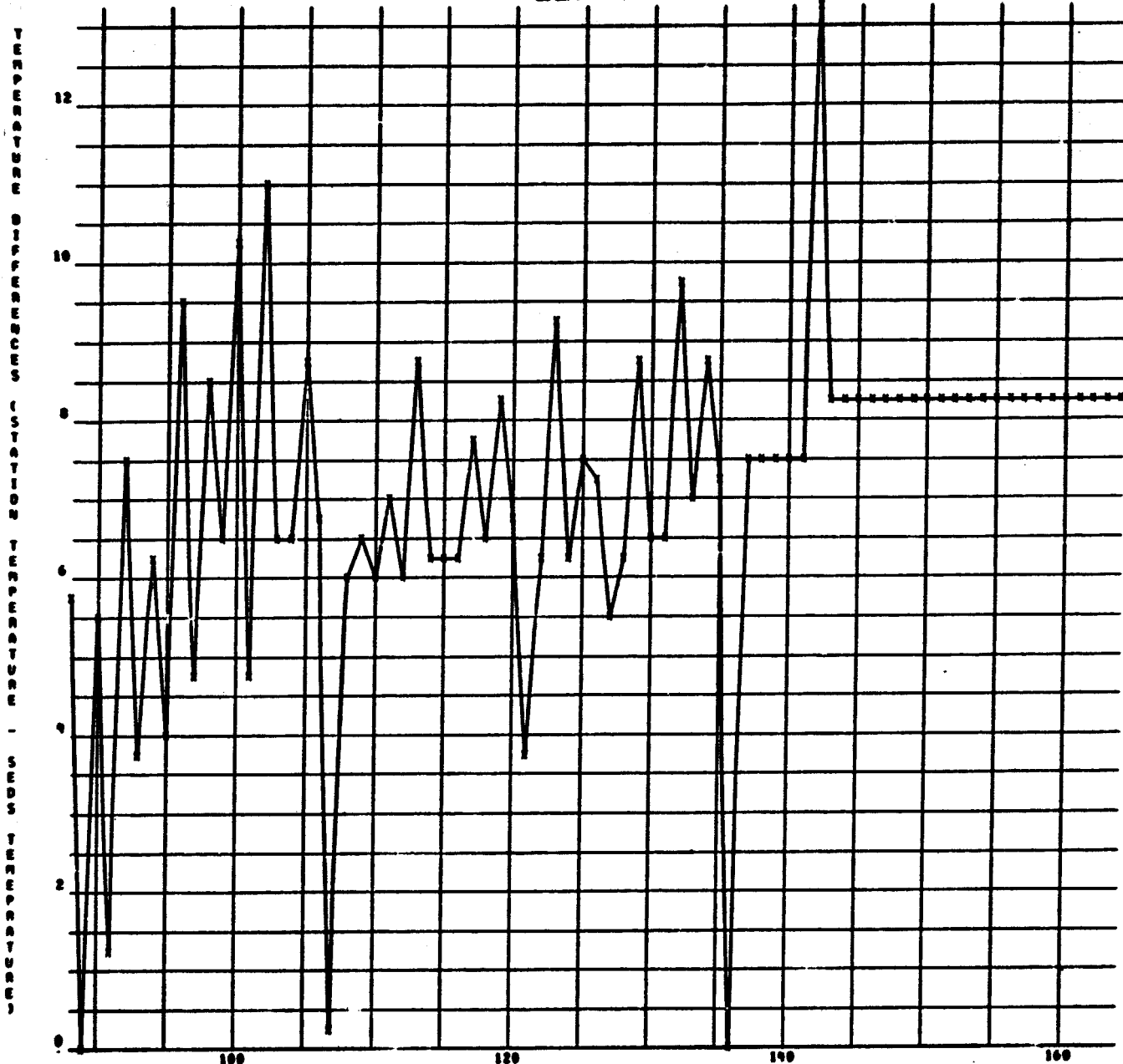
```
                                            NIGHT RADIOMETRIC ONLY
                                               BIAS ERROR =   2.446
   GROUND TRUTH DATA ONLY                       RMS ERROR ABOUT MEAN =   2.566
      BIAS ERROR =    .300                       SAMPLE SIZE =    14
      RMS ERROR ABOUT MEAN =   1.246
      SAMPLE SIZE =    25
```

```
                                            DAY RADIOMETRIC ONLY
                                               BIAS ERROR =   -.215
   BOTH RADIOMETRIC USABLE                      RMS ERROR ABOUT MEAN =   2.240
      BIAS ERROR =   1.810                       SAMPLE SIZE =    18
      RMS ERROR ABOUT MEAN =   1.625
      SAMPLE SIZE =    15
```

C-4

SALINA CRUZ

OVERALL SEDS PERFORMANCE FROM
  MISSING DATA =   0
  BIAS ERROR = 7.078
  RMS ERROR ABOUT MEAN = 2.202
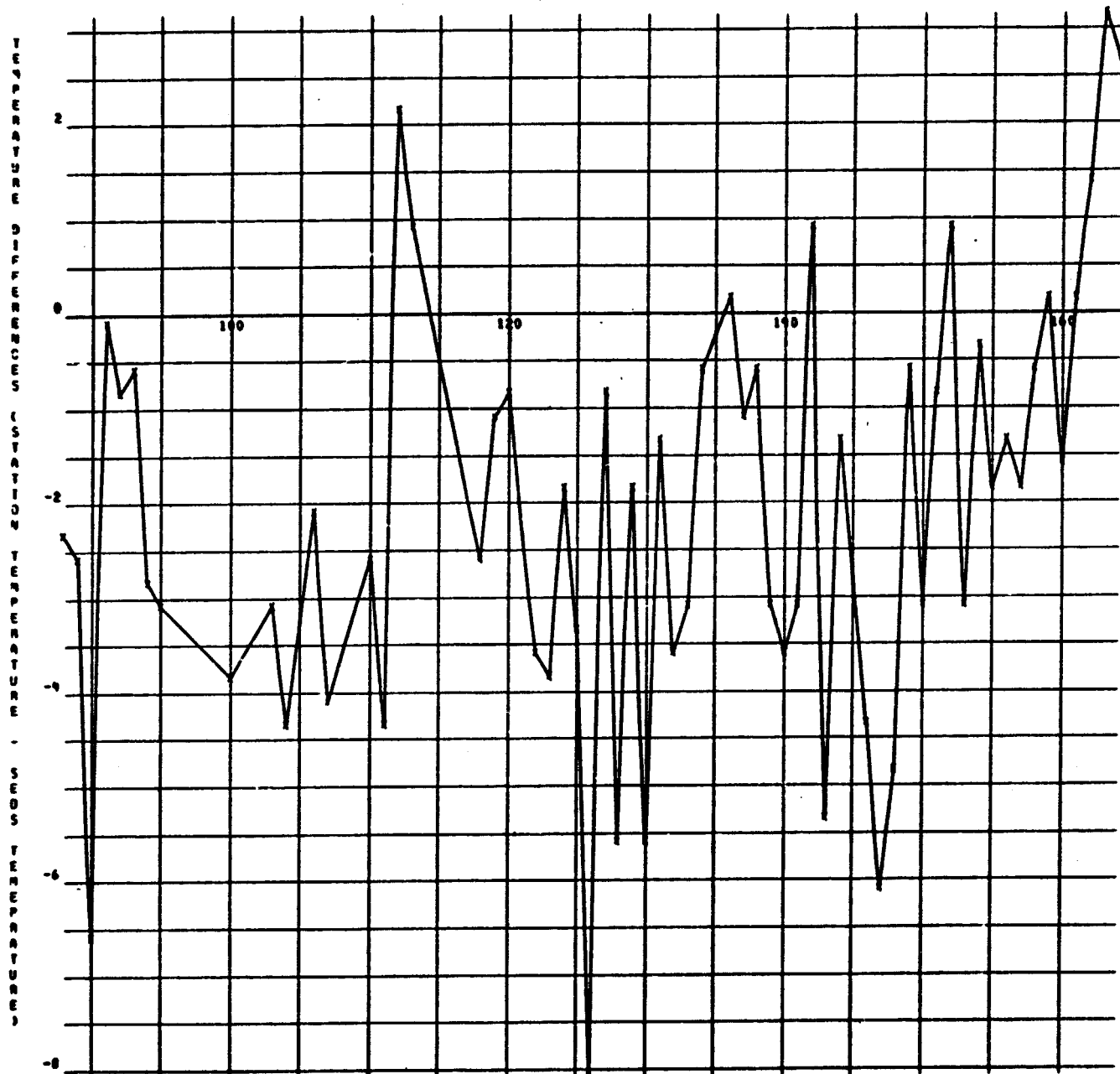 SAMPLE SIZE =   77

GROUND TRUTH DATA ONLY
  BIAS ERROR = 7.011
  RMS ERROR ABOUT MEAN = 1.798
  SAMPLE SIZE =   47

BOTH RADIOMETRIC USABLE
  BIAS ERROR = 6.333
  RMS ERROR ABOUT MEAN =   .629
  SAMPLE SIZE =   3

NIGHT RADIOMETRIC ONLY
  BIAS ERROR =   .250
  RMS ERROR ABOUT MEAN =   .000
  SAMPLE SIZE =   1

DAY RADIOMETRIC ONLY
  BIAS ERROR = 7.548
  RMS ERROR ABOUT MEAN = 2.568
  SAMPLE SIZE =   26

JULIAN DAY   STATION 32   PAGE 64.

C-5

NOGALES

OVERALL SEDS PERFORMANCE FROM   JULIAN DAY   STATION 53   PAGE 9.
        MISSING DATA =   0
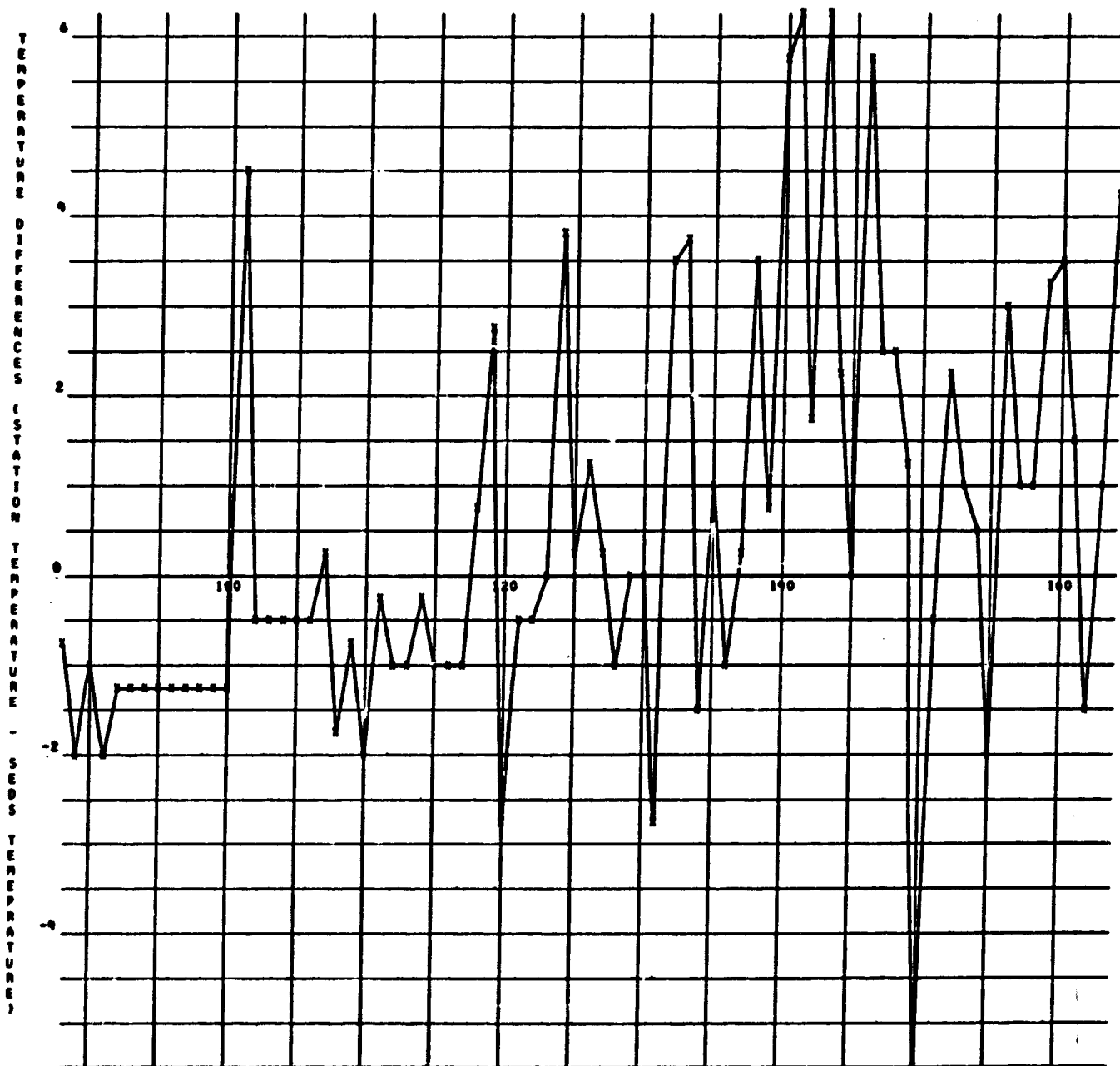   BIAS ERROR = -2.082
        RMS ERROR ABOUT MEAN =   2.267
        SAMPLE SIZE =   61

                                          NIGHT RADIOMETRIC ONLY
                                              BIAS ERROR = -.290
GROUND TRUTH DATA ONLY   RMS ERROR ABOUT MEAN =   1.578
        BIAS ERROR = -2.840   SAMPLE SIZE =   12
        RMS ERROR ABOUT MEAN =   1.847
        SAMPLE SIZE =   24

                                          DAY RADIOMETRIC ONLY
                                              BIAS ERROR = -3.403
BOTH RADIOMETRIC USABLE   RMS ERROR ABOUT MEAN =   2.760
        BIAS ERROR = -1.307   SAMPLE SIZE =   12
        RMS ERROR ABOUT MEAN =   1.537
        SAMPLE SIZE =   13

SAN ANGELO

OVERALL SEDS PERFORMANCE FROM JULIAN DAY   STATION 84   PAGE 38.
     MISSING DATA =   0
     BIAS ERROR =   .442
     RMS ERROR ABOUT MEAN = 2.271
     SAMPLE SIZE =   77

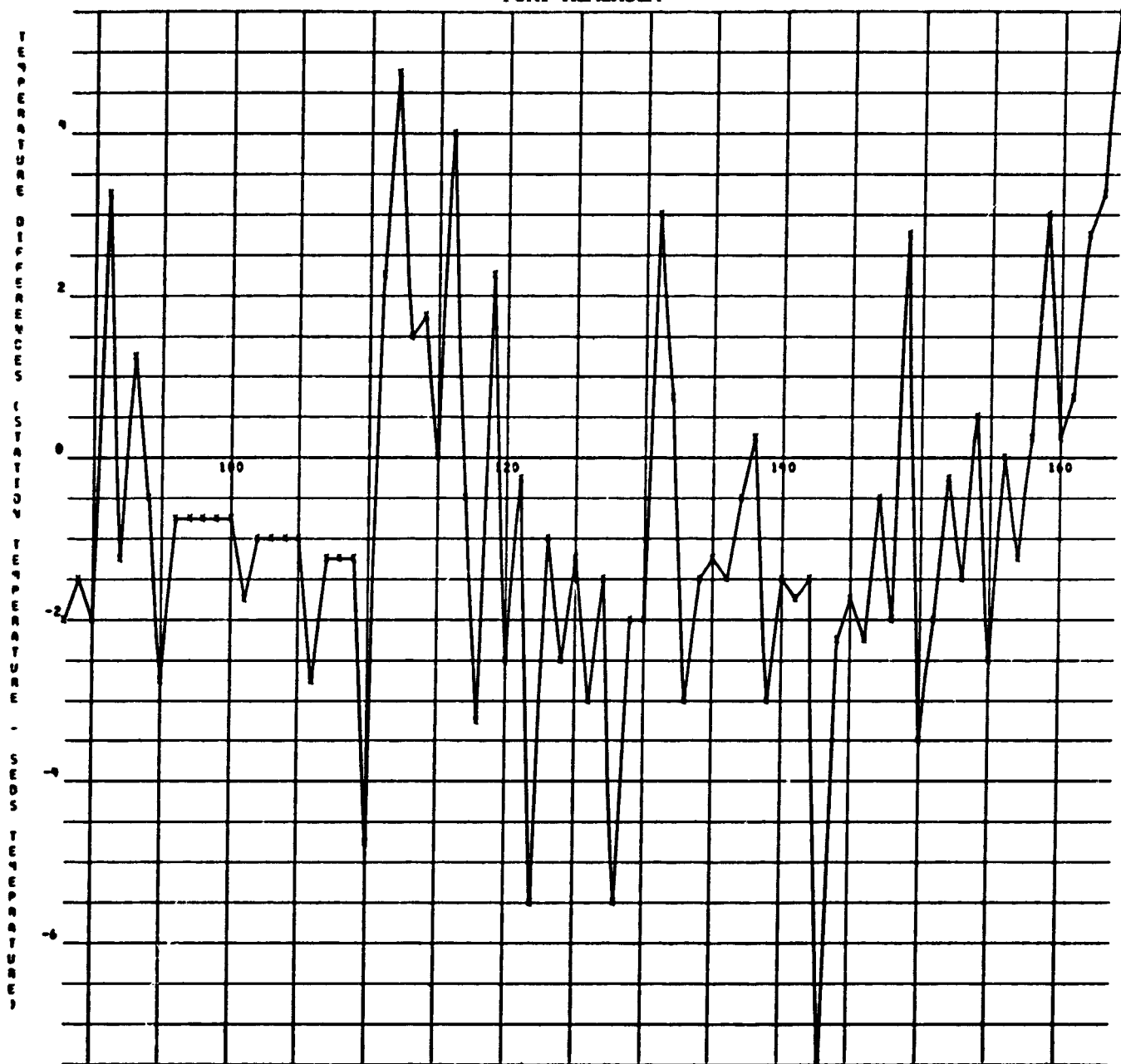   NIGHT RADIOMETRIC ONLY
                                                   BIAS ERROR =   .096
     GROUND TRUTH DATA ONLY   RMS ERROR ABOUT MEAN = 2.703
          BIAS ERROR = -.207   SAMPLE SIZE =   13
          RMS ERROR ABOUT MEAN = 1.184
          SAMPLE SIZE =   35

                                              DAY RADIOMETRIC ONLY
                                                   BIAS ERROR = 1.944
     BOTH RADIOMETRIC USABLE   RMS ERROR ABOUT MEAN = 3.009
          BIAS ERROR =   .459   SAMPLE SIZE =   18
          RMS ERROR ABOUT MEAN = 2.134
          SAMPLE SIZE =   11   C-7

FORT HUACHUCA

Temperature differences (station temperature - SEDS temperature) vs Julian Day, Station 71

OVERALL SEDS PERFORMANCE FROM
MISSING DATA =   0
BIAS ERROR = -.782
RMS ERROR ABOUT MEAN = 2.284
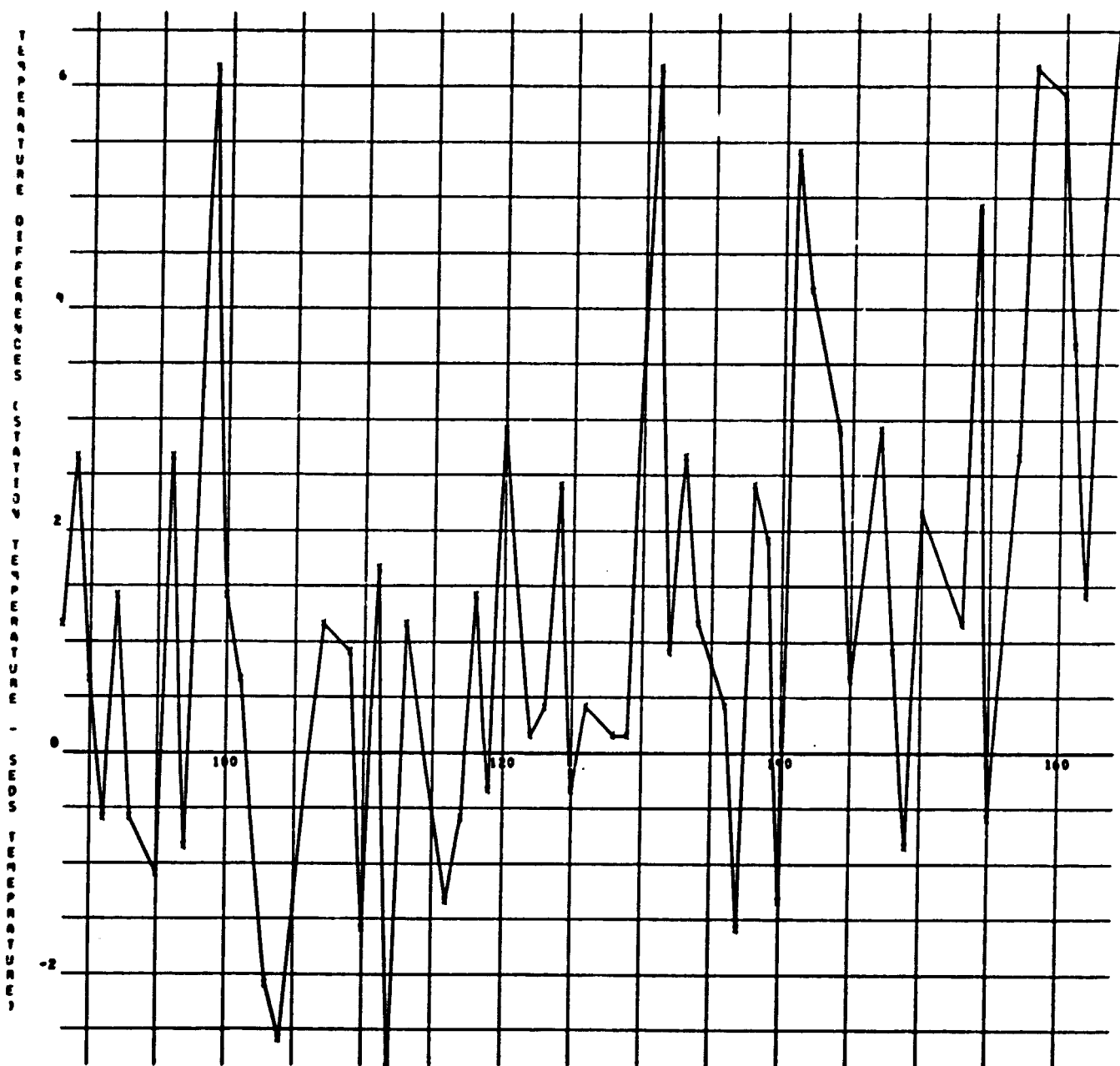SAMPLE SIZE =   77

GROUND TRUTH DATA ONLY
BIAS ERROR = -1.266
RMS ERROR ABOUT MEAN =   .573
SAMPLE SIZE =   31

BOTH RADIOMETRIC USABLE
BIAS ERROR = -.600
RMS ERROR ABOUT MEAN = 2.085
SAMPLE SIZE =   15

NIGHT RADIOMETRIC ONLY
BIAS ERROR = 1.679
RMS ERROR ABOUT MEAN = 2.025
SAMPLE SIZE =   14

DAY RADIOMETRIC ONLY
BIAS ERROR = -2.388
RMS ERROR ABOUT MEAN = 3.071
SAMPLE SIZE =   17

CIUDAD JUAREZ

OVERALL SEDS PERFORMANCE FROM   JULIAN DAY   STATION 39   PAGE 29.
   MISSING DATA = 0
   BIAS ERROR = 1.402
   RMS ERROR ABOUT MEAN = 2.323
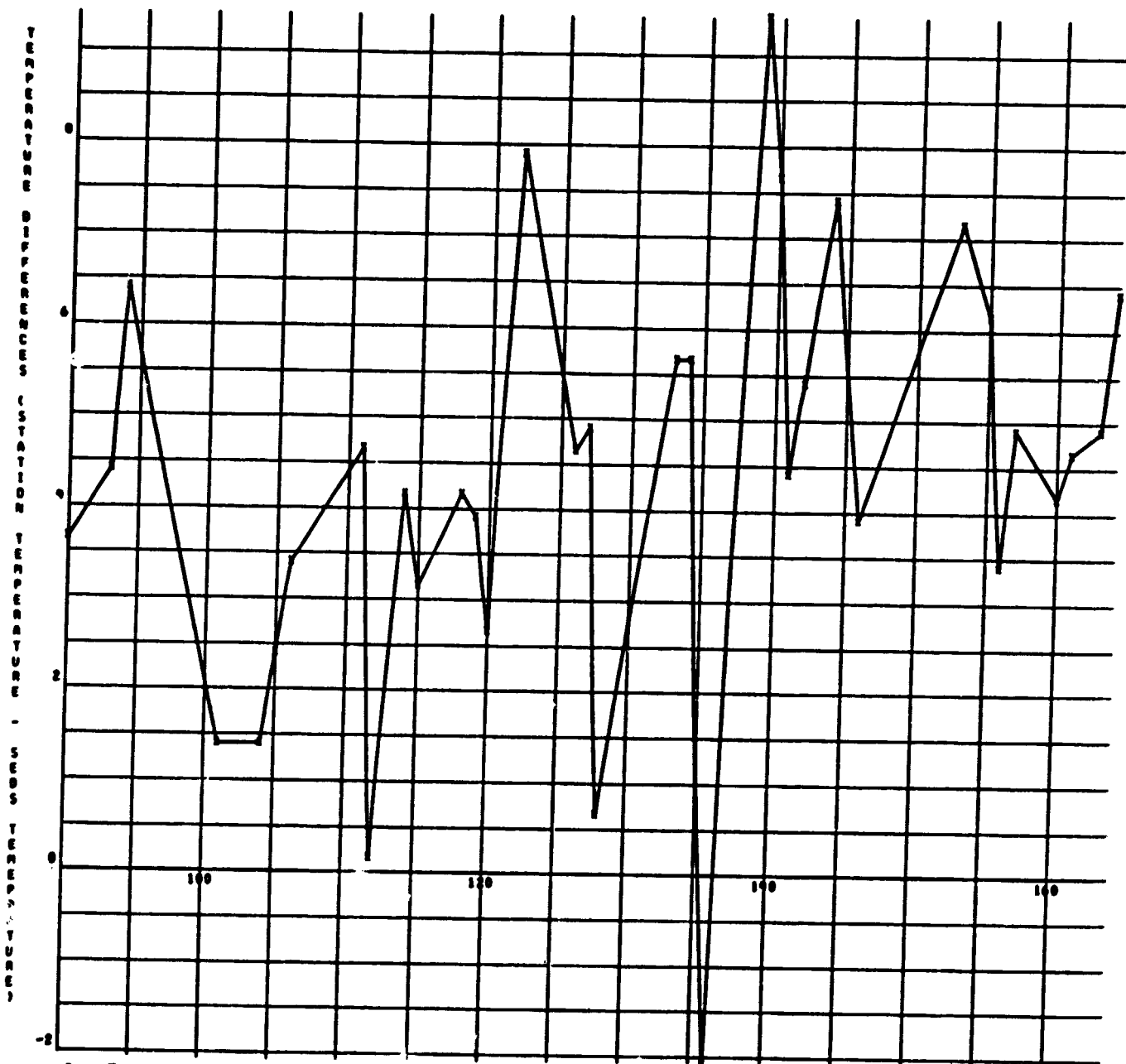   SAMPLE SIZE = 59

GROUND TRUTH DATA ONLY
   BIAS ERROR = .991
   RMS ERROR ABOUT MEAN = 2.156
   SAMPLE SIZE = 31

NIGHT RADIOMETRIC ONLY
   BIAS ERROR = 1.501
   RMS ERROR ABOUT MEAN = 2.506
   SAMPLE SIZE = 11

BOTH RADIOMETRIC USABLE
   BIAS ERROR = 1.549
   RMS ERROR ABOUT MEAN = 1.668
   SAMPLE SIZE = 9

DAY RADIOMETRIC ONLY
   BIAS ERROR = 2.691
   RMS ERROR ABOUT MEAN = 3.152
   SAMPLE SIZE = 8

C-9

MANZANILLO

OVERALL SEUS PERFORMANCE FROM
   MISSING DATA = 0
   BIAS ERROR = 4.381
   RMS ERROR ABOUT MEAN = 2.331
   SAMPLE SIZE = 35

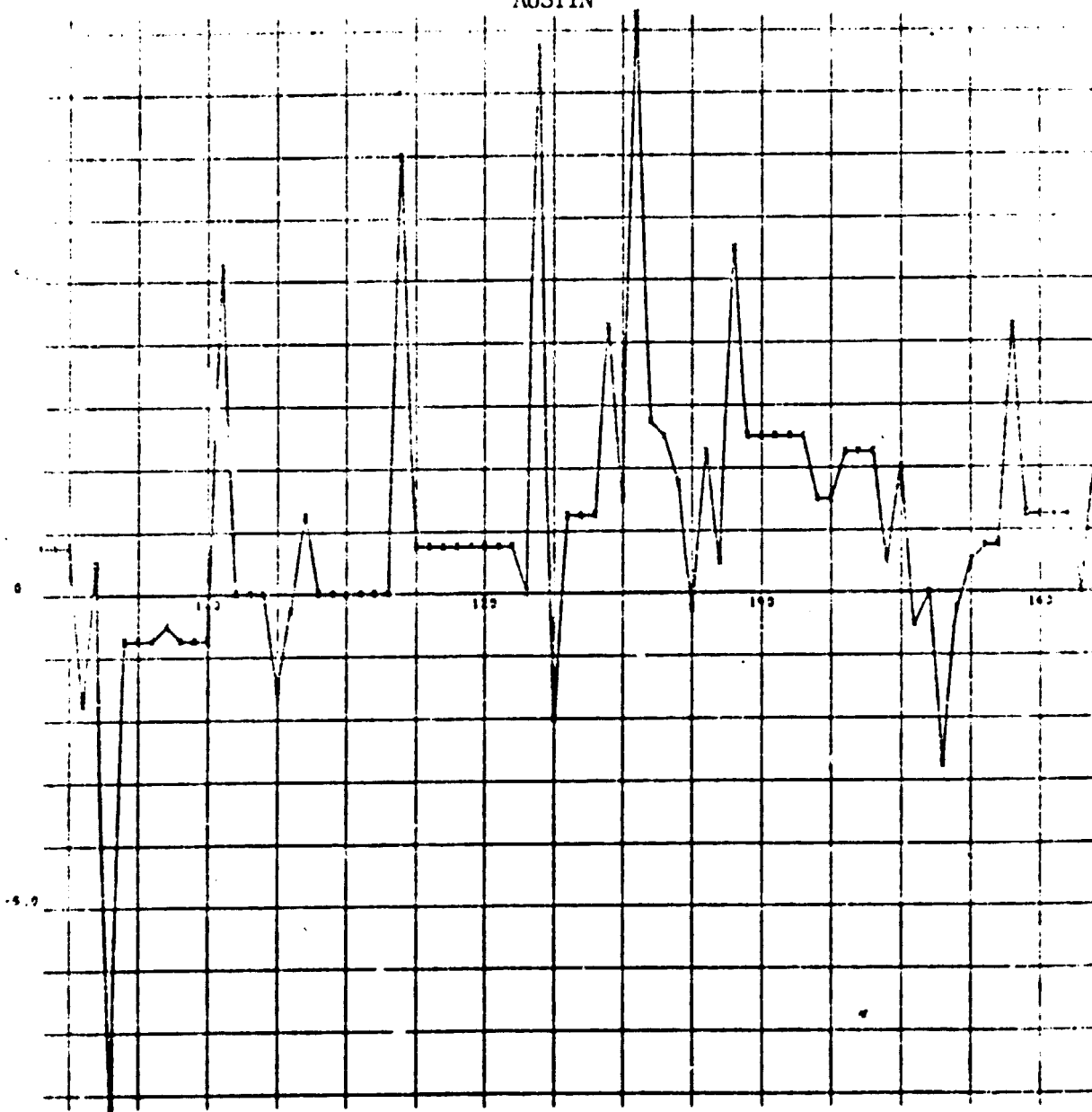JULIAN DAY   STATION 21   PAGE 41.

GROUND TRUTH DATA ONLY
   BIAS ERROR = 4.535
   RMS ERROR ABOUT MEAN = 1.602
   SAMPLE SIZE = 14

NIGHT RADIOMETRIC ONLY
   BIAS ERROR = 5.104
   RMS ERROR ABOUT MEAN = 2.800
   SAMPLE SIZE = 9

BOTH RADIOMETRIC USABLE
   BIAS ERROR = 1.310
   RMS ERROR ABOUT MEAN = 2.268
   SAMPLE SIZE = 5

DAY RADIOMETRIC ONLY
   BIAS ERROR = 5.339
   RMS ERROR ABOUT MEAN = 1.256
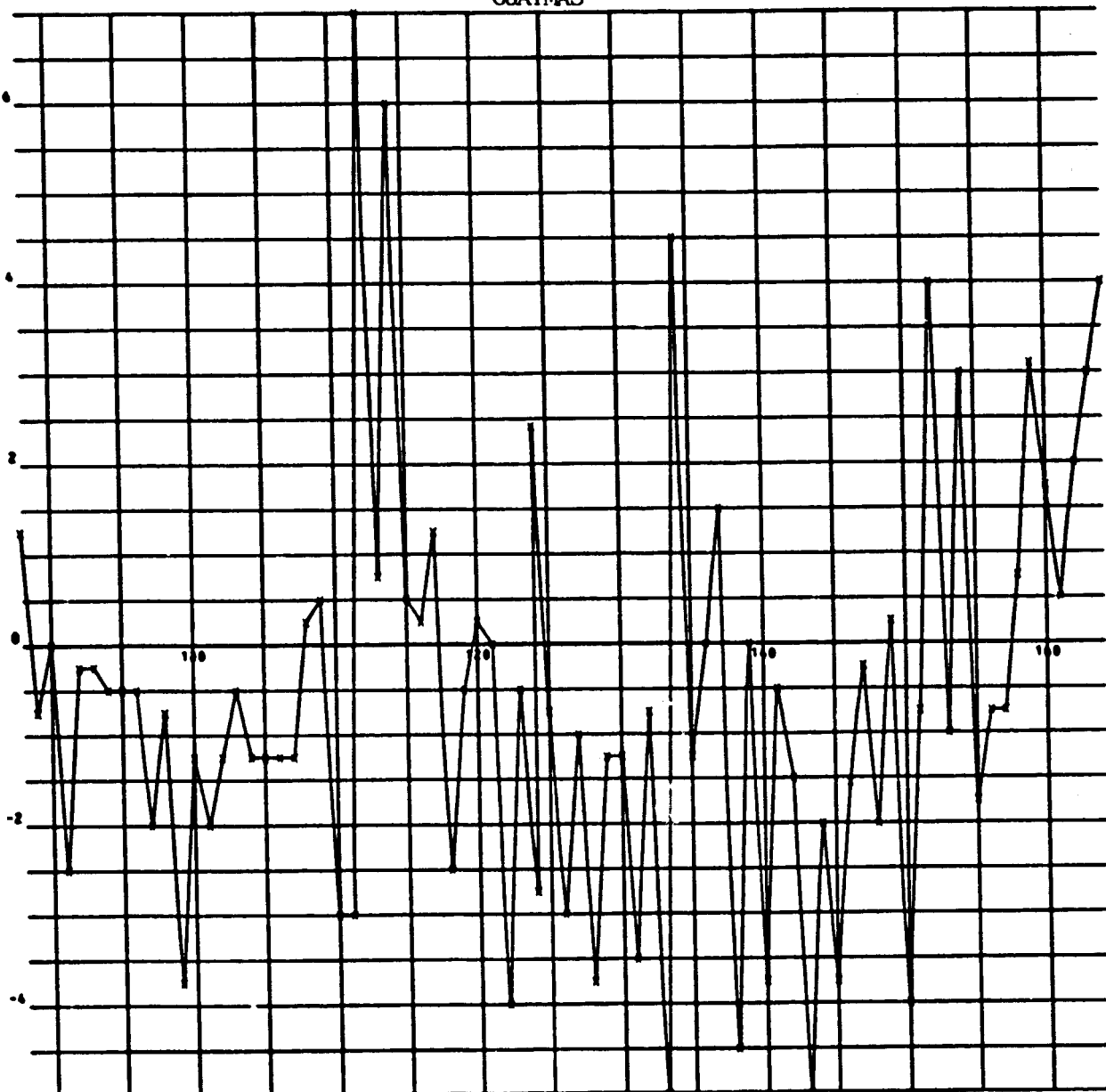   SAMPLE SIZE = 7

AUSTIN

JULIAN DAY   STATION 99

OVERALL SEDS PERFORMANCE FROM
    MISSING DATA = 0
    BIAS ERROR = 1.049
    RMS ERROR ABOUT MEAN = 2.335
    SAMPLE SIZE = 77

                                        NIGHT RADIOMETRIC ONLY
                                            BIAS ERROR = 2.956
GROUND TRUTH DATA ONLY   RMS ERROR ABOUT MEAN = 4.414
    BIAS ERROR = .606   SAMPLE SIZE = 9
    RMS ERROR ABOUT MEAN = 1.711
    SAMPLE SIZE = 49
                                        DAY RADIOMETRIC ONLY
                                            BIAS ERROR = 1.050
BOTH RADIOMETRIC USABLE   RMS ERROR ABOUT MEAN = 3.552
    BIAS ERROR = 1.750   SAMPLE SIZE = 15
    RMS ERROR ABOUT MEAN = 2.538
    SAMPLE SIZE = 4

C-11

GUAYMAS

OVERALL SEDS PERFORMANCE FROM   JULIAN DAY   STATION 03   PAGE 0.
    MISSING DATA =   0
    BIAS ERROR = -.571
    RMS ERROR ABOUT MEAN =   2.345
    SAMPLE SIZE =   78
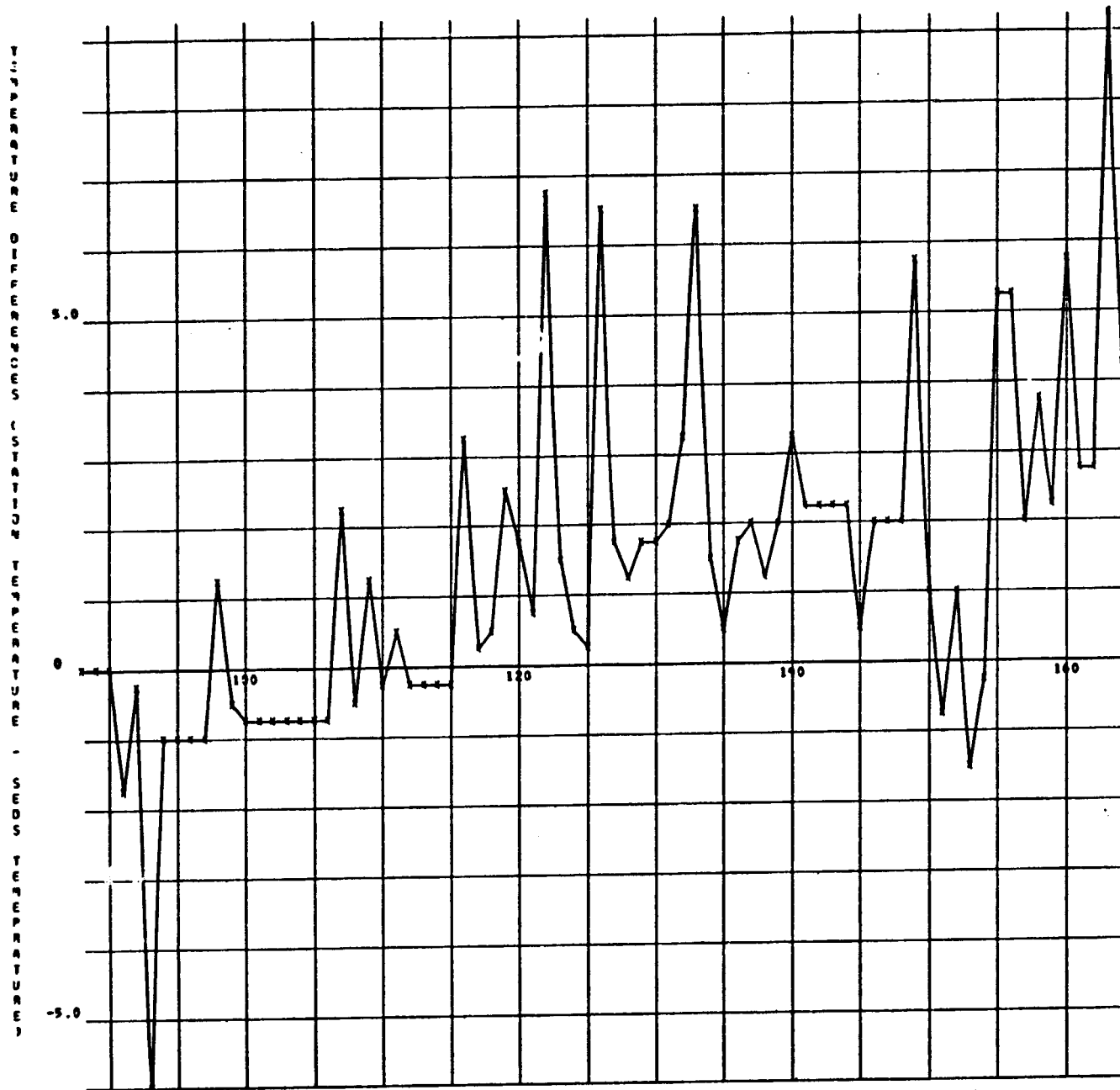
                                              NIGHT RADIOMETRIC ONLY
                                                  BIAS ERROR = -.186
                                                  RMS ERROR ABOUT MEAN =   3.311
GROUND TRUTH DATA ONLY   SAMPLE SIZE =   21
    BIAS ERROR = -.896
    RMS ERROR ABOUT MEAN =   .611
    SAMPLE SIZE =   26

                                              DAY RADIOMETRIC ONLY
                                                  BIAS ERROR = -.821
BOTH RADIOMETRIC USABLE   RMS ERROR ABOUT MEAN =   2.672
    BIAS ERROR = -.146   SAMPLE SIZE =   19
    RMS ERROR ABOUT MEAN =   2.275
    SAMPLE SIZE =   12

C-12

DEL RIO

OVERALL SEDS PERFORMANCE FROM   JULIAN DAY   STATION 76
    MISSING DATA =   0
    BIAS ERROR =   1.360
    RMS ERROR ABOUT MEAN = 2.347
    SAMPLE SIZE =   77

GROUND TRUTH DATA ONLY
    BIAS ERROR =   .622
    RMS ERROR ABOUT MEAN = 1.295
    SAMPLE SIZE =   39

NIGHT RADIOMETRIC ONLY
    BIAS ERROR = 2.641
    RMS ERROR ABOUT MEAN = 2.831
    SAMPLE SIZE =   16

DAY RADIOMETRIC ONLY
    BIAS ERROR =   1.712
    RMS ERROR ABOUT MEAN = 3.302
    SAMPLE SIZE =   13

BOTH RADIOMETRIC USABLE
    BIAS ERROR = 1.778
    RMS ERROR ABOUT MEAN = 2.578
    SAMPLE SIZE =   9

C-13

OVERALL SEDS PERFORMANCE FROM   JULIAN DAY   STATION 07   PAGE 20.
        MISSING DATA =   0
        BIAS ERROR =   .522
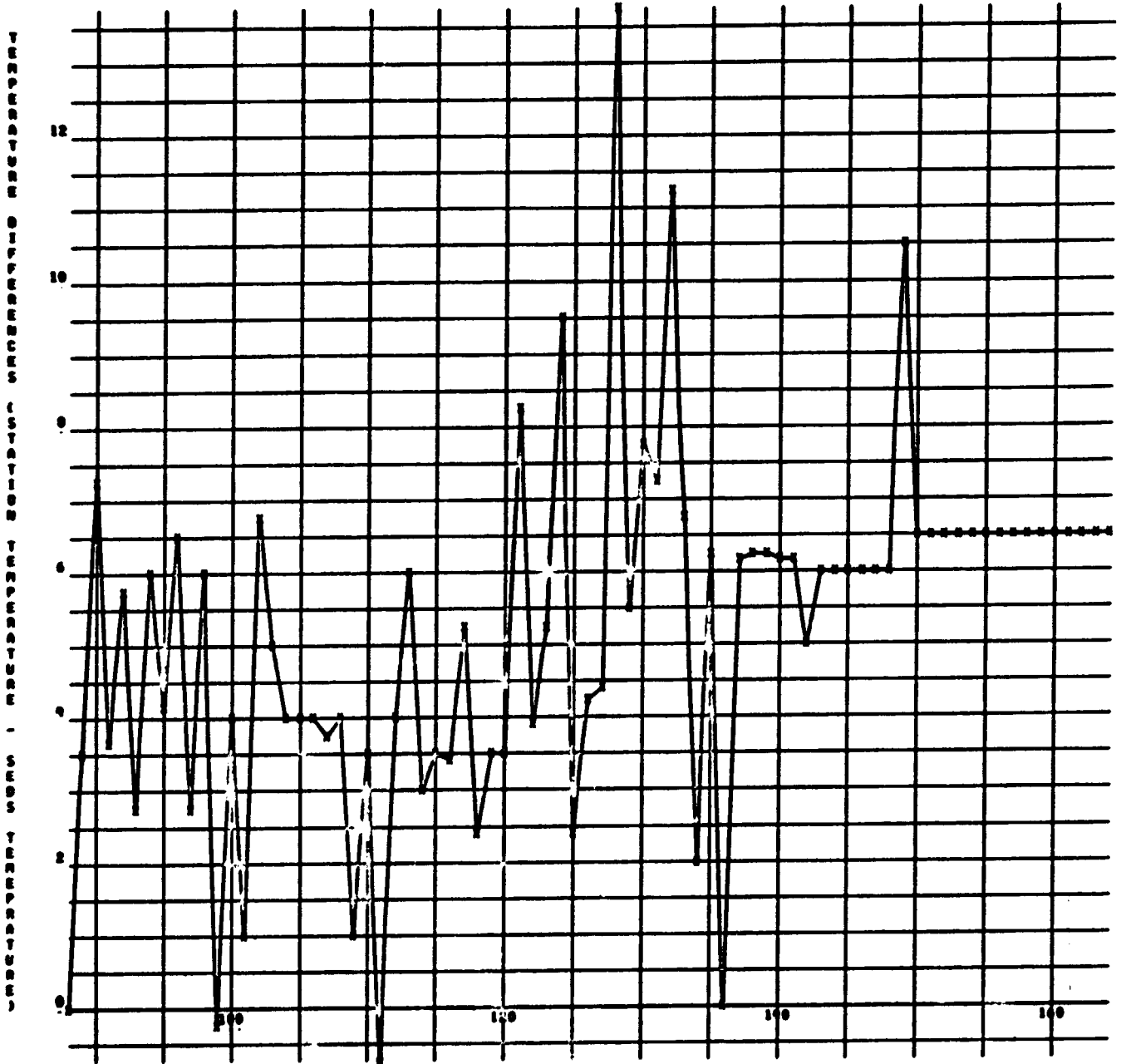   RMS ERROR ABOUT MEAN =   2.386
        SAMPLE SIZE =   76

                                                    NIGHT RADIOMETRIC ONLY
                                                        BIAS ERROR = -1.000
GROUND TRUTH DATA ONLY   RMS ERROR ABOUT MEAN =   2.632
        BIAS ERROR =   .356   SAMPLE SIZE =   18
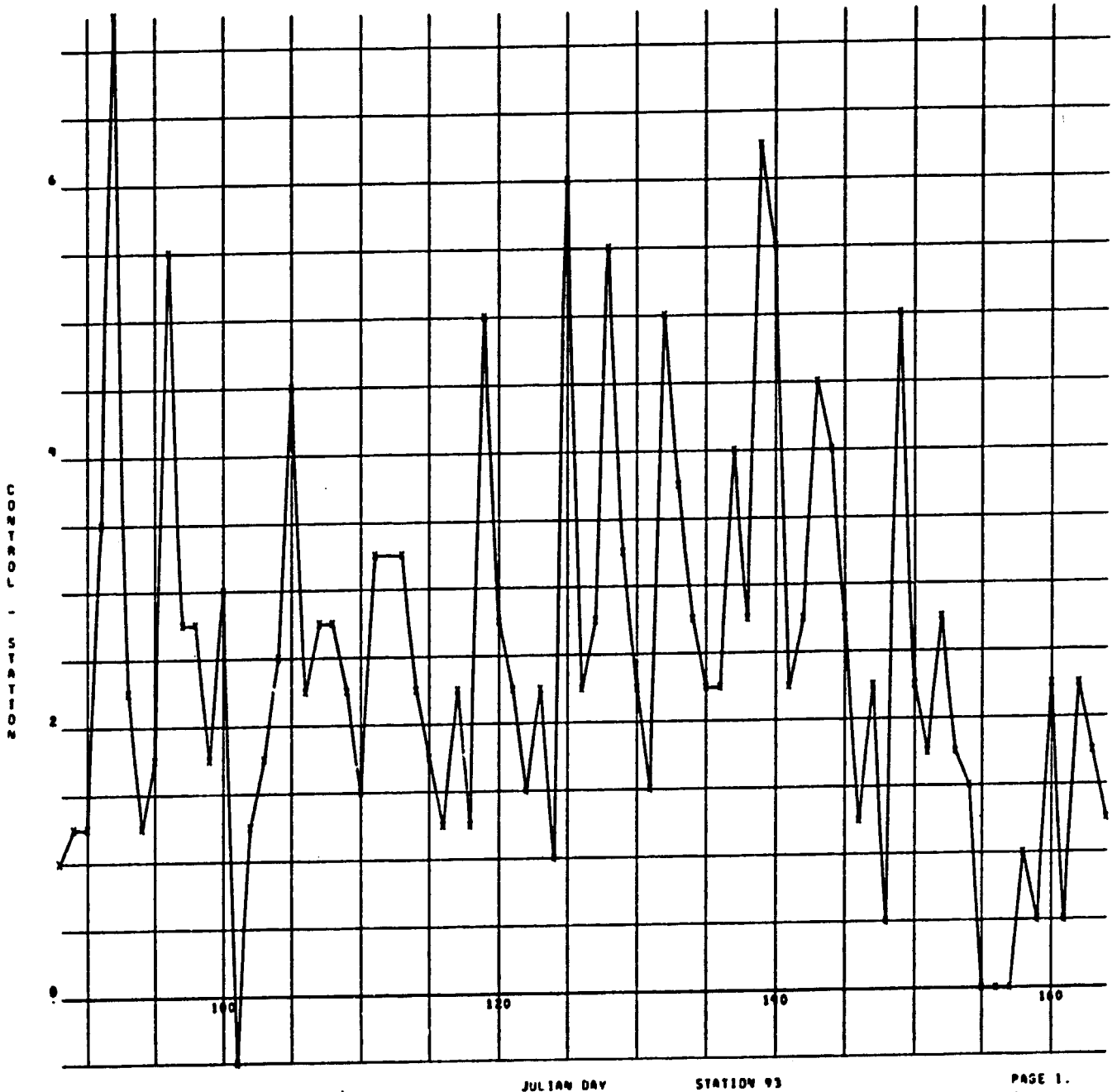   RMS ERROR ABOUT MEAN =   1.018
        SAMPLE SIZE =   37

                                                    DAY RADIOMETRIC ONLY
                                                        BIAS ERROR =   3.333
                                                        RMS ERROR ABOUT MEAN =   3.230
BOTH RADIOMETRIC USABLE   SAMPLE SIZE =   12
        BIAS ERROR =   .500
        RMS ERROR ABOUT MEAN =   1.561
        SAMPLE SIZE =   9

                                    C-14

MEXICO CITY

TEMPERATURE DIFFERENCES (STATION TEMPERATURE - SEDS TEMPERATURE)

OVERALL SEDS PERFORMANCE FROM   JULIAN DAY   STATION 23   PAGE 3.

MISSING DATA =   0
BIAS ERROR =   5.212
RMS ERROR ABOUT MEAN = 2.452
SAMPLE SIZE =   77

GROUND TRUTH DATA ONLY
BIAS ERROR =   5.710
RMS ERROR ABOUT MEAN = 1.417
SAMPLE SIZE =   38

BOTH RADIOMETRIC USABLE
BIAS ERROR =   2.116
RMS ERROR ABOUT MEAN = 2.939
SAMPLE SIZE =   10

NIGHT RADIOMETRIC ONLY
BIAS ERROR =   5.992
RMS ERROR ABOUT MEAN = 3.606
SAMPLE SIZE =   11

DAY RADIOMETRIC ONLY
BIAS ERROR =   5.437
RMS ERROR ABOUT MEAN = 1.911
SAMPLE SIZE =   18

SAN ANTONIO

OVERALL SEDS PERFORMANCE FROM
  MISSING DATA =   0
  BIAS ERROR =   .717
  RMS ERROR ABOUT MEAN =   2.462
  SAMPLE SIZE =   76

GROUND TRUTH DATA ONLY
  BIAS ERROR =   .729
  RMS ERROR ABOUT MEAN = 1.128
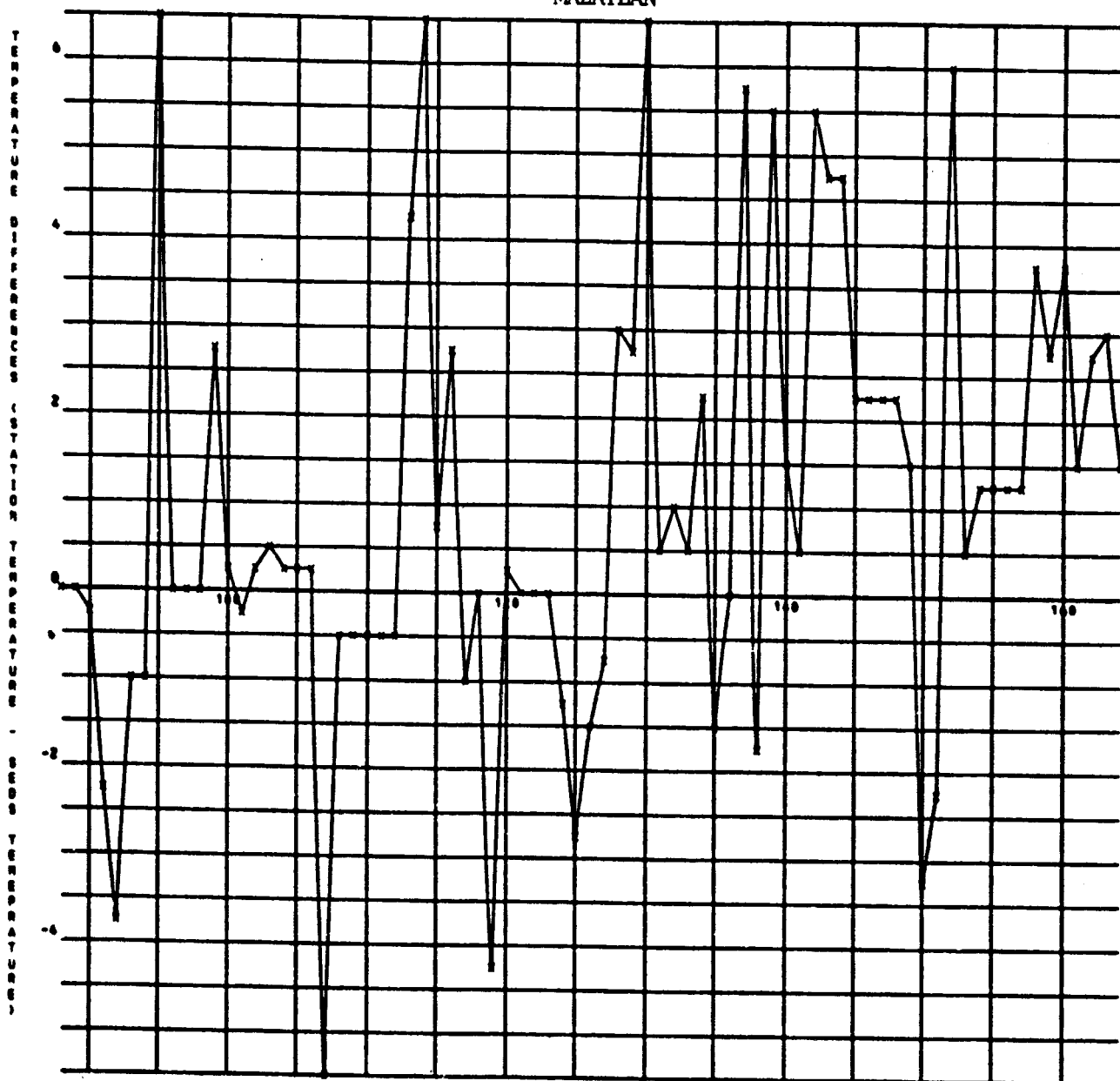 SAMPLE SIZE =   47

BOTH RADIOMETRIC USABLE
  BIAS ERROR =   1.100
  RMS ERROR ABOUT MEAN =   1.701
  SAMPLE SIZE =   5

NIGHT RADIOMETRIC ONLY
  BIAS ERROR =   .694
  RMS ERROR ABOUT MEAN =   3.461
  SAMPLE SIZE =   9

DAY RADIOMETRIC ONLY
  BIAS ERROR =   .567
  RMS ERROR ABOUT MEAN =   4.534
  SAMPLE SIZE =   15

C-16

DURANGO

MAZATLAN

OVERALL SFDS PERFORMANCE FROM   JULIAN DAY   STATION 18   PAGE 30.
    MISSING DATA =   0
    BIAS ERROR =   .968
    RMS ERROR ABOUT MEAN = 2.513
    SAMPLE SIZE =   17
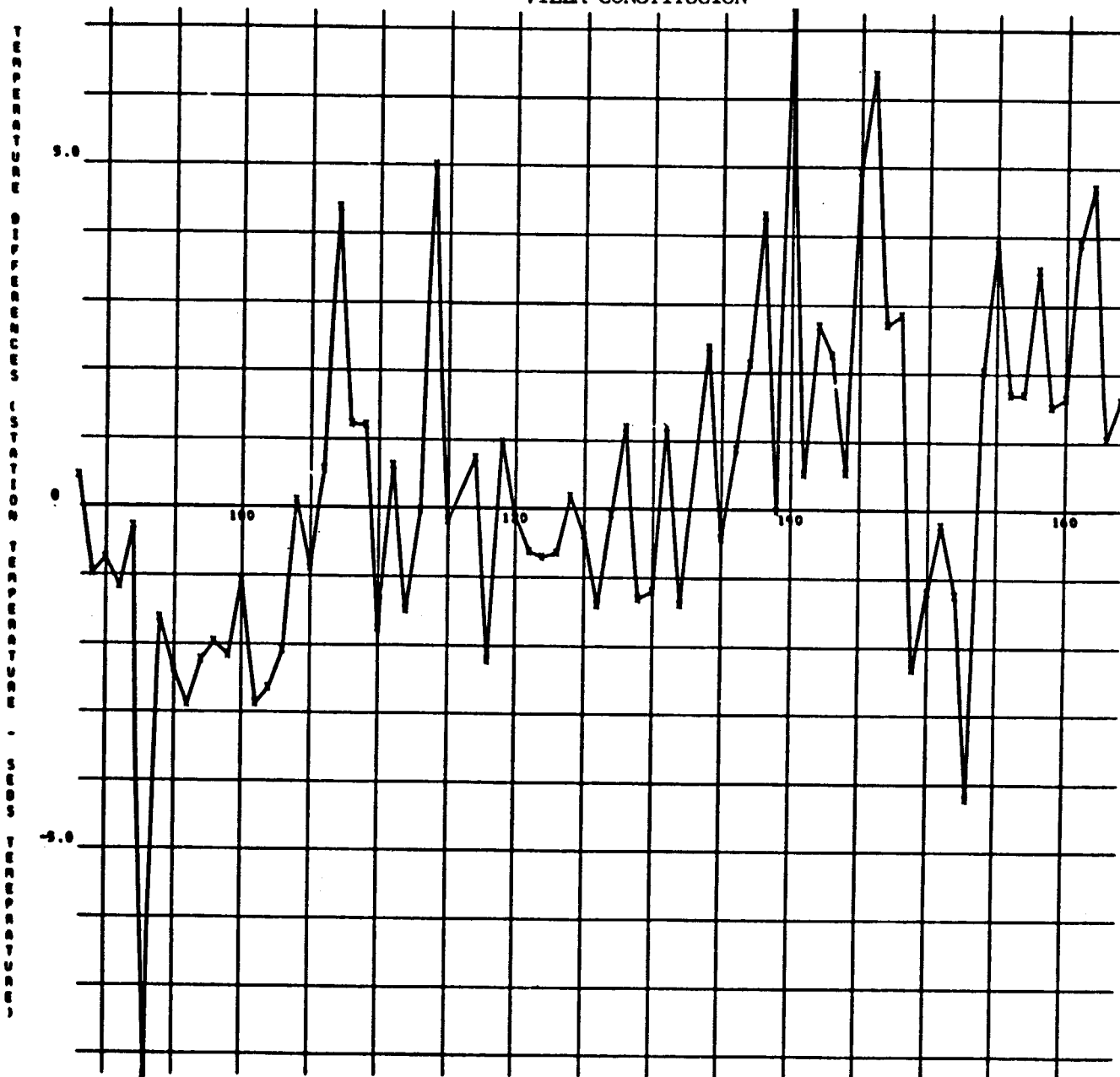
GROUND TRUTH DATA ONLY
    BIAS ERROR =   .518
    RMS ERROR ABOUT MEAN = 1.034
    SAMPLE SIZE =   28

NIGHT RADIOMETRIC ONLY
    BIAS ERROR =   .088
    RMS ERROR ABOUT MEAN = 2.813
    SAMPLE SIZE =   17

BOTH RADIOMETRIC USABLE
    BIAS ERROR = 2.217
    RMS ERROR ABOUT MEAN = 2.635
    SAMPLE SIZE =   15

DAY RADIOMETRIC ONLY
    BIAS ERROR = 1.485
    RMS ERROR ABOUT MEAN = 3.212
    SAMPLE SIZE =   17

VILLA CONSTITUCION

TEMPERATURE DIFFERENCES (STATION TEMPERATURE - SEBS TEMPERATURE)

5.0

0

-5.0

JULIAN DAY

OVERALL SEBS PERFORMANCE
   MISSING DATA =   0
   BIAS ERROR =   .364
   RMS ERROR = 2.521
   SAMPLE SIZE =   75

GROUND TRUTH DATA ONLY
   BIAS ERROR = -.154
   RMS ERROR = 1.678
   SAMPLE SIZE =   48
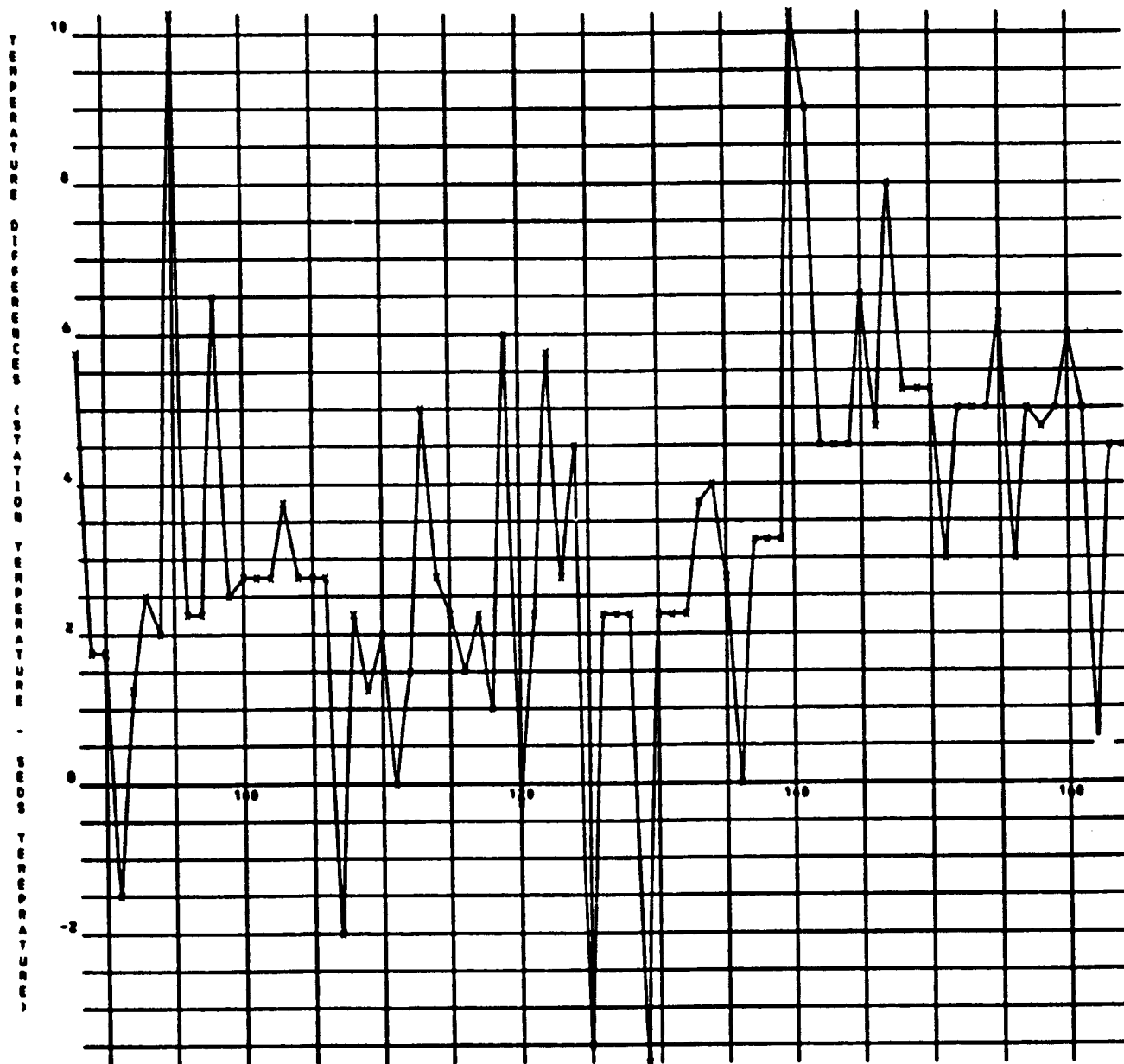
BOTH RADIOMETRIC-USABLE
   BIAS ERROR = 1.830
   RMS ERROR = 2.899
   SAMPLE SIZE =   2

NIGHT RADIOMETRIC ONLY
   BIAS ERROR = -.150
   RMS ERROR = 2.551
   SAMPLE SIZE =   10

DAY-RADIOMETRIC ONLY
   BIAS ERROR = 2.186
   RMS ERROR = 3.791
   SAMPLE SIZE =   15

TAMPICO

OVERALL SEDS PERFORMANCE FROM   JULIAN DAY   STATION 14   PAGE 46.
      MISSING DATA =   0
      BIAS ERROR =   3.312
      RMS ERROR ABOUT MEAN = 2.532
      SAMPLE SIZE =   77

                                          NIGHT RADIOMETRIC ONLY
                                             BIAS ERROR = 2.374
   GROUND TRUTH DATA ONLY   RMS ERROR ABOUT MEAN = 3.391
      BIAS ERROR =   3.134   SAMPLE SIZE =   17
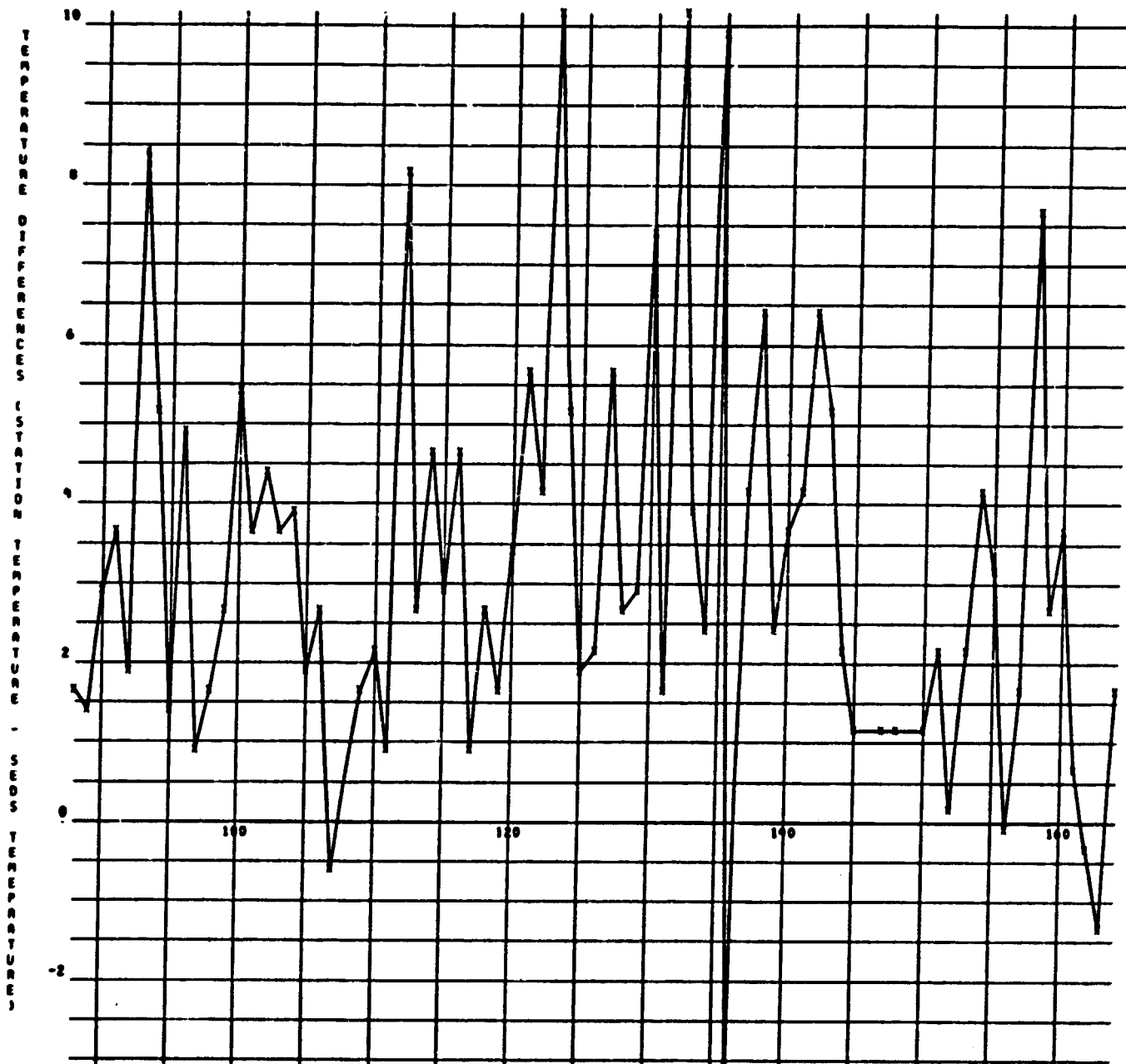   RMS ERROR ABOUT MEAN = 1.640
      SAMPLE SIZE =   43

                                          DAY RADIOMETRIC ONLY
                                             BIAS ERROR = 5.295
   BOTH RADIOMETRIC USABLE   RMS ERROR ABOUT MEAN = 3.049
      BIAS ERROR = 4.458   SAMPLE SIZE =   11
      RMS ERROR ABOUT MEAN = 1.946
      SAMPLE SIZE =   6

CHILPANCINGO

MISSING DATA =   3
BIAS ERROR =   3.217
RMS ERROR ABOUT MEAN =   2.557
SAMPLE SIZE =   74

GROUND TRUTH DATA ONLY
BIAS ERROR =   2.419
RMS ERROR ABOUT MEAN =   1.888
SAMPLE SIZE =   27

BOTH RADIOMETRIC USABLE
BIAS ERROR =   2.785
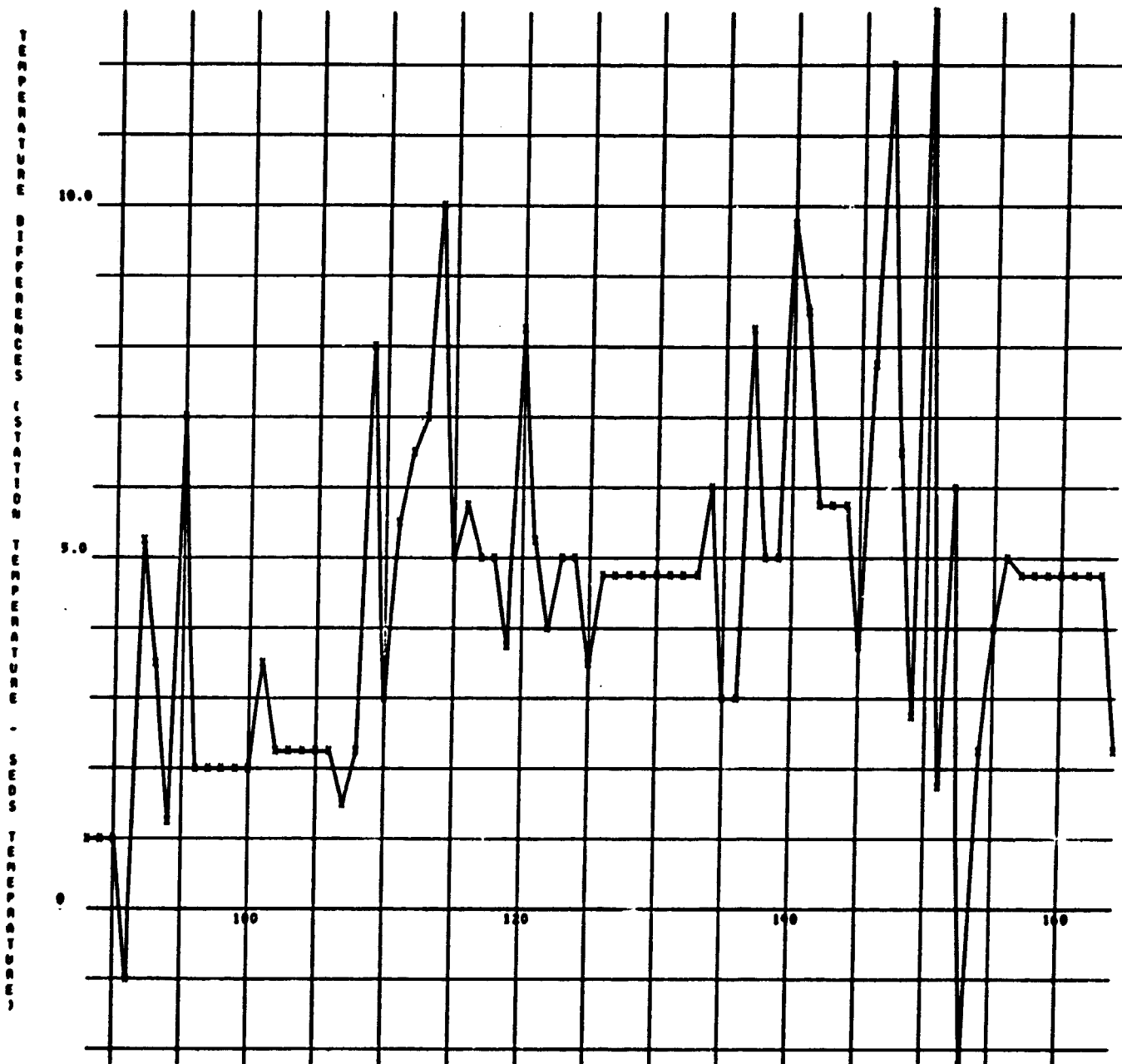RMS ERROR ABOUT MEAN =   1.353
SAMPLE SIZE =   4

NIGHT RADIOMETRIC ONLY
BIAS ERROR =   3.895
RMS ERROR ABOUT MEAN =   3.372
SAMPLE SIZE =   17

DAY RADIOMETRIC ONLY
BIAS ERROR =   3.933
RMS ERROR ABOUT MEAN =   2.719
SAMPLE SIZE =   22

C-21

MCALLEN

OVERALL SEOS PERFORMANCE FROM
   MISSING DATA =   0
   BIAS ERROR = 4.474
   RMS ERROR ABOUT MEAN = 2.594
   SAMPLE SIZE = 77

JULIAN DAY   STATION 78   PAGE 9.

GROUND TRUTH DATA ONLY
   BIAS ERROR = 3.902
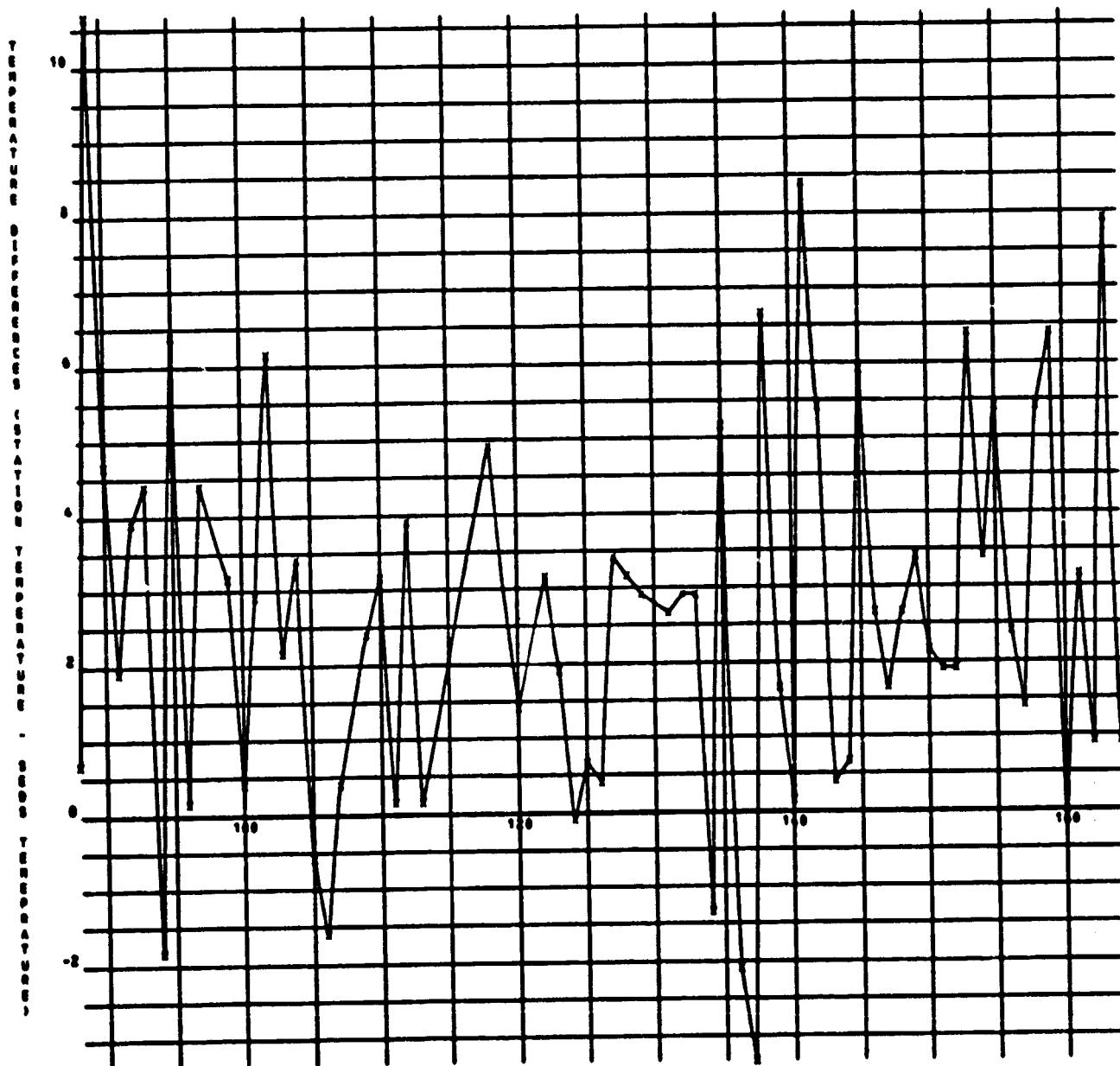   RMS ERROR ABOUT MEAN = 1.623
   SAMPLE SIZE = 41

NIGHT RADIOMETRIC ONLY
   BIAS ERROR = 4.385
   RMS ERROR ABOUT MEAN = 3.911
   SAMPLE SIZE = 13

DAY RADIOMETRIC ONLY
   BIAS ERROR = 6.900
   RMS ERROR ABOUT MEAN = 3.035
   SAMPLE SIZE = 14

BOTH RADIOMETRIC USABLE
   BIAS ERROR = 4.833
   RMS ERROR ABOUT MEAN = 2.628
   SAMPLE SIZE =   9

OVERALL SEDS PERFORMANCE FROM   JULIAN DAY   STATION 98   PAGE 63.
    MISSING DATA =   0
    BIAS ERROR = 2.642
    RMS ERROR ABOUT MEAN = 2.639
    SAMPLE SIZE =   68

                                        NIGHT RADIOMETRIC ONLY
                                            BIAS ERROR =   4.188
                                            RMS ERROR ABOUT MEAN =   1.730
    GROUND TRUTH DATA ONLY   SAMPLE SIZE =   9
        BIAS ERROR = 2.727
        RMS ERROR ABOUT MEAN = 2.791
        SAMPLE SIZE =   30
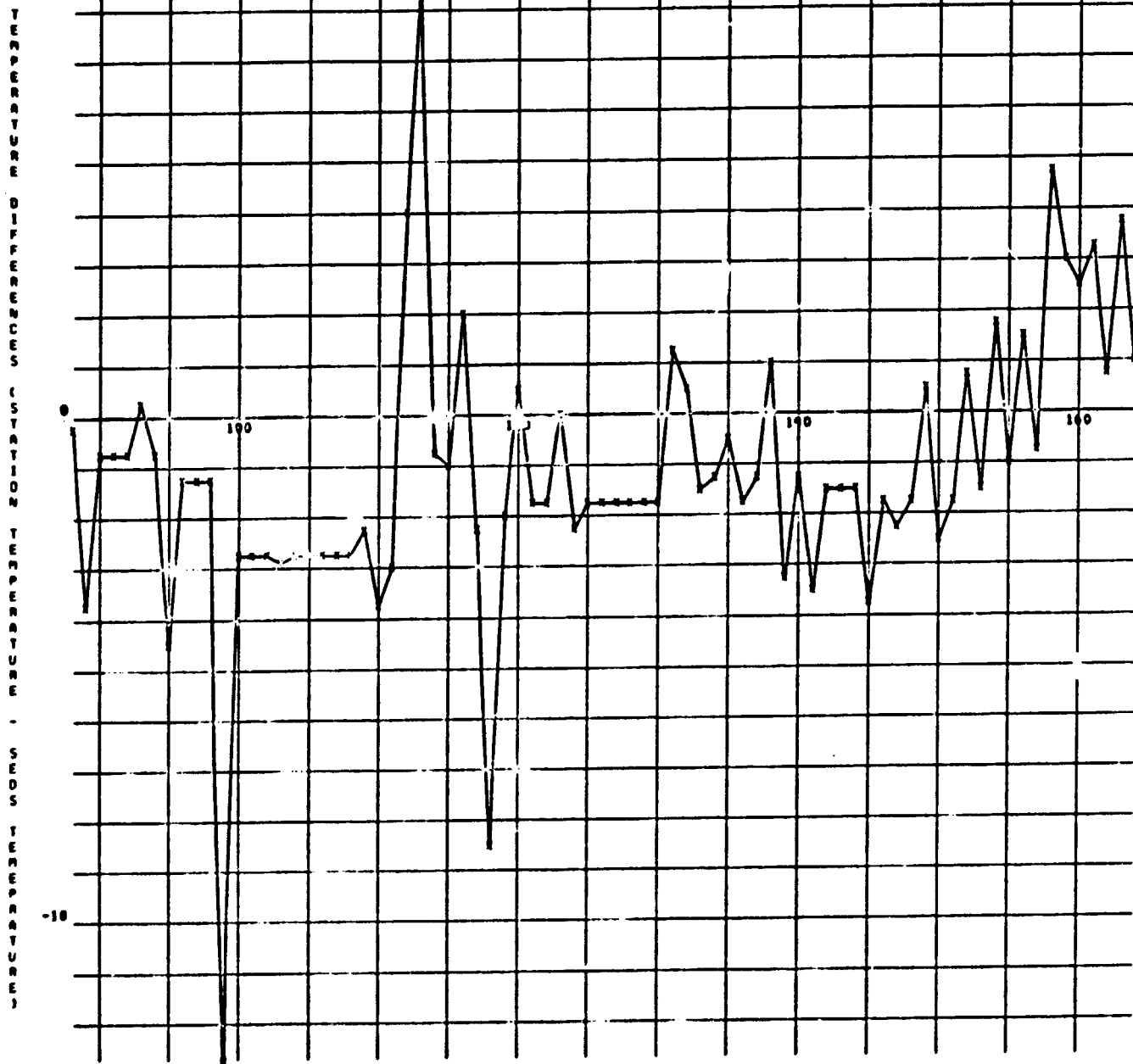
                                        DAY RADIOMETRIC ONLY
                                            BIAS ERROR =   2.727
                                            RMS ERROR ABOUT MEAN = 3.083
    BOTH RADIOMETRIC USABLE   SAMPLE SIZE =   15
        BIAS ERROR = 1.374
        RMS ERROR ABOUT MEAN = 1.740
        SAMPLE SIZE =   14

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TUCSON

Axis label (vertical): TEMPERATURE DIFFERENCES (STATION TEMPERATURE - SEDS TEMPERATURE)

Axis marks: 0, -10

X-axis labels: 100, 140, 160

JULIAN DAY   STATION 7C   PAGE 6.

OVERALL SEDS PERFORMANCE FROM
    MISSING DATA =   0
    BIAS ERROR = -1.128
    RMS ERROR ABOUT MEAN = 2.712
    SAMPLE SIZE =   77
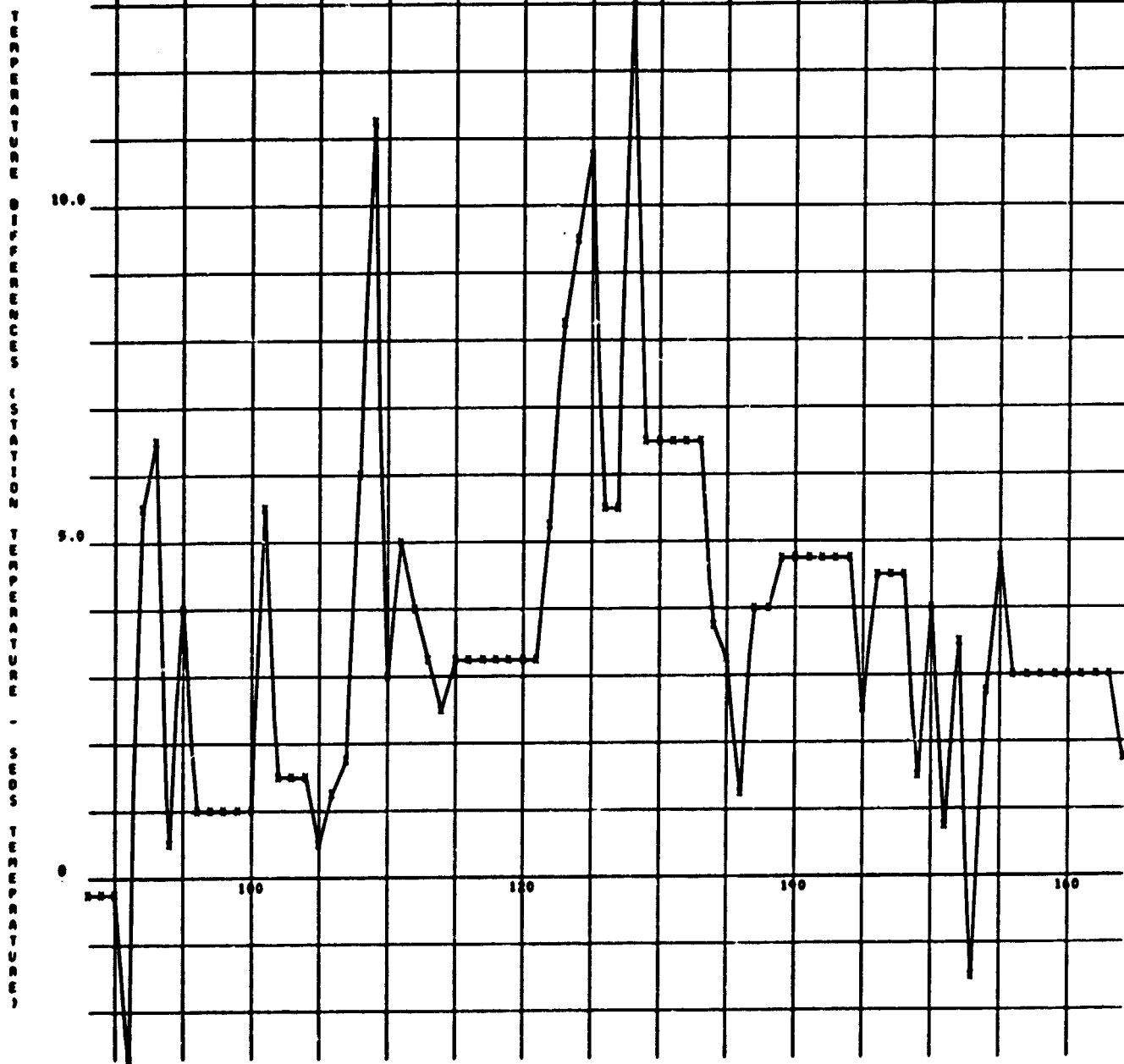
GROUND TRUTH DATA ONLY
    BIAS ERROR = -1.620
    RMS ERROR ABOUT MEAN =   .861
    SAMPLE SIZE =   43

BOTH RADIOMETRIC USABLE
    BIAS ERROR =   -.656
    RMS ERROR ABOUT MEAN = 1.817
    SAMPLE SIZE =   8

NIGHT RADIOMETRIC ONLY
    BIAS ERROR =   .667
    RMS ERROR ABOUT MEAN = 4.550
    SAMPLE SIZE =   18

DAY RADIOMETRIC ONLY
    BIAS ERROR = -3.300
    RMS ERROR ABOUT MEAN = 2.793
    SAMPLE SIZE =   8

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BROWNSVILLE

NIGHT RADIOMETRIC ONLY
  BIAS ERROR = 5.058
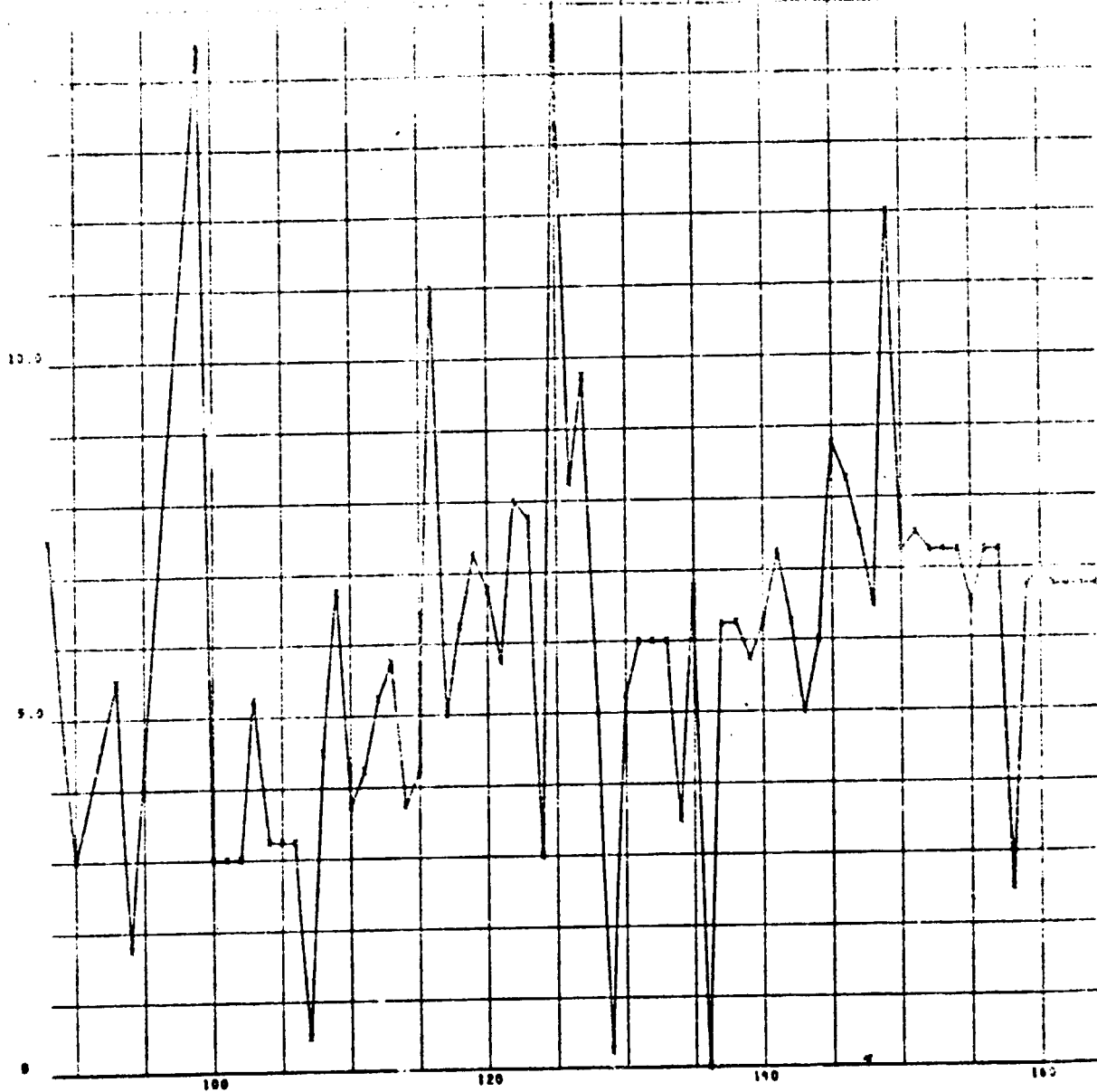 RMS ERROR ABOUT MEAN =   4.924
  SAMPLE SIZE =   13

GROUND TRUTH DATA ONLY
  BIAS ERROR = 3.218
  RMS ERROR ABOUT MEAN =   1.883
  SAMPLE SIZE =   47

DAY RADIOMETRIC ONLY
  BIAS ERROR = 4.391
  RMS ERROR ABOUT MEAN =   2.412
  SAMPLE SIZE =   11

BOTH RADIOMETRIC USABLE
  BIAS ERROR = 3.333
  RMS ERROR ABOUT MEAN =   1.571
  SAMPLE SIZE =   6

C-25

SOTO LA MARINA

JULIAN DAY   STATION 12   PAGE 1

OVERALL SEDS PERFORMANCE FROM
    MISSING DATA =   0
    BIAS ERROR =   6.007
    RMS ERROR ABOUT MEAN =   2.720   NIGHT RADIOMETRIC ONLY
    SAMPLE SIZE =   70   BIAS ERROR =   6.469
                                         RMS ERROR ABOUT MEAN =   4.107
                                         SAMPLE SIZE =   8

GROUND TRUTH DATA ONLY
    BIAS ERROR =   5.422
    RMS ERROR ABOUT MEAN =   1.822   DAY RADIOMETRIC ONLY
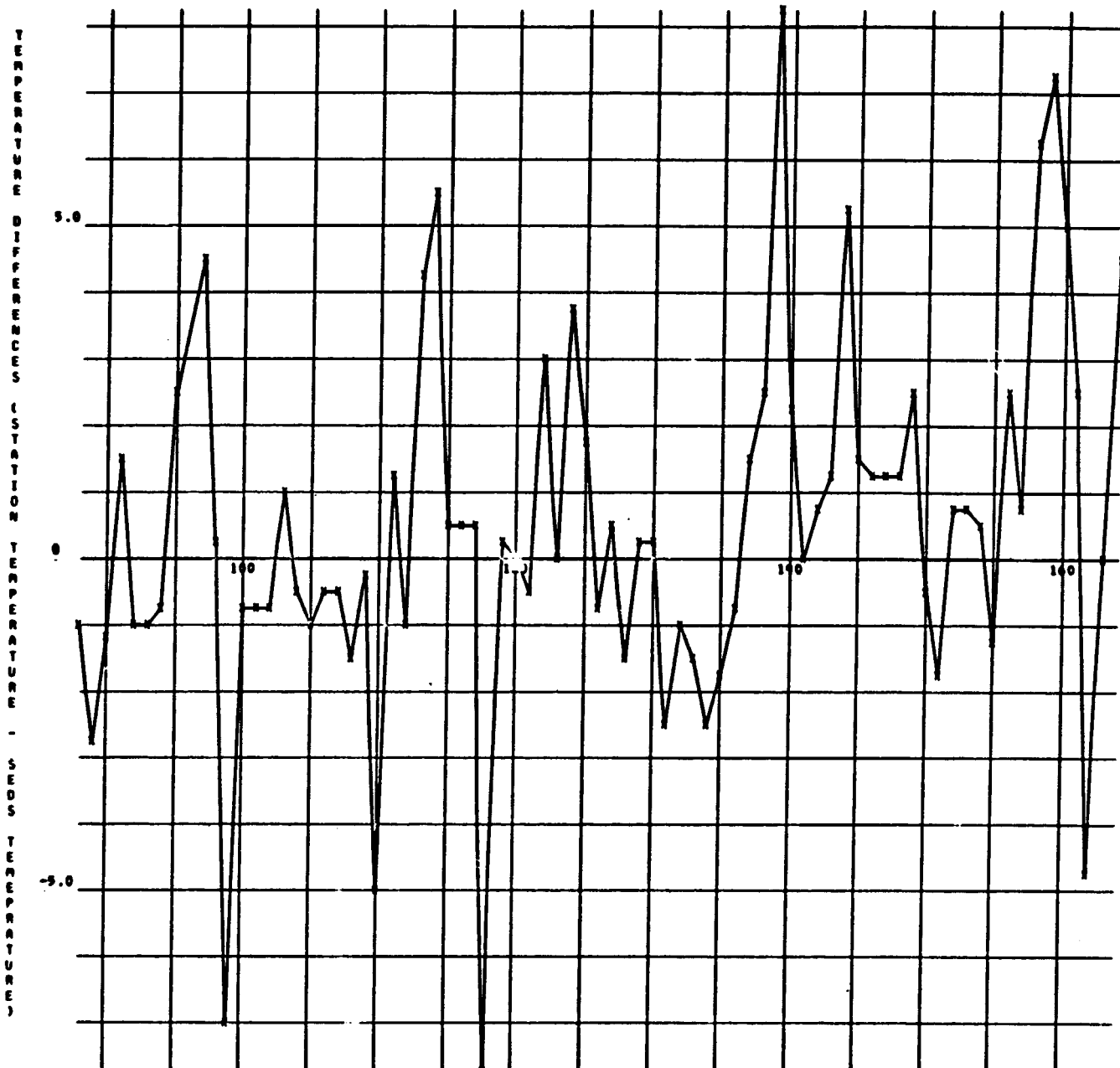   SAMPLE SIZE =   32   BIAS ERROR =   6.153
                                         RMS ERROR ABOUT MEAN =   2.872
                                         SAMPLE SIZE =   18

BOTH RADIOMETRIC USABLE
    BIAS ERROR =   7.042
    RMS ERROR ABOUT MEAN =   3.347
    SAMPLE SIZE =   12

C-26

SOTO LA MARINA

MIDLAND-ODESSA

Y-axis label: TEMPERATURE DIFFERENCES (STATION TEMPERATURE - SEDS TEMPERATURE)

OVERALL SEDS PERFORMANCE FROM   JULIAN DAY   STATION 03   PAGE 27.
   MISSING DATA =   C
   BIAS ERROR =   .478
   RMS ERROR ABOUT MEAN = 2.751
   SAMPLE SIZE =   76

                                            NIGHT RADIOMETRIC ONLY
                                               BIAS ERROR =   .056
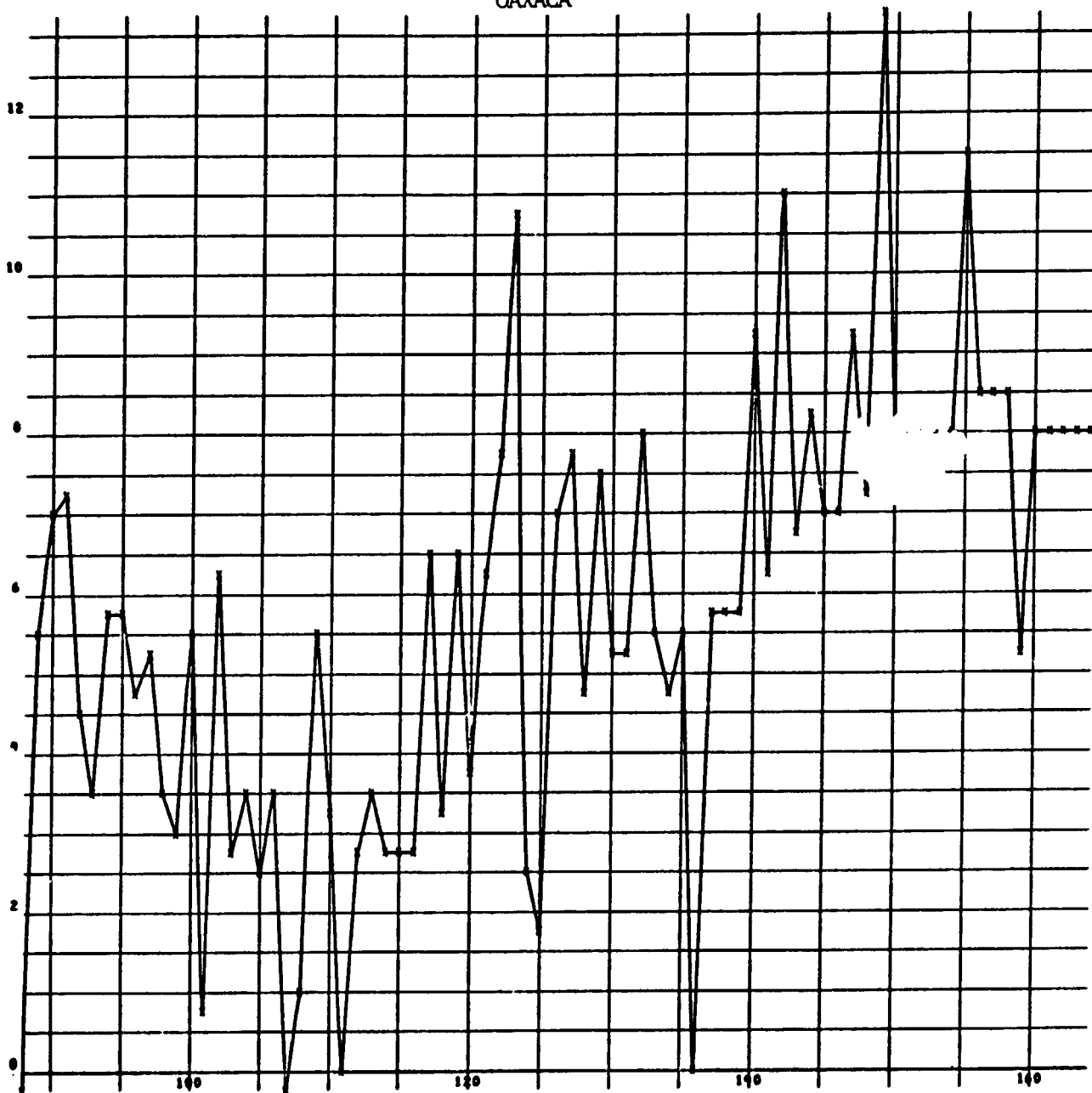   RMS ERROR ABOUT MEAN = 3.374
                                               SAMPLE SIZE =   9

GROUND TRUTH DATA ONLY
   BIAS ERROR =   .097
   RMS ERROR ABOUT MEAN =   .921
   SAMPLE SIZE =   29

                                            DAY RADIOMETRIC ONLY
                                               BIAS ERROR =   .559
                                               RMS ERROR ABOUT MEAN = 3.812
                                               SAMPLE SIZE =   22

BOTH RADIOMETRIC USABLE
   BIAS ERROR = 1.156
   RMS ERROR ABOUT MEAN = 3.165
   SAMPLE SIZE =   16

OAXACA

TEMPERATURE DIFFERENCES (STATION TEMPERATURE - SEDS TEREPRATURE)

JULIAN DAY   STATION 30

OVERALL SEDS PERFORMANCE FROM
    MISSING DATA = 0
    BIAS ERROR = 5.705
    RMS ERROR ABOUT MEAN = 2.806
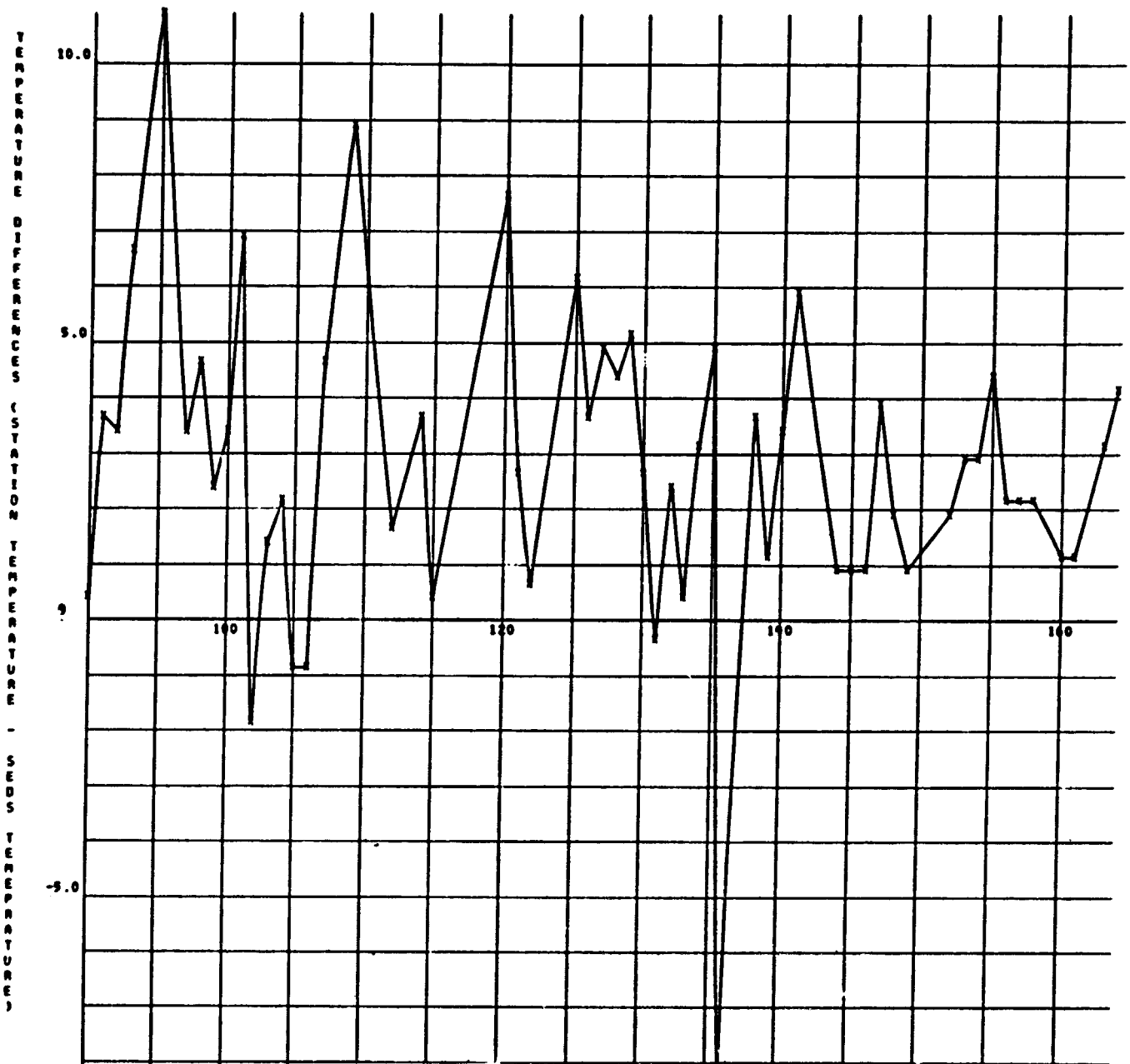   SAMPLE SIZE = 77

GROUND TRUTH DATA ONLY
    BIAS ERROR = 5.868
    RMS ERROR ABOUT MEAN = 2.206
    SAMPLE SIZE = 36

NIGHT RADIOMETRIC ONLY
    BIAS ERROR = 5.200
    RMS ERROR ABOUT MEAN = 3.194
    SAMPLE SIZE = 5

DAY RADIOMETRIC ONLY
    BIAS ERROR = 6.534
    RMS ERROR ABOUT MEAN = 2.919
    SAMPLE SIZE = 29

BOTH RADIOMETRIC USABLE
    BIAS ERROR = 1.786
    RMS ERROR ABOUT MEAN = 1.788
    SAMPLE SIZE = 7

JALAPA

OVERALL SEDS PERFORMANCE FROM
   MISSING DATA =   0
   BIAS ERROR =   2.812
   RMS ERROR ABOUT MEAN =   2.832
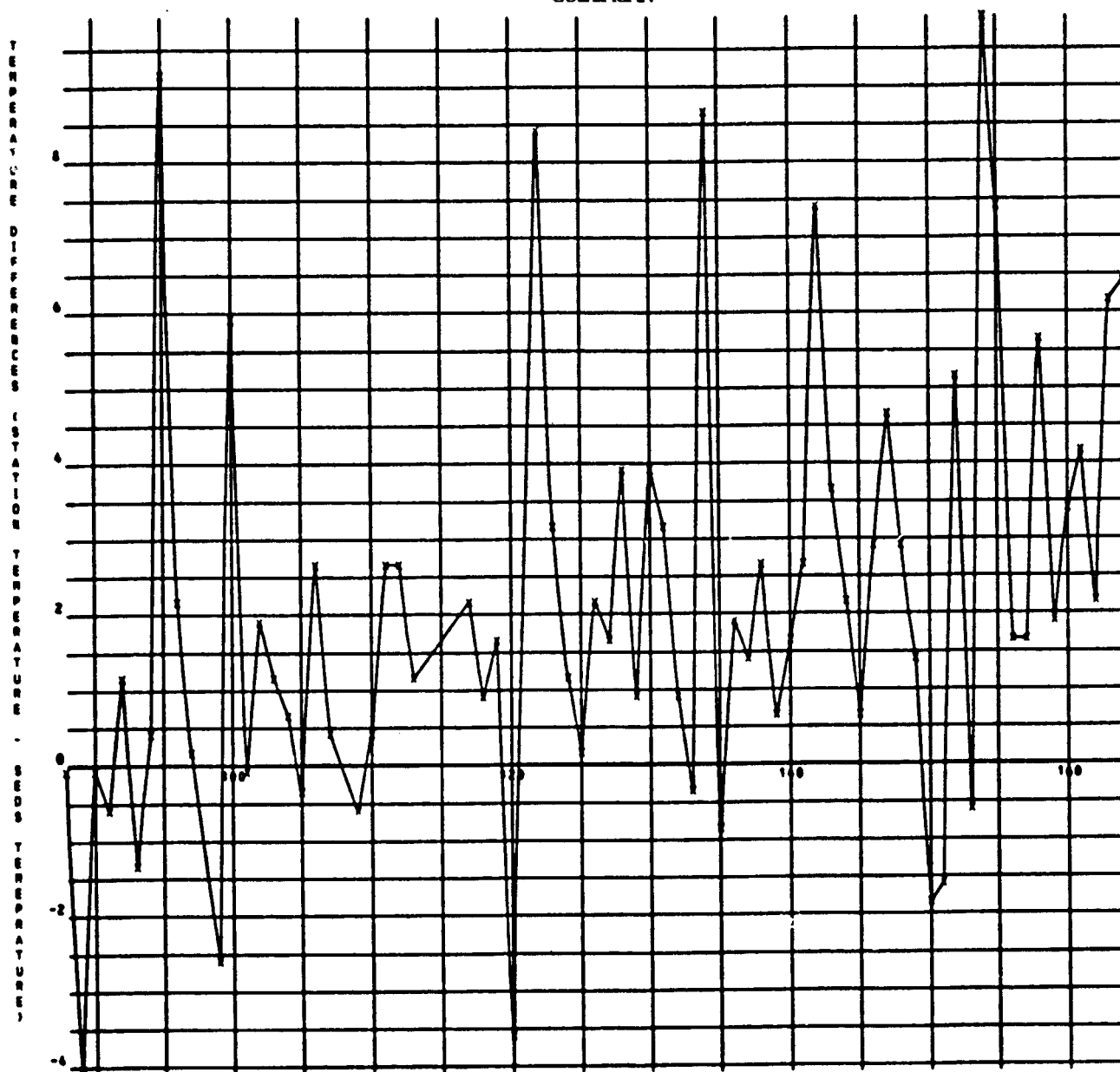   SAMPLE SIZE =   56

GROUND TRUTH DATA ONLY
   BIAS ERROR =   1.419
   RMS ERROR ABOUT MEAN =   1.437
   SAMPLE SIZE =   27

BOTH RADIOMETRIC USABLE
   BIAS ERROR =   6.010
   RMS ERROR ABOUT MEAN =   2.590
   SAMPLE SIZE =   5

NIGHT RADIOMETRIC ONLY
   BIAS ERROR =   4.941
   RMS ERROR ABOUT MEAN =   2.941
   SAMPLE SIZE =   8

DAY RADIOMETRIC ONLY
   BIAS ERROR =   3.397
   RMS ERROR ABOUT MEAN =   3.256
   SAMPLE SIZE =   16

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CULIACAN

MISSING DATA = 5
BIAS ERROR = 2.104
RMS ERROR ABOUT MEAN = 2.856
SAMPLE SIZE = 71

GROUND TRUTH DATA ONLY
BIAS ERROR = 1.199
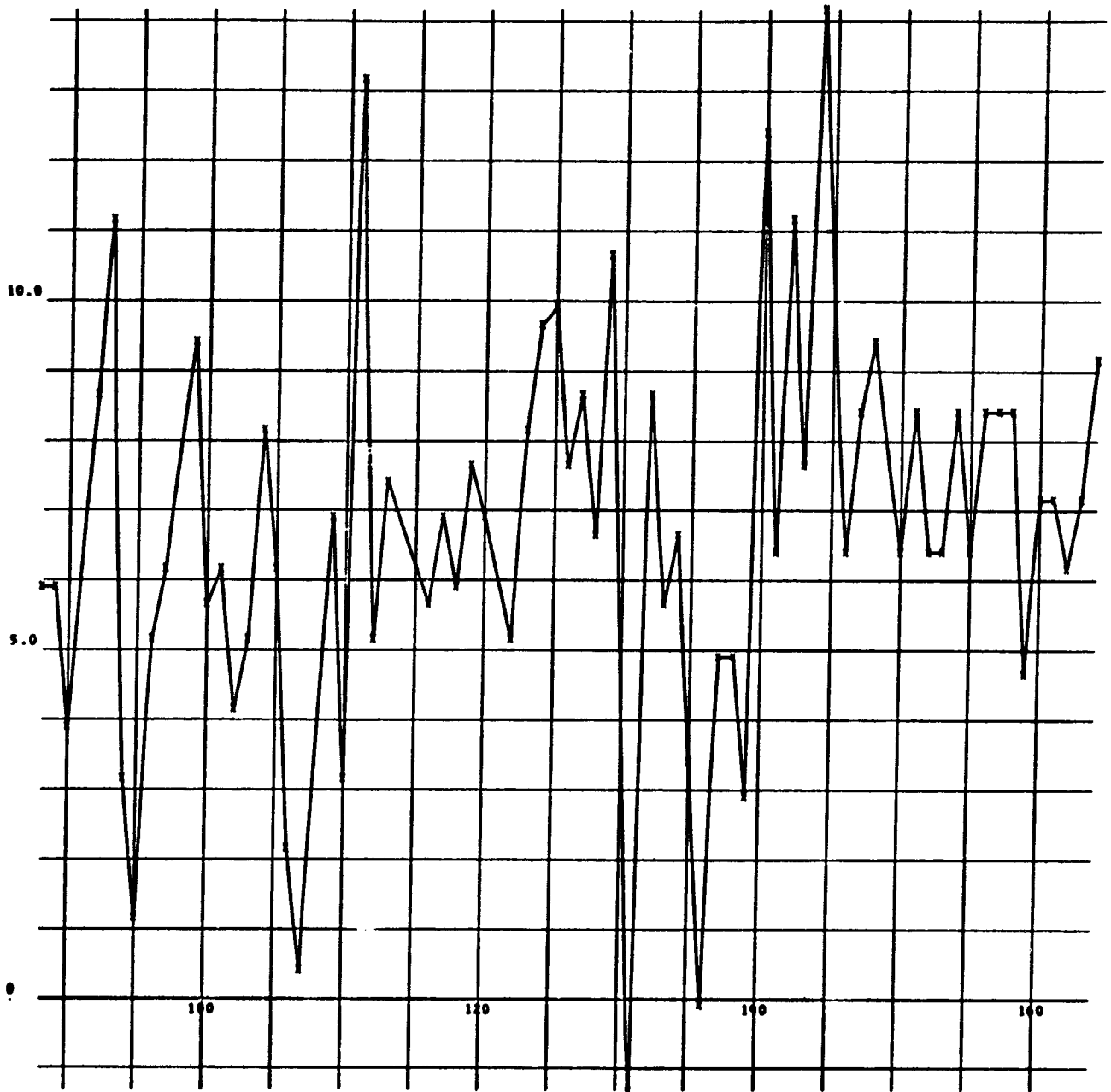RMS ERROR ABOUT MEAN = 1.926
SAMPLE SIZE = 25

BOTH RADIOMETRIC USABLE
BIAS ERROR = 2.927
RMS ERROR ABOUT MEAN = 2.813
SAMPLE SIZE = 15

NIGHT RADIOMETRIC ONLY
BIAS ERROR = 2.122
RMS ERROR ABOUT MEAN = 3.288
SAMPLE SIZE = 13

DAY RADIOMETRIC ONLY
BIAS ERROR = 2.688
RMS ERROR ABOUT MEAN = 3.592
SAMPLE SIZE = 18

OVERALL SEDS PERFORMANCE
MISSING DATA =   0
BIAS ERROR =   6.689
RMS ERROR =   2.880
SAMPLE SIZE =   68

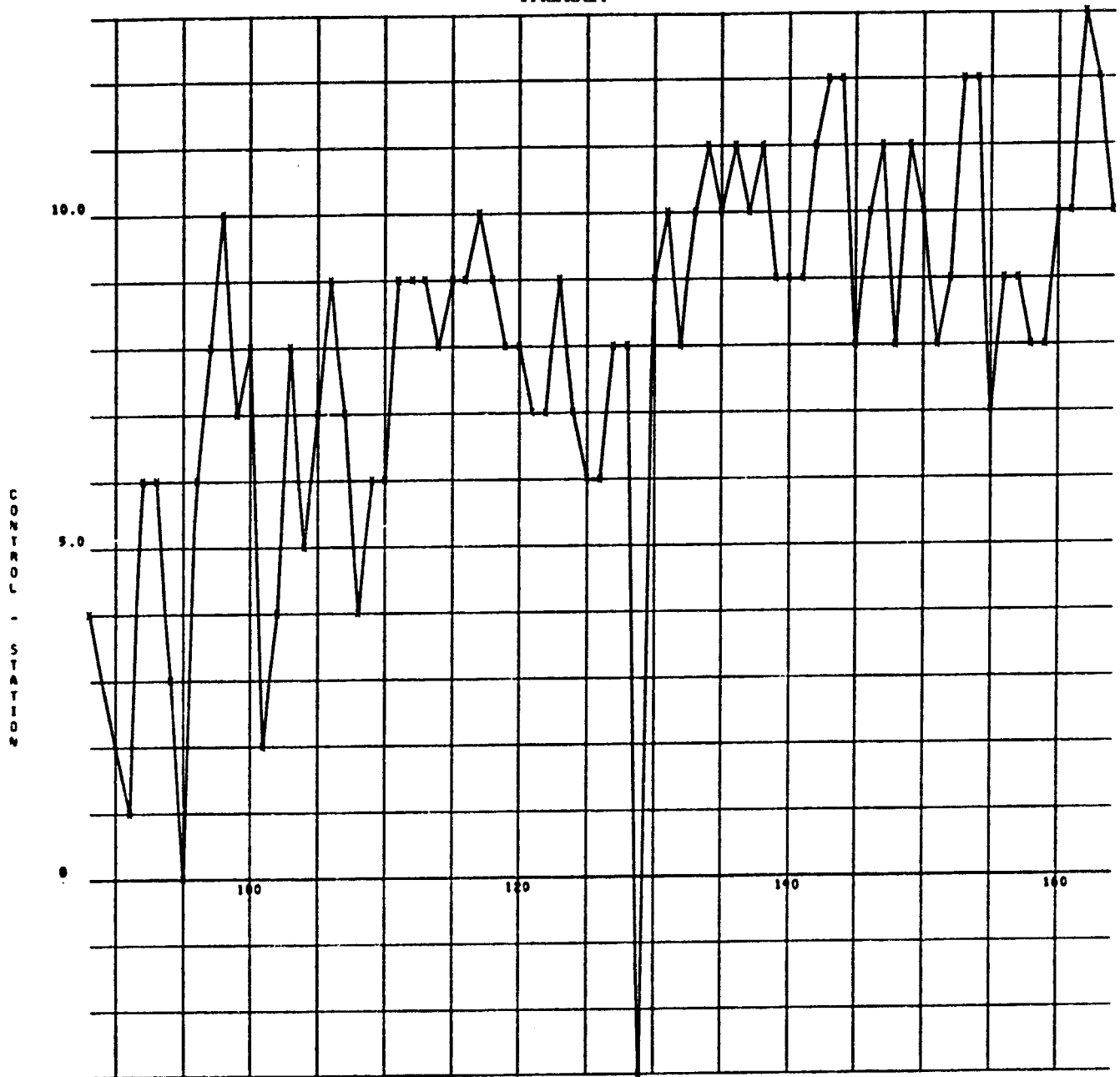JULIAN DAY   STATION 50   PAGE 29.

GROUND TRUTH DATA ONLY
BIAS ERROR =   6.120
RMS ERROR =   2.421
SAMPLE SIZE =   44

NIGHT RADIOMETRIC ONLY
BIAS ERROR =   6.785
RMS ERROR =   9.016
SAMPLE SIZE =   2

DAY RADIOMETRIC ONLY
BIAS ERROR =   8.204
RMS ERROR =   3.243
SAMPLE SIZE =   17

BOTH RADIOMETRIC USABLE
BIAS ERROR =   6.510
RMS ERROR =   .379
SAMPLE SIZE =   5

PACHUCA

UVERALL SEOS PERFORMANCE FRUM   JULIAN DAY   STATION 19   PAGE 4.
   MISSING DATA =   0
   BIAS ERROR =   4.335
   RMS ERROR ABOUT MEAN =   2.930
   SAMPLE SIZE =   75

                                          NIGHT RADIOMETRIC ONLY
                                             BIAS ERROR =   5.594
   GROUND TRUTH DATA ONLY   RMS ERROR ABOUT MEAN =   2.2 n
      BIAS ERROR =   4.492   SAMPLE SIZE =   8
      RMS ERROR ABOUT MEAN =   .813
      SAMPLE SIZE =   32

                                          DAY RADIOMETRIC ONLY
                                             BIAS ERROR =   4.164
   BOTH RADIOMETRIC USABLE   RMS ERROR ABOUT MEAN =   4.71z
      BIAS ERROR =   3.417   SAMPLE SIZE =   24
      RMS ERROR ABOUT MEAN =   .71
      SAMPLE SIZE =   6

PUEBLA

OVERALL SEDS PERFORMANCE FROM   JULIAN DAY   STATION 25   PAGE 10.
    MISSING DATA =   0
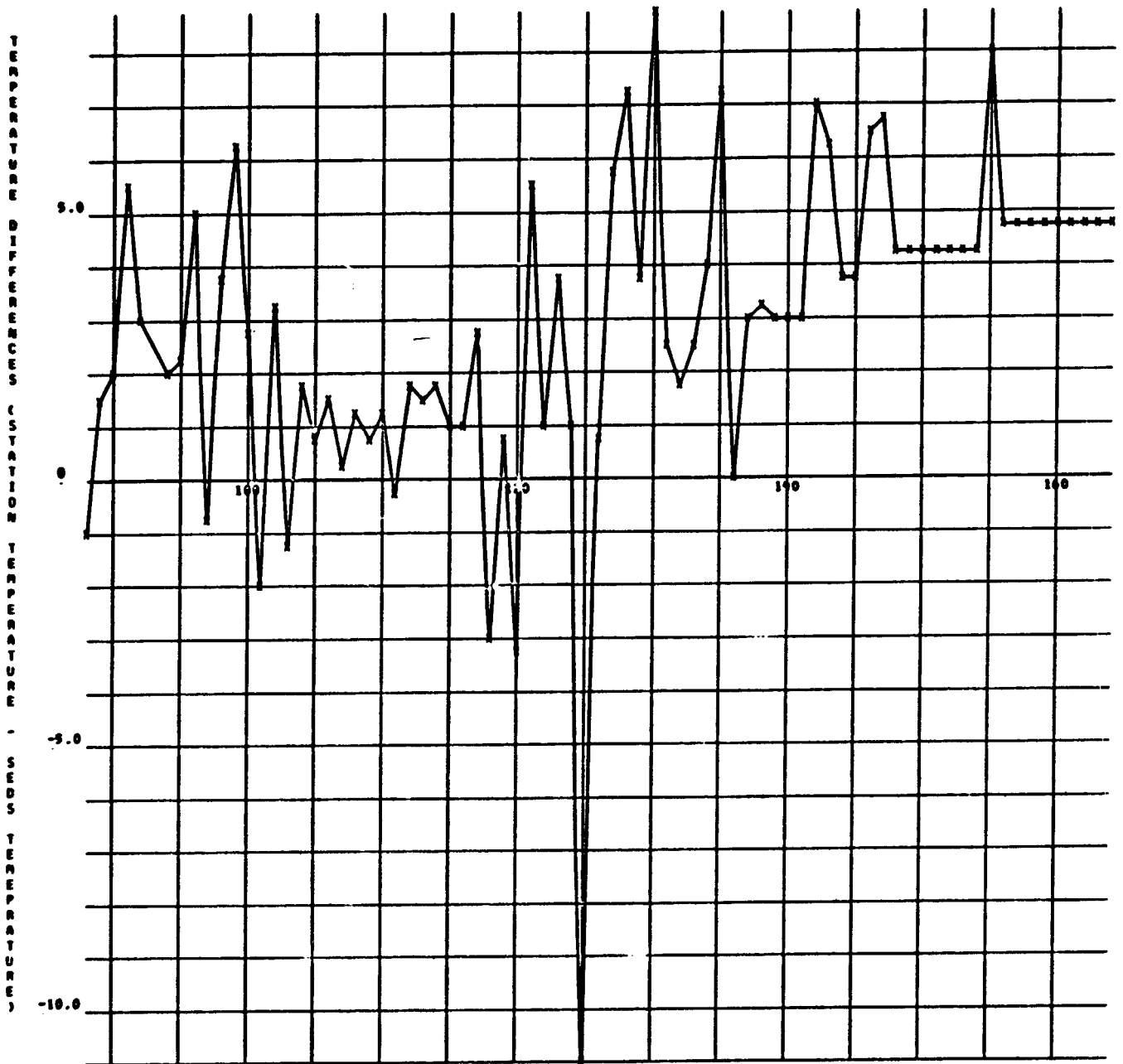   BIAS ERROR =   2.869
    RMS ERROR ABOUT MEAN =   2.950
    SAMPLE SIZE =   76

                                          NIGHT RADIOMETRIC ONLY
                                              BIAS ERROR =   3.792
GROUND TRUTH DATA ONLY   RMS ERROR ABOUT MEAN =   2.891
    BIAS ERROR =   3.229   SAMPLE SIZE =   6
    RMS ERROR ABOUT MEAN =   1.416
    SAMPLE SIZE =   35

                                          DAY RADIOMETRIC ONLY
                                              BIAS ERROR =   3.771
BOTH RADIOMETRIC USABLE   RMS ERROR ABOUT MEAN =   2.632
    BIAS ERROR =   -.750   SAMPLE SIZE =   24
    RMS ERROR ABOUT MEAN =   4.584
    SAMPLE SIZE =   11

OVERALL SEDS PERFORMANCE FROM JULIAN DAY   STATION 95   PAGE 3.
    MISSING DATA =   0
    BIAS ERROR =   .490
    RMS ERROR ABOUT MEAN = 2.954
    SAMPLE SIZE =   77

GROUND TRUTH DATA ONLY
    BIAS ERROR = -.067
    RMS ERROR ABOUT MEAN = 1.905
    SAMPLE SIZE =   52

BOTH RADIOMETRIC USABLE
    BIAS ERROR =   .488
    RMS ERROR ABOUT MEAN = 1.819
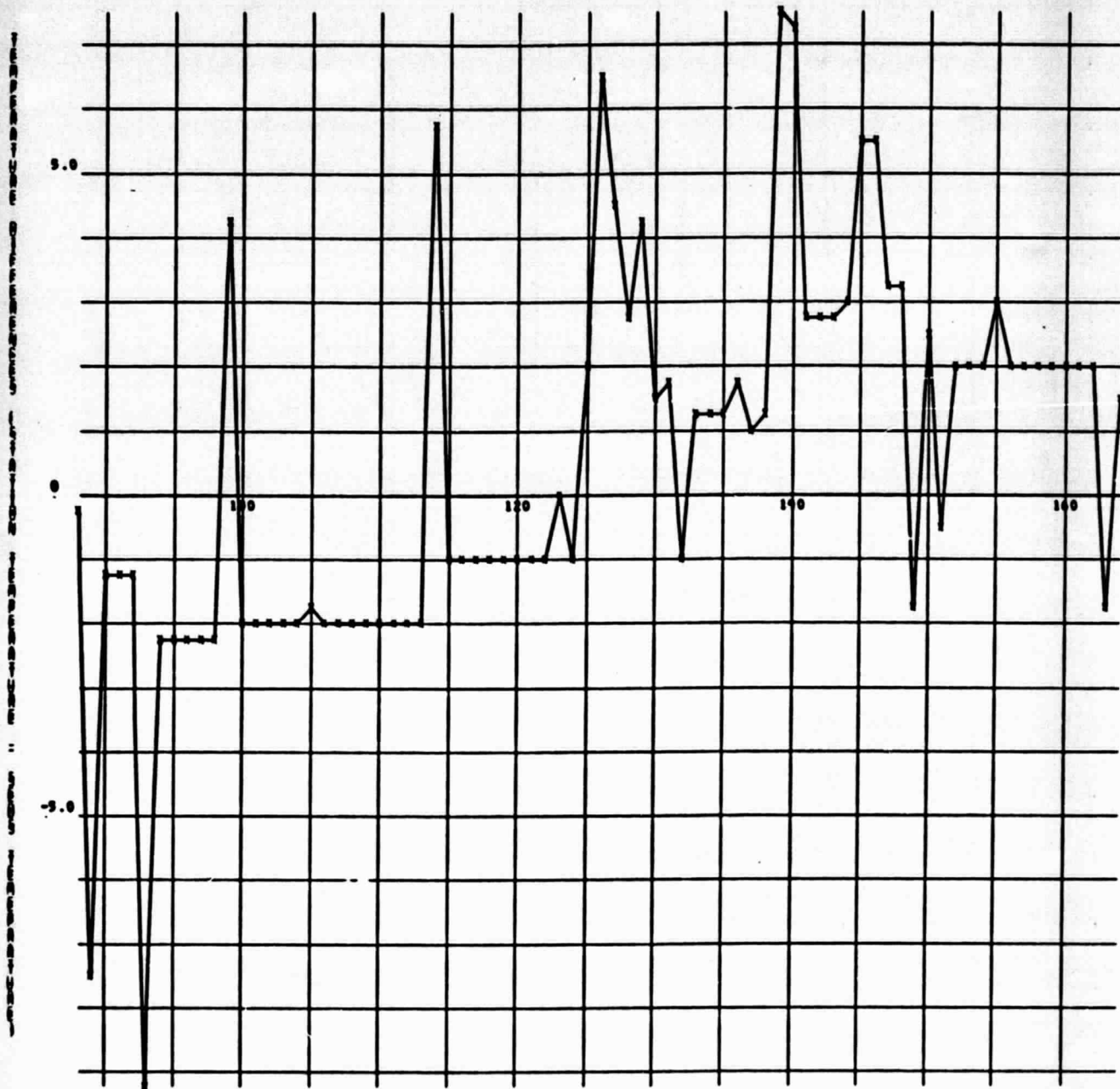   SAMPLE SIZE =   4
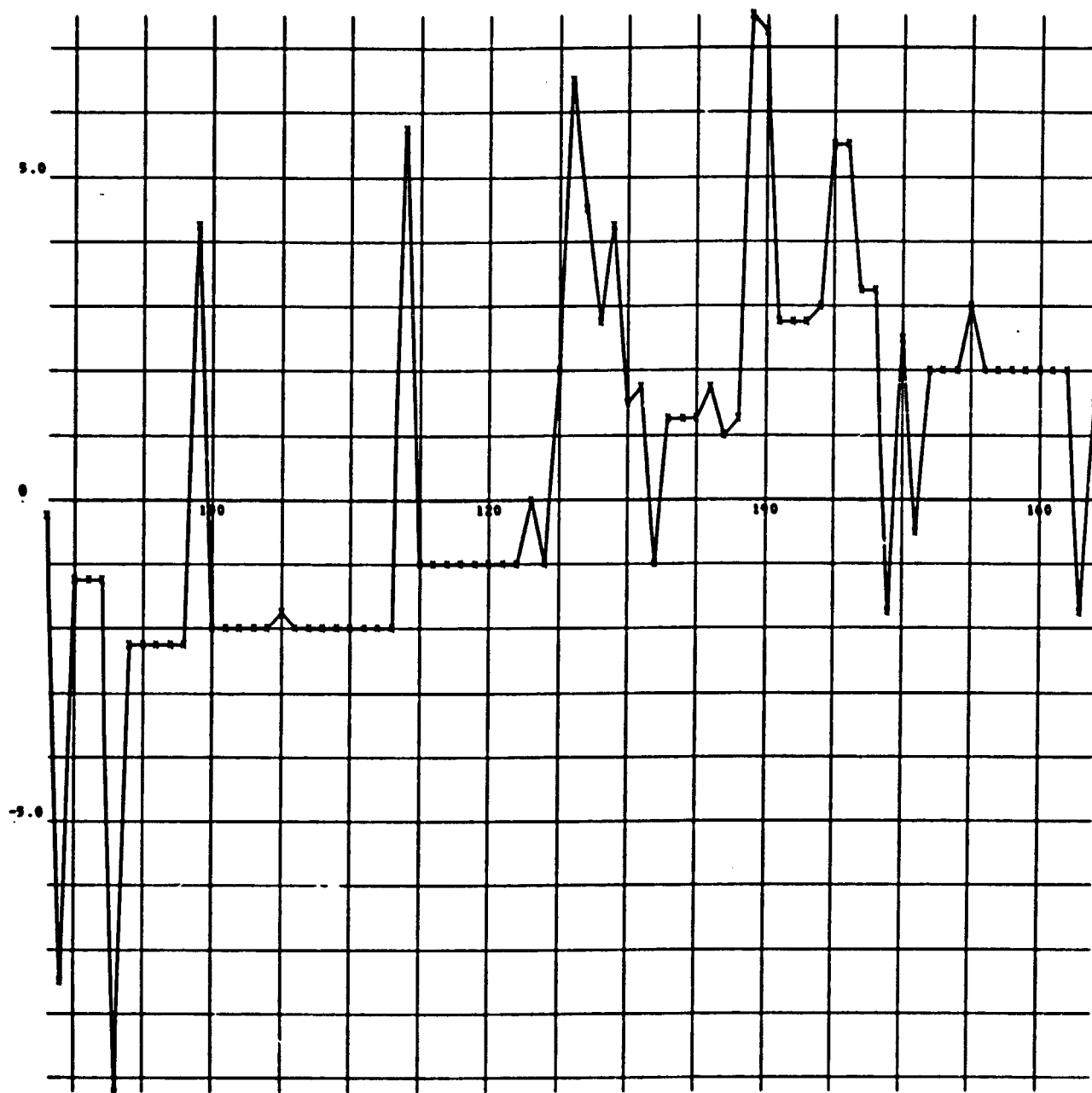
NIGHT RADIOMETRIC ONLY
    BIAS ERROR = -.583
    RMS ERROR ABOUT MEAN = 2.241
    SAMPLE SIZE =   3

DAY RADIOMETRIC ONLY
    BIAS ERROR = 2.292
    RMS ERROR ABOUT MEAN = 4.722
    SAMPLE SIZE =   18

C-34

WACO

OVERALL SFDS PERFORMANCE FROM   JULIAN DAY   STATION 95   PAGE 3.
   MISSING DATA =   C
   BIAS ERROR =   .49C
   RMS ERROR ABOUT MEAN = 2.954
   SAMPLE SIZE =   77

NIGHT RADIOMETRIC ONLY
   BIAS ERROR = -.503
   RMS ERROR ABOUT MEAN = 2.241
   SAMPLE SIZE =   3

GROUND TRUTH DATA ONLY
   BIAS ERROR = -.767
   RMS ERROR ABOUT MEAN = 1.905
   SAMPLE SIZE =   52

DAY RADIOMETRIC ONLY
   BIAS ERROR = 2.292
   RMS ERROR ABOUT MEAN = 4.722
   SAMPLE SIZE =   18

BOTH RADIOMETRIC USABLE
   BIAS ERROR = .488
   RMS ERROR ABOUT MEAN = 1.819
   SAMPLE SIZE =   4

VERACRUZ

OVERALL SEDS PERFORMANCE FROM

JULIAN DAY   STATION 26   PAGE 13.

MISSING DATA = 0
BIAS ERROR = 5.444
RMS ERROR ABOUT MEAN = 3.012
SAMPLE SIZE = 77

GROUND TRUTH DATA ONLY
BIAS ERROR = 5.431
RMS ERROR ABOUT MEAN = 2.512
SAMPLE SIZE = 45

NIGHT RADIOMETRIC ONLY
BIAS ERROR = .833
RMS ERROR ABOUT MEAN = 2.672
SAMPLE SIZE = 6

BOTH RADIOMETRIC USABLE
BIAS ERROR = 4.812
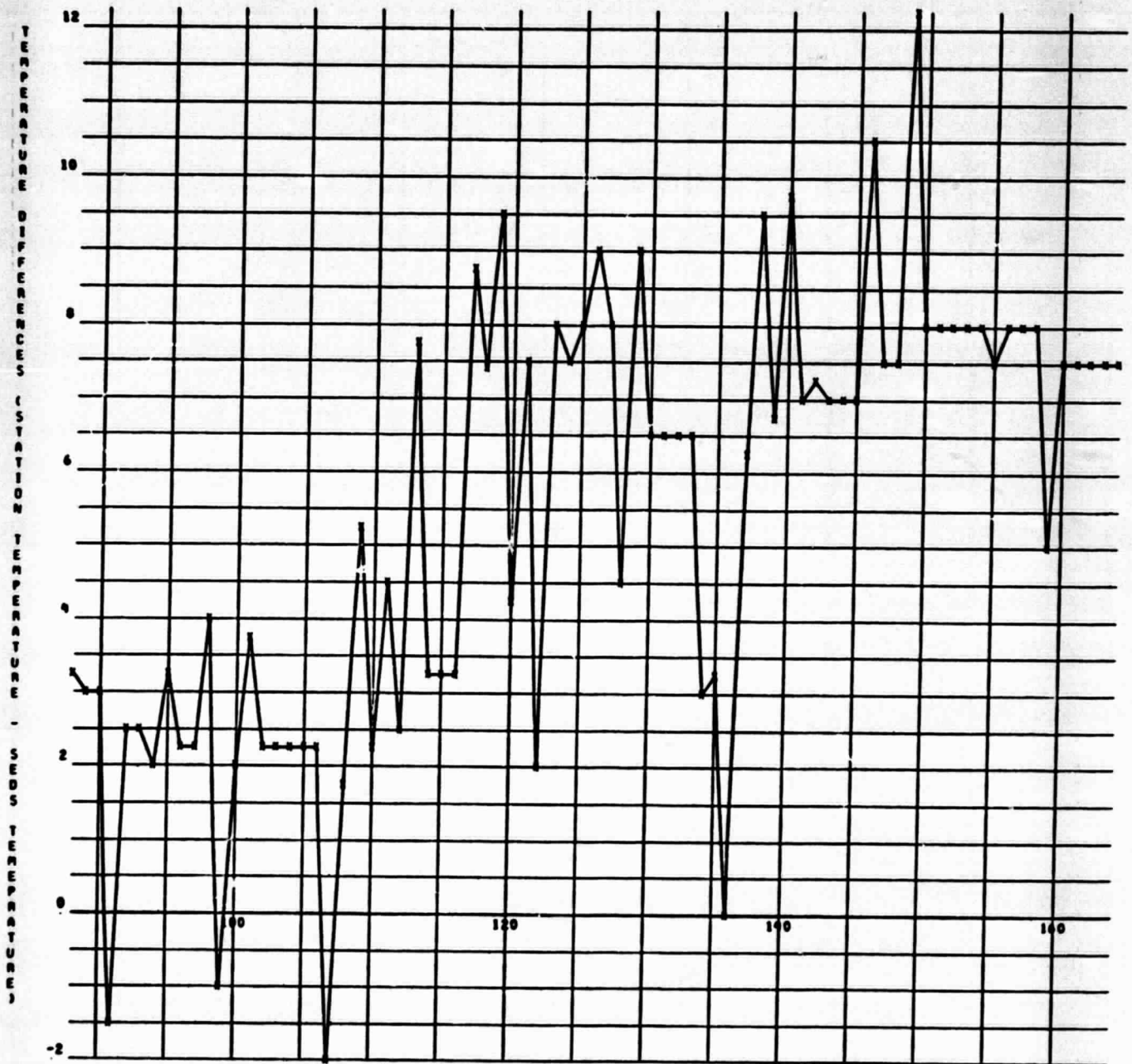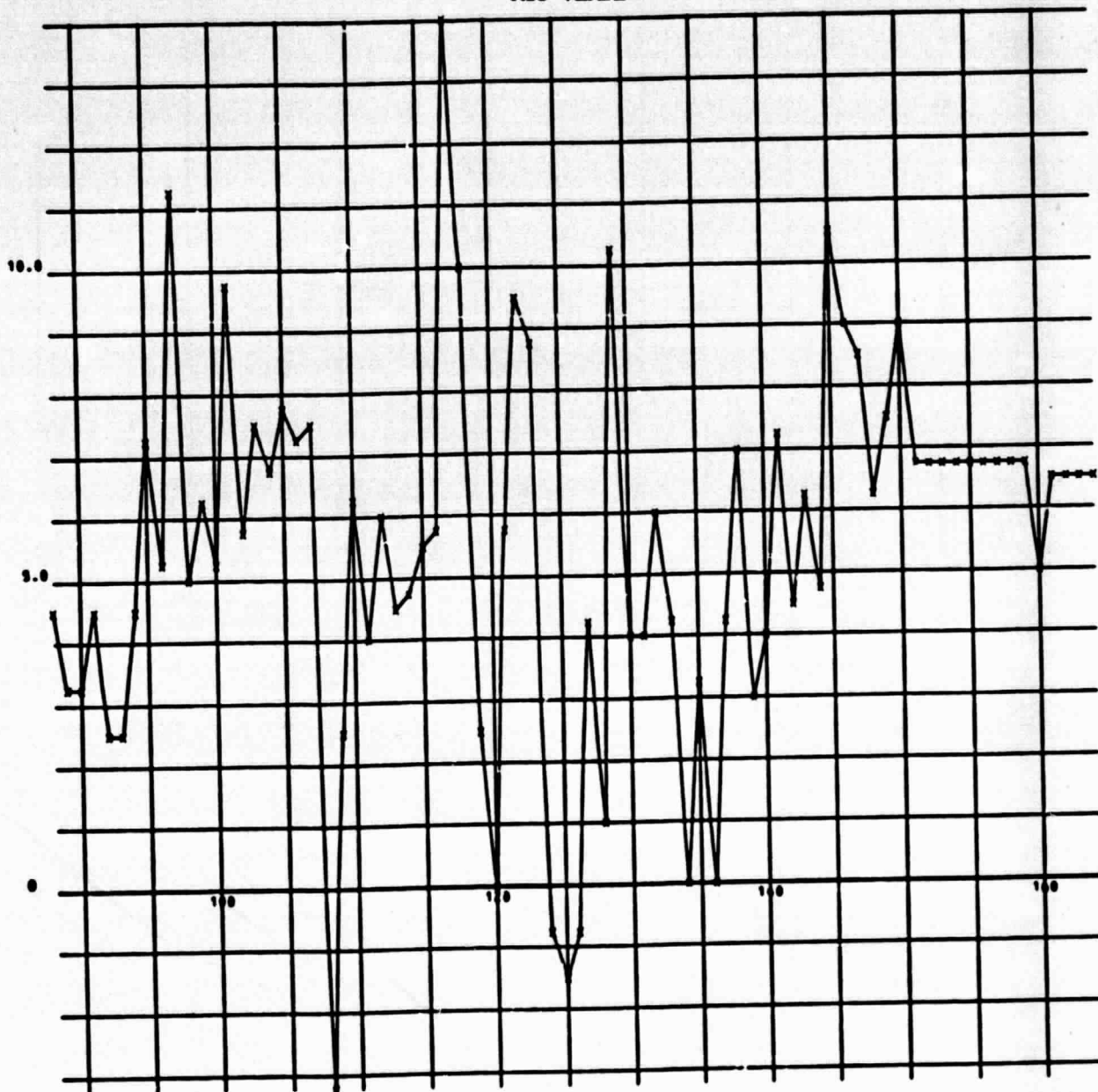RMS ERROR ABOUT MEAN = 1.963
SAMPLE SIZE = 8

DAY RADIOMETRIC ONLY
BIAS ERROR = 7.292
RMS ERROR ABOUT MEAN = 3.039
SAMPLE SIZE = 18

C-35

RIO VERDE

OVERALL SEDS PERFORMANCE FROM   JULIAN DAY   STATION 17   PAGE 56.
        MISSING DATA =   0
        BIAS ERROR =   5.474
        RMS ERROR ABOUT MEAN =   3.024
        SAMPLE SIZE =   77

                                                NIGHT RADIOMETRIC ONLY
                                                    BIAS ERROR =   5.833
                                                    RMS ERROR ABOUT MEAN =   2.314
        GROUND TRUTH DATA ONLY   SAMPLE SIZE =   12
            BIAS ERROR =   5.319
            RMS ERROR ABOUT MEAN =   2.262
            SAMPLE SIZE =   29
                                                DAY RADIOMETRIC ONLY
                                                    BIAS ERROR =   6.390
                                                    RMS ERROR ABOUT MEAN =   3.098
        BOTH RADIOMETRIC USABLE   SAMPLE SIZE =   25
            BIAS ERROR =   3.409
            RMS ERROR ABOUT MEAN =   4.384
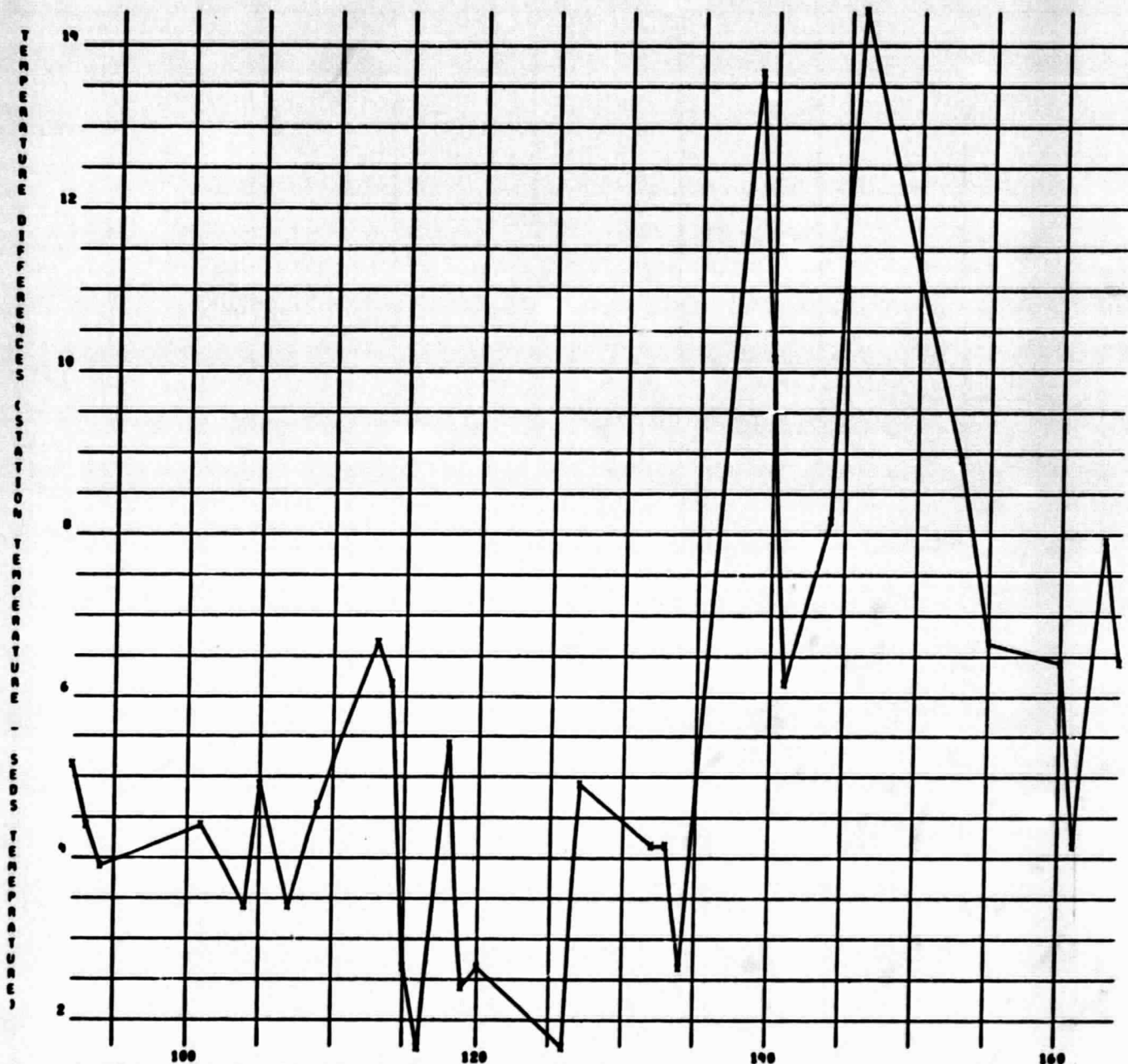   SAMPLE SIZE =   11

                                        C-36

COLIMA

C-37

TEMPERATURE DIFFERENCES (STATION TEMPERATURE - SEDS TEMPERATURE)

OVERALL SEDS PERFORMANCE JULIAN DAY   STATION 52   PAGE 26.
            MISSING DATA =   0
            BIAS ERROR =   3.821
            RMS ERROR =   3.149
            SAMPLE SIZE =   42

                                              NIGHT RADIOMETRIC ONLY
                                                  BIAS ERROR =   4.517
            GROUND TRUTH DATA ONLY   RMS ERROR =   3.338
                BIAS ERROR =   2.773   SAMPLE SIZE =   7
                RMS ERROR =   2.319
                SAMPLE SIZE =   32

                                              DAY RADIOMETRIC ONLY
                                                  BIAS ERROR =   5.300
            BOTH RADIOMETRIC USABLE   RMS ERROR =   4.346
                BIAS ERROR =   4.441   SAMPLE SIZE =   15
                RMS ERROR =   2.065
                SAMPLE SIZE =   0   C-38

TORREON

OVERALL SEDS PERFORMANCE FROM JULIAN DAY   STATION 05   PAGE 26.
    MISSING DATA = 0
    BIAS ERROR = 3.764
    RMS ERROR ABOUT MEAN = 3.158
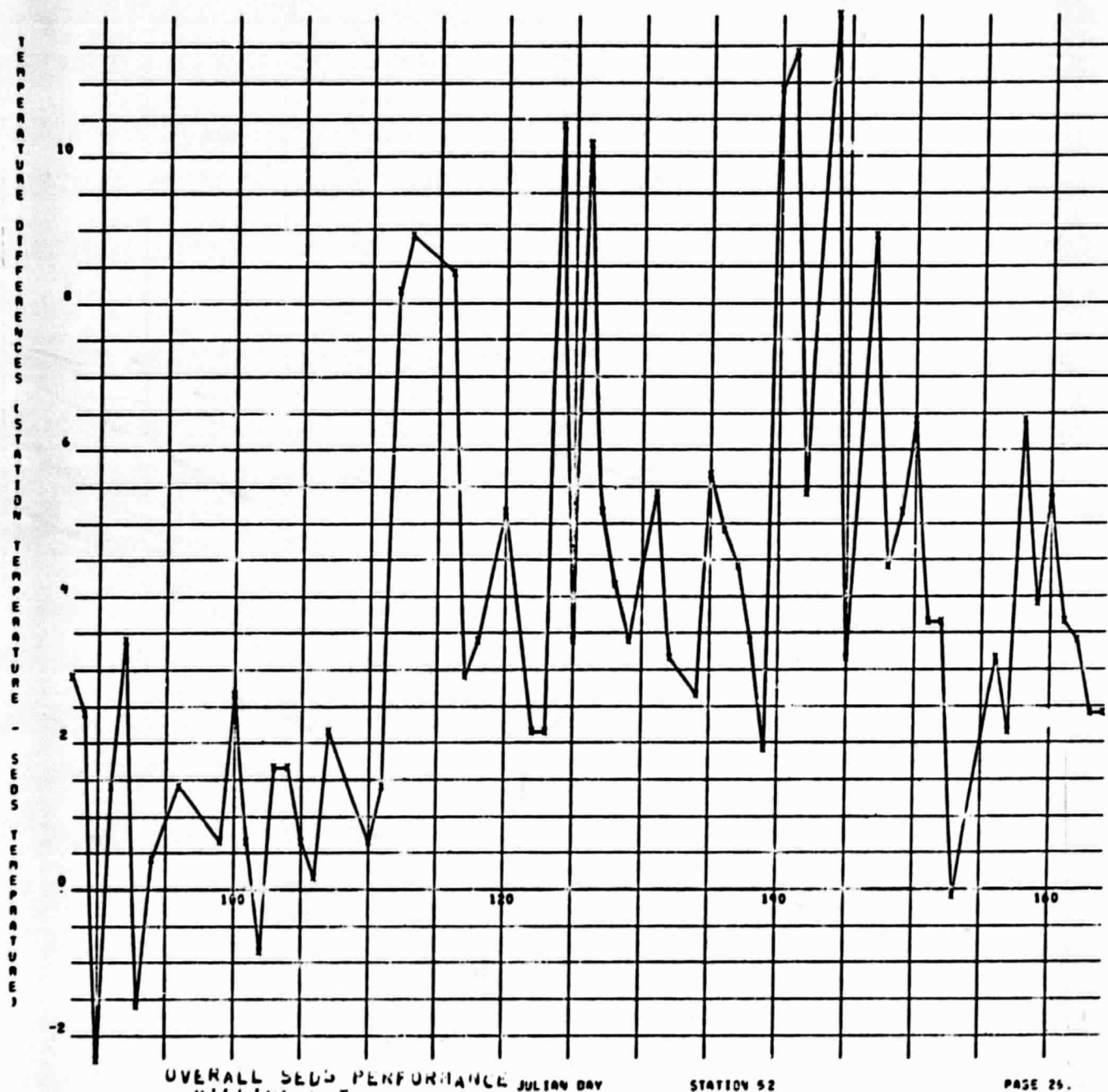   SAMPLE SIZE = 70

GROUND TRUTH DATA ONLY
    BIAS ERROR = 3.829
    RMS ERROR ABOUT MEAN = 2.890
    SAMPLE SIZE = 31

NIGHT RADIOMETRIC ONLY
    BIAS ERROR = 4.017
    RMS ERROR ABOUT MEAN = 4.006
    SAMPLE SIZE = 14

DAY RADIOMETRIC ONLY
    BIAS ERROR = 3.827
    RMS ERROR ABOUT MEAN = 3.129
    SAMPLE SIZE = 12

BOTH RADIOMETRIC USABLE
    BIAS ERROR = 3.275
    RMS ERROR ABOUT MEAN = 3.122
    SAMPLE SIZE = 13

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OVERALL SEDS PERFORMANCE FROM   JULIAN DAY   STATION 59   PAGE 16.
      MISSING DATA =   0
      BIAS ERROR =   .597
      RMS ERROR ABOUT MEAN =   3.16C
      SAMPLE SIZE =   60

                                              NIGHT RADIOMETRIC ONLY
                                                  BIAS ERROR = 1.264
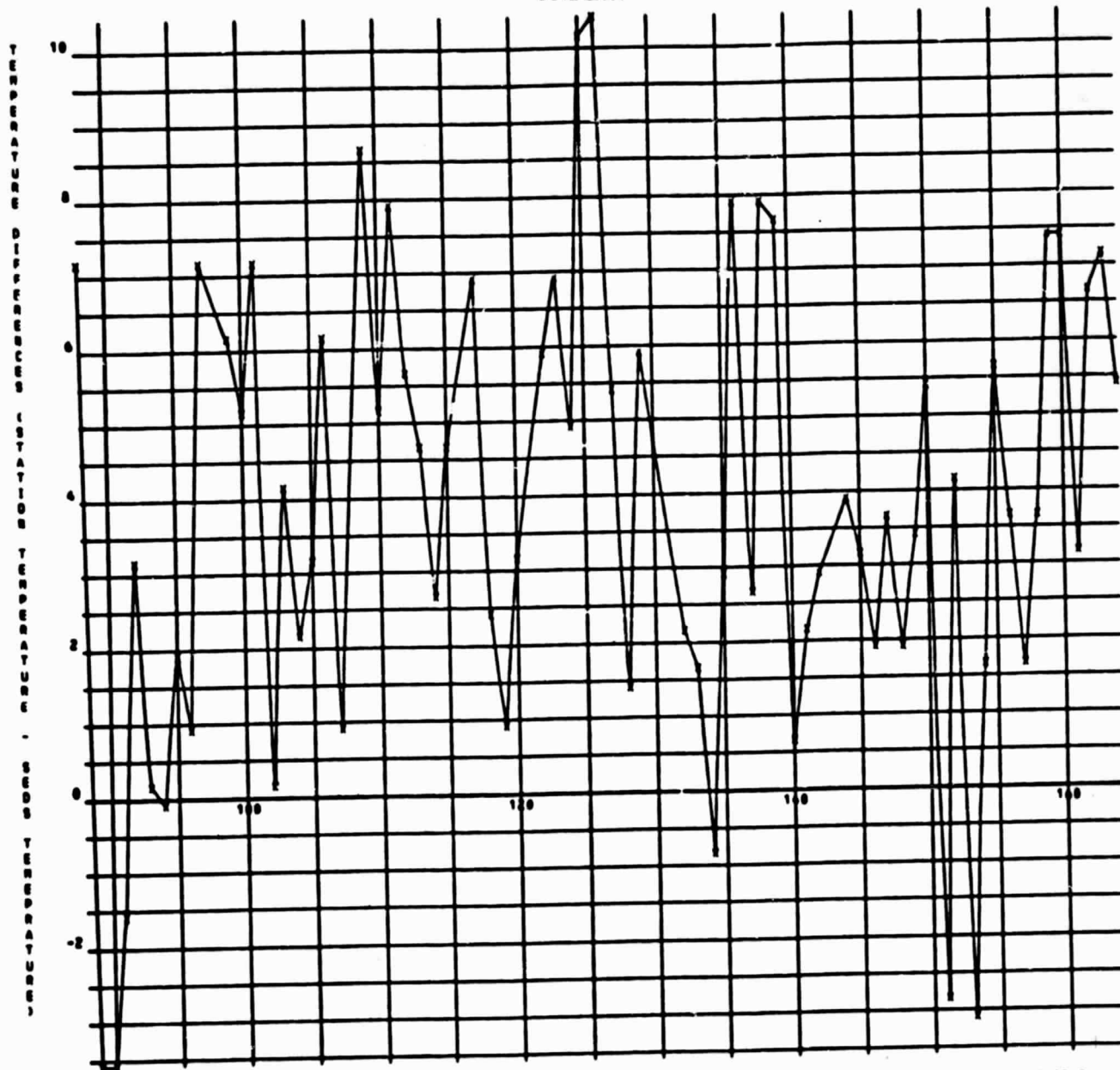   RMS ERROR ABOUT MEAN =   4.895
GROUND TRUTH DATA ONLY   SAMPLE SIZE =   12
      BIAS ERROR =   .285
      RMS ERROR ABOUT MEAN =   2.127
      SAMPLE SIZE =   26
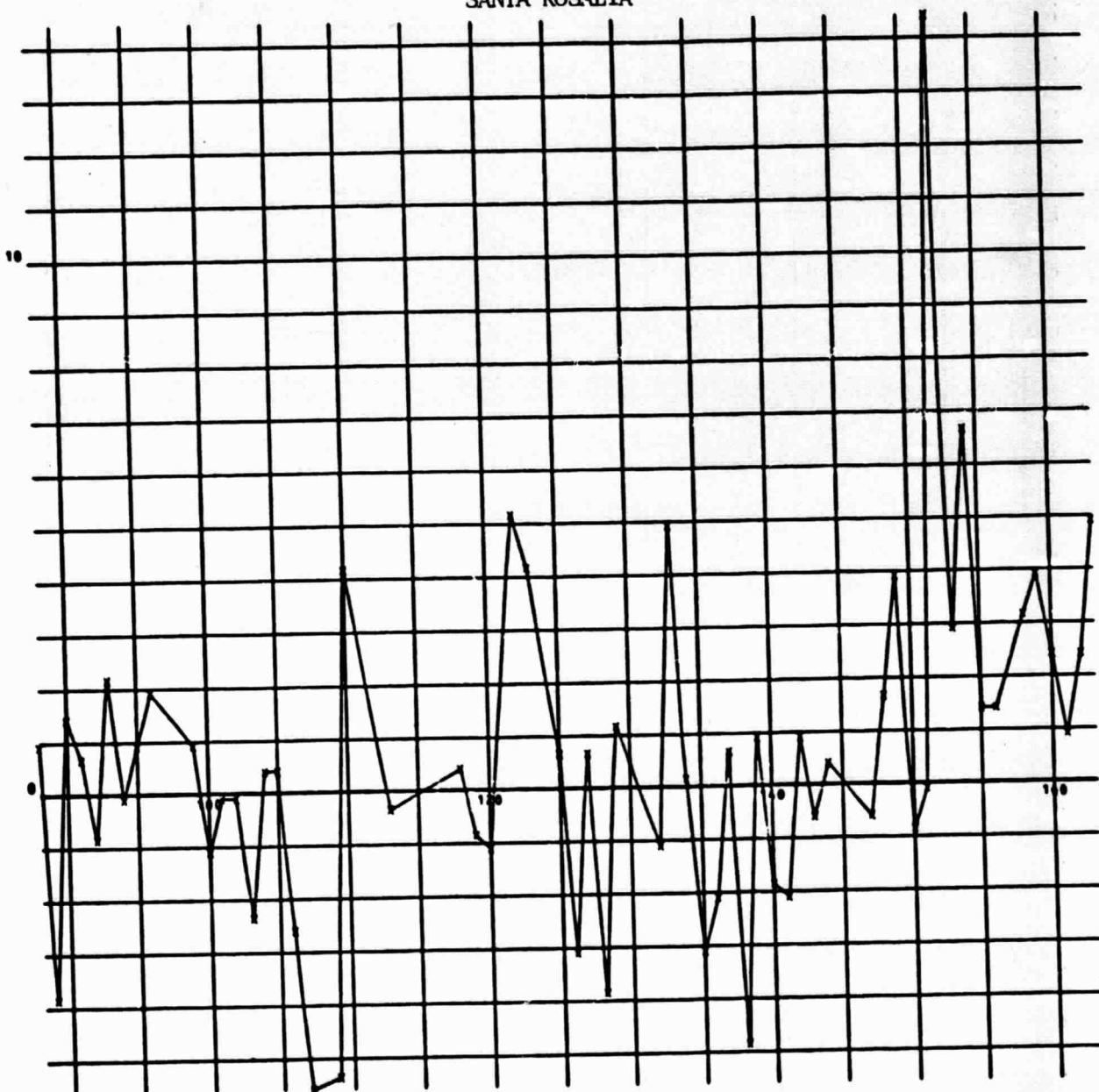
                                              DAY RADIOMETRIC ONLY
                                                  BIAS ERROR = -.179
                                                  RMS ERROR ABOUT MEAN =   3.319
BOTH RADIOMETRIC USABLE   SAMPLE SIZE =   14
      BIAS ERROR = 1.972
      RMS ERROR ABOUT MEAN =   2.321
      SAMPLE SIZE =   8

TEPIC

OVERALL SEUS PERFORMANCE FROM   JULIAN DAY   STATION 15   PAGE 49.
        MISSING DATA =   0
        BIAS ERROR = 1.523
        RMS ERROR ABOUT MEAN = 3.162
        SAMPLE SIZE =   76

GROUND TRUTH DATA ONLY
        BIAS ERROR = 1.143
        RMS ERROR ABOUT MEAN = 1.366
        SAMPLE SIZE =   21
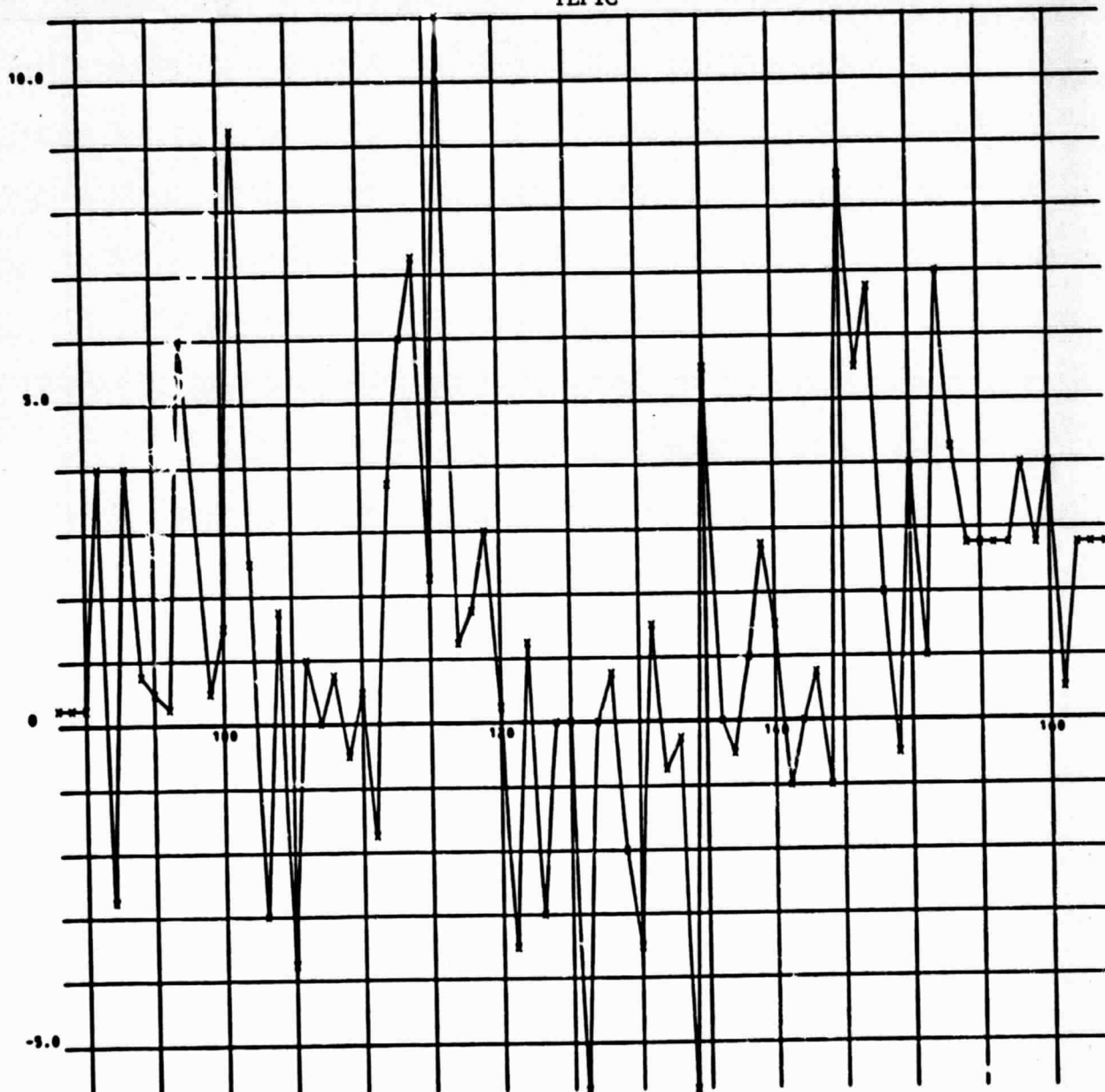
BOTH RADIOMETRIC USABLE
        BIAS ERROR = 2.233
        RMS ERROR ABOUT MEAN = 2.922
        SAMPLE SIZE =   15

NIGHT RADIOMETRIC ONLY
        BIAS ERROR =   3.387
        RMS ERROR ABOUT MEAN = 2.762
        SAMPLE SIZE =   20

DAY RADIOMETRIC ONLY
        BIAS ERROR =   -.475
        RMS ERROR ABOUT MEAN = 3.994
        SAMPLE SIZE =   20

C-41

VICTORIA
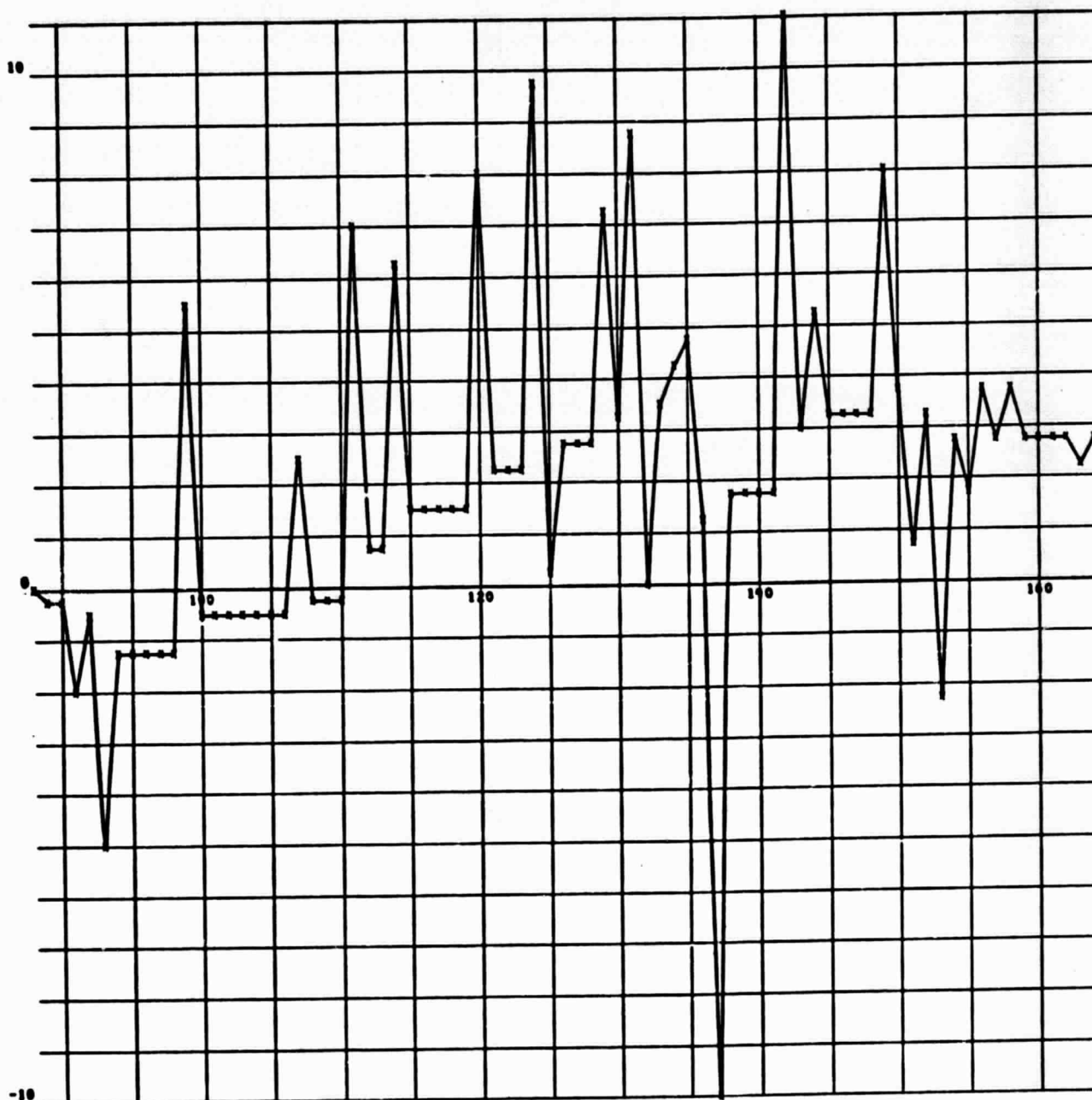
OVERALL SEDS PERFORMANCE FROM
    MISSING DATA =   0
    BIAS ERROR = 1.964
    RMS ERROR ABOUT MEAN = 3.174
    SAMPLE SIZE =   77

GROUND TRUTH DATA ONLY
    BIAS ERROR = 1.326
    RMS ERROR ABOUT MEAN = 1.635
    SAMPLE SIZE =   46

BOTH RADIOMETRIC USABLE
    BIAS ERROR = .750
    RMS ERROR ABOUT MEAN =   .000
    SAMPLE SIZE =   1

NIGHT RADIOMETRIC ONLY
    BIAS ERROR = 3.143
    RMS ERROR ABOUT MEAN = 4.266
    SAMPLE SIZE =   14

DAY RADIOMETRIC ONLY
    BIAS ERROR = 2.844
    RMS ERROR ABOUT MEAN = 4.876
    SAMPLE SIZE =   16

C-42

CORPUS CHRISTI

TEMPERATURE DIFFERENCES (STATION TEMPERATURE - SEDS TEMPERATURE)

10

0

100

120

140

160

OVERALL SEDS PERFORMANCE FROM
    MISSING DATA = 0
    BIAS ERROR = 2.590
    RMS ERROR ABOUT MEAN = 3.229
    SAMPLE SIZE = 77

JULIAN DAY   STATION 96   PAGE 10.

NIGHT RADIOMETRIC ONLY
    BIAS ERROR = 3.523
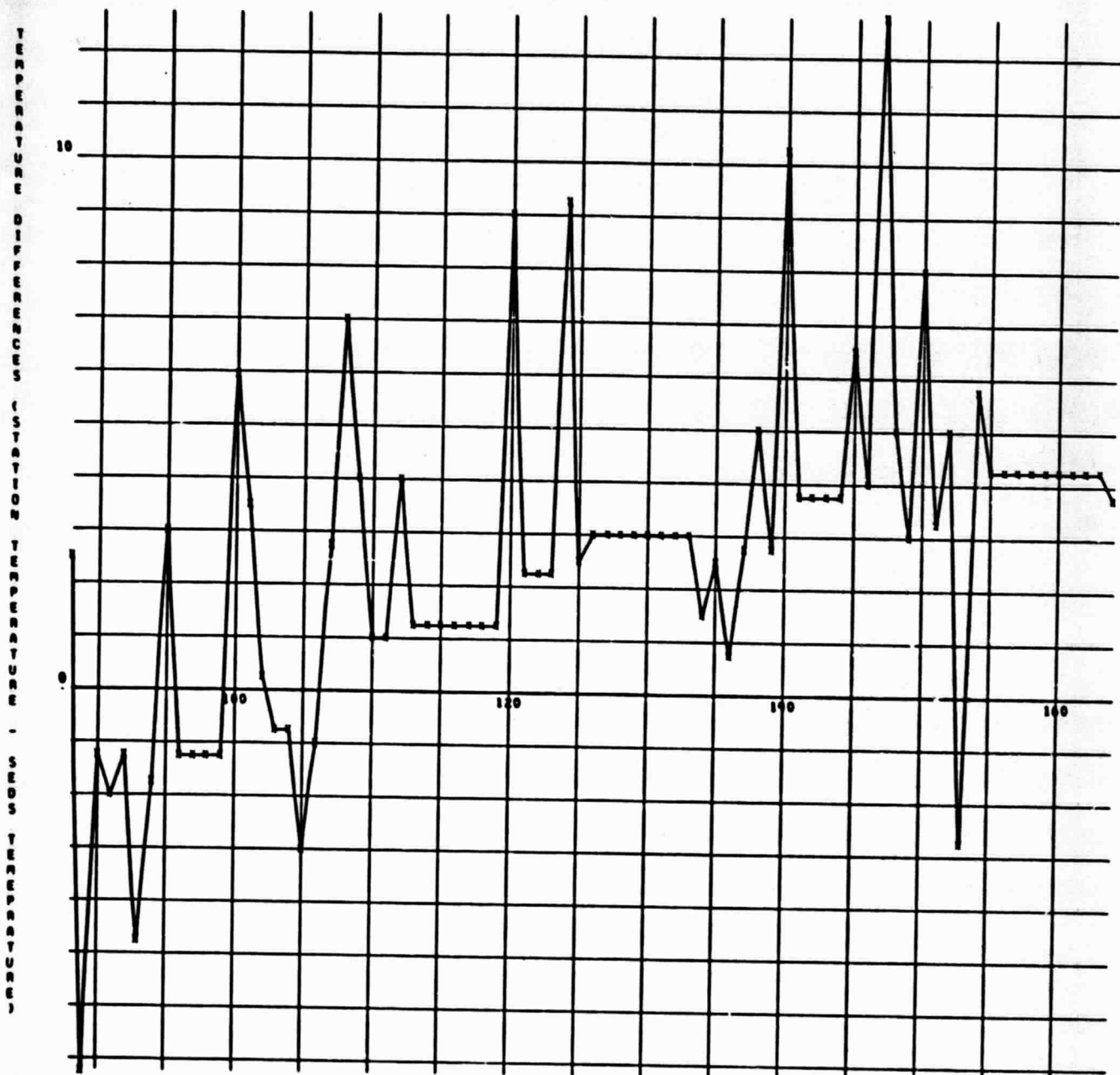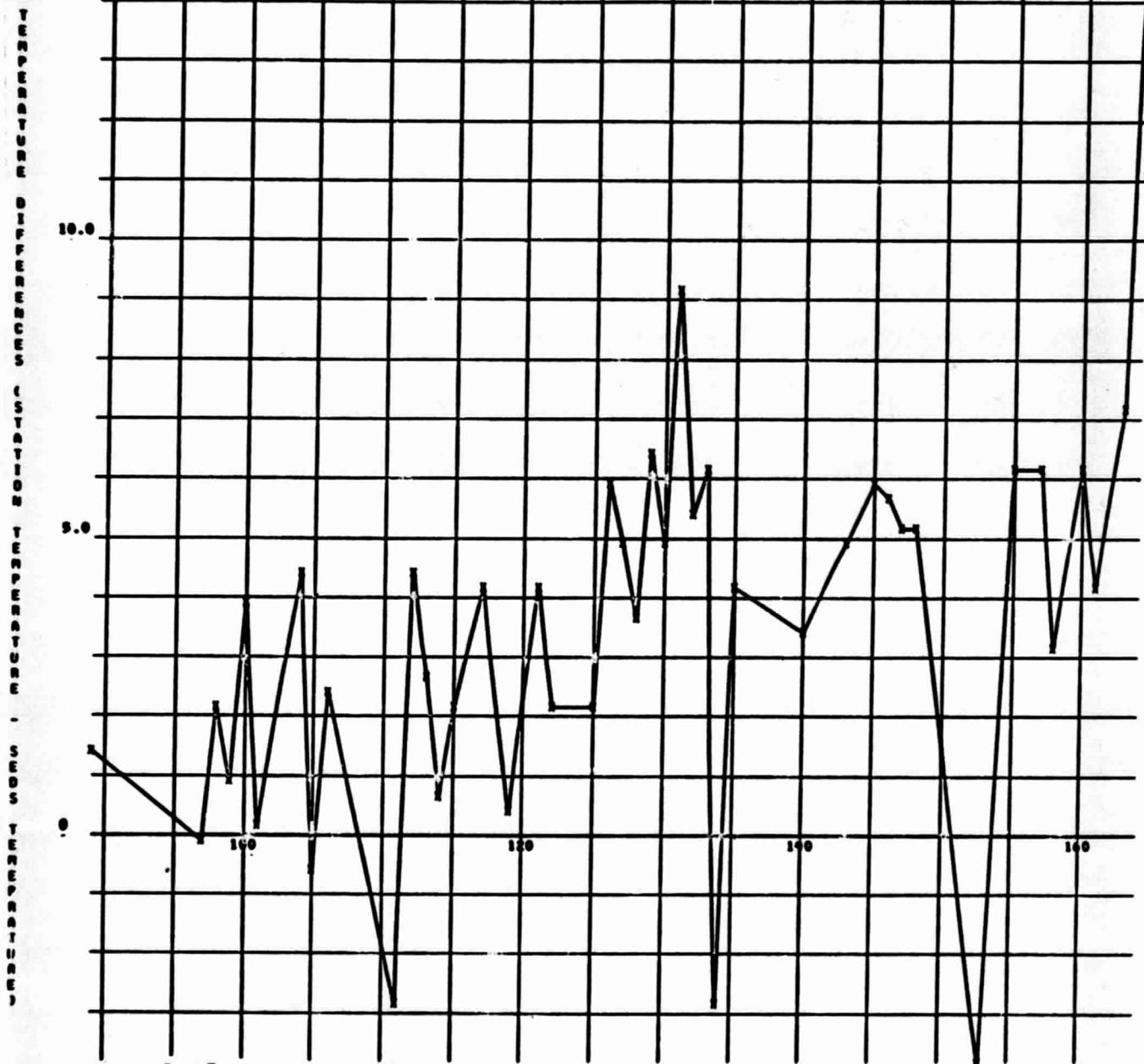   RMS ERROR ABOUT MEAN = 3.105
    SAMPLE SIZE = 11

GROUND TRUTH DATA ONLY
    BIAS ERROR = 2.016
    RMS ERROR ABOUT MEAN = 2.010
    SAMPLE SIZE = 48

DAY RADIOMETRIC ONLY
    BIAS ERROR = 3.996
    RMS ERROR ABOUT MEAN = 5.979
    SAMPLE SIZE = 13

BOTH RADIOMETRIC USABLE
    BIAS ERROR = 2.400
    RMS ERROR ABOUT MEAN = 2.553
    SAMPLE SIZE = 5

C-43

MEXICO CITY

OVERALL SEDS PERFORMANCE
    MISSING DATA =   0
    BIAS ERROR =   3.631
    RMS ERROR =   3.248
    SAMPLE SIZE =   43

JULIAN DAY   STATION 29   PAGE 6.

GROUND TRUTH DATA ONLY
    BIAS ERROR =   4.222
    RMS ERROR =   3.501
    SAMPLE SIZE =   20

NIGHT RADIOMETRIC ONLY
    BIAS ERROR =   4.910
    RMS ERROR =   2.820
    SAMPLE SIZE =   6

DAY RADIOMETRIC ONLY
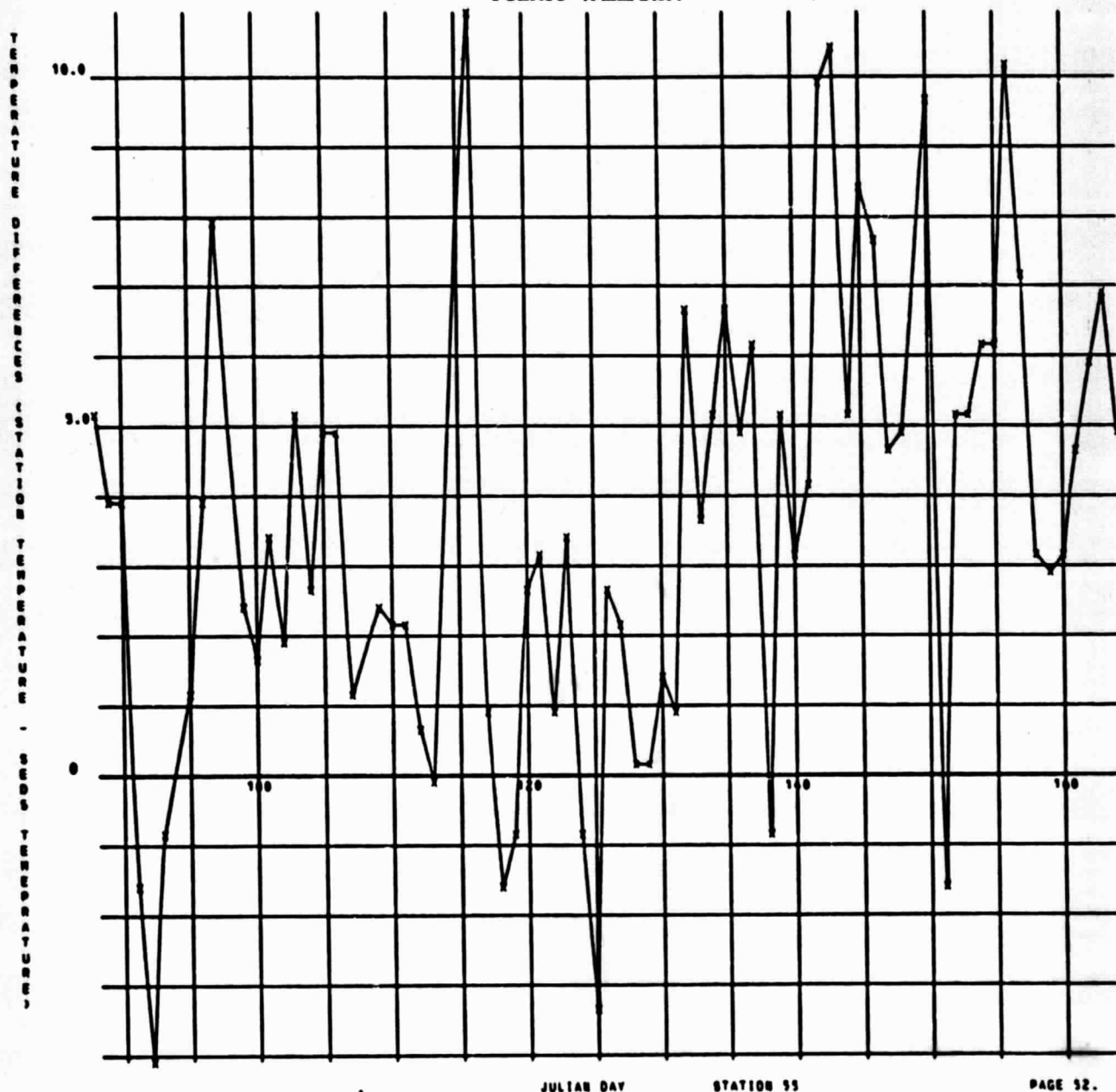   BIAS ERROR =   4.435
    RMS ERROR =   1.397
    SAMPLE SIZE =   10

BOTH RADIOMETRIC USABLE
    BIAS ERROR = -.304
    RMS ERROR =   1.879
    SAMPLE SIZE =   7

C-44

OVERALL SEDS PERFORMANCE FROM 0-0-0 TO 6-13-75
    MISSING DATA = 0
    BIAS ERROR = 3.568
    RMS ERROR ABOUT MEAN = 3.261
    SAMPLE SIZE = 71

NIGHT RADIOMETRIC ONLY
    BIAS ERROR = 3.234
    RMS ERROR ABOUT MEAN = 3.788
    SAMPLE SIZE = 20

GROUND TRUTH DATA ONLY
    BIAS ERROR = 4.191
    RMS ERROR ABOUT MEAN = 2.395
    SAMPLE SIZE = 23

DAY RADIOMETRIC ONLY
    BIAS ERROR = 4.688
    RMS ERROR ABOUT MEAN = 3.348
    SAMPLE SIZE = 18

BOTH RADIOMETRIC USABLE
    BIAS ERROR = .785
    RMS ERROR ABOUT MEAN = 2.202
    SAMPLE SIZE = 10

C-45

TEMPERATURE DIFFERENCES (STATION TEMPERATURE - SEDS TEMEPRATURE)   PAGE 37.

OVERALL SEDS PERFORMANCE FROM
     MISSING DATA =   0
     BIAS ERROR =   6.510
     RMS ERROR ABOUT MEAN =   3.285
     SAMPLE SIZE =   75

NIGHT RADIOMETRIC ONLY
     BIAS ERROR =   5.643
     RMS ERROR ABOUT MEAN =   6.495
     SAMPLE SIZE =   7

GROUND TRUTH DATA ONLY
     BIAS ERROR =   5.961
     RMS ERROR ABOUT MEAN =   1.959
     SAMPLE SIZE =   32

DAY RADIOMETRIC ONLY
     BIAS ERROR =   7.685
     RMS ERROR ABOUT MEAN =   3.633
     SAMPLE SIZE =   23

BOTH RADIOMETRIC USABLE
     BIAS ERROR =   6.250
     RMS ERROR ABOUT MEAN =   2.718
     SAMPLE SIZE =   13

JULIAN DAY   STATION 12   PAGE 49.

C-47

COTULLA

OVERALL SEDS PERFORMANCE FROM   JULIAN DAY   STATION 77   PAGE 63.
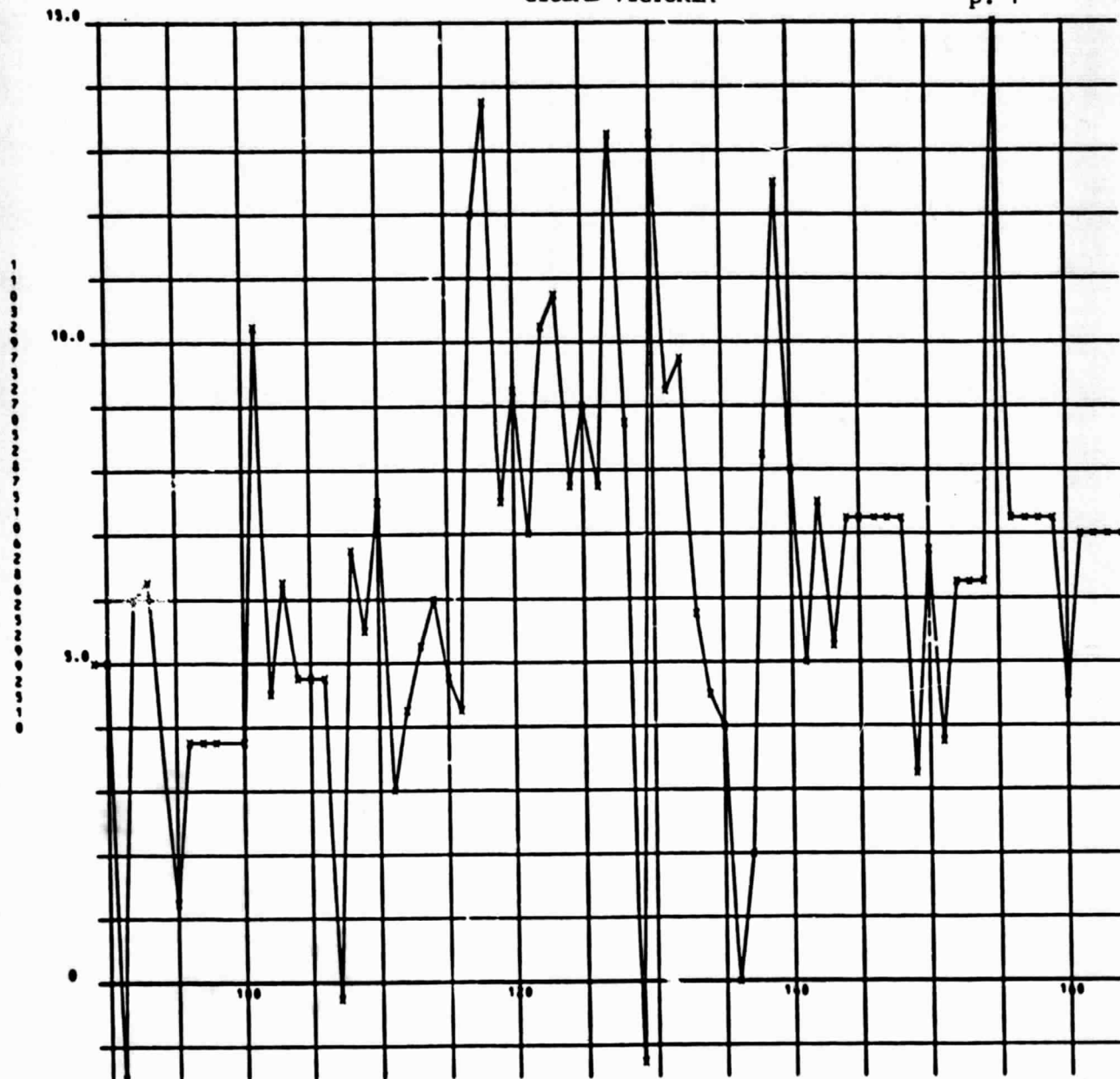
OVERALL SEDS PERFORMANCE FROM
   MISSING DATA = C
   BIAS ERROR = 1.731
   RMS ERROR ABOUT MEAN = 3.29"
   SAMPLE SIZE = 77

GROUND TRUTH DATA ONLY
   BIAS ERROR = 1.367
   RMS ERROR ABOUT MEAN = 2.144
   SAMPLE SIZE = 43

BOTH RADIOMETRIC USABLE
   BIAS ERROR = 1.857
   RMS ERROR ABOUT MEAN = 1.361
   SAMPLE SIZE = 7

NIGHT RADIOMETRIC ONLY
   BIAS ERROR = .857
   RMS ERROR ABOUT MEAN = 4.713
   SAMPLE SIZE = 7

DAY RADIOMETRIC ONLY
   BIAS ERROR = 2.731
   RMS ERROR ABOUT MEAN = 5.283
   SAMPLE SIZE = 18

OVERALL SEDS PERFORMANCE FROM   JULIAN DAY   STATION 72   PAGE 15.
    MISSING DATA =   0
    BIAS ERROR = -1.744
    RMS ERROR ABOUT MEAN =   3.290
    SAMPLE SIZE =   77

GROUND TRUTH DATA ONLY
    BIAS ERROR = -1.353
    RMS ERROR ABOUT MEAN =   2.449
    SAMPLE SIZE =   34

NIGHT RADIOMETRIC ONLY
    BIAS ERROR = -.125
    RMS ERROR ABOUT MEAN =   2.437
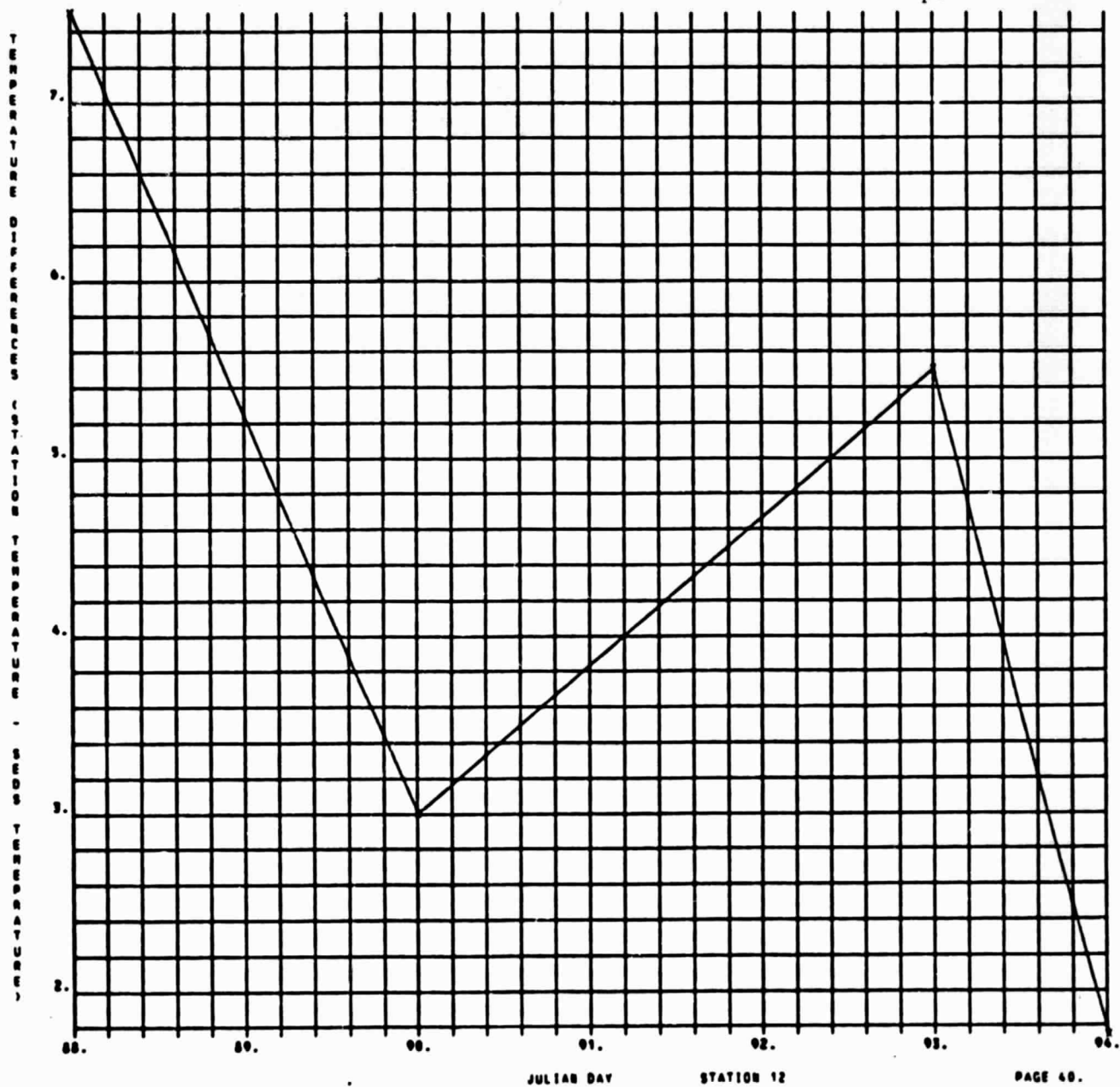   SAMPLE SIZE =   12

BOTH RADIOMETRIC USABLE
    BIAS ERROR = -1.167
    RMS ERROR ABOUT MEAN =   2.443
    SAMPLE SIZE =   15

DAY RADIOMETRIC ONLY
    BIAS ERROR = -4.328
    RMS ERROR ABOUT MEAN =   4.672
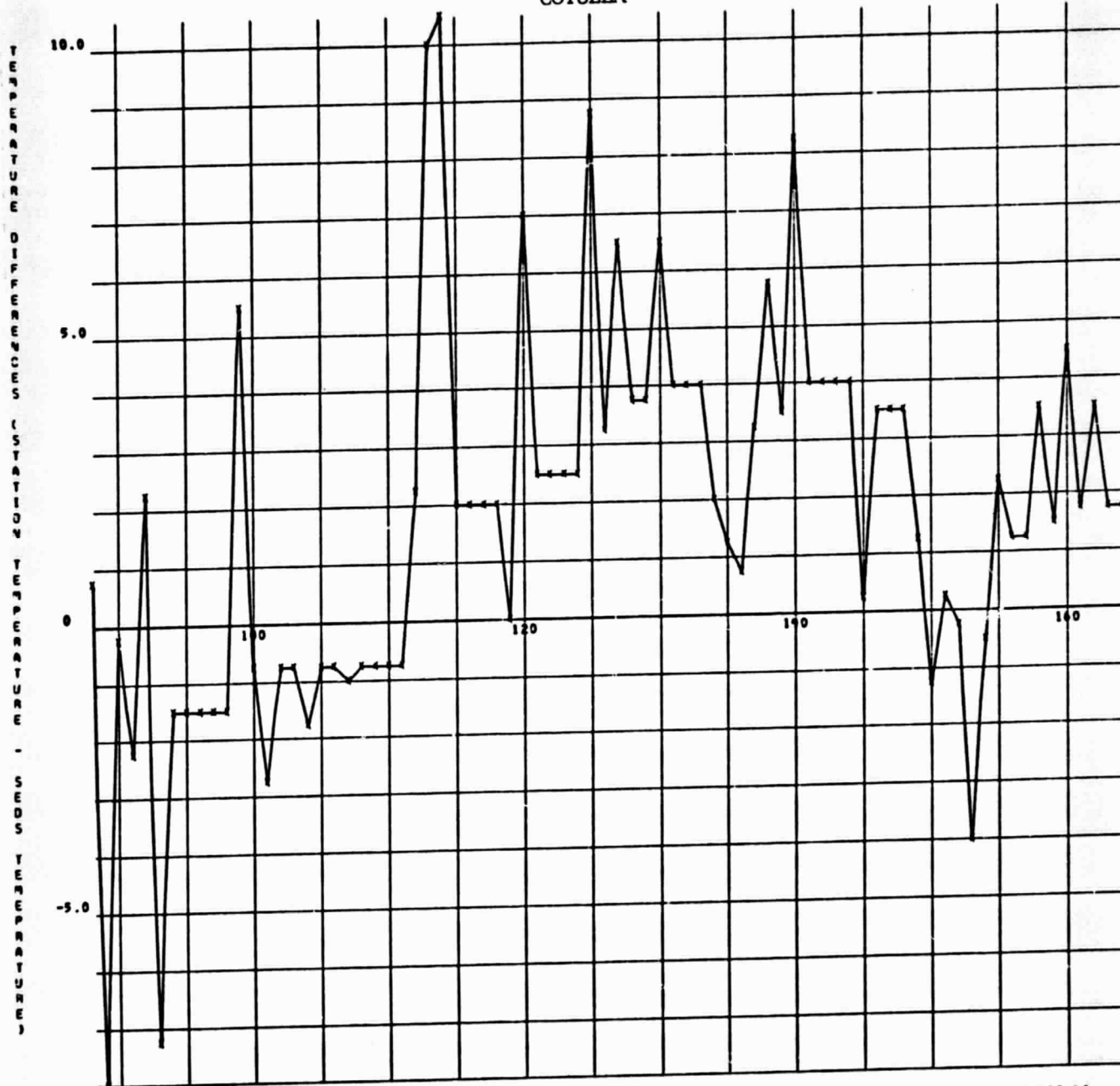   SAMPLE SIZE =   16

C-49

ACAPULCO

OVERALL SEDS PERFORMANCE FROM   JULIAN DAY   STATION 31   PAGE 38.
    MISSING DATA =   0
    BIAS ERROR =   6.431
    RMS ERROR ABOUT MEAN =   3.303
    SAMPLE SIZE =   75

                                         NIGHT RADIOMETRIC ONLY
                                             BIAS ERROR =   3.094
                                             RMS ERROR ABOUT MEAN =   2.818
    GROUND TRUTH DATA ONLY   SAMPLE SIZE =   15
        BIAS ERROR =   7.067
        RMS ERROR ABOUT MEAN =   2.765
        SAMPLE SIZE =   32
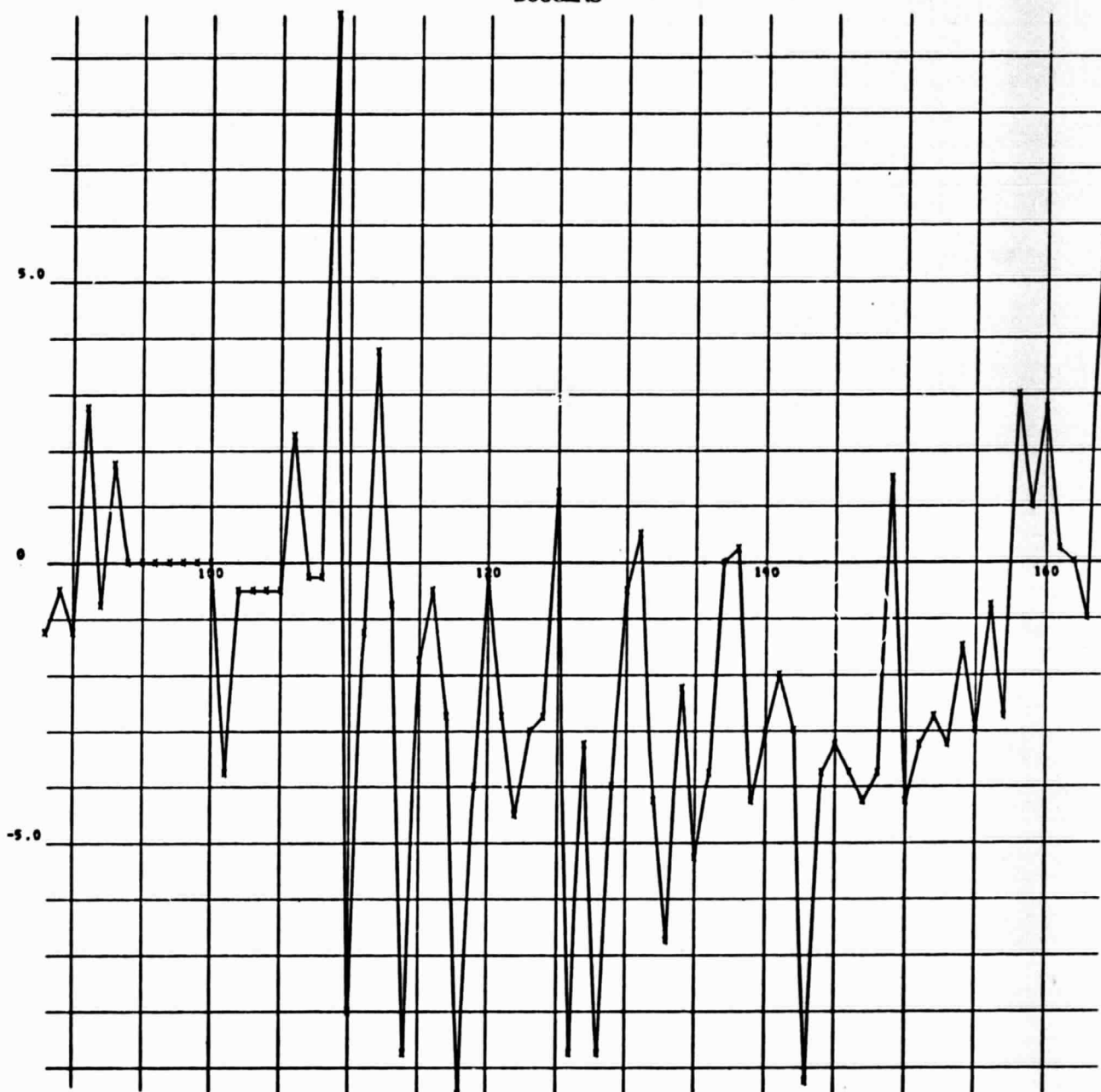
                                         DAY RADIOMETRIC ONLY
                                             BIAS ERROR =   8.887
                                             RMS ERROR ABOUT MEAN =   1.991
    BOTH RADIOMETRIC USABLE   SAMPLE SIZE =   20
        BIAS ERROR =   4.000
        RMS ERROR ABOUT MEAN =   2.264
        SAMPLE SIZE =   8

C-50

MARFA

OVERALL SFDS PERFORMANCE FROM   JULIAN DAY   STATION 75   PAGE 33.
   MISSING DATA =   0
   BIAS ERROR = -2.578
   RMS ERROR ABOUT MEAN =   3.347
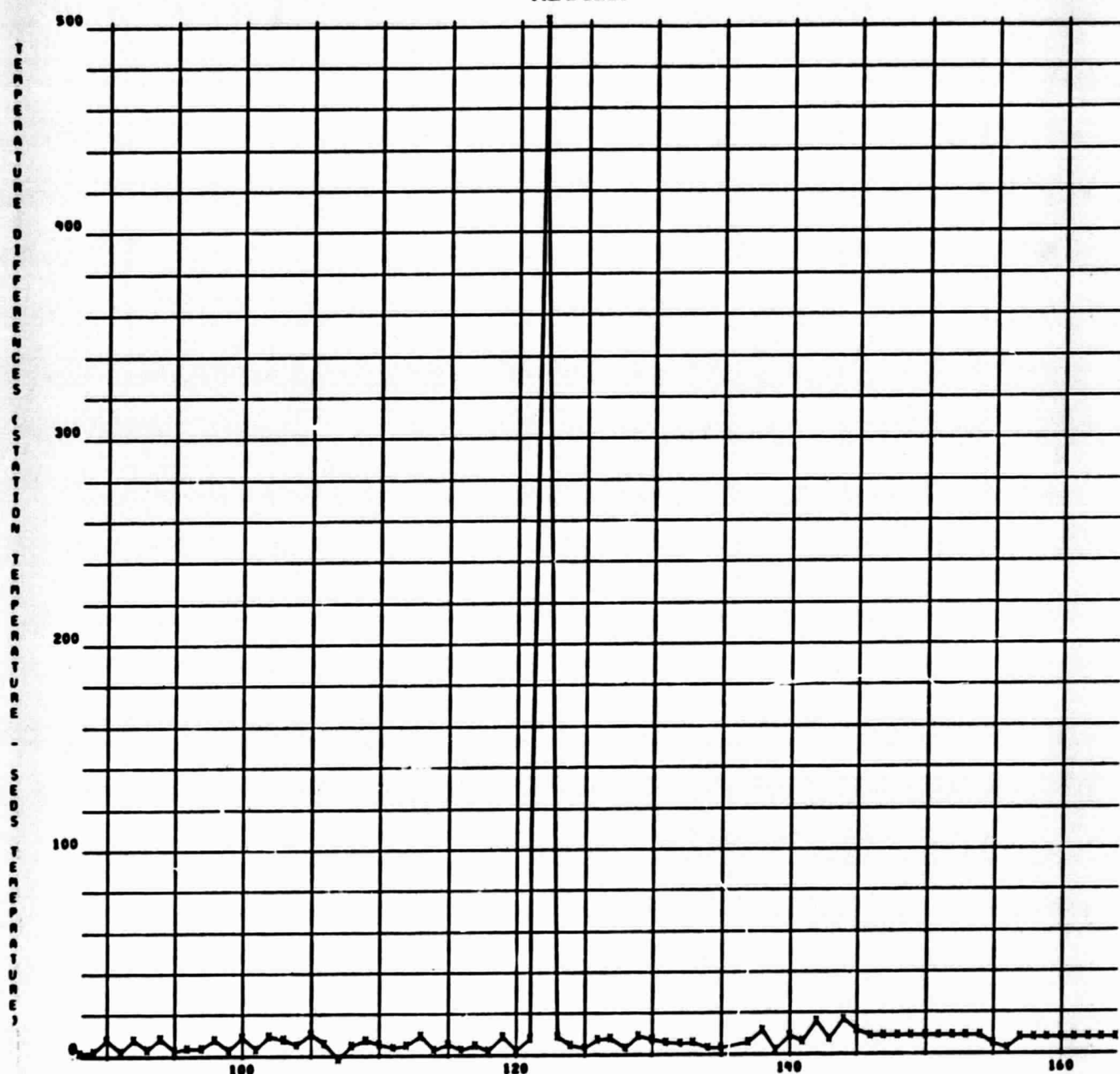   SAMPLE SIZE =   77

GROUND TRUTH DATA ONLY
   BIAS ERROR = -3.067
   RMS ERROR ABOUT MEAN =   2.217
   SAMPLE SIZE =   26

BOTH RADIOMETRIC USABLE
   BIAS ERROR = -1.778
   RMS ERROR ABOUT MEAN =   2.011
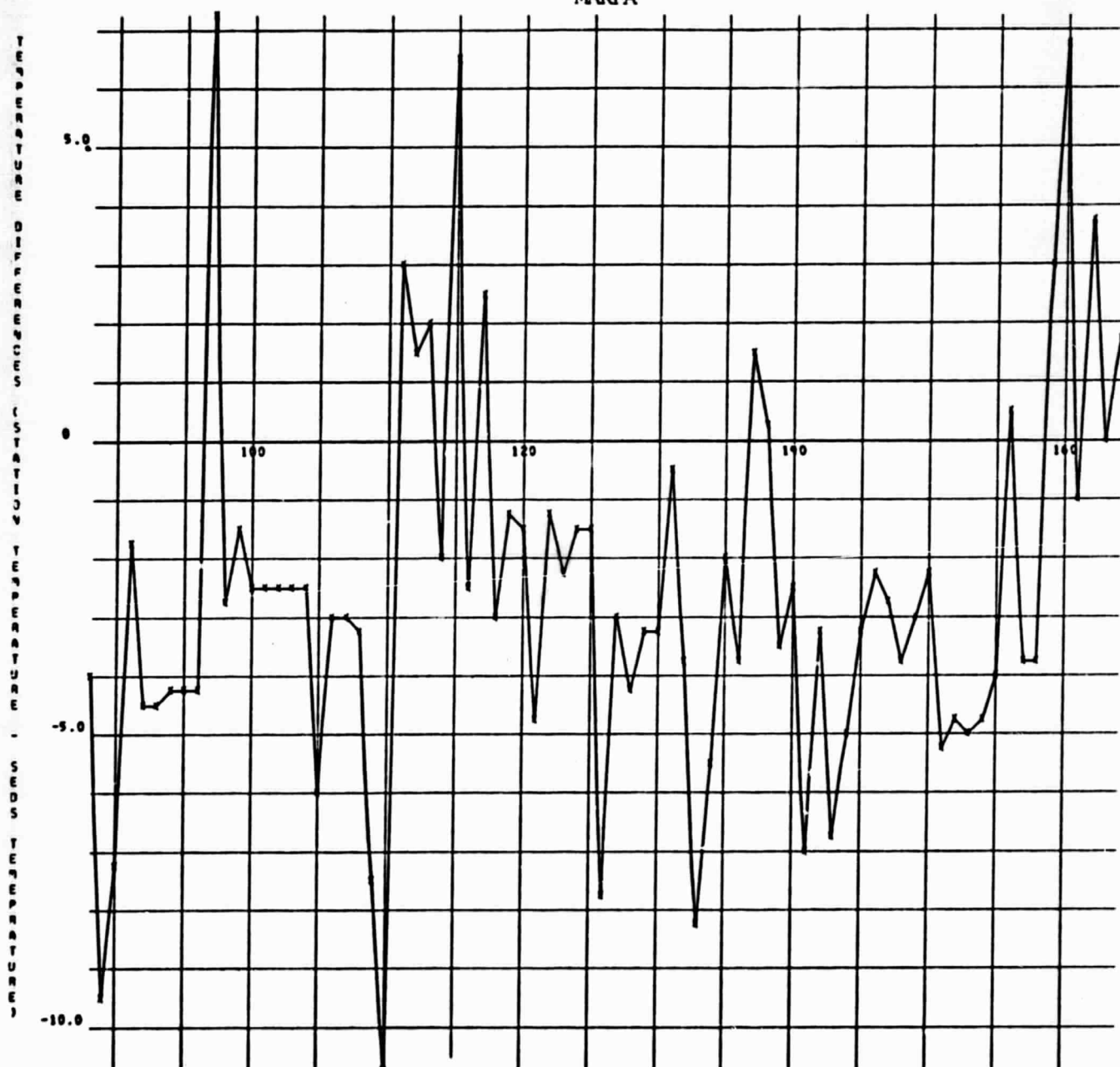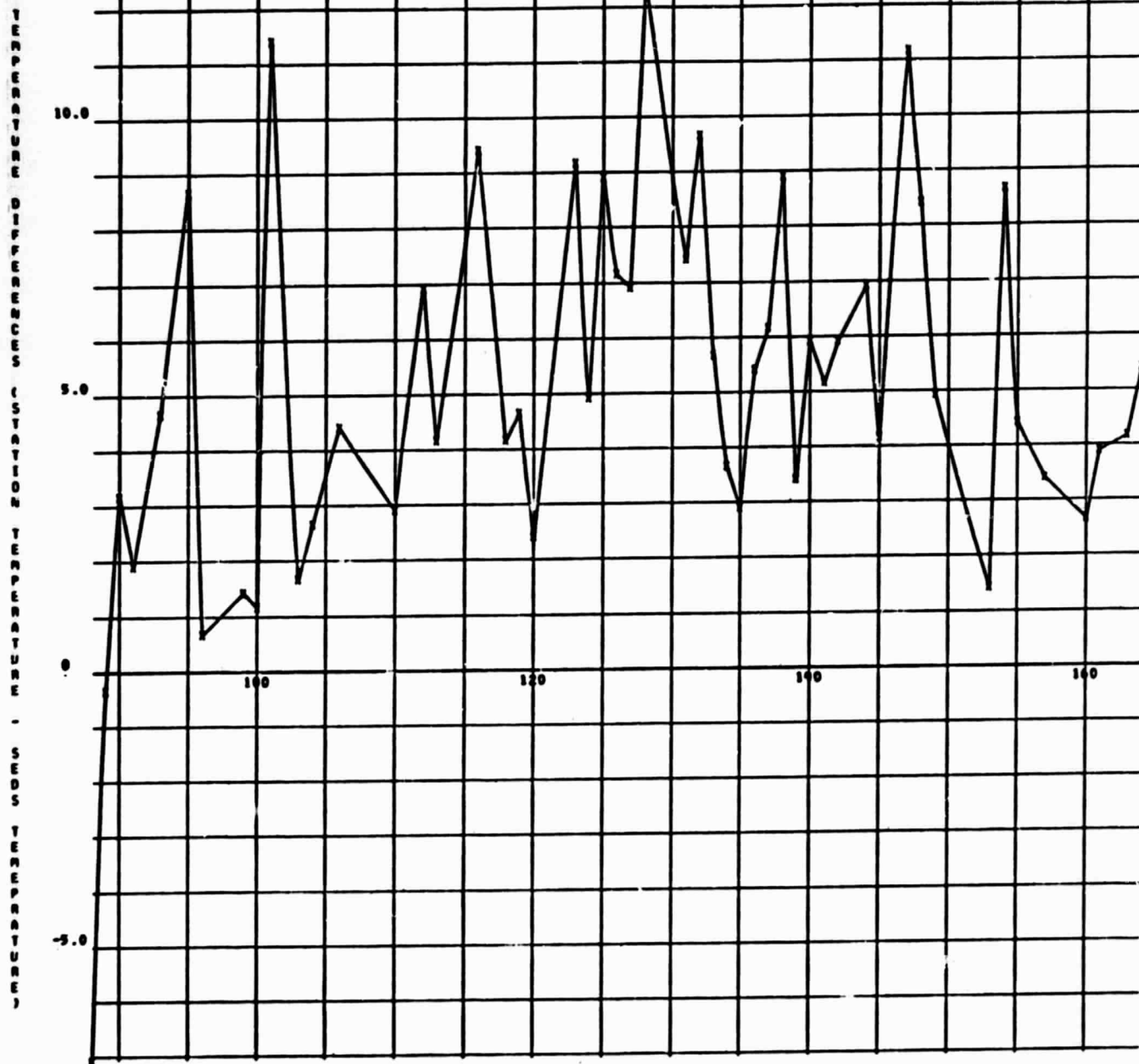   SAMPLE SIZE =   18

NIGHT RADIOMETRIC ONLY
   BIAS ERROR =   .174
   RMS ERROR ABOUT MEAN =   3.541
   SAMPLE SIZE =   9

DAY RADIOMETRIC ONLY
   BIAS ERROR = -3.667
   RMS ERROR ABOUT MEAN =   1.154
   SAMPLE SIZE =   24

TEMPERATURE DIFFERENCES (STATION TEMPERATURE - SFDS TEMPERATURE)

MATAMOROS

OVERALL SEDS PERFORMANCE.   JULIAN DAY   STATION 47   PAGE 23.
          MISSING DATA =   3
          BIAS ERROR =   5.002
          RMS ERROR =   3.414
          SAMPLE SIZE =   51

                                              NIGHT RADIOMETRIC ONLY
                                                    BIAS ERROR =   0.441
          GROUND TRUTH DATA ONLY   RMS ERROR =   4.433
                BIAS ERROR =   4.193   SAMPLE SIZE =   3
                RMS ERROR =   3.241
                SAMPLE SIZE =   30

                                              DAY RADIOMETRIC ONLY
                                                    BIAS ERROR =   7.553
          BOTH RADIOMETRIC USABLE   RMS ERROR =   2.723
                BIAS ERROR =   4.535   SAMPLE SIZE =   7
                RMS ERROR =   1.367
                SAMPLE SIZE =   0

PUERTO ANGEL

OVERALL SEDS PERFORMANCE
MISSING DATA =   0
BIAS ERROR = -1.188
RMS ERROR = 3.419
SAMPLE SIZE =   77

GROUND TRUTH DATA ONLY
BIAS ERROR = -1.816
RMS ERROR = 2.675
SAMPLE SIZE =   22

BOTH RADIOMETRIC USABLE
BIAS ERROR = -.449
RMS ERROR = 3.615
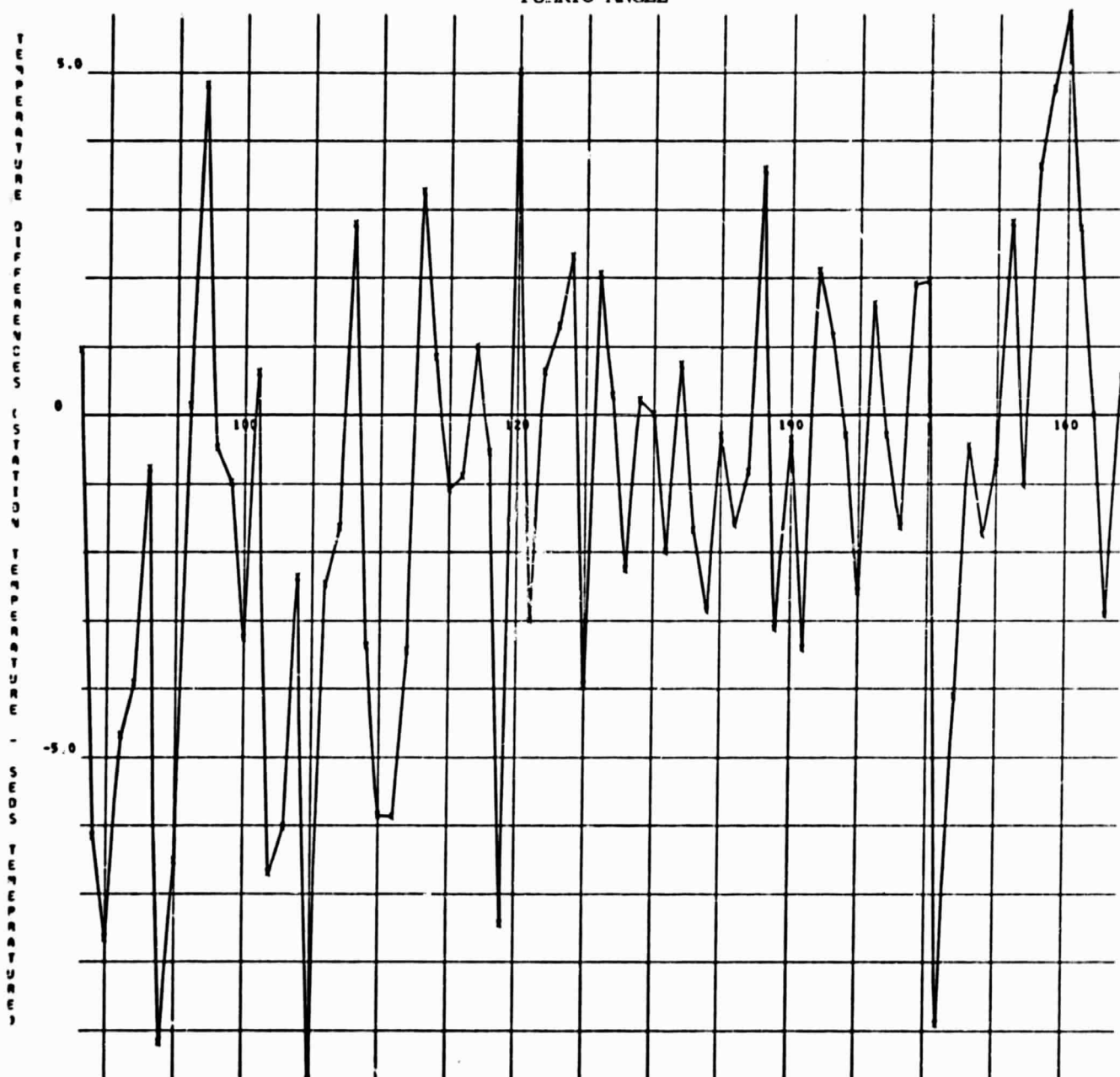SAMPLE SIZE =   18

JULIAN DAY   STATION 34

NIGHT RADIOMETRIC ONLY
BIAS ERROR = -1.088
RMS ERROR = 3.538
SAMPLE SIZE =   10

DAY RADIOMETRIC ONLY
BIAS ERROR = -1.206
RMS ERROR = 3.848
SAMPLE SIZE =   27

PAGE 44.

C-53

OVERALL SEDS PERFORMANCE   JULIAN DAY   STATION 04   PAGE 30.
    MISSING DATA =   0
    BIAS ERROR =   .491
    RMS ERROR = 3.424
    SAMPLE SIZE = 77

NIGHT RADIOMETRIC ONLY
    BIAS ERROR = 1.534
    RMS ERROR = 3.489
    SAMPLE SIZE = 11

GROUND TRUTH DATA ONLY
    BIAS ERROR =   .276
    RMS ERROR = 2.027
    SAMPLE SIZE = 32

DAY RADIOMETRIC ONLY
    BIAS ERROR =   .514
    RMS ERROR = 4.275
    SAMPLE SIZE = 17

BOTH RADIOMETRIC USABLE
    BIAS ERROR = -.173
    RMS ERROR = 3.515
    SAMPLE SIZE = 17

C-54

OVERALL SEDS PERFORMANCE   JULIAN DAY   STATION 66   PAGE 57.
        MISSING DATA =   0
        BIAS ERROR =   7.228
        RMS ERROR =   3.460
        SAMPLE SIZE =   44

                                              NIGHT RADIOMETRIC ONLY
                                                  BIAS ERROR = 6.115
        GROUND TRUTH DATA ONLY   RMS ERROR =   3.869
            BIAS ERROR =   7.460   SAMPLE SIZE =   11
            RMS ERROR =   1.971
            SAMPLE SIZE =   20

                                              DAY RADIOMETRIC ONLY
                                                  BIAS ERROR = 9.952
        BOTH RADIOMETRIC USABLE   RMS ERROR =   4.259
            BIAS ERROR =   5.981   SAMPLE SIZE =   6
            RMS ERROR =   4.663   C-55
            SAMPLE SIZE =   7

6 6 0 4 2 6 7 5   3 0 0 5   0 2 9 8 0 0 3 0 0 1 6 1 0

66042575   029750   10   Station 66   PASE 61.

C-56

POZA RICA
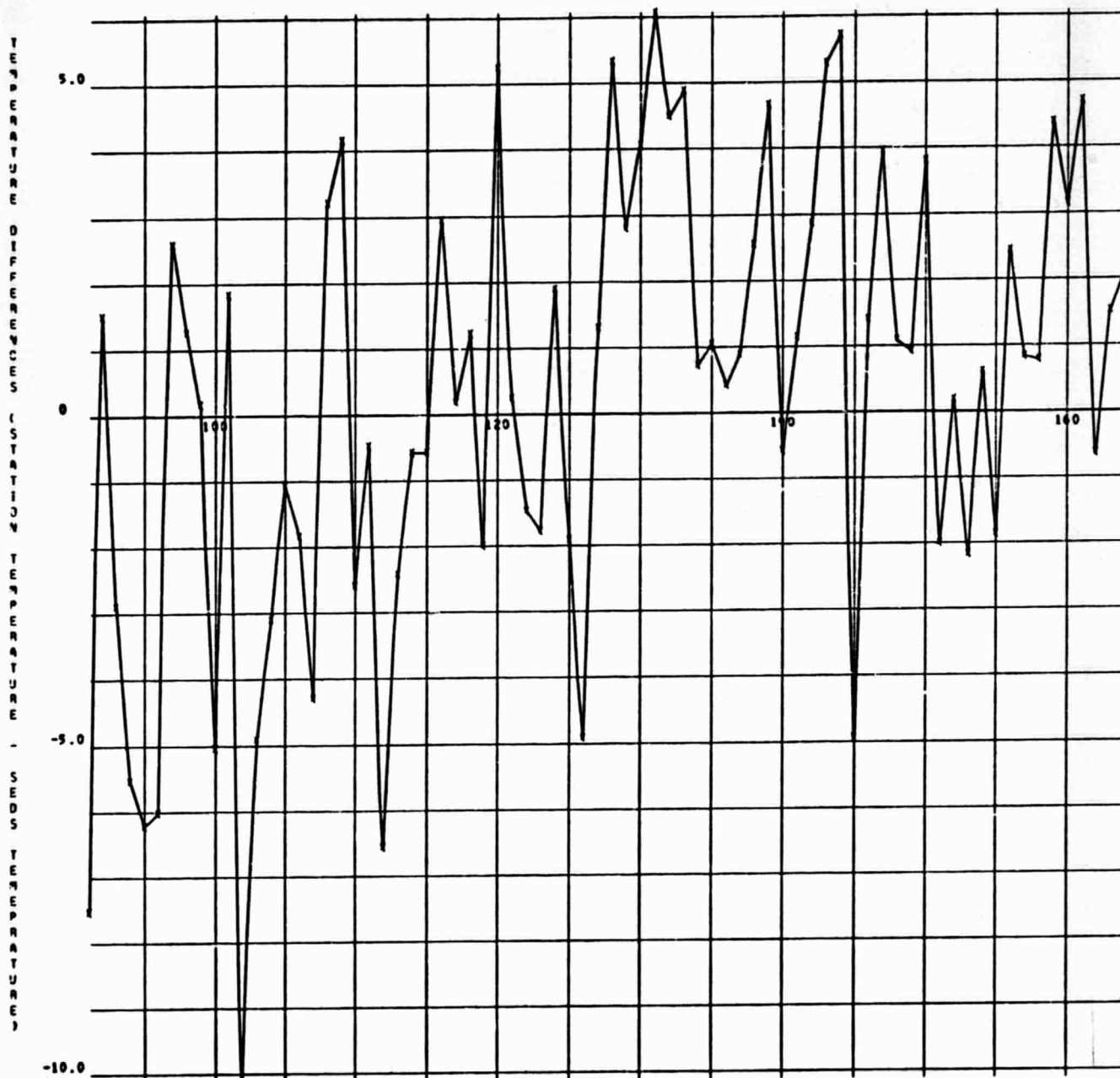
OVERALL SEDS PERFORMANCE   JULIAN DAY   STATION 56   PAGE 59.
      MISSING DATA =   0
      BIAS ERROR =   .223
      RMS ERROR = 3.516
      SAMPLE SIZE =   74

                                        NIGHT RADIOMETRIC ONLY
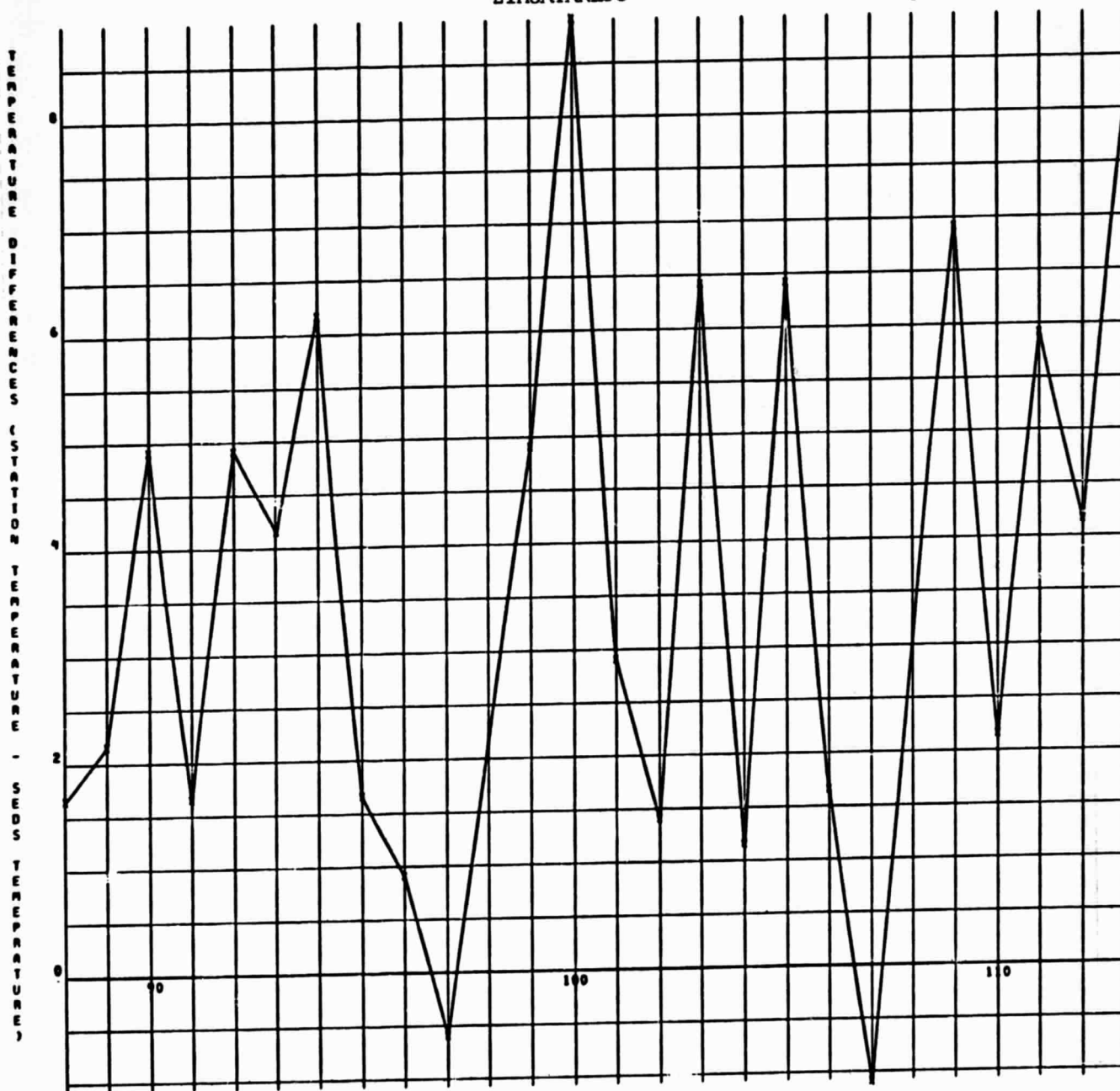   BIAS ERROR =   -.757
         GROUND TRUTH DATA ONLY   RMS ERROR = 3.941
            BIAS ERROR =   -.382   SAMPLE SIZE =   11
            RMS ERROR = 3.847
            SAMPLE SIZE =   38
                                        DAY RADIOMETRIC ONLY
                                           BIAS ERROR = 2.094
      BOTH RADIOMETRIC USABLE   RMS ERROR = 2.368
         BIAS ERROR =   .913   SAMPLE SIZE =   14
         RMS ERROR = 2.193   C-57
         SAMPLE SIZE =   11

IXTEPEC

OVERALL SEDS PERFORMANCE   JULIAN DAY   STATION 42   PAGE 67.
       MISSING DATA = 0
       BIAS ERROR = 11.479
       RMS ERROR = 3.547
       SAMPLE SIZE = 65

                                            NIGHT RADIOMETRIC ONLY
                                               BIAS ERROR = 6.535
       GROUND TRUTH DATA ONLY   RMS ERROR = 3.359
          BIAS ERROR = 11.207   SAMPLE SIZE = 2
          RMS ERROR = 3.199
          SAMPLE SIZE = 37

                                            DAY RADIOMETRIC ONLY
                                               BIAS ERROR = 12.681
       BOTH RADIOMETRIC USABLE   RMS ERROR = 3.567
          BIAS ERROR = 7.035   SAMPLE SIZE = 24
          RMS ERROR = 2.652
          SAMPLE SIZE = 2   C-58

NUEVA CASAS GRANDES

TEMPERATURE DIFFERENCES (STATION TEMPERATURE - SEDS TEMPERATURE)

OVERALL SEDS PERFORMANCE
    MISSING DATA =   0
    BIAS ERROR = -2.382
    RMS ERROR = 3.550
    SAMPLE SIZE =   75

GROUND TRUTH DATA ONLY
    BIAS ERROR = -3.817
    RMS ERROR = 2.860
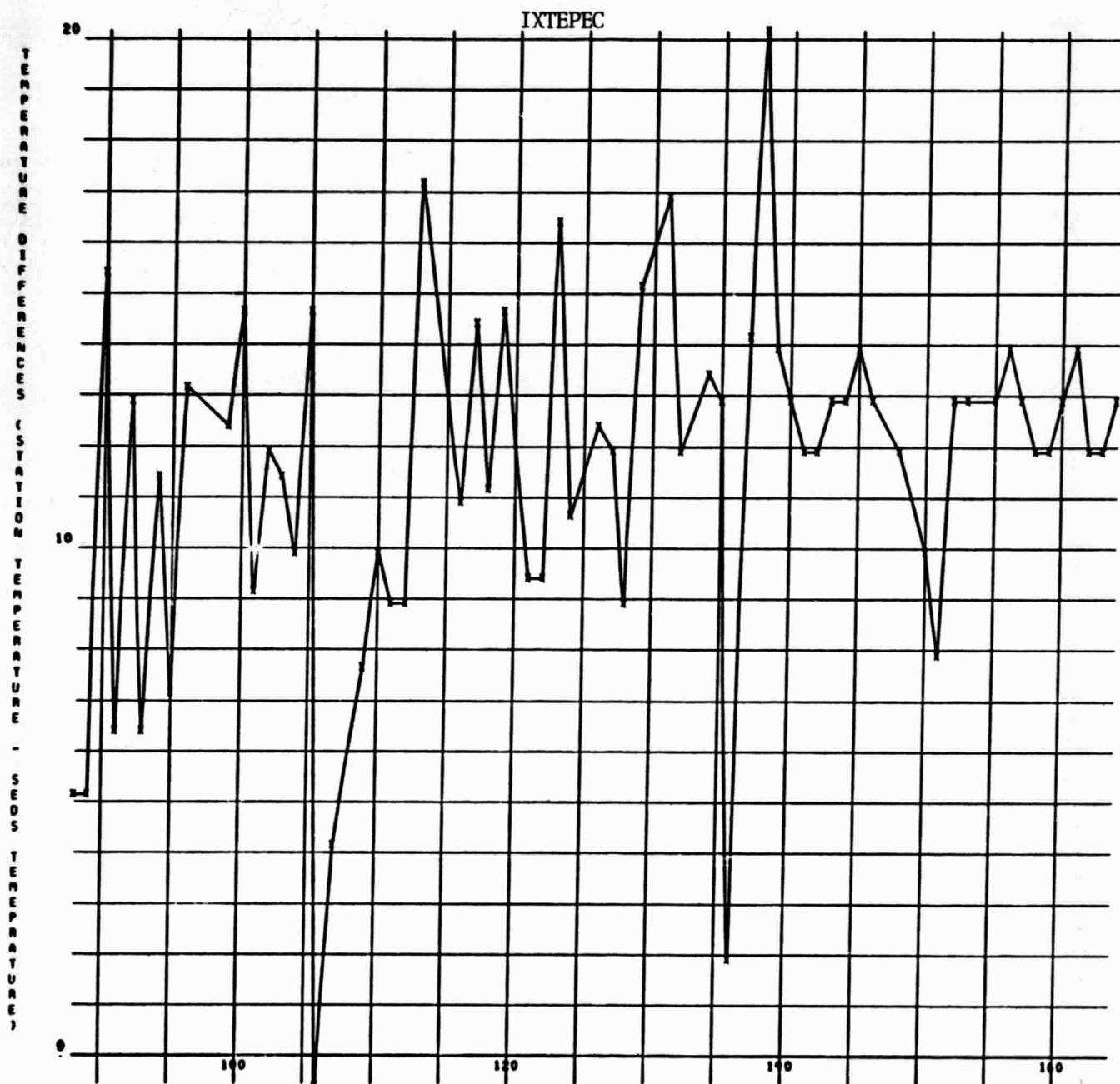   SAMPLE SIZE =   30

BOTH RADIOMETRIC USABLE
    BIAS ERROR = -1.723
    RMS ERROR = 2.683
    SAMPLE SIZE =   16
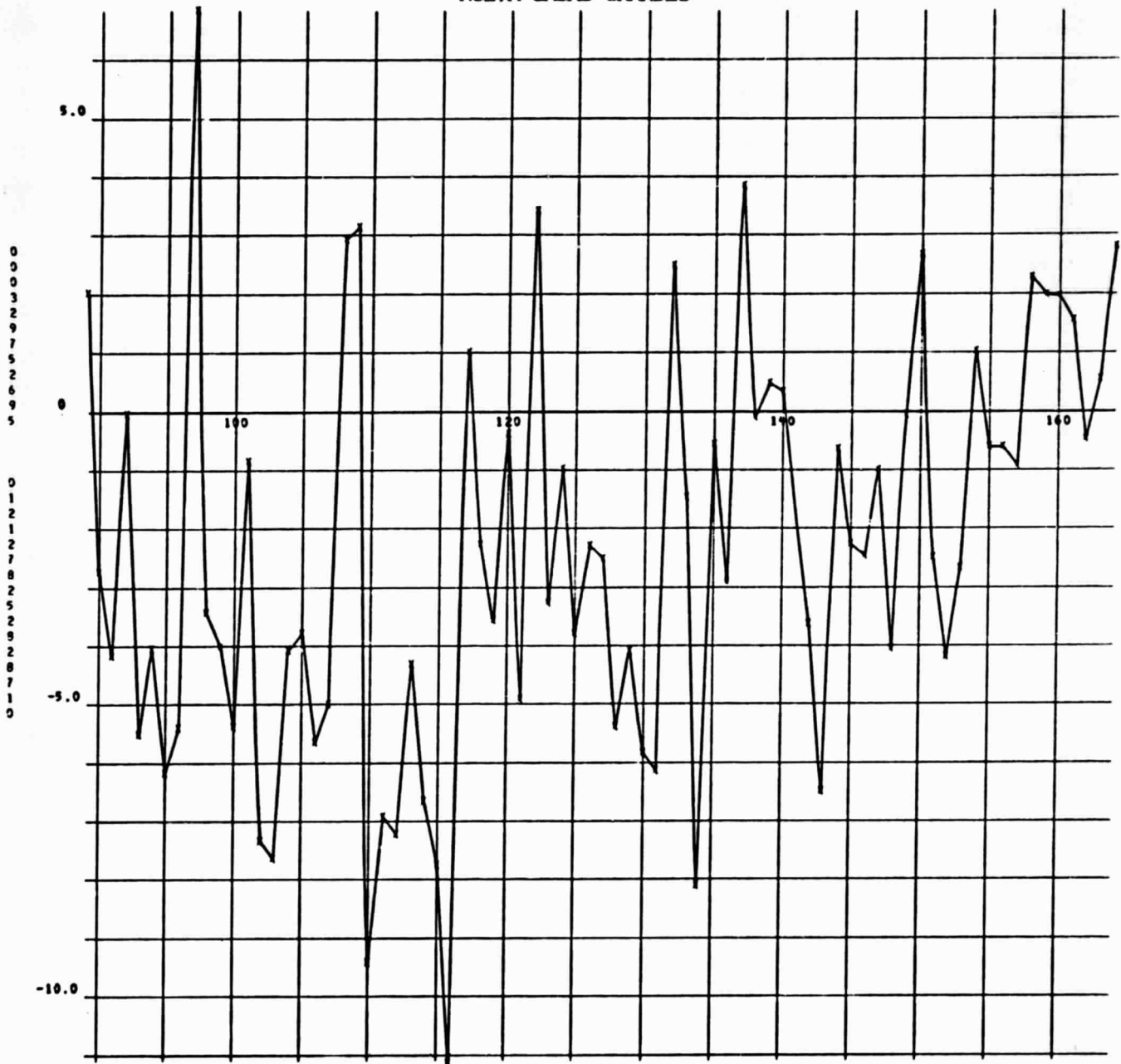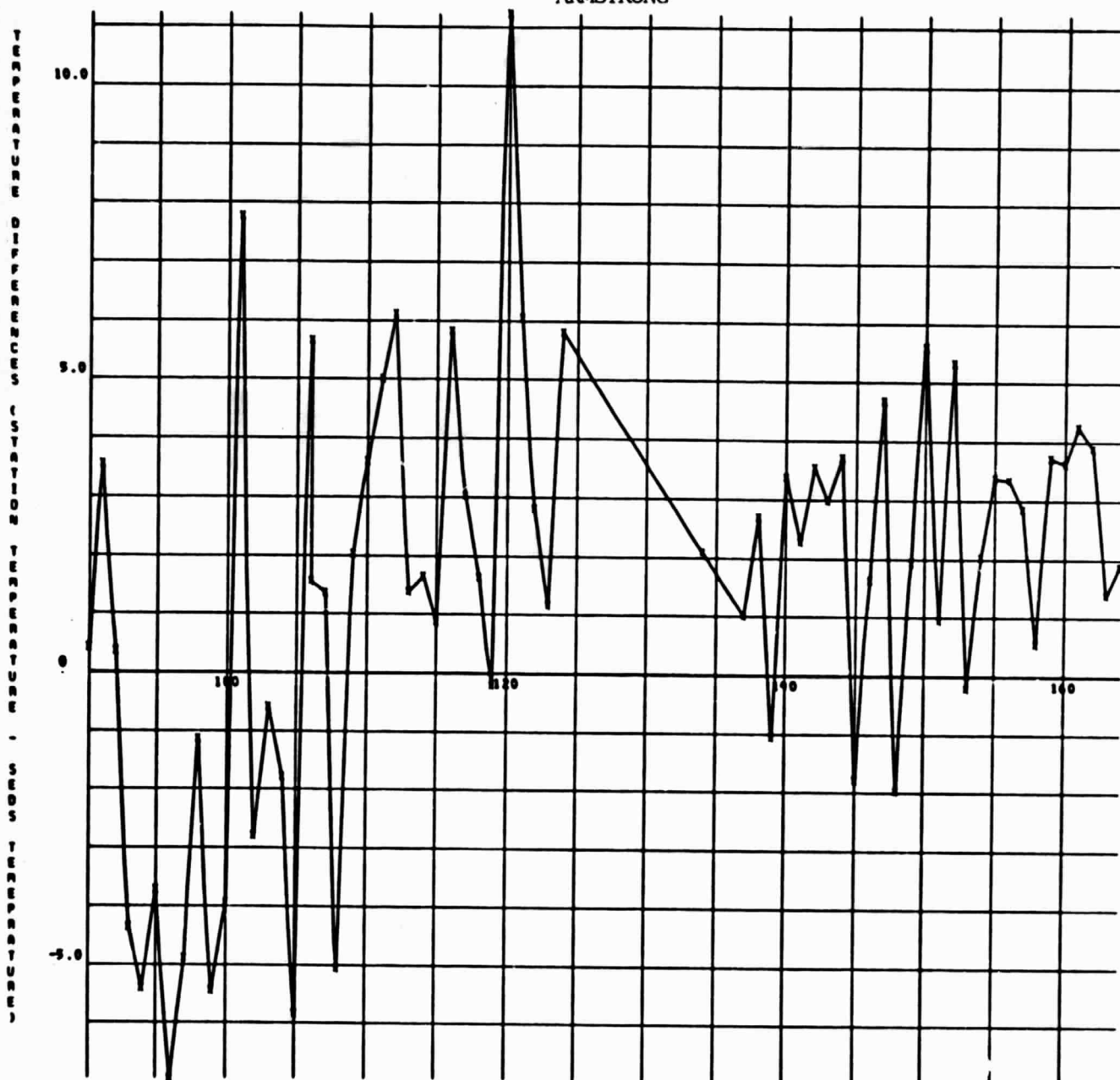
NIGHT RADIOMETRIC ONLY
    BIAS ERROR = .372
    RMS ERROR = 3.707
    SAMPLE SIZE =   13

DAY RADIOMETRIC ONLY
    BIAS ERROR = -2.588
    RMS ERROR = 4.120
    SAMPLE SIZE =   16

C-59

TEMPERATURE DIFFERENCES (STATION TEMPERATURE - SEDS TEMPERATURE)

10.0

5.0

0

-5.0

OVERALL SEDS PERFORMANCE   JULIAN DAY   STATION 91   PAGE 17.
        MISSING DATA =   0
        BIAS ERROR =   1.451
        RMS ERROR =   3.586
        SAMPLE SIZE =   65

                                              NIGHT RADIOMETRIC ONLY
                                                  BIAS ERROR =   4.358
        GROUND TRUTH DATA ONLY   RMS ERROR =   3.533
            BIAS ERROR =   1.022   SAMPLE SIZE =   9
            RMS ERROR =   3.341
            SAMPLE SIZE =   40

                                              DAY RADIOMETRIC ONLY
                                                  BIAS ERROR =   .142
        BOTH RADIOMETRIC USABLE   RMS ERROR =   4.086
            BIAS ERROR =   2.127   SAMPLE SIZE =   10
            RMS ERROR =   2.612
            SAMPLE SIZE =   6

TAMUIN

DEMING

OVERALL SEDS PERFORMANCE JULIAN DAY   STATION 73   PAGE 19.
        MISSING DATA =   0
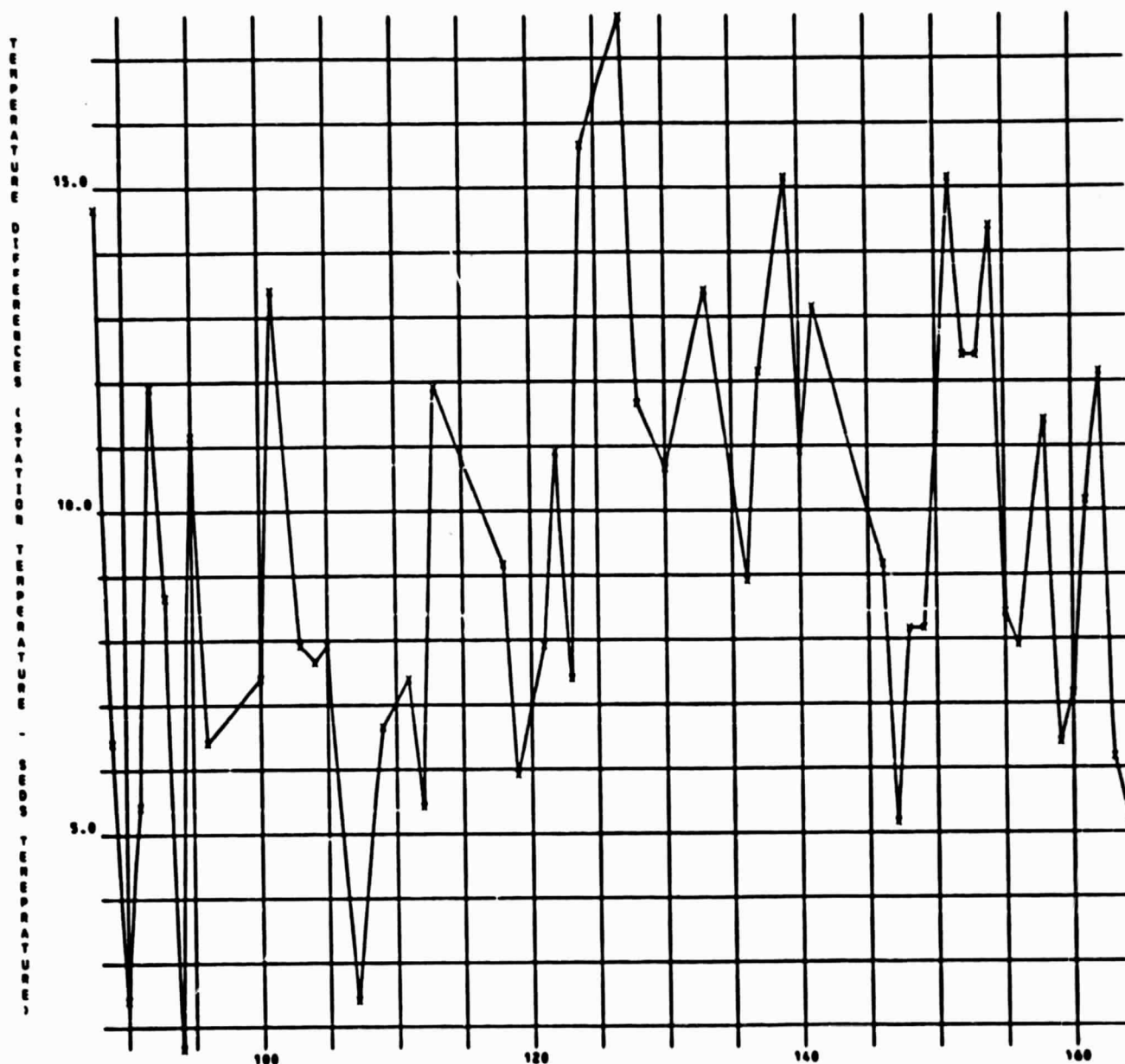   BIAS ERROR = -2.422
        RMS ERROR = 3.627
        SAMPLE SIZE =   77

                                              NIGHT RADIOMETRIC ONLY
                                                 BIAS ERROR = .574
            GROUND TRUTH DATA ONLY   RMS ERROR = 3.614
               BIAS ERROR = -2.809   SAMPLE SIZE =   17
               RMS ERROR = 1.881
               SAMPLE SIZE =   34

                                              DAY RADIOMETRIC ONLY
                                                 BIAS ERROR = -5.533
            BOTH RADIOMETRIC USABLE   RMS ERROR = 4.343
               BIAS ERROR = -1.614   SAMPLE SIZE =   15
               RMS ERROR = 3.157
               SAMPLE SIZE =   11   C-62
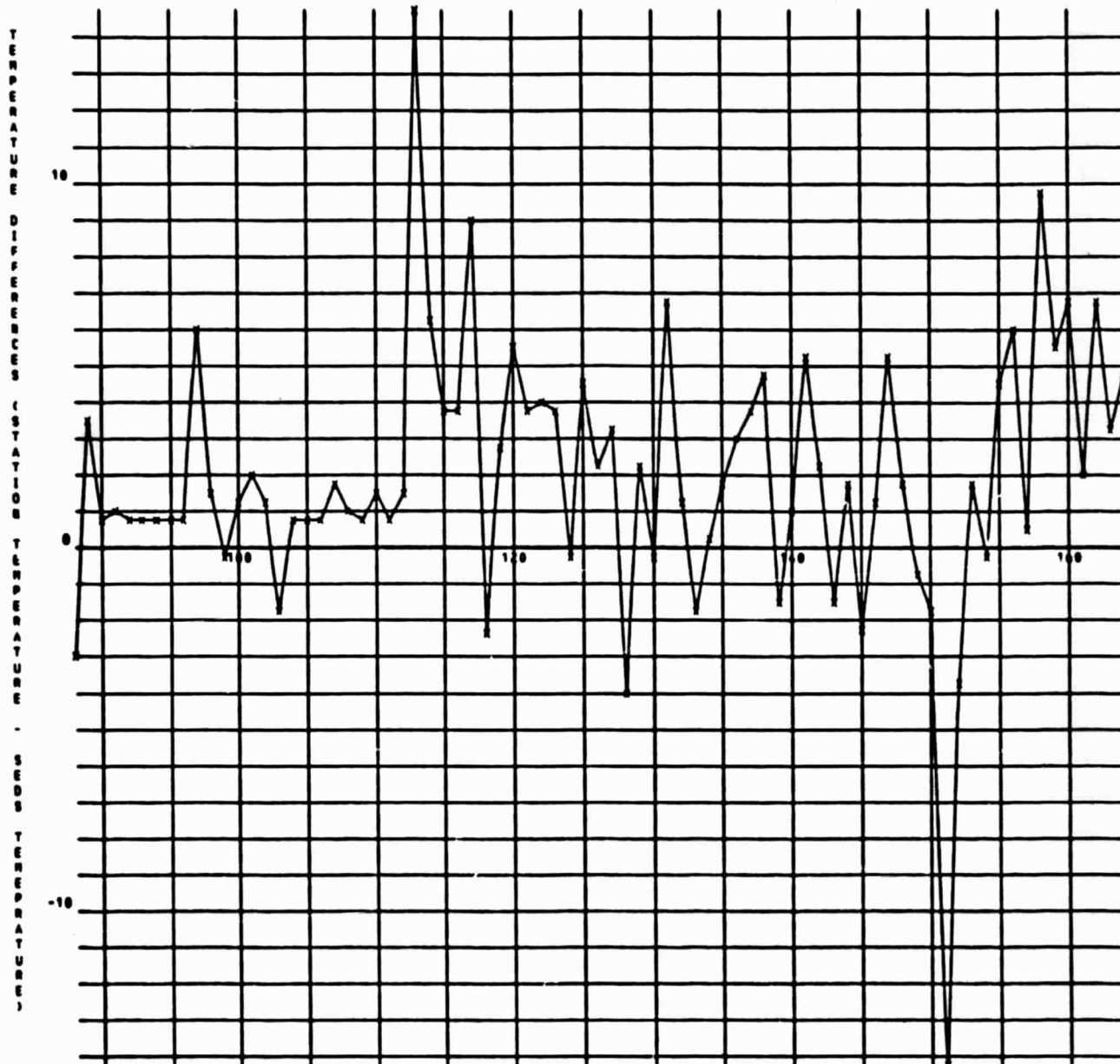
OVERALL SEDS PERFORMANCE FROM   JULIAN DAY   STATION 02   PAGE 6.
   MISSING DATA =   0
   BIAS ERROR = 1.973
   RMS ERROR ABOUT MEAN = 3.641
   SAMPLE SIZE =   77

GROUND TRUTH DATA ONLY
   BIAS ERROR = 1.710
   RMS ERROR ABOUT MEAN = 1.179
   SAMPLE SIZE =   25

NIGHT RADIOMETRIC ONLY
   BIAS ERROR = 4.400
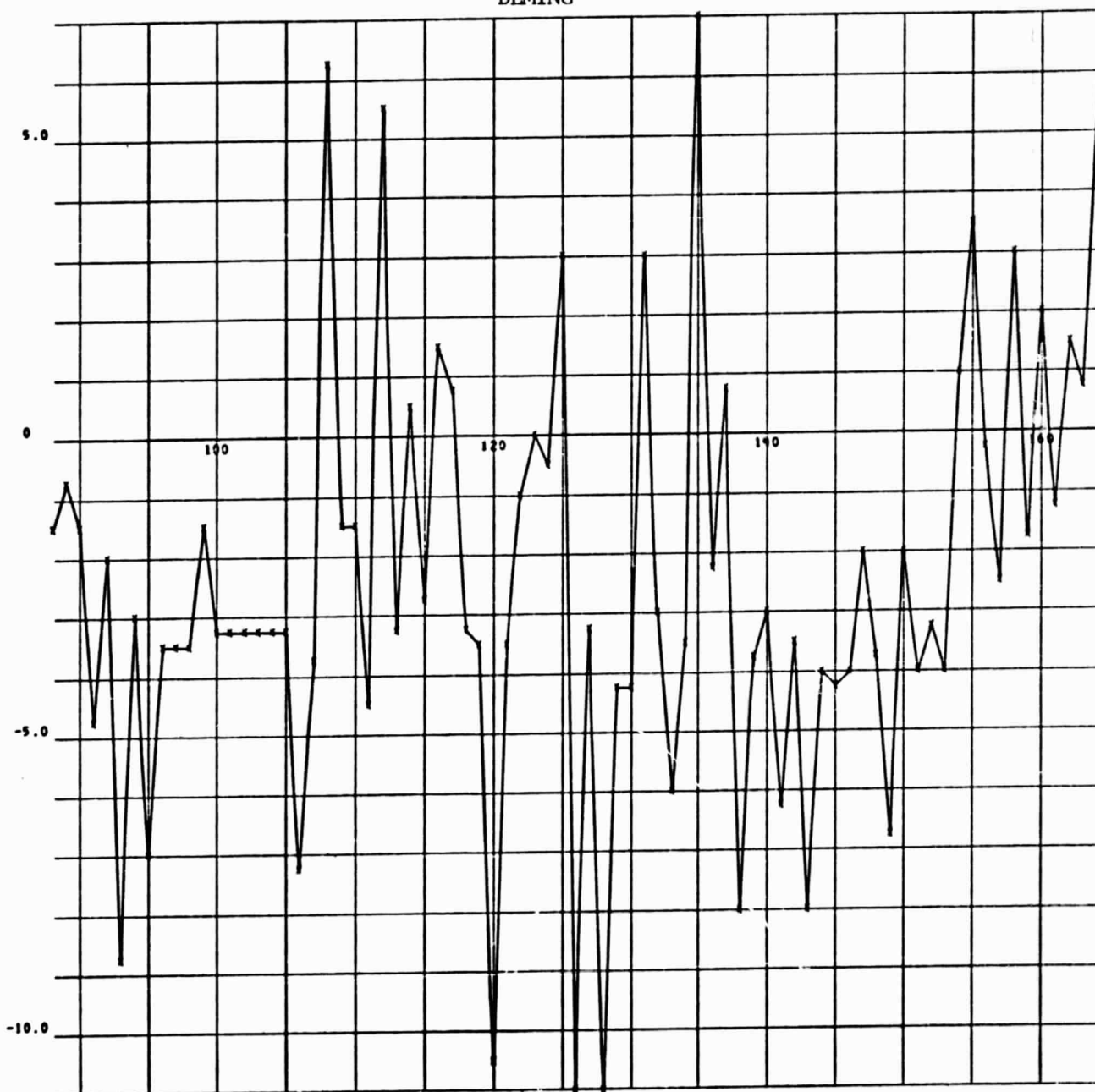   RMS ERROR ABOUT MEAN = 3.680
   SAMPLE SIZE =   15

DAY RADIOMETRIC ONLY
   BIAS ERROR = 2.950
   RMS ERROR ABOUT MEAN = 3.541
   SAMPLE SIZE =   20

BOTH RADIOMETRIC USABLE
   BIAS ERROR = -.932
   RMS ERROR ABOUT MEAN = 4.284
   SAMPLE SIZE =   17

C-63

EL PASO

OVERALL SEDS PERFORMANCE   JULIAN DAY   STATION 74   PAGE 22.
        MISSING DATA =   0
        BIAS ERROR =   -.223
        RMS ERROR =   3.725
        SAMPLE SIZE =   75

                                            NIGHT RADIOMETRIC ONLY
                                                BIAS ERROR =   -.237
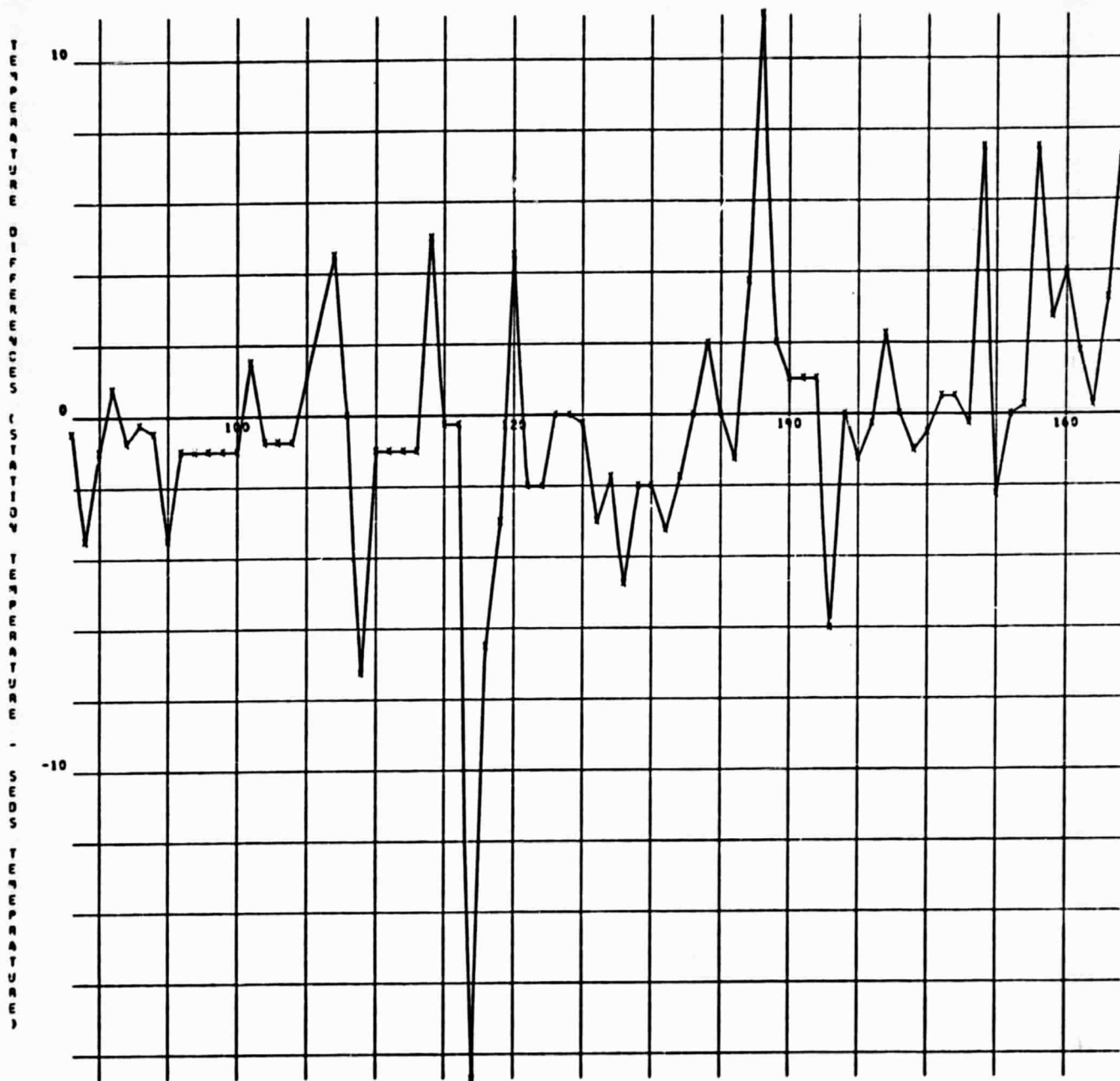   RMS ERROR =   6.410
        GROUND TRUTH DATA ONLY   SAMPLE SIZE =   19
            BIAS ERROR =   -.714
            RMS ERROR =   .938
            SAMPLE SIZE =   35

                                            DAY RADIOMETRIC ONLY
                                                BIAS ERROR =   .886
                                                RMS ERROR =   3.518
        BOTH RADIOMETRIC USABLE   SAMPLE SIZE =   11
            BIAS ERROR =   .300
            RMS ERROR =   3.478
            SAMPLE SIZE =   10   C-64

HUEJUCAR

OVERALL SEDS PERFORMANCE FROM
   MISSING DATA =   0
   BIAS ERROR = 1.541
   RMS ERROR ABOUT MEAN = 3.805
   SAMPLE SIZE =   76

JULIAN DAY   STATION 13   PAGE 35.

GROUND TRUTH DATA ONLY
   BIAS ERROR =   .198
   RMS ERROR ABOUT MEAN = 1.829
   SAMPLE SIZE =   29

NIGHT RADIOMETRIC ONLY
   BIAS ERROR = 2.942
   RMS ERROR ABOUT MEAN = 4.654
   SAMPLE SIZE =   18

BOTH RADIOMETRIC USABLE
   BIAS ERROR =   .235
   RMS ERROR ABOUT MEAN = 3.101
   SAMPLE SIZE =   13

DAY RADIOMETRIC ONLY
   BIAS ERROR = 3.462
   RMS ERROR ABOUT MEAN = 4.757
   SAMPLE SIZE =   16

GUERRERO NEGRO

OVERALL SEDS PERFORMANCE   JULIAN DAY   STATION 40   PAGE 34.
        MISSING DATA =   9
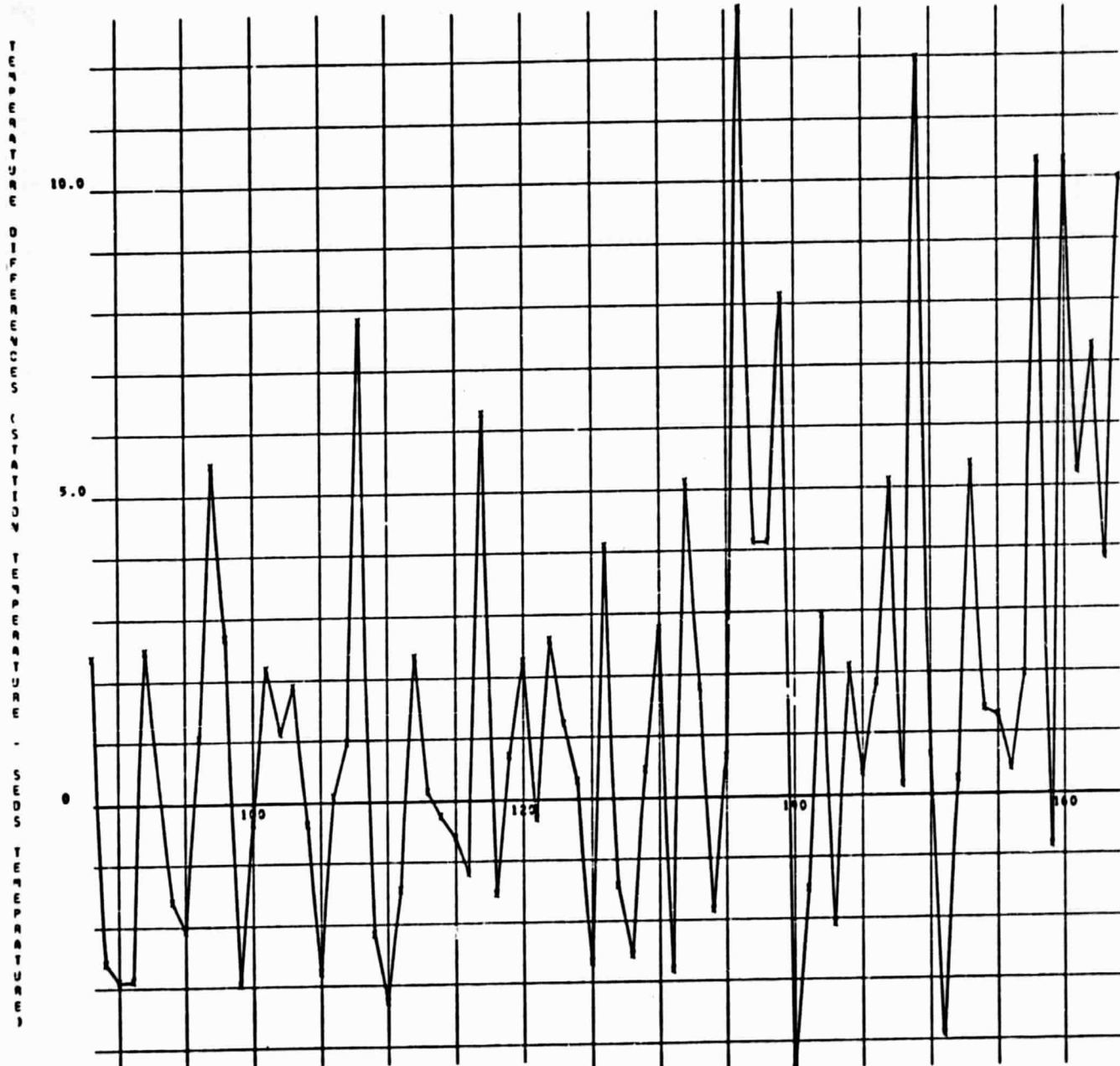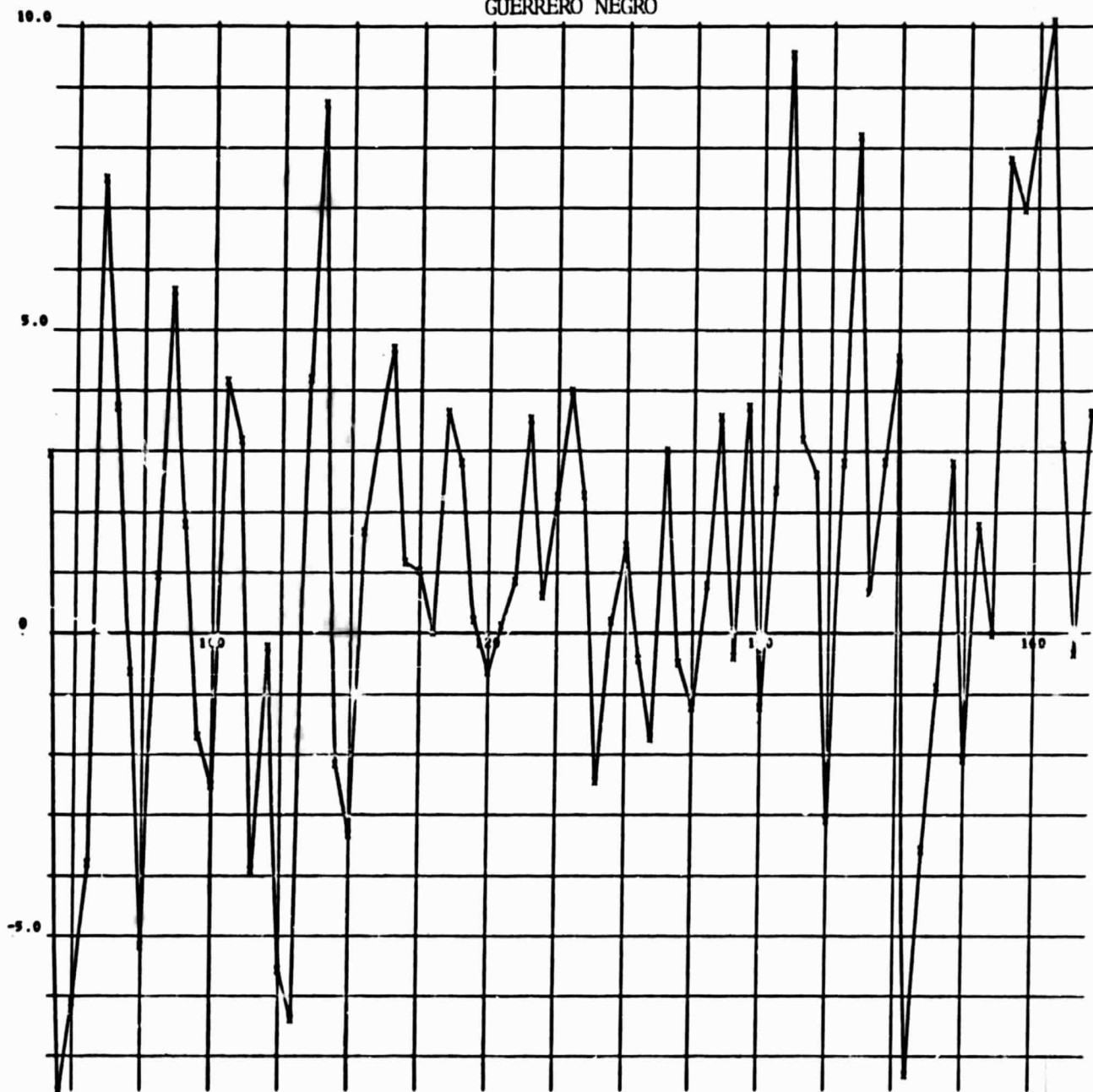   BIAS ERROR =   1.159
        RMS ERROR =   3.675
        SAMPLE SIZE =   75

                                            NIGHT RADIOMETRIC ONLY
                                                BIAS ERROR =   1.472
GROUND TRUTH DATA ONLY   RMS ERROR =   4.161
        BIAS ERROR =   .591   SAMPLE SIZE =   14
        RMS ERROR =   3.732
        SAMPLE SIZE =   27

                                            DAY RADIOMETRIC ONLY
                                                BIAS ERROR =   3.334
BOTH RADIOMETRIC USABLE   RMS ERROR =   3.663
        BIAS ERROR =   -.933   SAMPLE SIZE =   23
        RMS ERROR =   2.571
        SAMPLE SIZE =   15   C-66

ZACATEPEC

OVERALL SEDS PERFORMANCE JULIAN DAY STATION 27 PAGE 43.
MISSING DATA = 0
BIAS ERROR = -1.152
RMS ERROR = 3.883
SAMPLE SIZE = 77

GROUND TRUTH DATA ONLY
BIAS ERROR = -1.620
RMS ERROR = 4.501
SAMPLE SIZE = 22

NIGHT RADIOMETRIC ONLY
BIAS ERROR = -2.224
RMS ERROR = 4.371
SAMPLE SIZE = 10

BOTH RADIOMETRIC USABLE
BIAS ERROR = -1.947
RMS ERROR = 3.712
SAMPLE SIZE = 18

DAY RADIOMETRIC ONLY
BIAS ERROR = .157
RMS ERROR = 3.038
SAMPLE SIZE = 27

C-67

TEMPLE

TEMPERATURE DIFFERENCES (STATION TEMPERATURE - SEDS TEMPERATURE)

OVERALL SEDS PERFORMANCE   JULIAN DAY   STATION 87   PAGE 6.
    MISSING DATA =   0
    BIAS ERROR = -.449
    RMS ERROR = 3.893
    SAMPLE SIZE =   77

                                                    NIGHT RADIOMETRIC ONLY
                                                        BIAS ERROR = 1.248
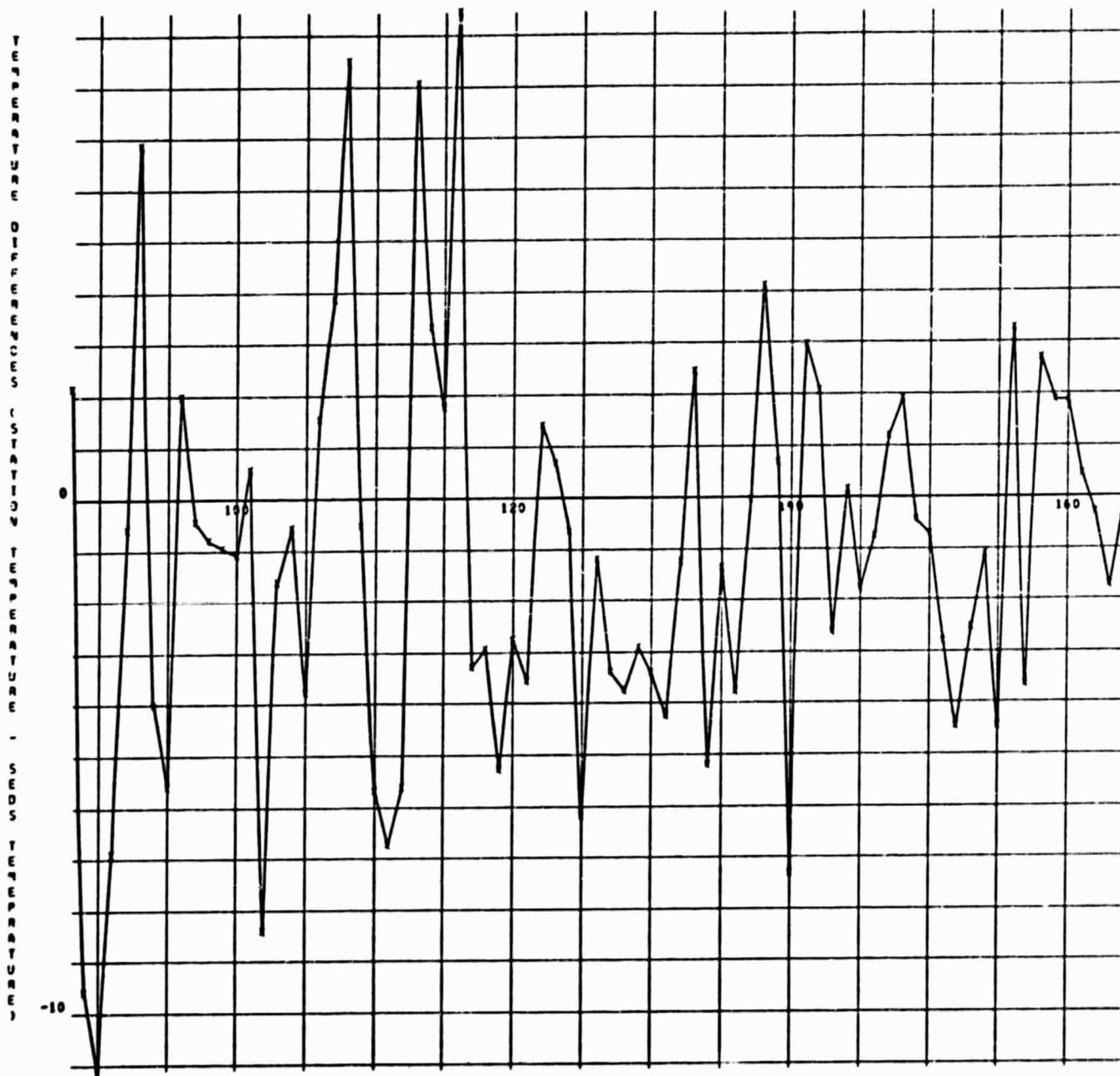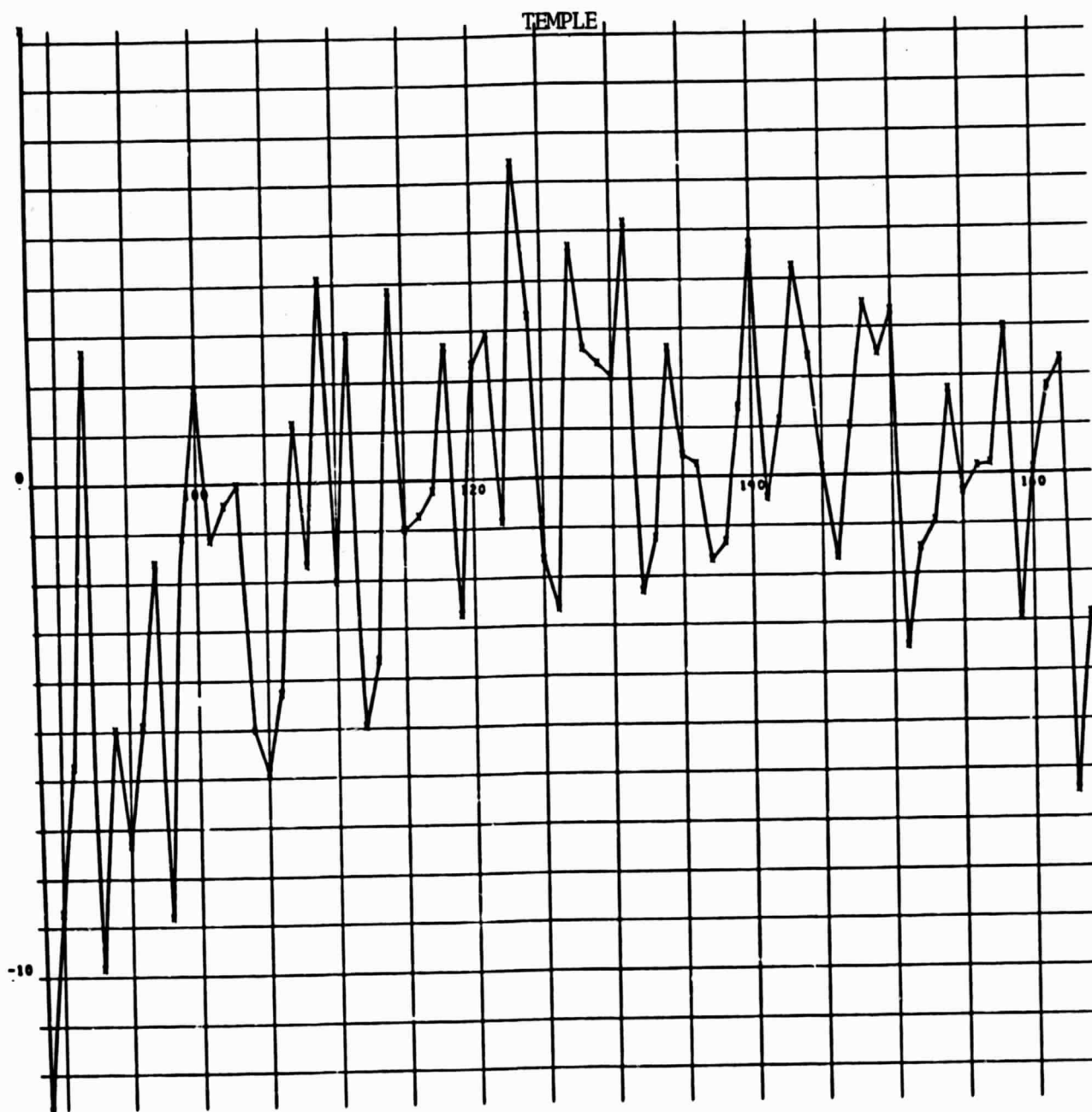   RMS ERROR = 2.067
    GROUND TRUTH DATA ONLY   SAMPLE SIZE =   4
        BIAS ERROR = -.568
        RMS ERROR = 3.632
        SAMPLE SIZE =   45

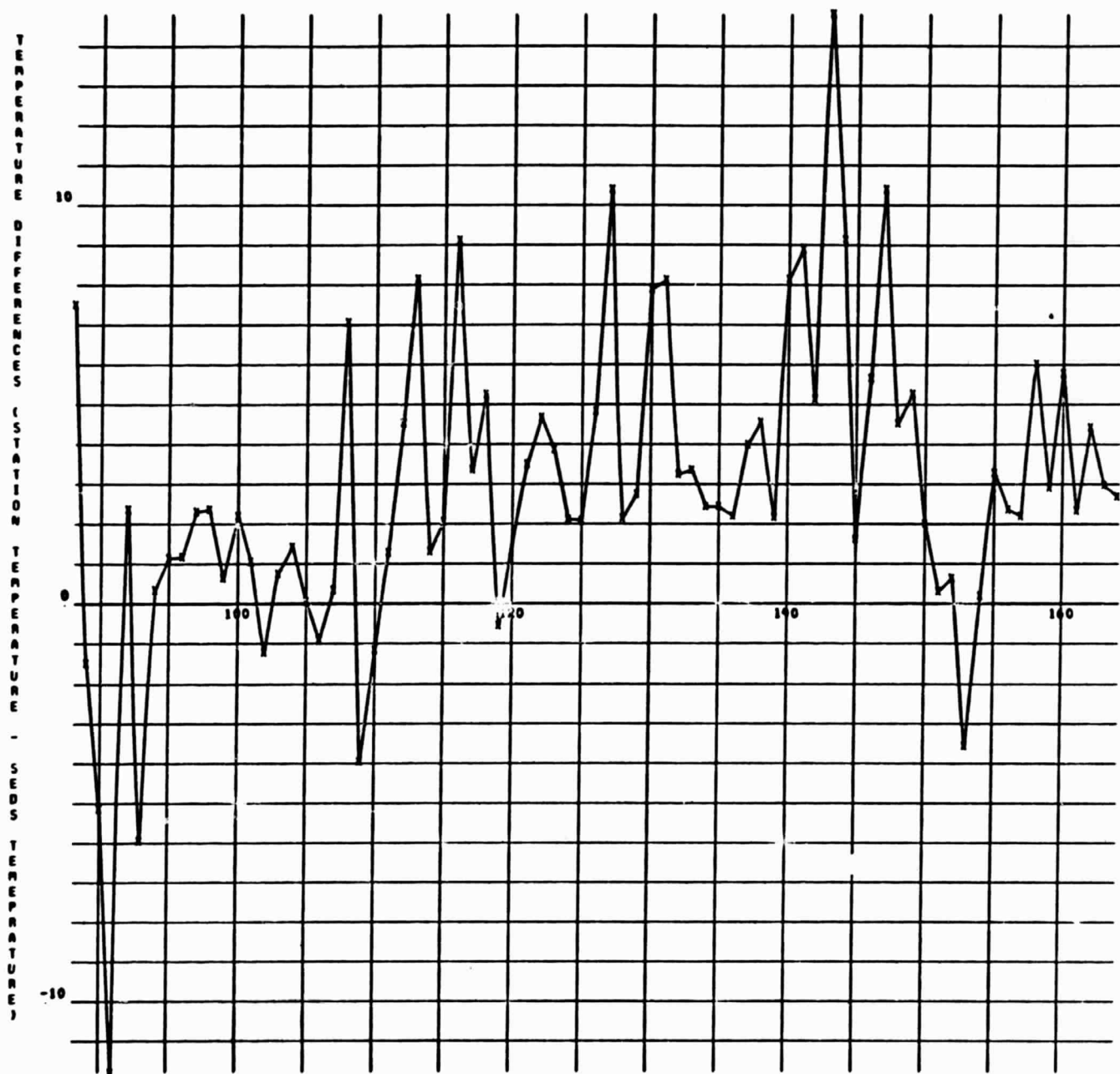   DAY RADIOMETRIC ONLY.
                                                        BIAS ERROR = -.210
                                                        RMS ERROR = 4.745
    BOTH RADIOMETRIC-USABLE   SAMPLE SIZE =   23
        BIAS ERROR = -1.852
        RMS ERROR = 3.165
        SAMPLE SIZE =   5

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LAREDO

TEMPERATURE DIFFERENCES (STATION TEMPERATURE - SEDS TEMEPRATURE)

OVERALL SEDS PERFORMANCE   JULIAN DAY   STATION 89   PAGE 6.
    MISSING DATA =   0
    BIAS ERROR = 2.807
    RMS ERROR = 3.966
    SAMPLE SIZE =   76

GROUND TRUTH DATA ONLY
    BIAS ERROR = 2.517
    RMS ERROR = 2.624
    SAMPLE SIZE =   46
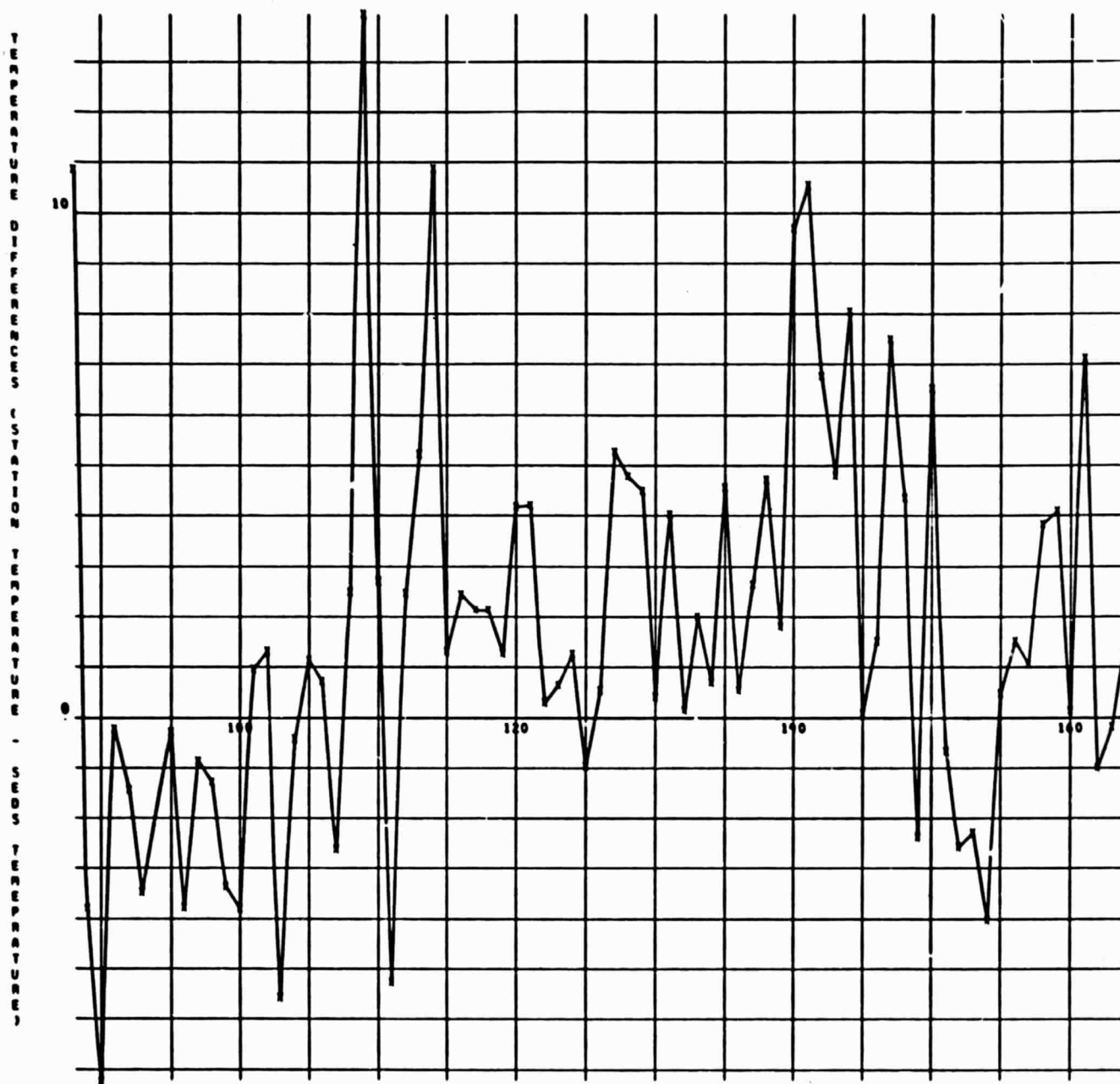
BOTH RADIOMETRIC USABLE
    BIAS ERROR = .912
    RMS ERROR = 5.303
    SAMPLE SIZE =   7

NIGHT RADIOMETRIC ONLY
    BIAS ERROR = 1.434
    RMS ERROR = 2.603
    SAMPLE SIZE =   5

DAY RADIOMETRIC ONLY
    BIAS ERROR = 3.194
    RMS ERROR = 5.181
    SAMPLE SIZE =   17

TEMPERATURE DIFFERENCES (STATION TEMPERATURE - SEDS TEMPERATURE)

10

0

100   120   140   160

OVERALL SEDS PERFORMANCE   JULIAN DAY   STATION 90   PAGE 13.
    MISSING DATA =   0
    BIAS ERROR =   1.729
    RMS ERROR =   4.047
    SAMPLE SIZE =   76

                                              NIGHT RADIOMETRIC ONLY
                                                  BIAS ERROR =   1.528
    GROUND TRUTH DATA ONLY   RMS ERROR =   4.077
        BIAS ERROR =   1.475   SAMPLE SIZE =   12
        RMS ERROR =   3.543
        SAMPLE SIZE =   41

                                              DAY RADIOMETRIC ONLY
                                                  BIAS ERROR =   1.914
    BOTH RADIOMETRIC USABLE   RMS ERROR =   4.975
        BIAS ERROR =   3.073   SAMPLE SIZE =   16
        RMS ERROR =   5.097
        SAMPLE SIZE =   7

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LORETO

OVERALL SEDS PERFORMANCE JULIAN DAY   STATION 45   PAGE 41.
        MISSING DATA =   0
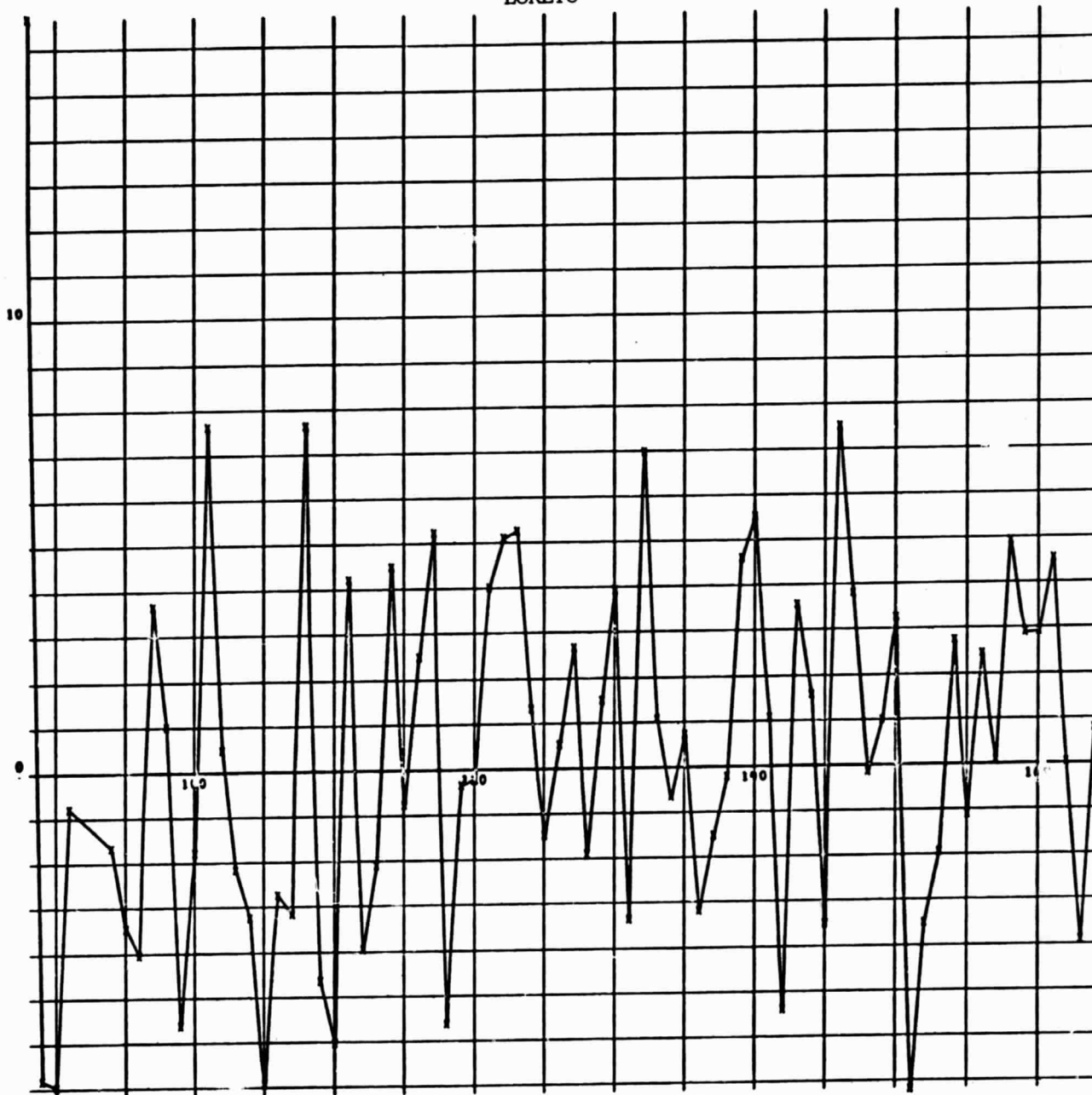   BIAS ERROR =   .307
        RMS ERROR =   4.271
        SAMPLE SIZE =   73

                                    NIGHT RADIOMETRIC ONLY
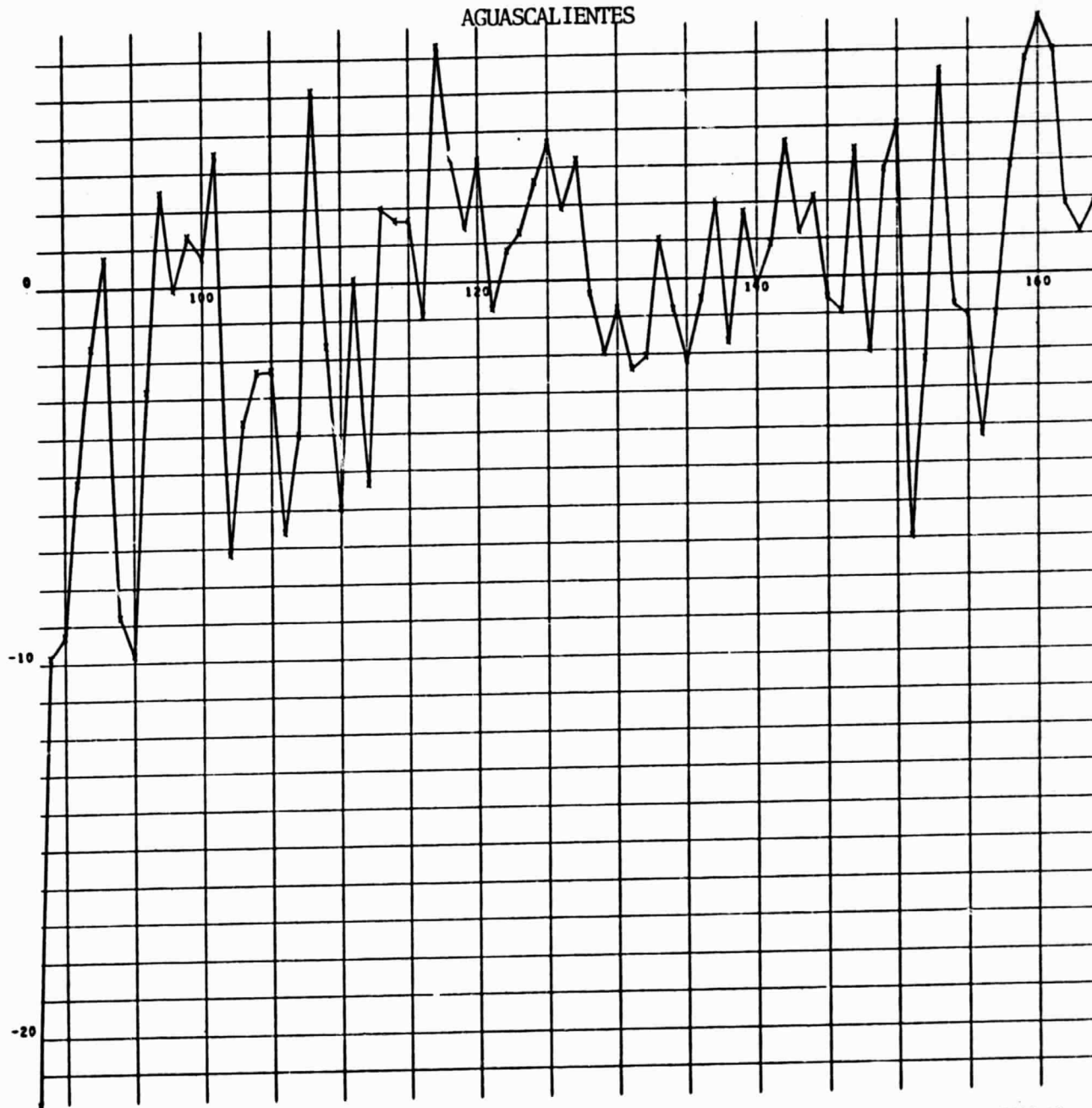   BIAS ERROR =   1.079
        GROUND TRUTH DATA ONLY   RMS ERROR =   4.567
            BIAS ERROR =   .699   SAMPLE SIZE =   13
            RMS ERROR =   4.582
            SAMPLE SIZE =   34

                                    DAY RADIOMETRIC ONLY
                                        BIAS ERROR =   .017
        BOTH RADIOMETRIC USABLE   RMS ERROR =   4.223
            BIAS ERROR =   -.903   SAMPLE SIZE =   17
            RMS ERROR =   3.250
            SAMPLE SIZE =   14

AGUASCALIENTES

OVERALL SEDS PERFORMANCE   JULIAN DAY   STATION 37   PAGE 48.
    MISSING DATA =   0
    BIAS ERROR = -.543
    RMS ERROR =   4.494
    SAMPLE SIZE =   77

                                                NIGHT RADIOMETRIC ONLY
                                                    BIAS ERROR = -.735
        GROUND TRUTH DATA ONLY   RMS ERROR =   6.793
            BIAS ERROR = -2.151   SAMPLE SIZE =   14
            RMS ERROR =   3.967
            SAMPLE SIZE =   29

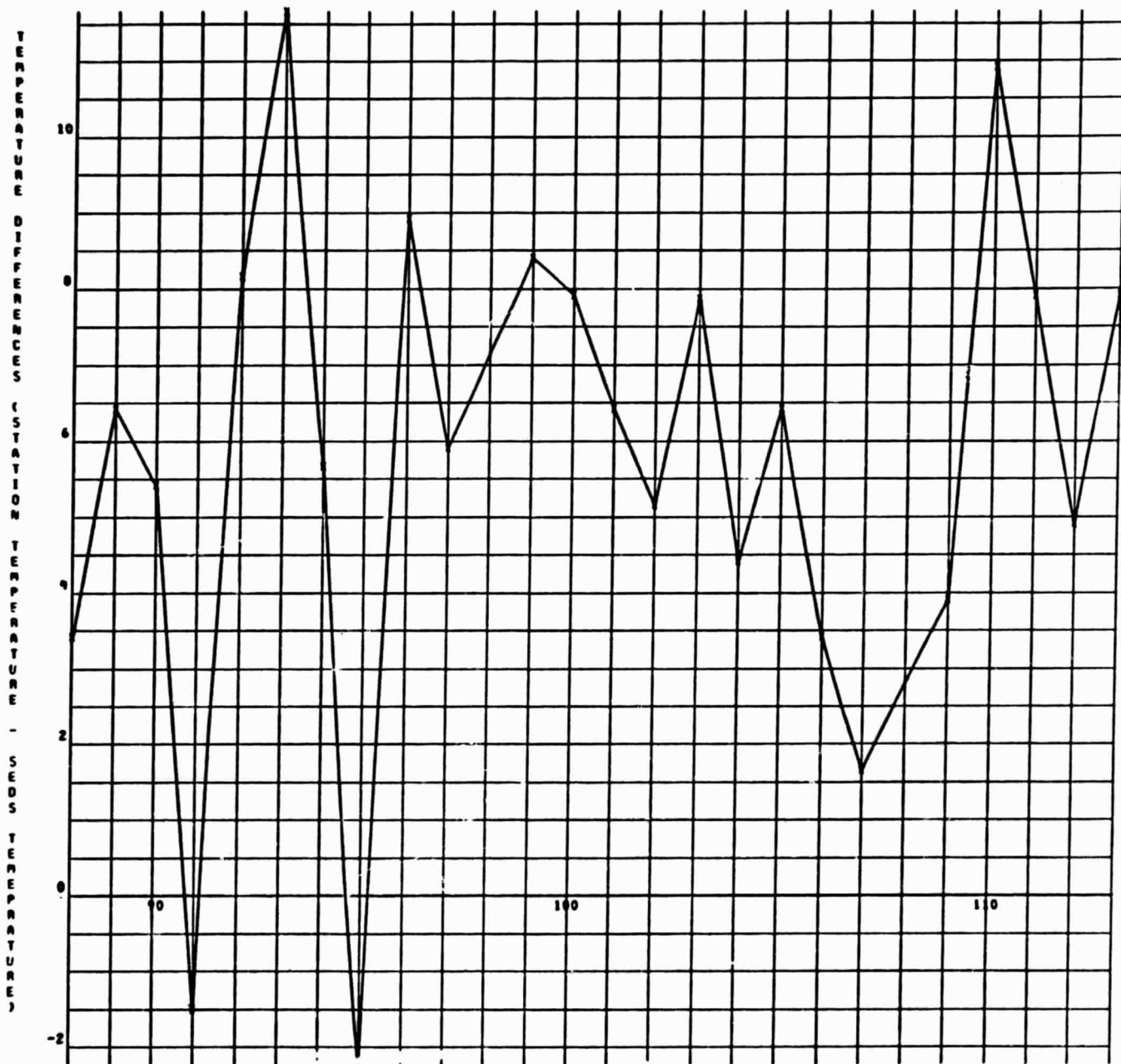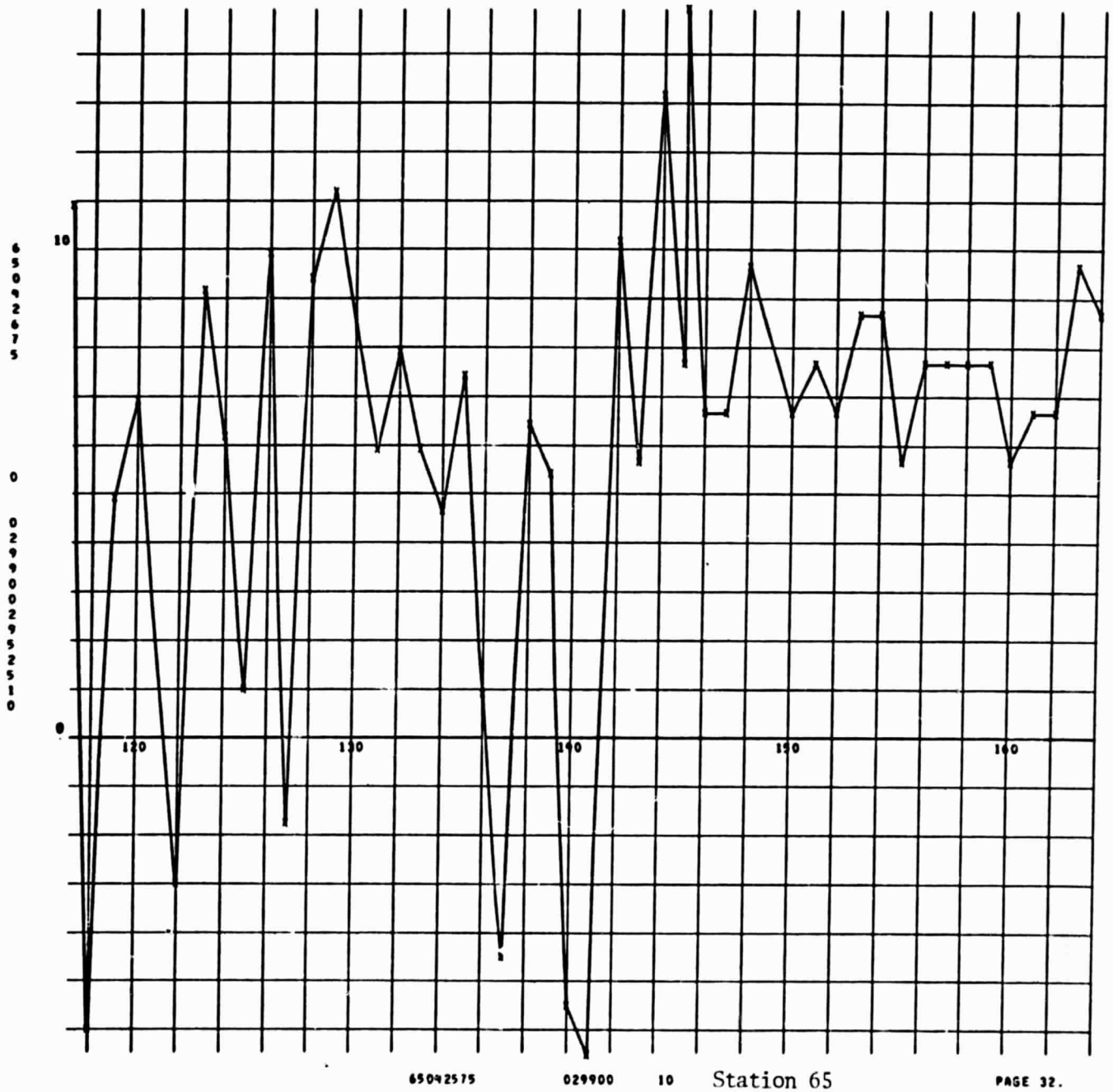   DAY RADIOMETRIC ONLY
                                                    BIAS ERROR =   1.096
                                                    RMS ERROR =   2.614
        BOTH RADIOMETRIC USABLE   SAMPLE SIZE =   18
            BIAS ERROR =   .694
            RMS ERROR =   3.914
            SAMPLE SIZE =   16

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OVERALL SEDS PERFORMANCE JULIAN DAY   STATION 65   PAGE 20.
     MISSING DATA =   0
     BIAS ERROR = 5.940
     RMS ERROR = 4.825
     SAMPLE SIZE =   46

NIGHT RADIOMETRIC ONLY
     BIAS ERROR = 6.160
     RMS ERROR = 2.121
     SAMPLE SIZE =   2

GROUND TRUTH DATA ONLY
     BIAS ERROR = 5.339
     RMS ERROR = 4.579
     SAMPLE SIZE =   36

DAY RADIOMETRIC ONLY
     BIAS ERROR = 7.686
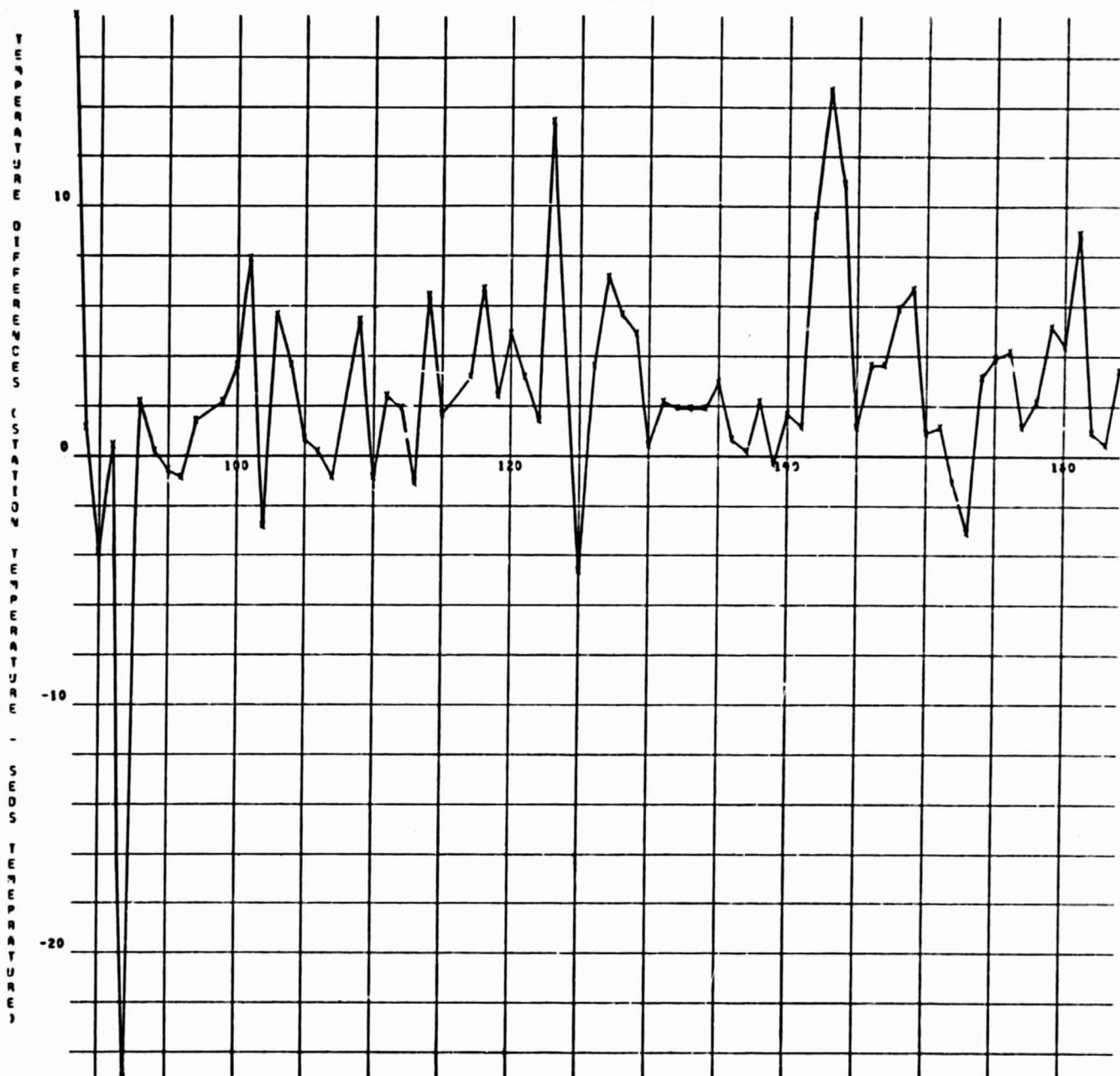   RMS ERROR = 5.693
     SAMPLE SIZE =   7

BOTH RADIOMETRIC USABLE
     BIAS ERROR = 14.910
     RMS ERROR = .000
     SAMPLE SIZE =   1

65042575   029900   10   Station 65   PAGE 32.

MONTERREY

OVERALL SEDS PERFORMANCE FROM JULIAN DAY   STATION 06   PAGE 66.
    MISSING DATA = 0
    BIAS ERROR = 2.592
    RMS ERROR ABOUT MEAN = 5.111
    SAMPLE SIZE = 73

NIGHT RADIOMETRIC ONLY
    BIAS ERROR = 2.237
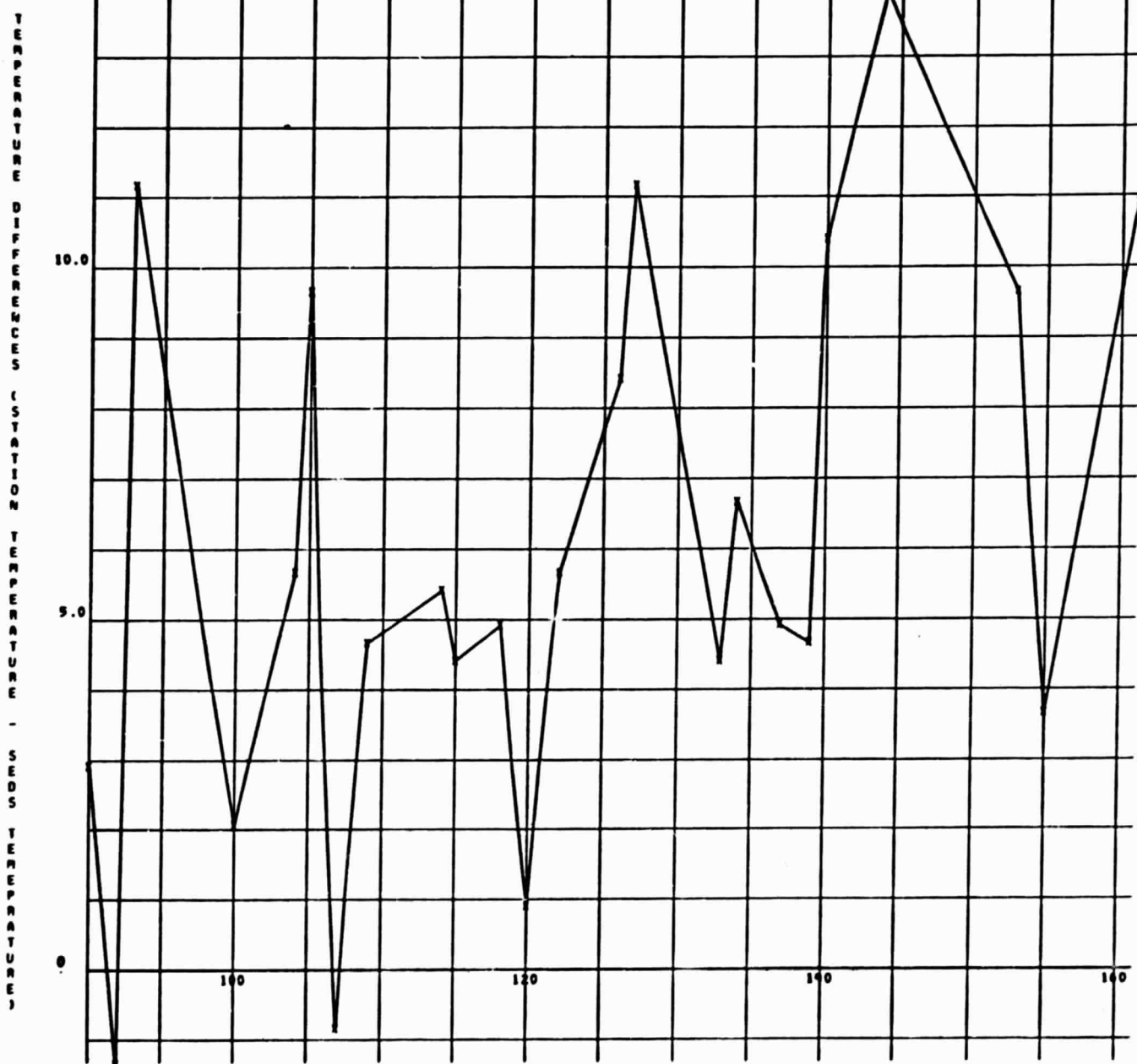   RMS ERROR ABOUT MEAN = 3.148
    SAMPLE SIZE = 13

GROUND TRUTH DATA ONLY
    BIAS ERROR = 2.834
    RMS ERROR ABOUT MEAN = 3.837
    SAMPLE SIZE = 33

DAY RADIOMETRIC ONLY
    BIAS ERROR = 2.267
    RMS ERROR ABOUT MEAN = 4.510
    SAMPLE SIZE = 14

BOTH RADIOMETRIC USABLE
    BIAS ERROR = 2.679
    RMS ERROR ABOUT MEAN = 3.022
    SAMPLE SIZE = 13

TEMPERATURE DIFFERENCES (STATION TEMPERATURE - SEDS TEMPERATURE)

OVERALL SEDS PERFORMANCE FROM JULIAN DAY STATION 28 PAGE 16.
   MISSING DATA = 0
   BIAS ERROR = 6.000
   RMS ERROR ABOUT MEAN = 3.962
   SAMPLE SIZE = 24

GROUND TRUTH DATA ONLY
   BIAS ERROR = 6.389
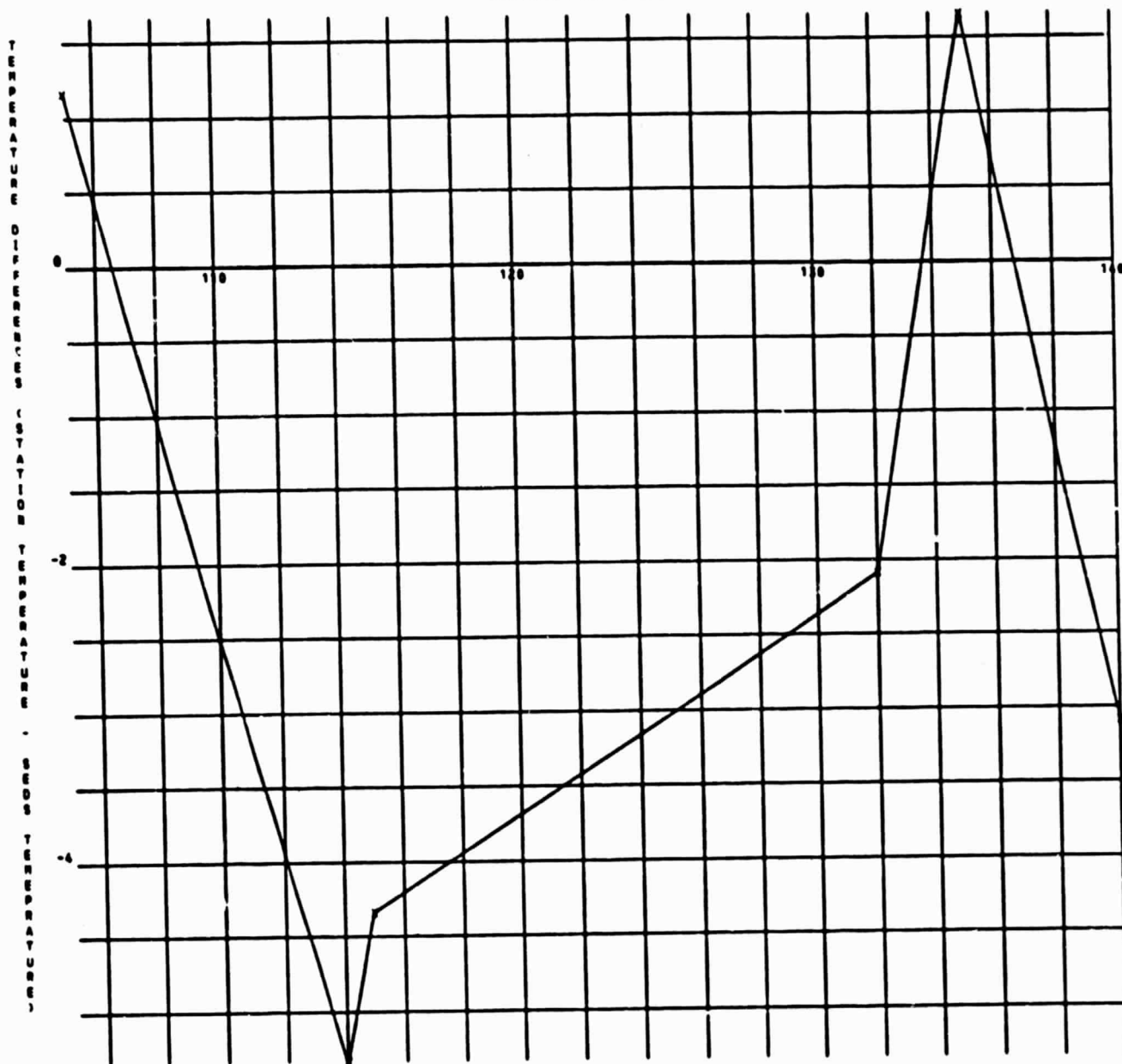   RMS ERROR ABOUT MEAN = 3.072
   SAMPLE SIZE = 14

NIGHT RADIOMETRIC ONLY
   BIAS ERROR = -.840
   RMS ERROR ABOUT MEAN = .000
   SAMPLE SIZE = 1

DAY RADIOMETRIC ONLY
   BIAS ERROR = 7.326
   RMS ERROR ABOUT MEAN = 5.353
   SAMPLE SIZE = 7

BOTH RADIOMETRIC USABLE
   BIAS ERROR = 4.160
   RMS ERROR ABOUT MEAN = .707
   SAMPLE SIZE = 2

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AGUASCALIENTES

OVERALL SEDS PERFORMANCE FROM   JULIAN DAY   STATION 36   PAGE 59.
   MISSING DATA =   0
   BIAS ERROR = -2.007
   RMS ERROR ABOUT MEAN = 2.871
   SAMPLE SIZE =   6

NIGHT RADIOMETRIC ONLY
   BIAS ERROR = 1.660
   RMS ERROR ABOUT MEAN =   .000
   SAMPLE SIZE =   1

GROUND TRUTH DATA ONLY
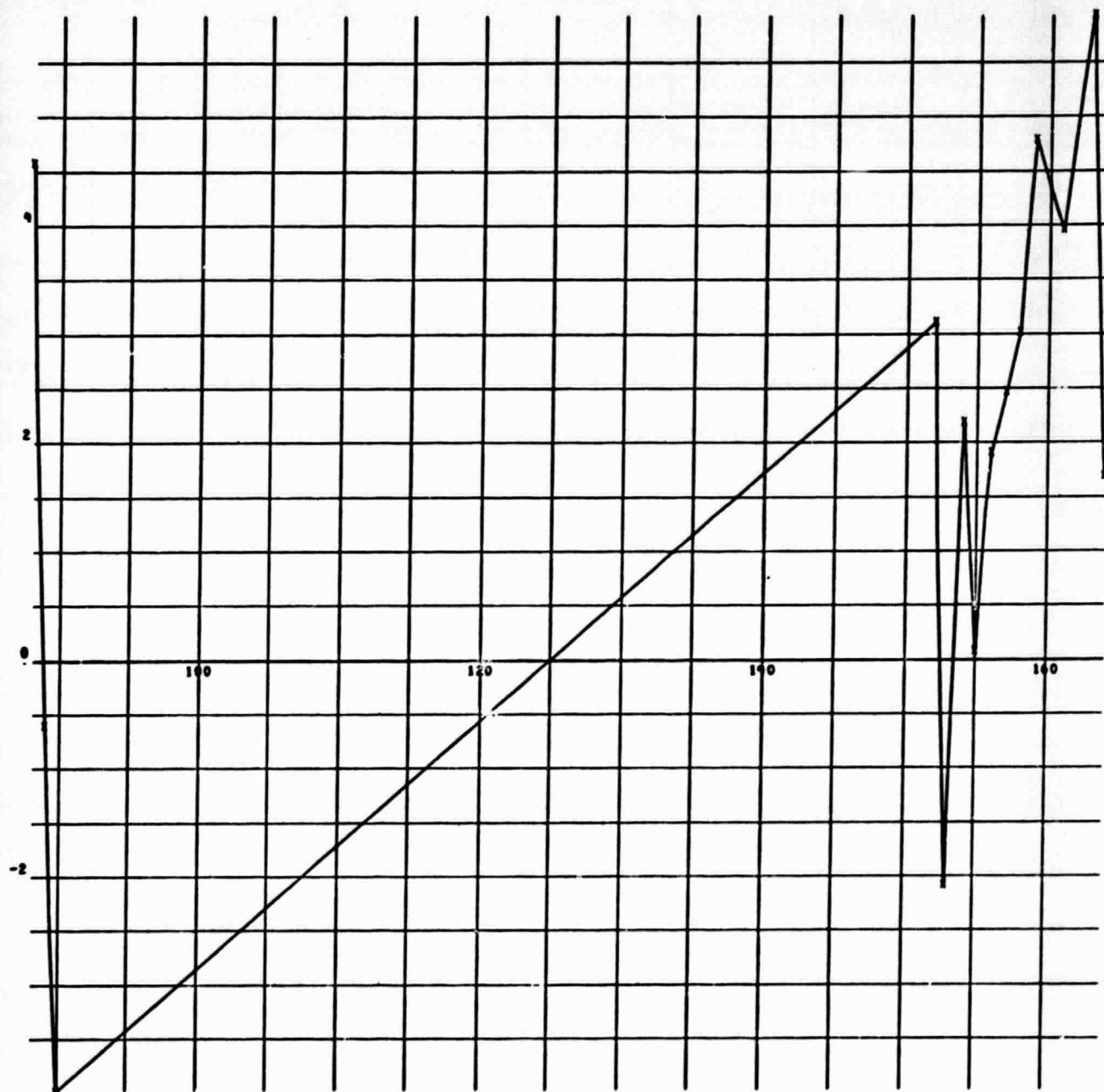   BIAS ERROR = -3.715
   RMS ERROR ABOUT MEAN =   .884
   SAMPLE SIZE =   2

DAY RADIOMETRIC ONLY
   BIAS ERROR = 1.160
   RMS ERROR ABOUT MEAN =   .000
   SAMPLE SIZE =   1

BOTH RADIOMETRIC USABLE
   BIAS ERROR = -3.715
   RMS ERROR ABOUT MEAN = 2.298
   SAMPLE SIZE =   2

TEMPERATURE DIFFERENCES (STATION TEMPERATURE - SEDS TEMPERATURE)

JULIAN DAY   STATION 92   PAGE 16.

OVERALL SEDS PERFORMANCE
    MISSING DATA =   0
    BIAS ERROR = 1.933
    RMS ERROR = 2.765
    SAMPLE SIZE =   14

GROUND TRUTH DATA ONLY
    BIAS ERROR = 2.596
    RMS ERROR = 2.909
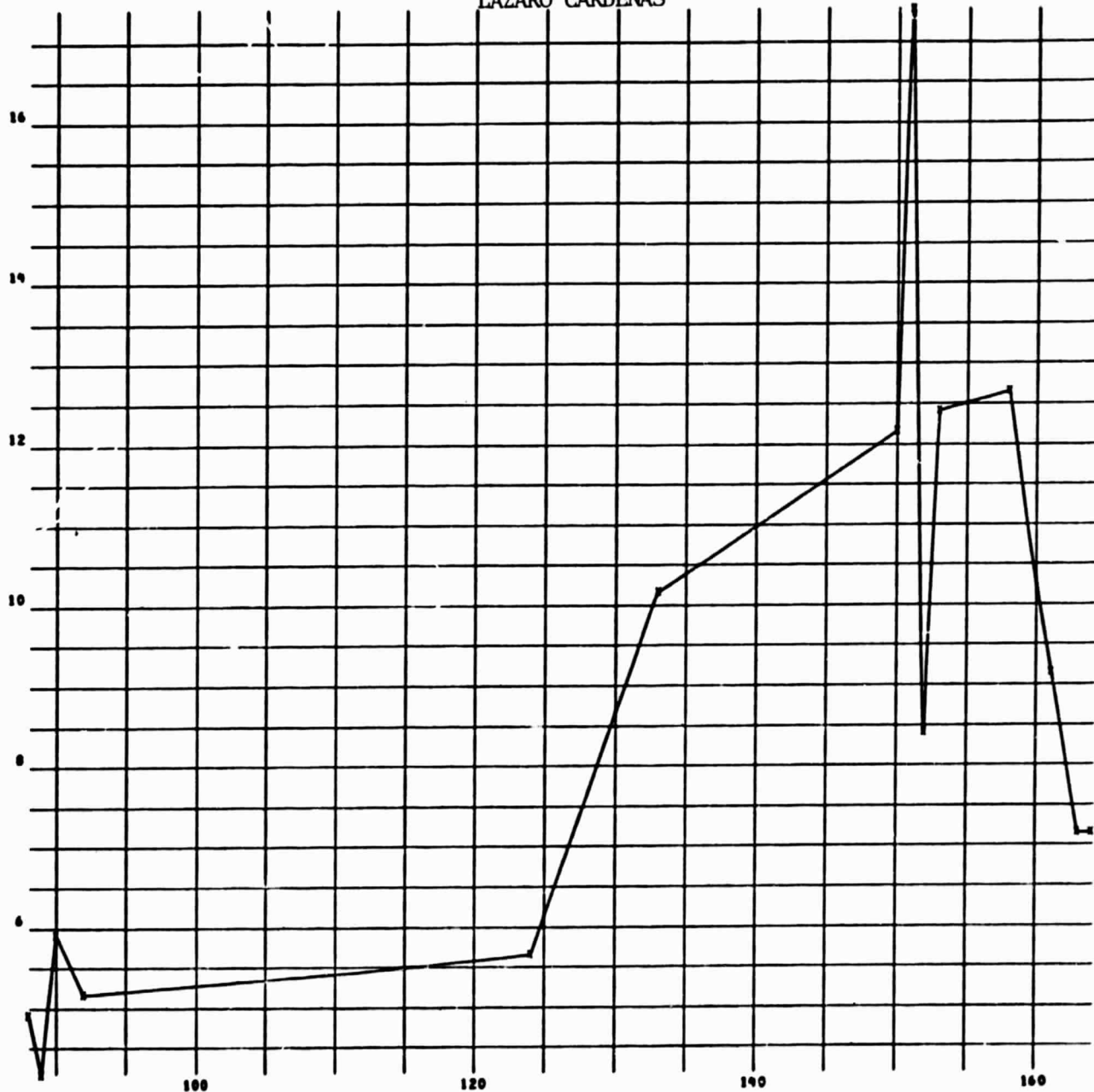   SAMPLE SIZE =   10

NIGHT RADIOMETRIC ONLY
    BIAS ERROR = -1.600
    RMS ERROR = 1.527
    SAMPLE SIZE =   2

DAY RADIOMETRIC ONLY
    BIAS ERROR = 1.800
    RMS ERROR = .300
    SAMPLE SIZE =   2

BOTH RADIOMETRIC USABLE
    BIAS ERROR = .000
    RMS ERROR = .000
    SAMPLE SIZE =   0

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LAZARO CARDENAS

OVERALL SECS PERFORMANCE FROM   JULIAN DAY   STATION 46   PAGE 53.
     MISSING DATA =   0
     BIAS ERROR =   8.749
     RMS ERROR ABOUT MEAN =   3.812
     SAMPLE SIZE =   14

                                           NIGHT RADIOMETRIC ONLY
                                               BIAS ERROR = 11.097
          GROUND TRUTH DATA ONLY   RMS ERROR ABOUT MEAN =   4.977
              BIAS ERROR =   8.874   SAMPLE SIZE =   4
              RMS ERROR ABOUT MEAN =   3.077
              SAMPLE SIZE =   7

                                           DAY RADIOMETRIC ONLY
                                               BIAS ERROR =   5.535
          BOTH RADIOMETRIC USABLE   RMS ERROR ABOUT MEAN =   .530
              BIAS ERROR =   4.910   SAMPLE SIZE =   2
              RMS ERROR ABOUT MEAN =   .000
              SAMPLE SIZE =   1

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TUXPAN

JULIAN DAY   STATION 29   PAGE 5.

OVERALL SEDS PERFORMANCE FROM
    MISSING DATA =   0
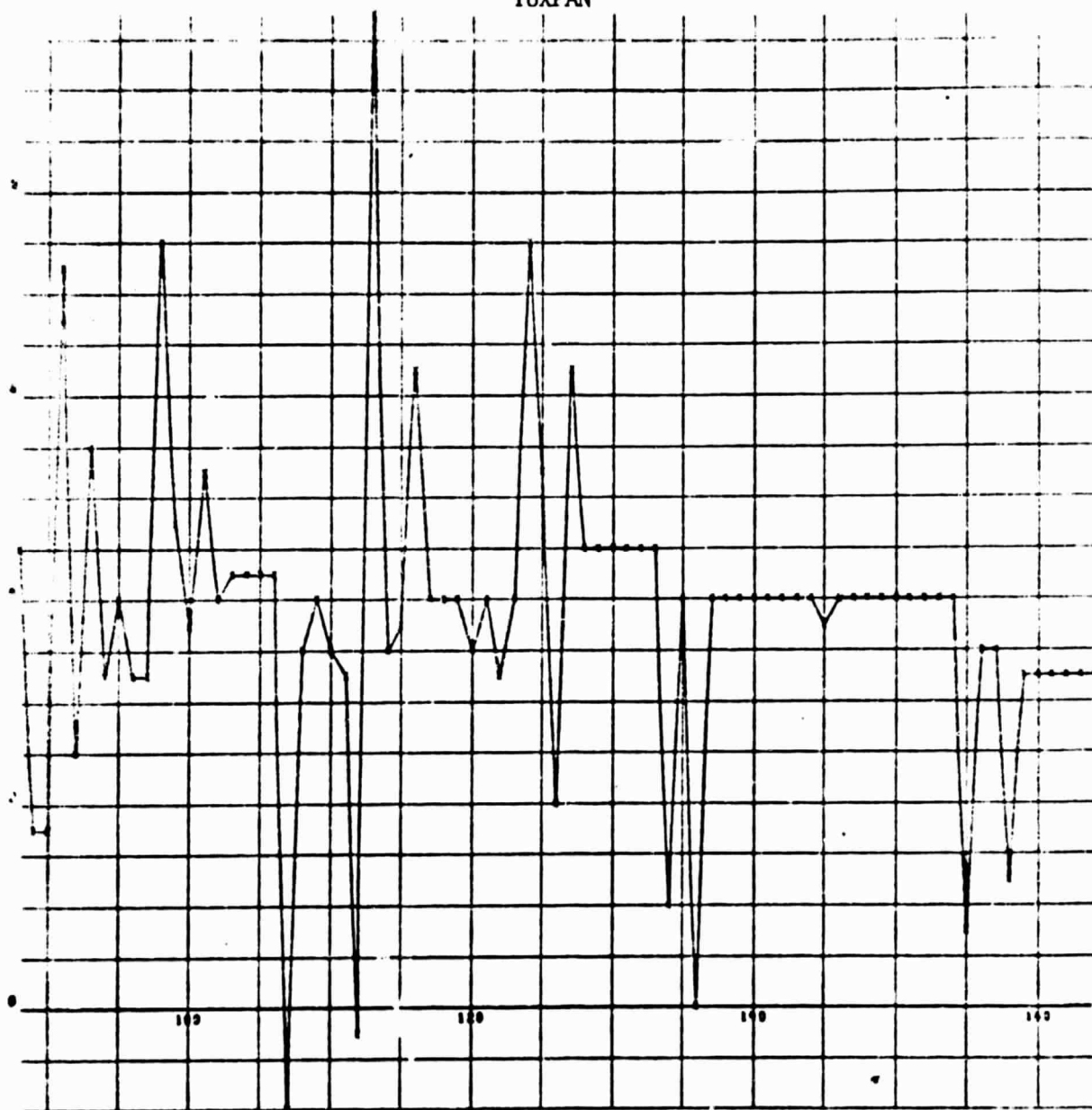   BIAS ERROR =   3.838
    RMS ERROR ABOUT MEAN = 1.600
    SAMPLE SIZE =   77

                                        NIGHT RADIOMETRIC ONLY
                                            BIAS ERROR =   3.396
                                            RMS ERROR ABOUT MEAN = 2.653
GROUND TRUTH DATA ONLY   SAMPLE SIZE =   12
    BIAS ERROR =   3.712
    RMS ERROR ABOUT MEAN =   .784
    SAMPLE SIZE =   53

                                        DAY RADIOMETRIC ONLY
                                            BIAS ERROR =   6.167
                                            RMS ERROR ABOUT MEAN = 2.773
BOTH RADIOMETRIC USABLE   SAMPLE SIZE =   6
    BIAS ERROR =   3.500
    RMS ERROR ABOUT MEAN = 1.440
    SAMPLE SIZE =   6