Selected Meteorological Data for an Arid Site Near Beatty, Nye County, Nevada, Calendar Year 1989

By James L. Wood and B.J. Andraski

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CONTENTS

	Page
ABSTRACT	1
INTRODUCTION	1
INSTRUMENTATION	3
SELECTED METEOROLOGICAL DATA	3
Air temperature	5
Relative humidity	6
Vapor pressure	7
Solar radiation	8
Windspeed and wind-vector direction	8
Precipitation	12
SUMMARY	12
REFERENCES CITED	14
BASIC DATA	15

ILLUSTRATIONS

Figure 1.	Map showing location of study site and adjacent waste-disposal facility	2
2.	Map showing location of weather station and related unsaturated-zone monitoring shaft, psychrometer borehole, and neutron-probe access tubes at study site	4
3-7.	Graphs showing meteorological data for 1989, computed from hourly averaged values:	
	3. Daily maximum, mean, and minimum air temperature	5
	4. Daily mean relative humidity	6
	5. Daily mean vapor pressure	7
	6. Daily maximum solar radiation	8
	7. Daily mean windspeed	9
8.	Diagrams showing percentage of time wind is from a given direction for each month during 1989	10
9.	Graphs showing precipitation at or near study site for 1989	13

TABLES

Table 1.	Monthly maximum, minimum, and mean air temperatures at study site for 1989	6
2.	Daily total precipitation at study site for 1989	12
3.	Summary of meteorological data collected at study site in 1989	16

CONVERSION FACTORS AND VERTICAL DATUM

Multiply	*By*	*To obtain*
kilometer (km)	0.6214	mile
kilopascal	0.1450	pounds per square inch
meter (m)	3.281	feet
meter per second (m/s)	3.281	feet per second
millimeter (mm)	0.03937	inch
millimeter per hour (mm/hr)	25.40	inch per hour
watt per square meter (W/m^2)	0.005290	British Thermal Unit per square foot per minute

For temperature, degrees Celsius (°C) can be converted to degrees Fahrenheit (°F) by using the formula °F = [(1.8)(°C)] + 32.

SEA LEVEL

In this report, "sea level" refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929, formerly called "Sea-Level Datum of 1929"), which is derived from a general adjustment of the first-order leveling networks of both the United States and Canada.

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ABSTRACT

Selected meteorological data were collected at a study site adjacent to a low-level radioactive-waste burial facility near Beatty, Nevada, for calendar year 1989. Data were collected in support of ongoing studies to estimate the potential for downward movement of radionuclides into the unsaturated sediments beneath waste-burial trenches at the facility. The data include air temperature, relative humidity, vapor pressure, incident solar radiation, windspeed, wind direction, and precipitation. The data are summarized in tables and graphs.

Instrumentation used at the site is discussed. The discussion includes the type, reported accuracy, and mounting height of each sensor.

In 1989, the hourly averaged air temperature ranged from -14.5 degrees Celsius, in February, to 46.0 degrees Celsius, in July. Hourly averaged relative humidity ranged from less than 12 percent to over 80 percent. Hourly vapor pressures ranged from 0.06 to 1.71 kilopascals. Daily maximum incident solar radiation values ranged from 149 to 1,084 watts per square meter. Daily mean windspeed ranged from less than 1 to 8.6 meters per second. Monthly wind direction patterns are shown in a series of diagrams in which wind direction is summed over 10-degree arcs from hourly averaged data. Wind direction was primarily from the northwest in fall, winter, and spring and varied from southeast, southwest, or northwest during the summer. Total precipitation for 1989 was 14.0 millimeters, with almost 90 percent occurring from January through May.

INTRODUCTION

Meteorological data were collected near the low-level radioactive-waste burial facility near Beatty, Nev., in support of ongoing studies (Andraski, 1990; Fischer, 1990) to estimate the potential for downward movement of radionuclides into the unsaturated sediments beneath waste-burial trenches at the facility (figure 1B). This report presents and summarizes meteorological data collected for calendar year 1989. Instrumentation used to collect the data is also described. This report is one in a series of meteorological data reports published for this site (Wood and Fischer, 1991, 1992; Wood and others, 1992). The meteorological data collected include air temperature, relative humidity, vapor pressure, incident solar radiation, windspeed, wind direction, and precipitation.

The waste-burial facility on the Amargosa Desert, 17 km southeast of Beatty and 169 km northwest of Las Vegas, Nev. (figure 1A), has been operating since 1962. The disposal facility was the first commercially operated in the United States. Wastes at the facility are emplaced in 2- to 15-m deep trenches and covered by back filling with previously excavated materials. The Amargosa Desert in the vicinity of the waste-burial facility is a northwest trending valley about 13 km wide. Vegetation is sparse, with creosote bush (*Larrea tridentata*) being the dominant species.

The study site (altitude, 847 m above sea level), is situated in one of the most arid parts of the United States. Precipitation is highly variable. Mean annual precipitation is about 114 mm at Beatty (altitude, 1,005 m), and 74 mm at Amargosa Farms (altitude, 817 m), 30 km southeast of the site (Nichols, 1987, p. 15). No perennial streams are within 16 km of the site and the dry bed of the Amargosa River is the principal drainage channel (figure 1A).

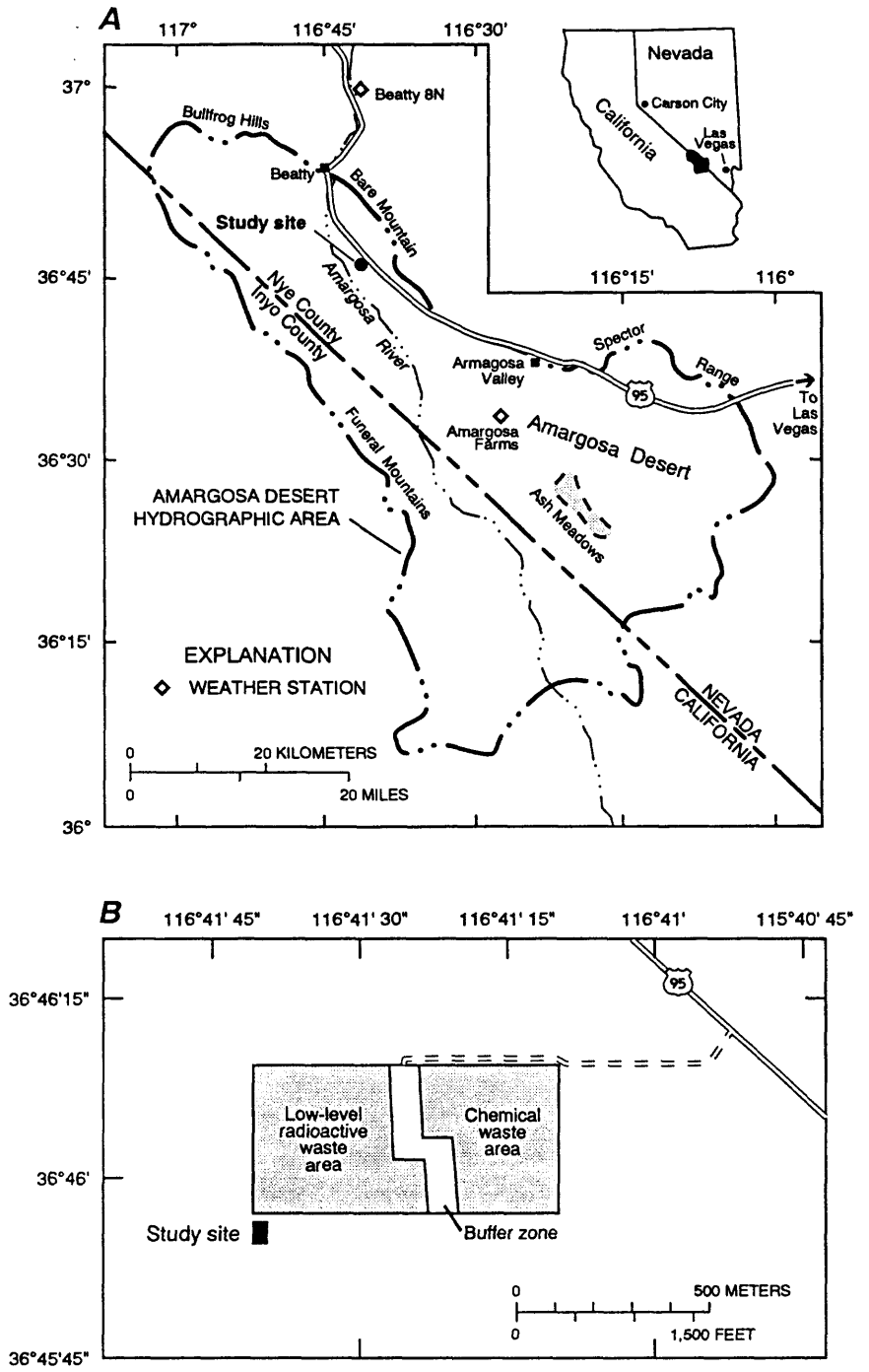

FIGURE 1.--Location of study site and adjacent waste-disposal areas.

A detailed view of part of the study site is shown in figure 2. The site is enclosed by a chain-link fence approximately 2 m high topped with 1/2 m of razor ribbon and is patrolled by security from the adjacent low-level waste-disposal facility; this provides protection against vandalism. Site-maintenance visits are made monthly and after significant precipitation. In addition to the meteorological station data, unsaturated-zone data are collected from three neutron-probe access tubes and from sensors installed at several depths in a monitoring shaft (figure 2). An undisturbed area is maintained on one side of the shaft site where no foot or vehicle traffic is allowed except on a designated foot path. A description of this unsaturated-zone monitoring is presented in Morgan and Fischer (1984).

INSTRUMENTATION

Meteorological sensors consisting of an air temperature and relative humidity sensor, silicon pyranometer, anemometer, wind vane, and tipping-bucket rain gage were installed in the fall of 1984. All sensors were factory calibrated prior to installation. These sensors remained in the field until May 1989 when all the sensors and the datalogger were replaced. With the exception of the temperature/relative humidity (RH) probe, all sensors were subsequently recalibrated and found to be within factory tolerances.

Data from the sensors are recorded using a Campbell Scientific, Inc. (CSI) CR21 datalogger. All instruments are mounted on a CSI CM10 tripod. Both the anemometer and wind vane are mounted 3.4 m above land surface. The air temperature/RH probe is mounted inside a CSI model 041 sensor shield 1.7 m above land surface. The tipping-bucket rain gage is mounted 2.2 m above land surface and the silicon pyranometer 3.7 m above land surface. All heights are approximate. The CSI tripod is located approximately 40 m from the CSI datalogger housed in a shed on the site (figure 2).

The anemometer is a model 014A supplied by MET ONE[1] with an accuracy of 1.5 percent and a threshold of 0.45 m/s. The wind vane is a model 024A also from MET ONE and has a specified accuracy of ±5 degrees and a threshold of 0.45 m/s. The temperature/RH probe is a CSI model 207 with a temperature accuracy of ±0.4°C in a range of -33°C to 48°C and a RH accuracy of ±5 percent over a 12- to 100-percent RH range. The tipping-bucket rain gage is a Weather-measure model P-501 with a sensitivity and resolution of 0.25 mm and an accuracy of 0.5 percent at 12.7 mm/hr. The silicon pyranometer is a LICOR LI200S calibrated against an Eppley Precision Spectral Pyranometer, which has a maximum absolute error of ±5 percent.

SELECTED METEOROLOGICAL DATA

Measurements from all meteorological instruments, except the tipping-bucket rain gage, were made every 60 seconds. These measurements were used by the CR21 datalogger to compute hourly averages for air temperature, relative humidity, solar radiation, windspeed, wind direction, and a standard deviation of the wind direction. Precipitation was recorded at 5-minute intervals only during events, and totaled for each day. The hourly averaged and totalized precipitation values were automatically retrieved from the datalogger to a Prime minicomputer using telecommunications and a computer program called ADAREPS, which is an acronym for Automatic DAta REtrieval and Processing System (John Walker, U.S. Geological Survey, written commun., 1986). Data from the datalogger were retrieved twice daily. A cassette tape connected to the datalogger was used as a backup to the automatic data-retrieval system. The hourly averaged values were used to compute daily means, maximums, and minimums for air temperature, relative humidity, solar radiation, windspeed, and wind direction, and are summarized in table 3 at the end of this report. Due to telecommunication failures, 4 days in 1989 had no reported values. An additional 17 days had missing hourly values, and of these, 11 had fewer than 20 hourly values reported.

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[1] All sensor specifications supplied by manufacturers.

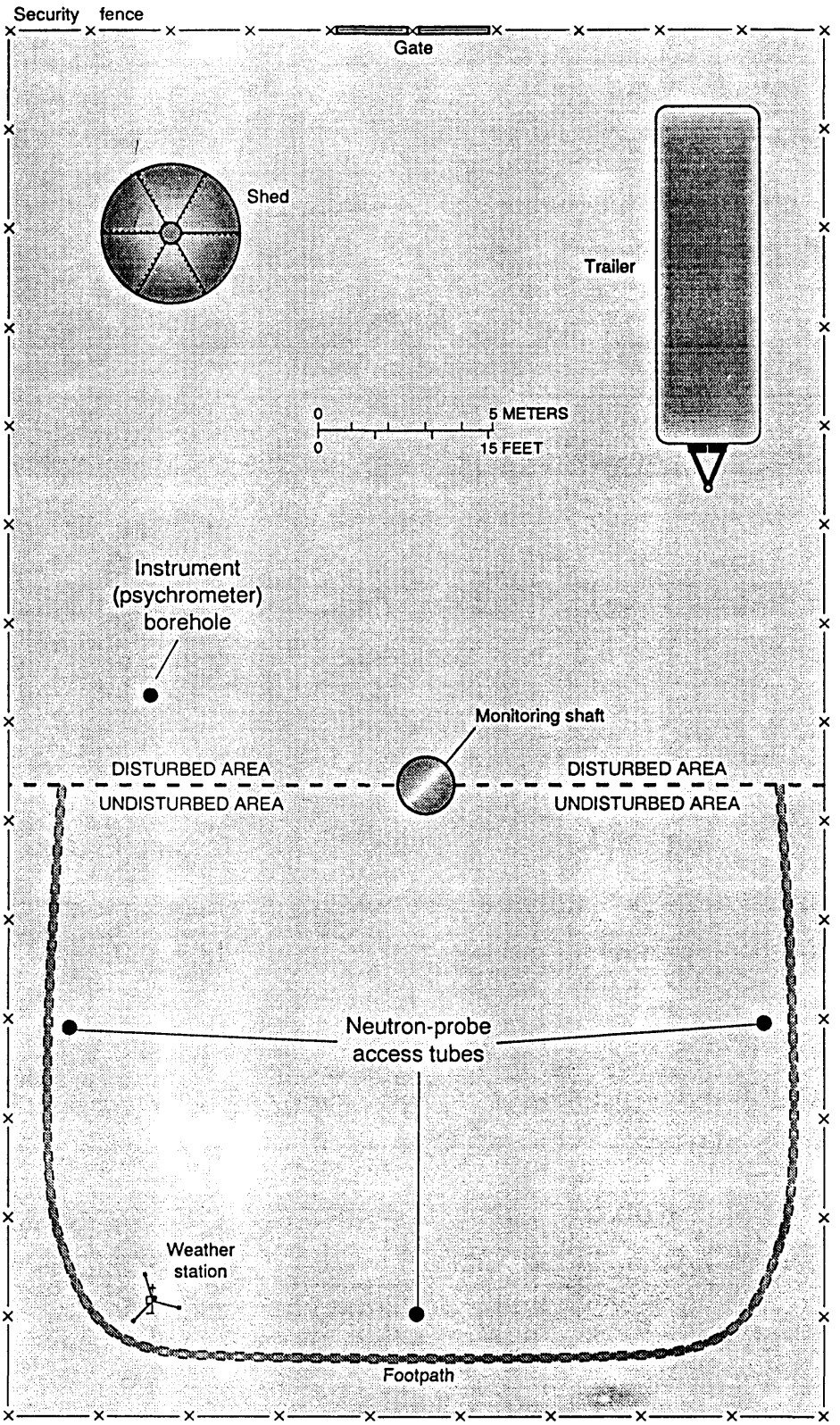

FIGURE 2.--Location of weather station and related unsaturated-zone monitoring shaft, psychrometer borehole, and neutron-probe access tubes at study site. The monitoring shaft is used to measure water potentials and the neutron-probe access tubes are used to measure moisture content. Location of study site is shown in figure 1.

Air Temperature

Maximum and minimum hourly averaged values of air temperature for each month together with a monthly mean value are listed in table 1. The minimum temperature for 1989 was -14.5°C in February and the maximum was 46.0°C in July.

Both seasonal and daily temperature fluctuations are large in the vicinity of the study area. Differences between maximum and minimum hourly averaged temperatures commonly exceeded 20°C. Daily maximum, mean, and minimum temperatures for 1989 are shown in figure 3.

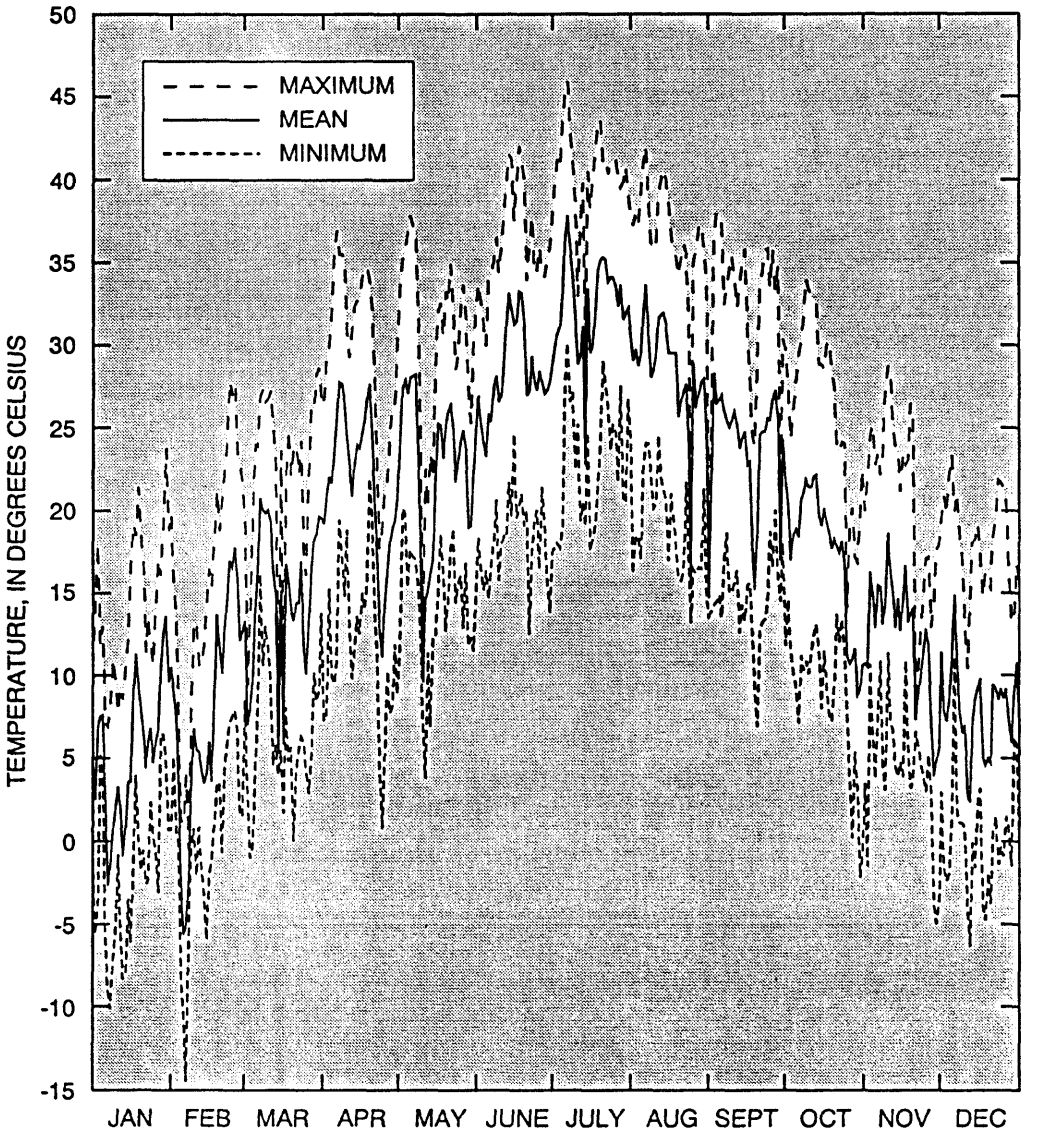

FIGURE 3.--Daily maximum, mean, and minimum air temperatures computed from hourly averaged values for 1989.

TABLE 1.--*Monthly maximum, minimum, and mean air temperatures at study site for 1989*

[Temperatures are degrees Celsius.]

Month	Maximum[1]	Day	Minimum[1]	Day	Mean
January	23.8	30	-10.2	8	6.7
February	27.9	24	-14.5	7	7.2
March	28.7	31	-1.0	4	15.2
April	37.0	7	0.8	25	21.7
May	37.9	6	3.8	12	22.7
June	42.1	18	12.5	22	28.3
July	46.0	7	17.5	1	32.8
August	42.1	7	13.2	25	28.0
September	38.1	4	6.9	20	22.8
October	34.1	9	-2.2	30	17.5
November	28.8	10	-5.0	29	11.5
December	23.4	5	-6.4	1	8.0

[1] Hourly averaged values.

Relative Humidity

Relative humidity is the ratio of the amount of water vapor in the air at a specific temperature to the maximum amount of water vapor the air can hold at that temperature and is expressed as a percent. Daily mean, maximum, and minimum relative humidity values computed from hourly averaged values are listed in table 3. Daily mean relative humidity values are shown in figure 4. Mean values range from about 12 percent (the lower limit of the sensor range) during the drier summer months to nearly 80 percent during one winter storm event. Minimum daily mean values of 12 percent or less for periods shown in table 3 might actually be less than the reported values due to lack of sensor accuracy in this range.

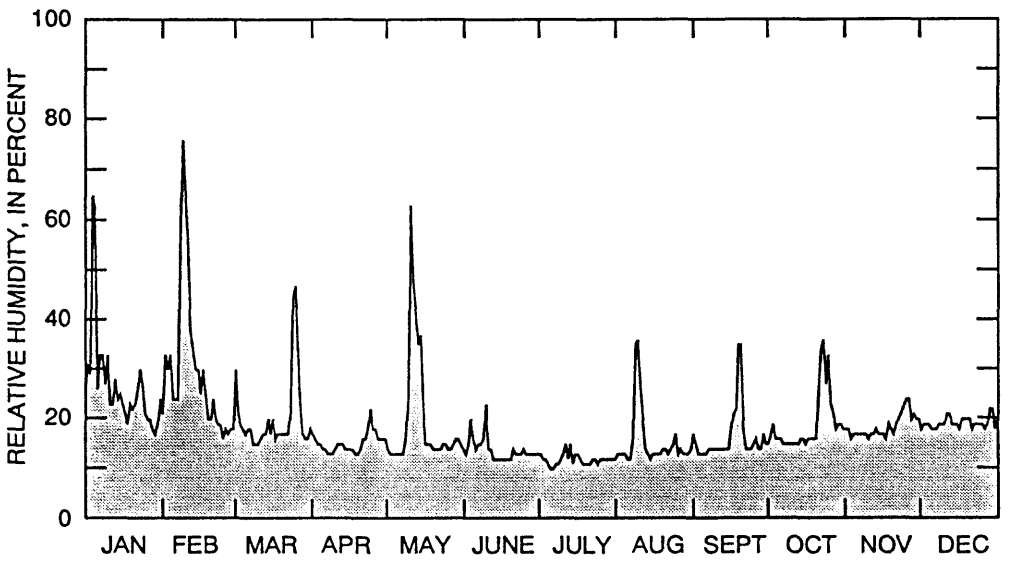

FIGURE 4.--Daily mean relative humidity computed from hourly averaged values for 1989.

Vapor Pressure

Water vapor content of air can be expressed in terms of the partial pressure exerted by the water vapor, or vapor pressure (Campbell, 1986, p. 21). Vapor pressure at a given hourly ambient air temperature was determined by first calculating the saturation vapor pressure at that particular temperature, which by definition is the highest concentration of water vapor that can exist in equilibrium with a plane, free water surface at a given temperature. This value was obtained by using the formula (Lowe, 1977, p. 100):

$$E_s = a_0 + a_1 T^1 + a_2 T^2 + a_3 T^3 + a_4 T^4 + a_5 T^5 + a_6 T^6 , \quad (1)$$

where E_s = saturation vapor pressure, in millibars;
T = temperature, in degrees Celsius; and
a_i $(i=0,1,\ldots 6)$ = numerical constants for each term of the polynomial.

The numerical constants in equation 1 are as follows:

$a_0 = 6.10779991$
$a_1 = 4.436518521 \times 10^{-1}$
$a_2 = 1.428945805 \times 10^{-2}$
$a_3 = 2.650648471 \times 10^{-4}$
$a_4 = 3.031240396 \times 10^{-6}$
$a_5 = 2.034080948 \times 10^{-8}$
$a_6 = 6.136820929 \times 10^{-11}$

The saturation vapor pressure value was then divided by 10 to convert from millibars to kilopascals. Ambient vapor pressure was determined by multiplying the hourly saturation vapor pressure by the hourly averaged relative humidity.

Daily mean, maximum, and minimum values of vapor pressure are listed in table 3. Daily mean vapor pressures computed from hourly averaged values of temperature and relative humidity are shown in figure 5. Hourly vapor pressures ranged from a maximum of 1.71 kilopascals in August to a minimum of 0.06 kilopascal in February. Vapor pressures have generally higher base pressures during the warmer summer months and lower base pressures coinciding with cooler winter conditions (figure 5). Vapor-pressure peaks throughout the year generally correlate with precipitation listed in table 2 and shown in figure 9C.

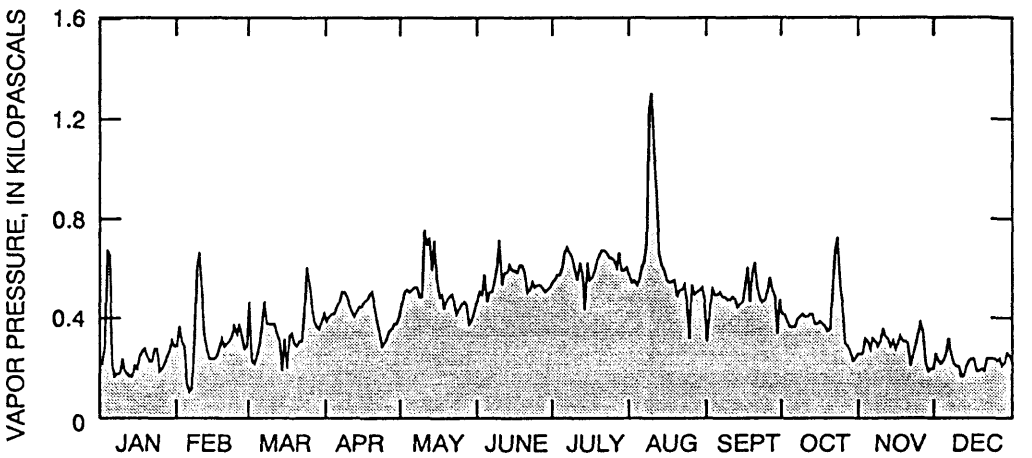

FIGURE 5.--Daily mean vapor pressure computed from hourly averaged values for 1989.

Solar Radiation

Daily averaged and maximum incident solar radiation computed from hourly averaged values are listed in table 3. Incident solar radiation (short wave) is the amount of radiation that reaches the earth without interception. Generally, daily mean and maximum radiation were highest from May through August and lowest from January-February and November-December coinciding, with seasonal cycles.

Maximum solar-radiation values computed from hourly averaged values for each day are shown in figure 6. The daily maximum solar-radiation values ranged from 149 W/m^2 on February 8 to 1,084 W/m^2 on July 20.

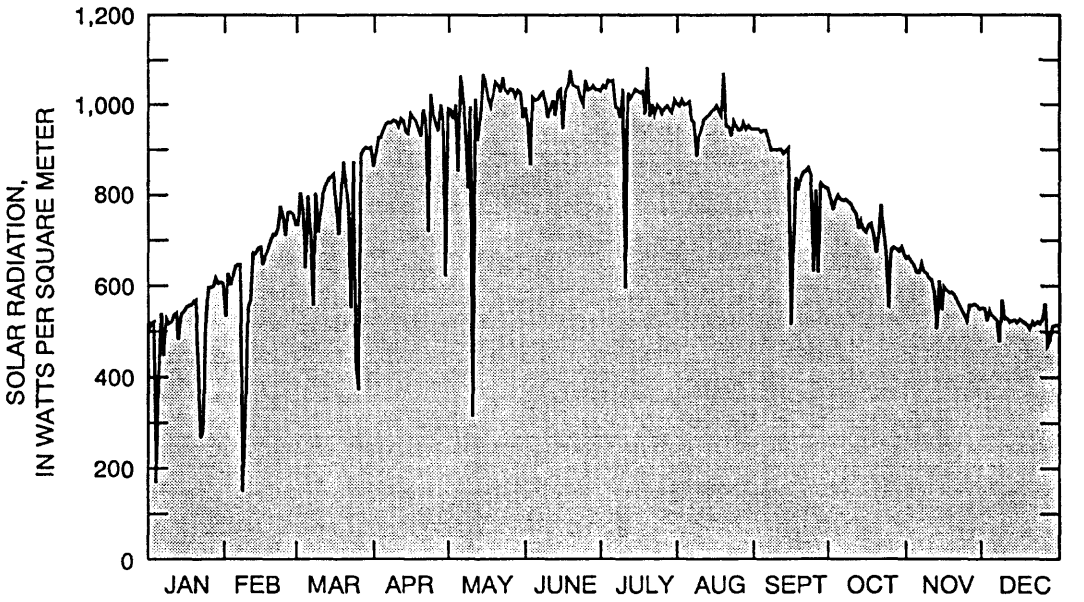

FIGURE 6.--Daily maximum solar radiation computed from hourly averaged values for 1989.

Windspeed and Wind-Vector Direction

Daily mean, maximum, and minimum values of windspeed computed from hourly averaged values are listed in table 3. Daily mean windspeeds are shown in figure 7. Daily mean windspeeds, for days with 24 values, ranged from a minimum of less than 1 m/s on several days in March and April, to a maximum of 8.6 m/s in December. Hourly averages ranged from less than 1 m/s (essentially zero) to almost 13 m/s.

Daily mean wind-vector direction (degrees Azimuth) and wind-vector magnitude (meters per second) presented in table 3 were determined from hourly wind-vector direction and magnitude values using the following equations (from Campbell Scientific Inc., 1984, p. B-6 to B-10):

$$\text{Daily mean wind-vector direction, in degrees} = \arctan(\bar{x}/\bar{y}), \text{ and} \quad (2)$$

$$\text{Daily mean wind-vector magnitude} = \sqrt{\bar{x}^2+\bar{y}^2}, \quad (3)$$

where $\bar{x}$ = the sum of each hourly wind-vector magnitude multiplied by the sine of the hourly wind-vector direction and divided by the number of hourly values; $\bar{x}$ is positive to the east.

$\bar{y}$ = the sum of each hourly wind-vector magnitude multiplied by the cosine of the hourly wind-vector direction and divided by the number of hourly values; $\bar{y}$ is positive to the north.

Daily mean wind-vector direction in table 3 ranges from 0 to 360 degrees Azimuth (increasing degrees clockwise from north). The wind-vector direction calculated from equation 2 was transformed into degrees Azimuth on the basis of $\bar{x}$ and $\bar{y}$. For positive $\bar{x}$ and $\bar{y}$, the value calculated from equation 2 is the daily mean wind-vector direction in degrees Azimuth. For negative values of $\bar{y}$, the calculated value of wind-vector direction is added to 180 degrees, and for negative value of $\bar{x}$ and positive value of $\bar{y}$ the calculated value is added to 360 degrees. Because equation 2 cannot be used when $\bar{y}$ is zero, the mean wind-vector direction was set to 90 degrees Azimuth for positive values of $\bar{x}$ and 270 degrees Azimuth for negative values of $\bar{x}$.

Wind-vector directions for each month are summarized in diagrams called wind roses (figure 8). The diagrams were determined by: (1) summing the number of hourly wind vector directions recorded during each month over 10-degree areas, (2) then dividing the sums by the total number of hourly values for each month, and (3) multiplying by 100 to obtain percent.

Trends shown in figure 8 indicate definite interseasonal variability in wind direction for 1989. Wind at the study site was predominantly from the northwest during January and February. Northwest winds also prevailed during March, April, and May but with a somewhat larger portion coming from the southwest and southeast. Winds in June, July, and August were more evenly distributed among the northwest, southwest, and southeast. Winds changed again in September and northwesterly patterns dominated the remainder of the year.

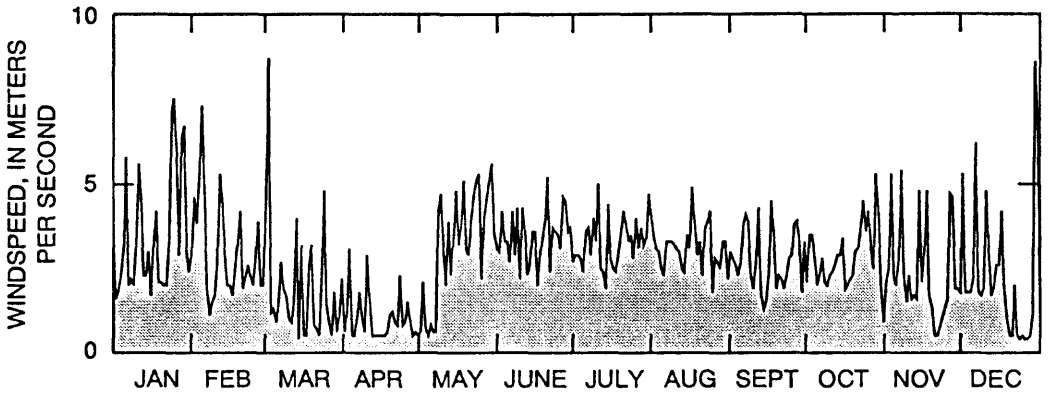

FIGURE 7.--Daily mean windspeed computed from hourly averaged values for 1989.

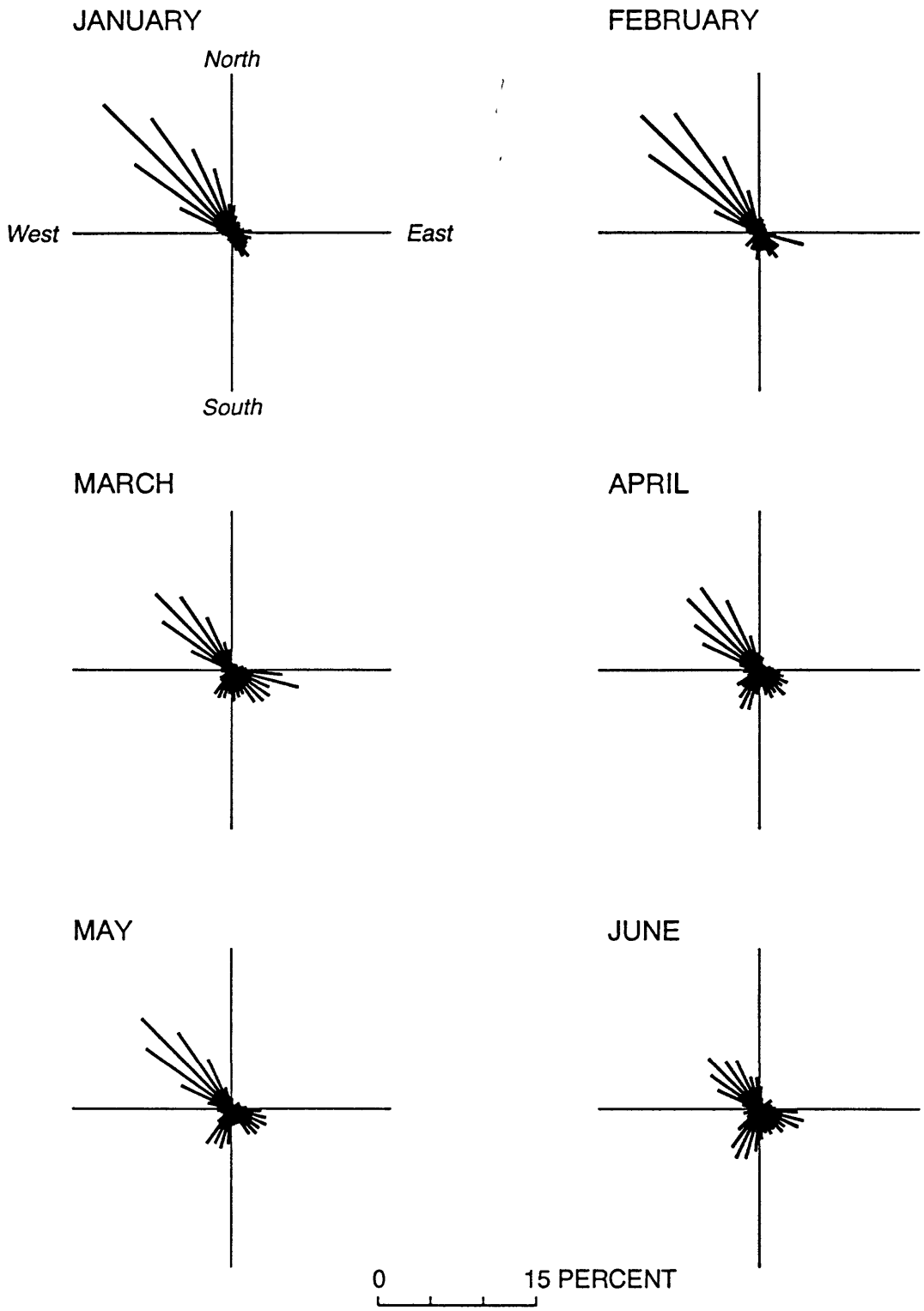

FIGURE 8.--Diagrams showing percentage of time wind is from a given direction for each month during 1989. Wind direction is summed over 10-degree arcs from hourly averaged data.

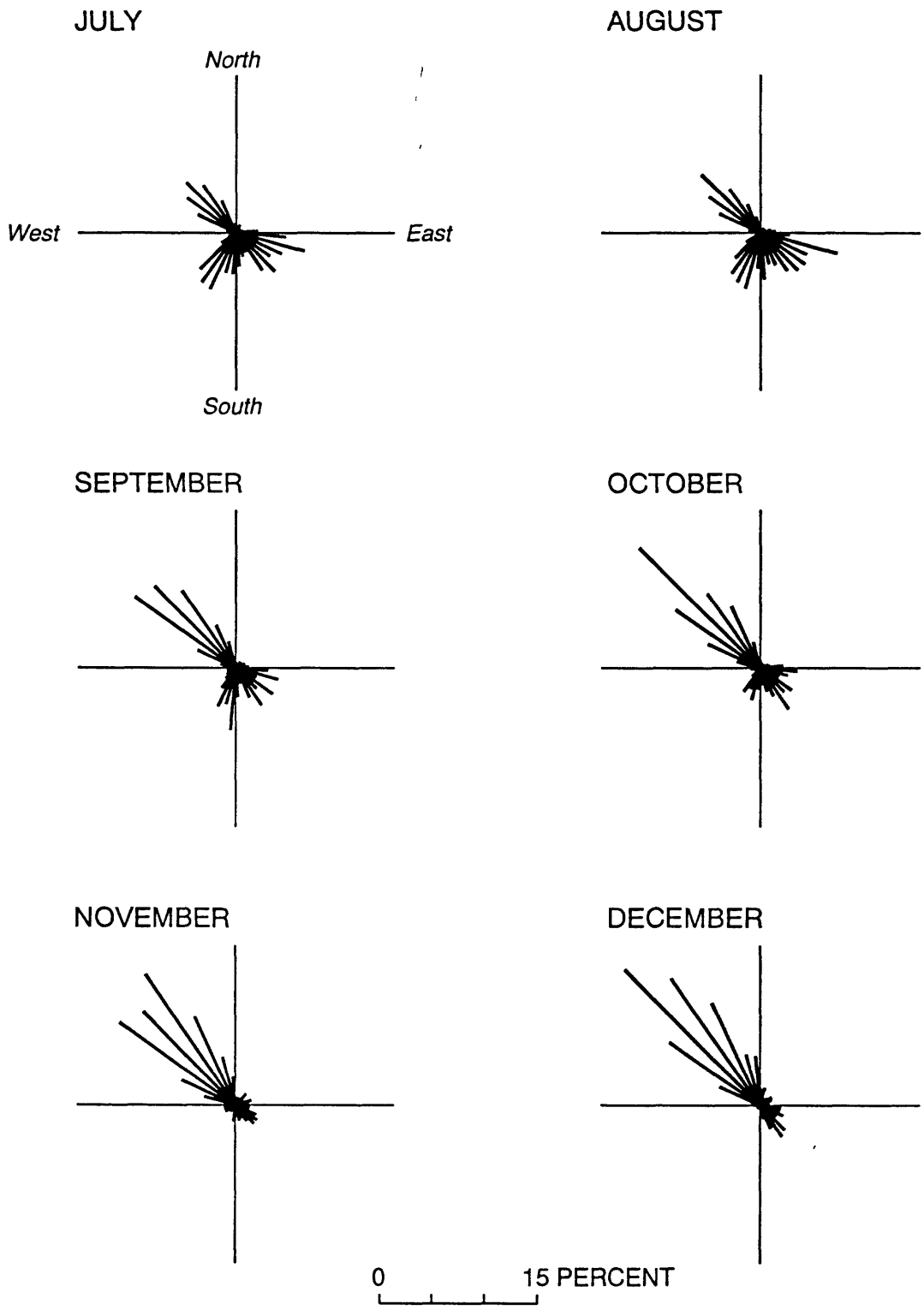

FIGURE 8.--Continued.

Precipitation

Due to the infrequent nature of precipitation at the study site, precipitation is not included in table 3, but is summarized in table 2 and figure 9. Total measured precipitation for the year was 14.0 mm.

Monthly precipitation values measured at the study site are shown in figure 9A. Monthly precipitation ranged from 6.1 mm in May to zero in January, April, June, July, September, November, and December. Typically, most precipitation occurred during the winter months, and least during the summer. Winter precipitation was from regional frontal systems, whereas summer precipitation was from localized convective storms.

Figure 9B compares monthly precipitation at the study site (altitude 847 m) and two National Oceanic and Atmospheric Administration (NOAA) sites. One of the these sites is designated Beatty 8N (37° 00′ N., 116° 43′ W.) and is situated 12.9 km north of Beatty at an altitude of 1,007 m (figure 1); the other is Amargosa Farms (36° 34′ N., 116° 28′ W.), which is about 35 km southeast of the study site at an altitude of 747 m. Monthly values differ considerably between sites.

Daily precipitation totals for the study site are shown in figure 9C and table 2. The largest events occurred during the winter and spring months. Daily precipitation exceeded 5 mm only on May 11.

TABLE 2.--*Daily total precipitation at study site for 1989. All unlisted dates had no precipitation*

Month	Day	Total precipitation (millimeters)
February	9	4.1
March	2	.5
March	25	1.5
May	11	5.8
May	13	.3
August	9	1.0
October	25	.8

SUMMARY

Meteorological data were collected adjacent to a low-level radioactive-waste facility near Beatty, Nev., for calendar year 1989 in support of an ongoing study to estimate the potential for downward movement of radionuclides into the unsaturated sediments beneath waste-burial trenches at the facility. This report provides daily averaged values of air temperature, relative humidity, vapor pressure, incident solar radiation, windspeed, wind direction, and daily totals of precipitation. A general description of instrumentation used and sensor installation is given.

The minimum hourly averaged air temperature for the year was -14.5°C in February and the maximum was 46.0°C in July. Hourly averaged values for relative humidity ranged from less than 12 percent to over 80 percent. Hourly vapor pressures ranged from a minimum of 0.06 kilopascals in February to a maximum of 1.71 kilopascals in August. Daily maximum solar radiation values ranged from 149 W/m^2 in February to 1,084 W/m^2 in July. Daily mean windspeed ranged from less than 1 m/s (essentially zero) on several days to 8.6 m/s in December. Wind direction determined from hourly averaged data was predominantly from the northwest during January through March and October through December. The wind shifted during the summer months and was commonly from the southeast and northwest. Total measured precipitation for the year was 14 mm. Monthly precipitation ranged from 6.1 mm in May to zero in January, April, June, July, September, November, and December. Daily precipitation totaled more than 5 mm only once during 1989.

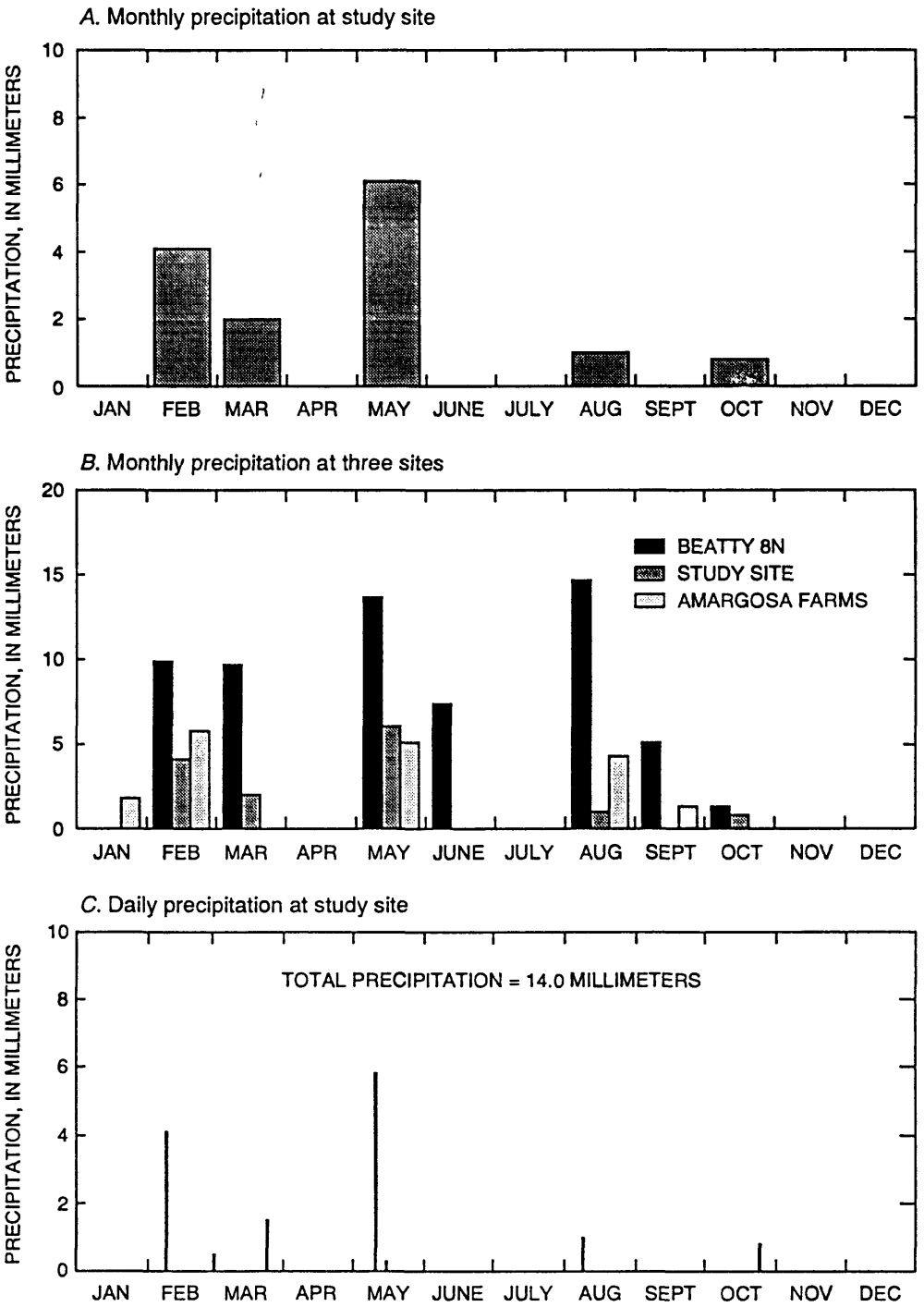

FIGURE 9.--Precipitation at or near study site for 1989. (A) Monthly precipitation at study site. (B) Comparison of monthly precipitation at study site with monthly precipitation at two National Oceanographic and Atmospheric Administration (NOAA) sites (Beatty 8N and Amargosa Farms) near study site. (C) Daily precipitation at study site.

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BASIC DATA

This section contains table 3, which is a listing of daily averaged meteorological data (except precipitation, which is totaled) collected at the study site for 1989. These data, and the individual measurements from which the averages and totals are calculated, may be obtained in machine-readable format through the Public Information Assistant, U.S. Geological Survey, WRD, Carson City, Nev.

TABLE 3.--Summary of meteorological data collected at study site in 1989. Daily mean, maximum, and minimum values were determined from hourly measurements

[Abbreviations: max, maximum; min, minimum; std. dev., standard deviation; °az, degrees Azimuth.]

Date	Number of hourly values[1]	Temperature (degrees Celsius)		Solar radiation (watts per square meter)		Relative humidity[2] (percent)		Vapor pressure (kilopascals)		Windspeed (meters per second)		Wind vector		
		Mean	Max/min	Mean	Max	Mean	Max/min	Mean	Max/min	Mean	Max/min	Magnitude (meters per second)	Direction °az	Direction Std. dev.
89/01/01	21	4.6	10.5/ -1.0	142	505	26	35/20	0.22	0.26/0.18	3.7	7.0/1.2	3.1	322	20
89/01/02	24	2.5	14.5/ -5.7	128	519	31	49/17	.21	.29/ .16	1.6	2.3/ .7	.7	321	48
89/01/03	23	6.9	18.1/ -4.1	126	522	29	43/15	.28	.47/ .18	1.8	2.5/1.1	.9	306	48
89/01/04	24	7.5	11.8/ 5.2	30	169	65	81/40	.67	.80/ .44	2.3	4.9/1.2	1.1	118	48
89/01/05	24	7.6	13.0/ 4.0	72	399	63	81/41	.65	.78/ .38	3.0	5.1/1.5	2.0	172	44
89/01/06	24	2.9	7.1/ -5.5	132	541	26	40/21	.20	.35/ .14	5.8	8.3/1.5	5.3	331	16
89/01/07	24	-2.7	6.9/ -9.0	104	447	33	49/20	.16	.20/ .11	2.0	2.8/ .9	.9	317	57
89/01/08	24	-1.5	7.9/-10.2	132	528	33	52/20	.17	.21/ .13	2.2	3.6/1.2	1.1	305	51
89/01/09	24	.7	11.0/ -7.2	117	517	27	42/18	.17	.25/ .12	2.0	2.5/1.2	.6	317	64
89/01/10	24	2.1	9.6/ -5.4	99	522	33	53/20	.23	.30/ .14	3.2	7.2/1.1	1.8	312	51
89/01/11	24	3.3	7.7/ -.8	136	536	23	27/19	.18	.22/ .15	5.6	8.1/3.8	5.2	336	13
89/01/12	24	2.0	9.3/ -5.1	137	540	23	28/19	.17	.22/ .12	4.7	7.6/1.5	3.9	322	22
89/01/13	24	-.9	8.5/ -8.4	128	483	28	46/19	.16	.22/ .11	2.3	3.1/1.4	.5	303	69
89/01/14	24	1.0	10.7/ -8.0	136	539	24	34/18	.16	.24/ .11	2.3	6.0/1.3	1.2	307	51
89/01/15	24	3.6	12.2/ -3.5	138	544	25	34/18	.20	.26/ .13	3.0	6.3/1.3	1.6	306	48
89/01/16	24	3.6	16.6/ -6.2	141	553	23	33/16	.19	.31/ .13	1.7	2.2/1.1	.8	321	49
89/01/17	24	8.6	19.2/ -1.6	142	557	21	29/15	.24	.35/ .15	3.3	7.6/1.4	1.9	322	45
89/01/18	24	11.3	18.5/ 4.0	143	559	19	24/15	.26	.34/ .19	4.2	8.1/1.0	3.2	326	31
89/01/19	24	9.5	21.5/ .5	144	566	23	35/14	.27	.38/ .18	2.1	5.4/1.1	1.1	333	45
89/01/20	24	8.1	18.4/ -1.8	136	569	22	34/16	.24	.34/ .18	2.1	2.9/ .9	.9	308	60
89/01/21	24	6.5	17.0/ -.5	96	427	23	31/16	.22	.32/ .16	2.0	3.0/ .9	.7	312	61
89/01/22	24	4.4	11.4/ -2.6	61	267	26	36/19	.22	.27/ .18	2.0	2.8/1.0	1.8	314	20
89/01/23	24	6.0	13.6/ -2.4	71	282	30	48/18	.27	.30/ .21	3.0	5.9/1.2	2.7	309	15
89/01/24	24	6.8	11.9/ 2.4	139	536	27	36/21	.27	.31/ .18	7.1	9.0/4.3	6.8	320	12
89/01/25	24	4.7	10.6/ .5	155	597	21	24/18	.18	.24/ .15	7.5	9.8/5.3	7.2	330	6
89/01/26	24	6.0	14.0/ -.6	156	598	20	22/17	.19	.28/ .13	5.9	11.0/1.6	5.2	331	16
89/01/27	24	6.7	17.1/ -3.1	155	599	20	25/16	.21	.31/ .11	2.9	6.1/1.5	1.7	328	42
89/01/28	24	10.6	16.1/ 6.5	160	618	18	20/16	.24	.31/ .20	6.4	9.0/4.5	5.9	334	18
89/01/29	24	12.6	19.4/ 6.4	153	607	17	20/15	.26	.35/ .19	6.7	9.2/4.2	5.7	333	26
89/01/30	24	13.6	23.8/ 5.0	160	609	19	26/14	.30	.43/ .22	3.0	7.4/1.3	1.4	315	54
89/01/31	24	9.6	18.8/ .7	159	607	24	42/16	.28	.36/ .18	2.4	3.2/1.4	.1	180	79

TABLE 3.--Summary of meteorological data collected at study site in 1989. Daily mean, maximum, and minimum values were determined from hourly measurements--Continued

Date	Number of hourly values[1]	Temperature (degrees Celsius)		Solar radiation (watts per square meter)		Relative humidity (percent)[2]		Vapor pressure (kilopascals)		Windspeed (meters per second)		Wind vector		
		Mean	Max/min	Mean	Max	Mean	Max/min	Mean	Max/min	Mean	Max/min	Magnitude (meters per second)	Direction °az	Direction Std. dev.
89/02/01	24	10.5	19.9/ 0.7	146	533	21	37/15	0.28	0.41/0.17	2.9	4.7/1.7	1.0	141	63
88/02/02	24	9.0	15.4/ 5.1	154	628	33	58/17	.36	.54/ .22	4.6	6.2/3.1	4.1	120	21
88/02/03	24	7.5	13.2/ .7	134	602	30	47/18	.30	.36/ .24	3.8	6.1/1.4	2.0	153	52
89/02/04	24	3.9	7.8/ -.1	118	623	33	45/21	.28	.41/ .14	5.3	11.0/1.8	4.5	321	25
89/02/05	24	-2.3	1.3/ -7.6	165	643	24	26/22	.13	.15/ .09	7.3	9.6/4.7	7.0	319	12
89/02/06	24	-5.7	1.0/-10.4	175	648	24	26/21	.10	.14/ .07	4.9	7.7/ .9	4.3	323	19
89/02/07	24	-5.2	4.0/-14.5	151	648	24	28/20	.11	.17/ .06	1.9	3.7/1.0	.9	306	46
89/02/08	24	-2.3	-.5/ -6.1	27	149	57	79/23	.31	.47/ .09	1.1	1.9/ .7	.3	22	66
89/02/09	24	3.5	8.0/ -.5	59	313	76	80/61	.60	.69/ .47	1.5	2.8/ .8	.5	310	59
89/02/10	24	6.8	13.0/ .8	132	554	67	80/42	.66	.83/ .50	1.7	3.2/ .6	.5	261	65
89/02/11	24	5.5	13.3/ -2.1	125	570	57	80/34	.49	.62/ .39	2.6	5.5/1.0	1.5	298	46
89/02/12	24	5.4	10.5/ .9	182	672	38	48/24	.33	.38/ .28	5.3	7.7/1.7	4.6	321	23
89/02/13	24	4.3	10.7/ -1.6	181	671	34	54/20	.27	.34/ .22	4.6	6.4/1.1	4.3	316	12
89/02/14	24	3.5	11.9/ -3.4	188	683	30	47/18	.23	.27/ .17	3.0	5.7/1.6	1.8	304	46
89/02/15	24	4.1	14.5/ -6.0	188	685	30	51/17	.23	.29/ .17	2.0	2.7/1.1	.6	302	65
89/02/16	24	6.0	16.5/ -2.0	136	647	25	36/16	.23	.32/ .18	2.0	2.8/1.0	1.2	303	42
89/02/17	*11*	3.6	15.4/ -1.2	142	573	30	40/17	.24	.31/ .19	1.7	2.0/1.3	1.0	326	42
89/02/18	*0*	--	-- --	--	--	--	-- --	--	-- --	--	-- --	--	--	--
89/02/19	*20*	13.7	21.3/ 3.4	217	701	20	31/15	.31	.40/ .22	3.3	7.1/1.3	1.8	310	49
89/02/20	24	11.7	18.8/ 3.6	201	714	20	26/16	.28	.35/ .20	4.2	6.9/ .7	3.8	321	16
89/02/21	24	10.1	20.6/ -.7	198	712	24	43/15	.29	.39/ .21	1.9	2.5/1.3	.8	290	56
89/02/22	24	12.8	22.3/ 4.3	189	729	20	29/14	.30	.40/ .23	2.2	3.8/ .5	.2	282	76
89/02/23	24	14.5	24.1/ 5.9	186	776	19	26/14	.32	.44/ .22	2.6	4.1/1.2	.5	351	72
89/02/24	24	17.0	27.9/ 7.1	204	756	19	30/*12*	.36	.49/ .25	2.3	5.5/ .7	.4	269	71
89/02/25	24	16.6	27.0/ 7.5	196	711	16	20/13	.33	.48/ .21	2.0	3.0/ .5	.5	323	69
89/02/26	24	17.8	27.7/ 7.9	206	762	18	25/13	.37	.50/ .26	2.8	5.8/1.2	1.5	298	52
89/02/27	24	16.0	23.5/ 6.7	219	763	17	21/14	.32	.42/ .20	3.9	6.2/1.3	3.4	312	21
89/02/28	24	12.1	22.9/ 1.6	218	758	18	21/14	.27	.41/ .15	2.0	3.9/ .4	.6	279	65

TABLE 3.--Summary of meteorological data collected at study site in 1989. Daily mean, maximum, and minimum values were determined from hourly measurements--Continued

Date	Number of hourly values[1]	Temperature (degrees Celsius)		Solar radiation (watts per square meter)		Relative humidity[2] (percent)		Vapor pressure (kilopascals)		Windspeed (meters per second)		Wind vector		
		Mean	Max/min	Mean	Max	Mean	Max/min	Mean	Max/min	Mean	Max/min	Magnitude (meters per second)	Direction °az	Direction Std. dev.
89/03/01	24	12.7	21.8/ 1.5	200	735	18	22/15	0.28	0.39/0.15	2.0	3.4/0.7	0.9	135	57
89/03/02	24	13.3	19.1/ 8.5	173	735	30	48/18	.46	.67/ .26	4.6	10.9/1.8	2.3	198	54
89/03/03	*18*	7.0	9.4/ 3.0	305	806	21	30/19	.22	.34/ .17	8.7	11.6/1.8	8.2	327	12
89/03/04	*18*	7.8	13.6/ -1.0	251	772	19	22/17	.21	.27/ .13	1.2	2.2/ .4	.3	196	67
89/03/05	24	10.0	19.6/ -.3	205	640	18	22/15	.24	.36/ .13	1.3	3.2/ .4	.3	213	70
89/03/06	24	14.3	24.0/ 4.5	220	799	17	20/14	.29	.43/ .17	.9	2.6/ .4	.2	184	71
89/03/07	24	16.3	23.9/ 7.9	162	713	18	22/16	.36	.48/ .22	1.5	4.3/ .4	.7	121	55
89/03/08	24	20.8	27.0/ 16.2	154	559	18	24/14	.46	.54/ .34	2.7	5.2/ .6	1.8	141	46
89/03/09	24	20.1	27.4/ 10.6	222	805	15	19/13	.37	.48/ .25	1.9	5.8/ .4	1.2	178	44
89/03/10	24	19.9	26.6/ 13.0	191	718	15	19/13	.37	.47/ .28	1.7	4.2/ .4	1.2	139	41
89/03/11	24	20.1	26.8/ 11.7	190	759	15	18/13	.37	.47/ .25	1.0	4.1/ .4	.7	101	32
89/03/12	24	19.3	27.3/ 9.6	230	805	16	22/13	.37	.49/ .27	.9	2.5/ .4	.3	145	59
89/03/13	24	16.3	25.2/ 4.6	245	821	17	20/14	.33	.46/ .18	1.5	7.5/ .4	.5	313	63
89/03/14	24	14.9	22.6/ 5.8	249	835	17	20/14	.30	.41/ .19	4.0	9.3/ .4	3.8	321	8
89/03/15	*6*	5.3	7.2/ 4.0	0	0	20	20/19	.18	.20/ .17	.4	.5/ .4	.4	299	26
89/03/16	*23*	15.2	23.7/ 5.5	232	846	17	21/14	.31	.42/ .19	3.2	9.0/ .4	2.3	209	39
89/03/17	*8*	5.8	8.5/ 1.7	42	265	20	21/19	.19	.21/ .15	.5	.5/ .4	.3	326	30
89/03/18	*17*	16.8	22.4/ 8.1	249	714	16	19/14	.32	.41/ .21	.5	.8/ .4	.0	264	77
89/03/19	24	16.0	25.0/ 4.8	241	801	17	23/14	.33	.45/ .19	2.5	8.0/ .4	1.5	332	47
89/03/20	24	13.9	22.1/ 5.7	267	873	17	20/15	.29	.40/ .19	3.2	7.5/ .4	2.7	326	21
89/03/21	24	13.3	24.0/ .0	260	832	17	22/14	.28	.43/ .14	.8	3.6/ .4	.4	239	55
89/03/22	24	14.4	23.9/ 4.0	204	782	17	20/14	.30	.43/ .17	.7	1.7/ .4	.1	240	71
89/03/23	24	14.4	22.2/ 5.5	150	553	17	20/15	.30	.41/ .19	.5	.8/ .4	.0	310	76
89/03/24	24	17.0	24.3/ 6.3	245	874	21	33/14	.40	.53/ .27	2.3	6.0/ .5	1.8	122	34
89/03/25	24	11.6	17.3/ 6.0	75	428	45	69/28	.60	.71/ .54	4.8	8.7/1.2	3.5	112	38
89/03/26	24	10.1	16.1/ 4.5	108	372	47	77/22	.54	.67/ .38	1.4	4.5/ .4	.9	327	44
89/03/27	24	13.1	22.4/ 2.9	269	889	35	73/15	.45	.64/ .28	.8	3.8/ .4	.3	243	60
89/03/28	24	16.4	26.3/ 5.0	279	900	22	40/13	.38	.48/ .30	.5	.7/ .4	.1	253	71
89/03/29	24	18.3	26.1/ 10.2	282	905	17	22/13	.36	.47/ .24	1.8	5.6/ .4	1.5	331	18
89/03/30	24	18.6	28.3/ 8.4	282	903	16	19/13	.35	.51/ .21	.6	2.0/ .4	.2	313	59
89/03/31	24	19.7	28.7/ 8.9	261	905	16	20/13	.38	.51/ .23	1.1	7.4/ .4	.5	291	56

TABLE 3.--Summary of meteorological data collected at study site in 1989. Daily mean, maximum, and minimum values were determined from hourly measurements--Continued

Date	Number of hourly values[1]	Temperature (degrees Celsius)		Solar radiation (watts per square meter)		Relative humidity[2] (percent)		Vapor pressure (kilopascals)		Windspeed (meters per second)		Wind vector		
												Magnitude (meters per second)	Direction	
		Mean	Max/min	Mean	Max	Mean	Max/min	Mean	Max/min	Mean	Max/min		°az	Std. dev.
89/04/01	24	19.6	26.4/ 13.8	275	862	18	25/14	0.41	0.49/0.31	2.2	7.3/0.4	2.0	302	18
89/04/02	24	19.2	26.7/ 7.3	266	892	17	24/13	.38	.49/ .24	.6	2.2/ .4	.2	215	63
89/04/03	24	20.9	29.4/ 7.3	291	927	16	22/*12*	.40	.53/ .23	1.2	4.5/ .4	.9	329	33
89/04/04	24	22.1	29.8/ 15.3	294	927	15	17/*12*	.41	.54/ .31	3.1	6.1/ .4	2.9	326	14
89/04/05	24	21.7	32.2/ 9.9	280	944	15	19/*12*	.41	.58/ .24	.5	.6/ .4	.2	305	56
89/04/06	24	23.7	35.4/ 9.5	304	957	14	19/*10*	.44	.63/ .23	.5	1.9/ .4	.2	261	63
89/04/07	24	25.4	37.0/ 10.8	306	961	14	18/*10*	.46	.66/ .25	1.1	4.1/ .4	.5	260	53
89/04/08	24	27.8	35.6/ 19.5	307	960	13	15/*11*	.50	.64/ .36	1.8	4.7/ .4	1.6	313	15
89/04/09	24	27.7	35.6/ 17.4	309	965	13	16/*11*	.50	.65/ .33	1.0	5.0/ .4	.8	320	20
89/04/10	24	26.5	35.3/ 14.8	309	964	13	17/*11*	.48	.64/ .30	.6	2.8/ .4	.0	320	78
89/04/11	24	24.5	30.8/ 18.9	302	951	14	16/*12*	.45	.56/ .36	2.9	7.4/ .4	2.8	318	11
89/04/12	24	22.8	29.3/ 13.6	311	969	15	18/13	.42	.54/ .28	1.6	3.7/ .4	1.3	330	27
89/04/13	24	20.9	30.7/ 9.8	310	965	15	19/*12*	.40	.56/ .23	.5	.5/ .4	.1	280	62
89/04/14	24	22.8	32.4/ 11.5	303	939	15	18/*12*	.42	.59/ .25	.5	.8/ .4	.1	235	66
89/04/15	24	24.0	32.7/ 13.6	298	936	14	17/*11*	.44	.59/ .28	.5	.7/ .4	.2	264	57
89/04/16	24	23.8	32.8/ 12.5	285	980	14	18/*11*	.44	.60/ .27	.5	.7/ .4	.1	236	67
89/04/17	24	24.7	34.1/ 15.0	298	972	14	17/*11*	.46	.62/ .30	.5	.6/ .4	.1	167	71
89/04/18	24	25.5	34.7/ 14.0	309	965	14	18/*11*	.47	.63/ .29	.5	.8/ .4	.1	251	68
89/04/19	24	26.8	34.8/ 15.7	261	946	13	17/*11*	.49	.63/ .31	.6	1.7/ .4	.3	158	56
89/04/20	24	27.7	34.0/ 22.0	282	930	13	15/*11*	.50	.62/ .40	1.1	2.7/ .4	.9	145	30
89/04/21	24	24.7	32.1/ 19.4	237	989	14	16/*12*	.45	.59/ .37	1.2	4.5/ .4	.9	180	33
89/04/22	24	20.4	27.7/ 14.1	319	966	16	20/13	.39	.51/ .30	.9	2.5/ .4	.5	154	44
89/04/23	24	17.4	22.3/ 11.4	244	720	16	18/15	.34	.41/ .26	.8	1.6/ .4	.5	150	41
89/04/24	24	12.7	17.7/ 4.7	293	1,024	18	23/16	.28	.34/ .20	2.3	7.2/ .4	1.9	196	28
89/04/25	24	11.1	19.1/ .8	324	982	22	32/16	.29	.37/ .19	.8	3.6/ .4	.3	258	61
89/04/26	24	14.5	21.3/ 5.3	305	959	18	22/15	.31	.40/ .20	.9	4.7/ .4	.5	270	51
89/04/27	24	16.3	21.8/ 10.3	281	941	18	28/15	.34	.41/ .28	1.5	5.4/ .4	1.2	318	28
89/04/28	24	18.1	24.7/ 7.7	310	1,000	16	21/14	.35	.46/ .22	.9	3.6/ .4	.4	315	48
89/04/29	24	19.0	26.4/ 8.1	304	970	16	20/14	.37	.49/ .22	.5	.8/ .4	.1	246	69
89/04/30	24	19.4	26.4/ 11.9	191	622	16	18/14	.37	.48/ .26	.6	2.0/ .4	.0	12	78

TABLE 3.--Summary of meteorological data collected at study site in 1989. Daily mean, maximum, and minimum values were determined from hourly measurements--Continued

Date	Number of hourly values[1]	Temperature (degrees Celsius)		Solar radiation (watts per square meter)		Relative humidity[2] (percent)		Vapor pressure (kilopascals)		Windspeed (meters per second)		Wind vector		
												Magnitude (meters per second)	Direction	
		Mean	Max/min	Mean	Max	Mean	Max/min	Mean	Max/min	Mean	Max/min		°az	Std. dev.
89/05/01	24	20.8	30.0/ 8.9	333	991	16	20/13	0.40	0.55/0.24	0.5	0.8/0.4	0.1	255	68
89/05/02	24	24.1	33.5/ 11.7	323	989	14	18/*11*	.45	.61/ .26	.6	2.5/ .4	.2	264	63
89/05/03	24	27.5	35.1/ 20.2	325	969	13	15/*11*	.50	.65/ .38	2.1	6.5/ .4	1.9	304	19
89/05/04	24	27.9	35.9/ 19.9	335	1,000	13	16/*11*	.51	.66/ .38	.7	2.5/ .4	.4	297	46
89/05/05	24	27.1	36.9/ 15.4	291	852	13	17/*10*	.50	.67/ .31	.5	.9/ .4	.1	263	68
89/05/06	24	28.1	37.9/ 17.7	295	1,065	13	16/*10*	.51	.68/ .34	.8	2.2/ .4	.3	145	56
89/05/07	24	28.2	37.3/ 17.3	323	1,022	13	16/*10*	.52	.68/ .33	.6	1.0/ .4	.1	255	69
89/05/08	24	28.3	37.1/ 17.1	315	946	13	17/*10*	.52	.68/ .33	.6	2.1/ .4	.3	214	57
89/05/09	24	24.0	32.2/ 15.7	216	815	16	33/*12*	.48	.59/ .34	4.2	8.8/ .4	3.1	151	36
89/05/10	24	17.9	25.0/ 12.4	316	996	24	38/14	.48	.58/ .36	4.7	8.0/ .6	1.7	160	63
89/05/11	24	9.6	12.3/ 7.0	80	315	63	78/36	.75	.87/ .51	3.1	6.6/1.0	.4	328	75
89/05/12	24	14.6	22.6/ 3.8	267	1,013	47	80/18	.69	.94/ .48	2.0	4.0/ .7	1.2	294	41
89/05/13	24	15.2	20.2/ 11.4	196	920	41	52/27	.72	.86/ .59	3.9	8.1/1.3	2.7	325	37
89/05/14	24	16.2	23.5/ 6.9	259	970	35	67/17	.59	.74/ .47	2.3	4.2/ .9	1.0	317	48
89/05/15	24	17.0	22.0/ 12.2	204	1,068	37	48/22	.71	.80/ .59	3.4	5.1/1.7	2.4	309	36
89/05/16	24	21.9	28.5/ 12.2	344	1,054	23	51/13	.55	.74/ .39	4.8	7.0/2.6	4.2	319	21
89/05/17	24	25.3	32.1/ 15.3	351	1,016	15	21/*12*	.48	.59/ .36	3.2	5.1/1.5	.8	211	68
89/05/18	24	25.2	32.6/ 18.6	346	998	15	19/*12*	.49	.61/ .39	3.8	5.8/2.3	2.7	117	37
89/05/19	24	23.2	30.6/ 16.5	355	1,019	15	17/*12*	.43	.57/ .32	5.1	9.7/1.5	4.0	309	31
89/05/20	24	25.2	33.3/ 12.7	299	1,051	14	18/*11*	.47	.61/ .28	3.1	4.8/1.3	1.3	195	58
89/05/21	24	26.0	32.7/ 14.5	362	1,046	14	17/*12*	.48	.61/ .29	2.9	4.1/1.8	.9	236	65
89/05/22	24	26.4	35.0/ 17.8	345	1,029	14	16/*11*	.49	.64/ .34	4.0	5.7/1.8	2.7	140	41
89/05/23	24	25.1	31.9/ 19.0	362	1,061	14	16/*12*	.46	.59/ .36	4.7	7.9/2.3	1.6	195	64
89/05/24	24	21.8	28.6/ 14.4	363	1,033	15	17/13	.41	.53/ .29	5.1	7.9/1.7	4.1	301	31
89/05/25	24	23.1	29.4/ 15.6	362	1,026	15	17/13	.43	.55/ .31	5.3	7.9/2.8	4.9	315	13
89/05/26	24	24.3	32.4/ 16.1	366	1,036	14	17/*12*	.45	.60/ .32	2.2	6.6/ .4	.9	295	57
89/05/27	24	24.9	33.7/ 12.9	362	1,035	14	18/*11*	.46	.62/ .27	4.0	5.8/2.0	2.1	177	53
89/05/28	24	23.8	31.6/ 16.9	361	1,019	15	17/*12*	.45	.58/ .34	4.6	6.6/2.5	2.5	144	52
89/05/29	24	19.0	27.1/ 11.8	340	1,033	16	18/14	.37	.50/ .26	5.1	12.7/1.5	2.4	340	56
89/05/30	24	19.1	25.3/ 12.3	362	1,028	16	20/14	.38	.47/ .29	5.6	7.9/2.5	5.0	326	21
89/05/31	24	22.3	30.0/ 11.5	319	971	15	19/*12*	.42	.55/ .27	3.5	6.5/1.3	1.8	6	51

TABLE 3.--Summary of meteorological data collected at study site in 1989. Daily mean, maximum, and minimum values were determined from hourly measurements--Continued

Date	Number of hourly values[1]	Temperature (degrees Celsius)		Solar radiation (watts per square meter)		Relative humidity[2] (percent)		Vapor pressure (kilopascals)		Windspeed (meters per second)		Wind vector		
		Mean	Max/min	Mean	Max	Mean	Max/min	Mean	Max/min	Mean	Max/min	Magnitude (meters per second)	Direction °az	Direction Std. dev.
89/06/01	24	24.8	32.3/ 15.0	369	994	14	17/12	0.46	0.60/0.30	3.1	5.3/1.4	1.8	358	41
89/06/02	24	27.0	33.8/ 18.4	358	961	13	16/11	.50	.63/ .35	3.0	5.2/1.3	.7	316	67
89/06/03	24	25.3	32.6/ 16.6	276	866	15	27/12	.49	.62/ .33	4.2	7.9/2.0	2.5	314	43
89/06/04	24	24.1	31.2/ 15.2	356	1,016	20	40/12	.57	.75/ .37	3.3	6.0/1.0	2.3	151	34
89/06/05	24	23.3	30.0/ 16.4	356	1,010	16	21/13	.46	.57/ .35	3.3	5.4/1.2	1.0	156	66
89/06/06	24	25.9	34.0/ 14.7	359	1,012	14	19/11	.50	.64/ .33	2.7	4.9/1.1	.8	290	61
89/06/07	24	25.4	34.3/ 16.7	282	1,022	15	18/11	.50	.63/ .35	4.2	9.0/1.2	1.4	307	63
89/06/08	24	27.6	35.1/ 18.2	291	1,027	15	21/11	.55	.65/ .44	2.9	4.9/1.4	1.4	326	49
89/06/09	24	28.2	36.6/ 20.7	335	1,004	16	33/11	.60	.80/ .48	4.3	9.5/1.6	.4	249	75
89/06/10	24	26.6	34.4/ 15.8	354	971	23	54/11	.71	1.02/ .40	2.2	4.0/1.0	.7	210	63
89/06/11	24	27.0	36.1/ 18.0	328	994	14	18/11	.53	.68/ .37	4.3	11.1/1.9	1.5	319	62
89/06/12	24	29.1	37.9/ 18.5	359	1,010	14	23/10	.58	.71/ .44	3.6	5.9/1.6	2.1	333	44
89/06/13	24	31.3	39.8/ 18.4	328	976	12	17/ 9	.58	.73/ .37	2.3	4.6/1.1	.9	271	52
89/06/14	24	33.2	41.6/ 21.8	366	1,029	12	15/ 9	.61	.76/ .41	2.6	5.0/1.4	1.0	217	60
89/06/15	24	32.2	41.3/ 19.7	372	1,034	12	16/ 9	.59	.76/ .37	3.6	7.1/1.6	1.8	169	52
89/06/16	24	31.3	37.6/ 24.7	351	947	12	15/10	.59	.71/ .47	3.6	5.2/2.0	2.0	135	50
89/06/17	24	31.5	39.9/ 19.6	369	1,032	12	16/10	.58	.74/ .37	2.0	3.6/ .6	.7	218	60
89/06/18	24	33.3	42.1/ 20.3	374	1,044	12	16/ 9	.61	.77/ .39	2.9	5.0/1.3	1.0	207	62
89/06/19	24	33.2	41.1/ 21.1	383	1,077	12	15/ 9	.61	.76/ .40	3.4	5.9/1.1	1.4	177	57
89/06/20	24	31.3	39.9/ 19.1	368	1,044	12	16/10	.58	.74/ .36	4.0	9.9/1.5	1.7	310	57
89/06/21	24	27.0	34.0/ 20.1	371	1,041	14	16/11	.50	.64/ .38	5.2	8.0/2.0	4.3	330	26
89/06/22	24	27.3	36.1/ 12.5	374	1,040	13	18/11	.51	.67/ .27	2.4	4.1/ .8	.6	175	66
89/06/23	24	29.4	37.9/ 17.4	352	1,015	13	17/10	.54	.71/ .34	3.7	6.7/1.5	2.5	296	38
89/06/24	24	27.9	34.6/ 19.5	325	1,002	13	16/11	.52	.65/ .37	3.6	7.3/1.2	.7	5	70
89/06/25	24	27.3	34.4/ 20.1	356	1,056	14	18/11	.53	.65/ .40	3.5	5.6/1.6	2.2	324	40
89/06/26	24	28.5	36.0/ 16.5	352	1,033	13	17/11	.53	.67/ .33	3.1	5.5/1.3	1.1	181	62
89/06/27	24	27.8	34.7/ 21.5	367	1,035	13	16/11	.52	.65/ .41	4.6	6.5/2.2	3.2	155	41
89/06/28	24	27.1	34.2/ 19.3	372	1,043	13	16/11	.50	.64/ .37	4.5	7.1/2.7	3.4	157	34
89/06/29	24	27.3	35.1/ 15.8	373	1,044	13	17/11	.51	.66/ .32	3.6	6.2/1.2	1.9	176	52
89/06/30	24	27.8	36.0/ 13.8	371	1,034	13	18/11	.52	.67/ .29	3.7	5.5/1.8	2.0	165	52

TABLE 3.--Summary of meteorological data collected at study site in 1989. Daily mean, maximum, and minimum values were determined from hourly measurements--Continued

Date	Number of hourly values[1]	Temperature (degrees Celsius)		Solar radiation (watts per square meter)		Relative humidity (percent)[2]		Vapor pressure (kilopascals)		Windspeed (meters per second)		Wind vector		
												Magnitude (meters per second)	Direction	
		Mean	Max/min	Mean	Max	Mean	Max/min	Mean	Max/min	Mean	Max/min		°az	Std. dev.
89/07/01	24	28.9	37.7/ 17.5	369	1,031	13	17/10	0.54	0.71/0.34	2.7	4.1/1.1	0.9	145	62
89/07/02	24	29.8	39.6/ 17.8	372	1,043	13	16/10	.55	.73/ .34	2.9	4.0/1.9	.7	203	68
89/07/03	24	30.7	41.3/ 18.1	375	1,038	12	16/ 9	.57	.75/ .35	2.9	4.4/1.2	.8	227	66
89/07/04	24	31.2	40.8/ 17.8	377	1,055	12	16/ 9	.57	.75/ .34	2.8	4.3/1.3	1.0	257	62
89/07/05	24	33.2	43.4/ 19.2	375	1,052	11	16/ 8	.60	.79/ .36	2.4	4.8/1.4	.7	245	63
89/07/06	24	36.5	45.6/ 27.9	375	1,054	10	13/ 8	.66	.81/ .51	3.6	7.0/1.7	2.3	305	41
89/07/07	24	37.9	46.0/ 30.2	334	994	10	13/ 8	.68	.81/ .57	3.7	8.2/1.5	2.2	297	46
89/07/08	24	36.0	43.1/ 26.6	290	992	11	14/ 8	.66	.78/ .50	2.9	5.4/1.3	1.0	225	60
89/07/09	24	34.3	41.0/ 27.2	338	972	11	14/ 9	.64	.76/ .51	4.0	6.3/1.5	2.5	132	44
89/07/10	24	31.8	38.8/ 22.5	365	1,036	12	15/10	.59	.73/ .42	3.3	4.7/1.9	1.5	152	57
89/07/11	24	28.9	33.0/ 25.3	177	596	13	16/12	.55	.61/ .47	5.0	6.7/2.6	4.5	115	18
89/07/12	24	29.4	37.3/ 19.4	346	1,027	15	26/10	.62	.70/ .43	2.5	4.9/ .4	.9	220	61
89/07/13	24	31.2	39.9/ 20.5	356	1,015	12	16/10	.58	.74/ .39	2.4	4.1/1.0	1.0	285	54
89/07/14	7	22.8	29.1/ 19.1	62	306	15	16/13	.43	.53/ .36	1.9	2.7/1.1	1.3	310	25
89/07/15	22	33.5	40.6/ 24.8	399	1,035	11	14/ 9	.62	.75/ .46	4.4	6.1/2.3	2.8	159	44
89/07/16	24	29.6	38.3/ 17.6	362	1,032	13	17/10	.55	.72/ .34	2.8	5.4/1.3	.6	141	69
89/07/17	24	30.0	40.1/ 18.4	362	1,027	13	16/ 9	.56	.74/ .35	2.5	3.7/1.3	.6	210	67
89/07/18	24	32.2	42.0/ 19.3	361	1,031	12	16/ 9	.59	.77/ .37	2.4	3.9/ .9	1.1	276	55
89/07/19	24	34.6	43.3/ 21.7	342	979	11	15/ 8	.63	.80/ .41	2.9	7.2/ .5	1.4	209	56
89/07/20	24	35.2	43.7/ 24.3	324	1,084	11	15/ 8	.65	.80/ .46	3.6	6.4/1.6	1.7	171	55
89/07/21	24	35.4	41.0/ 29.1	317	974	11	13/ 9	.67	.77/ .56	4.2	5.9/1.8	2.5	145	48
89/07/22	22	35.3	41.2/ 27.6	372	1,002	11	14/ 9	.67	.78/ .53	3.8	5.8/1.2	2.5	146	41
89/07/23	24	33.9	40.4/ 26.4	335	979	12	16/10	.66	.77/ .56	3.3	6.8/1.1	.7	155	71
89/07/24	24	34.2	41.2/ 23.7	346	1,000	12	15/ 9	.64	.77/ .46	3.5	7.4/1.2	1.4	257	59
89/07/25	24	34.2	41.2/ 25.2	344	995	11	15/ 9	.64	.78/ .48	2.8	6.5/1.0	1.2	249	56
89/07/26	24	33.7	41.3/ 25.1	338	981	12	14/ 9	.63	.77/ .47	4.0	6.5/1.5	2.6	139	40
89/07/27	24	32.4	40.2/ 21.8	344	993	12	15/10	.60	.75/ .41	3.1	5.7/1.1	1.3	183	58
89/07/28	18	33.7	39.6/ 27.6	328	998	12	18/10	.66	.74/ .52	3.7	5.8/1.2	2.0	165	52
89/07/29	24	31.6	39.9/ 20.8	338	989	12	16/10	.59	.74/ .39	3.2	6.0/1.3	1.4	213	58
89/07/30	24	32.0	40.9/ 20.5	336	984	12	16/ 9	.59	.76/ .39	3.4	5.9/ .7	1.6	168	57
89/07/31	24	32.3	39.1/ 26.8	293	1,011	12	14/10	.60	.73/ .49	4.7	7.0/2.0	4.4	126	15

TABLE 3.--Summary of meteorological data collected at study site in 1989. Daily mean, maximum, and minimum values were determined from hourly measurements--Continued

Date	Number of hourly values[1]	Temperature (degrees Celsius)		Solar radiation (watts per square meter)		Relative humidity[2] (percent)		Vapor pressure (kilopascals)		Windspeed (meters per second)		Wind vector		
												Magnitude (meters per second)	Direction	
		Mean	Max/min	Mean	Max	Mean	Max/min	Mean	Max/min	Mean	Max/min		°az	Std. dev.
89/08/01	24	30.6	37.9/ 24.4	348	1,002	12	14/*10*	0.57	0.71/0.45	4.1	5.5/2.5	2.8	138	42
89/08/02	24	29.1	37.3/ 16.2	342	997	13	17/*10*	.54	.70/ .32	3.4	4.9/1.8	1.7	163	55
89/08/03	24	29.8	38.0/ 18.5	345	1,010	13	16/*10*	.55	.71/ .35	3.1	4.9/1.9	1.8	157	44
89/08/04	24	28.8	37.4/ 18.5	341	1,000	13	16/*10*	.53	.70/ .36	3.0	4.6/1.6	1.1	182	61
89/08/05	24	29.5	39.1/ 17.1	339	1,002	13	17/*10*	.55	.73/ .34	2.5	4.5/1.0	.4	221	73
89/08/06	24	32.0	41.1/ 22.8	290	1,007	12	15/ *9*	.60	.76/ .43	2.3	3.3/1.4	.5	242	69
89/08/07	24	33.7	42.1/ 24.1	317	966	12	15/ *9*	.63	.78/ .46	3.3	10.4/ .4	1.2	282	58
89/08/08	24	30.9	38.9/ 24.1	241	962	16	24/*10*	.70	.82/ .56	3.3	6.5/1.4	1.1	204	62
89/08/09	24	28.1	36.0/ 22.3	251	886	35	60/13	1.24	1.64/ .81	3.3	8.0/ .4	1.8	129	48
89/08/10	24	28.5	35.9/ 20.2	299	927	36	68/17	1.30	1.71/ .93	3.2	5.1/1.1	1.7	149	51
89/08/11	24	29.4	36.1/ 20.4	310	945	27	49/15	1.05	1.23/ .76	3.1	6.0/1.4	1.1	117	61
89/08/12	24	31.7	38.9/ 24.6	320	967	20	36/*10*	.91	1.25/ .52	3.0	4.9/1.4	1.6	146	52
89/08/13	24	31.9	40.1/ 22.2	325	972	14	23/*10*	.66	.76/ .49	2.5	4.2/1.5	1.0	253	59
89/08/14	24	32.0	40.7/ 21.4	325	977	13	18/ *9*	.61	.76/ .46	2.4	4.7/1.0	1.1	249	55
89/08/15	24	31.4	40.1/ 20.8	329	985	12	16/*10*	.59	.75/ .41	3.5	6.5/1.8	1.3	178	62
89/08/16	24	29.6	38.6/ 17.0	332	990	13	17/*10*	.55	.72/ .34	3.1	5.1/1.8	1.1	183	60
89/08/17	24	29.3	36.6/ 21.1	333	998	13	16/*11*	.54	.68/ .40	4.3	7.3/1.2	4.1	132	20
89/08/18	24	28.0	36.0/ 17.4	323	967	14	17/*11*	.52	.67/ .34	3.4	5.5/1.2	3.0	164	25
89/08/19	24	26.6	35.5/ 16.6	323	977	14	17/*11*	.50	.66/ .33	2.7	4.3/1.1	2.4	199	27
89/08/20	24	25.7	34.3/ 15.9	283	1,071	14	17/*11*	.48	.64/ .31	3.3	4.7/1.8	.6	256	72
89/08/21	24	26.6	35.2/ 15.8	313	953	14	19/*11*	.51	.66/ .35	2.3	3.9/ .8	.8	193	61
89/08/22	24	27.3	36.2/ 16.4	312	951	13	17/*11*	.51	.67/ .33	3.7	5.4/1.8	1.5	154	59
89/08/23	24	27.7	35.6/ 21.8	304	930	14	17/*11*	.53	.67/ .42	3.9	5.8/2.3	1.9	117	53
89/08/24	24	24.1	31.4/ 16.8	315	963	15	17/*12*	.46	.59/ .33	4.2	7.3/1.4	3.0	301	34
89/08/25	24	24.5	34.0/ 13.2	311	952	15	18/*12*	.46	.64/ .28	2.2	4.3/1.0	1.9	207	32
89/08/26	24	26.4	35.0/ 15.6	306	943	14	18/*12*	.49	.65/ .31	2.8	4.8/1.3	2.4	181	26
89/08/27	24	26.2	35.8/ 16.2	305	944	14	17/*11*	.49	.66/ .32	2.7	3.8/1.1	.6	248	70
89/08/28	24	27.1	37.1/ 16.6	310	960	13	17/*10*	.50	.68/ .32	2.5	3.6/1.2	.6	258	68
89/08/29	24	27.8	37.4/ 16.5	307	945	13	17/*10*	.51	.69/ .32	3.3	5.6/ .4	1.6	172	56
89/08/30	24	28.0	35.8/ 21.4	307	954	13	15/*11*	.52	.66/ .40	3.3	4.6/1.6	1.7	141	52
89/08/31	24	25.2	34.3/ 14.8	304	946	14	17/*11*	.47	.64/ .30	2.2	3.3/ .5	.5	238	68

TABLE 3.--Summary of meteorological data collected at study site in 1989. Daily mean, maximum, and minimum values were determined from hourly measurements--Continued

Date	Number of hourly values[1]	Temperature (degrees Celsius)		Solar radiation (watts per square meter)		Relative humidity[2] (percent)		Vapor pressure (kilopascals)		Windspeed (meters per second)		Wind vector		
												Magnitude (meters per second)	Direction	
		Mean	Max/min	Mean	Max	Mean	Max/min	Mean	Max/min	Mean	Max/min		°az	Std. dev.
89/09/01	24	25.2	35.9/ 13.6	302	954	14	18/*11*	0.47	0.66/0.28	3.2	4.7/1.8	2.9	201	21
89/09/02	24	25.1	36.2/ 13.3	304	949	14	18/*11*	.47	.66/ .28	2.8	4.3/1.0	2.5	241	24
89/09/03	24	25.7	36.6/ 14.3	303	946	14	18/*11*	.48	.67/ .29	2.6	3.6/ .9	2.4	229	23
89/09/04	24	26.5	38.1/ 14.5	300	940	13	17/*10*	.49	.70/ .29	2.3	3.1/ .6	.9	274	61
89/09/05	24	26.7	37.9/ 14.9	302	944	13	17/*10*	.49	.70/ .30	2.7	4.1/ .9	.7	282	67
89/09/06	24	27.0	37.6/ 13.5	299	944	13	18/*10*	.50	.68/ .28	3.8	5.8/1.8	1.6	165	59
89/09/07	24	26.1	32.5/ 17.0	289	923	14	17/*12*	.48	.60/ .33	4.1	8.6/ .9	1.8	355	56
89/09/08	24	25.5	33.5/ 18.7	283	900	14	16/*12*	.48	.62/ .36	3.9	8.0/1.1	2.8	323	36
89/09/09	24	25.1	34.5/ 15.0	281	901	14	17/*11*	.47	.64/ .30	2.3	4.6/ .6	1.1	270	56
89/09/10	24	25.5	35.5/ 15.1	280	900	14	17/*11*	.47	.66/ .30	1.9	3.5/ .4	.9	244	54
89/09/11	24	26.0	34.2/ 15.7	278	901	14	17/*11*	.48	.63/ .31	2.7	7.3/ .4	.8	290	66
89/09/12	24	25.3	32.3/ 16.4	281	902	14	17/*12*	.47	.60/ .32	4.3	7.6/1.7	3.8	317	18
89/09/13	24	23.8	33.7/ 12.6	277	892	14	18/*11*	.44	.62/ .27	1.7	3.8/ .4	.3	198	72
89/09/14	24	24.4	34.8/ 14.3	277	898	14	17/*11*	.45	.64/ .29	1.3	3.2/ .4	.3	247	68
89/09/15	24	24.8	35.9/ 13.3	280	904	14	18/*11*	.46	.65/ .28	1.5	3.2/ .4	.6	256	60
89/09/16	24	22.8	31.1/ 15.5	117	517	18	32/*12*	.53	.83/ .31	2.4	8.0/ .4	.6	135	68
89/09/17	24	23.0	27.7/ 15.6	195	680	21	40/13	.60	1.03/ .36	4.5	8.0/ .4	3.7	169	29
89/09/18	24	18.2	24.6/ 13.1	248	839	22	35/15	.46	.60/ .33	3.6	5.8/ .8	2.8	126	31
89/09/19	24	15.2	23.9/ 9.2	181	810	35	72/16	.58	.95/ .31	1.9	7.5/ .4	.4	273	70
89/09/20	24	18.7	28.6/ 6.9	255	839	35	74/14	.62	.84/ .41	2.3	4.6/ .8	.6	204	68
89/09/21	24	24.6	33.3/ 12.9	257	850	18	31/*11*	.52	.61/ .42	2.2	4.6/1.2	.5	353	66
89/09/22	24	24.8	34.5/ 13.2	260	854	14	19/*11*	.47	.64/ .29	1.9	3.1/ .5	.4	9	69
89/09/23	24	24.8	35.8/ 13.4	260	859	14	18/*11*	.46	.66/ .29	2.3	3.3/ .4	.5	265	70
89/09/24	24	25.6	35.9/ 14.9	251	845	14	17/*10*	.47	.66/ .30	2.8	4.3/ .4	.8	268	67
89/09/25	24	25.5	33.5/ 18.8	129	632	15	22/*11*	.51	.61/ .36	2.9	5.0/ .9	.8	275	68
89/09/26	24	26.7	35.8/ 16.6	220	812	16	26/*11*	.56	.65/ .47	3.8	8.3/1.5	1.9	191	55
89/09/27	24	27.3	33.3/ 20.1	201	630	14	16/*11*	.51	.61/ .39	3.9	7.2/1.6	3.0	145	34
89/09/28	24	25.6	34.8/ 15.9	240	826	14	18/*11*	.48	.63/ .34	3.3	6.5/1.4	1.2	162	63
89/09/29	*4*	17.0	19.2/ 14.5	0	0	17	17/16	.33	.36/ .30	1.8	2.0/1.6	.8	283	59
89/09/30	*20*	24.4	30.4/ 18.1	290	817	15	20/*12*	.47	.56/ .38	3.3	6.1/1.7	1.0	227	66

TABLE 3.--Summary of meteorological data collected at study site in 1989. Daily mean, maximum, and minimum values were determined from hourly measurements--Continued

Date	Number of hourly values[1]	Temperature (degrees Celsius)		Solar radiation (watts per square meter)		Relative humidity[2] (percent)		Vapor pressure (kilopascals)		Windspeed (meters per second)		Wind vector		
												Magnitude (meters per second)	Direction	
		Mean	Max/min	Mean	Max	Mean	Max/min	Mean	Max/min	Mean	Max/min		°az	Std. dev.
89/10/01	24	22.0	29.8/ 11.8	241	814	15	18/*12*	0.41	0.55/0.26	2.1	6.0/0.4	0.3	167	73
89/10/02	24	20.4	27.2/ 14.6	231	791	17	23/14	.41	.52/ .32	3.5	5.7/1.5	1.6	127	57
89/10/03	24	17.0	24.3/ 11.5	228	769	19	27/15	.38	.46/ .27	3.5	6.3/ .8	2.5	307	34
89/10/04	24	18.6	25.8/ 10.0	232	791	16	21/14	.36	.47/ .25	2.9	6.0/ .4	2.6	306	16
89/10/05	24	18.9	27.8/ 9.3	233	800	16	19/13	.36	.51/ .23	2.0	3.0/ .8	.6	289	62
89/10/06	24	18.4	29.3/ 7.1	230	791	16	20/*12*	.36	.53/ .20	2.3	3.1/1.2	1.1	280	55
89/10/07	24	20.7	30.2/ 11.2	228	789	15	18/*12*	.39	.54/ .25	2.8	5.6/1.0	1.6	314	44
89/10/08	24	21.1	31.7/ 10.3	228	791	15	19/*12*	.40	.57/ .24	2.1	3.4/1.3	.8	301	57
89/10/09	24	21.9	34.1/ 10.9	226	786	15	18/*11*	.41	.61/ .24	2.0	3.8/ .7	1.2	306	42
89/10/10	24	21.5	33.4/ 10.1	221	782	15	19/*11*	.40	.60/ .24	2.3	3.2/1.0	.7	285	65
89/10/11	24	21.5	33.1/ 11.6	219	768	15	18/*11*	.40	.59/ .25	2.4	2.7/1.3	1.1	294	55
89/10/12	24	22.1	32.8/ 12.5	216	760	15	18/*11*	.41	.59/ .26	2.6	3.8/1.0	.3	293	75
89/10/13	24	22.2	32.5/ 13.1	208	727	15	18/*11*	.41	.59/ .27	2.9	5.3/1.5	.3	131	75
89/10/14	24	19.7	28.9/ 11.5	170	743	16	18/*12*	.37	.52/ .25	2.9	5.6/1.5	1.5	290	52
89/10/15	24	19.1	28.9/ 8.0	190	723	16	20/13	.37	.52/ .21	3.4	5.1/1.7	2.9	318	22
89/10/16	24	20.2	28.6/ 11.5	203	719	15	18/13	.38	.52/ .26	1.9	4.2/ .4	1.5	298	28
89/10/17	24	19.3	30.0/ 9.3	206	734	16	19/*12*	.37	.54/ .23	2.0	3.4/ .6	.6	303	62
89/10/18	24	18.6	30.3/ 7.6	207	737	16	19/*12*	.36	.54/ .21	2.2	2.9/1.0	.9	301	59
89/10/19	24	17.7	28.4/ 7.2	184	711	16	19/13	.34	.51/ .20	2.3	3.9/ .8	.3	277	74
89/10/20	24	18.3	27.5/ 9.3	167	674	16	19/13	.35	.49/ .22	3.0	6.2/1.6	.8	181	68
89/10/21	24	17.9	23.8/ 13.7	168	718	26	40/17	.52	.74/ .30	3.1	5.7/1.3	1.9	148	45
89/10/22	24	17.5	23.6/ 12.0	180	779	34	48/19	.67	.83/ .55	3.7	5.7/2.1	2.9	143	34
89/10/23	24	18.2	24.2/ 13.4	171	720	36	61/18	.72	.97/ .47	4.5	7.9/1.6	4.2	135	15
89/10/24	24	16.9	24.1/ 11.4	172	666	27	41/17	.52	.66/ .38	3.6	5.2/2.0	2.4	142	43
89/10/25	24	11.1	14.1/ 7.9	94	554	33	49/21	.45	.60/ .30	4.2	10.0/2.3	2.7	330	45
89/10/26	24	10.7	19.1/ 3.7	187	681	23	36/16	.29	.36/ .22	3.1	7.0/1.2	2.4	302	30
89/10/27	24	11.0	20.2/ .2	187	685	21	32/15	.28	.37/ .20	2.5	7.6/ .4	1.4	297	49
89/10/28	24	11.6	17.2/ 5.4	186	681	18	21/16	.26	.33/ .19	5.3	7.8/2.3	4.9	326	19
89/10/29	24	8.8	16.9/ 3.3	185	677	19	21/16	.22	.32/ .17	4.1	7.4/ .8	2.9	315	39
89/10/30	24	9.1	19.7/ -2.2	182	686	19	23/15	.23	.36/ .12	1.9	3.0/ .4	1.1	301	47
89/10/31	24	10.6	22.5/ -.9	183	672	18	22/14	.25	.40/ .13	.9	2.1/ .4	.6	322	37

TABLE 3.--Summary of meteorological data collected at study site in 1989. Daily mean, maximum, and minimum values were determined from hourly measurements--Continued

Date	Number of hourly values[1]	Temperature (degrees Celsius)		Solar radiation (watts per square meter)		Relative humidity (percent)[2]		Vapor pressure (kilopascals)		Windspeed (meters per second)		Wind vector		
		Mean	Max/min	Mean	Max	Mean	Max/min	Mean	Max/min	Mean	Max/min	Magnitude (meters per second)	Direction °az	Direction Std. dev.
89/11/01	24	10.7	20.0/ 3.5	179	662	18	21/15	0.25	0.37/0.17	2.1	3.1/1.0	0.3	259	71
89/11/02	24	10.5	21.8/ -1.5	179	665	18	22/14	.25	.39/ .12	2.5	6.4/1.4	.9	310	61
89/11/03	24	16.3	24.5/ 10.7	174	655	16	18/14	.31	.43/ .24	5.3	7.8/1.4	4.7	319	18
89/11/04	24	15.0	25.2/ 6.5	173	648	17	20/13	.30	.45/ .19	2.2	4.7/ .9	.6	286	68
89/11/05	24	12.9	22.8/ 3.8	167	631	17	21/14	.27	.41/ .17	2.0	3.6/ .4	.4	326	72
89/11/06	24	15.5	23.5/ 7.8	166	630	17	19/14	.31	.43/ .21	2.8	5.8/1.4	2.0	299	35
89/11/07	24	15.4	22.2/ 10.9	163	649	17	18/14	.30	.40/ .25	5.4	7.5/2.5	4.9	311	18
89/11/08	24	13.1	23.3/ 4.7	167	632	17	20/14	.28	.42/ .18	2.2	6.6/1.2	.8	305	55
89/11/09	24	14.4	27.2/ 3.1	165	629	17	21/13	.30	.47/ .16	1.5	2.7/ .8	.7	320	48
89/11/10	24	18.7	28.8/ 11.4	162	618	16	18/*12*	.35	.51/ .25	2.3	4.2/ .4	1.5	313	37
89/11/11	24	16.3	28.0/ 7.1	160	615	17	20/*12*	.32	.49/ .20	1.6	2.6/ .4	.6	307	61
89/11/12	24	15.0	25.1/ 6.7	155	587	17	21/14	.31	.45/ .21	1.7	3.2/ .4	.4	309	70
89/11/13	24	12.9	23.8/ 4.5	127	507	18	21/14	.28	.42/ .18	1.6	2.8/ .4	.7	319	58
89/11/14	24	14.7	23.5/ 3.9	158	612	17	22/14	.30	.41/ .18	4.8	8.0/ .4	4.4	324	18
89/11/15	24	12.7	21.2/ 4.8	137	547	17	20/15	.27	.38/ .18	2.1	5.4/ .4	.8	312	58
89/11/16	24	14.6	23.5/ 3.9	155	599	17	20/14	.29	.42/ .17	3.0	5.4/ .5	2.4	317	27
89/11/17	24	16.7	22.8/ 10.9	149	592	16	18/14	.32	.41/ .24	4.8	9.0/1.6	3.8	335	30
89/11/18	24	13.2	23.1/ 5.5	149	585	19	27/14	.30	.42/ .21	1.7	2.6/ .5	.6	301	61
89/11/19	24	13.8	26.5/ 3.2	150	587	18	25/13	.30	.46/ .19	1.3	2.5/ .4	.7	308	53
89/11/20	24	14.1	25.8/ 3.8	142	582	17	20/13	.29	.45/ .17	.5	1.3/ .4	.0	295	78
89/11/21	*5*	7.3	8.2/ 6.6	0	0	19	20/19	.20	.21/ .20	.5	.6/ .4	.5	307	6
89/11/22	*0*	--	-- --	--	--	--	-- --	--	-- --	--	-- --	--	--	--
89/11/23	*0*	--	-- --	--	--	--	-- --	--	-- --	--	-- --	--	--	--
89/11/24	*0*	--	-- --	--	--	--	-- --	--	-- --	--	-- --	--	--	--
89/11/25	*18*	12.8	17.1/ 3.0	155	525	24	41/19	.37	.56/ .18	1.6	6.0/ .4	1.4	137	24
89/11/26	24	11.8	17.2/ 5.2	141	558	24	41/16	.34	.57/ .19	4.7	8.3/ .4	3.5	323	37
89/11/27	24	7.0	12.9/ 3.0	140	559	20	23/17	.21	.27/ .17	4.6	7.7/2.5	4.1	332	17
89/11/28	24	3.9	14.1/ -3.8	141	561	21	24/17	.18	.28/ .11	1.9	2.6/1.0	.2	332	73
89/11/29	24	4.8	17.6/ -5.0	140	558	20	23/16	.19	.33/ .10	1.9	2.9/1.0	1.4	314	31
89/11/30	24	5.6	17.9/ -3.7	135	550	20	23/15	.19	.33/ .11	1.8	2.8/1.0	1.2	319	40

TABLE 3.--Summary of meteorological data collected at study site in 1989. Daily mean, maximum, and minimum values were determined from hourly measurements--Continued

[Abbreviations: max, maximum; min, minimum; std. dev., standard deviation; °az, degrees Azimuth.]

Date	Number of hourly values[1]	Temperature (degrees Celsius)		Solar radiation (watts per square meter)		Relative humidity (percent)[2]		Vapor pressure (kilopascals)		Windspeed (meters per second)		Wind vector		
		Mean	Max/min	Mean	Max	Mean	Max/min	Mean	Max/min	Mean	Max/min	Magnitude (meters per second)	Direction °az	Direction Std. dev.
89/12/01	24	11.4	19.5/ 3.0	138	553	18	20/15	0.25	0.35/0.16	5.3	8.8/1.2	4.6	318	22
89/12/02	24	7.8	20.9/ -1.7	138	552	19	23/14	.22	.37/ .13	1.8	3.0/ .9	.9	320	50
89/12/03	24	7.2	19.8/ -2.4	129	525	19	22/15	.21	.35/ .12	1.8	2.9/ .4	1.2	310	40
89/12/04	24	8.5	22.1/ -1.9	135	547	19	22/14	.22	.39/ .12	1.8	2.7/ .8	.6	329	65
89/12/05	24	11.2	23.4/ 1.9	132	536	18	21/14	.25	.41/ .15	2.2	7.1/ .4	.6	346	67
89/12/06	24	14.9	20.0/ 11.1	131	532	18	21/15	.31	.36/ .25	6.2	8.6/3.3	5.8	325	12
89/12/07	24	10.9	21.1/ 1.7	129	524	18	21/15	.25	.37/ .15	1.8	3.5/ .4	.6	333	64
89/12/08	24	7.8	18.4/ 1.1	93	478	19	21/15	.21	.34/ .14	1.7	2.7/ .4	1.0	307	51
89/12/09	24	6.5	17.2/ 1.1	101	570	19	21/16	.20	.32/ .14	1.9	3.3/ .4	.6	301	64
89/12/10	24	7.0	12.9/ .7	130	529	19	21/17	.20	.26/ .14	4.8	8.3/1.5	4.4	319	12
89/12/11	24	2.7	10.4/ -4.1	131	530	21	23/18	.16	.23/ .11	3.3	6.1/1.0	2.4	330	37
89/12/12	24	2.4	14.2/ -6.4	129	522	21	24/17	.16	.28/ .09	1.7	3.4/ .6	.4	354	67
89/12/13	24	7.1	18.1/ -.1	117	525	19	21/15	.20	.33/ .13	1.9	4.9/ .4	.9	349	51
89/12/14	24	8.5	18.3/ -1.6	129	526	19	22/15	.22	.33/ .12	2.6	5.6/1.0	1.6	336	36
89/12/15	24	9.2	19.2/ 2.4	127	520	19	21/15	.23	.35/ .16	2.6	4.7/ .9	.5	327	70
89/12/16	24	9.8	17.5/ 3.2	124	528	18	21/16	.23	.32/ .16	4.2	7.9/ .7	3.7	317	17
89/12/17	24	5.1	14.8/ -3.9	128	523	20	23/17	.18	.29/ .11	1.9	3.4/ .4	.4	316	71
89/12/18	24	4.6	16.2/ -4.8	126	519	20	24/16	.18	.30/ .10	1.0	3.2/ .4	.1	141	75
89/12/19	24	5.0	15.6/ -1.9	126	515	20	23/16	.19	.30/ .12	.5	.5/ .4	.1	339	65
89/12/20	24	4.7	15.3/ -3.8	117	507	20	24/16	.18	.29/ .11	.5	.6/ .4	.1	321	69
89/12/21	24	9.4	18.5/ .5	127	521	18	22/15	.23	.34/ .14	2.0	5.0/ .4	1.7	323	26
89/12/22	24	9.3	19.5/ 1.5	126	515	19	22/15	.23	.35/ .15	.5	1.5/ .4	.2	312	63
89/12/23	24	8.5	21.9/ -1.4	127	522	19	23/14	.23	.38/ .13	.4	.4/ .4	.2	337	54
89/12/24	24	9.2	21.8/ -.3	117	518	19	23/14	.23	.38/ .14	.5	.6/ .4	.3	328	41
89/12/25	24	8.6	21.5/ -.9	127	530	19	22/14	.22	.38/ .13	.4	.4/ .4	.3	322	32
89/12/26	24	9.2	20.6/ 1.5	113	562	18	21/15	.23	.36/ .15	.4	.4/ .4	.2	351	46
89/12/27	24	7.2	16.4/ .7	99	472	19	21/16	.20	.31/ .14	.5	.8/ .4	.1	326	67
89/12/28	24	5.9	13.2/ -1.5	116	481	22	30/18	.21	.32/ .12	1.1	7.5/ .4	.7	330	42
89/12/29	24	8.9	13.3/ 6.3	124	512	22	28/18	.25	.30/ .21	8.6	12.2/5.1	7.8	334	18
89/12/30	24	10.8	16.8/ 5.8	126	514	18	20/16	.24	.31/ .19	6.7	9.8/2.8	6.2	329	14
89/12/31	24	7.3	15.9/ -.1	124	515	20	26/16	.21	.30/ .16	2.0	5.5/ .4	.5	290	14

[1] Numbers in italics are for days with missing hourly values.