

**National Climatic Data Center**

**DATA DOCUMENTATION**

**FOR**

**DATA SET 9716 (DSI-9716)**

**COMPARATIVE CLIMATIC DATA**

**December 30, 2002**

National Climatic Data Center  
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1. **Abstract:** This digital data file contains 16 tables of Comparative Climatic Data (CCD) containing monthly and annual averages and totals, or extremes for selected meteorological elements portraying climatic conditions for selected locations.

These tables of meteorological elements outline the climatic conditions at major weather observing stations in all 50 states, Puerto Rico, and Pacific Islands. The data are from observing sites presently in use or include data from former sites that are comparable in exposure. Stations having less than three years of data for the current operating site are omitted from the tables of observed data. Data in this publication have been extracted from the Normals Means and Extremes table contained in the LOCAL CLIMATOLOGICAL DATA ANNUAL SUMMARY, published for individual stations.

Stations are listed alphabetically by state. The tables are arranged so that values of the same element can be compared for different locations by use of a single table. Some weather stations do not regularly report various elements and will therefore not be listed in the table for that element. Asterisks (\*) denote average frequency of occurrence greater than zero, but smaller than one-half.

This data file contains 10 tables of observed data and 6 tables of Normals data. The tables are listed below:

01. TEMPERATURE-HIGHEST OF RECORD, DEGREE F (WHOLE)
02. TEMPERATURE-LOWEST OF RECORD, DEGREE F (WHOLE)
03. MEAN NUMBER OF DAYS WITH MIN TEMPERATURE 32 DEGREES OR LESS
04. MEAN NUMBER OF DAYS WITH PRECIPITATION 0.01 INCH OR MORE
05. SNOWFALL (INCLUDING ICE PELLETS AND SLEET) AVERAGE TOTAL IN INCHES AND TENTHS
06. WIND-AVERAGE SPEED (MPH TO TENTHS)
07. WIND-MAXIMUM DIRECTION AND SPEED (MPH WHOLE)
08. SUNSHINE-AVERAGE PERCENT OF POSSIBLE
09. CLOUDINESS-MEAN NUMBER OF DAYS: CLEAR (CL), PARTLY CLOUDY CLOUDY (PC), AND CLOUDY (CD)
10. AVERAGE RELATIVE HUMIDITY (%) -MORNING AND AFTERNOON
11. NORMAL DAILY MAXIMUM TEMPERATURE, DEGREES F AND TENTHS
12. NORMAL DAILY MINIMUM TEMPERATURE, DEGREES F AND TENTHS
13. NORMAL DAILY MEAN TEMPERATURE, DEGREES F AND TENTHS
14. NORMAL HEATING DEGREE DAYS (JULY-JUNE)
15. NORMAL COOLING DEGREE DAYS (JAN-DEC)
16. NORMAL PRECIPITATION, INCHES AND 100THS

This manual was designed so that reference to other reference material should be unnecessary. Read the general tape notations and coding practices carefully.

The period of record for observed data are from the 1860's through the last processed year. Normals data are from 1951 through 1980.

Tables 1-10 are observed data (monthly and annual). These values are the means and extremes for the Period of Record (number of years) indicated. Period of Record are documented in the Local Climatological Data annual publication.

Table 1      Temperature - Highest of Record, Whole Degrees Fahrenheit (F)

Table 2      Temperature - Lowest of Record, Whole Degrees Fahrenheit (F)

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The annual temperature entry for each station represents the highest or lowest observed temperature in any month.

Table 3 Mean Number of Days with Minimum Temperature 32 Degrees F or Less.

The mean number of day with a minimum temperature of 32 degrees F or lower indicates the frequency of occurrence of days with freezing temperatures.

Table 4 Mean Number of Days with Precipitation 0.01 Inches or More.

This table shows mean number of days per month with at least 0.01 inch of precipitation. This is the smallest amount of precipitation numerically recorded, and includes the liquid water equivalent of frozen precipitation. The frequency of days with precipitation should not be considered as frequency of cloudy days.

Table 5 Snowfall (including ICE PELLETS and SLEET) - Average Total in Inches to 10th of INCHES.

Trace (T) is recorded for less than 0.05 inch of snowfall.

Table 6 Wind - Average Speed in MPH to nearest 10th.

Table 7 Wind - Maximum Direction and Speed MPH (whole).

This table expresses both a maximum wind speed for the station and where available, the direction (referenced to true north) from which it blew. Short gusts are only for stations denoted with a (G).

If the direction is expressed as one of the 16 compass points (N, NNE, NE, etc.), the maximum speed is calculated from the minimum time during which one mile of wind passed the station.

If the direction is expressed numerically, the maximum speed is the highest one minute average recorded by the observer. Direction is given in tens of degrees clockwise from true north.

Table 8 Sunshine - Average Percentage of Possible

The total time that sunshine reaches the surface of the earth is expressed as the percentage of the maximum amount possible from sunrise to sunset with clear sky conditions.

Table 9 Cloudiness - Mean Number of Days - Clear, Partly Cloudy, Cloudy

This table shows the mean number of days per category of cloudiness. The categories are determined for daylight hours only.

- (a) Clear denotes zero to 3/10 average sky cover
- (b) Partly cloudy denotes 4/10 to 7/10 average sky cover
- (c) Cloudy denotes 8/10 to 10/10 average sky cover

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Table 10 Average Relative Humidity (percent) - Morning (M) and Afternoon (A)

The relative humidity is expressed as a percentage measure of the amount of moisture in the air compared to the maximum amount of moisture the air can hold at the same temperature and pressure. Average humidity values are given for selected morning and afternoon observations. Maximum relative humidity values usually occur during morning hours. The time (LST) of morning and afternoon relative humidities are:

Atlantic, Alaskan - (M morning 8 A.M.) (A afternoon 2 P.M.)

Eastern, Bering, 165W Meridian - (M morning 7 A.M.) (A afternoon 1 P.M.)

Central, 180E Meridian (M morning 6 A.M.) (A afternoon NOON)

Mountain, 165E Meridian - (M morning 5 A.M.) (A afternoon 5 P.M.)

Pacific, 150E Meridian - (M morning 4 A.M.) (A afternoon 4 P.M.)

135E Meridian - (M morning 9 A.M.) (A afternoon 3 P.M.)

Tables 11-16 are:

Climatological Normals (Monthly and Annual) - These are the 30 year average values computed from the data recorded during the period 1951-80. Normals are updated decennially, for the most recent 30 year period. If an instruments exposure was changed, mathematical adjustments are made to make the data representative of the current location. The values are statistically determined and cannot be recreated solely from the original record.

Table 11 Normal Daily Maximum Temperature, Degrees Fahrenheit to nearest 10th

Table 12 Normal Daily Minimum Temperature, Degrees Fahrenheit to nearest 10th

Table 13 Normal Daily Mean (Average) Temperature, Degrees Fahrenheit to nearest 10th

In tables 11, 12, and 13, the temperature data are the normal daily values for each month. They have been adjusted as necessary.

Table 14 Normal Heating Degree Days (July-June)

Table 15 Normal Cooling Degree Days (January-December)

Degree day data are used to estimate amounts of energy required to maintain comfortable indoor temperature levels. Daily values are computed from each days mean temperature (max+min/2). Each degree that a days mean temperature is below or above 65 degrees Fahrenheit is counted as one heating or cooling degree day.

Table 16 Normal Precipitation, inches to nearest 100ths

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The normal precipitation is the arithmetic mean for each month over the 30 year period, adjusted as necessary, and includes the liquid water equivalent of snowfall.

**2. Element Names and Definitions:** Each logical record contains one year of one station's monthly values (plus annual totals) for each specific meteorological table (Tables 1-16). The record consists of an identification portion, and a data portion. The identification portion identifies the table number, the observing stations, and total years of data. The data portion contains the meteorological monthly/annual data values as determined for the appropriate table. The data portion is repeated 39 times. If a specific table does not use all the available data fields, the fields will be blank. Tables 1-6, 8, 11-16 use only the first 13 data value fields. Tables 7 and 10 use the first 26 data value fields. Only Table 9 uses all 39 data value fields.

Fixed Length (User Services): Tapes are structured as follows:

```
Data Length: Fixed 228 characters
Blocked      : 2280 characters
Media        : ASCII or EBCDIC Modes - 9 Track
Parity       : Odd
Label        : ANSI Standard Labeled (ASCII Only) or Unlabeled
File         : 1 File per tape
Density      : 800, 1600, or 6250 BPI
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FORMAT (fixed only): The first 5 fields, the ID Portion of the record, describe the table number, station name and total years of each specific record. The last field, the data portion field of the record, contain each data value and may be repeated up to 39 times.

ID PORTION (33 CHARACTERS)

TABLE NO.	WBAN STA. NO.	STATION NAME AND STATE	YEARS OF DATA	YEARS OF DATA TABLE 10 AFTN
XX	XXXXX	X (20)	XXX	XXX
001	002	003	004	005

TAPE FIELD

DATA PORTION (5 CHARACTERS REPEATED 39 TIMES)

DATA VALUE	DATA VALUE	DATA VALUE	...	DATA VALUE
XXXXX	XXXXX	XXXXX	...	XXXXX
006	007	008	...	044

TAPE FIELD

FIELD	RECORD POSITION	ELEMENT DESCRIPTION
001	001-002	TABLE NUMBER
002	003-007	WBAN STATION NUMBER
003	008-027	STATION NAME, STATE
004	028-030	YEARS OF DATA, TABLE 10 (Years of Morning Data)

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005	031-033	Blank (Tables 1-9 and 11-16) For Table 10 (Years of Afternoon data).
006	034-038	DATA VALUE 1
007	034-043	DATA VALUE 2
008-044	044-228	DATA VALUES 3 through 39

**REMARKS ON CODE DEFINITIONS**

Table 01 - TEMPERATURE HIGHEST OF RECORD - this table uses 13 data value fields. Jan-Dec plus annual. Range of values - 00099 thru 000150 in whole degrees Fahrenheit.

Table 02 - TEMPERATURE LOWEST OF RECORD - this table uses 13 data value fields. Jan-Dec plus annual. Range of values - 00100 thru 00150 in whole degrees Fahrenheit.

Table 03 - MEAN NUMBER OF DAYS WITH MIN TEMP 32 DEGREES OR LESS - this table uses 13 data value fields. Jan-Dec plus annual. Range 00000 thru 00361, \*bbbb (b=blanks). The value "\*" indicates the average frequency of occurrence greater than zero, but smaller than one half. The annual value is the total of the unrounded monthly values. It may not agree with the sum of the rounded monthly values.

Table 04 - MEAN NUMBER OF DAYS WITH PRECIPITATION 0.01 INCH OR MORE - this table uses 13 data value fields. Jan-Dec plus annual. Table 04 remarks are the same as Table 03.

Table 05 - SNOWFALL AVERAGE TOTAL - this table uses 13 data value fields. Jan-Dec plus annual. Range = 00000 thru 99999, Tbbbb (b=blank) in inches to nearest 10th of inch. Tbbbb indicates average total is trace.

Table 06 - WIND AVERAGE SPEED - this table uses data value fields. Jan-Dec plus annual. Range = 00000 thru 00250 in miles per hour to nearest 10th of an hour.

Table 07 - WIND MAXIMUM SPEED - this table uses 26 data value fields Jan (direction and speed) thru Dec (direction and speed) plus annual (direction and speed). Range for speed = 00000 thru 00300 in ,PH whole. Range for directions are:

Direction to 16 compass points \*

NORTH	= Nbbbb	(b=blank)
NORTH NORTHEAST	= NNEbb	
NORTHEAST	= NEbbb	

Etc.! Etc.!

Numerically expressed wind direction is given in tens of degrees clockwise from true North. Range 00010 thru 00360.\*\*

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\*If the direction is expressed as one of the 16 compass points (N, NNE, etc.), the maximum wind speed is calculated from the minimum time during which one mile of wind passed the station.

\*\*If the direction is expressed numerically, the maximum speed is the highest one minute average recorded by the observer.

Table 08 -SUNSHINE AVERAGE PERCENT OF POSSIBLE - this table uses 13 data value fields. Jan-Dec plus annual. Range = 00001 thru 00100 in percent of possible sunshine.

Table 09 -CLOUDINESS - MEAN NUMBER OF DAYS: CLEAR (CL), PARTLY CLOUDY (PC), AND CLOUDY (CD) - this table uses all 39 data value fields. Each month of data values requires 3 consecutive data value fields. The 1st data field is Clear, the 2nd is Partly Cloudy, and the 3rd is Cloudy. Range = 00000 thru 00366 representing mean number of days. \*Note: the annual value is the total of the unrounded monthly values. It may not agree with the sum of the rounded monthly values.

Table 10 -AVERAGE RELATIVE HUMIDITY (PERCENT) - for MORNING AND AFTERNOON - this table uses 26 data value fields. Each month data values require 2 data fields. The 1st value will be the morning value and the 2nd will be the afternoon data value. Range = 00000 thru 00100, and bbbbbb (blank) reported in percent (whole). Blank value indicates no data are reported.

Table 11 -NORMAL DAILY MAXIMUM TEMPERATURE - this table uses 13 data value fields, Jan-Dec plus annual. Range = -2000 thru 01300 in degrees Fahrenheit to the nearest 10th.

Table 12 -NORMAL DAILY MINIMUM TEMPERATURE - this table uses 13 data value fields, Jan-Dec plus annual. Range = -0600 thru 01300 in degrees Fahrenheit to the nearest 10th.

Table 13 -NORMAL DAILY MEAN TEMPERATURE - this table uses 13 data value fields, Jan-Dec plus annual. Range = -0600 thru 01300 in degrees Fahrenheit to the nearest 10th.

Table 14 -NORMAL HEATING DEGREE DAYS - this table uses 13 data value fields, July thru June plus annual. Range = 00000 thru 99999 in whole degree-day units.

Table 15 -NORMAL COOLING DEGREE DAYS - this table uses 13 data value fields, Jan-Dec, plus annual. Range = 00000 thru 99999 in whole degree-day units.

Table 16 -NORMAL PRECIPITATION - this table uses 13 data value fields, Jan-Dec, plus annual. Range = 00000 thru 90000 in inches to nearest 100th.

3. **Start Date:** 1860. Varies by state and location.

4. **Stop Date:** Ongoing.

5. **Coverage:** the contiguous United States, Alaska and Hawaii.

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6. **How to Order Data:**

Ask NCDC's Climate Services about the cost of obtaining this data set.  
Phone: 828-271-4800  
FAX: 828-271-4876  
E-mail: [NCDC.Orders@noaa.gov](mailto:NCDC.Orders@noaa.gov)

7. **Archiving Data Center:**

National Climatic Data Center  
Federal Building  
151 Patton Avenue  
Asheville, NC 28801-5001  
Phone: (828) 271-4800.

8. **Technical Contact:**

National Climatic Data Center  
Federal Building  
151 Patton Avenue  
Asheville, NC 28801-5001  
Phone: (828) 271-4800.

9. **Known Uncorrected Problems:** No information provided with original documentation.

10. **Quality Statement:** No information provided with original documentation.

11. **Essential Companion Datasets:** No information provided with original documentation.

12. **References:** No information provided with original documentation.

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