U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data,
and Information Service

Climatography of the United States No. 20 1971-2000

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: NEWTON ST PAULS ABBEY, NJ **COOP ID: 286177**

Climate Division: NJ 1 **NWS Call Sign:** **Elevation: 600 Feet** **Lat: 41˚02N** **Lon: 74˚48W**

Temperature (˚F)

Mean (1)				Extremes										Degree Days (1) Base Temp 65		Mean Number of Days (3)					
Month	Daily Max	Daily Min	Mean	Highest Daily(2)	Year	Day	Highest Month(1) Mean	Year	Lowest Daily(2)	Year	Day	Lowest Month(1) Mean	Year	Heating	Cooling	Max >= 100	Max >= 90	Max >= 50	Max <= 32	Min <= 32	Min <= 0
Jan	34.6	15.1	24.9	68	1950	27	33.5	1990	-26+	1961	22	15.4	1977	1246	0	.0	.0	2.5	12.6	29.2	3.5
Feb	37.5	16.8	27.2	71+	1954	17	33.1	1998	-17	1996	5	16.8	1979	1059	0	.0	.0	3.5	8.5	26.3	2.8
Mar	47.0	26.4	36.7	83+	1977	31	42.0	1973	-7	1967	19	30.6	1984	879	0	.0	.0	12.1	2.2	24.1	.1
Apr	58.7	36.3	47.5	91+	1962	28	50.4	1974	14+	1954	4	42.0	1975	526	0	.0	.2	23.5	.1	11.8	.0
May	69.9	46.1	58.0	96	1962	20	63.4	1991	24	1977	9	53.0	1997	233	15	.0	.5	30.6	.0	1.6	.0
Jun	78.0	55.2	66.6	98+	1952	27	71.0	1973	33+	1957	10	63.5	1985	44	90	.0	1.7	30.0	.0	.0	.0
Jul	82.8	59.7	71.3	101	1988	11	75.8	1999	40+	1957	3	67.2	2000	7	200	.1	4.3	31.0	.0	.0	.0
Aug	80.8	57.8	69.3	100	1954	1	72.7	1988	34	1965	31	65.9	1992	17	151	.0	2.2	31.0	.0	.0	.0
Sep	73.2	49.6	61.4	104	1953	3	65.4	1971	24	1963	24	57.3	1975	132	23	.0	.6	30.0	.0	.8	.0
Oct	62.1	37.5	49.8	89	1949	11	55.2	1990	16	1988	31	45.7	1987	471	1	.0	.0	28.7	.0	11.0	.0
Nov	50.6	30.3	40.5	81	1950	2	45.2	1975	4	1949	28	34.5	1976	737	0	.0	.0	15.2	.6	19.9	.0
Dec	39.1	21.4	30.3	72	1998	8	36.1	1982	-12	1950	28	17.5	1989	1077	0	.0	.0	4.2	7.3	27.3	1.1
Ann	59.5	37.7	48.6	104	Sep 1953	3	75.8	Jul 1999	-26+	Jan 1961	22	15.4	Jan 1977	6428	480	.1	9.5	242.3	31.3	152.0	7.5

\+ Also occurred on an earlier date(s)

@ Denotes mean number of days greater than 0 but less than .05

Complete documentation available from: www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

Issue Date: February 2004

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1948-2000

(3) Derived from 1971-2000 serially complete daily data

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Precipitation (inches)

Precipitation Totals

Month	Means/ Medians(1) Mean	Means/ Medians(1) Median	Extremes Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year
Jan	3.56	3.24	2.32	1979	25	10.51	1979	.62	1981
Feb	2.71	2.53	1.75	1977	25	5.50	1981	.54	1987
Mar	3.71	3.62	2.75	1977	14	7.61	1977	1.02	1981
Apr	4.05	4.02	2.50	1968	25	8.88	1983	1.29	1985
May	4.42	3.86	2.76	1984	30	9.28	1989	.87	1993
Jun	4.55	4.43	3.34	1976	21	9.69	1972	.88	1988
Jul	4.42	4.15	4.44	1956	9	11.96	1975	.64	1999
Aug	4.44	4.13	6.70	1955	19	8.40	1971	1.07	1981
Sep	4.51	3.70	5.75	1999	17	10.52	1989	1.19	1980
Oct	3.61	3.73	4.30	1996	20	8.69	1995	1.07	2000
Nov	3.79	3.80	3.65	1950	26	9.33	1972	.96	1976
Dec	3.45	3.07	2.30	1948	31	8.06	1973	.66	1980
Ann	47.22	45.71	6.70	Aug 1955	19	11.96	Jul 1975	.54	Feb 1987

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	11.1	6.9	2.4	.7
Feb	9.3	6.0	2.0	.4
Mar	11.0	6.9	2.5	.7
Apr	12.2	7.4	2.9	1.0
May	13.2	8.1	2.8	1.0
Jun	12.4	7.6	2.9	1.1
Jul	11.4	7.0	2.8	1.1
Aug	10.5	6.6	3.3	1.2
Sep	10.4	6.5	3.0	1.4
Oct	9.8	5.8	2.4	.9
Nov	10.3	6.2	2.4	1.1
Dec	11.1	6.3	2.6	.7
Ann	132.7	81.3	32.0	11.3

Precipitation Probabilities (1)

Probability that the monthly/annual precipitation will be equal to or less than the indicated amount

Monthly/Annual Precipitation vs Probability Levels
These values were determined from the incomplete gamma distribution

Month	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	.84	1.18	1.70	2.16	2.62	3.11	3.66	4.31	5.17	6.52	7.80
Feb	1.06	1.32	1.67	1.97	2.25	2.53	2.84	3.20	3.65	4.34	4.98
Mar	1.69	2.02	2.47	2.84	3.18	3.53	3.89	4.32	4.85	5.65	6.38
Apr	1.54	1.92	2.46	2.91	3.33	3.77	4.24	4.78	5.48	6.54	7.52
May	1.51	1.93	2.54	3.06	3.55	4.06	4.62	5.27	6.10	7.39	8.57
Jun	1.63	2.06	2.68	3.20	3.69	4.20	4.76	5.40	6.22	7.50	8.66
Jul	1.17	1.59	2.23	2.80	3.35	3.93	4.57	5.34	6.34	7.90	9.36
Aug	1.62	2.04	2.64	3.14	3.62	4.11	4.64	5.27	6.06	7.28	8.40
Sep	1.27	1.70	2.35	2.91	3.46	4.04	4.67	5.42	6.39	7.92	9.34
Oct	1.15	1.50	2.00	2.44	2.85	3.29	3.76	4.31	5.03	6.14	7.17
Nov	1.24	1.60	2.13	2.58	3.01	3.46	3.95	4.52	5.26	6.40	7.45
Dec	.79	1.11	1.61	2.07	2.52	3.00	3.54	4.19	5.03	6.38	7.66
Ann	36.06	38.29	41.10	43.21	45.07	46.86	48.70	50.71	53.14	56.64	59.63

\+ Also occurred on an earlier date(s)
\# Denotes amounts of a trace
@ Denotes mean number of days greater than 0 but less than .05
****** Statistics not computed because less than six years out of thirty had measurable precipitation

(1) From the 1971-2000 Monthly Normals
(2) Derived from station's available digital record: 1948-2000
(3) Derived from 1971-2000 serially complete daily data

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Snow (inches)

Snow Totals

Means/Medians (1)

Extremes (2)

Mean Number of Days (1)

Snow Fall >= Thresholds

Snow Depth >= Thresholds

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median	Highest Daily Snow Fall	Year	Day	Highest Monthly Snow Fall	Year	Highest Daily Snow Depth	Year	Day	Highest Monthly Mean Snow Depth	Year	0.1	1.0	3.0	5.0	10.0	1	3	5	10
Jan	11.3	9.0	3	2	24.0	1996	8	39.0	1996	40	1996	9	18	1996	5.0	3.8	1.3	.6	.2	16.0	9.1	5.8	1.4
Feb	9.7	7.0	4	3	20.0	1978	7	26.5	1978	26	1978	8	13	1994	4.1	3.2	1.4	.6	.1	14.3	11.1	8.3	2.7
Mar	6.6	4.8	1	#	16.0	1993	14	26.0	1993	18	1994	4	9	1994	2.9	2.4	.7	.3	@	6.4	3.7	2.6	.6
Apr	2.0	.0	#	#	12.0	1997	1	12.5	1997	12	1997	1	1	1997	.6	.6	.3	.1	@	.7	.4	.2	@
May	#	.0	0	0	#	1977	10	#	1977	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Jun	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Jul	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Aug	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Sep	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Oct	.1	.0	#	0	2.0	1979	11	2.0	1979	1	1972	19	#+	1979	.1	@	.0	.0	.0	@	.0	.0	.0
Nov	1.9	.3	#	#	7.5	1971	25	9.0	1971	8	1987	12	1	1987	.9	.7	.3	.1	.0	1.3	.5	.2	.0
Dec	5.1	4.0	1	#	8.0	1981	16	17.5	1995	12	1995	22	6	1995	2.9	2.3	.6	.2	.0	7.6	3.5	1.6	.4
Ann	36.7	25.1	N/A	N/A	24.0	Jan 1996	8	39.0	Jan 1996	40	Jan 1996	9	18	Jan 1996	16.5	13.0	4.6	1.9	.3	46.3	28.3	18.7	5.1

+ Also occurred on an earlier date(s) #Denotes trace amounts

@ Denotes mean number of days greater than 0 but less than .05

-9/-9.9 represents missing values
Annual statistics for Mean/Median snow depths are not appropriate

(1) Derived from Snow Climatology and 1971-2000 daily data

(2) Derived from 1971-2000 daily data

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Freeze Data

Spring Freeze Dates (Month/Day)

Temp (F)	Probability of later date in spring (thru Jul 31) than indicated(*)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	6/02	5/28	5/24	5/21	5/18	5/16	5/12	5/09	5/04
32	5/18	5/14	5/11	5/08	5/06	5/04	5/02	4/29	4/25
28	5/06	5/02	4/29	4/26	4/24	4/22	4/19	4/16	4/12
24	4/22	4/18	4/14	4/11	4/08	4/06	4/03	3/30	3/25
20	4/06	4/02	3/31	3/28	3/26	3/24	3/22	3/19	3/15
16	3/31	3/26	3/23	3/20	3/18	3/15	3/12	3/09	3/05

Fall Freeze Dates (Month/Day)

Temp (F)	Probability of earlier date in fall (beginning Aug 1) than indicated(*)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	9/06	9/11	9/14	9/16	9/19	9/22	9/24	9/27	10/02
32	9/20	9/24	9/27	9/30	10/02	10/05	10/07	10/10	10/14
28	10/02	10/07	10/10	10/13	10/15	10/18	10/21	10/24	10/29
24	10/12	10/18	10/22	10/25	10/29	11/01	11/05	11/09	11/14
20	10/28	11/03	11/07	11/11	11/14	11/17	11/21	11/25	12/01
16	11/09	11/15	11/20	11/23	11/27	11/30	12/04	12/08	12/15

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	143	136	131	127	123	119	115	110	103
32	166	160	155	152	148	145	141	137	131
28	192	186	181	178	174	170	166	162	155
24	224	216	211	207	203	199	194	189	182
20	250	244	239	236	232	229	225	221	214
16	276	268	263	258	254	249	244	239	231

***** Probability of observing a temperature as cold, or colder, later in the spring or earlier in the fall than the indicated date.

0/00 Indicates that the probability of occurrence of threshold temperature is less than the indicated probability.

Derived from 1971-2000 serially complete daily data

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Degree Days to Selected Base Temperatures (˚F)

Heating Degree Days (1)

Base Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	1246	1059	879	526	233	44	7	17	132	471	737	1077	6428
60	1091	919	724	377	119	8	0	1	48	325	587	922	5121
57	998	835	631	290	70	2	0	0	22	246	497	829	4420
55	936	779	569	236	46	1	0	0	12	198	438	767	3982
50	781	639	418	121	11	0	0	0	2	103	296	616	2987
32	293	200	54	0	0	0	0	0	0	0	15	177	739

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	70	65	199	465	805	1037	1216	1157	882	553	268	123	6840
55	0	0	0	10	139	347	503	444	203	38	1	0	1685
57	0	0	0	5	101	289	441	382	153	23	0	0	1394
60	0	0	0	1	57	205	348	290	89	10	0	0	1000
65	0	0	0	0	15	90	200	151	23	1	0	0	480
70	0	0	0	0	2	24	84	56	2	0	0	0	168

Growing Degree Units (2)

Base	Growing Degree Units (Monthly)												Growing Degree Units (Accumulated Monthly)											
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
40	8	12	72	240	556	790	963	907	641	317	111	22	8	20	92	332	888	1678	2641	3548	4189	4506	4617	4639
45	1	1	34	135	405	640	808	752	491	190	53	6	1	2	36	171	576	1216	2024	2776	3267	3457	3510	3516
50	0	0	15	68	261	491	653	597	346	98	23	0	0	0	15	83	344	835	1488	2085	2431	2529	2552	2552
55	0	0	6	29	145	344	498	442	212	40	5	0	0	0	6	35	180	524	1022	1464	1676	1716	1721	1721
60	0	0	1	11	69	211	344	292	117	13	0	0	0	0	1	12	81	292	636	928	1045	1058	1058	1058
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	2	12	53	155	337	503	643	599	405	210	72	10	2	14	67	222	559	1062	1705	2304	2709	2919	2991	3001

(1) Derived from the 1971-2000 Monthly Normals
(2) Derived from 1971-2000 serially complete daily data
Note: For corn, temperatures below 50 are set to 50, and temperatures above 86 are set to 86

Complete documentation available from:
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Notes

a. The monthly means are simple arithmetic averages computed by summing the monthly values for the period 1971-2000 and dividing by thirty. Prior to averaging, the data are adjusted if necessary to compensate for data quality issues, station moves or changes in station reporting practices. Missing months are replaced by estimates based on neighboring stations.

b. The median is defined as the middle value in an ordered set of values. The median is being provided for the snow and precipitation elements because the mean can be a misleading value for precipitation normals.

c. Only observed validated values were used to select the extreme daily values.

d. Extreme monthly temperature/precipitation means were selected from the monthly normals data.
Monthly snow extremes were calculated from daily values quality controlled to be consistent with the Snow Climatology.

e. Degree Days were derived using the same techniques as the 1971-2000 normals.
Compete documentation for the 1971-2000 Normals is available on the internet from:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

f. Mean "number of days statistics" for temperature and precipitation were calculated from a serially complete daily data set .
Documentation of the serially complete data set is available from the link below:

g. Snowfall and snow depth statistics were derived from the Snow Climatology.
Documentation for the Snow Climatology project is available from the link under references.

Data Sources for Tables

Several different data sources were used to create the Clim20 climate summaries. In some cases the daily extremes appear inconsistent with the monthly extremes and or the mean number of days statistics. For example, a high daily extreme value may not be reflected in the highest monthly value or the mean number of days threshold that is less than and equal to the extreme value. Some of these difference are caused by different periods of record. Daily extremes are derived from the station's entire period of record while the serial data and normals data were are for the 1971-2000 period. Therefore extremes observed before 1971 would not be included in the 1971-2000 normals or the 1971-2000 serial daily data set. Inconsistencies can also occur when monthly values are adjusted to reflect the current observing conditions or were replaced during the 1971-2000 Monthly Normals processing and are not reconciled with the Summary of the Day data.

a. Temperature/ Precipitation Tables
   1. 1971-2000 Monthly Normals
   2. Cooperative Summary of the Day
   3. National Weather Service station records
   4. 1971-2000 serially complete daily data

b. Degree Day Table
   1. Monthly and Annual Heating and Cooling Degree Days Normals to Selected Bases derived from 1971-2000 Monthly Normals
   2. Daily Normal Growing Degree Units to Selected Base Temperatures derived from 1971-2000 serially complete daily data

c. Snow Tables
   1. Snow Climatology
   2. Cooperative Summary of the Day

d. Freeze Data Table
   1971-2000 serially complete daily data

References

U.S. Climate Normals 1971-2000, www.ncdc.noaa.gov/normals.html
U.S. Climate Normals 1971-2000-Products Clim20, www.ncdc.noaa.gov/oa/climate/normals/usnormalsprods.html
Snow Climatology Project Description, www.ncdc.noaa.gov/oa/climate/monitoring/snowclim/mainpage.html
Eischeid, J. K., P. Pasteris, H. F. Diaz, M. Plantico, and N. Lott, 2000: Creating a serially complete, national daily time series of temperature and precipitation for the Western United States. J. Appl. Meteorol., 39, 1580-1591,
www1.ncdc.noaa.gov/pub/data/special/ serialcomplete_jam_0900.pdf