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: LEBANON 2 W, PA **COOP ID: 364896**

Climate Division: PA 3 **NWS Call Sign:** **Elevation: 450 Feet** **Lat: 40˚20N** **Lon: 76˚28W**

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	35.5	19.1	27.3	70	1967	26	36.9	1998	-22	1985	22	16.7	1977	1169	0	.0	.0	2.9	9.6	27.9	1.1
Feb	38.8	20.9	29.9	75	1997	27	38.7	1998	-12	1979	18	18.1	1979	984	0	.0	.0	5.3	7.0	23.7	.6
Mar	49.1	28.9	39.0	84+	1998	30	44.1	1977	-4	1989	8	32.7	1984	806	0	.0	.0	15.5	1.0	19.8	.2
Apr	60.6	37.8	49.2	90+	1985	22	53.8	1994	18	1982	7	44.2	1975	474	0	.0	.2	26.7	.0	7.3	.0
May	70.8	47.5	59.2	95	1969	30	65.8	1991	27	1966	11	55.0	1973	208	26	.0	.5	30.9	.0	.5	.0
Jun	78.9	56.6	67.8	100	1966	28	71.2	1987	37	1986	3	63.4	1980	39	121	.0	2.7	30.0	.0	.0	.0
Jul	83.2	61.1	72.2	103	1966	4	76.4	1987	44+	1979	6	69.1	1979	5	227	.1	6.6	31.0	.0	.0	.0
Aug	80.9	59.0	70.0	98	1973	31	73.3	1988	38	1982	29	66.4	1982	13	166	.0	3.5	31.0	.0	.0	.0
Sep	73.4	51.7	62.6	98	1983	11	66.6	1998	30	1974	24	58.2	1975	106	33	.0	1.0	30.0	.0	.1	.0
Oct	62.9	39.9	51.4	89	1986	1	57.3	1984	18	1975	31	46.2	1972	427	5	.0	.0	30.0	.0	5.1	.0
Nov	51.2	31.4	41.3	82	1982	3	46.4	1999	9	1976	30	35.4	1976	712	0	.0	.0	18.5	.3	15.3	.0
Dec	40.4	24.0	32.2	75	1984	30	38.0	1982	-2+	1976	30	20.7	1989	1017	0	.0	.0	5.9	4.6	24.6	.2
Ann	60.5	39.8	50.2	103	Jul 1966	4	76.4	Jul 1987	-22	Jan 1985	22	16.7	Jan 1977	5960	578	.1	14.5	257.7	22.5	124.3	2.1

\+ 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

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1948-2001

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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	3.19	2.73	3.70	1976	3	9.20	1979	.55	1985
Feb	2.56	2.19	1.55	1985	12	5.74	1981	.23	1987
Mar	3.31	3.33	2.70	2000	21	6.54	1977	.87	1995
Apr	3.72	3.54	2.10	1986	16	8.75	1983	.59	1989
May	4.61	4.41	2.60	1990	29	9.25	1989	.56	1977
Jun	4.04	3.57	8.85	1972	22	17.10	1972	.84	1991
Jul	4.57	3.92	3.33	1988	26	8.56	1988	1.09	1999
Aug	3.48	3.16	2.70	1998	10	8.26	1971	.59	1995
Sep	4.08	3.33	6.79	1951	2	12.65	1975	.61	1983
Oct	3.32	2.69	3.68	1996	19	9.01	1976	1.04	1994
Nov	3.62	3.64	3.24	1950	25	6.92	1972	1.17+	1998
Dec	3.19	2.57	3.18	1950	4	8.66	1972	.50	1998
Ann	43.69	44.90	8.85	Jun 1972	22	17.10	Jun 1972	.23	Feb 1987

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	9.2	6.6	2.3	.8
Feb	8.7	5.7	1.9	.4
Mar	9.2	6.5	2.3	.7
Apr	11.2	7.1	2.7	.7
May	12.4	8.6	3.1	1.1
Jun	10.2	7.2	2.4	.8
Jul	9.9	6.9	2.9	1.2
Aug	8.6	6.1	2.1	1.0
Sep	9.4	6.2	2.7	1.0
Oct	8.3	5.7	2.2	1.0
Nov	9.6	6.4	2.3	1.0
Dec	9.0	5.8	2.4	.7
Ann	115.7	78.8	29.3	10.4

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	.69	.98	1.45	1.88	2.30	2.76	3.27	3.88	4.68	5.97	7.18
Feb	.68	.92	1.29	1.62	1.94	2.27	2.65	3.09	3.67	4.57	5.42
Mar	1.17	1.49	1.94	2.32	2.68	3.05	3.46	3.93	4.54	5.47	6.33
Apr	1.02	1.38	1.91	2.38	2.84	3.32	3.85	4.48	5.29	6.58	7.77
May	1.48	1.92	2.57	3.12	3.65	4.20	4.81	5.51	6.43	7.84	9.15
Jun	.86	1.23	1.82	2.36	2.90	3.47	4.13	4.91	5.94	7.58	9.14
Jul	1.50	1.94	2.57	3.12	3.64	4.18	4.76	5.45	6.34	7.71	8.98
Aug	1.11	1.44	1.93	2.34	2.75	3.16	3.62	4.16	4.85	5.92	6.91
Sep	.73	1.09	1.69	2.24	2.81	3.43	4.12	4.97	6.10	7.91	9.65
Oct	.95	1.27	1.74	2.15	2.56	2.97	3.44	3.99	4.70	5.81	6.84
Nov	1.16	1.51	2.01	2.45	2.86	3.29	3.77	4.32	5.03	6.14	7.16
Dec	.69	.98	1.45	1.87	2.30	2.75	3.27	3.88	4.69	5.98	7.20
Ann	31.45	33.83	36.87	39.18	41.22	43.19	45.23	47.48	50.20	54.14	57.55

+ 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: 1948-2001
(3) Derived from 1971-2000 serially complete daily data

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Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	5.4	3.6	2	#
Feb	4.3	2.6	2	#
Mar	2.4	1.0	1	0
Apr	.1	.0	#	0
May	#	.0	0	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	#	.0	0	0
Nov	.7	.0	#	0
Dec	3.7	.8	#	0
Ann	16.6	8.0	N/A	N/A

Extremes (2)

Month	Highest Daily Snow Fall	Year	Day	Highest Monthly Snow Fall	Year	Highest Daily Snow Depth	Year	Day	Highest Monthly Mean Snow Depth	Year
Jan	12.0	1971	1	16.4	1971	30	1996	12	10	1996
Feb	10.4	1972	20	19.8	1972	19	1994	11	13	1994
Mar	8.0	1984	29	12.2	1994	14	1994	4	10	1994
Apr	1.0	1972	8	1.1	1972	1	1972	8	#+	2000
May	#	1977	9	#	1977	0	0	0	0	0
Jun	.0	0	0	.0	0	0	0	0	0	0
Jul	.0	0	0	.0	0	0	0	0	0	0
Aug	.0	0	0	.0	0	0	0	0	0	0
Sep	.0	0	0	.0	0	0	0	0	0	0
Oct	#	1992	20	#	1992	0	0	0	0	0
Nov	4.5	1971	25	5.3	1987	5	1987	11	#+	1996
Dec	10.0	1990	28	15.7	1995	11	1995	19	3	1995
Ann	12.0	Jan 1971	1	19.8	Feb 1972	30	Jan 1996	12	13	Feb 1994

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	2.4	1.6	.7	.3	.1
Feb	2.1	1.3	.4	.2	.1
Mar	1.1	.7	.3	.1	.0
Apr	.2	.1	.0	.0	.0
May	.0	.0	.0	.0	.0
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.0	.0	.0	.0	.0
Oct	.0	.0	.0	.0	.0
Nov	.3	.2	.2	.0	.0
Dec	1.1	.8	.3	.2	.1
Ann	7.2	4.7	1.9	.8	.3

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	5.1	3.3	1.4	.5
Feb	-9.9	-9.9	-9.9	-9.9
Mar	1.1	.4	.1	.0
Apr	.1	.0	.0	.0
May	.0	.0	.0	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.0	.0	.0	.0
Oct	.0	.0	.0	.0
Nov	.3	.2	.0	.0
Dec	2.8	1.6	1.0	.1
Ann	-9.9	-9.9	-9.9	-9.9

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

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

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

(2) Derived from 1971-2000 daily data

-9/-9.9 represents missing values

Annual statistics for Mean/Median snow depths are not appropriate

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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	5/20	5/16	5/13	5/11	5/08	5/06	5/03	5/01	4/27
32	5/11	5/06	5/03	4/30	4/27	4/25	4/22	4/18	4/13
28	4/26	4/21	4/18	4/15	4/12	4/10	4/07	4/03	3/30
24	4/09	4/05	4/02	3/31	3/28	3/26	3/23	3/20	3/16
20	3/30	3/26	3/23	3/21	3/19	3/16	3/14	3/11	3/07
16	3/24	3/16	3/11	3/06	3/02	2/26	2/22	2/16	2/09

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	9/20	9/24	9/27	9/29	10/02	10/04	10/07	10/10	10/14
32	10/01	10/06	10/09	10/12	10/15	10/17	10/20	10/23	10/28
28	10/08	10/14	10/18	10/22	10/25	10/28	11/01	11/05	11/11
24	10/22	10/27	10/30	11/02	11/05	11/08	11/12	11/15	11/20
20	11/02	11/09	11/14	11/18	11/22	11/25	11/30	12/04	12/11
16	11/26	12/02	12/06	12/10	12/13	12/16	12/20	12/24	12/29

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	163	157	153	149	146	142	139	134	128
32	188	182	177	173	169	166	162	157	151
28	217	210	204	199	195	191	186	180	173
24	241	234	229	225	221	217	213	208	201
20	270	262	257	252	247	243	238	232	224
16	310	302	295	290	285	280	275	268	259

***** 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	1169	984	806	474	208	39	5	13	106	427	712	1017	5960
60	1014	844	651	327	105	8	0	0	36	289	562	862	4698
57	921	760	558	243	61	2	0	0	15	216	472	769	4017
55	859	704	496	193	40	1	0	0	8	174	414	707	3596
50	705	571	351	91	10	0	0	0	1	91	275	559	2654
32	244	174	36	0	0	0	0	0	0	0	12	140	606

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	98	113	253	517	841	1072	1244	1176	917	601	290	147	7269
55	0	0	0	20	168	382	531	463	235	62	2	0	1863
57	0	0	0	10	127	324	469	401	182	42	1	0	1556
60	0	0	0	3	78	240	376	309	112	21	0	0	1139
65	0	0	0	0	26	121	227	166	33	5	0	0	578
70	0	0	0	0	5	43	102	64	3	0	0	0	217

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	16	27	112	325	638	874	1044	984	741	415	156	40	16	43	155	480	1118	1992	3036	4020	4761	5176	5332	5372
45	3	8	55	199	483	724	889	829	591	271	78	11	3	11	66	265	748	1472	2361	3190	3781	4052	4130	4141
50	0	0	24	106	333	574	734	674	443	154	34	3	0	0	24	130	463	1037	1771	2445	2888	3042	3076	3079
55	0	0	6	46	200	424	579	519	300	73	9	0	0	0	6	52	252	676	1255	1774	2074	2147	2156	2156
60	0	0	3	18	101	282	424	365	177	26	1	0	0	0	3	21	122	404	828	1193	1370	1396	1397	1397
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	6	20	80	197	386	575	708	663	466	252	88	20	6	26	106	303	689	1264	1972	2635	3101	3353	3441	3461

(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