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: HERSHEY 5 SSE, NE **COOP ID: 253810**

Climate Division: NE 7 **NWS Call Sign:** **Elevation: 2,952 Feet** **Lat: 41˚06N** **Lon: 100˚59W**

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	35.7	11.5	23.6	73	1997	3	31.9	1981	-23	1979	1	7.5	1979	1283	0	.0	.0	5.7	11.3	30.7	6.1
Feb	42.6	16.2	29.4	79	1982	23	38.6	1999	-23+	1996	4	16.1	1978	998	0	.0	.0	10.4	7.1	27.4	3.4
Mar	51.2	23.2	37.2	86	1967	29	44.5	1986	-15	1978	4	30.1	1996	861	0	.0	.0	17.3	3.5	25.8	.7
Apr	61.9	32.1	47.0	95	1989	23	54.8	1981	7	1975	3	39.8	1984	541	0	.0	.2	24.7	.4	13.7	.0
May	71.6	43.9	57.8	98	1970	19	63.0	1977	23+	1989	2	51.5	1995	246	21	.0	.7	30.4	.0	1.7	.0
Jun	82.1	53.8	68.0	107	1988	22	74.1	1988	33+	1998	4	61.8	1982	54	141	.8	6.3	29.9	.0	.0	.0
Jul	87.9	59.4	73.7	110	1990	3	77.3	1980	42	1968	1	67.2	1992	5	272	1.8	13.9	31.0	.0	.0	.0
Aug	86.4	57.1	71.8	106+	1990	31	77.5	2000	41	1976	28	65.7	1992	23	231	1.0	11.8	31.0	.0	.0	.0
Sep	77.8	46.0	61.9	102	1990	14	68.9	1998	22	1984	29	56.3	1973	153	61	.2	5.3	29.5	.0	1.4	.0
Oct	66.5	35.0	50.8	93+	1997	3	54.5	1974	9	1991	30	46.1	1976	443	0	.0	.4	27.9	.3	9.7	.0
Nov	48.8	22.4	35.6	86	1980	7	43.8	1999	-7+	1976	28	27.5	1985	882	0	.0	.0	15.3	3.8	26.2	.6
Dec	39.1	13.8	26.5	75	1980	18	33.9	1980	-31	1983	22	5.6	1983	1196	0	.0	.0	7.7	8.6	30.6	3.6
Ann	62.6	34.5	48.6	110	Jul 1990	3	77.5	Aug 2000	-31	Dec 1983	22	5.6	Dec 1983	6685	726	3.8	38.6	260.8	35.0	167.2	14.4

\+ 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

(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	.50	.31	.94	1976	1	4.10	1982	.00+	1995
Feb	.43	.22	1.36	1971	19	1.64	1971	.00+	1996
Mar	1.16	.71	1.68	1980	28	3.60	1992	.06	1994
Apr	1.87	1.41	1.80+	1986	3	5.00	1977	.06	1989
May	3.25	3.00	3.10	1951	15	5.66	1991	.81	1999
Jun	3.11	3.19	6.03	1956	17	5.68	1993	.99	1973
Jul	3.02	2.97	3.05	1965	4	5.65	1981	.86	1991
Aug	2.19	1.88	2.16	1999	29	6.33	1999	.02	1975
Sep	1.36	1.11	2.21	1996	7	4.71	1973	.00	1992
Oct	1.35	1.01	2.76	2000	29	3.50	1994	.02	1988
Nov	.73	.61	1.05	1998	3	2.02	1972	.00	1989
Dec	.38	.22	1.05	1968	22	1.47	1973	.00+	1999
Ann	19.35	19.40	6.03	Jun 1956	17	6.33	Aug 1999	.00+	Dec 1999

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	3.3	1.3	.3	.0
Feb	3.5	1.2	.2	@
Mar	5.6	2.7	.7	.2
Apr	7.3	4.2	1.2	.2
May	10.4	6.7	2.1	.7
Jun	9.5	6.3	2.2	.6
Jul	8.8	5.6	1.8	.8
Aug	7.1	4.3	1.6	.5
Sep	5.8	2.9	.8	.2
Oct	4.7	2.5	.9	.3
Nov	3.7	1.7	.5	@
Dec	2.7	1.0	.2	.0
Ann	72.4	40.4	12.5	3.5

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	.00	.01	.06	.13	.21	.31	.44	.60	.84	1.25	1.67
Feb	.00	.02	.07	.13	.20	.28	.38	.52	.70	1.02	1.34
Mar	.08	.16	.30	.46	.64	.85	1.09	1.41	1.84	2.57	3.30
Apr	.23	.38	.64	.90	1.17	1.48	1.84	2.28	2.88	3.86	4.81
May	1.24	1.54	1.98	2.34	2.68	3.03	3.41	3.84	4.40	5.26	6.04
Jun	1.07	1.36	1.79	2.15	2.50	2.86	3.25	3.71	4.29	5.20	6.03
Jul	1.20	1.48	1.87	2.20	2.51	2.82	3.16	3.55	4.05	4.81	5.50
Aug	.27	.44	.75	1.06	1.38	1.74	2.16	2.68	3.38	4.53	5.64
Sep	.06	.17	.37	.57	.79	1.03	1.32	1.67	2.16	2.98	3.78
Oct	.09	.17	.34	.53	.73	.97	1.26	1.63	2.15	3.02	3.88
Nov	.01	.05	.13	.23	.35	.49	.66	.88	1.19	1.73	2.27
Dec	.00	.00	.02	.07	.14	.22	.32	.45	.64	.98	1.31
Ann	13.43	14.56	16.02	17.13	18.12	19.08	20.08	21.18	22.51	24.46	26.15

\+ 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)

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	4.7	3.9	2	1	13.0	1976	1	17.5	1976	14+	1988	21	8	1993	3.1	1.7	.4	.2	.1	14.2	8.7	4.8	1.4
Feb	4.1	2.3	1	#	7.0	1993	11	17.6	1978	12+	1993	16	6	1978	2.9	1.8	.6	.1	.0	8.4	3.8	1.7	.2
Mar	5.1	3.8	1	#	13.0	1980	28	19.3	1980	14	1980	29	3	1978	2.7	1.9	.4	.2	@	4.4	1.8	1.0	.2
Apr	2.5	1.0	#	#	6.0	1977	3	12.5	1994	9	1980	2	1	1995	1.1	.9	.4	.2	.0	1.1	.6	.3	.0
May	.0	.0	0	0	.3	1984	7	.3	1984	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	.2	.0	#	0	3.0	1985	29	3.0	1985	3+	2000	24	#+	2000	.1	.1	@	.0	.0	.1	.1	.0	.0
Oct	.9	.0	#	0	6.0	1991	31	7.0	1991	7	1991	31	#+	1997	.4	.4	.1	@	.0	.4	.2	@	.0
Nov	5.0	4.5	1	#	7.0	1975	19	16.0	1975	14	1975	30	4	2000	2.1	1.5	.8	.3	.0	5.0	3.3	2.0	.2
Dec	4.6	2.9	1	#	9.0	1978	2	13.0	1987	17	1983	27	9	1983	2.2	1.2	.6	.2	.0	8.3	4.5	2.4	.6
Ann	27.1	18.4	N/A	N/A	13.0+	Mar 1980	28	19.3	Mar 1980	17	Dec 1983	27	9	Dec 1983	14.6	9.5	3.3	1.2	.1	41.9	23.0	12.2	2.6

+ 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	5/25	5/21	5/17	5/15	5/12	5/10	5/07	5/04	4/30
32	5/19	5/15	5/12	5/09	5/06	5/04	5/01	4/28	4/24
28	5/09	5/05	5/01	4/28	4/25	4/23	4/20	4/16	4/12
24	4/25	4/21	4/18	4/16	4/13	4/11	4/09	4/06	4/02
20	4/17	4/13	4/09	4/07	4/04	4/02	3/30	3/27	3/23
16	4/08	4/02	3/29	3/25	3/22	3/19	3/15	3/11	3/06

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	9/11	9/15	9/18	9/21	9/23	9/26	9/28	10/01	10/06
32	9/16	9/22	9/25	9/29	10/02	10/05	10/08	10/12	10/17
28	9/26	10/02	10/06	10/09	10/12	10/15	10/19	10/23	10/28
24	10/10	10/14	10/17	10/20	10/22	10/24	10/27	10/30	11/03
20	10/16	10/21	10/25	10/28	10/31	11/03	11/07	11/11	11/16
16	10/25	10/29	11/02	11/05	11/07	11/10	11/13	11/16	11/21

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	149	143	140	136	133	130	127	123	118
32	169	162	156	152	148	143	139	134	126
28	189	182	177	173	169	165	161	156	149
24	209	203	198	194	191	187	184	179	173
20	230	223	218	213	209	205	201	195	188
16	252	244	239	234	230	225	220	215	207

***** 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	1283	998	861	541	246	54	5	23	153	443	882	1196	6685
60	1128	858	706	397	134	16	0	5	72	293	732	1041	5382
57	1035	775	613	316	85	6	0	2	40	210	642	948	4672
55	973	724	551	265	59	3	0	1	24	162	582	886	4230
50	822	594	406	157	19	0	0	0	5	69	444	743	3259
32	346	217	56	3	0	0	0	0	0	0	94	293	1009

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	86	144	218	453	798	1078	1290	1232	898	581	202	120	7100
55	0	7	0	24	144	391	577	519	232	30	0	0	1924
57	0	2	0	15	107	334	515	458	187	16	0	0	1634
60	0	0	0	6	64	254	422	369	130	5	0	0	1250
65	0	0	0	0	21	141	272	231	61	0	0	0	726
70	0	0	0	0	4	63	140	122	22	0	0	0	351

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	6	36	111	289	592	875	1070	1021	704	382	84	18	6	42	153	442	1034	1909	2979	4000	4704	5086	5170	5188
45	0	6	53	183	438	725	915	866	555	250	34	1	0	6	59	242	680	1405	2320	3186	3741	3991	4025	4026
50	0	0	19	99	296	576	760	711	417	142	10	0	0	0	19	118	414	990	1750	2461	2878	3020	3030	3030
55	0	0	4	46	176	426	605	556	285	64	0	0	0	0	4	50	226	652	1257	1813	2098	2162	2162	2162
60	0	0	0	18	85	284	451	402	171	20	0	0	0	0	0	18	103	387	838	1240	1411	1431	1431	1431
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	21	57	110	216	368	561	694	659	450	280	88	31	21	78	188	404	772	1333	2027	2686	3136	3416	3504	3535

(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

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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