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: HARLAN COUNTY LAKE, NE **COOP ID: 253595**

Climate Division: NE 8 **NWS Call Sign:** **Elevation: 2,000 Feet** **Lat: 40˚05N** **Lon: 99˚13W**

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	36.4	11.6	24.0	77	1990	11	34.5	1986	-24	1974	4	11.1	1979	1271	0	.0	.0	5.7	11.7	30.8	6.2
Feb	42.3	16.7	29.5	79	1972	29	38.4	1992	-20	1951	1	16.1	1978	995	0	.0	.0	9.5	8.3	27.1	3.6
Mar	52.3	26.3	39.3	89	1972	12	45.5	1986	-18	1960	3	32.1	1996	798	0	.0	.0	17.7	2.7	23.7	.8
Apr	63.5	37.1	50.3	97	1989	23	57.5	1981	10+	1994	7	44.1	1983	444	2	.0	.3	25.3	.2	9.6	.0
May	72.4	48.3	60.4	99	1953	25	66.3	1977	18	1967	2	54.1	1995	189	45	.0	.6	30.6	.0	.7	.0
Jun	83.4	58.4	70.9	106+	1988	22	78.2	1988	34	1983	2	64.6	1982	35	211	.7	7.5	30.0	.0	.0	.0
Jul	89.3	63.9	76.6	111	1954	14	82.1	1980	40	1971	30	71.1	1992	1	361	3.3	15.9	31.0	.0	.0	.0
Aug	87.2	61.5	74.4	108	1983	18	82.8	1983	42+	1967	27	68.0	1992	14	304	1.9	12.7	31.0	.0	.0	.0
Sep	79.0	51.1	65.1	104+	1985	1	71.1	1998	21+	1984	30	59.7	1993	90	90	.2	5.6	29.8	.0	.8	.0
Oct	67.3	38.3	52.8	96	1954	4	55.9	1998	3	1997	27	48.5	1976	379	1	.0	.5	28.6	@	7.6	.0
Nov	50.1	25.1	37.6	86	1980	7	46.3	1999	-10+	1976	29	29.0	1985	823	0	.0	.0	16.2	2.7	24.9	.4
Dec	39.4	15.7	27.6	81	1964	24	33.4	1979	-35+	1989	23	9.2	1983	1163	0	.0	.0	7.0	8.5	30.6	2.8
Ann	63.6	37.8	50.7	111	Jul 1954	14	82.8	Aug 1983	-35+	Dec 1989	23	9.2	Dec 1983	6202	1014	6.1	43.1	262.4	34.1	155.8	13.8

\+ 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

Issue Date: February 2004

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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	.38	.28	.67	1992	1	1.25	1992	.00	1986
Feb	.47	.32	1.25	1971	19	1.35	1971	.00+	1996
Mar	1.84	1.11	2.30	1987	17	8.65	1987	.00+	1997
Apr	2.06	2.01	2.05	1977	20	5.24	1984	.19+	1992
May	4.16	4.06	3.50	1985	14	10.98	1995	1.71	1980
Jun	3.15	2.53	4.31	1957	16	6.75	1972	.89	1973
Jul	3.79	3.33	7.15	1973	14	13.71	1993	.38	1983
Aug	3.15	2.68	2.60	1987	7	6.96	1988	.63	1976
Sep	2.20	1.55	3.07	1983	29	8.11	1973	.26	1984
Oct	1.41	1.07	1.97	1968	17	3.53	1984	.08+	1999
Nov	1.02	.76	1.43	1996	16	2.80	1972	.00+	1989
Dec	.40	.38	1.03	1953	3	1.15	1982	.00+	1996
Ann	24.03	23.43	7.15	Jul 1973	14	13.71	Jul 1993	.00+	Mar 1997

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	3.0	1.2	.1	.0
Feb	3.1	1.4	.2	.1
Mar	5.3	3.6	1.1	.4
Apr	7.2	4.6	1.5	.4
May	10.3	7.2	2.9	1.0
Jun	8.5	5.5	2.0	.7
Jul	7.8	5.6	2.5	1.1
Aug	7.6	5.4	2.2	1.0
Sep	5.8	4.1	1.2	.6
Oct	4.8	3.0	1.0	.4
Nov	3.9	2.4	.6	.2
Dec	3.0	1.2	.2	.0
Ann	70.3	45.2	15.5	5.9

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	.01	.04	.09	.15	.21	.28	.36	.46	.60	.84	1.07
Feb	.00	.00	.05	.12	.20	.29	.41	.56	.78	1.16	1.53
Mar	.00	.08	.33	.60	.91	1.27	1.70	2.25	3.03	4.34	5.65
Apr	.48	.67	.97	1.24	1.51	1.80	2.12	2.50	3.00	3.79	4.54
May	1.45	1.84	2.41	2.90	3.36	3.83	4.35	4.95	5.72	6.91	8.01
Jun	.96	1.26	1.71	2.09	2.46	2.85	3.27	3.77	4.42	5.43	6.36
Jul	.45	.75	1.28	1.81	2.38	3.00	3.73	4.64	5.86	7.88	9.84
Aug	.63	.92	1.38	1.80	2.23	2.69	3.21	3.83	4.66	5.98	7.23
Sep	.25	.42	.72	1.03	1.36	1.73	2.16	2.69	3.42	4.62	5.78
Oct	.15	.26	.45	.65	.86	1.10	1.38	1.73	2.20	2.99	3.75
Nov	.00	.08	.25	.41	.58	.77	.99	1.26	1.64	2.26	2.87
Dec	.00	.00	.09	.17	.24	.32	.41	.51	.66	.88	1.11
Ann	16.29	17.76	19.66	21.11	22.41	23.67	24.98	26.43	28.19	30.77	33.01

\+ 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	4.2	3.2	1	#	8.0	1985	9	14.0	1985	16	1993	21	9	1993	2.4	1.4	.6	.2	.0	7.5	1.7	.3	.0
Feb	3.2	1.8	1	#	8.0	1978	13	14.0	1978	13	1978	14	6	1993	1.7	1.4	.5	.1	.0	4.4	2.3	1.2	.4
Mar	3.2	2.8	1	#	7.0	1992	19	10.0	1971	12	1984	19	5	1984	1.3	1.0	.4	.2	.0	2.8	.8	.1	.0
Apr	.3	.0	#	0	3.0	1973	8	3.0	1973	3	1973	8	#+	1997	.3	.1	.1	.0	.0	.3	@	.0	.0
May	.0	.0	0	0	.0	0	0	.0	0	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	.2	.0	0	0	6.0	1985	29	6.0	1985	0	0	0	0	0	@	@	@	@	.0	.0	.0	.0	.0
Oct	.3	.0	#	0	7.5	1991	31	7.5	1991	14	1997	27	1	1997	.1	.1	@	@	.0	.1	.0	.0	.0
Nov	1.7	1.3	#	#	8.0	1991	1	8.0	1991	16	1991	1	3	1991	.9	.6	.4	.1	.0	1.0	.4	.1	.0
Dec	3.3	3.5	1	#	8.0	1982	28	10.0	1982	8	1982	31	3	1992	1.5	1.3	.4	@	.0	3.0	1.4	.5	.0
Ann	16.4	12.6	N/A	N/A	8.0+	Nov 1991	1	14.0+	Jan 1985	16+	Jan 1993	21	9	Jan 1993	8.2	5.9	2.4	.6	.0	19.1	6.6	2.2	.4

+ 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	5/21	5/16	5/13	5/10	5/07	5/05	5/02	4/29	4/24
32	5/11	5/06	5/03	4/30	4/28	4/25	4/22	4/19	4/14
28	4/29	4/24	4/21	4/18	4/15	4/13	4/10	4/07	4/02
24	4/16	4/12	4/09	4/07	4/04	4/02	3/30	3/28	3/24
20	4/10	4/05	4/01	3/29	3/26	3/23	3/20	3/16	3/11
16	4/05	3/29	3/24	3/20	3/16	3/12	3/08	3/03	2/24

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	9/16	9/21	9/24	9/26	9/29	10/01	10/04	10/07	10/11
32	9/22	9/27	9/30	10/03	10/06	10/09	10/12	10/15	10/20
28	9/30	10/05	10/09	10/13	10/16	10/19	10/22	10/26	10/31
24	10/09	10/14	10/19	10/22	10/26	10/29	11/02	11/06	11/12
20	10/21	10/27	10/31	11/03	11/06	11/09	11/13	11/17	11/22
16	10/29	11/04	11/08	11/11	11/15	11/18	11/21	11/25	12/01

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	156	151	147	143	140	135	131	124
32	179	173	168	164	161	157	153	149	142
28	205	197	192	187	182	178	173	168	160
24	223	216	212	207	204	200	196	191	184
20	248	240	234	229	224	220	214	208	200
16	266	258	252	247	243	238	233	227	219

***** 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	1271	995	798	444	189	35	1	14	90	379	823	1163	6202
60	1116	855	643	304	96	10	0	3	31	234	673	1008	4973
57	1023	777	551	229	57	4	0	0	13	160	583	915	4312
55	961	724	494	184	38	2	0	0	6	119	525	853	3906
50	809	595	352	95	10	0	0	0	0	47	388	705	3001
32	330	225	50	0	0	0	0	0	0	0	67	254	926

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	82	154	275	549	879	1166	1383	1314	990	645	235	114	7786
55	0	10	7	43	203	477	670	601	306	51	3	0	2371
57	0	7	2	27	161	420	608	539	253	31	0	0	2048
60	0	0	0	13	107	336	515	448	181	12	0	0	1612
65	0	0	0	2	45	211	361	304	90	1	0	0	1014
70	0	0	0	0	13	115	219	181	36	0	0	0	564

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	3	38	131	332	636	930	1139	1070	757	416	96	12	3	41	172	504	1140	2070	3209	4279	5036	5452	5548	5560
45	0	12	68	218	482	780	984	915	614	283	38	1	0	12	80	298	780	1560	2544	3459	4073	4356	4394	4395
50	0	1	31	122	337	630	829	760	466	172	12	0	0	1	32	154	491	1121	1950	2710	3176	3348	3360	3360
55	0	0	7	59	208	482	674	605	329	85	1	0	0	0	7	66	274	756	1430	2035	2364	2449	2450	2450
60	0	0	1	27	108	339	519	452	212	32	0	0	0	0	1	28	136	475	994	1446	1658	1690	1690	1690
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	19	55	115	230	388	605	752	703	480	288	87	23	19	74	189	419	807	1412	2164	2867	3347	3635	3722	3745

(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