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: COOPER LAKE PROJECT, AK **COOP ID: 502144**

Climate Division: AK 2 **NWS Call Sign:** **Elevation: 800 Feet** **Lat: 60˚24N** **Lon: 149˚40W**

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 >= 90	Max >= 70	Max >= 50	Max <= 32	Min <= 32	Min <= 0
Jan	25.5	14.7	20.1	49+	1994	30	36.8	1977	-25	1989	28	4.5	1971	1392	0	.0	.0	.0	16.2	27.6	6.7
Feb	27.6	14.5	21.1	51	1982	3	35.0	1977	-26	1999	4	6.8	1999	1232	0	.0	.0	.1	13.9	25.6	5.9
Mar	34.8	18.6	26.7	51	1984	10	35.7	1984	-25+	1972	10	14.1	1972	1188	0	.0	.0	.3	8.6	27.7	3.5
Apr	44.3	27.9	36.1	64	1976	30	40.4	1993	-6	1985	2	26.0	1972	867	0	.0	.0	4.5	.9	22.7	.2
May	53.9	35.6	44.8	75	1964	31	48.3	1981	15	1964	10	38.9	1971	627	0	.0	.6	23.3	.0	7.4	.0
Jun	61.8	42.3	52.1	84+	1997	27	55.0	1993	28	1965	5	48.7	1972	390	0	.0	4.6	29.6	.0	.1	.0
Jul	65.4	47.7	56.6	83+	1999	5	61.0	1993	34	1959	26	54.4	1971	261	0	.0	8.1	31.0	.0	.1	.0
Aug	63.5	46.6	55.1	83	1968	6	58.6	1978	31	1973	27	51.9	1998	307	0	.0	4.3	31.0	.0	@	.0
Sep	53.4	40.3	46.9	70	1974	2	50.6+	1979	20	1992	23	39.3	1992	545	0	.0	@	24.8	.0	3.1	.0
Oct	41.2	30.8	36.0	60	1988	5	41.7	1979	5+	1997	27	26.2	1996	898	0	.0	.0	3.2	2.7	17.4	.0
Nov	32.5	22.6	27.6	52+	1998	4	35.1	2000	-7	1990	30	18.0	1990	1124	0	.0	.0	.3	11.7	25.5	.4
Dec	28.6	18.5	23.6	55	1985	26	34.5	1985	-18	1961	29	5.2	1980	1284	0	.0	.0	.1	16.0	28.5	2.3
Ann	44.4	30.0	37.2	84+	Jun 1997	27	61.0	Jul 1993	-26	Feb 1999	4	4.5	Jan 1971	10115	0	.0	17.6	148.2	70.0	185.7	19.0

+ 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: 1958-2001

(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	2.84	1.73	2.68	2001	15	10.61	1981	.17	1982
Feb	2.25	1.78	2.29	1977	19	7.13	1978	.04	1989
Mar	1.35	.96	1.59	1995	16	6.53	1981	.00	1989
Apr	1.26	.80	2.00	1988	12	5.17	1998	.04	1981
May	.92	.86	1.12	1977	18	2.24	1998	.02	1992
Jun	.90	.88	1.57	1969	9	1.63	1980	.11	1986
Jul	1.37	1.12	.91	1995	24	3.60	1995	.32	1977
Aug	2.98	2.59	3.49	1966	21	7.04	1993	.74	1994
Sep	5.70	5.13	3.20	1995	20	14.82	1976	1.66	1992
Oct	4.92	4.05	3.02	1969	11	12.43	1987	1.14	1997
Nov	3.29	2.02	2.31	1981	10	14.05	1976	.21+	1985
Dec	3.84	3.51	3.94	1992	2	8.89	1991	.54	1977
Ann	31.62	31.74	3.94	Dec 1992	2	14.82	Sep 1976	.00	Mar 1989

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	9.9	5.8	1.7	.6
Feb	8.7	5.1	1.2	.3
Mar	7.0	3.3	.6	.2
Apr	7.0	3.3	.5	.0
May	7.6	2.4	.4	.1
Jun	8.0	2.9	.3	.0
Jul	10.6	4.7	.3	.0
Aug	11.9	7.1	1.7	.4
Sep	16.4	10.4	3.9	1.6
Oct	15.1	9.4	3.3	.9
Nov	10.9	6.7	1.9	.7
Dec	12.5	7.9	2.3	.9
Ann	125.6	69.0	18.1	5.7

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	.20	.38	.75	1.14	1.57	2.08	2.68	3.45	4.52	6.32	8.10
Feb	.20	.36	.66	.97	1.31	1.70	2.16	2.74	3.53	4.86	6.17
Mar	.03	.10	.27	.46	.67	.93	1.23	1.63	2.19	3.14	4.09
Apr	.07	.14	.29	.46	.66	.89	1.17	1.52	2.03	2.88	3.74
May	.05	.10	.21	.33	.47	.64	.84	1.10	1.47	2.10	2.72
Jun	.21	.30	.43	.55	.67	.79	.93	1.09	1.31	1.66	1.98
Jul	.38	.51	.70	.88	1.04	1.22	1.42	1.65	1.95	2.42	2.86
Aug	.84	1.12	1.55	1.92	2.28	2.66	3.08	3.58	4.23	5.24	6.18
Sep	1.77	2.32	3.12	3.81	4.48	5.17	5.94	6.83	7.98	9.78	11.44
Oct	1.27	1.74	2.45	3.08	3.70	4.35	5.08	5.94	7.06	8.84	10.49
Nov	.19	.37	.77	1.21	1.72	2.32	3.04	3.97	5.27	7.49	9.70
Dec	.66	1.00	1.56	2.09	2.63	3.21	3.88	4.69	5.77	7.51	9.18
Ann	18.75	21.07	24.13	26.52	28.68	30.81	33.04	35.54	38.63	43.19	47.21

\+ 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: 1958-2001
(3) Derived from 1971-2000 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	14.3	11.6	9	8	16.0	2000	27	79.1	2000	52	2000	31	29	1992	5.3	4.4	1.8	.8	.2	26.2	23.9	18.6	11.6
Feb	14.2	11.5	11	10	17.0	1984	4	57.0	1984	54	2000	1	28	1999	4.9	4.0	2.0	.8	.2	23.7	20.8	18.7	13.9
Mar	12.3	10.0	13	14	14.5	1994	2	56.3	1985	43	1992	1	36	1999	4.7	3.9	1.6	.7	.1	27.9	25.7	21.6	17.8
Apr	3.7	2.0	6	3	8.0	1998	29	15.0	1971	36	1999	5	24	1999	1.9	1.5	.4	.1	.0	15.3	13.4	11.9	9.2
May	#	.0	#	0	#	1971	21	.0	0	10	1972	1	1+	1985	.0	.0	.0	.0	.0	.7	.5	.3	@
Jun	#	.0	0	0	#	1971	1	.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	.1	.0	0	0	2.0	1981	27	2.0	1981	0	0	0	0	0	@	@	.0	.0	.0	.0	.0	.0	.0
Oct	5.3	.6	#	0	12.0	1992	26	26.5	1981	18	1981	30	4	1996	1.6	1.3	.6	.4	.1	3.5	1.9	1.4	.3
Nov	12.7	11.5	2	2	17.0	1987	13	52.0	1979	26	1979	27	7+	1981	4.2	3.5	1.6	.9	.2	13.5	8.8	5.7	1.8
Dec	18.6	16.6	5	4	22.5	1998	29	61.5	1979	45	1979	28	18	1979	6.6	5.4	2.4	1.1	.1	20.6	17.5	14.3	6.4
Ann	81.2	63.8	N/A	N/A	22.5	Dec 1998	29	79.1	Jan 2000	54	Feb 2000	1	36	Mar 1999	29.2	24.0	10.4	4.8	.9	131.4	112.5	92.5	61.0

+ 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	6/26	6/21	6/16	6/13	6/10	6/06	6/03	5/30	5/24
32	6/10	6/03	5/29	5/25	5/21	5/17	5/12	5/07	4/30
28	5/18	5/13	5/09	5/06	5/03	4/29	4/26	4/22	4/17
24	5/09	5/03	4/28	4/24	4/20	4/16	4/12	4/07	3/31
20	5/03	4/25	4/20	4/15	4/11	4/06	4/02	3/27	3/19
16	4/21	4/14	4/09	4/05	4/02	3/29	3/25	3/20	3/14

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	8/26	8/31	9/03	9/06	9/09	9/12	9/16	9/19	9/24
32	9/07	9/12	9/16	9/20	9/23	9/26	9/29	10/03	10/09
28	9/19	9/25	9/29	10/03	10/06	10/09	10/13	10/17	10/23
24	9/29	10/05	10/09	10/13	10/17	10/20	10/24	10/28	11/03
20	10/08	10/15	10/20	10/24	10/28	11/01	11/05	11/10	11/17
16	10/20	10/26	10/30	11/03	11/06	11/10	11/14	11/18	11/24

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	118	109	102	96	91	86	80	74	65
32	152	142	136	130	124	119	113	107	97
28	183	174	167	161	156	150	145	138	128
24	206	197	190	185	179	174	168	161	152
20	228	218	211	205	200	194	188	181	171
16	249	238	231	224	218	212	205	198	187

***** 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	1392	1232	1188	867	627	390	261	307	545	898	1124	1284	10115
60	1243	1092	1033	717	472	241	117	166	395	743	974	1129	8322
57	1159	1008	940	627	379	158	54	98	307	650	884	1036	7300
55	1100	954	878	567	319	110	26	64	251	588	824	976	6657
50	955	825	731	419	179	31	1	14	131	436	674	829	5225
32	502	396	272	56	1	0	0	0	0	59	222	357	1865

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	132	89	107	179	397	600	762	716	446	184	88	96	3796
55	18	3	0	0	1	20	75	67	7	0	0	1	192
57	15	0	0	0	0	8	41	39	3	0	0	0	106
60	6	0	0	0	0	1	11	13	0	0	0	0	31
65	0	0	0	0	0	0	0	0	0	0	0	0	0
70	0	0	0	0	0	0	0	0	0	0	0	0	0

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	0	0	0	14	156	372	518	481	228	35	0	0	0	0	0	14	170	542	1060	1541	1769	1804	1804	1804
45	0	0	0	0	49	223	363	326	107	2	0	0	0	0	0	0	49	272	635	961	1068	1070	1070	1070
50	0	0	0	0	8	93	209	172	23	0	0	0	0	0	0	0	8	101	310	482	505	505	505	505
55	0	0	0	0	0	25	79	56	0	0	0	0	0	0	0	0	0	25	104	160	160	160	160	160
60	0	0	0	0	0	0	16	7	0	0	0	0	0	0	0	0	0	0	16	23	23	23	23	23
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	0	0	7	80	186	255	230	79	1	0	0	0	0	0	7	87	273	528	758	837	838	838	838

(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 were calculated from a serially complete daily data set. A serial dataset was not available for precipitation,
To ensure that a station's data was adequate to estimate these statistics, the following criteria were used:
1. A station must have 80% of its data for the 1971-2000 time period.
2. Only months with at least 21 days are used.
3. There must be a least 21 months (meeting criteria 2.) in the sample.

g. Snowfall and snow depth statistics were derived daily values quality controlled to be consistent with 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 differences 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. Other inconsistencies may appear from comparing statistically modeled values such as degree days to observed temperatures.

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. 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