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: TONSINA, AK **COOP ID: 509385**

Climate Division: AK 4 **NWS Call Sign:** **Elevation: 1,575 Feet** **Lat: 61˚39N** **Lon: 145˚10W**

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	3.4	-12.7	-4.7	45+	1971	6	17.3	1981	-60	1975	5	-26.4	1982	2161	0	.0	.0	.0	29.2	31.0	23.2
Feb	14.0	-8.5	2.8	48	1968	10	19.0	1977	-53+	1968	5	-16.9	1979	1743	0	.0	.0	.0	23.7	28.3	19.0
Mar	28.9	.1	14.5	54+	1965	26	24.0	1981	-46	1964	15	2.8	1972	1566	0	.0	.0	.2	16.4	30.8	15.4
Apr	43.2	17.4	30.3	64	1976	30	35.7	1994	-24+	1986	10	17.7	1972	1040	0	.0	.0	5.9	1.9	29.3	2.6
May	55.7	29.6	42.7	79	1993	16	47.1	1981	6	1964	9	37.7	1971	693	0	.0	1.9	25.8	.0	22.3	.0
Jun	65.8	38.2	52.0	90	1969	15	54.8	1999	20	1975	11	47.5	1985	390	0	.0	10.1	29.7	.0	5.5	.0
Jul	69.3	42.5	55.9	87+	1993	15	59.7	1993	26	1975	23	51.2	1975	281	0	.0	15.4	30.9	.0	.8	.0
Aug	65.3	38.1	51.7	88	1976	2	57.0	1994	17	1975	29	46.8	1975	412	0	.0	7.8	30.7	.0	7.4	.0
Sep	53.7	29.4	41.6	79	1974	1	47.3	1995	-1	1992	23	32.4	1992	704	0	.0	.3	22.5	.4	19.6	@
Oct	35.2	17.2	26.2	62	1969	7	32.9	1987	-23+	1996	28	14.2	1996	1203	0	.0	.0	1.6	11.3	29.4	3.4
Nov	14.6	-1.7	6.5	51	1964	18	21.1	1979	-42	1989	12	-6.6	1985	1757	0	.0	.0	.0	27.1	29.8	17.0
Dec	6.5	-9.1	-1.3	50	1999	21	14.5	1985	-61	1964	14	-27.8	1980	2057	0	.0	.0	@	29.2	30.9	22.4
Ann	38.0	15.0	26.5	90	Jun 1969	15	59.7	Jul 1993	-61	Dec 1964	14	-27.8	Dec 1980	14007	0	.0	35.5	147.3	139.2	265.1	103.0

\+ 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: 1963-2001

(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	.86	.79	2.02	1981	15	2.97	1981	.00	1982
Feb	.84	.53	1.10	1968	27	3.31	1996	.11	1972
Mar	.45	.33	1.24	1995	16	1.88	1995	.00	2000
Apr	.28	.15	1.31	1976	26	1.31	1976	.00+	1993
May	.47	.30	.77	1977	4	1.58	1977	.00+	1991
Jun	1.24	1.16	1.00+	1973	15	3.44	1973	.28	1994
Jul	1.75	1.60	1.41	1974	11	3.77	1983	.27	1994
Aug	1.44	1.38	1.11	1997	22	2.90	1995	.32	1978
Sep	1.40	1.17	1.33	1985	25	4.34	2000	.13	1984
Oct	1.30	1.23	2.30	1965	10	2.90	1987	.16	1973
Nov	1.17	1.03	1.60	1968	29	4.80	1976	.10	1973
Dec	1.27	1.27	1.28	1985	24	3.76	1999	.00	1972
Ann	12.47	12.34	2.30	Oct 1965	10	4.80	Nov 1976	.00+	Mar 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	6.1	3.2	.2	.0
Feb	5.2	2.7	.3	.0
Mar	3.3	1.5	.1	.0
Apr	2.1	.7	.1	.0
May	3.4	1.4	.2	.0
Jun	8.4	4.1	.5	.0
Jul	11.0	5.4	.8	.1
Aug	10.5	4.8	.4	.1
Sep	9.4	4.2	.5	.1
Oct	8.8	3.8	.4	.0
Nov	7.4	3.4	.5	.1
Dec	7.3	3.9	.5	.1
Ann	82.9	39.1	4.5	.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	.05	.14	.27	.40	.53	.68	.85	1.06	1.34	1.81	2.27
Feb	.09	.16	.28	.39	.52	.66	.82	1.03	1.30	1.76	2.21
Mar	.00	.02	.06	.11	.18	.27	.38	.53	.75	1.14	1.54
Apr	.00	.00	.03	.07	.12	.17	.25	.34	.47	.70	.93
May	.00	.02	.08	.15	.23	.32	.43	.57	.77	1.11	1.45
Jun	.35	.47	.65	.80	.95	1.11	1.28	1.49	1.75	2.17	2.56
Jul	.43	.60	.85	1.08	1.30	1.54	1.81	2.12	2.53	3.18	3.79
Aug	.47	.61	.81	.98	1.15	1.32	1.50	1.72	2.00	2.43	2.84
Sep	.25	.38	.58	.77	.97	1.18	1.42	1.71	2.09	2.71	3.30
Oct	.36	.49	.67	.84	1.00	1.16	1.35	1.57	1.85	2.30	2.71
Nov	.17	.27	.44	.60	.77	.95	1.16	1.42	1.77	2.34	2.89
Dec	.14	.29	.50	.69	.87	1.07	1.29	1.56	1.92	2.49	3.03
Ann	8.71	9.43	10.36	11.06	11.69	12.30	12.93	13.62	14.47	15.69	16.76

+ 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: 1963-2001
(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	9.8	8.9	18	18	11.0	1978	9	24.0	1984	34	1972	16	31	1972	5.6	4.0	.8	.2	.1	30.9	30.9	29.9	27.6
Feb	9.6	7.4	21	22	13.0	1984	4	39.7	1996	38	1992	18	34+	1992	4.7	3.3	1.1	.4	.1	28.1	28.1	27.9	26.8
Mar	5.7	3.5	22	23	15.3	1995	16	21.7	1995	42	1995	17	36+	1992	3.0	2.1	.6	.2	@	30.9	30.9	30.9	30.5
Apr	2.8	.9	17	16	24.0	1976	26	24.0	1976	37	1992	15	33	1992	1.4	.8	.2	.1	@	27.9	27.5	27.1	24.1
May	.2	.0	1	0	3.0	1989	16	3.0	1989	23	1972	1	9	1992	.1	.1	@	.0	.0	4.1	3.5	2.8	1.4
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	.6	.0	#	0	3.5	1993	26	7.5	1992	4	1993	26	1	1992	.3	.3	.1	.0	.0	.9	.1	.0	.0
Oct	9.5	9.5	2	2	10.0+	1980	10	23.8	1988	12+	1991	26	7+	1991	4.0	3.2	1.3	.4	.1	15.4	10.5	5.7	1.4
Nov	12.8	11.6	8	8	16.2	1999	1	28.2	1993	22	1991	28	15	1999	6.7	4.6	1.4	.6	@	29.1	27.6	24.7	10.4
Dec	13.5	13.1	14	14	11.0	1978	3	27.7	1997	32	1979	20	28	1991	6.8	5.2	1.5	.5	.1	30.8	29.9	29.2	24.0
Ann	64.5	54.9	N/A	N/A	24.0	Apr 1976	26	39.7	Feb 1996	42	Mar 1995	17	36+	Mar 1992	32.6	23.6	7.0	2.4	.4	198.1	189.0	178.2	146.2

+ 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	8/05	7/31	7/28	7/25	7/22	7/19	7/16	7/12	7/07
32	7/24	7/17	7/12	7/07	7/03	6/29	6/25	6/20	6/13
28	6/24	6/18	6/14	6/10	6/06	6/02	5/30	5/25	5/19
24	6/03	5/28	5/24	5/20	5/17	5/13	5/09	5/05	4/29
20	5/19	5/13	5/08	5/04	5/01	4/27	4/23	4/18	4/12
16	5/04	4/29	4/26	4/23	4/20	4/18	4/15	4/11	4/07

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	7/31	8/02	8/04	8/05	8/07	8/08	8/10	8/12	8/14
32	8/01	8/05	8/07	8/10	8/12	8/14	8/16	8/19	8/23
28	8/12	8/17	8/20	8/23	8/25	8/28	8/30	9/03	9/07
24	8/27	9/01	9/05	9/08	9/11	9/14	9/18	9/21	9/27
20	9/06	9/11	9/15	9/18	9/22	9/25	9/28	10/02	10/07
16	9/20	9/25	9/28	10/01	10/04	10/07	10/10	10/13	10/18

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	34	28	23	19	15	12	8	3	0
32	65	56	50	44	39	33	28	21	12
28	102	94	89	84	79	75	70	65	57
24	141	133	127	122	117	112	107	101	93
20	172	162	155	149	143	138	131	124	114
16	187	180	175	170	166	162	158	152	145

***** 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)

Base	Heating Degree Days (1)												
Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	2161	1743	1566	1040	693	390	281	412	704	1203	1757	2057	14007
60	2006	1603	1411	890	538	243	140	268	554	1048	1607	1902	12210
57	1913	1519	1318	800	445	162	77	191	465	955	1517	1809	11171
55	1851	1463	1256	740	383	116	46	147	406	893	1457	1747	10505
50	1696	1323	1101	593	237	36	7	64	268	738	1307	1592	8962
32	1174	840	565	165	7	0	0	0	12	250	788	1051	4852

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	35	21	22	115	337	600	742	611	298	70	21	18	2890
55	0	0	0	0	0	26	75	45	3	0	0	0	149
57	0	0	0	0	0	12	44	26	1	0	0	0	83
60	0	0	0	0	0	3	14	10	0	0	0	0	27
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	5	125	377	510	377	108	2	0	0	0	0	0	5	130	507	1017	1394	1502	1504	1504	1504
45	0	0	0	0	41	230	355	229	32	0	0	0	0	0	0	0	41	271	626	855	887	887	887	887
50	0	0	0	0	8	105	204	104	2	0	0	0	0	0	0	0	8	113	317	421	423	423	423	423
55	0	0	0	0	0	34	83	36	0	0	0	0	0	0	0	0	0	34	117	153	153	153	153	153
60	0	0	0	0	0	6	17	4	0	0	0	0	0	0	0	0	0	6	23	27	27	27	27	27
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	0	0	10	115	252	314	248	86	0	0	0	0	0	0	10	125	377	691	939	1025	1025	1025	1025

(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