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: KENAI MUNICIPAL AP, AK **COOP ID: 504546**

Climate Division: AK 5 **NWS Call Sign: ENA** **Elevation: 86 Feet** **Lat: 60˚35N** **Lon: 151˚14W**

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	21.3	5.5	13.4	47	1960	4	31.7	1981	-47	1975	4	-4.6	1973	1601	0	.0	.0	.0	23.8	30.2	12.0
Feb	25.8	7.3	16.6	47+	1981	1	30.6	1997	-44	1956	29	.1	1990	1357	0	.0	.0	.0	19.5	27.4	10.5
Mar	32.8	14.1	23.5	52	1957	31	35.9	1981	-41+	1971	8	8.5	1971	1287	0	.0	.0	@	13.5	29.1	6.1
Apr	42.6	26.5	34.6	63	1958	28	40.1	1980	-17	1985	2	23.7	1972	914	0	.0	.0	4.7	2.5	23.6	.6
May	52.8	35.9	44.4	82	1969	24	49.2	1983	14	1964	10	40.7	1975	641	0	.0	.5	21.5	.0	8.7	.0
Jun	58.6	43.0	50.8	93	1969	14	55.3	1983	28	1975	11	47.2	1975	425	0	.0	1.4	28.7	.0	.5	.0
Jul	62.1	47.8	55.0	85	1972	7	58.9	1972	32	1954	3	52.1	1974	311	0	.0	2.9	31.0	.0	.0	.0
Aug	61.9	46.0	54.0	86	1977	21	57.5	1972	24	1984	29	51.0	1973	342	0	.0	2.1	31.0	.0	.6	.0
Sep	54.9	38.9	46.9	70+	1963	6	52.1	1995	16+	1992	26	38.9	1992	543	0	.0	.0	25.2	.0	5.9	.0
Oct	41.4	27.2	34.3	62	1954	1	41.4	1979	-11	1966	26	22.3	1996	953	0	.0	.0	3.6	3.8	21.2	.4
Nov	29.2	14.4	21.8	53	1962	3	32.2	1979	-27	1994	30	8.2	1977	1297	0	.0	.0	.0	17.7	27.8	5.8
Dec	23.8	8.8	16.3	46+	1982	29	28.2	1985	-40+	1961	28	-.9	1980	1510	0	.0	.0	.0	23.7	30.2	9.9
Ann	42.3	26.3	34.3	93	Jun 1969	14	58.9	Jul 1972	-47	Jan 1975	4	-4.6	Jan 1973	11181	0	.0	6.9	145.7	104.5	205.2	45.3

\+ 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: 1949-2001

(3) Derived from 1971-2000 serially complete daily data

Issue Date: May 2005

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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	1.07	.91	1.32	1990	16	3.03	1980	.06	1971
Feb	.91	.85	1.18	1981	6	2.22	1996	.21	1979
Mar	.81	.56	1.65	1990	1	2.71	1990	.03	1998
Apr	.64	.48	1.05	1971	16	1.76	1998	.00	1997
May	.95	.77	.88	1995	24	2.44	1989	.07	1991
Jun	1.09	1.01	.97	1980	20	2.42	1980	.09	1986
Jul	1.75	1.83	1.34	1954	31	4.22	1995	.35	1988
Aug	2.62	2.73	1.67	1957	27	4.90	1999	.54	1987
Sep	3.31	2.92	1.68	1951	8	6.19	1990	1.49	1984
Oct	2.66	2.35	4.28	1986	10	7.36	1986	1.06+	1998
Nov	1.69	1.36	1.45	1979	6	6.95	1979	.06	1975
Dec	1.45	1.13	1.94	1963	9	3.96	1998	.19	1973
Ann	18.95	18.63	4.28	Oct 1986	10	7.36	Oct 1986	.00	Apr 1997

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	9.1	3.3	.3	.0
Feb	7.7	2.6	.2	.0
Mar	7.4	2.7	.2	.0
Apr	6.2	1.9	.2	.0
May	8.7	3.0	.3	.0
Jun	9.3	3.2	.4	.0
Jul	11.8	5.5	.6	.0
Aug	13.1	7.2	1.3	.2
Sep	14.9	8.9	1.9	.2
Oct	12.6	6.8	1.4	.2
Nov	10.0	4.9	.6	.1
Dec	11.4	4.8	.3	.1
Ann	122.2	54.8	7.7	.8

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	.13	.21	.36	.51	.67	.85	1.05	1.31	1.66	2.23	2.78
Feb	.18	.27	.40	.52	.65	.78	.93	1.11	1.34	1.73	2.09
Mar	.06	.11	.21	.32	.45	.59	.76	.98	1.28	1.79	2.29
Apr	.02	.08	.17	.26	.36	.48	.61	.78	1.01	1.40	1.78
May	.12	.19	.33	.46	.60	.75	.93	1.16	1.46	1.96	2.44
Jun	.25	.35	.51	.65	.80	.95	1.12	1.33	1.60	2.03	2.43
Jul	.44	.60	.85	1.08	1.30	1.54	1.80	2.11	2.52	3.17	3.77
Aug	.77	1.02	1.39	1.71	2.03	2.35	2.72	3.14	3.69	4.55	5.35
Sep	1.42	1.72	2.14	2.48	2.80	3.12	3.47	3.86	4.36	5.13	5.82
Oct	.96	1.21	1.57	1.88	2.16	2.46	2.78	3.15	3.63	4.36	5.03
Nov	.15	.27	.49	.73	.98	1.28	1.62	2.05	2.65	3.65	4.62
Dec	.27	.40	.61	.81	1.01	1.23	1.47	1.77	2.17	2.81	3.42
Ann	13.86	14.86	16.12	17.08	17.92	18.74	19.58	20.50	21.62	23.24	24.64

\+ 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: 1949-2001
(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	7.6	6.8	10	9	6.5	1987	4	17.2	1992	35	1995	31	29	1995	5.8	2.7	.7	.2	.0	25.8	22.6	19.7	12.3
Feb	6.1	4.2	10	10	8.8	1972	1	22.9	1992	35	1992	29	29	1992	3.9	1.8	.6	.4	.0	22.5	19.2	17.7	12.4
Mar	6.5	5.3	11	11	9.1	1985	6	23.6	1985	37	1990	1	32	1995	4.4	2.0	.6	.3	.0	22.8	20.3	19.2	14.3
Apr	2.8	1.4	3	2	10.5	1971	16	12.4	1971	27	1995	1	14+	1999	2.4	.9	.2	.1	@	13.4	10.3	8.2	4.8
May	.2	.0	#	0	2.0	1985	11	3.0	1985	4	1972	2	0	0	.2	.1	.0	.0	.0	.3	.1	.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
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	4.0	1992	30	4.0	1992	0	0	0	0	0	@	@	@	.0	.0	.0	.0	.0	.0
Oct	5.6	3.2	#	0	10.8	1996	12	24.3	1996	15	1996	14	6	1996	2.5	1.7	.8	.3	@	3.5	2.1	1.3	.4
Nov	8.2	9.1	2	1	9.0	1990	25	19.4	1988	17	1976	4	8	1997	5.3	2.8	1.1	.3	.0	14.7	8.2	4.6	.7
Dec	10.9	8.4	8	5	11.0	1998	4	34.2	1998	33	1994	12	29	1994	7.3	3.9	.9	.3	.1	22.0	19.1	15.2	7.8
Ann	48.0	38.4	N/A	N/A	11.0	Dec 1998	4	34.2	Dec 1998	37	Mar 1990	1	32	Mar 1995	31.8	15.9	4.9	1.9	.1	125.0	101.9	85.9	52.7

+ 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	7/19	7/10	7/03	6/28	6/23	6/17	6/12	6/05	5/27
32	6/10	6/05	6/01	5/29	5/26	5/23	5/20	5/16	5/11
28	5/24	5/18	5/13	5/09	5/05	5/02	4/28	4/23	4/16
24	5/03	4/28	4/25	4/23	4/20	4/18	4/15	4/12	4/08
20	4/27	4/22	4/17	4/14	4/11	4/07	4/04	3/31	3/25
16	4/22	4/16	4/12	4/08	4/04	4/01	3/28	3/24	3/18

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	8/08	8/14	8/18	8/22	8/25	8/29	9/02	9/06	9/12
32	8/23	8/29	9/02	9/06	9/09	9/13	9/16	9/20	9/26
28	9/06	9/12	9/16	9/19	9/22	9/26	9/29	10/03	10/09
24	9/16	9/20	9/24	9/27	9/29	10/02	10/05	10/08	10/13
20	9/28	10/04	10/07	10/11	10/14	10/17	10/20	10/24	10/30
16	10/09	10/13	10/17	10/20	10/22	10/25	10/28	10/31	11/05

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	97	85	77	70	63	56	49	41	29
32	132	123	116	110	105	100	94	88	78
28	167	158	151	145	139	134	128	121	111
24	183	175	170	165	161	157	153	147	140
20	206	199	194	190	186	182	177	172	165
16	223	215	210	205	200	196	191	185	177

***** 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

Complete documentation available from:
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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	1601	1357	1287	914	641	425	311	342	543	953	1297	1510	11181
60	1446	1217	1132	764	486	276	166	192	393	798	1147	1355	9372
57	1361	1133	1039	674	393	191	96	114	307	705	1057	1262	8332
55	1304	1077	977	614	331	140	61	75	252	643	997	1200	7671
50	1159	948	834	476	189	47	10	15	135	496	852	1047	6208
32	675	500	367	108	3	0	0	0	1	107	384	545	2690

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	97	67	102	184	385	565	712	681	448	177	78	58	3554
55	13	0	0	0	0	15	60	43	8	0	0	0	139
57	9	0	0	0	0	6	33	21	3	0	0	0	72
60	0	0	0	0	0	1	10	5	0	0	0	0	16
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	154	331	473	439	221	28	0	0	0	0	0	14	168	499	972	1411	1632	1660	1660	1660
45	0	0	0	0	48	185	318	284	99	2	0	0	0	0	0	0	48	233	551	835	934	936	936	936
50	0	0	0	0	6	64	165	136	20	0	0	0	0	0	0	0	6	70	235	371	391	391	391	391
55	0	0	0	0	0	7	43	34	0	0	0	0	0	0	0	0	0	7	50	84	84	84	84	84
60	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	0	0	6	64	140	203	200	85	3	0	0	0	0	0	6	70	210	413	613	698	701	701	701

(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:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

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