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: MATANUSKA AES, AK **COOP ID: 505733**

Climate Division: AK 5 **NWS Call Sign: PALA** **Elevation: 172 Feet** **Lat: 61˚33N** **Lon: 149˚15W**

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	22.2	5.6	13.9	51+	1961	21	34.1	1981	-40+	1989	28	-1.5	1989	1584	0	.0	.0	.1	21.6	29.9	11.8
Feb	27.0	9.3	18.2	56	1943	24	33.0	1977	-41+	1999	5	1.3	1990	1311	0	.0	.0	.1	17.1	27.0	8.8
Mar	35.6	17.2	26.4	65	1934	7	36.9	1981	-30	1956	2	14.8	1972	1197	0	.0	.0	.8	9.3	29.1	3.5
Apr	46.7	28.2	37.5	68	1976	30	42.3	1993	-16	1944	2	27.8	1972	827	0	.0	.0	11.2	1.3	22.3	.2
May	57.9	37.2	47.6	83	1947	29	52.6	1981	8	1945	3	42.7	1971	541	0	.0	1.6	28.5	.0	7.5	.0
Jun	64.7	45.2	55.0	91	1936	17	57.6	1997	27+	1947	7	51.5	1972	301	0	.0	7.5	29.8	.0	.0	.0
Jul	67.2	49.3	58.3	85+	1972	6	61.2	1997	31	1934	10	56.2	1982	209	0	.0	10.1	31.0	.0	.0	.0
Aug	65.1	46.9	56.0	87	1968	6	59.2	1977	27	1947	30	53.3	1973	280	0	.0	6.2	30.9	.0	.3	.0
Sep	56.2	38.9	47.6	75+	1957	5	52.6	1995	15+	1992	27	38.5	1992	523	0	.0	.2	25.8	.0	5.5	.0
Oct	41.6	25.8	33.7	69	1923	13	40.6	1979	-11	1982	31	22.1	1996	971	0	.0	.0	5.4	4.6	23.3	.8
Nov	28.4	12.4	20.4	66	1964	6	33.0	1979	-26	1990	29	7.9	1990	1338	0	.0	.0	.4	18.9	28.7	6.5
Dec	23.9	7.7	15.8	55	1934	8	29.1	1985	-37	1964	11	-3.2	1980	1525	0	.0	.0	.3	21.5	30.3	10.5
Ann	44.7	27.0	35.9	91	Jun 1936	17	61.2	Jul 1997	-41+	Feb 1999	5	-3.2	Dec 1980	10607	0	.0	25.6	164.3	94.3	203.9	42.1

\+ 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: 1917-2001

(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	.73	.70	1.36	1961	21	2.31	2000	.00+	1998
Feb	.70	.68	1.30	1992	28	2.11	1996	.04	1973
Mar	.48	.41	.80	1931	24	1.56	1979	.00+	1998
Apr	.43	.27	1.10	1937	17	1.79	1975	.01	1987
May	.74	.67	1.13	1997	31	2.32	1997	.10	1994
Jun	1.37	1.43	1.61	1949	21	2.61	1980	.30	1976
Jul	2.17	1.95	1.83	1986	21	5.39	1979	.20	1973
Aug	2.33	2.01	2.05	1959	24	5.03	1997	.68	1976
Sep	2.49	2.24	2.48	1925	9	4.93	1972	.77	1996
Oct	1.46	1.61	1.32	1921	10	2.29	1972	.19	2000
Nov	.94	.92	1.80	1964	19	3.54	1979	.00	1975
Dec	1.21	1.19	1.50	1997	10	3.23	1990	.00	1995
Ann	15.05	14.31	2.48	Sep 1925	9	5.39	Jul 1979	.00+	Mar 1998

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	5.7	2.3	.2	.1
Feb	5.0	2.3	.2	.0
Mar	4.8	1.7	.1	.0
Apr	4.0	1.6	.1	.0
May	6.2	2.2	.2	.0
Jun	10.0	4.4	.3	.0
Jul	12.9	6.7	.8	.0
Aug	13.6	7.0	1.0	.1
Sep	13.4	6.8	1.3	.1
Oct	9.3	4.6	.5	.0
Nov	6.8	3.3	.3	.0
Dec	8.8	3.8	.4	.1
Ann	100.5	46.7	5.4	.4

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	.06	.18	.30	.42	.56	.72	.91	1.18	1.63	2.06
Feb	.06	.11	.20	.30	.41	.53	.67	.85	1.10	1.52	1.93
Mar	.00	.00	.09	.17	.25	.35	.46	.59	.78	1.09	1.40
Apr	.01	.03	.07	.12	.18	.26	.37	.51	.71	1.06	1.42
May	.10	.16	.27	.37	.48	.60	.74	.91	1.13	1.51	1.87
Jun	.44	.57	.76	.92	1.08	1.24	1.42	1.63	1.90	2.32	2.71
Jul	.47	.67	.99	1.28	1.56	1.87	2.22	2.63	3.18	4.05	4.87
Aug	.62	.84	1.17	1.47	1.76	2.07	2.41	2.81	3.34	4.17	4.94
Sep	.85	1.09	1.43	1.72	2.00	2.28	2.59	2.96	3.43	4.15	4.81
Oct	.39	.53	.74	.93	1.11	1.30	1.51	1.76	2.09	2.60	3.08
Nov	.02	.09	.21	.34	.50	.67	.88	1.15	1.52	2.15	2.78
Dec	.10	.23	.43	.61	.79	.99	1.22	1.49	1.86	2.47	3.05
Ann	10.86	11.67	12.72	13.50	14.20	14.88	15.58	16.35	17.28	18.63	19.79

\+ 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: 1917-2001
(3) Derived from 1971-2000 daily data

Complete documentation available from:
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Climate Division: AK 5 **NWS Call Sign: PALA** **Elevation: 172 Feet** **Lat: 61°33N** **Lon: 149°15W**

Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	7.9	5.4	3	1
Feb	8.2	5.5	3	2
Mar	6.0	5.0	2	2
Apr	2.0	1.1	#	0
May	.1	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	#	.0	#	0
Oct	5.1	2.8	#	0
Nov	7.4	5.7	1	1
Dec	12.0	10.9	4	3
Ann	48.7	36.4	N/A	N/A

Extremes (2)

Month	Highest Daily Snow Fall	Year	Day	Highest Monthly Snow Fall	Year	Highest Daily Snow Depth	Year	Day	Highest Monthly Mean Snow Depth	Year
Jan	9.5	2000	25	32.6	2000	22	1991	11	14	1991
Feb	14.3	1992	28	32.2	1996	22	2000	1	13	1996
Mar	6.8	1995	16	20.0	1995	21	1992	7	11	1995
Apr	5.3	1977	11	12.6	1977	7	1972	4	4	1972
May	2.0	1972	21	2.0	1972	2	1972	21	0	0
Jun	.0	0	0	.0	0	0	0	0	0	0
Jul	.0	0	0	.0	0	0	0	0	0	0
Aug	.0	0	0	.0	0	0	0	0	0	0
Sep	1.0	1983	24	1.0	1983	1	1983	24	0	0
Oct	9.8	1976	27	20.8	1982	10	1976	27	4	1996
Nov	8.0	1996	5	20.1	1996	14	1996	30	9	1996
Dec	11.0	1994	17	33.9	1990	22	1978	28	11+	1998
Ann	14.3	Feb 1992	28	33.9	Dec 1990	22+	Feb 2000	1	14	Jan 1991

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	5.1	2.6	.9	.2	.0
Feb	4.4	2.6	.9	.2	.1
Mar	3.7	2.0	.6	.2	.0
Apr	1.6	.7	.2	@	.0
May	@	@	.0	.0	.0
Jun	.0	.0	.0	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	@	@	.0	.0	.0
Oct	2.4	1.6	.5	.2	.0
Nov	5.2	2.4	.8	.2	.0
Dec	7.0	3.6	1.4	.5	.1
Ann	29.4	15.5	5.3	1.5	.2

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	19.2	12.1	7.8	2.7
Feb	17.4	11.7	9.0	3.7
Mar	16.4	8.6	4.7	1.3
Apr	3.1	1.4	.7	.0
May	@	.0	.0	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	@	.0	.0	.0
Oct	5.2	3.3	2.0	@
Nov	14.7	8.4	4.0	.5
Dec	19.9	13.7	10.5	4.3
Ann	95.9	59.2	38.7	12.5

+ 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

Complete documentation available from:
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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	6/17	6/12	6/09	6/06	6/04	6/01	5/30	5/27	5/22
32	5/30	5/26	5/24	5/22	5/20	5/18	5/16	5/14	5/11
28	5/19	5/14	5/10	5/07	5/04	5/01	4/28	4/25	4/20
24	5/06	4/30	4/26	4/23	4/20	4/16	4/13	4/09	4/03
20	4/29	4/22	4/17	4/13	4/09	4/05	4/01	3/27	3/20
16	4/18	4/12	4/08	4/04	4/01	3/28	3/25	3/20	3/15

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	8/18	8/23	8/26	8/29	9/01	9/04	9/07	9/10	9/15
32	8/28	9/03	9/07	9/10	9/14	9/17	9/20	9/24	9/30
28	9/11	9/16	9/19	9/21	9/24	9/26	9/29	10/02	10/07
24	9/18	9/23	9/26	9/29	10/02	10/05	10/08	10/11	10/16
20	10/03	10/07	10/09	10/12	10/14	10/16	10/18	10/21	10/24
16	10/09	10/13	10/16	10/18	10/21	10/23	10/26	10/29	11/02

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	109	102	97	92	88	84	80	75	68
32	137	130	124	120	116	111	107	102	94
28	164	157	151	146	142	137	133	127	119
24	188	180	174	169	165	160	155	150	142
20	208	201	196	191	187	183	178	173	166
16	225	217	212	207	202	198	193	188	180

***** 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	1584	1311	1197	827	541	301	209	280	523	971	1338	1525	10607
60	1429	1171	1042	677	386	159	72	137	374	816	1188	1370	8821
57	1337	1087	949	587	295	90	24	73	290	723	1098	1277	7830
55	1284	1031	887	528	239	56	8	43	237	661	1038	1215	7227
50	1139	900	733	388	118	9	0	7	129	513	888	1061	5885
32	652	457	266	56	1	0	0	0	2	117	417	556	2524

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	92	70	92	219	482	689	814	743	469	169	69	54	3962
55	10	0	0	1	8	54	108	73	15	0	0	0	269
57	2	0	0	0	2	29	63	41	7	0	0	0	144
60	0	0	0	0	0	8	18	12	2	0	0	0	40
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	36	242	457	569	500	240	34	0	0	0	0	0	36	278	735	1304	1804	2044	2078	2078	2078
45	0	0	0	5	105	307	414	345	117	7	0	0	0	0	0	5	110	417	831	1176	1293	1300	1300	1300
50	0	0	0	0	31	160	259	191	34	0	0	0	0	0	0	0	31	191	450	641	675	675	675	675
55	0	0	0	0	4	57	109	67	2	0	0	0	0	0	0	0	4	61	170	237	239	239	239	239
60	0	0	0	0	0	6	24	9	0	0	0	0	0	0	0	0	0	6	30	39	39	39	39	39
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	0	0	24	136	235	289	249	110	8	0	0	0	0	0	24	160	395	684	933	1043	1051	1051	1051

(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