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: KELLOGG, ID **COOP ID: 104831**

Climate Division: ID 4 **NWS Call Sign:** **Elevation: 2,320 Feet** **Lat: 47˚32N** **Lon: 116˚08W**

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	35.7	20.9	28.3	58	1953	12	34.7	1981	-27	1937	20	14.6	1979	1137	0	.0	.0	.6	8.9	27.3	1.6
Feb	41.6	24.0	32.8	68	1968	29	38.9	1991	-26	1933	9	23.4	1989	902	0	.0	.0	4.4	3.5	23.5	1.0
Mar	49.5	28.8	39.2	78	1978	30	45.6	1992	-9	1955	5	35.0	1971	801	0	.0	.0	14.7	.3	21.8	.0
Apr	58.6	33.9	46.3	93+	1987	28	52.0	1987	6	1936	1	41.6	1972	563	0	.0	.1	24.6	.0	12.7	.0
May	67.5	40.5	54.0	101	1986	31	59.9	1993	20	1969	3	50.0	1996	347	5	.1	.9	30.3	.0	2.2	.0
Jun	74.6	46.5	60.6	103	1973	22	65.8	1986	23	1923	14	55.9	1981	168	34	.1	3.1	29.9	.0	.2	.0
Jul	82.6	50.2	66.4	109	1934	28	72.8	1998	31	1969	20	58.6	1993	78	122	1.1	10.4	31.0	.0	.0	.0
Aug	82.6	49.4	66.0	111	1961	5	71.0	1971	28+	1969	29	61.2	1995	77	108	.8	10.3	31.0	.0	@	.0
Sep	72.2	41.7	57.0	102	1938	4	64.0	1990	11	1926	24	51.7	1986	268	27	@	1.8	29.8	.0	2.1	.0
Oct	58.4	33.4	45.9	92+	1935	3	52.1	1988	0	1935	31	42.6	1984	591	0	.0	.0	26.3	@	14.2	.0
Nov	42.7	28.1	35.4	69	1999	13	40.7	1998	-11	1955	16	24.6	1985	889	0	.0	.0	6.5	2.0	21.4	.3
Dec	35.3	21.9	28.6	61+	1980	27	34.5	1979	-36	1968	30	18.3	1983	1130	0	.0	.0	1.0	9.8	27.0	1.1
Ann	58.4	34.9	46.7	111	Aug 1961	5	72.8	Jul 1998	-36	Dec 1968	30	14.6	Jan 1979	6951	296	2.1	26.6	230.1	24.5	152.4	4.0

\+ 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: 1905-2001

(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	3.89	3.77	1.84	1948	7	6.91	1990	.57	1985
Feb	2.96	2.75	1.58	1968	19	6.12	1996	.94	1973
Mar	3.03	3.08	1.61	1934	29	5.45	1995	.69	1992
Apr	2.57	2.47	1.82	1996	24	5.76	1996	.35	1973
May	2.79	2.59	2.27	1980	26	5.09	1984	.58	1973
Jun	2.23	1.86	1.68	1964	8	4.93	1981	.38	1979
Jul	1.43	1.13	2.20	1998	30	4.62	1993	.00+	1985
Aug	1.38	1.19	1.49	1923	20	3.89	1989	.02	1994
Sep	1.69	1.65	1.98	1909	29	4.11	1985	.03	1990
Oct	2.25	1.89	1.87	1990	30	6.10	1990	.01	1987
Nov	4.24	4.30	2.05	1946	18	8.66	1973	1.32	1972
Dec	4.31	4.16	4.00	1987	9	10.39	1996	1.12	1985
Ann	32.77	31.17	4.00	Dec 1987	9	10.39	Dec 1996	.00+	Jul 1985

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	17.2	11.1	1.9	.3
Feb	14.3	9.4	1.4	.2
Mar	16.2	9.5	1.1	.1
Apr	14.0	7.9	1.0	.1
May	14.3	7.7	1.5	.3
Jun	11.6	6.2	1.1	.1
Jul	7.4	3.6	.7	.2
Aug	6.8	3.5	.6	.2
Sep	8.3	4.3	.7	.1
Oct	10.9	6.4	1.0	.2
Nov	17.1	10.9	2.1	.4
Dec	17.1	11.2	2.1	.4
Ann	155.2	91.7	15.2	2.6

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	1.47	1.84	2.35	2.79	3.20	3.62	4.07	4.60	5.27	6.30	7.24
Feb	.98	1.26	1.67	2.02	2.36	2.70	3.08	3.53	4.09	4.98	5.79
Mar	1.27	1.54	1.93	2.25	2.55	2.85	3.18	3.55	4.03	4.75	5.41
Apr	.76	1.00	1.37	1.69	1.99	2.31	2.67	3.08	3.62	4.47	5.25
May	1.04	1.31	1.68	1.99	2.29	2.59	2.92	3.30	3.79	4.54	5.23
Jun	.67	.89	1.20	1.47	1.74	2.01	2.32	2.67	3.13	3.85	4.52
Jul	.00	.19	.47	.70	.93	1.17	1.46	1.79	2.24	2.98	3.69
Aug	.09	.17	.35	.53	.75	.99	1.29	1.67	2.19	3.09	3.97
Sep	.10	.20	.41	.64	.90	1.21	1.58	2.05	2.71	3.83	4.95
Oct	.19	.34	.64	.95	1.29	1.68	2.15	2.73	3.54	4.90	6.23
Nov	1.26	1.66	2.27	2.79	3.30	3.83	4.41	5.09	5.98	7.37	8.66
Dec	1.53	1.94	2.53	3.02	3.49	3.97	4.50	5.11	5.89	7.10	8.21
Ann	23.83	25.58	27.80	29.49	30.98	32.42	33.90	35.54	37.52	40.39	42.86

\+ 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: 1905-2001
(3) Derived from 1971-2000 serially complete daily data

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Snow (inches)

Snow Totals

Means/Medians (1)

Month	Snow Fall Mean	Snow Fall Median	Snow Depth Mean	Snow Depth Median
Jan	13.3	14.5	5	3
Feb	8.0	7.0	3	1
Mar	3.6	2.3	#	#
Apr	.9	.0	#	0
May	#	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	.1	.0	#	0
Nov	5.8	5.3	#	#
Dec	16.7	13.9	3	1
Ann	48.4	43.0	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	15.0	1991	7	29.2	1982	24	1979	31	18	1979
Feb	7.0	1996	23	21.5	1985	26	1979	5	15	1985
Mar	7.5	1998	2	17.2	1989	13	1985	3	7	1985
Apr	8.0	1982	4	9.0	1982	8	1982	4	1	1982
May	#	1996	3	#+	1996	#+	1999	8	#+	1999
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	.0	0	0	.0	0	0	0	0	0	0
Oct	1.0	1984	27	2.0	1984	1	1984	28	#+	1985
Nov	7.0	1978	28	16.4	1994	13	1985	27	4	1985
Dec	9.0	1984	30	46.5	1984	23	1984	31	9	1978
Ann	15.0	Jan 1991	7	46.5	Dec 1984	26	Feb 1979	5	18	Jan 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	7.2	4.9	1.6	.5	.1
Feb	4.1	2.9	.6	.2	.0
Mar	2.3	1.4	.3	.1	.0
Apr	.5	.4	@	@	.0
May	.0	.0	.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	.0	.0
Oct	.2	.1	.0	.0	.0
Nov	3.6	2.1	.6	.3	.0
Dec	7.6	5.4	2.0	.7	.0
Ann	25.5	17.2	5.1	1.8	.1

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	20.4	15.3	12.6	6.7
Feb	13.2	5.9	4.5	2.6
Mar	2.3	.8	.0	.0
Apr	.6	.1	.1	.0
May	.0	.0	.0	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.0	.0	.0	.0
Oct	.1	.0	.0	.0
Nov	4.7	2.6	1.0	.3
Dec	17.0	10.6	7.5	2.3
Ann	58.3	35.3	25.7	11.9

+ 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	6/24	6/17	6/12	6/08	6/04	5/31	5/27	5/22	5/15
32	5/27	5/22	5/18	5/15	5/12	5/09	5/06	5/02	4/26
28	5/05	4/29	4/25	4/22	4/19	4/16	4/12	4/08	4/03
24	4/16	4/09	4/04	3/30	3/26	3/22	3/18	3/13	3/06
20	4/01	3/24	3/18	3/13	3/08	3/03	2/26	2/20	2/12
16	3/25	3/13	3/05	2/27	2/20	2/14	2/07	1/30	1/19

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	8/27	9/02	9/07	9/10	9/14	9/18	9/22	9/26	10/03
32	9/09	9/15	9/19	9/22	9/26	9/29	10/02	10/06	10/12
28	9/22	9/28	10/02	10/06	10/09	10/13	10/16	10/21	10/27
24	10/05	10/11	10/16	10/20	10/23	10/27	10/31	11/05	11/11
20	10/14	10/22	10/28	11/02	11/06	11/11	11/16	11/21	11/29
16	11/01	11/10	11/17	11/22	11/28	12/03	12/08	12/15	12/24

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	128	119	112	107	101	96	90	84	74
32	158	150	145	140	136	132	127	122	114
28	198	190	183	178	173	168	163	156	148
24	235	227	221	215	211	206	200	194	186
20	280	267	258	250	243	235	227	218	205
16	323	308	297	288	280	271	262	251	236

***** 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	1137	902	801	563	347	168	78	77	268	591	889	1130	6951
60	982	762	646	414	212	79	26	25	160	437	739	975	5457
57	889	678	553	328	146	42	12	11	109	346	649	882	4645
55	827	622	491	272	109	25	7	5	81	286	589	820	4134
50	672	482	338	152	42	5	0	1	31	154	445	665	2987
32	204	97	16	0	0	0	0	0	0	1	75	195	588

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	90	119	238	427	681	857	1067	1054	750	432	176	88	5979
55	0	0	0	10	78	192	361	346	140	5	0	0	1132
57	0	0	0	5	52	149	304	290	108	2	0	0	910
60	0	0	0	1	25	96	225	211	70	1	0	0	629
65	0	0	0	0	5	34	122	108	27	0	0	0	296
70	0	0	0	0	0	8	50	40	8	0	0	0	106

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	14	68	214	457	647	859	856	554	220	35	3	0	14	82	296	753	1400	2259	3115	3669	3889	3924	3927
45	0	0	17	111	309	498	704	701	405	112	8	0	0	0	17	128	437	935	1639	2340	2745	2857	2865	2865
50	0	0	0	48	181	354	549	546	266	40	0	0	0	0	0	48	229	583	1132	1678	1944	1984	1984	1984
55	0	0	0	16	93	219	397	392	150	11	0	0	0	0	0	16	109	328	725	1117	1267	1278	1278	1278
60	0	0	0	2	39	116	253	244	68	1	0	0	0	0	0	2	41	157	410	654	722	723	723	723
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	10	53	149	286	398	528	532	367	164	14	0	0	10	63	212	498	896	1424	1956	2323	2487	2501	2501

(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 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