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: KEMMERER 2 N, WY **COOP ID: 485105**

Climate Division: WY 3 **NWS Call Sign:** **Elevation: 6,926 Feet** **Lat: 41˚49N** **Lon: 110˚32W**

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	28.5	4.1	16.3	55	1953	11	25.0	1981	-33	1963	12	6.0	1979	1510	0	.0	.0	.2	19.4	31.0	11.2
Feb	32.2	5.8	19.0	58	1970	27	27.3	1977	-39	1982	5	9.4	1993	1289	0	.0	.0	.5	13.7	28.2	9.0
Mar	40.4	14.8	27.6	67+	1986	30	35.2	1972	-21	1956	12	21.8	1980	1160	0	.0	.0	4.7	5.4	30.8	2.6
Apr	50.7	23.2	37.0	77	1987	28	44.5	1987	-5+	1982	5	31.0	1983	843	0	.0	.0	16.4	1.2	26.4	.4
May	61.9	32.3	47.1	87	1954	20	51.6	1976	7	1983	13	41.5	1983	555	0	.0	.0	26.9	.1	15.5	.0
Jun	72.3	38.9	55.6	98	1954	23	63.3	1988	20+	2001	6	48.5	1998	299	17	.0	.2	29.4	.0	4.9	.0
Jul	80.3	44.3	62.3	94	1979	28	67.5	1979	28+	1995	31	52.4	1993	154	69	.0	1.5	31.0	.0	.7	.0
Aug	78.9	43.1	61.0	96	1971	24	67.7	1971	21+	1992	28	55.6	1993	157	32	.0	.6	31.0	.0	1.7	.0
Sep	68.5	34.4	51.5	92	1976	5	57.1	1979	5	1983	21	46.7	1985	408	1	.0	@	28.6	.1	12.9	.0
Oct	55.8	24.9	40.4	84	1952	8	48.0	1988	-2	1972	31	34.3	1984	764	0	.0	.0	22.9	.7	27.4	.1
Nov	39.0	13.9	26.5	67	1949	5	33.5	1976	-27	1955	16	19.6	2000	1156	0	.0	.0	5.6	9.0	29.6	3.4
Dec	30.3	4.8	17.6	56+	1995	2	26.6	1980	-39	1990	22	8.6	1990	1472	0	.0	.0	.7	17.3	31.0	10.6
Ann	53.2	23.7	38.5	98	Jun 1954	23	67.7	Aug 1971	-39+	Dec 1990	22	6.0	Jan 1979	9767	119	.0	2.3	197.9	66.9	240.1	37.3

\+ 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: 1948-2001

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

Issue Date: February 2004

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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	.76	.69	1.25	1954	25	1.72	1980	.04	2000
Feb	.60	.46	1.57	1986	18	3.08	1986	.00+	2000
Mar	.71	.65	.66	1995	4	1.80	1987	.00+	2000
Apr	.97	.84	1.04	1971	19	2.40	1986	.00+	2000
May	1.18	1.17	1.21	1964	27	2.85	1980	.00	2000
Jun	1.05	.71	1.18	1965	26	4.51	1998	.00	2000
Jul	.87	.75	1.03	1984	22	2.81	1984	.11	1971
Aug	1.09	.85	1.21	1983	22	4.06	1983	.11	1996
Sep	1.17	1.07	1.50	1983	3	4.58	1982	.00	1974
Oct	.90	.88	1.33	1979	19	2.08	1979	.00	1978
Nov	.90	.77	.97	1957	4	3.05	1983	.00+	1999
Dec	.68	.49	1.01	1985	9	3.21	1983	.00	2000
Ann	10.88	10.57	1.57	Feb 1986	18	4.58	Sep 1982	.00+	Dec 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	7.8	2.5	.1	.0
Feb	6.0	2.2	.1	@
Mar	6.9	2.7	.1	.0
Apr	7.4	3.6	.3	@
May	8.1	3.7	.4	.0
Jun	5.9	2.8	.6	.0
Jul	6.0	2.8	.3	.1
Aug	6.3	2.9	.6	.1
Sep	6.1	3.4	.5	.1
Oct	6.5	2.9	.3	@
Nov	8.5	2.9	.3	.0
Dec	7.6	2.5	.1	@
Ann	83.1	34.9	3.7	.3

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	.17	.24	.35	.45	.55	.66	.78	.92	1.11	1.41	1.69
Feb	.00	.05	.14	.24	.34	.45	.58	.74	.96	1.33	1.69
Mar	.00	.00	.13	.26	.40	.54	.70	.90	1.17	1.60	2.03
Apr	.00	.14	.33	.48	.64	.80	.99	1.21	1.50	1.98	2.44
May	.14	.28	.48	.65	.82	1.01	1.21	1.46	1.79	2.31	2.81
Jun	.03	.11	.26	.41	.58	.77	.99	1.28	1.68	2.35	3.01
Jul	.20	.28	.41	.52	.64	.76	.89	1.05	1.26	1.60	1.91
Aug	.11	.20	.35	.50	.66	.85	1.06	1.33	1.70	2.31	2.90
Sep	.03	.10	.26	.42	.61	.83	1.09	1.42	1.89	2.67	3.46
Oct	.09	.19	.34	.47	.60	.75	.91	1.10	1.37	1.79	2.19
Nov	.00	.14	.32	.46	.61	.76	.93	1.13	1.40	1.83	2.25
Dec	.02	.07	.17	.27	.38	.50	.65	.84	1.10	1.53	1.96
Ann	5.71	6.59	7.79	8.73	9.60	10.47	11.38	12.42	13.70	15.63	17.34

\+ 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: 1948-2001
(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	9.8	9.2	9	9
Feb	8.9	7.1	9	7
Mar	7.5	5.7	4	4
Apr	4.7	2.0	#	#
May	1.7	.0	#	0
Jun	.2	.0	#	0
Jul	.0	.0	0	0
Aug	.0	.0	#	0
Sep	.8	.0	#	0
Oct	2.9	2.0	#	#
Nov	9.8	8.3	2	1
Dec	14.6	10.7	6	5
Ann	60.9	45.0	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	9.0	1984	14	19.7	1988	24+	1984	25	23	1984
Feb	10.5	1986	18	23.0	1986	31	1986	18	24	1984
Mar	13.0	1995	4	17.1	1990	25	1984	1	18	1984
Apr	8.0	1984	20	22.1	1984	9	1984	1	2	1984
May	7.0	1983	11	12.1	1983	11	1983	12	1	1983
Jun	3.0	1998	17	3.0	1998	1	1982	6	#+	1990
Jul	.0	0	0	.0	0	0	0	0	0	0
Aug	.0	0	0	.0	0	#	1997	4	#	1997
Sep	8.0	2000	23	10.6	2000	5	1984	24	#+	1996
Oct	6.0	1971	27	13.5	1971	12	1971	31	2	1971
Nov	8.0	1983	22	37.6	1983	18	1983	29	7	1984
Dec	20.5	1985	9	46.8	1983	29	1985	10	22	1983
Ann	20.5	Dec 1985	9	46.8	Dec 1983	31	Feb 1986	18	24	Feb 1984

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	7.8	4.1	.9	.2	.0
Feb	5.6	2.8	.8	.3	@
Mar	5.3	2.8	.5	.2	@
Apr	2.7	1.6	.5	.2	.0
May	1.3	.7	.2	@	.0
Jun	.1	.1	@	.0	.0
Jul	.0	.0	.0	.0	.0
Aug	.0	.0	.0	.0	.0
Sep	.4	.2	.1	.1	.0
Oct	1.8	1.0	.2	.1	.0
Nov	6.4	3.2	.9	.3	.0
Dec	6.7	3.7	1.1	.2	@
Ann	38.1	20.2	5.2	1.6	@

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	29.4	28.1	28.0	22.9
Feb	23.1	22.0	19.3	17.0
Mar	16.8	12.4	9.0	5.8
Apr	2.9	1.5	.6	.0
May	.8	.3	.2	@
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.2	@	@	.0
Oct	1.9	.4	.3	.2
Nov	12.8	8.6	5.8	1.0
Dec	22.3	21.2	17.8	11.0
Ann	110.2	94.5	81.0	57.9

+ 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	7/26	7/20	7/16	7/12	7/08	7/05	7/01	6/27	6/21
32	7/13	7/07	7/02	6/28	6/24	6/21	6/17	6/12	6/05
28	7/01	6/22	6/16	6/10	6/05	5/31	5/26	5/20	5/11
24	6/08	6/01	5/27	5/22	5/18	5/13	5/09	5/03	4/26
20	5/23	5/17	5/12	5/08	5/05	5/01	4/27	4/23	4/17
16	5/08	5/02	4/27	4/24	4/20	4/17	4/13	4/09	4/03

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	8/02	8/08	8/13	8/16	8/20	8/24	8/28	9/01	9/07
32	8/11	8/18	8/22	8/26	8/30	9/03	9/07	9/11	9/18
28	8/25	8/30	9/04	9/07	9/11	9/14	9/18	9/22	9/28
24	9/05	9/10	9/14	9/18	9/21	9/24	9/27	10/01	10/07
20	9/13	9/19	9/24	9/28	10/02	10/05	10/09	10/14	10/20
16	9/25	10/02	10/08	10/13	10/17	10/22	10/27	11/01	11/09

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	72	62	54	48	42	36	30	22	12
32	93	84	77	71	66	60	54	48	38
28	133	120	111	104	97	89	82	73	60
24	152	143	136	131	125	120	114	108	99
20	177	168	161	155	149	143	137	130	121
16	213	201	193	186	179	173	166	157	146

***** 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	1510	1289	1160	843	555	299	154	157	408	764	1156	1472	9767
60	1355	1149	1005	693	402	182	75	66	267	609	1006	1317	8126
57	1262	1065	912	603	315	126	42	31	193	517	916	1224	7206
55	1200	1009	850	547	260	95	27	17	149	457	856	1162	6629
50	1045	869	696	408	144	37	8	2	67	313	706	1007	5302
32	500	380	205	70	2	0	0	0	0	23	225	471	1876

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	12	15	68	217	470	708	939	899	583	282	59	22	4274
55	0	0	0	4	15	113	253	203	43	2	0	0	633
57	0	0	0	0	8	84	205	155	26	1	0	0	479
60	0	0	0	0	2	50	146	96	10	0	0	0	304
65	0	0	0	0	0	17	69	32	1	0	0	0	119
70	0	0	0	0	0	4	23	6	0	0	0	0	33

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	2	68	254	476	704	663	359	112	2	0	0	0	2	70	324	800	1504	2167	2526	2638	2640	2640
45	0	0	0	21	139	333	549	508	225	44	0	0	0	0	0	21	160	493	1042	1550	1775	1819	1819	1819
50	0	0	0	3	59	204	396	353	111	8	0	0	0	0	0	3	62	266	662	1015	1126	1134	1134	1134
55	0	0	0	0	12	99	247	206	38	0	0	0	0	0	0	0	12	111	358	564	602	602	602	602
60	0	0	0	0	0	32	117	83	8	0	0	0	0	0	0	0	0	32	149	232	240	240	240	240
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	0	11	78	203	347	481	462	297	142	18	0	0	0	11	89	292	639	1120	1582	1879	2021	2039	2039

(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