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: HURON AP, SD **COOP ID: 394127**

Climate Division: SD 7 **NWS Call Sign: HON** **Elevation: 1,281 Feet** **Lat: 44˚24N** **Lon: 98˚13W**

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	24.8	3.5	14.2	62+	1989	27	28.3	1990	-37	1988	6	-.4	1978	1572	0	.0	.0	.8	20.3	30.8	12.6
Feb	31.3	10.8	21.0	71	1958	25	33.3	1987	-41	1994	9	5.5	1979	1242	0	.0	.0	2.7	14.1	27.1	7.3
Mar	43.0	22.3	32.6	86	1963	31	40.4	2000	-24	1960	4	24.4	1975	1004	0	.0	.0	9.4	6.0	25.0	1.8
Apr	58.3	33.9	46.1	97	1980	21	53.6	1987	-2	1975	3	39.5	1975	567	4	.0	.2	22.6	.6	13.4	@
May	70.5	45.8	58.2	99	1959	1	65.3	1977	17+	1976	6	53.0	1979	242	29	.0	.5	30.4	.0	1.8	.0
Jun	80.3	55.4	67.9	109+	1988	24	75.3	1988	32	1964	2	63.1	1985	49	138	.4	4.2	30.0	.0	.0	.0
Jul	86.1	60.7	73.4	112	1966	10	78.9	1974	37	1971	30	65.1	1992	8	273	1.5	10.6	31.0	.0	.0	.0
Aug	84.4	58.6	71.5	110	1965	13	78.5	1983	36	1964	13	65.6	1992	21	228	1.0	8.4	31.0	.0	.0	.0
Sep	74.7	47.3	61.0	106	1970	6	67.4	1998	19	1974	30	56.2	1993	180	66	.3	2.9	29.7	.0	1.6	.0
Oct	60.9	34.9	47.9	102	1963	5	52.3	2000	9	1976	27	41.6	1976	530	3	.0	.2	25.7	.3	11.6	.0
Nov	41.4	21.1	31.3	86	1999	8	42.3	1999	-21+	1964	30	18.1	1985	996	0	.0	.0	8.5	7.7	26.2	1.3
Dec	28.8	8.4	18.6	66	1998	1	28.7	1997	-30+	1990	23	2.2	1983	1423	0	.0	.0	1.7	17.3	30.7	8.1
Ann	57.0	33.6	45.3	112	Jul 1966	10	78.9	Jul 1974	-41	Feb 1994	9	-.4	Jan 1978	7834	741	3.2	27.0	223.5	66.3	168.2	31.1

\+ 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: 1948-2001

(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	.49	.40	1.03	2001	29	1.93	1975	.02	1990
Feb	.57	.52	1.86	1962	17	1.73	1977	.10	1985
Mar	1.67	1.53	2.82	1985	3	5.89	1977	.15	1971
Apr	2.29	2.12	2.28	1970	12	5.59	1991	.21	1996
May	3.00	2.45	3.39	1990	19	6.86	1972	.33	1992
Jun	3.28	2.69	5.31	1967	18	11.49	1984	.77	1988
Jul	2.86	2.23	4.25	1986	25	6.69	1993	.46	1975
Aug	2.07	1.99	4.11	1956	2	4.63	1981	.14	1976
Sep	1.80	1.76	2.32	1950	20	4.03	1986	.00	1998
Oct	1.59	1.27	2.95	1961	10	5.12	1998	.09	1988
Nov	.89	.68	1.34	1972	2	2.46	1985	.00	1990
Dec	.39	.36	.91	1953	3	1.28	1987	.00	1986
Ann	20.90	20.30	5.31	Jun 1967	18	11.49	Jun 1984	.00+	Sep 1998

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	5.5	1.6	.1	.0
Feb	6.5	1.7	.1	@
Mar	7.9	3.7	.9	.3
Apr	9.0	5.2	1.5	.4
May	10.8	6.0	2.0	.6
Jun	10.3	6.1	2.4	.7
Jul	9.3	5.7	1.7	.6
Aug	8.0	4.3	1.4	.3
Sep	6.8	3.7	1.4	.4
Oct	5.9	3.3	1.1	.3
Nov	6.2	2.1	.3	.1
Dec	5.2	1.2	.1	.0
Ann	91.4	44.6	13.0	3.7

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	.04	.08	.14	.21	.28	.37	.47	.59	.76	1.05	1.33
Feb	.13	.18	.26	.34	.41	.50	.59	.69	.84	1.06	1.28
Mar	.16	.28	.50	.74	.99	1.27	1.61	2.03	2.61	3.57	4.51
Apr	.42	.62	.96	1.27	1.59	1.93	2.32	2.79	3.42	4.43	5.39
May	.63	.91	1.35	1.75	2.15	2.58	3.07	3.65	4.42	5.64	6.80
Jun	.72	1.02	1.51	1.94	2.38	2.84	3.36	3.99	4.81	6.12	7.36
Jul	.72	.99	1.41	1.77	2.14	2.52	2.95	3.46	4.13	5.18	6.17
Aug	.51	.70	1.00	1.27	1.54	1.82	2.13	2.50	2.99	3.76	4.49
Sep	.15	.34	.63	.90	1.17	1.47	1.81	2.23	2.79	3.70	4.57
Oct	.16	.28	.50	.72	.96	1.23	1.54	1.94	2.48	3.38	4.26
Nov	.01	.05	.14	.25	.39	.56	.77	1.05	1.46	2.15	2.86
Dec	.02	.06	.12	.18	.24	.31	.39	.49	.62	.84	1.05
Ann	13.10	14.54	16.42	17.87	19.18	20.46	21.80	23.30	25.13	27.82	30.19

\+ 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	7.2	5.0	4	3
Feb	7.5	6.7	4	2
Mar	9.0	7.0	2	2
Apr	3.2	1.1	#	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	1.2	.0	#	0
Nov	6.9	5.0	1	0
Dec	6.8	6.2	3	1
Ann	41.8	31.0	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	11.1	1975	7	27.7	1975	35	1995	17	19	1997
Feb	10.7	1990	15	16.0	1971	23	1997	5	17	1997
Mar	18.3	1985	3	33.9	1975	26	1985	5	5+	1985
Apr	11.0	2000	7	23.4	1995	16	1995	12	2+	1995
May	.2	1989	5	.2	1989	#	1989	5	#	2000
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	#	1995	21	#	1995	0	0	0	0	0
Oct	8.6	1995	23	10.7	1995	6	1995	24	#	1999
Nov	12.0	1998	10	32.7	1985	16	1985	26	7+	2000
Dec	9.0	1987	27	20.0	1987	20+	1996	30	13	1985
Ann	18.3	Mar 1985	3	33.9	Mar 1975	35	Jan 1995	17	19	Jan 1997

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	6.6	2.3	.6	.3	.1
Feb	6.8	2.3	.7	.3	@
Mar	5.2	2.2	1.0	.5	.1
Apr	1.8	1.0	.3	.2	@
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	.7	.4	.1	@	.0
Nov	5.2	1.9	.8	.3	@
Dec	6.6	2.0	.6	.2	.0
Ann	32.9	12.1	4.1	1.8	.2

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	21.0	15.2	10.5	4.4
Feb	17.5	13.2	8.9	4.6
Mar	9.7	6.2	3.7	1.3
Apr	1.4	.8	.5	.2
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	.6	.1	@	.0
Nov	6.8	3.0	2.1	1.1
Dec	15.2	9.7	6.8	1.9
Ann	72.2	48.2	32.5	13.5

+ 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

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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	6/02	5/28	5/24	5/21	5/19	5/16	5/13	5/09	5/04
32	5/20	5/15	5/11	5/08	5/05	5/02	4/29	4/25	4/20
28	5/13	5/07	5/03	4/29	4/26	4/22	4/19	4/14	4/08
24	4/29	4/23	4/19	4/16	4/13	4/10	4/06	4/03	3/28
20	4/22	4/16	4/11	4/07	4/04	3/31	3/28	3/23	3/17
16	4/11	4/05	4/02	3/30	3/27	3/24	3/21	3/17	3/12

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	9/10	9/13	9/16	9/18	9/20	9/22	9/24	9/27	9/30
32	9/14	9/19	9/22	9/25	9/27	9/30	10/03	10/06	10/11
28	9/22	9/27	10/01	10/04	10/07	10/10	10/13	10/17	10/22
24	9/28	10/04	10/09	10/13	10/17	10/20	10/24	10/29	11/05
20	10/09	10/14	10/18	10/21	10/24	10/27	10/30	11/03	11/08
16	10/16	10/22	10/26	10/30	11/03	11/06	11/10	11/14	11/20

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	143	136	132	127	124	120	116	111	104
32	166	159	153	149	145	141	136	131	123
28	185	178	172	168	163	159	154	149	141
24	209	201	196	191	186	181	177	171	163
20	226	218	212	207	202	198	193	187	178
16	244	236	230	225	220	215	210	204	196

***** 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	1572	1242	1004	567	242	49	8	21	180	530	996	1423	7834
60	1421	1091	848	424	145	15	5	6	81	379	863	1284	6562
57	1328	1007	755	343	98	5	0	2	46	293	773	1191	5841
55	1266	959	693	293	73	3	0	0	29	242	713	1129	5400
50	1115	828	547	183	29	0	0	0	6	132	574	976	4390
32	611	409	140	7	0	0	0	0	0	3	176	481	1827

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	11	44	157	436	812	1077	1288	1231	878	506	125	19	6584
55	0	0	2	32	159	390	575	518	231	36	1	0	1944
57	0	0	1	23	122	333	513	457	188	24	1	0	1662
60	0	0	0	13	78	252	421	367	134	11	0	0	1276
65	0	0	0	4	29	138	273	228	66	3	0	0	741
70	0	0	0	1	8	58	149	115	28	0	0	0	359

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	8	54	234	573	849	1049	992	648	294	42	1	0	8	62	296	869	1718	2767	3759	4407	4701	4743	4744
45	0	0	22	132	427	699	894	837	499	178	13	0	0	0	22	154	581	1280	2174	3011	3510	3688	3701	3701
50	0	0	7	73	284	549	739	682	362	93	4	0	0	0	7	80	364	913	1652	2334	2696	2789	2793	2793
55	0	0	0	37	165	400	584	527	238	42	0	0	0	0	0	37	202	602	1186	1713	1951	1993	1993	1993
60	0	0	0	15	81	262	430	375	139	11	0	0	0	0	0	15	96	358	788	1163	1302	1313	1313	1313
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	12	46	163	352	543	692	652	412	196	36	1	0	12	58	221	573	1116	1808	2460	2872	3068	3104	3105

(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