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: DINOSAUR NM QUARRY AREA, UT **COOP ID: 422173**

Climate Division: UT 6 **NWS Call Sign:** **Elevation: 4,770 Feet** **Lat: 40˚26N** **Lon: 109˚18W**

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	31.2	3.7	17.5	60	1971	31	30.9	1998	-39	1979	2	1.9	1973	1473	0	.0	.0	1.2	16.4	31.0	11.6
Feb	38.9	9.6	24.3	66	1986	26	36.8	1995	-40	1989	7	8.9	1985	1140	0	.0	.0	4.8	7.9	27.8	5.9
Mar	54.4	23.2	38.8	77+	1971	26	44.9	1986	-13	1962	1	31.3	1984	812	0	.0	.0	21.1	.6	26.4	.3
Apr	65.5	31.5	48.5	89+	1992	28	55.0	1992	10	1970	1	42.8	1983	496	1	.0	.0	28.2	.0	14.3	.0
May	76.2	40.3	58.3	94+	1958	29	64.2	2000	20	1972	1	53.4	1983	232	22	.0	1.3	30.9	.0	2.1	.0
Jun	88.0	47.1	67.6	105+	1961	19	73.0	1977	30	1973	19	62.4	1975	58	136	1.5	14.7	30.0	.0	.1	.0
Jul	94.4	53.4	73.9	110	2001	29	78.5	1998	38+	1968	1	69.8	1993	4	280	5.0	25.6	31.0	.0	.0	.0
Aug	92.3	51.1	71.7	105	1979	5	74.5	1998	35	1964	30	68.8	1975	6	213	1.7	23.5	31.0	.0	.0	.0
Sep	81.9	41.8	61.9	103	1967	5	67.6	1990	20+	1965	18	57.6	1971	144	49	.0	5.4	29.9	.0	2.4	.0
Oct	67.3	30.8	49.1	93	1996	9	54.0	1988	2	1971	30	44.2	1971	494	1	.0	@	29.6	.1	16.5	.0
Nov	48.3	20.4	34.4	74	1978	2	40.1	1999	-10	1976	28	26.5	1971	920	0	.0	.0	14.1	1.8	28.0	.2
Dec	35.2	8.9	22.1	61	1995	1	32.1	1980	-33	1990	23	10.3	1978	1332	0	.0	.0	1.8	11.3	31.0	5.8
Ann	64.5	30.2	47.3	110	Jul 2001	29	78.5	Jul 1998	-40	Feb 1989	7	1.9	Jan 1973	7111	702	8.2	70.5	253.6	38.1	179.6	23.8

\+ 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: 1958-2001

(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	.61	.59	.80	1973	17	1.62+	1980	.00+	2000
Feb	.67	.63	1.57	1983	8	2.20	1983	.00	1972
Mar	.74	.68	1.55	1979	29	2.21	1979	.00+	1999
Apr	.85	.86	.94	1971	19	2.25	1999	.01	1998
May	1.06	.80	1.06	1995	2	3.28	1971	.01	1974
Jun	.53	.45	1.42	1965	11	1.60	1998	.00	1979
Jul	.68	.37	1.90	2001	9	2.44	1998	.05+	1979
Aug	.68	.71	.90	1990	20	2.08	1997	.01+	1996
Sep	.95	.89	1.23	1997	19	3.73	1997	.00	1979
Oct	1.20	1.07	1.48	1994	3	4.26+	1994	.04	1988
Nov	.61	.55	.70	1978	12	1.61	1983	.00+	2000
Dec	.51	.39	.82	1984	27	1.69	1984	.00+	1993
Ann	9.09	9.71	1.90	Jul 2001	9	4.26+	Oct 1994	.00+	Nov 2000

Mean Number of Days (3)

Month	Daily Precipitation >= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	5.5	2.4	.2	.0
Feb	4.7	2.4	.1	@
Mar	5.5	2.4	.2	.1
Apr	6.3	2.6	.3	.0
May	7.0	3.1	.5	@
Jun	4.6	1.6	.1	@
Jul	4.7	2.2	.3	.1
Aug	4.8	1.9	.4	.0
Sep	5.8	2.9	.4	@
Oct	6.2	3.3	.5	.1
Nov	5.2	2.0	.1	.0
Dec	4.3	1.6	.2	.0
Ann	64.6	28.4	3.3	.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	.00	.00	.16	.27	.38	.49	.62	.77	.97	1.31	1.63
Feb	.06	.13	.24	.34	.44	.55	.67	.82	1.02	1.35	1.66
Mar	.00	.00	.16	.30	.44	.58	.74	.94	1.21	1.63	2.05
Apr	.05	.10	.21	.32	.46	.61	.79	1.03	1.36	1.92	2.48
May	.11	.19	.34	.49	.65	.82	1.03	1.29	1.65	2.24	2.81
Jun	.01	.04	.11	.18	.26	.36	.49	.64	.86	1.24	1.62
Jul	.03	.07	.14	.23	.34	.46	.62	.82	1.10	1.59	2.08
Aug	.05	.09	.17	.27	.37	.49	.64	.83	1.09	1.53	1.96
Sep	.06	.15	.30	.44	.59	.75	.94	1.18	1.50	2.02	2.53
Oct	.09	.16	.32	.48	.67	.88	1.14	1.46	1.91	2.67	3.43
Nov	.00	.00	.13	.24	.34	.46	.60	.77	.99	1.37	1.73
Dec	.00	.03	.10	.18	.26	.36	.48	.62	.82	1.16	1.50
Ann	5.41	6.07	6.95	7.63	8.25	8.86	9.49	10.21	11.09	12.38	13.53

\+ 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: 1958-2001
(3) Derived from 1971-2000 serially complete 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	5.7	4.6	5	4	10.0	1996	25	18.1	1978	17	1985	25	15	1985	4.4	2.8	.6	.1	@	18.6	15.4	12.3	2.2
Feb	4.5	4.0	6	4	5.5	1989	4	17.0	1990	18	1985	10	16	1985	2.7	1.7	.5	.1	.0	15.5	14.4	11.4	3.8
Mar	1.4	.0	1	0	6.0	1987	19	7.5	1976	17	1985	4	8	1985	.9	.6	.1	@	.0	1.9	1.6	1.4	.9
Apr	.6	.0	#	0	4.0	1976	26	4.0+	1997	4	1997	5	#+	1997	.2	.2	.1	.0	.0	@	@	.0	.0
May	.1	.0	0	0	4.0	1975	5	4.0	1975	0	0	0	0	0	@	@	@	.0	.0	.0	.0	.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	.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	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Oct	.5	.0	#	0	6.0	1971	29	8.0	1971	2	1996	28	#+	1997	.2	.2	@	@	.0	.1	.0	.0	.0
Nov	2.2	.0	#	#	8.0	1973	3	13.4	1978	8	1978	12	3	1978	1.0	.7	.3	.1	.0	1.8	1.0	.3	.0
Dec	5.5	5.0	2	1	10.0	1984	20	23.7	1984	16	1984	27	8	1983	3.2	2.1	.8	.2	@	10.9	6.6	3.2	.5
Ann	20.5	13.6	N/A	N/A	10.0+	Jan 1996	25	23.7	Dec 1984	18	Feb 1985	10	16	Feb 1985	12.6	8.3	2.4	.5	@	48.8	39.0	28.6	7.4

+ 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	6/17	6/10	6/05	5/31	5/27	5/23	5/18	5/13	5/06
32	6/03	5/27	5/23	5/18	5/15	5/11	5/06	5/02	4/25
28	5/12	5/07	5/03	4/30	4/27	4/24	4/21	4/17	4/12
24	4/25	4/20	4/16	4/13	4/10	4/07	4/04	4/01	3/27
20	4/23	4/15	4/10	4/05	4/01	3/27	3/23	3/17	3/10
16	4/11	4/03	3/29	3/24	3/19	3/15	3/10	3/04	2/25

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	9/06	9/11	9/14	9/16	9/19	9/21	9/24	9/27	10/01
32	9/14	9/18	9/21	9/24	9/26	9/29	10/01	10/05	10/09
28	9/20	9/26	9/30	10/03	10/07	10/10	10/13	10/17	10/23
24	9/26	10/03	10/07	10/11	10/15	10/19	10/23	10/27	11/03
20	10/13	10/18	10/22	10/26	10/29	11/01	11/04	11/08	11/14
16	10/26	10/31	11/04	11/07	11/11	11/14	11/17	11/21	11/26

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	142	133	126	120	114	109	103	96	86
32	160	151	145	139	134	129	123	117	108
28	186	178	172	167	162	157	152	146	138
24	212	203	197	192	187	182	177	170	162
20	240	230	223	216	210	205	198	191	181
16	266	255	248	241	235	229	223	215	205

***** 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	1473	1140	812	496	232	58	4	6	144	494	920	1332	7111
60	1318	1000	657	354	123	18	0	0	65	343	770	1177	5825
57	1230	925	564	275	76	7	0	0	35	259	680	1084	5135
55	1172	872	506	226	52	4	0	0	21	208	620	1022	4703
50	1028	741	364	127	15	0	0	0	4	102	471	868	3720
32	549	343	56	1	0	0	0	0	0	0	79	373	1401

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	99	127	267	496	813	1067	1299	1231	894	530	149	64	7036
55	9	12	4	31	151	381	586	518	226	24	0	0	1942
57	4	8	0	19	113	324	524	456	179	14	0	0	1641
60	0	0	0	9	68	245	431	363	119	5	0	0	1240
65	0	0	0	1	22	136	280	213	49	1	0	0	702
70	0	0	0	0	4	60	145	89	13	0	0	0	311

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	6	92	296	592	854	1085	1020	687	325	30	0	0	6	98	394	986	1840	2925	3945	4632	4957	4987	4987
45	0	0	29	174	438	704	930	865	538	192	6	0	0	0	29	203	641	1345	2275	3140	3678	3870	3876	3876
50	0	0	3	78	290	554	775	710	392	91	0	0	0	0	3	81	371	925	1700	2410	2802	2893	2893	2893
55	0	0	0	27	162	405	620	555	256	26	0	0	0	0	0	27	189	594	1214	1769	2025	2051	2051	2051
60	0	0	0	4	66	264	465	400	135	3	0	0	0	0	0	4	70	334	799	1199	1334	1337	1337	1337
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	0	15	111	246	413	536	645	621	475	282	56	0	0	15	126	372	785	1321	1966	2587	3062	3344	3400	3400

(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