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: PAROWAN POWER PLANT, UT **COOP ID: 426686**

Climate Division: UT 4 **NWS Call Sign:** **Elevation: 6,000 Feet** **Lat: 37˚50N** **Lon: 112˚50W**

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	42.1	14.3	28.2	68	1971	30	37.1	1986	-20	1963	13	20.1	1973	1142	0	.0	.0	6.5	4.3	30.8	2.9
Feb	46.3	17.8	32.1	74	1986	26	41.3	1995	-23	1949	14	25.5	1985	922	0	.0	.0	10.7	2.0	27.7	1.2
Mar	52.7	24.5	38.6	77	1966	31	44.6	1972	-2	1975	29	32.2	1976	818	0	.0	.0	19.3	.4	27.1	.1
Apr	60.3	30.2	45.3	84	1962	18	52.6	1992	2	1975	3	36.2	1975	592	0	.0	.0	25.0	.0	17.5	.0
May	70.4	39.0	54.7	91+	2000	29	61.0	2000	17	1975	1	49.7	1977	332	12	.0	.2	30.3	.0	5.4	.0
Jun	82.1	47.1	64.6	99+	1961	19	70.3	1999	25	1976	15	57.8	1998	101	90	.0	5.4	30.0	.0	.5	.0
Jul	88.0	54.2	71.1	102	1998	18	75.3	2000	39	1997	1	68.3	1986	8	198	.2	13.8	31.0	.0	.0	.0
Aug	85.9	52.2	69.1	100	1960	8	73.7	2000	35	1980	24	66.1	1976	16	143	.0	8.1	31.0	.0	.0	.0
Sep	78.5	43.6	61.1	95	1950	1	65.4	1979	19	1965	18	55.5	1986	152	33	.0	1.3	29.9	.0	2.0	.0
Oct	66.3	32.7	49.5	87+	1963	1	56.0	1988	-2	1971	30	42.3	1984	485	5	.0	.0	28.3	.1	14.2	.0
Nov	51.4	22.0	36.7	76+	1967	15	44.5	1995	-6	1976	28	30.6	1994	848	0	.0	.0	17.8	1.3	27.7	.2
Dec	43.4	15.2	29.3	67+	1950	10	37.9	1999	-22	1990	23	21.6	1990	1107	0	.0	.0	8.8	4.1	30.6	2.2
Ann	64.0	32.7	48.4	102	Jul 1998	18	75.3	Jul 2000	-23	Feb 1949	14	20.1	Jan 1973	6523	481	.2	28.8	268.6	12.2	183.5	6.6

\+ 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	.99	.78	1.21	1980	15	2.65	1974	.04	1976
Feb	1.10	1.08	2.60	2001	27	2.42	1971	.00	1972
Mar	1.37	1.42	2.05	1949	28	3.00	1973	.09	1972
Apr	1.28	1.33	1.10	1973	18	3.45	1973	.16	1977
May	.96	.77	.97	1958	11	2.47	1995	.00	1974
Jun	.50	.32	1.03	1957	10	1.99	1995	.00+	1999
Jul	1.09	.82	1.38	1951	20	3.55	1984	.00	2000
Aug	1.50	1.33	2.17	2000	27	3.82	2000	.00	1985
Sep	.99	.91	1.62	1967	24	2.76	1997	.00+	1984
Oct	1.42	1.19	1.21	1992	31	3.54	1972	.00+	1999
Nov	1.13	.93	1.62	1970	26	3.15	1987	.14	1977
Dec	.78	.67	.95	1987	23	1.99	1992	.00	1999
Ann	13.11	13.26	2.60	Feb 2001	27	3.82	Aug 2000	.00+	Jul 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	5.6	3.3	.4	@
Feb	5.7	3.1	.6	@
Mar	7.6	4.0	.6	@
Apr	6.0	3.9	.8	@
May	5.8	3.0	.3	.0
Jun	2.9	1.6	.2	.0
Jul	5.3	3.1	.4	.1
Aug	7.2	4.0	.7	.1
Sep	4.2	2.4	.6	.2
Oct	5.5	3.7	.9	.1
Nov	5.5	3.2	.7	.1
Dec	4.7	2.6	.2	.0
Ann	66.0	37.9	6.4	.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	.07	.13	.26	.39	.54	.72	.93	1.20	1.57	2.20	2.82
Feb	.23	.38	.56	.71	.85	1.00	1.16	1.34	1.59	1.96	2.31
Mar	.26	.38	.58	.77	.96	1.16	1.39	1.67	2.04	2.63	3.20
Apr	.21	.32	.50	.68	.86	1.06	1.29	1.56	1.93	2.53	3.10
May	.09	.20	.36	.50	.64	.80	.97	1.18	1.47	1.92	2.36
Jun	.00	.00	.00	.09	.19	.30	.44	.62	.87	1.30	1.72
Jul	.04	.12	.28	.44	.61	.81	1.04	1.33	1.74	2.42	3.08
Aug	.21	.41	.66	.87	1.08	1.30	1.55	1.84	2.23	2.85	3.42
Sep	.00	.05	.18	.32	.49	.68	.91	1.20	1.62	2.32	3.02
Oct	.00	.26	.55	.78	.99	1.22	1.48	1.77	2.17	2.80	3.40
Nov	.18	.27	.44	.59	.76	.93	1.13	1.38	1.71	2.24	2.76
Dec	.03	.10	.21	.33	.45	.59	.76	.96	1.25	1.72	2.18
Ann	8.11	9.02	10.22	11.15	11.99	12.81	13.66	14.62	15.80	17.53	19.05

\+ 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)

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	14.6	13.0	3	2	12.0	1979	26	37.0	1982	17+	1993	3	12	1993	4.6	4.1	2.1	.8	.2	16.5	11.9	7.8	3.3
Feb	10.8	9.0	2	1	18.0	1971	19	29.0	1971	19	1971	20	10	1979	3.9	3.2	1.5	.7	.1	12.1	8.7	5.7	1.4
Mar	10.2	9.0	1	1	12.0	1982	19	26.5	1981	12	1979	3	3	1984	4.4	3.4	1.5	.6	.1	4.3	2.6	1.3	.2
Apr	7.2	5.8	#	#	10.0	1986	17	24.5	1997	8	1986	17	1	1997	2.7	2.2	1.0	.5	.1	1.8	.9	.5	.0
May	1.3	.0	#	0	10.0	1979	8	12.5	1979	8	1979	8	#+	1993	.7	.6	.1	.1	@	.3	.1	@	.0
Jun	.1	.0	#	0	3.0	1993	6	3.0	1993	1	1993	6	#	1993	.1	@	@	.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	.1	.0	#	0	1.0	1986	26	1.0	1986	#+	1986	26	#+	1986	.1	@	.0	.0	.0	.0	.0	.0	.0
Oct	2.1	.0	#	#	10.0	1971	28	15.0	1971	15	1971	29	1	1991	.9	.8	.3	.2	@	.7	.4	.2	.1
Nov	9.3	7.8	1	1	12.0	1996	29	37.0	1994	20	1973	26	4	1994	3.2	2.6	1.3	.8	.1	5.2	3.2	1.7	.4
Dec	9.7	6.5	2	2	11.0	1987	23	37.5	1992	16	1992	31	6	1992	3.7	3.0	1.3	.7	.1	10.8	7.0	4.2	.6
Ann	65.4	51.1	N/A	N/A	18.0	Feb 1971	19	37.5	Dec 1992	20	Nov 1973	26	12	Jan 1993	24.3	19.9	9.1	4.4	.7	51.7	34.8	21.4	6.0

+ 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	6/20	6/15	6/12	6/09	6/06	6/03	5/31	5/28	5/23
32	6/13	6/06	6/02	5/29	5/25	5/21	5/17	5/13	5/06
28	5/26	5/20	5/16	5/12	5/09	5/05	5/02	4/27	4/21
24	5/05	4/29	4/24	4/21	4/17	4/14	4/10	4/06	3/31
20	4/25	4/18	4/13	4/08	4/04	3/31	3/26	3/21	3/13
16	4/08	4/01	3/27	3/22	3/18	3/14	3/10	3/05	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	9/10	9/14	9/17	9/19	9/22	9/25	9/28	10/03
32	9/13	9/18	9/22	9/25	9/28	10/01	10/04	10/08	10/13
28	9/22	9/28	10/03	10/07	10/11	10/15	10/19	10/24	10/30
24	10/07	10/12	10/16	10/20	10/23	10/26	10/29	11/02	11/08
20	10/19	10/23	10/26	10/28	10/31	11/02	11/05	11/08	11/12
16	10/24	10/30	11/04	11/08	11/12	11/15	11/19	11/24	11/30

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	124	117	112	108	104	101	97	92	85
32	147	140	134	129	125	121	116	111	103
28	184	174	167	160	155	149	143	135	125
24	211	203	197	192	188	183	178	172	164
20	239	229	221	215	209	203	197	190	180
16	266	257	249	243	238	232	226	219	209

***** 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	1142	922	818	592	332	101	8	16	152	485	848	1107	6523
60	987	782	663	448	206	41	1	1	68	343	698	952	5190
57	894	698	571	366	145	20	0	0	37	267	608	859	4465
55	832	642	511	314	111	12	0	0	23	222	549	797	4013
50	677	503	367	201	48	2	0	0	5	127	403	642	2975
32	208	112	39	10	0	0	0	0	0	3	48	178	598

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	89	113	244	408	703	979	1213	1149	871	546	190	94	6599
55	0	0	3	22	101	301	500	436	204	52	1	0	1620
57	0	0	1	14	73	249	438	374	158	35	0	0	1342
60	0	0	0	7	41	180	345	283	99	18	0	0	973
65	0	0	0	0	12	90	198	143	33	5	0	0	481
70	0	0	0	0	2	33	81	46	6	0	0	0	168

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	1	21	87	219	468	753	976	915	648	336	68	7	1	22	109	328	796	1549	2525	3440	4088	4424	4492	4499
45	0	2	30	115	325	603	821	760	500	206	19	0	0	2	32	147	472	1075	1896	2656	3156	3362	3381	3381
50	0	0	1	44	194	454	666	605	352	106	0	0	0	0	1	45	239	693	1359	1964	2316	2422	2422	2422
55	0	0	0	14	95	312	511	450	219	41	0	0	0	0	0	14	109	421	932	1382	1601	1642	1642	1642
60	0	0	0	0	28	181	358	295	105	7	0	0	0	0	0	0	28	209	567	862	967	974	974	974
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	19	38	94	180	330	490	618	583	439	271	90	25	19	57	151	331	661	1151	1769	2352	2791	3062	3152	3177

(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