

Climatology of the United States

No. 20

1971-2000

Station: LANDER AP, WY

COOP ID: 485390

Climate Division: WY 9

NWS Call Sign: LND

Elevation: 5,557 Feet Lat: 42°49N

Lon: 108°44W

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	31.9	8.7	20.3	63	1971	31	29.4	1999	-37	1963	12	1.3	1979	1397	0	.0	.0	2.2	15.0	30.7	7.6
Feb	37.4	13.9	25.6	68	1951	10	33.9	1991	-28	1949	13	10.5	1989	1118	0	.0	.0	4.8	9.0	27.7	4.0
Mar	47.5	23.5	35.5	76	1966	30	44.1	1986	-16	1960	2	27.2	1973	921	0	.0	.0	13.9	3.2	27.3	.4
Apr	56.5	31.3	43.9	82+	1992	29	50.7	1987	-2	1973	8	35.0	1973	643	0	.0	.0	21.1	.9	17.1	@
May	66.5	40.3	53.4	91	1954	20	60.5	1994	18+	1954	3	48.6	1983	373	3	.0	@	28.8	@	4.2	.0
Jun	78.5	48.9	63.7	100	1954	23	72.5	1988	25	1951	3	54.8	1998	116	70	.0	2.8	29.7	.0	.3	.0
Jul	86.3	55.4	70.9	101	1954	11	75.3	1988	39+	1993	7	64.7	1993	16	190	@	10.7	31.0	.0	.0	.0
Aug	84.8	54.1	69.4	101	1979	5	74.0	1983	35	1962	31	65.7	1974	24	153	@	7.1	31.0	.0	.0	.0
Sep	73.0	44.4	58.7	94+	1995	4	64.8	1990	10	1965	18	53.2	1985	220	29	.0	.8	28.6	.2	2.6	.0
Oct	59.5	33.2	46.4	85+	1963	4	53.6	1988	-3	1991	31	41.3	1971	580	0	.0	.0	24.9	.7	13.6	.1
Nov	41.8	18.9	30.3	70+	1988	1	41.3	1999	-18+	1985	23	16.0	2000	1027	0	.0	.0	9.6	7.6	27.4	2.2
Dec	32.6	9.9	21.3	64+	1980	30	34.3	1980	-37	1983	23	6.1	1983	1355	0	.0	.0	2.7	14.9	30.5	5.7
Ann	58.0	31.9	45.0	101+	Aug 1979	5	75.3	Jul 1988	-37+	Dec 1983	23	1.3	Jan 1979	7790	445	.0	21.4	228.3	51.5	181.4	20.0

+ 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/normal/usnormals.html

Issue Date: February 2004

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1948-2001

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Precipitation (inches)

		Precipitation Totals								Mean Number of Days (3)				Precipitation Probabilities (1)											
														Probability that the monthly/annual precipitation will be equal to or less than the indicated amount											
Means/Medians(1)		Extremes							Daily Precipitation				Monthly/Annual Precipitation vs Probability Levels												
													These values were determined from the incomplete gamma distribution												
Month	Mean	Med-ian	Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year	>= 0.01	>= 0.10	>= 0.50	>= 1.00	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95	
Jan	.52	.52	.73	1962	20	1.10	1994	.02+	2000	4.6	1.8	@	.0	.04	.08	.14	.22	.30	.39	.50	.63	.82	1.14	1.46	
Feb	.54	.50	.82	1955	2	1.73	1987	.05	1979	4.9	1.6	.2	.0	.09	.14	.22	.29	.37	.45	.54	.66	.81	1.06	1.29	
Mar	1.24	.89	1.28	1977	25	3.44	1998	.37	1989	7.4	3.4	.6	.1	.23	.34	.52	.68	.86	1.04	1.25	1.51	1.85	2.40	2.92	
Apr	2.07	1.70	2.15	1971	25	6.44	1999	.21	1992	8.5	5.3	1.2	.2	.45	.64	.95	1.22	1.50	1.79	2.12	2.52	3.04	3.87	4.66	
May	2.38	2.08	2.50	1964	29	5.47	1995	.07	1994	9.0	4.6	1.7	.5	.27	.45	.79	1.12	1.47	1.87	2.33	2.91	3.69	4.98	6.24	
Jun	1.15	.78	2.16	1969	7	4.96	1993	.00	1971	5.8	2.6	.5	.3	.02	.09	.23	.39	.57	.79	1.05	1.39	1.87	2.68	3.49	
Jul	.84	.83	2.11	1977	24	2.50	1977	.10	1996	6.2	2.0	.4	.1	.08	.14	.26	.37	.50	.64	.81	1.03	1.32	1.80	2.27	
Aug	.57	.47	1.00	1979	19	2.30	1979	.07	1985	5.5	1.8	.1	@	.08	.13	.21	.29	.38	.47	.57	.70	.88	1.16	1.43	
Sep	1.14	.97	1.72	1982	13	4.68	1973	.01+	1992	5.8	2.6	.8	.2	.04	.08	.20	.35	.52	.73	1.00	1.35	1.85	2.73	3.62	
Oct	1.37	1.17	1.71	1966	13	4.90	1994	.00	1988	5.7	3.5	.9	.2	.15	.31	.54	.74	.94	1.15	1.40	1.69	2.08	2.71	3.31	
Nov	.99	.74	1.13	1958	15	3.37	1983	.03	1999	5.7	2.7	.6	.0	.09	.16	.30	.44	.59	.76	.96	1.21	1.55	2.13	2.69	
Dec	.61	.40	.98	1955	2	2.02	1997	.05	1981	4.6	2.0	.2	.0	.07	.12	.20	.29	.38	.48	.60	.74	.94	1.27	1.60	
Ann	13.42	13.21	2.50	May 1964	29	6.44	Apr 1999	.00+	Oct 1988	73.7	33.9	7.2	1.6	8.78	9.65	10.78	11.65	12.43	13.19	13.98	14.86	15.93	17.50	18.88	

+ 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

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Snow (inches)																							
Snow Totals															Mean Number of Days (1)								
Means/Medians (1)					Extremes (2)										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	9.0	8.9	6	5	13.3	1980	18	26.2	1980	23+	1984	21	16+	1986	4.6	2.4	1.3	.4	.1	26.3	22.4	15.9	6.3
Feb	9.3	9.1	5	4	17.0	1987	23	32.7	1987	23+	1984	26	19	1984	5.0	2.5	1.0	.5	.1	22.3	16.9	12.6	5.2
Mar	17.3	14.7	3	3	16.3	1973	28	52.0	1977	27+	1973	29	17	1973	6.3	3.9	2.0	1.2	.3	11.7	8.2	5.9	3.1
Apr	20.2	13.6	1	2	28.6	1999	22	70.4	1999	26	1973	7	13	1973	5.8	4.2	2.2	1.3	.5	5.6	4.0	2.8	1.6
May	6.9	1.5	#	2	15.5	1979	2	33.9	1975	18	1975	21	1+	1983	1.8	1.3	.8	.5	.2	1.1	.7	.4	.2
Jun	.3	.0	#	0	2.9	1976	14	2.9	1976	#+	1995	9	#	1995	.2	.1	.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	3.2	.0	#	0	11.4	1982	30	32.9	1982	12	1982	14	1	1982	1.2	.9	.4	.2	@	.3	.1	.1	@
Oct	9.7	8.9	#	0	12.2	1971	28	39.9	1971	17	1971	29	2	1971	3.6	2.1	1.3	.7	.1	2.4	1.4	.7	.2
Nov	16.7	13.5	2	2	20.7	1985	13	48.7	1983	21	1983	27	7	1971	6.2	3.7	2.1	.9	.2	13.5	9.3	5.8	1.2
Dec	11.0	7.7	4	3	15.3	1979	22	28.0	1985	28	1985	10	15	1985	5.2	2.6	1.3	.6	.1	23.2	17.3	11.0	4.0
Ann	103.6	77.9	N/A	N/A	28.6	Apr 1999	22	70.4	Apr 1999	28	Dec 1985	10	19	Feb 1984	39.9	23.7	12.4	6.3	1.6	106.4	80.3	55.2	21.8

+ Also occurred on an earlier date(s) #Denotes trace amounts

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-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	6/19	6/13	6/08	6/04	6/01	5/28	5/24	5/19	5/13
32	6/06	5/31	5/26	5/22	5/19	5/15	5/11	5/07	4/30
28	5/17	5/13	5/09	5/07	5/04	5/01	4/29	4/25	4/21
24	5/03	4/28	4/24	4/21	4/18	4/15	4/11	4/08	4/02
20	4/26	4/19	4/15	4/11	4/07	4/04	3/31	3/26	3/20
16	4/18	4/11	4/05	4/01	3/27	3/23	3/18	3/13	3/06
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	9/08	9/11	9/14	9/15	9/17	9/19	9/21	9/23	9/26
32	9/13	9/17	9/20	9/22	9/24	9/26	9/29	10/02	10/05
28	9/18	9/23	9/27	9/30	10/03	10/06	10/09	10/13	10/18
24	9/28	10/04	10/08	10/11	10/15	10/18	10/22	10/26	10/31
20	10/10	10/16	10/20	10/23	10/26	10/29	11/01	11/05	11/10
16	10/21	10/26	10/29	11/01	11/03	11/06	11/09	11/12	11/16
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	130	122	117	112	108	104	99	94	86
32	151	143	137	132	128	123	118	113	105
28	173	165	160	156	151	147	143	137	130
24	204	196	189	184	179	174	169	163	154
20	225	217	211	206	201	196	191	185	176
16	250	240	232	226	220	214	208	200	190

* 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)

Base	Heating Degree Days (1)												
	Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
65	1397	1118	921	643	373	116	16	24	220	580	1027	1355	7790
60	1231	962	759	490	234	66	3	9	124	425	890	1200	6393
57	1138	878	666	408	167	38	1	3	79	336	800	1107	5621
55	1076	822	605	355	129	25	0	2	55	282	744	1045	5140
50	922	688	459	238	58	7	0	0	18	162	604	893	4049
32	428	268	83	20	0	0	0	0	0	6	205	404	1414

Cooling Degree Days (1)

Base	Cooling Degree Days (1)												
	Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
32	23	52	176	367	657	944	1200	1156	799	457	120	32	5983
55	0	0	0	15	74	273	487	444	177	21	0	0	1491
57	0	0	0	9	51	223	426	383	138	12	0	0	1242
60	0	0	0	3	24	155	335	293	86	4	0	0	900
65	0	0	0	0	3	70	190	153	29	0	0	0	445
70	0	0	0	0	0	20	76	52	6	0	0	0	154

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	57	180	424	712	962	916	572	251	38	2	0	8	65	245	669	1381	2343	3259	3831	4082	4120	4122
45	0	0	18	93	283	563	807	761	432	145	10	0	0	0	18	111	394	957	1764	2525	2957	3102	3112	3112
50	0	0	1	43	164	415	652	606	299	65	0	0	0	0	1	44	208	623	1275	1881	2180	2245	2245	2245
55	0	0	0	16	78	280	497	453	183	23	0	0	0	0	0	16	94	374	871	1324	1507	1530	1530	1530
60	0	0	0	1	25	161	344	303	90	4	0	0	0	0	0	1	26	187	531	834	924	928	928	928
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	10	55	139	264	451	615	587	366	178	36	2	0	10	65	204	468	919	1534	2121	2487	2665	2701	2703

(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.
Complete documentation for the 1971-2000 Normals is available on the internet from:
www.ncdc.noaa.gov/oa/climate/normal/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/normal.html
U.S. Climate Normals 1971-2000-Products Clim20, www.ncdc.noaa.gov/oa/climate/normal/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