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: BEULAH, OR **COOP ID: 350723**

Climate Division: OR 9 **NWS Call Sign:** **Elevation: 3,270 Feet** **Lat: 43˚54N** **Lon: 118˚09W**

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	36.3	15.3	25.8	59	1997	1	33.4	1998	-30+	1962	22	10.2	1979	1216	0	.0	.0	1.0	8.3	29.4	3.5
Feb	43.7	20.6	32.2	67	1995	25	40.9	1995	-25+	1956	1	21.3	1989	920	0	.0	.0	7.0	2.3	25.9	1.2
Mar	52.8	26.5	39.7	80	1966	30	45.4	1986	-5	1993	1	34.1	1971	785	0	.0	.0	21.3	.2	24.6	@
Apr	61.3	31.8	46.6	90	1977	24	53.7	1990	14	1968	13	39.1	1975	555	0	.0	@	27.8	.0	15.5	.0
May	69.9	39.4	54.7	99	1986	29	61.3	1992	19	1954	1	49.6	1977	329	9	.0	.9	31.0	.0	4.6	.0
Jun	78.9	46.0	62.5	101+	1986	25	68.0	1986	27	1962	4	57.8	1991	139	61	.2	5.1	30.0	.0	.4	.0
Jul	88.4	51.9	70.2	105+	1979	18	76.5	1985	32	1986	5	61.0	1993	38	197	1.5	17.4	31.0	.0	@	.0
Aug	88.0	50.5	69.3	108	1961	4	73.8	1986	30	1992	24	64.1	1976	36	167	1.7	16.4	31.0	.0	@	.0
Sep	79.2	40.5	59.9	103+	1955	5	65.7	1990	20	1950	30	51.3	1985	203	49	.1	5.3	29.9	.0	3.7	.0
Oct	67.5	30.7	49.1	92+	1992	1	56.4	1988	2	1971	29	45.4	1985	494	1	.0	.2	29.9	.0	18.5	.0
Nov	49.1	23.3	36.2	74	1988	1	42.9	1999	-11	1955	15	25.8	1985	865	0	.0	.0	12.9	1.4	25.5	.3
Dec	38.1	15.6	26.9	64	1958	3	32.6	1977	-29+	1990	23	12.3	1985	1183	0	.0	.0	2.6	6.1	29.6	2.7
Ann	62.8	32.7	47.8	108	Aug 1961	4	76.5	Jul 1985	-30+	Jan 1962	22	10.2	Jan 1979	6763	484	3.5	45.3	255.4	18.3	177.7	7.7

\+ 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	1.37	1.32	2.16	1998	19	2.92	1998	.01	1985
Feb	1.11	.95	1.64	2000	29	3.52	1986	.19	1971
Mar	1.25	1.13	.89	1996	13	3.40	1983	.00	1994
Apr	.91	.86	.90	1963	6	3.05	1978	.00	1977
May	1.19	.97	1.18	1989	10	3.27	1998	.04	1974
Jun	.84	.82	1.27	1980	14	2.05+	1992	.00	1985
Jul	.42	.31	.96	1995	13	1.21+	1976	.00+	2000
Aug	.54	.38	1.03	1984	31	1.96	1979	.00+	1998
Sep	.49	.41	.86	1980	13	1.94	1986	.00+	2000
Oct	.67	.60	.89	2000	28	2.23	1982	.00+	1998
Nov	1.40	1.19	1.27	1971	26	3.71	1988	.21	1974
Dec	1.61	1.34	2.06	1987	6	4.97	1996	.09	1976
Ann	11.80	11.22	2.16	Jan 1998	19	4.97	Dec 1996	.00+	Sep 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	7.0	3.7	.8	.1
Feb	6.2	3.4	.2	.1
Mar	8.5	4.1	.3	.0
Apr	6.4	3.1	.2	.0
May	6.5	3.7	.5	@
Jun	4.9	2.5	.4	@
Jul	2.3	1.1	.2	.0
Aug	3.1	1.5	.2	@
Sep	2.4	1.3	.1	.0
Oct	3.5	1.9	.1	.0
Nov	7.5	4.2	.5	.1
Dec	7.9	4.5	.8	@
Ann	66.2	35.0	4.3	.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	.15	.26	.45	.64	.84	1.07	1.34	1.67	2.12	2.87	3.60
Feb	.19	.29	.45	.60	.76	.93	1.12	1.36	1.67	2.18	2.66
Mar	.18	.34	.55	.73	.90	1.09	1.29	1.54	1.86	2.37	2.85
Apr	.09	.20	.35	.48	.61	.76	.92	1.12	1.39	1.82	2.23
May	.09	.17	.33	.49	.67	.88	1.13	1.45	1.89	2.62	3.35
Jun	.04	.12	.25	.37	.50	.65	.82	1.03	1.32	1.79	2.26
Jul	.00	.00	.04	.10	.17	.26	.37	.51	.71	1.06	1.42
Aug	.00	.00	.03	.13	.23	.35	.49	.67	.92	1.33	1.76
Sep	.00	.00	.00	.10	.22	.33	.47	.63	.84	1.21	1.55
Oct	.00	.00	.18	.30	.41	.53	.67	.84	1.06	1.43	1.78
Nov	.19	.31	.51	.71	.91	1.13	1.39	1.71	2.14	2.84	3.52
Dec	.22	.35	.58	.81	1.04	1.30	1.60	1.97	2.47	3.28	4.07
Ann	7.22	8.06	9.15	10.00	10.77	11.53	12.31	13.19	14.28	15.87	17.27

\+ 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	6.4	6.1	4	2
Feb	3.1	1.7	1	0
Mar	1.3	.0	#	0
Apr	.2	.0	#	0
May	.1	.0	0	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	.1	.0	#	0
Nov	2.8	1.1	#	0
Dec	10.9	10.5	2	#
Ann	24.9	19.4	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	7.5	1993	1	18.4	1986	25	1993	1	25	1993
Feb	6.0	1986	13	10.8	1989	9	1985	1	4	1985
Mar	5.0	1972	1	10.0	1985	4	1985	4	#+	1985
Apr	1.6	1975	15	3.0	1975	#	1975	4	#	1975
May	2.0	1982	9	2.0	1982	0	0	0	0	0
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	.0	0	0	.0	0	0	0	0	0	0
Oct	2.0	1971	30	2.7	1971	1	1971	30	#	1971
Nov	6.0	1971	26	11.5	1977	9	1977	22	2	1985
Dec	7.0	1983	6	25.5	1981	13	1983	6	8	1985
Ann	7.5	Jan 1993	1	25.5	Dec 1981	25	Jan 1993	1	25	Jan 1993

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	3.0	1.9	.7	.2	.0
Feb	1.7	1.2	.4	.1	.0
Mar	.8	.6	.1	@	.0
Apr	.2	.2	.0	.0	.0
May	.1	@	.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	.1	@	.0	.0	.0
Nov	1.6	1.2	.4	.2	.0
Dec	3.9	3.2	1.1	.3	.0
Ann	11.4	8.3	2.7	.8	.0

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	16.6	13.4	9.2	3.0
Feb	6.7	3.8	1.5	.0
Mar	.9	.2	.0	.0
Apr	.0	.0	.0	.0
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	.1	.0	.0	.0
Nov	2.6	1.9	.9	.0
Dec	15.5	10.3	4.8	.3
Ann	42.4	29.6	16.4	3.3

+ 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	7/03	6/27	6/23	6/20	6/16	6/13	6/10	6/06	5/31
32	6/15	6/08	6/03	5/30	5/27	5/23	5/19	5/14	5/07
28	5/28	5/21	5/16	5/11	5/07	5/03	4/29	4/24	4/16
24	5/05	4/27	4/22	4/18	4/14	4/10	4/06	4/01	3/25
20	4/24	4/14	4/07	4/01	3/27	3/21	3/16	3/09	2/27
16	3/28	3/20	3/13	3/08	3/03	2/26	2/21	2/15	2/06

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	8/29	9/03	9/06	9/09	9/11	9/14	9/16	9/19	9/24
32	9/07	9/13	9/17	9/20	9/23	9/26	9/29	10/03	10/09
28	9/18	9/23	9/26	9/29	10/02	10/04	10/07	10/10	10/15
24	10/01	10/05	10/09	10/12	10/14	10/17	10/20	10/23	10/28
20	10/12	10/17	10/21	10/24	10/27	10/30	11/02	11/06	11/11
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	105	98	94	90	86	82	78	74	67
32	142	134	128	123	119	114	109	103	95
28	170	162	156	151	147	142	138	132	124
24	209	200	193	188	183	177	172	165	157
20	250	237	228	220	213	206	198	189	177
16	283	273	265	259	253	247	240	233	222

***** 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	Ann
65	1216	920	785	555	329	139	38	36	203	494	865	1183	6763
60	1061	780	630	411	200	63	11	9	113	344	715	1028	5365
57	968	696	537	329	138	33	4	3	72	261	625	935	4601
55	906	640	476	277	104	20	1	1	51	211	565	873	4125
50	753	506	331	167	42	4	0	0	17	107	423	718	3068
32	282	125	23	4	0	0	0	0	0	1	71	243	749

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	89	129	261	440	703	912	1183	1154	836	530	197	83	6517
55	0	0	1	22	94	242	471	442	197	28	0	0	1497
57	0	0	0	14	66	195	412	382	158	16	0	0	1243
60	0	0	0	6	35	135	326	295	108	6	0	0	911
65	0	0	0	0	9	61	197	167	49	1	0	0	484
70	0	0	0	0	1	20	104	76	16	0	0	0	217

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	16	87	238	489	703	965	932	617	305	40	4	0	16	103	341	830	1533	2498	3430	4047	4352	4392	4396
45	0	0	25	128	342	553	810	777	469	178	10	0	0	0	25	153	495	1048	1858	2635	3104	3282	3292	3292
50	0	0	3	58	210	408	655	622	328	83	0	0	0	0	3	61	271	679	1334	1956	2284	2367	2367	2367
55	0	0	0	19	108	270	502	467	205	28	0	0	0	0	0	19	127	397	899	1366	1571	1599	1599	1599
60	0	0	0	2	47	155	352	315	101	7	0	0	0	0	0	2	49	204	556	871	972	979	979	979
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	0	21	88	196	331	455	600	576	436	281	44	3	0	21	109	305	636	1091	1691	2267	2703	2984	3028	3031

(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

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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