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: FOSSIL, OR **COOP ID: 353038**

Climate Division: OR 7 **NWS Call Sign:** **Elevation: 2,650 Feet** **Lat: 45˚00N** **Lon: 120˚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	41.3	28.1	34.7	67	1989	30	43.2	1994	-26	1957	26	16.8	1979	938	0	.0	.0	7.4	5.6	23.1	1.2
Feb	45.7	29.4	37.6	72+	1986	25	44.0	1992	-22+	1989	4	25.9	1989	768	0	.0	.0	10.8	2.3	20.3	.7
Mar	51.8	31.9	41.9	78	1972	9	48.0	1983	2	1955	5	36.2	1976	717	0	.0	.0	20.1	.2	20.1	.0
Apr	58.4	34.7	46.6	87+	1977	24	51.2	1992	12	1966	19	42.3	1976	554	0	.0	.0	25.5	.0	15.6	.0
May	66.2	39.0	52.6	97	1986	31	59.7	1993	15	1964	2	48.1	1996	388	4	.0	.2	30.3	.0	8.9	.0
Jun	74.0	44.2	59.1	101	1992	23	66.0	1977	25+	1991	4	52.5	1976	214	37	.1	1.4	30.0	.0	2.0	.0
Jul	83.4	47.4	65.4	106	1949	14	70.6	1985	25	1971	7	57.2	1993	90	101	.2	8.6	31.0	.0	.4	.0
Aug	83.5	47.7	65.6	106	1998	4	72.5	1977	28	1957	16	60.1	1976	80	98	.3	8.6	31.0	.0	.3	.0
Sep	75.1	42.7	58.9	98+	1958	7	64.2	1994	18	1965	18	52.5	1971	215	31	.0	1.8	30.0	.0	4.5	.0
Oct	63.7	37.1	50.4	98	1975	9	55.8	1988	3	1991	30	43.7	1984	453	0	.0	.6	29.3	@	12.4	.0
Nov	47.6	33.3	40.5	75	1965	1	48.4	1999	-16	1985	24	28.2	1985	735	0	.0	.0	14.3	1.6	17.5	.3
Dec	40.9	29.0	35.0	67	1980	30	42.9	1980	-24	1990	21	26.3	1985	933	0	.0	.0	7.2	4.9	23.8	.9
Ann	61.0	37.0	49.0	106+	Aug 1998	4	72.5	Aug 1977	-26	Jan 1957	26	16.8	Jan 1979	6085	271	.6	21.2	266.9	14.6	148.9	3.1

\+ 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: 1928-2001

(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	1.50	1.66	1.50	1995	29	2.68	1980	.23	1984
Feb	1.27	1.23	.98+	1986	22	3.04	1983	.18	1972
Mar	1.49	1.33	1.30	1994	30	3.25	1984	.58	1973
Apr	1.42	1.31	1.08	1989	25	3.15	1988	.10	1977
May	1.66	1.52	1.86	1998	24	4.36	1998	.21	1975
Jun	1.11	1.12	1.68	1950	12	2.61	1984	.18	1986
Jul	.55	.33	1.40	1978	8	2.48	1978	.00+	1997
Aug	.72	.51	1.56	1976	6	3.81	1976	.00+	1998
Sep	.79	.62	1.01	1928	12	2.33	1982	.00+	1998
Oct	1.33	1.28	2.00	1950	28	3.63	1979	.00	1987
Nov	1.77	1.23	1.67	1996	18	4.14	1988	.49	1976
Dec	1.57	1.06	1.97	1964	22	5.86	1996	.00	1997
Ann	15.18	14.70	2.00	Oct 1950	28	5.86	Dec 1996	.00+	Sep 1998

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	7.6	4.4	.5	.1
Feb	7.2	4.1	.4	.0
Mar	8.6	4.8	.4	.1
Apr	7.6	4.5	.5	.1
May	6.8	4.2	1.1	.2
Jun	5.2	3.2	.6	.1
Jul	2.7	1.4	.3	.1
Aug	2.8	1.9	.5	@
Sep	3.7	2.5	.3	.0
Oct	6.0	3.5	.6	.1
Nov	8.2	5.3	.7	.1
Dec	7.1	4.3	.6	.2
Ann	73.5	44.1	6.5	1.1

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	.49	.63	.84	1.02	1.19	1.37	1.57	1.80	2.09	2.55	2.97
Feb	.32	.44	.62	.79	.95	1.12	1.31	1.54	1.84	2.31	2.75
Mar	.62	.75	.95	1.10	1.25	1.40	1.57	1.75	1.99	2.35	2.68
Apr	.31	.44	.65	.84	1.03	1.23	1.45	1.72	2.08	2.65	3.19
May	.32	.47	.71	.94	1.17	1.41	1.69	2.03	2.47	3.19	3.87
Jun	.21	.31	.48	.63	.78	.94	1.13	1.35	1.65	2.13	2.58
Jul	.00	.00	.00	.15	.27	.39	.53	.71	.95	1.34	1.72
Aug	.00	.00	.00	.05	.21	.39	.61	.89	1.28	1.95	2.60
Sep	.00	.00	.00	.15	.31	.49	.71	.98	1.36	2.01	2.64
Oct	.05	.16	.35	.54	.75	.99	1.27	1.63	2.11	2.93	3.73
Nov	.42	.59	.85	1.08	1.31	1.55	1.82	2.14	2.57	3.24	3.87
Dec	.13	.31	.56	.79	1.03	1.29	1.58	1.94	2.41	3.19	3.93
Ann	9.91	10.90	12.18	13.17	14.05	14.92	15.81	16.81	18.03	19.82	21.38

+ 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: 1928-2001
(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	2.7	2.3	1	#
Feb	2.0	1.0	#	0
Mar	1.0	1.0	#	0
Apr	.3	.0	#	0
May	.2	.0	#	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	.6	.0	#	0
Nov	2.7	.0	#	0
Dec	2.8	2.0	1	#
Ann	12.3	6.3	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	7.0	1979	10	7.0+	1979	12	1979	16	6	1979
Feb	9.0	1986	12	15.0	1986	13	1986	13	2	1986
Mar	3.0	1987	15	3.0	1987	4	1991	25	#+	1993
Apr	2.0	1975	3	3.0	1975	2	1975	3	#+	1986
May	2.0	1977	6	2.0+	1988	1	1981	5	#	1981
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	5.0	1991	29	5.0+	1991	4	1971	30	#+	1985
Nov	9.0	1977	22	12.5	1985	9	1977	22	3	1985
Dec	5.0	1983	24	13.0	1983	7	1985	2	3	1972
Ann	9.0+	Feb 1986	12	15.0	Feb 1986	13	Feb 1986	13	6	Jan 1979

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	1.9	1.3	.4	.1	.0
Feb	1.0	.8	.2	.1	.0
Mar	.6	.4	@	.0	.0
Apr	.3	.2	.0	.0	.0
May	.2	.2	.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	.2	.2	.1	@	.0
Nov	.8	.6	.4	.2	.0
Dec	1.9	1.4	.4	.1	.0
Ann	6.9	5.1	1.5	.5	.0

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	2.3	.9	.4	.0
Feb	1.7	.6	.3	.1
Mar	.2	.0	.0	.0
Apr	.1	.0	.0	.0
May	@	.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	1.4	.8	.7	.0
Dec	3.9	1.1	.4	.0
Ann	9.7	3.4	1.8	.1

+ 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	7/27	7/20	7/14	7/09	7/05	6/30	6/25	6/20	6/12
32	7/08	6/28	6/21	6/14	6/08	6/02	5/27	5/20	5/09
28	6/22	6/12	6/05	5/30	5/24	5/18	5/12	5/05	4/25
24	5/25	5/16	5/10	5/04	4/29	4/24	4/19	4/13	4/04
20	5/04	4/22	4/13	4/05	3/29	3/22	3/14	3/05	2/21
16	3/27	3/13	3/03	2/23	2/15	2/06	1/29	1/18	1/01

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	8/06	8/14	8/19	8/23	8/28	9/01	9/05	9/10	9/18
32	8/25	9/01	9/05	9/09	9/13	9/17	9/21	9/25	10/02
28	9/09	9/17	9/22	9/27	10/02	10/06	10/11	10/16	10/24
24	9/19	9/27	10/03	10/08	10/13	10/18	10/23	10/28	11/05
20	9/29	10/11	10/19	10/27	11/02	11/09	11/16	11/25	12/06
16	10/30	11/08	11/15	11/21	11/27	12/03	12/09	12/16	12/28

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	87	75	67	60	53	46	39	31	19
32	134	121	111	103	96	88	80	71	58
28	168	155	145	137	130	122	114	104	91
24	200	188	180	172	166	159	152	144	132
20	267	250	238	228	218	208	198	185	168
16	342	317	304	293	284	275	265	254	239

***** 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	938	768	717	554	388	214	90	80	215	453	735	933	6085
60	783	628	562	405	247	120	31	25	117	302	588	778	4586
57	699	545	469	318	175	77	15	11	73	221	504	685	3792
55	641	491	411	263	134	53	8	5	49	172	448	623	3298
50	500	362	269	144	56	18	1	0	15	78	318	479	2240
32	137	53	12	0	0	0	0	0	0	0	42	95	339

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	222	209	318	436	639	812	1035	1042	806	571	297	185	6572
55	13	3	4	9	60	176	330	334	165	29	13	1	1137
57	9	0	0	4	38	139	274	277	128	16	8	0	893
60	0	0	0	0	18	92	198	199	82	5	2	0	596
65	0	0	0	0	4	37	101	98	31	0	0	0	271
70	0	0	0	0	0	11	36	33	9	0	0	0	89

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	42	57	103	195	372	559	771	780	548	323	94	42	42	99	202	397	769	1328	2099	2879	3427	3750	3844	3886
45	9	15	35	99	234	409	616	625	400	195	37	9	9	24	59	158	392	801	1417	2042	2442	2637	2674	2683
50	0	0	2	42	125	267	461	470	262	98	7	0	0	0	2	44	169	436	897	1367	1629	1727	1734	1734
55	0	0	0	8	55	145	310	317	142	40	0	0	0	0	0	8	63	208	518	835	977	1017	1017	1017
60	0	0	0	1	18	65	178	180	57	14	0	0	0	0	0	1	19	84	262	442	499	513	513	513
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	21	36	77	149	269	371	501	511	390	251	48	17	21	57	134	283	552	923	1424	1935	2325	2576	2624	2641

(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