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: DETROIT DAM, OR **COOP ID: 352292**

Climate Division: OR 4 **NWS Call Sign:** **Elevation: 1,220 Feet** **Lat: 44˚43N** **Lon: 122˚15W**

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	43.6	33.5	38.6	67	1961	21	42.7	1986	9	1957	27	32.3	1979	820	0	.0	.0	4.4	1.0	10.7	.0
Feb	47.1	34.2	40.7	75	1968	29	46.1+	1992	5	1989	4	34.1	1989	683	0	.0	.0	9.5	.5	7.5	.0
Mar	52.3	35.8	44.1	76	1969	26	50.2	1992	18	1955	6	38.8	1971	651	0	.0	.0	18.5	.0	3.9	.0
Apr	57.4	38.7	48.1	87+	1998	30	53.0	1989	30+	1975	6	42.7	1975	508	0	.0	.0	22.8	.0	.6	.0
May	63.9	43.3	53.6	104	1983	29	60.4	1992	32	1962	1	48.9	1977	357	4	@	.4	29.2	.0	.0	.0
Jun	70.1	48.4	59.3	101	1970	3	64.0	1992	36	1991	21	55.1	1980	191	19	@	.8	29.9	.0	.0	.0
Jul	77.6	52.3	65.0	103+	1988	20	69.6	1985	42+	1982	16	60.1	1983	87	85	.1	3.2	31.0	.0	.0	.0
Aug	78.5	53.0	65.8	105	1970	11	69.5	1997	40	1989	31	61.6	1980	66	90	.2	3.5	31.0	.0	.0	.0
Sep	73.4	49.6	61.5	107	1988	3	66.0	1998	35	1985	3	56.7	1985	154	48	.1	1.4	30.0	.0	.0	.0
Oct	62.1	44.0	53.1	92	1987	2	59.5	1988	26	1971	29	49.1	1971	373	2	.0	@	28.9	.0	.2	.0
Nov	49.3	38.2	43.8	72	1969	2	48.5	1997	11+	1955	16	35.9	1985	638	0	.0	.0	14.3	.2	3.2	.0
Dec	43.8	34.3	39.1	66	1955	12	42.8	1979	5	1972	9	32.4	1990	805	0	.0	.0	4.5	1.3	7.9	.0
Ann	59.9	42.1	51.1	107	Sep 1988	3	69.6	Jul 1985	5+	Feb 1989	4	32.3	Jan 1979	5333	248	.4	9.3	254.0	3.0	34.0	.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/normals/usnormals.html

(1) From the 1971-2000 Monthly Normals

(2) Derived from station's available digital record: 1954-2001

(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	12.46	13.36	5.11	1972	21	20.88	1974	.43	1985
Feb	11.00	10.43	4.50	1961	10	21.17	1996	2.47	1993
Mar	9.45	9.41	3.62	1972	2	15.90	1997	2.38	1992
Apr	7.31	6.84	5.56	1990	28	14.47	1993	3.06	1999
May	5.56	5.13	2.50	2001	15	10.62	1984	.99	1992
Jun	3.51	3.14	2.68	1981	8	9.35	1984	1.14	1987
Jul	1.04	.70	1.40	1997	1	5.03	1983	.02	1973
Aug	1.35	.89	1.28	1968	26	4.66	1978	.00	1988
Sep	3.28	2.82	3.10	1959	26	8.88	1986	.00	1993
Oct	6.41	6.16	3.74	1994	28	13.87	1997	.09	1987
Nov	14.08	12.25	4.90	1960	24	29.01	1973	2.86	1976
Dec	14.17	13.98	5.41	1964	22	33.13	1996	3.56	1976
Ann	89.62	91.75	5.56	Apr 1990	28	33.13	Dec 1996	.00+	Sep 1993

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	19.9	16.0	8.7	4.1
Feb	18.2	15.0	7.9	3.4
Mar	20.4	16.3	7.8	2.5
Apr	18.6	14.1	5.4	1.4
May	15.8	11.5	3.9	1.1
Jun	10.5	7.2	2.3	.7
Jul	5.4	2.8	.5	.1
Aug	4.9	3.1	.8	.1
Sep	8.6	5.7	2.4	1.0
Oct	12.8	9.9	4.9	2.0
Nov	21.0	16.7	9.8	4.6
Dec	20.5	16.5	9.5	5.1
Ann	176.6	134.8	63.9	26.1

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	2.91	4.07	5.89	7.52	9.15	10.87	12.80	15.10	18.12	22.92	27.43
Feb	3.99	5.02	6.51	7.76	8.95	10.17	11.50	13.04	15.01	18.05	20.83
Mar	3.70	4.57	5.82	6.85	7.83	8.82	9.90	11.14	12.72	15.15	17.36
Apr	3.06	3.72	4.66	5.42	6.14	6.87	7.66	8.56	9.70	11.45	13.03
May	1.93	2.45	3.22	3.86	4.48	5.11	5.81	6.62	7.65	9.25	10.72
Jun	.97	1.30	1.81	2.25	2.68	3.13	3.63	4.22	4.99	6.20	7.33
Jul	.05	.10	.22	.35	.51	.71	.94	1.25	1.69	2.44	3.20
Aug	.03	.11	.28	.47	.69	.94	1.25	1.64	2.19	3.13	4.07
Sep	.03	.15	.49	.91	1.42	2.05	2.84	3.89	5.41	8.05	10.74
Oct	.86	1.38	2.30	3.19	4.13	5.16	6.36	7.83	9.83	13.08	16.23
Nov	4.62	5.96	7.92	9.59	11.20	12.86	14.68	16.81	19.54	23.79	27.70
Dec	4.43	5.78	7.77	9.49	11.14	12.86	14.75	16.96	19.81	24.26	28.38
Ann	63.37	68.44	74.95	79.89	84.28	88.53	92.92	97.77	103.66	112.21	119.61

+ 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: 1954-2001
(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	4.1	1.0	#	#	10.0	1971	13	26.0	1971	22	1971	14	5	1982	1.5	1.1	.5	.3	@	2.1	1.2	.8	.4
Feb	4.5	.0	1	#	13.0	1971	25	31.8	1971	24	1971	28	4	1990	1.5	1.2	.7	.4	@	1.7	1.2	.6	.3
Mar	.8	.0	#	0	5.5	1971	4	10.5	1971	18	1971	4	5	1971	.4	.3	.1	.1	.0	.7	.4	.4	.2
Apr	.2	.0	#	0	1.5	1976	1	2.3	1982	2	1976	1	#+	1982	.2	.1	.0	.0	.0	.2	.0	.0	.0
May	.0	.0	0	0	.0	0	0	.0	0	0	0	0	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	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	.9	.0	#	0	8.2	1977	22	10.4	1977	8+	1985	25	2	1985	.3	.3	.1	.1	.0	.6	.3	.3	.0
Dec	1.4	.0	#	0	5.0	1985	1	9.0	1972	8	1994	7	2	1972	1.0	.7	.2	@	.0	1.3	.3	.1	.0
Ann	11.9	1.0	N/A	N/A	13.0	Feb 1971	25	31.8	Feb 1971	24	Feb 1971	28	5+	Jan 1982	4.9	3.7	1.6	.9	@	6.6	3.4	2.2	.9

+ 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	5/23	5/16	5/11	5/07	5/03	4/29	4/24	4/19	4/12
32	4/16	4/06	3/30	3/24	3/19	3/13	3/07	3/01	2/19
28	3/05	2/22	2/14	2/07	1/31	1/24	1/16	1/05	0/00
24	2/27	2/14	2/05	1/28	1/20	1/12	1/02	12/18	0/00
20	2/11	1/29	1/19	1/09	12/28	12/07	0/00	0/00	0/00
16	1/29	1/14	12/30	0/00	0/00	0/00	0/00	0/00	0/00

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	10/13	10/20	10/25	10/30	11/03	11/07	11/12	11/17	11/24
32	11/05	11/12	11/17	11/21	11/25	11/29	12/04	12/09	12/15
28	11/13	11/25	12/03	12/11	12/18	12/26	1/04	1/19	0/00
24	11/30	12/13	12/22	12/31	1/08	1/17	1/29	2/19	0/00
20	12/12	12/25	1/05	1/15	1/28	0/00	0/00	0/00	0/00
16	12/20	1/06	1/23	0/00	0/00	0/00	0/00	0/00	0/00

Freeze Free Period

Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	217	205	197	190	184	177	170	162	151
32	289	276	267	258	251	243	235	225	212
28	>365	>365	356	332	318	306	295	284	268
24	>365	>365	>365	>365	>365	343	328	314	298
20	>365	>365	>365	>365	>365	>365	>365	344	320
16	>365	>365	>365	>365	>365	>365	>365	>365	355

***** 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	820	683	651	508	357	191	87	66	154	373	638	805	5333
60	665	543	496	360	218	91	27	16	72	232	488	650	3858
57	572	459	403	276	150	49	11	6	39	159	402	557	3083
55	510	403	344	223	113	29	6	2	24	118	346	495	2613
50	359	270	205	114	44	6	0	0	5	46	218	344	1611
32	18	9	2	0	0	0	0	0	0	0	7	15	51

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	221	251	374	482	671	817	1021	1047	884	652	359	233	7012
55	0	0	3	15	71	157	314	335	217	57	8	0	1177
57	0	0	0	8	46	116	257	278	173	36	4	0	918
60	0	0	0	2	21	68	180	195	116	16	0	0	598
65	0	0	0	0	4	19	85	90	48	2	0	0	248
70	0	0	0	0	0	3	26	25	14	0	0	0	68

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	45	82	158	261	441	591	792	821	668	426	146	54	45	127	285	546	987	1578	2370	3191	3859	4285	4431	4485
45	2	21	57	135	291	441	637	666	518	278	55	9	2	23	80	215	506	947	1584	2250	2768	3046	3101	3110
50	0	1	12	59	164	295	482	511	368	146	10	0	0	1	13	72	236	531	1013	1524	1892	2038	2048	2048
55	0	0	0	20	77	168	331	356	227	60	0	0	0	0	0	20	97	265	596	952	1179	1239	1239	1239
60	0	0	0	2	32	77	193	214	116	15	0	0	0	0	0	2	34	111	304	518	634	649	649	649
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	2	27	71	129	230	322	478	501	384	202	37	3	2	29	100	229	459	781	1259	1760	2144	2346	2383	2386

(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