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: HART MOUNTAIN REFUGE, OR **COOP ID: 353692**

Climate Division: OR 7 **NWS Call Sign:** **Elevation: 5,616 Feet** **Lat: 42˚33N** **Lon: 119˚39W**

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	39.8	18.2	29.0	63	1994	18	36.2	1986	-28	1962	22	21.1	1979	1116	0	.0	.0	4.2	5.5	28.4	1.6
Feb	42.0	20.2	31.1	67	1977	19	39.8	1995	-26+	1989	5	21.0	1989	949	0	.0	.0	5.3	3.9	26.0	1.3
Mar	46.4	22.7	34.6	71	1966	30	41.7	1978	-11	1962	3	28.1	1975	944	0	.0	.0	11.2	1.3	27.7	.2
Apr	53.9	26.1	40.0	81	1981	30	45.9	1987	-4	1973	18	31.5	1975	750	0	.0	.0	19.7	.3	22.5	@
May	62.4	31.8	47.1	88	1986	30	54.1	1992	12+	1982	4	41.3	1977	554	0	.0	.0	27.7	.0	15.7	.0
Jun	71.9	37.5	54.7	96	1940	15	61.5	2000	18	1996	18	50.0	1984	319	11	.0	.3	29.7	.0	6.2	.0
Jul	81.3	42.7	62.0	98+	2001	3	66.7	1985	23+	1986	5	53.6	1993	148	55	.0	3.8	31.0	.0	1.7	.0
Aug	80.6	42.6	61.6	98	1972	8	65.9	1971	22	1999	31	56.3	1976	144	38	.0	3.1	31.0	.0	2.1	.0
Sep	72.3	36.2	54.3	97	1950	2	58.3	1991	11	1965	18	46.6	1985	333	11	.0	.4	29.3	.0	8.4	.0
Oct	60.8	29.5	45.2	89	1996	9	51.8	1988	4+	1972	30	38.7	1984	615	0	.0	.0	25.7	.2	17.7	.0
Nov	46.0	22.5	34.3	72+	1990	11	41.0	1976	-17+	1993	25	26.2	1985	923	0	.0	.0	10.6	2.4	24.8	.5
Dec	40.0	17.3	28.7	68	1939	3	34.6	1980	-32	1990	22	21.3	1990	1127	0	.0	.0	4.2	5.2	29.1	1.6
Ann	58.1	28.9	43.6	98+	Jul 2001	3	66.7	Jul 1985	-32	Dec 1990	22	21.0	Feb 1989	7922	115	.0	7.6	229.6	18.8	210.3	5.2

\+ 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: 1939-2001

(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	.92	.78	.86	1972	22	3.04	1993	.12	1994
Feb	.91	.89	1.12	1999	9	2.76	1999	.03	1988
Mar	1.42	1.44	1.01	1984	26	3.74	1983	.45	1997
Apr	1.54	1.42	2.80	1978	26	6.30	1978	.28	1977
May	1.69	1.16	2.36	1943	15	4.92	1998	.21	1976
Jun	1.17	1.22	2.21	1975	18	4.51	1975	.06	1973
Jul	.46	.31	1.65	2001	12	1.82	1975	.00	1991
Aug	.50	.22	1.27	1984	31	1.87	1983	.00+	2000
Sep	.79	.64	1.36	1966	14	2.29	1986	.00+	1999
Oct	1.06	.83	1.60	1962	10	3.42	1975	.00	1988
Nov	1.20	1.23	1.56	1981	13	3.22	1981	.00	1976
Dec	1.06	.74	1.30	1964	23	4.50	1983	.11	1999
Ann	12.72	12.66	2.80	Apr 1978	26	6.30	Apr 1978	.00+	Aug 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	8.0	3.2	.2	.0
Feb	7.4	3.2	.3	@
Mar	9.4	4.2	.5	@
Apr	8.7	4.6	.4	.1
May	8.1	4.8	.5	.1
Jun	6.1	3.4	.4	.1
Jul	3.2	1.3	.2	@
Aug	3.4	1.5	.2	@
Sep	4.1	2.0	.5	.0
Oct	5.7	3.1	.3	.1
Nov	8.4	4.1	.3	@
Dec	7.6	3.1	.2	@
Ann	80.1	38.5	4.0	.4

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	.16	.24	.37	.50	.63	.77	.93	1.12	1.38	1.80	2.20
Feb	.11	.18	.31	.44	.57	.72	.89	1.11	1.40	1.89	2.36
Mar	.46	.59	.79	.96	1.13	1.29	1.48	1.69	1.97	2.41	2.81
Apr	.31	.45	.68	.88	1.09	1.31	1.57	1.87	2.27	2.92	3.53
May	.28	.42	.67	.90	1.14	1.40	1.70	2.06	2.54	3.33	4.08
Jun	.10	.18	.33	.49	.67	.87	1.12	1.42	1.84	2.55	3.25
Jul	.01	.04	.09	.16	.23	.32	.42	.56	.75	1.07	1.40
Aug	.00	.00	.03	.10	.18	.29	.42	.60	.86	1.30	1.76
Sep	.00	.00	.09	.22	.36	.53	.72	.97	1.33	1.91	2.49
Oct	.10	.22	.39	.55	.71	.88	1.07	1.31	1.63	2.14	2.63
Nov	.19	.35	.56	.72	.89	1.06	1.25	1.48	1.77	2.24	2.68
Dec	.14	.23	.38	.53	.69	.86	1.05	1.30	1.63	2.17	2.69
Ann	6.93	7.94	9.29	10.36	11.33	12.30	13.32	14.47	15.90	18.03	19.93

\+ 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: 1939-2001
(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	5.0	3.5	1	1	8.0	1981	29	13.5	1981	12	1981	31	4	1993	4.1	2.5	.7	.2	.0	4.6	.9	.6	.1
Feb	5.6	3.8	1	1	18.0	1999	9	18.0	1999	12+	1985	8	4	1985	4.0	2.6	.9	.3	@	5.7	3.4	1.4	.1
Mar	9.2	6.9	1	#	7.0	1971	12	25.9	1982	12	1982	19	4	1982	4.1	2.7	1.2	.4	.0	5.3	2.6	1.2	.1
Apr	2.9	1.8	#	#	7.0	1973	1	10.0	1971	7+	1999	5	2	1999	2.0	1.5	.5	.1	.0	1.8	.6	@	.0
May	1.4	.5	#	0	18.0	1991	18	18.0	1991	10	1991	18	#+	1995	1.0	.7	.3	@	@	.5	.1	@	@
Jun	.5	.0	#	0	5.0	1979	17	5.0+	1984	3	1991	6	#+	1995	.2	.2	.1	@	.0	.1	@	.0	.0
Jul	#	.0	#	0	#	1986	16	#	1986	#	1992	22	#	1992	.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	.6	.0	#	0	8.0	1971	30	16.0	1971	3	1971	26	#+	1992	.1	.1	.1	.1	.0	.1	@	.0	.0
Oct	1.5	.2	#	0	5.0	1984	19	12.4	1984	5	1984	19	1	1984	1.2	.9	.1	@	.0	1.2	.4	@	.0
Nov	5.6	5.1	1	#	6.0	1977	19	16.9	1985	8	1977	21	3	1985	3.2	2.4	.6	.1	.0	3.5	1.6	.6	.0
Dec	9.1	5.0	1	1	6.0	1983	24	41.5	1983	18	1983	24	5	1983	3.9	2.4	.7	.2	.0	7.2	2.5	.0	.0
Ann	41.4	26.8	N/A	N/A	18.0+	Feb 1999	9	41.5	Dec 1983	18	Dec 1983	24	5	Dec 1983	23.8	16.0	5.2	1.4	@	30.0	12.1	3.8	.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	7/29	7/25	7/22	7/19	7/17	7/14	7/12	7/08	7/04
32	7/23	7/19	7/15	7/12	7/10	7/07	7/04	7/01	6/26
28	7/09	7/02	6/27	6/23	6/19	6/15	6/11	6/06	5/30
24	6/28	6/20	6/14	6/09	6/04	5/30	5/25	5/19	5/11
20	5/28	5/20	5/15	5/10	5/06	5/01	4/27	4/21	4/14
16	5/20	5/10	5/02	4/26	4/20	4/14	4/08	3/31	3/21

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	8/01	8/05	8/08	8/10	8/13	8/15	8/18	8/21	8/25
32	8/08	8/13	8/17	8/20	8/24	8/27	8/30	9/03	9/08
28	8/21	8/27	9/01	9/05	9/09	9/13	9/17	9/22	9/28
24	9/05	9/11	9/16	9/20	9/24	9/28	10/02	10/06	10/13
20	9/24	9/29	10/04	10/07	10/11	10/14	10/17	10/22	10/27
16	10/12	10/18	10/22	10/26	10/29	11/02	11/06	11/10	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	45	39	34	30	26	23	19	14	8
32	67	59	53	49	44	40	35	29	21
28	111	101	93	87	81	75	69	61	51
24	142	131	124	117	111	105	98	91	80
20	185	175	168	163	157	152	146	139	130
16	227	215	206	199	192	185	177	169	157

***** 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	1116	949	944	750	554	319	148	144	333	615	923	1127	7922
60	961	809	789	600	402	196	68	60	209	462	773	972	6301
57	868	725	696	511	316	136	35	29	149	372	683	879	5399
55	806	669	634	455	260	103	22	16	115	315	623	817	4835
50	651	529	482	319	145	41	5	2	51	190	477	662	3554
32	169	128	81	30	1	0	0	0	0	4	89	182	684

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	77	103	160	270	470	681	930	917	667	412	156	78	4921
55	0	0	0	5	16	95	239	220	93	11	0	0	679
57	0	0	0	2	9	68	191	170	67	6	0	0	513
60	0	0	0	0	2	37	130	109	37	2	0	0	317
65	0	0	0	0	0	11	55	38	11	0	0	0	115
70	0	0	0	0	0	2	16	8	2	0	0	0	28

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	6	13	36	112	260	461	703	692	450	223	41	4	6	19	55	167	427	888	1591	2283	2733	2956	2997	3001
45	0	0	7	47	147	319	548	537	310	120	14	0	0	0	7	54	201	520	1068	1605	1915	2035	2049	2049
50	0	0	0	15	66	195	394	385	189	47	0	0	0	0	0	15	81	276	670	1055	1244	1291	1291	1291
55	0	0	0	0	29	95	252	237	89	12	0	0	0	0	0	0	29	124	376	613	702	714	714	714
60	0	0	0	0	4	34	129	122	30	0	0	0	0	0	0	0	4	38	167	289	319	319	319	319
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	6	17	35	101	205	337	488	483	344	193	37	3	6	23	58	159	364	701	1189	1672	2016	2209	2246	2249

(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