

Climatography of the United States

No. 20

1971-2000

Station: GRAYLAND, WA

COOP ID: 453320

Climate Division: WA 1

NWS Call Sign:

Elevation: 10 Feet

Lat: 46° 48N

Lon: 124° 05W

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	48.1	36.0	42.1	68	1961	20	47.6	1981	11+	1972	28	35.2	1979	712	0	.0	.0	11.9	.2	10.0	.0
Feb	50.8	36.8	43.8	76	1992	27	48.8	1991	9	1989	4	37.0	1989	593	0	.0	.0	16.1	.3	7.6	.0
Mar	53.4	38.2	45.8	76	1994	28	50.0	1992	22+	1989	2	41.5	1976	580	0	.0	.0	24.2	.0	5.8	.0
Apr	56.3	40.6	48.5	85	1999	17	51.4	1989	26	1963	1	44.0	1975	497	0	.0	.0	28.2	.0	1.9	.0
May	59.8	44.6	52.2	92	1997	12	56.6	1993	27	1954	1	49.5	1976	396	0	.0	@	31.0	.0	.2	.0
Jun	63.0	48.2	55.6	94+	1982	19	58.4	1997	34	1979	12	52.4	1976	282	0	.0	.1	30.0	.0	.0	.0
Jul	65.8	50.5	58.2	96	1961	11	61.0	1995	32	1976	3	55.3	1973	215	2	.0	.2	31.0	.0	@	.0
Aug	67.2	50.7	59.0	94	1987	31	62.2	1997	36	1973	19	54.5	1973	193	4	@	.3	31.0	.0	.0	.0
Sep	67.1	48.0	57.6	92	1955	4	62.2	1995	30	1972	27	53.7	1972	231	7	.0	.1	30.0	.0	@	.0
Oct	60.7	42.8	51.8	85	1975	1	54.7	1988	25	1971	29	48.8	1981	411	0	.0	.0	30.6	.0	1.5	.0
Nov	52.7	39.4	46.1	69+	1987	5	50.5	1997	12	1955	15	38.7	1985	569	0	.0	.0	23.7	.1	5.4	.0
Dec	48.1	36.1	42.1	64	1957	10	45.9	1980	7	1983	23	36.8+	1990	711	0	.0	.0	14.0	.8	9.6	.0
Ann	57.8	42.7	50.2	96	Jul 1961	11	62.2+	Aug 1997	7	Dec 1983	23	35.2	Jan 1979	5390	13	@	.7	301.7	1.4	42.0	.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/normal/usnormals.html

Issue Date: February 2004

(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

038-A

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No. 20 1971-2000

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: GRAYLAND, WA

COOP ID: 453320

Climate Division: WA 1

NWS Call Sign:

Elevation: 10 Feet

Lat: 46°48N

Lon: 124°05W

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	10.45	11.64	3.10	1984	24	17.66	1998	.88	1985	20.6	16.7	7.6	3.0	3.15	4.15	5.63	6.91	8.15	9.44	10.86	12.53	14.69	18.06	21.19
Feb	8.81	8.58	4.06	1990	10	19.00	1999	1.48	1993	18.3	14.7	6.5	2.3	3.17	4.00	5.19	6.20	7.16	8.14	9.21	10.46	12.05	14.50	16.75
Mar	8.26	7.92	3.26	1959	31	17.45	1997	1.55	1992	20.3	15.3	6.0	2.0	3.48	4.23	5.28	6.15	6.95	7.77	8.65	9.67	10.95	12.90	14.67
Apr	5.42	4.96	2.24	1988	5	10.27	1993	2.04	1998	17.3	12.4	3.3	.8	2.11	2.61	3.33	3.92	4.48	5.05	5.67	6.39	7.30	8.69	9.96
May	3.65	3.77	2.32	1969	29	6.68	1977	.66	1982	14.5	9.2	2.3	.5	1.03	1.38	1.90	2.36	2.80	3.27	3.78	4.39	5.17	6.41	7.56
Jun	2.54	2.22	2.70	2000	12	4.91	1981	.71	1987	12.6	6.7	1.3	.2	.81	1.05	1.41	1.71	2.01	2.31	2.65	3.04	3.55	4.33	5.06
Jul	1.52	1.19	1.73	1983	13	4.50	1972	.23	1975	9.0	3.6	1.0	.2	.24	.37	.59	.80	1.02	1.25	1.53	1.86	2.30	3.03	3.72
Aug	1.65	1.19	1.82	1991	29	6.88	1991	.06	1998	8.3	3.6	1.1	.2	.20	.33	.56	.79	1.03	1.30	1.62	2.01	2.54	3.42	4.27
Sep	3.05	2.75	2.70	1997	17	10.89	1978	.07	1993	10.3	6.1	2.1	.7	.12	.26	.60	1.00	1.46	2.03	2.73	3.65	4.95	7.21	9.48
Oct	6.97	6.73	4.00	1982	29	15.69	1975	.70	1987	15.7	11.3	5.1	2.0	1.45	2.09	3.11	4.04	4.98	5.98	7.11	8.47	10.27	13.14	15.85
Nov	11.12	11.18	4.16	1990	24	20.47	1983	2.57	1976	21.4	17.6	8.4	3.0	4.13	5.17	6.66	7.91	9.10	10.31	11.63	13.16	15.11	18.11	20.85
Dec	11.11	11.14	3.50	1956	9	18.64	1998	2.99	1985	21.5	16.9	8.0	3.2	4.25	5.28	6.76	7.99	9.16	10.34	11.63	13.12	15.02	17.93	20.60
Ann	74.55	76.67	4.16	Nov 1990	24	20.47	Nov 1983	.06	Aug 1998	189.8	134.1	52.7	18.1	51.21	55.67	61.41	65.79	69.70	73.49	77.41	81.76	87.06	94.77	101.46

+ 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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Station: GRAYLAND, WA

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Climate Division: WA 1

NWS Call Sign:

Elevation: 10 Feet

Lat: 46°48N

Lon: 124°05W

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	.8	.0	#	0	4.0	1971	12	8.0	1971	#	1980	8	#	1980	.3	.3	.1	.0	.0	.0	.0	.0	.0
Feb	.1	.0	0	0	1.0	1980	15	1.0	1980	0	0	0	0	0	.1	.1	.0	.0	.0	.0	.0	.0	.0
Mar	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Apr	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.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	.0	.0	0	0	.0	0	0	.0	0	0	0	0	0	0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Dec	.1	.0	0	0	1.5	1971	28	1.5	1971	0	0	0	0	0	.1	.1	.0	.0	.0	.0	.0	.0	.0
Ann	1.0	.0	N/A	N/A	4.0	Jan 1971	12	8.0	Jan 1971	#	Jan 1980	8	#	Jan 1980	.5	.5	.1	.0	.0	.0	.0	.0	.0

+ 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

Complete documentation available from:

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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	6/09	6/01	5/26	5/20	5/15	5/10	5/05	4/29	4/20
32	5/15	5/04	4/27	4/20	4/14	4/08	4/02	3/26	3/15
28	3/26	3/16	3/09	3/02	2/25	2/19	2/13	2/06	1/27
24	2/20	2/09	2/01	1/24	1/16	1/07	12/25	0/00	0/00
20	2/05	1/23	1/12	1/02	12/20	0/00	0/00	0/00	0/00
16	1/20	1/04	12/19	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	9/17	9/25	9/30	10/05	10/09	10/14	10/18	10/24	10/31
32	10/10	10/18	10/23	10/28	11/01	11/05	11/10	11/15	11/23
28	11/07	11/16	11/23	11/29	12/04	12/10	12/16	12/22	1/01
24	11/21	12/05	12/15	12/25	1/04	1/17	2/08	0/00	0/00
20	12/10	12/25	1/06	1/17	2/01	0/00	0/00	0/00	0/00
16	12/17	1/02	1/18	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	185	172	162	154	146	138	130	120	107
32	241	227	217	208	200	192	183	173	159
28	321	308	298	290	282	274	266	256	243
24	>365	>365	>365	>365	362	339	325	312	296
20	>365	>365	>365	>365	>365	>365	>365	>365	323
16	>365	>365	>365	>365	>365	>365	>365	>365	>365

* 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

Complete documentation available from:
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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	712	593	580	497	396	282	215	193	231	411	569	711	5390
60	557	453	441	347	243	139	84	72	113	258	419	556	3682
57	464	369	348	258	159	72	35	28	63	172	333	463	2764
55	403	316	291	202	110	41	15	11	38	121	277	402	2227
50	261	189	156	86	30	4	0	0	7	35	154	258	1180
32	7	1	0	0	0	0	0	0	0	0	1	6	15

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	318	332	427	493	627	709	810	834	766	612	422	318	6668
55	1	2	5	5	24	59	112	133	113	20	8	1	483
57	0	0	0	1	10	31	70	87	79	9	4	0	291
60	0	0	0	0	2	8	26	38	39	2	0	0	115
65	0	0	0	0	0	0	2	4	7	0	0	0	13
70	0	0	0	0	0	0	0	0	0	0	0	0	0

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	113	143	192	262	386	480	571	598	535	373	203	109	113	256	448	710	1096	1576	2147	2745	3280	3653	3856	3965
45	32	52	72	123	231	330	416	443	385	221	82	32	32	84	156	279	510	840	1256	1699	2084	2305	2387	2419
50	0	6	15	42	96	181	261	288	236	96	15	0	0	6	21	63	159	340	601	889	1125	1221	1236	1236
55	0	0	0	6	30	56	115	137	107	26	0	0	0	0	0	6	36	92	207	344	451	477	477	477
60	0	0	0	1	5	7	22	29	32	2	0	0	0	0	0	1	6	13	35	64	96	98	98	98
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	20	39	67	104	164	220	286	307	288	182	59	22	20	59	126	230	394	614	900	1207	1495	1677	1736	1758

(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:

www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

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 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.

- | | |
|---|---|
| <ol style="list-style-type: none">a. Temperature/ Precipitation Tables<ol style="list-style-type: none">1. 1971-2000 Monthly Normals2. Cooperative Summary of the Day3. National Weather Service station records4. 1971-2000 serially complete daily datab. Degree Day Table<ol style="list-style-type: none">1. Monthly and Annual Heating and Cooling Degree Days Normals to Selected Bases derived from 1971-2000 Monthly Normals2. Daily Normal Growing Degree Units to Selected Base Temperatures derived from 1971-2000 serially complete daily data | <ol style="list-style-type: none">c. Snow Tables<ol style="list-style-type: none">1. Snow Climatology2. Cooperative Summary of the Dayd. 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