

Climatology of the United States

No. 20

1971-2000

Station: ALLIANCE 1 WNW, NE

COOP ID: 250130

Climate Division: NE 1

NWS Call Sign:

Elevation: 3,994 Feet Lat: 42°07N

Lon: 102°54W

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	38.6	10.0	24.3	70	1997	3	33.7	1983	-31+	1963	19	9.5	1979	1261	0	.0	.0	5.1	10.6	30.4	6.8
Feb	44.1	14.8	29.5	77	1962	11	37.9	1992	-40+	1899	11	17.8	1978	996	0	.0	.0	9.2	7.2	27.4	3.8
Mar	51.2	21.6	36.4	84+	1943	29	42.3	1986	-25	1989	5	28.9	1996	887	0	.0	.0	15.8	3.8	27.7	1.1
Apr	61.0	30.8	45.9	91	1910	28	53.1	1981	-12	1975	2	38.7	1997	573	0	.0	.1	22.5	.8	16.8	@
May	71.3	41.8	56.6	96+	1934	29	61.6	1994	7	1911	1	50.5	1995	282	19	.0	.4	29.4	.0	2.8	.0
Jun	82.6	52.0	67.3	105+	1989	20	73.7	1988	27	1969	2	60.7	1998	63	132	.3	5.3	29.9	.0	.1	.0
Jul	89.9	57.6	73.8	110	1983	19	77.3	1989	33	1941	3	67.8	1992	6	277	1.6	13.5	31.0	.0	.0	.0
Aug	88.4	55.2	71.8	105	1937	14	77.6	1983	30	1910	25	67.0	1992	20	230	.4	11.0	31.0	.0	.0	.0
Sep	78.8	44.1	61.5	102	1998	6	68.4	1998	15+	1926	26	56.6	1993	167	61	.1	3.5	29.1	.0	2.4	.0
Oct	66.5	31.9	49.2	91+	1997	3	52.4	1974	-8	1991	31	46.5	1987	490	0	.0	.2	26.1	.4	14.5	.1
Nov	50.2	19.9	35.1	80	1999	9	42.9	1999	-25	1916	13	22.1	1985	899	0	.0	.0	13.2	4.9	27.5	1.1
Dec	41.9	12.0	27.0	72	1939	6	33.4	1980	-42	1989	22	12.8	1983	1179	0	.0	.0	7.2	8.9	30.4	4.5
Ann	63.7	32.6	48.2	110	Jul 1983	19	77.6	Aug 1983	-42	Dec 1989	22	9.5	Jan 1979	6823	719	2.4	34.0	249.5	36.6	180.0	17.4

+ 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: 1894-2001

(3) Derived from 1971-2000 serially complete daily data

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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: ALLIANCE 1 WNW, NE

COOP ID: 250130

Climate Division: NE 1

NWS Call Sign:

Elevation: 3,994 Feet Lat: 42°07N

Lon: 102°54W

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	.37	.33	1.00+	1949	3	1.26	1976	.00+	1999	3.5	1.3	@	.0	.00	.00	.09	.15	.22	.29	.37	.47	.60	.82	1.03
Feb	.34	.22	1.00	1909	22	1.36	1986	.00+	1994	3.4	1.1	.1	.0	.00	.00	.02	.07	.13	.20	.29	.41	.58	.88	1.18
Mar	.78	.62	1.40	2000	8	2.39	1973	.04+	1991	5.3	2.1	.4	.1	.05	.10	.20	.31	.43	.57	.74	.95	1.25	1.75	2.24
Apr	1.67	1.65	2.38	1933	21	3.71	1973	.08	1987	6.5	4.1	1.1	.3	.33	.49	.73	.96	1.18	1.42	1.70	2.03	2.47	3.17	3.83
May	3.10	3.05	3.00	2000	18	6.59	1978	.55	1984	9.9	6.6	1.8	.6	.89	1.19	1.63	2.02	2.39	2.78	3.21	3.72	4.38	5.42	6.38
Jun	2.74	2.79	2.65	1947	22	6.26	1979	.54	1989	8.7	5.9	1.9	.5	.88	1.14	1.52	1.85	2.17	2.49	2.85	3.27	3.81	4.65	5.43
Jul	2.11	1.80	2.40	1915	31	4.77	1998	.19	1989	7.8	4.4	1.3	.6	.52	.72	1.03	1.30	1.57	1.85	2.17	2.55	3.04	3.82	4.55
Aug	1.63	1.41	2.81	1963	30	4.15	1979	.26	1986	6.1	3.8	1.1	.1	.36	.51	.75	.96	1.18	1.41	1.66	1.97	2.38	3.02	3.63
Sep	1.41	1.03	2.37	1951	3	5.39	1973	.05	1976	5.8	3.5	.8	.3	.11	.20	.38	.58	.79	1.04	1.34	1.71	2.23	3.10	3.95
Oct	.86	.67	1.73	1942	14	2.48	1994	.00+	1989	4.7	2.6	.3	.1	.00	.07	.21	.35	.49	.65	.84	1.07	1.39	1.91	2.43
Nov	.56	.50	1.85	1922	4	1.50	1972	.00+	1997	3.5	1.7	.3	.0	.00	.00	.15	.25	.35	.45	.57	.71	.90	1.21	1.51
Dec	.36	.30	1.37	1918	8	1.46	1978	.00+	1992	3.7	1.1	.1	.0	.00	.01	.06	.11	.17	.24	.33	.44	.59	.86	1.12
Ann	15.93	15.89	3.00	May 2000	18	6.59	May 1978	.00+	Jan 1999	68.9	38.2	9.2	2.6	10.70	11.69	12.97	13.94	14.82	15.67	16.55	17.53	18.73	20.47	21.99

+ 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: 1894-2001

(3) Derived from 1971-2000 serially complete daily data

Complete documentation available from:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

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Station: ALLIANCE 1 WNW, NE

COOP ID: 250130

Climate Division: NE 1

NWS Call Sign:

Elevation: 3,994 Feet

Lat: 42°07N

Lon: 102°54W

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	3.7	2.0	2	1	8.0	1974	21	17.2	1973	12	1976	1	9	1979	2.2	1.5	.6	.2	.0	6.8	2.1	.0	.0
Feb	2.1	3.0	1	#	8.0	1986	5	8.0	1986	14	1986	11	6	1986	1.6	1.2	.2	.1	.0	3.0	1.1	.0	.0
Mar	5.9	4.6	1	#	12.0	1975	27	17.0	1975	15	1983	26	2	1993	2.7	2.3	.6	.3	.1	3.8	1.4	.6	.1
Apr	2.2	1.2	#	#	13.5	1984	2	13.5	1984	10	1984	2	1	1994	1.0	.7	.3	.2	@	1.2	.4	.2	@
May	.0	.0	#	0	1.0	1983	11	1.0	1983	1	1983	11	#+	1990	@	@	.0	.0	.0	@	.0	.0	.0
Jun	.0	.0	#	0	.0	0	0	.0	0	#	1995	10	#	1995	.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	.3	.0	#	0	6.0	1985	28	6.0	1985	4	1985	28	#	1985	.1	.1	@	@	.0	@	@	.0	.0
Oct	1.5	.0	#	0	10.0	1979	29	10.0	1979	8	1991	31	1	1991	.5	.4	.2	.1	@	.6	.2	.1	.0
Nov	5.0	3.6	1	#	12.0	1973	3	15.5	1972	13	1979	21	5	1979	1.9	1.4	.7	.3	.1	4.6	3.0	1.2	.1
Dec	2.9	3.0	1	#	10.0	1975	31	10.0	1975	10	1973	31	6	1985	2.2	1.6	.2	.1	.0	5.4	2.2	1.1	.0
Ann	23.6	17.4	N/A	N/A	13.5	Apr 1984	2	17.2	Jan 1973	15	Mar 1983	26	9	Jan 1979	12.2	9.2	2.8	1.3	.2	25.4	10.4	3.2	.2

+ 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

Complete documentation available from:

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Climate Division: NE 1

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Lat: 42° 07N

Lon: 102° 54W

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	6/10	6/04	5/30	5/26	5/23	5/19	5/15	5/11	5/04
32	5/25	5/20	5/17	5/14	5/11	5/08	5/05	5/01	4/26
28	5/15	5/10	5/06	5/03	4/30	4/27	4/24	4/20	4/15
24	5/05	4/29	4/25	4/22	4/19	4/16	4/13	4/09	4/04
20	4/27	4/20	4/16	4/12	4/08	4/04	3/31	3/26	3/20
16	4/16	4/11	4/06	4/03	3/31	3/27	3/24	3/20	3/14
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	9/09	9/12	9/14	9/16	9/18	9/20	9/22	9/24	9/27
32	9/13	9/17	9/20	9/23	9/25	9/27	9/30	10/03	10/07
28	9/20	9/25	9/28	10/01	10/04	10/07	10/10	10/13	10/18
24	9/29	10/04	10/08	10/11	10/14	10/17	10/20	10/24	10/29
20	10/08	10/13	10/17	10/20	10/22	10/25	10/28	11/01	11/05
16	10/21	10/25	10/28	10/30	11/02	11/04	11/06	11/09	11/13
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	138	131	126	122	118	114	109	104	97
32	153	147	143	140	136	133	130	125	120
28	174	168	164	160	156	153	149	144	138
24	197	190	185	181	177	173	169	164	157
20	221	213	207	202	197	192	187	181	172
16	235	228	223	219	215	211	207	202	195

* 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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Climate Division: NE 1 NWS Call Sign: Elevation: 3,994 Feet Lat: 42°07N Lon: 102°54W

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	1261	996	887	573	282	63	6	20	167	490	899	1179	6823
60	1106	856	732	427	165	21	0	4	83	337	749	1024	5504
57	1013	772	639	343	111	9	0	1	48	249	659	931	4775
55	951	716	577	290	81	5	0	1	31	195	602	869	4318
50	799	587	428	175	31	0	0	0	8	88	463	716	3295
32	320	198	58	4	0	0	0	0	0	1	106	250	937

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	82	126	194	421	760	1058	1294	1234	884	534	197	94	6878
55	0	0	0	17	128	373	581	521	225	15	3	0	1863
57	0	0	0	10	95	317	519	460	182	7	0	0	1590
60	0	0	0	4	57	239	426	370	127	2	0	0	1225
65	0	0	0	0	19	132	277	230	61	0	0	0	719
70	0	0	0	0	4	58	145	118	22	0	0	0	347

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	28	76	219	497	794	1017	963	624	287	65	13	6	34	110	329	826	1620	2637	3600	4224	4511	4576	4589
45	0	2	33	127	352	644	862	808	481	172	22	0	0	2	35	162	514	1158	2020	2828	3309	3481	3503	3503
50	0	0	8	63	224	496	707	654	344	84	3	0	0	0	8	71	295	791	1498	2152	2496	2580	2583	2583
55	0	0	0	25	125	351	554	499	228	34	0	0	0	0	0	25	150	501	1055	1554	1782	1816	1816	1816
60	0	0	0	7	55	220	403	349	126	5	0	0	0	0	0	7	62	282	685	1034	1160	1165	1165	1165
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	17	38	87	175	314	500	647	612	406	231	72	29	17	55	142	317	631	1131	1778	2390	2796	3027	3099	3128

(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.

- 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/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