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: NAALEHU 14, HI **COOP ID: 516588**

Climate Division: HI 6 **NWS Call Sign:** **Elevation: 800 Feet** **Lat: 19˚04N** **Lon: 155˚35W**

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 >= 90	Max >= 70	Max >= 50	Max <= 32	Min <= 32	Min <= 0
Jan	77.1	62.4	69.8	89	1991	30	72.0	1974	50	1978	18	67.4	1979	2	148	.0	30.8	31.0	.0	.0	.0
Feb	77.9	62.4	70.2	90	1992	16	73.1	1991	54+	2001	12	66.7	1979	2	145	@	28.0	28.3	.0	.0	.0
Mar	77.7	63.2	70.5	93	1984	4	74.9	1986	50	1994	7	67.7	1985	3	172	.1	30.7	31.0	.0	.0	.0
Apr	77.6	64.0	70.8	89+	1987	27	72.9	1996	50	1987	27	68.5	1985	0	174	.0	29.9	30.0	.0	.0	.0
May	78.2	65.0	71.6	93	1997	27	74.3	1992	51	1987	4	69.7	1979	0	204	@	31.0	31.0	.0	.0	.0
Jun	79.3	66.2	72.8	87+	2001	25	75.5	1992	54	1987	2	70.8	1979	0	231	.0	30.0	30.0	.0	.0	.0
Jul	80.5	67.4	74.0	91	1992	25	75.6	1992	58	1995	21	71.8	1979	0	277	.1	31.0	31.0	.0	.0	.0
Aug	81.1	67.7	74.4	92+	1991	12	77.0	1990	60+	1999	2	72.9+	1988	0	291	.1	31.0	31.0	.0	.0	.0
Sep	81.7	67.5	74.6	90+	1985	9	76.3	1990	56	1984	17	73.0	1984	0	288	.1	30.0	30.0	.0	.0	.0
Oct	81.0	67.3	74.2	90	1976	1	76.6	1990	59	1980	4	72.1	1985	0	284	@	31.0	31.0	.0	.0	.0
Nov	78.9	66.2	72.6	90	1985	20	74.7	1980	55	1984	17	71.0+	1984	0	226	@	29.9	30.0	.0	.0	.0
Dec	77.4	64.1	70.8	89+	1983	17	73.2	1995	54+	1985	30	68.6	1978	0	179	.0	30.9	31.0	.0	.0	.0
Ann	79.0	65.3	72.2	93+	May 1997	27	77.0	Aug 1990	50+	Mar 1994	7	66.7	Feb 1979	7	2619	.4	364.2	365.3	.0	.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: 1949-2001

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

Issue Date: May 2005

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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	5.98	3.62	9.97	1975	8	24.03	1975	.30	1986
Feb	3.77	2.25	4.57	1975	1	16.11	1979	.08	1992
Mar	5.45	3.68	7.85	1985	1	24.09	1980	.15	1992
Apr	3.23	2.01	8.30	1986	11	14.03	1986	.54	2000
May	1.94	1.38	3.33	1965	4	5.44	1986	.45	1991
Jun	1.56	1.09	2.12	1968	14	6.05	1982	.21	1971
Jul	3.27	1.86	6.90	1986	23	13.52	1986	.13	1998
Aug	3.08	2.70	7.10	1970	26	13.66	1994	.18	1976
Sep	3.60	2.71	6.06	1994	20	13.74	1994	.35	1978
Oct	3.98	3.31	4.90	1976	22	13.94	1989	.55	1983
Nov	6.70	4.28	8.12	2001	28	31.32	1990	1.19	1977
Dec	5.82	3.82	10.44	1981	26	24.47	1987	.48	1993
Ann	48.38	46.79	10.44	Dec 1981	26	31.32	Nov 1990	.08	Feb 1992

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	9.6	6.3	2.6	1.5
Feb	8.4	4.9	2.1	.9
Mar	9.9	6.3	2.9	1.4
Apr	10.9	5.5	1.3	.5
May	10.9	4.8	.7	.1
Jun	9.0	4.1	.6	.2
Jul	9.2	4.2	1.4	.7
Aug	9.8	4.9	1.5	.6
Sep	11.3	6.1	1.6	.9
Oct	12.8	7.1	2.0	1.0
Nov	12.3	7.6	3.4	1.9
Dec	10.1	6.1	2.5	1.6
Ann	124.2	67.9	22.6	11.3

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	.21	.48	1.12	1.88	2.80	3.91	5.29	7.11	9.72	14.23	18.79
Feb	.07	.18	.50	.93	1.49	2.20	3.11	4.36	6.19	9.44	12.80
Mar	.19	.43	1.00	1.70	2.53	3.55	4.82	6.48	8.87	13.01	17.20
Apr	.34	.58	1.03	1.48	1.97	2.51	3.15	3.95	5.03	6.83	8.58
May	.39	.56	.85	1.11	1.37	1.65	1.97	2.36	2.87	3.68	4.46
Jun	.21	.33	.56	.77	1.00	1.25	1.55	1.91	2.39	3.19	3.96
Jul	.16	.34	.72	1.16	1.66	2.26	2.99	3.94	5.27	7.56	9.85
Aug	.30	.53	.95	1.38	1.84	2.37	2.98	3.76	4.82	6.58	8.30
Sep	.43	.72	1.22	1.73	2.26	2.85	3.54	4.40	5.56	7.47	9.32
Oct	.74	1.10	1.68	2.22	2.77	3.36	4.03	4.84	5.92	7.66	9.31
Nov	.59	1.06	1.95	2.88	3.90	5.06	6.44	8.16	10.55	14.52	18.43
Dec	.32	.65	1.35	2.13	3.03	4.08	5.37	7.02	9.34	13.29	17.23
Ann	23.99	28.08	33.66	38.12	42.24	46.35	50.73	55.70	61.92	71.26	79.63

\+ 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: 1949-2001
(3) Derived from 1971-2000 daily data

Complete documentation available from:
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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	.0	.0	0	0
Feb	.0	.0	0	0
Mar	.0	.0	0	0
Apr	.0	.0	0	0
May	.0	.0	0	0
Jun	.0	.0	0	0
Jul	.0	.0	0	0
Aug	.0	.0	0	0
Sep	.0	.0	0	0
Oct	.0	.0	0	0
Nov	.0	.0	0	0
Dec	.0	.0	0	0
Ann	.0	.0	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	.0	0	0	.0	0	0	0	0	0	0
Feb	.0	0	0	.0	0	0	0	0	0	0
Mar	.0	0	0	.0	0	0	0	0	0	0
Apr	.0	0	0	.0	0	0	0	0	0	0
May	.0	0	0	.0	0	0	0	0	0	0
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	.0	0	0	.0	0	0	0	0	0	0
Nov	.0	0	0	.0	0	0	0	0	0	0
Dec	.0	0	0	.0	0	0	0	0	0	0
Ann	.0	0	0	.0	0	0	0	0	0	0

Mean Number of Days (1)

Snow Fall >= Thresholds

Month	0.1	1.0	3.0	5.0	10.0
Jan	.0	.0	.0	.0	.0
Feb	.0	.0	.0	.0	.0
Mar	.0	.0	.0	.0	.0
Apr	.0	.0	.0	.0	.0
May	.0	.0	.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	.0	.0	.0	.0	.0
Nov	.0	.0	.0	.0	.0
Dec	.0	.0	.0	.0	.0
Ann	.0	.0	.0	.0	.0

Snow Depth >= Thresholds

Month	1	3	5	10
Jan	.0	.0	.0	.0
Feb	.0	.0	.0	.0
Mar	.0	.0	.0	.0
Apr	.0	.0	.0	.0
May	.0	.0	.0	.0
Jun	.0	.0	.0	.0
Jul	.0	.0	.0	.0
Aug	.0	.0	.0	.0
Sep	.0	.0	.0	.0
Oct	.0	.0	.0	.0
Nov	.0	.0	.0	.0
Dec	.0	.0	.0	.0
Ann	.0	.0	.0	.0

+ 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	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
32	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
28	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
24	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
20	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
16	0/00	0/00	0/00	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	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
32	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
28	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
24	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
20	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00	0/00
16	0/00	0/00	0/00	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	>365	>365	>365	>365	>365	>365	>365	>365	>365
32	>365	>365	>365	>365	>365	>365	>365	>365	>365
28	>365	>365	>365	>365	>365	>365	>365	>365	>365
24	>365	>365	>365	>365	>365	>365	>365	>365	>365
20	>365	>365	>365	>365	>365	>365	>365	>365	>365
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

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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	2	2	3	0	0	0	0	0	0	0	0	0	7
60	0	0	0	0	0	0	0	0	0	0	0	0	0
57	0	0	0	0	0	0	0	0	0	0	0	0	0
55	0	0	0	0	0	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0	0	0	0	0	0
32	0	0	0	0	0	0	0	0	0	0	0	0	0

Base — Cooling Degree Days (1)

Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	1170	1067	1192	1164	1227	1221	1300	1314	1278	1307	1216	1202	14658
55	457	423	479	474	514	531	587	601	588	594	526	489	6263
57	395	367	417	414	452	471	525	539	528	532	466	427	5533
60	302	283	324	324	359	381	432	446	438	439	376	334	4438
65	148	145	172	174	204	231	277	291	288	284	226	179	2619
70	33	37	53	48	64	90	124	137	138	131	85	52	992

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	934	879	951	928	992	992	1058	1079	1052	1071	990	965	934	1813	2764	3692	4684	5676	6734	7813	8865	9936	10926	11891
45	779	734	796	778	837	842	903	924	902	916	840	810	779	1513	2309	3087	3924	4766	5669	6593	7495	8411	9251	10061
50	624	589	641	628	682	692	748	769	752	761	690	655	624	1213	1854	2482	3164	3856	4604	5373	6125	6886	7576	8231
55	469	444	486	478	527	542	593	614	602	606	540	500	469	913	1399	1877	2404	2946	3539	4153	4755	5361	5901	6401
60	314	299	331	328	372	392	438	459	452	451	390	345	314	613	944	1272	1644	2036	2474	2933	3385	3836	4226	4571
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	623	589	640	628	682	692	747	768	751	760	690	655	623	1212	1852	2480	3162	3854	4601	5369	6120	6880	7570	8225

(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.
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 were calculated from a serially complete daily data set. A serial dataset was not available for precipitation,
To ensure that a station's data was adequate to estimate these statistics, the following criteria were used:
1. A station must have 80% of its data for the 1971-2000 time period.
2. Only months with at least 21 days are used.
3. There must be a least 21 months (meeting criteria 2.) in the sample.

g. Snowfall and snow depth statistics were derived daily values quality controlled to be consistent with 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 differences 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. Other inconsistencies may appear from comparing statistically modeled values such as degree days to observed temperatures.

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. 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