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: LAHAINA 361, HI **COOP ID: 515177**

Climate Division: HI 5 **NWS Call Sign:** **Elevation: 40 Feet** **Lat: 20˚53N** **Lon: 156˚41W**

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	81.6	64.1	72.9	89	2001	11	75.1	1974	54+	1981	4	71.3	1971	0	244	.0	31.0	31.0	.0	.0	.0
Feb	81.8	63.7	72.8	89	1986	4	74.9	1977	53	1967	21	70.4	1993	0	217	.0	28.3	28.3	.0	.0	.0
Mar	82.8	64.7	73.8	91	1986	12	76.0	1986	54	1958	22	71.5	1982	0	271	.1	31.0	31.0	.0	.0	.0
Apr	83.7	66.0	74.9	89+	1996	29	77.0	1996	54	1966	1	72.7	1973	0	296	.0	30.0	30.0	.0	.0	.0
May	84.5	67.3	75.9	91	1984	30	78.6	1986	57	1963	8	73.8	1973	0	339	.2	31.0	31.0	.0	.0	.0
Jun	86.2	68.9	77.6	93	1982	9	79.3+	1997	60	1987	1	75.3	1976	0	377	.8	30.0	30.0	.0	.0	.0
Jul	87.2	70.1	78.7	93+	1985	17	81.1	1996	62+	1952	16	76.5	1975	0	423	2.7	31.0	31.0	.0	.0	.0
Aug	88.1	70.6	79.4	97+	1985	19	81.1	1986	63+	1973	3	77.4	1975	0	445	7.3	31.0	31.0	.0	.0	.0
Sep	88.3	70.6	79.5	94+	1985	13	81.1	1986	61	1950	22	77.5+	1975	0	433	8.4	30.0	30.0	.0	.0	.0
Oct	87.4	69.7	78.6	94+	1980	6	80.1	1996	58	1978	24	76.6	1978	0	420	4.5	31.0	31.0	.0	.0	.0
Nov	85.4	68.0	76.7	92+	1984	2	78.6	1986	56	1949	21	74.5	1972	0	351	.8	30.0	30.0	.0	.0	.0
Dec	83.0	65.6	74.3	91	1971	19	76.6	1995	52+	1978	27	72.6	1978	0	289	.1	31.0	31.0	.0	.0	.0
Ann	85.0	67.4	76.3	97+	Aug 1985	19	81.1+	Jul 1996	52+	Dec 1978	27	70.4	Feb 1993	0	4105	24.9	365.3	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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Climate Division: HI 5 **NWS Call Sign:** **Elevation: 40 Feet** **Lat: 20°53N** **Lon: 156°41W**

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	3.00	1.56	5.48	1982	22	11.27	1980	.00	1988
Feb	2.22	1.13	6.75	1972	25	9.63	1972	.00	2000
Mar	1.51	1.11	6.65	1951	14	5.42	1982	.00+	2000
Apr	.82	.29	3.28	1977	2	5.54	1977	.00+	1983
May	.42	.04	2.15	1987	6	3.48	1992	.00+	1998
Jun	.09	.00	.78	1972	5	.92	1972	.00+	2000
Jul	.09	.03	2.12	1964	24	.46	1986	.00+	2000
Aug	.15	.07	2.08	1950	16	1.26	1982	.00+	1999
Sep	.32	.11	2.35	1963	17	2.17	1982	.00+	1999
Oct	.99	.26	4.65	1951	31	7.04	1989	.00+	1997
Nov	1.44	.99	6.60	1961	2	5.24	1990	.00+	1991
Dec	2.52	.90	7.01	1983	27	9.77	1988	.00	1976
Ann	13.57	11.87	7.01	Dec 1983	27	11.27	Jan 1980	.00+	Jul 2000

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	4.9	3.1	1.2	.5
Feb	4.0	2.5	1.3	.6
Mar	3.6	2.0	.8	.3
Apr	1.7	.9	.3	.2
May	1.5	.6	.1	.1
Jun	.5	.2	.0	.0
Jul	1.0	.2	.0	.0
Aug	1.1	.4	.0	.0
Sep	1.0	.5	.1	.1
Oct	1.8	1.0	.4	.2
Nov	2.8	1.5	.7	.3
Dec	3.3	2.0	.7	.4
Ann	27.2	14.9	5.6	2.7

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	.01	.08	.32	.66	1.11	1.69	2.44	3.46	4.98	7.67	10.46
Feb	.01	.07	.25	.50	.84	1.26	1.82	2.57	3.68	5.66	7.70
Mar	.00	.00	.10	.31	.57	.88	1.28	1.81	2.56	3.86	5.18
Apr	.00	.00	.02	.07	.16	.30	.51	.83	1.27	2.21	3.39
May	.00	.00	.00	.00	.00	.02	.11	.29	.63	1.28	2.06
Jun	.00	.00	.00	.00	.00	.00	.00	.04	.12	.29	.49
Jul	.00	.00	.00	.00	.01	.04	.06	.10	.15	.25	.34
Aug	.00	.00	.00	.00	.02	.06	.11	.17	.26	.43	.59
Sep	.00	.00	.00	.00	.04	.11	.21	.35	.56	.95	1.35
Oct	.00	.00	.00	.02	.11	.29	.56	.98	1.64	2.91	4.28
Nov	.00	.00	.09	.27	.51	.81	1.20	1.71	2.45	3.73	5.05
Dec	.00	.00	.06	.24	.55	1.01	1.68	2.66	4.18	7.04	10.10
Ann	3.88	5.17	7.11	8.80	10.44	12.16	14.06	16.30	19.21	23.76	28.00

\+ 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

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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

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	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	0	0	0	0	0	0	0	0	0	0	0	0	0
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	1267	1141	1294	1286	1362	1367	1446	1468	1423	1443	1341	1312	16150
55	554	497	581	596	649	677	733	755	733	730	651	599	7755
57	492	441	519	536	587	617	671	693	673	668	591	537	7025
60	399	357	426	446	494	527	578	600	583	575	501	444	5930
65	244	217	271	296	339	377	423	445	433	420	351	289	4105
70	94	85	120	146	184	227	268	290	283	265	201	135	2298

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	1030	962	1062	1056	1132	1137	1208	1236	1200	1206	1111	1076	1030	1992	3054	4110	5242	6379	7587	8823	10023	11229	12340	13416
45	875	817	907	906	977	987	1053	1081	1050	1051	961	921	875	1692	2599	3505	4482	5469	6522	7603	8653	9704	10665	11586
50	720	672	752	756	822	837	898	926	900	896	811	766	720	1392	2144	2900	3722	4559	5457	6383	7283	8179	8990	9756
55	565	527	597	606	667	687	743	771	750	741	661	611	565	1092	1689	2295	2962	3649	4392	5163	5913	6654	7315	7926
60	410	382	442	456	512	537	588	616	600	586	511	456	410	792	1234	1690	2202	2739	3327	3943	4543	5129	5640	6096
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	719	672	751	754	815	826	869	890	857	866	800	763	719	1391	2142	2896	3711	4537	5406	6296	7153	8019	8819	9582

(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