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: KANALOHULUHULU 1075, HI **COOP ID: 513099**

Climate Division: HI 1 **NWS Call Sign:** **Elevation: 3,600 Feet** **Lat: 22˚08N** **Lon: 159˚40W**

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	63.0	46.7	54.9	79	1999	21	58.1	1984	31	1970	15	50.7	1987	316	0	.0	1.3	30.8	.0	.1	.0
Feb	64.1	46.2	55.2	74+	1982	20	58.0	1984	32+	1983	11	52.4	1992	279	0	.0	1.6	28.2	.0	.1	.0
Mar	64.8	48.5	56.7	78	1990	13	59.8	1990	32	1987	5	51.6	1987	259	0	.0	3.2	30.9	.0	.1	.0
Apr	66.1	50.1	58.1	83	1984	16	60.5	1971	32	1984	29	55.7	1998	207	0	.0	3.7	30.0	.0	.1	.0
May	67.8	51.0	59.4	80	1982	30	61.8	1980	37	1996	9	53.3	1987	180	2	.0	10.4	31.0	.0	.0	.0
Jun	70.1	53.6	61.9	90	1982	28	63.6	1977	40+	1987	3	59.4	1998	98	3	@	16.9	30.0	.0	.0	.0
Jul	71.1	55.3	63.2	80	1968	27	64.7	1994	37	2000	9	61.3+	1999	63	7	.0	21.5	31.0	.0	.0	.0
Aug	72.2	55.2	63.7	80+	1976	7	65.7	1972	43	1974	30	62.1+	1999	53	12	.0	25.1	31.0	.0	.0	.0
Sep	72.3	53.6	63.0	86	1981	19	64.8	1978	42+	1995	11	61.3	1999	71	9	.0	24.2	30.0	.0	.0	.0
Oct	70.5	53.2	61.9	80+	1979	7	63.2	1974	34	1965	26	60.3	1999	100	2	.0	19.2	31.0	.0	.0	.0
Nov	67.3	51.3	59.3	78	1975	18	61.8+	1984	35	2001	15	56.3	1985	174	3	.0	7.3	30.0	.0	.0	.0
Dec	64.0	48.6	56.3	75+	1983	10	59.7	1981	34	1998	17	52.3	1987	271	0	.0	1.7	30.7	.0	.1	.0
Ann	67.8	51.1	59.5	90	Jun 1982	28	65.7	Aug 1972	31	Jan 1970	15	50.7	Jan 1987	2071	38	@	136.1	364.6	.0	.5	.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: 1955-2001

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Issue Date: May 2005

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Climate Division: HI 1 **NWS Call Sign:** **Elevation: 3,600 Feet** **Lat: 22˚08N** **Lon: 159˚40W**

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	10.11	7.21	16.75	1969	6	30.53	1982	2.28	2000
Feb	7.70	6.58	7.26	1975	1	20.69	1982	.02	2000
Mar	6.95	5.47	9.06	1990	7	17.20	1997	1.33	1993
Apr	4.31	3.41	5.45	1962	25	9.22	1974	.94	1993
May	3.00	2.37	3.18	1965	14	10.63	1980	.00	1984
Jun	1.95	1.69	4.85	1962	2	5.50	1996	.26	1990
Jul	2.12	1.67	3.95	1964	26	12.06	1989	.63	1994
Aug	2.23	2.03	8.81	1959	7	8.14	1982	.40	1974
Sep	2.23	1.90	2.00	1960	30	8.32	1974	.46	1975
Oct	4.50	3.13	6.37	1982	29	17.64	1982	.57	1975
Nov	7.58	6.69	6.81	1955	12	21.80	1995	1.43	1971
Dec	9.43	8.44	8.75	1973	2	26.09	1987	1.55	1976
Ann	62.11	60.65	16.75	Jan 1969	6	30.53	Jan 1982	.00	May 1984

Mean Number of Days (3)

Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	19.2	10.8	5.4	3.1
Feb	15.0	8.8	4.1	2.4
Mar	18.0	9.8	3.7	1.8
Apr	17.2	9.2	2.4	.8
May	14.0	6.9	1.4	.5
Jun	13.7	4.8	.7	.3
Jul	14.8	6.2	.6	.1
Aug	13.2	5.0	1.1	.3
Sep	14.3	5.2	1.2	.5
Oct	15.8	6.4	2.1	1.1
Nov	18.2	9.0	3.6	2.2
Dec	18.8	10.2	4.6	2.3
Ann	192.2	92.3	30.9	15.4

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	1.96	2.88	4.36	5.72	7.11	8.60	10.28	12.32	15.01	19.34	23.45
Feb	.84	1.42	2.49	3.56	4.71	6.00	7.52	9.40	11.97	16.21	20.34
Mar	1.19	1.80	2.81	3.77	4.74	5.80	7.02	8.49	10.45	13.62	16.65
Apr	1.11	1.52	2.14	2.70	3.24	3.81	4.45	5.21	6.20	7.75	9.21
May	.23	.55	1.03	1.47	1.93	2.43	3.00	3.70	4.64	6.17	7.65
Jun	.34	.51	.79	1.06	1.33	1.63	1.96	2.37	2.92	3.80	4.64
Jul	.50	.70	1.01	1.28	1.56	1.85	2.18	2.57	3.09	3.90	4.67
Aug	.48	.69	1.02	1.31	1.61	1.93	2.29	2.71	3.28	4.18	5.03
Sep	.43	.63	.96	1.26	1.57	1.89	2.27	2.71	3.31	4.26	5.16
Oct	.56	.91	1.55	2.18	2.84	3.58	4.44	5.50	6.94	9.30	11.59
Nov	1.47	2.15	3.27	4.29	5.33	6.44	7.71	9.23	11.25	14.49	17.57
Dec	1.80	2.65	4.03	5.31	6.60	8.00	9.58	11.49	14.02	18.08	21.95
Ann	34.54	39.38	45.86	50.95	55.60	60.19	65.03	70.49	77.25	87.31	96.23

\+ 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: 1955-2001
(3) Derived from 1971-2000 daily data

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Climate Division: HI 1 **NWS Call Sign:** **Elevation: 3,600 Feet** **Lat: 22°08N** **Lon: 159°40W**

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	4/01	3/16	3/04	2/20	2/09	1/25	12/31	0/00	0/00
32	3/01	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	12/11	12/29	1/12	1/26	2/09	2/27	0/00	0/00	0/00
32	2/09	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	350	316	281
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)

Heating Degree Days (1)

Base Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	316	279	259	207	180	98	63	53	71	100	174	271	2071
60	166	144	123	77	66	11	2	2	5	7	57	130	790
57	89	76	65	30	25	1	0	0	0	0	19	68	373
55	54	44	36	11	11	0	0	0	0	0	7	38	201
50	6	4	4	0	0	0	0	0	0	0	0	4	18
32	0	0	0	0	0	0	0	0	0	0	0	0	0

Cooling Degree Days (1)

Base Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	708	645	764	783	849	896	967	983	928	924	819	752	10018
55	48	45	87	104	147	206	254	270	238	211	136	78	1824
57	22	21	54	63	99	147	192	208	178	150	88	46	1268
60	5	5	19	20	47	67	101	116	93	64	36	14	587
65	0	0	0	0	2	3	7	12	9	2	3	0	38
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	464	439	517	538	595	653	713	727	680	667	570	498	464	903	1420	1958	2553	3206	3919	4646	5326	5993	6563	7061
45	309	294	362	388	440	503	558	572	530	512	420	345	309	603	965	1353	1793	2296	2854	3426	3956	4468	4888	5233
50	160	157	211	238	286	353	404	418	380	360	273	193	160	317	528	766	1052	1405	1809	2227	2607	2967	3240	3433
55	46	43	77	96	140	208	250	264	230	211	132	68	46	89	166	262	402	610	860	1124	1354	1565	1697	1765
60	0	0	3	12	29	65	100	121	94	72	28	2	0	0	3	15	44	109	209	330	424	496	524	526
Base	**Growing Degree Units for Corn (Monthly)**												**Growing Degree Units for Corn (Accumulated Monthly)**											
50/86	222	220	252	263	308	362	407	421	386	373	288	239	222	442	694	957	1265	1627	2034	2455	2841	3214	3502	3741

(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