

Climatology of the United States No. 20

Station: LIVINGSTON RADIO WLIV, TN

1971-2000

COOP ID: 405332

Climate Division: TN 2

NWS Call Sign:

Elevation: 975 Feet

Lat: 36° 23N

Lon: 85° 20W

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	45.5	24.7	35.1	73+	1972	24	44.4	1974	-25	1985	21	20.4	1977	927	0	.0	.0	12.9	4.3	21.2	.9
Feb	50.5	26.9	38.7	82	1996	23	47.2	1990	-15	1965	2	26.1	1978	736	0	.0	.0	16.6	2.5	17.0	.3
Mar	59.9	34.7	47.3	86	1982	19	53.6	1973	4	1980	3	40.7	1999	548	0	.0	.0	26.3	.3	11.5	.0
Apr	69.0	42.4	55.7	91	1995	10	60.7	1991	20+	1987	1	50.8	1983	288	9	.0	.1	29.1	.0	4.3	.0
May	76.7	51.6	64.2	94+	1982	13	70.3	1991	27	1976	4	59.4	1973	123	98	.0	.4	31.0	.0	.3	.0
Jun	84.2	60.7	72.5	100+	1988	24	75.1	1994	35	1972	1	68.7	1974	5	228	.1	4.8	30.0	.0	.0	.0
Jul	87.7	64.5	76.1	108	1980	12	79.9	1980	45	1972	7	72.0	1976	0	344	.5	12.6	31.0	.0	.0	.0
Aug	86.9	62.7	74.8	104	1983	21	79.4	1995	43	1976	3	70.1	1976	3	305	.2	9.2	31.0	.0	.0	.0
Sep	80.8	56.0	68.4	97+	1983	10	74.1	1998	27	1983	22	63.5	1976	41	143	.0	3.0	30.0	.0	.1	.0
Oct	70.5	43.3	56.9	91	1998	29	65.0	1984	20	1962	26	49.6	1976	276	25	.0	.0	30.7	.0	3.5	.0
Nov	59.3	35.0	47.2	84	1984	1	55.2	1985	2	1976	30	36.0	1976	538	2	.0	.0	24.4	.1	11.1	.0
Dec	50.5	29.3	39.9	77+	1982	2	49.5	1984	-18	1962	13	29.1	1989	779	0	.0	.0	17.5	2.1	18.1	.2
Ann	68.5	44.3	56.4	108	Jul 1980	12	79.9	Jul 1980	-25	Jan 1985	21	20.4	Jan 1977	4264	1154	.8	30.1	310.5	9.3	87.1	1.4

+ 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: 1961-2001

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

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: LIVINGSTON RADIO WLIV, TN

COOP ID: 405332

Climate Division: TN 2

NWS Call Sign:

Elevation: 975 Feet Lat: 36°23N

Lon: 85°20W

Precipitation (inches)

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	4.64	4.52	3.38	1982	3	9.95	1974	.73	1986	10.0	8.0	3.5	1.4	1.36	1.80	2.46	3.04	3.59	4.17	4.81	5.57	6.55	8.07	9.49
Feb	3.97	3.42	3.56	1984	11	8.55	1984	1.43	1988	8.0	6.5	3.0	1.2	1.37	1.74	2.29	2.75	3.20	3.65	4.15	4.73	5.47	6.62	7.68
Mar	5.32	4.84	3.83	1975	12	17.75	1975	1.18	1999	11.4	8.7	3.5	1.3	1.56	2.06	2.82	3.48	4.12	4.78	5.52	6.38	7.50	9.26	10.89
Apr	4.10	3.62	4.37	1977	4	8.12	1977	.56	1986	9.5	7.0	2.8	.9	1.19	1.58	2.16	2.67	3.17	3.68	4.25	4.93	5.80	7.16	8.43
May	5.25	5.24	3.68	1986	23	10.72	1984	1.87	1988	11.3	8.3	3.5	1.5	2.27	2.75	3.40	3.94	4.45	4.95	5.50	6.13	6.92	8.12	9.21
Jun	4.44	3.86	5.42	1969	23	9.75	1998	1.17	1980	9.7	7.4	3.2	1.3	1.34	1.76	2.39	2.94	3.46	4.01	4.61	5.32	6.23	7.66	8.98
Jul	4.94	4.30	4.95	1973	25	11.78	1973	.43	1997	9.6	7.1	3.1	1.5	1.14	1.60	2.32	2.97	3.62	4.30	5.07	5.99	7.20	9.12	10.92
Aug	4.16	3.50	5.80	1999	25	8.55	1979	1.67	1983	8.6	6.4	3.1	1.4	1.63	2.02	2.56	3.02	3.45	3.88	4.36	4.90	5.60	6.66	7.63
Sep	3.62	3.28	3.73	1981	15	8.06	1974	.02	1998	7.4	5.5	2.4	.9	.32	.58	1.06	1.56	2.11	2.74	3.48	4.41	5.69	7.83	9.92
Oct	2.96	2.68	3.63	1975	17	7.20	1984	.07	1987	6.6	4.9	2.2	.7	.42	.67	1.10	1.51	1.93	2.41	2.95	3.62	4.51	5.98	7.39
Nov	4.38	3.87	3.44	1973	27	9.67	1988	1.29	1976	9.5	7.2	3.1	1.2	1.67	2.07	2.66	3.14	3.60	4.07	4.58	5.17	5.92	7.07	8.13
Dec	4.81	3.31	5.43	1987	25	13.91	1990	1.24	1985	9.7	7.1	3.4	1.6	1.14	1.59	2.30	2.92	3.55	4.21	4.95	5.83	6.98	8.82	10.54
Ann	52.59	52.48	5.80	Aug 1999	25	17.75	Mar 1975	.02	Sep 1998	111.3	84.1	36.8	14.9	37.84	40.71	44.37	47.15	49.61	51.99	54.44	57.15	60.43	65.19	69.29

+ 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: 1961-2001

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

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COOP ID: 405332

Climate Division: TN 2

NWS Call Sign:

Elevation: 975 Feet

Lat: 36°23N

Lon: 85°20W

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	3.3	1.0	#	#	4.5	1981	30	20.6	1978	9	1978	21	3	1978	1.8	1.3	.2	.0	.0	3.0	1.0	.4	.0
Feb	3.8	2.1	#	0	9.0	1998	4	15.0	1978	6+	1985	12	1	1985	1.5	1.0	.5	.2	.0	.7	.4	.2	.0
Mar	.8	.0	#	0	5.0	1996	19	6.0	1996	7	1993	13	#+	1998	.4	.3	.1	@	.0	.2	@	.0	.0
Apr	.2	.0	0	0	4.3	1983	18	4.3	1983	0	0	0	0	0	.1	.1	@	.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	#	1980	25	#	1980	#	1980	25	#	1980	.0	.0	.0	.0	.0	.0	.0	.0	.0
Nov	.3	.0	#	0	2.5	1974	14	2.5+	1976	1	1974	14	#+	1989	.3	.2	.0	.0	.0	@	.0	.0	.0
Dec	.9	.0	#	0	4.5	1982	12	6.0	1974	5	1982	12	#+	1998	.5	.3	@	.0	.0	.3	@	@	.0
Ann	9.3	3.1	N/A	N/A	9.0	Feb 1998	4	20.6	Jan 1978	9	Jan 1978	21	3	Jan 1978	4.6	3.2	.8	.2	.0	4.2	1.4	.6	.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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No. 20 1971-2000

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Climate Division: TN 2

NWS Call Sign:

Elevation: 975 Feet

Lat: 36°23N

Lon: 85°20W

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	5/19	5/13	5/08	5/04	4/30	4/26	4/22	4/18	4/11
32	5/06	4/30	4/26	4/23	4/20	4/16	4/13	4/09	4/03
28	4/23	4/17	4/13	4/09	4/05	4/02	3/29	3/25	3/19
24	4/13	4/06	4/01	3/28	3/23	3/19	3/15	3/10	3/03
20	3/29	3/21	3/16	3/11	3/07	3/03	2/26	2/21	2/13
16	3/12	3/04	2/27	2/22	2/18	2/13	2/09	2/03	1/27
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	9/25	9/30	10/03	10/06	10/09	10/12	10/14	10/18	10/22
32	10/01	10/06	10/10	10/14	10/17	10/20	10/23	10/27	11/01
28	10/08	10/14	10/19	10/23	10/27	10/30	11/03	11/08	11/15
24	10/25	10/31	11/05	11/09	11/12	11/16	11/20	11/24	11/30
20	11/06	11/13	11/18	11/22	11/26	11/30	12/05	12/10	12/17
16	11/16	11/25	12/02	12/08	12/14	12/20	12/26	1/02	1/12
Freeze Free Period									
Temp (F)	Probability of longer than indicated freeze free period (Days)								
	.10	.20	.30	.40	.50	.60	.70	.80	.90
36	186	178	171	166	161	156	151	144	136
32	202	194	189	184	179	175	170	164	156
28	230	221	214	209	204	198	193	186	177
24	260	251	244	238	233	228	222	215	206
20	291	282	275	269	263	258	252	245	235
16	334	320	311	304	297	290	283	275	264

* 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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No. 20
1971-2000**

Station: LIVINGSTON RADIO WLIV, TN

COOP ID: 405332

Climate Division: TN 2 NWS Call Sign: Elevation: 975 Feet Lat: 36°23N Lon: 85°20W

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	927	736	548	288	123	5	0	3	41	276	538	779	4264
60	782	596	405	166	57	1	0	0	10	165	399	625	3206
57	693	519	323	108	31	0	0	0	4	114	320	540	2652
55	636	466	273	77	20	0	0	0	2	86	271	482	2313
50	498	342	170	25	5	0	0	0	0	37	170	347	1594
32	148	58	8	0	0	0	0	0	0	0	7	52	273

Base	Cooling Degree Days (1)												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
32	244	246	483	710	997	1213	1367	1325	1092	772	461	296	9206
55	18	11	35	97	304	523	654	612	404	146	35	13	2852
57	14	7	23	68	253	463	592	550	346	112	24	9	2461
60	9	0	12	36	186	373	499	457	262	70	13	1	1918
65	0	0	0	9	98	228	344	305	143	25	2	0	1154
70	0	0	0	1	39	103	198	169	59	6	0	0	575

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	103	153	335	538	788	999	1146	1102	878	574	298	149	103	256	591	1129	1917	2916	4062	5164	6042	6616	6914	7063
45	51	86	221	397	633	849	991	947	728	423	188	81	51	137	358	755	1388	2237	3228	4175	4903	5326	5514	5595
50	27	41	132	264	480	699	836	792	579	282	107	38	27	68	200	464	944	1643	2479	3271	3850	4132	4239	4277
55	3	16	66	158	334	549	681	637	430	164	53	16	3	19	85	243	577	1126	1807	2444	2874	3038	3091	3107
60	0	0	27	78	201	400	526	482	289	80	15	0	0	0	27	105	306	706	1232	1714	2003	2083	2098	2098
Base	Growing Degree Units for Corn (Monthly)												Growing Degree Units for Corn (Accumulated Monthly)											
50/86	56	102	220	352	514	680	787	754	578	372	187	84	56	158	378	730	1244	1924	2711	3465	4043	4415	4602	4686

(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/normal/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