U.S. DEPARTMENT OF COMMERCE
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION

CLIMATOGRAPHY OF THE UNITED STATES NO. 20 - 40

CLIMATOLOGICAL SUMMARY

LATITUDE 36° 11'N
LONGITUDE 84° 04'W
ELEV. (GROUND) 1066 Feet

STATION Norris, Tennessee

MEANS AND EXTREMES FOR PERIOD 1935-1965

Month	Temperature (°F) Means: Daily maximum	Daily minimum	Monthly	Extremes: Record highest	Year	Record lowest	Year	** Mean degree days	Precipitation Totals (Inches): Mean	Greatest daily	Year	Snow, Sleet: Mean	Maximum monthly	Year	Greatest daily	Year	Mean number of days: Precip. .10 inch or more	Temperatures: Max. 90° and above	Max. 32° and below	Min. 32° and below	Min. 0° and below	Month
(a)	31	31	31	31		31		30	31	31		21	22		22		31	31	31	31	31	
J	46.8	27.3	37.1	74	1949	-10	1963	795	5.36	3.16	1937	2.9	9.6	1966	8.3	1962	9	0	3	20	1	J
F	51.3	28.9	40.1	76	1954+	-7	1965	672	5.07	3.25	1939	2.9	11.3	1960	9.1	1960	8	0	2	18	*	F
M	59.6	36.4	48.0	86	1945	3	1943	553	5.41	4.00	1963	1.4	21.0	1960	12.0	1960	10	0	*	12	0	M
A	69.4	44.7	57.1	90	1965+	20	1940	230	3.96	2.19	1936	T	T	1962	T	1962	8	*	0	4	0	A
M	78.3	53.0	65.7	94	1941	31	1947	70	3.69	2.42	1935	0	0		0		7	1	0	*	0	M
J	84.5	60.8	72.7	104	1964+	41	1956+	0	3.90	2.37	1951	0	0		0		7	7	0	0	0	J
J	87.2	64.3	75.8	105	1964	47	1947	0	4.34	2.71	1942	0	0		0		7	10	0	0	0	J
A	86.9	63.5	75.2	103	1948	46	1946	0	3.48	2.44	1964	0	0		0		7	9	0	0	0	A
S	82.3	57.3	69.8	102	1954+	34	1942	56	3.04	4.84	1944	0	0		0		5	5	0	0	0	S
O	71.8	45.5	58.7	90	1954+	21	1962+	209	2.29	2.22	1941	T	T	1962	T	1962	4	*	*	3	0	O
N	57.9	34.9	46.4	83	1961	9	1959	548	3.89	3.50	1948	0.6	6.5	1950	6.5	1950	6	0	*	13	0	N
D	48.4	28.0	38.2	72	1955	-6	1962	789	4.56	4.42	1936	2.3	14.8	1963	10.8	1963	6	0	2	21	*	D
Year	68.7	45.4	57.1	105	July 1964	-10	Jan. 1963	3922	48.99	4.84	Aug. 1964	10.1	21.0	Mar. 1960	12.0	Mar. 1960	84	32	8	91	1	Year

(a) Average length of record, years.

T Trace, an amount too small to measure.

** Base 65°F

\+ Also on earlier dates, months, or years.

* Less than one half.

\# All data from Norris, Tennessee, except data on snow cover which are from Oak Ridge, Tennessee. Period of record, 1948-1969.

NARRATIVE CLIMATOLOGICAL SUMMARY

Norris is located along the west margin of the Great Valley of East Tennessee, a broad valley between the Cumberland Mountains to the west and the Great Smoky Mountains to the southeast. Local topography is complex with a number of minor valleys and ridges giving a local relief of as much as 500 feet. Norris Dam State Park is about three miles north of town. Norris Dam and Reservoir functions to control the flood waters of the Clinch River watershed and contributes to the reduction of flood heights at the cities and other important industrial, municipal, and agricultural areas downstreams.

The annual weather picture can well be represented in most years by four distinct seasons of approximately equal length. The winter climate may be described as warmer than that to the north and having more precipitation and higher humidity than in western parts of the nation. Spring is characterized by spells of mild weather interspersed among cooler periods and by a decrease in precipitation due to fewer general rains and more showers. Summers are warm and generally humid as a result of the continued inflow of warm, moist air from over the Gulf of Mexico. Fall is a season of mild temperatures, low humidities, abundant sunshine, and light-to-moderate rainfall.

Precipitation East Tennessee is the site of both the greatest and the least mean annual precipitation in the State. The greatest mean precipitation is about 80 inches annually on the highest, well exposed peaks of the Smokies, while the least is about 38 inches in the northernmost portion of the Great Valley.

Precipitation in the Norris area is usually well distributed during the year, with the greater amounts in wintertime when cyclonic storms from southern latitudes reach the area with greater intensity and frequency. A second peak rainfall period generally occurs in July, principally from thunderstorms that move into the area from the south and southwest. During any year there are usually a few of these storms that can be classified as severe, with hail and damaging winds.

A statistical study of heavy precipitation in just a few hours in this area indicates the probability of occurrence of totals at least as great as those listed below. These rates do not vary appreciably in the Great Valley.

Frequency in 100 years	Inches in 1 hour	6 hours	12 hours
1	3.0	5.0	5.8
4	2.5	4.0	4.6
20	1.9	3.0	3.5
90	1.2	2.0	2.4

Temperature The average annual temperature varies from 61°F. in the southern portion of East Tennessee to near 56° in the northern sector of the Great Valley. The decrease in temperature with increasing elevation, amounting to about 3°F. per 1000 feet on the average, accounts for most of the variation of temperature within eastern Tennessee. The relative coolness of the surrounding mountains along with their natural beauty and easy accessibility to the Southeast, has greatly contributed to the areas popularity as a summer resort.

Wind, Humidity, and Clouds The local climate is noticeably influenced by topography. Prevailing winds are usually either up-valley, from west to southwest, or down-valley, from east to northeast. Wind velocities are somewhat decreased by the mountains and ridges. In winter the Cumberland Mountains have a moderating influence on the local climate by retarding the flow of cold air from the north and west. While southerly winds are frequent in all months of the year, percentage of southerly winds are smallest in autumn.

The average annual relative humidity at Norris is about 70 per cent. This percentage is lower than that for the Great Lakes area to the north and the coastal areas of the country, but higher than that for the central states and much of the western part of the nation. There is some local variation in humidity during the year, with the highest average daily values recorded in winter, and the lowest in spring.

Mean annual sky cover by clouds, from sunrise to sunset is about 55 to 60 per cent. This percentage is lower than that for sky cover in areas to the north and east of Tennessee, but higher than that for sky cover in the southwestern states. Cloudiness is greater in winter than in other seasons, and is least in the fall.

Storms Severe storms are relatively infrequent in the Great Valley since it is located well to the east of the center of tornado activity, south of most blizzard conditions, and too far inland to be often affected by hurricanes. The hail risk for the Great Valley is comparatively light; the area has had few really damaging storms.

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(Summary prepared July 1970)

Average Temperature (°F)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ann'l
1931													
1932													
1933													
1934													
1935	37.5	43.0	55.8	58.8	67.3	70.9	77.5	77.2	70.6	58.6	48.6	32.2	58.2
1936	32.0	34.5	50.2	54.4	69.4	77.2	78.9	78.3	73.6	60.0	44.7	42.0	57.9
1937	48.4	39.1	43.8	55.4*	64.2	74.0	75.0*	77.2*	68.1	53.8	42.6	36.6	56.5
1938	36.0	46.2	52.6	58.0	64.9	70.3	75.3	76.8	69.6	60.2	47.7	38.2	58.0
1939	39.2	42.9	49.4	54.1	65.6	75.2	75.8*	74.8	72.8	60.4	44.7	38.9	57.8
1940	23.5	37.5	44.4	54.8	62.2	71.9	73.8	75.5	66.8	59.0	46.0	43.6	54.9
1941	37.4	33.6	41.1	59.2*	66.7	73.5	76.6	76.3	72.4	64.5	46.0	43.0	57.5
1942	33.8	33.8	46.5	55.0	62.4*	73.0*	76.8	74.0*	68.1	58.1+	49.8+	37.2	55.7
1943	41.2	39.6	43.0	54.8	67.0	77.2	75.8	76.6	65.6	53.9	43.4	38.0	56.4
1944	37.5	42.6	46.4	55.3	68.6	76.3	75.8	75.2	70.0	57.6	45.7	34.6	57.2
1945	36.0	40.6	56.8	60.8	62.4	72.2	75.8	75.2	73.2	57.4	48.4	33.3	57.6
1946	37.2	41.0	55.7	60.4	64.2	71.9	77.8	72.4	70.0	59.2	52.8	42.2	58.7
1947	41.4	29.4	37.6	59.3	63.6	72.4	72.6	79.0	72.1	65.1	46.7	38.3	56.5
1948	30.6	41.3	52.6	61.8	64.8	73.6	78.0	74.9	70.3	56.2	50.0	42.6	58.1
1949	47.6	45.9	45.6*	52.3*	67.5*	71.8	73.9	70.8	61.6	61.6	46.5	41.0	57.2
1950	46.5	42.6	44.2	53.8	67.9	71.7	71.5	72.8	69.2	63.7	44.5	33.8	56.8
1951	38.1	39.0	46.6	53.8	64.2	73.4	76.3	76.6	70.6	61.8	41.9	39.0*	56.8
1952	41.2*	43.2	47.3	57.1	66.2	78.0	78.8	74.4	68.8	55.5	46.9	40.4	58.2
1953	39.5	41.9*	48.9	54.7*	69.2	75.2	72.2	70.3	64.2	56.0	43.0	34.9	55.8
1954	42.4	47.3	51.5	61.5	60.1	73.7	78.9	76.9	72.3	60.0	43.8	36.7	58.8
1955	35.3	38.4	48.6	59.3	67.4	66.5	76.0	76.7	72.1	56.2	42.8	38.5	56.5
1956	32.6	44.1	47.7	54.5	67.2	71.6	75.8	75.6	65.1	60.8	45.0	46.7	57.2
1957	38.5	47.2	47.8	61.7	69.3	75.8	78.6	76.7	71.4	52.7	46.2	41.9*	59.0
1958	34.5*	31.1	44.7	55.7	64.0	71.3	76.3	73.2	66.7	56.3	47.5	35.2*	54.7
1959	34.2	39.2	43.2	58.0	68.1*	71.0	76.0	77.1*	71.0	59.0	44.2	40.0	56.8
1960	39.0*	36.1	35.2	57.3	61.5*	72.5	76.2	77.7*	70.6	60.3	45.8	31.4	55.3
1961	30.2	42.3	48.6	50.8	61.2	68.4*	74.6	74.5	70.7	57.1*	49.8*	38.8	55.6
1962	35.6	43.2	44.0	52.9	71.6	72.8	75.7	74.3	67.8	58.8	44.5	33.9	56.2
1963	29.7	30.4	50.1	59.5	63.8	72.3	73.1	74.4	69.0	61.6	47.4	30.3	55.2
1964	37.6	35.9	48.1	60.3	67.2	74.9	76.0	73.7	69.7	55.4	51.8	42.3	57.7
1965	39.7	39.1	44.9	60.5	68.4	71.7	75.3	74.6	71.3	57.0	49.9	40.5	57.7

*Days Missing.
+Interpolated or partly interpolated.

STATION HISTORY

A climatological station was established at Norris in September 1934. No major breaks have occurred in either the temperature or rainfall record. The station was known as the Norris Evaporation Station from May 1945 to October 1953.

The station has been located continuously within the city limits. Observations have been taken by the Tennessee Valley Authority, Hydraulic Data Branch, until August 1963, when it was moved to the Norris Fire Department. All instrument exposures have been over level ground and considered good.

Total Precipitation (Inches)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ann'l
1931													
1932													
1933													
1934													
1935	3.84	3.70	8.20	4.72	6.52	3.56	5.36	1.71	.80	1.66	6.57	2.06	48.70
1936	5.24	2.89	5.86	3.93	.83	1.09	6.86	1.57	1.33	2.31	2.04	8.27	42.22
1937	13.03	5.36	1.84	3.24	5.50	4.72	2.38	4.88	1.24	5.34	1.02	3.41	51.96
1938	3.97	2.40	4.86	7.06	7.66	4.59	4.17	3.29	1.46	.39	4.96	2.28	47.09
1939	4.67	11.04	5.20	5.03	.98	5.44	2.69	2.43	1.59	.91	2.06	3.52	45.56
1940	1.90	4.21	5.83	4.42	2.82	4.06	3.34	3.57	.99	2.11	2.21	2.44	37.90
1941	2.03	.68	3.51	5.46	.49	3.06	7.60	3.01	.96	3.81	2.96	3.18	36.75
1942	3.58	3.63	5.37	1.05	3.56	4.19	7.48	5.36	3.09	1.62	2.00	9.62	49.65
1943	3.62	3.73	5.27	4.81	3.56	4.59	6.77	3.10	6.33	3.10	1.80	2.07	48.75
1944	2.31	8.13	8.35	3.65	2.67	1.66	1.58	2.98	13.98	1.62	4.65	4.22	55.80
1945	2.99	8.61	2.37	5.62	5.70	4.77	3.64	3.66	2.43	2.81	4.51	5.01	52.12
1946	8.10	5.68	3.71	2.41	8.16	3.71	5.57	5.86	3.13	3.64	3.90	3.87	57.74
1947	9.48	1.76	3.09	2.58	3.46	4.18	2.61	2.61	1.77	1.94	3.53	2.57	39.58
1948	4.00	8.77	6.39	1.85	2.02	2.42	7.24	2.69	.85	1.78	12.00	5.58	55.59
1949	9.09	3.13	4.58	2.69	2.81	4.37	6.29	3.50	1.43	5.34	1.55	-	-
1950	11.83	5.36	4.13	1.51	8.22	4.67	5.59	4.09	3.29	.77	3.59	3.80	56.85
1951	6.85	6.41	7.39	3.69	3.71	5.69	4.44	2.64	4.62	3.16	7.46	8.41	64.47
1952	5.93	1.72	7.94	2.13	3.31	1.22	1.18	4.59	1.53	.40	5.39	4.07	39.41
1953	5.98	6.10	4.80	4.16	4.83	5.23	5.05	.41	2.31	.57	1.85	4.38	45.67
1954	9.79	2.39	4.71	2.39	3.14	1.55	4.05	2.07	1.87	1.75	2.41	9.05	45.17
1955	2.19	6.36	6.86	3.86	3.22	3.80	3.34	3.16	5.22	1.92	3.11	3.43	46.47
1956	3.87	9.56	6.73	7.12	2.20	2.70	5.00	3.79	2.99	2.41	2.49	7.66	56.52
1957	10.14	6.52	1.98	4.47	2.72	6.00	1.77	2.34	8.43	3.69	9.87	7.42	65.35
1958	1.96	2.76	3.72	7.47	3.57	3.28	2.42	3.51	1.34	1.00	2.76	2.82	36.61
1959	5.48	3.76	3.92	4.05	5.66	4.07	2.31	3.27	1.50	4.40	4.52	5.69	48.63
1960	3.11	4.22	5.64	1.19	3.59	5.61	2.17	8.96	3.86	2.82	2.53	3.09	46.79
1961	3.00	8.09	6.10	3.99	3.69	5.30	5.66	3.73	1.50	2.42	4.47	8.41	56.36
1962	5.92	10.04	5.46	4.43	1.89	5.62	3.30	5.22	7.06	2.39	4.22	3.23	58.78
1963	2.45	2.91	9.68	3.03	2.33	4.40	5.02	2.01	.78	.00	3.96	1.89	38.46
1964	5.47	3.59	6.18	6.31	2.27	1.77	1.73	5.93	4.02	3.47	3.90	4.92	49.56
1965	4.41	3.55	8.17	4.32	3.35	3.70	7.83	2.01	2.51	1.91	2.44	.56	44.76

- No record

PROBABILITY OF LOW TEMPERATURES IN SPRING AND FALL

Minimum Temp. (°F)	Percent of occurrence after the date in spring					Percent of occurrence before the date in fall				
	90%	75%	50%	25%	10%	10%	25%	50%	75%	90%
32	4/3	4/9	4/16	4/23	4/29	10/12	10/19	10/27	11/4	11/11
28	3/18	3/26	4/4	4/13	4/21	10/17	10/25	11/2	11/10	11/18
24	3/5	3/16	3/28	4/9	4/19	11/1	11/11	11/21	12/1	12/11
20	2/18	2/27	3/10	3/21	3/30	11/15	11/22	11/29	12/6	12/13
16	-	2/8	2/22	3/6	3/17	11/22	11/29	12/8	12/21	-

This table summarizes for a 30-year period, the dates when low temperatures last occurred in the spring and first occurred in the fall at Norris. The average date is given in the 50% column. In the spring the table shows that for a temperature 32° or lower, there is a 90% chance (9 chances out of 10) after April 3, a 10% chance (1 chance out of 10) after April 29. In the fall, there is a 10% chance of a freeze, 32° or lower before October 12, a 90% chance, before November 11. It should be noted that all freeze data are based on temperatures in a standard U.S. Weather Bureau thermometer shelter at a height of approximately 5 feet above ground and in a representative exposure. Lower temperatures will exist at times nearer the ground and/or in local areas subject to extreme air drainage.