

U. S. DEPARTMENT OF COMMERCE  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

IN COOPERATION WITH THE AGRICULTURAL EXPERIMENT STATION, CLEMSON UNIVERSITY  
CLIMATOGRAPHY OF THE UNITED STATES NO. 20-33  
CLIMATOLOGICAL SUMMARY

LATITUDE 35°07' North  
LONGITUDE 81°58' West  
ELEV. (GROUND) 748 feet MSL

STATION Rainbow Lake,  
South Carolina

MEANS AND EXTREMES FOR PERIOD 1935 - 1964

County: Spartanburg

Month	Temperature (°F)							** Mean degree days	Precipitation Totals (Inches)						Mean number of days					Month			
	Means			Extremes					Mean	Greatest daily	Year	Snow, Sleet			Precip. .10 inch or more	Temperatures							
	Daily maximum	Daily minimum	Monthly	Record highest	Year	Record lowest	Year					Mean	Maximum monthly	Year		Greatest daily	Year	90° and above	97° and above		32° and below	28° and below	
(a)	30	30	30	30	30	30	30	15	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
J	53.8	30.8	42.3	80	1944	-5	1940	716	4.62	2.68	1943	1.2	8.5	1962	4.0	1962	7	0	0	18	14	J	
F	56.6	32.3	44.5	78	1938	3	1958	571	4.67	3.20	1955	1.3	9.0	1936	7.0	1938	7	0	0	15	10	F	
M	63.9	37.9	50.9	88	1945	4	1960	457	5.47	3.10	1963	1.5	18.1	1942	5.5	1960	8	0	0	11	6	M	
A	73.2	44.7	59.0	92	1962	23	1950	185	4.30	3.37	1936	0	T	1951	T	1951	6	0	0	2	1	A	
M	82.0	55.4	68.7	98	1962	30	1963	36	3.35	3.30	1959	0	0	0	0	0	6	4	*	0	0	M	
J	87.9	63.5	75.7	105	1954	44	1947	2	3.97	3.10	1962	0	0	0	0	0	8	13	2	0	0	J	
J	89.2	66.7	78.0	106	1952	50	1963	0	5.15	3.60	1949	0	0	0	0	0	8	16	2	0	0	J	
A	87.9	66.0	77.0	103	1956	51	1942	0	4.44	6.02	1964	0	0	0	0	0	5	15	2	0	0	A	
S	83.5	59.6	71.6	102	1954	38	1947	17	4.03	3.81	1959	0	0	0	0	0	4	6	*	0	0	S	
O	74.9	47.5	61.2	98	1954	21	1952	165	3.43	6.00	1949	0	0	0	0	0	5	0	0	2	1	O	
N	63.7	36.9	50.3	87	1961	10	1950	444	3.25	3.35	1962	T	T	1936	T	1936	7	0	0	12	7	N	
D	53.8	30.4	42.1	77	1956	-1	1962	711	4.34	4.25	1950	0.6	12.0	1935	12.0	1935	0	0	0	20	14	D	
Year	72.5	47.6	60.1	106	July 1952	-5	Jan. 1940	3304	51.02	6.02	Aug. 1964	4.6	18.1	Mar. 1942	12.0	Dec. 1935	77	54	6	80	53	Year	

(a) Average length of record, years.

+ Also on earlier dates, months, or years.

T Trace, an amount too small to measure.

\* Less than one half. \*\* Base 65°F

CLIMATE OF RAINBOW LAKE, SOUTH CAROLINA

Rainbow Lake is located in the northern part of Spartanburg County about five miles from the northern edge of the state. Elevations in the county range from 1100 feet in the mountainous northwest to 650 feet in the south. The Enoree River forms part of the western border of the County. The climatological statistics for Rainbow Lake are representative of all of northern Spartanburg County which lies in the upper Piedmont plateau just east-southeast of the Blue Ridge Mountains. The area is mostly farmland with loamy soils.

The climate is temperate with rather warm summers and moderately cold winters. It is a continental type of climate with an annual temperature range of 36°F. Air masses arrive from the west, north-west and north during most of the year. During most of the summer however, the airflow is from the southwest. The warm season rainfall is mostly in the form of showers and varies widely from place to place. Fronts and cyclones provide most of the cold season rain which is more of a steady type and has a more uniform areal distribution. There are two rainfall maxima and minima during the year. A major maximum occurs in July and a minor maximum in March. The principal minimum is in the fall with a lesser minimum in late spring. Violent thunderstorms and tornadoes may occur in all months of the year but are more frequent in spring and summer. There have been seven tornadoes in Spartanburg County in 57 years, an average of one every eight years, and they have been in the period of March through August. Tropical storms visit the area occasionally and can bring heavy rains and flooding. Hurricanes are very infrequent this far inland. The tropical storm season is from May through November, with September being the most active month. The nearest relative humidity and wind measurements are made at the Greenville-Spartanburg Airport, twenty miles to the southwest of Rainbow Lake. Average values of maximum relative humidity, which occur normally just before sunrise, vary from 72% in January, February and March to 88% in July, August and September. The average minimum values, which usually occur in early afternoon, range from a low of 45% in March to a high of 59% in July. The prevailing wind direction is southwest in March, April, July and November and northeast in the other eight months. The surface wind nearly always parallels the mountains which are oriented northeast-southwest.

Summer is rather warm and relatively humid. One-half of the days in June, July and August have maximum temperatures of 90°F or above, and on one summer day the temperature may reach or exceed 100°F. The record high of 106°F was measured of July 29, 1952. Due to the northerly location and rather high altitude, summer nights are comfortably cool. Minimum temperatures average in the middle sixties in June, July and August. Summer rainfall is primarily in the form of air-mass showers and thunderstorms which begin in June and continue into September. Tropical storms occasionally add to the summer rains but their devastating effects are not usually felt due to the inland location. Slightly more than one-fourth of the annual precipitation comes during the summer months.

The beginning of fall is marked by a noticeable decrease in shower activity and air which is somewhat drier and cooler. The days are pleasantly warm and sunny and the nights are cool. The Atlantic tropical storm season is most active in September and once in every 5 or 6 years one of these storms adds to the sparse rainfall of the season. However, Rainbow Lake is far enough from the ocean to escape the harmful effects of these storms. Only about 20 percent of the annual rain comes in the fall, the driest part of the year.

Winters are mild with about 60% of the days in December, January, and February having freezing temperatures. The temperature seldom drops below 10°F, and temperatures as high as 77°F have occurred in every winter month. Winter rains are almost entirely due to fronts and cyclones, a rather continuous sequence of which pass through the region from late fall until early spring. Snowfalls occur nearly every year and the winter average is about 3 inches. Some of the heavy winter snows were the 12 inches that fell on December 28-29, 1935 and the 7½ inches which fell on February 6-7, 1936. The record snowfall, however, came on March 2-3, 1942 and measured 18.1 inches.

Spring is the most changeable season of the year. The frontal and cyclone activity of winter continues into March, decreases markedly in April and ceases almost entirely in May. Monthly rainfall reaches a secondary maximum in March, then decreases to a secondary minimum by May. Average temperatures increase 25°F from March 1 to May 31. The average April has two mornings with freezing temperatures. The cold fronts and squall lines of March and April initiate the severe weather of spring. Five of the seven tornadoes that have visited Spartanburg County in the last 57 years have been in spring, the other two were in summer. The most recent tornado occurrences were on March 22, 1968 near Valley Falls and on May 18, 1969 at Cowpens.

The average length of the growing season for the period 1935-1964 was 198 days. The average date of the first freezing temperature in the fall is October 29, but it has varied from October 7 to November 13. April 14 is the average date for the last freezing temperature in spring with the earliest on March 17 and the latest on April 22.

Maximum rates of rainfall in inches per unit time are taken from the recording rain gauge records at Spartanburg, ten miles to the south of Rainbow Lake, for the period 1953-1962.

Duration	1 hour	2 hours	3 hours	6 hours	12 hours
Amounts	2.37	3.29	3.36	3.48	3.77
Date	8/4/61	8/4/61	8/4/61	8/4/61	9/29/59

H. Landers, NOAA Climatologist for South Carolina  
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Clemson, South Carolina  
November 1970

Average Temperature (°F)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ann'l
1935	41.8	43.4	56.2	59.2	67.2	74.4	77.7	77.2	70.9	60.4	52.4	35.2	59.7
1936	36.4	39.4	52.6	56.8	69.8	76.0	78.2	76.8	62.8	48.4	43.2	35.2	59.5
1937	50.2	43.2	49.0	57.9	67.9	76.8	78.9	77.4	65.9	57.8	47.0	42.4	59.8
1938	42.5	49.2	56.6	59.8	69.6	74.2	77.4	79.4	72.6	60.8	52.8	42.4	61.4
1939	43.4	48.5	54.1	59.0	67.5	79.6	79.0	77.6	74.6	64.6	48.0	44.0	61.7
1940	30.4	42.5	47.4	57.2	66.2	76.8	77.2	76.6	70.4	61.8	51.6	45.5	58.6
1941	42.1	38.9	45.8	61.1	70.1	75.6	78.1	78.8	73.6	66.8	53.2	44.8	60.1
1942	40.0	38.2	50.0	61.0	68.0	76.8	79.1	76.0	76.0	63.4	50.2	42.8	60.1
1943	46.0	46.4	48.6	58.4	70.6	80.2	78.4	79.6	69.3	59.8	48.4	43.9	60.8
1944	42.1	48.1	50.8	59.0	71.6	80.2	77.0	76.4	73.5	59.8	49.2	43.9	60.6
1945	43.2	46.6	61.0	63.4	66.0	77.0	78.3	77.2	75.2	59.8	52.1	37.4	61.4
1946	43.2	45.2	56.6	61.2	66.2	74.6	77.0	77.5	70.5	60.4	53.2	45.6	60.8
1947	46.2	38.5	42.8	62.1	67.8	73.8	74.4	78.2	73.2	60.4	47.6	41.6	59.2
1948	35.8	44.2	54.7	62.6	67.9	76.0	78.8	75.7	69.4	56.6	47.0	44.6	61.1
1949	49.6	48.8	51.9	55.6	64.3	72.7	75.5	75.6	68.2	64.8	44.9	43.6	60.1
1950	51.8	47.8	47.9	56.9	69.9	75.4	75.4	75.7	69.4	63.8	46.2	38.9	59.9
1951	41.5	44.4	51.8	58.2	66.6	75.0	78.8	79.4	71.9	63.4	45.4	43.3	60.0
1952	48.9	45.9	50.4	59.6	68.0	80.5	80.2	76.7	69.9	56.4	49.4	41.1	60.6
1953	45.2	46.3	52.7	59.7	72.7	78.9	79.0	77.0	70.1	61.6	49.2	41.9	61.0
1954	42.9	47.7	50.6	63.9	65.2	75.3	80.0	80.3	74.9	62.7	48.4	40.8	60.7
1955	41.9	44.6	53.5	62.6	70.0	70.5	79.0	79.2	72.9	59.3	49.4	39.4	60.2
1956	39.1	46.9	51.6	57.6	69.3	75.7	78.6	79.4	62.1	52.1	49.0	52.2	60.9
1957	44.3	49.9	49.9	62.6	69.1	76.0	77.8	75.8	72.4	56.9	52.1	44.1	60.9
1958	36.2	36.6	46.5	59.3	69.0	75.5	77.7	79.0	70.3	58.8	53.7	39.5	58.5
1959	41.8	47.8	47.8	60.5	66.9	74.7	78.2	78.2	71.6	62.4	50.4	44.1	58.5
1960	42.8	41.8	39.3	61.2	65.9	74.8	77.2	78.2	71.4	60.4	51.1	38.0	58.7
1961	38.6	46.3	53.8	61.2	64.4	72.1	76.7	75.9	73.5	60.4	53.4	43.4	59.6
1962	41.5	38.9	48.3	57.5	67.5	74.9	78.4	77.5	70.8	62.7	49.9	45.9	59.0
1963	38.6	48.9	53.9	62.4	73.5	79.1	76.4	77.3	70.8	62.3	51.0	35.9	60.3
1964	41.2	40.3	51.1	59.4	68.9	76.7	77.0	76.0	70.9	57.0	54.2	45.5	59.9

Total Precipitation (Inches)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ann'l
1935	4.15	4.99	3.59	4.66	3.47	3.40	5.77	3.76	2.42	1.68	4.72	3.00	45.21
1936	9.64	4.77	7.46	9.04	0.00	4.41	7.23	4.07	4.48	7.06	1.35	8.53	68.04
1937	10.34	3.69	1.52	5.28	3.91	1.49	6.89	7.79	8.19	1.47	1.35	2.28	57.26
1938	2.86	1.53	3.86	2.08	7.07	6.25	5.75	2.23	4.40	.99	5.43	2.95	42.40
1939	4.33	10.22	3.63	3.55	3.52	2.91	4.53	7.57	1.22	.58	4.05	46.39	38.89
1940	3.05	3.33	5.15	1.21	1.39	1.95	4.18	9.79	.28	2.38	2.97	3.11	38.89
1941	1.60	1.31	5.37	2.33	.62	2.37	9.21	4.17	1.12	.63	2.01	5.12	34.86
1942	3.90	5.90	6.40	.45	4.61	2.55	9.21	4.17	6.94	1.76	2.01	5.12	34.86
1943	7.54	2.15	3.62	4.11	2.31	3.92	6.81	4.16	2.88	1.16	2.88	4.22	45.81
1944	3.31	8.41	10.99	6.59	1.12	2.49	6.99	4.82	3.05	3.05	3.05	2.10	45.81
1945	2.57	5.95	3.46	6.14	1.05	1.65	1.81	11.54	1.81	1.81	3.05	2.10	45.81
1946	7.75	5.67	4.25	3.11	5.60	3.80	5.84	2.56	4.05	3.54	3.54	2.52	47.02
1947	6.41	.87	4.27	3.07	2.66	4.71	2.20	4.32	1.47	7.28	3.54	2.13	47.02
1948	4.23	4.85	2.13	1.26	5.73	3.42	1.74	7.40	4.74	1.12	10.92	4.82	58.41
1949	3.43	4.29	8.72	1.26	2.82	3.62	6.89	3.70	3.70	9.83	1.26	2.19	55.99
1950	3.72	1.13	4.12	.97	4.72	4.12	7.08	2.12	4.94	3.61	1.06	8.36	43.41
1951	1.60	4.22	6.39	3.10	2.14	6.31	2.84	2.12	5.63	3.61	1.06	8.36	43.41
1952	4.60	4.42	13.24	3.59	3.09	1.98	2.84	.57	1.18	1.08	3.37	3.37	46.46
1953	4.99	6.62	4.75	2.89	3.63	3.19	1.48	6.63	1.32	1.32	1.32	4.05	46.46
1954	6.95	2.50	6.97	2.53	3.58	1.97	2.93	1.34	5.80	.99	1.12	6.82	44.36
1955	2.54	4.20	3.02	6.43	6.30	4.79	5.93	3.79	2.88	3.67	3.67	3.99	46.96
1956	1.57	9.00	4.81	6.58	2.46	4.04	4.05	.67	8.05	2.47	2.42	3.07	45.57
1957	3.30	6.68	3.54	2.99	3.70	4.70	6.75	9.53	3.73	9.32	5.73	2.82	62.13
1958	4.43	4.68	4.68	8.96	2.99	2.11	4.22	3.44	2.06	2.12	2.02	4.99	60.60
1959	2.42	2.97	5.23	6.32	8.65	1.44	6.46	4.92	8.29	7.10	2.18	3.62	53.38
1960	5.71	7.72	5.35	2.36	2.87	4.45	3.26	4.19	6.01	6.01	.86	2.18	53.38
1961	4.40	6.93	4.68	4.62	4.34	6.65	5.00	4.14	.72	.72	3.15	10.36	55.94
1962	5.97	4.35	6.95	4.62	2.41	9.22	2.93	1.99	4.60	4.60	3.15	3.53	55.94
1963	3.77	3.38	10.05	5.34	3.50	7.18	2.33	1.17	4.67	.01	4.82	2.81	49.23
1964	6.87	5.16	6.05	8.11	1.32	7.62	8.12	12.25	1.58	13.10	3.89	4.11	78.18

STATION HISTORY

Observations began at Rainbow Lake on February 1, 1928. The observing site is located at the Filtration Plant of the Spartanburg Water Works and various employees of this organization have been making the observations for 43 years. The station was named "Cherokee" originally but the name was changed to "Rainbow Lake" on March 1, 1947. The Meter Works had it's own instruments for several years but these were replaced by Weather Bureau equipment in the late 1940's. Observations of maximum and minimum temperature and precipitation have been made since the beginning. Evaporation measurements have been made since November 12, 1964, and wet-bulb temperature measurements since March 2, 1965. The observing site was moved about 200 feet on January 19, 1951 as growth of the filter plant began to affect the initial location. For the past quarter of a century the observations have been taken under the supervision of William C. Bowen, Superintendent of Water Resources and Samuel L. Thompson, Chief Operator of the Filter Plant.

