

U.S. DEPARTMENT OF COMMERCE WEATHER BUREAU  
 IN COOPERATION WITH MAINE DEPARTMENT OF ECONOMIC DEVELOPMENT  
 CLIMATOGRAPHY OF THE UNITED STATES NO. 20 - 17  
**CLIMATOLOGICAL SUMMARY**

LATITUDE 44° 19'  
 LONGITUDE 69° 48'  
 ELEV. (GROUND) 350 ft.

STATION AUGUSTA, MAINE  
 (State Airport)

MEANS AND EXTREMES FOR PERIOD Dec. 1944 - Dec. 1960

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	Year	Mean					Maximum monthly	Year	Greatest daily	Year		90° and above	Max.		Min.				
																				32° and below	33° and below	0° and below		0° and below		
(a)	16	16	16	16		16		11	16	16		16	16	16	16	16	16	16	16	16						
Jan	28.2	11.4	19.8	57	1960	-22	1957	1361	3.46	1.77	1960	21.9	43.3	1948	12.5	1948	8	0	20	30	6	Jan				
Feb	30.9	13.1	22.0	54	1954	-21	1948	1180	3.04	1.60	1952	22.0	44.2	1960	20.0	1960	6	0	15	27	4	Feb				
Mar	39.8	22.3	31.3	82	1946	-10	1950	1076	3.30	1.64	1953	13.4	29.9	1958	14.0	1959	7	0	6	27	1	Mar				
Apr	52.9	33.9	43.4	88	1945	9	1954	636	3.30	1.94	1958	2.2	7.6	1958	6.2	1957	8	0	*	12	0	Apr				
May	64.9	43.2	54.1	89	1955+	26	1950	319	3.21	4.00	1948	0.8	11.0	1945	9.0	1945	8	0	0	1	0	May				
Jun	73.8	52.2	63.0	95	1955+	36	1955	105	3.23	2.26	1954	0					7	1	0	0	0	Jun				
Jul	80.5	58.8	69.7	99	1952	47	1956+	18	3.36	3.03	1960	0					5	3	0	0	0	Jul				
Aug	78.4	56.6	67.5	100	1955	39	1954	38	2.92	2.27	1955	0					6	2	0	0	0	Aug				
Sep	69.2	45.9	59.1	93	1953	30	1947	214	3.05	5.78	1954	0					6	*	0	1	0	Sep				
Oct	58.4	39.3	48.9	86	1954	21	1957	513	3.43	2.35	1955	†	0.3	1954	0.3	1954	6	0	0	6	0	Oct				
Nov	45.3	30.2	37.8	72	1953	4	1951	808	4.67	2.79	1953	3.7	20.0	1945	10.0	1945	8	0	2	20	0	Nov				
Dec	32.4	16.5	24.5	59	1950	-12	1955+	1233	3.44	2.00	1952	13.0	28.1	1960	12.0	1960	7	0	16	29	2	Dec				
Year	54.6	35.6	45.1	100	Aug. 1955	-22	Jan. 1957	7496	41.01	5.78	Sep. 1954	77.0	44.2	Feb. 1950	20.0	Feb. 1960	82	6	59	153	13	Year				

(a) Average length of record, years.

† Trace, an amount too small to measure.

\*\* Base 65°F

+ Also on earlier dates, months, or years.

\* Less than one half.

CLIMATE OF AUGUSTA

The historic and industrial Capital City, Augusta, lies on the banks of the Kennebec River. This navigable river gives the City an outlet to the open Atlantic 35 miles away. Other inlets, or indentations of the coastline, come within about 20 miles of Augusta. Elevation above sea level rises from less than 50 feet along the river banks to 200 to 400 feet over much of the surrounding rolling, or somewhat hilly, countryside, with a few 600 ft. hills about 5 miles to the northwest. The Mahosuc Range rises about 50 miles to the west and the Blue Mountain range is 50 miles to the northwest, where some peaks reach to above 4000 ft.

Some general climatic features of this city include: (1) Variability of the weather, (2) moderately large range of temperature, both daily and annual, (3) great differences between the same seasons in different years, and, (4) equable distribution of precipitation through the year.

Frequent weather changes are shared with other New England communities, since this area lies in a belt favored as a path of centers of low barometric pressure. This belt is a battleground between cold air masses from northerly directions, warm air masses from south-westerly directions, and intermediate air masses which sometimes come in from the Atlantic or occasionally eastward from the Pacific Ocean. The influence of the Atlantic is moderating. This moderation is most effective in limiting summer temperatures to comfortable levels and less striking in other seasons. Augusta's climate temperaturewise is therefore mainly continental in character, with large daily and seasonal variation. These are shown in the table above.

Also like most of New England, Augusta has no "rainy" or "dry" seasons. Only one month, August, has an average of less than 3 inches and only one, November, has an average of over 4 inches. The monthly Total Precipitation table in this bulletin shows, however, that the same month may have widely fluctuating amounts from year to year. Also, monthly totals have varied from as little as 0.07 inch to as much as 9.71 inches. Periods of extended severe drought are rare. Shorter periods of dry weather are common enough to warrant the use of irrigation for certain agricultural production, especially high value truck and fruit crops. The general annual regularity of precipitation is, fortunately, sufficient to insure a supply not only for such irrigation but also for important industrial and water power uses. Even in Augusta's driest year of record, 1946, the total, 31.51 inches, was 77% of the long period average. The greatest annual amount was 55.64 inches in 1954.

In the warmer half of the year much of the rainfall occurs as showers and thunderstorms which frequently attend frontal passages. Days with thunderstorms average 18 per year in the period from May through October. The maximum frequency for any month, 6, comes in July. The colder months of the year may also have thunderstorms but only rarely. The effect of the Atlantic Ocean on precipitation at

Augusta is greatest during the cold months. Then, coastal storms, or "northeasters," become more frequent. They are a major producer of precipitation in the form of snow or, sometimes, sleet or rain. These disturbances may be attended by strong and sometimes damaging winds. They may affect the area for a day or even longer.

Frequency of days with 1.0 inch or more of precipitation averages 9 per year, though the annual frequency has varied from only 3 in 1946 to as many as 18 in 1960. This much in one day may occur in any month but is most frequent in the October through December period. The greater frequency at this time of year is due primarily to the coastal type of storm. A secondary maximum of the number of 1.0 inch or more daily rains occurs in July, due to thunderstorms. Days with 0.01 inch or more of precipitation average 154 per year. These are well distributed over the months but are somewhat fewer in the four months, July through October.

That summer heat is comfortably tempered is shown by the table above. But few days occur with maxima reaching as high as 90°. The record extreme, 100°, was reached but once. Mid-summer afternoon temperatures are in the ideal range from 75 to 80° on an average day, while nighttime minima average in the upper 50's. Uncomfortably hot and humid nights are nearly unknown.

Winters are moderately cold, with a mean temperature of 23.1° for the three month, December through February, period. Though readings of zero or lower are recorded on an average of 13 days per winter, the seasonal number has varied from as low as 2 in the 1952-53 season to as many as 33 in the winter of 1947-48. The lowest of record, -22°, is, however, much higher than the extreme lows of many farther inland stations at the same latitude. Based on temperatures for December through February, the coldest winter of record was 1947-48, averaging 16.5°. The mildest was the winter of 1952-53, with an average of 26.6°.

The average seasonal snowfall is 77.0 inches, but wide year to year variations occur. The extremes of record are 29.3 inches in 1952-53 and 106.1 inches in 1955-56. The frequency of daily snowfall of 1 inch or more is 23 per season, with 2 in November, 4 in December, 7 in January, 5 in February, 4 in March, and 1 in April. Daily snowfalls of 2 inches or more average 15 per season. Daily snowfalls of 4 inches or more average 8 per season, with 2 occurring by the end of December, 2 each in January and February, about 2 in March, and occasionally 1 in April. One daily snowfall of 10 inches or more is expected in a season. This is most likely to occur in February. One-half the winter seasons have 12 inches or more of snow in one day. The seasonal frequency of daily snowfall of 1 inch or more has varied from 12 to 31. In the 1952-53 season the greatest daily snowfall was only 4.0 inches. The station's greatest daily measurement, 20.0 inches in February, 1960, was a part of a two-day record breaking storm which totaled 26.0 inches. The frequency of snowfalls of 4 inches or more has varied from 1 to 13 per season. The maximum

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AUGUSTA, MAINE  
Average Temperature (°F)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ann'l
1944	14.3	20.8	33.6	47.4	50.1	62.0	68.5	67.7	60.8	45.0	36.5	21.3	44.3
1945	16.8	17.1	33.4	40.8	53.6	63.1	67.5	64.8	61.0	50.8	38.4	23.4	44.7
1946	18.4	22.2	31.8	39.9	51.9	60.4	71.2	70.3	59.7	52.1	35.5	20.4	44.7
1947	18.4	22.2	31.8	39.9	51.9	60.4	71.2	70.3	59.7	52.1	35.5	20.4	44.7
1948	13.8	15.4	32.6	41.8	50.4	60.0	70.2	70.9	61.4	51.7	41.7	27.6	44.2
1949	23.2	23.5	31.1	30.5	55.6	65.8	70.9	68.1	58.1	47.7	34.3	29.0	40.7
1950	22.7	17.1	25.7	40.9	55.6	64.3	70.3	66.8	64.9	48.9	41.7	27.8	44.7
1951	23.3	25.3	32.3	45.6	56.2	61.9	69.9	66.9	59.8	43.8	34.0	23.5	45.7
1952	22.2	23.9	31.5	44.8	52.6	66.6	75.0	69.3	60.4	46.8	37.5	28.1	46.6
1953	25.5	26.1	33.3	43.8	55.9	65.0	69.6	67.3	59.9	49.5	41.1	47.4	47.4
1954	15.5	27.6	30.5	43.3	52.0	62.9	67.1	64.2	56.5	50.9	36.7	25.5	44.4
1955	18.2	23.4	28.3	44.1	57.7	63.8	72.4	69.6	57.5	47.7	35.3	16.5	44.6
1956	25.5	23.2	34.7	40.2	48.9	63.2	65.4	65.1	54.5	48.3	37.4	24.2	43.4
1957	11.9	24.8	24.0	44.5	56.1	65.7	67.7	64.3	60.8	49.8	40.4	30.5	45.8
1958	24.3	17.7	34.8	44.6	51.6	59.2	67.7	66.9	58.6	45.5	37.1	15.8	45.7
1959	19.1	16.8	29.4	43.8	57.9	65.4	71.4	68.6	61.3	47.7	36.6	27.6	45.0
1960	21.6	27.1	27.3	42.6	58.4	64.9	68.6	67.7	59.4	46.8	40.3	21.4	45.5

CLIMATE OF AUGUSTA, continued

number of daily snowfalls of 8 inches or more in one season was 4. The ground is usually covered by 1 inch or more of snow continually for nearly the whole winter season. However, in 1 season in 9, the ground is bare much of the time. During the 1952-53 season, the longest period with 1 inch or more of snowcover was only 16 days. Excluding these few exceptions, the average number of consecutive days with measurable snowcover is 35 days, beginning about Dec. 28 and ending about March 23. The longest period with such snowcover was 124 days during the 1958-59 season. The maximum seasonal depth of snow on the ground has ranged from only 5 inches in the 1952-53 season to 52 inches in the 1944-45 season; average maximum depth is 24 inches. The average date of this seasonal maximum is February 13.

A summary of several years of hourly wind records shows an average annual velocity of 8.6 m.p.h. The prevailing wind direction, considering 16 compass points, was from the north, with the wind from this sector, 11% of the hours. Northwest was a close second, with 10% of the observations. A calm or nearly calm wind, not over 3 m.p.h., were observed 18% of the time. A seasonal variation (by representative months) of wind direction and velocity is shown by the following table:

Month	Prevailing Dir.	and %	Average Vel.
	Of Time from Prev. Dir.	(0-3 mph)	(mph)
January	N	19	8.4
February	N	18	9.4
March	N	14	7.0
April	N	10	7.0
May	S	16	9.2
June	NW	13	
July			
August			
September			
October			
November			
December			

A three-year summary of hourly observations showed the occurrence of dense fog a little over 4% of the time, ranging from a high of 7% in December to a minimum of 2% in February. Dense fog restricts surface visibility to 1/2 mile or less. Precipitation occurred in 13.6% of the hours, ranging from 22% in March to only 7% in August. Cloud ceiling heights were 1000 feet or less 15% of the time, ranging from about 13% in Spring to 12% in Fall. Visibility was 1 mile or less 9% of the time, ranging from near 13% in Spring to 6% in Fall.

An air temperature of 32° in a standard instrument shelter is usually accompanied by frosts or freezing temperatures at the ground level, which kill or damage tender plants. Growing seasons for hardier vegetation may not end until lower temperatures occur. As a planning guide for agricultural and other purposes, some average freeze dates have been computed, using 32° and several lower temperature thresholds. These average dates, of the beginning and end of the "season" free of the specified temperature, are shown in the following table:

Critical Temp. (°F)	Last Occurrence in Winter or Spring	First Occurrence in Fall or Winter	Season Length (days)
32	May 1	Oct. 8	160
28	Apr. 19	Oct. 19	183
24	Apr. 5	Nov. 3	212
20	Mar. 25	Nov. 22	242
16	Mar. 19	Nov. 30	256
0	Feb. 16	Jan. 1	319

AUGUSTA, MAINE  
Total Precipitation (Inches)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ann'l
1944	3.58	3.07	1.89	4.72	5.28	3.97	5.53	1.63	3.19	3.41	3.29	2.18	4.53
1945	2.55	1.97	.91	2.28	3.02	1.50	2.49	4.62	4.34	1.58	2.84	3.41	31.51
1946	2.55	1.97	.91	2.28	3.02	1.50	2.49	4.62	4.34	1.58	2.84	3.41	31.51
1947	3.20	2.23	2.87	3.78	5.20	4.51	6.64	.37	2.74	.07	4.56	4.24	34.13
1948	3.20	2.23	2.87	3.78	5.20	4.51	6.64	.37	2.74	.07	4.56	4.24	34.13
1949	3.26	2.07	3.55	3.26	.71	2.40	1.05	1.17	1.33	2.44	7.75	4.81	37.78
1950	3.26	2.07	3.55	3.26	.71	2.40	1.05	1.17	1.33	2.44	7.75	4.81	37.78
1951	2.44	3.37	5.18	6.38	2.58	1.59	6.06	3.30	2.81	3.64	6.64	4.79	49.98
1952	4.38	4.84	2.51	3.48	3.09	2.51	2.59	2.75	3.05	2.64	1.92	5.35	36.93
1953	4.08	3.84	9.71	3.34	2.93	3.19	2.79	2.81	2.75	4.68	4.75	4.24	48.59
1954	3.20	4.30	3.31	3.58	5.82	6.83	3.26	4.89	3.36	4.55	4.55	1.49	54.64
1955	1.22	5.21	3.32	1.78	3.31	2.26	1.40	5.96	1.16	4.56	3.42	1.08	54.66
1956	4.56	2.35	4.43	3.41	2.95	1.85	4.29	4.13	2.51	2.48	3.42	2.67	39.05
1957	2.32	2.30	1.62	2.27	2.98	3.77	3.71	3.78	1.34	1.70	6.01	4.50	31.70
1958	6.06	2.78	2.40	5.66	3.24	2.09	6.01	3.21	1.34	5.13	3.87	1.56	47.09
1959	3.00	1.64	2.76	2.48	1.62	5.69	2.84	3.26	2.19	6.09	6.59	3.41	43.12
1960	3.04	3.70	2.46	3.50	3.30	2.32	0.89	2.42	3.87	4.56	4.53	4.12	49.30

The standard deviation is included as a tool in estimating the probability of a freeze before or after the mean date. Slightly over two-thirds of the occurrences should fall within one standard deviation, either way, from the average date.

For example, the first freeze (32° or lower) in fall should occur between Sept. 26 and Oct. 20, 12 days either way from Oct. 6, or about 68% of the years. In one year out of six or seven, the date may be even before Sept. 26, with an equal chance that an occurrence will be later than Oct. 20. The earliest date of record is Sept. 14, the latest Oct. 25. These calculations, based on observations at Augusta Airport, may not be representative of all agricultural lands in the area. Some local areas, lower or more exposed, may have a growing season up to three weeks shorter than here indicated, with the last freeze in spring coming one to two weeks later and the first in fall earlier by a similar period.

In summary, the climate of Augusta is a rich, natural asset, considered healthily inviting. It offers ideal summer resort weather and also year-round vacation opportunities. It has contributed greatly to the City's prominence in various industrial pursuits such as printing and publishing, textiles, shoes, paper, and lumber. Augusta is also an important trading center for the surrounding climate-dependent agricultural areas.

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HISTORY OF WEATHER OBSERVATIONS AT AUGUSTA, MAINE

Standard climatological observations began Dec. 1, 1944, at Augusta State Airport and have continued at the same location. Certain army observations were begun earlier. These were first made May 1, 1936, at City Airport, 2 miles west of Augusta, until the station was moved to the Augusta State Airport, 1 mile west of the Post Office, on April 1, 1938. The contents of this summary are all based on observations taken at Augusta State Airport. Except where otherwise noted, the period of record for all items in this bulletin is for the 16 years, one month, ending December 1960.