U. S. DEPARTMENT OF COMMERCE
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CLIMATOLOGICAL DATA

NATIONAL SUMMARY

ANNUAL 1964

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RAWINSONDE DATA (Average Annual Values) - tabulation discontinued. The tabulation RAWINSONDE DATA (Average Monthly Values) is carried in the monthly issue of the publication CLIMATOLOGICAL DATA NATIONAL SUMMARY.

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CLIMATOLOGICAL DATA

NATIONAL SUMMARY

Volume 15 No. 13 ANNUAL 1964

GENERAL SUMMARY OF WEATHER CONDITIONS

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Weather Bureau, Washington, D. C.

The costliest weather factor of 1964 was deficient summer and autumn rainfall that resulted in periods of severe to extreme drought in northeastern areas from northern Virginia through sourther New England, in parts of Indiana and Illinois, and a Great Plains belt extending from southeastern Wyoming and the Nebraska Panhandle through western Texas. Other weather highlights included heavy snowfall in the western mountains, flood-producing rains in the Ohio River Basin in March and in the Pacific Northwest in December, record-breaking annual rainfall in the Southeast, and four hurricanes which were responsible for much rainfall in the Southeast and losses totaling about $500 million. About 50 deaths were attributed to hurricanes and 72 deaths to tornadoes.

Temperatures averaged below normal for every month except October and December in the Far West. East of the Rockies January and February were unseasonably cold and were followed by a warm spring, a cool summer, and a normal autumn. December was unusually cold west of the Great Lakes, but warmer than normal in most other parts of the Country.

JANUARY and FEBRUARY were cold in the East, ending the fourth consecutive cold winter there. January was the warmest in 20 years in the upper Mississippi Valley, while a few extreme southern stations reported near-record cold not only for January but also for February.

Precipitation was above normal during both January and February in the Atlantic Coastal States and unusually heavy in the Southeast. Heavy amounts in the western mountains during January built an unusually heavy snowpack which ranged up to more than 200 inches in the northern Cascades. January and February were both very dry in parts of the midcontinent area, and the latter month was extremely dry in the Far West. Heavy snow with local blizzard conditions occurred in the Northeast on January 13 with up to 20 inches of snow in eastern Pennsylvania causing one of the worst traffic tieups in recent years. Another snowstorm of note occurred in the Texas Panhandle the first week of February when up to 25-inch falls drifted 20 feet high, isolating several towns and ranches. Flurries were reported at Houston and Galveston during the third week.

The 1963-64 winter for the Country, excluding Alaska and Hawaii, was only slightly warmer than the winter of 1962-63, but it was much colder in the Far West, much warmer in the North Central Interior, and about as cold in the South where a few locations reported the coldest winter on record.

SPRING.--The season was cold in the Far West, mild east of the Rockies. Precipitation was extremely scanty in Atlantic coastal areas from North Carolina to southern New England, and the Ohio Valley thus setting the stage for the summer and fall drought.

The first several days of March were unusually warm. Abnormally cold weather during the remainder of the month was climaxed by a record-breaking cold wave in the Southeast at the end of the month. Peaches suffered heavy damage in the Carolinas and lesser damage in Georgia, Tennessee, Arkansas, and Mississippi. This was the coldest March on record at a few locations in the Far West. March precipitation was extremely heavy in the Ohio River Basin where Columbus and Cincinnati, Ohio; Louisville, Ky.; and Evansville, Ind., had their wettest March on record. During the first 10 days, 6 to 8 inches of rainfall between Louisville, Ky., and Cairo, Ill., and somewhat lesser amounts over the rest of the Ohio Basin caused severe flooding in the Ohio River and many of its tributaries. Damage was estimated at many millions of dollars. On March 16, strong, gusty winds in the San Fernando Valley, south coastal areas, and the San Bernardino Mountains of California, spread fires that caused millions of dollars damage in addition to comparable property damage from the wind. Tucson, Ariz., had a 5-inch snowfall on the 3d. On March 4 a tornado in Hardin and Wayne Counties, Tenn., caused millions of dollars damage.

A cold spell in the Far West on April 22 to 24 damaged some peaches and cherries in Oregon and fruit and grapes in California. April precipitation was rather widespread with record amounts in the middle Missippi Valley and Southeast. Numerous severe local storms took a heavy toll of property. Two of the worst of these included a hailstorm which caused damage estimated at $10 million in the vicinity of St. Louis, Mo., on the 2d, and a tornado which was blamed for 7 deaths and several million dollars damage at Wichita Falls, Tex., on the 3d.

Another cold spell in the Far West during the first half of May caused some crop damage in California and the Pacific Northwest. San Francisco, Calif., had its coolest May since 1899. Following the driest May on record in Maryland, Delaware, and locally in New Jersey, North Carolina, Pennsylvania, and West Virginia, drought was becoming serious by the end of the month. Many forest fires broke out in southern New England and some homes were burned. Outbreaks of tornadoes in the midcontinent area May 4 to 10 were responsible for several deaths and hundreds of injuries.

SUMMER.--In general, the summer was unusually hot only in the lower Great Plains, and was rather dry. The first week of June was unusually cool in the eastern half of the Country, and some locations in Kansas, Missouri, Louisiana, and the Northeast had their lowest temperatures ever recorded in June. Ithaca, N. Y., recorded 31° on the 5th and some ponds in the vicinity were frozen over. About midmonth, during another cool spell in the Northeast, snow squalls in northern Maine were the latest there on record and were only the second such occurrence in June. Drought continued from Maryland to New York, but precipitation was above normal in the northern Rockies and a flood in western Montana was responsible for 30 deaths and millions of dollars damage.

July was warmer than usual, except in the Southeast and Pacific Northwest where cloudiness prevented

daytime temperatures from reaching their normal heights. The temperature at Atlanta, Ga., failed to reach 90° during July for the first time in 87 years. Precipitation was spotty but generally above normal in the Pacific Northwest. Charleston, S. C., in a wet spot in the Southeast, measured 23.75 inches for the wettest month there since 1738. In contrast the month was rather dry in the Northeast where some sections were plagued with drought for the third consecutive summer. Albany, N. Y., had only 42 percent of normal precipitation for the period April through July, the driest such period there since 1826.

August, relative to normal, was a very cool month, except hot in Texas. Portland, Maine, had its coolest August; Providence, R. I., its coolest since 1927; Missoula, Mont., since 1899; and Knoxville, Tenn., since 1889. During a cool spell at midmonth temperatures at some locations were the lowest ever for August. Heavy snow fell in the northern Rockies during the last week. Continued dry weather in the lower Ohio Valley and Northeast cut production of some crops, but rains in Texas improved the dry situation there.

Hurricane Cleo entered Florida in the vicinity of Miami on August 27 and caused heavy rains along her path to Virginia. Wind damage occurred mainly in a narrow strip along the Florida coast. The storm was blamed for nearly 200 injuries.

The first tornado fatalities of record in Arizona occurred west of Tucson on August 27 when 2 persons were killed, 8 injured, and several homes destroyed. Another tornado killed 3 persons, injured 23, and caused $2 million damage in the vicinity of Port Washington, Wis., on August 22.

AUTUMN.--Temperatures for autumn averaged about normal. Precipitation was below normal in the major portion of the country.

September was abnormally cool. Heavy rains were mostly limited to the lower Great Plains, parts of the Far Southwest, and upper Mississippi Valley where dry soil conditions were considerably relieved. Tucson, Ariz., had its wettest September since 1867 and its coolest since 1889. Heat and low relative humidity created a high fire hazard in northern California and three major fires burned nearly 100,000 acres. Reno Nev., recorded 100 percent of possible sunshine, the first time for September. Albany, N. Y., reported that its driest September since 1826 continued the record-breaking drought in that area. Reading, Pa., had its sixth driest growing season on record.

Dora, the first hurricane to pass inland over northeastern Florida and the second to affect Florida this season moved inland in the vicinity of St. Augustine during the night of September 9-10 and brought heavy rains to an area extending from Florida and southeast Alabama to southeast Virginia. Winds reached 100 m.p.h. on the coast. Property losses were heavy in Florida.

October was mostly fair and sunny, favorable for harvesting but increased soil moisture deficiencies except in the Southeast. The month was abnormally cool in the East, warm in the Far West.

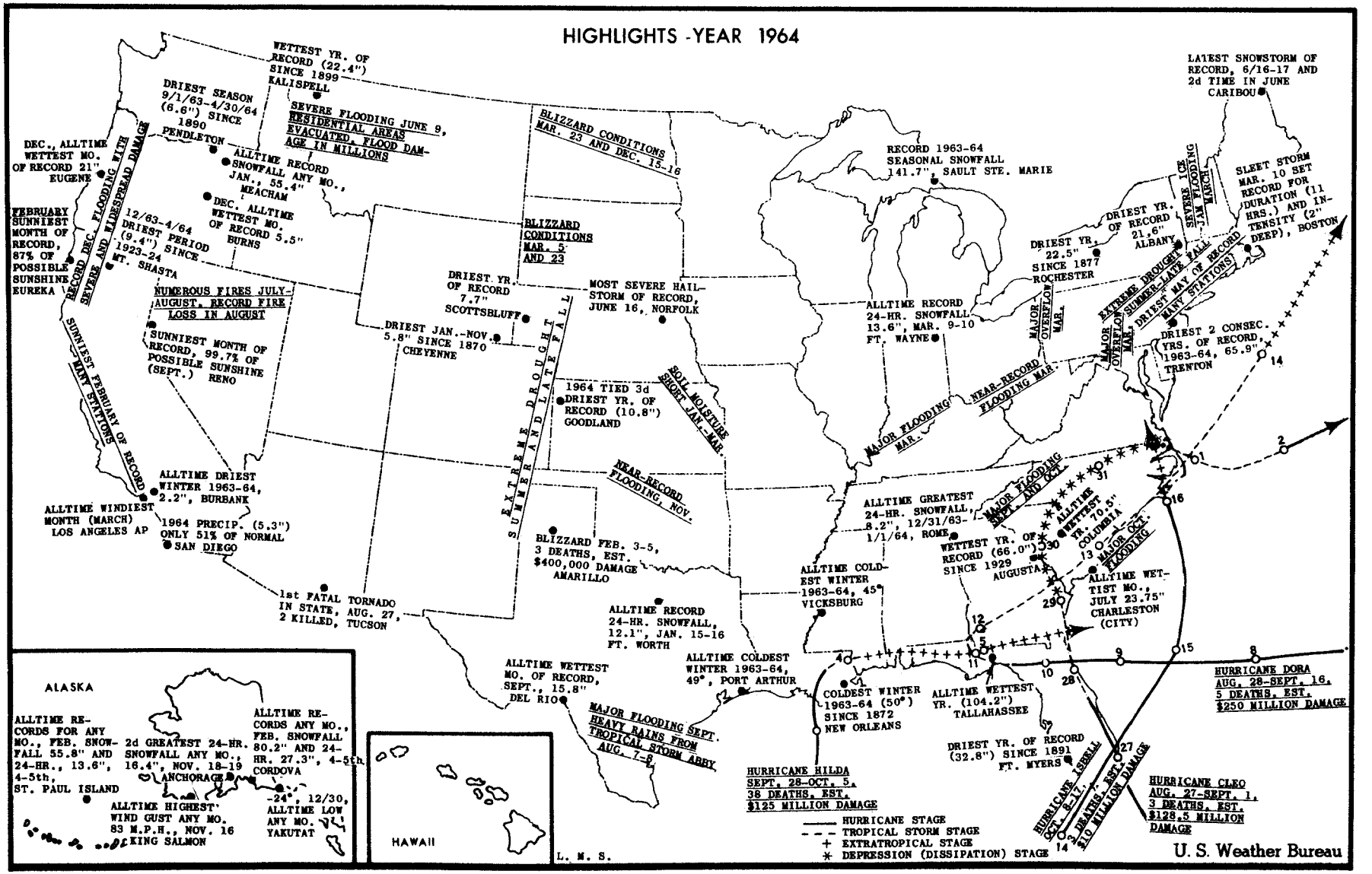
Hurricane Hilda reached St. Mary Parish, Louisiana on the afternoon of October 3. Winds of 100 m.p.h. extended some distance inland. Several tornadoes occurred in Louisiana during the hurricane's passage. A combination of wind and up to 10 inches of rain caused extensive crop and property damage in Louisiana.

Hurricane Isbell moved inland near Everglades, Fla., on the afternoon of October 14 and offshore about 20 miles north of Palm Beach Fla., during the evening of the same day. At least 11 tornadoes occurred in east Florida coast counties during the hurricane's passage, causing about 30 injuries. Vegetable crops suffered heavy damage.

November, relative to normal, was mild east of the Rockies and cold in the Far West. Precipitation was mostly normal or above with unusually heavy amounts in California and the lower Great Plains. Extremely cold weather the third week continued the remainder of the month between the Great Lakes and the Rockies where some stations reported their coldest November. Snowfall was unusually heavy for November in the western mountains. November precipitation helped replenish water supplies over much of the Nation and furnished complete relief in some sections. Some heavy local flooding occurred in Kansas and Oklahoma the second half of the month.

In DECEMBER above normal precipitation nearly everywhere except portions of the central and lower midcontinent area furnished further drought relief in the Northeast and Midwest. But unusually heavy to record-breaking amounts in the Far West caused disastrous floods in western Oregon and northern California. Snowfall was unusually heavy in the Cascade-Sierra Nevada Mountains. The month was among the coldest west of the Great Lakes, but mostly near normal elsewhere.

HIGHLIGHTS -YEAR 1964



EXCESSIVE PRECIPITATION

(Excessive Short Duration Rainfall)

YEAR 1964

This table contains statistics of maximum amounts of rainfall during the calendar year **1964.** Data presented in this table are generally from stations equipped with recording gages. Stations are at City Office locations unless otherwise shown.

Excessive precipitation data for the years 1896-1935 inclusive, generally present the accumulated amounts of precipitation for each 5, 10, or 20 minute intervals during storms in which the rate of fall equaled or exceeded .25 inch in any 5 minute period, or .30 in any 10 minute period, or .35 in any 15 minute period, etc., the tabulation beginning with the 5 minute period where the rate of .05 inch in 5 minutes began and continuing by 10 or 20 minute intervals up to 120 minutes. A detailed explanation of the method used may be found in the publications listed in the last paragraph of this explanation.

The present method, adopted with data for the calendar year 1936, gives the maximum fall of precipitation for the periods 5 to 180 minutes, the maximum amounts being taken for the periods in which the fall is greatest for the given time, and is tabulated to show maximum amounts for 5, 10, 15, 20, 30, 45, 60, 80, 100, 120, 150 and 180 minutes, even if the fall does not equal the excessive rate for some of the periods. (The 15 minute amount was not computed for 1936-43 and the 150 minute amount was not computed for 1944 through 1948).

The following Table A shows limits at which precipitation was considered excessive in this publication:

TABLE A

Duration (minutes)	Depth of precipitation (inches)	Duration (minutes)	Depth of precipitation (inches)
5	.25	60	.80
10	.30	80	1.00
15	.35	100	1.20
20	.40	120	1.40
30	.50	150	1.70
45	.65	180	2.00

This table is made up from the formula, $A = t + 20$ where A is the accumulated depth in hundredths of inches and t is the time in minutes.

For the years 1936 through 1948 stations in North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Tennessee, Arkansas, Louisiana, Texas, Oklahoma, and San Juan, P. R. used the limits shown in the following Table B:

TABLE B

Duration (minutes)	Depth of precipitation (inches)	Duration (minutes)	Depth of precipitation (inches)
5	.40	60	1.50
10	.50	80	1.90
15	.60	100	2.30
20	.70	120	2.70
30	.90	150	3.30
45	1.20	180	3.90

This table is made up from the formula $A = 2t + 30$. Its use, however, was discontinued at the end of 1948 and Table A is used by all sections for 1949 and the following years.

Publication of Data. A summary of maximum precipitation data for the years prior to 1896 is published in the annual report of the Chief of the Weather Bureau for 1895-1896. Excessive precipitation data for the period 1881-1896 are published in the annual report of the Chief of the Weather Bureau 1896-1897. Data for the years 1897 through 1934 have been published in the appropriate annual reports of the Chief of the Weather Bureau. For the years 1935 through 1949 these data are published in the appropriate issue of the United States Meteorological Yearbook. For 1950 and succeeding years excessive precipitation are presented in the annual issues of the Climatological Data, National Summary.

EXCESSIVE SHORT DURATION RAINFALL

Station and date	Maximum precipitation in inches (5 to 180 minutes)											
	5	10	15	20	30	45	60	80	100	120	150	180
ALASKA												
ANCHORAGE						NONE						
ANNETTE												
NOV 2	.32*	.64*	.72	.74*	.77	.84	.86	.88	.92	.98	1.11	1.17
FAIRBANKS						NONE						
JUNEAU						NONE						
YAKUTAT						NONE						
ALABAMA												
BIRMINGHAM												
JAN 9	.27	.41	.43	.55	.67	.78	.93	.98	1.01	1.05	1.10	1.19
MAR 2	.15	.30	.35	.40	.44	.58	.76	.94	1.11	1.29	1.41	1.56
MAR 14	.38	.58	.64	.66	.75	.92	.99	1.03	1.03	1.03	1.03	1.03
MAY 2	.25	.42	.49	.54	.59	.63	.65	.91	.93	1.05	1.42	1.59
MAY 23	.38	.55	.61	.73	.87	.92	.93	.94	.95	.95	.95	.95
JUN 6	.27	.52	.55	.64	.85	.96	1.01	1.05	1.11	1.20	1.27	1.89
JUL 12	.21	.32	.34	.40	.68	.80	.89	.90	.91	.92	.99	1.01
JUL 31	.26	.34	.38	.43	.56	.62	.62	.62	.62	.62	.62	.62
AUG 11	.23	.43	.60	.62	.65	.66	.68	.72	.72	.72	.72	.72
SEP 29	.25	.50	.55	.73	1.00	1.29	1.32	1.39	1.60	1.71	1.84	1.89
DEC 4	.28	.46	.50	.56	.70	.86	.91	.97	1.00	1.07	1.13	1.15
HUNTSVILLE												
JAN 24	.15	.24	.28	.36	.52	.61	.69	.73	.89	.95	1.05	1.07
MAR 9	.33	.43	.44	.45	.46	.47	.47	.49	.50	.50	.58	.62
MAR 14	.15	.30	.35	.43	.65	.77	1.00	1.30	1.40	1.45	1.49	1.54
MAR 14	.20	.30	.35	.42	.55	.65	.79	.97	1.24	1.38	1.50	1.58
APR 6	.23	.38	.45	.56	.60	.62	.64	.64	.66	.67	.68	.72
APR 7	.28	.47	.59	.87	1.17	1.30	1.33	1.36	1.37	1.39	1.42	1.51
APR 13	* .39	.67	.74	.82	.90	.94	.99	1.12	1.20	1.30	1.42	1.44
APR 24	.27	.47	.50	.60	.64	.66	.71	.75	.77	.78	.78	.78
MAY 28	.37	.37	.37	.37	.37	.37	.37	.37	.37	.37	.37	.37
JUN 12	.33	.64	.71	.83	.99	1.34	1.50	1.68	1.89*	1.90	1.90	1.90
JUN 17	.35	.65	.75	.95	1.17	1.27	1.27	1.27	1.27	1.27	1.27	1.27
JUL 1	.35	.65	.80	.98	1.11	1.13	1.16	1.16	1.16	1.16	1.16	1.16
JUL 12	* .40	.60	.65	.80	1.02	1.09	1.25	1.39	1.50	1.55	1.60	1.71
JUL 12	.25	.27	.28	.30	.34	.38	.42	.47	.55	.63	.69	.72
JUL 20	.33	.35	.41	.46	.46	.46	.47	.50	.50	.50	.50	.50
AUG 4	* .45*	.80	.82	.85	.91	.93	.94	.98	1.01	1.05	1.05	1.05
SEP 28	.23	.33	.35	.35	.36	.37	.38	.39	.39	.40	.40	.40
SEP 29	.35	.56	.62	.71	.82	.87	.92	.98	1.00	1.00	1.00	1.00
DEC 24	.20	.30	.32	.33	.34	.34	.36	.37	.38	.38	.38	.38
MOBILE												
JAN 6	.50	.65	.68	.75	.76	.80	.85	.89	.94	1.09	1.18	1.20
JAN 8	.15	.23	.27	.35	.51	.65	.81	.93	1.03	1.17	1.27	1.30
MAR 2	.20	.35	.36	.43	.54	.62	.73	1.05	1.20	1.42	1.50	1.60
APR 6	.45	.89	1.02	1.29	1.57	1.90	2.02	2.05	2.06	2.09	2.14	2.16
APR 13	.20	.30	.42	.47	.63	.68	.71	.75	.77	.82	.82	.82
APR 14	.26	.35	.50	.60	.87	.92	.99	1.10	1.10	1.10	1.10	1.10
APR 26	.50	.90	1.30	1.50	1.68	1.90	2.30	2.55	2.65	2.72	2.80	2.87
APR 27	.70	1.13	1.45	1.90*	2.45	2.70	2.88	3.26	3.44	3.51	3.74	3.79
MAY 1	.40	.63	.64	.65	.65	.67	.67	.67	.67	.67	.67	.67
MAY 2	.60	1.20	1.49	1.77	2.00	2.25	2.40	2.51	2.55	2.58	2.59	2.60
JUN 22	.30	.53	.65	.78	1.10	1.50	1.75	1.76	1.76	1.76	1.76	1.76
JUN 25	.31	.43	.52	.59	.71	.75	.75	.75	.75	.75	.75	.75
JUL 3	.24	.45	.55	.70	.97	1.00	1.07	1.07	1.49	1.69	1.69	1.69
JUL 4	.30	.59	.69	.73	.78	.80	.80	.80	.80	.80	.80	.80
JUL 11	.35	.55	.75	.98	1.10	1.25	1.32	1.34	1.34	1.34	1.34	1.34
JUL 13	.20	.40	.57	.64	.65	.65	.65	.65	.65	.65	.65	.65
JUL 21	.35	.68	.93	1.05	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13
AUG 2	.50	.96	1.16	1.42	1.74	1.79	1.80	1.80	1.80	1.80	1.80	1.80
AUG 22	.36	.43	.70	.82	.89	.93	.93	.93	.95	.95	.95	.95
AUG 23	.42	.80	1.05	1.12	1.36	1.48	1.51	1.52	1.52	1.52	1.52	1.52
SEP 28	.42	.47	.55	.73	.73	.75	.75	.75	.75	.75	.75	.75
NOV 24	.23	.45	.55	.68	1.10	1.18	1.22	1.25	1.26	1.27	1.32	1.34
NOV 28	.26	.43	.48	.53	.55	.59	.63	.66	.68	.69	.71	.76
DEC 4	.25	.39	.45	.48	.49	.49	.49	.49	.59	.62	.62	.62
DEC 24	.30	.57	.72	.75	.80	.82	.95	.99	1.05	1.05	1.05	1.11
MONTGOMERY												
JAN 24	.26	.48	.51	.53	.55	.61	.61	.61	.61	.61	.61	.61
MAR 2	.34	.45	.50	.54	.57	.61	.69	.81	.85	.95	1.01	1.03
MAR 4	.30	.37	.37	.37	.42	.44	.44	.45	.51	.53	.53	.53
MAR 14	.33	.39	.46	.48	.50	.75	.78	.80	.80	.80	.81	1.22
MAR 15	.18	.28	.41	.46	.49	.52	.56	.62	.65	.65	.65	.65
APR 6	.41	.64	.69	.73	.79	.91	1.07	1.20	1.23	1.23	1.23	1.27
APR 8	.32	.50	.63	.76	1.07	1.39	1.66	2.05	2.79	3.19	3.32	3.85
APR 27	.18	.26	.35	.50	.51	.64	.86	1.06	1.17	1.31	1.52	1.63
JUN 6	.27	.44	.54	.61	.65	.68	.69	.70	.74	.74	.75	.75
JUL 1	.32	.51	.54	.55	.55	.55	.55	.55	.55	.55	.56	.57
JUL 3	.24	.32	.39	.60	.72	.97	1.04	1.05	1.07	1.09	1.09	1.09
JUL 4	.27	.39	.41	.41	.46	.56	.61	.82	.87	.93	.97	1.04
JUL 29	.28	.44	.57	.63	.71	.72	.73	.73	.73	.73	.73	.74
AUG 1	.32	.42	.45	.45	.45	.45	.45	.45	.45	.45	.45	.45
AUG 12	.13	.23	.34	.36	.54	.56	.58	.58	.58	.58	.58	.58
SEP 11	.20	.34	.40	.43	.46	.58	.68	.81	.88	.95	1.11	1.28
SEP 30	.35	.52	.61	.67	.73	.75	.79	.80	.80	.80	.80	.80
OCT 4	.22	.40	.46	.63	.81	1.17	1.34	1.57	1.78	1.94	2.73	2.90
DEC 24	.32	.54	.61	.66	.72	1.02	1.18	1.23	1.26	1.31	1.47	1.56
DEC 26	.32	.59	.84	1.03	1.28	1.49	1.52	1.52	1.52	1.52	1.52	1.52
ARIZONA												
FLAGSTAFF												
JUL 15	.32	.47	.55	.57	.78	1.20	1.20	1.39	1.55	1.69	1.77	*2.44
JUL 30	.38	.68	.78	.92	.98	1.05	1.05	1.06	1.06	1.09	1.10	1.12
PHOENIX												
SEP 14	.40	.60	.86	1.10	*1.25	1.36	1.37	1.37	1.37	1.37	1.37	1.37
PRESCOTT						NONE						
TUCSON												
AUG 1	.29	.38	.46	.53	.64	.86	1.13	1.36	1.59	1.77	1.78	1.78
SEP 10	.25	.47	.59	.80	.90	1.02	1.12	1.21	1.39	1.34	1.44	1.45
SEP 14	.30	.42	.55	.59	.62	.62	.62	.62	.62	.62	.62	.62
OCT 16	.31	.35	.35	.35	.35	.37	.38	.38	.38	.38	.38	.39

Station and date	Maximum precipitation in inches (5 to 180 minutes)											
	5	10	15	20	30	45	60	80	100	120	150	180
ARIZONA												
WINSLOW												
JUL 30	.25	.35	.44	.45	.46	.47	.47	.47	.47	.47	.48	.48
AUG 12	.29	.58	.79	1.08*	1.56	1.75*	1.83	2.07	2.08	*2.08	2.08	*2.08
YUMA						NONE						
ARKANSAS												
FORT SMITH												
MAR 8	.24	.37	.47	.68	.93	1.05	1.08	1.15	1.16	1.20	1.25	1.25
MAR 24	.24	.44	.50	.58	.69	.73	.75	.75	.75	.75	.77	.77
APR 3	.60	1.00	1.15	1.30	1.48	1.72	2.35	2.97	3.80	4.08	4.45	4.50
APR 5	.23	.46	.55	.68	.88	.95	1.10	1.13	1.15	1.40	1.67	1.75
APR 12	.20	.32	.42	.45	.49	.50	.50	.50	.50	.50	.50	.50
APR 24	.14	.24	.37	.39	.46	.67	.67	.77	.77	.77	.77	.77
MAY 11	.30	.42	.53	.63	.78	.98	1.02	1.20	1.52	1.75	1.80	2.30
AUG 21	.32	.34	.36	.37	.37	.37	.37	.37	.37	.37	.37	.37
AUG 28	.45	.79	1.13	1.22	1.52	1.63	1.65	1.70	1.80	1.81	1.90	1.95
LITTLE ROCK												
APR 5	.20	.35	.50	.54	.65	.68	.70	.70	.71	.72	.73	.75
APR 21	.17	.25	.33	.50	.61	.67	.75	.91	.92	1.00	1.10	1.15
APR 23	.28	.45	.60	.75	1.00	1.05	1.20	1.28	1.34	1.43	1.65	1.75
APR 25	.20	.35	.40	.45	.49	.49	.52	.55	.58	.63	.63	.64
APR 26	.20	.31	.38	.40	.43	.43	.43	.43	.43	.43	.43	.43
MAY 10	.25	.30	.39	.42	.57	.70	.75	.82	.84	.89	.90	.91
JUL 8	.31	.32	.33	.33	.33	.36	.60	.60	.60	.60	.60	.60
JUL 9	.42	.83	.94	1.20	1.40	1.42	1.42	1.42	1.42	1.42	1.42	1.42
JUL 26	.17	.27	.41	.47	.60	.70	.70	.71	.72	.75	.75	.75
AUG 11	.39	.62	.75	1.05	1.15	1.20	1.20	1.20	1.20	1.20	1.20	1.20
SEP 17	.26	.32	.38	.45	.55	.72	.93	1.03	1.13	1.18	1.35	1.55
SEP 27 T	M	M	M	M	M	M	M	1.11	1.24	1.33	1.34	1.45
NOV 27	.25	.40	.45	.45	.45	.47	.47	.47	.47	.47	.47	.47
DEC 3	.18	.20	.28	.33	.50	.70	.90	1.03	1.07	1.16	1.20	1.33
TEXARKANA												
APR 24	.54	.81	.86	1.05	1.70	1.92	2.26	2.60	2.72	2.78	2.78	2.78
MAY 29	.20	.30	.35	.37	.50	.69	.72	.84	.98	1.02	1.07	1.11
MAY 30	.28	.34	.37	.39	.43	.45	.45	.45	.45	.45	.45	.45
JUN 23	.26	.29	.39	.39	.39	.39	.39	.39	.39	.39	.39	.39
JUL 16	.26	.45	.69	.76	.88	.90	1.00	1.02	1.02	1.02	1.02	1.02
JUL 29	.25	.42	.61	.82	.95	1.50	1.75	1.75	1.75	1.75	1.75	1.75
AUG 10	.25	.35	.44	.54	.70	.71	.73	.99	1.00	1.00	1.00	1.00
AUG 22	.24	.30	.34	.41	.46	.53	.58	.59	.61	.68	.72	.76
SEP 16	.18	.28	.39	.44	.53	.66	.79	.84	.88	.89	.89	.89
SEP 17	.27	.39	.53	.61	.98	1.25	1.60	1.69	1.91	2.06	2.24	2.36
SEP 20	.22	.35	.48	.64	.83	.92	1.00	1.05	1.05	1.05	1.05	1.05
NOV 14	.25	.38	.42	.44	.46	.46	.46	.46	.46	.46	.46	.46
NOV 19	.34	.54	.64	.74	.85	.92	.96	1.12	1.15	1.16	1.18	1.19
DEC 3	.25	.38	.50	.57	.74	.85	.97	1.03	1.41	1.54	1.57	1.60
CALIFORNIA												
BAKERSFIELD						NONE						
BLUE CANYON						NONE						
BURBANK						NONE						
EUREKA U						NONE						
FRESNO						NONE						
LOS ANGELES						NONE						
MT SHASTA R						NONE						
OAKLAND												
JAN 20	* .20*	.32*	.39	.46*	.59	.73*	.83	.95	1.04*	1.11	1.25*	1.37
RED BLUFF												
DEC 26	.19	.34	.38	.43	.48	.49	.50	.50	.50	.51	.51	.51
SACRAMENTO												
JAN 20	.18	.31	.39	.44	.50	.58	.65	.80	.92	1.04	1.23	1.52
SAN DIEGO						NONE						
SAN FRANCISCO						NONE						
SAN FRANCISCO U						NONE						
COLORADO												
ALAMOSA						NONE						
DENVER						NONE						
GRAND JUNCTION						NONE						
PUEBLO												
APR 29	.42	.50	.55	.60	.65	.68	.72	.76	.81	.85	.93	.97
AUG 7	.15	.28	.34	.48	.64	.79	.80	.82	.83	.84	.84	.84
AUG 14	.22	.38	.50	.60	.73	.76	.79	.84	.84	.84	.84	.84
CONNECTICUT												
BRIDGEPORT												
MAY 19	.47	.49	.49	.51	.55	.60	.60	.60	.60	.60	.60	.60
HARTFORD												
JUL 29	.25	.44	.48	.55	.59	.61	.66	.68	.69	.69	.69	.69
AUG 12	.18	.35	.37	.45	.57	.67	.84	.87	1.00	1.00	1.00	1.00
NEW HAVEN												
JUL 29	.25	.36	.38	.38	.39	.42	.43	.43	.43	.43	.43	.43
AUG 8	.18	.34	.43	.49	.49	.77	.77	.77	.77	.77	.77	.77
AUG 12	.26	.41	.50	.58	.71	.80	1.06	1.20	1.28	1.31	1.32	1.32
AUG 18	.32	.40	.41	.41	.43	.48	.51	.51	.51	.51	.51	.51
DELAWARE												
WILMINGTON												
JUN 8	.26	.40	.48	.56	.66	.68	.68	.68	.68	.68	.68	.68

T Clock malfunction
M No record

EXCESSIVE SHORT DURATION RAINFALL

YEAR 1964

Station and date	Maximum precipitation in inches (5 to 180 minutes)											
	5	10	15	20	30	45	60	80	100	120	150	180
DIST. OF COLUMBIA												
WASH NATL AP												
MAY 13	.16	.32	.35	.46	.63	.79	.90	.98	1.08	1.15	1.16	1.16
JUN 19	.18	.32	.36	.40	.47	.48	.51	.55	.57	.57	.57	.57
JUL 21	.26	.30	.34	.35	.35	.36	.37	.37	.37	.37	.37	.37
AUG 30	.31	.39	.42	.46	.53	.54	.54	.54	.54	.56	.56	.57
SEP 29	.23	.31	.32	.32	.34	.42	.48	.68	.70	.73	.74	.76
FLORIDA												
APALACHICOLA U												
FEB 18	.47	.79	.88	.91	.94	1.07	1.15	1.25	1.32	1.36	1.39	1.42
MAR 19	.32	.59	.73	.84	.98	1.07	1.12	1.24	1.29	1.43	1.54	1.59
APR 27	.21	.40	.54	.74	.97	1.35	1.50	1.80	2.26	2.77	3.29	3.44
APR 27	.32	.58	.71	.89	1.14	1.22	1.25	1.47	1.76	1.82	1.88	2.35
APR 28	.18	.35	.47	.52	.77	1.00	1.25	1.40	1.61	1.94	2.05	2.15
JUN 21	.30	.55	.72	.75	.76	.77	.77	.77	.77	.77	.77	.77
DAYTONA BEACH												
FEB 8	.28	.41	.44	.47	.58	.60	.63	.64	.64	.68	.68	.68
FEB 18	.25	.39	.40	.41	.42	.42	.43	.43	.43	.43	.43	.45
MAR 17	.17	.30	.39	.49	.63	.75	.80	.85	.87	.89	.98	1.04
MAR 26	.40	.50	.55	.84	.91	.93	.94	.94	.94	.94	.99	1.03
APR 28	.50	.80	.83	.93	.98	.99	1.41	1.53	1.55	1.67	1.92	1.94
MAY 2	.32	.63	.78	1.08	1.18	1.19	1.19	1.19	1.21	1.21	1.21	1.22
JUN 6	.37	.47	.49	.52	.58	.63	.63	.63	.63	.63	.63	.63
JUN 17	.25	.40	.43	.45	.50	.51	.52	.55	.55	.56	.57	.57
JUN 26	.36	.52	.67	.75	.82	1.06	1.30	1.38	1.45	1.49	1.51	1.51
JUN 27	.25	.44	.48	.50	.50	.50	.50	.50	.50	.50	.50	.50
JUN 28	.42	.57	.67	.86	1.14	1.23	1.28	1.29	1.29	1.29	1.29	1.30
JUL 2	.30	.50	.62	.80	.89	1.25	1.42	1.53	1.69	1.72	1.75	2.09
AUG 5	.20	.25	.34	.40	.64	.64	.64	.64	.64	.64	.64	.64
AUG 10	.23	.46	.50	.56	.59	.60	.67	.70	.70	.70	.72	.73
AUG 11	.30	.50	.70	1.00	1.30	1.35	2.44	2.70	2.76	2.77	2.89	2.90
AUG 17	.33	.66	.67	.67	.67	.67	.67	.67	.67	.67	.67	.67
AUG 27	.35	.51	.57	.58	.60	.77	1.02	1.08	1.40	1.47	1.62	1.70
SEP 1	.30	.45	.50	.55	.90	.97	1.02	1.18	1.23	1.24	1.25	1.27
SEP 12	.30	.35	.40	.42	.44	.44	.44	.44	.44	.44	.44	.51
OCT 15	.34	.48	.75	.78	.80	.80	.80	.80	.80	.80	.80	.80
DEC 4	.35	.55	.60	.62	.64	.66	.75	.76	.76	.76	.76	.76
DEC 5	.25	.38	.45	.55	.65	.74	.79	.81	.86	.89	.95	1.03
FORT MYERS												
JAN 12	.27	.33	.37	.43	.45	.47	.52	.60	.66	.68	.69	.70
FEB 5	.29	.40	.45	.59	.62	.68	.71	1.12	1.33	1.37	1.48	1.54
MAR 20	.33	.52	.68	.83	1.07	1.20	1.24	1.25	1.25	1.25	1.26	1.26
MAR 21	.53	.61	.63	.65	.66	.67	.70	.71	.71	.72	.72	.72
JUN 27	.27	.52	.62	.80	1.20	1.36	1.44	1.45	1.45	1.48	1.51	1.51
JUL 17	.25	.40	.42	.47	.47	.47	.47	.47	.47	.47	.47	.47
JUL 30	.20	.32	.35	.37	.42	.45	.45	.45	.45	.45	.45	.45
AUG 9	.73	.88	.91	.93	.95	.96	.97	.99	1.00	1.00	1.00	1.00
AUG 21	.27	.52	.56	.71	.80	.84	.85	.85	.86	.87	.87	.87
SEP 2	.20	.33	.42	.50	.64	.76	.77	.78	.78	.81	.81	.83
SEP 4	.77	1.02	1.25	1.60	1.65	1.67	1.95	2.52	2.69	2.70	2.73	2.76
SEP 12	.31	.36	.40	.43	.56	.61	.66	.68	.70	.70	.70	.70
SEP 12	.27	.33	.34	.36	.40	.65	.70	.71	.71	.71	.71	.71
SEP 13	.25	.35	.35	.35	.36	.36	.48	.55	.75	.75	.78	.78
SEP 15	.47	.87	.92	1.10	1.26	1.51	1.60	1.73	1.82	1.89	1.93	1.94
DEC 27	.18	.31	.32	.40	.44	.45	.46	.46	.57	.59	.59	.70
JACKSONVILLE												
JAN 17	.20	.29	.33	.38	.52	.64	.73	.78	.78	.78	.79	.81
MAR 26	.36	.60	.78	.86	.93	.97	.97	.97	.98	.98	1.00	1.02
MAY 1	.38	.54	.55	.75	.89	1.26	1.38	1.53	1.59	1.59	1.59	1.59
MAY 2	.25	.39	.53	.58	.61	.68	.74	.78	.90	1.25	1.38	1.60
JUN 6	.52	.98	1.44	1.72	2.11	2.25	2.27	2.29	2.29	2.30	2.31	2.33
JUN 28	.29	.45	.57	.63	.66	.70	.75	.77	.79	.79	.79	.79
JUL 16	.23	.38	.48	.54	.58	.62	.63	.65	.65	.65	.66	.66
JUL 23	.28	.37	.49	.61	.73	.75	.75	.76	.76	.76	.76	.77
JUL 26	.15	.26	.33	.38	.54	.62	.71	.81	.95	1.03	1.07	1.25
AUG 28	.12	.22	.34	.43	.53	.64	.72	.76	.78	.82	.86	.97
SEP 9	.12	.22	.29	.34	.50	.67	.86	1.02	1.12	1.16	1.24	1.39
SEP 26	.28	.45	.52	.55	.60	.73	1.13	1.23	1.28	1.38	1.44	1.44
OCT 2	.30	.56	.77	.94	1.15	1.29	1.29	1.29	1.29	1.29	1.29	1.29
DEC 3	.22	.35	.51	.61	.71	.84	1.14	1.39	1.50	1.51	1.56	1.58
KEY WEST												
MAR 21	.21	.32	.47	.59	.71	.78	.78	.78	.78	.78	.78	.78
MAR 28	.35	.52	.60	.70	.73	.73	.73	.73	.73	.73	.73	.73
MAY 15	.28	.38	.41	.44	.52	.59	.61	.63	.65	.68	.69	.70
JUN 3	.17	.29	.36	.41	.47	.58	.66	.71	.81	.90	1.11	1.20
JUN 4	.25	.45	.55	.56	.61	.64	.68	.87	.89	.89	.91	.92
JUN 5	.48	.65	.74	.77	.87	1.14	1.24	1.33	1.35	1.37	1.42	1.62
JUN 21	.23	.30	.32	.33	.33	.33	.33	.33	.33	.33	.33	.33
AUG 20	.22	.36	.46	.52	.55	.56	.57	.59	.61	.62	.62	.63
SEP 7	.41	.49	.52	.56	.64	.65	.66	.66	.66	.91	.92	.92
SEP 18	.22	.37	.47	.52	.57	.63	.88	.90	.96	1.10	1.22	1.24
DEC 16	.33	.52	.58	.61	.65	.80	.81	.83	.86	.89	.92	.93
DEC 16	.23	.33	.38	.40	.68	.75	.85	.87	.93	1.06	1.25	1.27
MIAMI BEACH U												
JAN 12	.30	.58	.74	.83	.95	1.15	1.30	1.52	1.56	1.56	1.56	1.56
MAR 23	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28
APR 16	.20	.33	.35	.37	.40	.55	.60	.85	.85	.85	.85	.85
APR 28	.23	.32	.35	.42	.60	.83	.85	.89	1.06	1.09	1.12	1.12
APR 29	.25	.39	.46	.55	.76	.84	1.00	1.26	1.39	1.50	1.68	2.22
APR 30	.25	.45	.47	.65	.78	.80	.80	.80	.80	.80	.80	.80
MAY 14	.23	.34	.35	.36	.38	.54	.71	.73	.75	.75	.75	.75
JUN 5	.51	.74	.80	1.05	1.33	1.42	1.46	1.47	1.50	1.50	1.51	1.51
JUN 5	.43	.58	.66	.69	.89	1.00	1.06	1.17	1.32	1.38	1.53	1.63
JUN 6	.36	.52	.65	.70	.73	.73	.73	.74	.81	.82	.87	.87
JUN 8	.25	.47	.50	.56	.62	.64	.64	.64	.69	.77	.78	.78
JUL 6	.26	.48	.52	.54	.82	1.02	1.30	1.36	1.52	1.54	1.55	1.55
JUL 16	.26	.45	.51	.57	.65	.78	1.00	1.00	1.03	1.03	1.03	1.03
AUG 5	.26	.38	.51	.64	.90	1.01	1.06	1.11	1.11	1.11	1.11	1.11
AUG 11	.15	.30	.35	.38	.52	.52	.61	.61	.61	.61	.61	.61
AUG 20	.20	.27	.37	.40	.53	.58	.61	.63	.63	.66	.75	.78
MIAMI												
MAR 21	.29	.31	.31	.31	.31	.31	.33	.33	.33	.33	.33	.34
APR 30	.25	.48	.51	.51	.54	.65	.66	.98	1.15	1.16	1.20	1.35
MAY 13	.26	.32	.40	.55	.55	.57	.60	.62	.62	.62	.62	.62
MAY 14	.45	.90	1.00	1.20	1.64	1.80	1.82	1.82	1.82	1.82	1.82	1.82
FLORIDA												
MIAMI												
JUN 3	.25	.45	.50	.57	.65	.69	.69	.69	.71	.71	.71	.71
JUN 5	.35	.60	.60	.90	.90	.91	.92	.92	.93	.95	.95	.96
JUN 5	.33	.50	.55	.60	.90	1.05	1.12	1.45	1.60	1.78	1.78	1.86
JUN 6	.28	.35	.43	.58	.83	1.00	1.48	1.49	1.68	1.69	1.72	1.74
JUN 8	.33	.43	.44	.45	.46	.46	.47	.63	.70	.73	.73	.73
JUN 10	.40	.55	.56	.65	.75	.95	1.00	1.06	1.07	1.07	1.08	1.08
JUN 28	.17	.30	.35	.37	.53	.62	.64	.64	.64	.64	.64	.64
JUL 1	.25	.30	.32	.32	.32	.32	.32	.32	.32	.32	.32	.33
JUL 6	.15	.30	.35	.45	.53	.55	.60	.70	.94	.97	.98	.98
JUL 8	.20	.38	.43	.50	.58	.59	.60	.60	.60	.60	.60	.60
JUL 25	.38	.75	.92	.97	1.04	1.05	1.06	1.07	1.08	1.08	1.08	1.08
AUG 20	.38	.65	.68	.85	1.08	1.20	1.30	1.36	1.40	1.40	1.46	1.50
AUG 27	.60	1.10	1.30	1.60	2.50	3.00	3.75	4.15	4.65	5.00	5.50	5.70
SEP 13	.26	.31	.32	.33	.39	.52	.52	.53	.53	.53	.53	.53
SEP 15	.25	.40	.45	.54	.66	.77	.81	.95	.99	1.03	1.04	1.05
SEP 16	.26	.30	.35	.40	.48	.48	.50	.51	.52	.53	.53	.53
OCT 12	.50	.82	.90	1.05	1.40	1.80	2.20	2.35	2.50	2.58	2.60	2.69
OCT 14	.35	.37	.39	.42	.65	.70	.93	1.05	1.20	1.25	1.50	1.56
OCT 28	.18	.30	.35	.43	.62	.92	1.12	1.47	1.67	2.02	2.11	2.20
NOV 29	.58	.73	.83	.93	1.07	1.10	1.13	1.15	1.17	1.17	1.17	1.17
DEC 5	.42	.75	.90	1.25	1.60	2.00	2.23	2.40	2.42	2.42	2.42	2.42
DEC 19	.25	.35	.45	.59	.75	.97	1.15	1.35	1.46	1.46	1.73	1.75
MIAMI U												
APR 30	.30	.43	.57	.61	.76	.82	.85	.86	.90	.90	.90	.91
MAY 14	.29	.53	.70	.83	1.09	1.29	1.37	1.42	1.42	1.42	1.42	1.42
MAY 29	.16	.29	.38	.47	.63	.72	.75	.79	.80	.80	.80	.80
JUN 3	.27	.40	.47	.51	.59	.60	.60	.61	.62	.63	.63	.64
JUN 5	.52	.75	.98	1.11	1.12	1.30	1.30	1.30	1.31	1.32	1.33	1.33
JUN 5	.22	.33	.38	.44	.68	.88	.95	1.09	1.20	1.42	1.51	1.56
JUN 6	.31	.43	.52	.61	.70	.93	1.36	1.38	1.49	1.50	1.53	1.54
JUN 10	.60	.93	1.25	1.48	1.61	1.73	1.82	1.85	1.85	1.86	1.86	1.86
JUN 28	.25	.35	.40	.42	.46	.46	.46	.46	.46	.46	.46	.46
JUL 16	.16	.27	.33	.40	.50	.60	.66	.86	.92	.93	.93	.93
JUL 25	.22	.36	.47	.53	.62	.66	.67	.67	.70	.71	.71	.71
AUG 5	.27	.47	.56	.58	.59	.59	.59	.59	.59	.59	.59	.59
AUG 14	.30	.49	.55	.58	.62	.64	.65	.66	.74	.74	.74	.74
AUG 20	.55	.71	.81	.93	1.13	1.46	1.56	1.60	1.61	1.64	1.67	1.71
OCT 7	.39	.66	.84	.99	1.14	1.26	1.34	1.39	1.41	1.42	1.43	1.43
OCT 12	.21	.28	.36	.51	.67	.98	1.23	1.58	1.72	1.75	1.76	1.76
OCT 14	.32	.45	.49	.52	.79	.84	.88	.93	1.08	1.45	1.72	1.76
OCT 28	.25	.42	.53	.63	.81	1.09	1.30	1.55	1.83	2.02	2.15	2.20
OCT 31	.26	.32	.41	.44	.45	.46	.46	.46	.46	.46	.46	.46
DEC 5	.31	.50	.74	.90	1.10	1.45	1.58	1.72	1.74	1.74	1.74	1.74
DEC 19	.20	.37	.48	.60	.77	.95	1.05	1.16	1.18	1.32	1.41	1.41
ORLANDO												
JAN 12	.18	.26	.30	.35	.52	.63	.75	.96	1.17	1.31	1.41	1.44
JAN 12	.25	.32	.37	.45	.51	.65	.77	.85	.87	.90	.92	.94
FEB 8	.36	.59	.62	.73	.82	.83	.84	.85	.86	.87	.88	.88
MAR 28	.27	.36	.39	.44	.56	.67	.87	.91	1.13	1.24	1.32	1.38
APR 27	.20	.27	.39	.44	.69	.84	.96	1.04	1.05	1.11	1.11	1.11
APR 28	.40	.55	.58	.59	.60	.60	.60	.60	.60	.60	.60	.60
MAY 1	.29	.44	.50	.54	.65	.70	.78	.97	1.04	1.11	1.14	1.25
MAY 14	.19	.25	.31	.40	.54	.60	.66	.68	.70	.70	.70	.70
MAY 14	.25	.32	.32	.32	.32	.32	.32	.32	.32	.32	.32	.32
JUN 5	.40	.75	.94	1.15	1.43	1.71	1.89	2.02	2.09	2.10	2.10	2.20
JUN 10	.31	.49	.51	.54	.56	.59	.60	.60	.60	.60	.60	.60
JUN 26	.56	.63	.64	.70	.75	.75	.75	.75	.75	.75	.75	.75
JUN 28	.28	.30	.32	.36	.39	.39	.39	.39	.39	.39	.39	.39
JUN 29	.46	.81	.90	.92	.94	.95	.95	.95	.95	.95	.95	.95
JUL 1	.16	.25	.34	.39	.50	.52	.56	.58	.58	.59	.61	.62
JUL 3	.55	.90	1.04	1.30	1.95	2.19	2.28	2.33	2.34	2.34	2.34	2.34
JUL 17	.31	.40	.54	.60	.64	.68	.69	.72	.74	.75	.77	.78
JUL 25	.30	.35	.39	.42	.46	.47	.50	.54	.60	.63	.65	.66
AUG 5	.28	.52	.67	.77	.82	.83	.83	.83	.83	.83	.83	.83
AUG 6	.44	.70	.85	.91	.95	1.02	1.05	1.05	1.05	1.06	1.08	1.09
AUG 7	.27	.39	.48	.55	.81	.82	.83	.85	.85	.85	.85	.85
AUG 11	.22	.31	.42	.44	.52	.54	.57	.62	.68	.68	.70	.71
AUG 27	.26	.35	.38	.42	.45	.50	.58	.72	.91	1.04	1.22	1.38
SEP 1	.45	.74	.81	.89	1.13	1.51	1.58	1.61	1.65	1.65	1.73	1.73
SEP 10	.15	.30	.42	.44	.64	.80	.99	1.09	1.20	1.23	1.31	1.39
OCT 3	.25	.36	.37	.37	.37	.37	.37	.37	.37	.37	.37	.37
PENSACOLA												
JAN 6	.54	1.03	1.15	1.34	1.50	1.65	1.80	1.94	1.98	2.08	2.30	2.44
JAN 8	.29	.53	.68	.90	1.09	1.20	1.46	1.91	2.12	2.39	2.68	2.79
MAR 2	.20	.32	.38	.41	.58	.76	.95	1.14	1.33	1.44	1.59	1.68
APR 6	.27	.43	.52	.57	.65	.72	.76	.85	1.00	1.08	1.52	1.61
APR 13	.35	.50	.55	.62	.80	1.05	1.29	1.35	1.39	1.40	1.40	1.42
APR 14	.27	.30	.37	.43	.48	.54	.75	.82	.88	.91	.96	.98
APR 26	.41	.71	.84	.95	1.02	1.04	1.07	1.11	1.12	1.12	1.12	1.12
APR 26	.38	.60	.76	.92	1.30	1.68	1.81	1.84	1.86	1.87	1.89	1.91
APR 26	.51	.74	.99	1.36	1.62	2.25	2.51	2.99	3.22	3.29	3.41	3.44
APR 27	.40	.64	.81	.97	1.04	1.12	1.39	1.57	1.61	1.64	1.65	1.65
MAY 1	.26	.35	.37	.37	.37	.37	.37	.41	.41	.41	.41	.43
JUN 24	.28	.49	.58	.63	.68	.74	.82	.86	.86	.86	.86	.86
JUL 4	.27	.32	.36	.36	.36	.43	.43	.43	.43	.43	.43	.43
JUL 10	.29	.37	.55	.65	.82	.91	.99	1.03	1.04	1.08	1.09	1.10
JUL 11	.27	.38	.39	.39	.40	.52	.63	.64	.64	.64	.64	.64
JUL 11	.17	.30	.39	.45	.61	.72	.76	.79	.82	.88	.94	.97
JUL 13	.28	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30
JUL 17	.38	.55	.64	.68	.81	.84	.84	.85	.86	.86	.86	.86
JUL 19	.24	.46	.60	.70	.82	.85	.85	.87	.90	.91	.91	.92
JUL 22	.30	.50	.63	.70	.77	.80	.81	.86	.91	.95	.99	1.01
JUL 28	.29	.44	.52	.53	.55	.55	.56	.56	.56	.56	.56	.56
SEP 18	.31	.39	.45	.48	.63	.79	.94	1.07	1.08	1.08	1.08	1.08
SEP 19	.30	.49	.63	.69	.70	.72	.72	.72	.72	.72	.72	.72
SEP 22	.35	.57	.68	.73	.74	.74	.78	.81	.81	.81	.81	.81
OCT 6	.27	.46	.53	.55	.56	.59	.62	.75	.81	.85	.90	.91
OCT 18	.22	.33	.44	.51	.61	.61	.61	.68	.79	.84	.84	.85
NOV 24	.58	.96	1.24	1.44	1.54	1.60	1.61	1.63	1.63	1.64	1.66	1.67
DEC 25	.65	1.08	1.26	1.34	1.40	1.61	1.82	2.00	2.14	2.18	2.21	2.34
DEC 25	.35	.57	.79	.92	1.08	1.28	1.29	1.30	1.30	1.30	1.30	1.30
DEC 25	.22	.38	.43	.46	.49	.54	.61	.62	.62	.62	.62	.64
TAMPA												
FEB 18	.20	.31	.35	.42	.51	.60	.82	.95	1.08	1.22	1.38	1.50
APR 27	.47	.75	.84	.94	1.02	1.09	1.16	1.21	1.24	1.27	1.36	1.44
APR 27	.17	.32	.40	.44	.53	.58	.62	.65	.66	.66	.69	.74
APR 28	.27	.50	.60	.65	.82	.93	1.00	1.02	1.04	1.08	1.17	1.40
MAY 19	.25	.38	.41	.50	.74	.84	1.03	1.20	1.32	1.38	1.51	1.56
MAY 25	.30	.42	.43	.44	.49	.70	.71	.72	.83	.83	.83	.83
JUN 6	.43	.85	1.05	1.25	1.45	1.56	1.65	1.80	2.22	2.36	2.56	2.61
JUN 13	.35	.64	.90	.99	1.04	1.04	1.06	1.06	1.06	1.16	1.18	1.18

EXCESSIVE SHORT DURATION RAINFALL

Station and date	Maximum precipitation in inches (5 to 180 minutes)											
	5	10	15	20	30	45	60	80	100	120	150	180
FLORIDA												
TAMPA U												
JUN 22	.20	.32	.35	.37	.38	.38	.38	.38	.38	.38	.38	.38
JUN 27	.25	.27	.28	.30	.30	.44	.47	.50	.50	.50	.50	.50
JUN 30	.54	.93	.96	1.20	1.49	1.61	1.70	1.72	1.73	1.77	1.77	1.77
JUL 1	.55	1.08	1.35	1.55	1.87	2.31	*2.41	2.60	2.76	*2.80	2.81	2.82
JUL 4	.25	.46	.47	.62	.62	.62	.62	.62	.62	.63	.65	.65
JUL 18	.55	.95	1.08	1.35	*2.15	2.60	*3.30	4.15	4.80	5.05	5.27	5.38
JUL 18	.32	.60	.63	.65	.66	.67	.70	.74	.85	.90	1.05	1.25
JUL 23	.51	.88	1.06	1.24	1.29	1.43	1.49	1.49	1.49	1.49	1.49	1.49
JUL 26	.44	.75	.89	.95	1.30	1.58	2.17	2.21	2.21	2.21	2.23	2.23
AUG 5	.23	.29	.37	.50	.53	.75	.79	.86	.88	.89	.97	1.02
AUG 7	.41	.53	.55	.61	.75	1.01	1.05	1.05	1.08	1.08	1.10	1.10
AUG 8	.24	.47	.54	.56	.56	.56	.56	.56	.56	.56	.56	.56
AUG 10	.41	.48	.70	.83	.97	.99	.99	1.41	1.42	1.42	1.42	1.55
AUG 12	.30	.42	.50	.56	.58	.60	.60	.60	.60	.60	.60	.60
AUG 13	.55	.67	.79	.86	.88	.89	.89	.89	1.12	1.50	1.50	1.50
AUG 20	.57	.80	.83	.89	.91	.93	.95	.95	.95	.99	1.10	1.10
OCT 4	.36	.70	.76	.86	1.17	1.43	1.60	1.70	1.87	1.94	2.04	2.17
NOV 20	.48	.70	.74	.75	.78	.85	1.13	1.25	1.32	1.44	1.52	1.52
NOV 25	.16	.30	.35	.39	.54	.67	.77	.83	.90	.98	.98	1.01
DEC 4	.30	.58	.74	.93	1.38	1.65	2.15	2.85	3.05	*3.50	3.82	*4.27
DEC 4	.21	.38	.48	.68	.81	1.04	1.23	1.56	1.68	1.84	2.05	2.13
DEC 13	.24	.40	.42	.45	.47	.49	.55	.56	.58	.68	.71	.72
DEC 26	.30	.40	.42	.43	.53	.58	.58	.61	.62	.64	.67	.74
TAMPA												
JAN 12	.21	.35	.40	.48	.55	.64	.70	.76	.84	1.12	1.17	1.32
FEB 7	.34	.36	.37	.37	.40	.40	.44	.47	.48	.48	.51	.51
FEB 18	.35	.55	.62	.67	.85	.90	.96	1.16	1.25	1.30	1.45	1.51
MAY 2	.47	.77	.91	.96	1.10	1.52	1.57	1.60	1.60	1.60	1.60	1.74
JUN 11	.38	.40	.50	.65	.70	.70	.70	.70	.70	.70	.70	.70
JUN 19	.25	.35	.45	.50	.85	1.20	1.25	1.25	1.25	1.25	1.25	1.25
JUN 25	.60	1.02	1.15	1.35	1.58	1.73	1.75	1.75	1.75	1.75	1.75	1.75
JUN 30	.35	.52	.75	.85	.90	1.20	1.35	1.41	1.46	1.49	1.50	1.54
JUL 1	.30	.60	.70	.92	1.10	1.15	1.17	1.18	1.19	1.20	1.23	1.24
JUL 24	.25	.26	.28	.29	.32	.32	.33	.33	.33	.33	.33	.33
JUL 25	.23	.43	.55	.62	.67	.68	.88	.95	.99	1.15	1.21	1.25
JUL 26	.30	.33	.34	.34	.35	.35	.36	.50	.51	.51	.53	.87
JUL 26	.52	.59	.60	.67	.86	.95	.97	1.06	1.08	1.18	1.55	2.02
JUL 26	.25	.42	.42	.50	.67	.75	1.17	1.29	1.61	1.63	1.73	2.01
JUL 26	.52	.59	.60	.62	.86	.95	1.17	1.29	1.61	1.63	1.73	2.14
AUG 6	.25	.42	.50	.68	.98	1.10	1.10	1.10	1.10	1.10	1.10	1.10
AUG 8	.35	.65	.77	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AUG 10	.25	.46	.50	.62	.63	.63	.64	.64	.68	.69	.71	.76
AUG 11	.28	.50	.60	.80	.83	.87	.87	.87	.87	.87	.87	.87
AUG 16	.31	.38	.43	.51	.55	.58	.62	.65	.65	.65	.65	.65
AUG 20	.23	.36	.47	.60	.86	.90	1.05	1.21	1.24	1.24	1.25	1.26
AUG 22	.15	.26	.32	.40	.60	.67	.87	1.25	1.50	1.60	1.65	1.65
AUG 25	.28	.35	.38	.41	.42	.47	.49	.49	.49	.49	.49	.49
SEP 4	.28	.47	.52	.70	1.03	1.42	1.62	1.70	1.70	1.71	1.71	1.71
SEP 5	.21	.31	.38	.45	.66	.68	.68	.70	1.01	1.15	1.19	1.25
SEP 12	.30	.45	.50	.55	.75	1.00	1.05	1.14	1.14	1.14	1.14	1.14
OCT 1	.26	.30	.35	.43	.63	.63	.75	.75	.75	.75	.75	.75
OCT 2	.38	.50	.55	.58	.58	.62	.62	.62	.62	.85	1.10	1.10
DEC 5	.28	.48	.60	.80	1.19	1.28	1.28	1.28	1.28	1.38	1.52	1.55
DEC 27	.25	.45	.53	.62	.63	.65	.66	.66	.66	.66	.66	.66
WEST PALM BEACH												
FEB 4	.20	.30	.36	.42	.54	.64	.67	.76	.96	1.11	1.26	1.41
MAR 21	.20	.33	.38	.38	.42	.45	.51	.77	.78	.78	.78	.78
APR 10	.45	.80	1.14	1.24	1.34	1.79	1.88	1.88	1.88	1.88	1.88	1.88
APR 15	.12	.20	.32	.32	.51	.58	.58	.59	.59	.59	.59	.59
APR 25	.26	.51	.68	.69	.75	.75	.75	.76	.80	.80	.80	.81
APR 29	.24	.48	.70	.86	1.28	1.69	1.93	2.02	2.02	2.04	2.08	2.18
APR 29	.29	.41	.57	.63	.68	.70	.78	.86	.87	.87	.87	.87
MAY 14	.55	.90	1.20	1.31	1.68	1.73	1.73	1.74	1.74	1.74	1.74	1.74
MAY 20	.28	.47	.59	.74	1.14	1.49	1.69	2.20	2.23	2.39	2.45	2.45
JUN 1	.25	.38	.51	.65	.66	.66	.75	.76	.77	.77	.77	.77
JUN 4	.25	.35	.44	.56	.75	.85	.91	.95	.98	.98	.98	.99
JUN 5	.20	.40	.42	.43	.44	.44	.45	.45	.46	.46	.46	.46
JUN 6	.32	.50	.82	.96	1.20	1.25	1.26	1.26	1.26	1.26	1.75	1.85
JUN 7	.39	.55	.56	.56	.58	.58	.58	.58	.58	.58	.58	.58
JUN 25	.45	.85	*1.25	1.48	1.81	2.00	2.03	2.03	2.03	2.03	2.03	2.03
JUL 4	.24	.37	.45	.47	.48	.50	.50	.50	.50	.50	.50	.50
JUL 8	.18	.27	.35	.43	.53	.55	.56	.56	.56	.56	.56	.56
JUL 16	.25	.30	.34	.37	.41	.58	.72	.80	.82	.82	.82	.82
JUL 24	.55	*.95	1.10	1.20	1.30	1.32	1.33	1.34	1.34	1.34	1.36	1.36
AUG 6	.25	.33	.38	.40	.41	.41	.41	.43	.45	.50	.50	.57
AUG 14	.27	.41	.48	.50	.53	.54	.54	.54	.54	.54	.54	.54
AUG 19	.20	.40	.54	.55	.55	.55	.55	.55	.55	.56	.56	.56
SEP 5	.25	.40	.58	.68	.80	.88	.93	.95	.99	1.00	1.00	1.00
SEP 15	.30	.50	.79	1.00	1.29	1.31	1.31	1.32	1.33	1.34	1.35	1.63
SEP 20	.17	.31	.43	.54	.58	.67	.74	.74	.99	1.10	1.25	1.30
SEP 21	.17	.26	.32	.41	.55	.68	.69	.69	.69	.69	.69	.69
SEP 24	.44	.84	1.04	1.19	1.69	1.75	1.77	1.79	1.83	1.83	1.83	1.83
OCT 11	.57	.87	.93	1.12	1.33	1.57	2.30	2.33	2.36	2.36	2.36	2.36
OCT 11	.48	.84	.96	1.18	1.35	1.64	2.28	2.36	2.37	2.37	2.37	2.37
OCT 14	.27	.47	.60	.67	.80	.90	1.00	1.40	1.60	1.70	1.90	1.98
OCT 30	.20	.37	.45	.55	.72	.90	1.00	1.04	1.06	1.09	1.10	1.11
NOV 22	.35	.60	.85	1.10	1.35	2.10	2.25	2.70	2.80	2.90	2.97	3.04
DEC 5	.25	.40	.55	.64	.66	.67	.68	.82	1.34	1.44	1.44	1.45
GEORGIA												
ATHENS												
JAN 25	.21	.38	.40	.50	.65	.74	.97	1.01	1.01	1.02	1.03	1.03
JUN 23	.40	.57	.60	.82	1.08	1.29	1.51	1.60	1.63	1.64	1.65	1.66
JUN 24	.26	.50	.55	.62	.62	.63	.64	.64	.64	.64	.64	.64
JUL 13	.28	.42	.56	.80	1.10	1.16	1.18	1.22	1.22	1.22	1.22	1.22
JUL 18	.18	.30	.40	.55	.65	.67	.81	.88	1.05	1.34	1.62	1.64
JUL 20	.25	.26	.27	.28	.34	.34	.34	.34	.34	.34	.38	.38
ATLANTA												
JAN 25	.21	.36	.52	.57	.62	.69	.77	.86	.98	1.02	1.03	1.04
APR 25	.20	.29	.37	.44	.45	.70	.77	.78	.79	.79	.81	.83
APR 27	.30	.43	.49	.60	.67	.75	.84	.98	1.06	1.07	1.07	1.13
JUN 1	.50	.51	.51	.51	.51	.51	.51	.51	.51	.51	.51	.51
JUN 23	.39	.57	.68	.73	.78	1.02	1.07	1.07	1.07	1.07	1.07	1.07
JUL 22	.16	.30	.38	.53	.70	1.00	1.25	1.50	1.60	1.64	1.64	1.64
AUG 4	.28	.37	.50	.56	.57	.61	.61	.61	.61	.62	.65	.66
AUG 10	.25	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30
AUG 11	.20	.40	.55	.59	.60	.60	.60	.63	.65	.66	.80	.80
AUG 22	.25	.50	.65	.67	.70	.78	.79	.85	.90	.91	.91	.93
AUGUSTA												
MAR 26	.28	.45	.55	.62	.75	.90	1.07	1.28	1.29	1.29	1.29	1.32

Station and date	Maximum precipitation in inches (5 to 180 minutes)											
	5	10	15	20	30	45	60	80	100	120	150	180
GEORGIA												
AUGUSTA												
APR 8	.35	.44	.45	.50	.60	.74	.84	.95	1.08	1.11	1.25	1.33
APR 27	.22	.42	.58	.64	.80	.86	.91	.96	1.03	1.09	1.25	1.33
JUN 1	.18	.32	.35	.36	.37	.37	.37	.37	.38	.38	.39	.39
JUN 12	.44	.86	1.12	1.34	1.72	2.20	2.62	2.82	2.87	2.90	2.93	2.95
JUN 13	.27	.50	.55	.60	.66	.68	.70	.70	.70	.70	.70	.70
JUL 2	.45	.70	.82	.98	1.04	1.06	1.06	1.06	1.09	1.10	1.10	1.10
JUL 13	.20	.35	.42	.46	.50	.51	.51	.51	.51	.51	.51	.51
JUL 14	.33	.38	.40	.43	.45	.45	.45	.45	.45	.45	.45	.45
JUL 19	.25	.46	.67	.82	1.28	1.41	1.54	1.60	1.65	1.65	1.66	1.66
JUL 20	.35	.50	.56	.58	.78	.88	.90	.95	1.24	1.50	1.54	1.73
JUL 29	.25	.30	.35	.40	.45	.46	.47	.47	.47	.47	.47	.47
AUG 10	.48	.76	.92	1.08	1.21	1.24	1.42	1.54	1.58	1.62	1.90	2.02
AUG 29	.35	.69	.77	.88	1.02	1.06	1.20	1.25	1.34	1.45	1.55	1.62
AUG 30	.30	.60	.75	.82	.83	.83	.83	.83	.83	.83	.83	.83
OCT 4	.28	.50	.52	.57	.58	.59	.59	.59	.59	.59	.60	.61
DEC 26	.28	.50	.53	.59	.63	.66	.75	.78	.80	.80	.84	.84
COLUMBUS												
JAN 25	.30	.47	.51	.53	.56	.61	.64	.65	.67	.70	.72	.74
MAR 2	.23	.35	.42	.47	.56	.73	1.06	1.24	1.30	1.39	1.52	1.61
MAR 14	.25	.30	.40	.42	.65	.95	.96	.98	.98	.98	.98	.99
APR 6	.39	.54	.55	.57	.64	.69	.70	.85	1.09	1.34	1.64	1.64
APR 7	.25	.26	.29	.31	.36	.37	.38	.39	.39	.39	.39	.39
APR 8	.29	.49	.52	.60	.78	.83	.98	1.27	1.58	1.71	1.95	2.25
APR 27	.15	.20	.27	.30	.45	.67	.80	.92	.99	1.09	1.20	1.44
MAY 2	.17	.21	.30	.42	.46	.55	.65	.75	.85	.98	1.18	1.35
MAY 12	.31	.48	.49	.50	.51	.52	.53	.53	.53	.53	.53	.53
JUN 6	.26	.33	.38	.40	.60	.64	.75	.80	.84	.91	.99	1.00
JUN 21	.25	.33	.35	.36	.38	.39	.39	.39	.39	.39	.39	.39
JUN 26	.32	.57	.59	.60	.74	.80	.80	.80	.81	.82	.85	.86
JUL 1	.20	.30	.40	.50	.55	.57	.60	.65	.68	.68	.68	.68
JUL 12	.25	.45	.49	.58	.62	.64	.74	.85	.85	.86	.88	.89
JUL 14	.17	.32	.40	.41	.43	.47	.48	.48	.48	.48	.48	.48
JUL 20	.50	.77	.81	.82	.83	.84	.84	.84	.84	.84	.84	.84
JUL 21	.28	.37	.49	.64	.77	.99	1.06	1.09	1.10	1.10	1.10	1.10
JUL 23	.28	.50	.60	.73	1.09	1.21	1.23	1.24	1.40	1.43	1.44	1.45
JUL 24	.30	.37	.39	.40	.40	.44	.45	.45	.45	.45	.45	.45
JUL 25	.27	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30
AUG 12	.65	1.00	1.15	1.36	1.57	1.78	1.95	2.29	2.51	2.63	2.68	2.73
AUG 22	.20	.32	.35	.41	.42	.49	.57	.57	.59	.59	.64	.72
SEP 30	.35	.60	.70	.90	1.15	1.29	1.36	1.37	1.38	1.38	1.38	1.38
OCT 1	.27	.31	.35	.43	.50	.50	.50	.50	.50	.50	.50	.50
OCT 4	.30	.56	.60	.67	1.00	1.19	1.35	1.52	1.70	1.80	1.96	2.11
OCT 4	.35	.55	.60	.68	.84	1.20	1.33	1.47	1.76	1.77	1.97	2.05
DEC 24	.39	.61	.67	.71	.75	.76	.77	.84	.89	.95	.96	1.09
DEC 25	.26	.48	.57	.64	.75	.95	1.37	1.47	1.61	1.63	1.85	2.06
DEC 26	.28	.35	.38	.42	.61	.65	.68	.68	.68	.68	.68	.68
MACON												
MAR 2	.35	.45	.49	.52	.59	.67	.81	.96	1.12	1.26	1.37	1.45
APR 6	.15	.29	.40	.48	.58	.69	.80	1.07	1.24	1.33	1.48	1.53
APR 8	.41	.66	.87	1.01	1.28	1.59	1.64	1.88	1.96	2.06	2.24	2.55
APR 8	.24	.33	.44	.47	.54	.60	.61	.66	.67	.80	1.05	1.22
JUL 31	.27	.34	.36	.36	.36	.36	.37	.39	.39	.39	.41	.44
AUG 11	.39	.69	.82	1.02	1.04	1.07	1.08	1.08	1.09	1.10	1.10	1.10
AUG 28	.34	.52	.62	.63	.64	.64	.64	.64	.64	.64	.64	.65
DEC 25	.32	.44	.49	.52	.54	.56	.63	.71	.78	.85	.94	1.19
DEC 26	.16	.25	.36	.42	.47	.48	.51	.53	.53	.54	.55	.65
ROME												
JAN 24	.32	.38	.42	.45	.53	.68	1.04	1.12	1.22	1.26	1.31	1.36
MAR 4	.32	.44	.51	.53	.54	.65	.74	.76	.76	.76	.76	.76
MAR 14	.35	.43	.57	.61	.70	.80	.85	1.00	1.07	1.15	1.29	1.33
MAR 25	.40	.54	.61	.69	.80	1.01	1.46	1.67	1.72	1.87	2.09	2.13
APR 7	.37	.42	.53	.59	.65	.79	1.14	1.27	1.29	1.30	1.31	1.33
JUN 5	.23	.38	.49	.49	.58	.62	.62	.62	.63	.63	.64	.74
JUN 13	.24	.30	.35	.40	.53	.74	.85	.97	1.03	1.03	1.03	1.05
JUN 24	.33	.55	.63	.65	.69	.69	.71	.72	.72	.72	.72	.72
JUL 8	.18	.26	.30	.45	.60	.72	.84	.87	.86	.87	.93	1.17
JUL 17	.29	.49	.62	.64	.71	.72	.72	.72	.72	.72	.72	.72
JUL 30	.50	.67	.78	.83	.88	.88	.88	.89	.90	.90	.90	.91
AUG 4	.21	.37	.44	.55	.62	.63	.63	.63	.64	.66	.66	.66
SEP 29	.18	.33	.45	.48	.62	.62	.75	.89	.95	1.00	1.02	1.02
OCT 4	.23	.38	.40	.50	.68	.87	.95	1.04	1.08	1.28	1.63	1.78
DEC 4	.32	.52	.53	.54	.55	.57	.62	.68	.73	.78	.85	1.05
SAVANNAH												
FEB 18	.22	.30	.33	.46	.59	.71	.87	1.04	1.25	1.36	1.62	1.75
MAR 3	.23	.32	.35	.37	.39	.40	.43	.45	.50	.54	.65	.73
MAR 15	.47	.47	.48	.48	.48	.48	.48	.48	.48	.48	.48	.48
APR 27	.26	.41	.48	.53	.58	.62	.68	.73	.83	.90	1.01	1.05
JUN 18	.20	.36	.44	.51	.55	.62	.64	.65	.65	.65	.65	.65
JUL 4	.23	.35	.45	.48	.49	.52	.57	.63	.65	.66	.67	.68
JUL 10	.13	.25	.35	.41	.43	.44	.46	.48	.48	.48	.48	.48
JUL 14	.30	.48	.64	.72	.80	.85	.90	.93	.93	.93	.93	.93
JUL 17	.27	.52	.63	.70	.75	.81	1.10	1.25	1.68	1.74	1.76	1.90
JUL 18	.35	.58	.72	.93	1.15	1.24	1.30	1.38	1.60	1.70	1.91	2.08
JUL 18	.21	.27	.48	.52	.62	.64	.65	.66	.67	.67	.79	.81
JUL 19	.37	.65	.74	.76	1.00	1.12	1.48	1.64	1.79	1.97	2.08	2.09
JUL 20	.24	.44	.66	.86	1.04	1.06	1.06	1.12	1.21	1.26	1.29	1.29
JUL 20	.34	.47	.52	.55	.58	.58	.58	.63	.65	.71	.75	.75
JUL 22	.33	.62	.87	1.14	1.40	1.52	1.53	1.54	1.54	1.64	2.15	2.19
JUL 26	.23	.37	.48	.51	.53	.54	.54	.54	.54	.54	.54	.59
JUL 31	.40	.67	.74	.85	1.13	1.45	1.79	1.82	1.83	1.84	1.88	1.93
AUG 5	.22	.39	.49	.53	.54	.54	.55	.55	.55	.55	.55	.55
AUG 28	.18	.33	.46	.60	.83	1.17	1.45	1.73	1.90	2.31	2.66	2.86
SEP 10	.29	.40	.45	.46	.52	.59	.79	.86	1.00	1.15	1.23	1.28
SEP 12	.12	.20	.28	.37	.50	.60	.72	.94	1.00	1.13	1.18	1.22
OCT 1	.32	.53	.65	.73	.83	.84	.85	.85	.85	.85	.85	.85
OCT 2	.25	.49	.66	.80	1.04	1.28	1.37	1.38	1.41	1.44	1.47	1.51
DEC 4	.17	.30	.44	.49	.65	.83	.94	1.05	1.09	1.12	1.16	1.17
DEC 4	.23	.35	.44	.51	.64	.68	.80	.98	1.30	1.37	1.44	1.52
HAWAII												
HILO												
JAN 5	.22	.32	.33	.33	.34	.47	.46	.56	.63	.65	.76	.90
JAN 6	.29	.58	.67	.73	.98	1.20	1.28	1.51	1.79	1.87	2.13	2.17
FEB 13	.24	.35	.41	.54	.66	.71	.72	.76	.80	.80	.81	.87
FEB 14	.28	.36	.38	.41	.41	.47	.61	.66	.76	.76	.78	1.02
FEB 22	.45*	.80	.95	1.04	1.24	1.30	1.32	1.33	1.39	1.39	1.40	1.45
FEB 24	.17	.30	.35	.40	.59	.78	1.00	1.08	1.13	1.16	1.31	1.38
E FEB 24	.18	.30	.34	.40	.63	.65	.68	.79	1.07	1.24	1.34	1.38
MAR 1	.35	.50	.54	.60	.63	.65	.66	.68	.70	.74	.74	.76
MAR 1	.23	.37	.42	.50	.78	.83	.86	.94	1.01	1.06	1.09	1.14

E Estimated

EXCESSIVE SHORT DURATION RAINFALL

Station and date	Maximum precipitation in inches (5 to 180 minutes)											
	5	10	15	20	30	45	60	80	100	120	150	180
HAWAII												
HILO												
MAR 7	.24	.30	.32	.32	.33	.35	.40	.40	.43	.43	.48	.48
MAR 9	.15	.30	.34	.41	.46	.57	.61	.67	.69	.71	1.03	1.11
MAR 20	.25	.31	.36	.44	.50	.55	.59	.59	.59	.59	.59	.59
MAR 21	.27	.45	.49	.50	.50	.53	.85	.88	.88	.88	1.02	1.16
MAR 22	.37	.47	.51	.53	.55	.57	.57	.57	.58	.58	.64	.84
MAR 24	.13	.25	.33	.42	.57	.68	.83	.86	.89	.92	1.02	1.05
MAY 24	.20	.39	.51	.62	.92	1.09	1.47	1.70	1.88	1.98	2.48	2.60
NOV 5	.19	.37	.39	.41	.47	.48	.53	.54	.55	.65	.75	1.06
NOV 6	.28	.50	.58	.73	.94	1.10	1.68	1.90	2.16	2.58	3.00	3.32
NOV 7	.26	.42	.46	.50	.57	.63	.78	1.05	1.18	1.25	1.66	1.83
NOV 8	.28	.40	.48	.68	.76	.94	1.24	1.66	1.80	1.90	2.07	2.20
NOV 9	.22	.36	.43	.56	.60	.70	.79	.80	.82	.95	1.03	1.07
NOV 11	.17	.29	.37	.47	.50	.57	.60	.70	.90	.93	1.10	1.15
NOV 12	.28	.50	.53	.55	.63	.68	.80	.80	.80	.80	.80	.80
HONOLULU												
MAR 4	.19	.33	.42	.47	.70	.87	.90	.90	.92	1.01	1.03	1.05
MAR 23	.22	.29	.33	.42	.64	.77	.79	.98	1.13	1.15	1.15	1.15
DEC 19	.25	.32	.38	.41	.48	.61	.79	.80	.82	1.03	1.05	1.09
KAHULUI						NONE						
LIHUE												
JAN 4	.25	.42	.59	.64	.76	1.19	1.31	1.40	1.42	1.51	2.12	2.17
MAR 8	.32	.49	.68	.89	1.19	1.43	1.86	2.19	2.54	2.73	2.95	3.19
MAR 23	.48	.65	.74	.86	1.00	1.09	1.09	1.65	1.84	1.97	1.97	1.98
MAR 25	.42	.62	.72	.79	.87	.87	.87	.87	.87	.87	.87	.87
JUL 12	.25	.31	.35	.42	.43	.43	.43	.43	.43	.43	.43	.43
JUL 24	.20	.30	.36	.41	.46	.47	.48	.48	.48	.48	.48	.48
NOV 25	.26	.37	.40	.41	.43	.52	.60	.76	.76	.76	.76	.76
NOV 25	.26	.42	.50	.54	.68	.74	.97	1.16	1.19	1.20	1.21	1.25
NOV 26	.21	.32	.38	.44	.58	.63	.67	.70	.72	.74	.75	.83
DEC 16	.33	.50	.62	.68	.78	.91	1.00	1.07	1.12	1.19	1.22	1.28
IDAHO												
BOISE												
JUL 29	.18	.31	.32	.32	.32	.32	.32	.32	.32	.32	.32	.32
LEWISTON												
JUN 5 T	M	M	.96	.96	.96	.96	.96	.96	.96	.96	.96	.96
JUL 15 *	.35	.49	.57	.60	.66	.71	.87	.88	.89	.90	.92	.94
JUL 30	.26	.28	.29	.31	.34	.34	.34	.34	.34	.34	.34	.34
POCATELLO						NONE						
ILLINOIS												
CAIRO U												
JUL 28	.17	.32	.34	.34	.34	.34	.34	.42	.44	.44	.44	.44
AUG 22	.25	.33	.38	.39	.41	.42	.42	.43	.44	.44	.44	.44
AUG 22	.20	.34	.43	.43	.43	.43	.43	.43	.43	.43	.43	.43
AUG 27	.33	.38	.42	.43	.44	.44	.44	.44	.44	.44	.44	.44
CHICAGO O HARE												
MAY 8	.27	.41	.47	.55	.69	.79	.79	.79	.79	.79	.79	.79
JUN 22	.30	.50	.70	.83	1.00	1.09	1.13	1.13	1.13	1.13	1.13	1.13
JUL 7	.22	.40	.42	.43	.55	.55	.55	.57	.61	.63	.66	.67
JUL 18	.25	.44	.65	.78	1.00	1.23	1.32	1.34	1.36	1.38	1.43	1.45
AUG 3	.38	.48	.65	.85	.99	1.05	1.07	1.10	1.10	1.10	1.10	1.10
AUG 21	.33	.53	.67	.80	.88	.94	.98	1.02	1.07	1.10	1.15	1.17
SEP 22	.30	.52	.55	.72	.96	1.05	1.15	1.22	1.25	1.26	1.27	1.32
NOV 15	.28	.43	.47	.51	.59	.59	.92	.99	.99	1.07	1.07	1.07
CHICAGO MIDWAY												
JUL 18	.32	.42	.60	.72	.91	1.02	1.02	1.02	1.03	1.07	1.38	1.42
JUL 21	.22	.28	.33	.44	.55	.73	.74	.87	.95	1.03	1.19	1.19
JUL 25	.26	.48	.68	.87	.88	.88	.88	.89	.89	.89	.90	.90
JUL 28	.27	.50	.55	.56	.57	.57	.58	.59	.59	.59	.59	.59
AUG 2	.33	.43	.62	.65	.65	.66	.66	.85	.95	.95	.95	.95
SEP 20	.24	.46	.51	.53	.53	.53	.53	.53	.53	.53	.53	.53
MOLINE												
APR 21	.18	.33	.43	.50	.52	.67	.68	.82	.95	1.01	1.02	1.02
MAY 6	.26	.49	.53	.61	.62	.62	.62	.62	.62	.62	.62	.62
MAY 8	.16	.25	.39	.45	.53	.57	.63	.69	.71	.71	.71	.71
JUN 14	.13	.22	.31	.42	.51	.71	.72	.74	.77	.79	.83	.86
JUL 7	.36	.51	.73	.85	.93	.94	.97	.99	1.01	1.05	1.07	1.09
JUL 19	.20	.34	.40	.43	.44	.44	.46	.46	.46	.46	.46	.46
JUL 25	.22	.40	.44	.52	.64	.69	.69	.71	.72	.72	.94	.98
JUL 31	.37	.56	.64	.73	.90	.94	.99	1.03	1.04	1.07	1.12	1.14
AUG 20	.26	.50	.62	.78	1.00	1.28	1.44	1.55	1.62	1.69	1.71	1.82
SEP 22	.36	.70	.83	.84	.89	1.03	1.09	1.13	1.14	1.14	1.14	1.14
SEP 25	.26	.33	.36	.40	.44	.44	.44	.44	.44	.44	.44	.44
NOV 27	.22	.33	.37	.45	.54	.61	.70	.80	.86	.92	1.06	1.09
PEORIA												
APR 20	.33	.43	.43	.43	.43	.43	.59	.63	.75	1.02	1.06	1.06
MAY 6	.19	.33	.38	.41	.42	.44	.46	.50	.52	.53	.56	.56
JUN 19	.22	.41	.60	.74	.84	1.14	1.44	1.69	1.90	2.10	2.26	2.28
AUG 21	.20	.30	.43	.52	.54	.74	.78	.92	.94	.96	1.02	1.14
SEP 22	.25	.44	.49	.52	.54	.56	.57	.58	.62	.63	.64	.64
SEP 26	.16	.25	.35	.42	.62	.90	1.07	1.13	1.20	1.22	1.23	1.27
NOV 27	.27	.35	.46	.55	.76	.92	1.16	1.34	1.51	1.58	1.66	1.70
ROCKFORD												
APR 21	.35	.68	.89	1.12	1.29	1.78	*2.03	2.12	2.15	*2.16	2.16	*2.24
JUN 14	.18	.27	.38	.45	.54	.76	.93	1.21	1.38	1.51	1.73	1.95
JUN 21	.40	.69	.90	1.11	*1.55	2.00	*2.09	2.10	2.10	2.10	2.10	2.10
JUL 7	.45	.73	.80	.87	.97	1.01	1.04	1.06	1.06	1.06	1.07	1.07
JUL 18	.25	.39	.46	.51	.77	.85	1.02	1.13	1.29	1.41	1.54	1.59
JUL 27	.25	.33	.40	.44	.45	.45	.45	.45	.45	.45	.45	.48
AUG 21	.20	.31	.40	.41	.47	.58	.65	.74	.80	.94	1.07	1.14
SEP 20	.30	.43	.45	.46	.47	.47	.47	.47	.53	.53	.53	.53
SEP 22	.22	.32	.40	.49	.62	.71	.83	.94	.98	1.03	1.04	1.04
NOV 2	.26	.34	.44	.47	.50	.85	.93	1.05	1.16	1.25	1.43	1.55
SPRINGFIELD												
APR 4	.28	.37	.38	.38	.38	.38	.38	.38	.38	.38	.38	.38
APR 19	.22	.32	.37	.39	.40	.41	.43	.44	.44	.44	.44	.44
APR 19	.26	.37	.41	.41	.42	.44	.58	.65	.75	.78	.85	.93
APR 19	.16	.28	.34	.50	.54	.67	.83	.97	.98	.99	1.00	1.00
APR 20	.22	.42	.51	.57	.59	.94	1.05	1.09	1.12	1.13	1.15	1.16
JUN 21	.19	.38	.45	.55	.61	.63	.64	.64	.66	.68	.68	.68
AUG 21	.16	.30	.44	.54	.70	1.01	1.09	1.10	1.16	1.16	1.16	1.16

Station and date	Maximum precipitation in inches (5 to 180 minutes)											
	5	10	15	20	30	45	60	80	100	120	150	180
ILLINOIS												
SPRINGFIELD												
NOV 15	.38	.65	.67	.69	.81	1.11	1.25	1.35	1.53	1.59	1.64	1.66
INDIANA												
EVANSVILLE												
MAR 4	.18	.36	.40	.45	.57	.63	.84	.93	1.00	1.12	1.20	1.24
MAR 8	.27	.34	.46	.52	.63	.69	.96	1.15	1.24	1.32	1.45	1.51
APR 19	.20	.30	.35	.48	.59	.71	.76	1.00	1.19	1.19	1.25	1.25
APR 21	.17	.30	.40	.43	.44	.55	.57	.59	.60	.60	.60	.60
JUN 18	.32	.40	.48	.49	.50	.51	.60	.91	.94	.94	.96	.96
AUG 22	.15	.23	.35	.40	.45	.51	.56	.96	.96	.96	.96	.96
SEP 18	.24	.33	.44	.66	.78	.83	.92	.93	.93	.93	.93	.93
FORT WAYNE												
MAY 26	.16	.23	.33	.40	.43	.56	.61	.77	.83	.85	1.00	1.08
JUN 19	.23	.36	.42	.44	.48	.50	.52	.59	.65	.66	.69	.72
AUG 17	.16	.30	.34	.34	.34	.34	.34	.34	.34	.34	.34	.34
INDIANAPOLIS												
MAR 8	.22	.34	.46	.56	.68	.80	.82	1.13	1.19	1.27	1.61	1.67
APR 19	.25	.32	.38	.44	.54	.62	.67	.71	.72	.77	.82	.82
APR 20	.20	.28	.36	.42	.50	.59	.64	.66	.70	.72	.77	.78
APR 22	.17	.26	.37	.39	.41	.44	.45	.45	.45	.45	.45	.45
JUN 12	.45	.55	.60	.66	.68	.69	.75	.75	.75	.75	.75	.75
JUN 21	.16	.28	.38	.48	.57	.60	.62	.62	.62	.62	.62	.62
JUL 7	.28	.47	.49	.55	.58	.58	.58	.58	.65	.68	.68	.68
JUL 21	.30	.40	.50	.60	.66	.71	.71	.71	.71	.71	.71	.71
JUL 25	.36	.42	.60	.80	.90	.94	.96	.98	.98	.98	.98	.98
NOV 15	.20	.38	.42	.46	.53	.58	.58	.58	.58	.58	.58	.58
NOV 15	.21	.32	.36	.40	.40	.50	.60	.66	.72	.77	.79	1.00
SOUTH BEND												
MAR 8	.32	.45	.46	.48	.54	.56	.57	.64	.69	.72	.74	.74
APR 29	.27	.48	.53	.58	.59	.71	1.06	1.10	1.12	1.12	1.14	1.22
MAY 8	.45	.47	.49	.50	.51	.51	.51	.51	.51	.51	.51	.51
JUN 12	.26	.37	.41	.47	.48	.49	.50	.56	.58	.60	.65	.67
JUN 19	.20	.35	.40	.45	.50	.55	.59	.65	.70	.80	.88	.98
JUN 21	.21	.31	.35	.36	.40	.41	.48	.53	.59	.63	.66	.66
JUN 22	.57	.73	.79	.91	1.23	1.25	1.27	1.27	1.27	1.27	1.27	1.27
JUL 6	.20	.32	.40	.51	.55	.60	.76	.80	.90	.90	.90	.90
JUL 7	.50	.62	.64	.69	.72	.77	.81	.82	.83	.83	.83	.83
JUL 22	.45	.83	.95	1.32	1.48	1.50	1.50	1.50	1.50	1.50	1.50	1.50
AUG 11	.36	.40	.41	.51	.56	.56	.60	.85	.95	.95	.95	1.00
AUG 21	.25	.33	.34	.38	.63	.69	.71	.73	.78	.80	.82	.85
IOWA												
BURLINGTON												
JUN 14	.25	.35	.39	.48	.50	.55	.58	.58	.58	.58	.58	.58
JUN 20	.62	.82	.92	1.00	1.07	1.24	1.24	1.24	1.27	1.30	1.54	1.62
JUL 25	.50	.68	.69	.70	.72	.73	.73	.73	.74	.74	.74	.74
SEP 20	.34	.35	.35	.35	.35	.35	.35	.35	.35	.35	.35	.35
SEP 22	.30	.42	.46	.48	.50	.52	.55	.55	.55	.55	.55	.55
SEP 26	.16	.32	.33	.35	.62	.66	.70	.72	1.03	1.07	1.08	1.13
DES MOINES												
JUN 14	.24	.40	.42	.50	.66	.71	.75	.76	.78	.80	.86	.90
JUN 20	.24	.34	.36	.37	.43	.49	.54	.59	.67	.68	.69	.70
JUN 22	.28	.39	.42	.46	.49	.54	.58	.62	.62	.63	.63	.63
JUN 22	.24	.35	.36	.42	.68	.82	.96	.98	1.04	1.05	1.06	1.06
JUL 11	.35	.69	.73	.75	.77	.79	.83	.86	.90	.92	1.01	1.11
AUG 20	.27	.41	.44	.47	.53	.56	.65	.68	.71	.71	.71	.71
AUG 24	.32	.55	.58	.60	.70	.71	.76	.88	.89	.90	1.00	1.01
AUG 27	.25	.36	.39	.47	.54	.59	.60	.61	.62	.64	.67	.70
SEP 3	.28	.37	.38	.40	.51	.52	.54	.54	.70	.94	.97	.97
SEP 19	.21	.30	.31	.31	.33	.35	.40	.44	.44	.44	.44	.44
DUBUQUE												
APR 2	.17	.30	.37	.44	.51	.65	.73	.84	.95	1.00	1.03	1.07
APR 27	.22	.32	.35	.41	.50	.57	.65	.73	.78	.79	.83	.85
MAY 7	.20	.35	.41	.50	.55	.60	.61	.62	.64	.64	.66	.70
MAY 8	.65	1.12	1.30	1.40	1.65	1.78	1.85	1.85	1.85	1.85	1.85	1.85
MAY 24	.28	.37	.40	.43	.48	.53	.70	.91	1.00	1.18	1.36	1.44
JUN 13	.18	.35	.42	.55	.60	.63	.64	.64	.64	.66	.73	.73
JUN 19	.28	.41	.43	.46	.61	.70	.75	.81	.82	.85	1.00	1.27
JUN 21	.40	.71	.80	.85	.85	.85	.85	.85	.85	.85	.85	.85
JUN 22	.14	.23	.25	.34	.50	.57	.59	.63	.64	.64	.64	.64
JUN 22	.37	.44	.52	.55	.60	.62	.63	.69	.70	.71	.71	.71
JUL 8	.27	.42	.47	.61	.71	.76	.77	.81	.94	1.10	1.18	1.19
JUL 28	.21	.35	.42	.47	.48	.48	.48	.48	.48	.48	.48	.48
AUG 29	.18	.35	.45	.55	.82	1.03	1.17	1.20	1.25	1.31	1.42	1.42
NOV 15	.52	.70	.74	.79	.85	.87	.92	.92	.92	.92	.92	.92
SIOUX CITY												
MAY 6	.34	.46	.46	.46	.48	.48	.58	.60	.60	.60	.60	.60
MAY 22	.22	.29	.28	.41	.42	.45	*.46	.46	.70	.75	.75	.75
JUN 8	.33	.39	.46	.47	.48	.48	.49	.49	.49	.49	.49	.49
JUL 5	.27	.40	.50	.50	.50	.52	.61	.76	.97	1.18	1.18	1.18
JUL 9	.44	.84	1.05	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16
JUL 11	.15	.25	.33	.39	.59	.60	.61	.63	.75	.82	.83	.89
JUL 30	.18	.34	.42	.48	.58	.67	.74	.95	1.02	1.13	1.20	1.20
AUG 6	.21	.33	.35	.38	.53	.62	.69	.79	1.02	1.07	1.21	1.25
AUG 29	.20	.30	.35	.42	.50	.51	.51	.51	.51	.51	.51	.51
WATERLOO												
APR 26	.27	.53	.70	.81	1.01	1.08	1.24	1.43	1.47	1.58	1.67	1.77
MAY 7	.25	.30	.53	.57	.61	.87	.92	1.03	1.20	1.35	1.63	1.64
JUN 12	.17	.33	.40	.43	.45	.47	.48	.48	.48	.48	.48	.48
JUN 22	.46	*.92	*1.15	1.21	*1.60	1.78	*1.86	1.92	1.98	2.06	2.20	2.24
AUG 20 T	M	M	M	M	M	M	M	M	M	M	M	2.64
AUG 29	.31	.61	.72	.82	.97	1.04	1.06	1.12	1.18	1.24	1.27	1.27
SEP 3	.32	.60	.90	.92	.95	.96	.97	.98	.99	.99	.99	1.02
SEP 8	.25	.44	.54	.68	.99	1.40	1.64	1.71	1.79	2.21	2.33	2.55
KANSAS												
CONCORDIA												
MAY 23	.19	.31	.42	.45	.67	.71	.72	.72	.73	.73	.73	.74
JUN 4	.30	.55	.84	.93	1.17	1.29	1.31	1.36	1.40	1.41	1.42	1.45
JUN 4	.23	.36	.55	.66	.70	.78	.86	.90	.91	.93	.93	.96
JUN 7	.22	.33	.44	.44	.50	.59	.62	.64	.68	.69	.69	.69
JUN 8	.33	.43	.49	.50	.50	.50	.50	.50	.50	.50	.50	.50
JUN 14	.28	.40	.42	.43	.43	.43	.43	.43	.43	.43	.43	.43
JUN 21	.26	.47	.66	.67	.68	.68	.68	.68	.68	.68	.68	.68
JUN 21	.51	.86	1.03	1.17	1.27	1.42	1.42	1.42	1.42	1.42	1.42	1.42

T Clock malfunction
M No record

T Clock malfunction
M No record

EXCESSIVE SHORT DURATION RAINFALL

Station and date	Maximum precipitation in inches (5 to 180 minutes)											
	5	10	15	20	30	45	60	80	100	120	150	180
KANSAS												
CONCORDIA												
JUL 27	.17	.34	.49	.63	.97	1.34	1.44	1.47	1.50	1.59	1.62	1.69
AUG 27	.21	.32	.44	.55	.75	.90	.94	.96	.98	1.00	1.00	1.00
SEP 5	.26	.42	.60	.67	.88	1.10	1.18	1.53	1.58	1.59	1.62	1.65
DODGE CITY												
APR 19	.25	.29	.30	.31	.31	.40	.40	.40	.40	.40	.41	.41
JUN 10	.19	.38	.54	.64	.74	.80	.88	.96	1.01	1.08	1.23	1.36
JUL 10	.30	.56	.59	.60	.60	.60	.60	.60	.60	.60	.60	.60
JUL 28	.42	.81	1.09	1.32	2.12	2.54	2.80	2.86	2.89	3.00	3.21	3.26
AUG 19	.24	.41	.49	.55	.74	1.04	1.41	M	M	M	M	2.71
GOODLAND												
JUL 8	.30	.45	.60	.80	1.00	1.30	1.55	1.59	1.63	1.67	1.69	1.70
TOPEKA												
JUN 12	.22	.34	.56	.68	.78	.90	.97	1.04	1.12	1.14	1.19	1.51
JUN 14	.22	.33	.36	.50	.61	.75	.87	.90	.95	.98	1.00	1.00
JUN 18	.18	.34	.46	.56	.70	.74	.76	.78	.80	.80	.80	.80
JUN 22	.24	.34	.44	.55	.69	.90	1.06	1.10	1.14	1.16	1.17	1.18
JUL 11	.24	.38	.38	.38	.38	.39	.39	.40	.40	.42	.44	.44
AUG 20	.16	.27	.37	.43	.58	.72	.90	1.04	1.13	1.28	1.38	1.43
AUG 20	.18	.25	.26	.40	.47	.47	.61	.61	.61	.61	.62	1.01
AUG 31	.40	.71	.82	1.02	1.56	1.86	2.36	2.91	2.93	3.11	3.15	3.15
NOV 15	.28	.56	.70	.78	1.00	1.50	1.92	2.18	2.70	2.85	3.05	3.16
WICHITA												
APR 3	.28	.41	.46	.54	.62	.64	.68	.68	.68	.69	.70	.71
MAY 27	.20	.35	.47	.60	.86	1.20	1.52	1.85	1.89	1.91	2.07	2.25
JUN 4	.25	.46	.57	.58	.58	.60	.90	1.01	1.08	1.08	1.10	1.25
JUN 30	.35	.70	.90	1.08	1.20	1.31	1.33	1.33	1.33	1.33	1.33	1.33
JUL 12	.22	.36	.43	.53	.76	.94	.98	1.00	1.01	1.01	1.01	1.01
AUG 7	.18	.34	.50	.60	.70	.98	1.02	1.04	1.05	1.06	1.09	1.12
AUG 25	.14	.24	.32	.40	.58	.64	.65	.70	.92	1.08	1.08	1.08
AUG 27	.25	.50	.72	.96	1.31	1.77	1.81	1.89	1.92	1.93	1.93	1.93
NOV 15	.25	.39	.46	.56	.64	.68	.90	.95	1.00	1.04	1.15	1.28
KENTUCKY												
COVINGTON												
MAR 4	.20	.32	.44	.50	.60	.79	.90	1.02	1.06	1.08	1.14	1.23
MAR 4	.17	.30	.33	.35	.42	.47	.50	.50	.55	.58	.65	.80
MAR 9	.26	.37	.47	.52	.60	.67	.76	.83	.95	1.10	1.22	1.31
APR 3	.25	.40	.45	.47	.50	.60	.71	.72	.72	.72	.72	.72
AUG 4	.28	.48	.55	.56	.57	.58	.58	.58	.58	.58	.58	.58
AUG 11	* .31	.43	.49	.50	.50	.50	.50	.50	.54	.63	.64	.64
AUG 21	.25	.34	.39	.41	.43	.44	.45	.45	.45	.45	.45	.45
LEXINGTON												
MAR 4	.35	.55	.61	.65	.70	.75	.80	.90	.99	1.17	1.27	1.46
JUN 14	.20	.37	.50	.58	.75	1.00	1.07	1.23	1.43	1.47	1.50	1.50
JUN 18	.21	.37	.51	.62	.82	.90	1.00	1.00	1.00	1.00	1.00	1.01
JUL 7	.45	.80	.93	.97	1.08	1.11	1.14	1.17	1.21	1.23	1.45	1.52
LOUISVILLE												
MAR 4	.26	.33	.44	.53	.58	.62	.66	.80	.95	.99	1.12	1.23
MAR 9	.10	.20	.28	.36	.46	.66	.81	1.06	1.28	1.36	1.56	1.76
MAR 9	.20	.30	.40	.46	.52	.58	.63	.70	.81	.99	1.18	1.30
MAR 25	.30	.42	.46	.54	.68	.76	1.00	1.01	1.02	1.04	1.06	1.06
APR 19	.29	.56	.57	.58	.59	.61	.61	.66	.72	.74	.77	.80
JUN 14	.17	.31	.33	.34	.36	.37	.38	.38	.38	.38	.38	.38
JUN 18	.32	.42	.42	.43	.43	.45	.45	.47	.51	.59	.70	.70
JUN 18	.32	.42	.50	.69	.72	.72	.72	.72	.72	.72	.72	.72
JUL 7	.44	.80	.93	.96	.98	.98	.99	.99	.99	.99	.99	.99
JUL 29	.28	.44	.44	.44	.44	.44	.44	.44	.44	.44	.44	.44
AUG 8	.30	.54	.56	.56	.58	.66	.67	.67	.67	.67	.67	.67
AUG 21	.22	.39	.54	.56	.57	.58	.58	.58	.58	.58	.58	.58
AUG 28	.28	.43	.52	.55	.67	.70	.77	.79	.79	.79	.79	.79
SEP 21	.31	.54	.76	.88	.93	.94	.94	.94	.94	.94	.94	.94
LOUISIANA												
ALEXANDRIA												
JAN 8	.26	.52	.55	.69	.90	1.02	1.36	1.57	1.75	1.84	1.88	1.88
JAN 24	.20	.40	.45	.55	.70	.88	.97	1.03	1.08	1.09	1.10	1.14
MAR 2	.29	.54	.58	.70	1.06	1.28	1.37	1.41	1.54	1.63	1.77	1.81
MAR 14	.14	.26	.32	.36	.59	.65	.78	.80	.80	.80	.80	.90
MAY 28	.50	.73	.81	1.03	1.21	1.31	1.33	1.34	1.36	1.38	1.38	1.40
JUN 24	.27	.30	.32	.32	.32	.32	.32	.32	.32	.32	.32	.42
JUL 12	.41	.66	.72	.87	.90	.92	.93	.93	.93	.93	.93	1.20
JUL 24	.45	.54	.55	.59	.95	1.02	1.17	1.59	1.67	1.67	1.67	1.67
JUL 28	.30	.43	.45	.59	.82	.89	.94	.97	.98	.98	.98	.98
AUG 5	.21	.33	.34	.34	.37	.38	.39	.40	.40	.40	.40	.40
AUG 9	.22	.40	.43	.58	.80	.87	.90	.90	.90	.90	.90	.90
AUG 13	.40	.66	.73	.90	1.08	1.23	1.37	1.42	1.56	1.62	1.80	2.03
AUG 16	.50	.77	.78	.79	.80	.80	.80	.80	.80	.80	.80	.80
AUG 22	.28	.40	.41	.45	.63	.69	.71	.89	1.15	1.25	1.32	1.32
SEP 27	.55	.85	1.03	1.20	1.32	1.39	1.40	1.41	1.42	1.42	1.66	1.72
NOV 19	.23	.37	.38	.39	.43	.43	.43	.46	.49	.51	.59	.60
NOV 27	.20	.31	.36	.38	.43	.46	.48	.50	.52	.52	.55	.75
DEC 10	.24	.45	.48	.52	.59	.82	.96	1.25	1.33	1.53	1.80	2.13
BATON ROUGE												
FEB 5	.16	.25	.36	.42	.55	.62	.65	.68	.68	.72	.80	.87
FEB 17	.20	.32	.42	.48	.58	.65	.78	1.01	1.13	1.25	1.40	1.55
MAR 1	.21	.38	.56	.63	.73	.75	.76	.76	.76	.76	.78	.82
MAR 2	.25	.42	.54	.63	.80	1.00	1.16	1.30	1.35	1.50	1.56	1.58
MAR 14	.32	.54	.72	.76	.79	.81	.85	.87	.87	.89	1.24	1.30
MAR 19	.14	.26	.34	.42	.68	.89	.97	1.06	1.13	1.17	1.25	1.35
APR 18	.40	.80	.81	.82	.84	.84	.84	.84	.84	.84	.84	.84
APR 25	.29	.40	.40	.42	.42	.42	.44	.44	.44	.44	.44	.44
APR 26	.54	.86	1.08	1.20	1.38	1.45	1.53	1.59	1.63	1.69	1.71	1.71
MAY 1	.38	.60	.70	.80	.92	.98	1.17	1.21	1.23	1.25	1.30	1.30
MAY 12	.25	.35	.38	.40	.40	.41	.44	.47	.48	.48	.48	.48
JUN 24	.25	.34	.38	.43	.52	.56	.62	.65	.72	.74	.77	.78
JUL 1	.25	.35	.50	.65	.75	.75	.75	.83	.88	.88	.88	.88
JUL 2	.20	.31	.37	.44	.50	.68	.69	.72	.74	.80	.84	.89
JUL 12	.55	.89	1.08	1.25	1.75	2.10	2.18	2.22	2.23	2.24	2.24	2.24
JUL 27	.35	.55	.64	.69	.72	.77	.79	.81	.85	.89	.90	.90
AUG 8	.32	.57	.68	.76	.83	.83	.83	.84	.84	.84	.84	.89
AUG 13	.25	.37	.44	.46	.47	.47	.47	.47	.47	.47	.47	.47
AUG 14	.20	.31	.40	.45	.47	.47	.47	.47	.47	.47	.47	.47
AUG 18	.40	.68	.85	.99	1.04	1.07	1.15	1.20	1.20	1.23	1.23	1.24
AUG 26	.20	.30	.33	.36	.41	.45	.45	.45	.45	.50	.57	.57
AUG 27	.25	.41	.42	.43	.43	.43	.43	.43	.43	.43	.43	.43
SEP 6	.29	.42	.48	.51	.53	.55	.58	.58	.58	.58	.58	.62

Station and date	Maximum precipitation in inches (5 to 180 minutes)											
	5	10	15	20	30	45	60	80	100	120	150	180
LOUISIANA												
BATON ROUGE												
SEP 17	.35	.51	.75	.77	.83	.85	.88	.92	.95	1.00	1.00	1.00
SEP 18	.27	.36	.37	.38	.38	.39	.39	.67	.69	.70	.70	.71
OCT 3	.15	.25	.38	.46	.68	.88	1.04	1.28	1.64	1.79	2.06	2.33
OCT 4	.25	.40	.50	.55	.65	.87	1.00	1.22	1.70	2.20	2.45	2.75
OCT 13	.19	.30	.35	.41	.42	.44	.45	.45	.45	.45	.45	.45
NOV 19	.40	.57	.85	.98	1.03	1.04	1.13	1.20	1.24	1.31	1.35	1.39
NOV 24	.22	.30	.38	.47	.60	.70	.73	.85	.90	.98	1.02	1.10
NOV 28	.41	.71	.76	.77	.77	.78	.78	.78	.78	.78	.80	.82
LAKE CHARLES												
JAN 6	.28	.48	.55	.67	.85	.87	.93	.93	1.00	1.01	1.04	1.16
MAR 19	.65	.70	.70	.77	.80	.85	.93	.98	1.00	1.07	1.14	1.24
APR 25	.20	.35	.38	.52	.60	.64	.65	.65	.65	.65	.65	.65
APR 26	.25	.43	.48	.71	.90	.90	.90	.90	.90	.90	.90	.90
JUN 30	.30	.48	.58	.75	1.11	1.36	1.68	1.97	2.28	2.32	2.36	2.36
JUN 30	.35	.57	.67	.83	1.32	1.48	1.59	1.91	2.09	2.20	2.44	2.53
JUL 1	.25	.33	.34	.36	.40	.42	.46	.49	.56	.59	.64	.67
AUG 13	.25	.44	.45	.48	.49	.57	.57	.57	.57	.57	.58	.59
AUG 18	.30	.42	.48	.48	.48	.48	.48	.48	.48	.48	.48	.48
AUG 22	.30	.51	.57	.60	.62	.65	.65	.65	.66	.66	.67	.67
SEP 5	.25	.49	.50	.56	.57	.58	.59	.60	.60	.60	.60	.62
SEP 16	.25	.38	.45	.57	.70	.77	.86	.87	.87	.87	.88	1.12
SEP 17	.58	.85	.95	1.10	1.35	1.39	1.41	1.42	1.42	1.42	1.42	1.42
NOV 19	.30	.38	.39	.39	.41	.46	.46	.55	.66	.89	.89	.89
DEC 10	.35	.70	.80	.90	1.02	1.10	1.15	1.50	2.15	2.20	2.35	2.35
NEW ORLEANS												
JUL 3	.24	.37	.40	.55	.55	.55	.55	.67	.70	.70	.74	.75
JUL 13	* .27*	.45*	.49	.60*	.63	.67*	.69	.71	.73*	.76	.81*	.86
JUL 28	.27	.44	.48	.52	.55	.59	.61	.61	.61	.61	.61	.61
JUL 31	.16	.32	.33	.36	.42	.53	.57	.59	.59	.59	.59	.59
NEW ORLEANS AUDUBON												
JAN 6	.45	.73	.79	.82	1.08	1.28	1.45	1.63	1.92	2.14	2.33	2.55
JAN 8	.17	.32	.40	.50	.55	.78	1.01	1.23	1.41	1.41	1.42	1.43
JAN 23	.22	.33	.37	.40	.73	.81	1.13	1.22	1.31	1.31	1.31	1.32
FEB 24	.21	.24	.30	.36	.52	.70	.77	.87	1.13	1.43	1.50	1.50
MAR 19	.52	.92	.99	1.02	1.25	1.67	2.08	2.43	2.86	3.14	3.27	3.32
APR 6	.25	.32	.36	.44	.60	.65	.82	1.26	1.34	1.42	1.46	1.55
APR 14	.54	.95	1.05	1.25	1.56	1.76	1.95	2.33	2.40	2.40	2.40	2.50
APR 18	.32	.43	.49	.61	.77	.82	.91	1.04	1.06	1.08	1.08	1.08
APR 25	.47	.93	.96	1.08	1.58	1.61	1.71	1.82	1.82	1.82	1.82	1.82
MAY 26	.40	.49	.51	.52	.53	.53	.53	.53	.53	.53	.53	.53
MAY 31	.28	.42	.42	.42	.44	.44	.44	.46	.46	.46	.46	.46
JUN 20	.22*	.31	.36	.39	.45	.56	.86	.93	1.21	1.23	1.23	1.24
AUG 14	.65	.98	1.05	1.25	1.82	2.05	2.08	2.18	2.18	2.18	2.18	2.18
AUG 18	.24	.37	.47	.57	.70	.70	.70	.70	.70	.70	.70	.70
AUG 31	.22	.27	.47	.60	.65	.66	.66	.66	.66	.66	.66	.66
OCT 2	.27	.37	.43	.46	.49	.49	.49	.49	.53	.53	.57	.57
OCT 27	.42	.57	.62	.78	.87	.92	.92	.93	1.08	1.24	1.25	1.28
DEC 11	.45	.65	.88	.98	1.20	1.29	1.45	1.60	1.83	1.97	1.99	2.03
SHREVEPORT												
MAR 9	.28	.30	.31	.32	.33	.34	.37	.49	.50	.61	.68	.72
MAR 19	.25	.49	.52	.55	.65	.70	.78	.83	.89	.89	.94	.94
APR 5	.26	.42	.45	.65	.88	1.01	1.23	1.35	1.53	1.62	1.73	1.87
APR 24	.25	.42	.53	.57	.63	.65	.65	.78	.96	1.02	1.40	1.51
APR 26	.25	.50	.55	.65	.90	1.04	1.19	1.58	1.67	1.73	1.89	1.96
JUN 27	.25	.47	.65	.78	.88	.91	.92	.93	.93	.93	.93	.93
AUG 16	.38	.58	.70	.73	.91	1.09	1.14	1.44	1.50	1.53	1.53	1.54
AUG 18	.17	.34	.36	.40	.54	.66	.95	1.01	1.04	1.06	1.46	1.62
SEP 27	.39	.71	.77	.79	.81	.83	.84	.85	.85	.89	.94	.95
NOV 19	.40	.44	.45	.47	.51	.52	.53	.54	.57	.62	.67	.69
MAINE												
CARIBOU												
MAY 9	.12	.20	.26	.36	.51	.61	.69	.76	.82	.85	.89	.95
PORTLAND												
JUN 24	.39	.53	.59	.61	.75	1.02	1.03	1.04	1.10	1.14	1.16	1.16
JUL 14	.22	.36	.54	.72	.82	.86	.91	.96	1.01	1.01	1.01	1.01
MARYLAND												
BALTIMORE												
JUN 15	.25	.31	.31	.31	.31	.31	.31	.31	.31	.31	.31	.31
JUN 27	.26	.28	.35	.38	.60	.60	.60	.60	.60	.60	.60	.60
AUG 7	.35	.43	.50	.66	.79	.80	.80	.80	.80	.80	.80	.80
BALTIMORE U												
JUL 3	.25	.47	.50	.60	.65	.65	.68	.68	.68	.69	.69	.69
DEC 26	.30	.54	.67	.71	.80	.86	.86	.86	.86	.86	.86	.86
FREDERICK						NONE						
WASHINGTON U												
MAY 13	.50	.72	.80	.90	1.00	1.05	1.05	1.10	1.15	1.25	1.25	1.25
MAY 17	.25	.38	.40	.41	.45	.45	.45	.45	.45	.45	.45	.45
MASSACHUSETTS												
BOSTON												
JUN 20	.25	.45	.55	.64	.78	.83	.85	.85	.86	.87	.87	.87
JUL 1	.26	.40	.43	.50	.66	.74	.77	.92	1.05	1.07	1.08	1.08
JUL 8	.15	.30	.32	.38	.42	.42	.42	.42	.42	.42	.42	.42
AUG 5	.20	.37	.39	.42	.44	.44	.44	.44	.44	.44	.44	.44
AUG 26	.40	.60	.64	.66	.68	.70	.70	.70	.70	.70	.70	.70
NANTUCKET												
JUL 29	.21	.32	.42	.54	.79	.91	.96	1.01	1.06	1.11	1.13	1.27
PITTSFIELD												
AUG 8	.31	.37	.39	.42	.45	.47	.47	.47	.47	.47	.47	.47
MICHIGAN												
ALPENA												
MAY 8	.25	.37	.42	.56	.64	.74	.78	.81	.83	.88	.90	.91
JUN 9	.26	.34	.36	.37	.39	.48	.49	.50	.51	.51	.51	.51
JUL 11	.52	.58	.61	.63	.72	.76	.76	.76	.76	.76	.76	.76
AUG 2	.31	.39	.40	.40	.40	.40	.42	.45	.48	.49	.50	.50
AUG 3	.33	.55	.62	.66	.67	.69	.71	.76	.79	.82	.84	.86

M No record

EXCESSIVE SHORT DURATION RAINFALL

Station and date	Maximum precipitation in inches (5 to 180 minutes)											
	5	10	15	20	30	45	60	80	100	120	150	180
MICHIGAN												
ALPENA												
SEP 3	.27	.38	.45	.47	.48	.48	.48	.48	.48	.50	.68	.77
DETROIT												
JUL 25	.18	.28	.35	.42	.69	.86	1.06	1.16	1.16	1.16	1.16	1.16
AUG 2	.31	.48	.50	.51	.52	.55	.59	.71	.72	.72	.72	.72
AUG 11	.28	.39	.45	.54	.76	.95	1.00	1.02	1.02	1.04	1.06	1.66
AUG 22	.26	.41	.51	.54	.56	.57	.58	.59	.81	.85	.86	1.08
DETROIT M WAYNE CO												
JUN 7	*.45*	.80	.83	.83	.85	1.14	1.15	1.18	1.20	1.21	1.21	1.21
AUG 11	.33	.55	.80	1.00	1.35	1.50	1.50	1.50	1.53	1.54	1.55*	2.30
DETROIT WILLOW RUN												
MAY 8	.26	.35	.37	.45	.51	.58	.63	.64	.64	.64	.76	.80
JUN 7	.30	.47	.60	.80	1.02	1.06	1.06	1.06	1.06	1.06	1.06	1.06
JUL 12	.28	.43	.50	.58	.62	.62	.64	.64	.64	.65	.67	.67
AUG 11	.40	.55	.64	.78	1.00	1.11	1.19	1.25	1.26	1.26	1.27	1.55
AUG 22	.30	.53	.60	.65	.69	.71	.74	.74	.74	.74	.81	.98
FLINT												
MAY 8	.37	.47	.50	.63	.84	1.05*	1.25	1.36	1.45*	1.49	1.50*	1.51
JUN 15	.17	.31	.38	.45	.56	.63	.77	.86	1.02	1.09	1.15	1.30
JUN 19	.38	.45	.47	.50	.53	.55	.55	.55	.55	.55	.55	.55
JUL 2	.26	.37	.40	.40	.40	.40	.40	.40	.40	.40	.40	.40
JUL 11	*.62*	.90*	.97	1.03*	1.32	1.41*	1.45	1.54	1.58*	1.59	1.61*	1.62
GRAND RAPIDS												
MAY 8	.19	.30	.36	.39	.41	.54	.73	.75	.76	.77	.85	.88
JUN 15	.42	.63	.68	.70	.84	.93	.97	1.16	1.50	1.66	1.76	1.80
JUN 22	.18	.30	.38	.46	.53	.56	.60	.66	.67	.67	.67	.67
AUG 20	.27	.35	.39	.40	.43	.49	.55	.55	.55	.55	.55	.64
HOUGHTON LAKE												
JUL 20	*.33*	.41*	.44	.48*	.49	.51*	.55	.55	.55*	.55	.55*	.55
AUG 3	*.35*	.50*	.63	.70*	.78	.81	.82	.83	.83	.83	.83	.83
AUG 28	.35	.47	.55	.58	.60	.60	.60	.60	.60	.60	.60	.60
SEP 21	.13	.23	.30	.40*	.60	.85*	1.08	1.20	1.28*	1.28	1.28*	1.28
LANSING						NONE						
MARQUETTE U												
JUL 24	.28	.49	.53	.59	.75	.88	.92	.94	1.02	1.32	1.58	1.75
AUG 2	.29	.55	.79	1.03	1.36	1.45	1.46	1.46	1.46	1.46	1.46	1.46
SEP 3	.27	.41	.46	.50	.53	.53	.53	.53	.54	.54	.54	.54
MUSKEGON												
AUG 11	.28	.32	.39	.43	.44	.59	.66	.67	.67	.67	.67	.67
SEP 10	.25	.37	.46	.49	.50	.66	.74	.76	.77	.78	.79	.79
SEP 20	.28	.47	.48	.48	.48	.48	.49	.49	.58	.58	.59	.59
SAULT STE MARIE												
MAY 24	.27	.46	.48	.56	.66	.72	.75	.75	.75	.79	.79	.79
JUL 2	.29	.38	.40	.47	.58	.62	.62	.62	.62	.62	.62	.62
AUG 1	.21	.33	.40	.50	.54	.59	.81	.86	.90	.92	1.02	1.03
AUG 2	.26	.28	.28	.28	.28	.30	.30	.30	.30	.30	.30	.30
NOV 15	.16	.31	.33	.34	.36	.36	.36	.39	.50	.58	.63	.65
MINNESOTA												
DULUTH												
MAY 4	.20	.36	.40	.52	.53	.70	1.03	1.04	1.04	1.04	1.04	1.04
MAY 6	.24	.39	.48	.51	.62	.73	.75	.95	1.00	1.07	1.07	1.07
MAY 23	.27	.45	.53	.62	.72	.89	.91	.92	.92	1.03	1.10	1.10
JUN 9	.22	.39	.48	.56	.66	.74	.80	.92	.95	.95	1.00	1.01
JUL 24	.28	.52	.67	.70	.70	.70	.70	.70	.70	.70	.70	.70
AUG 10	.24	.41	.52	.64	.77	.87	1.02	1.10	1.11	1.12	1.12	1.13
AUG 20	.22	.42	.54	.60	.65	.77	.83	1.35	1.49	1.54	1.57	1.57
SEP 6	.28	.38	.46	.58	.64	.78	.82	.92	1.26	1.27	1.37	1.38
SEP 7	.40	.58	.64	.86	.88	.90	.91	.92	.96	1.03	1.21	1.32
SEP 26	.24	.40	.50	.55	.57	.59	.60	.60	.63	.65	.69	.71
INTERNATIONAL FALLS												
JUN 8	.45	.67	.74	.89	.90	.90	.91	.91	1.33	1.65	1.65	1.65
JUN 9	.36	.55	.61	.93	1.01	1.06	1.15	1.31	1.41	1.51	1.51	1.52
JUL 17	.22	.38	.40	.42	.45	.45	.45	.45	.45	.45	.45	.45
AUG 2	.28	.56	.67	.87	1.18	1.28*	1.53	1.58	1.60	1.60	1.61	1.69
MINNEAPOLIS												
APR 20	.15	.28	.40	.43	.45	.49	.54	.60	.62	.62	.64	.64
MAY 23	.48	.84	.93	1.02	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03
JUL 11	.28	.42	.44	.47	.49	.49	.59	.60	.62	.69	.75	.75
AUG 29	.42	.81	.98	1.17	1.50	1.88	1.96	2.04	2.05	2.05	2.05	2.05
SEP 7	.25	.33	.42	.43	.52	.60	.72	.86	1.00	1.06	1.12	1.23
SEP 9	.26	.39	.41	.43	.44	.44	.44	.46	.47	.47	.51	.54
ROCHESTER												
SEP 3	.20	.30	.40	.56	.70	.80	.80	.82	.84	.84	.84	.84
SEP 6	.23	.30	.32	.34	.35	.36	.40	.42	.42	.43	.44	.44
SEP 7	.56	.95	.99	1.04	1.10	1.18	1.24	1.34	1.98	2.12	2.18	2.20
NOV 3	.25	.28	.39	.40	.41	.41	.53	.53	.53	.53	.53	.53
ST CLOUD												
MAY 5	.23	.33	.35	.36	.38	.40	.40	.40	.40	.40	.40	.40
JUL 10	.30	.37	.44	.56	.69	.69	.70	.70	.77	.77	.78	.81
JUL 18	.13	.26	.30	.38	.54	.56	.56	.56	.56	.56	.56	.56
AUG 27	.31	.46	.55	.65	.88	1.04	1.25	1.37	1.55	1.63	1.66	1.67
AUG 29	.30	.59	.66	.88	1.20	1.73	1.80	1.95	1.98	2.00	2.02	2.02
ST PAUL						NONE						
MISSISSIPPI												
JACKSON												
JAN 8	.26	.33	.39	.42	.52	.54	.61	.70	.73	.86	1.10	1.19
JAN 24	.33	.40	.42	.44	.46	.47	.52	.53	.60	.64	.75	.77
MAR 3	*.77*	1.54*	2.00	2.15*	2.20	2.20	2.22	2.22	2.22	2.22	2.22	2.22
MAR 14	.25	.38	.39	.48	.52	.80	.85	.95	1.15	1.38	1.44	1.50
APR 6	.48	.90	1.02	1.12	1.27	1.35	1.38	1.49	1.49	1.55	1.60	1.67
APR 13	.34	.65	.80	.95	1.38	1.50	1.55	1.70	1.73	1.74	1.83	1.90
APR 24	.15	.27	.31	.42	.54	.66	.70	.72	.74	.79	.84	.89
APR 25	.23	.40	.46	.50	.59	.61	.72	.81	.82	.90	1.05	1.09
APR 26	.21	.31	.33	.38	.49	.62	.78	.84	.93	.97	1.01	1.12
MAY 31	.28	.50	.54	.56	.57	.58	.63	.64	.64	.64	.64	.64

Station and date	Maximum precipitation in inches (5 to 180 minutes)											
	5	10	15	20	30	45	60	80	100	120	150	180
MISSISSIPPI												
JACKSON												
JUN 12	.27	.40	.40	.40	.40	.40	.40	.40	.40	.40	.40	.40
JUN 24	.24	.35	.38	.41	.42	.43	.43	.44	.44	.44	.44	.44
JUN 30	.20	.32	.37	.45	.62	.63	.63	.63	.63	.63	.63	.63
JUL 1	.33	.41	.42	.42	.43	.51	.56	.56	.56	.56	.56	.59
JUL 9	.30	.43	.52	.65	.78	.81	.85	.97	1.14	1.17	1.32	1.43
JUL 12	.20	.30	.39	.41	.41	.41	.41	.41	.41	.41	.41	.41
JUL 15	.20	.30	.32	.36	.43	.44	.46	.46	.46	.46	.46	.46
AUG 2	.25	.45	.68	.52	.70	.73	.75	.88	1.00	1.01	1.03	1.03
AUG 7	.35	.60	.75	1.00	1.18	1.20	1.33	1.35	1.45	1.47	1.47	1.47
AUG 17	.23	.41	.50	.61	.85	.93	1.08	1.18	1.23	1.25	1.31	1.36
AUG 23	.30	.39	.40	.40	.40	.41	.41	.41	.41	.41	.41	.41
SEP 18	.24	.43	.55	.65	.77	.90	1.12	1.39	1.50	1.51	1.53	1.53
SEP 28	.20	.35	.46	.56	.82	.87	.87	.88	.88	.88	.88	.91
OCT 4	.16	.31	.37	.41	.60	.85	1.09	1.39	1.59	1.78	2.31	2.70
NOV 19	.25	.40	.45	.48	.49	.52	.53	.56	.56	.58	.64	.74
NOV 28	.35	.65	.71	.83	1.16	1.32	1.52	1.96	2.35	2.47	2.70	2.84
DEC 11	.34	.58	.70	.88	1.05	1.25	1.45	1.47	1.55	1.65	1.78	1.87
DEC 30	.30	.53	.63	.65	.70	.75	.76	1.23	1.26	1.27	1.32	1.36
MERIDIAN												
MAR 2	.39	.58	.63	.69	.80	.92	1.08	1.30	1.49	1.70	1.91	2.06
MAR 14	.28	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30
APR 5	.22	.31	.38	.52	.73	.97	1.22	1.35	1.57	1.75	2.18	2.33
APR 6	.27	.47	.48	.51	.53	.56	.71	.82	1.04	1.16	1.30	1.43
APR 7	.18	.32	.35	.41	.53	.64	.73	.84	.85	.86	.89	.89
APR 13	.29	.44	.56	.78	1.10	1.43	1.53	1.56	1.58	1.63	1.68	1.70
APR 24	.26	.40	.46	.50	.54	.56	.60	.63	.63	.63	.68	.70
APR 25	.28	.53	.67	.78	1.08	1.63	M	M	M	M	M	M
APR 26	.28	.46	.51	.54	.65	.70	.94	1.01	1.04	1.04	1.04	1.04
JUN 22	.22	.32	.38	.52	.72	.82	.95	1.04	1.06	1.06	1.06	1.06
JUN 23	.28	.54	.66	.73	1.12	1.45	1.45	1.45	1.48	1.48	1.55	1.55
JUN 28	.28	.33	.35	.35	.35	.35	.36	.36	.36	.36	.36	.36
JUN 29	.18	.30	.33	.35	.37	.38	.44	.57	.66	.68	.70	.72
JUN 30	.28	.50	.57	.62	.70	.72	.72	.72	.72	.72	.72	.72
JUL 21	.18	.32	.34	.34	.45	.56	.60	.60	.60	.60	.60	.60
JUL 24	.33	.56	.63	.69	.71	.72	.72	.72	.72	.95	.95	.95
JUL 31	.27	.52	.74	.83	.84	1.07	1.07	1.10	1.10	1.10	1.10	1.10
OCT 4	.17	.32	.34	.36	.37	.42	.60	.72	.83	.90	1.16	1.43
NOV 24	.12	.23	.30	.40	.52	.66	.80	.91	1.12	1.21	1.45	1.57
NOV 28	.38	.54	.58	.66	.78	.83	.88	.94	1.08	1.18	1.23	1.25
DEC 3	.28	.53	.66	.73	.92	1.01	1.04	1.07	1.14	1.19	1.39	1.54
DEC 11	.27	.43	.57	.72	.83	1.01	1.24	1.57	1.77	1.82	1.94	2.07
DEC 31	.29	.48	.57	.67	1.05	1.22	1.56	1.71	1.93	1.97	2.08	2.22
VICKSBURG U												
JUL 9	.39	.75	1.01	1.20	1.61	1.91	2.01	2.19	2.33	2.61	2.66	2.68
JUL 12	.45	.74	.92	1.10	1.33	1.34	1.34	1.34	1.34	1.34	1.34	1.34
JUL 29	.14	.27	.39	.44	.51	.56	.57	.57	.57	.57	.57	.57
AUG 22	.29	.45	.52	.57	.64	.74	.96	1.16	1.20	1.32	1.35	1.37
SEP 5	.26	.41	.42	.42	.42	.42	.42	.42	.42	.42	.42	.42
SEP 28	.19	.27	.35	.44	.53	.62	.88	1.13	1.19	1.19	1.19	1.28
NOV 19	.18	.35	.42	.45	.47	.47	.48	.51	.54	.56	.60	.66
DEC 10	.36	.45	.48	.53	.67	.71	.76	.88	.97	1.02	1.12	1.26
DEC 30	.29	.36	.38	.41	.61	.77	.84	1.07	1.37	1.39	1.40	1.46
MISSOURI												
COLUMBIA												
APR 3	.40	.48	.58	.62	.70	.77	.80	.80	.80	.80	.80	.80
MAY 26	.28	.37	.40	.43	.45	.49	.58	.60	.60	.60	.60	.60
MAY 26	.28	.44	.58	.59	.86	1.00	1.02	1.04	1.04	1.05	1.07	1.11
JUL 11	.22	.34	.45	.50	.77	1.03	1.12	1.20	1.27	1.30	1.31	1.32
JUL 23	.20	.35	.39	.41	.44	.45	.45	.45	.45	.45	.45	.45
NOV 27	.36	.40	.58	.68	.69	.70	.72	.73	.74	.75	.75	.75
KANSAS CITY												
APR 20	.21	.40	.58	.59	.60	.60	.60	.60	.60	.60	.60	.60
MAY 24	.25	.40	.56	.61	.81	1.06	1.26	1.54	1.66	1.68	1.68	1.68
MAY 26	.14	.27	.39	.47	.62	.85	.95	.96	.96	.96	.98	1.00
MAY 27	.23	.40	.43	.44	.46	.47	.56	.77	.78	.79	.81	.81
JUN 11	.22	.41	.48	.52	.57	.59	.61	.61	.61	.61	.61	.61
JUN 14	.21	.37	.48	.56	.67	.87	.99	1.05	1.12	1.15	1.16	1.16
JUN 18	.28	.46	.53	.60	.62	.64	.83	.85	.85	.85	.85	.85
JUL 4	.30	.46	.56	.58	.60	.61	.62	.62	.62	.63	.63	.63
E AUG 20	.35	.48	.55	.62	.70	.99	1.08	1.20	1.24	1.29	1.58	1.61
SEP 26	.17	.33	.46	.56	.60	.76	.98	.98	.98	.98	.98	.98
NOV 15	.22	.37	.46	.48	.52	.62	.62	.62	.62	.62	.72	.72
NOV 15	.14	.25	.33	.42	.51	.62	.84	1.07	1.32	1.43	1.47	1.48
ST JOSEPH												
APR 20	.35	.49	.49	.50	.51	.52	.55	.60	.60	.64	.64	.64
JUN 14	.36	.70	.72	.73	.76	.80	.89	.95	1.00	1.04	1.08	1.09
JUN 21	.30	.60	.80	.95	1.05	1.25	1.65	1.69	1.70	1.71	1.73	1.73
JUN 21	.50	.85	1.18	1.33	1.55	2.05	2.43	2.90	3.23	3.38	3.69	3.80
AUG 20	.65	1.05	1.35	1.53	1.59	1.63	1.65	1.66	1.75	1.76	1.84	1.84
AUG 29	.38	.45	.54	.68	.80	.80	.85	.86	.86	.86	.86	.88
SEP 3	.25	.40	.55	.68	.83	1.03	1.11	1.15	1.15	1.15	1.15	1.15
SEP 5	.20	.35	.35	.36	.36	.38	.45	.53	.58	.63	.66	.66
ST LOUIS												
APR 24	.25	.42	.47	.51	.58	.59	.59	.60	.66	.66	.68	.68
MAY 26	.28	.41	.50	.55	.56	.57	.62	.63	.64	.64	.65	.65
JUN 14	.22	.35	.54	.55	.56	.56	.56	.56	.60	.60	.60	.60
JUL 11	.35	.56	.76	.96	1.25	1.39	1.56	1.86	2.00	2.32	2.50	2.54
JUL 21	.32	.37	.38	.38	.38	.39	.41	.41	.41	.41	.41	.41
AUG 21	.27	.33	.35	.40	.51	.62	.71	.82	.94	.97	1.37	1.50
SEP 26	.22	.28	.32	.36	.48	.65	.75	.76	.76	.76	.77	.77
NOV 27	.21	.35	.40	.49	.60	.82	.92	1.32	1.40	1.46	1.52	1.66
SPRINGFIELD												
MAY 24	.10	.20	.30	.35	.55	.60	.85	1.02	1.05	1.07	1.07	1.07
JUN 11	.28	.46	.62	.69	.77	.85	.87	.87	.87	.87	.87	.87
JUN 12	.16	.25	.35	.43	.46	.70	.82	.91	1.01	1.08	1.17	1.27
AUG 21	.26	.37	.41	.42	.43	.63	.69	.69	.70	.70	.70	.70
AUG 28	.14	.22	.26	.38	.48	.68	.76	.94	.96	.97	.99	1.04
MONTANA												
BILLINGS						NONE						
GLASGOW						NONE						
GREAT FALLS						NONE						

E Estimated
M No record

EXCESSIVE SHORT DURATION RAINFALL

Station and date	Maximum precipitation in inches (5 to 180 minutes)											
	5	10	15	20	30	45	60	80	100	120	150	180
MONTANA												
HAVRE												
JUL 15	.27	.28	.28	.28	.29	.31	.32	.33	.33	.33	.33	.33
HELENA						NONE						
KALISPELL						NONE						
MILES CITY						NONE						
MISSOULA						NONE						
NEBRASKA												
GRAND ISLAND												
JUN 11	.20	.35	.45	.48	.55	.63	.64	.65	.65	.65	.65	.65
JUN 14	.29	.36	.38	.39	.40	.41	.42	.43	.43	.43	.43	.43
JUL 7	.33	.59	.74	.95	1.12	1.20	1.22	1.24	1.25	1.25	1.25	1.25
AUG 10	.30	.32	.32	.32	.32	.32	.32	.32	.32	.32	.32	.32
AUG 19	.43	.58	.63	.73	.77	1.01	1.08	1.12	1.17	1.20	1.21	1.24
LINCOLN U						NONE						
NORFOLK												
MAY 5	.45	.70	.86	.96	1.05	1.15	1.25	1.33	1.35	1.35	1.35	1.35
JUN 14	.26	.29	.33	.34	.37	.38	.39	.39	.39	.39	.39	.39
JUN 14	.17	.31	.44	.53	.75	.93	1.04	1.09	1.17	1.21	1.23	1.25
JUN 16	.45	.80*	1.13	1.43*	1.98	2.18*	2.31	2.31	2.31	2.31	2.31	2.31
JUN 21	.35	.45	.50	.58	.78	.79	.79	.79	.79	.81	.81	.81
JUN 22	.32	.61	.75	.83	1.03	1.26	1.56	1.60	1.71	1.75	1.75	1.75
JUL 2	.25	.28	.30	.30	.30	.36	.38	.40	.40	.40	.40	.40
AUG 20	.25	.37	.43	.59	.64	.69	.69	.88	.93	.95	.96	.99
AUG 29	.47	.63	.71	.73	.74	.74	.74	.74	.74	.74	.74	.74
NORTH PLATTE												
JUN 12	.37	.58	.69	.75	.81	.82	.83	.84	.84	.84	.84	.84
JUN 19	.40	.64	.70	.70	.70	.70	.70	.70	.70	.70	.70	.70
JUN 22	.51	.80	.93	1.00	1.16	1.20	1.30	1.35	1.39	1.40	1.45	1.45
JUL 7	.37	.62	.62	.62	.62	.62	.62	.62	.62	.62	.63	.63
JUL 10	.20	.34	.45	.49	.53	.53	.53	.53	.53	.53	.53	.53
JUL 10	* .85*	1.25*	1.65	2.05*	2.45	2.55	2.59	2.60	2.62	2.62	2.62	2.62
AUG 16	.28	.42	.68	.73	.76	.77	.79	.81	.82	.82	.82	.82
AUG 19	.27	.50	.53	.61	.74	.90	.90	.97	1.00	1.00	1.01	1.01
OMAHA												
APR 20	.20	.38	.41	.47	.49	.56	.56	.57	.57	.57	.57	.57
APR 20	.25	.34	.39	.42	.42	.44	.45	.50	.53	.55	.55	.55
MAY 7	.35	.59	.83	.92	1.08	1.16	1.55	1.60	1.62	1.62	1.62	1.62
MAY 7	.25	.45	.47	.50	.55	.55	.55	.61	.61	.61	.61	.61
MAY 23	.25	.30	.40	.44	.49	.56	.67	.67	.67	.67	.67	.67
JUN 8	.20	.24	.27	.34	.54	.61	.87	1.05	1.12	1.24	1.32	1.40
T JUN 14	.23	.33	.38	.46	M	M	M	M	M	M	M	.71
JUN 20	.28	.35	.43	.43	.44	.44	.44	.44	.44	.44	.44	.44
JUN 22	.29	.35	.39	.39	.39	.39	.39	.39	.39	.39	.39	.39
JUL 2	.18	.24	.29	.41	.56	.60	.74	.88	.93	.93	.93	.93
JUL 4	.16	.26	.29	.31	.53	.58	.60	.61	.62	.66	.66	.66
JUL 7	.38	.61	.71	.82	1.07	1.10	1.10	1.11	1.11	1.12	1.12	1.12
JUL 11	.20	.32	.46	.52	.61	.65	.73	.76	.78	.96	.98	.98
AUG 20	.27	.40	.46	.48	.50	.54	.56	.57	.57	.57	.58	.59
AUG 27	.28	.53	.55	.77	1.01	1.07	1.13	1.27	1.37	1.42	1.49	1.49
NOV 15	.36	.69	.82	.91	1.22	1.44	1.52	1.54	1.58	1.60	1.61	1.62
NOV 28	* .28*	.47*	.67	.79*	.91	.96*	.97	.97	.97*	1.08	1.17*	1.29
SCOTTSBLUFF						NONE						
VALENTINE												
JUL 29	.64	.76	.80	.83	1.30	1.56	1.59	1.71	1.88	1.95	1.96	1.96
NEVADA												
ELKO						NONE						
ELY						NONE						
LAS VEGAS						NONE						
RENO						NONE						
TONOPAH						NONE						
WINNEMUCCA						NONE						
NEW HAMPSHIRE												
CONCORD												
JUL 2	.25	.42	.55	.61	.70	.75	.86	.96	1.07	1.13	1.21	1.23
JUL 19	.30	.48	.62	.62	.63	.63	.63	.63	.77	.77	.77	.77
NEW JERSEY												
ATLANTIC CITY												
APR 29	.20	.32	.49	.54	.74	.96	1.02	1.12	1.20	1.23	1.30	1.37
AUG 16	.24	.38	.38	.42	.51	.71	.78	.85	.97	.99	.99	.99
SEP 30	.17	.30	.33	.50	.60	.92	1.12	1.27	1.63	1.79	1.96	2.00
NEWARK												
JUL 29	.37	.58	.66	.68	.71	.76	.77	.77	.78	.78	.79	.80
TRENTON U												
JUN 15	.26	.29	.33	.36	.43	.43	.43	.43	.55	.63	.79	.82
JUL 8	.18	.32	.44	.54	.76	1.13	1.26	1.40	1.53	1.82	2.15	2.59
JUL 13	.44	.76	.80	1.00	1.10	1.35	1.45	1.47	1.47	1.47	1.49	1.49
SEP 11	.19	.30	.41	.51	.63	.86	1.18	1.39	1.54	1.69	1.83	2.02
OCT 2	.24	.35	.38	.40	.43	.51	.59	.70	1.06	1.11	1.12	1.15
NEW MEXICO												
ALBUQUERQUE												
JUL 27	.21	.35	.48	.58	.70	.82	.88	.88	.88	.88	.88	.88
CLAYTON												
AUG 8	.25	.40	.50	.60	.85	.97	1.10	1.16	1.20	1.25	1.31	1.34

Station and date	Maximum precipitation in inches (5 to 180 minutes)											
	5	10	15	20	30	45	60	80	100	120	150	180
NEW MEXICO												
RATON												
JUL 18	.30	.58	.62	.67	.68	.68	.68	.68	.68	.68	.68	.68
AUG 7	.19	.28	.37	.47	.57	.59	.61	.61	.61	.61	.61	.61
AUG 14	.20	.38	.40	.41	.42	.43	.43	.45	.47	.49	.52	.52
ROSWELL												
JUN 13	.27	.47	.54	.67	.85	1.07	1.10	1.10	1.10	1.10	1.10	1.10
SILVER CITY												
JUL 26	.20	.32	.36	.41	.42	.43	.43	.45	.45	.45	.45	.46
JUL 31	.24	.32	.42	.49	.59	.65	.66	.69	.69	.70	.71	.72
AUG 8	.20	.35	.36	.47	.61	.66	.67	.68	.68	.68	.68	.68
AUG 11	.28	.34	.52	.63	.75	.78	.79	.79	.80	.83	.89	.91
NEW YORK												
ALBANY												
MAY 19	.17	.29	.31	.43	.45	.50	.57	.58	.58	.58	.58	.58
AUG 12	.20	.31	.38	.44	.53	.62	.68	.71	.73	.73	.74	.74
AUG 31	.25	.29	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30
BINGHAMTON												
MAY 13	.62	.73	.78	.80	.81	.82	.84	1.02	1.14	1.18	1.22	1.24
JUL 1	.49	.84	1.06	1.26	1.46	1.51	1.53	1.56	1.56	1.56	1.58	1.60
JUL 2	.21	.35	.50	.52	.53	.54	.56	.56	.56	.56	.56	.56
JUL 20	.22	.34	.42	.46	.56	.60	.61	.62	.62	.62	.62	.62
JUL 22	.18	.25	.34	.40	.46	.47	.48	.48	.48	.48	.48	.48
JUL 29	.33	.37	.39	.39	.40	.40	.40	.40	.40	.40	.40	.40
BUFFALO												
AUG 17	.18	.24	.30	.41	.43	.44	.44	.44	.59	.82	.85	.86
NEW YORK CENT PK												
JUN 19	.23	.39	.45	.54	.71	.75	.76	.76	.76	.76	.76	.76
NEW YORK LA GUARDIA												
JUN 19	.23	.40	.54	.73	.85	.87	.87	.90	.90	.90	.90	.90
JUL 29	.33	.53	.66	.79	.86	1.06	1.20	1.23	1.23	1.23	1.31	1.32
ROCHESTER												
MAY 13	.29	.42	.54	.62	.64	.65	.65	.65	.72	.76	.79*	.79
SYRACUSE												
MAY 19	.26	.40	.48	.54	.56	.57	.57	.57	.57	.57	.57	.57
JUN 26	.25	.28	.30	.38	.38	.38	.38	.38	.50	.52	.52	.52
JUL 3	.38	.45	.48	.50	.52	.57	.58	.58	.60	.60	.60	.60
JUL 12	.26	.29	.32	.36	.40	.44	.48	.48	.48	.48	.48	.48
AUG 30	.30	.42	.70	.71	.74	.76	.76	.77	.77	.77	.77	.77
NORTH CAROLINA												
ASHEVILLE												
SEP 29	* .16*	.30	.33	.40	.57	.62	.69	.78	.84	.92	1.02	1.10
OCT 4	* .14*	.27*	.33	.36*	.59	.75*	.90	1.05	1.17*	1.31	1.49*	1.67
ASHEVILLE U						NONE						
CAPE HATTERAS R												
FEB 6	.15	.29	.37	.40	.48	.61	.84	.90	.95	1.10	1.16	1.22
MAY 20	.15	.20	.35	.38	.43	.50	.54	.54	.55	.55	.55	.55
JUN 1	.25	.38	.39	.40	.51	.54	.54	.54	.54	.54	.54	.54
JUL 31	.20	.32	.42	.46	.48	.50	.51	.53	.54	.54	.54	.54
AUG 12	.30	.46	.58	.61	.64	.64	.64	.64	.64	.64	.64	.64
AUG 28	.18	.35	.40	.45	.60	.70	.73	.74	.75	.75	.75	.81
AUG 28	.37	.60	.87	1.00	1.40	1.53	1.61	1.65	1.70	1.79	1.81	1.81
AUG 30	.40	.70	.85	1.00	1.02	1.10	1.17	2.07	2.17	2.23	2.30	2.50
AUG 31	.25	.50	.67	.75	.88	.93	.97	1.03	1.31	1.38	1.42	1.43
SEP 12	.19	.36	.43	.55	.76	.85	.94	1.00	1.06	1.08	1.08	1.08
OCT 5	.20	.33	.50	.54	.74	1.02	1.38	1.71	1.94	2.18	2.29	2.38
CHARLOTTE												
JUN 1	.18	.34	.43	.45	.52	.57	.60	.62	.64	.65	.66	.68
SEP 30	.36	.68	.76	.82	.94	.98	1.01	1.04	1.05	1.05	1.06	1.06
GREENSBORO												
JUL 10	.22	.33	.42	.52	.58	.58	.63	.70	.74	.74	.75	.90
JUL 21	.20	.30	.35	.42	.54	.67	.71	.72	.74	.75	.76	.77
JUL 29	.18	.34	.45	.50	.52	.52	.54	.88	.93	.94	.95	.96
AUG 3	.31	.51	.66	.70	.70	.73	.74	.74	.74	.75	.76	.76
AUG 12	.21	.43	.46	.49	.49	.49	.49	.49	.49	.49	.49	.49
AUG 19	.21	.30	.36	.55	.72	.82	.90	.91	.91	.91	.91	.91
AUG 30	.51	.86	1.27	1.66	1.95	1.96	1.96	1.99	1.99	2.00	2.00	2.00
OCT 4	.19	.27	.42	.52	.64	.87	1.02	1.23	1.37	1.53	1.69	1.91
RALEIGH												
JUN 1	.30	.45	.48	.51	.56	.60	.64	.70	.71	.71	.71	.71
JUN 21	.48	.90	1.15	1.20	1.26	1.35	1.45	1.49	1.49	1.49	1.49	1.49
JUL 13	.30	.53	.53	.53	.54	.54	.54	.54	.54	.54	.54	.54
JUL 20	.28	.47	.49	.52	.55	.55	.55	.55	.55	.55	.55	.55
AUG 3	.27	.38	.40	.45	.53	.57	.57	.62	.97	1.04	1.05	1.09
AUG 31	.25	.50	.55	.75	.86	1.00	1.12	1.25	1.51	1.64	1.74	1.85
SEP 28	.20	.35	.38	.43	.43	.43	.43	.43	.43	.43	.43	.43
SEP 30	.25	.48	.64	.74	1.05	1.29	1.36	1.39	1.40	1.40	1.45	1.68
WILMINGTON												
MAY 28	.45	.67	.72	.77	.84	.86	.88	.88	.92	.94	.96	1.14
JUN 1	.38	.53	.61	.76	1.04	1.11	1.14	1.15	1.17	1.22	1.22	1.22
JUN 3	.22	.37	.43	.45	.45	.45	.45	.45	.45	.45	.45	.45
JUL 4	.18	.35	.40	.47	.50	.50	.50	.50	.50	.50	.50	.50
JUL 9	.13	.25	.35	.45	.57	.60	.62	.62	.64	.64	.65	.68
JUL 13	.25	.48	.53	.61	.68	.68	.68	.68	.68	.68	.68	.68
JUL 22	.25	.50	.61	.78	1.10	1.22	1.28	1.32	1.41	1.43	1.49	1.49
AUG 25	.21	.40	.42	.46	.63	.71	.72	.72	.72	.72	.72	.72
AUG 28	.16	.30	.33	.35	.40	.42	.45	.48	.52	.54	.57	.57
SEP 12	.34	.39	.42	.45	.63	.76	.94	1.07	1.34	1.39	1.44	1.44
SEP 13	.28	.36	.40	.43	.48	.58	.75	.85	.89	.92	1.14	1.20
OCT 1	.35	.60	.70	.90	1.08	1.14	1.15	1.15	1.74	1.85	1.85	1.87
OCT 4	.41	.68	.89	.99	1.36	1.65	1.96	2.18	2.33	2.47	3.02	3.04
DEC 27	.21	.38	.45	.55	.75	.82	.87	.93	.97	1.02	1.13	1.22
OCT 29	.18	.31	.42	.51	.64	.77	.89	.92	.98	.98	.98	.98
WINSTON SALEM												
JUN 13	.26	.36	.39	.39	.39	.39	.39	.39	.39	.39	.39	.39
JUN 15	.25	.37	.41	.41	.41	.42	.42	.43	.43	.43	.43	.43
JUL 10	.29	.54	.75	.88*	1.25	1.57*	1.91	2.04	2.05*	2.08	2.08*	2.33
JUL 12	.36*	.66	.77	.93	1.07	1.16	1.35	1.61	1.64	1.67	1.70	1.75

T Clock malfunction
M No record

EXCESSIVE SHORT DURATION RAINFALL

Station and date	Maximum precipitation in inches (5 to 180 minutes)											
	5	10	15	20	30	45	60	80	100	120	150	180
NORTH CAROLINA												
WINSTON SALEM												
JUL 13	.28	.37	.40	.41	.42	.44	.45	.46	.51	.52	.52	.52
AUG 3	.21	.29	.35	.36	.38	.40	.43	.45	.45	.45	.45	.45
AUG 10	.27	.30	.31	.31	.32	.34	.34	.34	.35	.37	.37	.37
AUG 30	.32	.41	.52	.54	.67	.68	.68	.68	.68	.68	.75	.86
DEC 26	.20	.29	.36	.46	.63	.85	.89	.94	.96	1.01	1.06	1.14
NORTH DAKOTA												
BISMARCK												
APR 26	.18	.33	.36	.40	.51	.62	.70	.72	.72	.72	.79	.84
JUN 11	.19	.30	.36	.40	.43	.45	.48	.51	.54	.55	.57	.62
JUN 18	.33	.44	.47	.55	.64	.71	.75	.82	.87	.92	.93	.93
JUL 5	.20	.27	.39	.52	.76	.85	.90	.92	.96	.96	.96	.96
JUL 18	.34	.60	.72	.74	.76	.78	.78	.78	.78	.78	.78	.78
DEVILS LAKE						NONE						
FARGO												
JUN 8	.19	.37	.39	.45	.48	.48	.48	.48	.48	.48	.49	.49
JUN 18	.44	.86	1.00	1.16	1.48	1.56	1.61	1.66	1.71	1.73	1.75	1.76
JUN 18	.34	.52	.54	.55	.62	.65	.65	.65	.65	.65	.65	.65
WILLISTON												
JUN 7	.14	.26	.32	.40	.58	.72	.82	.92	1.22	1.38	1.49	1.58
JUN 30	.28	.52	.56	.64	.70	.78	.78	.78	.78	.78	.78	.78
JUL 5	.46	.72	.76	.94	1.18	1.32	1.36	1.38	1.41	1.46	1.48	1.50
OHIO												
AKRON												
JUL 28	.28	.49	.60	.66	.67	.72	.79	.80	.81	.82	.82	.82
AUG 2	.39	.49	.51	.51	.56	.79	.86	.91	.92	.92	.92	1.20
AUG 3	.23	.42	.69	.70	.75	.76	.82	.83	.83	.83	1.06	1.17
CINCINNATI OBS												
MAR 4	.22	.31	.39	.47	.60	.78	.86	.97	1.05	1.06	1.12	1.22
APR 19	.24	.37	.50	.56	.60	.61	.62	.64	.67	.78	.87	.92
JUN 12	.35	.65	.80	.88	.93	.93	.93	.93	.93	1.03	1.03	1.03
JUN 18	.30	.45	.53	.58	.67	.80	.95	1.00	1.12	1.18	1.28	1.43
JUN 30	.45	.85	1.05	1.20	1.38	1.48	1.63	1.68	1.73	1.80	1.81	1.82
SEP 18	.28	.56	.63	.65	.67	.70	.71	.90	.98	1.00	1.02	1.02
CINCINNATI U												
MAR 4	.17	.32	.44	.54	.73	.90	1.04	1.19	1.26	1.27	1.29	1.39
APR 21	.26	.41	.43	.44	.44	.45	.45	.45	.53	.68	.81	.91
JUN 12	.20	.40	.43	.50	.53	.57	.68	.72	.74	.76	.76	.76
JUN 30	.25	.45	.55	.58	.72	.78	.80	1.00	1.10	1.14	1.15	1.15
JUL 21	*.40	.60	.70	.75	.75	.75	.75	.75	.75	.75	.75	.75
CLEVELAND												
MAY 24	.18	.31	.40	.46	.60	.72	.82	.97	1.09	1.09	1.09	1.09
JUN 7	.36	.48	.52	.60	.63	.63	.63	.63	.63	.63	.63	.63
JUL 28	.38	.54	.74	.98	1.20	1.30	1.36	1.40	1.44	1.48	1.50	1.51
AUG 13	.20	.30	.36	.40	.43	.51	.54	.65	.68	.70	.70	.70
OCT 2	.34	.58	.82	.90	.90	.90	.90	.90	.90	.90	.90	.90
COLUMBUS												
JUN 14	.13	.23	.31	.37	.43	.63	.78	1.03	1.23	1.29	1.29	1.29
JUN 14	.29	.45	.69	.74	.79	.79	.79	.79	.79	.79	.79	.79
JUN 23	.26	.44	.60	.76	.92	1.03	1.05	1.05	1.05	1.05	1.05	1.05
AUG 2	.35	.65	1.00	1.28	1.55	1.95	2.17	2.18	2.18	2.18	2.18	2.18
DAYTON												
MAY 12	.18	.29	.35	.40	.42	.44	.53	.61	.64	.67	.68	.68
JUN 12	.36	.60	.68	.78	.92	.97	.97	1.06	1.12	1.16	1.21	1.21
MANSFIELD												
APR 21	.32	.52	.58	.59	.60	.60	.60	.60	.60	.60	.60	.75
JUN 15	.34	.55	.58	.62	.62	.65	.65	.67	.70	.71	.74	.77
SANDUSKY U						NONE						
TOLEDO												
JUL 16	.25	.33	.35	.41	.43	.43	.43	.43	.43	.48	.50	.50
YOUNGSTOWN												
MAY 13	.25	.39	.50	.57	.68	.76	.77	.78	.79	.81	.82	.83
JUN 15	.20	.33	.34	.34	.34	.35	.49	.50	.53	.58	.74	.77
JUN 19	.20	.30	.35	.51	.60	.65	.65	.68	.70	.93	1.14	1.14
JUL 28	.27	.53	.79	.90	1.02	1.17	1.27	1.41	1.46	1.55	1.80	1.84
AUG 11	.21	.37	.46	.50	.51	.52	.54	.56	.63	.66	.70	.70
OCT 29	.38	.48	.57	.59	.66	.83	.88	.94	.96	.97	.99	.99
OKLAHOMA												
OKLAHOMA CITY												
APR 17	.19	.33	.40	.50	.60	.60	.61	.61	.61	.62	.62	.62
MAY 6	.23	.34	.34	.34	.35	.36	.37	.37	.37	.37	.37	.37
MAY 10	.55	.95	1.25	1.40	1.45	1.48	1.51	1.51	1.51	1.56	1.76	1.87
JUN 4	.25	.35	.37	.45	.47	.47	.47	.47	.47	.47	.47	.47
JUL 31	.25	.35	.36	.37	.37	.37	.37	.37	.37	.37	.37	.37
AUG 7	.15	.25	.40	.43	.55	.62	.62	.84	1.07	1.11	1.12	1.12
SEP 26	.17	.34	.36	.42	.52	.52	.52	.52	.52	.52	.52	.52
NOV 3	.15	.30	.33	.36	.40	.55	.69	.74	.85	.88	.96	.99
TULSA												
APR 4	.30	.60	.70	.78	.85	.97	1.20	1.61	2.14	2.31	2.38	2.48
MAY 10	.28	.53	.56	.67	.73	.89	.94	.99	1.00	1.00	1.15	1.21
JUN 14	.20	.37	.52	.58	.61	.63	.65	.65	.65	.65	.65	.65
JUN 15	.22	.31	.36	.42	.56	.67	.75	.79	.79	.79	.79	.79
JUN 17	.25	.42	.54	.60	.68	.73	.77	.80	.81	.82	.90	.97
JUL 26	.17	.30	.37	.48	.61	.80	.91	.98	1.02	1.02	1.02	1.02
AUG 28	.29	.57	.72	.88	1.27	1.47	1.82	1.88	1.90	1.92	1.92	1.92
AUG 29	.37	.73	.81	.90	.92	.94	.94	.94	.94	.94	.94	.95
SEP 5	.36	.61	.73	.75	.77	.78	.78	.78	.78	.78	.78	.78
SEP 22	.28	.52	.65	.75	.89	.95	.99	1.01	1.05	1.09	1.10	1.13
SEP 26	.22	.34	.36	.37	.37	.37	.37	.37	.37	.37	.37	.37
NOV 15	.24	.43	.58	.63	.76	.86	.90	.98	1.30	1.68	1.73	1.87
OREGON												
ASTORIA						NONE						
OREGON												
BURNS U						NONE						
MEDFORD												
JUL 1	.20	.39	.48	.53	.58	.60	.60	.60	.60	.60	.60	.60
PENDLETON						NONE						
PORTLAND U						NONE						
ROSEBURG						NONE						
SEXTON SUMMIT						NONE						
PACIFIC AREA												
CANTON ISLAND												
JAN 5	.23	.42	.45	.57	.90	1.08	1.18	1.29	1.32	*1.42	1.50	*1.54
JAN 13	.38	*.73	.80	.97	*1.25	1.85	*2.40	2.47	2.65	*2.71	2.82	*3.00
JAN 17	.27	.50	.55	.64	.66	.66	.66	.73	.75	.75	1.00	1.35
ENIWETOK						NONE						
JOHNSTON ISLAND												
MAR 11	.19	.33	.40	.43	.52	.66	.76	.91	1.19	1.46	1.60	1.67
MAY 25	*.35	.45	.58	.67	.94	1.06	1.13	1.16	1.19	1.19	1.19	1.19
MAY 30	.28	.35	.50	.58	.72	.91	.95	1.03	1.07	1.12	1.21	1.31
SEP 4	.25	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28
KOROR												
JAN 12	.18	.32	.35	.35	.35	.37	.63	.64	.65	.71	.71	.77
FEB 8	.21	.28	.33	.43	.49	.69	.91	1.14	1.31	1.45	1.66	1.79
FEB 12	.35	.59	.67	.74	.87	1.00	1.17	1.55	1.73	1.85	2.23	2.33
FEB 12	.14	.23	.35	.43	.57	.65	.68	.70	.70	.70	.71	.72
FEB 12	.18	.34	.45	.55	.61	.88	1.02	1.07	1.07	1.07	1.07	1.07
FEB 22	.21	.33	.39	.40	.40	.41	.41	.41	.41	.41	.41	.41
FEB 27	.21	.32	.40	.49	.66	.93	1.25	1.45	1.68	1.85	2.14	2.35
MAR 12	.18	.26	.31	.41	.55	.64	.65	.65	.65	.67	.71	.74
APR 1	.25	.34	.44	.45	.49	.51	.51	.51	.51	.52	.54	.55
APR 3	.20	.29	.35	.36	.36	.36	.36	.39	.53	.54	.54	.55
APR 13	.22	.37	.47	.53	.60	.64	.66	.67	.67	.68	.70	.71
APR 13	.25	.37	.45	.47	.49	.51	.52	.52	.52	.53	.53	.54
MAY 6	.22	.44	.62	.74	.97	1.11	1.15	1.20	1.22	1.22	1.24	1.24
MAY 10	.22	.42	.59	.71	1.04	1.26	1.38	1.45	1.45	1.46	1.47	1.47
MAY 11	.27	.38	.47	.54	.71	.98	1.33	1.59	1.82	1.93	2.45	2.79
MAY 15	.26	.46	.54	.59	.62	.62	.62	.62	.62	.62	.62	.62
MAY 21	.35	.42	.42	.42	.42	.42	.42	.42	.64	.80	.80	.80
MAY 21	.32	.53	.72	.81	1.05	1.13	1.13	1.13	1.13	1.14	1.30	1.59
MAY 27	.13	.23	.31	.38	.53	.64	.69	.76	.76	.76	.85	1.05
MAY 27	.28	.43	.57	.61	.67	.67	.88	1.08	1.08	1.08	1.09	1.15
MAY 30	.23	.38	.48	.55	.68	.77	.78	.78	.78	.78	.78	.78
JUN 18	.25	.34	.42	.51	.77	1.05	1.45	1.53	1.53	1.53	1.53	1.53
JUN 19	.16	.32	.42	.45	.46	.53	.54	.54	.55	.56	.57	.57
JUN 30	.18	.30	.41	.51	.61	.77	.88	.90	.90	.90	.90	.90
JUL 26	.28	.45	.50	.52	.57	.75	.75	.75	.75	.75	.75	.75
SEP 21	.23	.34	.43	.49	.55	.55	.63	.64	.64	.64	.64	.64
SEP 23	.25	.37	.46	.59	.84	1.09	1.23	1.30	1.36	1.38	1.41	1.41
NOV 3	.24	.47	.63	.77	.98	1.28	1.37	1.46	1.66	1.85	1.96	2.02
NOV 10	.27	.36	.42	.45	.45	.45	.45	.45	.45	.45	.45	.45
NOV 11	.19	.33	.36	.40	.40	.40	.40	.40	.40	.42	.46	.47
NOV 16	.28	.53	.70	.83	1.07	1.29	1.40	1.49	1.60	1.71	1.91	1.96
NOV 16	.31	.50	.62	.67	.68	.69	.69	.69	.69	.69	.69	.72
NOV 30	.22	.29	.37	.46	.60	.64	.67	.67	.67	.67	.67	.67
DEC 5	.22	.37	.55	.63	.68	.68	.68	.69	.70	.74	.80	.86
DEC 11	.17	.29	.41	.45	.63	.70	.95	1.10	1.17	1.28	1.55	2.03
DEC 14	.23	.35	.55	.66	.74	.77	.78	.78	.78	.80	1.17	1.38
MAJURO												
FEB 20	.27	.39	.42	.44	.45	.45	.45	.45	.45	.45	.50	.70
FEB 21	.34	.56	.84	1.04	*1.53	2.12	*2.68	3.16	3.46	3.51	3.54	3.65
MAR 5	.17	.29	.40	.46	.49	.53	.57	.65	.68	.74	.83	.92
MAR 17	.17	.25	.37	.49	.69	.89	.95	1.06	1.16	1.23	1.40	1.48
MAR 25	.17	.25	.31	.38	.56	.71	.82	1.01	1.06	1.12	1.18	1.20
APR 3	.25	.33	.34	.41	.47	.50	.50	.50	.50	.51	.51	.51
APR 18	.22	.34	.39	.43	.43	.44	.57	.60	.65	.68	.86	1.13
APR 18	.21	.41	.50	.54	.63	.76	.96	1.09	1.49	1.75	1.77	1.79
APR 27	.22	.27	.39	.52	.53	.55	.56	.58	.58	.58	.58	.58
MAY 4	.21	.32	.35	.37	.44	.45	.47	.48	.48	.48	.48	.49
MAY 6	.30	.55	.82	1.04	1.34	1.75	2.37	2.77	2.87	2.92	3.05	3.14
MAY 11	.27	.43	.57	.64	.73	.80	.95	1.05	1.06	1.15	1.61	1.86
MAY 17	.26	.42	.43	.48	.50	.72	.76	1.00	1.25	1.25	1.36	1.61
MAY 23	.23	.36	.54	.68	.96	1.19	1.49	1.61	1.94	2.33	2.65	2.86
JUN 8	.16	.23	.30	.40	.46	.46	.46	.46	.46	.46	.46	.46
JUN 12	.34	.52	.61	.70	.81	.89	.96	1.03	1.16	1.43	1.69	1.73
JUN 20	.24	.46	.60	.65	.73	.81	.83	.84	.89	.90	.92	1.24
JUN 22	.12	.20	.27	.35	.50	.63	.73	.78	.82	.84	.84	.86
SEP 11	.22	.39	.50	.63	.63	.63	.63	.63	.63	.63	.63	.80
SEP 11	.26	.33	.33	.33	.33	.33	.33	.33	.33	.33	.33	.33
SEP 12	.22	.33	.42	.54	.55	.55	.55	.55	.55	.55	.55	.55
SEP 13	.19	.29	.40	.50	.59	.63	.77	.78	.78	.79	.84	.86
SEP 16	.27	.33	.41	.42	.42	.43	.43	.43	.43	.43	.43	.43
SEP 16	.22	.31	.34	.34	.35	.35	.35	.35	.36	.36	.36	.36
SEP 17	.33	.52	.56	.56	.57	.57	.58	.59	.60	.64	.99	1.11
SEP 20	.28	.41	.53	.63	.83	1.03	1.18	1.31	1.40	1.53	1.61	1.70
SEP 28	.28	.46	.55	.66	.83	.95	1.11	1.23	1.40	1.46	1.59	1.79
OCT 5	.30	.44	.48	.54	.57	.73	1.05	1.21	1.24	1.25	1.25	1.26
OCT 7	.25	.36	.38	.44	.50	.66	.67	.67	.88	1.00	1.20	1.22
OCT 10	.31	.50	.69	.81	1.20	1.62	2.09	2.63	2.87	2.94	2.95	2.95
OCT 11	.48	.75	.98	1.19	1.64	1.78	1.78	1.79	1.80	1.83	1.88	1.92
OCT 14	.30	.53	.70	.94	1.24	1.44	1.47	1.47	1.47	1.48	1.48	1.48
OCT 14	.20	.34	.46	.60	.70	.75	.76	.76	.76	.77	.77	.77
OCT 16	.33	.50	.51	.51	.51	.51	.51	.51	.51	.51	.51	.51
OCT 22	.26	.29	.30	.30	.30	.30	.31	.31	.31	.31	.33	.33
OCT 23	.34	.68	.83	.92	1.07	1.46	1.75	2.16	2.34	2.67	2.84	2.88
NOV 1	.17	.29	.41	.43	.44	.45	.50	.76	.86	.94	1.00	1.02
NOV 2	.33	.50	.80	.93	.94	.95	.95	.95	1.09	1.18	1.19	1.20
NOV 4	.21	.33	.44	.55	.79	1.10	1.35	1.58	1.68	1.74	1.82	1.85
NOV 7	.27	.36	.43	.49	.53	.60	.78	.93	.94	.95	1.15	1.49
NOV 15	.26	.35	.41	.50	.61	.62	.62	.62	.62	.62	.78	.78
NOV 17	.28	.46	.63	.81	1.19	1.59	1.93	2.03	2.11	2.23	2.35	2.39
NOV 30	.44	.72	*1.02	1.14	1.22	1.25	1.25	1.25	1.25	1.26	1.26	1.26
DEC 1	.41	.66	.90	.91	.91	.91	.92	.94	.94	.94	.96	.96
DEC 6	.40	.41	.41	.41	.41	.50	.51	.51	.52	.54	.56	.57
DEC 9	.25	.29	.29	.31	.31	.31	.31	.31	.31	.31	.31	.31
DEC 26	.28	.41	.43	.43	.48	.77	.77	.77	.77	.77	.77	.77
MARCUS ISLAND												
JAN 5	.14	.27	.39	.47	.57	.64	.66	.67	.67	.67	.67	.67

EXCESSIVE SHORT DURATION RAINFALL

Station and date		Maximum precipitation in inches (5 to 180 minutes)											
		5	10	15	20	30	45	60	80	100	120	150	180
PACIFIC AREA													
MARCUS ISLAND													
JAN	16	.18	.33	.46	.51	.53	.53	.56	.56	.56	.56	.56	.56
MAR	6	.45	.69	.76	.81	.81	.81	.81	.81	.81	.89	.92	.93
MAY	21	.18	.27	.32	.34	.51	.64	.88	1.12	1.38	1.53	1.87	2.07
JUN	2	.31	.43	.46	.47	.55	.63	.68	.68	.68	.68	.68	.68
JUN	30	.26	.35	.36	.39	.41	.45	.63	.66	.67	.68	.68	.81
JUL	5	.26	.41	.47	.55	.62	.64	.64	.64	.64	.64	.64	.64
JUL	22	.26	.38	.48	.55	.60	.65	.67	.69	.70	.87	.92	1.02
NOV	18	.31	.58	.83	.88	.92	.99	1.03	1.03	1.04	1.08	1.46	1.55
NOV	18	.26	.40	.51	.63	.66	.67	.67	.67	.67	.68	.68	.68
NOV	20	.21	.32	.38	.46	.62	.87	.88	.88	.89	.89	.89	.95
NOV	23	.20	.30	.35	.36	.41	.45	.51	.58	.80	.93	.99	1.01
DEC	10	.24	.33	.36	.36	.36	.36	.36	.36	.36	.36	.36	.36
PONAPE													
FEB	4	.12	.21	.27	.32	.44	.70	.83	.93	1.04	1.16	1.18	1.37
FEB	6	.29	.56	.82	1.05	1.32	1.58	2.02	2.30	2.50	2.99	3.74	*4.71
FEB	21	.37	.57	.62	.68	.86	1.08	1.23	1.46	1.61	1.75	1.78	1.85
FEB	21	.30	.42	.53	.57	.65	.69	.72	.72	.72	.72	.77	.77
FEB	22	.26	.50	.69	.85	1.07	1.24	1.24	1.33	1.39	1.39	1.74	1.75
FEB	22	.38	.60	.67	.75	.86	.88	.93	1.01	1.20	1.30	1.39	1.46
FEB	22	.30	.51	.69	.83	.94	1.16	1.39	1.68	1.78	1.82	2.26	2.30
MAR	8	.15	.29	.38	.46	.49	.51	.56	.58	.60	.65	.80	.80
MAR	16	.18	.25	.32	.37	.43	.54	.71	1.01	1.20	1.28	1.39	1.56
MAR	19	.23	.42	.59	.76	.93	1.11	1.24	1.27	1.36	1.38	1.48	1.53
MAR	19	.23	.33	.41	.56	.64	.75	.82	.83	1.11	1.27	1.29	1.62
MAR	19	.34	.40	.40	.40	.40	.40	.44	.74	.80	.80	1.19	1.20
MAR	21	.30	.46	.51	.57	.68	.75	1.00	1.09	1.16	1.19	1.21	1.23
APR	2	.28	.42	.51	.53	.53	.53	.56	.57	.57	.60	.60	.62
APR	5	.20	.27	.33	.37	.57	.59	.61	.63	.93	1.00	1.09	1.10
APR	9	.38	.69	.95	1.04	1.16	1.27	1.38	1.47	1.55	1.58	1.64	1.67
APR	20	.15	.29	.39	.47	.50	.53	.56	.59	.59	.59	.59	.59
APR	22	.22	.33	.44	.52	.61	.62	.63	.65	.66	.66	.66	.66
APR	24	.30	.54	.59	.70	.82	.84	.84	.84	.90	1.01	1.10	1.11
MAY	1	.21	.35	.42	.49	.57	.59	.60	.60	.60	.60	.60	.64
MAY	7	.40	.45	.68	.87	.93	.94	.95	.99	1.00	1.00	1.00	1.00
MAY	10	.24	.36	.43	.44	.44	.44	.44	.44	.44	.49	.65	.78
MAY	12	.26	.35	.41	.42	.58	.67	.73	.81	.82	.83	.85	.88
MAY	13	.31	.46	.55	.65	.86	.97	1.09	1.13	1.14	1.15	1.18	1.19
MAY	15	.16	.24	.31	.35	.41	.68	.75	.83	.92	1.00	1.18	1.25
JUN	7	.24	.35	.43	.44	.45	.46	.46	.66	.67	.67	.70	.72
JUN	10	.38	.43	.45	.51	.57	.57	.57	.91	.99	1.06	1.11	1.11
JUN	18	.20	.31	.39	.49	.54	.62	.62	.62	.62	.62	.62	.62
JUN	19	.32	.50	.56	.66	.72	.72	.72	.78	1.07	1.22	1.35	1.35
JUN	21	.19	.29	.35	.36	.36	.36	.36	.36	.36	.36	.36	.36
JUN	21	.29	.32	.42	.51	.53	.54	.70	.81	.84	.84	.85	.85
JUN	27	.27	.32	.38	.39	.41	.41	.41	.41	.41	.41	.41	.41
JUL	6	.15	.23	.32	.39	.52	.62	.71	.75	.79	.81	.81	.81
JUL	11	.21	.34	.41	.41	.41	.43	.44	.46	.52	.59	.62	.63
JUL	20	.38	.59	.74	.91	1.18	1.33	1.40	1.42	1.42	1.54	1.64	1.64
JUL	20	.17	.30	.34	.36	.38	.38	.38	.38	.38	.38	.59	.60
JUL	24	.27	.41	.50	.51	.52	.55	.60	.63	.65	.65	.66	.67
JUL	27	.33	.53	.78	.98	1.19	1.50	1.64	1.80	1.82	1.85	1.90	1.95
JUL	29	.23	.42	.55	.62	.67	.69	.70	.70	.70	.70	.70	.70
JUL	29	.23	.37	.43	.48	.54	.55	.56	.56	.56	.56	.97	1.11
SEP	3	.22	.34	.45	.53	.64	.71	.73	.73	.73	.73	.73	.73
SEP	7	.27	.36	.38	.45	.48	.49	.56	.56	.56	.56	.56	.56
SEP	8	.46	.64	.67	.71	.75	.76	.77	.79	.79	.79	.79	.79
SEP	8	.33	.52	.62	.63	.66	.68	.68	.70	.71	.71	.73	.74
SEP	10	.22	.31	.33	.34	.34	.34	.34	.34	.34	.34	.34	.34
SEP	23	.14	.25	.34	.43	.46	.46	.47	.47	.47	.47	.47	.47
SEP	25	.35	.57	.76	.82	.84	.96	.97	1.02	1.02	1.02	1.15	1.20
SEP	26	.28	.45	.59	.66	.75	.75	.75	.79	.85	.86	.94	.96
SEP	29	.33	.52	.62	.65	.72	1.09	1.38	1.38	1.38	1.40	1.41	1.42
NOV	7	.37	.57	.74	.88	1.14	1.31	1.45	1.70	2.18	2.57	2.99	3.17
NOV	13	.18	.30	.35	.37	.37	.37	.37	.37	.37	.37	.37	.37
DEC	1	.31	.44	.48	.50	.50	.50	.65	.75	.79	.80	.87	.89
DEC	7	.29	.38	.45	.57	.62	.79	.91	.98	1.01	1.06	1.12	1.12
DEC	8	.38	.49	.52	.53	.53	.53	.54	.54	.68	.87	.90	.91
DEC	8	.24	.35	.36	.37	.38	.40	.42	.44	.44	.44	.68	.76
DEC	8	.31	.48	.52	.53	.60	.62	.64	.66	.67	.92	.95	.98
DEC	24 T	M	M	M	M	M	.67	.68	.68	.68	.68	.68	.68
DEC	29	.22	.37	.38	.38	.39	.39	.43	.44	.45	.45	.45	.45
TRUK													
FEB	4	.34	.60	.82	.95	1.11	1.27	1.41	1.90	2.03	2.26	2.41	2.49
MAR	10	.21	.40	.49	.57	.71	.82	.88	.94	.95	.96	1.01	1.03
APR	5	.20	.36	.42	.46	.62	.71	.84	.93	.93	.93	1.05	1.11
APR	23	.28	.40	.50	.55	.73	1.10	1.42	1.74	1.90	2.02	2.21	2.57
MAY	9	.24	.37	.44	.44	.44	.44	.45	.45	.45	.47	.47	.52
MAY	13	.30	.54	.75	.95	1.20	1.32	1.61	1.97	2.05	2.08	2.08	2.08
MAY	13	.15	.25	.35	.41	.45	.45	.45	.45	.45	.45	.45	.45
MAY	14	.33	.58	.77	.83	.91	1.14	1.37	1.66	1.91	2.15	2.37	2.50
MAY	21	.41	.75	.98	1.09	1.19	1.59	1.86	1.91	2.12	2.16	2.17	2.37
MAY	24	.31	.52	.70	.81	.81	.83	.84	.85	.85	.92	1.10	1.23
JUN	4	.38	.59	.70	.80	1.02	1.16	1.28	1.34	1.38	1.43	1.52	1.60
JUN	10	.32	.41	.49	.53	.61	.79	.83	.89	.93	.95	.99	1.00
JUN	10	.42	.52	.54	.57	.73	.78	.96	1.34	1.36	1.58	1.67	1.67
JUL	1	.32	.50	.63	.68	.72	.72	.73	.73	.73	.73	.73	.73
JUL	4	.31	.45	.54	.63	.72	.84	.87	.89	.89	.89	.89	1.26
JUL	4	.29	.29	.29	.29	.30	.30	.31	.34	.35	.35	.49	.61
JUL	7	.54	.90	1.17	1.29	1.51	1.68	1.87	2.15	2.38	2.63	2.94	3.03
JUL	10	.21	.33	.45	.49	.52	.52	.52	.52	.52	.57	.58	.58
JUL	29	.23	.38	.46	.57	.70	1.06	1.33	1.54	1.81	2.08	2.45	2.63
SEP	2	.33	.43	.49	.52	.54	.54	.72	.98	1.06	1.06	1.06	1.06
SEP	4	.36	.59	.80	.87	1.02	1.07	1.09	1.12	1.16	1.27	1.41	1.52
SEP	5	.21	.41	.58	.65	.73	.78	.82	.88	.92	.96	.99	1.02
SEP	7	.27	.39	.47	.54	.61	.64	.66	.68	.70	.73	.77	.82
SEP	8	.45	.78	1.08	1.27	1.85	2.16	2.17	2.17	2.17	2.17	2.17	2.17
SEP	10	.24	.42	.55	.57	.57	.58	.58	.58	.58	.58	.68	.68
SEP	15	.16	.31	.46	.58	.86	1.20	1.28	1.31	1.31	1.31	1.31	1.33
SEP	15	.28	.30	.32	.34	.38	.40	.40	.40	.40	.40	.40	.40
SEP	17	.23	.31	.42	.49	.62	.68	.73	.75	.75	.75	.75	.75
SEP	19	.19	.30	.38	.49	.52	.61	.69	.72	.72	1.02	1.02	1.12
SEP	24	.30	.51	.64	.73	.78	.81	.83	.83	.83	.83	.83	.83
SEP	29	.21	.34	.44	.45	.46	.47	.49	.49	.49	.49	.49	.49
NOV	7	.37	.61	.67	.73	.80	.83	.86	.92	.95	.99	1.19	1.60
NOV	7	.23	.38	.43	.44	.46	.46	.46	.49	.49	.53	.71	M
NOV	19	.15	.27	.34	.40	.46	.48	.51	.54	.58	.59	.59	.59
NOV	25	.31	.44	.47	.47	.48	.48	.48	.48	.48	.48	.48	.48
DEC	9	.28	.32	.33	.34	.34	.39	.62	.64	.67	.68	.70	.70
DEC	10	.33	.54	.75	.59	1.19	1.36	1.68	2.33	2.63	2.70	2.96	3.51
DEC	13	.25	.43	.55	.60	.61	.66	.68	.72	.72	.72	1.06	1.16
DEC	29	.46	.74	1.01	1.26	1.51	1.83	2.00	2.09	2.12	2.14	2.15	2.15

Station and date		Maximum precipitation in inches (5 to 180 minutes)											
		5	10	15	20	30	45	60	80	100	120	150	180
PACIFIC AREA													
WAKE													
APR	9	.30	.42	.55	.60	.62	.62	.76	.77	.77	.77	.77	.77
JUN	3	.30	.56	.77	.86	1.20	1.80	2.20	2.26	2.30	2.32	2.39	2.40
JUN	27	.30	.45	.67	.75	.77	.77	.80	1.02	1.03	1.05	1.10	1.10
JUL	23	.20	.29	.45	.54	.60	.81	.86	.87	.88	.88	.88	.88
SEP	12	.19	.34	.44	.44	.44	.44	.44	.44	.44	.44	.44	.44
SEP	21	.20	.31	.36	.41	.51	.62	.63	.64	.67	.84	.88	.93
NOV	30	.35	.60	.78	.93	1.25	1.43	1.71	1.78	1.78	1.78	1.78	1.78
YAP R													
FEB	18	.17	.31	.31	.31	.31	.31	.31	.31	.31	.31	.31	.32
APR	14	.19	.27	.38	.45	.61	.82	.83	.83	.86	.88	.88	.88
APR	19	.33	.61	.80	1.04	1.50	1.81	2.04	2.13	2.16	2.30	2.48	2.61
MAY	19	.24	.34	.41	.51	.59	.63	.63	.65	.66	.66	.66	.66
MAY	23	.22	.34	.42	.50	.73	.95	1.09	1.25	1.41	1.71	1.87	2.05
MAY	23	.18	.32	.44	.45	.46	.48	.60	.73	1.02	1.13	1.50	1.69
JUN	8	.28	.53	.77	.97	1.07	1.10	1.10	1.10	1.10	1.10	1.10	1.10
NOV	2	.22	.34	.44	.48	.49	.49	.49	.49	.49	.49	.49	.49
NOV	6	.33	.65	.84	1.03	1.19	1.23	1.23	1.25	1.25	1.25	1.25	1.25
NOV	12	.21	.36	.50	.53	.59	.61	.61	.61	.61	.61	.62	.63
NOV	18	.19	.30	.38	.45	.58	.60	.60	.60	.60	.60	.60	.60
DEC	5	.30	.49	.56	.58	.59	.67	.72	.72	.72	.72	.72	.91
DEC	6	.28	.53	.68	.75	.76	.76	.76	.76	.90	.98	1.06	1.35
DEC	6	.33	.64	.72	.76	.84	.95	.97	.97	.99	1.15	1.27	1.58
PENNSYLVANIA													
ALLENTOWN													
JUN	15	.55	.69	.78	.80	.80	.80	.80	.80	.80	1.27	1.35	1.41
AUG	12	.16	.28	.40	.45	.52	.54	.54	.54	.55	.55	.56	.56
OCT	2	.17	.27	.34	.42	.48	.51	.55	.60	.67	.71	.74	.74
NOV	25	.16	.30	.32	.36	.42	.52	.60	.69	.72	.77	.80	.89
ERIE													
JUN	23	.26	.40	.50	.54	.56	.56	.56	.56	.56	.56	.56	.56
AUG	3 E	.38	.49	.52	.56	.66	1.14	1.14	M	M	M	M	1.64
AUG	3	.20	.30	.31	.35	.37	.38	.55	.75	.80	.84	1.02	1.02
HARRISBURG													
MAR	10	.22	.30	.31	.32	.33	.36	.38	.43	.45	.45	.45	.45
JUN	8	.13	.18	.30	.35	.53	.83	1.02	1.17	1.23	1.24	1.24	1.24
JUN	24	.12	.21	.29	.39	.51	.56	.56	.56	.56	.56	.56	.56
AUG	31	.33	.57	.70	.87	1.00	1.24	1.49	1.69	1.72	1.73	1.73	1.73
PHILADELPHIA							NONE						
PITTSBURGH													
APR	21	.38	.56	.66	.77	.78	.78	.82	.82	.82	.82	.82	.86
APR	28	.22	.37	.45	.58	.72	.73	.76	.76	.76	.76	.76	.76
APR	29	.20	.36	.43	.53	.67	.67	.67	.67	.67	.69	.73	.76
JUN	20	.22	.32	.32	.34	.45	.45	.57	.60	.60	.60	.60	.60
JUL	12	.17	.33	.35	.40	.41	.41	.41	.41	.64	.65	.70	.73
JUL	28	.45	.68	.72	.75	.77	.78	.79	.86	.90	.91	.92	.92
AUG	11	.18	.32	.38	.44	.70	.72	.74	.77	.83	.89	1.01	1.03
OCT	2	.32	.33	.33	.34	.35	.37	.37	.38	.42	.43	.43	.43
OCT	29	.24	.31	.32	.33	.36	.37	.38	.41	.42	.43	.46	.46
PITTSBURGH U													
MAY	12	.16	.24	.35	.44	.55	.65	.69	.69	.69	.69	.69	.69
JUN	14	.26	.31	.37	.41	.49	.72	.78	.80	.80	.80	.80	.80
JUN	23	.34	.51	.61	.64	.65	.67	.69	.69	.69	.69	.69	.69
JUL	12	.35	.50	.52	.64	.66	.72	.80	.82	.90	1.07	1.08	1.12
JUL	28	.27	.45	.57	.64	.66	.67	.67	1.01	1.01	1.02	1.02	1.02
READING U													
JUN	24	.43	.70	.75	.75	.75	.75	.75	.75	.76	.76	.76	.76
JUL	8	.13	.26	.32	.40	.47	.58	.72	.84	.98	1.06	1.14	1.14
WILKES BARRE													
JUN	7	.50	.51	.55	.65	.80	.81	.82	.82	.82	.82	.82	.89
JUN	15	*1.21	*1.35	1.42	1.51	1.57	1.64	1.72	1.81	1.89	1.89	1.89	1.89
AUG	12	.25	.45	.55	.62	.88	1.09	1.21	1.25	1.26	1.27	1.28	1.57
AUG	18	.26	.36	.38	.39	.39	.39	.39	.39	.39	.41	.41	.41
RHODE ISLAND													
BLOCK ISLAND													
MAY	19	.13	.23	.26	.30	.51	.55	.56	.61	.62	.65	.69	.79
PROVIDENCE													
JUN	8	.30	.50	.72	.88	1.25	1.37	1.42	1.45	1.46	1.46	1.46	1.47
JUL	1	.38	.62	.65	.65	.66	.68	.68	.68	.68	.68	.68	.68
SOUTH CAROLINA													
CHARLESTON							NONE						
CHARLESTON U													
MAR	2	.45	.75	.82	.85	.96	1.01	1.03	1.15	1.20	1.22	1.23	1.29
MAY	29	.36	.49	.55	.59	.79	.94	.96	1.00	1.03	1.04	1.05	1.07
MAY	29	.18	.33	.47	.64	.88	1.01	1.15	1.39	1.46	1.48	1.49	1.54
JUN	7	.39	.65	.90	1.10	1.49	1.90	2.19	2.57	2.84	2.91	2.99	3.14
JUN	25	.37	.44	.46	.46	.46	.46	.46	.46	.46	.46	.46	.46
JUL	13	.26	.38	.56	.66	.75	.79	.80	.80	.80	.80	.80	.87
JUL	22	.35	.65	.95	1.25	1.67	1.96	2.07	2.17	2.45	2.54	2.59	3.11
JUL	24	.35	.65	.80	.81	.82	1.11	1.22	1.23	1.24	1.24	1.35	1.36
JUL	26	.39	.61	.73	.79	1.09	1.15	1.29	1.45	1.48	1.48	1.95	2.22
JUL	27	.20	.36	.53	.61	.74	.83	.91	.98	.98	.98	1.11	1.18
JUL	30	.28	.46	.60	.78	.96	1.04	1.09	1.10	1.10	1.11	1.13	1.14
JUL	31	.18	.34	.47	.60	.63	.63	.63	.63	.63	.63	.78	.79
AUG	17	.39	.59	.73	.93	1.18	1.37	1.50	1.58	1.59	1.61	1.61	1.61
AUG	29	.32	.46	.62	.70	.86	1.20	1.51	1.93	2.04	2.10	2.22	2.26
SEP	29	.25	.50	.68	.80	.82	.94	1.00	1.01	1.01	1.01	1.01	1.01
OCT	15	.21	.32	.40	.44	.53	.58	.64	.71	.75	.80	.83	.87
DEC	4	.22	.39	.55	.58	.61	.69	.74	.79	.83	.88	.94	.95
COLUMBIA													
MAR	4	.60	.65	.66	.67	.70	.84	.95	1.11	1.21	1.41	1.71	1.93
JUL	2	.27	.49	.69	.79	.82	.84	.84	.84	.85	.87	.88	.92
JUL	19	.38	.50	.61	.71	.83	.91	.99	1.11	1.14	1.20	1.22	1.22
JUL	20	.19	.33	.42	.48	.55	.56	.56	.60	.65	.70	.80	.82
JUL	21	.19	.38	.45	.60	.76	.97	1.04	1.13	1.14	1.14	1.14	1.17
JUL	22	.15	.27	.39	.44	.57	.69	.76	.83	.85	.87	.89	.90
AUG	9	.32	.48	.59	.80	.99	1.22	1.44	1.86	2.38	2.48	2.49	2.49
AUG	10	.36	.58	.71	.85	.93	.95	.99	1.00	1.27	1.30	1.31	1.32
AUG	29	.25	.36	.40	.45	.50	.52	.55	.59	.75	1.05	1.40	1.52

T Clock malfunction
M No record

E Estimated
M No record

EXCESSIVE SHORT DURATION RAINFALL

Station and date		Maximum precipitation in inches (5 to 180 minutes)											
		5	10	15	20	30	45	60	80	100	120	150	180
SOUTH CAROLINA													
COLUMBIA													
SEP	12	.12	.22	.31	.39	.61	.77	.95	1.13	1.35	1.44	1.60	1.78
SEP	30	.35	.47	.52	.63	.91	1.23	1.32	1.60	1.98	2.08	2.10	2.11
OCT	4	.18	.35	.43	.48	.51	.55	.58	.60	.65	.79	.87	.90
NOV	20	.30	.43	.46	.54	.64	.67	.69	.70	.73	.76	.78	.79
DEC	26	.25	.40	.43	.46	.50	.55	.60	.61	.62	.64	.72	.78
DEC	26	.25	.40	.46	.52	.65	.78	.79	.79	.79	.80	.83	.84
DEC	26	.28	.45	.47	.55	.59	.64	.86	.94	.98	1.05	1.13	1.20
FLORENCE													
JUN	22	.50	.62	.71	.76	.91	.92	.93	.94	.99	1.03	1.04	1.05
JUL	3	.25	.40	.47	.58	.65	.79	.90	.94	.98	.99	1.00	1.01
JUL	12	.26	.39	.40	.40	.41	.41	.41	.41	.41	.41	.41	.41
JUL	15	.17	.25	.33	.38	.53	.57	.60	.60	.60	.60	.60	.60
JUL	20	.31	.58	.70	1.00	1.20	1.30	1.37	1.41	1.43	1.47	1.49	1.54
JUL	24	.63	1.00	1.04	1.31	1.46	1.47	1.48	1.50	1.53	1.55	1.56	1.56
JUL	27	.31	.43	.45	.47	.54	.57	.62	.66	.67	.67	.67	.67
AUG	9	.30	.47	.54	.70	.93	1.13	1.38	1.46	1.49	1.51	1.53	1.53
AUG	30	.25	.30	.30	.30	.43	.54	.58	.60	.60	.60	.60	.60
SEP	12	.19	.23	.29	.40	.55	.60	.62	.63	.63	.63	.63	.64
SEP	30	.54	.92	1.03	1.30	*1.85	2.10	*2.44	2.62	2.90	3.26	3.63	*4.00
OCT	4	.55	.60	.61	.62	.64	.65	.65	.68	.70	.72	.72	.72
DEC	5	.20	.36	.37	.37	.38	.39	.39	.39	.39	.39	.39	.39
GNVLE SPARTANBURG													
APR	24	M	M	M	M	1.30	1.51	1.52	1.57	1.58	1.58	1.58	1.58
APR	28	.28	.40	.43	.52	.65	.71	.72	.80	.84	.85	.87	.95
JUN	1	*.43	*.83	.93	.95	1.02	1.17	1.25	1.44	1.65	*2.21	2.45	*2.58
JUN	6	.25	.43	.43	.43	.43	.43	.43	.43	.43	.43	.43	.43
JUN	13	.20	.37	.40	.42	.42	.43	.44	.44	.44	.44	.44	.44
JUN	22	.27	.44	.57	.71	.87	.99	1.01	1.02	1.02	1.02	1.02	1.02
JUN	22	.42	*.75	.95	1.12	*1.28	1.41	*1.42	1.42	1.43	1.44	1.45	1.47
JUL	9	.30	.41	.45	.56	.60	.60	.60	.60	.60	.60	.60	.60
JUL	15	.36	.53	.55	.55	.55	.56	.56	.56	.56	.56	.56	.56
JUL	18	.27	.40	.64	.73	.92	1.16	*1.50	1.77	1.84	1.87	1.89	1.95
OCT	16	.11	.21	.30	.37	.58	.82	1.11	1.38	1.53	1.69	1.99	2.24
SOUTH DAKOTA													
ABERDEEN													
JUL	5 S	*.34	*.38	*.40	*.43	*.44	*.46	*.69	.82	.82	*.82	.82	*.82
JUL	5	*.48	*.64	*.64	.64	.64	.64	.64	.64	.64	.64	.64	.64
JUL	6	.24	*.38	*.43	*.53	*.70	.78	*.79	1.12	1.38	*1.39	1.40	*1.40
JUL	8	*.30	*.40	.41	.43	.46	.46	.46	.46	.46	.46	.46	.46
JUL	31	*.32	*.44	*.45	.48	.52	.61	*.84	1.00	1.14	1.32	1.72	*1.76
HURON													
APR	21	.15	.27	.33	.40	.47	.54	.63	.73	.76	.84	.92	.98
RAPID CITY													
JUN	5	.26	.36	.39	.42	.42	.42	.42	.42	.42	.42	.42	.42
AUG	31	.20	.35	.35	.35	.35	.35	.35	.35	.35	.35	.69	.69
SIOUX FALLS													
JUL	1	.22	.36	.42	.44	.48	.50	.54	.55	.56	.56	.56	.56
JUL	10	.40	.52	.64	.80	1.14	1.18	1.19	1.19	1.19	1.19	1.20	1.20
AUG	6	.40	.53	.58	.63	.72	.78	.78	1.01	1.30	1.38	1.40	1.40
AUG	29	.30	.46	.65	.75	.78	.78	.78	.78	.78	.78	.78	.78
TENNESSEE													
BRISTOL													
MAY	23	.25	.38	.40	.40	.40	.40	.40	.40	.40	.40	.40	.40
JUL	2	.36	.50	.54	.63	.76	.87	1.00	1.15	1.15	1.15	1.15	1.15
AUG	3	.14	.27	.35	.41	.45	.46	.46	.47	.49	.51	.52	.53
AUG	11	.20	.35	.45	.52	.56	.56	.56	.56	.56	.56	.56	.56
CHATTANOOGA													
MAR	14	.13	.26	.38	.50	.66	.74	.79	.84	.89	.95	1.00	1.00
APR	7	.27	.41	.55	.63	.68	.81	.98	1.04	1.13	1.36	1.40	1.44
APR	7	.15	.25	.30	.36	.58	.72	.81	.93	.99	1.04	1.07	1.07
APR	28	.26	.37	.55	.58	.60	.60	.62	.80	.97	.99	1.01	1.03
MAY	24	.29	.39	.44	.46	.49	.50	.50	.50	.50	.50	.50	.50
JUN	12	.23	.42	.59	.69	1.04	1.12	1.14	1.23	1.29	1.31	1.31	1.31
AUG	16	.12	.22	.32	.41	.57	.68	.75	.85	.95	1.04	1.17	1.31
KNOXVILLE													
APR	7	.27	.39	.48	.55	.67	.80	.87	.94	1.05	1.09	1.29	1.32
APR	25	.32	.45	.45	.61	.67	.68	.70	.70	.70	.70	.70	.70
MAY	11	.45	.50	.55	.60	.66	.96	.97	.98	.98	.98	.98	1.03
JUL	12	.27	.33	.52	.56	.58	.83	.88	.88	.88	.88	.88	.88
JUL	22	.33	.51	.55	.56	.56	.56	.56	.56	.56	.56	.56	.56
AUG	3	.25	.31	.36	.41	.59	.67	.70	1.02	1.05	1.05	1.08	1.09
MEMPHIS													
JAN	8	.18	.33	.44	.54	.62	.70	.79	.85	.90	1.03	1.20	1.25
MAR	4	.60	.65	.66	.67	.70	.84	.95	1.11	1.21	1.41	1.74	1.93
APR	4	.40	.69	.74	.80	1.01	1.11	1.15	1.21	1.30	1.36	1.48	1.57
APR	23	.39	.65	.76	.91	1.15	1.38	1.45	1.55	1.59	1.60	1.62	1.63
MAY	2	.40	.55	.65	.70	.75	.90	.98	1.00	1.01	1.02	1.03	1.04
MAY	10	.18	.29	.37	.42	.50	.58	.62	.68	.78	.83	.86	.87
MAY	24	.19	.33	.37	.43	.44	.45	.45	.45	.46	.46	.46	.46
JUL	2	.37	.57	.70	.78	.96	.99	.99	1.04	1.04	1.04	1.04	1.04
JUL	11	.30	.55	.75	.94	1.14	1.19	1.21	1.26	1.32	1.35	1.38	1.38
JUL	11	.24	.33	.33	.38	.54	.75	.97	1.08	1.14	1.15	1.30	1.52
JUL	20	.19	.37	.53	.62	.66	.66	.66	.66	.66	.66	.66	.66
JUL	21	.21	.36	.46	.49	.52	.53	.53	.53	.53	.53	.54	.55
AUG	22	.29	.41	.42	.42	.43	.44	.45	.67	.69	.71	.72	.72
AUG	25	.43	.71	.87	1.03	1.24	1.40	1.44	1.48	1.48	1.50	1.50	1.50
OCT	28	.43	.62	.85	.90	1.00	1.08	1.27	1.31	1.32	1.39	1.52	1.61
NASHVILLE													
JUN	13	.25	.35	.40	.47	.48	.50	.50	.50	.50	.50	.50	.50
JUL	29	.25	.40	.50	.55	.55	.57	.60	.60	.61	.62	.62	.63
AUG	8	.20	.40	.60	.65	.88	.92	.98	1.00	1.00	1.00	1.00	1.00
OCT	2	.30	.42	.45	.46	.46	.47	.47	.47	.47	.47	.47	.47
TEXAS													
ABILENE													
FEB	3	.23	.33	.38	.39	.45	.77	.79	.79	.79	.82	.82	.82
APR	23	.24	.38	.41	.44	.50	.54	.56	.61	.61	.61	.61	.61
APR	26	.27	.42	.50	.61	.80	.87	.89	.91	.91	.92	.92	.92
MAY	8	.22	.30	.31	.32	.38	.40	.41	.42	.42	.42	.42	.42

S Record began June 29, 1964
M No record

Station and date		Maximum precipitation in inches (5 to 180 minutes)											
		5	10	15	20	30	45	60	80	100	120	150	180
TEXAS													
ABILENE													
JUN	12	.22	.40	.48	.58	.76	.83	.87	1.10	1.14	1.16	1.18	1.19
JUL	29	.52	.92	1.38	1.78	1.95	2.20	2.23	2.23	2.29	2.29	2.29	2.29
AUG	16	.50	.87	1.32	1.72	2.29	2.45	2.52	2.54	2.54	2.54	2.54	2.54
AUG	20	.14	.24	.34	.40	.54	.78	.80	.80	.80	.80	.80	.80
SEP	21	.20	.38	.50	.56	.58	.60	.61	.63	.69	.71	.71	.71
NOV	18	.29	.46	.49	.53	.56	.64	.67	.73	.79	.81	.86	.92
AMARILLO													
AUG	7	.24	.36	.40	.50	.58	.59	.59	.59	.59	.59	.59	.59
AUG	16	.52	.76	.92	1.06	1.14	1.15	1.17	1.20	1.35	1.52	1.76	2.19
AUG	25	.24	.42	.46	.56	.59	.62	.62	.62	.63	.63	.64	.69
SEP	15	.30	.43	.50	.53	.55	.56	.58	.60	.64	.65	.65	.65
SEP	23	.25	.39	.47	.60	.78	.84	.86	.90	.94	.98	.99	.99
AUSTIN													
MAR	19	.43	.60	.67	.72	.83	.96	1.08	1.10	1.17	1.21	1.39	1.49
APR	26	.27	.38	.43	.46	.50	.54	.63	.88	.91	.91	.91	.91
MAY	1	.34	.49	.51	.51	.52	.52	.52	.52	.52	.52	.52	.52
MAY	24	.26	.35	.41	.45	.46	.46	.46	.46	.46	.46	.46	.46
MAY	30	.21	.40	.45	.45	.45	.47	.48	.48	.48	.49	.49	.49
JUN	15	.33	.56	.67	.71	.86	1.06	1.25	1.55	1.77	1.97	1.98	1.98
JUN	16	.27	.46	.59	.69	.93	1.23	1.61	2.27	2.62	2.89	3.11	3.20
AUG	16	.18	.25	.37	.45	.48	.54	.58	.62	.63	.74	.80	.88
SEP	6	.18	.36	.39	.47	.48	.48	.48	.48	.48	.48	.48	.48
SEP	16	.61	.98	1.18	1.20	1.22	1.26	1.42	1.62	1.76	1.78	1.81	1.81
SEP	27	.19	.27	.34	.41	.58	.91	1.02	1.31	1.46	1.62	1.80	2.04
OCT	26	.29	.42	.56	.78	1.10	1.23	1.30	1.39	1.57	1.66	1.80	1.99
NOV	4	.21	.33	.46	.55	.66	.79	.94	1.09	1.15	1.20	1.32	1.35
BROWNSVILLE													
FEB	21	.20	.30	.33	.35	.38	.41	.43	.46	.49	.50	.52	.55
APR	14	.23	.42	.55	.62	.75	.83	.94	.97	1.00	1.02	1.04	1.05
MAY	20	.25	.34	.34	.34	.37	.40	.40	.40	.40	.40	.40	.40
SEP	4	.16	.26	.35	.48	.58	.60	.60	.60	.60	.60	.60	.60
SEP	8	.20	.31	.39	.42	.43	.43	.43	.43	.43	.43	.43	.43
SEP	13	.27	.45	.62	.65	.65	.65	.65	.65	.65	.65	.65	.65
SEP	25	.25	.36	.46	.51	.57	.65	.74	.81	.87	1.19	1.22	1.25
CORPUS CHRISTI													
MAY	21	.41	.66	.82	.86	.88	.88	.91	.91	.99	1.13	1.16	1.19
MAY	31	.23	.34	.38	.43	.56	.59	.77	.91	1.13	1.18	1.18	1.18
SEP	12	.32	.42	.43	.44	.45	.45	.47	.47	.48	.49	.49	.49
SEP	16	.32	.47	.50	.51	.52	.52	.52	.52	.52	.52	.52	.52
SEP	25	.16	.27	.35	.44	.49	.52	.53	.55	.58	.58	.58	.63
DALLAS													
MAR	9	.33	.54	.63	.77	1.07	1.09	1.13	1.20	1.49	1.53	1.65	1.76
APR	26	.35	.43	.45	.46	.47	.50	.81	.95	1.14	1.16	1.18	1.18
MAY	1	.32	.37	.38	.40	.45	.50	.51	.51	.51	.51	.51	.51
MAY	8	.36	.47	.48	.48	.49	.50	.51	.52	.52	.52	.52	.52
SEP	16	.30	.46	.49	.56	.66	.75	.80	.85	.90	.95	1.00	1.00
SEP	21	.27	.45	.49	.60	.92	1.05	1.56	1.76	2.23	2.40	2.68	2.77
SEP	21	.48	.76	.84	.99	1.27	1.41	1.48	1.49	1.50	1.50	1.50	1.50
SEP	22	.23	.40	.45	.53	.84	1.04	1.30	1.41	1.59	1.90	2.03	2.09
OCT	26	.22	.39	.41	.44	.51	.54	.58	.58	.59	.59	.59	.65
NOV	3	.16	.30	.38	.50	.72	.83	.93	1.06	1.15	1.22	1.32	1.39
DEL RIO													
MAY	9 S	.30	.50	.56	.79	1.01	1.41	1.50	1.51	1.51	1.57	1.69	1.75
OCT	25	.43	.45	.47	.49	.52	.55	.59	.63	.65	.67	.68	.70
EL PASO													
SEP	11	.26	.50	.60	.70	.97	1.19	1.26	1.40	1.50	1.58	1.64	1.72
FORT WORTH													
APR	26	.20	.37	.38	.39	.41	.45	.46	.47	.47	.48	.48	.48
MAY	1	.33	.42	.42	.42	.43	.48	.48	.48	.48	.48	.48	.48
MAY	29	.45	.56	.59	.65	.73	.74	.76	.76	.76	.76	.76	.87
SEP	16	.33	.57	.60	.66	.72	.77	.92	1.07	1.10	1.13	1.50	1.19
SEP	20	.52	.75	.85	.91	1.08	1.13	1.23	1.31	1.35	1.36	1.38	1.38
SEP	21	.25	.45	.65	.67	.82	.85	.95	1.30	1.40	1.57	2.04	2.38
SEP	21	.30	.36	.42	.52	.73	.81	.90	.90	.95	.95	1.27	1.38
NOV	3	.32	.45	.51	.67	.98	1.26	1.55	1.63	1.71	1.92	2.05	2.15
GALVESTON U													
JAN	24	.18	.26	.36	.49	.58	.59	.59	.59	.59	.59	.59	.59
JAN	30	.30	.38	.42	.43	.44	.47	.50	.54	.58	.65	.70	.73
JUL	28	.28	.49	.65	.69	.75	1.18	1.43	1.52	1.54	1.56	1.64	1.70
AUG	5	.20	.38	.53	.63	.71	.75	.76	.77	.80	.82	.85	.86
AUG	22	.23	.42	.55	.69	.90	1.28	1.68	1.72	1.73	1.74	1.76	1.80
AUG	23	.32	.56	.72	.84	1.09	1.52	1.55	1.57	1.58	1.64	1.83	1.84
SEP	17	.14	.25	.34	.41	.56	.67	.75	.84	.90	.94	1.04	1.17
DEC	10	.10	.18	.26	.33	.49	.66	.74	.79	.91	1.02	1.10	1.23
HOUSTON U													
JAN	30	.25	.36	.41	.45	.51	.59	.67	.76	.86	.92	.95	.95
MAR	19	.38	.63	.68	.72	.78	.86	.88	1.22	1.36	1.39	1.47	1.51
APR	25	.13	.26	.36	.46	.52	.55	.57	.62	.64	.65	.65	.65
MAY	1	.20	.33	.44	.48	.49	.50	.50	.50	.50	.50	.50	.50
MAY	31	.20	.32	.42	.47	.50	.54	.54	.54	.54	.55	.55	.55
AUG	5	.35	.65	.85	1.00	1.01	1.02	1.03	1.03	1.03	1.03	1.03	1.03
AUG	16	.21	.35	.45	.50	.53	.53	.53	.53	.53	.53	.53	.53
AUG	22	.22	.35	.45	.58	.68	.78	.79	.80	.80	.80	.80	.84
SEP	2	.23	.35	.37	.39	.42	.44	.44	.44	.44	.44	.44	.44
SEP	26	.25	.39	.39	.39	.39	.39	.40	.44	.50	.83	.90	.90
OCT	25	.18	.29	.34	.45	.57	.64	.64	.65	.67	.67	.69	.70
LAREDO													
JUN	26	.39	.75	.85	.95	1.20	1.27	1.32	1.32	1.33	1.33	1.33	1.43
AUG	23	.28	.43	.48	.55	.90	1.10	1.55	1.76	1.82	1.84	1.88	1.90
SEP	15	.15	.23	.38	.41	.49	.50	.52	.52	.52	.52	.52	.52
LUBBOCK													
JUN	10 T	M	M	M	M	M	M	M	M	M	M	M	1.26
JUN	13	.12	.21	.31	.35	.52	.58	.60	.60	.60	.60	.60	.60
JUN	21	.18	.32	.41	.44	.52	.62	.72	.80	1.16	1.34	1.44	1.50
JUL	28	.24	.34	.44	.57	.66	.70	.72	.74	.78	.79	.80	.82
AUG	8	.22	.38	.56	.68	.86	1.04	1.06	1.06	1.06	1.06	1.06	1.06
SEP	15	.28	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.31
MIDLAND													
MAY	28	*.57	*1.01	1.21	1.62	*1.96	2.06	2.08	2.08	2.08	2.08	2.08	2.08
AUG	30	.26	.34	.37	.44	.46	.46	.46	.46	.46	.46	.46	.46

S Record began April 8, 1964
T Clock malfunction
M No record

EXCESSIVE SHORT DURATION RAINFALL

Station and date	Maximum precipitation in inches (5 to 180 minutes)											
	5	10	15	20	30	45	60	80	100	120	150	180
TEXAS												
PORT ARTHUR												
JAN 24	.27	.40	.44	.48	.50	.54	.54	.54	.54	.55	.55	.56
MAR 19	.60	.68	.70	.77	.82	.83	.89	.93	.98	1.07	1.24	1.50
APR 26	.43	.67	.78	.84	.90	.94	.94	.94	.94	.94	.94	.94
MAY 12	.22	.34	.44	.60	.74	.75	.76	.76	.76	.76	.86	.86
MAY 24	.48	.90	1.21	1.50	1.95	M	2.22	2.24	2.24	2.24	2.25	2.25
MAY 30	.30	.53	.62	.70	.80	.89	1.06	1.08	1.08	1.08	1.08	1.08
MAY 31	.38	.57	.74	.98	1.26	1.43	1.49	1.51	1.55	1.61	1.61	1.61
JUL 1	.23	.37	.45	.52	.82	1.11	1.44	1.68	1.96	2.07	2.33	2.48
AUG 5	.35	.66	.90	.99	1.03	1.05	1.06	1.06	1.06	1.06	1.08	1.09
AUG 13 T	M	M	M	M	M	1.51	1.51	1.51	1.51	1.51	1.52	1.52
AUG 22	.25	.32	.38	.39	.44	.44	.45	.45	.45	.45	.45	.45
SEP 16	.33	.46	.56	.59	.65	.67	.67	.69	.69	.70	.76	.76
SEP 17	.27	.48	.59	.75	1.00	1.09	1.21	1.29	1.34	1.44	1.44	1.57
SEP 19	.28	.32	.33	.34	.34	.34	.34	.34	.34	.34	.55	.55
NOV 19	.22	.30	.42	.47	.49	.64	.86	.98	1.03	1.11	1.28	1.30
NOV 28	.23	.38	.56	.67	.86	1.28	1.60	1.80	1.84	1.84	1.85	1.85
DEC 10	.22	.33	.45	.49	.50	.53	.56	.58	.88	1.03	1.17	1.22
SAN ANGELO												
NOV 18	.27	.31	.35	.38	.40	.47	.59	.60	.60	.61	.61	.61
SAN ANTONIO												
JAN 30	.25	.45	.62	.74	.95	1.19	1.38	1.65	1.91	2.04	2.21	2.26
FEB 4	.20	.33	.37	.42	.48	.49	.49	.49	.49	.49	.49	.49
MAR 18	.38	.62	.70	.74	.86	.99	1.08	1.16	1.20	1.30	1.40	1.52
APR 17	.24	.32	.38	.40	.42	.44	.48	.54	.56	.57	.57	.57
MAY 30	.20	.35	.43	.44	.44	.44	.44	.44	.44	.44	.44	.44
JUN 15	.29	.53	.69	.79	.83	.85	.86	.88	.89	.90	.91	.91
JUN 16	.38	.76	1.05	1.15	1.38	1.53	1.61	1.93	2.11	2.16	2.23	2.27
JUN 17	.23	.30	.36	.42	.49	.57	.63	.63	.63	.63	.63	.63
AUG 22	.51	.97	1.43	1.80	*2.54	2.96	3.26	3.44	3.58	3.58	3.62	3.68
SEP 8	.30	.51	.71	.87	.91	1.06	1.07	1.07	1.07	1.07	1.07	1.07
SEP 23	.21	.33	.44	.49	.57	.61	.62	.62	.63	.63	.64	.64
OCT 26	.21	.38	.46	.50	.55	.65	.69	.74	.80	.85	.88	.88
NOV 4	.34	.55	.70	.80	1.14	1.28	1.33	1.34	1.35	1.68	1.82	2.05
NOV 15	.29	.52	.55	.56	.67	1.08	1.17	1.18	1.20	1.20	1.20	1.20
VICTORIA												
JAN 30	.21	.31	.40	.48	.70	.70	.70	.70	.70	.70	.70	.73
FEB 3	.25	.43	.46	.47	.48	.50	.58	.59	.60	.61	.61	.62
MAR 19	.40	.70	.75	.88	.95	.97	1.05	1.13	1.20	1.24	1.26	1.27
MAY 23	.43	.85	.96	1.04	1.07	1.12	1.13	1.13	1.15	1.16	1.16	1.46
JUN 14	.25	.37	.44	.49	.53	.54	.54	.54	.54	.54	.54	.54
JUN 15	.20	.28	.35	.41	.46	.47	.58	.63	.81	.86	1.31	1.38
JUL 28	.25	.38	.40	.48	.62	.66	.68	.68	.68	.68	.68	.68
AUG 8	.40	.70	.73	.99	1.26	1.53	1.91	2.15	2.90	3.36	3.85	4.25
SEP 6	.27	.53	.70	.85	.85	.85	.85	.85	.85	.85	.85	.85
SEP 8	.28	.42	.42	.42	.42	.42	.42	.42	.42	.42	.42	.42
SEP 24	.39	.72	.86	1.04	1.17	1.18	1.18	1.18	1.18	1.21	1.21	1.23
WACO												
APR 5	.21	.36	.42	.58	.63	.76	.77	.79	.79	.79	.79	.79
APR 24	.25	.45	.50	.58	.69	.75	.75	.75	.75	.75	.75	.75
MAY 1	.40	.54	.54	.54	.54	.54	.55	.56	.56	.56	.56	.56
MAY 8	.25	.30	.33	.35	.40	.40	.40	.40	.40	.40	.40	.40
SEP 16	.12	.24	.30	.40	.53	.57	.85	1.08	1.18	1.20	1.20	1.20
SEP 24	.25	.48	.68	.93	1.26	1.62	1.75	1.80	1.83	1.87	1.99	2.05
NOV 4	.30	.59	.74	.78	.87	.96	1.02	1.06	1.08	1.11	1.15	1.19
NOV 19	.28	.55	.63	.67	.92	1.15	1.35	1.37	1.39	1.39	1.39	1.39
WICHITA FALLS												
APR 24	.32	.63	.81	.92	1.16	1.24	1.28	1.34	1.37	1.50	1.64	1.88
MAY 12	.28	.54	.66	.71	.73	.73	.73	.73	.73	.73	.73	.73
MAY 15	.25	.38	.41	.42	.42	.42	.42	.42	.42	.65	.78	.82
MAY 29	.25	.39	.53	.66	.82	1.20	1.58	2.06	2.26	2.34	2.36	2.36
MAY 30	.31	.55	.75	.91	1.16	1.34	1.48	1.51	1.54	1.55	1.55	1.56
AUG 18	.28	.47	.62	.70	1.00	1.25	1.35	1.40	1.47	1.48	1.54	1.60
SEP 16	.26	.36	.58	.70	1.04	1.32	1.50	1.62	1.62	1.62	1.62	1.66
UTAH												
MILFORD						NONE						
SALT LAKE CITY						NONE						
VERMONT												
BURLINGTON												
JUN 24	.38	.59	.61	.61	.62	.62	.62	.62	.62	.62	.62	.62
JUN 27	.28	.39	.44	.46	.46	.48	.48	.50	.50	.50	.50	.50
JUL 3	.26	.36	.45	.51	.73	.85	.85	.86	.89	.90	.90	.90
AUG 23	.25	.33	.34	.34	.34	.34	.34	.34	.34	.34	.35	.36
VIRGINIA												
LYNCHBURG												
JUL 10	*.72	.86	1.09	1.12	1.18	1.22	1.26	1.26	1.27	1.27	1.27	1.27
JUL 12	.21	.40	.60	.67	1.05	1.30	1.64	1.68	1.75	1.85	1.90	2.05
JUL 29	.36	.45	.64	.83	1.02	1.08	1.09	1.09	1.09	1.09	1.10	1.11
NOV 25	.27	.53	.66	.68	.79	.90	1.00	1.04	1.06	1.11	1.13	1.16
NORFOLK												
JUN 13	.36	.63	.98	1.16	1.44	1.53	1.63	1.66	1.69	1.70	1.70	1.70
JUL 4	.30	.59	.80	1.06	1.35	1.50	1.55	1.57	1.58	1.59	1.60	1.61
JUL 9	.34	.56	.76	.89	1.14	1.28	1.48	1.55	1.63	1.65	1.67	1.68
JUL 14	.32	.41	.47	.51	.51	.51	.51	.51	.52	.52	.52	.52
JUL 21	.39	.65	.73	.76	.87	.91	.91	.91	.91	.91	.91	.91
AUG 26	.26	.31	.40	.45	.56	.66	.73	.74	.80	.81	.81	.84
AUG 31	.29	.39	.42	.44	.46	.51	.54	.56	.60	.62	.62	.63
AUG 31	.44	.76	1.02	1.17	1.39	1.58	1.84	2.20	2.53	2.84	3.39	3.96
SEP 11	.32	.49	.54	.55	.56	.57	.57	.57	.57	.57	.57	.57
SEP 28	.36	.69	.89	1.21	1.49	1.74	1.82	1.95	1.95	1.95	1.95	1.98
RICHMOND												
JUN 14	.17	.30	.40	.45	.48	.48	.48	.48	.48	.48	.48	.48
JUN 19	.20	.39	.55	.65	.74	.80	.82	.82	.82	.82	.82	.82
JUL 4	.27	.42	.49	.53	.55	.55	.55	.55	.55	.66	.67	.68
JUL 8	.27	.38	.39	.40	.40	.40	.40	.67	.71	.71	.71	.71
JUL 12	.22	.37	.43	.46	.54	.61	.66	.70	.73	.77	.77	.77
JUL 29	.30	.46	.57	.61	.75	.77	.78	.79	.80	.80	.80	.80
AUG 3	.42	.80	1.04	1.14	1.27	1.33	1.35	1.40	1.44	1.46	1.50	1.62

Station and date	Maximum precipitation in inches (5 to 180 minutes)											
	5	10	15	20	30	45	60	80	100	120	150	180
VIRGINIA												
RICHMOND												
AUG 10	.18	.29	.40	.50	.57	.64	.70	.71	.78	.84	.85	.87
AUG 12	.38	.45	.45	.45	.45	.45	.45	.45	.45	.45	.45	.45
AUG 26	.56	.91	1.24	1.32	1.39	1.40	1.41	1.41	1.41	1.41	1.44	1.46
AUG 30	.32	.59	.90	1.12	1.38	1.88	1.98	2.07	2.13	2.14	2.16	2.17
AUG 31	.29	.41	.49	.51	.61	.89	1.11	1.26	1.29	1.31	1.45	1.46
SEP 28	.24	.40	.50	.60	.69	.76	.78	.79	.79	.79	.79	.79
OCT 4	.10	.15	.22	.30	.44	.64	.82	.93	.97	1.07	1.18	1.31
ROANOKE												
APR 29	.16	.30	.43	.58	.81	.83	.86	.88	.94	.94	.94	.94
JUN 23	.28	.43	.60	.70	1.00	1.02	1.02	1.02	1.02	1.02	1.02	1.02
JUL 9	.12	.19	.30	.40	.47	.47	.47	.47	.47	.47	.47	.47
JUL 17	.20	.31	.35	.47	.54	.55	.55	.55	.55	.55	.55	.55
WASHINGTON												
OLYMPIA						NONE						
SEATTLE						NONE						
SPOKANE						NONE						
TATOOSH ISLAND R												
SEP 30	.25	.36	.40	.44	.51	.57	.58	.59	.61	.64	.71	.74
WALLA WALLA U						NONE						
YAKIMA						NONE						
WEST INDIES												
SAN JUAN U												
APR 20	M	M	M	M	M	M	M	M	M	M	1.54	1.54
MAY 31	.16	.25	.31	.33	.47	.65	.76	.81	.88	.88	.89	.90
JUN 3	.32	.58	.71	.78	1.02	1.40	1.85	2.10	2.21	2.22	2.27	2.69
JUL 3	.27	.52	.72	.74	.77	.80	.81	.81	.82	.82	.82	.82
JUL 12	.20	.35	.40	.41	.44	.46	.47	.48	.49	.50	.54	.59
SAN JUAN												
APR 1	.26	.45	.56	.56	.57	.57	.60	.60	.60	.60	.60	.60
APR 20	.42	.70	.82	.94	1.12	1.20	1.37	1.43	1.49	1.60	1.66	1.83
MAY 20	.27	.39	.42	.49	.54	.73	.78	.80	.81	.84	.84	.84
MAY 28	.19	.30	.45	.50	.56	.62	.63	.63	.63	.63	.63	.63
JUN 16	.28	.38	.44	.53	.75	.84	1.01	1.07	1.22	1.29	1.30	1.30
JUN 18	.23	.32	.36	.43	.48	.60	.85	.94	.94	.94	1.09	1.09
JUL 1	.18	.30	.40	.45	.58	.66	.74	.95	1.08	1.08	1.08	1.08
AUG 21	.28	.31	.31	.31	.31	.32	.32	.32	.32	.32	.33	.49
AUG 31	.20	.35	.39	.58	.65	.66	.66	.66	.68	.68	.68	.77
AUG 31	.20	.32	.42	.50	.51	.52	.52	.52	.52	.52	.54	.54
SEP 22	.34	.49	.53	.53	.53	.53	.53	.53	.53	.53	.59	.59
SEP 25	.46	.68	.74	.87	.97	1.06	1.20	1.35	1.35	1.35	1.55	1.93
OCT 10	.28	.49	.59	.73	.84	.88	.88	.89	.89	.89	.89	.89
NOV 22	.26	.43	.50	.53	.57	.60	.60	.65	.68	.72	.74	.78
WEST VIRGINIA												
BECKLEY												
APR 19	.26	.27	.29	.29	.39	.43	.44	.44	.44	.44	.44	.44
AUG 12	.20	.30	.35	.38	.43	.48	.52	.57	.64	.66	.66	.66
SEP 28	*.40	.51	.52	.52	.52	.54	.54	.54	.54	.54	.90	.94
SEP 29	.25	.45	.55	.57	.72	.76	.93	1.05	1.20	*1.58	1.78	*2.12
CHARLESTON												
APR 19	.25	.40	.42	.47	.49	.52	.59	.61	.61	.62	.62	.63
JUN 15	.33	.33	.33	.33	.33	.33	.33	.33	.33	.35	.37	.37
JUN 22	.30	.51	.55	.59	.71	.73	.73	.73	.74	.76	.84	.95
JUL 9	.23	.43	.43	.43	.43	.43	.43	.43	.43	.43	.43	.43
AUG 2	.30	.48	.49	.50	.52	.52	.52	.52	.52	.52	.52	.52
AUG 11	.35	.55	.60	.85	.90	1.02	1.05	1.10	1.17	1.19	1.19	1.19
ELKINS												
JUN 15	.21	.30	.32	.34	.34	.34	.34	.35	.35	.35	.35	.42
JUN 20	.29	.52	.55	.70	.78	.80	.81	.81	.81	.81	.81	.81
JUL 11	.29	.57	.66	.71	.73	.74	.74	.74	.74	.75	.75	.75
JUL 17	.30	.48	.50	.54	.60	.60	.60	.60	.60	.60	.60	.60
JUL 21	.25	.48	.50	.52	.56	.58	.60	.65	.65	.70	.75	.84
AUG 3	.27	.31	.31	.31	.31	.31	.31	.31	.31	.31	.31	.31
HUNTINGTON												
JUL 2	.25	.40	.40	.40	.40	.40	.40	.40	.40	.40	.40	.40
AUG 3	.20	.30	.35	.37	.66	.70	1.00	1.00	1.00	1.00	1.00	1.00
AUG 22	.42	.67	.81	.99	1.35	1.37	1.38	1.40	1.40	1.40	1.59	1.60
AUG 22	.55	.65	.70	.74	.80	.80	.80	.80	.80	.80	.80	.80
PARKERSBURG U												
JUN 14	.16	.28	.37	.40	.46	.60	.60	.61	.61	.61	.61	.61
JUN 14	.30	.40	.47	.57	.76	.78	.78	.78	.78	.78	.78	.78
JUN 15	.27	.32	.34	.34	.35	.37	.37	.37	.37	.39	.39	.39
JUN 21	.30	.31	.31	.31	.32	.34	.34	.34	.39	.58	.58	.58
JUL 9	.25	.35	.37	.38	.38	.38	.38	.38	.38	.38	.39	.40
JUL 24	.18	.33	.37	.38	.42	.46	.49	.51	.52	.52	.52	.52
JUL 28	.15	.29	.38	.40	.42	.43	.43	.43	.43	.65	.66	.66
JUL 29	.30	.53	.73	.88	.96	1.02	1.03	1.03	1.03	1.03	1.03	1.03
AUG 22	.32	.47	.55	.63	.73	.76	.79	.92	.92	.97	1.11	1.11
WISCONSIN												
GREEN BAY												
MAY 26	.26	.38	.38	.38	.40	.48	.50	.52	.52	.52	.52	.52
JUL 19	.43	.81	.92	1.05	1.20	1.21	1.23	1.23	1.23	1.23	1.23	1.23
JUL 27	.30	.48	.51	.55	.59	.65	.70	.70	.70	.70	.70	.70
AUG 30	.21	.39	.42	.47	.49	.49	.50	.50	.50	.50	.50	.50
SEP 3	.60	*1.15	1.26	1.44	*2.16	2.70	*2.87	2.93	2.97	*2.99	2.99	*2.99
LA CROSSE												
MAY 15	.23	.40	.41	.46	.48	.56	.76	.85	.87	.88	.90	.93
MAY 24	.33	.41	.46	.48	.52	.53	.53	.53	.53	.55	.55	.55
JUN 22	.51	.69	.90	.97	1.18	1.27	1.39	1.49	1.71	1.82	1.94	2.02
JUL 8	.24	.36	.37	.37	.37	.37	.39	.39	.39	.39	.39	.39
JUL 18	.30	.41	.49	.60	.62	.62	.62	.62	.62	.62	.62	.62
JUL 27	.30	.37	.44	.51	.71	.91	1.02	1.11	1.28	1.37	1.51	1.53
SEP 3	.33	.48	.52	.73	.78	.80	.81	.83	.87	.89	.89	.89
SEP 10	.44	.56	.64	.75	.96	1.04	1.12	1.18	1.38	1.39	1.40	1.47

T Clock malfunction
M No record

M No record

EXCESSIVE SHORT DURATION RAINFALL

Station and date	Maximum precipitation in inches (5 to 180 minutes)											
	5	10	15	20	30	45	60	80	100	120	150	180
WISCONSIN												
MADISON												
JUN 17	.23	.27	.32	.42	.46	.53	.56	.58	.59	.61	.66	.66
JUN 22	.19	.37	.53	.56	.59	.59	.61	.63	.69	.76	.77	.77
JUL 21	.20	.30	.34	.39	.40	.41	.41	.41	.41	.41	.41	.41
JUL 27	.42	.76	1.09	1.26	1.44	1.45	1.45	1.45	1.45	1.45	1.50	1.54
SEP 20	.25	.49	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50
MILWAUKEE												
MAY 7	.31	.42	.45	.49	.61	.71	.75	.75	.75	.75	.75	.75
JUN 22	.22	.43	.61	.70	.75	.80	.85	.88	.88	.88	.88	.88
JUL 1	.52	1.00	1.22	1.37	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41
JUL 1	.22	.35	.45	.55	.60	.63	.65	.67	.69	.69	.69	.69
JUL 17	.20	.36	.43	.45	.47	.49	.49	.50	.53	.53	.57	.58
JUL 17	.30	.41	.48	.53	.56	.63	.71	.75	.78	.83	.85	.89
JUL 18	.25	.34	.47	.52	.72	.90	1.07	1.30	1.49	1.77	1.82	1.92
WYOMING												
CASPER						NONE						
CHEYENNE												
JUL 25	.21	.31	.37	.47	.57	.60	.60	.60	.60	.60	.60	.60
LANDER						NONE						
SHERIDAN						NONE						

Data from airport unless otherwise specified.
U indicates Urban, R indicates Rural, sites.

* Maximum of record for this duration and station. Period of record is that compiled in Weather Bureau Technical Paper No. 2, revised, plus 1962 and 1963 data. New records are denoted only for 5, 10, 15, 30, 60, 120, and 180 minutes. The continuity of record at stations that have changed location is described on page 2 of the above reference.

SUNSHINE, AMOUNT AND PERCENT

Station	January		February		March		April		May		June		July		August		September		October		November		December		Annual	
	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible
ALABAMA																										
Birmingham	167	53	171	53	225	62	258	66	354	82	290	67	223	51	273	66	294	79	248	71	200	64	124	40	2827	63
Montgomery	143	45	171	53	212	57	184	47	290	68	288	67	192	44	258	63	242	65	257	73	188	59	127	41	2552	57
ALASKA																										
Anchorage	70	35	83	32	185	56	223	50	327	60	236	41	275	48	154	31	165	43	111	36	103	47	102	58	2033	45
Juneau	53	24	33	12	121	33	174	40	233	45	168	31	139	26	97	20	169	44	52	16	51	22	60	30	1349	30
Nome	34	20	102	41	210	57	183	40	226	39	353	56	290	47	152	30	30	8	84	28	36	19	58	45	1758	38
ARIZONA																										
Phoenix	296	93	299	94	323	87	366	94	406	94	415	96	357	82	349	84	320	86	323	92	254	81	244	79	3952	89
Prescott	277	88	294	93	299	80	324	83	395	91	408	94	329	75	324	78	310	83	315	90	253	81	204	67	3732	84
Tucson	294	92	283	88	313	84	343	88	396	92	392	92	306	70	317	77	260	70	316	90	266	84	254	81	3738	84
Yuma	295	92	303	94	355	95	376	96	408	95	420	98	386	89	361	87	354	95	310	88	270	86	231	74	4067	91
ARKANSAS																										
Ft. Smith	242	77	205	65	220	59	204	52	231	53	315	72	351	79	236	57	202	54	273	78	187	60	168	55	2833	64
Little Rock	208	66	198	62	235	63	218	56	303	70	333	77	304	69	198	47	230	62	280	80	165	53	98	32	2770	62
CALIFORNIA																										
Eureka (U)	135	45	270	87	225	61	257	64	230	51	258	57	255	56	268	63	266	71	185	54	139	47	95	32	2583	58
Fresno	168	54	284	90	289	78	341	86	373	85	390	89	434	97	397	95	369	99	325	93	210	69	113	38	3693	83
Los Angeles (U)	268	85	305	96	297	80	289	74	321	74	284	66	†417	95	318	77	278	75	238	68	206	66	134	44	3355	75
Red Bluff	129	43	293	94	273	74	367	92	380	85	340	76	431	94	403	95	364	97	291	84	169	57	132	46	3572	80
Sacramento	136	45	296	95	287	77	372	94	385	87	356	80	445	99	408	97	369	99	312	90	174	58	129	42	3668	82
San Diego	255	80	284	89	266	72	244	63	276	64	207	48	335	77	232	56	271	73	224	63	241	77	183	59	3017	68
San Francisco (U)	207	67	297	95	311	84	318	80	327	74	304	69	316	70	307	73	290	78	276	79	187	62	125	42	3265	73
COLORADO																										
Denver	235	78	190	61	264	71	287	72	290	65	332	74	362	80	347	82	302	81	312	90	195	65	214	73	3330	75
Grand Junction	210	69	258	83	222	60	228	57	325	73	325	73	360	80	326	77	317	85	315	91	161	53	143	49	3192	71
Pueblo	279	91	207	66	279	91	322	81	319	72	346	78	348	77	326	77	278	75	307	89	216	71	220	75	3449	77
CONNECTICUT																										
Hartford	174	59	197	64	232	63	239	60	341	75	300	66	263	57	289	67	243	65	219	64	181	61	113	40	2791	62
New Haven	194	65	204	66	221	60	197	49	353	79	314	69	274	60	285	67	256	69	238	69	191	65	137	48	2864	64
DISTRICT OF COLUMBIA																										
Washington Nat'l Airport	201	66	189	61	217	59	186	47	308	70	311	70	255	56	210	50	237	64	229	66	190	55	118	40	2650	59
FLORIDA																										
Apalachicola (U)	176	54	---	--	198	53	231	60	316	75	311	74	180	42	198	49	---	--	221	62	171	53	139	44	----	--
Jacksonville	203	63	216	67	238	64	264	68	314	74	305	72	231	54	219	53	209	56	168	48	162	51	169	53	2698	61
Key West	206	61	221	67	281	75	316	83	314	76	312	76	322	77	316	79	266	72	196	55	197	60	177	54	3124	70
Lakeland (U)	125	38	172	55	201	54	294	76	279	66	272	65	221	52	219	54	174	47	195	55	203	63	193	60	2548	57
Miami Beach 1/	142	43	205	62	240	65	262	68	277	64	246	60	306	73	#259	76	249	67	198	55	225	69	---	--	----	--
Pensacola	82	25	146	45	179	48	181	47	339	80	295	70	209	49	271	66	257	69	254	72	217	68	175	55	2606	59
Tampa	137	42	179	55	271	73	283	74	344	82	338	81	298	70	231	57	185	50	191	54	151	47	228	71	2836	64
GEORGIA																										
Atlanta	165	52	179	56	228	61	230	59	325	75	309	72	238	54	249	60	241	65	252	72	217	69	165	53	2798	63
Macon	132	42	170	53	247	66	222	57	310	72	311	73	180	41	253	61	233	63	231	65	204	65	139	45	2632	59
Savannah	145	45	193	60	236	64	254	65	320	75	345	81	256	59	290	70	271	73	240	68	217	69	175	56	2941	66
HAWAII																										
Hilo	151	44	162	49	102	27	116	31	87	21	169	42	124	30	159	40	103	28	63	17	123	36	118	35	1477	33
Honolulu	248	73	268	81	307	82	190	50	254	62	199	49	236	57	313	79	230	62	168	47	128	39	248	74	2788	63
Kahului	255	75	260	78	266	71	291	77	305	75	307	76	333	79	312	79	275	75	237	65	196	59	216	64	3253	73
Lihue	180	53	226	68	136	37	---	--	203	50	228	56	218	53	243	61	186	51	---	--	---	--	158	47	----	--
IDAHO																										
Boise	143	49	262	86	222	60	294	73	342	75	266	58	412	88	374	87	334	89	264	77	155	53	101	36	3170	71
Pocatello	98	33	146	48	191	52	237	59	243	54	277	60	424	91	395	92	337	90	285	83	104	31	73	26	2810	63
ILLINOIS																										
Cairo (U)	217	70	198	63	203	55	193	49	267	61	276	63	331	74	310	74	264	71	292	84	178	58	97	32	2826	63
Chicago (Midway)	157	53	176	57	221	60	201	50	349	77	294	65	282	61	283	66	214	57	234	68	177	60	102	36	2690	60
Moline	193	65	177	57	186	50	182	43	298	66	283	62	312	68	302	71	227	61	251	73	175	59	93	33	2679	60
Peoria	179	60	182	59	204	55	211	53	318	71	310	69	323	71	307	72	260	70	273	79	170	57	77	27	2812	63
Springfield	191	63	191	62	197	53	213	54	325	73	334	74	343	75	340	80	285	76	295	85	186	62	104	36	3004	67
INDIANA																										
Evansville	178	58	161	52	219	59	206	52	304	69	301	68	316	70	348	82	256	69	304	88	223	73	87	29	2903	65
Ft. Wayne	181	61	200	65	180	49	186	47	334	74	341	75	359	78	309	72	259	69	228	66	179	60	72	25	2827	63
Indianapolis	182	60	203	65	186	50	221	56	305	69	322	72	298	65	313	74	277	74	258	75	178	59	83	28	2824	63
IOWA																										
Burlington	200	67	191	62	205	55	181	45	292	65	298	66	355	77	325	76	276	74	288	83	195	66	118	41	2925	65
Des Moines	182	61	198	64	234	63	168	42	275	61	265	58	329	72	290	68	217	58	235	68	132	45	129	45	2653	59
Sioux City	225	76	202	66	250	68	179	44	296	65	280	61	378	82	258	60	231	62	283	83	188	64	139	49	2909	65
KANSAS																										
Concordia	228	76	214	69	266	72	240	60	349	78	342	76	364	80	287	68	243	65	298	86	188	63	174	60	3193	72
Dodge City	253	82	205	65	287	77	302	77	331	75	374	85	365	81	322	76	262	70	286	82	180	59	158	53	3325	75
Topeka	210	69	204	65	263	71	186	47	271	61	250	56	301	67	252	60	244	65	254	73	163	54	155	53	2753	62
Wichita	240	78	203	65	235	63	214	54	295	67	305	69	353	79	261	62	248	66	254	73	154	51	172	58	2934	66
KENTUCKY																										
Louisville	188	62	170	54	182	49	187	47	311	70	349	79	277	61	318	75	258	69	256	74	201	66	96	32	2794	63
LOUISIANA																										
New Orleans (Audubon Pk.) 3/	126	39	184	57	228	61	201	52	284	67	215	51	181	43	236	58	255	69	224	63	133	41	137	43	2404	54
Shreveport	202	63	200	62	226	61	199	51	238	56	284	66	337	77	258	62	237	64	300	85	189	60	156	50	2854	63
MAINE																										
Portland	194	67	202	66	196	53	216	53	304	67	274	59	288	62	264	61	239	64	204	60	176	60	111	40	2666	60
MARYLAND																										
Baltimore	206	68	191	61	209	56	166	42	294	66	268	60	281	66	245	58	240	64	229	66	218	73	131	45	2677	60
MASSACHUSETTS																										
Blue Hill Obs. (R)	173	60	180	61	196	55	200	52	318	73	293	67	217	49	244	59	213	59	201	61	171	60	113	41	2519	58
Boston	185	63	202	68	229	62	212	53	343	76	326	71	224	48	259	60	239	64	223	65	179	61	124	44	2744	61
Nantucket	167	56	165	53	225	61	226	57	362	80	298	66	223	49	242	56	201	54	167	49	157	53	80	28	2512	56
MICHIGAN																										
Alpena	147	51	207	68	234	63	240	59	353	77	394	84	345	73	257	59	239	64	225	66	109	38	81	30	2830	63
Detroit City AP	116	39	174	57	165	45	189	47	325	72	305	67	306	66	245	57	220	59	210	61	148	50	93	33	2497	56
Grand Rapids	123	42	154	50	137	37	235	58	324	71	322	70	311	67	272	63	199	53	195	57	114	39	69	24	2453	55
Lansing	109	37	160	52	212	57	261	65	373	82	342	75	283	61	246	57	180	48	181	53	113	39	87	31	2548	57
Marquette (U)	135	48	156	52	208	56	226	55	309	66	338	71	345	72	247	56	172	46	191	57	93	33	80	30	2500	56

See reference notes at end of table.

SUNSHINE, AMOUNT AND PERCENT

YEAR 1964

Station	January		February		March		April		May		June		July		August		September		October		November		December		Annual	
	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible
MICHIGAN (Cont'd.)																										
Sault Ste. Marie	89	32	175	58	202	55	198	49	312	67	330	70	325	68	178	41	154	41	186	55	80	28	85	32	2313	52
MINNESOTA																										
Duluth	131	47	187	62	239	65	217	53	307	66	295	62	389	81	232	53	176	47	198	59	128	45	118	44	2616	58
Minneapolis-St. Paul	172	60	220	73	232	63	252	62	345	75	325	70	345	73	278	64	204	54	191	56	150	52	133	49	2846	64
MISSISSIPPI																										
Vicksburg (U)	141	44	170	53	235	63	225	58	306	71	329	77	288	66	263	64	246	66	253	72	145	46	149	48	2750	62
MISSOURI																										
Columbia	197	65	178	55	195	52	212	53	266	60	270	61	332	73	317	75	252	68	279	81	183	60	164	56	2844	64
Kansas City	215	71	203	65	243	66	227	57	302	68	311	70	344	76	299	71	264	71	246	71	172	57	172	58	2997	67
St. Louis	210	69	171	55	211	57	193	49	299	68	324	73	316	70	317	75	226	61	282	81	201	66	119	40	2870	64
Springfield	232	75	211	67	238	64	249	63	256	58	274	62	321	72	254	60	223	60	248	71	168	55	156	52	2829	63
MONTANA																										
Billings	183	65	173	57	243	66	252	62	239	52	246	52	398	84	296	68	247	66	249	73	92	32	145	54	2761	62
Great Falls	126	45	150	50	236	64	240	59	301	64	331	69	423	88	310	70	217	58	273	81	112	40	106	40	2824	63
Havre	136	50	148	50	197	53	213	52	262	56	278	57	421	87	298	67	203	54	240	71	100	36	95	37	2589	58
Helena	130	46	154	51	251	68	246	60	272	58	270	57	400	84	309	70	253	67	255	75	107	38	121	45	2768	62
Missoula	76	27	156	52	177	48	163	40	213	46	234	49	384	80	234	53	235	62	199	59	71	25	72	27	2215	49
NEBRASKA																										
Lincoln (U)	214	72	196	63	224	60	191	48	300	67	305	67	358	78	265	62	191	51	254	74	147	49	133	46	2778	62
North Platte	263	88	192	62	233	63	203	51	272	61	324	72	417	91	318	74	273	73	274	79	178	60	122	43	3068	69
Omaha	218	73	203	66	228	62	179	45	315	70	296	65	342	74	267	63	221	59	255	74	151	51	168	59	2843	64
Valentine	218	74	203	66	273	74	168	42	295	65	292	64	377	81	283	66	248	66	287	84	293	56	282	51	3219	66
NEVADA																										
Ely	197	65	266	85	273	74	264	66	368	83	351	79	395	87	355	84	347	93	300	87	213	71	139	47	3467	78
Las Vegas	279	90	294	93	313	84	310	79	372	85	403	92	387	87	370	88	361	97	324	93	235	76	229	76	3877	87
Reno	203	67	306	98	344	93	377	95	417	94	427	96	452	99	420	99	372	100	332	96	270	90	234	80	4152	93
Winnemucca	77	26	218	70	203	55	274	69	276	61	218	48	405	88	374	88	346	93	263	76	139	47	121	42	2913	65
NEW HAMPSHIRE																										
Concord	158	54	191	62	205	55	216	54	334	73	332	72	230	49	249	58	226	60	218	64	157	54	112	40	2627	59
Mt. Washington Obs. (R)	66	22	128	43	104	28	174	43	205	44	179	38	123	26	118	27	151	40	144	41	107	36	69	24	1568	35
NEW JERSEY																										
Atlantic City Exp. Center	211	70	171	55	205	55	164	41	345	78	326	73	303	67	250	59	222	59	223	65	201	67	112	39	2733	61
Trenton (U)	203	68	191	61	217	58	179	45	372	83	288	64	247	54	269	63	256	69	227	66	198	66	134	46	2781	62
NEW MEXICO																										
Albuquerque	263	84	237	75	263	71	306	78	351	81	400	92	350	79	327	78	253	68	324	92	244	79	193	63	3510	79
Roswell	271	85	261	82	268	72	283	72	323	75	382	89	345	79	314	76	226	61	289	82	208	66	189	61	3357	75
NEW YORK																										
Albany	160	55	208	68	179	48	171	43	292	64	268	58	229	49	211	49	222	59	179	52	113	38	82	29	2313	52
Binghamton	117	40	158	51	145	39	170	42	297	66	295	65	316	68	232	54	257	69	193	56	136	46	63	22	2379	53
Buffalo	134	46	152	49	152	41	192	48	315	69	326	71	328	71	214	50	256	68	207	61	124	42	59	21	2457	55
New York Central Park Obs.	202	67	175	57	210	57	192	48	331	74	283	63	221	48	278	65	243	65	229	66	183	61	113	39	2660	60
Rochester	126	43	175	57	176	48	208	52	338	74	357	78	345	74	273	63	244	65	186	54	136	47	72	26	2635	59
Syracuse	162	56	154	50	178	48	197	49	319	70	309	67	295	63	236	55	198	53	184	54	109	37	56	20	2398	54
NORTH CAROLINA																										
Asheville (U) 2/	203	65	151	48	223	60	193	49	289	66	307	70	236	53	224	54	227	61	248	71	239	77	150	49	----	--
Cape Hatteras (R)	207	66	192	61	209	56	199	51	292	67	304	70	315	71	307	74	273	74	185	53	202	65	147	48	2832	64
Charlotte	173	55	193	61	234	63	228	58	311	72	309	71	253	57	265	63	277	74	231	66	231	75	156	51	2860	64
Greensboro	179	58	188	60	224	60	168	43	273	62	280	64	196	44	208	50	251	67	223	64	223	72	120	40	2532	57
Raleigh	172	55	194	64	248	67	204	52	290	67	293	67	226	51	199	48	259	70	225	64	239	78	138	46	2687	60
Wilmington	188	60	207	65	222	60	225	57	295	68	262	61	217	49	223	54	270	73	204	58	242	78	190	62	2745	62
NORTH DAKOTA																										
Bismarck	185	66	176	59	266	72	243	60	330	71	284	60	377	79	326	74	259	69	248	73	121	43	91	34	2906	65
Fargo	176	63	199	66	256	69	240	59	343	74	265	56	388	81	294	67	236	63	207	61	115	41	117	44	2835	63
Williston	162	59	170	57	240	65	244	59	304	65	273	57	394	81	290	65	202	53	225	67	139	50	127	49	2768	62
OHIO																										
Cincinnati Obs.	175	58	142	45	158	43	148	37	267	60	291	65	229	51	313	74	238	64	248	72	221	73	95	32	2524	57
Cleveland	148	50	152	49	154	42	227	57	335	75	335	74	315	68	276	65	231	62	221	64	136	46	90	31	2620	59
Columbus	165	55	176	57	195	53	191	48	259	58	250	56	330	72	292	69	226	61	231	67	183	61	67	24	2565	57
Dayton	207	69	179	58	182	49	198	50	306	69	295	66	338	74	359	84	278	74	250	72	193	64	83	28	2868	64
Toledo	168	56	203	66	209	56	199	50	328	73	344	76	321	70	280	65	242	65	249	72	171	58	105	37	2818	63
OKLAHOMA																										
Oklahoma City	251	80	216	68	247	67	275	70	236	54	280	64	350	79	308	74	226	61	269	77	151	49	217	71	3025	68
Tulsa	239	77	216	68	227	61	220	56	242	55	291	66	340	76	253	60	214	57	232	66	153	50	186	62	2810	63
OREGON																										
Portland	50	18	145	48	139	38	173	43	239	52	216	46	303	64	263	60	203	54	167	49	58	20	66	24	2022	45
Roseburg	71	24	144	47	159	43	221	55	254	56	245	53	310	67	297	69	282	75	188	55	54	18	33	12	2257	50
PACIFIC AREA																										
Guam (R)	245	69	213	63	267	71	243	65	209	53	252	82	199	50	141	36	85	29	184	50	225	65	204	58	2465	56
Johnston Island	231	66	206	61	277	74	166	44	190	47	249	63	296	73	201	51	136	34	101	28	161	47	209	61	2421	55
Koror (R)	233	64	298	57	307	82	212	58	230	59	220	59	287	74	188	49	229	63	188	51	161	45	190	53	2643	60
Majuro	260	71	201	58	206	55	173	47	181	47	185	49	206	53	183	48	183	39	164	44	164	46	216	59	2320	52
Marcus Island	253	75	215	65	268	72	288	75	263	64	313	77	342	82	291	72	321	87	244	68	203	62	103	31	3104	70
Ponape (R)	217	60	168	49	199	53	139	38	135	35	172	46	203	52	195	51	165	45	158	42	190	54	170	47	2111	48
Truk	276	76	143	42	224	60	208	56	*164	42	227	60	230	59	216	56	184	50	173	47	207	59	168	46	2421	55
Yap (R)	321	86	295	86	239	64	215	58	139	37	115	30	177	45	‡118	31	186	51	49	30	207	59	105	34	2166	49
PENNSYLVANIA																										
Harrisburg	198	66	183	59	195	53	168	42	329	74	286	64	272	60	258	61	264	71	227	66	213	71	113	39	2704	61
Philadelphia	199	66	184	59	200	54	173	44	324	73	309	69	271	59	253	60	230	62	217	63	192	64	119	41	2671	60
Pittsburgh (U)	155	52	144	47	168	45	193	48	290	65	274	61	253	55	254	60	219	58	180	52	134	45	55	19	2319	52
Pittsburgh	147	49	146	47	166	45	194	49	313	70	313	70	344	75	322	76	226	60	234	68	199	67	87	30	2691	60
Reading (U)	183	61	157	51	169	46	176	44	322	72	290	64	276	60	248	58	249	67	216	63	189	63	110	38	2585	58
Scranton	153	51	171	55	183	49	160	40	300	67	265	58	245	53	223	52	248	66	197	57	175	59	82	29	2402	54
PUERTO RICO																										
San Juan (Isla Verde)	247	71	260	78	274	73	242	64	345	86	287	72	276	68	269	68	197	54	204	56	200	59	172	50	2972	67
RHODE ISLAND																										
Providence	177	60	177	57	213	57	217	54	336	75	283	62	240	52	225	53	188	50	176	51	183	62	115	40	2530	57
SOUTH CAROLINA																										
Charleston	132	41	188	59	278	75	237	61	290	67	257	60	143	33	198	48	233	63	217	62	185	59	155	50	2513	56
Columbia	164	52	202	63	257	69	208	53	289	67	282	65	170	39	248	60	291	78	237	68	220	70	129	42	2695	60
Greenville-Spartanburg	196	63	205	65	240	65	201	51	264	61	291	67	238	54	222	53	252	68	248	71	237	76	127	42	2721	61

See reference notes at end of table.

SUNSHINE, AMOUNT AND PERCENT

YEAR 1964

Station	January		February		March		April		May		June		July		August		September		October		November		December		Annual	
	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible	Hours	Percent of possible
SOUTH DAKOTA																										
Huron	176	61	164	54	233	63	200	50	320	70	339	73	375	80	309	71	254	68	281	83	197	68	127	46	2974	66
Rapid City	183	63	195	64	257	70	234	58	256	56	267	58	342	73	341	79	300	80	286	84	176	61	139	50	2976	66
TENNESSEE																										
Chattanooga	170	54	146	46	201	54	200	51	286	66	327	75	237	54	292	70	276	74	238	68	212	68	130	43	2715	61
Knoxville	183	59	141	45	202	54	190	48	277	64	326	75	300	68	291	70	253	68	236	68	172	56	101	33	2672	60
Memphis	227	73	247	78	235	63	225	57	347	80	372	86	326	74	275	66	267	72	263	75	178	57	106	35	3066	69
Nashville	212	68	157	50	191	51	192	49	272	62	324	74	282	63	290	69	246	66	240	69	185	60	106	35	2694	60
TEXAS																										
Abilene	248	78	237	74	300	81	315	81	334	78	361	85	377	87	319	77	199	54	288	82	216	68	221	71	3413	77
Amarillo	270	86	222	70	291	78	319	81	292	67	352	81	342	77	329	79	234	63	297	85	182	59	219	72	3349	75
Austin	226	70	205	64	238	64	149	38	160	38	303	72	336	78	326	80	206	56	292	82	183	57	170	53	2792	63
Brownsville	167	50	163	50	181	49	179	47	213	51	283	69	345	82	353	87	245	66	265	74	179	55	160	49	2733	61
Corpus Christi	189	58	156	48	185	50	134	35	172	41	248	60	322	76	309	76	188	51	260	73	177	55	129	40	2468	55
Dallas	245	77	219	68	261	70	215	55	210	49	314	73	379	87	281	68	167	45	282	80	187	59	190	61	2948	66
El Paso	296	92	294	91	334	90	345	89	389	91	412	97	342	79	349	85	299	81	326	92	301	95	220	70	3906	88
Galveston (U)	115	35	173	53	221	59	159	41	320	76	310	74	303	71	331	81	258	70	289	82	226	70	149	47	2856	64
Houston	165	51	187	58	215	58	192	50	262	62	345	82	360	84	313	77	225	61	296	84	214	67	154	48	2929	66
Port Arthur	148	46	169	52	210	56	149	38	267	63	308	73	230	53	244	60	230	62	283	80	185	58	128	40	2550	57
San Antonio	232	71	195	58	247	66	253	66	232	55	332	79	359	84	341	83	281	76	309	87	195	61	197	62	3173	71
UTAH																										
Salt Lake City	128	43	211	68	242	65	227	57	283	63	253	56	417	91	391	92	354	95	300	87	169	57	106	37	3083	69
VERMONT																										
Burlington	138	48	179	59	213	57	234	58	328	72	359	77	266	57	242	56	229	61	207	61	134	46	93	34	2621	60
VIRGINIA																										
Lynchburg	178	58	168	53	208	56	188	48	324	74	314	71	252	56	238	57	252	68	228	66	216	71	135	45	2700	61
Norfolk	202	65	203	64	217	58	---	--	307	70	302	69	223	50	232	55	228	61	203	58	202	66	94	31	----	--
Richmond	208	68	202	64	241	65	195	49	294	67	323	73	229	51	219	52	246	66	236	68	222	73	138	46	2753	62
WASHINGTON																										
Seattle (U)	65	23	129	49	125	34	189	46	293	63	207	43	295	61	275	63	230	61	191	57	57	20	36	14	2092	47
Spokane	89	32	204	68	193	52	241	59	275	59	252	53	361	75	284	64	244	65	210	62	34	12	26	10	2413	54
Tatoosh Is. (R)	22	8	127	43	127	34	217	53	236	50	210	44	176	36	248	56	246	65	194	58	91	55	53	20	1944	43
WEST VIRGINIA																										
Parkersburg (U)	183	60	133	43	156	42	197	50	293	66	258	58	270	60	274	65	239	64	211	61	175	58	66	22	2455	55
WISCONSIN																										
Green Bay	142	49	151	50	216	59	214	53	309	67	286	61	265	56	236	54	166	44	177	52	145	50	89	32	2394	54
Madison	158	54	179	59	197	53	172	43	327	72	272	59	288	62	309	72	213	57	220	64	164	56	97	35	3596	58
Milwaukee	154	53	175	57	225	61	228	57	351	77	330	72	333	72	322	75	209	56	225	66	166	57	98	35	2813	63
WYOMING																										
Cheyenne	223	75	241	78	238	64	237	59	223	50	245	54	324	71	289	68	278	74	262	76	141	48	155	54	2855	64
Lander	192	66	218	71	288	78	239	59	286	63	290	63	422	91	372	87	317	85	283	83	189	65	170	60	3265	73
Sheridan	188	65	170	56	252	68	257	63	261	57	279	60	412	87	324	75	255	68	243	71	133	46	135	50	2908	65

Data from airport unless otherwise specified.
"U" indicates Urban, "R" indicates Rural, sites.
1/ Data taken from instruments at 3240 N.W. 27th Avenue from December 1 thru 12; then from 1365 Memorial Drive.
* Estimated
† Data from this location discontinued June 30. -- Continued from 434 S. San Pedro St. from July 29.
\# 27th - 31st missing due to Hurricane Cleo.
‡ Instrument malfunction from 16th - 31st.
2/ Station moved to airport September 1, 1964.
3/ From Loyola Ave. location.

ANNUAL CLIMATOLOGICAL DATA
ENGLISH UNITS

State and Station	Temperature: Averages: Daily maximum	Temperature: Averages: Daily minimum	Temperature: Averages: Annual	Temperature: Extremes: Highest	Temperature: Extremes: Date	Temperature: Extremes: Lowest	Temperature: Extremes: Date	Heating degree days	Precipitation: Total	Precipitation: Greatest in 24 hours	Precipitation: Date (s)	Snow, Sleet: Total	Snow, Sleet: Greatest in 24 hours	Snow, Sleet: Date (s)	Relative humidity: 1:00 a.m. E.S.T.	Relative humidity: 7:00 a.m. E.S.T.	Relative humidity: 1:00 p.m. E.S.T.	Relative humidity: 7:00 p.m. E.S.T.	Wind: Average speed	Wind: Prevailing direction	Wind: Fastest mile: Speed	Wind: Fastest mile: Direction	Wind: Fastest mile: Date	Possible sunshine	Average sky cover sunrise to sunset	Number of days: Sunrise to sunset: Clear, 0-0.3	Number of days: Sunrise to sunset: Partly cloudy, 0.4-0.7	Number of days: Sunrise to sunset: Cloudy, 0.8-1.0	Number of days: Precipitation .01 inch or more	Number of days: Snow, Sleet 1.0 inch or more	Number of days: Thunderstorms	Number of days: Heavy fog	Number of days: Max. temp. 90°F and above	Number of days: Max. temp. 32°F and below	Number of days: Min. temp. 32°F and below	Number of days: Min. temp. 0°F and below
	°F	°F	°F	°F		°F		Base 65 °F	In.	In.		In.	In.		%	%	%	%	M.p.h.		M.p.h.			%	Tenths											
ALABAMA																																				
BIRMINGHAM	73.2	51.7	62.5	99	JUN 22	13	JAN 15	2764	57.79	3.68	APR 5-6	.4	T	DEC 18 +	82	85	59	64	7.1	15	43	S	MAR 4	63	6.1	106	97	163	120	0	59	7	46	1	52	0
HUNTSVILLE	71.4	50.4	60.9	97	JUN 22	13	DEC 18+	3209	64.20	5.10	MAR 14-15	2.7	1.0	FEB 28	77	81	56	59	7.1	14	40*	18	MAR 4		5.7	113	106	147	109	2	52	13	46	3	60	0
MOBILE	76.7	56.9	66.8	98	SEP 2	20	JAN 14	1774	63.85	7.31	APR 26-27	T	T	JAN 13 +	85	87	60	70	10.1	36	46*	36	OCT 4		6.2	94	106	166	128	0	76	56	72	0	21	0
MONTGOMERY	75.0	54.1	64.6	99	JUN 21	15	JAN 15	2325	64.41	4.54	APR 8	T	T	FEB 19 +	84	89	59	65	7.3	36	43	S	MAR 4	57	6.2	92	110	164	107	0	73	29	61	1	41	0
ALASKA																																				
ANCHORAGE	40.8	26.3	33.6	75	MAY 31	-30	DEC 14	11430	15.89	1.66	NOV 18-19	100.4	16.4	NOV 18-19	79	75	65	72	7.4	18	41*	5	DEC 22	45	7.1	70	75	218	125	24	1	19	8 9	131	210	52
ANNETTE	45.5	38.4	42.0	80	JUN 8	1	DEC 15	7590	120.89	3.86	OCT 17-18	81.7	12.8	DEC 31	85	79	74	82	9.5	18	43*	15	OCT 18		8.5	22	57	287	252	20	1	11	17	28	95	0
BARROW	9.9	- .7	4.6	67	JUL 23	-54	FEB 19	22051	3.07	.35	JUN 30	35.7	3.9	OCT 18-19	77	78	74	75	11.8	9	40*	11	NOV 17			V69	V53	V178	81	12	0	62	0	259	336	192
BARTER ISLAND	11.8	1.1	6.5	64	JUL 6	-48	FEB 19	21384	5.12	.72	AUG 24-25	32.5	2.7	AUG 26	78	77	76	78	11.9	8	48*	27	MAR 14			X65	X56	X190	88	9	0	59	0	249	320	192
BETHEL	33.2	17.8	25.5	77	JUL 8	-39	MAR 14	14364	10.25	.74	OCT 26-27	60.3	5.3	OCT 26-27	85	83	74	79	12.1	3	55*	18	NOV 14		7.6	56	58	252	140	20	2	77	13	161	234	101
COLD BAY	42.1	32.7	37.4	69	OCT 26	6	FEB 18	9996	26.51	1.78	SEP 24	52.7	8.6	NOV 30	86	85	79	83	16.0	15	59*	11	NOV 16		8.7	16	57	293	203	16	0	25	0	55	166	0
FAIRBANKS	32.6	12.9	22.8	82	JUL 16	-56	DEC 14	15446	10.06	.64	JUN 24	68.5	7.7	NOV 19-20	81	76	64	71	5.0	36	24*	26	SEP 3+		7.1	62	92	212	113	21	8	16	53	166	238	134
JUNEAU	46.4	34.0	40.2	79	MAY 29	-15	DEC 30+	8996	58.28	2.33	DEC 4-5	135.1	14.9	DEC 16-17	88	83	76	84	10.1	12	45*	13	DEC 7	30	8.6	35	33	298	242	33	0	12	12	49	132	9
KING SALMON	39.9	23.2	31.6	76	JUN 24+	-28	DEC 31	12177	18.86	.81	SEP 24-25	52.4	5.2	DEC 14-15	81	77	67	77	11.2	36	54*	9	NOV 16		7.2	70	64	232	168	18	2	35	17	111	220	61
KOTZEBUE	23.3	9.7	16.5	73	JUL 22	-52	FEB 19+	17662	6.63	.54	SEP 4-5	70.8	5.6	NOV 6-7	79	79	76	76	12.1	11	52*	11	DEC 29		6.3	107	68	191	98	22	1	30	4	206	261	154
MC GRATH	32.6	13.3	23.0	82	JUL 28	-55	DEC 11	15362	14.50	1.21	JUN 19-20	122.6	13.2	APR 23-24	77	74	59	67	5.1	33	35*	19	AUG 30		7.3	67	65	234	136	40	9	22	40	162	244	126
NOME	30.2	15.3	22.8	81	AUG 13	-38	MAR 13	15367	14.41	1.28	SEP 1	53.7	4.7	APR 4	80	78	73	77	12.5	9	52*	9	DEC 29	38	6.7	90	80	196	119	19	0	20	4	193	242	114
ST. PAUL ISLAND	37.7	29.4	33.6	56	JUN 15	-10	FEB 20	11395	36.61	1.49	NOV 15-16	159.0	13.8	JAN 30	92	90	87	90	17.6	32	82*	35	NOV 16		9.0	17	34	315	224	45	0	96	0	84	202	7
SHEMYA	40.0	34.7	37.4	59	AUG 11	16	JAN 14	10007	32.11	1.74	NOV 6-7	77.3	3.6	DEC 17-18	84	85	84	85	20.9	24	90*		DEC 10		8.9	9	59	298	214	29	0	60	0	50	145	0
YAKUTAT	44.5	31.9	38.2	77	MAY 30+	-24	DEC 30	9729	168.34	4.99	FEB 19-20	304.3	15.6	FEB 13-14	90	83	76	86	6.9	9	45*	13	OCT 21		8.3	44	41	281	243	82	3	16	6	56	174	14
ARIZONA																																				
FLAGSTAFF	59.4	28.7	44.1	90	JUL 7	-15	JAN 24	7658	19.04	2.55	JUL 15	101.9	12.2	MAR 23-24	70	39	38	62	7.7	18	32*	2	NOV 3		4.3	179	90	97	77	23	49	20	1	25	215	14
PHOENIX	82.4	53.2	67.8	112	JUL 3	20	JAN 11	2054	6.00	1.50	SEP 14	.0	.0		54	34	24	42	6.8	12	61Y	NNW	SEP 14	89	3.2	224	82	60	31	0	23	3	154	0	35	0
PRESCOTT	68.6	39.4	54.0	99	JUL 7	5	JAN 14	4827	11.37	1.42	JUL 24-25	24.7	8.0	NOV 15	60	34	30	50	8.9	19	56	SW	NOV 13	84	3.8	194	90	82	53	10	42	5	34	2	144	0
TUCSON	79.5	52.5	66.0	106	JUL 5+	18	JAN 12	2166	17.99	3.05	SEP 9-10	5.8	5.7	MAR 2-3	51	30	23	43	9.0	12	54	S	JUL 24	84	3.5	206	89	71	52	2	42	2	124	0	34	0
WINSLOW	70.2	37.6	53.9	102	JUL 6+	- 1	JAN 14	5155	7.68	2.08	AUG 12	12.0	3.0	MAR 24	58	34	26	47	8.7	22	46*	22	NOV 13		3.9	179	114	73	55	3	43	3	74	5	156	1
YUMA	85.6	58.2	71.9	114	JUL 12	30	DEC 15+	1272	1.98	.78	APR 28	.0	.0		49	30	21	39	8.0	18	50	W	FEB 20	91	2.8	242	66	58	13	0	10	1	167	0	5	0
ARKANSAS																																				
FORT SMITH	75.0	47.8	61.4	110	AUG 4	3	JAN 14	3299	39.66	5.12	APR 3	.8	.6	JAN 12	76	84	51	51	7.5	7	42	N	AUG 28	64	5.1	141	95	130	75	0	42	26	94	3	86	0
LITTLE ROCK	74.4	50.1	62.3	108	AUG 4	9	JAN 14	3042	46.24	3.61	SEP 16-17	.2	.2	DEC 19	79	84	55	59	7.7	25	47	N	JUL 9	62	5.2	140	91	135	85	0	46	15	87	3	71	0
TEXARKANA	75.7	53.8	64.8	105	AUG 5	11	JAN 14	2430	45.52	5.54	SEP 16-17	.4	.3	JAN 16	79	85	59	60	6.8	18									92	0	57	15	87	1	47	0
CALIFORNIA																																				
BAKERSFIELD	77.1	51.6	64.4	111	JUN 25	26	DEC 13	2360	4.02	.39	OCT 29	.0	.0		62	47	35	52	6.7	34	31*	32	JUN 8+		3.2	214	83	69	45	0	0	21	103	0	17	0
BISHOP	73.9	37.1	55.5	105	JUL 24	0	JAN 23	4392	2.70	.49	APR 18-19	12.3	5.0	JAN 21-22		26	18								3.3	220	81	65	20	4	9	0	97	0	155	1
BLUE CANYON	56.8	40.4	48.6	85	SEP 24	12	DEC 31	6142	88.85	9.33	DEC 22	263.4	19.5	JAN 20-21		49									4.1	193	66	107	96	43	1	77	0	23	116	0

See reference notes at end of table.

ANNUAL CLIMATOLOGICAL DATA
ENGLISH UNITS

YEAR 1964

State and Station	Temperature: Averages: Daily maximum	Temperature: Averages: Daily minimum	Temperature: Averages: Annual	Temperature: Extremes: Highest	Temperature: Extremes: Date	Temperature: Extremes: Lowest	Temperature: Extremes: Date	Heating degree days	Precipitation: Total	Precipitation: Greatest in 24 hours	Precipitation: Date (s)	Snow, Sleet: Total	Snow, Sleet: Greatest in 24 hours	Snow, Sleet: Date (s)	Relative humidity: 1:00 a.m. E.S.T.	Relative humidity: 7:00 a.m. E.S.T.	Relative humidity: 1:00 p.m. E.S.T.	Relative humidity: 7:00 p.m. E.S.T.	Wind: Average speed	Wind: Prevailing direction	Wind: Fastest mile: Speed	Wind: Fastest mile: Direction	Wind: Fastest mile: Date	Possible sunshine	Average sky cover sunrise to sunset	Number of days: Sunrise to sunset: Clear, 0-0.3	Number of days: Sunrise to sunset: Partly cloudy, 0.4-0.7	Number of days: Sunrise to sunset: Cloudy, 0.8-1.0	Number of days: Precipitation .01 inch or more	Number of days: Snow, Sleet 1.0 inch or more	Number of days: Thunderstorms	Number of days: Heavy fog	Number of days: Max. temp. 90°F and above	Number of days: Max. temp. 32°F and below	Number of days: Min. temp. 32°F and below	Number of days: Min. temp. 0°F and below
	°F	°F	°F	°F		°F		Base 65 °F	In.	In.		In.	In.		%	%	%	%	M.p.h.		M.p.h.			%	Tenths											
CALIFORNIA																																				
BURBANK	74.7	50.0	62.4	100	OCT 6+	34	DEC 29+	1993	8.41	1.51	JAN 21-22	T	T	NOV 17	72	50	42	66	7.3	18	36*	2	MAR 16		3.3	216	83	67	34	0	1	18	50	0	0	0
EUREKA U	56.3	45.9	51.1	83	SEP 24	30	NOV 15	4986	47.04	2.67	NOV 8-9	.3	.3	DEC 31					7.3	NW	42	SW	DEC 22	58	6.5	93	83	190	118	0	13	47	0	0	5	0
FRESNO	75.9	47.2	61.6	110	JUN 25	25	JAN 13	2824	8.44	1.13	OCT 28-29	.0	.0		77	51	38	63	6.8	31	41	NW	MAR 2	83	3.5	219	61	86	47	0	5	40	105	0	39	0
LONG BEACH	71.3	51.2	61.3	97	APR 14	33	MAR 8	1875	4.96	.69	NOV 16-17	.0	.0		79	59	52	74	6.5	28	37*	17	JAN 21		4.1	172	126	68	29	0	1	26	10	0	0	0
LOS ANGELES	68.5	53.2	60.9	94	OCT 20	38	NOV 19+	1857	6.51	.86	DEC 19-20	.0	.0		76	58	62	74	9.4	27	55Y	NE	MAR 16		4.2	171	119	76	32	0	2	25	3	0	0	0
LOS ANGELES U	72.9	54.3	63.6	96	OCT 20	39	NOV 19+	1395	7.98	1.12	MAR 22-23	.0	.0						6.1		47	NW	MAR 16	75	3.5	201	109	56	28	0			0	13	0	0
MT SHASTA R	61.2	35.7	48.5	97	JUL 11	9	DEC 31	6140	32.47	4.80	DEC 21-22	125.2	17.8	DEC 18-19		59									4.2	187	65	114	93	27	8	7	17	4	149	0
OAKLAND	62.9	50.9	56.9	89	SEP 22	36	JAN 13	2998	16.83	2.20	JAN 20-21	.0	.0		79	73	66	77	9.4	30	46*	16	JAN 20		4.5	168	105	93	77	0	2	5	0	0	0	0
RED BLUFF	75.0	49.7	62.4	111	JUL 24	27	DEC 13	2673	17.08	1.85	JAN 20	.0	.0		62	47	33	53	8.9	17	56	SE	JAN 20	80	4.1	189	76	101	62	0	7	14	95	0	17	0
SACRAMENTO	74.1	47.1	60.6	106	JUL 24+	28	JAN 13	2732	16.70	2.67	JAN 20-21	T	T	JAN 21	81	63	44	71	8.4	22	37	SW	APR 22	82	3.7	214	64	88	65	0	1	30	81	0	19	0
SACRAMENTO U	72.9	49.0	61.0	103	JUL 11+	30	JAN 5	2513	15.07	2.30	JAN 20-21	.0	.0																63	0	0	0	57	0	3	0
SANDBERG R	63.0	44.9	54.0	96	JUL 13	21	DEC 31+	4918	8.27	1.68	NOV 17	35.9	14.0	NOV 17		40			13.3		54*	34	APR 11		3.6	209	65	92	41	12	3	74	20	8	96	0
SAN DIEGO	69.7	54.5	62.1	97	OCT 19	38	DEC 14+	1546	5.27	1.01	JAN 21-22	.0	.0		76	59	61	75	7.0	30	34	NW	MAR 2	68	4.6	160	119	87	39	0	3	16	3	0	0	0
SAN FRANCISCO	64.8	48.0	56.4	92	SEP 24	33	JAN 13+	3197	17.54	2.69	JAN 20-21	.0	.0		83	68	61	78	11.5	27	59	SSE	JAN 20		4.3	180	85	101	68	0	1	9	5	0	0	0
SAN FRANCISCO U	62.2	50.7	56.5	92	SEP 24	40	DEC 31	3188	17.73	1.91	JAN 20-21	.0	.0			F76	K63		8.7	W#	36	SW	APR 22	73					69	0	3	0	2	0	0	0
SANTA CATALINA	68.1	54.4	61.3	98	AUG 8	39	NOV 17	2336	5.53	.68	NOV 17	T	T	NOV 14 +											3.8	193	86	87	39	0	5	137	20	0	0	0
SANTA MARIA	67.3	42.6	55.0	99	OCT 19	25	MAR 8	3640	9.93	1.40	OCT 28-29	.0	.0			61	62								3.7	201	105	60	54	0	3	79	6	0	51	0
STOCKTON	74.2	47.0	60.6	108	JUN 23	24	JAN 13	2840	14.10	1.59	OCT 28-29	.0	.0		76	58	43	65	8.5	27	40*	16	JAN 20		3.9	204	62	100	61	0	2	34	79	0	37	0
COLORADO																																				
ALAMOSA	56.7	20.6	38.7	91	JUL 4	-33	JAN 14+	9638	7.07	.93	DEC 3-4	62.4	14.7	DEC 3	75	44	40								4.1	172	133	61	78	12	47	32	3	60	235	77
COLORADO SPRINGS	62.4	35.2	48.8	99	JUL 4	- 5	FEB 26	6459	8.59	1.49	MAY 29-30	33.1	13.3	MAR 7	55	32	35	51	10.9	36	43*	34	DEC 24		5.0	134	118	114	63	7	53	17	31	35	155	6
DENVER	64.2	35.1	49.7	98	JUL 27+	- 8	DEC 17	6208	10.14	1.71	MAY 29-30	57.2	10.3	APR 2-3	62	35	35	54	8.6	18	43	SW	DEC 15+	75	5.1	126	135	105	78	15	31	8	50	26	164	7
GRAND JUNCTION	65.0	38.8	51.9	102	JUL 20+	- 3	JAN 14	5853	6.88	.69	AUG 12-13	29.1	6.1	NOV 15-16	54	36	32	46	7.5	13	49	W	AUG 26	71	4.9	145	102	119	71	11	25	7	61	16	147	1
PUEBLO	68.6	35.7	52.2	102	JUL 20+	-10	MAR 9	5642	8.29	1.63	MAY 29-30	24.3	9.0	MAR 6	60	34	30	50	11.0	30	73	NE	JUL 28	77	4.5	160	113	93	56	7	31	8	77	11	163	7
CONNECTICUT																																				
BRIDGEPORT	59.5	42.8	51.2	93	JUN 30	7	JAN 15	5587	23.03	1.74	APR 14-15	25.5	10.0	JAN 13-14	79	79	61	70	13.5	23	67*	34	JAN 21		5.6	125	100	141	106	6	14	35	3	14	102	0
HARTFORD	61.2	38.9	50.1	101	JUL 1	- 6	JAN 15	6087	34.55	2.10	JAN 20-21	52.2	10.2	FEB 19-20	77	78	51	62	8.3	18	50	NW	JAN 21	62	6.3	92	115	159	122	10	22	31	21	32	140	7
NEW HAVEN	59.3	41.4	50.4	93	JUN 30	7	JAN 15	5767	33.52	1.95	JUL 8-9	33.4	9.3	JAN 13		78	59		8.2		40	W	JAN 10	64	5.8	117	100	149	112	8	13	24	1	12	123	0
DELAWARE																																				
WILMINGTON	63.8	43.8	53.8	98	JUN 30	1	JAN 15	4990	32.82	2.33	JUL 8	32.7	8.1	MAR 21-22	76	78	53	63	9.8	29	42*	30	MAR 10		5.6	126	95	145	95	10	21	34	21	11	104	0
DIST OF COLUMBIA																																				
WASH NATL AP	67.6	47.3	57.5	100	JUN 10	7	JAN 15	4140	29.48	1.63	SEP 29-30	27.9	8.2	FEB 10-11	70	73	51	58	9.4	18	43	SW	MAR 10	59	5.8	120	93	153	92	6	19	19	49	5	78	0
FLORIDA																																				
APALACHICOLA U	74.6	61.3	68.0	95	AUG 28	24	JAN 14	1373	71.30	7.76	APR 27-28	T	T	JAN 13					7.6						5.5	119	102	142	114	0	62	41	20	0	5	0
DAYTONA BEACH	79.0	61.8	70.4	97	JUN 17	27	JAN 14	815	62.76	6.34	SEP 9-10	.0	.0		86	87	63	76	9.4	36	46*	26	SEP 9		6.4	73	129	164	108	0	58	21	46	0	3	0
FORT MYERS	84.5	64.6	74.6	97	JUL 14+	32	JAN 15	269	32.83	2.78	SEP 4	.0	.0		84	85	56	72	9.7		37*	29	FEB 8		5.9	69	185	112	104	0	80	19	127	0	1	0

See reference notes at end of table.

ANNUAL CLIMATOLOGICAL DATA
ENGLISH UNITS

YEAR 1964

State and Station	Temperature: Averages: Daily maximum	Temperature: Averages: Daily minimum	Temperature: Averages: Annual	Temperature: Extremes: Highest	Temperature: Extremes: Date	Temperature: Extremes: Lowest	Temperature: Extremes: Date	Heating degree days	Precipitation: Total	Precipitation: Greatest in 24 hours	Precipitation: Date (s)	Snow, Sleet: Total	Snow, Sleet: Greatest in 24 hours	Snow, Sleet: Date (s)	Relative humidity: 1:00 a.m. E.S.T.	Relative humidity: 7:00 a.m. E.S.T.	Relative humidity: 1:00 p.m. E.S.T.	Relative humidity: 7:00 p.m. E.S.T.	Wind: Average speed	Wind: Prevailing direction	Wind: Fastest mile: Speed	Wind: Fastest mile: Direction	Wind: Fastest mile: Date	Possible sunshine	Average sky cover sunrise to sunset	Number of days: Sunrise to sunset: Clear, 0-0.3	Number of days: Sunrise to sunset: Partly cloudy, 0.4-0.7	Number of days: Sunrise to sunset: Cloudy, 0.8-1.0	Number of days: Precipitation .01 inch or more	Number of days: Snow, Sleet 1.0 inch or more	Number of days: Thunderstorms	Number of days: Heavy fog	Number of days: Max. temp. 90 °F and above	Number of days: Max. temp. 32 °F and below	Number of days: Min. temp. 32 °F and below	Number of days: Min. temp. 0 °F and below
	°F	°F	°F	°F		°F		Base 65 °F	In.	In.		In.	In.		%	%	%	%	M.p.h.		M.p.h.			%	Tenths											
FLORIDA																																				
JACKSONVILLE	78.4	59.5	69.0	99	JUN 17+	22	JAN 15	1202	65.03	6.26	SEP 9-10	.0	.0		85	89	58	72	9.7	36	82	N	SEP 9	61	6.1	91	120	155	126	0	57	28	78	0	7	0
KEY WEST	82.8	73.3	78.1	91	SEP 15+	47	JAN 15	60	29.36	2.76	DEC 16-17	.0	.0		80	80	69	75	11.9	12	73	S	OCT 14	70	5.7	92	154	120	116	0	60	0	32	0	0	0
LAKELAND U	80.9	62.9	71.9	97	JUN 18	27	JAN 14	610	47.53	3.77	JAN 11-12	.0	.0						7.7					57	6.1	82	146	138	111	0	82	22	77	0	2	0
MIAMI BEACH	80.4	71.9	76.2	95	JUL 8	38	JAN 15+	127	46.48	3.83	APR 29-30	.0	.0												5.9	67	185	114	116	0	0	0	11	0	0	0
MIAMI	82.7	70.1	76.4	93	AUG 19	36	JAN 15	142	60.20	6.92	AUG 26-27	.0	.0		82	85	64	74	8.9	9	74*	36	AUG 27		6.6	40	179	147	127	0	72	9	39	0	0	0
ORLANDO	82.2	62.8	72.5	97	JUN 17+	27	JAN 14	582	54.39	5.36	SEP 9-10	.0	.0		87	90	57	70	9.5	18	46*	2	JUN 10		6.2	79	143	144	108	0	53	23	106	0	1	0
PENSACOLA	75.4	57.9	66.7	97	SEP 2+	20	JAN 14	1730	82.96	7.51	APR 26-27	T	T	JAN 13					7.8	35	45	SE	APR 27	59					134	0	69	0	49	0	16	0
TALLAHASSEE	77.7	55.9	66.8	98	JUN 20	16	JAN 15	1672	104.18	9.26	DEC 3-4	T	T	FEB 22	87	90	57	70	8.8	36	48*	27	MAR 15		6.1	95	120	151	137	0	90	50	76	0	28	0
TAMPA	81.5	61.9	71.7	97	JUL 14+	27	JAN 15	644	57.92	4.08	JUL 25-26	.0	.0		85	88	59	71	11.5	6	67*	31	JUN 25	64	6.4	81	127	158	105	0	75	20	81	0	4	0
WEST PALM BEACH	82.8	67.2	75.0	94	AUG 14+	35	JAN 14	213	79.30	7.07	OCT 11-12	.0	.0		84	86	65	77	10.0	12	86*	13	AUG 27		6.6	53	154	159	128	0	61	8	70	0	0	0
GEORGIA																																				
ATHENS	72.0	50.3	61.2	103	JUN 21	14	JAN 15	2996	71.42	4.70	OCT 4-5	T	T	FEB 25 +	81	79	58	66	7.8	5	31*	29	MAY 12		5.8	115	92	159	127	0	52	51	37	0	53	0
ATLANTA	70.0	50.8	60.4	98	JUN 22	14	JAN 15	3129	60.13	3.38	MAR 25-26	1.1	.8	JAN 13	80	85	60	65	7.7	6	45	SE	JUL 22	63	5.9	109	101	156	122	0	43	49	17	2	52	0
AUGUSTA	75.7	51.7	63.7	99	MAY 28	14	JAN 15	2451	66.04	5.98	AUG 28-29	T	T	JAN 13	83	86	53	67	7.3	24	40*	17	MAY 21		6.1	92	98	176	110	0	51	24	74	0	44	0
COLUMBUS	74.9	52.8	63.9	99	JUN 21	13	JAN 15	2397	73.22	5.63	OCT 4-5	T	T	JAN 13 +		87	57	68	7.3		37*	18	MAR 4		6.2	95	98	173	123	0	53	24	55	0	45	0
MACON	75.3	52.7	64.0	103	JUN 21	16	JAN 15	2380	52.85	3.54	APR 6	T	T	FEB 22 +	84	88	54	64	7.7	30	35	SW	DEC 26+	59	6.0	105	95	166	119	0	50	33	67	0	34	0
ROME	72.0	46.9	59.5	100	JUN 22	7	JAN 15	3489	68.56	5.85	MAR 25-26	1.9	.3	FEB 25															122	1	58	20	58	2	82	0
SAVANNAH	76.3	54.7	65.5	100	JUN 16+	18	JAN 15	1910	73.17	5.86	JUL 17-18	T	T	JAN 13	85	87	56	72	9.5	18	39	N	JUL 9	66	6.0	105	105	156	122	0	63	34	62	0	26	0
HAWAII																																				
HILO	80.6	65.5	73.1	90	DEC 21	60	DEC 18+	0	166.44	8.27	MAY 24-25	.0	.0		88	83	66	84	8.7	25	31*	16	DEC 9	33	7.4	37	113	216	307	0	18	0	1	0	0	0
HONOLULU	83.5	70.5	77.0	90	AUG 29	61	NOV 17	0	20.12	3.35	MAR 23-24	.0	.0		68	66	55	64	10.3	6	33	SW	DEC 19	63	5.9	79	167	120	137	0	12	0	1	0	0	0
KAHULUI	82.2	66.9	74.6	91	AUG 29	58	DEC 7+	0	10.02	.87	DEC 9-10	.0	.0		84	79	61	78	12.1	6	44	NE	DEC 16	73	5.0	131	145	90	100	0	7	0	3	0	0	0
LIHUE	80.8	69.6	75.2	86	JUN 17+	59	MAR 20	0	51.75	4.98	MAR 8-9	.0	.0		80	77	67	77	12.1	6	36	SW	DEC 21		6.7	54	153	159	242	0	12	0	0	0	0	0
IDAHO																																				
BOISE	60.0	36.9	48.5	101	AUG 17+	1	DEC 17+	6540	15.77	1.07	MAY 27-28	46.5	6.5	NOV 25-26	75	57	47	67	7.9	13	40	SW	DEC 20	71	5.4	133	81	152	108	14	17	25	39	29	151	0
IDAHO FALLS 42NW R	54.2	22.3	38.3	98	JUL 27	-32	DEC 17	9917	12.37	1.12	OCT 29-30																		77	0	0	0	28	96	231	72
IDAHO FALLS 46W R	54.2	23.9	39.1	96	JUL 27	-33	DEC 17	9601	12.40	1.18	DEC 22-23	51.5	6.6	APR 22-23					7.6		42A	WSW	SEP 25						82	14	17	14	19	89	224	64
LEWISTON	61.3	40.3	50.8	105	JUL 12	-11	DEC 17	5578	14.81	1.40	JUL 14-15	32.1	7.5	DEC 20	73	60	47								6.6	93	69	204	102	8	16	20	22	6	105	2
POCATELLO	57.4	31.0	44.2	99	JUL 17	-19	JAN 13	7901	11.67	.84	DEC 22-23	48.1	9.0	APR 22-23	73	55	47	63	10.8	24	42	SW	MAY 2+	63	5.6	123	87	156	104	15	21	35	34	60	179	22
ILLINOIS																																				
CAIRO U	69.3	50.9	60.1	103	AUG 4+	8	DEC 18	3627	43.83	6.58	MAR 8-9	3.9	2.4	JAN 11-12		80	56		8.6	SW	60	NW	MAR 4	63	5.4	129	98	139	95	2	44	8	63	7	73	0
CHICAGO MIDWAY	61.1	42.2	51.7	98	AUG 3	2	DEC 18	5887	26.95	2.09	JUL 17-18	41.4	7.1	MAR 29	70	77	57	61	10.8	21	47	SW	MAY 8	60	6.0	105	100	161	105	11	31	15	35	44	131	0
MOLINE	61.5	40.6	51.1	97	JUL 24	-4	DEC 27	6093	35.67	1.95	APR 19-20	38.5	5.3	MAR 20	77	81	58	62	9.9	18	52	SW	MAY 8	60	5.8	106	114	146	110	13	54	16	32	42	141	7
PEORIA	62.1	40.9	51.5	99	AUG 2	-3	JAN 1	5944	28.95	2.80	JUN 19-20	27.1	4.2	JAN 12	78	83	60	62	9.5	18	56	W	NOV 20	63	5.5	120	79	167	102	8	48	29	35	39	136	4
ROCKFORD	58.9	37.6	48.3	93	AUG 3+	-10	DEC 6	6724	39.24	2.50	APR 20-21	44.3	7.3	MAR 4-5	81	84	60	65	10.7	18	37*	22	APR 13		5.7	119	98	149	107	13	47	28	14	50	150	5
SPRINGFIELD	64.9	42.9	53.9	103	AUG 3	-7	JAN 14	5357	31.02	2.82	APR 18-19	36.7	8.8	JAN 11-12	73	78	57	59	11.4	18	48	W	NOV 20+	67	5.5	135	76	155	97	11	46	21	55	33	130	3

See reference notes at end of table.

ANNUAL CLIMATOLOGICAL DATA
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State and Station	Temperature: Averages: Daily maximum	Temperature: Averages: Daily minimum	Temperature: Averages: Annual	Temperature: Extremes: Highest	Temperature: Extremes: Date	Temperature: Extremes: Lowest	Temperature: Extremes: Date	Heating degree days	Precipitation: Total	Precipitation: Greatest in 24 hours	Precipitation: Date (s)	Snow, Sleet: Total	Snow, Sleet: Greatest in 24 hours	Snow, Sleet: Date (s)	Relative humidity: 1:00 a.m. E.S.T.	Relative humidity: 7:00 a.m. E.S.T.	Relative humidity: 1:00 p.m. E.S.T.	Relative humidity: 7:00 p.m. E.S.T.	Wind: Average speed	Wind: Prevailing direction	Wind: Fastest mile: Speed	Wind: Fastest mile: Direction	Wind: Fastest mile: Date	Possible sunshine	Average sky cover sunrise to sunset	Number of days: Sunrise to sunset: Clear, 0-0.3	Number of days: Sunrise to sunset: Partly cloudy, 0.4-0.7	Number of days: Sunrise to sunset: Cloudy, 0.8-1.0	Number of days: Precipitation .01 inch or more	Number of days: Snow, Sleet 1.0 inch or more	Number of days: Thunderstorms	Number of days: Heavy fog	Number of days: Max. temp. 90 °F and above	Number of days: Max. temp. 32 °F and below	Number of days: Min. temp. 32 °F and below	Number of days: Min. temp. 0 °F and below
	°F	°F	°F	°F		°F		Base 65 °F	In.	In.		In.	In.		%	%	%	%	M.p.h.		M.p.h.			%	Tenths											
INDIANA																																				
EVANSVILLE	68.6	43.9	56.3	102	AUG 3	- 6	JAN 14	4515	38.37	5.63	MAR 8-9	9.2	3.5	JAN 12	80	84	56	60	7.3	18	43	SW	MAR 4	65	5.4	131	95	140	97	4	38	10	62	11	119	1
FORT WAYNE	61.4	39.8	50.6	98	AUG 2	- 5	DEC 9+	6083	28.54	1.65	JUL 7	49.7	13.6	MAR 9-10	78	82	60	65	9.7	22	52	SW	MAR 5	63	6.1	97	113	156	113	15	44	18	32	40	134	8
INDIANAPOLIS	63.6	42.6	53.1	97	AUG 3	- 5	JAN 14	5312	36.35	2.88	MAR 8-9	29.9	8.0	JAN 12-13	77	83	59	62	9.5	23	51	SW	MAR 5	63	6.0	95	117	154	113	9	43	14	31	24	120	1
SOUTH BEND	60.1	40.3	50.2	97	AUG 2	- 8	JAN 1	6175	36.12	1.73	JUL 6-7	79.4	5.4	DEC 2	75	78	58	58	10.8	23	46*	27	JUN 19		6.4	90	92	184	148	26	41	28	29	47	134	1
IOWA																																				
BURLINGTON	62.5	41.7	52.1	99	JUL 24	- 3	DEC 18	5759	29.51	2.62	APR 5	40.7	6.5	DEC 3-4												116	99	151	109	13	52	17	35	36	137	2
DES MOINES	59.5	39.3	49.4	100	AUG 2	- 9	DEC 17	6528	28.42	2.29	JUN 14-15	23.7	3.5	JAN 8	79	84	63	63	12.0	18	65	SW	MAY 8	59	5.7	121	99	146	105	9	56	23	24	51	146	9
DUBUQUE	57.4	37.7	47.6	93	AUG 2+	- 8	DEC 18+	6980	36.14	2.69	MAY 7-8	35.8	4.8	MAR 25-26		80	59	62							6.0	101	104	161	99	13	46	29	12	59	154	8
SIOUX CITY	60.1	38.2	49.2	102	JUL 22	-19	JAN 13	6676	27.30	1.94	AUG 6	27.0	5.1	MAR 19-20	76	82	60	59	11.4	32	57	SW	MAY 5	65	5.5	127	100	139	104	8	54	14	26	45	150	13
WATERLOO	58.6	35.8	47.2	97	AUG 2	-11	DEC 27+	7213	35.93	2.80	AUG 20	23.0	5.1	MAR 25	82	85	62	65	10.6	18	43*	33	NOV 20		5.9	107	114	145	97	7	42	23	24	59	162	21
KANSAS																																				
CONCORDIA	66.1	41.7	53.9	108	JUL 6	- 9	JAN 13	5340	28.61	2.72	JUN 4	11.0	2.3	MAR 8	71	79	52	52	12.8	18	52	W	JUN 21	72	5.0	156	86	124	85	6	59	16	60	20	136	5
DODGE CITY	68.8	42.6	55.7	107	AUG 10	- 6	JAN 13	4991	21.25	3.28	JUL 28	14.2	4.1	DEC 2-3	67	76	48	46	14.1	19	65	S	JUL 4	75	5.1	134	108	124	71	6	50	30	81	17	136	2
GOODLAND	66.4	35.5	51.0	108	JUL 4	-10	DEC 17	6123	10.81	1.78	JUL 8-9	26.9	5.3	APR 4	74	42	40	64	14.3	18	58*	27	MAY 8		4.5	167	104	95	60	7	40	18	70	23	166	5
TOPEKA	66.4	43.6	55.0	105	AUG 3+	- 5	JAN 13	4983	35.98	4.66	NOV 15	12.8	4.3	DEC 3	74	81	56	56	12.0	18	57	S	MAY 5+	62	5.4	129	95	142	84	5	66	10	42	14	131	3
WICHITA	68.9	46.2	57.6	110	AUG 6	- 1	JAN 13	4455	34.21	4.33	NOV 15-16	7.2	5.1	DEC 3	71	80	55	53	12.9	18	63	W	APR 27	66	5.1	143	103	120	78	2	55	20	74	12	122	1
KENTUCKY																																				
COVINGTON	66.0	42.2	54.1	101	AUG 3	-15	JAN 14	4944	43.88	5.21	MAR 9	25.9	7.6	JAN 1	78	82	56	61	8.4	21	37*	23	MAR 5		6.0	99	110	157	121	6	46	19	44	17	116	2
LEXINGTON	66.6	44.7	55.7	98	AUG 3	- 2	JAN 14	4574	43.48	3.54	MAR 4	24.5	6.4	JAN 31-1	71	76	54	58	9.0	18	39*	22	AUG 11		5.4	129	103	134	118	8	41	15	37	15	101	1
LOUISVILLE	67.7	44.9	56.3	101	AUG 3	- 1	JAN 14	4414	46.58	6.97	MAR 9	24.1	7.2	JAN 1	76	83	57	59	7.8	18	48	W	MAR 5	63	5.7	113	108	145	113	4	39	8	46	9	102	1
LOUISIANA																																				
ALEXANDRIA	75.6	52.4	64.0	101	AUG 5	11	JAN 14	2318	56.43	6.18	DEC 10-11	T	T	FEB 21 +	90	92	59	69	5.5	18	40*	9	JUL 24		6.0	109	100	157	95	0	68	39	73	0	48	0
BATON ROUGE	77.5	57.3	67.4	97	AUG 5+	20	JAN 14	1700	63.83	8.38	OCT 3-4	.0	.0		83	87	59	65	7.5	12	40*	33	OCT 4+		6.1	94	123	149	107	0	72	39	80	0	23	0
LAKE CHARLES	76.1	57.7	66.9	97	AUG 5	20	JAN 14	1743	47.17	4.98	JUN 29-30	T	T	FEB 21 +	87	90	61	70	8.9	18	46*	11	AUG 5		6.2	85	129	152	98	0	58	56	49	0	14	0
NEW ORLEANS MOISANT	76.9	57.5	67.2	96	AUG 31	21	JAN 1	1633	58.09	3.98	JAN 6	.0	.0		90	92	68	74	7.5	6	40*	17	OCT 4		6.0	103	105	158	114	0	69	33	59	0	17	0
NEW ORLEANS AUDUBON	77.9	59.2	68.6	97	SEP 3+	26	JAN 14+	1434	62.80	3.88	MAR 19	† .0	† .0		87	90	65	72	4.7		24	W	OCT 4	†54	†6.0	†89	†132	†145	130	†0	†82	†18	88	0	8	0
SHREVEPORT	76.7	55.6	66.2	105	AUG 5	15	JAN 14	2207	32.31	2.41	APR 24-25	1.4	1.4	JAN 15-16	77	86	56	57	10.1	18	41*	29	MAR 9	63	5.4	127	108	131	87	1	42	28	100	1	36	0
MAINE																																				
CARIBOU	48.0	29.2	38.6	93	JUL 18	-17	JAN 18+	9654	30.74	2.00	OCT 21	117.5	11.4	DEC 1		83	63	73							6.8	65	112	189	155	33	23	41	1	100	184	33
PORTLAND	55.2	33.1	44.2	93	JUN 20	-12	JAN 1	7721	34.59	1.87	OCT 17-18	78.6	11.5	MAR 10-11	81	80	56	72	8.8	18	43	NW	FEB 3	60	6.0	104	107	155	125	19	22	59	4	43	179	10
MARYLAND																																				
BALTIMORE	65.7	44.4	55.1	98	JUN 15	- 2	JAN 15	4676	34.68	2.02	NOV 25	42.9	11.5	MAR 21-22	73	76	51	59	8.7	28	57	NW	MAR 10	60	5.5	128	104	134	98	9	15	32	34	7	100	1
BALTIMORE U	66.5	49.9	58.2	98	JUL 1+	12	JAN 14	3981	37.19	2.44	NOV 25																		93	0	0	0	37	6	65	0
MASSACHUSETTS																																				
BLUE HILL OBS R	57.5	39.6	48.6	98	JUL 1	6	JAN 15+	6349	40.22	2.43	APR 14-15	72.5	13.4	JAN 13-14	79	79	61	69											124	15	0	0	8	34	123	0
BOSTON	58.0	42.3	50.2	97	JUL 1	10	JAN 15+	5854	36.47	2.09	DEC 27-28	57.5	9.5	FEB 19-20	75	75	59	68	12.6	30	45*	N	JUL 1	61	5.7	126	86	154	127	10	20	36	9	27	104	0

See reference notes at end of table.

ANNUAL CLIMATOLOGICAL DATA
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State and Station	Temperature: Averages: Daily maximum	Temperature: Averages: Daily minimum	Temperature: Averages: Annual	Temperature: Extremes: Highest	Temperature: Extremes: Date	Temperature: Extremes: Lowest	Temperature: Extremes: Date	Heating degree days	Precipitation: Total	Precipitation: Greatest in 24 hours	Precipitation: Date (s)	Snow, Sleet: Total	Snow, Sleet: Greatest in 24 hours	Snow, Sleet: Date (s)	Relative humidity: 1:00 a.m. E.S.T.	Relative humidity: 7:00 a.m. E.S.T.	Relative humidity: 1:00 p.m. E.S.T.	Relative humidity: 7:00 p.m. E.S.T.	Wind: Average speed	Wind: Prevailing direction	Wind: Fastest mile: Speed	Wind: Fastest mile: Direction	Wind: Fastest mile: Date	Possible sunshine	Average sky cover sunrise to sunset	Number of days: Sunrise to sunset: Clear, 0-0.3	Number of days: Sunrise to sunset: Partly cloudy, 0.4-0.7	Number of days: Sunrise to sunset: Cloudy, 0.8-1.0	Number of days: Precipitation .01 inch or more	Number of days: Snow, Sleet 1.0 inch or more	Number of days: Thunderstorms	Number of days: Heavy fog	Number of days: Max. temp. 90°F and above	Number of days: Max. temp. 32°F and below	Number of days: Min. temp. 32°F and below	Number of days: Min. temp. 0°F and below
	°F	°F	°F	°F		°F		Base 65 °F	In.	In		In	In.		%	%	%	%	M.p.h.		M.p.h.			%	Tenths											
MASSACHUSETTS																																				
NANTUCKET	55.8	42.6	49.2	92	JUL 1	15	FEB 18+	5885	42.59	2.54	SEP 13-14	51.6	17.8	JAN 13-14	83	79	68	80	13.4	24	66	NW	FEB 16	56	6.4	105	77	184	120	11	14	98	1	15	99	0
PITTSFIELD	56.4	33.7	45.1	92	JUL 19+	-11	JAN 1	7472	28.58	1.54	AUG 22	94.7	14.5	FEB 15-16															140	25	0	0	4	48	161	13
WORCESTER	56.2	37.8	47.0	94	JUL 1	3	FEB 25+	6826	37.65	2.32	JAN 20-21	63.2	12.4	FEB 16	75	74	54	64	10.5	28	42*	29	JAN 1		5.8	116	100	150	119	15	17	92	2	45	144	0
MICHIGAN																																				
ALPENA	54.6	32.3	43.5	97	JUN 30	-12	JAN 13+	8093	26.99	1.75	AUG 2-3	60.7	8.8	MAR 25-26		79	59	67	7.8	24	37	SW	APR 14	63	6.7	65	117	184	138	23	31	24	10	58	182	14
DETROIT	60.0	42.3	51.2	96	JUL 20	6	JAN 1	5832	27.94	2.06	AUG 11	33.2	3.5	DEC 2	74	77	56	61	10.9	18	56	W	JUN 19	56	6.3	82	123	161	132	12	31	9	26	41	119	0
DETROIT M WAYNE CO	58.6	37.6	48.1	97	AUG 2	- 2	JAN 1	6663	28.74	3.21	AUG 11	36.8	3.3	MAR 8	78	80	59	65	9.0	22					6.3	77	124	165	123	13	35	32	21	45	146	2
DETROIT WILLOW RUN	59.0	38.9	49.0	99	AUG 2	- 2	JAN 1	6433	26.39	2.04	AUG 11	32.3	3.2	MAR 8	84	87	60	67	10.3	21	44*	25	MAY 9+		6.3	79	120	167	110	13	30	36	27	43	138	1
FLINT	58.3	37.5	47.9	97	AUG 2	- 9	JAN 1	6762	24.59	1.95	JUN 15	39.3	3.7	DEC 4	77	78	59	65	10.1	22	39*	22	MAR 5		6.5	77	115	174	120	13	33	25	13	45	147	4
GRAND RAPIDS	58.7	38.4	48.6	100	AUG 3	-15	JAN 1	6696	32.28	2.65	JUN 14-15	67.1	12.1	JAN 25-26	84	87	63	69	10.2	25	58	W	JUN 9	55	6.7	75	112	179	124	27	39	30	20	53	149	3
LANSING	59.6	37.7	48.7	100	AUG 2	-17	DEC 6	6635	26.40	1.57	JUN 14-15	43.2	5.4	DEC 4	82	84	60	67	8.6	29	47	SW	NOV 12	57	6.3	78	119	169	130	19	38	25	22	50	156	4
MARQUETTE U	51.2	35.6	43.4	98	MAY 22	- 5	DEC 17	8067	31.48	1.93	JUL 24	99.6	10.1	FEB 7-8		75	63	65	8.8	##	50	SW	APR 13	56	7.1	62	97	207	161	36	25	21	8	83	155	4
MUSKEGON	58.0	40.0	49.0	99	AUG 3	- 9	JAN 1	6413	24.31	1.38	NOV 2	105.4	9.1	NOV 20-21	79	83	64	68	11.6	22	43*	22	MAY 8+		6.8	78	95	193	131	33	49	27	11	46	136	1
SAULT STE MARIE	49.4	31.5	40.5	89	JUN 29	-16	JAN 12	9028	32.71	1.38	NOV 27-28	157.2	11.9	MAR 4-5	84	86	67	73	10.9	31	52*	21	APR 14	52	7.3	60	94	212	181	43	38	53	0	94	175	26
MINNESOTA																																				
DULUTH	48.8	28.8	38.8	94	JUL 17	-25	DEC 27	9710	34.95	3.66	SEP 6-7	69.6	9.0	DEC 22-23	75	78	60	62	10.9	30	56	NE	JAN 23	58	6.6	73	116	177	128	21	43	53	3	102	179	52
INTERNATIONAL FALLS	48.4	25.2	36.8	96	JUL 16	-35	JAN 12	10455	26.63	3.80	JUN 8-9	46.5	3.7	DEC 22	82	86	64	67	10.8	27	37*	27	OCT 3+		6.6	81	103	182	127	16	36	18	9	109	196	78
MINNEAPOLIS	55.8	35.5	45.7	98	AUG 1	-17	NOV 30	7778	25.97	2.49	SEP 7-8	33.7	4.5	MAR 3-4	75	80	60	61	10.5	13	61	NW	MAY 23	64	5.7	111	112	143	109	13	44	14	27	81	162	18
ROCHESTER	55.1	34.3	44.7	97	JUL 19+	-15	DEC 17+	7963	19.91	2.66	SEP 7-8	32.1	4.0	NOV 20	78	82	62	63	13.6	18	52*	28	MAY 23+		5.9	103	109	154	106	9	45	28	23	75	161	23
ST CLOUD	53.8	32.1	43.0	99	AUG 1	-20	NOV 30	8608	21.17	2.02	AUG 29	36.9	7.5	MAR 19-20	76	81	58	60							5.9	110	102	154	99	11	39	18	23	89	171	41
MISSISSIPPI																																				
JACKSON	76.6	53.7	65.2	99	AUG 4+	15	JAN 15	2326	71.45	6.97	OCT 4	1.5	1.5	JAN 16	80	85	56	63	8.6		38*	14	MAR 3		5.7	109	104	153	111	1	66	27	92	1	40	0
MERIDIAN	75.8	51.1	63.5	101	JUN 21	10	JAN 15	2589	68.55	6.36	APR 5-6	1.0	T	JAN 16 +	88	91	57	67	6.6	18	40*	3	JUL 6		6.0	93	110	163	111	1	67	37	78	1	60	0
VICKSBURG U	74.2	56.2	65.2	97	AUG 4	18	JAN 13	2150	58.37	3.48	MAR 1-2	T	T	DEC 17 +					8.1		41	W	APR 5	62	5.6	112	119	125	99	0	53	16	62	2	26	0
MISSOURI																																				
COLUMBIA	66.8	45.6	56.2	103	AUG 3	- 2	DEC 18	4651	33.57	2.51	APR 4-5	23.4	6.0	FEB 15	71	77	53	54	11.0	18	59	NW	MAR 29	64	5.4	133	90	143	97	7	59	15	45	18	110	1
KANSAS CITY	66.6	47.3	57.0	104	AUG 3+	1	DEC 18+	4456	38.82	3.69	NOV 15	29.6	7.3	JAN 11-12	66	73	55	52	9.7	18	47	N	JUL 1	67	5.4	130	92	144	100	8	64	4	44	15	95	0
ST JOSEPH	64.9	42.2	53.6	101	AUG 3	- 6	JAN 13	5299	36.55	5.83	JUN 20-21	16.5	3.4	DEC 3-4 +					9.5	18	43*	21	MAY 8		5.0	149	94	123	95	6	59	11	35	23	131	4
ST LOUIS	66.4	45.6	56.0	104	AUG 3	- 1	JAN 14	4710	32.16	2.81	JUL 11-12	28.8	6.1	MAR 9-10	73	81	55	57	10.4	18	60	SE	JUN 29	64	5.4	142	91	133	103	10	35	9	47	19	108	1
SPRINGFIELD	68.4	45.1	56.8	102	AUG 4+	- 1	DEC 18	4341	34.62	2.85	APR 4-5	8.5	2.5	MAR 9	76	81	56	59	10.4	16	35	S	JAN 19	63	5.1	142	102	122	109	4	49	17	37	10	109	2
MONTANA																																				
BILLINGS	57.9	35.0	46.5	103	AUG 4	-26	DEC 16	7275	18.76	1.90	JUN 8-9	56.3	10.5	MAR 22	66	51	45	59	11.9	24	59	NW	JUL 14	62	5.9	95	134	137	89	17	19	10	27	44	160	13
GLASGOW	54.8	30.7	42.8	102	AUG 18+	-31	DEC 17	8599	10.53	1.61	JUN 17-18	24.7	3.8	DEC 15	72	52	47	64							6.6	79	109	178	86	8	20	7	25	72	176	36
GREAT FALLS	55.8	33.5	44.7	101	AUG 18	-36	DEC 16	7788	17.91	2.74	JUN 7-8	66.5	7.3	JAN 21	65	49	45	59	13.4	23	47	W	SEP 30	63	6.6	78	100	188	102	22	25	4	23	49	158	25
HAVRE	54.7	29.5	42.1	102	AUG 18	-31	DEC 17	8642	12.14	.92	AUG 19-20	33.9	4.5	DEC 21-22	75	54			9.8	SW#	52	SW	MAR 1	58	6.5	89	91	186	100	13	29	3	25	58	183	40
HELENA	55.6	30.3	43.0	95	AUG 18+	-38	DEC 17	8214	13.61	2.06	MAY 2-3	56.1	10.1	MAY 2-3	70	51	46	62	8.5	27	38	W	OCT 1+	62	6.4	88	105	173	85	18	26	5	15	45	185	20

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ANNUAL CLIMATOLOGICAL DATA
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State and Station	Temperature: Averages: Daily maximum	Temperature: Averages: Daily minimum	Temperature: Averages: Annual	Temperature: Extremes: Highest	Temperature: Extremes: Date	Temperature: Extremes: Lowest	Temperature: Extremes: Date	Heating degree days	Precipitation: Total	Precipitation: Greatest in 24 hours	Precipitation: Date (s)	Snow, Sleet: Total	Snow, Sleet: Greatest in 24 hours	Snow, Sleet: Date (s)	Relative humidity: 1:00 a.m. E.S.T.	Relative humidity: 7:00 a.m. E.S.T.	Relative humidity: 1:00 p.m. E.S.T.	Relative humidity: 7:00 p.m. E.S.T.	Wind: Average speed	Wind: Prevailing direction	Wind: Fastest mile: Speed	Wind: Fastest mile: Direction	Wind: Fastest mile: Date	Possible sunshine	Average sky cover sunrise to sunset	Number of days: Sunrise to sunset: Clear, 0-0.3	Number of days: Sunrise to sunset: Partly cloudy, 0.4-0.7	Number of days: Sunrise to sunset: Cloudy, 0.8-1.0	Number of days: Precipitation .01 inch or more	Number of days: Snow, Sleet 1.0 inch or more	Number of days: Thunderstorms	Number of days: Heavy fog	Number of days: Max. temp. 90°F and above	Number of days: Max. temp. 32°F and below	Number of days: Min. temp. 32°F and below	Number of days: Min. temp. 0°F and below
	°F	°F	°F	°F		°F		Base 65 °F	In.	In.		In.	In.		%	%	%	%	M.p.h.		M.p.h.			%	Tenths											
MONTANA																																				
KALISPELL	52.6	28.6	40.6	94	JUL 8	-24	DEC 17	8883	22.36	1.47	MAY 1-2	94.7	10.6	DEC 21-22		69			6.6						7.2	66	74	226	157	31	18	45	5	47	207	20
MILES CITY	57.2	32.4	44.8	105	AUG 4+	-29	DEC 17	8052	14.91	2.71	JUN 18	54.3	8.0	NOV 14	74	53	48	65	10.0	15	58*	27	JUN 16						93	20	30	13	41	67	175	25
MISSOULA	53.0	28.7	40.9	96	JUL 12+	-30	DEC 17	8812	15.22	1.61	JUN 7-8	77.2	7.8	DEC 20-21	87	69	57	78	6.5	32	45	W	FEB 4	49	7.1	77	68	221	131	25	14	29	9	64	214	15
NEBRASKA																																				
GRAND ISLAND	63.3	37.4	50.4	106	AUG 2	-20	JAN 13	6341	20.67	3.30	APR 25-26	15.2	4.3	FEB 14-15	72	78	52	51	12.3	18	57*	32	JUN 11		5.0	139	107	120	76	4	51	16	51	42	155	10
NORFOLK	60.2	36.6	48.4	104	JUL 22	-23	JAN 13	6932	26.36	2.82	JUN 21-22	31.2	3.7	FEB 14-15		77	54	53							5.2	133	107	126	93	13	55	12	37	55	158	17
NORTH PLATTE	63.4	33.6	48.5	102	JUL 30	-13	DEC 17	6825	20.96	3.15	JUL 10	21.4	5.4	APR 4-5	69	78	48	45	10.8	34	65	W	JUN 22	69	5.1	143	107	116	69	8	47	15	44	27	182	13
OMAHA	63.3	40.4	51.9	107	AUG 2	-13	JAN 13	5886	35.75	3.58	MAY 25-26	26.9	4.4	JAN 11-12	72	77	56	55	9.5	16	63	NW	MAY 25	64	5.4	132	99	135	105	11	51	12	41	34	139	8
SCOTTSBLUFF	62.7	33.0	47.9	103	JUL 22	-25	DEC 17	6938	7.70	.93	APR 2-3	27.2	7.5	APR 3	74	45	41	65	12.3	30	54*	32	APR 27		5.4	126	103	137	69	7	34	6	51	29	181	9
VALENTINE	61.3	33.2	47.3	109	JUL 23+	-19	DEC 17	7258	13.33	1.96	JUL 29	18.9	3.0	APR 4-5	79	56	48	69	11.5	SW				66	5.1	140	115	111	65	9	40	4	45	43	178	20
NEVADA																																				
ELKO	59.5	26.3	42.9	96	JUL 20	-15	JAN 13	8225	12.14	.90	DEC 23-24	67.7	5.8	JAN 18					6.7		36*	24	NOV 1		5.3	132	101	133	104	27	13	4	37	42	228	25
ELY	58.7	25.7	42.2	92	AUG 9+	-17	JAN 24+	8432	12.70	1.48	JUN 6-7	101.3	11.6	JAN 21-22	71	46	41	61	8.5	19	49	SW	JAN 21	78	5.0	144	100	122	79	29	20	10	14	43	231	24
LAS VEGAS	78.2	51.3	64.8	110	JUL 29+	20	JAN 9	2929	1.12	.62	NOV 15-16	4.0	4.0	NOV 15-16	35	24	17	29	10.1	23	54*	SW	DEC 27	87	3.1	227	88	51	16	2	10	0	143	0	67	0
RENO	66.5	31.5	49.0	101	JUL 11	0	DEC 31	6076	7.73	1.55	DEC 22-23	48.8	7.6	MAY 5-6	70	45	32	54	7.0	29	51	SW	JAN 20	93	4.3	174	87	105	48	19	4	7	51	9	181	1
WINNEMUCCA	63.6	30.8	47.2	98	JUL 25	- 4	NOV 18	6753	10.47	1.10	JUN 8-9	51.1	4.8	NOV 12-13+	65	43	33	53	8.4	18	52	W	DEC 23	65	5.2	130	77	139	77	21	11	11	48	9	203	6
NEW HAMPSHIRE																																				
CONCORD	57.8	33.4	45.6	97	JUN 30+	-16	JAN 1	7377	27.90	1.82	AUG 22	71.6	11.9	JAN 13-14	83	80	51	63	7.3	32	46*	32	DEC 1	59	5.8	111	108	147	114	17	18	56	12	40	173	12
MT WASHINGTON OBS	33.8	19.5	26.7	67	JUL 18	-23	JAN 12+	13923	76.66	2.35	AUG 22-23	232.5	13.3	OCT 20-21	84	82	82	84	33.7	WW	141Y	NW	FEB 3	35	7.5	45	93	228	213	66	20	318	0	168	260	66
NEW JERSEY																																				
ATLANTIC CITY	64.1	44.1	54.1	97	JUL 1+	3	JAN 15	4913	41.01	3.08	SEP 29-30	31.5	14.4	JAN 12-13	80	60	54	69	10.2	20	44*	30	MAR 26	61	5.7	119	90	157	99	6	20	44	23	9	106	0
NEWARK	63.1	46.0	54.6	99	JUL 1+	8	JAN 15	4845	33.42	2.03	JUL 8-9	36.4	12.1	JAN 13	69	72	51	58	10.9	23	52*	30	JAN 21		5.7	115	108	143	120	6	15	25	26	10	87	0
TRENTON U	63.0	45.1	54.1	98	JUN 30	8	JAN 14	4909	35.44	4.85	JUL 8-9	25.9	8.9	JAN 12-13					9.1	NW#	42	NW	JAN 21+	62	5.5	125	112	129	111	8	28	27	21	12	84	0
NEW MEXICO																																				
ALBUQUERQUE	67.8	41.2	54.5	99	JUL 4+	0	JAN 14	5049	7.44	.88	JUL 27	10.3	2.4	FEB 2-3	57	37	29	47	7.5	18	52	SW	MAY 7+	79	3.7	195	98	73	63	4	44	6	73	14	130	1
CLAYTON	67.2	38.6	52.9	102	JUL 3	- 6	JAN 13	5359	8.93	1.45	AUG 7-8	14.9	5.0	FEB 3-4	64	35	35								4.2	188	77	101	64	6	65	4	57	13	145	1
RATON	64.5	31.8	48.2	96	JUL 6+	-14	DEC 13	6556	10.34	1.04	APR 3-4	31.9	10.1	APR 3-4		34									4.5	159	115	92	78	11	55	3	21	21	182	16
ROSWELL	76.4	41.2	58.8	105	JUL 2	- 9	JAN 13	3968	6.98	1.10	JUN 13	15.2	5.5	FEB 20	64	35			8.9		43	W	JAN 19	75	3.6	210	97	59	42	4	24	6	116	2	138	4
SILVER CITY	70.6	41.0	55.8	100	JUL 4	4	JAN 13	4349	10.20	1.99	SEP 23-24	7.8	3.0	APR 3-4		31	27								3.3	207	104	55	50	2	42	3	48	0	127	0
NEW YORK																																				
ALBANY	58.5	37.3	47.9	98	JUN 30	-15	JAN 15	6765	21.55	1.53	MAR 9-10	67.2	15.4	JAN 13-14	77	77	52	62	8.8	17	42	W	JAN 10	52	6.5	80	108	178	115	12	19	20	17	46	145	9
BINGHAMTON	55.1	37.2	46.2	92	SEP 10+	- 6	JAN 15	7196	31.33	1.95	MAR 9-10	87.7	18.4	JAN 13	79	83	63	68	10.5	34	47	SW	MAR 5	53	7.1	58	107	201	156	21	20	54	3	72	146	6
BINGHAMTON U	59.8	40.4	50.1	96	JUN 30	-10	JAN 15	6020	28.62	2.16	MAR 10	64.4	16.3	JAN 13															137	14			18	38	143	6
BUFFALO	56.6	39.5	48.1	93	JUL 28	1	FEB 11	6633	29.67	1.82	JUL 12-13	65.0	8.2	JAN 1-2	79	79	63	70	11.0	24	56	SW	MAR 5	55	7.0	58	117	191	154	19	30	17	6	51	131	0
NEW YORK CENT PK	62.7	46.4	54.6	99	JUL 1+	9	JAN 14	4779	32.99	2.12	JUL 8-9	36.5	12.5	JAN 12-13	66	69	49	57	9.1	WW	43	NE	JAN 13	60	4.9	158	97	111	113	10	11	0	23	13	75	0
J.F.KENNEDY AP	61.7	45.2	53.5	99	JUN 30	10	JAN 14	5068	36.70	1.63	DEC 4	30.3	13.0	JAN 13	72	71	55	65	11.4		40	31	DEC 31+		5.6	108	119	139	128	8	13	38	8	13	88	0

See reference notes at end of table.

ANNUAL CLIMATOLOGICAL DATA
ENGLISH UNITS

YEAR 1964

State and Station	Temperature: Averages: Daily maximum	Temperature: Averages: Daily minimum	Temperature: Averages: Annual	Temperature: Extremes: Highest	Temperature: Extremes: Date	Temperature: Extremes: Lowest	Temperature: Extremes: Date	Heating degree days	Precipitation: Total	Precipitation: Greatest in 24 hours	Precipitation: Date (s)	Snow, Sleet: Total	Snow, Sleet: Greatest in 24 hours	Snow, Sleet: Date (s)	Relative humidity: 1:00 a.m. E.S.T.	Relative humidity: 7:00 a.m. E.S.T.	Relative humidity: 1:00 p.m. E.S.T.	Relative humidity: 7:00 p.m. E.S.T.	Wind: Average speed	Wind: Prevailing direction	Wind: Fastest mile: Speed	Wind: Fastest mile: Direction	Wind: Fastest mile: Date	Possible sunshine	Average sky cover sunrise to sunset	Number of days: Sunrise to sunset: Clear, 0-0.3	Number of days: Sunrise to sunset: Partly cloudy, 0.4-0.7	Number of days: Sunrise to sunset: Cloudy, 0.8-1.0	Number of days: Precipitation .01 inch or more	Number of days: Snow, Sleet 1.0 inch or more	Number of days: Thunderstorms	Number of days: Heavy fog	Number of days: Max. temp. 90°F. and above	Number of days: Max. temp. 32°F. and below	Number of days: Min. temp. 32°F. and below	Number of days: Min. temp. 0°F. and below
	°F.	°F.	°F.	°F.		°F.		Base 65 °F.	In.	In.		In.	In.		%	%	%	%	M.p.h.		M.p.h.			%	Tenths											
NEW YORK																																				
NEW YORK LAGUARDIA	61.5	47.9	54.7	97	JUL 1+	10	JAN 14	4778	31.31	1.79	JUL 8-9	25.3	9.0	JAN 12-13	69	71	55	60	11.9	18	59	NE	JAN 13		5.7	100	133	133	119	6	16	19	17	17	75	0
ROCHESTER	58.4	38.5	48.5	98	JUL 28	- 6	JAN 1	6547	22.45	1.35	MAY 13-14	69.7	10.1	MAR 10	76	77	57	65	10.0	25	56	SW	MAY 9	59	6.5	77	121	168	137	21	24	17	17	46	139	1
SYRACUSE	58.9	38.3	48.6	96	JUL 28	- 6	JAN 12	6496	27.10	1.33	MAR 10	74.0	10.3	MAR 10	78	77	56	67	10.1	27	52	S	JAN 25	54	6.6	65	140	161	156	22	28	10	18	47	139	6
NORTH CAROLINA																																				
ASHEVILLE U	66.7	45.4	56.1	94	JUN 22	5	JAN 15	4105	49.88	3.55	OCT 4	15.7	4.5	FEB 25															120	6			9	6	86	0
CAPE HATTERAS R	69.3	54.5	61.9	92	JUN 15	19	JAN 15	2545	57.16	4.08	OCT 4-5	T	T	FEB 22 +	83	82	66	79	10.8	24	45	S	AUG 31	64	6.1	98	100	168	138	0	40	19	1	0	25	0
CHARLOTTE	70.7	49.1	59.9	99	JUN 21	12	JAN 15	3309	46.64	3.34	OCT 15-16	.8	.6	JAN 12-13	76	85	55	62	7.6	22	34	SW	MAR 5	64	5.6	129	82	155	114	0	30	29	26	0	64	0
GREENSBORO	68.6	47.0	57.8	98	JUN 21	7	JAN 15	3827	45.19	4.10	OCT 4-5	5.1	2.4	FEB 28	81	85	56	66	7.5	22	42	NW	MAR 30	57	5.7	123	85	158	107	1	33	32	17	2	82	0
RALEIGH	70.2	47.5	58.9	99	JUN 21+	9	JAN 15	3530	42.91	3.05	AUG 30-31	3.9	1.0	FEB 28 +	84	88	54	67	8.1	22	40*	22	JAN 20	60	5.8	113	97	156	121	3	45	41	25	2	78	0
WILMINGTON	73.6	53.6	63.6	97	JUN 15	20	JAN 15	2341	57.83	4.34	OCT 4-5	T	T	NOV 30 +	84	84	57	74	8.4	22	50	W	JAN 20	62	6.0	108	97	161	124	0	41	21	25	0	33	0
WINSTON-SALEM	69.1	49.4	59.3	99	JUN 22+	14	JAN 15	3506	47.34	3.55	OCT 4-5	7.5	1.8	JAN 12-13	76	81	56	63	7.5	24	32*	16	DEC 6		5.6	123	94	149	108	5	34	29	25	2	63	0
NORTH DAKOTA																																				
BISMARCK	54.0	27.9	41.0	104	AUG 5	-38	JAN 12	9130	15.43	1.97	APR 26-27	34.4	4.6	NOV 26-27	70	76	53	50	10.9	7	52	NE	JUN 8	65	6.2	98	105	163	82	15	45	10	19	78	189	53
FARGO	53.5	30.2	41.9	98	JUN 28+	-24	DEC 26	8995	18.26	2.74	JUN 18-19	46.8	5.4	DEC 22-23	76	81	60	60	11.1	16	68	NW	APR 13	63	6.2	98	104	164	89	15	35	13	20	88	172	53
WILLISTON	53.8	27.8	40.8	103	AUG 4	-30	JAN 27	9249	15.71	2.20	JUN 7-8	42.6	5.2	APR 5-6		78	54	52	10.9	SW#	70	NW	JAN 17	62	5.9	103	123	140	87	16	16	10	19	84	197	57
OHIO																																				
AKRON	60.6	39.4	50.0	93	SEP 10+	- 5	JAN 14	6044	40.82	3.29	MAR 8-9	55.8	7.9	JAN 12-13	76	79	58	64	9.3	24	40*	22	MAR 5		6.4	79	125	162	143	16	43	29	19	38	132	2
CINCINNATI OBS	66.0	45.2	55.6	101	AUG 3	3	DEC 18	4631	44.31	4.63	MAR 9	23.0	8.3	JAN 12-13					6.0	S#	38	SW	MAR 5	57					119	4	44	0	46	18	102	0
CLEVELAND	58.8	40.8	49.8	93	SEP 10+	3	FEB 22	6097	31.40	2.03	MAR 4-5	51.3	8.1	JAN 12-13	78	82	63	67	10.1	18	48	SW	MAR 5	59	6.5	80	113	173	144	13	35	14	12	44	127	0
COLUMBUS	63.1	41.4	52.3	98	AUG 2	-14	JAN 14	5467	41.21	3.40	MAR 9	30.7	6.6	JAN 12-13	77	81	58	63	8.7	18	54	NW	MAY 24	57	6.2	89	112	165	123	11	49	14	30	29	121	1
DAYTON	64.2	42.7	53.5	100	AUG 3	- 2	JAN 14	5211	31.57	2.87	MAR 4	40.0	9.8	JAN 1	74	79	57	62	10.5	20	43	S	MAR 5	64	5.9	108	104	154	119	10	45	26	37	23	116	1
MANSFIELD	59.8	39.9	49.9	95	AUG 2	- 5	JAN 14	6127	34.78	2.45	MAR 4-5	51.5	8.0	JAN 12-13		81	61								6.3	85	109	172	133	16	42	32	14	40	131	1
TOLEDO	60.2	38.2	49.2	98	AUG 2	- 8	JAN 14	6433	24.28	1.56	MAR 25-26	43.7	5.5	MAR 10	76	80	57	61	9.3	24	37	SW	JUN 12	63	6.2	87	122	157	127	15	34	17	33	46	144	4
YOUNGSTOWN	58.8	39.2	49.0	92	SEP 10	- 6	JAN 14	6309	38.56	2.04	MAR 9-10	65.5	10.9	JAN 12-13	75	78	59	65	10.1	24	36*	26	NOV 20		6.6	79	104	183	153	16	44	25	9	47	130	2
OKLAHOMA																																				
OKLAHOMA CITY	71.9	48.7	60.3	106	AUG 6+	5	DEC 18	3678	29.14	2.58	MAY 9-10	2.1	.8	MAR 9	71	79	52	51	13.5	16	56	W	APR 12	68	4.8	150	102	114	76	0	53	20	83	7	92	0
TULSA	72.9	49.3	61.1	110	AUG 5	3	JAN 13	3495	44.27	4.58	APR 3-4	9.9	7.0	MAR 4	71	79	52	51	11.5	18	42	S	APR 12	63	4.9	150	94	122	110	2	59	16	78	5	93	0
OREGON																																				
ASTORIA	57.0	42.2	49.6	86	AUG 24	15	DEC 17+	5555	73.49	4.32	JAN 24-25	19.0	7.2	DEC 28-29	89	80	73	87	8.9	24	44*	19	MAR 11		7.6	49	77	240	223	5	6	48	0	1	38	0
BURNS U	58.3	30.4	44.4	95	JUL 27+	-10	DEC 17	7630	16.03	2.15	DEC 22-23	62.6	5.5	JAN 18-19	74	55	42	63							5.4	139	87	140	110	21	14	9	14	18	197	3
EUGENE	62.3	41.4	51.9	96	AUG 22	10	DEC 17	4874	57.95	3.78	JAN 19-20	10.2	3.5	DEC 29-30+		76	60		7.0		36*	20	JAN 19		7.0	70	76	220	138	3	2	53	11	1	55	0
MEACHAM	50.2	33.3	41.8	90	JUL 12	-22	DEC 16	8477	39.78	1.68	NOV 23-24	201.3	15.1	JAN 24-25		61									6.8	84	70	212	182	59	11	23	1	66	185	2
MEDFORD	65.5	38.2	51.9	103	AUG 22+	17	NOV 19	5128	29.09	3.75	DEC 21-22	11.5	4.2	DEC 29-30	88	69	49	76	4.8	30	29*	23	DEC 22+		5.6	127	75	164	114	3	8	50	39	4	124	0
PENDLETON	62.7	41.1	51.9	102	JUL 12	-12	DEC 17+	5181	10.14	.67	DEC 23-24	5.9	2.2	DEC 15-16	70	54	46	61	10.7	26	46*	25	DEC 14+		6.1	110	73	183	101	2	11	21	23	5	80	3
PORTLAND	59.3	40.8	50.1	94	AUG 24	6	DEC 16	5476	37.88	2.09	DEC 21-22	11.0	8.0	DEC 19	86	76	62	79	8.4	12	49	S	JAN 17	45	7.3	66	74	226	178	2	2	41	2	4	64	0
PORTLAND U	61.5	45.7	53.6	93	AUG 24	10	DEC 17+	4329	49.17	2.16	DEC 21-22	13.4	8.3	DEC 19															164	3	0	0	5	2	13	0

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ANNUAL CLIMATOLOGICAL DATA
ENGLISH UNITS

YEAR 1964

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	°F	°F	°F	°F		°F		Base 65 °F	In.	In.		In.	In.		%	%	%	%	M.p.h.		M.p.h.			%	Tenths											
OREGON																																				
ROSEBURG	64.2	41.4	52.8	97	AUG 24+	17	DEC 17	4603	43.12	3.17	JAN 18-19	6.3	4.0	DEC 30		72	55		4.4	N#	32	S	MAR 11	50	6.8	70	99	197	138	1	1	52	17	1	58	0
SALEM	61.6	40.3	51.0	97	JUL 11	9	DEC 17	5190	42.49	2.72	DEC 21-22	5.7	2.0	DEC 18-19	92	76	62	84	7.7	18	35*	19	MAR 11+		7.0	68	79	219	164	3	2	27	10	3	65	0
SEXTON SUMMIT R	55.0	37.4	46.2	90	AUG 22+	19	DEC 31+	6967	47.29	4.43	DEC 21-22	172.7	13.7	JAN 17-18		72	62		11.3						5.5	141	68	157	126	41	0	144	2	32	134	0
PACIFIC AREA																																				
CANTON ISLAND	87.2	77.4	82.3	92	JAN 4	73	AUG 29+	0	20.45	3.70	JAN 12-13	.0	.0		78	77	64	75			29*	22	JAN 17		5.5	108	156	102	83	0	3	0	41	0	0	0
ENIWETOK	86.6	77.2	81.9	91	MAY 31	71	DEC 18+	0	63.65	3.06	APR 22-23	.0	.0		79	80	73	75	13.5										234	0	11	0	5	0	0	0
TAGUAC GUAM R	84.9	72.5	78.7	90	OCT 11+	64	MAR 9+	0	109.68	7.50	MAY 16-17	.0	.0											56					277	0	43	0	2	0	0	0
JOHNSTON	81.9	74.8	78.4	86	AUG 13	62	DEC 12	0	39.14	9.23	DEC 12-13	.0	.0		79	79	72	77	14.7	9	49	SE	MAR 11	55	6.4	48	179	139	148	0	8	0	0	0	0	0
KOROR R	87.0	75.5	81.3	91	NOV 2+	72	NOV 22+	0	130.57	5.13	MAY 10-11	.0	.0		94	82	80	91	6.9	6	59	SE	NOV 17	60	9.9	0	2	364	266	0	40	0	44	0	0	0
KWAJALEIN	85.9	75.9	80.9	89	JUN 11+	71	JUN 22+	0	139.37	4.58	MAY 5-6	.0	.0		86	87	78	82	13.2	6	39*	15	OCT 8		8.2	22	89	255	232	0	7	0	0	0	0	0
MAJURO	85.3	76.7	81.0	88	OCT 21+	71	JUN 12	0	162.70	5.56	FEB 20-21	.0	.0		82	82	75	78	10.9	7	38	NE	JUN 12	52	8.5	14	80	272	267	0	25	0	0	0	0	0
MARCUS	82.1	72.6	77.4	90	SEP 23+	58	FEB 8	0	43.83	3.67	MAY 21-22	.0	.0		79	70	71	77	12.1	9	54	SE	MAY 22	70	6.1	83	141	142	158	0	5	1	8	0	0	0
PONAPE R	86.7	73.8	80.3	91	OCT 30+	69	NOV 23+	0	167.39	6.42	FEB 22	.0	.0		91	78	79	90	6.6	6	27	NE	DEC 2	48	8.9	5	57	304	294	0	21	0	12	0	0	0
TRUK MOEN ISLAND	86.2	75.6	80.9	90	NOV 20+	72	DEC 26+	0	140.25	4.54	DEC 9-10	.0	.0		86	76	75	84	9.3	4	34	SE	MAY 14	55	9.1	2	51	313	256	0	23	0	6	0	0	0
WAKE ISLAND	84.6	74.9	79.8	90	JUN 23	66	DEC 28+	0	36.19	2.58	JUN 3	.0	.0		76	77	66	71	10.9	6	35*	35	NOV 30		6.0	90	148	128	168	0	14	0	1	0	0	0
YAP R	86.5	75.5	81.0	91	SEP 22	71	AUG 19+	0	113.00	5.34	MAY 22-23	.0	.0		91	80	78	88	8.4	4	47	NE	DEC 11	49	9.5	2	29	335	261	0	26	0	15	0	0	0
PENNSYLVANIA																																				
ALLENTOWN	61.7	40.2	51.0	97	JUN 30	2	JAN 15	5798	34.74	1.54	NOV 25	45.9	13.0	JAN 12-13	78	80	54	63	10.2	29	81*	27	JUN 15		5.6	126	104	136	105	12	29	30	17	20	130	0
ERIE	57.8	41.4	49.6	93	SEP 10+	1	FEB 11	6156	36.47	2.79	AUG 2-3	86.8	13.8	NOV 21-22	76	76	64	69	14.3	18	46*	22	MAR 5		6.5	84	111	171	150	20	41	16	9	48	120	0
HARRISBURG	63.1	41.9	52.5	97	SEP 11+	-3	JAN 15	5455	34.45	1.73	AUG 31	60.3	19.6	FEB 18-19	73	76	53	60	8.6	27	42	W	MAR 26	61	6.0	106	95	165	106	10	26	23	32	16	112	2
PHILADELPHIA	64.1	44.0	54.1	100	JUN 30	2	JAN 15	4947	29.88	2.28	JUL 8	27.5	7.2	JAN 12-13	75	77	53	61	9.3	23	42	SW	MAR 5	60	5.8	120	103	143	106	10	15	18	28	11	105	0
PITTSBURGH	61.4	40.8	51.1	94	SEP 10	-6	JAN 14	5602	37.89	2.15	APR 29-29	48.1	13.6	JAN 12-13	73	77	55	60	9.4	23	44*	26	JAN 25	60	6.8	61	116	189	143	12	39	20	5	33	117	1
READING U	63.4	44.5	54.0	98	JUN 30	10	JAN 14	4976	34.26	1.97	JUL 8-9	42.5	12.5	JAN 12-13					10.5	NW#	59	SE	MAR 10	58	5.5	131	98	137	117	10	27	9	27	11	94	0
SCRANTON	59.4	39.8	49.6	97	JUN 30	-9	JAN 15	6221	30.33	2.20	MAR 9-10	64.6	20.1	JAN 12-13	73	77	54	60	8.0	23	43	SE	JAN 23	54	6.3	94	104	168	119	13	20	25	17	44	132	2
WILLIAMSPORT	61.2	39.7	50.5	98	JUN 30	-11	JAN 15	5966	34.94	2.52	MAR 9-10	61.5	23.1	JAN 12-13	79	81	55	63	7.9	27	35*	23	MAR 5		6.4	81	115	170	129	11	28	37	21	26	135	4
RHODE ISLAND																																				
BLOCK ISLAND	55.6	43.4	49.5	85	JUL 1	12	JAN 14	5841	34.96	2.40	DEC 27-28	21.0	5.5	JAN 13-14		72	59								5.9	104	113	149	107	6	12	88	0	17	93	0
PROVIDENCE	59.7	40.3	50.0	97	JUL 1	0	JAN 1	5881	38.41	2.67	APR 14-15	36.7	10.6	JAN 13-14	75	74	55	66	10.8	29	41*	31	NOV 17	57	5.7	126	89	151	115	8	17	29	8	21	121	1
SOUTH CAROLINA																																				
CHARLESTON	75.5	54.7	65.1	97	AUG 3+	18	JAN 15	1982	72.99	5.77	AUG 28-29	T	T	JAN 13	85	85	57	73	9.0	2	54Y	W	JAN 20	56	6.2	92	110	164	128	0	51	23	46	0	30	0
COLUMBIA	74.5	51.8	63.2	99	JUN 21+	14	JAN 15	2602	70.53	5.46	OCT 15-16	.0	.0		82	86	52	64	7.0	23	46*	28	JAN 20	60	5.6	119	95	152	120	0	35	23	67	0	46	0
FLORENCE	73.8	52.1	63.0	101	JUN 20	18	JAN 15	2555	58.97	5.33	SEP 30-1	T	T	NOV 30 +	82	85	53	68	8.2	2	33*	30	JAN 20		5.7	120	89	157	120	0	40	37	51	0	39	0
GNVLE SPARTANBURG	71.1	50.5	60.8	98	JUN 21	14	JAN 15	3122	70.41	4.28	OCT 15-16	1.7	1.2	FEB 25	76	80	54	61	7.6	4	43	SE	DEC 25	61	5.5	131	87	148	115	1	37	43	34	1	53	0
SOUTH DAKOTA																																				
HURON	60.1	31.6	45.9	108	JUL 23	-26	DEC 26+	7859	10.85	1.27	APR 20-21	35.3	6.0	MAR 19-20	72	78	51	51	12.5	15	57	NW	SEP 23	66	5.6	126	100	140	80	8	40	8	51	63	174	39
RAPID CITY	59.9	34.3	47.1	104	JUL 21	-23	DEC 17	7173	15.17	1.96	JUN 8-9	32.7	4.1	FEB 19-20	68	47	47	63	12.3	32	61	NW	SEP 25	66	5.4	122	121	123	98	8	36	12	40	37	159	15

See reference notes at end of table.

ANNUAL CLIMATOLOGICAL DATA
ENGLISH UNITS

State and Station	Temperature: Averages: Daily maximum	Temperature: Averages: Daily minimum	Temperature: Averages: Annual	Temperature: Extremes: Highest	Temperature: Extremes: Date	Temperature: Extremes: Lowest	Temperature: Extremes: Date	Heating degree days	Precipitation: Total	Precipitation: Greatest in 24 hours	Precipitation: Date (s)	Snow, Sleet: Total	Snow, Sleet: Greatest in 24 hours	Snow, Sleet: Date (s)	Relative humidity: 1:00 a.m. E.S.T.	Relative humidity: 7:00 a.m. E.S.T.	Relative humidity: 1:00 p.m. E.S.T.	Relative humidity: 7:00 p.m. E.S.T.	Wind: Average speed	Wind: Prevailing direction	Wind: Fastest mile: Speed	Wind: Fastest mile: Direction	Wind: Fastest mile: Date	Possible sunshine	Average sky cover sunrise to sunset	Number of days: Sunrise to sunset: Clear, 0-0.3	Number of days: Sunrise to sunset: Partly cloudy, 0.4-0.7	Number of days: Sunrise to sunset: Cloudy, 0.8-1.0	Number of days: Precipitation .01 inch or more	Number of days: Snow, Sleet 1.0 inch or more	Number of days: Thunderstorms	Number of days: Heavy fog	Number of days: Max. temp. 90 °F. and above	Number of days: Max. temp. 32 °F. and below	Number of days: Min. temp. 32 °F. and below	Number of days: Min. temp. 0 °F. and below
	°F.	°F.	°F.	°F.		°F.		Base 65 °F.	In.	In.		In.	In.		%	%	%	%	M.p.h.		M.p.h.			%	Tenths											
SOUTH DAKOTA																																				
SIOUX FALLS	58.7	34.3	46.5	101	JUL 31	-20	DEC 26+	7568	22.56	1.71	JUL 10-11	23.7	4.9	DEC 24-25	76	83	59	58	11.5	18	44*	26	MAY 6		5.5	130	93	143	79	6	45	24	37	61	169	24
TENNESSEE																																				
BRISTOL	67.5	44.6	56.1	95	JUN 28	- 4	JAN 16+	4323	40.05	3.65	OCT 16	21.1	8.9	JAN 12-13	79	84	56	61	5.0	27	40*	36	AUG 3		5.9	106	101	159	126	5	36	43	30	5	99	2
CHATTANOOGA	71.0	48.9	60.0	97	JUN 28+	10	JAN 2	3374	64.26	4.09	MAR 14-15	3.5	.1	FEB 28	86	90	59	65	6.1	18	54	SW	MAR 4	61	5.9	120	84	162	119	1	52	47	48	0	58	0
KNOXVILLE	68.2	47.4	57.8	96	JUN 28	7	JAN 15	3811	45.93	2.95	AUG 15-16	13.7	6.0	JAN 1	79	84	57	61	7.1	24	56	SW	MAR 10	60	5.8	121	82	163	130	4	37	32	22	1	74	0
MEMPHIS	71.7	51.2	61.5	101	AUG 4	13	DEC 18	3146	57.68	4.15	DEC 2-3	.5	.5	JAN 12	79	85	59	61	8.2	18	56	NW	JUL 11	69	5.2	139	99	128	105	0	53	17	60	3	68	0
NASHVILLE	70.6	48.2	59.4	101	AUG 4	8	DEC 18	3668	45.01	2.25	AUG 15-16	9.2	4.2	FEB 28	80	86	58	62	8.3	18	47	NW	JUN 15	60	5.6	125	98	143	112	2	56	20	67	5	82	0
OAK RIDGE AREA STA	68.8	46.7	57.8	98	JUN 23	10	JAN 15	3819	45.39	2.56	AUG 15-16								4.5	SW#									114				25	1	85	0
OAK RIDGE	68.6	46.3	57.5	97	JUN 22	8	JAN 15	3923	49.94	2.51	MAR 14-15	3.4	2.5	FEB 28					4.9		53Y		AUG 12		5.6	136	72	158	126	1	40	33	28	1	81	0
TEXAS																																				
ABILENE	77.7	54.4	66.1	105	AUG 11+	12	JAN 14+	2313	25.35	3.16	AUG 15-16	6.3	4.3	FEB 20-21	58	66	43	37	11.3	18	46	NW	AUG 20	77	4.2	186	86	94	63	2	39	7	107	1	51	0
AMARILLO	71.5	44.2	57.9	104	AUG 6	0	JAN 13	4226	17.97	3.94	AUG 14-15	17.8	11.0	FEB 3-4	58	68	40	37	14.4	21	47	SW	JUN 11+	75	4.0	196	89	81	61	2	36	20	85	7	121	1
AUSTIN	78.9	58.0	68.5	103	JUL 25	17	JAN 14	1690	32.97	6.50	JUN 15-16	4.6	4.0	FEB 21	75	84	55	52	9.5	18	38	NW	MAR 9	63	5.3	126	116	124	74	1	42	19	103	0	26	0
BROWNSVILLE	82.4	64.6	73.5	98	APR 26	32	DEC 18+	705	15.72	2.43	DEC 8-9	T	T	DEC 18	85	90	59	68	13.0	14	40	NW	MAR 9	61	5.9	97	126	143	51	0	19	32	125	0	2	0
CORPUS CHRISTI	81.5	61.0	71.3	101	JUL 12	27	JAN 13	1058	21.71	3.24	SEP 25	T	T	FEB 21	86	91	62	68	12.6	15	45	NW	MAR 9	55	6.0	102	117	147	75	0	29	29	117	0	10	0
DALLAS	76.6	56.1	66.4	107	AUG 5	11	JAN 14	2275	37.47	4.73	SEP 20-21	7.7	7.4	JAN 15-16	68	78	54	49	11.8	18	45	SE	JAN 30	66	4.8	160	90	116	70	2	36	10	93	3	42	0
DEL RIO	81.7	58.0	69.9	107	AUG 6	19	JAN 14	1585	25.15	4.50	SEP 21-22	T	T	DEC 18 +	60	74	50	41	10.7						5.0	130	118	118	50	0	45	8	131	0	26	0
EL PASO	76.2	49.4	62.8	105	JUL 3	10	JAN 10	3050	5.35	1.79	SEP 11-12	T	T	DEC 18 +	48	32	23	37	8.7	27	56	W	MAR 24	88	3.1	225	91	50	26	0	35	4	113	0	77	0
FORT WORTH	76.6	53.7	65.2	108	AUG 11	4	JAN 14	2507	34.31	4.75	SEP 20-21	12.7	12.1	JAN 15-16	72	82	54	51	10.2	18	40*	29	MAY 1+		4.7	160	93	113	75	2	42	16	92	2	60	0
GALVESTON U	73.5	64.4	69.0	95	AUG 5	25	JAN 13	1342	38.88	5.43	DEC 9-10	T	T	FEB 21					10.7		47	E	AUG 5	64					85				8	0	3	0
HOUSTON U	78.2	62.9	70.6	103	AUG 5	24	JAN 13	1224	33.05	3.02	DEC 9-10																		101				88	0	5	0
HOUSTON	78.1	59.2	68.7	101	JUL 25	21	JAN 14	1496	39.12	4.39	DEC 9-10	T	T	FEB 21	84	88	61	66	10.2	16	40*	36	JUL 25	66	6.2	95	112	159	102	0	46	40	90	0	14	0
LAREDO	84.9	62.5	73.7	106	AUG 19+	26	JAN 13	931	13.39	3.08	AUG 23	T	T	NOV 22	67	79	47	41	11.0	14	36*	33	MAR 9		5.1	140	107	119	55	0	30	13	160	0	7	0
LUBBOCK	74.1	46.3	60.2	102	JUN 9	1	JAN 13	3524	14.22	2.10	JUN 21	3.6	2.3	FEB 20-21	59	72	44	38	14.0	18	58*	25	JUN 21		3.9	192	96	78	48	2	35	11	93	3	98	0
MIDLAND	80.1	51.7	65.9	107	AUG 6	7	JAN 13	2470	7.65	2.08	MAY 28	.4	.2	FEB 24 +	54	68	36	30	11.4	18	38*	24	JUN 4		4.0	184	101	81	38	0	23	10	134	1	70	0
PORT ARTHUR	77.7	58.3	68.0	98	AUG 5	19	JAN 14	1617	46.78	4.87	JUL 30-1	T	T	MAR 26 +	90	92	65	74	9.7	18	73	E	AUG 5	57	6.0	91	136	139	97	0	56	49	89	0	18	0
SAN ANGELO	79.9	53.9	66.9	107	AUG 6	14	JAN 13	2213	12.18	1.58	APR 20-21	.8	.8	FEB 20-21	60	72	42	37	9.6	16	40*	30	APR 20		4.1	186	94	86	49	0	29	6	127	2	59	0
SAN ANTONIO	80.3	57.4	68.9	104	AUG 5	15	JAN 14	1638	31.88	3.97	AUG 22-23	2.2	2.0	FEB 21	74	82	54	48	9.5	16	45	SE	AUG 6	71	5.1	134	120	112	74	1	34	25	121	0	23	0
VICTORIA	80.0	60.7	70.4	104	JUL 12	21	JAN 14	1282	33.32	6.14	AUG 7-8	T	T	DEC 18 +		88	59	63	10.2		56Y		APR 3		6.1	96	114	156	88	0	44	36	107	0	12	0
WACO	78.4	56.1	67.3	106	AUG 5+	7	JAN 14	2099	29.32	3.99	JUN 15-16	6.6	5.6	JAN 15-16	71	80	55	52	11.7	18	40*	30	APR 5		4.7	157	92	117	70	3	40	10	103	1	44	0
WICHITA FALLS	76.9	51.2	64.1	113	AUG 6	7	JAN 13	2899	31.85	3.39	MAY 28-29	4.2	1.7	FEB 5	70	79	48	47	11.9	18	48*	23	MAY 1		4.1	186	90	90	64	3	46	15	106	3	71	0
UTAH																																				
MILFORD	63.8	31.1	47.5	102	JUL 29	-10	NOV 17	6939	8.66	.83	NOV 13	62.0	8.3	NOV 13		40	32								4.5	170	90	106	72	21	21	9	57	28	183	14
SALT LAKE CITY	61.0	35.5	48.3	101	JUL 18	-10	JAN 13	6807	17.87	1.41	DEC 23-24	79.8	11.8	MAR 21-22	66	47	43	62	9.2	16	57	NW	APR 11	69	5.6	131	78	157	97	26	38	15	54	36	158	5
WENDOVER	60.8	40.6	50.7	101	JUL 21	3	DEC 18+	6147	7.17	1.33	JUN 6-7	9.4	3.1	MAR 23-24	51	41	33								4.4	179	84	103	59	5	25	2	42	21	140	0

See reference notes at end of table.

ANNUAL CLIMATOLOGICAL DATA
ENGLISH UNITS

YEAR 1964

State and Station	Temperature: Averages: Daily maximum	Temperature: Averages: Daily minimum	Temperature: Averages: Annual	Temperature: Extremes: Highest	Temperature: Extremes: Date	Temperature: Extremes: Lowest	Temperature: Extremes: Date	Heating degree days	Precipitation: Total	Precipitation: Greatest in 24 hours	Precipitation: Date (s)	Snow, Sleet: Total	Snow, Sleet: Greatest in 24 hours	Snow, Sleet: Date (s)	Relative humidity: 1:00 a.m. E.S.T.	Relative humidity: 7:00 a.m. E.S.T.	Relative humidity: 1:00 p.m. E.S.T.	Relative humidity: 7:00 p.m. E.S.T.	Wind: Average speed	Wind: Prevailing direction	Wind: Fastest mile: Speed	Wind: Fastest mile: Direction	Wind: Fastest mile: Date	Possible sunshine	Average sky cover sunrise to sunset	Number of days: Sunrise to sunset: Clear, 0-0.3	Number of days: Sunrise to sunset: Partly cloudy, 0.4-0.7	Number of days: Sunrise to sunset: Cloudy, 0.8-1.0	Number of days: Precipitation .01 inch or more	Number of days: Snow, Sleet 1.0 inch or more	Number of days: Thunderstorms	Number of days: Heavy fog	Number of days: Max. temp. 90°F and above	Number of days: Max. temp. 32°F and below	Number of days: Min. temp. 32°F and below	Number of days: Min. temp. 0°F and below
VERMONT	°F.	°F.	°F.	°F.		°F.		Base 65 °F.	In.	In.		In.	In.		%	%	%	%	M.p.h.		M.p.h.			%	Tenths											
BURLINGTON	54.8	33.3	44.1	96	JUL 28	- 9	FEB 10	7888	29.71	2.09	AUG 22-23	61.5	12.6	MAR 10-11	78	76	57	66	9.1	18	47	NW	NOV 18	60	7.0	58	117	191	142	17	32	16	7	66	175	15
VIRGINIA																																				
LYNCHBURG	66.6	45.2	55.9	99	JUN 20	7	JAN 15+	4272	33.73	2.40	JUL 12	18.5	6.0	FEB 28		78	53	63	6.5		36	NE	OCT 16	61	5.5	131	80	155	107	7	27	41	20	4	90	0
NORFOLK	68.1	50.1	59.1	101	JUN 10	20	JAN 15+	3436	57.71	11.40	AUG 31-1	8.0	3.6	FEB 11-12	80	79	59	69	11.5	18	63	NE	SEP 13		5.9	114	92	160	115	4	35	22	26	2	54	0
RICHMOND	68.3	45.2	56.8	98	JUN 10	0	JAN 15	4018	45.03	2.28	AUG 30-31	24.5	7.3	FEB 28	82	84	54	69	7.9	18	54	W	AUG 12	62	5.7	118	93	155	121	7	24	35	25	3	90	1
ROANOKE	67.7	45.7	56.7	98	JUN 21	8	DEC 19	4175	37.87	2.59	AUG 30-31	40.7	11.0	JAN 12-13	73	76	50	57	7.6	32	53*	30	JAN 21		5.5	128	96	142	116	9	30	31	37	4	90	0
WASHINGTON																																				
OLYMPIA	57.7	37.9	47.8	87	AUG 24	3	DEC 17	6208	51.93	2.94	JAN 24-25	21.2	3.8	DEC 18-19	94	82	68	89	8.0	20	44*	22	JAN 19+		7.8	42	76	248	173	7	3	89	0	3	102	0
SEATTLE-TACOMA	57.2	42.8	50.0	90	MAY 31	10	DEC 16	5468	41.34	2.23	NOV 23-24	11.4	3.3	DEC 19	83	76	65	78	9.3	20	38*	23	JAN 19		7.6	53	71	242	172	3	11	55	1	3	42	0
SEATTLE	58.5	46.5	52.5	86	AUG 11+	11	DEC 16	4592	37.06	1.93	JAN 31-1	9.6	3.8	DEC 19										47					165	4	0	0	0	2	6	0
SPOKANE	55.0	35.4	45.2	99	JUL 12	-20	DEC 17	7359	21.51	2.07	JUN 7-8	100.5	7.0	DEC 18-19+	78	64	53	69	10.0	21	42	SW	FEB 16	54	6.7	82	83	201	133	32	14	47	8	40	160	5
STAMPEDE PASS R	42.6	31.8	37.2	82	JUL 11	-16	DEC 17	10089	111.58	3.40	SEP 30-1	573.3	19.5	JAN 5-6	92	84	80								7.8	63	37	266	228	106	0	263	0	121	201	3
TATOOSH ISLAND R	52.2	43.8	48.0	70	OCT 4+	14	DEC 16	6138	71.54	2.19	SEP 29-30	22.8	7.0	DEC 18	88	83	81	87	14.9	27	72	SW	JAN 19	43	7.7	50	72	244	216	11	6	59	0	2	12	0
WALLA WALLA U	62.4	43.7	53.1	103	JUL 12	- 6	DEC 17	4864	15.28			12.3	3.4	DEC 20															101	4	12	15	22	6	51	2
YAKIMA	61.3	34.4	47.9	101	JUL 12	-17	DEC 17	6391	7.55	1.40	DEC 21-22	43.4	14.0	DEC 20-21	74	54	42	64	7.6	27	44*	28	FEB 17		6.0	97	114	155	51	12	8	29	15	14	167	4
WEST INDIES																																				
SAN JUAN P.R. U	84.2	73.5	78.9	94	JUN 10+	66	DEC 22	0	51.89	3.68	JUN 3																		196	0	31	0	19	0	0	0
SAN JUAN P.R.	86.3	72.9	79.6	94	JUN 10+	63	DEC 22+	0	47.54	2.19	AUG 30-31				84	81	66	77	8.8	7	32	E	MAY 23	67	5.8	57	213	96	209	0	32	0	36	0	0	0
WEST VIRGINIA																																				
BECKLEY	62.1	40.6	51.4	90	JUN 23	1	DEC 19	5376	41.55	5.34	SEP 28-29	53.9	5.9	FEB 10-11	79	82	56	65	9.3	24	32	25	MAR 10		6.6	87	86	193	142	17	44	26	1	21	118	0
CHARLESTON	67.6	44.2	55.9	96	SEP 9	3	JAN 15	4361	32.98	1.36	NOV 25-26	37.5	7.8	JAN 12-13	77	82	52	57	6.2	22	37*	25	MAR 10		6.2	89	121	156	137	11	32	96	41	12	104	0
ELKINS	62.6	36.7	49.7	90	SEP 10+	-12	JAN 15	5868	41.58	1.83	SEP 28-29	61.2	6.4	JAN 12-13	88	90	57	69	6.6	30	37*	25	JAN 25		6.8	64	106	196	165	22	45	88	2	22	159	4
HUNTINGTON	66.7	43.7	55.2	100	AUG 3	0	JAN 14	4559	37.02	2.90	AUG 22	27.7	6.3	FEB 10-11	79	86	57	60	6.1	18	35*	26	MAR 17+		6.1	97	116	153	126	7	40	40	36	13	107	1
PARKERSBURG U	65.5	43.7	54.6	95	SEP 10+	6	JAN 15+	4713	38.50	1.84	JUN 14-15	23.5	10.0	JAN 12-13					6.7		37	W	MAR 17	55					132	8	42	8	29	16	105	0
WISCONSIN																																				
GREEN BAY	54.9	35.2	45.1	96	JUN 29	-12	FEB 24	7723	28.12	2.99	SEP 3	27.7	10.1	MAR 25-26	81	85	64	68	10.2	22	59	SW	APR 13	54	6.1	93	124	149	124	8	49	29	14	77	158	12
LA CROSSE	57.7	38.1	47.9	101	AUG 2	-19	DEC 27	7052	25.36	2.54	JUN 22-23	35.8	6.3	MAR 25-26	78	80	58	62	10.9	18	53*	25	APR 13						94	8	35	17	28	59	147	14
MADISON	58.4	35.4	46.9	97	JUL 24+	- 9	DEC 17	7242	23.62	1.70	AUG 20-21	30.5	5.2	MAR 8-9	76	79	56	61	9.3	18	57	NW	JUL 27	58	6.2	93	107	166	109	9	55	22	25	54	168	14
MILWAUKEE	56.6	38.0	47.3	95	AUG 2+	- 2	DEC 17+	7027	28.18	4.04	JUL 17-18	38.8	9.2	MAR 4-5	77	80	62	68	11.0	21	51	SW	APR 14+	63	5.7	112	122	132	114	10	47	32	20	59	153	5
WYOMING																																				
CASPER	56.2	30.8	43.5	95	JUL 30+	-31	DEC 17+	8251	10.88	1.57	APR 2	81.1	13.2	APR 2-3	65	45	41	60	13.5	23	49*	24	MAY 3		5.5	118	119	129	91	27	26	12	26	70	190	18
CHEYENNE	57.7	31.8	44.8	91	JUL 21+	-24	DEC 17	7632	5.94	.68	JUL 25-26	22.4	3.5	APR 2-3	59	38	39	56	14.9	29	61	NW	APR 27	64	5.2	127	117	122	79	7	36	9	8	43	176	7
LANDER	57.3	30.6	44.0	98	JUL 21	-22	DEC 17	8087	12.81	2.75	MAY 29-30	89.8	9.3	FEB 24-25	61	46	42	54	7.8	27	73	SW	DEC 22	73	5.3	129	123	114	66	25	22	6	26	49	183	15
SHERIDAN	57.5	30.8	44.2	101	JUL 21	-29	DEC 17	7964	15.62	2.18	JUN 8-9	69.0	10.4	NOV 13-14	74	52	50	65	9.9	30	63	NW	FEB 5	65	6.0	103	106	157	104	21	22	4	24	53	189	17

Data from airport unless otherwise specified. U indicates Urban, R indicates Rural, sites.
* Values entered in column "Fastest Mile" is the highest observed 1-minute wind speed. This station is not equipped with a recording anemometer from which Fastest Mile data can be evaluated.
\+ And also on an earlier date or dates.
A Maximum hourly average.
B Number of days maximum 70°F. or above for Alaskan Stations.

Y Peak gust.
\# Wind direction to 8 compass points only.
F Computed as of 8:00 a.m. local time.
K Computed as of noon local time.
V Sun below horizon November 19 - January 23.
X Sun below horizon November 24 - January 17.
† From the Loyola Avenue site.

ANNUAL CLIMATOLOGICAL DATA
METRIC UNITS

YEAR 1964

State and Station	Temperature: Averages: Daily maximum	Temperature: Averages: Daily minimum	Temperature: Averages: Annual	Temperature: Extremes: Highest	Temperature: Extremes: Date	Temperature: Extremes: Lowest	Temperature: Extremes: Date	Heating degree days	Precipitation: Total	Precipitation: Greatest in 24 hours	Precipitation: Date (s)	Precipitation: Snow, Sleet: Total	Precipitation: Snow, Sleet: Greatest in 24 hours	Precipitation: Snow, Sleet: Date (s)	Relative humidity: 1:00 a.m. E.S.T.	Relative humidity: 7:00 a.m. E.S.T.	Relative humidity: 1:00 p.m. E.S.T.	Relative humidity: 7:00 p.m. E.S.T.	Wind: Average speed	Wind: Prevailing direction	Wind: Fastest mile (1.6 kilometers): Speed	Wind: Fastest mile (1.6 kilometers): Direction	Wind: Fastest mile (1.6 kilometers): Date	Possible sunshine	Average sky cover sunrise to sunset	Number of days: Sunrise to sunset: Clear, 0-0.3	Number of days: Sunrise to sunset: Partly cloudy, 0.4-0.7	Number of days: Sunrise to sunset: Cloudy, 0.8-1.0	Number of days: Precipitation 25mm or more	Number of days: Snow, Sleet 25.4mm. or more	Number of days: Thunderstorms	Number of days: Heavy fog	Number of days: Max. temp. 32.2 °C and above	Number of days: Max. temp. 0 °C and below	Number of days: Min. temp. 0 °C and below	Number of days: Min. temp. −17.8 °C. and below
	°C.	°C.	°C.	°C.		°C.		Base 18.3 °C.	Mm.	Mm.		Mm.	Mm.		%	%	%	%	M.p.s.		M.p.s.			%	Tenths										
ALABAMA																																			
BIRMINGHAM	22.9	10.9	16.9	37.2	JUN 22	− 10.6	JAN 15	1536	1468	93	APR 5-6	10	T	DEC 18 +	82	85	59	64	3.7	15	2.2	S	MAR 4	63	6.1	106	97	163	120	0	59	7	46	1	52	0
HUNTSVILLE	21.9	10.2	16.1	36.1	JUN 22	− 10.6	DEC 18+	1783	1631	130	MAR 14-15	69	25	FEB 28	77	81	56	59	3.7	14	2.1*	18	MAR 4		5.7	113	106	147	109	2	52	13	46	3	60	0
MOBILE	24.8	13.8	19.3	36.7	SEP 2	− 6.7	JAN 14	986	1622	186	APR 26-27	T	T	JAN 13 +	85	87	60	70	5.2	36	2.4*	36	OCT 4		6.2	94	106	166	128	0	76	56	72	0	21	0
MONTGOMERY	23.9	12.3	18.1	37.2	JUN 21	− 9.4	JAN 15	1292	1636	115	APR 8	T	T	FEB 19 +	84	89	59	65	3.8	36	2.2	S	MAR 4	57	6.2	92	110	164	107	0	73	29	61	1	41	0
ALASKA																																			
ANCHORAGE	4.9	− 3.2	.9	23.9	MAY 31	− 34.4	DEC 14	6350	404	42	NOV 18-19	2550	417	NOV 18-19	79	75	65	72	3.9	18	2.1*	5	DEC 22	45	7.1	70	75	218	125	24	1	19	B 9	131	210	52
ANNETTE	7.5	3.6	5.6	26.7	JUN 8	− 17.2	DEC 15	4217	3071	98	OCT 17-18	2075	325	DEC 31	85	79	74	82	4.9	18	2.2*	15	OCT 18		8.5	22	57	287	252	20	1	11	17	28	95	0
BARROW	−12.3	−18.2	−15.2	19.4	JUL 23	− 47.8	FEB 19	12251	78	9	JUN 30	907	99	OCT 18-19	77	78	74	75	6.1	9	2.1*	11	NOV 17			V69	V53	V178	81	12	0	62	0	259	336	192
BARTER ISLAND	−11.2	−17.2	−14.2	17.8	JUL 6	− 44.4	FEB 19	11880	130	18	AUG 24-25	826	69	AUG 26	78	77	76	78	6.1	8	2.5*	27	MAR 14			X65	X56	X190	88	9	0	59	0	249	320	192
BETHEL	.7	− 7.9	− 3.6	25.0	JUL 8	− 39.4	MAR 14	7980	260	19	OCT 26-27	1532	135	OCT 26-27	85	83	74	79	6.2	3	2.8*	18	NOV 14		7.6	56	58	252	140	20	2	77	13	161	234	101
COLD BAY	5.6	.4	3.0	20.6	OCT 26	− 14.4	FEB 18	5553	673	45	SEP 24	1339	218	NOV 30	86	85	79	83	8.2	15	3.0*	11	NOV 16		8.7	16	57	293	203	16	0	25	0	55	166	0
FAIRBANKS	.3	−10.6	− 5.1	27.8	JUL 16	− 48.9	DEC 14	8581	256	16	JUN 24	1740	196	NOV 19-20	81	76	64	71	2.6	36	1.2*	26	SEP 3+		7.1	62	92	212	113	21	8	16	53	166	238	134
JUNEAU	8.0	1.1	4.6	26.1	MAY 29	− 26.1	DEC 30+	4998	1480	59	DEC 4-5	3432	378	DEC 16-17	88	83	76	84	5.2	12	2.3*	13	DEC 7	30	8.6	35	33	298	242	33	0	12	12	49	132	9
KING SALMON	4.4	− 4.9	− .2	24.4	JUN 24+	− 33.3	DEC 31	6765	479	21	SEP 24-25	1331	132	DEC 14-15	81	77	67	77	5.8	36	2.8*	9	NOV 16		7.2	70	64	232	168	18	2	35	17	111	220	61
KOTZEBUE	− 4.8	−12.4	− 8.6	22.8	JUL 22	− 46.7	FEB 19+	9817	168	14	SEP 4-5	1798	142	NOV 6-7	79	79	76	76	6.2	11	2.7*	11	DEC 29		6.3	107	68	191	98	22	1	30	4	206	261	154
MC GRATH	.3	−10.4	− 5.0	27.8	JUL 28	− 48.3	DEC 11	8534	368	31	JUN 19-20	3114	335	APR 23-24	77	74	59	67	2.6	33	1.8*	19	AUG 30		7.3	67	65	234	136	40	9	22	40	162	244	126
NOME	− 1.0	− 9.3	− 5.1	27.2	AUG 13	− 38.9	MAR 13	8537	366	33	SEP 1	1364	119	APR 4	80	78	73	77	6.4	9	2.7*	9	DEC 29	38	6.7	90	80	196	119	19	0	20	4	193	242	114
ST. PAUL ISLAND	3.2	− 1.4	.9	13.3	JUN 15	− 23.3	FEB 20	6331	930	38	NOV 15-16	4039	351	JAN 30	92	90	87	90	9.1	32	4.2*	35	NOV 16		9.0	17	34	315	224	45	0	96	0	84	202	7
SHEMYA	4.4	1.5	3.0	15.0	AUG 11	− 8.9	JAN 14	5559	816	44	NOV 6-7	1963	91	DEC 17-18	84	85	84	85	10.8	24	4.6*		DEC 10		8.9	9	59	298	214	29	0	60	0	50	145	0
YAKUTAT	6.9	− .1	3.4	25.0	MAY 30+	− 31.1	DEC 30	5405	4276	127	FEB 19-20	7729	396	FEB 13-14	90	83	76	86	3.6	9	2.3*	13	OCT 21		8.3	44	41	281	243	82	3	16	6	56	174	14
ARIZONA																																			
FLAGSTAFF	15.2	− 1.8	6.7	32.2	JUL 7	− 26.1	JAN 24	4254	484	65	JUL 15	2588	310	MAR 23-24	70	39	38	62	4.0	18	1.6*	2	NOV 3		4.3	179	90	97	77	23	49	20	1	25	215	14
PHOENIX	28.0	11.8	19.9	44.4	JUL 3	− 6.7	JAN 11	1141	152	38	SEP 14	0	0		54	34	24	42	3.5	12	3.1Y	NNW	SEP 14	89	3.2	224	82	60	31	0	23	3	154	0	35	0
PRESCOTT	20.3	4.1	12.2	37.2	JUL 7	− 15.0	JAN 14	2682	289	36	JUL 24-25	627	203	NOV 15	60	34	30	50	4.6	19	2.9	SW	NOV 13	84	3.8	194	90	82	53	10	42	5	94	2	144	0
TUCSON	26.4	11.4	18.9	41.1	JUL 5+	− 7.8	JAN 12	1203	457	77	SEP 9-10	147	145	MAR 2-3	51	30	23	43	4.6	12	2.8	S	JUL 24	84	3.5	206	89	71	52	2	42	2	124	0	34	0
WINSLOW	21.2	3.1	12.2	38.9	JUL 6+	− 18.3	JAN 14	2864	195	53	AUG 12	305	76	MAR 24	58	34	26	47	4.5	22	2.4*	22	NOV 13		3.9	179	114	73	55	3	43	3	74	5	156	1
YUMA	29.8	14.6	22.2	45.6	JUL 12	− 1.1	DEC 15+	707	50	20	APR 28	0	0		49	30	21	39	4.1	18	2.6	W	FEB 20	91	2.8	242	66	58	13	0	10	1	167	0	5	0
ARKANSAS																																			
FORT SMITH	23.9	8.8	16.3	43.3	AUG 4	− 16.1	JAN 14	1833	1007	130	APR 3	20	15	JAN 12	76	84	51	51	3.9	7	2.2	N	AUG 28	64	5.1	141	95	130	75	0	42	26	94	3	86	0
LITTLE ROCK	23.6	10.1	16.8	42.2	AUG 4	− 12.8	JAN 14	1690	1174	92	SEP 16-17	5	5	DEC 19	79	84	55	59	4.0	25	2.4	N	JUL 9	62	5.2	140	91	135	85	0	46	15	87	3	71	0
TEXARKANA	24.3	12.1	18.2	40.6	AUG 5	− 11.7	JAN 14	1350	1156	141	SEP 16-17	10	8	JAN 16	79	85	59	60	3.5	18									92	0	57	15	87	1	47	0
CALIFORNIA																																			
BAKERSFIELD	25.1	10.9	18.0	43.9	JUN 25	− 3.3	DEC 13	1311	102	10	OCT 29	0	0		62	47	35	52	3.4	34	1.6*	32	JUN 8+		3.2	214	83	69	45	0	0	21	103	0	17	0
BISHOP	23.3	2.8	13.1	40.6	JUL 24	− 17.8	JAN 23	2440	69	12	APR 18-19	312	127	JAN 21-22		26	18								3.3	220	81	65	20	4	9	0	97	0	155	1
BLUE CANYON	13.8	4.7	9.2	29.4	SEP 24	− 11.1	DEC 31	3412	2257	237	DEC 27	6690	495	JAN 20-21		49									4.1	193	66	107	96	43	1	77	0	23	116	0

See reference notes at end of table.

ANNUAL CLIMATOLOGICAL DATA
METRIC UNITS

YEAR 1964

State and Station	Temperature: Averages: Daily maximum	Temperature: Averages: Daily minimum	Temperature: Averages: Annual	Temperature: Extremes: Highest	Temperature: Extremes: Date	Temperature: Extremes: Lowest	Temperature: Extremes: Date	Heating degree days	Precipitation: Total	Precipitation: Greatest in 24 hours	Precipitation: Date (s)	Snow, Sleet: Total	Snow, Sleet: Greatest in 24 hours	Snow, Sleet: Date (s)	Relative humidity: 1:00 a.m. E.S.T.	Relative humidity: 7:00 a.m. E.S.T.	Relative humidity: 1:00 p.m. E.S.T.	Relative humidity: 7:00 p.m. E.S.T.	Wind: Average speed	Wind: Prevailing direction	Wind: Fastest mile (1.6 kilometers): Speed	Wind: Fastest mile (1.6 kilometers): Direction	Wind: Fastest mile (1.6 kilometers): Date	Possible sunshine	Average sky cover sunrise to sunset	Number of days: Sunrise to sunset: Clear, 0-0.3	Number of days: Sunrise to sunset: Partly cloudy, 0.4-0.7	Number of days: Sunrise to sunset: Cloudy, 0.8-1.0	Number of days: Precipitation 2.5mm. or more	Number of days: Snow, Sleet 25.4mm. or more	Number of days: Thunderstorms	Number of days: Heavy fog	Number of days: Max. temp. 32.2 °C and above	Number of days: Max. temp. 0 °C. and below	Number of days: Min. temp. 0 °C. and below	Number of days: Min. temp. -17.8 °C. and below
	°C.	°C.	°C.	°C.		°C.		Base 18.3 °C.	Mm.	Mm.		Mm.	Mm.		%	%	%	%	M.p.s.		M.p.s.			%	Tenths										
CALIFORNIA																																			
BURBANK	23.7	10.0	16.9	37.8	OCT 6+	1.1	DEC 29+	1107	214	38	JAN 21-22	T	T	NOV 17	72	50	42	66	3.8	18	1.9*	2	MAR 16		3.3	216	83	67	34	0	1	18	50	0	0	0
EUREKA U	13.5	7.7	10.6	28.3	SEP 24	- 1.1	NOV 15	2770	1195	68	NOV 8-9	8	8	DEC 31					3.8	N#	2.2	SW	DEC 22	58	6.5	93	83	190	118	0	13	47	0	0	5	0
FRESNO	24.4	8.4	16.4	43.3	JUN 25	- 3.9	JAN 13	1569	214	29	OCT 28-29	0	0		77	51	38	63	3.5	31	2.1	NW	MAR 2	83	3.5	219	61	86	47	0	5	40	105	0	39	0
LONG BEACH	21.8	10.7	16.3	36.1	APR 14	.6	MAR 8	1042	126	18	NOV 16-17	0	0		79	59	52	74	3.3	28	1.9*	17	JAN 21		4.1	172	126	68	29	0	1	26	10	0	0	0
LOS ANGELES	20.3	11.8	16.1	34.4	OCT 20	3.3	NOV 19+	1032	165	22	DEC 19-20	0	0		76	58	62	74	4.8	27	2.8Y		MAR 16		4.2	171	119	76	32	0	2	25	3	0	0	0
LOS ANGELES U	22.7	12.4	17.6	35.6	OCT 20	3.9	NOV 19+	775	203	28	MAR 22-23	0	0						3.1		2.4	NW	MAR 16	75	3.5	201	109	56	28	0			0	13	0	0
MT SHASTA R	16.2	2.1	9.2	36.1	JUL 11	- 12.8	DEC 31	3411	825	122	DEC 21-22	3180	452	DEC 18-19		59									4.2	187	65	114	93	27	8	7	17	4	149	0
OAKLAND	17.2	10.5	13.8	31.7	SEP 22	2.2	JAN 13	1666	427	56	JAN 20-21	0	0		79	73	66	77	4.8	30	2.4*	16	JAN 20		4.5	168	105	93	77	0	2	5	0	0	0	0
RED BLUFF	23.9	9.8	16.9	43.9	JUL 24	- 2.8	DEC 13	1485	434	47	JAN 20	0	0		62	47	33	53	4.6	17	2.9		JAN 20	80	4.1	189	76	101	62	0	7	14	95	0	17	0
SACRAMENTO	23.4	8.4	15.9	41.1	JUL 24+	- 2.2	JAN 13	1518	424	68	JAN 20-21	T	T	JAN 21	81	63	44	71	4.3	22	1.9	SW	APR 22	82	3.7	214	64	88	65	0	1	30	81	0	19	0
SACRAMENTO U	22.7	9.4	16.1	39.4	JUL 11+	- 1.1	JAN 5	1396	383	58	JAN 20-21	0	0																63	0	0	0	57	0	3	0
SANDBERG R	17.2	7.2	12.2	35.6	JUL 13	- 6.1	DEC 31+	2732	210	43	NOV 17	912	356	NOV 17		40			6.8		2.8*	34	APR 11		3.6	209	65	92	41	12	3	74	20	8	96	0
SAN DIEGO	20.9	12.5	16.7	36.1	OCT 19	3.3	DEC 14+	859	134	26	JAN 21-22	0	0		76	59	61	75	3.6	30	1.8	NW	MAR 2	68	4.6	160	119	87	39	0	3	16	3	0	0	0
SAN FRANCISCO	18.2	8.9	13.6	33.3	SEP 24	.6	JAN 13+	1776	446	68	JAN 20-21	0	0		83	68	61	78	5.9	27	3.0	S	JAN 20		4.3	180	85	101	68	0	1	9	5	0	0	0
SAN FRANCISCO U	16.8	10.4	13.6	33.3	SEP 24	4.4	DEC 31	1771	450	49	JAN 20-21	0	0			F76	K63		4.5	W	1.9	SW	APR 22	73					69	0	3	0	2	0	0	0
SANTA CATALINA	20.1	12.4	16.3	36.7	AUG 8	3.9	NOV 17	1298	140	17	NOV 17	T	T	NOV 14 +											3.8	193	86	87	39	0	5	137	20	0	0	0
SANTA MARIA	19.6	5.9	12.8	37.2	OCT 19	- 3.9	MAR 8	2022	252	36	OCT 28-29	0	0			61	62								3.7	201	105	60	54	0	3	79	6	0	51	0
STOCKTON	23.4	8.3	15.9	42.2	JUN 23	- 4.4	JAN 13	1578	358	40	OCT 28-29	0	0		76	58	43	65	4.4	27	2.1*	16	JAN 20		3.9	204	62	100	61	0	2	34	79	0	37	0
COLORADO																																			
ALAMOSA	13.7	- 6.3	3.7	32.8	JUL 4	- 36.1	JAN 14+	5354	180	24	DEC 3-4	1585	373	DEC 3	75	44	40								4.1	172	133	61	78	15	47	32	3	60	235	77
COLORADO SPRINGS	16.9	1.8	9.3	37.2	JUL 4	- 20.6	FEB 26	3588	218	38	MAY 29-30	841	338	MAR 7	55	32	35	51	5.6	36	2.2*	34	DEC 24		5.0	134	118	114	63	7	53	17	31	35	155	6
DENVER	17.9	1.7	9.8	36.7	JUL 27+	- 22.2	DEC 17	3449	258	43	MAY 29-30	1453	262	APR 2-3	62	35	35	54	4.4	18	2.2	SW	DEC 15+	75	5.1	126	135	105	78	15	31	8	50	26	164	7
GRAND JUNCTION	18.3	3.8	11.1	38.9	JUL 20+	- 19.4	JAN 14	3252	175	18	AUG 12-13	739	155	NOV 15-16	54	36	32	46	3.9	13	2.5	W	AUG 26	71	4.9	145	102	119	71	11	25	7	61	16	147	1
PUEBLO	20.3	2.1	11.2	38.9	JUL 20+	- 23.3	MAR 9	3134	211	41	MAY 29-30	617	229	MAR 6	60	34	30	50	5.7	30	3.8		JUL 28	77	4.5	160	113	93	56	7	31	8	77	11	163	7
CONNECTICUT																																			
BRIDGEPORT	15.3	6.0	10.7	33.9	JUN 30	- 13.9	JAN 15	3104	585	44	APR 14-15	648	254	JAN 13-14	79	79	61	70	6.9	23	3.4*	34	JAN 21		5.6	125	100	141	106	6	14	35	3	14	102	0
HARTFORD	16.2	3.8	10.1	38.3	JUL 1	- 21.1	JAN 15	3382	878	53	JAN 20-21	1326	259	FEB 19-20	77	78	51	62	4.3	18	2.6	NW	JAN 21	62	6.3	92	115	159	122	10	22	31	21	32	140	7
NEW HAVEN	15.2	5.2	10.2	33.9	JUN 30	- 13.9	JAN 15	3204	851	50	JUL 8-9	848	236	JAN 13		78	59		4.2		2.1	W	JAN 10	64	5.8	117	100	149	112	8	13	24	1	12	123	0
DELAWARE																																			
WILMINGTON	17.7	6.6	12.1	36.7	JUN 30	- 17.2	JAN 15	2772	834	59	JUL 8	831	206	MAR 21-22	76	78	53	63	5.0	29	2.2*	30	MAR 10		5.6	126	95	145	95	10	21	34	21	11	104	0
DIST OF COLUMBIA																																			
WASH NATL AP	19.8	8.5	14.2	37.8	JUN 10	- 13.9	JAN 15	2300	749	41	SEP 29-30	709	208	FEB 10-11	70	73	51	58	4.8	18	2.2	SW	MAR 10	59	5.8	120	93	153	92	6	19	19	49	5	78	0
FLORIDA																																			
APALACHICOLA U	23.7	16.3	20.0	35.0	AUG 28	- 4.4	JAN 14	763	1811	197	APR 27-28	T	T	JAN 13					3.9						5.5	119	105	142	114	0	62	41	20	0	5	0
DAYTONA BEACH	26.1	16.6	21.3	36.1	JUN 17	- 2.8	JAN 14	453	1594	161	SEP 9-10	0	0		86	87	63	76	4.8	36	2.4*	26	SEP 9		6.4	73	129	164	108	0	58	21	46	0	3	0
FORT MYERS	29.2	18.1	23.7	36.1	JUL 14+		JAN 15	149	834	71	SEP 4	0	0		84	85	56	72	5.0		1.9*	29	FEB 8		5.9	69	185	112	104	0	80	19	127	0	1	0

See reference notes at end of table.

ANNUAL CLIMATOLOGICAL DATA
METRIC UNITS

State and Station	Temperature: Averages: Daily maximum	Temperature: Averages: Daily minimum	Temperature: Averages: Annual	Temperature: Extremes: Highest	Temperature: Extremes: Date	Temperature: Extremes: Lowest	Temperature: Extremes: Date	Heating degree days	Precipitation: Total	Precipitation: Greatest in 24 hours	Precipitation: Date (s)	Precipitation: Snow, Sleet: Total	Precipitation: Snow, Sleet: Greatest in 24 hours	Precipitation: Snow, Sleet: Date (s)	Relative humidity: 1:00 a.m. E.S.T.	Relative humidity: 7:00 a.m. E.S.T.	Relative humidity: 1:00 p.m. E.S.T.	Relative humidity: 7:00 p.m. E.S.T.	Wind: Average speed	Wind: Prevailing direction	Wind: Fastest mile (1.6 kilometers): Speed	Wind: Fastest mile (1.6 kilometers): Direction	Wind: Fastest mile (1.6 kilometers): Date	Possible sunshine	Average sky cover sunrise to sunset	Number of days: Sunrise to sunset: Clear, 0-0.3	Number of days: Sunrise to sunset: Partly cloudy, 0.4-0.7	Number of days: Sunrise to sunset: Cloudy, 0.8-1.0	Number of days: Precipitation 25mm. or more	Number of days: Snow, Sleet 25.4mm. or more	Number of days: Thunderstorms	Number of days: Heavy fog	Number of days: Max. temp. 32.2 °C. and above	Number of days: Max. temp. 0 °C. and below	Number of days: Min. temp. 0 °C. and below	Number of days: Min. temp. -17.8 °C. and below
	°C.	°C.	°C.	°C.		°C.		Base 18.3 °C.	Mm.	Mm.		Mm.	Mm.		%	%	%	%	M.p.s.		M.p.s.			%	Tenths											
FLORIDA																																			
JACKSONVILLE	25.8	15.3	20.6	37.2	JUN 17+	- 5.6	JAN 15	668	1652	159	SEP 9-10	0	0		85	89	58	72	5.0	36	4.2	N	SEP 9	61	6.1	91	120	155	126	0	57	28	78	0	7	0
KEY WEST	28.2	22.9	25.6	32.8	SEP 15+	8.3	JAN 15	33	746	70	DEC 16-17	0	0		80	80	69	75	6.1	12	3.8	S	OCT 14	70	5.7	92	154	120	116	0	60	0	32	0	0	0
LAKELAND U	27.2	17.2	22.2	36.1	JUN 18	- 2.8	JAN 14	339	1207	96	JAN 11-12	0	0						4.0					57	6.1	82	146	138	111	0	82	22	77	0	2	0
MIAMI BEACH	26.9	22.2	24.6	35.0	JUL 8	3.3	JAN 15+	71	1181	97	APR 29-30	0	0												5.9	67	185	114	116	0	0	0	11	0	0	0
MIAMI	28.2	21.2	24.7	33.9	AUG 19	2.2	JAN 15	79	1529	176	AUG 26-27	0	0		82	85	64	74	4.6	9	3.8*	36	AUG 27		6.6	40	179	147	127	0	72	9	39	0	0	0
ORLANDO	27.9	17.1	22.5	36.1	JUN 17+	- 2.8	JAN 14	323	1382	136	SEP 9-10	0	0		87	90	57	70	4.9	18	2.4*	2	JUN 10		6.2	79	143	144	108	0	53	23	106	0	1	0
PENSACOLA	24.1	14.4	19.3	36.1	SEP 2+	- 6.7	JAN 14	961	2107	191	APR 26-27	T	T	JAN 13					4.0	35	2.3		APR 27	59					134	0	69	0	49	0	16	0
TALLAHASSEE	25.4	13.3	19.3	36.7	JUN 20	- 8.9	JAN 15	929	2646	235	DEC 3-4	T	T	FEB 22	87	90	57	70	4.5	36	2.5*	27	MAR 15		6.1	95	120	151	137	0	90	50	76	0	28	0
TAMPA	27.5	16.6	22.1	36.1	JUL 14+	- 2.8	JAN 15	358	1471	104	JUL 25-26	0	0		85	88	59	71	5.9	6	3.4*	31	JUN 25	64	6.4	81	127	158	105	0	75	20	81	0	4	0
WEST PALM BEACH	28.2	19.6	23.9	34.4	AUG 14+	1.7	JAN 14	118	2014	180	OCT 11-12	0	0		84	86	65	77	5.1	12	4.4*	13	AUG 27		6.6	53	154	159	128	0	61	8	70	0	0	0
GEORGIA																																			
ATHENS	22.2	10.2	16.2	39.4	JUN 21	- 10.0	JAN 15	1664	1814	119	OCT 4-5	T	T	FEB 25 +	81	79	58	66	4.0	5	1.6*	29	MAY 12		5.8	115	92	159	127	0	52	51	37	0	53	0
ATLANTA	21.1	10.4	15.8	36.7	JUN 22	- 10.0	JAN 15	1738	1527	86	MAR 25-26	28	20	JAN 13	80	85	60	65	4.0	6	2.3		JUL 22	63	5.9	109	101	156	122	0	43	49	17	2	52	0
AUGUSTA	24.3	10.9	17.6	37.2	MAY 28	- 10.0	JAN 15	1362	1677	152	AUG 28-29	T	T	JAN 13	83	86	53	67	3.9	24	2.1*	17	MAY 21		6.1	92	98	176	110	0	51	24	74	0	44	0
COLUMBUS	23.8	11.6	17.7	37.2	JUN 21	- 10.6	JAN 15	1332	1860	143	OCT 4-5	T	T	JAN 13 +		87	57	68	3.8		1.9*	18	MAR 4		6.2	95	98	173	123	0	53	24	55	0	45	0
MACON	24.1	11.5	17.8	39.4	JUN 21	- 8.9	JAN 15	1322	1342	90	APR 8	T	T	FEB 22 +	84	88	54	64	4.0	30	1.8	SW	DEC 26+	59	6.0	105	95	166	119	0	50	33	67	0	34	0
ROME	22.2	8.3	15.3	37.8	JUN 22	- 13.9	JAN 15	1938	1741	149	MAR 25-26	48	8	FEB 25															122	1	58	20	58	2	82	0
SAVANNAH	24.6	12.6	18.6	37.8	JUN 16+	- 7.8	JAN 15	1061	1859	149	JUL 17-18	T	T	JAN 13	85	87	56	72	4.9	18	2.0	N	JUL 9	66	6.0	105	105	156	122	0	63	34	62	0	26	0
HAWAII																																			
HILO	27.0	18.6	22.8	32.2	DEC 21	15.6	DEC 18+	0	4228	210	MAY 24-25	0	0		88	83	66	84	4.5	25	1.6*	16	DEC 9	33	7.4	37	113	216	307	0	18	0	1	0	0	0
HONOLULU	28.6	21.4	25.0	32.2	AUG 29	16.1	NOV 17	0	511	85	MAR 23-24	0	0		68	66	55	64	5.3	6	1.7	SW	DEC 19	63	5.9	79	167	120	137	0	12	0	1	0	0	0
KAHULUI	27.9	19.4	23.7	32.8	AUG 29	14.4	DEC 7+	0	255	22	DEC 9-10	0	0		84	79	61	78	6.2	6	2.3		DEC 16	73	5.0	131	145	90	100	0	7	0	3	0	0	0
LIHUE	27.1	20.9	24.0	30.0	JUN 17+	15.0	MAR 20	0	1314	126	MAR 8-9	0	0		80	77	67	77	6.2	6	1.9	SW	DEC 21		6.7	54	153	159	242	0	12	0	0	0	0	0
IDAHO																																			
BOISE	15.6	2.7	9.2	38.3	AUG 17+	- 17.2	DEC 17+	3633	401	27	MAY 27-28	1181	165	NOV 25-26	75	57	47	67	4.1	13	2.1	SW	DEC 20	71	5.4	133	81	152	108	14	17	25	39	29	151	0
IDAHO FALLS 42NW R	12.3	- 5.4	3.5	36.7	JUL 27	- 35.6	DEC 17	5509	314	28	OCT 29-30																		77	0	0	0	28	96	231	72
IDAHO FALLS 46W R	12.3	- 4.5	3.9	35.6	JUL 27	- 36.1	DEC 17	5334	315	30	DEC 22-23	1308	168	APR 22-23					3.9		2.2A	WSW	SEP 25						82	14	17	14	19	89	224	64
LEWISTON	16.3	4.6	10.4	40.6	JUL 12	- 23.9	DEC 17	3099	376	36	JUL 14-15	815	191	DEC 20	73	60	47								6.6	93	69	204	102	8	16	20	22	8	105	2
POCATELLO	14.1	- .6	6.8	37.2	JUL 17	- 28.3	JAN 13	4389	296	21	DEC 22-23	1222	229	APR 22-23	73	55	47	63	5.6	24	2.2	SW	MAY 2+	63	5.8	123	87	156	104	15	21	35	34	60	179	22
ILLINOIS																																			
CAIRO U	20.7	10.5	15.6	39.4	AUG 4+	- 13.3	DEC 18	2015	1113	167	MAR 8-9	99	61	JAN 11-12		80	56		4.4	SW	3.1	NW	MAR 4	63	5.4	129	98	139	95	2	44	8	63	7	73	0
CHICAGO MIDWAY	16.2	5.7	10.9	36.7	AUG 3	- 16.7	DEC 18	3271	685	53	JUL 17-18	1052	180	MAR 29	70	77	57	61	5.6	21	2.4	SW	MAY 8	60	6.0	105	100	161	105	11	31	15	35	44	131	0
MOLINE	16.4	4.8	10.6	36.1	JUL 24	- 20.0	DEC 27	3385	906	50	APR 19-20	978	135	MAR 20	77	81	58	62	5.1	18	2.7	SW	MAY 8	60	5.8	106	114	146	110	13	54	16	32	42	141	7
PEORIA	16.7	4.9	10.8	37.2	AUG 2	- 19.4	JAN 1	3302	735	71	JUN 19-20	688	107	JAN 12	78	83	60	62	4.9	18	2.9	W	NOV 20	63	5.9	120	79	167	102	8	48	29	35	39	136	4
ROCKFORD	14.9	3.1	9.1	33.9	AUG 3+	- 23.3	DEC 6	3736	997	64	APR 20-21	1125	185	MAR 4-5	81	84	60	65	5.5	19	1.9*	22	APR 13		5.7	119	98	149	107	13	47	28	14	50	150	5
SPRINGFIELD	18.3	6.1	12.2	39.4	AUG 3	- 21.7	JAN 14	2976	788	72	APR 18-19	932	224	JAN 11-12	73	78	57	59	5.9	19	2.5	W	NOV 20+	67	5.5	135	76	155	97	11	46	21	55	33	130	3

See reference notes at end of table.

ANNUAL CLIMATOLOGICAL DATA
METRIC UNITS

State and Station	Temperature: Averages: Daily maximum	Temperature: Averages: Daily minimum	Temperature: Averages: Annual	Temperature: Extremes: Highest	Temperature: Extremes: Date	Temperature: Extremes: Lowest	Temperature: Extremes: Date	Heating degree days	Precipitation: Total	Precipitation: Greatest in 24 hours	Precipitation: Date (s)	Precipitation: Snow, Sleet: Total	Precipitation: Snow, Sleet: Greatest in 24 hours	Precipitation: Snow, Sleet: Date (s)	Relative humidity: 1:00 a.m. E.S.T.	Relative humidity: 7:00 a.m. E.S.T.	Relative humidity: 1:00 p.m. E.S.T.	Relative humidity: 7:00 p.m. E.S.T.	Wind: Average speed	Wind: Prevailing direction	Wind: Fastest mile (1.6 kilometers): Speed	Wind: Fastest mile (1.6 kilometers): Direction	Wind: Fastest mile (1.6 kilometers): Date	Possible sunshine	Average sky cover sunrise to sunset	Number of days: Sunrise to sunset: Clear, 0-0.3	Number of days: Sunrise to sunset: Partly cloudy, 0.4-0.7	Number of days: Sunrise to sunset: Cloudy, 0.8-1.0	Number of days: Precipitation 25mm. or more	Number of days: Snow, Sleet 25.4mm. or more	Number of days: Thunderstorms	Number of days: Heavy fog	Number of days: Max. temp. 32.2°C and above	Number of days: Max. temp. 0°C and below	Number of days: Min. temp. 0°C and below	Number of days: Min. temp. -17.8°C and below
	°C.	°C.	°C.	°C.		°C.		Base 18.3°C.	Mm.	Mm.		Mm.	Mm.		%	%	%	%	M.p.s.		M.p.s.			%	Tenths											
INDIANA																																			
EVANSVILLE	20.3	6.6	13.5	38.9	AUG 3	- 21.1	JAN 14	2508	975	143	MAR 8-9	234	89	JAN 12	80	84	56	60	3.8	18	2.2	SW	MAR 4	65	5.4	131	95	140	97	4	38	10	62	11	119	1
FORT WAYNE	16.3	4.3	10.3	36.7	AUG 2	- 20.6	DEC 9+	3379	725	42	JUL 7	1262	345	MAR 9-10	78	82	60	65	5.0	22	2.7	SW	MAR 5	63	6.1	97	113	156	113	15	44	18	32	40	134	8
INDIANAPOLIS	17.6	5.9	11.7	36.1	AUG 3	- 20.6	JAN 14	2951	923	73	MAR 8-9	759	203	JAN 12-13	77	83	59	62	4.9	23	2.6	SW	MAR 5	63	6.0	95	117	154	115	9	43	14	31	24	120	1
SOUTH BEND	15.6	4.6	10.1	36.1	AUG 2	- 22.2	JAN 1	3431	917	44	JUL 6-7	2017	137	DEC 2	75	78	58	58	5.6	23	2.4*	27	JUN 19		6.4	90	92	184	148	26	41	28	29	47	134	1
IOWA																																			
BURLINGTON	16.9	5.4	11.2	37.2	JUL 24	- 19.4	DEC 18	3199	750	67	APR 5	1034	165	DEC 3-4												116	99	151	109	13	52	17	35	36	137	2
DES MOINES	15.3	4.1	9.7	37.8	AUG 2	- 22.8	DEC 17	3627	722	58	JUN 14-15	602	89	JAN 8	79	84	63	63	6.2	18	3.3	SW	MAY 8	59	5.7	121	99	146	105	9	56	23	24	51	146	9
DUBUQUE	14.1	3.2	8.7	33.9	AUG 2+	- 22.2	DEC 18+	3878	918	68	MAY 7-8	909	122	MAR 25-26		80	59	62							6.0	101	104	161	99	13	46	29	12	59	154	8
SIOUX CITY	15.6	3.4	9.6	38.9	JUL 22	- 28.3	JAN 13	3709	693	49	AUG 6	686	130	MAR 19-20	76	82	60	59	5.9	32	2.9	SW	MAY 5	65	5.5	127	100	139	104	8	54	14	26	45	150	13
WATERLOO	14.8	2.1	8.4	36.1	AUG 2	- 23.9	DEC 27+	4007	913	71	AUG 20	584	130	MAR 25	82	85	62	65	5.5	18	2.2*	33	NOV 20		5.9	107	114	145	97	7	42	23	24	59	162	21
KANSAS																																			
CONCORDIA	18.9	5.4	12.2	42.2	JUL 6	- 22.8	JAN 13	2967	727	69	JUN 4	279	58	MAR 8	71	79	52	52	6.6	18	2.7	W	JUN 21	72	5.0	156	86	124	85	6	59	16	60	20	136	5
DODGE CITY	20.4	5.9	13.2	41.7	AUG 10	- 21.1	JAN 13	2773	540	83	JUL 28	361	104	DEC 2-3	67	76	48	46	7.3	19	3.3	S	JUL 4	75	5.1	134	108	124	71	6	50	30	81	17	136	2
GOODLAND	19.1	1.9	10.6	42.2	JUL 4	- 23.3	DEC 17	3402	275	45	JUL 8-9	683	135	APR 4	74	42	40	64	7.4	18	3.0*	27	MAY 8		4.5	167	104	95	60	7	40	18	70	23	166	5
TOPEKA	19.1	6.4	12.8	40.6	AUG 3+	- 20.6	JAN 13	2768	914	118	NOV 15	325	109	DEC 3	74	81	56	56	6.2	18	2.9	S	MAY 5+	62	5.4	129	95	142	84	5	65	10	42	14	131	3
WICHITA	20.5	7.9	14.2	43.3	AUG 6	- 18.3	JAN 13	2475	869	110	NOV 15-16	183	130	DEC 3	71	80	55	53	6.6	18	3.2	W	APR 27	66	5.1	143	103	120	78	2	55	20	74	12	122	1
KENTUCKY																																			
COVINGTON	18.9	5.7	12.3	38.3	AUG 3	- 26.1	JAN 14	2747	1115	132	MAR 9	658	193	JAN 1	78	82	56	61	4.3	21	1.9*	23	MAR 5		6.0	99	110	157	121	6	46	19	44	17	116	2
LEXINGTON	19.2	7.1	13.2	36.7	AUG 3	- 18.9	JAN 14	2541	1104	90	MAR 4	622	163	JAN 31-1	71	76	54	58	4.6	18	2.0*	22	AUG 11		5.4	129	103	134	118	8	41	15	37	15	101	1
LOUISVILLE	19.8	7.2	13.5	38.3	AUG 3	- 18.3	JAN 14	2452	1183	177	MAR 9	612	183	JAN 1	76	83	57	59	4.0	18	2.5	W	MAR 5	63	5.7	113	108	145	113	4	39	8	46	9	102	1
LOUISIANA																																			
ALEXANDRIA	24.2	11.3	17.8	38.3	AUG 5	- 11.7	JAN 14	1288	1433	157	DEC 10-11	T	T	FEB 21 +	90	92	59	69	2.8	18	2.1*	9	JUL 24		6.0	109	100	157	95	0	68	39	73	0	48	0
BATON ROUGE	25.3	14.1	19.7	36.1	AUG 5+	- 6.7	JAN 14	944	1621	213	OCT 3-4	0	0		83	87	59	65	3.9	12	2.1*	33	OCT 4+		6.1	94	123	149	107	0	72	39	80	0	23	0
LAKE CHARLES	24.5	14.3	19.4	36.1	AUG 5	- 6.7	JAN 14	968	1198	126	JUN 29-30	T	T	FEB 21 +	87	90	61	70	4.6	18	2.4*	11	AUG 5		6.2	85	129	152	98	0	58	56	49	0	14	0
NEW ORLEANS MOISANT	24.9	14.2	19.6	35.6	AUG 31	- 6.1	JAN 1	907	1475	101	JAN 6	0	0		90	92	68	74	3.9	6	2.1*	17	OCT 4		6.0	103	105	158	114	0	69	33	59	0	17	0
NEW ORLEANS AUDUBON	25.5	15.1	20.3	36.1	SEP 3+	- 3.3	JAN 14+	797	1595	99	MAR 19	†0	†0		87	90	65	72	2.4		1.2	W	OCT 4	†54	†6.0	†89	†132	†145	130	†0	†82	†18	88	0	8	0
SHREVEPORT	24.8	13.1	19.0	40.6	AUG 5	- 9.4	JAN 14	1226	821	61	APR 24-25	36	36	JAN 15-16	77	86	56	57	5.2	18	2.1*	29	MAR 9	63	5.4	127	108	131	87	1	42	28	100	1	36	0
MAINE																																			
CARIBOU	8.9	- 1.6	3.7	33.9	JUL 18	- 27.2	JAN 18+	5363	781	51	OCT 21	2985	290	DEC 1		83	63	73							6.8	65	112	189	155	33	23	41	1	100	184	33
PORTLAND	12.9	.6	6.8	33.9	JUN 20	- 24.4	JAN 1	4289	879	47	OCT 17-18	1996	292	MAR 10-11	81	80	56	72	4.5	18	2.2	NW	FEB 3	60	6.0	104	107	155	125	19	22	59	4	43	179	10
MARYLAND																																			
BALTIMORE	18.7	6.9	12.8	36.7	JUN 15	- 18.9	JAN 15	2598	881	51	NOV 25	1090	292	MAR 21-22	73	76	51	59	4.5	28	2.9	NW	MAR 10	60	5.5	128	104	134	98	9	15	32	34	7	100	1
BALTIMORE U	19.2	9.9	14.6	36.7	JUL 1+	- 11.1	JAN 14	2212	945	62	NOV 25																		93	0	0	0	37	6	65	0
MASSACHUSETTS																																			
BLUE HILL OBS R	14.2	4.2	9.2	36.7	JUL 1	- 14.4	JAN 15+	3527	1022	62	APR 14-15	1842	340	JAN 13-14	79	79	61	69											124	15	0	0	8	34	123	0
BOSTON	14.4	5.7	10.1	36.1	JUL 1	- 12.2	JAN 15+	3252	926	53	DEC 27-28	1461	241	FEB 19-20	75	75	59	68	6.5	30	2.3*	N	JUL 1	61	5.7	126	86	154	127	10	20	36	9	27	104	0

See reference notes at end of table.

ANNUAL CLIMATOLOGICAL DATA
METRIC UNITS

YEAR 1964

State and Station	Temperature: Averages: Daily maximum	Temperature: Averages: Daily minimum	Temperature: Averages: Annual	Temperature: Extremes: Highest	Temperature: Extremes: Date	Temperature: Extremes: Lowest	Temperature: Extremes: Date	Heating degrees days	Precipitation: Total	Precipitation: Greatest in 24 hours	Precipitation: Date (s)	Snow, Sleet: Total	Snow, Sleet: Greatest in 24 hours	Snow, Sleet: Date (s)	Relative humidity: 1:00 a.m. E.S.T.	Relative humidity: 7:00 a.m. E.S.T.	Relative humidity: 1:00 p.m. E.S.T.	Relative humidity: 7:00 p.m. E.S.T.	Wind: Average speed	Wind: Prevailing direction	Wind: Fastest mile (1.6 kilometers): Speed	Wind: Fastest mile (1.6 kilometers): Direction	Wind: Fastest mile (1.6 kilometers): Date	Possible sunshine	Average sky cover sunrise to sunset	Number of days: Sunrise to sunset: Clear, 0-0.3	Number of days: Sunrise to sunset: Partly cloudy, 0.4-0.7	Number of days: Sunrise to sunset: Cloudy, 0.8-1.0	Number of days: Precipitation 2.5mm. or more	Number of days: Snow, Sleet 2.5mm. or more	Number of days: Thunderstorms	Number of days: Heavy fog	Number of days: Max. temp. 32.2°C and above	Number of days: Max. temp. 0°C. and below	Number of days: Min. temp. 0°C. and below	Number of days: Min. temp. -17.8°C. and below
	°C.	°C.	°C.	°C.		°C.		Base 18.3°C.	Mm.	Mm.		Mm.	Mm.		%	%	%	%	M.p.s.		M.p.s.			%	Tenths										
MASSACHUSETTS																																			
NANTUCKET	13.2	5.9	9.6	33.3	JUL 1	- 9.4	FEB 18+	3269	1082	65	SEP 13-14	1311	452	JAN 13-14	83	79	68	80	6.9	24	3.4	NW	FEB 16	56	6.4	105	77	184	120	11	14	98	1	15	99	0
PITTSFIELD	13.6	.9	7.3	33.3	JUL 19+	- 23.9	JAN 1	4151	726	39	AUG 22	2405	368	FEB 15-16															140	25	0	0	4	48	161	13
WORCESTER	13.4	3.2	8.3	34.4	JUL 1	- 16.1	FEB 25+	3792	956	59	JAN 20-21	1605	315	FEB 16	75	74	54	64	5.4	28	2.2*	29	JAN 1		5.8	116	100	150	119	15	17	92	2	45	144	0
MICHIGAN																																			
ALPENA	12.6	.2	6.4	36.1	JUN 30	- 24.4	JAN 13+	4496	686	44	AUG 2-3	1542	224	MAR 25-26		79	59	67	4.0	24	1.9	SW	APR 14	63	6.7	65	117	184	138	23	31	24	10	58	182	14
DETROIT	15.6	5.7	10.7	35.6	JUL 20	- 14.4	JAN 1	3240	710	52	AUG 11	843	89	DEC 2	74	77	56	61	5.6	18	2.9	W	JUN 19	56	6.3	82	123	161	132	12	31	9	26	41	119	0
DETROIT M WAYNE CO	14.8	3.1	8.9	36.1	AUG 2	- 18.9	JAN 1	3702	730	82	AUG 11	935	84	MAR 8	78	80	59	65	4.6	22					6.3	77	124	165	123	13	35	32	21	43	146	2
DETROIT WILLOW RUN	15.0	3.8	9.4	37.2	AUG 2	- 18.9	JAN 1	3574	670	52	AUG 11	820	81	MAR 8	84	87	60	67	5.3	21	2.3*	25	MAY 9+		6.3	79	120	167	110	13	30	36	27	43	138	1
FLINT	14.6	3.1	8.8	36.1	AUG 2	- 22.8	JAN 1	3757	625	50	JUN 15	998	94	DEC 4	77	78	59	65	5.2	22	2.0*	22	MAR 5		6.5	77	115	174	120	13	33	25	13	45	147	4
GRAND RAPIDS	14.8	3.6	9.2	37.8	AUG 3	- 26.1	JAN 1	3698	820	67	JUN 14-15	1704	307	JAN 25-26	84	87	63	69	5.3	25	3.0	W	JUN 9	55	6.7	75	112	179	124	27	39	30	20	53	149	3
LANSING	15.3	3.2	9.3	37.8	AUG 2	- 27.2	DEC 6	3686	671	40	JUN 14-15	1097	137	DEC 4	82	84	60	67	4.4	29	2.4	SW	NOV 12	57	6.3	78	119	169	130	19	38	25	22	50	156	4
MARQUETTE U	10.7	2.0	6.3	36.7	MAY 22	- 20.6	DEC 17	4482	800	49	JUL 24	2530	257	FEB 7-8		75	63	65	4.5	W*	2.6	SW	APR 13	56	7.1	62	97	207	161	36	25	21	8	83	155	4
MUSKEGON	14.4	4.4	9.4	37.2	AUG 3	- 22.8	JAN 1	3563	617	35	NOV 2	2677	231	NOV 20-21	79	83	64	68	6.0	22	2.2*	22	MAY 8+		6.8	78	95	193	131	33	49	27	11	46	136	1
SAULT STE MARIE	9.7	- .3	4.7	31.7	JUN 29	- 26.7	JAN 12	5016	831	35	NOV 27-28	3993	302	MAR 4-5	84	86	67	73	5.6	31	2.7*	21	APR 14	52	7.3	60	94	212	181	43	38	53	0	94	175	26
MINNESOTA																																			
DULUTH	9.3	- 1.8	3.8	34.4	JUL 17	- 31.7	DEC 27	5394	888	93	SEP 6-7	1768	229	DEC 22-23	75	78	60	62	5.6	30	2.9		JAN 23	58	6.6	73	116	177	128	21	43	53	3	102	179	52
INTERNATIONAL FALLS	9.1	- 3.8	2.7	35.6	JUL 16	- 37.2	JAN 12	5808	676	97	JUN 8-9	1181	94	DEC 22	82	86	64	67	5.6	27	1.0*	27	OCT 3+		6.6	81	103	182	127	16	36	18	9	109	196	78
MINNEAPOLIS	13.2	1.9	7.6	36.7	AUG 1	- 27.2	NOV 30	4321	660	63	SEP 7-8	856	114	MAR 3-4	75	80	60	61	5.4	13	3.1	NW	MAY 23	64	5.7	111	112	143	109	13	44	14	27	81	162	18
ROCHESTER	12.8	1.3	7.1	36.1	JUL 19+	- 26.1	DEC 17+	4424	506	68	SEP 7-8	815	102	NOV 20	78	82	62	63	7.0	18	2.7*	28	MAY 23+		5.9	103	109	154	106	9	45	28	23	75	161	23
ST CLOUD	12.1	.1	6.1	37.2	AUG 1	- 28.9	NOV 30	4782	538	51	AUG 29	937	191	MAR 19-20	76	81	58	60							5.9	110	102	154	99	11	39	18	23	89	171	41
MISSISSIPPI																																			
JACKSON	24.8	12.1	18.4	37.2	AUG 4+	- 9.4	JAN 15	1292	1815	177	OCT 4	38	38	JAN 16	80	85	56	63	4.4		2.0*	14	MAR 3		5.7	109	104	153	111	1	66	27	92	1	40	0
MERIDIAN	24.3	10.6	17.5	38.3	JUN 21	- 12.2	JAN 15	1438	1741	162	APR 5-6	25	T	JAN 16 +	88	91	57	67	3.4	18	2.1*	3	JUL 6		6.0	93	110	163	111	1	67	37	78	1	60	0
VICKSBURG U	23.4	13.4	18.4	36.1	AUG 4	- 7.8	JAN 13	1194	1483	88	MAR 1-2	T	T	DEC 17 +					4.2		2.1	W	APR 5	62	5.6	112	119	125	99	0	53	16	62	2	26	0
MISSOURI																																			
COLUMBIA	19.3	7.6	13.4	39.4	AUG 3	- 18.9	DEC 18	2584	853	64	APR 4-5	594	152	FEB 15	71	77	53	54	5.7	18	3.0	NW	MAR 29	64	5.4	133	90	143	97	7	59	15	45	18	110	1
KANSAS CITY	19.2	8.5	13.9	40.0	AUG 3+	- 17.2	DEC 18+	2476	986	94	NOV 15	752	185	JAN 11-12	66	73	55	52	5.0	18	2.4	N	JUL 1	67	5.4	130	92	144	100	8	64	4	44	15	95	0
ST JOSEPH	18.3	5.7	12.0	38.3	AUG 3	- 21.1	JAN 13	2944	928	148	JUN 20-21	419	86	DEC 3-4 +					4.9	18	2.2*	21	MAY 8		5.0	149	94	123	95	6	59	11	35	23	131	4
ST LOUIS	19.1	7.6	13.3	40.0	AUG 3	- 18.3	JAN 14	2617	817	71	JUL 11-12	732	155	MAR 9-10	73	81	55	57	5.4	18	3.1		JUN 29	64	5.4	142	91	133	103	10	35	9	47	19	108	1
SPRINGFIELD	20.2	7.3	13.8	38.9	AUG 4+	- 18.3	DEC 18	2412	879	72	APR 4-5	216	64	MAR 9	76	81	56	59	5.4	16	1.8	S	JAN 19	63	5.1	142	102	122	109	4	49	17	37	10	109	2
MONTANA																																			
BILLINGS	14.4	1.7	8.1	39.4	AUG 4	- 32.2	DEC 16	4042	477	48	JUN 8-9	1430	267	MAR 22	66	51	45	59	6.1	24	3.0	NW	JUL 14	62	5.9	95	134	137	89	17	19	10	27	44	160	13
GLASGOW	12.7	- .7	6.0	38.9	AUG 18+	- 35.0	DEC 17	4777	267	41	JUN 17-18	627	97	DEC 15	72	52	47	64							6.6	79	109	178	86	8	20	7	25	72	176	36
GREAT FALLS	13.2	.8	7.1	38.3	AUG 18	- 37.8	DEC 16	4327	455	70	JUN 7-8	1689	185	JAN 21	65	49	45	59	6.9	23	2.4	W	SEP 30	63	6.6	78	100	188	102	22	25	4	23	49	158	25
HAVRE	12.6	- 1.4	5.6	38.9	AUG 18	- 35.0	DEC 17	4801	308	23	AUG 19-20	861	114	DEC 21-22	75	54			5.0	SW*	2.7	SW	MAR 1	58	6.5	89	91	186	100	13	29	3	25	58	183	40
HELENA	13.1	- .9	6.1	35.0	AUG 18+	- 38.9	DEC 17	4563	346	52	MAY 2-3	1425	257	MAY 2-3	70	51	46	62	4.4	27	2.0	W	OCT 1+	62	6.4	88	105	173	85	18	26	5	15	45	185	20

See reference notes at end of table.

ANNUAL CLIMATOLOGICAL DATA
METRIC UNITS

State and Station	Temperature: Averages: Daily maximum	Temperature: Averages: Daily minimum	Temperature: Averages: Annual	Temperature: Extremes: Highest	Temperature: Extremes: Date	Temperature: Extremes: Lowest	Temperature: Extremes: Date	Heating degree days	Precipitation: Total	Precipitation: Greatest in 24 hours	Precipitation: Date (s)	Precipitation: Snow, Sleet: Total	Precipitation: Snow, Sleet: Greatest in 24 hours	Precipitation: Snow, Sleet: Date (s)	Relative humidity: 1:00 a.m. E.S.T.	Relative humidity: 7:00 a.m. E.S.T.	Relative humidity: 1:00 p.m. E.S.T.	Relative humidity: 7:00 p.m. E.S.T.	Wind: Average speed	Wind: Prevailing direction	Wind: Fastest mile (1.6 kilometers): Speed	Wind: Fastest mile (1.6 kilometers): Direction	Wind: Fastest mile (1.6 kilometers): Date	Possible sunshine	Average sky cover sunrise to sunset	Number of days: Sunrise to sunset: Clear, 0-0.3	Number of days: Sunrise to sunset: Partly cloudy, 0.4-0.7	Number of days: Sunrise to sunset: Cloudy, 0.8-1.0	Number of days: Precipitation 25mm. or more	Number of days: Snow, Sleet 25.4mm. or more	Number of days: Thunderstorms	Number of days: Heavy fog	Number of days: Max. temp. 32.2 °C. and above	Number of days: Max. temp. 0 °C. and below	Number of days: Min. temp. 0 °C. and below	Number of days: Min. temp. -17.8 °C. and below
	°C.	°C.	°C.	°C.		°C.		Base 18.3 °C.	Mm.	Mm.		Mm.	Mm.		%	%	%	%	M.p.s.		M.p.s.			%	Tenths										
MONTANA																																			
KALISPELL	11.4	- 1.9	4.8	34.4	JUL 8	- 31.1	DEC 17	4935	568	37	MAY 1-2	2405	269	DEC 21-22		69			3.4						7.2	66	74	226	157	31	18	45	5	47	207	20
MILES CITY	14.0	.2	7.1	40.6	AUG 4+	- 33.9	DEC 17	4473	379	69	JUN 18	1379	203	NOV 14	74	53	48	65	5.1	15	3.0*	27	JUN 16						93	20	30	13	41	67	175	25
MISSOULA	11.7	- 1.8	4.9	35.6	JUL 12+	- 34.4	DEC 17	4896	387	41	JUN 7-8	1961	198	DEC 20-21	87	69	57	78	3.3	32	2.3	W	FEB 4	49	7.1	77	68	221	131	25	14	29	9	64	214	15
NEBRASKA																																			
GRAND ISLAND	17.4	3.0	10.2	41.1	AUG 2	- 28.9	JAN 13	3523	525	84	APR 25-26	386	109	FEB 14-15	72	78	52	51	6.3	18	2.9*	32	JUN 11		5.0	139	107	120	76	4	51	16	51	42	155	10
NORFOLK	15.7	2.6	9.1	40.0	JUL 22	- 30.6	JAN 13	3851	670	72	JUN 21-22	792	94	FEB 14-15		77	54	53							5.2	133	107	126	93	13	55	12	37	55	158	17
NORTH PLATTE	17.4	.9	9.2	38.9	JUL 30	- 25.0	DEC 17	3792	532	80	JUL 10	544	137	APR 4-5	69	78	48	45	5.6	34	3.3	W	JUN 22	69	5.1	143	107	116	69	8	47	15	44	27	182	13
OMAHA	17.4	4.7	11.1	41.7	AUG 2	- 25.0	JAN 13	3270	908	91	MAY 25-26	683	112	JAN 11-12	72	77	56	55	4.9	16	3.2	NW	MAY 25	64	5.4	132	99	135	105	11	51	12	41	34	139	8
SCOTTSBLUFF	17.1	.6	8.8	39.4	JUL 22	- 31.7	DEC 17	3854	196	24	APR 2-3	691	191	APR 3	74	45	41	65	6.3	30	2.8*	32	APR 27		5.4	126	103	137	69	7	34	6	51	29	181	9
VALENTINE	16.3	.7	8.5	42.8	JUL 23+	- 28.3	DEC 17	4032	339	50	JUL 29	480	76	APR 4-5	79	56	48	69	5.9	S#				66	5.1	140	115	111	65	9	40	4	45	43	178	20
NEVADA																																			
ELKO	15.3	- 3.2	6.1	35.6	JUL 20	- 26.1	JAN 13	4569	308	23	DEC 23-24	1720	147	JAN 18					3.4		1.9*	24	NOV 1		5.3	132	101	133	104	27	13	4	37	42	228	25
ELY	14.8	- 3.5	5.7	33.3	AUG 9+	- 27.2	JAN 24+	4684	323	38	JUN 6-7	2573	295	JAN 21-22	71	46	41	61	4.4	19	2.5	SW	JAN 21	78	5.0	144	100	122	79	29	20	10	14	43	231	24
LAS VEGAS	25.7	10.7	18.2	43.3	JUL 29+	- 6.7	JAN 9	1627	28	16	NOV 15-16	102	102	NOV 15-16	35	24	17	29	5.2	23	2.8*	SW	DEC 27	87	3.1	227	88	51	16	2	10	0	143	0	67	0
RENO	19.2	- .3	9.4	38.3	JUL 11	- 17.8	DEC 31	3376	196	39	DEC 22-23	1240	193	MAY 5-6	70	45	32	54	3.6	29	2.6	SW	JAN 20	93	4.3	174	87	105	48	19	4	7	51	9	181	1
WINNEMUCCA	17.6	- .7	8.4	36.7	JUL 25	- 20.0	NOV 18	3752	266	28	JUN 8-9	1298	122	NOV 12-13+	65	43	33	53	4.3	18	2.7	W	DEC 23	65	5.2	150	77	139	77	21	11	11	48	9	203	6
NEW HAMPSHIRE																																			
CONCORD	14.3	.8	7.6	36.1	JUN 30+	- 26.7	JAN 1	4098	709	46	AUG 22	1819	302	JAN 13-14	83	80	51	63	3.8	32	2.4*	32	DEC 1	59	5.8	111	108	147	114	17	18	56	12	40	173	12
MT WASHINGTON OBS	1.0	- 6.9	- 2.9	19.4	JUL 18	- 30.6	JAN 12+	7735	1947	60	AUG 22-23	5906	338	OCT 20-21	84	82	82	84	17.3	W#	7.3Y	NW	FEB 3	35	7.5	45	93	228	213	66	20	318	0	168	260	66
NEW JERSEY																																			
ATLANTIC CITY	17.8	6.7	12.3	36.1	JUL 1+	- 16.1	JAN 15	2729	1042	78	SEP 29-30	800	366	JAN 12-13	80	80	54	69	5.3	20	2.3*	30	MAR 26	61	5.7	119	90	157	99	6	20	44	23	9	106	0
NEWARK	17.3	7.8	12.6	37.2	JUL 1+	- 13.3	JAN 15	2692	849	52	JUL 8-9	925	307	JAN 13	69	72	51	58	5.6	23	2.7*	30	JAN 21		5.7	115	108	143	120	6	15	25	26	10	87	0
TRENTON U	17.2	7.3	12.3	36.7	JUN 30	- 13.3	JAN 14	2727	900	123	JUL 8-9	658	226	JAN 12-13					4.7	NW#	2.2	NW	JAN 21+	62	5.5	125	112	129	111	8	28	27	21	12	84	0
NEW MEXICO																																			
ALBUQUERQUE	19.9	5.1	12.5	37.2	JUL 4+	- 17.8	JAN 14	2805	189	22	JUL 27	262	61	FEB 2-3	57	37	29	47	3.9	18	2.7	SW	MAY 7+	79	3.7	195	98	73	63	4	44	6	73	14	130	1
CLAYTON	19.6	3.7	11.6	38.9	JUL 3	- 21.1	JAN 13	2977	227	37	AUG 7-8	378	127	FEB 3-4	64	35	35								4.2	188	77	101	64	6	65	4	57	13	145	1
RATON	18.1	- .1	9.0	35.6	JUL 6+	- 25.6	DEC 13	3642	263	26	APR 3-4	810	257	APR 3-4		34									4.5	159	115	92	76	11	55	3	21	21	182	16
ROSWELL	24.7	5.1	14.9	40.6	JUL 2	- 22.8	JAN 13	2204	177	28	JUN 13	386	140	FEB 20	64	35			4.6		2.2	W	JAN 19	75	3.6	210	97	59	42	4	24	6	116	2	138	4
SILVER CITY	21.4	5.0	13.2	37.8	JUL 4	- 15.6	JAN 13	2416	259	51	SEP 23-24	198	76	APR 3-4		31	27								3.3	207	104	55	50	2	42	3	48	0	127	0
NEW YORK																																			
ALBANY	14.7	2.9	8.8	36.7	JUN 30	- 26.1	JAN 15	3758	547	39	MAR 9-10	1707	391	JAN 13-14	77	77	52	62	4.5	17	2.2	W	JAN 10	52	6.5	80	108	178	115	12	19	20	17	46	145	9
BINGHAMTON	12.8	2.9	7.9	33.3	SEP 10+	- 21.1	JAN 15	3998	796	50	MAR 9-10	2228	467	JAN 13	79	83	63	68	5.4	34	2.4	SW	MAR 5	53	7.1	58	107	201	156	21	20	54	3	72	146	6
BINGHAMTON U	15.4	4.7	10.1	35.6	JUN 30	- 23.3	JAN 15	3344	727	55	MAR 10	1636	414	JAN 13															137	14			18	38	123	6
BUFFALO	13.7	4.2	8.9	33.9	JUL 28	- 17.2	FEB 11	3685	754	46	JUL 12-13	1651	208	JAN 1-2	79	79	63	70	5.7	24	2.9	SW	MAR 5	55	7.0	58	117	191	154	19	30	17	6	51	131	0
NEW YORK CENT PK	17.1	8.0	12.6	37.2	JUL 1+	- 12.8	JAN 14	2655	838	54	JUL 8-9	927	318	JAN 12-13	66	69	49	57	4.7	W#	2.2		JAN 13	60	4.9	158	97	111	113	10	11	0	23	13	75	0
J.F.KENNEDY AP	16.5	7.3	11.9	37.2	JUN 30	- 12.2	JAN 14	2816	932	41	DEC 4	770	330	JAN 13	72	71	55	65	5.9		2.1	31	DEC 31+		5.6	108	119	139	128	8	13	38	8	13	88	0

See reference notes at end of table.

ANNUAL CLIMATOLOGICAL DATA
METRIC UNITS

State and Station	Temperature: Averages: Daily maximum	Temperature: Averages: Daily minimum	Temperature: Averages: Annual	Temperature: Extremes: Highest	Temperature: Extremes: Date	Temperature: Extremes: Lowest	Temperature: Extremes: Date	Heating degree days	Precipitation: Total	Precipitation: Greatest in 24 hours	Precipitation: Date (s)	Snow, Sleet: Total	Snow, Sleet: Greatest in 24 hours	Snow, Sleet: Date (s)	Relative humidity: 1:00 a.m. E.S.T.	Relative humidity: 7:00 a.m. E.S.T.	Relative humidity: 1:00 p.m. E.S.T.	Relative humidity: 7:00 p.m. E.S.T.	Wind: Average speed	Wind: Prevailing direction	Wind: Fastest mile (1.6 kilometers): Speed	Wind: Fastest mile (1.6 kilometers): Direction	Wind: Fastest mile (1.6 kilometers): Date	Possible sunshine	Average sky cover sunrise to sunset	Number of days: Sunrise to sunset: Clear, 0-0.3	Number of days: Sunrise to sunset: Partly cloudy, 0.4-0.7	Number of days: Sunrise to sunset: Cloudy, 0.8-1.0	Number of days: Precipitation 25mm. or more	Number of days: Snow, Sleet 25.4mm. or more	Number of days: Thunderstorms	Number of days: Heavy fog	Number of days: Max. temp. 32.2 °C. and above	Number of days: Max. temp. 0 °C. and below	Number of days: Min. temp. 0 °C. and below	Number of days: Min. temp. -17.8 °C. and below
	°C.	°C.	°C.	°C.		°C.		Base 18.3 °C.	Mm.	Mm.		Mm.	Mm.		%	%	%	%	M.p.s.		M.p.s.			%	Tenths											
NEW YORK																																			
NEW YORK LAGUARDIA	16.4	8.8	12.6	36.1	JUL 1+	- 12.2	JAN 14	2654	795	45	JUL 8-9	643	229	JAN 12-13	69	71	55	60	6.1	18	3.0		JAN 13		5.7	100	133	133	119	6	16	19	17	17	75	0
ROCHESTER	14.7	3.6	9.2	36.7	JUL 28	- 21.1	JAN 1	3637	570	34	MAY 13-14	1770	257	MAR 10	76	77	57	65	5.1	25	2.9	SW	MAY 9	59	6.5	77	121	168	137	21	24	17	17	46	139	1
SYRACUSE	14.9	3.5	9.2	35.6	JUL 28	- 21.1	JAN 12	3609	688	34	MAR 10	1880	262	MAR 10	78	77	56	67	5.2	27	2.7	S	JAN 25	54	6.6	65	140	161	156	22	28	10	18	47	139	6
NORTH CAROLINA																																			
ASHEVILLE U	19.3	7.4	13.4	34.4	JUN 22	- 15.0	JAN 15	2281	1267	90	OCT 4	399	114	FEB 25															120	6			9	6	86	0
CAPE HATTERAS R	20.7	12.5	16.6	33.3	JUN 15	- 7.2	JAN 15	1414	1452	104	OCT 4-5	T	T	FEB 22 +	83	82	66	79	5.6	24	2.3	S	AUG 31	64	6.1	98	100	168	138	0	40	19	1	0	25	0
CHARLOTTE	21.5	9.5	15.5	37.2	JUN 21	- 11.1	JAN 15	1838	1185	85	OCT 15-16	20	15	JAN 12-13	76	85	55	62	3.9	22	1.8	SW	MAR 5	64	5.6	129	82	155	114	0	30	29	26	0	64	0
GREENSBORO	20.3	8.3	14.3	36.7	JUN 21	- 13.9	JAN 15	2126	1148	104	OCT 4-5	130	61	FEB 28	81	85	56	66	3.9	22	2.2	NW	MAR 30	57	5.7	123	85	158	107	1	33	32	17	2	82	0
RALEIGH	21.2	8.6	14.9	37.2	JUN 21+	- 12.8	JAN 15	1961	1090	77	AUG 30-31	99	25	FEB 28 +	84	88	54	67	4.2	22	2.1*	22	JAN 20	60	5.8	113	97	156	121	3	45	41	25	2	78	0
WILMINGTON	23.1	12.0	17.6	36.1	JUN 15	- 6.7	JAN 15	1301	1469	110	OCT 4-5	T	T	NOV 30 +	84	84	57	74	4.3	22	2.6	W	JAN 20	62	6.0	108	97	161	124	0	41	21	25	0	33	0
WINSTON-SALEM	20.6	9.7	15.2	37.2	JUN 22+	- 10.0	JAN 15	1948	1202	90	OCT 4-5	191	46	JAN 12-13	76	81	56	63	3.9	24	1.6*	16	DEC 6		5.6	123	94	149	108	5	34	29	25	2	63	0
NORTH DAKOTA																																			
BISMARCK	12.2	- 2.3	5.0	40.0	AUG 5	- 38.9	JAN 12	5072	392	50	APR 26-27	874	117	NOV 26-27	70	76	53	50	5.6	7	2.7		JUN 8	65	6.2	98	105	163	82	15	45	10	19	78	189	53
FARGO	11.9	- 1.0	5.5	36.7	JUN 28+	- 31.1	DEC 26	4997	464	70	JUN 18-19	1189	137	DEC 22-23	76	81	60	60	5.7	16	3.5	NW	APR 13	63	6.2	98	104	164	89	15	35	13	20	88	172	53
WILLISTON	12.1	- 2.3	4.9	39.4	AUG 4	- 34.4	JAN 27	5138	399	56	JUN 7-8	1082	132	APR 5-6		78	54	52	5.6	SW#	3.6	NW	JAN 17	62	5.9	103	123	140	87	16	16	10	19	84	197	57
OHIO																																			
AKRON	15.9	4.1	10.0	33.9	SEP 10+	- 20.6	JAN 14	3358	1037	84	MAR 8-9	1417	201	JAN 12-13	76	79	58	64	4.8	24	2.1*	22	MAR 5		6.4	79	125	162	143	16	43	29	19	38	132	2
CINCINNATI OBS	18.9	7.3	13.1	38.3	AUG 3	- 16.1	DEC 18	2573	1125	118	MAR 9	584	211	JAN 12-13					3.1	S#	2.0	SW	MAR 5	57					119	4	44	0	46	18	102	0
CLEVELAND	14.9	4.9	9.9	33.9	SEP 10+	- 16.1	FEB 22	3387	798	52	MAR 4-5	1303	206	JAN 12-13	78	82	63	67	5.2	18	2.5	SW	MAR 5	59	6.5	80	113	173	144	13	35	14	12	44	127	0
COLUMBUS	17.3	5.2	11.3	36.7	AUG 2	- 25.6	JAN 14	3037	1047	86	MAR 9	780	168	JAN 12-13	77	81	58	63	4.5	18	2.8	NW	MAY 24	57	6.2	89	112	165	123	11	49	14	30	29	121	1
DAYTON	17.9	5.9	11.9	37.8	AUG 3	- 18.9	JAN 14	2895	802	73	MAR 4	1016	249	JAN 1	74	79	57	62	5.4	20	2.2	S	MAR 5	64	5.9	108	104	154	119	10	45	26	37	23	116	1
MANSFIELD	15.4	4.4	9.9	35.0	AUG 2	- 20.6	JAN 14	3404	883	62	MAR 4-5	1308	203	JAN 12-13		81	61								6.3	85	109	172	133	16	42	32	14	40	131	1
TOLEDO	15.7	3.4	9.6	36.7	AUG 2	- 22.2	JAN 14	3574	617	40	MAR 25-26	1110	140	MAR 10	76	80	57	61	4.8	24	1.9	SW	JUN 12	63	6.2	87	122	157	127	15	34	17	33	46	144	4
YOUNGSTOWN	14.9	4.0	9.4	33.3	SEP 10	- 21.1	JAN 14	3505	979	52	MAR 9-10	1664	277	JAN 12-13	75	78	59	65	5.2	24	1.9*	26	NOV 20		6.6	79	104	183	153	16	44	25	9	47	130	2
OKLAHOMA																																			
OKLAHOMA CITY	22.2	9.3	15.7	41.1	AUG 6+	- 15.0	DEC 18	2043	740	66	MAY 9-10	53	20	MAR 9	71	79	52	51	6.9	16	2.9	W	APR 12	68	4.8	150	102	114	76	0	53	20	83	7	92	0
TULSA	22.7	9.6	16.2	43.3	AUG 5	- 16.1	JAN 13	1942	1124	116	APR 3-4	251	178	MAR 4	71	79	52	51	5.9	18	2.2	S	APR 12	63	4.9	150	94	122	110	2	59	16	78	5	93	0
OREGON																																			
ASTORIA	13.9	5.7	9.8	30.0	AUG 24	- 9.4	DEC 17+	3086	1867	110	JAN 24-25	483	183	DEC 28-29	89	80	73	87	4.6	24	2.3*	19	MAR 11		7.6	49	77	240	223	5	6	48	0	1	38	0
BURNS U	14.6	- .9	6.9	35.0	JUL 27+	- 23.3	DEC 17	4239	407	55	DEC 22-23	1590	140	JAN 18-19	74	55	42	63							5.4	139	87	140	110	21	14	9	14	18	197	3
EUGENE	16.8	5.2	11.1	35.6	AUG 22	- 12.2	DEC 17	2708	1472	96	JAN 19-20-	259	89	DEC 29-30+		76	60		3.6		1.9*	20	JAN 19		7.0	70	76	220	138	3	2	53	11	1	55	0
MEACHAM	10.1	.7	5.4	32.2	JUL 12	- 30.0	DEC 16	4709	1010	43	NOV 23-24	5113	384	JAN 24-25		61									6.8	84	70	212	182	59	11	23	1	66	185	2
MEDFORD	18.6	3.4	11.1	39.4	AUG 22+	- 8.3	NOV 19	2849	739	95	DEC 21-22	292	107	DEC 29-30	88	69	49	76	2.5	30	1.5*	23	DEC 22+		5.6	127	75	164	114	3	8	50	39	4	124	0
PENDLETON	17.1	5.1	11.1	38.9	JUL 12	- 24.4	DEC 17+	2878	258	17	DEC 23-24	150	56	DEC 15-16	70	54	46	61	5.5	26	2.4*	25	DEC 14+		6.1	110	73	183	101	2	11	21	23	5	80	3
PORTLAND	15.2	4.9	10.1	34.4	AUG 24	- 14.4	DEC 16	3042	962	53	DEC 21-22	279	203	DEC 19	86	76	62	79	4.3	12	2.5	S	JAN 17	45	7.3	66	74	226	178	2	2	41	2	4	64	0
PORTLAND U	16.4	7.6	12.0	33.9	AUG 24	- 12.2	DEC 17+	2405	1249	55	DEC 21-22-	340	211	DEC 19															164	3	0	0	5	2	13	0

See reference notes at end of table.

ANNUAL CLIMATOLOGICAL DATA
METRIC UNITS

YEAR 1964

State and Station	Temperature: Averages: Daily maximum	Temperature: Averages: Daily minimum	Temperature: Averages: Annual	Temperature: Extremes: Highest	Temperature: Extremes: Date	Temperature: Extremes: Lowest	Temperature: Extremes: Date	Heating degree days	Precipitation: Total	Precipitation: Greatest in 24 hours	Precipitation: Date (s)	Snow, Sleet: Total	Snow, Sleet: Greatest in 24 hours	Snow, Sleet: Date (s)	Relative humidity: 1:00 a.m. E.S.T.	Relative humidity: 7:00 a.m. E.S.T.	Relative humidity: 1:00 p.m. E.S.T.	Relative humidity: 7:00 p.m. E.S.T.	Wind: Average speed	Wind: Prevailing direction	Wind: Fastest mile (1.6 kilometers): Speed	Wind: Fastest mile (1.6 kilometers): Direction	Wind: Fastest mile (1.6 kilometers): Date	Possible sunshine	Average sky cover sunrise to sunset	Number of days: Sunrise to sunset: Clear, 0-0.3	Number of days: Sunrise to sunset: Partly cloudy, 0.4-0.7	Number of days: Sunrise to sunset: Cloudy, 0.8-1.0	Number of days: Precipitation 25mm. or more	Number of days: Snow, Sleet 25.4mm. or more	Number of days: Thunderstorms	Number of days: Heavy fog	Number of days: Max. temp. 32.2 °C. and above	Number of days: Max. temp. 0 °C. and below	Number of days: Min. temp. 0 °C. and below	Number of days: Min. temp. -17.8 °C. and below
	°C.	°C.	°C.	°C.		°C.		Base 18.3 °C.	Mm.	Mm.		Mm.	Mm.		%	%	%	%	M.p.s.		M.p.s.			%	Tenths											
OREGON																																				
ROSEBURG	17.9	5.2	11.6	36.1	AUG 24+	- 8.3	DEC 17	2557	1095	81	JAN 18-19	160	102	DEC 30		72	55		2.3	N#	1.6	S	MAR 11	50	6.8	70	99	197	138	1	1	52	17	1	58	0
SALEM	16.4	4.6	10.6	36.1	JUL 11	- 12.8	DEC 17	2883	1079	69	DEC 21-22	145	51	DEC 18-19	92	76	62	84	4.0	18	1.8*	19	MAR 11+		7.0	68	79	219	164	3	2	27	10	3	65	0
SEXTON SUMMIT R	12.8	3.0	7.9	32.2	AUG 22+	- 7.2	DEC 31+	3871	1201	113	DEC 21-22	4387	348	JAN 17-18		72	62		5.8						5.5	141	68	157	126	41	0	144	2	32	134	0
PACIFIC AREA																																				
CANTON ISLAND	30.7	25.2	27.9	33.3	JAN 4	22.8	AUG 29+	0	519	94	JAN 12-13	0	0		78	77	64	75			1.5*	22	JAN 17		5.5	108	156	102	83	0	3	0	41	0	0	0
ENIWETOK	30.3	25.1	27.7	32.8	MAY 31	21.7	DEC 18+	0	1617	78	APR 22-23	0	0		79	80	73	75	6.9										234	0	11	0	5	0	0	0
TAGUAC GUAM R	29.4	22.5	25.9	32.2	OCT 11+	17.8	MAR 9+	0	2786	191	MAY 16-17	0	0											56					277	0	43	0	2	0	0	0
JOHNSTON	27.7	23.8	25.8	30.0	AUG 13	16.7	DEC 12	0	994	234	DEC 12-13	0	0		79	79	72	77	7.6	9	2.5		MAR 11	55	6.4	48	179	139	148	0	8	0	0	0	0	0
KOROR R	30.6	24.2	27.4	32.8	NOV 2+	22.2	NOV 22+	0	3316	130	MAY 10-11	0	0		94	82	80	91	3.6	6	3.0		NOV 17	60	9.9	0	2	364	266	0	40	0	44	0	0	0
KWAJALEIN	29.9	24.4	27.2	31.7	JUN 11+	21.7	JUN 22+	0	3540	116	MAY 5-6	0	0		86	87	78	82	6.8	6	2.0*	15	OCT 8		8.2	22	89	255	232	0	7	0	0	0	0	0
MAJURO	29.6	24.8	27.2	31.1	OCT 21+	21.7	JUN 12	0	4133	141	FEB 20-21	0	0		82	82	75	78	5.6	7	2.0		JUN 12	52	8.5	14	80	272	267	0	25	0	0	0	0	0
MARCUS	27.8	22.6	25.7	32.2	SEP 23+	14.4	FER 8	0	1113	93	MAY 21-22	0	0		79	70	71	77	6.2	9	2.8		MAY 22	70	6.1	83	141	142	156	0	5	1	8	0	0	0
PONAPE R	30.4	23.2	26.8	32.8	OCT 30+	20.6	NOV 23+	0	4252	163	FEB 22	0	0		91	78	79	90	3.4	6	1.4		DEC 2	48	8.9	5	57	304	294	0	21	0	12	0	0	0
TRUK MOEN ISLAND	30.1	24.2	27.2	32.2	NOV 20+	22.2	DEC 26+	0	3562	115	DEC 9-10	0	0		86	76	75	84	4.8	4	1.8		MAY 14	55	9.1	2	51	313	256	0	23	0	6	0	0	0
WAKE ISLAND	29.2	23.8	26.6	32.2	JUN 23	18.9	DEC 28+	0	919	66	JUN 3	0	0		76	77	66	71	5.6	6	1.8*	35	NOV 30		6.0	90	148	128	168	0	14	0	1	0	0	0
YAP R	30.3	24.2	27.2	32.8	SEP 27	21.7	AUG 19+	0	2870	136	MAY 22-23	0	0		91	80	78	88	4.3	4	2.4		DEC 11	49	9.5	2	29	335	261	0	26	0	15	0	0	0
PENNSYLVANIA																																				
ALLENTOWN	16.5	4.6	10.6	36.1	JUN 30	- 16.7	JAN 15	3221	882	39	NOV 25	1166	330	JAN 12-13	78	80	54	63	5.3	29	4.2*	27	JUN 15		5.6	126	104	136	105	12	29	30	17	20	130	0
ERIE	14.3	5.2	9.8	33.9	SEP 10+	- 17.2	FEB 11	3420	926	71	AUG 2-3	2205	351	NOV 21-22	76	76	64	69	7.4	18	2.4*	22	MAR 5		6.5	84	111	171	150	20	41	16	9	48	120	0
HARRISBURG	17.3	5.5	11.4	36.1	SEP 11+	- 19.4	JAN 15	3031	875	44	AUG 31	1532	498	FEB 18-19	73	76	53	60	4.4	27	2.2	W	MAR 26	61	6.0	106	95	165	106	10	26	23	32	16	112	2
PHILADELPHIA	17.8	6.7	12.3	37.8	JUN 30	- 16.7	JAN 15	2748	759	58	JUL 8	699	183	JAN 12-13	75	77	53	61	4.8	23	2.2	SW	MAR 5	60	5.8	120	103	143	106	10	15	18	28	11	105	0
PITTSBURGH	16.3	4.9	10.6	34.4	SEP 10	- 21.1	JAN 14	3112	962	55	APR 28-29	1222	345	JAN 12-13	73	77	55	60	4.8	23	2.3*	26	JAN 25	60	6.8	61	116	189	143	12	39	20	5	33	117	1
READING U	17.4	6.9	12.2	36.7	JUN 30	- 12.2	JAN 14	2764	870	50	JUL 8-9	1080	318	JAN 12-13					5.4	NW#	3.0		MAR 10	58	5.5	131	98	137	117	10	27	9	27	11	94	0
SCRANTON	15.2	4.3	9.8	36.1	JUN 30	- 22.8	JAN 15	3456	770	56	MAR 9-10	1641	511	JAN 12-13	73	77	54	60	4.1	23	2.2		JAN 25	54	6.3	94	104	168	119	13	20	25	17	44	132	2
WILLIAMSPORT	16.2	4.3	10.3	36.7	JUN 30	- 23.9	JAN 15	3314	887	64	MAR 9-10	1562	587	JAN 12-13	79	81	55	63	4.1	27	1.8*	23	MAR 5		6.4	81	115	170	129	11	28	37	21	26	135	4
RHODE ISLAND																																				
BLOCK ISLAND	13.1	6.3	9.7	29.4	JUL 1	- 11.1	JAN 14	3245	888	61	DEC 27-28	533	140	JAN 13-14		72	59								5.9	104	113	149	107	6	12	88	0	17	93	0
PROVIDENCE	15.4	4.6	10.0	36.1	JUL 1	- 17.8	JAN 1	3267	976	68	APR 14-15	932	269	JAN 13-14	75	74	55	66	5.6	29	2.1*	31	NOV 17	57	5.7	126	89	151	115	8	17	29	8	21	121	1
SOUTH CAROLINA																																				
CHARLESTON	24.2	12.6	18.4	36.1	AUG 3+	- 7.8	JAN 15	1101	1854	147	AUG 28-29	T	T	JAN 13	85	85	57	73	4.6	2	2.8Y	W	JAN 20	56	6.2	92	110	164	128	0	51	23	46	0	30	0
COLUMBIA	23.6	11.0	17.3	37.2	JUN 21+	- 10.0	JAN 15	1446	1791	139	OCT 15-16	0	0		82	86	52	64	3.6	23	2.4*	28	JAN 20	60	5.6	119	95	152	120	0	35	23	67	0	46	0
FLORENCE	23.2	11.2	17.2	38.3	JUN 20	- 7.8	JAN 15	1419	1498	135	SEP 30-1	T	T	NOV 30 +	82	85	53	68	4.2	2	1.7*	30	JAN 20		5.7	120	89	157	120	0	40	37	51	0	39	0
GNVLE SPARTANBURG	21.7	10.3	16.0	36.7	JUN 21	- 10.0	JAN 15	1734	1788	109	OCT 15-16	43	30	FEB 25	76	80	54	61	3.9	4	2.2		DEC 25	61	5.5	131	87	148	115	1	37	43	34	1	53	0
SOUTH DAKOTA																																				
HURON	15.6	- .2	7.7	42.2	JUL 23	- 32.2	DEC 26+	4366	276	32	APR 20-21	897	152	MAR 19-20	72	78	51	51	6.4	15	2.9	NW	SEP 23	66	5.6	126	100	140	80	8	40	8	51	63	174	39
RAPID CITY	15.5	1.3	8.4	40.0	JUL 21	- 30.6	DEC 17	3985	385	50	JUN 8-9	831	104	FEB 19-20	68	47	47	63	6.3	32	3.1	NW	SEP 25	66	5.4	122	121	123	98	8	36	12	40	37	159	15

See reference notes at end of table.

ANNUAL CLIMATOLOGICAL DATA
METRIC UNITS

YEAR 1964

State and Station	Temperature: Averages: Daily maximum	Temperature: Averages: Daily minimum	Temperature: Averages: Annual	Temperature: Extremes: Highest	Temperature: Extremes: Date	Temperature: Extremes: Lowest	Temperature: Extremes: Date	Heating degree days	Precipitation: Total	Precipitation: Greatest in 24 hours	Precipitation: Date (s)	Precipitation: Snow, Sleet: Total	Precipitation: Snow, Sleet: Greatest in 24 hours	Precipitation: Snow, Sleet: Date (s)	Relative humidity: 1:00 a.m. E.S.T.	Relative humidity: 7:00 a.m. E.S.T.	Relative humidity: 1:00 p.m. E.S.T.	Relative humidity: 7:00 p.m. E.S.T.	Wind: Average speed	Wind: Prevailing direction	Wind: Fastest mile (1.6 kilometers): Speed	Wind: Fastest mile (1.6 kilometers): Direction	Wind: Fastest mile (1.6 kilometers): Date	Possible sunshine	Average sky cover sunrise to sunset	Number of days: Sunrise to sunset: Clear, 0-0.3	Number of days: Sunrise to sunset: Partly cloudy, 0.4-0.7	Number of days: Sunrise to sunset: Cloudy, 0.8-1.0	Number of days: Precipitation .25mm. or more	Number of days: Snow, Sleet 2.54mm. or more	Number of days: Thunderstorms	Number of days: Heavy fog	Number of days: Max. temp. 32.2 °C. and above	Number of days: Max. temp. 0 °C. and below	Number of days: Min. temp. 0 °C. and below	Number of days: Min. temp. -17.8 °C. and below
	°C.	°C.	°C.	°C.		°C.		Base 18.3 °C.	Mm.	Mm.		Mm.	Mm.		%	%	%	%	M.p.s.		M.p.s.			%	Tenths										
SOUTH DAKOTA																																			
SIOUX FALLS	14.8	1.3	8.1	38.3	JUL 31	- 28.9	DEC 26+	4204	573	43	JUL 10-11	602	124	DEC 24-25	76	83	59	58	5.9	18	2.3*	26	MAY 6		5.5	130	93	143	79	6	45	24	37	61	169	24
TENNESSEE																																			
BRISTOL	19.7	7.0	13.4	35.0	JUN 28	- 20.0	JAN 16+	2402	1017	93	OCT 16	536	226	JAN 12-13	79	84	56	61	2.6	27	2.1*	36	AUG 3		5.9	106	101	159	126	5	36	43	30	5	99	2
CHATTANOOGA	21.7	9.4	15.6	36.1	JUN 28+	- 12.2	JAN 2	1874	1632	104	MAR 14-15	89	3	FEB 28	86	90	59	65	3.1	18	2.8	SW	MAR 4	61	5.9	120	84	162	119	1	52	47	48	0	58	0
KNOXVILLE	20.1	8.6	14.3	35.6	JUN 28	- 13.9	JAN 15	2117	1167	75	AUG 15-16	348	152	JAN 1	79	84	57	61	3.7	24	2.9	SW	MAR 10	60	5.8	121	82	163	130	4	37	32	22	1	74	0
MEMPHIS	22.1	10.7	16.4	38.3	AUG 4	- 10.6	DEC 18	1748	1465	105	DEC 2-3	13	13	JAN 12	79	85	59	61	4.2	18	2.9	NW	JUL 11	69	5.2	139	99	128	105	0	53	17	60	3	68	0
NASHVILLE	21.4	9.0	15.2	38.3	AUG 4	- 13.3	DEC 18	2038	1143	57	AUG 15-16	234	107	FEB 28	80	86	58	62	4.3	18	2.4	NW	JUN 15	60	5.6	125	98	143	112	2	56	20	67	5	82	0
OAK RIDGE AREA STA	20.4	8.2	14.3	36.7	JUN 23	- 12.2	JAN 15	2122	1153	65	AUG 15-16								2.3	SW#									114				25	1	85	0
OAK RIDGE	20.3	7.9	14.2	36.1	JUN 22	- 13.3	JAN 15	2179	1268	64	MAR 14-15	86	64	FEB 28					2.5		2.7Y		AUG 12		5.6	136	72	158	126	1	40	33	28	1	81	0
TEXAS																																			
ABILENE	25.4	12.4	18.9	40.6	AUG 11+	- 11.1	JAN 14+	1285	644	80	AUG 15-16	160	109	FEB 20-21	58	66	43	37	5.8	18	2.4	NW	AUG 20	77	4.2	186	86	94	63	2	39	7	107	1	51	0
AMARILLO	21.9	6.8	14.4	40.0	AUG 6	- 17.8	JAN 13	2348	456	100	AUG 14-15	452	279	FEB 3-4	58	68	40	37	7.4	21	2.4	SW	JUN 11+	75	4.0	196	89	81	61	2	36	20	85	7	121	1
AUSTIN	26.1	14.4	20.3	39.4	JUL 25	- 8.3	JAN 14	939	837	165	JUN 15-16	117	102	FEB 21	75	84	55	52	4.9	18	2.0	NW	MAR 9	63	5.3	126	116	124	74	1	42	19	103	0	26	0
BROWNSVILLE	28.0	18.1	23.1	36.7	APR 26	.0	DEC 18+	392	399	62	DEC 8-9	T	T	DEC 18	85	90	59	68	6.7	14	2.1	NW	MAR 9	61	5.9	97	126	143	51	0	19	32	125	0	2	0
CORPUS CHRISTI	27.5	16.1	21.8	38.3	JUL 12	- 2.8	JAN 13	588	551	82	SEP 25	T	T	FEB 21	86	91	62	68	6.5	15	2.3	NW	MAR 9	55	6.0	102	117	147	75	0	29	29	117	0	10	0
DALLAS	24.8	13.4	19.1	41.7	AUG 5	- 11.7	JAN 14	1264	952	120	SEP 20-21	196	188	JAN 15-16	68	78	54	49	6.1	18	2.3		JAN 30	66	4.8	160	90	116	70	2	36	10	93	3	42	0
DEL RIO	27.6	14.4	21.1	41.7	AUG 6	- 7.2	JAN 14	881	639	114	SEP 21-22	T	T	DEC 18 +	60	74	50	41	5.5						5.0	130	118	118	50	0	45	8	131	0	26	0
EL PASO	24.6	9.7	17.1	40.6	JUL 3	- 12.2	JAN 10	1694	136	45	SEP 11-12	T	T	DEC 18 +	48	32	23	37	4.5	27	2.9	W	MAR 24	88	3.1	225	91	50	26	0	35	4	113	0	77	0
FORT WORTH	24.8	12.1	18.4	42.2	AUG 11	- 15.6	JAN 14	1393	871	121	SEP 20-21	323	307	JAN 15-16	72	82	54	51	5.3	18	2.1*	29	MAY 1+		4.7	160	93	113	75	2	42	16	92	2	60	0
GALVESTON U	23.1	18.0	20.6	35.0	AUG 5	- 3.9	JAN 13	746	988	138	DEC 9-10	T	T	FEB 21					5.5		2.4	E	AUG 5	64					85				8	0	3	0
HOUSTON U	25.7	17.2	21.4	39.4	AUG 5	- 4.4	JAN 13	680	839	77	DEC 9-10																		101				88	0	5	0
HOUSTON	25.6	15.1	20.4	38.3	JUL 25	- 6.1	JAN 14	831	994	112	DEC 9-10	T	T	FEB 21	84	88	61	66	5.3	16	2.1*	36	JUL 25	66	6.2	95	112	159	102	0	46	40	90	0	14	0
LAREDO	29.4	16.9	23.2	41.1	AUG 19+	- 3.3	JAN 13	517	340	78	AUG 23	T	T	NOV 22	67	79	47	41	5.7	14	1.9*	33	MAR 9		5.1	140	107	119	55	0	30	13	160	0	7	0
LUBBOCK	23.4	7.9	15.7	38.9	JUN 9	- 17.2	JAN 13	1958	361	53	JUN 21	91	58	FEB 20-21	59	72	44	38	7.2	18	3.0*	25	JUN 21		3.9	192	96	78	48	2	35	11	93	3	98	0
MIDLAND	26.7	10.9	18.8	41.7	AUG 6	- 13.9	JAN 13	1372	194	53	MAY 28	10	5	FEB 24 +	54	68	36	30	5.9	18	2.0*	24	JUN 4		4.0	184	101	81	38	0	23	10	134	1	70	0
PORT ARTHUR	25.4	14.6	20.0	36.7	AUG 5	- 7.2	JAN 14	898	1188	124	JUL 30-1	T	T	MAR 26 +	90	92	65	74	5.0	18	3.8	E	AUG 5	57	6.0	91	136	139	97	0	56	49	89	0	18	0
SAN ANGELO	26.6	12.2	19.4	41.7	AUG 6	- 10.0	JAN 13	1229	309	40	APR 20-21	20	20	FEB 20-21	60	72	42	37	4.9	16	2.1*	30	APR 20		4.1	186	94	86	49	0	29	6	127	2	59	0
SAN ANTONIO	26.8	14.1	20.5	40.0	AUG 5	- 9.4	JAN 14	910	810	101	AUG 22-23	56	51	FEB 21	74	82	54	48	4.9	16	2.3		AUG 6	71	5.1	134	120	112	74	1	34	25	121	0	23	0
VICTORIA	26.7	15.9	21.3	40.0	JUL 12	- 6.1	JAN 14	712	846	156	AUG 7-8	T	T	DEC 18 +		88	59	63	5.3		2.9Y		APR 3		6.1	96	114	156	88	0	44	36	107	0	12	0
WACO	25.8	13.4	19.6	41.1	AUG 5+	- 13.9	JAN 14	1166	745	101	JUN 15-16	168	142	JAN 15-16	71	80	55	52	6.0	18	2.1*	30	APR 5		4.7	157	92	117	70	3	40	10	103	1	44	0
WICHITA FALLS	24.9	10.7	17.8	45.0	AUG 6	- 13.9	JAN 13	1611	809	86	MAY 28-29	107	43	FEB 5	70	79	48	47	6.1	18	2.5*	23	MAY 1		4.1	186	90	90	64	3	46	15	106	3	71	0
UTAH																																			
MILFORD	17.7	- .5	8.6	38.9	JUL 29	- 23.3	NOV 17	3855	220	21	NOV 13	1575	211	NOV 13		40	32								4.5	170	90	106	72	21	21	9	57	28	183	14
SALT LAKE CITY	16.1	1.9	9.1	38.3	JUL 18	- 23.3	JAN 13	3782	454	36	DEC 23-24	2027	300	MAR 21-22	66	47	43	62	4.7	16	2.9	NW	APR 11	69	5.6	131	79	157	97	26	38	15	54	36	158	5
WENDOVER	16.0	4.8	10.4	38.3	JUL 21	- 16.1	DEC 18+	3415	182	34	JUN 6-7	239	79	MAR 23-24	51	41	33								4.4	179	84	103	59	5	25	2	42	21	140	0

See reference notes at end of table.

ANNUAL CLIMATOLOGICAL DATA
METRIC UNITS

State and Station	Temperature: Averages: Daily maximum	Temperature: Averages: Daily minimum	Temperature: Averages: Annual	Temperature: Extremes: Highest	Temperature: Extremes: Date	Temperature: Extremes: Lowest	Temperature: Extremes: Date	Heating degree days	Precipitation: Total	Precipitation: Greatest in 24 hours	Precipitation: Date (s)	Precipitation: Snow, Sleet: Total	Precipitation: Snow, Sleet: Greatest in 24 hours	Precipitation: Snow, Sleet: Date (s)	Relative humidity: 1:00 a.m. E.S.T.	Relative humidity: 7:00 a.m. E.S.T.	Relative humidity: 1:00 p.m. E.S.T.	Relative humidity: 7:00 p.m. E.S.T.	Wind: Average speed	Wind: Prevailing direction	Wind: Fastest mile (1.6 kilometers): Speed	Wind: Fastest mile (1.6 kilometers): Direction	Wind: Fastest mile (1.6 kilometers): Date	Possible sunshine	Average sky cover sunrise to sunset	Number of days: Sunrise to sunset: Clear, 0-0.3	Number of days: Sunrise to sunset: Partly cloudy, 0.4-0.7	Number of days: Sunrise to sunset: Cloudy, 0.8-1.0	Number of days: Precipitation .25mm. or more	Number of days: Snow, Sleet 25.4mm. or more	Number of days: Thunderstorms	Number of days: Heavy fog	Number of days: Max. temp. 32.2 °C. and above	Number of days: Max. temp. 0 °C. and below	Number of days: Min. temp. 0 °C. and below	Number of days: Min. temp. -17.8 °C. and below
	°C.	°C.	°C.	°C.		°C.		Base 18.3 °C.	Mm.	Mm.		Mm.	Mm.		%	%	%	%	M.p.s.		M.p.s.			%	Tenths										
VERMONT																																			
BURLINGTON	12.7	.7	6.7	35.6	JUL 28	- 22.8	FEB 10	4382	755	53	AUG 22-23	1562	320	MAR 10-11	78	76	57	66	4.7	18	2.4	NW	NOV 18	60	7.0	58	117	191	142	17	32	16	7	66	175	15
VIRGINIA																																			
LYNCHBURG	19.2	7.3	13.3	37.2	JUN 20	- 13.9	JAN 15+	2373	857	61	JUL 12	470	152	FEB 28		78	53	63	3.3		1.9		OCT 16	61	5.5	131	80	155	107	7	27	41	20	4	90	0
NORFOLK	20.1	10.1	15.1	38.3	JUN 10	- 6.7	JAN 15+	1909	1466	290	AUG 31-1	203	91	FEB 11-12	80	79	59	69	5.9	18	3.2		SEP 13		5.9	114	92	160	115	4	35	22	26	2	54	0
RICHMOND	20.2	7.3	13.8	36.7	JUN 10	- 17.8	JAN 15	2232	1144	58	AUG 30-31	622	185	FEB 28	82	84	54	69	4.1	18	2.8	W	AUG 12	62	5.7	118	93	155	121	7	24	35	25	3	90	1
ROANOKE	19.8	7.6	13.7	36.7	JUN 21	- 13.3	DEC 19	2319	962	66	AUG 30-31	1034	279	JAN 12-13	73	76	50	57	3.9	32	2.7*	30	JAN 21		5.5	128	96	142	116	9	30	31	37	4	90	0
WASHINGTON																																			
OLYMPIA	14.3	3.3	8.8	30.6	AUG 24	- 16.1	DEC 17	3449	1319	75	JAN 24-25	538	97	DEC 18-19	94	82	68	89	4.1	20	2.3*	22	JAN 19+		7.8	42	76	248	173	7	3	89	0	3	102	0
SEATTLE-TACOMA	14.0	6.0	10.0	32.2	MAY 31	- 12.2	DEC 16	3038	1050	57	NOV 23-24	290	84	DEC 19	83	76	65	78	4.8	20	2.0*	23	JAN 19		7.6	53	71	242	172	3	11	55	1	3	42	0
SEATTLE	14.7	8.1	11.4	30.0	AUG 11+	- 11.7	DEC 16	2551	941	49	JAN 31-1	244	97	DEC 19										47					165	4	0	0	0	2	6	0
SPOKANE	12.8	1.9	7.3	37.2	JUL 12	- 28.9	DEC 17	4088	546	53	JUN 7-8	2553	178	DEC 18-19+	78	64	53	69	5.1	21	2.2	SW	FEB 16	54	6.7	82	83	201	133	32	14	47	8	40	160	5
STAMPEDE PASS R	5.9	- .1	2.9	27.8	JUL 11	- 26.7	DEC 17	5605	2834	86	SEP 30-1	14562	495	JAN 5-6	92	84	80								7.8	63	37	266	228	106	0	263	0	121	201	3
TATOOSH ISLAND R	11.2	6.6	8.9	21.1	OCT 4+	- 10.0	DEC 16	3410	1817	56	SEP 29-30	579	178	DEC 18	88	83	81	87	7.7	27	3.7	SW	JAN 19	43	7.7	50	72	244	216	11	6	59	0	2	12	0
WALLA WALLA U	16.9	6.5	11.7	39.4	JUL 12	- 21.1	DEC 17	2702	388			312	86	DEC 20															101	4	12	15	22	6	51	2
YAKIMA	16.3	1.3	8.8	38.3	JUL 12	- 27.2	DEC 17	3551	192	36	DEC 21-22	1102	356	DEC 20-21	74	54	42	64	3.9	27	2.3*	28	FEB 17		6.0	97	114	155	51	12	8	29	15	14	167	4
WEST INDIES																																			
SAN JUAN P.R. U	29.0	23.1	26.1	34.4	JUN 10+	18.9	DEC 22	0	1318	93	JUN 3																		196	0	31	0	19	0	0	0
SAN JUAN P.R.	30.2	22.7	26.4	34.4	JUN 10+	17.2	DEC 22+	0	1208	56	AUG 30-31				84	81	66	77	4.5	7	1.6	E	MAY 23	67	5.8	57	213	96	209	0	32	0	36	0	0	0
WEST VIRGINIA																																			
BECKLEY	16.7	4.8	10.8	32.2	JUN 23	- 17.2	DEC 19	2987	1055	136	SEP 28-29	1369	150	FEB 10-11	79	82	56	65	4.8	24	1.6	25	MAR 10		6.6	87	86	193	142	17	44	26	1	21	118	0
CHARLESTON	19.8	6.8	13.3	35.6	SEP 9	- 16.1	JAN 15	2423	838	35	NOV 25-26	953	198	JAN 12-13	77	82	52	57	3.2	22	1.9*	25	MAR 10		6.7	89	121	156	137	11	32	96	41	12	104	0
ELKINS	17.0	2.6	9.8	32.2	SEP 10+	- 24.4	JAN 15	3260	1056	46	SEP 28-29	1554	163	JAN 12-13	88	90	57	69	3.4	30	1.9*	25	JAN 25		6.8	64	106	196	165	22	45	88	2	22	159	4
HUNTINGTON	19.3	6.5	12.9	37.8	AUG 3	- 17.8	JAN 14	2533	940	74	AUG 22	704	160	FEB 10-11	79	86	57	60	3.1	18	1.8*	26	MAR 17+		6.1	97	116	153	126	7	40	40	36	13	107	1
PARKERSBURG U	18.6	6.5	12.6	35.0	SEP 10+	- 14.4	JAN 15+	2618	978	47	JUN 14-15	597	254	JAN 12-13					3.4		1.9	W	MAR 17	55					132	8	42	8	29	16	105	0
WISCONSIN																																			
GREEN BAY	12.7	1.8	7.3	35.6	JUN 29	- 24.4	FEB 24	4291	714	76	SEP 3	704	257	MAR 25-26	81	85	64	68	5.3	22	3.0	SW	APR 13	54	6.1	93	124	149	124	8	49	29	14	77	158	12
LA CROSSE	14.3	3.4	8.8	38.3	AUG 2	- 28.3	DEC 27	3918	644	65	JUN 22-23	909	160	MAR 25-26	78	80	58	62	5.6	18	2.7*	25	APR 13						94	8	35	17	28	59	147	14
MADISON	14.7	1.9	8.3	36.1	JUL 24+	- 22.8	DEC 17	4023	600	43	AUG 20-21	775	132	MAR 8-9	76	79	56	61	4.8	18	2.9	NW	JUL 27	58	6.2	93	107	166	109	9	55	22	25	54	168	14
MILWAUKEE	13.7	3.3	8.5	35.0	AUG 2+	- 18.9	DEC 17+	3904	716	103	JUL 17-18	986	234	MAR 4-5	77	80	62	68	5.7	21	2.6	SW	APR 14+	63	5.7	112	122	132	114	10	47	32	20	59	153	5
WYOMING																																			
CASPER	13.4	- .7	6.4	35.0	JUL 30+	- 35.0	DEC 17+	4584	276	40	APR 2	2060	335	APR 2-3	65	45	41	60	5.9	23	2.5*	24	MAY 3		5.5	118	119	129	91	27	26	12	26	70	190	18
CHEYENNE	14.3	- .1	7.1	32.8	JUL 21+	- 31.1	DEC 17	4240	151	17	JUL 25-26	569	89	APR 2-3	59	38	39	56	7.7	29	3.1	NW	APR 27	64	5.2	127	117	122	79	7	36	9	8	43	176	7
LANDER	14.1	- .8	6.7	36.7	JUL 21	- 30.0	DEC 17	4493	325	70	MAY 29-30	2281	236	FEB 24-25	61	46	42	54	4.0	27	3.8	SW	DEC 22	73	5.3	129	123	114	66	25	22	6	26	49	183	15
SHERIDAN	14.2	- .7	6.8	38.3	JUL 21	- 33.9	DEC 17	4424	397	55	JUN 8-9	1753	264	NOV 13-14	74	52	50	65	5.1	30	3.2	NW	FEB 5	65	6.0	103	106	157	104	21	22	4	24	53	189	17

Data from airport unless otherwise specified. U indicates Urban, R indicates Rural, sites.

* Value entered in column "Fastest Mile" is the highest observed 1-minute wind speed. This station is not equipped with a recording anemometer from which Fastest Mile data can be evaluated.

\+ And also on an earlier date or dates.

A Maximum hourly average.

B Number of days maximum 21.1°C. or above for Alaskan Stations.

Y Peak gust.

\# Wind direction to 8 compass points only.

F Computed as of 8:00 a.m. local time.

K Computed as of noon local time.

V Sun below horizon November 19 - January 23.

X Sun below horizon November 24 - January 17.

† From the Loyola Avenue site.

Data in this table are obtained by conversion from data in the English Units table.

NORMALS, MEANS AND EXTREMES

State and Station	Elevation ground (feet)	Temperature (°F) NORMAL (1931-1960) January Daily maximum	January Daily minimum	July Daily maximum	July Daily minimum	Annual	Extremes Length, yrs	Record highest	Record lowest	Normal degree days (1931-1960) January	Seasonal
ALABAMA							81	112	-8		
Birmingham	620	56.6	36.3	92.5	70.7	64.1	19	106	1	592	2551
Huntsville	600	52.4	34.8	92.4	69.8	62.0	6	101	-4	694	3070
Mobile	211	62.3	43.7	92.0	73.1	68.2	3	100	8	415	1560
Montgomery	194	58.5	37.7	91.9	71.7	65.0	4	100	5	543	2291
ALASKA							81	100	-76		
Anchorage	85	20.5	4.3	64.6	49.5	35.2	11	81	-30	1631	10864
Annette	110	38.4	30.3	63.2	51.4	45.6	4	90	1	949	7069
Barrow	22	-9.4	-23.0	44.9	33.3	9.6	44	78	-56	2517	20174
Barter Island	39	-9.9	-23.6	47.5	35.0	10.4	15	72	-59	2536	19862
Bethel	125	10.8	-3.7	61.8	47.5	28.7	6	86	-39	1903	13196
Cold Bay	94	32.6	22.9	54.3	45.0	37.9	20	78	-9	1153	9880
Fairbanks	436	-.8	-21.4	71.7	47.6	25.8	12	93	-62	2359	14279
Cordova (1963)	41	31.6	14.5	60.3	46.1	38.2	20	84	-33	1299	9764
Juneau	12	30.1	20.0	62.7	47.8	40.1	21	84	-21	1237	9075
King Salmon	43	20.8	5.9	63.0	46.8	33.8	21	88	-40	1600	11343
Kotzebue	10	1.3	-12.7	58.6	46.8	20.7	22	85	-52	2192	16105
McGrath	334	.8	-18.7	68.6	48.7	25.8	22	88	-67	2294	14283
Nome	13	11.5	-2.7	54.6	44.4	26.1	18	81	-42	1879	14171
Northway (1956)	1713	-8.5	-25.7	69.8	48.5	22.4	14	88	-72	2545	15506
St. Paul Island	22	29.7	21.1	49.4	41.6	34.3	47	64	-26	1228	11199
Shemya	122	33.9	28.6	49.2	43.6	38.4	19	63	16	1045	9687
Yakutat	28	34.4	20.2	60.5	47.7	40.0	17	86	-22	1169	9092
ARIZONA							70	127	-37		
Flagstaff	6993	40.4	14.1	81.4	49.6	45.6	15	94	-20	1169	7152
Phoenix	1117	64.0	35.3	104.6	75.0	69.0	4	114	20	474	1765
Prescott	5014	51.0	23.1	90.8	61.1	55.7	22	103	-5	865	4362
Tucson	2584	62.6	37.0	98.5	74.1	67.7	24	111	16	471	1800
Winslow	4895	45.2	16.8	95.7	64.6	55.7	5	105	-13	1054	4782
Yuma	194	69.3	41.5	108.2	80.3	74.3	14	120	28	307	974
ARKANSAS							74	120	-29		
Fort Smith	447	50.2	29.4	94.7	71.2	61.8	4	106	-3	781	3292
Little Rock	257	50.6	30.5	92.7	71.1	61.7	5	108	-4	756	3219
Texarkana	372	54.9	35.2	93.3	71.9	64.3	22	106	-3	626	2533
CALIFORNIA							80	134	-45		
Bakersfield	494	57.4	37.4	100.3	68.2	65.1	26	115	20	546	2122
Bishop	4108	53.7	19.8	98.0	55.2	96.2	17	109	-6	874	4227
Blue Canyon	5280	43.6	30.5	77.0	59.0	50.7	21	93	5	865	5507
Burbank	724	64.9	42.3	86.2	61.4	63.6	31	111	21	366	1646
Eureka (U)	43	53.6	41.1	60.5	52.0	52.3	54	85	22	546	4643
Fresno	328	55.4	36.7	100.0	62.6	63.0	13	111	21	586	2492
Long Beach	34	65.3	40.8	82.0	61.1	62.8	5	111	25	375	1711
Los Angeles (U)	270	65.0	46.6	83.3	62.6	64.4	24	110	28	310	1349
Los Angeles	97	63.8	45.0	75.9	62.3	61.9	6	110	30	347	1799
Mount Shasta (R)	3544	41.4	25.1	85.3	50.7	49.9	22	103	-2	983	5722
Oakland	6	55.4	40.6	72.7	55.9	57.5	34	107	23	527	2870
Point Arguello (1963)	364	59.0	40.3	65.5	51.5	55.2	4	97	24	474	3595
Red Bluff	342	53.4	37.5	99.6	67.9	63.5	20	114	21	605	2515
Sacramento (U)	19	54.4	38.3	90.0	58.0	60.7	31	112	22	577	2587
Sacramento	17	53.2	37.2	93.4	57.4	60.4	4	115	23	614	2773
Sandberg (R)	4517	46.0	33.8	85.6	63.2	55.5	32	102	3	778	4209
San Diego	13	64.6	45.4	76.8	63.4	63.2	4	111	31	313	1439
San Francisco (U)	52	55.8	45.5	64.3	53.3	56.8	28	101	30	443	3001
San Francisco	8	55.4	41.7	71.9	53.5	56.9	35	106	20	508	3012
Santa Catalina	1568	59.7	47.4	77.9	59.4	60.9	2	101	36	353	2052
Santa Maria	236	62.3	38.1	71.6	52.8	57.0	20	104	21	459	2967
Stockton	22	52.4	37.0	95.4	60.9	61.3	5	113	19	629	2676
COLORADO							77	118	-60		
Alamosa	7536	35.6	-.8	82.5	47.2	41.9	19	91	-50	1476	8529
Colorado Springs	6173	41.9	15.2	84.2	56.7	48.5	4	99	-21	1128	6423
Denver	5283	42.1	14.8	88.4	57.4	49.5	5	100	-25	1132	6283
Grand Junction	4855	34.8	17.1	92.5	63.8	52.5	18	102	-23	1209	5641
Pueblo	4684	45.3	14.7	92.1	60.8	52.7	23	105	-31	1085	5462
CONNECTICUT							77	105	-32		
Bridgeport	7	37.4	22.9	82.6	64.8	51.5	3	97	-5	1079	5617
Hartford (Bradley Fld.)	169	34.7	17.3	85.0	61.8	49.8	5	101	-26	1209	6172
New Haven	6	37.1	22.0	80.5	63.2	50.2	21	100	-8	1097	5897

State and Station	Precipitation (inches) NORMAL (1931-1960) Wettest month	Driest month	Annual	Extremes Wettest month	Driest month	Maximum in 24 hours	Snow, sleet Mean total January	Mean total Seasonal	Extreme Maximum in 24 hours	Relative humidity (percent) January 7:00 a.m. EST	1:00 p.m. EST	7:00 p.m. EST	July 7:00 a.m. EST	1:00 p.m. EST	7:00 p.m. EST	Wind Speed (m.p.h.) Mean hourly January	July	Fastest mile	Sunshine (percent of possible) January	July
ALABAMA																				
Birmingham	6.00	2.95	53.05	17.67	T	20.33 / 6.57	0.5	1.5	8.4	84	62	69	86	56	65	9.0	6.2	65	40	60
Huntsville	5.57	2.72	48.67	12.55	T	5.84	1.6	7.8	17.1	80	62	68	87	55	59	8.2	5.5	---	---	---
Mobile	9.67	3.03	68.13	19.29	.05	13.36	.2	.5	3.5	78	64	68	91	65	74	11.4	7.4	---	---	---
Montgomery	6.16	2.28	50.69	21.32	.02	8.81	.2	.3	2.5	78	60	65	89	59	66	7.9	6.0	60	48	64
ALASKA																				
Anchorage	2.57	.42	14.71	5.43	.01	37.67 / 2.06	10.3	79.9	17.7	77	78	75	86	75	65	5.5	6.8	---	36	44
Annette	16.88	5.67	118.36	34.87	.71	7.59	11.6	48.7	14.2	82	83	78	86	77	68	12.9	8.3	---	---	---
Barrow	.90	.11	4.26	2.81	.00	1.00	2.3	28.4	15.0	63	64	63	94	91	88	11.2	11.7	---	---	---
Barter Island	1.05	.17	6.28	4.91	T	2.25	7.2	47.1	17.0	68	68	67	93	89	86	14.1	12.9	---	---	---
Bethel	4.20	.58	18.42	5.81	.02	1.31	4.7	51.4	6.5	73	74	74	94	85	65	14.7	12.2	---	---	---
Cold Bay	4.59	1.46	34.30	9.97	.02	2.75	6.7	44.2	9.7	85	86	83	93	91	83	18.1	15.7	---	---	---
Fairbanks	2.20	.25	11.29	4.35	T	1.63	11.5	59.5	12.6	67	67	67	87	71	53	2.9	6.0	---	---	---
Cordova (1963)	12.51	3.48	80.98	27.72	.08	7.92	25.0	124.7	22.9	83	82	81	92	86	80	4.6	4.1	---	---	---
Juneau	8.33	2.87	54.62	13.29	.27	4.66	18.1	96.7	31.0	80	80	78	88	79	68	8.4	7.7	---	28	29
King Salmon	3.43	.64	19.18	7.30	.00	2.00	6.3	44.1	9.5	77	78	76	92	85	65	11.2	9.9	---	---	---
Kotzebue	2.16	.28	8.18	5.18	T	1.78	5.5	44.3	8.6	72	72	71	88	86	78	14.5	12.7	---	---	---
McGrath	3.79	.47	18.58	6.26	T	2.39	15.5	87.4	15.2	69	68	70	87	75	56	2.7	5.9	---	---	---
Nome	3.80	.69	17.88	7.82	T	2.38	11.0	58.1	8.4	78	77	77	90	86	82	12.0	10.0	---	38	31
Northway (1956)	2.89	.22	11.35	6.42	T	3.91	7.7	40.1	11.5	68	67	65	87	67	50	3.0	5.9	---	---	---
St. Paul Island	3.15	.96	23.60	9.32	.08	1.93	12.9	55.9	13.8	87	87	86	96	96	91	19.1	12.7	---	---	---
Shemya	2.76	1.32	27.27	8.59	.14	5.26	11.8	60.9	15.3	85	84	84	95	97	93	20.2	13.3	n139	---	---
Yakutat	19.59	5.06	131.81	43.88	.52	7.13	36.2	212.5	32.4	82	83	81	96	85	79	8.5	7.2	---	---	---
ARIZONA																				
Flagstaff	2.84	.51	18.31	6.60	T	13.09 / 3.11	17.7	72.0	22.0	77	53	49	69	32	33	8.7	6.3	---	---	---
Phoenix	1.12	.09	7.20	5.56	.00	3.07	T	T	.6	58	40	27	46	28	20	4.6	6.4	75	77	84
Prescott	2.66	.24	12.23	9.61	.00	3.08	5.9	16.7	12.4	71	49	44	59	30	31	7.1	8.3	72	73	74
Tucson	2.88	.13	11.00	7.93	.00	3.93	.4	1.3	6.4	62	40	34	56	32	28	7.6	7.9	59	80	76
Winslow	1.43	.26	7.23	4.80	.00	2.12	2.6	9.3	7.8	77	60	50	52	25	24	7.6	9.2	---	---	---
Yuma	.50	.01	3.03	2.68	.00	2.42	.0	.0	.0	52	34	25	47	29	20	7.2	9.6	54	86	92
ARKANSAS																				
Fort Smith	5.26	2.66	42.22	14.01	T	12.00 / 7.13	1.9	5.0	5.6	80	61	63	92	58	56	8.4	6.6	58	46	69
Little Rock	5.28	2.82	48.66	12.53	T	7.71	2.3	5.0	11.3	81	57	59	85	88	59	8.9	7.1	65	44	68
Texarkana	5.30	2.98	49.19	15.33	T	6.55	1.4	2.2	7.5	84	67	70	90	58	59	7.9	6.4	---	---	---
CALIFORNIA																				
Bakersfield	1.17	.01	6.36	4.61	.00	26.12 / 1.68	T	T	T	86	72	58	48	30	19	4.9	7.1	---	---	---
Bishop	1.18	.09	5.84	5.03	.00	3.32	3.6	6.6	9.0	--	45	34	--	18	13	---	---	---	---	---
Blue Canyon	11.70	.06	60.37	45.12	.00	9.33	50.1	241.3	38.5	--	60	--	--	47	--	---	---	---	---	---
Burbank	3.22	T	14.53	13.84	.00	7.76	.2	.2	4.7	70	53	46	82	51	75	4.5	5.9	---	---	---
Eureka (U)	6.71	.10	38.43	13.97	.00	5.83	.2	.2	3.0	--	--	--	--	--	--	6.9	6.8	56	41	52
Fresno	2.19	T	11.14	6.73	.00	1.91	.2	.2	1.5	94	83	68	62	38	20	5.4	7.1	43	53	98
Long Beach	2.31	T	9.84	9.05	.00	6.86	T	T	T	65	49	44	87	67	57	5.6	6.7	---	---	---
Los Angeles (U)	3.33	T	14.68	12.42	.00	6.11	T	T	.3	63	45	50	84	49	53	6.8	5.4	49	72	82
Los Angeles	2.88	.01	12.63	11.07	.00	6.19	T	T	T	62	48	54	86	68	69	6.4	7.0	62	---	---
Mount Shasta (R)	6.36	.18	36.72	17.60	.00	5.90	32.4	106.1	37.4	--	74	70	--	41	30	---	---	---	---	---
Oakland	3.83	T	17.93	11.29	.00	5.45	T	T	1.0	85	74	67	87	69	61	6.2	9.1	---	---	---
Point Arguello (1963)	2.35	.02	11.27	8.36	T	2.28	T	T	T	--	--	--	--	--	--	7.3	6.9	---	---	---
Red Bluff	4.29	.04	22.05	11.38	.00	4.00	1.1	1.7	9.9	80	71	58	48	29	17	9.0	8.2	68	54	96
Sacramento (U)	3.58	T	18.02	12.20	.00	5.07	----	----	----	--	--	--	--	--	--	---	---	---	---	---
Sacramento	3.24	T	16.29	12.64	.00	5.59	T	T	T	92	90	73	77	47	27	8.7	9.7	70	44	98
Sandberg (R)	2.58	.02	12.10	11.12	.00	4.87	9.1	26.2	38.5	--	56	--	--	25	--	17.3	12.9	---	---	---
San Diego	2.15	.01	10.40	7.60	.00	3.07	T	T	T	65	48	51	83	69	66	5.5	6.8	51	69	68
San Francisco (U)	4.55	.01	20.78	11.47	.00	3.65	T	T	T	--	c82	c68	--	c85	c75	6.7	11.2	47	56	65
San Francisco	4.09	.01	18.69	12.30	.00	3.74	T	T	1.5	87	78	69	90	69	66	7.0	13.7	62	---	---
Santa Catalina	3.16	.02	14.36	2.51	.00	1.92	.0	T	T	--	--	--	--	--	--	---	---	---	---	---
Santa Maria	2.84	.03	13.37	9.69	.00	3.07	T	T	T	81	60	61	93	66	64	6.7	6.5	---	---	---
Stockton	2.66	T	13.37	8.05	.00	3.01	.0	.0	.0	90	88	69	63	39	23	6.2	7.6	---	---	---
COLORADO																				
Alamosa	1.07	.17	6.56	2.45	T	8.05 / 1.82	4.6	31.7	14.7	75	58	57	83	38	36	---	---	---	---	---
Colorado Springs	2.37	.24	13.19	5.90	T	3.09	4.4	38.4	18.0	55	36	45	69	34	39	10.2	9.8	---	---	---
Denver	2.70	.47	14.81	7.31	T	3.43	8.7	59.0	19.4	59	44	49	67	30	30	9.8	8.9	56	72	72
Grand Junction	1.07	.42	8.29	3.48	.00	1.24	8.3	27.6	9.1	75	63	61	44	26	19	5.6	9.5	66	59	78
Pueblo	1.85	.30	11.84	6.17	T	3.77	6.1	32.5	16.8	69	46	49	73	35	34	7.7	8.2	80	75	77
CONNECTICUT																				
Bridgeport	4.45	2.96	44.89	13.29	.07	12.12 / 4.67	6.5	25.3	15.0	74	62	68	82	61	72	11.9	9.3	---	---	---
Hartford (Bradley Fld.)	4.01	2.94	42.92	21.87	.35	12.12	11.4	52.7	14.3	76	59	65	82	53	65	10.2	7.8	51	55	60
New Haven	4.62	3.19	46.02	10.95	.12	5.55	9.1	36.5	17.2	76	64	--	81	67	--	8.3	6.3	57	54	67

State and Station	Annual mean number of days: Sunrise to sunset Clear	Partly cloudy	Cloudy	Precipitation .01 inch or more	Snow, sleet, hail 1.0 inch or more	Thunderstorms	Heavy fog	Temperature Max 90 and above	Min 32 and below	Min Zero and below
ALABAMA										
Birmingham	100	117	148	117	1	56	8	68	52	0
Huntsville	110	101	154	114	2	53	12	71	71	1
Mobile	104	119	142	124	*	84	34	83	28	0
Montgomery	108	107	150	109	*	63	21	90	43	0
ALASKA										
Anchorage	65	67	233	111	22	1	29	#13	203	41
Annette	39	57	269	224	15	2	17	#26	71	0
Barrow	x61	x51	x187	72	7	*	66	*	323	169
Barter Island	v47	v71	v192	99	13	*	72	*	309	167
Bethel	65	60	240	143	18	1	68	#13	223	84
Cold Bay	12	49	304	204	13	0	27	*	162	1
Fairbanks	69	81	215	100	20	5	19	#49	231	122
Cordova (1963)	51	52	262	215	35	2	12	#8	189	18
Juneau	43	36	286	223	27	*	20	#20	145	8
King Salmon	57	65	243	150	15	1	33	#13	204	53
Kotzebue	88	71	206	112	14	*	21	#4	252	120
McGrath	68	63	234	138	27	6	13	#29	232	114
Nome	81	66	218	129	19	*	24	#2	239	89
Northway (1956)	45	84	236	102	11	12	17	#37	247	138
St. Paul Island	23	64	278	201	19	*	47	#0	190	5
Shemya	3	61	301	210	21	0	81	#0	123	0
Yakutat	41	44	280	226	50	2	31	#5	168	9
ARIZONA										
Flagstaff	173	93	99	70	18	47	6	1	211	9
Phoenix	211	85	69	34	0	22	2	163	16	0
Prescott	184	99	82	60	6	46	4	48	130	*
Tucson	195	90	80	49	1	40	1	145	21	0
Winslow	181	96	88	53	4	36	5	78	137	4
Yuma	253	66	46	14	0	7	1	185	3	0
ARKANSAS										
Fort Smith	131	93	141	92	2	58	13	84	72	1
Little Rock	123	98	144	102	2	57	16	84	68	1
Texarkana	---	---	---	99	1	63	18	83	40	*
CALIFORNIA										
Bakersfield	200	82	83	37	0	3	21	108	16	0
Bishop	205	86	74	28	2	13	*	99	145	*
Blue Canyon	175	64	126	88	40	12	68	1	100	0
Burbank	189	101	75	38	*	4	29	46	3	0
Eureka (U)	82	100	183	118	*	5	49	0	4	0
Fresno	205	68	92	43	*	5	41	99	26	0
Long Beach	158	127	80	27	0	3	65	13	1	0
Los Angeles (U)	186	105	74	35	0	6	17	17	*	0
Los Angeles	144	112	109	35	0	3	50	4	*	0
Mount Shasta (R)	163	85	117	89	19	13	7	20	135	*
Oakland	145	116	104	63	*	2	18	5	7	0
Point Arguello (1963)	116	89	160	68	0	2	140	1	9	0
Red Bluff	177	69	119	70	1	11	17	97	23	0
Sacramento (U)	---	---	---	58	--	--	--	66	10	0
Sacramento	196	66	103	57	0	5	36	80	23	0
Sandberg (R)	211	79	75	40	7	4	79	21	56	0
San Diego	153	121	91	42	0	3	30	3	*	0
San Francisco (U)	---	---	---	67	0	2	--	1	*	0
San Francisco	162	105	98	62	*	2	20	3	6	0
Santa Catalina	193	85	87	42	0	4	142	16	0	0
Santa Maria	177	111	77	46	0	2	87	4	15	0
Stockton	194	72	99	47	0	3	41	83	27	0
COLORADO										
Alamosa	150	139	76	65	12	44	15	1	226	48
Colorado Springs	137	119	109	85	11	59	22	23	158	10
Denver	114	137	114	86	18	41	10	41	161	13
Grand Junction	140	109	116	70	9	37	8	56	138	4
Pueblo	142	120	103	71	10	44	8	56	156	9
CONNECTICUT										
Bridgeport	106	104	155	116	7	22	28	4	108	1
Hartford (Bradley Fld.)	87	110	168	126	14	23	33	15	143	9
New Haven	102	106	157	129	10	27	28	3	113	1

See reference notes at end of table.

NORMALS, MEANS AND EXTREMES

State and Station	Elevation ground (feet)	Temperature (°F) NORMAL (1931-1960) January Daily maximum	January Daily minimum	July Daily maximum	July Daily minimum	Annual	Extremes Length, yrs.	Record highest	Record lowest	Normal degree days (1931-1960) January	Seasonal
DELAWARE							72	110	-17		
Wilmington	78	41.3	25.5	86.2	65.8	54.1	17	102	-4	980	4930
DIST. OF COLUMBIA											
Washington (U)(1958)	72	44.0	28.9	87.1	68.4	56.8	87	100	-15	884	4258
Washington Nat'l. AP	14	44.3	29.5	87.0	69.3	57.0	4	100	3	871	4224
FLORIDA							75	109	-2		
Apalachicola (U)	13	62.3	47.9	87.6	75.4	68.8	35	102	13	347	1308
Daytona Beach	31	69.6	48.7	88.2	72.0	70.3	21	102	21	248	879
Fort Myers	13	74.8	52.2	91.0	73.3	73.7	5	98	26	146	442
Jacksonville(U)(1956)	18	65.9	48.7	89.6	73.7	69.8	86	104	10	303	1113
Jacksonville	24	66.8	45.0	92.0	73.2	69.5	23	105	12	332	1239
Key West (U) (1957)	9	75.8	65.8	89.1	78.3	77.6	90	97	41	28	77
Key West (Int'l. AP)	4	73.7	65.4	87.4	79.1	76.8	12	95	46	40	108
Lakeland (U)	214	71.2	52.2	90.5	72.6	72.3	24	101	20	195	661
Miami (U) (1961)	8	74.4	62.6	86.8	76.4	75.3	49	95	27	57	173
Miami Beach	9	74.2	63.9	87.0	77.6	76.2	24	98	35	56	141
Miami (Int'l. AP)	7	75.8	57.9	88.8	74.7	75.1	22	98	32	74	214
Orlando	108	70.7	50.0	92.0	73.0	72.0	4	100	20	220	766
Pensacola (U) (1961)	13	61.1	46.9	86.9	75.0	68.0	22	103	13	383	1435
Pensacola 1/	112	61.9	46.3	88.4	75.2	68.3	23	103	10	381	1451
Tallahassee	55	65.1	42.7	90.5	72.0	68.0	4	99	10	375	1485
Tampa	19	71.3	51.0	89.7	73.4	72.2	16	98	18	202	683
West Palm Beach	15	75.5	58.3	90.8	74.3	75.3	11	98	30	87	253
GEORGIA							73	112	-17		
Athens	802	54.6	34.5	90.2	69.2	61.9	21	105	2	642	2929
Atlanta	1010	54.0	35.5	88.4	69.2	61.6	4	98	-3	636	2961
Augusta	143	59.4	35.7	91.3	70.0	64.0	13	106	6	549	2397
Columbus	385	59.0	36.6	91.5	70.6	64.4	19	104	3	552	2383
Macon	354	60.2	38.2	92.8	71.0	65.6	15	106	5	505	2136
Rome	637	52.8	31.3	90.6	67.4	60.4	19	106	-5	710	3326
Savannah	46	62.5	40.9	91.2	71.4	66.4	13	104	9	437	1819
Thomasville (U)(1963)	283	63.4	44.0	92.0	72.0	68.2	41	106	8	394	1529
HAWAII							60	100	18		
Hilo	31	78.7	62.8	82.4	67.4	73.1	18	93	53	----	----
Honolulu (U)	12	----	----	----	----	75.1	42	88	57	----	----
Honolulu	7	79.1	65.8	84.6	73.0	75.9	16	92	54	----	----
Kahului	48	80.8	63.4	86.4	70.1	75.2	2	91	53	----	----
Lihue	115	78.2	63.5	83.1	72.0	74.5	14	90	51	----	----
IDAHO							72	118	-60		
Boise	2838	36.1	22.1	91.4	59.0	51.0	25	111	-17	1113	5809
Idaho Falls 46W (R)	4933	27.5	3.2	87.9	50.1	42.4	15	101	-40	1538	8475
Idaho Falls 42NW (R)	4790	26.5	.2	89.0	49.2	41.7	14	103	-43	1600	8760
Lewiston	1413	37.7	23.7	89.8	57.8	51.6	18	115	-22	1063	5542
Pocatello	4454	31.6	13.0	89.6	55.1	47.0	14	101	-30	1324	7033
Salmon (1960)	3949	28.2	4.1	89.6	46.8	44.0	48	---	---	1513	7922
ILLINOIS							75	117	-35		
Cairo (U)	314	44.6	30.2	90.3	71.8	59.6	22	104	-5	856	3821
Chicago (Midway)	607	33.0	19.0	84.1	67.1	50.8	20	104	-15	1209	6155
Moline	582	31.6	13.6	88.0	63.2	50.1	5	99	-26	1314	6408
Peoria	652	33.7	17.6	87.0	65.0	51.4	5	99	-20	1218	6025
Rockford	724	30.2	13.7	86.3	62.1	48.6	12	103	-20	1333	6830
Springfield	588	36.3	20.5	89.6	66.4	53.6	5	103	-22	1135	5429
INDIANA							78	116	-35		
Evansville	381	42.7	25.6	90.3	67.2	57.0	4	102	-18	955	4435
Fort Wayne	791	34.4	19.6	85.1	63.2	50.3	4	101	-18	1178	6205
Indianapolis(U)(1955)	781	38.7	23.4	88.3	67.7	54.5	--	---	---	1051	5134
Indianapolis	792	37.1	21.0	86.0	64.3	52.1	6	97	-18	1113	5699
South Bend	773	33.0	18.1	84.5	62.6	49.4	23	101	-22	1221	6439
IOWA							92	118	-47		
Burlington	694	32.7	16.1	87.6	65.6	51.2	67	111	-27	1259	6114
Des Moines	938	30.1	12.5	88.3	65.6	50.1	4	100	-22	1355	6542
Dubuque	1065	27.3	11.1	83.7	61.5	46.6	14	99	-26	1420	7376
Sioux City	1095	27.9	9.5	89.5	65.2	49.1	5	104	-26	1435	6951
Waterloo	868	26.8	8.9	85.7	61.8	47.2	5	98	-34	1460	7320

State and Station	Precipitation (inches) NORMAL (1931-1960) Wettest month	Driest month	Annual	Extremes Wettest month	Driest month	Maximum in 24 hours	Snow, sleet Mean total January	Seasonal	Ex-treme Maximum in 24 hours	Relative humidity (percent) January 7:00 a.m. EST	1:00 p.m. EST	7:00 p.m. EST	July 7:00 a.m. EST	1:00 p.m. EST	7:00 p.m. EST	Wind Speed (m.p.h.) Mean hourly January	July	Fastest mile	Sunshine (percent of possible) January	July
DELAWARE					0.00	7.83														
Wilmington	5.59	2.91	44.56	12.09	.16	6.24	5.7	21.9	15.6	76	61	70	80	53	67	9.6	7.5	---	---	---
DIST. OF COLUMBIA																				
Washington (U)(1958)	4.49	2.64	41.44	17.45	.14	7.31	5.9	19.4	25.0	73	56	64	78	52	67	7.7	5.7	62	46	64
Washington Nat'l. AP	4.90	2.47	40.78	14.31	T	6.39	4.7	16.9	14.4	69	54	59	76	51	59	10.3	8.4	78	49	64
FLORIDA					.00	38.70														
Apalachicola (U)	8.53	2.44	56.23	22.55	.01	11.71	T	T	1.2	87	69	80	85	72	76	8.4	6.6	67	60	64
Daytona Beach	7.00	1.95	49.90	19.89	.06	9.29	.0	T	T	90	60	80	90	67	81	9.4	7.8	---	---	---
Fort Myers	9.08	1.20	53.34	16.32	.00	10.85	.0	.0	.0	87	60	75	82	57	71	8.5	7.0	---	---	---
Jacksonville(U)(1956)	7.89	1.57	52.40	23.32	T	9.86	----	----	----	--	--	--	--	--	--	---	---	---	---	---
Jacksonville	7.68	1.69	53.36	19.36	.04	10.17	T	.1	1.5	88	56	74	86	57	75	8.5	8.0	82	58	59
Key West (U) (1957)	6.78	1.54	39.57	23.56	T	19.88	.0	.0	.0	84	69	79	77	68	74	10.3	8.2	91	68	69
Key West (Int'l. AP)	6.73	1.53	39.99	18.45	.00	8.89	.0	.0	.0	84	69	78	76	66	72	12.3	10.4	122	70	70
Lakeland (U)	8.30	1.59	51.37	15.67	T	10.12	T	T	T	--	--	--	--	--	--	7.3	5.7	---	60	60
Miami (U) (1961)	7.88	1.73	47.26	25.34	T	15.10	.0	.0	.0	--	--	--	--	--	--	---	---	122	70	61
Miami Beach	7.36	1.65	46.26	18.02	.01	8.35	.0	.0	.0	--	--	--	--	--	--	11.7	10.9	122	67	63
Miami (Int'l. AP)	9.47	1.67	59.76	24.40	.01	9.95	.0	.0	.0	86	56	74	84	64	75	9.2	7.9	---	---	---
Orlando	8.00	1.57	51.37	19.57	T	9.67	T	T	T	89	57	68	91	53	72	9.0	7.7	---	---	---
Pensacola (U) (1961)	7.59	3.84	61.60	18.80	T	9.16	T	.2	2.1	86	64	79	85	64	74	8.1	6.7	91	56	66
Pensacola 1/	7.59	3.40	63.39	18.80	T	9.16	T	.2	2.1	86	64	79	85	64	74	8.1	6.7	91	56	66
Tallahassee	8.05	2.43	56.86	20.12	T	9.26	.0	T	T	87	61	74	93	61	74	---	---	---	---	---
Tampa	8.62	1.46	51.57	20.59	T	12.11	T	T	T	88	57	74	87	62	77	9.2	7.8	---	67	60
West Palm Beach	9.66	2.35	61.70	24.86	.12	15.23	.0	.0	.0	86	58	73	84	62	75	9.9	7.6	---	---	---
GEORGIA					.00	18.00														
Athens	5.10	2.86	48.53	14.98	T	5.54	.4	1.4	5.0	81	58	66	91	59	70	9.5	6.9	---	---	---
Atlanta	5.37	2.44	47.14	15.72	T	5.67	.8	1.7	8.3	76	58	61	91	66	72	11.1	7.6	70	47	62
Augusta	4.50	2.01	39.18	9.91	T	5.98	.1	.4	1.3	85	55	70	88	54	68	6.8	5.8	---	---	---
Columbus	6.01	1.77	48.67	12.53	.00	5.63	T	T	T	85	60	73	87	59	70	8.6	6.0	---	---	---
Macon	5.64	2.01	44.08	11.77	.00	4.60	.3	.3	3.7	83	53	63	87	53	65	8.8	7.4	70	56	64
Rome	5.87	2.93	52.56	17.37	T	7.53	.5	1.9	8.2	81	58	73	88	54	67	---	---	---	---	---
Savannah	6.62	2.05	48.91	20.10	.02	6.36	T	.1	1.0	86	56	70	88	58	75	9.3	7.6	66	55	66
Thomasville (U)(1963)	6.81	2.08	51.01	18.83	T	9.00	T	T	2.0	85	60	70	85	60	78	5.3	4.1	---	54	57
HAWAII					.00	51.35														
Hilo	15.18	6.79	136.62	50.82	.36	15.59	.0	.0	.0	84	80	66	88	82	66	7.7	7.3	---	47	42
Honolulu (U)	3.86	.62	23.96	18.70	.06	17.41	.0	.0	.0	--	--	--	--	--	--	---	---	---	---	---
Honolulu	3.76	.33	21.89	20.79	T	17.07	.0	.0	.0	80	80	61	74	69	56	10.3	13.5	67	65	76
Kahului	3.14	.18	16.33	9.46	.00	5.82	.0	.0	.0	83	83	63	80	73	57	15.3	20.2	---	69	80
Lihue	5.51	1.46	43.00	18.45	.30	11.20	.0	.0	.0	83	83	67	79	75	64	10.5	12.8	73	52	62
IDAHO					.00	7.17														
Boise	1.33	.16	11.43	4.00	.00	2.24	8.0	21.5	13.0	82	75	72	53	34	22	8.6	8.6	61	43	89
Idaho Falls 46W (R)	1.10	.26	7.57	4.42	.00	1.73	6.6	27.5	8.5	--	--	--	--	--	--	5.6	8.0	51	---	---
Idaho Falls 42NW (R)	1.24	.33	7.02	5.04	.00	1.78	----	----	----	--	--	--	--	--	--	4.7	8.1	50	---	---
Lewiston	1.73	.43	13.24	4.80	T	1.73	7.0	18.5	11.9	79	74	71	61	36	23	---	---	---	---	---
Pocatello	1.21	.51	10.85	3.30	.00	1.30	11.8	38.1	10.1	82	75	73	57	30	21	10.5	9.8	72	37	84
Salmon (1960)	1.28	.42	8.64	3.88	.00	1.50	----	----	----	--	--	--	--	--	--	---	---	---	---	---
ILLINOIS					.00	16.17														
Cairo (U)	4.79	2.88	45.23	14.95	T	7.56	2.8	8.8	7.3	80	67	--	84	59	--	9.8	6.5	60	46	77
Chicago (Midway)	4.07	1.60	33.18	14.17	.20	6.24	8.4	37.1	12.5	80	70	75	78	52	55	11.3	7.9	60	43	69
Moline	4.37	1.35	32.79	11.00	.01	6.29	7.0	27.4	9.6	74	64	67	88	59	61	10.4	7.4	77	47	72
Peoria	4.27	1.71	34.84	13.09	.03	5.06	5.3	23.1	9.0	77	69	70	88	60	61	11.2	8.2	75	45	69
Rockford	4.30	1.44	35.62	11.81	.01	5.56	8.5	33.5	10.9	82	73	78	87	56	59	9.4	7.9	---	---	---
Springfield	4.45	1.82	34.83	9.91	.15	5.12	4.1	20.4	8.8	76	67	70	85	59	60	13.2	8.6	75	43	73
INDIANA					.00	10.50														
Evansville	4.31	2.57	41.45	13.50	.01	6.05	3.4	11.3	10.6	79	63	69	88	56	58	9.7	6.5	59	41	77
Fort Wayne	4.17	2.09	35.31	9.72	.14	4.60	6.8	29.9	13.6	79	71	75	83	55	58	11.2	8.1	65	39	71
Indianapolis(U)(1955)	4.18	2.08	39.24	----	----	----	----	----	----	--	--	--	--	--	--	---	---	---	---	---
Indianapolis	4.62	2.28	39.25	12.69	.17	3.90	4.3	19.3	8.0	79	67	70	91	62	64	11.7	7.7	90	40	72
South Bend	3.62	1.88	35.70	9.75	.02	3.31	14.2	60.3	15.0	83	75	80	85	55	59	11.9	8.4	---	---	---
IOWA					.00	12.99														
Burlington	5.01	1.39	34.60	15.10	.06	6.28	7.2	26.0	13.0	80	69	74	85	57	59	11.2	8.0	73	53	77
Des Moines	4.71	1.10	30.37	14.19	.03	5.50	8.7	33.4	19.8	79	70	72	85	61	60	11.9	9.2	76	50	70
Dubuque	4.22	1.40	35.71	13.13	T	6.28	8.8	43.0	15.5	81	70	76	85	58	62	---	---	---	---	---
Sioux City	4.33	.74	24.77	8.67	T	4.28	6.2	32.0	11.4	77	67	70	88	59	56	11.0	8.9	91	58	76
Waterloo	4.83	.92	31.48	8.73	T	4.33	7.1	32.0	12.2	81	72	75	88	61	62	10.6	8.2	---	---	---

State and Station	Annual mean number of days: Sunrise to sunset Clear	Partly cloudy	Cloudy	Precipitation .01 inch or more	Snow, sleet, hail 1.0 inch or more	Thunderstorms	Heavy fog	Temperature Max 90 and above	Min 32 and below	Min Zero and below
DELAWARE										
Wilmington	99	106	160	119	6	30	42	20	103	*
DIST. OF COLUMBIA										
Washington (U)(1958)	125	116	124	124	6	33	12	28	81	*
Washington Nat'l. AP	106	103	156	113	5	29	15	34	80	0
FLORIDA										
Apalachicola (U)	134	112	119	106	*	72	25	17	4	0
Daytona Beach	97	134	134	116	0	83	33	59	6	0
Fort Myers	104	158	103	116	0	99	22	134	1	0
Jacksonville(U)(1956)	---	---	---	122	*	--	--	61	5	0
Jacksonville	99	126	140	116	*	61	34	88	11	0
Key West (U) (1957)	140	157	68	112	0	59	*	33	0	0
Key West (Int'l. AP)	105	166	94	112	0	59	1	59	0	0
Lakeland (U)	99	155	111	121	0	100	19	86	1	0
Miami (U) (1961)	155	96	---	---	--	--	--	--	--	---
Miami Beach	147	121	97	123	0	--	--	14	0	0
Miami (Int'l. AP)	82	172	111	126	0	78	8	63	*	0
Orlando	98	147	120	116	0	80	28	123	2	0
Pensacola (U) (1961)	---	---	---	112	*	65	--	39	9	0
Pensacola 1/	---	---	---	112	*	65	--	39	9	0
Tallahassee	97	130	138	123	0	90	53	89	32	0
Tampa	97	146	122	112	0	91	26	85	2	0
West Palm Beach	73	157	135	132	0	78	8	88	*	0
GEORGIA										
Athens	110	109	146	111	1	50	32	56	51	0
Atlanta	111	109	145	115	*	50	28	19	57	*
Augusta	110	101	154	103	*	56	24	84	55	0
Columbus	114	101	150	110	0	59	19	79	45	0
Macon	118	102	145	111	*	58	24	96	36	0
Rome	105	117	143	122	1	61	26	66	80	*
Savannah	107	114	144	109	*	65	37	71	31	0
Thomasville (U)(1963)	122	119	124	116	*	72	13	77	15	0
HAWAII										
Hilo	28	123	214	285	0	7	0	*	0	0
Honolulu (U)	---	---	---	147	0	--	--	0	0	0
Honolulu	96	170	99	98	0	6	0	1	0	0
Kahului	109	173	83	87	0	5	0	3	0	0
Lihue	57	166	142	206	0	9	0	*	0	0
IDAHO										
Boise	125	90	150	91	8	16	20	41	128	2
Idaho Falls 46W (R)	---	---	---	68	10	13	14	26	211	34
Idaho Falls 42NW (R)	---	---	---	67	--	--	--	31	217	43
Lewiston	94	77	194	103	6	16	21	36	99	3
Pocatello	114	97	154	89	13	25	15	33	162	9
Salmon (1960)	---	---	---	---	--	--	--	--	---	---
ILLINOIS										
Cairo (U)	112	104	149	115	3	53	7	54	65	*
Chicago (Midway)	95	103	167	119	11	36	15	26	123	7
Moline	104	99	162	109	9	47	20	27	137	22
Peoria	104	100	161	108	8	47	20	20	136	16
Rockford	95	104	166	112	12	41	24	19	150	14
Springfield	110	94	161	112	7	50	17	30	124	11
INDIANA										
Evansville	105	101	159	114	4	47	14	54	111	7
Fort Wayne	80	110	175	128	9	43	20	20	135	16
Indianapolis(U)(1955)	---	---	---	---	--	--	--	--	---	---
Indianapolis	92	103	170	122	7	46	21	15	126	11
South Bend	77	103	185	137	21	43	24	17	139	7
IOWA										
Burlington	104	103	158	104	10	53	18	34	128	11
Des Moines	103	96	166	103	11	49	17	17	141	25
Dubuque	95	97	173	109	14	45	28	8	154	19
Sioux City	110	102	153	98	11	46	18	17	151	28
Waterloo	99	105	161	90	10	40	23	16	155	30

See reference notes at end of table.

NORMALS, MEANS AND EXTREMES

State and Station	Elevation ground (feet)	Temperature (°F) NORMAL (1931-1960) January Daily maximum	January Daily minimum	July Daily maximum	July Daily minimum	Annual	Extremes Length, yrs	Record highest	Record lowest	Normal degree days (1931-1960) January	Seasonal
KANSAS							78	121	-40		
Concordia (U)(1961)	1375	37.6	18.6	91.2	68.7	54.5	77	116	-25	1144	5323
Concordia	1470	37.3	17.6	92.1	68.4	54.1	3	108	-13	1163	5479
Dodge City	2582	42.4	19.7	92.8	67.5	55.4	21	107	-15	1051	4986
Goodland	3645	40.9	13.9	91.8	61.3	50.8	44	111	-26	1166	6141
Topeka	876	38.5	19.0	91.6	68.1	54.9	17	109	-13	1122	5182
Wichita	1321	41.6	22.3	92.4	69.4	57.1	12	113	-12	1023	4620
KENTUCKY							76	114	-34		
Lexington	966	42.9	26.1	88.2	66.5	55.6	18	103	-15	946	4683
Louisville(U)(1955)	457	43.2	27.9	87.9	69.3	57.3	f	f	f	911	4279
Louisville	477	43.5	26.5	88.5	66.6	55.7	4	101	-20	930	4660
LOUISIANA							74	114	-16		
Alexandria	92	60.7	39.9	91.8	72.6	66.4	5	104	5	471	1921
Baton Rouge	64	63.5	42.3	92.0	73.4	68.1	6	102	10	409	1560
Lake Charles	9	62.3	45.0	90.5	74.0	68.6	2	103	15	381	1459
New Orleans(U)(1961)	9	63.5	48.3	90.3	75.8	70.4	47	102	17	341	1175
New Orleans(Audubon)	6	64.8	46.2	91.4	73.7	69.5	2	97	17	344	1254
New Orleans(Int'l.AP)	3	64.4	44.8	90.6	72.6	68.6	18	100	14	363	1385
Shreveport	252	56.7	38.3	94.2	73.2	66.1	12	107	3	552	2184
MAINE							77	105	-48		
Caribou	624	19.8	1.1	75.1	53.9	38.4	25	96	-41	1690	9767
Portland	61	31.8	11.7	79.5	56.7	45.0	24	100	-39	1339	7511
MARYLAND							69	109	-40		
Baltimore (U)	14	44.1	30.4	87.4	70.7	57.6	94	107	-7	859	4111
Baltimore (Int'l.AP)	148	44.2	25.3	87.2	66.4	55.2	14	102	-7	936	4654
Frederick (1961)	294	41.4	24.0	87.9	65.4	54.7	12	102	-11	1001	4854
MASSACHUSETTS							77	106	-34		
Blue Hill Obs.	629	34.4	19.5	80.2	61.6	48.7	79	101	-21	1178	6368
Boston	15	36.8	23.0	81.9	65.4	51.4	12	100	-12	1088	5634
Nantucket	43	39.2	26.8	74.3	61.7	49.5	18	95	-3	992	5891
Pittsfield	1170	30.5	13.1	79.2	56.4	44.9	26	95	-25	1339	7578
Worcester	986	31.2	16.8	79.0	60.5	46.8	9	94	-19	1271	6969
MICHIGAN							78	112	-51		
Alpena (U) (1959)	587	28.1	14.2	76.8	57.9	43.5	45	104	-28	1358	8073
Alpena	689	28.9	10.4	80.4	51.4	42.1	6	97	-28	1404	8506
Detroit (City AP)	619	33.0	20.7	83.9	64.8	50.1	31	105	-16	1181	6232
Detroit (Metro. AP)	633	33.9	19.1	84.7	61.1	49.7	6	97	-13	1194	6293
Detroit (Willow Run)	711	33.4	19.8	86.0	62.4	50.0	4	99	-13	1190	6258
Escanaba (U) (1961)	594	25.0	10.0	75.3	58.4	41.9	52	100	-31	1473	8657
Flint	766	30.0	14.2	82.8	57.3	46.0	7	97	-22	1330	7377
Grand Rapids(U)(1956)	638	31.8	19.7	84.0	63.2	49.3	f	f	f	1215	6474
Grand Rapids	784	31.5	17.3	83.6	60.1	47.8	24	102	-22	1259	6894
Lansing	841	31.1	17.4	83.4	59.9	47.6	5	94	-15	1262	6909
Marquette (U)	677	25.7	13.2	75.7	57.6	42.6	28	102	-21	1411	8393
Muskegon	627	32.3	19.7	81.9	60.6	48.2	5	99	-12	1209	6696
Sault Ste. Marie	721	23.1	8.4	75.6	53.5	40.6	24	98	-25	1525	9048
MINNESOTA							78	114	-59		
Duluth (U) (1959)	1162	18.7	1.9	75.8	55.8	39.2	84	106	-41	1696	9574
Duluth	1428	17.9	-.6	77.1	53.9	37.9	4	95	-33	1745	10000
International Falls	1179	14.2	-8.1	78.4	52.8	36.2	25	98	-41	1919	10606
Minneapolis	834	22.4	2.3	83.9	60.7	43.7	5	99	-32	1631	8382
Rochester	1297	23.0	4.2	84.0	60.5	44.0	5	97	-31	1593	8295
St. Cloud	1034	20.4	-.2	83.1	58.9	42.0	25	103	-40	1702	8879
MISSISSIPPI							76	115	-16		
Jackson	310	58.3	37.6	91.9	71.2	65.1	7	100	-1	546	2239
Meridian	290	59.4	36.8	92.6	70.3	64.8	18	104	0	543	2289
Vicksburg (U)	234	57.4	40.5	90.4	73.2	65.9	27	101	2	512	2041
MISSOURI							77	118	-40		
Columbia	778	39.3	21.3	89.7	67.6	55.0	26	113	-18	1076	5046
Kansas City	742	39.9	23.4	91.9	71.0	56.8	5	104	-9	1032	4711
St. Joseph	811	37.2	17.1	91.0	67.8	53.8	18	107	-13	1172	5484
St. Louis (U)(1958)	465	41.0	25.6	89.6	71.6	57.3	23	112	-12	983	4469
St. Louis	535	40.2	23.5	89.2	66.9	55.3	4	105	-11	1026	4900
Springfield	1268	43.4	23.8	90.3	67.2	56.5	5	102	-10	973	4561

State and Station	Precipitation (inches) NORMAL (1931-1960) Wettest month	Driest month	Annual	Extremes Wettest month	Driest month	Maximum in 24 hours	Snow, sleet Mean total January	Seasonal	Extreme Maximum in 24 hours	Relative humidity (percent) January 7:00 a.m. EST	1:00 p.m. EST	7:00 p.m. EST	July 7:00 a.m. EST	1:00 p.m. EST	7:00 p.m. EST
KANSAS															
Concordia (U)(1961)	4.23	0.59	25.40	13.74	0.00 T	12.59 6.46	4.5	21.4	17.2	78	63	68	67	47	48
Concordia	4.20	.70	25.39	8.51	.03	2.72	5.0	12.6	3.8	75	59	59	77	49	46
Dodge City	3.22	.47	19.25	9.13	T	4.17	4.2	18.6	9.3	79	59	62	79	47	43
Goodland	2.67	.39	16.50	8.09	.00	2.95	5.5	32.9	15.2	76	54	61	78	43	41
Topeka	4.51	1.02	32.36	12.02	T	4.66	5.9	21.2	9.3	78	64	67	87	57	56
Wichita	4.21	.81	28.41	10.46	T	4.70	4.8	15.7	13.0	80	63	65	80	50	46
KENTUCKY															
Lexington	4.94	2.28	44.73	16.65	.00 .24	10.40 5.88	5.1	14.2	9.5	84	71	77	85	56	66
Louisville(U)(1955)	4.67	2.48	41.60	f	f	f	f	f	f	f	f	f	f	f	f
Louisville	4.59	2.25	41.32	14.91	.23	6.97	5.0	15.9	9.5	79	63	64	91	61	63
LOUISIANA															
Alexandria	5.73	3.13	56.69	12.06	.00 .35	22.00 6.18	.4	.5	7.3	87	64	70	97	64	72
Baton Rouge	6.27	2.45	54.46	13.23	.09	8.38	T	.2	1.0	86	66	67	92	63	71
Lake Charles	7.29	3.06	56.04	17.36	T	14.10	T	T	T	84	68	74	95	60	69
New Orleans(U)(1961)	7.09	3.66	63.54	25.11	T	14.01	T	.1	1.3	†85	†67	†73	†84	†63	†71
New Orleans(Audubon)	8.12	3.15	62.96	10.15	.00	4.03	.0	2.3	4.5	80	68	72	96	72	80
New Orleans(Int'l.AP)	6.72	2.84	53.90	19.09	.00	9.86	T	.3	2.7	87	67	73	92	66	74
Shreveport	4.94	2.28	46.28	12.39	.00	7.17	.5	1.1	3.5	82	63	64	90	55	56
MAINE															
Caribou	4.07	2.02	36.31	8.45	.00 .12	7.72 6.23	22.2	107.9	18.2	74	68	73	83	58	72
Portland	4.37	2.42	42.85	12.27	.26	7.71	19.0	72.1	21.0	80	64	73	80	59	76
MARYLAND															
Baltimore (U)	4.60	2.98	44.21	17.69	.00 .05	14.75 7.82	6.1	22.7	24.5	72	58	66	71	52	65
Baltimore (Int'l.AP)	5.19	2.89	43.05	18.35	T	7.82	5.5	23.6	15.5	74	58	65	81	53	65
Frederick (1961)	4.03	2.58	40.23	11.26	.15	5.56	5.2	22.0	16.0	--	64	--	--	57	--
MASSACHUSETTS															
Blue Hill Obs.	4.54	3.27	47.50	18.78	.00 .06	11.14 9.93	15.4	59.7	27.2	77	63	69	81	57	75
Boston	4.22	2.88	42.77	17.09	.35	8.40	12.4	41.1	19.4	69	58	63	72	54	65
Nantucket	4.54	2.71	43.66	12.92	.01	4.48	8.1	34.9	20.1	80	72	76	86	74	89
Pittsfield	4.89	2.51	44.42	10.32	.42	4.25	18.3	76.2	14.5	--	--	--	--	--	--
Worcester	4.26	2.92	45.41	8.56	.83	4.79	16.4	79.5	24.0	73	60	67	75	58	69
MICHIGAN															
Alpena (U) (1959)	3.20	1.45	26.63	7.43	.00 .16	9.91 4.40	16.0	64.4	16.7	80	70	76	77	61	68
Alpena	3.61	1.61	29.92	5.99	.16	2.54	15.8	70.9	11.5	78	68	72	83	51	60
Detroit (City AP)	3.53	2.05	30.95	8.05	.23	3.72	7.9	31.7	9.8	80	70	75	75	51	55
Detroit (Metro. AP)	3.54	1.92	30.80	7.70	.27	3.21	7.0	34.0	6.3	79	69	73	83	51	57
Detroit (Willow Run)	3.48	1.94	30.67	8.71	.25	4.78	7.5	32.0	8.0	82	73	76	86	50	53
Escanaba (U) (1961)	3.22	1.37	28.08	9.93	.07	5.05	13.5	55.7	14.5	78	70	74	80	65	69
Flint	3.39	1.70	30.14	8.68	.07	6.04	9.8	38.9	13.4	83	73	79	86	50	54
Grand Rapids(U)(1956)	3.47	1.73	31.35	f	f	f	f	f	f	f	f	f	f	f	f
Grand Rapids	3.46	1.75	31.19	9.15	.03	4.26	21.3	72.1	12.0	86	77	81	83	51	55
Lansing	3.73	1.95	31.18	6.09	.35	4.35	9.6	43.4	11.0	79	68	73	82	53	53
Marquette (U)	3.46	1.65	31.61	10.20	.21	4.65	19.1	103.2	16.1	75	68	72	76	63	66
Muskegon	3.06	1.80	30.07	8.54	.19	3.51	25.3	84.3	20.1	82	77	78	85	59	59
Sault Ste. Marie	3.81	1.50	31.22	6.93	.16	3.58	21.7	101.5	14.3	84	77	82	88	61	67
MINNESOTA															
Duluth (U) (1959)	3.72	1.00	26.67	11.52	.00 .07	10.75 5.35	11.1	56.0	23.0	78	74	74	87	61	66
Duluth	4.27	.96	28.97	8.48	.13	4.05	14.7	73.3	25.4	74	65	67	85	58	59
International Falls	3.87	.71	24.69	11.26	.10	4.82	9.7	57.1	13.9	73	68	70	88	57	58
Minneapolis	4.00	.70	24.78	8.03	T	4.12	6.1	41.3	16.2	76	67	69	87	57	57
Rochester	4.46	.80	28.46	5.99	.04	3.28	5.5	46.4	8.4	78	73	75	86	61	61
St. Cloud	4.49	.72	25.92	9.34	.01	4.62	6.4	40.8	12.2	77	70	72	87	55	56
MISSISSIPPI															
Jackson	5.57	1.94	49.33	11.16	.00 .04	12.35 5.29	.6	2.3	9.1	83	61	67	90	57	63
Meridian	6.32	2.22	53.13	16.82	T	6.95	.6	1.8	15.0	89	64	71	93	57	69
Vicksburg (U)	5.73	2.04	49.50	16.58	T	9.97	1.0	1.7	10.0	83	62	70	93	62	71
MISSOURI															
Columbia	4.70	1.71	36.96	13.30	.00 .09	12.25 4.05	4.5	19.5	10.3	79	65	69	85	55	56
Kansas City	4.57	1.24	34.07	11.94	.04	5.96	6.0	20.6	12.8	71	58	57	79	59	54
St. Joseph	5.93	1.09	34.18	13.73	.03	7.12	6.2	21.5	11.3	79	66	70	88	59	59
St. Louis (U)(1958)	4.10	1.88	37.86	20.45	.03	8.78	3.8	14.6	12.4	b77	b65	b68	b73	b50	b55
St. Louis	4.29	1.97	35.31	7.97	.25	3.29	4.4	17.7	11.2	77	60	64	85	60	58
Springfield	5.28	1.96	41.08	18.75	.08	6.85	3.1	12.6	12.5	75	56	61	89	60	60

State and Station	Wind Speed (m.p.h.) Mean hourly January	July	Fastest mile	Sunshine (percent of possible) January	July	Annual mean number of days Sunrise to sunset Clear	Partly cloudy	Cloudy	Precipitation .01 inch or more	Snow, sleet .1 inch or more	Thunderstorms	Heavy fog	Temperature Max 90 and above	Min 32 and below	Min Zero and below
KANSAS															
Concordia (U)(1961)	7.7	7.0	65	60	78	142	126	97	86	7	45	10	48	118	6
Concordia	13.1	11.9	63	65	73	154	86	125	88	6	66	17	63	129	12
Dodge City	14.2	13.5	78	70	77	142	106	117	77	6	55	24	61	127	3
Goodland	12.3	12.0	--	--	--	144	125	96	75	11	52	29	59	157	8
Topeka	11.0	9.7	81	54	66	118	96	151	94	7	59	14	51	127	5
Wichita	12.9	11.4	66	61	74	130	97	138	83	5	57	18	67	112	2
KENTUCKY															
Lexington	12.4	7.7	--	--	--	102	105	158	129	5	49	18	28	98	2
Louisville(U)(1955)	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f
Louisville	9.7	6.5	61	38	66	101	102	162	122	5	45	10	28	101	4
LOUISIANA															
Alexandria	6.6	4.5	--	--	--	115	105	145	102	*	74	38	77	51	0
Baton Rouge	9.8	6.2	--	--	--	100	122	143	105	*	74	37	88	28	0
Lake Charles	11.9	6.8	--	--	--	95	133	137	84	0	66	52	82	20	0
New Orleans(U)(1961)	7.5	5.6	98	49	61	110	135	120	119	*	74	15	68	4	0
New Orleans(Audubon)	10.8	6.3	26	37	47	99	129	137	115	1	79	18	84	14	0
New Orleans(Int'l.AP)	9.8	6.5	--	--	--	114	123	128	112	*	73	32	72	10	0
Shreveport	10.7	8.4	--	52	76	127	99	139	95	*	55	20	96	33	0
MAINE															
Caribou	12.4	9.8	--	--	--	57	103	205	161	30	20	27	2	191	43
Portland	9.5	7.7	76	55	67	111	98	156	126	18	19	53	6	162	15
MARYLAND															
Baltimore (U)	10.3	8.8	66	48	65	121	123	121	122	6	32	15	26	71	*
Baltimore (Int'l.AP)	10.5	8.9	80	51	68	111	112	142	113	9	28	31	30	101	1
Frederick (1961)	---	---	--	--	--	---	---	---	123	8	--	9	28	119	1
MASSACHUSETTS															
Blue Hill Obs.	17.4	13.0	121	44	57	---	---	---	136	16	--	---	5	132	4
Boston	14.7	11.0	65	52	65	99	107	159	130	11	20	24	14	96	1
Nantucket	14.7	11.3	73	41	62	87	91	187	126	8	21	99	*	94	*
Pittsfield	---	---	--	--	--	57	127	181	152	23	28	45	3	162	14
Worcester	13.4	9.2	--	--	--	92	112	161	129	19	20	84	2	147	7
MICHIGAN															
Alpena (U) (1959)	11.7	9.2	61	29	70	82	119	164	144	19	29	20	3	155	10
Alpena	7.6	6.4	43	45	72	76	107	182	139	21	32	19	6	187	31
Detroit (City AP)	11.5	8.2	77	32	70	81	108	176	132	11	33	11	15	126	2
Detroit (Metro. AP)	10.8	8.2	--	--	--	78	109	178	131	13	36	26	14	143	8
Detroit (Willow Run)	11.7	8.7	--	--	--	77	108	180	121	11	34	29	21	136	7
Escanaba (U) (1961)	10.2	9.0	68	41	66	102	108	155	129	18	33	19	*	163	20
Flint	11.9	8.1	--	--	--	68	108	189	129	13	33	20	5	153	18
Grand Rapids(U)(1956)	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f
Grand Rapids	10.9	8.1	65	28	69	72	95	198	136	25	36	18	13	148	6
Lansing	12.8	9.3	63	31	72	88	99	178	137	14	34	24	5	158	18
Marquette (U)	8.9	7.1	59	33	66	62	104	199	156	31	28	17	5	159	10
Muskegon	12.0	8.4	--	--	--	81	91	193	139	28	37	24	5	139	6
Sault Ste. Marie	10.2	8.4	--	33	63	66	94	205	161	33	30	47	2	177	27
MINNESOTA															
Duluth (U) (1959)	12.3	10.5	75	46	67	110	119	136	126	16	31	37	2	173	41
Duluth	12.5	10.3	75	51	67	79	101	185	132	22	35	52	2	180	52
International Falls	9.2	7.5	--	--	--	83	104	178	134	17	31	14	4	198	67
Minneapolis	10.5	9.3	92	51	69	103	101	161	111	12	35	11	15	159	34
Rochester	11.3	9.6	--	--	--	94	98	173	112	14	46	36	8	165	34
St. Cloud	8.2	7.0	--	--	--	97	105	163	107	13	36	20	11	178	44
MISSISSIPPI															
Jackson	7.7	4.9	57	44	67	107	110	148	116	1	72	15	83	43	*
Meridian	7.4	5.4	--	--	--	124	109	132	104	*	58	21	92	50	*
Vicksburg (U)	9.3	6.7	56	44	66	109	117	139	104	1	62	12	66	22	0
MISSOURI															
Columbia	11.1	8.0	63	50	74	118	99	148	106	6	55	15	42	109	4
Kansas City	9.9	8.9	72	52	76	120	103	142	99	6	50	13	45	96	5
St. Joseph	11.6	8.4	--	46	62	128	96	141	96	6	58	19	44	128	8
St. Louis (U)(1958)	12.6	9.5	82	45	72	128	106	131	110	6	51	8	46	83	2
St. Louis	10.2	7.5	60	53	70	107	102	156	103	8	41	10	36	107	6
Springfield	12.9	9.8	66	49	71	114	101	150	106	5	58	20	41	106	4

NORMALS, MEANS AND EXTREMES

State and Station	Elevation ground (feet)	Temperature (°F) NORMAL (1931-1960) January Daily maximum	January Daily minimum	July Daily maximum	July Daily minimum	Annual	Extremes Length, yrs.	Record highest	Record lowest	Normal degree days (1931-1960) January	Seasonal
MONTANA							98	117	-70		
Billings	3567	33.2	13.1	88.5	60.8	47.5	6	105	-26	1296	7049
Butte (1961)	5530	28.0	.4	79.8	45.0	38.3	29	100	-52	1575	9760
Glasgow	2277	19.6	-.1	85.3	56.1	41.4	8	104	-37	1711	8996
Great Falls	3662	31.6	12.5	84.7	54.1	44.7	4	106	-36	1349	7750
Havre (U) (1961)	2852	26.3	6.1	85.9	56.6	43.6	57	107	-57	1513	8213
Havre	2582	24.2	3.6	85.3	54.6	42.1	4	111	-35	1584	8700
Helena	3828	28.8	8.4	84.4	52.3	43.4	22	103	-42	1438	8129
Kalispell	2965	27.6	12.0	83.7	47.6	42.8	5	105	-29	1401	8191
Miles City	2629	27.4	5.6	90.2	60.4	45.8	27	110	-37	1504	7723
Missoula	3190	28.0	10.3	85.0	49.0	43.2	5	105	-30	1420	8125
NEBRASKA							89	118	-47		
Grand Island	1841	34.1	11.0	90.7	63.7	50.1	4	106	-28	1314	6530
Lincoln (U)	1150	34.0	16.2	92.3	67.9	52.8	5	107	-15	1237	5864
Norfolk	1544	30.1	8.6	89.2	64.7	48.9	19	113	-26	1414	6979
North Platte	2775	37.3	10.7	90.0	62.2	49.2	12	112	-23	1271	6684
Omaha	978	31.7	12.9	89.7	67.3	51.5	9	107	-15	1324	6218
Scottsbluff	3957	38.7	11.9	89.2	60.1	48.7	21	107	-32	1231	6673
Valentine	2587	33.3	6.7	90.6	60.2	46.9	10	109	-29	1395	7425
NEVADA							76	122	-50		
Elko	5050	35.1	10.0	90.8	48.3	45.4	33	104	-43	1314	7433
Ely	6257	36.8	8.7	86.8	48.1	44.3	26	99	-27	1308	7733
Las Vegas	2162	54.2	32.0	103.5	75.8	65.7	5	113	8	688	2709
Reno	4404	44.6	16.2	89.4	45.9	48.4	22	104	-16	1073	6332
Winnemucca	4299	39.7	14.7	92.0	49.9	47.4	15	105	-24	1172	6761
NEW HAMPSHIRE							88	106	-46		
Concord	339	31.7	10.6	82.8	56.4	45.6	23	100	-37	1358	7383
Mt. Washington Obs.	6262	14.7	-2.2	54.9	43.3	27.0	32	71	-47	1820	13817
NEW JERSEY							80	110	-34		
Atlantic City(U)(1956)	8	42.4	29.1	79.3	67.9	54.1	85	104	-9	905	4741
Atlantic City(NAFExp.)	64	42.9	26.6	83.8	66.3	54.1	20	102	-8	936	4812
Newark	11	40.5	26.0	87.1	67.5	54.6	23	105	-7	983	4859
Trenton (U)	56	40.0	26.2	85.2	66.7	53.9	32	106	-14	989	4980
NEW MEXICO							73	116	-50		
Albuquerque	5311	46.4	23.5	91.2	65.8	56.6	5	103	-7	930	4348
Clayton	4969	46.2	20.2	88.4	60.6	53.1	20	102	-21	986	5158
Raton	6379	45.3	12.6	86.6	52.9	48.9	20	98	-31	1116	6228
Roswell	3617	55.1	20.6	95.4	61.7	58.5	5	107	-24	840	3793
Silver City	5371	52.6	26.4	90.3	63.9	58.2	4	102	-9	791	3705
NEW YORK							75	108	-52		
Albany	277	31.0	14.4	83.7	60.5	47.6	18	100	-26	1311	6875
Binghampton (U)	858	34.2	18.9	83.1	60.4	48.8	74	103	-28	1190	6451
Binghampton	1590	30.1	17.4	78.3	58.5	45.8	13	96	-20	1277	7286
Buffalo	705	30.8	18.2	80.1	59.4	46.7	4	94	-20	1256	7062
New York (U) (1960)	10	39.9	25.8	82.3	66.9	53.4	90	102	-14	995	5050
New York Central Pk	132	39.5	26.9	85.3	68.2	54.5	96	106	-15	986	4871
New York(LaGuardia)	11	39.6	27.5	84.8	68.8	54.7	3	97	-2	973	4811
New York(J.F.Kendy.AP)	12	38.0	25.6	84.7	67.1	53.2	4	102	-2	1029	5219
Rochester	543	32.6	17.8	82.5	60.7	48.0	22	100	-16	1234	6748
Syracuse	410	31.5	16.5	82.4	62.0	48.0	13	98	-24	1271	6756
NORTH CAROLINA							78	109	-23		
Asheville (U)	2203	49.0	30.4	85.0	63.7	56.5	34	99	-7	784	4042
Cape Hatteras (R)	7	53.2	39.9	83.8	72.2	62.2	7	94	14	580	2612
Charlotte	735	51.4	34.0	88.8	69.5	60.8	4	100	2	691	3191
Greensboro	897	49.6	29.8	87.7	66.9	58.2	34	102	-7	784	3805
Raleigh	434	51.9	31.3	88.1	67.6	59.5	19	105	4	725	3393
Wilmington	28	58.4	37.3	89.0	70.9	63.8	11	104	10	546	2347
Winston-Salem	963	49.8	31.5	88.2	67.8	59.1	10	100	1	753	3595
NORTH DAKOTA							73	121	-60		
Bismarck	1647	19.6	.1	85.7	57.7	42.2	5	108	-38	1708	8851
Devils Lake(U)(1961)	1471	14.2	-4.7	81.7	56.9	38.7	58	112	-46	1866	9940
Fargo	896	17.3	-2.8	83.8	59.0	41.1	5	100	-34	1789	9226
Williston (U) (1961)	1877	19.8	.2	83.5	58.2	41.3	46	110	-50	1705	9068
Williston	1899	19.4	-2.9	85.9	56.7	40.9	3	103	-41	1758	9243

State and Station	Precipitation (inches) NORMAL (1931-1960) Wettest month	Driest month	Annual	Extremes Wettest month	Driest month	Maximum in 24 hours	Snow, sleet Mean total January	Seasonal	Extreme Maximum in 24 hours
MONTANA									
Billings	2.55	0.54	13.23	7.64	0.00 T	10.10 2.83	8.2	54.5	23.7
Butte (1961)	2.28	.55	12.69	5.40	T	2.02	7.1	51.0	13.0
Glasgow	2.98	.41	12.27	5.36	.03	3.98	3.9	22.1	5.0
Great Falls	2.90	.60	14.07	8.13	T	3.20	8.7	53.8	11.0
Havre (U) (1961)	2.98	.39	12.31	7.09	T	2.94	7.3	37.4	22.9
Havre	2.73	.43	11.89	3.36	.05	1.66	4.0	22.2	4.5
Helena	2.23	.43	10.85	4.74	.02	2.06	8.1	47.8	21.5
Kalispell	2.21	.96	15.42	4.44	T	1.99	18.9	68.1	15.4
Miles City	2.71	.37	12.17	9.78	T	2.71	5.9	29.4	10.5
Missoula	1.91	.72	12.83	4.19	.02	1.82	12.3	47.6	11.2
NEBRASKA									
Grand Island	3.85	.56	21.85	9.60	.00	13.15 5.41	5.9	28.2	8.7
Lincoln (U)	4.50	.90	27.43	11.40	.05	5.38	6.8	28.5	10.4
Norfolk	4.26	.73	23.95	9.11	T	3.46	5.5	29.4	8.3
North Platte	3.25	.40	18.27	8.01	T	3.61	4.3	32.4	9.7
Omaha	4.53	.80	27.56	10.81	T	3.62	8.4	32.5	13.7
Scottsbluff	3.10	.29	14.38	8.33	T	3.74	6.1	37.6	12.1
Valentine	3.11	.34	17.30	8.96	T	3.19	3.6	23.5	8.2
NEVADA									
Elko	1.16	.30	9.05	3.35	.00	7.13 1.62	10.8	37.6	16.7
Ely	.95	.49	8.33	3.53	.00	1.50	8.8	45.8	13.1
Las Vegas	.53	.04	3.90	2.59	.00	2.59	1.2	1.5	5.0
Reno	1.19	.17	7.15	5.25	.00	2.37	6.3	24.8	16.9
Winnemucca	1.05	.15	8.63	2.86	.00	1.79	7.0	24.2	9.9
NEW HAMPSHIRE									
Concord	3.75	2.48	38.80	10.10	.00	8.00 4.47	18.0	61.8	19.0
Mt. Washington Obs.	7.00	5.21	74.09	18.23	.75	7.03	29.5	198.6	32.0
NEW JERSEY									
Atlantic City(U)(1956)	4.72	2.98	41.77	14.87	.00	14.81 9.21	4.2	14.6	18.0
Atlantic City(NAFExp.)	4.90	2.83	42.36	13.09	.01	6.46	4.9	15.3	14.4
Newark	4.43	2.80	42.38	11.84	.10	4.17	7.1	29.8	26.0
Trenton (U)	4.77	2.59	41.28	14.10	.05	4.85	5.3	22.7	16.6
NEW MEXICO									
Albuquerque	1.33	.38	8.13	3.25	.00	11.28 1.92	2.0	10.1	14.2
Clayton	2.74	.33	14.51	7.77	.00	4.67	3.5	19.1	12.7
Raton	2.63	.26	14.75	7.61	.00	3.97	4.9	24.9	10.1
Roswell	1.82	.34	11.62	5.64	.00	3.37	3.2	10.2	15.3
Silver City	2.40	.28	10.76	4.47	.00	2.08	2.5	7.2	6.0
NEW YORK									
Albany	3.58	2.20	35.08	8.96	.00	11.17 4.08	16.2	62.3	17.9
Binghampton (U)	3.81	2.38	36.68	9.59	.20	4.55	12.6	51.8	21.0
Binghampton	3.85	2.18	36.24	9.46	.16	3.88	20.9	90.1	23.0
Buffalo	3.60	2.54	35.65	9.13	.26	3.88	25.6	100.0	19.9
New York (U) (1960)	4.34	3.04	42.03	14.51	.11	9.40	7.3	30.1	25.8
New York Central Pk	4.44	2.84	42.37	16.85	.11	11.17	7.7	29.9	26.4
New York(LaGuardia)	5.08	3.09	44.22	16.05	.02	7.11	6.8	30.4	22.8
New York(J.F.Kendy.AP)	4.97	2.93	43.93	17.41	.03	6.59	7.3	29.5	18.0
Rochester	3.01	2.38	31.50	9.70	T	3.13	19.2	82.1	18.7
Syracuse	3.60	2.84	37.60	8.41	.22	4.27	25.0	108.5	21.4
NORTH CAROLINA									
Asheville (U)	4.31	2.22	37.88	13.75	.00	22.22 6.78	2.5	12.2	15.8
Cape Hatteras (R)	6.42	2.99	54.47	14.63	T	8.11	.5	2.5	7.0
Charlotte	4.88	2.53	43.38	10.89	.45	4.84	1.7	19.3	8.0
Greensboro	4.79	2.68	42.16	13.26	T	7.49	2.8	8.0	14.3
Raleigh	5.49	2.71	43.58	12.94	.13	5.20	2.5	6.7	9.1
Wilmington	7.68	2.85	51.29	15.51	.44	8.24	.1	1.3	5.3
Winston-Salem	4.63	2.78	44.13	10.86	.17	3.60	3.2	9.2	10.9
NORTH DAKOTA									
Bismarck	3.40	.36	15.15	8.29	.00 T	7.70 3.25	6.5	35.9	13.5
Devils Lake(U)(1961)	3.18	.40	17.61	8.55	T	4.82	6.2	35.4	13.4
Fargo	3.04	.51	18.45	8.52	.02	4.72	5.8	32.0	11.2
Williston (U) (1961)	3.59	.46	14.66	7.88	T	3.06	5.5	32.9	10.6
Williston	3.31	.48	13.70	6.20	T	5.03	4.4	34.0	5.7

State and Station	Relative humidity (percent) January 7:00 a.m. EST	1:00 p.m. EST	7:00 p.m. EST	July 7:00 a.m. EST	1:00 p.m. EST	7:00 p.m. EST	Wind Speed (m.p.h.) Mean hourly January	July	Fastest mile	Sunshine (percent of possible) January	July
MONTANA											
Billings	63	58	53	60	38	29	13.0	9.8	73	52	79
Butte (1961)	--	--	--	--	--	--	6.9	8.0	--	--	--
Glasgow	83	78	80	70	39	30	---	---	--	--	--
Great Falls	65	59	60	67	36	27	16.8	10.7	82	52	80
Havre (U) (1961)	82	71	--	74	38	--	8.8	7.2	70	49	78
Havre	72	66	--	71	36	--	10.8	8.3	71	54	81
Helena	72	68	66	71	41	32	6.8	8.0	73	52	79
Kalispell	--	82	--	--	40	--	6.2	6.0	--	--	--
Miles City	72	66	64	68	37	30	9.2	9.7	--	--	--
Missoula	83	81	76	81	45	32	5.0	6.6	72	30	80
NEBRASKA											
Grand Island	76	58	63	86	54	51	11.6	11.1	--	--	--
Lincoln (U)	--	--	--	--	--	--	9.8	9.4	64	61	75
Norfolk	77	63	68	84	54	51	---	---	--	--	--
North Platte	80	62	65	85	49	44	9.7	10.2	72	63	75
Omaha	78	66	68	85	54	46	11.4	9.4	73	55	76
Scottsbluff	72	55	58	78	45	39	10.6	9.7	--	--	--
Valentine	81	68	66	84	50	42	10.1	10.1	72	71	77
NEVADA											
Elko	78	72	63	54	24	18	5.4	6.3	--	--	--
Ely	77	59	55	47	21	20	11.0	10.7	74	64	81
Las Vegas	46	33	23	24	15	11	6.8	10.2	--	78	86
Reno	81	67	52	72	26	19	6.0	6.5	59	66	92
Winnemucca	78	66	58	44	20	14	7.7	8.2	66	47	86
NEW HAMPSHIRE											
Concord	78	59	70	80	50	67	7.3	5.5	72	49	61
Mt. Washington Obs.	82	83	82	91	87	91	46.5	25.1	231	34	31
NEW JERSEY											
Atlantic City(U)(1956)	79	68	74	81	72	82	16.2	13.3	91	51	67
Atlantic City(NAFExp.)	77	58	69	83	55	68	12.8	9.5	--	60	64
Newark	72	58	64	74	51	63	11.2	8.8	--	--	--
Trenton (U)	--	--	--	--	--	--	9.8	7.8	64	50	67
NEW MEXICO											
Albuquerque	66	48	37	60	35	27	7.9	9.0	90	71	76
Clayton	63	42	49	76	41	42	---	---	--	--	--
Raton	--	45	--	--	37	--	---	---	--	--	--
Roswell	73	46	39	74	39	33	8.5	9.5	75	86	80
Silver City	--	43	39	--	36	36	---	---	--	--	--
NEW YORK											
Albany	78	65	73	77	50	62	9.7	7.3	71	45	64
Binghampton (U)	--	--	--	--	--	--	---	---	--	--	--
Binghampton	82	74	76	85	57	65	12.0	8.5	72	35	66
Buffalo	74	70	74	80	56	63	14.8	10.9	91	34	70
New York (U) (1960)	74	62	66	76	a58	67	16.4	14.5	113	51	65
New York Central Pk	68	61	61	76	56	64	11.0	7.8	70	50	66
New York(LaGuardia)	67	59	61	75	54	63	14.7	10.5	70	--	--
New York(J.F.Kendy.AP)	69	57	66	71	55	68	13.4	10.9	--	--	--
Rochester	82	73	79	81	51	60	11.6	7.9	73	36	71
Syracuse	77	69	74	77	52	60	10.7	8.5	63	36	68
NORTH CAROLINA											
Asheville (U)	81	59	66	89	57	70	9.4	5.6	52	48	60
Cape Hatteras (R)	80	67	77	85	70	83	12.1	10.3	72	63	70
Charlotte	78	52	59	90	58	68	8.2	6.7	59	55	69
Greensboro	82	58	70	86	57	72	8.3	6.7	63	51	64
Raleigh	81	56	68	87	56	72	8.3	6.6	--	58	64
Wilmington	84	58	75	88	62	78	10.3	9.1	88	58	63
Winston-Salem	72	52	59	84	57	67	9.3	7.4	--	--	--
NORTH DAKOTA											
Bismarck	71	64	65	80	48	42	10.2	9.8	72	55	76
Devils Lake(U)(1961)	76	72	76	86	53	52	9.7	8.4	57	53	71
Fargo	70	67	69	86	55	54	13.5	11.0	88	50	69
Williston (U) (1961)	74	67	69	77	45	41	6.8	6.9	60	52	78
Williston	74	66	67	85	49	43	10.3	9.3	70	53	73

State and Station	Annual mean number of days: Sunrise to sunset Clear	Partly cloudy	Cloudy	Precipitation .01 inch or more	Snow, sleet, hail 1.0 inch or more	Thunderstorms	Heavy fog	Temperature Max 90 and above	Min 32 and below	Zero and below
MONTANA										
Billings	92	121	152	93	19	30	18	32	144	18
Butte (1961)	79	107	179	105	19	41	6	4	228	43
Glasgow	89	106	170	82	8	28	11	23	179	41
Great Falls	87	106	172	98	19	28	13	16	143	30
Havre (U) (1961)	121	124	120	90	13	25	5	22	172	38
Havre	99	93	173	84	9	24	5	28	176	36
Helena	84	107	174	97	14	38	8	14	181	26
Kalispell	76	82	207	133	23	24	32	16	193	18
Miles City	101	108	156	88	12	30	9	39	172	31
Missoula	75	81	209	124	15	26	27	20	197	15
NEBRASKA										
Grand Island	124	105	136	84	9	49	16	39	151	20
Lincoln (U)	119	104	142	95	9	49	8	41	131	15
Norfolk	119	104	142	88	10	50	11	35	157	21
North Platte	123	109	133	81	10	49	17	42	174	15
Omaha	116	106	143	97	10	50	15	36	140	14
Scottsbluff	121	112	132	83	12	45	10	39	177	15
Valentine	124	108	133	78	9	45	5	41	178	26
NEVADA										
Elko	137	100	128	77	14	21	6	43	213	18
Ely	137	106	122	70	15	31	2	15	217	19
Las Vegas	221	79	65	22	1	14	1	135	46	0
Reno	169	92	104	48	9	13	9	46	189	3
Winnemucca	143	84	138	66	9	14	3	52	194	9
NEW HAMPSHIRE										
Concord	99	105	161	125	17	22	54	13	169	18
Mt. Washington Obs.	52	78	235	204	59	16	307	0	243	64
NEW JERSEY										
Atlantic City(U)(1956)	118	122	125	122	5	23	21	3	75	*
Atlantic City(NAFExp.)	107	98	160	113	4	24	44	13	93	*
Newark	100	111	154	123	8	26	23	25	94	*
Trenton (U)	101	116	148	122	7	33	--	18	90	*
NEW MEXICO										
Albuquerque	175	112	78	58	4	44	4	66	119	2
Clayton	172	95	98	66	6	54	11	41	143	3
Raton	136	133	96	78	9	75	8	18	182	9
Roswell	185	100	80	49	4	41	9	112	131	4
Silver City	198	98	69	59	2	55	1	48	110	*
NEW YORK										
Albany	75	113	177	131	15	29	23	13	146	12
Binghampton (U)	---	---	---	151	15	--	--	9	134	7
Binghampton	51	103	211	162	26	32	50	3	150	8
Buffalo	61	110	194	165	29	29	21	4	142	5
New York (U) (1960)	104	131	130	124	8	30	20	7	91	*
New York Central Pk	107	124	134	121	8	16	--	16	82	1
New York(LaGuardia)	97	115	153	121	8	24	15	15	78	1
New York(J.F.Kendy.AP)	101	114	150	121	9	27	35	10	92	*
Rochester	65	113	187	154	25	30	13	13	137	5
Syracuse	69	106	190	168	32	29	9	10	136	8
NORTH CAROLINA										
Asheville (U)	105	124	136	128	3	50	47	13	84	*
Cape Hatteras (R)	105	103	157	123	1	44	17	3	33	0
Charlotte	115	105	145	111	1	43	24	41	72	0
Greensboro	114	107	144	119	2	48	31	37	86	*
Raleigh	116	107	142	116	2	46	35	46	75	0
Wilmington	119	112	134	115	1	45	20	47	42	0
Winston-Salem	121	102	142	115	3	42	32	34	76	0
NORTH DAKOTA										
Bismarck	97	106	162	96	12	35	12	26	183	47
Devils Lake(U)(1961)	112	109	144	101	11	30	9	10	189	60
Fargo	91	110	164	99	10	33	12	18	176	53
Williston (U) (1961)	122	116	127	89	12	27	7	18	178	43
Williston	88	117	160	92	12	19	9	19	181	53

NORMALS, MEANS AND EXTREMES

State and Station	Elevation ground (feet)	Temperature (°F) NORMAL (1931-1960) January Daily maximum	January Daily minimum	July Daily maximum	July Daily minimum	Annual	Extremes Length, yrs	Record highest	Record lowest	Normal degree days (1931-1960) January	Seasonal
OHIO											
Akron	1208	35.6	20.9	83.2	61.9	50.3	91	113	-39	1138	6037
Cincinnati (1961)	869	39.7	23.8	85.9	64.3	53.6	14	100	-11	1021	5195
Cincinnati Abbe Obs.	761	41.3	26.1	87.5	66.3	55.2	17	---	---	1021	5195
Cincinnati (Ort.Cin.AP)	869	40.5	22.7	87.4	63.3	53.4	49	109	-17	970	4806
Cleveland	777	34.8	20.3	82.8	60.2	49.2	3	102	-19	1035	5265
Columbus	812	37.8	22.0	86.6	62.9	52.0	4	93	-19	1159	6351
Dayton	1002	36.9	22.2	85.3	65.1	52.3	5	98	-15	1088	5660
Mansfield	1297	34.8	19.8	82.6	60.8	49.1	19	102	-16	1097	5622
Portsmouth(R) (1955)	670	42.7	23.4	87.7	61.6	54.1	5	95	-20	1169	6403
Sandusky (U) (1961)	603	35.7	21.8	83.7	65.5	51.3	34	107	-25	989	4965
Toledo	676	34.1	18.4	85.1	60.2	49.0	34	105	-12	1122	5859
Youngstown	1178	34.4	20.2	81.7	59.3	48.8	9	98	-17	1200	6494
							21	100	-18	1169	6417
OKLAHOMA											
Oklahoma City	1280	45.9	28.1	92.8	72.2	60.3	73	120	-27		
Tulsa	650	45.9	26.5	92.9	71.4	59.7	11	107	-4	868	3725
							5	110	-3	893	3860
OREGON											
Astoria	8	46.5	34.8	68.6	52.5	50.8	75	119	-54		
Burns (U)	4151	35.2	14.3	86.8	52.1	46.7	11	100	14	753	5186
Eugene	359	45.3	32.8	82.2	51.0	52.5	14	103	-26	1246	6957
Meacham	4050	32.7	19.3	77.6	49.2	43.5	20	105	-4	803	4726
Medford	1298	42.4	28.4	88.3	55.7	52.6	20	105	-23	1209	7874
Pendleton	1482	39.3	25.1	89.3	57.8	52.8	4	109	0	918	5008
Portland (U)	30	44.9	35.5	79.2	57.9	54.6	29	113	-22	1017	5127
Portland	21	43.7	33.0	78.6	55.7	52.9	62	107	3	769	4109
Roseburg	505	47.2	33.4	84.0	51.8	53.4	24	105	-3	825	4635
Salem	196	45.5	31.5	81.7	50.4	52.4	11	106	-1	766	4491
Sexton Summit (R)	3836	39.3	28.9	75.5	51.6	48.0	24	108	-10	822	4754
							20	100	-2	958	6254
PACIFIC AREA											
Canton Island	8	88.4	77.8	89.4	77.7	83.5	18	98	70	0	0
Eniwetok	13	84.6	77.8	86.5	79.1	82.3	11	93	71	0	0
Guam (R)	361	83.9	72.4	86.7	72.3	79.3	8	95	59	0	0
Johnston Is.	7	80.7	73.4	85.0	77.1	79.3	9	88	62	0	0
Koror (R)	94	86.0	74.6	86.6	75.1	80.9	15	93	69	0	0
Kwajalein, Marshall Is.	8	82.2	78.0	85.2	77.9	81.1	12	97	69	0	0
Majuro, Marshall Is.	10	84.1	76.3	84.6	75.7	80.4	9	91	69	0	0
Marcus Is.	20	---	---	---	---	---	1	93	58	0	0
Ponape (R)	123	85.6	75.3	86.6	72.7	80.1	14	96	67	0	0
Truk, Moen Is.	5	84.9	76.5	86.1	74.8	80.7	14	94	70	0	0
Wake	11	81.5	73.3	86.6	77.4	80.0	17	92	64	0	0
Yap (R)	53	85.3	75.6	87.6	75.1	81.3	16	97	69	0	0
PENNSYLVANIA											
Allentown	376	36.7	21.3	85.2	63.0	51.1	77	111	-42		
Avoca(W-B Scranton AP)	930	33.6	21.7	81.6	63.2	49.4	21	102	-12	1116	5810
Erie	732	34.0	20.5	80.1	62.0	48.7	9	97	-11	1156	6254
Harrisburg	335	38.9	23.6	87.0	65.3	53.3	5	94	-15	1169	6451
Philadelphia	5	40.3	24.3	85.9	65.2	53.5	26	102	-8	1045	5251
Pittsburgh (U)	749	40.4	26.2	85.4	66.1	53.9	5	100	-5	1014	5101
Pittsburgh (Gr. AP)	1137	36.5	21.2	83.3	60.9	50.3	30	103	-13	983	5053
Reading (U)	266	39.1	26.3	86.4	67.3	54.3	5	95	-18	1119	5987
Scranton (U) (1955)	746	35.4	21.0	83.2	61.9	50.1	24	102	-2	1001	4945
Shippingport (1957)	736	33.8	20.7	80.5	60.0	51.0	f	f	f	1141	6047
Williamsport	527	36.1	21.4	85.3	61.8	50.7	2	92	-3	1163	5647
							20	102	-15	1122	5934
RHODE ISLAND											
Block Island	110	37.9	26.3	75.9	63.2	50.1	77	102	-23		
Providence	51	37.3	21.0	81.4	62.7	50.1	14	91	-4	1020	5804
							9	97	-9	1110	5954
SOUTH CAROLINA											
Charleston	41	61.2	38.3	89.2	72.0	65.2	80	111	-13		
Charleston(U) (1961)	9	61.4	39.2	89.4	70.8	65.2	22	103	8	487	2033
Columbia	217	58.2	35.6	92.5	70.7	64.0	18	103	14	472	1973
Florence	146	58.3	36.7	90.9	70.4	64.0	17	107	4	570	2484
Greenville (1961)	1018	51.6	35.0	87.9	68.8	61.0	17	108	8	552	2387
Spartanburg (1961)	801	52.1	34.7	88.7	69.1	61.2	2	98	8	673	3060
Greenville-Spartanburg	957	53.3	34.7	90.0	69.7	61.8	18	104	3	670	3044
							1	98	9	660	2980

State and Station	Precipitation (inches) NORMAL (1931-1960) Wettest month	Driest month	Annual	Extremes Wettest month	Driest month	Maximum in 24 hours	Snow, sleet Mean total January	Seasonal	Extreme Maximum in 24 hours	Relative humidity (percent) January 7:00 a.m. EST	1:00 p.m. EST	7:00 p.m. EST	July 7:00 a.m. EST	1:00 p.m. EST	7:00 p.m. EST	Wind Speed (m.p.h.) Mean hourly January	July	Fastest mile	Sunshine (percent of possible) January	July
OHIO																				
Akron	4.26	2.25	36.43	11.43	0.00	8.70	9.3	48.2	8.5	84	74	80	83	55	65	11.9	7.6	--	--	--
Cincinnati (1961)	4.04	2.17	39.16	----	.20	4.18	----	----	----	82	70	74	84	52	60	---	---	--	--	--
Cincinnati Abbe Obs.	4.18	2.24	39.51	13.68	.10	4.77	5.3	18.8	11.0	--	--	--	---	--	--	8.3	5.2	49	41	71
Cincinnati (Ort.Cin.AP)	3.89	2.26	38.02	12.18	.18	5.21	7.1	24.0	8.3	78	63	69	88	56	61	10.8	7.2	--	---	--
Cleveland	3.52	2.33	35.35	9.50	.36	3.73	10.1	51.2	15.0	77	69	73	84	57	61	12.5	8.9	74	30	68
Columbus	4.16	2.11	36.67	9.75	.11	4.81	6.7	27.3	8.7	77	67	70	87	56	60	9.8	6.1	63	39	69
Dayton	4.10	2.23	36.04	10.89	.10	4.30	6.6	26.6	10.0	82	72	77	83	54	59	12.1	8.1	78	39	69
Mansfield	4.23	2.27	38.16	7.04	.43	2.79	8.8	45.3	8.0	82	74	--	83	55	--	---	---	--	--	--
Portsmouth(R) (1955)	4.26	2.28	38.56	9.92	.51	3.43	8.8	32.9	10.1	b71	b59	b59	b88	b47	b54	7.7	3.4	60	--	--
Sandusky (U) (1961)	3.73	1.92	33.16	12.51	.19	5.95	6.2	26.9	12.3	--	--	--	--	--	--	10.1	6.9	75	35	75
Toledo	3.79	1.88	30.50	6.71	.27	2.50	8.8	34.8	9.8	81	70	75	87	54	60	10.6	7.6	72	45	70
Youngstown	4.32	2.50	39.27	9.87	.27	4.31	12.2	56.8	20.7	83	73	78	83	53	64	11.8	7.9	--	--	--
OKLAHOMA																				
Oklahoma City	5.19	1.31	30.82	10.78	.00	19.75														
Tulsa	5.26	1.62	37.08	18.00	T	4.82	3.4	9.2	8.4	80	62	62	84	54	49	14.6	12.1	56	59	77
					T	7.54	3.7	9.4	9.0	78	55	55	81	55	51	11.4	9.2	75	52	70
OREGON																				
Astoria	13.65	1.27	80.44	21.89	.00	31.10														
Burns (U)	1.62	.29	10.96	5.47	.01	4.32	1.3	5.1	7.2	87	84	78	91	75	69	8.9	8.5	--	--	--
Eugene	6.61	.27	39.56	20.99	.00	2.15	15.9	49.9	10.9	82	76	68	53	34	20	---	---	--	--	--
Meacham	4.53	.50	33.87	9.29	T	4.82	4.2	6.8	7.2	--	86	81	--	54	37	8.4	8.2	--	--	--
Medford	3.38	.18	19.78	12.72	.00	3.00	32.3	151.5	22.9	--	80	--	--	40	--	---	---	--	--	--
Pendleton	1.49	.22	12.38	3.23	.00	3.75	3.7	7.9	7.9	94	90	73	80	48	29	4.2	5.7	--	--	--
Portland (U)	7.42	.39	42.37	17.45	.00	1.49	8.0	17.4	13.3	82	77	77	54	34	23	8.0	9.8	--	--	--
Portland	6.38	.41	37.18	12.83	T	5.01	5.1	9.1	16.0	--	--	--	--	--	--	---	---	--	--	--
Roseburg	5.69	.21	33.11	15.74	T	2.60	5.1	8.3	10.6	86	81	76	84	62	47	10.1	7.4	88	24	67
Salem	7.37	.35	41.75	15.40	T	4.80	3.2	6.5	9.4	--	86	73	--	54	34	3.9	5.9	50	26	79
Sexton Summit (R)	5.59	.25	33.12	20.03	.00	3.16	3.7	6.3	10.8	88	84	79	87	55	39	8.8	6.6	--	--	--
					.00	5.20	24.0	98.8	22.6	--	80	67	--	61	48	12.8	11.8	--	--	--
PACIFIC AREA																				
Canton Island	4.35	1.10	29.43	16.39	T	5.21	.0	.0	.0	79	79	65	80	80	65	15.1	13.1	--	--	--
Eniwetok	9.09	1.02	51.46	18.07	.12	4.04	.0	.0	.0	76	76	68	81	83	75	17.0	11.5	--	--	--
Guam (R)	13.36	2.64	88.53	21.86	.67	7.50	.0	.0	.0	--	--	--	--	--	--	8.1	4.9	80	53	46
Johnston Is.	3.89	.84	26.11	15.80	.22	9.51	.0	.0	.0	75	76	68	78	77	69	13.3	15.2	49	73	77
Koror (R)	15.76	7.13	147.49	34.82	1.65	11.57	.0	.0	.0	88	91	82	90	92	82	7.9	5.3	59	50	56
Kwajalein, Marshall Is.	12.13	2.15	94.76	30.38	.61	6.68	.0	.0	.0	79	79	70	85	86	78	18.2	10.5	--	--	--
Majuro, Marshall Is.	15.92	6.98	143.63	24.26	.86	10.01	.0	.0	.0	81	81	75	83	84	77	13.0	8.6	38	64	53
Marcus Is.	----	----	-----	13.51	.64	5.66	.0	.0	.0	73	73	70	71	79	71	14.0	11.7	114	75	82
Ponape (R)	20.31	9.74	191.92	38.65	2.40	22.48	.0	.0	.0	84	86	77	94	95	79	7.7	3.7	36	50	55
Truk, Moen Is.	14.12	6.29	137.52	34.89	.84	14.92	.0	.0	.0	81	83	77	89	92	80	7.9	5.6	45	58	50
Wake	7.08	1.14	36.86	ø17.66	.27	ø15.00	.0	.0	.0	74	75	66	81	82	72	13.1	12.3	--	--	--
Yap (R)	14.70	4.64	121.50	29.44	1.08	10.45	.0	.0	.0	86	88	79	90	91	80	10.3	5.5	72	59	52
PENNSYLVANIA																				
Allentown	4.82	2.64	44.12	12.10	.00	34.50														
Avoca(W-B Scranton AP)	4.79	1.99	38.48	7.78	.09	4.79	7.9	32.8	17.5	78	62	70	82	52	62	11.1	7.3	--	--	--
Erie	3.67	2.32	37.50	9.87	.03	3.09	11.3	52.1	20.1	75	62	67	82	54	62	9.0	7.5	60	41	57
Harrisburg	3.90	2.31	37.65	9.07	.58	4.84	18.6	78.6	23.0	77	70	75	76	60	61	12.6	8.8	--	--	--
Philadelphia	4.63	2.78	42.48	9.70	.04	4.36	9.6	35.4	21.0	72	58	64	78	51	61	8.2	6.2	68	47	69
Pittsburgh (U)	3.95	2.31	36.87	8.84	.09	5.45	5.3	20.4	14.6	76	60	68	79	54	62	10.2	8.1	73	50	63
Pittsburgh (Gr. AP)	3.91	2.19	36.14	8.20	.16	3.57	7.6	30.7	20.1	--	--	--	--	--	--	---	---	--	25	53
Reading (U)	4.26	2.64	41.43	14.85	.16	3.56	10.3	44.4	14.7	76	65	67	84	53	60	10.7	7.6	--	41	67
Scranton (U) (1955)	4.43	2.02	36.61	f	.17	6.08	8.3	30.1	18.7	71	--	--	75	--	--	11.4	8.5	80	46	63
Shippingport (1957)	5.17	1.40	38.96	7.01	f	f	f	f	f	f	f	--	f	f	--	f	f	f	f	f
Williamsport	4.18	2.51	40.65	9.45	.71	3.30	3.6	17.4	9.0	g76	g64	--	g80	g55	--	3.3	2.0	63	--	--
					.19	4.38	9.9	43.1	23.1	76	62	69	85	52	64	9.2	6.9	--	--	--
RHODE ISLAND																				
Block Island	4.07	2.56	40.45	11.51	.00	12.13														
Providence	4.14	2.76	42.13	11.89	.39	8.52	4.7	22.7	16.9	73	65	--	87	72	--	---	---	--	--	--
						6.63	9.3	39.1	18.3	70	57	64	80	57	70	11.9	10.0	--	56	60
SOUTH CAROLINA																				
Charleston	7.71	2.09	49.16	18.46	.00	13.25														
Charleston(U) (1961)	8.04	1.92	46.11	17.31	.08	8.84	T	.1	2.1	86	56	74	90	65	81	9.5	8.0	--	59	63
Columbia	6.09	2.36	46.82	16.72	.08	8.84	T	.1	2.1	87	56	75	90	65	82	9.9	8.3	--	65	80
Florence	6.24	2.18	42.69	13.68	T	7.66	.2	1.2	8.8	85	54	69	86	52	66	7.1	6.7	--	61	65
Greenville (1961)	4.81	3.00	47.65	10.10	.00	6.36	.1	1.0	4.8	82	52	66	88	57	73	8.2	7.2	--	--	--
Spartanburg (1961)	4.70	2.97	46.66	10.33	.52	5.79	.5	4.1	6.4	70	41	50	85	56	70	9.4	7.7	70	58	63
Greenville-Spartanburg	4.75	2.84	46.42	11.30	.13	6.85	.8	3.6	7.1	73	44	51	89	56	70	8.6	6.8	--	--	--
					.24	4.45	.3	3.8	2.1	71	49	58	86	60	69	7.4	6.8	47	60	59

State and Station	Annual mean number of days: Sunrise to sunset Clear	Partly cloudy	Cloudy	Precipitation .01 inch or more	Snow, sleet, hail 1.0 inch or more	Thunderstorms	Heavy fog	Temperature Max 90 and above	Min 32 and below	Min Zero and below
OHIO										
Akron	76	101	188	149	15	40	28	10	136	4
Cincinnati (1961)	108	115	142	---	--	--	--	--	--	--
Cincinnati Abbe Obs.	---	---	---	133	7	50	--	29	98	2
Cincinnati (Ort.Cin.AP)	83	99	183	128	8	46	19	29	119	10
Cleveland	73	105	187	153	18	37	14	10	131	8
Columbus	79	108	178	134	9	42	20	19	127	7
Dayton	82	104	179	128	8	42	22	17	117	4
Mansfield	75	106	184	135	15	39	28	5	135	10
Portsmouth(R) (1955)	39	75	142	106	9	63	64	36	113	0
Sandusky (U) (1961)	93	115	157	137	10	37	8	19	111	2
Toledo	79	110	176	128	11	41	20	16	144	9
Youngstown	75	97	193	161	18	36	29	9	136	5
OKLAHOMA										
Oklahoma City	147	96	122	82	3	51	19	70	85	1
Tulsa	125	104	136	91	4	55	9	75	90	2
OREGON										
Astoria	48	72	245	201	2	9	43	1	37	0
Burns (U)	129	83	153	91	17	14	12	21	183	5
Eugene	78	84	203	140	3	6	58	14	59	*
Meacham	91	71	203	154	46	16	31	3	170	4
Medford	117	81	167	102	3	9	47	42	108	*
Pendleton	107	90	168	101	6	11	30	31	85	3
Portland (U)	---	---	---	152	3	--	--	8	21	0
Portland	66	69	230	155	3	7	32	8	6	*
Roseburg	75	89	201	135	2	5	59	21	56	*
Salem	76	85	204	151	2	6	40	16	60	*
Sexton Summit (R)	123	67	175	131	30	6	160	2	111	*
PACIFIC AREA										
Canton Island	76	147	142	99	0	4	0	164	0	0
Eniwetok	---	---	---	204	0	5	0	11	0	0
Guam (R)	---	---	---	270	0	28	*	5	0	0
Johnston Is.	45	203	117	167	0	2	0	0	0	0
Koror (R)	*	47	318	274	0	40	0	45	0	0
Kwajalein, Marshall Is.	30	97	238	243	0	12	0	26	0	0
Majuro, Marshall Is.	10	69	286	261	0	19	0	*	0	0
Marcus Is.	83	141	142	158	0	5	1	8	0	0
Ponape (R)	3	57	305	301	0	32	0	35	0	0
Truk, Moen Is.	1	56	308	272	0	22	0	5	0	0
Wake	118	155	92	181	0	7	0	6	0	0
Yap (R)	7	47	311	262	0	15	0	52	0	0
PENNSYLVANIA										
Allentown	96	116	153	124	9	34	30	17	129	3
Avoca(W-B Scranton AP)	74	111	180	135	14	32	28	8	138	5
Erie	71	100	194	152	26	39	16	4	124	5
Harrisburg	87	105	173	124	124	9	34	22	107	1
Philadelphia	92	114	159	118	6	27	29	15	112	1
Pittsburgh (U)	---	---	---	146	9	--	--	19	95	1
Pittsburgh (Gr. AP)	62	106	197	148	13	36	17	6	130	7
Reading (U)	95	109	161	123	8	32	8	23	92	*
Scranton (U) (1955)	f	f	f	f	f	f	f	f	f	f
Shippingport (1957)	---	---	---	144	5	40	21	10	126	1
Williamsport	69	117	179	142	12	33	40	18	131	4
RHODE ISLAND										
Block Island	101	108	156	113	7	17	82	*	87	*
Providence	109	103	153	126	10	22	29	6	120	2
SOUTH CAROLINA										
Charleston	99	115	151	116	*	58	28	49	34	0
Charleston(U) (1961)	96	116	153	121	*	60	31	48	31	0
Columbia	124	103	138	110	*	54	26	86	54	0
Florence	121	107	137	110	*	53	29	71	46	0
Greenville (1961)	107	104	154	116	1	50	23	48	54	0
Spartanburg (1961)	127	87	151	114	1	47	23	48	52	0
Greenville-Spartanburg	137	86	142	107	2	36	36	40	64	0

See reference notes at end of table.

NORMALS, MEANS AND EXTREMES

State and Station	Elevation ground (feet)	Temperature (°F) NORMAL (1931-1960) January Daily maximum	January Daily minimum	July Daily maximum	July Daily minimum	Annual	Extremes Length, yrs.	Record highest	Record lowest	Normal degree days (1931-1960) January	Seasonal	Precipitation (inches) NORMAL (1931-1960) Wettest month	Driest month	Annual	Extremes Wettest month	Driest month	Maximum in 24 hours	Snow, sleet Mean total January	Seasonal	Extreme Maximum in 24 hours	Relative humidity (percent) January 7:00 a.m. EST	1:00 p.m. EST	7:00 p.m. EST	July 7:00 a.m. EST	1:00 p.m. EST	7:00 p.m. EST	Wind Speed (m.p.h.) Mean hourly January	July	Fastest mile	Sunshine (percent of possible) January	July	Annual mean number of days Sunrise to sunset Clear	Partly cloudy	Cloudy	Precipitation .01 inch or more	Snow, sleet, hail 1.0 inch or more	Thunderstorms	Heavy fog	Temperature Max. 90 and above	Min. 32 and below	Zero and below
SOUTH DAKOTA							75	120	-58							0.00	13.52																								
Huron	1282	23.1	1.9	90.3	59.6	44.7	5	108	-39	1628	8223	3.14	0.48	17.33	7.69	T	4.20	6.1	37.3	17.5	77	70	74	88	53	50	11.8	10.9	77	54	77	105	112	148	93	12	43	15	33	177	44
Rapid City	3165	34.1	9.8	87.7	59.9	46.8	15	109	-26	1333	7345	3.08	.30	14.71	7.05	T	4.01	5.5	35.8	14.7	70	59	65	70	45	40	10.3	9.9	66	55	71	112	113	140	94	12	45	15	33	166	21
Sioux Falls	1418	25.1	5.2	86.0	62.5	45.7	17	108	-31	1544	7839	4.35	.62	25.16	7.94	T	4.32	5.8	41.4	26.0	71	63	68	84	52	50	10.9	9.5	--	--	--	106	105	154	91	11	45	21	26	168	31
TENNESSEE							82	113	-32							.00	11.00																								
Bristol	1507	46.8	29.7	86.4	65.4	56.8	19	102	-9	828	4143	5.55	2.15	41.06	9.73	.07	3.65	3.9	14.5	16.2	83	63	70	89	57	66	6.7	4.2	--	--	--	90	112	163	133	4	46	41	21	95	1
Chattanooga	665	49.9	33.4	90.0	71.4	61.2	25	106	-7	722	3254	5.64	3.02	51.96	13.68	.20	5.40	1.3	3.8	8.9	82	62	68	88	56	64	7.3	5.1	82	41	63	108	110	147	120	2	56	34	58	73	*
Knoxville	980	50.1	32.6	88.5	68.2	59.6	4	96	-6	732	3494	4.88	2.54	45.85	11.74	T	5.08	3.3	11.9	18.2	79	62	63	89	61	65	8.6	6.5	73	37	59	102	108	155	127	3	48	28	21	75	1
Memphis	263	50.6	32.4	91.1	71.5	61.5	23	106	-13	729	3232	6.07	2.72	49.73	12.29	T	4.94	2.0	5.2	14.3	81	65	71	86	57	60	10.9	7.6	56	47	74	120	102	143	104	1	52	11	69	59	*
Nashville	577	48.8	30.9	90.7	69.6	60.0	25	107	-15	778	3578	5.49	2.32	45.14	13.92	T	5.34	3.6	10.7	10.2	83	67	72	86	55	61	8.9	6.1	73	39	64	105	109	151	118	4	56	15	59	75	1
Oak Ridge (R)	905	49.2	30.6	88.7	66.7	58.2	17	105	-8	778	3817	5.95	2.67	54.71	13.27	T	7.48	2.3	9.0	12.0	--	--	--	--	--	--	4.8	3.9	--	--	--	115	92	158	126	3	53	34	37	81	*
Oak Ridge Area	886	48.9	31.2	88.0	66.7	58.5	20	103	-8	772	3742	5.44	2.82	51.52	12.84	.00	7.75	---	---	---	--	--	--	--	--	--	5.7	3.8	--	--	--	---	---	---	119	--	--	--	35	79	*
TEXAS							84	120	-24							.00	38.20																								
Abilene	1762	56.4	32.8	94.3	72.1	64.3	11	107	5	642	2624	4.33	.88	23.32	13.19	.00	6.70	1.5	3.9	5.7	73	44	44	82	51	44	12.4	10.9	73	62	77	153	97	115	65	2	41	6	108	46	*
Amarillo	3604	49.8	23.5	94.2	67.0	58.7	4	104	-9	877	3985	3.37	.62	19.67	10.16	.00	6.75	3.8	13.8	12.2	63	40	36	71	40	36	13.1	12.3	84	d69	d77	161	107	97	67	4	49	24	83	105	4
Austin	597	60.3	40.5	95.1	73.9	68.3	4	105	12	468	1711	3.71	1.94	32.58	12.31	.00	7.22	.6	.9	7.0	74	53	51	88	47	40	9.9	8.7	57	48	78	120	113	132	80	*	40	23	118	26	0
Brownsville	16	70.5	52.2	92.5	75.5	73.7	27	104	19	205	600	4.99	1.04	26.75	17.12	T	8.18	T	T	T	89	65	74	93	55	65	12.0	11.9	57	46	81	100	138	127	70	0	23	25	115	2	0
Corpus Christi	41	67.4	47.4	93.5	74.6	71.8	5	103	14	291	914	4.40	1.44	28.34	14.54	.00	7.68	.1	.1	1.1	81	64	64	90	55	62	11.9	11.7	70	48	85	108	119	138	74	*	32	26	112	10	0
Dallas	481	55.8	36.0	94.5	75.3	65.8	6	107	8	601	2363	4.83	1.93	34.55	13.85	T	9.18	1.5	2.3	7.4	75	57	55	79	50	43	10.4	10.2	65	50	78	145	93	127	79	1	41	8	101	41	0
Del Rio (1956) e	1091	62.2	41.6	93.3	76.1	69.8	51	111	11	419	1407	2.51	.80	18.62	13.71	.00	8.88	.4	.7	4.7	81	58	53	80	50	41	7.8	9.7	62	53	75	153	118	94	61	*	24	6	118	14	0
Del Rio	1026	----	----	----	----	----	2	107	19	----	----	----	----	-----	15.79	T	4.50	T	T	T	62	41	31	69	43	33	10.3	11.4	--	--	--	130	118	118	50	0	45	8	131	26	0
El Paso	3918	56.3	29.5	94.9	68.9	63.3	5	106	-8	685	2700	1.29	.29	7.89	6.29	.00	2.89	1.4	4.3	7.8	60	41	32	55	43	30	10.0	9.6	70	77	78	197	99	69	44	1	37	2	113	63	1
Ft. Worth (Gtr. Int'l. AP)	537	56.0	34.9	95.9	74.9	65.8	11	109	7	614	2405	4.59	1.68	31.33	12.64	.02	5.91	2.2	3.6	12.1	81	62	63	79	47	43	12.5	11.1	--	--	--	149	92	124	77	1	44	11	106	41	0
Galveston (1961)	7	60.4	48.2	88.7	77.9	70.1	11	97	18	362	1233	5.82	3.14	47.98	25.06	T	11.34	T	.2	2.0	84	73	78	82	69	71	13.0	11.3	--	--	--	111	118	136	90	*	52	32	32	2	0
Galveston (U)	7	60.5	49.3	87.3	78.9	69.9	94	101	8	350	1235	4.79	2.59	41.81	26.01	.00	14.35	T	.2	15.4	--	--	--	--	--	--	11.6	9.8	91	49	73	---	---	---	97	*	--	--	12	4	0
Houston (U)	41	62.6	46.6	92.0	75.8	70.0	27	106	10	363	1278	4.43	2.40	45.26	17.64	.01	10.83	.2	.3	3.0	--	--	--	--	--	--	---	---	--	--	--	---	---	---	103	*	--	--	91	7	0
Houston	50	63.6	43.6	92.1	73.8	69.2	5	106	17	384	1396	4.36	2.67	45.95	22.31	T	15.65	.2	.4	4.4	84	66	68	70	59	65	12.2	9.0	--	46	83	90	125	150	102	*	60	43	103	15	0
Laredo	496	68.4	47.0	99.0	76.0	73.9	20	110	18	267	797	2.86	.62	18.63	8.62	.00	5.55	.1	.1	2.0	81	58	53	83	44	39	9.6	14.8	--	--	--	130	116	119	58	*	31	14	174	6	0
Lubbock	3243	53.0	25.4	92.4	66.5	59.7	19	107	-16	800	3578	3.18	.54	18.08	7.80	.00	5.14	1.9	8.7	12.1	73	49	49	77	47	40	13.2	12.4	--	--	--	173	101	91	60	3	43	14	87	101	1
Midland	2851	57.1	30.9	94.5	71.2	64.3	3	106	-8	651	2591	2.08	.36	14.24	6.73	.00	5.99	1.4	3.0	5.9	79	55	47	79	47	39	9.4	9.8	--	--	--	169	97	99	48	2	36	14	109	64	*
Port Arthur	16	63.5	43.7	91.0	72.7	68.5	4	107	14	384	1447	6.00	2.88	53.09	18.71	.00	13.17	T	.7	4.4	87	68	76	94	63	71	11.9	8.3	73	43	64	93	128	144	103	*	65	40	99	22	0
San Angelo	1903	59.4	34.3	96.9	72.7	66.4	5	111	6	567	2255	3.20	.78	18.63	9.20	.00	6.03	.9	2.4	5.1	69	44	40	73	42	35	10.5	9.8	--	--	--	165	94	106	53	1	36	6	132	56	0
San Antonio (Int'l. AP)	788	62.3	41.6	94.0	73.9	68.7	23	106	0	428	1546	3.49	1.37	27.84	15.78	.00	6.97	.3	.5	4.7	80	60	58	88	49	43	9.1	9.1	74	48	77	114	117	134	77	*	36	23	120	19	*
Victoria	104	64.8	46.0	91.7	74.6	70.2	4	107	16	344	1173	4.23	2.32	36.20	7.64	.22	6.14	.0	T	T	82	60	65	93	54	58	11.6	9.0	99	--	--	95	131	139	75	0	42	28	120	15	0
Waco	500	58.2	37.8	96.0	74.6	67.2	20	108	-5	536	2030	4.57	1.68	32.08	13.37	.00	7.18	1.1	1.5	7.0	83	64	64	84	51	47	12.9	11.7	--	--	--	135	102	128	76	1	47	13	110	28	*
Wichita Falls	994	53.9	31.6	97.9	73.3	64.5	5	113	-1	698	2832	4.60	1.12	26.20	12.03	.00	5.61	1.8	5.4	5.2	74	49	48	75	42	38	11.0	10.5	--	--	--	163	95	107	69	2	48	12	112	65	*
UTAH							74	116	-50							.00	5.08																								
Milford	5028	37.1	12.1	92.1	55.5	48.9	16	104	-28	1252	6497	1.03	.43	8.00	2.10	.00	1.20	9.7	39.0	16.3	--	65	60	--	23	20	---	---	--	--	--	152	104	109	58	13	32	7	60	178	14
Salt Lake City	4220	36.8	17.5	94.1	59.6	50.9	5	107	-18	1172	6052	1.76	.53	13.90	4.90	.00	2.41	13.2	52.8	15.4	81	73	70	47	22	16	7.5	9.5	71	48	83	132	106	127	86	17	35	10	64	142	5
Wendover	4237	35.9	18.0	92.0	66.8	52.3	27	112	-19	1178	5778	.66	.29	4.67	3.01	.00	1.33	2.5	7.0	5.5	65	57	57	27	18	12	---	---	--	--	--	158	92	115	45	3	29	5	53	129	1
VERMONT							77	105	-50							.00	8.77																								
Burlington	331	25.4	6.9	81.9	56.0	43.2	20	101	-30	1513	8269	3.85	1.79	33.21	11.54	.50	3.59	17.0	68.9	14.5	79	67	75	77	54	66	9.9	7.8	72	38	62	62	105	198	148	20	24	15	9	159	24
VIRGINIA							74	110	-29							.00	12.50																								
Lynchburg	916	46.2	29.0	86.6	65.9	56.7	18	103	2	849	4166	4.41	2.58	40.30	11.36	.61	4.98	4.8	16.9	12.8	75	57	65	84	56	70	8.8	6.8	56	50	62	109	108	148	123	5	41	40	27	82	0
Norfolk	26	50.2	32.2	87.9	69.6	59.7	16	103	11	738	3421	5.97	2.74	44.94	12.83	.36	11.40	2.6	6.5	11.4	77	60	70	82	59	72	11.6	8.5	78	59	64	109	107	149	117	2	39	25	34	53	0
Richmond	162	48.3	29.0	89.4	66.7	58.1	35	104	-12	815	3865	5.61	2.90	44.21	18.87	.30	8.79	4.9	13.6	21.6	81	57	70	84	56	72	8.1	7.0	68	51	67	105	106	154	115	4	39	29	44	84	1
Roanoke	1149	47.0	29.1	88.0	65.2	56.9	16	104	-4	834	4150	4.63	2.70	41.23	9.12	.27	4.95	5.9	22.3	17.4	71	54	61	82	51	64	10.0	6.6	--	--	--	101	119	145	121	7	41	26	40	87	*
WASHINGTON							98	118	-42							.00	32.27																								
Olympia	195	45.1	31.1	79.7	48.0	50.8	5	100	3	834	5236	9.05	.76	52.37	19.84	.00	4.93	6.9	15.5	13.7	90	87	78	89	64	49	7.2	5.9	--	--	--	50	90	225	163	5	4	93	6	87	0
Seattle (U)	14	45.6	36.8	75.1	56.1	53.2	31	100	11	738	4424	5.42	.63	34.10	10.93	T	3.31	4.3	8.1	11.5	--	--	--	--	--	--	---	---	65	28	63	71	93	201	152	3	6	--	2	15	0
Seattle-Tacoma	400	43.6	33.0	75.6	54.1	51.1	5	99	10	828	5145	6.29	.81	38.94	12.92	T	3.41	6.1	14.0	21.4	80	79	74	86	66	50	10.8	9.3	--	--	--	54	82	229	164	5	8	54	3	40	0
Spokane	2357	31.4	19.2	85.6	55.4	47.8	5	108	-20	1231	6655	2.44	.38	17.19	5.71	T	2.07	19.4	57.9	13.0	82	80	74	59	37	23	8.0	7.9	56	28	82	86	88	191	118	19	12	47	20	138	6
Stampede Pass (R)	3958	27.5	19.5	65.4	47.0	39.5	21	90	-16	1287	9283	16.19	1.46	92.19	29.06	.19	7.94	78.5	450.5	36.2	93	92	91	87	67	60	---	---	--	--	--	70	54	241	206	85	7	252	*	190	3
Tatoosh Is. (R)	101	45.2	38.8	59.5	51.5	49.3	62	88	14	713	5719	12.16	1.98	77.69	22.57	.02	5.91	3.4	7.6	12.0	84	82	82	94	89	87	20.0	10.1	94	26	47	58	76	231	197	3	5	59	0	8	0
Walla Walla (U)	949	39.0	27.4	89.2	62.7	54.2	50	113	-16	986	4805	1.89	.21	15.50	4.52	.00	2.02	7.8	19.9	14.0	--	76	--	--	34	--	5.1	5.4	67	25	86	120	88	157	106	7	11	14	36	66	2
Yakima	1052	36.5	18.5	88.9	53.1	49.8	18	108	-25	1163	5941	1.19	.13	7.86	4.19	.00	1.40	9.6	24.5	14.0	84	76	71	69	35	25	5.4	7.6	--	--	--	112	87	166	70	8	8	20	34	153	5
WEST INDIES							64	103	40							.00																									
San Juan (U)	47	79.9	70.3	84.2	76.0	78.3	66	96	62	0	0	7.16	2.07	60.36	16.88	.05	10.55	.0	.0	.0	--	--	--	--	--	--	---	---	--	--	--	---	---	---	208	0	49	0	10	0	0
San Juan	15	81.3	67.4	87.1	73.7	78.0	10	94	60	0	0	7.13	2.20	64.21	13.59	.68	5.08	.0	.0	.0	87	66	79	81	67	79	8.4	9.5	80	67	63	53	206	106	209	0	37	0	37	0	0
WEST VIRGINIA							74	112	-37							.00	19.00																								
Beckley	2504	41.9	21.0	81.5	57.1	50.7	13	97	-18	1032	5548	4.75	2.33	43.48	8.66	.14	3.37	10.9	45.8	----	--	--	--	--	--	--	---	---	--	--	--	---	---	---	---	--	--	--	5	136	5
Charleston	939	45.2	27.9	85.6	64.2	55.6	16	102	-12	880	4476	5.67	2.58	44.43	13.54	.09	5.60	7.6	26.8	15.1	77	62	66	89	62	67	7.7	5.2	--	--	--	61	117	187	149	8	43	109	24	99	1
Elkins	1970	43.0	22.0	82.3	57.9	50.7	20	97	-21	1008	5675	5.49	2.75	45.92	9.30	.31	2.94	12.8	60.9	6.4	79	60	68	97	59	74	7.3	4.2	--	--	--	54	110	201	164	22	46	85	3	142	5
Huntington	827	45.3	27.9	86.0	64.3	55.8	4	100	-15	880	4446	4.50	1.85	39.53	8.57	T	4.27	6.8	23.8	6.3	80	61	62	91	59	65	7.1	5.0	--	--	--	82	114	169	129	8	39	53	18	108	6
Parkersburg (U)	615	42.9	26.3	86.3	65.2	55.0	76	106	-27	942	4754	4.27	2.05	38.77	12.05	.07	4.81	6.8	24.3	18.3	82	66	74	80	52	67	7.2	5.1	66	31	63	109	103	153	143	8	44	12	23	97	2

See reference notes at end of table.

NORMALS, MEANS AND EXTREMES

State and Station	Elevation ground (feet)	Temperature (°F) NORMAL (1931-1960) January Daily maximum	January Daily minimum	July Daily maximum	July Daily minimum	Annual	Extremes Length, yrs.	Record highest	Record lowest	Normal degree days (1931-1960) January	Seasonal
WISCONSIN							74	114	-54		
Green Bay	682	25.1	8.5	82.0	59.0	44.3	4	96	-29	1494	8029
La Crosse	651	25.6	7.4	84.6	63.0	46.3	14	103	-37	1504	7589
Madison	858	25.9	9.1	82.2	60.0	45.0	5	101	-30	1473	7863
Milwaukee	672	28.3	12.8	78.9	58.4	45.1	5	98	-24	1376	7635
WYOMING							105	114	-63		
Casper	5338	32.8	13.9	87.1	56.3	46.0	13	104	-30	1290	7410
Cheyenne	6126	37.2	13.6	85.2	54.8	45.9	5	96	-27	1228	7278
Lander	5563	30.8	7.7	85.8	55.4	44.4	18	101	-37	1417	7870
Sheridan	3964	34.0	8.6	87.1	55.5	45.2	23	106	-35	1355	7683

State and Station	Precipitation (inches) NORMAL (1931-1960) Wettest month	Driest month	Annual	Extremes Wettest month	Driest month	Maximum in 24 hours	Snow, sleet Mean total January	Seasonal	Extreme Maximum in 24 hours	Relative humidity (percent) January 7:00 a.m. EST	1:00 p.m. EST	7:00 p.m. EST	July 7:00 a.m. EST	1:00 p.m. EST	7:00 p.m. EST	Wind Speed (m.p.h.) Mean hourly January	July	Fastest mile	Sunshine (percent of possible) January	July
WISCONSIN					0.00	11.72														
Green Bay	3.36	1.08	25.83	7.75	T	3.68	7.9	39.7	10.1	74	69	71	90	61	63	10.9	8.1	73	44	64
La Crosse	4.20	1.05	31.16	9.16	.02	3.92	7.3	43.0	15.7	76	65	70	86	57	58	9.4	8.0	--	--	--
Madison	3.95	1.13	30.16	10.93	.06	5.25	8.4	38.4	10.8	76	67	70	89	58	60	10.5	8.3	77	49	70
Milwaukee	3.64	1.40	29.51	9.87	.15	5.28	12.4	42.8	16.7	75	67	70	83	61	64	13.0	9.7	73	43	70
WYOMING					.00	5.50														
Casper	2.03	.48	11.80	3.93	T	2.49	9.0	67.2	14.6	65	55	58	63	29	23	16.9	10.3	--	--	--
Cheyenne	2.52	.45	15.06	5.35	T	2.68	6.3	54.3	16.5	55	46	51	69	33	37	14.7	9.9	69	63	69
Lander	2.65	.42	13.58	6.88	T	3.56	8.9	91.9	23.1	66	58	58	56	33	28	6.1	7.5	77	68	78
Sheridan	2.57	.62	15.91	9.54	.06	3.84	9.1	65.4	26.7	73	63	66	72	36	34	7.7	7.4	84	58	76

State and Station	Annual mean number of days: Sunrise to sunset Clear	Partly cloudy	Cloudy	Precipitation .01 inch or more	Snow, sleet, hail 1.0 inch or more	Thunderstorms	Heavy fog	Temperature Max 90 and above	Min 32 and below	Min Zero and below
WISCONSIN										
Green Bay	97	100	168	117	14	38	29	7	156	35
La Crosse	92	101	172	108	12	43	23	14	152	24
Madison	95	99	171	113	12	40	23	11	164	29
Milwaukee	97	101	167	119	13	37	27	10	150	21
WYOMING										
Casper	118	105	142	89	21	37	9	26	174	15
Cheyenne	104	133	128	101	17	53	24	15	171	13
Lander	124	127	114	69	22	32	3	21	185	20
Sheridan	104	111	150	106	22	37	6	27	181	22

Data from airport or from airport and Urban site records combined.
U indicates Urban, R indicates Rural sites.
Data for this table are based on records through 1964 except as indicated in notes.
Date in Parenthesis after station name indicates last year included in summarization of data.
Normal values are based on the period, 1931-1960, and are means adjusted to represent observations taken at the present standard location.
Degree days are based on a daily average of 65°F.

Fastest mile is the speed of the wind recorded in the shortest time on an automatic recording wind instrument.
Clear Day averages 0-3 tenths sky cover, Partly Cloudy 4-7 tenths and Cloudy 8-10 tenths.
Heavy Fog includes data formerly referred to as "Dense" or "Thick." The upper visibility limit for heavy fog is 1/4 mile.
* Less than one-half.
\- No record.
\# Number of days Maximum 70° or above (Alaskan stations).
† Relative humidity means for period of record through 1960.
‡ Mt. Washington excluded.
ø Estimated amounts during typhoon.
1/ Means and extremes are from post office location through 1962.

a Relative Humidity readings NOON Local Time.
b Relative Humidity readings reported 30 minutes later.
c Relative Humidity readings 8:00 a.m. and NOON Local Time.
d Estimated
e Reopened 1963.
f Combined Records, city office and airport.
g 8:00 a.m., and 2:00 p.m., EST.
n Estimated, recorder pen against stop at 128 m.p.h.
T Trace, an amount too small to measure.
x Sun below horizon continuously Nov. 18 - Jan. 24.
y Sun below horizon continuously Nov. 26 - Jan. 16.
(x and y)-Yearly totals for period sun above horizon.

ELEVATIONS FROM WHICH STATION PRESSURES ARE REDUCED

State and station	Ft.	Mtrs.
ALABAMA		
Birmingham	700	213
Huntsville	644	196
Mobile	57	17
Montgomery	216	66
ALASKA		
Anchorage	132	40
Annette	110	34
Barrow	13	4
Barter Island	50	15
Bethel	38	12
Cold Bay	103	31
Cordova	40	12
Fairbanks	454	138
Juneau	24	7
King Salmon	49	15
Kotzebue	16	5
McGrath	338	103
Nome	22	7
Shemya	102	31
St. Paul Island	28	9
Yakutat	31	9
ARIZONA		
Flagstaff	6907	2104
Phoenix	1107	336
Prescott	5022	1531
Tucson	2555	779
Winslow	4883	1488
Yuma	141	43
ARKANSAS		
Fort Smith	463	141
Little Rock	357	109
Texarkana	368	112
CALIFORNIA		
Bakersfield	492	150
Bishop	4145	1263
Blue Canyon	5283	1610
Burbank	725	221
Eureka (U)	60	18
Fresno	327	100
Long Beach	40	12
Los Angeles (U)	512	156
Los Angeles	104	32
Mt Shasta (R)	3587	1094
Oakland	7	2
Point Arguello (R)	367	112
Red Bluff	353	108
Sacramento	30	9
Sandberg (R)	4523	1378
San Diego	87	27
San Francisco	18	5
Santa Catalina	1580	482
Santa Maria	238	73
Stockton	27	8
COLORADO		
Alamosa	7541	2298
Colorado Springs	6170	1881
Denver	5292	1613
Grand Junction	4602	1403
Pueblo	4690	1430
CONNECTICUT		
Bridgeport	17	5
Hartford	159	48
New Haven	13	4
DELAWARE		
Wilmington	80	24
DISTRICT OF COLUMBIA		
Washington (U)	112	34
Wash. Nat'l AP	112	34
FLORIDA		
Apalachicola (U)	35	11
Daytona Beach	41	12
Fort Myers	12	4
Jacksonville	43	13
Key West	21	6
Lakeland (U)	236	72
Miami	25	7
Orlando	119	36
Pensacola	56	17
Tallahassee	68	21
Tampa	35	11
West Palm Beach	21	6
GEORGIA		
Athens	811	247
Atlanta	1173	358
Augusta	182	55
Columbus	394	120
Macon	370	113
Rome	643	196
Savannah	65	20
HAWAII		
Hilo	36	11
Honolulu	15	5
Kahului	67	20
Lihue	148	45
IDAHO		
Boise	2739	835
Idaho Falls 46W (R)	4939	1505
IDAHO (Cont'd.)		
Lewiston	1436	438
Pocatello	4478	1365
ILLINOIS		
Cairo (U)	357	109
Chicago (O'Hare)	674	205
Chicago (Midway)	623	190
Moline	606	185
Peoria	609	186
Rockford	743	226
Springfield	636	194
INDIANA		
Evansville	431	131
Fort Wayne	857	261
Indianapolis	823	251
South Bend	773	236
IOWA		
Burlington	702	214
Des Moines	860	262
Dubuque	699	213
Sioux City	1138	347
Waterloo	878	268
KANSAS		
Concordia	1392	424
Dodge City	2509	765
Goodland	3688	1124
Topeka	986	299
Wichita	1358	414
KENTUCKY		
Covington	877	265
Lexington	989	301
Louisville	525	160
LOUISIANA		
Alexandria	118	36
Baton Rouge	76	23
Lake Charles	32	10
New Orleans (Audubon)	177	54
New Orleans	53	16
Shreveport	249	76
MAINE		
Caribou	628	191
Portland	103	31
MARYLAND		
Baltimore	123	37
Baltimore (U)	123	37
MASSACHUSETTS		
Blue Hill Obs. (R)	640	195
Boston	124	38
Nantucket	12	4
Pittsfield	1169	354
Worcester	997	302
MICHIGAN		
Alpena	609	210
Detroit (City AP)	730	223
Detroit (M. Wayne Co.)	664	202
Detroit (Willow Run)	777	237
Flint	766	233
Grand Rapids	707	215
Lansing	878	271
Marquette (U)	734	224
Muskegon	633	193
Sault Ste. Marie	614	187
MINNESOTA		
Duluth	1133	345
International Falls	1126	343
Minneapolis	919	280
Rochester	1021	311
St. Cloud	1043	318
MISSISSIPPI		
Jackson	331	101
Meridian	375	113
Vicksburg (U)	247	75
MISSOURI		
Columbia	784	239
Kansas City	963	294
St. Joseph	966	294
St. Louis (Lambert)	568	173
Springfield	1324	404
MONTANA		
Billings	3570	1088
Glasgow	2086	636
Great Falls	3657	1115
Havre	2507	764
Helena	4123	1257
Kalispell	2973	906
Miles City	2634	803
Missoula	3263	995
NEBRASKA		
Grand Island	1856	566
Lincoln (U)	1889	576
Norfolk	1551	473
North Platte	2821	860
Omaha (Eppley AP)	1105	337
Omaha (N. Omaha AP)	1330	405
Scottsbluff	3958	1206
Valentine	2598	792
NEVADA		
Elko	5077	1547
Ely	6262	1909
Las Vegas	1869	570
Reno	4527	1380
Winnemucca	4399	1341
NEW HAMPSHIRE		
Concord	289	88
Mt. Washington Obs.	6267	2010
NEW JERSEY		
Atlantic City (Exp. Cntr.)	52	16
Atlantic City (U)	52	16
Newark	30	9
Trenton (U)	190	58
NEW MEXICO		
Albuquerque	4972	1515
Clayton	5052	1525
Raton	6376	1943
Roswell	3566	1087
Silver City	5376	1638
NEW YORK		
Albany	97	30
Binghamton	1638	499
Buffalo	768	234
New York Central Park	314	96
New York (U)	314	96
New York (Kennedy AP)	22	7
New York (LaGuardia)	52	16
Rochester	523	159
Schenectady	217	66
Syracuse	596	182
NORTH CAROLINA		
Asheville (U)	2253	687
Cape Hatteras (R)	11	3
Charlotte	779	237
Greensboro	886	270
Raleigh	376	115
Wilmington	72	22
Winston-Salem	978	298
NORTH DAKOTA		
Bismarck	1677	511
Fargo	940	287
Williston	1878	571
OHIO		
Akron	1052	321
Cincinnati (U)	627	191
Cleveland	762	232
Columbus	822	251
Dayton	900	274
Mansfield	1312	400
Sandusky (U)	632	193
Toledo	628	191
Youngstown	1186	361
OKLAHOMA		
Oklahoma City	1214	370
Tulsa	676	206
OREGON		
Astoria	22	7
Burns (U)	4170	1271
Eugene	373	114
Meacham	4056	1236
Medford	1329	405
Pendleton	1495	456
Portland	154	47
Roseburg	510	155
Salem	201	61
Sexton Summit (R)	3841	1171
PACIFIC AREA		
Canton Island	11	3
Eniwetok	21	6
Johnston Island	10	3
Koror (R)	109	33
Kwajalein	26	8
Ponape (R)	151	46
Truk (Moen Island)	8	2
Wake Island	12	4
Yap (R)	56	17
Taguac, Guam (R)	365	111
PENNSYLVANIA		
Allentown	385	117
Erie	714	218
Harrisburg	378	115
Philadelphia	114	15
Pittsburgh	842	257
Reading (U)	323	98
Scranton	948	289
Williamsport	525	160
RHODE ISLAND		
Block Island	118	36
Providence	159	48
SOUTH CAROLINA		
Charleston	48	15
Columbia	347	106
Florence	151	46
Grnvl-Spartanburg	971	296
SOUTH DAKOTA		
Huron	1301	397
Rapid City	3259	993
SOUTH DAKOTA (Cont'd)		
Sioux Falls	1427	435
TENNESSEE		
Bristol	1525	465
Chattanooga	762	232
Knoxville	980	299
Memphis	399	122
Nashville	546	166
Oak Ridge	914	279
TEXAS		
Abilene	1738	530
Amarillo	3676	1120
Austin	605	184
Brownsville	57	17
Corpus Christi	20	6
Dallas	512	156
Del Rio	960	293
El Paso	3778	1152
Fort Worth	576	176
Galveston	9	3
Galveston (U)	54	16
Houston	62	19
Houston (U)	138	40
Laredo	418	127
Lubbock	3241	988
Midland	2862	872
Port Arthur	34	10
San Angelo	1908	582
San Antonio	693	211
Victoria	117	36
Waco	578	176
Wichita Falls	1030	314
UTAH		
Milford	5097	1526
Salt Lake City	4357	1328
Wendover	4239	1292
VERMONT		
Burlington	403	123
VIRGINIA		
Lynchburg	686	209
Norfolk	30	9
Richmond	164	50
Roanoke	1176	358
WASHINGTON		
Olympia	200	61
Seattle-Tacoma	388	118
Spokane	1929	588
Stampede Pass (R)	3967	1209
Tatoosh Island (R)	86	26
Walla Walla (U)	991	302
Yakima	1076	307
WEST INDIES		
San Juan, P. R.	82	25
Swan Island	35	11
WEST VIRGINIA		
Beckley	2514	766
Charleston	989	301
Elkins	1947	593
Huntington	838	255
WISCONSIN		
Green Bay	617	188
La Crosse	714	218
Madison	974	297
Milwaukee	681	208
Parkersburg (U)	637	194
WYOMING		
Casper	5290	1612
Cheyenne	6094	1830
Lander	5352	1631
Sheridan	3790	1155

Data from airport unless otherwise specified. U indicates Urban, R indicates Rural, sites.
These are the elevations of the barometer (in feet and meters above mean sea level) to which station pressure values pertain in the "Climatological Data" table in the monthly publication CLIMATOLOGICAL DATA NATIONAL SUMMARY. When an elevation differs from the present station elevation this level was selected to permit comparison of data for a longer period of homogeneous record.

GENERAL SUMMARY OF TORNADOES, 1964

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A total of 713 tornadoes were reported in 1964. They killed 73 persons, injured 1,085 others, and caused extensive damage to property and crops. Tornadoes occurred on 156 days. Almost three-fourths of these days (72%) were in the 5-month period April to August, when tornadoes occurred somewhere in the United States on an average of 3 days in 4. These statistics are listed by states in Table 1. The table shows that 440 tornadoes, 62 percent of the total number, occurred from April to June and 580 or 81 percent of the storms occurred in the 5-month period, April to August. This is the usual "tornado season", the time of year when tornadoes are generally most frequent. Only 15 percent occurred during the first 3 months and the last 3 months of the year.

Two-thirds of the tornadoes, 475, occurred in 11 States -- Minnesota, Wisconsin, Iowa, South Dakota, Nebraska, Kansas, Missouri, Arkansas, Oklahoma, Texas, and Louisiana. Half of the tornadoes, 356, occurred in six States -- Wisconsin, Iowa, Nebraska, Kansas, Oklahoma, and Texas. The high frequency of tornadoes in this section of the Plains is responsible for its occasionally being referred to as the "tornado belt." The summary includes nine tornadoes that crossed State lines. A brief discussion follows.

On April 12, two tornadoes crossed the Kansas-Missouri boundary. One moved from Leavenworth County, Kans., to Platte County, Mo., about midafternoon. Later in the afternoon a tornado moved from Bourbon County, Kans., to Vernon County, Mo. On April 28, a tornado moved from Cleburne County, Ala., to Haralson County, Ga.

On May 4, a tornado moved from northwest of Harpers Ferry, Iowa, to Rising Sun, Wis. The storm caused considerable property damage in both States. On May 5, a tornado moved from near Fairmount, N. Dak., northeastward to near Doran, Minn. In the Fairmount area the storm injured 11 persons, demolished 6 houses and 2 churches, and badly damaged a score of other houses before moving to Minnesota. On the same date, May 5, a tornado caused crop damage and destroyed many farm buildings in Campbell County, S. Dak. The storm peeled the black top surface from several hundred feet of Highway 10. It moved to North Dakota where it destroyed more farm buildings, a utility company substation, and leveled utility lines.

On the afternoon of June 11, a tornado crossed from Curry County, N. Mex., to near Bovina, Parmer County, Tex. On the 17th a tornado over the Mountain Home area in Arkansas moved east-northeast to Thayer, Mo. On November 19, a tornado crossed the Arkansas-Mississippi State boundary.

A number of tornadoes are described briefly because of the number of persons killed or injured or because they caused extensive damage.

On January 24, a tornado struck a wooded area about 1 mile southwest of Harpersville, Ala. It moved to the eastern part of town, demolished 3 houses, and killed 10 persons. It damaged about 20 houses, destroyed 5 farm buildings, and damaged several automobiles. Some of the contents of the demolished houses were found more than a half mile away.

On March 4, a tornado moved from Counce, Tenn., to Clifton Junction. It destroyed a chemical plant; heavily damaged a pulp and paper mill; caused several million dollars damage at the Pickwick Dam TVA Station; destroyed a boat dock and about 15 boats, many houses, and damaged barns, roofs, TV antennas, utility lines, trees, and motor vehicles.

NOTE.--This summary was prepared from information published by the United States Weather Bureau in Climatological Data National Summary and Storm Data.

On April 3, a very large tornado struck the northwest section of Wichita Falls, Tex., and the Sheppard Air Force Base, killing 7 persons and injuring 111. Property damage was estimated at $15 million. Property damage included 225 homes destroyed, major damage to 50 homes and 16 other buildings, and minor damage to 200 homes.

During the early evening of May 5, a tornado moved from near Hastings, Nebr., northeastward for about 110 miles to southwestern Cuming County. Severe hail preceded, accompanied, and followed the 1, 2, and sometimes 3 funnels which contacted the ground. Four persons were killed, about 50 injured, and property damage exceeded $15 million.

Severe storms covered all of Lower Michigan on May 8. Several tornadoes occurred. The most damaging struck 3 1/2 miles north of Mount Clemens. It killed 11 persons, injured 244 others, completely demolished 132 dwellings, caused major damage to 69 houses, and minor damage to 167. It also destroyed household furnishings, farm buildings, automobiles, boats, and trees. The property damage was estimated at $2 1/2 to $3 million.

On October 3, a tornado killed 22 persons in the Larose, La., vicinity. Most of the persons were killed when their homes collapsed. Some were killed by flying debris. The storm injured 165 other persons. Some of the debris was carried 16 miles. Property damage exceeded $1/2 million.

Table 2 lists the total number of tornadoes in selected States and shows the number per 10,000 square miles of area in those States. More tornadoes occurred in Kansas than any other State. Furthermore, the ratio of occurrences to land area in that state was the highest in the Nation, 11.5 tornadoes per 10,000 square miles. Texas ranked second in the number of tornadoes but the ratio of the number of tornadoes to the land area was 3.0 tornadoes per 10,000 square miles.

Table 3 lists tornadoes, tornado days, and resulting losses by years for 1916 to 1964. The apparent increase in tornado frequency in recent years as represented in the tables is not an actual increase in the number of occurrences but, rather, indicates the more complete coverage of tornado reports. Property losses are greater in recent years. This is partially because more areas are occupied by dwellings, factories, etc., and partially because of the higher dollar value of such improvements.

Table 4 lists the total number of tornadoes, tornado days, and deaths from tornadoes, by months for the 12-year period 1953 to 1964. Of the 12-year total, 7261, more than 5000 or two-thirds of the tornadoes occurred in the late spring and early summer months, April to July. The number of tornadoes in those months in an "average year" is 417.

Table 5 lists the number of funnel clouds that were seen but which did not reach the ground. As with tornadoes, the funnel clouds were most frequent from April to June. About 60 percent of the funnels were seen during the 3-month period, April to June, and 85 percent in the 5-month period, April to August. These percentage frequencies are about the same as the percentage frequencies of tornado occurrences. Fewer than one-sixth of the funnels and one-sixth of the tornadoes occurred during the first 3 and the last 3 months of the year. As might well be expected, the States that ranked high in tornado frequency also ranked high in the frequency of funnel clouds.

The paths of the tornadoes are shown on the accompanying map, Chart IV.

TABLE I – TORNADO SUMMARY 1964

Year 1964

State	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
ALA.													
Number	2		3	12			1			3	2	5	28
Days	1		2	3			1			1	2	2	12
Deaths	10		2	0			0			0	0	0	12
Injuries	6		10	7			0			3	0	0	26
ALASKA													
(None)													
ARIZ.													
Number								1	1				2
Days								1	1				2
Deaths								2	0				2
Injuries								9	0				9
ARK.													
Number	3		3	8	1	3	2	3					23
Days	1		2	3	1	2	1	2					12
Deaths	0		1	0	0	0	0	0					1
Injuries	1		6	0	0	3	0	0					10
CALIF.													
Number	1										3		4
Days	1										3		4
Deaths	0										0		0
Injuries	0										0		0
COLO.													
Number				2	2	2	1						7
Days				2	2	2	1						7
Deaths				0	0	0	0						0
Injuries				0	0	0	0						0
CONN.													
(None)													
DEL.													
Number			1										1
Days			1										1
Deaths			0										0
Injuries			0										0
FLA.													
Number	4	1	2	3	1	7	2	6		9	1	1	37
Days	1	1	2	3	1	4	2	4		1	1	1	21
Deaths	0	0	0	0	0	0	0	0		0	0	0	0
Injuries	0	0	1	2	0	1	6	1		0	0	4	15
GA.													
Number				6			1					4	11
Days				4			1					3	8
Deaths				0			0					2	2
Injuries				2			0					20	22
HAWAII													
(None)													
IDAHO													
Number					1			1					2
Days					1			1					2
Deaths					0			0					0
Injuries					0			0					0
ILL.													
Number			3	4									7
Days			2	2									4
Deaths			0	0									0
Injuries			2	1									3
IND.													
Number				4	1	1	1	1					8
Days				3	1	1	1	1					7
Deaths				0	0	0	0	0					0
Injuries				2	0	0	2	0					4
IOWA													
Number				10	15	15	1	10	4				55
Days				3	5	6	1	3	3				21
Deaths				1	0	0	0	0	0				1
Injuries				30	38	0	0	0	0				68
KANS.													
Number			1	46	13	24	1	7			2		94
Days			1	11	7	11	1	3			2		36
Deaths			0	4	0	0	0	0			0		4
Injuries			0	34	1	0	0	3			0		38
KY.													
Number	4		5			3							12
Days	1		3			2							6
Deaths	0		3			0							3
Injuries	2		30			3							35
LA.													
Number				2				1		6	2	3	14
Days				2				1		2	1	1	7
Deaths				0				0		22	0	0	22
Injuries				2				0		170	1	0	173
MAINE													
(NONE)													

State	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
MD.													
(None)													
MASS.													
Number					2		3						5
Days					1		2						3
Deaths					0		0						0
Injuries					0		0						0
MICH.													
Number				1	6		3	4	1				15
Days				1	2		2	1	1				7
Deaths				0	11		0	0	0				11
Injuries				0	245		1	5	0				251
MINN.													
Number				1	7	4	1	2	6				21
Days				1	3	2	1	2	2				11
Deaths				0	0	0	0	0	0				0
Injuries				0	14	8	0	0	1				23
MISS.													
Number							1			1	3		5
Days							1			1	1		3
Deaths							0			0	0		0
Injuries							0			0	0		0
MO.													
Number			3	8	1	11	3	1	2				29
Days			2	2	1	4	3	1	1				14
Deaths			0	2	0	0	0	0	0				2
Injuries			29	16	0	1	1	0	0				47
MONT.													
Number				1		1	2	1					5
Days				1		1	2	1					5
Deaths				0		0	0	0					0
Injuries				1		0	0	0					1
NEBR.													
Number				8	13	13	5	2					41
Days				4	6	4	4	2					20
Deaths				0	4	0	0	0					4
Injuries				0	63	0	0	0					63
NEV.													
Number				1	2	1							4
Days				1	1	1							3
Deaths				0	0	0							0
Injuries				0	1	0							1
N. H.													
Number						1							1
Days						1							1
Deaths						0							0
Injuries						0							0
N. J.													
Number			2										2
Days			2										2
Deaths			0										0
Injuries			10										10
N. MEX.													
Number					2	8			1				11
Days					2	4			1				7
Deaths					1	0			0				1
Injuries					8	1			0				9
N. Y.													
Number						1							1
Days						1							1
Deaths						0							0
Injuries						0							0
N. C.													
Number			2				1	4	1	2		1	11
Days			1				1	4	1	1		1	9
Deaths			0				0	0	0	0		0	0
Injuries			0				1	17	4	2		1	25
N. DAK.													
Number					2	3	3	3					11
Days					1	3	2	2					8
Deaths					0	0	0	0					0
Injuries					11	0	0	0					11
OHIO													
Number			1		1	4		3					9
Days			1		1	2		1					5
Deaths			0		0	0		0					0
Injuries			0		0	7		0					7
OKLA.													
Number				17	22	4	4	4	1		2		54
Days				7	5	3	4	4	1		2		26
Deaths				0	0	0	0	0	0		0		0
Injuries				2	1	1	0	0	0		0		4
OREG.													
(None)													

TABLE 1 – TORNADO SUMMARY 1964

Year 1964

State	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
PA.													
Number			1			4	1						6
Days			1			2	1						4
Deaths			0			0	0						0
Injuries			0			6	0						6
R. I.													
(None)													
S. C.													
Number				6		4	3	7	1			2	23
Days				3		3	2	2	1			2	13
Deaths				0		0	0	0	0			0	0
Injuries				0		0	0	2	0			0	2
S. DAK.													
Number					12	14	5	1					32
Days					4	3	3	1					11
Deaths					0	0	0	0					0
Injuries					0	2	0	0					2
TENN.													
Number			3				1	1				1	6
Days			1				1	1				1	4
Deaths			0				0	0				0	0
Injuries			13				0	6				0	19
TEX.													
Number		1	6	23	15	11	9	7	3	1	3		79
Days		1	2	9	7	8	8	7	3	1	1		47
Deaths		0	0	8	0	0	0	0	0	0	0		8
Injuries		1	1	119	0	4	1	6	0	0	0		132
UTAH													
Number								1					1
Days								1					1
Deaths								0					0
Injuries								0					0
VT.													
(None)													

State	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
VA.													
Number							2						2
Days							1						1
Deaths							0						0
Injuries							3						3
WASH.													
Number					1			1					2
Days					1			1					2
Deaths					0			0					0
Injuries					0			0					0
W. VA.													
Number												1	1
Days												1	1
Deaths												0	0
Injuries												0	0
WIS.													
Number					16	4	3	7	3				33
Days					6	3	2	2	1				14
Deaths					0	0	0	0	0				0
Injuries					25	2	3	32	4				66
WYO.													
Number				1	2	3	1						7
Days				1	2	3	1						7
Deaths				0	0	0	0						0
Injuries				0	0	0	0						0
TOTALS													
Number	14	2	36	164	138	146	61	79	24	24	16	18	722
				*161	*135	*144					*15		*713
Days	†3	†2	†11	†23	†20	†24	†23	†23	†10	†4	†8	†5	†156
Deaths	10	0	6	15	16	0	0	2	0	22	0	2	73
Injuries	9	1	102	218	407	39	18	81	9	175	1	25	1085

* Corrected for boundary-crossing tornadoes

† Tornado days for country as a whole.

Table 2 - Tornadoes per 10,000 Square Miles in Selected States

State	Number of Tornadoes	Tornadoes per 10,000 Square Miles
Kansas	94	11.5
Iowa	55	9.8
Oklahoma	54	7.8
South Carolina	23	7.6
Florida	37	6.9
Wisconsin	33	6.0
Nebraska	41	5.3
Alabama	28	4.9
Arkansas	23	4.4
Missouri	29	4.2
Louisiana	14	3.1
Texas	79	3.0

TABLE 3

NUMBER OF TORNADOES, TORNADO DAYS, AND RESULTING LOSSES BY YEARS 1916–64

Year	Number tornadoes	Number tornado days	Total deaths	Most deaths in a single tornado	Total property losses †	Number of tornadoes causing losses † in category 5	category 6	category 7 & over
1916	90	36	150	30	6	7	1	0
1917	121	38	509	101	7	21	9	0
1918	81	45	135	36	7	20	5	0
1919	64	35	206	59	7	10	2	0
1920	87	50	498	87	7	14	10	0
1921	105	55	202	61	7	22	3	0
1922	108	64	135	16	7	27	5	0
1923	102	59	109	23	6	21	1	0
1924	130	57	376	85	7	26	11	1
1925	119	65	794	689	7	34	2	1
1926	111	57	144	23	6	28	0	0
1927	163	62	540	92	7	42	9	1
1928	203	79	92	14	7	40	7	0
1929	197	74	274	40	7	48	4	0
1930	192	72	179	41	7	38	6	0
1931	94	57	36	6	6	14	1	0
1932	151	67	394	37	7	23	1	1
1933	258	96	362	34	7	46	9	0
1934	147	77	47	6	6	10	3	0
1935	180	77	70	11	6	29	0	0
1936	151	71	552	216	7	17	5	1
1937	147	75	29	5	6	24	0	0
1938	213	76	183	32	7	29	6	0
1939	152	75	87	27	7	21	3	0
1940	124	62	65	18	7	13	2	0
1941	118	57	53	25	6	24	1	0
1942	167	66	384	65	7	42	10	0
1943	152	61	58	5	7	28	8	0
1944	169	68	275	100	7	50	9	0
1945	121	66	210	69	7	21	10	1
1946	106	65	78	15	7	29	7	0
1947	165	78	313	169	7	46	7	1
1948	183	68	140	33	7	62	11	2
1949	249	80	212	58	7	54	13	0
1950	199	88	70	18	7	47	9	0
1951	272	113	34	6	7	35	11	2
1952	236	98	230	57	7	53	19	0
1953	437	136	516	116	8	63	18	7
1954	549	159	35	6	7	63	8	1
1955	593	153	125	80	7	74	13	1
1956	532	155	83	25	7	83	24	1
1957	864	154	191	44	8	129	26	3
1958	565	166	66	19	7	70	8	1
1959	589	156	58	21	7	70	4	1
1960	618	172	47	16	7	65	11	1
1961	683	169	51	16	7	103	21	1
1962	658	153	28	17	7	51	10	0
1963	461	140	31	5	7	77	15	1
1964	713	156	73	22	7	113	17	5
Means:								
1916-64	---	---	194	--	-	---	--	-
1953-64	605	156	109	--	-	---	--	-

NOTE.--The above estimated losses are based on values at time of occurrence.

† Storm damages in categories:

5 $50,000 to $500,000
6 $500,000 to $5,000,000
7 $5,000,000 to $50,000,000
8 $50,000,000 and over.

This tabulation does not include funnel clouds that remained aloft or funnels on water surfaces only.

TABLE 4 — NUMBER OF TORNADOES, TORNADO DAYS, AND DEATHS — 1953-1964

Year	January			February			March			April			May			June			July		
	Number	Days	Deaths	Number	Days	Deaths	Number	Days	Deaths	Number	Days	Deaths	Number	Days	Deaths	Number	Days	Deaths	Number	Days	Deaths
1953	14	6	0	17	3	3	40	10	24	45	16	34	99	21	162	114	24	244	40	19	0
1954	2	1	0	19	9	2	69	13	10	117	22	3	97	22	8	101	26	5	46	23	0
1955	2	2	0	4	3	0	41	15	4	101	18	7	150	26	103	148	28	2	50	21	5
1956	2	2	0	47	12	8	31	7	1	87	15	67	88	24	4	66	21	0	101	26	1
1957	17	3	13	5	3	0	39	7	1	216	21	29	226	26	87	148	25	14	54	19	0
1958	12	7	0	20	5	13	15	10	0	78	19	4	69	21	0	128	27	42	119	30	1
1959	15	2	3	19	5	21	42	11	9	30	12	1	225	28	8	73	25	2	62	24	0
1960	9	4	0	28	10	0	27	10	0	70	20	7	200	26	34	123	27	3	48	22	1
1961	1	1	0	31	8	0	121	17	7	73	19	3	135	25	23	101	23	2	77	27	0
1962	11	3	1	25	7	0	37	9	17	41	8	1	201	22	3	173	29	0	75	26	0
1963	14	5	1	6	3	0	49	12	8	82	14	16	69	21	1	93	23	0	62	26	0
1964	14	3	10	2	2	0	36	11	6	161	23	15	135	20	16	144	24	0	61	23	0
TOTAL	113	39	28	223	70	47	547	132	87	1101	207	187	1694	282	449	1412	302	314	795	286	8
MEAN	9	3	2	19	6	4	46	11	7	92	17	16	141	24	37	118	25	26	66	24	1

Year	August			September			October			November			December			Annual		
	Number	Days	Deaths	Number	Days	Deaths	Number	Days	Deaths	Number	Days	Deaths	Number	Days	Deaths	Number	Days	Deaths
1953	26	15	0	5	4	0	6	4	0	11	6	0	20	8	49	437	136	516
1954	46	21	1	20	10	3	15	8	2	2	2	0	16	3	1	549	159	35
1955	34	18	0	16	8	2	23	7	1	20	4	1	3	2	0	593	153	125
1956	43	20	2	19	10	0	30	8	0	8	6	0	10	4	0	532	155	83
1957	26	14	0	17	10	2	17	11	2	61	11	25	38	4	18	864	154	191
1958	45	20	1	24	14	1	9	6	4	45	6	0	1	1	0	565	166	66
1959	37	18	0	54	15	14	19	10	0	11	4	0	2	2	0	589	156	58
1960	48	23	1	21	13	0	18	10	1	25	6	0	1	1	0	618	172	47
1961	25	16	0	53	16	15	13	5	0	36	7	1	16	5	0	682	169	51
1962	49	21	6	27	12	0	12	10	0	5	4	0	2	2	0	658	153	28
1963	27	13	2	33	12	3	14	5	0	12	6	0	0	0	0	461	140	31
1964	79	23	2	24	10	0	24	4	22	15	8	0	18	5	2	713	156	73
TOTAL	485	222	15	313	134	40	200	88	32	251	70	27	127	37	70	7261	1869	1304
MEAN	40	19	1	26	11	3	17	7	3	21	6	2	11	3	6	605	156	109

TABLE 5 - NUMBER OF FUNNEL CLOUDS ALOFT 1964

State	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Ala.				3									3
Alaska													0
Ariz.				1									1
Ark	1		2				2	1				1	7
Calif.			2	1							8	2	13
Colo.				2	2	1							5
Conn.													0
Del.													0
D. C.													0
Fla.		1	1	5	5	20	10	14	5	5	6	5	77
Ga.				2			1	1		1		4	9
Hawaii		1		2									3
Idaho						2		1					3
Ill.			1		4		3						8
Ind.				2	3	3	1						9
Iowa				3	10	23	4	3	1	1			45
Kans.				36	11	30		3	12				92
Ky.													0
La.	1			3	3	2	6	8	1	2	1	2	29
Maine													0
Md.													0
Mass.													0
Mich.				2	1	5	4	1					13
Minn.					4	2	1		1				8
Miss.			4	4	1		4	5		3	1		22
Mo.	2			14		5	1	1	2				25
Mont.						6							6
Nebr.				2	9	10		2					23
Nev.						1							1
N. H.													0
N. J.						1							1
N. Mex.						1							1
N. Y.			1			1	1	3					6
N. C.							2						2
N. Dak.						2	3	6					11
Ohio					1	2		5					8
Okla.				23	14	5	3	11	1		15		72
Oreg.													0
Pa.													0
R. I.													0
S. C.						1	5	2				1	9
S. Dak.					7	3	3						13
Tenn.				2									2
Tex.				10	12	14	11	14	11	1		1	74
Utah						2							2
Vt.													0
Va.													0
Wash.					1								1
W. Va.													0
Wis.						1							1
Wyo.					1	5	1						7
W. Indies													0
Total	4	2	11	117	89	148	66	81	34	13	31	16	612

HAILSTORM LOSSES FOR PAST YEARS

Year	Property (exclusive of crops)	Crops	Total
1933	-	-	7
1934	-	-	7
1935	-	-	7
1936	6	7	7
1937	6	7	7
1938	6	7	7
1939	5	6	6
1940	6	7	7
1941	6	7	7
1942	6	7	7
1943	6	7	7
1944	7	7	8
1945	6	7	7
1946	7	7	7
1947	6	8	8
1948	7	8	8
1949	7	7	7
1950	7	7	7
1951	7	7	8
1952	7	7	7
1953	7	7	7
1954	7	8	8
1955	7	7	8
1956	7	8	8
1957	7	8	8
1958	7	8	8
1959	6	7	7
1960	7	8	8
1961	8	8	8
1962	9	8	9
1963	8	8	8
1964	8	8	8

† Storm damages are placed in categories varying from 1 to 9 as follows:

1	Less than $50	4	$5,000 to $50,000	7	$5,000,000 to $50,000,000
2	$50 to $500	5	$50,000 to $500,000	8	$50,000,000 to $500,000,000
3	$500 to $5,000	6	$500,000 to $5,000,000	9	$500,000,000 to $5,000,000,000.

NOTE.--The above estimated losses are based on values at time of occurrence.

WINDSTORM LOSSES FOR PAST YEARS

(Windstorms other than tornadoes)

Year	Total loss of life	Total property loss
1916	65	7
1917	25	6
1918	79	7
1919	344	7
1920	42	6
1921	65	7
1922	133	7
1923	68	7
1924	78	7
1925	88	7
1926	357	8
1927	64	7
1928	1,947	8
1929	46	7
1930	49	7
1931	17	7
1932	306	7
1933	156	8
1934	109	7
1935	461	7
1936	121	7
1937	43	7
1938	630	8
1939	60	6
1940	251	7
1941	43	7
1942	68	7
1943	61	7
1944	448	8
1945	85	7
1946	70	7
1947	117	8
1948	52	8
1949	102	8
1950	210	8
1951	289	8
1952	137	8
1953	118	8
1954	292	9
1955	301	8
1956	196	8
1957	553	8
1958	129	8
1959	145	7
1960	85	8
1961	64	8
1962	134	9
1963	54	9
1964	64	9
TOTAL	9,421	

† Storm damages are placed in categories varying from 1 to 9 as follows:

1	Less than $50	4	$5,000 to $50,000	7	$5,000,000 to $50,000,000
2	$50 to $500	5	$50,000 to $500,000	8	$50,000,000 to $500,000,000
3	$500 to $5,000	6	$500,000 to $5,000,000	9	$500,000,000 to $5,000,000,000.

NOTE.--The above estimated losses are based on values at time of occurrence.

NORTH ATLANTIC TROPICAL CYCLONES, 1964

George W. Cry, Climatology
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Twelve tropical cyclones, including six of hurricane intensity, developed over the North Atlantic region during 1964. The season, extending from June 2 through November 9, was relatively active. The total number of storms was the highest since 1955, when twelve were also observed. The average annual frequency during the past three decades (1931-1963) has been 9.8, including 5.6 hurricanes.

Significant effects of four hurricanes and two tropical storms were felt on the United States mainland. This was the largest number of hurricanes to pass inland since 1933, when five did so. In only four other years since 1900 have four or more hurricane centers moved inland: 1916 (6); 1906, 1909, and 1926 (4).

Florida was affected by three hurricanes -- Cleo, Dora, and Isbell -- the final extratropical stages of Hilda and one tropical storm. This season ended a prolonged period of unusually low hurricane frequencies in Florida. During the 13 years from 1951 through 1963 only three hurricanes passed over the State compared with a long-term average of almost one per year.

Dora was the first tropical cyclone of record to bring full hurricane force winds of long duration to northeastern Florida. High winds in Cleo and Isbell were confined to southern sectors of the State, and Hilda swept through east-central Louisiana.

Property and crop damages resulting from the tropical cyclones during 1964 has been estimated at more than $515 million in the United States and at more than $86 million in the Antilles and Bermuda. Good warnings and evacuation of the immediate coastal areas exposed to the greatest dangers from high winds and storm tides kept casualties in the United States at a moderate number--49. Three persons perished in Cleo, five in Dora, and three in Isbell. Of the 38 fatalities in Hilda more than two-thirds were the result of destructive tornadoes imbedded in a pre-hurricane squall line.

Some 214 fatalities resulted from Cleo's passage through the Antilles, and three persons were lost during Isbell in western Cuba.

Summaries of each hurricane and tropical storm follow. The tracks of the storms are shown in the chart and meteorological data are given in accompanying tables.

TROPICAL STORM, JUNE 2-11

During June 2 and 3 a broad area of unsettled weather covered the northwestern Caribbean. A weak depression moved northward to the Yucatan Channel by the night of the 4th, with maximum winds about 30 to 35 m.p.h. in scattered squalls. Conditions were not favorable for intensification of the circulation as it moved northward through the eastern Gulf of Mexico on June 5 and across the northern portions of the Florida peninsula during June 6. Intensification and organization of the circulation to tropical storm force did take place on the 7th while it was centered off the Carolinas, and the storm moved east-northeastward during the next two days. Late on the 8th it changed to an easterly course, reaching a point some 200 miles north of Bermuda on the 9th. Maximum intensity was attained at this time, with winds of near 60 m.p.h. reported from ships in the area.

By the 10th the storm's winds had weakened to under 40 m.p.h., and the storm turned northward during that day. On June 11 it was absorbed into an extratropical cyclone south of Newfoundland.

Several tornadoes and waterspouts were associated with this depression in Florida on June 6. The most damaging of these struck along a 3-1/2-mile section of Jacksonville, causing damage estimated in excess of $300,000. Strong winds and hail were reported in several areas of northern Florida and southern Georgia in connection with thunderstorm activity which left precipitation totaling from 3 to 6 inches. Sustained winds reached 48 m.p.h. at Jacksonville WBAS on the 6th. Winds were only 30 to 35 m.p.h. in the Charleston, S. Car., area. Lowest pressures reported from mainland stations were 1009.1 mb. (29.80 in.) at Jacksonville and Charleston.

The storm produced local flooding in western Cuba and in eastern South Carolina. Largest totals in the latter area were around Conway where 10.38 inches of rain fell in less than 24 hours on the 7th-8th. Flash flooding interrupted traffic and caused substantial damage to roads and automobiles. The tobacco crop suffered heavy damage in parts of South Carolina. No casualties were reported.

TROPICAL STORM, JULY 28-AUGUST 3

During the night of July 27-28 an area of showers and squalls was indicated by ship reports in the south-central North Atlantic. A reconnaissance plane on the 28th reported no westerly winds indicative of a closed circulation although maximum easterly winds of 50 m.p.h. were noted near 21° N., 50°W., some 800 miles east-northeast of the Leeward Islands. Reconnaissance the next morning found a small storm center and maximum winds of 50 m.p.h. in scattered squalls. The system continued to be poorly organized as it moved rapidly west-northwestward, then northward. It recurved on the 30th, and was located some 350 miles east of Bermuda on the 31st.

There was still little organization, the central pressure was only about 1012 mb., and winds were 55 to 65 m.p.h. east of the center. During the day pressure dropped several millibars and winds in the western portion of the circulation increased to 25 to 30 m.p.h. Some further intensification and organization were noted on August 1 as the storm continued rapidly northeastward in advance of a cold front approaching the area from the northwest. Several ships reported winds of 45 m.p.h. or higher, with one indicating 80 m.p.h., apparently in a squall. By August 3 cold air had intruded into the storm so that the tropical characteristics of the circulation were destroyed, and a typical extratropical cyclone was created.

No damage or casualties have been reported.

TROPICAL STORM ABBY, AUGUST 5-8

A weak trough of low pressure moved into the northeastern Gulf of Mexico on August 5. During the next two days it moved westward with no sign of development or intensification until it approached the southern portion of the upper Texas Coast on the 7th. The radar installations at Galveston, Victoria, Brownsville, and Lake Charles all showed the sudden development of spiral precipitation bands and an eye characteristic of a tropical storm shortly before noon, c.s.t., August 7. A reconnaissance plane was in the area and reported

a center "fix" at 1115 c.s.t.

Abby, a very small storm with a complete surface wind circulation well under 100 miles in diameter, moved westward at about 10 m.p.h. following its development and crossed the coast just northeast of Matagorda about 1600 c.s.t. Over land Abby continued westward, with the center passing over Edna, and through the Victoria-Cuero area, as the winds weakened steadily. By the morning of August 8 the circulation had degenerated into an area of squalls over southern Texas.

Maximum winds over the Gulf were estimated at about 85 m.p.h. in brief squalls (probably an overestimate), and the central pressure was near 1000 mb. (29.53 in.). Highest winds observed on land were 45 m.p.h., with gusts to 65 m.p.h. from the west-southwest, at the Corps of Engineers installation at Matagorda. The lowest pressure on the coast was also recorded there -- 1004 mb. (29.66 in.).

Tides were only slightly above normal due to Abby's small size and rapid development near the coast. The highest reported, 2.7 feet above mean sea level at Galveston, occurred at 0420 c.s.t., August 7, before Abby intensified. At Matagorda the water level reached 1.8 feet, m.s.l.; at Freeport the highest tide was 2.1 feet, m.s.l.

Locally heavy rains occurred in a narrow belt near the storm track across the coastal plain, with the largest amounts falling during early morning hours of the 8th. Some of the highest totals included 6.14 inches at Victoria; 5.09 inches at Falls City; and 5.00 inches at Pettus and Cibolo Creek.

Property damage, mainly from flooding in and around Victoria, was estimated at $150,000. Crop damage from the effects of wind and driving rain on rice, which was in mid-harvest, and cotton, which was nearing maturity, was estimated at $600,000. The rainfall was beneficial to ranges in most sections.

No deaths or injuries were reported.

TROPICAL STORM BRENDA, AUGUST 7-10

Observations from Bermuda gave the first synoptic indications of tropical storm Brenda. The storm probably began developing in a trough of low pressure some 300 miles west of Bermuda on August 7. An airliner crew member observed a low-level circular cloud formation at 1800 G.m.t. that day near 32°N., 69°W. It was similar to many noted previously, but after learning of the storm, he realized its possible importance and notified the Weather Bureau.

At Bermuda during the morning of August 8 pressure began to fall, from 1018 mb. (30.06 in.) at 0600 G.m.t. to 1008 mb. (29.77 in.) at 1300 G.m.t. Winds increased briefly to 45 m.p.h., with gusts to 65 m.p.h., as Brenda's center passed over the Islands. A small tornado or waterspout within the storm circulation caused damage to a commercial airliner and several private aircraft, and was apparently responsible for winds of 92 m.p.h. measured atop a 100-foot NASA tower.

After passing Bermuda, Brenda drifted slowly east-southeastward before turning northeastward and accelerating ahead of a cold front on the 9th. Spiral precipitation bands were observed on the Bermuda radar after the center passed, indicating that the circulation became better organized for a short time. However, reconnaissance aircraft could find no complete circulation on the 10th, and reported that Brenda had dissipated near 35°N. The lowest central pressure was 1006 mb. (29.71 in.) on the 9th. There were no reported casualties.

HURRICANE CLEO, AUGUST 20-SEPTEMBER 5

Cleo, the first hurricane of the 1964 season, was located in its early stages of development by a Navy reconnaissance plane during the afternoon of August 20, near 13.2°N., 44.5°W., with minimum pressure 1006 mb. (29.71 in.) and a few squalls of 35 m.p.h. The initial disturbance in which Cleo formed probably moved off the west African coast south of Dakar on August 15. TIROS VIII photographs on August 18 showed a large cloud mass centered near 10°N., 34°W. A report from the German ship LICHTENSTEIN at 1800 G.m.t. that day showed continuous rain and a relatively low pressure, but no indication of a circulation. However, at 0600 G.m.t. on the 20th a ship report did indicate the existence of a circulation and this was soon confirmed by the aircraft.

Cleo intensified rapidly, with the central pressure dropping to 993 mb. (29.32 in.) and winds reaching hurricane force by the morning of August 21. The hurricane intensified steadily during the next few days as it moved west-northwestward at 20 to 25 m.p.h., unusually rapid movement for these low latitudes.

The center reached the Lesser Antilles during the early afternoon of August 22. It crossed the island of Marie Galante and the southern tip of Guadeloupe, in the French West Indies. At Raizet Airport, some 15 miles north of the eye, lowest pressure was 1003 mb. (29.62 in.) and the maximum wind was 44 m.p.h., with gusts to 81 m.p.h. In the French West Indies, Cleo caused 14 deaths and 40 injuries; destroyed the banana crop and 1,000 homes; and left extensive damage to roofs, roads, and communications.

The hurricane center passed 80 to 90 miles south of the Virgin Isands and Puerto Rico during the 23d with gale winds and heavy rains extending into those areas. Highest observed winds were 50 m.p.h. on St. Croix and 52 m.p.h. at Tuna Point, Puerto Rico. Although the hurricane had continued to intensify rapidly, with central pressure 950 mb. (28.05 in.), surface winds estimated at 140 m.p.h., and winds measured at flight level by Weather Bureau research aircraft at 152 m.p.h., the size of the storm remained small and these extreme winds were confined to an area very near the center.

During the 24th Cleo moved westward just south of the Dominican Republic and Haiti. A slight turn toward the northwest began during the day and the hurricane entered the southern Haitian Peninsula just east of Les Cayes. It was still quite small and concentrated, with the strong winds lasting under two hours at many points. At Les Cayes there was no calm and the lowest pressure was 964 mb. (28.47 in.). The pressure fell 34 mb. there from 1500 to 1535 l.s.t., and rose 37 mb. in the following 25 minutes. The lowest pressure at Camp Perrin, about 12.5 miles inland along the track, was 950 mb. (28.05 in.). There was extensive destruction of buildings and houses from about 20 miles east of Les Cayes to some 18 miles inland toward the northwest from that town.

At least seven persons perished in the Dominican Republic, where damage was estimated at $2 million. Some 192 lives were lost in Haiti and damage was estimated at $15 million.

The mountains of southern Haiti distorted Cleo's surface circulation, and the exact path of the center over the area is somewhat obscure. The storm continued northwestward, however, and passed over the southeastern peninsula of Cuba east of Cabo Cruz as a marginal hurricane, then into the Golfo de Guacanaybo

HURRICANE CLEO

AUGUST 20-SEPTEMBER 5, 1964

Station	Date	Pressure (inches)		Wind (miles per hour)				Highest Tide (feet)		Storm Rainfall (inches)	Remarks
		Low	Time+	Fastest Mile	Time+	Gusts	Time+	#	Time+		
FLORIDA	Aug.										
Daytona Beach WBAS	28	29.43	0430	E 40†	0359	E 60		1.0		3.82	Property damage slight.
Ft. Myers WBAS	27	29.73	0430,1530	WNW 23†	1446	WNW 32	1415			T	No significant property damage. Wind gusts at Sanibel Island, 52 mph.
Gainesville FAA	28	29.72	0600,0700	NW 23	1214	N 28				0.38	Rainfall from cooperative station.
Jacksonville WBAS	28	29.58	1730	NE 43	0805	ENE 44	0818	3 to 4	1200	2.71	Storm damages negligible.
Key West WBAS	27	29.72	0258	NE 22	1236-26	NE 28	1236-26			0.15	Winds at Plantation Key, 40 mph; Ocean Reef(Key Largo) est. 50 mph.
Lakeland WBO	28	29.66	0100	NE 26	1342-27	NE 40				0.30	
Miami NHC	27	28.74	0306	N 110 est.		N 135 est.		3.6 est.			Extensive damage in Dade and Broward Counties. About 175
Miami WBAS	27	28.71	0308	N 74†	0311	NW 100				6.80	persons injured in Lower East Coast area.
Orlando WBAS	28	29.43	0130	N 32†	0055	NNE 46	1930-27			3.20	Minor damage.
Tampa WBAS	28	29.73	0255	NNE 28†	1729-27	NW 33	1340	1.3		0.05	
West Palm Beach WBAS	27	29.14	0842	SE 86†	0840	ESE 104	0840			3.99	Extensive damage in Palm Beach County.
GEORGIA											
Augusta WBAS	29	29.69		N 21†						7.56	Rainfall total for August 28-30.
Brunswick	28	29.65	1630	NE 35 est.	1400					5.66	
Savannah WBAS	29	29.61	0356	NE 34	2120-28	NE 44	2047-28	2.3		6.26	Rainfall: Isle of Hope, 9.59 in.
Sapelo Island	29	29.53		NNE 42	1600-28	50					
SOUTH CAROLINA											
Charleston WBAS	29	29.78	0449	SE 42	1635					5.84	Rainfall: Sullivans Island USCG, 8.41 in.; Mt. Pleasant, 6.65.
Charleston WBO	29			E 57	0109			2.6	0415	4.46	Tornado on James Island, 29-0106. Beach erosion on exposed areas; flooding in poorly drained areas.
Columbia WBAS	29	29.78	1705	NNE 21†	0700	NNE 28	0700			5.13	Tornado at Lake Murray, 29-1600, $50,000 damage.
Florence WBAS	30	29.80	1750	ENE 21†	1002					2.53	Tornado at Darlington 29-2130.
Greenville WBAS	30	29.80	1657	N 28	2249-29	N 33				4.34	Minor lowland flooding.
NORTH CAROLINA											
Raleigh WBAS	31	29.72	1400,1600	ESE 17†						3.10	Tornado at Laurinburg, 29-1400 to north of Rockingham, 29-1600. Another small tornado at Laurinburg, 30-0400. One or more
Hatteras WBO	Sept. 1	29.56	1100	S 45-31						5.14	tornadoes at two places in Pitt County, one place in Martin County about 31-1600. Heavy rainfall northwest of Winston-Salem with unofficial measurements 7-8 in. on 30-31 caused some flooding on Yadkin River.
VIRGINIA											
Norfolk WBAS	1	29.66	0340	E 28-31		E 40	0035	1.0		11.40	Record rainfall over much of Hampton Roads area, on Aug. 31-Sept. 1. Almost all rain fell within a 24-hr. period. Totals in-
Oceana NAS	1					ESE 42	0002			13.70	cluded Back Bay Wildlife Refuge, 14.09 in., Diamond Springs, 13.70 in., Norfolk Navy, 13.32 in., Cape Henry WBO and Norfolk Co-op., 10.41 in., Langley Field, 6.59 in.

+ Eastern Standard Time
# Above Normal
† Fastest observed 1-minute wind speed.

and the Golfo de Ana Maria. The center re-entered the coast near 79°W., late on the 25th and moved across the island by the next morning. Cleo was probably just under hurricane force during this period. Winds in Jucaro, Majagua, Tamarindo, and Florencia were estimated about 60 to 70 m.p.h., and in Jatibonico at 70 to 75 m.p.h. Damage in Cuba was apparently not heavy -- totaling about $3 million -- and one casualty was reported.

Shortly after emerging from the north coast of Cuba east of Caibarien about 0700 e.s.t. on the 26th, Cleo regained hurricane force, but the area covered by hurricane winds remained small. The hurricane moved on a north to north-northwest track during the 26th, headed toward the lower east coast of Florida. The center was tracked after mid-morning by radar at Miami and Key West. By midday Cleo had intensified with maximum winds 85 m.p.h. and central pressure near 984 mb. (29.06 in.). Throughout the afternoon and evening research aircraft remained in Cleo, finding no winds of hurricane force in the western half of the storm and central pressure steady at 984 mb.

The edge of the eye reached Key Biscayne, just off Miami, at 0200 e.s.t. on the 27th, and the center, which was continually expanding and contracting from a minimum diameter of 8 miles to a maximum of 16 miles, passed over the northeastern sections of Miami. Cleo was the first hurricane to strike the Miami area with full force since October 17, 1950.

Rapid intensification had evidently occurred over the extremely warm water (86° to 90°F) just off the coast. The lowest pressure in Florida was 967.5 mb. (28.57 in.) in North Miami, about 0.5 inch lower than the series of observations from the research aircraft a few hours earlier. Maximum sustained winds were estimated at 100 to 110 m.p.h., with gusts to 135 m.p.h. in sections of Miami, some 25 to 30 m.p.h. higher than estimated from the aircraft.

Cleo moved north-northwestward to northward during the 27th and 28th with the center remaining some 10 to 20 miles inland and closely paralleling the coastline. A gradual decrease of intensity occurred with much of the circulation over land. At West Palm Beach WBAS maximum sustained winds were 86 m.p.h., with gusts to 104 m.p.h. At Daytona Beach WBAS, about 210 miles north of Miami, sustained winds were only 40 m.p.h., with gusts to 60 m.p.h.

The major damage from Cleo was confined to a narrow belt 20 to 35 miles wide along the east coast of Florida from Miami to near Melbourne. Although wind gusts were above 100 m.p.h. over a considerable area, the duration of extreme winds at any point was short due to the small size of the storm. Little structural damage to buildings was reported. In Dade and Broward Counties, the principal damage was glass breakage in unprotected store fronts, beach hotels and motels, and homes. Many instances of water damage were reported after windows gave way. Other damage was uprooted trees, disrupted communications and power failures, sand-blasted automobiles and buildings, and overturned parked aircraft. Agricultural losses included blow-off of some 10 percent of the oranges and 20 to 30 percent of the grapefruit in the Indian River citrus area. Some early truck crops suffered wind damage, and sugarcane east of Lake Okeechobee was flattened, increasing harvest cost. Avocado losses were estimated at under 5 percent of the crop. Overall direct and indirect damages were estimated at $125 million in Florida.

Rainfall associated with Cleo in Florida was relatively light. Storm totals varied from 5 to 8 inches in the coastal areas of north Dade, Broward, and Palm Beach Counties to 3 to 5 inches along the coast farther north. Most places in the middle and western portions of the peninsula had under one inch. No significant flooding occurred.

Tides were less than 4 feet above normal in the Miami area, about 5 feet at Fort Lauderdale, and 5 to 6 feet above normal at Pompano Beach. No serious tidal damage was reported and damage to small craft was minimal.

No fatalities or serious injuries were reported, although many persons suffered cuts from breaking windows in the Miami area.

The center of Cleo left Florida between St. Augustine and Jacksonville during the afternoon of the 28th, but moved back inland near Savannah, Ga., a few hours later. Winds diminished to less than tropical storm force as the circulation moved slowly through eastern Georgia on the 29th, into South Carolina on the 30th, and across central North Carolina on the 31st. As the remnants of the circulation moved out to sea between Norfolk and Hatteras during the early morning hours of September 1, the winds increased and the storm began to take on a better organized structure. Cleo regained tropical storm force during the afternoon of September 1, and again reached hurricane force while well at sea on the 2d. Cleo then curved northeastward and northward, moved east of Newfoundland, and acquired predominant extratropical features on the 4th.

Cleo's major effects from northern Florida northward were due to precipitation and scattered tornadoes. Winds reached gale force only at Charleston, S. Car., and in connection with severe local storms.

Rainfall amounts in Georgia ranged from 6 to 9 inches along the coast and the eastern border as far north as Augusta. Very little rain fell in central Georgia and none in the west. Extensive damage to roads, streets, and farmland resulted from the torrential rainfall. Floodwaters entered homes in Savannah, Augusta, and many smaller communities. One man drowned attempting to secure a boat near Brunswick.

In South Carolina rains ranging from 3 to more than 8 inches were widespread, and some flooding occurred on streams in the western part of the State. Rainfall totals in North Carolina varied from 2 to more than 8 inches, while 3- to 6-inch totals were reported in south-central Virginia and the lower Eastern Shore of Maryland. Flash flooding of small streams caused scattered damage.

Very heavy rainfall developed in extreme southeastern Virginia during the night of August 31-September 1 as Cleo moved offshore to the south and a cold front approached the area from the north. Rainfall amounts at several points exceeded previous all-time 24-hour records. The largest reported storm total was 14.09 inches at Back Bay Wildlife Refuge. At Norfolk WBAS, 10.40 inches of rain fell between 1100 e.s.t., August 31 and 1100 e.s.t., September 1, shattering the previous 24-hour record of 6.78 inches on June 2-3, 1963. Considerable flooding occurred in the Hampton Roads area with many streets and roads washed out. Two persons perished due to carbon monoxide poisoning in a vehicle stranded by high waters. Damage from flooding was estimated at $3 million.

A number of tornadoes or probable tornadoes were reported in connection with Cleo in Florida and the Carolinas. These occurred near Titusville, New Smyrna Beach, and Davie in Florida; James Island, Lawton Bluff,

Bethera, Lake Murray, Cassat, Darlington, Timmonsville, and Sansbury Crossroads in South Carolina; Laurinburg (2), Bethel, Stokes, and Beargrass in North Carolina. At least 22 injuries and more than $400,000 damage resulted from these storms.

HURRICANE DORA, AUGUST 28-SEPTEMBER 16

A large, weak low pressure area that moved off the west African coast south of Dakar on August 28 was probably the initial disturbance from which Dora later developed. This low passed south of the Cape Verde Islands on the 29th. By early on the 31st TIROS VIII photographs showed a large cloud mass indicative of an incipient tropical storm centered near 11°N., 40°W., and the next day ship reports placed it near 12°N., 46°W. The MORMACSCAN passed close to the center, and reported a windshift from northeast to southwest, pressure 1007.5 mb. (29.75 in.) and winds to 40 m.p.h. during the early morning hours of September 1. Reconnaissance aircraft reached the area by midday and located the center of the tropical storm near 12.5°N., 48.5°W., with surface winds of 60 m.p.h., and minimum pressure 998 mb. (29.47 in.). Dora moved west-northwestward during the 1st and 2d at about 18 m.p.h., and reached hurricane force on the latter day. During the evening of the 2d it slowed down in forward speed and turned to a more northwesterly course. It continued to gain intensity and to expand in size. Reconnaissance aircraft during the night of the 2d reported winds had increased rapidly to 115 m.p.h., and on the afternoon of the 3d, the central pressure was down to 981 mb. (28.97 in.).

Late on the 5th Dora began to turn toward a course almost due west. The storm was about 350 miles south of Bermuda at the time and had grown into a large and intense hurricane. On the morning of the 6th the central pressure was near 942 mb. (27.82 in.) and maximum winds were about 150 m.p.h. During the 7th and 8th Dora continued on a track just slightly north of west heading toward the upper east coast of Florida. Prior to reaching the coast the hurricane slowed its forward speed so that winds and tides increased gradually during the 9th over a broad area from central Florida northward to the Carolinas. Radar photographs showed that the center followed a very erratic path on the 9th. The central eye finally moved onshore at St. Augustine, Fla., between 0015 and 0130 e.s.t., September 10. The lowest pressure reported on land, 966 mb. (28.52 in.), occurred there at 0100, and the highest sustained winds, estimated at 125 m.p.h. from the southwest, immediately followed the passage of the center.

Winds exceeded hurricane force from extreme southeastern Georgia to Flagler County, Fla., with sustained speeds near 100 m.p.h. along the coastline from St. Augustine northward to the Jacksonville beaches. At Jacksonville WBAS, some miles inland, the maximum sustained wind, 82 m.p.h. at 1948 e.s.t. on the 9th, was the first occurrence of full hurricane force in Weather Bureau records there dating back some 80 years.

After passing inland, Dora continued to move slowly on an unusual path only slightly north of west, and maintained hurricane force winds over a gradually decreasing area on the 10th. The storm center reached extreme southeastern Alabama on the evening of the 11th with wind speeds down to moderate levels, then recurved and moved east-northeastward through southern Georgia during the 12th. The forward speed picked up, and wind force increased offshore and along the coast as the center moved rapidly northeastward to near Cape Hatteras by the evening of the 13th. Within 12 hours after Dora re-entered the Atlantic, cold air had completely destroyed its tropical structure. The storm continued rapidly northeastward, and crossed southern Newfoundland during the 15th.

Damage resulting from all the major potential destructive forces in a hurricane (tides, winds, and rainfall), was heavy throughout northern Florida and southern Georgia. No ancillary tornadoes were reported in the major damage areas.

Unusually high tides were produced by the long duration of strong onshore winds. Levels reached 5 to 8 feet or more above the average tide from the Daytona Beach area northward to the Georgia coast. Tides estimated at 12 feet (reference plane unknown), or 4 feet higher than any known previous tide, swept over Anastasia Island off St. Augustine, and the water level reached 10 feet above normal at Mayport. These massive storm surges caused extensive beach erosion, inundated many beach communities, washed out beach roads, and swept several dwellings and buildings into the sea.

Wind damage was also extensive in coastal areas north of Daytona Beach. The heaviest destruction occurred from St. Augustine to the Georgia border. The high winds in the Jacksonville Metropolitan area caused extensive damage to utility lines. Numerous trees were uprooted throughout northeastern Florida, adding to damage as they fell across utility lines or onto buildings. Major structural damage due to wind was limited to coastal areas and to older frame buildings a short distance inland. Extensive wind-induced river flooding occurred in Jacksonville along the banks of the St. Johns River following the passage of Dora's center.

Although winds gradually diminished as Dora moved westward across northern Florida, widespread and intense rainfall spread over sections of the interior counties northward into southeastern Georgia. Rain continued at many places for four days during both the westward and eastward passages of the storm center. Totals in excess of 10 inches fell over an estimated 10,000-square-mile area, and amounts of more than 6 inches were general from near Brunswick and Waycross, Ga., to near Tallahassee and Orlando, Fla. The most intense rains fell in Lafayette and Suwannee Counties, Fla., on the 12th. At Live Oak 18.62 inches of rain fell between the 10th and the 14th, with 12.95 inches during the 24 hours ending at 1800 e.s.t. on the 12th. Mayo recorded 23.73 inches, with 14.62 inches during the same 24-hour period.

Tides along the Gulf coast between St. Marks and Tampa, Fla. ranged from two to locally six feet above normal (at Yankeetown) as gale force southwesterly winds persisted from the 10th through most of the 12th. Tidal flooding was increased in many places by the runoff from the heavy rains of the 11th and 12th. In addition to flooding in these coastal sections and along lakes and streams, many poorly-drained sections were completely inundated by the heavy rains. Some communities were isolated for several days and damage to roads and bridges was widespread. Considerable water damage was reported to unharvested crops of corn, cotton, and peanuts.

Conditions in southeastern Georgia were less severe, but considerable beach erosion was reported all along the coast; flooding, wind damage, and utility failures were widespread around Brunswick. Lesser damage was recorded elsewhere, and crop damage was apparently not heavy.

HURRICANE DORA

SEPTEMBER 1-14, 1964

Station	Date	Pressure (inches)		Wind (miles per hour)				Highest Tide (feet)		Storm Rainfall (inches)	Remarks
		Low	Time+	Fastest Mile	Time+	Gusts	Time+	#	Time+		
FLORIDA	Sept.										
Apalachicola WBO	11	29.44	0140	NW 39	1416-10					4.95	Tide Alligator Point 2 ft. mean low water.
Daytona Beach WBAS	9	29.04	2015	W 46*	1424	W 71	1715	7.0	2200-9	9.32	Tide: USCG, New Smyrna Beach.
Fernandia Beach	10	29.28	0145	100	2200-9			10.0	2300-9		Winds are downtown; estimated on beach near 115 m.p.h.
Fort Myers	10	29.71	0300	SSW 29*	1030	W 44		1.5 to 2.0		0.27	
Gainesville FAA	10	29.08	0700	W 40	1030	W 60				10.74	Arm of anemometer lost during storm, speeds estimated.
Jacksonville Beach	9					84					Anemometer failed.
Jacksonville WBAS	10	29.05	0314	N 82	1948-9	NE 85†		7.0†	0144-10	8.67	Tide Mayport Ferry Slip.
Jacksonville Navy	10	28.87	0255	N 53	1832-9	N 81					
Jacksonville (Cecil Field)	10	28.91	0455	NE 44	0555	NNW 71					
Lakeland WBO	10	29.56	0300	W 27	1039	W 42†	1039			1.50	
Marineland	10	28.80	0000	NW 60†	1700-9					5.85	
Mayport	10	29.03	0130	NNE 74		NNE 101					
Orlando WBAS	9	29.41	1937	WSW 40*	1955	WSW 58				5.99	
St. Augustine	10	28.52	0100	SW 125†	0130					7.10	Station in eye 0015-0130-10. Tides Anastasis Island, 12 ft., 4 ft. above any other known.
Tallahassee WBAS	11	29.29	0230	N 35*	1335-10	N 44	2030-10			6.11	Record low pressure.
Tampa WBAS	10	29.57	0358	WSW 44*	2120-12	WSW 52				2.39	
W. Palm Beach WBAS	9	29.69		WSW 35*							RAINFALL: Mayo 23.73 in.; Live Oak 18.62 in.; New Harmony 17.33 in.; Usher Tower 16.60 in.; Inglis 15.55 in.; Perry 12.96 in.; Cedar Key 12.15 in.; Lake City 12.10 in.; Ocala 11.46 in.; Melrose 11.40 in.; Cross City 11.29 in.; Federal Point 11.11 in.; Gainesville 3 WSW 11.04 in.; Bayport 10.65 in. (Totals for September 9 or 10 through 12 or 13.)
Pensacola	11-12	29.63		NW 29	12					0.33	
Miami WBAS	9	29.74									
GEORGIA											
Brunswick	10	29.40	0030			NE 90†				6.23	Peak gust on water front.
Brunswick	12	29.47	1700			S-SW 50†		13.0-14.0	2300-9		Tide above average low water.
Brunswick FAA	9-13									6.35	
Cairo	11	29.29	0230			NNE 45	0230				
Homerville	9-13									8.10	
Jesup						E 50†	2000 to 0000-10			5.81	
Nahunta										7.48	
Savannah WBAS	10	29.66	0014	E 37	0327	NE 53	2345-9	2.4	2302-9	3.81	
Savannah WBAS	13	29.51	0335			S 59	0748				
Savannah Beach	9					NNE 64	1720				
Waycross	9-13									7.03	
Fargo											Unconfirmed report of 14.84 in. of rain.
Sapelo Island	10	29.53	0200-0500	ENE 45	0300	70	1930	10.7	0000	3.22	
Valdosta	10	29.43	1500			S 35	1400 to 1700-11			5.12	
SOUTH CAROLINA											
Charleston WBAS	13	29.51	0542	SE 46	1704-12					2.53	RAINFALL: Conway 8.25 in.; Loris 5.20 in.; Myrtle Beach 5.12 in.; Hilton Head 4.24 in.; Columbia 3.23 in.
Charleston WBO	12-13			S 47	2018-12			1.7		1.35	
Georgetown	13	29.52	0700	SSW 45	1430	55	1445			2.85	
McClellanville	13	29.54	0800			SW 55	2100-12			3.00	Several waterspouts near Garden City Beach between 1300-1400-12.
NORTH CAROLINA											
Hatteras WBO	13	29.50	1852	NNE 35	0018-14	NNE 41	0012-14	2.5	a.m.-14	2.52	Tide on Sound side.
Raleigh WBAS	13	29.75	0827	WNW 25	0858					2.75	
Wilmington WBAS	13	29.54	1230	N 28	1653	N 35	1356	3.0		3.41	Tide on Sound side. Tornado Howell's Point 2100-12. Waterspout Carolina Beach 0725-10.
VIRGINIA											
Cape Henry	13			NE 66	1231					2.63	Greatest tidal departures Hampton Roads area about 3.5 ft. above normal.
Norfolk Navy	13					NE 69	1545				
Norfolk WBAS	13	29.74	1510			NE 61	1617			4.80	
Richmond WBAS	13					29	1458				
MARYLAND											
Pocomoke City	13									2.40	Tides 2 to 4 ft. above normal on 14th along Atlantic coast.
NEW JERSEY											
Atlantic City WBAS	14			N 33	0322					1.47	
MASSACHUSETTS											
Nantucket WBAS	14	29.62		NE 42	1133	N 50	1420	1.3	1800-1900	2.53	
Nantucket Shoals Lightship	14			63							

+ Eastern Standard Time
# Above normal
† Estimated
* Fastest one-minute wind speed

Final damage estimates were $200 million to $230 million in Florida; $9 million in Georgia. Only one direct fatality -- a drowning at Live Oak, Fla., had been reported. Two Navy men died near Sanford, Fla., on September 9 when an aircraft being evacuated crashed on takeoff. Two men drowned while attempting to secure boats before Dora approached -- one near Brunswick, Ga., and another near Norfolk, Va. This low number of casualties is remarkable for such an extensive and severe hurricane.

Wind damage in South Carolina was minor, but rainfall in the eastern part of the State ranging from 3 to more than 8 inches caused some flooding. Several small waterspouts were reported near Garden City Beach between 1300 and 1400 e.s.t. on the 12th.

The only significant damage to structures in North Carolina was caused by local storms: a waterspout moving westward onto Carolina Beach, south of Wilmington at 0725 e.s.t. on the 10th; and a tornado moving northwestward across Howell's Point, southwest of Wilmington at 2100 e.s.t. on the 12th. Rainfall, locally 5 inches or more, and tides 3 to 4 feet above normal were reported between Cape Hatteras and the Virginia border.

Dora's effects in Virginia were confined to heavy rainfall over the southeast, ranging up to almost 5 inches in the Hampton Roads area; and storm tides of about 3.5 feet above normal in the same area.

The western fringes of Dora brushed the Middle Atlantic and New England coasts but no significant damage was reported. Winds were generally below gale force; tides reached 2 to 4 feet above normal on the Maryland and Delaware coasts, and locally to about 3 feet in New Jersey. Rainfall totaled only 1 to 2 inches at scattered coastal points. Highest amount was 2.53 inches at Nantucket, Mass. The rains were timely and much needed.

HURRICANE ETHEL, SEPTEMBER 4-16

The first indications of Ethel came from TIROS VIII photographs on the morning of September 4. These showed a large cloud mass centered near 18°N., 45°W. Reconnaissance aircraft on the 5th found a poorly-defined eye near 20°N., 45°W., with a central pressure of 1005 mb. (29.68 in.). Maximum observed winds were 25 m.p.h. south of the center but much higher winds were indicated toward the north. The plane could not completely cover the area because of the extreme range from its base. Ethel moved west-northwestward for the next two days with little development. Around 1200 A.s.t. on September 7, reconnaissance indicated the storm had reached hurricane intensity, with maximum winds near the center about 80 m.p.h. The development persisted during the next two days, as Ethel slowed down and moved on a westward course near 28°N. On the 10th central pressure was 977 mb. (28.85 in.) and maximum observed winds were 100 m.p.h. Early on the 11th the hurricane turned northward and the forward speed accelerated. Reports indicate Ethel reached its maximum intensity on the 12th as it moved northward to the west of Bermuda with maximum winds 100 m.p.h. and the central pressure 976 mb. (28.82 in.).

The center passed some 100 miles west of Bermuda. High surf, heavy rains, and winds gusting over 70 m.p.h. lashed the Islands during the afternoon of September 12, but no casualties or significant damage occurred. After passing Bermuda Ethel moved rapidly northeastward and maintained hurricane force during its modification into an extratropical storm near 45°N., 40°W. on September 15.

TROPICAL STORM FLORENCE, SEPTEMBER 6-10

Weather conditions became unsettled arount the Cape Verde Islands as a strong perturbation on the Intertropical Convergence Zone moved into the eastern Atlantic from west Africa on September 4 and 5. By the morning of the 6th a closed circulation had formed with a central pressure estimated at 1002 mb. (29.59 in.). It was located just north of the Cape Verdes, accompanied by heavy rainfall and maximum winds of about 25 m.p.h., and was moving northwestward at about 10 m.p.h.

Some intensification occurred as the depression continued northwestward, and it probably reached tropical storm force by the evening of the 7th. Maximum winds of 50 m.p.h. were estimated on the 8th and 9th as Florence moved northward toward the Azores Islands, but the storm dissipated before it reached that area. An Air Force tanker reported sighting only an area of squalls south of the Azores during the early morning hours of September 10. No casualties or damage were reported.

HURRICANE GLADYS, SEPTEMBER 13-24

A ship report from the SS GERWI including 63 m.p.h. winds and heavy rains on the morning of September 13 confirmed the existence of a well-developed tropical storm in the south-central North Atlantic near 15.5°N., 46°W. A disturbance, first observed off the west coast of Africa on September 9 was probably the initial perturbation in which the storm later formed.

A reconnaissance plane was unable to obtain data due to darkness on the 13th, but early the next morning another flight found that Gladys had intensified to hurricane force and was moving west-northwestward at about 18 m.p.h. The hurricane continued to intensify and move along a persistent path for the next four days. Gladys reached its maximum intensity -- 945 mb. (27.91 in.) central pressure and 140 m.p.h. winds -- on the 17th near 25°N., 65°W.

On September 19, Gladys turned slowly to a northward course for about 48 hours before it returned to a northwestward path for another two days. The center of the storm reached its closest point to the United States on the 23d when it was located about 140 miles east of Cape Hatteras. A slow attrition of the strength of the circulation had been proceeding since the time of its turn to the north on the 19th, and the maximum winds were down to 85 m.p.h. by the 23d. During the night of the 22d a recurvature toward the northeast had begun, followed by a rapid acceleration of the forward speed as cool air began to enter the circulation. Gladys had taken on predominant extratropical features by the 24th before it passed over Newfoundland. No unusually strong winds were reported there.

Gladys remained far enough offshore so that the effects of winds and rainfall associated with the hurricane were only slight from North Carolina to southern New England. High tides, ranging generally two to three feet above normal, and heavy wave action produced considerable erosion on exposed ocean beaches. No casualties and no damage that can be measured in monetary terms were reported.

HURRICANE HILDA, SEPTEMBER 28-OCTOBER 5

A weak circulation formed in an easterly wave just

HURRICANE HILDA

SEPTEMBER 28-OCTOBER 5, 1964

Station	Date	Pressure (inches)		Wind (miles per hour)				Highest Tide (feet)		Storm Rainfall (inches)	Remarks
		Low	Time+	Fastest Mile	Time+	Gusts	Time+	#	Time+		
LOUISIANA	Oct.										
Baldwin	3	28.53	1848	NE 120†	1730	130†	1730	4.5	0115-4	9.63	
Baton Rouge WBAS	4	28.97	0200	NE 46	2358-3	69	0624			8.88	
Bogalosa	4	29.25	1030	NW 60†	1330					3.67	
Buras	3	29.60	0745	S 75	1040	80	1040	4.5	1110	2.11	
Clinton	4	29.18	0425	62†						10.65	Anemometer blown down.
Franklin	3	28.40	1810	NNE 135†	1800			4.0		9.53	
Jeanerette	3			N 75+†	1900					17.71	
Jennings	3	29.34	2135	NE 67	2130					2.78	
Lafayette FAA	3	29.10	1958	N 69	1858	92	1836			8.04	
Melville	4	28.98	1530	NE 95†	1600					7.82	
Morgan City	3			E 100†	1900			5.8	2300	8.53	
New Orleans WBAS	4	29.29	0330	S 40	0156	54	1331			3.26	
Oakmolia	4			N 60†	0900	80	0900			8.98	
Plaquemine	4	28.96	0215	75-80†	0300						
Reserve	4	29.12	0330	E 58	0200	70	0315			4.42	
Thibodaux	3	29.18		NE 100	2200					7.50	
TEXAS											
Port Arthur C. of E.	3	29.57	1500	N 29	1400			2.2	0600		
Port Arthur WBAS	3	29.64	1525	N 37	1203					T	
Sabine C.G.	3	29.54	1500	N 35				2.6	0900		
MISSISSIPPI											
Bay St. Louis	4	29.46	1200	S 40	0900	S 60	0900	6.0	1030		
Centerville										10.06	
Gulfport	4	29.35	1500	S 46	0700	75	0700			3.05	
Jackson WBAS	4	29.63	0630	NNE 41	1058	45	0940				
Keesler AFB	4	29.31	1550	N 58	1657	58	1657	5.0	0820	1.65	
McComb	4	29.34	0600	N 63	1300	63	1300			12.57	
Meridian WBAS	4	29.66		N 35						3.46	
Pascagoula	4	29.38	1600	SSW 30	1300	SSW 40	1300	4.2	1200	1.30	
Vicksburg WBO	4	29.66	0956	N 29	0927	40				1.85	
Woodville										11.50	
ALABAMA											
Mobile WBAS	4	29.41	1630	S 30	0809	S 46	0809	4.4	1500	1.65	Tides above normal. $50,000 damage in Mobile and Baldwin Counties
Montgomery WBAS	4	29.61		N 30						4.02	
FLORIDA											
Apalachicola WBO	5	29.54	0345	NE 36	0720	NE 50	0843			7.90	
Pensacola WBAS	4	29.50	2050	NW 43	2146	54	2146	3.1	1200	5.03	
Tallahassee WBAS	5	29.55	0500	SSW 27	0858-4					3.87	

+ Times are Central Standard, except for Apalachicola and Tallahassee, Eastern Standard
# Above Mean Sea Level
† Estimated

off the south-central coast of Cuba during the morning of September 28. It became better organized and gradually intensified as it moved westward. Hilda reached tropical storm force as it crossed the western tip of Cuba near Cabo San Antonio on the morning of the 29th. Hilda continued to increase rapidly in intensity over the southern Gulf of Mexico, became a hurricane during the early morning hours of September 30, and reached its maximum development -- central pressure 941 mb. (27.79 in.) and maximum winds estimated at 150 m.p.h. -- on October 1.

The severe hurricane continued to move forward slowly at an average speed of about 6 m.p.h. on the 1st and 2d while turning northward toward the Louisiana coast. A slight decrease in intensity apparently had occurred by the 2d, but Hilda was still an intense storm. The central eye, about 30 to 35 miles in diameter, crossed the coast over Vermilion Bay, St. Mary Parish about 1800 c.s.t., October 3. At landfall, maximum winds were 100 to 120 m.p.h. along the immediate coast in the Franklin-New Iberia-Morgan City section. The lowest reported pressure -- 961.7 mb. (28.40 in.) -- and the highest estimated wind -- 135 m.p.h. -- were at Franklin.

After the center moved inland the storm gradually lost force as it moved north-northeastward to East Baton Rouge Parish by the morning of October 4. Hurrican force winds were reported near the path of the center for a considerable distance inland during the night of the 3d. The storm was forced eastward from this area on the 4th by the intrusion of a large mass of cold air into the circulation from the northwest. Hilda continued to weaken as it rapidly acquired extratropical features and moved eastward across southern Mississippi and Alabama on the 4th and over northern Florida and southern Georgia on the 5th. The strongest winds at most places from northeastern Louisiana eastward occurred following the passage of the cold front.

Tides along much of the Gulf coast were well above normal as a result of Hilda. Levels were two to four feet above normal along the western Louisiana and upper Texas coasts, and 2 to 5 feet above normal from the mouth of the Mississippi River to Apalachicola, Fla. The highest water reported was an unofficial estimate of 10 feet at Point au Fer, La., where the center crossed the coast.

Rainfall was excessive over most of southeastern Louisiana and southern Mississippi. Storm totals of 10 inches or more occurred over a large area and considerable flooding resulted. The largest rainfall accumulation in Louisiana was 17.71 inches at the Jeanerette Experiment Farm, with 16.01 inches in a 25-1/2hour period ending at 0900 c.s.t., October 4. In Mississippi, the largest storm total recorded was 12.57 inches at McComb FAA. On the 4th, 10.98 inches fell there -- an alltime Mississippi October 24-hour rainfall record. Storm totals of four to seven inches or more were reported in sections of Alabama, Georgia, and northwestern Florida. Moisture brought into the region by Hild's circulation also contributed to extremely heavy rains in parts of the Carolinas and northern Georgia that were caused by a cold front moving across the southern Appalachians.

The combination of high winds and heavy rains produced considerable damage to crops in Louisiana and Mississippi. Sugarcane blowdown increased harvest costs, open cotton was blown from the bolls, and pecans and tungnuts were prematurely blown from the trees, with substantial losses.

Extensive property damage occurred in Louisiana. Over 100,000 telephones were out of service and many other utility lines were damaged. The American Red Cross reported almost 2,600 dwellings were destroyed or severely damaged and over 16,000 others suffered some damage.

Offshore oil facilities in the large Eugene Island-Marsh Island field were directly in the path of Hilda's most intense winds and heaviest seas. About 100 miles south of Morgan City winds of 120 m.p.h. were recorded on the "Oil Driller" at 2300 c.s.t., October 2. This was the highest their anemometer could indicate and "substantially higher winds" were apparent later that night. The center of the hurricane passed during the morning of the 3d and the winds dropped to 30 m.p.h., but after the eye moved toward shore winds again exceeded 120 m.p.h. Huge waves, estimated at 50 feet or higher, lashed the platform for many hours. A number of drilling rigs and platforms were destroyed; many producing wells and additional rigs were severely damaged.

Evacuation of most of the oil platforms and the low coastal areas subject to tidal flooding reduced the possible death toll. Loss of life in Louisiana did total 37, but more than two-thirds of the fatalities were the direct result of several of the nine tornadoes embedded in pre-hurricane squall lines that moved through southeastern Louisiana on the morning of October 3. Localaties affected by these local storms included Galliano, Golden Meadow, Kenner, Metairie, New Orleans, and Larose. The Larose tornado caused 22 deaths and about 175 injuries.

A 125-foot water tower at Erath, La., toppled under the force of high wind and crushed the City Hall where Civil Defense activities were being conducted. Eight persons perished.

Tornadoes also occurred at Poplarville, Miss., on October 3d, and at Evergreen, Eufaula, and Crawford, Ala., on the 4th.

Damages to property, crops, and industrial equipment were heavy. Direct damage and indirect losses were estimated in excess of $100 million in Louisiana and Mississippi. Damage was relatively moderate farther east, and much of it resulted from causes not wholly attributable directly to Hilda.

HURRICANE ISBELL, OCTOBER 8-16

Showers and squalls indicative of a tropical disturbance appeared over the western Caribbean on October 7. The disturbed area remained weak and poorly-organized for the next few days as it drifted slowly northwestward toward the coast of Yucatan. The circulation became better defined on October 12, and winds reached tropical storm force during that night, shortly after the center made a small counterclockwise loop and headed toward the western tip of Cuba. Isbell reached hurricane force as it neared Cuba on the morning of October 13.

Over Cuba, wind gusts of 70 m.p.h. were reported as far east as Boyeros Airport near Havana. The lowest pressure recorded in Cuba was 979 mb. (28.91 in.) around Pinar del Rio. Three fatalities and damage to communications and the tobacco crop totaling about $10 million were reported. Damage was most severe in the Guane area.

The lowest estimated surface pressure in Isbell -- 964 mb. (28.47 in.) -- was calculated from reconnaissance data obtained on the morning of October 14 when the hurricane center was west-southwest of Key West.

Isbell moved inland over Florida near Everglades

about 1600 e.s.t., October 14. A calm was experienced there from 1615 to 1640 e.s.t. The storm moved rapidly across the State and passed offshore in the Juniper-Juno Beach area around 2130 e.s.t. At its closest approach, the center was some 47 miles northwest of Miami, where sustained winds were 46 m.p.h., with peak gusts to 63 m.p.h., and the lowest pressure was 1000.3 mb. (29.54 in.). The highest winds reported -- 90 m.p.h. -- were along small sections of both coasts near the eye. Minimum pressures were recorded at Juno Beach -- 978 mb. (28.88 in.), and Juniper, 890.4 mb. (28.95 in.).

Rainfall in Florida was relatively light, ranging up to 5 or 6 inches very near the path of the center. Localized flooding occurred. At least 11 tornadoes touched down in southeastern coastal sections from Coral Gables northward to Eau Gallie, with reported injuries totaling about 50, apparently none serious.

Two persons drowned off the lower Florida Keys when a shrimp boat was destroyed, and one person succumbed to a heart attack while putting up storm shutters at Palm Beach.

Damage associated with Isbell was generally light. In the lower Keys property damage totaled about $175,000, mostly to telephone equipment. In Palm Beach County damage estimates totaled about $700,000--about half due to tornadoes--excluding agricultural losses. Vegetable crops in the Everglades and Pompano areas suffered heavy damage.

After leaving Florida Isbell moved rapidly northeastward, then turned northward on October 15. Its intensity was steadily decreasing during this period and the winds were barely of hurricane force in gusts by the early morning of the 16th as the center approached the North Carolina coast. The center moved inland near Morehead City around 0800 e.s.t. Cold air which had been located just to the northwest of the circulation from the Gulf of Mexico northward finally penetrated to the center of Isbell about the time it crossed the North Carolina coast, and rapidly completed the transformation of the storm into an extratropical cyclone. The last remnants of Isbell were absorbed in southern Virginia into an extensive and rapidly developing storm that moved northeastward off the Middle Atlantic and New England areas on October 17 and 18.

The highest winds reported in connection with Isbell in North Carolina were 45 m.p.h. sustained, 75 m.p.h. gusts, at Elizabeth City. At Norfolk, Va., the fastest mile was 50 m.p.h., with gusts to 62 m.p.h. Relatively minor property damage resulted from Isbell in the Carolinas and tidewater Virginia. Heavy rainfall--locally from 3 to more than 5 inches-- caused considerable flooding on inland streams in South Carolina and eastern North Carolina. There was substantial agricultural damage, particularly to unharvested peanuts in northeastern North Carolina.

TROPICAL STORM, NOVEMBER 5-9

The final tropical storm of the 1964 season developed slowly. There was a perturbation on the Intertropical Convergence Zone in northern Colombia as early as November 1, and heavy rainfall was reported intermittently during the following days in the Caribbean north of Panama. A weak circulation developed on the 4th east of San Andres Island. A reconnaissance plane on the 6th found a minimum pressure of 1001 mb. (29.56 in.), but maximum winds of only 35 m.p.h. Ships in the area reported winds of 40 to 45 m.p.h. during the night of the 6th. The storm passed inland over northeastern Nicaragua on the 7th and a reconnaissance flight reported a central pressure of 997 mb. (29.44 in.) over land. After moving into the Gulf of Honduras on the morning of the 8th the storm continued to lose intensity and passed inland again in northern British Honduras on the morning of the 9th in its dissipating stages.

Press reports indicated heavy damage from winds, rains, and consequent flooding in northeastern Nicaragua. The meteorological service of Honduras reported that high tides swept the coast around Caukira, and heavy rainfall caused flooding in Puerto Castilla.

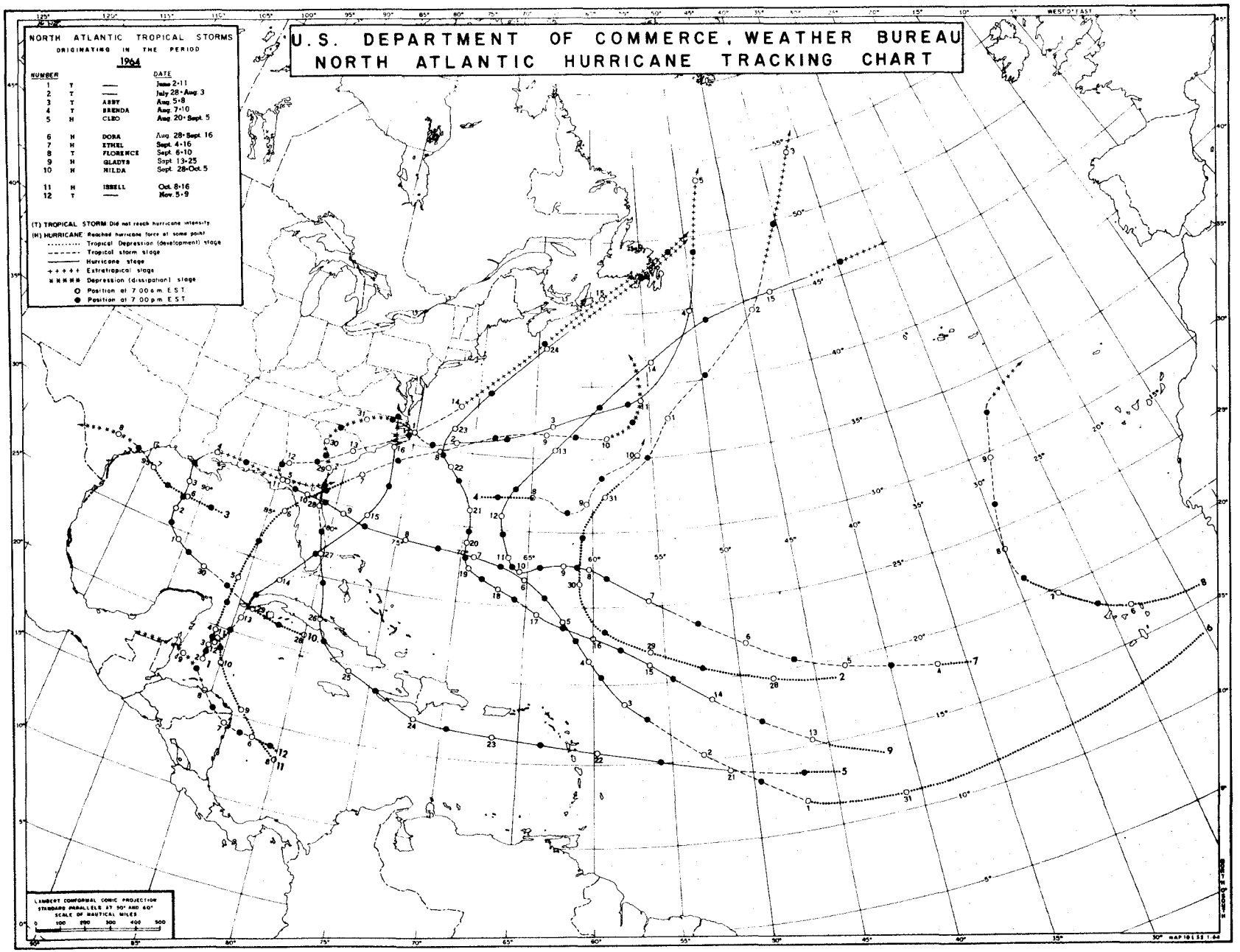
Total damage was estimated at about $5 million.

HURRICANE ISBELL

OCTOBER 8-16, 1964

Station	Date	Pressure (inches)		Wind (miles per hour)				Highest Tide (feet)	Time	Storm Rainfall (inches)	Remarks
		Low	Time	Fastest Mile	Time	Gusts	Time				
FLORIDA	Oct.										
Dry Tortugas	14	28.67	0955	E 60	1011						
Key West	14	29.49	1145	S 73	1130	SW 76	1152	4 to 5		1.43	
Everglades	14	28.75	1620	90							
Naples	14	29.35	1630			NNE 50	1620			0.40	
Miami WBAS	14	29.54	1820	37	1713	59	1711			1.69	
Miami WBO	14	29.54	1805	46		63				2.26	
Fort Lauderdale Ap.	14	29.45	1928	52	2001	81	2001				
Fort Myers	14	29.54		NE 24		36	1701			T	
Belle Glade	14	29.07	1935	N 65	1930	80 Est.	1930			4.25	
Everglades Exp. St.	14	28.98	1930	67	1925					5.09	Five-minute maximum wind.
Port Mayaca	14	29.35		NE 55		70				1.55	
Indiantown	14			90							
Pompano Beach	14	29.41	1955	48		80				1.55	
Lantana Heights	14	29.26		47		72					
West Palm Beach	14	29.05	2051	SSE 74	2020	87				2.38	
Juno Beach	14	28.87	2128								
SOUTH CAROLINA											
Charleston WBAS	15	29.48		NE 23	0957	N 36	1902			1.63	
Charleston WBO	15			NE 32	0815			2.1		2.06	
Columbia	15	29.49		NE 15	1240	NE 28	1240			6.11	
Florence	15	29.44		NNE 23	1558	NNE 38	1558			2.98	
NORTH CAROLINA											
Wilmington	16	29.42	1238	SW 24	1307	SW 29	1256			0.76	
Hatteras	16	29.43		E 26	0558	E 51	0554			1.52	Tide: less than 1 ft. above normal.
Elizabeth City	16	29.44	1400	NE 45	1000	NE 75	1000			2.16	Tide: 2.5 Ocean, 3.0 Pamlico Sound, above normal.
Raleigh	16	29.30	1349	NE 23	1115					0.60	
VIRGINIA											
Norfolk	16	29.45	1430	NE 50	1119	E 62	1130			0.62	

· Eastern Standard Time


U.S. DEPARTMENT OF COMMERCE, WEATHER BUREAU
NORTH ATLANTIC HURRICANE TRACKING CHART
NORTH ATLANTIC TROPICAL STORMS
ORIGINATING IN THE PERIOD
1964
NUMBER DATE
1 T — June 2-11
2 T — July 28-Aug. 3
3 T ABBY Aug. 5-8
4 T BRENDA Aug. 7-10
5 H CLEO Aug. 20-Sept. 5
6 H DORA Aug. 28-Sept. 16
7 H ETHEL Sept. 4-16
8 T FLORENCE Sept. 6-10
9 H GLADYS Sept. 13-25
10 H HILDA Sept. 28-Oct. 5
11 H ISBELL Oct. 8-16
12 T — Nov. 5-9
(T) TROPICAL STORM Did not reach hurricane intensity
(H) HURRICANE Reached hurricane force at some point
Tropical Depression (development) stage
Tropical storm stage
Hurricane stage
Extratropical stage
Depression (dissipation) stage
Position at 7:00 a.m. EST
Position at 7:00 p.m. EST
LAMBERT CONFORMAL CONIC PROJECTION
STANDARD PARALLELS AT 50° AND 60°
SCALE OF NAUTICAL MILES
0 100 200 300 400 500

NORTH ATLANTIC TROPICAL CYCLONES, 1964

Storm name	Date	Area where first reported	Coast lines crossed	Highest wind speed reported	Lowest pressure reported	Place of dissipation reported	Intensity	Remarks
1. TROPICAL STORM	June 2-11	Western Caribbean	Northern Florida	Est. 60 m.p.h., north of Bermuda on June 9	990 mb. (29.24 in.) north of Bermuda on June 9	Atlantic - south of Newfoundland	Tropical Storm	Damage estimated near $1 million in northern Florida and eastern South Carolina. No deaths or injuries.
2. TROPICAL STORM	July 28-Aug. 3	South-central North Atlantic	None	Est. 80 m.p.h., (squall), southeast of Newfoundland on August 1	997 mb. (29.44 in.) southeast of Newfoundland on August 1	Atlantic - south of Greenland	Tropical Storm	
3. ABBY	Aug. 5-8	North-central Gulf of Mexico	Upper Texas coast	Est. 85 m.p.h., (squall), just off Texas coast on August 7	1000 mb. (29.53 in.) just off Texas coast on August 7	Southern Texas	Tropical Storm	Damage estimated at $150,000 to property from flooding; $600,000 to crops in Texas coastal plain. No deaths or injuries.
4. BRENDA	Aug. 7-10	West of Bermuda	Bermuda	Est. 60 m.p.h., east of Bermuda on August 9	1006 mb. (29.71 in.) east of Bermuda on August 9	Northeast of Bermuda	Tropical Storm	Damage estimated at $275,000 on Bermuda. No death or injuries.
5. CLEO	Aug. 20-Sept. 5	South-central North Atlantic	Guadeloupe, Haiti, Cuba, southern Florida, Georgia	Est. 140 m.p.h., recon. south of Puerto Rico on August 23	950 mb. (28.50 in.) recon. south of Puerto Rico on August 23 and Camp Perrin, Haiti on August 24	South of Greenland	Hurricane	Damage estimated at $125 million in Florida, $3 million in Virginia from floods, $0.5 million in other states. Three deaths, over 200 injuries. Damage in Caribbean estimated at $70 million, 214 deaths, over 300 injuries.
6. DORA	Aug. 28-Sept. 16	Southeastern North Atlantic	Northeastern Florida, Newfoundland	Est. 150 m.p.h., recon. south of Bermuda on September 6.	942 mb. (27.82 in.) recon. south of Bermuda on September 6	Northeast of Newfoundland	Hurricane	Damage estimated at $230 million in Florida, $9 million in Georgia, $11 million in other areas. Five deaths in United States.
7. ETHEL	Sept. 4-16	Southeastern North Atlantic	None	Est. 100 m.p.h., recon. west of Bermuda on September 12	976 mb. (28.82 in.) recon. west of Bermuda on September 12	North of the Azores	Hurricane	Minor damage at Bermuda, no deaths or injuries.
8. FLORENCE	Sept. 6-10	Southeastern North Atlantic	None	Est. 50 m.p.h., September 8 and 9 north of Cape Verde Islands	1000 mb. (29.53 in.) north of Cape Verde Islands on September 8 and 9	South of the Azores	Tropical Storm	
9. GLADYS	Sept. 13-25	South-central North Atlantic	Newfoundland	Est. 140 m.p.h., recon. south of Bermuda on September 17	945 mb. (27.91 in.) recon. south of Bermuda on September 17	Northeast of Newfoundland	Hurricane	
10. HILDA	Sept. 28-Oct. 5	Caribbean - just south of central Cuba	Western Cuba, central Louisiana	Est. 150 m.p.h., recon. south-central Gulf of Mexico on October 1	941 mb. (27.79 in.) recon. south-central Gulf of Mexico October 1	Off the Georgia coast	Hurricane	Damage estimated near $125 million in United States, $1 million in Cuba. Deaths totaled 38, including 22 in one tornado at Larose, Louisiana.
11. ISBELL	Oct. 8-16	Southwestern Caribbean	Western Cuba, southwestern Florida, eastern North Carolina	90 m.p.h., Everglades and Indiantown, Florida on October 14	964 mb. (28.47 in.) recon. southwest of Key West, Florida on October 14	Southeast Virginia	Hurricane	Damage estimated at $10 million in Florida and North Carolina, $10 million in Cuba. Deaths: 3 in Florida, 3 in Cuba.
12. TROPICAL STORM	Nov. 5-9	Southwestern Caribbean	Northeastern Nicaragua, northern British Honduras	Est. 60 m.p.h., (squalls), southwestern Caribbean on November 6	997 mb. (29.44 in.) recon. over northeastern Nicaragua on November 7	Southern Mexico	Tropical Storm	Damage estimated about $5 million in Nicaragua and Honduras.

NORTH ATLANTIC TROPICAL CYCLONES FOR PAST YEARS

TOTAL NUMBER OF TROPICAL CYCLONES, LOSS OF LIFE AND DAMAGE

	Total Number Tropical Cyclones*		Total Number Hurricanes		Loss of Life		Damage by Categories**	
Year	All Areas	Reaching U.S. Coast	All Areas	Reaching U.S. Coast	Total All Areas	United States	Total All Areas	United States
1886	10	7	8	6				
1887	17	4	10	3				
1888	10	6	5	3				
1889	9	4	5	2				
1890	1	0	1	0				
	47	21	29	14				
1891	11	4	8	2				
1892	9	3	4	0				
1893	12	7	10	6				
1894	6	3	5	2				
1895	6	4	2	1				
	44	21	29	11				
1896	6	4	6	4				
1897	5	4	2	1				
1898	9	6	4	3				
1899	6	4	5	3				
1900	7	3	3	1		6,000		7
	35	21	20	12				
1901	10	6	3	2		10		6
1902	5	3	3	1		*		*
1903	9	2	8	2		9		6
1904	5	3	2	2		*		6
1905	5	2	1	0		*		*
	34	16	17	7				
1906	11	6	6	4		285		7
1907	4	3	0	0		*		*
1908	8	2	5	1		*		*
1909	10	7	4	3		404		7
1910	4	2	3	2		13		6
	37	20	18	10				
1911	4	2	3	2		17		6
1912	6	4	4	2		12		6
1913	4	3	3	2		*		*
1914	1	1	0	0		*		*
1915	5	4	4	3		600		8
	20	14	14	9				
1916	14	8	11	6		107		7
1917	3	1	2	1		5		5
1918	5	2	3	1		34		6
1919	3	2	1	1		287		7
1920	4	3	4	2		2		6
	29	16	21	11				
1921	6	2	4	2		5		6
1922	4	1	2	0		0		*
1923	7	4	3	2		0		4
1924	8	3	5	2		2		3
1925	2	2	1	1		6		3
	27	12	15	7				
1926	11	4	8	4		269		8
1927	7	1	4	0		0		*
1928	6	3	4	2		1,836		7
1929	3	2	3	2		3		6
1930	2	1	2	0		0		2
	29	11	21	8				
1931	9	2	2	0		0		*
1932	11	5	6	2		0		*
1933	21	7	9	5		63		7
1934	11	5	6	3		17		6
1935	6	2	5	2		414		7
	58	21	28	12				
1936	16	7	7	3		9		6
1937	9	4	3	0		0		4
1938	8	4	3	2		600		8
1939	5	3	3	1		3		3
1940	8	3	4	2		51		6
	46	21	20	8				
1941	6	4	4	2		10		7
1942	10	3	4	2	17	8	7	7
1943	10	4	5	1	19	16	7	7
1944	11	4	7	3	1,076	64	8	8
1945	10	5	4	3	29	7	8	8
	47	20	24	11				
1946	6	4	3	1	5	0	7	7
1947	9	7	5	3	72	53	8	8
1948	9	4	6	3	24	3	7	7
1949	13	3	7	2	4	4	8	*
1950	13	4	11	3	27	19	7	7
	50	22	32	12				
1951	10	1	8	0	244	0	7	6
1952	7	2	6	1	16	3	6	6
1953	14	6	6	2	3	2	7	7
1954	11	4	8	3	720+	193	9	9
1955	12	5	9	3	1,518+	218	9	9
	54	18	37	9				
1956	8	2	4	1	76	21	8	7
1957	8	5	3	1	475	395	8	8
1958	10	1	7	0	49	2	7	7
1959	11	7	7	3	57	24	7	7
1960	7	5	4	2	185	65	8	8
	44	20	25	7				
1961	11	3	8	2	345	46	8	8
1962	5	1	3	0	4	4	6	6
1963	9	1	7	1	7,218+	11	9	7
1964	12	6	6	4	266	49	9	9
Total	638	285	374	155				
Median	8	4	4	2				

** The Weather Bureau has for some time recognized that, without detailed expert appraisal of damage, all figures published are merely approximations to fact. Since errors in dollar estimates vary in proportion to the total damage, storms are placed in categories varying from 1 to 9 as follows:

1 Less than $50
2 $50 to $500
3 $500 to $5,000
4 $5,000 to $50,000
5 $50,000 to $500,000
6 $500,000 to $5,000,000
7 $5,000,000 to $50,000,000
8 $50,000,000 to $500,000,000
9 $500,000,000 to $5,000,000,000

Blank spaces indicate no figures available.

* Including hurricanes.

* Not reported in literature, believed minor.

\+ Additional deaths for which figures are not available.

NORTH ATLANTIC TROPICAL CYCLONES FOR PAST YEARS — CONT'D

Frequency of Tropical Cyclones (Including Hurricanes) by Months and Years

		May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1886			3	1	2	2	2			10
1887		1		2	2	3	6	1	2	17
1888			1	1	2	2	1	3		10
1889		1	1		1	5	1			9
1890					1					1
1891				1	2	3	4	1		11
1892			1		1	4	3			9
1893			1	1	5	3	1	1		12
1894					2	1	3			6
1895					2	1	3			6
1896				1	1	2	2			6
1897					1	2	2			5
1898					2	5	2			9
1899				1	2	1	2			6
1900					1	3	3			7
1901			1	2	2	3	2			10
1902			2			1	1	1		5
1903				1	1	4	2	1		9
1904			1			1	3			5
1905						3	2			5
1906			2		1	3	4	1		11
1907			1			2	1			4
1908	Mar. 1			1	1	3	2			8
1909			2	2	2	2	1	1		10
1910					1	2	1			4
1911					2	1	1			4
1912			1	1		1	2	1		6
1913			1		1	1	1			4
1914						1				1
1915				1	2	2				5
1916			1	2	3	4	3	1		14
1917					2	1				3
1918					3	2				5
1919				1		1		1		3
1920						4				4
1921			1			3	2			6
1922			1			1	2			4
1923					1	1	5			7
1924			1		2	2	2	1		8
1925						1		1		2
1926				1	2	5	2	1		11
1927					1	3	3			7
1928					2	3	1			6
1929			1			1	1			3
1930					2					2
1931			1	1	2	3	1	1		9
1932		1			3	3	3	1		11
1933		1	1	3	7	5	3	1		21
1934		1	1	1	2	2	3	1		11
1935					3	1	2			6
1936			3	2	6	4	1			16
1937				1	2	6				9
1938					3	1	3	1		8
1939			1		1	1	2			5
1940		1			3	2	2			8
1941						4	2			6
1942					3	3	3	1		10
1943				1	2	4	3			10
1944				3	2	4	2			11
1945			1	1	4	3	1			10
1946			1	1	1	1	2			6
1947				1	2	3	3			9
1948		1		1	2	3	1	1		9
1949					3	7	2	1		13
1950					4	3	6			13
1951		1			3	4	2			10
1952	Feb. 1				2	2	2			7
1953		1			3	4	4	1	1	14
1954			1	1	2	4	1	1	1	11
1955				1	4	5	2			12
1956			1	1	1	4	1			8
1957			2		1	4	1			8
1958			1		4	4	1			10
1959		1	2	2	1	3	2			11
1960			1	2	1	3				7
1961				1		6	2	2		11
1962					2	2	1			5
1963				1	1	5	2			9
1964			1	1	4	4	1	1		12
Totals	Feb. 1 Mar. 1	10	41	46	142	216	146	29	4	636

Frequency of Tropical Cyclones Reaching Hurricane Intensity by Months and Years

		May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1886			2	1	2	2	1			8
1887				1	2	3	2	1	1	10
1888			1		2		1	1		5
1889		1			1	3				5
1890					1					1
1891				1	2	3	2			8
1892					1	2	1			4
1893			1	1	5	3				10
1894					1	1	3			5
1895					1		1			2
1896				1	1	2	2			6
1897					1	1				2
1898					2	2				4
1899				1	2	1	1			5
1900					1	2				3
1901				1	2					3
1902			1			1	1			3
1903				1	1	3	2	1		8
1904						1	1			2
1905							1			1
1906			1		1	2	2			6
1907										0
1908	Mar. 1			1		2	1			5
1909				1	1	1	1			4
1910						2	1			3
1911					2	1				3
1912						1	2	1		4
1913			1		1	1				3
1914										0
1915					2	2				4
1916			1	2	3	2	2	1		11
1917					1	1				2
1918					2	1				3
1919						1				1
1920						4				4
1921			1			2	1			4
1922						1	1			2
1923					1	1	1			3
1924					2	1	1	1		5
1925								1		1
1926				1	2	4	1			8
1927					1	3				4
1928					2	1	1			4
1929			1			1	1			3
1930					2					2
1931						2				2
1932					3	1	1	1		6
1933			1	1	3	3	1			9
1934			1	1	1	1	1	1		6
1935					2	1	2			5
1936			1	1	3	2				7
1937						3				3
1938					2	1				3
1939					1		2			3
1940					3	1				4
1941						3	1			4
1942					3			1		4
1943				1	1	2	1			5
1944				2	1	3	1			7
1945			1		1	1	1			4
1946				1		1	1			3
1947					2	1	2			5
1948					1	3	1	1		6
1949					2	4	1			7
1950					4	3	4			11
1951		1			2	3	2			8
1952					2	2	2			6
1953					2	3	1			6
1954			1		2	3	1		1	8
1955					3	5	1			9
1956				1	1	1	1			4
1957			1			2				3
1958					3	3	1			7
1959			1	2		3	1			7
1960				1	1	2				4
1961				1		5	1	1		8
1962					1	1	1			3
1963				1	1	4	1			7
1964					2	3	1			6
Totals	Mar. 1	2	17	26	104	141	69	12	2	374

TROPICAL CYCLONES IN THE EASTERN NORTH PACIFIC, 1964

Martin McGurrin
U. S. Weather Bureau, San Francisco, California

Only six tropical cyclones of storm or hurricane intensity were detected in the Eastern North Pacific Ocean during the 1964 season. This is the smallest number of any season since 1955. Only one of these reached hurricane intensity. Weather satellites were relied upon to supplement the surface ship reports in determining the storm positions and to some extent their strength. All of these tropical cyclones moved with an average speed of 8 to 14 kt. and in a direction between west and north.

Of these tropical cyclones, only one went inland into continental Mexico, two passed over or very near the Tres Marias Islands and one over or very near Socorro Island shortly before it developed to tropical storm intensity. One of the centers that went over the Tres Marias Islands passed barely south of the tip of Baja California. In none of these cases was the extent of damage to property or loss of life known. A storm track map for the season with legend is given in conjunction with a short table presenting a summary of the tropical cyclones.

When these tropical cyclones in the Eastern North Pacific have winds equal to or greater than 64 kt., they are known as hurricanes rather than typhoons as in the Western North Pacific. However, winds of tropical storm intensity have the uniform definition of 34 to 63 kt. and tropical depressions, winds below 34 kt. All times used are GMT. Tracks and dates shown in the chart are those for which the cyclones were at least of tropical storm intensity.

TROPICAL STORM NATALIE, JULY 5-7

This was the first tropical cyclone of the 1964 season off the west coast of Mexico and Central America. It was first located at 16.2°N., 104.0°W. or about 250 mi. west of Acapulco, Mexico, at 1800 on July 5 at which time the CALIFORNIA STAR reported a pressure of 1005.8 mb. and a 30 kt. east-southeast wind. On later maps many ships reported 35- to 40-kt. winds and some had seas of 13 and 14 ft. The storm first followed a north-northwesterly path then curved almost directly northward to cross over the Tres Marias Islands. At or very near the time of crossing, the WESTPORT, anchored at the Islands, reported a pressure of 1001 mb. and a southeast wind of 70 kt. Gale winds of 40 kt. were reported aboard the AMERICAN QUEEN on the 6th, also near the Islands. Immediately after crossing the Tres Marias Islands Natalie lost intensity and no more reports of strong winds were received from either ship or shore stations. The weakened storm appeared to go inland about 70 mi. northwest of Mazatlan. The storm remained of small diameter and maintained an average speed of 14 kt. during its short life. Gale force winds extended only about 75 mi. from its center at maximum development. Although 70 kt. winds were reported, these were believed to be observed in local squalls and the pressure did not indicate sustained winds of hurricane intensity.

HURRICANE ODESSA, JULY 15-19

A wave on the intertropical convergence zone with pressures below 1008 mb. extended over 20 degrees of longitude west of Acapulco, Mexico, as early as 1800 on the 13th, with showers, rain and seas 6 to 8 ft. However, the first definite report of a storm came from the CALLI at 2300 on the 14th with a pressure of 994 mb. and a 50-kt. east-northeast wind. Successive radio reports followed at 3-hr intervals and these formed an interesting series in defining the position of the storm center. The ship originally in the right forequarter of the storm, altered course, crossing ahead of the storm path to a left quarter to achieve better wind and sea conditions. While making this crossover, winds of 50 to 60 kt. were experienced in squalls. Gale winds of 35 kt. on the 15th and 36 kt. on the 18th were reported from the MILLICOMA as the ship circumnavigated the hurricane. The JANECKE MAERSK remained hove-to just north of Odessa's center late on the 17th and early on the 18th. Heavy rain lowered visibility as 60-kt. winds and 21-ft. waves were observed. The PIONEER MING also in the vicinity of the storm reported 40-ft. seas.

The first advisory gave the position as 15.0°N., 112.0°W. at 0000 on the 15th. After the storm was 24 hr. old, no more radio reports were received near the storm center, so great reliance was placed upon the two TIROS weather satellite determinations made during that later period. These pictures showed an extensive cloud mass 300 to 400 mi. in diameter and a well-defined circulation of the kind that may have caused surface winds up to 90 kt. The storm moved west-northwestward with a speed of 11 kt. during its life of 4 days. At its maximum development hurricane winds extended outward about 100 mi. from the center and gale force winds 275 mi.

TROPICAL STORM PRUDENCE, JULY 20-24

The first indication of a tropical cyclone was given by photograph from a weather satellite on the 19th, showing the location near 12°N., 113°W. The chart at 0000 of the 20th had two ships in the vicinity, the STEEL KING giving a west wind of 20 kt. and the JANECKE MAERSK reporting a northeast wind of 30 kt., pressure 999.8 mb., indicating a storm centered at 12.3°N., 112.0°W. or 200 mi. northwest of Clipperton Island and within one degree of the Satellite Bulletin position. The wind on the yacht TRADEWIND increased to 35 kt. by 0600 on the 20th with seas of 20 ft. by 1200.

The storm moved west-northwestward at a speed of 12 kt. and very closely paralleled the path of hurricane Odessa of 5 days earlier. Gale force winds extended 200 mi. from the center at its maximum development on the 22d and 23d. Prudence dissipated on the 24th near 20°N., 130°W.

TROPICAL STORM ROSLYN, AUGUST 20-22

This storm was followed for 48 hr. as a tropical depression before it developed to storm intensity. Information from a satellite picture and from the ship GOPHER STATE gave the first indication that the depression was centered near 15°N., 107°W. at 1800 on the 18th. This depression moved northwestward passing just west of Socorro Island and curved west-northwestward with an average speed of 12 kt. It is believed that it increased to tropical storm strength about 1800 on the 20th near 20°N., 115°W., continuing west-northwestward but slowing to about 8 kt. and dissipating at approximately 1800 on the 22d. During

its existence as a tropical storm no observational information from its central area was available. At its maximum development, the highest winds were believed to be 55 kt., with gale force winds extending outward about 200 mi.

TROPICAL STORM SYLVIA, AUGUST 23-24

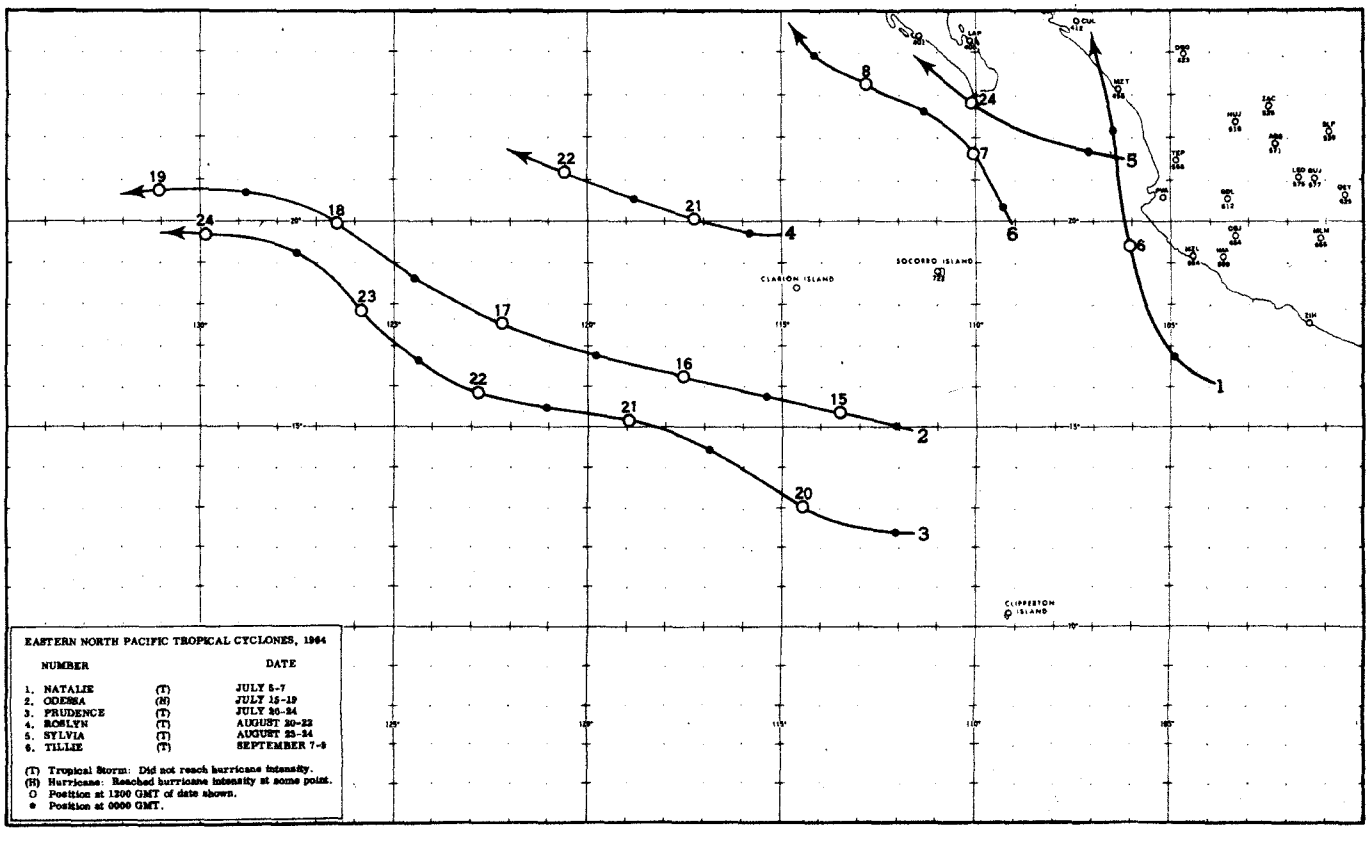
This tropical storm was one of the smaller Mexican west coast storms. Direct evidence of its location and strength was given at 2200 on the 23d by the ship CULIACAN. It reported seas of 25 ft. with southwest winds 30 to 35 kt. and the storm center position was determined to be 21.7°N., 107.1°W., at 0000 on the 24th. This tropical cyclone, having barely reached tropical storm strength, weakened to a tropical depression sometime during the 24th and moved west-northwestward with an average speed of 14 kt. At 1915 of the 25th a picture taken by TIROS showed a spiral formation of clouds centered at about 25.0°N., 115.0°W. Surface data indicated no storms in this vicinity at that time, so it has been assumed that the satellite picture showed the upper air remnants of a previously well-developed storm. At its maximum development the highest winds were estimated to be 50 kt. with gale force winds extending outward 50 mi. from the center.

TROPICAL STORM TILLIE, SEPTEMBER 7-9

For two days a tropical depression was followed on the weather maps as it moved in a northwesterly direction. Then at about 0000 on the 7th it developed to storm intensity near 20.3°N., 109.3°W., or 230 mi southwest of Mazatlan, Mexico. This storm dissipated shortly after 0000 on the 9th about 125 mi. west-southwest of Magdalena Bay. It moved at an average speed of 8 kt., generally in a northwesterly direction. At its maximum development, highest winds were believed to be 50 kt. with gale force winds extending outward about 100 mi. The chart shows Tillie during the formative stages, demonstrating the exceptionally fine results of the NIMBUS I high resolution infrared radiometer (HRIR) system, used for nighttime surveillance.

TROPICAL CYCLONES IN THE EASTERN NORTH PACIFIC, 1964

Name	Dates	Area Where First Reported	Land Area Affected	Highest Wind Speed (Observed)	Lowest Pressure (Observed)	Area of Dissipation
1. NATALIE	July 5-7	16.2°N., 104.0°W.	Tres Marias Islands and 70 mi. northwest of Mazatlan, Mexico.	70 kt.	1001.0 mb.	70 mi. northwest of Mazatlan, Mexico
2. ODESSA	July 15-19	15.0°N., 112.0°W.	None	65 kt.	992.0 mb.	20.8°N., 131.0°W.
3. PRUDENCE	July 20-24	12.3°N., 112.0°W.	None	40 kt.	999.8 mb.	19.7°N., 129.8°W.
4. ROSLYN	August 20-22	19.7°N., 115.0°W.	Socorro Island, before it developed to storm intensity.	40 kt.	1005.5 mb.	21.5°N., 121.3°W.
5. SYLVIA	August 23-24	21.7°N., 107.1°W.	Tres Marias Islands and the southern tip of Baja California	40 kt.	1005.7 mb.	23.5°N., 111.0°W.
6. TILLIE	September 7-9	20.3°N., 109.3°W.	None	35 kt.	1000.0 mb.	23.9°N., 114.2°W.



TYPHOONS OF THE WESTERN NORTH PACIFIC, 1964

Based on Material Prepared by the Joint Typhoon Warning Center, Fleet Weather Central, Guam, Mariana Islands

A total of 730 tropical warnings were issued by the Joint Typhoon Warning Center on 26 typhoons, 13 tropical storms, and 5 tropical depressions in the western North Pacific Ocean during 1964. Seven additional tropical cyclones were investigated, but did not intensify enough to necessitate the issuance of warnings. The development of 26 typhoons in the North Pacific west of 180° longitude in 1964 is a new record. The previous high of 24 was established in 1962. For the years since 1952, when intense aircraft reconnaissance began, the average annual number of typhoons is about 19.

The two most intense typhoons of 1964 were Sally and Opal. Each had maximum sustained surface winds of 170 kt. Other typhoons with sustained winds exceeding 130 kt. were Cora, Ida, Wilda, and Louise. Opal had the largest surface circulation with a maximum radius of 650 mi. Alice was the smallest typhoon with a maximum radius of 200 mi. Of the 26 typhoons during the 1964 season, 15 dissipated over land, 5 dissipated over water, 2 were absorbed by other typhoons, and only 4 became extratropical.

Total extent of damage and loss of life due to tropical cyclones in the western North Pacific is unknown. However, several areas were frequented by more than their usual share of typhoons and tropical storms. The South China Sea west of the Philippines and south of 8.5°N. was visited by 10 typhoons, compared to an annual average of 3.2 for the previous 5 yr. Three other regions in particular were adversely affected by typhoon activity.

An unusually high number (5) of typhoons hit near Hong Kong. They caused heavy rains in the British Crown Colony. High water, landslides, and strong winds did considerable damage and caused over 50 deaths. At least 14 freighters in the harbor were damaged. Ruby, with winds to 140 kt., was reported to be the first typhoon in 20 yr. to pass directly over Hong Kong.

Six typhoons (and two tropical storms) moved across the Viet Nam coast between 11° and 22°N., Violet was responsible for destroying many houses in Quang Tin Province. Iris, Joan, and Kate struck within a 12-day period in November. Reports indicated up to 7,000 dead and many homeless in the wake of Iris and Joan. Up to 5,000,000 acres were reported swamped by the worst floods in 60 yr.

The Philippines suffered from 10 typhoons with Luzon being crossed by 6 and receiving at least fringe effects from the other 4. Most destructive were Winnie, Ida, Louise, and Opal. Louise moved through the central Philippines for about 2 days with winds to 140 kt. Nearly 600 were reported killed. At the time Winnie hit, it was reported to be the worst typhoon on Luzon since 1882. Property and crop losses from the typhoons were high. At least five freighters were sunk or damaged.

The tracks of the typhoons and tracks of tropical storms and depressions are shown in the accompanying charts. Typhoon intensity indicates wind speeds equal to or greater than 64 kt.; tropical storm intensity, wind speeds from 34 to 63 kt.; and tropical depression intensity, wind speeds less than 34 kt. All distances are in nautical miles and all times in Greenwich Mean Time. Brief summaries of individual typhoons follow:

TESS, MAY 14-22

Typhoon Tess formed east of the central Philippines on the 14th and remained quasi-stationary in the area until the 17th, briefly attaining storm intensity. Then, slowly moving east-northeastward, Tess had become better organized by the 18th. On the 19th near 14°N., 139°E., typhoon intensity was reached, and later the same day Tess moved through the Marianas. Aircraft reconnaissance reported 85-kt. winds near the center of the cyclone early on the 21st. Now weakening slowly Tess moved about 100 mi. west of Marcus at noon that day. Scattered gale reports were received from vessels in the path of the storm over the next 3 days as Tess continued moving slowly northeastward into the trans-Pacific shipping lanes. Winds on the periphery of Tess of 35 kt., were reported on the 21st by the ALASKA BEAR, and on the 23d by the HAWAII and the NAESS JUPITER.

VIOLA, MAY 25-28

Typhoon Viola developed over the waters of the South China Sea west of Luzon on the 25th. With winds of storm intensity, Viola moved in a northwesterly direction toward the China coast while slowly intensifying. Typhoon intensity was reached on the 27th as winds increased to maximum intensity of 70 kt. The JARICHA experienced winds of 36 and 48 kt., on the 26th and 27th, respectively, near 15°N., 115°E. Viola crossed inland about 100 mi. west of Hong Kong early on the 28th. Three freighters were grounded at Hong Kong from the force of Viola; the Liberian MADURA; and the Greek GLORIA in Pennys Bay, Lantao. The British MANGROVE HARBOUR was partially flooded when it grounded on Tung Kwu Island. Beneficial rain fell over the Crown Colony due to Viola.

WINNIE, JUNE 26-JULY 3

Typhoon Winnie formed as a tropical depression southwest of Guam on the 26th. Rapid intensification took place on the 27th and typhoon strength was reached late in the day near 15°N., 130°E. Winnie moved in a westerly direction toward southern Luzon which it approached on the 29th with sustained winds of about 95 kt. near the center. Manila was directly in the path of the cyclone and damage reported was the worst in the area since 1882. An estimated 500,000 persons were left homeless in Manila and the central Luzon provinces. Loss of life was surprisingly light with about 40 persons dead or missing. A Philippine Navy destroyer sank at her moorings and several aircraft suffered varying amounts of damage. Coconut and abaca plantations on Luzon were also hard hit. From the Philippines, typhoon Winnie turned to a northwesterly course across the South Chine Sea with winds of 100 kt. The cyclone crossed Hainan and the Gulf of Tonkin on July 2 and moved inland over the Red River delta of North Viet Nam where it weakened and dissipated during the next day or two.

ALICE, JUNE 26-28

Typhoon Alice developed from a tropical depres-

sion which moved over Guam on the 26th. Tropical storm intensity was reached late on the 26th when a reconnaissance aircraft recorded winds of 50 kt. Typhoon strength was reported a few hours later early on the 27th as the wind speed reached 65 kt. Alice moved westward about 700 mi. behind the larger, developing cyclone Winnie, and late on the 27th Alice began dissipating rapidly and was absorbed in the circulation of typhoon Winnie.

BETTY, JULY 2-6

Typhoon Betty developed early on the 2d near 22°N., 132°E., with winds already of storm intensity of 40 kt. by the time an aircraft checked the area. Betty intensified and moved along a northwesterly path which took it across the southern Ryukyu Islands on the 4th with winds of 100 kt. over a small area near the center. Maximum intensity of 110 kt. was reported on the following day as the cyclone approached the China coast about 200 mi. south of Shanghai. The cyclone then rapidly weakened and lost its identity. Several good TIROS pictures were obtained of typhoon Betty.

CORA, JULY 6-10

Typhoon Cora, a tropical storm near 10°N., 142°E., about 300 mi. southwest of Guam when the first advisory was issued early on the 6th, reached typhoon intensity later that same day and had central winds to 130 kt. by the 7th. Cora moved slightly north of west toward the central Philippines intensifying to about 140 kt. sustained winds on the 8th. Approaching northern Samar and southern Luzon on the 9th, the intensity of the cyclone suddenly dropped below typhoon intensity and on the 10th it had dissipated.

DORIS, JULY 11-15

Typhoon Doris formed on the 11th in the same area where Cora developed, about 300 mi. southwest of Guam. Doris was of tropical storm intensity on the 11th and 12th and attained typhoon intensity early on the 13th near 17°N., 131°E., while moving northwestward. Maximum intensity of 80 kt. was reached early on the 14th. Later that day, while located about 200 mi. east of Taiwan, Doris weakened suddenly, and by noon on the 15th it had dissipated near the southern Ryukyu Islands.

ELSIE, JULY 13-18

Typhoon Elsie developed as a tropical depression near the Marianas on the 13th. Tropical storm intensity was reached late on the 14th, and Elsie became a typhoon about 48 hr. later when aircraft reconnaissance estimated winds at 65 kt. near 14°N., 127°E. Elsie moved in a general westerly direction toward southern Luzon. On the 17th some intensification occurred as wind speeds increased to 100 kt. near the center. Elsie later that day crossed southern Luzon near Manila and appeared in the South China Sea with winds down to 40 kt. Late on the 18th Elsie was dissipating near 18°N., 117°E.

FLOSSIE, JULY 26-29

Typhoon Flossie formed within an area of low pressure east of Taiwan on the 25th. Intensification to tropical storm strength occurred later on the 25th when aircraft reconnaissance found 40-kt. winds in the circulation just south of Okinawa. North of Flossie's center as the typhoon approached the island on the 26th, the PRESIDENT ROOSEVELT met 40-kt. gales. Flossie continued along a northwesterly track to off the China coast near Shanghai on the 28th with winds increasing to about 80 kt. near the center. Recurvature and movement toward the northeast over the Yellow Sea to the west coast of North Korea took place on the 29th. The dissipating storm then moved across southeastern portions of Manchuria and Siberia. Two U. S. Navy vessels collided and a third ran aground during gale force winds in Okinawan waters as Flossie passed that island. Damage to the ships was rated as "not serious". The attack transport GEORGE CLYMER and the amphibious ship ELDORADO were involved in the collision while the high-speed transport WEISS broke out of her anchorage and went aground. At least two fishermen and several fishing boats were lost along the Yellow Sea coast of Korea during the passage of Flossie.

HELEN, JULY 27-AUGUST 3

Typhoon Helen developed over the sparse data areas near 19°N., 150°E., on the 27th. Winds near the center were then estimated at 35 kt. Helen moved in a northwesterly direction toward southern Japan. Typhoon intensity was reached early on the 29th near 22°N., 146 °E. Helen moved within 100 mi. of Iwo Jima about noon on the 30th with peak winds at 130 kt. near the center. On August 1, Helen skirted Kyushu and the northern Ryukyu Islands. Some damage and loss of life were sustained on these islands. Central winds were then approximately 100 kt. Helen continued northwestward into the Yellow Sea on the 2d and 3d with winds slowly diminishing. On the 4th the storm was dissipating over Manchuria.

IDA, AUGUST 2-9

Typhoon Ida was discovered as a tropical depression about 300 mi. southeast of Guam on the 2d. Late the same day Ida was upgraded to a tropical storm and continued to move in a general west-northwesterly direction. Ida reached typhoon intensity early on the 4th with 80 kt. winds near the center of the circulation. Churning across northern Luzon with sustained winds of 135 kt. late on the 6th and early on the 7th, Ida was responsible for 11 fatalities and widespread flooding and crop damage. The 3,541-ton SUNSHINE was grounded in Ida near Aparri on northern Luzon. The Panamanian freighter suffered considerable damage to bottom, propeller, and rudder. Several vessels encountered gale force or greater winds in Ida's circulation on the 6th and 7th: FREDERICK LYKES, 35 kt.; PRESIDENT WILSON, 40 kt.; BRETON, 46 kt.; SGT. TRUMAN KIMBRO, 50 kt. Some weakening occurred, but Ida rapidly reintensified after crossing Luzon. Passing 40 mi. southwest of Hong Kong, Ida moved into the Chinese mainland with 90-kt. winds on the 8th. Fringe winds with gusts to 120 kt. swept over the Crown Colony and the 11,360-ton Liberian tanker DOROTHY broke loose from her moorings and ran aground in Hong Kong Harbor. Moving inland, Ida rapidly dissipated on the 9th.

KATHY, AUGUST 12-25

Typhoon Kathy was located by ship reports on the

12th near 28°N., 151°E., as a tropical storm. One of the earliest indications of Kathy came from the CALIFORNIA GETTY near the storm's first known position. Winds were from the east-southeast at 38 kt. Intensification to typhoon strength occurred on the 13th about 150 mi. northwest of its original location when winds were 70 kt. near the center. Movement the following 4 days was west-southwestward near Okinawa to about 25°N., 126°E. Completing a counterclockwise loop, Kathy was positioned about 150 mi. northeast of Okinawa on the 20th. During this time, sustained winds near the center had reached 115 kt. and typhoon Marie was absorbed into Kathy's circulation. From the 19th through the 22d, numerous ships in the vicinity of the northern Ryukyu Islands experienced some effect of the typhoon. On the 19th, the FLYING DRAGON recorded 35 kt. winds. The following 2 days the NAESS VENTURER encountered 50 kt. gales. Similarly, the PRESIDENT McKINLEY encountered 40 kt. winds on the 21st-22d. Moving into Kyushu on the 23d with winds of 70 kt., Kathy caused widespread damage. At least 13 fatalities and numerous injuries were reported. Landslides and flooding were the major causes of casualities and up to 28 in. of rain was recorded in Kyushu's mountainous regions. Turning northeastward, Kathy churned into the Inland Sea, across Honshu, and into the Sea of Japan via Wakasa Bay late on the 24th. However, Kathy had been downgraded to a tropical storm as it left Kyushu. Maximum winds were 45 to 50 kt. as Kathy rapidly moved across the Noto Peninsula and back across Honshu near the 40th parallel on the 24th-25th. The cyclone became extratropical on the 25th and moved seaward in an easterly direction. A swing to the northeast on the 29th from near 42°N., 170°E., took the storm into the Bering Sea near the central Aleutians. Force 8 and 9 winds were reported by vessels in this area on the 30th. The storm began to dissipate over the colder waters and eventually drifted across the Bering Strait by September 1.

MARIE, AUGUST 14-18

Typhoon Marie was already a tropical storm when sighted by reconnaissance aircraft on the 14th near 20°N., 129°E. After initially moving northwestward, Marie recurved toward the east and by late on the 16th, the center was located near 22°N., 135°E. Moving northward, Marie finally reached typhoon intensity on the 17th at 25°N., about 450 mi. east of typhoon Kathy. Central winds were near 70 kt. As Kathy moved eastward, Marie traveled northwestward remaining just above minimum typhoon strength. Late on the 18th, when Marie was about 150 mi. north of Okinawa, the typhoon was absorbed by Kathy, However, about 200 mi. south of Kobe, minimum gale winds of 35 kt. were reported from the FLYING DRAGON in Marie's disappearing circulation.

RUBY, SEPTEMBER 1-5

Typhoon Ruby, the third such major cyclone to strike the coast near Hong Kong this year, was discovered on the 1st near 20°N., 132°E. Aircraft reconnaissance positioned the storm which had 35-kt. winds near the center. Ruby attained typhoon strength 1 day later. Movement was westward until early on the 4th when, about 125 mi. west-northwest of Luzon, Ruby turned to the northwest. Early the next day, as maximum intensity was reached, sustained winds near the center were 120 kt. Moving across the South China Sea, Ruby approached the Chinese mainland early on the 5th. Just southeast of Hong Kong that day, the PHIL. PRES. OSMENA reported 55-kt. winds. The typhoon was the first to pass directly over Hong Kong in 20 yr. Winds in the Crown Colony on the 5th ranged to near 140 kt. Heavy rains caused flooding, landslides, and house collapses. Up to 9 persons were reported missing when the Panamanian freighter DORAR sank in Hong Kong Harbor; 14 others were rescued. More than 20 ocean-going ships broke their moorings, colliding with each other. Some were swept out to sea. Other ships damaged at Hong Kong during Ruby's assault were the AMONEA, FAIRHURST, COSMO TRADER, SHUN FUNG, ANJI, and KOWLOON BAY. The combined casualty toll on Hong Kong and Portuguese Macao was reported to be 31 dead, 11 missing and over 300 injured as huge trees were uprooted, cars flipped over and houses were demolished in the high winds. Continuing the westward movement, Ruby rapidly dissipated over land about 150 mi. west of Canton.

SALLY, SEPTEMBER 3-10

Typhoon Sally was discovered on the 3d by ship observations as a depression about 150 mi. southwest of Eniwetok. Later that day Sally was of tropical storm intensity and positioned by aircraft radar about 200 mi. northeast of Truk. Early on the 4th, Sally was upgraded to a typhoon with 65-kt. winds near the center. Only 1 day later, 85-kt. winds battered Guam as Sally continued its west-northwestward movement near the Island. Maximum intensity was attained early on the 7th. Sustained winds near the center reached 170 kt. and the lowest reported sea level pressure was 894 mb. After brushing northern Luzon on the 8th-9th, Sally crossed the South China Sea and moved into the Chinese mainland just east of Hong Kong with 85-kt. winds. Late on the 10th near Canton, Sally was downgraded to a tropical storm as dissipation rapidly continued. By the 12th-13th, remnants of Sally gave Seoul, Korea, the worst rains in 20 yr. Reports listed at least 376 persons as dead or missing and 258 injured. Most of the casualties were attributed to rain-triggered landslides, floods and many collapsed houses. Strong, damaging winds accompanied the storm as some intensification occurred over marine areas. Vessels encountered force 8 to 10 winds as the storm moved across Hokkaido on the 13th and northeastward to southern Kamchatka by the 16th where dissipation occurred.

TILDA, SEPTEMBER 13-22

Typhoon Tilda was the fifth major typhoon to affect Hong Kong during 1964. On the 13th, near 18°N., 132°E., vessel reports and aircraft reconnaissance indicated a tropical depression. By early on the 14th, Tilda had reached typhoon intensity with winds near the center from 65 to 70 kt. Later that day, Tilda moved near Batan Islands lashing southern Taiwan and sparsely populated islands in the northern Philippines, and then headed westward across the South China Sea. Midday on the 16th, Tilda was positioned about 60 mi. south of Hong Kong where it remained stationary for about 12 hr. before drifting southeastward and being downgraded to storm strength. Again after remaining stationary in the vicinity of 19°N., 115°E., for nearly 2 days, Tilda attained full typhoon

intensity on the 19th. One day later about 100 mi. southeast of Hainan maximum intensity was achieved. Winds near the center were 100 kt. for about 12 hr. as Tilda headed westward. Beneficial information was provided on the 21st from the observation of the PRESIDENT JOHNSON, just off the southern coast of Hainan. Winds of 60 kt. were reported from the ship. Slowly losing intensity the typhoon was downgraded to a tropical storm shortly after slamming into the Viet Nam coast about 60 mi. northwest of Hue.

VIOLET, SEPTEMBER 14-15

Typhoon Violet began and ended during the lifetime of typhoon Tilda and also struck the coast of Viet Nam. Violet's life was short, from early on the 14th to late the following day. Discovered as a depression about 350 mi. east-northeast of Saigon, Violet intensified to a tropical storm within a few hours. Most early fixes were based on vessel reports. Just prior to striking the coast, Violet was upgraded to a typhoon with winds of 75 kt. Early reports indicated that about 90 percent of the houses in Quang Tin Province were demolished. Farther north at the coastal city of Da Nang, one plane was damaged at an air base. Moving just inland along the coast, Violet weakened to storm intensity. The final advisory was issued as Violet rapidly dissipated in the vicinity of Donghoi (18 °N., 106°E.).

WILDA, SEPTEMBER 19-25

Typhoon Wilda was one of the most severe tropical cyclones to strike Japan this year. When first discovered on the 19th in the storm stage, Wilda was situated about 230 mi. northwest of Saipan. Wilda was upgraded to a typhoon the same day and its movement was generally northwestward until the 23d. On the 21st maximum sustained winds were 150 kt. near the center. They were not much less on the 23d-24th when the typhoon caused widespread damage in the northern Ryukyus. Positions of the center and estimates of intensity were good during this time due to land and ship reports, and radar observations. The storm curved toward the north, moving directly into Kyushu. Kagoshima was especially hard hit by the 95-kt. winds. There were at least 3 fatalities, 450 homes destroyed and two ships sunk in Kagoshima Bay. The British ORIENTAL was cracked amidships and forced aground near Namami Cape on southern Kyushu. Wilda sped across Shikoku and the Inland Sea to the heavily populated Kobe-Osaka district. There 70-kt. winds battered the cities and forced the ADRI XIV, an Indonesian freighter, aground in Kobe Harbor. The SURNA and DON RAMON were also grounded in Osaka Bay from Wilda's high winds. After crossing Honshu on the 24th, Wilda entered the Sea of Japan and moved northeastward brushing along the western coast of the main Japanese island as a tropical storm. However, Wilda was fast becoming extratropical as it again crossed Honshu through the northern districts on the 25th. On that day the PRESIDENT VAN BUREN, just south of Tokyo Bay, reported 41-kt. winds. Deepening occurred as the cyclone moved rapidly to the central Aleutians by late on the 27th. Pressure was then 968 mb. and vessels in the circulation encountered force 8 to 10 winds; the SANTA ISABEL MARU in the storm's eastern quadrant had 47-kt. winds.

CLARA, OCTOBER 2-8

Typhoon Clara was initially indicated on the 2d from sparse surface reports as a tropical depression near Yap. Later that day reconnaissance aircraft and surface data better positioned the cyclone about 100 mi. west of Yap. The reports further revealed Clara to be of tropical storm intensity. Movement was generally northwestward until late on the 3d near 15°N., 130°E. Thereafter, Clara's direction varied little from slightly north of west. By the 4th, Clara was a typhoon and maximum winds were 80 kt. when it struck Luzon near Dilasac Bay late that day. Weakened somewhat by its journey over land, the cyclone maintained enough strength to retain typhoon designation. Crossing the South China Sea on the 5th-7th, Clara followed a path similar to its immediate predecessor, tropical storm Billie. Clara's highest winds reached 80 kt. again on the 6th and brushed southern Hainan on the 7th. Weakening to a tropical storm with 45-kt winds, Clara spun into Viet Nam near Ben Thuy early on the 8th, but rapidly dissipated over land.

DOT, OCTOBER 6-13

Typhoon Dot was the strongest tropical cyclone in the North Pacific during October and 5th typhoon of 1964 to move inland near Hong Kong. As a tropical storm Dot was first sighted by aircraft reconnaissance about 100 mi. southwest of Yap on the 6th. Little movement was evidenced that day and Dot appeared to be dissipating, but rapid reintensification gave a more definitive center to the storm and it was relocated near 11°N., 131°E., early on the 7th. Dot continued west-northwestward, brushing Catanduanes Islands on the 8th. Swinging to a northwesterly course, Dot attained typhoon strength as it arced over the northern edge of Luzon on the 9th leaving that island near Laoag, heading westward. However, Dot quickly resumed its earlier direction on the 10th and 11th veering across the South China Sea towards Hong Kong. Maximum intensity was reached on the latter day, with sustained winds near the center estimated at 90 kt. and observed winds of 50 kt. in the circulation reported by the NAESS VENTURER. The following day, the PRESIDENT ROOSEVELT, nearer Dot's center encountered seas over 17 ft. and near hurricane winds of 57 kt. With only a slight drop in intensity, Dot battered the Crown Colony on the 12th-13th. Within a 15-hr. period the typhoon caused at least 23 deaths and numerous injuries. Rain-triggered landslides and collapsed houses left many homeless. Two ships in the harbor were driven aground and 30 junks were sunk or missing. Earlier 1964 typhoons had already refilled Hong Kong's drought depleted reservoirs to overflowing.

HOPE, OCTOBER 23-29

Typhoon Hope was detected on the 23d about 200 mi. west of Guam in its embryonic stage. Hope was quickly upgraded to a tropical storm after reconnaissance aircraft surveyed the cyclone. Vessel reports were instrumental in aiding to track the storm during the 6 days it was a tropical cyclone. Early movement took Hope to near 16°N., 136°E., where it swung to a northerly course on the 25th. By the 27th, intensity and forward motion had increased and Hope's movement had gained an easterly component. Late

that day 65-kt. winds qualified Hope for typhoon classification as it passed northwest of the Bonin Islands. Highest winds were estimated at 130 kt. by early on the 29th. At 0000 on the 29th, the ELISABETH ENTZ remained hove-to in winds of 75 kt. and 27-ft. waves. Later that day the FLYING FISH met 50-kt. winds while in the circulation. Hope was downgraded to tropical storm and further was transformed to extratropical on the 29th as it continued to move northeastward. Maximum winds in the circulation were 50 kt. late that day as the system passed near 38°N., 156°E. On the 30th, the extratropical stage of typhoon Hope deepened as it neared the central Aleutians and moved into the southeastern Bering Sea. It became the main cell of a large system with a fetch from Kamchatka to 155°W. in the strong pressure gradient of the storm's southern quadrant.

IRIS, NOVEMBER 2-4

Typhoon Iris had a known existence slightly over 2 days from time of discovery in the central South China Sea on the 2d. Sparse surface reports helped to follow the system which was a tropical storm when penetrated by reconnaissance aircraft near 14°N., 115°E. Movement of Iris was mostly westward with a temporary swing to about 15°N., and back again on the 3d. Iris reached minimal typhoon strength just prior to slamming into the central provinces of South Viet Nam early on the 4th. Shortly thereafter, typhoon Iris was downgraded to tropical storm as it rapidly dissipated in crossing the rough terrain.

JOAN, NOVEMBER 6-8

Typhoon Joan, together with its immediate predecessor typhoon Iris, reportedly flooded over 5,000,000 acres, left 7,000 dead and a million homeless in the central provinces of South Viet Nam. Vessel reports were the first indications of Joan, which was located about 200 mi. southwest of Manila on the 6th with 40-kt. winds. Joan increased in strength as it moved westward, reaching typhoon intensity early on the 8th near 13°N., 111°E. The typhoon was preceded by days of torrential rains and damage was reported high at Quinhon, just north of the region where Joan struck the coast. The floods were termed the most disastrous in 60 yr. Mountain valleys and coastal plains were swept clean, entire hamlets washed away without a trace. Late on the 8th, Joan was dissipating over land.

KATE, NOVEMBER 13-16

Typhoon Kate began in the South China Sea near the spawning grounds of typhoons Iris and Joan. Soon after discovery near 10°N., 112°E., early on the 13th, the tropical storm moved on a southerly course to about 8°N., 112°E. Just north of the storm's center the ILLINOIS encountered 45-kt. gales later that day. Reversing its direction, Kate continued to intensify and was centered near 10°N., 113°E., by the 15th with 65-kt. winds. Shifting direction again on the 15th Kate headed west-northwestward and further intensified as winds near the center reached 80 kt. late that day. On the 16th Kate struck the Viet Nam coast near Nhatrang, just south of the region devastated by floods from typhoons Iris and Joan. Reports indicated heavy damage. Rapid dissipation occurred over land and late on the 16th maximum winds were only 25 kt.

LOUISE, NOVEMBER 15-20

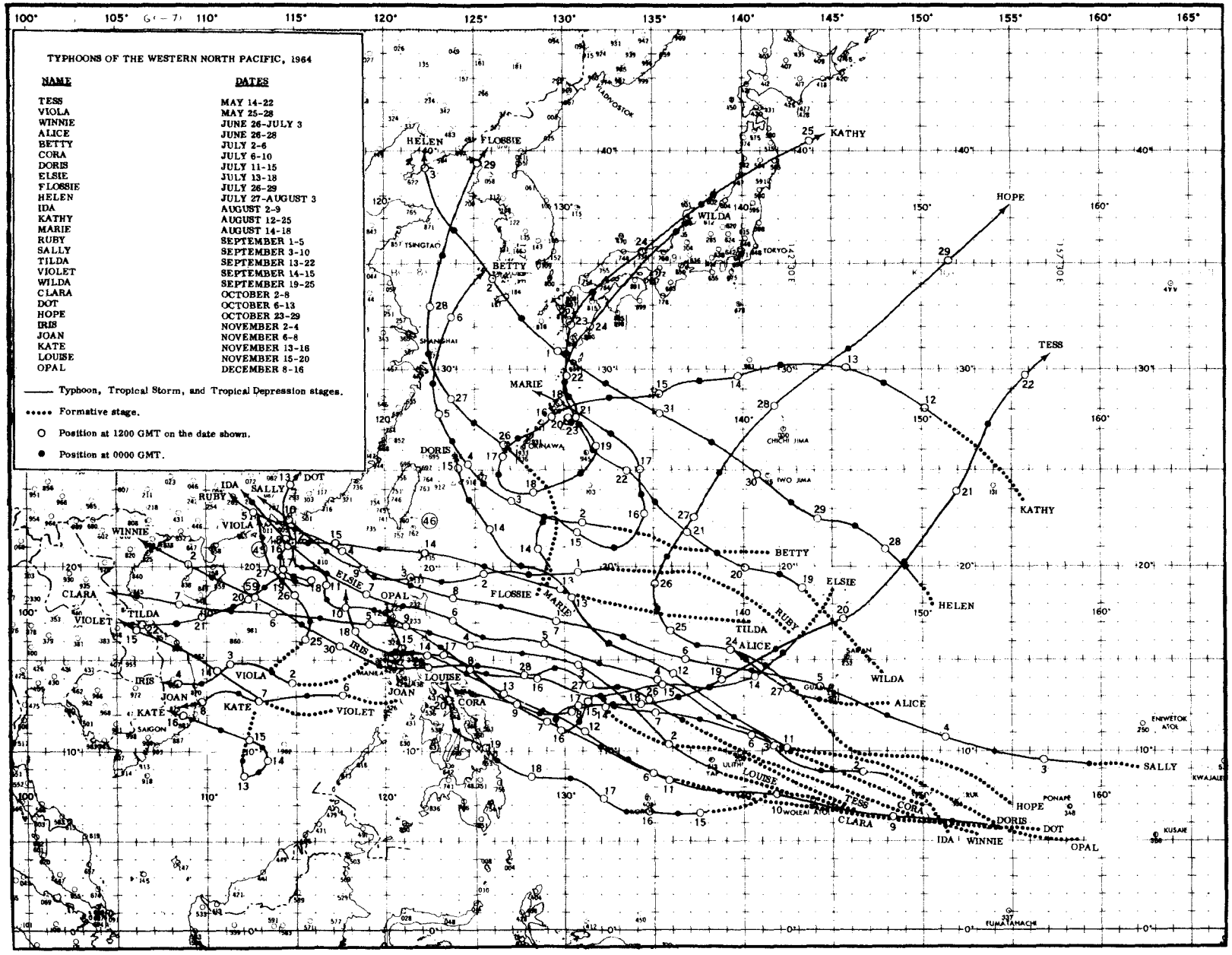
Typhoon Louise had only 25-kt. winds in the circulation when discovered early on the 15th about 100 mi. south of Yap. Sparse surface reports furnished early information until reconnaissance aircraft penetrated the circulation late on that day. Louise was upgraded to typhoon on the basis of winds of 70 kt. and a more accurate fix positioned the center near 7°N., 136°E., early on the 16th. Moving just south of Koror, Louise headed for the Philippines on a west-northwesterly course. For 1 day from early on the 18th until the typhoon hit Mindanao on the 19th near Lanuza Bay, Louise packed winds to 165 kt. The typhoon was one of the most destructive storms to hit the central Philippines in years. A total of 576 persons were reported killed and many more missing and homeless. Property and crop losses were high. The provinces of Surigao, Del Norte, Agusan, Leyte, Bohol, and the island of Negros bore the brunt of winds of 140 kt. At the city of Surigao on northern Mindanao, reports indicated one village suffered 100 casualties and destruction of all buildings. Nine interisland ships were sunk. The Panamanian freighter POMPADOUR and an escort salvage tug were lost when they were slammed into a reef by the typhoon's winds. A British frigate rescued the 46 men aboard the two vessels. Louise crossed the Visayan Islands on the 19th, turned northward over Panay Island on the 20th, and became stationary off the northern end of Masbate Island that day. Louise had weakened rapidly and was downgraded to a depression near the latter point, where the storm remained until dissipation on the 21st.

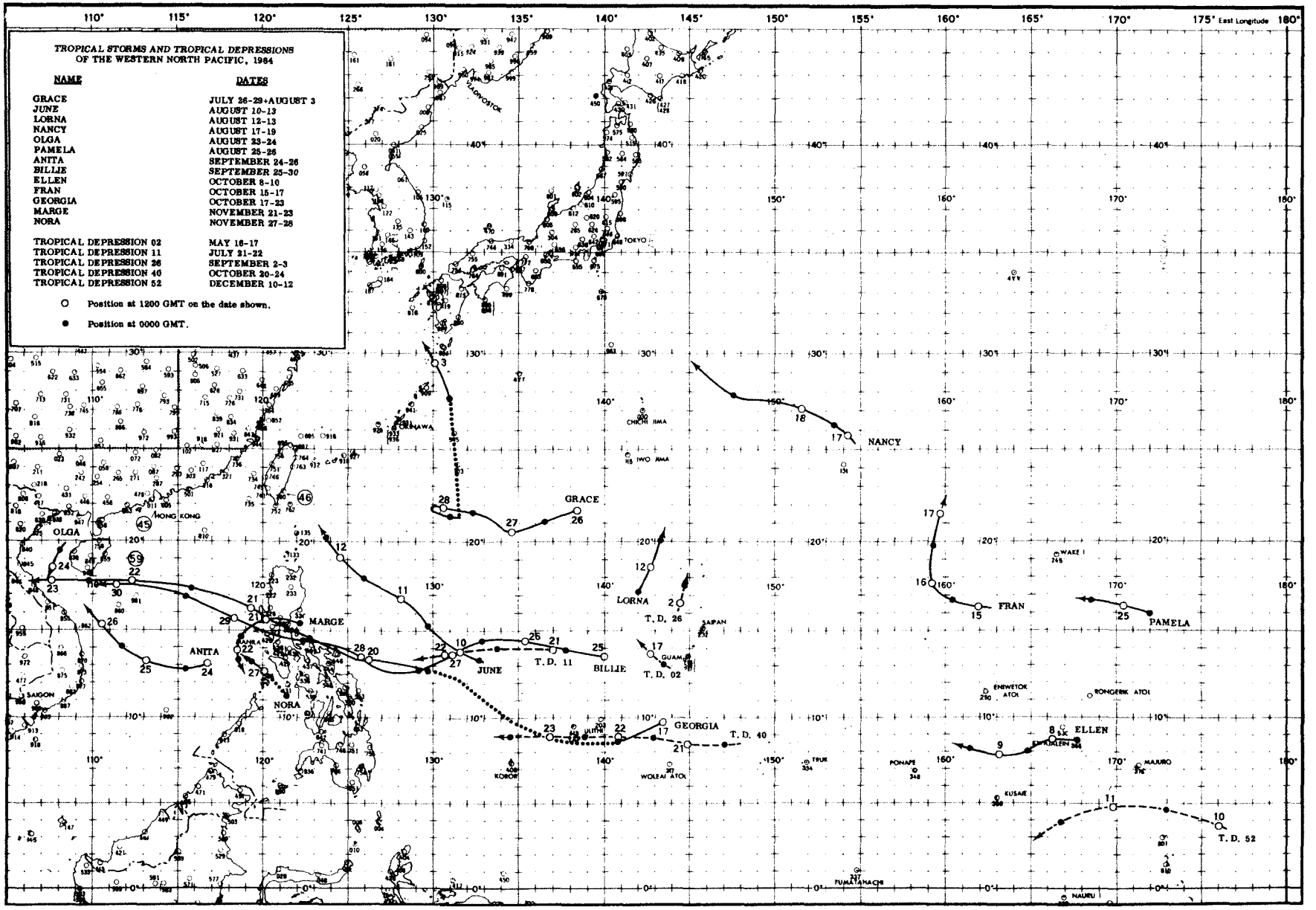
OPAL, DECEMBER 8-16

Typhoon Opal intensified rapidly after earliest indications late on the 8th and had 65-kt. winds near the center when first positioned by aircraft reconnaissance early on the 9th about 100 mi. southwest of Truk. Late on the 10th, about midway between Palau and Yap Islands, Opal continued to intensify. Moving west-northwestward the typhoon developed sustained winds to 170 kt. by late on the 12th. The eye passed just north of Catanduanes Island and the Polillo Islands and into central Luzon on the 14th. Central winds had dropped to 75 kt. The British freighter SWIFT RIVER was driven ashore. Heavy rains damaged rice crops on Luzon and caused a washout that derailed a passenger train; at least two were killed and three injured. Considerable property damage to structures was also sustained. Weakening over land as it crossed to near Iba by the 15th, Opal swung back toward Manila, making a small counterclockwise loop. The center moved off the western shore of Luzon via Lingayen Gulf. Winds had dropped to 40 kt. by then. On the 16th, Opal crossed the northwestern corner of Luzon and passed through the Babuyan Islands slightly intensified. Winds were then 45 kt. The final advisory was issued that day as Opal continued toward Okinawa. However, winds to 45 kt. battered a stranded ore carrier near Naha on the 17th and 18th as the tropical cyclone's final stages moved through the southern Ryukyus. Rough weather had forced the UNION PACIFIC aground on the 3d. Two persons who had remained on the stranded vessel were lost during rescue attempts on the 18th.

TYPHOONS OF THE WESTERN NORTH PACIFIC, 1964

Name	Dates of Storm and Typhoon Intensity (mb.)	Values and Dates (GMT) of: Highest Surface Wind Speed (kt.)	Values and Dates (GMT) of: Lowest Observed Surface Pressure (mb.)	Calendar Days of: Warnings	Calendar Days of: Typhoons	Land Areas Affected
TESS	May 14-22	85-21	965-21	8.75	3.00	Marcus Island, Marianas Islands
VIOLA	May 25-28	70-27	980-27	3.00	1.00	China, Hong Kong
WINNIE	June 26-July 3	100-01	950-01	6.25	4.50	Philippines, Hainan Island, Viet Nam
ALICE	June 26-28	65-27	990-26,27	1.50	0.50	Marianas Islands
BETTY	July 2-6	110-05	958-04,05	4.75	3.75	Ryukyu Islands, China, Korea
CORA	July 6-10	140-08	967-06	4.00	3.00	Caroline Islands, Philippines
DORIS	July 11-15	80-14	974-13	4.25	1.25	None
ELSIE	July 13-18	100-17	992-17	5.25	1.25	Philippines
FLOSSIE	July 26-29	80-27	974-28	4.75	3.00	Ryukyu Islands, China, Korea
HELEN	July 27-Aug. 3	130-30	931-30	7.00	4.75	Volcano Islands, Japan, Korea, Manchuria
IDA	Aug. 2-9	135-06	927-06	7.25	4.75	Caroline Islands, Philippines, China, Hong Kong
KATHY	Aug. 12-25	115-18,19	945-20	13.50	10.00	Bonin Islands, Japan, Ryukyu Islands
MARIE	Aug. 14-18	70-17	976-17	4.75	1.00	Japan
RUBY	Sept. 1-5	120-05	963-04	4.50	3.25	Babuyan Island, Philippines, China, Hong Kong
SALLY	Sept. 3-10	170-07	894-08	8.00	6.50	Marianas Islands, Philippines, Babuyan Island, China, Hong Kong
TILDA	Sept. 13-22	110-20	952-20	9.50	5.75	Batan Island, Hainan Island, Viet Nam
VIOLET	Sept. 14-15	75-15	--	1.75	0.50	Viet Nam
WILDA	Sept. 19-25	150-21	905-20	6.25	5.50	Japan
CLARA	Oct. 2-8	80-05,06	979-06	6.50	4.00	Philippines, Hainan Island
DOT	Oct. 6-13	90-11,12	976-12	7.50	4.25	Palau Islands, Philippines, China, Hong Kong
HOPE	Oct. 23-29	130-29	973-28	6.00	1.75	Bonin Islands
IRIS	Nov. 2-4	65-04	994-03	2.25	0.50	Viet Nam
JOAN	Nov. 6-8	70-08	999-07	4.50	0.50	Viet Nam
KATE	Nov. 13-16	80-15	986-15	4.00	1.50	Viet Nam
LOUISE	Nov. 15-20	165-18	914-18	6.00	4.25	Palau Islands, Philippines
OPAL	Dec. 8-16	170-12	903-11	7.75	5.75	Caroline Islands, Palau Islands, Philippines


TYPHOONS OF THE WESTERN NORTH PACIFIC, 1964
NAME DATES
TESS MAY 14-22
VIOLA MAY 25-28
WINNIE JUNE 26-JULY 3
ALICE JUNE 26-28
BETTY JULY 2-6
CORA JULY 6-10
DORIS JULY 11-15
ELSIE JULY 13-18
FLOSSIE JULY 26-29
HELEN JULY 27-AUGUST 3
IDA AUGUST 2-9
KATHY AUGUST 12-25
MARIE AUGUST 14-18
RUBY SEPTEMBER 1-5
SALLY SEPTEMBER 3-10
TILDA SEPTEMBER 13-22
VIOLET SEPTEMBER 14-15
WILDA SEPTEMBER 19-25
CLARA OCTOBER 2-8
DOT OCTOBER 6-13
HOPE OCTOBER 23-29
IRIS NOVEMBER 2-4
JOAN NOVEMBER 6-8
KATE NOVEMBER 13-16
LOUISE NOVEMBER 15-20
OPAL DECEMBER 8-16
Typhoon, Tropical Storm, and Tropical Depression stages.
Formative stage.
Position at 1200 GMT on the date shown.
Position at 0000 GMT.


TROPICAL STORMS AND TROPICAL DEPRESSIONS
OF THE WESTERN NORTH PACIFIC, 1964
NAME
DATES
GRACE JULY 26-29+AUGUST 3
JUNE AUGUST 10-13
LORNA AUGUST 12-13
NANCY AUGUST 17-19
OLGA AUGUST 23-24
PAMELA AUGUST 25-26
ANITA SEPTEMBER 24-26
BILLIE SEPTEMBER 25-30
ELLEN OCTOBER 8-10
FRAN OCTOBER 15-17
GEORGIA OCTOBER 17-23
MARGE NOVEMBER 21-23
NORA NOVEMBER 27-28
TROPICAL DEPRESSION 02 MAY 16-17
TROPICAL DEPRESSION 11 JULY 21-22
TROPICAL DEPRESSION 26 SEPTEMBER 2-3
TROPICAL DEPRESSION 40 OCTOBER 20-24
TROPICAL DEPRESSION 52 DECEMBER 10-12
Position at 1200 GMT on the date shown.
Position at 0000 GMT.
110° 115° 120° 125° 130° 135° 140° 145° 150° 155° 160° 165° 170° 175° East Longitude 180°
VLADIVOSTOK
TOKYO
OKINAWA
CHICHI JIMA
IWO JIMA
HONG KONG
SAIGON
SAPPAN
GUAM
WAKE I
ENIWETOK ATOL
RONGERIK ATOL
KUSAIE
PONAPE
TRUK
MAJURO
WOLEAI ATOL
KOROR
FUNAFUTI
NAURU
GRACE
NANCY
OLGA
MARGE
ANITA
NORA
JUNE
T. D. 11
BILLIE
LORNA
T. D. 26
T. D. 02
GEORGIA
T. D. 40
FRAN
PAMELA
ELLEN
T. D. 52

GENERAL SUMMARY OF FLOOD LOSSES FOR 1963

Monetary losses from floods in the United States during 1963 estimated at $175,646,000, was more than twice the total that occurred in 1962. This is the highest damage sustained from floods since 1958 when the losses totaled $218,255,000. In comparison with the national average of $350,000,000 based on the 10 year period 1951 to 1960 (adjusted to the 1960 price index), the flood loss in 1963 was about 50 percent.

The total loss of life in 1963 was 39; in 1962, 19 lives were lost. The national average of lives lost each year due to floods is 78 during the last 39 years (1925-1963).

The savings reported from the flood forecasting service of the Weather Bureau were compiled from fragmentary information, $55,000,000. This figure represents statistics collected from less than 15 percent of the river systems where flooding was reported during the year.

The most destructive of the floods during 1963 occurred in the Ohio Basin during March. The Guyandot and Tug Fork Rivers in West Virginia reached the highest stages of record. Crest stages in the headwaters of the Kentucky Basin were only 2 feet below the record flood of 1957. Major flooding occurred in the upper Cumberland Basin in southeastern Kentucky and on Stones and Harpeth Rivers in Tennessee. Small streams in Woodbury, Tenn., were the highest since 1902. The main stem of the Ohio was above flood stage for 22 consecutive days at Cincinnati, Ohio, the longest consecutive period on record. Parts of West Virginia, Virginia, and Kentucky were declared Disaster Areas by the President. The total damages in the Ohio Basin during March totaled $97,600,500 or 55 percent of the total damages sustained during the entire year. Twenty-six lives were lost in the Ohio Basin during the March floods.

The total flood damages reported in Hawaii during 1963 was estimated at $2.2 million. This occurred during April in the northern Islands of Kauai and Oahu.

The total flood damages reported in Puerto Rico during 1963 was estimated between $4 and 7 million dollars.

ANNUAL FLOOD LOSSES FOR U. S. . .

Annual Flood Losses and Savings for years 1933 to 1947, inclusive, have been published in the Monthly Weather Review as follows:

Year	Issue of Review	Pages
1933	Vol. 62, No. 1, Jan. 1934	25-27
1934	Vol. 62, No. 12, Dec. 1934	465-467
1935	Vol. 63, No. 12, Dec. 1935	362-365
1936	Vol. 65, No. 1, Jan. 1937	28-31
1937	Vol. 66, No. 12, Dec. 1938	426-430
1938	Vol. 68, No. 9, Sep. 1940	262-263
1939	Vol. 68, No. 11, Nov. 1940	329-330
1940	Vol. 69, No. 7, Jul. 1941	217-218
1941	Vol. 71, No. 11, Nov. 1943	185-186
1942 & 1943	Vol. 73, No. 8, Aug. 1945	137-139
1944 & 1945	Vol. 76, No. 6, Jun. 1948	113-116
1946	Vol. 76, No. 9, Sep. 1948	208-210
1947	Vol. 77, No. 9, Sep. 1949	262-265

Beginning with flood losses for the year 1948, annual flood loss data are published in Climatological Data, National Summary, as follows:

Year	Issue of Climatological Data
1948	August 1950
1949	Annual 1950
1950) 1951)	Annual 1951
1952	Annual 1952
1953	Annual 1953
1954	Annual 1955
1955	Annual 1956
1956	Annual 1957
1957	Annual 1958
1958	Annual 1959
1959	Annual 1960
1960	Annual 1961
1961	Annual 1962
1962	Annual 1963

Prior to 1933 Flood Losses and Savings were published monthly, as a rule, in the Monthly Weather Review.

ESTIMATED FLOOD LOSSES FOR 1963

PROPERTY LOSSES IN THOUSANDS OF DOLLARS

River and drainage	Urban Property					Rural Property					Other Property		Miscellaneous	Unclassified	Total Loss	Lives Lost
	Residential		Commercial		Public	Crops		Livestock	Other		RR's, bridges, Highways, etc.	Public Utilities				
	Fixed	Movable	Fixed	Movable		Growing	Stored		Fixed	Movable						
ST. LAWRENCE DRAINAGE																
Lake Erie																
Sandusky River	179.8	0.0	0.0	0.0	141.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	50.0	A 372.1	0
Minor Streams Vicinity Buffalo, N.Y.	0.0	0.0	0.0	0.0	822.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	34,677.6	35,500.0	1
Total	179.8	0.0	0.0	0.0	963.4	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	34,727.6	35,872.1	1
ATLANTIC SLOPE DRAINAGE																
Juniata River	75.0	25.0	0.0	0.0	8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	110.0	0
Four Mile Run near Arlandria, Va.	844.0	0.0	318.0	0.0	33.0	0.0	0.0	0.0	0.0	0.0	0.0	17.0	0.0	0.0	1,212.0	1
Potomac River	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0
James River and Tributaries	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5
Santee River	0.0	0.0	3.0	0.0	0.0	44.0	5.0	0.5	0.0	0.0	0.0	5.0	0.0	31.5	89.0	0
Total	919.0	25.0	321.0	0.0	41.0	47.0	5.0	0.5	0.0	0.0	0.0	22.0	0.0	33.5	1,414.0	6
EAST GULF OF MEXICO DRAINAGE																
Conasauga River	0.0	0.0	0.0	0.0	0.0	256.2	0.0	0.0	0.0	0.0	27.7	0.0	0.0	0.0	B 283.9	0
Coosawattee River	0.0	0.0	0.0	0.0	0.0	158.0	0.0	0.0	0.0	0.0	3.5	0.0	0.0	0.0	B 161.5	0
Oostanaula River	0.0	0.0	0.0	0.0	0.0	268.1	0.0	0.0	0.0	0.0	34.5	0.0	0.0	0.0	B 302.6	0
Etowah River	123.7	0.0	0.0	0.0	0.0	99.1	0.0	0.0	0.0	0.0	10.8	0.0	0.0	0.0	B 233.6	0
Coosa River	0.0	0.0	0.0	0.0	0.0	426.1	0.0	0.0	0.0	0.0	13.5	0.0	0.0	0.0	B 439.6	0
Tallapoosa River	0.0	0.0	0.0	0.0	0.0	112.0	0.0	0.0	0.0	0.0	8.3	0.0	0.0	0.0	B 120.3	0
Cahaba River	0.0	0.0	0.0	0.0	0.0	33.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	B 33.7	0
Alabama River	0.0	0.0	0.0	0.0	0.0	135.8	0.0	0.0	0.0	0.0	14.6	0.0	0.0	0.0	B 150.4	0
Total	123.7	0.0	0.0	0.0	0.0	1,489.0	0.0	0.0	0.0	0.0	112.9	0.0	0.0	0.0	B 1,725.6	0
MISSISSIPPI SYSTEM																
Upper Mississippi Basin																
Blue Earth River	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.5	0
Minnesota River	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.5	0
Whitewater River	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.0	0.0	0.0	0.0	18.0	0
Root River	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.0	2.5	0
Kickapoo River	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0	5.0	0
Pecatonica River	0.0	0.0	60.5	0.0	0.0	0.0	0.0	0.0	214.0	0.0	0.0	0.0	0.0	0.0	B 274.5	0
Mississippi River	0.0	1.5	0.0	0.0	5.0	91.0	0.0	1.0	0.7	0.0	2.0	0.0	7.0	0.0	108.2	0
Total	0.0	1.5	60.5	0.0	6.0	91.0	0.0	1.0	214.7	0.0	31.5	0.0	7.0	0.0	B 413.2	0
Missouri Basin																
Gallatin River (Montana)	0.0	15.0	0.0	2.0	100.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	120.0	0
Soap Creek (Bighorn River)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0
Shoshone, Woodriver & Greybull Rivers (Tributaries of Bighorn River)	0.0	0.0	0.0	0.0	205.0	30.0	0.0	0.5	40.0	0.0	0.0	20.0	1.0	0.0	296.5	0
Bighorn River (Yellowstone River)	68.0	25.0	20.0	10.0	130.0	100.0	25.0	3.0	23.0	2.0	96.0	100.0	0.5	0.0	602.5	0
Yellowstone and Clark Fork Rivers	1.0	0.0	0.0	0.0	10.5	0.3	0.2	0.0	6.0	1.0	0.0	0.0	2.0	0.0	21.0	0
Maple River (Iowa)	0.0	0.0	0.0	0.0	0.0	15.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0	20.0	0
Little Sioux River	0.0	0.0	0.0	0.0	0.0	25.0	0.0	0.0	0.0	0.0	25.0	0.0	0.0	0.0	50.0	0
Platte and Blue Rivers. Wahoo and Salt Creeks	0.0	0.0	0.0	0.0	0.0	17.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	13,000.0	13,017.5	3
Sappa Creek (Nebraska)	0.0	0.0	0.0	0.0	0.0	15.0	0.0	0.0	2.0	0.0	4.0	0.0	0.0	0.0	21.0	0
Solomon River	0.0	0.0	0.0	0.0	23.5	C 20.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	46.5	0
Gypsum Creek and Smoky Hill River	D 47.8	0.0	E 50.5	0.0	2.8	C 21.0	0.0	0.0	0.0	0.0	4.0	4.5	5.5	0.0	B 136.1	0
Big Blue River	D 93.0	0.0	E 16.6	0.0	8.4	C 140.4	0.0	0.0	0.0	0.0	49.0	0.0	2.0	0.0	309.4	0
Grand River	0.0	0.0	0.0	0.0	0.0	40.2	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	B 40.7	
Chariton River	0.0	0.0	0.0	0.0	0.0	3.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	0
Dragoon Creek (Marais Des Cygnes)	2.0	0.0	1.0	0.5	5.0	2.0	0.0	0.2	0.1	0.0	2.0	0.0	0.0	0.0	12.8	0
Missouri	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0
Total	216.8	40.0	88.1	12.5	485.2	429.5	25.2	3.7	74.1	3.0	191.0	124.5	11.0	13,000.0	14,704.6	3
Ohio Basin																
Allegheny River	11.0	6.0	3.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	0.0	32.0	0
Monongahela River	480.7	215.5	309.1	183.8	401.5	0.0	0.0	0.0	0.0	0.0	985.7	32.3	0.0	1,505.2	4,113.8	3
Muskingum River and Tributaries	604.0	0.0	0.0	0.0	174.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	A 778.0	0
Hocking River	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,796.0	B 1,796.0	0
Greenbrier River	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	456.5	B 456.5	0
New River	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	95.0	B 95.0	0
Kanawha River	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,683.0	B 1,683.0	0
Guyandot River	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8,370.0	B 8,370.0	0
Big Sandy River	0.0	0.0	0.0	0.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19,951.0	B 19,961.0	1
Twelvepole Creek (West Virginia)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	38.0	B 38.0	0
Little Kanawha River	10.0	3.0	0.0	2.0	5.0	51.0	0.0	0.0	5.0	0.5	20.0	5.0	2.5	47.0	B 151.0	0
Jenny Creek (Kentucky)	0.0	0.0	0.0	0.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	0
Alum Creek (Ohio)	20.0	0.0	0.0	0.0	15.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	35.0	0
Scioto River and Tributaries	1,008.0	0.0	0.0	0.0	261.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2,345.8	B 3,615.0	0
Licking River	0.0	0.0	0.0	0.0	37.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	37.0	0

See reference notes at end of table.

ESTIMATED FLOOD LOSSES FOR 1963

PROPERTY LOSSES IN THOUSANDS OF DOLLARS

River and drainage	Urban Property					Rural Property					Other Property		Miscellaneous	Unclassified	Total Loss	Lives Lost
	Residential		Commercial		Public	Crops		Livestock	Other		RR's, bridges, Highways, etc.	Public Utilities				
	Fixed	Movable	Fixed	Movable		Growing	Stored		Fixed	Movable						
MISSISSIPPI SYSTEM - CONTD.																
Ohio Basin - Contd																
White Water River (Ohio)	3.0	1.0	0.0	0.0	133.0	1.0	0.0	1.0	5.0	0.0	100.0	6.0	5.0	0.0	255.0	2
Great Miami and Little Miami Rivers	1,110.0	600.0	1,200.0	550.0	1,630.0	100.0	0.0	50.0	800.0	230.0	220.0	59.0	290.0	0.0	6,839.0	2
Kentucky River	950.0	570.0	900.0	350.0	1,000.0	250.0	0.0	50.0	750.0	150.0	450.0	80.0	413.0	0.0	5,913.0	7
Barren River	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	B 10.0	0
Rough River	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.0	B 36.0	0
Green River	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	517.0	B 517.0	0
Wabash River and Tributaries	600.0	60.0	200.0	160.0	1,600.0	1,512.0	40.0	0.0	120.0	40.0	320.0	40.0	200.0	1,505.0	B 6,397.0	2
Saline River	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	75.0	B 75.0	0
Cumberland River	1.0	1,822.6	218.1	1,337.3	471.3	0.0	81.9	0.0	821.9	0.0	137.0	0.0	473.2	0.0	5,364.3	2
Little Pigeon (Tennessee)	10.0	0.0	30.0	70.0	410.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	520.0	0
First Creek	1.0	0.0	0.0	0.0	150.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	151.0	0
Little River and Pistol Creek	1.0	0.0	0.0	0.0	328.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5	0.0	0.0	333.5	0
Ohio	1,253.2	535.8	2,401.8	2,090.0	2,035.5	153.0	5.0	3.0	194.0	55.0	1,627.5	126.3	6,949.3	13,813.0	31,242.4	7
Total	6,062.9	3,813.9	5,262.0	4,744.1	8,652.5	2,087.0	126.9	104.0	2,695.9	475.5	3,860.2	353.1	8,343.0	52,243.5	98,824.5	26
White Basin																
Black and Cache Rivers	0.0	0.0	0.0	0.0	0.0	95.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	95.2	0
Total	0.0	0.0	0.0	0.0	0.0	95.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	95.2	0
Arkansas Basin																
Kramer Creek (East of Boone, Colo.)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	50.0	1
Cottonwood River and Tributaries	0.0	0.0	0.8	0.0	3.5	7.1	0.0	0.0	2.5	0.0	4.5	0.0	0.2	0.0	18.6	1
Salt Fork and Tributaries	1.0	1.0	1.0	2.0	5.0	170.0	4.0	1.0	20.0	4.0	15.0	2.0	2.0	0.0	228.0	0
Eagle Chief Creek (nr. Alva, Okla.)	0.0	0.0	0.0	0.0	0.0	3.0	1.0	0.0	2.0	1.0	3.0	1.0	0.0	0.0	11.0	0
Boggy Creek (nr. Enid, Okla.)	15.0	27.5	30.0	20.0	15.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	107.5	0
Mingo, Bird, Walnut and Flat Rock Creeks (Oklahoma)	10.0	0.0	3.0	15.5	15.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	3.2	0.0	52.7	0
Total	26.0	28.5	34.8	37.5	38.5	180.1	5.0	1.0	24.5	5.0	72.5	9.0	5.4	0.0	467.8	2
Red Basin																
Ouachita River	0.0	0.0	0.0	0.0	0.0	5.5	0.0	2.3	2.0	1.0	0.0	0.0	0.0	2,350.0	2,360.8	1
Total	0.0	0.0	0.0	0.0	0.0	5.5	0.0	2.3	2.0	1.0	0.0	0.0	0.0	2,350.0	2,360.8	1
Lower Mississippi Basin																
Yazoo River	0.0	0.0	0.0	0.0	0.0	15.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	16.0	0
Mississippi	0.0	0.0	0.0	0.0	0.0	187.5	25.0	0.0	5.0	0.0	25.0	5.0	30.0	0.0	277.5	0
Total	0.0	0.0	0.0	0.0	0.0	202.5	25.0	0.0	5.0	0.0	26.0	5.0	30.0	0.0	293.5	0
WEST GULF OF MEXICO DRAINAGE																
Nueces River and Tributaries	0.0	0.0	0.0	0.0	5.0	0.0	0.0	3.0	12.0	0.0	0.0	0.0	0.0	0.0	20.0	0
Minor Creeks near Albuquerque, N. Mex.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	449.1	0.0	0.0	171.1	620.2	0
Total	0.0	0.0	0.0	0.0	5.0	0.0	0.0	3.0	12.0	0.0	449.1	0.0	0.0	171.1	640.2	0
GREAT BASIN																
Dry Canyon near Parowan, Utah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	40.0	0.0	0.0	0.0	40.0	0
Corn Creek near Kanosh, Utah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0	5.0	0
South Fork Provo Canyon (Utah County)	0.0	0.0	0.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	14.0	0
Twelve Mile Creek nr. Woodruff, Utah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0	5.0	0
Susan River (Nevada)	0.0	0.0	0.0	0.0	155.0	0.0	0.0	0.0	45.0	0.0	0.0	0.0	0.0	315.0	515.0	0
Truckee River	737.5	0.0	0.0	0.0	40.7	0.0	0.0	0.0	0.0	0.0	884.7	0.0	0.0	663.5	2,326.4	0
Long Creek nr. Doyle, Calif.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	40.0	0.0	0.0	10.0	50.0	0
Carson River	0.0	0.0	0.0	0.0	3.4	245.0	0.0	0.0	0.0	0.0	75.7	0.0	0.0	101.0	425.1	0
Walker River	65.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	57.0	0.0	0.0	27.2	149.2	0
Total	802.5	0.0	0.0	0.0	209.1	245.0	0.0	0.0	45.0	0.0	1,111.4	0.0	0.0	1,116.7	3,529.7	0
PACIFIC SLOPE DRAINAGE																
Tulare Basin																
Kern River	2.0	0.0	0.0	0.0	43.0	0.0	0.0	0.0	0.0	0.0	50.0	30.0	0.0	0.0	125.0	0
Total	2.0	0.0	0.0	0.0	43.0	0.0	0.0	0.0	0.0	0.0	50.0	30.0	0.0	0.0	125.0	0
Tule and Kaweah Basins																
Tule and Kaweah Rivers	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	200.0	200.0	0
Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	200.0	200.0	0

See reference notes at end of table.

ESTIMATED FLOOD LOSSES FOR 1963

PROPERTY LOSSES IN THOUSANDS OF DOLLARS

River and drainage	Urban Property					Rural Property					Other Property		Miscellaneous	Unclassified	Total Loss	Lives Lost
	Residential		Commercial		Public	Crops		Livestock	Other		RR's, bridges, Highways, etc.	Public Utilities				
	Fixed	Movable	Fixed	Movable		Growing	Stored		Fixed	Movable						
PACIFIC SLOPE DRAINAGE - CONTD.																
Sacramento and San Joaquin Basins																
Fresno, Chowchilla and Merced Rivers	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	300.0	300.0	0
Sacramento and San Joaquin Rivers	317.0	0.0	1,016.0	0.0	0.0	2,960.0	0.0	0.0	0.0	0.0	6,236.0	0.0	0.0	0.0	10,529.0	0
Total	317.0	0.0	1,016.0	0.0	0.0	2,960.0	0.0	0.0	0.0	0.0	6,236.0	0.0	0.0	300.0	10,829.0	0
Eel Basin																
Eel River	0.0	0.0	0.0	0.0	0.0	20.0	45.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	65.0	0
Total	0.0	0.0	0.0	0.0	0.0	20.0	45.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	65.0	0
Columbia Basin																
Henry's Fork	10.0	5.0	15.0	5.0	10.0	0.0	10.0	4.0	10.0	15.0	40.0	10.0	16.0	0.0	150.0	0
Portneuf River	600.0	250.0	100.0	75.0	200.0	0.0	50.0	10.0	50.0	50.0	800.0	100.0	75.0	0.0	2,360.0	0
Big Wood and Little Wood Rivers	5.0	5.0	2.0	1.0	10.0	0.0	0.0	1.0	10.0	5.0	40.0	5.0	5.0	0.0	89.0	0
South Fork Owyhee Rivers	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0	0.0	0.0	0.0	7.0	0
Weiser and Payette Rivers	8.0	2.0	5.0	2.0	5.0	0.0	0.0	5.0	15.0	2.0	25.0	5.0	1.0	0.0	75.0	0
Salmon	5.0	2.0	0.0	1.0	5.0	0.0	0.0	0.0	1.0	1.0	5.0	1.0	2.0	0.0	23.0	0
Clearwater River	10.0	2.0	3.0	2.0	10.0	0.0	0.0	0.0	2.0	0.0	40.0	0.0	0.0	0.0	69.0	0
Palouse and South Palouse Rivers	85.0	0.0	84.0	0.0	13.0	C 290.0	0.0	0.0	0.0	0.0	6.0	3.0	12.0	0.0	B 493.0	0
Minor Creeks near Spokane, Wash.	0.0	0.0	0.0	0.0	72.8	0.0	0.0	0.0	0.0	0.0	200.0	0.0	0.0	0.0	272.8	0
Wilson and Crab Creeks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	172.5	B 172.5	0
Yakima River	1.0	0.5	2.5	0.5	0.0	1.0	0.0	0.0	0.5	0.0	1.0	0.0	0.0	18.0	25.0	0
Umatilla River	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	B 2.5	0
Adler and Rock Creeks (Washington)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	B 50.0	0
Deschutes near Madres, Oreg.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0	B 5.0	0
Willamette River	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	292.0	B 292.0	0
Total	724.0	266.5	211.5	86.5	325.8	291.0	60.0	20.0	88.5	73.0	1,169.0	124.0	111.0	535.0	4,085.8	0
Grand Total	9,373.7	4,175.4	6,993.9	4,880.6	10,769.5	8,142.8	292.1	135.5	3,161.7	557.5	13,309.6	668.9	8,507.4	104,677.4	175,646.0	39

A. Figures furnished by Ohio Civil Defense and Ohio Dept. of Natural Resources.
B. Coordinated with U.S. Engineers.
C. Includes all rural.
D. Includes all residential.
E. Includes all commerical.

LOSS OF LIFE AND PROPERTY IN THE UNITED STATES FROM FLOODS

Property Losses in Thousands of Dollars
BY DISTRICTS AND YEARS, 1925-1963

District	1925		1926		1927		1928		1929		1930		1931		1932	
	Life	Property	Life	Property	Life	Property	Life	Property	Life	Property	Life	Property	Life	Property	Life	Property
Great Lakes	---	--------	---	19	48	15,750	---	--------	---	171	---	36	---	1	---	1
North Atlantic	---	50	---	137	40	29,408	3	2,105	---	245	---	--------	---	1,050	---	25
South Atlantic	---	2,999	---	--------	---	1	5	8,382	8	10,196	---	--------	---	31	---	191
East Gulf	2	615	---	37	8	255	---	2,428	5	8,746	---	466	---	174	---	615
Ohio Valley	---	33	2	5,523	94	15,639	4	10,279	34	17,050	---	7,042	---	1	---	288
* Upper Mississippi	14	3,983	1	5,435	---	19,612	---	1,173	---	3,677	---	15	---	20	---	88
Lower Mississippi	---	115	---	42	100	133,898	---	7,819	4	9,980	---	530	---	--------	---	1,840
Missouri	---	--------	6	1,434	1	4,880	2	6,714	13	2,118	---	13	---	886	---	451
Arkansas	---	224	6	8,938	132	26,183	1	4,349	12	7,516	---	213	---	6	---	2,528
Red	---	--------	1	155	---	100,908	---	153	1	100	14	3,616	---	19	---	516
West Gulf	6	1,436	---	301	---	208	---	75	---	8,124	---	924	---	2	11	3,522
Colorado	---	--------	---	447	---	12	---	100	12	175	---	--------	---	3	---	13
Pacific	14	468	---	--------	---	902	---	1,032	---	--------	---	--------	---	560	---	217
Miscellaneous east of Rockies	---	--------	---	1,000	---	--------	---	--------	---	--------	---	2,500	---	--------	---	--------
Miscellaneous west of Rockies	---	--------	---	--------	---	--------	---	--------	---	--------	---	495	---	55	---	--------
Total	36	9,923	16	23,468	423	347,656	15	44,611	89	68,098	14	15,850	---	2,808	11	10,295

District	1933		1934		1935		1936		1937		1938		1939		1940	
Great Lakes	---	14	---	--------	---	13,185	1	9	---	690	---	240	---	11	2	--------
North Atlantic	2	5,418	---	142	52	16,340	24	146,035	---	2,689	8	37,068	2	56	4	2,519
South Atlantic	---	19	---	240	---	77	2	2,391	---	989	---	455	---	454	12	5,034
East Gulf	---	444	---	13	---	719	---	1,240	---	357	---	1,655	1	6,680	---	5,497
Ohio Valley	5	7,725	2	928	5	8,536	82	122,296	65	413,936	8	4,481	80	3,773	28	8,077
* Upper Mississippi	4	1,157	12	1,023	---	1,506	---	313	3	1,127	2	3,659	---	228	---	199
Lower Mississippi	---	6,933	---	--------	17	6,631	---	55	72	6,657	---	1	---	1,448	---	--------
Missouri	2	1,391	6	1,906	125	38,959	---	109	2	1,367	71	4,333	---	610	5	1,759
Arkansas	---	776	---	18	4	8,344	6	817	---	1,557	---	2,202	---	179	2	1,332
Red	---	38	22	640	8	2,751	---	16	---	24	---	755	---	22	---	12
West Gulf	---	1,160	---	422	20	29,522	24	8,376	---	1,830	6	6,003	---	360	7	7,622
Colorado	---	--------	1	22	---	--------	---	--------	---	264	---	256	---	13	---	180
Pacific	20	11,604	45	5,008	5	557	3	892	---	9,245	85	39,990	---	--------	---	8,236
Total	33	36,679	88	10,362	236	127,127	142	282,549	142	440,738	180	101,098	83	13,834	60	40,467

District	1941		1942		1943		1944		1945		1946		1947		1948	
Great Lakes	---	--------	---	153	1	9,564	---	130	---	119	---	251	1	5,761	4	20,270
North Atlantic	---	--------	35	22,321	4	1	---	--------	3	5,729	14	8,500	---	198	4	12,467
South Atlantic	---	89	---	608	---	152	---	1,926	3	1,007	---	172	---	944	1	1,372
East Gulf	---	24	2	155	---	773	---	2,660	---	268	---	2,963	2	654	---	3,122
Ohio	---	1,122	16	16,546	44	31,416	---	806	27	52,887	---	10,914	5	7,812	16	16,871
* Upper Mississippi	---	3,018	1	5,592	16	42,097	7	27,031	---	9,288	4	8,642	27	87,937	---	2,905
Lower Mississippi	---	--------	---	475	---	829	---	1,550	---	3,601	---	4,407	1	2,555	---	5,390
Missouri	2	12,019	1	22,511	13	62,630	13	44,616	4	34,403	---	8,305	18	163,176	1	31,490
Arkansas	9	13,346	---	6,577	26	41,850	10	11,171	20	15,068	---	1,791	1	1,424	14	18,721
Red	---	1,855	---	2,205	---	44	---	1,676	6	22,209	---	1,434	---	1,446	---	220
West Gulf	34	5,458	2	12,489	---	2,589	3	8,938	4	10,987	10	15,967	---	330	1	4,604
Colorado	2	1,061	---	3	---	310	---	575	10	182	---	--------	---	3	---	1
Pacific	---	1,532	11	8,872	3	7,477	---	--------	14	9,530	---	7,367	---	88	37	111,826
Great Basin	---	--------	---	--------	---	--------	---	--------	---	520	---	100	---	--------	---	--------
Total	47	39,524	68	98,507	107	199,732	33	101,079	91	165,798	28	70,813	55	272,328	82	229,959

District	1949		1950		1951		1952		1953		1954		1955		1956	
Great Lakes	---	1,619	9	33,542	---	131	---	2,350	1	2,654	---	15,000	---	2,596	---	1,327
North Atlantic	11	9,273	2	7,149	1	916	5	1,222	1	10,637	11	7,337	211	761,303	11	1,453
South Atlantic	3	291	---	1,203	---	9	---	236	---	109	1	546	2	902	3	2,720
East Gulf	---	1,747	---	1,435	---	4,310	---	347	2	2,444	---	543	6	5,300	1	1,379
Ohio	7	4,754	50	25,195	1	4,889	14	4,940	5	778	9	18,594	15	14,645	12	17,836
* Upper Mississippi	---	406	2	11,060	6	71,799	7	22,439	2	5,602	4	24,656	---	85	---	388
Lower Mississippi	---	10,020	6	10,071	---	5,996	---	444	12	7,857	---	490	---	1,352	---	865
Missouri	6	33,503	18	35,090	31	889,872	8	181,335	14	44,255	---	11,999	1	2,753	1	6,360
Arkansas	---	6,696	---	8,294	10	44,331	---	5	2	2,020	---	296	2	5,362	---	24
Red	2	365	1	1,105	---	2,101	---	836	---	2,061	---	923	---	2,003	1	250
West Gulf	18	22,462	---	417	---	238	10	9,584	1	34,849	29	21,639	2	4,286	3	3,714
Colorado	---	155	---	--------	---	889	---	76	---	7	---	1,890	---	2,173	---	--------
Pacific	1	2,640	5	37,362	2	3,260	10	20,251	---	8,931	1	2,929	63	186,785	6	27,930
Great Basin	---	--------	---	4,127	---	--------	---	9,999	---	--------	---	--------	---	5,946	4	442
Total	48	93,931	93	176,050	51	1,028,741	54	254,064	40	122,204	55	106,842	302	995,491	42	64,688

District	1957		1958		1959		1960		1961		1962		1963	
Great Lakes	1	1	---	10	---	12,746	2	1,942	1	216	---	--------	1	35,872
North Atlantic	---	11	---	167	---	6,952	2	15,274	---	1,168	---	8	6	1,325
South Atlantic	---	166	---	3,917	---	631	---	172	---	600	---	97	---	89
East Gulf	---	4,526	---	3,434	---	241	---	13,780	3	30,386	---	5,768	---	1,726
Ohio	25	135,972	10	68,248	8	82,503	1	7,519	31	33,748	5	30,583	26	98,824
* Upper Mississippi	8	14,648	---	20,770	8	3,427	2	12,901	4	25,320	1	5,341	---	413
Lower Mississippi	6	15,608	---	11,979	---	199	---	496	---	11,462	---	3,546	---	293
Missouri	15	26,057	21	45,819	3	12,162	8	28,105	7	33,990	2	10,501	3	14,705
Arkansas	5	50,082	---	360	2	12,886	1	3,480	1	9,173	3	1,254	2	563
Red	6	16,037	---	11,768	---	880	---	226	---	1,609	---	581	1	2,361
West Gulf	16	73,057	6	18,127	4	2,886	14	8,205	1	2,945	2	1,948	---	640
Colorado	---	741	---	240	---	100	---	--------	3	552	---	1,080	---	--------
Pacific	---	23,397	10	33,404	---	5,638	2	876	1	1,825	6	12,198	---	15,305
Great Basin	---	--------	---	12	---	4	---	--------	---	1,039	---	2,332	---	3,530
Total	82	360,303	47	218,255	25	141,255	32	92,976	52	154,033	19	75,237	39	175,646

* Including Red River of the North

LOSS OF LIFE AND PROPERTY IN THE UNITED STATES FROM FLOODS

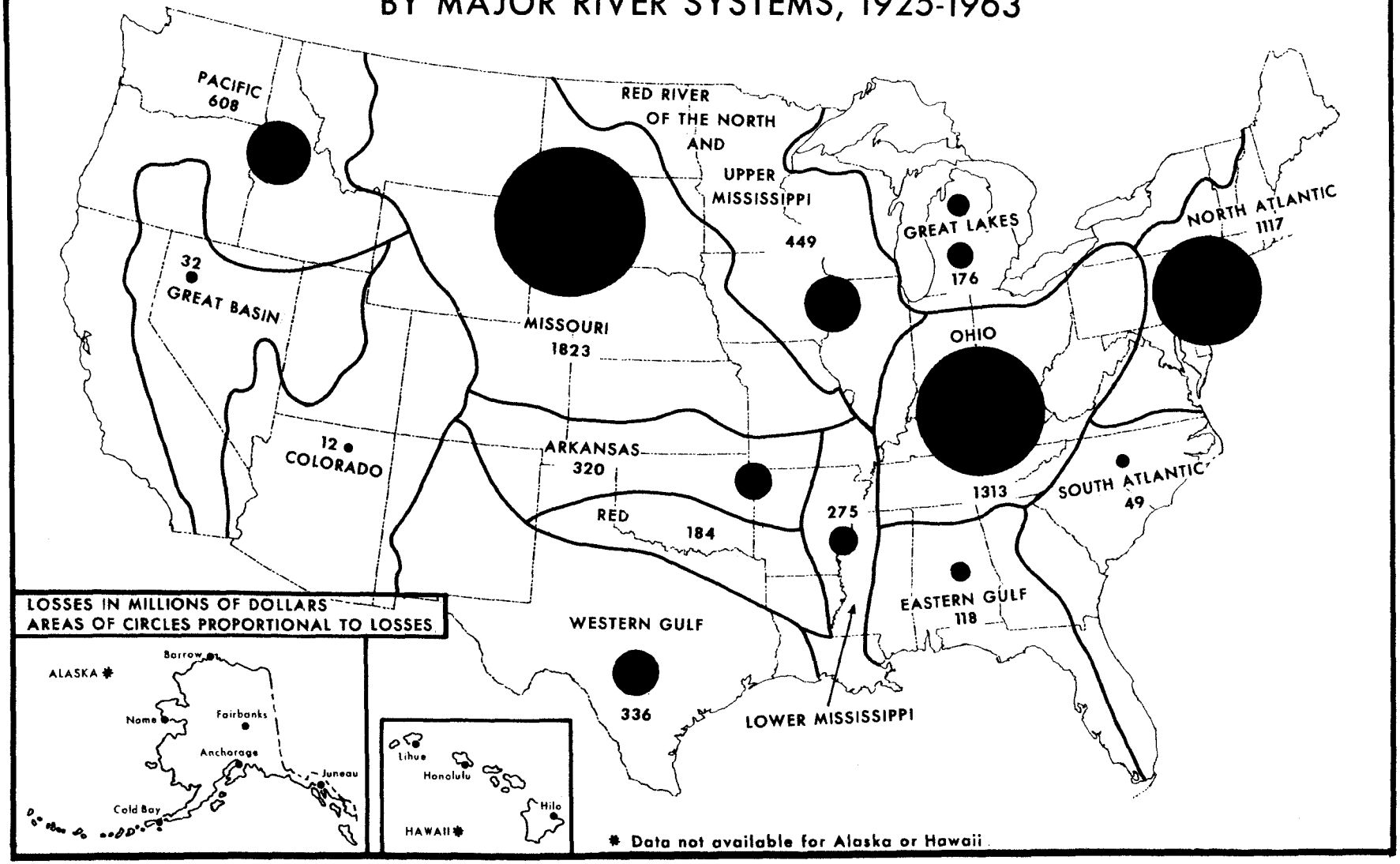
Property Losses in Thousands of Dollars
BY MONTHS AND YEARS, 1925-1963

	January		February		March		April		May		June	
Year	Property	Life	Property	Life	Property	Life	Property	Life	Property	Life	Property	Life
1925	3,614	2	141	0	74	0	-	0	65	6	3,980	14
1926	19	0	600	0	77	0	293	0	-	0	-	1
1927	2,626	8	1,867	0	407	0	283,207	232	7,566	95	1,125	0
1928	4	0	9	0	758	0	1,168	0	105	0	12,296	1
1929	122	0	2,964	0	21,647	47	1,937	0	15,668	5	10,268	5
1930	7,110	0	7	0	146	0	-	0	5,021	14	3,042	0
1931	-	0	30	0	572	0	-	0	8	0	13	0
1932	1,207	0	-	0	165	0	373	0	1,552	0	1,245	0
1933	308	0	87	0	2,008	1	2,709	4	10,785	4	2,650	4
1934	5,002	45	9	0	706	0	1,693	34	-	0	899	0
1935	297	0	1	0	2,177	4	2,698	5	16,903	40	62,702	122
1936	341	0	2,107	6	145,936	24	124,743	82	1,118	6	124	0
1937	411,481	65	7,691	75	62	0	4,524	0	2,627	0	5,429	0
1938	260	0	3,712	2	27,819	86	3,008	0	12,402	0	3,624	58
1939	3	0	1,657	4	738	0	1,982	0	37	0	4,271	1
1940	58	0	7,246	0	1,048	2	2,185	0	438	0	2,790	12
1941	3	0	516	0	820	2	1,970	4	3,081	7	12,718	12
1942	131	0	1,901	1	327	0	18,369	2	14,837	31	25,586	1
1943	3,579	4	69	5	7,183	8	10,161	5	130,478	57	41,771	0
1944	3	0	35	1	2,633	3	42,646	13	24,103	0	24,535	16
1945	146	0	5,882	0	33,202	14	54,054	36	23,530	0	28,866	8
1946	13,385	0	4,015	0	631	0	2	0	12,587	12	20,343	3
1947	486	3	96	0	1,458	0	56,037	2	18,032	1	193,134	48
1948	6,479	6	11,429	1	17,896	4	28,667	15	107,244	35	22,160	15
1949	9,772	6	5,073	2	11,676	3	9,261	2	18,195	10	32,861	17
1950	4,619	3	6,925	7	3,451	7	14,668	0	51,126	21	22,340	34
1951	884	0	5,823	2	7,264	1	18,287	2	15,166	6	5,383	8
1952	9,139	14	926	1	1,909	9	199,127	10	6,438	3	22,775	2
1953	8,575	1	368	0	10,675	2	-	0	41,656	5	53,572	29
1954	2,554	4	84	0	20	0	557	0	6,213	1	52,076	20
1955	-	0	1,620	4	17,372	17	2,653	4	9,231	2	3,825	1
1956	9,455	0	2,731	3	3,403	2	1,202	0	24,799	10	2,300	4
1957	61,383	15	29,750	2	-	0	106,130	18	44,182	13	101,696	32
1958	273	0	12,501	11	11,193	0	21,145	3	24,884	2	67,537	0
1959	95,601	8	2,448	0	2,031	6	427	0	7,181	8	890	0
1960	534	1	713	2	29,988	4	28,056	0	2,214	3	9,956	13
1961	32	0	13,870	1	14,242	3	5,053	0	67,785	6	4,324	4
1962	884	0	24,906	9	28,418	3	8,920	0	1,893	0	2,265	2
1963	2,343	0	16,392	0	99,429	31	2	0	1,573	0	14,682	3
Total	662,712	190	176,201	139	509,861	283	1,057,904	486	730,723	403	880,053	490
Average	16,993	5	4,518	4	13,073	7	27,126	12	18,736	10	22,565	13

Year	July		August		September		October		November		December		* Total	
1925	140	0	275	0	1,171	14	380	0	83	0	-	0	9,923	36
1926	55	0	7	0	7,729	6	12,699	6	135	0	1,854	3	23,468	16
1927	241	0	3,460	0	-	0	1,627	0	45,093	88	437	0	347,656	423
1928	13,339	0	9,272	3	4,047	5	-	0	3,567	6	46	0	44,611	15
1929	4,959	32	130	0	92	0	9,379	0	556	0	76	0	68,098	89
1930	244	0	251	0	-	0	29	0	-	0	-	0	15,850	14
1931	1,215	0	201	0	2	0	1	0	744	0	22	0	2,808	0
1932	1,627	0	763	0	2,666	11	335	0	3	0	359	0	10,295	11
1933	1,117	0	6,516	4	489	0	10	0	-	0	10,000	16	36,679	33
1934	178	0	322	9	84	0	28	0	1,287	0	154	0	10,362	88
1935	29,370	52	159	5	7,551	0	2,691	0	61	0	2,517	8	127,127	236
1936	2,428	20	205	0	5,046	4	378	0	118	0	5	0	282,549	142
1937	124	2	760	0	140	0	256	0	97	0	7,546	0	440,738	142
1938	10,373	9	232	8	39,641	17	3	0	5	0	19	0	101,098	180
1939	1,725	78	3,408	0	13	0	-	0	-	0	-	0	13,834	83
1940	5,314	0	18,853	40	2,135	6	88	0	95	0	217	0	40,467	60
1941	314	0	23	0	6,247	15	10,446	7	3,361	0	25	0	39,524	47
1942	13,064	17	267	0	3,234	0	5,678	2	-	0	15,113	14	98,507	68
1943	2,870	3	3,621	25	-	0	-	0	-	0	-	0	199,732	107
1944	3,198	0	928	0	1,708	0	108	0	-	0	1,182	0	101,079	33
1945	8,280	3	2,942	13	1,059	3	1,424	3	-	0	6,413	11	165,798	91
1946	1,636	4	1,148	0	7,346	9	1,965	0	1,314	0	6,441	0	70,813	28
1947	652	1	1,431	0	455	0	248	0	5	0	304	0	272,328	55
1948	17,550	2	1,144	0	590	0	-	0	3,553	0	13,247	4	229,959	82
1949	3,762	5	568	0	618	0	1,551	2	578	1	16	0	93,931	48
1950	19,224	6	1,687	0	3,718	4	5,562	3	6,638	3	36,092	5	176,050	93
1951	972,458	25	2,509	7	621	0	-	0	-	0	346	0	1,028,741	51
1952	3,858	9	296	0	9,378	6	-	0	30	0	190	0	254,064	54
1953	3,873	1	1,926	2	887	0	42	0	300	0	330	0	122,204	40
1954	2,218	2	6,606	3	3,170	8	33,341	17	-	0	3	0	106,842	55
1955	1,071	0	712,085	193	3,471	0	52,442	18	1,168	0	190,553	63	995,491	302
1956	5,849	15	11,671	4	-	0	1,892	0	137	3	1,249	1	64,688	42
1957	4,669	0	722	2	335	0	2,663	0	8,610	0	163	0	360,303	82
1958	42,779	29	18,631	1	14,560	0	2,336	1	2,416	0	-	0	218,255	47
1959	557	0	5,550	0	1,844	0	19,602	3	4,970	0	154	0	141,255	25
1960	9,038	1	677	0	5,266	2	5,818	6	360	0	356	0	92,976	32
1961	5,825	25	3,974	6	26,041	7	580	0	1,641	0	10,666	0	154,033	52
1962	2,428	1	708	0	3,266	3	-	0	580	0	970	0	75,238	19
1963	4,261	4	36,926	1	38	0	-	0	-	0	-	0	175,646	39
Total	1,201,884	346	860,854	326	164,656	120	173,602	68	87,505	101	307,065	125	6,813,020	3,060
Average	30,818	9	22,073	8	4,222	3	4,451	2	2,244	3	7,873	3	174,693	78

* Not adjusted to present price index

DISTRIBUTION OF ESTIMATED FLOOD LOSSES IN THE UNITED STATES BY MAJOR RIVER SYSTEMS, 1925-1963



LOSSES IN INDIVIDUAL SEVERE FLOODS IN THE UNITED STATES SINCE JULY 1902

Property Losses in Thousands of Dollars

Date	Location	Lives #	Property
May-June 1903	Kansas, Lower Missouri, and Upper Mississippi Rivers	100	$ 40,000
July 1908	Missouri River	---	9,339
	Upper Mississippi River	---	5,600
	Red River	---	16,200
July 1909	Missouri River east of Kansas City	---	5,500
March 1912	Lower Mississippi River	---	70,000
March 1913	Ohio River and tributaries	467	147,000
	Mississippi River	---	7,000
December 1913	Texas rivers	177	9,000
June 1915	Kansas River	---	5,950
August 1916	Rivers of the Carolinas	---	21,700
June 1921	Arkansas River in State of Colorado	120	25,000
September 1921	Texas rivers	215	19,000
April-May, 1922*	Upper Mississippi River	---	4,700
	Ohio Valley	---	4,000
	Lower Mississippi River	---	7,500
October 1923	Lower Arkansas, including the State of Oklahoma	---	15,000
March 1924	Potomac River	---	6,000
Spring of 1927	Mississippi Valley	313	284,118
August 1927	Arkansas River and tributaries	---	3,440
November 1927	New England rivers	88	45,578
June 1928	Ohio Valley	---	7,536
August 1928	South Atlantic drainage	---	4,400
September 1928	South Atlantic drainage	---	4,000
March-June 1929	East Gulf drainage	---	8,000
	Ohio Valley	---	16,500
	Missouri Valley	---	2,000
	Upper Mississippi Valley	---	3,600
	Lower Mississippi Valley	---	10,000
	Arkansas-White Valley	---	2,700
	Rivers in Texas	---	8,000
July 1929	Rivers in Central Kansas	---	4,000
October 1929	Rivers in Southeastern States	---	** 9,000
January 1930	White-Wabash Rivers	---	7,000
May 1930	Red River and tributaries	---	3,000
Sept.-Oct. 1932	Lower Rio Grande	---	2,500
March 1933	Ohio River	---	2,000
December 1933	Columbia River and tributaries	---	10,000
May 1935	Rivers in eastern Colorado	---	6,000
May-June 1935	Republican and Kansas Rivers	110	18,000
	Lower Missouri River	---	10,000
July 1935	Upper Susquehanna tributaries	52	26,000
December 1935	Houston, Texas, area	---	2,500
March-April 1936	Rivers in Eastern United States	107	270,000
July 1936	Rivers in central Texas	---	2,000
September 1936	Rivers in central and northern Texas	---	5,000
Jan.-Feb. 1937	Ohio and lower Mississippi River basins	137	417,685
December 1937	Sacramento Valley	---	7,100
March 1938	Streams in southern California	79	24,500
September 1938	Rivers in New England	---	37,000
July 1939	Licking and Kentucky Rivers	78	1,715
Feb.-Mar. 1940	Sacramento Valley	---	6,700
August 1940	Rivers in southern Virginia, the Carolinas, and eastern Tennessee	40	12,000
Oct.-Nov. 1941	Arkansas River Basin	---	8,500
April-June 1942	Upper Mississippi, Missouri, Arkansas, Red, and Trinity River Basins	---	44,350
May 1942	Delaware & Susquehanna River Basins	33	13,000
July 1942	Upper Allegheny River and Sennemahoning Creek Basins	15	10,000
Nov.-Dec. 1942	Willamette River	10	6,900
Dec.1942-Jan.1943	Ohio River	---	10,540
Apr.-June 1943	Maumee, Wabash, upper Mississippi, Missouri, White, and Arkansas River Basins	60	172,500
August 1943	Little Kanawha	23	1,300

LOSSES IN INDIVIDUAL SEVERE FLOODS IN THE UNITED STATES SINCE JULY 1902-Cont'd

Property Losses in Thousands of Dollars

Date	Location	Lives #	Property
April-June 1944	Upper Mississippi, Missouri, Arkansas, Red, lower Mississippi Basins and east Texas Streams	17	$ 82,000
Feb.-Mar. 1945	Ohio River	18	30,000
Feb.-Apr. 1945	Trinity and Sabine Rivers	---	9,000
Mar.-July 1945	Lower Mississippi River	---	9,500
July 1945	Lake Section of Rensselaer County, N. Y.	---	3,500
December 1945	Willamette River	9	6,000
January 1946	Cumberland River	---	3,925
	Tennessee River and tributaries	---	4,500
May-June 1946	Trinity River	---	4,150
September 1946	San Antonio and Nueces Rivers	9	6,050
December 1946	Willamette River	---	5,525
April 1947	Allegheny	---	4,319
May-July 1947	Rivers in Middle West in the lower Missouri and middle Mississippi River Basins	29	235,000
June 1947	East Creek at Rutland, Vt.	---	2,000
March 1948	Susquehanna River and tributaries	---	4,300
Apr.-May 1948	Red River of North and tributaries	---	18,700
May-June 1948	[1] Columbia Basin	35	101,725
June-July 1948	Arkansas River and minor tributaries	---	14,500
December 1948	Housatonic River	---	4,200
April 1949	Rio Grande	---	3,300
May 1949	Trinity River	10	14,000
June 1949	Shenandoah and Potomac Rivers	11	8,850
Apr.-May 1950	[2] Red River of North	9	33,000
June 1950	Central West Virginia	31	4,020
Nov.-Dec. 1950	Central Valleys of California and Western Nevada	---	23,000
February 1951	Western Washington	---	2,688
Mar.-Apr. 1951	Alabama-Georgia	---	3,292
April 1951	Upper Mississippi Basin	---	18,622
June-July 1951	[3] Kansas-Missouri	28	935,224
Jan.-Feb. 1952	Ohio River	---	1,898
April 1952	[4] Red River of the North-Upper Mississippi-Missouri River Basins	11	198,000
May 1952	Great Basin	---	8,373
September 1952	West Gulf of Mexico Drainage	---	7,762
January 1953	Northern California, Oregon, and Washington	---	5,971
March 1953	New England States	---	10,000
Apr.-May 1953	Louisiana-Texas	12	38,959
June 1953	Northwestern Iowa	14	32,950
June 1954	Middle Rio Grande and lower Pecos	16	19,079
October 1954	Pecos River in New Mexico	13	1,783
March 1955	Ohio Basin	15	14,396
August 1955	[5] Hurricane floods in Northeast	187	714,079
December 1955	[6] West Coast	61	154,532
May-June 1956	[7] Columbia and Kootenai Rivers	---	14,025
Jan.-Feb. 1957	[8] Streams in Southeastern Kentucky, Southwestern West Virginia, adjoining portions of Tennessee and Virginia	14	58,000
February 1957	Snake River and tributaries	---	20,500
Apr.-June 1957	Streams in Texas, Arkansas, Kansas, Louisiana, Missouri and Oklahoma	18	105,000
June-July 1957	Wabash River and tributaries	9	63,000
June 1958	White and Wabash Rivers	---	57,000
July 1958	Flash flood on East Nishnabotna River in Iowa	19	5,850
January 1959	Ohio River Basin	8	81,921
January 1959	Lake Erie Drainage in Ohio and New York	---	11,265

LOSSES IN INDIVIDUAL SEVERE FLOODS IN THE UNITED STATES SINCE JULY 1902-Cont'd

Property Losses in Thousands of Dollars

Date	Location	Lives #	Property
Mar.-Apr. 1960-----	[9] Snowmelt Floods in the Missouri and Upper Mississippi Basins---------	7	$ 34,466
Feb.-March 1961-----	East Gulf of Mexico Drainage----------	---	13,997
March 1961----------	Upper Mississippi Basin----------	---	7,499
July 1961----------	Flash Flood on Small Streams in Charleston, W. Va.----------	22	3,238
September 1961------	Kansas-Missouri----------	---	23,557
Feb.-March 1962-----	Kentucky----------	---	16,067
Feb.-March 1962-----	Southeastern Idaho----------	---	6,318
March 1963----------	Ohio River Basin----------	26	97,600

Loss of Life Carried Only Where Considerable
* No Lives Lost in Mississippi Valley Floods of 1922
** Partly Storm Damage Caused by Tropical Disturbance

References

1. Monthly Weather Review, January 1949
2. Monthly Weather Review, September 1951
3. Technical Paper No. 17
4. Technical Paper No. 23
5. Technical Paper No. 26
6. Climatological Data, National Summary, December 1955
7. Climatological Data, National Summary, Annual 1956
8. Climatological Data, National Summary, January 1957
9. Technical Paper No. 45

FLOOD DAMAGE ESTIMATES BY STATES

1955-63

Flood Damages in Thousands of Dollars

States	1955	1956	1957	1958	1959	1960	1961	1962	1963
Alabama	3,379	720	2,324	872	-	670	12,625	3,529	1,280
Alaska	-	*	-	-	-	-	**	***	-
Arizona	226	-	-	-	100	-	325	1,000	-
Arkansas	61	255	27,938	6,202	3,090	580	3,503	91	2,500
California	165,767	8,745	13	33,063	4	516	95	2,780	11,834
Colorado	2,567	5,135	2,901	240	-	-	-	80	50
Connecticut	379,360	-	-	-	-	750	-	-	-
Delaware	117	-	-	-	-	-	-	-	-
District of Columbia	-	51	-	60	-	-	-	-	-
Florida	105	1,891	-	-	150	12,047	317	1,481	-
Georgia	1	212	1,068	323	-	392	5,236	-	445
Hawaii	-	-	-	400	-	-	-	-	2,300
Idaho	1,371	6,222	20,896	3	500	-	939	8,112	2,766
Illinois	102	1,026	1,206	17,970	1,506	7,503	11,553	891	513
Indiana	1,003	4,021	66,748	52,302	12,958	2,649	13,306	670	8,266
Iowa	35	51	1,543	7,508	128	7,612	9,389	6,778	70
Kansas	474	33	9,164	4,606	4,061	1,947	13,397	1,826	168
Kentucky	6,629	568	55,233	3,817	2,480	3	12,969	16,885	36,917
Louisiana	30	-	4,147	2,842	-	112	6,074	1,908	-
Maine	-	-	-	-	61	-	800	-	-
Maryland	5,450	837	-	40	-	-	-	-	-
Massachusetts	155,982	-	-	-	-	6,400	-	-	-
Michigan	-	1,278	-	-	-	1,181	-	-	-
Minnesota	-	11	9,128	17	50	212	552	1,291	26
Mississippi	3,132	1,270	2,693	13,826	280	744	15,918	1,982	19
Missouri	666	167	9,618	38,718	6,018	13,506	27,375	557	152
Montana	63	317	33	1	82	57	-	147	148
Nebraska	1,500	865	5,983	3,064	3,753	8,884	674	2,630	13,394
Nevada	7,398	237	-	-	-	-	891	762	2,858
New Hampshire	-	-	-	-	4,500	100	-	-	-
New Jersey	23,102	-	-	3	-	-	-	-	-
New Mexico	1,066	-	-	-	-	-	-	-	620
New York	30,072	1,089	166	42	5,667	7,229	608	-	33,102
North Carolina	625	831	788	3,201	506	100	1,400	-	-
North Dakota	2	-	100	-	28	136	-	-	-
Ohio	753	1,056	7	4,867	54,840	191	1,217	6,512	22,359
Oklahoma	977	-	35,665	169	8,907	2,638	2,483	792	413
Oregon	9,515	6,376	310	363	20	360	757	1,550	299
Pennsylvania	141,381	7,199	1,048	3,582	21,109	3,072	612	15	5,397
Rhode Island	28,830	-	-	-	-	-	-	-	-
South Carolina	74	-	60	680	122	72	369	97	89
South Dakota	11	10	3,969	-	-	3,417	1	3,030	-
Tennessee	977	279	5,118	128	-	226	2,263	651	6,262
Texas	5,165	3,715	78,881	18,101	2,886	8,093	2,846	1,948	20
Utah	226	210	169	10	4	-	281	1,272	64
Vermont	-	-	3	-	-	-	-	-	-
Virginia	10,695	-	139	-	28	211	231	-	5,937
Washington	1,165	6,472	1,664	50	4,914	-	130	-	1,013
West Virginia	5,187	3,185	11,052	1,170	709	370	3,455	5,914	17,624
Wisconsin	50	335	-	-	1,791	996	1,442	57	142
Wyoming	200	11	526	3	-	-	-	-	899
TOTAL	995,491	64,688	360,303	218,255	141,255	92,976	154,033	75,238	177,946

* Major Flood in May 1956
** Major Flood in June 1961
*** Ice Jam Flooding May 1962
*** Serious Flooding June 1962

GENERAL SUMMARY OF RIVER AND FLOOD CONDITIONS

YEAR 1964

The most damaging floods during 1964 occurred in northern California and Oregon during the latter part of December. Preliminary estimates of damages run into hundreds of millions of dollars. The American Red Cross reported 45 lives lost in the severe floods.

Major flooding occurred in tributary storms in southwest Washington and northwest Oregon during the latter part of January. Record high water was reported on some creeks in Oregon. Serious flooding occurred in the lower Coquille Basin in Oregon. Less serious flooding occurred along the Umpqua River below its confluence with Cow and myrtle Creeks. Major flooding occurred on the Chehalis and Skookumchuck Rivers in southwest Washington. According to the USGS, the monthly flow for the Chehalis River near Grand Mound, Wash., was the second highest for January in 34 years.

Flooding during February was mostly light. Only low-lying areas were affected. Damages reported were minor.

Severe flooding with extensive damage occurred in the Ohio Basin during March. Crest stages were generally the highest since March 1945 in the reach from Cincinnati, Ohio, to Mount Vernon, Ind. In the reach below, the crests were the highest since 1950. The crest at Louisville, Ky., was the fourth highest of record; the one at Cincinnati, Ohio, the sixth highest; and the one at Wheeling, W. Va., the fifth highest of record. Record stages were reached on some of the tributaries. The American Red Cross reported 18 persons lost their lives and over 1000 persons were injured.

Moderate to major flooding occurred in the East Gulf of Mexico Drainage during April. In the headwaters of the Chickasawhay River in Mississippi, the flooding was the highest of record, much worse than the last severe flooding of 1961. Thousands of residents were evacuated. Major flooding occurred in Indiana with the highest crests in more than 50 years at some points along the White River.

The most important flooding during May was the culmination of the moderate to major flooding which began in the East Gulf of Mexico Drainage and in Indiana during April. The flooding in the East Gulf of Mexico Drainage was prolonged by the heavy rains in the beginning of the month. Streams in Indiana receded within their banks early in May and continued to fall the remainder of the month. Some portions of the Wabash Basin experienced the driest May in more than two decades.

Record floods occurred on tributaries of the upper Missouri River in northwestern Montana east of the Continental Divide and on the Flathead and Clearwater Rivers in the Columbia Basin west of the Divide early in June. Preliminary estimates place flood damages at over $60 million. Twenty-four lives were known to be lost and 7 people were missing and presumed dead.

The most severe flooding since the hurricane rains of September 1945 occurred in the Edisto Basin of South Carolina during July. The crest of the North Fork of the Edisto at Orangeburg, S. C., was the fourth highest of record. Flooding reported elsewhere was mostly minor.

The most important flooding during August resulted from excessive rains associated with the movement of hurricane Cleo through Florida, Georgia, and the Carolinas. Serious flooding occurred in the upper St. Johns River in Florida. Flash floods were reported on tributary streams in Georgia with minor damage to highways. The North Fork of the Edisto in South Carolina reached its highest stage at Orangeburg since September 1945 and the South Fork of the Edisto at Denmark since 1936. Low bottom lands were flooded in the upper Catawba and upper Yadkin River Basins in North Carolina. Extreme flooding occurred in Surry County on the Mitchell, Fisher, and Ararat Rivers damaging some crops.

Severe floods occurred in central and southern Texas during September. The crests on the Nueces at Asherton and Cotulla, Tex., were the fourth highest of record. Pulliam Creek, a tributary of the upper Nueces, reached its highest stage since 1955. The second highest flood of record occurred on the West Nueces. The flash flooding in the Boerne, Tex., area was described as the highest in its history. Some severe flooding was reported in the Suwannee River Basin in Florida and in the French Broad Basin in North Carolina.

Some of the most severe and damaging floods in history occurred on some streams in North Carolina during October. In the eastern portion, record to near record high floods occurred on the Neuse River. In western North Carolina, the floods in the French Broad Basin were the most devastating since 1916. One of the biggest floods of record occurred on the Rocky River. The second highest crest of record was reported on the Yadkin River at Yadkin College, N. C. Some severe flooding was reported in South Carolina on the Broad and upper Santee Rivers.

The most important flooding during November occurred in the Arkansas Basin. The Arkansas River in the reach from Augusta, Kans., to Ralston, Okla., exceeded flood stage by 4 to 7 feet. The crest at Ralston, Okla., was the third highest on record. A near record crest occurred on the Chickaskia River at Blackwell, Okla. Many bridges were destroyed and roads damaged.

Record breaking floods occurred in late December in northern California and Oregon, on the anniversary and in much the same area struck by the Great Flood of December 1955. The 1964 flood equalled or exceeded the flood of 1955 in many places, and exceeded the historical flood of 1861-62 in a number of cases.

SOLAR RADIATION DATA

Average daily values (direct and diffuse) received on a horizontal surface, tabulated in langleys.

YEAR 1964

Station	January	February	March	April	May	June	July	August	September	October	November	December	Annual
Albuquerque, N. Mex.	324	398	542	629	684	765	670	609	485	446	315	203	506
Ames, Iowa	180	250	325	---	485	464	503	425	353	301	171	135	---
Annette, Alaska	36	68	138	250	352	388	220	202	184	82	25	---	---
Apalachicola, Florida	238	361	430	517	623	619	494	496	445	405	318	239	432
Astoria, Oregon	73	215	261	427	504	486	492	449	---	256	140	86	---
Atlanta, Georgia	218	287	398	426	557	593	474	486	426	357	275	177	390
Barrow, Alaska	# ---	37	---	451	591	553	533	308	133	---	# ---	# 0	---
Bethel, Alaska	35	121	303	452	561	490	433	253	184	109	60	28	252
Bismarck, N. Dak.	165	237	349	418	543	487	567	478	370	277	146	135	348
Blue Hill Obs., Mass.	177	280	351	413	622	605	465	461	391	285	192	114	363
Boise, Idaho	159	291	---	---	610	549	688	593	476	325	166	114	---
Boston, Mass.	171	258	323	382	---	---	---	---	384	264	165	109	---
Brownsville, Texas	270	301	381	466	486	574	635	621	447	470	334	255	437
Burlington, Vt.	128	255	293	388	507	580	460	431	364	241	132	102	323
Canton Island, Pacific	416	613	680	574	551	534	570	660	----	---	---	---	---
Caribou, Me.	138	235	326	455	447	496	462	379	325	195	136	97	308
Charleston, S. C.	227	337	424	488	542	578	417	485	417	354	291	197	379
Cleveland, Ohio	128	168	---	330	509	---	496	431	348	274	167	83	---
Columbia, Mo.	198	279	336	421	527	545	582	527	409	341	199	147	376
Corvallis, Oregon	102	224	293	430	551	518	607	---	---	---	---	---	---
Davis, Calif.	188	---	450	---	---	667	722	656	501	338	205	152	---
Dodge City, Kans.	256	305	---	502	532	615	559	491	359	324	191	187	---
El Centro, Calif.	290	371	423	522	541	586	505	477	451	---	264	219	---
El Paso, Texas	380	487	576	675	722	758	654	637	540	474	382	273	547
Ely, Nev.	262	402	479	520	636	643	691	608	556	390	273	179	470
Fairbanks, Alaska	21	69	240	350	477	---	470	360	194	63	23	---	---
Flaming Gorge, Utah	227	302	397	411	577	518	604	521	491	342	209	202	400
Ft. Worth, Texas	284	338	439	413	494	637	672	479	332	425	279	262	421
Fresno, Calif.	182	347	430	577	657	701	715	619	532	372	244	147	460
Gainesville, Fla.	272	400	492	585	591	600	546	---	---	---	---	292	---
Glasgow, Mont.	144	219	367	431	---	549	699	524	395	299	155	128	---
Grand Junction, Colo.	266	379	434	512	589	641	645	569	494	418	239	204	449
Great Falls, Mont.	121	190	358	401	472	539	621	458	315	257	126	100	330
Greensboro, N. C.	230	303	413	393	562	574	505	631	440	335	273	174	403
Griffin, Ga.	263	350	---	491	625	649	519	548	475	405	323	240	---
Cape Hatteras, N. C.	229	298	401	467	568	587	516	448	431	291	270	176	390
Indianapolis, Ind.	231	313	334	413	608	631	557	570	465	370	236	111	403
Inyokern China Lake, Calif.	352	487	620	750	832	896	867	---	---	474	350	---	---
Ithaca, N. Y.	116	205	251	316	520	547	498	---	377	229	---	---	---
Lake Charles, La.	210	319	388	357	535	556	473	497	424	418	281	196	388
Lakeland, Fla.	259	342	453	545	586	593	515	507	---	381	361	292	---
Lander, Wyo.	217	332	479	496	557	588	655	589	480	351	231	180	430
East Lansing, Mich.	143	247	304	422	592	615	575	479	396	284	173	113	362
Laramie, Wyo. (U of Wyoming)	200	311	413	483	530	497	534	468	427	337	214	217	386
Las Vegas, Nev.	308	407	512	601	712	739	699	616	578	440	289	255	513
Lemont, Ill.	165	267	328	353	556	573	515	510	381	319	187	121	356
Little Rock, Ark.	206	293	372	402	487	525	565	433	388	330	222	122	362
Los Angeles, Calif. (U)	293	414	476	531	635	585	---	588	512	363	---	205	---
Los Angeles, Calif.	288	411	469	553	613	541	678	566	496	352	294	192	454
Madison, Wis.	---	---	376	419	587	590	544	529	364	299	191	123	---
Manhattan, Kans.	246	315	400	401	562	614	625	502	426	369	201	184	404
Matanuska, Alaska	---	80	242	334	481	436	434	280	237	96	40	202	---
Mauna Loa Obs., Hawaii	502	623	509	607	686	761	674	694	627	541	451	436	593
Medford, Oreg.	89	268	327	527	584	594	638	624	495	302	126	92	389
Miami, Fla.	290	380	452	557	556	502	---	496	434	355	317	261	---
Midland, Texas	---	378	520	604	579	618	615	551	386	408	---	265	---
Nashville, Tenn.	---	---	---	423	539	600	503	503	436	348	239	141	---
Newport, R. I.	164	252	337	406	563	526	434	422	345	263	187	112	334
New York, N. Y. (U)	169	243	311	354	554	521	455	482	379	278	181	116	337
North Omaha, Nebr.	229	302	407	421	580	605	626	487	381	337	176	---	---
Oak Ridge, Tenn.	199	211	299	358	484	521	435	418	378	297	203	127	328
Oklahoma City, Okla.	265	311	384	495	505	---	547	491	320	345	207	208	---
Page, Ariz.	261	363	431	519	606	637	578	524	463	384	268	170	434
Phoenix, Ariz.	318	416	490	609	658	687	579	537	484	402	297	241	477
Portland, Me.	159	256	302	397	561	615	454	444	391	280	171	110	345
Rapid City, S. Dak.	170	245	355	409	483	522	557	491	421	303	182	139	356
Riverside, Calif.	330	465	490	570	666	662	666	562	507	389	316	224	487
St. Cloud, Minn.	164	280	391	410	500	485	580	445	345	261	153	127	345
Salt Lake City, Utah	204	324	403	470	645	641	770	664	552	405	204	153	453
San Antonio, Texas	297	339	423	409	470	598	618	535	440	457	---	227	---
Santa Maria, Calif.	301	403	475	559	620	670	673	572	481	353	285	203	466
Ste. St. Marie, Mich.	137	272	---	---	557	620	563	378	291	242	108	104	---
Seattle, Wash. (U of Wash.)	66	151	218	340	467	406	460	402	294	---	83	65	---
Seattle-Tacoma, Wash.	65	181	229	382	515	437	501	437	315	222	87	71	287
Shreveport, La.	258	337	419	471	538	622	615	490	423	415	271	184	420
Spokane, Wash.	119	256	326	476	616	610	643	519	413	278	102	84	370
State College, Pa.	187	259	294	342	604	573	526	460	401	297	195	105	354
Sterling, Va.	188	271	356	347	564	571	---	428	391	295	209	148	---
Stillwater, Okla.	270	307	367	460	497	580	567	483	---	363	222	214	---
Swan Island, W. I.	428	539	642	702	618	551	562	600	534	370	356	419	527
Tampa, Fla.	251	341	451	528	607	570	---	---	453	403	350	293	---
Tucson, Ariz. (U of Ariz.)	334	404	450	604	671	675	---	538	454	430	323	247	---
Wake Island, Pacific	---	---	---	492	547	552	504	477	475	425	392	361	----

Note: Langley is the unit to denote one gram calorie per square centimeter.
(U) Indicates Urban sites.
Sun below horizon November 18 through January 24, inclusive.

Chart 1. Departure from Normal of Annual Temperature (°F) at Surface, 1964.

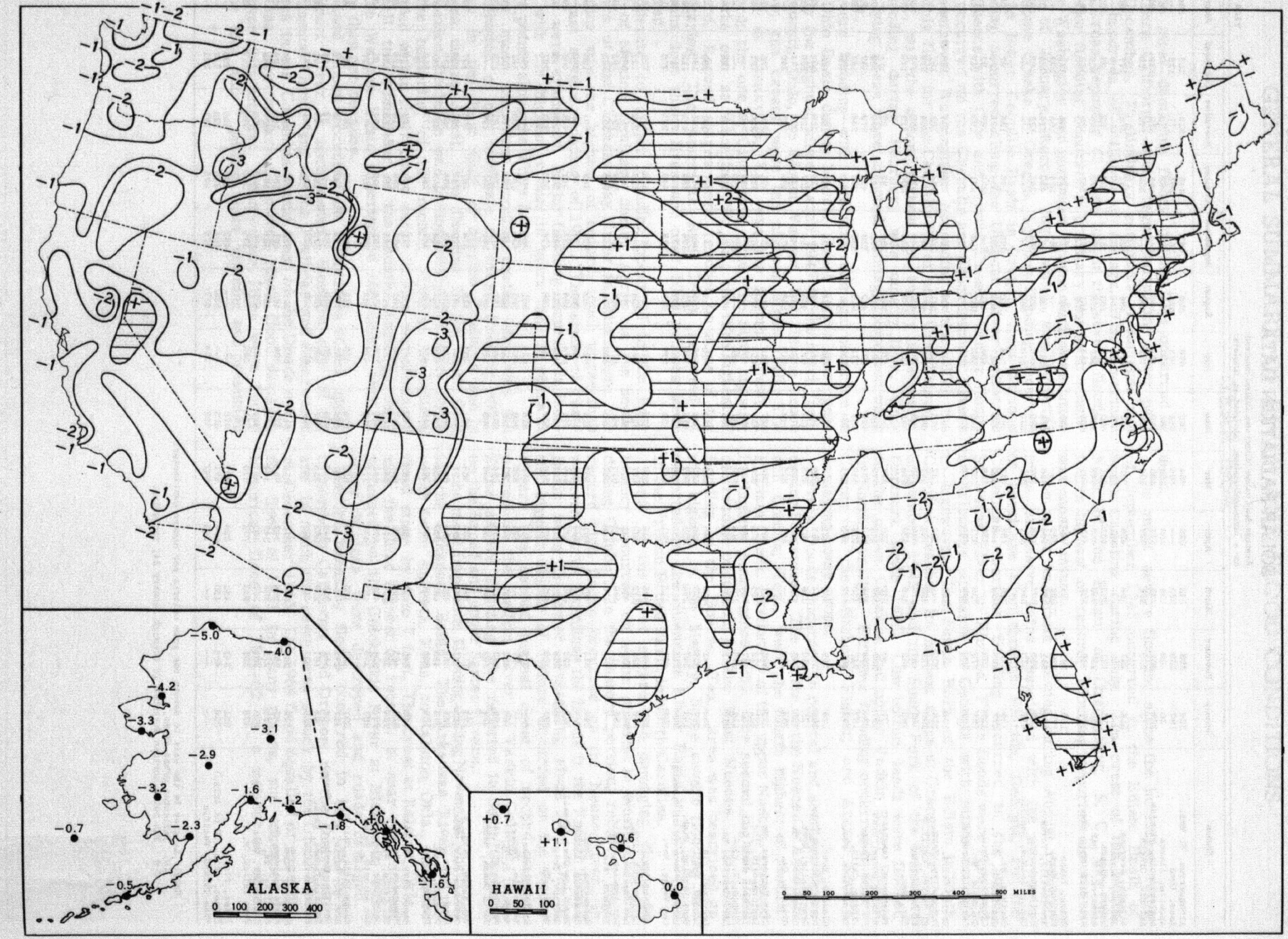


Chart II. Total Annual Precipitation (Inches), 1964.

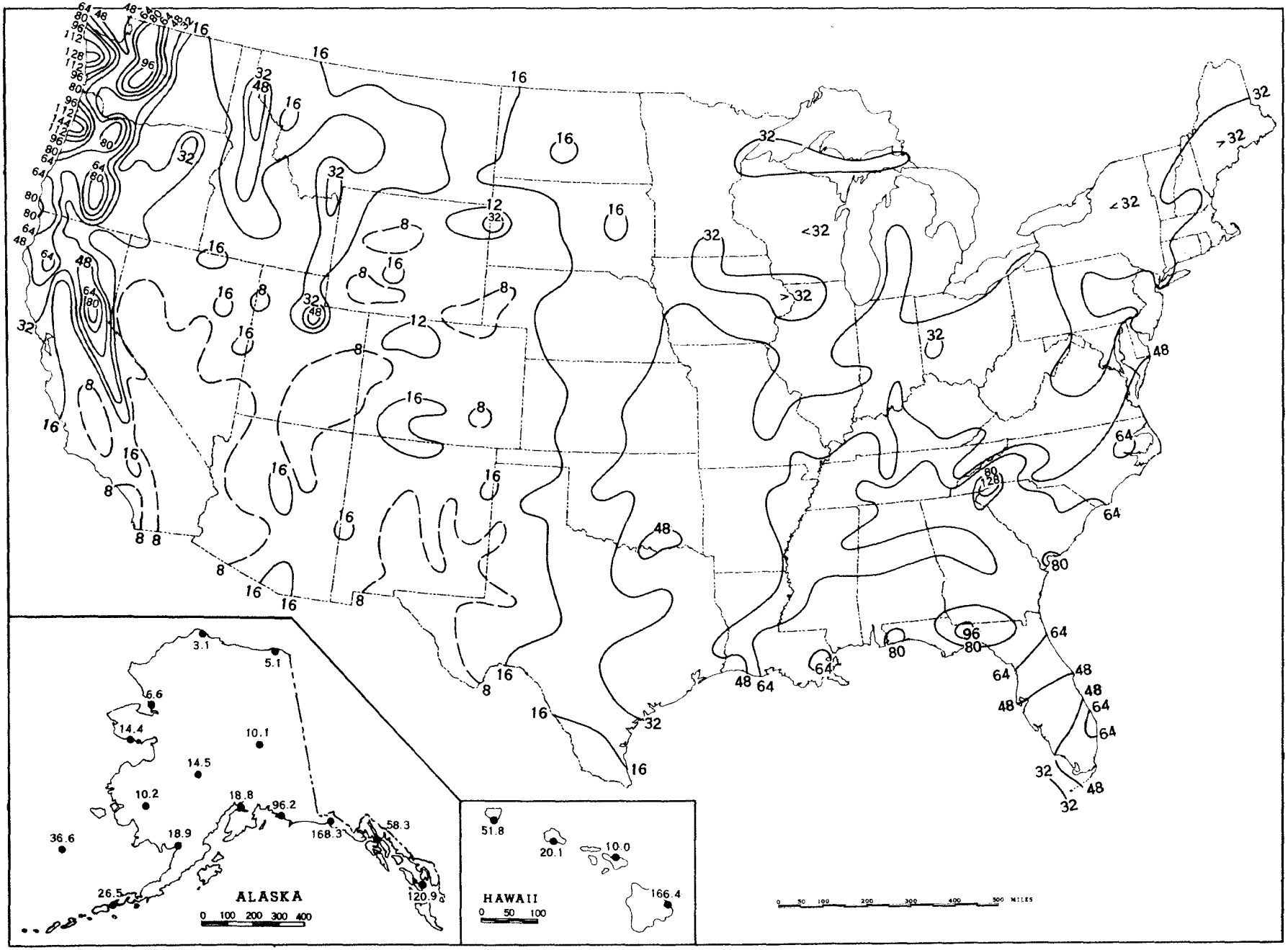


Chart III. Percentage of Normal Annual Precipitation, 1964.

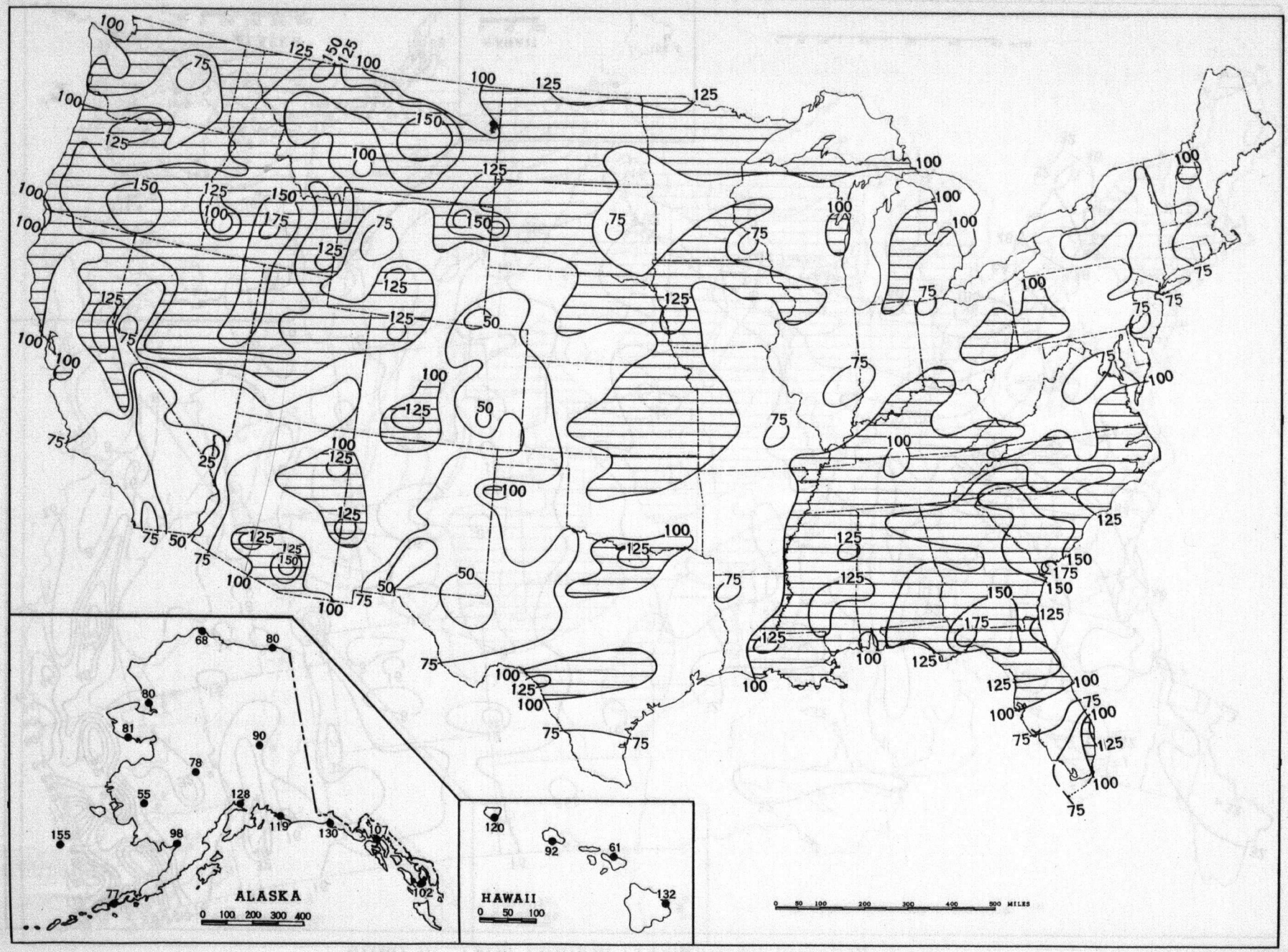
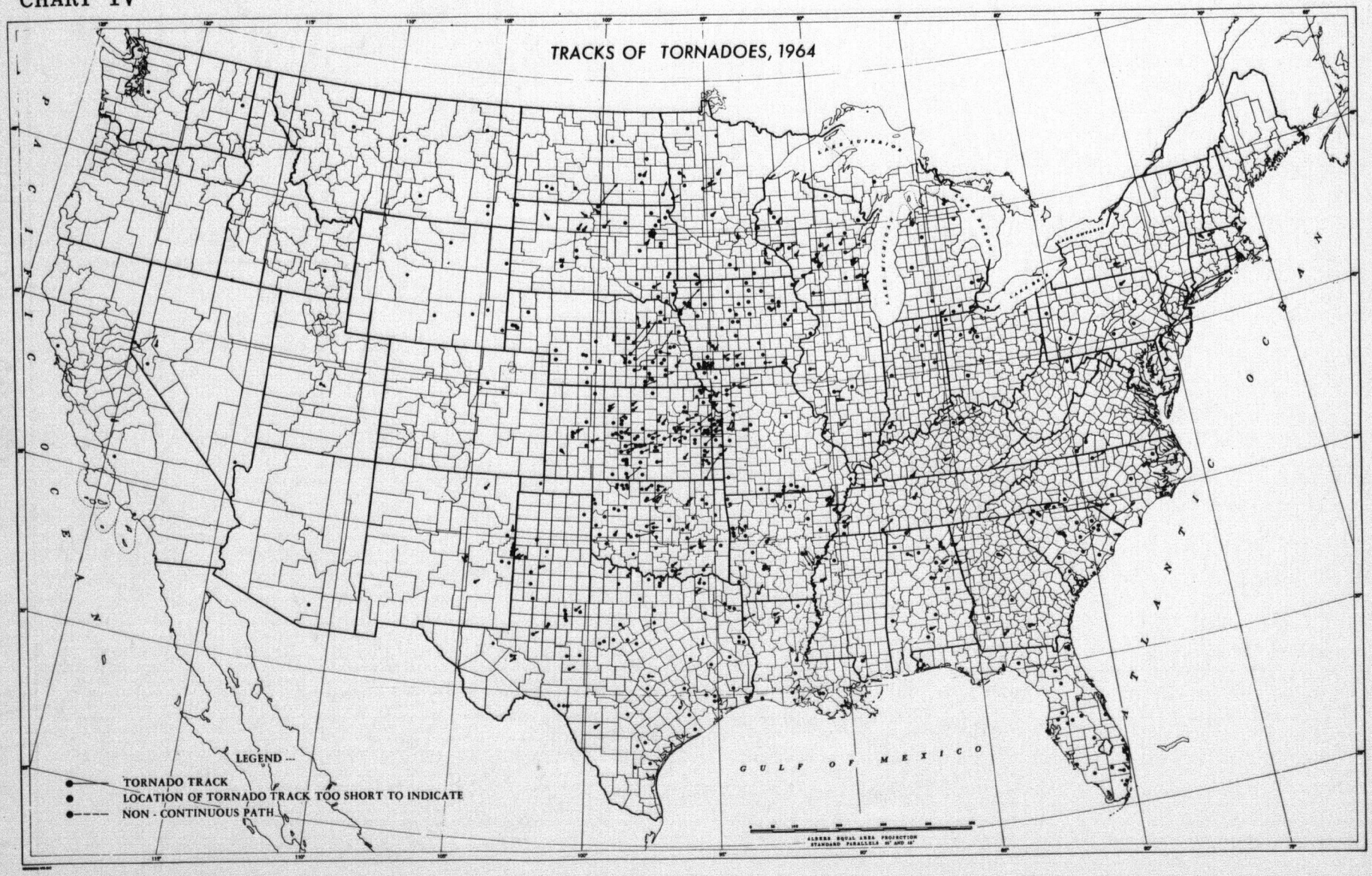


CHART IV



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