

SECTION VII.—WEATHER AND DATA FOR THE MONTH.

THE WEATHER OF THE MONTH.

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[Dated: Weather Bureau, Washington, Sept. 2, 1915.]

PRESSURE.

The distribution of the mean atmospheric pressure over the United States and Canada, and the prevailing directions of the winds are graphically shown on Chart VII, while the average values for the month at the several stations, with the departures from the normal, are shown in Tables I and III.

The mean atmospheric pressure for the month as a whole was below the normal over the greater portion of the country, but the minus departures were not especially marked over any district. From the central and northern Mississippi Valley eastward, and in the South Atlantic States, the minus departures ranged quite generally from 0.03 to 0.05 inch, and they were of similar magnitude over most of the Plateau region and north Pacific Coast States. In the lower Mississippi Valley, over most of the central Rocky Mountain region, and in California the means for the month were near the normal or slightly above, but in the Dakotas, Montana, and portions of Wyoming they were decidedly high, ranging from 0.04 to 0.07 inch above the normal.

At the beginning of the month low pressure obtained from the Plains region eastward to the Atlantic, and unsettled barometric conditions continued over eastern districts for several days, the pressure being especially low over the Canadian Provinces north of the Great Lakes on the 5th, and at the same time an extensive, though moderate, high area overspread the more southern districts. From the 7th to the 10th a well-defined disturbance moved from the central Plains region north-eastward to the Canadian maritime Provinces, but it was not succeeded by a high pressure area worthy of note.

The second decade of the month was characterized by unsettled barometric conditions over eastern districts, with tendencies to relatively low readings in the interior and northern localities and relatively high to the southward. However, about the 18th a rather marked high area advanced from the Northwest, and during the following four or five days it overspread and dominated weather conditions over most districts to the eastward of the Rocky Mountains, and, as a rule, relatively high pressure continued during the remainder of the month.

TEMPERATURE.

The month opened with slowly rising temperature, which approximated the normal in most districts to eastward of the Rocky Mountains, but by the middle of the first week cooler weather prevailed in the northern mountain and central districts, while moderately warm weather obtained in the Gulf and Atlantic Coast States. During the latter part of the week the weather in the northwest became decidedly cooler, with minimum temperatures at points in Nebraska and Wyoming near or slightly below the freezing point and the coldest ever recorded at those points in July. The cool wave advanced into the Mississippi Valley and the interior districts to the eastward, establishing new records for low summer temperatures at many points. At the close of

the week temperatures continued moderately low in the central valleys and eastern districts, and warmer weather was again in evidence in the West. The mean temperature for the week was almost universally below the normal, it being especially cold in the Missouri Valley and Plains States. However, in portions of the extreme South, along the Atlantic coast and in the far Northwest, the averages were near or slightly above the normal.

Temperatures near the normal prevailed in nearly all districts at the beginning of the second week and continued until after the middle, when decidedly cooler weather overspread the northern mountain and plateau regions; but in a few days temperatures had again risen to near the normal in all districts and at the close of the week they were generally near or slightly above the normal. The average temperature for the week was less than the normal over all central and northern districts, except near the extreme Upper Lakes and along the immediate Pacific coast, while in the Gulf and South Atlantic States and over the central and northern coasts of California, moderately warm weather prevailed.

During the first half of the third week warm weather prevailed over the districts from the Rocky Mountains eastward, but west of the mountains cooler weather set in early in the week and continued without much variation throughout. During the latter part of the week it remained warm over the Eastern and Southern States, but cooler weather overspread the northern districts from the Upper Lakes westward, and at the close it had extended to nearly all sections. The week as a whole was decidedly cool from the Upper Lake region westward to the central portions of Oregon and Washington, while high temperatures prevailed over practically all eastern and southern districts and along the immediate Pacific coast.

Decidedly cool midsummer weather prevailed over most districts east of the Rocky Mountains during the early part of the last 10-day period of the month, with a tendency to warmer weather as the decade advanced, and temperatures in all parts of the country were near the normal about the middle of the decade. However, during the next few days moderately cool weather prevailed along the northern border, and toward the latter part of the decade warmer weather overspread the central and eastern districts. The month closed with warm weather over eastern districts, generally cool weather in the Northwest, and normal July temperatures over nearly all other sections. For the decade as a whole, the average temperature was below the normal over large portions of the West and Northwest, while in the East and Southeast it was uniformly warm except in portions of New England and Florida, where it was below the normal.

PRECIPITATION.

During the first few days of the month substantial rains occurred quite generally east of the Appalachian Mountains. At the same time rain fell in the Middle West, and about the middle of the first week light to heavy showers occurred over much of the Gulf region and thence northward to the Canadian border, with some heavy rains in portions of New England. The week closed with fair weather over most central and eastern districts, but with light, local showers occurring in the

North Pacific States. The rainfall for the week was well distributed and generous over nearly all sections of the country from the Rocky Mountains eastward, but west of the mountains there was an absence of any material rainfall.

During the first few days of the second week thunder-showers, with local heavy rains, prevailed over a considerable area from South Dakota, Nebraska, and northern Kansas eastward to Lake Michigan, and local storms of great severity occurred in portions of the Ohio Valley, causing the loss of a number of lives and much damage to property and crops. During the latter part of the week showers were fairly general from the Ohio Valley and lake regions eastward to the Middle Atlantic coast, and at the close of the week local showers occurred at widely separated points from the Florida Peninsula northwestward to Washington State. During the week much rainy weather prevailed from the middle Plains region eastward to the Ohio Valley and Lake Region and from Pennsylvania northeastward to New England, the precipitation being very generally well above the normal. Over the remaining districts to eastward of the Rocky Mountains the rainfall for the week was below the normal, practically no rain occurring in Texas. Over the districts west of the Rocky Mountains there was the usual absence of any material rains, except in the far Northwest where light local showers occurred.

During much of the third week rather frequent local showers occurred over the northern districts from the Rocky Mountains eastward and moderately dry weather prevailed in the South, but at the close of the week general showers, in some cases heavy, occurred over the Atlantic coast district and in portions of the Plains region. In Ohio local heavy rains fell, causing unusually high water in some of the rivers of that State with much damage to crops and other property, and the rivers in eastern Kansas and adjoining regions were high, due to heavy local rains. The rainfall for the week was unusually heavy in the central Plains States, but to the eastward of the Mississippi River the amounts were generally light, except heavy falls occurred in portions of Ohio, Indiana, the Florida Peninsula, and southeastern Louisiana. In much of the western portion of the cotton belt, and the central and southern portions of the plateau and Pacific coast districts the week was practically rainless.

Showery conditions prevailed over the Atlantic coast districts during the early part of the last decade of the month, but in most other districts the weather was clear, and toward the middle of the decade clear weather prevailed over nearly the entire country. During the latter part of the decade showers prevailed at intervals from the middle Plains region to the Great Lakes and thence eastward to the North Atlantic States, and at the close of the month thunderstorms occurred locally over wide areas, with some heavy precipitation in the upper Mississippi and lower Missouri valleys. The rainfall for the decade, as a whole, was light or entirely lacking over a large part of the country, the comparatively small amounts over much of the corn and wheat growing sections being in marked contrast to the previous heavy falls experienced during most of the season. Except for local areas in the Atlantic Coast States, the Missouri Valley, and thence eastward to the lake region, where an inch or more of rainfall occurred, and in the southern Rocky Mountains and plateau regions, where the falls were locally heavy, the precipitation during the decade was generally light, and no rain occurred over large areas in the central and west Gulf States, much of the great Central Valleys, and the Pacific Coast States.

GENERAL SUMMARY.

The outstanding features of the weather during July, 1915, were the continued marked low summer temperatures over much of the country, especially in the principal cereal-producing States, and the heavy to excessive rainfall from the central Plains region eastward. The close of the month marked a period of about 10 consecutive weeks in which the temperature remained continuously below the normal, save for a few brief intervals, over much of the interior and northern portions.

The mean temperature for the month was below the normal throughout the country, except in the South Atlantic and Gulf States and along the immediate Pacific coast, where the month was moderately warm. From the lake region and Ohio Valley westward to the central and northern plateau districts the minus departures ranged from 3° to 6°.

The rainfall for the month was heavy to excessive over many important sections, particularly so from the central Plains States eastward to the Ohio Valley, and thence northeastward over New York and New England, where from 6 to 15 inches were recorded. Excessive amounts were received also in limited areas in the South Atlantic and central Gulf States.

To the westward of the Rocky Mountains the usual summer distribution of rainfall occurred, except that the amounts were comparatively large in the southern portions of the mountain and plateau districts, and more than the normal amounts occurred from the Dakotas westward to the Pacific.

LOCAL STORMS DURING THE MONTH.

The following notes of severe storms have been extracted from reports of section directors:

Missouri.—Severe storms occurred in St. Charles County during the afternoon of July 7, four people being killed and 20 injured. Property loss probably exceeded \$20,000.

Ohio.—One of the most destructive storms in the history of Cincinnati visited that city and the suburban districts in Clermont and Hamilton counties about 9.30 p. m., July 7. Many buildings were wrecked and several struck by lightning. Thirty-eight people were killed, 12 are missing and many were injured. Property loss about \$1,500,000.

Kentucky.—On the 4th a severe local storm did considerable damage in Mercer County, and on the 7th heavy rainstorms, accompanied by winds of great violence, caused much damage. In Kenton and Campbell counties the property damage was estimated at \$600,000, and 1 person was killed at Earlington.

Iowa.—During a typical tornado of small proportions that struck New London on the night of the 10th 1 person was killed, others were seriously injured, and much property destroyed. On the night of the 6th severe windstorms occurred near Logan and Garwin, and a press dispatch indicates that damage amounting to \$100,000 was done to corn and oats near Storm Lake, on the 17th, by hail. The most damage was done, however, by excessive rains, accompanied by severe wind squalls, in the southwestern counties between the 11th and 14th, when corn and grain were beaten to the ground, rivers were out of their banks, and all low ground was flooded.

Georgia.—Severe local storms occurred on the 1st and 2d in the region between West Point, Columbus, and Macon, causing a great deal of damage to crops and destroying considerable of the peach crop by blowing the fruit from the trees.

Average and accumulated departures for July, 1915.

Maximum wind velocities, July, 1915.

Districts.	Temperature.			Precipitation.			Cloudiness.		Relative humidity.	
	General mean for the current month.	Departure for the current month.	Accumulated departure since Jan. 1.	General mean for the current month.	Departure for the current month.	Accumulated departure since Jan. 1.	General mean for the current month.	Departure from the normal.	General mean for the current month.	Departure from the normal.
	° F.	° F.	° F.	In.	In.	In.	0-10.		P. ct.	
New England.....	67.4	-1.4	+ 7.3	5.87	+2.30	-2.20	6.0	+0.9	82	+ 2
Middle Atlantic.....	73.8	-0.8	+ 5.2	4.20	-0.10	-1.40	5.4	+0.5	75	+ 1
South Atlantic.....	79.8	+0.7	- 1.3	4.98	-1.10	-4.00	4.8	-0.4	77	- 3
Florida Peninsula ¹	83.0	+1.1	-10.4	5.15	-1.30	+2.50	5.8	+0.8	74	- 4
East Gulf.....	81.2	+0.9	- 3.0	4.00	-1.30	-3.70	4.0	-1.4	73	- 5
West Gulf.....	81.5	-0.4	- 5.4	1.49	-1.70	-1.80	3.3	-0.8	71	- 3
Ohio Valley and Tennessee.....	74.9	-1.9	- 3.5	4.25	+0.20	-5.20	5.3	+0.7	72	+ 3
Lower Lakes.....	69.4	-2.3	- 2.0	5.16	+1.80	-2.50	5.9	+1.4	77	+ 8
Upper Lakes.....	64.8	-3.2	+ 5.8	3.12	0.00	-2.30	5.7	+1.1	76	+ 4
North Dakota.....	63.0	-6.0	+11.3	2.38	-0.50	-0.30	5.0	+0.6	71	+ 5
Upper Mississippi Valley.....	71.6	-3.8	+ 1.4	6.24	+2.60	+3.40	6.2	+1.2	76	+ 8
Missouri Valley.....	71.2	-4.5	- 2.6	6.15	+2.30	+7.80	5.2	+1.0	76	+10
Northern slope.....	62.8	-5.3	+ 1.2	3.09	+1.50	+3.10	5.1	+1.4	66	+14
Middle slope.....	73.7	-3.1	- 7.1	2.87	-0.10	+5.10	4.6	+0.5	66	+ 6
Southern slope.....	79.8	-0.6	- 9.5	2.31	-0.50	+1.50	3.3	-1.2	59	0
Southern plateau.....	80.4	-1.4	-15.5	1.66	+0.40	+2.00	3.1	-0.2	46	+ 8
Middle plateau.....	72.1	-0.8	- 3.4	0.32	-0.20	0.00	2.7	-0.4	36	+ 4
Northern plateau.....	69.3	-1.6	+ 8.9	0.85	+0.40	+0.60	4.1	+1.4	45	+ 4
North Pacific.....	61.9	+0.7	+16.0	1.12	+0.40	-5.70	5.7	+1.1	76	+11
Middle Pacific.....	65.8	+0.3	+ 4.4	0.04	0.00	+4.70	2.6	-0.9	61	- 5
South Pacific.....	70.3	+0.4	+ 8.0	0.00	0.00	+3.90	2.4	-0.4	68	+ 2

¹ Regular Weather Bureau and selected cooperative stations.

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
		Mi/hr.				Mi/hr.	
Buffalo, N. Y.....	5	60	sw.	Mount Tamalpais, Cal.....	28	54	nw.
Charlotte, N. C.....	12	62	nw.	Do.....	29	54	nw.
Cheyenne, Wyo.....	6	50	w.	Do.....	30	72	nw.
Columbus, Ohio.....	15	52	w.	Do.....	8	55	n.
Drexel, Nehr.....	18	68	se.	New York, N. Y.....	17	77	nw.
Eastport, Me.....	9	51	ne.	Do.....	29	65	ne.
El Paso, Tex.....	5	50	sw.	Norfolk, Va.....	10	50	ne.
Do.....	11	54	nw.	Pensacola, Fla.....	6	52	nw.
Do.....	12	50	nw.	Point Reyes Light, Cal.....	8	55	nw.
Jacksonville, Fla.....	20	52	w.	Do.....	9	68	nw.
Kansas City, Mo.....	18	56	nw.	Do.....	10	67	nw.
Lexington, Ky.....	30	58	nw.	Do.....	11	59	nw.
Lincoln, Nebr.....	6	52	nw.	Do.....	13	72	nw.
Do.....	15	53	nw.	Do.....	16	57	nw.
Modena, Utah.....	24	51	e.	Do.....	26	65	nw.
Mount Tamalpais, Cal.....	5	52	nw.	Do.....	27	63	nw.
Do.....	6	67	nw.	Do.....	28	56	nw.
Do.....	7	56	nw.	Do.....	29	51	nw.
Do.....	8	62	nw.	Do.....	30	60	nw.
Do.....	12	52	nw.	Sandy Hook, N. J.....	8	54	n.
Do.....	16	71	nw.	Savannah, Ga.....	1	50	nw.
Do.....	26	54	nw.	Do.....	6	52	w.
Do.....	27	52	nw.				