

PRELIMINARY REPORT ON TORNADES IN THE UNITED STATES DURING 1937

By J. P. KOHLER

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In keeping with the custom inaugurated in the December issue of the REVIEW, 1925, and continued each year thereafter, preliminary statements on loss of life and property damage by tornadoes during the year 1937 are briefly set forth in this article. A final and more detailed study will appear in the *United States Meteorological Yearbook 1937*. The data contained in the latter publication prior to 1935 were printed in the statistical section of the *Report of the Chief of the Weather Bureau*.

Practically all the information given in this summary is abstracted from table 3 SEVERE LOCAL STORMS, contained in the several monthly issues of the REVIEW. The contents of the table of SEVERE LOCAL STORMS have been compiled from the reports of many observers and the various section directors of the Bureau. While it is thought that figures given are substantially correct, it must be remembered that all are subject to change after the final study mentioned above.

While the year 1937 recorded 137 (possibly 150 tornadoes), only 9 less than the 1936 figure (159), fortunately they were far less disastrous. Only 28 deaths were reported in 1937; injured numbered 192 (possibly 195), and property losses in the final study will be in the neighborhood of 3 million dollars. This is a decidedly favorable contrast to the 1936 figures—552 deaths; 2,928 injured, and property losses totalling \$26,228,500.

Table 1, TORNADES AND PROBABLE TORNADES, shows the monthly frequency and comparative severity during 1937. June, with 44 and possibly 46 (table 2), was the month of greatest tornado frequency. May ranks second, with 33 (possibly 36); and April, third, with 18 (possibly 19). Although April's reported number was considerably less than the June totals, vital figures, 14 deaths, 97 injuries, greatly surpassed other monthly corresponding values. Also, April in 1936, with 32 tornadoes, 492 deaths, and 2,539 injured, was the most destructive month. Tornado frequencies for the remaining months of 1937 were as follows: July, 12 (possibly 14); February, 11 (possibly 13); August, 5 (possibly 7); March, 5; October, 4 (possibly 5); September, 4; and possibly 1 in November. No tornadoes or storms bordering on the destructiveness of tornadoes were reported in January or December.

Provided the death figure 28 is not greatly modified by later analysis, it will stand as the lowest tornado mortality total since comparative study was begun in 1916. Previously, 1931, with 36 deaths, was the lowest on record. Also monetary losses will rank close to or below the low 1923 figure of \$2,958,750.

Tornadoes occurred during the year in 31 States. Alabama reported 5; Arizona 1, possibly 2 (table 2), Arkansas 4, Colorado 2, Connecticut 1 (possibly 2), Florida 5, Georgia 2, Illinois 1, Indiana 4, Iowa 32 (possibly 3 more), Kansas 19, Kentucky 1, Louisiana 3, Maryland 8, Minnesota 4 (possibly 5), Mississippi 2 (possibly 3), Missouri 8 (possibly 9), Montana 1, Nebraska 5, New Mexico 1, New York 1 (possibly 2), North Carolina

1, North Dakota 1, Oklahoma 6, Oregon 1, Pennsylvania 1, South Carolina 3 (possibly 4), South Dakota 4, Tennessee 2, Texas 5, Wisconsin 3, and there is some possibility that later consideration may include Ohio, Virginia, and West Virginia with 1 tornado each. The large number reported in Iowa and Kansas is due partly to the efficient service covering storms of this type by the Weather Bureau section directors for these respective States. The number of deaths on a State basis was as follows: Alabama 7, Arkansas 3, Iowa 1, Kansas 1, Kentucky 5, Louisiana 5, Minnesota 1, Missouri 3, Oklahoma 1, and Texas 1. Likewise the number injured was: Alabama 32, Arkansas 40, Florida 5, Illinois 2, Iowa 5, Kansas 3, Kentucky 23, Louisiana 8, Minnesota 3, Missouri 47, North Carolina 2, Oklahoma 15, Pennsylvania 2, Tennessee 3, and Texas 2.

Tornado occurrences with regard to frequency and distribution within the month showed a marked degree of grouping or localization in respect to time and area affected. In February, seven tornadoes occurred within 2 days, February 20–21. The first occurred in Missouri; somewhat later in Louisiana and Mississippi on the 20th, and on the 21st Florida and North Carolina reported tornadoes. The five disturbances in March occurred over the period from the 19th to 25th in Louisiana, Alabama, South Carolina, and Kentucky. In early April, on 3 days, tornadoes were reported in Florida and Alabama. Beginning on April 14, and extending through May 5, a series of 18 tornadoes occurred in the Southeastern States, Gulf region, and interior valleys. In the remaining days of May, and during the summer months, June, July, and August, tornadoes occurred frequently in the Southeast and interior States, and occasionally in scattered points in New England, the Northern Rocky Mountains, and Southern Plateau States. They were in general quite closely connected in respect to area and time, while occurrences in September and October were widely scattered.

The most singular destructive tornado action during the year was the result of a series of three tornadoes which swept portions of Green, Christian, Webster, Wright, and Douglas Counties, in the southwestern part of Missouri, on the afternoon of February 20, causing property damage of at least \$200,000, and injuries to at least 13 persons, 2 critically, and killed considerable livestock and poultry. The paths of the tornadoes were about 10 miles apart and ran parallel in an almost southwest to northeast direction and were from 1,000 feet to one-fourth mile wide, and from 10 to 30 miles long. A total of 55 homes was damaged or destroyed, together with as many or more barns, garages, and outbuildings. Eyewitnesses reported well-defined, funnel-shaped or twisting clouds in the sections visited by the tornadoes.

If further study shows the storms listed in table 2 on tornadic winds to be true tornadoes, the 1937 number is 150 tornadoes with 28 deaths, 195 injuries, and property losses exceeding \$2,924,000 (see tables on following page).

TABLE 1.—Tornadoes and probable tornadoes

	January	February	March	April	May	June	July	August	September	October	November	December	Total
Number.....	0	11	5	18	33	44	12	5	4	4	1	0	137
Deaths reported.....	0	0	7	14	3	3	0	1	0	0	0	0	28
Injuries reported.....	0	21	31	97	12	26	0	0	0	5	0	0	192
Damage ¹	0	426.3	210.0	318.8	733.3	738.5	23.5	14.5	12.2	332.2	(²)	0	2,809.3

¹ In thousands of dollars.

² Several hundred.

TABLE 2.—Tornadic winds and possible tornadoes ¹

	January	February	March	April	May	June	July	August	September	October	November	December	Total
Number.....	0	2	0	1	3	2	2	2	0	1	0	0	13
Deaths reported.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Injuries reported.....	0	0	0	0	0	(²)	0	1	0	2	0	0	3
Damage ¹	0	37.2	0	(³)	8.0	25.0	16.5	8.0	0	20.0	0	0	114.7

¹ Some of these may not be classed as tornadoes in the final study.
² Several reported injured.

³ In thousands of dollars.
⁴ Several hundred.

NORTH ATLANTIC TROPICAL DISTURBANCES OF 1937

By WILLIS E. HURD

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The hurricane season of 1937 was of comparatively short duration. The first tropical disturbance originated on July 29 and the last of definite tropical origin disintegrated over land on October 4. There were nine tropical disturbances in all over the North Atlantic, including the Gulf of Mexico. The final occurrence of the season was the only one on waters of the Caribbean Sea and that over only its extreme northwestern part. The year 1936 was also deficient as to occurrences in the Caribbean.

As in 1936, with 17 disturbances, of which less than 30 percent attained hurricane intensity, the percentage of those of like force, 2 in number, in 1937, was only 22. Thus for 2 consecutive years the percentage of disturbances of full hurricane force was much below the normal of about 50 percent for the past 51 years. The two hurricanes of the year occurred in September. Of the nine disturbances charted, seven occurred wholly or partly in September. Four were charted in the Gulf of Mexico;

and the tracks of three, two of which were hurricanes, lay almost entirely in Atlantic waters. Five of the disturbances dissipated over land, one at sea south of Nova Scotia, and three continued toward upper waters of the Atlantic or into the Arctic Ocean.

The only disturbance of the year to cause any considerable amount of damage was that of August 24–September 2 (track III in the chart). The damage occurred partly as the result of wind and rain in northern Florida on August 30, but was largely due to the heavy rains of the disturbance with accompanying floods over southern Alabama on August 31–September 1. A disturbance was in progress in the Gulf of Mexico from November 23 to 26, but it was apparently of extratropical origin. This disturbance was discussed in the November issue of the REVIEW.

A synopsis of some of the more important features of the nine disturbances of 1937 is given in the table herewith. Their tracks, numbered I to IX chronologically, are shown in the accompanying chart.

North Atlantic tropical disturbances of 1937

[Synopsis of tropical disturbances of 1937 (number of storm in table corresponds to number of track on accompanying chart)]

Storm	Date	Place where first reported	Coast lines crossed	Maximum wind velocity reported	Lowest barometer reported	Place of dissipation	Intensity	Remarks
I.....	July 29–Aug. 2..	Off west coast of Florida.	Florida, Nova Scotia.	60 miles, SW. S. S. <i>Mundric</i> . Force 10, S. S. <i>Clare</i> .	29.44, S. S. <i>Clare</i>	St. Lawrence Valley.	Not of hurricane force.	Small damage to fruit and roads in Florida (A).
II.....	Aug. 2–8.....	Near 24° N., 76° W..	None.....	Force 10, on 3 vessels..	29.67, S. S. <i>American Trader</i> .	Near Sable Island.do.....	No damage reported (B).
III.....	Aug. 24–Sept. 2.	Northeast of Leeward Islands.	Florida.....	Force 10, S. S. <i>Solana</i> .	29.33, Coast Guard, Daytona Beach, Fla.	Arkansas.....do.....	Some damage due to wind, rain, and floods (B).
IV.....	Sept. 9–14 ¹	Near 18° N., 55° W..	Nova Scotia, Maine.	Force 10, S. S. <i>Winnamac</i> and S. S. <i>Darcoila</i> .	29.30, on 3 vessels.....	St. Lawrence Valley.do.....	(C).
V.....	Sept. 14–19 ²	Northeast of Leeward Islands.	None.....	Force 12, several vessels.	28.20, on M. S. <i>California Express</i> .	North Atlantic..	Hurricane.....	(C).
VI.....	Sept. 16–21.....	Gulf of Campeche..	Florida.....	Force 10, S. S. <i>Oliver Olson</i> .	29.64, Port Eads, La..	Florida.....	Not of hurricane force.	(C).
VII.....	Sept. 20–26.....	Near 15° N., 44° W..	Nova Scotia, Newfoundland.	Force 12, S. S. <i>Nordenhama</i> .	28.94.....	Arctic Ocean.....	Hurricane.....	(C).
VIII.....	Sept. 26–30.....	Near north coast of Cuba.	Newfoundland.....	Force 8, S. S. <i>Gulphawk</i> .	29.83.....	North Atlantic..	Not of hurricane force.	(C).
IX.....	Sept. 30–Oct. 4 ³	South of Yucatan Channel.	Louisiana.....	Force 8, S. S. <i>Gulphawking</i> .	29.62.....	Arkansas.....do.....	(C).

Complete reports of these disturbances may be found in the MONTHLY WEATHER REVIEW: (A) July 1937; 65: 281, 282. (B) August 1937; 65: 303, 304. (C) September 1937; 65: 332–335.

¹ Disturbed conditions were reported in the vicinity as early as the 6th, but no evidences until the 9th of a storm center.
² On Sept. 10 the S. S. *Chincha*, near 19¼° N., 40° W., reported a fresh to strong east-southeast gale and signs of a tropical cyclone.
³ This disturbance was associated with a second low on Oct. 1. The 2 apparently merged on Oct. 2.