

NORTH ATLANTIC HURRICANES AND TROPICAL DISTURBANCES OF 1949

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Eleven tropical disturbances occurred in the North Atlantic during 1949.

I. *Hurricane of August 21-25.*—The first disturbance was discovered on August 21, 300 miles north of San Juan, Puerto Rico, moving west-northwest at 18 m. p. h. Six hours after discovery the storm was well developed with winds of 80 m. p. h. reported by surface vessels in its path. The hurricane moved west-northwest from the point of discovery to the position 27.5° N., 75° W., where it began to curve northward. Moving at a speed of 15 to 18 m.p.h., the hurricane passed over Diamond Shoals Lightship located off Cape Hatteras, N. C. As the eye of the storm passed over the Lightship, a 15-minute calm and a minimum pressure of 977.3 mb. (28.86 in.) were recorded. Shortly afterward the storm curved northeastward and finally eastward into the Atlantic.

The French ship *Marseille* passed through the center of this hurricane on August 25 at 1200 G. M. T. At this time the ship was at 38.0° N. and 60.3° W., and the lowest pressure recorded on the ship's barograph was 722 mm. (962.6 mb.; 28.43 in.). The captain of the ship reports as follows:

At first we experienced extremely strong southwest winds, overcast skies and rough seas. Next, these winds brought heavy rain reducing the visibility to almost zero. Afterwards, there was a short interval of almost calm, a small clearing at the zenith, and an enormous confused swell. Finally, the wind shifted to the northeast, blew with practically the same force, and gradually became a northwest wind.

II. *Hurricane of August 23-29.*—The second hurricane in 1949 caused more than \$52,000,000 property and crop damage in the southeastern States, about \$45,000,000 of which occurred in Florida. It caused the death of 2 persons and injured 133 others, 12 seriously. This hurricane was discovered in its formative stages on August 23 about 125 miles northeast of St. Martin, Leeward Islands, at latitude 19° N., longitude 61.5° W. It moved on a west-northwestward course for a time as a partially developed easterly wave, and some characteristics of the wave could be observed until the storm moved into the Bahama Islands two days later. The storm was well developed, however, by the time its center passed a short distance north of Nassau at about 5 a. m. of the 26th. It was over West Palm Beach Airport from 6:37 to 7:57 p. m., and a calm was experienced for 22 minutes from 7:20 to 7:42 p. m. The lowest sea level pressure was 28.17 in. recorded at the Weather Bureau Airport Station, West Palm Beach. The microbarograph trace for this station is reproduced in figure 1. The wind instrument was blown down when the velocity reached 110 m. p. h. with gusts of 125 m. p. h. The Official in Charge at the station estimated the highest wind at 120 m. p. h. with gusts of 130 m. p. h. A privately owned anemometer on Palm Beach, the accuracy of which is unknown, recorded gusts of 155 m. p. h.

The strongest wind occurred, as usual, some distance to the right of the center in the vicinity of Jupiter and Stuart, Florida. The anemometer failed at Jupiter Lighthouse after reaching a velocity of 153 m. p. h. The observer

reported that winds were somewhat stronger thereafter, but he felt unable to make a reliable estimate of the peak strength.

After leaving the east coast of Florida, the center of the storm crossed the northern part of Lake Okeechobee during the early part of the night of the 26th. The storm was the worst felt in that section since the disastrous hurricane of September 1928. The highest winds registered around the lake ranged from 100 to 126 m. p. h. on the instruments of the U. S. Army Engineers. The water of the lake rose 12 feet or more at places on the southeast and east side of the lake, but the levees held and there was no flooding from the lake.

After leaving the Lake Okeechobee area, the center passed northwestward through the heart of Florida's main citrus belt, where much fruit was destroyed, and upon reaching the west coast north of Tampa it turned northward and moved through Georgia and the Carolinas as a weakened disturbance. Figure 2 shows the path of this hurricane over Florida.

Pertinent meteorological information about this hurricane can be found on the backs of the Washington Daily Weather Map for October 31 and November 1, 1949.

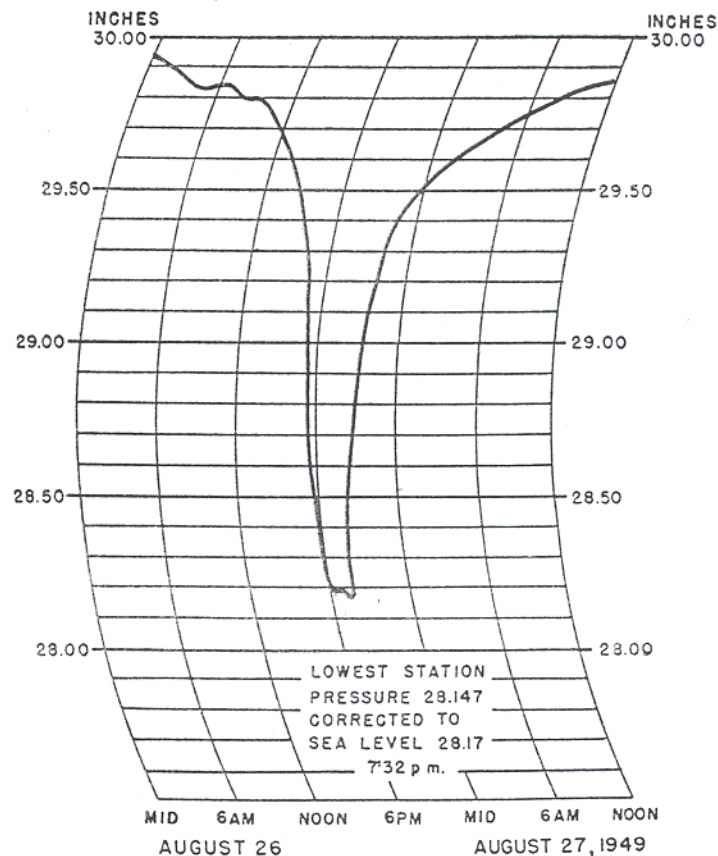


FIGURE 1.—Microbarograph trace at West Palm Beach, Fla., during passage of hurricane of August 23-29, 1949.

damage occurred near Grande Isle when immovable oil-drilling rigs and equipment in the Gulf of Mexico were demolished by heavy seas.

No loss of life or serious injuries directly attributable to the hurricane were reported. Total property and crop damage was approximately \$900,000 divided among the four States affected as follows: Louisiana \$660,000; Mississippi \$140,000; Alabama \$88,000, and Florida \$12,000.

VII. *Hurricane of September 3-15.*—This hurricane, which had an unusually long history, was first reported on September 3 when it moved off the African mainland near Dakar. It followed a westerly course during the next several days until on September 9, it was detected by aircraft reconnaissance near latitude 17.5° N., longitude 47° W. Thereafter it moved on a broad curving path over the Atlantic, passing a short distance west of Bermuda on the 13th. Winds at Bermuda exceeded 100 m. p. h., and damage was reported as heavy. After passing Bermuda the hurricane continued its broad curve over the North Atlantic, passing south of Cape Race, Newfoundland, on the 15th. It is notable that for the second year in a row a hurricane has been traced to a point of origin over West Africa. During its 12-day history this hurricane traveled approximately 3,500 miles, or roughly the distance from New York to London.

VIII. *Florida hurricane of September 18-25.*—This most destructive hurricane of 1948 developed in the western Caribbean between Jamaica and Grand Cayman Island on September 18. It formed from an easterly wave that had been under observation since it passed through the Lesser Antilles on the 14th. After a center developed on the 18th, it moved very slowly, turned to a northerly direction, and passed over western Cuba with the center moving between Havana and Matanzas on the 20th. At this time it was a fully developed hurricane, with winds well over 100 m. p. h., and reports indicate that the city

of Matanzas suffered extensive damage. Some damage occurred at Havana where the wind reached 90 m. p. h. from the north. Press reports indicate that 10 persons were killed by the storm in Cuba and that property damage reached "several million dollars."

Leaving Cuba the hurricane crossed the Florida Straits and by noon of the 21st the center was very close to Key West and due east of the station. The lowest barometric pressure recorded on the Keys was 963.4 millibars (28.45 inches) observed at the Boca Chica Airport, 8 miles east-northeast of the Key West city office. The wind speed at this same station reached 122 m. p. h. before the anemometer was blown away. This was the highest reported in this hurricane but undoubtedly higher winds were experienced. Boca Chica was in the western portion of the calm center for a period of 15 minutes beginning at 11 a. m., September 21.

A tabular listing of lowest pressure, maximum wind, total rainfall, and miscellaneous meteorological data for selected stations in Florida is contained in TABLE I. Stations are arranged in a time sequence corresponding, as nearly as possible, to the order in which they were affected by this hurricane.

After leaving the Keys the center moved onto the mainland a short distance east of Everglades City, crossed Lake Okeechobee between Clewiston and Belle Glade and passed into the Atlantic at Jensen Beach near Stuart. By the time the Lake Okeechobee section was reached, wind velocities had been reduced to about 90 to 95 m. p. h., while on the Atlantic coast where the center passed to sea readings were slightly below hurricane force for sustained velocities, but with gusts above hurricane force. There was some intensification of the hurricane after it moved northeastward between Hatteras and Bermuda, finally reaching a point south of Newfoundland, on September 25.

Table 1.—Meteorological data for hurricane Sept. 18-25, 1948

Station	Date	Pressure <sup>1</sup>		Wind data						Rain-fall	Miscellaneous
		Low	Time	5-min. max.	Time	1-min. max.	Time	Gusts	Hours of gales <sup>2</sup>		
Dry Tortugas	21	29.17	11:00 a. m.	76	10:55 a. m.	78	10:58 a. m.		48		
Key West, WBAS	21	28.45	11:15 a. m.			<sup>2</sup> 122 NNW	12:50 p. m.	<sup>2</sup> 150	42		
Key West, WBO	21	28.73	11:30 a. m.	73 NW	12:07 p. m.	75 NW	12:08 p. m.		16	6.33	Lull ½ hour. Did not clear.
Sombrero Key	21	29.12	1:00 p. m.	120 SE	1:00 p. m.	120 SE	1:00 p. m.				
Tavernier	21	29.32		<sup>2</sup> 80 SE				<sup>2</sup> 90		6.02	Wind lulled to 12-18 m. p. h. for 10-15 minutes. 5.0-ft. tide.
Carysfort Reef	21	29.24	2:15 p. m.	74 ENE	7:20 p. m.	80 ENE	7:23 p. m.		44		
Everglades City	21					120 NNW					
Naples	22	28.99	1:15 a. m.	80 W	5:30 a. m.	86 W	5:30 a. m.	87	15	4.90	
Fort Myers	22	29.05	3:30 a. m.			50 NNW	5:30 a. m.	58	15	8.69	
Miami, WBO	22	29.11	4:42 a. m.	62 SE	12:35 a. m.	76 SE	(21) 2:43 p. m.	32			
						76 S	(22) 12:35 a. m.				
Miami, WBAS	22	29.09	5:15 a. m.	70 SSE	12:58 a. m.	75 SSE	12:56 a. m.	90	31	11.00	
Moorehaven	22	28.62	6:00 a. m.	60 NE	6:00 a. m.	79 NE	6:00 a. m.	29	29		Partial lull; 20 m. p. h., 9 a. m.
Clewiston	22	28.47	6:30 a. m.	84 ENE	5:04 a. m.	96 ENE	5:04 a. m.		19	10.07	No lull. Flooded to depth of 2 or 3 ft.
Lake Placid	22	29.15	8:45 a. m.	<sup>3</sup> 55 NW	10:30 a. m.	<sup>3</sup> 65 NW	11:00 a. m.	81		8.43	Wind shifted from east through north to northwest.
Belle Glade	22	28.54	8:00 a. m.	60 W	2:00 p. m.	60 W	2:00 p. m.			8.47	Lull about ½ hour 8-8:30 a. m.
Canal Point	22	28.50	8:30 a. m.	<sup>3</sup> 100 W	2:30 p. m.					10.00	Lull 10 minutes, 8:30 a. m., and another lull at 12 noon to 12:45 p. m.
Hillsboro Light	22	29.05	8:30 a. m.	83 NE	2:05 a. m.	87 NE	2:06 a. m.		39		
Okeechobee City	22	28.86	10:15 a. m.	44 NW	2:30 p. m.	76	2:30 p. m.		4	4.89	Lull 2-2:30 p. m.; shift from southeast to southwest.
Pahokee	22			<sup>3</sup> 70-80 NNW	3:00 p. m.	<sup>3</sup> 90-100	2-4 p. m.				Lull 8 a. m., ½ hour; lull again 11 a. m.; sky clear both lulls
West Palm Beach	22	28.85	8:45 a. m.			58 W	3:42 p. m.	84	23	9.04	
Stuart	22	28.51	12:30 p. m.	60 NW						6.36	Lull 2-3:30 p. m.; sky cleared; sun out.
Fort Pierce	22	28.82	12:30 p. m.	58 ESE	5:00 a. m.	58 ESE	5:00 a. m.		6		
Melbourne	22	29.02	2:27 p. m.	48 NNE	10:29 a. m.	52 NE		74	8	8.53	
Cocoa Beach	22			<sup>3</sup> 50 NNE	10:30 a. m.			<sup>3</sup> 60			Indian River highest in many years.
Vero Beach, WBAS	22	28.83	2:45 p. m.	55 NW	5:30 p. m.	<sup>3</sup> 80	5:06-5:30 p. m.	70-80		5.25	Wind lulled to 10-20 m. p. h., 2:30 p. m.
New Smyrna	22	29.36	2:00 p. m.			52 NE			6	2.25	
Drane Field (Lakeland)	22			40 N	10:35 a. m.	45 N	10:35 a. m.				
Lakeland, WBO	22	29.33	2:30 p. m.	24 NE	1:25 p. m.	29 NW	12:25 p. m.				
Orlando	22	29.27	1:45 p. m.	35 N	1:45 p. m.					5.71	Lightning to west 2-3 a. m., 2nd.
Titusville	22					<sup>3</sup> 40 NE					
Daytona Beach	22	29.34	4:28 p. m.	31 NNW	2:10 p. m.			52		2.09	Thunder heard a few times.
St. Augustine	22			48 NE	5:45 p. m.	63	5:45 p. m.		5		

<sup>1</sup> Pressure reduced to sea level.

<sup>2</sup> Over 38 m. p. h.

<sup>3</sup> Estimated.

night of September 24, the S. S. *Potrero del Llano* reported winds as high as 80 m. p. h. at latitude 20.4° N., longitude 96.7° W. The storm weakened during the 25th and by the morning of the 26th its remains had passed inland between Nautla and Vera Cruz, Mexico. Winds at Nautla during a large part of September 25 were 40-60 m. p. h. Nautla was the only coastal station that reported high winds.

IX. *Hurricane of October 1-6.*—This hurricane moved from Yucatan almost directly northward. Pressure had been abnormally low over Yucatan, Honduras, and Guatemala 2 or 3 days prior to October 1. During the night of September 30-October 1 a low pressure center passed into the Gulf of Mexico near Carmen, Mexico and increased to hurricane intensity by 10:45 a. m., October 2. The center moved inland near Freeport, Tex., during the night of October 3-4, and passed between the Airport and City Offices of the Weather Bureau at Houston, Tex., during the early morning of October 4. Winds were estimated at 135 m. p. h. 5 miles west of Freeport by the Brazos River Engineers. High tides were reported as follows: Velasco, 11.0 feet; Matagorda, 8.0 feet; Anahuac, 9.0 feet; Harrisburg (in Houston Ship Channel), 11.4 feet. Figure 3 shows the path of this hurricane over Texas. Heavy rains fell at many places. The heaviest reported was at Goodrich, Tex., where 14.50 inches fell during the storm.

Two lives were lost in this hurricane. The total damage reported amounted to \$6,700,000, of which more than four-fifths was to crops. The remainder was mainly to roads and oil rigs.

X. *Hurricane of October 12-19.*—Disturbed conditions were observed in the western Caribbean Sea on October 11 and 12, and these moved over extreme western Cuba during the night of the 12th without any evidence of a center. But on October 13 a closed circulation began forming over the extreme southeastern Bahamas in the vicinity of Great Inagua and Mayaguana. The strongest winds at this time were only 30-35 m. p. h. This center moved in a north-northeast direction and increased in intensity, and at noon of October 14 aircraft reconnaissance indicated a very small center of hurricane force. The north-northeastward movement carried the center some 200 miles west of Bermuda by October 16. The next day, when several hundred miles north of Bermuda, it was blocked by high pressure and moved very slowly during the following 2 days to a position a short distance south of Sable Island on October 19. During this time it took on extra-tropical character and began to spread out and dissipate.

The strongest winds were estimated at 80 to 90 m. p. h. over most of its path but reached 100 m. p. h. about the time it reached latitude 35° N. on October 16. No dam-

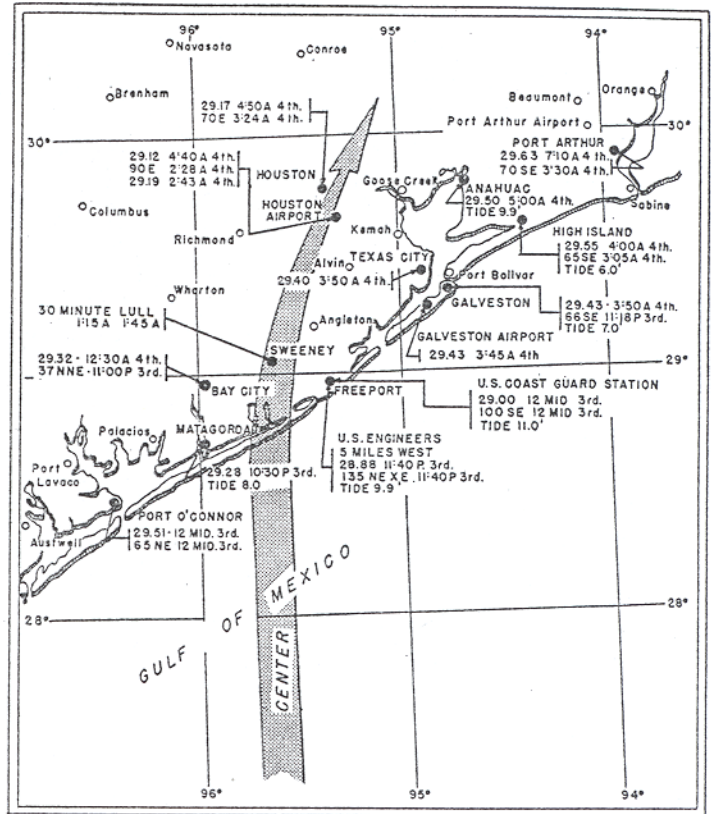


FIGURE 3.—Path of hurricane of October 1-6, 1949, as it passed inland over the Texas coast October 3 and 4. Plotted figures show extremes of wind velocity and pressure (inches) and the time of their occurrence. Maximum height of tide is shown for coastal stations.

age was reported as the strong winds occurred over the ocean.

XI. *Hurricane of November 3-4.*—The pressure began falling in the northwestern Caribbean Sea on November 2, and by morning of November 3 low pressure had become concentrated in the vicinity of Swan Island. A reconnaissance plane located a small center about 50 miles in diameter, perfectly formed with a well defined eye, about 30 miles east of Swan Island. The highest wind was estimated at 50 knots, and the lowest pressure, at 992.9 mb. (29.32 in.). It was described as very shallow in its organization. Earlier on November 3 a TACA airliner en route from San Jose to Havana had flown over the storm at 9,000 feet and described it very much as the reconnaissance plane had done. From this elevation, the entire system could be seen; the active part extended only 4,000 feet. During the night of November 3 it drifted south-southwestward into the northeastern tip of Honduras and dissipated. No damage was reported.