ANNUAL SUMMARY

Atlantic Hurricane Season of 1987

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ABSTRACT

The general overview of the 1987 hurricane season in the North Atlantic is presented together with detailed accounts of all named storms. In addition, an unnamed tropical storm and a tropical depression that required watches and/or warnings on the U.S. coastline are discussed.

1. Introduction

The tropical Atlantic remained relatively quiet in 1987, producing only four tropical storms and three hurricanes. Figure 1 presents the tropical storm and hurricane tracks while Table 1 contains the season statistics. Two of these systems, an unnamed tropical storm and Hurricane Floyd, struck the United States coastline. Three of the storms remained in the eastern half of the Atlantic basin and Hurricane Arlene moved eastward across the open waters of the Atlantic. Emily, the only major hurricane of the season (winds > 50 m s^{-1}) became the first hurricane in the Caribbean since Katrina in 1981.

One possible cause for the weak, quiet season could be due to the rather persistent vertical shear of the horizontal winds over much of the Atlantic basin. With the exception of Emily, all of the storms experienced strong shearing at some point in their existence. Only Arlene was capable of overcoming it, and finally reached minimal hurricane strength.

This was the first year since the three-year period of 1979–81 in which more than half of the named tropical cyclones had their start as tropical waves and reached depression stage while located south of latitude 20°N. Of the five tropical cyclones that formed south of latitude 20°N in 1987, only Hurricane Emily was capable of strengthening to major hurricane status. During the past five years the majority of the named tropical cyclones have had their origin in a baroclinic atmosphere that included cold lows.

Finally, the season was a rather uneventful one for the United States. Total damages in the United States resulting from the two tropical cyclones that struck the coastline amounted to only $8 million,* and there were no deaths. Thus, the 1987 season was the fourth since 1976 in which there were no United States hurricane deaths, and the damage figure was the least amount since 1962 when only $6 million occurred.

2. Individual storms

a. Unnamed storm: 9–17 August

In light of additional data and a year-end review, Tropical Depression Number Two in the northwest Gulf of Mexico was upgraded to a tropical storm.

The tropical wave that spawned the Unnamed Tropical Storm moved off the coast of Africa on 29 July. The system progressed westward across the tropical Atlantic along the southern perimeter of an extensive swath of dust that extended from Africa to the Bahamas. The wave had very little deep convection associated with it until just prior to crossing the Lesser Antilles. The southern extent of the wave moved into Central America on 7 August. The northern portion of the wave interacted with an upper cold low centered in the southwest Gulf of Mexico on 8 August.

The first visible satellite pictures on the morning of 9 August revealed that a low-level circulation had developed in the northwestern Gulf of Mexico just north of National Data Buoy Center (NDBC) buoy 42002 (26.0°N, 93.5°W), well to the north of a low-level circulation that had been noted the previous night. An upper-level anticyclone formed over the new surface center and provided substantial outflow for the developing system. The depression, with its distinctive tropical cloud pattern (Fig. 2), strengthened rapidly and became a tropical storm by 1800 UTC 9 August. Maximum sustained winds reported by the oil rigs in the area ranged from 16 to 22 m s^{-1}. The rig *EC 42B* reported a peak gust of 26 m s^{-1}.

The storm never became well-organized over the waters of the northwest Gulf of Mexico as it moved

* Figures adjusted to 1980 dollars.

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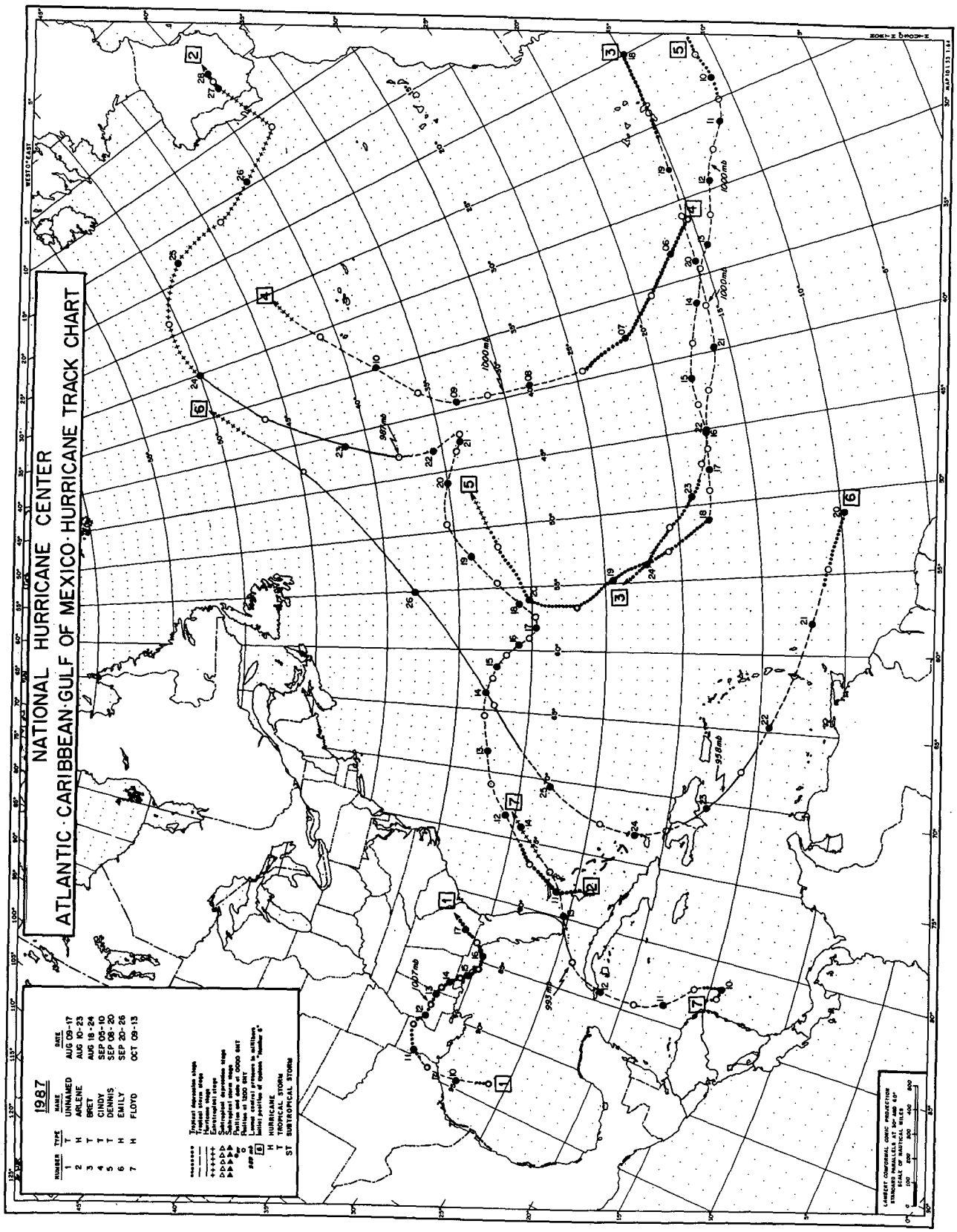

FIG. 1. Tracks of the 1987 tropical storms and hurricanes.

TABLE 1. 1987 Hurricane season statistics.

Number	Name	Type*	Dates**	Maximum sustained winds[a] ($m\ s^{-1}$)	Lowest pressure (mb)	U.S. damage ($ millions)	U.S. deaths
1	Unnamed	T	8/09–8/17	23	1007	7.4	
2	Arlene	H	8/10–8/23	34	987		
3	Bret	T	8/18–8/24	23	1000		
4	Cindy	T	9/05–9/10	23	1000		
5	Dennis	T	9/08–9/20	23	1000		
6	Emily	H	9/20–9/26	57	958		
7	Floyd	H	10/9–10/14	36	993	0.5	

* T: tropical storm, wind speed 17–32 m s^{-1}. H: hurricane, wind speed 33 m s^{-1} or higher.
** Date begins at 0000 UTC.
[a] Estimated maximum one-minute average surface wind speed.

toward the upper Texas coast. Most of the heavier showers and thunderstorms moved across the coastline hours in advance of the precipitation-free center of circulation.

The Unnamed Tropical Storm essentially produced no damage near its point of landfall on the upper Texas coast. However, after landfall this system produced 125 to 225 mm of rainfall over portions of the northern Gulf coastal states resulting in severe flooding and about $7.5 million in damages, primarily in Mississippi. There were no deaths directly attributable to the storm.

b. Hurricane Arlene: 10–23 August

Arlene began as a low-pressure center in the western end of a decaying frontal zone near Wilmington, North Carolina by 0000 UTC 8 August. After drifting southward into the Bahamas, the low-pressure center became a tropical depression at 1800 UTC on 10 August.

The depression then began to move toward the northeast in response to a trough off the United States east coast as the subtropical ridge elongated westward south of the depression. The depression was upgraded to a tropical storm at 2300 UTC 11 August based on reconnaissance reports of 23 m s^{-1} at a flight level altitude of approximately 450 m.

Tropical Storm Arlene tracked toward Bermuda in a broad trough of low pressure that extended to a deep low in the North Atlantic. The proximity of an upper level trough inhibited significant strengthening as the center passed about 90 km to the north of the island near 1500 UTC 13 August. Strongest winds observed at the Naval Air Station were 15 m s^{-1} with gusts to 22 m s^{-1}.

For the next four to five days, the general westerly steering currents weakened as an elongated ridge developed north of the storm. A short-wave trough initiated a northeast motion on 18 August, but the steering currents collapsed on 20 August, and the storm remained nearly stationary for 24 hours while located about 1300 km southwest of the Azores.

By 21 August, a surface ridge developed to the east of the storm and accelerated Arlene toward the north. During this time period, excellent outflow aloft developed over the storm, and on the basis of satellite interpretation Arlene was upgraded to a hurricane at 0600 UTC 22 August, with maximum winds of 33 m s^{-1} and a minimum surface pressure of 987 mb (Fig. 3). As the hurricane raced northeastward, it crossed over the colder waters of the North Atlantic and was downgraded to an extratropical storm by 0000 UTC 24 August.

The remnants of Arlene were tracked for several days thereafter and dissipated in south-central Spain on 28 August, after producing an August record rainfall of 31.8 mm in Rota, Spain.

c. Tropical storm Bret: 18–24 August

A well-organized tropical disturbance moved off the northwest African coast on 17 August. Early the next day, it became the fifth tropical depression of the 1987

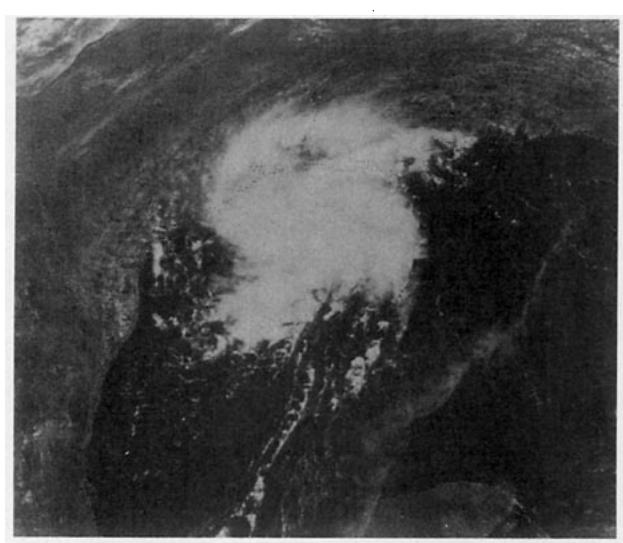

FIG. 2. Visible satellite picture of the Unnamed Tropical Storm off the Texas coast at 1701 UTC 9 August 1987.

hurricane season. Later in the day, on 18 August the ship S.S. *Columbus Canterrury* reported winds of 18 m s^{-1} with a surface pressure of 1004.5 mb while located just west of the Cape Verde Islands. This observation and later satellite imagery resulted in the depression being upgraded to Tropical Storm Bret at 1800 UTC 18 August.

The storm moved on a westerly course for the next several days and, based upon satellite imagery, reached its maximum strength of 1000 mb with strongest winds of 23 m s^{-1} by 0600 UTC 20 August. During the period 21–23 August, Bret began to encounter upper-level wind shearing from a 200 mb trough west of the storm causing it to be downgraded to a tropical depression by 1800 UTC 22 August.

A weakness in the mid-Atlantic ridge of high pressure permitted the weakening cyclone to turn toward the northwest. By the morning of 24 August, a low-level circulation was not evident by satellite pictures or ship data, and the depression was reduced to a tropical wave.

d. Tropical storm Cindy: 5–10 September

The second of three African waves that developed into eastern Atlantic tropical storms moved off the African coast as an area of disturbed weather on 1 September. A major trough (surface to 200 mb) in the mid-Atlantic began to dig southward on 4 September. The westward-moving disturbance responded to the weakness in the pressure field and began a northward turn prior to reaching 40°W.

The disturbance became a depression on 5 September and was upgraded to Tropical Storm Cindy on 7 September. Based on satellite imagery, Cindy reached its maximum strength of 1000 mb on 8 September. Thereafter, strong shearing forced most of the storm's deep convection to the north of the center, exposing the low-level center of circulation. The weakening storm began accelerating as it passed just to the northwest of the Azores on the morning of 10 September and produced sustained winds of 15 m s^{-1} on the island of Flores. By the afternoon of 10 September, Cindy became extratropical and was absorbed by a large North Atlantic storm on 11 September.

e. Tropical storm Dennis: 8–20 September

Dennis, the last of the eastern Atlantic tropical storms of 1987, was first detected as a low-level circulation near the African coast on 8 September. Based on satellite imagery, the system was classified as a depression later that day. The depression moved westward, passing some 550 km south of the Cape Verde Islands on 10 September, and satellite intensity estimates indicated that it attained minimal tropical storm strength at this time. Tropical Storm Dennis tracked toward the west-northwest for the next several days, reaching its estimated maximum strength of 1000 mb and 23 m s^{-1} near 1800 UTC 11 September.

Thereafter, strong shearing near the 200 mb level destroyed most of the organized deep convection associated with the storm, and it began to weaken. Late in the day on 17 September, when Dennis was nearly 1100 km east of Antigua, Air Force reconnaissance investigated the storm and found that it had weakened to a tropical depression with strongest winds of 11 m s^{-1} and a central pressure of 1011 mb.

At this same time, the center shifted abruptly to the north in an almost discontinuous manner, suggesting a new center may have formed. In any case, the depression turned northward toward a weakness in the Atlantic subtropical high pressure ridge, and by 20 September, merged with an extratropical cyclone in the central North Atlantic Ocean.

f. Hurricane Emily: 20–26 September

1) GENERAL DESCRIPTION

Emily began as a disturbance on the intertropical convergence zone (ITCZ) on 13 September. The disturbance was the very next system to move off the African coast behind the tropical wave that produced Dennis. The disturbance remained weak and tracked at a very low latitude (5° to 10°N) on its journey across the tropical Atlantic. On 20 September, the system became detached from the ITCZ as a depression while located about 1100 km southeast of the Windward Islands. Conditions were favorable for strengthening with an anticyclone at 200 mb centered slightly to the north of the system. When an Air Force reconnaissance aircraft arrived in the area at 2141 UTC 20 September, the surface winds were estimated to be near 22 m s^{-1} and thus, the depression had already reached tropical storm status.

Tropical Storm Emily moved into the Windward Islands with little change in strength and was located directly over St. Vincent near 1200 UTC 21 September. By this time, the weakness in the Atlantic subtropical ridge that had allowed Tropical Depression Dennis to escape to the north was elongating westward and reinforced a general west-northwestward motion for Emily.

As Emily entered the Caribbean, its upper-level outflow became more pronounced, and the storm began to strengthen rapidly. Emily reached hurricane strength when located about 320 km south of Puerto Rico. The hurricane then was on the southwest side of a 200 mb anticyclone. The subtropical high centered northeast of Puerto Rico began drifting eastward at the surface relaxing the pressure gradient ahead of the hurricane. Emily reached its minimum pressure of 958 mb and strongest winds of 57 m s^{-1} about nine hours before the center crossed the southwest coast of the Dominican Republic. A satellite picture of the hurricane at its maximum strength is shown in Fig. 4, while a cross-sectional view of Emily from the tail radar of NOAA's WP3D aircraft is presented in Fig. 5.

The eye of the hurricane crossed the coast between

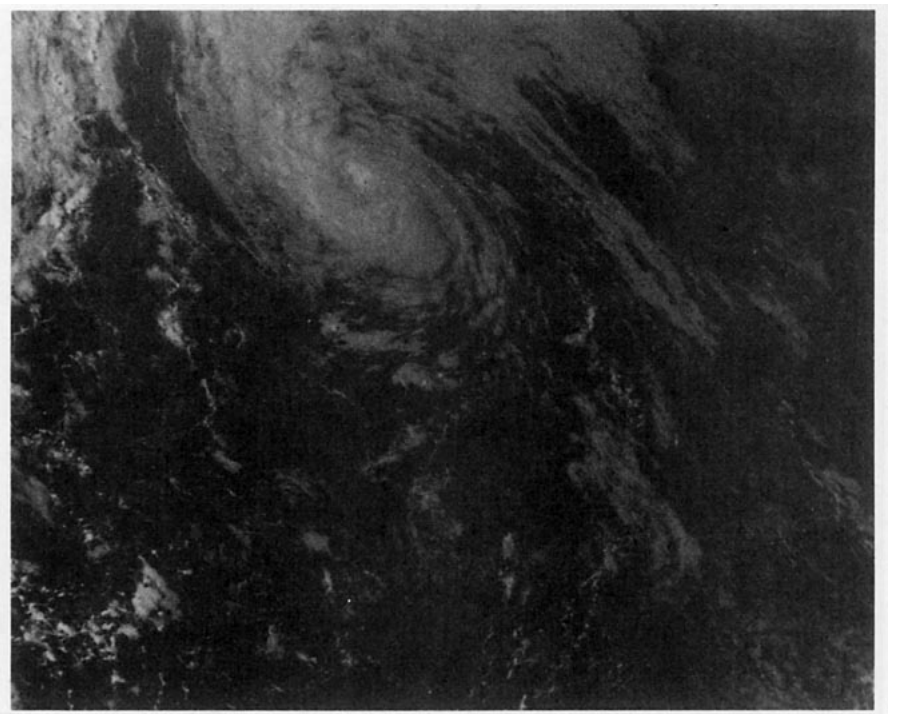

FIG. 3. Visible satellite picture of Hurricane Arlene over the North Atlantic at 1931 UTC 22 August 1987.

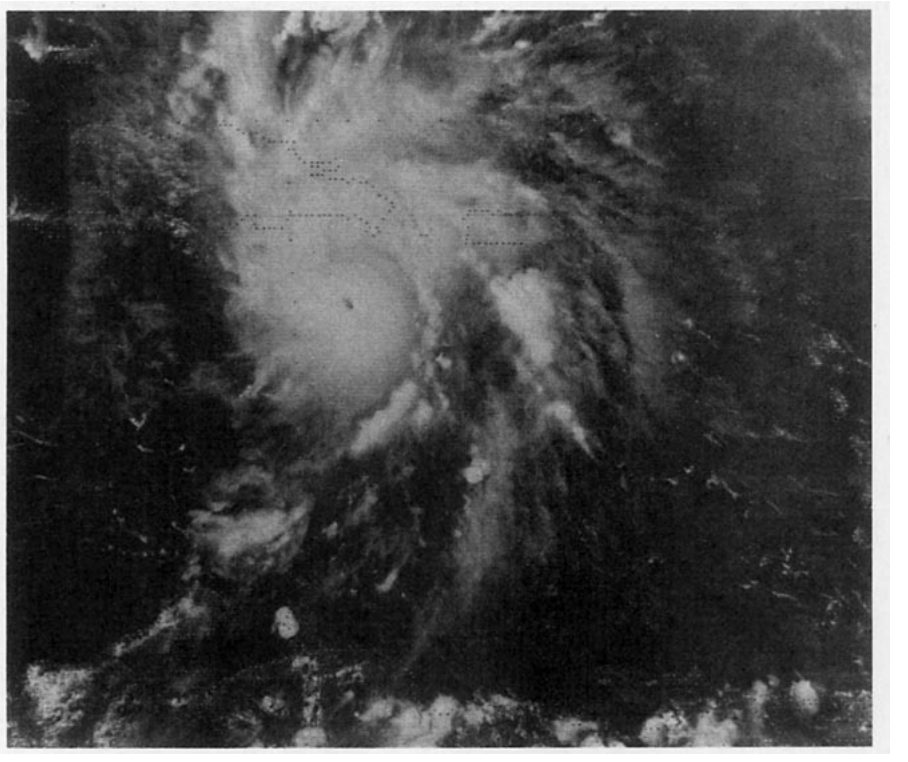

FIG. 4. Visible satellite picture of Hurricane Emily south of the Dominican Republic at 1831 UTC 22 September 1987.

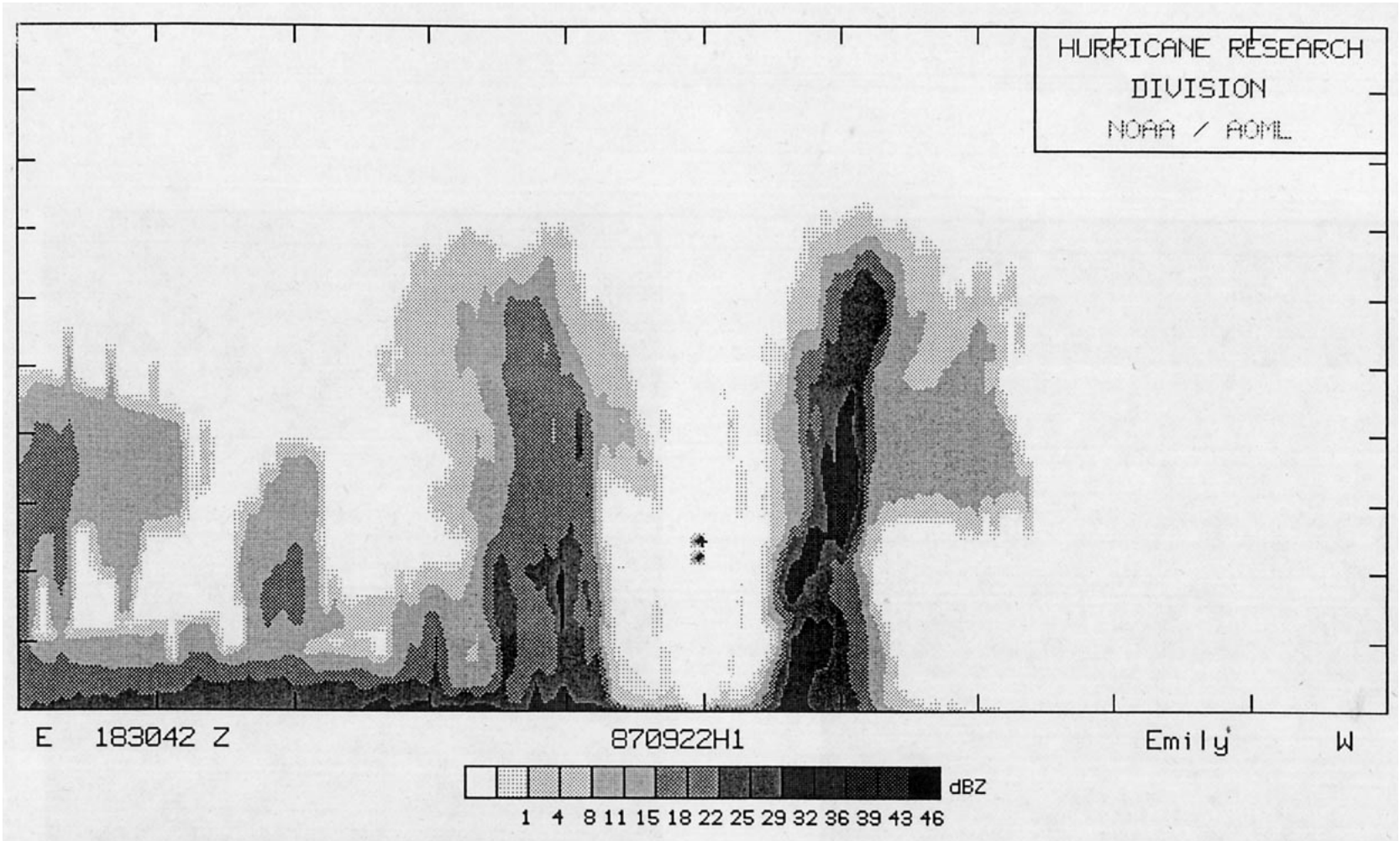

FIG. 5. East–west vertical cross section of radar reflectivity (dBZ), from the tail radar on board the NOAA WP-3D aircraft, across the eye of Hurricane Emily at 183042 UTC, 22 September 1987. The domain of the cross section is 162 × 20 km, with tic marks every 16.2 km horizontally and 2 km vertically. The aircraft is positioned in the center of the eye at 5 km altitude (denoted by the +). The eye diameter is roughly 27 km, and the eyewall extends to 14 km in height. The most intense reflectivity (40 dBZ) was along the west side of the eyewall.

Barahona and Bani with a central pressure of 965 mb near 0300 UTC 23 September. Emily weakened rapidly over the mountains of Hispaniola, and the center emerged off the north coast of Haiti near Cap-Haitien at 1200 UTC 23 September as a tropical storm with a central pressure of 1002 mb and strongest winds of 28 m s^{-1}.

Little change occurred in the storm from 1200 UTC 23 August to 0000 UTC 25 August as it passed over the southeast Bahamas on its northward track. Initially, it was anticipated that the storm would regain hurricane status as it moved over the warm Atlantic waters in advance of an approaching trough in the westerlies. That did not occur for more than 24 hours, and ultimately, the system became embedded in strong, southwesterly flow. By then, it appeared that the frontal system to the northwest of Emily was gradually being drawn into the circulation implying that Emily would be losing its tropical characteristics. As a result, weakening was forecast to accompany the acceleration on a track in the general direction of Bermuda.

At 0601 UTC 25 September, an Air Force reconnaissance aircraft reported a central pressure of 985 millibars and winds of 39 m s^{-1} at a flight level of 450 m while located about 440 km southwest of Bermuda. The pressure at 0000 UTC 25 September had been 999 mb. The storm was not only accelerating faster than expected but had deepened rapidly at 2.3 mb h^{-1} during that six-hour period. Emily was immediately upgraded to a hurricane.

Hurricane Emily, a very small system, continued to strengthen while racing toward Bermuda. The center passed directly over Bermuda at 1145 UTC 25 September, with a central pressure of 973.6 mb and sustained winds of 39 m s^{-1} with gusts to 52 m s^{-1} recorded at Kindley Field. Figure 6 shows a satellite picture of Emily passing over Bermuda.

The forward speed of Emily was near 20 m s^{-1} when it passed over Bermuda. After passing Bermuda, the hurricane continued to accelerate to a forward speed in excess of 29 m s^{-1}. Table 2 shows a comparison of the fastest moving Atlantic hurricanes since 1886 within selected five-degree segments of latitude. Emily was the fastest moving hurricane, regardless of latitude, of any known hurricane in this century. On the afternoon of 26 September with a forward speed near 31 m s^{-1}, the weakening cyclone became extratropical as it sped northeastward over the colder waters of the North Atlantic.

2) DATA

Tropical storm force winds of 23 m s^{-1} with gusts to 25 m s^{-1} were observed at St. Lucia as Tropical Storm Emily passed through the Windward Islands. The center of Emily passed directly over St. Vincent with a minimum pressure near 1005 mb.

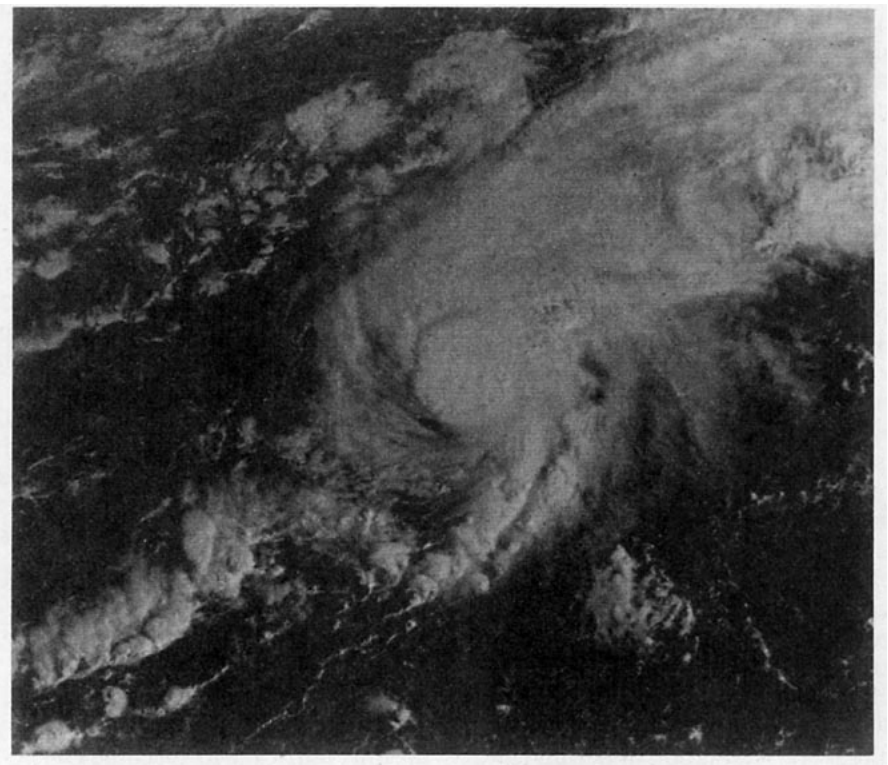

FIG. 6. Visible satellite picture of Hurricane Emily passing over Bermuda at 1231 UTC 25 September 1987.

TABLE 2. Maximum hurricane forward motion greater than 18 meters per second during the 102-year period 1886–1987.

Latitude (°N)	Period (h)	Not extratropical at end of period			Extratropical at end of period		
		Year	Storm	Speed ($m\ s^{-1}$)	Year	Storm	Speed ($m\ s^{-1}$)
30.0	6		None			None	
	12		None			None	
30.1–35.0	6	1987	EMILY	24	1956	GRETA	23
	12	1987	EMILY	25	1927	SEP 29	26
35.1–40.0	6	1987	EMILY	29	1927	SEP 29	34
	12	1987	EMILY	27	1935	LABOR DAY	22
40.1–45.0	6	1987	EMILY	31	1970	OCT 17	28
	12	1987	EMILY	30	1987	EMILY	31
45.1–50.0	6	1951	FOX	28	1987	EMILY	31
	12	1961	DEBBIE	22	1954	OCT 6	30
50.1–55.0	6	1969	DEBBIE	23	1959	HANNAH	27
	12	1961	DEBBIE	22	1975	GLADYS	28

During the 24 hour period from 1800 UTC 21 September to 1800 UTC 22 September, the central pressure in Emily dropped from 1002 to 958 mb—a total of 44 mb or about 1.83 mb h^{-1}. A pressure drop in excess of 1.75 mb h^{-1} for 24 hours is considered to be rapid deepening in typhoons (Holliday and Thompson, 1979).

The regularly reporting synoptic stations on Hispaniola did not observe the most severe conditions associated with landfalling Hurricane Emily. Ham operators did report gusts to 26 m s^{-1} at Herrera Airport, but the estimated maximum winds of 49 m s^{-1} at landfall most likely occurred in the data void region west of Santo Domingo.

As Tropical Storm Emily moved through the Turks and Caicos Islands, ham operators reported sustained winds of 26 m s^{-1} at Turks Island.

The most severe meteorological conditions were observed on Bermuda. A copy of the barograph trace showing a minimum pressure of 973.6 mb is presented in Fig. 7, and the accompanying wind record showing sustained 75 knots (39 m s^{-1}) with gusts to 101 knots (52 m s^{-1}) is presented in Fig. 8. Notice that winds of 34 knots (17 m s^{-1}) or more occurred for a period of less than two hours, while hurricane force winds occurred only during two ten-minute periods. The primary part of the hurricane had departed within two hours after the onset of tropical storm force winds.

Rainfall, associated with Emily, was generally light. Maximum reported amounts ranged from 26.9 mm at Barbados to 116.6 in Santo Domingo. However, probably more than 116 mm of rain fell in the mountainous area of Hispaniola as the hurricane crossed the island. The rain gage at the Naval Air Station in Bermuda was destroyed, but little rainfall fell there due to the rapid movement of Emily as it crossed the island.

3) DEATHS AND DAMAGE

Emily claimed a total of three lives and produced over $75 million in damages. Barbados received about $100 thousand in damage which occurred in the form of roof damage, downed utility lines and uprooted trees. There was considerable damage to the banana industry on St. Vincent. Power lines and trees were blown down, and 76 mm of rain in six hours produced widespread flooding throughout the island. Emily seriously hurt the farming industry in the Dominican Republic, especially in the southwest and central sections, where damage was estimated as high as $25 million. About 5000 people were forced from their homes and three people were officially listed as dead.

There was minimal damage in the Bahamas. Initial estimates of damage in Bermuda were as high as $50 million. About 60 to 70 percent of the insurance claims were for housing damage. Two hundred homes had major roof damage. Many cars and boats experienced extensive damage. From 80 to 90 percent of all trees were downed.

A side note of interest was the thousands of migrating birds that were caught up in the hurricane and found refuge on Bermuda. The flocks included more than 10 000 bobolinks from North America on their way to South America as well as thousands of Connecticut warblers.

g. Hurricane Floyd: 9–13 October

1) GENERAL DESCRIPTION

Floyd, the third hurricane of the 1987 season, was the only hurricane to affect the United States coastline. It was a weak, dissipating hurricane at the time it passed over the Florida Keys. However, it was the first October

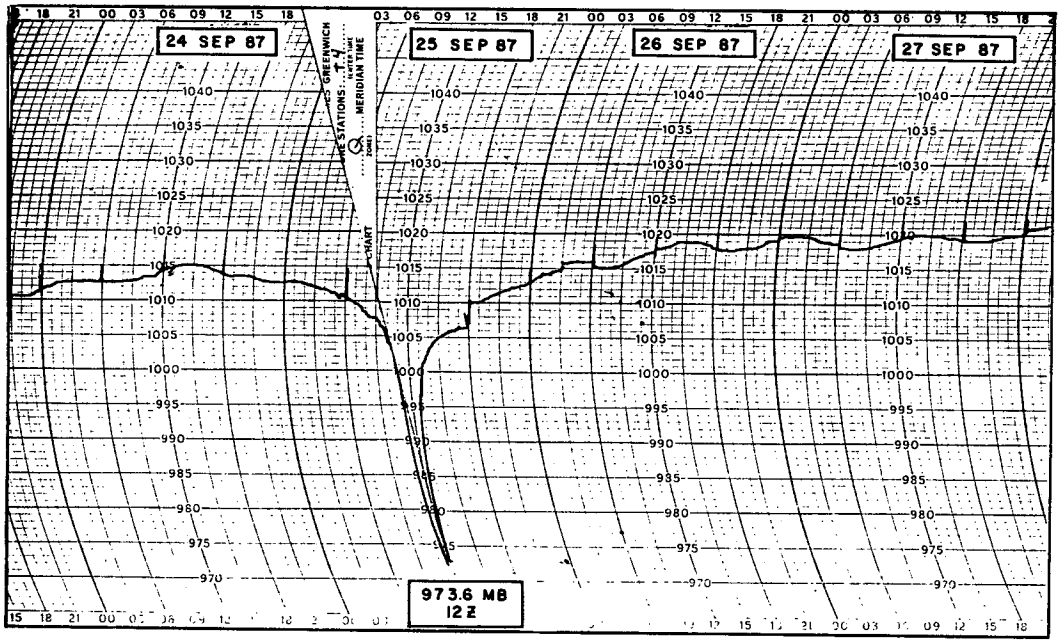

FIG. 7. Barograph trace of Emily recorded at Kindley Field, Bermuda as Emily passed directly over the island.

hurricane in a record hiatus of 19 years to strike the Sunshine State.

Floyd began as a broad area of low pressure over the Gulf of Honduras on 5 October. After meandering in a general southeastward direction for the next several days, the system became better organized on 9 October and was upgraded to a tropical depression when it was located just off the coast of Nicaragua. A building high-pressure ridge over the eastern Caribbean and western Atlantic on 9 October turned the depression toward the north by 0000 UTC 10 October. A 200 mb anticyclone gradually developed over the depression and it strengthened to a tropical storm by 1200 UTC 10 October.

The approach of a low pressure trough in the westerlies over the Gulf of Mexico on 11 October steered Floyd on a course across the western tip of Cuba. Early on 12 October, a reconnaissance aircraft measured winds near 36 m s^{-1} at a flight level of 450 m, and Floyd was upgraded to a hurricane at 1200 UTC. Later that day, the approaching trough from the northwest initiated a low pressure system along a stationary front across central Florida. This development displaced the warm moist inflow into Floyd with cooler, dry air, and the hurricane turned to a more easterly course. As a result, the hurricane soon lost most of the deep convection around the center and made it nearly impossible to follow the center by satellite and radar. How-

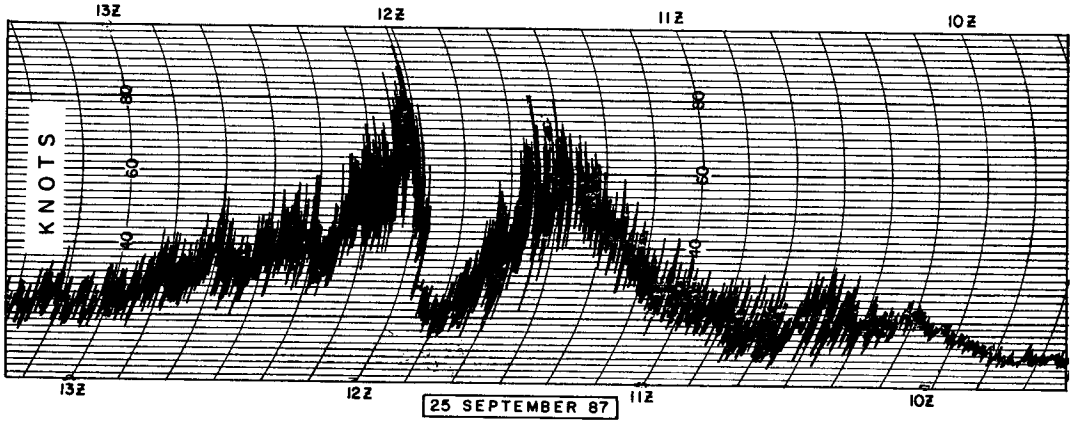

FIG. 8. Wind speed trace of Emily recorded at Kindley Field, Bermuda as Emily passed directly over the island.

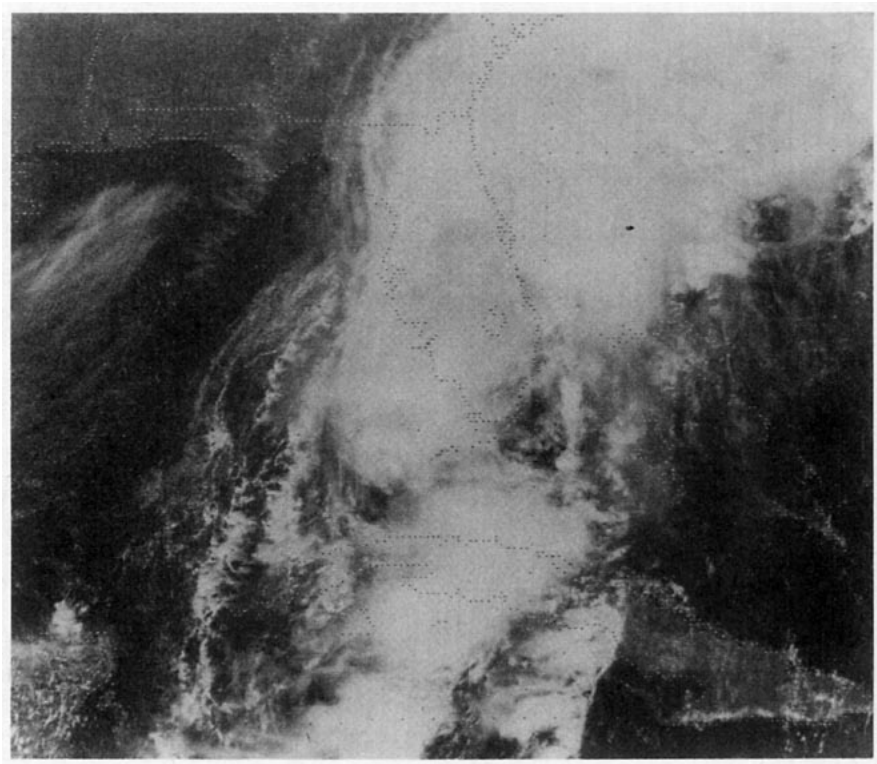

FIG. 9. Visible satellite picture of Hurricane Floyd near Key West, Florida at 1706 UTC 12 October 1987.

ever, surface observations and aircraft data indicated that the center of the weakening hurricane moved toward the east northeast through the Florida Keys and passed south of the Miami area on the evening of October 12 as a disorganized, weakening system. Floyd was downgraded to a tropical storm at 0000 UTC 13 October while its center was located about 60 to 70 km south southeast of Miami.

By the morning of 13 October, Tropical Storm Floyd was located just northeast of the northern Bahamas and had begun to merge with the low pressure center that had been located over central Florida the previous day. The developing extratropical system, in combination with a second large high pressure center located over Ohio, produced northeast winds of 18 to 23 m s^{-1} over the coastal and offshore waters from the mid-Atlantic states to central Florida.

2) DATA

Floyd barely attained hurricane strength and remained a minimal hurricane for a period of only 12 hours. The strongest winds measured by reconnaissance aircraft were 37 m s^{-1} on the morning of 12 October. Figure 9 shows the poorly organized hurricane at its lowest pressure (993 mb) while located near Key West. The aircraft found that the area of maximum winds remained south of the center over the Florida Straits during the entire passage of the hurricane through the Florida Keys. There were no official reports of hurricane force winds in the Keys even though the center passed directly over this area. However, there was an unofficial report of hurricane-force gusts to 42 m s^{-1} at Cudjoe Key and numerous other reports of gusts in the 29 to 33 m s^{-1} range.

The only significant storm tide occurred on the Florida Bay side of the lower and middle Keys. Strong northerly winds following passage of Floyd's center produced tides one meter above normal. No significant flood damage was reported.

Most of the rainfall associated with Floyd occurred due to the interaction of the hurricane's circulation with a frontal trough across central Florida. Amounts of 50 to 100 mm fell across portions of south Florida except for a band of 125 to 225 mm between Naples and Fort Pierce. Rainfall that could be directly attributed to Floyd's circulation was quite small. Table 3 contains a number of selected observations from Hurricane Floyd.

3) DEATHS AND DAMAGE

There were no injuries or deaths that can be directly attributed to Floyd. Damage totaled nearly $0.5 million. A tornado in the Keys caused nearly $80 thousand in damages, while damage to unsecured objects, trees

TABLE 3. Selected observations of Hurricane Floyd, October 1987.

Location	Minimum sea level pressure		Maximum surface wind speed (m s^{-1})			Storm surge† (m)	Rain†† (mm)
	Pressure (mb)	Time (UTC 12 Oct)	1-min average	Peak gust	Time (UTC 12 Oct)*		
Florida							
Key West WSO	994.6	1900	21	30	1849		83.3
Duck Key			26	31	2157		
Conch Key	992.6	1900					
Miami WSO	999.3	2050	15	17	1330		60.7
Miami Beach			12	24	2250		70.1
Natl. Hur. Cntr.			16	18	2139		
Ft. Lauderdale			18		2147		54.1
North Dade							101.1
Hollywood							75.4
Tamiami Airport							32.3
Homestead AFB							50.6
Clewiston							58.7
Naples							132.1
W. Palm Beach WSO			14	22	1755		74.2
Vero Beach FSS				18			95.8
Kennedy Space Cntr.			10	15			74.9
Brevard CD			15	22			76.2
Patrick AFB			10	17			72.1
Melbourne FSS			11	17			78.7
Ft. Myers FSS	1002.4	1900	11	23	1253		122.7
Tampa WSO	1005.1	1900	07	11	1239		32.5

* Time of 1-min wind, except when only a gust is given.
† Unofficial reports of tide heights 1 m above normal on the north side of the middle and lower Keys.
†† Storm total.

and utility lines accounted for an amount in excess of $300 thousand. Crop damage in Dade County was difficult to estimate but was probably less than $100 thousand.

h. Tropical depression number 14: 31 October–4 November

Late in October, a tropical depression formed in the western Caribbean and tracked to the northwest toward Florida in a manner very similar to Floyd. However, unlike Floyd, the system remained a depression.

Flash flood warnings were issued for Jamaica which received in excess of 254 mm of rainfall from the depression as the center passed to the west of the island. Unofficial reports indicate that six people lost their lives there in the flooding.

A tropical storm watch was issued for the middle and lower Florida Keys at 1600 UTC on 1 November as the depression approached that area. A second tropical storm watch was issued for the Florida southwest coast at 1600 UTC on 3 November. However, the depression remained weak and disorganized as its center passed to the west of Key West on 3 November. By midday on 4 November, the remnants of the depression merged with a weak extratropical low pressure center over the northern Florida peninsula and accelerated toward the northeast.

A line of heavy thunderstorms moved through the lower Keys on the night of 2 November and the predawn hours of 3 November, creating wind gusts of 31 m s^{-1}. Elsewhere in Florida, there were no reports of any severe weather.

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