

TROPICAL STORM CHRISTINE
AUGUST 25-SEPTEMBER 4

THE DISTURBANCE WHICH PRODUCED CHRISTINE LEFT AFRICA ON AUGUST 25 AS AN IMPRESSIVE SYSTEM-ALREADY A DEPRESSION. UNLIKE MANY AFRICAN DISTURBANCES WHICH PRODUCE TROPICAL STORMS, ITS PASSAGE 300 MILES TO THE SOUTH OF DAKAR, SENEGAL WAS BARELY REFLECTED IN THE LATTER'S UPPER AIR SOUNDINGS.

SATELLITE PICTURES ON THE 28TH INDICATED THE SYSTEM WAS PROBABLY OF MINIMAL TROPICAL STORM STRENGTH. THIS WAS CONFIRMED LATER THAT DAY BY THE GERMAN CARGO SHIP STEINFELS (DEBP) WHICH REPORTED WINDS OF 30 TO 35 KNOTS VEERING FROM NORTHEAST TO SOUTH WHILE PASSING SOME DISTANCE EAST OF THE CENTER. BECAUSE OF THE MARGINAL STORM INTENSITY AND UNFAVORABLE VERTICAL WIND SHEARS AND BELOW NORMAL SEA SURFACE TEMPERATURES TO THE WEST, THE FIRST ADVISORY ON CHRISTINE WAS NOT ISSUED UNTIL LATE ON THE 30TH. ON THAT DAY A MILITARY RECONNAISSANCE AIRCRAFT FOUND A SURFACE PRESSURE OF 1007 MB AND MAXIMUM SUSTAINED WINDS OF 45 KNOTS ABOUT 1000 MILES EAST OF TRINIDAD.

THE STORM HAD BEEN MOVING WESTWARD AT 15 KNOTS BUT DECELERATED TO 10 KNOTS WHILE TURNING TO THE WEST NORTHWEST AND SLOWLY INTENSIFYING DURING THE NEXT 48 HOURS. LATE ON SEPTEMBER 1 THE LOWEST DROPSONDE SEA LEVEL PRESSURE OF 999 MB WAS OBTAINED, BUT TWO EXTRAPOLATED PRESSURES OF 996 MB WERE REPORTED DURING THE NIGHT. THE MAXIMUM SUSTAINED WIND OF 62 KNOTS FROM THE EAST WAS RECORDED BY RECONNAISSANCE AIRCRAFT EARLY ON THE 2ND AT FLIGHT LEVEL OF 700 MB WITH SURFACE WINDS ESTIMATED AT THE THRESHOLD OF HURRICANE STRENGTH. DURING THIS INTENSIFICATION PERIOD THE UNFAVORABLE VERTICAL SHEARS IN ADVANCE OF THE STORM HAD DECREASED.

GALE WARNINGS AND A HURRICANE WATCH WERE ISSUED AT NOON EDT ON THE 2ND FOR THE NORTHERN LEEWARD ISLANDS OF GUADELOUPE, DESIRADE, ANTIGUA, AND BARBUDA WHEN THE STORM WAS 300 MILES EAST OF GUADELOUPE. GALE WARNINGS WERE EXTENDED SOUTHWARD TO DOMINICA LATER IN THE DAY FOR A RATHER BRIEF PERIOD.

THE STORM BEGAN TO WEAKEN LATE ON THE 2ND AND SATELLITE PICTURES ON THE MORNING OF THE 3RD SHOWED THE STRONG VERTICAL SHEARS WHICH HAD EXISTED EARLIER WERE BEING RE-ESTABLISHED. AS A CONSEQUENCE THE LOW LEVEL CIRCULATION WAS SEPARATED FROM THE CONVECTIVE SYSTEM.

CHRISTINE WAS BARELY OF TROPICAL STORM STRENGTH AS IT ENTERED THE NORTHERN LEEWARD ISLANDS NEAR ANTIGUA AROUND MIDDAY OF THE 3RD. IT PICKED UP FORWARD SPEED TO 15 KNOTS ON THE 4TH WHILE DEGENERATING INTO A TROPICAL WAVE.

HEAVY THUNDERSQUALLS MOVED INTO THE LEEWARD ISLANDS EARLY ON THE 4TH AND SPREAD WESTWARD TO PUERTO RICO LATER THAT DAY. WIND GUSTS TO 49 KNOTS OCCURRED AT SAN JUAN DURING THE LATE MORNING CAUSING MINOR DAMAGE OVER EASTERN PUERTO RICO. ONE PERSON DIED WHEN ELECTROCUTED BY A FALLEN POWER LINE. HEAVY RAINS UP TO 9½ INCHES IN SOUTHEASTERN PUERTO RICO CAUSED MINOR FLOODING. SIMILAR CONDITIONS LIKELY PREVAILED OVER THE VIRGIN AND NORTHERN LEEWARD ISLANDS BUT NO DETAILS WERE AVAILABLE AT THE TIME OF THIS REPORT.

THE WAVE CONTINUED WESTWARD AND WEAKENED, LOSING ITS IDENTITY UNDER AN UPPER COLD LOW ON THE 6TH.

PJH

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PRELIMINARY BEST TRACK

DATE	TIME	LAT.	LONG.	CLASS.	PRESSURE (MB)	MAX. WIND (KT)	MOVEMENT
25	12	11.0	14.0	DEPRESSION			
26	00	10.8	16.4				
	12	10.5	19.0				255/12
27	00	10.5	21.0				
	12	10.5	24.0				270/15
28	00	10.5	27.0				
	12	10.5	30.0	STORM		40	270/15
29	00	10.3	33.5				
	12	10.2	37.0				265/17
30	00	10.1	39.8				
	12	10.0	41.8				285/13
31	00	10.8	44.3				
	06	11.2	45.3				
	12	11.8	46.4				300/13
	18	12.5	47.8		1003		
01	00	13.2	49.2				
	06	13.7	50.7				
	12	14.3	52.3		1002		285/10
	18	14.5	53.3				
02	00	14.7	54.4		999	50	
	06	14.9	55.5		996		
	12	15.2	56.8			62	290/10
	18	15.3	57.7				
03	00	15.6	58.6		1004		
	06	16.0	59.5				
	12	16.4	60.3		1008		295/10
	18	16.8	61.6	DEPRESSION			
04	00	17.1	62.7		1011		
	06	17.7	63.8				
	12	18.4	65.0				300/15
	18	19.0	66.2				

No casualties or significant damage have been attributed to Alice.

Hurricane Brenda, 18-22 August

1973

The disturbance which eventually developed into Brenda moved westward off the African coast south of Dakar, Senegal, on 9 August. The disturbance weakened after leaving the coast, moving across the Atlantic as an inverted-V tropical wave. The first signs of development occurred on the 13th when a large area of showers and thunderstorms developed over the Lesser Antilles. This area of disturbed weather became more concentrated as the system moved to the western Caribbean during the next three days. A sharp amplitude upper and middle tropospheric trough had preceded the convection by about 300 mi. East-northeast winds of 40 to 60 kt at middle tropospheric levels were reported by several stations in advance of the trough. Satellite pictures on the 17th revealed the convection had consolidated into a concentrated, nearly circular pattern, and the 850-mb wind at Kingston, Jamaica, shifted to southeasterly 55 kt at 1200 GMT. Thickness values indicated the system was quite warm, and Grand Cayman gave evidence of strong convection by recording over four inches of rain on the 17th.

A ship near 21N, 84W reported 45 kt southeast winds and 18-ft seas that evening, suggesting that a low center was developing. A NOAA-2 infrared satellite photograph at 0117 GMT 18 August also suggested formation of a low center. The next morning a ship just south of Cape San Antonio, Cuba, reported winds shifting from northeasterly 50 to 60 kt to southeasterly 45 kt accompanied by 20-ft seas. A reconnaissance aircraft reported winds nearing hurricane force during the afternoon, and the central pressure dropped to 992 mb shortly before the center moved inland 30 mi north of Cozumel, Mexico, during the early evening.

The center passed directly over Merida 24 hours later, and was turned southwestward into the Bay of Campeche on the 20th by a strong ridge of high pressure building over Texas and Mexico. Rapid intensification occurred after the center moved offshore. ATS-3 satellite pictures revealed an eye at midday, and a reconnaissance aircraft reported a central pressure of 977 mb and maximum sustained winds of 70 kt about 0000 GMT 21 August. At the same time an unidentified ship north of the center reported hurricane force winds of 65 kt from the northeast, one of two ship observations of hurricane force winds during the 1973 hurricane season. It is likely that further intensification took place prior to landfall 30 mi west of Carmen early on the morning of the 21st. Rapid weakening occurred over land, and the system was downgraded to a depression by 0000 GMT 22 August.

The turn of Brenda to the southwest and south was very unusual for an August storm. Brenda was the first hurricane of record to affect the southeast coastal

sections of Campeche Bay by moving onshore from the Gulf of Mexico. The only other tropical cyclones of storm intensity to move ashore in the Carmen-Campeche area occurred in May 1933, and October 1922 and 1936.

Carmen reported the highest sustained wind by a land station—45 kt with gusts to 50 kt, but hurricane force winds undoubtedly occurred near the center. Gusts to gale force were observed as far west as Vera Cruz. Earlier, Cozumel and Merida had experienced winds of minimal gale force.

Ten persons were killed in coastal towns as widespread tidal flooding occurred from Vera Cruz to Campeche. The town of Campeche was 80% flooded, the worst in 25 years. The hurricane destroyed 50% of the houses in coastal municipalities of the state of Tabasco, leaving 2000 persons homeless. Another 2000 persons lost their homes in Carmen.

The press mistakenly associated widespread damage over large portions of Mexico with Brenda. Prior to the arrival of this storm, a prolonged three-month rainy period had caused considerable flooding damage over central Mexico; and this damage was enhanced by an earthquake along the southeast Mexican coast west of Brenda's landfall.

The Greek freighter *Yucatan* was crippled by Brenda when caught by the unexpected turn to the south. In addition, Brenda terminated the almost-completed Acali Raft Experiment of human endurance, which had departed from the Canary Islands on 12 May.

c. Tropical storm Christine, 25 August-4 September

The disturbance which produced Christine left the west African coast as a strong depression on 25 August. Unlike many African disturbances which produce tropical storms, its passage 300 mi to the south of Dakar, Senegal, was barely reflected in the latter's upper air soundings.

Satellite pictures on the morning of the 28th indicated the system was probably of minimal tropical storm strength and later that day the German cargo ship *Steinfels* reported winds of 30 to 35 kt veering from NE to S, while passing some distance east of the center. Except for the ephemeral Ginger of 1967, Christine became the first tropical storm since 1966 to form as far east as longitude 30W. The first advisory on Christine was not issued until late on the 30th when a reconnaissance flight found a surface pressure of 1007 mb and sustained surface winds of 45 kt about 1000 miles east of Trinidad.

The storm reached maximum strength on 2 September when reconnaissance aircraft obtained the lowest central pressure of 996-mb and 700-mb maximum sustained winds of 62 kt from the east. With the storm located 300 mi east of Guadeloupe, gale warnings and a hurricane watch were issued at noon AST on the 2nd for the northern Leeward Islands of Guadeloupe,

