CLIMATE REPORT NO.20

HURRICANE BOB (1985)

STATE OF SOUTH CAROLINA
WATER RESOURCES COMMISSION
STATE CLIMATOLOGY OFFICE

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HURRICANE BOB 1985

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TABLE OF CONTENTS

LIST OF FIGURES

INTRODUCTION

The purpose of this study is to provide information on the impact of Hurricane Bob on the South Carolina coastal area.

The author expresses appreciation to Miles B. Lawrence of the National Hurricane Center for furnishing data for this publication.

SUMMARY

Although of minimal intensity, Hurricane Bob was the first tropical cyclone of hurricane strength with the eye penetrating the South Carolina coastline since 1959. Of course South Carolina has in recent years been affected by hurricanes whose eyes penetrated the coastline very near South Carolina such as Hurricane David in 1979 and Diana in 1984.

The eye of Hurricane Bob passed over the South Carolina coastline in the vicinity of Fripp Island about 10:30 p.m. E.D.T. (0230 GMT) on the night of July 24th. The storm rapidly lost strength after moving inland and continued to move northward into North Carolina on the morning of the 25th.

Satellite pictures suggest that Bob developed within the cloud remnants of a tropical wave which moved into the eastern Gulf of Mexico on July 20th. On the 21st, satellite pictures and a reconnaissance aircraft indicated that a low-level circulation center had formed off the southwest Florida coast. The system moved slowly eastward and was named Tropical Storm Bob at 2200 GMT, July 22, after an aircraft measured a 36 kt wind speed at an altitude of 1500 ft.

The storm center moved on shore on the southwest Florida coast between Naples and Fort Myers midday on the 23rd. Most of the heavy rain and strongest winds were located to the south and east of the center. Naples reported a sustained west wind of 35 kt as the center passed to its north. Bob's forward speed increased and the storm turned sharply northward. By 0000 GMT, 24 July, the storm was moving due northward at 10 kt near Vero Beach on the Florida east coast.

At 1600 GMT, Bob's center was 55 nautical miles east southeast of Jacksonville, and a hurricane watch along with gale warnings was issued from Savannah, Georgia to Little River Inlet, South Carolina. An aircraft reported a 65 kt wind speed 21 nautical miles east of the storm center at 1721 GMT. A second aircraft confirmed the presence of minimal hurricane force winds four hours later and the hurricane watch was changed to a hurricane warning at 2200 GMT, July 24.

Bob's eye reached the South Carolina coast at Fripp Island near Beaufort about 0230 GMT, July 25. Based on reconnaissance data, it is estimated that Bob was still a minimal hurricane at the time of landfall. Bob's center moved into Virginia by 1800 GMT on July 25th as the system fell below storm strength and Bob's remnants merged with a frontal trough early on the 26th over eastern West Virginia.

Maximum sustained surface winds recorded during landfall were 50 kt at Georgetown Coast Guard Station, South Carolina at 1000 GMT, July 25th. By this time, Bob was 90 nautical miles inland, although a strong spiral rain band still extended off the coast. The highest gust was 72 kt reported from Holden Beach, North Carolina at 0730 GMT, July 25, some 120 nautical miles east of the center. This area was also being affected by a spiral band associated with Bob at the time of the peak gust.

Bob's central surface pressure never fell below 1002 mb a rather high central pressure, even for a minimal hurricane. Ambient surface

pressures near and east of the storm were high as Bob was embedded in the westward extension of the subtropical high pressure ridge, resulting in strong pressure gradients in spite of the high central pressure.

Bob produced rainfall totals ranging up to 21.5 inches in 48 hours at Everglades City in south Florida. Rainfall amounts in the six inch to eight inch range were measured over portions of the Carolinas. Isolated tornados were reported in Maryland and Virginia in association with the storm.

Heavy rains caused more damage in South Carolina than the winds and tides. Limbs and trees were down from Colleton County to Horry County. Winds of 40 to 60 mph with higher gusts buffeted portions of eastern South Carolina. A moored houseboat sank at Charleston, and trees were blown on cars at Folly Beach, Charleston, Surfside, Myrtle Beach, Loris and elsewhere along the path of storm. Winds and heavy rains damaged tobacco in Horry, Marion and Georgetown Counties. Surfside was particularly hard hit with flooding covering streets and water entering some homes. Also, at Surfside a roof was blown from a restaurant and a shopping center flooded. Many car windows were broken by falling limbs. At Folly Beach, the winds blew the top off a service station. A new building in southern Myrtle Beach was damaged by wind. Tides ran mostly one to three feet above normal causing moderate beach erosion mostly north of Fripp Island to Horry County. A building was undermined by erosion at Surfside Beach. Total insured damage from Bob was about five million dollars. There were 8,500 residents evacuated at Myrtle Beach. Power loss was widespread along path of the storm.

Figure One

Summary of Warnings

Hurricane Bob
July 1985

Date/Time (GMT)	Action	Location
22/2200	Issue gale warnings	The Florida Keys from Craig Key westward and the southwest Florida coast from Flamingo to Venice
23/1600	Issue gale warnings	South Florida from Cape Canaveral and Venice southward through the Keys
23/1900	Discontinue gale warnings	Venice to Cape Romano, Florida
23/2220	Discontinue gale warnings	Cape Romano to Cape Sable, Florida
24/1000	Issue gale warnings Discontinue gale warnings	Key Largo to St. Augustine, Florida south of Key Largo, Florida
24/1300	Discontinue gale warnings	Key Largo to St. Augustine, Florida
24/1600	Issue gale warnings and a hurricane watch	Savannah, Georgia to Little River Inlet, South Carolina
24/2200	Issue hurricane warnings	Savannah, Georgia to Little River Inlet, South Carolina
25/1000	Discontinue hurricane warnings Issue gale warnings	Savannah, Georgia to Little River Inlet, South Carolina Savannah, Georgia to Cape Fear, North Carolina
25/1300	Discontinue gale warnings	Savannah, Georgia to Cape Fear, North Carolina

Figure Two

Critical Values

Hurricane Bob selected surface observations, July, 1985. All times are GMT. Wind speeds are one-minute averages. Rainfall amounts are storm totals.

location	pressure (mb)	date/ time	wind (kt)	date/ time	rain (inches)
Florida					
Everglades City					21.50
Naples			35	23/1535	12.07
Georgia					
Savannah Light					
C-MAN	1002.8	25/0100	42	25/0000	
South Carolina					
Beaufort	1003.1	25/0308	19	25/0027	1.37
Charleston	1010.1	25/0510	32	25/0237	5.00
Charleston Harbor			38	25/0300	
Crescent Beach			15	25/1153	3.84
Edisto Beach	1009.8	25/0430	23	25/0300	
Folly Beach C-MAN			42	25/0300	
Georgetown			50	25/1000	
Hilton Head			14	25/0100	
McClellanville			45	25/0530	
Myrtle Beach, A.F.B.	1014.9	25/0900	30	25/1153	7.79
Springmaid Pier			36	25/0900	
North Carolina					
Greensboro	1008.3	25/1530	19	25/1550	2.45
Holden Beach			31	25/1200	
Leland					3.97
Pope AFB			18	25/1430	
Red Springs					6.55
Raleigh	1015.6	25/1550	22	25/1550	1.90
Seymour Johnson AFB			16	25/1555	
Wilmington	1019.3	25/0351	25	25/1235	2.47

Figure Three

Preliminary best track
Hurricane Bob
21-26 July 1985

date/time (GMT)	position lat.	long.	pressure (mb)	wind speed (kt)	stage
21/0600	26.0	85.0	1012	25	tropical depression
1200	25.8	84.9	1011	25	"
1800	25.6	84.7	1011	25	"
22/0000	25.6	84.4	1010	25	"
0600	25.8	84.2	1009	30	"
1200	26.0	84.0	1008	30	"
1800	26.2	83.8	1007	35	tropical storm
23/0000	26.5	83.4	1004	35	"
0600	26.6	82.9	1004	40	"
1200	26.4	82.3	1005	40	"
1800	26.4	81.1	1006	40	"
24/0000	27.2	80.3	1006	40	"
0600	28.3	80.4	1005	50	"
1200	29.4	80.4	1004	60	"
1800	30.5	80.5	1003	65	hurricane
25/0000	31.6	80.5	1002	65	"
0600	32.9	80.7	1004	55	tropical storm
1200	34.8	80.5	1006	45	"
1800	36.6	80.1	1009	30	tropical depression
26/0000	38.3	79.5	1011	25	"
landfall at 25/0230	32.2	80.5	1003	65	hurricane

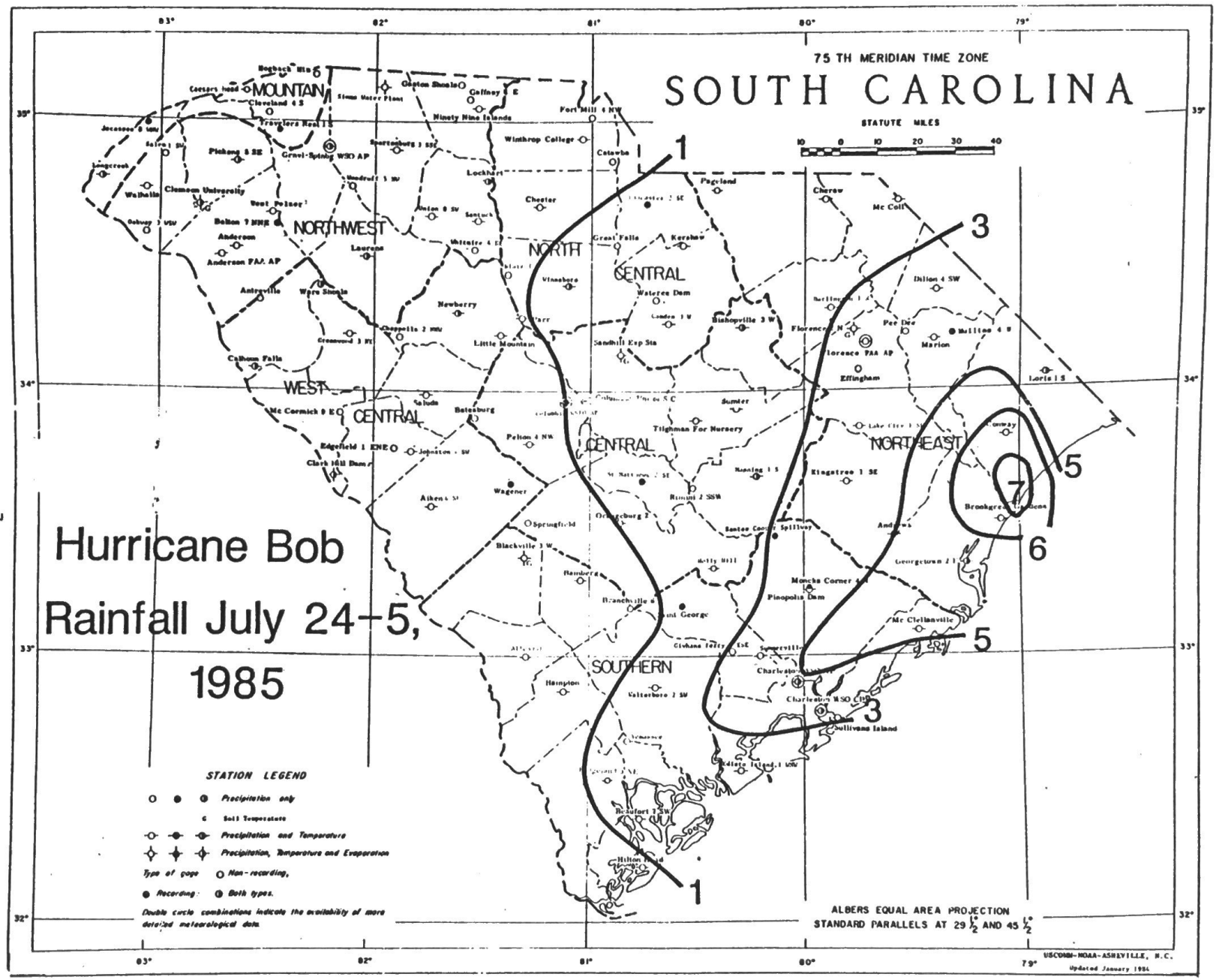
75 TH MERIDIAN TIME ZONE
SOUTH CAROLINA
STATUTE MILES
10 0 10 20 30 40
MOUNTAIN
NORTHWEST
NORTH CENTRAL
WEST CENTRAL
CENTRAL
NORTHEAST
SOUTHERN
Hurricane Bob
Rainfall July 24-5,
1985
1
3
5
7
6
5
3
1
STATION LEGEND
Precipitation only
Soil Temperature
Precipitation and Temperature
Precipitation, Temperature and Evaporation
Type of page O Non-recording,
Recording Both types.
Double circle combinations indicate the availability of more detailed meteorological data.
ALBERS EQUAL AREA PROJECTION
STANDARD PARALLELS AT 29 1/2° AND 45 1/2°
83° 82° 81° 80° 79°
35° 34° 33° 32°

Figure 4

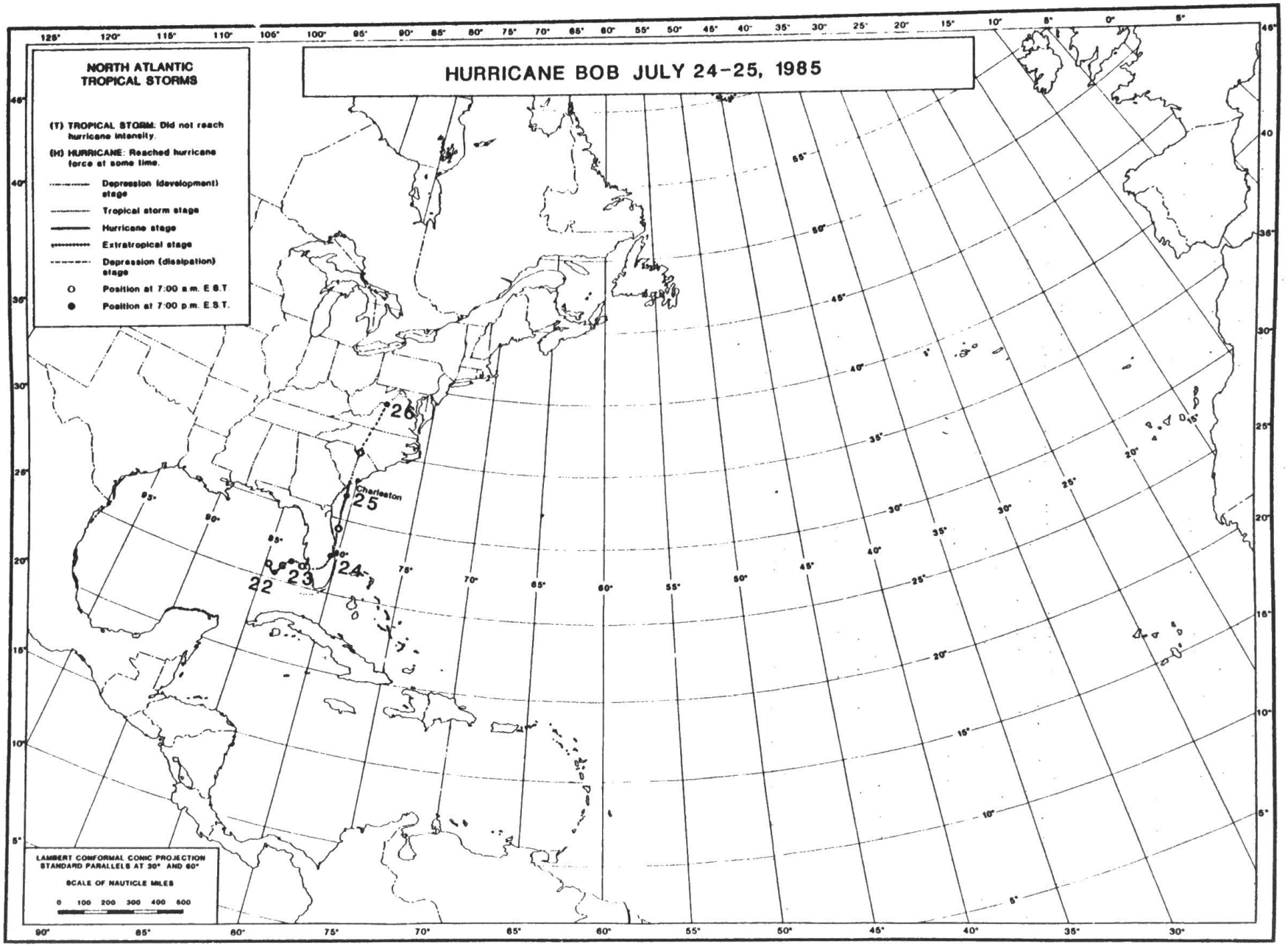
HURRICANE BOB JULY 24-25, 1985
NORTH ATLANTIC TROPICAL STORMS
(T) TROPICAL STORM: Did not reach hurricane intensity.
(H) HURRICANE: Reached hurricane force at some time.
Depression (development) stage
Tropical storm stage
Hurricane stage
Extratropical stage
Depression (dissipation) stage
Position at 7:00 a.m. E.S.T.
Position at 7:00 p.m. E.S.T.
Charleston
22
23
24
25
26
LAMBERT CONFORMAL CONIC PROJECTION
STANDARD PARALLELS AT 30° AND 60°
SCALE OF NAUTICLE MILES
0 100 200 300 400 500

Figure 5

REFERENCES

Lawrence, Miles B, 1985, Preliminary Report: National Hurricane Center, National Weather Service, Coral Gables, Florida 33146, 7 p.

Palmer, Bernard, 1985, unpublished report on Hurricane Bob: National Weather Service Forecast Office, West Columbia, South Carolina 29169, 1 p.

National Ocean Atmospheric Administration, 1985, Storm Data Volume 27, Number 7: National Climatic Data Center, Asheville, North Caorlina.