

HURRICANE HUGO



**STATE OF SOUTH CAROLINA
WATER RESOURCES COMMISSION
SOUTH CAROLINA STATE CLIMATOLOGY OFFICE**

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SC Department of Natural Resources
State Climatology Office
1000 Assembly Street
PO Box 167
Columbia, SC 29202

HURRICANE HUGO

Compiled by
John C. Purvis
Scott F. Sidlow
David J. Smith
Wes Tyler
Ian Turner

Climate Report G-37

South Carolina Water Resources Commission
South Carolina State Climatology Office
1201 Main Street, Suite 1100
Columbia, South Carolina 29201
(803) 737-0811

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Editor Affiliations:

John C. Purvis - State Climatologist and Director of both the South Carolina State Climatology Office and the Southeastern Regional Climate Center, South Carolina Water Resources Commission

Scott F. Sidlow - Assistant State Climatologist for South Carolina, South Carolina State Climatology Office, South Carolina Water Resources Commission

David J. Smith - Regional Climatologist, Southeastern Regional Climate Center, South Carolina Water Resources Commission

Wes Tyler - Assistant State Climatologist for South Carolina, South Carolina State Climatology Office, South Carolina Water Resources Commission

Ian Turner - Department of Geography, University of South Carolina

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TABLE OF CONTENTS

Introduction.....	ii
Executive Summary.....	1
Meteorological Description.....	3
Hurricane Hugo "Best Fit" Track.....	6
Hurricane Hugo & The Leeward Islands.....	7
Summary of Recorded and Estimated Surface Wind Speeds.....	8
Hugo's Track In South Carolina.....	11
Maximum Storm Tides Along the South Carolina Coast.....	12
Damaging Wind Directions of Hugo in South Carolina.....	13
Precipitation in South Carolina, September 21-23, 1989.....	14
Selected Surface Observations.....	15
Locations and Types of NWS Reporting Stations.....	18
Areas of Significant Damage.....	19
Saffir-Simpson Hurricane Scale.....	20
September 1989 Storm Data (County by County Summary).....	21
Weather Observations For:	
Anderson, South Carolina, Federal Aviation Administration.....	35
Augusta, Georgia, National Weather Service.....	37
Beaufort, South Carolina, Marine Corps Air Station.....	41
Charleston, South Carolina, National Weather Service.....	45
Charlotte, North Carolina, National Weather Service.....	50
Columbia, South Carolina, National Weather Service.....	54
Florence, South Carolina, Federal Aviation Administration.....	58
Greer, South Carolina, National Weather Service.....	60

Myrtle Beach Air Force Base, Myrtle Beach, South Carolina.....	64
Shaw Air Force Base, Sumter, South Carolina.....	66
Pressure vs. Time.....	68
Wind Speed vs. Time.....	74
South Carolina Precipitation Data.....	77
700 mb Wind Field at Charleston, South Carolina.....	82
Satellite Images of Hugo.....	83

INTRODUCTION

This is a report on the most devastating hurricane to affect South Carolina in the 20th century to date.

All times listed in this report are in twenty-four hour time format, and Eastern Standard Time (except where noted). To obtain Eastern Daylight Time, add 1 hour to Eastern Standard Time.

In the Storm Data section of this report, a code, i.e. M67M, which is used by the National Weather Service to compile directly related storm death statistics. The first letter of the code is the individual's sex, the next two numbers are the individual's age, and the last letter indicates where the individual was killed: M - mobile home, O -other, P -permanent structure, V - vehicle.

Storm Data damage categories are as follows:

Category	Dollar Value
1	< \$50
2	\$50 to \$500
3	\$501 to \$5,000
4	\$5,001 to \$50,000
5	\$50,001 to \$500,000
6	\$500,001 to \$5,000,000
7	\$5,000,001 to \$50,000,000
8	\$50,000,001 to \$500,000,000
9	> \$500,000,000

Executive Summary

After developing in the far eastern Atlantic and causing major damage in the United States Virgin Islands and Puerto Rico, Hurricane Hugo (Category 4) made landfall near Sullivan's Island, South Carolina, at 2300EST on September 21, 1989. The hurricane caused 13 directly related deaths, 22 indirectly related deaths, and injured several hundred people in South Carolina. Damage within the Palmetto State from Hugo has been estimated to exceed \$7 billion, including \$2 billion in crop damage.

Hugo was moving northwest at 25 miles per hour when it made landfall. At landfall, the estimated minimum central pressure was 934 mb (27.58 inches). The minimum central pressure recorded at the Charleston International Airport was 943.2 mb (27.85 inches) at 2323EST on the 21st.

The estimated maximum sustained wind at landfall was 138 mph. The highest sustained wind recorded in the storm was 85 mph at Folly Beach at 2300EST. At Charleston International Airport, the highest recorded sustained winds were 78 mph. The western portion of the eye passed directly over that location at 0003EST on September 22nd. Gusts reached 98 mph at Charleston Airport at 2359EST on the 21st, 109 mph at Shaw Air Force Base, in Sumter County, 70 mph at the Columbia Metropolitan Airport, and 79 mph at 0040EST on the 22nd at the Myrtle Beach Air Force Base, in Horry County. The eye of the hurricane exited South Carolina at approximately 0500EST on the 22nd at a point southwest of Charlotte, North Carolina.

The highest storm surge occurred in the McClellanville-Bulls Bay area of Charleston County, South Carolina, where the arrival of Hugo almost coincided with the time of high tide. The combination of the storm surge and the tide pushed the level of the ocean to record heights. The highest ocean elevation measured was 20.2 feet National Geodetic Vertical Datum (NGVD) at one mile north of Moores Landing, Seewee Bay, south of McClellanville. At Lincoln High School, in McClellanville, the storm surge flooded the building where residents had sought shelter. At the Isle of Palms, many structures were destroyed and the bridge linking the island to the mainland was damaged. Boats that were harbored at a marina on the island side of the of the intercoastal waterway were piled in a heap on the mainland shore. At Sullivan's Island, many beachfront homes were destroyed as far back as the second and third rows. The damage at Sullivan's Island and the Isle of Palms was estimated near \$270 million.

Severe damage to coastal structures and heavy beach erosion occurred as far south as Folly Beach in Charleston County and as far north as Myrtle Beach in Horry County. High tides pushed by hurricane force winds destroyed many buildings, swept away homes, and damaged roads and utilities. Salt water contaminated many fresh water areas with heavy losses to marine life.

The major damage was from the winds, although torrential rains caused additional losses to cotton and other crops. The pattern of destructive winds was typically cyclonic with the most extensive losses occurring around the eye and the northeastern quadrant of the hurricane. There were many areas along Hugo's path across the coastal plain where almost every tree was broken off or uprooted. Falling trees and high winds broke power lines, crushed cars, and blocked roads. High winds broke windows, peeled roofs, overturned or destroyed mobile homes, and caused widespread damage to other buildings. Many areas in or near the path of the eye of the hurricane were without power for an extended period that in some cases exceeded two weeks. Losses to the timber industry were particularly severe with an estimated one-third of the forests in the path of Hugo destroyed. The Francis Marion National Forest in Charleston and Berkeley counties was especially devastated, causing damage not only to the timber but also to the wildlife indigenous to that area. All coastal state parks except Hunting Island and Edisto were substantially damaged.

There has been considerable speculation that there were numerous tornados associated with Hugo's passage across the state; however, only two have been confirmed. A small tornado developed in western Sumter County and a second small tornado near Kershaw in Lancaster County.

Property damage was extensive in the following counties: Berkeley, Calhoun, Charleston, Clarendon, Darlington, Georgetown, Horry, Kershaw, Lancaster, Lee, Orangeburg, Richland, Sumter, Williamsburg, and York.

Damage in the Upstate was not as severe as in the remainder of the state. Cherokee County was the hardest hit in that area, with property damage estimated to be near \$100,000. There was widespread damage to timber and some agricultural loss in northwestern South Carolina. Union, Spartanburg, and Laurens counties received some damage, limited primarily to fallen trees.

The times listed in the county level damage reports reflect the approximate times of the eye's passage over or near the county. The coast experienced tropical storm force winds beginning at approximately 2000EST on the 21st, and hurricane force winds at approximately 2200EST. The wind field surrounding the hurricane caused extensive damage both ahead and behind the eye in time as well as distance.

Meteorological Description

The origin of Hugo, the eighth named storm of the 1989 Atlantic Hurricane season, began as a cluster of thunderstorms moving off of the west coast of Africa on September 9th. As this system became better organized and surface pressures began to fall on September 10th, a tropical depression, centered 125 miles southeast of the Cape Verde Islands, formed. The tropical depression, moving west at 21 mph along 12 degrees north latitude, became a tropical storm, named Hugo, on the 11th. By late on the 13th Hugo had gained sufficient strength and organization to be classified as a hurricane by the National Hurricane Center (NHC). At the time Hugo was upgraded on the 13th, the storm was located 1100 nautical miles east of the Leeward Islands continuing due west at 20 mph. Forecasters at the NHC expected Hugo to continue to strengthen over the next few days.

By Thursday, September 14, Hugo had slowed its forward speed to 16 mph while its winds increased to 115 mph. A weakness in the Bermuda high pressure ridge, located north of Hugo's track, caused Hugo to gradually turn on a west-northwestwardly heading. By the 15th, wind speeds were found to have increased to 150 mph with a central pressure of 918 mb (27.11 inches). A category 5 storm, Hugo now appeared to be taking aim at the islands of Guadeloupe and Dominica in the Leeward chain.

Having slightly weakened to a category 4 hurricane, Hugo struck Guadeloupe on the 17th at 0000EST where a pressure of 941 mb (27.80 inches) was reported. Decelerating and turning to the northwest, the eye passed over St. Croix, U.S. Virgin Islands, at 0100EST on the 18th with a forward speed of 9 mph. Although weather observers on St. Croix had abandoned their exposed site, Hugo's maximum sustained winds on the island have been estimated to be near 140 mph. A report of 46 mph winds with gusts to 78 mph was reported from St. Maarten, an island located 75 miles southwest of St. Croix.

The eye, now accelerating, missed St. Thomas as it continued northwest through the channel which separates Puerto Rico and the Virgin Islands. At 0700EST on the 18th the eye passed over the island of Vieques, Puerto Rico, and then over the extreme eastern tip of mainland Puerto Rico near Fajardo at 0900EST. Peak gusts of 120 mph and the lowest surface pressure of 946 mb (27.94 inches) on Puerto Rico were recorded at Roosevelt Roads Naval Air Station, 10 miles south of Fajardo. San Juan International Airport, west of Fajardo, reported maximum sustained winds of 77 mph with a gust of 92 mph. By 1200EST on the 18th, Hugo was centered north of San Juan moving northwest at 15 mph.

The brush with mountainous Puerto Rico, however, had restricted the airflow into the surface of the system. The eye, on September 19, had become poorly defined on satellite imagery. The sustained wind speed had decreased to 104 mph, and the surface pressure had risen to 966 mb (28.53 inches). Hugo was now moving to the north-northwest at 14 mph, as hurricane warnings were issued for the southern Bahamas. On the 19th, the weakness in the ridge of high pressure northwest of Hugo had diminished. Hugo's track became influenced by both the ridge and an upper-level low pressure trough centered over Georgia.

On September 20, Hugo became better organized and its eye had become well-defined once again. Although its forward speed had increased to 18 mph by late in the day, the storm had not significantly intensified during the day. At 1800EST on the 20th, the National Hurricane Center issued a hurricane watch from St. Augustine, Florida to Cape Hatteras, North Carolina.

On September 21, at 0600EST, the National Hurricane Center issued a hurricane warning from Fernandina Beach, Florida--near Jacksonville--to Cape Lookout, North Carolina--near Wilmington. During the day Hugo entered the warm waters of the Gulf Stream and began to reintensify. NOAA and Air Force reconnaissance aircraft reported falling central pressures to the forecasters at the NHC throughout the day. Centered a few hundred miles east of the northern Florida coast, Hugo's track had become influenced by the trough which had moved into the northwestern Gulf of Mexico, the ridge which had migrated westward and was situated off of the Mid-Atlantic coast, and a strong cold front that was advancing eastward across the central United States. The advisory issued by the National Hurricane Center at 1500EST on the 21st stated that Hugo was expected to make a gradual turn towards the north within the next 12 hours, therefore the NHC at that time extended the hurricane warning northward from Cape Lookout to Oregon Inlet, North Carolina (Disaster Study, Hurricane Hugo).

Hugo, though, maintained its northwestward track until shortly after landfall. During the late afternoon and early evening, the forward speed of the advancing storm increased to 25 mph. Just before landfall, a reconnaissance measurement of 934 mb (27.58 inches) and 161 mph winds at an altitude of 12,000 feet were recorded--the basis of the estimate of the highest one-minute wind speed of 138 mph at landfall. Landfall was expected by late night or early morning along the coast of South Carolina--close to the time of normal high tide. NHC bulletins alerted coastal residents and evacuees of tides 12 to 17 feet above normal and rainfall of 5 to 10 inches in Hugo's path. A tornado watch was issued that evening as well for residents of central and southern portions of South Carolina and southeastern North Carolina.

The eye of Hugo, measuring 20 miles in diameter, made landfall near Sullivan's Island, South Carolina, at 2300EST on the 21st. Officially, the lowest minimum central pressure recorded in the state associated with the storm was 943 mb (27.85 inches) at the Charleston International Airport at 2323EST on the 21st, although an unofficial observer reported a minimum pressure of 937 mb (27.68 inches) in the eye. At Charleston International the

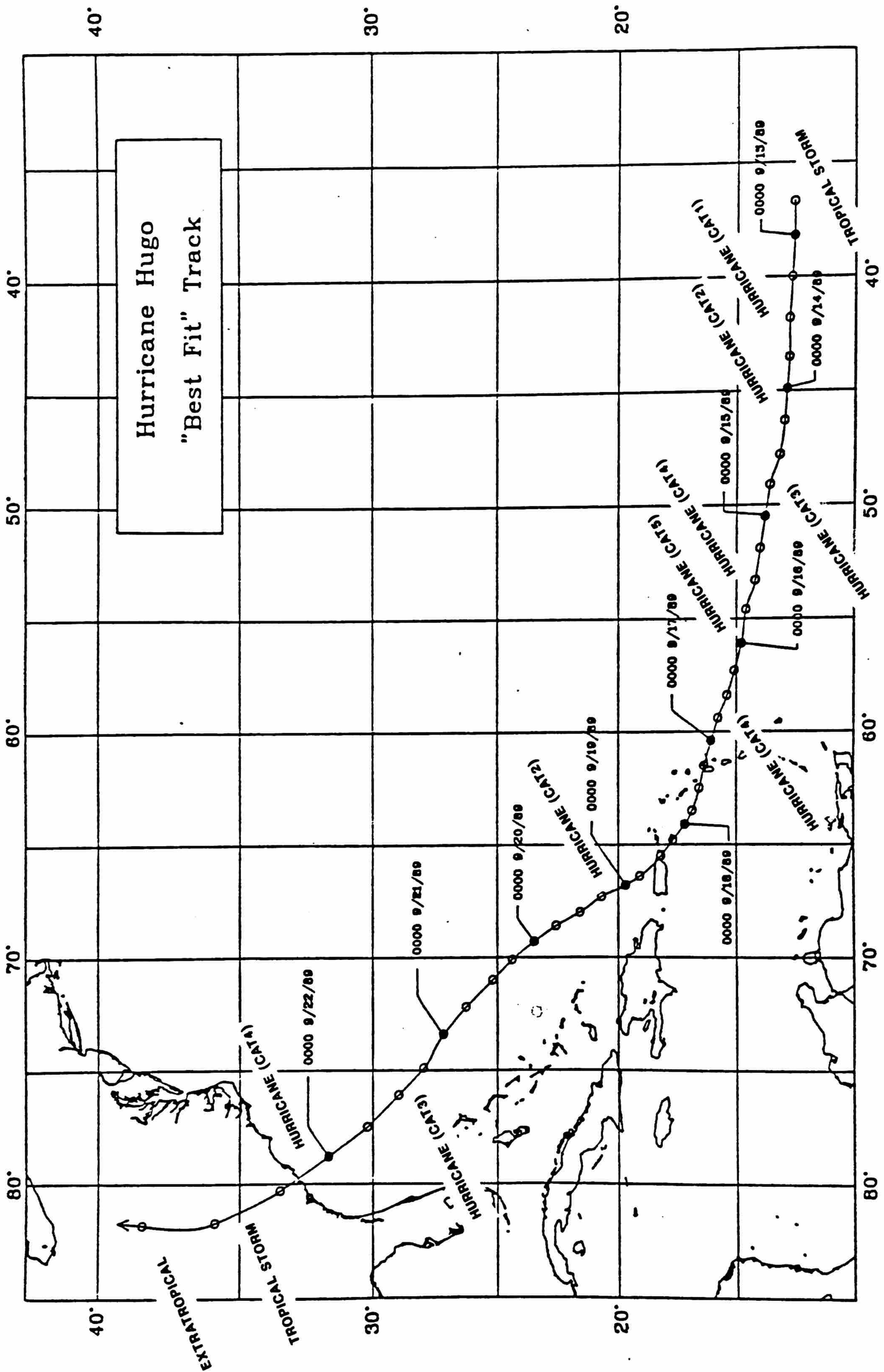
highest recorded sustained winds were 78 mph with gusts reaching 98 mph. The weather office in downtown Charleston measured a maximum sustained wind speed of 87 mph with a peak gust of 108 mph. Gusts to 125 mph were observed by U. S. Navy ships in Charleston Harbor. The highest, category 4, winds associated with Hugo were located in the Bulls Bay area of northeastern Charleston County. There the winds in combination with the local high tide, caused the greatest storm surge ever measured on the Eastern seaboard in Bulls Bay near the towns of McClellanville and Awendaw. The highest ocean elevation measured was 20.2 feet National Geodetic Vertical Datum, just south of McClellanville (Storm Tide Elevations...Along the South Carolina Coast, September 21-22, 1989).

As the storm moved inland over Lakes Moultrie and Marion, Hugo began a gradual turn towards the north-northwest. The center of the storm passed between Shaw Air Force Base in Sumter County and Eastover in Richland County, causing 109 mph gusts at Shaw and a small tornado west of the base. The eye then moved northward over Camden with gusts estimated at over 100 mph. Hugo continued northwestward over Lancaster and York counties with winds of hurricane strength and a forward speed of up to 30 mph. Hugo exited the state southwest of Charlotte, North Carolina, before sunrise.

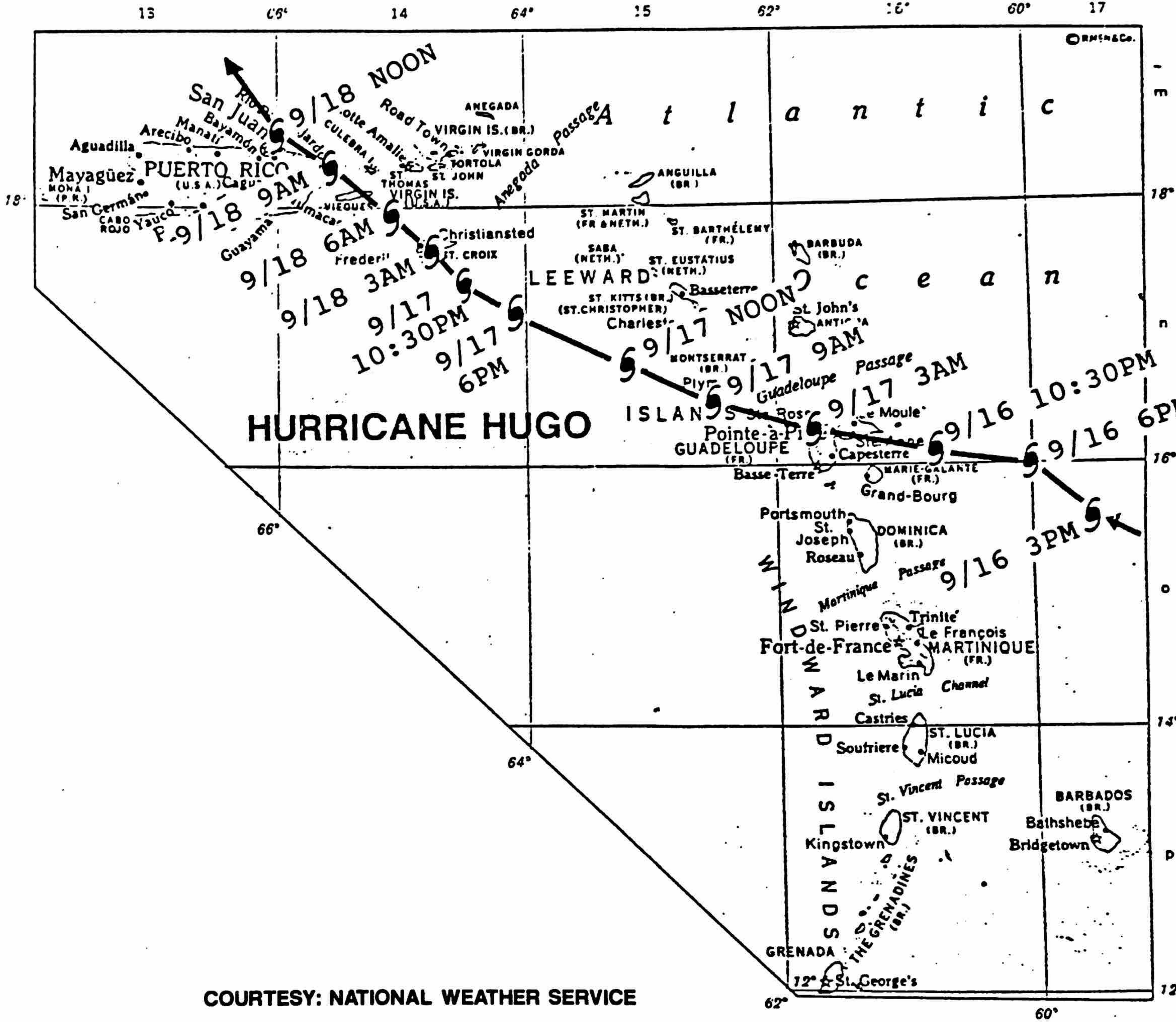
Having moved through South Carolina, Hugo weakened to tropical storm status just west of Charlotte. With gusty winds and locally heavy rain, the storm continued northward across western North Carolina, southwestern Virginia, West Virginia, eastern Ohio, western Pennsylvania, and western New York. By that evening Hugo exited the United States less than 25 hours and 600 miles from where it had made landfall near Charleston.

There are no storm surge observations available from the Caribbean. However, the SLOSH storm surge model calculations, based on Hugo's track, indicate water levels of three to four feet above normal tide levels occurred during the period of on-shore winds at St. Croix and along the eastern coast of Puerto Rico. The islands of Vieques and Culebra, just off of the eastern coast of Puerto Rico probably received a storm surge of seven to eight feet above normal.

Rainfall totals associated with Hugo range from 6.10 inches at Savannah, Georgia; 8.10 inches near Charleston; 2.30 inches at Myrtle Beach; and 0.58 inches at Hatteras, North Carolina. A 150-mile wide swath of three to six inches of rain spread inland across South Carolina and western North Carolina. Rainfall totals ranged from two to four inches from western Virginia through western New York. Some small stream flooding occurred in western North Carolina, eastern Tennessee, southwestern Virginia, and West Virginia as a result of locally heavy orographically-enhanced rain in the Appalachians.



COURTESY: NATIONAL WEATHER SERVICE



SUMMARY OF RECORDED AND ESTIMATED SURFACE WIND SPEEDS IN HURRICANE HUGO

Recorded Surface Wind Speeds

Roosevelt Roads Naval Station, PR

Date = Sept. 18
Anemometer Ht. = 23 ft.
Peak Gust = 120 mph @ 7:58 AM
Max. Sustained Speed = 98 mph
Max. 10-Min Mean Speed = 76 mph @ 9:20 AM

WSFO San Juan, PR

Date = Sept. 18
Anemometer Ht. = 20 ft.
Peak Gust = 92 mph @ 7:52 AM
Max. Sustained Speed = 77 mph @ 7:50 AM
Max. 10-Min Mean Speed = 61 mph @ 7:50 AM

Charleston Naval Station, SC

Date = Sept. 21-22
Anemometer Ht. = 118 ft.
Peak Gust = 137 mph @ 11:30-11:45 PM, Sept. 21
Max. Sustained Speed = N/A
Max. 15-Min Mean Speed = 74 mph @ 1 AM, Sept. 22

Charleston (City Site), SC

Date = Sept. 21
Anemometer Ht. = 25 ft.
Peak Gust = 108 mph @ 11:40 PM
Max. Sustained Speed = 87 mph @ 11:30 PM

WSO Charleston Airport, SC

Date = Sept. 22
Anemometer Ht. = 20 ft.
Peak Gust = 98 mph @ 12:59 AM
Max. Sustained Speed = 78 mph @ 1:03 AM
Max. 10-Min Mean Speed = 59 mph @ 1:10 AM

Myrtle Beach AFB, SC

Date = Sept. 22
Anemometer Ht. = 15 ft.
Peak Gust = 76 mph @ 1:55 AM
Max. Sustained Speed = 52 mph @ 1:55 AM

Shaw AFB, SC

Date = Sept. 22

Anemometer Ht. = 15 ft.

Peak Gust = 109 mph @ 2:46 AM

Max. Sustained Speed = 67 mph @ 2:55 AM

WSFO Columbia, SC

Date = Sept. 22

Anemometer Ht. = 20 ft.

Peak Gust = 70 mph @ 3:27 AM

Max. Sustained Speed = 48 mph @ 3:50 AM

Max. 10-Min Mean Speed = 46 mph @ 3:20 AM

WSO Charlotte, NC

Date = Sept. 22

Anemometer Ht. = 20 ft.

Peak Gust = 87 mph @ 5:20 AM

Max. Sustained Speed = 46 mph @ 5:51 AM

Max. 10-Min Mean Speed = 38 mph @ 6:20 AM

Courtesy of

R. D. Marshall

Research Structural Engineer

National Institute of

Standards and Technology

ESTIMATED SURFACE WIND SPEEDS

Estimated as a reduction of aircraft observations and
700 mb analyses to surface values and
inferred speeds due to damage patterns

Location	Sustained (MPH)	Gusts (MPH)
St. Croix	132	161
Sts. Thomas/John	98	121
Vieques	109	132
Culebra	121	150

Courtesy of
Joseph Golden
Senior Meteorologist
Office of the Chief Scientist
NOAA

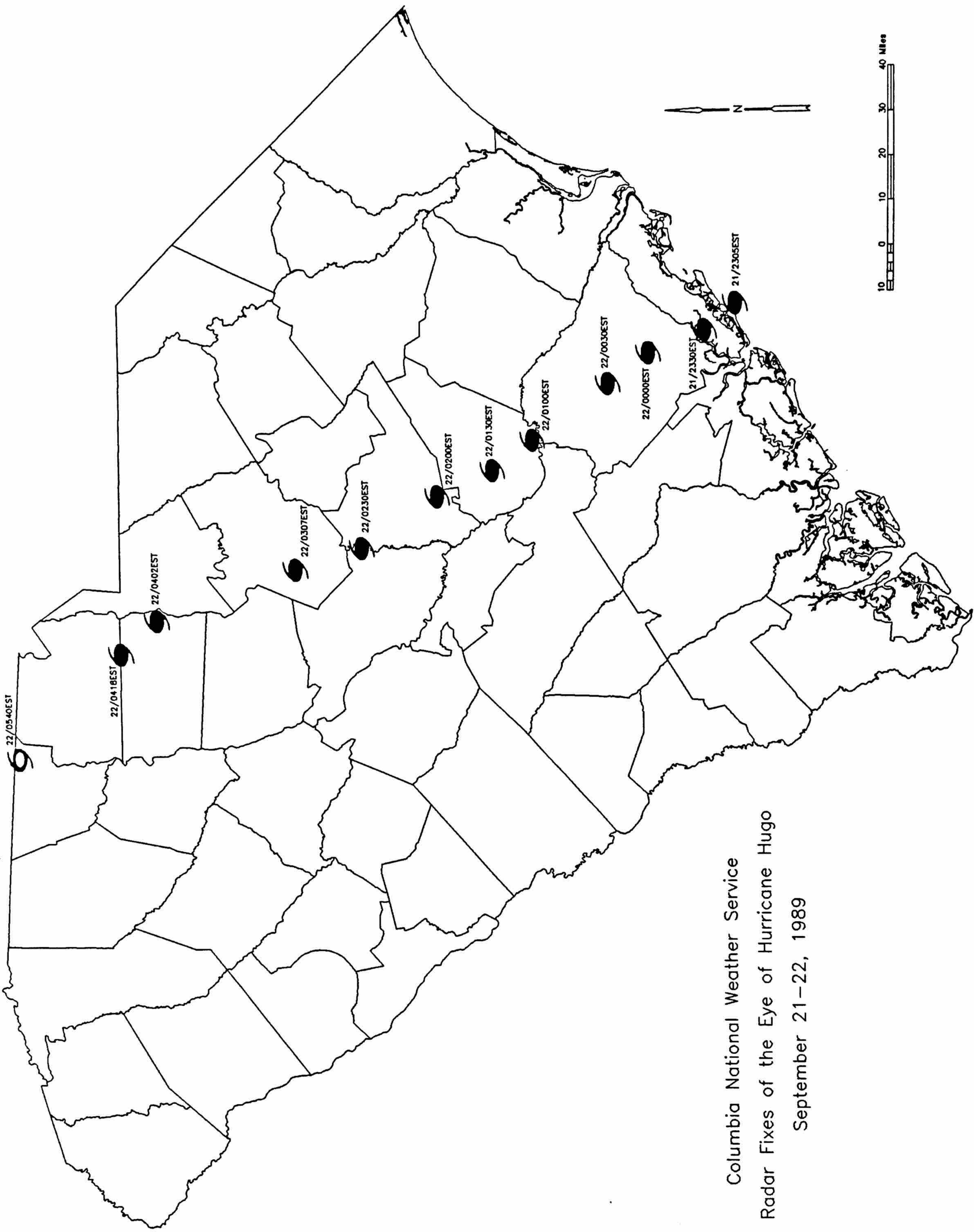
ESTIMATED SURFACE WIND SPEEDS

Location	Sustained (MPH)	Gusts
14°31'N, 54°35'W (East of Guadeloupe)	160 ¹	N/A
Bulls Bay South Carolina	135 ²	N/A

Courtesy of
Robert Sheets
Director, National Hurricane Center
NOAA

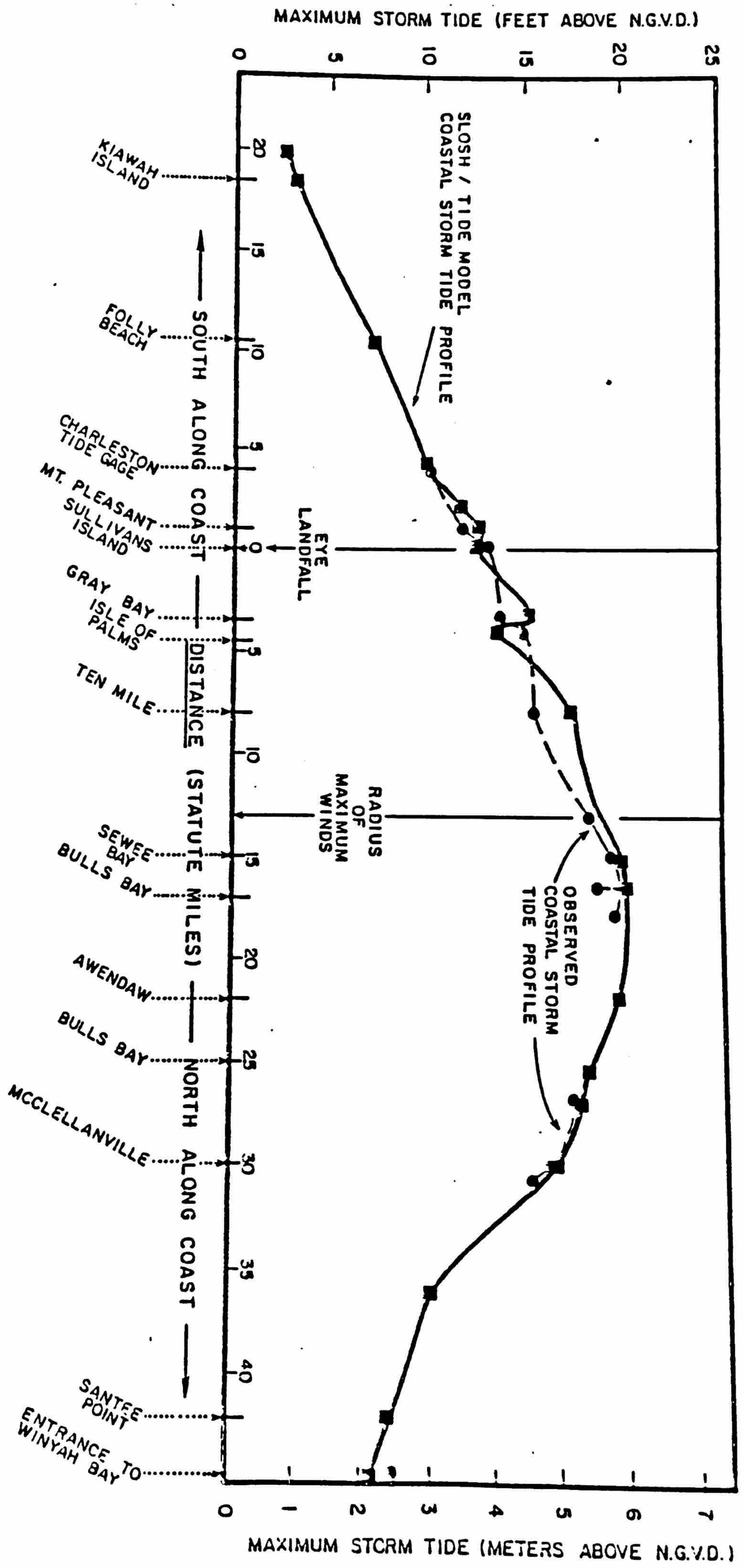
¹ Estimated using step frequency micro wave radiometer aboard NOAA Research Aircraft.

² Estimated from a reduction of observed flight level winds and the empirical pressure wind relationship.

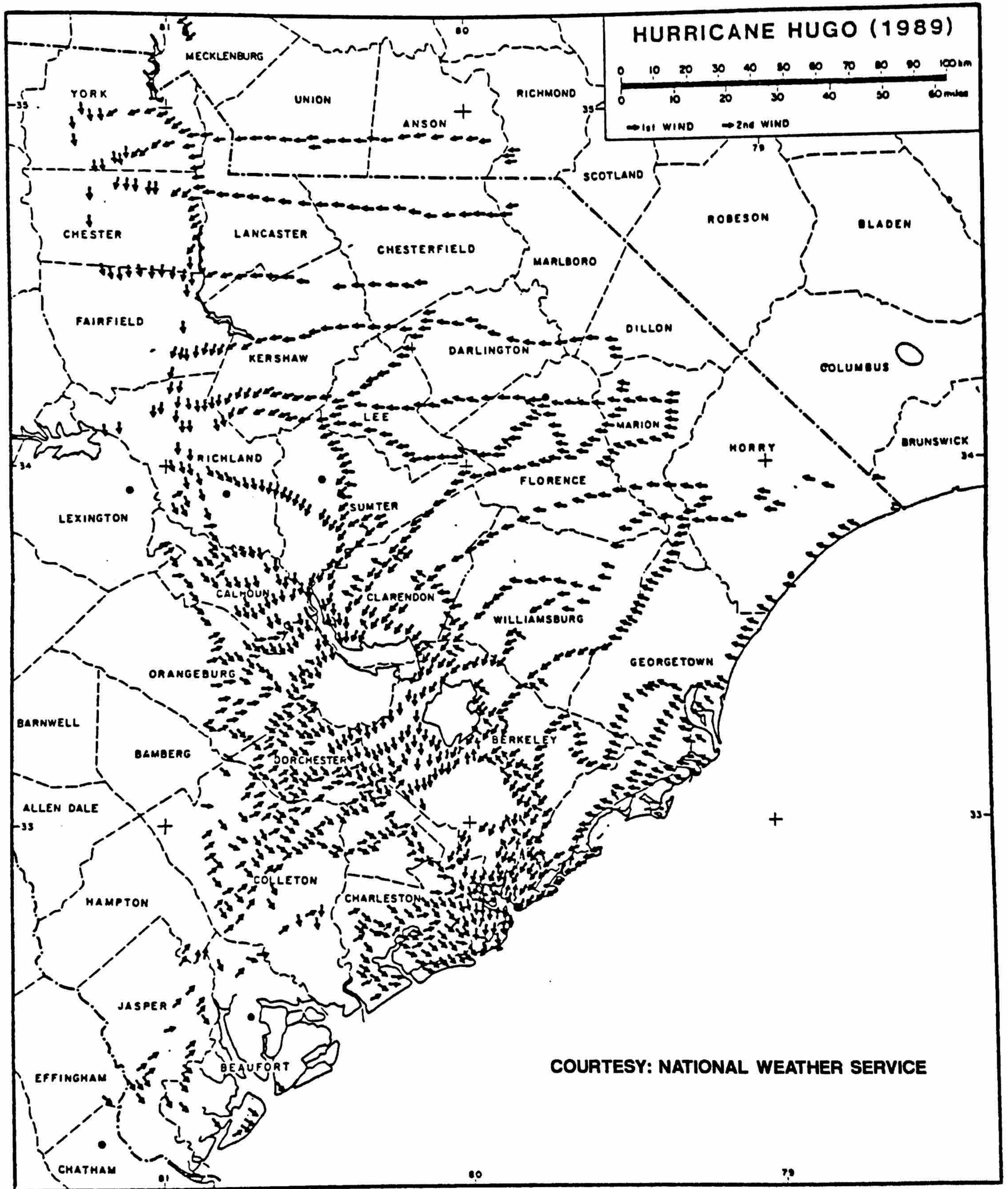


Columbia National Weather Service
 Radar Fixes of the Eye of Hurricane Hugo
 September 21-22, 1989

MAXIMUM STORM TIDE ALONG SOUTH CAROLINA COAST



Direction of Damaging (All) Winds



COURTESY: NATIONAL WEATHER SERVICE

Based on aerial mapping and photography on Sep.27 - Oct.2, 1989

**SOUTH CAROLINA PRECIPITATION
SEPTEMBER 21-23, 1989
IN INCHES**

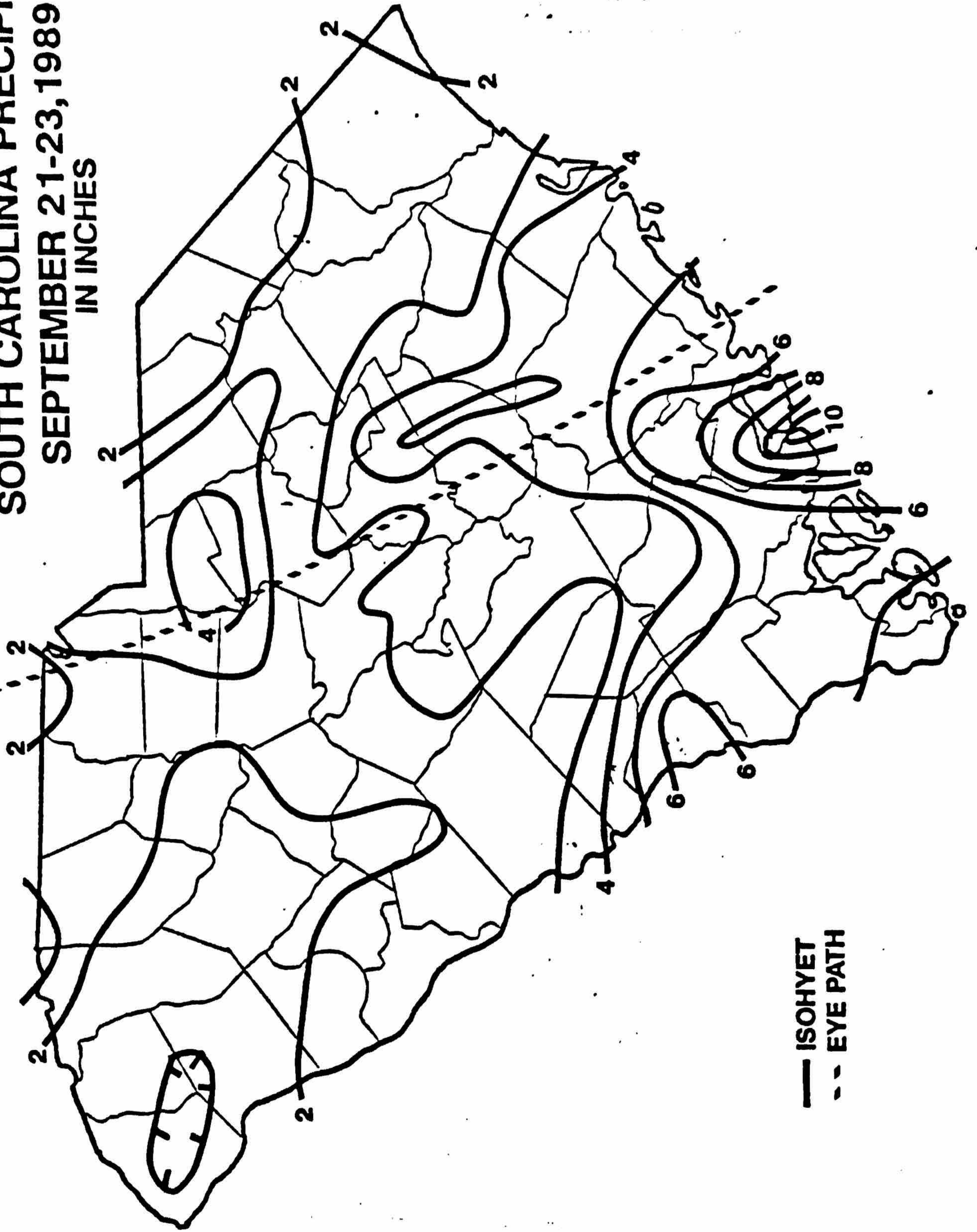


Table Estimated Maximum Wind Speeds at
Coastal Locations During Hurricane Hugo
Courtesy of Dr. Sparks, Clemson University

Location	Mean Speed (mph)	Fastest Mile (mph)	Gust Speed (mph)	Direction (degrees)
Hilton Head	36	47	59	295
Edisto Beach	52	68	83	295
Seabrook Island	(a)61 (b)66	79 86	98 106	335 270
Folly Beach	(a)63 (b)73	82 95	107 115	30 235
Sullivans Island	(a)67 (b)78	87 101	107 133	30 205
Isle of Palms	(a)70 (b)81	91 105	112 140	50 185
S. Bulls Bay	82	107	143	145
Awendaw	73	95	117	145
McClellanville	61	79	98	110
Grand Strand	56	73	91	145
Beaufort	37	48	59	295
Charleston	(a)67 (b)73	87 95	108 115	15 230
Summerville	(a)66 (b)74	86 96	106 118	0 225
Moncks Corner	(a)67 (b)77	87 100	108 123	45 195
Georgetown	54	70	86	145
Myrtle Beach	56	73	91	145
Columbia	53	69	84	325
Sumter	73	95	117	55
Florence	49	64	78	115
Camden	69	90	110	90
Charlotte	58	75	93	120

*Notes for Tables

1. Wind speeds refer to 33ft in flat open terrain except for on shore winds when the gust speed is for a rough ocean exposure.
2. Mean speed is an equivalent hourly measure wind speed.
3. Where two values are given at a particular location the first refer to the highest value before the passage of the eye, the second after the passage of the eye.

*Courtesy of Dr. Sparks, Clemson University.

HURRICANE HUGO SELECTED SURFACE OBSERVATIONS SEPTEMBER 1989

Location	Minimum sea-level pressure		Maximum surface wind speed (knots)			Storm surge (tide height above normal) (ft)	Rain (storm total) (in)
	Pressure (mb)	Date/time (UTC)	1-minute average	Peak gust	Date/time (UTC)*		
South Carolina							
Charleston							
Savannah hwy	936.5	22/0405					
Columbia AT&T	971.7	22/0800		86	22/0654		
Columbia WSFO			46	61	22/0609		
Florence	989.1	22/0750	39	54	22/0547		
Folly Beach C-MAN	940	22/0400	74	93	22/0400		
Georgetown EOC			69		22/0300		3.74
Mt. Pleasant	933	22/0405	71	83	22/0345		8.10
Myrtle Beach AFB	993.5	22/0455	45	66	22/0555		2.30
Sampit River	984.5	22/0442	104				
Shaw AFB	959.6	22/0655	58	95	22/0655		
Summerville							5.98
North Carolina							
Asheville	989.9	22/1150	20	32	22/1050		1.93
Boone							6.91
Cape Fear River				61	22/0545		
Carolina Beach						3(est.)	
Charlotte	978.0	22/0945	60	86	22/1003		3.16
Greensboro	998.1	22/1153	37	47	22/1108		1.43
Hatteras	1013.1	22/0730	23	30	22/0050	4	0.60
Hickory	980.5		30	70	22/1046		
Holden Beach				51	22/0555	6(est.)	
Ocean Isle						7(est.)	
Raleigh	1004.6	22/0930	25	40	22/1050		0.45
Wilmington	1004.5	22/0500	26	46	22/0452		0.79
Virginia							
Norfolk	1008.8	22/1950	23	32	22/2050	0.2	0.21

*Time of 1-minute wind speed unless only gust is given.

Courtesy National Hurricane Center

WIND, PRECIPITATION, PRESSURE, AND TIDE DATA

HIGHEST SUSTAINED WIND SPEED

CHARLESTON WSO	68KTS AT 0003EST
CHARLESTON CITY	76KTS AT 2240EST
MYRTLE BEACH AFB	45KTS AT 0055EST
FOLLY BEACH C-MAN	74KTS AT 2300EST
BEAUFORT MCAS	27KTS AT 2300 TO 0200EST

PEAK GUSTS

CHARLESTON WSO	85KTS AT 2359EST
CHARLESTON CITY	94KTS AT 2240EST
MYRTLE BEACH AFB	66KTS AT 0055EST
FOLLY BEACH C-MAN	93KTS AT 2300EST
BEAUFORT MCAS	44KTS AT 0122EST
HILTON HEAD ISLAND	40KTS AT 2100EST (LAST REPORT)

UNOFFICIAL REPORTS
GEORGETOWN (MARINA)
MT. PLEASANT

NE40 G60MPH AT 5PM EST (LAST REPORT)
SUSTAINED 71KTS AT 2245. PEAK GUST 83KTS AT 2249.

LOWEST PRESSURE

CHARLESTON WSO	943.2MB	2323EST
CHARLESTON CITY	938.7MB	2300EST
MYRTLE BEACH AFB	993.6MB	2355EST
BEAUFORT MCAS	984MB	2355EST
FOLLY BEACH C-MAN	940MB	2300EST

UNOFFICIAL REPORTS
MT PLEASANT

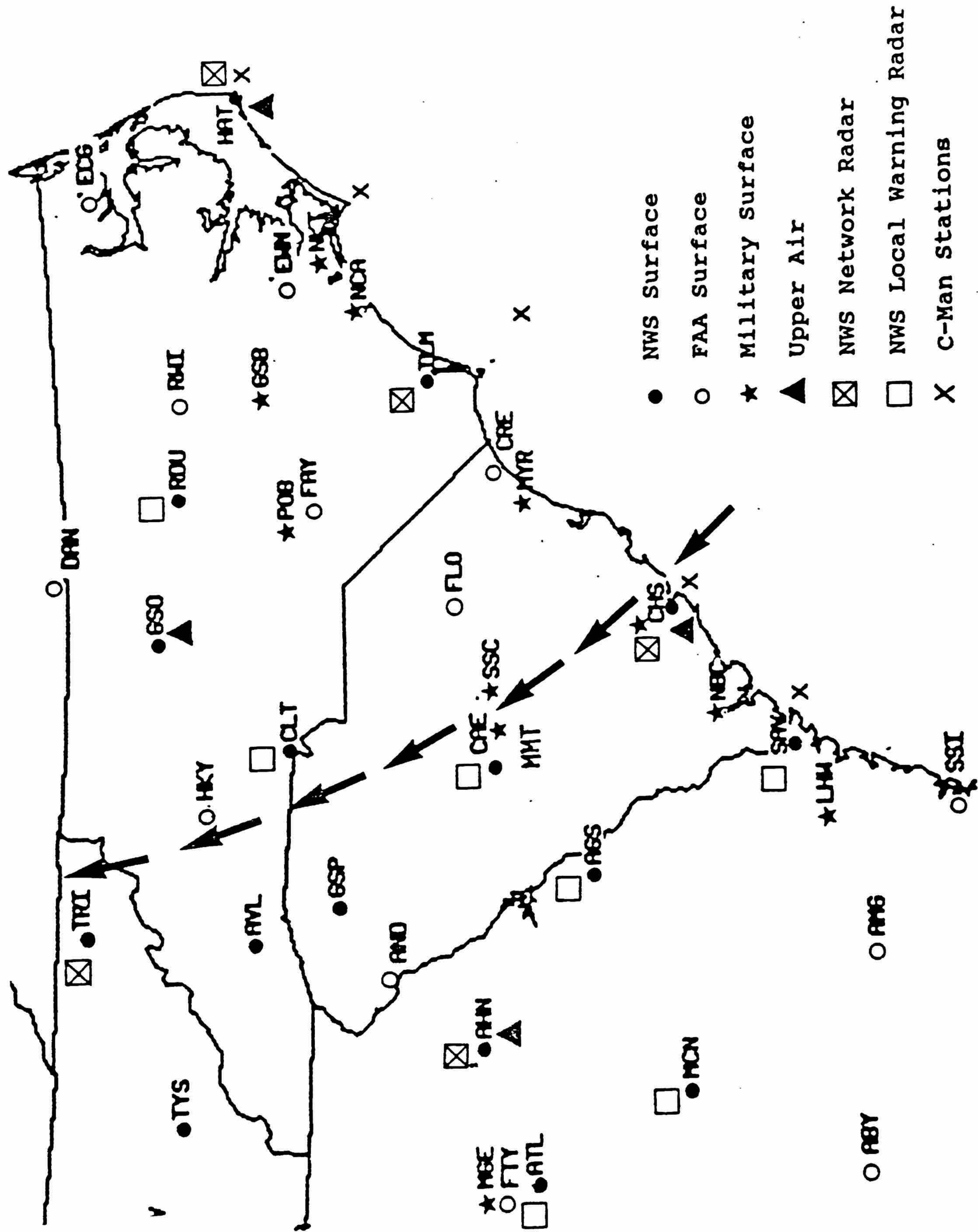
933MB? 1105EST

RAINFALL (STORM TOTAL)

CHARLESTON WSO	5.90 INCHES
CHARLESTON CITY	6.37 INCHES
MYRTLE BEACH AFB	2.30 INCHES
BEAUFORT MCAS	5.94 INCHES
GEORGETOWN CITY	3.74 INCHES
SUMMERVILLE	5.98 INCHES
MT. PLEASANT	8.10 INCHES

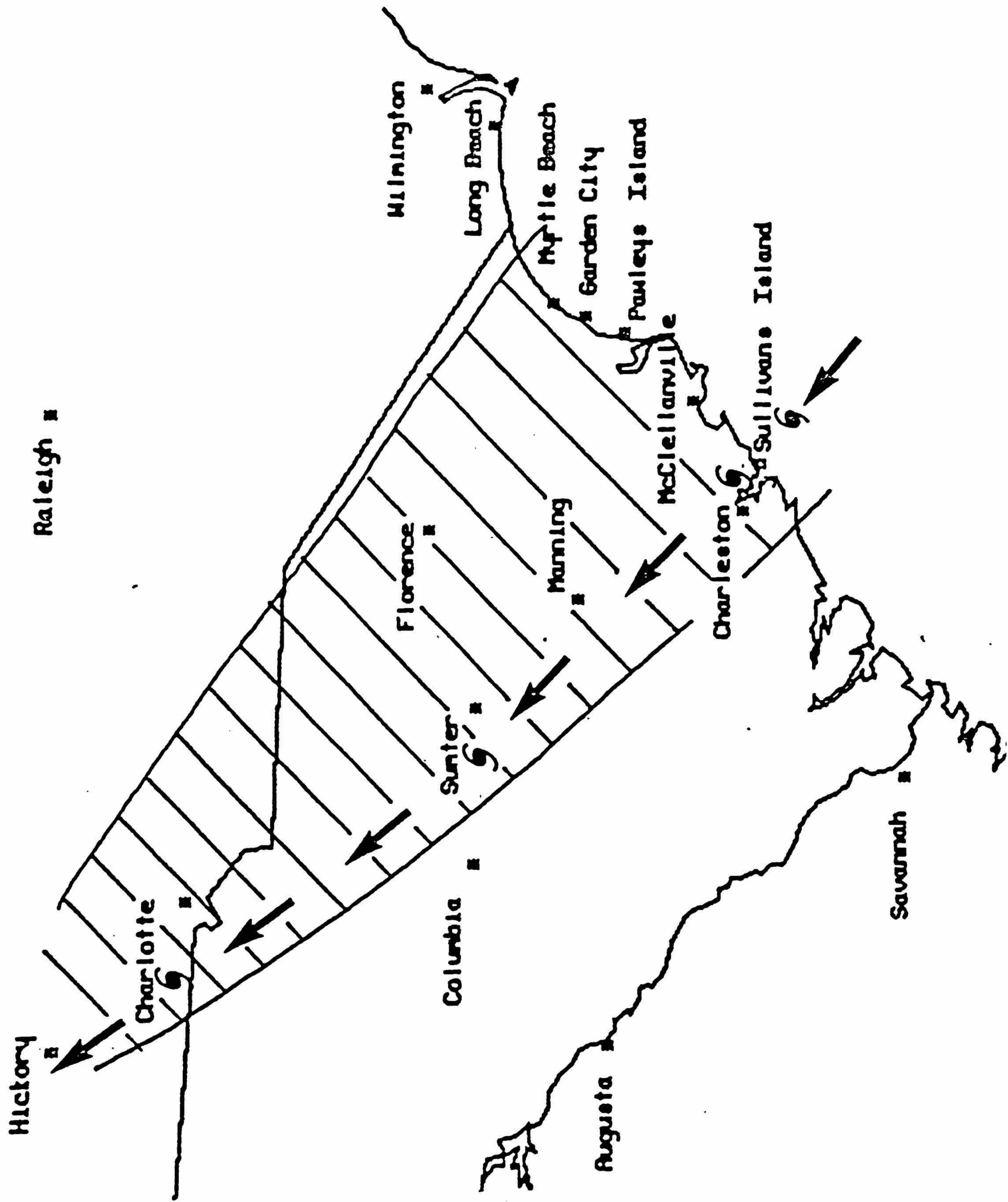
TIDES

CHARLESTON HARBOR	11.34 MLW	2340EST
GEORGETOWN (UNOFFICIAL)	11.5 MLW	
MCCLELLANVILLE (UNOFFICIAL)	17 MLW	
NORTH MYRTLE BEACH (UNOFFICIAL)	9.5 MLW	
MYRTLE BEACH TIDE GAGE DESTROYED. NO DATA AVAILABLE.		



Locations and types of data reporting stations available to NWS in area affected by Hurricane Hugo. Arrows show the track of the storm center.

COURTESY: NATIONAL WEATHER SERVICE



Track of storm center of Hurricane Hugo inland across South Carolina and western North Carolina. Hatch area is approximate area of significant damage resulting from storm.

COURTESY: NATIONAL WEATHER SERVICE

SAFFIR-SIMPSON HURRICANE SCALE

This can be used to give an estimate of the potential property damage and flooding expected along the coast with a hurricane.

<u>Category</u>	<u>Definition -- Effects</u>
<u>ONE</u>	<u>Winds 74-95 MPH or storm surge 4-5 feet above normal.</u> No real damage to building structures. Damage primarily to unanchored mobile homes, shrubbery and trees. Also, some coastal road flooding and minor pier damage.
<u>TWO</u>	<u>Winds 96-110 MPH or storm surge 6-8 feet above normal.</u> Some roofing material, door and window damage to buildings. Considerable damage to vegetation, mobile homes and piers. Coastal and low-lying escape routes flood 2-4 hours before arrival of center. Small craft in unprotected anchorages break moorings.
<u>THREE</u>	<u>Winds 111-130 MPH or storm surge 9-12 feet above normal.</u> Some structural damage to small residences and utility buildings with a minor amount of curtainwall failures. Mobile homes are destroyed. Flooding near the coast destroys smaller structures with larger structures damaged by floating debris. Terrain continuously lower than 5 feet ASL may be flooded inland 8 miles or more.
<u>FOUR</u>	<u>Winds 131-155 MPH or storm surge 13-18 feet above normal.</u> More extensive curtainwall failures with some complete roof structure failure on small residences. Major erosion of beach areas. Major damage to lower floors of structures near the shore. Terrain continuously lower than 10 feet ASL may be flooded requiring massive evacuation of residential areas inland as far as 6 miles.
<u>FIVE</u>	<u>Winds greater than 155 MPH or storm surge greater than 18 feet above normal.</u> Complete roof failure on many residences and industrial buildings. Some complete building failures with small utility buildings blown over or away. Major damage to lower floors of all structures located less than 15 feet ASL and within 500 yards of the shoreline. Massive evacuation of residential areas on low ground with 5-10 miles of the shoreline may be required.

STORM DATA AND UNUSUAL WEATHER PHENOMENA

STATE SOUTH CAROLINA

38

MONTH AND YEAR

September 1989

PLACE	DATE	EST TIME	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS		ESTIMATED [†] DAMAGE		CHARACTER OF STORM
					KILLED	INJURED	PROPERTY	CROPS	
Beaufort Co County wide	21	2200EST			0	0	7	4	Hurricane
	<p>Heavy winds from the storm caused a disalignment and a small crack in the Battery Creek bridge connecting Parris Island with the mainland. There was scattered coastal flooding, and minor beach erosion. There was also scattered minor damage to structures.</p>								
Colleton Co Northwest portion	21	2200EST			0	0	5	7	Hurricane
	<p>Approximately 75 residences were damaged with a total value of \$120,000 to \$150,000. Only two or three homes were destroyed. Crop damage was estimated at \$30,000, and timber damage around \$7 million. Much of the county's damage was in the rural northwestern tip of the county, primarily between Cottageville and SC hwy 61. Around 30,000 people were left without electricity because of the storm.</p>								
Charleston Co County wide	21	2200EST			2	0	9	8	Hurricane
North coast up to 10 miles inland	21	2340EST			1	0	9	6	Storm Surge
	<p>The center of the hurricane passed directly over the Mount Pleasant - Isle of Palms - Sullivan's Island - Bull's Bay area near 2300EST. A woman drowned at Mount Pleasant, in her mobile home, in the Copahee subdivision, when the Cooper River, about 200 yards away, overflowed its banks with the storm surge. In Charleston, one man was killed when a tree fell on his house. Also, in Charleston a man was killed when his home collapsed on him. An indirect death occurred to a 57 year old man when a chainsaw cut his throat while clearing debris. The storm surge went up the Cooper, Ashley and Santee Rivers, and inundated much of the lowlying areas more than 10 miles upriver. The Cathedral of St. Luke and St. Paul, built c. 1811, probably was the most heavily damaged historic building, sustaining damage to 80 percent of its roof. Many of the historic structures on the peninsula survived the storm, while newer structures were heavily damaged. Many trees on Wadmalaw and John's Islands crushed homes they fell on. The 300 year old Angel Oak tree, on John's Island, sustained only slight damage to its limbs. An estimated 15,000 to 20,000 people were left homeless in the</p>								

STORM DATA AND UNUSUAL WEATHER PHENOMENA

STATE SOUTH CAROLINA

38

MONTH AND YEAR

September 1989

PLACE	DATE	EST TIME	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS		ESTIMATED [†] DAMAGE		CHARACTER OF STORM
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county as a result of the storm. At Mount Pleasant, there was widespread devastation associated with the winds and storm surge. On all the barrier islands, many of the newer structures were demolished completely or left unsalvageable. Many shrimp boats were brought inland as a result of the storm surge throughout the northern portions of the county. Numerous shrimp boats docked at Shem Creek, in Mount Pleasant, sank. Boats at Toler's Cove, also in Mount Pleasant, sustained heavy damage, one of them was found on top of the guard house. Approximately 700 to 800 boats were left in poor to unsalvageable condition. The Francis Marion National Forest sustained damage to 70 percent of the trees more than 10 inches in diameter. Many trees were snapped like toothpicks 8 to 10 feet above the ground. The storm blew down trees valued at up to \$115 million in the forest. The salvaged timber, worth about \$12 million, was five times the normal annual harvest because of the millions of dollars of timber rotting in the forest. At least three holes twelve feet in diameter in the Patriot's Point hotel roof were caused by the hurricane. The Ben Sawyer Bridge, connecting Mount Pleasant to Sullivan's Island was bent and twisted, leaving one end of the span sticking almost straight up in the air. It was temporarily replaced with a pontoon bridge. At Bull's Bay, near the maximum of the storm surge, two well-built houses were swept into the Intracoastal Waterway, without a trace. Many schools and large buildings had roof damage. The Charleston harbor was closed for several days following the storm, as all aids to navigation were destroyed by the storm surge. In Harleyville, damage was estimated at \$250,000. The Cape Romain National Wildlife Refuge lost buildings and animal life. Many of the animals there were endangered species. The Charleston Naval Weapons Station sustained damages estimated from \$95 million to \$100 million. Damages to schools in the county were estimated at \$50 million. F60M, M67P, M55P.

Horry Co
County wide
Coast and up to
3 miles inland

22	0000EST	0	0	9	7	Hurricane
22	0025EST	0	0	8	3	Storm Surge

There was one indirect death associated with the storm. A seven year old girl was killed when a fire that was started by a candle engulfed the mobile home she was in. Total destruction in the county amounted to about \$944 million. At

STORM DATA AND UNUSUAL WEATHER PHENOMENA

STATE SOUTH CAROLINA

38

MONTH AND YEAR

September 1989

PLACE	DATE	EST TIME	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS		ESTIMATED [†] DAMAGE		CHARACTER OF STORM
					KILLED	INJURED	PROPERTY	CROPS	
Georgetown Co County wide Coast and up to 5 miles inland	22	0000EST			0	0	9	8	Hurricane
	22	0055EST			0	0	8	4	Storm Surge
<p>Garden City, in southern Horry County, the storm surge eroded a large amount of beach to the front row of houses. There were bent power poles along the front beach. The oceanfront road was traversable only with four-wheel drive vehicles, as it had sand at least two feet thick in places. Landward of the causeway at Garden City, mobile homes in a trailer park had walls and roofs caved in. Also at Garden City, two cottages ended up in the creek. Damage at Garden City was estimated at nearly \$169 million. At Murrells Inlet, there were many downed trees and a number of damaged homes and businesses. A sailboat and motorboat washed up near the Murrells Inlet Boat Landing. In Conway, many trees fell on houses. The roof at Pleasant Hill High School auditorium was blown off. The control tower at the Myrtle Beach AFB was damaged by winds, causing rain to pour onto computers and other equipment. There was about \$2 million worth of damage to buildings and equipment at the base. The pier at Surfside Beach was reduced to 100 feet from 800 feet. The Springmaid Pier at Myrtle Beach was utterly destroyed, as was the pier at the Kingfisher Inn in Garden City. Beach erosion was severe in Myrtle Beach and North Myrtle Beach. Inland sections of Horry county lost trees and street signs, but no major damage was reported. In Cherry Grove, there was as much as 5 feet of sand on the roads. Picnic tables, cabinets, chairs, benches, roof materials and decks littered Heritage Shores, an island across from Cherry Grove at about 53rd Avenue North. Parts of the beach at Ocean Drive, in North Myrtle Beach were eroded as much as 5 feet. Wooden decks at the North Myrtle Beach city park on First Avenue South were knocked loose by waves. The beach, which once met the park's concrete deck, was 5 feet below the deck. In Crescent Beach and Windy Hill, many pools and much oceanfront property were destroyed, and the beach was eroded.</p> <p>There was one indirect death. A 65 year old woman died from smoke inhalation in a house fire caused by candles. The storm surge traveled up the Waccamaw and Pee Dee Rivers, inundating low lying places beyond 5 miles inland. At Garden City, damage</p>									

STORM DATA AND UNUSUAL WEATHER PHENOMENA

STATE SOUTH CAROLINA

38

MONTH AND YEAR

September 1989

PLACE	DATE	EST TIME	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS		ESTIMATED [†] DAMAGE		CHARACTER OF STORM
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was estimated at \$36 million; at Pawleys Island \$17 million; at Debordieu, \$4 million plus \$2.5 million to the water and sewer plant. The city of Georgetown had estimated losses of \$7.25 million, most of which occurred on the water front. The biggest loss was to agriculture, most of that in timber (\$67 million). One hundred fifty houses were destroyed, 350 suffered major damage and 500 sustained minor damage, with dollar losses of \$87,345,838. In addition, 10 mobile homes were destroyed, 25 had major damage, and 100 had minor damage, with losses of \$250,000. Fifty business received major damage and 100 minor damage, for a total of \$5 million. Also, 375 homes and 25 mobile homes on farms were damaged or destroyed, for a total of \$5 million. Other farm building losses totaled \$3 million. Seven industrial plants were damaged, at a cost of \$1 million. Eighty thousand dollars damage to shrimp and other lost to aquaculture operations. Pawley's Island sustained extensive storm surge damage as only a few of the beachfront houses remained intact after the hurricane. Homes were stacked up against each other, and many streets on the South end of Pawley's Island were clogged with the remains of homes. Approximately half the houses at Pawley's Island were either destroyed or left uninhabitable. The hurricane cut a new inlet at Pawley's, through a house, leaving the house under water. The roof of the Georgetown National Guard Armory was blown off. Throughout the county, hurricane winds damaged homes and felled trees. At Murrells Inlet there were many downed trees and a number of damaged businesses and homes.

Dorchester Co
County wide

22 0030EST 0 12 8 8 Hurricane

There were five indirect deaths associated with the storm. All were in good health, and suffered heart attacks after reviewing property loss following the storm. The ages ranged from 48 years to 86 years. Preliminary estimates of storm damage are 15 permanent homes, 81 mobile homes, 5 apartment buildings destroyed; 5,066 permanent homes, four apartments, 1,070 mobile homes damaged; and 20 businesses affected. The estimated dollar value of damages is as follows: residential \$301 million, commercial \$16 million, timber \$65 million. St. Luke's Lutheran Church, in Summerville had part of its roof destroyed from falling trees and limbs. The Francis Willis

STORM DATA AND UNUSUAL WEATHER PHENOMENA

STATE SOUTH CAROLINA

38

MONTH AND YEAR

September 1989

PLACE	DATE	EST TIME	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS		ESTIMATED [†] DAMAGE		CHARACTER OF STORM
					KILLED	INJURED	PROPERTY	CROPS	
Berkeley Co County wide	22	0030EST			6	8	8	9	Hurricane
			<p>SPCA had standing sewage in the kennels, and left the grounds strewn with trees. A large portion of the trees in Summerville were damaged.</p> <p>Five people came up the Santee River from the coast and drowned when their boats capsized. A woman was killed when a mobile home crushed her. She had sought refuge outside behind a car. There were 2 indirect deaths. An eight year old boy was killed when a limb fell on him during cleanup efforts, and a 64 year old man died of a heart attack after examining property damage. Preliminary estimates of the damage in the county are \$3.4 million to residential, commercial property and mobile homes. The eye of the storm passed over the Santee-Cooper Lakes in the hour of 0015EST to 0115EST. The Francis Marion Forest destruction is described under Charleston County's narrative. Virtually all of St. Stephen's homes and business sustained damage, and about half of the residences are unsalvageable. The South Carolina Public Service Authority (Santee Cooper) had virtually all of their transmission towers bent or snapped when the eyewall went over Lake Marion. The post office in Moncks Corner had many windows blown in and part of the roof blown off. An estimated 1,500 people were left homeless in St. Stephen. M300, M590, M580, M380, F410, F410.</p>						
Bamberg Co County wide	22	0030EST			0	0	4	3	Hurricane
			<p>Less than \$6,000 in damage throughout the county including property and crops. Some trees were down and one mobile home was damaged. About 85 percent of the residents were without power.</p>						
Orangeburg Co County Wide	22	0100EST			1	20	7	7	Hurricane
			<p>At Eutawville, a man was killed when his mobile home rolled on top of him. There were four indirect deaths associated with the storm. Three people were killed in a mobile home fire that was started by a candle. One person was electrocuted during cleanup efforts. Preliminary damage estimates are 74 permanent</p>						

STORM DATA AND UNUSUAL WEATHER PHENOMENA

STATE SOUTH CAROLINA

38

MONTH AND YEAR

September 1989

PLACE	DATE	EST TIME	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS		ESTIMATED [†] DAMAGE		CHARACTER OF STORM
					KILLED	INJURED	PROPERTY	CROPS	
Calhoun Co County wide	22	0130EST			0	0	7	7	Hurricane
									<p>structures destroyed, 359 mobile homes destroyed; 3,640 permanent structures damaged, 177 mobile homes damaged. A total of \$31 million in damage to property, including \$25 million to residences alone. Agricultural losses were: 500 acres of pecans lost; 80,000 acres of soybeans lost; 500 acres of truck crops lost; 11,000 acres of cotton lost; \$19 million in timber losses. The eastern half of the county suffered the worst damage, as the eye of the storm went over Lake Marion during the hour of 0030-0130 EST. Thousands of pin oaks and pine trees were either snapped off or uprooted. The roof of the Days Inn hotel at Santee was heavily damaged. Eighty-five percent of the residents lost power during the storm. Whole peach orchards were flattened from the storm, and cotton fields were devastated with 95 percent of the crop lost. At least 12 homes were destroyed. M69M.</p>
Clarendon Co County wide	22	0130EST			0	2	8	8	Hurricane
									<p>There was one indirect death. A 27 year old woman was trapped under a tree and was asphyxiated. The county's crops, including cotton, corn and soybeans, sustained \$13 million in damage. An estimated \$7 million to \$8 million property damage occurred throughout the county. One third of the pecans trees were felled and pecans from other trees were strewn on the ground. The Stump Hole area with Cameron, Lone Star and St. Matthews were hit hard. Approximately 7,800 people were left without power immediately after the storm. Debris clogged roads throughout the county. Houses suffered extensive damage, including several struck by falling trees. Mobile homes sustained the most damage. A few businesses in St. Matthews had their windows broken. Fallen trees blocked many roads. Power lines were down throughout the county.</p> <p>There were three indirect deaths that occurred when a 36 year old woman and her two children, ages 6 and 2, died from smoke inhalation as a result of a candle fire in their home. Preliminary estimated damage was set at \$367 million including at least \$78 million to timber. There was much widespread damage associated with the passage of the eyewall over the</p>

STORM DATA AND UNUSUAL WEATHER PHENOMENA

STATE SOUTH CAROLINA

38

MONTH AND YEAR

September 1989

PLACE	DATE	EST TIME	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS		ESTIMATED [†] DAMAGE		CHARACTER OF STORM
					KILLED	INJURED	PROPERTY	CROPS	
Florence Co County wide	22	0130EST			0	0	8	8	Hurricane
									<p>county during the hour of 0100-0200 EST. At 5 E of Turbeville, hurricane winds flipped over a squad car, injuring a police officer. At 3 S of Turbeville, trees fell on a squad car, but did not injure the officer, although he was trapped. Eighty-five percent of the structures in the county received damage; 40 percent were destroyed. Three fire stations, the county courthouse, the county police station and a National Guard Armory received damage. Virtually every road in the county was blocked by fallen trees. It was estimated that 87 percent of the trees fell. Seventy percent of the county's residents were left without power.</p> <p>It is estimated that the total damage would exceed \$200 million from property and agriculture losses, including \$71 million in timber damage. At the intersection of I-95 and US hwy. 52, tropical storm force winds blew the roof off of a motel, sending it crashing into the parking lot, damaging many vehicles. Many parts of the roof became projectiles and damaged a hotel roof next to the property. There were many trees and power lines downed as a result of the storm. There was extensive damage at Johnsonville and Pamplico. A hangar at the Florence Regional Airport, on US hwy 301 South, and a terminal's roof were damaged. Also, a number of airplanes were damaged. There was also roof damage to the South Florence High School. Downtown Florence was littered with shingles, awnings, aluminum siding, destroyed plastic signs and fallen trees. Many tobacco warehouses were flattened.</p>
Sumter Co Hwy 441 & US 378	22	0130EST	1.25	165	0	0	7	0	Tornado (F1)
									<p>A tornado, moving from northeast to southwest, flipped over several trailers and skipped one-half mile and ripped off the roof of a day care center and proceeded into a grove of trees and dissipated. It caused an estimated \$500,000 in damage.</p>
Williamsburg Co County wide	22	0130EST			0	0	8	8	Hurricane
									<p>An indirect death occurred when a man, aged 55 years, stepped</p>

STORM DATA AND UNUSUAL WEATHER PHENOMENA

STATE SOUTH CAROLINA

38

MONTH AND YEAR

September 1989

PLACE	DATE	EST TIME	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS		ESTIMATED [†] DAMAGE		CHARACTER OF STORM
					KILLED	INJURED	PROPERTY	CROPS	
Marion Co County wide	22	0145EST			0	0	5	7	Hurricane
									<p>on a live wire after the storm's passage. Preliminary estimates of storm damage are 61 permanent homes, 178 mobile homes destroyed; 1,538 permanent homes, four apartments, 317 mobile homes damaged; 98 businesses and 69 public buildings affected. The estimated dollar value of damages is as follows: residential \$50 million, county buildings and roads \$2.07 million, Towns of Greeleyville, Lane, Hemingway and Kingstree \$1.5 million, schools and colleges \$5.5 million, power companies \$14 million, timber \$232.5 million (on 390,000 acres), crops \$12.4 million and farm buildings and farm equipment \$5 million, for a total of approximately \$323 million. The Carolina and Fair Deal warehouses were damaged, as was the Goldkist fertilizer plant, which had a wall blown out by the high winds at Kingstree. There was also damage to the roofs of the City Hall and Williamsburg County complexes. Most of the damage in Kingstree was downtown.</p> <p>Most of the damage (\$40 million) was confined to timber in the lower part of the county. In the city of Marion, windows on Main Street were blown out, and the courthouse, county museum and council on aging buildings were damaged. The entire county lost power as a result of the storm.</p>
Lancaster Co Kershaw	22	0145EST	0.75	150	0	0	3	4	Tornado (F1)
									<p>A tornado, moving from northeast to southwest, caused damage to a grove of trees.</p>
Dillon Co County wide	22	0200EST			0	?	7	7	Hurricane
									<p>One indirect death occurred when a 76 year old man was burned in a house fire started by a candle. Preliminary damage estimates are \$6 million for crops, \$3.9 million for property. There was scattered damage to structures. Many trees were uprooted and branches broke off as a result of the winds.</p>

STORM DATA AND UNUSUAL WEATHER PHENOMENA

STATE SOUTH CAROLINA

38

MONTH AND YEAR September 1989

PLACE	DATE	EST TIME	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS		ESTIMATED [†] DAMAGE		CHARACTER OF STORM
					KILLED	INJURED	PROPERTY	CROPS	
Marlboro Co County wide County wide	22	0200EST			0	0	7	6	Hurricane
	22	0200EST			0	0	3	8	Heavy Rain
<p>Timber losses were estimated at \$2.2 million. Total damage throughout the county was estimated at \$9.5 million. 447 homes were damaged and two small houses were destroyed in the county. About 50 percent of the defoliated cotton and up to 30 percent of the late cotton was damaged. Other crops that were damaged included tobacco and corn still in the field and pecans. The Williams Motel on U.S. hwy 15 in Bennetsville suffered substantial damage, as the roof of a large section of the motel was destroyed by the hurricane. Many trees were uprooted and/or snapped throughout the county. At the McAlpine Stadium, at Marlboro County High School, in Bennetsville, winds bent the goalposts of the football field. Many signs and windows throughout the county were damaged.</p>									
Sumter Co County wide	22	0200EST			1	328	8	8	Hurricane
<p>An infant boy suffocated as a result of damage to the mobile home he was in. There was one indirect death when a man, aged 25 years, was electrocuted while attempting to rewire his house following the storm. It has been estimated that the county sustained \$400 million in storm related damage including substantial timber loss. Sixteen houses and 150 mobile homes were destroyed and 793 homes and 113 mobile homes suffered major damage. Forty-four businesses in the county were destroyed, 585 had minor damage and 60 had major damage. There was much widespread damage throughout the county. Many people were left without communications, power and water for up to several weeks following the storm. At the Manchester State Forest, on SC hwy 261 south of Wedgefield, many trees were snapped 8 to 12 feet above the ground. Witnesses in Wedgefield stated that the wind calmed down substantially around 0230EST, and picked up again around 0300EST. The city of Sumter was devastated by the storm as the eye passed just to the west. At Shaw AFB, many trees were downed. An entire wall of the First Presbyterian Church of Sumter was ripped away during the storm. M01M.</p>									

STORM DATA AND UNUSUAL WEATHER PHENOMENA

STATE SOUTH CAROLINA

38

MONTH AND YEAR September 1989

PLACE	DATE	EST TIME	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS		ESTIMATED† DAMAGE		CHARACTER OF STORM
					KILLED	INJURED	PROPERTY	CROPS	
Lee Co									
County wide	22	0200EST			1	20	8	8	Hurricane
County wide	22	0200EST			0	0	6	7	Heavy Rain
<p>A man was killed when his mobile home was crushed by the force of the wind. The preliminary estimate of damage is \$91,713,830. Included in that is \$13 million in crops and \$40 million in timber. More than 1,100 single-family homes and mobile homes in the county were destroyed or had major damage. Approximately 1,700 homes sustained minor damage. Trees, crops and mobile homes took the brunt of the winds. Many power lines were downed as a result of the winds and trees. Power poles throughout the county were snapped. The entire county was without power for several days. M32M.</p>									
Darlington Co									
County wide	22	0200EST			0	0	8	7	Hurricane
<p>The total loss was estimated as approximately \$95 million, including at least \$20 million in timber. More than 125 homes were totally destroyed, 379 suffered major damage and 2,270 sustained minor damage as a result of the winds. Many of the trees in Hartsville were damaged, as were road signs throughout the county. Five miles north of Kellytown, two trailers were completely destroyed. In Kellytown, many trees were downed at the South Hartsville School. Crop losses of \$5.6 million were sustained, as the wind and rain destroyed much of the county's cotton crop. Many telephone/power poles were snapped off halfway up throughout the county.</p>									
Richland Co									
County wide	22	0215EST			1	30	7	7	Hurricane
<p>A man was killed when a tree fell on the car he was driving in during the storm. Total estimates of damage were \$50 million to \$60 million. Of that, \$23 million was crop and timber losses. The lower part of the county bore the brunt of the storm. Eastover, Hopkins and Gadsden, and the Northeast area of Columbia were among the hardest hit. Numerous power lines had trees fall on them in the eastern portion. Western portions of the county sustained minor to moderate damage. More than 150,000 people were without power as a result of the storm. M30V.</p>									

STORM DATA AND UNUSUAL WEATHER PHENOMENA

STATE SOUTH CAROLINA

38

MONTH AND YEAR

September 1989

PLACE	DATE	EST TIME	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS		ESTIMATED [†] DAMAGE		CHARACTER OF STORM
					KILLED	INJURED	PROPERTY	CROPS	
Lexington Co Eastern portions	22	0230EST			0	0	4	5	Hurricane
A minimal amount of damage occurred in the county.									
Kershaw Co County wide	22	0300EST			0	0	8	7	Hurricane
<p>Preliminary estimates of damage are \$35 million in residential and commercial buildings, \$25 million for mobile homes, \$8.1 million for government buildings, including schools; \$5 million for non-profit buildings. Timber damage was estimated \$30 million. Industrial loss was estimated at \$18 million. A gymnasium roof collapsed at Camden where 160 had sought shelter. No injuries were reported. At the DuPont plant in Lugoff, there were at least 7 wind gusts in excess of 100 mph at the top of the plant's water tower. A complete cooling tower was thrown from the roof of the plant during the storm. There were many trees down and broken around the DuPont property. There was damage to a shopping center at the intersection of US hwy 1 and SC hwy 34, where a portion of the roof was lifted off the structure. There were numerous trees downed in and around Lugoff. The eye passed over Camden, and caused widespread damage in the city of Camden. The Camden High School had damage to 2 of the football field lights which were bent over backwards and kinked. The worst damage in and around the city of Camden was located from along US hwy 601 to SC hwy 97. The Robert Mills courthouse on South Broad Street in Camden sustained heavy damage to the front portion of the roof. There was damage along the road between Hartsville and Camden, where several farm buildings had their roofs peeled off, and telephone poles were snapped in half. An estimated \$1.5 million dollars worth of damage was done to city of Camden property. Seventy-five percent of the cotton was destroyed. Along Lake Wateree, there was damage to structures, boats, trees and docks.</p>									
Chesterfield Co County wide	22	0300EST			0	0	7	7	Hurricane
<p>Total damage was estimated near \$27 million, with \$18 million worth of timber damage. Many limbs fell in Cheraw, in the area in and around the intersection of Kershaw and Huger Streets.</p>									

STORM DATA AND UNUSUAL WEATHER PHENOMENA

STATE SOUTH CAROLINA

38

MONTH AND YEAR

September 1989

PLACE	DATE	EST TIME	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS		ESTIMATED [†] DAMAGE		CHARACTER OF STORM
					KILLED	INJURED	PROPERTY	CROPS	
Fairfield Co Eastern portions	22	0300EST			0	0	6	7	Hurricane
									<p>Several trailers were flipped 1 W of Mt. Croghan. At Ruby, several trees were downed along SC hwy 9 near the cemetery. 2 W of Chesterfield, several signs were blown down and the steeple of a church was bent, and a concrete block structure was destroyed. At the Lynches River bridge for highway 601, several farm buildings had the tin peeled off their roofs. About 400 families were left homeless in the storm's wake. Twenty single-family homes and 39 mobile homes were destroyed. Another 265 homes and 74 mobile homes are uninhabitable because of major damage. A total of 2,041 homes received some damage, with repair costs estimated at \$3.5 million. The worst hit communities were Pageland, McBee and Jefferson.</p>
Chester Co County wide	22	0400EST			0	0	7	7	Hurricane
									<p>Most of the damage occurred along Lake Wateree, to structures, boats, trees and docks. There was some loss in timber, but not as much as counties further south and east. Nearly all of the houses near the lake were damaged. Ridgeway sustained heavy damage also. At least 30 mobile homes were damaged by trees or winds.</p>
Lancaster Co County wide	22	0400EST			0	0	8	8	Hurricane
									<p>It was estimated that Duke Power lost \$50 million to \$100 million. It was also estimated that 40 percent of the forest's in the county were affected worth \$48 million. Another \$24 million worth of property damage occurred in the storm. The hurricane knocked out power to 48,000 residents. In the town of Kershaw, there was much building damage, as hurricane winds lifted the roofs off of a furniture store and auto parts store. The town fire station sustained damage to its roof, which had tin peeled back from it.</p>

STORM DATA AND UNUSUAL WEATHER PHENOMENA

STATE SOUTH CAROLINA

38

MONTH AND YEAR

September 1989

PLACE	DATE	EST TIME	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS		ESTIMATED [†] DAMAGE		CHARACTER OF STORM
					KILLED	INJURED	PROPERTY	CROPS	
Greenville Co County wide	22	0400EST			0	0	4	4	Hurricane
									Winds toppled trees onto power poles, leaving 15,000 customers out of electricity for several hours.
Spartanburg Co County wide	22	0400EST			0	0	4	4	Hurricane
									Winds toppled trees onto power poles, leaving 5,000 customers out of electricity for several hours. A house had its roof blown off.
Laurens Co Eastern portions	22	0400EST			0	0	4	4	Hurricane
									There were scattered areas that had fallen trees in the county.
Union Co County wide	22	0400EST			0	0	4	4	Hurricane
									High winds uprooted 30-40 trees throughout the county, causing some to fall on power lines, and blocking streets.
York Co County wide	22	0400EST			0	0	8	7	Hurricane
									There was one indirect death. A 56 year old utility worker was electrocuted during cleanup efforts. Total property damage was estimated at \$11 million. There was approximately \$7 million in damage to timber. Softball complexes, high school fields and other sports facilities sustained damage during the storm. Damage to Fort Mill was estimated between \$360,000 and \$500,000. Damage to schools throughout the county was estimated at \$435,000 to \$500,000. A 200 year old oak tree, measuring 6 feet in diameter at the base, fell during the storm in Fort Mill Township. In Rock Hill alone, damages were estimated at \$8 million. In Rock Hill, the winds were strong enough to bend steel beams in half. At Lake Wylie, the Tega Cay Marina broke into four parts and floated nearly two miles to Big Allison Creek, and more than 100 boats were reported damaged. The Commodore Yacht Club, near the Catawba Nuclear Station, sustained damage to 20 boats. At the River Hills subdivision, approximately six homes were destroyed and most of

AUGUSTA HOURLY WEATHER OBSERVATION SEPTEMBER 21, 1989

SURFACE WEATHER OBSERVATION FOR AUGUSTA MSO DATE 09/21/89 SYNOPTIC OBSERVATIONS

-----PRESSURE----- 3 HOUR AIR TEMPERATURE PRECIPITATION DATE 09/21/89 SYNOPTIC OBSERVATIONS

TIME	STATION INCHES	TENDENCY (SEE CODE)	TEMPERATURE F	PRECIPITATION INCHES	DATE	SYNOPTIC OBSERVATIONS	TEMPERATURE	SOIL	BAROMETER
0054	29.820	7	71	00.00	MIDNIGHT TO 0100	0.00 00. 0	71	71	29.810
0150	29.810		71	00.00	TO 0054	0.00 00. 0	73	71	29.800
0250	29.800		72	TRACE	TO 0650	0.90 00. 0	73	71	29.800
0352	29.790	7	72	TRACE	TO 1249	0.95 00. 0	80	70	29.745
0451	29.780		72	00.28	TO 1849	0.09 00. 0	82	75	29.590
0550	29.810		72	00.52	1849 TO MIDNIGHT	0.45 00. 0	76	72	
0651	29.800	0	73	00.10					
0750	29.820		74	00.25					
0950	29.825		70	00.48					
0950	29.825	2	73	00.12					
1050	29.810		74	00.08					
1150	29.790		77	00.02					
1250	29.750	7	80	00.00					
1352	29.715		82	00.00					
1450	29.690		81	TRACE					
1551	29.670	7	79	TRACE					
1650	29.660		76	TRACE					
1750	29.630		75	00.02					
1850	29.590	7	76	00.07					
1950	29.580		75	00.11					
2050	29.530		74	00.01					
2150	29.440	8	73	00.21					
2251	29.360		73	00.10					
2350	29.270		73	00.02					

EXPLANATION OF PRESSURE TENDENCY DESCRIPTION

0 INCREASING, THEN DECREASING; ATMOSPHERIC PRESSURE THE SAME OR HIGHER THAN 3 HOURS AGO.
 1 INCREASING, THEN STEADY; OR INCREASING THEN INCREASING MORE SLOWLY.
 2 INCREASING (STEADILY OR UNSTEADILY).
 3 DECREASING OR STEADY, THEN INCREASING; OR INCREASING, THEN INCREASING MORE RAPIDLY.
 4 STEADY, ATMOSPHERIC PRESSURE THE SAME AS 3 HOURS AGO.
 5 DECREASING, THEN INCREASING; ATMOSPHERIC PRESSURE THE SAME OR LOWER THAN 3 HOURS AGO.
 6 DECREASING, THEN STEADY; OR DECREASING THEN DECREASING MORE SLOWLY.
 7 DECREASING (STEADILY OR UNSTEADILY).
 8 STEADY OR INCREASING, THEN DECREASING; OR INCREASING, THEN DECREASING MORE RAPIDLY.

TIME	AMT	OPQ	1ST LAYER	2ND LAYER	3RD LAYER	4TH LAYER	5TH LAYER	6TH LAYER
0054	10	10	7 SC	35 SC	10			
0150	10	10	6 SC	55 SC	10			
0250	10	10	10 ST					
0352	10	10	10 ST					
0451	10	10	10 CUFP					
0550	10	10	10 CUFP					
0651	10	10	4 CUFP	7 CUFP				
0750	10	10	2 STFP	7 ST				
0850	10	10	3 STFP	20 SC	4 AC	120 10		
0950	10	10	2 STFP	29 SC	4 AC	120 10		
1050	10	10	1 STFP	4 AC				
1150	10	10	6 SC	120 AC				
1250	10	10	3 SC	120 AC				
1352	10	10	3 SC	120 AC				
1450	10	10	3 CUFP	50 SC	5 NS	100 10		
1551	10	10	3 CUFP	50 SC				
1650	10	10	2 STFP	100 NS				
1750	10	10	2 STFP	75 NS				
1850	10	10	4 CUFP	100 AC				
1950	10	10	6 CU	100 AC				
2050	10	10	6 CU	100 AC				
2150	10	10	8 CUFP	100 NS				
2251	10	10	7 CUFP	100 NS				
2350	10	10	6 CUFP	100 AS				

AUGUSTA HOURLY WEATHER OBSERVATION SEPTEMBER 21, 1989

SURFACE WEATHER OBSERVATIONS FOR AUGUSTA WSO

DATE 09/21/89

TIME	CEILING & SKY CONDITIONS	VISIBILITY IN MILES & WEATHER	SEA TEMPERATURE		-DEW-		--WIND--		ALTIMETER		REMARKS AND CODED DATA
			LEVEL MB	AIR F	POINT F	DIR	SPEED KNOTS	SETTING INCHES			
0054	M20 BKN 35 OVC	7	1015.1	71	68	01	04	29.98	710 15// 77 (SG)		
0120	M14 BKN 65 OVC	7				35	05	29.98	(SG)		
0150	M12 BKN 55 OVC	7	1014.7	71	69	32	04	29.97	(SG)		
0216	M9 OVC	7				33	05	29.96	(SG)		
0250	M8 OVC	7RW-	1014.4	72	69	34	06	29.96	RB49 (SG)		
0322	M7 OVC	7				32	04	29.95	(SG)		
0352	M7 OVC	5F	1014.1	72	70	34	05	29.95	RE21/ 71000 16// (SG)		
0445	M7 OVC	4TRW-F	1013.7	72	71	36	06	29.95	TB44/ T OVHD MVG NW (SG)		
0451	M6 OVC	2TRW-F				34	05	29.94	TB44/RB30/T OVHD MOVG NW/LGTICCG (SG)		
0521	M6 OVC	11/2RW-F	1014.7	72	72	02	04	29.95	TE20/T MOVD NW (SG)		
0550	M6 OVC	11/2TRW-F				18	05	29.97	TE20B49/T S MOVG NW (SG)		
0605	M2 BKN 6 OVC	11/2TRW-F				34	06	29.95	T S MOVG NW (SG)		
0622	M2 BKN 7 OVC	11/2RW-F				19	04	29.96	TE22/T MOVD NW ('SG)		
0651	2 SCT M7 OVC	11/2RW-F	1014.4	73	72	31	04	29.96	TE22/T MOVD NW/ 00390 17// 71 20090 (SG)		
0723	2 SCT M7 OVC	3/4RWF				01	06	29.98	(TB)		
0739	2 SCT M7 OVC	2RW-F				07	03	29.98	(TB)		
0742	2 SCT M7 OVC	1RWF				07	06	29.98	R35VR60+ (TB)		
0750	2 SCT M7 OVC	1RWF	1015.1	74	73	09	07	29.98	R35VR60+ (TB)		
0828	7 SCT E20 OVC	2RWF				03	05	29.97	(TB)		
0850	7 SCT E20 OVC	2RW-F	1015.2	70	70	08	07	29.99	(TB)		
0856	7 SCT E20 OVC	1RWF				08	12	29.99	R35VR40V60+ (TB)		
0910	7 SCT E20 OVC	3RW-F				05	08	29.98	(TB)		
0950	7 SCT E20 BKN 120 OVC	3RW-F	1015.2	73	71	04	05	29.99	20884 157/ (TB)		
1050	7 SCT E20 BKN 120 OVC	4RW-F	1014.7	74	73	04	04	29.97	(TB)		
1150	E29 BKN 120 OVC	5F	1014.1	77	75	03	05	29.95	RE05 (TB)		
1250	E29 BKN 120 OVC	6F	1012.7	80	76	01	06	29.91	72595 157/ 70 (TB)		
1329	29 SCT E120 OVC	7				03	07	29.88	(TB)		
1352	27 SCT E120 OVC	7	1011.5	82	77	02	07	29.88	(RLS)		
1450	33 SCT E120 OVC	7RW-	1010.6	81	77	01	04	29.85	RB28 PCPN VRY LGT (TB)		
1551	27 SCT E100 OVC	8RW-	1010.0	79	72	01	06	29.83	72700 172/ (KS)		
1650	50 SCT E100 OVC	6RW-F	1009.6	76	73	32	05	29.82	(KS)		
1750	50 SCT E100 OVC	6R-F	1008.6	75	73	33	07	29.79	(KS)		
1850	35 SCT M75 OVC	5R-F	1007.2	76	74	34	09	29.75	72709 172/ 82 (KS)		
1950	M41 BKN 100 OVC	6R-F	1006.9	75	73	36	15G19	29.74	(KS)		
2050	M35 BKN 100 OVC	6R-F	1005.2	74	72	34	17G20	29.69	PCPN VRY LGT (KS)		
2123	M20 BKN 100 OVC	5RWF				35	16G22	29.65	PRESFR (KS)		
2150	M24 BKN 100 OVC	3RWF	1002.1	73	71	34	17G23	29.60	PRESFR/ 85125 172/ (KS)		
2158	M24 BKN 100 OVC	2RW+				33	20G23	29.59	(KS)		
2247	M11 BKN 100 OVC	3R-F	999.4	73	71	35	13	29.53	PRESFR (KS)		
2251	M19 BKN 100 OVC	3R-F				35	18G23	29.52	PRESFR (KS)		
2350	M19 BKN 100 OVC	4R-F	996.4	73	71	34	17G24	29.43	PRESFR (KS)		

ALL TIMES ON THIS SHEET ARE 24-HOUR CLOCK STANDARD TIME. ADD ONE HOUR FOR DAYLIGHT TIME, IF AND WHEN IN USE. WIND DIRECTION IS MEASURED IN TENS OF DEGREES FROM NORTH, GOING CLOCKWISE, AND IS THE DIRECTION FROM WHICH THE WIND WAS BLOWING. NORTH IS 360 DEGREES. TO CONVERT KNOTS TO MILES PER HOUR, MULTIPLY BY 1.15.

AUGUSTA HOURLY WEATHER OBSERVATIONS SEPTEMBER 22, 1989

SURFACE WEATHER OBSERVATIONS FOR AUGUSTA WSO

DATE 09/22/89

3 HOUR
PRESSURE

SYNOPTIC OBSERVATIONS

TEMPERATURE

TIME	STATION INCHES	TENDENCY (SEE CODE)	AIR TEMPERATURE F	PRECIPITATION INCHES	TIME	WATER	SNOWFALL	SNOWDEPTH	F	F	F	F	BAROMETER
0051	29.175	8	73	00.06	MIDNIGHT TO 0100	0.06	00.0	00.0	74	73			29.160
0150	29.135		74	TRACE	TO 0050	0.51	00.0	00.0	76	73			+ .015
0250	29.150		73	00.10	TO 0649	0.55	00.0	00.0	74	69			+ .010
0350	29.205	3	71	00.35	TO 1249	TRACE	00.0	00.0	87	70			+ .010
0450	29.290		70	00.05	TO 1850	TRACE	00.0	00.0	88	77			29.650
0550	29.390		71	00.05	1850 TO MIDNIGHT	TRACE	00.0	00.0	78	71			+ .005
0650	29.470	2	70	00.00									
0750	29.520		70	TRACE									
0852	29.570		74	00.00									
0950	29.580		78	00.00									
1050	29.595	1	82	00.00									
1153	29.600		84	00.00									
1250	29.600	1	87	00.00									
1350	29.600		85	00.00									
1450	29.590	3	86	00.00									
1550	29.610		86	00.00									
1650	29.620		84	00.00									
1750	29.645		81	00.00									
1850	29.655	2	77	TRACE									
1950	29.680		76	TRACE									
2050	29.700		74	TRACE									
2150	29.705	1	73	TRACE									
2250	29.700		72	TRACE									
2351	29.700		72	00.00									

EXPLANATION OF PRESSURE TENDENCY

0 INCREASING, THEN DECREASING; ATMOSPHERIC PRESSURE THE SAME OR HIGHER THAN 3 HOURS AGO.

1 INCREASING, THEN STEADY; OR INCREASING THEN INCREASING MORE SLOWLY

2 INCREASING (STEADILY OR UNSTEADILY).

3 DECREASING OR STEADY, THEN INCREASING; OR INCREASING, THEN INCREASING MORE RAPIDLY.

4 STEADY, ATMOSPHERIC PRESSURE THE SAME AS 3 HOURS AGO.

5 DECREASING, THEN INCREASING; ATMOSPHERIC PRESSURE THE SAME OR LOWER THAN 3 HOURS AGO.

6 DECREASING, THEN STEADY; OR DECREASING THEN DECREASING MORE SLOWLY

7 DECREASING (STEADILY OR UNSTEADILY).

8 STEADY OR INCREASING, THEN DECREASING; OR DECREASING, THEN DECREASING MORE RAPIDLY.

TIME	AMT	OPQ	1ST LAYER	2ND LAYER	3RD LAYER	4TH LAYER	5TH LAYER	6TH LAYER
0051	10	10	6 CUERA	4 AS	2 AC	1 CI		
0150	10	10	6 CUERA	4 AS	2 AC	1 CI		
0250	10	10	6 CUERA	4 NS	2 AC	1 CI		
0350	10	10	10 CUERA	3 AC	3 AC	1 CI		
0450	10	10	4 CUERA	7	120	10		
0550	10	10	10 SC	2 AC	100	10		
0650	10	10	6 SC	4 AC	100	10		
0750	10	10	4 SC	6 CI	250	10		
0852	9	8	3 SC	5 CI	250			
0950	7	4	2 SC	8 CI	250			
1050	10	5	2 CU	7 CI	250			
1153	9	4	2 SC	7 CI	250			
1250	10	4	3 SC	7 CI	250			
1350	10	4	3 SC	7 CI	250			
1450	10	4	3 SC	7 CI	250			
1550	9	8	2 SC	6 AC	250	9		
1650	10	9	2 SC	7 AC	250	10		
1750	10	10	3 SC	7 AC	230	10		
1850	10	10	4 SC	5 AC	230	10		
1950	10	10	5 SC	3 SC	100	10		
2050	10	10	2 SC	4 CI	100	10		
2150	10	10	6 AC	6 AC	230	10		
2250	10	10	2 SC	6 AC	100			
2351	10	10	4 AC	6 AC	110	10		

CHARLESTON HOURLY WEATHER OBSERVATIONS SEPTEMBER 21, 1989

U.S. DEPARTMENT OF COMMERCE
 NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
 NATIONAL WEATHER SERVICE
 SURFACE WEATHER OBSERVATIONS

STATION CHARLESTON AP, SC
 DATE SEPTEMBER 21, 1989
 TO CONVERT LST TO GMT ADD 05 hrs. SUBTRACT hrs

TYPE	TIME (LST)	SKY AND CEILING (Hundreds of Feet)	VISIBILITY (Miles)		WEATHER AND OBSTRUCTIONS TO VISION	SEA LEVEL PRESS (Hrs)	TEMP (F)	DPT (F)	WIND			ALTIMETER SETTING (Hrs)	REMARKS AND SUPPLEMENTAL CODED DATA	OBSERVER'S INITIALS
			SFC	THR					DIR (00-36)	SPEED (Kts)	CHARACTER			
SP 0035		3SCTE200VC	5		F	146	74	73	01	04		996	RE30 LTGIC M-NE	
SA 0050		4SCTM240VC	5		RM-F	085//	333	10256	03	04		996	RE30B45 DSMT LTGIC M-NE/ 71400 15// 78	
SP 0130		72208 11258 80304 10233 20228 4SCTM60BKN	5	40146	57014 69901 72582 TRM-F				03	04		555	04001 92106 (FGH)	
RS 0150		M3BKN400VC	5		TRM-F	143	74	73	36	06		995	1825 T S-SM MOVG M LTGIC CG	
RS 0252		4SCT50-SCT	5		F	143	74	73	01	05		995	TE50 T MOVG M OCNL LTG M -NM RE45/ 98029	
SP 0301		E100VC	5		RM-F				09	05		995	RE50/ 60349 1700	
SP 0340		M6BKN	6		RM-F				04	05		994	RB05	
SA 0353		M6BKN	5		F	143	75	73	03	06		995	RB05 TB45 T M-SM MOVG M	
SP 0408		6SCTM400VC	4		RM-F				04	08		995	LTGICG	
RS 0450		M5BKN200VC	5		TRM-F	139	75	74	06	07		994	TE40 MOVD M OCNL LTGICCC S-SM	
SP 0540		5SCTM228KKN800VC	5		RM-F				05	07		995	TE40 MOVD M OCNL LTGICCC S-SM	
SA 0550		5SCTM228KKN80BKN2500VC	5		RM-F	139	76	75	04	07		994	SE-SM	
RS 0650		18SCTE80BKN2500VC	5		F	146	76	74	05	06		956	RE04 TCU ALRDS/ 30356 12 63 73 20056 RADAT 95141 06002 1077 07707 20095	
SP 0719		72208 11458 80506 10244 20233 8SCT18SCT80SCTE2500VC	5	40146	53003 60141 71098	82263	333	10256	05	09		555	TCU NE-SE	
SA 0750		8SCTM18BKN80BKN2500VC	5		F	143	80	76	06	11		995	TCU NE-SE	
SP 0816		8SCTM12BKN2500VC	5		F	139	81	76	04	10		994	TCU NE-SE	
RS 0850		8SCT20SCT80SCT250-0VC	6		F	139	81	76	04	10		994	TCU M-N/ 707 1203	
SP 0941		M13BKN208KN2500VC	6		F	139	82	76	05	10		994	TCU M-N/ 707 1203	
SA 0950		M13BKN208KN2500VC	6		F	139	82	76	05	10		994	TCU M-N/ 707 1203	
RS 1050		M18BKN80BKN2500VC	7		F	132	83	76	05	14		992	RB12E22	
SP 1133		18SCT80SCTE2500VC	6		F	122	83	74	07	15		990	RB12E22	
SA 1150		24SCTM45BKN2500VC	6		F	122	83	74	04	14		989	RB38 PCPN VRY LGT/ 72700	
RS 1250		M24BKN450VC	5		RM-F	112	82	74	06	10		986	18// 73	
SP 1354		72208 11558 80610 10278 20233 M240VC	2	40112	57027 69901 78082	888//	333	10289	04	14		555	06001 92118 (LJCI)	
SP 1359		M240VC	1		RMF				04	14		981		
SA 1350		M25BKN400VC	5		RM+F	095	82	73	03	11		980	R15VR45V60+	
SP 1404		M24BKN400VC	3		RM-F				04	15		981	PCPN VRY LGT	
SP 1418		15SCT33SCTM700VC	3		RMF				02	14		979		
SP 1427		15SCTM55BKN700VC	3		RM-F				05	13		979		
SA 1450		28SCTE700VC	4		RM-F	078	77	74	04	11		978		
SP 1511		M23BKN400VC	1 1/2		RM+F				04	10		976		
SP 1513		M230VC	1		RM+F				03	14		975	R15VR30V45	
SP 1523		13SCTM23BKN400VC	3		RMF				04	16		973		
SP 1532		5SCT13SCTM230VC	3		RMF				01	16		973		
SA 1550		5SCT13SCTM230VC	3		RM-F	064	76	73	03	14		972	74732 18//	
SP 1640		5SCTM100VC	1 1/2		RM-F				02	14		966	R15VR60+	

A synoptic observation, in WMO code format FM12-V11, is entered on line following related aviation observation.
 FM12-V11: 11111 IRXHV NDDff 1sn11T 2sn1D1D1d 3p0p0p0 4pppp 5pppp 6RRR1R 7wM1W2 8NhC1CmCh

CHARLESTON HOURLY WEATHER OBSERVATIONS SEPTEMBER 21, 1989

U.S. DEPARTMENT OF COMMERCE
 NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
 NATIONAL WEATHER SERVICE

STATION **CHARLESTON AP, SC**

DATE **SEPTEMBER 21, 1989**

SURFACE WEATHER OBSERVATIONS

TO CONVERT LST TO GMT **ADD 05 hrs. SUBTRACT** hrs

TYPE	TIME (LST)	SKY AND CEILING (Hundreds of feet)	VISIBILITY (Miles)		WEATHER AND OBSTRUCTIONS TO VISION	SEA LEVEL PRESS (Hpa)	TEMP. (F)	DEW PT. (F)	WIND			ALTIMETER SETTING (Hpa)	REMARKS AND SUPPLEMENTAL CODED DATA	OBSERVER'S INITIALS	
			SFC	TMR					DIR (100-36)	SPEED (Kts.)	CHARACTER				
RS	1650	M80VC	1/2		RM-F	044	75	73	02	08	G	24	966	R15VR60+ PRESFR/ 68186 17// 84 RA DAT 90167 06019 1076 08207 20163 R15VR16V25 PK MND 0435/2 7 R15VR16V25 PRESFR PCPN 0 88 R15VR16V25 PRESFR PCPN 0 54 R15VR16V20 PRESFR PK MND 0346/46 PCPN 051/ 79993 ONE 99183 R15VR5V10 PRESFR PK MND 0279/42 PCPN 052 EYE OVHD PK MND 0273/03 R15VR10V20 PRESFR PK MND 2358/47	
SP	1712	5SCTM280VC	4		RM-F	017	76	73	04	12	G	26	963		
RS	1752	M120VC	3		RM-F	017	76	73	03	13	G	25	958		
SP	1827	M80VC	3		RM-F	983	75	73	01	16	G	27	957		
RS	1852	M20VC	2		RM-F				36	20	G	32	948		
SP	1930	72208 11132 83620 10239 20228	39966	49983	56081 60221 72562	887//	333	10289	20233	70361	90563	555	942		
SA	1950	M2X	1/4		RM+F	946	75	73	02	20	G	29	937		
RS	2052	M1X	1/4		RM+F	891	76	75	03	25	G	41	921		
SA	2150	M1X	1/4		RM+F	800	78	75	03	35	G	46	894		
RS	2250	M0X	0		RM+F	518	76	75	02	42	G	79	811		
SP	2310	M60VC	3		RM-F	484	76	73	02	21	G	46	795		
RS	2350	M0X	0		RM-F				24	20	G	58	801		

A synoptic observation, in WMO code format FM12-VII, is entered on line following related aviation observation.
 FM12-VII: 1111 1R1XHV NDDff 1snt1T 2sntDIDID 3PoPoPoPo 4PPPP 5ppp 6RRRrR 7MM1W2 8NhC1CmCh

CHARLESTON HOURLY WEATHER OBSERVATIONS SEPTEMBER 22, 1989

HF1-10A
11-851

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE

STATION CHARLESTON AP, SC
DATE SEPTEMBER 22, 1989

TO CONVERT LST TO GMT
ADD 05 hrs. SUBTRACT

TYPE	TIME (LST)	SKY AND CEILING (Hundreds of Feet)	VISIBILITY (Miles)		HEATHER AND OBSTRUCTIONS TO VISION	SEA LEVEL PRESS (Hbs)	TEMP. (F)	DEW PT. (F)	WIND			ALTIMETER SETTING	REMARKS AND SUPPLEMENTAL CODED DATA	OBSERVER'S INITIALS	
			SFC	TMR					DIR (100-36)	SPEED (Kts)	CHARACTER				
RS	0050	M60VC	3		RM-F	790	74	73	21	45	G	49	891		
SA	0150	72208 11348 82145 10233 20228 M50VC	39773	49790	55010 61001 78598 RM-F	888//	333	10289	20233	71356	90563	555	891	PRESRR PK MND 2285/59 PR ECIP ESTIMATED/ 51092 TH REE 18// 84	
SP	0243	M100VC	1	1/2	RM-F	912	73	72	21	32	G	46	927	01// 92206 (LJC)	
SA	0250	M100VC	1		RM-F	973	73	71	02	28	G	41	944	R15VR40V60+	
RS	0350	10SCTM750VC	5		F	010	75	70	20	28	G	32	945	R15VR40V60+ PK MND 2046/ 32/ 98040	
SA	0450	20SCTM500VC	7			041	75	69	20	16	G	32	956	PRESRR PK MND 2141/28/ 2	
SA	0550	20SCT120SCTE250BKN	8			058	75	69	21	16	G	26	965	9906 ONE 99220 186/	
SA	0650	30SCTE2000VC	8			075	75	69	21	13	G	20	970	PRESRR PK MND 2135/02	
SA	0750	72208 11562 82113 10239 20206 E2500VC	30058	40075	53064 60031 72582	82508	333	10289	20228	71483	90523	555	979	36410 1508 73 20584 RAD AT MISG	
SA	0853	250-0VC	10			088	77	69	21	15	G	26	983	01// 10// 0820/ 20342	
SA	0955	30SCT250-BKN	12			102	80	70	21	18			985		
SA	1052	27SCTE2500VC	15			109	82	70	21	16			984	134 1101	
SA	1150	30SCT250-BKN	15			105	83	72	22	18			985		
SA	1252	35SCT250-BKN	15			109	84	70	23	17			985		
SA	1353	72208 32674 62116 10294 20206 35SCT250-BKN	30088	40105	58003 82101 333	10300	20228	71483	21	16			984	803 1101 73	
SA	1452	250-BKN	15			105	85	65	20	16			984		
SA	1551	250-SCT	15			105	83	67	20	16			984	FEM CU	
SA	1650	250-SCT	10			105	83	67	22	17			984	400 1001	
SA	1752	250-BKN	15			143	82	67	21	13			995		
SA	1850	100SCT250-BKN	10			115	80	68	19	08			987		
SA	1952	72208 32966 62007 10256 20211 100SCT250-BKN	30102	40119	52014 82071 333	10300	20228	71265	20	07			988	214 1071 86 RADAT 90142	
SA	2050	100SCT250-0VC	10			127	77	71	18	09			991	01//0/	
SA	2150	100SCT200-0VC	7			129	78	71	19	08			991	92300 (PE1)	
SA	2250	100SCTE2500VC	7			126	78	72	19	07			990	007 1071	
SA	2250	100SCTE2500VC	7			127	78	73	21	07			991		
SA	2350	100SCTE2500VC	7			122	78	73	21	08			989		

A synoptic observation, in WMO code format FM12-VII, is entered on line following related aviation observation.
FM12-VII: 11:11 IRHXHV NDDff 1sntT 2sntDIDd 3p0p0p0 4ppp 5app 6RRRR 7MWHM2 8NHCIcMch

CHARLESTON HOURLY WEATHER OBSERVATIONS SEPTEMBER 22, 1989

MF1-108
(1-85)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE

STATION **CHARLESTON AP, SC**
DATE **SEPTEMBER 22, 1989**

SURFACE WEATHER OBSERVATIONS

TO CONVERT LST TO GMT
ADD 05 hrs. SUBTRACT hrs

TIME (LST)	STATION PRESSURE (In.s)	DRY BULB (deg. F)	WET BULB (deg. F)	RELATIVE HUMIDITY (%)	TOTAL SKY COVER	CLOUDS AND OBSCURING PHENOMENA										PRECIP-ITATION (In.s)						
						LOWEST LAYER		SECOND LAYER		THIRD LAYER		FOURTH LAYER		TOTAL OPAQUE	PRESSURE TENDENCY		NET 3HR CHANGE (In.s)	SUNSHINE (MIN)				
					AMT	TYPE	HGT	AMT	TYPE	HGT	AMT	TYPE	HGT			AMT			TYPE	HGT		
00 50	28860	74.0	73.3	96.7	10	SC	6	5	AC	M 75	10						10	5	030	0.53	00-01	
01 50	29220	73.0	72.3	96.7	10	STFRA	5	10	AC	M 50	10						10	2	030	0.46	01-02	
02 50	29400	73.0	71.7	93.5	10	STFRA	10	10	AC	M 10	10						10	2	020	0.07	02-03	
03 50	29510	75.0	71.7	84.5	10	SC	10	10	SC	M 10	10						10	2	030		03-04	
04 50	29600	75.0	71.0	81.7	10	SC	20	7	AC	M 50	10						10	5	040		04-05	
05 50	29650	75.0	71.0	81.7	10	CU	20	4	AC	M 120	5						10	5	050		05-06	
06 50	29700	75.0	71.0	81.7	10	CU	30	8	CS	E200	10						10	5	060		06-07	
07 50	29740	77.0	71.7	81.7	10	SC	250	3	CS	E200	10						10	7	070		07-08	
08 53	29780	80.0	73.3	71.6	10	CU	250	5	CI	250	6						10	4	100		08-09	
09 55	29800	82.0	73.9	67.1	10	CU	250	6	CI	250	10						10	2	010		09-10	
10 52	29790	84.0	74.4	62.9	10	CU	30	6	CI	E250	10						10	6	010		10-11	
11 50	29800	85.0	74.1	58.8	7	CU	30	4	CI	250	6						10	3	010		11-12	
12 52	29790	85.0	74.1	58.8	7	CU	35	5	CI	250	7						10	3	010		12-13	
13 53	29790	83.0	72.3	58.6	5	CU	40	5	CI	250	6						10	2	000		13-14	
14 52	29790	83.0	72.3	58.6	5	CU	250	5	CI	250	6						10	2	000		14-15	
15 51	29790	82.0	72.0	60.6	5	CU	250	5	CI	250	6						10	2	000		15-16	
16 50	29900	80.0	72.0	66.9	8	CU	250	8	CI	250	8						10	2	040		16-17	
17 52	29820	78.0	72.0	76.5	8	CU	100	8	CI	250	8						10	2	040		17-18	
18 50	29830	78.0	72.6	76.5	8	CU	100	8	CI	250	8						10	2	040		18-19	
19 52	29855	77.0	73.0	79.2	10	AC	100	5	CI	200	10						10	5	020		19-20	
20 50	29860	78.0	73.3	81.9	10	AC	100	6	CI	E250	10						10	8	020		20-21	
21 50	29850	78.0	73.9	81.9	10	AC	100	6	CI	E250	10						10	8	020		21-22	
22 50	29855	78.0	74.6	84.7	10	AC	100	6	CI	E250	10						10	8	020		22-23	
23 50	29840	78.0	74.6	84.7	10	AC	100	6	CI	E250	10						10	8	020		23-24	

SYNOPTIC OBSERVATIONS

TIME (GMT)	TIME (LST)	NO.	PRECIP (In.s)	SNOW FALL (In.s)	SNOW DEPTH (In.s)	MAX TEMP (deg. F)	MIN TEMP (deg. F)	PREC ORIG	STATE OF GRND.	SOIL TEMP.							
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58
	HID. TO																
	0050	1	0.53	0.0	0.0	76	74										
	0050	2	3.95	0.0	0.0	78	74										
	0650	3	0.53	0.0	0.0	75	73										
	1250	3	0.00	0.0	0.0	86	75										
	1848	4	0.00	0.0	0.0	86	78										
	MID.		0.00	0.0	0.0	78	77										

SUMMARY OF DAY (MIDNIGHT TO MIDNIGHT)

24HR MAX TEMP (deg. F)	24HR MIN TEMP (deg. F)	24HR PRECIP (In.s)	24HR SNOW FALL (In.s)	SNOW DEPTH (In.s)	SPD (kts)	DIR	TIME (LST)	ICE ON WATER	FROZEN GRND (In.s)	RIVER GAGE	SR-SS	MN-MN	WATER EQUIV (In.s)		
66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81
86	73	1.06	0.0	0	81	SW	0003				7	9			

90. REMARKS, NOTES AND MISCELLANEOUS PHENOMENA

TIME: SUNRISE 0607 SUNSET 1818

TOTAL SUNSHINE (MIN) 325 % OF POSSIBLE SUNSHINE 45

FASTEST OBSERVED 1-MINUTE WIND SPEED (MPH) 52 OR FASTEST MILE (MPH)

CHARACTER OF CLOUDY CHARACTER OF SUNSET CHARACTER OF CLOUDY

DIREC-TION 21 TIME 0050

STATION PRESSURE COMPUTATIONS

TIME (LST)	59	0050	0650	1250	1848
ATT. THERM. OBSRVD BAR.	60				
TOTAL CORR.	61				
STA. PRESS.	62				
BAROGRAPH CORR.	63				
BAR. CORR.	64				
	65	28.860	29.700	29.790	29.820
		.000	.000	.000	+.010

WEATHER & OBSTRUCTIONS TO VISION

TYPE	BEGAN	ENDED	TYPE	BEGAN	ENDED
82	83	84	85	87	88
F RM- RM+ RM-	CONT CONT	0440 0002			
	0002 0025	0340			

TIME CHECK == 0132E // HURRICANE HUGO EYE PASSAGE AT STATION 21/2310-2340

CHARLOTTE HOURLY WEATHER OBSERVATIONS SEPTEMBER 21, 1989

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE

STATION **CHARLOTTE, NC**
DATE **SEPTEMBER 21, 1989**

SURFACE WEATHER OBSERVATIONS

TIME (LST)	SKY AND CEILING (Hundreds of feet)	VISIBILITY (Miles)		WEATHER AND OBSTRUCTIONS TO VISION	SEA LEVEL PRESS (Hbs)	TEMP. (F)	DEW PT. (deg. F)	WIND			ALTIMETER SETTING (Inches)	REMARKS AND SUPPLEMENTAL CODED DATA	OBSERVER'S INITIALS
		SFC	TMR					DIR (00-36)	SPEED (Kts.)	CHARACTER			
SP 0042	4SCTM290VC	2	40176	R-F	176	71	71	06	04	04	008	CIG RGD	JK
RS 0050	4SCTM290VC	1	40176	R-F	885//	333	10217	05	04	90516	007	R36LVR60+/RB10/ 70708 15	JK
SP 0110	M40VC	1	39903	R-F	176	72	72	08	06	555	007	92106 (JK)	JK
SP 0148	M60VC	2	40176	R-F	176	72	72	08	07	90516	007	R36LVR60+/CIG RGD	JK
SA 0151	M60VC	2	40176	R-F	176	72	72	09	07	90516	007	BINVC/ CIG RGD	JK
SP 0243	4SCTE200BKN	3	40176	F	176	72	72	09	07	90516	007	RE30/BINVC/CIG RGD	JK
SP 0247	M4BKN200BKN	3	40176	F	172	72	72	07	06	90516	006		JK
SA 0250	M4BKN200BKN	3	40176	F	172	72	72	07	04	90516	006		JK
SP 0340	M7BKN480VC	3	40176	F	176	72	72	07	04	90516	007	98000	JK
SP 0348	M60VC	2	40176	F	176	72	72	05	04	90516	007		JK
SA 0350	M60VC	2	40176	F	176	72	72	05	05	90516	007		JK
SP 0431	M40VC	1	40176	RMF	175	73	73	02	06	90516	007	50002 17//	JK
SA 0450	M40VC	1	40176	F	175	73	73	04	08	90516	007	R36LVR60+/RB20	JK
SA 0552	M50VC	4	40176	F	179	73	73	10	05	90516	008	R36LVR60+/RB20E35	JK
SP 0629	M9BKN2500VC	5	40176	F	182	74	73	07	06	90516	009		JK
RS 0650	M8BKN2500VC	5	40182	F	87708	333	10217	08	06	90525	009	20708 1708 71 20016	JK
SA 0752	M80VC	5	40182	F	187	74	73	10	07	90525	010	92112 (JK)	JK
SA 0853	M90VC	6	40182	F	187	76	73	05	07	90525	011		JK
SP 0944	M130VC	7	40182	F	188	78	73	05	08	90525	011		JK
SA 0953	M90VC	7	40182	F	179	81	73	08	08	90525	011	207 16//	JK
RS 1054	M16BKN2500VC	7	40182	F	174	82	72	05	08	90525	009		JK
SA 1150	M20BKN2500VC	7	40182	F	163	85	72	05	07	90525	007		JK
RS 1250	M28BKN2500VC	10	40163	F	149	87	71	05	10	90525	004	724 1101 69	JK
SA 1350	72314 32566 70510 10294 20222	39893	40163	57024 70222 85101	333	10300	20206	05	08	92118	000		JK
RS 1450	35SCTE140BKN250BKN	10	40127	57008 82577 333	138	86	71	05	14	92118	000		JK
SA 1450	40SCTE140BKN250BKN	12	40127	57008 82577 333	135	84	70	05	12	92118	997		JK
SA 1550	40SCTE140BKN250BKN	12	40127	57008 82577 333	128	83	70	04	16	92118	996	627 1578	JK
SA 1650	45SCTE140BKN2500VC	10	40127	57008 82577 333	129	81	70	04	08	92118	994		JK
SA 1750	E140BKN2500VC	10	40127	57008 82577 333	127	80	70	05	11	92118	994	FEM SC	JK
SA 1850	40SCTE140BKN2500VC	10	40127	57008 82577 333	10311	20217	70041	05	11	92118	993	708 1577 88	JK
SA 1953	72314 32666 80511 10267 20211	39858	40127	57008 82577 333	123	79	70	03	09	92118	992		JK
SA 2051	50SCTE140BKN2500VC	10	40127	57008 82577 333	120	75	71	02	14	92118	991	RB35	JK
SA 2150	E50BKN1400VC	7	40127	57008 82577 333	099	74	71	02	12	92118	985	PRESFR 82702 17//	JK
RS 2250	M340VC	7	40127	57008 82577 333	078	73	71	01	12	92118	979		JK
SP 2340	M250VC	6	40127	57008 82577 333	078	73	71	01	16	92118	971		JK
SP 2340	M170VC	3	40127	57008 82577 333	045	72	71	04	16	92118	969		JK
SA 2350	M170VC	5	40127	57008 82577 333	045	72	71	04	15	92118	969	PRESFR	JK

A synoptic observation, in MHO code format FM12-VII, is entered on line following related aviation observation.
FM12-VII: 11111 IRIXHV NDDff 1an11T 2an1D1D1D 3PoPoPoPo 4PPPP 5appp 6RRRRR 7wWw1W2 8NhC1CwCh

FM1-10A
11-851

CHARLOTTE HOURLY WEATHER OBSERVATIONS SEPTEMBER 22, 1989

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE

STATION CHARLOTTE, NC

DATE SEPTEMBER 22, 1989

TO CONVERT LST TO GMT
ADD 05 hrs. SUBTRACT

hrs

TYPE (11)	TIME (LST) (12)	SKY AND CEILING (Hundreds of Feet) (13)	VISI- BILITY (Miles)		WEATHER AND OBSTRUCTIONS TO VISION (15)	SEA LEVEL PRESS (Hbs) (16)	TEMP. (°F) (17)	DEW PT. (°F) (18)	WIND			ALTIMETER SETTING (112)	REMARKS AND SUPPLEMENTAL CODED DATA (113)	OBSERVER'S INITIALS (15)
			SFC (14)	TMR (14a)					DIR (100-36) (19)	SPEED (Kts.) (110)	CHAR- ACTER (111)			
SA	0054	E170VC	3	40013	RM+F	013	72	71	04	15	G 34	960	78355 17// 88 IJK	JK
SA	0150	E170VC	39748	40013	57083 60141 78280	887//	333	10311	20217	70160	G 55	555	92206 IJK	JK
SA	0250	E170VC	6		RM-F	973	74	71	03	20	G 31	948	IJK	JK
SA	0352	E200VC	2		RM+F	903	74	72	05	35	G 42	928	PRESFR/PK MND 0439/08/ 9	JK
SA	0451	E200VC	2		RM+F	839	73	71	06	30	G 55	909	8207	JK
SA	0550	E200VC	2		RM+F	779	72	71	12	40	G 71	891	PK MND 0654/18 /PRESFR/	JK
SA	0650	E200VC	2		RM-F	833	71	71	13	37	G 52	907	89945 99169 17//	JK
SP	0705	72314 11532 81427 10222 20217	39633	49896	53054 60441 78182	887//	333	10311	20217	70577	G 40	555	PK MND 1267/03/PRESFR	JK
SA	0752	M90VC	11/2		RM-F	961	69	68	16	24	G 40	932	PK MND 1248/04 /PRESRR/ 3	JK
RS	0854	M120VC	2		RM-F	998	70	68	15	22	G 44	944	5472 ONE 17// 71 20227	JK
SA	0950	M130VC	20		RM-F	025	71	68	18	22	G 40	955	92212 ICECI	JK
SA	1052	M140VC	20		RM-F	040	71	68	19	18	G 24	967	PRESRR/PK MND 1441/03	JK
RS	1150	M200VC	20		RM-F	046	73	68	19	15	G 40	969	PRESRR/PK MND 1647/26/CI	JK
RS	1251	M240VC	20		RM-F	055	75	67	19	16	G 40	972	G RGD	JK
SA	1350	M290VC	39787	40055	52029 60101 70282	885//	333	10239	20206	70681	G 20	972	22941 15// 69	JK
SA	1450	M29BKN40BKN	20			054	77	66	18	10	G 20	972	92218 IJK	JK
SA	1550	M29BKN40BKN	20			127	79	67	19	17	G 20	993	BINOVC	JK
SA	1650	M29BKN40BKN	20			064	80	65	20	16	G 20	975	310 1500	JK
SA	1750	M45BKN75BKN150BKN	15			068	80	66	19	10	G 20	976		JK
SA	1850	M45BKN75BKN150BKN	15			072	78	68	20	08	G 20	977		JK
SA	1950	M45BKN75BKN150BKN	15			082	76	68	19	11	G 20	980	217 1570 80	JK
SA	2050	M45BKN75BKN150BKN	10			10267	20206	70681	555	92300	IJK	983		JK
SA	2150	M45BKN75BKN150BKN	8			093	76	69	19	10	G 20	984		JK
SA	2250	M45BKN75BKN150BKN	8			097	75	68	19	10	G 20	985	117 1070	JK
SA	2350	M45BKN75BKN150BKN	8			100	74	68	19	09	G 20	985		JK
SA	2350	M45BKN75BKN150BKN	7			100	73	68	19	10	G 20	985		JK

A synoptic observation, in MNO code format FM12-VII, is entered on line following related aviation observation.
FM12-VII: III: IRIHV NDDff 1snTT 2snIDIDd 3PoPoPo 4ppp 5ppp 6RRRr 7wMIW2 8MhCICCh

CHARLOTTE HOURLY WEATHER OBSERVATIONS SEPTEMBER 22, 1989

MF1-108
11-851

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE

SURFACE WEATHER OBSERVATIONS

STATION **CHARLOTTE, NC**
DATE **SEPTEMBER 22, 1989**

TO CONVERT LST TO GMT
ADD 05 hrs. SUBTRACT hrs

TIME (LST)	STATION PRESSURE (Ings)	DRY BULB (deg. F)	WET BULB (deg. F)	RELATIVE HUMIDITY (%)	TOTAL SKY COVER	CLOUDS AND OBSCURING PHENOMENA										PRECIP-ITATION (Ings)			
						LOWEST LAYER AMT	TYPE	HGT	SECOND LAYER AMT	TYPE	HGT	THIRD LAYER AMT	TYPE	HGT	FOURTH LAYER AMT		TYPE	HGT	
0054	28785	72.0	71.3	96.7	10	STFRA	E 17	3	SC	40	9	1						0.20	00-01
0150	28670	74.0	72.0	90.4	10	STFRA	E 17	5	SC	50	7	4						0.06	01-02
0250	28470	74.0	72.6	93.5	10	STFRA	E 17	3	SC	55	7	4						0.11	02-03
0352	28285	73.0	71.6	93.5	10	STFRA	E 20	1	SC	75	5	4						0.28	03-04
0451	28110	72.0	71.3	96.7	10	STFRA	E 20	1	SC	75	5	4						0.85	04-05
0550	28265	71.0	71.0	100.0	10	STFRA	E 20	1	SC	150	5	4						0.85	05-06
0650	28445	72.0	71.3	96.7	10	STFRA	E 20	1	SC	150	5	4						0.35	06-07
0752	28630	69.0	68.3	96.6	10	STFRA	E 20	1	SC	150	5	4						0.16	07-08
0854	28735	70.0	68.7	93.4	10	STFRA	E 12	1	SC	55	5	4						0.05	08-09
0950	28815	71.0	69.0	90.3	10	STFRA	M 13	1	SC	75	5	4						0.01	09-10
1052	28855	71.0	69.7	84.4	10	SC	M 14	1	SC	75	5	4						0.00	10-11
1150	28875	73.0	73.0	84.4	10	SC	M 20	1	SC	75	5	4						0.00	11-12
1251	28900	75.0	69.8	76.3	10	SC	M 24	1	SC	55	5	4						0.00	12-13
1350	28900	77.0	69.8	69.0	10	SC	M 29	1	SC	55	5	4						0.00	13-14
1450	29110	79.0	70.2	66.8	10	SC	M 29	1	SC	55	5	4						0.00	14-15
1550	28930	80.0	70.7	60.3	10	SC	M 40	1	SC	55	5	4						0.00	15-16
1650	28940	80.0	70.7	62.5	10	SC	M 45	1	SC	75	5	4						0.00	16-17
1750	28950	78.0	71.3	76.4	9	SC	M 45	1	SC	75	5	4						0.00	17-18
1850	28980	76.0	70.7	79.0	9	SC	M 45	1	SC	75	5	4						0.00	18-19
1950	29010	75.0	71.3	79.0	5	SC	M 45	1	SC	75	5	4						0.00	19-20
2050	29020	74.0	70.4	81.6	5	SC	M 45	1	SC	75	5	4						0.00	20-21
2150	29030	73.0	70.1	84.4	5	SC	M 45	1	SC	75	5	4						0.00	21-22
2250	29030	73.0	69.7	81.6	5	SC	M 45	1	SC	75	5	4						0.00	22-23
2350	29030	73.0	69.1	81.6	10	AC	E120											0.00	23-24

SYNOPTIC OBSERVATIONS

TIME (GMT)	TIME (LST)	NO.	PRECIP (Ings)	SNOW FALL (Ings)	SNOW DEPTH (Ings)	SNOW DEPTH (Ings)	MAX TEMP (deg. F)	MIN TEMP (deg. F)	PREC ORIG	STATE OF GRND.	SOIL TEMP.						
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58
	HID. TO																
	0045	1	0.20	0.0	0.0	72	72										
	0045	2	0.48	0.0	0.0	80	72										
	0646	3	2.48	0.0	0.0	74	71										
	1248	4	0.24	0.0	0.0	75	69										
	1845		0.00	0.0	0.0	80	75										
	MID.		0.00	0.0	0.0	76	73										

SUMMARY OF DAY (MIDNIGHT TO MIDNIGHT)

24HR MAX TEMP (deg. F)	24HR MIN TEMP (deg. F)	24HR PRECIP (Ings)	24HR SNOW FALL (Ings)	SNOW DEPTH (Ings)	SPD (Kts)	DIR	TIME (LST)	ICE ON	FROZEN GRND (Ings)	RIVER GAGE	SR-SS	SKY COVER	WATER EQUIV (Ings)		
66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81
80	69	2.92	0.0	0	76	E	0420					10	9		

90. REMARKS, NOTES AND MISCELLANEOUS PHENOMENA

TIME: SUNRISE 0610

SUNSET 1822

TOTAL SUNSHINE (MIN) 51

% OF POSSIBLE SUNSHINE 7

CHARACTER OF SUNRISE

CHARACTER OF SUNSET

CHARACTER OF CLOUDY

FASTEST OBSERVED 1-MINUTE WIND SPEED (MPH) 46

OR FASTEST MILE

DIREC-TION 12

TIME 0451

TIME CHECK = 0025 //

STATION PRESSURE COMPUTATIONS

TIME (LST)	59	0045	0646	1248	1845
ATT. THERM.	60				
OBSVD BAR.	61				
TOTAL CORR.	62				
STA. PRESS.	63				
BAROGRAPH	64				
BAR. CORR.	65				
		28.770	28.475	28.940	29.025
		+015	-030	-040	-045

WEATHER & OBSTRUCTIONS TO VISION

TYPE	BEGAN	ENDED	TYPE	BEGAN	ENDED
82	83	84	86	87	88
RM-	0025	0025			
RM+	0045	0105			
RM+	0030	0930			
RM-	0105	0220			
RM+	0220	0300			
RM+	0300	0630			
RM-	0630	0830			
RM-	0830	0905			

COLUMBIA HOURLY WEATHER OBSERVATIONS SEPTEMBER 21, 1989

SURFACE WEATHER OBSERVATIONS FOR COLUMBIA WFO

DATE 09/21/89

SYNOPTIC OBSERVATIONS

TEMPERATURE

AIR

SOIL

BAROMETER

CURRENT CORRECTION

PRECIPITATION

WATER SNOWFALL SNOWDEPTH

EXPLANATION OF PRESSURE TENDENCY

DESCRIPTION

SKY AND CLOUDS

1ST LAYER

2ND LAYER

3RD LAYER

4TH LAYER

5TH LAYER

6TH LAYER

TOTAL

STATION INCHES

TENDENCY (SEE CODE)

TEMPERATURE F

PRECIPITATION INCHES

TIME

3 HOUR

PRESSURE

COLUMBIA HOURLY WEATHER OBSERVATIONS SEPTEMBER 21, 1989

SURFACE WEATHER OBSERVATIONS FOR COLUMBIA WSFO

DATE 09/21/89

TIME	CEILING & SKY CONDITIONS	VISIBILITY IN MILES & WEATHER	SEA TEMPERATURE		-DEW- POINT		--WIND-- DIR SPEED		ALTIMETER SETTING INCHES	REMARKS AND CODED DATA
			LEVEL MB	AIR F	F	F	DIR	SPEED KNOTS		
0055	M4 OVC	4F	1015.5	72	71	05	06	29.99	70801 16// 75 (EH)	
0155	M4 OVC	4R-F	1015.1	73	72	05	07	29.98	RB770 (EH)	
0212	M3 OVC	2F				05	07	29.99	(EH)	
0255	M3 OVC	2F	1014.9	74	72	05	09	29.98	RE05/ 98003 (EH)	
0354	M5 BKN 21 OVC	2RW-F	1014.9	74	73	05	10	29.98	RWB05/ 70500 16// (EH)	
0438	M5 OVC	2TRW-F				05	12	29.98	TB778 OVHD MOVG NW (EH)	
0444	M5 OVC	11/2TRW-F				06	08	29.98	T OVH MOVG NW (EH)	
0453	M5 OVC	11/2TRW-F	1014.9	74	73	05	12	29.98	T OVH MOVG NW (EH)	
0453	M5 OVC	11/2TRW-F				05	12	29.98	TB778 OVHD MOVG NW (EH)	
0506	M11 OVC	4RW-F				05	08	29.98	TE06 DISPTD (EH)	
0554	M13 BKN 40 OVC	4F	1015.3	74	73	05	08	29.99	TE06 DISPTD RE40 (EH)	
0636	M9 OVC	4F				05	09	30.00	(RHM)	
0651	M8 OVC	4F	1015.6	75	73	05	08	30.00	30718 17// 72 20019 (RHM)	
0752	M8 OVC	4F	1015.8	76	74	06	08	30.00	(RHM)	
0851	M9 OVC	6F	1015.8	77	74	05	10	30.00	(RHM)	
0937	E10 BKN 20 OVC	7				06	11	30.00	(RHM)	
0950	M13 BKN 20 OVC	7	1015.8	80	74	07	11	30.00	102 15// (RHM)	
1023	M17 BKN 80 BKN 250 OVC	7				07	10G17	30.00	(RHM)	
1052	E17 BKN 80 OVC	7	1015.3	83	73	08	12	29.99	(RHM)	
1135	20 SCT 80 SCT E250 OVC	7				07	15G21	29.97	(RHM)	
1151	22 SCT 80 SCT E250 OVC	7	1014.4	88	74	04	13G20	29.96	(RHM)	
1251	25 SCT 80 SCT E250 OVC	10	1013.2	89	71	07	15G23	29.93	825 1177 72 (RHM)	
1350	25 SCT E80 OVC	7RW-	1012.1	88	70	06	18G28	29.90	TCD SE RB47 (RHM)	
1451	30 SCT E100 OVC	10	1014.2	86	71	05	12G18	29.96	(RHM)	
1451	30 SCT E100 OVC	10	1014.2	86	71	05	12G18	29.96	RE08 (RHM)	
1451	30 SCT E100 OVC	10	1010.8	86	71	05	12G18	29.86	(RHM)	
1551	30 SCT E100 OVC	10	1009.8	85	69	06	10G19	29.83	83400 117/ (RHM)	
1650	30 SCT E100 OVC	7R-	1009.3	84	69	02	10G17	29.81	RB44 (RHM)	
1750	30 SCT E100 OVC	7R-	1008.6	79	72	02	11	29.79	(CC)	
1850	35 SCT M80 OVC	4R-F	1007.6	75	73	36	12	29.76	82211 112/ 91 (CC)	
1850	35 SCT M80 OVC	4R-F	1007.6	75	73	36	12	29.76	82211 112/ 91 (CC)	
1952	33 SCT M80 OVC	3R-F	1006.7	74	72	04	14	29.74	(CC)	
2050	M33 BKN 80 OVC	7RW-	1004.2	73	71	03	16G23	29.66	PRESFR (CC)	
2150	10 SCT M30 BKN 80 OVC	7RW-	1000.1	73	71	02	23G38	29.54	PCPN VLGT PK WND 0238/51 PRESFR/ 87547	
2203	8 SCT M15 BKN 30 OVC	7RW-				36	22G38	29.54	PCPN VLGT (CC)	
2252	8 SCT M15 BKN 27 OVC	5RW-	997.7	74	71	02	24G36	29.47	PRESFR PK WND 0323/41 (EH)	
2252	8 SCT M15 BKN 27 OVC	5RW-	997.7	74	71	02	24G36	29.47	PRESFR PK WND 0241/23 (EH)	
2350	M8 OVC	1RW-F	992.2	74	71	02	26G38	29.31	R11VR60+ PRESFR PK WND 0239/12 (EH)	

ALL TIMES ON THIS SHEET ARE 24-HOUR CLOCK STANDARD TIME. ADD ONE HOUR FOR DAYLIGHT TIME, IF AND WHEN IN USE. WIND DIRECTION IS MEASURED IN TENS OF DEGREES FROM NORTH, GOING CLOCKWISE, AND IS THE DIRECTION FROM WHICH THE WIND WAS BLOWING. NORTH IS 360 DEGREES. TO CONVERT KNOTS TO MILES PER HOUR, MULTIPLY BY 1.15.

COLUMBIA HOURLY WEATHER OBSERVATION SEPTEMBER 22, 1989

SURFACE WEATHER OBSERVATIONS FOR COLUMBIA WSFO			DATE 09/22/89					
TIME	CEILING & SKY CONDITIONS	VISIBILITY IN MILES & WEATHER	SEA TEMPERATURE		-DEW- POINT F	--WIND-- DIR SPEED KNOTS	ALTIMETER SETTING INCHES	REMARKS AND CODED DATA
			LEVEL MB	AIR F				
0055	M8 OVC	2R-F	986.2	74	72	02 32G47	29.13	PRESFR PK WND 0250/37/ 79982 99137 17// 91 (EH)
0150	M5 OVC	1/2RWF	977.3	74	72	35 40G55	28.87	R11VR60 PK WND 3555/46 (EG)
0150	M5 OVC	1/2RWF	977.3	74	72	35 40G55	28.87	R11VR60 PRESFR PK WND 3555/46 (EH)
0250	M5 OVC	1/2R+P	973.2	74	72	30 42G54	28.75	R11VR40V50 PRESFR LMST PRES 28.730 PK W ND 3161/27/ 98143 (EH)
0350	5 SCT M15 OVC	2RF	982.1	74	71	24 22G35	29.01	PRESRR PK WND 3147/0753/ 54181 ONE 15// (EH)
0452	5 SCT M15 OVC	2R-F	990.0	73	70	24 32G44	29.24	PRESRR PK WND 2447/31 (EH)
0551	5 SCT M15 OVC	2RF	996.7	71	68	21 30G42	29.44	PRESRR PK WND 2245/22 (RHM)
0605	10 SCT M17 OVC	7R-				21 32G40	29.47	(EH)
0651	10 SCT M23 OVC	7R-	1000.8	72	69	21 23G33	29.56	PRESRR PK WND 2138/06/ 29905 TWO 99185 15// 71 20298 (RHM)
0750	M15 BKN 100 BKN 250 OVC	15	1003.2	72	68	21 20G29	29.63	RE06 PRESRR (RHM)
0838	15 SCT 120 SCT E250 BKN	15				21 16G25	29.68	PRESRR (RHM)
0851	15 SCT 120 SCT E250 BKN	15	1005.2	75	69	21 18G29	29.69	PRESRR (RHM)
0932	M21 BKN 250 BKN	15				21 20G30	29.72	PRESRR (RHM)
0951	M23 BKN 250 BKN	15	1006.4	77	69	21 20G28	29.73	15600 1501 (RHM)
1052	M27 BKN 250 OVC	15	1007.2	79	69	19 14G20	29.75	(RHM)
1135	30 SCT E250 BKN	15				21 20G26	29.75	(RHM)
1151	30 SCT E250 BKN	15	1007.2	83	69	20 18G30	29.75	(RHM)
1251	M36 BKN 250 BKN	15	1007.6	83	68	19 18G26	29.76	21200 1101 71 (RHM)
1351	40 SCT E250 BKN	15	1007.6	84	68	18 14G22	29.76	(RHM)
1452	40 SCT E250 BKN	15	1007.6	85	69	18 14G21	29.76	(CC)
1550	42 SCT E250 BKN	15	1007.7	84	68	18 11G18	29.77	302 1101 (CC)
1650	45 SCT E250 OVC	15	1008.3	83	67	22 13G22	29.78	(CC)
1750	45 SCT E90 BKN 250 OVC	15	1008.8	80	68	18 10	29.80	(CC)
1850	E90 BKN 250 OVC	15	1009.5	78	65	18 10	29.82	317 1077 86 (CC)
1950	E90 BKN 250 OVC	15	1010.2	76	68	18 07	29.84	(CC)
2050	E90 BKN 250 OVC	15	1011.0	76	68	18 09	29.86	(CC)
2153	60 SCT E100 BKN 250 OVC	10R-	1010.8	75	68	22 07	29.86	RB778/ 01400 1577 (CC)
2252	30 SCT E100 OVC	10R-	1011.2	74	60	22 07	29.87	(EH)
2352	30 SCT E120 OVC	10	1011.2	73	68	18 05	29.87	RE37 (EH)

ALL TIMES ON THIS SHEET ARE 24-HOUR CLOCK STANDARD TIME. ADD ONE HOUR FOR DAYLIGHT TIME, IF AND WHEN IN USE. WIND DIRECTION IS MEASURED IN TENS OF DEGREES FROM NORTH, GOING CLOCKWISE, AND IS THE DIRECTION FROM WHICH THE WIND WAS BLOWING. NORTH IS 360 DEGREES. TO CONVERT KNOTS TO MILES PER HOUR, MULTIPLY BY 1.15.

FLORENCE HOURLY WEATHER OBSERVATION SEPTEMBER 21, 1989

SURFACE WEATHER OBSERVATIONS

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE

STATION
FLORENCE S.C.
9/21/89

Time in Column 3 is:		Time in Column 3 is:		Time in Column 3 is:		Time in Column 3 is:		Time in Column 3 is:		Time in Column 3 is:		Time in Column 3 is:		Time in Column 3 is:		Time in Column 3 is:		Time in Column 3 is:	
Time	Wind	Wind Dir	Wind Spd	Wind Dir	Wind Spd	Wind Dir	Wind Spd	Wind Dir	Wind Spd	Wind Dir	Wind Spd	Wind Dir	Wind Spd	Wind Dir	Wind Spd	Wind Dir	Wind Spd	Wind Dir	Wind Spd
0000	0000	M 4	13 KND	5	100	E	157	24	27	04	08	000	810	800	29.835	100	10	10	EZ
0100	0100	M 4	13 KND	5	100	E	157	24	27	05	10	000	810	800	29.835	100	10	10	EZ
0200	0200	M 4	13 KND	5	100	E	157	24	27	06	10	000	810	800	29.835	100	10	10	EZ
0300	0300	M 4	13 KND	5	100	E	157	24	27	07	10	000	810	800	29.835	100	10	10	EZ
0400	0400	M 4	13 KND	5	100	E	157	24	27	08	10	000	810	800	29.835	100	10	10	EZ
0500	0500	M 4	13 KND	5	100	E	157	24	27	09	10	000	810	800	29.835	100	10	10	EZ
0600	0600	M 4	13 KND	5	100	E	157	24	27	10	10	000	810	800	29.835	100	10	10	EZ
0700	0700	M 4	13 KND	5	100	E	157	24	27	11	10	000	810	800	29.835	100	10	10	EZ
0800	0800	M 4	13 KND	5	100	E	157	24	27	12	10	000	810	800	29.835	100	10	10	EZ
0900	0900	M 4	13 KND	5	100	E	157	24	27	13	10	000	810	800	29.835	100	10	10	EZ
1000	1000	M 4	13 KND	5	100	E	157	24	27	14	10	000	810	800	29.835	100	10	10	EZ
1100	1100	M 4	13 KND	5	100	E	157	24	27	15	10	000	810	800	29.835	100	10	10	EZ
1200	1200	M 4	13 KND	5	100	E	157	24	27	16	10	000	810	800	29.835	100	10	10	EZ
1300	1300	M 4	13 KND	5	100	E	157	24	27	17	10	000	810	800	29.835	100	10	10	EZ
1400	1400	M 4	13 KND	5	100	E	157	24	27	18	10	000	810	800	29.835	100	10	10	EZ
1500	1500	M 4	13 KND	5	100	E	157	24	27	19	10	000	810	800	29.835	100	10	10	EZ
1600	1600	M 4	13 KND	5	100	E	157	24	27	20	10	000	810	800	29.835	100	10	10	EZ
1700	1700	M 4	13 KND	5	100	E	157	24	27	21	10	000	810	800	29.835	100	10	10	EZ
1800	1800	M 4	13 KND	5	100	E	157	24	27	22	10	000	810	800	29.835	100	10	10	EZ
1900	1900	M 4	13 KND	5	100	E	157	24	27	23	10	000	810	800	29.835	100	10	10	EZ
2000	2000	M 4	13 KND	5	100	E	157	24	27	24	10	000	810	800	29.835	100	10	10	EZ
2100	2100	M 4	13 KND	5	100	E	157	24	27	25	10	000	810	800	29.835	100	10	10	EZ
2200	2200	M 4	13 KND	5	100	E	157	24	27	26	10	000	810	800	29.835	100	10	10	EZ
2300	2300	M 4	13 KND	5	100	E	157	24	27	27	10	000	810	800	29.835	100	10	10	EZ
2400	2400	M 4	13 KND	5	100	E	157	24	27	28	10	000	810	800	29.835	100	10	10	EZ
2500	2500	M 4	13 KND	5	100	E	157	24	27	29	10	000	810	800	29.835	100	10	10	EZ
2600	2600	M 4	13 KND	5	100	E	157	24	27	30	10	000	810	800	29.835	100	10	10	EZ
2700	2700	M 4	13 KND	5	100	E	157	24	27	31	10	000	810	800	29.835	100	10	10	EZ
2800	2800	M 4	13 KND	5	100	E	157	24	27	32	10	000	810	800	29.835	100	10	10	EZ
2900	2900	M 4	13 KND	5	100	E	157	24	27	33	10	000	810	800	29.835	100	10	10	EZ
3000	3000	M 4	13 KND	5	100	E	157	24	27	34	10	000	810	800	29.835	100	10	10	EZ
3100	3100	M 4	13 KND	5	100	E	157	24	27	35	10	000	810	800	29.835	100	10	10	EZ
3200	3200	M 4	13 KND	5	100	E	157	24	27	36	10	000	810	800	29.835	100	10	10	EZ
3300	3300	M 4	13 KND	5	100	E	157	24	27	37	10	000	810	800	29.835	100	10	10	EZ
3400	3400	M 4	13 KND	5	100	E	157	24	27	38	10	000	810	800	29.835	100	10	10	EZ
3500	3500	M 4	13 KND	5	100	E	157	24	27	39	10	000	810	800	29.835	100	10	10	EZ
3600	3600	M 4	13 KND	5	100	E	157	24	27	40	10	000	810	800	29.835	100	10	10	EZ
3700	3700	M 4	13 KND	5	100	E	157	24	27	41	10	000	810	800	29.835	100	10	10	EZ
3800	3800	M 4	13 KND	5	100	E	157	24	27	42	10	000	810	800	29.835	100	10	10	EZ
3900	3900	M 4	13 KND	5	100	E	157	24	27	43	10	000	810	800	29.835	100	10	10	EZ
4000	4000	M 4	13 KND	5	100	E	157	24	27	44	10	000	810	800	29.835	100	10	10	EZ
4100	4100	M 4	13 KND	5	100	E	157	24	27	45	10	000	810	800	29.835	100	10	10	EZ
4200	4200	M 4	13 KND	5	100	E	157	24	27	46	10	000	810	800	29.835	100	10	10	EZ
4300	4300	M 4	13 KND	5	100	E	157	24	27	47	10	000	810	800	29.835	100	10	10	EZ
4400	4400	M 4	13 KND	5	100	E	157	24	27	48	10	000	810	800	29.835	100	10	10	EZ
4500	4500	M 4	13 KND	5	100	E	157	24	27	49	10	000	810	800	29.835	100	10	10	EZ
4600	4600	M 4	13 KND	5	100	E	157	24	27	50	10	000	810	800	29.835	100	10	10	EZ
4700	4700	M 4	13 KND	5	100	E	157	24	27	51	10	000	810	800	29.835	100	10	10	EZ
4800	4800	M 4	13 KND	5	100	E	157	24	27	52	10	000	810	800	29.835	100	10	10	EZ
4900	4900	M 4	13 KND	5	100	E	157	24	27	53	10	000	810	800	29.835	100	10	10	EZ
5000	5000	M 4	13 KND	5	100	E	157	24	27	54	10	000	810	800	29.835	100	10	10	EZ
5100	5100	M 4	13 KND	5	100	E	157	24	27	55	10	000	810	800	29.835	100	10	10	EZ
5200	5200	M 4	13 KND	5	100	E	157	24	27	56	10	000	810	800	29.835	100	10	10	EZ
5300	5300	M 4	13 KND	5	100	E	157	24	27	57	10	000	810	800	29.835	100	10	10	EZ
5400	5400	M 4	13 KND	5	100	E	157	24	27	58	10	000	810	800	29.835	100	10	10	EZ
5500	5500	M 4	13 KND	5	100	E	157	24	27	59	10	000	810	800	29.835	100	10	10	EZ
5600	5600	M 4	13 KND	5	100	E	157	24	27	60	10	000	810	800	29.835	100	10	10	EZ
5700	5700	M 4	13 KND	5	100	E	157	24	27	61	10	000	810	800	29.835	100	10	10	EZ
5800	5800	M 4	13 KND	5	100	E	157	24	27	62	10	000	810	800	29.835	100	10	10	EZ
5900	5900	M 4	13 KND	5	100	E	157	24	27	63	10	000	810	800	29.835	100	10	10	EZ
6000	6000	M 4	13 KND	5	100	E	157	24	27	64	10	000	810	800	29.835	100	10	10	EZ
6100	6100	M 4	13 KND	5	100	E	157	24	27	65	10	000	810	800	29.835	100	10	10	EZ
6200	6200	M 4	13 KND	5	100	E	157	24	27	66	10	000	810	800	29.835	100	10	10	EZ
6300	6300	M 4	13 KND	5	100	E	157	24	27	67	10	000	810	800	29.835	100	10	10	EZ
6400	6400	M 4	13 KND	5	100	E	157	24	27	68	10	000	810	800	29.835	100	10	10	EZ
6500	6500	M 4	13 KND	5	100	E	157	24	27										

GREER HOURLY WEATHER OBSERVATIONS SEPTEMBER 21, 1989

MF1-10A
11-851

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE
SURFACE WEATHER OBSERVATIONS

STATION **GREENVILLE-SPARTANBURG AP, SC**
DATE **SEPTEMBER 21, 1989**
TO CONVERT LST TO GMT **ADD 05 hrs. SUBTRACT** hrs

TYPE	TIME (LST)	SKY AND CEILING (Hundreds of feet)	VISIBILITY (Miles)		WEATHER AND OBSTRUCTIONS TO VISION	SEA LEVEL PRESS (Hbs)	TEMP (deg F)	DEW PT. (deg F)	WIND			ALTIMETER SETTING (In)	REMARKS AND SUPPLEMENTAL CODED DATA	OBSERVER'S INITIALS
			SFC	THR					DIR (100-36)	SPEED (Kts)	CHARACTER			
RS 0050		M40VC	2		R-F	173	69	68	02	08		007		
SA 0150		72312 11232 80208 10206 20200	39831	40173	57010 69931 76152	887//	333	10239	20150	70003	90521	555	ABLE15/ 71001 17// 75	
SA 0250		M30VC	21/2		F	170	69	68	03	09		006	RE30	
SA 0350		M20VC	21/2		F	166	69	68	02	09		005	98014	
SP 0440		MIX	2		L-F	170	70	69	03	08		006	LB40/ 50300 17//	
SA 0450		MIX	1/4		L-F	170	70	70	03	07		006	R03VR27V35	
RS 0550		-XM10VC	3/4		L-F	174	70	70	03	09		007	R03VR28V34	
SP 0604		M30VC	2		L-F	177	71	70	04	09		007	R03VR60+ F2	
SA 0650		M40VC	2		L-F	177	71	70	04	09		008	30700 17// 69 20001	
SP 0737		72312 11232 80409 10217 20211	39834	40177	53007 69901 75165	887//	333	10239	20206	70003	90566	555	92112 (REMI)	
SA 0750		M50VC	3		L-F	179	72	71	04	10		008	LE45	
SA 0850		M60VC	3		F	180	74	72	07	09		009		
SP 0929		M100VC	6		F	178	76	72	05	08		009	CIG RAG	
SA 0950		M110VC	4		F	178	76	72	06	08		009	CIG RAG/ 002 15//	
SP 1022		M180VC	5		F	174	79	73	02	09		009		
SA 1050		M200VC	7		F	174	79	73	06	10		007	BINOVC	
SA 1151		M16BKN800VC	10			167	80	72	07	13		006	BINOVC	
SP 1229		E25BKN50BKN	12			158	81	71	04	08		004		
SA 1250		E28BKN50BKN2500VC	15			158	81	71	08	10		003	TCU ALBDS/ 71900 1201 69	
SA 1352		72312 11574 80810 10272 20217	39817	40158	57019 69901 72182	86201	333	10278	20206	70003	90510	555	92118 (HVI)	
SP 1405		E39BKN2500VC	10			147	81	72	05	06		000	TCU ALBDS RB33E40	
SA 1450		32SCTE100BKN2500VC	15			136	83	73	04	10		999	BINOVC	
SA 1551		30SCTE100BKN2508KN	15			131	82	71	04	11		997		
SA 1650		30SCTE100BKN2500VC	15			124	81	71	02	11		995	72500 1171	
SA 1752		E100BKN2500VC	15			125	78	71	03	10		993	FEM CU	
SA 1851		E100BKN2500VC	15			121	78	70	04	08		993	FEM CU	
SA 1952		35SCTE1000VC	15			121	78	70	05	10		992	81000 117/ 84	
SA 2051		72312 12674 80510 10256 20211	39782	40121	58010 69901 8217/	333	10289	20206	70003	555	92200	1JC1		
SA 2150		M32BKN1000VC	15			114	77	70	02	10		990		
SA 2229		M32BKN900VC	10			107	76	70	03	12		988	RB30	
SP 2251		M30BKN800VC	8			093	73	71	02	14		984	72701 157/	
SP 2343		M240VC	7			074	72	70	03	15		978		
SA 2350		M280VC	7			042	71	70	01	17		970	R OCNLY R-	
SA 2350		10SCTM200VC	21/2						02	19		969	R- OCNLY R	

A synoptic observation, in WMO code format FM12-VII, is entered on line following related aviation observation.
FM12-VII: IIII IRIHXHV NDDff 1sntTT 2sntDIDId 3p0p0p0p0 4pppp 5ppp 6RRRrR 7wMHW2 8NHCIcMCh

GREER HOURLY WEATHER OBSERVATIONS SEPTEMBER 21, 1989

MF1-108
 11-851
 U.S. DEPARTMENT OF COMMERCE
 NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
 NATIONAL WEATHER SERVICE
 SURFACE WEATHER OBSERVATIONS
 STATION GREENVILLE-SPARTANBURG AP, SC
 DATE SEPTEMBER 21, 1989
 TO CONVERT LST TO GMT ADD 05 hrs. SUBTRACT hrs

TIME ILST1	STATION PRESSURE (In.s)	DRY BULB (deg. F)	WET BULB (deg. F)	RELATIVE HUMIDITY (%)	TOTAL SKY COVER	CLOUDS AND OBSCURING PHENOMENA					TOTAL OPAQUE PRESSURE TENDENCY	NET 3HR CHANGE (In.s)	SUNSHINE (MIN)	PRECIP- ITATION (In.s)		
						LOWEST LAYER	SECOND LAYER	THIRD LAYER	FOURTH LAYER	TOTAL						
					AMT	TYPE	HGT	AMT	TYPE	HGT	AMT	TYPE	HGT			
00 50	29030	69.0	68.4	96.6	10	STFRA	M 4	10	STFRA	M 1	10			0.01		00-01
01 50	29020	69.0	68.4	96.6	10	STFRA	M 3	10	STFRA	M 1	10			T .00		01-02
02 50	29010	69.0	68.4	96.6	10	STFRA	M 3	10	STFRA	M 1	10			T .00		02-03
03 50	29020	70.0	69.3	96.7	10	STFRA	M 2	10	STFRA	M 1	10			T .00		03-04
04 50	29020	70.0	70.0	100.0	10	F	M 1	10						T .00		04-05
05 50	29030	70.0	70.0	100.0	10	F	M 1	10						T .00		05-06
06 50	29040	71.0	71.0	96.7	10	STFRA	M 4	10						T .00		06-07
07 50	29045	72.0	71.3	96.7	10	STFRA	M 5	10						T .00		07-08
08 50	29050	74.0	72.6	93.5	10	ST	M 6	10						T .00		08-09
09 50	29045	76.0	73.3	87.5	10	SC	M 11	10						T .00		09-10
10 50	29035	79.0	74.8	81.9	10	SC	M 20	10						T .00		10-11
11 51	29015	80.0	74.5	76.7	10	SC	M 16	10						T .00		11-12
12 50	28990	81.0	74.1	71.7	10	TCU	E 28	10						T .00		12-13
13 52	28960	81.0	74.8	71.2	10	TCU	E 39	10						T .00		13-14
14 50	28930	83.0	76.0	71.9	10	SC	E 30	10						T .00		14-15
15 51	28915	82.0	74.4	69.4	10	CU	E 30	10						T .00		15-16
16 50	28895	81.0	74.1	71.7	10	CU	E 30	10						T .00		16-17
17 52	28895	78.0	73.2	79.2	10	CU	E 35	10						T .00		17-18
18 51	28885	78.0	72.6	76.5	10	CU	E 32	10						T .00		18-19
19 52	28865	77.0	72.3	79.1	10	SC	E 32	10						T .00		19-20
20 51	28845	76.0	72.0	81.8	10	SC	E 32	10						T .02		20-21
21 50	28805	73.0	71.7	93.5	10	SC	M 30	10						T .02		21-22
22 51	28750	72.0	70.7	93.5	10	SC	M 30	10						T .02		22-23
23 50	28660	71.0	70.3	96.7	10	STFRA	M 28	10						0.13		23-24

SYNOPTIC OBSERVATIONS

TIME IGMT1	TIME ILST1	NO.	PRECIP (In.s)	SNOW FALL (In.s)	SNOW DEPTH (In.s)	MAX TEMP deg. F	MIN TEMP deg. F	PREC ORIG	STATE OF GRND.	SOIL TEMP.	56	57	58				
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58
	MID. TO		0.01	0.0	0	69	69										
	0048		0.01	0.0	0	70	69										
	0047		T	0.0	0	71	69										
	0647		T	0.0	0	82	71										
	1249		T	0.0	0	84	78										
	1848		0.17	0.0	0	78	71										

SUMMARY OF DAY (MIDNIGHT TO MIDNIGHT)

24HR MAX TEMP deg. F	24HR MIN TEMP deg. F	24HR PRECIP (In.s)	24HR SNOW FALL (In.s)	24HR SNOW DEPTH (In.s)	SPD (Kts)	DIR	TIME ILST1	ICE ON WATER (In.s)	FROZEN GRND (In.s)	BASE	RIVER GAGE	SR-SS	HN-NN	WATER EQUIV (In.s)
66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
84	69	0.18	0.0	0	26	NE	2354					10	10	81

90. REMARKS, NOTES AND MISCELLANEOUS PHENOMENA

SUNSET 1829

TIME: SUNRISE	0615	CHARACTER OF	12	CHARACTER OF	1829
TOTAL SUNSHINE (MIN)	89	% OF POSSIBLE SUNSHINE	12	CHARACTER OF CLOUDY	SUNSET
FASTEST OBSERVED 1-MINUTE WIND SPEED (MPH)		OR FASTEST MILE	22	DIREC-TION	02
				TIME	2350

TIME CHECK == 2330E //
 TIME CHECK == 2330E //

STATION PRESSURE COMPUTATIONS

TIME (LST)	59	0048	0647	1249	1848
ATT. THERM.	60				
OBSRVD BAR.	61				
TOTAL CORR.	62				
STA. PRESS.	63				
BAROGRAPH	64	29.030	29.035	28.995	28.875
BAR. CORR.	65	.000	+.005	-.005	+.010

WEATHER & OBSTRUCTIONS TO VISION

TYPE	BEGAN	ENDED	TYPE	BEGAN	ENDED
82	83	84	86	87	88
L-	CONT	0015	0015		
F+	CONT	0015	0130		
R-	CONT	0340	0745		
L-	CONT	1210	1228		
RM-	CONT	1333	1340		
R-	CONT	2030	2342		
F-	CONT	2340	2342		
R-	CONT	2342	2348		

GREER HOURLY WEATHER OBSERVATIONS SEPTEMBER 22, 1989

HF1-10A (1-85)		U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL WEATHER SERVICE										STATION GREENVILLE-SPARTANBURG AP, SC		DATE SEPTEMBER 22, 1989		TO CONVERT LST TO GMT ADD 05 hrs. SUBTRACT ___ hrs	
SURFACE WEATHER OBSERVATIONS												OBSERVER'S INITIALS					
TYPE	TIME (LST)	SKY AND CEILING (Hundreds of feet)	VISIBILITY (Miles)		HEATHER AND OBSTRUCTIONS TO VISION	SEA LEVEL PRESS (Hbs)	TEMP (F)	DEW PT. (F)	WIND			ALTIMETER SETTING (Ings)	REMARKS AND SUPPLEMENTAL CODED DATA	OBSERVER'S INITIALS			
			SFC	TMR					DIR (100-36)	SPEED (Kts)	CHARACTER						
SP 0025	121	M80VC	21/2	(491)	R-F	012	71	69	01	20	G	29	964	PRESFR			
SA 0050		M90VC	21/2		R-F	887//	333	10289	36	20	G	30	960	PRESFR/ 77824 17// 84			
RS 0150		72312 11440 83620 10217 20206	39677	40012	57078 60061 76162	972	71	69	01	21	G	30	555	92206 10HRI			
SA 0250		M80VC	3		R-F	940	71	68	01	21	G	33	949	PK MND 0137/0554 PRESFR			
SP 0329		M90VC	10		R-	894	71	69	36	23	G	37	939	PRESFR/ 98089			
RS 0350		3SCTM100VC	2		RF				34	24	G	33	926	PRESFR			
SP 0418		M3BKN120VC	3		R-F						G	33	926	R- OCNL R PK MND 0137/23			
SA 0450		M4BKN130VC	2		RF						G	35	921	PRESFR/ 79916 99113 17//			
SP 0528		M4BKN150VC	2		RF				35	24	G	39	923	PRESFR			
SA 0550		M4BKN200VC	5		R-F	877	72	70	31	21	G	35	921	R OCNLY R- PK MND 3539/0			
SP 0628		4SCTM8BKN220VC	5		R-F	885	70	68	28	17	G	27	921	R- OCNLY R			
SA 0651		M9BKN220VC	5		RMF	915	69	67	26	16	G	26	923	R- OCNLY R			
SA 0750		72312 11456 82423 10206 20194	4		RMF				24	23	G	31	931	PRESRR/ 31957 17// 69 20			
SA 0850		E90VC	39582	49915	53019 60141 78186	887//	333	10289	25	26	G	36	555	92212 (MV)			
SP 0904		M1BKN300VC	3		RMF	956	68	66	21	20	G	33	943	PRESRR PK MND 2537/31			
RS 0950			5		RM-F	991	68	65	21	20	G	33	954	PRESRR BINOV C S PCPN VRY			
SP 1038		20SCTE250BKN	10			015	71	65	20	15	G	20	956	PRESRR			
SA 1050		20SCTE250BKN	15			029	74	64	21	15	G	28	961	PRESRR BKN V SCT REO3/ 2			
SP 1125		M240VC	15			043	74	64	22	16	G	27	967	PRESRR			
SA 1150		M280VC	25			051	77	65	22	18	G	25	970	LG T			
SP 1227		M330VC	20			051	77	65	22	18	G	24	972	PRESRR			
SA 1252		M320VC	30			885//	333	10250	22	20	G	24	555	BINOV C/ 23623 15// 67			
SA 1350		M310VC	39714	40051	52036 60061 70282	055	78	65	22	15	G	26	973	92218 (MV)			
SA 1450		32SCTE60BKN	20			060	79	66	23	15	G	26	974				
SA 1552		90SCT250-SCT	20			067	79	65	21	16	G	22	976	FEM CU/ 215 1171			
SA 1650		35SCT90SCT	20			074	76	65	22	14	G	22	978				
SA 1751		40SCTE90BKN	15			081	79	67	22	13	G	27	980				
SA 1852		M30BKN900VC	12			089	74	68	22	10	G	27	982				
SA 1951		72312 32569 82007 10233 20200	39749	40089	52020 8557/ 333	10267	74	70264	20	07	G	24	982	220 157/ 80 (JC)			
SA 2053		M35BKN900VC	10			095	74	68	18	06	G	26	984				
SA 2150		E35BKN900VC	10			098	72	68	20	05	G	25	985				
SA 2251		35SCTM1000VC	10			101	73	68	18	08	G	28	986	212 157/			
SA 2350		M35BKN1000VC	10			101	72	67	20	06	G	26	986				
SA 2350		M41BKN800VC	10			103	71	66	19	08	G	28	987				

A synoptic observation, in WMO code format FM12-VII, is entered on line following related aviation observation.
 FM12-VII: III: IRIXHV NDDf f 1sNIT 2sNIDIDd 3pOpOpO 4pppp 5ppp 6RRRtR 7wMh2 8NhCICmCh

MYRTLE BEACH HOURLY WEATHER OBSERVATION SEPTEMBER 21, 1989

FEDERAL METEOROLOGICAL FORM 1-TM SURFACE WEATHER OBSERVATIONS (AF 1-10)															
(ABRIDGED FORM FOR MILITARY USE)															
TIME	LOCAL TIME	UNIVERSAL TIME	STATION	ELEVATION	MAGNETIC VARIATION	MAGNETIC DECLINATION	DAYS	MONTH	YEAR	OBSERVER	CORRECTOR	WIND	TEMPERATURE	PRESSURE	HUMIDITY
TIME	LOCAL TIME	UNIVERSAL TIME	STATION	ELEVATION	MAGNETIC VARIATION	MAGNETIC DECLINATION	DAYS	MONTH	YEAR	OBSERVER	CORRECTOR	WIND	TEMPERATURE	PRESSURE	HUMIDITY
0100	0650	0100	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
0200	0750	0200	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
0300	0850	0300	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
0400	0950	0400	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
0500	1050	0500	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
0600	1150	0600	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
0700	1250	0700	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
0800	1350	0800	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
0900	1450	0900	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
1000	1550	1000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
1100	1650	1100	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
1200	1750	1200	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
1300	1850	1300	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
1400	1950	1400	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
1500	2050	1500	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
1600	2150	1600	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
1700	2250	1700	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
1800	2350	1800	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
1900	0050	1900	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
2000	0150	2000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
2100	0250	2100	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
2200	0350	2200	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
2300	0450	2300	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
2400	0550	2400	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000

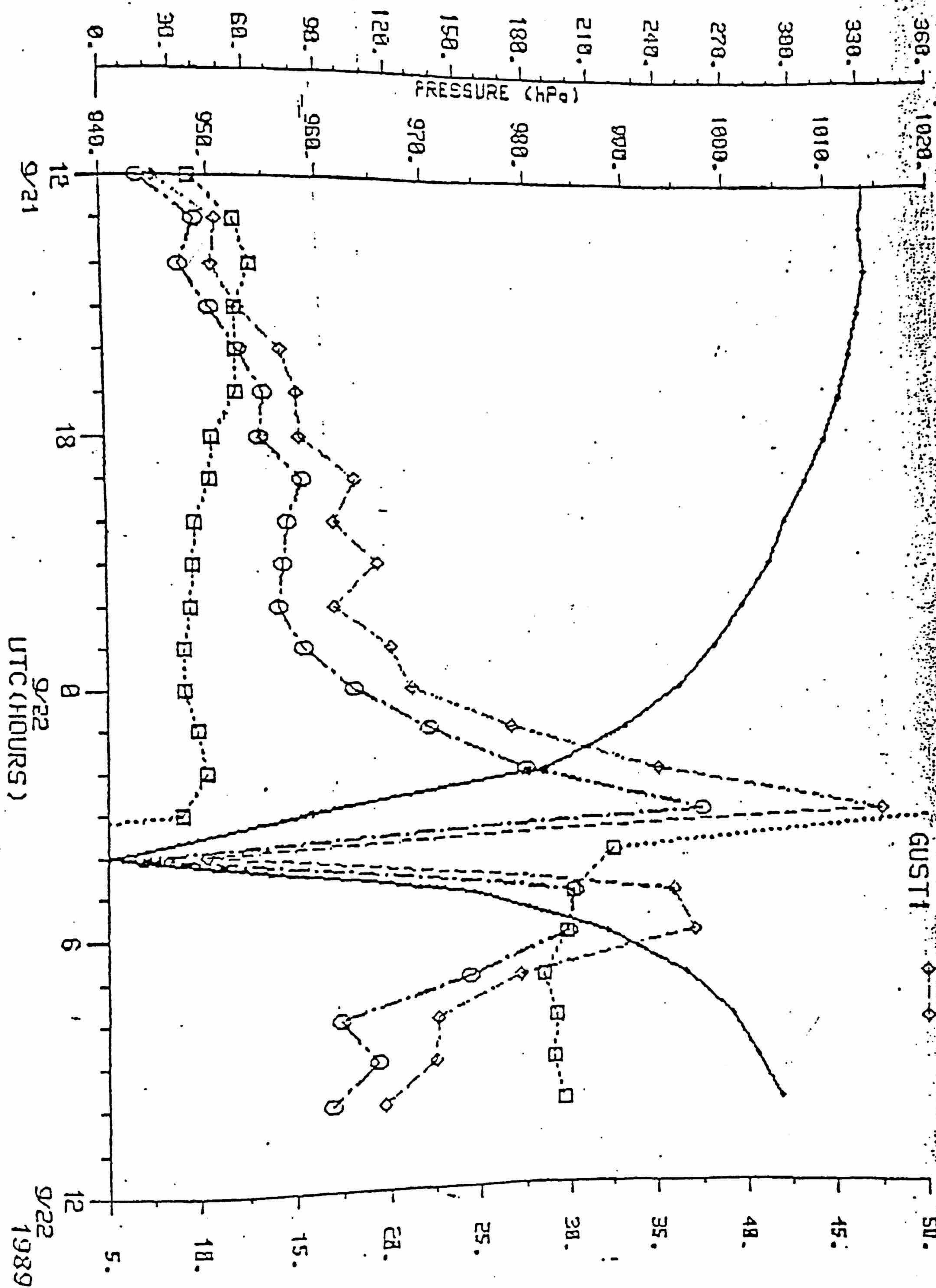
FOLLY ISLAND WIND BUOY, PRESSURE, AND TIDE

TIME SERIES PLOT 1

P.37

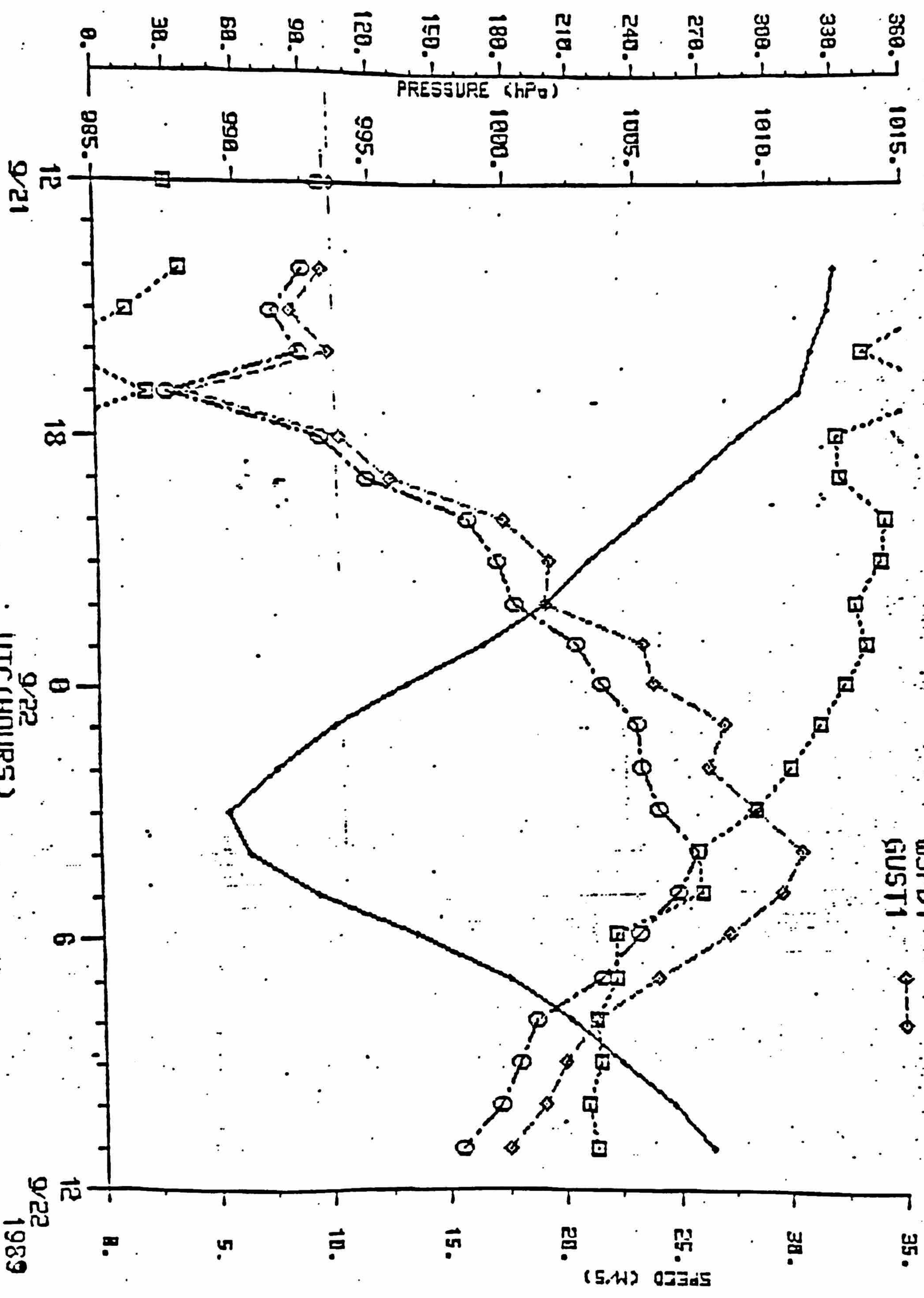
DIRECTION (DEGREES)

SEP 25 '89 13:12 MDSC-NSTL

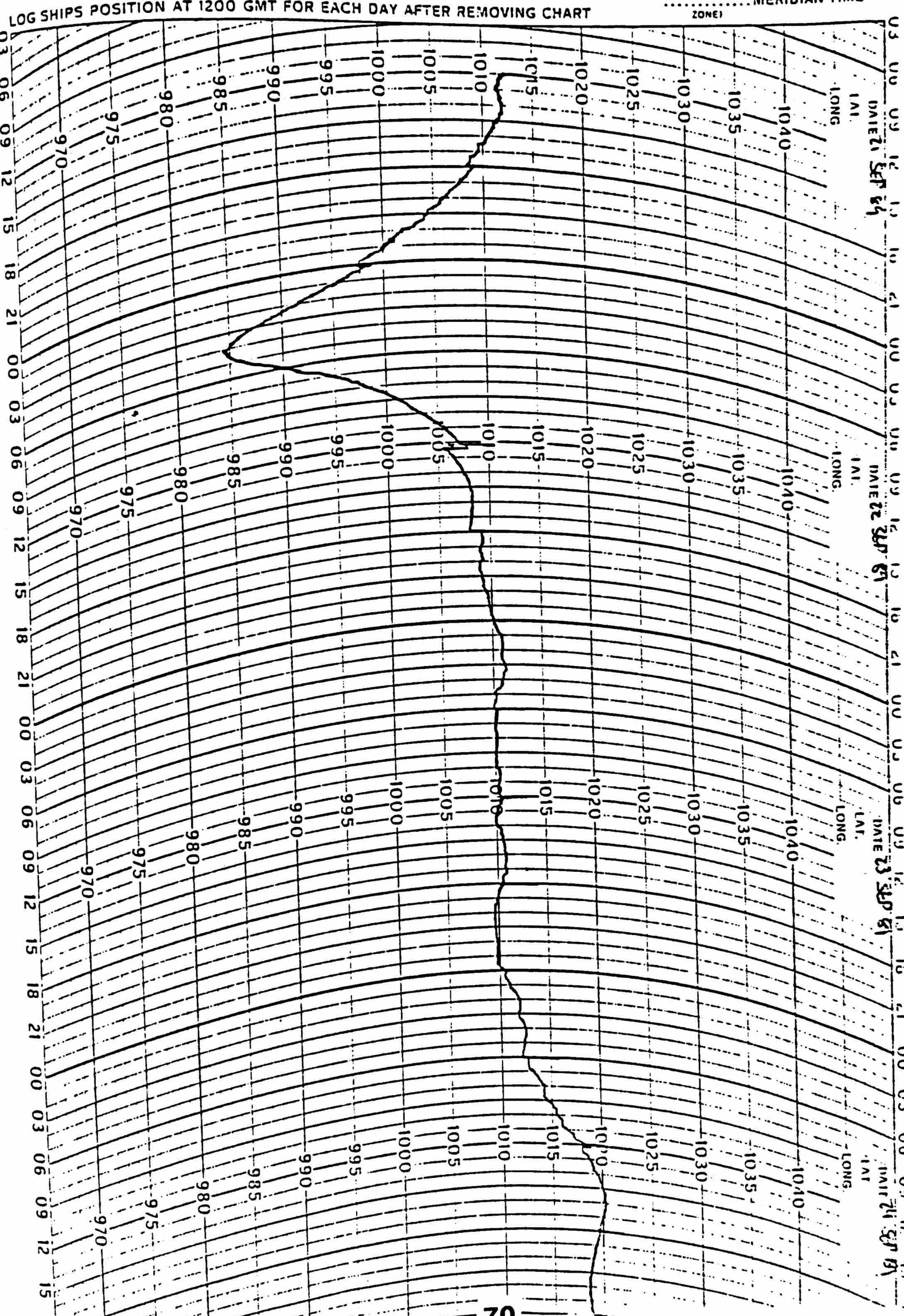


SAVANNAH LIGHT TOWER BUOY WIND, AND BAROGRAPH TRACES

Edited Data Available TIME SERIES PLOT SLS1 BARO1 UDIR1 WSPD1 GUST1



SHIP **MCAS BEAUFORT** ROUTE FROM **SL 2444** TO **8043 W**
 ON: PRESSURE **1012.6** DATE **21 SEP 59** TIME **1200 Z**
 OFF: PRESSURE **1014.7** DATE **25 SEP 59** TIME **1200 Z**
 ALL PRESSURE IN MILLIBARS-SET TO : STATION PRESSURE ASHORE: SEA LEVEL PRESSURE ABOARD SHIP
 SHIPBOARD: ALL TIMES GREENWICH
 SHORE STATIONS:
 (ENTER TIME) MERIDIAN TIME (ZONE)



BEAUFORT MCAS BAROGRAPH

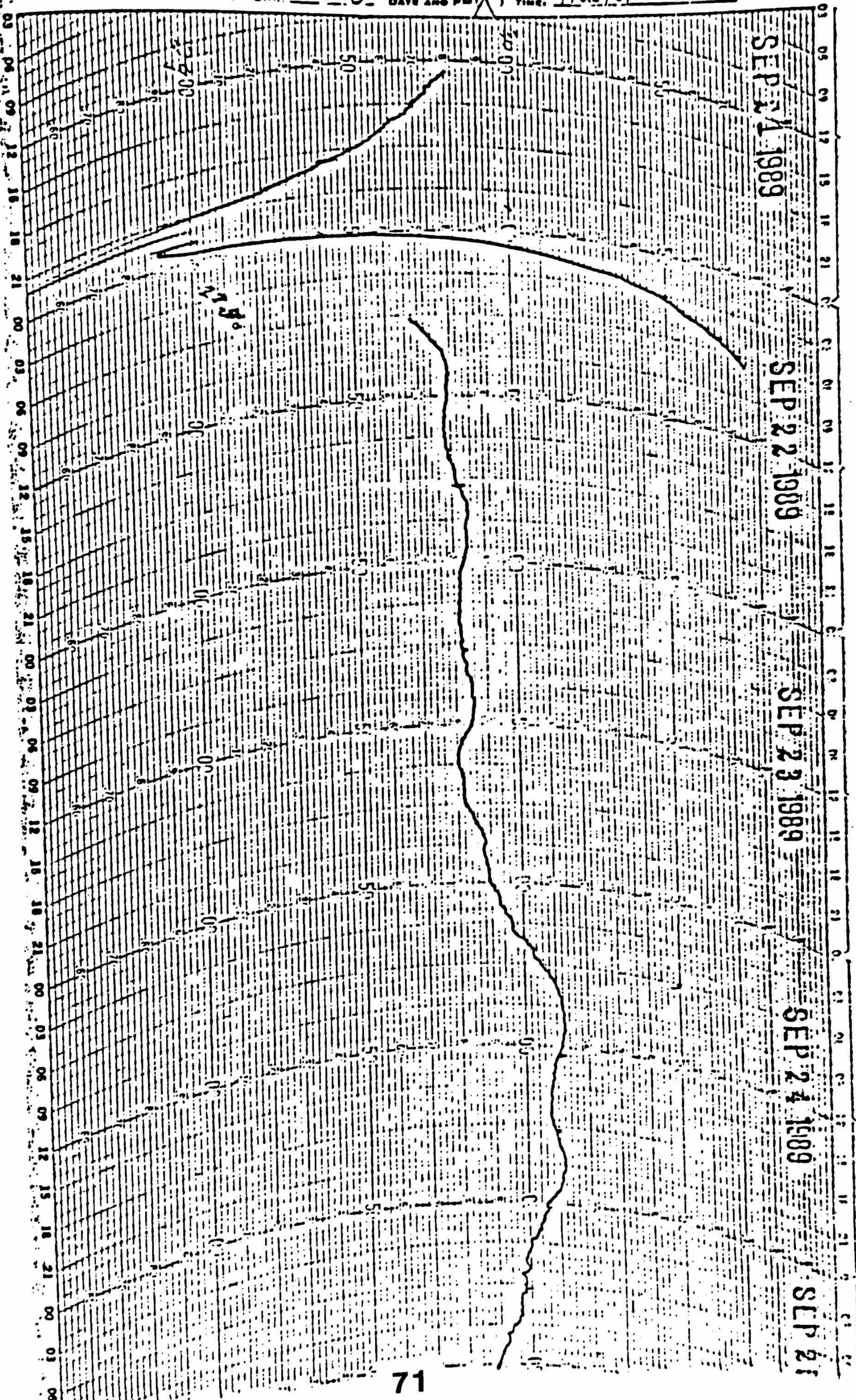
BAROGRAM
WSO CHARLESTON, SC

STATION PRESSURE (IN INCHES) AT _____

TIME OF RECORD 75 TH MERIDIAN, ELEVATION (IN FT) 48 ft

ON PRESSURE 29.810 DATE AND PM 9/21/89 TIME 125E

OFF PRESSURE 29.000 DATE AND PM 9/25/89 TIME 125E



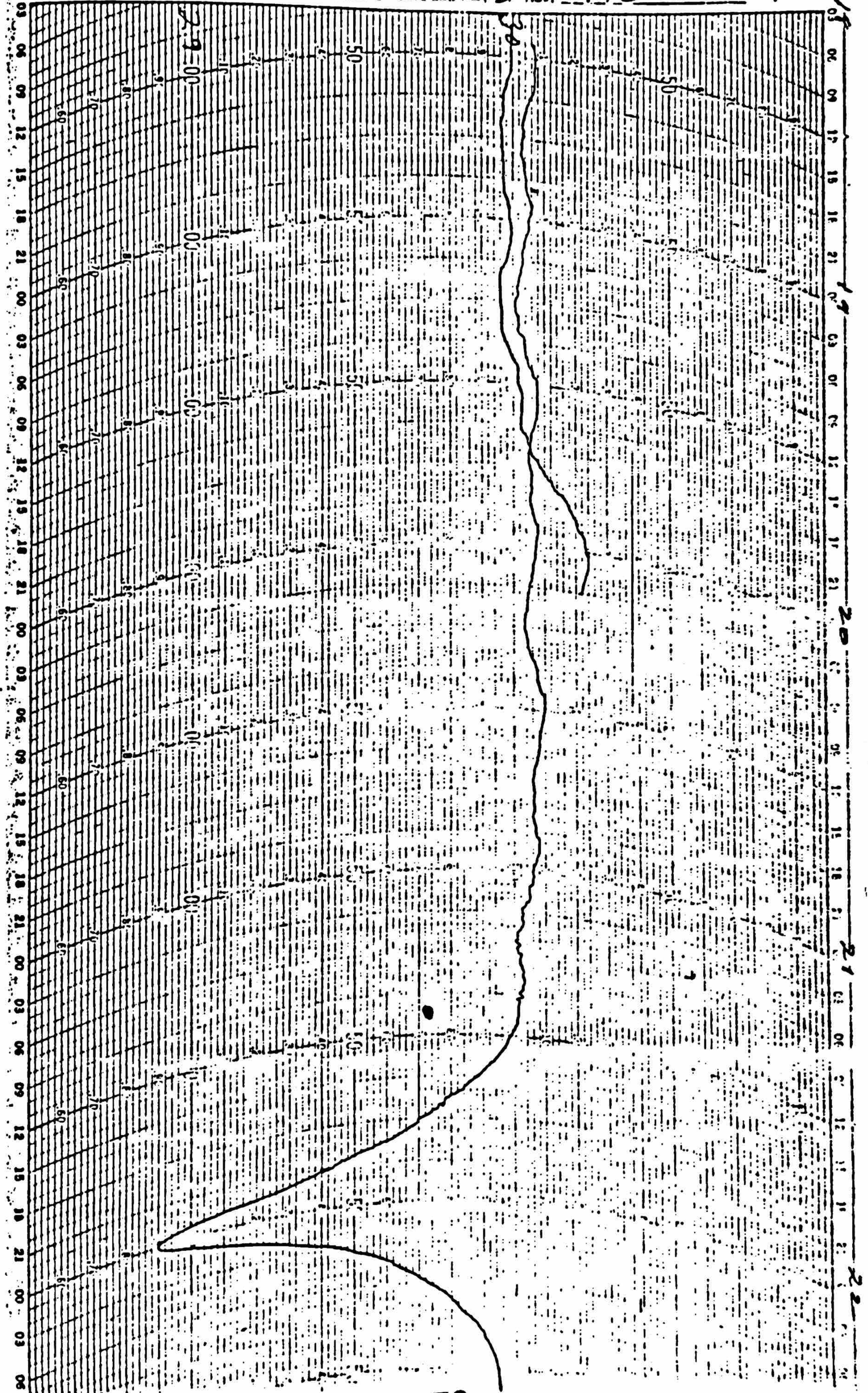
CHARLESTON WSO BAROGRAPH

STATION PRESSURE (IN INCHES) AT Churn - Edisto Beach, S.C.

TIME OF RECORD _____ IN MERIDIAN ELEVATION (IN FT) _____

ON PRESSURE: 30.06 AM (4) DATE AND TIME: 10:00 9-19-89 EDT

OFF PRESSURE: 30.20 AM () DATE AND TIME: 2:40 9-24-89 EDT



EDISTO BEACH BAROGRAPH

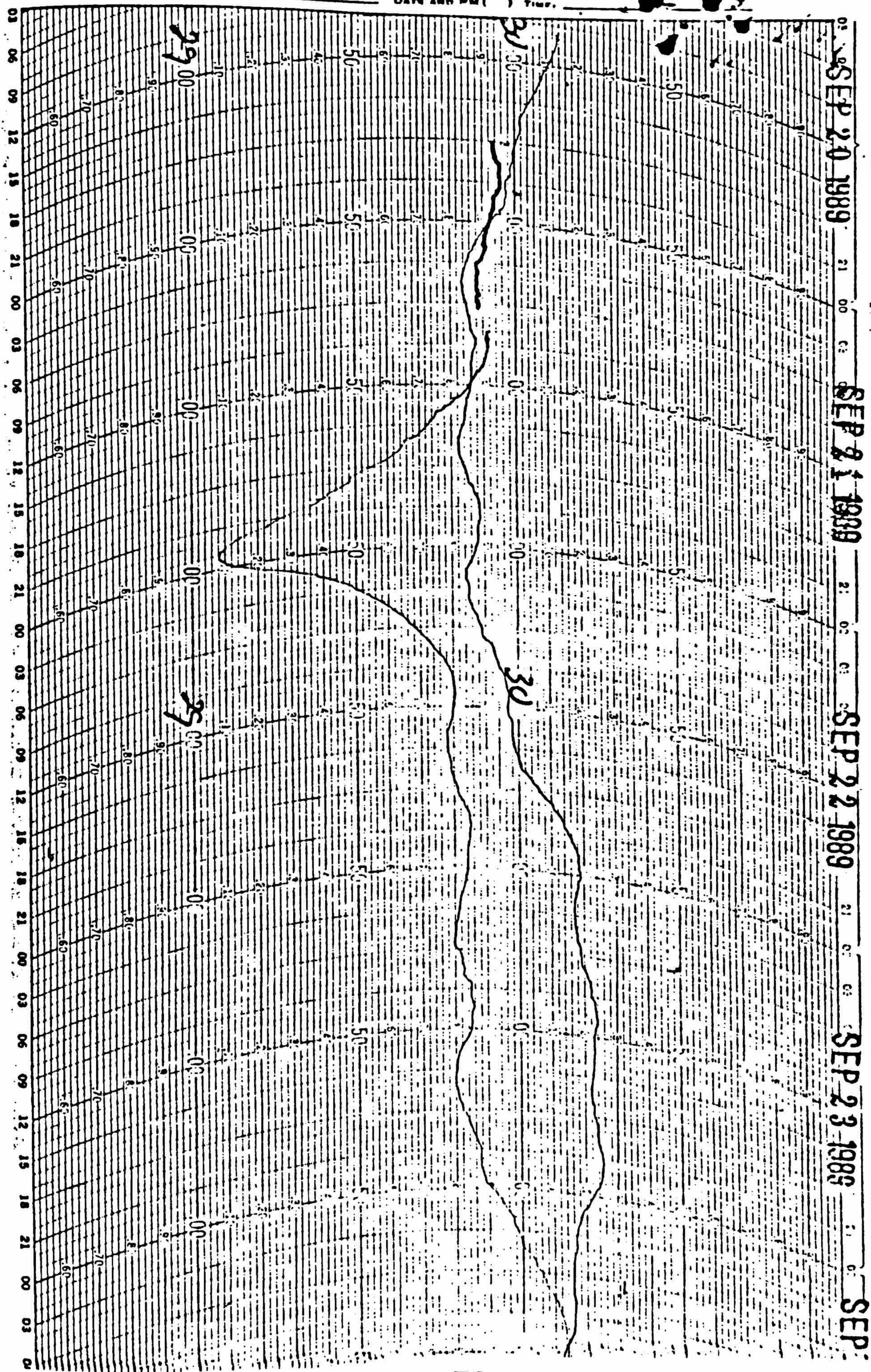
U.S. DEPARTMENT OF COMMERCE - NOAA NATIONAL WEATHER SERVICE
BAROGRAM

STATION NAME (IN INCHES) AT Georgetown, SC

TIME OF RECORD _____ IN MIDDAY. ELEVATION (M) _____

ON PRESSURE: 29.930 (CHS) AMT. _____ DATE AND PM () TIME: 1800

OFF PRESSURE: _____ AMT. _____ DATE AND PM () TIME: _____



GEORGETOWN BAROGRAPH

108 HOURS

MICRO-BAROGRAPH
CHART NO. 5-1090

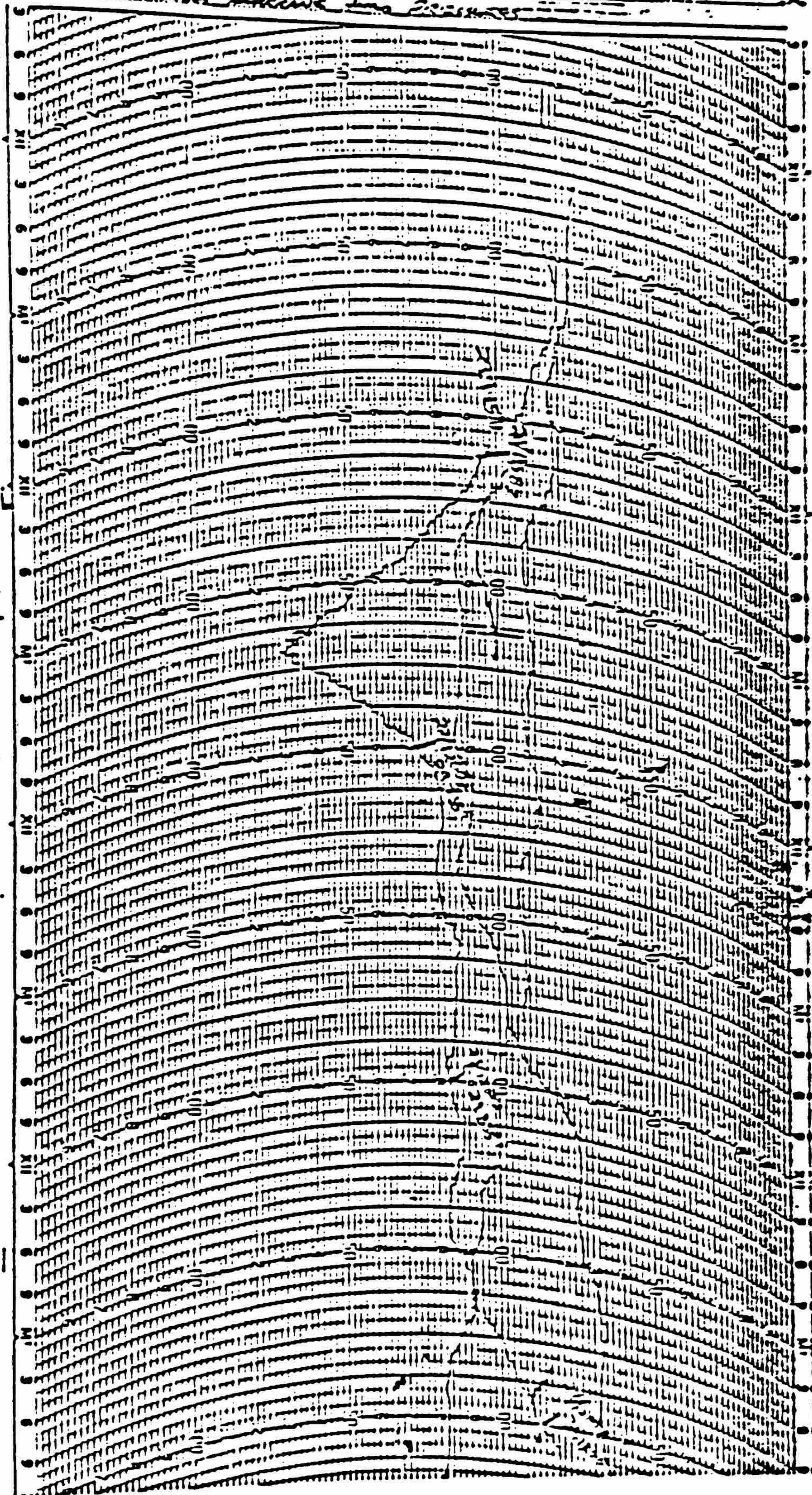
INCHES OF MERCURY

BELFORT INSTRUMENT COMPANY
BALTIMORE & MARYLAND, U.S.A.

INSTRUMENT NO

REMARKS

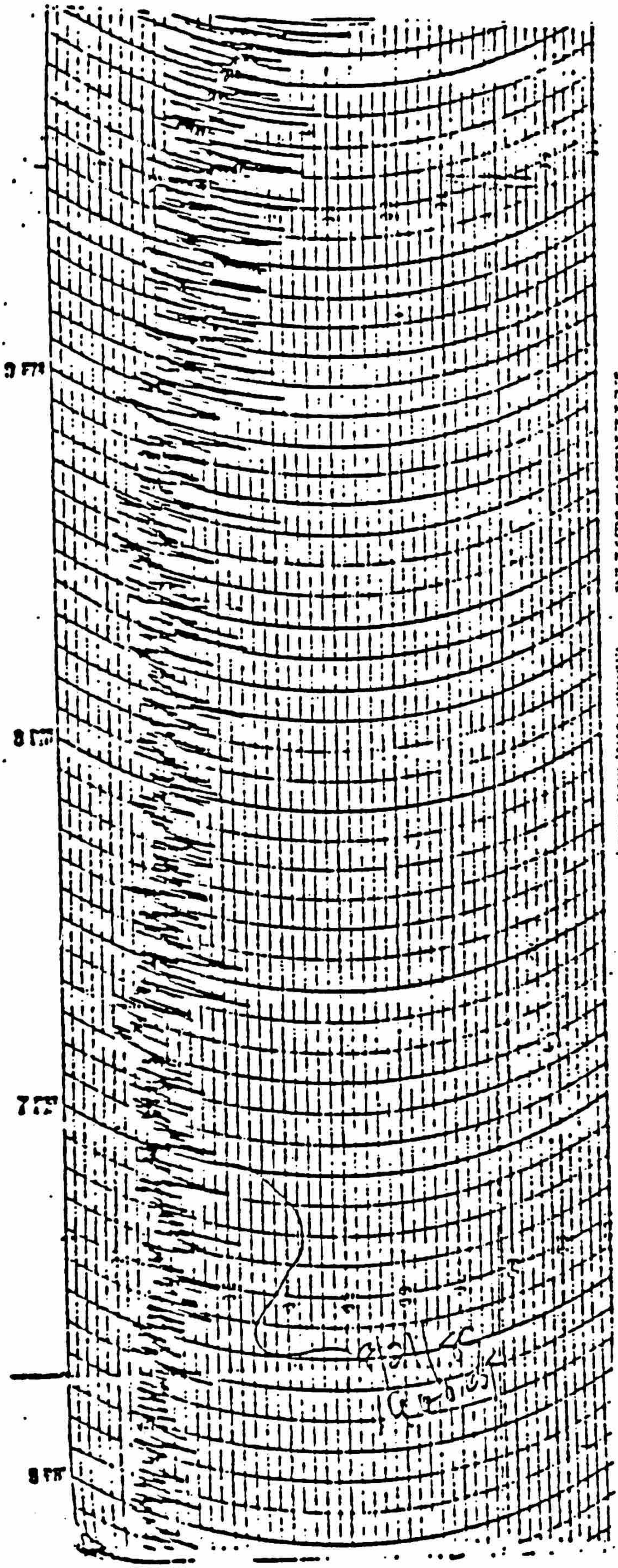
DATE 1-20-58 STATION DE 3303 U-106 3000 MSL



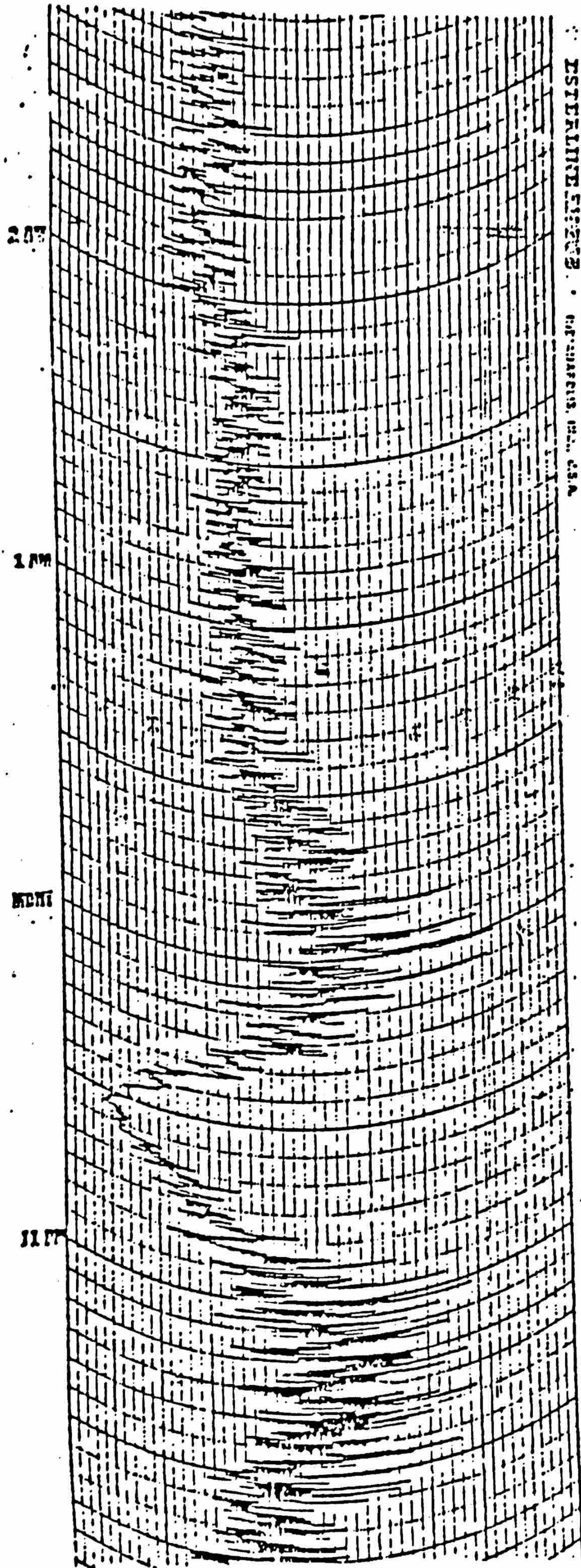
MYRTLE BEACH AFB BAROGRAPH

CHARLESTON AIRPORT ANEMOMETER TRACE

ESTABLISHED BY THE U.S. AIR FORCE, WASHINGTON, D.C. CHART NO. 4213C



CHARLESTON AIRPORT ANEMOMETER TRACE



STATION INDEX

SOUTH CAROLINA
SEPTEMBER 1989

STATION	INDEX NO.	DIVISION	COUNTY	LATITUDE	LONGITUDE	ELEVATION (IN FEET)	OBSERVATION TIME AND TABLES				OBSERVER
							TEMP	PRECIP	EVAP	SPECIAL (SEE NOTES)	
LITTLE MOUNTAIN	52000	05	NEWBERRY	34 12	81 25	711	18	18	08	H	MRS MARGARET S JAYROE
LOCKHART	52320	02	UNION	34 47	81 28	400	18	08	08	C	MRS GLADYS COBB
LONGCREEK	52278	01	OCONEE	34 47	83 16	1630	18	07	07	C	MRS J J SPIVEY SR
LORIS 1 S	53060	04	HORRY	34 33	80 53	900	08	08	08	C	Mrs L L J GIBSON
HANNING 2 M	55493	06	CLARENDON	33 41	80 14	1000	17	17	17	C	ROBERT E KNIGHT
MARION 2 M	55099	04	MARLETON	33 10	79 26	550	17	17	17	H	JOHN FINGER
MCCOLL 3 NM	56328	07	MARLBORO	33 43	79 29	190	17	17	17	H	MRS ELIZABETH FOLEY
MCCORMICK 9 E	56580	05	EDGEFIELD	33 55	82 39	495	17	08	08	H	MRS TRULIA PRICE
MYRTLE BEACH 2	61533	04	HORRY	33 44	78 51	30	07	07	07	H	MYRTLE BEACH FIRE DEPT
NEWBERRY 9	62209	05	NEWBERRY	34 17	81 37	476	18	18	18	C	NEWBERRY FIRE DEPT
NINE ISLANDS	62930	02	CHESTER	35 13	81 30	500	MID	MID	MID	H	DUKE POWER TURNER COMPANY
OAKHAY 3 H	64233	02	OCONEE	34 35	83 30	860	MID	07	07	H	CHARLES WATSON
ORANGEBURG 2	65227	06	ORANGEBURG	33 30	80 52	160	MID	MID	17	H	ORANGEBURG WATER WORKS
PAGELAND	66160	04	FAIRFIELD	34 45	81 24	615	07	07	07	H	PAGELAND ELECTRIC & GAS CO
PARR DEE	66888	03	MARION	34 12	81 22	258	07	07	07	H	SC ELECTRIC BOAN
PEELION 4 NM	67750	06	LEXINGTON	33 48	79 17	450	17	07	07	H	DEBORAH SHIRLEY BOAN KNEECE
PICKENS 5 SE	68310	02	PICKENS	34 50	82 38	1140	17	08	08	H	CHARLES B SMITH
RIDGELAND 5 NE	68933	07	BERKELEY	33 15	79 59	50	07	07	07	H	SC PUBL SERV AUTHORITY
RIMINI 2 SSM	73133	06	CLARENDON	33 38	80 31	20	18	18	18	H	CHESTER ELLIOTT
SALEM 1 SM	75891	05	OCONEE	34 53	82 59	800	08	08	08	H	LOUIS T LUSK
SANDHILL EXP STATION	76310	05	RICHLAND	33 58	81 46	480	08	08	08	H	WOODRUSH EXP OF PUBLIC MOR
SANTUCK	77666	06	UNION	34 38	81 52	440	08	08	08	H	SANDHILL EXP OF STN
SIMMS WATER PLANT	77222	02	UNION	34 38	81 31	520	18	18	18	H	MALCOLME C GREGORY WORKS
SPARTANBURG 3 SSE	81888	02	SPARTANBURG	35 7	81 58	748	18	18	18	H	SPARTANBURG WATER WORKS
SPRINGFIELD	82199	06	SPARTANBURG	34 54	81 55	610	17	17	17	H	SPARTANBURG SANT SEMER D.
SULLIVANS ISLAND	84050	07	ORANGEBURG	33 30	81 17	300	07	07	07	H	SPRS MARION PARK SERVICE
SUMNERVILLE	84260	07	CHARLESTON	32 46	79 51	5	16	16	16	H	MATSONAL PARK SERVICE
SUMTER 8 SM	84440	06	DORCHESTER	32 59	80 11	35	07	07	07	H	RICHARD ELMORE
UNION 8 SM	87860	02	SUMTER	33 56	81 21	177	07	07	07	H	MALDEN HURPHREY SR
WALHALLA	88887	02	UNION	34 45	81 45	565	17	07	07	H	R D HURPHREY SR
WALTERBORO 2 SM	89222	07	OCONEE	34 45	83 45	980	17	07	07	H	MISS HENRIETTA BRANDT
WARE SHOALS	89470	05	GREENWOOD	32 24	80 41	556	17	17	17	H	RADIO STATION CHESHIRE
WATEREE DAM	89799	03	KERSHAW	34 20	80 42	226	16	16	16	H	CHARLES A BRANDT
WEDGEFIELD	90339	06	SUMTER	33 54	80 31	250	MID	MID	MID	H	DUKE POWER COMPANY
WEST PELZER	91222	02	ANDERSON	34 39	82 28	850	08	08	08	H	HARRY H TERRY DRAKE
WHITMIRE 4 NE	93218	02	UNION	34 32	81 33	400	14	14	14	H	CHARLES F ALYERSON
WINNSBORO COLLEGE	93327	03	FAIRFIELD	34 22	81 25	560	08	08	08	C	GEORGE F WINNSBORO
WOODRUFF 5 NM	94120	02	SPARTANBURG	34 46	82 25	790	18	18	18	H	HILLIAM L CULP
YEMASSEE	94699	07	BEAUFORT	32 41	80 51	25	16	16	16	H	SAMANTHA R HADELLS LAB ANIMAL BREEDERS

SEE REFERENCE NOTES FOLLOWING STATION INDEX

HUGO (1989) STM-RELATIVE COORDS

WIND BARBS

09/21/89 22 UTC - 09/22/89 8 UTC

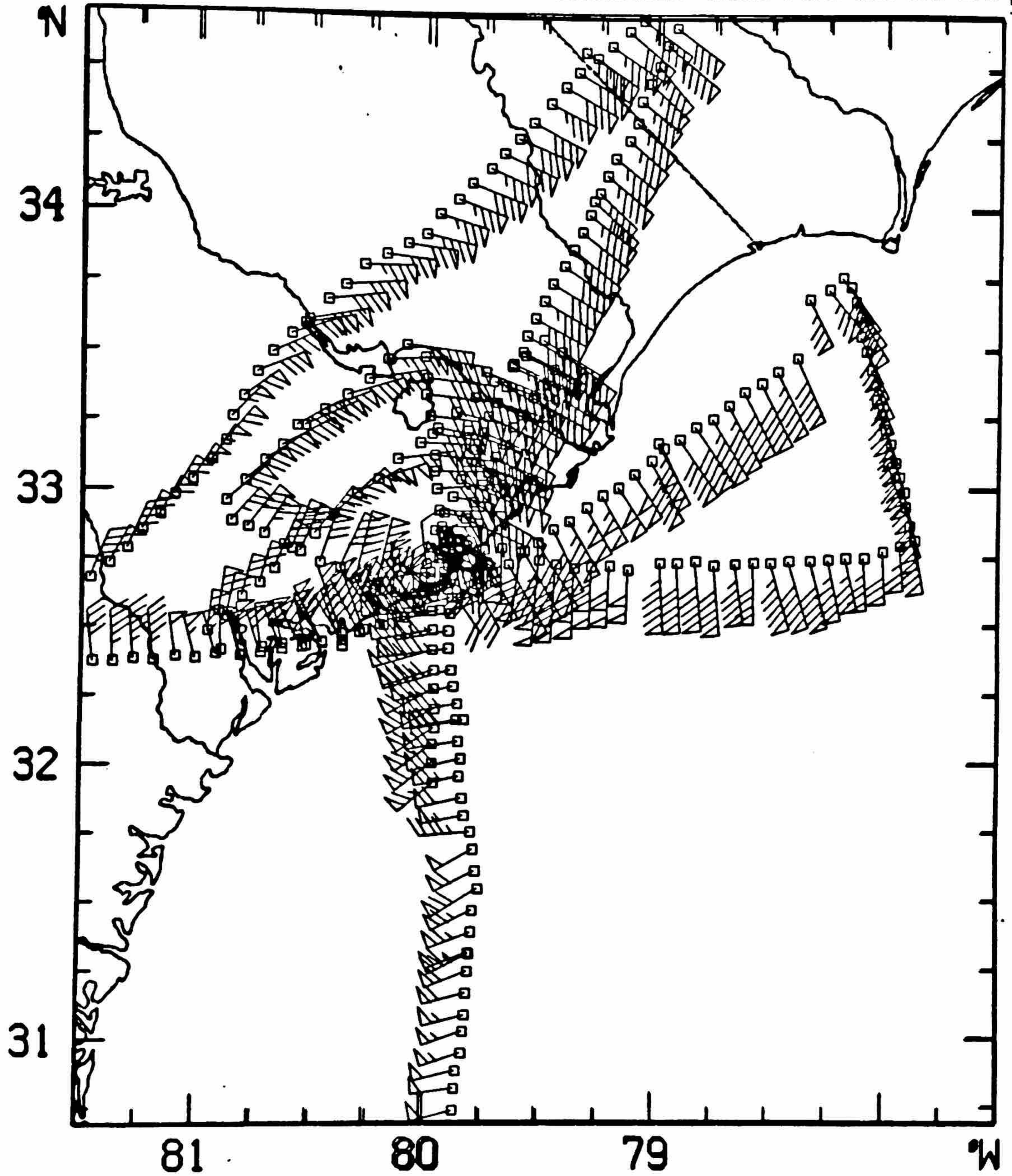
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700 MB

(M S**-1)

LVL=13



D11/(HRD.POWELL.SPLMAP)SEV.DAT

Two dimensional wind field at 700 mb of Hugo as it approached Charleston, South Carolina.

COURTESY: NATIONAL WEATHER SERVICE

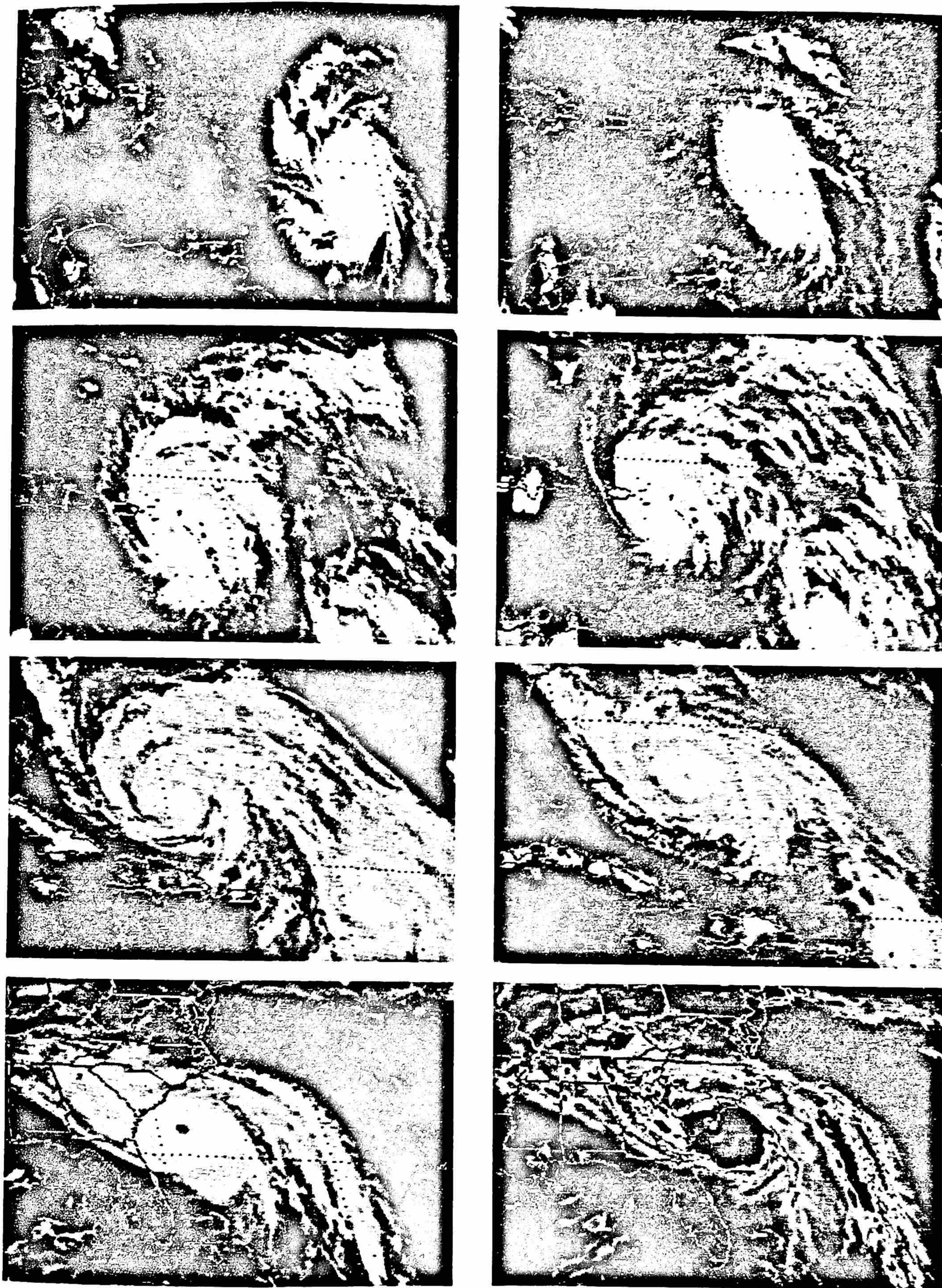


Figure 1-3. Composite history of Hurricane Hugo shown by GOES-7 infrared satellite images. Times are Universal Coordinated Times (UTC). Subtract 4 hours to convert to EDT. Image at landfall (0401, 22 Sept) is enhanced with "MB curve".

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