

HURRICANE CARLA  
September 4-14, 1961  
(A Preliminary Report)

Carla, one of the major Gulf hurricanes of this century, was spawned in an area of squalls that moved into the western Caribbean Sea on September 4. Although this storm was severe, loss of life was held to a minimum by timely advices and well planned evacuations. The loss of life directly attributed to Carla was amazingly low. Preliminary reports indicate about 43 deaths, approximately half of which can be attributed to the tornadoes and floods associated with the hurricane. Preliminary damage estimates total over \$300 million.

From the time of its inception Carla moved generally northwestward, passing through the Yucatan Channel on the 7th, and reaching the Texas coast during the afternoon of the 11th. The first advisory on Carla was issued on the evening of the 4th and by the morning of the 5th the circulation reached tropical storm intensity (39 miles per hour), at which time the center was located about 60 miles north of Cape Gracias, Nicaragua. Hurricane force winds (74 miles per hour or more) were reported late on the 6th as the storm, moving with a forward speed of 9 miles per hour, passed the 20th parallel and approached the Yucatan Channel.

As it moved through the Yucatan Channel close off the Mexican Coast on the 7th, winds had increased to 110 miles per hour and gales, extending several hundred miles out from the center, battered western Cuba and the Yucatan Peninsula.

On the 8th the center began a west-northwestward movement toward the Texas coast, and by the 9th Carla's circulation enveloped the entire Gulf of Mexico with fringe effects being felt by all the Gulf Coast States. Maximum winds near the center were now estimated by reconnaissance aircraft at 135 miles per hour.

On the 9th residents of low coastal areas and islands of Texas and Louisiana were advised to evacuate to higher ground. This warning resulted in the largest mass movement of persons from danger areas preceding a storm of this type. An estimated 500,000 persons sought safety in inland areas.

The hurricane continued to move toward the central Texas coast at a forward speed of 9 miles per hour. As the center approached Texas on the 10th, winds estimated at 150 miles per hour were reported near the center. Late on the 10th, with the storm centered about 80 miles southeast of Matagorda Island, the forward movement slowed to about 6 miles per hour. Early in the afternoon of the 11th the center moved over the northeastern tip of Matagorda Island and inland over the Port Lavaca-Port O'Connor area. Reconnaissance aircraft indicated a central pressure of 27.50 inches just prior to its crossing the coast.

Upon striking the coast the storm rapidly lost intensity, but heavy rains over widespread areas along the track were reported as it moved north-northwestward east of Austin on the morning of the 12th. Increasing its forward movement it then began a recurve northeastward and by the morning of the 13th, it became extratropical and was located over east-central Oklahoma. Continuing to pick up speed it moved northeastward toward the Great Lakes at about 35 miles per hour, reaching Lake Huron on the 14th. Extensive flooding was reported from areas along the storm's path.

**WINDS, TIDES AND PRESSURES.**--Carla moved inland near the Port O'Connor-Port Lavaca area on Monday, September 11. In advance of the eye many stations along the coast reported their highest winds that morning. The leading edge of the eye reached Port Lavaca between 3 and 4 p.m. (C.S.T.). The storm followed a northwesterly course carrying the center near Inez, Yoakum, Waelder, Austin, Waco, Fort Worth, and Dallas. Gusts of hurricane force were reported from Gal-

HURRICANE CARLA PRELIMINARY DATA  
SEPTEMBER 4-14, 1961

Station	Date	Pressure (inches)		Wind (miles per hour)				Rainfall (inches)	Remarks **
		Sept. Low	Time	Fastest mile	Time †	Gusts	Time †		
TEXAS									
Bay City	11	29.88	1500	50-65 ESE		80			Heavy rain. Tide plus 11.5 feet mean sea level.
Brownsville	11	29.19	0235	38 NN	0047	85 NW	0031	1.98	
Corpus Christi	11	28.88	0730			86 NN	0858	4.73	Highest at Corpus Christi Bay 7.5 feet mean low water at 1300.
Dickinson	11					150 Est.		12.47	
Edna	11								Tide plus 8.7 feet mean sea level.
Fl. Point	11	29.05	1400	60-75 SE		100			Heavy squalls. Tide 10.8 feet mean sea level.
Freeport	11	29.24	1715	88 SE	1418	112 SE	0315	14.84	Gust recorder inoperative after 1308 on 11th. Tide 10.0 feet estimated mean sea level.
Galveston	11						0558		
							0612		
							1028		
Galveston (WBAS)	11	29.24	1645	51 ENE	2254	86 E	1415	16.49	
Houston	11	29.20	1858	52 ENE	2058	77 ENE	1533	6.86	Duration of gale force gusts 38 hours. In metropolitan area of Houston most damage was to roofs, power and telephone lines. TV antennas, trees, and shrubbery and from local flooding. No deaths caused directly by storm although 3 lives lost by electrocution following storm. Many homes and boats were destroyed near the bay. Tide estimated 12.6 feet mean sea level.
Matagorda (Corps of Engineers)	11	28.60	1500	85-115 SE		125			Heavy rain and squalls.
Port Aransas	11	28.73	1350			150 NW	0620		Highest water 10.8 feet mean low water at 0810.
Port Arthur (WHAS)	11	29.48	0530	49	0712	68	0015	4.76	Gale winds experienced from 0825 September 10 to 1500 September 12. Tide 7.8 feet, highest on record.
Port Isabel (USCG)	11			46 NW	0200	65 NW	0200		Highest tide at U. S. Engineers gage at drawbridge over Intercoastal Canal at entrance to Queen Isabella causeway 5.0 feet mean low water early morning September 10.
Port Lavaca	11	27.62	1610			170 Est.	1600		Eye passed over Port Lavaca at 1600 September 11. Still in lull at 1627. Wind equipment blew away after reporting 153 m.p.h., shortly after 1450. Tide estimated at 18.5 feet above mean sea level. Needle of barometer went below scale.
Port Mansfield Churn Station	11	29.11	0800	46 WNW	0000	92 WNW	2100	3.93	Tide normal during storm - after storm and with drainage of excess tide from Corpus Christi area down the Laguna Madre tide rose appreciably.
Rockport	11	28.68	1400			90 WNW	1400		Highest water 7.8 feet mean low water 1000.
Sabine	11	27.92	1847	110 NNE	1715	150 Est.	1755	6.25	Tide 10.0 feet mean sea level.
Victoria	11			100 E	1840				
Texas City	11					68 NNE	2034		Tide 10.1 feet mean sea level.
Austin	12	28.73	0520				Sept. 11		Rains immediate Austin area 3-5 inches. Center passed just east of Austin 0520 September 12.
Fort Worth	12	28.94							
LOUISIANA									
Baton Rouge	11	29.55	0400			50		5.60	
Cameron	11	29.58	0310	44	1025	55	1125	1.58	Damage light. Some damage to house roofs, plate glass, tree limbs. Rise of one foot above flood stage in local river due to wind.
Lake Charles	11						Sept. 12		
Morgan City								5.57	
New Orleans								3.16	
Shreveport								4.25	

† Central Standard Time

\* Total Storm Rainfall

\*\* All tides given are above reference point listed.

veston to Corpus Christi, a distance of approximately 200 miles. A peak gust of 170 miles per hour was estimated at Port Lavaca. Gusts of 150 miles per hour were estimated at Victoria, Port Aransas, and Edna. Sustained winds (fastest mile) were reported as 115 at Matagorda, 110 at Victoria, and 88 at Galveston.

Tides of 10 feet and over, above mean sea level, were estimated along the coast from Port Aransas to Sabine Pass. The highest tide reported was 18.5 feet at Port Lavaca. Matagorda reported 12.6 feet, Port Aransas 10.9 feet, Freeport 10.8 feet, Texas City 10.1 feet, and Galveston and Sabine 10.0 feet. Port Arthur reported a highest tide of record 7.8 feet.

A low pressure of 27.62 inches was reported by the Bauer Dredging Company at Port Lavaca from a recently calibrated barometer at 1610 C. S. T. before the needle went below the scale. Other low pressures were 27.92 inches at Victoria and 28.60 inches at Matagorda. Austin and Fort Worth reported their lowest pressures of record; 28.73 inches and 28.94 inches respectively.

**RAINFALL.**--Torrential rains of 10 to 16.5 inches accompanied hurricane Carla 50 miles inland. Rainfall amounts decreased progressively northward in Texas with 4 to 5 inches over the northeastern section. Some of the heaviest storm totals were Galveston Airport 16.49 inches, Galveston City Office 14.94 inches, Wharton 13.05 inches, Liberty 12.55 inches, Dickinson 12.47 inches, and Flatonia over 11.8 inches.

Rainfall associated with Carla in Oklahoma reached almost 7 inches in the southeastern portion. Rainfall associated with the cold front which merged with Carla on the 13th totaled from 4 to 8 inches over a 70-mile wide band extending from Ponca City to Fort Sill. Minor to moderate flooding occurred along rivers in the northeastern portion of the State. Elsewhere flooding was due to swollen small streams and extensive rains. Damage to buildings and dwellings was minor with no loss of life.

In Kansas excessive rains of 5 to 8 inches occurred in 24 hours, 4 inches of which fell from midnight to 6 a.m. (C.S.T.) of the 13th over a 60-mile wide area from Cowley and Chautaugua Counties northeastward to Lynn and Johnson

Counties. These excessive rains resulted in extensive and severe flooding. Record high stages occurred on Pottawatomie Creek. In Arkansas there were some locally heavy amounts in the western part of the State, the heaviest amount was 5.25 inches at Daisy.

Rainfall in Illinois generally ranged between 2 and 5 inches over a band approximately 120 miles wide north of the storm track. Heavy amounts were generally in the northwest portion of the State which had considerable rain during the previous 24-hour period. Precipitation occurred quite steadily with the oncoming storm and in general was not excessive in most locations. Moline with the greatest storm total received a record 24-hour amount of 6.29 inches on the 13th. In the Chicago area precipitation ranged from 2.5 to 3.5 inches and resulted in the flooding of about 60 viaducts and approximately 1,000 basements. The Chicago River rose 5 feet to near the danger point and its lock gates to Lake Michigan were opened. The resultant onrushing waters caused about \$75,000 damage to boats in the Wilmette Harbor.

In Michigan 3-day totals of precipitation totaled over 5 inches at Traverse City and Petosky. One small tornado struck in the Traverse City area at 1506 E.S.T. September 13th. Damage occurred to farm buildings and many trees were uprooted. Two power dams were washed out on the Boardman River.

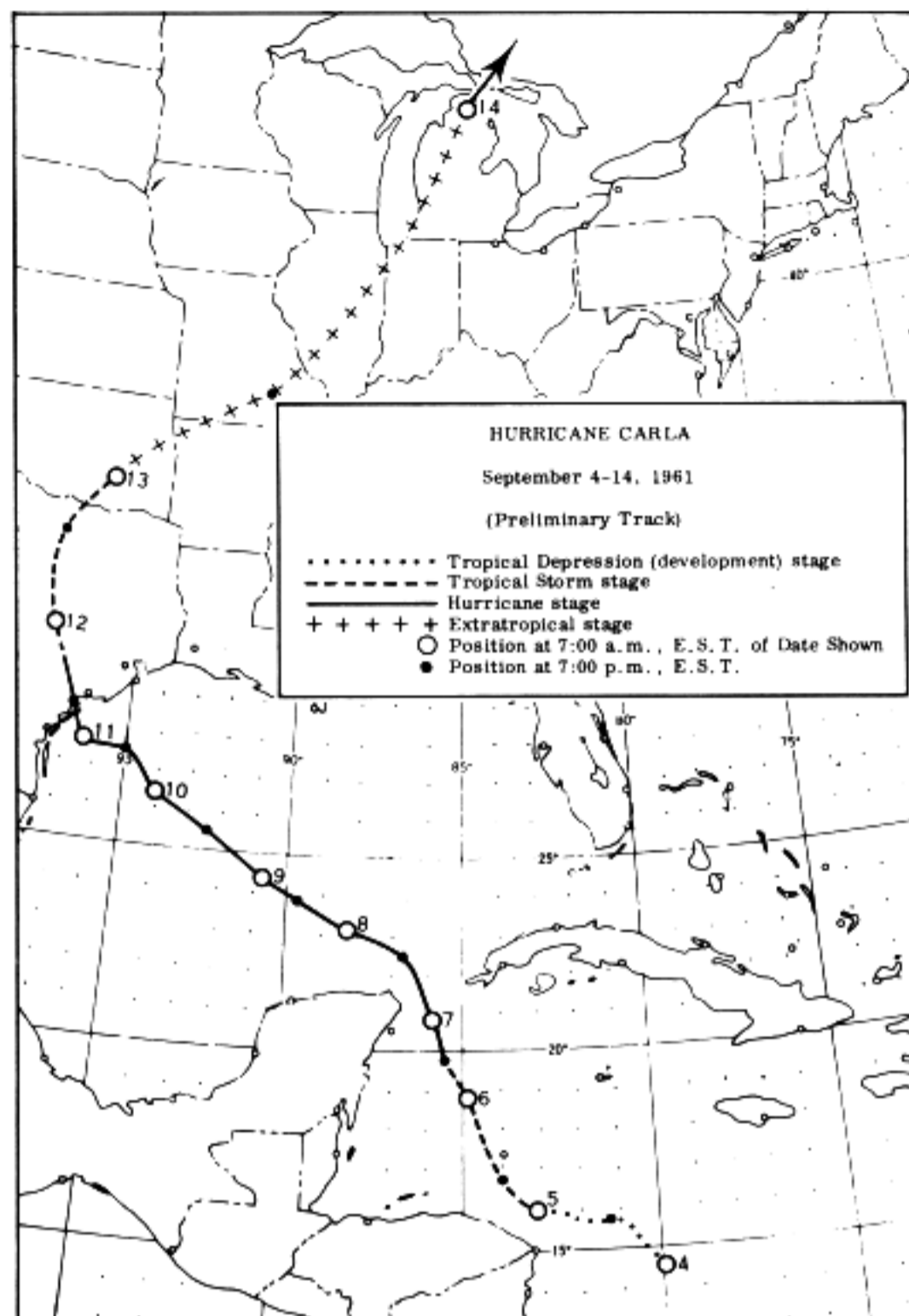
**LOSS OF LIFE AND DAMAGE.**—Preliminary reports indicate loss of life totaled 43 persons. In its wake Carla left 31 known dead in Texas, 24 of these died directly as a result of the hurricane and 5 at Galveston in a tornado spawned by Carla. Five were lost as a result of flash flooding in Kansas, 6 died in tornadoes in Louisiana, and one life was lost in Missouri. The 6 tornadoes associated with Carla in Texas injured 226 persons. One tornado occurred in a Houston suburb, 2 in Galveston and 3 in east Texas. In Louisiana there were 50 persons injured in the 7 tornadoes accompanying the hurricane.

Although reports are still fragmentary estimates indicate that damage may reach \$300 million in Texas. Property losses are estimated at \$200 million and the remainder resulted from crop losses. Most of the crop damage was to unharvested rice and lesser damage to cotton and citrus.

The major portion of property damage was inflicted in the coastal counties between Corpus Christi and Port Arthur. Port O'Connor with a normal population of 700 was particularly hard hit. Heaviest property loss was in Galveston County. Most of the damage was caused by high water rather than from strong winds. The large oil and chemical plants along the Texas coast rode out the storm satisfactorily as did the offshore drilling rigs. Heaviest plant damage was in the Freeport area. Damage was also extensive in the inland counties of Victoria, Jackson, Harris, and Wharton. Damage decreased progressively northwestward along the path of the storm with relatively minor wind damage at Austin and from Austin northward.

In Louisiana property damage has been estimated at \$25 million, broken down as follows: \$6 million to crops, livestock and pastures; \$5 million to buildings, including tornado damage; \$4 million to small craft, piers, and beaches; \$3 million to roads and bridges; \$5 million to oil rigs in the Gulf and an additional \$2 million in miscellaneous damage.

**HISTORICAL HURRICANES ON THE TEXAS COAST.**—The devastation left along the Gulf coast as Carla passed inland over Texas recalls other severe hurricanes that have brought death and destruction to the area. Some of the more notable of these



hurricanes which occurred during this century are listed below.

1. September 8, 1900, Galveston, Tex.; wind gusts reached 120 miles per hour; water rose at a steady rate from 3 p.m. until about 7:30 p.m. when there was a sudden rise of about 4 feet; approximately 6,000 persons lost their lives.
2. August 17, 1915, Galveston, Texas had a fastest mile of 92 and a peak gust of 120 miles per hour; 12-foot storm tides inundated Galveston to a depth of 5 to 6 feet; 275 lives were lost and property damage estimated at \$50 million.
3. September 14, 1919, center moved inland south of Corpus Christi; tides 16 feet above normal in that area and 8.8 feet above normal at Galveston; 284 lives lost with property damage estimated in excess of \$20 million.
4. September 4-5, 1933, hurricane crossed the Texas coast north of Brownsville; lowest barometer 28.02 inches; highest wind estimated at 80 miles per hour and damage estimated at \$17 million.
5. August 30, 1942, center moved onto the Texas coast over Matagorda Bay; Seadrift, Texas reported a low barometer of 28.10 inches and a highest wind estimated at 150 miles per hour. Tide at Matagorda, Texas 14.7 feet; property losses estimated at \$11 million and crop losses at \$15 million.
6. July 27, 1943, hurricane moved across the coast east of Galveston, Texas; the lowest pressure reported was 28.95 inches at both Galveston and the Houston Airport; a gust of 104 miles per hour was recorded at Texas City; damage in Texas estimated in excess of \$16 million.
7. August 27, 1945, center moved inland north of Corpus Christi; highest wind gust in the vicinity of Port O'Connor and Port Lavaca estimated at 135 miles per hour; damage in excess of \$20 million.
8. October 3-4, 1949, center moved inland near Freeport, Texas; wind gusts estimated as high as 135 miles per hour; a high tide of 11.4 feet reported at Harrisburg (on the Houston Ship Channel).

(Compiled by Arthur I. Cooperman and Howard C. Summer, Marine Section, Climatology.)

## U. S. DEPARTMENT OF COMMERCE

### WEATHER BUREAU

Reprinted from  
Weekly Weather and Crop Bulletin  
September 18, 1961 issue.