

Preliminary Report  
Tropical Storm Gabrielle  
10 - 12 August 1995

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a. Synoptic History

A tropical wave was at the coast of Africa on 27 July and was a well-defined system as it was tracked across the Atlantic and Caribbean over a 12-day period. It moved into the western Gulf of Mexico on 8 August.

A weak low-level cloud circulation was evident from visible satellite imagery on the 9th of August and aircraft reconnaissance on the 10th determined that a well-defined low-level wind circulation had formed. The tropical depression stage begins on the afternoon of the 10th about 160 n mi east of La Pesca, Mexico and 225 n mi southeast of Brownsville, Texas. Gabrielle's track is shown in Fig. 1 and six-hour track positions, maximum one-minute wind speeds and minimum sea-level pressure are listed in Table 1.

The track from the 10th through the 12th was slow and erratically westward with a sharp turn to the south on the 10th and a turn to the northwest on the 11th. With sporadic periods of deep convection, the depression strengthened to a storm on the 10th. The storm gradually intensified to 60 knots by late on the 11th, just prior to moving inland. Landfall was on the coast of Mexico just south of La Pesca and about 150 n mi south of the U.S./Mexico border. Gabrielle quickly weakened after moving inland.

b. Meteorological Statistics

The minimum sea-level pressure and flight-level wind speed observations from reconnaissance aircraft are plotted in Figs. 2 and 3 respectively. Wind speed estimates from satellite data are plotted in Fig. 3 and the corresponding pressure from the Dvorak pressure-wind relation is plotted in Fig. 2.

Gabrielle came close to hurricane intensity just before landfall. The 73-knot aircraft wind speed measured at a flight level of 1500 feet is the basis for estimating a maximum one-minute surface wind of 60 knots for 1800 UTC on the 11th. The corresponding central pressure from an aircraft fix was 990 mb, but a little later, a 989-mb pressure was reported when the center was too close to the coast for the aircraft to monitor. It is assumed that the central pressure was 988 mb at this time.

There were no land or ship reports of 34 knots or higher in association with this storm. The storm center was tracked with the Brownsville WSR-88D radar on the 10th and 11th of August. A few radar pictures showing the center were also received from Mexico.

c. Casualty and Damage Statistics

No reports of death have been received and damage is estimated to be minor. It is assumed that 35- to 60-knot winds affected the La Pesca region. A newspaper reported up to 24 inches of beneficial rain in the Mexican states of Tamaulipes and Nuevo Leon and flash floods were likely over higher terrain. Storm surge flooding of a few feet above normal was likely along the Mexican coast to the north of where the center crossed the coast and some beach flooding occurred in southeastern Texas. Eight hundred persons were evacuated in Soto la Marina and San Fernando on the northeast coast of Mexico.

d. Forecast and Warning Critique

There were six official forecasts issued while Gabrielle was a tropical storm. The official track errors are mostly near normal as the general westward motion was correctly forecast by most of the guidance models.

The official wind speed forecasts had a negative bias. A forecast issued at 0900 UTC on the 10th under-forecast the maximum wind speed by 30 knots at 36 hours. This forecast was issued just before the erratic motion began and the center was expected to be inland in 12 hours. The center actually remained offshore for 35 more hours, allowing Gabrielle to strengthen to 60 knots at the time that it was forecast to be inland.

Tropical storm warnings were issued for the west coast of the Gulf of Mexico at 2100 UTC on the 9th, from Baffin Bay, Texas to La Pesca, Mexico, while Gabrielle was still a depression. These warnings were extended southward to just north of Tampico at 0900 UTC on the 10th and extended southward again at 2100 UTC, to Tuxpan. Warnings were discontinued north of Port Mansfield, Texas at 1500 UTC on the 10th, for the remainder of Texas at 2100 UTC and for Mexico at 0300 UTC on the 11th. The tropical storm warnings were issued 47 hours before landfall for La Pesca and 35 hours was the lead time south of there.

Table 1. Best track, Tropical Storm Gabrielle, 9-12 August 1995

Date/Time (UTC)	Position		Pressure (mb)	Wind Speed (kt)	Stage
	Lat. (°N)	Lon. (°W)			
09/1800	23.7	94.8	1007	30	Trop. Dep.
10/0000	23.7	95.4	1004	30	"
0600	23.7	96.2	1002	30	"
1200	23.5	96.5	999	35	Trop. Storm
1800	23.1	96.7	997	40	"
11/0000	23.0	96.7	995	45	"
0600	23.1	97.0	993	50	"
1200	23.3	97.2	991	55	"
1800	23.6	97.5	990	60	"
12/0000	23.9	98.2	999	30	Trop. Dep.

Landfall and lowest pressure:

11/2000      23.7      97.8      988      60      Trop. Storm

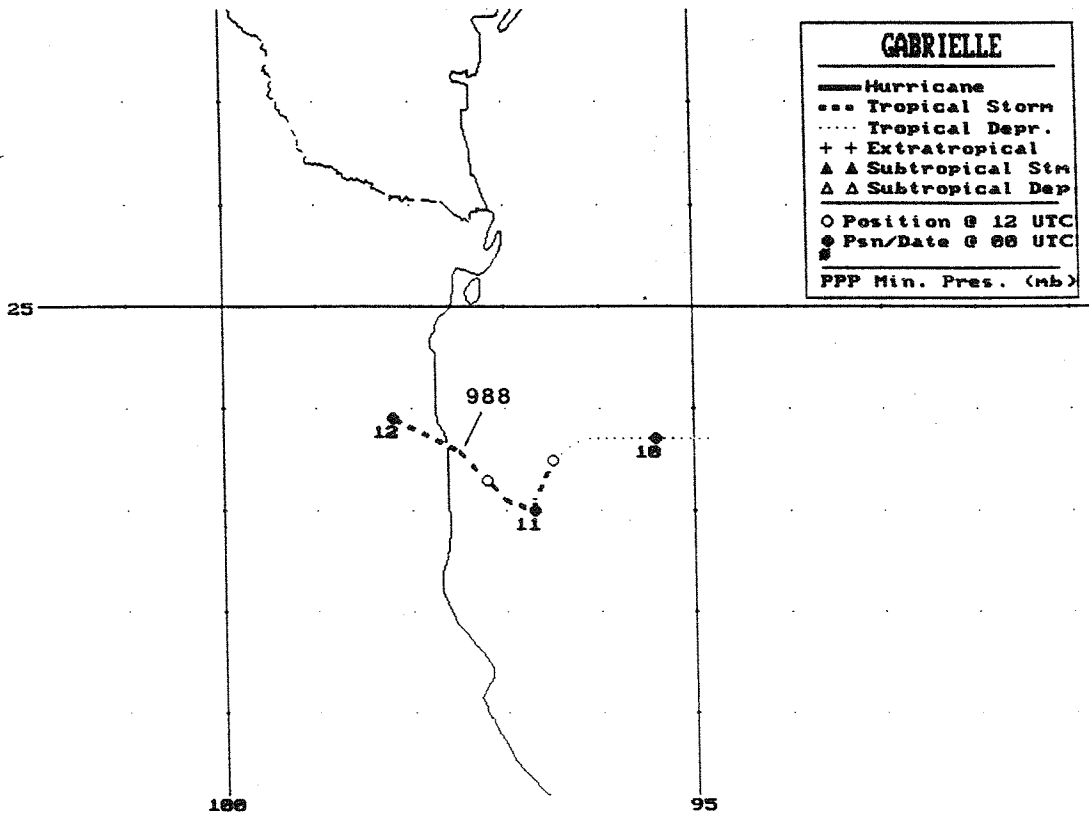


Fig. 1. Track of Tropical Storm Gabrielle, August 1995.

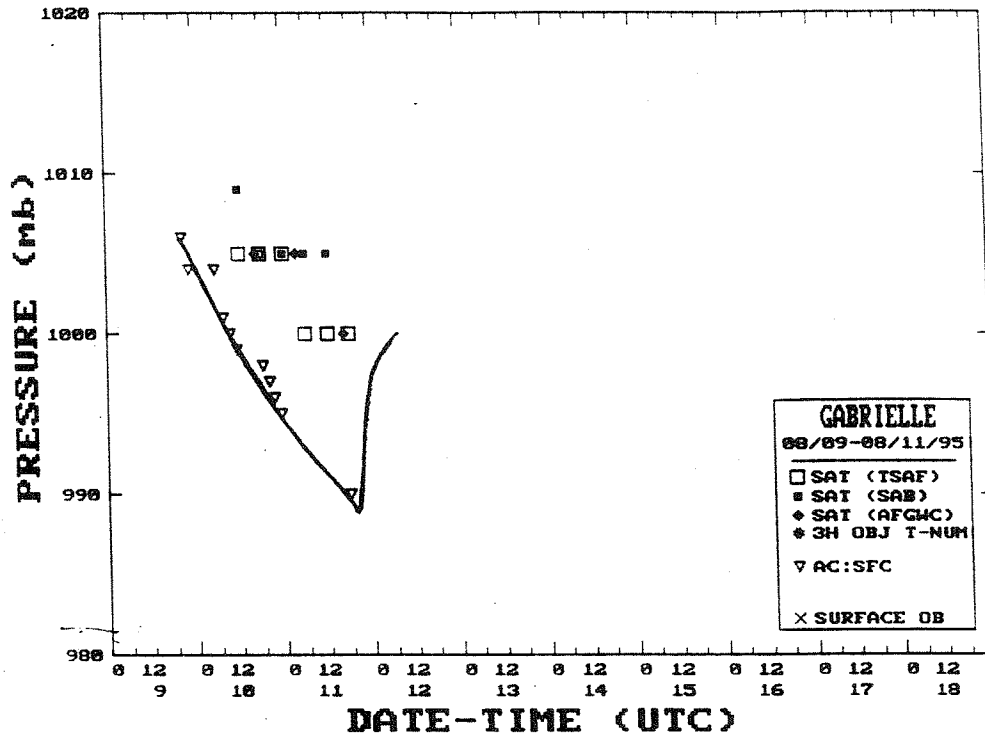


Fig. 2. Minimum sea level pressure versus time.

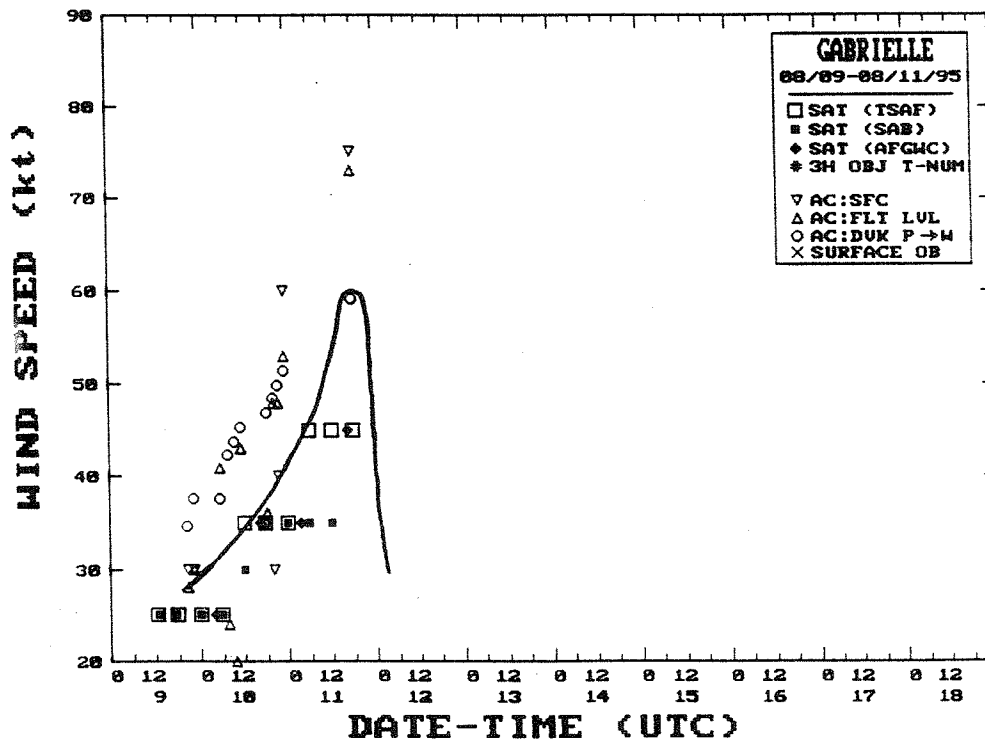


Fig. 3. Maximum one-minute wind speed versus time.