

Tropical Cyclone Report  
Tropical Storm Claudette  
(AL042009)  
16-17 August 2009

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Updated 21 January 2010 for additional drowning death near Shell Island, Florida

Short-lived Claudette made landfall in the Florida Panhandle as a 40-kt tropical storm, causing minimal damage.

a. Synoptic History

Claudette originated from a well-defined tropical wave that crossed the west coast of Africa early on 7 August. On 13 August, just after the system had passed the Lesser Antilles, an area of disturbed weather formed near the northern end of the wave axis. This cluster of clouds and showers moved west-northwestward, passing over the Bahamas on 14 August and over the Straits of Florida and the Florida Keys on 15 August. Satellite and radar imagery indicated that a well-defined mid-level circulation associated with the disturbance passed just south of the Keys that day. A broad area of surface low pressure developed as the system moved into the extreme southeastern Gulf of Mexico early on 16 August, and by 0600 UTC that day there was sufficient low-level circulation and organized deep convection to designate the formation of a tropical depression centered about 50 n mi west-southwest of Sarasota, Florida. The “best track” map of the tropical cyclone’s path is given in Fig. 1, with the wind and pressure histories shown in Figs. 2 and 3, respectively. The best track positions and intensities are listed in Table 1<sup>1</sup>.

Throughout its existence, the cyclone moved on a north-northwestward to northwestward track, on the southwestern and western periphery of the low- to mid-level subtropical ridge. Initially, the system was in an environment of diffluent southerly upper-tropospheric flow and it was able to strengthen into a tropical storm by 1200 UTC 16 August. Claudette strengthened rather quickly over the ensuing 6 hours or so and reached its peak intensity of 50 kt by 1800 UTC 16 August while centered about 35 n mi south of Apalachicola, Florida. Thereafter, southwesterly to westerly vertical shear began to increase over the tropical storm. Claudette’s cloud pattern became less organized, and the cyclone weakened slightly as it approached the Florida Panhandle. The tropical storm made landfall near Fort Walton Beach, Florida, around 0530 UTC 17 August with maximum winds of near 40 kt. Later on the morning of 17 August, the cyclone moved into southern Alabama while weakening into a tropical depression. By the time the system moved over Mississippi, its surface center was no longer detectable and Claudette dissipated by 0000 UTC 18 August.

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<sup>1</sup> A digital record of the complete best track, including wind radii, can be found on line at <ftp://ftp.nhc.noaa.gov/atcf>. Data for the current year’s storms are located in the *brk* directory, while previous years’ data are located in the *archive* directory.

b. Meteorological Statistics

Observations in Claudette (Figs. 2 and 3) include satellite-based Dvorak technique intensity estimates from the Tropical Analysis and Forecast Branch (TAFB) and the Satellite Analysis Branch (SAB), as well as flight-level and stepped frequency microwave radiometer (SFMR) observations from flights of the 53<sup>rd</sup> Weather Reconnaissance Squadron of the U. S. Air Force Reserve Command. Data and imagery from NOAA polar-orbiting satellites, the NASA Tropical Rainfall Measuring Mission (TRMM), the NASA QuikSCAT, and Defense Meteorological Satellite Program (DMSP) satellites, among others, were also useful in constructing the best track of Claudette. The estimated maximum intensity of 50 kt is based on the highest reliable SFMR measurements. A peak SFMR wind speed of 58 kt appears to have been contaminated by heavy rainfall and therefore inaccurate.

A ship report of winds of tropical storm force associated with Claudette is given in Table 2, and selected surface observations from land stations and data buoys are given in Table 3. The lone tropical-storm-force ship observation of 40 kt came from a vessel with call sign H3VT at 0600 UTC 16 August but is considered to be too high. The highest sustained wind observation in Claudette was a 10-min average wind speed of 44 kt from the Tyndall AFB Tower C-MAN site over the Gulf of Mexico about 25 n mi offshore of the Florida panhandle. This station's sensor is 35 m above sea level. The highest measured wind gust was 57 kt from a Weather Underground network observer in Eastpoint, Florida. The largest rainfall total was 4.66 inches at Milligan, Florida. The maximum reported storm surge height was 3 ft at Indian Pass, Florida. There were no reports of tornadoes associated with Claudette.

c. Casualty and Damage Statistics

A 28-year old male drowned near Broadwater Condominiums in Panama City Beach, Florida, and a 45-year old man was missing and presumed drowned near Shell Island, just to the southwest of Panama City, Florida. Otherwise, Claudette's impacts were minimal, consisting of minor damage to trees and sporadic power outages. Beach erosion was not severe.

d. Forecast and Warning Critique

Although the tropical storm's precursor disturbance was noted well in advance, its prospects for becoming a tropical cyclone were never stated to be good. The tropical wave and associated area of disturbed weather that led to the formation of Claudette was first mentioned in the NHC's Tropical Weather Outlook (TWO) at 0000 UTC 13 August, 78 h before genesis. However, up to the time of development, the system's probability of tropical cyclone formation within 48 h was kept in the "low" range (less than 30 percent).

Since Claudette was a tropical cyclone for less than two days, the sample of official and model track and intensity forecasts is very small, so statistics of these forecasts are not very meaningful. Nonetheless, the few official track forecasts were quite accurate with only a slight eastward bias, and the highest wind speed forecast was 55 kt.

Watches and warnings associated with Claudette are listed in Table 4. Due to the unanticipated formation of Claudette, the tropical storm warning was issued less than 24 hours prior to landfall.

Table 1. Best track for Tropical Storm Claudette, 16-17 August 2009.

Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
16 / 0600	27.0	83.4	1011	30	tropical depression
16 / 1200	28.2	84.2	1010	35	tropical storm
16 / 1800	29.1	85.1	1008	50	"
17 / 0000	29.8	85.8	1005	45	"
17 / 0600	30.5	86.6	1005	40	"
17 / 1200	31.5	87.5	1013	25	tropical depression
17 / 1800	32.8	88.3	1017	20	"
18 / 0000					dissipated
16 / 1800	29.1	85.1	1008	50	maximum wind
17 / 0000	29.8	85.8	1005	45	minimum pressure
17 / 0530	30.4	86.5	1005	40	landfall near Fort Walton Beach, FL

Table 2. Ship report with winds of at least 34 kt for Tropical Storm Claudette, 16-17 August 2009.

Date/Time (UTC)	Ship call sign	Latitude (°N)	Longitude (°W)	Wind dir/speed (kt)	Pressure (mb)
16 / 0600	H3VT	27.4	83.1	140 / 40	1015.0

Table 3. Selected surface observations for Tropical Storm Claudette, 16-17 August 2009.

Location	Minimum Sea Level Pressure		Maximum Surface Wind Speed			Storm surge (ft) <sup>c</sup>	Storm tide (ft) <sup>d</sup>	Total rain (in)
	Date/time (UTC)	Press. (mb)	Date/time (UTC) <sup>a</sup>	Sustained (kt) <sup>b</sup>	Gust (kt)			
<b>Florida</b>								
<b>International Civil Aviation Organization (ICAO) Sites</b>								
Apalachicola Municipal Airport (KAAF)	16/2153	1014.2	16/2153	31	45			3.15
Crestview (KCEW)	17/0526	1013.2	17/0526	20	34			
Destin/Ft. Walton Beach Airport (KDTS)	17/0453	1007.7	17/0416	24	39			
Panama City (KPFN)	16/2353	1013.7	17/0310	21	34			2.11
Tallahassee (KTLH)	16/2153	1017.5	16/1834	22	34			
Tyndall AFB (KPAM)	17/0336	1016.5	17/0336	29	37			
Valparaiso (KVPS)	17/0555	1011.4	17/0514		39			
<b>Coastal-Marine Automated Network (C-MAN) Sites</b>								
Tyndall AFB Tower C (SGOF1), elevation 35 m 29.41N 84.86W	16/2200	1013.5	16/2000	44 (10-min)	52			
<b>National Ocean Service (NOS) Sites</b>								
Apalachicola	16/2200	1014.2	16/1824	29	40	2.76	2.85	
Panama City	16/2306	1013.3	17/0400	24	41	1.10	2.80	
<b>Sites from other Government Agencies</b>								
Eglin AFB Main 30.48N 86.53W	17/0531	1005.4	17/0531		43			
<b>University Networks</b>								
Shell Point COMPS	16/2106	1016.8	16/2106	32	40			
<b>Public/Other</b>								
Alligator Point 29.89N 84.36W			16/1937	42	51			
Cape San Blas 29.66N 85.36W								3.93
Crestview (CRVF1) 30.70N 86.57W								3.91
Eastpoint (KFLEASTP2)	16/2100	1010.9	16/2048	43	57			
East Pass Destin						2.30 <sup>e</sup>	2.85	

Fort Walton						1.70 <sup>e</sup>	2.29	
Indian Pass						3.00	3.50	
Lanark Village 29.92N 84.51W			16/2030	28	35			
Milligan (MLGF) 30.75N 86.63W								4.66
Port St. Joe 29.80N 85.30W								4.00
<b>Buoys</b>								
42036 28.50N 84.51W	16/1250	1013.2	16/1820	32 (10-min)	39			
<b>Alabama</b>								
<b>ICAO Sites</b>								
Andalusia (K79J)	17/0756	1015.8	17/0714		35			

<sup>a</sup> Date/time is for sustained wind when both sustained and gust are listed.

<sup>b</sup> Except as noted, sustained wind averaging periods for C-MAN and land-based ASOS reports are 2 min.

<sup>c</sup> Storm surge is water height above normal astronomical tide level.

<sup>d</sup> Storm tide is water height above National Geodetic Vertical Datum (1929 mean sea level).

<sup>e</sup> Estimated

Table 4. Watch and warning summary for Tropical Storm Claudette, 16-17 August 2009.

Date/Time (UTC)	Action	Location
16 / 0900	Tropical Storm Warning issued	AL/FL Border to Suwannee River
17 / 0300	Tropical Storm Warning modified to	AL/FL Border to Aucilla River
17 / 0900	Tropical Storm Warning modified to	Destin to Indian Pass
17 / 1200	Tropical Storm Warning discontinued	All

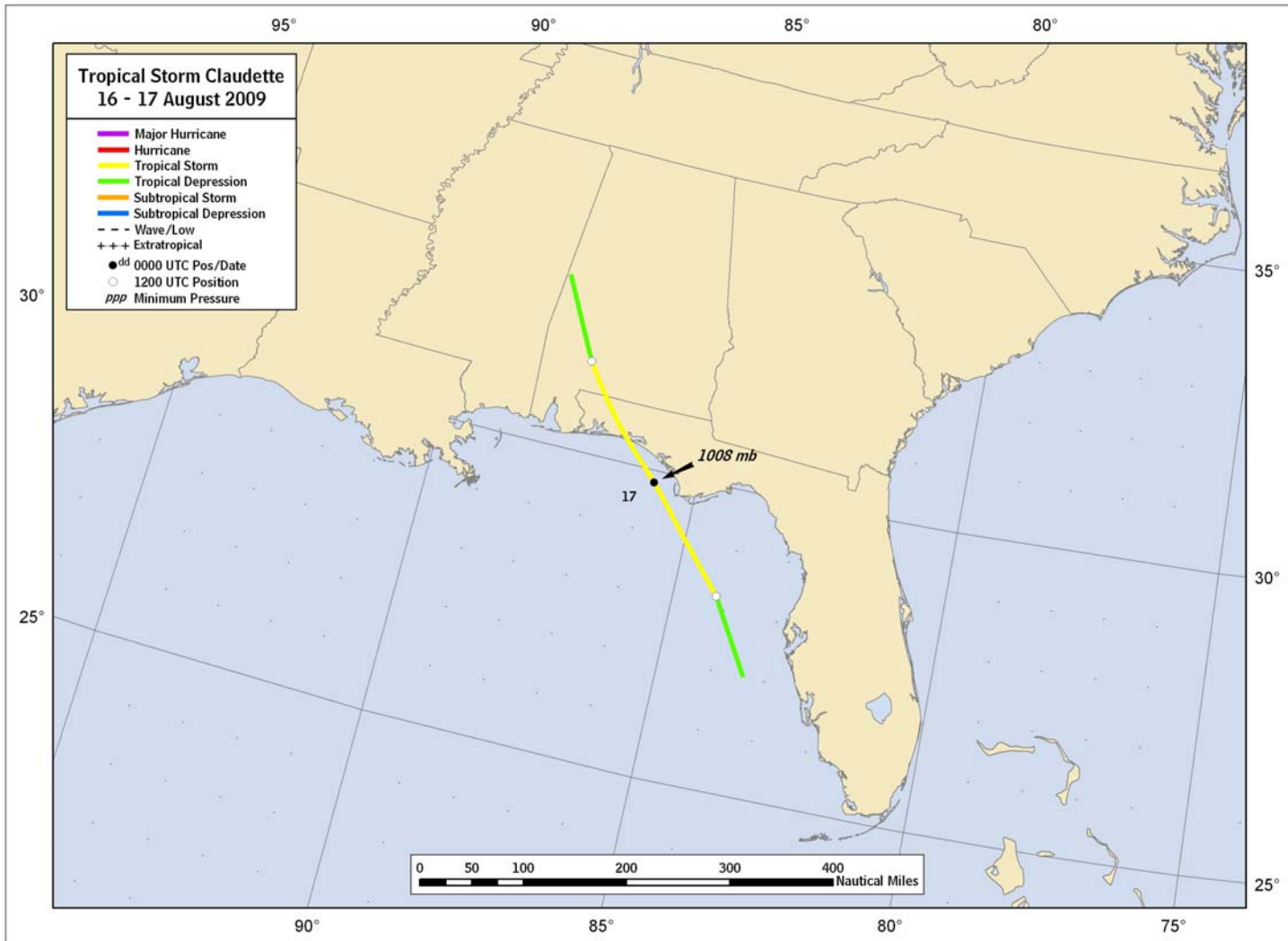


Figure 1. Best track positions for Tropical Storm Claudette, 16-17 August 2009. Inland portion of track is based partially on analyses from the Hydrometeorological Prediction Center.

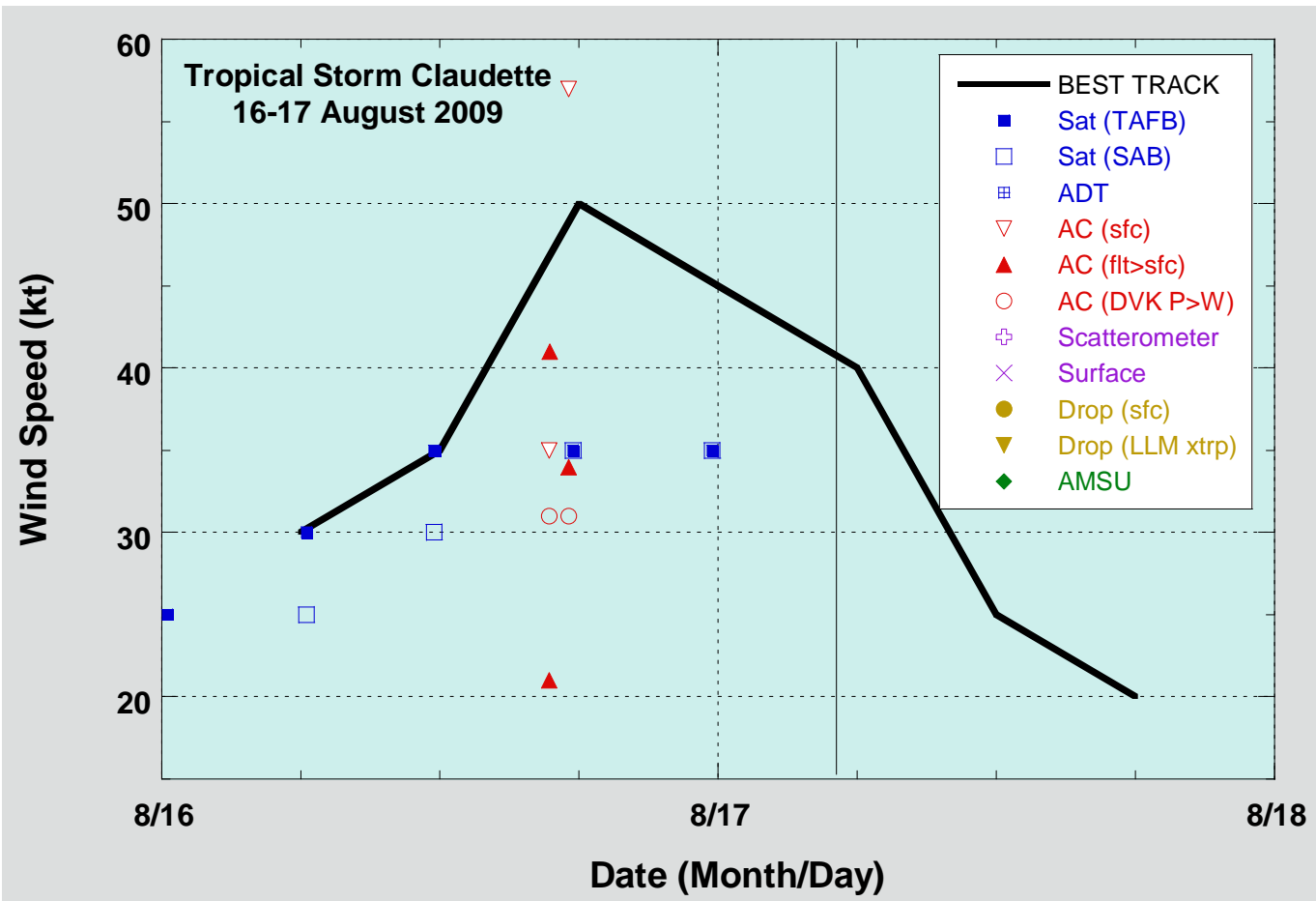


Figure 2. Selected wind observations and best track maximum sustained surface wind speed curve for Tropical Storm Claudette, 16-17 August 2009. Aircraft observations have been adjusted for elevation using 90%, 80%, and 80% adjustment factors for observations from 700 mb, 850 mb, and 1500 ft, respectively. Dashed vertical line corresponds to 0000 UTC. Solid vertical line corresponds to landfall.



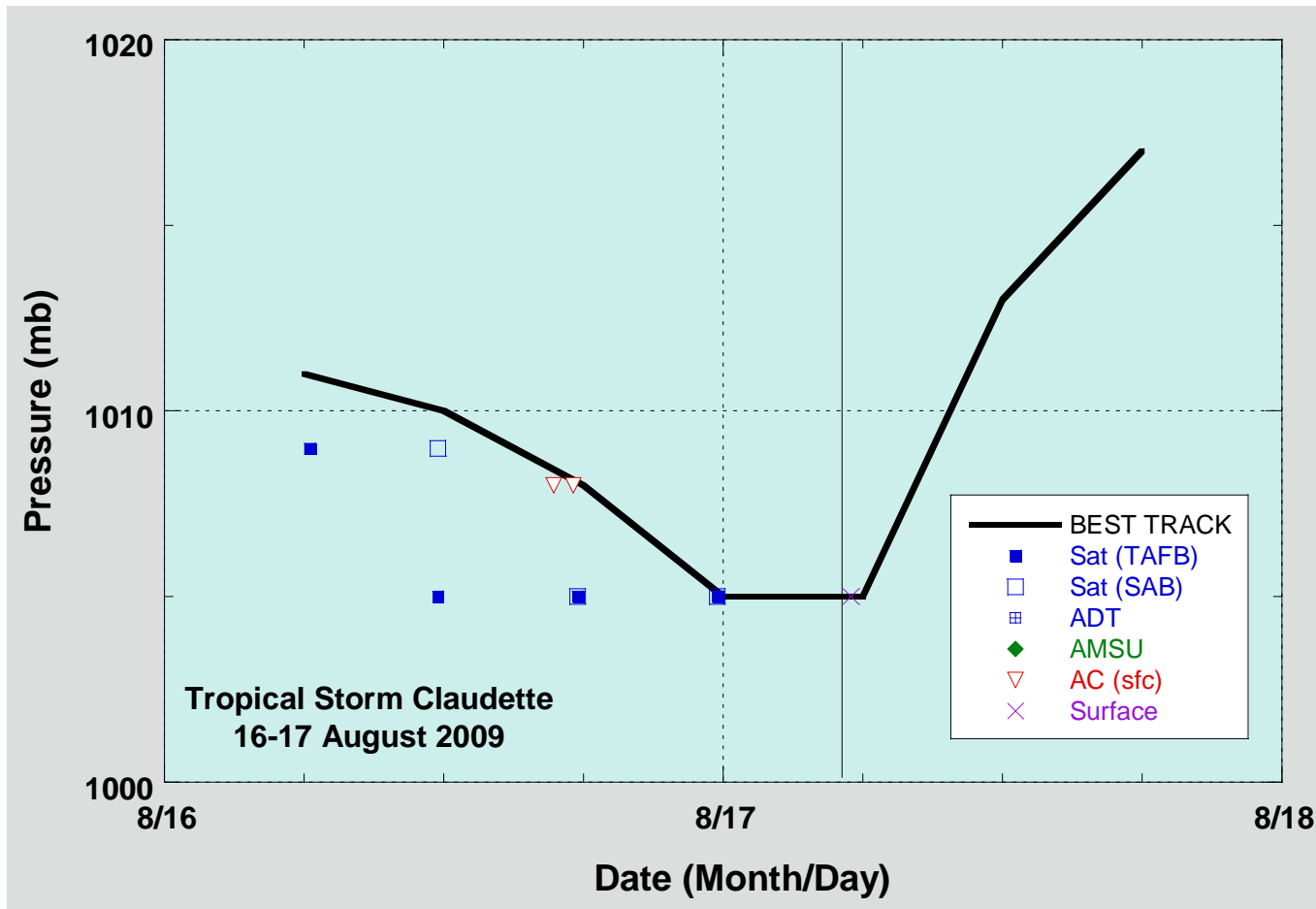


Figure 3. Selected pressure observations and best track minimum central pressure curve for Tropical Storm Claudette, 16-17 August 2009. Dashed vertical line corresponds to 0000 UTC. Solid vertical line corresponds to landfall.