

Tropical Cyclone Report
Tropical Storm Juliette
(EP142007)
29 September – 2 October 2007

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8 November 2007

Juliette was a relatively short-lived tropical storm that took a northwesterly track about 300 n mi off the Pacific coast of Mexico, its center passing between Socorro and Clarion Islands.

a. Synoptic History

Juliette formed from a tropical wave that moved off the coast of west Africa early on 12 September. The wave became indistinct over the central Atlantic Ocean during 17 – 19 September as it interacted with another slower-moving tropical wave located to its west, but it ultimately became better defined on 20 September over the eastern Caribbean. It then enhanced a pre-existing area of showers and thunderstorms located over the western Caribbean on 22 September and moved inland over Central America soon thereafter.

The southern portion of the wave emerged over the eastern Pacific Ocean on 23 September and continued to move westward over the next few days with showers and thunderstorms becoming more consolidated on 26 September. An area of low pressure developed along the wave axis around 1200 UTC 27 September, approximately 300 n mi southwest of Acapulco, Mexico. Deep convection gradually became better organized near the low during the next day or so, and a tropical depression is estimated to have formed at 0000 UTC 29 September, centered about 365 n mi southwest of Manzanillo, Mexico. The depression intensified to a tropical storm about 12 h later, becoming the tenth tropical storm of the 2007 Eastern Pacific season—about one month later than the average date of formation for the tenth tropical storm. The “best track” chart of Juliette 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.

Juliette moved to the northwest over the next three days at a fairly consistent speed of about 10 kt as it rounded the western periphery of a mid-level ridge located over northern Mexico. The cyclone gradually strengthened and reached a peak intensity of 50 kt at 1200 UTC 30 September as it passed between Socorro and Clarion Islands. The storm then moved into an environment of strong southerly shear later that evening as it approached a mid- to upper-level trough located to its northwest. Combined with increasingly cooler waters and a more stable air mass, the shear caused the low-level center to become separated from the deep convection early on 1 October, and Juliette weakened to a tropical depression later that day by 0000 UTC 2 October. No deep convection redeveloped, and Juliette degenerated to a remnant low at 1200 UTC 2 October. The forward motion of the remnant circulation slowed down considerably, and

the low became nearly stationary for about 24 h as it came under the influence of northwesterly flow associated with the low-level subtropical ridge. The low eventually began to move to the southeast, staying about 200 n mi west of the Baja Peninsula, and ultimately degenerated to a trough at 0000 UTC 5 October.

b. Meteorological Statistics

Observations in Juliette (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). Microwave satellite imagery from NOAA polar-orbiting satellites, the NASA Tropical Rainfall Measuring Mission (TRMM), the NASA QuikSCAT, the NASA Aqua, the Department of Defense WINDSAT, and Defense Meteorological Satellite Program (DMSP) satellites were also useful in tracking Juliette. Juliette's estimated peak intensity of 50 kt is based on an average of Dvorak intensity estimates from the TAFB and SAB.

There were no surface observations available from Socorro or Clarion Islands during the passage of Juliette. In addition, no ship observations with tropical storm force winds were received in the vicinity of Juliette.

c. Casualty and Damage Statistics

There were no reports of casualties or damage associated with Juliette.

d. Forecast and Warning Critique

The area of disturbed weather that ultimately became Tropical Storm Juliette was first mentioned in the Tropical Weather Outlook (TWO) issued by the National Hurricane Center at 1100 UTC 27 September, about 36 h prior to genesis. Explicit mention of the formation of a tropical depression was included in the 2300 UTC 27 September TWO, about 24 h prior to genesis. In addition, the Tropical Cyclone Danger Graphic issued by the Tropical Analysis and Forecast Branch (TAFB) first indicated that tropical cyclone formation was possible within the 48 h window beginning at 0300 UTC 28 September.

A verification of official and guidance model track forecasts is given in Table 2. Average official track errors for Juliette were 28, 40, 48, 83, and 213 n mi for the 12, 24, 36, 48, and 72 h forecasts, respectively. Excluding the 72 h projection, for which there was only one official forecast, these results are considerably better than the long-term average of 33, 57, 79, 99, and 140 n mi for the 12, 24, 36, 48 and 72 h forecasts, respectively. The official forecasts were also considerably better than all of the individual track models through 48 h. The CONU consensus was marginally better than the official forecast at 48 h.

A verification of official and guidance model intensity forecasts is given in Table 3. Average official intensity errors were 3, 4, 4, 4, and 10 kt for the 12, 24, 36, 48, and 72 h forecasts, respectively. For comparison, the average long-term official intensity errors are 6, 11, 15, 17, and 19 kt, respectively. The intensity forecast errors were below the long-term averages at all forecast times and beat all of the individual intensity models through 36 h.

Table 1. Best track for Tropical Storm Juliette, 29 September – 2 October 2007.

Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
29 / 0000	14.7	108.9	1006	30	tropical depression
29 / 0600	15.0	110.0	1005	30	"
29 / 1200	15.4	110.9	1004	35	tropical storm
29 / 1800	16.0	111.7	1003	35	"
30 / 0000	16.7	112.2	1003	35	"
30 / 0600	17.4	112.6	1001	40	"
30 / 1200	18.1	113.0	997	50	"
30 / 1800	18.9	113.5	997	50	"
01 / 0000	19.7	114.0	1000	45	"
01 / 0600	20.5	114.6	1001	45	"
01 / 1200	21.4	115.1	1003	40	"
01 / 1800	22.3	115.4	1003	35	"
02 / 0000	23.1	115.8	1004	30	tropical depression
02 / 0600	23.5	116.1	1005	25	"
02 / 1200	23.8	116.2	1006	25	remnant low
02 / 1800	24.0	116.2	1006	25	"
03 / 0000	24.0	116.1	1006	25	"
03 / 0600	23.9	116.0	1006	25	"
03 / 1200	23.8	115.9	1006	25	"
03 / 1800	23.6	115.6	1007	25	"
04 / 0000	23.4	115.1	1007	25	"
04 / 0600	23.2	114.5	1007	25	"
04 / 1200	22.9	113.8	1007	25	"
04 / 1800	22.4	113.0	1008	25	"
05 / 0000	21.9	112.0	1008	25	"
05 / 0600					dissipated
30 / 1200	18.1	113.0	997	50	minimum pressure

Table 2. Preliminary track forecast evaluation (heterogeneous sample) for Tropical Storm Juliette, 29 September – 2 October 2007. Forecast errors (n mi) are followed by the number of forecasts in parentheses. Errors smaller than the NHC official forecast are shown in bold-face type. Verification includes the depression stage but does not include the remnant low stage.

Forecast Technique	Forecast Period (h)						
	12	24	36	48	72	96	120
CLP5	48 (12)	92 (10)	156 (8)	242 (6)	391 (2)		
GFNI	37 (6)	71 (5)	100 (3)	160 (1)			
GFDI	34 (12)	59 (10)	75 (8)	107 (6)	189 (2)		
GFSI	40 (12)	68 (10)	92 (8)	114 (6)	258 (2)		
AEMI	33 (12)	61 (10)	90 (8)	125 (6)	123 (2)		
NGPI	48 (8)	67 (6)	71 (5)	91 (3)	126 (2)		
UKMI	46 (9)	79 (7)	92 (5)	101 (3)			
BAMD	81 (12)	168 (10)	257 (8)	327 (6)	333 (2)		
BAMM	63 (11)	121 (9)	178 (7)	213 (5)	213 (2)		
BAMS	35 (11)	57 (9)	83 (7)	122 (5)	240 (2)		
CONU	35 (12)	59 (10)	70 (8)	79 (6)	111 (2)		
GUNA	35 (6)	53 (4)	68 (3)	106 (1)			
FSSE	32 (9)	66 (7)	93 (5)	89 (3)			
OFCL	28 (11)	40 (9)	48 (7)	83 (5)	213 (1)		
NHC Official (2002-2006 mean)	33 (1349)	57 (1192)	79 (1039)	99 (897)	140 (655)	188 (465)	233 (311)

Table 3. Preliminary intensity forecast evaluation (heterogeneous sample) for Tropical Storm Juliette, 29 September – 2 October 2007. Forecast errors (kt) are followed by the number of forecasts in parentheses. Errors smaller than the NHC official forecast are shown in bold-face type. Verification includes the depression stage but does not include the remnant low stage.

Forecast Technique	Forecast Period (h)						
	12	24	36	48	72	96	120
SHF5	6.5 (12)	7.7 (10)	7.0 (8)	6.7 (6)	22.5 (2)		
GHMI	7.3 (12)	11.3 (10)	14.9 (8)	11.3 (6)	5.0 (2)		
SHIP	6.9 (12)	8.5 (10)	6.4 (8)	6.8 (6)	6.5 (2)		
DSHP	6.9 (12)	8.5 (10)	6.4 (8)	6.8 (6)	6.5 (2)		
FSSE	6.8 (9)	7.4 (7)	5.8 (5)	2.7 (3)			
ICON	6.3 (12)	8.8 (10)	10.1 (8)	6.0 (6)	3.5 (2)		
OFCL	3.2 (11)	3.9 (9)	3.6 (7)	4.0 (5)	10.0 (1)		
NHC Official (2002-2006 mean)	6.3 (1349)	11.0 (1192)	14.6 (1039)	16.9 (896)	18.9 (655)	18.5 (465)	19.3 (311)

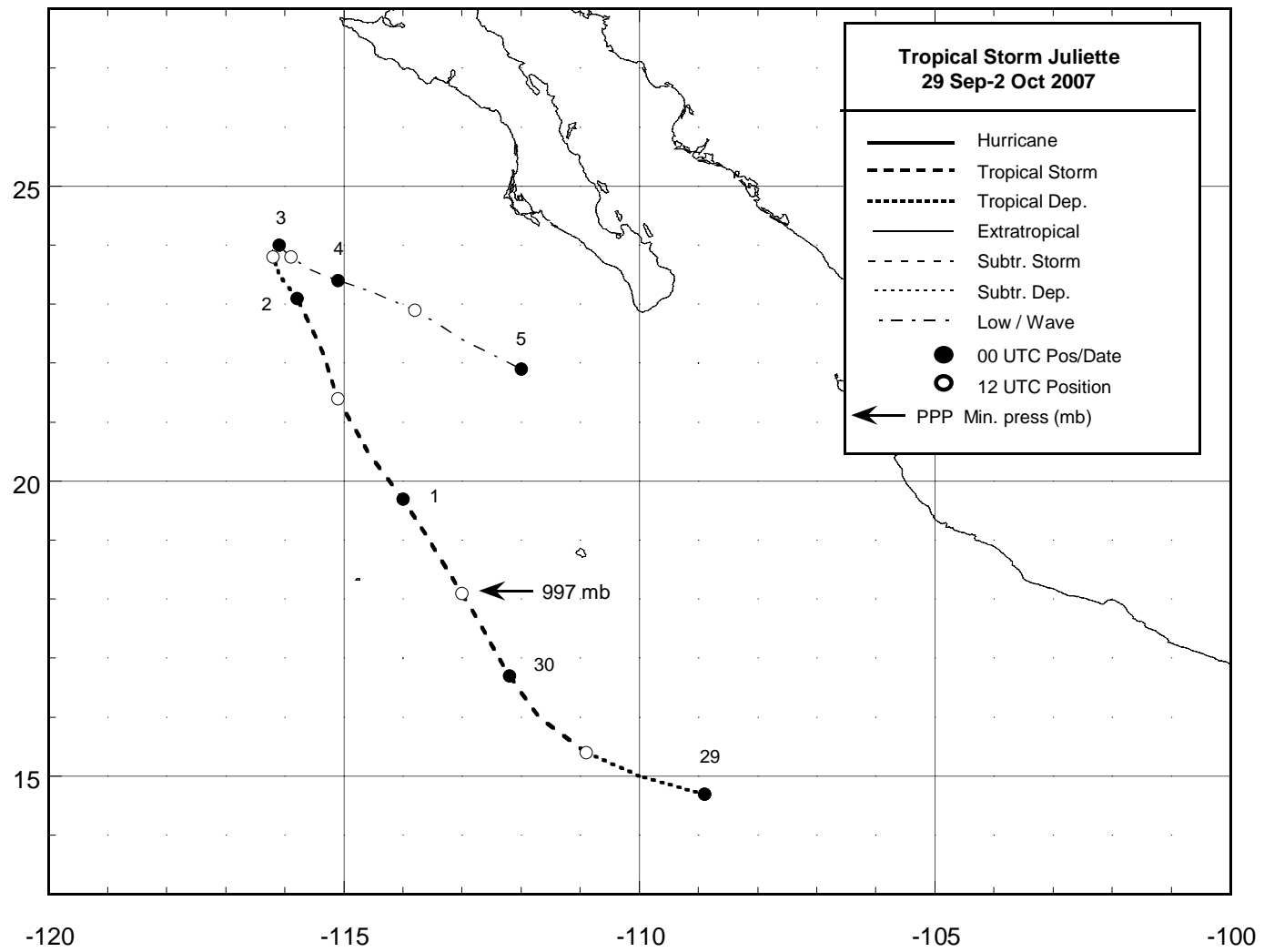


Figure 1. Best track positions for Tropical Storm Juliette, 29 September – 2 October 2007.

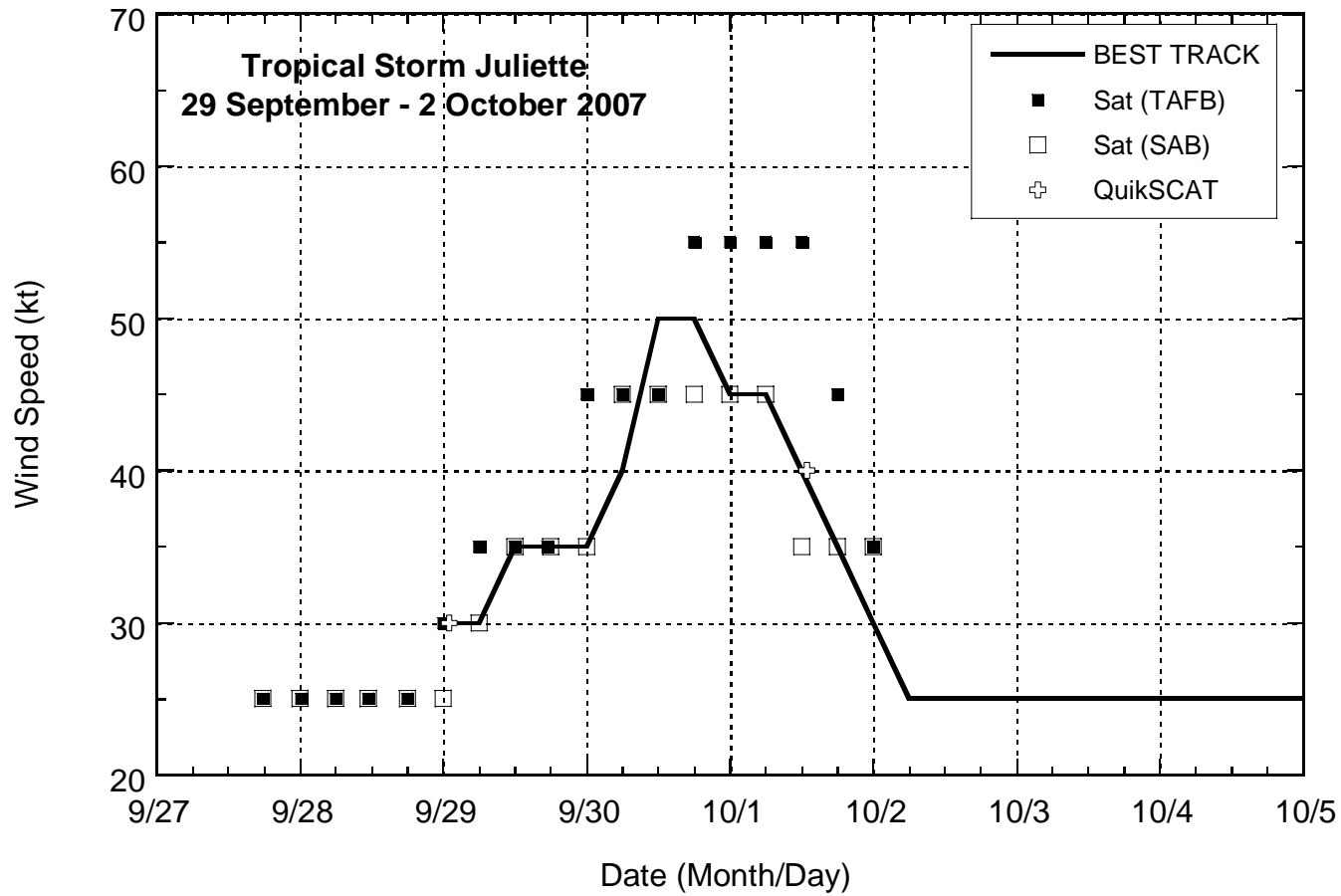


Figure 2. Selected wind observations and best track maximum sustained surface wind speed curve for Tropical Storm Juliette, 29 September – 2 October 2007.

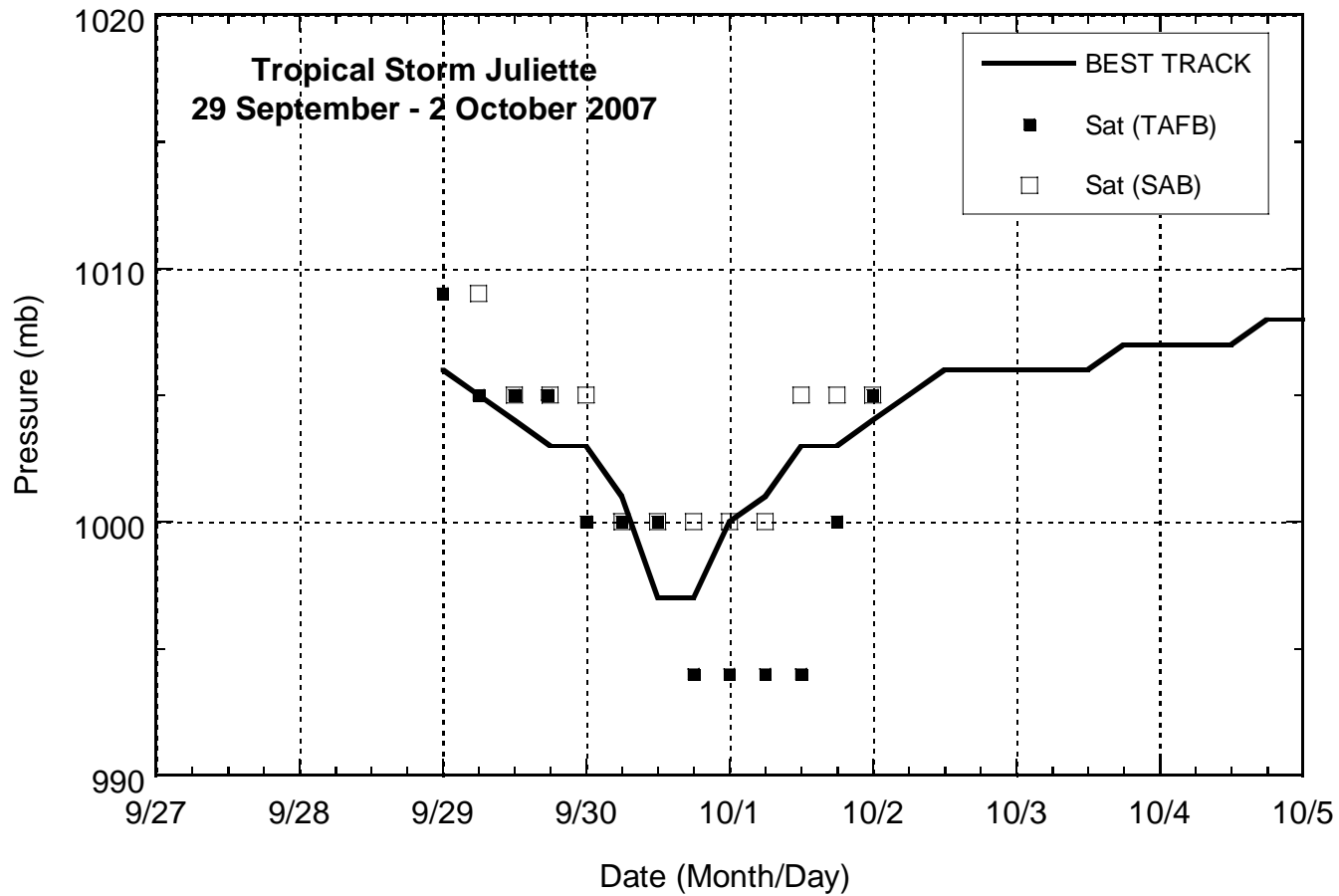


Figure 3. Selected pressure observations and best track minimum central pressure curve for Tropical Storm Juliette, 29 September – 2 October 2007.