Tropical Cyclone Report
Tropical Storm Miriam
(EP142006)
16-18 September 2006

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Miriam was a relatively weak and short-lived tropical storm.

a. Synoptic History

Miriam developed within a broad area of disturbed weather that represented a northward extension of the ITCZ to the west of Hurricane Lane. One disturbance within this trough, associated with the tropical wave in front of Lane, was briefly organized enough to warrant Dvorak classifications on 14 September, but soon weakened. A second disturbance formed a little to the northeast of the first on 15 September and developed a distinct closed circulation late in the day. By 0000 UTC 16 September, this system had enough convective organization to be classified as a tropical depression, about 440 n mi southwest of Cabo San Lucas, Mexico, and about 500 n mi west-southwest of Lane.

The "best track" chart 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. Initially, the depression moved slowly northeastward, embedded in southwesterly low- to mid-level flow feeding into Hurricane Lane. The depression strengthened and became a tropical storm near 1200 UTC 16 September, about 400 n mi southwest of Cabo San Lucas, and reached its peak intensity of 40 kt 12 h later. Persistent northeasterly wind shear, as well as low-level inflow from the cool and stable environment to the north limited further development. By midday on 17 September the low-level circulation became decoupled from the deep convection, the latter racing off to the west of the former. The circulation then began to slowly spin down, with winds falling below storm strength by 0600 UTC the following day. Miriam degenerated to a remnant low shortly thereafter, which moved generally northward toward the Baja California peninsula before dissipating on 21 September a short distance offshore.

b. Meteorological Statistics

Observations in Miriam (Figs. 2 and 3) include satellite-based Dvorak technique intensity estimates from the Tropical Analysis and Forecast Branch (TAFB), the Satellite Analysis Branch (SAB) and the U. S. Air Force Weather Agency (AFWA). Microwave satellite imagery from NOAA polar-orbiting satellites, the NASA Tropical Rainfall Measuring Mission (TRMM), the

NASA QuikSCAT, and Defense Meteorological Satellite Program (DMSP) satellites were also useful in tracking Miriam.

Ship DGVC reported 35 kt winds and a pressure of 1003 mb at 0000 UTC 18 September about 40 n mi south-southeast of the center of Miriam. There were a few other ship reports of winds of tropical storm force in the vicinity of Miriam, although these have been judged to be either incorrect or unrepresentative.

The center of Miriam passed about 30 n mi to the east of the automated station at Clarion Island late on 16 September. This station reported a maximum 15-minute mean wind of 31 kt, with a gust to 43 kt at 0830 UTC 17 September, and a minimum pressure of 1003.2 mb at 0030 UTC 17 September. The wind observations were from an elevation of 60 m.

c. Casualty and Damage Statistics

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

d. Forecast and Warning Critique

Only nine verifying forecast packages were issued for Miriam, and only one official forecast went out as far as 48 hours. The track verification for this limited sample is given in Table 2, where it is seen that official errors for Miriam were comparable to their long-term averages. The intensity verification is given in Table 3. Official intensity forecasts had a modest high bias.

Table 1. Best track for Tropical Storm Miriam, 16-18 September 2006.

Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
16 / 0000	17.3	115.0	1006	25	tropical depression
16 / 0600	17.4	114.7	1004	30	"
16 / 1200	17.7	114.4	1003	35	tropical storm
16 / 1800	18.1	114.2	1001	35	"
17 / 0000	18.5	114.1	999	40	"
17 / 0600	18.7	114.0	999	40	"
17 / 1200	18.9	113.9	1000	40	"
17 / 1800	19.0	113.8	1001	35	"
18 / 0000	19.1	113.7	1001	35	"
18 / 0600	19.5	113.6	1002	30	tropical depression
18 / 1200	19.9	113.6	1003	25	low
18 / 1800	20.3	113.7	1004	25	"
19 / 0000	20.7	113.9	1005	25	"
19 / 0600	21.2	114.2	1005	25	"
19 / 1200	21.8	114.6	1006	25	"
19 / 1800	22.5	114.8	1007	25	"
20 / 0000	23.2	114.9	1007	25	"
20 / 0600	23.6	114.6	1007	25	"
20 / 1200	24.0	114.3	1007	25	"
20 / 1800	24.3	113.8	1007	20	"
21 / 0000	24.4	113.2	1008	20	"
21 / 0600	24.4	112.6	1009	20	"
21 / 1200					dissipated
17 / 0000	18.5	114.1	999	40	minimum pressure

Table 2. Preliminary track forecast evaluation (heterogeneous sample) for Tropical Storm Miriam, 16-18 September 2006. 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 extratropical stage, if any.

Forecast Technique	Forecast Period (h)						
	12	24	36	48	72	96	120
CLP5	34 (8)	50 (6)	**57 (4)**	106 (2)			
GFNI	43 (4)	102 (2)					
GFDI	37 (5)	**42 (3)**	**29 (1)**				
GFSI	71 (8)	130 (6)	155 (4)	173 (2)			
AEMI	58 (8)	103 (6)	127 (4)	134 (2)			
NGPI	60 (5)	96 (3)	155 (1)				
UKMI	70 (5)	92 (3)	121 (1)				
BAMD	62 (8)	112 (6)	176 (4)	251 (2)			
BAMM	48 (8)	76 (6)	107 (4)	145 (2)			
BAMS	69 (8)	110 (6)	141 (4)	156 (2)			
CONU	38 (5)	64 (3)	**62 (1)**				
GUNA	38 (5)	63 (3)	**62 (1)**				
FSSE	32 (5)	56 (3)	**52 (1)**				
OFCL	30 (7)	55 (5)	98 (3)	93 (1)			
NHC Official (2001-2005 mean)	35 (1300)	60 (1152)	83 (1009)	103 (877)	145 (652)	192 (465)	231 (313)

Table 3. Preliminary intensity forecast evaluation (heterogeneous sample) for Tropical Storm Miriam, 16-18 September 2006. 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 extratropical stage, if any.

Forecast Technique	Forecast Period (h)						
	12	24	36	48	72	96	120
SHF5	4.8 (8)	7.7 (6)	9.8 (4)	10.5 (2)			
GHMI	**2.2 (5)**	**2.0 (3)**	**0.0 (1)**				
SHIP	3.8 (8)	5.0 (6)	**5.3 (4)**	**7.5 (2)**			
DSHP	3.8 (8)	5.0 (6)	**5.3 (4)**	**7.5 (2)**			
FSSE	**2.2 (5)**	3.0 (3)	**3.0 (1)**				
ICON	**2.2 (5)**	3.0 (3)	**2.0 (1)**				
OFCL	2.9 (7)	3.0 (5)	8.3 (3)	10.0 (1)			
NHC Official (2001-2005 mean)	6.2 (1300)	10.8 (1152)	14.3 (1009)	16.5 (876)	18.7 (652)	18.3 (465)	19.3 (313)

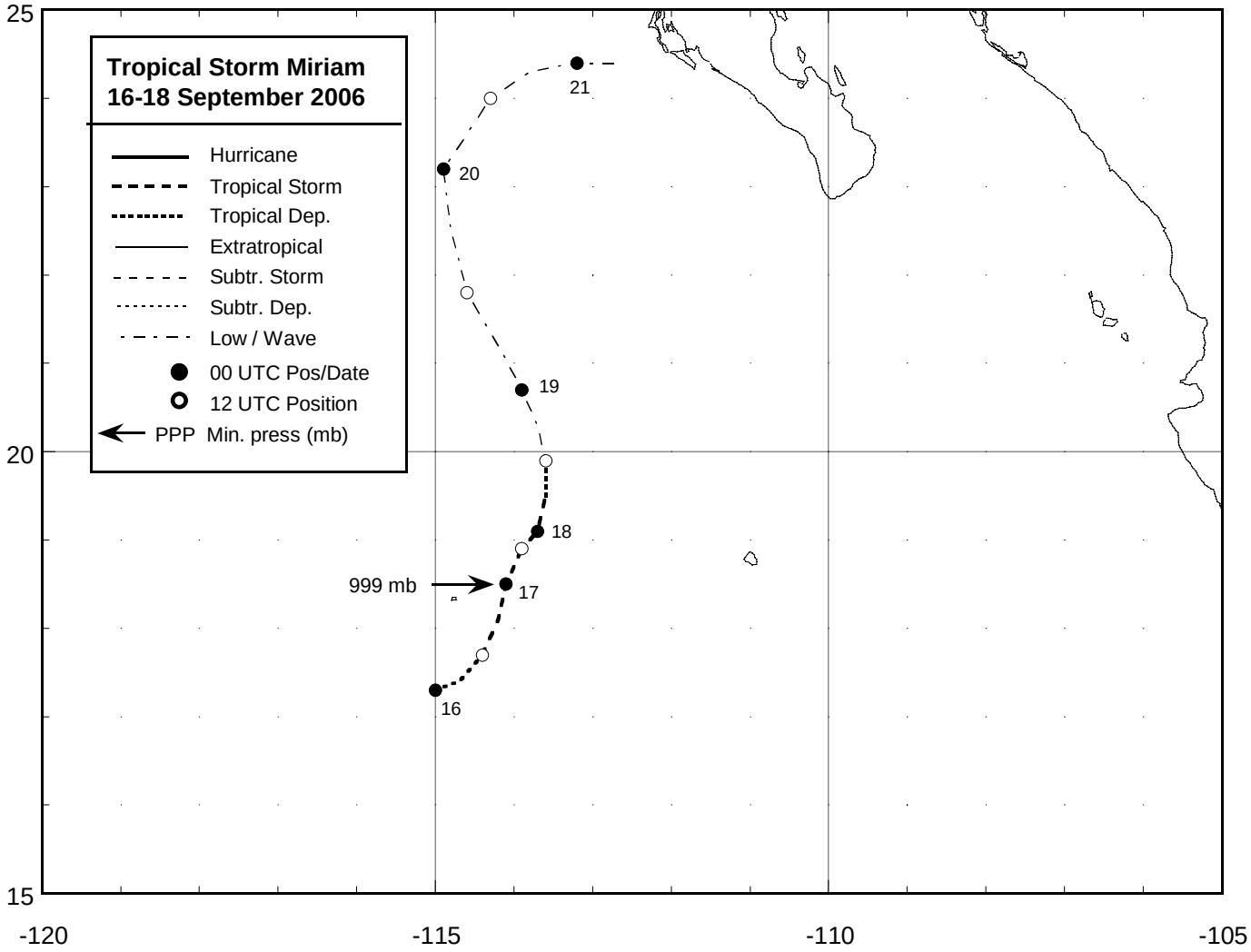

Figure 1. Best track positions for Tropical Storm Miriam, 16-18 September 2006.

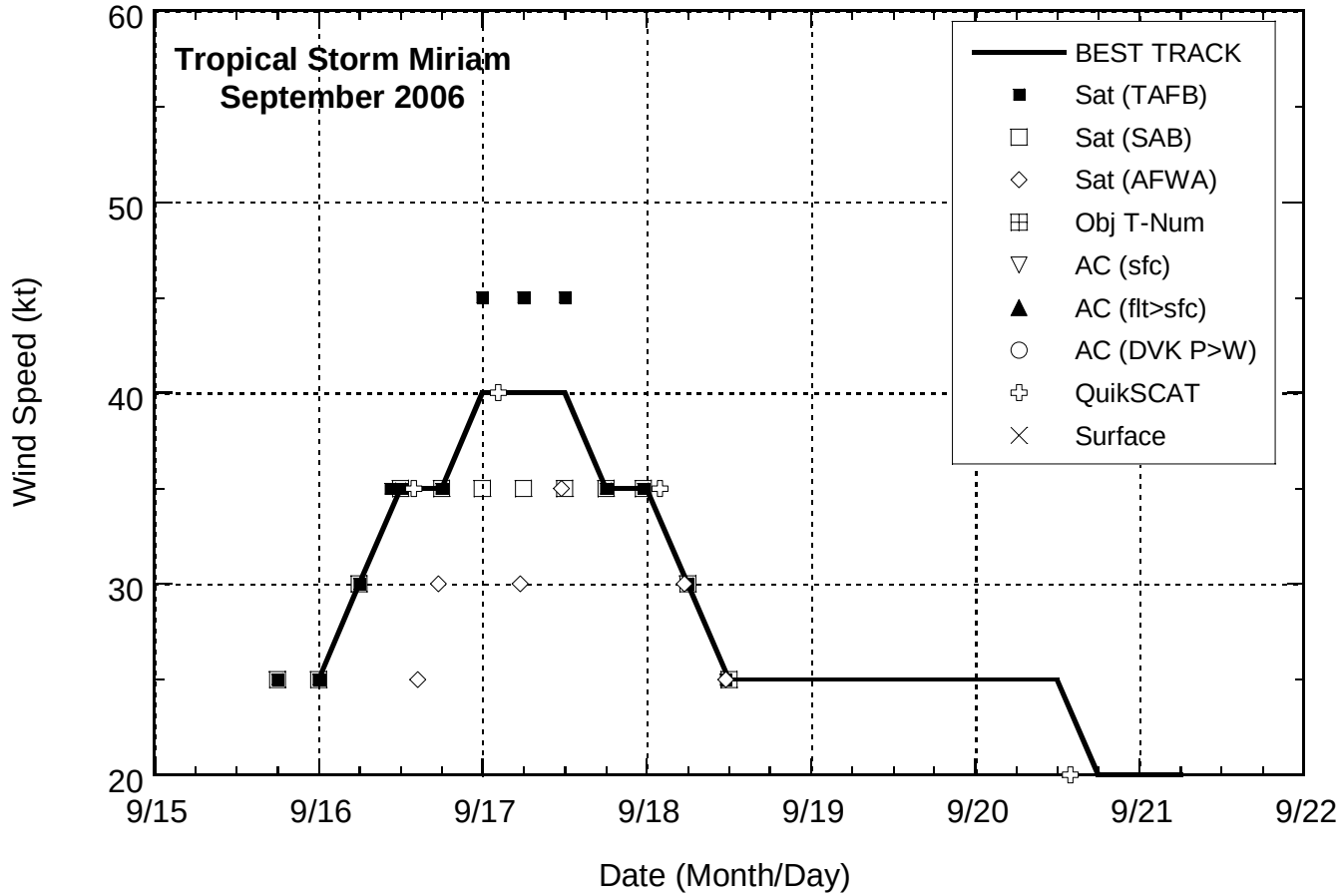

Figure 2. Selected wind observations and best track maximum sustained surface wind speed curve for Tropical Storm Miriam, 16-18 September 2006.

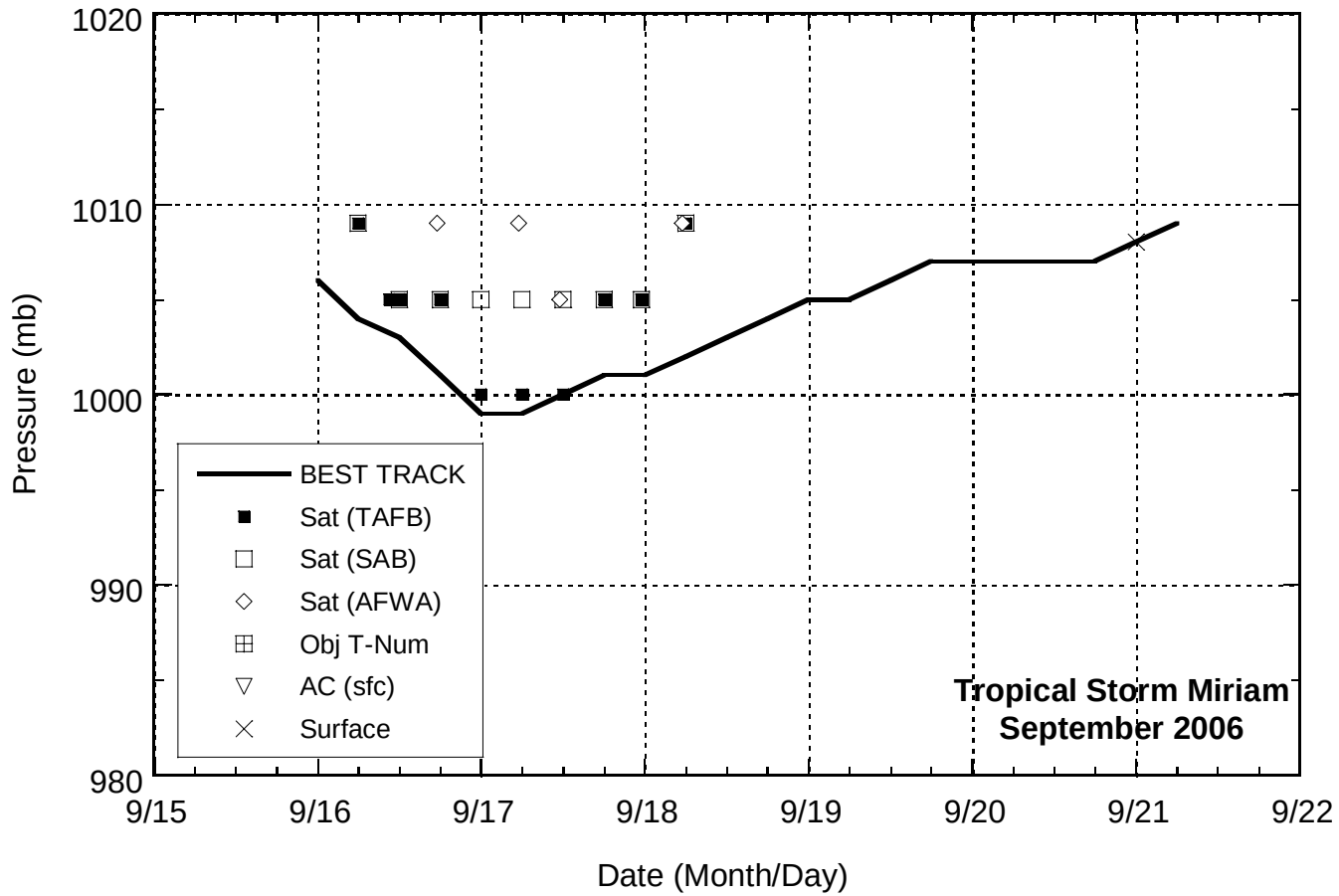

Figure 3. Selected pressure observations and best track minimum central pressure curve for Tropical Storm Miriam, 16-18 September 2006.