Tropical Cyclone Report
Tropical Storm Beatriz
21-24 June 2005

James L. Franklin
National Hurricane Center
23 July 2005

Tropical Storm Beatriz was a short-lived cyclone that did not affect land.

a. Synoptic History

The origin of Beatriz can be traced in part to a tropical wave that crossed the coast of Africa on 8 June and entered the eastern North Pacific basin on 17 June. Ahead of the wave, a persistent broad area of low pressure, with a number of embedded convective disturbances, had been centered over extreme southeastern Mexico. One such disturbance moved southward across Mexico and entered the Gulf of Tehuantepec on 17 June. Convection associated with this area increased south of the Gulf of Tehuantepec the following day and the disturbance began to move slowly westward and weaken. Meanwhile, the tropical wave was continuing westward and by 20 June it was not possible to distinguish between the two systems. Convective organization of the combined system increased late on 20 June, and the system continued to develop. It is estimated that a tropical depression had formed by 1800 UTC the next day, about 240 n mi south of Zihuatanejo, Mexico.

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. The depression moved to the west-northwest to the south of a mid-level anticyclone over the southwestern United States. The depression's elongated convective pattern slowly consolidated, and the system reached tropical storm strength at 1200 UTC 22 June, about 250 n mi south of Manzanillo, Mexico. However, there was little additional development, with easterly wind shear largely keeping the circulation center and convection apart. The thermodynamic environment may not have been particularly favorable either, as evidenced by the modest amounts of convection generated by the cyclone during its lifetime. Beatriz' peak intensity of 45 kt was reached at 0000 UTC 23 June. Late on 23 June the cyclone crossed the 26EC sea-surface temperature isotherm and weakened to a depression at 0000 UTC 24 June. Six hours later the system had lost all deep convection and had become a remnant low about 250 n mi south-southwest of Cabo San Lucas, Mexico. Now decoupled from the mid- and upper-level easterly flow, the remnant circulation slowed and turned southward before dissipating two days later.

b. Meteorological Statistics

Observations in Beatriz (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 Beatriz. Peak operational Dvorak intensity estimates for Beatriz reached 55-65 kt (Fig. 2); however, subsequent microwave data showed that these classifications had been based on erroneous position estimates. The best track peak intensity of 45 kt is based on a revised classification based on more reasonable center positioning, as well as on a QuikSCAT pass near the time of the peak satellite classifications. It is of note that the operational advisory intensity estimates, reflecting the uncertainty of the center position, also never exceeded 45 kt.

The only surface observation of note was from ship 9VVN, which reported 30 kt winds in the southwestern quadrant of Beatriz at 1800 UTC 22 June.

c. Casualty and Damage Statistics

Beatriz remained at sea throughout its lifetime and there were no reports of damage or casualties.

d. Forecast and Warning Critique

Average official track errors (with the number of cases in parentheses) for Beatriz were 29 (8), 44 (6), 72 (6), and 94 (2) n mi for the 12, 24, 36, and 48 h forecasts, respectively. These errors are well below the average official track errors for the 10-yr period 1995-2004[1] (Table 2). Because of the small and very heterogeneous nature of the verifications, it is difficult to compare the performance of the official forecast to that of the guidance. However, with the notable exception of the GFS, the track guidance in general performed very well for Beatriz.

Average official intensity errors were 7, 12, 15, and 18 kt for the 12, 24, 36, and 48 h forecasts, respectively. Although these errors are very close to the long-term averages, several of the official intensity forecasts had a substantial high bias. The GFDL model intensity forecasts for Beatriz were very good, with small errors and little bias.

No watches or warnings were required for Beatriz.

[1] Errors given for the 96 and 120 h periods are averages over the four-year period 2001-4.

Table 1. Best track for Tropical Storm Beatriz, 21-24 June 2005.

Date/Time (UTC)	Latitude (EN)	Longitude (EW)	Pressure (mb)	Wind Speed (kt)	Stage
21 / 1800	13.6	101.7	1006	25	tropical depression
22 / 0000	13.9	102.8	1004	30	"
22 / 0600	14.3	103.8	1004	30	"
22 / 1200	14.8	104.9	1003	35	tropical storm
22 / 1800	15.2	106.0	1002	40	"
23 / 0000	15.7	107.1	1000	45	"
23 / 0600	16.3	108.3	1000	45	"
23 / 1200	16.7	109.4	1002	40	"
23 / 1800	16.9	110.4	1005	35	"
24 / 0000	17.1	111.3	1005	30	tropical depression
24 / 0600	17.4	112.2	1006	25	remnant low
24 / 1200	17.8	112.9	1007	20	"
24 / 1800	18.2	113.6	1008	20	"
25 / 0000	18.7	114.3	1009	20	"
25 / 0600	18.7	114.5	1009	20	"
25 / 1200	18.6	114.7	1009	20	"
25 / 1800	18.4	114.7	1009	20	"
26 / 0000	18.2	114.7	1009	20	"
26 / 0600	18.0	114.5	1010	20	"
26 / 1200					dissipated
23 / 0000	15.7	107.1	1000	45	minimum pressure

Table 2. Preliminary forecast evaluation (heterogeneous sample) for Tropical Storm Beatriz, 21-24 June 2005. 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	35 (8)	54 (6)	89 (4)	143 (2)			
GFNI	31 (3)	65 (1)					
GFDI	33 (8)	51 (6)	94 (4)	123 (2)			
GFDL	42 (8)	60 (6)	89 (4)	142 (2)			
GFDN	52 (3)	55 (2)					
GFSI	60 (7)	94 (5)	136 (3)	119 (1)			
GFSO	67 (8)	101 (6)	155 (4)	171 (2)			
AEMI							
NGPI	38 (4)	54 (2)					
NGPS	55 (5)	83 (3)	130 (1)				
UKMI	**22 (6)**	**23 (4)**	**33 (2)**				
UKM	40 (4)	**31 (3)**	**35 (2)**	**42 (1)**			
A98E							
A9UK							
BAMD	70 (8)	129 (6)	201 (4)	241 (2)			
BAMM	54 (8)	99 (6)	156 (4)	208 (2)			
BAMS	52 (8)	95 (6)	151 (4)	175 (2)			
CONU	36 (7)	51 (5)	83 (3)	120 (1)			
GUNA	**27 (4)**	**21 (2)**					
FSSE	**22 (4)**	**16 (2)**					
OFCL	29 (8)	44 (6)	72 (4)	94 (2)			
NHC Official (1995-2004 mean)	37 (2654)	68 (2378)	97 (2096)	123 (1829)			

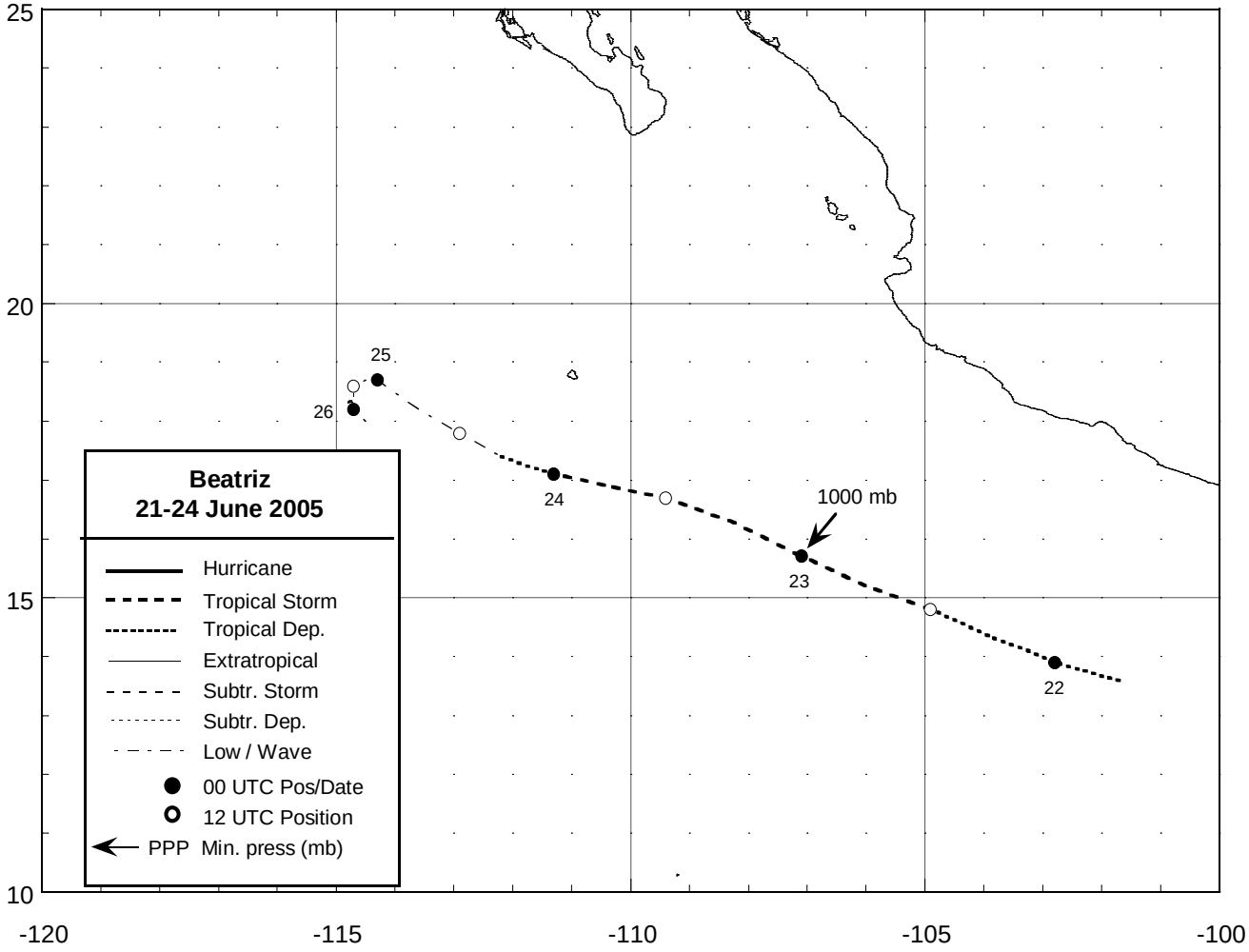

Figure 1. Best track positions for Tropical Storm Beatriz, 21-24 June 2005.

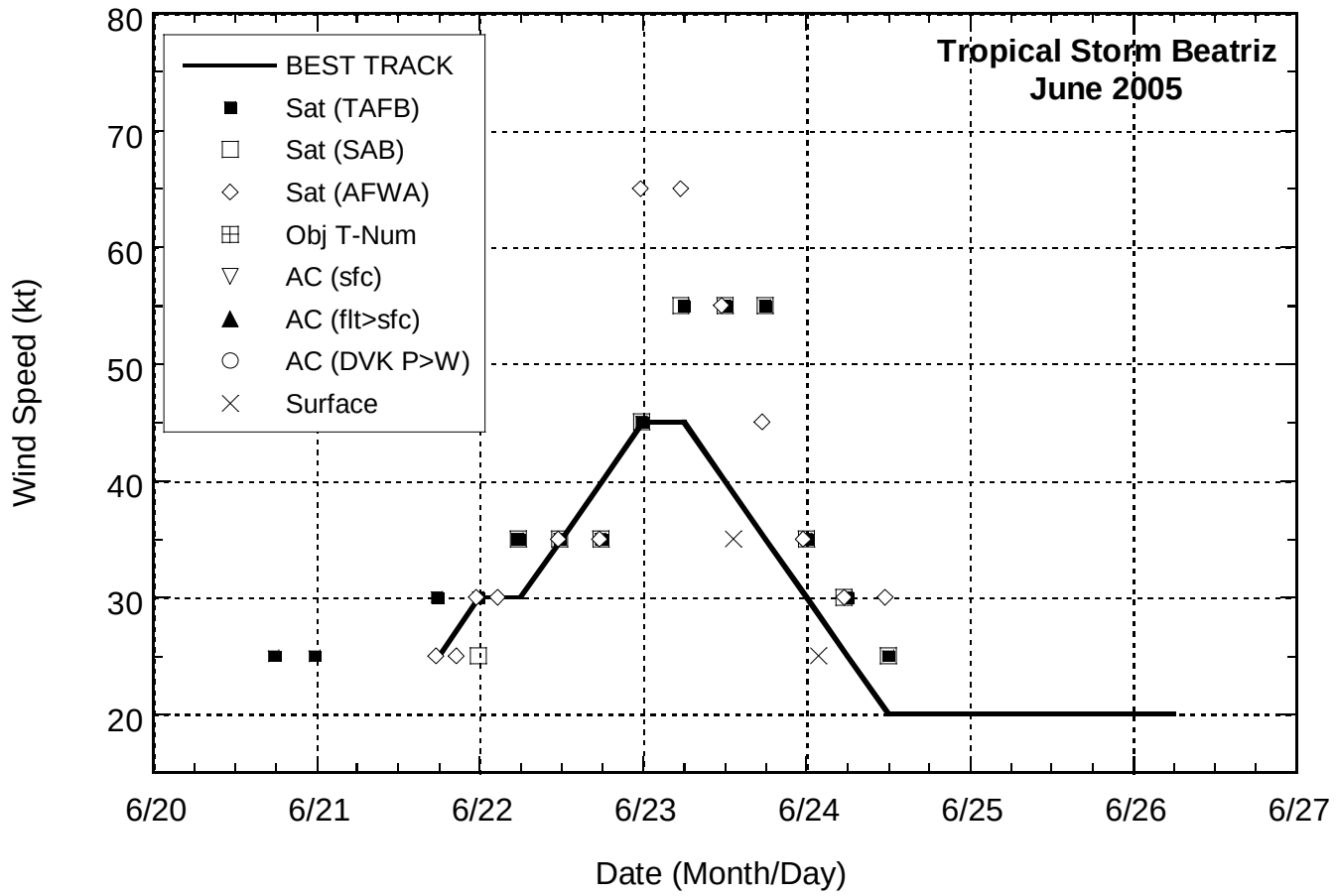

Figure 2. Selected wind observations and best track maximum sustained surface wind speed curve for Tropical Storm Beatriz, 21-24 June 2005. Surface observations represent QuikSCAT estimates.

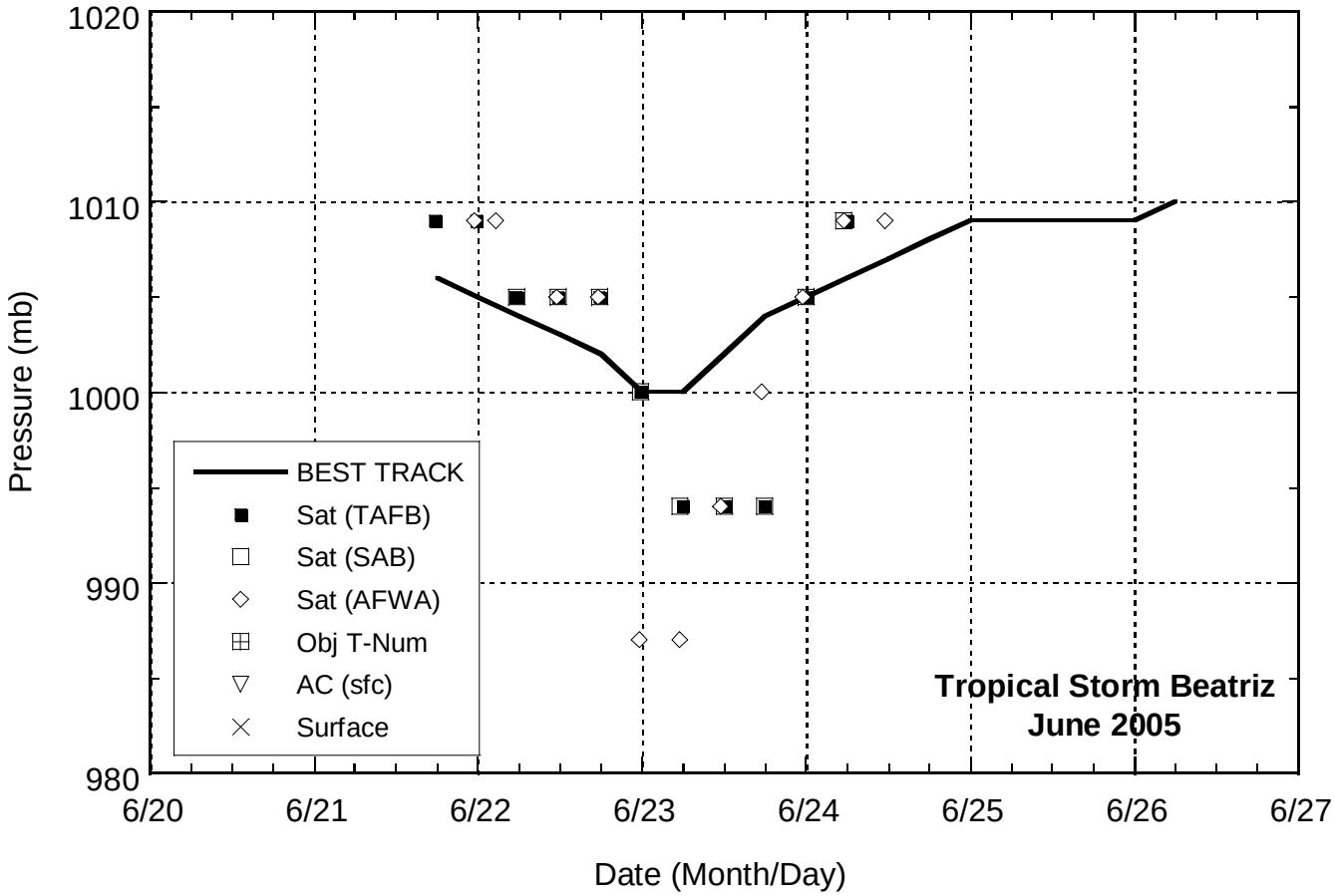

Figure 3. Selected pressure observations and best track minimum central pressure curve for Tropical Storm Beatriz, 21-24 June 2005.