Tropical Cyclone Report
Hurricane Fernanda
9-16 August 2005
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Hurricane Fernanda spent most of its life over the ocean well away from Mexico.

a. Synoptic History

Fernanda developed from a tropical wave that crossed Dakar, Senegal on 25 July. The wave was well-defined in upper-air data and was accompanied by a large area of thunderstorms. The wave was easily identified by satellite as it moved westward across the tropical Atlantic and it appeared to be in a developing phase as it crossed the Windward Islands on 31 July. The development ceased when the system moved over South America. The westward moving tropical wave crossed Central America and convection began to redevelop gradually south of the Gulf of Tehuantepec on 5 August. The wave continued westward, and it was not until 1200 UTC 9 August that the activity became organized enough to classify the system as a tropical depression.

The convective pattern continued to become better organized and by 0000 UTC 10 August the system was designated Tropical Storm Fernanda. The cyclone continued on a general west to west-northwest track and reached hurricane status at 0600 UTC 11 August. Thereafter, there was just a slight intensification and Fernanda reached its peak intensity of 75 knots and a minimum central pressure of 978 mb at 1200 UTC 12 August. The cyclone developed a ragged eye during that time. Fernanda did not change in intensity significantly during the next day and a half, and thereafter, the northern half of the circulation moved over cooler waters, resulting in a gradual weakening. Fernanda began to move toward the west-southwest around a very strong subtropical ridge toward warmer waters and the thunderstorm activity temporarily increased. However, strong shear removed most of the deep convection from the center and the cyclone became a depression at 1800 UTC 15 August. The cyclone then weakened to a remnant low at 0600 UTC 16 August and continued moving toward the west-southwest still producing intermittent convection until dissipation. 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.

b. Meteorological Statistics

Observations in Fernanda (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 Fernanda.

c. Casualty and Damage Statistics

There are no reports of casualties or damage associated with Fernanda.

d. Forecast and Warning Critique

Average official track errors (with the number of cases in parentheses) for Fernanda were 19 (25), 28 (23), 41 (21), 54(19), 95(15), 126(11) and 173(7) n mi for the 12, 24, 36, 48, 72, 96, and 120 h forecasts, respectively. These errors are well below the average official track errors for the 10-yr period 1995-2004[1] of 37, 68, 97, 123, 175, 208, and 259 n mi, respectively. Table 2 displays the forecast track model statistics and shows that comparison with the official forecast track.

Average official intensity errors were 7, 11, 11, 13, 15, 15 and 19 knots for the 12, 24, 36, 48, 72, 96 and 120 h forecasts, respectively. These errors are very close to the long-term averages of 6, 11, 14, 17, 19, 18, and 19 knots for the same 10-yr period.

No watches or warnings were required for Fernanda.

[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 Fernanda, 9-16 August 2005.

Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
09 / 1200	14.0	113.8	1006	25	tropical depression
09 / 1800	14.3	114.8	1005	30	"
10 / 0000	14.8	115.8	1005	35	tropical storm
10 / 0600	15.1	116.9	1000	45	"
10 / 1200	15.4	118.0	994	55	"
10 / 1800	15.6	118.6	994	55	"
11 / 0000	16.1	119.6	994	55	"
11 / 0600	16.3	120.2	989	65	hurricane
11 / 1200	16.7	120.8	989	65	"
11 / 1800	17.1	121.6	986	65	"
12 / 0000	17.6	122.2	982	70	"
12 / 0600	17.9	122.6	979	75	"
12 / 1200	18.3	123.5	978	75	"
12 / 1800	18.6	124.3	979	75	"
13 / 0000	18.8	125.1	979	75	"
13 / 0600	19.1	126.0	979	75	"
13 / 1200	19.2	126.7	979	75	"
13 / 1800	19.2	127.5	983	65	"
14 / 0000	19.2	128.3	987	65	"
14 / 0600	19.0	129.0	990	60	tropical storm
14 / 1200	18.7	129.6	990	60	"
14 / 1800	18.3	130.3	990	60	"
15 / 0000	17.9	131.0	990	60	"
15 / 0600	17.6	131.8	994	50	"
15 / 1200	17.3	132.6	1002	40	"
15 / 1800	17.1	133.7	1004	30	tropical depression
16 / 0000	17.2	134.6	1008	25	"
16 / 0600	17.1	135.8	1008	20	low
16 / 1200	17.0	137.0	1008	20	"
16 / 1800	16.8	138.0	1008	20	"
17 / 0000	16.6	139.0	1010	20	"
17 / 0600	16.5	140.0	1010	20	"
17 / 1200	16.4	141.0	1011	20	"
17/ 1800					dissipated
12 / 1200	18.3	123.5	978	75	minimum pressure

Table. 2. Preliminary forecast evaluation (heterogeneous sample) for Fernanda, 9-16 August 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.

Forecast Technique	Forecast Period (h)						
	12	24	36	48	72	96	120
CLP5	27 (25)	54 (23)	88 (21)	122 19)	167 (15)	192 (11)	232 (7)
GFNI	22 (22)	44 (20)	71 (18)	95 (16)	151 (12)	233 (8)	383 (4)
GFDI	20 (24)	30 (22)	**38 (20)**	54 (18)	97 (14)	157 (10)	241 (6)
GFDL	19 (25)	31 (23)	**33 (21)**	**44 (19)**	**82 (15)**	138 (11)	224 (7)
GFDN	28 (23)	42 (21)	**62 (19)**	87 (17)	143 (13)	211 (9)	343 (5)
GFSI	20 (24)	30 (22)	**33 (20)**	**47 (18)**	**93 (14)**	147 (10)	**126 (6)**
GFSO	31 (25)	38 (23)	**36 (21)**	**43 (19)**	**80 (15)**	**130 (11)**	**129 (7)**
AEMI	24 (24)	41 (22)	54 (20)	71 (18)	113 (14)	143 (10)	**170 (6)**
NGPI	29 (24)	64 (22)	98 (20)	138 18)	222 (14)	323 (10)	399 (5)
NGPS	28 (24)	50 (22)	82 (20)	122 18)	209 (14)	313 (10)	435 (6)
UKMI	26 (24)	46 (22)	67 (20)	78 (18)	110 (14)	**100 (10)**	**123 (6)**
UKM	25 (13)	46 (12)	52 (11)	73 (10)	111 (8)	**93 (6)**	**99 (4)**
BAMD	29 (25)	49 (23)	66 (21)	81 (19)	107 (15)	**135 (11)**	**140 (7)**
BAMM	29 (24)	41 (22)	50 (20)	68 (18)	111 (15)	**130 (11)**	**111 (7)**
BAMS	34 (24)	49 (22)	70 (20)	90 (18)	124 (15)	142 (11)	**136 (7)**
CONU	**17 (24)**	**27 (22)**	**38 (20)**	55 (18)	**94 (14)**	148 (10)	193 (6)
GUNA	**15 (23)**	**22 (21)**	**34 (19)**	**45 (17)**	**85 (13)**	138 (9)	177 (5)
FSSE	19 (24)	39 (22)	61 (20)	86 (18)	124 (14)	183 (9)	208 (5)
OFCL	19 (25)	28 (23)	41 (21)	54 (19)	95 (15)	136 (11)	173 (7)

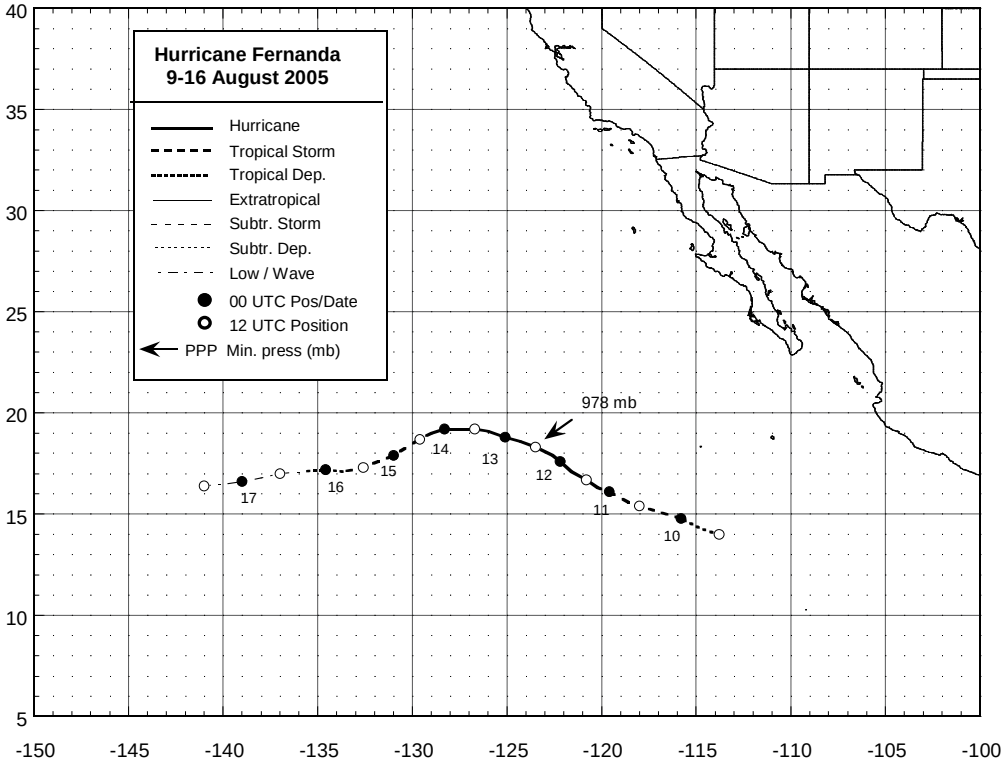

Figure 1. Best track positions for Hurricane Fernanda 9-16 August 2005.

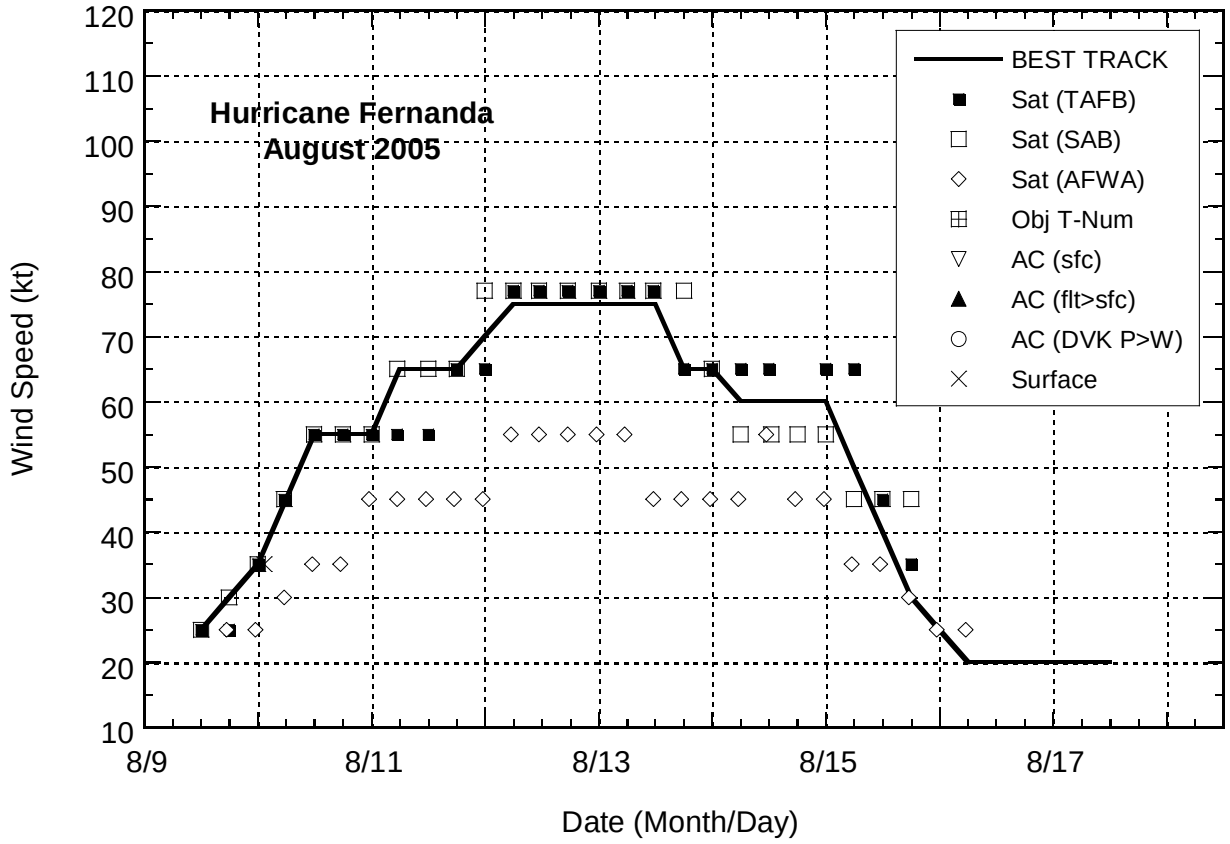

Figure 2. Selected wind observations and best track maximum sustained surface wind speed curve for Hurricane Fernanda, 9-16 August 2005

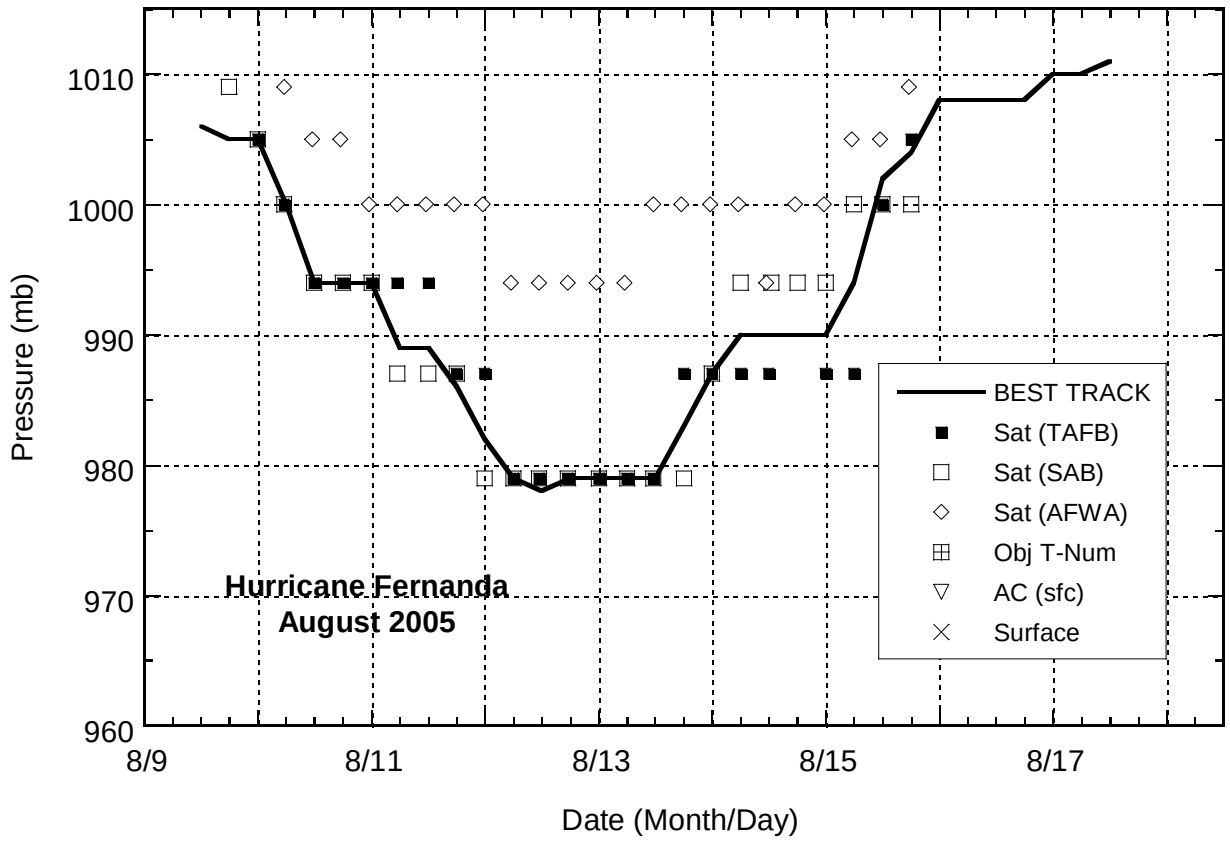

Figure 3. Selected pressure observations and best track minimum central pressure curve for Hurricane Fernanda, 9-16 August, 2005.