

Tropical Cyclone Report  
Hurricane Fausto  
21 August - 03 September 2002

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6 December 2002

Hurricane Fausto was a long-lived category 4 hurricane (on the Saffir-Simpson Hurricane Scale) that did not affect any land areas. After degenerating to a remnant low in the Central North Pacific basin, Fausto was reborn as a tropical depression and later as a tropical storm.

a. Synoptic History

Fausto developed from a tropical wave that crossed the west-African coast on 11 August and entered the eastern North Pacific basin on 17 August. By late on 18 August the system acquired enough organization to be classified using the Dvorak technique. By the following day a broad closed circulation was present, but the convective pattern had weakened. Early on 21 August the system began to reorganize and at 1200 UTC became a tropical depression about 400 n mi south-southwest of Manzanillo, 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 initially moved westward and strengthened, becoming a tropical storm at 0000 UTC 22 August, about 450 n mi south-southwest of Manzanillo. Fausto turned to the west-northwest, a heading it would maintain for the next six days, and steadily strengthened, becoming a hurricane later that day at 1800 UTC, when it was about 565 n mi south-southwest of Cabo San Lucas, Mexico. Steady and significant strengthening continued, with Fausto reaching its peak intensity of 125 kt at 1200 UTC 24 August, roughly 60 hours after becoming a tropical storm. At the time of peak intensity Fausto was located about 800 n mi southwest of Cabo San Lucas.

By 0000 25 August, deep convection in the eyewall of Fausto began to diminish, and a weakening trend began, one that was nearly as steady as the intensification had been. Fausto crossed the 26°C SST isotherm near midday on 25 August, and had become a tropical storm again by 1200 UTC the following day. Even though Fausto subsequently failed to generate any more deep convection (and therefore was arguably no longer a tropical cyclone), its large circulation was slow to spin down. Winds did not fall below tropical storm strength until 0000 UTC 28 August, shortly after Fausto crossed 140° W longitude and entered the central Pacific basin. Fausto is considered to have become a remnant low by 1200 UTC 28 August.

The remnant low of Fausto continued on a westward track, passing about 430 n mi north of the Hawaiian Islands on 30 August. During the day the surface circulation passed underneath an upper-level low and redeveloped deep convection. With the redevelopment of convection Fausto became a tropical depression again at 1800 UTC 30 August, although it did have some subtropical

characteristics; scatterometer passes and satellite imagery indicated that the strongest winds and convection were located over 120 n mi east of the center. Fausto moved to the west-northwest on 31 August, and during the day the upper-level flow over the center gradually changed from cyclonic to anticyclonic. (A scatterometer pass at 1642 UTC 1 September indicates that the surface wind field was contracting as the upper-level anticyclonic flow developed.) Fausto strengthened and became a tropical storm later on 1 September. On 2 September, Fausto turned north and accelerated ahead of a mid-latitude frontal system, becoming absorbed by an extratropical low shortly after 0000 UTC the next day.

b. Meteorological Statistics

Observations in Fausto (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).

Ship **PFEW** (*Jo Lonn*) reported 35 kt winds at 0000 UTC 24 August and again at 0000 UTC 25 August. These observations are given in Table 2.

c. Casualty and Damage Statistics

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

d. Forecast and Warning Critique

Forecasts on Fausto were issued by both the National Hurricane Center (NHC) and by the Central Pacific Hurricane Center; only the NHC forecast verification is presented here. Average official track errors (with the number of cases in parentheses) for Fausto were 21 (21), 42 (20), 54 (18), 74 (16), and 120 (12) n mi for the 12, 24, 36, 48, and 72 h forecasts, respectively. These errors are substantially lower than the average official track errors for the 10-yr period 1992-2001 (36, 67, 97, 125, and 182 n mi, respectively), (Table 4). The Global Forecast System ensemble mean (AEMI) and the GFDL/UKMET/NOGAPS/GFS consensus (GUNA) were among the best performing of the guidance models.

Average official intensity errors were 8, 13, 16, 19 and 23 kt for the 12, 24, 36, 48, and 72 h forecasts, respectively. These were slightly above the long-term averages (7, 12, 16, 18, and 21 kt, respectively), although mostly smaller than the errors from the SHIPS and GFDI guidance models. Although overall the intensity forecast biases were low, the official forecasts systematically under-forecast intensity changes during both the strengthening and weakening phases.

Table 1. Best track for Hurricane Fausto, 21 August - 03 September 2002.

Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
21 / 1200	12.8	106.9	1006	25	tropical depression
21 / 1800	12.8	107.7	1005	30	"
22 / 0000	12.8	108.6	1004	35	tropical storm
22 / 0600	13.0	109.7	1000	45	"
22 / 1200	13.2	111.0	994	55	"
22 / 1800	13.7	112.3	987	65	hurricane
23 / 0000	14.2	113.7	979	70	"
23 / 0600	14.5	115.1	976	80	"
23 / 1200	14.7	116.5	966	90	"
23 / 1800	15.0	117.9	962	100	"
24 / 0000	15.2	119.2	952	110	"
24 / 0600	15.3	120.5	942	120	"
24 / 1200	15.7	121.8	936	125	"
24 / 1800	16.1	122.9	936	125	"
25 / 0000	16.6	124.0	942	120	"
25 / 0600	17.2	125.2	952	110	"
25 / 1200	17.8	126.5	966	95	"
25 / 1800	18.5	127.9	970	90	"
26 / 0000	19.4	129.3	973	85	"
26 / 0600	20.2	130.7	981	75	"
26 / 1200	20.9	132.1	990	60	tropical storm
26 / 1800	21.4	133.9	997	50	"
27 / 0000	22.0	135.6	1000	45	"
27 / 0600	22.6	137.0	1002	40	"
27 / 1200	23.4	138.4	1005	35	"

Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
27 / 1800	24.3	139.8	1005	35	"
28 / 0000	25.3	141.2	1008	30	tropical depression
28 / 0600	26.3	142.8	1010	30	"
28 / 1200	26.8	145.0	1011	30	low
28 / 1800	27.0	147.0	1012	30	"
29 / 0000	27.3	149.2	1012	25	"
29 / 0600	27.5	151.3	1012	25	"
29 / 1200	27.8	153.3	1013	25	"
29 / 1800	27.9	154.7	1013	25	"
30 / 0000	28.1	155.4	1012	30	"
30 / 0600	28.6	156.1	1012	30	"
30 / 1200	29.3	156.7	1012	30	"
30 / 1800	30.0	157.3	1012	30	tropical depression
31 / 0000	30.9	158.0	1012	30	"
31 / 0600	31.9	159.0	1012	30	"
31 / 1200	32.4	160.5	1012	30	"
31 / 1800	32.9	162.3	1010	30	"
01 / 0000	33.3	163.8	1009	30	"
01 / 0600	33.8	165.0	1009	30	"
01 / 1200	34.3	166.3	1009	30	"
01 / 1800	34.6	167.4	1009	35	tropical storm
02 / 0000	35.1	168.4	1009	35	"
02 / 0600	35.7	169.2	1009	35	"
02 / 1200	37.2	170.0	1011	35	"
02 / 1800	40.0	170.3	1014	35	"
03 / 0000	43.1	169.8	1016	35	"

Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
03 / 0600					absorbed by extratropical low
24 / 1200- 1800			936	125	minimum pressure

Table 2. Ship reports with winds of at least 34 kt for Hurricane Fausto, 21 August - 03 September 2002.

Date/Time (UTC)	Ship call sign	Latitude (°N)	Longitude (°W)	Wind dir/speed (kt)	Pressure (mb)
24 / 0000	PFEW	10.5	114.9	200/35	1011.9
25 / 0000	PFEW	11.2	120.7	170/35	1012.0

Table 3. Preliminary forecast evaluation (heterogeneous sample) for Hurricane Fausto. Forecast errors for tropical storm and hurricane stages (n mi) are followed by the number of forecasts in parentheses. Errors smaller than the NHC official forecast are shown in bold-face type.

Forecast Technique	Forecast Period (h)				
	12	24	36	48	72
CLP5	40 (22)	94 (20)	143 (18)	201 (16)	285 (12)
GFDI	28 (21)	58 (20)	85 (18)	114 (16)	191 (12)
GFDL	24 (22)	51 (20)	74 (18)	100 (16)	165 (12)
LBAR	27 (22)	55 (20)	81 (18)	111 (16)	157 (12)
AVNI	25 (21)	<b>39 (20)</b>	58 (18)	81 (16)	137 (12)
AVNO	33 (22)	41 (20)	55 (18)	<b>70 (16)</b>	<b>118 (12)</b>
AEMI	23 (15)	<b>38 (14)</b>	<b>49 (12)</b>	<b>68 (11)</b>	120 ( 8)
BAMD	30 (22)	58 (20)	81 (18)	103 (16)	150 (12)
BAMM	26 (22)	42 (20)	<b>52 (18)</b>	<b>68 (16)</b>	<b>108 (12)</b>
BAMS	28 (22)	42 (20)	<b>52 (18)</b>	77 (16)	158 (12)
NGPI	29 (21)	52 (20)	89 (18)	133 (16)	210 (12)
NGPS	34 (20)	44 (19)	74 (17)	116 (15)	205 (12)
UKMI	24 (21)	42 (20)	64 (18)	82 (16)	<b>92 (12)</b>
UKM	30 (11)	46 (10)	60 ( 9)	80 ( 8)	<b>100 ( 6)</b>
GUNS	22 (21)	42 (20)	65 (18)	91 (16)	148 (12)
GUNA	<b>19 (21)</b>	<b>32 (20)</b>	<b>47 (18)</b>	<b>69 (16)</b>	<b>118 (12)</b>
OFCL	21 (21)	42 (20)	54 (18)	74 (16)	120 (12)
NHC Official (1992-2001 mean)	36 (2203)	67 (1947)	97 (1700)	125 (1472)	182 (1091)

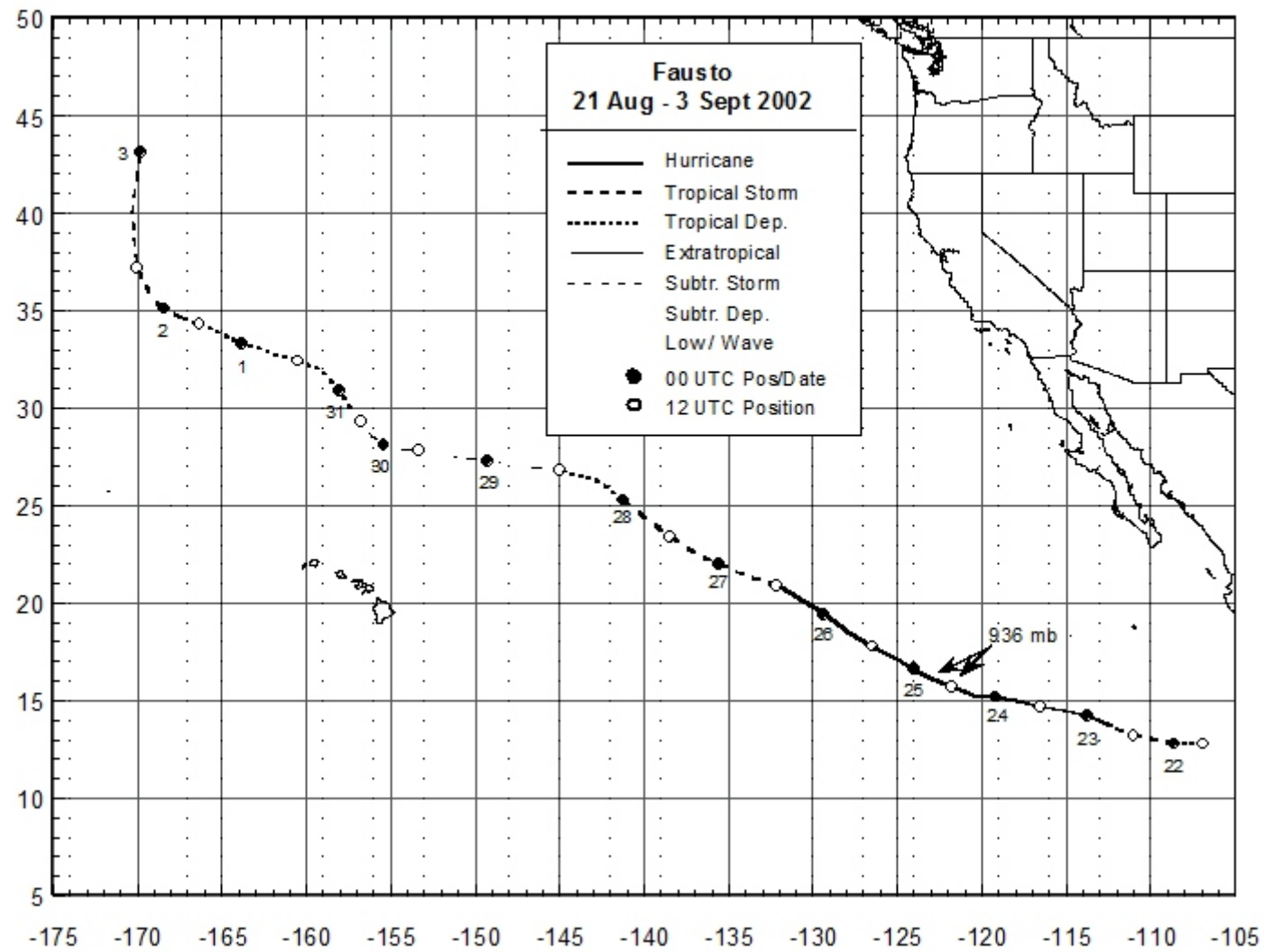


Figure 1. Best track positions for Hurricane Fausto, 21 August - 03 September 2002.



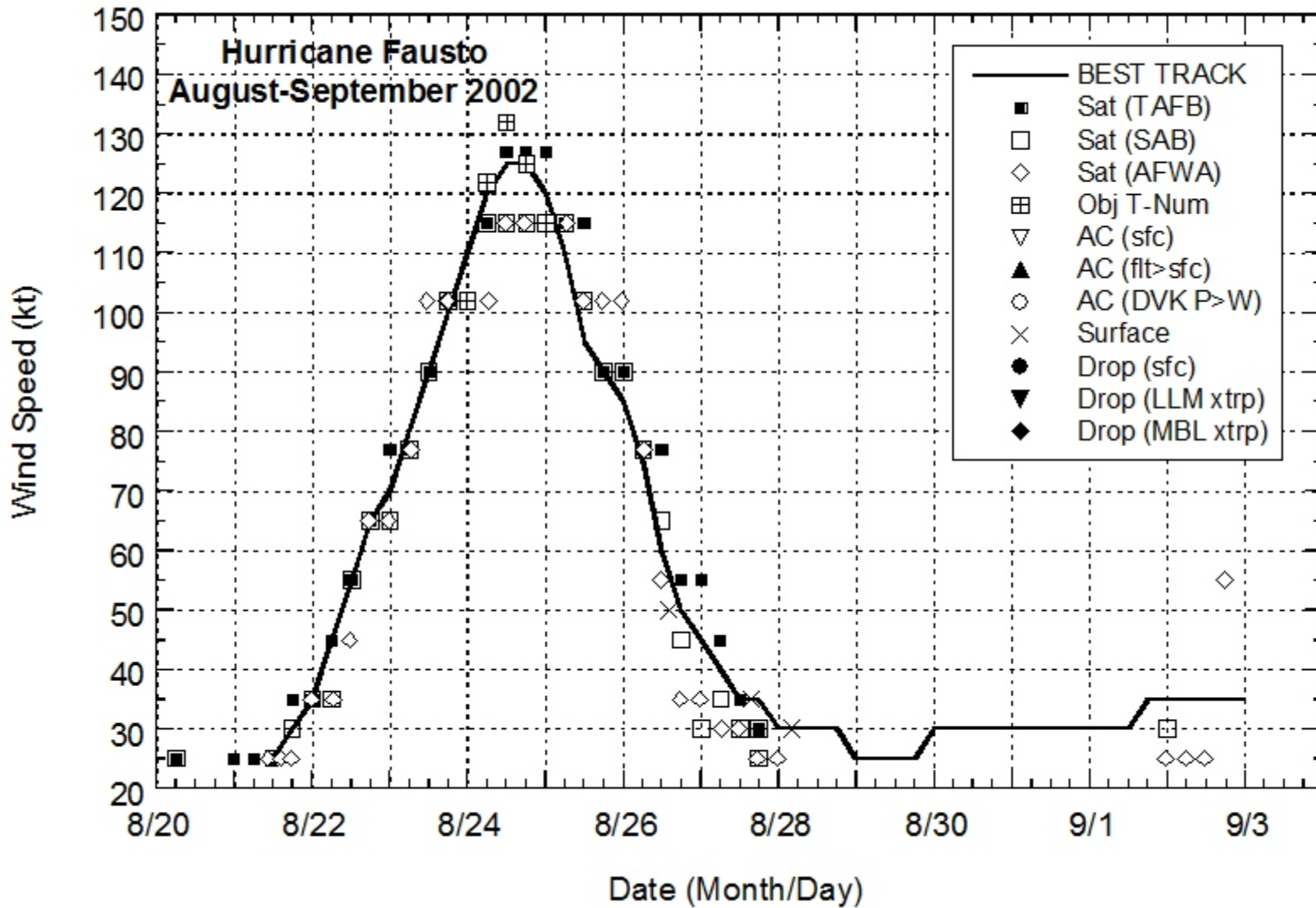


Figure 2. Selected wind observations and best track maximum sustained surface wind speed curve for Hurricane Fausto, 21 August - 03 September 2002. Objective Dvorak estimates represent linear averages over a three-hour period centered on the nominal observation time.

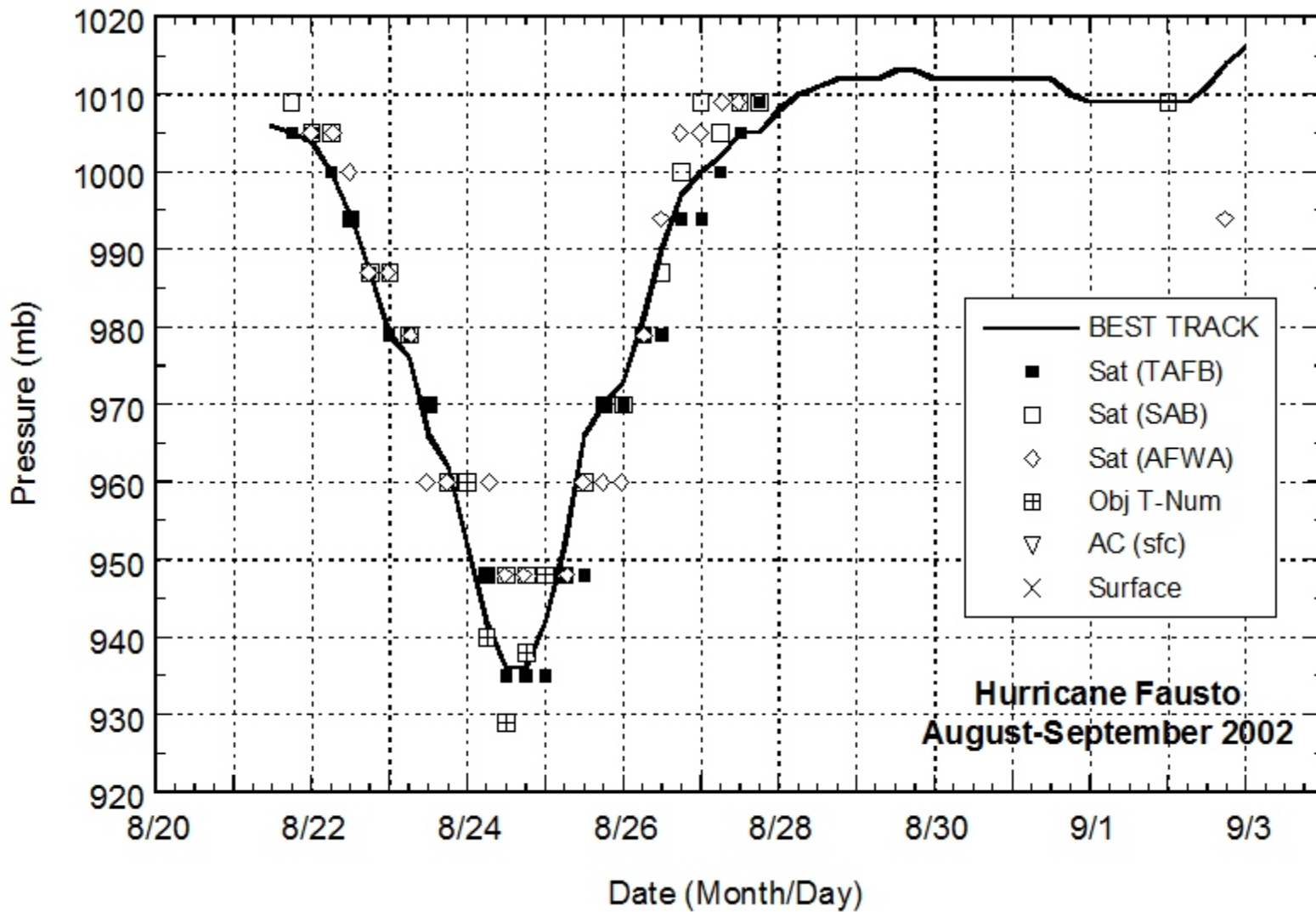


Figure 3. Selected pressure observations and best track minimum central pressure curve for Hurricane Fausto, 21 August - 03 September 2002. Objective Dvorak estimates represent linear averages over a three-hour period centered on the nominal observation time.