

Preliminary Report  
Tropical Storm Chantal  
13-22 July 1995

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a. Synoptic History

Chantal was a 60-knot tropical storm that developed just east of the Lesser Antilles, re-curved around the western periphery of the Atlantic subtropical high pressure ridge and became extratropical east of Newfoundland as it moved over the far north Atlantic Ocean. The best track locations are plotted in Fig. 1 and are listed in Table 1, along with the one-minute maximum wind speeds and minimum central surface pressures.

Chantal originated from a tropical wave which moved off of the coast of Africa on 5 July and soon showed signs of a low level cloud circulation. On the 12th, satellite imagery showed enough organization for the system to be upgraded to a tropical depression while it was located a few hundred miles east of the Lesser Antilles. An aircraft investigated on the 13th and confirmed the existence of a depression.

Even though there were signs of unfavorably strong upper level westerlies, the depression strengthened to a storm on the 14th, while centered a little over 200 n mi north-northeast of Puerto Rico. On the 15th, it threatened the southeast and central Bahamas as it was moving west-northwestward, but it gradually re-curved toward the north on the 16th and 17th and did not directly affect the Bahamas.

The storm's maximum one-minute surface wind of 60 knots is estimated to have been reached on the 17th as it was moving northward between Bermuda and the U.S. mid Atlantic coast. Although there was a brief threat to Bermuda, the center passed well to the west of there on the 18th. Chantal turned toward the northeast and accelerated across the North Atlantic shipping lanes where it became extratropical on the 20th.

b. Meteorological Statistics

Figures 2 and 3 show the minimum central surface pressure and maximum one-minute surface wind speed curves as a function of time, along with the data on which these curves are based. The storm was monitored by Air Force Reserve Unit reconnaissance aircraft from the 13th to the 18th. There were 40 penetrations into the center of the storm during this period, which averages to one fix every three hours. The lowest surface pressure reported from an aircraft was 991 mb at 2338 UTC on the 16th and the maximum wind speed was 67 knots at a flight level of 1500 feet a few hours earlier. Table 2 lists those ship observations for which the wind speed was near

tropical storm force or higher.

c. Casualty and Damage Statistics

No reports of casualties or damage have been received in connection with Chantal.

d. Forecast and Warning Critique

The government of the Bahamas issued a tropical storm warning for the southeastern Bahamas and the Turks and Caicos Islands and a tropical storm watch for the central Bahamas at 1600 UTC 15 July. The warning was discontinued at 1200 UTC on the 16th and the watch was discontinued three hours later. The government of Bermuda issued a tropical storm watch at 0300 UTC on the 16th. This watch was discontinued at 1500 UTC on the 18th. While tropical storm conditions did not materialize for the Bahamas, the National Hurricane Center official track forecasts on the 15th did bring the center of the storm within about 150 n mi to the north of these islands.

The following table lists the official track forecast errors for Chantal, along with the official track errors for the 1985-94 ten-year average:

forecast period(hr):	0	12	24	36	48	72
error(n mi):	11	47	94	152	192	269
no. of cases:	(28)	(28)	(28)	(27)	(25)	(21)
1985-94 average:	15	51	98	144	194	296

The official errors for Chantal are close to the previous ten-year averages. There was a left bias to the forecast track before re-curvature which resulted in tropical storm warnings for the Bahamas.

Table 1. Best track, Tropical Storm Chantal, 13-22 July 1995

Date/Time (UTC)	Position		Pressure (mb)	Wind Speed (kt)	Stage
	Lat. (°N)	Lon. (°W)			
12/0000	17.1	54.9	1012	25	trop. dep.
0600	17.5	56.5	1012	25	"
1200	18.1	58.3	1012	25	"
1800	18.7	59.9	1011	30	"
13/0000	19.2	61.0	1011	30	"
0600	19.6	61.9	1011	30	"
1200	20.1	62.7	1010	30	"
1800	20.6	63.6	1010	30	"
14/0000	21.1	64.4	1006	35	trop. storm
0600	21.1	64.9	1008	35	"
1200	21.1	65.2	1009	35	"
1800	21.3	65.5	1010	40	"
15/0000	21.8	66.0	1009	40	"
0600	22.3	66.7	1006	45	"
1200	22.7	67.5	1006	45	"
1800	23.2	67.9	1005	45	"
16/0000	23.7	68.2	1004	45	"
0600	24.5	68.4	999	50	"
1200	25.3	68.8	999	50	"
1800	26.2	69.1	997	55	"
17/0000	27.2	69.4	991	60	"
0600	28.2	69.6	995	60	"
1200	29.3	69.8	997	60	"
1800	30.5	69.8	995	55	"
18/0000	31.6	69.7	994	55	"
0600	32.6	69.0	994	55	"
1200	33.6	68.1	995	50	"
1800	34.6	67.3	996	50	"
19/0000	35.4	65.8	997	50	"
0600	36.2	64.1	997	50	"
1200	37.1	62.4	998	50	"
1800	38.2	60.2	998	50	"
20/0000	39.5	57.6	999	50	"
0600	41.1	54.7	999	50	"
1200	43.0	51.7	1000	50	"
1800	45.4	48.8	1000	50	extratropical
21/0000	47.7	45.2	1001	50	"
0600	49.7	41.6	1002	50	"
1200	51.4	37.0	1003	50	"
1800	53.0	31.0	1005	50	"
22/0000	55.0	20.0	1005	50	"
17/0000	27.2	69.4	991	60	Minimum Pressure

Table 2. Ship reports of 34 knots or higher wind speed,  
associated with Tropical Storm Chantal, July 1995.

date/time (UTC)	ship name	lat.(°)	lon.(°W)	wind dir & speed(kt)	Press. (mb)
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06/0000	C6MY	13.9	17.4	040/35	1004.5
13/1200		21.2	62.5	090/40	
13/1500		20.8	61.1	130/50	1014.0
13/1500		20.9	61.6	130/40	
14/1800	KMJL	22.6	65.1	100/40	1013.0
15/0000	KMJL	21.9	64.2	120/45	1012.0
17/0000	WVEZ	32.4	67.3	130/50	1005.0
17/1100	SEA LORD	30.1	68.0	SE /40	1012
18/1200	WXXM	32.3	68.4	220/35	1009.0
18/1800	WXXM	32.9	68.9	290/35	1010.2
19/1200		35.4	61.6	230/45	1018.0
19/1500	ICBA	37.1	59.1	160/50	1012.0
19/1800	KRPB	39.0	57.9	150/34	1009.1
19/1800	KRJP	36.1	59.0	220/35	1010.8
19/1800	ELRE5	35.3	62.3	250/40	1022.0
19/2100	KRPJ	36.1	59.5	220/35	1012.3
19/2100	KRPB	39.3	56.8	150/35	1009.1
20/0000	ICBA	36.7	61.1	250/40	1015.0

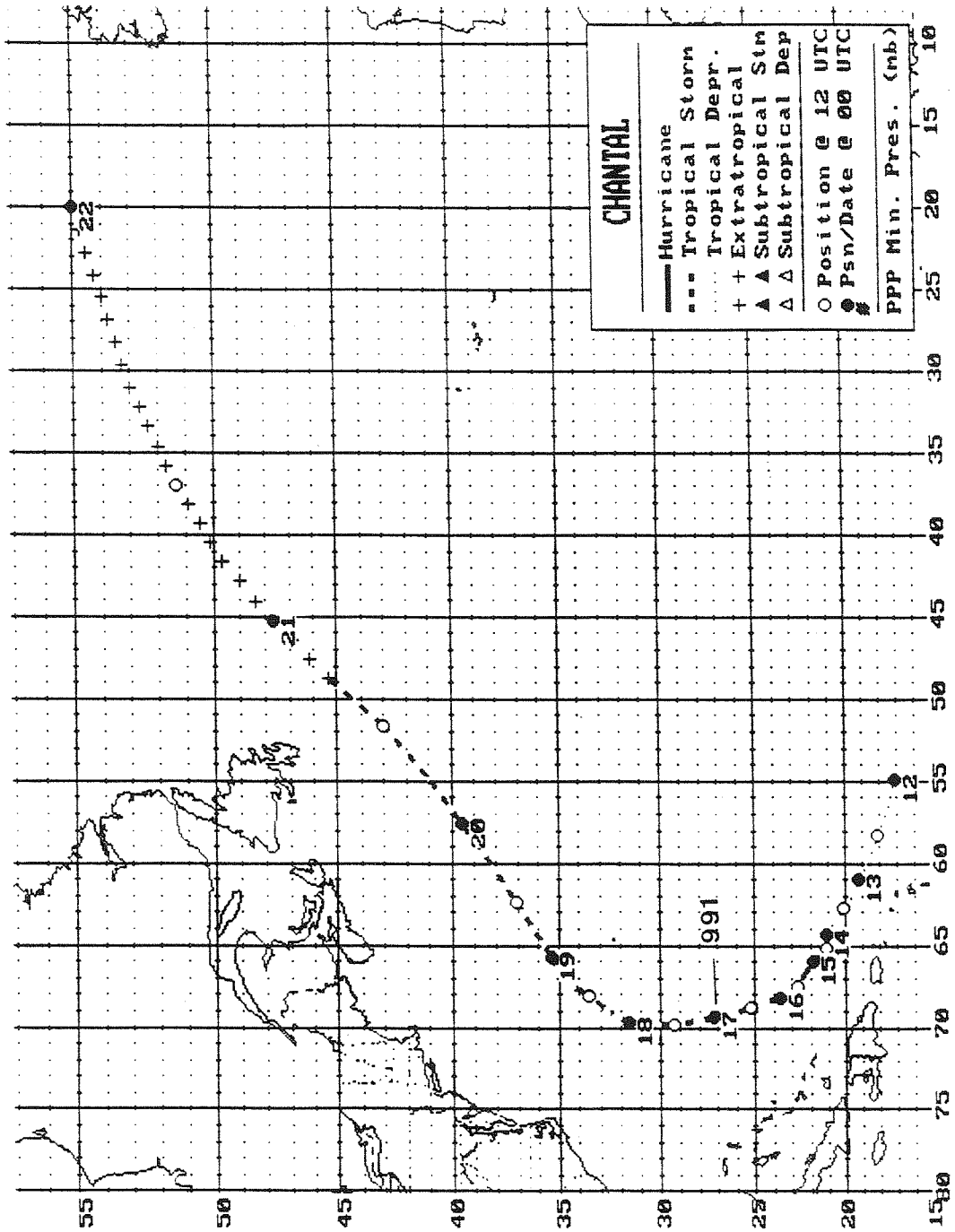


Fig. 1. Best track positions for Tropical Storm Chantal, 13-22 July 1995.

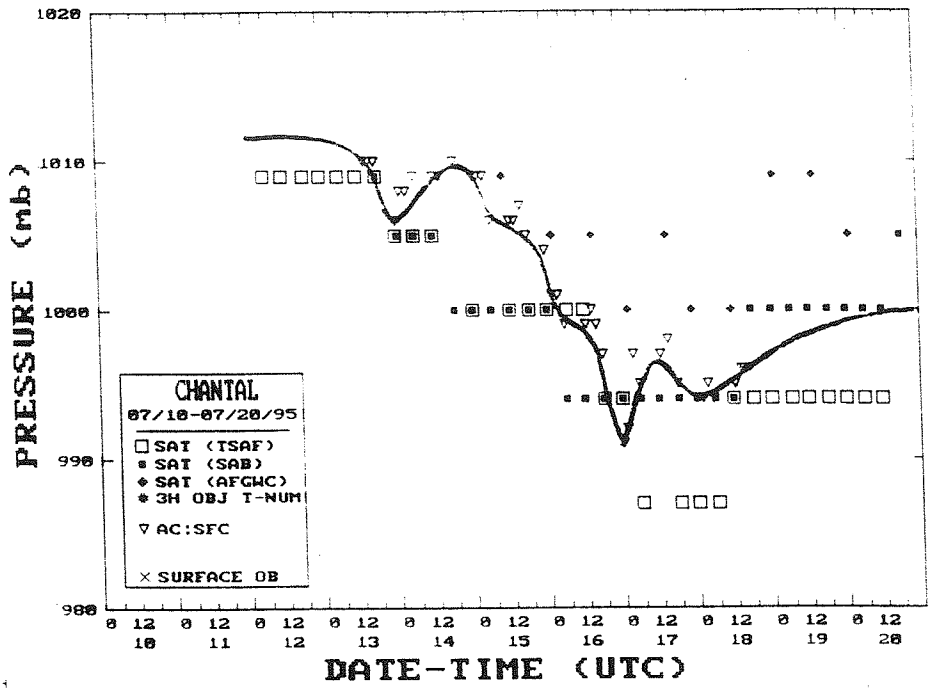


Fig. 2. Best track minimum central pressure curve for Tropical Storm Chantal.

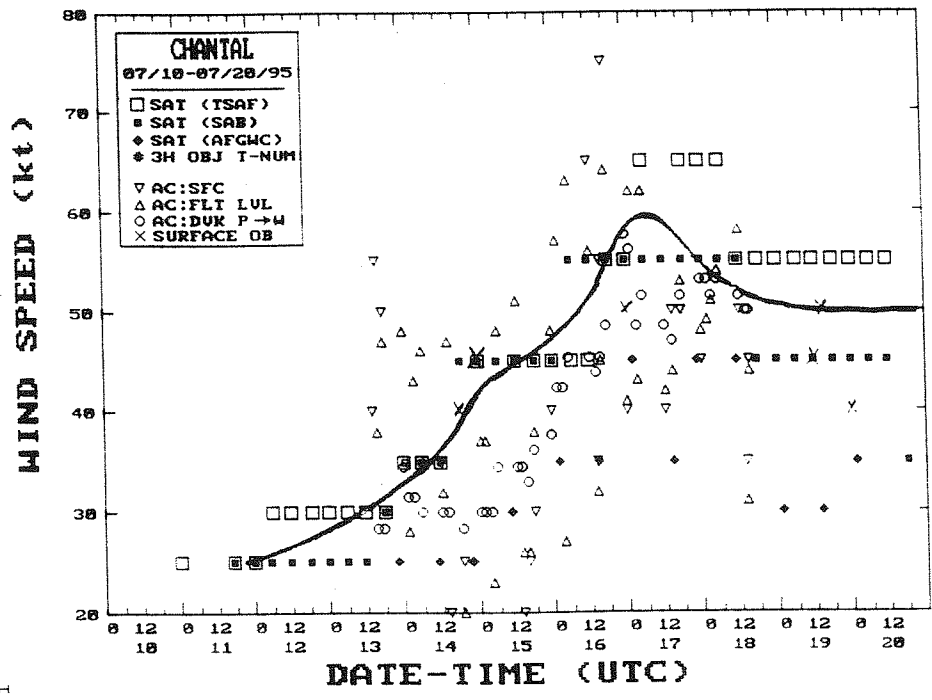


Fig. 3. Best track maximum one-minute wind speed curve for Tropical Storm Chantal.