

Preliminary Report
Tropical Storm Danny
7 - 11 September 1991

Tropical Storm Danny was the first named Atlantic storm of the 1991 season to form from purely tropical origins.

a. Synoptic History

A marked wind shift was noted at low levels in the Dakar soundings on 5 September as a tropical wave emerged from the northwest coast of Africa. The wave quickly acquired a banding-type pattern while over the far eastern Atlantic. As the wave continued westward over the Atlantic, analysis of METEOSAT images suggested that the wave developed into the seventh tropical depression of 1991 at 0000Z on 7 September while centered 270 n mi south-southwest of the southwesternmost Cape Verde Island.

The depression moved toward the west around 15 knots and was upgraded to Tropical Storm Danny at 1200 UTC on 8 September based on an analysis of Dvorak intensity estimates from the NHC, the NESDIS Synoptic Analysis Branch (SAB), and the Air Force Global Weather Central (AFGWC). Under the influence of a strong subtropical ridge to the north, Danny moved toward the west or west-northwest at 15 to 20 knots, except for about 12 hours on the 10th when the forward motion was in excess of 20 knots. Although Danny changed little in strength between 0600 UTC on the 9th and 1200 UTC on the 10th, the minimum surface pressure of 998 mb is estimated to have occurred near 0000 UTC on 10 September. At this time the center of Danny was embedded within a central dense overcast. Later on the 10th, the flow around an upper-level low centered near 22°N 60°W resulted in a shearing environment over the storm. Danny was downgraded to tropical depression status at 1200 UTC on 11 September while centered 180 n mi east of the island of Guadeloupe. The depression dissipated by 1800 UTC on the 11th at which time an Air Force Reserve Unit aircraft was unable to find more than a broad and ill-defined area of cyclonic turning, characteristic of a tropical wave. The cloudiness and showers associated with the remnants of Danny then moved toward the northwest and north, eventually merging with a frontal cloud band over the north central Atlantic.

The best track positions, the central pressure, and maximum sustained wind speeds every six hours are summarized in Figure 1 and in Table 1.

b. Meteorological Statistics

Figures 2 and 3 show the best track pressure and wind curves as a function of time, along with the observations on which the curves are based. The pressure and wind observations shown on

Figures 2 and 3 are Dvorak intensity estimates from GOES, METEOSAT, and DMSF satellite imagery.

c. Casualty and Damage Statistics

There were no reports of damage or casualties related to Tropical Storm Danny.

d. Forecast and Warning Critique

There were no warnings issued or necessary with Tropical Storm Danny.

Accurate positioning of Danny was difficult due to the fact that the storm rarely exhibited a well-defined center and because the storm spent much of its life midway between the GOES and METEOSAT subpoints. Preliminary average official track forecast errors were 118 n mi at 24 hours and 282 n mi at 48 hours. These errors are larger than the previous ten-year averages and are unusual for a low-latitude storm. The higher errors were likely due in large part to the somewhat anomalous rapid forward motion of the storm. Since Danny was a tropical storm for slightly less than 3 days, there were no verifications at the 72 hour period. None of the track prediction models had consistently lower mean forecast errors than the official forecasts, except for the QLM (QLM forecasts had only 3 cases at 24 hours and 2 cases at 48 hours.).

Intensity forecasts, in general, indicated the correct trends, except for the weakening into a tropical wave just east of the Lesser Antilles which was not predicted. It is interesting to note that some of the satellite intensity estimates were still 35 knots nearly 24 hours after data from a reconnaissance aircraft failed to show an organized vortex (Fig. 3).

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Figure Captions:

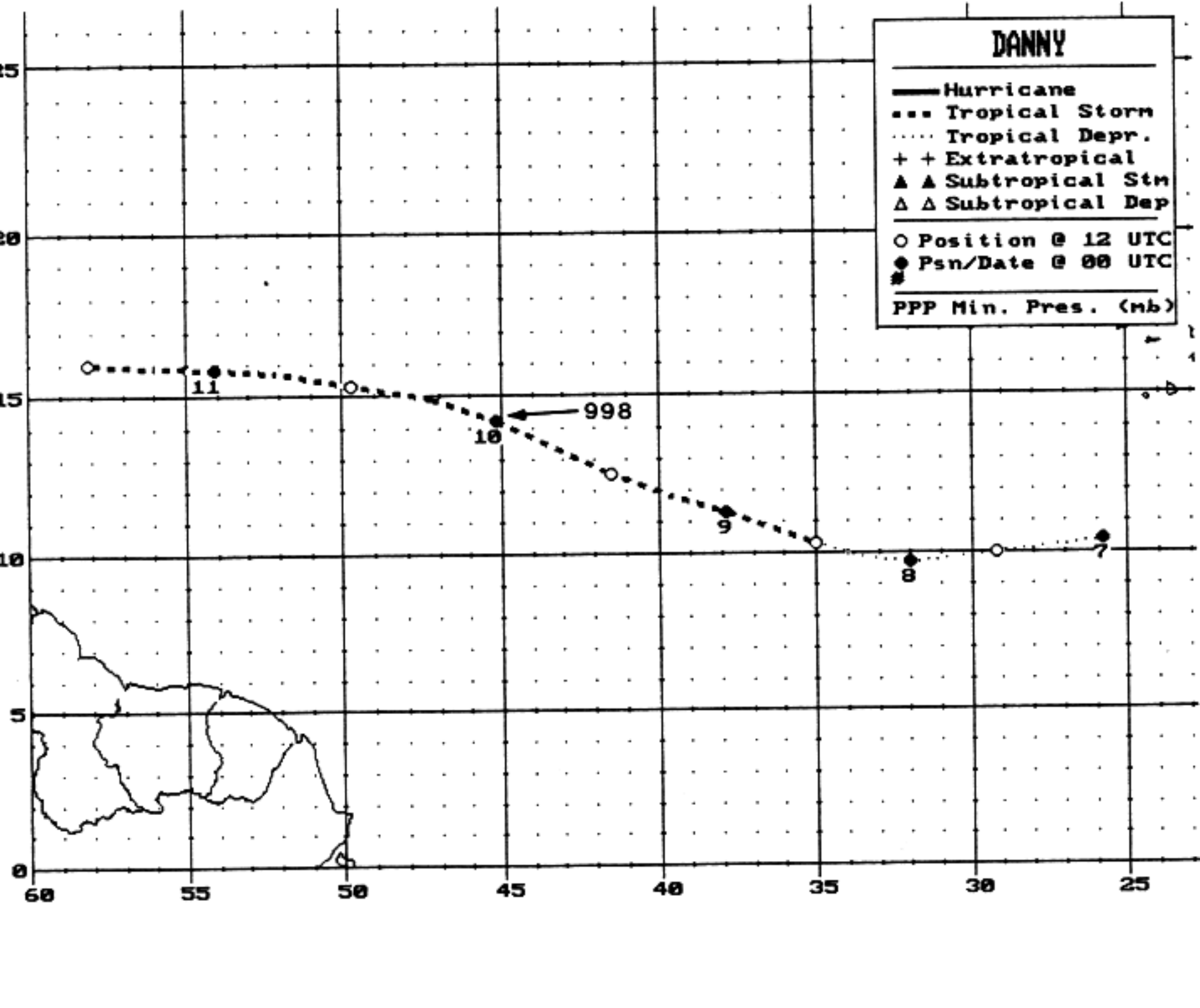
- Fig. 1. Best track positions for Tropical Storm Danny, 7 - 11 September 1991.
- Fig. 2. Best track minimum central pressure curve for Tropical Storm Danny.
- Fig. 3. Best track maximum sustained wind speed curve for Tropical Storm Danny.

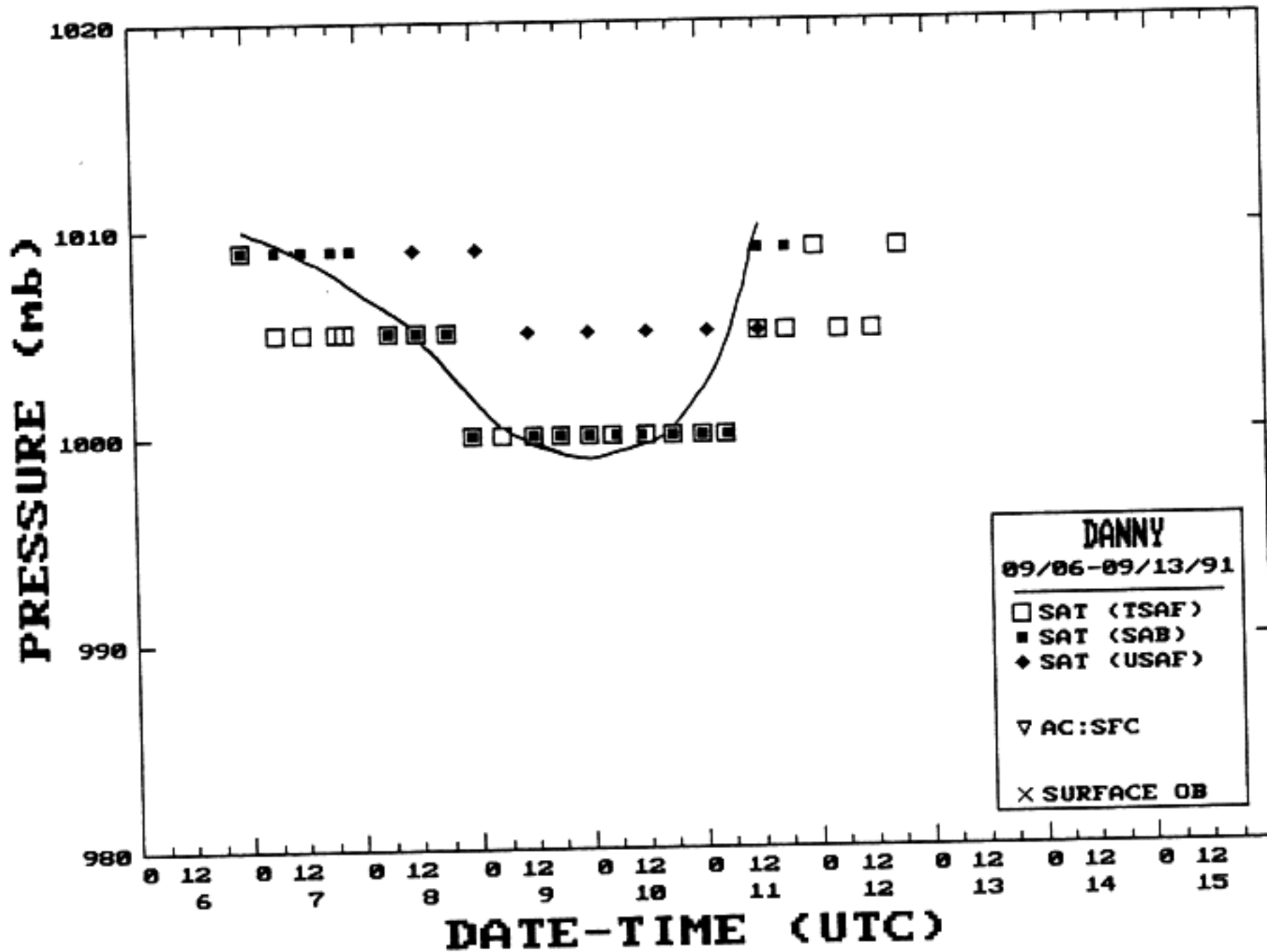
Table 1. Preliminary best track, Tropical Storm Danny,
7 - 11 September 1991.

Date/Time (UTC)	Position		Pressure (mb)	Wind Speed (kt)	Stage	
	Lat. (°N)	Lon. (°W)				
07/0000	10.4	25.8	1010	25	Trop. Depression	
0600	10.2	27.5	1009	25	"	"
1200	10.0	29.2	1008	25	"	"
1800	9.8	30.6	1008	30	"	"
08/0000	9.7	32.0	1007	30	"	"
0600	9.8	33.4	1006	30	"	"
1200	10.3	35.0	1005	35	Tropical Storm	
1800	10.8	36.5	1004	40	"	"
09/0000	11.3	37.9	1002	40	"	"
0600	11.8	39.6	1000	45	"	"
1200	12.5	41.5	999	45	"	"
1800	13.4	43.4	999	45	"	"
10/0000	14.2	45.2	998	45	"	"
0600	14.9	47.3	999	45	"	"
1200	15.3	49.7	999	45	"	"
1800	15.7	52.1	1000	40	"	"
11/0000	15.8	54.1	1002	35	"	"
0600	15.9	56.1	1005	35	"	"
1200	16.0	58.1	1010	30	Trop. Depression	
1800					Dissipated	
10/0000	14.2	45.2	998	45	Minimum Pressure	

DANNY

- Hurricane
- - Tropical Storm
- ... Tropical Depr.
- + + Extratropical
- ▲▲ Subtropical Stm
- △△ Subtropical Dep
- Position @ 12 UTC
- Psn/Date @ 00 UTC
- ★
- PPP Min. Pres. (mb)





WIND SPEED (kt)

