Tropical Cyclone Report
Tropical Storm Peter
7-11 December, 2003

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17 December 2003

Peter became the 16th named tropical cyclone of the 2003 Atlantic hurricane season. This is the first time since 1887 that two tropical storms have formed in December.

a. Synoptic History

A large extratropical gale was located in the far eastern Atlantic on 5 December. The gale cut off from the westerlies and moved southward for two days. By 7 December, the gale began to develop some convection and it is estimated that it became a subtropical storm at 1800 UTC 7 December. As the cyclone moved farther south over warmer waters, the convection became concentrated near the center and it developed well-defined cyclonically-curved bands of showers suggesting that the cyclone had acquired tropical characteristics. It is estimated that Peter became a tropical storm at 0600 UTC 9 December and reached its maximum winds of 60 knots and a minimum pressure of 990 mb around 1800 UTC 9 December while located about 700 n mi west-northwest of the Cape Verde Islands. Figure 1 shows Tropical Storm Peter during its most impressive satellite presentation. By then, Peter was already moving northward ahead of a strong approaching cold front. This was the same frontal system that had absorbed Tropical Storm Odette a few days earlier. Thereafter, the effects of strong upper-level winds and cooler sea-surface temperatures caused a rather rapid weakening of the tropical cyclone. By 0000 UTC on 10 December, the satellite appearance had deteriorated significantly and by 1200 UTC Peter was a tight swirl of low clouds with estimated winds of 30 knots. Peter continued to move toward the north and north-northeastward over cooler waters and became an extratropical low by 0600 UTC 11 December. A few hours later, the system was absorbed by a cold front.

The "best track" chart of the tropical cyclone's path is given in Fig. 2, with the wind and pressure histories shown in Figs. 3 and 4, respectively. The best track positions and intensities are listed in Table 1.

b. Meteorological Statistics

Observations in Tropical Storm Peter (Figs. 3 and 4) primarily consist of 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). Visible satellite imagery and microwave data suggested the development of an eye feature that was best defined around 1515 UTC 9 December. In general, the presence of an eye feature on satellite imagery would

correspond to a tropical cyclone of hurricane intensity. In fact, the 3-h average objective Dvorak T-number was 4.0 during that period. However, the eye feature was transient and by 1800 UTC it had begun to dissipate. The best estimate of the maximum winds associated with Peter is 60 knots.

c. Casualty and Damage Statistics

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

d. Forecast and Warning Critique

Peter was a short-lived tropical cyclone, with too few forecasts to provide useful verification analysis. Advisories were initiated when the system became a tropical storm. Previously, the system was considered a gale center and the forecast information was included in the Tropical Prediction Center High Seas Forecast. However, after a post-analysis of satellite imagery, the system was classified as a subtropical storm for the first 36 hours in the best track. Thereafter, the decision to classify the cyclone as tropical was heavily based on the satellite presentation. The cloud pattern was typical of a tropical cyclone when advisories were initiated. Global models were able to forecast well in advance, the development of the gale which eventually became Peter.

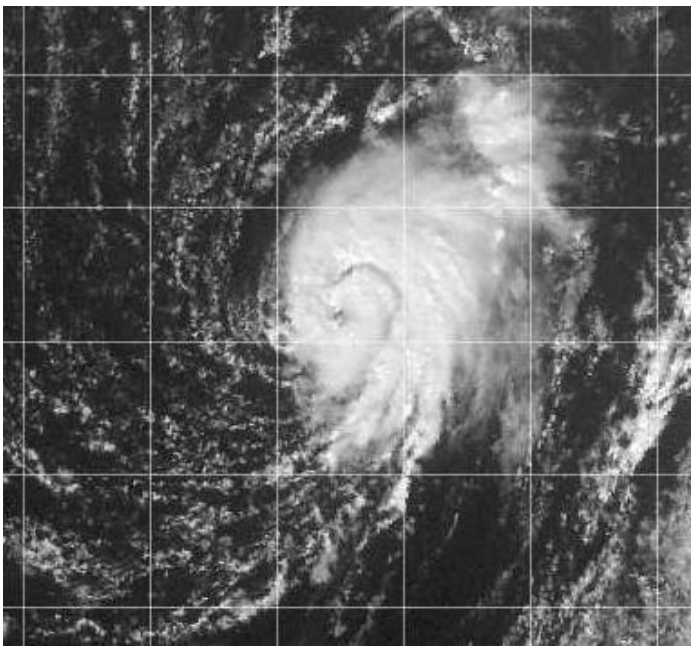

Figure 1. GOES-12 visible satellite image of Tropical Storm Peter at 1515 UTC 9 December, 2003. The image shows the banding-eye feature normally associated with tropical cyclones of hurricane intensity. However, this feature was too transient to assume that Peter reached hurricane status.

Table 1. Best track for Tropical Storm Peter, 7-11 December 2003.

Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
07 / 1800	27.5	34.5	1005	40	subtropical storm
08 / 0000	26.1	34.8	1004	40	"
08 / 0600	24.1	35.8	1004	40	"
08 / 1200	22.4	36.8	1004	40	"
08 / 1800	20.7	37.9	1004	40	"
09 / 0000	20.4	37.7	1002	40	"
09 / 0600	20.0	37.4	998	40	tropical storm
09 / 1200	19.5	37.2	992	50	"
09 / 1800	21.0	37.0	990	60	"
10 / 0000	22.2	37.0	1000	45	"
10 / 0600	23.1	37.1	1005	35	"
10 / 1200	23.8	37.1	1005	30	tropical depression
10 / 1800	25.0	36.7	1005	30	"
11 / 0000	26.0	36.2	1005	30	"
11 / 0600	27.5	35.0	1009	30	extratropical
11 / 1200					absorbed by a front
09 / 1800	21.0	37.0	990	60	minimum pressure

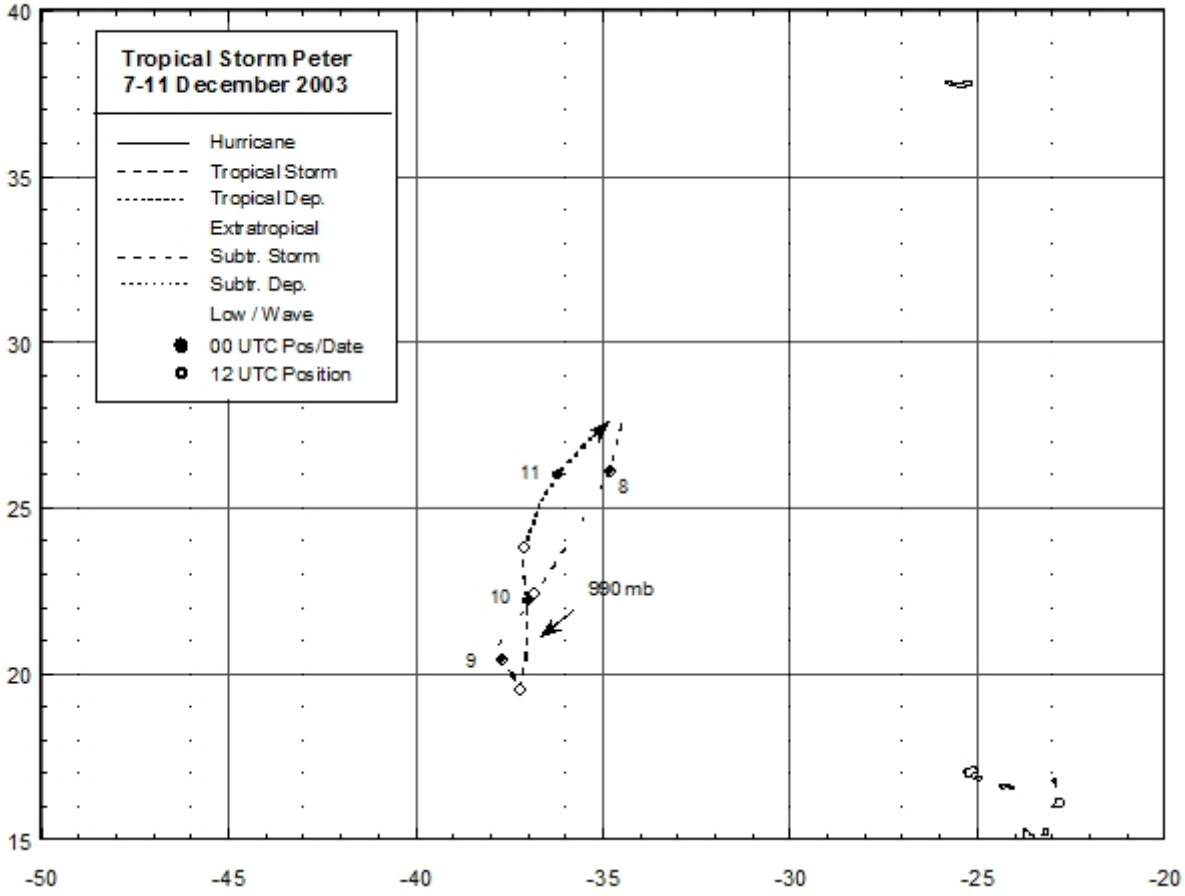

Figure 2. Best track positions for Tropical Storm Peter, 7-11 December, 2003.

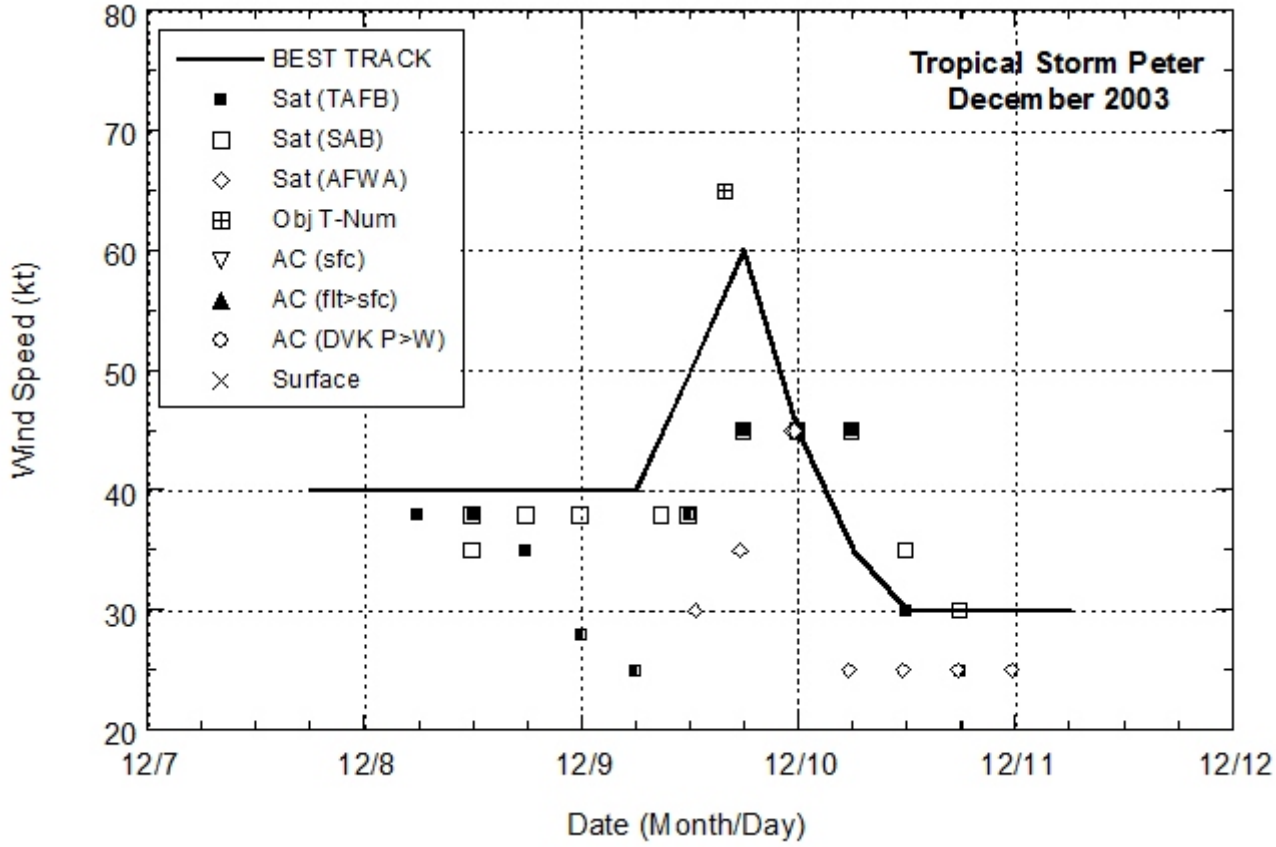

Figure 3. Best track maximum sustained surface wind speed curve for Tropical Storm Peter, 7- 11 December, 2003. See text for discussion of the peak intensity.

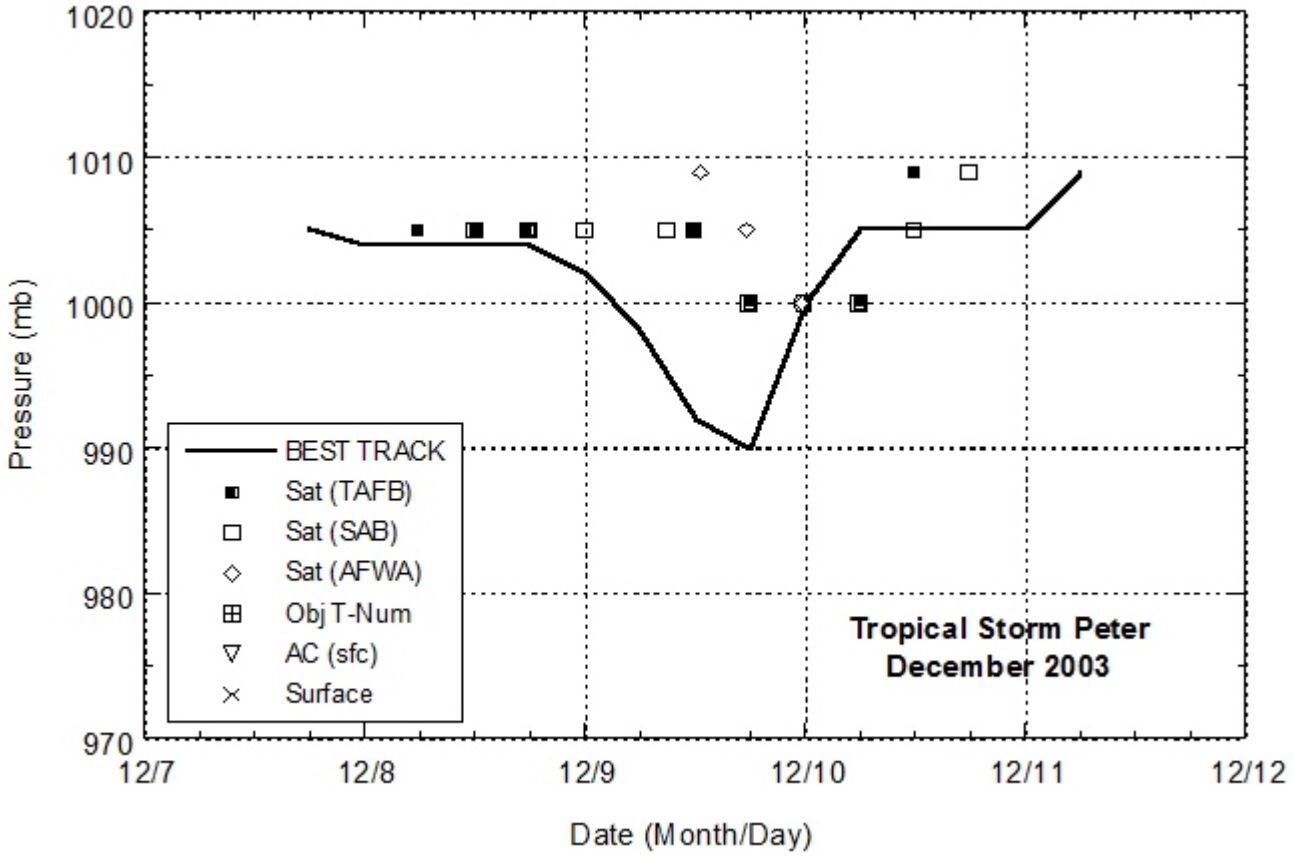

Figure 4. Best track minimum central pressure curve for Tropical Storm Peter, 7-11 December, 2003.