

Tropical Cyclone Report
Tropical Storm Mindy
10-14 October 2003

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Mindy was a tropical storm with maximum sustained winds of 40 kt that produced heavy rain over portions of Puerto Rico and the Dominican Republic.

a. Synoptic History

Mindy originated from a tropical wave that moved from Africa to the Atlantic Ocean on 1 October. The wave axis neared the vicinity of the Mona Passage on 9 October where there was a weakness in the subtropical ridge. On 10 October, in strong southwesterly vertical shear, the wave acquired a weak low-level circulation that moved northwestward across the eastern Dominican Republic. Later that day, the circulation, accompanied by rather disorganized convection, moved over the Atlantic Ocean and became Tropical Storm Mindy with 40-kt winds. Mindy turned northward around the western periphery of the subtropical ridge over the next two days and gradually weakened in southwesterly to westerly vertical wind shear of 20 to 25 kt. Mindy weakened to a depression on 12 October and then turned eastward ahead of an approaching short-wave trough in the westerlies. Devoid of deep convection, the remaining swirl of low clouds dissipated early on 14 October while located about 400 n mi south-southwest of Bermuda.

The center of Mindy passed near the Turks and Caicos Islands on 11 October, but heavy rain and tropical storm force winds remained east of these islands.

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 Mindy (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), as well as flight-level observations from flights of the 53rd Weather Reconnaissance Squadron of the U. S. Air Force Reserve Command. A reconnaissance aircraft flew into the system as it moved away from the Dominican Republic. At first, aircraft wind observations at 1500 ft flight level did not show a closed circulation. By 2146 UTC, a closed circulation was observed, along with a minimum surface pressure of 1002 mb. The aircraft data is the basis for identifying Mindy as a tropical cyclone at 1800 UTC. An aircraft-measured wind speed of 54 kt at a flight level of 1500 ft, along with subjective Dvorak satellite estimates of 35-45 kt, are the reasons for assigning a wind speed of 40 kt to Mindy at its inception as a tropical cyclone.

There were no ship reports with tropical storm force wind speeds in connection with Mindy. Grand Turk reported 27 kt and 1007.1 mb on 11 October as Mindy passed just east of this location.

c. Casualty and Damage Statistics

Mindy produced periods of heavy rain over portions of Puerto Rico and the eastern Dominican Republic, but there were no reports of damages or casualties.

d. Forecast and Warning Critique

Average official track errors (with the number of cases in parentheses) for Mindy were 40 (12), 95 (10), 184 (8), 292 (6), and 414 (2) n mi for the 12, 24, 36, 48, and 72 h forecasts, respectively¹. These errors are considerably larger than the average official track errors for the 10-yr period 1993-2002 (45, 81, 116, 150, and 225 n mi). These large errors were the result of not correctly forecasting the sharp turn toward the east on 12 October. The guidance models also had large errors for the same reason. Mindy did not last long enough to verify any 96 and 120 h forecasts.

Average official intensity errors were 3, 9, 14, 18, and 23 kt for the 12, 24, 36, 48, and 72 h forecasts, respectively. For comparison, the average official intensity errors over the 10-yr period 1993-2002 are 6, 10, 13, 15, and 19 kt, respectively.

A tropical storm warning was issued for the Southeastern Bahamas and the Turks and Caicos Islands (Table 2). However, tropical storm conditions passed just east of the warned area.

¹ All forecast verifications in this report include the depression stage of the cyclone. National Hurricane Center verifications presented in these reports prior to 2003 did not include the depression stage.

Table 1. Best track for Tropical Storm Mindy, 10-14 October 2003.

Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
10/1800	19.1	68.8	1004	40	tropical storm
11/0000	20.1	69.7	1002	40	“
11/0600	20.9	70.4	1003	40	“
11/1200	21.8	71.3	1007	35	“
11/1800	22.7	71.5	1007	35	“
12/0000	23.6	71.9	1006	35	“
12/0600	24.0	72.4	1007	30	tropical depression
12/1200	24.7	72.2	1008	30	“
12/1800	25.5	72.0	1008	30	“
13/0000	25.6	71.0	1008	30	“
13/0600	25.7	70.3	1008	30	“
13/1200	25.8	69.3	1008	30	“
13/1800	25.9	68.3	1007	30	“
14/0000	25.9	67.7	1008	25	“
14/0600	dissipated				
11/0000	20.1	69.7	1002	40	minimum pressure

Table 2. Watch and warning summary for Tropical Storm Mindy, 10-14 October 2003.

Date/Time (UTC)	Action	Location
10/2100	tropical storm warning issued	southeastern Bahamas and Turks and Caicos islands
11/1500	tropical storm warning discontinued	southeastern Bahamas and Turks and Caicos islands

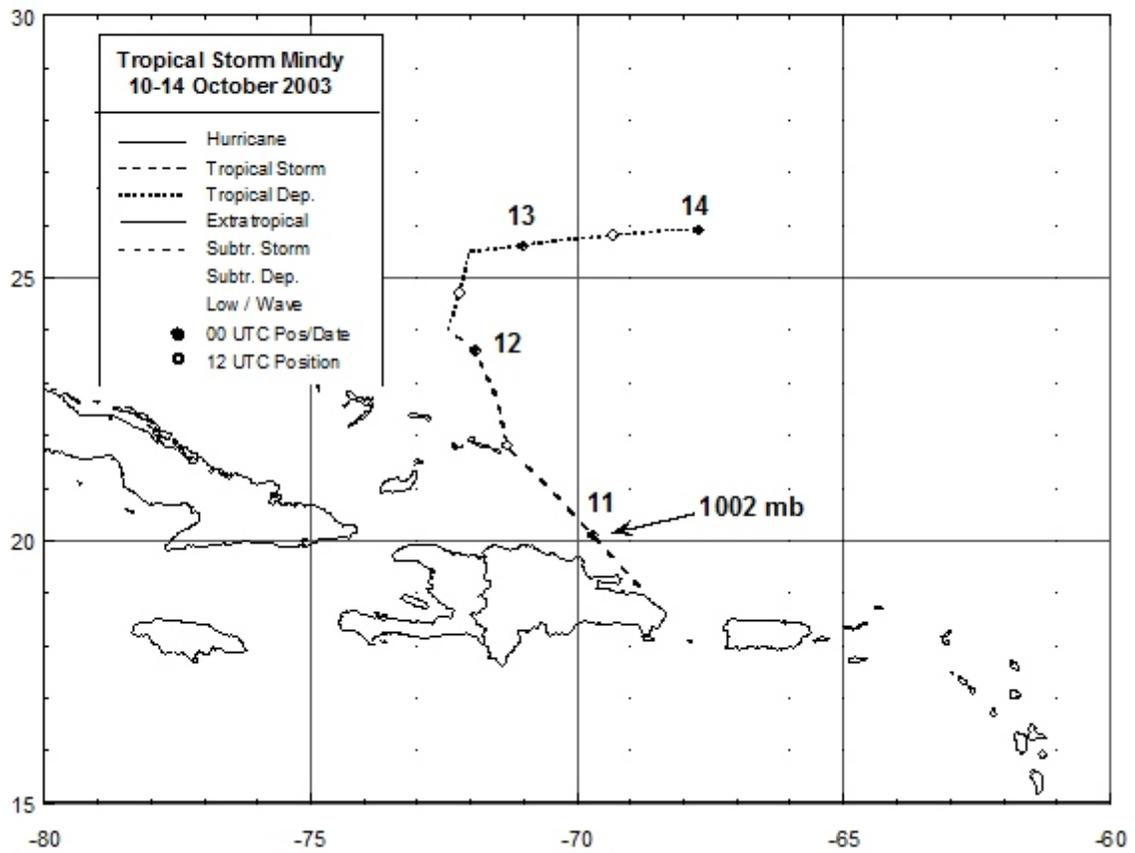


Figure 1. Best track positions for Tropical Storm Mindy, 10-14 October 2003.

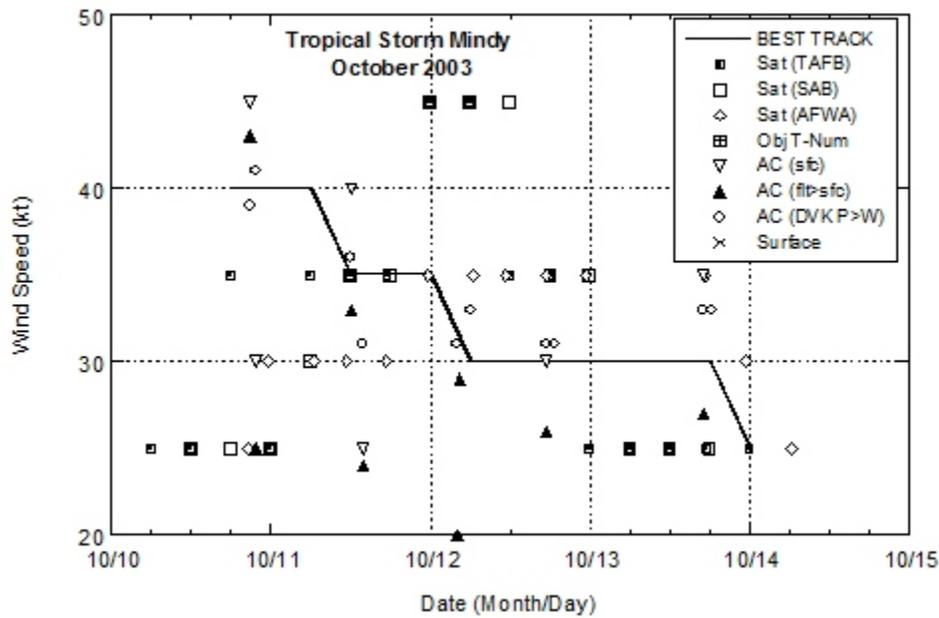
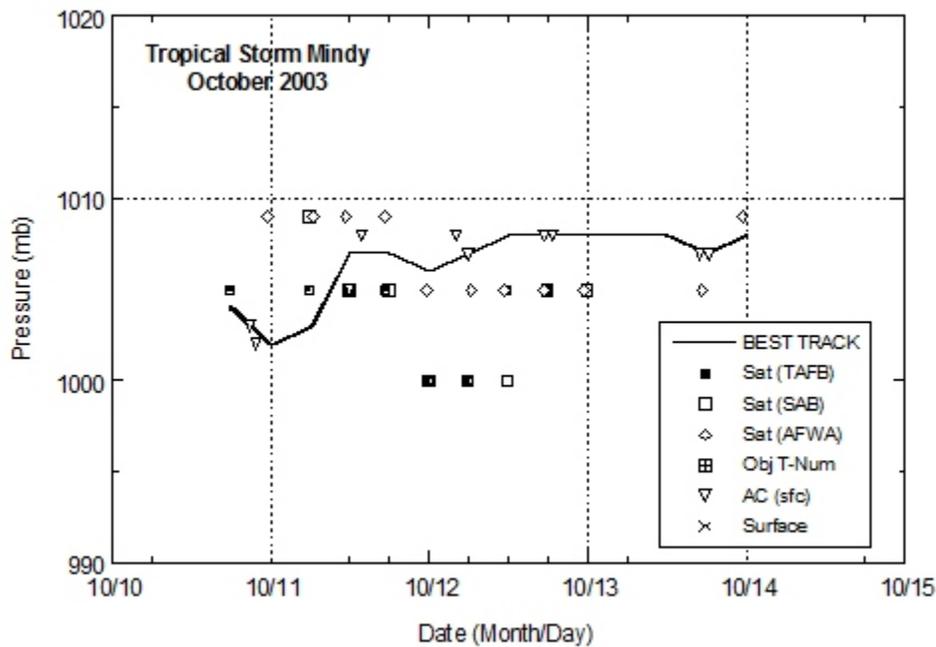


Figure 2. Selected wind observations and best track maximum sustained surface wind speed curve for Tropical Storm Mindy, 10-14 October 2003.



Aircraft observations have been adjusted for elevation using 90%, 80%, and 80% reduction factors for observations from 850 mb, and 1500 ft, respectively.

Figure 3. Selected pressure observations and best track minimum central pressure curve for Tropical Storm Mindy, 10-14 October 2003.