

Tropical Cyclone Report
Tropical Storm Boris
8-11 June 2002

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Boris was a short-lived tropical storm that brought heavy rains to portions of the southwest coast of Mexico.

a. Synoptic History

Boris appears to have developed from an interaction of an Atlantic tropical wave with a broad and persistent eastern North Pacific disturbance southwest of Acapulco, Mexico. On 1 June, a broad trough of low pressure, accompanied by a large area of showers and thunderstorms, extended from the Gulf of Tehuantepec southwestward for several hundred miles. The disturbance remained nearly stationary with little change in structure until 6 June, when convection became more concentrated about 200 n mi southwest of Acapulco. A tropical wave, which was located in the extreme southwestern Caribbean Sea on 1 June, moved slowly westward and was near the Gulf of Tehuantepec by late on 6 June. As the wave reached the disturbance on 7 June, the organization of the disturbed weather increased and Dvorak classifications began. By 1200 UTC 8 June, the system had developed a distinct circulation center with enough organized convection to be considered a tropical depression. At this time the center of circulation was located about 150 n mi west-southwest of Acapulco.

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 moved to the west-northwest at 7-8 kt and strengthened during the day, reaching tropical storm status by 0000 UTC 9 June, when it was about 150 n mi south-southeast of Manzanillo, Mexico. Boris reached its peak intensity of 50 kt at 0600 UTC 9 June. At this point, Boris’ forward speed slowed dramatically when the cyclone became caught between weak mid-level ridges to its north and south. However, upper-level easterly flow did not abate and the resultant easterly shear put an end to the intensification stage. Boris moved little on 9 June and began to weaken late in the day. On 10 June, Boris drifted to the northeast and then east while generating very little deep convection, and weakened back to a depression by 1800 UTC, when it was located about 100 n mi south-southeast of Manzanillo. The last deep convection occurred early on 11 June, and Boris degenerated to a non-convective remnant low by 1800 UTC 11 June. The remnant low then moved southeastward and had dissipated by 0600 UTC 12 June.

b. Meteorological Statistics

Observations in Boris (Figs. 2 and 3) used to construct the best track are largely limited to

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). The peak objective Dvorak intensity estimate is included for completeness, but was likely contaminated by an erroneous assumed center position; it was disregarded in the construction of the best track. The ship ELYL8 (**P&O NEDLLOYD AMAZON**) reported 39 kt winds and a pressure of 1003.8 mb at 2100 UTC 9 June, when it was located about 75 n mi north of Boris' center. No tropical storm force winds were reported over land. An isolated 60 kt rain-flagged QuikSCAT vector appeared in the 1232 UTC 9 June overpass; this has been discounted as neighboring values were in the 35- 40 kt range.

The National Meteorological Service of Mexico reported maximum storm total rainfalls for the period 8-11 June from the following states: Michoacan 163.4 mm (6.43 in), Jalisco 130.2 mm (5.13 in), Guerrero 118 mm (4.65 in), and Colima 98.1 mm (3.86 in). Specific observation sites were not provided.

c. Casualty and Damage Statistics

The Associated Press reported that several homes along the Mexican coast were damaged due to heavy rains from Boris. The precise location of this damage was not reported. There was also a report of damage to homes in the town of Tequila in western Jalisco due to heavy rainfall, but these rains were not likely associated with the tropical cyclone. There are no known reports of casualties associated with Boris.

d. Forecast and Warning Critique

Boris was a tropical storm for less than 48 h. Average official track errors (with the number of cases in parentheses) for Boris were 46 (5), 105 (3), and 191 (1) n mi for the 12, 24, and 36 h forecasts, respectively. These errors are greater than the average official track errors for the 10-yr period 1992-2001 (36, 67, and 97 n mi, respectively). Initial forecasts of Boris' track relied mostly on the BAM and statistical guidance models and did not anticipate the abrupt decrease in forward speed. However, both the GFDI and AVNI did forecast the slowdown and their errors were lower than the official forecast.

Average official intensity errors were 8, 12, and 10 kt for the 12, 24, and 36 h forecasts, respectively. For comparison, the average official intensity errors over the 10-yr period 1992-2001 are 7, 12, and 16 kt, respectively.

A tropical storm watch was issued at 2100 UTC 8 June for the coast of Mexico from Punta San Telmo to Cabo Corrientes. The watch was discontinued at 1500 UTC 10 June.

Table 1. Best track for Tropical Storm Boris, 8-11 June 2002.

| Date/Time (UTC) | Latitude (°N) | Longitude (°W) | Pressure (mb) | Wind Speed (kt) | Stage |
|--------------------|------------------|-------------------|------------------|--------------------|---------------------|
| 08 / 1200 | 16.1 | 102.4 | 1004 | 25 | tropical depression |
| 08 / 1800 | 16.5 | 103.1 | 1004 | 30 | " |
| 09 / 0000 | 16.6 | 103.8 | 1002 | 40 | tropical storm |
| 09 / 0600 | 16.8 | 104.1 | 997 | 50 | " |
| 09 / 1200 | 16.9 | 104.2 | 997 | 50 | " |
| 09 / 1800 | 17.1 | 104.3 | 1000 | 50 | " |
| 10 / 0000 | 17.2 | 104.2 | 1000 | 45 | " |
| 10 / 0600 | 17.3 | 104.1 | 1002 | 40 | " |
| 10 / 1200 | 17.3 | 103.9 | 1004 | 35 | " |
| 10 / 1800 | 17.1 | 103.7 | 1004 | 30 | tropical depression |
| 11 / 0000 | 17.1 | 103.6 | 1004 | 30 | " |
| 11 / 0600 | 17.1 | 103.5 | 1004 | 25 | " |
| 11 / 1200 | 17.1 | 103.3 | 1004 | 25 | " |
| 11 / 1800 | 17.0 | 103.2 | 1006 | 20 | remnant low |
| 12 / 0000 | 16.8 | 102.7 | 1006 | 20 | " |
| 12 / 0600 | | | | | dissipated |
| 09 / 0600 | 16.8 | 104.1 | 997 | 50 | minimum pressure |

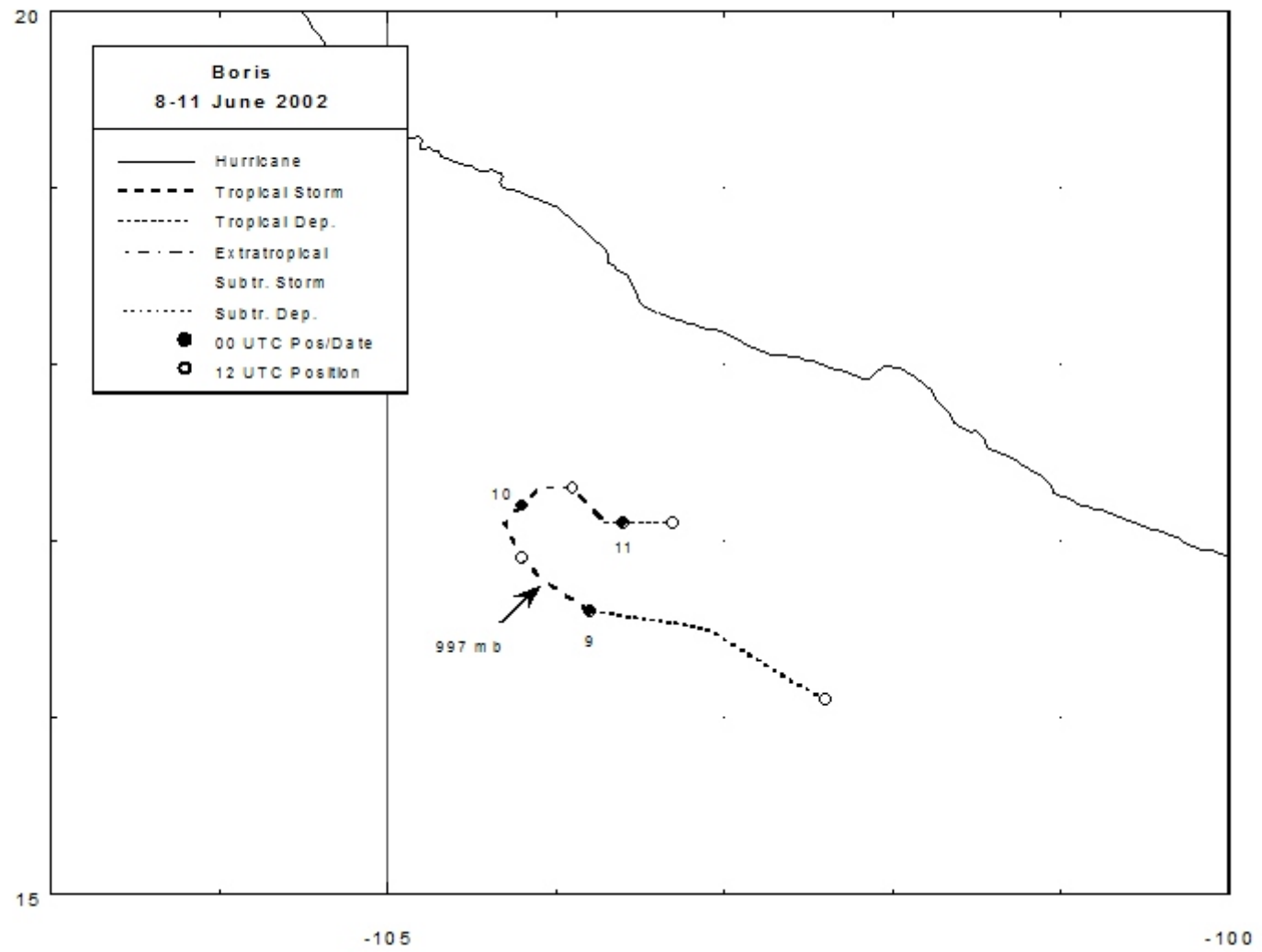


Figure 1. Best track positions for Tropical Storm Boris, 8-11 June 2002.

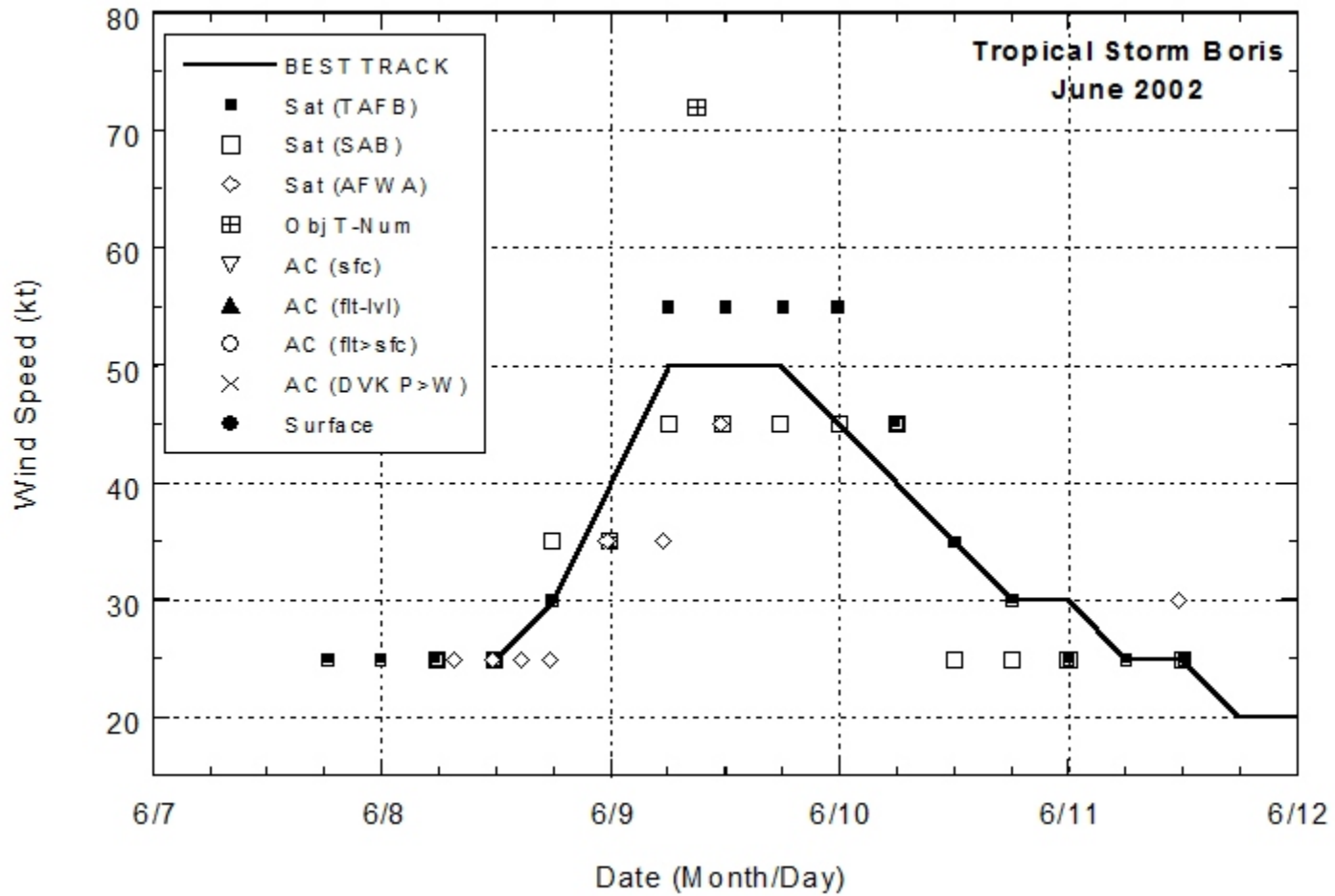


Figure 2. Selected wind observations and best track maximum sustained surface wind speed curve for Tropical Storm Boris, 8-11 June 2002. Objective Dvorak estimate is a 3-h average.

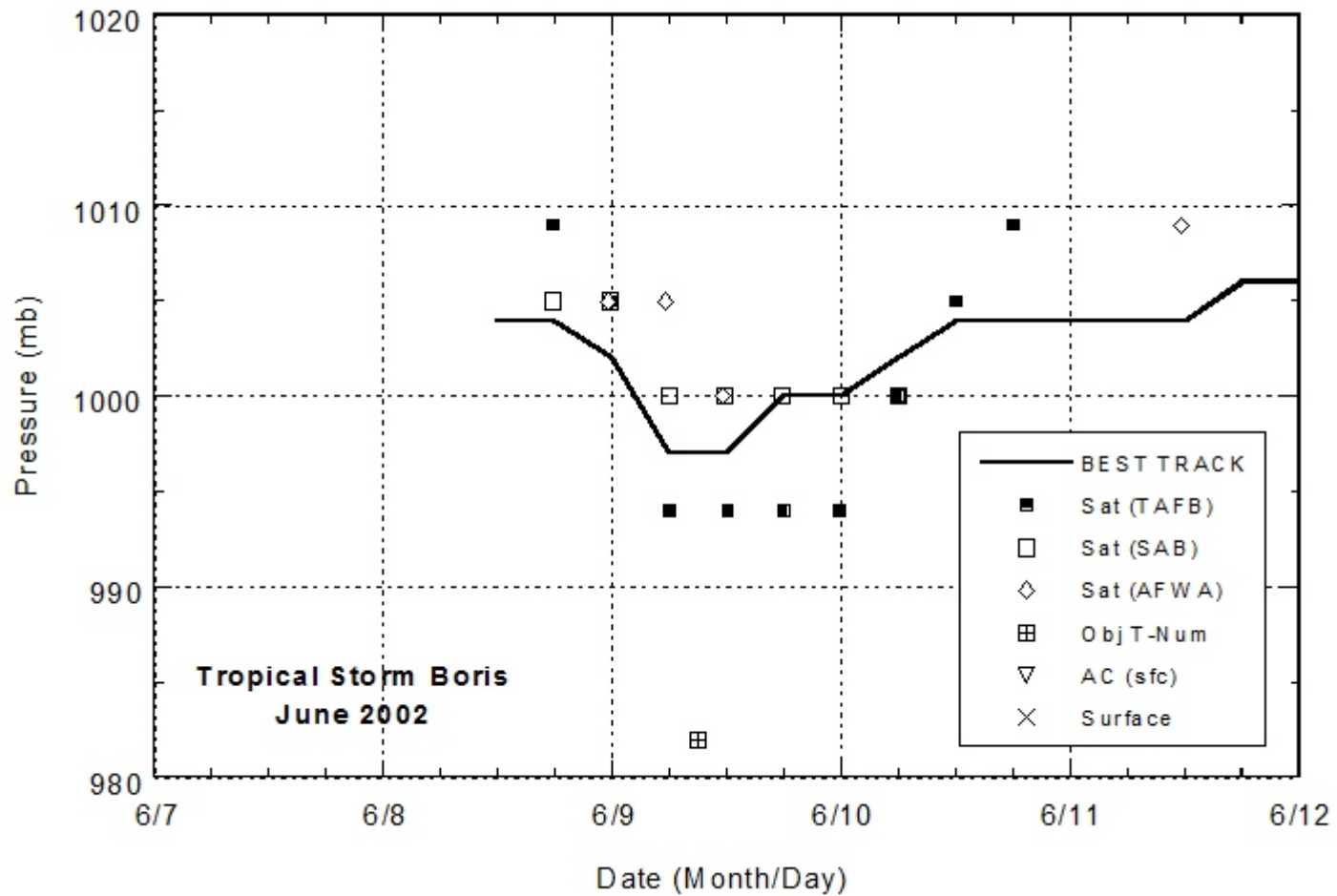


Figure 3. Selected pressure observations and best track minimum central pressure curve for Tropical Storm Boris, 8-11 June 2002. Objective Dvorak estimate is a 3-h average.