

Tropical Cyclone Report
Subtropical Storm Nicole
10-11 October 2004

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Nicole was a short-lived subtropical storm that passed near Bermuda.

a. Synoptic History

Nicole's genesis appears to be associated with an upper-tropospheric trough and a decaying frontal system that were over the southwestern North Atlantic during the first week of October. There was also a persistent low-level trough extending northward from the Lesser Antilles; analysis of satellite images and surface data, however, suggest that the tropical trough was a distinct feature unrelated to the development of this subtropical cyclone. By 8 October, a broad area of surface low pressure became evident about 400 n mi southeast of Bermuda, and although it lacked a single, well-defined center of circulation, this system began to produce gale force winds. These gales affected Bermuda on 9 October. Around 0000 UTC 10 October, a better-defined low-level circulation had formed about 140 n mi to the south of Bermuda, with a band of clouds over the northern portion of the circulation. This cloud band did not have much curvature, however. Shortly thereafter, a distinctly curved cloud band developed over the northwestern semicircle of the system, although there was no deep convection over the center. Moreover, the strongest winds, which were about 40 kt, were occurring more than 100 n mi from the center. Based on the cloud pattern and wind field, it is estimated that subtropical storm Nicole formed at 0600 UTC 10 October, centered about 120 n mi to the southwest of Bermuda.

During 10 October, the cyclone's heading turned from northwestward to northward, and then northeastward heading due to the presence of a mid-tropospheric trough that was moving off the northeast coast of the United States. Nicole's center passed about 50 n mi to the northwest of Bermuda around 0000 UTC 11 October. Early on 11 October, some deep convection developed closer to Nicole's center, suggesting that the system was trying to acquire fully tropical characteristics. Deep convection failed to wrap around the center, however, and strong upper-level southwesterly flow sheared the deep convection away from the center. The storm did not strengthen significantly while it accelerated northeastward to north-northeastward, and it soon came under the influence of a strong extratropical cyclone that was just south of Nova Scotia. Nicole was absorbed by this cyclone shortly after 1800 UTC 11 October.

The "best track" chart of Nicole'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 Nicole (Figs. 2 and 3) include satellite-based Hebert-Poteat and Dvorak technique intensity estimates from the Tropical Analysis and Forecast Branch, the Satellite Analysis Branch, and the U. S. Air Force Weather Agency, as well as surface observations from ships and Bermuda, and NASA QuickSCAT data. Microwave data from NOAA polar-orbiting satellites were also useful for monitoring the storm.

On 9 October, before Nicole formed, its predecessor low pressure area caused gale force winds at Bermuda. At 2055 UTC on that day, sustained winds of 37 kt with a gust to 52 kt were observed at the island. After Nicole's genesis, sustained winds at Bermuda reached 39 kt with a gust to 48 kt at 2018 UTC 10 October.

Ship reports of 34 kt or greater winds associated with Nicole are given in Table 2.

c. Casualty and Damage Statistics

There were no reported damages or casualties associated with Nicole.

d. Forecast and Warning Critique

Since Nicole existed for less than 48 hours, there is no meaningful sample of forecasts to verify for this cyclone. The few official forecasts that were issued had a slightly left of track bias, and generally called for slightly more strengthening than actually occurred.

The Bermuda Weather Service issued a gale warning for Bermuda at 0230 UTC 9 October, which was more than a day before Nicole formed. Additionally, they issued a tropical storm watch for Bermuda at 0830 UTC 10 October. Both the gale warning and the tropical storm watch were discontinued at 0830 UTC 11 October.

Table 1. Best track for subtropical storm Nicole, 10-11 October 2004.

Date/Time (UTC)	Latitude (EN)	Longitude (EW)	Pressure (mb)	Wind Speed (kt)	Stage
10 / 0000	30.0	65.2	1000	40	extratropical
10 / 0600	31.0	66.3	1000	40	subtropical storm
10 / 1200	31.5	66.5	1000	40	"
10 / 1800	32.1	66.5	998	40	"
11 / 0000	32.9	65.5	994	40	"
11 / 0600	34.3	63.9	992	40	"
11 / 1200	36.0	61.8	986	45	"
11 / 1800	38.5	60.5	986	45	"
12 / 0000					absorbed
11 / 1200	36.0	61.8	986	45	minimum pressure

Table 2. Selected ship and drifting buoy reports with winds of at least 34 kt for Subtropical Storm Nicole, 10-11 October 2004.

Date/Time (UTC)	Ship call sign	Latitude (EN)	Longitude (EW)	Wind dir/speed (kt)	Pressure (mb)
09 / 2200	41590	26.5	59.2	/ 36	1013.1
10 / 0600	KSPH	33.3	68.1	360 / 38	1005.7
10 / 0900	KSPH	33.3	67.7	000 / 36	1002.5
10 / 1700	41539	25.6	69.0	/ 41	1012.6
11 / 0300	A8DM9	33.3	67.7	320 / 39	1017.1
11 / 0600	WDB548	38.1	69.6	290 / 43	1007.5
11 / 1200	KSDF	35.3	61.2	190 / 45	
11 / 1200	WDB548	38.3	67.4	320 / 38	1003.5
11 / 1800	PFBE	39.4	57.1	170 / 35	998.0
11 / 1800	DNFA	40.9	55.9	150 / 43	1003.1
12 / 0000	44141	43.0	58.0	140 / 35	994.6

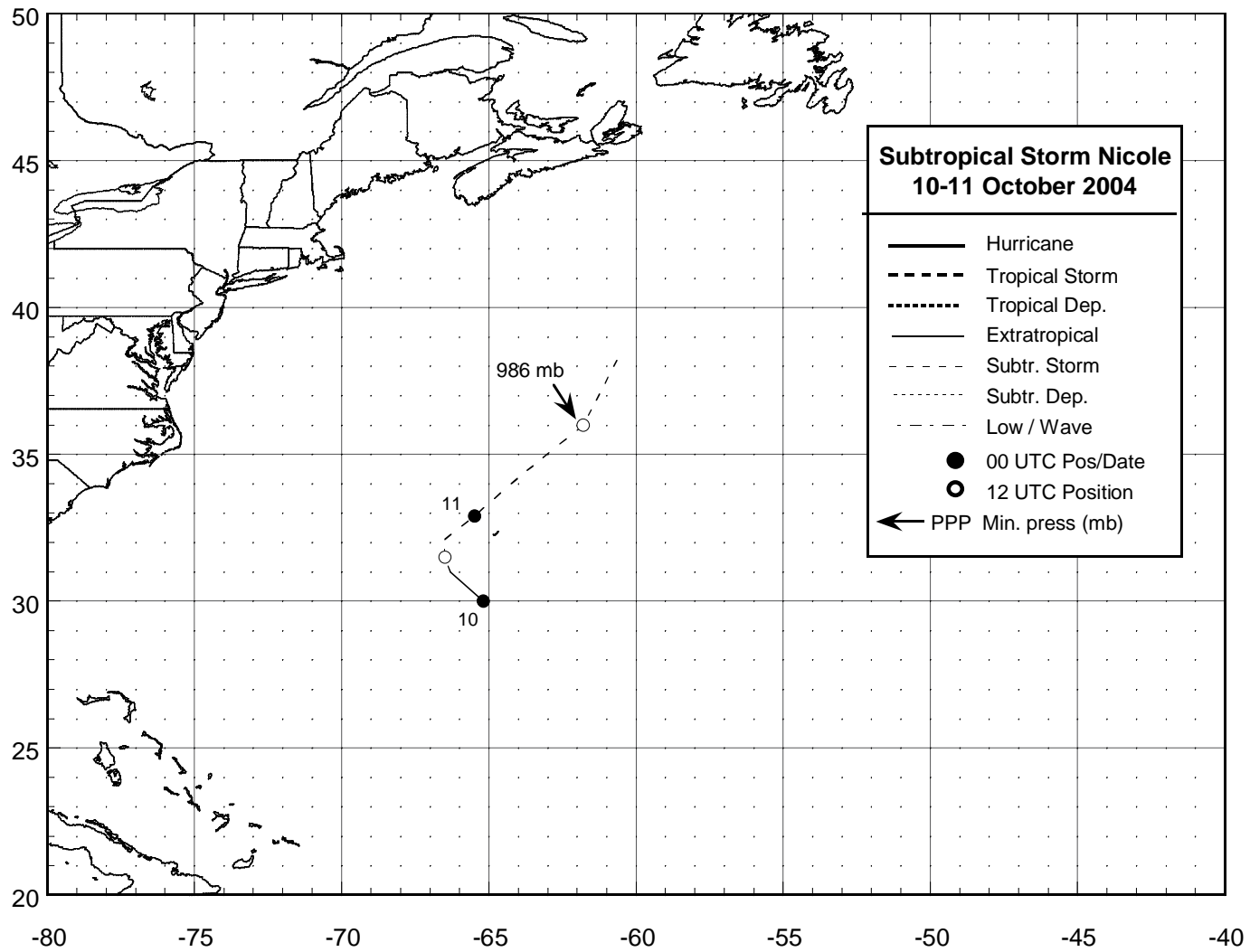


Figure 1. Best track positions for Subtropical Storm Nicole, 10-11 October 2004.

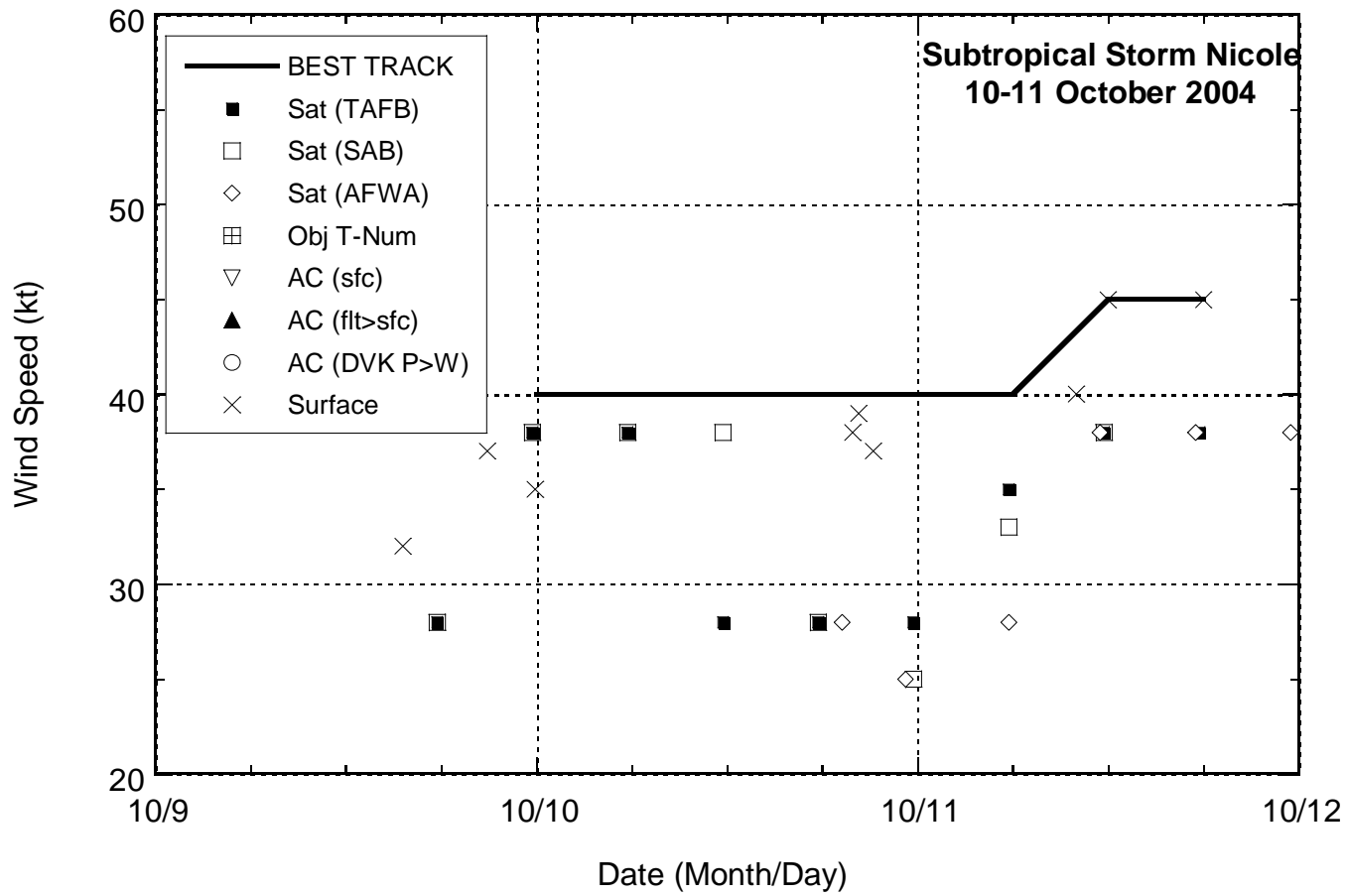


Figure 2. Selected wind observations and best track maximum sustained surface wind speed curve for Subtropical Storm Nicole, 10-11 October 2004.

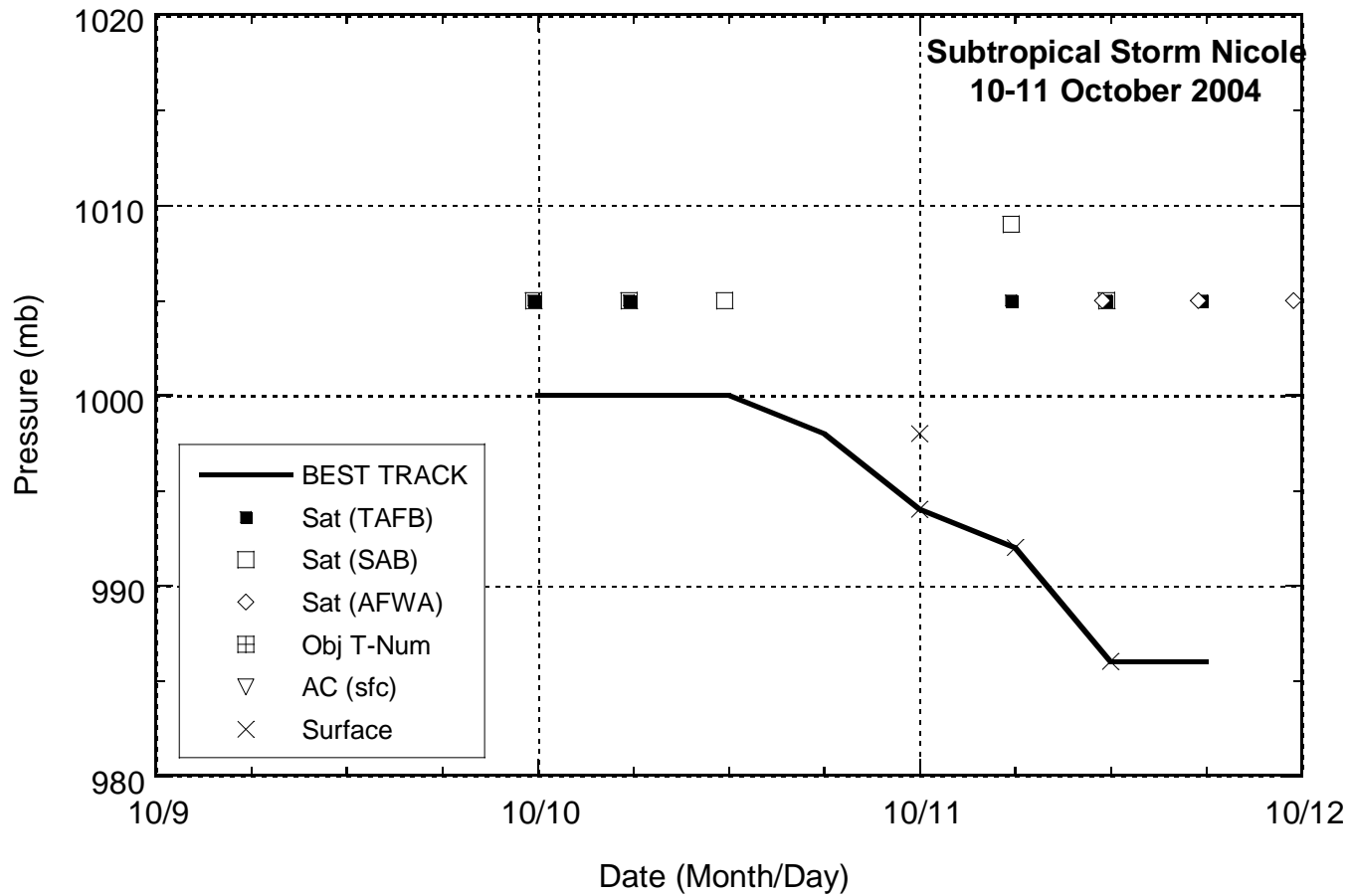


Figure 3. Selected pressure observations and best track minimum central pressure curve for Subtropical Storm Nicole, 10-11 October 2004.