

Tropical Cyclone Report  
Tropical Storm Agatha  
22-24 May 2004

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Agatha was a short-lived tropical storm that did not affect land.

a. Synoptic History

A nearly stationary trough of low pressure became established from the eastern Pacific east-northeastward across Central America and portions of the Caribbean Sea during mid May. This pattern resulted in a large area of moist southwest monsoon-type flow over the region. A poorly-defined westward-moving tropical wave became convectively active over the eastern Caribbean Sea on 13 May, and crossed Central America on the 17<sup>th</sup> accompanied by cloudiness and thunderstorms. Once the wave reached the eastern Pacific and interacted with the trough, the convection associated with the wave gradually became organized and on 20 May, the system began to show signs of cyclonic rotation. As the wave continued westward, the thunderstorm activity became concentrated to the southwest of a developing low-level circulation center. It is estimated that Tropical Depression One-E formed at 0000 UTC 22 May about 500 n mi south-southeast of Cabo San Lucas, Mexico. The depression moved slowly toward the northwest and under very light shear, the cyclone intensified and became Tropical Storm Agatha by 1200 UTC on that day. It is estimated that the cyclone reached its peak intensity of 50 knots at 0000 UTC 23 May. Thereafter, cooler sea surface temperatures and stable air caused the cyclone to weaken gradually, and it degenerated to a remnant low by 1200 UTC 24 May. The low drifted aimlessly and dissipated by 0000 UTC 26 May. 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 Agatha (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). Microwave satellite imagery from NOAA polar-orbiting satellites, the NASA Tropical Rainfall Measuring Mission (TRMM), the NASA QuikSCAT, and Defense Meteorological Satellite Program (DMSP) satellites were also useful in tracking Agatha. It is interesting that SSM/I and TRMM images of Agatha from around 1400 UTC 22 May through 0230 UTC 23 May revealed a ring of precipitation that resembled an eyewall as indicated in Fig. 4. The presence of the convective ring suggests that Agatha’s peak intensity was probably higher than indicated by the Dvorak estimates, although no technique exists to estimate tropical cyclone intensity from such microwaves features. The peak intensity of Agatha is estimated to be 50 kt but this estimate is particularly uncertain.

c. Casualty and Damage Statistics

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

d. Forecast and Warning Critique

Agatha was a short-lived tropical cyclone and there were only a few forecasts to verify. The average official track errors (with the number of cases in parentheses) for Agatha were 26 (8), 46 (6), 67 (4), and 111 (2), n mi for the 12, 24, 36, and 48 h forecasts, respectively. These errors are lower than the average official track errors for the 10-yr period 1994-2003 of 38, 70, 100, and 127 n mi, respectively).

Average official intensity errors were 8, 13, 11, and 5 kt for the 12, 24, 36, and 48 h forecasts, respectively. These average official intensity errors over the 10-yr period 1994-2003 of 6, 11, 15, and 17 kt, respectively.

Table 1. Best track for Tropical Storm Agatha, 22-24 May 2004.

Latitude (°N)	Longitude (°W)	Date/Time (UTC)	Pressure (mb)	Wind Speed (kt)	Stage
22 / 0000	14.7	107.6	1006	25	tropical depression
22 / 0600	15.4	108.5	1006	30	"
22 / 1200	16.0	109.1	1005	35	tropical storm
22 / 1800	16.6	109.6	1000	45	"
23 / 0000	17.1	109.9	997	50	"
23 / 0600	17.5	110.1	1000	45	"
23 / 1200	17.9	110.3	1002	40	"
23 / 1800	18.2	110.5	1002	35	"
24 / 0000	18.5	110.7	1003	30	tropical depression
24 / 0600	18.7	110.8	1005	25	"
24 / 1200	18.9	110.9	1006	25	remnant low
24 / 1800	18.8	111.0	1008	25	"
25 / 0000	18.8	110.7	1008	25	"
25 / 0600	18.6	110.2	1008	25	"
25 / 1200	18.5	110.0	1009	20	"
25 / 1800	18.4	110.1	1010	15	"
26 / 0000	18.7	110.4	1010	15	"
26 / 0600					dissipated
23 / 0000	17.1	109.9	997	50	minimum pressure

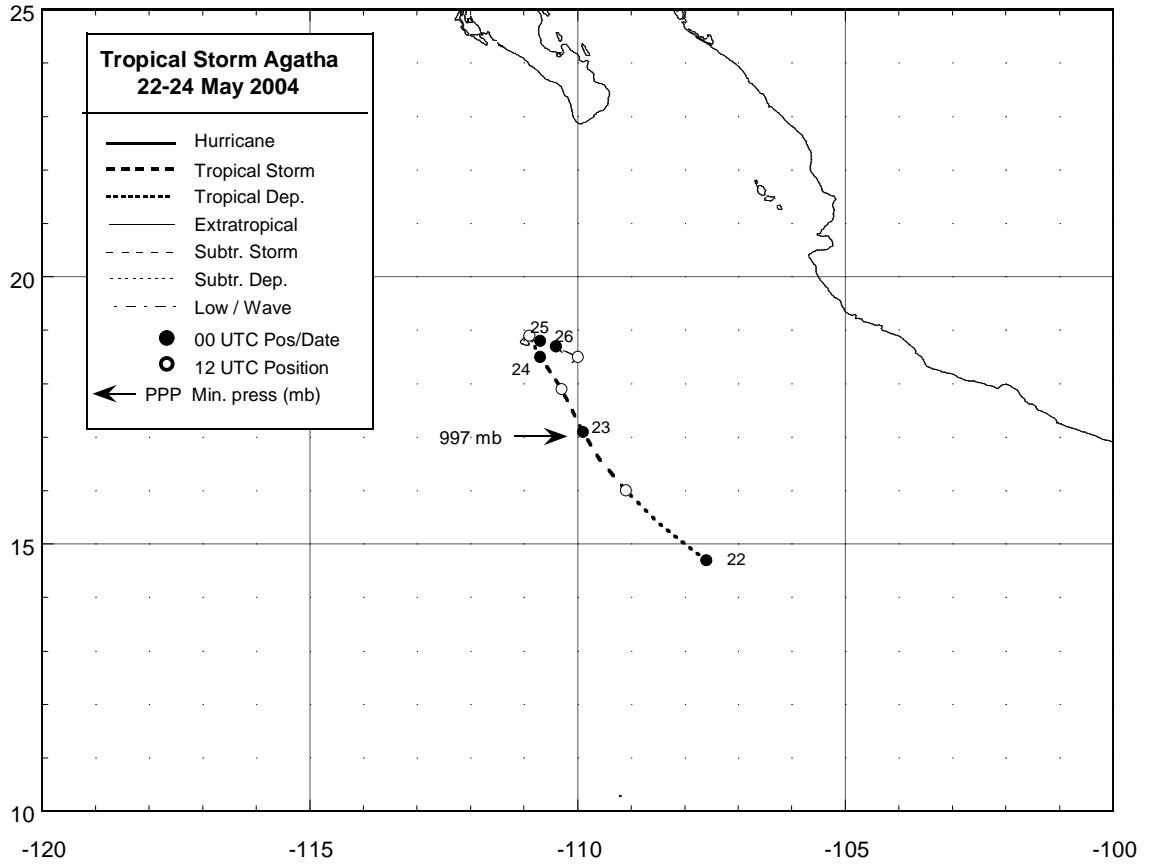


Figure 1. Best track positions for Tropical Storm Agatha, 22-24 May 2004.

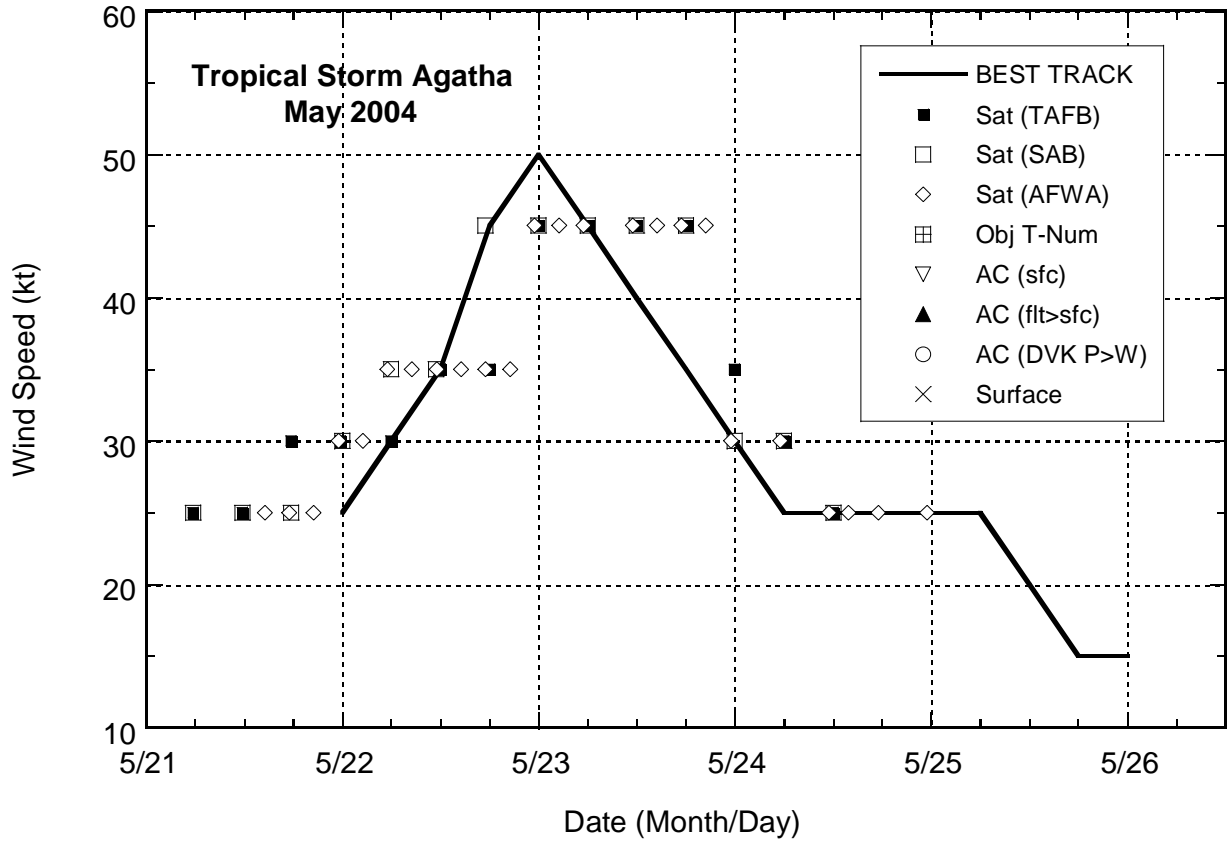


Figure 2. Selected wind observations and best track maximum sustained surface wind speed curve for Tropical Storm Agatha, 22-24 May 2004.

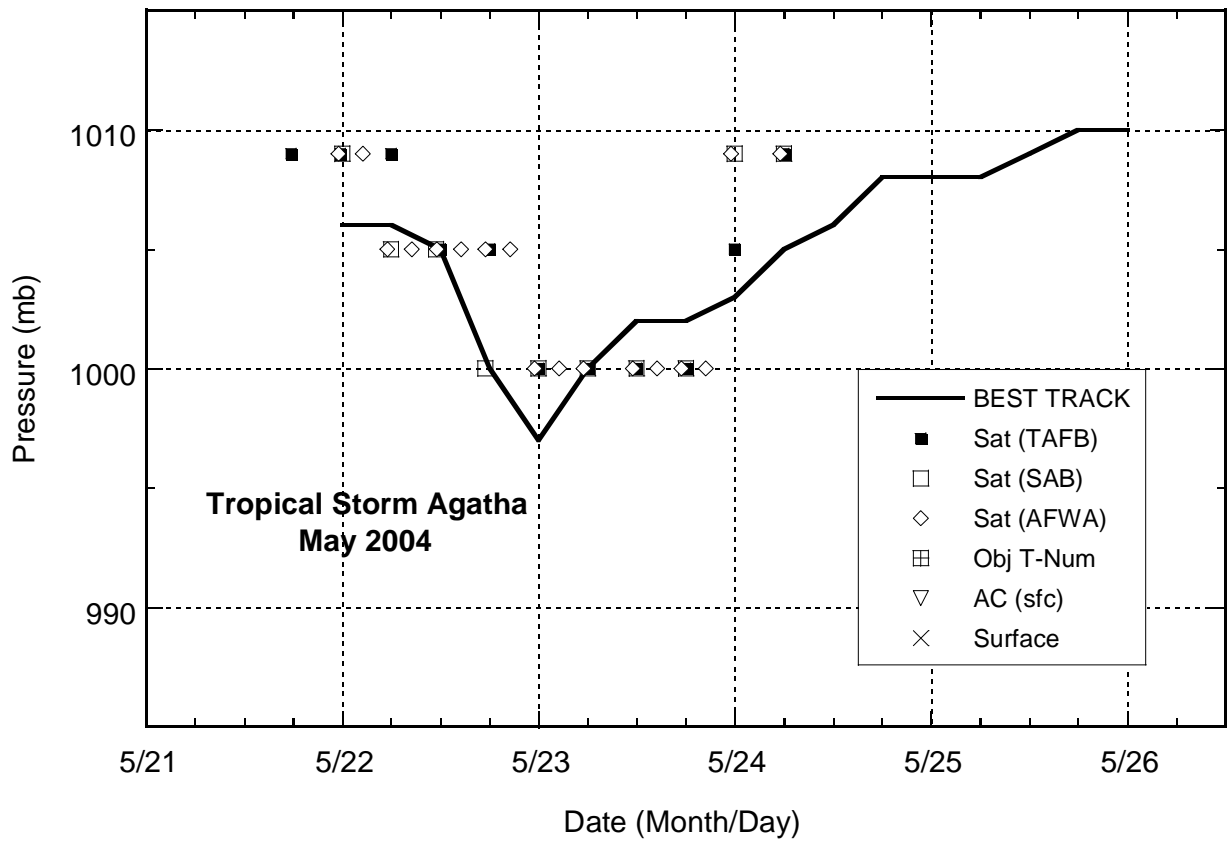


Figure 3. Selected pressure observations and best track minimum central pressure curve for Tropical Storm Agatha, 22-24 May 2004.

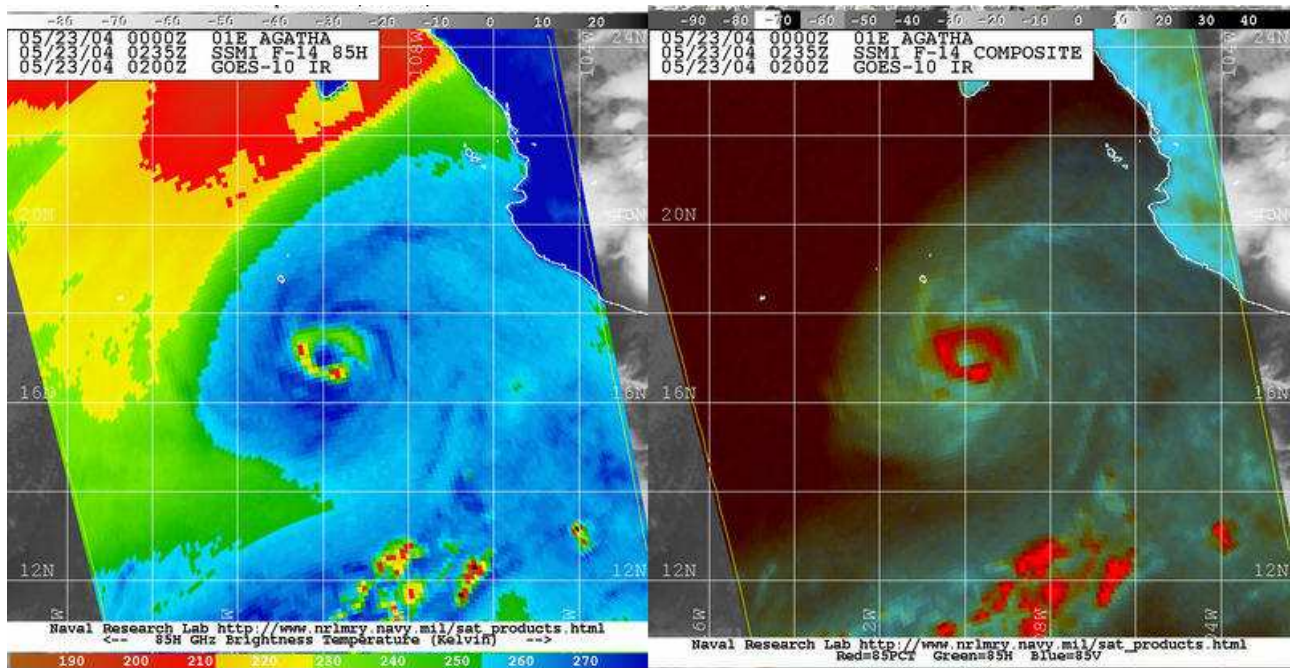


Figure 4. Microwave data for Agatha at 0235 UTC showing a ring of convection resembling an eyewall.