

Tropical Cyclone Report
Hurricane Shary
(AL202010)
28-30 October 2010

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Shary was a short-lived category 1 hurricane (on the Saffir-Simpson Hurricane Wind Scale) that formed in the central Atlantic. It did not affect land.

a. Synoptic History

A broad area of low pressure formed along the southern portion of a nearly stationary frontal system over the central Atlantic about 700 n mi east-northeast of Puerto Rico on 27 October. The disturbance interacted with an upper-level low associated with the mid-oceanic trough, resulting in an asymmetric cloud pattern more commonly observed in subtropical systems. By 28 October, the disturbance moved toward the west-northwest away from the upper-low, and the convection began to take a more circular shape. Some upper-level outflow developed over the northern semicircle as the system moved toward the west-northwest between 15 and 20 kt. A low-level center of circulation became better defined closer to the thunderstorm activity, suggesting that the system had acquired tropical characteristics, and it is estimated that a tropical depression formed at 1800 UTC 28 October about 450 n mi south-southeast of Bermuda. The depression became a tropical storm at 0000 UTC 29 October. 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 1¹

The cyclone slowed down significantly and turned northward and then northeastward as the steering flow weakened ahead of a strong cold front. There was a small decrease in the wind shear for a short period of time, and Shary intensified to hurricane status at 0000 UTC 30 October when an eye feature became apparent on microwave data (Fig. 4). By then, the cyclone became fully embedded within southwesterly flow ahead of a front and began to move rapidly toward the northeast away from Bermuda. The cloud pattern deteriorated rapidly after 1200 UTC 30 October as the cyclone interacted with the cold front, and Shary became extratropical by 1800 UTC. The circulation of Shary was completely absorbed within the frontal zone that day.

b. Meteorological Statistics

¹ A digital record of the complete best track, including wind radii, can be found on line at <ftp://ftp.nhc.noaa.gov/atcf>. Data for the current year’s storms are located in the *btk* directory, while previous years’ data are located in the *archive* directory.

Observations in Hurricane Shary (Figs. 2 and 3) include satellite-based Dvorak technique intensity estimates from the Tropical Analysis and Forecast Branch (TAFB) and the Satellite Analysis Branch (SAB), as well as flight-level, and stepped frequency microwave radiometer (SFMR) data from a flight into the system by the 53rd Weather Reconnaissance Squadron of the U. S. Air Force Reserve Command. Data and imagery from NOAA polar-orbiting satellites, the NASA Tropical Rainfall Measuring Mission (TRMM) and Aqua, the European Space Agency's Advanced Scatterometer (ASCAT), Defense Meteorological Satellite Program (DMSP) satellites, among others, were also useful in constructing the best track. There were no ship reports of tropical-storm-force winds associated with Shary.

Shary was classified a tropical storm based on data from NOAA buoy 41049, which measured a 1-min sustained wind of 33 knots at 0000 UTC 29 October. These winds were very close to the center, suggesting that the cyclone was tropical rather than subtropical at that time. The crew on board an Air Force aircraft reconnaissance mission into Shary measured flight-level winds (850 mb) of 69 and 73 knots at 2033 UTC and 2146 UTC 29 October, respectively. There was also a surface wind of 60 kt measured by the SFMR at 2144 UTC during that flight. Based on the aircraft data, the better organization of the cloud pattern, and the subsequent development of an eye feature observed on a 2353 UTC TRMM pass, Shary is analyzed to have reached hurricane status at 0000 UTC 30 October. Dvorak T-numbers marked in Fig. 2 never reflected the intensity of the cyclone during its entire life.

c. Casualty and Damage Statistics

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

d. Forecast and Warning Critique

The area of disturbed weather that preceded Shary was first mentioned in the Tropical Weather Outlook (TWO) 30 h before formation with a low (10%) chance of becoming a tropical cyclone. At that time, the low was associated with a cold front and the thunderstorm activity was disorganized. The probability of formation was increased to medium (30%) at 0000 UTC 28 October and to high (60%) at 0600 UTC that day, about 12 h before genesis.

Shary was a short-lived cyclone, and there were only 5, 3, and 1 track and intensity forecasts to verify at the 12, 24, and 36 h periods, respectively. A verification of NHC official track forecasts for Shary is given in Table 2. Official forecast track errors were 64.9, 104.0 and 139.2 n mi at 12, 24 and 36 h, respectively. These values are much higher than the mean official errors for the previous 5-yr period and the climatology-persistence model (OCD5) errors were also much higher than the previous 5-yr OCD5 average. A verification of NHC official intensity forecasts for Shary is given in Table 3. Both the official forecast intensity errors as well as the climatology-persistence skill baseline forecast errors were greater than their respective 5-yr means. This suggests that the track and the intensity of Shary were difficult to forecast.

Given the forecast track of the system, a tropical storm watch and a tropical storm warning were issued for Bermuda by the Bermuda Weather Service (Table 4). No tropical storm force winds were observed on that island.

Table 1. Best track for Hurricane Shary, 28-30 October 2010.

Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
28 / 1800	25.6	61.2	1006	30	tropical depression
29 / 0000	26.8	63.0	1004	35	tropical storm
29 / 0600	28.1	64.6	1002	40	"
29 / 1200	29.3	65.9	998	50	"
29 / 1800	30.2	65.8	993	55	"
30 / 0000	31.3	64.0	990	65	hurricane
30 / 0600	32.9	60.9	989	65	"
30 / 1200	35.1	57.2	991	65	"
30 / 1800	37.0	53.5	993	55	extratropical
31 / 0000					absorbed by front
30 / 0600	32.9	60.9	989	65	minimum pressure

Table 2. NHC official (OFCL) and climatology-persistence skill baseline (OCD5) track forecast errors (n mi) for Hurricane Shary. Mean errors for the 5-yr period 2005-9 are shown for comparison. Official errors that are smaller than the five-year means are shown in boldface type.

	Forecast Period (h)						
	12	24	36	48	72	96	120
OFCL (Shary)	64.9	104.0	139.2				
OCD5 (Shary)	161.9	364.9	364.9				
Forecasts	5	3	1				
OFCL (2005-9)	31.8	53.4	75.4				
OCD5 (2005-9)	46.9	97.3	155.4				

Table 3. NHC official (OFCL) and climatology-persistence skill baseline (OCD5) intensity forecast errors (kt) for Hurricane Shary. Mean errors for the 5-yr period 2005-9 are shown for comparison. Official errors that are smaller than the five-year means are shown in boldface type.

	Forecast Period (h)						
	12	24	36	48	72	96	120
OFCL (Shary)	13.0	20.0	20.0				
OCD5 (Shary)	12.8	21.7	12.0				
Forecasts	5	3	1				
OFCL (2005-9)	7.0	10.7	13.1				
OCD5 (2005-9)	8.6	12.5	15.8				

Table 4. Watch and warning summary for Hurricane Shary, 28-30 October 2010.

Date/Time (UTC)	Action	Location
29 / 0300	Tropical Storm Watch issued	Bermuda
29 / 0900	Tropical Storm Watch changed to Tropical Storm Warning	Bermuda
30 / 0300	Tropical Storm Warning discontinued	All

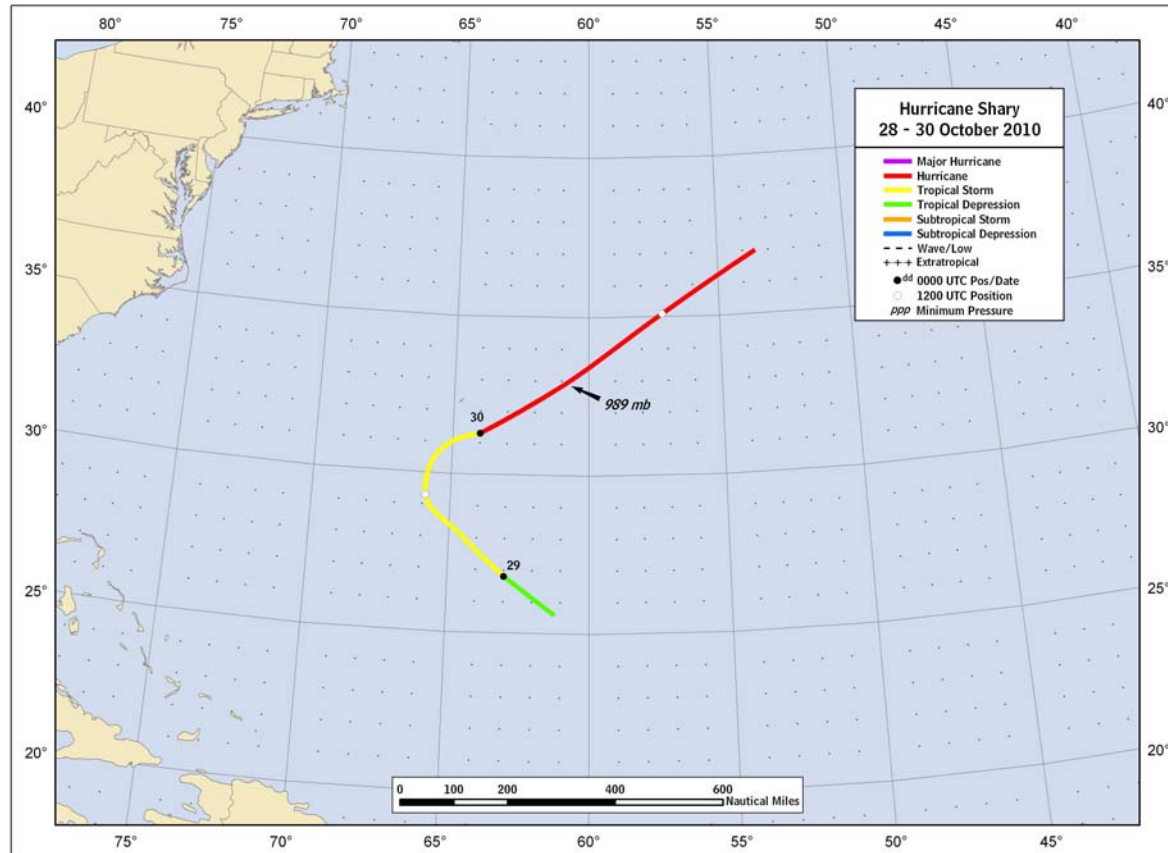


Figure 1. Best track positions for Hurricane Shary, 28-30 October 2010.

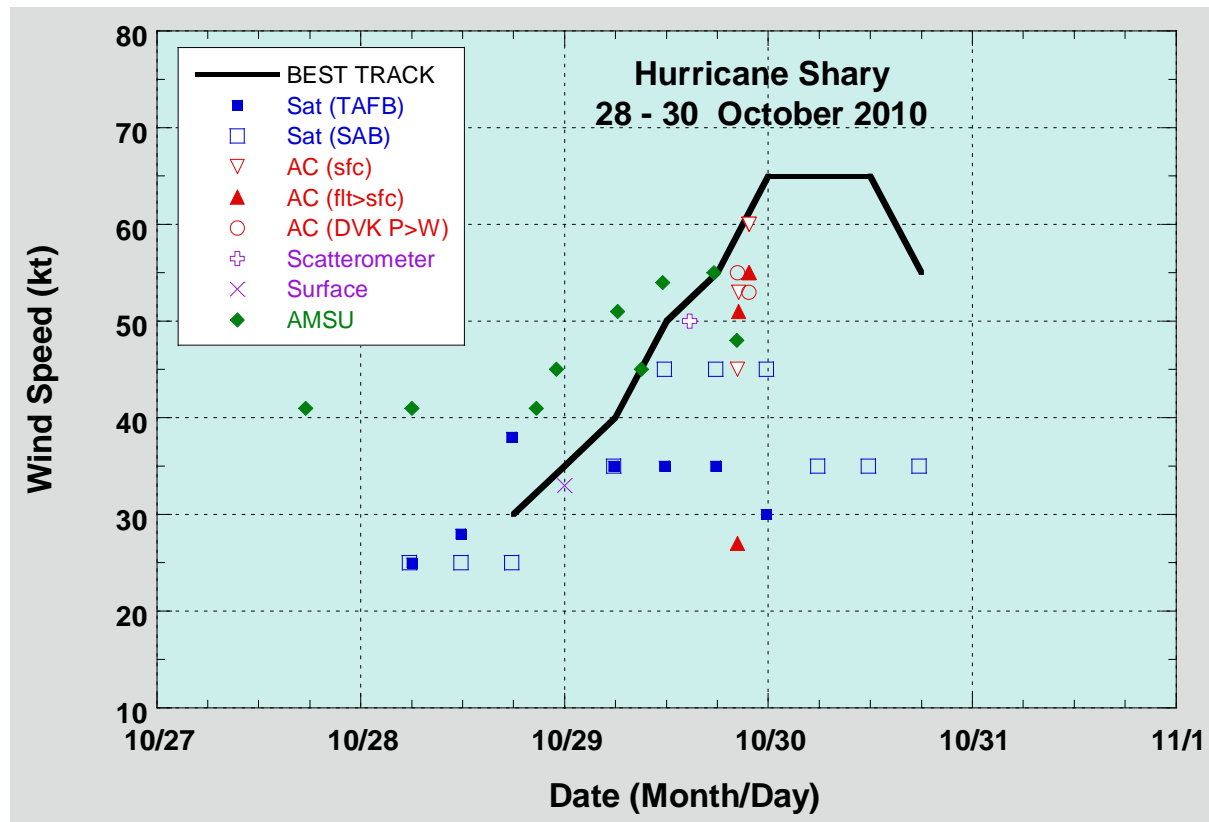


Figure 2. Selected wind observations and best track maximum sustained surface wind speed curve for Hurricane Shary, 28-30 October 2010. Aircraft observations have been adjusted for elevation adjustment factors for observations from 850 mb. AMSU data are from the Cooperative Institute of Meteorological Satellite Studies (CIMSS) at the University of Wisconsin intensity technique. Dashed vertical lines correspond to 0000 UTC.

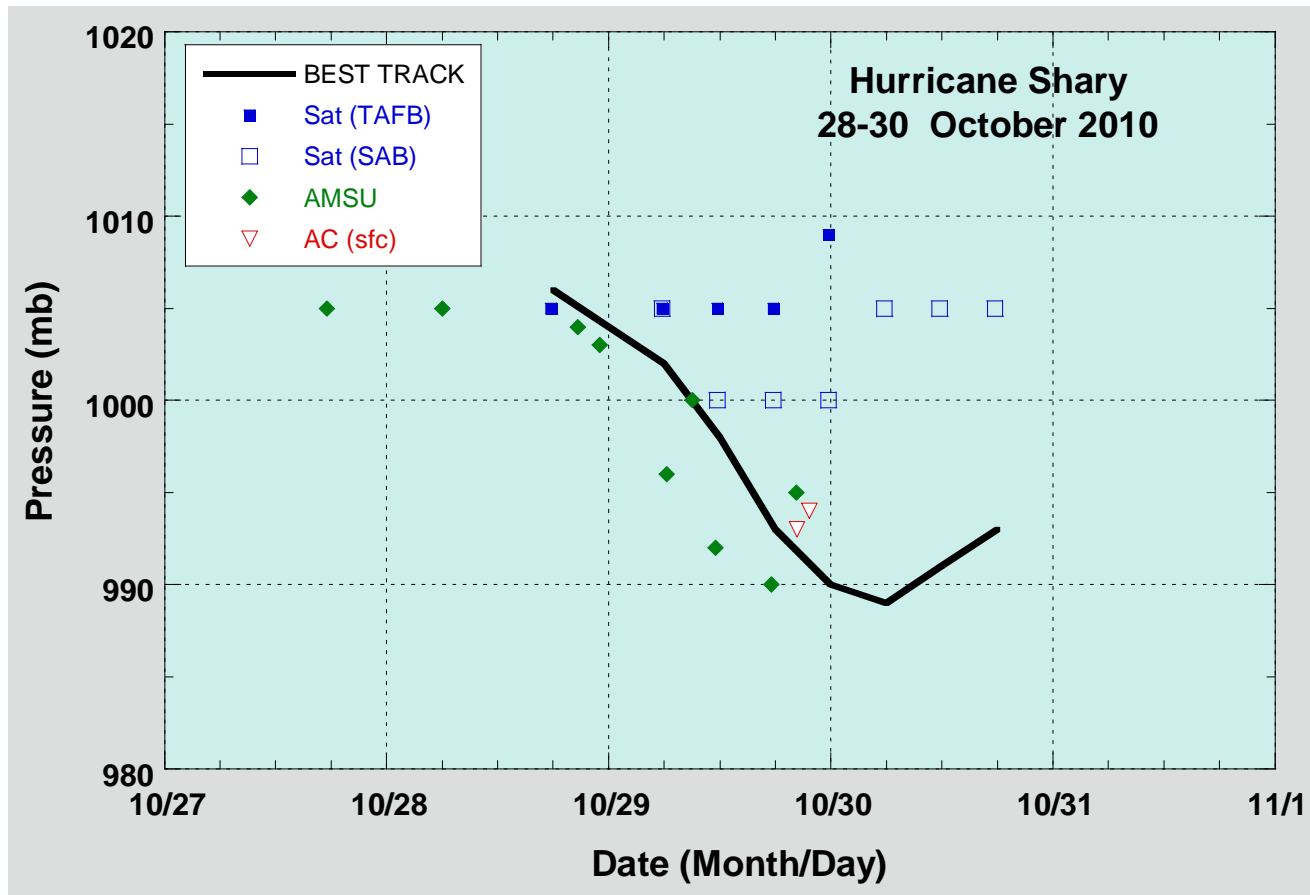


Figure 3. Selected pressure observations and best track minimum central pressure curve for Hurricane Shary, 28-30 October 2010. Dashed vertical lines correspond to 0000 UTC.

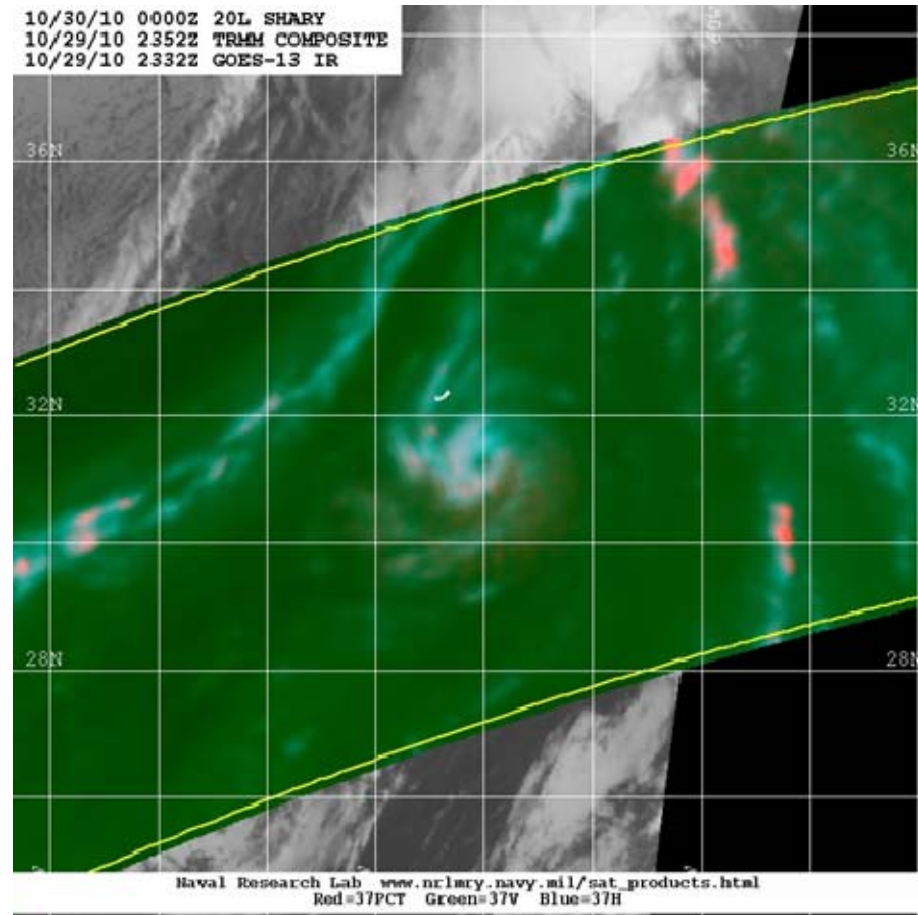


Figure 4. TRMM 37 GHz microwave image at 2352 UTC 29 October near the time Shary became a hurricane. Image courtesy of the Naval Research Laboratory, Monterey, CA.