

1985 ATLANTIC SEASONAL TROPICAL CYCLONE ACTIVITY
AND VERIFICATION OF AUTHOR'S FORECAST

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ABSTRACT

This paper gives a brief summary of the tropical cyclone activity which occurred in the Atlantic in 1985 and verifies the author's (Gray, 1985a, 1985b) forecast of this activity that was issued on 28 May and updated on 27 July. This forecast was based on the author's previous research (Gray, 1983, 1984a, 1984b) which relates seasonal Atlantic hurricane activity to: 1) the El Nino (EN); 2) the Quasi-Biennial Oscillation (QBO) of equatorial 30 mb stratospheric wind; 3) the April-May and June-July Caribbean Basin-Gulf of Mexico Sea-Level Pressure Anomaly (SLPA), and 4) lower latitude Caribbean Basin 200 mb zonal wind anomaly.

Information received by the author as of 28 May 1985 indicated that the 1985 hurricane season should have been an above average year with about 8 hurricanes (6 is average), 11 hurricanes and tropical storms (9 is average), and 35 hurricane days (25 is average). This forecast was updated on 27 July 1985 to the revised values of 7 hurricanes, 10 hurricanes and tropical storms and thirty hurricane days. The actual number of hurricanes which occurred in 1985 was 7 (1 above average); actual number of hurricanes and tropical storms was 11 (2 above average); and actual number of hurricane days was 29 (4 above average). The actual number of hurricane and tropical storm days was 60 (20 above average).

A more detailed report of the 1985 Atlantic hurricane season with a discussion of the association of this season's storm activity with various meteorological factors will be issued at the end of the year.

1. 1985 Atlantic Tropical Cyclone Activity

The 1985 Atlantic hurricane season officially ends on 1 December. There were seven hurricanes (maximum sustained winds ≥ 75 mph) and 29 hurricane days during 1985. This is above the last 35 years seasonal average of 6 hurricanes and 25 hurricane days.* There were 4 named tropical storms in the Atlantic and 31 tropical storm days. The combined number of hurricanes and tropical storms was 11 (2 above average), the combined number of hurricane and tropical storm days was 60 (20 above average).

The 1985 Atlantic tropical cyclone season may thus be summarized as one in which both hurricane activity and tropical storm activity was above average. The author correctly predicted the number of hurricanes and was within one of the total number of named storms.

Table 1 lists all the named tropical storms and hurricanes for 1985. Seven cyclones (Bob, Claudette, Danny, Elena, Gloria, Juan, and Kate) were of hurricane intensity while four systems (Ana, Fabian, Henri, and Isabel) were of Tropical Storm intensity (maximum sustained surface winds between 39-74 mph). This table also lists the dates of each cyclone and gives the number of hurricane and number of hurricane and tropical storm days plus the measured or estimated minimum pressure and maximum sustained winds of each cyclone.

Figure 1 shows the tracks of these 11 cyclones during the period when they were of tropical storm intensity or greater. Tracks of the

* A hurricane day or a tropical storm day is defined as a day during which a tropical cyclone has measured or estimated maximum sustained surface winds ≥ 75 mph, or 39-74 mph respectively. Any portion of a GMT day meeting these conditions is accepted as a day of these conditions.

earlier formation and intensification periods of these cyclones as well as their late dissipation stages are not shown. Six of the 11 named storms (Bob, Danny, Elena, Fabian, Gloria and Isabel) formed from a wave or depression which could be tracked backward to the eastern tropical Atlantic.

The feature of most note about the 1985 season is the large number of hurricanes - six (Bob, Danny, Elena, Gloria, Juan, and Kate) which made landfall in the US. The seasonal average is only about two. In addition Tropical Storm Isabel also crossed the US coast. This ties the US record of six (6) hurricane strikes in one season on the US coast which was set in 1916. In terms of named storm strikes (7), 1985 had the second largest total of this century. 1916 had eight (8) named storm strikes and 1933 seven (7) named storm strikes.

Despite the large number of strikes on the US coastline, the Atlantic hurricane season in terms of number of hurricanes (7), number of named cyclones (11), and number of hurricane days (29) was only slightly above average. 1985 is in contrast with 1982 and 1983 (El Nino years) which had only three hurricanes in each season and only 5 and 6 hurricane days, respectively.

The US received an unusual number of hurricane strikes (6) because of the strong upper-air ridging pattern which was present at middle latitudes over the western Atlantic through most of the hurricane season. This led to generally favorable conditions for tropical cyclone formation to the south and east of the US. This ridging pattern was also associated with the unusually warm temperatures throughout the US Southeast during this period. At the same time, upper tropospheric western winds and higher surface pressures in the southeast Caribbean

Sea inhibited low latitude development in the region to the east of the Antiles Islands. This led to more tropical cyclone formation at higher latitudes and further west than normal. The length of 1985 hurricane tracks and the number of hurricane days was consequently suppressed from what it would have been for this number of hurricanes.

TABLE 1
The 1985 Tropical Cyclone Season

Name	Maximum Sustained Winds (knots)*	Minimum Sea Level Pressure (mb)	Dates	No. of Hurricane Days	No. of Hurricane and Trop. Storm Days
1. TS Ana	60	996	16 July-19 July	--	4
2. HUR Bob	65	1002	22 July-25 July	2	4
3. HUR Claudette	65	980	11 Aug-16 Aug	4	6
4. HUR Danny	75	986	13 Aug-16 Aug	2	3
5. HUR Elena	110	953	28 Aug-02 Sept	5	6
6. TS Fabian	55	994	17 Sept-19 Sept	--	3
7. HUR Gloria	125	920	17 Sept-28 Sept	6	12
8. TS Henri	50	996	23 Sept-25 Sept	--	3
9. TS Isabel	55	996	08 Oct-10 Oct	--	3
10. HUR Juan	75	970	26 Oct-01 Nov	3	7
11. HUR Kate	100	953	15 Nov-23 Nov	7	9
TOTAL				29	~60

* 1 knot equals 1.15 miles per hour.

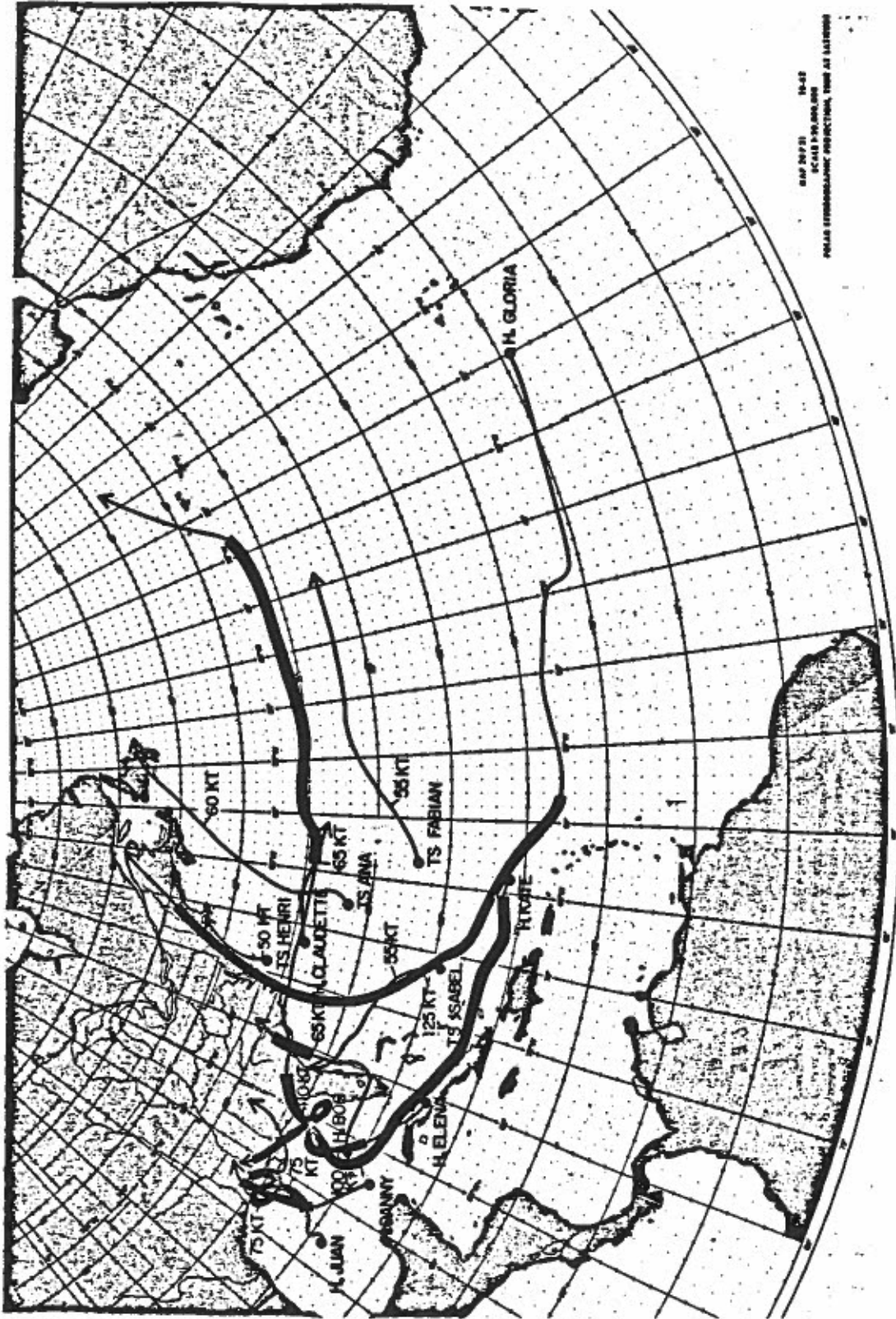


Fig. 1. Tracks of 1985 Atlantic named tropical cyclones. The thin lines represent tropical storm intensity (maximum surface winds between 39-74 mph) and the thick lines the stages of hurricane intensity (maximum wind 75 mph or greater).

2. Forecast Verification

Table 2 gives the verification of the author's 1985 seasonal hurricane forecast with regard to the 28 May forecast and the updated prediction as of 27 July. The hurricane season does not really get started in earnest until after the first of August. These predictions appear to have verified rather well.

A more detailed report of the 1985 hurricane season with a full discussion of the association of this seasons' tropical cyclone activity with the various meteorological predictors will be issued at the end of the year.

TABLE 2
Prediction vs. Observed Tropical Cyclone Activity for 1985

	Prediction as of 28 May	Updated Prediction of 27 July	Observed
No. of Hurricanes	8	7	7
No. of Hurricane Days	35	30	29
No. of Hurricane and Tropical Storms	11	10	11
No. of Hurricane and Tropical Storm Days	55 (implied from hurricane forecast)	50	60

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