

PRELIMINARY REPORT  
Hurricane Humberto  
22 August - 1 September 1995

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Humberto coexisted with four other tropical cyclones (Iris, Karen, Jerry and Luis) in the Atlantic basin. The hurricane traveled several days through the open Atlantic without hitting land.

a. Synoptic History

Hurricane Humberto developed from one of the several strong tropical waves that moved off the coast of Africa in August of 1995. In fact, Dakar, Senegal reported 50 knot winds at 500 mb when the axis of the wave crossed that station on 19 August. Humberto was preceded by a strong tropical wave which eventually became Iris and followed by another strong wave which triggered Karen.

Satellite images and surface reports indicated a broad cyclonic rotation associated with this weather system from the time it moved off the west coast of Africa. However, the convection was disorganized and displaced to the southwest of the circulation center due to the prevailing northeasterly shear. Once the system moved westward over warmer waters and into an area of lighter shear, it developed rapidly. A post-analysis of satellite images suggests that it became tropical depression at 0000 UTC 22 August and reached tropical storm status six hours later. Under an upper-level environment very favorable for development, Humberto became a hurricane at 0600 UTC 23 August.

Humberto's motion was rapidly influenced by a middle-level trough over the central Atlantic (Fig. 1) and turned northward and northeastward over open waters. Humberto maintained hurricane status until the 31st when it weakened to a tropical storm. It was rapidly absorbed by an extratropical low early on the 1st of September.

Just before Humberto began the northwestward turn, it reached its estimated peak intensity of 95 knots and a minimum pressure of 968 mb. This occurred at 1800 UTC 24 August when intensity estimates from the National Hurricane Center and the Satellite Analysis Branch (SAB) reached 5.5 and 5.0 on the Dvorak scale. Thereafter, the hurricane weakened some, primarily due to interference with the outflow produced by Iris. Once Humberto moved away from Iris, it reintensified and turned northeastward ahead of the extratropical cyclone which eventually absorbed it.

Humberto's track is shown in Fig. 2. Table 1 is a listing, at

six-hour intervals, of the "best-track" position, estimated minimum central pressure and maximum 1-minute surface wind speed.

b. Meteorological Statistics

The best track pressure and wind curves as a function of time, shown in Figures 3 and 4, are primarily based on satellite intensity estimates from the National Hurricane Center (NHC), SAB and the Air Force Global Weather Central (AFGWC). The vessel **DBRUK4** was under the influence of Humberto for about 48 hours and experienced tropical storm force winds throughout that period. There was a report from that vessel of 60-knot winds from the southeast and a pressure of 1005 mb at 1800 UTC 30 August. At that time, the ship was about 20 n mi north of the center of the hurricane. Table 2 shows observations from ships that encountered 34 knot or higher winds speeds associated with Humberto.

c. Casualty and Damage Statistics

There were no reports of injuries, deaths or damage associated with Humberto.

d. Forecast and Warning Critique

A post-analysis of satellite images suggests that advisories on Humberto could have been initiated, perhaps, a few hours earlier. However, the location and intensity of incipient tropical systems on infrared images is uncertain. Unless surface observations are available, if a system is in a formative stage, the NHC often waits for the more accurate estimates obtained from visible imagery to initiate advisories.

The individual errors of each track model as well as the errors of the official forecast are included in Table 3. The official forecast was comparable with the past 10-year average and slightly better than average for the 48- and 72-h period. The tropical cyclone intensified faster than forecast during the early stage. Thereafter, once Humberto became a hurricane, it did not intensify as much as forecast and during the decaying phase, Humberto weakened slower than expected.

Figure Captions:

Fig. 1. 500 mb radiosonde data combined with the AVN model analysis for 1200 UTC 26 August. Black dot represents the location of Hurricane Humberto at 1200 UTC 26 August. Thick dashed line represents the position of the axis of the trough which eventually steered the hurricane away from the United States.

Fig. 2. Best track positions for Hurricane Humberto, 22 August - 1 September 1995.

Fig. 3. Best track one-minute surface wind speed curve for Hurricane Humberto.

Fig. 4. Best track minimum central pressure curve for Hurricane Humberto.

Table 1. Preliminary best track, Hurricane Humberto,  
22 August- 1 September, 1995

Date/Time (UTC)	Position		Pressure (mb)	Wind Speed (kt)	Stage
	Lat. (°N)	Lon. (°W)			
22/0000	13.2	33.0	1009	30	Tropical Depression
0600	13.7	34.3	1005	35	Tropical Storm
1200	14.2	35.2	1002	45	" "
1800	14.6	36.2	998	50	" "
23/0000	14.8	37.3	995	60	" "
0600	14.9	38.3	987	65	Hurricane
1200	15.0	39.2	985	70	"
1800	15.1	40.3	982	75	"
24/0000	15.2	41.0	975	80	"
0600	15.3	41.9	973	85	"
1200	15.4	42.6	971	90	"
1800	15.7	43.2	968	95	"
25/0000	16.1	43.8	970	90	"
0600	16.7	44.4	970	90	"
1200	17.6	45.1	970	90	"
1800	18.5	45.9	970	90	"
26/0000	19.4	46.6	970	90	"
0600	20.0	47.2	970	90	"
1200	20.6	47.6	972	85	"
1800	21.4	48.0	975	80	"
27/0000	22.2	48.2	980	80	"
0600	22.9	48.0	982	75	"
1200	24.1	48.2	984	70	"
1800	25.4	48.4	986	70	"
28/0000	26.4	48.6	992	65	"
0600	27.1	48.8	994	65	"
1200	27.7	49.1	991	65	"
1800	28.4	49.3	987	65	"
29/0000	29.0	49.4	985	65	"
0600	29.5	49.4	983	70	"
1200	30.0	49.2	981	75	"
1800	30.6	48.9	979	75	"
30/0000	31.3	48.3	978	80	"
0600	32.8	47.1	976	80	"
1200	34.0	45.7	974	80	"
1800	35.2	44.0	971	80	"
31/0000	36.0	41.9	970	80	"
0600	37.1	40.0	971	80	"
1200	38.3	39.0	985	70	"
1800	39.1	38.2	995	60	Tropical Storm
01/0000	40.0	37.0	1000	45	" "
0600					Absorbed by an extratropical low
24/1800	15.7	43.2	968	95	Minimum Pressure

Table 2

**Tropical Cyclone Winds**  
(Ship encounters of 34 Knots or more)

Tropical Cyclone	Ship Name	Date Mo/Da	Time UTC	Position		Wind(kn) Dir/Speed	Pressure (mb)
				LatN	LonW		
Humberto	DVRUK4	8/28	1800	30.1	51.5	040/40	1016.5
	DVRUK4	8/29	1200	32.1	48.9	110/35	1016.5
	DVRUK4	8/29	1800	32.7	48.0	130/36	1016.5
	DVRUK4	8/30	1200	34.9	44.8	140/45	1013.0
	PPO	8/30	1200	30.1	45.1	230/35	1019.5
	DVRUK4	8/30	1800	35.5	44.0	130/60	1005.0
	3EOD8	8/30	1800	32.1	41.2	170/34	1016.0
	DGSM	8/31	1200	35.3	36.9	180/44	1015.1

Table 3.

PRELIMINARY FORECAST EVALUATION HURRICANE HUMBERTO  
HETEROGENEOUS SAMPLE(Errors in nautical miles for tropical storm  
and hurricane stages with number  
of forecasts in parenthesis)

Forecast Technique	Period (hours)				
	12	24	36	48	72
GFDI	61 (36)	90 (34)	124 (32)	172 (30)	309 (26)
GFDL*	70 (19)	116 (18)	134 (17)	168 (16)	263 (14)
VBAR*	51 (35)	88 (33)	134 (31)	199 (29)	361 (25)
AVNI	96 (22)	193 (22)	312 (22)	361 (20)	605 (16)
BAMD	53 (38)	95 (36)	136 (34)	186 (32)	306 (28)
BAMM	60 (38)	112 (36)	166 (34)	224 (32)	372 (28)
BAMS	79 (38)	153 (36)	227 (34)	291 (32)	435 (28)
A90E	51 (38)	89 (36)	119 (34)	170 (32)	263 (28)
CLIP	53 (38)	107 (36)	161 (34)	211 (32)	250 (28)
NHC Official	53 (38)	103 (36)	138 (34)	171 (32)	242 (28)
NHC Official (1985-94 10-yr average)	50	98		194	296

\* GFDL output not available until after forecast issued. VBAR output sometimes not available until after forecast issued.

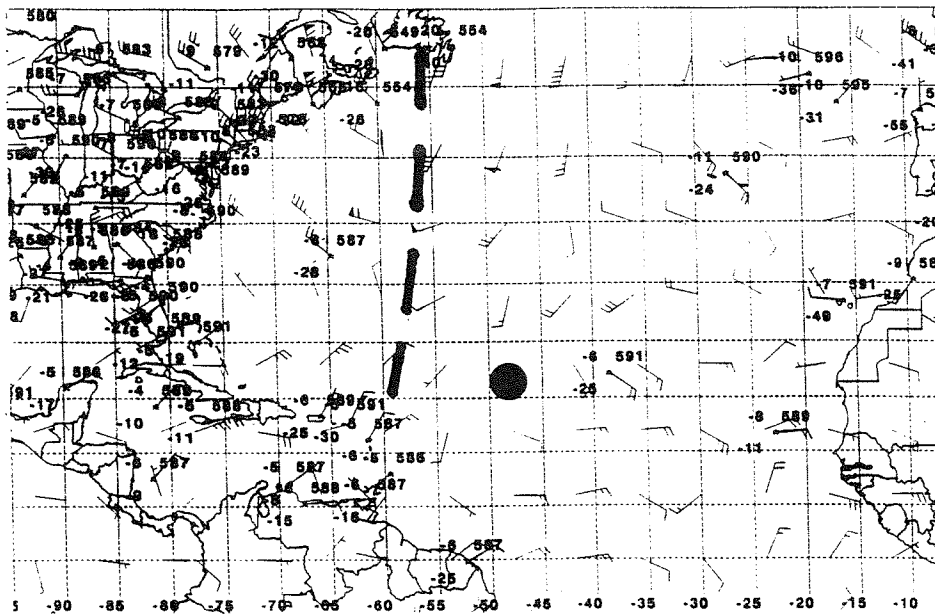


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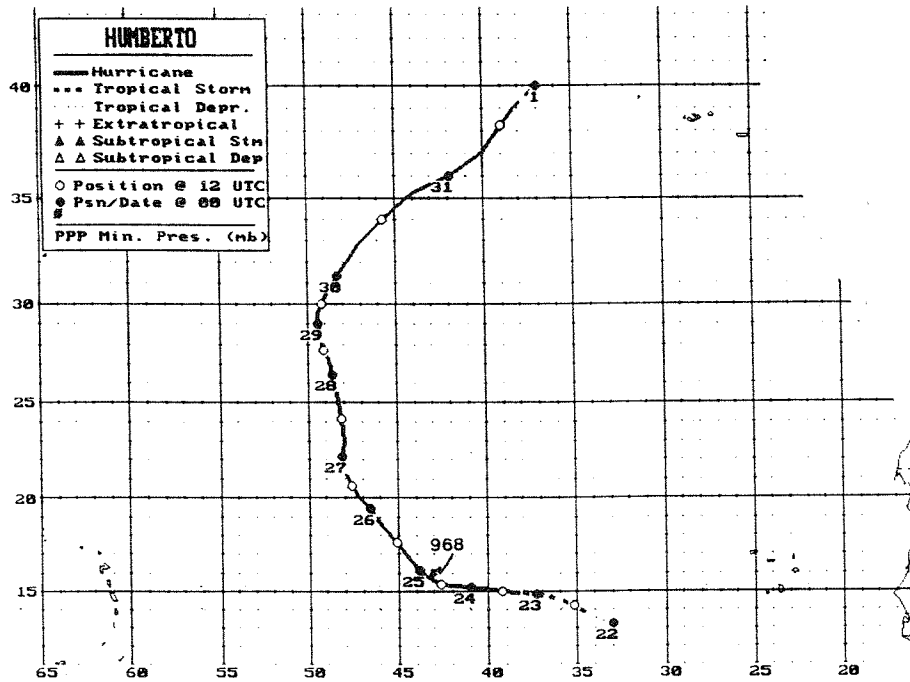


Fig. 2. Best track positions for Hurricane Humberto, 22 August - 1 September 1995.

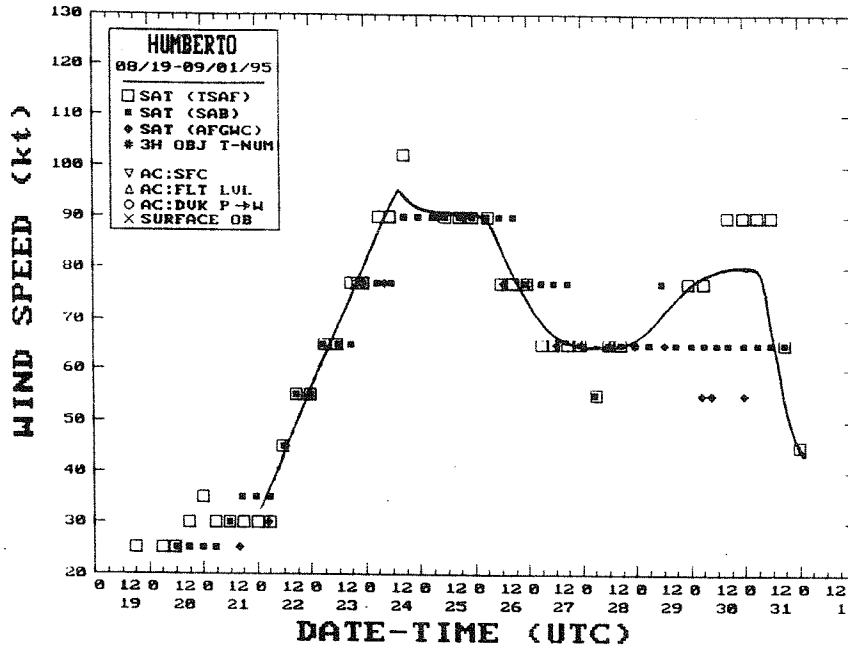


Fig. 3. Best track one-minute surface wind speed curve for Hurricane Humberto.

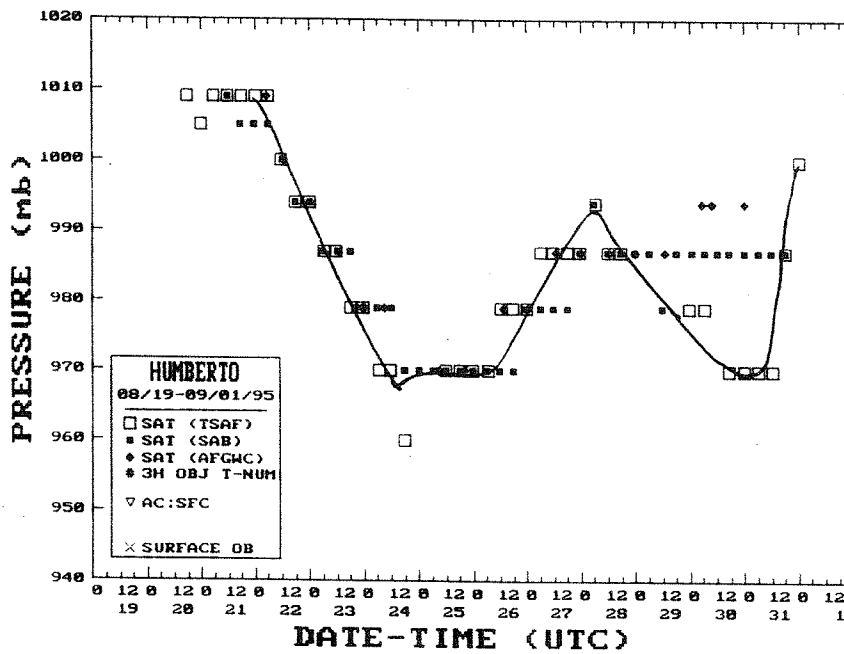


Fig. 4. Best track minimum central pressure curve for Hurricane Humberto.