

Tropical

LOWEST MEASURED MINIMUM PRESSURES OCCURRING IN THE NORTH ATLANTIC HURRICANES, BY REGION, PERIOD 1900-1981

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ABSTRACT

The occurrence of the record-breaking Hurricane Allen in August of 1980 prompted a review of minimum measured pressures occurring throughout the entire North Atlantic Basin, 1900 - 1981. Values for 19 regions are given.

1. DISCUSSION

This brief paper is an adaption from the author's extensive monograph of North American Hurricane Data, for 1900-1981. (2) This work continues.

The associated regions of interest are outlined in Figure 1. Table 1 presents a summary of the lowest measured pressures observed for each Region of the N. Atlantic, occurring exclusively in hurricanes. In some cases, these may have been observed some distance from the actual center of the hurricane eye, and may not represent the absolute minimum that may have occurred; however, the data presented are considered to be the most representative available, and are considerably better than that available for most other parts of the world.

For tropical cyclone track data, the reader is referred to the excellent atlas "Tropical Cyclones of The North Atlantic Ocean 1871-1980" (3) available from the National Climatic Data Center, Asheville, North Carolina.

Hurricane Allen, which occurred in August 1980, produced several new record low pressures for several regions of the North Atlantic Basin (see Table 1). One of the more notable was the 26.91 in. observed in the Southeast Caribbean Sea, greatly exceeding the 28.47 in. observed in Hurricane Flora while it passed through the same area, in 1963. Such intense hurricanes are seldom observed in the Southeast Caribbean Sea, and Allen represents

the first fully documented case of the same hurricane producing record low-pressure values throughout the entire Caribbean and into the Gulf of Mexico.

Other significant records include the 28.05 in. observed in Hurricane Faith over the north central Atlantic, September 1966, Hurricane Camille's 26.73 in. over the north central Gulf of Mexico, August 1969, and the 27.01 in. occurring over the south central Caribbean in the hurricane of November 1932.

Also of particular interest is the 28.12 in. listed for the northeast Gulf of Mexico. This region of the Gulf, which is densely populated and composed of primarily low-lying (10 feet or less above sea level) flood plain and barrier islands, receives the protection of the longitude-orientated Florida peninsula, and latitude-orientated Cuban peninsula to the south. Hurricanes entering the northeast Gulf must do so primarily by either crossing the Florida peninsula from the east or south, thereby weakening significantly before reaching this region, or recurving in the eastern Gulf of Mexico, crossing over western Cuba before doing so, and/or being deflected to the north and/or northeast by approaching westerlies aloft, primarily in the latter part of the hurricane season (October & November). Weakening here occurs either as a result of cooler, drier air being entrained into the system, or the close proximity to the Florida peninsula, or both.

TABLE 1. Lowest Measured Pressures Observed in The North Atlantic Basin, by Regions, 1900 through 1981.

REGION	SECTION NUMBER	HURRICANE NAME	STORM NO.	MONTH	YEAR	LOWEST PRESS.	NEW (1) RECORD
Gulf or Mexico:							
	NW 1	Carla	3	Sept	1961	27.49	26.84
	SW 2	Beulah	2	Sept	1967	27.25	
	N. Central 3	Camille	3	Aug.	1969	26.73	
	S. Central 4	Camille	3	"	"	26.81	26.55
	NE 5	none	6	Oct.	1921	28.12	
	SE 6	"Labor Day"	2	Sept	1935	26.35	
Caribbean Sea:							
	NW 1	Janet	10	Sept.	1955	27.00	26.88
	SW 2	none	10	Nov.	1932	27.20	
	N. Central 3	Flora	7	Oct.	1963	27.64	27.05
	S. Central 4	none	10	Nov.	1932	27.01	
	NE 5	David	4	Sept.	1979	27.29	27.06
	SE 6	Flora	7	Oct.	1963	28.47	26.91
Western North Atlantic:							
	Coastal NW 1	Edna	5	Sept.	1954	27.77	
	Coastal W 2	Helene	8	Sept.	1958	27.52	
	Coastal SW 3	"Great Atlantic"	7	Sept.	1944	27.15	
	Sub-Polar N 4	none	4	Oct.	1905	27.92	
	N. Central 5	Faith	6	Sept.	1966	28.05	
	S. Central 6	Carol	4	Sept.	1953	27.45	
	Tropical SW 7	David	4	Sept.	1979	27.55	

(1) All figures in this column pertain to values obtained from Hurricane Allen, August 1980.

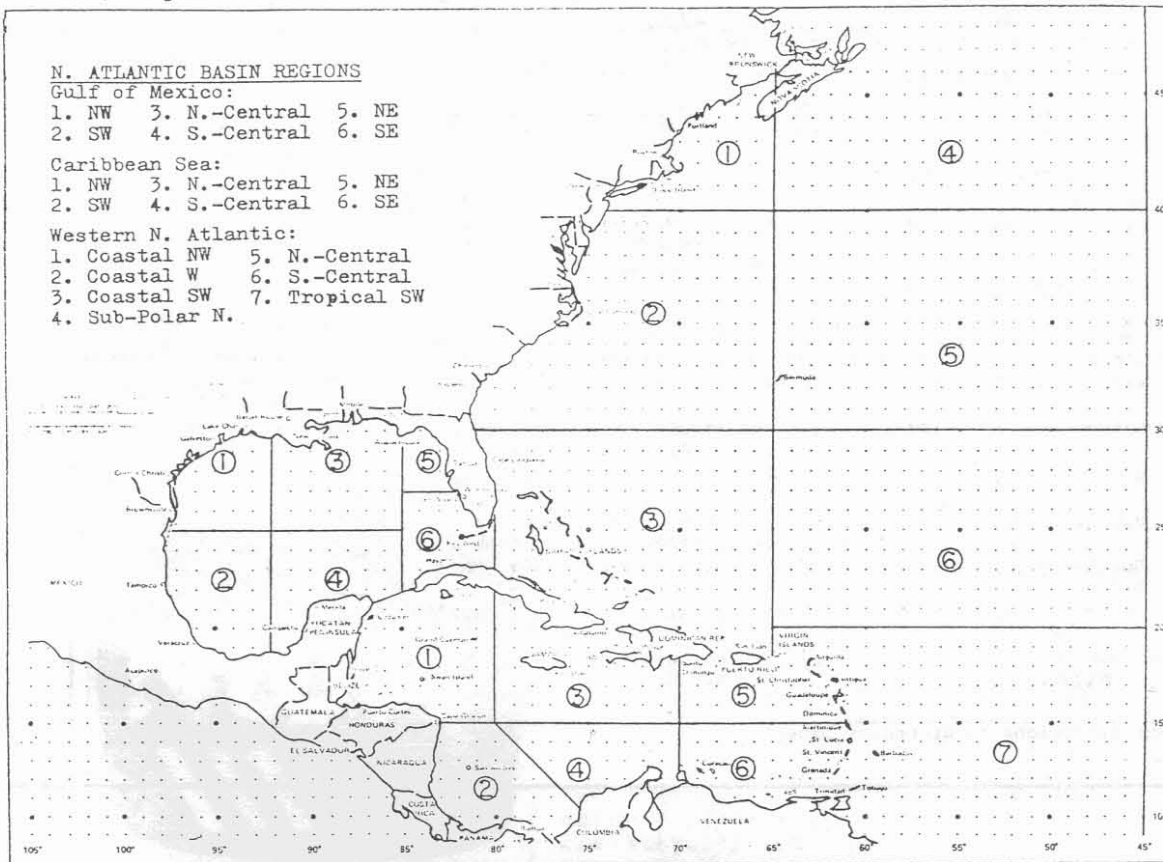


Figure 1. North Atlantic Basin regions

FOOTNOTES AND REFERENCES

1. Stephen M. Blumel has worked as a Hydrological Technician employed by the U.S. Geological Survey at Ft. Meyers, Florida. He has been a cooperative observer in the Central Florida severe weather network since 1966. He has also been an active NWA member and published previously in the National Weather Digest.
2. Blumel, Stephen M., 1982: Major Hurricanes of The North Atlantic 1900 - 1980. Unpublished Monograph (In Preparation). Ft. Myers, Florida.
3. Neumann, C.J., Cry, G.W., Caso, E.L., and Jarvinen, B.R., 1981: Tropical Cyclones of The North Atlantic Ocean 1871 - 1980. NCC/EDIS/NOAA, Asheville, NC, July.

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WEATHER NOTE: SOME MINIMUM PRESSURES OBSERVED IN GLOBAL TROPICAL CYCLONES

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In the author's course of conducting a global tropical cyclone climatology, the minimum pressures actually measured (instrumentally, by ship, aircraft, land station, etc.) have been compiled for most of the principal ocean and sea basins affected by these storms, while the storms were tropical (warm-core) in nature.

It should be emphasized that this list may be somewhat incomplete at this time, owing

to the sparsity of available data for some areas, e.g., New Caledonia, and relative timeliness with which reports are received from the various tropical ocean areas concerned. However, this listing is being made available at this time for the benefit of those who may be interested in this type of data. Criticisms/additions are welcomed by the author.

Name	Basin	Minimum Pressure		Location	Year	Month
		Mb.	In.			
Labor Day	Western North Atlantic	892	26.35	Central Florida keys	1935	Sept.
Camille	Gulf of Mexico	905	26.73	25.2°N, 87.2°W	1969	August
Allen	Caribbean Sea	899	26.55	21.6°N, 86.2°W	1980	August
Ava	Eastern North Pacific	915	27.02	650 n. mi. SW of Acapulco, Mex.	1973	June
Dot	Central North Pacific	952	28.11	Near 15°N, 146°W	1959	August
Tip	Western North Pacific	870	25.69	16.7°N, 137.8°E	1979	October
-----	Arabian Sea	947	27.97	14.8°N, 60.1°E	1963	May
-----	Bay of Bengal	919	27.14	False Point, India	1885	Sept.
-----	Bay of Bengal	920	27.17	Ship south of Chittagong, Bangladesh	1963	May
Monica	Southwest Indian Ocean	934	27.58	Rodriguez Is.	1968	March
-----	SW Pacific/Australia Region	914	27.00	Cossack, Australia	1881	January
Beatrice	Southwest Pacific	939	27.73	Poindimie, New Caledonia	1959	January

Table 1.
Minimum measured pressures occurring in tropical cyclones worldwide, by region.*

* See map of regions in preceding paper.