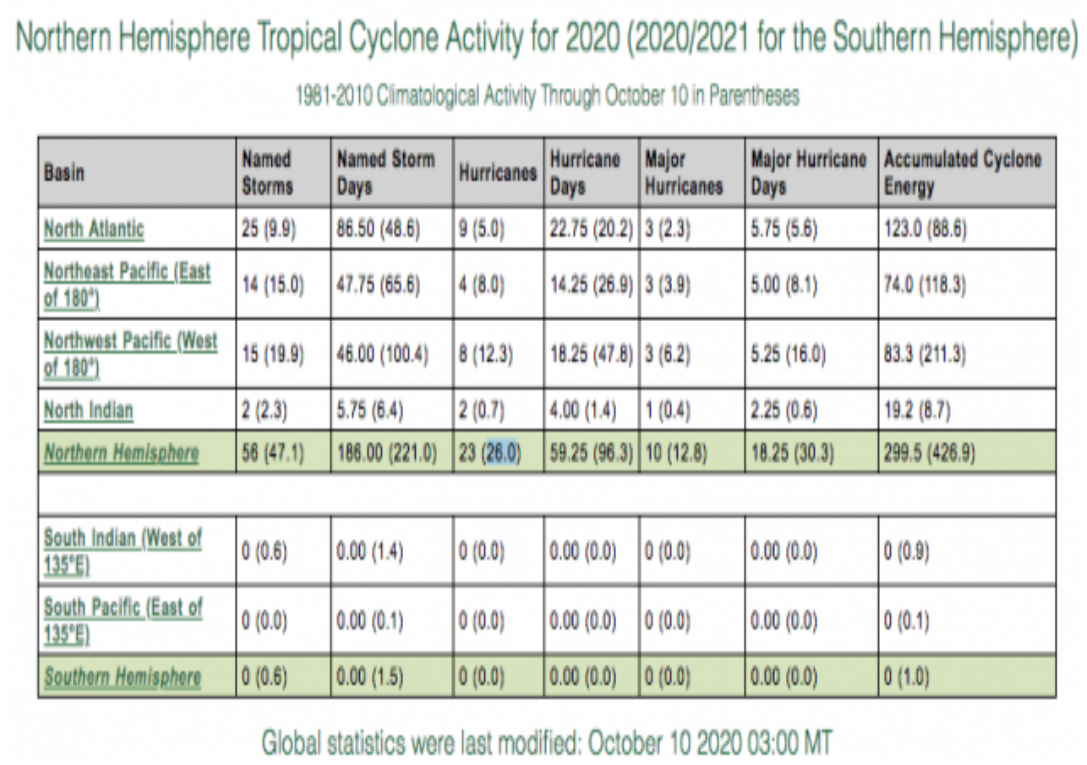
HURRICANE SEASON 2020 UPDATE



Northern Hemisphere Tropical Cyclone Activity for 2020 (2020/2021 for the Southern Hemisphere)

1981-2010 Climatological Activity Through October 10 in Parentheses

Basin	Named Storms	Named Storm Days	Hurricanes	Hurricane Days	Major Hurricanes	Major Hurricane Days	Accumulated Cyclone Energy
North Atlantic	25 (9.9)	86.50 (48.6)	9 (5.0)	22.75 (20.2)	3 (2.3)	5.75 (5.6)	123.0 (88.6)
Northeast Pacific (East of 180°)	14 (15.0)	47.75 (65.6)	4 (8.0)	14.25 (26.9)	3 (3.9)	5.00 (8.1)	74.0 (118.3)
Northwest Pacific (West of 180°)	15 (19.9)	46.00 (100.4)	8 (12.3)	18.25 (47.8)	3 (6.2)	5.25 (16.0)	83.3 (211.3)
North Indian	2 (2.3)	5.75 (6.4)	2 (0.7)	4.00 (1.4)	1 (0.4)	2.25 (0.6)	19.2 (8.7)
Northern Hemisphere	56 (47.1)	186.00 (221.0)	23 (26.0)	59.25 (96.3)	10 (12.8)	18.25 (30.3)	299.5 (426.9)
South Indian (West of 135°E)	0 (0.6)	0.00 (1.4)	0 (0.0)	0.00 (0.0)	0 (0.0)	0.00 (0.0)	0 (0.9)
South Pacific (East of 135°E)	0 (0.0)	0.00 (0.1)	0 (0.0)	0.00 (0.0)	0 (0.0)	0.00 (0.0)	0 (0.1)
Southern Hemisphere	0 (0.6)	0.00 (1.5)	0 (0.0)	0.00 (0.0)	0 (0.0)	0.00 (0.0)	0 (1.0)

Global statistics were last modified: October 10 2020 03:00 MT

Laura and Teddy and Delta were the strongest storms. Paulette and Teddy the most storm days. Laura Paulette, Teddy and Delta brought the most ACE points.

Real-Time North Atlantic Ocean Statistics by Storm for 2020 (source)

Year	Storm#	Name	Dates TC Active	Max Wind (kts)	MSLP (mb)	Named Storm Days	Hurricane Days	Major Hurricane Days	ACE
2020	1	ARTHUR	5/17-5/19	50	991	2.50	0.00	0.00	1.8
2020	2	BERTHA	5/27-5/27	45	1007	0.50	0.00	0.00	0.4
2020	3	CRISTOBAL	6/2-6/8	50	992	4.75	0.00	0.00	3.5
2020	4	DOLLY	6/23-6/24	40	1002	1.00	0.00	0.00	0.6
2020	5	EDOUARD	7/6-7/6	40	1005	1.00	0.00	0.00	0.6
2020	6	FAY	7/9-7/11	50	998	1.50	0.00	0.00	1.1
2020	7	GONZALO	7/22-	55	997	3.50	0.00	0.00	2.8

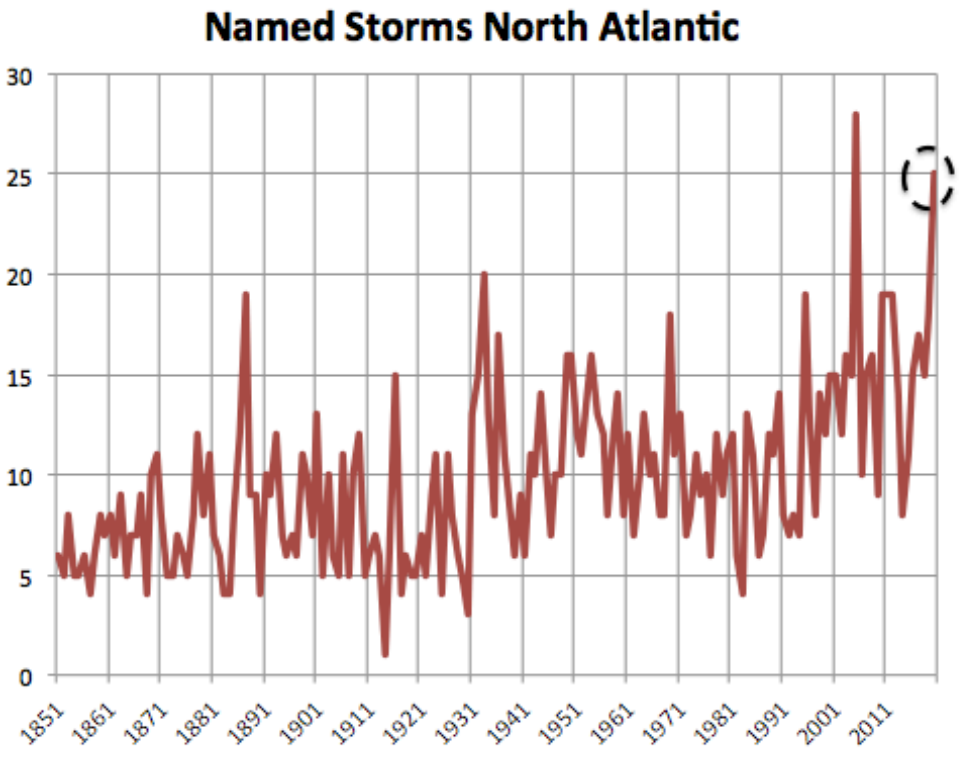
Year	Storm#	Name	Dates TC Active	Max Wind (kts)	MSLP (mb)	Named Storm Days	Hurricane Days	Major Hurricane Days	ACE
			7/25						
2020	8	HANNA	7/24-7/26	75	973	3.00	0.75	0.00	3.4
2020	9	ISAIAS	7/30-8/4	75	987	6.00	2.25	0.00	9.2
2020	10	JOSEPHINE	8/13-8/16	40	1005	3.00	0.00	0.00	1.8
2020	11	KYLE	8/14-8/16	45	1000	1.50	0.00	0.00	1.0
2020	12	LAURA	8/21-8/28	130	938	6.75	2.25	1.00	12.8
2020	13	MARCO	8/22-8/25	65	991	3.25	0.25	0.00	3.4
2020	14	OMAR	9/2-9/2	35	1003	0.75	0.00	0.00	0.4
2020	15	NANA	9/1-9/3	65	994	2.75	0.25	0.00	2.6
2020	16	PAULETTE	9/7-9/22	90	965	10.25	3.50	0.00	15.9
2020	17	RENE	9/7-9/12	45	1000	4.00	0.00	0.00	2.2
2020	18	SALLY	9/12-9/17	90	967	4.50	2.00	0.00	7.4
2020	19	TEDDY	9/14-9/23	120	945	9.00	7.25	2.75	27.8
2020	20	VICKY	9/14-9/17	45	1000	3.00	0.00	0.00	2.1
2020	21	BETA	9/18-9/22	50	994	4.00	0.00	0.00	3.3
2020	22	WILFRED	9/18-9/20	35	1007	1.75	0.00	0.00	0.9
2020	23	ALPHA	9/18-9/18	45	998	0.50	0.00	0.00	0.4
2020	24	GAMMA	10/3-10/5	60	980	2.75	0.00	0.00	2.5
2020	25	DELTA	10/5-10/10	120	953	5.00	4.25	2.00	15.6

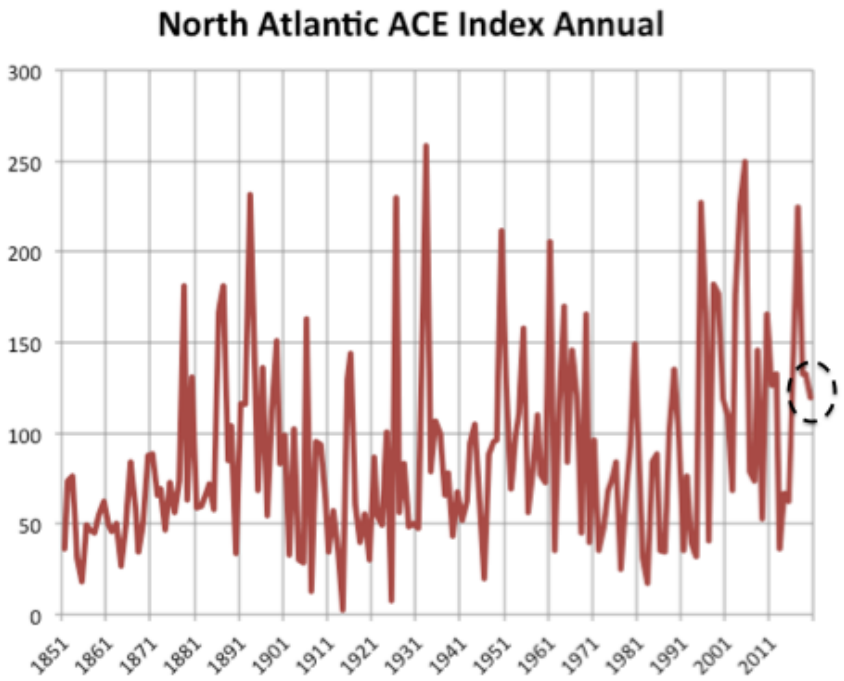
Se similarities to the last 1800s here.

For the North Atlantic, the number of storms ranked behind only 2005 while ACE ranked only the 40th of 170 seasons and 12th highest this century.

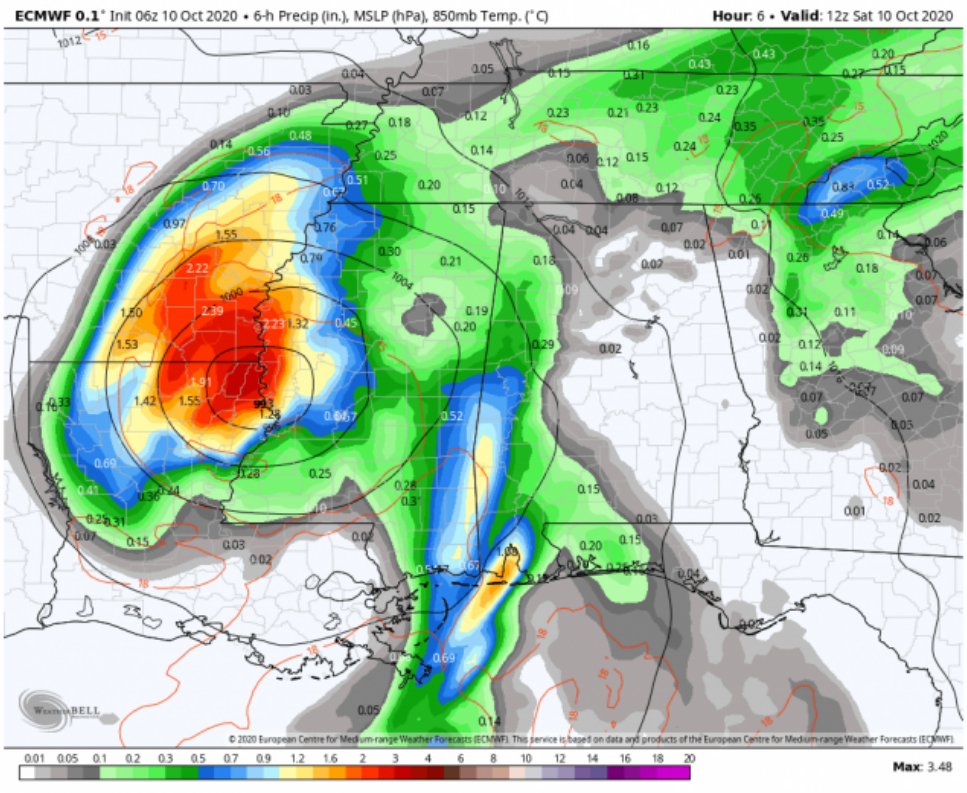
Named Storms by Basin	% Average
North Atlantic	245.1%
North Pacific	91.5%
Northwest Pacific	79.6%
North Indian Ocean	83.3%
Northern Hemiphere	119.8%

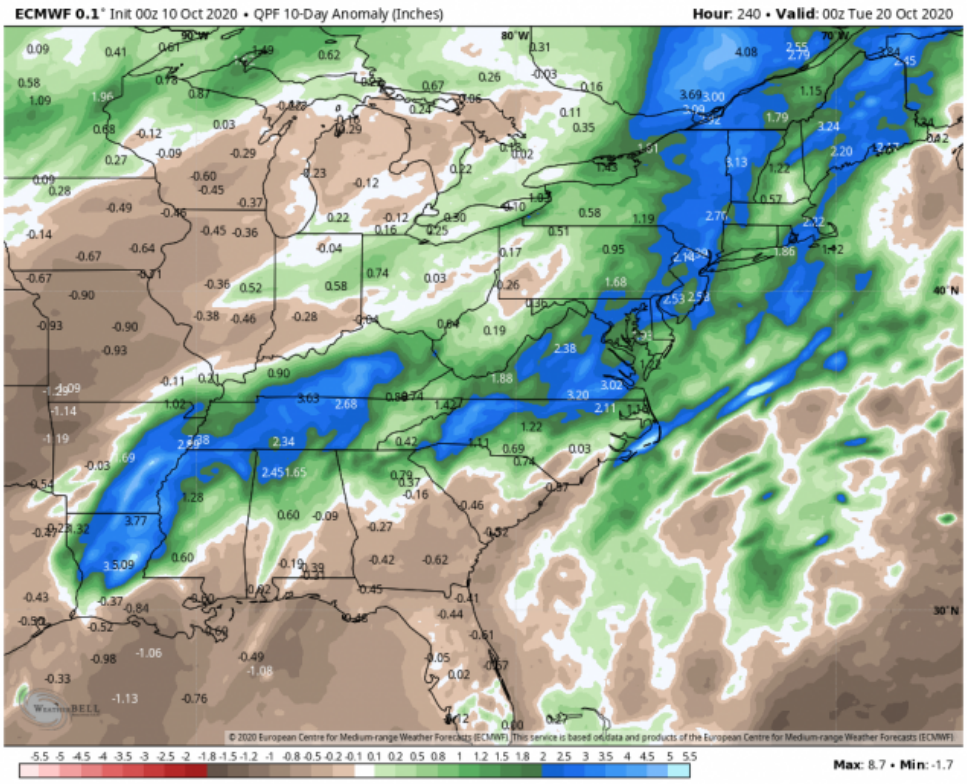
ACE Index by Basin	% Average
North Atlantic	137.2%
North Pacific	61.5%
Northwest Pacific	40.2%
North Indian Ocean	220.7%
Northern Hemiphere	69.9%



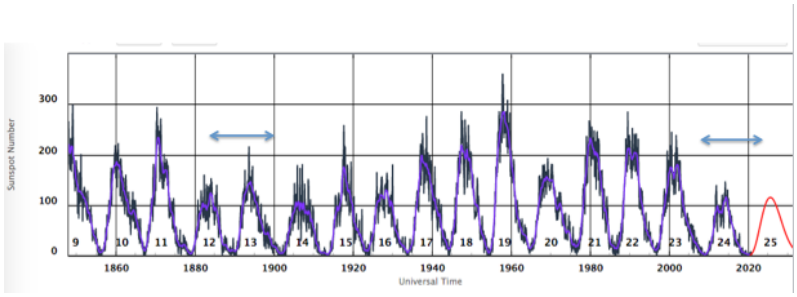


Delta is tracking through the delta - another big rain maker.

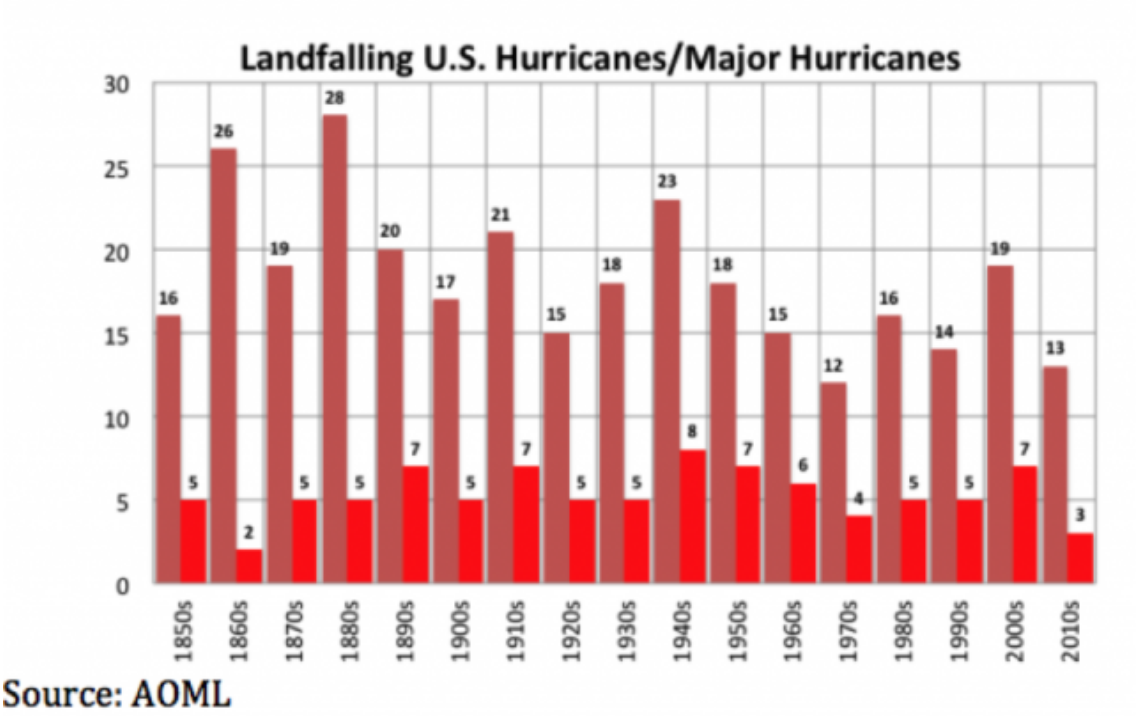




We are in a similar solar inactivity period as the 1880s-1900s.



Though landfalls have declined - last decade second least since 1850, there is a bump. Notice the active 1880-1890s!

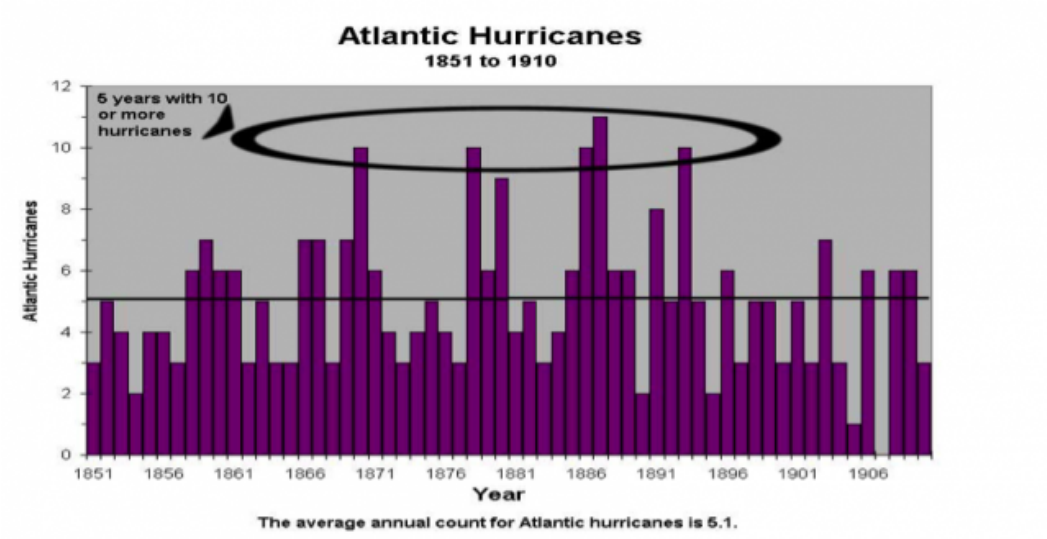


Source: AOML

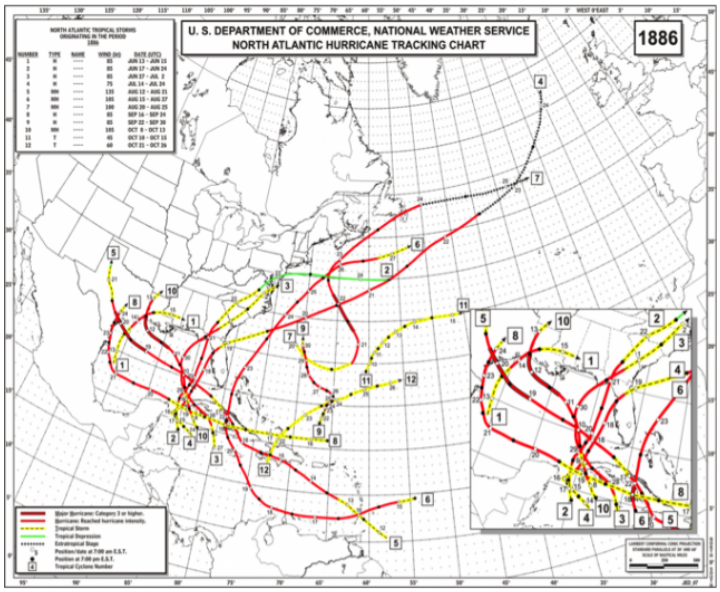
Dr. Neil Frank, longest serving Director of the NHC noted recently:

"Without question the most reliable indicator of a trend in hurricane activity in the Atlantic is to focus on land falling major hurricanes (3-5) in the mainline U.S. I doubt if a major hurricane could have hit the U.S. in the 1800s without being noticed, while a minor hurricane in a remote area could have been undetected so it is important to concentrate on major hurricanes.

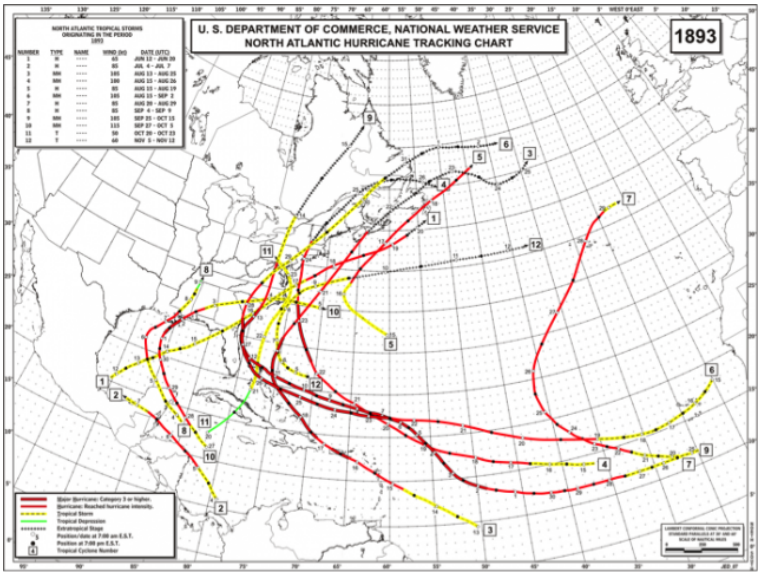
The Atlantic was active 1870-1910.



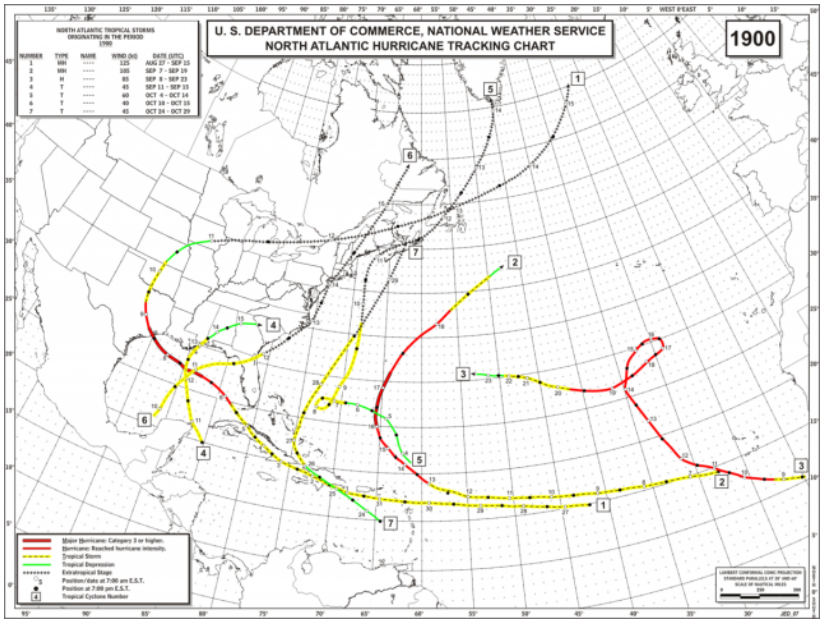
"*The most active hurricane season in the U.S. was 1886 when 7 hurricanes hit the Gulf coast* (3 in Texas). 4 of the 1886 hurricanes were major hurricanes). *One of the major hurricanes in Texas destroyed Indianola on the south shore of Matagorda Bay. At one time there were around 20,000 people in the city before a prior major hurricane in 1875 did major damage. The only thing in Indianola today is a cemetery with numerous headstones with dates 1875 or 1886."*



1893 had at least 10 hurricanes. Of those, 5 became major hurricanes. Two of the hurricanes caused over two thousand (2000) deaths in the United States; at the time, the season was the deadliest in U.S. history.

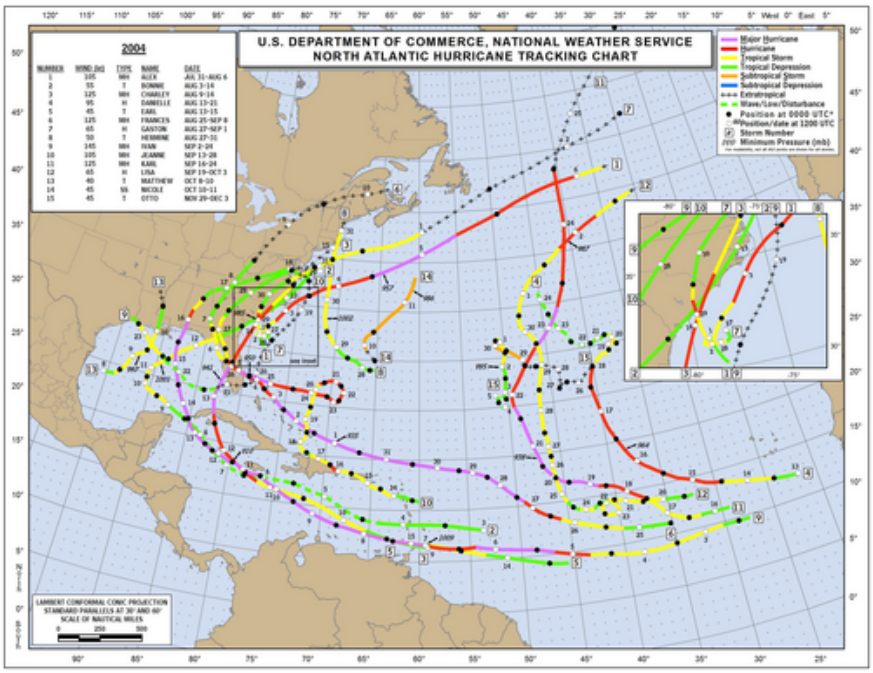


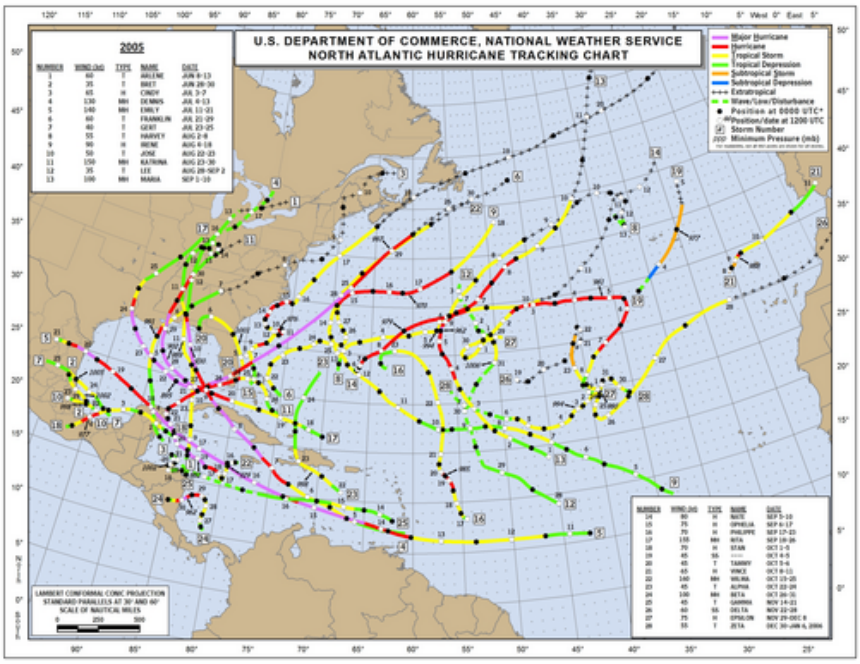
The was the quieter but deadly 1900.



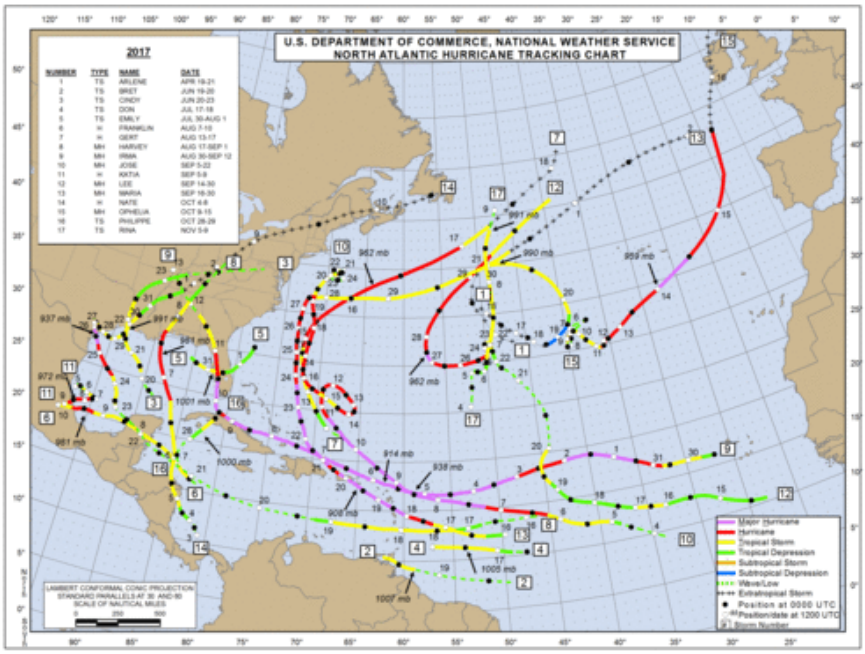
The Galveston Hurricane in 1900 killed at least 8,000 people with some estimates as high as 12,000, making it the deadliest natural disaster in U.S. history.

2004 and 2005 were two very active years, in Florida and the Gulf.

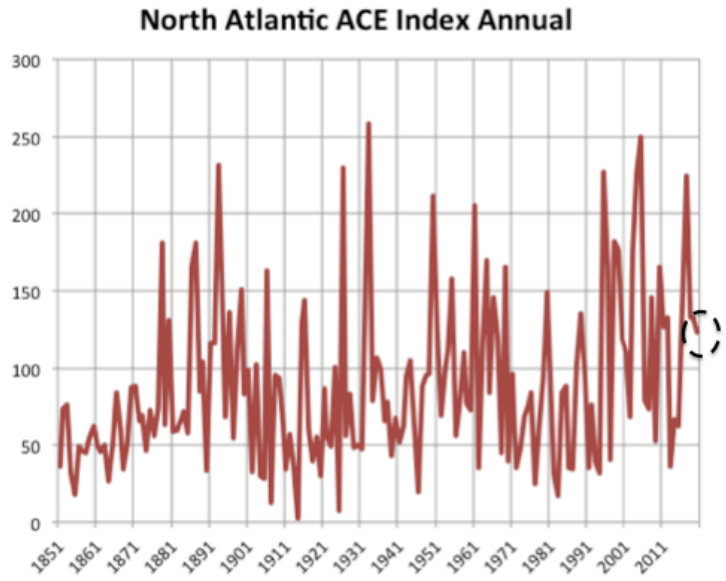



2005
U.S. DEPARTMENT OF COMMERCE, NATIONAL WEATHER SERVICE
NORTH ATLANTIC HURRICANE TRACKING CHART

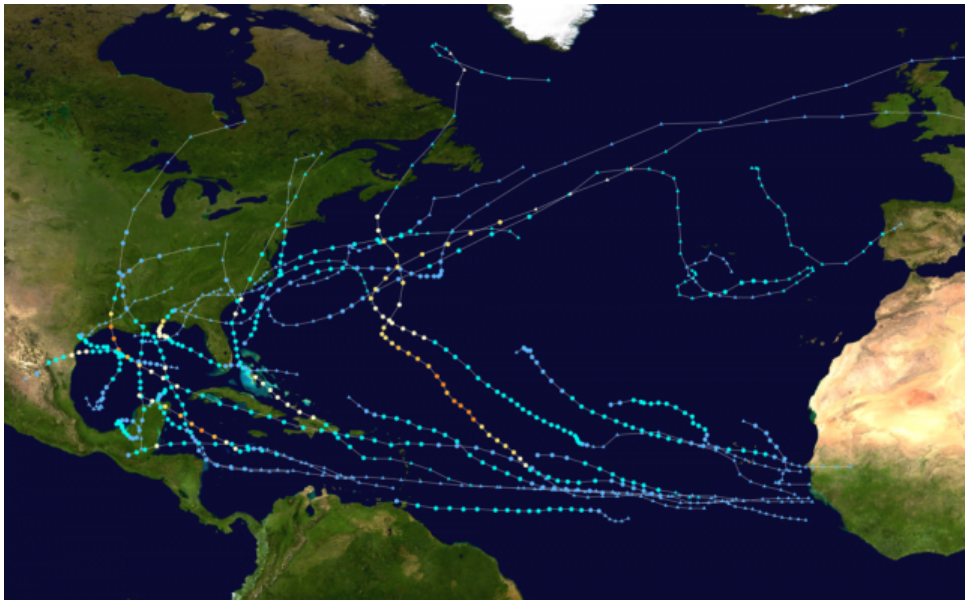
As was 2017.


2017
U.S. DEPARTMENT OF COMMERCE, NATIONAL WEATHER SERVICE
NORTH ATLANTIC HURRICANE TRACKING CHART

See the 1880s-1890s, 1920s-1930s, 1950s-1969s, and most recently, 2004, 2005, 2017. See how 2020 trails.



2020 prior to Delta



The ACE with Delta in the Gulf is at 122, less than 50% of 2005, 1995, 1933 and almost 2017.

The big years mentioned were in quiet sun periods. Note also 1933 occurred in quiet cycle 16 and Camille occurred at diminished cycle 20.

Less solar activity has been speculated to mean less warming of the high atmosphere and increased instability in the hurricane season especially in the lower latitudes including the Caribbean and Gulf.

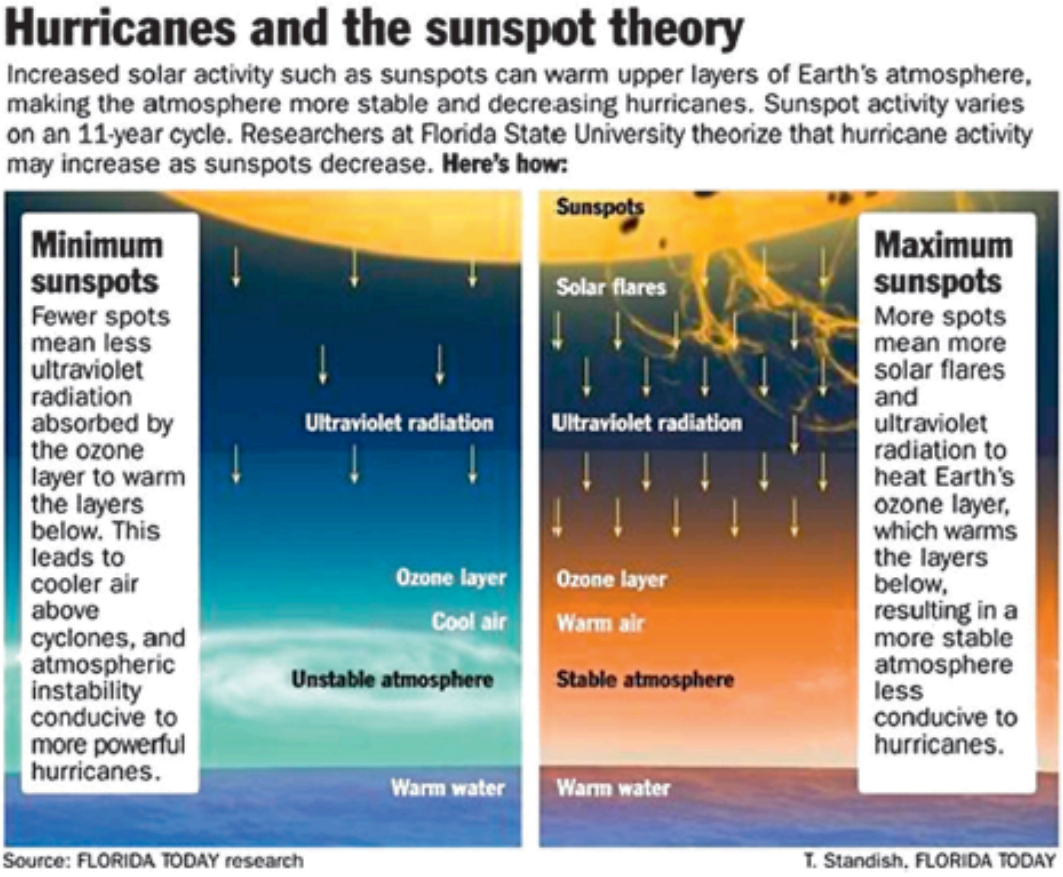


FIGURE 10 Research by Robert Hodges and Jim Elsner of Florida State University found the probability of three or more hurricanes hitting the United States goes up drastically during low points of the 11-year sunspot cycle, such as we're in now. Years with few sunspots and above-normal ocean temperatures spawn a less stable atmosphere and, consequently, more hurricanes, according to the researchers. Years with more sunspots and above-normal ocean temperatures yield a more stable atmosphere and thus fewer hurricanes.