Colorado State University (CSU)
Atlantic Hurricane Season Forecast

Colorado State University (CSU) has issued its April forecast for the 2021 Atlantic Hurricane Season. The forecast calls for ***17 named storms, 8 hurricanes, and 4 major hurricanes (Category 3+)*** between the months of June and November.

With the release of their forecast, CSU is predicting above-normal tropical cyclone activity in the Atlantic Basin during the upcoming 2021 season. The report cites several factors as to how and why this activity was forecast. The biggest reason surrounds the fact that the tropical Pacific Ocean remains characterized by weak La Niña conditions. While there is an expectation of an eventual transition from La Niña to ENSO-neutral conditions during the summer months, it is unlikely that El Niño conditions will be prevalent during the 2021 Atlantic Hurricane Season. El Niño typically correlates with reduced tropical activity in the Atlantic Ocean; while La Niña conditions often lead to enhanced cyclogenesis. The most recent statistical and dynamical ENSO model output from NOAA currently highlights a 44 percent likelihood of a La Niña event during the peak development month timeframe (August-October) and a 46 percent chance of ENSO-neutral conditions. There is just a 10 percent chance of El Niño.

A second factor revolves around current sea surface temperatures across the Atlantic Ocean. Water temperatures in the subtropical North Atlantic remain well above normal, which is not dissimilar to the pattern seen in December 2020. Perhaps the biggest difference from April 2021 and previous years at this time is that there is no current strongly positive North Atlantic Oscillation (NAO). Such a pattern usually shows warm waters along the U.S. East Coast and colder waters in the far North Atlantic and tropical Atlantic. The NAO is currently in neutral conditions. However, CSU notes that the current Atlantic sea surface temperature anomaly pattern is well correlated with what is typically seen in active Atlantic hurricane seasons.

CSU further highlights that forecast skill in April has only modest success when evaluated in hindcast mode. Forecast skill improves as the peak of hurricane season approaches.

As always, a reminder that it only takes one significant landfalling storm to make a hurricane season notable from a humanitarian and financial perspective.

The tables on the next page show the CSU forecast, including probabilities of landfall on the United States mainland. Visit the Appendix below to view historical seasonal forecast performance versus the actual observed Atlantic activity. The full report is available at CSU's Tropical Meteorology webpage (http://tropical.atmos.colostate.edu/). The next forecast update is expected on June 3.

CSU Atlantic Basin Hurricane Season Forecast (June 1 – November 30)

Forecast Parameter	Average Year (1981-2010)	2021 (April 2021)
Named Storms	12.1	17
Named Storm Days	59.4	80
Hurricanes	6.4	8
Hurricane Days	24.2	35
Major Hurricanes	2.7	4
Major Hurricane Days	6.2	9
Accumulated Cyclone Energy (ACE)	106	150
Net Tropical Cyclone Activity	116%	160%

Source: Colorado State University

CSU Major Hurricane Landfall Probabilities (June 1 – November 30)

Forecast Parameter	Average Year	2021 (April 2021)
Entire U.S. Coastline	52%	69%
U.S. East Coast (including FL Peninsula)	31%	45%
U.S. Gulf Coast (FL Panhandle to Brownsville, TX)	30%	44%

***Expected 58% risk of major hurricane tracking into the Caribbean (average is 42%)

Source: Colorado State University

Appendix

Historical Colorado State University Forecast Validation Since 2000

Season	April NS	June NS	August NS	Actual NS	April HU	June HU	August HU	Actual HU	April MHU	June MHU	August MHU	Actual MHU
2000	11	12	11	15	7	8	7	8	3	4	3	3
2001	10	12	13	15	6	7	7	9	2	3	3	4
2002	12	11	10	12	7	6	4	4	3	2	1	2
2003	12	14	18	16	8	8	10	7	3	3	3	3
2004	14	14	13	15	8	8	7	9	3	3	3	6
2005	13	15	20	28	7	8	11	15	3	4	6	7
2006	17	17	16	10	9	9	7	5	5	5	3	2
2007	17	17	16	15	9	9	8	6	5	5	4	2
2008	15	15	17	16	8	8	9	8	4	4	5	5
2009	12	11	10	9	6	5	4	3	2	2	2	2
2010	15	18	18	19	8	10	10	12	4	5	5	5
2011	16	16	16	19	9	9	9	7	5	5	5	4
2012	10	13	14	19	4	5	6	10	2	2	2	2
2013	18	18	18	14	9	9	8	2	4	4	3	0
2014	9	10	10	8	3	4	4	6	1	1	1	2
2015	7	8	8	11	3	3	2	4	1	1	1	2
2016	13	14	15	15	6	6	6	7	2	2	2	4
2017	11	14	16	17	4	6	8	10	2	2	3	6
2018	14	14	12	15	7	6	5	8	3	2	1	2
2019	13	14	14	18	5	6	7	6	2	2	2	3
2020	16	19	24	30	8	9	12	13	4	4	5	6
2021	17				8				4			

NS: Named Storms
HU: Hurricanes (Category 1+)
MHU: Major Hurricanes (Category 3+)

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