Forecast of the 2026 Hurricane Activities over the North Atlantic

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According to our model, hurricane activities over the North Atlantic are expected to be above average for 2026 as showin in Table 1. The prediction includes total numbers of named storms, hurricanes, major hurricanes, and accumulated cyclone energy (ACE, defined as the sum of the squares of the 6-hourly windspeeds in knots of storms at least of tropical storm strength). Our forecast combines dynamic forecasts with machine learning as informed by our physical understanding of hurricane activities.

We utilize a Random Forest approach based on seasonal forecast data from the European Centre for Medium-Range Weather Forecasts (ECMWF). We use the forecast July/August/September tropical Atlantic area-averaged sea surface temperatures (SSTs) in the same region used in our June predictions (Davis, Zeng, and Ritchie 2015; Davis and Zeng 2019) as well as August/September area-averaged SSTs in the Niño 3.4 region. Our method uses 25 ensemble members from 1981-2016 and 51 members from 2017-2026. We calibrate the model using data from 1981 to 2007: we first train the model on the first ensemble member (from the model control run) on all data from 1981 to 2007, use that model to predict for the other members over the same time period, and average predictions from all members as our prediction for that year. Then we validate the model using data from 2008 to 2025 in "real time" (for example, for 2015, we would train the model using data from 1981 to 2014 and use the 2015 SST data to make a prediction for 2015).

Table 2 compares our model's performance during the calibration and validation periods against the 5-year running average, or a no-skill metric. The model outperforms the no-skill category in all variables.

The big story with this season will be the possibility of a very strong El Niño, in fact the highest SST values in the Niño 3.4 region in our model. This makes our forecast of an active year surprising, but another factor to consider is the high forecasted SSTs in the Atlantic which are among the highest in the model. The setup feels similar to 2023 though the Atlantic SST anomaly is not as high and the ENSO anomaly is higher. Our forecast this year is very similar to 2023 where the observed values fell within our ranges for all categories except major hurricane.

	2026 Prediction	Probability Range	Median Since 1981
Hurricanes	9	7-11 (67%)	7
Major Hurricanes	4	3-5 (67%)	3
Named Storms	20	17-23 (71%)	14
ACE	155	114-196 (69%)	110

Table 1. 2026 tropical outlook.

We will update our prediction in early June.

Reference:

Davis, K., X. Zeng, and E. A. Ritchie, 2015: A New Statistical Model for Predicting Seasonal North Atlantic Hurricane Activity. Wea. Forecasting, 30, 730–741, doi: 10.1175/WAF-D-14-00156.1

Davis, K. and X. Zeng, 2019: Seasonal Prediction of North Atlantic Accumulated Cyclone Energy and Major Hurricane Activity. Wea. Forecasting, 34, 221–232, doi: 10.1175/WAF-D-18-0125.1

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Category	Calibration	Validation	5-yr Average
Named Storms	2.6	3.3	4.5
Hurricane	1.9	2.2	2.8
Major Hurricane	1.2	1.1	1.4
ACE	43.8	33.1	42.1

Table 2. Mean absolute errors of our forecasts and those using the 5-year average as the prediction. All three columns use data as described above. 5-yr average is for the same period as the validation test.