



**Wilkins Weather**  
Technologies, L.P.  
1977-2017

# 2017 Atlantic Hurricane Season Outlook

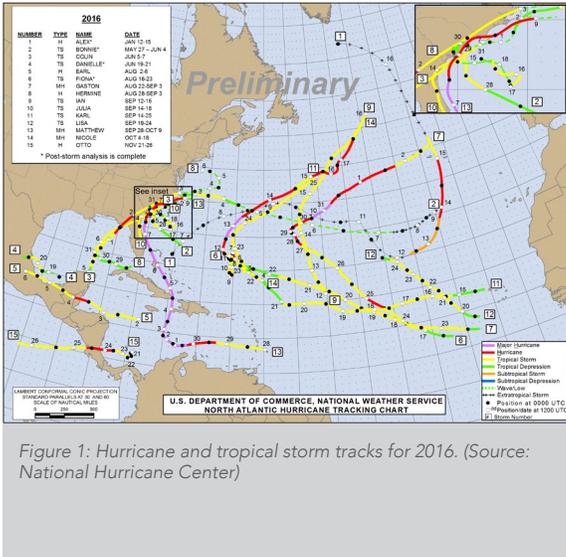


Figure 1: Hurricane and tropical storm tracks for 2016. (Source: National Hurricane Center)

The potential return of a weak El Niño during the upcoming summer months is expected to drive a **near normal level of tropical activity** for the upcoming 2017 Atlantic Hurricane Season. In addition to an outlook for the upcoming season, this article will include a review of the above normal North Atlantic hurricane season of 2016, which was accurately predicted in last year's seasonal outlook. Factors considered this year include status of the El Niño cycle, current and forecasted sea surface temperatures (SSTs) across the Atlantic, and Pacific and combined effects on the global atmospheric circulation pattern with subsequent influence on the tropics.

A few facts about the 2016 Atlantic hurricane season:

- Nearly \$16.0 billion in damages and about 1,800 fatalities were directly caused across North America and the Caribbean. The primary contributors were Hurricane Matthew and Hurricane Earl.
- Hurricane Alex was the first hurricane to form in January since 1938.
- Once again, no major hurricane made U.S. landfall. The last major hurricane (Cat 3 or higher) landfall was Wilma in October 2005.

## Review of the 2016 Hurricane Season

	2016 WWT forecast	2016 season results	30-yr median (1981-2010)
Named storms	15	15	12.1
Hurricanes	9	7	6.4
Major hurricanes	3	3	2.7

Table 1: Wilkins Weather's 2016 North Atlantic basin hurricane season forecast.

Compared to the early tropical Atlantic seasonal forecasts that were issued by various national meteorological services and scientific agencies, the early May 2016 forecast issued by Wilkins Weather was the most accurate in predicting the number of named storms, along with the number of major

The forecast for a La Niña developing during the summer of 2016 did verify which contributed to above normal tropical activity across the Atlantic basin. These effects were particularly highlighted by the active period experienced during the latter part of September into early October.

## Climatology

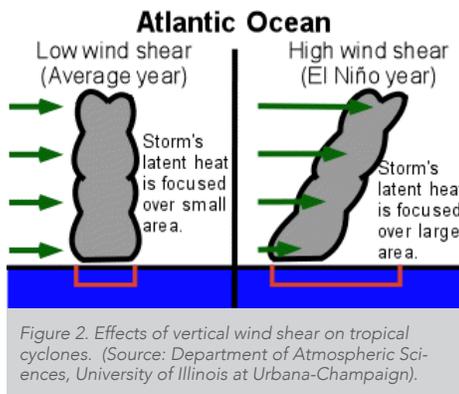
Prior to our 2017 North Atlantic tropical season forecast, an overview of the basin's climatology over the past 60 years is presented. During this time period, there have been cycles in the level of tropical activity and are primarily defined by the Atlantic Multidecadal Oscillation (AMO).

While the 60-year average for Atlantic basin is 10.9 named storms, 6.2 hurricanes and 2.6 major hurricanes, an examination of the 30-year median shows a recent rise in tropical activity across the North Atlantic basin. This can generally be attributed to the warm phase of the AMO that has been in place since 1995. Over the past 22 years, the North Atlantic basin has been especially active with five of the most active seasons (1995, 2005, 2010, 2011 and 2012) in the past 60 years occurring.



Hurricane Matthew. This image was taken on October 7, 2016 as the storm moved along the Florida coast.

# Sea Surface Temperatures



Warmer SSTs lead to increased evaporation, which yields additional moisture in the lower atmosphere. An important factor in the tropical cyclone development is the availability of latent heat. Latent heat is the release of energy as the moist air rises, transferring energy to the atmosphere as the vapor condenses to droplets. The increased amount of low-level moisture yields a higher potential amount of latent heat which destabilizes the atmosphere.

Above normal SSTs across the equatorial Pacific can also impact tropical development in tropical Atlantic basin. The variations in SSTs are known as the El Niño-Southern Oscillation (ENSO). The ENSO consists of two phases: El Niño, warmer than normal SSTs, and La Niña, cooler than normal SSTs. The vertical wind shear, the difference between the upper-level and lower-level winds, is enhanced across the North Atlantic basin during an El Niño event, (Figure 2). In this enhanced shear environment (right panel of Figure 2), tropical development across the North Atlantic basin is inhibited whereas during La Niña years, storms typically can form more easily due to lower vertical wind shear.

The central and eastern Pacific basins are currently experiencing ENSO-neutral conditions (Figure 3) and may transition El Niño conditions towards the end of summer. This translates into a neutral to slightly positive factor for a less active tropical season.

## Atlantic Multidecadal Oscillation

The Atlantic Multidecadal Oscillation (AMO) is a naturally occurring pattern extending across the Atlantic Ocean, typified by variations in both the SSTs and the sea level pressure. As indicated by the phase names, the "warm phase" of the AMO is generally associated with warmer SSTs and weaker trade winds. Research indicates that there is a relationship between the AMO phase and long-term cycles of tropical activity across the North Atlantic basin.

The AMO has been above normal since April 2015 and is expected to remain positive until at least October 2017 with the most recent value of 0.175 (March 2017). The positive AMO phase is a leading positive factor for a more active tropical season.

## Conclusion

The Wilkens Weather team has examined all of the factors discussed in this report and is forecasting a near normal 2017 Atlantic hurricane season.

	2017 WWT forecast	30-yr median (1981-2010)	2016 season
Named storms	12	12.1	15
Hurricanes	5	6.4	7
Major hurricanes	2	2.7	3

Table 2: Wilkens Weather's 2017 North Atlantic basin hurricane season forecast.

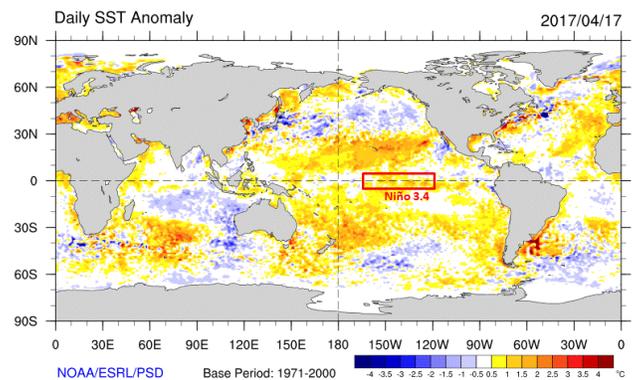


Figure 3: Worldwide sea surface temperature anomalies (°C) as of April 17, 2017. (Source: NOAA – Earth System Research Laboratory).

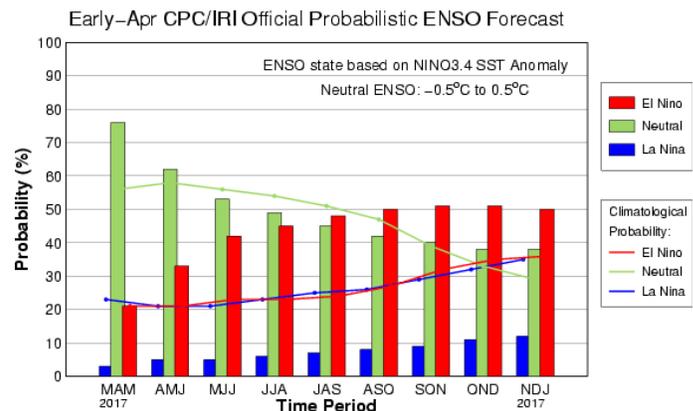


Figure 4: Niño 3.4 probabilistic forecast model outputs for 16 dynamical and 8 statistical models. This information is compiled and published by the International Research Institute for Climate Prediction at Columbia University.