



## SHORELINES – August 2019

As presented to the *Island Review* magazine

### 2019 Hurricane Season Preview

The 2019 hurricane season started on June 1<sup>st</sup> and will sunset six months later on November 30<sup>th</sup> - trends of dynamics associated with *El Niño*-Southern Oscillation, sea surface temperatures, vertical wind shear, moist or dry air, and the Saharan Air Layer (dust) can provide a clue of whether or not the environmental conditions are favorable for cyclone development (i.e, tropical storms and hurricanes). Meteorologists in turn often use this information to forecast the general level of activity we can expect for the year. However predicting intensities for each cyclone and landfall strike locations in advance of the hurricane season are going to continue to be speculative for a while. There’s just too many variables at play to get at that granular level and of course there’s unpredictable weather patterns that develop and fade over and near land which also steer cyclones – all impossible to predict/forecast weeks and months ahead of time.

This again is why we like to look at the overall activity expected, which can foreshadow our probability of being impacted. To these ends, the Barcelona Supercomputing Center in cooperation with Colorado State University maintain a [website](#) summarizing roughly eighteen Atlantic hurricane season forecasts for 2019. That’s a lot, and our preference is to drill down and review the predictions produced by groups that make not just their forecasts public, but verify their prediction skill in the public arena as well. This really leaves us with; **(1)** the Tropical Meteorology Project at [Colorado State University](#), **(2)** the [University College London](#), U.K. for Tropical Storm Risk, and **(3)** our federal voice for climatology/meteorology matters, the National Oceanic & Atmospheric Administration ([NOAA](#)). We subsequently take these groups’ last prediction before or near when the hurricane season starts and begin to “torture the statistics until they confess” as one my favorite professors used to say.

	NOAA (median) 5/23/19	Colorado State University, US 6/4/19	University College London, UK 5/30/19	Average of Forecasts	Historical Average (1981-2010)
<b>Total No. of Named Tropical Cyclones</b>	12	14	12	13	12
<b>Tropical Storms</b>	6	8	6	7	6
<b>Hurricanes / Major</b>	6/3	6/2	6/2	6/2	6/3
<b>Accumulated Cyclone Energy (ACE) Index</b>	94	100	88	94	104

**Table 1** - Summary comparing publicly available pre-season predictions for the 2019 Hurricane Season with average activity.

As the accompanying prediction summary table indicates, we could expect 13 named cyclones, 6 of which will generate into hurricanes, with 2 of these becoming a major hurricane (on average). *El Niño* Southern Oscillation (ENSO) warm phase (that’s an *El Niño* rather than a *La Niña*) is present that generally suppress cyclone development, but on the flip side; both sea surface temperatures are expected to be warmer-than-normal in the Main

Development Region (MDR) of the Atlantic (even warmer than last year) and weak tradewinds are also expected in the eastern part of the MDR. These competing interests (*El Niño* vs. warm water and less shear) are resulting in a “near normal” hurricane season prediction for 2019.

As also evidenced from the summary table, the forecast groups are in good agreement with one another including with respect to the *Accumulated Cyclone Energy Index* (ACE Index). The ACE Index is simply a measurement taking a storm’s wind speed strength for each 6-hour period of its existence into account. The larger the ACE Index value, the more active the season. The ACE Index is actually one of the more revealing parameters we can use and serves as a better barometer of whether a hurricane season is truly “active” or not. The longer duration and/or more intense each cyclone (tropical storm or hurricane); the more contribution to the ACE Index Value – and vice versa. For instance, the 2017 hurricane season had the 7<sup>th</sup> highest ACE index on record and was notably punctuated by the month of September, which had the highest ACE contribution ever for a single month (175). Hurricanes *Irma*, *Jose’*, and *Maria* contributed more than 40 ACE a piece – the first time three tropical cyclones each produced >40 in a single season. And just in case you are wondering...the ACE Index Value for last year (2018) was 129 with *Florence* contributing 37 points alone.

Accordingly, the ACE Index range forecasted for 2019 (Table 1) is anywhere from 88 to 100, and the 94 value is the median prediction for NOAA; not the upper end which could be as high as ~130. Traditionally ACE Index values can be scaled to describe cyclone activity as follows; “below normal” (<68), “near normal” (68 – 106), “above normal” (106 – 168), and even “hyperactive” (>168). Thus in theory, the three major forecast groups in conglomerate are stating we should expect a “near normal” hurricane season.

But again as we experienced in 2018 with *Florence*, “it only takes one” with the year of 1992 serving as a prime example – just 7 named cyclones, 4 of which were hurricanes, with one of those classified as major, and an ACE Index Value of 75. Sounds like a very quiet year, except the one major hurricane was *Andrew*, which struck Florida and was the costliest natural disaster in U.S. history until *Katrina* in 2005. Also, the National Hurricane Center (NHC) track forecasts during the 2018 Atlantic hurricane season were generally very accurate once a cyclone did develop, but forecasters are still wrestling with intensity estimates and especially for the hurricanes that undergo rapid intensification; so again and as always - be prepared and be safe.