

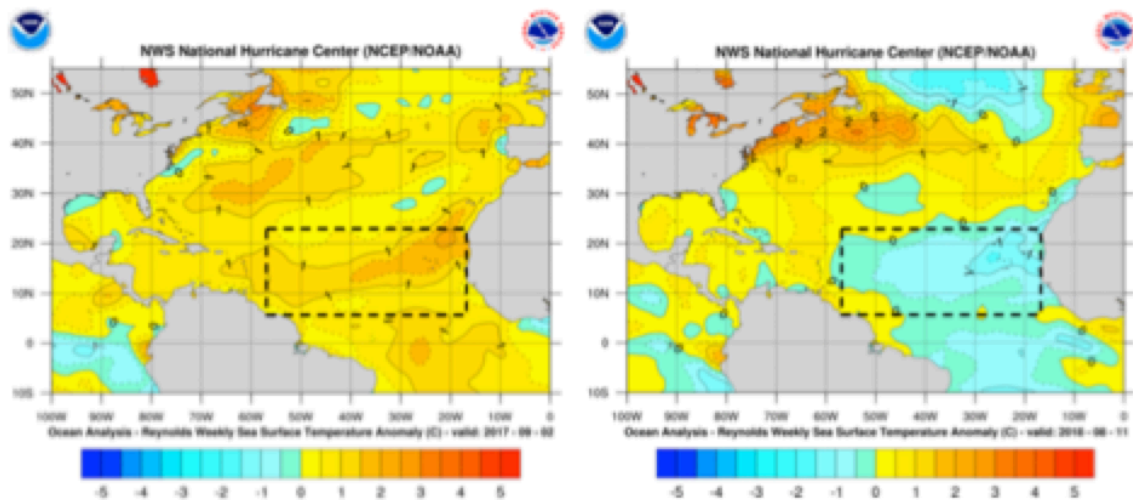
THEN THE RAINS CAME

It has been a changeable and at time extreme spring and summer. The cold and snow of March gave way to a cold April and some very chilly days well into the spring. Warmth with some very hot days followed in the early to mid summer. Then the rains came with strong thunderstorms. The wet August spell put an end to a borderline droughty spell the last few years. It became very muggy, keeping nighttime temperatures up and air conditioners on.

The changes all have to do with the wind direction. The jet stream brought chilly air masses (and snow) into eastern Canada even into June. The winds around these cool air masses turn to the northeast here in New England coming in off cool land and water. Then increasingly warm air masses built north into the Canadian prairies and came east. The surface winds turned northwesterly. In summer, warm air crossing the Appalachians and sinking down into the Merrimack Valley and coast heats by compression 5F or more. Our hottest days come with these 'downslope winds'. Historically all the 100F days come with a west to northwest wind.

When late July and August came, our surface winds turned southwesterly.

This change was caused by a sharp cooling of the subtropical Atlantic Ocean waters relative to 2017



Summer 2017

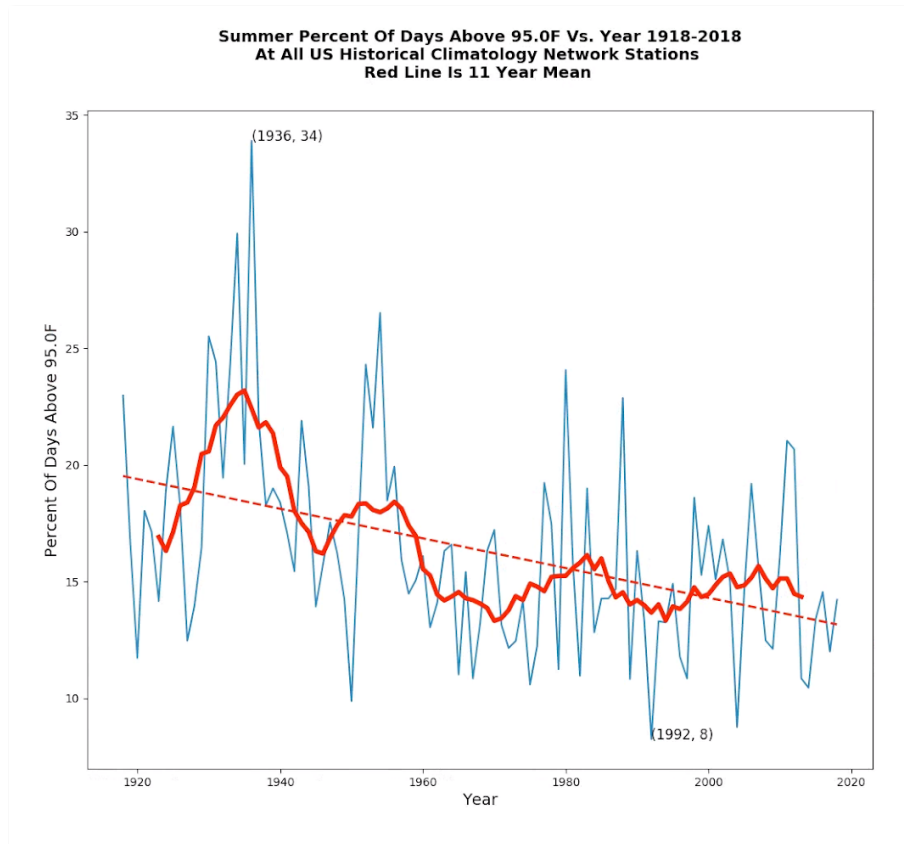
Summer 2018

The Atlantic cool subtropical pattern leads to that stronger than normal Atlantic high pressure called the 'Bermuda High'. In these patterns, this regular feature of our climate expands south and west and acts as a pump for moisture much like we see in the southeastern and eastern Asia monsoon flow. This causes nights to be warm and muggy, and days very warm and showery here in the east.

Uncomfortable yes, unprecedented heat no. You may be surprised that most of the extreme heat records for the region, country and world occurred in the early 20th century or earlier. The 1930s was the record decade in the United States as a whole. For the east, the 1950s was the warmest but extreme heat has occurred even in cold periods.

July 1911 was an incredible hot month in the northeast with the northwest wind coming off a warm dry Canada where prairie fires reigned. Read about it on the New England Historical Society site <http://www.newenglandhistoricalsociety.com/the-1911-heat-wave-was-so-deadly-it-drove-people-insane/>.

For the region and nation (all stations) the number of 90, 95 and 100F all continue the downtrend since the 1930s. Nights are warmer thanks to the fact most observations are now in urban centers or airports, which hold the daytime heat.



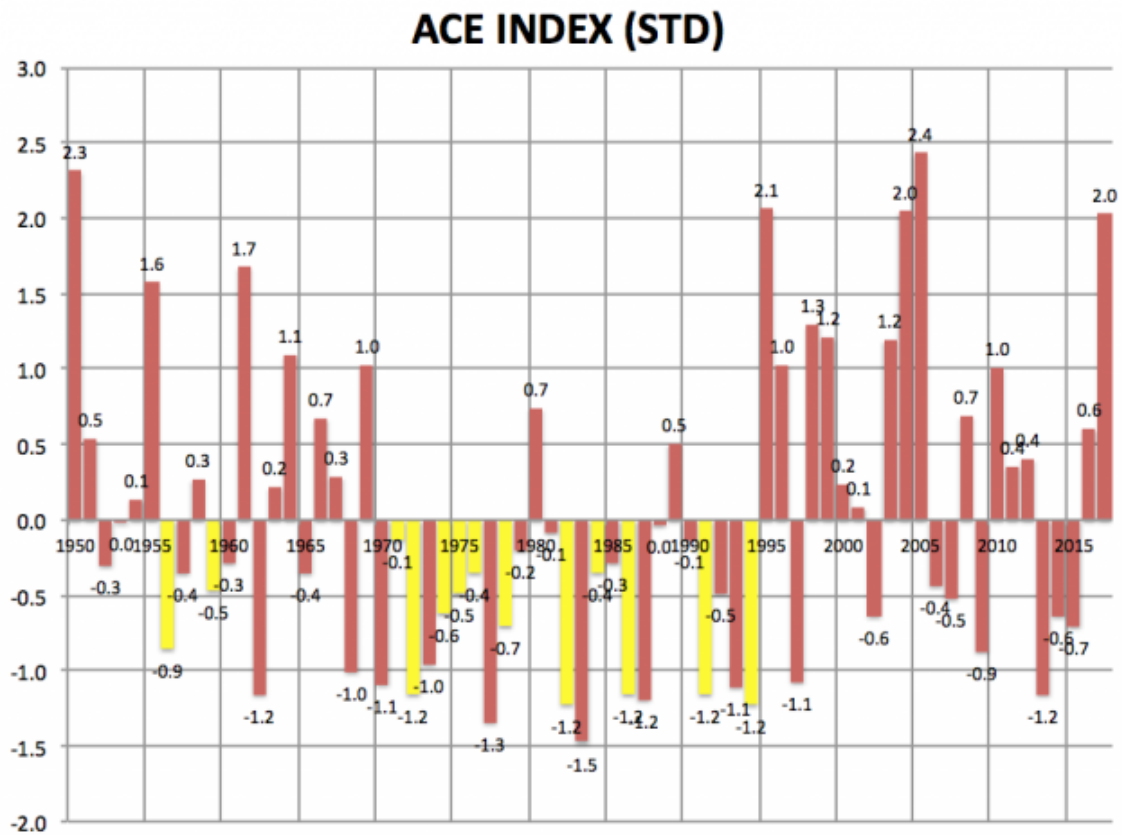
EFFECT ON THE HURRICANE SEASON

As a general rule, when the subtropical Atlantic is warm, we have more hurricane activity, when it is cool, we have fewer storms. A measure of how much tropical activity energy there was over the season is the ACE (Accumulated Cyclone Energy)

Index. See how last year when the subtropical Atlantic was very warm, ranked behind only 1893, 1926, 1933, 1995, 2004 and 2005 in total storm energy (and impact).. It featured major hurricanes that slammed the islands, Florida and Texas.

Rank	Season	ACE
1	1933	259
2	2005	250
3	1893	231
4	1926	230
5	1995	228
6	2004	227
7	2017	212*
8	1950	211
9	1961	205
10	1998	182

With the sub-tropical Atlantic cold this year and El Nino trying to come on in the Pacific, it is likely we will have a quiet year with fewer named storms and less than half the storm energy than last year. See all the cool Atlantic year shown in yellow (most in the 1970s to early 1990s).



That does not preclude the possibility of a storm spinning up over the warm western Atlantic waters and making landfall (and the news) on the mainland, but the season will not be one for the books like last year.