

# Introspect – Atlantic Hurricane Outlook

19 April 2013

## Understanding Seasonal Hurricane Forecasts

While it is still two months before the tropical season officially begins and much of the U.S. continues to experience below normal temperatures, and in some cases even snow, the release of several 2013 Atlantic hurricane seasonal forecasts is a reminder that summer is right around the corner. The early indications from the forecasts released in the last few days suggest we could be in for an active storm season with a higher probability of U.S. landfall.

In [December 2011 Dr. Gray and Dr. Klotzbach of Colorado State University](#) (CSU) discontinued their highly visible public December 2011 Atlantic basin hurricane forecast, which was amazing as it is rare for any scientist to suspend a highly visible public work because they decided it just didn't have any predictive skill. So it is natural to ask is there any predictive skill in April pre-season hurricane forecasts? In general, there is very little as shown by the residual in Figure 1, however, the overall skill improves with the June and August forecast

Relying on just one forecast in the April time is not as good as using the overall consensus from several forecasts. In fact, the [Risk Prediction Initiative](#) is currently hosting a crowd-sourcing competition in hopes to show that multiple forecasts can produce better skill. If one looks at the forecast of the 2012 season average across 6 different forecasting groups the consensus was for 12 named storms (compared to 19 observed), 7 hurricanes (compared to 10 observed) and 2.5 major hurricanes (compared to 2 observed). In short, the group underestimated the total number of named storms and hurricanes and slightly overestimated the major hurricane forecast. Of course, the naming of storms is dictated by the naming practices of the National Hurricane Center (NHC) which in itself has known bias, but the general ability to use the consensus of the April forecast to predict an above or below normal hurricane season has proven to be correct in past years.

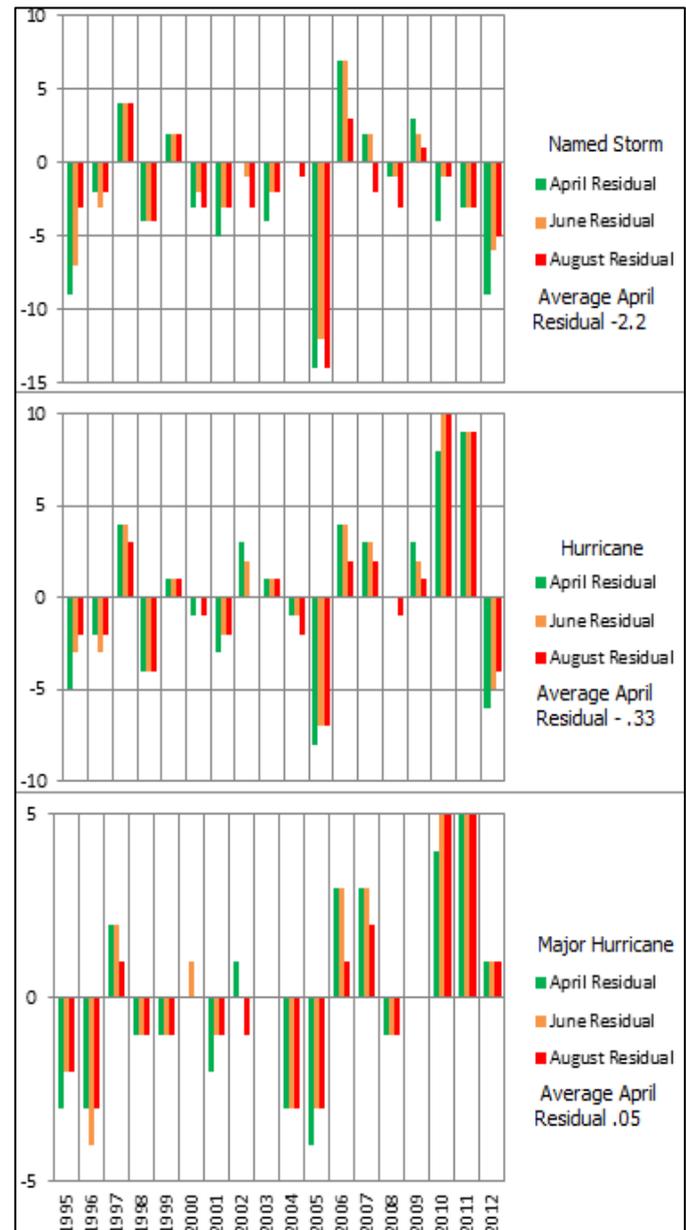


Figure 1. Historical CSU forecasts from 1995 - 2012 and the residual from the observed counts of named storms, hurricanes and major hurricanes.

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Typically the seasonal forecast for the Atlantic basin is based on several factors, but often every year the forecast revolves around three primary factors:

- The active [Atlantic Multi Decadal Oscillation](#) (AMO) era that began in 1995 and should continue until at least the year 2020.
- Ocean [Sea Surface Temperatures](#) (SST) in the Main Development Region (MDR) that remain warmer than average.
- [El Niño–Southern Oscillation](#) (ENSO) - conditions are expected to be a neutral phase this year. During the El Niño phase wind shear can create hostile conditions for storm formation in the Atlantic basin. During the La Niña phase there is reduced wind shear which aids in storm formation and this year wind shear is expected to be normal.

Seasonal Hurricane Forecasts April 2013			
Organization	Named Storms	Hurricanes	Major Hurricanes
CSU	18	9	4
TSR	15	8	3
TWC(WSI)	16	9	5
Impact Weather	16-20	7-9	2-4
WRC	16	6	
WeatherBell	16	12	5
N.C. State	13-17	7-10	3-6
AccuWeather	16	8	4
<b>Average</b>	<b>16.3</b>	<b>8.6</b>	<b>4</b>
1995 - 2012 Historical Average	15	8	3.6

Table 1. Various organizations that have produced an April seasonal hurricane forecast for the 2013 hurricane season. The general consensus is for an above normal season across the Atlantic basin. Links to these forecasts: [CSU](#), [TSR](#), [TWC](#), [Impact Weather](#), [WTC](#), [WeatherBell](#), [AccuWeather](#), and [N.C. State](#). Outlooks to be released in May or June [NOAA](#), [UK Met Office](#), [Penn State](#) and [Florida State](#).

In addition, to the above forecasts in Table 1 from the various organizations, seasonal climate models both dynamical and statistical are generally indicating an above-normal activity level for named storms in the Atlantic Basin for the 2013 season.

Although the U.S. is currently experiencing one of the longest periods without a major landfalling hurricane, it should be noted that at least one hurricane landfall has occurred somewhere along the U.S. coast in 80 percent of seasons in the historical data set, and 43 percent of seasons have had multiple hurricane landfalls, with the general understanding that an overall active tropical Atlantic should increase the probability of landfalling hurricanes. Recent trends in steering currents during the tropical season, perhaps driven by historically low Arctic summer sea ice values and or the cooler waters in the North Pacific, do suggest at least a slightly increased threat again this year for the U.S., with an emphasis on the eastern Gulf and East Coast states.

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## Various landfall forecast highlights:

**CSU** - Provides a 72% chance of one or more major hurricanes will make landfall along the entire U.S. Historically, they calculate this average over the last century to be 52%.

**WeatherBell** – Provides an analog package that highlights the threat of a major landfalling storm along the East Coast of the U.S.

**Weather Research Center** - Three named storm landfalls with a 70% chance of a tropical storm or hurricane making landfall on the coast from Louisiana to the southern tip of Florida

## Summary

The CSU forecast was very aggressive considering the lack of skill that exists in April, however the general consensus from the various forecast organizations is that it will be an above normal season with higher than normal landfall probabilities. At BMS we know it only takes one hurricane making landfall to make a troublesome season for our clients, and being prepared, regardless of how much or how little activity is predicted, is why BMS has developed tools to help clients prepare for hurricane season and the necessary response if they are impacted.

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