



NOAA Updated 2015 Atlantic Hurricane Season Outlook

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Hurricane Research Division/ NOAA/ OAR/ AOML/ HRD

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<http://www.cpc.ncep.noaa.gov/products/outlooks/hurricane.shtml>



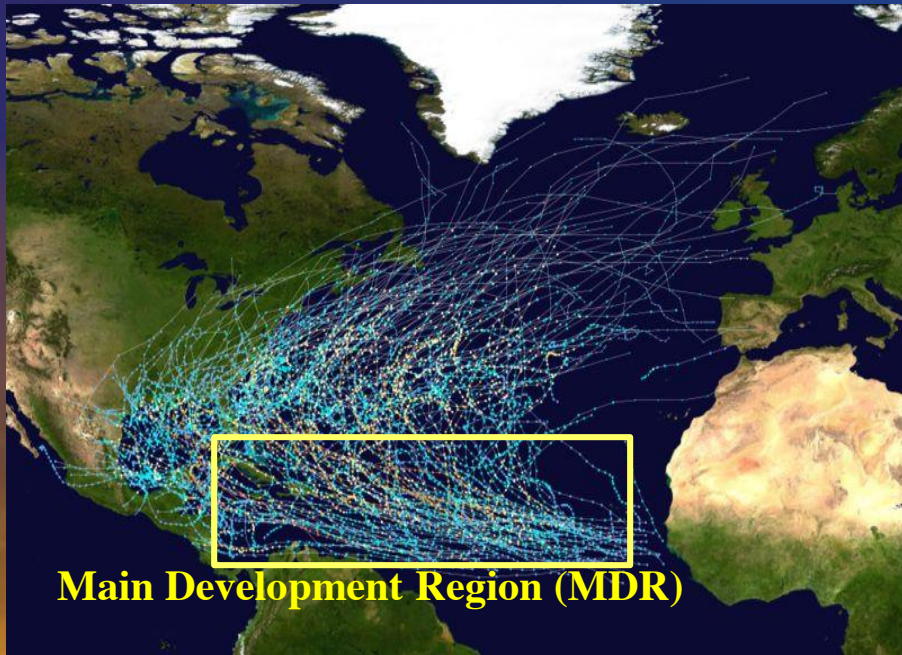
Outline

1. NOAA Hurricane outlook regions
2. The updated 2015 Atlantic outlook
3. Climate factors behind the updated Atlantic outlook
4. U.S. landfalling storms during El Niño
5. Summary



NOAA's Hurricane Outlook Regions

Atlantic Basin
Storm Tracks 1980-2005



Central and Eastern North Pacific
Storm Tracks 1980-2005

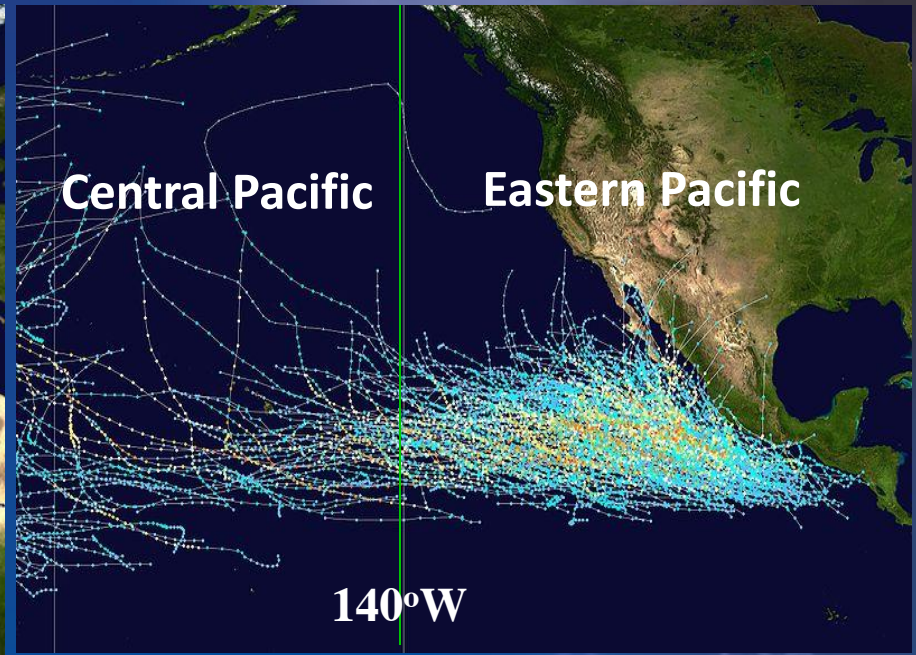


Figure Courtesy of Wikipedia

NOAA issues seasonal hurricane outlooks for the Atlantic basin, the central North Pacific, and the eastern North Pacific. An updated outlook is issued only for the Atlantic basin.

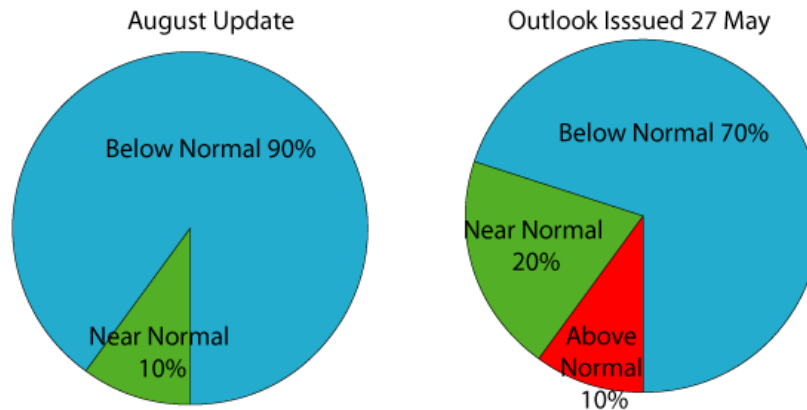


NOAA 2015 Atlantic Hurricane Season Outlook

NOAA's Updated 2015 Atlantic Hurricane Season Outlook

90% Chance of Below-Normal Season

Probability of Season Type



Predicted Activity

70% Probability For Each Range

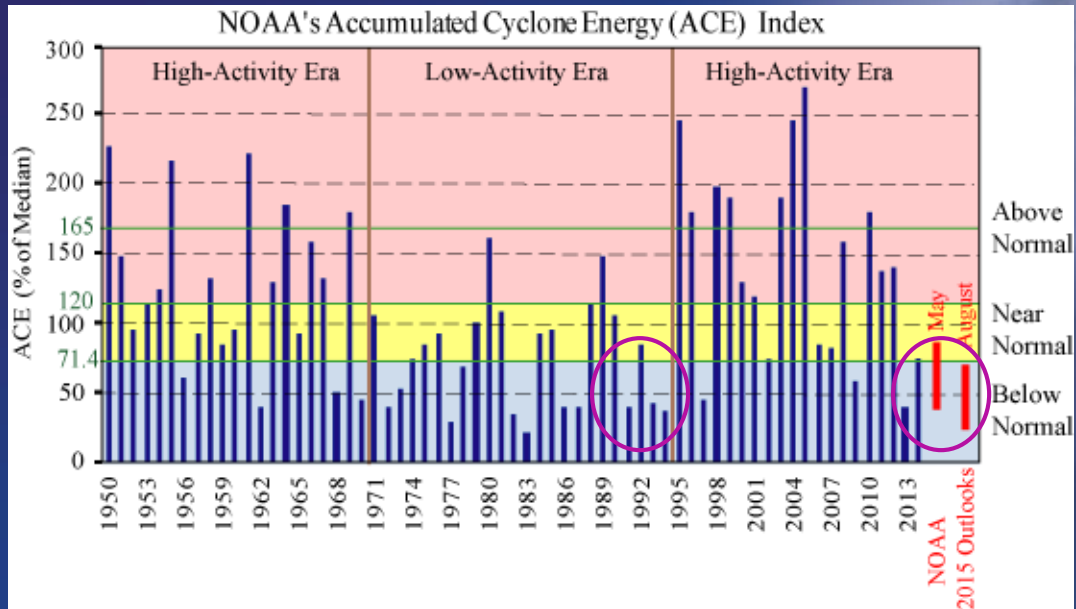
	August Update	May Outlook	Season Averages (1981-2010)
Named Storms	6-10	6-11	12
Hurricanes	1-4	3-6	6
Major Hurricanes	0-1	0-2	3

Main reason for higher likelihood of below-normal season compared to May outlook:

- Significant El Niño, exceptionally unfavorable conditions now in place



The Updated 2015 Atlantic Outlook in a Historical Perspective



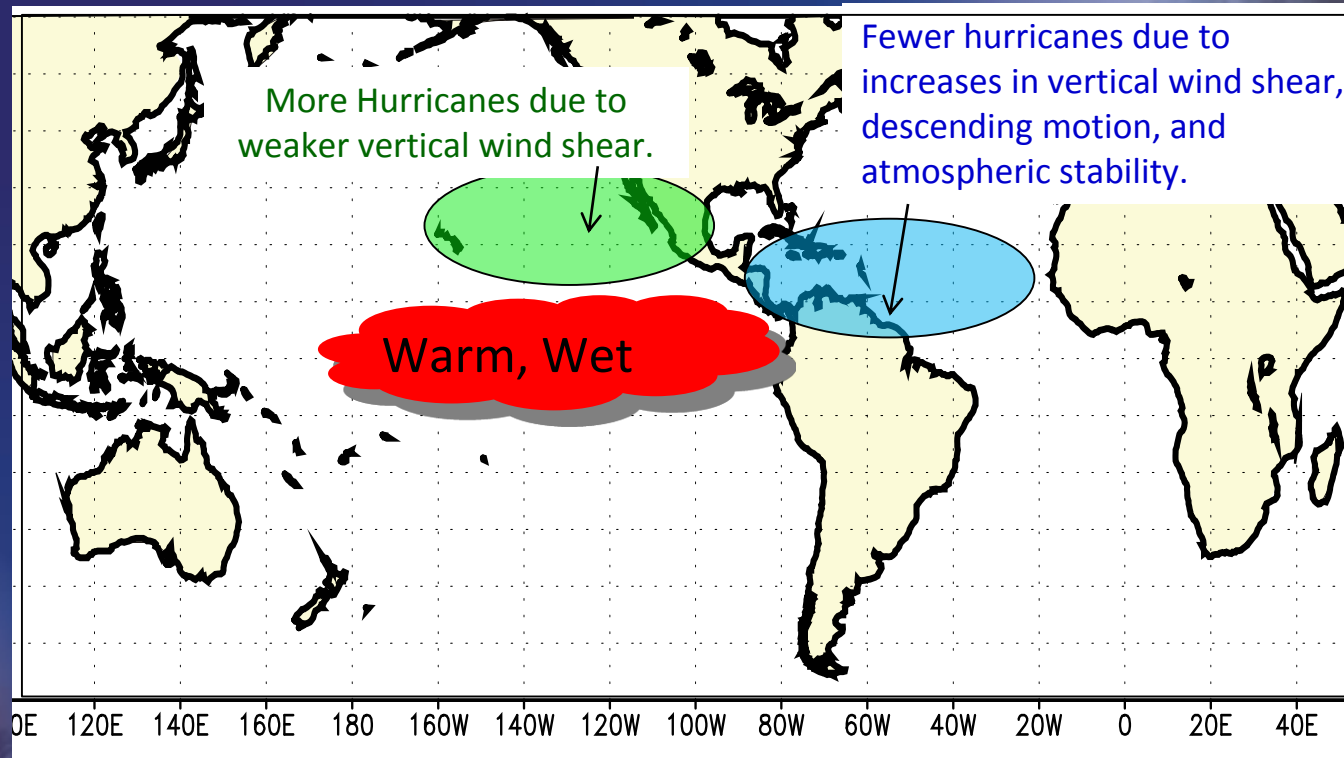
Caption: Seasonal Accumulated Cyclone Energy (ACE) index during 1950-2014 (Blue bars) and NOAA's 2015 outlook ranges with a 70% probability of occurrence (Red bars). Shading indicates NOAA's thresholds for classifying hurricane season strength. Green line indicates lower threshold for a very active season.

NOAA's updated 2015 Atlantic hurricane season outlook indicates a 70% probability of an ACE range of 25%-70% of the median.

2015 is expected to be the 3rd season in a row that was not above normal. Such reduced activity has not been seen since 1991-1994.



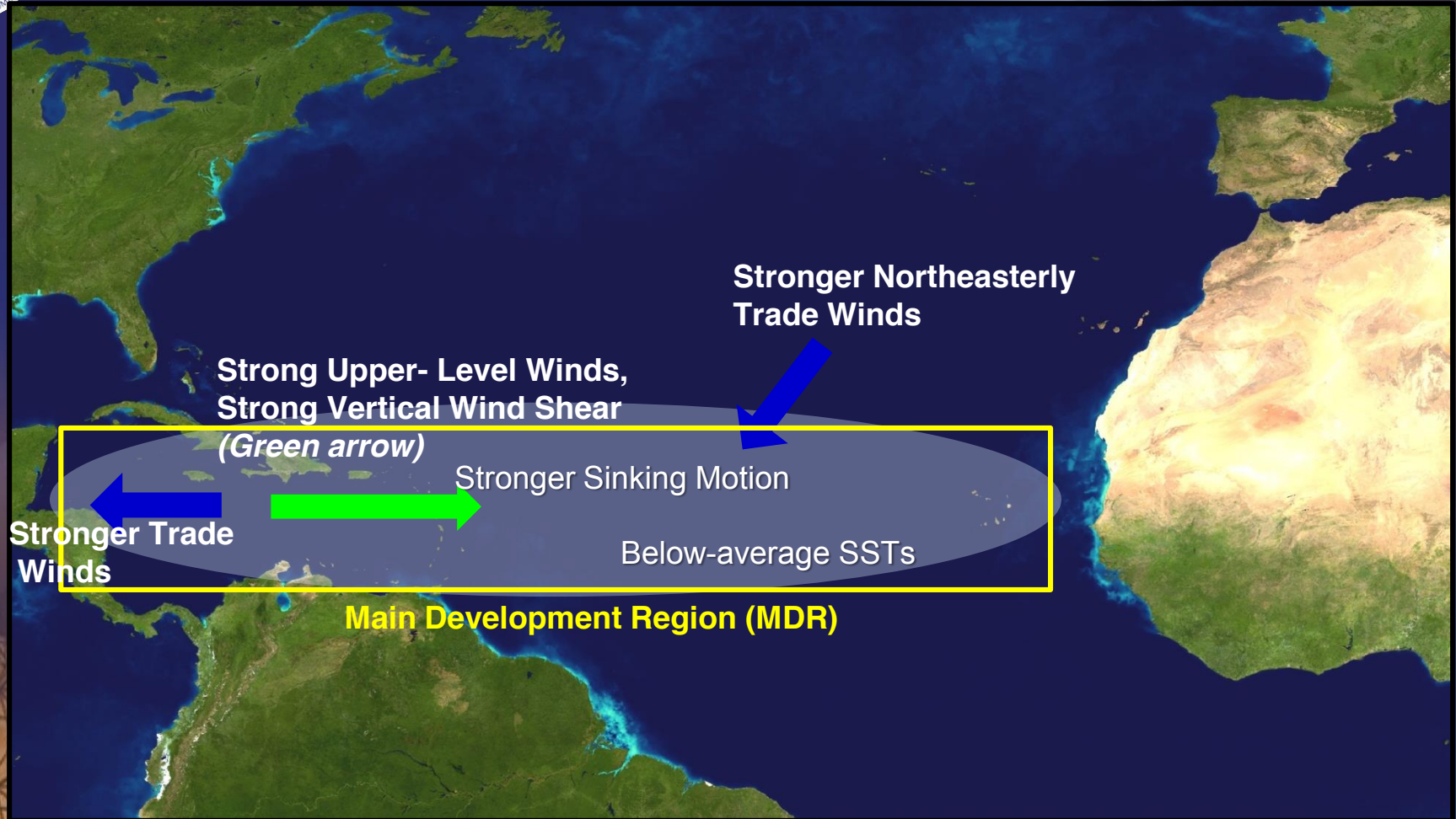
El Niño Impacts on Hurricane Activity



- El Niño has opposite impacts between the Pacific and Atlantic hurricane basins.
- Atlantic basin: El Niño suppresses the hurricane season by strengthening the vertical wind shear, and also by producing more descending motion and increasing the atmospheric stability.
- Central and eastern Pacific hurricane basins: El Niño strengthens the hurricane season by weakening the vertical wind shear.



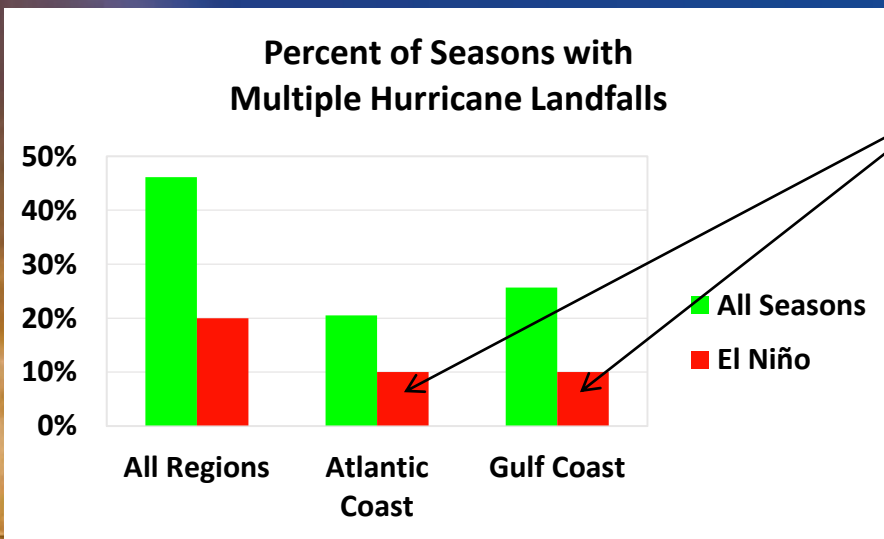
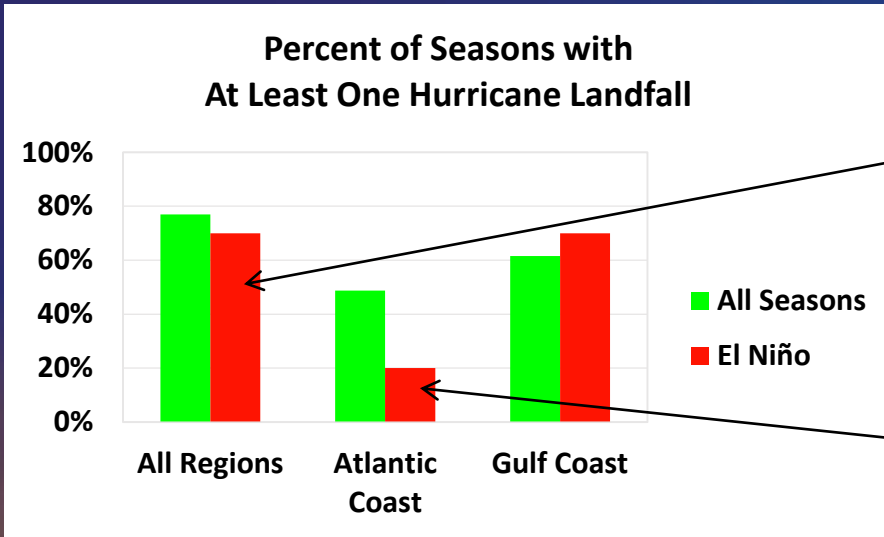
Expected Conditions During August-October 2015



- These conditions are now present, suggest below-normal Atlantic hurricane season very likely.
- These atmospheric conditions are typical of a significant El Niño.
- Also, MDR is expected to remain much cooler than the remainder of the global tropics.



U.S. Landfalling Hurricanes During Past El Niño's

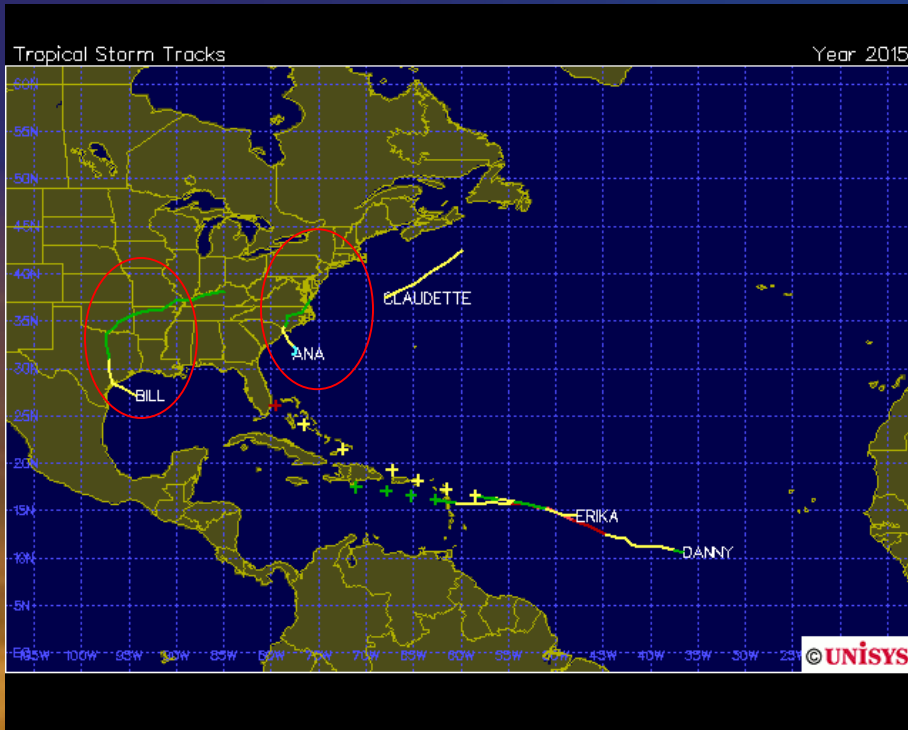


- The probability of at least one U.S. hurricane landfall is not reduced during El Niño.
- During El Niño, we do see a lower percentage of seasons with an Atlantic coast hurricane landfall.
- During El Niño, both the Atlantic and Gulf coasts experience a lower percentage of seasons having **multiple** hurricane landfalls.



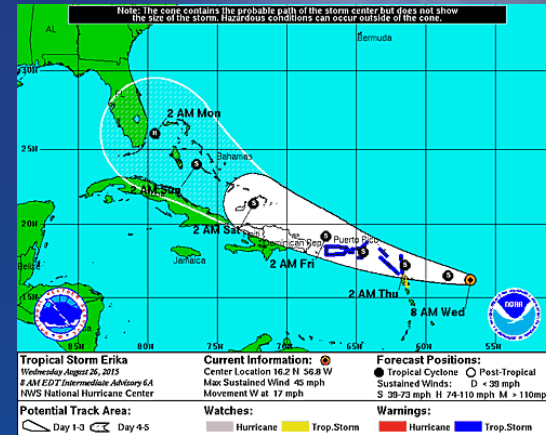
Landfalling Storms This Season

Tropical Storms Ana and Bill have already made landfall this season

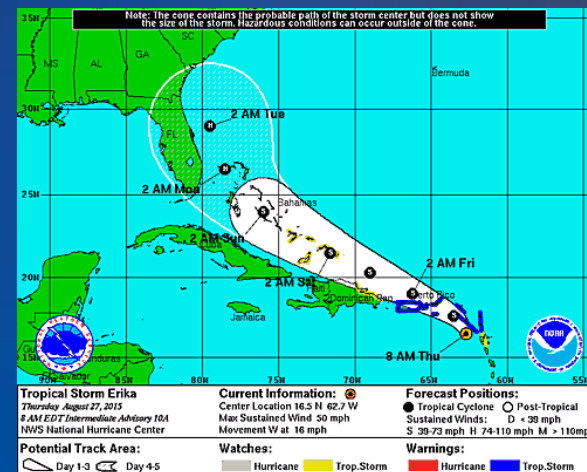


5 Named storms to date, which includes
1 Hurricane, which includes
1 Major Hurricane (6-hours)

Currently: Tropical Storm Erika Predicted to threaten Florida as a hurricane.



Forecast from yesterday



Forecast from today

All coastal residents should prepare for every hurricane season regardless of the hurricane outlook. It only take one storm striking your area to make for a very bad season.



Summary

1. Higher likelihood (90% chance) of a below-normal Atlantic hurricane season, lower ranges of activity.
2. Two main reasons for predicting a below normal hurricane season:
 - Significant El Niño already creating exceptionally hostile environment over tropical North Atlantic and Caribbean Sea.
 - Stronger vertical wind shear
 - Stronger upper-level westerly winds and stronger trade winds
 - Enhanced sinking motion, increased atmospheric stability
 - Colder Atlantic SSTs--Record cool compared to remainder of global tropics
3. We are now in the peak of the hurricane season (August-October).
 - All coastal residents should now be prepared.
 - It only take one storm striking your area to make for a bad season.



Supporting Slides





Nature of NOAA's Seasonal Hurricane Outlooks

- Active/ inactive seasons often result from coherent set of atmospheric conditions controlled by tropical climate patterns. Not Random.
- Predicting tropical climate patterns is the basis for making a seasonal hurricane outlook.
- Outlooks indicate the expected overall seasonal activity.
- Outlooks are NOT a seasonal hurricane landfall prediction and do not predict levels of activity for any particular region.
- Outlooks are probabilistic, meaning the stated ranges have a certain likelihood of occurring.



Science behind NOAA's Atlantic Hurricane Outlooks

- NOAA's seasonal outlooks based largely on predictions of three main climate factors that strongly control Atlantic hurricane season
 1. Atlantic Multi-Decadal Oscillation (25-40 year) signal : Reflects fluctuations in Atlantic sea surface temperatures, West African monsoon.
 2. El Niño and La Niña; Reflect large year-to-year changes in tropical Pacific Ocean temperatures.- **El Niño is the main factor behind the outlooks this season.**
 3. Year-to-year fluctuations in Atlantic sea-surface temperatures

Three types of models used:

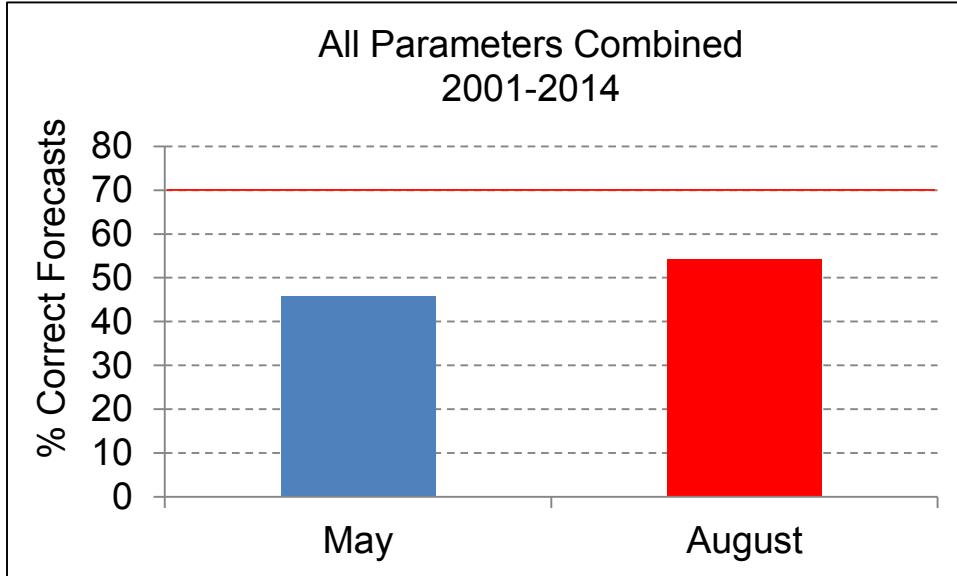
Statistical

Dynamical

Hybrid Dynamical/ statistical

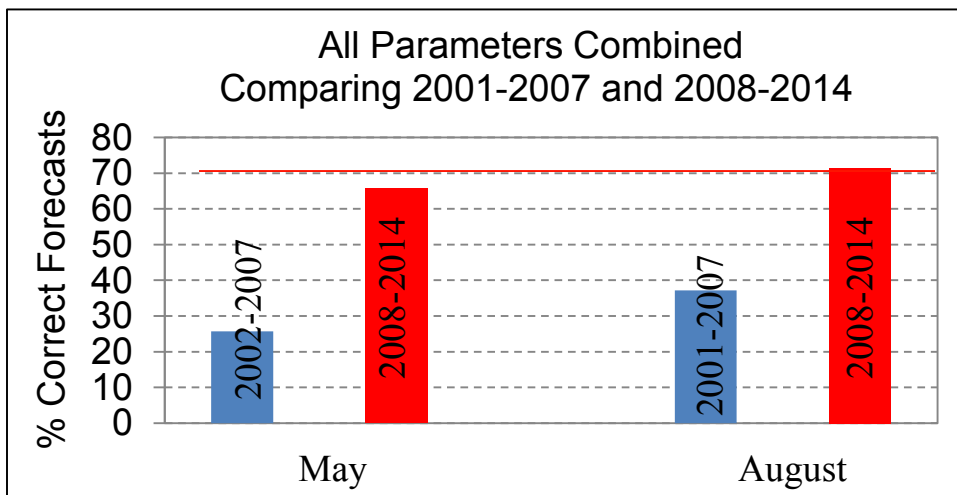


NOAA Percentage of Correctly Forecasted Parameters (Forecast is Correct if Observation is within the Predicted Range)



- May outlooks verified with Jun-Nov data.
- August outlooks verified with Aug-Nov data.
- NOAA's predicted ranges reflect a 70% probability of occurrence.

Overall, NOAA's updated outlooks issued in August are more accurate than the pre-season outlooks issued in May.



Both the May and August outlooks have improved substantially since 2008, which is when CFS dynamical model forecasts were introduced.

Since 2008, for both the May and August outlooks approximately 70% of forecasted parameters have verified. This value matches the expected number of correct forecasts (since the predicted ranges are made with a 70% probability of occurrence.)