

Don't Count Out El Niño

Sea Surface Temperature isn't the Full Story of the 2023 Hurricane Season

By Dr. Steve Smith, Head of Research & Development, Vantage Risk

December 2023

4 min read

As the 2023 Atlantic hurricane season wraps up, the prevailing narrative is that, in the battle of Atlantic sea surface temperature versus El Niño, the sea surface temperature won. Indeed, an article from weather.com summarizing the 2023 season was entitled "Atlantic Hurricane Season 2023: The El Niño That Didn't Matter." However, scratch the surface just a little and a different story emerges – **El Niño mattered a great deal.**

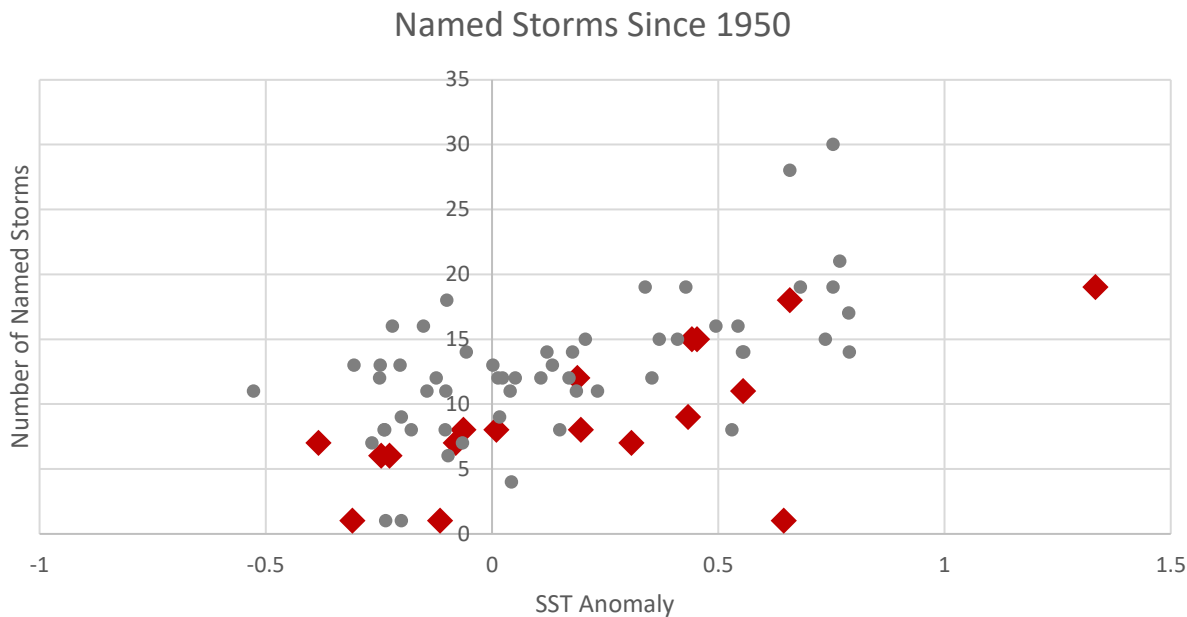
The interplay between El Niño (suppressing hurricane activity through higher wind shear) and high Atlantic SSTs (increasing hurricane activity through increased energy) *did* define the 2023 season. We saw Atlantic SSTs at the highest level ever observed and we saw an El Niño which didn't create the same amount of wind shear over the Atlantic as expected. So, in this context, we would have expected to see a very high, if not record breaking, 2023 hurricane season. But we didn't:

- The number of named storms was the 4th highest on record
- An average number of major hurricanes (3)
- An ACE index (the measure of how much energy hurricanes had during the season) only slightly above average (144), and not even in the top 10 most energetic years.

It certainly looks like El Niño fought the Atlantic SSTs to a draw. NOAA note this in their end of season press release: "The record-warm ocean temperatures in the Atlantic provided a strong counterbalance to the traditional El Niño impacts."

Taking this a stage further, can we estimate **how different could the season have been if El Niño hadn't been in place?**

Using data from 1950 onwards, the chart below shows the number of named storms versus the Atlantic SST anomaly (how warm the Atlantic is relative to an average). El Niño years are shown as red diamonds, non-El Niño years as gray dots. **The red diamond on the far right is 2023, so we can see how much of an outlier it is.** We can also see that El Niño years generally have lower numbers of named storms relative to non-El Niño years for a cool or warm Atlantic.



We can also find a trend line for non-El Niño years (there is an obvious trend in the data – a warmer Atlantic has more storms). This analysis is sensitive to the trend line we use so is somewhat rough and ready but show that in a non-El Niño year for the exceptionally hot Atlantic we observed this year, we would have expected around 30 named storms, not the 19 we actually saw. We could argue that **El Niño ‘saved’ the Atlantic season from an additional 11 named storms.**

We can do the same thing for major hurricane numbers and the ACE index. This simple analysis shows that, if 2023 was not an El Niño year, we would have expected:

- 6 major hurricanes (we observed 3), and,
- An ACE index of 225 (we observed 144).

I think we can make a good argument that **El Niño prevented 2023 from being a lot, possibly twice as, worse.**

About the Author

Dr. Steve Smith, Head of Research & Development, Vantage Risk



Steve has spent over 20 years in re/insurance in analytic roles. He is a Fellow of the Royal Meteorological Society, a Certified Catastrophe Risk Management Professional, a Chartered Physicist, and holds a doctorate in atmospheric physics and a first-class honors degree in physics, both from the University of Oxford.

He was the 2007 recipient of The Review Worldwide Reinsurance Future Industry Leader award and a 2008 recipient of a Risk & Insurance Risk Innovator award.

This material is provided for informational purposes only. It is not intended as, nor does it constitute, legal, technical or other professional advice. While reasonable attempts have been made to ensure that this information is accurate and current as of its publication date, Vantage is not responsible for any errors or omissions and makes no guarantees, representations or warranties, either express or implied, as to the accuracy, completeness or adequacy of any information contained herein. Additionally, this material does not address all potential risks and may contain time-sensitive information. Vantage is under no obligation, and expressly disclaims any obligation, to update or revise this material. This material may not be reproduced or distributed without the express, written permission of Vantage Group Holdings Ltd.

© 2023 Vantage Group Holdings Ltd. All rights reserved.