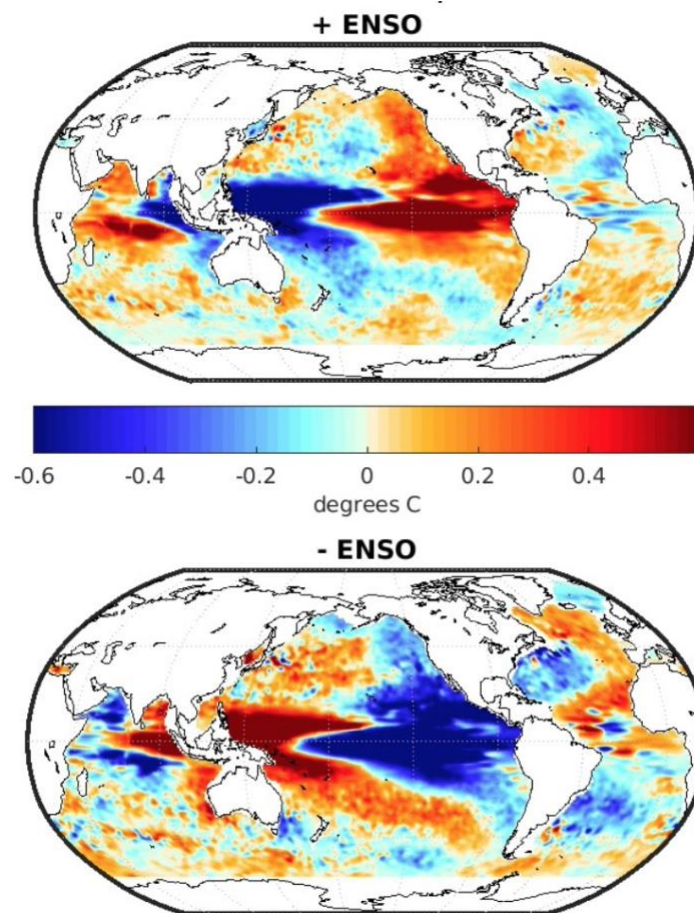
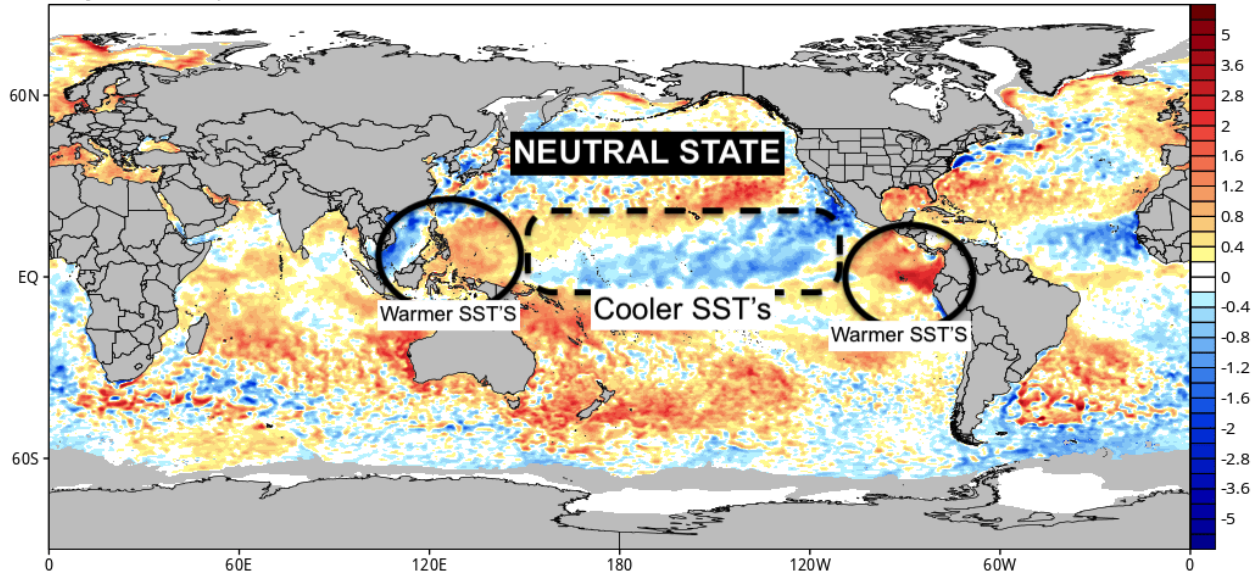


What Hurricane Implications Could a La Nina or Neutral-ENSO Year Have This Season?



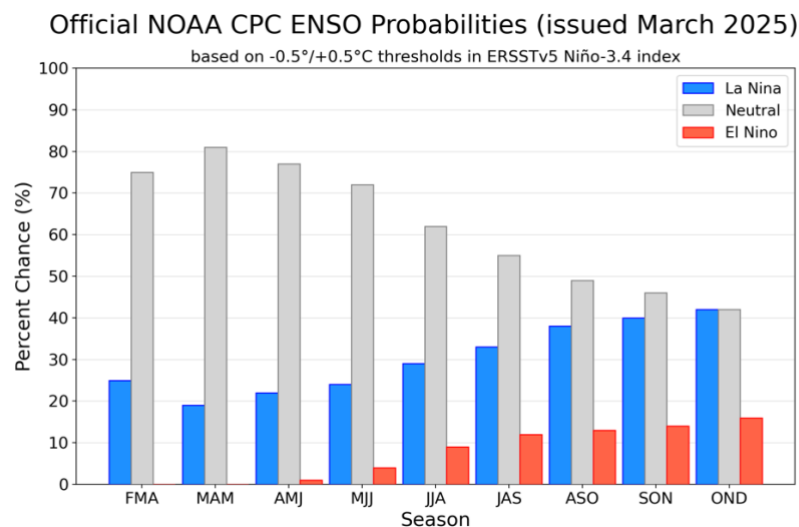
As we approach the hurricane season - which officially begins June 1st, we'll analyze the state of the Pacific Ocean and what phase or "flavor" the El Nino-Southern Oscillation is. Since February, near to below average sea surface temperatures emerged in the eastern Pacific and persisted across the central equatorial Pacific Ocean. We've also seen positive (warmer) temperatures in the eastern and far western Pacific. This below does characterize more of a "Neutral" blend.



(Graphic Courtesy of Tropical Tidbits)

If you were to take the net average of tropical precipitation across the Pacific from the Indian Ocean to the eastern Pacific, you'd categorize that the tropical atmosphere resembles more of a La Nina. In fact, the Oceanic Nino Index (ONI) latest's index value is -0.4°C . Again, in a nutshell it's one of the main ways ENSO is quantified by analyzing a section of the central Pacific surface temperatures (NINO 3.4) and seeing if that area's temperature departures exceed $\pm 0.5^{\circ}\text{C}$ for three consecutive months. In this case, it leans simply more toward La Nina.

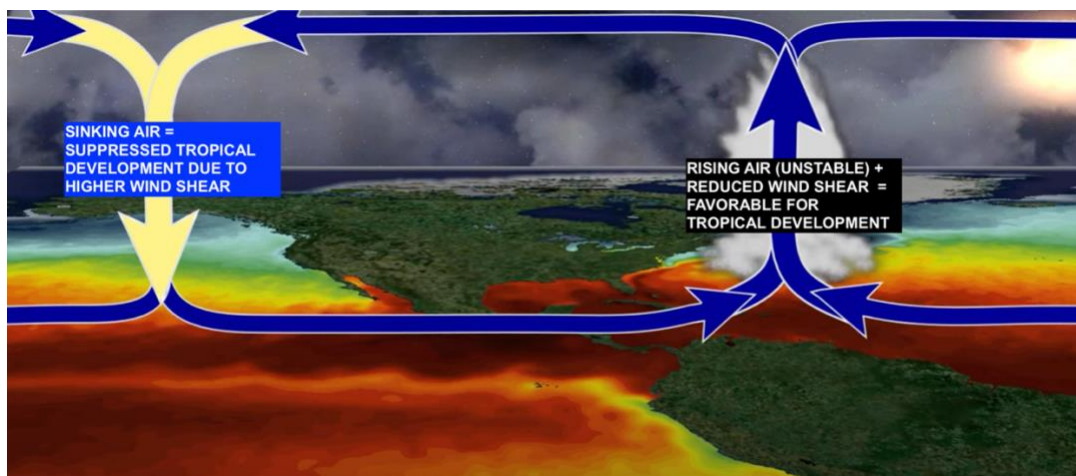
Forecasted ENSO This Summer & Implications



According to [CPC](#), there is statistically a 62% chance of *ENSO-neutral* heading into the summer months and persist through most of the season as shown on the graphic above. As in the case with anything forecasted when it comes to the atmosphere, there's uncertainties of course that could change in a short amount of time. However, with the way the atmosphere is behaving in terms of climate drivers like circulation patterns, it's pretty apparent La Nina tendencies are here to stay heading into the summer months.

Hurricanes need several main ingredients to build into a stable vortex and become powerful as we've seen. These factors consist of low vertical wind shear, sufficient warm sea surface temperatures (80°F), moisture, and converging winds (away from the Equator). During La Nina seasons, due to specific large-scale wind patterns like the Walker Circulation (areas of rising and sinking air in the Pacific that is controlled due to the placement of sea surface temperatures) dictates wind shear in the Atlantic.

This is nicely viewed as in the diagram created below. In La Nina seasons (or neutral), sinking air is observed typically across the eastern equatorial Pacific. This drastically hampers hurricanes seen there. On the contrary, where there is sinking air, and equal mass distribution must be distributed elsewhere and that takes place in the western Atlantic in the form of rising air. Rising air implies instability and reduced vertical wind shear – favorable for hurricane development.

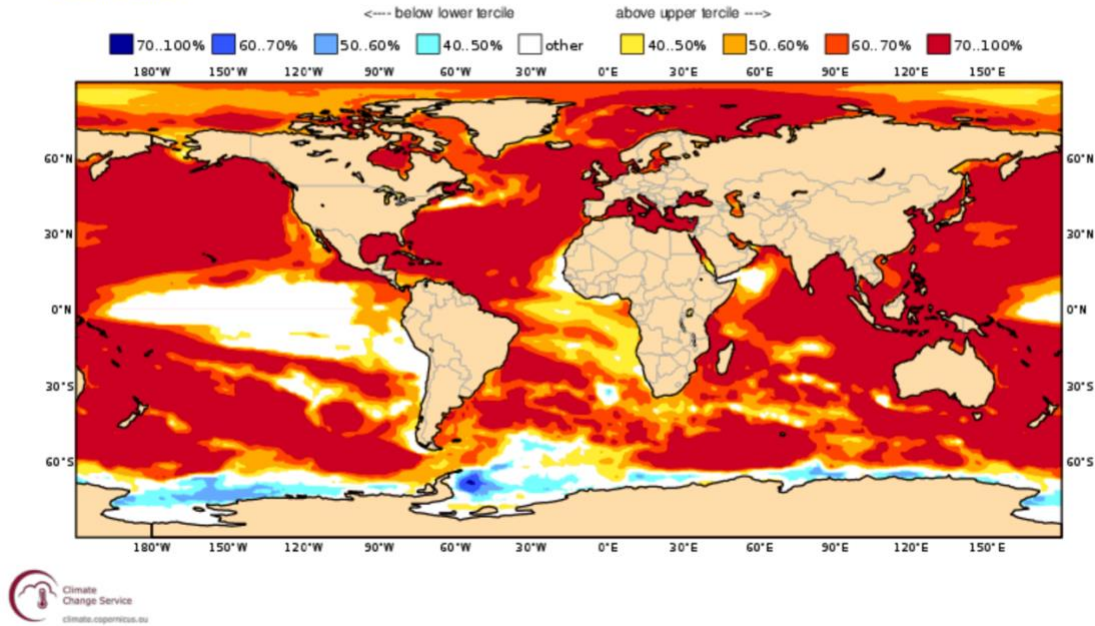


The result is that once again, cooler sea surface temperatures associated with a La Nina and increased wind shear is correlated with a below average Eastern Pacific hurricane season. Where one area sees a net decline, there is always an equal and opposite effect in another basin and in this case, it's the Atlantic. We also tend to see much warmer sea surface temperatures in the Atlantic augmenting the Atlantic hurricane season all together.



(Image Courtesy of Fox Weather)

Taking it a step further, when taking a blend of ensembles (C3S Multi-System Seasonal Climate Model) and their anomalies then averaging down below, we see a blended net average of the most likely probability of a specific temperature (i.e. warmer than normal) for the July-September timeframe. What we see is a pretty consistent signal for a greater than 60% of warm SST's across the Atlantic, Main Development Region, Gulf & Caribbean, and northern Pacific. What is also evident is that the white region across the central and eastern Pacific represents simply neutral conditions with no clearly defined signal for a La Nina or El Nino. That's consistent with the CPC ENSO forecast from above for probabilities of a statistically higher chance for ENSO-neutral this summer.



Lastly, analyzing the current “snapshot” of the Atlantic and spatial SST’s, we see there’s plenty of above average temperatures. This is evident across the Gulf, Caribbean, and into the subtropical Atlantic. What’ll remain an uncertainty, however, is the Main Development Region (MDR). While it’s currently below average, this is the region that tends to provide significant energy to waves coming off Africa and what we associate with the “Cabo Verde” season. There’s much we won’t know until this summer of how this evolves, but the net result of the Atlantic favors an average to above average season in terms of tropical systems.

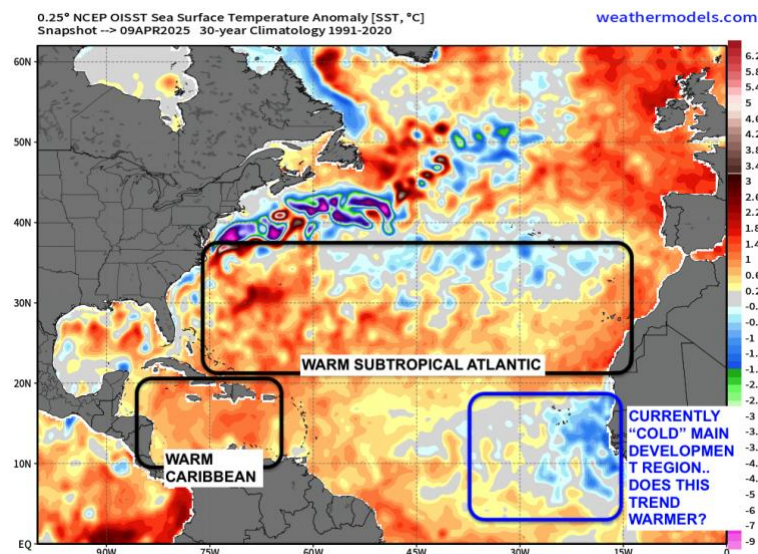


Image Courtesy of Tropical Tidbits

In conclusion, the 2025 Atlantic hurricane season is projected to feature above normal tropical activity. Current La Nina tendencies and conditions likely wane toward a neutral state over the next few months as we advance into summer. A warmer-than-average tropical Atlantic plus an ENSO-neutral state provides a favorable thermodynamic environment conducive for tropical cyclone formation and intensification. We also believe there's an above average probability for hurricanes making landfall along the U.S. coast and in the Caribbean. It's always reminded that preparations leading into the season should be made independent of forecasted activity!