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An Update from North America Peril Advisory

2023 HURRICANE OUTLOOK FOR THE NORTH ATLANTIC BASIN

Seasonal outlook providers are expecting a near-normal North Atlantic hurricane season for 2023. Predictions sit near to slightly below average for the period of elevated activity from 1995-2022, and near to slightly above average for the longer 1950-2022 period. Factors in play include above-average sea-surface temperatures in the Atlantic Main Development Region, and developing El Niño conditions. The ratio of hurricane landfalls to basin activity varies considerably from year to year, and depends strongly on daily weather patterns and related steering currents. Weather prediction for any event generally loses skill beyond a 7-10 day forecast lead. Interests in property (re)insurance should be prepared as always for an impactful hurricane landfall regardless of seasonal outlooks for the basin.

Near-Normal Hurricane Season

Seasonal outlooks for the 2023 North Atlantic Hurricane season are shown in Table 1 below, from:

- National Oceanic and Atmospheric Administration (NOAA)

- North Carolina State University (NCSU)

- Colorado State University (CSU)

- The Weather Company (TWC)

The 1950-2022 average represents a longer-term period where hurricane detection in the Atlantic Basin includes overflight data, and then satellite data from about 1970 onwards. The 1995-2022 average is reflective of the current active period of Atlantic hurricane activity that began around 1995.

Sea-surface temperatures are trending well above average for much of the Atlantic Main Development Region as shown in Figure 1 on the next page (circled area to the east). With all-else equal, this would be associated with elevated tropical activity in the Atlantic Basin. Elevated sea-surface temperatures in the far west

Table 1: Seasonal Outlooks for the 2023 North Atlantic Hurricane season with observed averages.

	NOAA (May 25)*	NCSU (April 13)	CSU (June 1)	TWC (April 13)	1950-2022 Average	1995-2022 Average
Named Storms	12-17	11-15	15	15	12	16
Hurricanes	5-9	6-8	7	7	6	8
Major Hurricanes	1-4	2-3	3	3	3	4

Source: NOAA – National Oceanic and Atmospheric Administration; NCSU – North Carolina State University; CSU – Colorado State University; TWC – The Weather Company. *Not including the subtropical storm that formed last January.

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tropical Atlantic and Gulf of Mexico could also enhance the potential for sudden development "in close" to Mainland, including the threat for rapid intensification (sustained wind increase of 35 mph in 24 hours).

In the meantime, the tropical eastern Pacific is becoming warmer than average, consistent with a developing El Niño pattern as shown in Figure 1 below (circled area to the west).

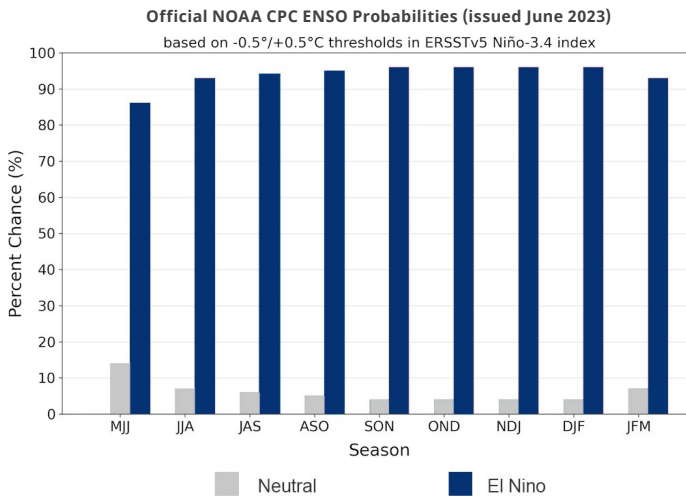**Figure 1:** Sea-surface temperatures for the western hemisphere as of June 13, 2023

NOAA Coral Reef Watch Daily 5km SST Anomalies (v3.1) 13 June 2023
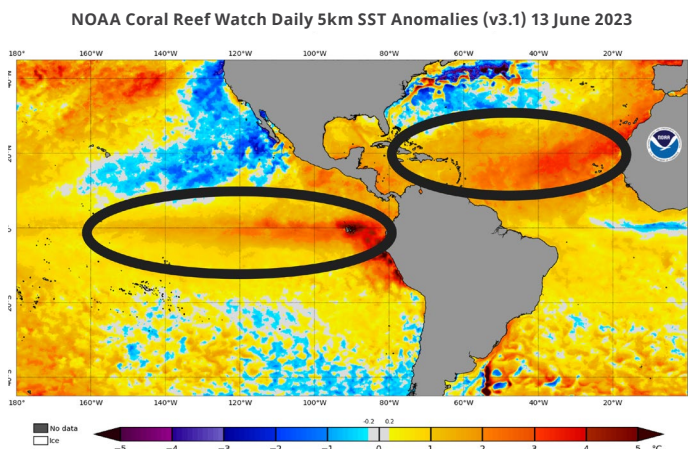
Source: NOAA Coral Reef Watch.

Under El Niño conditions, we typically see reduced hurricane activity in the North Atlantic Basin due to elevated wind shear (change in wind speed with height that disrupts storm development—like a Jenga game on a windy day). For the heart of hurricane season from August to October, El Niño conditions are most probable according to the NOAA Climate Prediction Center, as shown in Figure 2. With all-else equal, this would bring reduced activity for the season. The last 3 seasons were La Niña seasons, which are typically associated with elevated hurricane activity.

The competing factors of warm waters in the Atlantic versus the developing El Niño in the Pacific lend more uncertainty than usual to predictions for 2023. Forecast sea-surface temperatures could surpass the warmest of any prior season in recorded history in the Atlantic Basin. In the meantime, the strength and placement of the developing El Niño will be an important factor for Atlantic Hurricane activity in 2023. One factor that could act as a "tie breaker" is the aggressiveness of disturbances leaving the African coast (called "African Easterly Waves"), and their relation to the West African monsoon circulation.

Figure 2: Probability of El Niño (blue) and El Niño-Southern Oscillation (ENSO)-Neutral (grey) conditions through winter 2023/2024, with El Niño most probable for the August-October period.

Official NOAA CPC ENSO Probabilities (issued June 2023)
based on -0.5°/+0.5°C thresholds in ERSSTv5 Niño-3.4 index

Source: NOAA/CPC, Columbia University.

According to the NOAA Climate Prediction Center, the circulation appears weak at present, but model guidance shows this could strengthen over the coming months to produce more aggressive African disturbances. This in turn could lead to more named storms and hurricanes as a result, a factor that will be closely monitored as the season unfolds.

Analog seasons that most closely match expectations for 2023 include 1951, 1957, 1969, 2004 and 2006, according to the seasonal outlook from Dr. Phil Klotzbach of Colorado State University. These seasons either produced very quiet activity (such as occurred in 1951 or 2006) or very impactful activity (such as occurred in 1969 (Camille) or 2004 (Charley, Frances, Ivan, Jeanne)). One of the quietest seasons was 1957, which produced only 3 hurricanes in the Atlantic Basin, but 1 catastrophic landfall and devastating storm surge for the Northern Gulf, with Hurricane Audrey.

Meanwhile, the Continental US landfall to basin ratio shows considerable volatility on an annual basis. Hurricane landfalls depend on how close the hurricane is to land, along with weather patterns and associated steering currents. Neither of these is reliably predictable on long timescales beyond 7-10 days, and even 72 hours can be a challenge in certain cases. The landfall to basin ratio for the Continental US is shown in Figure 3 on the next page, with a range between 0 and 86 percent for the post-satellite period (and best detection capability).

Figure 3: Continental US landfall to basin ratio for detected hurricanes 1970-2022.
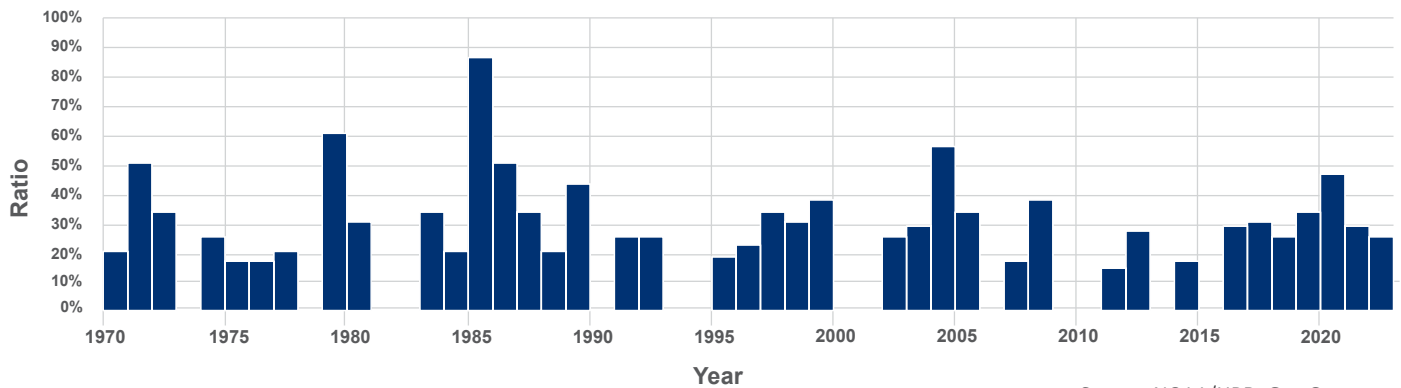
Source: NOAA/HRD, Guy Carpenter.

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About Guy Carpenter

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