Summary of 2023 North Atlantic Hurricane Season and Verifiation of Seasonal Forecasts

Issued: 20th November 2023

Summary

The 2023 North Atlantic hurricane season was active with an ACE index 20% above the 1991-2020 climate norm. Forecasts initially underestimated activity but improved significantly from early summer.

Features of the 2023 Atlantic Season

- 20 names storms, 7 hurricanes, 3 intense hurricanes and an ACE index of 146. Since reliable records began in 1950 this is the second highest (after 1969) ACE index for a year where the Jul-Sep Oceanic Nino Index was 0.5 or greater (El Nino conditions).
- Two named storms formed in the Atlantic Main Development Region in June, the first year on record this has occurred.
- Hurricane Idalia made landfall on the Big Bend region of Florida at category 3 intensity with winds of 125 mph. Losses are estimated at $2.2 – 5 billion.

Verification of Seasonal Forecasts

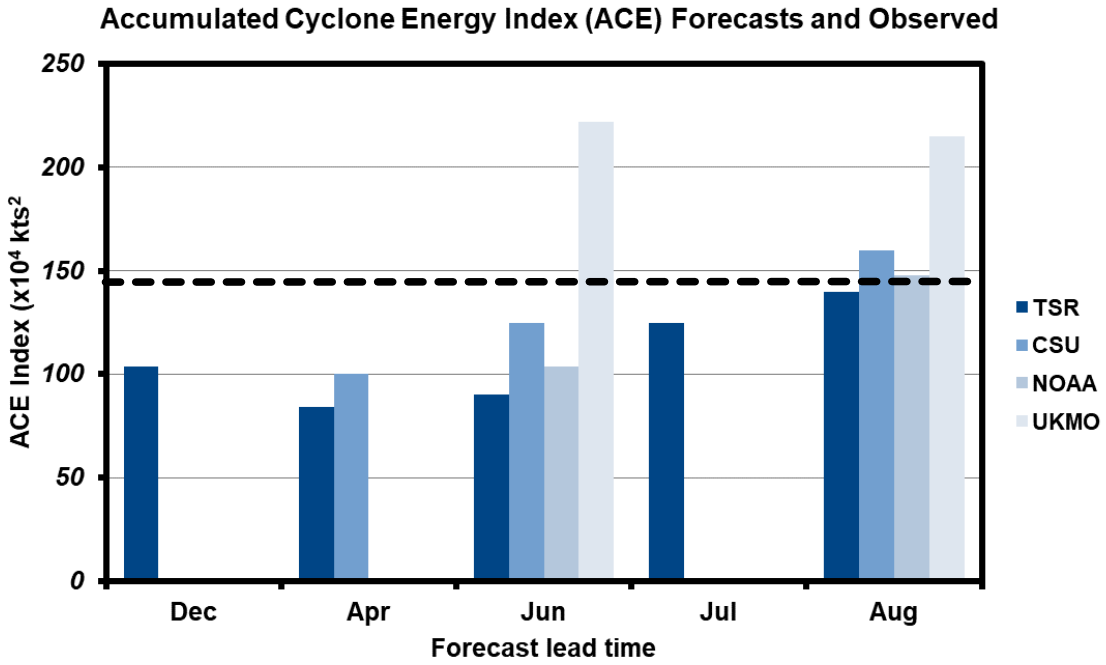

Figure 1: Comparison of forecast ACE index issued by different agencies compared to observed (black dashed line).

Most agencies initially underpredicted Atlantic seasonal activity in 2023 due to the forecast development of a moderate El Nino during early summer which was

expected to suppress hurricane activity (figure 1). Forecasts improved at shorter lead times as agencies increased their predictions due to the presence of very warm sea surface temperatures across the Atlantic which were expected to persist through summer. Atlantic sea surface temperatures were very warm through the peak hurricane season which acted to counter the normally suppressing effects of El Nino, and vertical wind shear through the season was far less unfavourable for activity than would normally be expected during a moderate El Nino.

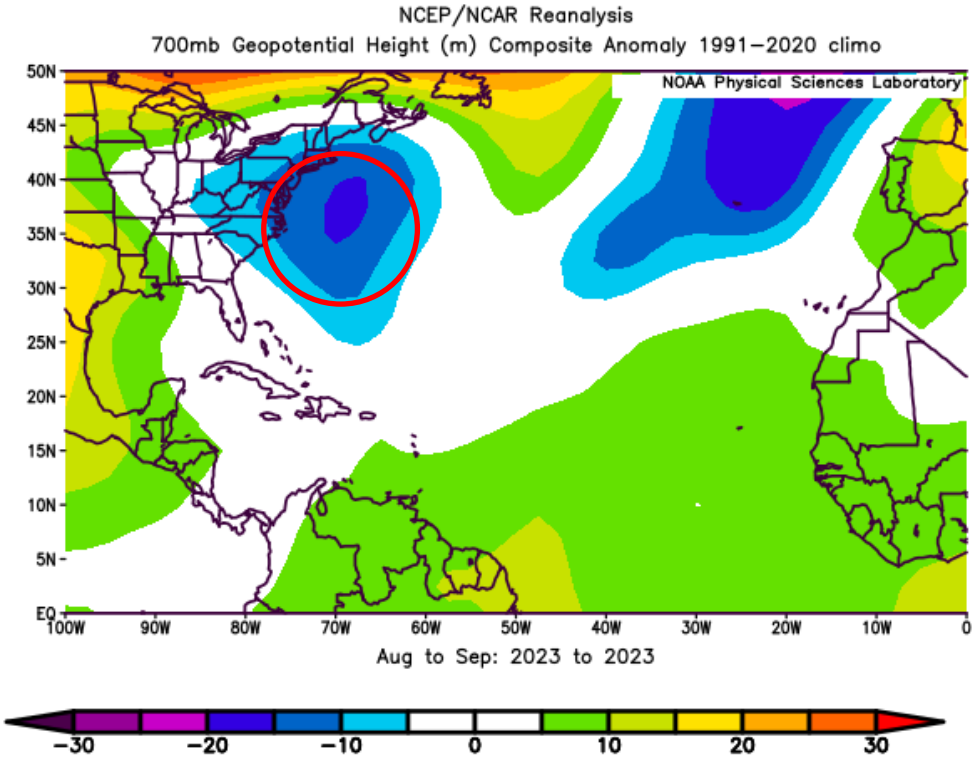

Figure 2: August-September 2023 700mb geopotential height anomaly (1991-2020 climatology) across the Atlantic basin showing anomalous troughing close to the U.S. east coast.

The TSR forecasts issued in December and April for U.S. landfalling activity was close to the observed numbers of three storms and one hurricane; however, U.S. landfalling was overpredicted from late May onward. This overprediction was due to landfalling activity being unusually low for a season as active as 2023. Only three out of the 17 seasons since 1950 with a total ACE index of 146 or greater have had less than two U.S. hurricane landfalls. The 2023 hurricane season was characterized by high activity in the Atlantic but with many recurving storms, and in contrast, apart from hurricane Idalia, very low activity in the Caribbean Sea and Gulf of Mexico. Figure 2 shows higher than normal troughing near the U.S. east coast was present through the peak season which helped to steer Atlantic storms out to sea.

Forecasts for 2024

The TSR extended range forecast for the 2024 North Atlantic hurricane season will be issued on the 7th December. Updated TSR outlooks will be issued on the 8th April, 30th May, 8th July and the 6th August.