



University of Missouri – Atlantic Ocean Basin Tropical Forecast 2024

	Predicted	Observed	Difference
Number of Named Storms:	26	18	-8 (-31%)
Tropical Storms:	15	7	-8 (-53%)
Category 1-2:	6	6	HIT
Category 3-5:	5	5	HIT
Regional (where they will form):			
West Atlantic (to 45° W):	12	3	-9 (-75%)
East Atlantic (to 45° W):	7	6	-1 (-14%)
Gulf of Mexico:	3	5	+2 (+66%)
Caribbean:	4	4	HIT

Reasoning: In 2023 - 2024, we are coming off an El Niño interlude in a La Niña period. During this season, the majority of forecast models are projecting the Eastern Tropical Pacific to cool down and we'll either be cold neutral or full blown La Niña by fall. Previous research has suggested a reasonable correlation towards an above average number of Atlantic-based storms during this projected ENSO state. This is predominantly due to a combination of eastern/central Atlantic-based subtropical shear, and this year the easterly QBO may be a little more favourable to development. Also, the 800 lb gorilla in the room is the warm North Atlantic. Temperatures are extremely warm in the Atlantic at this and they should remain that way. Additionally, based on the 30 to 60-day evolution of the Intraseasonal Oscillation (ISO) (aka MJO), the MJO is strengthening a bit currently and is projected to continue moving forward. Based on the current near 50-day cycle, this projection would land more conducive MJO impacts towards Africa and the North Atlantic during early August and late September / early October if one projects out along the same path MJO has taken. However, depending upon the ongoing intensity of these projected MJO convective event rates of propagation, it may be less or more of a factor even during peak-season times. We referenced climatological research from a few different analog platforms. We looked at La Nina years recently from 1998, 2007, 2010, 2016, 2017, and 2020 as well as others beforehand. All of these years suggest around 20 storms. Additional analogs are some PDO negative analogs (1964, 1973) as well as PDO positive (1983, 1988, 1995). We're keeping our projections high as the number of tropical storms in the last few years have been under-forecast likely due to better

Predicted (12 April) Observed as of 1 December.

identification of them through improved satellite technology. The forecasters this year are: Sarah Weaver, Thomas Schwent, Atabak Sadeghi, Joe Renken, and Tony Lupo

Wrap-up (J. Renken and T. Lupo):

Let's look at what we forecast vs what happened.

- 1. MJO ~50 days a major player. Looking at the activity we were on @!
- 2. The Sarahan dust, mixed with destructive/weak MJO phase in August and storms not developing in the traditional main development region, shut down the ATL as a whole and our Western ATL numbers.
- 3. The season started late, which is typical for La Nina (Lupo, 2011). And La Nina was slow to set in during the late summer early fall.
- 4. We would HIGHLY suggest that the students read the expert discussions located on the CPC MJO page to learn some Rossby Wave Propagation techniques because that's an asset to use in LRF!
- 5. Great job all around as being off 8 named storms due to two variables, SAL & storms forming north of MDR, could not be predicted that far out as we made our prediction in April. There were entities that made as many as three forecast number changes after their initial April forecast!
- 6. Since our first forecast in 2019, we forecast one hurricane too many in 2019, three short in 2020, we hit in 2021 and 2022, (though cat 1-2 and major ratio was not on target), 2023, and 2024. *An incredible run of FOUR straight years hitting the total number of hurricanes and only one off in 2019*.