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The growing interest in marine heatwaves in the Atlantic Ocean has led to important discoveries over the past decade. For example, the strong ocean-atmosphere heat flux responsible for the onset and decay of marine heatwaves is prevalent in the North and South Atlantic. It remains unclear, however, how marine heatwaves may impact the formation and evolution of tropical storms in the North Atlantic. While it is well established that a warm mixed layer is mandatory for their formation, a cohesive understanding of how extreme ocean temperatures may affect them is still missing. Here, we investigate the role of marine heatwaves on the development and evolution of tropical storms in the North Atlantic. Our preliminary analysis for 1981-2020 indicates that the number of marine heatwave days per boreal summer in the mean developing region (MDR, 10-20°N; 80-20°W) is strongly correlated to the number of tropical cyclones in the tropical North Atlantic, particularly when considering only major hurricanes. Years with higher numbers of hurricanes and major hurricanes only occur when the MDR experiences marine heatwave frequency of the order of 100 days per season. More importantly, marine heatwaves in the western subtropical North Atlantic seem to be more relevant to the evolution of the tropical storms along and offshore of the Gulf Stream between the Florida Strait and Cape Hatteras. These results have the potential to help improving hurricane forecast in the North Atlantic and our understanding of the consequences of extreme ocean temperature events.
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