The Effect of the Atlantic Multidecadal Oscillation on the Accumulated Cyclone Energy and Annual Storm Counts of Atlantic Tropical Storms and Hurricanes

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The purpose of this project is to determine the role that sea surface temperatures play in the formation and intensity of tropical storms and hurricanes found in the Atlantic Basin. The Atlantic Multidecadal Oscillation (AMO) served as the index of sea surface temperatures, and the Accumulated Cyclone Energy (ACE) was used as a measurement of the overall storm intensity for a year. The researcher hypothesized that the AMO would have an effect on the ACE and annual storm counts. For this project the researcher used data concerning the past fifty years (1964-2013). She began by collecting and recording data concerning the number of storms per year, the AMO index per year, and the ACE index per year. She then took this data and organized it into three time series and three scatter-plot graphs to show the correlation between the three variables. The researcher then used three ANOVA tests to determine the statistical significance of the variables tested against each other. The AMO was determined to be about 40% responsible for the annual storm counts and about 30% responsible for the ACE. Also, the ACE was determined to be about 60% related to the annual storm counts. The whole project turned out to be significant, so the researcher was able to accept her research hypothesis. After analyzing the data, the researcher was able to conclude that while the AMO has a significant impact on the annual storm counts and ACE, it is not the only factor that affects these variables.

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