

**Department of Mathematical Sciences
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MS Thesis Defense

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Spatial Analysis of North Atlantic Storm Trajectories

Friday, June 30, 4:00pm in SE 215

Advisor: Dr. Yang Li

Storms in the North Atlantic Ocean are observed on a continual basis yearly. Storm trajectories exhibit random behavior and are very costly to society. Data from the National Oceanic and Atmospheric Administration (NOAA) contains every storm's track from 1851 to 2022. Data points of each storm's track can help aid in decision making regarding their behavior. In this article, data analysis is performed on historical storm tracks during the years, 1966 to 2022, where access to satellite data is available. Analysis on this data will be used to determine if the storm's trajectory is statistically dependent on other storms' trajectories at varying distances in space. The proposed model is a spatial statistical model that is "fitted" on an in-sample data set to determine the spatial relationship for storm trajectories at all pair-wise directions or orientations. The model is tested on an out-of-sample data set and obtained a performance of a 58.4 root mean squared error and a 42.56 mean absolute error.

*Please contact Dr. Hongwei Long (hlong@fau.edu) for an electronic copy of the thesis.
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