A physical and statistical study of trends in weather variability

Name of Student Mentor: Jiehao Huang

Name of Faculty Mentor: James Booth

Abstract (Limit between 150-200 Words):

As the Earth continues to warm overall, changes in the Earth's climate are being observed such as extreme weather events, heat waves, and heavy precipitation events. In this research study, we will apply statistical analysis on station-based observation data to understand the sensitivity of climate variability. Daily station observations from three greater New York City airports: John F. Kennedy (JFK), LaGuardia (LGA), and Newark(EWR), are used in this study. Multiple statistical metrics will be used in this study to analyze trends and variability in temperature and precipitation in the greater New York City region. If students complete these tasks, this research will also further explore the relationship between cyclone tracks to cyclone hazards in terms of propagation speed, intensity, and surge events in the coastal area. Statistical testing will be required to examine the correlation between each pair of two components.

Datasets:

Daily Station-Based Observation data, TC and ETC lagrangian tracks data, etc.

Computer Skill

Summer Intern will work on MATLAB (highly preferred), python (maybe), Word, and PPT

Students are expected to have good time management skills, self driven to complete tasks on time.

Benefits to students:

Summer Intern will benefit from gaining research experiences on atmospheric science, by applying statistical analysis to analyze large-scale datasets. By conducting this research, summer intern will strengthen computer programming skills as well as data analysis skills.