Predictive Model; Flood Vulnerability; Open Data; NYC-311; Community Reporting; New York City

Resilience in the event of weather extremes is a critical factor in community safety and in the design, operations, and maintenance of infrastructure systems. Given the increasing occurrences of extreme climate events, agencies are being challenged with weather hazards such as storm surges and heavy precipitation induced. The challenge is complicated by the need to evaluate respective risks and plan for the mitigation of possible physical damage or threat to communities. Among the variety of climate hazards likely to become more frequent and/or severe, storm surges including intense rainfall, snow, and windstorms have proven to be particularly devastating. While many models for the prediction of such events exist, their application to heavily built urban landscapes is often impractical, making it difficult to accurately assess the flood risks in these areas. In this work, flood related NYC 311 calls records are used to create a data-driven model which can capture the flood vulnerable area across new york city five boroughs. The novel methodology presented in this study provides insights into where the city lacks flood prevention infrastructures.