

Quantifying the impact of US events weather and climate extremes

Graduate student mentor: Niloufar Nouri

Faculty mentor: Reza Khanbilvardi

Abstract

During the last several decades, weather and climate extremes such as tornadoes, thunderstorms, droughts, heat waves, heavy rainfall, etc., have caused severe economic damages and losses of life. The damages due to extreme weather events is intrinsically linked to physical characteristics of the events such as the frequency or intensity of the weather extremes as well as social variables like population or economic growth. Studying the relationships between them is of importance to determine the most significant climatic and societal variables and estimate the future losses.

In the era of changing weather patterns and having more frequent weather extremes with great impacts on communities and infrastructures, improving the knowledge about future uncertainty and quantifying the connection between climate variables and damages will enable us to estimate the risk under climate conditions and will help to enhance adaptation capacity by considering the population and economic growth in estimations.

The objective of this project is to quantify the relationship between the economic loss resulting from extreme weather events and its influencing factors including the frequency of occurrence and human-induced variables. Generalized linear regression model will be applied to build the relationship and investigate the impact of variables on total loss. The project will develop a suite of exploratory strategies and the NOAA storm events database, which includes the historical records of different weather extremes is used as the baseline

Datasets:

NOAA Storm event data set

Computer Skills:

Summer Intern will learn/work on R, QGIS, Excel and Word.

Benefits to students:

Summer Intern will benefit through writing report that can be converted in manuscript.