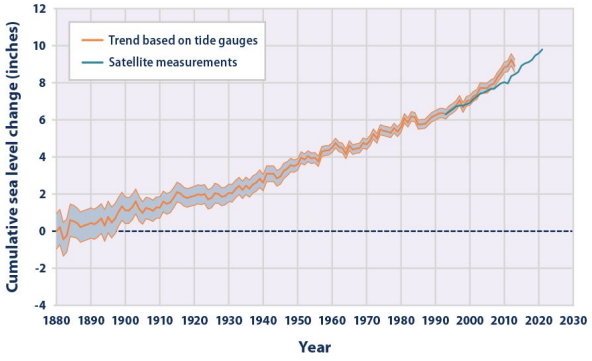
Project E^3: Energy, Environment and Education

Drs. Zhiming Zhang, Kauser Jahan, and Jie Li

- Climate change has been accelerated due to greenhouse gas emissions, which results in increasing extreme weather events and sea-level rise. The U.S. is heavily investing in alternate clean energy and lowering of the carbon footprint. New Jersey is at the forefront of using renewable clean energy and has recently invested in two more new wind farms in the Atlantic Ocean.



- This project focuses on the education of future generations about their environment: specifically renewable energy and climate change. Students will acquire knowledge regarding the causes and effects of climate change, such as impacts of climate change on South Jersey.

- The wind and tidal data collected from hands-on and outdoor activities will be used to predict the amount of power generated by nature and to estimate the reduction in greenhouse gas emissions. Decision-making process will be practiced for a low-carbon future.

Sustainable Removal of PFAS

Dr. Zhiming Zhang and Dr. Kauser Jahan

New Jersey Health Foundation, Inc.

ERDC ENGINEER RESEARCH & DEVELOPMENT CENTER

As emerging contaminants, per- and polyfluoroalkyl substances (PFAS) are drawing growing concerns due to their persistence in the environment and potential for acute health impacts. PFAS compounds are frequently detected in urban stormwater runoff, groundwater, and even tap water. This project will investigate the removal of PFAS via filtration and adsorption processes.

- Types and concentrations of PFAS in tap water will be explored, followed by the treatment by household filters.
- Different types of ion-exchange resins will be tested for the removal of PFAS compounds via batch sorption tests in the lab.
- Regeneration of these ion-exchange resins will be performed to achieve optimal utilization conditions.