



# Enhancing Coastal Resilience Decision-Support Tools to Reflect Latest Local Applied Science

## Overview

### Project Location

New Jersey

### Project Duration

September 2018 to August 2019

### Project Lead

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Research Reserve  
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### Project Type

Catalyst – Targeted investment for  
advancing collaborative science

### Products

- NJ Flood Mapper interactive website to visualize exposure from coastal flooding hazards
- Video tutorial on how to use the NJ Flood Mapper tool

### Project Partners

- Jacques Cousteau National Estuarine Research Reserve
- NOAA Office for Coastal Management
- Rutgers University

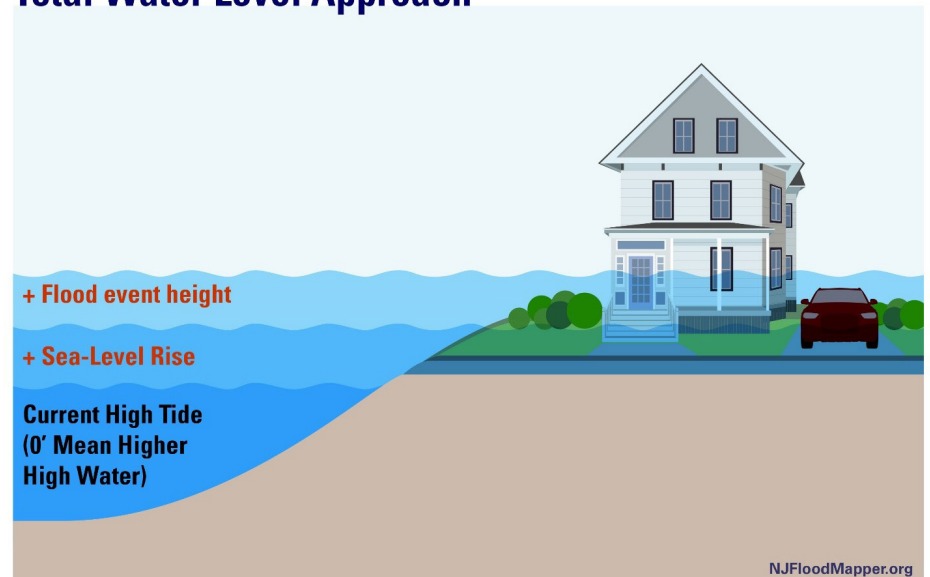
### Project Webpage

[nerssciencecollaborative.org/project/Auermuller18](http://nerssciencecollaborative.org/project/Auermuller18)

Hurricane Sandy brought home to New Jersey coastal communities the importance of planning for flooding hazards and sea level rise. The following years saw the creation of an overwhelming array of data, tools, and planning guidance, but the difficult task of synthesizing and applying this information was largely left up to coastal decision-makers. Recognizing this challenge, a multidisciplinary team of Rutgers University climate resilience experts worked to streamline the latest spatial data and decision-support tools into a single portal for coastal planners.

The result was NJ Flood Mapper, an interactive, user-centered website launched in September 2019 to enable decision-makers to visualize flood risk due to sea level rise and extreme storms. The website operationalized a total water level concept developed by the Rutgers team to help planners evaluate a range of flood conditions and time horizons. Enhanced map overlays and new data layers showing physical infrastructure, evacuation routes, and socio-demographic information were integrated into the tool to give a fuller picture of community vulnerability.

## Total Water Level Approach



*Rutgers' total water level approach illustrates flood exposure risk that results from a combination of tides, sea level rise, and flood events like extreme storms.*

Over the course of this project, the team worked collaboratively with state and local end-users to develop, refine, and promote NJ Flood Mapper. This work had already begun to contribute to more effective, coordinated coastal resilience planning across New Jersey for the benefit of ecosystems and communities.

## Project Approach

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Rutgers University is a respected resilience planning leader with more than a decade of experience preparing coastal communities for climate hazards. Drawing on their expertise and statewide networks, the project team used an iterative approach to create, test, and promote an enhanced web tool to visualize and plan for coastal flood risk. First, the team compiled an inventory of all available data sets for inclusion in the NJ Flood Mapper tool. The inventory was organized into a spreadsheet ranked by usefulness to end-users. A group of approximately 25 to 30 end-users was assembled, representing state and municipal agencies, nonprofits, private consulting firms, risk communication specialists, and subject area experts in real estate and municipal finance with experience in climate hazard planning. These end-users were asked to provide feedback through: (1) an online pre-survey describing how users employ decision-support and resilience planning tools; (2) three half-day work sessions to discuss design aspects of the online tool and increase ease of use; (3) a focus group survey to set a priority list for NJ Flood Mapper indicators.

Next, the team developed an Alpha version of the online tool that was tested by end-users. User feedback generated a list of changes and updates and informed the development of a user tutorial. A Beta test of the updated tool and user guide followed, with further revisions incorporated into its final version. NJ Flood Mapper was launched in September 2019, accompanied by an extensive outreach and communications campaign that targeted organizations serving state and local planners, media, and workshop and conference presentations, and leveraged ongoing engagement between Rutgers University, the Jacques Cousteau National Estuarine Research Reserve, and state and local coastal resilience planners (particularly the New Jersey Climate Adaptation Alliance).

## Benefits

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- New Jersey coastal decision-makers gain a go-to resource with up-to-date, easily accessible, science-based, state-specific data and visualizations to aid resilience planning efforts.
- The consolidation of Rutgers University's user-centered resilience data, tools, and planning guidance into a single online site has established a Rutgers NJ Adapt brand and simplified ongoing update and maintenance work.
- The tool's total water level visualization offers a framework for exposure methodology that can be replicated across New Jersey. The tool, its methodology, and lessons learned were also shared with the National Oceanic and Atmospheric Administration's Office for Coastal Management.
- As New Jersey develops a statewide climate resilience plan, NJ Flood Mapper offers a single, authoritative resource for municipal and regional leaders to coordinate their climate adaptation and mitigation planning.

## What's Next

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- The Rutgers team was contracted by the New Jersey State Hazard Mitigation Plan to develop a Municipal Snapshots tool and incorporate it into NJ Flood Mapper in 2021.
- The New Jersey Department of Environmental Protection is leading the development of a statewide climate resilience plan and climate adaptation strategy, and throughout this process will provide Rutgers with updated science to be incorporated into NJ Flood Mapper.
- Rutgers' total water level framework is being considered for adoption by the state Office of Emergency Management and Office of Climate Resilience.
- New Jersey's Department of Veterans Affairs contracted Jacques Cousteau National Estuarine Research Reserve and Rutgers University to conduct climate change assessments of 12 of its facilities using the NJ Flood Mapper tool.

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### About the Science Collaborative

*The National Estuarine Research Reserve System's Science Collaborative supports collaborative research that addresses coastal management problems important to the reserves. The Science Collaborative is managed by the University of Michigan's Water Center through a cooperative agreement with the National Oceanic and Atmospheric Administration (NOAA). Funding for the research reserves and this program comes from NOAA. Learn more at [nerrsciencecollaborative.org](http://nerrsciencecollaborative.org) or [coast.noaa.gov/nerrs](http://coast.noaa.gov/nerrs).*