



Coastal Community Resilience: Lessons Still to Learn

Hurricane Katrina: 10 Years Later

NOAA.gov

Conversations about coastal community resilience have changed tremendously in the past decade. Before Katrina, many people considered hurricanes, tsunamis, and other hazardous weather events as trials that happened to someone else.

But the trilogy of storms in 2005 – Katrina, Rita, Wilma – started a marked change in perception, as the possibility of real catastrophe and devastation was realized. Sandy, in 2012, drove home the point even further, highlighting the deadly combination of an increasing population

coupled with the increasing strength and reach of tropical storms. And for those who escaped the eye of a storm, nuisance flooding, which is also on the rise, taxed the infrastructure and coffers of hundreds of communities—including such major coastal cities as Norfolk, Charleston, and Miami.



Inundated areas in New Orleans following breaking of levees surrounding the city as a result of storm surge from Hurricane Katrina. Credit: NOAA

NOAA is working to ensure our nation's preparedness. Learning from the past decade, the federal agency is working with coastal communities to make the following part of the goals set for the next 10 years.

Identify Risk. Even the most educated among us fail to appreciate risk exposure. Risk varies by location and is influenced by development, geographical features, ocean bathymetry, economics, even the will of the people and local officials. It is nearly impossible to decrease vulnerability without understanding risk.

Understand What Can Be Done. In addition to changing building codes and preparing for redevelopment opportunities, cities are looking for other means of preparation. Green infrastructure, the use of natural areas that mimic natural hydraulic processes to reduce flooding impacts, represents an approach many communities are embracing. Each community's situation and therefore approach will be different.

Participate in Blue Sky Planning. The time to prepare is before disaster strikes. Scientists, planners, engineers, politicians, local officials, citizens, and the private, government, and non-profit sectors must work together to understand, develop strategies, and implement.

Don't Forget the "People" Side of Coastal Management. Social science research tells us that pre-existing social conditions help determine how quickly recovery occurs. Wealth, poverty levels, job security, percentage of home ownership, race, gender, and ethnicity are all indicators to consider. Community leaders should incorporate social science data and approaches into their resiliency efforts.

THE DISASTER POTENTIAL OF U.S. COASTS

America's coasts have extreme disaster potential. The shore-adjacent counties of the U. S. are six times more densely populated than the remainder of the U.S., a population that has been growing faster than the nation as a whole for several decades.



Annapolis, Maryland, pictured here in 2012, is one of three major East Coast urban areas already being faced with nuisance flooding in excess of 30 days per year. Managing nuisance flooding along the coast is a major resilience need facing coastal communities. Photo Credit: Amy McGovern (with permission).

Even with our improved warning systems, thousands of Americans lives were lost in extreme weather events over the last ten years.

During the past ten years more than 80 of these extreme events occurred in the United States, resulting in damages to infrastructure, crops, homes, and businesses exceeding \$1 billion each, and total losses exceeding \$500 billion.

NOAA and Coastal Resilience: Data, Tools, and Technical Assistance

NOAA plays an integral role in advancing community planning efforts by providing data, tools, and technical assistance.

Data and Tools

Having data is important, but the way data is presented often determines whether or not data is actually useful. **NOAA provides data and the related tools and information that make it easier for people to “see” what these data are representing.**



Coastal County Snapshots tool. Credit: NOAA

Sea Level Rise Viewer: Use the toggle to simulate various levels of sea level rise and see how the community is impacted in terms of flooding reach.

coast.noaa.gov/digitalcoast/tools/slr

Coastal Flood Exposure Mapper: Pick a location to see maps that show the people, places, and natural resources exposed to coastal flood hazards.

coast.noaa.gov/digitalcoast/tools/flood-exposure

Coastal County Snapshots: Flood exposure, wetlands, jobs – communities use the snapshots to get county level data that is automatically served up in a printable format, complete with charts and graphs.

coast.noaa.gov/digitalcoast/tools/snapshots

These are just a few of the hundreds of resources available from NOAA’s Digital Coast: coast.noaa.gov/digitalcoast

Technical Assistance

Grants: NOAA is providing more than \$9 million in coastal resilience grants to enhance [coastal communities](#) and [restore coastal habitat](#). The President’s budget proposes to expand that effort to \$50 million in fiscal year 2016. Local and state matching investments magnify the impact of these grants.

Green Infrastructure: Parks, beaches, wetlands - many natural areas absorb excess water and provide natural habitat, clean water, and recreational opportunities. NOAA provides a training class and numerous information resources to help communities incorporate green infrastructure in their planning efforts. Examples of this approach can be found at sagecoast.org a public-private effort sponsored by NOAA, FEMA, USCG, VIMS along with other federal, state, and local agencies, non-governmental organizations, academic institutions, engineers, and private businesses working together to promote effective green infrastructure use and best practices.

FEMA Rating System: FEMA encourages communities to earn points for actions taken to increase community resiliency, which FEMA awards by providing lower flood insurance rates for all citizens. [NOAA’s Digital Coast](#), a data and tool delivery system for coastal communities, provides the local data and information communities need to undertake many of the tasks associated with this rating system.

National Weather Service Assistance: NOAA’s [Office for Coastal Management](#) is working with the [National Weather Service](#) to use social science findings to increase the public’s understanding of hazardous weather messages. A “[fast-draw](#)” video used to inform citizens about storm surge reach has been particularly popular.

Coastal Community Resilience Index: Sea Grant and NOAA have partnered to provide a simple, inexpensive method for performing a self-assessment of community resilience. So far 54 communities have used this process to identify strengths and weaknesses and prioritize actions to be taken prior to the next hazard event.

toolkit.climate.gov/tool/coastal-resilience-index

Climate Outreach Community of Practice: NOAA is supporting a volunteer network of officials from Gulf States who are working together to explore Gulf coast climate science, adaptation, and lessons learned. This group is also developing shared messages and goals for the future. These relationships help communities get the information and momentum needed to take action.