NATIONAL CENTERS FOR COASTAL OCEAN SCIENCE

Science To Sustain Thriving Coastal Communities and Economies

Social Science to Support Vibrant Coastal Communities: Assessing Vulnerability and Resilience

The National Centers for Coastal Ocean Science (NCCOS) conduct research and provide information to help sustain thriving coastal communities and economies. Coastal communities use NCCOS tools, maps, and products to sustainably manage their natural resources and protected areas, and to better understand and respond to coastal hazards, such as flooding, storms, harmful algal blooms, and contaminated coastal waters.

The NCCOS social science team is made up of sociologists, economists, geographers, and coastal specialists who focus their research on the connections between people and the environment. Assessing vulnerability and resilience to coastal risks is one of the ways in which we study these connections.

Why Assess Vulnerability and Resilience?

Coastal hazards threaten property, community well-being, and marine industries, the latter of which contributes billions of dollars annually to the U.S. economy. By understanding the vulnerabilities of communities to potential coastal hazards—such as sea level rise, oil spills, flooding, water pollution, storms, and coastal erosion—communities can take action to prepare for coastal hazard impacts and increase their recovery potential. With this type of research, coastal communities are able to become more resilient, increasing their ability to sustain local economies in the face of natural hazards. NCCOS generates information and tools that community's need to better plan for, recover from, and adapt to coastal hazards.

Communities can take action to prepare for coastal hazard impacts

NCCOS Approaches

Assess Vulnerabilities to Coastal Hazards

Communities and ecosystems can be physically, structurally, socially, and economically vulnerable to coastal hazards. Physical vulnerability means that people and structures are in the path of potential threats because of where they are located. For example, beach homes on a barrier island are vulnerable to damage from hurricanes. Structural vulnerability refers to the structural characteristics that influence a building or road's vulnerability to hazard impacts, such as building material or structure grade. Social and economic vulnerability pertain to the population characteristics that may increase one's vulnerability to the effects of coastal hazards. Social characteristics, such as old age or disability can influence the ability of people to escape coastal hazards. Economic vulnerability, often due to low incomes, poverty or unemployment, can hinder one's ability to escape and recover from hazard events as well.

NCCOS examines this array of vulnerabilities in relation to various coastal and climate-related threats. We intersect vulnerabilities with risks to identify areas of overlapping high risk and high vulnerability. Coastal communities can then use this information to identify priority adaptation areas to help coastal managers both understand the unique characteristics of their region and allocate resources accordingly. Ultimately, this research informs decision making related to hazard planning, mitigation, and recovery.

Assess Hazard Impacts to Inform Recovery Potential

Coastal hazards impact communities, industries, and infrastructure differently. Documenting the effects from various hazard events on each sector and then intersecting these impacts helps communities to identify what might be done to better facilitate recovery efforts. Understanding recovery potential, in tandem with vulnerability, means that planners can target resources to increase their community's potential for resilience. NCCOS researches these impacts and evaluates recovery potential to assist coastal planners in decision-making, strategic planning, and resource allocation.

For More Information

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