NOAA Sea Grant Community Climate Adaptation Initiative: Helping communities prepare for climate change

NOAA Sea Grant is committed to improving the nation's ability to understand, plan for, and respond to climate variability and change along our shorelines. In 2012, Sea Grant held its second Coastal Communities Climate Adaptation Initiative (CCCAI) grants competition to help enhance planning for climate adaptation in coastal communities. Based on the success of the initial projects, the new projects will help communities meet the climate change challenges and hazards that threaten their economic and social well-being. The primary objectives are to provide the communities with sufficient information to consider alternatives, enable them to make well-informed decisions, and ultimately, to develop and implement customized solutions. The projects may also serve as a model for other communities to carry out climate adaptation.

Alaska Sea Grant: Climate change adaptation for an at-risk community
Shaktoolik, AK
This community-driven project will build on efforts by Shaktoolik and other at-risk mainly Alaska Native villages on the Bering Sea coast to adapt to potentially devastating effects climate change. It will involve a multi-party approach to assist the community of Shaktoolik to make a decision whether to relocate or stay at the current location. It will result in a well-defined process that may be replicated by other at-risk communities in the region. A final report will document lessons learned, adaptation methods for Shaktoolik, potential funding sources, and a step-by-step action plan to implement the community's decision.

The primary objective is that Shaktoolik and its partners develop a final adaptation plan that identifies risks and responses to climate change. This adaptation plan will allow Shaktoolik to participate in the Alaska Community Coastal Protection Project and will be used by the State of Alaska in allocating financial and technical resources to implement the plan.

More information is available at:
http://seagrant.uaf.edu/map/climate/shaktoolik/index.php, http://ine.uaf.edu/accap/ or http://www.anthc.org/chs/ces/climate/index.cfm

University of Southern California Sea Grant: Sea-level rise planning for a coastal, urban metropolis
Los Angeles, CA

Coastal communities in California are anticipating a climate change scenario in which temperatures will warm significantly during the 21st century, and thus expect an increase in the frequency, magnitude and duration of heat waves and sea level rise (SLR) extremes. As such, coastal Californians have recognized the need to plan for the impacts of climate change, specifically SLR.

As one of the largest cities in the nation, Los Angeles faces complex challenges preparing for the impacts of a changing climate on infrastructure operations and the safety of its large population. City of Los Angeles Mayor Antonio Villaraigosa has made climate change adaptation one of his top priorities in this region of fourteen million, and home to the nation's busiest seaport.

In response to a request from the Mayor, USC Sea Grant proposes to develop a city-led, science-based, and stakeholder-supported process ("AdaptLA") to help the City begin planning for the impacts of climate change, focusing first on SLR. Sea Grant will work with the City and regional stakeholders to develop the baseline analyses necessary for an effective adaptation plan, including an existing conditions report and a review of existing City policies. Outreach to the broader L.A. community will be an important component of AdaptLA, since any city-led planning effort can meet insurmountable resistance without community support.

More information is available at: http://www.usc.edu/org/seagrant/research/adaptla.html

Delaware Sea Grant: Weathering Change – Integrated hazard and adaptation training to create resilient local governments

Delaware City, DE

Coastal communities face threats from natural hazards that may be exacerbated by climate change. The goal of the project is to integrate climate change adaptation's forward-looking planning process with existing hazard mitigation actions of local governments. While many communities undergo hazard mitigation planning, they do so based on current and historic risks. Climate change adaptation planning, with a longer-term view of impacts and risks, focuses on understanding expected future impacts and the community's ability to address them.

By merging traditional hazard mitigation planning concepts with climate adaptation planning concepts, local communities can be engaged in the process. The outcome is enhanced local knowledge of existing and future vulnerabilities – knowledge that is essential when making local decisions on such issues as infrastructural upgrades, zoning changes, ecosystem protection, and future development. The training program will focus on developing and enhancing existing processes, incorporating existing tools, expanding local knowledge of climate change issues, and creating action-oriented solutions to identified problems.

Project partners will work with Delaware City, Del., to enhance preparedness planning and create a locally applicable action plan that is responsive to changing conditions and community impacts. The initiative will also result in a step-wise training program and template that will be

available to other communities. Additionally, Pennsylvania Sea Grant will work with project partners to extend climate adaptation outreach efforts to local governments regionally.

More information is available at:
http://www.seagrant.noaa.gov/whatwedo/climate/www.deseagrant.org

Florida Sea Grant: Building a shared vision for post-disaster recovery in Sarasota County
Sarasota County, FL
How to best redevelop after a storm? It's a challenging question coastal communities must answer once basic order is restored after a storm catastrophe.

In Sarasota County, Florida, community leaders are getting ahead of the game. With Sea Grant funding, they will use an innovative visualization tool that combines a Nintendo Wii controller and GIS technologies to help citizens and planners decide where and how to rebuild should a severe storm strike (See also Texas Sea Grant project). The area recognizes its vulnerability to coastal storm hazards. Its barrier islands and white-sand beaches along the Gulf of Mexico have been highly developed with affluent neighborhoods and first-class tourism facilities. When the county recently began drafting a post-disaster redevelopment plan, the process raised land-use planning and private property concerns. County managers now want to address the rebuild issues to complete the county's draft redevelopment plan.

Over the next several months, this project will bring community representatives and county managers together over a virtual tabletop, where they can simultaneously view and interact with map layers over an aerial image of Sarasota County. The map layers can illustrate a wide range of information, such as census data, utility infrastructure, flood zones, and storm surge scenarios. Seeing how a decision about one factor affects other factors during a simulated recovery helps participants test ideas, and develop responses to challenging planning issues. This project's combination of innovative technology with collaborative facilitation offers great promise for promoting local dialogue on challenging resource issues.

More information is available at: http://www.flseagrant.org/component/content/article/18-latest-news/308-sharing-a-vision

Georgia Sea Grant: Developing a 50-year climate adaptation plan for a highly vulnerable barrier island community
Tybee Island, GA
The City of Tybee Island has approximately 3000 residents and is located on a small Atlantic barrier island east of Savannah in Chatham County. Georgia Sea Grant and the University Of Georgia Carl Vinson Institute Of Government will work with Tybee to develop a climate adaptation plan for the Island. The recommendations developed by the project will help the City prepare for and adapt to sea level rise through appropriate local ordinances, infrastructural improvements and other municipal actions.

The plan will be developed through a series of workshops in which stakeholders will identify vulnerable assets and formulate measures to deal with problems like flooding and more frequent high tides. To facilitate the planning process, the team will utilize two models to predict future sea level rise. A program to assist decision-making will help prioritize the importance of the community's assets while the Coastal Adaptation to Sea level rise Tool will illustrate the impact of specific storm surges and coastal flooding scenarios. Results from these models will be used as a foundation for prioritizing, developing timescales and initiating municipal finance planning for the development of the adaptation action plan.

Outreach and extension support will be provided throughout the implementation period. It is expected that this project will serve as a model for advanced adaptation planning and implementation for other coastal communities of Georgia, the southeast region and across the nation.

More information is available at: http://georgiaseagrant.uga.edu/article/5_8_12_Tybee/

Maine Sea Grant: Coastal infrastructure resiliency in a changing climate
Ellsworth, ME
Maine's coastal communities represent an excellent laboratory to investigate adaptation strategies that mobilize science-based approach with a clear appreciation of local contexts, governance, and information needs. The Maine Healthy Beaches Program, which monitors coastal water quality, experienced 250 beach advisories or closures due to rain events. This greatly impacts tourism, which is the largest industry in Maine.

New approaches that increase resiliency to climate and coastal hazards will lead to benefits for coastal communities and the economic sector. Results from Maine Sea Grant's previous work with town and city officials affirm the needs to mitigate the recurrent impacts from extreme rain events—planning and decision-making related to maintenance, repair, replacement of stormwater infrastructure, including culverts are viewed as a major issues. Maine Sea Grant proposes to work in collaboration with the City of Ellsworth in downeast Maine to develop a community based adaptation model with a focus on stormwater and flood protection infrastructure.

This work builds on Sea Grant's ongoing work with community officials along Maine's coast. Initial results from previous work with town and city officials affirm the needs to mitigate the recurrent impacts from extreme rain events—planning and decision-making related to maintenance, repair and replacement of stormwater infrastructure such as culverts, is viewed as a major issue.

More information is available at:
http://www.umaine.edu/sustainabilitysolutions/sustainability_science/SSI_projects_YR1/jain2_et_al.html

Pennsylvania Sea Grant: Helping a tidal riverfront community build capacity to adapt to climate change

Chester, PA

Chester, Pennsylvania, located near Philadelphia and just ten miles northeast of Wilmington, DE, is a financially distressed community that is particularly susceptible to the impacts of climate change. Increased storms, sea level rise and extreme heat will affect Chester populations that are already vulnerable due to poverty, lack of services, and other social and economic stressors. The City of Chester also needs to protect resources that will be critical to its revitalization, such as property along the city's waterfront that has potential for redevelopment.

Chester's once nearly abandoned waterfront now features class A office space, entertainment destinations, and public access along the Delaware River. Continuing this waterfront redevelopment is important, so it is crucial for the City to find ways to protect existing resources from the impacts of climate change, while also identifying ways to enable future development that will be resilient to anticipated changes.

A coalition of planners and coastal outreach specialists from Pennsylvania Sea Grant and their project partners will team up with community stakeholders to identify how climate change can exacerbate "on-going" problems facing Chester, such as water availability, sewage treatment and storm water management, while showing how climate change can intensify extreme weather events. This two-year project will bring the best available data, resources, and information to help the Chester community make informed decisions and implement adaptation strategies.

More information is available at: http://seagrant.psu.edu/

South Carolina Sea Grant: Using participatory scenario building to encourage climate-resilient zoning in the Coastal Carolinas

Beaufort County, SC

Although the low-lying areas of the Carolina coasts are clearly vulnerable to climate variability and change, planning for climate impacts is not yet widespread. In the Carolinas, climate models present a wide range of possible climate futures, including extreme heavy rainfall events, which could increase the input of pollutants, nutrients, and sediments into the estuarine environment, and could compromise shellfish beds, an important part of the cultural and economic fabric of South Carolina's Lowcountry. Increases in human population and existing local land-use practices will likely exacerbate this impact, as will the likelihood of drought and accelerated sea-level rise. Coastal governments in the Carolinas must think about adapting to climate change, but have little guidance from climate models.

This project will take a SC demonstration community through an adaptation planning cycle. South Carolina Sea Grant will develop an initial assessment of the consequences climate change could have on current zoning and new codes in Beaufort County, followed by scenarios of how zoning- and code-related adaptation decisions could impact the county's resilience. South Carolina Sea Grant will help the community write a plan for priority actions to update zoning and codes in the future to encourage climate resilience. South Carolina Sea Grant will share lessons learned with other communities in the Carolinas that are interested in beginning to consider the effects of climate change but currently are unwilling to commit to doing so.

More information is available at: http://www.scseagrant.org/Content/?cid=251

Texas Sea Grant: Texas Coastal CHARM – Coastal resiliency tools for local officials
Rockport, Fulton, and Aransas County, TX
The Cities of Rockport, Fulton, and Aransas County are located on Texas' central Gulf Coast. The cities and county have a population of nearly 24,000 residents, and is part of the Corpus Christi metropolitan area, population 416,000. Much of the area is low-lying in coastal surge and flood zones. These communities are likely to directly experience rising sea level, more frequent storms, higher surges, and longer droughts.

Texas Sea Grant will update and provide a participatory GIS tool in partnership with the public and local officials to develop future growth scenarios to evaluate strategies for adapting to coastal change. The question facing communities is not if growth will occur, but where and how it will occur. Texas Sea Grant researchers developed the Community Health and Resources Management (CHARM) model, which allows citizens and officials to work in a team setting to propose answers to where and how growth will occur (see also Florida Sea Grant project.) The public can outline areas of growth and redevelopment in the model, while the model calculates impacts to resiliency in real-time. Leading up to a growth-modeling charrette, Sea Grant will host a series of Coastal Resiliency Index assessments, a speaker's forum, and a set of project meetings with local officials to incorporate local knowledge in the model.

A final Rockport-Aransas resiliency report will summarize public input outcomes, review growth and resiliency scenarios, and provide local officials with tools to address vulnerabilities.

More information is available at: http://texas-sea-grant.tamu.edu/NewsAndEvents/MediaReleases/press12/weTable-JohnJacob.html

Virginia Sea Grant: Innovation and adoption of adaptation best practices
Hampton Roads, VA

Virginia has the highest rate of sea-level rise on the East Coast, and Hampton Roads ranks 10th in the world in value of assets exposed to increased flooding from sea level rise. These assets include ports, railways, utilities, roads, military installations, and other critical infrastructure.

To address the climate adaptation challenge in this diverse and densely populated set of communities, the Hampton Roads Adaptation Forum will provide a suite of resources and opportunities for local engineers, planners, facility managers and others to build the capacity for effective adaptation responses. A partnership between Old Dominion University, Hampton Roads Planning District Commission and Virginia Sea Grant, the Adaptation Forum is designed to enhance information sharing by bringing together members from Hampton Roads municipalities and state and federal agencies for quarterly meetings. In addition, the Adaptation Forum will create a comprehensive system to manage and communicate knowledge about climate adaptation throughout the region, and will host public town hall meetings and track communities adaptation efforts in order to help policy-makers learn about and implement effective strategies for climate adaptation.

More information is available at: http://vaseagrant.vims.edu/2012/05/22/hampton-roads-adaptation-forum/