

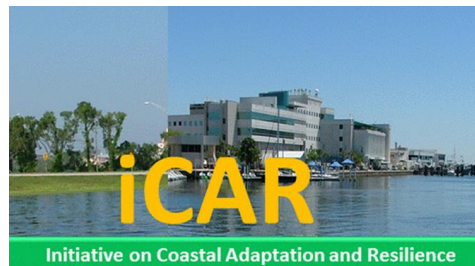
Preamble

The Initiative on Coastal Adaptation and Resilience (iCAR), USF St. Petersburg

The Initiative on Coastal Adaptation and Resilience (iCAR) was developed in 2015 by faculty members from USF St. Petersburg, Barnali Dixon, Ph.D., Donny Smoak, Ph.D., and Rebecca Johns, Ph.D., to engage stakeholders to facilitate the adoption of policies and practices focused on coastal adaptation and resilience. iCAR also aims to leverage the university's intellectual capital and resources to build safer, healthier, more aware, prepared, and resilient communities in the Tampa Bay region. iCAR's mission is to increase knowledge and awareness of climate impacts on the region, identify research gaps in scholarly understanding of climate issues in Florida, conduct relevant research within the iCAR faculty's areas of expertise, help local entities develop the skills necessary for climate resiliency, and build local capacity for adaptation to climate change. Serving primarily Pinellas County, iCAR utilizes university resources and expertise to provide diverse types of support to local communities in Tampa Bay through outreach to residents, neighborhood associations, NGOs and through partnerships with local, state and federal agencies.

iCAR's vision includes a transdisciplinary approach where the sciences, engineering and social sciences are used to examine the interactions between society and environment (viz climate change-related extreme weather events, flooding, resiliency) as well as interactions among the built environment, landuse, water systems, and ecosystem functions to develop policy and support informed spatially explicit decision-making and resource allocation. iCAR facilitates the decision-making process by recognizing the complexity of the policy formulation process and by connecting science to policy in the context of economic and technological feasibility, public awareness and knowledge, and various decision-making levels (individual, family, community, city, state, etc.) as decisions made at different levels require different levels of information and access to resources. Therefore, iCAR aims to help Pinellas County and the Tampa Bay region develop Action Plans for Resiliency and Recovery that is holistic as well as multi-dimensional and integrate infrastructure, economic, health, social fabric, and ecological impacts. iCAR engages with stakeholders in various formats to realize its transdisciplinary vision toward resiliency. iCAR accomplishes its mission via three major activities: i) Research, ii) Education and Outreach, and iii) Service and Capacity Building. While on the surface they may appear to be three different activities, they are intellectually connected. For examples, annual workshop topics are selected based on research findings and conversations from workshops are used to shape iCAR's research agenda and community outreach efforts; and we also refocus community-wide capacity building based on information exchanges that occur with stakeholders during our community-based research, annual workshops and outreach events. Overall benefits of iCAR-related activities include:

- ✓ Engage students and faculty with the community



- ✓ Cities and counties receive ideas, energy, and access to ‘state of the art’ scientific knowledge to support policy options
- ✓ Community/Society benefits from information sharing and technology transfer where universities will be part of the solution to our most pressing issues (expertise from research and data analysis)

Research : iCAR’s research goals include both basic and applied approach. Examples of basic research include Dr. Smoak’s carbon biogeochemistry, while examples of applied research conducted by Drs. Dixon and Johns include climate change-related extreme weather events such as flooding and their impacts to communities. Above all, iCAR is engaged in conducting community-based research to influence policies and resource allocation to foster equitable resiliency. Specific research goals include i) Identifying unique needs of neighborhoods so policy can be developed and resources can be allocated to meet the unique needs of each community to foster resiliency (with a special emphasis on marginalized communities), ii) Understanding communities’ unique communication/information needs and access to resources, iii) Understanding gaps in social capital and participation in governance, iv) Understanding of environmental impacts (viz wetlands and mangroves to climate change and Sea Level Rise, and v) Development of customizable, spatially explicit information systems that can help develop social network and foster resiliency including health.

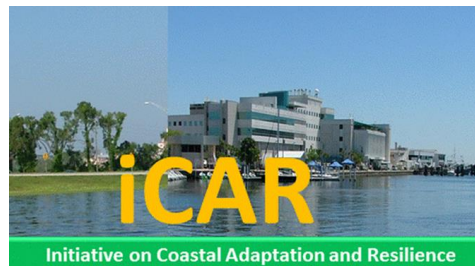
The research results of iCAR projects: i) highlight the unique infrastructural and information needs of diverse neighborhoods; 2) identify vulnerable populations in Pinellas County; 3) suggest improvements in communication between government offices and residents; 4) identify successful strategies for preparing and responding to imminent climate threats; and 5) offer ideas for improvement in building social and physical capital and environmental assets as part of resilience and adaptation in the region. Lessons learned from this research are shared with the community through the organization of panels, talks, informal meetings, an iCAR newsletter, and through publication in scholarly journals. iCAR also hosts national and international scholars to foster exchange of ideas among researchers in the field of coastal adaptation and resiliency using an interdisciplinary approach.

Recently Completed projects:

- ✓ The Role of Crowdsourced Data, Participatory Decision-Making and Mapping of Flood Related Events (Lead: Dixon and Johns)
- ✓ Tale of Two Neighborhoods: Biophysical and Socio-Economic Vulnerability to Climate Change in Pinellas County, Florida (Lead: Johns and Dixon)
- ✓ How coastal wetlands respond to climate change and sea-level rise (Lead: Smoak).

Current Projects

- ✓ Coastal flooding: An integrative analysis of socio-economic vulnerability and its relationship to successful coastal adaptation and resilience (Lead : Dixon and Johns)



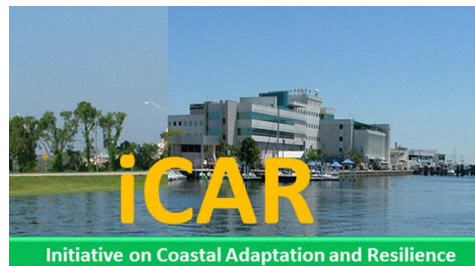
- ✓ Public Responses to Flooding and Severe Weather: Utilizing Spatial Distribution in Identifying Influencing Components (Lead: Dixon and Johns)
- ✓ Crowdsourced Flood Mapping & STEM Education, A Geospatial Analytical Approach (Lead: Dixon and Johns)
- ✓ Implementing a Community Health Resiliency Information System “CHRIS” to Foster a Healthy St. Petersburg: A Multi-Modular Digital Hub Proposal (Lead: Dixon, Johns & Smoak)
- ✓ Organic carbon biomass, burial, and biogeochemistry in blue carbon ecosystems along the South Florida coast: climate change and anthropogenic influences (Lead: Smoak)

Education and Outreach:

Education and Outreach efforts include promoting awareness of climate change (consequent extreme weather events, flooding, sea-level rise), reducing gaps in social capital, facilitating access to information and resources, and enhancing citizen/community participation in governance and resiliency. These goals are accomplished through an annual workshop that brings professionals, practitioners, policy makers, and community together to discuss relevant topics related to resiliency. We also offer a community-based climate change education series in collaboration with BoydHill Nature Preserve, City of Saint Petersburg Parks and Recreation (known as Climate 101) where we bring expertise and educational assets of the university and other local experts directly into St. Petersburg neighborhoods by hosting these events at community centers or city parks. Additionally, we offer opportunities for public education including workshops for K-12 (students and teachers) where we use a hands-on approach combined with fieldwork to enhance understanding of environmental and human health impacts of extreme weather events, such as flooding and increased chemical and biological contamination.

The titles of the past four annual workshops are: Coastal Adaptation and Resilience in Tampa Bay (September 2015), Solutions for Coastal Cities: Resilience and Adaptations in Tampa Bay (September 2016), Social Aspects of Resilience: identifying key areas of social vulnerability and enhancing resilience (October 2017), and Lessons Learned from Hurricanes: Preparation, Recovery and Resilience (October 2018). Title of 2019 annual workshop is: Pathways to Change: Policy and Action for Resilience (Oct 29 & 30).

The annual workshops draw several hundred participants each year, and include nationally recognized speakers as well as state and local experts and practitioners. The workshops are free and open to faculty, students and community members. The fall 2018 workshop included a mayoral panel, sponsored by OPEN’s Aresty Speaker Series, which brought mayors from five Florida coastal cities together to discuss recent hurricane events and preparation strategies. Past speakers and panelists have included Jeff Goodell (author of *The Water Will Come*),



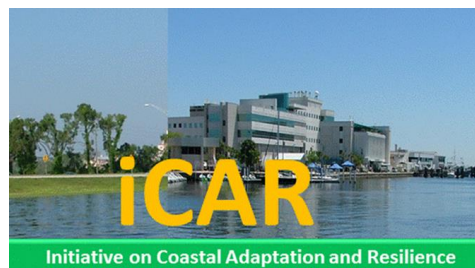
Jaqueline Patterson (Climate Justice Director of the NAACP), Naval Commander A. Schedel, Senator J. Brandies, Senator D. Rouson, Commissioner J. Long, Commissioner R. DiSabatino, D. Rice (St. Pete Council Member), P. Roff (Bradenton Council Member), to name a few. The annual workshops have been inaugurated by former Senator Nelson, Congressman Christ, and Mayor Kriseman while they were in their respective office.

iCAR's community climate change education series (Climate 101) has been held at Boyd Hill Nature Park since fall of 2018. This program contains six monthly events from October to May. These events are free and open to the public, and cover a range of important topics related to climate change and the environment. By bringing the educational assets of the university and other local experts directly into St. Petersburg neighborhoods, we increase the university's impact and help strengthen awareness and understanding of ongoing and potential climate-related impacts on our area, helping to build an environmentally literate and active citizenry. Topics include health impacts of severe weather events and climate change effects; climate change impacts on the local real estate markets; changing flood hazard maps and models; and impacts on local flora and fauna.

Finally, as part of iCAR's social capital and skill-building efforts, iCAR in collaboration with its partners and sponsors offers workshops on GIS technology, flooding, and other climate and environmental issues for middle school and high school students from South St. Petersburg during the summer. These workshops target disadvantaged youth and provide them a cost-free opportunity to gain technology and science knowledge and skills, experience working in a college environment, and to gain knowledge of the environmental issues facing their communities. Skills-based workshops help develop local youth leadership, which will ultimately lead to advocacy for the marginalized neighborhoods.

Service Capacity Building: iCAR's capacity-building efforts include, but are not limited to, lending expertise to the community and providing logistical and technical support to local community organizations, neighborhood associations, NGOs, and business and agencies involved in promoting adaptation and resilience in our community; and working to improve social capital, participation in governance and information flow at the neighborhood level.

iCAR also offers skilled interns (with training in GIS and qualitative research skills), and cost-free consulting services to small community-based organizations and neighborhood associations on relevant climate resiliency and capacity-building issues that impact their respective neighborhoods. iCAR helps build local leadership in marginalized neighborhoods to increase adaptive capacity through partnerships for citizen science, community-based research, and



informal and formal educational events. iCAR also helps neighborhood associations organize hurricane preparation day as well as special educational events where iCAR, by utilizing its connections with policy makers and government officials, connects and oversees the logistics of bringing government officials and speakers to these events. Additionally, through an active web and social media presence, iCAR encourages wide community participation in iCAR events. Photography contests, art contests and crowd-sourced data gathering on flood issues help build an aware and active citizenry across diverse demographics. Finally, iCAR through its newsletter, web and in-person events provides networking opportunities for various organizations, policy makers, academics and businesses.

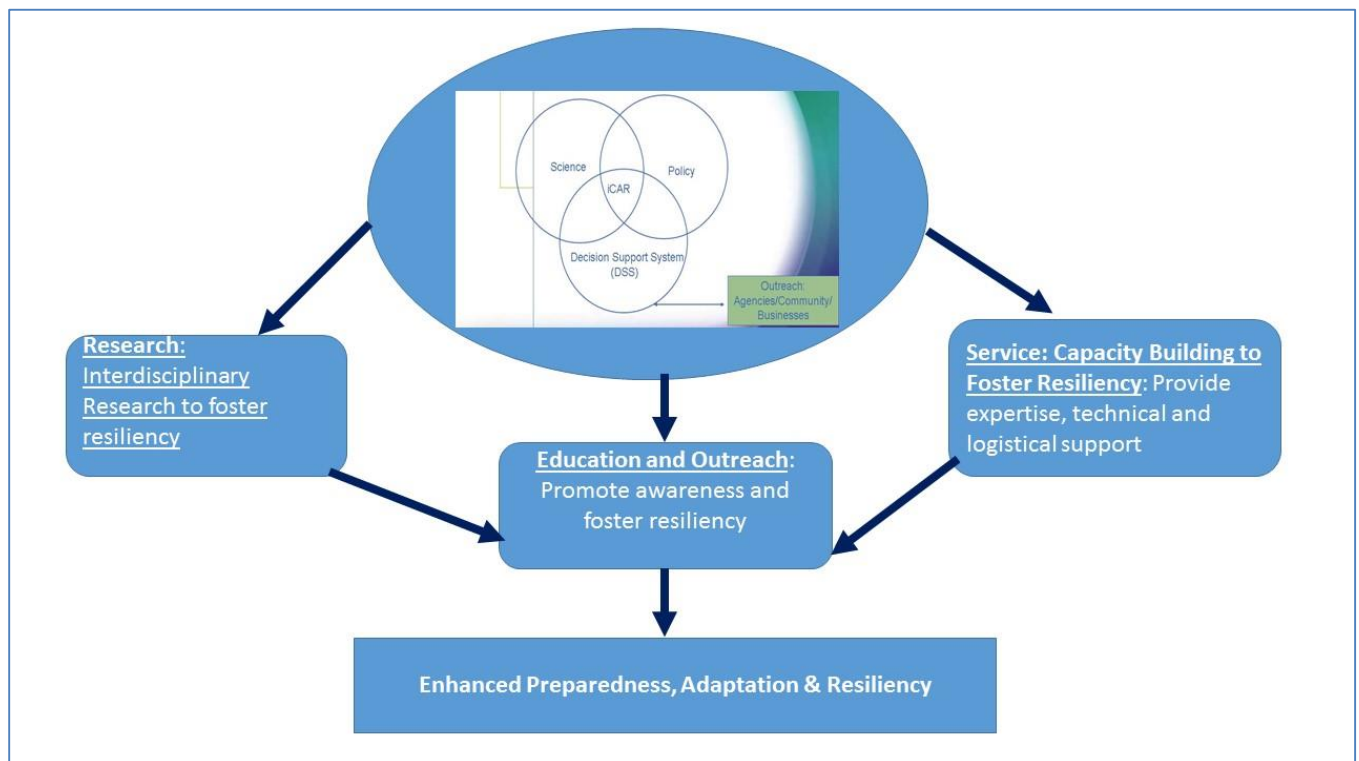


Figure 1. Simplified Concept to be included in brochure

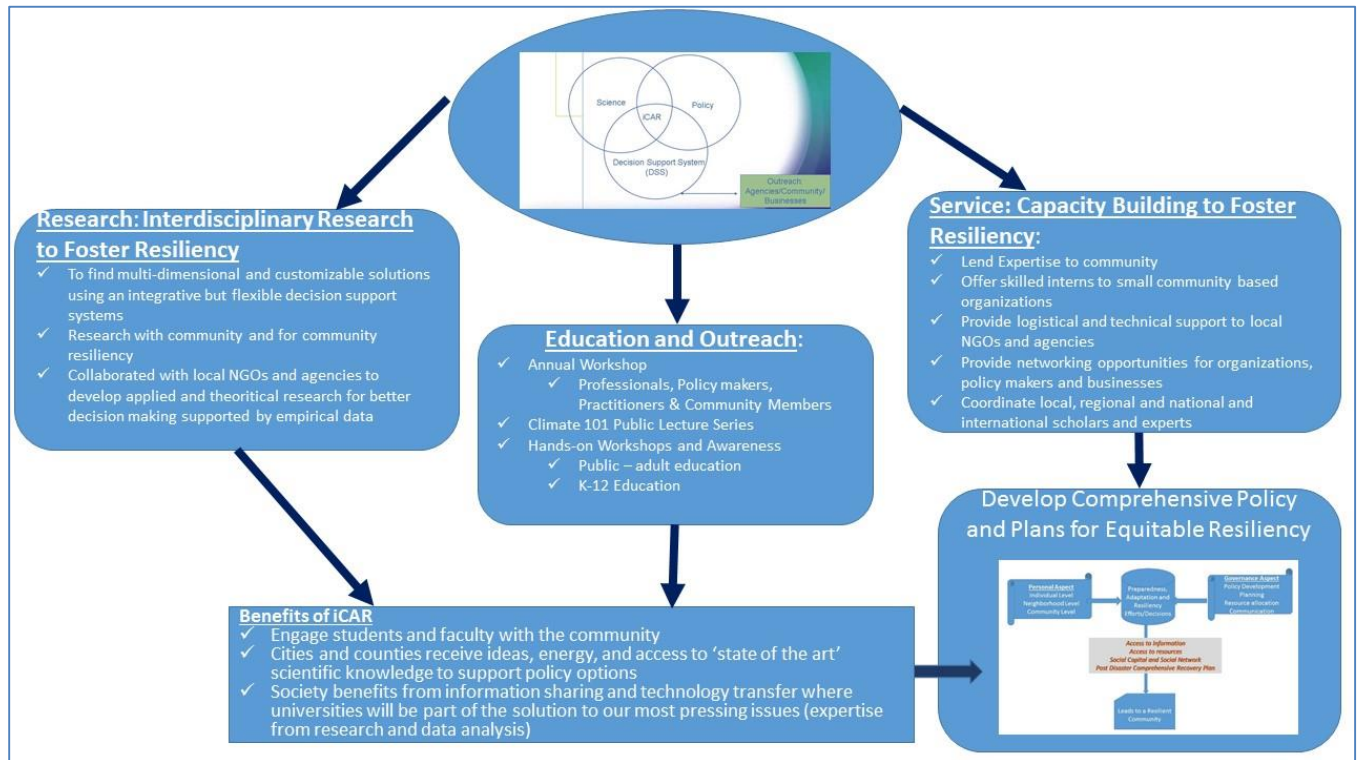


Figure 2. Comprehensive list of activities and benefits for iCAR for your reference



Figure 3. iCAR aims to promote adaptation and resiliency by bringing science, data into policy decisions to have a plan so we can avoid kayaking on the road

Photo credit: Kara Doran – recipient of iCAR Flood related photo contest, summer 2019). Photo location and Date: Flooding on 31st Terrace North in the Holiday Park Neighborhood of St. Petersburg during Hurricane Hermine, September 3, 2016 around 10:30am.