



# Florida Climate Institute



## Building a climate-resilient Florida

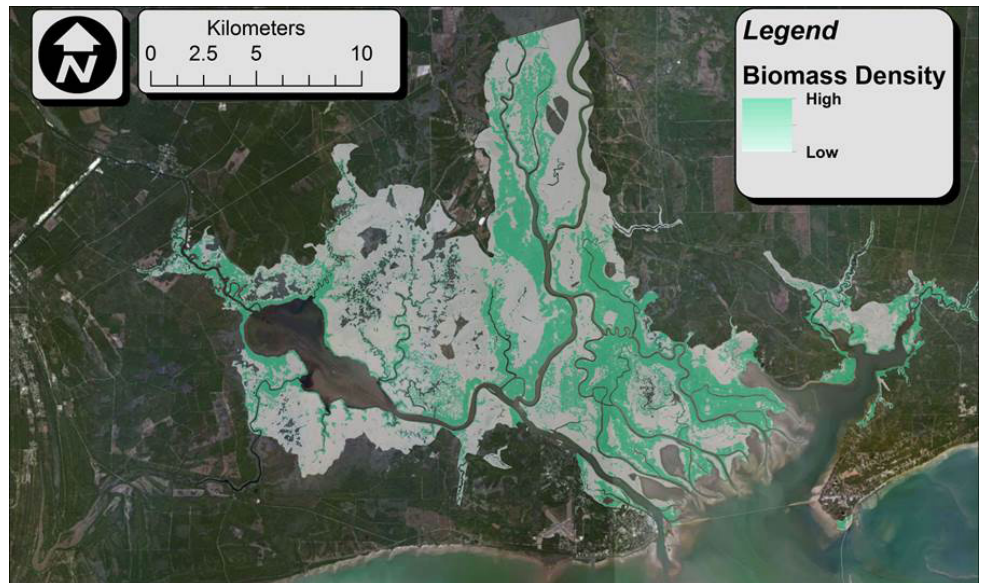
The Florida Climate Institute (FCI) was created by Florida's universities with a goal of providing Florida and its businesses and communities the much needed scientific knowledge, support, and education to respond to a changing climate. While Florida's economic growth is predicted to outpace the national trend, climate change is already affecting many communities and key economic sectors. If Florida's economy is to continue to flourish, it must respond to convert the state's potential liabilities into competitive economic advantages. Florida is well positioned to become a center of excellence for climate change research and education and a test bed for innovations in climate adaptation, including areas like water management, tourism, urban design, agriculture, and ecosystem adaptation.



# Climate Information System

**Problem:** Global projections for climate change do not downscale accurately to peninsular Florida. Short term, decadal, and long-term climate projections need to be made using Florida data and local characteristics.

**Response:** The FCI will develop a state-wide climate information system, build Florida-based higher-resolution models to better predict climate change at time scales of several months to several decades, and include information that predicts the magnitude and effects of extreme events. The FCI will provide standardized projections for all state and local agencies.



## Sea Level Rise

**Problem:** Florida's flat terrain and widespread porous limestone geology will cause even modest increases in sea level to have significant impacts on natural environments such as the Everglades and on urbanized coastal areas. Future projections show exacerbation on these impacts and communities are demanding action.

**Response:** The FCI will build on work already underway to develop better models of storm surge in the context of rising sea levels, create an information system and adaptation technologies to address the vulnerabilities of the natural and built environment, and design responses to impacts on coastal ecosystems and urban buildings and infrastructure. FCI will become a clearing house for modeling and adaptation for all communities along the coast.



## Ecosystems

**Problem:** Changes in temperature, rainfall, and other climate parameters are already impacting Florida's terrestrial ecology, including the distribution of invasive species. These changes are likely to continue and are complicated by changes in land use and population distribution. In addition, coral reefs and other marine ecosystems are crucial to South Florida's fishing and tourist industry. Increasing ocean acidification has already degraded reef structures in the region; some coral reefs are less than 50% of their former extent.

**Response:** Florida's ecosystems provide a wide range of services, wildlife habitat, water supply, and opportunities for recreation and tourism. We need to monitor changes in these systems, understand and maintain migration corridors, develop robust plans to stem the spread of invasive species, and create new opportunities for tourism and nature-based wildlife industries. Studies of specific impacts of warmer temperatures and acidification in both the lab and field are important for understanding the processes at work and designing restorative actions.



# Agriculture & Forestry

**Problem:** Agriculture and forestry are a vital part of Florida's economy. Climate change and variability, including the potential for increased temperatures and longer drought, can impact crop, animal, and timber production unless innovation and adaptation are built into production systems.

**Response:** Development of drought-resistant crops will be intensified, together with experimentation in technologies of water management and control. Special attention will be given to the impact of new plant diseases.

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# Urban Planning & Development

**Problem:** Urban areas on the coast will be impacted by sea level rise, increases in temperature patterns, and changes in extreme rainfall and hurricanes. Direct impacts on coastal infrastructure including transportation systems, water supply wellfields and intakes, and flood control systems have already been identified.



**Response:** As conditions change, we must understand the needs of vulnerable communities (e.g., health impacts), rethink community infrastructure such as roads and water and drainage systems, and redesign urban areas. The FCI will work with urban managers to develop products and programs to mitigate impacts and, in coastal areas especially, define adaptation options and opportunities. FCI will become a centralize institution for consultation on adaptation actions.

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# Water Management

**Problem:** As hydrological patterns change and coastal areas are affected by sea level rise, new water management strategies will be needed. Options include innovative water capture and storage approaches and development of alternative water supplies, including reuse. In some cases, areas subject to recurrent flooding may need redesign of drainage systems.

**Response:** The FCI will work with regional and local water managers to experiment with new water management strategies that are robust to climate and sea level variation, reduce excessive water use, and, as in the Everglades restoration, identify ways to make sure that the water needs of humans and the natural environment are met.

# Public Health

**Problem:** Florida's tropical and subtropical climate and diverse agriculture, together with increasing international trade and tourism, place the state in a high vulnerability to emerging and re-emerging pathogens and other health hazards, which pose risks to food safety and public health.

**Response:** Climate/health-related research projects with FCI will help address food safety and foodborne diseases, environmental health issues, and vector-borne diseases.



# Workforce Training

**Problem:** Traditional discipline-based methods of scientific research are not as appropriate for training scientists and technicians to meet future interdisciplinary challenges such as climate change as they are at organizing traditional research. Professionals and citizens need to become better informed about the new challenges and opportunities of living in a climate-changing world.

**Response:** The FCI will coordinate a broad program of training and literacy development in the crucial science, technology, engineering, and mathematics (STEM) fields for a climate-smart workforce. Educational opportunities will be provided for both university students and those who are already in the labor market.

# The FCI will achieve its goal by:

- Becoming an information clearinghouse for local and state agencies and developing standardized climate impact scenarios and adaptation technologies for use across economic sectors.
- Partnering with Florida businesses to foster collaboration in the areas of climate change adaptation, mitigation, and resilience.
- Working with state agencies and private partners to inform decisions for managing the unique ecosystems and natural resources that are the underpinning of Florida's economic success.
- Developing science-based methods for managing economic and environmental risks.
- Working to create opportunities for new climate-smart jobs in different economic sectors and natural resources, including agriculture, tourism, public health, and recreation. In response to sea level rise, planners and technicians will be needed to mitigate coastal erosion, implement urban responses to storm surge, and manage our port and harbor infrastructure. Florida will need workers to manage our drinking water supplies so that they are sustainable for people, our economy, and the environment. Workers will be needed to monitor and manage ecosystems, protect wildlife habitat, and develop new opportunities for recreation and ecotourism.
- Fostering STEM education and training interdisciplinary problem-solvers for a climate-resilient economy.
- Promoting climate-resilient innovation and entrepreneurship and creating strong public-private research and education partnerships.

For more information about the Florida Climate Institute, visit <http://floridacclimateinstitute.org>

