

MAPPING FLORIDA'S RESILIENCE THROUGH A NATIONAL SECURITY LENS



American Security Project

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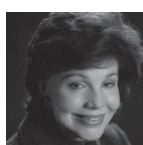
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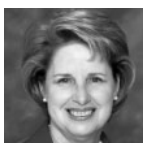
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Vice Admiral Gunn is Vice Chairman of the CNA Military Advisory Board, former Inspector General of the Department of the Navy, and former President of the Institute of Public Research at the CNA Corporation.



The Honorable Chuck Hagel

Chuck Hagel served as the 24th U.S. Secretary of Defense and served two terms in the United States Senate (1997-2009). He was a senior member of the Senate Foreign Relations; Banking, Housing and Urban Affairs; and Intelligence Committees.



Lieutenant General Claudia Kennedy, USA (Ret.)

Lieutenant General Kennedy was the first woman to achieve the rank of three-star general in the United States Army.



Stuart Piltch

Stuart Piltch is Managing Director of Risk Strategies Consulting Philadelphia.



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David Wade is a consultant helping global corporations and organizations with strategic advice, public affairs and thought leadership, crisis communications, political intelligence gathering, and federal and legislative strategy.

In this Report

ASP has been conducting research on Florida's role in U.S. national security since 2015. As part of that effort, ASP identified the need for a more comprehensive understanding of the state's climate resilience efforts for key national security assets in the state.

Resilience has definitions and elements that cover diverse range of issue areas, including socio-economic factors, transportation, and energy. This report focuses exclusively, but broadly, on city and regional climate resilience efforts that directly impact Florida's defense and security facilities. While not an exhaustive list of every climate resilience measure underway, this report serves as a foundation for further climate resilience analysis for national security assets located in the Sunshine state.

IN BRIEF

- Florida is home to more than 20 critical national security and Department of Defense (DoD) assets, including three combatant commands (U.S. Southern Command, U.S. Central Command, and U.S. Special Operations Command). It is also home to the third largest naval facility in the country (Naval Station Mayport) and the U.S. Coast Guard's largest and busiest air station (Air Station Clearwater).
- The eastern Gulf of Mexico (EGOMEX) along Florida's west coast has more than 100,000 square miles of an irreplaceable, incomparable combination of air space, water space, and existing infrastructure to support military training, testing, and evaluation, which is used by every branch of the U.S. military. Florida's coastal waters also provide the most realistic training opportunities for U.S. Indo-Pacific Command (INDO-PACOM) scenarios.
- In a 2019 report to Congress, eight of Florida's installations were identified as at-risk of significant impacts from climate change:
 - Eglin Air Force Base (AFB)
 - Hurlburt Field
 - Homestead AFB
 - MacDill AFB
 - Tyndall AFB
 - Patrick Space Force Base
 - Naval Air Station Key West
 - Marine Corps Support Facility Blount Island
- Resilience at and around Florida installations is paramount to maintaining military readiness, mission assurance, and U.S. national security. Understanding city and regional approaches to resilience is paramount to understanding resilience at the surrounding national security facilities, since most depend on community infrastructure. This paper provides a broad overview of climate resilience efforts in the five Florida cities/regions that are home to key national security and military operations:
 - Cape Canaveral/Space Coast
 - Jacksonville
 - Pensacola/Emerald Coast
 - Miami /South Florida
 - Tampa

About the Author

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Background

Florida plays a critical role in national security. It ranks fifth in the U.S. states with the most military personnel and is home to three combatant commands (U.S. Southern Command, U.S. Central Command, and U.S. Special Operations Command) and more than 20 installations—representing every branch of the military as well as the U.S. Coast Guard (USCG).¹ The missions across these assets range from protecting U.S. interests in the Middle East, North Africa, Southwest and Central Asia, and South America, to disrupting and defeating terrorist networks and providing essential training and exercise opportunities for pilots and explosive ordnance technicians. Florida is also home to two of the U.S. Navy’s four deepwater ports, one of three Navy Fleet Readiness Centers, the U.S. Marine Corps’ only maritime prepositioning force facility, and the Eastern Range rocket launch facility. As such, any disruption in operations at these facilities has a truly global impact.

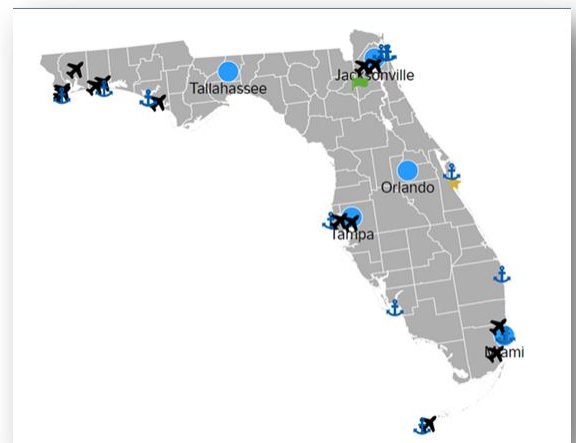
Florida’s coastal waters also serve as an invaluable training ground for the U.S. military. According to a 2018 DoD report, the eastern Gulf of Mexico [EGOMEX] provides an irreplaceable, incomparable combination of air space, water space, and infrastructure to support military training, testing, and evaluation.² Activities in this area span all service branches, and includes advanced technology demonstrations, special operations training, high-altitude supersonic air combat maneuver training, exercises, and electronic warfare.³ Ensuring that these facilities, and indeed the state as a whole, enhance their resilience to climate change is critical to support U.S. national security.

“No other area in the world [than EGOMEX] provides the U.S. military with ready access to a highly instrumented, network-connected, surrogate environment for military operations in the Northern Arabian Gulf and Indo-Pacific Theater.”

Preserving Military Readiness in the Eastern Gulf of Mexico
Office of the Secretary of Defense, May 2018

Many of the same factors that make Florida an attractive location for military presence and training are the same factors that make it vulnerable to climate change. It’s specious coastlines, topography, and moderate temperatures yield ideal conditions for aviation as well as maritime security operations in the Gulf of Mexico, Caribbean, and Atlantic Ocean waters.⁴ But these conditions also make Florida and Florida-based national security assets susceptible to risks like sea-level rise, wildfires, and more intense hurricanes. A 2019 report to Congress identified eight of Florida’s military installations as “at risk” of significant impacts from climate change⁵ specifically from climate risks like recurrent flooding and drought. Given that risks cannot be mitigated by the installations or communities alone, at least five of Florida’s regions have embarked on innovative, collaborative resilience projects that simultaneously build Florida’s resilience and increase resilience for Florida’s critical national security assets.

This report aims to highlight climate resilience activities in these five Florida regions which are home to some of the U.S.’ most critical national security missions and military facilities: Cape Canaveral/Treasure Coast; Jacksonville; Pensacola/Emerald Coast; Miami/Doral/South Florida; and Tampa. While this research is not exhaustive, it aims to provide an overview of major resilience activities to educate and inform policymakers and key stakeholders about climate resilience measures across the Sunshine state. This report will also serve as the foundation for additional Florida resilience analysis.



DoD

DoD has been conceptualizing climate change as a “threat multiplier” for more than 15 years. Climate change has been listed as national security threat as far back as the 2010 & 2014 Quadrennial Defense Reviews (the precursor to the National Defense Strategy) and has most recently been labelled as “the existential challenge of our time” in the latest National Security Strategy.⁶ Over the past five years, DoD and each of the service branches have issued additional climate related strategies and plans designed to institutionalize climate as a strategic, operational, and tactical concern. DoD now includes the security implications of climate change in all risk analyses and planning.

As part of conceptualizing climate as national security, DoD has been actively preparing for a range of climate threats and hazards to its personnel, installations, missions, and readiness. Individual communities, states, and regions are continuing to prepare for increases in extreme weather events, and so too has DoD. Specifically, installation resilience has become a priority for maintaining mission assurance across the DoD enterprise, with significant benefits for local economies and infrastructure. In support of building resilience for both installations and their communities, Florida has seen important investments from two major DoD programs: the Defense Community Infrastructure Pilot program (DCIP) and the Readiness and Environmental Protection Integration (REPI) Program.



Examples of Installation Resilience Factors, U.S. Department of Defense Office of Local Defense Community Cooperation, <https://oldcc.gov/our-programs/installation-resilience>

The DCIP program, operated by DoD’s Office of Local Defense Community Cooperation (OLDCC), provides grant funds to address vulnerabilities at installations and the communities that support them. DCIP has awarded five grants in the past two years to Florida installation communities to enhance resilience which contributes to Florida’s resilience as a whole.⁷ In 2022, Eglin Air Force Base (AFB) was awarded funding for the construction of a new fire station that enables faster deployment of Emergency Medical Services and wildland firefighting, and Naval Station Mayport was awarded funding for construction of a new water main to improve the capacity and pressure for consumers. In 2023,

Marine Corps Support Facility Blount Island, Naval Air Station Pensacola, and Naval Air Station Whiting Field were also awarded funding for a range of activities, including construction of a new fire station, projects that reduce flooding threats and improve emergency response times, and airport upgrades.⁸

OLDCC has also awarded funding for Military Installation Resilience Reviews (MIRRs) in Tampa, South Florida, and Northwest Florida. These community-led activities support a variety of assessments, planning, and implementation activities that protect and enhance military installation sustainability on a variety of issues, including utilities, stormwater management, and vulnerability assessments.

Meanwhile, the REPI program was highlighted as one of the key programs to ensure climate resilience in the DoD's 2021 Climate Adaptation Plan. REPI works with installations and communities to achieve mutually supportive actions⁹ with the ultimate goal of protecting the military's ability to train, test, and operate.¹⁰ REPI projects and programs include wildfire risk mitigation and living shoreline construction—all of which have significant benefits for installation and community resilience. REPI also supports land use conversions by coordinating encroachment management partnerships, which contribute to the longevity of working farms, forests, and ranchlands throughout Florida. Through the end of FY22, DoD and its REPI partners have invested nearly \$228 million on projects at 11 Florida facilities.¹¹ REPI also helps coordinate DoD's participation in the Sentinel Landscapes Partnership, an inter-agency coalition of federal and state partners working preserve military missions while promoting sustainable land management. There are 12 Sentinel Landscapes in total, two of which are in Florida: the Avon Park Air Force Range Sentinel Landscape in south central Florida and the Northwest Florida Sentinel Landscape. These Sentinel Landscapes “strengthen military readiness, conserve natural resources, bolster agricultural and forestry economies, increase public access to outdoor recreation, and enhance resilience to climate change.”¹²

REPI PROJECTS

Project Installation	County	Congressional District
Avon Park AFB	Polk, Highlands	18th
Cape Canaveral AFS	Brevard	8th
Camp Blanding	Clay	4th
Eglin AFB	Okaloosa	1st
Homestead ARB	Miami-Dade	28th
NAS Pensacola	Escambia	1st
NAS Whiting Field	Santa Rosa	1st
NS Mayport	Duval	5th
OLF Whitehouse (with NAS Jacksonville)	Duval	4th
Tyndall AFB	Bay	2nd

U.S. Department of Defense REPI State Fact Sheet: Florida.
https://www.repi.mil/Portals/44/Documents/State_Fact_Sheets/Florida_StateFacts.pdf

State Level Action

The military and defense industry plays a significant role in Florida's economy and has an economic impact of approximately \$96.6 billion annually.¹³ As such, it is crucial that the state continues to invest in resilience measures that keep defense communities and national security assets operating at full capacity. Though Florida's Energy & Climate Change Action Plan has not been updated since 2008,¹⁴ Florida has developed an integrated comprehensive planning framework and made significant investments in mitigating and adapting to climate change risks and hazards. The *Peril of Flood* statute, enacted in 2015, outlines guiding principles for flood reduction techniques and requires communities to have a resiliency and coastal element in their comprehensive plans.¹⁵ Florida announced its first Chief Resilience Officer (CRO) in 2019 and has been steadily increasing its resilience activities and investments in the intervening years. For example, the Office of Resilience and Coastal Protection, within the Florida Department of Environmental Protection (DEP), manages more than 5.3 million acres of submerged lands and coastal uplands.¹⁶ In addition to a diverse portfolio of programs, research, and tools, the office also manages the Resilient Florida Grant Program which helps coastal and inland communities coordinate planning for the impacts from climate change,

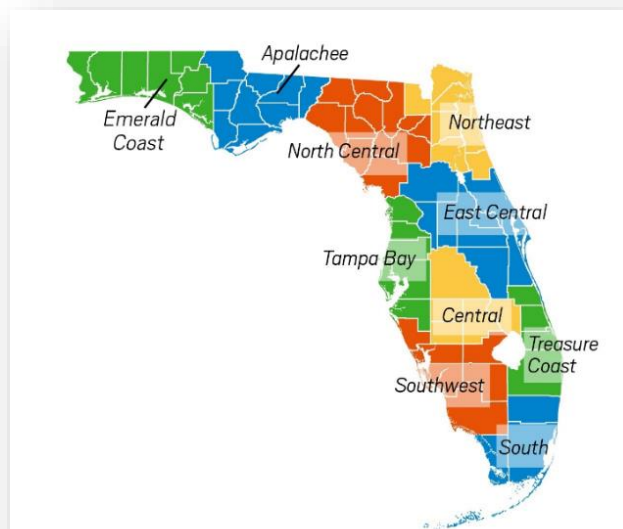
including flooding and sea-level rise.¹⁷ In addition, in late 2021, the state issued its first-ever Statewide Flooding Resilience Plan.¹⁸

Last year, the Florida Department of Commerce established an Office of Military and Defense to streamline business and protect military installations—another demonstration of how important it is to both the state and the nation to foster resilience in military communities. The governor also announced more than \$6.1 million in funding for military communities through the Defense Infrastructure Grant Program, Defense Reinvestment Grant Program, and the Florida Defense Support Task Force Grant Program. Through collaborative efforts with the Florida Department of Economic Opportunity and Select Florida (previously Enterprise Florida), these programs are providing grants to military communities to support infrastructure projects, economic diversification, and community relations at some of the most at-risk defense locations.¹⁹

Florida is also a member of the Southeast Regional Partnership for Planning and Sustainability (SERPPAS), a regional forum designed to promote collaborative decision-making on development and policy initiatives and increase partnerships to improve conservation, the economy, resilience, and military readiness.²⁰

Regional Councils

Florida's 10 regional planning councils play a critical role in fostering Florida's climate adaptation and resilience. Established and defined in Florida's state statutes, these geographically organized councils help coordinate activities between cities and counties to address complex issues that often cannot be dealt with by one city or county alone. They are experienced with consensus-building across jurisdictions,²¹ which makes them ideal partners for climate adaptation, mitigation, and resilience. Specifically, regional councils can provide informed environmental reviews, improved evaluation of encroachment issues, and support to mutually beneficial programs like land use studies.²² Several planning councils also operate regional climate and resilience coalitions that help enhance resilience across their communities and regions.



Florida's 10 Regional Planning Councils. Image Credit: <http://www.flregionalcouncils.org/>

Florida also has a Coastal Resiliency Portal, *Peril of Flood*,²³ which collates relevant resources and projects underway by the Florida's 10 regional councils. The portal provides valuable insights into key state and federal partners, case studies, and tools for planners working on adaptation, mitigation, and resilience. And more importantly for national security assets, regional councils can be key partners in winning additional DoD resilience funding. For example, the Tampa Bay Regional Planning Council, South Florida Regional Planning Council, and Emerald Coast Regional Planning Council were instrumental partners in winning and executing DoD Military Installation Resilience Review (MIRR) grants for their respective communities.

Regional Water Management Districts

Water plays a central role in Florida's economy and ecosystems. It's also front and center of its climate risk. Florida's five water management districts are responsible for the protection and administration of water resources, including water supply, water quality, flood protection and floodplain management, and maintenance of natural systems, so coordination with them is necessary for any resilience activity.²⁴ Water management districts handle a myriad of

programs and permitting, and are important partners for military installation resilience since most rely on commercial water services. For example, the South Florida Water Management District (SFWMD) manages water resources for 16 counties and approximately nine million people.²⁵ It also works with Florida DEP, Florida Department of Emergency Management, and other local, state, and federal stakeholders to invest in water infrastructure adaptation. SFWMD has an annual *Sea Level and Flood Resiliency Plan* to prioritize resilience products in their area of responsibility.

Florida National Security Regions of Interest

Military resilience is defined in U.S. code. Most military facilities rely on commercial water and electricity to operate, and any effort to enhance community resilience in these areas will have widespread benefits for service members, facilities, and the communities that sustain them. As part of its Florida research portfolio, ASP examined five primary national security regions of interest in Florida to better understand ongoing activities and how they enhance installation resilience.

Cape Canaveral/Space Coast

Cape Canaveral is a barrier island, and as such, faces routine weather and water related challenges. In 2018, the city was awarded a vulnerability assessment grant from the Florida Resilient Coastlines Program (FRCP), which ultimately resulted in both a robust vulnerability assessment, *Resilient Cape Canaveral*,²⁶ and accompanying *Resilient Cape Canaveral Action Plan*.²⁷ The plans, developed in conjunction with the East Central Florida Regional Planning Council (ECFRPC), outlined 56 preparedness targets across eight action categories to build the region's sustainability and resilience. Cape Canaveral has combined its sustainability and resilience programs under the Cape Canaveral 2063 umbrella,²⁸ a year chosen in both celebration of the city's centennial anniversary and long-term planning target for its resilience and sustainability activities. It is both a "Tree City," a nationwide program to manage and increase trees in public spaces, as well as an American Flood Coalition member.²⁹

Brevard County and ECFRPC have also undertaken assessments and actions in support of *Resilient Brevard*, an effort to develop strategies, policies, and plans of action to increase resilience across the region.³⁰

Key National Security Assets and Missions

Cape Canaveral and Brevard County's resilience efforts directly impact the following assets and surrounding communities:

- **Cape Canaveral Space Force Station (CCSFS)**
 - Home to the Cape Canaveral Space Force Station Skid Strip³¹, which handles payloads from U.S. military satellites and Customs and Border Protection drone aircraft.
- **National Aeronautics and Space Administration (NASA) Kennedy Space Center**³²
 - One of 10 NASA field centers and main NASA launch site.
 - Also home to critical space research and development activities.
- **Patrick Space Force Base**³³
 - Home to Space Launch Delta 45 (SLD 45), which controls/operates Cape Canaveral Space Force Station (CCSFS) and maintains the 15-million-square mile Eastern Range.

“Military Installation Resilience—means the capability of a military installation to avoid, prepare for, minimize the effect, adapt to, and recover from extreme weather events, or from anticipated or unanticipated changes in environmental conditions, that do, or have the potential to, adversely affect the military installation or essential transportation, logistical, or other necessary resources outside of the military installation that are necessary in order to maintain, improve, or rapidly reestablish installation mission assurance and mission-essential functions.”

10 USC § 101(e)(8)

- Home to Air Force Technical Applications Center (AFTAC), which monitors nuclear treaties, Defense Equal Opportunity Management Institute (DEOMI), and the 920 Rescue Wing (AFRES).³⁴
- **Naval Ordnance Test Unit (NOTU)**³⁵
 - Provides key component of U.S. strategic nuclear deterrence mission, including the Strategic Weapons System (SWS) Ashore Facility and readiness for Trident II submarines.
 - Operates the Navy's port, which support submarines and surface ships of the U.S. Atlantic Fleet, foreign navies, and assets of Military Sealift Command.

Jacksonville

Located in northeastern Florida, Jacksonville is the largest city in Florida by population, and the largest city by land area in the continental U.S.³⁶ Shaped by both the Intracoastal Waterway and the St. John's River, it has over 1,000 miles of shoreline. Naturally, it faces climate hazards such as increased flooding, sea-level rise, and increased extreme heat. In late 2023, the City of Jacksonville released *Resilient Jacksonville*, the city's strategy for adapting and mitigating climate change to enhance resilience.

Resilient Jacksonville has four themes and iterates 45 actions and 90 sub-actions for systems, sites, and people. It leverages 11 adaptation approaches³⁷ and calls for the development of a Climate Action Plan for the city that aligns the city's resilience efforts with sustainability goals.³⁸ Of the many items listed in *Resilient Jacksonville*, the actions on enhancing water and energy utility resilience, improving stormwater infrastructure, and coordination with military partners will directly impact well-being and resilience of soldiers, sailors, airman, and civilians stationed in the greater Jacksonville area. It also has a simultaneous benefit of enhancing the resilience of area military facilities on which they work.

In early 2024, the city of Jacksonville was awarded \$500,000 from the Defense Infrastructure Grant program to support ongoing REPI programs and encroachment protection acquisitions around Outlying Landing Field Whitehouse and Naval Air Station Jacksonville.³⁹

The Northeast Florida Regional Council (NEFRC) also operates *Resilient First Coast*, a formal inter-county partnership to coordinate regional resilience activities. It recently completed a *Regional Resilience Priorities Analysis*⁴⁰ to map the resiliency work underway, identify potential gaps and data needs, and inform future planning.

Key National Security Assets and Missions

The Jacksonville Naval Complex includes assets such as Cecil Airport, Naval Outlying Landing Field Whitehouse, and the Pinecastle Range Complex.⁴¹ Jacksonville's resilience efforts directly impact the following assets and surrounding communities:

- **Marine Corps Support Facility Blount Island (MCSF-BI)**⁴²
 - MCSF-BI is responsible for the planning, coordination, and logistics for the Maritime Prepositioning Force (MPF), which allows equipment to be placed at overseas locations in order to more rapidly respond to security crises.⁴³
- **Naval Air Station (NAS) Jacksonville**⁴⁴
 - NAS Jacksonville is the largest installation in Navy Region Southeast (NAVREGSE), as well as home to Commander, Navy Region Southeast (CNRSE). It includes three bombing ranges, including the only Navy live-fire range on the East Coast. It is also home to seven active-duty patrol (VP) squadrons, three Reserve squadrons, five helicopter squadrons, and a UAS Triton squadron.⁴⁵
- **Naval Station Mayport**⁴⁶
 - Naval Station Mayport is home to the third largest naval fleet concentration in the country and has a port and runway that makes it capable of managing any aircraft in the DoD inventory,⁴⁷ as well as the

ability to handle aircraft carriers. It is the home port to 20 DoD vessels and the U.S. Coast Guard vessel *USCGC Valiant*.⁴⁸

- **Naval Submarine Base Kings Bay⁴⁹ (Georgia)**
 - Naval Submarine Base Kings Bay is located approximately 40 minutes from Jacksonville, and while located in Georgia, vice Florida, those traveling to the base typically travel first to Jacksonville. The base is home to the U.S. Navy Atlantic Fleet's ballistic missile nuclear submarines.

Miami/Doral/South Florida

Miami and greater South Florida is perhaps the most vulnerable area to climate change in the entire United States.⁵⁰ The area's high groundwater table and complex canal water management system yields an inescapable vulnerability to sea-level rise, as well as dangerous and destructive storm surge and more frequent instances of deadly extreme heat.⁵¹ In addition, South Florida is one of the most hurricane-prone regions in the world. This has made climate adaptation and mitigation essential to its continued inhabitability, and thus is at the forefront of regional policy and planning.

South Florida has embraced this challenge and is now a leader in both the nation and the world in climate adaptation and mitigation. Miami-Dade County established the world's first Chief Heat Officer⁵² position and, along with the City of Miami and City of Miami Beach, established the Greater Miami & the Beaches (GM&B) partnership to develop a robust approach to regional resilience. The collective, under the umbrella of the Rockefeller Foundation's 100 Resilient Cities Network, has resulted in a robust regional resilience strategy. In 2019, the partnership released a comprehensive Resilient305 Strategy to foster resilience among South Florida's places, people, and pathways⁵³ with more than 53 ongoing actions and a continually growing number of resilience partners.

One of those partners is the Southeast Florida Regional Climate Change Compact. The Compact has been instrumental in coordinating resilience action across Broward, Miami-Dade, Palm Beach, and Monroe counties. The Compact has been working since its inception in 2009 to collaboratively reduce greenhouse gas emissions, implement adaptation strategies, and build regional climate resilience.⁵⁴ In 2012, the Compact published the Regional Climate Action Plan (RCAP), which has been continually updated to foster the region's climate resilience.⁵⁵ According to its website, the Compact leadership committee engages closely with regional stakeholders from the representative counties, the South Florida Water Management District, the South Florida Regional Planning Council, the Nature Conservancy, and Florida International University's Sea Level Solutions Center.⁵⁶

The South Florida Regional Planning Council (SFRPC) is another key resilience player and helped win DoD funding for a South Florida focused Military Installation Resilience Review (MIRR). Awarded in 2022, the MIRR examined the resilience challenges and opportunities of four military installations in the South Florida Area. The 18-month process involved partnership from the South Florida Defense Alliance and the Florida Defense Support Task Force, among others, and resulted in the 2023 *South Florida Military Resilience Strategy: Mission Assurance Through Community Resilience* report. The final report identified key risks, hazards, and vulnerabilities to the installations as well as potential adaptation measures needed to mitigate impacts over short- mid- and long-term timelines.⁵⁷

Key National Security Assets and Missions

Miami, Doral, and South Florida's resilience efforts directly impact the following assets and surrounding communities:

- **District 7 Headquarters⁵⁸ (Miami)**
 - U.S. Coast Guard facility responsible for USCG activities over a 1.7 million square mile operational area, including Puerto Rico, Florida, Georgia, South Carolina, and 34 foreign nations/territories.
- **Homestead Air Reserve Base⁵⁹ (Miami-Dade County)**
 - Home to 367th and 482nd Fighter Wings, which provides combat ready F-16 fighter jets that are capable of worldwide deployment on short notice.

- Also home to Special Operations Command South, which provides contingency response force and special operations in support of U.S. Southern Command.
- **Naval Air Station Key West**⁶⁰
 - Supports missions and requirements for DoD, Department of Homeland Security, USCG and Air and Army National Guard.
 - Home to Joint Interagency Task Force-South, whose mission is to conduct counter illicit trafficking operations, as well as U.S. Army Special Forces Underwater Training School.
- **U.S. Army Garrison—Miami/U.S. Southern Command**⁶¹ (USSOUTHCOM) (Doral)
 - Home to U.S. Southern Command (USSOUTHCOM), which provides contingency planning, operations, and security cooperation in Central America, South America, and the Caribbean.
- **South Florida Ocean Measurement Facility (SFOMF)**⁶² (Dania Beach/Fort Lauderdale)
 - SFOMF conducts deep sea testing and evaluation for mines, mine countermeasures, and mine response, as well as acoustic and electromagnetic signatures.

Pensacola/Emerald Coast

Pensacola and greater Northwest Florida are home to some of the Gulf of Mexico's most pristine beaches as well as irreplaceable air, surface, and subsurface testing and evaluation grounds for DoD. Like most of its coastal counterparts, the Emerald Coast is already contending with sea-level rise, coastal degradation, flooding, and an increase in severe weather events.

In 2018, the City of Pensacola Climate Mitigation and Adaption Task Force released the *Climate Action Recommendations* report, which outlined goals to advance city and regional adaptation and mitigation strategies.⁶³ The same year, Hurricane Michael caused catastrophic damage in the panhandle,⁶⁴ with more than \$5 billion dollars of damages to nearby Tyndall Air Force Base—completely upending the F-22 enterprise.⁶⁵ And in 2020, the slow-moving Hurricane Sally caused extensive flooding and infrastructure damage that continues to pose significant stormwater management challenges to the city.⁶⁶

In early 2022, nine Northwest Florida DoD installations were together designated as a Sentinel Landscape.⁶⁷ This federal public-private partnership program aims to enhance collaboration at all levels to enhance military mission assurance, restore and increase resiliency, and maintain sustainable land and water use. That same year, the Emerald Coast Regional Council was awarded DoD funding for a MIRR, which will analyze the resiliency challenges at opportunities at seven regional military installations.⁶⁸

Earlier this year, two area organizations were awarded approximately \$1.2 million in funding from the Defense Infrastructure Grant Program for infrastructure improvements to Eglin AFB and NSA Panama City communities.⁶⁹ The Greater Pensacola Chamber was also awarded \$65,000 from the Defense Reinvestment Grant Program to create a 5-Year Strategic Plan for the City of Pensacola.

Key National Security Assets and Missions

Pensacola and Emerald Coast's resilience efforts directly impact the following assets and surrounding communities:

- **Eglin AFB**⁷⁰
 - DoD's second largest test and training complex and home to the 96th Test Wing, the test and evaluation center for USAF air weapons, navigation, and guidance systems; command and control systems.
 - Also home to 33rd Fighter Wing, 7th Special Forces Group, and 6th Ranger Training Battalion, among other missions and assets.

- **Hurlburt Field**⁷¹
 - Located within the greater Eglin facility, Hurlburt is home to Air Force Special Operations Command (AFSOC) headquarters, 1st Special Operations Wing, USAF Special Operations School, and Air Combat Command's 505th Command and Control Wing. Units cover a range of missions and training for precision strike, specialized mobility and intelligence, surveillance, and reconnaissance.
- **Naval Air Station Pensacola**⁷²
 - Known as the “Cradle of Naval Aviation” and is a primary training facility for naval aviators and flight officers.
 - Also home to Naval Education Training Command and the Blue Angels, among others.
- **Naval Air Station Whiting Field**⁷³
 - The busiest Naval Air Station in the world—every Navy, U.S. Marine Corps and Coast Guard helicopter pilot has their initial rotary wing training at Whiting Field.
 - Home of Training Air Wing FIVE and the largest air wing in the U.S. Navy.
- **Naval Support Activity (NSA) Panama City**⁷⁴
 - Home to Naval Surface Warfare Center Panama City, a premiere Navy research, development, test, and evaluation lab, as well as U.S. Coast Guard Station Panama City.⁷⁵
 - Also home to Florida Fish and Wildlife Conservation Commission, Navy Experimental Diving Unit, Naval Diving and Salvage Training Center, and Center for Navy Ordnance Disposal and Diving, among others.
- **Tyndall AFB**⁷⁶
 - Home of the 325th Fighter Wing and the 95th Fighter Squadron.
 - Has historically conducted crucial training for F-22 Raptor pilots and maintenance personnel, air battle managers, air traffic controllers, weapons controllers, and crew chiefs.
 - Currently transitioning to F-35A Lightning II training, maintenance, and readiness.
 - Sustained a direct hit from Hurricane Michael in 2018 and has embarked rebuilding as the “Installation of the Future.”⁷⁷

Tampa

The Tampa Bay area, located around the Gulf of Mexico, has a unique topography which creates persistent water management challenges.⁷⁸ Residents and businesses are regularly subject to sunny day flooding and extreme weather events. As such, managing ground water, wastewater, and storm water are central to the safety and resilience of both day-to-day operations and the longevity of the greater Tampa Bay region.

Tampa has several resiliency efforts already underway that will boost infrastructure and resilience for Tampa's national security assets. In 2018, the Tampa Bay Regional Resiliency Coalition was established to coordinate climate action across county lines and counts representatives from MacDill AFB as part of its steering committee.⁷⁹ Similarly, in 2019, Mayor Jane Castor rolled out the *Transforming Tampa's Tomorrow* (T3)⁸⁰ initiative, which outlines strategic goals and priorities for the city. Goals include: 1) strengthening resident services; 2) enhancing workforce development; 3) increasing housing affordability; 4) improving infrastructure and mobility; and 5) establishing sustainability and resilience—the latter of which includes specific water conservation and resiliency efforts through the Southwest Florida Water Management District Water-Wise program.⁸¹ The T3 initiative also outlined Tampa M.O.V.E.S. (which stands for Mobility, Opportunity, Vision, Equity, and Safety) plan to both mitigate emissions and improve pedestrian and bicycle transportation nodes.

The mayor's office subsequently released the *Resilience Tampa* roadmap⁸², which details 58 initiatives across four areas, including “climate-ready infrastructure.” Tampa subsequently released the city's *Climate Action and Equity Plan* with three overarching goals: 1) reduce carbon emissions; 2) build climate-ready infrastructure; and 3) support all people

along the way, as well as 10 flagship actions cutting across 10 climate action categories, including energy, wastewater and stormwater, and transportation and land use.⁸³ In particular, the water actions are good for MacDill AFB, which has suffered acute problems from wastewater discharging into waterways.⁸⁴

In addition, in 2022, the Tampa Bay Regional Planning Council was also awarded DoD funding to complete a MIRR. The 18-month grant seeks to examine long-term resilience and sustainability of the greater MacDill AFB community, including an energy, water, and wastewater vulnerability assessment, transportation analysis, and critical infrastructure resilience.⁸⁵

Key National Security Assets and Missions

Tampa's resilience efforts directly impact the following assets and surrounding communities:

- **Air Station Clearwater**⁸⁶
 - The U.S. Coast Guard's largest and busiest Air Station, with an area of responsibility that includes the Gulf of Mexico, the Caribbean basin, and the Bahamas. Operations and missions regularly include combatting drug trafficking and migrant smuggling operations, as well as search and rescue operations around Florida's coast.⁸⁷
- **MacDill AFB**⁸⁸
 - Home to U.S. Central Command (USCENTCOM)⁸⁹
 - USCENTCOM is responsible for U.S. security interests in the Middle East, North Africa, and Southwest and Central Asia.
 - Priorities include integrated air and missile defense/counter unmanned aerial systems; deter Iran; and counter violent extremist organizations.
 - Home to U.S. Special Operations Command (USSOCOM)⁹⁰
 - USSOCOM is responsible for disrupting, defeating, and destroying terrorist networks around the world.
 - Oversees special operations components from Army, USMC, Navy, and Air Force.
 - Develops and employs special operations forces (SOF) activities, including civil affairs, counterinsurgency, counter-weapons of mass destruction (WMD), foreign humanitarian assistance, and special reconnaissance, as well as several other mission sets.
 - Home to 6th Air Refueling Wing

Conclusion

All five Florida regions we examined are facing unprecedented sea-level rise, water and wastewater management, flooding, and storm surge risk that are increasing in severity due to climate change. Though this report is not an exhaustive list of efforts underway, it aims to help highlight the myriad activities happening across Florida which enhance both the state's resilience as well as the resilience of its national security assets.

All five regions also have (or are currently) conducting vulnerability assessments. These assessments have had valuable community engagement to help inform adaptation, mitigation, and resilience plans and actions. Additional research is necessary to robustly analyze these assessments and subsequent resilience actions. This report can be used as the foundation for additional research which explores how these existing efforts work together across the state, complement and/or conflict with each other, and facilitate sharing best practices and lessons learned. Additional research should also explore how these regions are working with the national security assets themselves to paint a robust Florida-wide resilience picture.

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