More than 21 million people call Florida home, but many more visit the peninsula each year—including a record 131 million in 2019. Residents and tourists enjoy the State’s warm weather and varied attractions amid incredibly diverse biological and natural resources. Numerous lakes and rivers, and 8,400 miles of ocean shoreline, play a prominent role, as do unique habitats like the Everglades, which are home to protected species such as the Florida manatee (Trichechus manatus latirostris), American crocodile (Crocodylus acutus), and Florida panther (Puma concolor couguar). The State also supports cattle, sugarcane, and citrus production—along with nearly one-half of the tree species in the United States.

A changing climate is expected to bring rising sea levels and more extreme weather events. In a State where the average elevation is 100 feet above sea level, climate change could affect everything from urban shores and beaches to agriculture and forests. In addition, as cities grow, more land cover tends to shift from natural vegetation to impervious surfaces such as pavement, which can add to environmental risks such as flooding.

Landsat can help Florida’s agencies, organizations, and residents monitor the State’s fragile landscapes and plan for a resilient future. Here are just a few examples of how Landsat benefits Florida.

**Mapping Fire History Across the State**

Land managers in Florida use prescribed burns to help prevent fire fuel buildup and maintain the State’s native vegetation for species dependent on it; the Florida Forest Service issues permits to burn more than two million acres annually. Land managers—public and private—can benefit from knowing the extent and timing of past fires to make decisions about future fuel treatment and prescribed burns. Recent research addresses that need Florida-wide. Scientists from the USGS and Florida’s Tall Timbers research station used the Landsat Burned Area product from 2006 to 2018, along with other information, to map the history and perimeter of fires of various sizes and ownerships across the State (Teske and others, 2021).

This Landsat-derived example of fire mapping across Florida shows when and where a fire was detected between 2006 and 2016 on Eglin Air Force Base, Florida. Image credit: Teske and others, 2021; used with permission.

The Landsat series is a joint effort of the USGS and NASA. NASA develops and launches the spacecraft; the USGS manages satellite operations, ground reception, data archiving, product generation, and data distribution. Funding for the National Land Imaging Program’s Landsat operations and data management is provided through the USGS.

**National Land Imaging Program Benefits—Florida**

The U.S. Geological Survey (USGS) National Land Imaging Program provides a wide range of satellite imagery and other remotely sensed and geospatial data to Government, commercial, academic, and public users. Those users can get worldwide access to Landsat satellite data through the National Land Imaging Program-funded USGS Earth Resources Observation and Science (EROS) Center.
Keeping an Eye on the Everglades

University and Federal researchers have used Landsat’s archive to study hurricane damage to mangroves in Everglades National Park. Imagery can reveal the extent of the damage and the length of time it takes for an area to either recover to its prior state or be replaced by open water. One study using Landsat found that a trend of decreasing outer coastline mangroves from 1985 to 2017 was more than offset by increases in inner coastline mangroves. Each hurricane during that timeframe caused damage, but the amount of damage varied by wind factors. Such studies can support effective decisions about ecosystem management and restoration (Han and others, 2018).

Addressing a Changing Climate in Miami Beach

NASA DEVELOP Program researchers used data from several Landsat satellites to provide information to the Miami Beach Public Works Department to mitigate climate change effects in Biscayne Bay, including reducing storm damage and monitoring water quality. The group assessed tree loss and recovery and coastal damage after Hurricane Irma, historical trends in urban vegetation density, and the condition of mangroves in protected areas (NASA, 2017b, 2018). They also developed a tool to view the bay’s water-quality parameters over time (NASA, 2017a).

References Cited


