Climate Change
Projections & Impacts
INDIAN RIVER COUNTY, FLORIDA
Introduction

LIKELY CLIMATE STRESSORS FOR INDIAN RIVER COUNTY

- Higher average temperatures and more extreme heat
- Shifts in rainfall seasonality and drier summer conditions
- Increased intensity of hurricanes and extreme precipitation events
- Sea level rise and more frequent high-tide flooding
- Increased inland and coastal flooding

Icons courtesy of Tracey Saxby, Diana Kleine, and Jane Hawkey, Integration and Application Network (ian.umces.edu/media-library)
The Climate Explorer

Explore graphs and maps of historical and projected climate variables for any county in the contiguous United States.

To get started, enter a county, city, or zip code

or choose from the following suggested cities:

- New York City, NY
- Los Angeles, CA
- Chicago, IL
- Phoenix, AZ
- Houston, TX
- Anchorage, AK
Important Considerations

FACTORS TO CONSIDER:

- Trend direction ▲ ▼ –
- Magnitude of change
- Shifts in timing/variability
Air Temperature

HIGHER AVERAGE TEMPERATURES

▲ Minimum temperature
+3.6°F by 2050; +7.7 °F by 2100 (historical: 62.5°F)

▲ Maximum temperature
+3.8°F by 2050; +8.0°F by 2100 (historical: 82.7°F)

MORE EXTREME HEAT

▲▲ Days over 95°F
48.8 days by 2050; 138.5 days by 2100 (historical: 3.3 days)

Source: Climate Explorer
**Precipitation**

**SHIFTS IN AMOUNT/TIMING OF RAINFALL**

- Annual precipitation
  
  +1.8% by 2050; -3.5% by 2100 (*historical: 51.2 in*)

▲▼ Changes in seasonality

  Decreases in summer (–21.1% by 2100) and spring rainfall (–8.4%)

  Increases in fall rainfall (+8.9%)

  No change in winter rain

Source: Climate Explorer; USGS National Climate Change Viewer
MORE EXTREME PRECIPITATION

▲▲ Precipitation total for 20-year storm event
+21% in the Southeast US by 2100

▲▲ Days with at least 2 inches of rain in 24 hours
+0% by 2050; +8% by 2100 (historical: 1.2 days per year)

INCREASED HURRICANE IMPACTS

▲ +8% per decade in global hurricane intensity from 1979–2017
▲ -16% rate of forward motion for Atlantic hurricanes from 1949–2016

Source: Climate Explorer; Easterling et al. 2017; Kossin 2018; Kossin et al. 2020
HIGHER SEA LEVELS

▲▲ 1.4 ft (range of likely possibilities: 0.7–1.8 ft) by 2040

3.2 ft (range 1.2–4.4 ft) by 2070

7.4 ft (range 1.9–11.2 ft) by 2120

Extreme scenario: Up to 14.3 ft possible

(Compared to sea levels in the year 2000)

Source: U.S. Army Corps of Engineers Sea-Level Change Curve Calculator
High-Tide Flooding

HIGH-TIDE FLOODING

▲▲ 97 days per year (range of likely possibilities: 17–176 days) by 2040
364 days per year (range 66–365 days) by 2070
365 days per year (range 148–365 days) by 2100

(Historical: 2.1 days per year with tide 1.8 feet over MHHW)

NEXT UP: How will these changes affect Indian River County?

Source: Sweet et al. 2018
Utilities

- Damage to critical infrastructure (e.g., wastewater treatment plants) and reduced pump station capacity or failure during flood events
- Increased energy demand during heat waves, potentially straining electrical grids and increasing costs for users
- Increased concentration of contaminants and increased risk of algal blooms in water sources during warm, dry and/or drought periods, reducing effectiveness of water treatment
Impacts of Climate Change

Transportation

- Damage to transportation infrastructure (e.g., roads, bridges, culverts) following storms, floods, and extreme heat
- Road blockages and loss of access, impacting evacuation routes, emergency access, and other critical travel
- Slower travel or road closures due to melting asphalt, overheating engines, and other heat-related impacts
- Loss of electricity due to flooding or heat waves, limiting use of electric vehicles and impacting public transit
Impacts of Climate Change

Conservation Lands & Parks

• Changes in plant survival due to more frequent coastal inundation and/or saltwater intrusion into freshwater habitats

• Increased heat stress for people using parks and recreation areas as well as changes in patterns of recreational use

• Decreased accessibility/use and increased maintenance costs of park lands due to flooding

• Altered/reduced ecosystem functioning on conservation lands due to changes in hydrology and plant species composition
Important Tools and Resources

- Climate Explorer ([https://crt-climate-explorer.nemac.org/](https://crt-climate-explorer.nemac.org/))
- NOAA Sea Level Rise Viewer ([https://coast.noaa.gov/slr/](https://coast.noaa.gov/slr/))
- Surging Seas Risk Zone Map ([https://ss2.climatecentral.org/](https://ss2.climatecentral.org/))
- Southeast Chapter of the Fourth National Climate Change Assessment ([https://nca2018.globalchange.gov/chapter/19/](https://nca2018.globalchange.gov/chapter/19/))
- Climate Adaptation Knowledge Exchange ([www.cakex.org](http://www.cakex.org))
Questions?

Next step: Group discussion of climate impacts!