



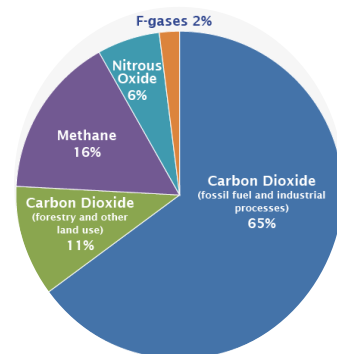
Sea Level Rise

Two phenomena related to climate change contribute to accelerated global sea level rise:

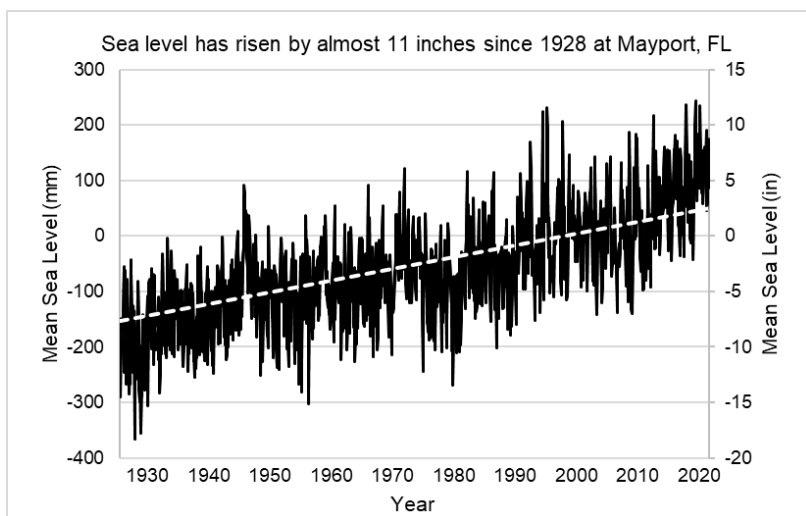
- Thermal expansion: global atmospheric and ocean temperatures are rising, and water expands as it absorbs heat
- Ice melt: melting glaciers and ice sheets increase freshwater runoff into oceans

Greenhouse gases trap heat in our atmosphere resulting in rising ocean temperatures.

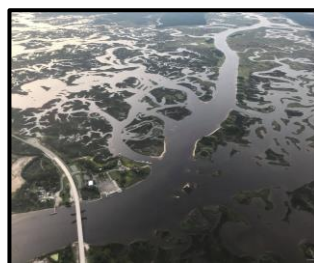
Sources of greenhouse gases include the use of fossil fuels such as coal, oil, and natural gas to power our societies, which releases carbon dioxide and methane into the atmosphere; methane sources also include emissions from landfills and agriculture.



Greenhouse Gas Emissions by Gas



Since 1928, sea level has risen by almost 11 inches at Timucuan based on data from the Mayport, FL tide gauge, which is operated by the National Oceanic and Atmospheric Administration (NOAA). Sea level could rise by as much as 5.18 feet by 2100.

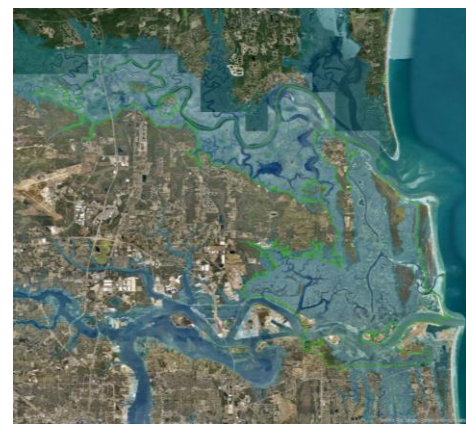
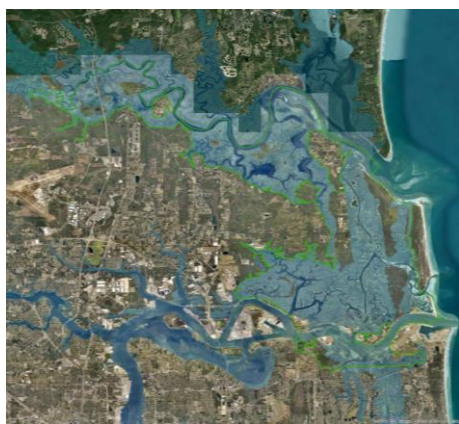
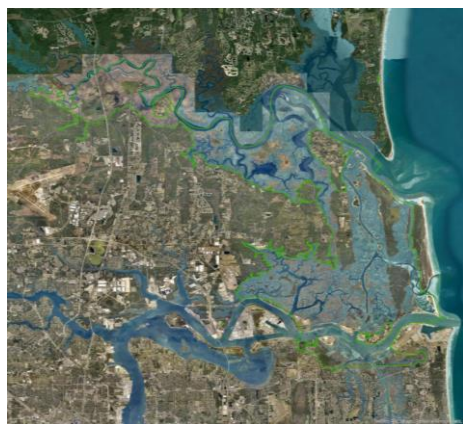


Timucuan has 46,000 acres of wetlands and waterways in its boundaries. Rising sea levels could drown much of this habitat if the marshland is unable to grow vertically quickly enough (NPS)

What is the future of sea level rise at Timucuan?

NOAA Projections ¹	2050	2100
Intermediate Low	+1.05 ft	+2.17 ft
Intermediate	+1.18 ft	+3.67 ft
Intermediate High	+1.38 ft	+5.18 ft

This table shows projected sea level heights at the preserve compared to today's mean sea level. These projections were developed by NOAA in 2022 based on different climate change scenarios. Projections are a way of visualizing a range of possible futures. They can aid in park planning by helping managers determine which resources are most threatened by sea level rise.



From left to right, these images show the preserve with its current water level, with 2 feet of sea level rise, and with 6 feet of sea level rise.



How Is Sea Level Rise Impacting Timucuan?

Timucuan is home to salt marshes, coastal dunes, hardwood hammocks, Native American artifacts, and European and early American settlements. The preserve is located on a low-lying coastal area, so rising sea levels and increased storm surge could severely impact the natural and historic resources within the park. High-tide flooding, increased erosion, saltwater intrusion, and other impacts related to increased sea level rise and storm surge could damage these natural and cultural resources.

- Estuarine wetlands, like salt marshes, encompass over 75% of the preserve. These wetlands are among the most productive ecosystems on the planet, supporting diverse plant and animal life. As sea levels rise, these areas are at risk of drowning, so salt marsh restoration efforts to increase salt marsh elevation are underway.
- One of the most popular visitor destinations at the preserve is the Kingsley Plantation, which is the oldest surviving example of an antebellum Spanish Colonial plantation in the United States. Recently, the floating docks at Kingsley Plantation had to be closed due to damage from storms. Sea level rise will continue to cause flooding and high storm surges that can damage the plantation area.
- The natural areas of the preserve are nesting and feeding grounds for several birds listed as part of Florida's Imperiled Species Management Plan, such as the wood stork and the brown pelican. These birds rely on the shallow waters of the salt marshes in the preserve, which are threatened by rising sea levels.



Kayakers enjoy the salt marsh at the preserve (NPS)



Damage to the Kingsley Plantation dock from high storm waves (NPS)



Wood storks in a wetland (NPS)



This image shows sunny day, high tide flooding of the road that leads to Kingsley Plantation, which is one of the most popular visitor locations at the preserve (NPS)

What can you do to help?

- Reduce your carbon footprint: power down electronics or reduce your thermostat. Go to carbonfootprint.com to calculate your carbon footprint and find ways to make changes.
- Volunteer with organizations working to protect coastal habitats that provide natural defenses against sea level rise.
- Support climate mitigation and adaptation policies. Contact your representatives in Congress to let them know you care.
- Visit coastal areas and support the parks and communities that are taking actions to prepare for sea level rise.

Additional Resources

1. <https://coast.noaa.gov/slr/>: A NOAA SLR viewer tool to access local sea level rise projections at tide gauges and visualize sea level rise scenarios (2017).
2. <https://tidesandcurrents.noaa.gov/>: Access water levels, tide predictions, and other conditions along coasts.
3. [NOAA Coastal Flood Exposure Mapper](#): A tool to visualize coastal hazards as well as societal, infrastructure, and ecosystems exposure to those hazards.

Note: The sea level rise projections, storm surge projections, and other information presented here are for general educational and awareness purposes only. They should not be used for site-specific analysis, navigation, permitting, or legally binding activities.