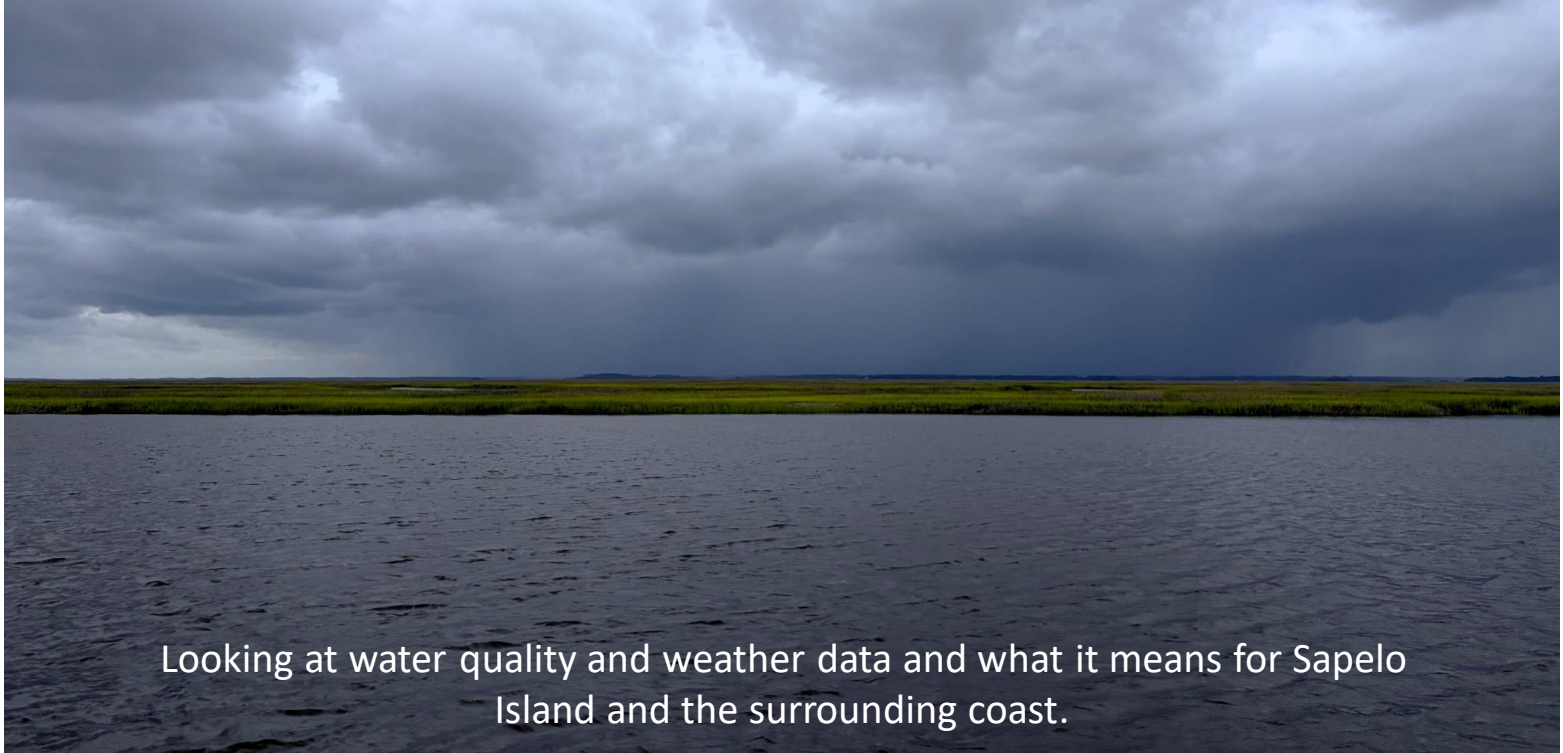


OUR ESTUARY TRENDS: WEATHER & WATER QUALITY



Looking at water quality and weather data and what it means for Sapelo Island and the surrounding coast.

Sapelo Island National Estuarine Research Reserve (SINERR)

SINERR's mission is to promote the protection, restoration, and conservation of coastal Georgia's estuarine ecosystems; specifically, on Sapelo Island. As part of the National Estuarine Research Reserve system, SINERR participates in the System-Wide Monitoring Program (SWMP). This program collects long-term data on water quality, meteorological conditions, and nutrient levels in our estuary. For more information go:

<http://www.sapelonerr.org/>

2025 HIGHLIGHTS

.....

Air temperatures ranged from 25.9°F to 100.8°F, with an average of 68.2°F.

.....

Precipitation recorded from Sept. - Nov. was the lowest since 2012. Precipitation recorded from March - May was the highest since 2009.

.....

Water temperatures were slightly warmer in the spring and summer, and slightly colder in the fall compared to the 20-year average.

.....

Salinity at all four water quality sites continues to trend downward, with Hunt Dock doing so at the highest rate.



Water quality issues influence human and environmental health. The more we monitor our water, the better we will be able to recognize and prevent problems.



HOW IS OUR ESTUARY CHANGING?

Water Temperature: Water temperature continues to trend warmer at all four sites.

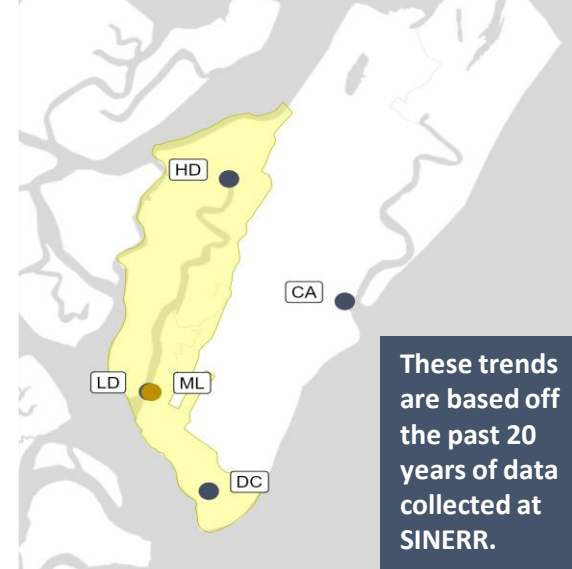
pH: pH is trending down at 3 sites (DC, LD, CA) and remains stable at the fourth (HD).

Salinity: Salinity continues to trend down at all four sites.

Air Temperature: Air temperature continued trending warmer in 2025.

Wind and Rain: Wind speed and rainfall in 2025 did not significantly change compared to the 20-year average.

Sapelo Island SWMP Sites



Trends in Weather & Water Quality*

Location ID	Location Name	Air Temperature	Precipitation
ML	Marsh Landing	↑	—

Location ID	Location Name	Water Temperature	Salinity	Dissolved Oxygen	pH	Turbidity
CA	Cabretta Creek	↑	↓	↑	↓	↑
DC	Dean Creek	↑	↓	—	↓	—
HD	Hunt Dock	↑	↓	—	—	↓
LD	Lower Duplin	↑	↓	↑	↓	↓

Location ID	Location Name	Ortho-phosphate	Ammonium	Nitrite	Nitrate	Chlorophyll-a
CA	Cabretta Creek	↓	—	↓	—	—
DC	Dean Creek	↓	↓	↓	↓	↑
HD	Hunt Dock	↓	↓	↓	—	↑
LD	Lower Duplin	↓	↓	↓	↓	↑

**Based on data collected from 2005 - 2025*

X Insufficient Data ↑ Increasing — Not Changing ↓ Decreasing

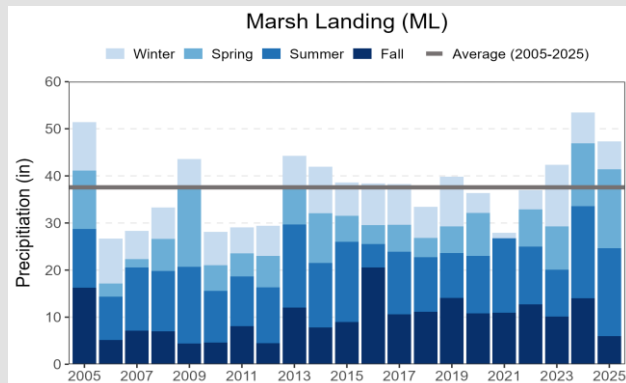
Weather & Climate – What is the Difference?

WEATHER is what you see outside on any particular day in terms of precipitation, temperature, humidity, cloudiness, visibility and wind.

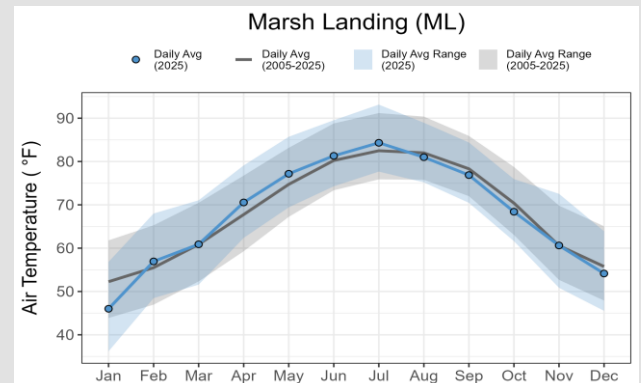


CLIMATE tells us the average daily weather for an extended period of time (years, decades, centuries) at a certain location.

Weather can have a major impact on water quality Precipitation & Air Temperature



Live weather data from the Marsh Landing station on Sapelo Island is available to the public and is used by scientists to help track and predict storms. To view the live data, visit:



Rainfall in 2025 totaled 46.6 inches at the Marsh Landing meteorological station. This was approximately 6 inches less than recorded in 2024.

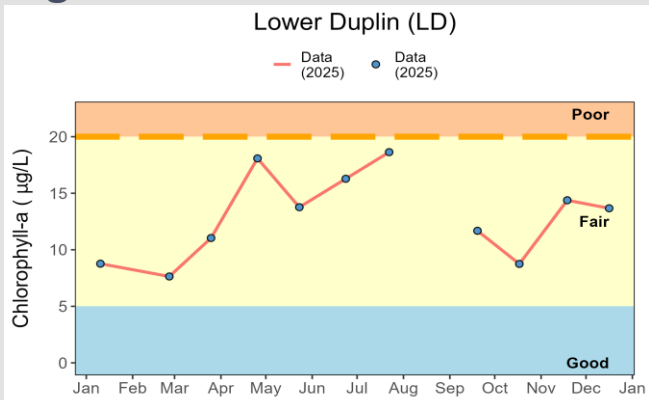
https://www.ndbc.noaa.gov/station_page.php?station=saxg1

During much of spring and early summer 2025, air temperatures were slightly above average. Then in late summer into fall, they became slightly below average.

What nutrients are in the water? *How much is too much?*

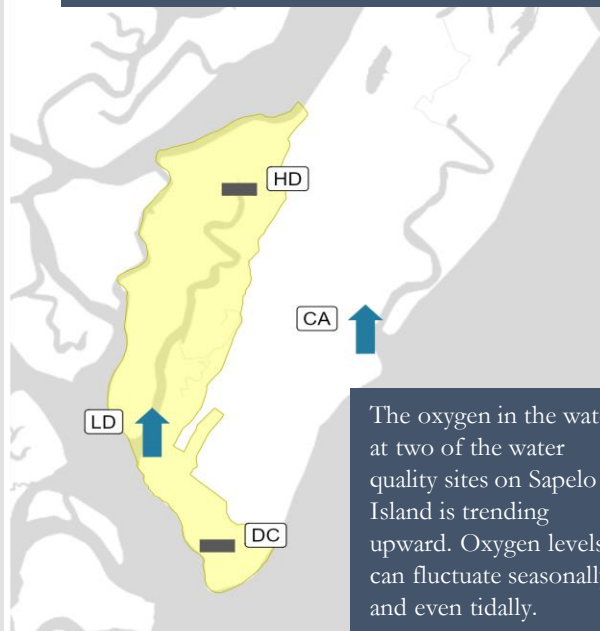
Phytoplankton (also called microalgae) are tiny, plant-like organisms that need nutrients (nitrogen and phosphorus) to grow. Phytoplankton are critical to estuarine and ocean health, forming the base of many marine food webs and producing a significant amount of the Earth's oxygen. However, if there are excess nutrients in the water, these tiny organisms can grow out of control and negatively affect water quality, impacting both marine organisms and humans.

Algae



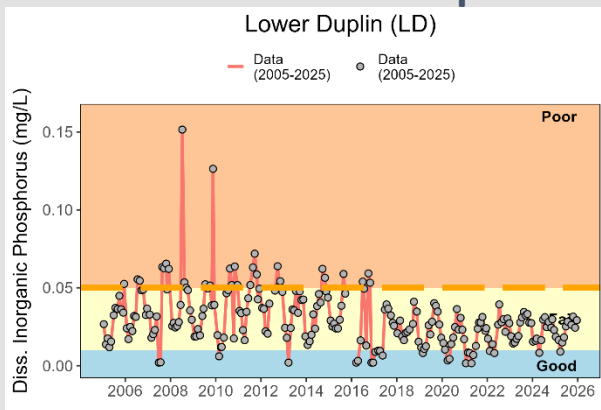
A critical threshold value is used to determine if a water quality measurement is at a level where negative impacts may occur.

How is Oxygen Changing?

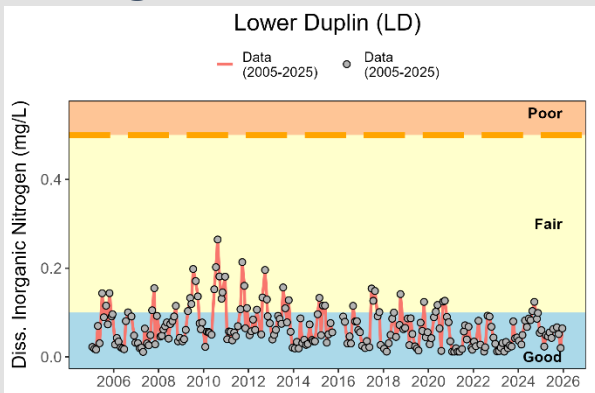


Phosphorus

Stormwater runoff that enters the estuary can transport excess nutrients in the forms of animal waste, fertilizer, and soil erosion. Levels of phosphorus and nitrogen measured near the Marsh Landing ferry dock in 2025 stayed below the critical threshold.



Nitrogen



Nutrients like phosphorus and nitrogen are important parts of a healthy estuary. Too much of these, and algae can bloom out of control, depleting oxygen and choking out other life. In the last 20 years, measurements of these two nutrients around Sapelo Island have been, for the most part, at healthy levels.



Water Quality is a MAJOR Driver of Ecosystem Change

What happens on the land affects the quality of the water and the health of the plants and animals that live in the estuary.

Why Estuaries Matter

Economic Impacts



Coastal shoreline counties provided 54.6 million jobs and contributed \$9.6 trillion (nearly 45%) of the nation's gross domestic product in 2020.

Community Benefits



Estuaries protect coastal communities by reducing flooding and storm surge impacts, enhancing water quality, and providing commercial and recreational benefits.

Healthy Ecosystems



Up to two-thirds of the nation's commercial fish and shellfish spend some part of their life cycle in an estuary or depend on this resource for food.

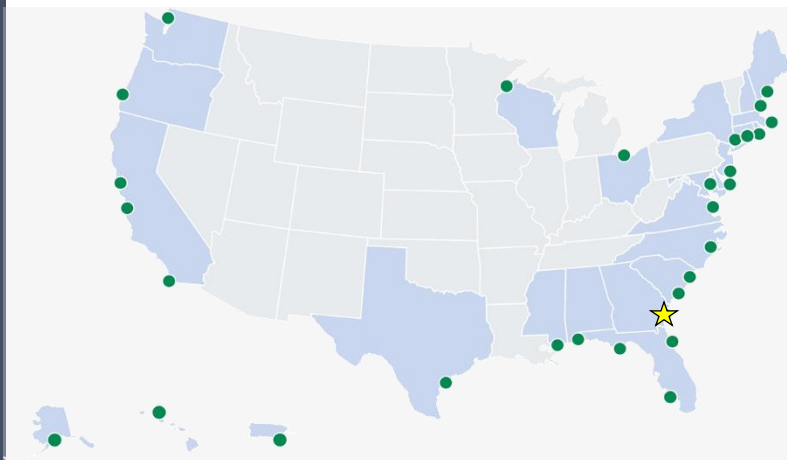
Habitat Diversity



Habitat types include shallow open waters, freshwater/salt marshes, swamps, sandy beaches, mud/sand flats, rocky shores, oyster reefs, mangrove forests, river deltas, tidal pools and seagrasses.

Tracking The Health of Our Estuaries 24/7

The **NERRS** is a partnership program between NOAA and the coastal states to manage designated reserves. More than 1.3 million acres of estuarine land and water are protected. Each reserve is managed on a daily basis by a lead state agency or university with input from local partners. The health of every reserve is continuously monitored by the **System Wide Monitoring Program (SWMP)**. SWMP is a **robust, long-term, and versatile** monitoring program that uses the NERRS network to intensively study estuarine reference sites for evaluating ecosystem function and change. Reserve-generated data and information are available to local citizens and decision makers. For more information, go to: <https://coast.noaa.gov/nerrs/>



The NERRS is a network of 30 coastal reserves established for long-term **research, education, and stewardship.**

More Information...

For Stakeholders

Access data at the System Wide Monitoring Program (SWMP) Graphing Application website:
<https://coast.noaa.gov/swmp/>

For Scientists

Access data at the Central Data Management Office (CDMO) website:
<http://www.nerrsdata.org/>

Have Questions?

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dylan.bedortha@dnr.ga.gov

SINERR – providing the science needed for today *and* tomorrow!