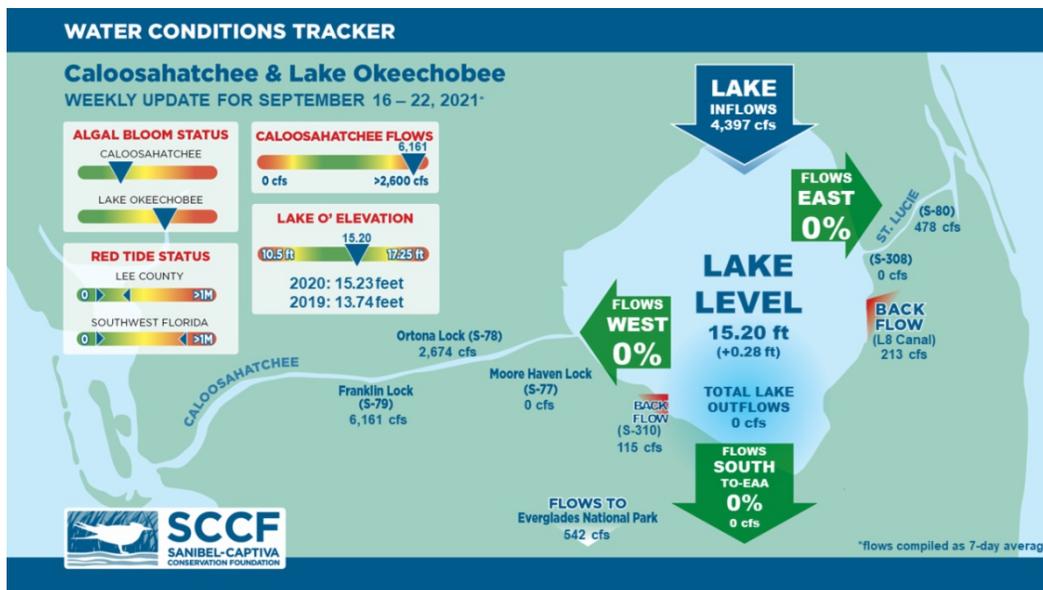




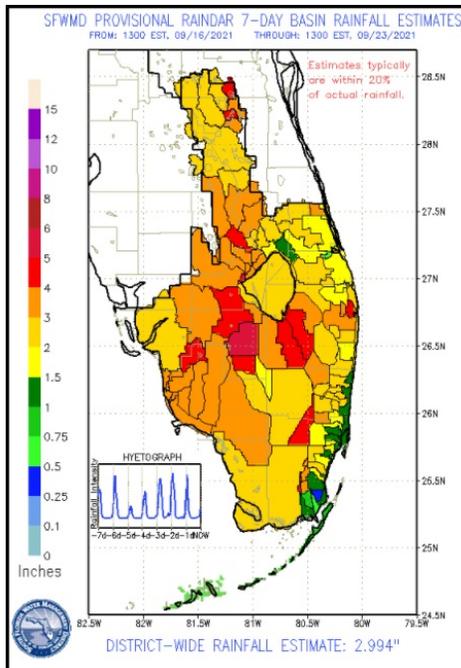
This Week's Water Conditions Update

September 24, 2021

Water Conditions Tracker

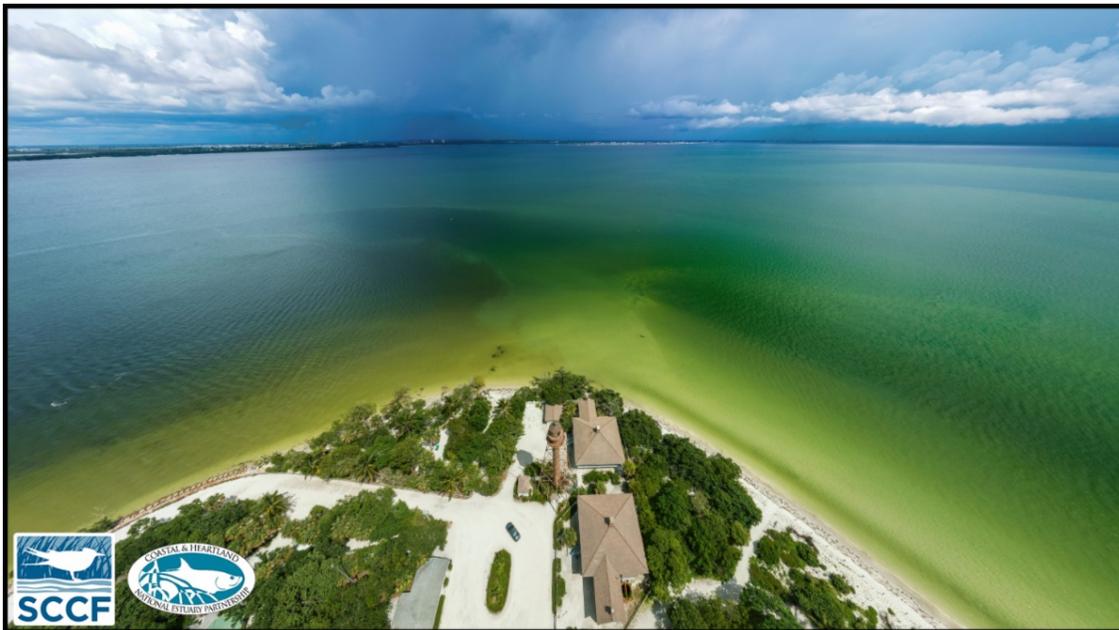


Lake Okeechobee Levels & Caloosahatchee Flow Impacts



On 9/22/21 Lake Okeechobee was at 15.20 feet (+0.28 feet in the past week). The average volume of water reaching the Caloosahatchee from the watershed increased to 6,161 cfs (cubic feet per second) this week. The 14-day average flow on 9/22/21 was 4,392 cfs and has been in the **damaging flow envelope** for 6 days. We are still not receiving any flows from Lake Okeechobee, but heavy rainfall in the watershed has caused high flows at S-79. From 9/16 - 9/23 the **E. Caloosahatchee Basin** received an average of **4.16"** of rain, the **W. Caloosahatchee Basin** received an average of **3.03"**, and the **Tidal Basin** received an average **2.67"** (left). On 9/22/21 flow at S-79 was over 10,000 cfs. Damaging flows from S-79 for prolonged periods can have negative impacts to seagrass and oysters, which are important indicator species in the Caloosahatchee Estuary.

Virtual Water Quality Tour from Lighthouse Beach



[Click here](#) or on the image above to take a virtual tour from above Lighthouse Beach Park to see how the water looked this week.

With no flows from Lake Okeechobee, water clarity and quality is only being affected by the watershed and stormwater runoff from rain.

Learn More About Water Clarity

Water Clarity and Seagrass

The Caloosahatchee Estuary is home to five species of seagrass that require light for growth and survival. Seagrass is an indicator of water quality and provide important habitat in the Caloosahatchee Estuary. High turbidity, water color (CDOM), and chlorophyll all reduce the amount of light reaching the bottom where seagrass grows, a process called light attenuation. These three factors are influenced by tide, weather, flows from the watershed, and flows from Lake Okeechobee.

Important Water Clarity Parameters

Turbidity is caused by small particles such as decaying organic matter or minerals suspended in the water column that scatter light making the water appear cloudy. Turbidity can increase with high winds and tidal shifts that resuspend sediments and is less associated with freshwater flow than color (CDOM) and chlorophyll.

Colored Dissolved Organic Matter (CDOM) is a natural component of Florida's waters and is an organic component in the water that gives it a brown or orange color. This natural occurrence can be elevated when water cannot be filtered through a natural landscape. The predominant source of CDOM in our estuary comes from freshwater flows >1000 cfs (measured at S-79) from the C-43 (Caloosahatchee) basin. Damaging flows (>2,600cfs) from Lake Okeechobee can also contribute to high CDOM in the estuary and bays. CDOM is the greatest contributor to light attenuation compared to turbidity and chlorophyll.

Chlorophyll a is the most common photosynthetic pigment in phytoplankton (microscopic algae). This green pigment absorbs light and creates energy for the growth and reproduction of phytoplankton and is an indicator of primary production. Chlorophyll also causes light attenuation, but to a lesser extent than CDOM. In the upper parts of the estuary (closer to S-79, with fresher water) flow from the basin and the lake have little to no effect on chlorophyll,

likely because higher CDOM blocks the light needed for phytoplankton growth and increased flows tend to push phytoplankton downstream. Damaging flows from the C-43 basin and Lake Okeechobee can increase chlorophyll in the lower estuary and bays. Chlorophyll is affected by nutrient concentrations as well as seasonal changes in light and temperature.

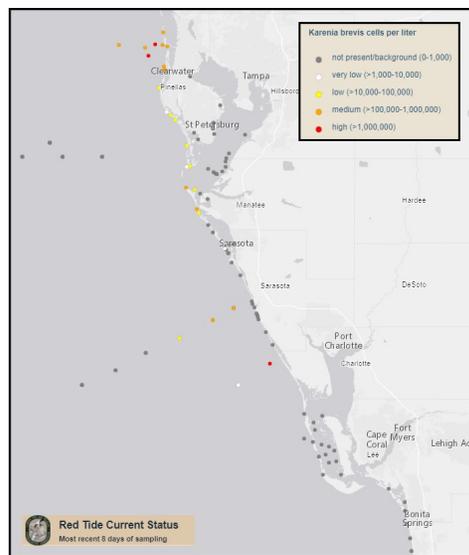
Other Factors Influencing Water Clarity

The tide can also affect water color and clarity at Lighthouse Beach Park where weekly aerial photographs are taken to demonstrate these effects. During a high tide, water from the Gulf of Mexico is pushed into Pine Island Sound which increases water clarity at Lighthouse Beach Park. During a low tide, water from the estuary pushes out into the Gulf of Mexico, decreasing water clarity. The angle of the sun on the water can also affect light attenuation. Low angles of the sun can produce glare in photographs, which is why we take the aerial photos when the sun is close to the highest point in the sky (solar noon). High cloud coverage can also make the water appear less clear.

Sources:

McPherson BF, Miller RL. (1994) Causes of light attenuation in Tampa Bay and Charlotte Harbor, Southwestern Florida. Water Resources Bulletin 30(1):43 –53

Rumbold, DG, Doering PH (2020) Water quality and source of freshwater discharge to the Caloosahatchee Estuary, Florida: 2009 – 2018. Florida Scientist 83(1):1-20.



Red Tide

Satellite imagery over the past week has shown medium to high levels of chlorophyll off the coast of Southwest Florida, with high chlorophyll patches off the coast of Cayo Costa and Boca Grande. *Karenia brevis* and/or other algal species may be contributing to the high chlorophyll concentrations.

In Lee County, FWC reported not present/background levels of *Karenia brevis* in all samples in the past week in Estero Bay and Pine Island Sound. The Clinic for the Rehabilitation of Wildlife (CROW) on Sanibel received 2 patients with toxicosis symptoms (from red tide or blue-green algae) from 9/16/21 - 9/20/21.

Blue-Green Algae

No cyanobacteria was present in the Caloosahatchee over the past week. On 9/23/21 algal blooms covered about 180 square miles of Lake Okeechobee. There is presently a 40% bloom-potential on Lake Okeechobee based on the most recent satellite imagery.

Resources To Follow:

To learn more about our current water conditions, click on the following links:

Caloosahatchee Conditions Report

A collaborative, weekly analysis, including recommendations for water managers regarding Lake Okeechobee flows.

RECON

SCCF's River, Estuary, and Coastal Observing Network is a network of eight optical water quality sensors deployed throughout the Caloosahatchee and the Pine Island Sound estuary to provide real-time water quality data.

Red Tide Resources

NOAA HAB Monitoring System - Lake Okeechobee

Algae Reporting App

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