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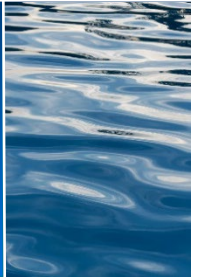
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Long Island Sound Water Quality Monitoring Program

July 10th, 2024

June

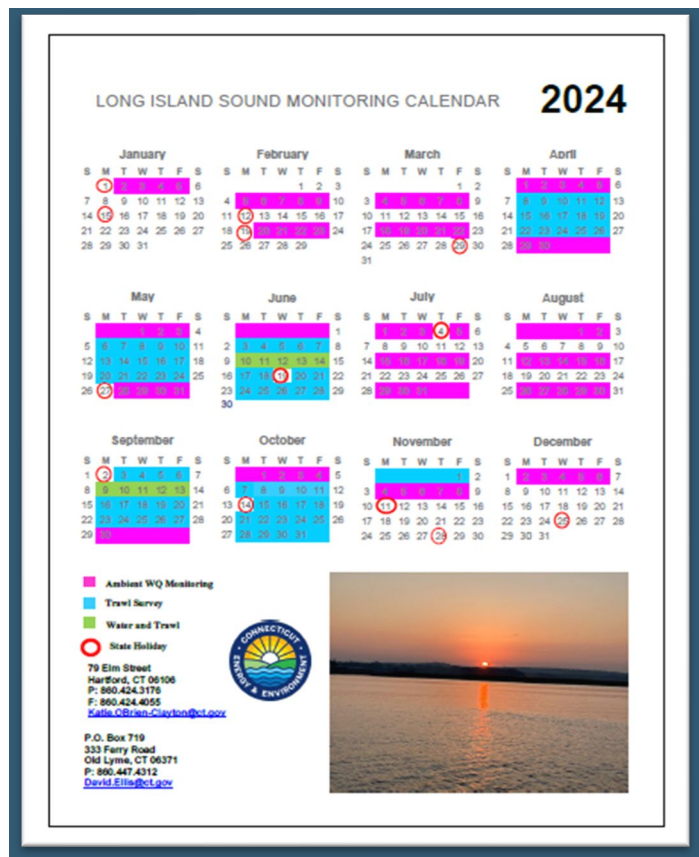


Dempsey Update

After completing the June water quality survey 30 May - 4 June and the June trawl survey, the July water quality survey is currently underway. Following the July survey, the Dempsey will undergo its annual Coast Guard inspection, necessitating the use of the R/V Lynn for the HYJUL24 survey. If you have any questions or want more information on the Dempsey, please contact Matthew Lyman at matthew.lyman@ct.gov.

2024 Sampling Schedule

The 2024 Long Island Sound Sampling began on January 2, 2024. The WQJAN24, WQFEB24, CHFEB24, WQMAR24 and CHMAR24, WQAPR24, WQMAY24, WQJUN24 and HYJUN24 cruises were completed as scheduled. The next scheduled cruise is WQJUL24. Below are the anticipated sampling dates for the year.

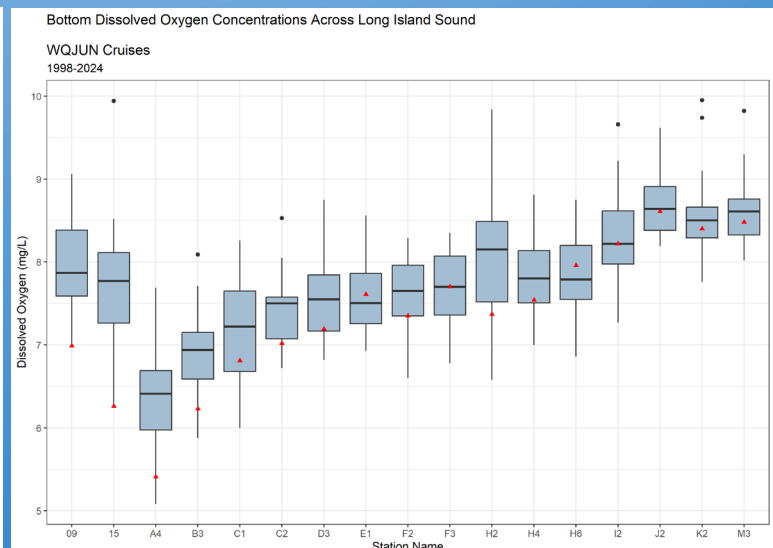
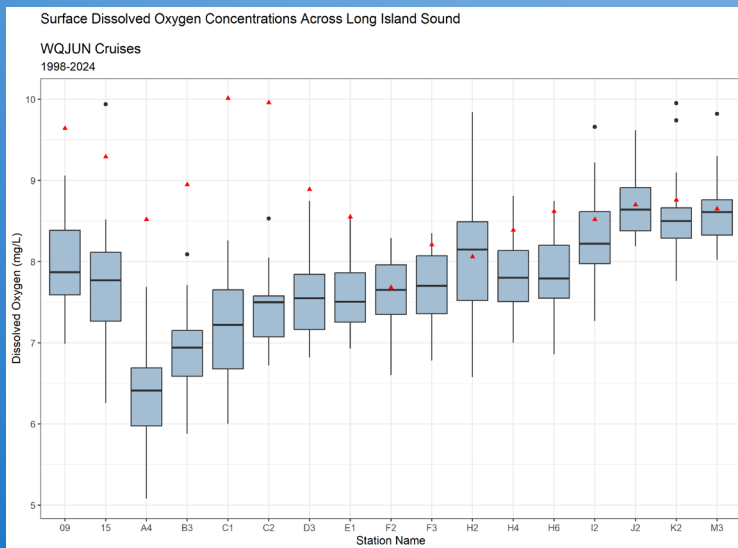
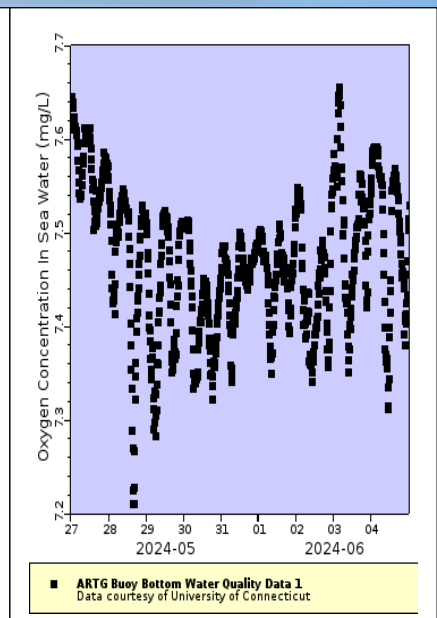
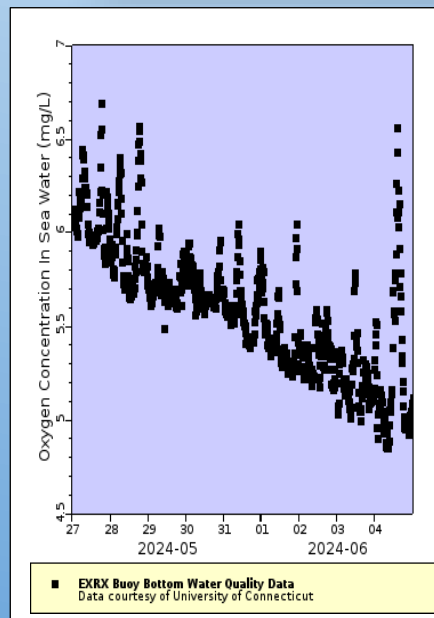
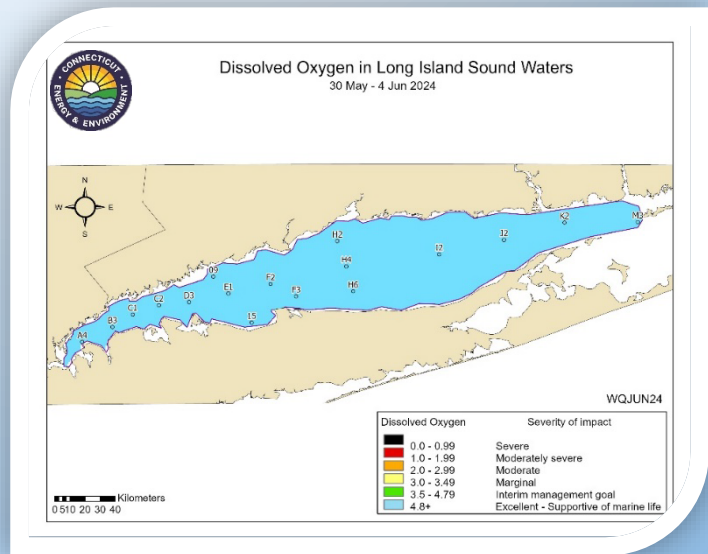


Dissolved Oxygen

Dissolved oxygen (DO) concentrations in the bottom waters of Long Island Sound remained well above 5 mg/L through the June Water Quality Survey. The lowest concentration measured during the survey was 5.41 mg/L at Station A4 and the highest was 8.61 mg/L measured at Station J2. These are very similar to WQJUN23 data. Surface concentrations during the WQJUN24 survey were generally above the medians, while bottom water concentrations were generally below the median concentrations.

Station A4 is usually one of the first stations to exhibit hypoxia, defined as DO below 3.0 mg/L, and therefore, is the focus of much of our reporting. During the WQJUN24 survey, DO in the bottom water at Station A4 was 5.41 mg/L. Of the 27 bottom waters measurements recorded at Station A4 between 1998 and 2024, the median concentration was 6.41 mg/L with a range of 5.08 to 7.69 mg/L. The mean was 6.33 mg/L.

Leading up to the WQJUN24 survey, A4 had concentrations of 10.64 mg/L in April and 8.64 mg/L in May.



Preliminary data from this survey and prior 2024 cruises are available in Excel spreadsheet format from the [Water Quality Portal](#) as well as on the [UCONN ERDDAP site](#).

Temperature Data Summary

Bottom and surface water temperatures have begun to rise with a 4.72°C increase of average surface temperatures and a 3.11°C increase of average bottom temperatures from WQMAY24 to WQJUN24.

The maximum surface water temperature during the WQJUN24 survey occurred at Station C1 (18.69°C) while the maximum bottom water temperature occurred at Station J2 (13.68°C).

The average surface and bottom water temperatures for WQJUN were lower in 2024 than in 2023. The 2024 surface temperatures were above normal, but bottom temperatures were below normal in the west and average in the east.

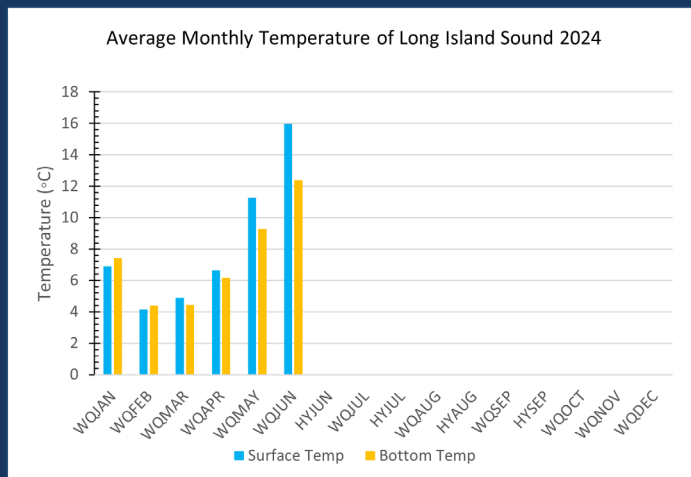
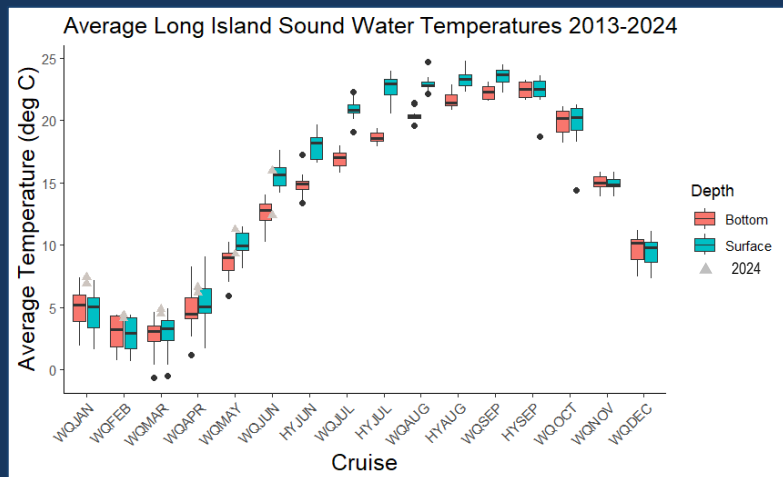
Delta T (ΔT)

ΔT 's averaged 3.05°C during the WQJUN24 survey, an increase of 0.17 from the WQMAY24 ΔT average (2.88°C).

The greatest temperature difference between the surface and bottom waters during the WQJUN24 survey was 6.81°C, measured at Station C1. The smallest temperature difference was 1.1°C at Station M3.

Delta T (ΔT) is the difference between the surface and bottom water temperature. Differences in water temperature contribute to stratification and exacerbate hypoxic conditions. In general, the shallower coastal stations tended to have the smallest temperature differences, as they are more susceptible to mixing, weather, and anthropogenic influences (human caused Influences). The greater the delta T, the greater the potential for hypoxia to be more severe.

In June, DEEP's hypoxia monitoring cruises began. The DEEP's monitoring program records water temperatures and salinity during its hypoxia monitoring cruises to help estimate the extent of favorable conditions for the onset and ending of hypoxia. Water temperature plays a major role in the timing and severity of the summer hypoxia event. Water temperature differences in the western Sound during the summer months are particularly influential in contributing to the difference in dissolved oxygen content between surface and bottom waters



Weather

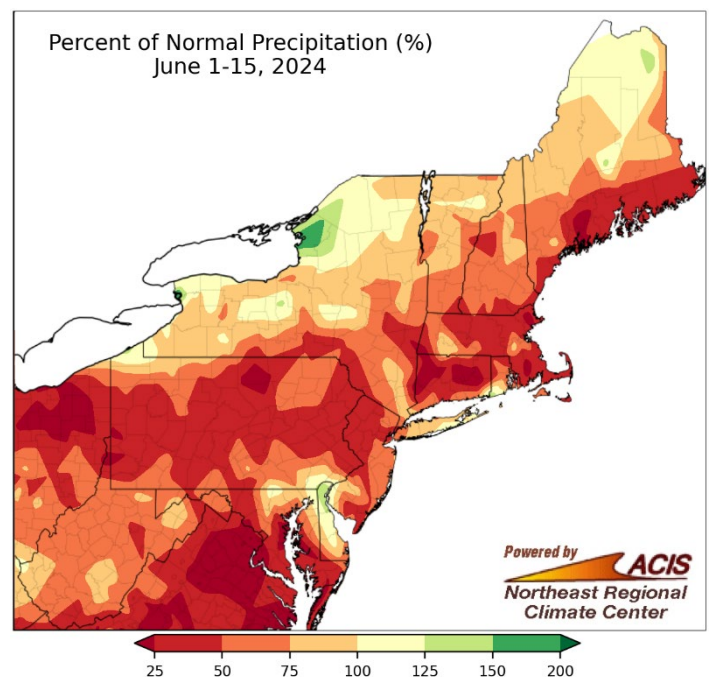
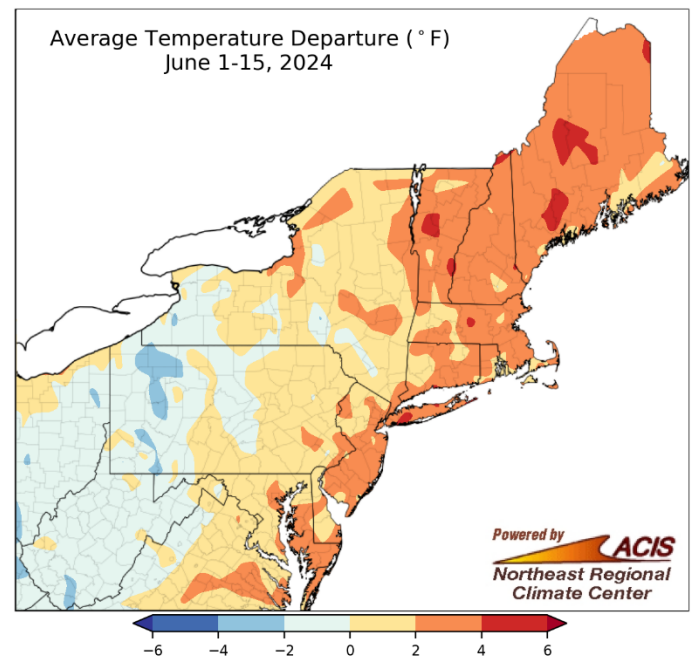
Average temperatures during the first half of June ranged from 4° F below normal in interior areas such as western Pennsylvania to 6° F above normal in locations closer to the coast such as southern Maine. Twenty-nine of the major climate sites were warmer than normal, with this June 1-15 period ranking among the 20 warmest on record for 16 of the sites. Outlooks from [NOAA's Climate Prediction Center](#) indicate that the rest of June is expected to be warmer than normal, as well, with a significant heat wave forecast for the June 17-22 period.

Much of the Northeast was drier than normal during the first half of June, with the driest locations like southern Maryland and parts of Connecticut seeing less than 25% of normal precipitation. This lack of precipitation contributed to an [expansion of abnormal dryness](#) in the Northeast. Conversely, a few areas such as northern Delaware, northern Maine, and northern New York were wetter, seeing up to 200% of normal precipitation. June 1-15 precipitation at the region's 35 major climate sites ranged from 13% to 146%, with 30 of the sites being drier than normal. This first half of June ranked among the 20 driest on record for nine major climate sites.

Hartford, CT had a 4.2° F departure from normal temperature of 66.6° F. The average temperature from June 1st to June 15th was 70.8° F with 25% normal precipitation at 0.56 inches. Hartford, CT was ranked 18th among the 20 driest sites in the Northeast.

Bridgeport, CT had an above average temperature of 69.6° F with a 2.6° F departure from normal temperature of 67.2° F. Bridgeport, CT was ranked 5th among the 20 coolest sites in the Northeast. Precipitation was 79% of normal with an average of 1.63 inches compared to a normal 2.07 inches.

Islip, NY also had a below average temperature. There was a 2.9° F departure from a normal temperature of 66.7° F, with the average temperature in Islip, NY at 64.9° F. For precipitation Islip, NY did not rank among the 20 driest sites on record, with 84% of normal precipitation at 1.90 inches. Normal precipitation was 2.25 inches.



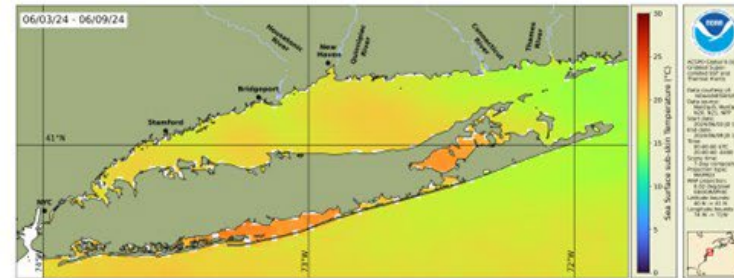
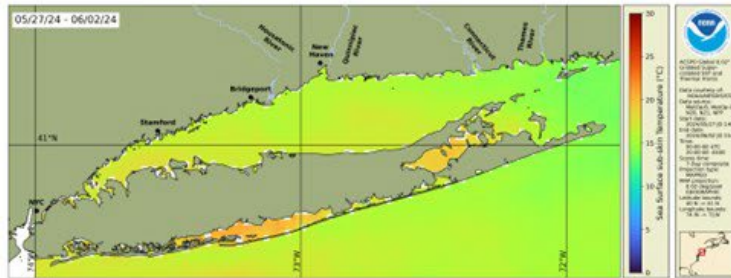
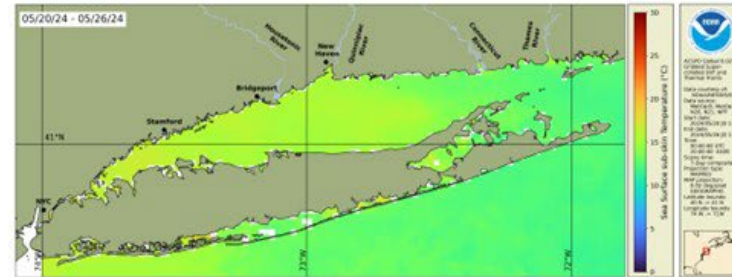
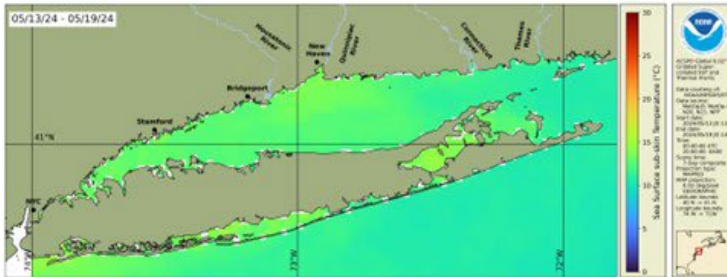
All data and images were from the Northeast Regional Climate Center's website. Please visit <http://www.nrcc.cornell.edu/> for more information.

Sea Surface Temperature

Weekly composites show increasing LIS temperatures into June 2024

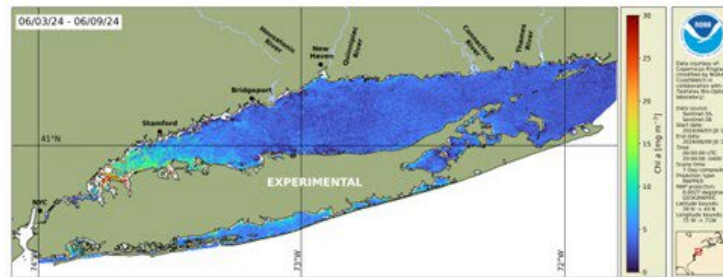
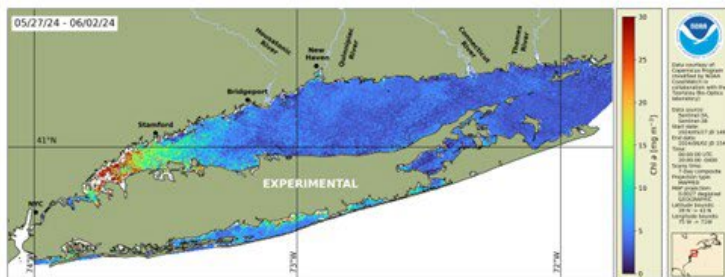
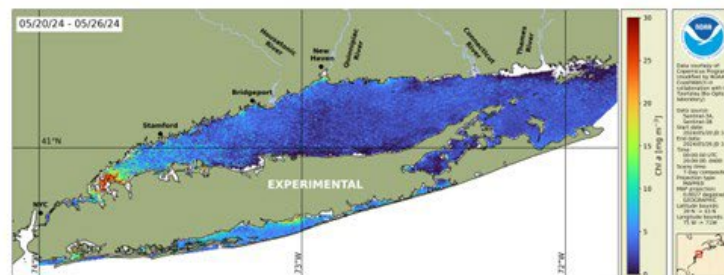
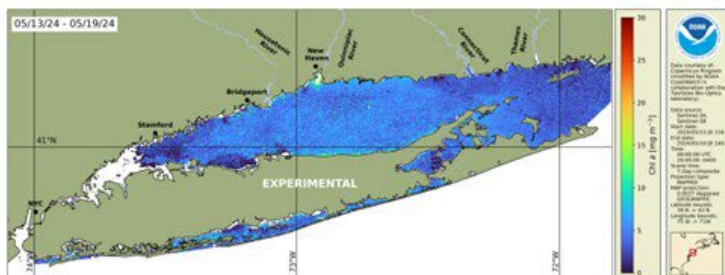
Data courtesy of Copernicus Program, modified by NOAA CoastWatch in collaboration with Tzortziou Bio-Optics Lab

Optimized and validated for Long Island Sound



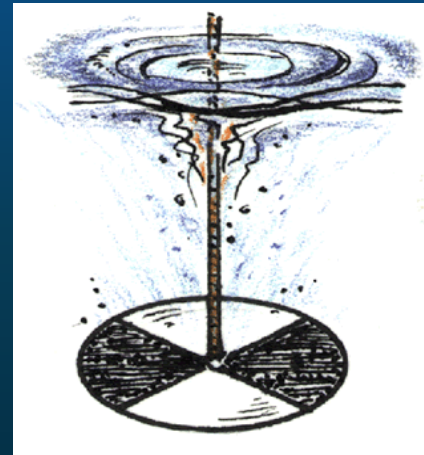
Chlorophyll *a*

Weekly composites show potential bloom in Western LIS during WQJUN24



Secchi Disk Depths

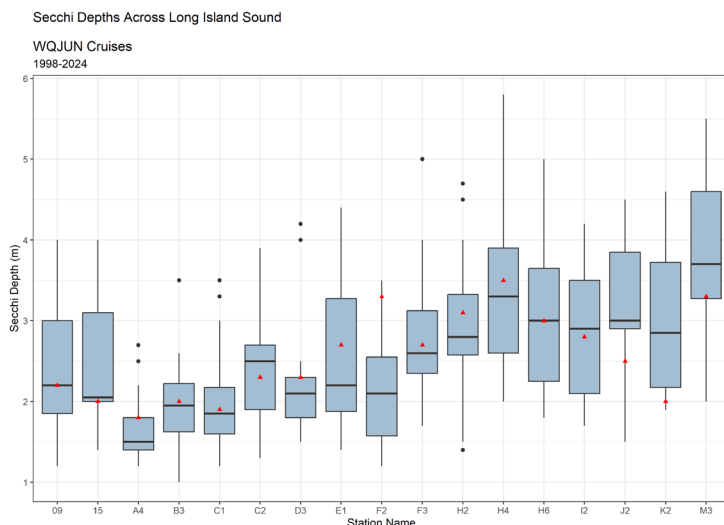
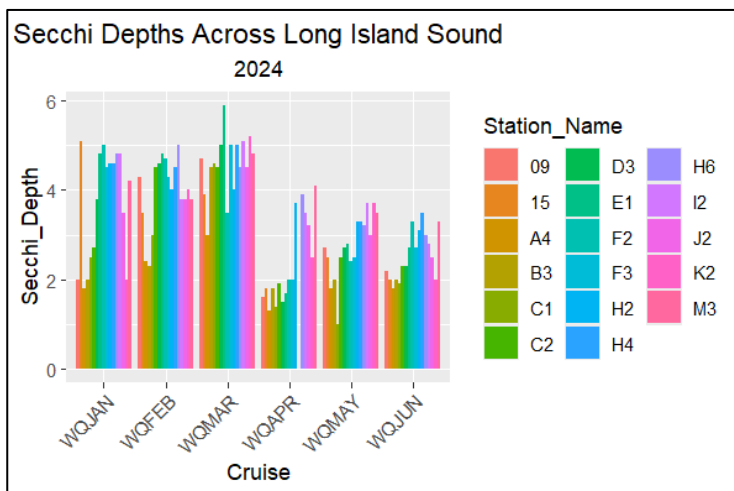
To assess the water clarity across Long Island Sound, Secchi disks are used at each station. The black and white disk is lowered into the water column until such a depth is reached that the black and the white quarters can no longer be differentiated. This is called the Secchi depth.



The Long Island Sound Report Card developed by Save the Sound utilizes the following water clarity depths thresholds:

1. >2.28 m (A- to A+; 90-100)
2. 2.12 to <2.28 (B- to B+; 80-89)
3. 1.95 to <2.12 (C- to C+; 70-79)
4. 1.8 to <1.95 (D- to D+; 60-69)
5. 0 to <1.8 (F; <60)

Secchi depths were taken at 17 stations during the WQJUN24 survey; these depths ranged from 1.8 meters (Station A4) to 3.5 meters (Station H4).



In Report Card terms, 11 stations were in the A- range (>2.28m), 1 station was in the B- range (2.12-2.28), 3 stations were in the C- range (1.95-<2.12m), 2 stations were in the D- range (1.8 to <1.95m), and no stations failed (<1.8m).

For more information on the Long Island Sound Water Quality Monitoring Program please visit:
<https://portal.ct.gov/v/DEEP-LISWater>

