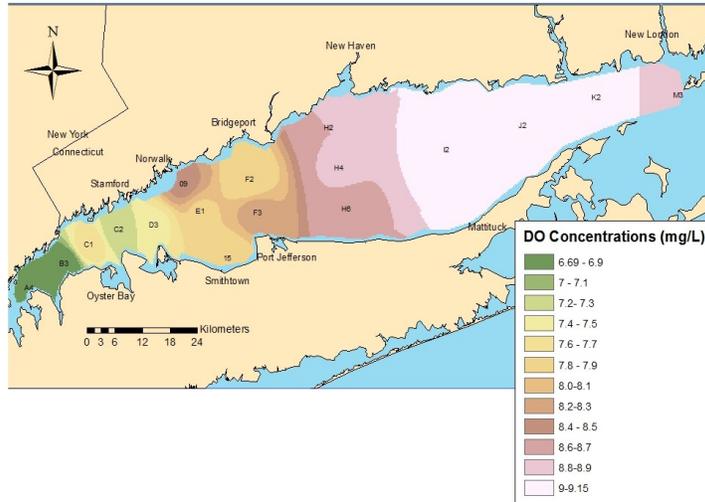


Dissolved Oxygen in Long Island Sound Bottom Waters
May 29 - 31, 2019



Long Island Sound
Water Quality Monitoring
Program

www.ct.gov/deep/lis

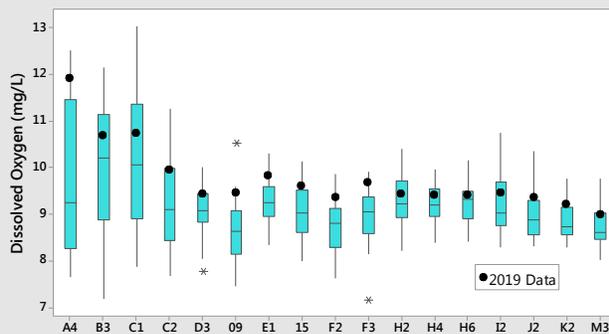
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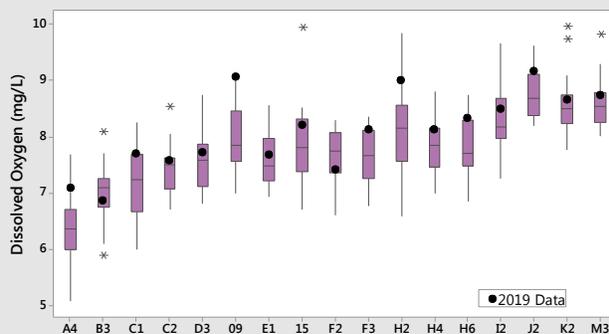
WQJUN19 Hypoxia Summary

Dissolved Oxygen Concentrations Still Above 6 mg/L

Surface Dissolved Oxygen Concentrations Across Long Island Sound
WQJUN Cruises
1998 - 2019



Bottom Dissolved Oxygen Concentrations Across Long Island Sound
WQJUN Cruises
1998 - 2019



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The Connecticut Department of Energy and Environmental Protection conducted our WQJUN19 survey May 29 through May 31, 2019 aboard the R/V John Dempsey. Dissolved oxygen concentrations in the bottom waters of Long Island Sound remained well above 6 mg/L through the survey. The lowest concentration measured during the survey was 6.86 mg/L at Station A4 and the highest was 9.17 mg/L measured at Station J2. Of the 22 bottom waters measurements recorded at Station A4 between 1998 and 2019, the median concentration was 6.38 mg/L with a range of 5.08 to 7.69 mg/L. The mean was 6.37 mg/L.

Leading up to the WQJUN19 survey, A4 had concentrations of 9.79 mg/L in April and 9.78 mg/L in May.

Preliminary data from this survey and prior 2019 cruises are available in [Excel spreadsheet format](#).

Sampling Schedule



CT DEEP conducted our regular monthly water quality sampling from January through June except for the March chlorophyll survey which was not conducted due to weather and the Dempsey was hauled out for its annual inspection

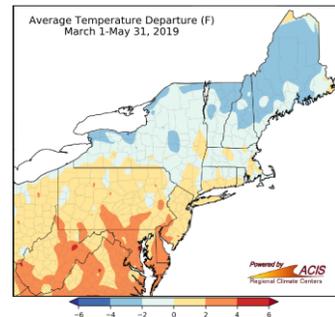
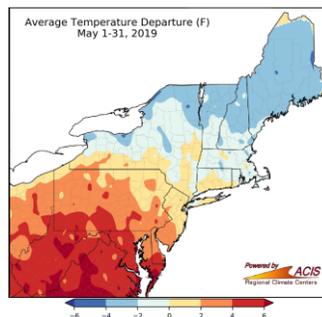
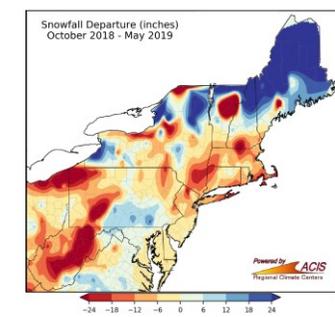
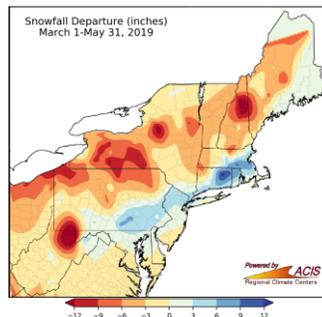
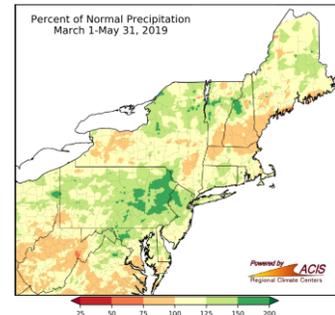
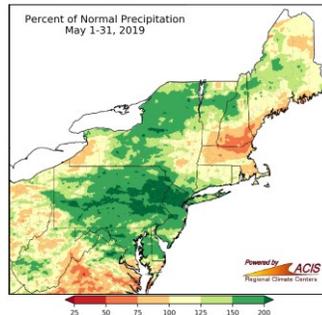
The trawl survey was conducted during May as slated.

The next survey is planned for 6/10 (HYJUN19).

The [schedule](#) for the remainder of 2019 is shown to the left and available on our website.

Weather

As spring comes to close with our WQJUN19 and HYJUN19 surveys, we look back on a winter that brought above average weather conditions across the Northeast. January and February both had above average temperatures of -4.8°C and -2.6°C respectively, which were 0.1°C and 0.7°C warmer than normal for the region. The Northeast experienced above normal precipitation in January, February, April, and May with all months ranking in the top 20 wettest months on record since 1895. March brought an end to nine consecutive wetter-than-normal months, with regional precipitation 71% of normal. A nor'easter at the start of April had extreme gusts of wind up to 60 mph that took down trees and wires across New England. Kennedy Airport reported May had the greatest number of days with measurable precipitation on record with 21 days. As summer begins, the NOAA Climate Prediction Center indicates that temperatures will likely be above normal with near normal precipitation. Weather information can be viewed on the Northeast Regional Climate Center's website <http://www.nrcc.cornell.edu/>.

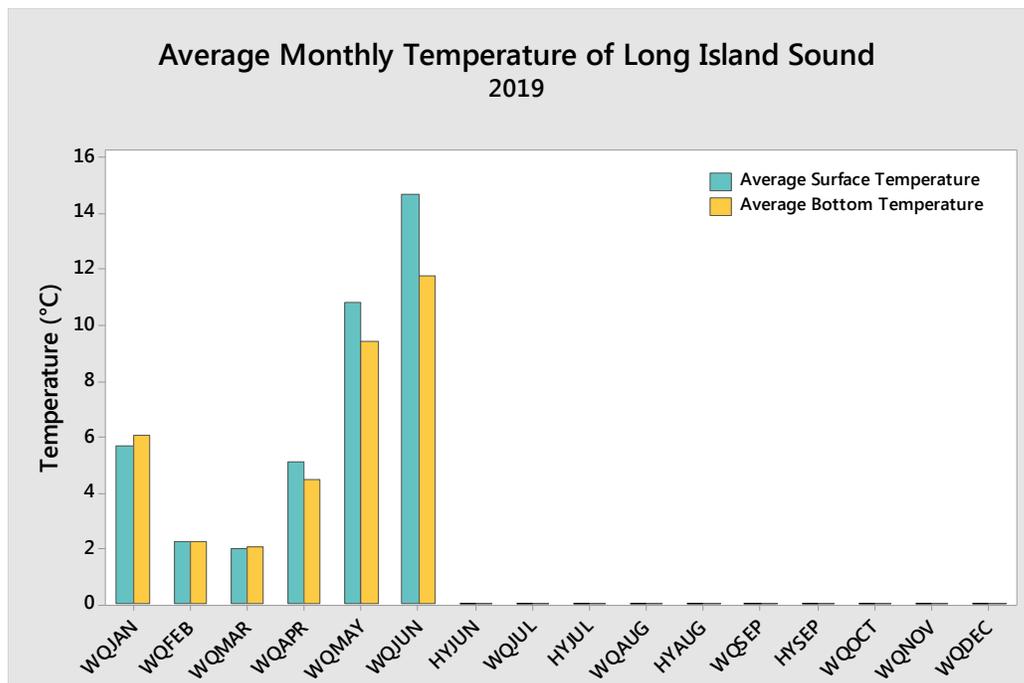
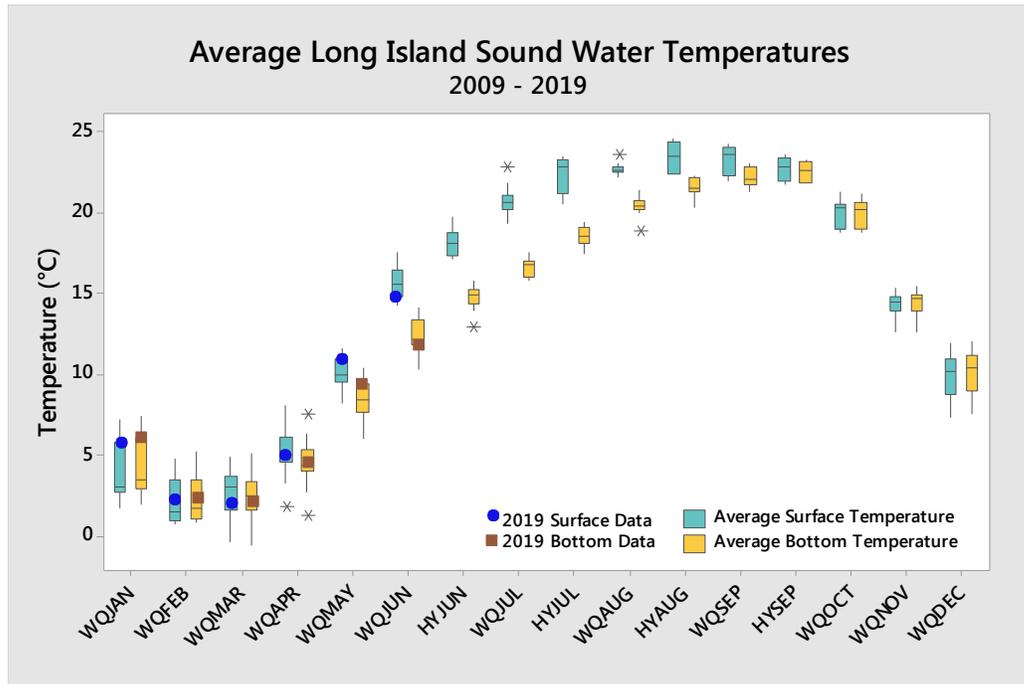


Temperature

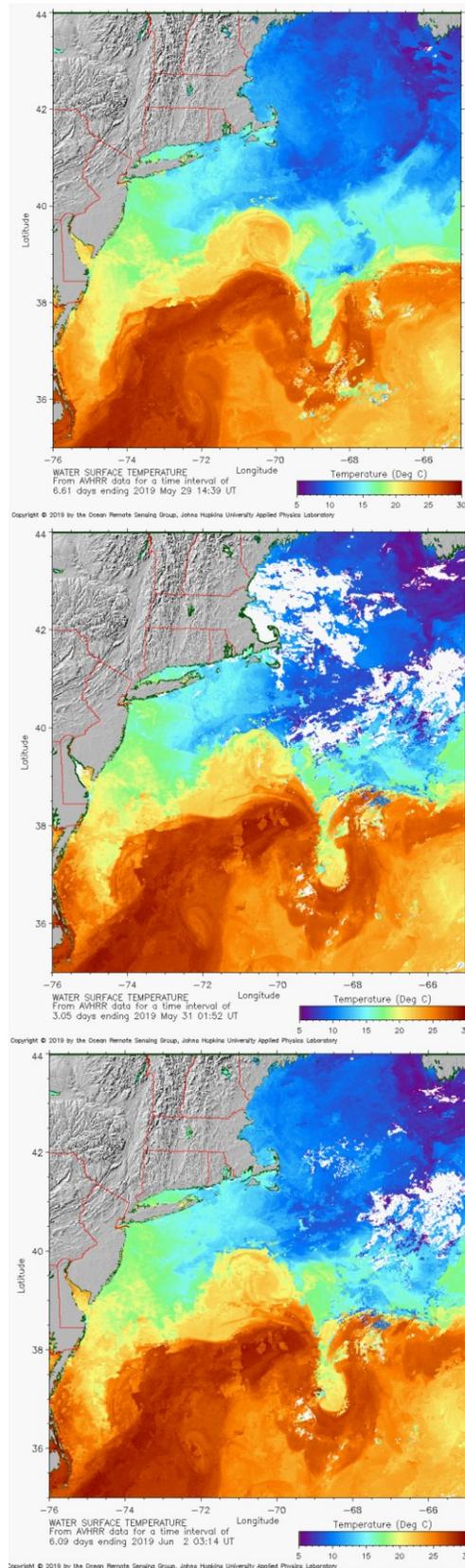
Bottom and surface water temperatures have begun to rise with a 3°C increase of average temperatures from WQMAY19 to WQJUN19. The maximum surface water temperature during the WQJUN19 survey occurred at Stations A4 and C1 (15.52°C) while the maximum bottom water temperature occurred at Station 09 (14.51°C).

The average monthly surface water temperatures in LIS through May 2019 were higher than in 2018 and 2017; in June the average surface water temperature were slightly lower than 2018 and 2017. Since 2016, the June average water temperatures appear to be decreasing slightly every year.

Stratification is intensifying with WQJUN19 ΔT 's ranging from 0.64 °C at Station 09 to 4.84°C at Station E1. ΔT 's averaged 2.91°C during the WQJUN19 survey, an increase of 1.50°C from the WQMAY19 ΔT average.



Sea Surface Temperature



Sea Surface temperature data from Johns Hopkins University Applied Physics Laboratory illustrate how currents and fronts impact water temperatures in the Sound and offshore.

In the first image taken on May 29th, the waters in Long Island Sound are around 16°C.

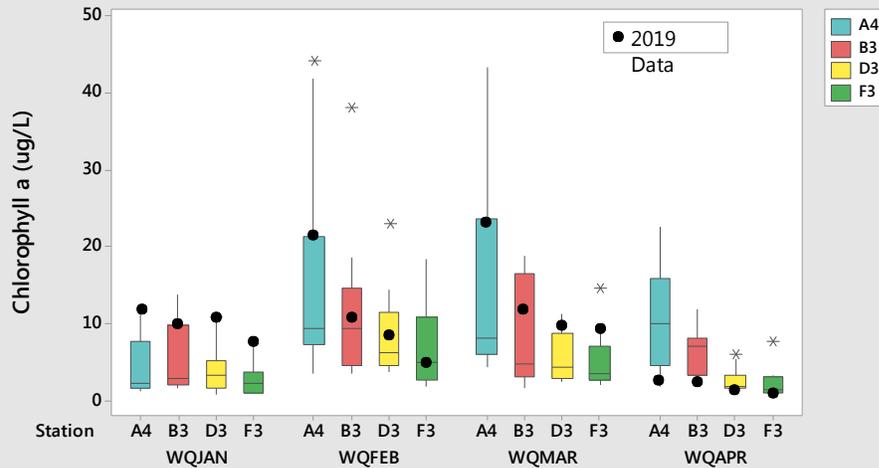
All three images show warmer water from the South Atlantic pushing upward toward LIS. By May 31st, temperatures in the Sound appear to be increasing.

On June 2nd, the average sea surface temperatures in LIS have increased to about 18 °C.

More information about sea surface temperature can be found on the Johns Hopkins APL Ocean Remote Sensing website http://fermi.jhuapl.edu/avhrr/gs_n/19may/index_thumbnail.html.

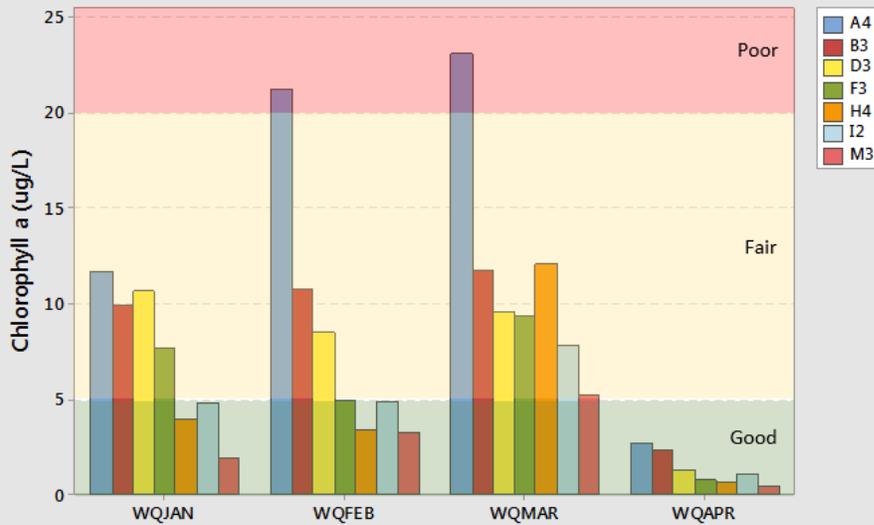
Chlorophyll a

Surface Chlorophyll a Data from Four Stations in Long Island Sound
2009 - 2019



2012 and 2013 FEB, MAR, and APR data were removed due to a calibration error.

Spring 2019 Chlorophyll a Data from Seven Stations Across Long Island Sound



Chlorophyll a analysis performed for DEEP by UCONN CESE utilizes EPA Approved Method 445.0 rev1.2. The method is a non-acidification fluorometric technique that utilizes a narrow band interference filter and a special blue mercury vapor lamp to reduce background fluorescence errors associated with interference from chlorophylls b and c, pheophytin, and dissolved organic matter.

The concentration of chlorophyll a is a measure used to estimate the quantity of phytoplankton biomass suspended in surface waters. Spring chlorophyll a levels generally peak during February and March, predominately increasing from east to west. Historically high levels of chlorophyll a in the Western Sound during this time have been linked to summertime hypoxia conditions.

The spring phytoplankton bloom occurred on time this year, beginning in January with peak chlorophyll a levels measured in February and March. Although precipitation was above normal, temperatures did not get cold enough to slow the start of the spring bloom.

January chlorophyll a concentrations were a little above average, while February and March concentrations were on par with measurements over the past ten years. April concentrations were very low compared to past years.

Using thresholds established by the National Coastal Condition Assessment, 2019 spring chlorophyll a concentrations were generally fair (5 to 20 ug/L) to good (<5 ug/L).

Seasonals

Joel Corso has returned for another summer with the LIS Water Quality Monitoring Program as a seasonal employee. This year he is joined by Vanessa Thornberg. Vanessa graduated from UCONN Avery Point this past May with a Bachelor of Science degree in Marine Science. Vanessa was a field and laboratory assistant in Dr. Vaudrey's coastal ecosystems lab.



Connecticut Department of
**ENERGY &
ENVIRONMENTAL
PROTECTION**