



Department of
Environmental
Conservation

Advanced HABs Monitoring Pilot: Owasco Lake

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Finger Lakes Watershed Hub, NYSDEC

OLWMC

October 16, 2018

Governor's 4 Point HABs Initiative



1. ✓ Water Quality/HABs Summits
2. ✓ 12-Priority Lakes – Action Plans and WQIP funding
3. In-lake Mitigation Pilots
4. **Advanced HABs Monitoring**

Governor's 4 Point HABs Initiative

4. Advanced HABs Monitoring Pilots

- USGS, NYSDEC, and NYSDOH collaboration.
- Develop and implement a comprehensive water quality monitoring strategy in 3 Finger Lakes (initially): Owasco, Seneca and Skaneateles.
 - Enhance the scientific understanding of environmental factors associated with HABs
 - Inform the development of an ***advanced monitoring strategy*** for the State



Purpose

- Establish an advanced monitoring program
 - Continuous monitoring stations are/will be established
 - Synoptic water quality sampling events will be conducted at all three lakes/watersheds



Objectives of Program

1. Better understand HABs development in NYS lakes using a multi-tiered approach, which monitors the occurrence of and contributing factors to HABs.
2. Evaluate water-quality sensor and data to inform the development of advanced HABs monitoring strategy for NYS
3. ***Create a user friendly, public accessible web application for data dissemination and data analysis.***

Approach

Three major components:

1. In-lake continuous monitoring and discrete sampling
2. Tributary-mouth discrete sampling and shoreline mapping
3. Intensive WQ sampling of tributaries (upstream)

A project web application developed to provide an interface for viewing real-time data and accessing historical WQ and meteorological data collected at the sites





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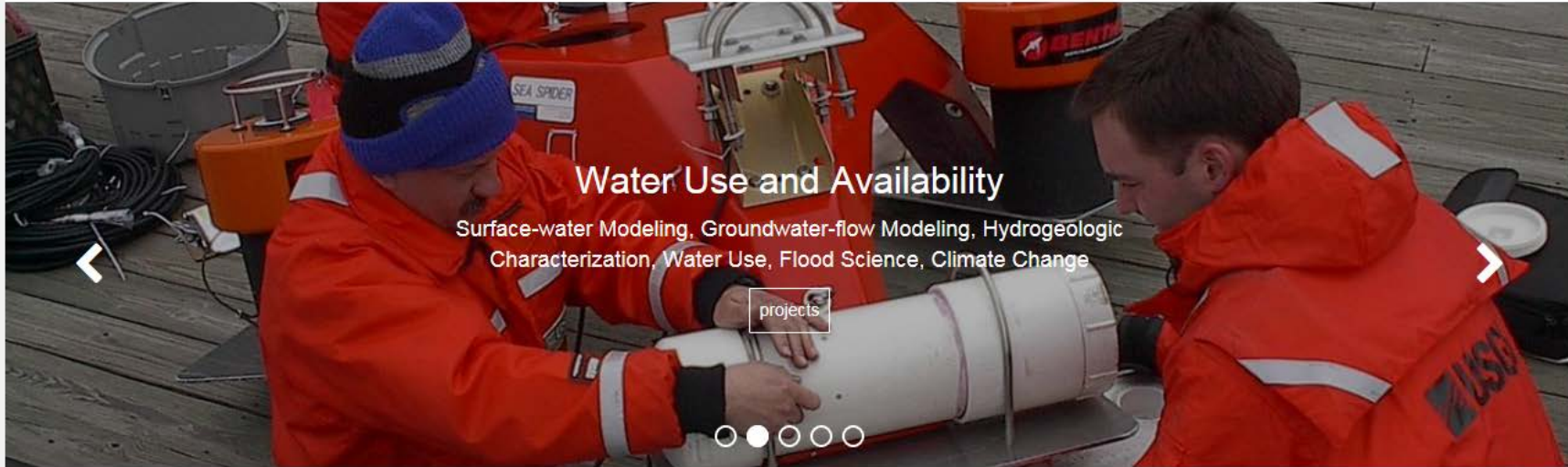
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New York Water Science Center



Link to the USGS –
New York site:
[https://www.usgs.gov/
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The New York Water Science Center (NYWSC) provides research and data about water-related issues. The NYWSC provides high-quality, timely, and unbiased scientific data, reports, and other information that are widely accessible and understandable and that benefit science interests of all levels of government, Native American Nations, academia, nongovernmental organizations, the private sector,

[Read more about NY WSC](#)

Current Water Conditions

Science

NY WSC Quick Links



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04213500	CATTARAUGUS CREEK AT GOWANDA NY	09/17 12:15 EST	8.6	408	22.0	--	9.6	4.9	
● STREAMS TRIBUTARY TO LAKE ONTARIO									
0422026250	NORTHRUP CREEK AT NORTH GREECE NY	09/17 12:15 EST	--	--	21.8	--	--	--	
04226000	KESHEQUA CR AT CRAIG COLONY AT SONYEA NY	09/17 11:45 EST	8.5	549	21.6	--	9.9	2.4	
04231600	GENESSEE RIVER AT FORD STREET BRIDGE, ROCHESTER NY	09/17 11:30 EST	7.8	395	22.5	--	7.1	16.9	
04232050	ALLEN CREEK NEAR ROCHESTER NY	09/17 12:30 EST	--	--	19.4	--	--	--	
0423205010	IRONDEQUOIT CR ABOVE BLOSSOM RD NEAR ROCHESTER NY	09/17 12:15 EST	--	--	19.2	--	--	--	
04236000	SKANEATELES LAKE AT SKANEATELES NY	09/17 11:45 EST	8.1	279	24.0	--	8.9	2.4	
04249000	OSWEGO RIVER AT LOCK 7, OSWEGO NY	09/17 11:45 EST	8.2	720	24.4	--	9.0	--	
		09/04 12:00 EST	--	--	--	--	--	4.3	
04253296	BUCK CREEK NEAR INLET NY	09/17 11:45 EST	--	--	15.6	--	--	--	
04256000	INDEPENDENCE RIVER AT DONNATTSBURG NY	09/17 12:30 EST	--	--	20.2	--	--	--	
425327076313601	OWASCO LAKE PLATFORM								
	[Depth at 3 feet]	09/17 11:45 EST	8.7	293	23.6	--	9.9	0.9	
	[Depth at 44 feet]	09/17 11:45 EST	8.2	296	21.6	--	7.6	0.3	
	[Depth at 88 feet]	09/17 11:45 EST	7.6	322	6.4	--	7.9	0.3	
425606076251601	SKANEATELES LAKE USGS BUOY	09/17 12:00 EST	8.7	281	23.3	--	9.4	0.6	
● ST. LAWRENCE RIVER BASIN									
04294413	LAKE CHAMPLAIN AT PORT HENRY NY	09/17 11:45 EST	--	--	21.0	--	--	--	
04294500	LAKE CHAMPLAIN AT BURLINGTON, VT	09/17 13:00 EDT	--	187	--	--	--	--	
	[sensor located at 88 ft]	09/17 13:00 EDT	--	--	23.2	--	--	--	
04295000	RICHELIEU R (LAKE CHAMPLAIN) AT ROUSES POINT NY	09/17 12:00 EST	--	--	23.2	--	--	--	

Data status codes:
 *** Temporarily unavailable
 -- Parameter not determined
 Eqp Equipment malfunction

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Imagine Dragons Radio - No x USGS Current Conditions for USC x Water Quality Data Viewer x

https://ny.water.usgs.gov/maps/habs/

USGS science for a changing world

NEW YORK STATE OF OPPORTUNITY Department of Environmental Conservation

Water Quality Data Viewer

ABOUT

WATER QUALITY MONITORING SITES

Click a site name or constituent in the area below or a site on the map to launch the Water Quality Data Retrieval and Graphing Module

Icon	Site Name	Get Data
	SENECA LAKE PLATFORM	Get Data
	OWASCO LAKE PLATFORM	Get Data
	SKANEATELES LAKE BOUY	Get Data
	SKANEATELES LAKE AT SKANEATELES	Get Data

MAP LAYERS +

BASEMAPS +

Developed by USGS NY WSC

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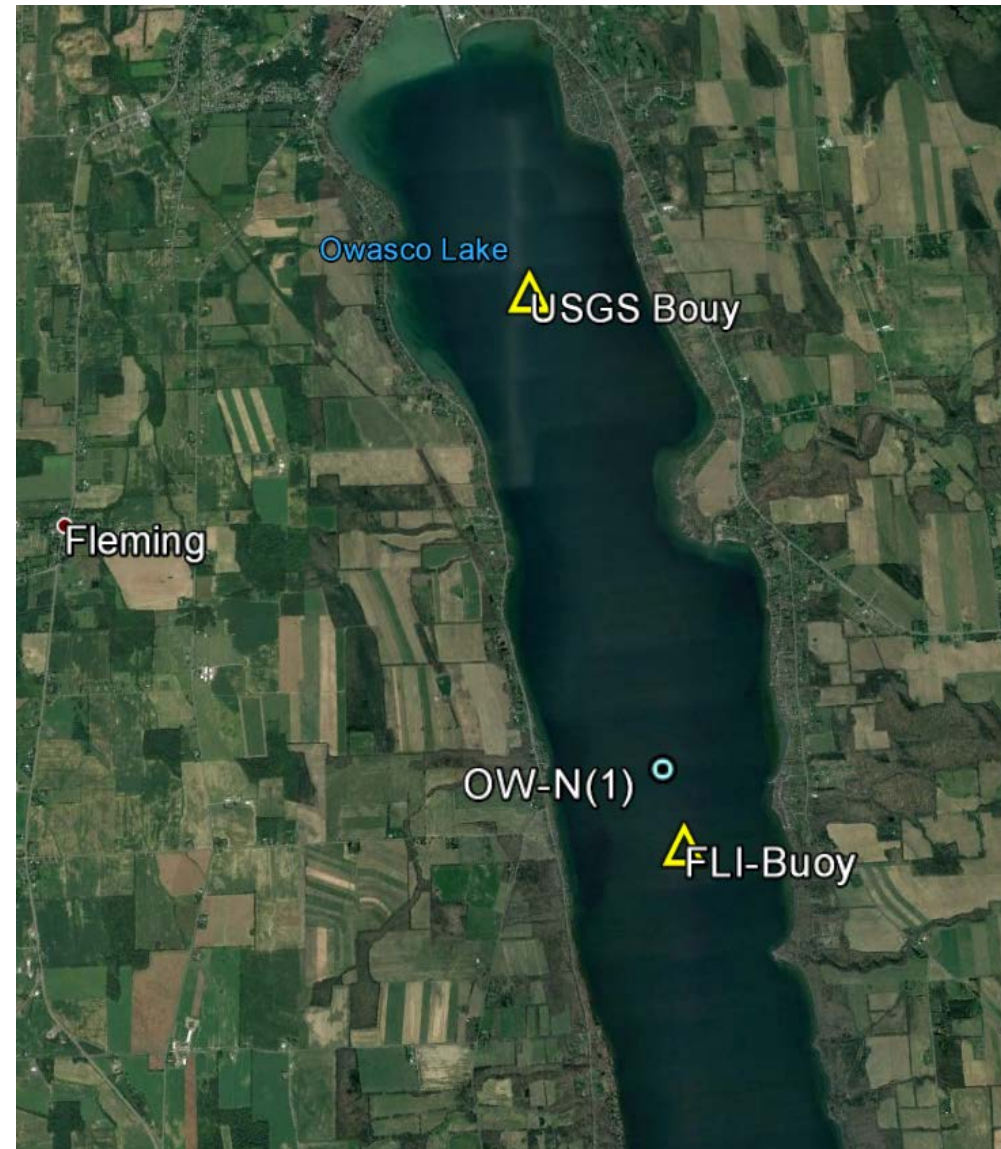
10 km
5 mi

Leaflet | Tiles © Esri — Esri, DeLorme, NAVTEQ

Link to the data viewer web page for Skaneateles Lake:
<https://ny.water.usgs.gov/maps/habs/>





Owasco Lake Buoy



Imagine Dragons Radio - No x USGS Current Conditions for USC x

https://waterdata.usgs.gov/ny/nwis/uv/?site_no=425327076313601&PARAMeter_cd=00400,00095,00010,90860,...

National Water Information System: Web Interface

USGS Water Resources

Data Category: Current Conditions Geographic Area: New York GO

Click to hide News Bulletins

- Please see news on new formats
- Full News

Click to hide state-specific text


ALL DATA ARE EASTERN STANDARD TIME

USGS 425327076313601 OWASCO LAKE PLATFORM
PROVISIONAL DATA SUBJECT TO REVISION

Available data for this site SUMMARY OF ALL AVAILABLE DATA GO

Click to hide station-specific text

LOCATION.--Lat 42°53'27.2", long 76°31'36.3" referenced to North American Datum of 1983, Cayuga County, NY, Hydrologic Unit 04140201,



[Station image](#)

https://waterdata.usgs.gov/ny/nwis/uv/?site_no=425327076313601&PARAMeter_cd=00400,00095,00010,90860,00300,63680,62361,99137



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WATER QUALITY MONITORING

Click a site name or coordinate to launch the Water Quality Data Retrieval and Graphing Module

Icon Site Name

- SENECA LAKE PL
- OWASCO LAKE PL
- SKANEATELES LAK
- SKANEATELES LAK

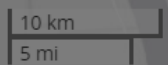
MAP LAYERS

BASEMAPS

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Water Quality Data Retrieval and Graphing Module

Select Station(s)

x OWASCO LAKE PLATFORM

Select Parameter(s)

Select Parameter

Select Time Period

Choose Time Period

Past 7 Days

OR

Choose Specific Date Range

2018-09-25 Start Date

2018-10-02 End Date

Compare past year's data

Show Graph

Download Data

Close

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https://ny.water.usgs.gov/maps/habs/

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WATER QUALITY MONITORING

Click a site name or coordinate or a site on the map to view Data Retrieval and Graphing options.

Icon Site Name

- SENECA LAKE PLATFORM
- OWASCO LAKE PLATFORM

Most recent values as of: 10/02/2018 09:58 AM EDT

- Temperature, water, °C, [Depth at 3 feet]
- Temperature, water, °C, [Depth at 44 feet]
- Temperature, water, °C, [Depth at 88 feet]
- Specific conductance, water, microsiemens per centimeter, [Depth at 3 feet]
- Specific conductance, water, microsiemens per centimeter, [Depth at 44 feet]
- Specific conductance, water, microsiemens per centimeter, [Depth at 88 feet]
- Dissolved oxygen, water, mg/L, [Depth at 3 feet]
- Dissolved oxygen, water, mg/L, [Depth at 44 feet]
- Dissolved oxygen, water, mg/L, [Depth at 88 feet]

Choose Time Period
Past 7 Days

OR

Choose Specific Date Range
2018-09-25 Start Date 2018-10-02 End Date

Compare past year's data

Show Graph

deg C

09/25 00am 09/26 00am 09/27 00am 09/28 00am 09/29 00am 09/30 00am 10/01 00am 10/02 00am

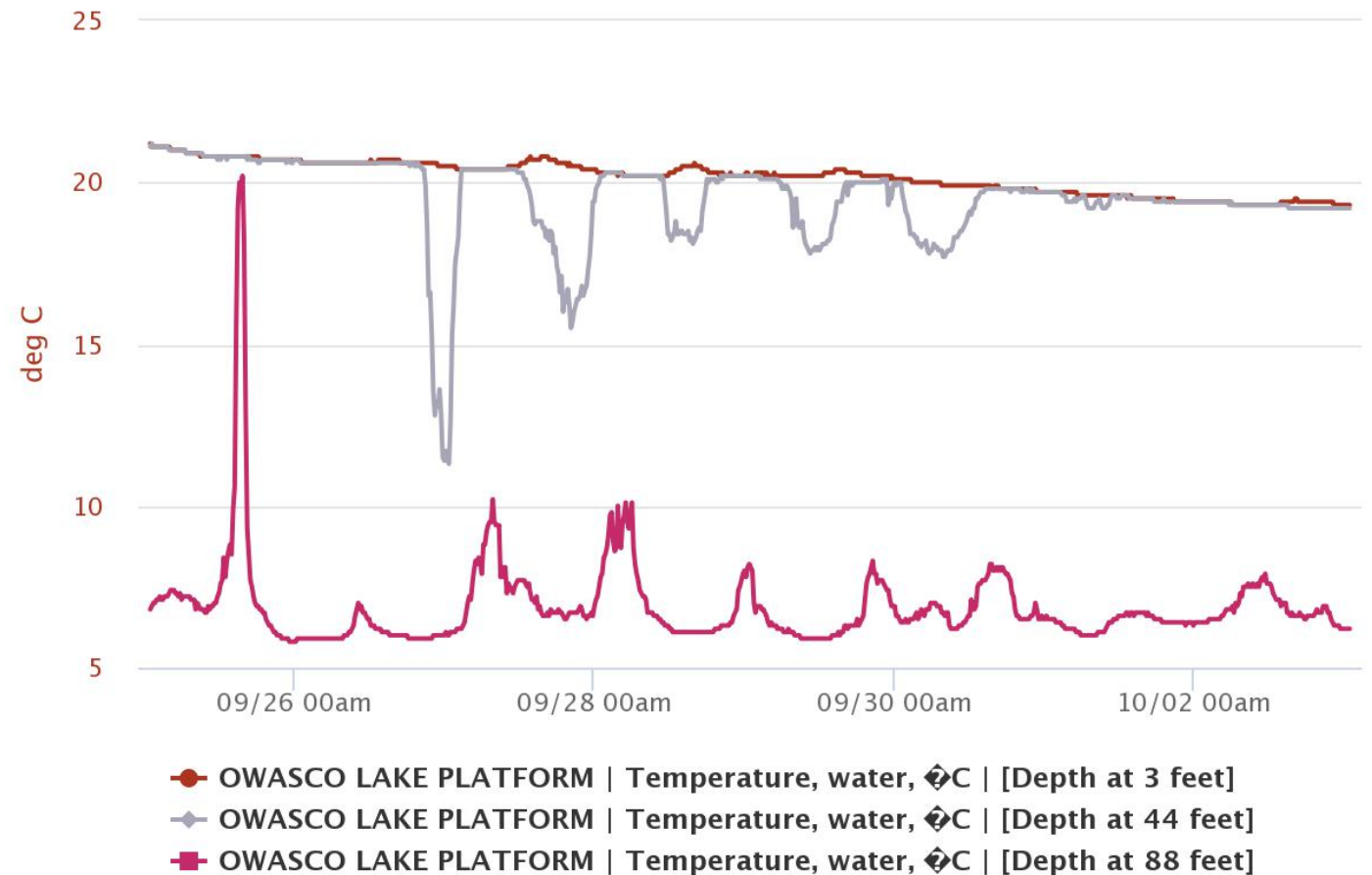
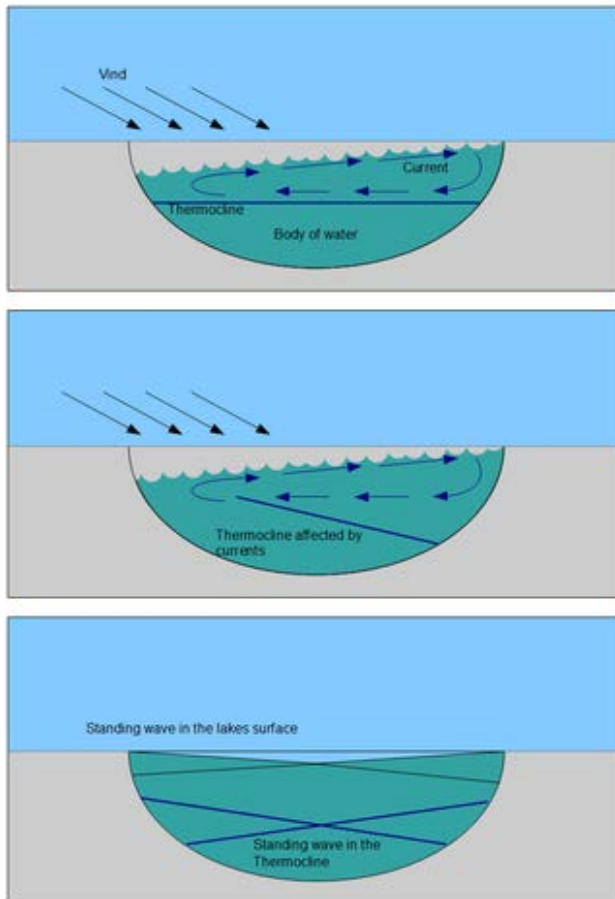
- OWASCO LAKE PLATFORM | Temperature, water, °C | [Depth at 3 feet]
- OWASCO LAKE PLATFORM | Temperature, water, °C | [Depth at 44 feet]
- OWASCO LAKE PLATFORM | Temperature, water, °C | [Depth at 88 feet]

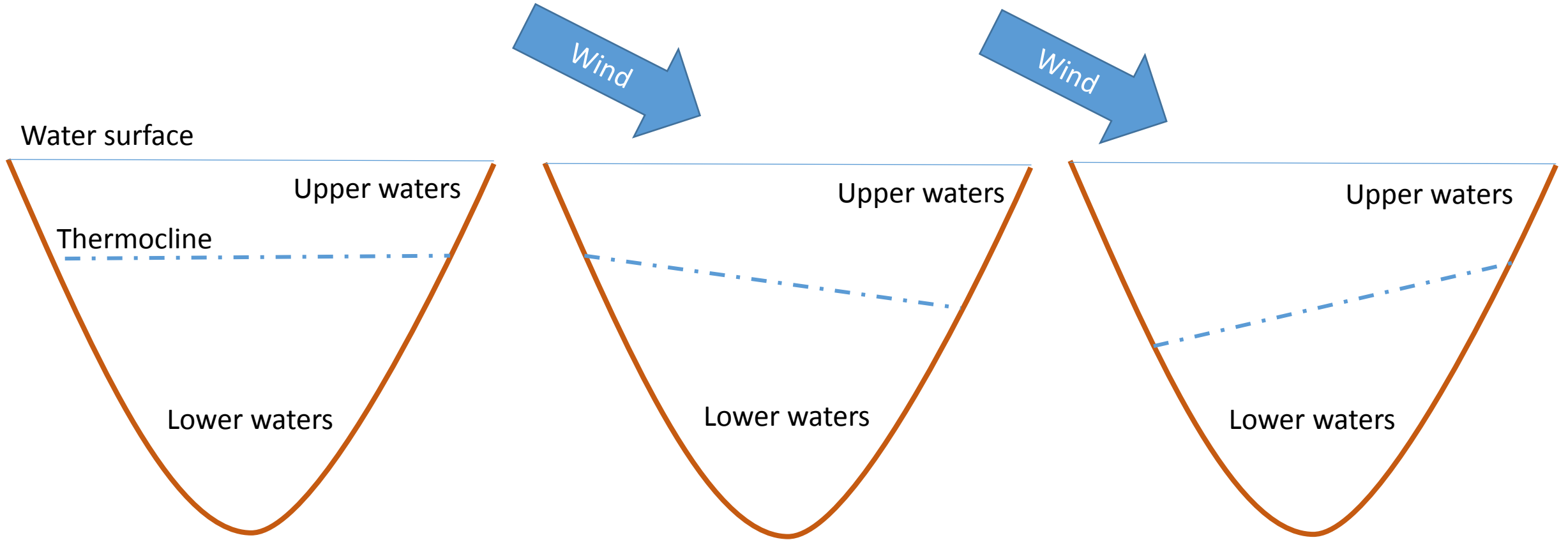
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Seiches and Other Limnological Processes

<https://oceanservice.noaa.gov/facts/seiche.html>





The seiche doesn't fully mix the lake but can increase transport (water, nutrients?) from lower waters to uppers

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WATER QUALITY MONITORING

Click a site name or coordinate to select a site on the map to launch Data Retrieval and Graphing

Icon	Site Name
	SENECA LAKE PL...
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	SKANEATELES LA...
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Past 7 Days ▾

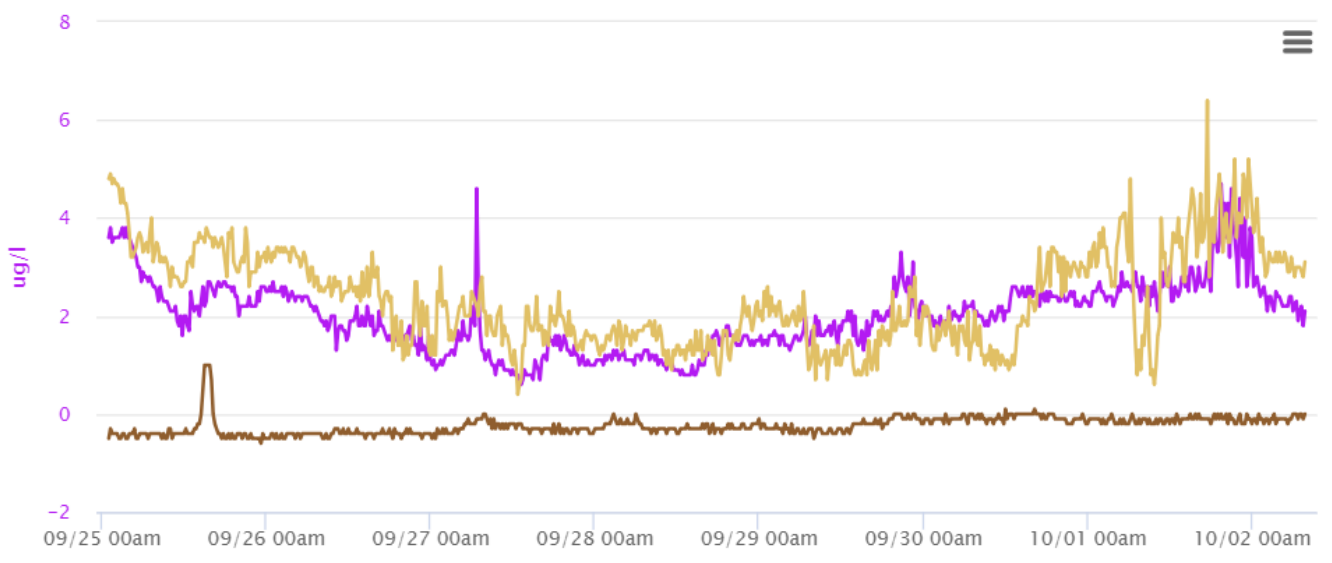
OR

Choose Specific Date Range

2018-09-25 Start Date 2018-10-02 End Date

Compare past year's data

[Show Graph](#)



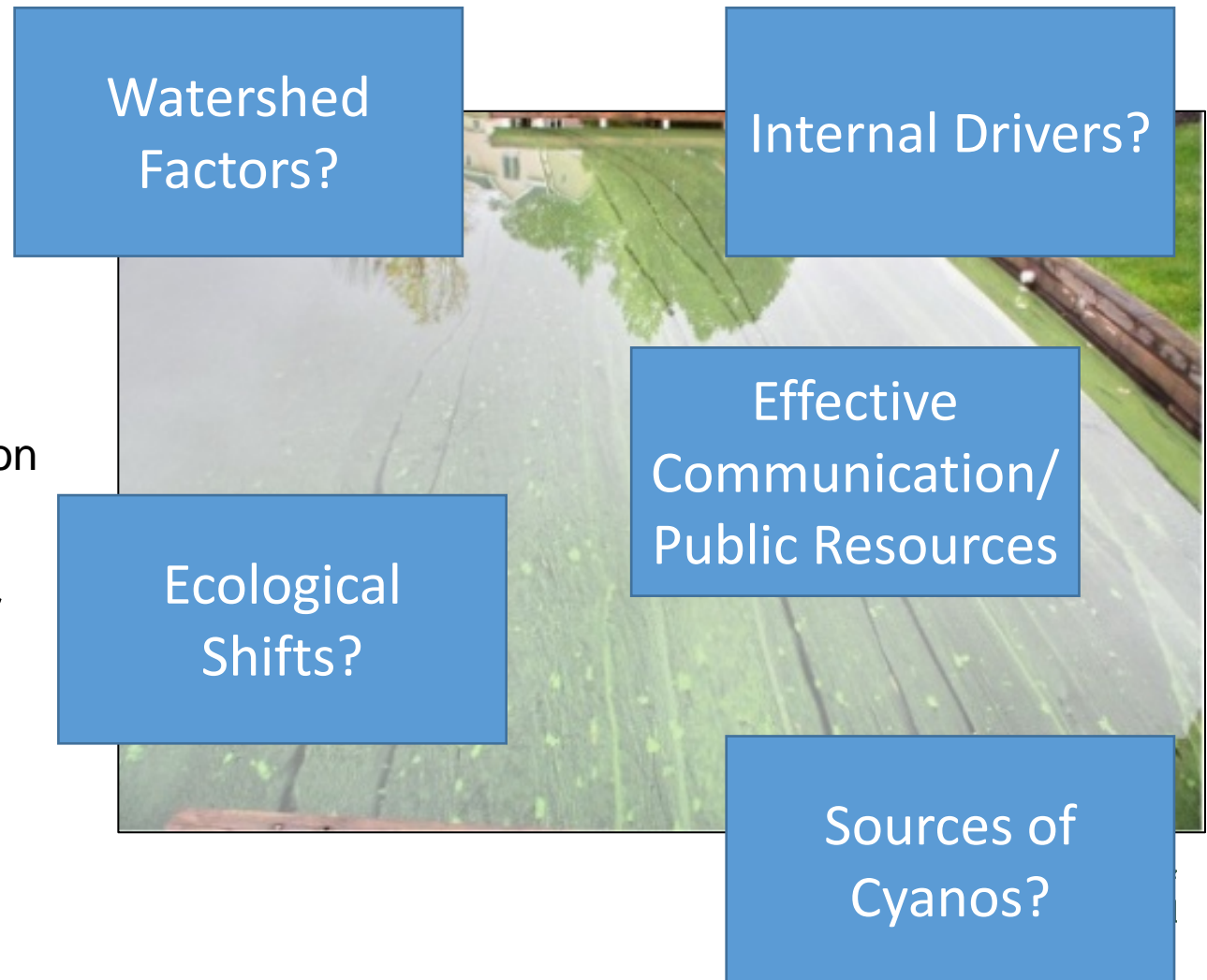
- OWASCO LAKE PLATFORM | Chlorophyll a, estimated, water, in-situ, in-vivo fluorescence (IVF), concentration estimate
- OWASCO LAKE PLATFORM | Chlorophyll a, estimated, water, in-situ, in-vivo fluorescence (IVF), concentration estimate
- OWASCO LAKE PLATFORM | Chlorophyll a, estimated, water, in-situ, in-vivo fluorescence (IVF), concentration estimate

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2019-2020 Owasco Lake

Lake Program

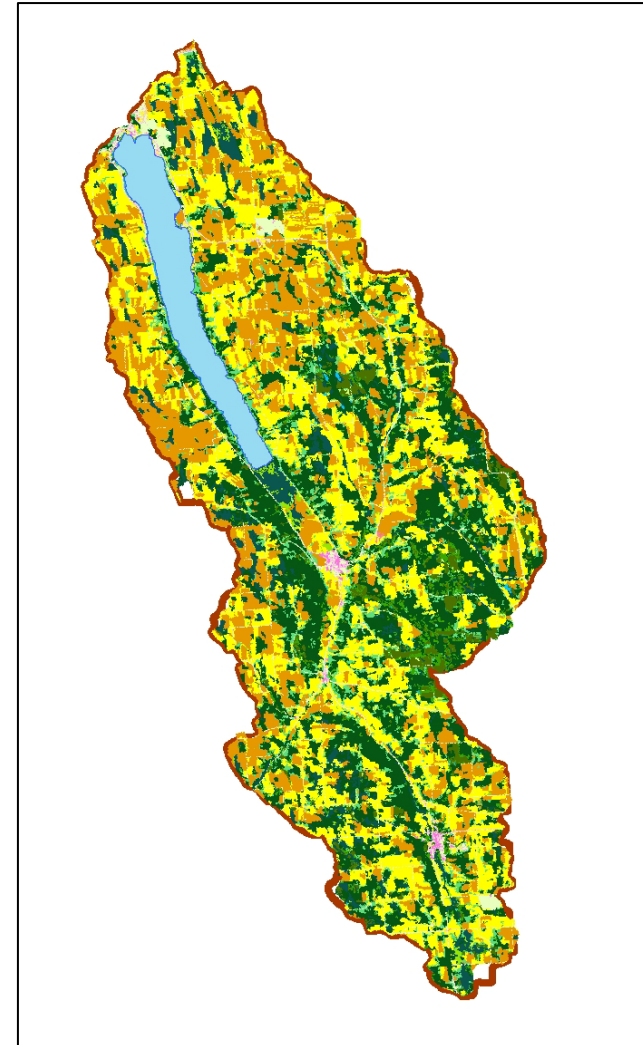
1. Buoy upgrades
 - Additional sensors for real-time, *in-situ* **nitrate, phosphate**
 - Multi-spectral algal analyzer
 - Web cam for live stream surface visualization
 - Chemistry sampling – ground-truthing
2. Nearshore mapping and tributary water quality
 - Near tributary mouths to assess impacts
 - Real-time nutrients and chemistry grabs



2019-2020 Owasco Lake Watershed

Watershed Program

1. Tributary chemistry samples
 - Consistent with USGS/NYSDEC methods
 - Multiple locations along major tribs - source identification?



Skaneateles Near-Shore and Lake Buoy



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**Existing Programs → Advanced Monitoring
→ Understanding (HABs) → → Mitigation**



Thank You

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Research Scientist 2

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Questions?

