

HRECOS Yonkers Water Quality Metadata

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Station Overview

Location: Yonkers, NY ([40.9362778, -73.9043056](#))

Data collection period: 06/12/2014- present; seasonal due to ice hazards

Parameters: pH, dissolved oxygen, specific conductance, salinity, turbidity, water temperature

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Station Description:

The station is located on the Science Barge which is located just south of the Center for the Urban River at Beczak (CURB). The Science Barge is located directly north of where the Saw Mill River outflows into the Hudson River, and ~500' south (downstream) of a sewage outfall. The river bottom is characterized by thick mud and rocks.

A sonde is deployed in a perforated PVSC pipe strapped to the floating Science Barge. A YSI 6-series sonde was in place from the first deployment through 2017, after which a YSI EXO sonde was installed on 7/12/2018.

CURB initiated this station to support their education and research goals. CURB educates over 5,000 youth annually on the Hudson River and urban watershed issues, and in 2013 launched a research and monitoring program utilizing Sarah Lawrence College students and faculty. The Groundwork Hudson Valley Science Barge joined the partnership as a host site for the station. CURB and the Science Barge are open to the public during operational hours, which vary seasonally.

Special Remarks:

Date	Remark
All	Sonde is removed in the winter and redeployed in the spring to avoid ice damage. Specific dates can be found below.
July 2016	PVC deployment tube is replaced with a stainless-steel pipe
October 2017	Station temporarily decommissioned for barge maintenance
7/12/2018	Station rebuilt with a new YSI EXO2 sonde, logger, and telemetry system. The stainless pipe was replaced back to a PVC pipe due to concerns about corrosion to the barge
11/1/2018	Sonde pulled for winter
5/10/2019	Sonde redeployed
12/4/2019	Sonde pulled for winter
12/11/2023	Sonde pulled for winter
4/11/2024	Sonde redeployed
6/7/2024-6/11/2024	Sonde pulled for maintenance
9/23/2024	Sonde pulled for maintenance
12/9/2024	Sonde pulled for winter
4/1/2025	Sonde redeployed

Distribution Terms:

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Data Quality Assurance:

Data collection and verification have been performed on all parameters (except velocity; see below) since the establishment of this station (January 2011) according to the HRECOS Quality Assurance Project Plan, which is available at www.hrecos.org

Remark on velocity: The level gage and velocity meter have been maintained by the U.S. Geological Survey since their adoption/installation by the agency in September 2016. Water elevation is verified by USGS annually, while velocity is only a working dataset and is primarily purposed for short-term operational use. USGS-verified data may have been corrected based on field measurements, sensor

calibrations, sensor cleanings, and other observations using standard USGS methodology. Unverified data is provisional and is subject to revision.

Code Definitions

Flag code definitions:

A	Accepted data
P	Provisional data
S	Suspect data, consult comment codes
R	Rejected data, consult comment codes
C	Corrected data, consult comment codes

Comment code definitions:

General Errors

[GIM]	instrument malfunction
[GIT]	instrument recording error, recovered telemetry data
[GMC]	no instrument deployed due to maintenance/calibration
[GPF]	power failure/low battery
[GQR]	rejected due to QAQC checks
[GSM]	see metadata
[GIC]	no instrument deployed due to ice
[GNF]	deployment tube clogged/no flow
[GOW]	out of water event

Sensor Errors

[SBO]	blocked optic
[STF]	catastrophic temperature sensor failure
[SCF]	conductivity sensor failure
[SDF]	depth port frozen
[SDP]	DO membrane puncture
[SDO]	DO suspect
[SIC]	incorrect calibration/contaminated standard
[SNV]	negative value
[SPC]	post calibration out of range
[SSD]	sensor drift
[SSM]	sensor malfunction
[SOW]	sensor out of water
[SSR]	sensor removed (not deployed)
[STS]	turbidity spike
[SWM]	wiper malfunction/loss

Comments

(CAB)	algal bloom
(CAF)	acceptable calibration/accuracy error of sensor
(CAP)	depth sensor in water, affected by atmospheric pressure
(CBF)	biofouling

(CCU)	cause unknown
(CDA)	DO hypoxia < 28 percent saturation
(CDB)	disturbed bottom
(CDF)	data appear to fit conditions
(CFK)	fish kill
(CIP)	surface ice present at sample station
(CLT)	low tide
(CMC)	in field maintenance/cleaning
(CMD)	mud in probe guard
(CND)	new deployment begins
(CRE)	significant rain event
(CSM)	see metadata
(CTS)	turbidity spike
(CVT)	possible vandalism/tampering
(CWD)	data collected at wrong depth
(CWE)	significant weather event

YSI EXO2 Sensor Specifications:

Consult description and remarks for upgrade dates.

Parameter: Temperature

Units: Celsius (C)

Sensor Type: Thermistor

Model#: 599870-01

Range: -5 to 50 C

Accuracy: -5 to 35: +/- 0.01, 35 to 50: +/- .005

Resolution: 0.01 C

Parameter: Conductivity

Units: mS/cm

Sensor Type: 4-electrode cell with autoranging

Model#: 599870-01

Range: 0-200 mS/cm

Accuracy: 0 to 100: +/- 0.5% of reading or 0.001 mS/cm; 100 to 200: +/- 1% of reading

Resolution: 0.001 mS/cm to 0.1 mS/cm

Parameter: Salinity

Units: practical salinity units (psu)/parts per thousand (ppt)

Sensor Type: Calculated from conductivity and temperature

Range: 0 to 70 psu

Accuracy: +/- 1.0% of reading or 0.1 ppt, whichever is greater

Resolution: 0.01 psu

Parameter: Dissolved Oxygen % saturation

Sensor Type: Optical probe w/ mechanical cleaning

Model#: 599100-01

Range: 0 to 500% air saturation

Accuracy: 0-200% air saturation: +/- 1% of the reading or 1% air saturation, whichever is greater 200-500% air saturation: +/- 5% of reading

Resolution: 0.1% air saturation

Parameter: Dissolved Oxygen mg/L (Calculated from % air saturation, temperature, and salinity)

Units: milligrams/Liter (mg/L)

Sensor Type: Optical probe w/ mechanical cleaning

Model#: 599100-01

Range: 0 to 50 mg/L

Accuracy: 0-20 mg/L: +/-0.1 mg/L or 1% of the reading, whichever is greater

20 to 50 mg/L: +/- 5% of the reading

Resolution: 0.01 mg/L

Parameter: pH

Units: pH units

Sensor Type: Glass combination electrode

Model#: 599701 (guarded) or 599702 (wiped)

Range: 0 to 14 units

Accuracy: +/- 0.01 units within +/- 10° of calibration temperature, +/- 0.02 units for entire temperature range

Resolution: 0.01 units

Parameter: Turbidity

Units: formazin nephelometric units (FNU)

Sensor Type: Optical, 90-degree scatter

Model#: 599101-01

Range: 0 to 4000 FNU

Accuracy: 0 to 999 FNU: 0.3 FNU or +/-2% of reading (whichever is greater); 1000 to 4000 FNU +/-5% of reading

Resolution: 0 to 999 FNU: 0.01 FNU, 1000 to 4000 FNU: 0.1 FNU

Parameter: Chlorophyll

Units: micrograms/Liter, RFU

Sensor Type: Optical probe

Model#: 599102-01

Range: 0 to 400 ug/Liter; 0 to 100 RFU

Accuracy: Dependent on methodology

Resolution: 0.1 ug/L chl a, 0.1% RFU

Parameter: Phycocyanin

Units: micrograms/Liter, RFU

Sensor Type: Optical probe

Model#: 599102-01

Range: 0 to 100 ug/Liter; 0 to 100 RFU

Accuracy: Dependent on methodology

Resolution: 0.1 ug/L PC, 0.1% RFU

YSI 6600 Sensor Specifications

Consult description and remarks for upgrade dates.

Parameter: Temperature

Units: Celsius (C)

Sensor Type: Thermistor

Model#: 6560

Range: -5 to 45 C

Accuracy: +/- 0.15 C

Resolution: 0.01 C

Parameter: Conductivity

Units: mS/cm

Sensor Type: nickel electrode

Model#: 6560

Range: 0-100 mS/cm

Accuracy: 0 to 100: +/- 0.5% of reading or 0.001 mS/cm

Resolution: 0.001 mS/cm to 0.1 mS/cm

Parameter: Salinity

Units: parts per thousand (ppt)

Sensor Type: Calculated from conductivity and temperature

Parameter: Dissolved Oxygen % saturation

Sensor Type: Optical probe w/ mechanical cleaning

Model#: 6150 ROX

Range: 0 to 500% air saturation

Accuracy: 0-200% air saturation: +/- 1% of the reading or 1% air saturation, whichever is greater 200-

500% air saturation: +/- 15% of reading

Resolution: 0.1% air saturation

Parameter: Dissolved Oxygen mg/L (Calculated from % air saturation, temperature, and salinity)

Units: milligrams/Liter (mg/L)

Sensor Type: Optical probe w/ mechanical cleaning

Model#: 6150 ROX

Range: 0 to 50 mg/L

Accuracy: 0-20 mg/L: +/-0.1 mg/l or 1% of the reading, whichever is greater

20 to 50 mg/L: +/- 5% of the reading

Resolution: 0.01 mg/L

Parameter: pH
Units: pH units
Sensor Type: Glass combination electrode
Model#: 6589
Range: 0 to 14 units
Accuracy: +/- 0.2 units
Resolution: 0.01 units

Parameter: Turbidity
Units: nephelometric turbidity units (NTU)
Sensor Type: Optical
Model#: 6136
Range: 0 to 1000 NTU
Accuracy: +/-2% of reading or 0.3 NTU (whichever is greater)
Resolution: 0.1 NTU

Parameter: Chlorophyll
Units: RFU, micrograms/Liter
Sensor Type: Optical probe
Model#: 6025
Range: 0 to 400 ug/Liter; 0 to 100 RFU
Accuracy: Dependent on methodology
Resolution: 0.1 ug/L chl a, 0.1% RFU

Remarks on Sensor Specifications and Units

Conductivity:

Historically, specific conductivity data from HRECOS sites was reported in millisiemens/cm. However beginning in 2019, reporting switched to microsiemens/cm. All data files available on hrecos.org have been converted to reflect this change.

Salinity:

The 6600 series sondes report salinity in parts per thousand (ppt) units, the EXO sondes report practical salinity units (psu).

Turbidity:

The 6600 series sondes report turbidity in nephelometric turbidity units (NTU), the EXO sondes use formazin nephelometric units (FNU).

Chlorophyll and Phycocyanin Disclaimer:

YSI chlorophyll sensors (6025 or 599102-01) are designed to serve as a proxy for chlorophyll concentrations in the field for monitoring applications and complement traditional lab extraction methods; therefore, there are accuracy limitations associated with the data that are detailed in the YSI manual.