

Winter survey data from Lake Erie from 2018-2020

Website: <https://www.bco-dmo.org/dataset/809945>

Data Type: Cruise Results

Version: 4

Version Date: 2022-08-25

Project

» [Lake Erie Center for Fresh Waters and Human Health](#) (Great Lakes Center)

Contributors	Affiliation	Role
Bullerjahn, George S.	Bowling Green State University (BGSU)	Principal Investigator
Anderson, James T.	United States Coast Guard (USCG)	Co-Principal Investigator
McKay, Robert Michael	University of Windsor	Co-Principal Investigator
Rauch, Shannon	Woods Hole Oceanographic Institution (WHOI BCO-DMO)	BCO-DMO Data Manager
Soenen, Karen	Woods Hole Oceanographic Institution (WHOI BCO-DMO)	BCO-DMO Data Manager

Abstract

Winter survey data from Lake Erie collected on USCGC NEAH BAY, CCGS Limnos and M/V Orange Apex during 2018, 2019 and 2020.

Table of Contents

- [Coverage](#)
- [Dataset Description](#)
 - [Methods & Sampling](#)
 - [Data Processing Description](#)
- [Data Files](#)
- [Supplemental Files](#)
- [Parameters](#)
- [Instruments](#)
- [Deployments](#)
- [Project Information](#)
- [Funding](#)

Coverage

Spatial Extent: N:42.6225 E:-81.1059 S:41.5192 W:-83.15

Temporal Extent: 2018-11-29 - 2020-06-08

Methods & Sampling

See attached Supplemental File "Study Plan for the U.S. Coast Guard Survey of Lake Erie in Winter 2019" and "Study Plan for the U.S. Coast Guard Survey of Lake Erie in Winter 2020".

Data Processing Description

Notes on winter survey 2020:

- The 2020 was ice-free, so no Ice type data

BCO-DMO Processing:

Version 1

- changed date format from MM/DD/YYYY to YYYY-MM-DD;
- added ISO8601 date/time field;
- replaced spaces with underscores in column headers.

Version2

- Update the dataset with data from the 2019-2020 winter survey, making it a timeseries dataset (version 2 replaces version 1).
- changed date format from MM/DD/YYYY to YYYY-MM-DD;
- added ISO8601 date/time field;
- replaced spaces with underscores in column headers.
- Added survey plan to supplemental docs

Version 3

- On submitters request: divided the cell abundances by 1000 for the 2018-2019 dataset of the following columns: Aulacoseira_islandica, Stephanodiscus_spp, Fragilaria_spp, Skeletonema_spp, centric_small, Nitzschia, Aphanizomenon_flos_aquae, cryptomonads, Gymnodinium_sp, chlorophytes. Did not do this for the columns named Asterionella, Cyanobacteria, Dinoflagellates, Microflagellates sinc they were already correctly in cells/ml.
- Converted the decimal numbers to integers (no decimals) for all the columns metntioned above.

Version 4

- Version with updated locations (lat/lon).

[[table of contents](#) | [back to top](#)]

Data Files

File
winter_lake_erie_2018_2020_v4.csv (Comma Separated Values (.csv), 7.74 KB) MD5:1ee130bbf0d47c366c81f195d0fa6e8a Primary data file for dataset ID 809945

[[table of contents](#) | [back to top](#)]

Supplemental Files

File
Study Plan for the U.S. Coast Guard Survey of Lake Erie in Winter 2019 filename: Study_Plan_BGSU_USCoastGuard_Winter_2019.pdf (Portable Document Format (.pdf), 58.83 KB) MD5:533b64528f5699321ebc969c4d6d7f86 Study Plan for the U.S. Coast Guard Survey of Lake Erie in Winter 2019
Study Plan for the U.S. Coast Guard Survey of Lake Erie in Winter 2020. filename: Study_Plan_BGSU_USCoastGuard_Winter_2020_v.1.1.pdf(Portable Document Format (.pdf), 239.29 KB) MD5:9c68661d13f4b848a7b19b1f7a550564 Study Plan for the U.S. Coast Guard Survey of Lake Erie in Winter 2020.

[[table of contents](#) | [back to top](#)]

Parameters

Parameter	Description	Units
Station	Station of sample collection	unitless
Deployment	Cruise ID	unitless

Alternate_Deployment	(possibly remove this column?)	unitless
Date	Date of sample collection	unitless
Time	Time of sample collection	UTC
ISO_DateTime_UTC	Date and time (UTC) in ISO8601 format: YYYY-MM-DDTHH:MM:SSZ	UTC
Lat	Latitude of sample collection	dec degrees N
Long	Longitude of sample collection	dec degrees E
Max_Depth	Maximum depth of water	meters (m)
Sample_Depth	Depth of sample collection	meters (m)
Air_Temp	Air temperature	degrees Celsius (°C)
Water_Temp	Water temperature	degrees Celsius (°C)
Ice_cover	Percent ice cover around sampling area	percent (%)
Snow_cover	Percent snow cover on ice around sampling area	percent (%)
Ice_type	Ice type	unitless
Ice_thickness	Thickness of ice	centimeter (cm)
Sp_Conc	Specific conductance	microSiemen per cm ($\mu\text{S cm}^{-1}$)
Chl_a	Chlorophyll a	microgram per liter ($\mu\text{g L}^{-1}$)
NH3	Dissolved nutrients: Ammonia	milligram per liter (mg L ⁻¹)
CL	Dissolved nutrients: chloride	milligram per liter (mg L ⁻¹)
S04	Dissolved nutrients: sulphate	milligram per liter (mg L ⁻¹)

NO2	Dissolved nutrients: Nitrite	milligram per liter (mg L-1)
NO3	Dissolved nutrients: Nitrate	milligram per liter (mg L-1)
SIO2	Dissolved nutrients: silica	milligram per liter (mg L-1)
SRP	Dissolved nutrients: Soluble Reactive Phosphorus	milligram per liter (mg L-1)
Total_Phosphorus	Particulate nutrients: Total Phosphorus	milligram per liter (mg L-1)
Total_Nitrogen	Particulate nutrients: Total Nitrogen	milligram per liter (mg L-1)
Aulacoseira_islandica	Cell abundance: Aulacoseira islandica	Cells per milliliter (cells/mL)
Stephanodiscus_spp	Cell abundance: Stephanodiscus spp.	Cells per milliliter (cells/mL)
Fragilaria_spp	Cell abundance: Fragilaria spp.	Cells per milliliter (cells/mL)
Skeletonema_spp	Cell abundance: Skeletonema spp.	Cells per milliliter (cells/mL)
centric_small	Cell abundance: centric (small)	Cells per milliliter (cells/mL)
Nitzschia	Cell abundance: Nitzschia	Cells per milliliter (cells/mL)
Aphanizomenon_flos_aquae	Cell abundance: Aphanizomenon_flos_aquae	Cells per milliliter (cells/mL)
cryptomonads	Cell abundance: cryptomonads	Cells per milliliter (cells/mL)
Gymnodinium_sp	Cell abundance: Gymnodinium sp.	Cells per milliliter (cells/mL)
chlorophytes	Cell abundance: chlorophytes	Cells per milliliter (cells/mL)
Asterionella	Cell abundance: Asterionella	Cells per milliliter (cells/mL)
Cyanobacteria	Cell abundance: Cyanobacteria	Cells per milliliter (cells/mL)
Dinoflagellates	Cell abundance: Dinoflagellates	Cells per milliliter (cells/mL)

Microflagellates	Cell abundance: Microflagellates	Cells per milliliter (cells/mL)
------------------	----------------------------------	---------------------------------

[[table of contents](#) | [back to top](#)]

Instruments

Dataset-specific Instrument Name	stainless steel sampling bottle
Generic Instrument Name	Stainless Steel Sampling Bottle
Dataset-specific Description	Near-surface water is collected using a stainless steel sampling bottle. This approach has been adopted rather than use of Go-Flo bottles to accommodate working in ice.
Generic Instrument Description	A stainless steel sampling bottle used for collecting near surface samples (not a GO-FLO bottle)

Dataset-specific Instrument Name	TD-700 fluorometer
Generic Instrument Name	Turner Designs 700 Laboratory Fluorometer
Generic Instrument Description	The TD-700 Laboratory Fluorometer is a benchtop fluorometer designed to detect fluorescence over the UV to red range. The instrument can measure concentrations of a variety of compounds, including chlorophyll-a and fluorescent dyes, and is thus suitable for a range of applications, including chlorophyll, water quality monitoring and fluorescent tracer studies. Data can be output as concentrations or raw fluorescence measurements.

[[table of contents](#) | [back to top](#)]

Deployments

NB-2018-01

Website	https://www.bco-dmo.org/deployment/810593
Platform	USCGC NEAH BAY
Start Date	2018-11-29
End Date	2018-11-29

NB-2019-01

Website	https://www.bco-dmo.org/deployment/810600
Platform	USCGC NEAH BAY
Start Date	2019-02-26
End Date	2019-02-26

NB-2019-02

Website	https://www.bco-dmo.org/deployment/810606
Platform	USCGC NEAH BAY
Start Date	2019-03-11
End Date	2019-03-11

NB-2019-03

Website	https://www.bco-dmo.org/deployment/810613
Platform	CCGS Limnos
Start Date	2019-04-29
End Date	2019-05-03

NB-2019-04

Website	https://www.bco-dmo.org/deployment/862763
Platform	USCGC NEAH BAY
Start Date	2019-11-12
End Date	2019-11-13
Description	

NB-2020-01

Website	https://www.bco-dmo.org/deployment/862766
Platform	USCGC NEAH BAY
Start Date	2020-01-07
End Date	2020-01-07

NB-2020-02

Website	https://www.bco-dmo.org/deployment/862769
Platform	USCGC NEAH BAY
Start Date	2020-02-14
End Date	2020-02-14

NB-2020-03

Website	https://www.bco-dmo.org/deployment/862772
Platform	USCGC NEAH BAY
Start Date	2020-02-03
End Date	2020-02-03

OA-2020-01

Website	https://www.bco-dmo.org/deployment/862776
Platform	M/V Orange Apex
Start Date	2020-01-05
End Date	2020-01-05

OA-2020-02

Website	https://www.bco-dmo.org/deployment/862779
Platform	M/V Orange Apex
Start Date	2020-05-22
End Date	2020-05-22

OA-2020-03

Website	https://www.bco-dmo.org/deployment/862782
Platform	M/V Orange Apex
Start Date	2020-06-08
End Date	2020-06-08

[[table of contents](#) | [back to top](#)]

Project Information

Lake Erie Center for Fresh Waters and Human Health (Great Lakes Center)

Website: <https://www.bgsu.edu/great-lakes-center.html>

Coverage: Laurentian Great Lakes

NSF Award Abstract:

The Lake Erie Center for Fresh Waters and Human Health is a five-year, multi-institutional effort aimed at understanding the environmental factors and ongoing changes that influence the growth and toxicity of cyanobacterial harmful algal blooms (cHABs) in Lake Erie. The Center will support three research projects. Specifically these projects address the following aims: first, how environmental cues promote or constrain the proliferation of cHAB species in mixed populations; second, how environmental cues influence toxin production by cHAB species; third, how other member of the microbial assemblage influence cHAB growth and toxicity. The Center will provide a Community Engagement Core to lead outreach activities that will inform the general public on the effects of cHABs by efforts that include: (1) a community engaged scholarship training for scientists associated with the Center, (2) community-engaged scholarship training for practitioners or community members associated with the Center, and (3) a stakeholder needs assessment for Great Lakes and environmental health literacy to inform general outreach information needs. A citizen science engagement with charter boat captains will further develop a near real-time database on cHAB severity in Lake Erie, and the Facilities Core will provide metadata that not only serve the three stated research projects, but also yield a database available to all Great Lakes scientists. The outcomes are to involve community stakeholders and researchers in the Great Lakes on issues regarding human health, climate change and awareness of threats to our fresh water resources.

The Center is jointly supported by NSF and by the National Institute for Environmental Health Sciences (NIEHS).

This award reflects NSF's statutory mission and has been deemed worthy of support through evaluation using the Foundation's intellectual merit and broader impacts review criteria.

[[table of contents](#) | [back to top](#)]

Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1840715

[[table of contents](#) | [back to top](#)]