CTD profiles from the Lake Superior collected during various R/V Blue Heron cruises between 2000-2002 (IRONMAN project)

Website: https://www.bco-dmo.org/dataset/655211
Data Type: Cruise Results
Version:
Version Date: 2016-08-22

Project
» Trace Metal Limitation of Phytoplankton Productivity: Combined Immunological, Geochemical and Growth Assay Approaches in Lake Superior (IRONMAN)

Program
» Laurentian Great Lakes Ecosystem Studies (Laurentian Great Lakes Ecosystem Studies)

Contributors	Affiliation	Role
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Coverage

Spatial Extent: **N**:48 **E**:-84.833 **S**:46.667 **W**:-91.432
Temporal Extent: 2000-06-07 - 2002-09-13

Dataset Description

CTD profile data

Methods & Sampling

CTD casts were conducted during R/V Blue Heron cruises at designated stations.

Data Processing Description

BCO-DMO Data Manager Processing Notes:
* added a conventional header with dataset name, PI name, version date
* modified parameter names to conform with BCO-DMO naming conventions
* blank values replaced with no data value 'nd'

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Data Files

File
IRONMAN_CTD.csv (Comma Separated Values (.csv), 42.02 MB) MD5:1a67f135758bf50fb32c135de4dc6845 Primary data file for dataset ID 655211

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Parameters

Parameter	Description	Units
CruiseID	cruise identifier	unitless
Station	station identifier	unitless
Date	date (UTC) in format YYYYMMDD	unitless
Time	time (UTC) in format HHMMSS	unitless
Lat	latitude of the station	decimal degrees
Lon	longitude of the station; west is negative	decimal degrees
temp	temperature	degrees C
cond	actual conductivity	microSiemens per centimeter
cond_spec	specific conductance (actual conductivity at 25 degrees C)	microSiemens per centimeter
beam_trans	beam transmission	percent
fluor	fluorescence	miligrams per meter cubed
O2_mg_L	dissolved oxygen	milileters per liter
ISO_DateTime_UTC	Date/Time (UTC) in ISO format YYYY-MM-DDTHH:MM:SS[.xx]	unitless
PAR	Photosynthetically Active Radiation (Biospherical/Licor)	microEinsteins per meter squared per second
press	Pressure at time of CTD sample.	decibars

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Instruments

Dataset-specific Instrument Name	CTD Sea-Bird SBE 911plus
Generic Instrument Name	CTD Sea-Bird SBE 911plus
Generic Instrument Description	The Sea-Bird SBE 911 plus is a type of CTD instrument package for continuous measurement of conductivity, temperature and pressure. The SBE 911 plus includes the SBE 9plus Underwater Unit and the SBE 11plus Deck Unit (for real-time readout using conductive wire) for deployment from a vessel. The combination of the SBE 9 plus and SBE 11 plus is called a SBE 911 plus. The SBE 9 plus uses Sea-Bird's standard modular temperature and conductivity sensors (SBE 3 plus and SBE 4). The SBE 9 plus CTD can be configured with up to eight auxiliary sensors to measure other parameters including dissolved oxygen, pH, turbidity, fluorescence, light (PAR), light transmission, etc.). more information from Sea-Bird Electronics

Dataset-specific Instrument Name	
Generic Instrument Name	Fluorometer
Generic Instrument Description	A fluorometer or fluorimeter is a device used to measure parameters of fluorescence: its intensity and wavelength distribution of emission spectrum after excitation by a certain spectrum of light. The instrument is designed to measure the amount of stimulated electromagnetic radiation produced by pulses of electromagnetic radiation emitted into a water sample or in situ.

Dataset-specific Instrument Name	
Generic Instrument Name	Oxygen Sensor
Generic Instrument Description	An electronic device that measures the proportion of oxygen (O2) in the gas or liquid being analyzed

Dataset-specific Instrument Name	
Generic Instrument Name	Transmissometer
Generic Instrument Description	A transmissometer measures the beam attenuation coefficient of the lightsource over the instrument's path-length. This instrument designation is used when specific manufacturer, make and model are not known.

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Deployments

BH98-IRONMAN1

Website	https://www.bco-dmo.org/deployment/58799
Platform	R/V Blue Heron
Start Date	2000-06-07
End Date	2000-06-08
Description	locations from CTD profile stations

IRONMAN2

Website	https://www.bco-dmo.org/deployment/682129
Platform	R/V Blue Heron
Start Date	2009-09-17
End Date	2009-09-20
Description	Locations and times extracted from CTD station data

IRONMAN3

Website	https://www.bco-dmo.org/deployment/682130
Platform	R/V Blue Heron
Start Date	2001-05-29
End Date	2001-06-01
Description	Locations and times extracted from CTD station data.

IRONMAN4

Website	https://www.bco-dmo.org/deployment/682131
Platform	R/V Blue Heron
Start Date	2001-07-24
End Date	2001-07-31
Description	Locations and times extracted from CTD station data.

IRONMAN5

Website	https://www.bco-dmo.org/deployment/682132
Platform	R/V Blue Heron
Start Date	2002-09-10
End Date	2002-09-13
Description	Locations and times extracted from CTD station data.

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Project Information

Trace Metal Limitation of Phytoplankton Productivity: Combined Immunological, Geochemical and Growth Assay Approaches in Lake Superior (IRONMAN)

Website: http://www.tc.umn.edu/~stern007/

Coverage: Lake Superior

ABSTRACT FROM NSF AWARDS: OCE-9819324 / OCE-9902660 / OCE- 9902658

Although a number of recent studies have verified that primary production in various marine environments may be limited by trace metal availability, there has not yet been a similar body of research for freshwater systems, even the inland sea system of the North American Great Lakes. In this project researchers from the University of Minnesota, Rutgers University, and Bowling Green State University will investigate the existence, mechanisms, spatial-temporal extent, and significance of trace metal limitation to primary production in Lake Superior. They will take a three-pronged approach. First, to quantify and characterize total and bioactive trace metal concentrations, Al, Fe, Mn, Zn, Cu, Cd, and Co would be determined in solution, in suspended particles, and in plankton in the field. Secondly, immunological and fluorescence assays would be used to assess metal deficiency in algae in the field. Third, trace metal enrichment experiments would be used to assess limitation experimentally in the laboratory. The three field sites would be chosen to take advantage of existing data available from the NSF-sponsored KITES program.

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Program Information

Laurentian Great Lakes Ecosystem Studies (Laurentian Great Lakes Ecosystem Studies)

Website: http://www.tc.umn.edu/~stern007/

Coverage: Laurentian Great Lakes

A series of studies concerned with the chemistry and biology of the Laurentian Great Lakes. These different studies share a focus on the dynamics of organic pools of carbon, nitrogen and phosphorus, and the stoichiometric linkages among these elements. At different times, work also has focused on trace metal dynamics and interactions with biota, the rates of primary production and herbivory, rates and patterns of primary productivity, and the century-long, steady trend of increasing nitrate in Earth's largest lake by area. Microbial populations have been investigated and linked to these chemical properties.

This Program was created by BCO-DMO staff to bring various Laurentian Great Lakes Research projects under one umbrella for improved discovery and access.

Dates: 1998 - 2014
Funding: NSF/OCE and Minnesota Sea Grant

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-9819324
NSF Division of Ocean Sciences (NSF OCE)	OCE-9902660
NSF Division of Ocean Sciences (NSF OCE)	OCE-9902658

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