

# CTD data collected during MOCNESS hauls in the Georges Bank from 1993-1997 on the R/V Albatross IV, R/V Endeavor, R/V Oceanus, R/V Seward Johnson (GB project)

**Website:** <https://www.bco-dmo.org/dataset/2512>

**Version:** 2005-10-27

**Version Date:** 2008-09-30

## Project

» [U.S. GLOBEC Georges Bank](#) (GB)

## Program

» [U.S. GLOBal ocean ECosystems dynamics](#) (U.S. GLOBEC)

Contributors	Affiliation	Role
<a href="#">Bollens, Steve M.</a>	Washington State University	Principal Investigator
<a href="#">Lough, Greg</a>	National Marine Fisheries Service (NMFS)	Principal Investigator
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## Dataset Description

The MOCNESS is based on the Tucker Trawl principle (Tucker, 1951). The particular MOCNESS system from which these CTD data came is one of three net systems. The MOCNESS-.25 carries nine rectangular nets (1/4-m<sup>2</sup>), usually with 64 micrometer mesh. In all three MOCNESS systems, the underwater unit sends a data frame, comprised of temperature, depth, conductivity, net-frame angle, flow count, time, number of open net, and net opening/closing, to the deck unit in a compressed hexadecimal format every 2 seconds and from the deck unit to a microcomputer every 4 seconds. Temperature (to approximately 0.01 deg C) and conductivity are measured with SEABIRD sensors. Normally, a modified T.S.K.-flowmeter is used. Both the temperature and conductivity sensors and the flowmeter are mounted on top of the frame so that they face horizontally when the frame is at a towing angle of 45deg. Calculations of salinity (to approximately 0.01 o/oo S), potential temperature (theta), potential density (sigma), the oblique and vertical velocities of the net, and the approximate volume filtered by each net are made after each string of data has been received by the computer. (Wiebe *et al.*, 1985) In addition, data were collected from four other sensors attached to the frame: the Transmissometer, the Fluorometer, the Downwelling light sensor, and the Oxygen sensor. A SeaBird underwater pump was also included in the sensor suite.

**It should be noted that whenever the data are of questionable value, 50.000 is written in the particular data field.**

Unless otherwise indicated, these data have not been post-processed.

For additional information, contact the [chief scientist](#) for the cruise or the [U.S. GLOBEC Data Management Office](#) (DMO).

**Note:** Some variables have been eliminated from the display but are nevertheless available. These variables include: oxycurrent, oxytemp, tempco, and echo.

## References

Fofonoff and Millard, 1983, UNESCO technical papers in Marine Sciences, #44.

Tucker, G.H., 1951. Relation of fishes and other organisms to the scattering of underwater sound. *Journal of Marine Research*, **10**: 215-238.

Wiebe, P.H., K.H. Burt, S. H. Boyd, A.W. Morton, 1976. The multiple opening/closing net and environmental sensing system for sampling zooplankton. *Journal of Marine Research*, **34(3)**: 313-326.

Wiebe, P.H., A.W. Morton, A.M. Bradley, R.H. Backus, J.E. Craddock, V. Barber, T.J. Cowles and G.R. Flierl, 1985. New developments in the MOCNESS, an apparatus for sampling zooplankton and micronekton. *Marine Biology*, **87**: 313-323.

*updated September 30, 2008. mda*

## Methods & Sampling

The underwater unit sends a data frame, comprised of temperature, depth, conductivity, net-frame angle, flow count, time, number of open net, and net opening/closing, to the deck unit in a compressed hexadecimal format every 2 seconds and from the deck unit to a microcomputer every 4 seconds... Temperature (to approximately 0.01 deg C) and conductivity are measured with SEABIRD sensors. Normally, a modified T.S.K.-flowmeter is used... Both the temperature and conductivity sensors and the flowmeter are mounted on top of the frame so that they face horizontally when the frame is at a towing angle of 45deg... Calculations of salinity (to approximately 0.01 o/oo S), potential temperature (theta), potential density (sigma), the oblique and vertical velocities of the net, and the approximate volume filtered by each net are made after each string of data has been received by the computer.

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## Data Files

File
<b>ctd_mocness.csv</b> (Comma Separated Values (.csv), 5.26 MB) MD5:444bca9fd9e342a7ccb45fb94f711bf2 Primary data file for dataset ID 2512

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## Parameters

Parameter	Description	Units
cruiseid	Cruise identification, e.g. EN261, for Endeavor cr. 261	none
year	Four digit year	
brief_desc	Brief cruise description, such as: broad-scale, process, mooring, etc.,	
tow	Tow number	
day_local	Day of month, local time, 1 - 31	
month_local	Month of year, local time 1 - 12	
station	station number, from event log	
station_std	standard station number, from event log	
yrday_local	year day, Julian Calendar local time. January 1 = yrday 1	decimal day
potemp	potential temperature (International Practical Temperature Scale - 68 ,or 90. When known, the scale will be reported in the units field of the documentation file.	degrees C
sal	salinity, calculated from the CTD 'primary sensors' of conductivity and temperature, Practical Salinity Scale, dimensionless. <sup>1</sup> Depending on the input source, salinity from the primary sensors can have a variety of names i.e. s0, s00, s1, sal0, sal00, sal1. Change to DMO term sal.	unitless
sigma_0	potential density at the surface	kg/m3-1000
flvolt	fluorescence (0-5 volts)	volts
angle	angle of net frame relative to vertical (0-89degrees)	degrees
flow	consecutive flow counts	counts
hzvel	horizontal net velocity	meters/minute
vtvel	vertical net velocity	meters/minute
vol_net	volume filtered	cubic meters
trans_v	light transmission (0-5 volts)	volts
net	sequential MOCNESS net number	
lat	latitude, negative = South	decimal degrees
press	depth of sample	decibars
lon	longitude, negative = West	decimal degrees
time_local	time of day; local time using 24 hour clock.	HHmm.m

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## Instruments

<b>Dataset-specific Instrument Name</b>	CTD MOCNESS
<b>Generic Instrument Name</b>	CTD MOCNESS
<b>Generic Instrument Description</b>	The CTD part of the MOCNESS includes 1) a pressure (depth) sensor which is a thermally isolated titanium strain gauge with a standard range of 0-5000 decibars full scale, 2) A Sea Bird temperature sensor whose frequency output is measured and sent to the surface for logging and conversion to temperature by the software in the MOCNESS computer (The system allows better than 1 milli-degree resolution at 10 Hz sampling rate), and 3) A Sea Bird conductivity sensor whose output frequency is measured and sent to the surface for logging and conversion to conductivity by the software in the computer (The system allows better than 1 micro mho/cm at 10 Hz sampling rate). The data rate depends on the speed of the computer and the quality of the cable. With a good cable, the system can operate at 2400 baud, sampling all variables at 2 times per second. One sample every 4 seconds is the default, although the hardware can operate much faster. (From The MOCNESS Manual)

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## Deployments

### AL9306

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57366">https://www.bco-dmo.org/deployment/57366</a>
<b>Platform</b>	R/V Albatross IV
<b>Report</b>	<a href="http://globec.whoi.edu/globec-dir/reports/al9306/AL9306DataReport.pdf">http://globec.whoi.edu/globec-dir/reports/al9306/AL9306DataReport.pdf</a>
<b>Start Date</b>	1993-05-18
<b>End Date</b>	1993-05-29
<b>Description</b>	<p>process</p> <p><b>Methods &amp; Sampling</b></p> <p>The underwater unit sends a data frame, comprised of temperature, depth, conductivity, net-frame angle, flow count, time, number of open net, and net opening/closing, to the deck unit in a compressed hexadecimal format every 2 seconds and from the deck unit to a microcomputer every 4 seconds... Temperature (to approximately 0.01 deg C) and conductivity are measured with SEABIRD sensors. Normally, a modified T.S.K.-flowmeter is used... Both the temperature and conductivity sensors and the flowmeter are mounted on top of the frame so that they face horizontally when the frame is at a towing angle of 45deg... Calculations of salinity (to approximately 0.01 o/oo S), potential temperature (theta), potential density (sigma), the oblique and vertical velocities of the net, and the approximate volume filtered by each net are made after each string of data has been received by the computer.</p>

### AL9403II

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57368">https://www.bco-dmo.org/deployment/57368</a>
<b>Platform</b>	R/V Albatross IV
<b>Report</b>	<a href="http://globec.who.edu/globec-dir/reports/al9403.2/AL9403.2.pdf">http://globec.who.edu/globec-dir/reports/al9403.2/AL9403.2.pdf</a>
<b>Start Date</b>	1994-05-17
<b>End Date</b>	1994-05-28
<b>Description</b>	<p>process</p> <p><b>Methods &amp; Sampling</b></p> <p>The underwater unit sends a data frame, comprised of temperature, depth, conductivity, net-frame angle, flow count, time, number of open net, and net opening/closing, to the deck unit in a compressed hexadecimal format every 2 seconds and from the deck unit to a microcomputer every 4 seconds... Temperature (to approximately 0.01 deg C) and conductivity are measured with SEABIRD sensors. Normally, a modified T.S.K.-flowmeter is used... Both the temperature and conductivity sensors and the flowmeter are mounted on top of the frame so that they face horizontally when the frame is at a towing angle of 45deg... Calculations of salinity (to approximately 0.01 o/oo S), potential temperature (theta), potential density (sigma), the oblique and vertical velocities of the net, and the approximate volume filtered by each net are made after each string of data has been received by the computer.</p>

## EN268

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57409">https://www.bco-dmo.org/deployment/57409</a>
<b>Platform</b>	R/V Endeavor
<b>Start Date</b>	1995-06-26
<b>End Date</b>	1995-07-06
<b>Description</b>	<p>process</p> <p><b>Methods &amp; Sampling</b></p> <p>The underwater unit sends a data frame, comprised of temperature, depth, conductivity, net-frame angle, flow count, time, number of open net, and net opening/closing, to the deck unit in a compressed hexadecimal format every 2 seconds and from the deck unit to a microcomputer every 4 seconds... Temperature (to approximately 0.01 deg C) and conductivity are measured with SEABIRD sensors. Normally, a modified T.S.K.-flowmeter is used... Both the temperature and conductivity sensors and the flowmeter are mounted on top of the frame so that they face horizontally when the frame is at a towing angle of 45deg... Calculations of salinity (to approximately 0.01 o/oo S), potential temperature (theta), potential density (sigma), the oblique and vertical velocities of the net, and the approximate volume filtered by each net are made after each string of data has been received by the computer.</p>

## OC301

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57447">https://www.bco-dmo.org/deployment/57447</a>
<b>Platform</b>	R/V Oceanus
<b>Report</b>	<a href="http://globec.whoi.edu/globec-dir/reports/oc301/oc301.html">http://globec.whoi.edu/globec-dir/reports/oc301/oc301.html</a>
<b>Start Date</b>	1997-04-05
<b>End Date</b>	1997-04-17
<b>Description</b>	<p>process fish vital rates</p> <p><b>Methods &amp; Sampling</b>  The underwater unit sends a data frame, comprised of temperature, depth, conductivity, net-frame angle, flow count, time, number of open net, and net opening/closing, to the deck unit in a compressed hexadecimal format every 2 seconds and from the deck unit to a microcomputer every 4 seconds... Temperature (to approximately 0.01 deg C) and conductivity are measured with SEABIRD sensors. Normally, a modified T.S.K.-flowmeter is used... Both the temperature and conductivity sensors and the flowmeter are mounted on top of the frame so that they face horizontally when the frame is at a towing angle of 45deg... Calculations of salinity (to approximately 0.01 o/oo S), potential temperature (theta), potential density (sigma), the oblique and vertical velocities of the net, and the approximate volume filtered by each net are made after each string of data has been received by the computer.</p>

### OC303

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57449">https://www.bco-dmo.org/deployment/57449</a>
<b>Platform</b>	R/V Oceanus
<b>Report</b>	<a href="http://globec.whoi.edu/globec-dir/reports/oc303/oc303.html">http://globec.whoi.edu/globec-dir/reports/oc303/oc303.html</a>
<b>Start Date</b>	1997-05-06
<b>End Date</b>	1997-05-23
<b>Description</b>	<p>process</p> <p><b>Methods &amp; Sampling</b>  The underwater unit sends a data frame, comprised of temperature, depth, conductivity, net-frame angle, flow count, time, number of open net, and net opening/closing, to the deck unit in a compressed hexadecimal format every 2 seconds and from the deck unit to a microcomputer every 4 seconds... Temperature (to approximately 0.01 deg C) and conductivity are measured with SEABIRD sensors. Normally, a modified T.S.K.-flowmeter is used... Both the temperature and conductivity sensors and the flowmeter are mounted on top of the frame so that they face horizontally when the frame is at a towing angle of 45deg... Calculations of salinity (to approximately 0.01 o/oo S), potential temperature (theta), potential density (sigma), the oblique and vertical velocities of the net, and the approximate volume filtered by each net are made after each string of data has been received by the computer.</p>

### SJ9503

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57482">https://www.bco-dmo.org/deployment/57482</a>
<b>Platform</b>	R/V Seward Johnson
<b>Start Date</b>	1995-03-14
<b>End Date</b>	1995-03-24
<b>Description</b>	<p>process larvae</p> <p><b>Methods &amp; Sampling</b>  The underwater unit sends a data frame, comprised of temperature, depth, conductivity, net-frame angle, flow count, time, number of open net, and net opening/closing, to the deck unit in a compressed hexadecimal format every 2 seconds and from the deck unit to a microcomputer every 4 seconds... Temperature (to approximately 0.01 deg C) and conductivity are measured with SEABIRD sensors. Normally, a modified T.S.K.-flowmeter is used... Both the temperature and conductivity sensors and the flowmeter are mounted on top of the frame so that they face horizontally when the frame is at a towing angle of 45deg... Calculations of salinity (to approximately 0.01 o/oo S), potential temperature (theta), potential density (sigma), the oblique and vertical velocities of the net, and the approximate volume filtered by each net are made after each string of data has been received by the computer.</p>

### SJ9505

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57484">https://www.bco-dmo.org/deployment/57484</a>
<b>Platform</b>	R/V Seward Johnson
<b>Report</b>	<a href="http://globec.whoi.edu/globec-dir/reports/sj9505/sj9505.html">http://globec.whoi.edu/globec-dir/reports/sj9505/sj9505.html</a>
<b>Start Date</b>	1995-04-07
<b>End Date</b>	1995-04-21
<b>Description</b>	<p>Process cruise looking for cod and haddock larvae.</p> <p><b>Methods &amp; Sampling</b>  The underwater unit sends a data frame, comprised of temperature, depth, conductivity, net-frame angle, flow count, time, number of open net, and net opening/closing, to the deck unit in a compressed hexadecimal format every 2 seconds and from the deck unit to a microcomputer every 4 seconds... Temperature (to approximately 0.01 deg C) and conductivity are measured with SEABIRD sensors. Normally, a modified T.S.K.-flowmeter is used... Both the temperature and conductivity sensors and the flowmeter are mounted on top of the frame so that they face horizontally when the frame is at a towing angle of 45deg... Calculations of salinity (to approximately 0.01 o/oo S), potential temperature (theta), potential density (sigma), the oblique and vertical velocities of the net, and the approximate volume filtered by each net are made after each string of data has been received by the computer.</p>

### SJ9507

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57486">https://www.bco-dmo.org/deployment/57486</a>
<b>Platform</b>	R/V Seward Johnson
<b>Report</b>	<a href="http://globec.whoi.edu/globec-dir/reports/sj9507/SJ9507.pdf">http://globec.whoi.edu/globec-dir/reports/sj9507/SJ9507.pdf</a>
<b>Start Date</b>	1995-05-08
<b>End Date</b>	1995-05-26
<b>Description</b>	<p>process larvae</p> <p><b>Methods &amp; Sampling</b></p> <p>The underwater unit sends a data frame, comprised of temperature, depth, conductivity, net-frame angle, flow count, time, number of open net, and net opening/closing, to the deck unit in a compressed hexadecimal format every 2 seconds and from the deck unit to a microcomputer every 4 seconds... Temperature (to approximately 0.01 deg C) and conductivity are measured with SEABIRD sensors. Normally, a modified T.S.K.-flowmeter is used... Both the temperature and conductivity sensors and the flowmeter are mounted on top of the frame so that they face horizontally when the frame is at a towing angle of 45deg... Calculations of salinity (to approximately 0.01 o/oo S), potential temperature (theta), potential density (sigma), the oblique and vertical velocities of the net, and the approximate volume filtered by each net are made after each string of data has been received by the computer.</p>

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## Project Information

### U.S. GLOBEC Georges Bank (GB)

**Website:** [http://globec.whoi.edu/globec\\_program.html](http://globec.whoi.edu/globec_program.html)

**Coverage:** Georges Bank, Gulf of Maine, Northwest Atlantic Ocean

The U.S. GLOBEC [Georges Bank](#) Program is a large multi- disciplinary multi-year oceanographic effort. The proximate goal is to understand the population dynamics of key species on the Bank - Cod, [Haddock](#), and two species of zooplankton ([Calanus finmarchicus](#) and [Pseudocalanus](#)) - in terms of their coupling to the physical environment and in terms of their [predators and prey](#). The ultimate goal is to be able to predict changes in the distribution and abundance of these species as a result of changes in their physical and biotic environment as well as to anticipate how their populations might respond to climate change.

The effort is substantial, requiring broad-scale surveys of the entire Bank, and process studies which focus both on the links between the target species and their physical environment, and the determination of fundamental aspects of these species' life history (birth rates, growth rates, death rates, etc).

Equally important are the modelling efforts that are ongoing which seek to provide realistic predictions of the flow field and which utilize the life history information to produce an integrated view of the dynamics of the populations.

The U.S. GLOBEC Georges Bank [Executive Committee \(EXCO\)](#) provides program leadership and effective communication with the funding agencies.

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## Program Information

### U.S. GLOBal ocean ECosystems dynamics (U.S. GLOBEC)



**Website:** <http://www.usglobec.org/>

**Coverage:** Global

U.S. GLOBEC (GLOBAL ocean ECosystems dynamics) is a research program organized by oceanographers and fisheries scientists to address the question of how global climate change may affect the abundance and production of animals in the sea.

The U.S. GLOBEC Program currently had major research efforts underway in the Georges Bank / Northwest Atlantic Region, and the Northeast Pacific (with components in the California Current and in the Coastal Gulf of Alaska). U.S. GLOBEC was a major contributor to International GLOBEC efforts in the Southern Ocean and Western Antarctic Peninsula (WAP).

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## Funding

Funding Source	Award
National Science Foundation (NSF)	<a href="#">unknown GB NSF</a>
National Oceanic and Atmospheric Administration (NOAA)	<a href="#">unknown GB NOAA</a>

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