

# CTD data collected during MOCNESS tows to Georges Bank and the Gulf of Maine on the US GLOBEC Georges Bank Broadscale and Process cruises, 1994-1999

Website: <https://www.bco-dmo.org/dataset/2302>

Data Type: Cruise Results

Version: 1

Version Date: 2005-10-27

## Project

» [U.S. GLOBEC Georges Bank](#) (GB)

## Program

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

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## Abstract

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-10 (with 10 m<sup>2</sup> nets) carries 6 nets of 3.0-mm circular mesh which are opened and closed sequentially by commands through conducting cable from the surface (Wiebe et al., 1976). In all three 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.

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## Coverage

**Spatial Extent: N:76.1552 E:113.3667 S:0.0333 W:-138.9962**

**Temporal Extent: 1994-05-17 - 1999-06-24**

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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-10 (with 10 m<sup>2</sup> nets) carries 6 nets of 3.0-mm circular mesh which are opened and closed sequentially by commands through conducting cable from the surface (Wiebe *et al.*, 1976). In all three 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.**

The following notes are cruise-specific:

**OC319:** Lats and Lons for first two tows are missing because gps string not yet available.

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 October 27 2005, gfh

## Acquisition Description

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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## Parameters

Parameter	Description	Units
cruiseid	Cruise identification, e.g. EN261, for Endeavor cr. 261	
year	Four digit year, local time	
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 eventlog	
yday_local	year day, Julian Calendar local time	decimal day
time_local	time of day; local time using 24 hour clock.	HHmm.m
press	depth of sample	meters
temp	temperature	degrees C.
potemp	potential temperature <sup>1</sup>	degrees C.
sal	salinity calculated from conductivity; if salinity exceeds 50 or is less than 0 o/oo, salinity is set to 50.	
sigma_0	potential density <sup>1</sup> at the surface	kg/m <sup>3</sup> -1000
flvolt	fluorescence (0-5 volts)	volts
angle	angle of net frame relative to vertical (0-89 degrees)	
flow	consecutive flow counts	
hzvel	horizontal net velocity m/min	meters/minute
vtvel	vertical net velocity m/min	meters/minute
vol_net	volume filtered	meters <sup>3</sup>
trans_v	light transmission (0-5 volts)	volts
net	sequential MOCNESS net number	
lat	latitude, negative = South	decimal degrees
lon	longitude, negative = West	decimal degrees
datatype	MOCNESS size	

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## Instruments

<b>Dataset-specific Instrument Name</b>	MOCNESS.25
<b>Generic Instrument Name</b>	MOCNESS.25
<b>Dataset-specific Description</b>	The MOCNESS-.25 carries nine rectangular nets (1/4-m <sup>2</sup> ), usually with 64 micrometer mesh.
<b>Generic Instrument Description</b>	The Multiple Opening/Closing Net and Environmental Sensing System or MOCNESS is a family of net systems based on the Tucker Trawl principle. The MOCNESS-1/4 carries nine 1/4-m <sup>2</sup> nets usually of 64 micrometer mesh and is used to sample the larger micro-zooplankton.

<b>Dataset-specific Instrument Name</b>	MOCNESS1
<b>Generic Instrument Name</b>	MOCNESS1
<b>Dataset-specific Description</b>	The MOCNESS-1 has nine rectangular nets (1m x 1.4 m) which are opened and closed sequentially by commands through conducting cable from the surface (Wiebe et al., 1976).
<b>Generic Instrument Description</b>	The Multiple Opening/Closing Net and Environmental Sensing System or MOCNESS is a family of net systems based on the Tucker Trawl principle. The MOCNESS-1 carries nine 1-m <sup>2</sup> nets usually of 335 micrometer mesh and is intended for use with the macrozooplankton. All nets are black to reduce contrast with the background. A motor/toggle release assembly is mounted on the top portion of the frame and stainless steel cables with swaged fittings are used to attach the net bar to the toggle release. A stepping motor in a pressure compensated case filled with oil turns the escapement crankshaft of the toggle release which sequentially releases the nets to an open then closed position on command from the surface. -- from the MOCNESS Operations Manual (1999 + 2003).

<b>Dataset-specific Instrument Name</b>	MOCNESS10
<b>Generic Instrument Name</b>	MOCNESS10
<b>Dataset-specific Description</b>	The MOCNESS-10 (with 10 m <sup>2</sup> nets) carries 6 nets of 3.0-mm circular mesh.
<b>Generic Instrument Description</b>	The Multiple Opening/Closing Net and Environmental Sensing System (MOCNESS) is based on the Tucker Trawl principle (Tucker, 1951). The MOCNESS-10 (with 10 m <sup>2</sup> nets) carries 6 nets of 3.0-mm circular mesh which are opened and closed sequentially by commands through conducting cable from the surface (Wiebe et al., 1976). In this system, "the underwater unit sends a data frame, comprising 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" (Wiebe et al., 1985).

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## Deployments

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>Acquisition Description</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...</p> <p>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>

**AL9508**

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57373">https://www.bco-dmo.org/deployment/57373</a>
<b>Platform</b>	R/V Albatross IV
<b>Report</b>	<a href="http://globec.who.edu/globec-dir/reports/al9508/a9508rp2.HTM">http://globec.who.edu/globec-dir/reports/al9508/a9508rp2.HTM</a>
<b>Start Date</b>	1995-07-10
<b>End Date</b>	1995-07-20
<b>Description</b>	<p>broad-scale</p> <p><b>Acquisition Description</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...</p> <p>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>

**AL9605**

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57375">https://www.bco-dmo.org/deployment/57375</a>
<b>Platform</b>	R/V Albatross IV
<b>Report</b>	<a href="http://globec.who.edu/globec-dir/reports/al9605/al9605.html">http://globec.who.edu/globec-dir/reports/al9605/al9605.html</a>
<b>Start Date</b>	1996-05-06
<b>End Date</b>	1996-05-17
<b>Description</b>	<p>broad-scale</p> <p><b>Acquisition Description</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...</p> <p>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>

AL9701

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57378">https://www.bco-dmo.org/deployment/57378</a>
<b>Platform</b>	R/V Albatross IV
<b>Report</b>	<a href="http://globec.who.edu/globec-dir/reports/al9701/cral9701.htm">http://globec.who.edu/globec-dir/reports/al9701/cral9701.htm</a>
<b>Start Date</b>	1997-01-13
<b>End Date</b>	1997-01-20
<b>Description</b>	<p>broad-scale</p> <p><b>Acquisition Description</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...</p> <p>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>

**AL9707**

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57380">https://www.bco-dmo.org/deployment/57380</a>
<b>Platform</b>	R/V Albatross IV
<b>Report</b>	<a href="http://globec.who.edu/globec-dir/reports/al9707/al9707.html">http://globec.who.edu/globec-dir/reports/al9707/al9707.html</a>
<b>Start Date</b>	1997-06-18
<b>End Date</b>	1997-06-28
<b>Description</b>	<p>broad-scale</p> <p><b>Acquisition Description</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...</p> <p>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>

AL9801

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57382">https://www.bco-dmo.org/deployment/57382</a>
<b>Platform</b>	R/V Albatross IV
<b>Report</b>	<a href="http://globec.who.edu/globec-dir/reports/al9801/al9801.html">http://globec.who.edu/globec-dir/reports/al9801/al9801.html</a>
<b>Start Date</b>	1998-01-07
<b>End Date</b>	1998-01-19
<b>Description</b>	<p>broad-scale</p> <p><b>Acquisition Description</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...</p> <p>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>

**AL9806**

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57384">https://www.bco-dmo.org/deployment/57384</a>
<b>Platform</b>	R/V Albatross IV
<b>Report</b>	<a href="http://globec.who.edu/globec-dir/reports/al9806/al9806.html">http://globec.who.edu/globec-dir/reports/al9806/al9806.html</a>
<b>Start Date</b>	1998-05-13
<b>End Date</b>	1998-05-22
<b>Description</b>	<p>broad-scale</p> <p><b>Acquisition Description</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...</p> <p>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>

**AL9808**

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57385">https://www.bco-dmo.org/deployment/57385</a>
<b>Platform</b>	R/V Albatross IV
<b>Report</b>	<a href="http://globec.who.edu/globec-dir/reports/al9808/al9808.html">http://globec.who.edu/globec-dir/reports/al9808/al9808.html</a>
<b>Start Date</b>	1998-06-16
<b>End Date</b>	1998-06-26
<b>Description</b>	<p>broad-scale</p> <p><b>Acquisition Description</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...</p> <p>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>

AL9901

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57386">https://www.bco-dmo.org/deployment/57386</a>
<b>Platform</b>	R/V Albatross IV
<b>Report</b>	<a href="http://globec.who.edu/globec-dir/reports/al9901/al9901.html">http://globec.who.edu/globec-dir/reports/al9901/al9901.html</a>
<b>Start Date</b>	1999-01-12
<b>End Date</b>	1999-01-24
<b>Description</b>	<p>broad-scale</p> <p><b>Acquisition Description</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...</p> <p>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>

**AL9906**

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57388">https://www.bco-dmo.org/deployment/57388</a>
<b>Platform</b>	R/V Albatross IV
<b>Report</b>	<a href="http://globec.who.edu/globec-dir/reports/al9906/al9906rpt.html">http://globec.who.edu/globec-dir/reports/al9906/al9906rpt.html</a>
<b>Start Date</b>	1999-06-14
<b>End Date</b>	1999-06-24
<b>Description</b>	<p>broad-scale</p> <p><b>Acquisition Description</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...</p> <p>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>

EN261

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57401">https://www.bco-dmo.org/deployment/57401</a>
<b>Platform</b>	R/V Endeavor
<b>Start Date</b>	1995-02-10
<b>End Date</b>	1995-02-20
<b>Description</b>	<p>broad-scale</p> <p><b>Acquisition Description</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...</p> <p>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>

EN263

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57403">https://www.bco-dmo.org/deployment/57403</a>
<b>Platform</b>	R/V Endeavor
<b>Report</b>	<a href="http://globec.who.edu/globec-dir/reports/en263/EN263.pdf">http://globec.who.edu/globec-dir/reports/en263/EN263.pdf</a>
<b>Start Date</b>	1995-03-13
<b>End Date</b>	1995-03-24
<b>Description</b>	<p>broad-scale</p> <p><b>Acquisition Description</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...</p> <p>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>

**EN265**

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57405">https://www.bco-dmo.org/deployment/57405</a>
<b>Platform</b>	R/V Endeavor
<b>Start Date</b>	1995-04-11
<b>End Date</b>	1995-04-22
<b>Description</b>	<p>broad-scale</p> <p><b>Acquisition Description</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...</p> <p>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>Acquisition Description</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...</p> <p>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>

EN276

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57413">https://www.bco-dmo.org/deployment/57413</a>
<b>Platform</b>	R/V Endeavor
<b>Report</b>	<a href="http://globec.who.edu/globec-dir/reports/en276/EN276.pdf">http://globec.who.edu/globec-dir/reports/en276/EN276.pdf</a>
<b>Start Date</b>	1996-01-10
<b>End Date</b>	1996-01-22
<b>Description</b>	<p>broad-scale</p> <p><b>Acquisition Description</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...</p> <p>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>

**EN278**

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57414">https://www.bco-dmo.org/deployment/57414</a>
<b>Platform</b>	R/V Endeavor
<b>Start Date</b>	1996-02-13
<b>End Date</b>	1996-02-25
<b>Description</b>	<p>broad-scale</p> <p><b>Acquisition Description</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...</p> <p>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>

EN282

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57415">https://www.bco-dmo.org/deployment/57415</a>
<b>Platform</b>	R/V Endeavor
<b>Start Date</b>	1996-04-08
<b>End Date</b>	1996-04-20
<b>Description</b>	<p>broad-scale</p> <p><b>Acquisition Description</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...</p> <p>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>

EN320

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57427">https://www.bco-dmo.org/deployment/57427</a>
<b>Platform</b>	R/V Endeavor
<b>Report</b>	<a href="http://globec.who.edu/globec-dir/reports/en320new/en320mda.htm">http://globec.who.edu/globec-dir/reports/en320new/en320mda.htm</a>
<b>Start Date</b>	1999-03-10
<b>End Date</b>	1999-03-23
<b>Description</b>	<p>broad-scale</p> <p><b>Acquisition Description</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...</p> <p>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>

**EN325**

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57432">https://www.bco-dmo.org/deployment/57432</a>
<b>Platform</b>	R/V Endeavor
<b>Start Date</b>	1999-06-13
<b>End Date</b>	1999-06-30
<b>Description</b>	<p>process</p> <p><b>Acquisition Description</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...</p> <p>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>

OC300

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57446">https://www.bco-dmo.org/deployment/57446</a>
<b>Platform</b>	R/V Oceanus
<b>Report</b>	<a href="http://globec.who.edu/globec-dir/reports/oc300/oc300rpt.mr7.html">http://globec.who.edu/globec-dir/reports/oc300/oc300rpt.mr7.html</a>
<b>Start Date</b>	1997-03-16
<b>End Date</b>	1997-03-28
<b>Description</b>	<p>broad-scale</p> <p><b>Acquisition Description</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...</p> <p>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>

**OC302**

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57448">https://www.bco-dmo.org/deployment/57448</a>
<b>Platform</b>	R/V Oceanus
<b>Report</b>	<a href="http://globec.who.edu/globec-dir/reports/oc302/oce302.html">http://globec.who.edu/globec-dir/reports/oc302/oce302.html</a>
<b>Start Date</b>	1997-04-22
<b>End Date</b>	1997-05-02
<b>Description</b>	<p>broad-scale</p> <p><b>Acquisition Description</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...</p> <p>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>

**OC319**

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57452">https://www.bco-dmo.org/deployment/57452</a>
<b>Platform</b>	R/V Oceanus
<b>Report</b>	<a href="http://globec.who.edu/globec-dir/reports/oc319/oc319new/oc319rpt.8april98.htm">http://globec.who.edu/globec-dir/reports/oc319/oc319new/oc319rpt.8april98.htm</a>
<b>Start Date</b>	1998-03-15
<b>End Date</b>	1998-03-27
<b>Description</b>	<p>broad-scale</p> <p><b>Acquisition Description</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...</p> <p>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>

OC336

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57459">https://www.bco-dmo.org/deployment/57459</a>
<b>Platform</b>	R/V Oceanus
<b>Report</b>	<a href="http://globec.who.edu/globec-dir/reports/oc336/oc336cruise-report.html">http://globec.who.edu/globec-dir/reports/oc336/oc336cruise-report.html</a>
<b>Start Date</b>	1999-02-11
<b>End Date</b>	1999-02-23
<b>Description</b>	<p>broad-scale</p> <p><b>Acquisition Description</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...</p> <p>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>

**OC341**

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57464">https://www.bco-dmo.org/deployment/57464</a>
<b>Platform</b>	R/V Oceanus
<b>Report</b>	<a href="http://globec.who.edu/globec-dir/reports/oc341/reptoc341.html">http://globec.who.edu/globec-dir/reports/oc341/reptoc341.html</a>
<b>Start Date</b>	1999-04-16
<b>End Date</b>	1999-04-27
<b>Description</b>	<p>broad-scale</p> <p><b>Acquisition Description</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...</p> <p>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>Acquisition Description</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...</p> <p>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.who.edu/globec-dir/reports/sj9505/sj9505.html">http://globec.who.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>Acquisition Description</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...</p> <p>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.who.edu/globec-dir/reports/sj9507/SJ9507.pdf">http://globec.who.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>Acquisition Description</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...</p> <p>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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