CTD data collected during MOCNESS hauls from ARSV Laurence M. Gould and RVIB Nathaniel B. Palmer cruises LMG0203, NBP0104,and NBP0204 in the Southern Ocean from 2001-2002 (SOGLOBEC project)

Website: https://www.bco-dmo.org/dataset/2388

Data Type: Cruise Results

Version: 1

Version Date: 2001-12-03

Project

» U.S. GLOBEC Southern Ocean (SOGLOBEC)

Program

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

Contributors	Affiliation	Role
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Abstract

CTD data collected during MOCNESS hauls from ARSV Laurence M. Gould and RVIB Nathaniel B. Palmer cruises LMG0203, NBP0104,and NBP0204 in the Southern Ocean from 2001-2002 (SOGLOBEC project)

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Coverage

Spatial Extent: **N**:33.064 **E**:-64.1496 **S**:-69.7085 **W**:-77.0803

Temporal Extent: 2001-04-30 - 2002-09-11

Dataset Description

CTD observations taken simultaneously during MOCNESS tows, plus MOCNESS sampling conditions

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

The MOCNESS is based on the Tucker Trawl principle (Tucker, 1951). The particular MOCNESS system from which these CTD data came is one of two net systems. 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). The MOCNESS-10 (with 10 m^2 nets)carries 6 nets of 3.0-mm circular mesh. In both 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 flow meter 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 Down welling light sensor, and the Oxygen sensor. A SeaBird underwater pump was also included in the sensor suite.

It should be noted that due to Antarctic cold, the first few minutes of data are often of questionable value as they are extremely variable and have a high frequency of '50.000' (indicating 'bad values') in the temp, theta and sal fields. Once the sensors encounter deeper, warmer water, they start recording good values.

For additional information, contact the chief scientist for the cruise.

References

[1]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.

last updated January 10, 2006; gfh

Acquisition 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 two net systems. 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). The MOCNESS-10 (with 10 m2 nets)carries 6 nets of 3.0-mm circular mesh. In both 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 flow meter 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 Down welling light sensor, and the Oxygen sensor. A SeaBird underwater pump was also included in the sensor suite.

Processing Description

It should be noted that due to Antarctic cold, the first few minutes of data are often of questionable value as they are extremely variable and have a high frequency of '50.000' (indicating 'bad values') in the temp, theta and sal fields. Once the sensors encounter deeper, warmer water, they start recording good values.

For additional information, contact the chief scientist for the cruise.

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Parameters

Parameter	Description	Units
datatype	sampling method - instrument type, e.g. MOCNESS-1 or MOCNESS-10	

cruiseid	cruise identification, e.g. NBP0202, for RVIB Palmer cruise 0202	
year	year	
brief_desc	brief cruise description, such as process or mooring	
tow	tow number	
day_gmt	day of month, GMT, 1 - 31	
month_gmt	month of year, GMT, 1 - 12	
station	station number, from event log	
station_std	standard station number, from event log	
yrday_gmt	year day as a decimal, based on Julian calendar, GMT	YYY.Y
time_gmt	time, GMT using 24 hour clock to decimal minutes	HHmm.m
press	depth of observation or sample	meters
temp	temperature of water	degrees C
potemp	potential temperature or theta1	degrees C
sal	salinity calculated from conductivity, bad values are set to 50	
sigma_0	potential density1	kg/m3
flvolt	relative fluorescence (0-5 volts)	volts
angle	angle of net frame relative to vertical (0-89 degrees)	degrees
flow	consecutive flow counts	
hzvel	horizontal net velocity	m/min
vtvel	vertical net velocity	m/min
vol_filt	volume filtered	$meters^3$
trans_v	transmissometry or light transmission, (0-5 volts)	volts
o2	dissolved oxygen	ml/liter
lite	down welling light	volts
net	MOCNESS net number, (00-08)	
lat	latitude, negative = South	DD.D
lon	longitude, negative = West	DDD.D

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Instruments

Dataset-specific Instrument Name	MOCNESS1
Generic Instrument Name	MOCNESS1
Dataset-specific 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 two net systems. 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).
Generic Instrument Description	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-m2 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).

Dataset-specific Instrument Name	MOCNESS10
Generic Instrument Name	MOCNESS10
Dataset-specific 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 two net systems. The MOCNESS-10 (with 10 m2 nets)carries 6 nets of 3.0-mm circular mesh. In both 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 flow meter 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)
Generic Instrument Description	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^2 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

LMG0203

Website	https://www.bco-dmo.org/deployment/57642
Platform	ARSV Laurence M. Gould
Report	http://www.ccpo.odu.edu/Research/globec/main_cruises02/lmg0203/menu.html
Start Date	2002-04-07
End Date	2002-05-20
Description	**Acquisition 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 two net systems. 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). The MOCNESS-10 (with 10 m2 nets)carries 6 nets of 3.0-mm circular mesh. In both 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 flow meter 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 Down welling light sensor, and the Oxygen sensor. A SeaBird underwater pump was also included in the sensor suite. **Processing Description** It should be noted that due to Antarctic cold, the first few minutes of data are often of questionable value as they are extremely variable and have a high frequency of '50.000' (indicating 'bad values') in the temp, theta and sal fields. Once the sensors encounter deeper, warmer water, they start recording good values. For additional information, contact the chief scientist for the cruise.

Website	https://www.bco-dmo.org/deployment/57638
Platform	RVIB Nathaniel B. Palmer
Report	http://www.ccpo.odu.edu/Research/globec/cruises01/nbp0104_menu.html
Start Date	2001-07-22
End Date	2001-08-31
Description	**Acquisition 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 two net systems. 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). The MOCNESS-10 (with 10 m2 nets)carries 6 nets of 3.0-mm circular mesh. In both 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 flow meter 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 Down welling light sensor, and the Oxygen sensor. A SeaBird underwater pump was also included in the sensor suite. **Processing Description** It should be noted that due to Antarctic cold, the first few minutes of data are often of questionable value as they are extremely variable and have a high frequency of '50.000' (indicating 'bad values') in the temp, theta and sal fields. Once the sensors encounter deeper, warmer water, they start recording good values. For additional information, contact the chief scientist for the cruise.

Website	https://www.bco-dmo.org/deployment/57643
Platform	RVIB Nathaniel B. Palmer
Report	http://globec.whoi.edu/so-dir/reports/nbp0204/nbp0204b.html
Start Date	2002-07-31
End Date	2002-09-18
Description	**Acquisition 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 two net systems. 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). The MOCNESS-10 (with 10 m2 nets)carries 6 nets of 3.0-mm circular mesh. In both 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 flow meter 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 Down welling light sensor, and the Oxygen sensor. A SeaBird underwater pump was also included in the sensor suite. **Processing Description** It should be noted that due to Antarctic cold, the first few minutes of data are often of questionable value as they are extremely variable and have a high frequency of '50.000' (indicating 'bad values') in the temp, theta and sal fields. Once the sensors encounter deeper, warmer water, they start recording good values. For additional information, contact the chief scientist for the cruise.

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Project Information

U.S. GLOBEC Southern Ocean (SOGLOBEC)

Website: http://www.ccpo.odu.edu/Research/globec_menu.html

Coverage: Southern Ocean

The fundamental objectives of United States Global Ocean Ecosystems Dynamics (U.S. GLOBEC) Program are dependent upon the cooperation of scientists from several disciplines. Physicists, biologists, and chemists must make use of data collected during U.S. GLOBEC field programs to further our understanding of the interplay of physics, biology, and chemistry. Our objectives require quantitative analysis of interdisciplinary data sets and, therefore, data must be exchanged between researchers. To extract the full scientific value, data must be made available to the scientific community on a timely basis.

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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
NSF Antarctic Sciences (NSF ANT)	unknown SOGLOBEC NSF ANT

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