CTD data from 4 floats near the West Antarctic Peninsula (WAP) shelf near Marguerite Bay from ARSV Laurence M. Gould LMG0302 in the Southern Ocean from 2003-2003 (SOGLOBEC project)

Website: https://www.bco-dmo.org/dataset/3481
Version: 2011-05-23

Project
» U.S. GLOBEC Southern Ocean (SOGLOBEC)

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

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Dataset Description

Lagrangian Circulation on the West Antarctic Peninsula Shelf From Isobaric Floats

W. Owens, R. Limeburner, and R. Beardsley
Four isobaric floats were deployed over the West Antarctic Peninsula (WAP) shelf near Marguerite Bay during February 2003 on cruise LMG03-02 to characterize the Lagrangian circulation and repeatedly profile the local hydrographic structure.

Methods & Sampling

These isobaric floats were designed to repeat the following cycle: (a) sink to 250 db; (b) drift with the current at that level for 5 days; (c) sink to a greater depth 450-m and immediately begin an ascent to the surface, rapidly collecting temperature, conductivity and pressure data; (d) drift at the surface transmitting the environmental data and GPD position data using ARGOS. After completing this cycle the float sinks to 250-m to start the next cycle. Each float is equipped with a pumped Sea Bird temperature and conductivity sensor set and precision pressure sensor. The floats were deployed in a rough rectangular array centered over the deep trench running northwest from George VI Sound toward the shelf edge. The float deployment positions listed in Table 1.

Table 1. Float deployment times and positions

Float ID	Date	Time UTC	Latitude	Longitude	Data Filename
Float 193	2/22/2003	1306S	68° 13.210' S	70° 01.620' W	7900026.nc
Float 183	2/25/2003	300S	68° 13.690' S	70° 41.330' W	7900027.nc
Float 182	2/25/2003	548S	67° 49.880' S	70° 46.810' W	7900028.nc
Float 181	2/25/2003	723S	67° 49.790' S	70° 11.450' W	7900029.nc

The tracks of the floats at 250 m indicated relatively small cross-self displacements during austral fall, less than 100 km from the inner-shelf deployment positions to the mid-shelf over 5 months. One float continued to send data during the winter, ice-covered period and returned to near its deployment position, thus completing a closed anticyclonic path about 50 km in diameter over 7 months. The 20-30 profiles of pressure, temperature and conductivity made during February through September 2003 by each float were used to estimate changes in heat and salt content over the WAP shelf during austral fall. The mid-shelf region had a surface mixed layer about 80-m deep above a deeper stratified region. The surface mixed layer lost heat at an average rate of 72 Watts/m2 (-0.6° C/mo) and gained salt at 166 gm/m2 /day (0.06 psu/mo). The stratified water between 80–250 m gained heat at an average rate of 31 Watts/m2 (+0.1° C/mo) and gained salt at 225 gm/m2/day (0.04 psu/mo). Thus the water column over the upper 250 m lost heat at a net rate of 41 Watts/m2 and gained salt at 391 gm/m2/day.

Data Processing Description

Data format of time is decimal Julian days. Used Matlab gregorian.m to get the actual time, starting time at January 1, 4713 BC Greenwich time midnight, not noon.

No data for 7900029 is included here; the matlab file provided to BCO-DMO was corrupted.

[ ]

Data Files

File
float_2003.csv (Comma Separated Values (.csv), 892.06 KB)   MD5:9fd4d692a81695734e483a7d3174c36b
Primary data file for dataset ID 3481

[ ]

Parameters

Parameter	Description	Units
cruiseid	cruise identifier	dimensionless
julian_date_gmt	interval of time in days and fractions of a day since January 1, 4713 BC Greenwich midnight.	dimensionless
lat	latitude. north is positive; south is negative.	decimal degrees
lon	longitude. east is positive, west is negative.	decimal degrees
press	water pressure at measurement	decibars
temp	temperature	degrees Celsius
sal	salinity	dimensionless
yrday_gmt	yearday. Yearday 1 is January 1, 2003 at midnight, GMT	dimensionless
year	year of sampling	
month_gmt	month, GMT	
day_gmt	day of month, GMT	
time_gmt	time, GMT	HH:MM:SS
float_id	identification number of float	

Instruments

Dataset-specific Instrument Name	Drifter Buoy
Generic Instrument Name	Drifter Buoy
Dataset-specific Description	Often called isobaric floats, these were designed to repeat the following cycle: (a) sink to 250 db; (b) drift with the current at that level for 5 days; (c) sink to a greater depth 450-m and immediately begin an ascent to the surface, rapidly collecting temperature, conductivity and pressure data; (d) drift at the surface transmitting the environmental data and GPD position data using ARGOS. After completing this cycle the float sinks to 250-m to start the next cycle.
Generic Instrument Description	Drifting buoys are free drifting platforms with a float or buoy that keep the drifter at the surface and underwater sails or socks that catch the current. These instruments sit at the surface of the ocean and are transported via near-surface ocean currents. They are not fixed to the ocean bottom, therefore they "drift" with the currents. For this reason, these instruments are referred to as drifters, or drifting buoys. The surface float contains sensors that measure different parameters, such as sea surface temperature, barometric pressure, salinity, wave height, etc. Data collected from these sensors are transmitted to satellites passing overhead, which are then relayed to land-based data centers. definition sources: https://mmisw.org/ont/ioos/platform/drifting_buoy and https://www.aoml.noaa.gov/phod/gdp/faq.php#drifter1

Deployments

LMG0302

Website	https://www.bco-dmo.org/deployment/57645
Platform	ARSV Laurence M. Gould
Report	http://globec.whoi.edu/so-dir/reports/lmg0302/lmg0302.htm
Start Date	2003-02-13
End Date	2003-03-07
Description	**Methods & Sampling** Four isobaric floats were deployed over the West Antarctic Peninsula (WAP) shelf near Marguerite Bay during February 2003 on cruise LMG03-02 to characterize the Lagrangian circulation and repeatedly profile the local hydrographic structure.

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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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