

CONTRIBUTOR IDENTIFICATION

Sharon Stammerjohn
Institute of Arctic and Alpine Research (INSTAAR)
University of Colorado Boulder
Campus Box 450
Boulder, CO 80309-0450
Email: sharon.stammerjohn@colorado.edu
Phone: (303) 735-7811
Fax: (303) 492-6388

Claudia F. Giulivi and Stanley S. Jacobs
Lamont-Doherty Earth Observatory of Columbia University
Palisades, NY 10964
Email: claudiag@ldeo.columbia.edu
Phone: (845) 365-8576
Fax: (845) 365-8157
Email: sjacobs@ldeo.columbia.edu
Phone: (845) 365-8326
Fax: (845) 365-8157

DATA COLLECTOR

Sharon Stammerjohn and Katherine Leonard
University of Colorado Boulder
Email: sharon.stammerjohn@colorado.edu
Phone: (303) 735-7811
Email: katherine.leonard@colorado.edu
Phone: (303) 735-6621

DATASET TITLE

Ocean measurements in the Bellingshausen Sea, NB Palmer Cruise 07-09, 31 August – 31 October 2009

DATASET ABSTRACT

We are reporting ocean pressure, temperature, and salinity data from 85 CTD profiles acquired in the Bellingshausen Sea. These austral spring observations, taken along the continental shelf slope to a nominal depth of 500m (interspersed with a few full depth profiles), comprise a portion of several related data sets obtained during NBP07-09, from Punta Arenas to Punta Arenas, Chile. Additional sampling was undertaken for physical, geochemical and biological parameters of sea ice and upper ocean, as well as ocean currents and continuous underway mapping of sea surface properties, meteorological variables and bathymetry.

DATASET PURPOSE

These data were acquired primarily in support of a sea ice drift study, 'Sea Ice Mass Balance in the Antarctic' (SIMBA; <http://www.utsa.edu/lrsg/antarctica/SIMBA/>), conducted in the Bellingshausen Sea to measure sea ice growth/melt processes.

DATASET COLLECTION DATES

25 September – 26 October 2009

DATASET LOCATION

Northernmost Latitude: -68.7107
Southernmost Latitude: -70.631
Easternmost Longitude: -90.0985
Westernmost Longitude: -94.6558
Ocean/sea area names: Bellingshausen Sea

PLATFORM USED TO COLLECT THESE DATA

Nathaniel B Palmer, Research Vessel Icebreaker. NODC code: 3206

INSTRUMENTS USED TO COLLECT THE DATA

On NBP0709 there were three CTD packages. The primary CTD package that acquired 68 of the 85 CTD casts was the NBP's 24-bottle SBE32 rosette system deployed from the ship's baltic room ('Main' CTD). Four of the 85 CTD casts were acquired with a Trace Metal Clean ('TMC') CTD, equipped with a 12-bottle rosette system deployed from the ship's starboard A-frame. The remaining 13 CTD casts were acquired with a sensor-only CTD package deployed from the stern A-frame ('Aft' CTD) when conditions or work on the ice did not permit starboard-side access to the water. All three CTD packages included Seabird 911+ CTD systems, and all included dual temperature and conductivity sensors.

PARAMETERS MEASURED

Pressure (depth), temperature, and conductivity (salinity) CTD data acquired with a Seabird 911+, using Seabird's Seasave version 7.0h software on a PC running Windows XP. CTD data had been processed with standard Seabird processing software combining pre-cruise and after cruise calibration for each sensor (pressure, temperature, and conductivity). Mean agreement between dual sensors was within 0.0003°C and 0.0002 S/m for the temperature and conductivity sensors, respectively.

PROJECT NAME

Sea Ice Mass Balance in the Antarctic (SIMBA; <http://www.utsa.edu/lrsg/antarctica/SIMBA/>)

ORIGINAL CRUISE NAME

NBP07-09

FUNDING AGENCY

Supported mainly by grants ANT-07-03682 (PI S.F. Ackley, UTAS) and ANT-06- 32282 (P.I. S.S. Jacobs, LDEO) from National Science Foundation, Division of Polar Programs (NSF/OPP).

DATA FILES

p07090SSD.asc: CTD 'Main' downcast (D) data, SS = 01 to 69 (station 28 missing)
p07090SSU.asc: CTD 'Main' upcast (U) data, SS = 01 to 69 (station 28 missing)

p0709tmc0SSU.asc: CTD 'Tmc' upcast (U) data, SS = 02 to 05 (station 01 missing)
p0709aft0SSU.asc: CTD 'Aft' upcast (U) data, SS = 01 to 14 (station 10 missing)

DESCRIPTION OF DATA FILES

All data files are written in ASCII format, separated by blanks spaces. In the first line of the CTD files we report parameters measured at the beginning of the downcast.

The first line of data files is in the format:

TPPCC S C SDD.DDDD SDDD.DDDD YYYY/MM/DD YDA HH:MM CRUISE_ID

T	Data type (C: CTD)
PP	NODC platform code
CC	NODC country code of the platform
S	Station number
C	Cast number
SDD.DDDD	latitude in decimal degrees (S: sign, neg. in the southern hemisphere)
SDD.DDDD	longitude in decimal degrees (S: sign, neg. in the western hemisphere)
YYYY/MM/DD	date: year/month/day
YDA	Julian day for year of collection
HH:MM	hour: minutes (GMT) start time of downcast (of all CTD packages)
CRUISE_ID	cruise name NBP0709

The second line is preceded by the "&" character and contains additional information:

ZC	Bottom depth in meters
ZM	Bottom to CTD depth in meters
AT	Air temperature in °C
AP	Barometric sea surface pressure in milibars
WS	Wind speed in meters/sec
WD	Wind direction in degrees from North

The third line begins with "@" with data columns identified by a two letter mnemonic:

PR	Pressure [decibars]
TE	In-situ temperature [°C] (ITS-90)
SA	Salinity (PSU)

Notes:

(1) For the TMC and Aft CTD profile data, due to on-deck cold issues with the conductivity cells, downcast salinity data were often spurious in top tens of meters. Thus, upcast data are reported for the TMC and Aft packages (but date/time in header is for start of downcast). However, both down/upcast data from TMC Station 1 and from Aft Station 10 were unreliable; therefore, those two stations are missing as noted under Data Files. (2) Throughout the sea ice drift experiment, there were several instances when sequential (i.e., yo-yo) profiles were acquired with the 'Main' CTD package, see stations 7-24, 25-38 (w/ profile data from station 28 not logged, therefore missing), 43-47, 48-50, 51-53, 54-56, 57-59, 60-62, and 63-65. Therefore, both downcast and upcast data are

provided for the 'Main' CTD package. (3) Although NBP0709 started 31 August, data collection was delayed by several weeks due to a ship fire, requiring return to port for inspection, repairs and replacement of most electronic systems in the science lab. Thus, data acquisition did not commence until 25 September 2007.

General Comments:

A ship data report is available at <http://www.marine-geo.org/link/data/field/NBPalmer/NBP0709/docs/NBP0709Data.pdf>