

NBP0908

Multibeam

End of Cruise Report



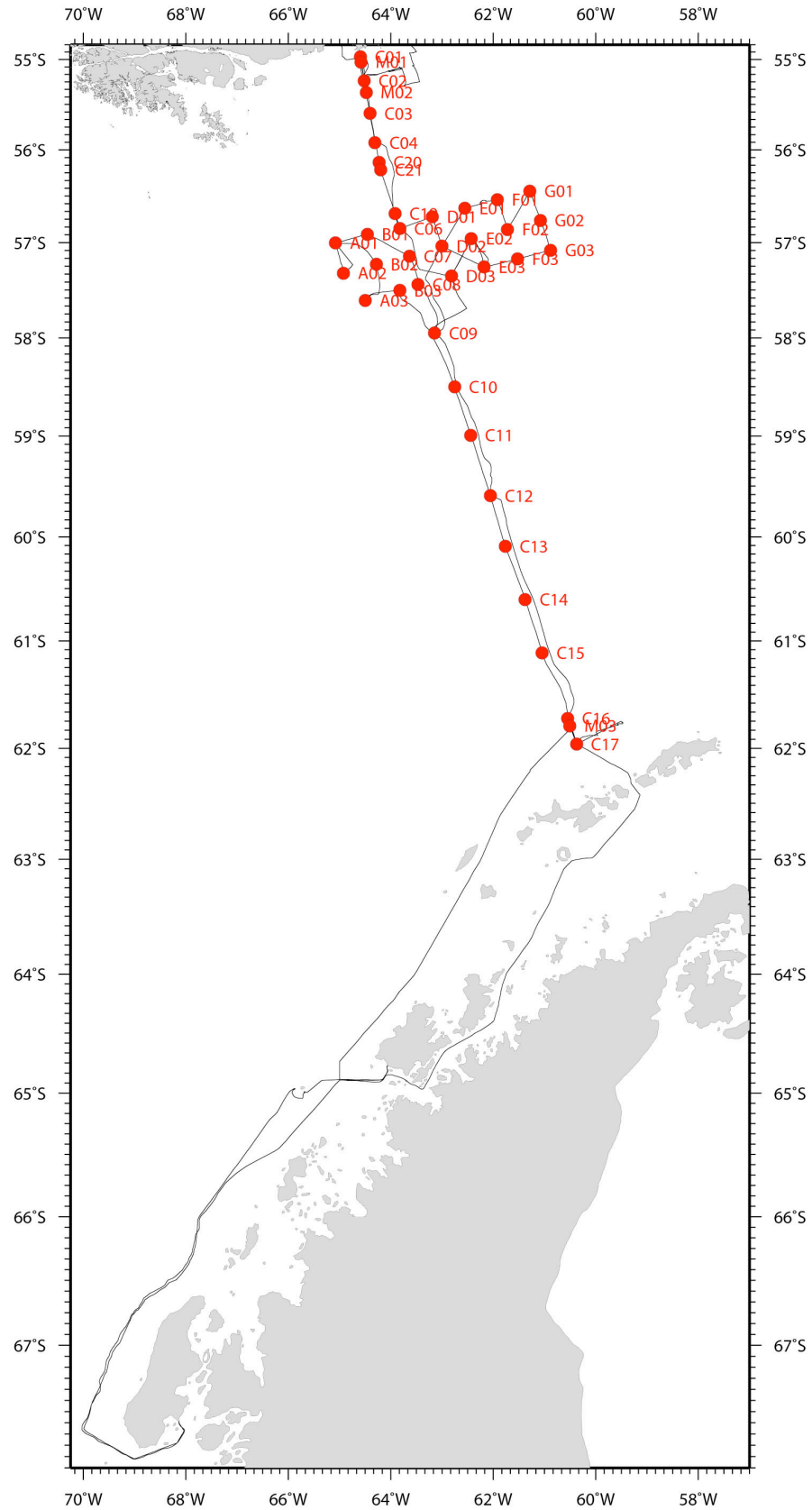
Prepared By Scott Walker
December 18, 2009

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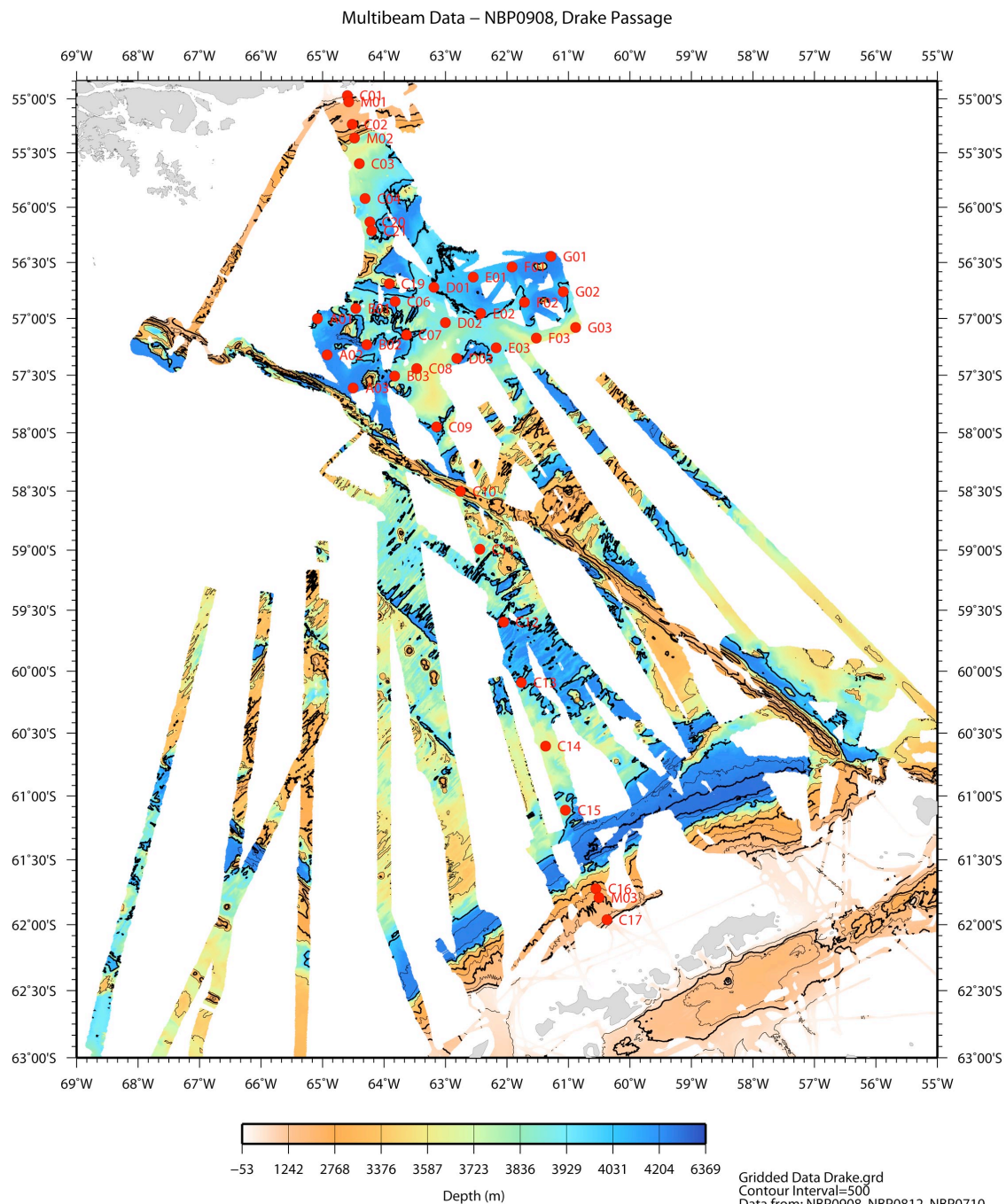
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Cruise Track Plot

NBP0908, Cruise Track

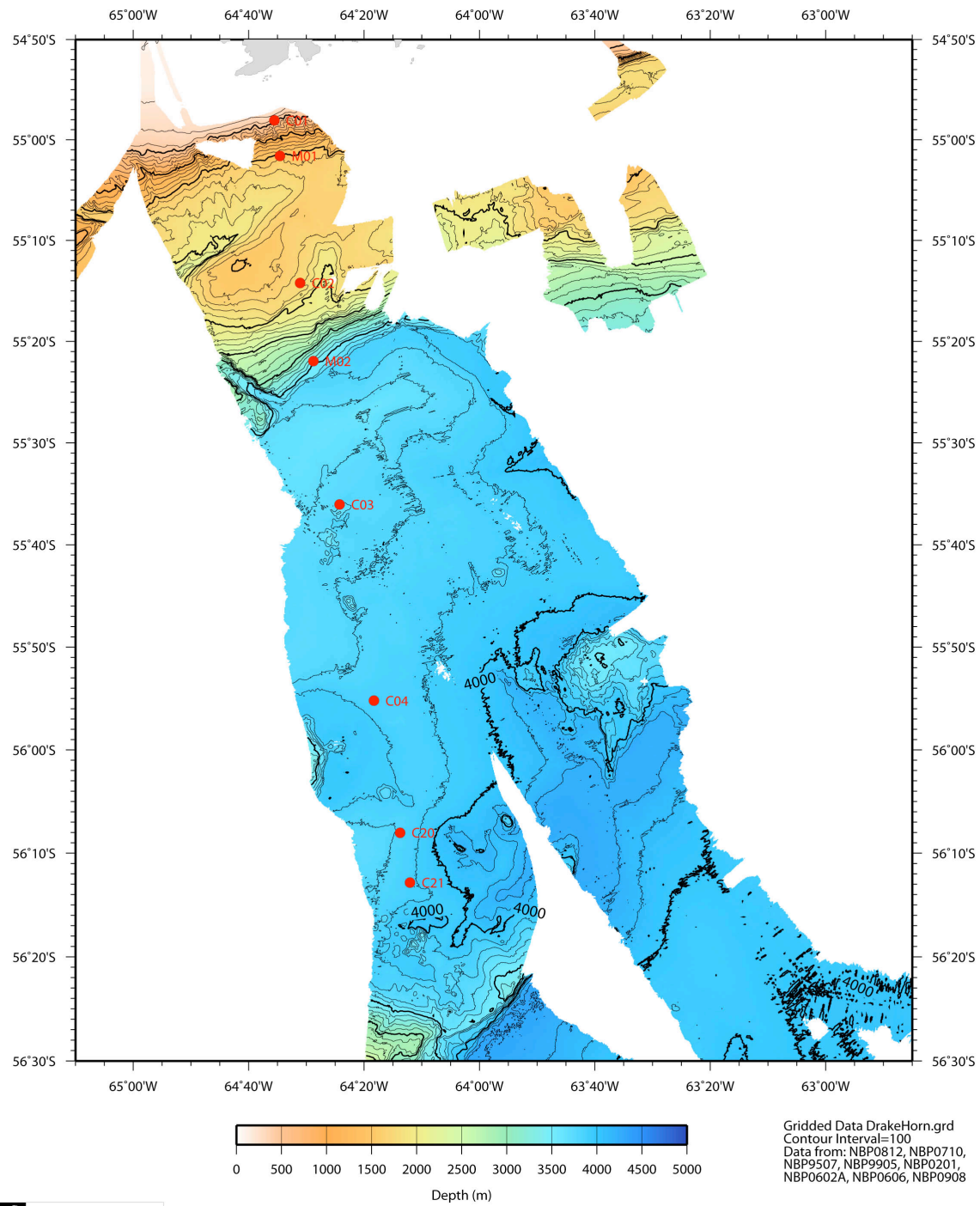


Multibeam Work Area Plots



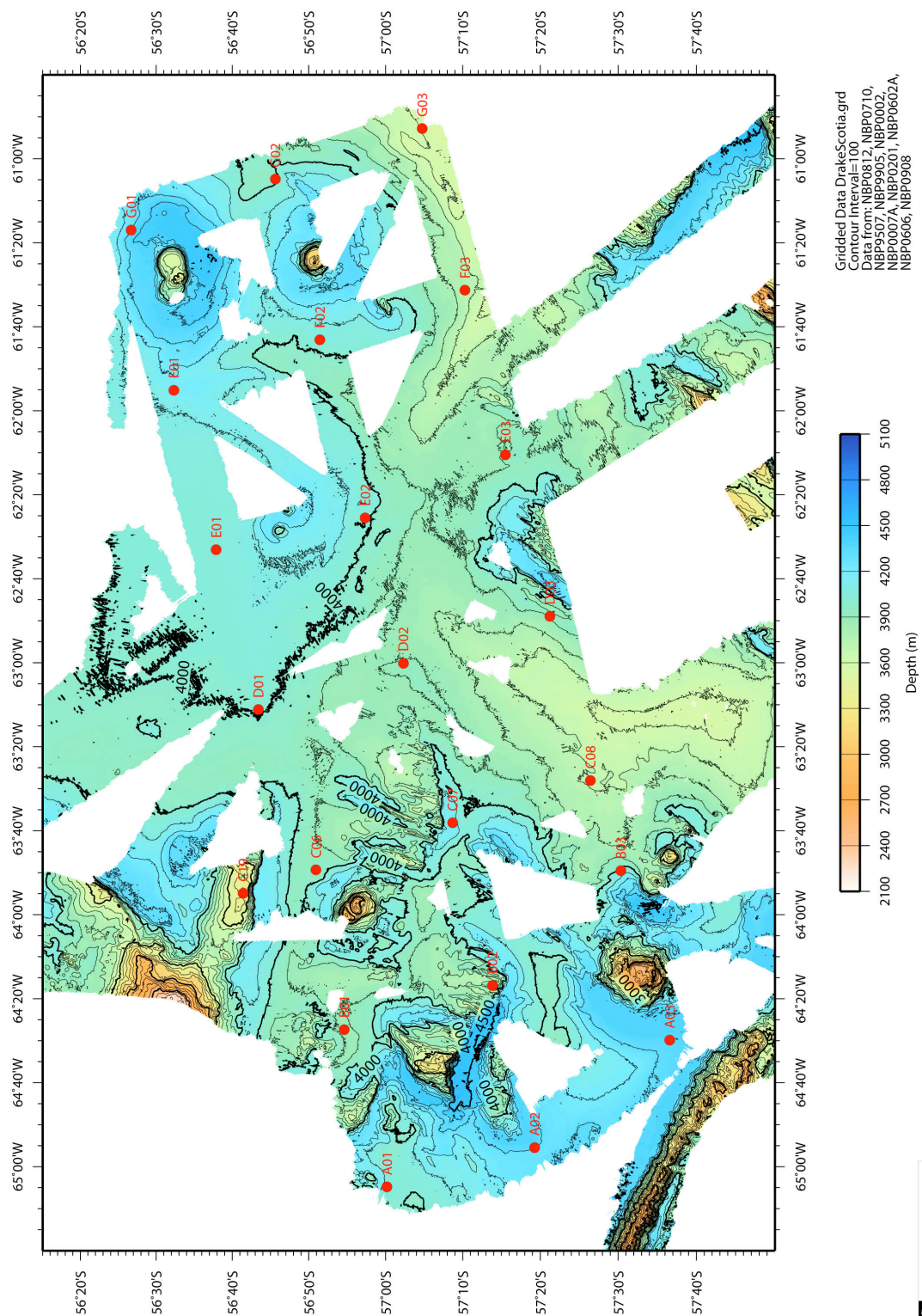
GMD 2009 Dec 18 15:00:50 RPSC

Multibeam Data – NBP0908, North Drake

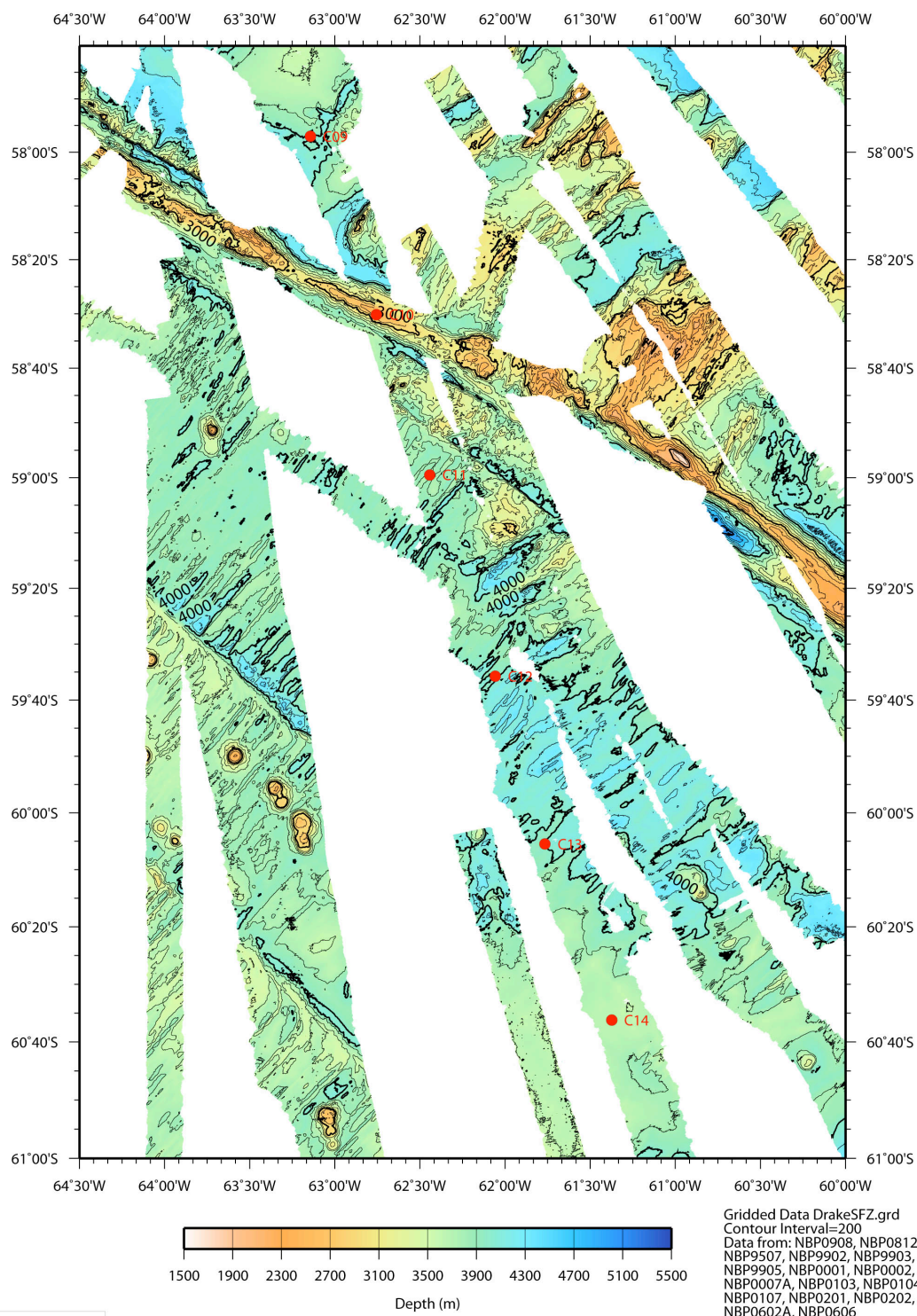


GM 2009 Dec 18 14:58:37 RPSC

Multibeam Data – NBP0908, Drake Scotia Plate

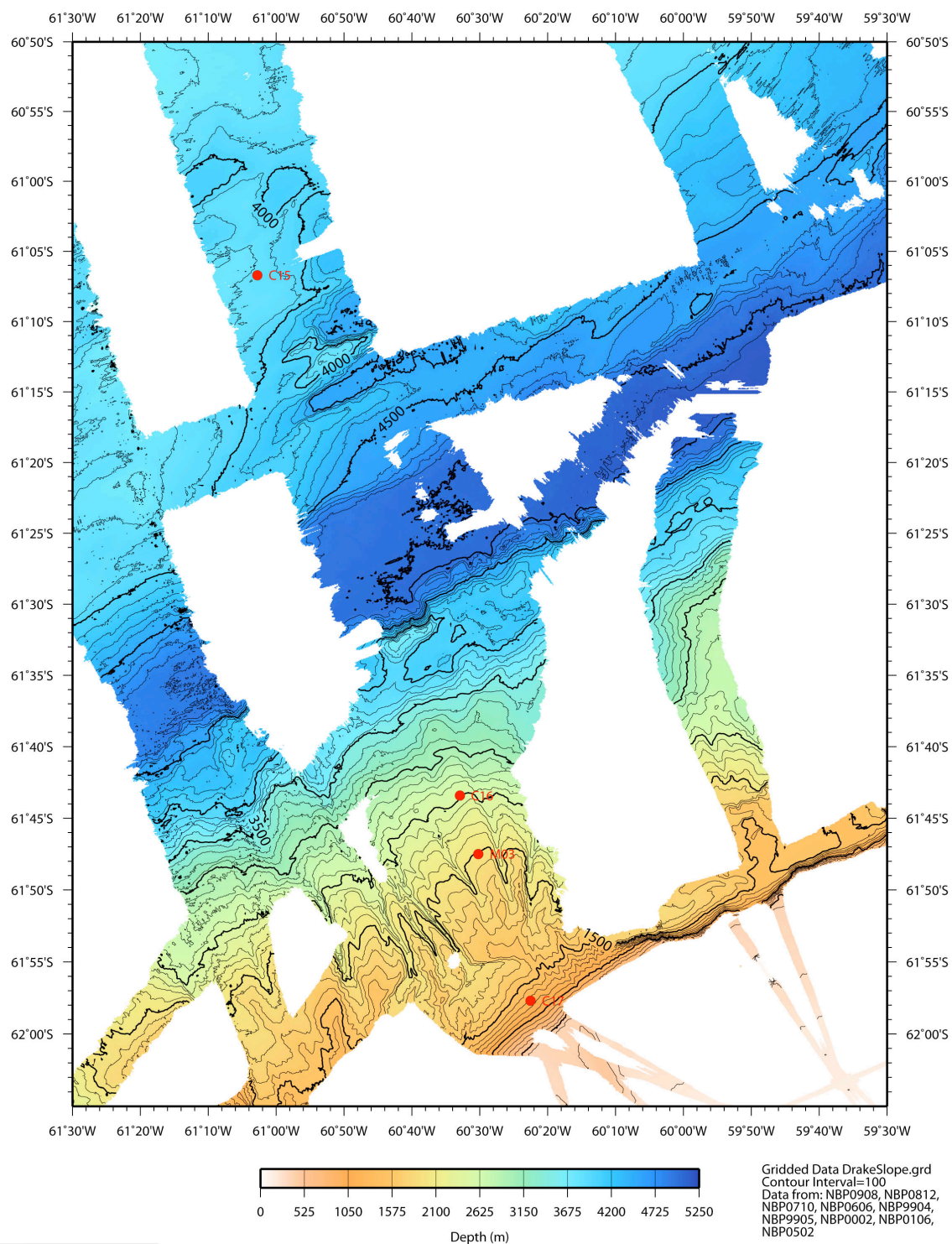


Multibeam Data – NBP0908, Drake Shackleton Fracture Zone



GM 2009 Dec 18 14:44:46 RPSC

Multibeam Data – NBP0908, Drake Shelf Slope



GM 2009 Dec 18 14:42:04 RPSC

NBP0908 Multibeam Description of Work

This report covers the Simrad EM120 Multibeam data collection and processing for the RVIB Nathaniel B. Palmer cruise NBP0908. This cruise started in Punta Arenas, Chile on November 19, 2009 (GMT) and ended in Punta Arenas, Chile on December 19, 2009. The Chief Scientist was Teresa Chereskin (Scripps.) The principal investigators were Kathleen Donohue (URI) and Randy Watts (URI). Chris Linden (RPSC) was responsible for Multibeam data acquisition, processing, and ping editing quality control.

The first day of Multibeam data collection was November 21 and the last day was December 17, 2009. While data quality was mixed, most of the data was very good considering the area in which we were working. None of the data files for November 27th was edited due to rough seas. In addition, the following files were corrupted, non-existent or unedited: 10, 46-48, 58-71, 209, 210. On December 2nd we left the primary study area for a transit to Palmer Station and Rothera. No new sound velocity profiles were created during the transit and the last SVP worked well throughout. Editing outside of the primary study area was fast and rough but fortunately, the data was very clean to begin. On December 7th we returned to the primary study area and returned to standard ping editing. Much of the data collected covered areas where good previous data exists. The datalists for the individual days have some of the above files commented-out.

The raw Multibeam data were logged in approximately one hour-long files in the Kongsberg-Simrad EM120 raw format. This is a complex format that is not described in this report. The MB-System¹ software package may be used to access the files if additional work is to be done with the data. MB-System version 5.1.1 was used for processing of data on this cruise. These raw data files are named xxxx_yyyymmdd_hhmmss_raw.all where xxxx is a consecutive line number within the survey, yyyy is the year, mm is the month, dd is the day, hh is the hour, mm is the minute, and ss is the seconds that the file was started.

The logged Multibeam data files were transferred from the data acquisition computer to a data storage area just after the end of each day. The raw hourly data files were converted from MB-System format 56 (the raw Simrad format) to format 57 using mbcopy and made available for manual editing. The format 57 files are named xxx_yyyymmdd_hhmmss.mb57 where the first part of the name is identical to the raw file. All data files were edited while at sea.

The science party was responsible for editing the Multibeam data. Mbclean was used to flag bad data points outside the valid depth range for each hour of data. Mbedit was used to manually remove bad data points from these files. Data files were edited with mbnavedit to correct navigational problems. Navigation corrections were made after the files were edited. If the velocity was observed to be incorrect, a new sound velocity was generated using mbvelocitytool and was applied to the data.

The edited files were checked using mbedit, the statistics from mbinfo, and hourly contour plots. If these checks failed, the files were re-edited by Chris Linden or Scott Walker. When the data quality was judged acceptable, the edits were applied to the data using mbprocess. The edited files

¹ The MB-System software package was used for all Multibeam data handling. This package was developed at Lamont-Doherty Earth Observatory. This system is designed to manipulate, process, list and display many kinds of Multibeam bathymetry, amplitude, and sidescan data. It has been successfully installed on many different computer platforms. To obtain more information about the MB-System programs or to obtain a copy of the current distribution, contact the authors David W. Caress (caress@mbari.org) and Dale N. Chayes (dale@lamont.ldeo.columbia.edu)

are named xxxx_yyyymmdd_hhmmssp.mb57 where the p in the dataset name denotes a processed file. Page size plots were produced of the edited data. Daily plots were also produced which showed one days worth of gridded data.

The UNIX tar command was used to write the digital data to DDS tapes at the end of the cruise. These tapes were checked before distribution. The tapes contain the raw and processed data for the entire cruise. The processing scripts and gridded data for each survey are included in the processed data directory. The contents of these tapes and an itemized distribution list are located on separate pages of this report.

Speed of Sound Corrections

The travel time of sound in water was corrected at the surface by a sound velocity calculated from the Thermosalinograph (TSG). This value was supplied directly to the EM120 system serial port and the data was transmitted by the RVDAS program rv_tsg. Sound velocity profiles were calculated from CTD casts, which were combined with the Levitus historical database. The CTD data have been provided on the RVDAS data distribution. The calculated sound velocities files and plots are in the process/svp directory in this multibeam data distribution.

NBP0908 Data Distribution

Multibeam data has been provided on DDS 4mm tapes to the science party and RPSC. The distribution consists of one (1) tape and a copy of this data report. The tapes were created on Linux computers using the command `tar cvf /dev/st0` and verified to be sound on Linux and Sun computers before they were distributed.

The contents of the tapes are described below. The processed data is in mbio format 57 in the process directory. The raw data is in mbio format 56 in the Raw directory. The processed data includes gridded files, processing scripts and postscript plots divided into subdirectories for each day and map area.

Each Full DDS4 Data Set Includes:

1. DDS4

- a) **Raw** has raw data and ancillary files for November 20 through December 17, 2009. The files are divided into directories by days
- b) **process** has the edited data and daily processing divided into directories by days for November 20 through December 17, 2009.
- c) **maps** contains additional maps request by the science team mostly in the primary study area.

Portions of this cruise took place in the EEZ (exclusive economic zone) of Argentina. Argentina will be provided with the complete distribution by the decision of the Chief Scientist through the clearance holder of record for the NBP.

All full data distributions also include a printed copy of this report.

A copy of the full data distribution will be sent to the Antarctic Multibeam Synthesis at the MGDS (<http://www.marine-geo.org/>). You can locate the all information for and download data from this cruise at the web site by selecting your cruise name from the data link tool. You can also download and use the java application GeoMapApp to interactively access multibeam and other data sets. Data sent to the database will not be downloadable until the Chief Scientist has released the proprietary hold.

You can contact the MGDS at:

MGDS Data Manager
Lamont-Doherty Earth Observatory
61 Route 9W
Palisades NY 10964 USA
845-818-3745 Phone/Fax
info@marine-geo.org

Data Distribution Information:

S/N	Who	Description	Type
1	Chereskin 1	20 Nov. – 17 Dec. 2009 raw, processed, maps	DDS4
2	Chereskin 2	20 Nov. – 17 Dec. 2009 raw, processed, maps	DDS4
3	NBP	20 Nov. – 17 Dec. 2009 raw, processed, maps	DDS4
4	RPSC	20 Nov. – 17 Dec. 2009 raw, processed, maps	DDS4
5	MGDS	20 Nov. – 17 Dec. 2009 raw, processed, maps	DDS4