NBP0804
Multibeam
End of Cruise Report
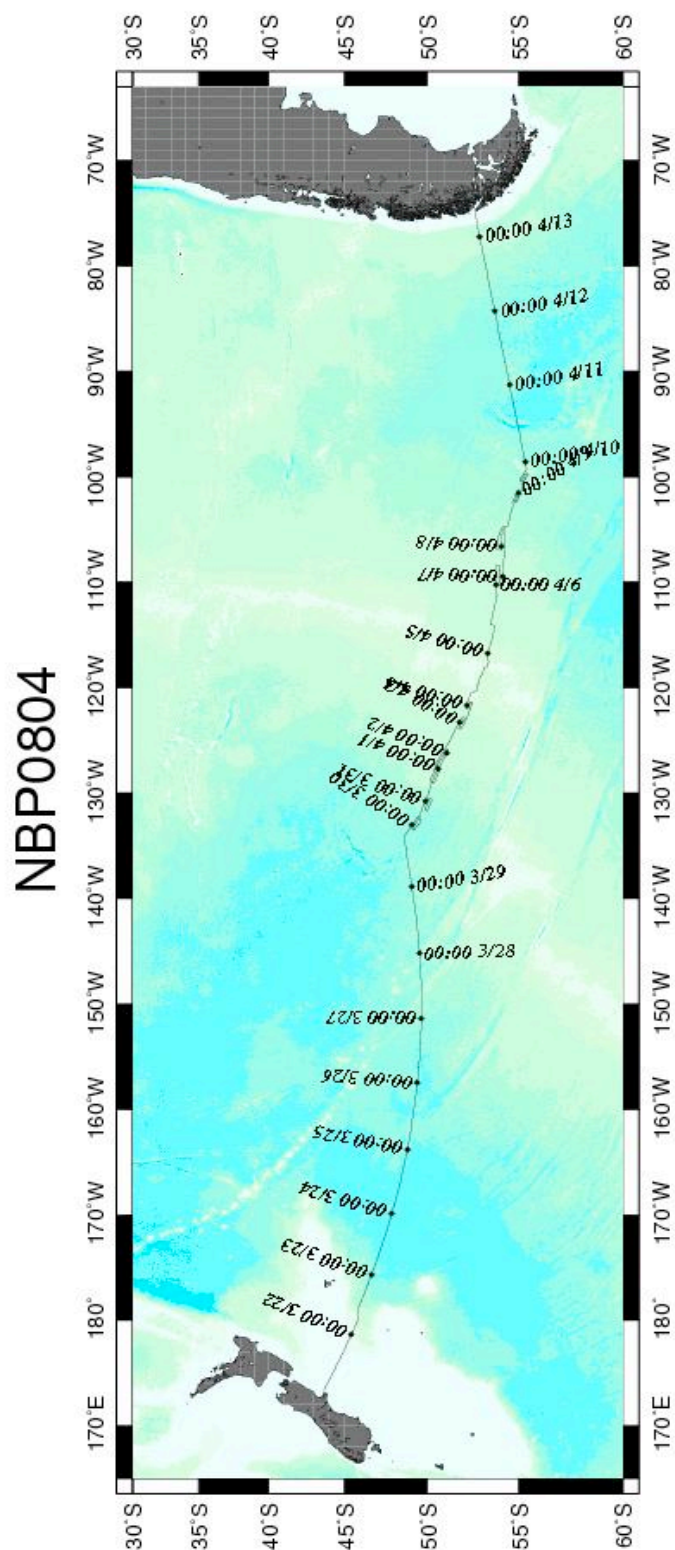
Prepared By Chris Linden
April 14, 2008

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Cruise Track Plot

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NBP0804 Multibeam Description of Work

This report covers the Simrad EM120 Multibeam data collection and processing for the RVIB Nathaniel B. Palmer cruise NBP0804. This cruise started at Lyttelton, New Zealand on March 21, 2008 (GMT) and ended at Punta Arenas, Chile on April 14, 2008. Data collection for this distribution goes through April 13, 2008 GMT. The Chief Scientist was Marcel Croon. Chris Linden (RPSC) was responsible for Multibeam data acquisition, processing, and ping editing quality control.

Multibeam data acquisition began March 21st and ended April 13, 2008 GMT. Data quality was generally poor due weather and rough seas. Data was particularly poor on April 4th, 5th, 6th and 7th. The Chief Scientist elected to deleted all data for several hours on the 6th and 7th. A twenty-four hour watch by the science team started on March 21, 2008 and was suspended on April 13, 2008.

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-System[1] software package may be used to access the files if additional work is to be done with the data. MB-System version 5.0.7 was used for processing of data on this cruise. MBSystem versions 5.0.9 and 5.1.0 are available, but these newer distributions do not correctly handle sidescan data for the EM120 system. It is recommended that users who are interested in this data continue to use MBSystem 5.0.7 until a distribution that correctly handles the EM120 sidescan data is released. 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.

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. Some data files were edited with mbnavedit to correct navigational problems. Navigation corrections were made after the files were edited. For the edited data, 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. When the data quality was judged acceptable, the edits were applied to the data using mbprocess. The edited files 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.

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[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)

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 NBP0804 XBT launches, which were combined with the Levitus historical database. The sound velocity profiles include data from XBT's launched using the NOAA autolauncher. The calculated sound velocities files and plots for the XBT launch are in the process/svp directory in the multibeam data distribution.

NBP0804 Data Distribution

The multibeam data distribution has been provided on one DDS 4mm tape to the science party and RPSC. The distribution consists of 1 tape and a copy of this data report. That will also be provided to the science team. 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. 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. The files are divided into directories by days
   b) **process** has the edited data and daily processing divided into directories by days.

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	Croon	NBP0804 Raw and processed multibeam data	DDS4
2	Croon	NBP0804 Raw and processed multibeam data	DDS4
3	Croon	NBP0804 Raw and processed multibeam data	DDS4
4	RPSC, NBP	NBP0804 Raw and processed multibeam data	DDS4
5	RPSC, DHQ	NBP0804 Raw and processed multibeam data	DDS4
6	MGDS	NBP0804 Raw and processed multibeam data	DDS4