

NBP0607C Multibeam End of Cruise Report

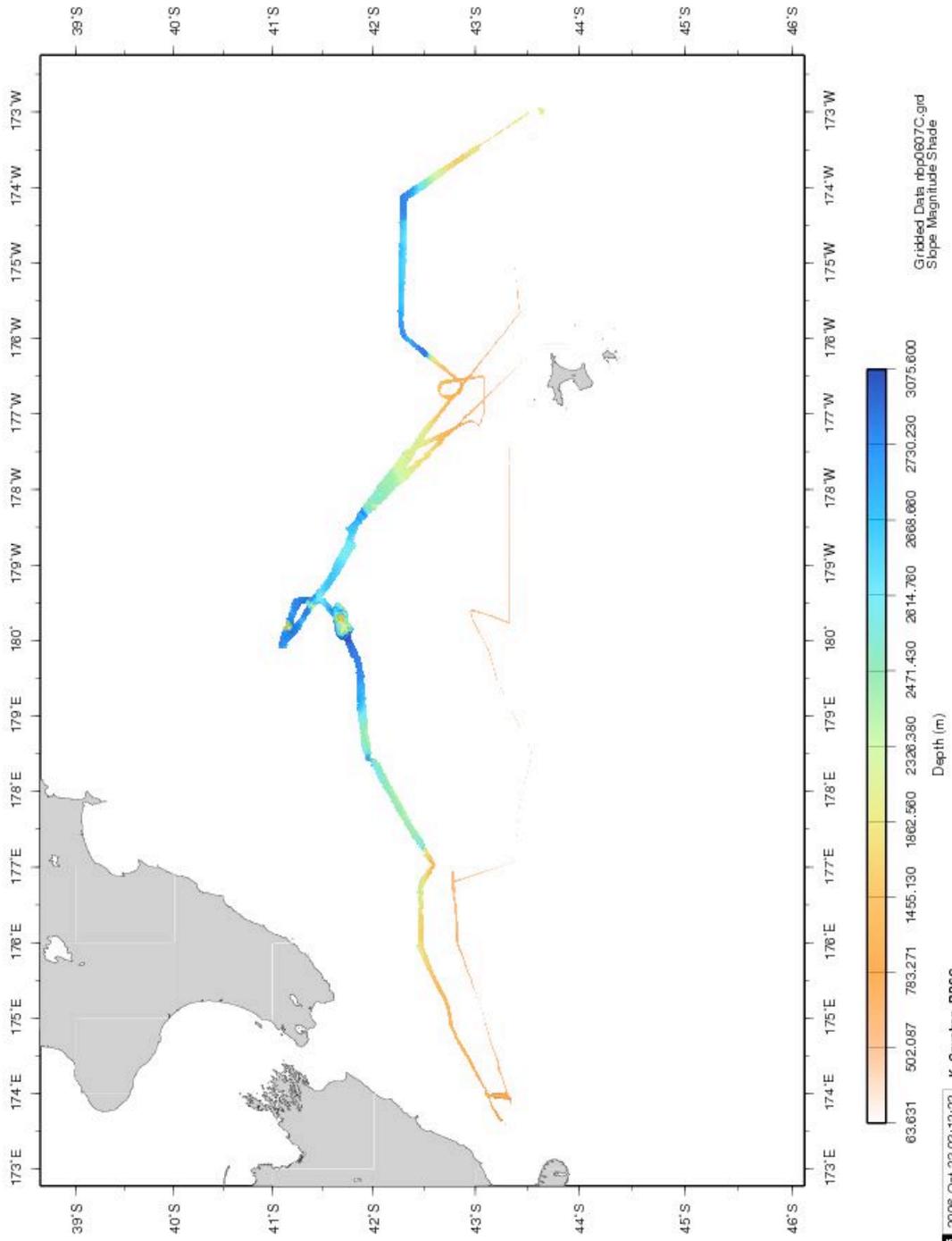


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Contents:

- Cruise Track Map
- Multibeam Work Area Plot
- NBP0607C Multibeam Description of Work
- Speed of Sound Corrections
- NBP0607C Multibeam Data Tape/DVD Description
- NBP0607C Multibeam Data Distribution

Multibeam Data – Chatham Rise – NBP0607C



NBP0607C MultiBeam Description of Work

This report covers the Simrad EM120 multibeam data collection and processing for the R/V Nathaniel B. Palmer cruise NBP0607C. This cruise started at Lyttelton, New Zealand on October 10, 2006 and ended at Lyttelton, New Zealand on October 23, 2006. The chief scientist aboard was Dr. Joann Stock, California Institute of Technology. Principal investigators were Bruce Luyendyk and Steve Cande (not on board). Kathleen Gavahan (RPSC) was responsible for multibeam data acquisition, ping editing quality control and preliminary processing of the data. The science party stood a 24-hour watch. Data was collected from October 10, 2006 through October 22, 2006. The entire cruise took place in the New Zealand EEZ and they received a copy of the data.

The raw multibeam data was logged into files (approximately one hour-long) 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. 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 using mbedit to remove bad data points from these files. All data files were edited with mbnedit to correct any navigational problems.

The edited files were checked using mbedit, the statistics from mbinfo, and hourly contour plots. If these checks failed, the files were re-edited. 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 day's worth of gridded data.

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@ldeo.columbia.edu)

The UNIX tar command was used to write the digital data to DDS4 tapes at the end of the cruise. These tapes were checked before distribution. The tapes contain the raw, edited, 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 elsewhere in this report.

The EM120 Multi-beam sonar system was run continuously during this cruise. The weather was mostly cooperative, and where it was, the data collected was of good quality. The data deteriorated when we had high winds and seas.

Speed of Sound Corrections

The travel time of sound in water was corrected at the surface by a sound velocity calculated from the Thermosalinigraph (TSG). This value was supplied directly to the EM120 system serial port and the data was transmitted by the RVDAS program rv_tsg.

Expendable BathyThermographs (XBTs) were used along with the Levitus historical database to calculate sound velocity profiles.

Below is a listing of the sound velocity profiles derived from the XBTs.

```
# XBT/CTDs for NBP0607C
#Prefix    GMT_Date  GMT_Time  LatitudeLongitude  Salin  Type
T5_00068   2006/10/10 02:15:37  -43.2347 173.6800 34.60  T-5
T5_00069   2006/10/11 01:38:40  -42.0501 178.2900 35.17  T-5
T5_00070   2006/10/12 03:20:29  -41.0995 179.9810 35.24  T-5
T5_00071   2006/10/12 21:50:45  -41.7319 -178.7950 35.40  T-5
T5_00072   2006/10/14 20:52:23  -42.7255 -176.5750 35.23  T-5
T5_00073   2006/10/15 12:06:00  -42.2833 -175.0200 35.22  T-5
T5_00076   2006/10/16 21:59:51  -43.3763 -173.1390 35.24  T-5
T7_00077   2006/10/18 00:55:20  -43.4099 -175.3790 34.97  T-7
T5_00002   2006/10/18 23:21:15  -41.9800 -178.1510 35.39  T-5
T4_00078   2006/10/20 06:18:54  -43.3330 -176.9550 34.88  T-4
T7_00079   2006/10/20 23:48:38  -43.0964 -179.6470 35.12  T-7
T4_00080   2006/10/21 22:23:27  -42.8662 176.8390 35.00  T-4
```

NBP0607C Multibeam Data Tape/DVD Description

Multibeam data has been provided on 4mm DAT tape to the science party and RPSC. The New Zealand government was provided a copy of the data. Each complete set of Multibeam data consists of one 4mm DAT tape. The 4mm DAT tapes were created on UNIX computers using the command "tar cvf /dev/rmt/0l" and verified to be sound on a UNIX machine before they were distributed.

Each DAT tape contains all the raw and processed daily MB data. 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 areas.

Each Full Data Set Includes:

1. One tape – Raw and Processed data
 - a. **Raw** contains the raw data files as recorded by the MB and ancillary files. The files are divided into directories by days
 - b. **process** contains all the edited data and daily processing divided into directories by days. It includes all files for grids and maps as well as any additional work done by the MB staff or the science party. It also includes the svp directory that contains all sound velocity profiles used during cruise.
2. Printed copy of this report

NBP0607C Multibeam Distribution

| S/N | Who | Description | Type | Created on | Verified on |
|------------|------------|--|-------------|-------------------|--------------------|
| 1 | Stock | Raw, Edit, Process Multibeam 10/10 thru 10/22 2006 | DDS4 | teranova | tula |
| 2 | Cande | Raw, Edit, Process Multibeam 10/10 thru 10/22 2006 | DDS4 | teranova | tula |
| 3 | Luyendyk | Raw, Edit, Process Multibeam 10/10 thru 10/22 2006 | DDS4 | c2 | icecap |
| 4 | Davy | Raw, Edit, Process Multibeam 10/10 thru 10/22 2006 | DDS4 | c3 | teranova |
| 5 | O'Hara | Raw, Edit, Process Multibeam 10/10 thru 10/22 2006 | DDS4 | c5 | polarstar |
| 6 | DENHQ | Raw, Edit, Process Multibeam 10/10 thru 10/22 2006 | DDS4 | c2 | icecap |
| 7 | NBP | Raw, Edit, Process Multibeam 10/10 thru 10/22 2006 | DDS4 | c3 | polarstar |
| 8 | NZ | Raw, Edit, Process Multibeam 10/10 thru 10/22 2006 | DDS4 | c5 | hero |