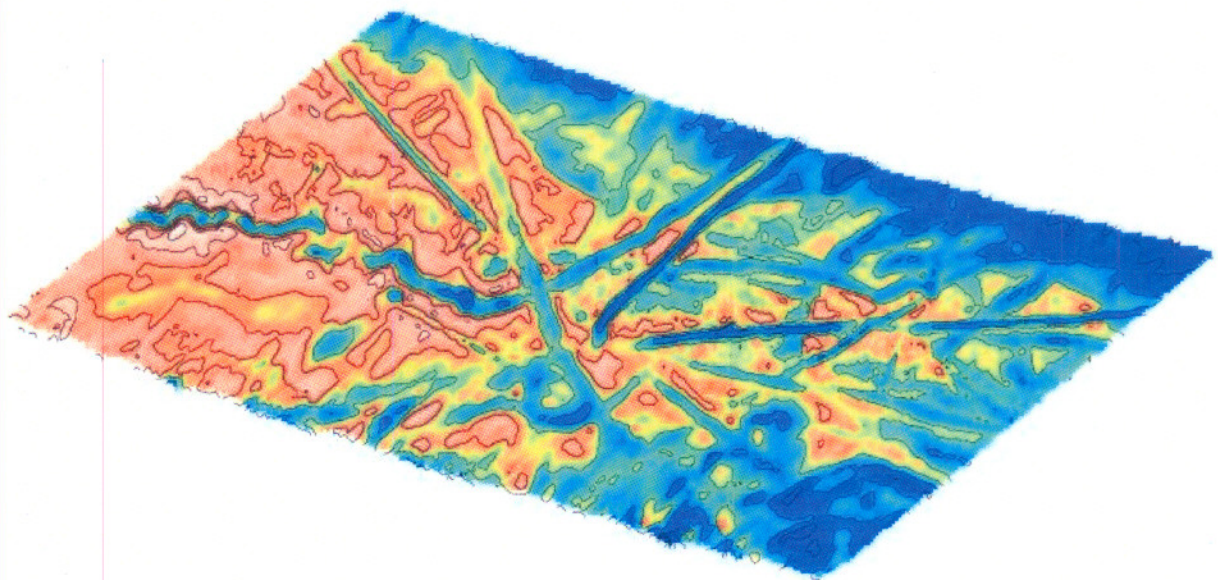


NBP0709
Multibeam
End of Cruise Report

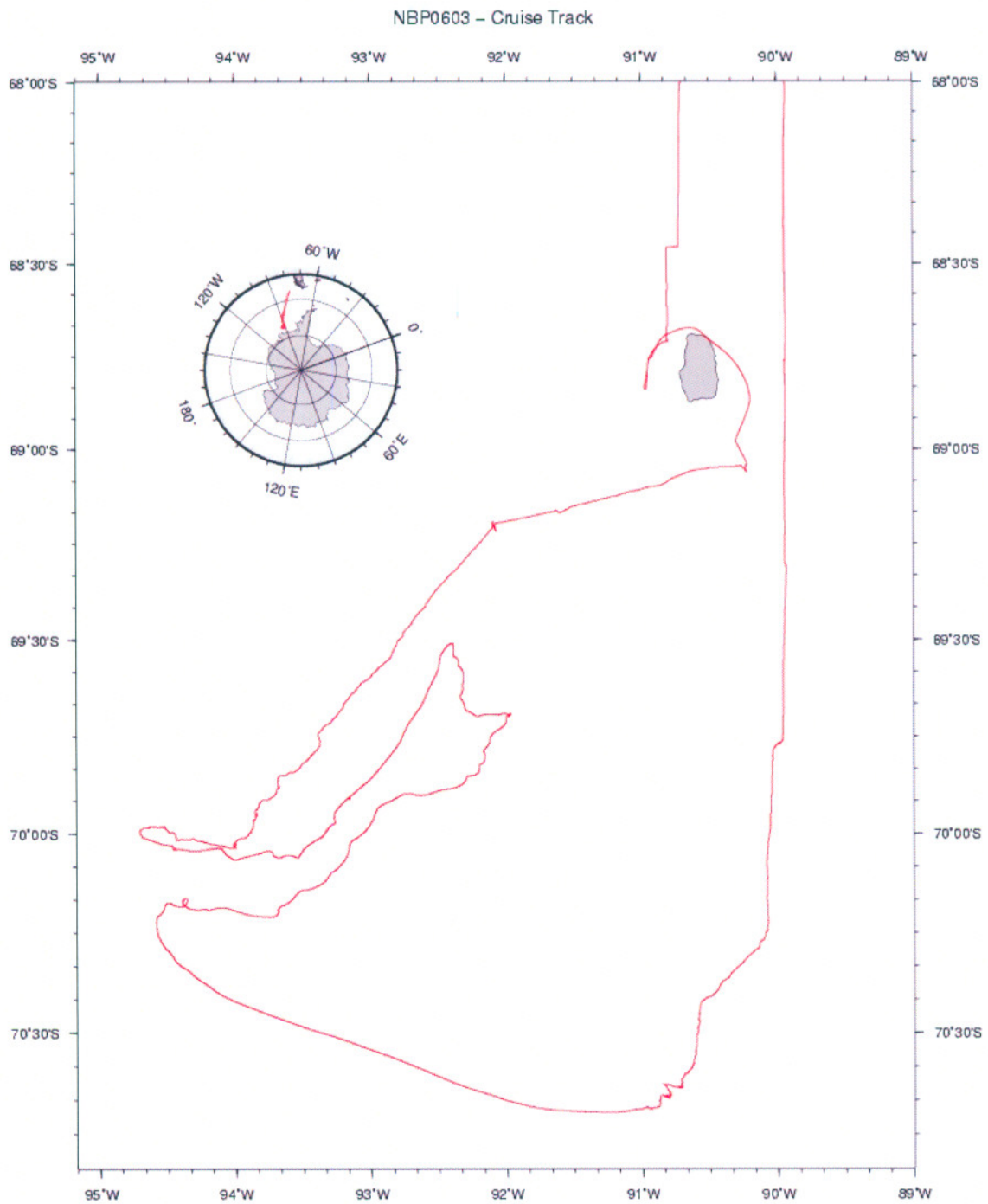


Prepared By Kathleen Gavahan
October 30, 2007

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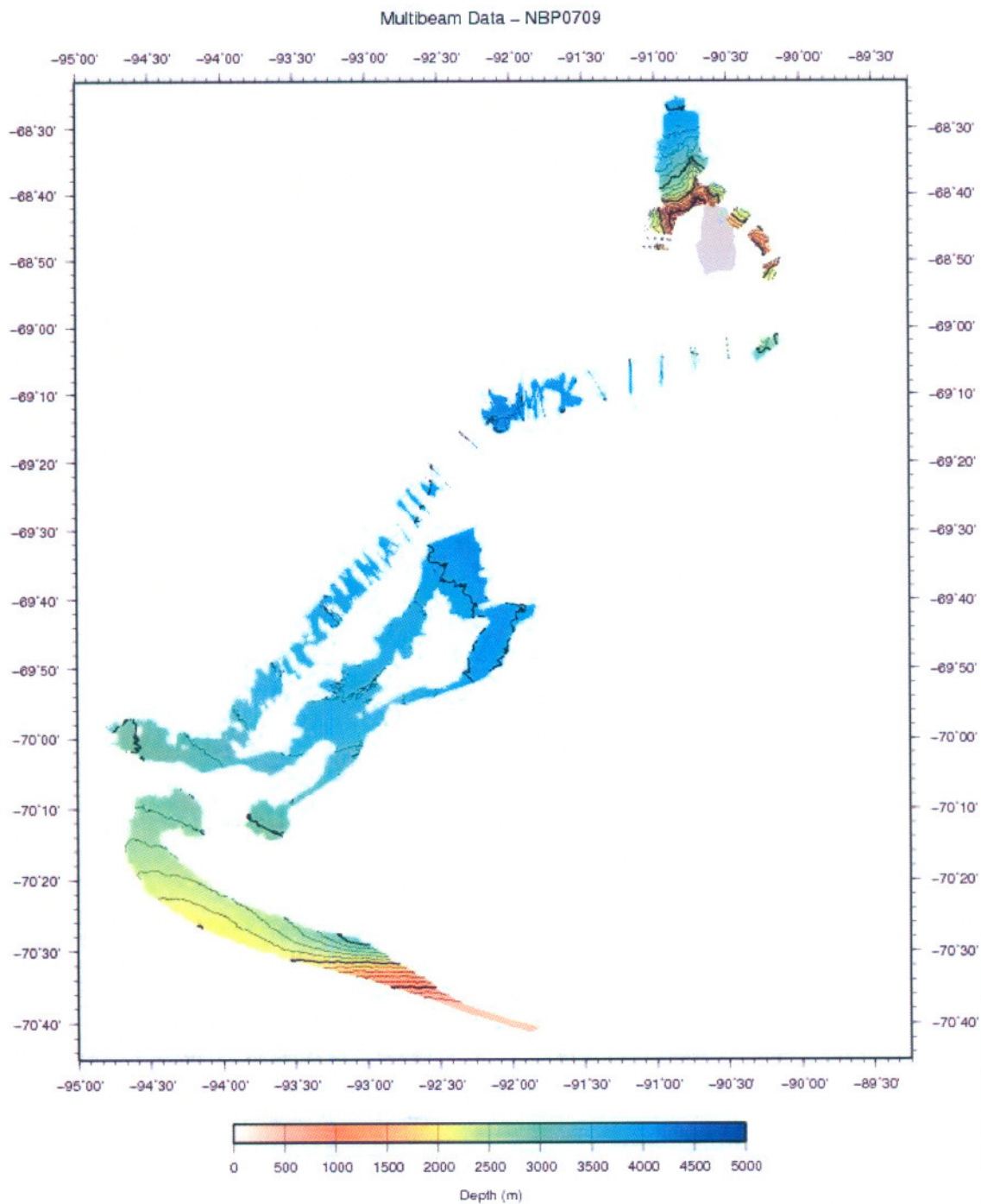
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Cruise Track Plot



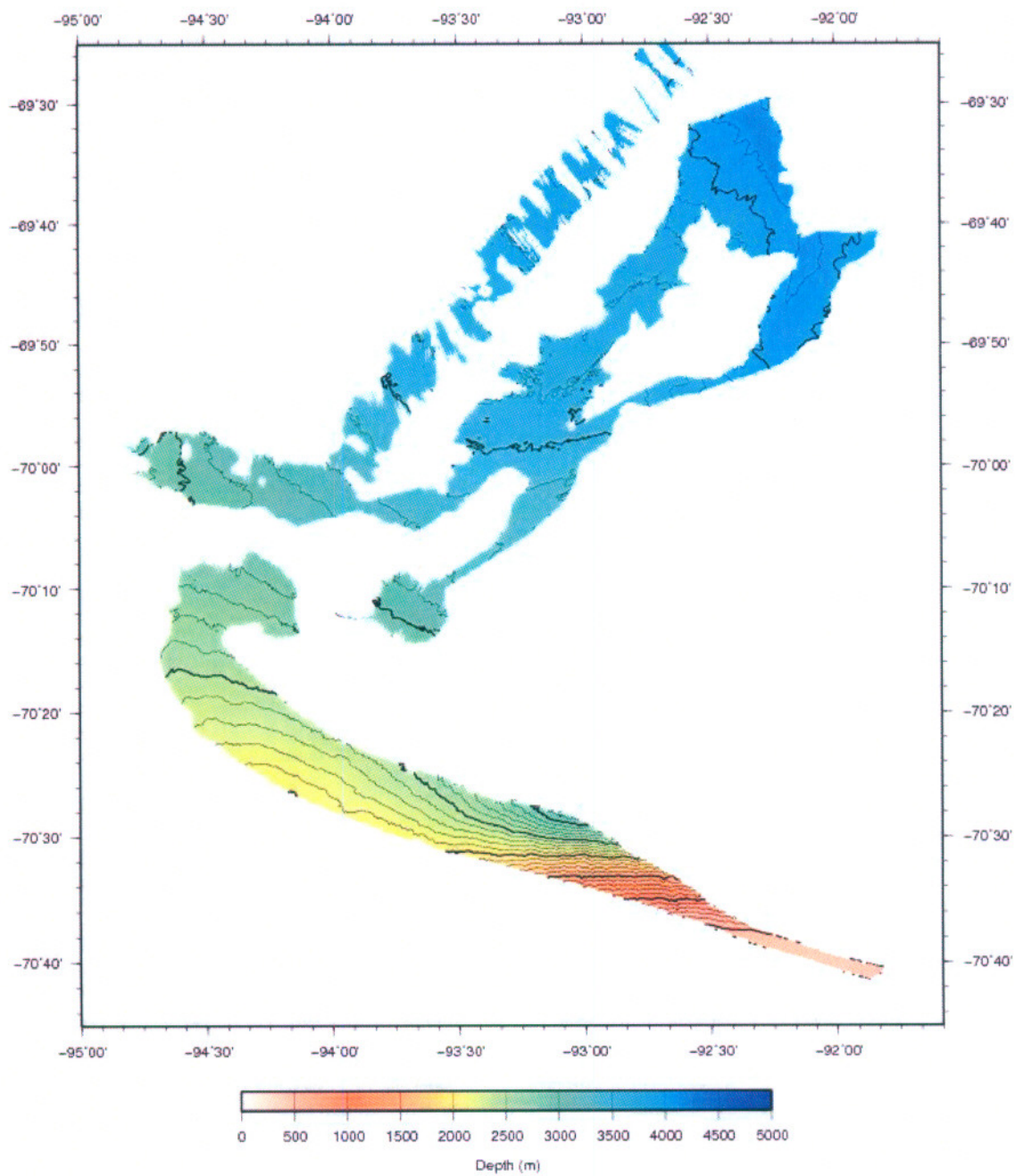
GM 2007 Oct 28 13:37:57 K. Gavahan, RPSC

Multibeam Work Area Plots



1994 Aug 22 22:36:28 K. Gavahan, RPSC

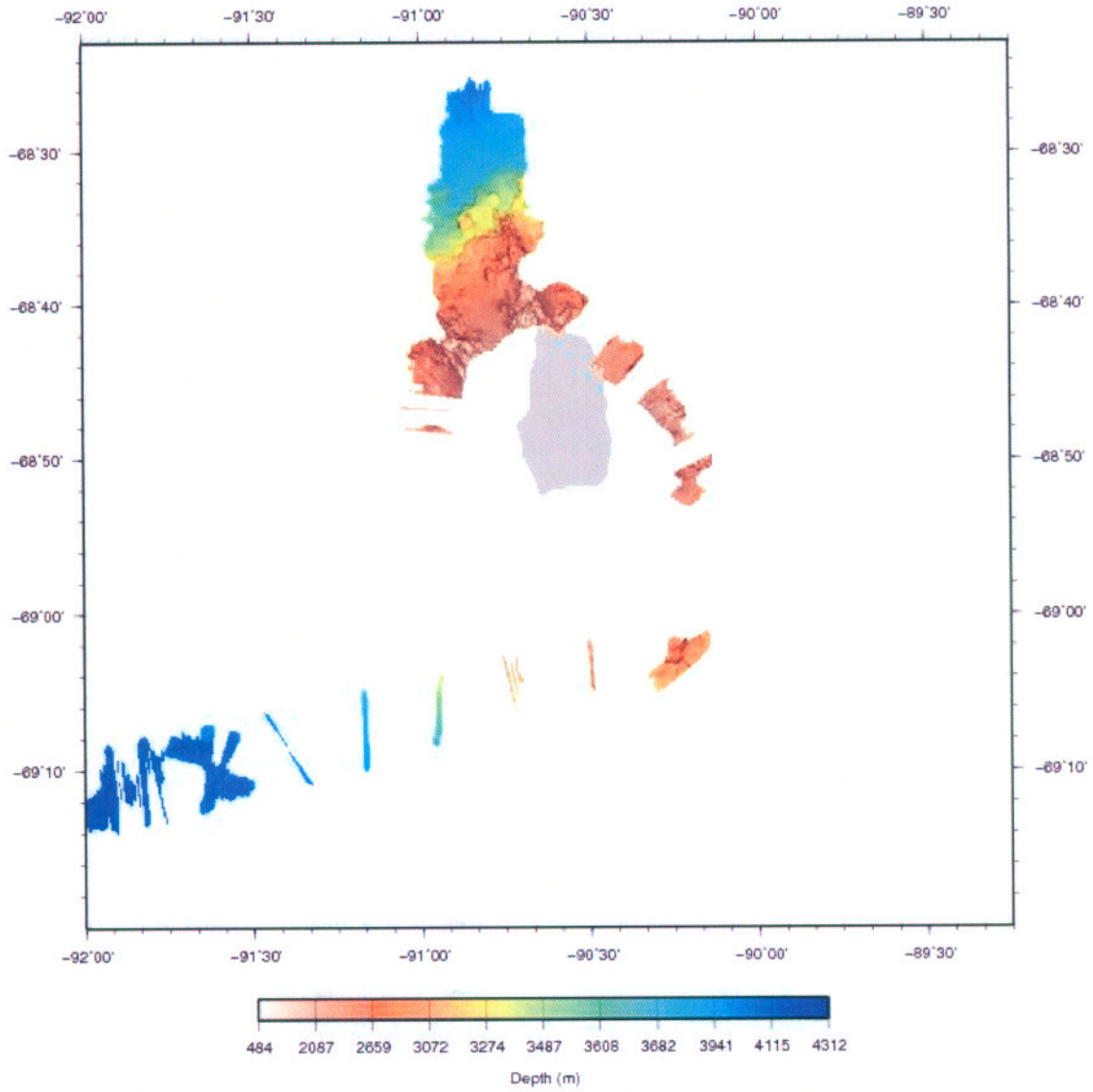
Multibeam Data – NBP0709, Ice Camp Belgica Drift



Gridded Data Belgica.grd
Contour Interval=100
MB Data from NBP0709

GM 1994 Aug 22 20:58:52 K. Gavahan, RPSC

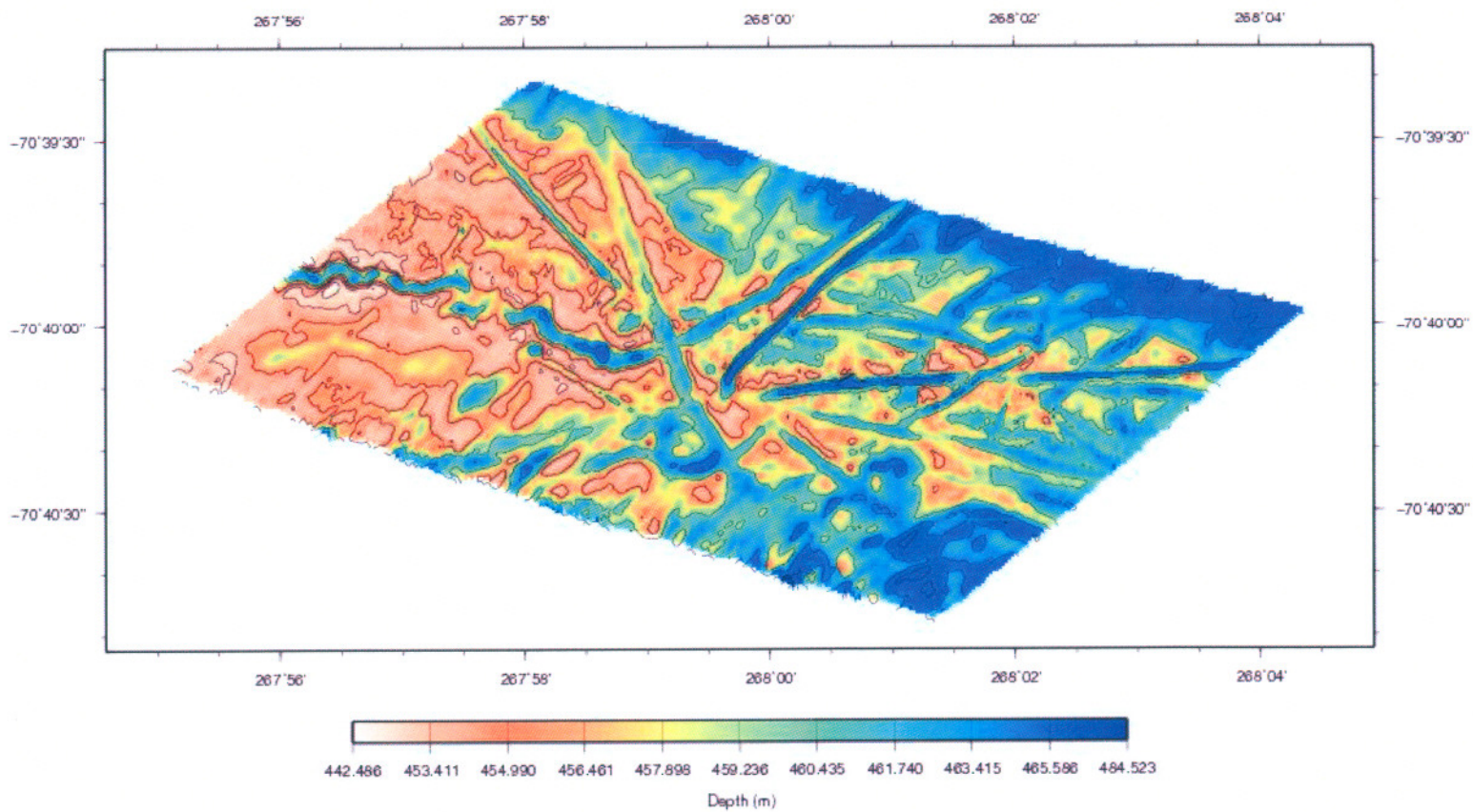
Multibeam Data – NBP0709, Peter I Island



Gridded Data Peter1.land.grd
Slope Magnitude Shade
MB Data from NBP0709

GM 1994 Aug 22 19:22:02 K. Gavahan, RPSC

Multibeam Data – NBP0709, Ice Berg Scours



Gridded Data IceBerg.grd
Slope Magnitude Shade

NBP0709 Multibeam Description of Work

This report covers the Simrad EM120 Multibeam data collection and processing for the RVIB Nathaniel B. Palmer cruise NBP0709. This cruise started at Punta Arenas, Chile on September 1, 2007 (GMT) and ended at Punta Arenas, Chile on October 31, 2007. The Chief Scientist was Dr. Stephen Ackley, UTSA. Kathleen Gavahan (RPSC) was responsible for Multibeam data acquisition, processing, and ping editing quality control.

Shortly after exiting the 200 mile Chilean EEZ on September 4th, a fire occurred on the main deck. Smoke and soot were deposited on all computers and instruments in the forward dry lab and the electronics lab. The EM120 and all computers and other instruments were turned off. After a stop at Palmer Station, the ship went back to Punta Arenas for cleaning and repair. After departing Punta Arenas for a second time on September 19, 2007, the EM120 was cleaned. The operator interface computer and monitor failed, and were replaced with backup equipment. The transceiver and RX preamplifier unit came up properly after cleaning. Multibeam data logging started at 19:44 (GMT), September 28, 2007. Data was collected during the rest of the cruise with the exception of a few hours when it was turned off so as not to interfere with recording of underwater seal calls.

1862 kilometers of data consisting of 222,829 records were collected during this cruise. Most of the data collected was collected during the Camp Belgica Drift. Data quality during the drift was good except when the bow thrusters were operating. When the ship was drifting parallel to the swath width, not much new data was collected. After ending the drift, the ship traveled through pack ice for several days and data quality was poor during this period.

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 5.0.7 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_yyyyymmdd_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_yyyyymmdd_hhmmss.mb57 where the first part of the name is identical to the raw file. All data files were edited while at sea.

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 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. 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 Kathleen. 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.

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 Expendable BathyThermographs (XBTs) and CTSs, which were combined with the levitus historical database. The XBT and 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.

NBP0709 Data Distribution

Multibeam data has been provided on a DDS 4mm tape to the science party and RPSC. The tapes were created on Sun computers using the command tar cvf /dev/rmt/0l and verified to be sound 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 for September 28 to October 29, 2007. The files are divided into directories by days
- b) **process** has the edited data and daily processing divided into directories by days for September 28 to October 29, 2007.

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	Ackley Copy1	28 Sept. – 29 Oct. 2007 Raw, process, maps	DDS4
2	Ackley Copy 2	28 Sept. – 29 Oct. 2007 Raw, process, maps	DDS4
3	Ackley Copy 3	28 Sept. – 29 Oct. 2007 Raw, process, maps	DDS4
4	NBP	28 Sept. – 29 Oct. 2007 Raw, process, maps	DDS4
5	RPSC	28 Sept. – 29 Oct. 2007 Raw, process, maps	DDS4
6	MGDS	28 Sept. – 29 Oct. 2007 Raw, process, maps	DDS4