NBP0901

Multibeam
End of Cruise Report

Photo © Kathleen Gavahan

Prepared By Kathleen Gavahan
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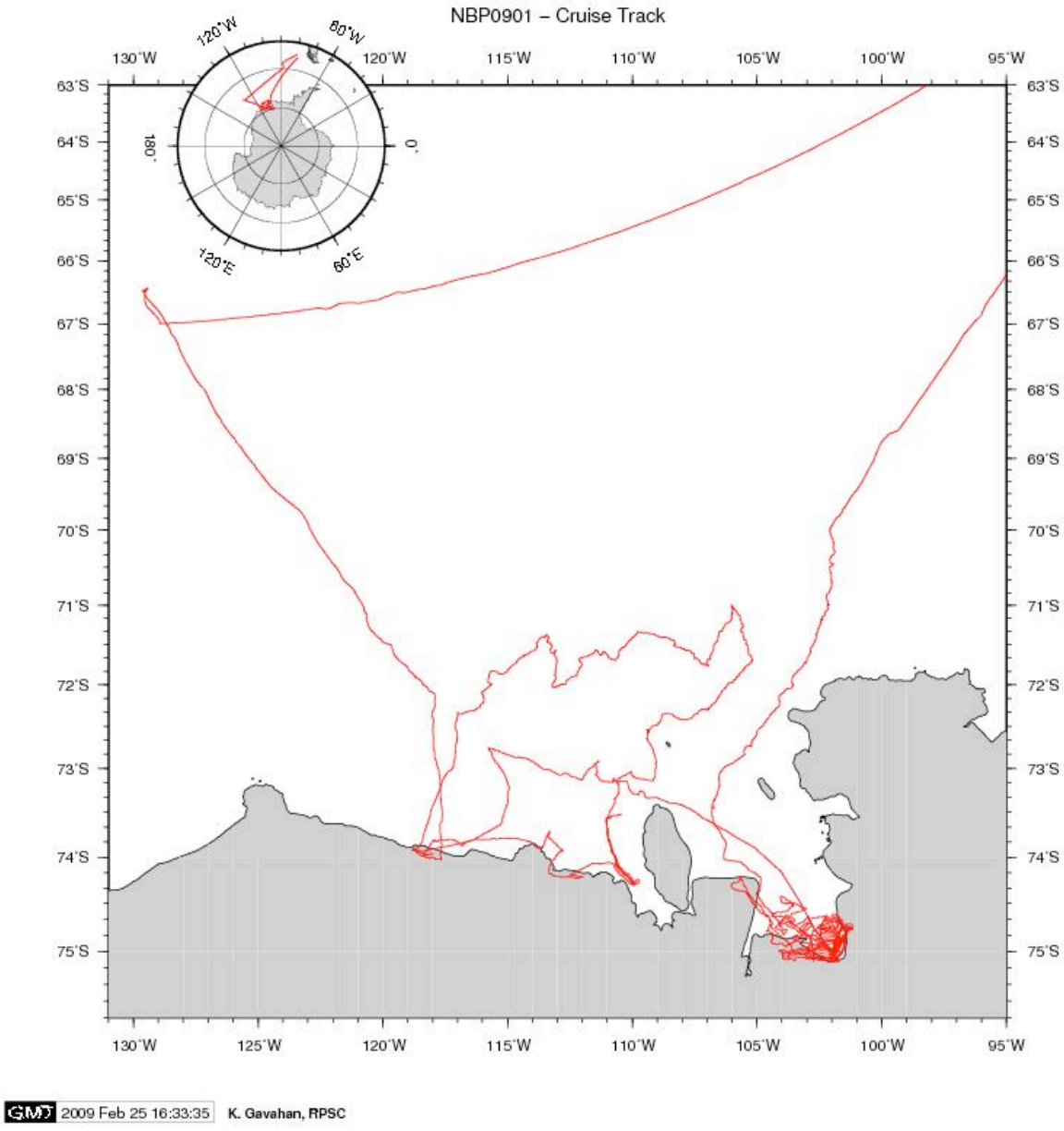
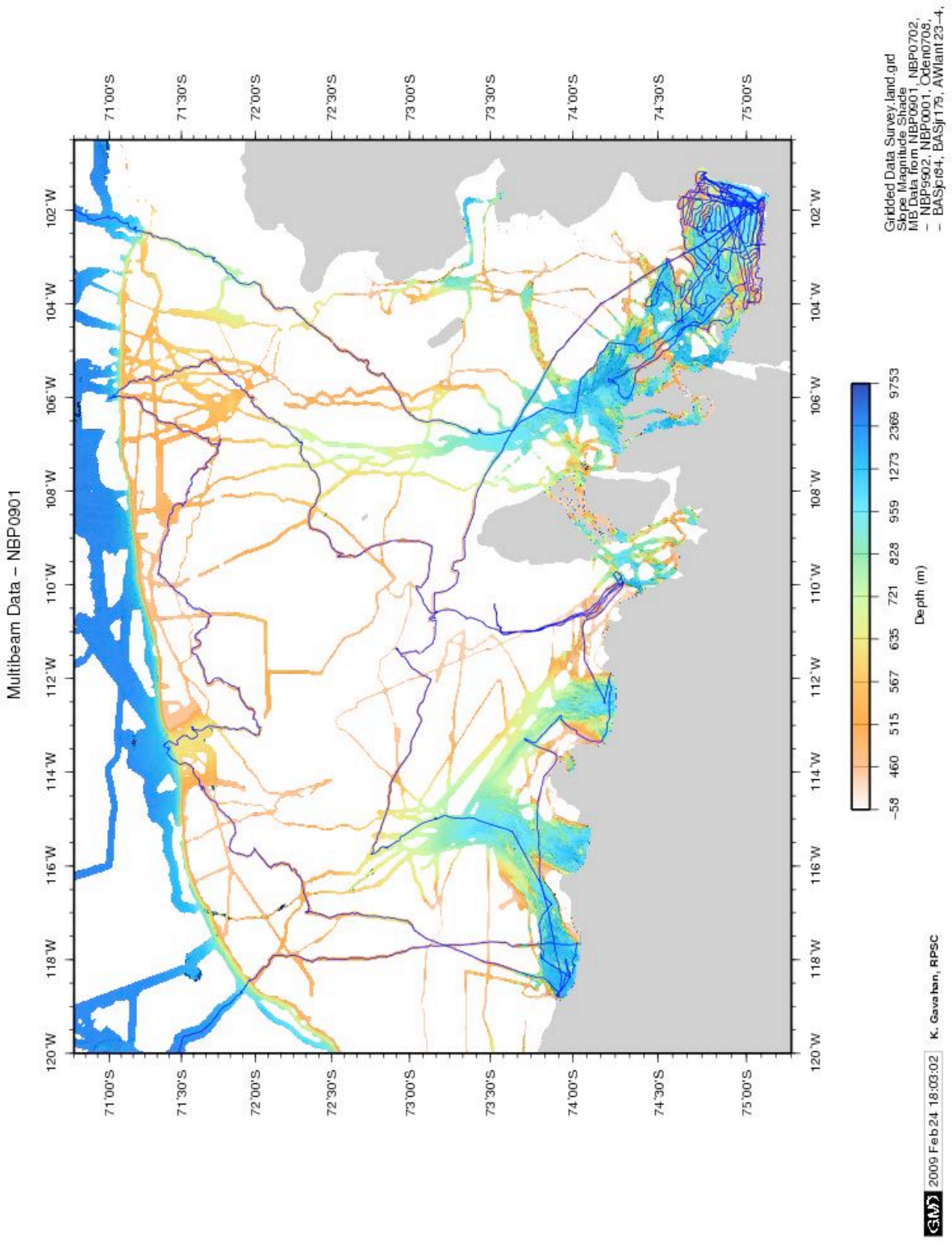
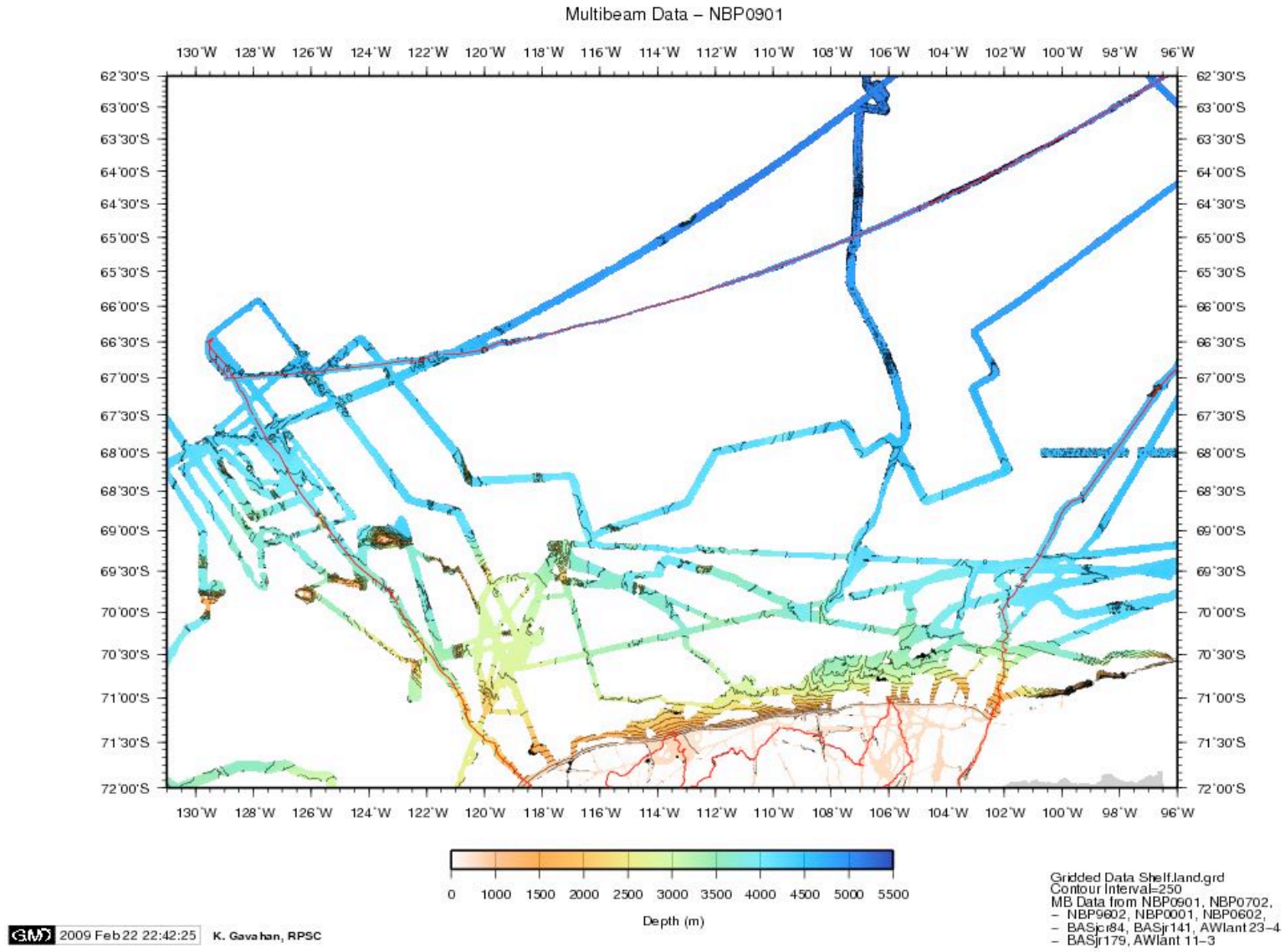
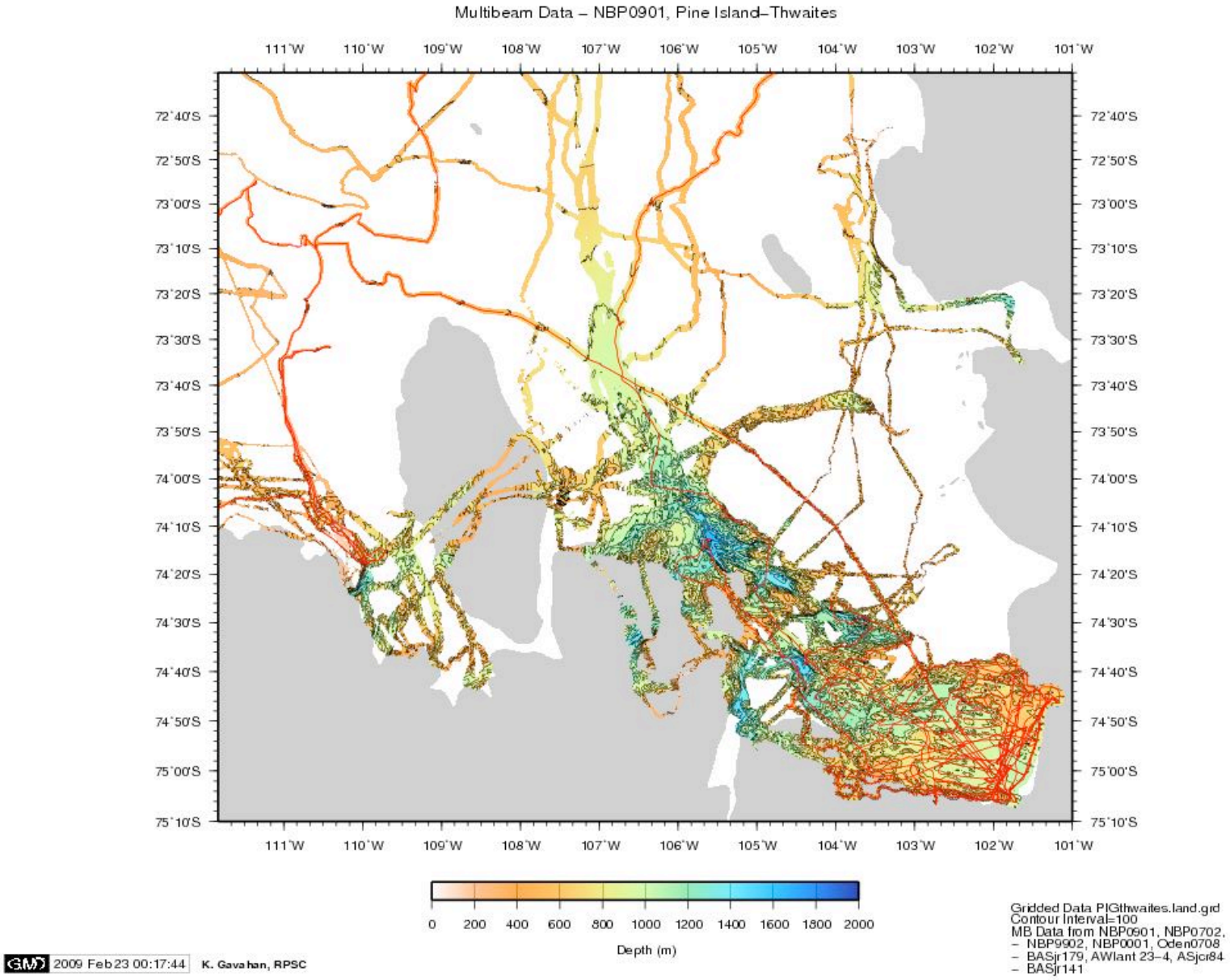
Cruise Track Plot

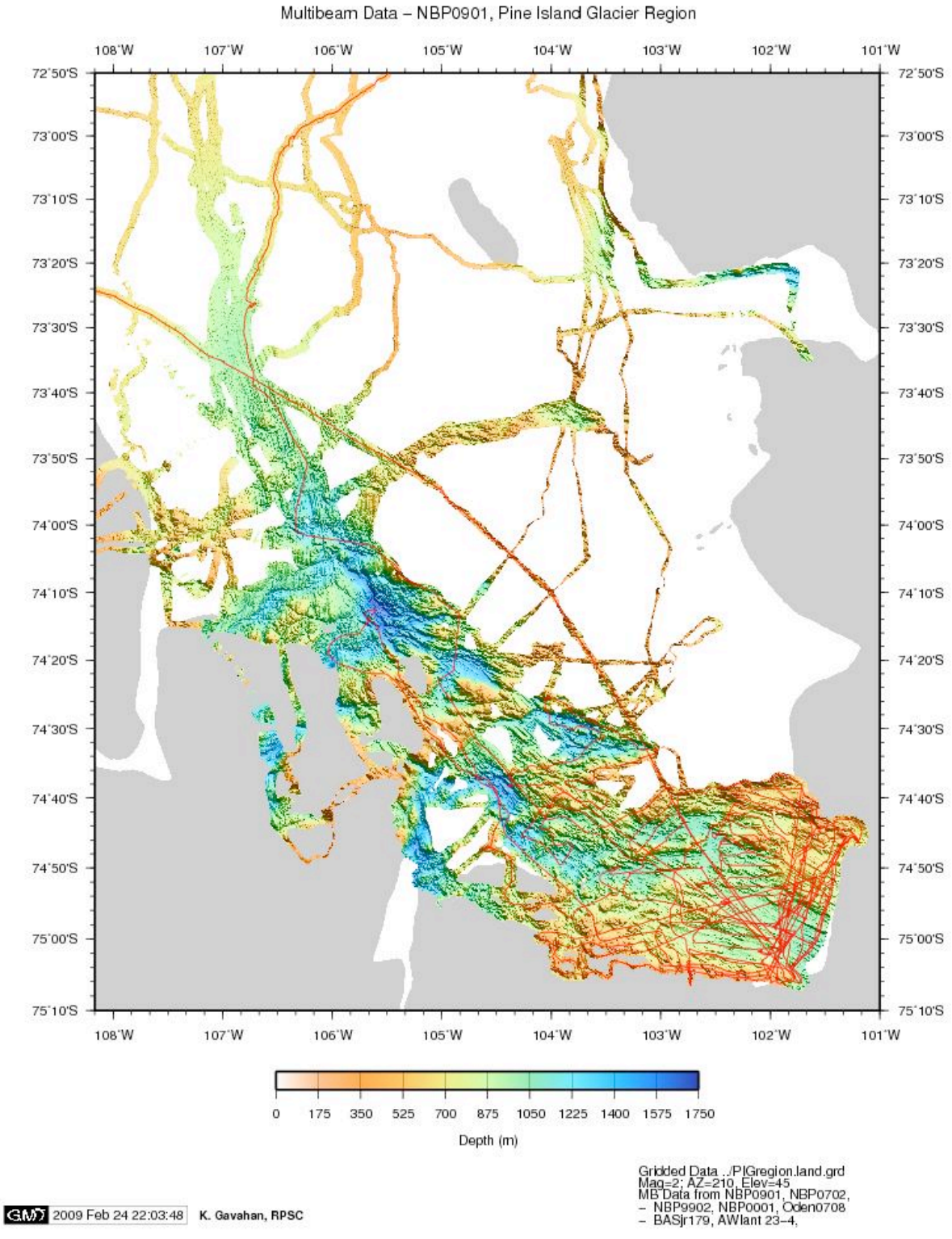


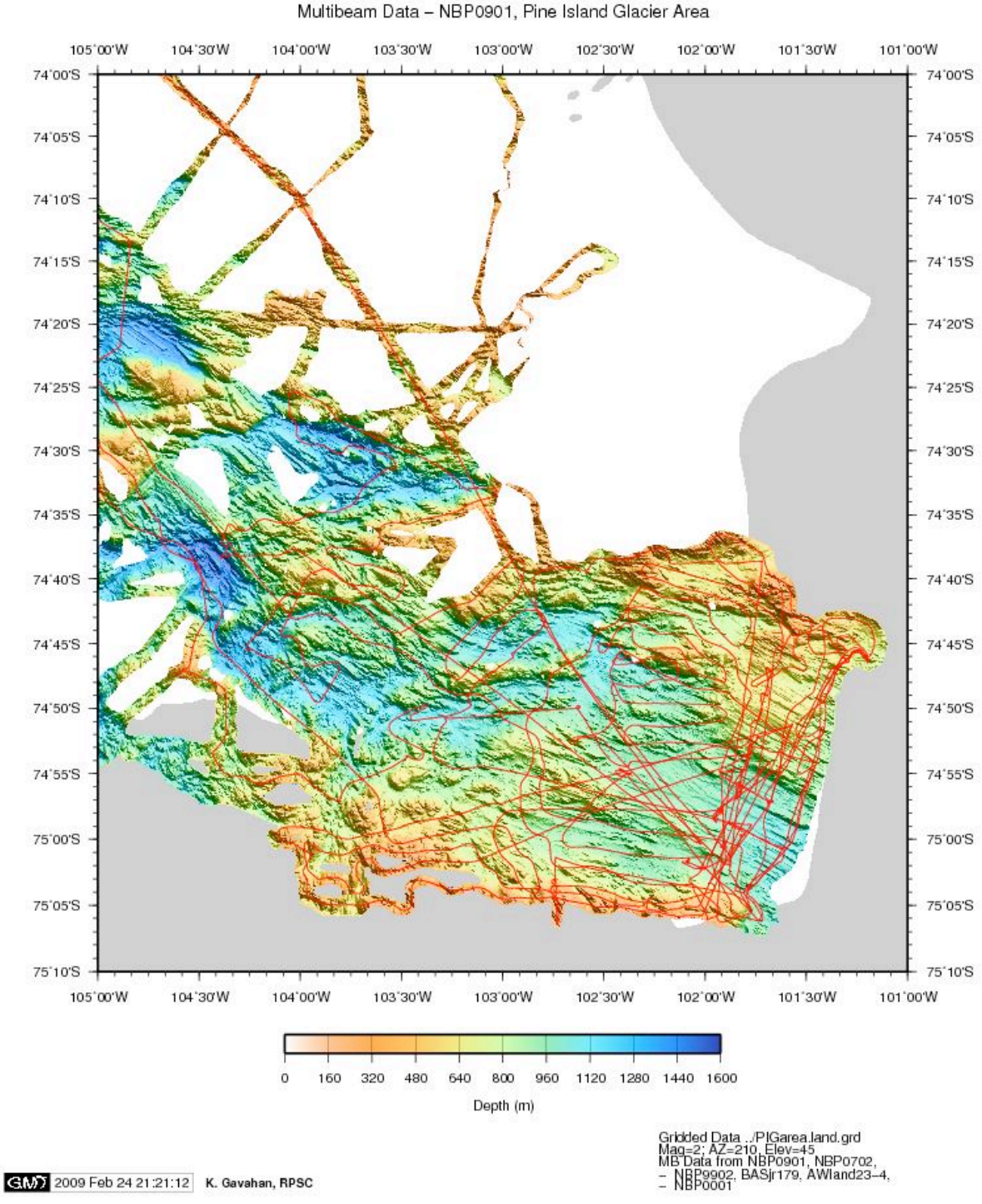
Multibeam Work Area Plots

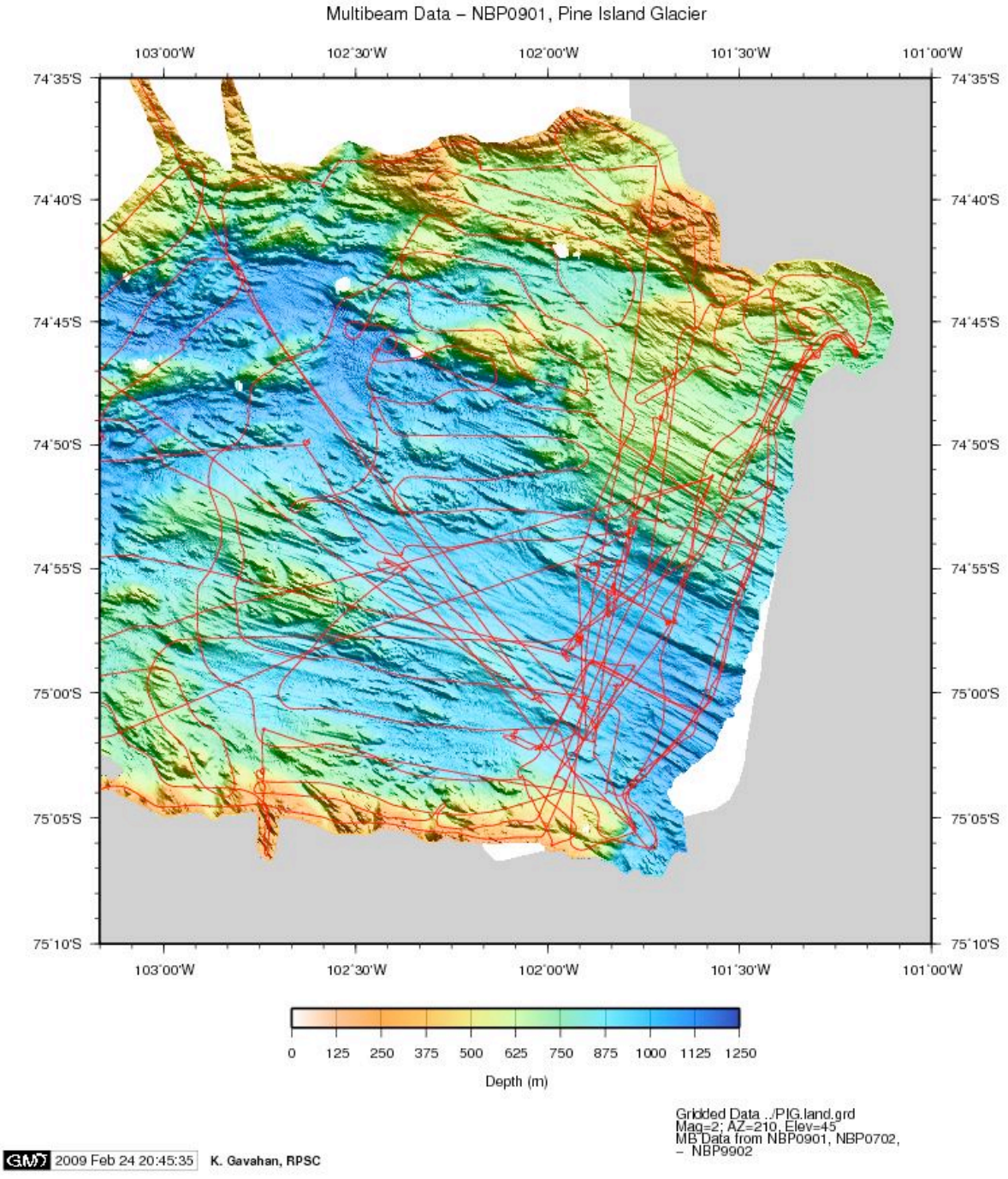


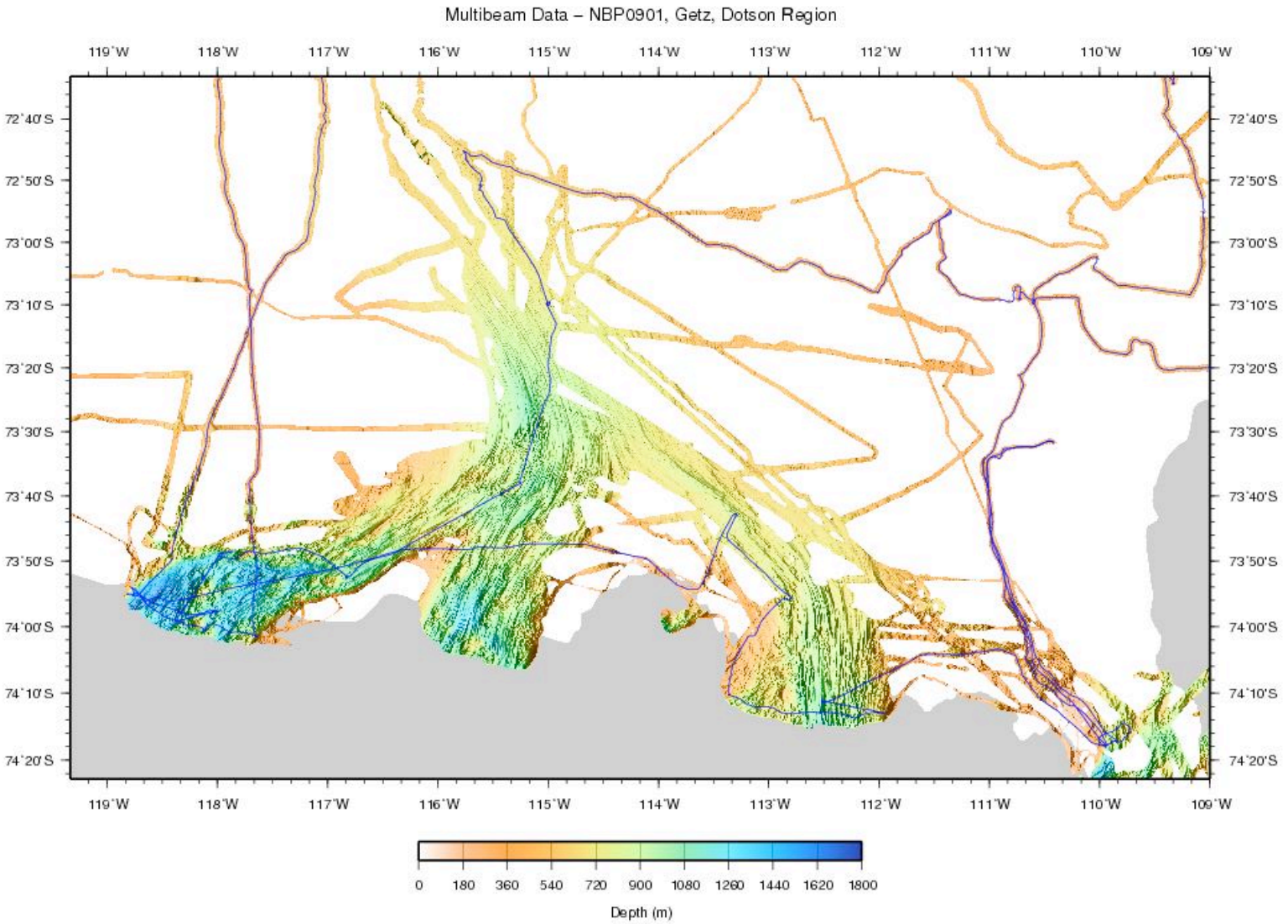

Multibeam Data – NBP0901
130°W 128°W 126°W 124°W 122°W 120°W 118°W 116°W 114°W 112°W 110°W 108°W 106°W 104°W 102°W 100°W 98°W 96°W
62°30'S 63°00'S 63°30'S 64°00'S 64°30'S 65°00'S 65°30'S 66°00'S 66°30'S 67°00'S 67°30'S 68°00'S 68°30'S 69°00'S 69°30'S 70°00'S 70°30'S 71°00'S 71°30'S 72°00'S
0 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500
Depth (m)
Gridded Data Shelf.land.grd
Contour Interval=250
MB Data from NBP0901, NBP0702,
– NBP9602, NBP0001, NBP0602,
– BASjcr84, BASjr141, AWlant23-4
– BASjr179, AWlant 11-3
GMT 2009 Feb 22 22:42:25 K. Gavahan, RPSC


Multibeam Data – NBP0901, Pine Island–Thwaites
111°W
110°W
109°W
108°W
107°W
106°W
105°W
104°W
103°W
102°W
101°W
72°40'S
72°50'S
73°00'S
73°10'S
73°20'S
73°30'S
73°40'S
73°50'S
74°00'S
74°10'S
74°20'S
74°30'S
74°40'S
74°50'S
75°00'S
75°10'S
0
200
400
600
800
1000
1200
1400
1600
1800
2000
Depth (m)
GMT 2009 Feb 23 00:17:44
K. Gavahan, RPSC
Gridded Data PIGthwaites.land.grd
Contour Interval=100
MB Data from NBP0901, NBP0702,
– NBP9902, NBP0001, Oden0708
– BASjr179, AWIant 23–4, ASjcr84
– BASjr141


Multibeam Data – NBP0901, Pine Island Glacier Region
108°W
107°W
106°W
105°W
104°W
103°W
102°W
101°W
72°50'S
73°00'S
73°10'S
73°20'S
73°30'S
73°40'S
73°50'S
74°00'S
74°10'S
74°20'S
74°30'S
74°40'S
74°50'S
75°00'S
75°10'S
0
175
350
525
700
875
1050
1225
1400
1575
1750
Depth (m)
Gridded Data ../PIGregion.land.grd
Mag=2; AZ=210, Elev=45
MB Data from NBP0901, NBP0702,
– NBP9902, NBP0001, Oden0708
– BASjr179, AWIant 23–4,
GMT 2009 Feb 24 22:03:48
K. Gavahan, RPSC


Multibeam Data – NBP0901, Pine Island Glacier Area
105°00'W
104°30'W
104°00'W
103°30'W
103°00'W
102°30'W
102°00'W
101°30'W
101°00'W
74°00'S
74°05'S
74°10'S
74°15'S
74°20'S
74°25'S
74°30'S
74°35'S
74°40'S
74°45'S
74°50'S
74°55'S
75°00'S
75°05'S
75°10'S
0
160
320
480
640
800
960
1120
1280
1440
1600
Depth (m)
Gridded Data ../PIGarea.land.grd
Mag=2; AZ=210, Elev=45
MB Data from NBP0901, NBP0702,
– NBP9902, BASjr179, AWIand23–4,
– NBP0001
GMT 2009 Feb 24 21:21:12
K. Gavahan, RPSC


Multibeam Data – NBP0901, Pine Island Glacier
103°00'W
102°30'W
102°00'W
101°30'W
101°00'W
74°35'S
74°40'S
74°45'S
74°50'S
74°55'S
75°00'S
75°05'S
75°10'S
0 125 250 375 500 625 750 875 1000 1125 1250
Depth (m)
Gridded Data ../PIG.land.grd
Mag=2; AZ=210, Elev=45
MB Data from NBP0901, NBP0702,
– NBP9902
GMT 2009 Feb 24 20:45:35 K. Gavahan, RPSC


Multibeam Data – NBP0901, Getz, Dotson Region
119°W
118°W
117°W
116°W
115°W
114°W
113°W
112°W
111°W
110°W
109°W
72°40'S
72°50'S
73°00'S
73°10'S
73°20'S
73°30'S
73°40'S
73°50'S
74°00'S
74°10'S
74°20'S
0
180
360
540
720
900
1080
1260
1440
1620
1800
Depth (m)
Gridded Data ../Getz.land.grd
Mag=2; AZ=270, Elev=45
MB Data from NBP0901, NBP0702,
– NBP9902, NBP0001, Oden0708
– BASjcr84, BASjr179, AWIant23-4,
GMT 2009 Feb 24 21:46:24
K. Gavahan, RPSC

NBP0901 Multibeam Description of Work

This report covers the Simrad EM120 Multibeam data collection and processing for the RVIB Nathaniel B. Palmer cruise NBP0901. This cruise started in Punta Arenas, Chile on January 5, 2009 (GMT) and ended in Punta Arenas, Chile on February 26, 2009. Data collection for this distribution goes from January 7 through February 25, 2009. The Chief Scientist was Stan Jacobs (LDEO), and principal investigators were Adrian Jenkins (BAS) and Anne-Carlijn Aldercamp (Stanford). Kathleen Gavahan (RPSC) and Frank Nitsche (LDEO) were responsible for Multibeam data acquisition, processing, and ping editing quality control.

Multibeam data acquisition began January 7 and ended February 25, 2009. Approximately 11,913 kilometers of multibeam data consisting of 540,857 records were collected during this cruise. Data quality was usually good. The exceptions were when we experienced strong winds and heavy seas or sea ice.

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. 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. 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 K. Gavahan. 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

[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)

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 mb_vel. Sound velocity profiles were calculated from CTD casts and XBTs, which were combined with the Levitus historical database. The CTD and XBT 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.

NBP0901 Data Distribution

Multibeam data has been provided on two DDS 4mm tapes to the science party and RPSC. The distribution consists of 2 tapes 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 January 7 to February 8, 2009. The files are divided into directories by days
   b) **process** has the edited data and daily processing divided into directories by days for January 7 to February 8, 2009.

2. DDS4
   a) **Raw** has raw data and ancillary files for February 9 to February 25, 2009. The files are divided into directories by days
   b) **process** has the edited data and daily processing divided into directories by days for February 9, 2009 to February 25, 2009. It also contains the maps directory.

All full data distributions also includes 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	Jacobs 1	7 Jan – 8 Feb 2009 Raw, process	DDS4
2	Jacobs 2	7 Jan – 8 Feb 2009 Raw, process	DDS4
3	MGDS	7 Jan – 8 Feb 2009 Raw, process	DDS4
4	NBP	7 Jan – 8 Feb 2009 Raw, process	DDS4
5	RPSC	7 Jan – 8 Feb 2009 Raw, process	DDS4
6	Jacobs 1	9 Feb – 25 Feb 2009 Raw, process, maps	DDS4
7	Jacobs 2	9 Feb – 25 Feb 2009 Raw, process, maps	DDS4
8	MGDS	9 Feb – 25 Feb 2009 Raw, process, maps	DDS4
9	NBP	9 Feb – 25 Feb 2009 Raw, process, maps	DDS4
10	RPSC	9 Feb – 25 Feb 2009 Raw, process, maps	DDS4