RRS James Clark Ross

JR259 Cruise Report

Geology and Bathymetry, Scotia and Weddell Seas

RRS James Clark Ross JR259 Cruise Report

Geology and Bathymetry, Scotia and Weddell Seas

P.T. Leat, A. J. Tate, G. Buys

British Antarctic Survey Cruise Report

Falkland Islands – South Orkney – South Sandwich Islands – Weddell Sea - Halley – South Scotia Ridge – Signy – Falkland Islands

Report of *RRS James Clark Ross* cruise JR259, February-March 2012

BAS Archive Reference Number: AD6/3/JR259

March 2012

Contents:

Front Page Image: RRS James Clark Ross arriving at Creek 3, Brunt Ice Shelf. Photographer: Kirk Watson.

Summary

RRS James Clark Ross cruise JR259 took place from 7th February 2012 to 22nd March 2012. It was a BAS National Capability cruise for the Geological Long Term Monitoring and Survey (LTMS) Workpackage. It was joined with cruise JR275 (Evolutionary History Workpackage), specifically benthic biology, which belonged to the same BAS Science Programme (Environmental Change and Evolution). The main objectives of JR259 and JR275 were closely integrated. It was also joined with JR255B (retrieval of oceanographic gliders from the south Drake Passage and South Orkney area) a logistics visit to Halley and a logistic visit to Signy. A cruise track is shown in Figure 1. Five days were lost at the start of the cruise due to late arrival of the ship in the Falklands and engineering works. Small surveys and dredging in the West Scotia Ridge and Herdman Bank and the passage to the South Sandwich Islands were successful and completed in good time. Work in the South Sandwich arc was abandoned because of bad weather and shortage of time. Work in the Weddell Sea was mainly for cruise JR275, and consisted of benthic biology sampling on the Weddell Sea continental margin and continental slope using Agassiz trawls and an Epibenthic Sledge fitted with a camera. This sampling was very successful. During this time, JR259 provided swath bathymetry coverage of sites to be sampled by the biologists, and to provide data and assessments of suitability of sites. This combination was very effective at identifying good sites for the biology sampling. A swath bathymetry survey of the continental slope from the shelf brake to locally over 2000 m was completed for the eastern Weddell Sea, as far as ice conditions and time would allow. After personnel uplift from Halley, and transect of the Weddell Sea, retrieval of oceanographic gliders for JR255B was attempted. This was partially successful, in that one of three gliders deployed was retrieved. Two gliders were not retrieved because their GPS location systems failed. A short swath survey of the South Scotia ridge was carried out before transit to Signy.

Objectives

The main purposes of the cruise were to map the seafloor around the southern South Sandwich Islands, extending the coverage obtained during cruise JR204 in 2010, to dredge unsampled seamounts and faulted margins in the same area, and to map sea floor areas in the Scotia Sea and Weddell Seas in support of benthic biology EVOLHIST cruise JR275, running concurrently. Other objectives were to resample a young peridotite xenolith-bearing seamount on the West Scotia Ridge, to map part of the continental shelf edge in the Weddell Sea to investigate hazards, and map parts of the South Scotia Ridge to improve coverage for the Tectonic Map of the Scotia Sea. These objectives were constrained by logistics considerations, including a logistics visit to Halley, and the objectives of cruise JR275. The objectives were therefore a combination of providing data for current research projects, support of cruise JR275, and providing base map information for future research in these areas. The close collaboration between the swath mapping on JR259 and the benthic biology sampling on JR275 was experimental, investigating the advantages of running these two science elements together to improve identification of sample sites, providing regional bathymetry context and geology, sedimentology and sea floor processes, of sample sites for

improved interpretation of seafloor communities. The main target for bathymetry and biology sampling in the Weddell Sea was the Filchner Trough. The cruise was the third of a series of three LTMS Geology swath bathymetry cruises to the Scotia Sea, following JR168 (Tate & Leat 2007) and JR206 (Leat et al., 2010).

Funding

Cruise JR259 was part of the Long-Term Monitoring and Survey (LTMS) Workpackage of the Environmental Change and Evolution Programme (BAS).

Summary narrative for JR259/JR275/JR255B

February to March 2012

The cruise track is shown in Figure 1. Note that the cruise took place at the same time and in collaboration with JR275, a benthic biology cruise. Cruise JR255B, which involved recovery of gliders in the southern Drake Passage – South Orkney area also took place during the same leg. The leg was also used to uplift personnel from Halley and Signy.

The initial work in the Western Scotia Sea and the transect toward the South Sandwich Islands went well, with work being completed on schedule.

Arrival in the South Sandwich Islands coincided with the arrival of a large anticyclone, and weather forecasts suggested that this would strongly affect waves in the area for several days. As we had already lost critical days from the cruise, and the number of days available for work in the South Sandwich area was already limited, this forced us to a decision. Either we stayed out the storm in the South Sandwich Islands area, then try to recover work in the area before heading to the Weddell Sea. This could have left us short of science time in both areas. Or we abandoned work in the South Sandwich area, moved to the Weddell Sea, and used all available science time to do a thorough job in the Weddell Sea. The decision was made to move immediately to the Weddell Sea.

Work in the Weddell Sea progressed very well, with JR275 achieving a good coverage of benthic biology sites. Part of the eastern continental slope in the Weddell Sea was mapped using swath bathymetry.

During attempts to recover the gliders for R255B, swath mapping was carried out along the South Scotia Ridge between the South Orkney Block and Clarence Island at the north tip of the Antarctic Peninsula. This work was continued for a period of over a day before transit to Signy, and return to the Falkland Islands.

Date	Julian Day	Notes
4.2.12	35	Scientific Party joined ship at Mare Harbour, Transit to FIPASS
5.2.12	36	Mobilisation/Engineering works at FIPASS
6.2.12	37	Mobilisation/Engineering works at FIPASS
7.2.12	38	Sailed from FIPASS, Falkland Islands 16.35 (Z). Lifeboat deployment and training.
8.2.12	39	Passage to West Scotia Sea. Arrived at W5 segment of West Scotia Ridge
9.2.12	40	Overnight swath survey of south part of W5 segment. Two successful dredges of seamount in extinct spreading centre (DR203 and DR204). Started passage to South Orkney shelf.
10.2.12	41	Passage to South Orkney shelf.
11.2.12	42	Site on South Orkney shelf. CTD, Agassiz trawl and two deployments of /S

		Epibenthic Sledge with camera trials for JR275.
12.2.12	43	Passage toward Herdman Bank/southern South Sandwich Islands.
13.2.12	44	Overnight swath mapping of eastern flank of Herdman Bank. Dredge (DR205) of Herdman Bank. Start passage to southern South Sandwich Islands (heading for Kemp and Adventure caldera).
14.2.12	45	Large storm. Hove too in morning. Decided to abandon work in South Sandwich area. Started passage to Weddell Sea.
15.2.12	46	Passage across Weddell Sea.
16.2.12	47	Passage across Weddell Sea.
17.2.12	48	Passage across Weddell Sea.
18.2.12	49	Transect to southern part of Weddell Sea. Attempted to cut through ice to Filchner Trough in southern Weddell Sea. Abandoned attempt. Overnight swath survey on east flank of middle Filchner Trough.
19.2.12	50	Southeast Filchner Trough site for JR275. Swath mapping to identify biology sample site, overnight swath mapping during transect north.
20.2.12	51	Southeast Filchner Trough site for 275. Swath mapping to identify biology sample site, overnight swath mapping during transect north.
21.2.12	52	Coastal fjords sites for 275. Swath mapping of sites, overnight swath mapping during transect northwest.
22.2.12	53	Central east Filchner site for 275. Swath mapping of sites, overnight swath mapping during transect north.
23.2.12	54	Northeast Filchner site for 275. Swath mapping of sites, overnight swath mapping during transect north.
24.2.12	55	Northeast Filchner site for 275. Swath mapping of sites, overnight swath mapping during transect north. TOPAS survey and box core on iceberg scour.
25.2.12	56	Swath survey of Continental slope at east edge of Crary Fan.
26.2.12	57	Deep sea biology site at 2000 m on Continental slope at east edge of Crary Fan.
27.2.12	58	Swath survey of Continental slope along east sector of Crary Fan.
28.2.12	59	Biology site at 1500 m on Continental slope at east edge of Crary Fan. Overnight swath on shelf break.
29.2.12	60	Biology sites at 600 and 400 m on Continental slope at east edge of Crary Fan. Overnight swath on shelf break.
1.3.12	61	Biology site at 1000 m on Continental slope at east edge of Crary Fan. Overnight swath on shelf break.
2.3.12	62	Swath survey of Continental slope from east edge of Crary Fan to Brunt ice shelf.

3.3.12	63	Swath survey of Continental slope from east edge of Crary Fan to Brunt ice shelf.
4.3.12	64	Biology sites at 400 m on Continental shelf.
5.3.12	65	Halley last call. Personnel uplift at Creek 3. Started passage north across Weddell Sea.
6.3.12	66	Passage north across Weddell Sea.
7.3.12	67	Passage north across Weddell Sea. CTD at 4700 m to correct cable spooling.
8.3.12	68	Passage north across Weddell Sea.
9.3.12	69	Passage north across Weddell Sea.
10.3.12	70	Passage along to South Orkney continental shelf edge to first glider site north of South Orkney Islands.
11.3.12	71	Failed attempt to recover glider SG546 for JR255B north of Inaccessible Islands, South Orkney Islands.
12.3.12	72	Transit to South Scotia Ridge 150 miles west of South Orkneys. Retrieved Glider SG539 for JR255B. 5 hours of swath survey on South Scotia Ridge. Started transit north to Quest Fracture Zone for third glider.
13.3.12	73	Failed attempt to recover glider SG522 for JR255B from near Quest Fracture Zone, West Scotia Sea. 5 hours overnight swath survey along Quest Fracture Zone.
14.3.12	74	Failed attempt to recover glider SG522 for JR255B from between Quest and Endurance Fracture Zones, West Scotia Sea. Started transect back to South Scotia Ridge.
15.3.12	75	Completed transit south from glider site to South Scotia Ridge. Started swath survey on South Scotia Ridge at ca. 16.00 (Z).
16.3.12	76	Swath survey on South Scotia Ridge.
17.3.12	77	Continued swath survey on South Scotia Ridge. Stopped at 10.43 (z) to transit to Signy and stand by for last call.
18.3.12	78	Last call and personnel uplift, Signy.
19.3.12	79	Transit to Falkland Islands
20.3.12	80	Transit to Falkland Islands
21.3.12	81	Arrived Falkland Islands
22.3.12	82	Demobilisation

Personnel

Officers and crew for JR206

BURGAN, Michael JS	Master
PAGE, Timothy S	Chief Officer
O'DONNELL, Wendy A	2nd Officer
BARRATT, Thomas R	3rd Officer
GLOISTEIN, Michael EP	ETO Comms
PECK, David J	DO Sci Ops
ANDERSON, Duncan E	Ch Engineer
PICKARD, Colin S	2nd Engineer
SLATER, Bobby L	3rd Engineer
COUPER, Robert JJ	4th Engineer
WALE, Gareth M	Deck Eng
GOIER, Gerald F	ETO
TURNER, Richard J	Purser
BOWEN, Albert Martin	Bosun
RAPER, Ian	Bosun's Mate
PHILLIPS David A	SG1
MACNEIL, Seamus	SG1
SHEARER, James S	SG1
WALLEY, Mark S	SG1
HERNANDEZ, Francisco J	SG1
HERBERT, Ian B	MG1
PATTERSON, Mark	MG1
HUNTLEY, Ashley Alan	Chief Cook
LEE, Jamie Edward	2nd Cook
JONES, Lee J	Senior Steward
GREENWOOD, Nicholas R	Steward
RAWORTH, Graham	Steward
HENRY, Glyndor, N	Steward
RUDD, James	Doctor

Scientific party

LEAT, Philip Timothy	BAS Geoscientist (PSO)
TATE, Alexander James	BAS Geoscientist
BUYS, Gwen B	BAS Geoscientist
THOMAS, Seth J	BAS (Antarctic and Marine Engineering)
KLEPACKI, Julian ZB	BAS (Antarctic and Marine Engineering)
LENS, Peter C D	BAS (IT Support)

Cruise participants at Creek 3, near Halley, Brunt Ice Shelf, 5th March 2012.

Back row: Gareth Lee, Seth Thomas, Philip Leat, Chester Sands, Camille Moreau, Mark Patterson, Bobby Slater, James Shearer, Alex Tate, Jennifer Jackson, Adam Reed

Front Row: Celine Heuze, Huw Griffiths, Peter Lens, Douglas Hamilton, Rachel Downey, Melanie Mackenzie, Gwen Buys, Gerald Goier

Equipment Reports

The main equipment used was the EM122 multibeam echo sounder on the RRS *James Clark Ross*. We also carried out three dredges to yield samples for geochemical analysis and dating, and used sub-bottom profiling (TOPAS) to determine structures and sedimentation processes. The EM122 event log is presented as Appendix 1, and the deployment log for the cruise as Appendix 2.

1. EM122 Multibeam Echosounder

Alex Tate and Gwen Buys

The EM122 multibeam equipment performed well throughout the cruise with the exception of some minor issues and teething problems due to the recently upgraded system. Most of the minor issues encountered were due to the Seafloor Information System (SIS) software, through which the EM122 is run. The following section gives an overview of the operational settings and issues encountered on this cruise and some recommendations for future cruises. General operational documentation for the EM122 can be found on the JCR wiki (http://wiki.jcr.nerc-bas.ac.uk/JCR_EM122_Multibeam_Bathymetry) and these have been updated and expanded to reflect experience gained on this cruise.

Survey Information

EM122 survey details are given in the table below and illustrated in Fig. 1. There were many breaks in the multibeam acquisition between the timeframes listed due to the ship being stationary (scientific deployment, hove to etc), crossing over previously swathed areas or for safety of navigation in shallow waters (bridge request). These extra details can be found in the EM122 event log in Appendix 1. Files consist of a maximum of one hour of data.

Survey name	Timeframes (UTC)	Description	Order	No of files
jr259_a	08/02/2012 01:42 08/02/2012 23:14	Transit from south of the Falkland Islands to the W5 spreading centre, Scotia Sea.	1	22
jr259_b	08/02/2012 23:15 10/02/2012 03:40	W5 spreading centre survey, Scotia Sea.	2	24
jr259_c	10/02/2012 03:43 11/02/2012 09:23	Transit from W5 spreading centre to South Orkney area.	3	33
	11/02/2012 16:04 11/02/2012 18:12	Brief transit from JR275 test trawl site to deeper waters east of South Orkneys.	5	
jr275_a	11/02/2012 09:24 11/02/2012 15:44	Brief survey of South Orkney shelf for JR275 test trawl site.	4	3
jr259_d	11/02/2012 18:15 13/02/2012 22:01	Transit from South Orkney area to South Sandwich Islands including survey of eastern side of Herdman Bank.	6	51
jr259_e	13/02/2012 22:10 18/02/2012 08:39	Transit from southern South Sandwich Island area to Weddell Sea continental slope near Halley.	7	197

	05/03/2012 23:23 09/03/2012 23:40	Transit from Weddell Sea continental slope around sea ice to South Orkney Islands area.	11	
jr259_f	18/02/2012 08:40 25/02/2012 06:04	Weddell Shelf area and eastern side of Filchner Trough in support of JR275 biological trawl stations.	8	131
	03/03/2012 23:39 05/03/2012 23:23	Weddell Shelf area and passage into and out of Creek 3 for Halley relief.	10	
jr259_g	25/02/2012 06:05 03/03/2012 23:38	Weddell Sea continental slope area.	9	137
jr259_h	09/03/2012 23:43 17/03/2012 21:48	Includes passage north of the South Orkney Islands, passage between JR255b glider locations and dedicated survey of the North Scotia Ridge before finishing at Signy Island	12	163
jr259_i	19/03/2012 01:29 20/03/2012 09:21	Passage between Signy Island and Mare Harbour, Falkland Islands. Data recording was abandoned in the central Scotia Sea due to poor weather conditions.	13	28

Operational Settings

The EM122 system is run through the Windows based SIS software provided by Kongsberg. Throughout the cruise the EM122 was run in external trigger mode with the ping rate calculated by the Simrad Synchronisation Unit (SSU). SIS creates 'on the fly' grids of the data as it is collected and these are displayed in the geographical window. The creation of these grids requires that a grid size is defined for each new survey which cannot be changed once selected. During this cruise the number of cells in the processing grid was always set to 128*128 and the grid cell size in meters varied from 20 to 30 m for shallow / deep survey areas. Angular coverage mode was set to manual and beam spacing to high density equidistant for the duration of the cruise. The max beam angle was varied from 45° to 67° depending on the sea state, water depth and bathymetry with the max width kept constant at 20,000 m to port and starboard. Pitch stabilisation was set on, yaw stabilisation off, auto tilt off, along direction to 0° and heading filter to medium. Spike filter strength was set to medium, range gate to normal, phase ramp to normal and penetration filter strength to off. Slope and sector tracking were both switched on and the angle from nadir was set to 6°. Salinity was used as the absorption coefficient source with the default value of 35 ppm. Throughout the cruise the mammal protection power level was set to max with a startup ramp time of 0 mins. The real time data cleaning was set to auto 0 which provided a satisfactory level of automatic flagging of anomalous data points, i.e. many of the bad points were flagged and no automatically flagged points were required to be restored. When cleaning the data using MBSystem (see Data Processing section below) the automatically flagged points are marked as 'sonar' edits and are shown in green. For the large majority of the cruise the dual pulse mode was set to dynamic (i.e. on), however on a few occasions when looking for biology sites of a certain depth the dual pulse mode was switched off due to interaction with the bridge EA600 echosounder (see section below for more details).

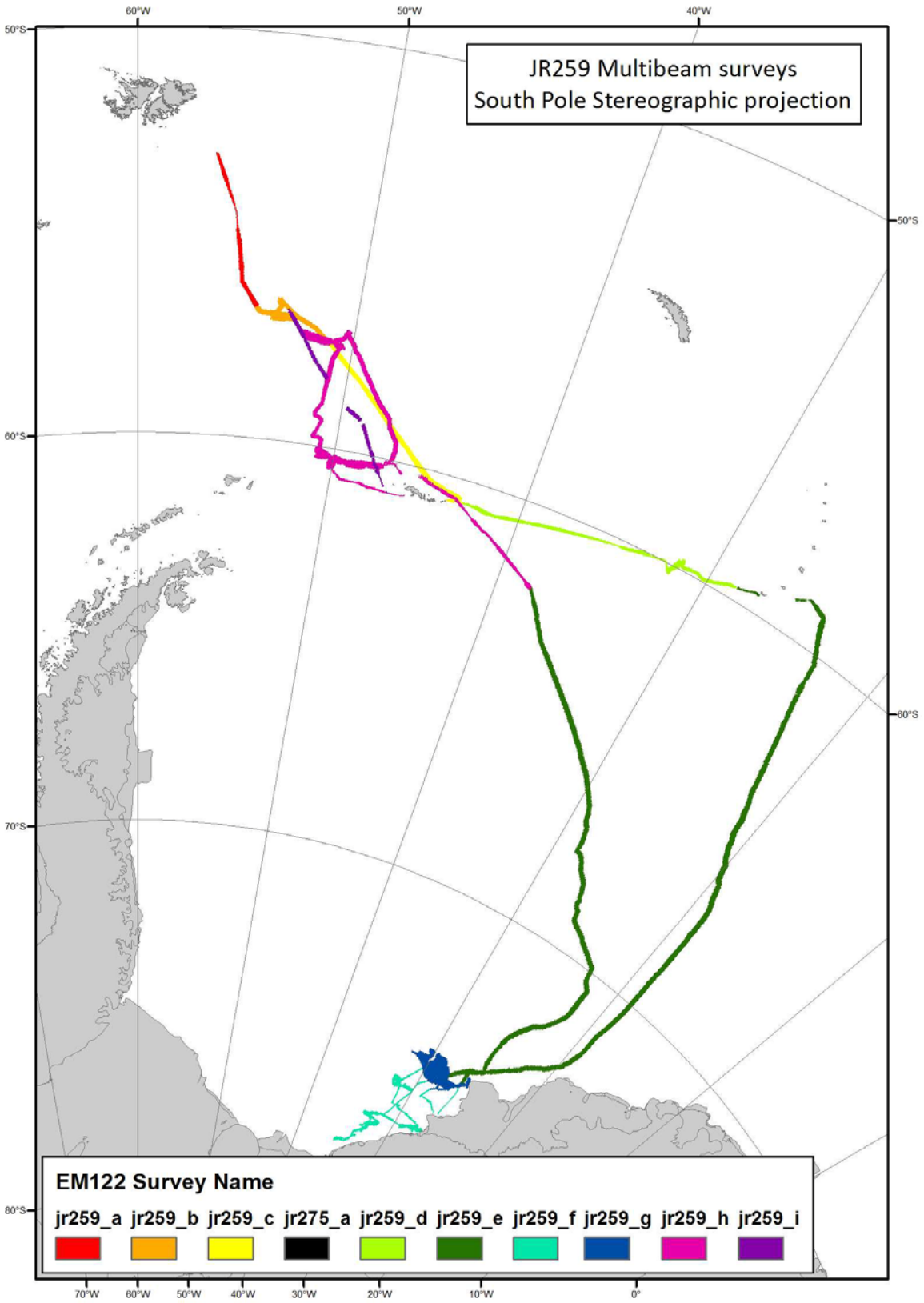

Fig. 1. JR259 multibeam surveys.

BIST Tests

The Built In Self Tests (BIST) were carried out three times during the cruise, first on departure from Stanley on the 7th of February and then again on the 19th of February upon reaching the Filchner Trough area and finally on the 18th of March during Signy relief. On all occasions all tests were passed with the exception of test 7 the TX channels test which fails due to some failed channels in the transceiver unit, a known issue which is detailed in the JRtri006 trials cruise report. The results of the tests were saved as text files in D:/sisdata/common/bist with filenames JR259_date.

Roll Calibration

On the 11th of February a roll calibration was carried out on the South Orkney Shelf at a depth of approx 200 m. Earlier in the day a line (survey jr275_a line 0000) had been surveyed over a flat area of the shelf for the purpose of JR275 biology trawls. On leaving the site a reciprocal line was recorded (survey jr275_a line 0002). Both lines were surveyed at a speed of 10 kts. Using the SIS calibration mode multiple 'corridors' across the two lines were assessed for depth differences in the outer beams. No roll error was discerned, hence the roll bias in the installation parameters was not changed from that which had been calculated during the trials cruise JRtri006.

Import of Sound Velocity Profiles

Sound velocity profiles were acquired from Expendable Bathythermographs (XBTs) deployed during the cruise (see Section 2) or from CTD's deployed in support of JR275 biological work. It was noted that the MySQL database that contains the JCR XBT archive was not up to date and it did not populate automatically with the first XBT deployments on this cruise. A slight change to the cron job that inserts new XBT data to the database was made but this did not appear to fix the problem. However, after a following deployment the insert job ran fine and continued this way throughout the cruise. It is possible that the original problem was caused by lock files stopping the cron job running. Onward transfer of xbt data into /data/cruise/jcr/current/asvp worked fine as did the transfer of CTD sound velocity data to the same directory.

Helmsman Program

The SIS software has an additional program called Helm which is used for the helmsman display. The program was used throughout the majority of the cruise to aid the bridge with planned surveys and overlap of lines. The program is run from the main EM122 machine and can be displayed in the additional monitor (positioned above the main monitor) whose image is transferred to a repeater monitor on the bridge. In general the program worked ok and served its purpose. Grids of the current dataset are transferred to the Helm program from SIS by using the SIS Planning window and pressing 'Transfer Grids'. All grids displayed in SIS are transferred when this button is pressed, irrespective of whether they are already present in the Helm program. On occasion this led to the same grid being displayed in the Helm program multiple times (checked using the Import/Export function).

In addition to grids of the current survey it is possible to display background GeoTiff images on the Helm program. This function was used throughout the cruise with images of previous swath in the area being displayed behind the current survey grids. The import of new images often caused the Helm program to crash due to memory issues. This was also a problem for the main SIS program and is discussed further below. There was a persistent issue with the display of real time coverage 'train track' lines which frequently stopped appearing when nearing the end of an hour file. When the line number auto-incremented and a new file started the coverage would come back. If the bridge require the coverage lines to aid with overlap then the problem can be rectified by manually incrementing the line using the 'Line cnt' button.

Use of Background Grids

It is possible to add background images in GeoTiff format to both the SIS and Helm programs. This functionality was used extensively throughout the cruise. An ArcGIS grid of all the multibeam data held by BAS (up until the end of the 2010-11 season) was created in Cambridge before the start of the cruise. This was used to create background images of bathymetry in certain geographical areas as required throughout the cruise. As the default for both SIS and the Helm programs is to have a black background the aim was to create GeoTiff images with transparent backgrounds. Unfortunately when exporting from ArcGIS transparent GeoTiff backgrounds appear white. This was temporarily resolved by creating the images with black backgrounds instead. Later in the cruise a fix was found whereby the GeoTiff's can be forced to have transparent backgrounds by using ImageMagik and libgeotiff tools in UNIX. Details of how this procedure is carried out are given in Appendix 3.

Various problems were encountered when importing and exporting the background images. If one or more background images were already stored in the program then often importing a new image into SIS would cause the Helm program to crash due to memory limitations. Similarly importing new images to Helm would cause SIS to crash. It was found that the best solution was to remove any existing images and then exit from the Import/Export tool before reopening it to import the new image. Restricting the image resolution to 600 dpi also helped to reduce the number of system crashes.

Initially the background images were stored on the legwork drive and imported to SIS from there. However, it was found that being run over the network caused the images to 'run' slowly. Part way through the cruise a folder was created on the SIS grid drive (G:\GeoTIFFs for SIS) and the images were used from there which greatly reduced the time it took the images to upload to SIS.

Overall the use of background images during the cruise has been very useful, both for ease of describing survey plans to the bridge and for achieving a relevant overlap when traversing along historic cruise tracks.

Missed Pings

During the cruise there was a reoccurring problem where the em122 would miss a few pings leaving a gap in the survey like the one shown in Fig. 2. In most cases this was not noticed at the time as the gap was only about a minute or two long. However, it was noticed once and it was seen that no pings were occurring for the em122 on the SSU. The trigger for this issue was never discovered and is something which should be monitored on future cruises. It should be noted that similar issues have been seen and reported in the past with the previous EM120 system.

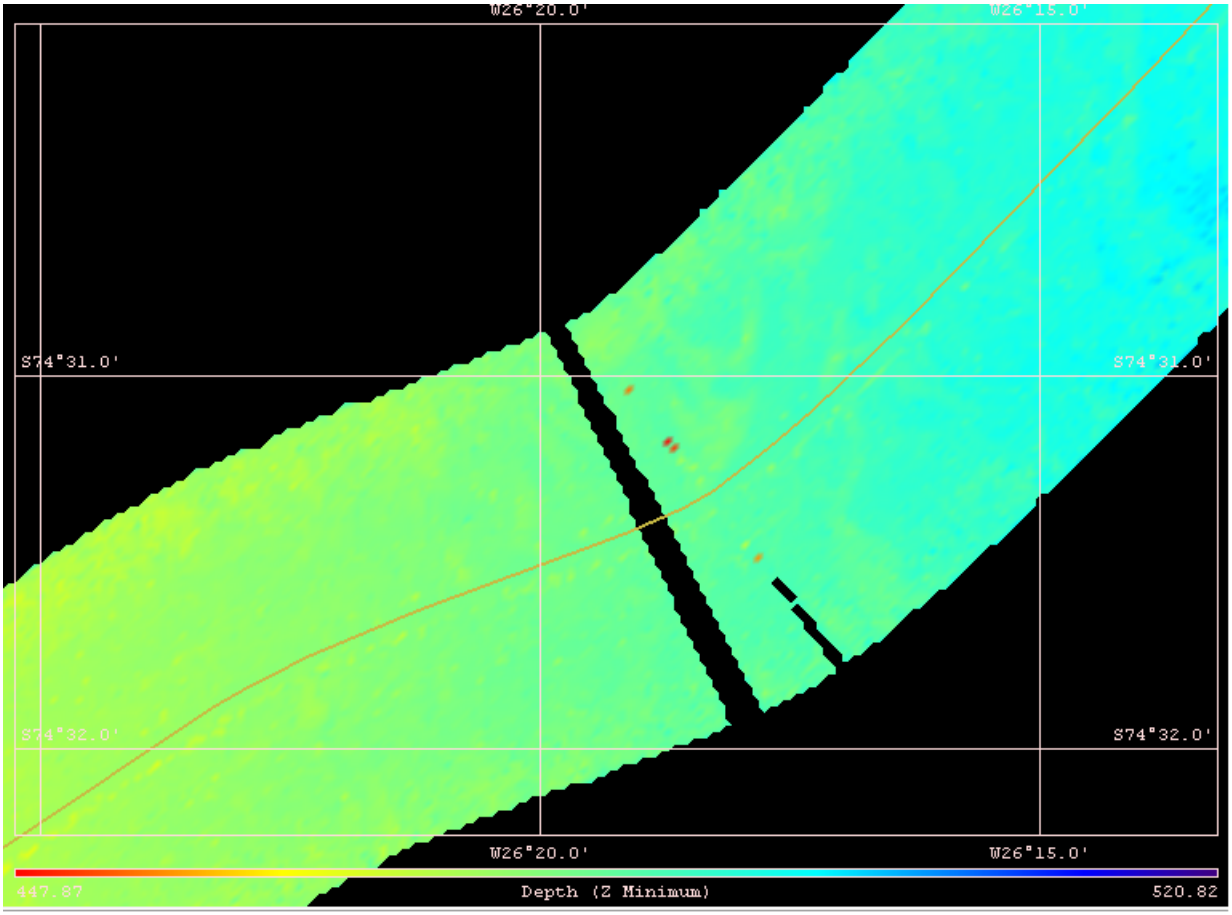

Fig. 2. Example of missing pings on a EM122 track.

Interaction with the EA600 Echosounder

It was previously noted in an email communication from Sophie Fielding on JR206b that the dual ping mode on the EM122 caused a large amount of noise in the upper water column of the EA600 navigational echosounder. This was seen during the JR259 but was rarely a problem as we didn't encounter very shallow depths for the majority of the cruise (<100m) However, we encountered a related but different issue using the EM122 dual ping mode. Both systems were running through the Simrad Synchronisation Unit (SSU) with the EA600 in passive mode. When the EM122 dual ping mode was set to 'Dynamic' the EA600 received

two distinct returns and often picked the 'second' ping as the true depth. This was generally deeper than the true depth under the hull.

This issue was raised with Kongsberg and is currently being investigated. An interim solution suggested was to reduce the EA600 pulse length to minimum. While this seems odd given that the EA600 was operated in passive mode, it tightens the band pass filter when receiving the return and enabled the EA600 to report the 'first' ping depth in most instances. Test data were recorded with the EM122 dual ping mode on and off and with a variety of EA600 pulse lengths. These data were passed to Kongsberg to aid their investigation.

Software Crashes

On a few occasions during the cruise the SIS software crashed and had to be manually restarted which caused a gap in data acquisition. On one of these occasions no error message was given and the SIS window just disappeared. On other occasions an error message appeared and when the message was accepted SIS closed. These messages ranged from: 'GridEngine HDDS port failure', to 'NVIDA graphics card does not meet minimum specifications to run the application'. No specific trigger for these failures was discernible however, as most were associated with graphical display or the grid engine it is likely that the high memory demand required to run and display the gridded data is the underlying cause of most failures. Without a software or hardware change the only suggested way of minimising these types of crashes is to keep the grid resolution coarse and to avoid displaying too much data at once, i.e. start a new survey in each study area and only display one survey at a time.

Data processing

Raw data were automatically written to the data drive (D:/sisdata/raw/'survey name') on the em122 acquisition machine and then a cron job running every 10 minutes copied the data to the path:

`/data/cruise/jcr/current/em122/raw/'survey name'`

where current is a symbolic link to the leg id 20120207 (the date the cruise started - YYYYMMDD)

Data were processed with MB System v5.3.1917 installed on the Linux virtual server JRLC (full server name is jrlc.jcr.nerc-bas.ac.uk) following the same general procedures detailed in the JR93, JR134 and JR168 cruise reports. MB can be setup by typing,

```
setup mb
setup gmt
```

GMT (version 4.5.7) is needed for several of the MB System subroutines and is worth setting up at the same time. Type, `'man mbsystem'` for an overview of MB.

Copying the data and producing auxiliary files

The perl script *mbcopy_em122* was used to copy raw EM122 data into MB system format and produce auxiliary files. To run the script type,

```
setup gsd

mbcopy_em122
```

from a Unix/Linux command line. You will be asked several questions regarding the raw data location, the desired location of the copied data and whether you want all the lines copied (type 'n' if you are actively acquiring data and the script will not copy the last hour file as it will not be complete). This information will be stored in a defaults file in your home directory and will not need to be re-typed until you change survey names. Note that the script will check for lines already copied and will ignore these. You can however, force the script to start at a predetermined line number if you do not want the earlier line numbers copied. The script automatically creates a text file of all the raw data copied (named raw_datalist) and creates auxiliary files which help MB speed up functions such as gridding.

Cleaning the data

All of the data cleaning was done manually using the mbedit graphical interface. This allows the user to manually flag data in either a ping-by-ping view or as a waterfall view where n number of pings can be viewed together. Detailed editing was done using the ping-by-ping view for each hour file followed by a quick look using the waterfall view to check for any erroneous depth values missed.

Cleaning the data creates two additional files, a .esf file which holds the flagging information and a .par file which contains a whole variety of edits including cleaning and navigation fixes. Navigation data was not a problem during JR259 so did not need fixing.

Processing the data

The command *mbprocess* takes information from the .par file and processes the .mb59 data to produce a final output file. If the input file is called "data.all.mb59", the processed file becomes "data.allp.mb59". *mbprocess* also creates additional auxiliary files (.inf, .fnv, .fbt). The command takes the form of:

```
mbprocess –Iraw_datalist –F-1
```

A text file containing the names of all the processed data can then be created (proc_datalist on this cruise, i.e. type, 'ls *.allp.raw.mb59 > proc_datalist'). If at some point the user decides to go back and re-clean the data or edit the navigation for a single file, mbprocess can be run with the same command and it will process only the newly edited files.

To recap the processes and the files they create are:

Input	Process	Output
Data.all.raw	mbcopy	Data.all.raw.mb59

Data.all.raw.mb59	mbdatalist	Data.all.raw.mb59.inf
		Data.all.raw.mb59.fbt
		Data.all.raw.mb59.fnv
Note : The above two processes are combined in the script em122_mbcopy		
Data.all.raw.mb57	mbclean/mbedit	Data.all.raw.mb59.esf
		Data.all.raw.mb59.par
Data.all.raw.mb59	mbnavedit	Data.all.raw.mb59.nve
		Data.all.raw.mb59.par (modified)
Data.all.raw.mb59	mbprocess	Data.allp.raw.mb59
		Data.allp.raw.mb59.inf
		Data.allp.raw.mb59.fbt
		Data.allp.raw.mb59.fnv

Gridding the data

The command *mbgrid* with its associated options produces a user-defined grid for viewing the cleaned swath results. Data were output directly to ArcGIS ascii grids as ArcGIS was the primary software tool used to view the grids. One of the limitations of ArcGIS grids is the need for matching x and y grid resolution values. Hence, with a non projected grid it was necessary to use identical values in degrees (usually 0.001 or 0.002) that are unequal in real world distance, particularly at high latitudes. The command and some of the more common options used are:

```
mbgrid -Iproc_datalist (can be ../ etc if in another directory)
-O‘grid filename’ (naming scheme – ‘surveyname_resolution’ e.g.
jr259_a_002. A suffix is automatically added)
-R-29/-26/-57/-55 (bounding co-ords, min long/max long/min lat/max
lat. Note that MB will default to the maximum extent of the input
files. This is very useful for survey overviews. No –R flag is
needed in this case)
-E0.002/0.002/degrees! (grid resolution; 0.002 degrees in this case.
! forces the resolution by changing the extent slightly if
necessary.)
-G4 (Specifies an ArcGIS ascii grid output)
-A2 (produces a grid with bathymetry as negative values)
-F1 (type of filter used; 1=gaussian weighting, 2=median weighting)
-C5 (spline interpolation into data free areas, ~500m in this case
(grid resolution x 5)
-M  (produces two further grids; one giving the number of beams
within each grid cell and the other giving the standard deviation of
those beams in each grid cell)
-J  (Projection defaults to geographic but see man mbgrid for 1000’s
of projected systems on offer. –E would then be set to n/n/metres!
```

Ascii xyz files were also produced from the cleaned data using the command *mblist* and the following options

```
mblist –Iproc_datalist –F-1 –D3 > survey_name.mbxyz
```

-D3 is the output format (simple X, Y, Topography [-Z]) and the output text file can be called anything you like. The file suffix 'mbxyz' was used to avoid confusion with Neptune 'xyz' files produced on older cruises.

The mbxyz files can be used as an input to the GMT nearneighbor command or any other gridding software that accepts ascii xyz files.

Generated ascii grid files were converted into ArcGIS binary grids using the ArcGIS tool 'Ascii to raster'. They could then be viewed and manipulated using ArcGIS v9.3.1 and this proved a very useful tool for finding data spikes that needed further cleaning. This was done by both visual inspection of the bathymetric grid and identifying anomalies within the standard deviation grid. In general all survey files that caused standard deviations above 120m within a 0.002 degree grid cell were inspected again and cleaned if necessary. This provided a very robust way to identify spikes and false multiples that had not been seen at the cleaning stage. It was considered that standard deviations lower than 120m could be real in areas of high variability or more likely random noise in the outer beams that would average out in the grid itself.

File Structure
A common file structure was created to hold all the mb data located under

/data/cruise/jcr/20120207/work/mb/*'survey_name'*

Each survey_name (e.g. jr259_a) directory contains processing, grd and mbxyz subdirectories. The processing directory holds all the copied mb59 raw files, the edits and the processed mb59 files. The grd directory holds any GMT grids or ArcGIS ascii grids while the mbxyz directory holds the xyz text output.

2. Expendable Bathy Thermographs (XBT)

XBTs were used where necessary throughout the cruise to provide the correct sound velocity profile for the EM120. In the main survey areas around the South Sandwich Islands there was very little difference in water column properties and only 6 XBTs were needed. As in previous cruises, we used archive XBT data collected on previous cruises when launching an XBT would have been impractical such as in rough weather. A full list of XBT locations deployed for this cruise can be found in Appendix 4.

3. TOPAS Sub-bottom Profiler System

The Topas sub-bottom profiler was used intermittently in support of the concurrent biological sciences cruise JR275. In general Topas was run for a maximum of half an hour at a time during an Agassiz Trawl in order to survey the seabed before deploying the Epibenthic Sledge. A dedicated Topas log was set up and the location, start and end times of each line noted. A copy of this log is given in Appendix 5. During most lines both raw and

segy data were logged. All lines were run in shallow (< 1000 m) water and the following parameters were used:

Acquisition Parameters

Transmitter: Mode Normal, Triggering External, Pulse Chirp (LFM), Start Frequency 1.5 kHz, Stop Frequency 5 kHz, Chirp Length 10-15 ms, Power Level -1 dB, HRP enabled, Beam Forming Manual with 0° slopes.

Receiver: Delay Control Manual, Master Trigger Delay depth dependent, Delay Offset 0 ms, Sample Rate 30 kHz, Trace Length generally 100-200 ms, Gain around 10 dB, HP-filter 1 kHz.

Depth Selector: External enabled if EM122 is on, Bottom Tracker 1 enabled if EM122 is off.

Sound Speed Selectors: Default enabled with either 1500 m/s or the value from the EM122 SVP typed in. Note the sound speeds are not automatically transferred over from the EM122 like the depths are.

Processing Parameters – Only those which were enabled are listed below.

Filters: Type Matched or Spiking, Corner Frequencies Auto.

Bottom Tracker: Enabled, Show Master Depth enabled, Envelope Detection enabled, Window Start depth dependent, Window Length 8 ms, Threshold 50 %, Auto Search enabled.

Time Varying Gain: TVG Control Tracking, Offset 0 ms. Generally, the values for each section length and slope were set by clicking and dragging the green squares in the Single Trace area.

Attribute Processing: Attributes Instant Amplitude.

4. Dredges

Dredges were conducted over the stern of the ship using a dredge consisting of a chain bag and attached bucket (pipe dredge), with an acoustic pinger attached 200 m up the dredge cable to monitor dredge position relative to the seabed. The dredge bag set-up is shown in Fig. 3. Three-ton weak links were used for all dredges. In all three dredges, the pipe dredge provided the best recovery. Details of dredges and rick specimens recovered are provided in Appendix 6.

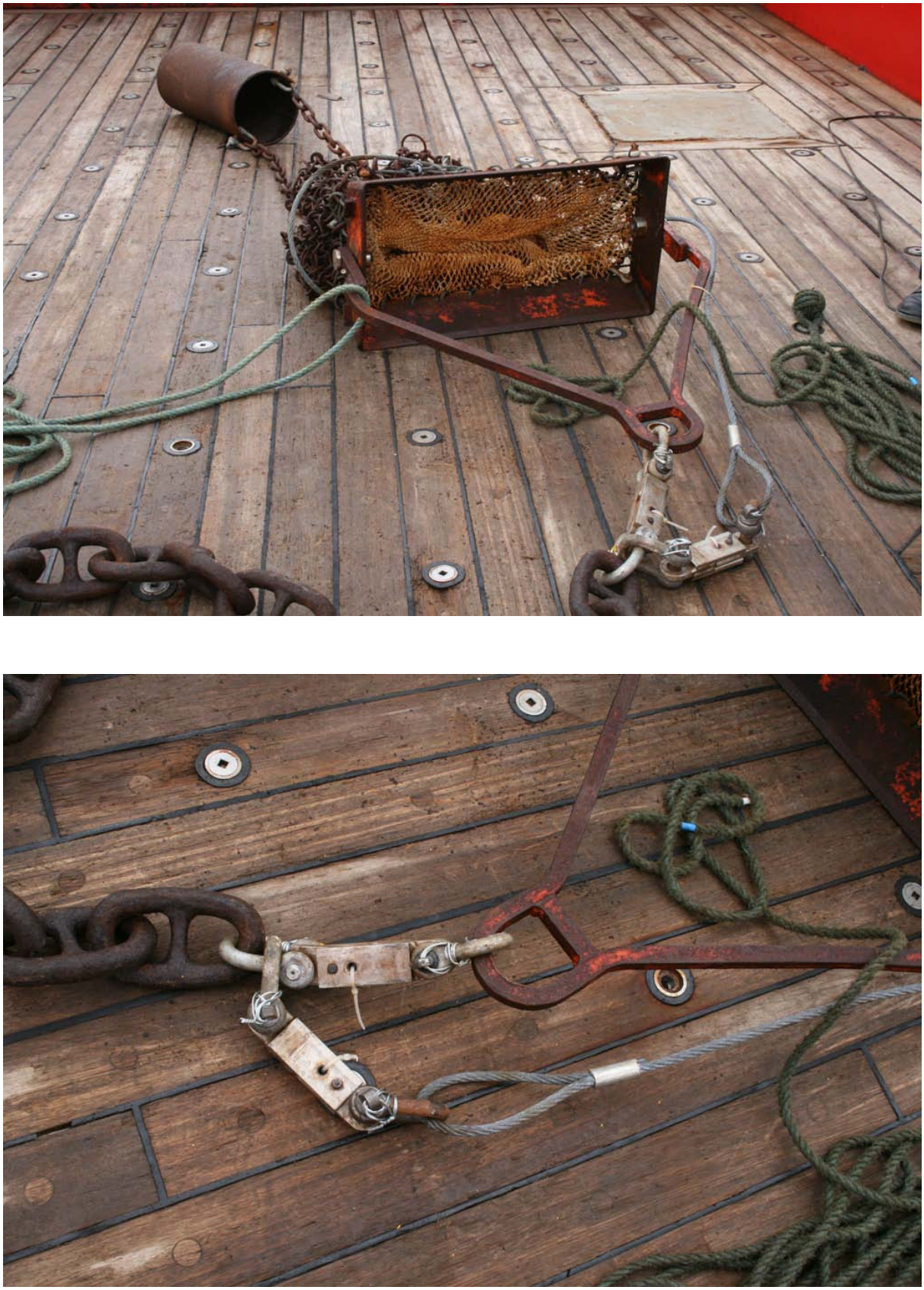

Fig. 3. A. Set-up of the rock dredge. B. Detail of the attachment of the weak links which bolt the flat plates together.

5. Box Corer

The BAS box corer was used at one site, BC640, in the northern transect of the Filchner Trough. The site was in the centre of a large iceberg scour at 675 m depth. Normal recommended procedures were followed. The box core successfully recovered about 15 cm of unstratified, homogeneous, grey mud. This was present as a layer of irregular thickness in the box core. The sediment was apparently disturbed during extraction of the core. One sub-core was extracted from the box corer. The box core log is presented in Appendix 7.

Details of Surveys

1. Segment W5, West Scotia Ridge

The West Scotia Ridge was an actively spreading ocean ridge from about 30 Ma until it became extinct about 5-6 Ma (Eagles et al. 2005; Livermore et al., 2005). Segment W5 is approximately in the centre of the fossil spreading centre. During cruise JR77/78 (Leat et al., 2004) the spreading centre was incompletely mapped. However, complete coverage was obtained for a seamount situated in the centre of the spreading centre. The seamount rises to ca. 3500 m, some 1500 m above the floor of the axial trough. This seamount was dredged (DR191) and yielded samples of basalt and a few small peridotite mantle xenoliths coated in basalt. This site is important as it is, as far as known at the time of writing, the only recorded site where mantle xenoliths have been brought to the surface on any of the World's ocean spreading centres. Ar-Ar dating of the seamount basalt gave an age of 377±45 Ma, much younger than the 5.53 Ma Ar-Ar age obtained from a dredge on nearby lavas from the extinct spreading centre (Leat, 2004; Pearce et al., 2011, in preparation). The seamount is an example of volcanism centred on an extinct spreading centre after spreading ceases (Haase et al., 2011).

Two swath lines were made along the Quest Fracture Zone south of the extinct spreading centre to improve bathymetric coverage. The new tracks and data, combined with previous data are shown in Fig. 4. Two dredges were carried out. Dredge DR203 sampled the southeast slope of the young seamount, in order to provide information on the extent of the xenolith-bearing lava. This dredge yielded fresh, vesicular basalt (Fig. 5) with a glassy pillow rind, but no peridotite xenoliths. A second dredge, DR204 was made on the same site as the previous dredge DR191 which sampled the xenoliths. This produced a large haul of fresh, vesicular basalt and peridotite. The peridotite was recovered in three fragments, that fit together and obviously originally formed one large peridotite xenolith ca. 15 cm across with a coating of basalt (Fig. 6).

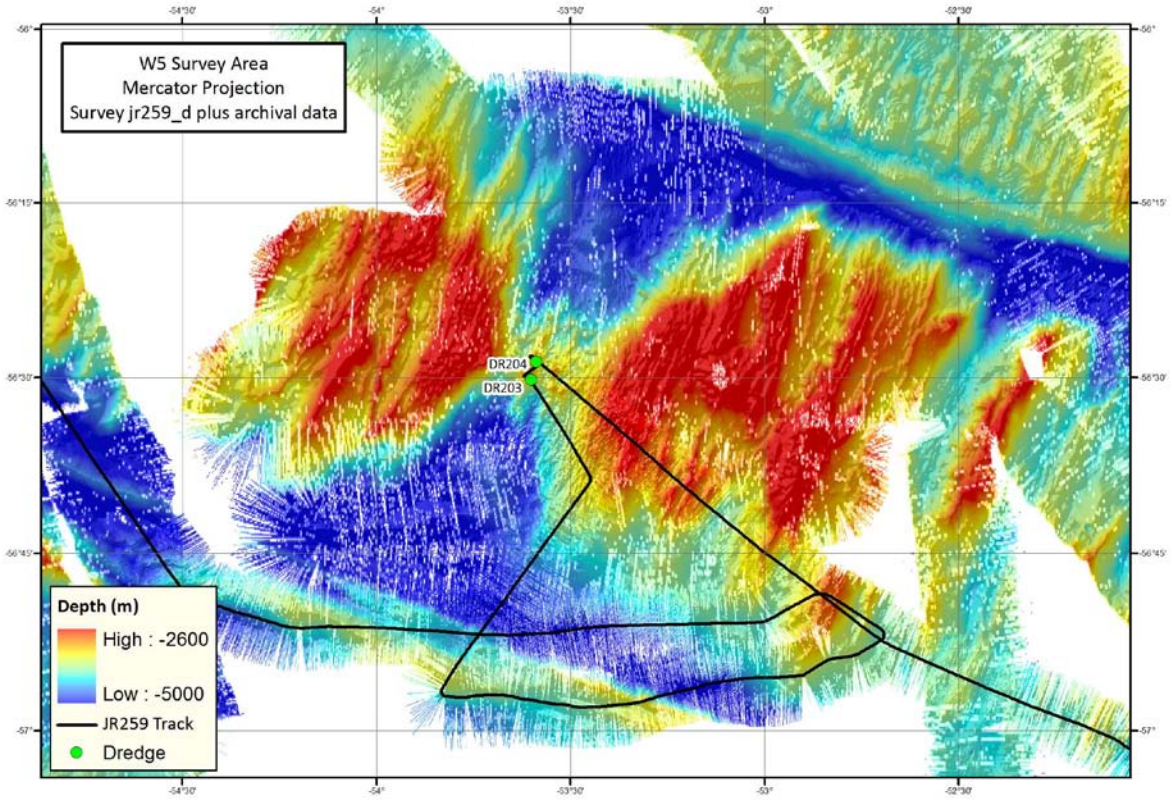

Fig. 4. Swath coverage of W5 with locations of dredges DR203 and DR204.

Fig. 5. Glassy basalt from dredge DR203.

Fig. 6. Peridotite xenoliths broken into fragments, dredge DR204.

2. Herdman Bank

Herdman Bank is the easternmost of a group of shallow banks that are situated in the southeast of the Scotia Sea, to the north of the South Scotia Ridge. The origin of Herdman Bank is uncertain. It may be similar crust to Discovery Bank, which is suggested to be continental from interpretation of seismic data (Vuan et al., 2005), or it may be transitional to oceanic crust (Galindo-Zaldívar et al., 2002; Bohoyo et al., 2007). It is situated in the south of the East Scotia Sea and may represent crust rifted from the basement of the southern Sandwich plate during opening of segment E9 of the East Scotia Ridge back-arc spreading centre (Barker, 1995). In this model, it would be a conjugate margin to Bank B, identified during swath survey of the southern South Sandwich arc during JR204 (Leat et al., 2010). Possibly, it is similar to the ca. 29 Ma arc crust identified from a dredge from the southern South Sandwich fore-arc (Barker, 1995).

The eastern escarpment of Herdman Bank was mapped during a short swath survey shown in Fig. 7. The data show that the escarpment is steep and controlled by generally NNE-SSW faults. This is consistent with the model that this is a rifted margin formed when segment E9 of the East Scotia ridge spreading centre opened, and the conjugate margin to Bank B. One dredge (DR205) was carried out on a south-facing slope on the escarpment. The dredge yielded dominantly mafic volcanic rocks and mafic-intermediate gneiss, and a limited number of probable dropstones. The volcanic rocks may be equivalent to the ca. 29 Ma arc crust thought to underlie the southern South Sandwich arc.

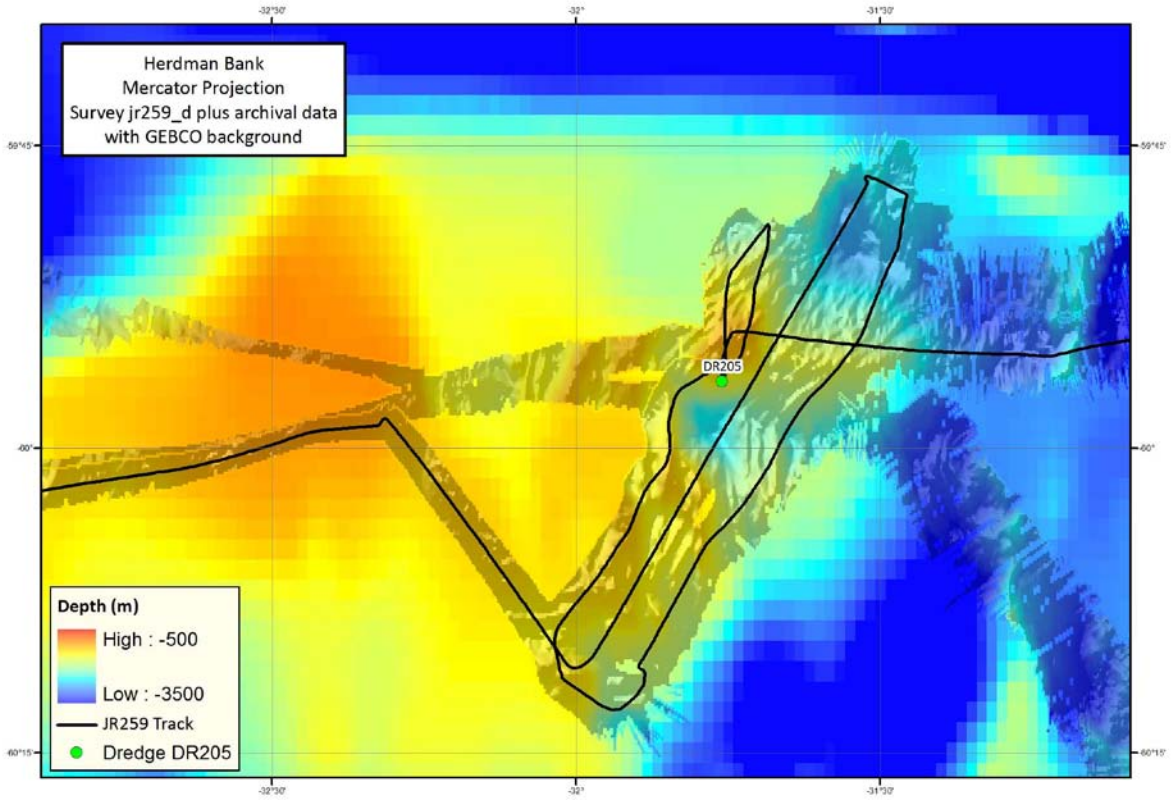

Fig. 7. Swath survey of east escarpment of Herdman Bank showing location of dredge DR205.

3. Eastern Weddell Sea

Continental shelf occupies the southern part of the Weddell Sea. The eastern part of the shelf is topographically dominated by the NNE-SSW trending Filchner Trough which extends to the shelf break. The Trough has subdued topography, and is over 1000 m deep at the edge of the Filchner ice-shelf, and shallows to ca. 600 m deep at the shelf break. Only the eastern margin of the Trough is normally readily accessible for ship-borne survey because of extensive sea ice cover in the Weddell Sea. The eastern Weddell Sea, Filchner Trough and shelf break were investigated during cruise JR244 in season 2010-11 (Larter et al., 2011) which had the objective of establishing the former extent of ice-sheet cover to the shelf break. The area remains poorly surveyed, with no areas of significant size having been covered by continuous multibeam bathymetry surveys.

Sections of the eastern Weddell Sea were mapped by swath survey during JR259. Most of these were carried out to investigate and record sites for biological sampling, specifically to identify depths, seafloor slopes and roughness, and likely seafloor sediments for benthic biology cruise JR275, which was running collaboratively. This worked very well, and all biological sites consisted of mud-covered, gentle slopes that were ideal for the benthic sampling being carried out. The biology sampling work is described in Griffiths et al. (2012). The shelf break and continental slope in the eastern Weddell Sea were also investigated by

dedicated ship time for swath bathymetry, and these data were also used to inform biological sampling.

Filchner Trough

Around 75° 15′S, 32°W, the Filchner Trough was mapped and sampled in an area forming the east margin of the Trough. The swath survey showed that this was a shallow sub-basin within the trough (Fig. 8). Large numbers of iceberg scours at depths of 600-710 m were imaged. Such ice berg scour depths are consistent with ice shelf thicknesses of 600 m or more of parts of the Ronne and Filchner ice shelves. The abundance of iceberg scours suggests that large icebergs are funnelled along the deeper water axis of the Filchner Trough. One of the biology sampling sites was within a large iceberg scour. This scour was sampled by box corer and TOPAS profiles were taken along the axis of the scour and across the scour. Box core BC640 was taken from the centre of the iceberg scour track, in an attempt to determine whether it has a preserved sediment stratigraphy that could be dated. This yielded 0.13 m of siliceous mud with no obvious stratification.

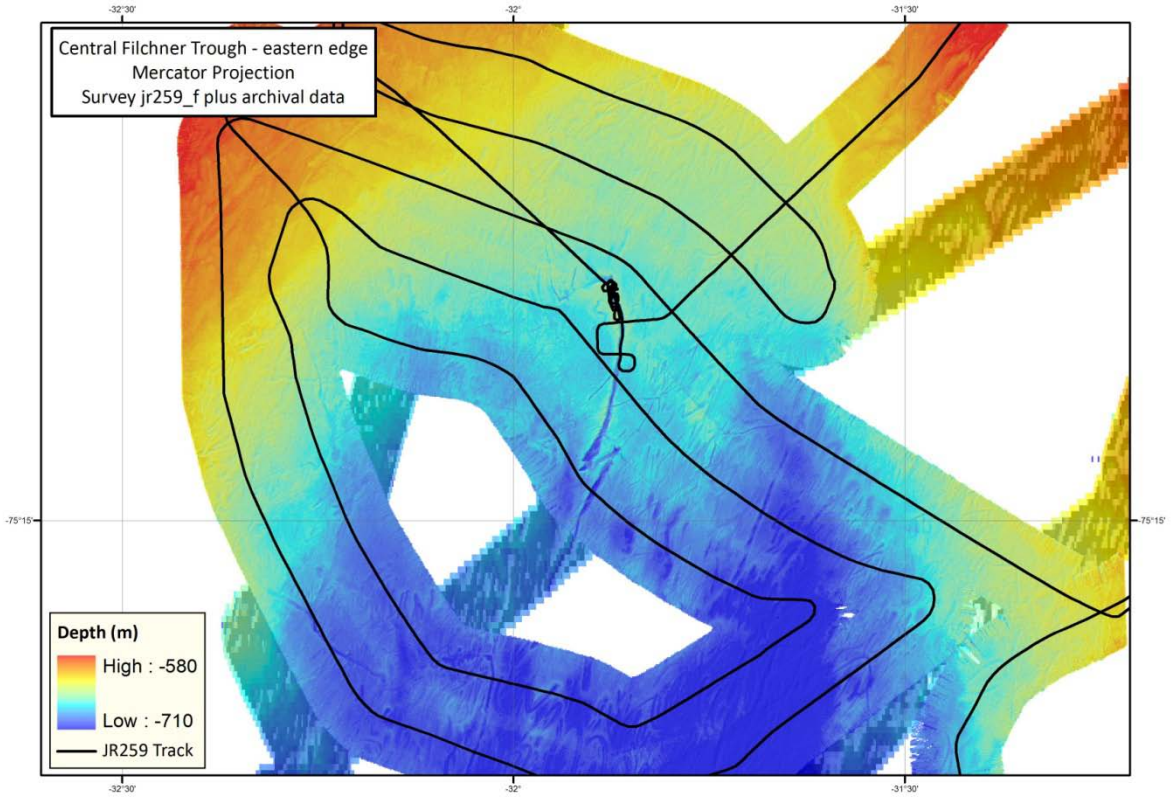

Fig. 8. Swath bathymetry coverage of sub-basin within Filchner Trough, showing iceberg scours.

Eastern Weddell Fjords

Fjords close to the continental shoreline were investigated as these are sheltered environments in that the bottom sediments of the fjords are immune from ice berg scour. Our multibeam survey (Fig. 9) increased the coverage obtained during JR44 when these

fjords were sampled by sediment coring. The fjords are 500-700 m deep, significantly deeper than the surrounding shelf which is 300-400 m deep. The topography on the shelf and in the fjords is rugged, suggesting little sediment cover over basement. Narrow troughs in the deepest parts of the fjords some 1 km across are relatively flat and sedimented, and these were sampled for the benthic biology work of JR275.

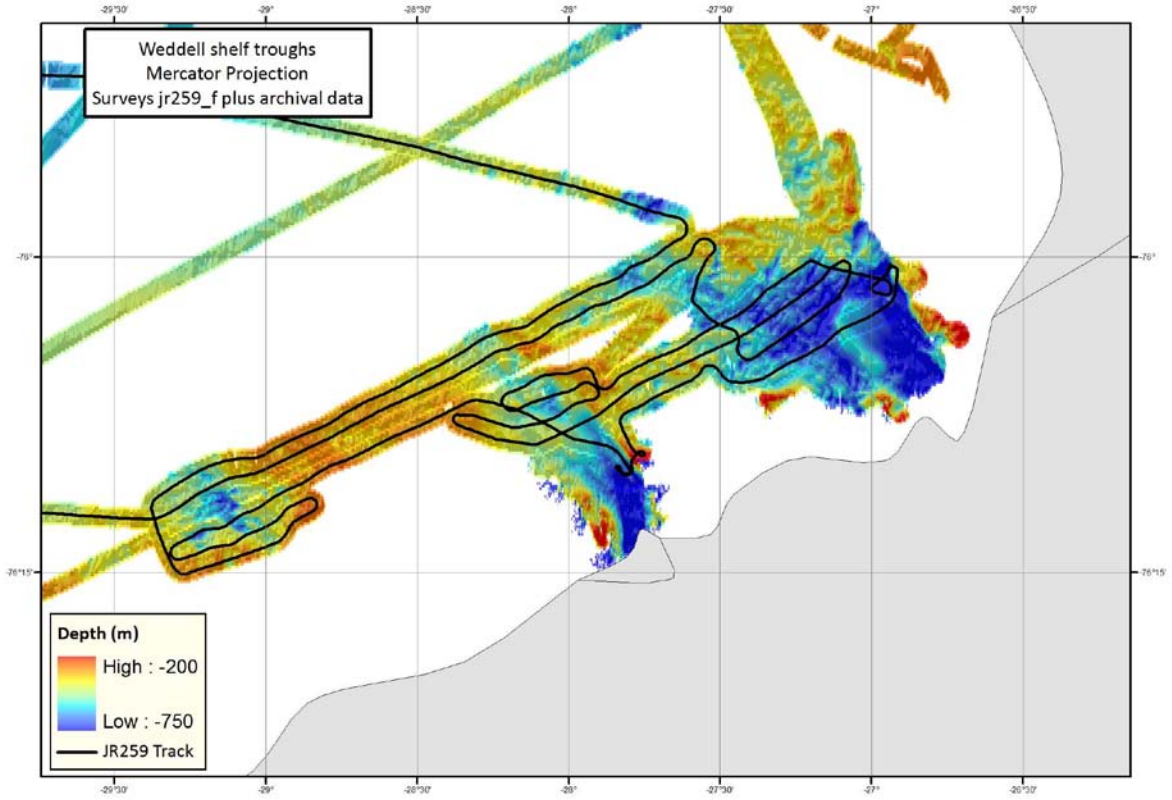

Fig. 9. Swath bathymetry coverage of fjords in the eastern Weddell Sea.

Continental slope in Eastern Weddell Sea

The continental slope from the shelf break to approximately 2000 m was surveyed between the eastern Crary Fan at 32°W, where the Filchner Trough terminates and the Brunt Ice-shelf at 25°30′W. The multibeam coverage is continuous with, and considerably increases, the coverage completed during JR244 (Larter et al., 2011). Previous work in the area has defined sediment types using sub-bottom profiling and sediment cores (Kuhn & Weber, 1993; Weber et al., 1994, 2011; Michels et al., 2002). These studies showed that about 1 m of Holocene sediments overlie much greater thicknesses of glacial sediments deposited at high sedimentation rates during the last glacial period. There are east-west contrasts in morphology along the continental slope. West of 28°30′W, the survey covered the east part of the Crary fan, where the Filchner Trough terminates at the continental break. Here, the continental slope is gentle and is only weakly incised by gullies. There is evidence for gravity collapses causing mass flows between the shelf break and the lower slope. The uppermost points of the scars are acute, and scars are narrow relative to their width. The mass flows

have halted further down slope forming a narrow ridge of high topography. Between 28°30′W and 27°20′W, the Continental break is directly north of Helmert Bank, an area of shallow bathymetry in the eastern Weddell Sea. Here the continental slope is steep, and cut by numerous gullies which trend directly down slope. East of 27°20′W and extending to the Brunt Ice Shelf, the continental slope is steepest and not incised by numerous gullies. At the base of the slope, several mounds may represent fans of mass flow deposits shed from the top of the slope or erosional remnants.

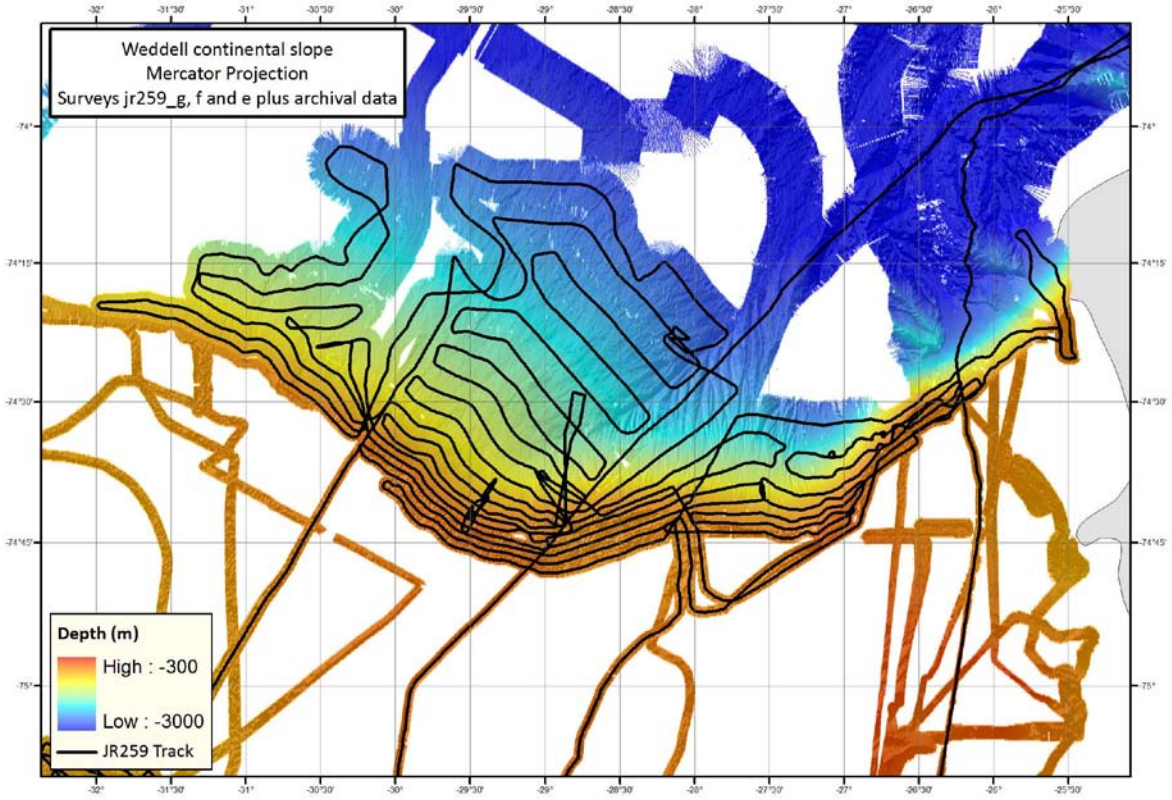

Fig. B. Swath bathymetry survey of the continental slope and shelf break in the eastern Weddell Sea.

4. South Scotia Ridge

The South Scotia Ridge is the plate boundary between the Scotia and Antarctic plates. Between the north of the South Orkney block and the northern tip of the Antarctic Peninsula, it forms a prominent ridge that consists of two branches separated by a series of troughs which are locally over 5000 m deep. The plate boundary it thought to run along the central troughs, and is a sinistral strike-slip boundary. Seismic and some topographic data have been published for the ridge (Acosta & Uchupi, 1996; Galindo-Zaldívar et al., 1996; Lodolo et al., 2006). The ridge is thought to consist of Scotia complex rocks similar to those of Elephant and Clarence islands to the west and the South Orkney Islands to the east. The ridge is thought to consist of a series of tilted blocks, bounded on the northern side by a near vertical fault representing a refaulted passive continental margin. Sediments along the north margin are locally deformed, forming a structure like an accretionary complex, perhaps originating from localised compression. The topography of the ridge is poorly

known. The objective was to acquire swath bathymetric data, to define the extent of blocks, to trace faults, and to identify other processes such as sedimentation along the ridges and in the troughs.

Sections of the South Scotia Ridge and the troughs to the south were mapped from to 47°W to 51°W during less than 2 days prior to Signy last call. The survey used existing tracks and attempted to fill in unmapped areas between these. A large part of the north branch of the Ridge, and the troughs immediately to the south were surveyed. The data show that the north branch of the ridge has large areas which are flat and penplained to about 500 m depth. The strong north-dipping escarpment morphology of the north branch is evident, with very steep slopes on the south-facing slopes of the ridge. The ridge is locally modified by landslides/slumps. Numerous faults cut the ridge and the troughs to the south, consistent with the position of the ridge on the strike-slip plate margin.

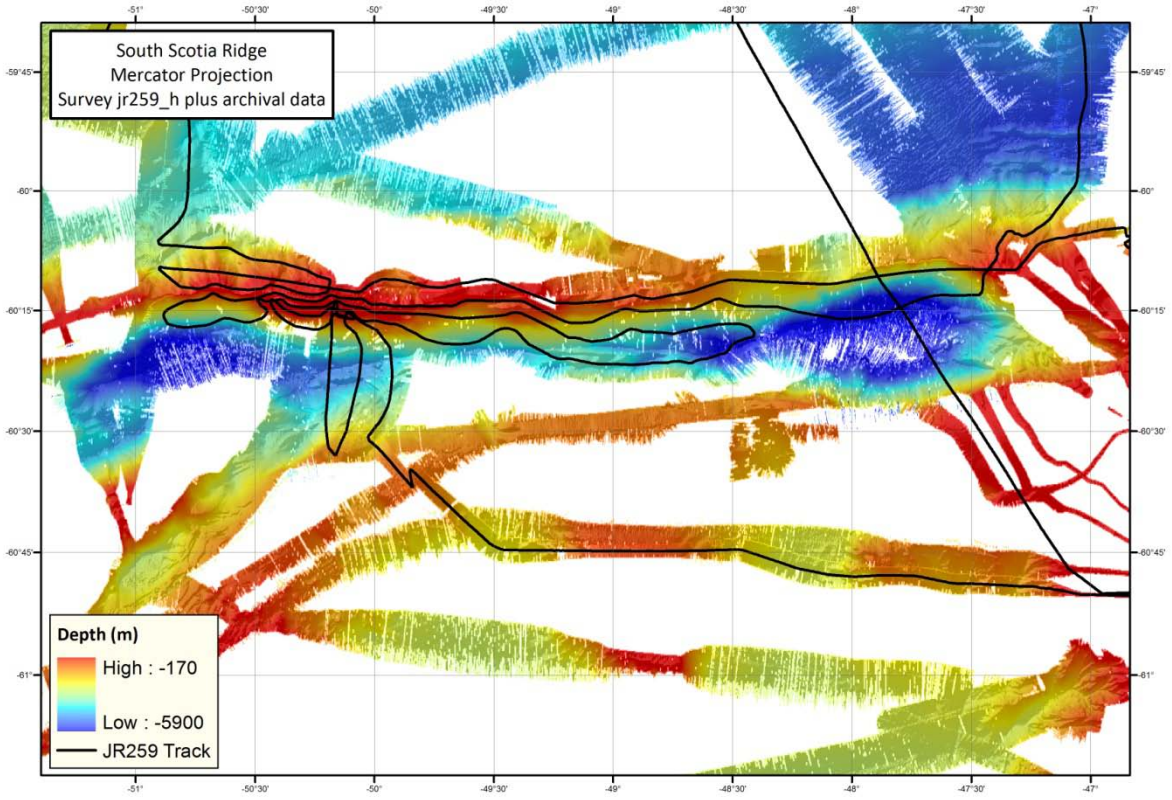

Figure X. Swath bathymetry survey of the north branch and axial basins of the South Scotia Ridge.

Recommendation

The combination of multibeam bathymetry and benthic biology sampling in the Weddell Sea on cruises JR259 and JR275 respectively, worked very well. The geologists/swath bathymetry team on JR259 were able to locate and survey sites, interpret likely sea floor conditions such as roughness and sediment cover, and guide the ship to biology sample sites. This left the biology able to concentrate on sampling. We recommend that benthic biology cruises are joined by a multibeam bathymetry team for future cruises.

Acknowledgements

We are grateful to Captain Burgan and officers and crew of the RRS James Clark Ross for their tremendous help in carrying out this science cruise.

References

Acosta, J. & Uchupi, E. 1996. Transtensional tectonics along the South Scotia Ridge, Antarctica. Tectonophysics, 267, 31-56.

Barker, P.F. 1995. Tectonic framework of the East Scotia Sea. In: Taylor, B. (ed.) Backarc Basins: Tectonics and Magmatism. Plenum Press, New York, 281-314.

Bohoyo, F., Galindo-Zaldívar, J., Jabaloy, A., Maldonado, A., Rodríguez-Fernández, J., Schreider, A. & Suriñach E. 2007. Extensional deformation and development of deep basins associated with the sinistral transcurrent fault zone of the Scotia–Antarctic plate boundary. Geological Society, London, Special Publications, 290, 203-217.

Eagles, G., Livermore, R.A., Fairhead, J.D. & Morris, P. 2005. Tectonic evolution of the West Scotia Sea. Journal of Geophysical Research, 110, B02401, doi:10.1029/2004JB003145.

Galindo-Zaldívar, J., Jabaloy, A., Maldonado, A. & Sanz de Galdeano, C. 1996. Continental fragmentation along the South Scotia Ridge transcurrent plate boundary (NE Antarctic Peninsula). Tectonophysics, 258, 275-301.

Galindo-Zaldívar, J., Balanyá, J.C., Bohoyo, F., Jabaloy, A., Maldonado, A., Martínez-Martínez, J.M., Rodríguez-Fernández, J., & Suriñach E. 2002. Active crustal fragmentation along the Scotia-Antarctic plate boundary east of the South Orkney microcontinent (Antarctica). Earth and Planetary Science Letters, 204, 33-46.

Griffiths, H.J., Downey, R.V., Hamilton, D.S., Heuze, C., Jackson, J., Mackenzie, M., Moreau, C., Reed A. & Sands C. J. 2012. RRS James Clark Ross JR275 cruise report. Benthic biology of the Weddell Sea. British Antarctic Survey Cruise Report.

Kuhn, G. & Weber, M.E., 1993. Acoustical characterization of sediments by *Parasound* and 3.5 kHz systems: related sedimentary processes on the southeastern Weddell Sea continental slope, Antarctica, Marine Geology, 113, 201-217.

Larter, R.D, Allen, C.S., Gales, J.A. et al. 2011. RRS James Clark Ross JR244 Cruise Report, Marine Geoscience and Physical Oceanography, Southern Weddell Sea and South Orkney Shelf. British Antarctic Survey Report.

Leat, P. 2004. Rare find on the sea floor. Planet Earth, Summer 2004, p. 33.

Leat, P.T. Pearce, J.A., Livermore, R.A. & Morris, P. 2004. Cruise Report JR77 and JR78. British Antarctic Survey Cruise Report.

Leat, P.T., Tate, A.J., Tappin, D.R., Day, S.J. & Owen, M.J. 2010. Growth and mass wasting of volcanic centres in the northern South Sandwich arc, South Atlantic, revealed by new multibeam mapping. Marine Geology, 275, 110-126.

Leat, P.T. Tate, A.J. Deen, T.J. Day, S.J. & Owen, M.J. 2010. RRS James Clark Ross JR206 Cruise Report, Volcanic and Continental Slope Processes, South Georgia and South Sandwich Islands. British Antarctic Survey Report ES6/1/2010/1.

Livermore, R., Nankivell, A., Eagles, G. & Morris P. 2005. Paleogene opening of the Drake Passage, Earth and Planetary Science Letters, 236, 459-470.

Lodolo, E., Donda, F. & Tassone, A. 2006. Western Scotia Sea margins: improved constraints on the opening of the Drake Passage. Journal of Geophysical Research, 111, B06101, doi: 10.1029/2006JB004361.

Haase, K.M., Beier, C., Fretzdorff, S., Leat, P.T., Livermore, R.A., Barry, T.L., Pearce, J.A. & Hauff, F. 2011. Magmatic evolution of a dying spreading axis: evidence for the interaction of tectonics and mantle heterogeneity from the fossil Phoenix Ridge, Drake Passage. Chemical Geology, 280, 115-125.

Michels, K.H., Kuhn, G., Hillenbrand, C.-D., Diekmann, B., Fütterer, D.K., Grobe, H. & Uenzelmann-Neben, G., 2002. The southern Weddell Sea: combined contourite–turbidite sedimentation at the southeastern margin of the Weddell Gyre. In: Stow, D.A.V et al. (eds), Deep-Water Contourite Systems: Modern Drifts and Ancient Series, Seismic and Sedimentary Characteristics, Geological Society, London, Memoir, 22, 305-323.

Pearce, J.A., Leat, P.T. & Barry, T.L. & Tindle, A.G. 2011. Newly-discovered abyssal peridotite mantle xenoliths constrain mid-ocean ridge melting models. Goldschmidt Conference Abstracts, Mineralogical Magazine, 75, 1610.

Pearce, J.A., Leat, P.T., Barry, T.L., Millar, I.L. & Tindle, A.G. Mantle xenoliths from an ocean ridge demonstrate significant deep melting at normal mantle temperatures. In preparation.

Tate, A.J. & Leat, P.T. 2007. RRS James Clark Ross JR168 Cruise Report, Swath Bathymetry South Sandwich Islands, British Antarctic Survey Report ES6/1/2007/1.

Vuan, A., Lodolo, E., Panza, G.F. & Sauli, C., 2005. Crustal structure beneath Discovery Bank in the Scotia Sea from group velocity tomography and seismic reflection data. Antarctic Science, 17, 97-106.

Weber, M.E., Bonani, G. & Fütterer, K. D., 1994. Sedimentation processes within channel-ridge systems, southeastern Weddell Sea, Antarctica. Paleoceanography, 9, 1027-1048.

Weber, M.E., Clark, P.U., Ricken, W., Mitrovica, J.X., Hostetler, S.W. & Kuhn, G., 2011. Interhemispheric ice-sheet synchronicity during the Last Glacial Maximum. Science, 334, 1265-1269.

Appendix 1. EM122 Log for JR259

Date/Time	Latitude	Longitude	Depth - EA600 (m)	Wind Speed (knots)	Heading (degrees)	Comment
07/02/2012 16:35	-51.69164	-57.82409	3.26	8.5	99.88	Depart FIPASS, Stanley, Falkland Islands.
08/02/2012 01:43	-53.02415	-56.76946	1651.05	27.2	161.62	Swath on and logging to survey jr259_a using sound velocity profile T5_00001_thinned.asvp. Max angular coverage set to 60 degrees.
08/02/2012 18:12	-55.86021	-55.41061	3966.18	19.1	174.78	Beams into 50 degrees as weather poor and we are covering previously swathed area.
08/02/2012 21:29	-56.41703	-54.9749	3767.81	9.7	148.6	Sound velocity profile changed to T5_00002_thinned.asvp. Line count incremented to line 20.
08/02/2012 23:03	-56.68616	-54.6443	4941.91	4	151.16	Beams out to 55 degrees as weather calms and entering W5 spreading ridge area.
08/02/2012 23:18	-56.72809	-54.59282	4921.44	5.3	151.44	Survey changed to jr259_b as entering un-swathed area near W5 spreading ridge.
09/02/2012 19:39	-56.47558	-53.59467	3349.26	33.1	307.35	SIS software restarted to try and cure background image problem.
09/02/2012 20:31	-56.47494	-53.58784	3639.26	11.1	130.46	Restarted logging to jr259_b line number 16. Moderate swell and re-crossing old swath so leaving beams at 55 degrees as last set.
09/02/2012 22:10	-56.69825	-53.11255	4158.25	9.2	129.43	Shut down Helmsman Display and SIS to try and sort grid viewing issues. Pinging and logging both stopped.
09/02/2012 22:15	-56.70875	-53.08895	0	7.5	130.69	Restart SIS and Helmsman display. Stated pinging and logging to survey jr259_b, line 18. Cures grid display issues.
10/02/2012 03:43	-57.31184	-51.33255	3950.69	16	134.91	Finished survey jr259_b as exiting un-swathed area. Started logging to survey jr259_c transit line from W5 area to test trawl east of Signy.
10/02/2012 22:38	-59.91992	-45.81959	4000.97	7.9	132.86	Changed sound velocity profile to T5_00003_thinned.asvp. Logging to survey jr259_c line 19.
11/02/2012 09:24	-60.65218	-43.88113		38.3	250.42	Survey jr239_c stopped and survey jr275_a started as onto Orkney plateau in preparation for biology trawls.
11/02/2012 15:31	-60.67596	-44.00921	277.72	18.1	69.69	Started reciprocal roll calibration line - logging to jr275_a line 0002.
11/02/2012 15:44	-60.6633	-43.94103	34.59	13	69.8	Finished the roll calibration line and stopped logging.
11/02/2012 15:44	-60.6633	-43.94103	34.59	13	69.8	Finished the roll calibration line and stopped logging.
11/02/2012 16:06	-60.6504	-43.81381	735.97	8.6	98.59	Finished checking calibration. Consensus was that no additional roll correction needed to be applied. Started logging onto jr259_c line 0030.
11/02/2012 18:15	-60.59626	-43.01801	92.35	12.6	94.02	Stopped pinging and logging again to start a new survey: jr259_d for transit to South Sandwich Islands. Now pinging and logging to jr259_d line 0000.
13/02/2012 10:54	-59.94582	-31.76073	991.88	28.3	18.96	Arrived at dredge site and stopped EM122 logging.
13/02/2012 13:19	-59.9155	-31.75308	678.23	30	358.55	Applied T5_0005_thinned.asvp to the EM122. Actually 4th XBT taken at 12:40:00.
13/02/2012 13:41	-59.90528	-31.70087	940.54	25.6	93.75	Started logging to line 0041 of survey jr259_d.
13/02/2012 20:15	-59.78328	-29.22082	2860.98	33.7	63.5	Tried to import a new background GeoTiff to SIS but the image just showed up as a grey square. After loading and removing various images we concluded it was a memory issue due to the size of survey jr259_d.
13/02/2012 22:05	-59.68432	-28.51305	1577.71	22.8	81.96	In an attempt to fix the background image problem and to start a new survey SIS was closed down and restarted. A new survey was created, jr259_e. When the background GeoTiff was imported an 'NVIDA OpenGL Driver' error occurred and the Helm program crashed completely but the GeoTiff imported successfully to SIS. The Helm program was restated and the same background GeoTiff was successfully imported to it.
13/02/2012 22:10	-59.68404	-28.50755	1578.16	23.5	84.8	Started logging to survey jr259_e line 0000.
14/02/2012 01:40	-59.56363	-27.38252	1436.18	27.6	89.46	Stopped logging and pinging at line 3, survey jr259_e. Moving to leeside of Cook Island as bad weather approaches.
14/02/2012 08:48	-59.13531	-25.76849	2414.79	28.6	54.58	Pinging restarted and logging to survey jr259_e line 4 as bad weather track has drifted into un-swathed area east of Bristol Island.
14/02/2012 20:09	-60.19578	-23.12899	4312.39	16.2	157.8	Applied new sound speed profile, T5_00006_thinned.asvp and incremented to jr259_e line 0016.
14/02/2012 20:22	-60.23842	-23.10274	4342.26	22.7	179.67	Loaded new background GeoTiff to SIS and it caused the Helm program to crash with NVIDA error.
14/02/2012 20:24	-60.24544	-23.10251	4013.62	20.8	178.74	Restarted Helm transferred grids and loaded background GeoTiff, caused SIS to crash with the same NVIDA error.
14/02/2012 20:28	-60.25938	-23.10298	3662.09	20.1	181.69	Restarted SIS, loaded background GeoTiff and started logging to jr259_e line 0017. Both programs now working fine.
15/02/2012 00:35	-61.07354	-22.8837	4283.36	23	171.52	SIS crashes all on its own and requires restarting (last line was 21). Trying to restart gives a 'Cannot start due to a DB error, could not connect to server'. The EM122 machine was shutdown.
15/02/2012 00:50	-61.07354	-22.8837	4283.36	23	171.52	SIS restarted and logging to survey jr259_e, line 21. There are now two line 21s with differing timestamps.
15/02/2012 11:36	-62.96971	-21.93954	4907.37	13.8	165.77	Sound velocity profile changed to T5_00007_thinned.EDF. Logging to survey jr259_e line 32. Profile was noisy from 1000m down possibly due to the XBT wire touching the ship.
16/02/2012 07:56	-66.45178	-19.28426	5010.43	15.3	62.53	Logging off as stationary in poor visibility.
16/02/2012 08:32	-66.4631	-19.29961	5012.18	18	163.19	Logging restarted to survey jr259_e line 53 as visibility improves.
16/02/2012 12:20	-67.00986	-18.88219	4969.13	17.5	170.03	Sound velocity profile updated to T500008_thinned.asvp. Incremented to line 0057.
17/02/2012 04:48	-70.09764	-18.74565	4627.5	19.2	184.19	Beams out to 60 degrees as calm with little sea ice.
17/02/2012 18:59	-72.84868	-21.21467	3245.52	12.9	42.19	Ship stopped due to engine issues. Stopped logging.
17/02/2012 19:22	-72.85325	-21.21806	3244.08	7.9	233.12	Ship moving again. Started logging to line 0088.
17/02/2012 19:48	-72.9152	-21.49547	3001.37	10.7	237.66	Beams out to 62 degrees
18/02/2012 08:33	-74.58348	-28.42926	1482.27	16.1	225.44	Beams out to 65 degrees as going onto shelf area and weather still calm
18/02/2012 08:38	-74.59533	-28.47293	1347.07	14.2	219.87	Stopped logging to jr259_e at line 101 as nearing shelf area west of Halley.
18/02/2012 08:41	-74.60408	-28.50217	1265.24	16	228.06	Started logging to survey jr259_f, line 0000. Beams still at 65 degrees. Grid resolution set to 20m
18/02/2012 11:51	-75.13935	-29.97791	451.34	23.4	188.31	Applied new sound speed profile, T500009_thinned.asvp and incremented to line 0004.
18/02/2012 18:30	-76.29561	-32.914	818.68	15.4	235.68	Changed to sound speed profile T500010_thinned.asvp. Incremented to line 0011.
18/02/2012 19:42	-76.39097	-33.31436	0	10.5	79.47	Changed beams to 55 degrees as going through ice.
18/02/2012 20:05	-76.3817	-32.99501	846.32	21.3	88.91	Changed beams to 65 degrees as no longer in ice.
18/02/2012 22:07	-76.70269	-33.27233	592.89	13	260.34	Changed beams to 55 degrees as in ice.

Date/Time	Latitude	Longitude	Depth - EA600 (m)	Wind Speed (knots)	Heading (degrees)	Comment
18/02/2012 22:14	-76.70646	-33.32826	0	8.8	264.7	Stopped logging as stopped in ice.
18/02/2012 22:17	-76.70625	-33.32963	652.82	6.6	299.09	Restarted logging as moving again.
18/02/2012 23:04	-76.71262	-33.32941	0	16.3	118.75	Out of ice and into open water.
18/02/2012 23:34	-76.72151	-33.06293	523.8	20.3	89.22	Changed beams to 65 degrees.
19/02/2012 00:05	-76.72238	-32.67831	465.41	23.5	88.08	When trying to remove old grids and images and import a new background image the Helm program crashed and had to be restarted.
19/02/2012 00:15	-76.7227	-32.5562	440.86	21.3	82.09	Changed beams to 67 degrees.
19/02/2012 15:21	-77.3301	-35.34947	729.6	7	204.69	Stopped logging as retracing track back to biology site.
19/02/2012 15:28	-77.34908	-35.38662	723.46	11.9	200.92	Restarted logging to file 0033.
19/02/2012 15:39	-77.36078	-35.37842	694.27	1	42.18	Stopped logging as reached biology site.
19/02/2012 16:13	-77.36076	-35.3785	652.8	1.5	41.89	Started running BIST tests.
19/02/2012 16:22	-77.36076	-35.37848	654.34	2.5	41.82	BIST tests finished. Results as expected with only test 7 failing.
19/02/2012 16:54	-77.35815	-35.36653	655.75	3.6	42.66	Started logging to line 0034 as moving forward for trawl.
19/02/2012 16:57	-77.35757	-35.36393	653.98	2.7	42.75	Stopped logging as ship is stationary again.
19/02/2012 21:05	-77.35298	-35.34229	651.26	1.3	42.17	Applied new sound speed profile, JR259_019_thinned.asvp from CTD deployment number 19.
19/02/2012 21:15	-77.35236	-35.33943	694.28	2.5	43.08	Started logging to line 0035.
20/02/2012 08:34	-76.50045	-32.29163	543.74	24	60.28	Possible issue with velocity profile. Briefly tried going back to svp T5_00010_thinned.asvp but made no difference so reverted to JR259_019_thinned.asvp. Logging to survey jr259_f, line 46.
20/02/2012 10:55	-76.35548	-32.71445	783.3	21.4	296.04	Changed sound velocity to T5_00010_thinned.edf as nearing previous XBT site and swath starting to curve upwards at edges. Line incremented to 49.
20/02/2012 11:13	-76.33347	-32.89668	814.39	18.6	299.02	Changed dual ping mode to OFF to stop the EA600 from taking the second ping as the main return.
20/02/2012 11:18	-76.33171	-32.90461	790.74	13.8	6.55	Stopped logging as on site for CTD.
20/02/2012 15:59	-76.31157	-32.86662	780.12	8.6	20.39	Started logging to line 0050.
20/02/2012 17:33	-76.2002	-31.86618	0	15.1	62.31	Stopped logging as on station for CTD.
20/02/2012 18:17	-76.20029	-31.86609	587.88	14.7	48.21	Stopped pinging in order to run TOPAS.
20/02/2012 20:26	-76.19318	-31.83078	573.01	18.7	57.21	Started pinging and changed SVP to JR259_28_thinned.asvp from CTD deployment number 28.
20/02/2012 21:26	-76.18915	-31.80985	565.67	22.5	59.85	Started logging to line 0052.
21/02/2012 03:27	-75.98548	-27.55083	339.08	26.7	90.79	Dual ping returned to dynamic (i.e. on) as entering canyon area on Weddell shelf. Line incremented to 59.
21/02/2012 10:52	-76.03063	-26.95186	573.03	8.2	273.91	Dual ping mode set to off as we are nearing biology site.
21/02/2012 11:00	-76.02534	-27.00142	599.71	15.5	5.93	Logging stopped as on site for biology.
21/02/2012 15:27	-76.00757	-26.93995	515.29	7	17.7	Changed SVP to JR259_32_thinned.asvp from CTD deployment number 32.
21/02/2012 17:00	-76.00882	-26.93748	501.95	4	18.15	Dual ping set to dynamic (on) mode in preparation for moving to next site.
21/02/2012 17:01	-76.00866	-26.93724	0	4.9	19.48	Started logging to line 0067.
21/02/2012 18:52	-76.16837	-27.79039	466.42	7.6	179.49	Dual swath turned off as we are looking for the next biology site. Incremented to line 0069.
21/02/2012 19:14	-76.17131	-27.79531	571.36	5.8	85.84	Logging switched off as on station for biology.
21/02/2012 23:12	-76.1623	-27.81644	513.8	13.2	323.5	Changed dual swath mode to dynamic (on) and started logging to line 0070.
22/02/2012 10:34	-75.79463	-30.58231	436.83	3.9	51.68	Turned dual swath mode off as nearing biology site.
22/02/2012 10:54	-75.75723	-30.43239	432.35	8.5	37.86	Logging turned off as on station for biology work.
22/02/2012 14:59	-75.76583	-30.45823	427.91	19.9	205.08	Started logging to line 0082.
22/02/2012 16:29	-75.73569	-31.2266	578.97	23.5	207.26	Stopped logging as on site for biology work.
22/02/2012 20:10	-75.7523	-31.27121	584.88	20.1	185.01	Updated SVP to JR259_46_thinned.asvp from CTD deployment number 46.
22/02/2012 21:33	-75.74828	-31.26042	584.97	20.4	199.92	Dual ping set to dynamic. Logging to line 0084.
22/02/2012 22:32	-75.58301	-31.30096	675.18	15.7	358.48	EA600 testing started for Kongsberg. EM122 dual ping kept at dynamic, EA600 kept at standard pulse length settings. Recording EA600 line 20.
22/02/2012 22:39	-75.55849	-31.30293	685.57	14.1	359.07	Finished recording to EA600 line 20. EM122 dual ping kept at dynamic, EA600 pulse length set to minimum logging to line 21.
22/02/2012 22:47	-75.53036	-31.30563	647.64	14.8	359.19	Stopped logging to EA600 line 21. EM122 dual ping mode to off, EA600 pulse length kept at minimum. Logging to EA600 line 22.
22/02/2012 22:53	-75.50923	-31.31064	642	16.2	350.7	Stopped logging to EA600 line 22. EM122 dual ping kept off and EA600 pulse length returned to normal. Logging to EA600 line 23.
22/02/2012 22:58	-75.49186	-31.32075	648.52	19.1	351.53	Stopped logging to EA600 line 23. Tests indicate that EA600 minimum pulse length gives a better bottom detection ignoring the 'second' ping emitted by the EM122. EA600 set to minimum pulse length when in passive mode, EM122 dual ping set to dynamic.
23/02/2012 01:37	-75.20674	-30.51962		27.4	111.34	Beams set to 65 degrees as sea state picks up.
23/02/2012 02:38	-75.2241	-30.20309	414.13	28.8	257.66	Starboard beam angle reduced to 60 degrees as poor data on this side.
23/02/2012 04:33	-75.24323	-30.75672	497.89	14.2	65.37	Starboard beams back out to 65 degrees as heading changes and sea state reduces.
23/02/2012 09:52	-75.27265	-30.35677	429.06	4.1	38.75	Logging stopped as going over pre-swathed ground.
23/02/2012 21:10	-75.27033	-31.17545	616.91	5.1	236.4	Changed SVP to JR259_057_thinned.asvp taken from CTD deployment number 57.
23/02/2012 22:02	-75.26632	-31.14952	609.51	8.6	228.04	Changed beams back to 67 degrees on both sides as sea is very calm.
23/02/2012 22:53	-75.2739	-31.29692	634.46	14.5	300.8	Started logging to line 0097.
24/02/2012 11:04	-75.08308	-32.21844	612.79	1.8	192.18	Logging stopped and dual swath mode switched off as on station for biology work.
24/02/2012 13:00	-75.08986	-32.21769	610.87	7.9	174.69	Started logging to line 0110.
24/02/2012 13:15	-75.09241	-32.21768	610.79	7.5	174.84	Stopped logging.

Date/Time	Latitude	Longitude	Depth - EA600 (m)	Wind Speed (knots)	Heading (degrees)	Comment
24/02/2012 14:49	-75.08305	-32.22327	610.06	11.8	78.33	Started logging to line 0111 to fill in a small gap in the data.
24/02/2012 14:53	-75.0828	-32.2178	612.3	10.5	180.08	Stopped logging.
24/02/2012 22:17	-75.18177	-31.86561	653.92	14.5	162.55	Gridded data stopped displaying in SIS. Closed and restarted program and the problem was solved.
25/02/2012 00:03	-75.17646	-31.87339	659.47	13.9	249.23	Stopped pinging in as going to carry out Topas survey.
25/02/2012 00:57	-75.18459	-31.83065	0	2.9	88.42	Restarted pinging as Topas survey is complete.
25/02/2012 01:00	-75.1838	-31.80814	656.11	3.6	65.5	Changed SVP to JR259_067_thinned.asvp. Taken from CTD deployment number 67.
25/02/2012 01:25	-75.14187	-31.63381	639.85	8.7	46.31	Changed to dynamic dual pulse mode and started logging to line 0112.
25/02/2012 03:38	-74.82959	-30.81208	494.93	17.5	35.77	Changed beams to 65 degrees on passage to shelf edge.
25/02/2012 05:47	-74.51801	-30.0836	746.61	22.9	34.19	Changed beams to 62 degrees as sea state increases. Entering shelf area.
25/02/2012 06:06	-74.32853	-28.64275	1886.27	22.3	313.17	At shelf break. Stopped logging to jr259_f and started logging to a new survey, jr259_g.
25/02/2012 06:39	-74.39034	-29.76589	1318.18	19.2	28.98	Profile starting to look slightly concave. Tried T500009_thinned.asvp but this did not improve the profile.
25/02/2012 06:42	-74.38228	-29.74833	1352.23	21.3	28.37	Changed SVP to T5_00008_thinned.asvp and incremented to line 0002. Profile much better.
25/02/2012 13:44	-74.32853	-28.64275	1886.27	22.3	313.17	Changed SVP to T5_00012_thinned.asvp and incremented line to 0009.
26/02/2012 09:08	-74.44873	-27.86951	2023.73	6.4	298.23	Stopped logging at line 0028 as entering previously swathed area on way to biology 2000m site.
26/02/2012 11:59	-74.36639	-28.12449	2051.14	9	130.7	Switched the dual swath mode to off as nearing biology site.
26/02/2012 22:24	-74.41061	-28.05872	2032.82	6	127.08	Changed SVP to JR259_074_thinned.asvp from CTD deployment number 74.
26/02/2012 22:46	-74.39968	-27.88533	2166.83	13.4	72.26	Switched dual swath mode to dynamic and started logging to line 0029.
27/02/2012 00:21	-74.27459	-28.33464	2064.47	2.5	238.57	Stopped logging as going over previously swathed area to avoid ice.
27/02/2012 00:43	-74.24253	-28.43957	2066.32	9.7	337.32	Started logging to line 0031.
27/02/2012 19:17	-74.03857	-30.37879	2056.51	9.2	231.66	Changed beams into 63 degrees as outer edges are poor.
27/02/2012 19:59	-74.13023	-30.19242	1887.12	17.3	121.03	Stopped logging as crossing track from earlier in the day.
27/02/2012 20:18	-74.1809	-30.06767	1794.99	12.6	156.73	Started logging to line 0051.
27/02/2012 21:57	-74.29672	-30.95484	1100.1	27.8	310.55	Tried changing beams to 64 degrees but outer edged were poor so returned to 63 degrees.
28/02/2012 01:13	-74.3516	-30.72142	1000.59	32.1	26.48	Stopped logging as covering previously swathed area and to allow a sharp turn in direction at line 0055
28/02/2012 01:16	-74.34881	-30.70912	1016.88	21.4	135.79	Logging again to line 0056 as Officer on Watch required train track information to line up with previous swath line
28/02/2012 03:35	-74.54971	-29.7432	862.9	26.7	109.16	Starboard beams to 61 degrees as poor upslope coverage.
28/02/2012 05:29	-74.71623	-28.94619	520.11	24.7	307.2	Starboard beams to 63 degrees as coverage improves.
28/02/2012 08:18	-74.59246	-29.82394	625.99	28.9	92.62	Starboard beams to 61 degrees as poor upslope coverage.
28/02/2012 09:58	-74.72279	-28.93792	521.15	31.3	66.73	Logging stopped at line 0064 as entering previously swathed area heading to Biology 1500m site. Dual ping mode set to OFF.
28/02/2012 21:19	-74.49491	-28.81971	1545.32	10.6	186.32	Changed beams from 61 to 63 degrees and dual pulse mode from off to dynamic.
28/02/2012 22:11	-74.68543	-28.86042	544.32	14.8	178.24	Started logging to line 0065.
29/02/2012 02:12	-74.40255	-30.50358	938.29	10.7	258.1	Logging off as doubling back over previously swathed area.
29/02/2012 02:40	-74.3959	-30.29179	0	8.2	192.32	Started logging again.
29/02/2012 09:59	-74.726	-29.50863	383.5	17.3	23.78	Stopped logging as covering previously swathed ground.
29/02/2012 22:19	-74.73101	-29.5442	386.21	14.6	140.18	Started logging to line 0078.
01/03/2012 09:35	-74.71495	-28.82251	521.78	9.5	265.59	Stopped logging as covering previously swathed ground.
01/03/2012 19:18	-74.7007	-28.6291	511.97	14.5	108.57	Changed beams to 66 degrees and started logging to line 0090.
01/03/2012 20:00	-74.65216	-28.15872	745.89	13.6	69.61	Stopped logging as covering previously swathed ground.
01/03/2012 20:16	-74.69451	-28.04981	500.27	15.7	149.06	Started logging to line 0091.
02/03/2012 13:47	-74.72243	-28.15726	500.11	16.3	39.32	Stopped logging as covering previously swathed ground.
02/03/2012 14:53	-74.52667	-27.71424	1773.33	21.8	68.76	Started logging to line 0109 and changed beams to 64 degrees.
02/03/2012 16:14	-74.53634	-26.72917	741.09	21.2	95.72	Changed beams to 66 degrees.
02/03/2012 17:39	-74.4024	-25.97618	1027.24	17.6	32.22	Changed port beams to 64 degrees.
02/03/2012 18:02	-74.37396	-25.76551	792.18	26.1	89.33	Changed port beams back to 66 degrees.
02/03/2012 23:47	-74.54424	-26.64501	0	11.8	226.61	No power in the UIC. On survey jr259_g line 0118.
03/03/2012 00:21	-74.5886	-26.76936	442.54	14.5	218.55	Systems back on - booting up.Error Message:Exception EstTrayIconErrors in module DataDisrtrib.exe uat 0005BBGC. Error adding tray icon.Boot up abandoned.
03/03/2012 06:43	-74.56157	-26.73839	555.63	13.4	171.04	SIS successfully restarted. Started logging to line 0119 with beams at 64 degrees.
03/03/2012 12:07	-74.46856	-26.21582	0	10.1	347.13	Logging off as covering previous swath.
03/03/2012 12:28	-74.47316	-26.28882	685.76	9.3	216.24	Started logging to line 0125.
03/03/2012 13:04	-74.51416	-26.4705	467.26	13.2	217.18	Stopped logging as covering previously swathed ground.
03/03/2012 13:20	-74.54588	-26.58547	456.24	12.9	224.12	Started logging to line 0126.
03/03/2012 13:31	-74.56815	-26.65961	450.32	14.2	235.34	Stopped logging as covering previously swathed ground.
03/03/2012 13:43	-74.5886	-26.76936	442.54	14.5	218.55	Started logging to line 0127.
03/03/2012 18:51	-74.72276	-27.4389	469.2	16.6	105.45	Changed beams to 66 degrees.
03/03/2012 23:39	-74.97951	-28.5558	436.62	15.1	214.47	On shelf area, changed back to survey jr259_f - logging to line 0117.

Date/Time	Latitude	Longitude	Depth - EA600 (m)	Wind Speed (knots)	Heading (degrees)	Comment
04/03/2012 01:45	-75.24178	-28.97336	394.05	3.8	22.49	Logging off as reducing speed to drift overnight.
04/03/2012 14:00	-75.24975	-29.0278	391.65	8.7	217.74	Shut down and restarted EM122 machine to try and rectify issue with U drive when importing background images. The restart did not fix the issue.
04/03/2012 15:42	-75.25213	-28.97066	392.94	4.7	83.54	Started logging to line 0120.
04/03/2012 17:42	-75.23727	-27.84038	32.58	12	231.78	Stopped logging as reached biology site.
04/03/2012 22:05	-75.24742	-27.85082	431.07	13.9	132.36	Changed beams to 62 degrees and started logging to line 0122.
04/03/2012 23:16	-75.40976	-27.17601	259.31	18.5	133.38	Stopped logging as reaching shallow water near Halley. Beams were varied from 60 to 66 degrees a few times in the last hour as we moved through patches of ice.
05/03/2012 09:28	-75.39735	-27.06986	253.94	12.1	97.69	Started logging to line 0124 then incremented to 0125 as entering creek 3 on approach to Halley.
05/03/2012 10:20	-75.47702	-26.93052	0	4.6	87.08	Stopped logging - reached Halley.
05/03/2012 18:50	-75.40203	-26.50241	315.95	4.1	33.51	Pinging and logging to survey jr259_f line 0126 as leaving Halley creek 3. Beams out to 64 degrees
05/03/2012 20:19	-75.09505	-26.31532		7.6	9.75	Beams into 60 degrees as going through new sea ice.
05/03/2012 23:22	-74.47762	-26.21847	554.89	14.2	348.84	Changed survey to jr259_e line 0102 at shelf break
05/03/2012 23:24	-74.47161	-26.22298	637.63	12.9	348.74	GRIDENGINE error message within SIS. Message saved as print screen image.
05/03/2012 23:26	-74.46561	-26.22752	718.89	13.8	348.89	Restarting SIS as current grid for jr259_e not being created.
05/03/2012 23:28	-74.4588	-26.23253	0	10.8	351.29	Restarted SIS and started logging to survey jr259_e line 0103
06/03/2012 00:19	-74.32897	-26.19301	203.96	12.2	345.94	Real time coverage stopped showing on both SIS and Helm with line 0103 having 10 minutes to go. Incremented to line 0104 and the coverage came back.
06/03/2012 01:26	-74.22401	-26.16275	192.86	17	101.28	Ship stopped due to poor visibility and ice conditions. Logging switched off.
06/03/2012 04:46	-74.18172	-26.12032	174.17	19.7	257.13	Visibility improved - ship moving off again. Started logging to line 0106.
06/03/2012 09:49	-73.80501	-24.98985	175.28	12.8	41.97	Stopped logging as ship stopped in ice.
06/03/2012 11:19	-73.68247	-25.17291	2910.15	5.3	273.23	Started logging to line 0112 as ship moving again.
06/03/2012 12:25	-73.68103	-25.1703	2910.89	4.6	246.65	Ship stopped for emergency drills - stopped logging.
06/03/2012 13:13	-73.68247	-25.17291	2910.15	5.3	273.23	Drill completed - started logging to line 0114.
07/03/2012 11:40	-70.12479	-22.66113	4435.07	9.3	348.33	Reduced beams to 45 degrees as experiment as beams at 60 degrees are giving variable results.
07/03/2012 11:52	-70.08261	-22.68801	4445.28	9.7	347.53	Continued experimenting with beams at 50 degrees.
07/03/2012 16:58	-69.38527	-24.90517	4507.77	15.7	316.03	Brief test of SVP. Changed to XBT taken in Northern Weddell. This gives same depth but different cross-track shape. Reverted to CTD profile taken at 2000m on the shelf.
07/03/2012 19:23	-69.15108	-25.98279	4565.64	22.4	152.83	Stopped logging as at deep CTD site in middle Weddell Sea.
07/03/2012 23:22	-69.15092	-25.9819	4551.72	22.7	148.33	Changed SVP to JR259_110_thinned.asvp from CTD deployment number 110.
07/03/2012 23:32	-69.1526	-25.98838	4551.72	12.2	325.47	Changed depth mode to DEEP. Started logging to line 0145 - accidently stopped logging. Restarted logging to line 0146.
08/03/2012 10:54	-67.57294	-28.49139	4550.28	13.2	250.32	Stopped logging as stopped in ice.
08/03/2012 11:02	-67.5694	-28.49825	4551.32	13.3	14.89	Started logging to line 0158.
08/03/2012 11:21	-67.52471	-28.48716	4562.74	17.1	99.78	Stopped logging - stopped in ice.
08/03/2012 11:31	-67.52451	-28.47855	4560.86	15.2	60.42	Started logging to line 0159.
09/03/2012 20:13	-62.58237	-37.33282	4645.51	32	326.43	Changed SVP to T5_00013_thinned.asvp from xbt12.
09/03/2012 23:14	-62.12809	-38.02397	2874.41	29.5	328.65	Changed beams from 50 to 55 degrees.
09/03/2012 23:40	-62.06849	-38.10933	2677.61	28.1	311.56	Stopped logging and pinging to set up a new survey.
09/03/2012 23:43	-62.06511	-38.12532	2888.68	28.7	294.78	Set up a new survey jr259_h with 128x128 processing cells and a 30m grid size. Started pinging and logging to jr25g_h line 0000.
09/03/2012 23:59	-62.04372	-38.20999	4240.24	27.3	305.75	Changed beams to 50 degrees.
10/03/2012 00:06	-62.0333	-38.24498	4858.99	30.4	305.34	Depth mode had changed to VERY DEEP while on AUTO mode - changed it back to DEEP as only in 5000m of water.
10/03/2012 00:52	-61.96765	-38.47665	3557.07	25.7	304.71	Changed ping mode from DEEP to AUTO as now in 3500m of water.
10/03/2012 09:50	-61.24834	-40.99713	1920.38	32.3	294.51	Beams changed to 55 degrees. Note - beams changed often during the day due to slope, depth and weather.
11/03/2012 00:17	-60.24108	-45.57663	0	35.2	264.7	Stopped logging and pinging at line 0024 as getting very few good returns due to the weather.
11/03/2012 08:59	-60.28706	-46.42517	0	32.8	188.87	Started pinging to get depth for glider recovery.
12/03/2012 01:40	-60.28774	-46.42566	2841.03	27.6	305.93	Moving off - started logging to line 0025. Beams changed to 50 degrees.
12/03/2012 02:51	-60.11153	-46.8571	1688.13	15.7	348.16	Stopped logging as at glider recovery site.
12/03/2012 04:11	-60.08953	-46.85279	2039.34	13.8	347.63	Moving off to next glider site - started logging to line 0027.
12/03/2012 09:23	-60.18719	-48.52392	1884.31	28.2	259.59	Beams changed often during the day due to weather.
12/03/2012 15:22	-60.16351	-50.90176	2680.69	12.2	164.57	At glider recovery site - stopped logging.
12/03/2012 17:09	-60.16492	-50.89885	2636.01	13.9	164.49	Moving off - started logging to line 0039.
12/03/2012 19:57	-60.16507	-50.29012	1189.65	16.5	288.58	Changed SVP profile to JR255b_SG539_thinned.asvp from CTD deployment number 113.
13/03/2012 12:45	-57.79155	-50.82943	4061.21	11.4	19.59	SIS crashed while removing a background grid. Happened while on line 0060.
13/03/2012 12:49	-57.77542	-50.81737	4137.44	12.7	19.94	SIS restarted and now logging to a new line 0060.
13/03/2012 14:25	-57.45267	-50.55651	3328.06	9	34.49	Stopped pinging and logging.
13/03/2012 14:48	-57.45243	-50.54289	4655.78	8.1	104.89	Started pinging and logging to line 0062.
13/03/2012 15:09	-57.46776	-50.44798	4004.85	8.6	235.79	Stopped pinging and logging.
13/03/2012 15:51	-57.46675	-50.45158	3819.35	20.6	298.67	Started pinging and logging to line 0063.
13/03/2012 16:11	-57.43952	-50.5394	3310.46	16.5	271.48	Stopped logging and pinging.

Date/Time	Latitude	Longitude	Depth - EA600 (m)	Wind Speed (knots)	Heading (degrees)	Comment
13/03/2012 16:31	-57.43799	-50.54316	0	12.4	288.48	Started pinging and logging to line 0064.
13/03/2012 17:22	-57.44946	-50.52942	0	15.1	172.33	Stopped logging during turn.
13/03/2012 17:25	-57.4551	-50.54031	3403.77	23.5	246.2	Started logging to line 0065.
13/03/2012 17:59	-57.49325	-50.68453	3543.95	14.8	237.7	Stopped logging.
13/03/2012 19:26	-57.49197	-50.68833	3626.4	16.5	314.98	Started logging to line 0066.
13/03/2012 20:00	-57.45853	-50.74732	0	6.4	107.9	Stopped logging.
13/03/2012 21:23	-57.43278	-50.75183	3390.35	22.3	268.41	Started logging to line 0067 for overnight transform fault survey.
13/03/2012 21:50	-57.39519	-50.71606	3312.9	7.6	90.05	Stopped logging during turn.
13/03/2012 21:51	-57.39492	-50.71059	3288.49	8.7	89.1	Started logging to line 0068.
14/03/2012 10:37	-57.17443	-50.37276	4121.59	13	238.12	Stopped logging as ship stopped waiting for glider position.
14/03/2012 12:41	-57.17152	-50.37418	4236.64	13.1	20.37	Started logging to line 0081.
14/03/2012 13:41	-57.12435	-50.19511	4352.74	9.8	103.68	Logging off while ship turns.
14/03/2012 13:46	-57.06263	-50.40687	4219.4	4.7	115.97	Started logging to line 0083.
14/03/2012 14:30	-57.0646	-50.41446	4220.82	23.8	293.59	Logging off as ship turns.
14/03/2012 14:35	-57.06263	-50.40687	4219.4	4.7	115.97	Started logging to line 0084.
14/03/2012 15:16	-57.11796	-50.18823	4265.97	5.8	117.52	Logging off as ship turns.
14/03/2012 15:24	-57.12726	-50.19798	4418.94	21.8	287.55	Started logging to line 0085.
14/03/2012 15:52	-57.09458	-50.32923	4283.09	22.7	294.08	Logging off as going over previously swathed area.
14/03/2012 20:03	-57.07428	-50.41847	4315.95	17.5	259.9	Changed SVP to JR255b_114_thinned.asvp from CTD deployment number 114.
14/03/2012 20:11	-57.07857	-50.4167	4312.83	2.5	135.17	Started logging to line 0086.
15/03/2012 18:39	-60.09164	-47.36083	1567.62	21.3	215.38	Changed SVP back to JR255b_SG539_thinned.asvp as back near Signy. Line incremented to 0109.
16/03/2012 00:00	-60.2483	-48.73414	0	24.6	268.39	Beams changed often during the night depending on slope and weather.
16/03/2012 09:00	-60.28228	-50.73448	3604.02	22.5	79.24	Beams changed often during the day due to depth and slope.
16/03/2012 14:23	-60.2968	-49.22115	2431.25	16.3	123.14	Changed SVP to T5_00014_thnned.asvp. Incremented line to 0129.
17/03/2012 01:07	-60.2856	-50.29984	0	29.8	95.6	Bad/no returns due to weather. Stopped logging and stopped and restarted pinging.
17/03/2012 01:10	-60.28685	-50.28576	0	27.8	95.57	Getting some returns. Started logging to line 0140.
17/03/2012 02:44	-60.24029	-50.1565	519.54	35.1	356.8	Turned off logging while ship is turning.
17/03/2012 02:52	-60.24362	-50.17432	516.76	18.7	208.57	Started logging to line 0142.
17/03/2012 04:50	-60.52272	-50.19619	2037.58	10.2	176.09	Stopped logging during ship turn.
17/03/2012 05:12	-60.53872	-50.153	0	30	17.5	Started logging to line 0144.
17/03/2012 07:31	-60.25579	-50.11806	565.75	36.8	5.33	Stopped logging during ship turn.
17/03/2012 07:57	-60.28922	-49.997	1541.78	30	116.14	Started logging to line 0147.
17/03/2012 09:32	-60.50979	-50.02491	3935.84	30.3	215.18	Stopped logging during ship turn.
17/03/2012 09:43	-60.53047	-49.99592	2055.74	18.5	134.78	Turn completed - started logging to line 0149.
17/03/2012 21:53	-60.80788	-45.96012	264.87	16.4	102.02	Error message on return from break. Stopped logging and pinging as approaching Signy.
18/03/2012 13:30	-60.70169	-45.57971	35.12	21.1	324.47	Stopped and restarted SIS and ran the BIST tests as a training task to test the EM122 Opportunistic notes.
18/03/2012 20:39	-60.70167	-45.57972	35.98	22.6	327.97	Created a new survey jr259_i with a grid resolution of 128x128 and a cell size of 30m.
18/03/2012 20:43	-60.70169	-45.57975	35.72	25.1	328.7	Loaded grid of survey jr259_h. Tried to load a background image but the U drive was not visible from Import/Export. Copied the image to the G drive and then uploaded it. Started the Helm program - transferred the grid of survey jr259_h and loaded the background image.
19/03/2012 01:29	-60.83174	-46.70678	191.38	38.2	268.72	Started logging to line 0000 of survey jr259_i
19/03/2012 09:20	-60.01531	-48.07042	0	29.2	325.35	Beams to 52 degrees
19/03/2012 09:23	-60.00878	-48.07763	101.26	28	325.93	Beams to 50 degrees
19/03/2012 14:20	-59.27148	-48.86073	0	35.2	325	Stopped logging as drifting into previously swathed line.
19/03/2012 14:57	-59.18958	-48.99591	175.43	32.2	308.82	Started logging as back into unsurveyed area
19/03/2012 17:35	-58.94919	-49.76992		35.2	298.93	Stopped logging as in previously swathed area and current data quality very poor.
19/03/2012 22:18	-58.29839	-50.95272	3883.51	31.9	317.24	Started logging to line 0016 as into unsurveyed area.
20/03/2012 09:23	-56.70688	-53.16299	0	38	315.13	Stopped logging as data quality very poor due to sea state. End of EM122 data recording for jr259.
21/03/2012 19:00	-51.93037	-58.51743	22.29	36.8	282.2	At anchor outside Mare Harbour, Falkland Islands. Time approximate.

Appendix 2. Deployment list for JR259, JR275 and JR255B where deployment numbers are unique to the cruise leg (20120207). Note that gear codes are from a controlled list held by BODC and entries in red are estimated values.

Cruise ID	Site	Deployment No	Gear Code	Gear No	Event No	Event Gear Code	Event Gear No	Final event number	Local ID	JDay (Start)	Start Date	Start Time UTC	Start Lat	Start Long	Start water depth (m)	Equipment depth (m)	Jday (End)	End Date	End Time UTC	End Lat	End Long	End water depth (m)	Comments
JR259	Falklands Plateau	1	XBT	1	1			JR259_1_XBT1		38	07/02/2012	22:48:00	-52.48058	-57.13432	560		38	07/02/2012	22:54:00	-52.48058	-57.13432	560	
JR259	Falklands Trough	2	SWATH	1	1			JR259_2_SWATH1		39	08/02/2012	01:43:00	-53.02415	-56.76946	1651		80	20/03/2012	09:23:00	-56.70688	-53.16299		
JR259	W5 Spreading Centre	3	XBT	2	1			JR259_3_XBT2		39	08/02/2012	20:51:50	-56.33077	-55.09576	4034		39	08/02/2012	20:57:50	-56.33077	-55.09576	4034	
JR259	W5 Spreading Centre	4	ROCKDREDGE	1	1			JR259_4_ROCKDREDGE1	DR.203	40	09/02/2012	14:33:51	-56.50329	-53.60169	3714	3714	40	09/02/2012	15:04:11	-56.50274	-53.60461	3682	
JR259	W5 Spreading Centre	5	ROCKDREDGE	2	1			JR259_5_ROCKDREDGE2	DR.204	40	09/02/2012	18:22:20	-56.47729	-53.58849	3392	3392	40	09/02/2012	19:12:27	-56.47627	-53.5923	3378	
JR259	South Orkney Islands	6	XBT	3	1			JR259_6_XBT3		41	10/02/2012	22:20:00	-59.89036	-45.89084	4073		41	10/02/2012	22:25:00	-59.89544	-45.87836	4020	
JR275	South Orkney Islands	7	CTD	1	1	CTD	1	JR275_7_CTD1_CTD		42	11/02/2012	11:06:00	-60.67662	-44.00929	300		42	11/02/2012	11:20:00	-60.67658	-44.00934	300	Start time equals in water, end time is at surface
JR275	South Orkney Islands	7	CTD	1	2	LADCP	1	JR275_7_CTD1_LADCP		42	11/02/2012	11:06:00	-60.67662	-44.00929	300		42	11/02/2012	11:20:00	-60.67658	-44.00934	300	
JR275	South Orkney Islands	7	CTD	1	3	NISKIN	1	JR275_7_CTD1_NISKIN1		42	11/02/2012	11:14:00	-60.67661	-44.00929	300	265							
JR275	South Orkney Islands	7	CTD	1	4	NISKIN	2	JR275_7_CTD1_NISKIN2		42	11/02/2012	11:14:00	-60.67661	-44.00929	300	265							
JR275	South Orkney Islands	7	CTD	1	5	NISKIN	3	JR275_7_CTD1_NISKIN3		42	11/02/2012	11:14:00	-60.67661	-44.00929	300	265							
JR275	South Orkney Islands	8	AGT	1	1			JR275_8_AGT1		42	11/02/2012	11:56:13	-60.67737	-44.01327	279	279	42	11/02/2012	11:58:22	-60.67754	-44.01438	279	Times are for start and stop of trawling.
JR275	South Orkney Islands	9	ES	1	1	ES	1	JR275_9_ES1_ES		42	11/02/2012	12:58:23	-60.67775	-44.01644	279	279	42	11/02/2012	13:08:42	-60.67864	-44.02198	287	Times are for start and stop of trawling.
JR275	South Orkney Islands	9	ES	1	2	CAMERA	1	JR275_9_ES1_CAMERA		42	11/02/2012	12:58:23	-60.67775	-44.01644	279	279	42	11/02/2012	13:08:42	-60.67864	-44.02198	287	
JR275	South Orkney Islands	10	ES	2	1	ES	1	JR275_10_ES2_ES		42	11/02/2012	14:25:46	-60.67784	-44.01701	280	280	42	11/02/2012	14:35:58	-60.67872	-44.02248	287	Times are for start and stop of trawling.
JR275	South Orkney Islands	10	ES	2	2	CAMERA	1	JR275_10_ES2_CAMERA		42	11/02/2012	14:25:46	-60.67784	-44.01701	280	280	42	11/02/2012	14:35:58	-60.67872	-44.02248	287	
JR259	Herdman Bank	11	ROCKDREDGE	3	1			JR259_11_ROCKDREDGE3	DR.205	44	13/02/2012	11:34:00	-59.94496	-31.76011	993	993	44	13/02/2012	12:09:25	-59.94203	-31.76016	887	
JR259	Herdman Bank	12	XBT	4	1			JR259_12_XBT4		44	13/02/2012	12:40:00	-59.93858	-31.76024	788		44	13/02/2012	12:44:00	-59.93748	-31.76027	780	
JR259	North Weddell	13	XBT	5	1			JR259_13_XBT5		45	14/02/2012	19:52:00	-60.1759	-23.17676	3826		45	14/02/2012	20:02:00	-60.18218	-23.14974	4104	
JR259	Weddell Sea	14	XBT	6	1			JR259_14_XBT6		46	15/02/2012	11:21:00	-62.96971	-21.93954	4907		46	15/02/2012	11:25:00	-62.96971	-21.93954	4907	
JR259	Weddell Sea	15	XBT	7	1			JR259_15_XBT7		47	16/02/2012	12:07:00	-66.9823	-18.8933	4973		47	16/02/2012	12:12:00	-66.9905	-18.88966	4973	
JR259	Near Halley Bay	16	XBT	8	1			JR259_16_XBT8		49	18/02/2012	11:41:00	-75.10706	-29.95436	419		49	18/02/2012	11:42:30	-75.10991	-29.95807	449	
JR259	East Filchner Trough	17	XBT	9	1			JR259_17_XBT9		49	18/02/2012	18:16:00	-76.2776	-32.81173	807		49	18/02/2012	18:16:00	-76.2776	-32.81173	807	Faulty XBT probe - deployment terminated and no data file created.
JR259	East Filchner Trough	18	XBT	10	1			JR259_18_XBT10		49	18/02/2012	18:23:00	-76.28452	-32.84867	858		49	18/02/2012	18:25:00	-76.28656	-32.85993	852	
JR275	Southeast Filchner Trough Edge	19	CTD	2	1	CTD	1	JR275_19_CTD2_CTD		50	19/02/2012	15:41:00	-77.36077	-35.37846	650		50	19/02/2012	16:10:00	-77.36077	-35.37849	650	Start time equals in water, end time is at surface
JR275	Southeast Filchner Trough Edge	19	CTD	2	2	LADCP	1	JR275_19_CTD2_LADCP		50	19/02/2012	15:41:00	-77.36077	-35.37846	650		50	19/02/2012	16:10:00	-77.36077	-35.37849	650	
JR275	Southeast Filchner Trough Edge	19	CTD	2	3	NISKIN	1	JR275_19_CTD2_NISKIN1		50	19/02/2012	15:55:00	-77.36077	-35.37849	650	620							
JR275	Southeast Filchner Trough Edge	19	CTD	2	4	NISKIN	2	JR275_19_CTD2_NISKIN2		50	19/02/2012	15:55:00	-77.36077	-35.37849	650	620							
JR275	Southeast Filchner Trough Edge	19	CTD	2	5	NISKIN	3	JR275_19_CTD2_NISKIN3		50	19/02/2012	16:02:00	-77.36077	-35.37849	650	300							
JR275	Southeast Filchner Trough Edge	19	CTD	2	6	NISKIN	4	JR275_19_CTD2_NISKIN4		50	19/02/2012	16:09:00	-77.36077	-35.37849	650	5							
JR275	Southeast Filchner Trough Edge	20	AGT	2	1			JR275_20_AGT2		50	19/02/2012	16:49:47	-77.35897	-35.37029	654		50	19/02/2012	16:56:38	-77.35763	-35.36416	654	
JR275	Southeast Filchner Trough Edge	21	AGT	3	1			JR275_21_AGT3		50	19/02/2012	17:56:31	-77.35482	-35.35131	651		50	19/02/2012	18:06:40	-77.35286	-35.34232	652	
JR275	Southeast Filchner Trough Edge	22	AGT	4	1			JR275_22_AGT4		50	19/02/2012	19:15:28	-77.34935	-35.32627	650		50	19/02/2012	19:20:57	-77.34829	-35.32139	654	
JR275	Southeast Filchner Trough Edge	23	ES	3	1	ES	1	JR275_23_ES3_ES		50	19/02/2012	20:24:35	-77.35693	-35.36059	654		50	19/02/2012	20:34:42	-77.35788	-35.36497	655	
JR275	Southeast Filchner Trough Edge	23	ES	3	2	CAMERA	1	JR275_23_ES3_CAMERA		50	19/02/2012	20:24:35	-77.35693	-35.36059	654		50	19/02/2012	20:34:42	-77.35788	-35.36497	655	
JR275	Mideast Filchner Trough Edge 800m	24	CTD	3	1	CTD	1	JR275_24_CTD3_CTD		51	20/02/2012	11:26:00	-76.33171	-32.9046	780		51	20/02/1012	12:06:00	-76.33171	-32.90448	780	Start time equals in water, end time is at surface
JR275	Mideast Filchner Trough Edge 800m	24	CTD	3	2	LADCP	1	JR275_24_CTD3_LADCP		51	20/02/2012	11:26:00	-76.33171	-32.9046	780		51	20/02/1012	12:06:00	-76.33171	-32.90448	780	
JR275	Mideast Filchner Trough Edge 800m	24	CTD	3	3	NISKIN	1	JR275_24_CTD3_NISKIN1		51	20/02/2012	11:45:00	-76.33171	-32.90448	780	770							
JR275	Mideast Filchner Trough Edge 800m	24	CTD	3	4	NISKIN	2	JR275_24_CTD3_NISKIN2		51	20/02/2012	11:45:00	-76.33171	-32.90448	780	770							
JR275	Mideast Filchner Trough Edge 800m	24	CTD	3	5	NISKIN	3	JR275_24_CTD3_NISKIN3		51	20/02/2012	11:57:00	-76.33171	-32.90452	780	210							
JR275	Mideast Filchner Trough	24	CTD	3	6	NISKIN	4	JR275_24_CTD3_NISKIN4		51	20/02/2012	11:57:00	-76.33171	-32.90452	780	210							

Cruise ID	Site	Deployment No	Gear Code	Gear No	Event No	Event Gear Code	Event Gear No	Final event number	Local ID	JDay (Start)	Start Date	Start Time UTC	Start Lat	Start Long	Start water depth (m)	Equipment depth (m)	Jday (End)	End Date	End Time UTC	End Lat	End Long	End water depth (m)	Comments
	Edge 800m																						
JR275	Mideast Filchner Trough Edge 800m	24	CTD	3	7	NISKIN	5	JR275_24_CTD3_NISKIN5		51	20/02/2012	12:01:00	-76.33171	-32.9045	780	5							
JR275	Mideast Filchner Trough Edge 800m	24	CTD	3	8	NISKIN	6	JR275_24_CTD3_NISKIN6		51	20/02/2012	12:01:00	-76.33171	-32.9045	780	5							
JR275	Mideast Filchner Trough Edge 800m	25	AGT	5	1			JR275_25_AGT5		51	20/02/2012	12:38:33	-76.32951	-32.90046	780		51	20/02/2012	12:49:01	-76.32695	-32.8956	781	
JR275	Mideast Filchner Trough Edge 800m	26	AGT	6	1			JR275_26_AGT6		51	20/02/2012	14:02:07	-76.32103	-32.88435	780		51	20/02/2012	14:07:24	-76.31971	-32.88189	781	
JR275	Mideast Filchner Trough Edge 800m	27	AGT	7	1			JR275_27_AGT7		51	20/02/2012	15:20:17	-76.31506	-32.87307	781		51	20/02/2012	15:23:00	-76.31442	-32.87185	779	
JR275	Mideast Filchner Trough Edge 600m	28	CTD	4	1	CTD	1	JR275_28_CTD4_CTD		51	20/02/2012	17:37:00	-76.20027	-31.86614	587		51	20/02/2012	18:13:00	-76.20028	-31.86608	592	
JR275	Mideast Filchner Trough Edge 600m	28	CTD	4	2	LADCP	1	JR275_28_CTD4_LADCP		51	20/02/2012	17:37:00	-76.20027	-31.86614	587		51	20/02/2012	18:13:00	-76.20028	-31.86608	592	
JR275	Mideast Filchner Trough Edge 600m	28	CTD	4	3	NISKIN	1	JR275_28_CTD4_NISKIN1		51	20/02/2012	17:51:00	-76.20029	-31.86612	587	580							
JR275	Mideast Filchner Trough Edge 600m	28	CTD	4	3	NISKIN	2	JR275_28_CTD4_NISKIN2		51	20/02/2012	17:51:00	-76.20029	-31.86612	587	580							
JR275	Mideast Filchner Trough Edge 600m	28	CTD	4	3	NISKIN	3	JR275_28_CTD4_NISKIN3		51	20/02/2012	18:03:00	-76.20028	-31.86609	589	250							
JR275	Mideast Filchner Trough Edge 600m	28	CTD	4	3	NISKIN	4	JR275_28_CTD4_NISKIN4		51	20/02/2012	18:03:00	-76.20028	-31.86609	589	250							
JR275	Mideast Filchner Trough Edge 600m	28	CTD	4	3	NISKIN	5	JR275_28_CTD4_NISKIN5		51	20/02/2012	18:04:00	-76.20028	-31.8661	589	200							
JR275	Mideast Filchner Trough Edge 600m	28	CTD	4	3	NISKIN	6	JR275_28_CTD4_NISKIN6		51	20/02/2012	18:05:00	-76.20027	-31.86612	589	150							
JR275	Mideast Filchner Trough Edge 600m	28	CTD	4	3	NISKIN	7	JR275_28_CTD4_NISKIN7		51	20/02/2012	18:06:00	-76.20027	-31.86611	589	100							
JR275	Mideast Filchner Trough Edge 600m	28	CTD	4	3	NISKIN	8	JR275_28_CTD4_NISKIN8		51	20/02/2012	18:07:00	-76.20027	-31.86611	589	80							
JR275	Mideast Filchner Trough Edge 600m	28	CTD	4	3	NISKIN	9	JR275_28_CTD4_NISKIN9		51	20/02/2012	18:08:00	-76.20027	-31.86613	589	60							
JR275	Mideast Filchner Trough Edge 600m	28	CTD	4	3	NISKIN	10	JR275_28_CTD4_NISKIN10		51	20/02/2012	18:09:00	-76.20028	-31.8661	589	50							
JR275	Mideast Filchner Trough Edge 600m	28	CTD	4	3	NISKIN	11	JR275_28_CTD4_NISKIN11		51	20/02/2012	18:10:00	-76.20028	-31.86609	587	40							
JR275	Mideast Filchner Trough Edge 600m	28	CTD	4	3	NISKIN	12	JR275_28_CTD4_NISKIN12		51	20/02/2012	18:11:00	-76.20028	-31.8661	587	20							
JR275	Mideast Filchner Trough Edge 600m	28	CTD	4	3	NISKIN	13	JR275_28_CTD4_NISKIN13		51	20/02/2012	18:12:00	-76.20028	-31.86609	592	10							
JR275	Mideast Filchner Trough Edge 600m	28	CTD	4	3	NISKIN	14	JR275_28_CTD4_NISKIN14		51	20/02/2012	18:12:30	-76.20028	-31.86609	589	5							
JR275	Mideast Filchner Trough Edge 600m	28	CTD	4	3	NISKIN	15	JR275_28_CTD4_NISKIN15		51	20/02/2012	18:12:30	-76.20028	-31.86609	589	5							
JR275	Mideast Filchner Trough Edge 600m	29	AGT	8	1			JR275_29_AGT8		51	20/02/2012	18:42:16	-76.19908	-31.86015	577		51	20/02/2012	18:47:39	-76.19816	-31.85561	576	
JR275	Mideast Filchner Trough Edge 600m	30	AGT	9	1			JR275_30_AGT9		51	20/02/2012	19:46:24	-76.19557	-31.84258	579		51	20/02/2012	19:51:29	-76.19471	-31.83826	576	
JR275	Mideast Filchner Trough Edge 600m	31	AGT	10	1			JR275_31_AGT10		51	20/02/2012	20:47:17	-76.19192	-31.82427	573		51	20/02/2012	20:52:40	-76.19099	-31.81973	571	
JR275	North Brunt Canyon	32	CTD	5	1	CTD	1	JR275_32_CTD5_CTD		52	21/02/2012	11:15:00	-76.02446	-27.00203	602		52	21/02/2012	11:40:00	-76.02447	-27.00201	602	
JR275	North Brunt Canyon	32	CTD	5	2	LADCP	1	JR275_32_CTD5_LADCP		52	21/02/2012	11:15:00	-76.02446	-27.00203	602		52	21/02/2012	11:40:00	-76.02447	-27.00201	602	
JR275	North Brunt Canyon	33	AGT	11	1			JR275_33_AGT11		52	21/02/2012	12:15:16	-76.02313	-26.99542	608		52	21/02/2012	12:20:42	-76.0222	-26.99088	610	
JR275	North Brunt Canyon	34	AGT	12	1			JR275_34_AGT12		52	21/02/2012	13:17:32	-76.01957	-26.97793	608		52	21/02/2012	13:22:46	-76.01868	-26.97352	613	
JR275	North Brunt Canyon	35	AGT	13	1			JR275_35_AGT13		52	21/02/2012	14:19:19	-76.01602	-26.9604	611		52	21/02/2012	14:24:27	-76.01513	-26.95604	613	
JR275	North Brunt Canyon	36	ES	3	1	ES	1	JR275_36_ES3_ES		52	21/02/2012	15:24:22	-76.00827	-26.941	525		52	21/02/2012	15:34:57	-76.0098	-26.94333	547	
JR275	North Brunt Canyon	36	ES	3	2	CAMERA	1	JR275_36_ES3_CAMERA		52	21/02/2012	15:24:22	-76.00827	-26.941	525		52	21/02/2012	15:34:57	-76.0098	-26.94333	547	
JR275	South Brunt Canyon	37	CTD	6	1	CTD	1	JR275_37_CTD6_CTD		52	21/02/2012	19:23:00	-76.1713	-27.79085	562		52	21/02/2012	20:00:00	-76.17127	-27.79092	567	
JR275	South Brunt Canyon	37	CTD	6	2	LADCP	1	JR275_37_CTD6_LADCP		52	21/02/2012	19:23:00	-76.1713	-27.79085	562		52	21/02/2012	20:00:00	-76.17127	-27.79092	567	
JR275	South Brunt Canyon	37	CTD	6	3	NISKIN	1	JR275_37_CTD6_NISKIN1		52	21/02/2012	19:36:00	-76.17129	-27.79082	560	565							
JR275	South Brunt Canyon	37	CTD	6	3	NISKIN	2	JR275_37_CTD6_NISKIN2		52	21/02/2012	19:36:00	-76.17129	-27.79082	560	565							
JR275	South Brunt Canyon	37	CTD	6	3	NISKIN	3	JR275_37_CTD6_NISKIN3		52	21/02/2012	19:40:00	-76.1713	-27.79085	562	300							
JR275	South Brunt Canyon	37	CTD	6	3	NISKIN	4	JR275_37_CTD6_NISKIN4		52	21/02/2012	19:40:00	-76.1713	-27.79085	562	300							
JR275	South Brunt Canyon	37	CTD	6	3	NISKIN	5	JR275_37_CTD6_NISKIN5		52	21/02/2012	19:44:00	-76.1713	-27.79083	562	200							
JR275	South Brunt Canyon	37	CTD	6	3	NISKIN	6	JR275_37_CTD6_NISKIN6		52	21/02/2012	19:47:00	-76.17129	-27.79086	560	150							

Cruise ID	Site	Deployment No	Gear Code	Gear No	Event No	Event Gear Code	Event Gear No	Final event number	Local ID	JDay (Start)	Start Date	Start Time UTC	Start Lat	Start Long	Start water depth (m)	Equipment depth (m)	Jday (End)	End Date	End Time UTC	End Lat	End Long	End water depth (m)	Comments
JR275	South Brunt Canyon	37	CTD	6	3	NISKIN	7	JR275_37_CTD6_NISKIN7		52	21/02/2012	19:50:00	-76.17127	-27.79088	567	100							
JR275	South Brunt Canyon	37	CTD	6	3	NISKIN	8	JR275_37_CTD6_NISKIN8		52	21/02/2012	19:52:00	-76.17127	-27.79088	562	80							
JR275	South Brunt Canyon	37	CTD	6	3	NISKIN	9	JR275_37_CTD6_NISKIN9		52	21/02/2012	19:54:00	-76.17127	-27.7909	567	60							
JR275	South Brunt Canyon	37	CTD	6	3	NISKIN	10	JR275_37_CTD6_NISKIN10		52	21/02/2012	19:55:00	-76.17127	-27.79092	567	50							
JR275	South Brunt Canyon	37	CTD	6	3	NISKIN	11	JR275_37_CTD6_NISKIN11		52	21/02/2012	19:56:00	-76.17127	-27.79092	567	40							
JR275	South Brunt Canyon	37	CTD	6	3	NISKIN	12	JR275_37_CTD6_NISKIN12		52	21/02/2012	19:57:00	-76.17127	-27.79092	567	20							
JR275	South Brunt Canyon	37	CTD	6	3	NISKIN	13	JR275_37_CTD6_NISKIN13		52	21/02/2012	19:58:00	-76.17127	-27.79091	567	10							
JR275	South Brunt Canyon	37	CTD	6	3	NISKIN	14	JR275_37_CTD6_NISKIN14		52	21/02/2012	19:59:00	-76.17127	-27.79093	567	5							
JR275	South Brunt Canyon	37	CTD	6	3	NISKIN	15	JR275_37_CTD6_NISKIN15		52	21/02/2012	19:59:00	-76.17127	-27.79093	567	5							
JR275	South Brunt Canyon	38	AGT	14	1			JR275_38_AGT14		52	21/02/2012	20:29:52	-76.16965	-27.79567	561		52	21/02/2012	20:35:06	-76.1685	-27.79901	544	
JR275	South Brunt Canyon	39	AGT	15	1			JR275_39_AGT15		52	21/02/2012	21:33:17	-76.16936	-27.79659	549		52	21/02/2012	21:35:34	-76.16887	-27.79802	555	
JR275	South Brunt Canyon	40	ES	4	1	ES	1	JR275_40_ES4_ES		52	21/02/2012	22:27:30	-76.16686	-27.8038	549		52	21/02/2012	22:32:50	-76.16565	-27.80733	538	
JR275	South Brunt Canyon	40	ES	4	2	CAMERA	1	JR275_40_ES4_CAMERA		52	21/02/2012	22:27:30	-76.16686	-27.8038	549		52	21/02/2012	22:32:50	-76.16565	-27.80733	538	
JR275	Mid West Brunt Shelf 400m	41	CTD	7	1	CTD	1	JR275_41_CTD7_CTD		53	22/02/2012	11:05:00	-75.75996	-30.43226	429		53	22/02/2012	11:25:00	-75.75994	-30.43216	429	
JR275	Mid West Brunt Shelf 400m	41	CTD	7	2	LADCP	1	JR275_41_CTD7_LADCP		53	22/02/2012	11:05:00	-75.75996	-30.43226	429		53	22/02/2012	11:25:00	-75.75994	-30.43216	429	
JR275	Mid West Brunt Shelf 400m	42	AGT	16	1			JR275_42_AGT16		53	22/02/2012	11:49:37	-75.76116	-30.43723	430		53	22/02/2012	11:54:58	-75.76213	-30.44131	432	
JR275	Mid West Brunt Shelf 400m	43	AGT	17	1			JR275_43_AGT17		53	22/02/2012	12:45:03	-75.76453	-30.45297	429		53	22/02/2012	12:47:31	-75.76497	-30.45472	429	
JR275	Mid West Brunt Shelf 400m	44	AGT	18	1			JR275_44_AGT18		53	22/02/2012	13:31:07	-75.76699	-30.46317	429		53	22/02/2012	13:33:19	-75.76738	-30.46484	429	
JR275	Mid West Brunt Shelf 400m	45	ES	5	1	ES	1	JR275_45_ES5_ES		53	22/02/2012	14:19:51	-75.76202	-30.44267	429		53	22/02/2012	14:30:33	-75.76412	-30.45131	427	
JR275	Mid West Brunt Shelf 400m	45	ES	5	2	CAMERA	1	JR275_45_ES5_CAMERA		53	22/02/2012	14:19:51	-75.76202	-30.44267	429		53	22/02/2012	14:30:33	-75.76412	-30.45131	427	
JR275	Mid West Brunt Shelf 600m	46	CTD	8	1	CTD	1	JR275_46_CTD8_CTD		53	22/02/2012	16:39:00	-75.7389	-31.23664	580		53	22/02/2012	17:14:00	-75.73944	-31.23476	581	
JR275	Mid West Brunt Shelf 600m	46	CTD	8	2	LADCP	1	JR275_46_CTD8_LADCP		53	22/02/2012	16:39:00	-75.7389	-31.23664	580		53	22/02/2012	17:14:00	-75.73944	-31.23476	581	
JR275	Mid West Brunt Shelf 600m	46	CTD	8	3	NISKIN	1	JR275_46_CTD8_NISKIN1		53	22/02/2012	16:52:00	-75.73935	-31.23533	581	560							
JR275	Mid West Brunt Shelf 600m	46	CTD	8	3	NISKIN	2	JR275_46_CTD8_NISKIN2		53	22/02/2012	16:52:00	-75.73935	-31.23533	581	560							
JR275	Mid West Brunt Shelf 600m	46	CTD	8	3	NISKIN	3	JR275_46_CTD8_NISKIN3		53	22/02/2012	17:00:00	-75.7394	-31.23505	592	300							
JR275	Mid West Brunt Shelf 600m	46	CTD	8	3	NISKIN	4	JR275_46_CTD8_NISKIN4		53	22/02/2012	17:00:00	-75.7394	-31.23505	592	300							
JR275	Mid West Brunt Shelf 600m	46	CTD	8	3	NISKIN	5	JR275_46_CTD8_NISKIN5		53	22/02/2012	17:03:00	-75.73943	-31.23479	582	200							
JR275	Mid West Brunt Shelf 600m	46	CTD	8	3	NISKIN	6	JR275_46_CTD8_NISKIN6		53	22/02/2012	17:05:00	-75.73943	-31.2348	582	150							
JR275	Mid West Brunt Shelf 600m	46	CTD	8	3	NISKIN	7	JR275_46_CTD8_NISKIN7		53	22/02/2012	17:06:00	-75.73943	-31.2348	582	100							
JR275	Mid West Brunt Shelf 600m	46	CTD	8	3	NISKIN	8	JR275_46_CTD8_NISKIN8		53	22/02/2012	17:07:00	-75.73942	-31.23481	581	80							
JR275	Mid West Brunt Shelf 600m	46	CTD	8	3	NISKIN	9	JR275_46_CTD8_NISKIN9		53	22/02/2012	17:08:00	-75.73943	-31.23478	581	60							
JR275	Mid West Brunt Shelf 600m	46	CTD	8	3	NISKIN	10	JR275_46_CTD8_NISKIN10		53	22/02/2012	17:09:00	-75.73944	-31.23476	581	50							
JR275	Mid West Brunt Shelf 600m	46	CTD	8	3	NISKIN	11	JR275_46_CTD8_NISKIN11		53	22/02/2012	17:10:00	-75.73944	-31.23476	581	40							
JR275	Mid West Brunt Shelf 600m	46	CTD	8	3	NISKIN	12	JR275_46_CTD8_NISKIN12		53	22/02/2012	17:11:00	-75.73945	-31.23475	580	20							
JR275	Mid West Brunt Shelf 600m	46	CTD	8	3	NISKIN	13	JR275_46_CTD8_NISKIN13		53	22/02/2012	17:12:00	-75.73945	-31.23474	580	10							
JR275	Mid West Brunt Shelf 600m	46	CTD	8	3	NISKIN	14	JR275_46_CTD8_NISKIN14		53	22/02/2012	17:13:00	-75.73944	-31.23475	581	5							
JR275	Mid West Brunt Shelf 600m	46	CTD	8	3	NISKIN	15	JR275_46_CTD8_NISKIN15		53	22/02/2012	17:13:00	-75.73944	-31.23475	581	5							
JR275	Mid West Brunt Shelf 600m	47	AGT	19	1			JR275_47_AGT19		53	22/02/2012	17:45:17	-75.7406	-31.23803	580		53	22/02/2012	17:50:34	-75.74176	-31.24128	578	
JR275	Mid West Brunt Shelf 600m	48	AGT	20	1			JR275_48_AGT20		53	22/02/2012	18:45:37	-75.74505	-31.25064	584		53	22/02/2012	18:50:32	-75.74617	-31.2538	589	
JR275	Mid West Brunt Shelf 600m	49	AGT	21	1			JR275_49_AGT21		53	22/02/2012	19:43:45	-75.74963	-31.2636	583		53	22/02/2012	19:48:51	-75.75076	-31.26678	584	
JR275	Mid West Brunt Shelf 600m	50	ES	6	1	ES	1	JR275_50_ES6_ES		53	22/02/2012	20:46:45	-75.74325	-31.24615	583		53	22/02/2012	20:58:18	-75.74587	-31.25353	586	
JR275	Mid West Brunt Shelf 600m	50	ES	6	2	CAMERA	1	JR275_50_ES6_CAMERA		53	22/02/2012	20:46:45	-75.74325	-31.24615	583		53	22/02/2012	20:58:18	-75.74587	-31.25353	586	
JR275	West Brunt Shelf 400m	51	CTD	9	1	CTD	1	JR275_51_CTD9_CTD		54	23/02/2012	11:03:00	-75.24165	-30.24278	419		54	23/02/2012	11:20:00	-75.2416	-30.24272	418	
JR275	West Brunt Shelf 400m	51	CTD	9	2	LADCP	1	JR275_51_CTD9_LADCP		54	23/02/2012	11:03:00	-75.24165	-30.24278	419		54	23/02/2012	11:20:00	-75.2416	-30.24272	418	
JR275	West Brunt Shelf 400m	52	AGT	22	1			JR275_52_AGT22		54	23/02/2012	11:46:00	-75.24344	-30.24534	419		54	23/02/2012	11:51:09	-75.24473	-30.24715	419	
JR275	West Brunt Shelf 400m	53	AGT	23	1			JR275_53_AGT23		54	23/02/2012	12:37:05	-75.2478	-30.25152	417		54	23/02/2012	12:42:10	-75.24906	-30.25333	417	
JR275	West Brunt Shelf 400m	54	AGT	24	1			JR275_54_AGT24		54	23/02/2012	13:23:23	-75.25256	-30.25835	418		54	23/02/2012	13:28:36	-75.25386	-30.26024	419	
JR275	West Brunt Shelf 400m	55	AGT	25	1			JR275_55_AGT25		54	23/02/2012	14:16:27	-75.25672	-30.26436	418		54	23/02/2012	14:21:32	-75.25798	-30.26619	418	
JR275	West Brunt Shelf 400m	56	ES	7	1	ES	1	JR275_56_ES7_ES		54	23/02/2012	15:15:40	-75.246	-30.24888	417		54	23/02/2012	15:25:50	-75.24865	-30.25268	415	
JR275	West Brunt Shelf 400m	56	ES	7	2	CAMERA	1	JR275_56_ES7_CAMERA		54	23/02/2012	15:15:40	-75.246	-30.24888	417		54	23/02/2012	15:25:50	-75.24865	-30.25268	415	
JR275	West Brunt Shelf 400m	57	CTD	10	1	CTD	1	JR275_57_CTD10_CTD		54	23/02/2012	17:30:00	-75.26199	-31.11879	601		54	23/02/2012	18:07:00	-75.26199	-31.11874	601	
JR275	West Brunt Shelf 600m	57	CTD	10	2	LADCP	1	JR275_57_CTD10_LADCP		54	23/02/2012	17:30:00	-75.26199	-31.11879	601		54	23/02/2012	18:07:00	-75.26199	-31.11874	601	
JR275	West Brunt Shelf 600m	57	CTD	10	3	NISKIN	1	JR275_57_CTD10_NISKIN1		54	23/02/2012	17:44:00	-75.262	-31.11876	601	595							
JR275	West Brunt Shelf 600m	57	CTD	10	3	NISKIN	2	JR275_57_CTD10_NISKIN2		54	23/02/2012	17:44:00	-75.262	-31.11876	601	595							
JR275	West Brunt Shelf 600m	57	CTD	10	3	NISKIN	3	JR275_57_CTD10_NISKIN3		54	23/02/2012	17:54:00	-75.26199	-31.11873	601	200							
JR275	West Brunt Shelf 600m	57	CTD	10	3	NISKIN	4	JR275_57_CTD10_NISKIN4		54	23/02/2012	17:54:00	-75.26199	-31.11873	601	200							
JR275	West Brunt Shelf 600m	57	CTD	10	3	NISKIN	5	JR275_57_CTD10_NISKIN5		54	23/02/2012	17:57:00	-75.26201	-31.11878	601	150							
JR275	West Brunt Shelf 600m	57	CTD	10	3	NISKIN	6	JR275_57_CTD10_NISKIN6		54	23/02/2012	17:59:00	-75.26199	-31.11873	601	100							
JR275	West Brunt Shelf 600m	57	CTD	10	3	NISKIN	7	JR275_57_CTD10_NISKIN7		54	23/02/2012	18:00:00	-75.262	-31.11875	601	80							
JR275	West Brunt Shelf 600m	57	CTD	10	3	NISKIN	8	JR275_57_CTD10_NISKIN8		54	23/02/2012	18:01:00	-75.262	-31.11876	601	60							
JR275	West Brunt Shelf 600m	57	CTD	10	3	NISKIN	9	JR275_57_CTD10_NISKIN9		54	23/02/2012	18:02:00	-75.262	-31.11876	601	50							
JR275	West Brunt Shelf 600m	57	CTD	10	3	NISKIN	10	JR275_57_CTD10_NISKIN10		54	23/02/2012	18:03:00	-75.262	-31.11876	601	40							
JR275	West Brunt Shelf 600m	57	CTD	10	3	NISKIN	11	JR275_57_CTD10_NISKIN11		54	23/02/2012	18:04:00	-75.26199	-31.11875	601	20							
JR275	West Brunt Shelf 600m	57	CTD	10	3	NISKIN	12	JR275_57_CTD10_NISKIN12		54	23/02/2012	18:05:00	-75.26198	-31.11874	601	10							

Cruise ID	Site	Deployment No	Gear Code	Gear No	Event No	Event Gear Code	Event Gear No	Final event number	Local ID	JDay (Start)	Start Date	Start Time UTC	Start Lat	Start Long	Start water depth (m)	Equipment depth (m)	Jday (End)	End Date	End Time UTC	End Lat	End Long	End water depth (m)	Comments
JR275	West Brunt Shelf 600m	57	CTD	10	3	NISKIN	13	JR275_57_CTD10_NISKIN13		54	23/02/2012	18:06:00	-75.26199	-31.11875	601	5							
JR275	West Brunt Shelf 600m	57	CTD	10	3	NISKIN	14	JR275_57_CTD10_NISKIN14		54	23/02/2012	18:06:00	-75.26199	-31.11875	601	5							
JR275	West Brunt Shelf 600m	58	AGT	26	1			JR275_58_AGT26		54	23/02/2012	18:37:01	-75.26308	-31.12627	604		54	23/02/2012	18:42:12	-75.26378	-31.131	605	
JR275	West Brunt Shelf 600m	59	AGT	27	1			JR275_59_AGT27		54	23/02/2012	19:37:56	-75.26581	-31.14481	608		54	23/02/2012	19:43:06	-75.26645	-31.15042	609	
JR275	West Brunt Shelf 600m	60	AGT	28	1			JR275_60_AGT28		54	23/02/2012	20:40:29	-75.26856	-31.16355	616		54	23/02/2012	20:45:11	-75.26921	-31.168	616	
JR275	West Brunt Shelf 600m	61	ES	8	1	ES	1	JR275_61_ES8_ES		54	23/02/2012	21:47:17	-75.2647	-31.13846	607		54	23/02/2012	21:57:25	-75.2661	-31.14796	609	
JR275	West Brunt Shelf 600m	61	ES	8	2	CAMERA	1	JR275_61_ES8_CAMERA		54	23/02/2012	21:47:17	-75.2647	-31.13846	607		54	23/02/2012	21:57:25	-75.2661	-31.14796	609	
JR275	North West Brunt Shelf	62	CTD	11	1	CTD	1	JR275_62_CTD11_CTD		55	24/02/2012	11:06:00	-75.08311	-32.21813	612		55	24/02/2012	11:32:00	-75.08316	-32.21797	612	
JR275	North West Brunt Shelf	62	CTD	11	2	LADCP	1	JR275_62_CTD11_LADCP		55	24/02/2012	11:06:00	-75.08311	-32.21813	612		55	24/02/2012	11:32:00	-75.08316	-32.21797	612	
JR275	North West Brunt Shelf	63	AGT	29	1			JR275_63_AGT29		55	24/02/2012	12:06:42	-75.08519	-32.21766	609		55	24/02/2012	12:11:54	-75.08658	-32.21765	609	
JR275	North West Brunt Shelf	64	AGT	30	1			JR275_64_AGT30		55	24/02/2012	13:09:41	-75.09095	-32.21768	611		55	24/02/2012	13:14:42	-75.09233	-32.21767	610	
JR275	North West Brunt Shelf	65	AGT	31	1			JR275_65_AGT31		55	24/02/2012	14:09:02	-75.09664	-32.21773	616		55	24/02/2012	14:14:07	-75.09788	-32.21772	615	
JR275	North West Brunt Shelf	66	ES	9	1	ES	1	JR275_66_ES9_ES		55	24/02/2012	15:15:22	-75.08861	-32.21791	610		55	24/02/2012	15:25:32	-75.09142	-32.21797	610	
JR275	North West Brunt Shelf	66	ES	9	2	CAMERA	1	JR275_66_ES9_CAMERA		55	24/02/2012	15:15:22	-75.08861	-32.21791	610		55	24/02/2012	15:25:32	-75.09142	-32.21797	610	
JR275	North West Brunt Shelf Scour	67	CTD	12	1	CTD	1	JR275_67_CTD12_CTD		55	24/02/2012	17:24:00	-75.17468	-31.87152	654		55	24/02/2012	18:08:00	-75.17446	-31.86734	654	
JR275	North West Brunt Shelf Scour	67	CTD	12	2	LADCP	1	JR275_67_CTD12_LADCP		55	24/02/2012	17:24:00	-75.17468	-31.87152	654		55	24/02/2012	18:08:00	-75.17446	-31.86734	654	
JR275	North West Brunt Shelf Scour	67	CTD	12	3	NISKIN	1	JR275_67_CTD12_NISKIN1		55	24/02/2012	17:39:00	-75.17459	-31.86968	648	650							
JR275	North West Brunt Shelf Scour	67	CTD	12	3	NISKIN	2	JR275_67_CTD12_NISKIN2		55	24/02/2012	17:39:00	-75.17459	-31.86968	648	650							
JR275	North West Brunt Shelf Scour	67	CTD	12	3	NISKIN	3	JR275_67_CTD12_NISKIN3		55	24/02/2012	17:48:00	-75.17459	-31.86969	648	370							
JR275	North West Brunt Shelf Scour	67	CTD	12	3	NISKIN	4	JR275_67_CTD12_NISKIN4		55	24/02/2012	17:48:00	-75.17459	-31.86969	648	370							
JR275	North West Brunt Shelf Scour	67	CTD	12	3	NISKIN	5	JR275_67_CTD12_NISKIN5		55	24/02/2012	17:56:00	-75.1746	-31.86964	651	200							
JR275	North West Brunt Shelf Scour	67	CTD	12	3	NISKIN	6	JR275_67_CTD12_NISKIN6		55	24/02/2012	17:58:00	-75.17459	-31.86964	649	150							
JR275	North West Brunt Shelf Scour	67	CTD	12	3	NISKIN	7	JR275_67_CTD12_NISKIN7		55	24/02/2012	18:00:00	-75.17458	-31.86966	648	100							
JR275	North West Brunt Shelf Scour	67	CTD	12	3	NISKIN	8	JR275_67_CTD12_NISKIN8		55	24/02/2012	18:01:00	-75.1746	-31.86964	651	80							
JR275	North West Brunt Shelf Scour	67	CTD	12	3	NISKIN	9	JR275_67_CTD12_NISKIN9		55	24/02/2012	18:02:00	-75.17459	-31.86963	650	60							
JR275	North West Brunt Shelf Scour	67	CTD	12	3	NISKIN	10	JR275_67_CTD12_NISKIN10		55	24/02/2012	18:03:00	-75.1746	-31.86961	651	50							
JR275	North West Brunt Shelf Scour	67	CTD	12	3	NISKIN	11	JR275_67_CTD12_NISKIN11		55	24/02/2012	18:04:00	-75.1746	-31.86965	651	40							
JR275	North West Brunt Shelf Scour	67	CTD	12	3	NISKIN	12	JR275_67_CTD12_NISKIN12		55	24/02/2012	18:05:00	-75.17459	-31.86939	652	20							
JR275	North West Brunt Shelf Scour	67	CTD	12	3	NISKIN	13	JR275_67_CTD12_NISKIN13		55	24/02/2012	18:06:00	-75.17456	-31.86861	651	10							
JR275	North West Brunt Shelf Scour	67	CTD	12	3	NISKIN	14	JR275_67_CTD12_NISKIN14		55	24/02/2012	18:07:00	-75.1745	-31.868	649	5							
JR275	North West Brunt Shelf Scour	67	CTD	12	3	NISKIN	15	JR275_67_CTD12_NISKIN15		55	24/02/2012	18:07:00	-75.1745	-31.868	649	5							
JR275	North West Brunt Shelf Scour	68	AGT	32	1			JR275_68_AGT32		55	24/02/2012	18:45:37	-75.17671	-31.8702	656		55	24/02/2012	18:50:39	-75.17805	-31.86902	676	
JR275	North West Brunt Shelf Scour	69	AGT	33	1			JR275_69_AGT33		55	24/02/2012	19:51:56	-75.17541	-31.87114	654		55	24/02/2012	19:57:10	-75.1768	-31.86995	656	
JR275	North West Brunt Shelf Scour	70	AGT	34	1			JR275_70_AGT34		55	24/02/2012	20:58:29	-75.17434	-31.87206	691		55	24/02/2012	21:03:29	-75.17568	-31.87083	654	
JR275	North West Brunt Shelf Scour	71	ES	10	1	ES	1	JR275_71_ES10_ES		55	24/02/2012	22:04:30	-75.17747	-31.86928	657		55	24/02/2012	22:15:02	-75.18163	-31.86577	676	
JR275	North West Brunt Shelf Scour	71	ES	10	2	CAMERA	1	JR275_71_ES10_CAMERA		55	24/02/2012	22:04:30	-75.17747	-31.86928	657		55	24/02/2012	22:15:02	-75.18163	-31.86577	676	
JR259	North West Brunt Shelf Scour	72	BOXCORE	1	1			JR259_72_BOXCORE1	BC640	55	24/02/2012	23:06:00	-75.17643	-31.87334	662		55	24/02/2012	23:33:00	-75.17645	-31.87333	656	Times are for in and out of water.
JR259	Weddell Shelf Break	73	XBT	11	1			JR259_73_XBT11		56	25/02/2012	13:34:00	-74.34343	-28.58699	1887		56	25/02/2012	13:39:00	-74.3361	-28.61402	1890	
JR275	Carry Fan 2000m	74	CTD	13	1	CTD	1	JR275_74_CTD13_CTD		57	26/02/2012	10:01:00	-74.38004	-28.17627	2014		57	26/02/2012	11:43:00	-74.37995	-28.17682	2014	
JR275	Carry Fan 2000m	74	CTD	13	2	LADCP	1	JR275_74_CTD13_LADCP		57	26/02/2012	10:01:00	-74.38004	-28.17627	2014		57	26/02/2012	11:43:00	-74.37995	-28.17682	2014	
JR275	Carry Fan 2000m	74	CTD	13	3	NISKIN	1	JR275_74_CTD13_NISKIN1		57	26/02/2012	10:39:00	-74.37995	-28.17679	2013	2025							
JR275	Carry Fan 2000m	74	CTD	13	3	NISKIN	2	JR275_74_CTD13_NISKIN2		57	26/02/2012	10:39:00	-74.37995	-28.17679	2013	2025							
JR275	Carry Fan 2000m	74	CTD	13	3	NISKIN	3	JR275_74_CTD13_NISKIN3		57	26/02/2012	10:48:00	-74.37996	-28.17684	2013	1975							

Cruise ID	Site	Deployment No	Gear Code	Gear No	Event No	Event Gear Code	Event Gear No	Final event number	Local ID	JDay (Start)	Start Date	Start Time UTC	Start Lat	Start Long	Start water depth (m)	Equipment depth (m)	Jday (End)	End Date	End Time UTC	End Lat	End Long	End water depth (m)	Comments
JR275	Carry Fan 2000m	74	CTD	13	3	NISKIN	4	JR275_74_CTD13_NISKIN4		57	26/02/2012	10:48:00	-74.37996	-28.17684	2013	1975							
JR275	Carry Fan 2000m	74	CTD	13	3	NISKIN	5	JR275_74_CTD13_NISKIN5		57	26/02/2012	10:52:00	-74.37995	-28.17684	2013	1700							
JR275	Carry Fan 2000m	74	CTD	13	3	NISKIN	6	JR275_74_CTD13_NISKIN6		57	26/02/2012	10:56:00	-74.37995	-28.1768	2014	1475							
JR275	Carry Fan 2000m	74	CTD	13	3	NISKIN	7	JR275_74_CTD13_NISKIN7		57	26/02/2012	11:00:00	-74.37995	-28.17683	2013	1230							
JR275	Carry Fan 2000m	74	CTD	13	3	NISKIN	8	JR275_74_CTD13_NISKIN8		57	26/02/2012	11:04:00	-74.37994	-28.1768	2013	985							
JR275	Carry Fan 2000m	74	CTD	13	3	NISKIN	9	JR275_74_CTD13_NISKIN9		57	26/02/2012	11:04:00	-74.37994	-28.1768	2013	985							
JR275	Carry Fan 2000m	74	CTD	13	3	NISKIN	10	JR275_74_CTD13_NISKIN10		57	26/02/2012	11:09:00	-74.37993	-28.17677	2013	790							
JR275	Carry Fan 2000m	74	CTD	13	3	NISKIN	11	JR275_74_CTD13_NISKIN11		57	26/02/2012	11:12:00	-74.37992	-28.17678	2013	640							
JR275	Carry Fan 2000m	74	CTD	13	3	NISKIN	12	JR275_74_CTD13_NISKIN12		57	26/02/2012	11:17:00	-74.37995	-28.17683	2013	495							
JR275	Carry Fan 2000m	74	CTD	13	3	NISKIN	13	JR275_74_CTD13_NISKIN13		57	26/02/2012	11:20:00	-74.37996	-28.17684	2013	345							
JR275	Carry Fan 2000m	74	CTD	13	3	NISKIN	14	JR275_74_CTD13_NISKIN14		57	26/02/2012	11:26:00	-74.37996	-28.17684	2013	200							
JR275	Carry Fan 2000m	74	CTD	13	3	NISKIN	15	JR275_74_CTD13_NISKIN15		57	26/02/2012	11:29:00	-74.37995	-28.17684	2013	150							
JR275	Carry Fan 2000m	74	CTD	13	3	NISKIN	16	JR275_74_CTD13_NISKIN16		57	26/02/2012	11:32:00	-74.37995	-28.17684	2013	100							
JR275	Carry Fan 2000m	74	CTD	13	3	NISKIN	17	JR275_74_CTD13_NISKIN17		57	26/02/2012	11:34:00	-74.37995	-28.17679	2013	80							
JR275	Carry Fan 2000m	74	CTD	13	3	NISKIN	18	JR275_74_CTD13_NISKIN18		57	26/02/2012	11:36:00	-74.37995	-28.17682	2013	60							
JR275	Carry Fan 2000m	74	CTD	13	3	NISKIN	19	JR275_74_CTD13_NISKIN19		57	26/02/2012	11:37:00	-74.37995	-28.17681	2013	50							
JR275	Carry Fan 2000m	74	CTD	13	3	NISKIN	20	JR275_74_CTD13_NISKIN20		57	26/02/2012	11:38:00	-74.37995	-28.17682	2013	40							
JR275	Carry Fan 2000m	74	CTD	13	3	NISKIN	21	JR275_74_CTD13_NISKIN21		57	26/02/2012	11:40:00	-74.37995	-28.17684	2013	20							
JR275	Carry Fan 2000m	74	CTD	13	3	NISKIN	22	JR275_74_CTD13_NISKIN22		57	26/02/2012	11:41:00	-74.37995	-28.17686	2013	10							
JR275	Carry Fan 2000m	74	CTD	13	3	NISKIN	23	JR275_74_CTD13_NISKIN23		57	26/02/2012	11:42:00	-74.37995	-28.17682	2014	5							
JR275	Carry Fan 2000m	74	CTD	13	3	NISKIN	24	JR275_74_CTD13_NISKIN24		57	26/02/2012	11:42:00	-74.37995	-28.17682	2014	5							
JR275	Carry Fan 2000m	75	AGT	35	1			JR275_75_AGT35		57	26/02/2012	12:59:21	-74.36996	-28.10797	2052		57	26/02/2012	13:09:40	-74.37177	-28.09996	2053	
JR275	Carry Fan 2000m	76	AGT	36	1			JR275_76_AGT36		57	26/02/2012	15:41:00	-74.37971	-28.06634	2058		57	26/02/2012	15:51:28	-74.38169	-28.05902	2056	
JR275	Carry Fan 2000m	77	AGT	37	1			JR275_77_AGT37		57	26/02/2012	18:23:48	-74.38861	-28.1561	2006		57	26/02/2012	18:33:57	-74.3904	-28.14818	2008	
JR275	Carry Fan 2000m	78	ES	11	1	ES	1	JR275_78_ES11_ES		57	26/02/2012	20:58:12	-74.40471	-28.08486	2020		57	26/02/2012	21:08:15	-74.40649	-28.07692	2026	
JR275	Carry Fan 2000m	78	ES	11	2	CAMERA	1	JR275_78_ES11_CAMERA		57	26/02/2012	20:58:12	-74.40471	-28.08486	2020		57	26/02/2012	21:08:15	-74.40649	-28.07692	2026	
JR275	Carry Fan 1500m	79	CTD	14	1	CTD	1	JR275_79_CTD14_CTD		59	28/02/2012	11:16:00	-74.52513	-28.75628	1531		59	28/02/2012	12:30:00	-74.52514	-28.75628	1531	
JR275	Carry Fan 1500m	79	CTD	14	2	LADCP	1	JR275_79_CTD14_LADCP		59	28/02/2012	11:16:00	-74.52513	-28.75628	1531		59	28/02/2012	12:30:00	-74.52514	-28.75628	1531	
JR275	Carry Fan 1500m	79	CTD	14	3	NISKIN	1	JR275_79_CTD14_NISKIN1		59	28/02/2012	11:46:00	-74.52512	-28.75628	1531	1535							This bottle was a test to see whether it would freeze - it was not used as a sample.
JR275	Carry Fan 1500m	79	CTD	14	3	NISKIN	1	JR275_79_CTD14_NISKIN2		59	28/02/2012	11:46:00	-74.52512	-28.75628	1531	1535							This bottle was a test to see whether it would freeze - it was not used as a sample.
JR275	Carry Fan 1500m	79	CTD	14	3	NISKIN	1	JR275_79_CTD14_NISKIN3		59	28/02/2012	11:46:00	-74.52512	-28.75628	1531	1535							
JR275	Carry Fan 1500m	79	CTD	14	3	NISKIN	1	JR275_79_CTD14_NISKIN4		59	28/02/2012	11:46:00	-74.52512	-28.75628	1531	1535							
JR275	Carry Fan 1500m	79	CTD	14	3	NISKIN	1	JR275_79_CTD14_NISKIN5		59	28/02/2012	11:52:00	-74.52512	-28.75628	1531	1100							
JR275	Carry Fan 1500m	79	CTD	14	3	NISKIN	1	JR275_79_CTD14_NISKIN6		59	28/02/2012	11:59:00	-74.52512	-28.75627	1531	770							
JR275	Carry Fan 1500m	79	CTD	14	3	NISKIN	1	JR275_79_CTD14_NISKIN7		59	28/02/2012	11:59:00	-74.52512	-28.75627	1531	770							
JR275	Carry Fan 1500m	79	CTD	14	3	NISKIN	1	JR275_79_CTD14_NISKIN8		59	28/02/2012	12:05:00	-74.52511	-28.75624	1531	500							
JR275	Carry Fan 1500m	79	CTD	14	3	NISKIN	1	JR275_79_CTD14_NISKIN9		59	28/02/2012	12:11:00	-74.52513	-28.75626	1531	200							
JR275	Carry Fan 1500m	79	CTD	14	3	NISKIN	1	JR275_79_CTD14_NISKIN10		59	28/02/2012	12:15:00	-74.52512	-28.75625	1531	150							
JR275	Carry Fan 1500m	79	CTD	14	3	NISKIN	1	JR275_79_CTD14_NISKIN11		59	28/02/2012	12:19:00	-74.52512	-28.75624	1531	100							
JR275	Carry Fan 1500m	79	CTD	14	3	NISKIN	1	JR275_79_CTD14_NISKIN12		59	28/02/2012	12:21:00	-74.52513	-28.75628	1531	80							
JR275	Carry Fan 1500m	79	CTD	14	3	NISKIN	1	JR275_79_CTD14_NISKIN13		59	28/02/2012	12:23:00	-74.52513	-28.75627	1531	60							
JR275	Carry Fan 1500m	79	CTD	14	3	NISKIN	1	JR275_79_CTD14_NISKIN14		59	28/02/2012	12:24:00	-74.52513	-28.75628	1531	50							
JR275	Carry Fan 1500m	79	CTD	14	3	NISKIN	1	JR275_79_CTD14_NISKIN15		59	28/02/2012	12:25:00	-74.52513	-28.75625	1531	40							
JR275	Carry Fan 1500m	79	CTD	14	3	NISKIN	1	JR275_79_CTD14_NISKIN16		59	28/02/2012	12:27:00	-74.52514	-28.75629	1531	20							
JR275	Carry Fan 1500m	79	CTD	14	3	NISKIN	1	JR275_79_CTD14_NISKIN17		59	28/02/2012	12:28:00	-74.52514	-28.75627	1531	10							
JR275	Carry Fan 1500m	79	CTD	14	3	NISKIN	1	JR275_79_CTD14_NISKIN18		59	28/02/2012	12:29:00	-74.52513	-28.75628	1531	5							
JR275	Carry Fan 1500m	79	CTD	14	3	NISKIN	1	JR275_79_CTD14_NISKIN19		59	28/02/2012	12:29:00	-74.52513	-28.75628	1531	5							
JR275	Carry Fan 1500m	80	AGT	38	1			JR275_80_AGT38		59	28/02/2012	13:25:32	-74.52019	-28.75306	1537		59	28/02/2012	13:35:46	-74.51747	-28.75118	1542	
JR275	Carry Fan 1500m	81	AGT	39	1			JR275_81_AGT39		59	28/02/2012	15:28:12	-74.50839	-28.74527	1560		59	28/02/2012	15:38:07	-74.50573	-28.74355	1566	
JR275	Carry Fan 1500m	82	AGT	40	1			JR275_82_AGT40		59	28/02/2012	17:37:54	-74.49621	-28.73726	1585		59	28/02/2012	17:51:48	-74.49309	-28.73518	1591	
JR275	Carry Fan 1500m	83	ES	12	1	ES	1	JR275_82_ES12_ES		59	28/02/2012	19:46:35	-74.48534	-28.77472	1581		59	28/02/2012	19:56:38	-74.4846	-28.78469	1579	
JR275	Carry Fan 1500m	83	ES	12	2	CAMERA	1	JR275_83_ES12_CAMERA		59	28/02/2012	19:46:35	-74.48534	-28.77472	1581		59	28/02/2012	19:56:38	-74.4846	-28.78469	1579	
JR275	Carry Fan 600m	84	CTD	15	1	CTD	1	JR275_84_CTD15_CTD		60	29/02/2012	11:08:00	-74.67334	-29.4173	612		60	29/02/2012	11:57:00	-74.67332	-29.41732	612	
JR275	Carry Fan 600m	84	CTD	15	2	LADCP	1	JR275_84_CTD15_LADCP		60	29/02/2012	11:08:00	-74.67334	-29.4173	612		60	29/02/2012	11:57:00	-74.67332	-29.41732	612	
JR275	Carry Fan 600m	85	AGT	41	1			JR275_85_AGT41		60	29/02/2012	12:32:19	-74.67411	-29.42462	600		60	29/02/2012	12:42:29	-74.67504	-29.43436	590	
JR275	Carry Fan 600m	86	AGT	42	1			JR275_86_AGT42		60	29/02/2012	13:47:10	-74.67694	-29.45447	573		60	29/02/2012	13:49:21	-74.67659	-29.45068	574	
JR275	Carry Fan 600m	87	AGT	43	1			JR275_87_AGT42		60	29/02/2012	14:49:00	-74.67671	-29.45172	574		60	29/02/2012	14:51:44	-74.67648	-29.44921	577	
JR275	Carry Fan 600m	88	AGT	44	1			JR275_88_AGT44		60	29/02/2012	15:36:59	-74.67467	-29.43061	594		60	29/02/2012	15:39:12	-74.67446	-29.42842	598	
JR275	Carry Fan 600m	89	ES	13	1	ES	1	JR275_89_ES13_ES		60	29/02/2012	16:33:28	-74.6716	-29.39886	641		60	29/02/2012	16:44:11	-74.6706	-29.38834	657	
JR275	Carry Fan 600m	89	ES	13	2	CAMERA	1	JR275_89_ES13_CAMERA		60	29/02/2012	16:33:28	-74.6716	-29.39886	641		60	29/02/2012	16:44:11	-74.6706	-29.38834	657	
JR275	Carry Fan 400m	90	CTD	16	1	CTD	1	JR275_90_CTD16_CTD		60	29/02/2012	17:54:00	-74.70841	-29.51068	394		60	29/02/2012	18:31:00	-74.7084	-29.51067	394	
JR275	Carry Fan 400m	90	CTD	16	2	LADCP	1	JR275_90_CTD16_LADCP		60	29/02/2012	17:54:00	-74.70841	-29.51068	394		60	29/02/2012	18:31:00	-74.7084	-29.51067	394	
JR275	Carry Fan 400m	90	CTD	16	3	NISKIN	1	JR275_90_CTD16_NISKIN1		60	29/02/2012	18:08:00	-74.70841	-29.51065	394	390							

Cruise ID	Site	Deployment No	Gear Code	Gear No	Event No	Event Gear Code	Event Gear No	Final event number	Local ID	JDay (Start)	Start Date	Start Time UTC	Start Lat	Start Long	Start water depth (m)	Equipment depth (m)	Jday (End)	End Date	End Time UTC	End Lat	End Long	End water depth (m)	Comments
JR275	Carry Fan 400m	90	CTD	16	3	NISKIN	1	JR275_90_CTD16_NISKIN2		60	29/02/2012	18:08:00	-74.70841	-29.51065	394	390							
JR275	Carry Fan 400m	90	CTD	16	3	NISKIN	1	JR275_90_CTD16_NISKIN3		60	29/02/2012	18:14:00	-74.70841	-29.51066	394	200							
JR275	Carry Fan 400m	90	CTD	16	3	NISKIN	1	JR275_90_CTD16_NISKIN4		60	29/02/2012	18:14:00	-74.70841	-29.51066	394	200							
JR275	Carry Fan 400m	90	CTD	16	3	NISKIN	1	JR275_90_CTD16_NISKIN5		60	29/02/2012	18:16:00	-74.70842	-29.51066	394	150							
JR275	Carry Fan 400m	90	CTD	16	3	NISKIN	1	JR275_90_CTD16_NISKIN6		60	29/02/2012	18:18:00	-74.70842	-29.51069	394	100							
JR275	Carry Fan 400m	90	CTD	16	3	NISKIN	1	JR275_90_CTD16_NISKIN7		60	29/02/2012	18:21:00	-74.70842	-29.51068	394	80							
JR275	Carry Fan 400m	90	CTD	16	3	NISKIN	1	JR275_90_CTD16_NISKIN8		60	29/02/2012	18:22:00	-74.70842	-29.51068	394	60							
JR275	Carry Fan 400m	90	CTD	16	3	NISKIN	1	JR275_90_CTD16_NISKIN9		60	29/02/2012	18:24:00	-74.70841	-29.51068	394	50							
JR275	Carry Fan 400m	90	CTD	16	3	NISKIN	1	JR275_90_CTD16_NISKIN10		60	29/02/2012	18:25:00	-74.70841	-29.51067	394	40							
JR275	Carry Fan 400m	90	CTD	16	3	NISKIN	1	JR275_90_CTD16_NISKIN11		60	29/02/2012	18:26:00	-74.70841	-29.51066	394	20							
JR275	Carry Fan 400m	90	CTD	16	3	NISKIN	1	JR275_90_CTD16_NISKIN12		60	29/02/2012	18:28:00	-74.7084	-29.51068	394	10							
JR275	Carry Fan 400m	90	CTD	16	3	NISKIN	1	JR275_90_CTD16_NISKIN13		60	29/02/2012	18:29:00	-74.7084	-29.51068	394	5							
JR275	Carry Fan 400m	90	CTD	16	3	NISKIN	1	JR275_90_CTD16_NISKIN14		60	29/02/2012	18:30:00	-74.70841	-29.51068	394	5							
JR275	Carry Fan 400m	91	AGT	45	1			JR275_91_AGT45		60	29/02/2012	18:57:44	-74.70666	-29.50822	402		60	29/02/2012	19:03:11	-74.70542	-29.50656	409	
JR275	Carry Fan 400m	92	AGT	46	1			JR275_92_AGT46		60	29/02/2012	19:52:06	-74.70134	-29.50091	428		60	29/02/2012	19:54:11	-74.70085	-29.50021	427	
JR275	Carry Fan 400m	93	AGT	47	1			JR275_93_AGT47		60	29/02/2012	20:32:23	-74.69818	-29.49652	443		60	29/02/2012	20:34:59	-74.69752	-29.49558	450	
JR275	Carry Fan 400m	94	ES	14	1	ES	1	JR275_94_ES14_ES		60	29/02/2012	21:21:23	-74.69188	-29.48786	478		60	29/02/2012	21:31:23	-74.68928	-29.4842	491	
JR275	Carry Fan 400m	94	ES	14	2	CAMERA	1	JR275_94_ES14_CAMERA		60	29/02/2012	21:21:23	-74.69188	-29.48786	478		60	29/02/2012	21:31:23	-74.68928	-29.4842	491	
JR275	Carry Fan 1000m	95	CTD	17	1	CTD	1	JR275_95_CTD17_CTD		61	01/03/2012	11:02:00	-74.62333	-29.06073	1028		61	01/03/2012	11:55:00	-74.6233	-29.06073	1028	
JR275	Carry Fan 1000m	95	CTD	17	2	LADCP	1	JR275_95_CTD17_LADCP		61	01/03/2012	11:02:00	-74.62333	-29.06073	1028		61	01/03/2012	11:55:00	-74.6233	-29.06073	1028	
JR275	Carry Fan 1000m	95	CTD	17	3	NISKIN	1	JR275_95_CTD17_NISKIN1		61	01/03/2012	11:24:00	-74.62333	-29.06075	1028	1025							
JR275	Carry Fan 1000m	95	CTD	17	3	NISKIN	1	JR275_95_CTD17_NISKIN2		61	01/03/2012	11:25:00	-74.62333	-29.06075	1028	1025							
JR275	Carry Fan 1000m	95	CTD	17	3	NISKIN	1	JR275_95_CTD17_NISKIN3		61	01/03/2012	11:31:00	-74.62332	-29.06076	1031	650							
JR275	Carry Fan 1000m	95	CTD	17	3	NISKIN	1	JR275_95_CTD17_NISKIN4		61	01/03/2012	11:39:00	-74.62331	-29.0607	1028	300							
JR275	Carry Fan 1000m	95	CTD	17	3	NISKIN	1	JR275_95_CTD17_NISKIN5		61	01/03/2012	11:39:00	-74.62331	-29.0607	1028	300							
JR275	Carry Fan 1000m	95	CTD	17	3	NISKIN	1	JR275_95_CTD17_NISKIN6		61	01/03/2012	11:42:00	-74.62331	-29.06074	1028	200							
JR275	Carry Fan 1000m	95	CTD	17	3	NISKIN	1	JR275_95_CTD17_NISKIN7		61	01/03/2012	11:44:00	-74.62331	-29.06072	1028	150							
JR275	Carry Fan 1000m	95	CTD	17	3	NISKIN	1	JR275_95_CTD17_NISKIN8		61	01/03/2012	11:45:00	-74.62332	-29.06073	1028	100							
JR275	Carry Fan 1000m	95	CTD	17	3	NISKIN	1	JR275_95_CTD17_NISKIN9		61	01/03/2012	11:47:00	-74.62331	-29.06071	1028	80							
JR275	Carry Fan 1000m	95	CTD	17	3	NISKIN	1	JR275_95_CTD17_NISKIN10		61	01/03/2012	11:48:00	-74.62331	-29.06071	1028	60							
JR275	Carry Fan 1000m	95	CTD	17	3	NISKIN	1	JR275_95_CTD17_NISKIN11		61	01/03/2012	11:49:00	-74.62331	-29.06073	1028	50							
JR275	Carry Fan 1000m	95	CTD	17	3	NISKIN	1	JR275_95_CTD17_NISKIN12		61	01/03/2012	11:50:00	-74.62331	-29.06074	1028	40							
JR275	Carry Fan 1000m	95	CTD	17	3	NISKIN	1	JR275_95_CTD17_NISKIN13		61	01/03/2012	11:51:00	-74.62331	-29.06073	1028	20							
JR275	Carry Fan 1000m	95	CTD	17	3	NISKIN	1	JR275_95_CTD17_NISKIN14		61	01/03/2012	11:52:00	-74.6233	-29.06075	1028	10							
JR275	Carry Fan 1000m	95	CTD	17	3	NISKIN	1	JR275_95_CTD17_NISKIN15		61	01/03/2012	11:53:00	-74.62331	-29.06073	1028	5							
JR275	Carry Fan 1000m	95	CTD	17	3	NISKIN	1	JR275_95_CTD17_NISKIN16		61	01/03/2012	11:54:00	-74.62331	-29.06073	1028	5							
JR275	Carry Fan 1000m	96	AGT	48	1			JR275_96_AGT48		61	01/03/2012	12:34:11	-74.62518	-29.05155	1022		61	01/03/2012	12:44:23	-74.62676	-29.04293	1025	
JR275	Carry Fan 1000m	97	AGT	49	1			JR275_97_AGT49		61	01/03/2012	14:07:29	-74.63035	-29.0236	1006		61	01/03/2012	14:17:34	-74.63194	-29.01513	995	
JR275	Carry Fan 1000m	98	AGT	50	1			JR275_98_AGT50		61	01/03/2012	15:41:01	-74.63566	-28.99501	968		61	01/03/2012	15:50:59	-74.63723	-28.98652	949	
JR275	Carry Fan 1000m	99	ES	15	1	ES	1	JR275_99_ES15_ES		61	01/03/2012	17:38:06	-74.63411	-29.00812	976		61	01/03/2012	17:48:11	-74.63571	-28.99958	963	
JR275	Carry Fan 1000m	99	ES	15	2	CAMERA	1	JR275_99_ES15_CAMERA		61	01/03/2012	17:38:06	-74.63411	-29.00812	976		61	01/03/2012	17:48:11	-74.63571	-28.99958	963	
JR275	Halley West	100	CTD	18	1	CTD	1	JR275_100_CTD18_CTD		64	04/03/2012	10:56:00	-75.2417	-28.99967	398		64	04/03/2012	11:14:00	-75.2417	-28.9997	398	
JR275	Halley West	100	CTD	18	2	LADCP	1	JR275_100_CTD18_LADCP		64	04/03/2012	10:56:00	-75.2417	-28.99967	398		64	04/03/2012	11:14:00	-75.2417	-28.9997	398	
JR275	Halley West	101	AGT	51	1			JR275_101_AGT51		64	04/03/2012	12:27:53	-75.24272	-29.00356	394		64	04/03/2012	12:32:58	-75.2437	-29.00721	393	
JR275	Halley West	102	AGT	52	1			JR275_102_AGT52		64	04/03/2012	13:13:38	-75.246	-29.01541	393		64	04/03/2012	13:18:55	-75.24708	-29.01895	396	
JR275	Halley West	103	AGT	53	1			JR275_103_AGT53		64	04/03/2012	13:58:49	-75.24953	-29.02708	392		64	04/03/2012	14:03:44	-75.25056	-29.0304	392	
JR275	Halley West	104	ES	16	1	ES	1	JR275_104_ES16_ES		64	04/03/2012	14:52:26	-75.24564	-29.01217	393		64	04/03/2012	15:02:25	-75.24777	-29.01915	396	
JR275	Halley West	104	ES	16	2	CAMERA	1	JR275_104_ES16_CAMERA		64	04/03/2012	14:52:26	-75.24564	-29.01217	393		64	04/03/2012	15:02:25	-75.24777	-29.01915	396	
JR275	Halley East	105	CTD	19	1	CTD	1	JR275_105_CTD19_CTD		64	04/03/2012	17:45:00	-75.2373	-27.84034	414		64	04/03/2012	18:16:00	-75.23735	-27.84028	414	
JR275	Halley East	105	CTD	19	2	LADCP	1	JR275_105_CTD19_LADCP		64	04/03/2012	17:45:00	-75.2373	-27.84034	414		64	04/03/2012	18:16:00	-75.23735	-27.84028	414	
JR275	Halley East	105	CTD	19	3	NISKIN	1	JR275_105_CTD19_NISKIN1		64	04/03/2012	17:56:00	-75.23729	-27.84037	414	410							
JR275	Halley East	105	CTD	19	3	NISKIN	1	JR275_105_CTD19_NISKIN2		64	04/03/2012	17:56:00	-75.23729	-27.84037	414	410							
JR275	Halley East	105	CTD	19	3	NISKIN	1	JR275_105_CTD19_NISKIN3		64	04/03/2012	18:01:00	-75.2373	-27.84038	414	200							
JR275	Halley East	105	CTD	19	3	NISKIN	1	JR275_105_CTD19_NISKIN4		64	04/03/2012	18:02:00	-75.2373	-27.84038	414	200							
JR275	Halley East	105	CTD	19	3	NISKIN	1	JR275_105_CTD19_NISKIN5		64	04/03/2012	18:04:00	-75.2373	-27.84038	414	150							
JR275	Halley East	105	CTD	19	3	NISKIN	1	JR275_105_CTD19_NISKIN6		64	04/03/2012	18:05:00	-75.2373	-27.84037	414	100							
JR275	Halley East	105	CTD	19	3	NISKIN	1	JR275_105_CTD19_NISKIN7		64	04/03/2012	18:07:00	-75.23729	-27.84038	413	80							
JR275	Halley East	105	CTD	19	3	NISKIN	1	JR275_105_CTD19_NISKIN8		64	04/03/2012	18:08:00	-75.2373	-27.84038	414	60							
JR275	Halley East	105	CTD	19	3	NISKIN	1	JR275_105_CTD19_NISKIN9		64	04/03/2012	18:09:00	-75.23729	-27.8404	414	50							
JR275	Halley East	105	CTD	19	3	NISKIN	1	JR275_105_CTD19_NISKIN10		64	04/03/2012	18:10:00	-75.23729	-27.84039	413	40							
JR275	Halley East	105	CTD	19	3	NISKIN	1	JR275_105_CTD19_NISKIN11		64	04/03/2012	18:12:00	-75.2373	-27.84038	415	20							
JR275	Halley East	105	CTD	19	3	NISKIN	1	JR275_105_CTD19_NISKIN12		64	04/03/2012	18:13:00	-75.23728	-27.84036	414	10							
JR275	Halley East	105	CTD	19	3	NISKIN	1	JR275_105_CTD19_NISKIN13		64	04/03/2012	18:14:00	-75.2373	-27.84038	414	5							
JR275	Halley East	105	CTD	19	3	NISKIN	1	JR275_105_CTD19_NISKIN14		64	04/03/2012	18:15:00	-75.2373	-27.84037	414	5							

Cruise ID	Site	Deployment No	Gear Code	Gear No	Event No	Event Gear Code	Event Gear No	Final event number	Local ID	JDay (Start)	Start Date	Start Time UTC	Start Lat	Start Long	Start water depth (m)	Equipment depth (m)	Jday (End)	End Date	End Time UTC	End Lat	End Long	End water depth (m)	Comments
JR275	Halley East	106	AGT	54	1			JR275_106_AGT54		64	04/03/2012	18:49:45	-75.23894	-27.84859	414		64	04/03/2012	18:54:45	-75.23971	-27.85297	414	
JR275	Halley East	107	AGT	55	1			JR275_107_AGT55		64	04/03/2012	19:38:45	-75.24155	-27.8633	414		64	04/03/2012	19:43:50	-75.24234	-27.86773	415	
JR275	Halley East	108	AGT	56	1			JR275_108_AGT56		64	04/03/2012	20:25:44	-75.24402	-27.87707	424		64	04/03/2012	20:30:54	-75.24481	-27.88155	418	
JR275	Halley East	109	ES	17	1	ES	1	JR275_109_ES17_ES		64	04/03/2012	21:18:26	-75.24096	-27.86192	414		64	04/03/2012	21:28:29	-75.24248	-27.87098	415	
JR275	Halley East	109	ES	17	2	CAMERA	1	JR275_109_ES17_CAMERA		64	04/03/2012	21:18:26	-75.24096	-27.86192	414		64	04/03/2012	21:28:29	-75.24248	-27.87098	415	
JR255B	North Weddell	110	CTD	20	1	CTD	1	JR255B_110_CTD20_CTD		67	07/03/2012	19:32:00	-69.15108	-25.98277	4561		67	07/03/2012	23:16:00	-69.15111	-25.98263	4556	
JR255B	North Weddell	110	CTD	20	2	LADCP	1	JR255B_110_CTD20_LADCP		67	07/03/2012	19:32:00	-69.15108	-25.98277	4561		67	07/03/2012	23:16:00	-69.15111	-25.98263	4556	
JR255B	North Weddell	110	CTD	20	3	NISKIN	1	JR255B_110_CTD20_NISKIN1		67	07/03/2012	20:53:00	-69.15109	-25.98279	4552	4660							
JR255B	North Weddell	110	CTD	20	3	NISKIN	1	JR255B_110_CTD20_NISKIN2		67	07/03/2012	20:53:00	-69.15109	-25.98279	4552	4660							
JR255B	North Weddell	110	CTD	20	3	NISKIN	1	JR255B_110_CTD20_NISKIN3		67	07/03/2012	21:27:00	-69.1511	-25.98275	4552	4000							
JR255B	North Weddell	110	CTD	20	3	NISKIN	1	JR255B_110_CTD20_NISKIN4		67	07/03/2012	21:46:00	-69.15111	-25.98273	4552	3500							
JR255B	North Weddell	110	CTD	20	3	NISKIN	1	JR255B_110_CTD20_NISKIN5		67	07/03/2012	21:57:00	-69.15111	-25.98279	4552	3000							
JR255B	North Weddell	110	CTD	20	3	NISKIN	1	JR255B_110_CTD20_NISKIN6		67	07/03/2012	22:09:00	-69.1511	-25.98276	4552	2500							
JR255B	North Weddell	110	CTD	20	3	NISKIN	1	JR255B_110_CTD20_NISKIN7		67	07/03/2012	22:10:00	-69.1511	-25.98281	4551	2500							
JR255B	North Weddell	110	CTD	20	3	NISKIN	1	JR255B_110_CTD20_NISKIN8		67	07/03/2012	22:21:00	-69.15108	-25.98276	4552	2000							
JR255B	North Weddell	110	CTD	20	3	NISKIN	1	JR255B_110_CTD20_NISKIN9		67	07/03/2012	22:33:00	-69.1511	-25.98273	4552	1500							
JR255B	North Weddell	110	CTD	20	3	NISKIN	1	JR255B_110_CTD20_NISKIN10		67	07/03/2012	22:45:00	-69.1511	-25.98277	4552	1000							
JR255B	North Weddell	110	CTD	20	3	NISKIN	1	JR255B_110_CTD20_NISKIN11		67	07/03/2012	22:54:00	-69.15111	-25.98272	4552	500							
JR255B	North Weddell	110	CTD	20	3	NISKIN	1	JR255B_110_CTD20_NISKIN12		67	07/03/2012	23:00:00	-69.15112	-25.98277	4551	200							
JR255B	North Weddell	110	CTD	20	3	NISKIN	1	JR255B_110_CTD20_NISKIN13		67	07/03/2012	23:02:00	-69.1511	-25.98271	4552	100							
JR255B	North Weddell	110	CTD	20	3	NISKIN	1	JR255B_110_CTD20_NISKIN14		67	07/03/2012	23:03:00	-69.15111	-25.98276	4551	120							
JR255B	North Weddell	110	CTD	20	3	NISKIN	1	JR255B_110_CTD20_NISKIN15		67	07/03/2012	23:04:00	-69.15111	-25.98273	4553	100							
JR255B	North Weddell	110	CTD	20	3	NISKIN	1	JR255B_110_CTD20_NISKIN16		67	07/03/2012	23:06:00	-69.15112	-25.98274	4555	80							
JR255B	North Weddell	110	CTD	20	3	NISKIN	1	JR255B_110_CTD20_NISKIN17		67	07/03/2012	23:07:00	-69.15112	-25.98272	4552	60							
JR255B	North Weddell	110	CTD	20	3	NISKIN	1	JR255B_110_CTD20_NISKIN18		67	07/03/2012	23:08:00	-69.15111	-25.98273	4552	50							
JR255B	North Weddell	110	CTD	20	3	NISKIN	1	JR255B_110_CTD20_NISKIN19		67	07/03/2012	23:09:00	-69.15111	-25.98279	4551	40							
JR255B	North Weddell	110	CTD	20	3	NISKIN	1	JR255B_110_CTD20_NISKIN20		67	07/03/2012	23:11:00	-69.15113	-25.98274	4554	30							
JR255B	North Weddell	110	CTD	20	3	NISKIN	1	JR255B_110_CTD20_NISKIN21		67	07/03/2012	23:12:00	-69.15112	-25.98275	4553	20							
JR255B	North Weddell	110	CTD	20	3	NISKIN	1	JR255B_110_CTD20_NISKIN22		67	07/03/2012	23:13:00	-69.15112	-25.98277	4551	10							
JR255B	North Weddell	110	CTD	20	3	NISKIN	1	JR255B_110_CTD20_NISKIN23		67	07/03/2012	23:14:00	-69.15112	-25.98283	4551	5							
JR255B	North Weddell	110	CTD	20	3	NISKIN	1	JR255B_110_CTD20_NISKIN24		67	07/03/2012	23:15:00	-69.15113	-25.98276	4552	5							
JR259	South Orkney Islands	111	XBT	12	1			JR259_111_XBT12		69	09/03/2012	19:30:00	-62.68999	-37.20796	4471		69	09/03/2012	19:37:00	-62.67891	-37.20827	4392	
JR255B	Hesperides Trough	112	GLIDER	1				JR255B_112_GLIDER1	SG539	72	12/03/2012	15:44:00	-60.16386	-50.89921	2645								Glider recovered on deck.
JR255B	Hesperides Trough	113	CTD	21	1	CTD	1	JR255B_113_CTD21_CTD	SG539	72	12/03/2012	16:01:00	-60.16378	-50.89909	2645		72	12/03/2012	16:43:00	-60.16375	-50.89909	2650	
JR255B	Hesperides Trough	113	CTD	21	2	LADCP	1	JR255B_113_CTD21_LADCP		72	12/03/2012	16:01:00	-60.16378	-50.89909	2645		72	12/03/2012	16:43:00	-60.16375	-50.89909	2650	

Appendix 3: Creating Transparent GeoTiffs

Procedure for creating a GeoTiff with a transparent background for use in SIS:

Export a GeoTiff from ArcMap (or similar), selecting ‘No Fill’ as the background, and save onto a unix accessible drive.

Connect to unix, navigate to the folder with the image in and setup the libgeotiff package.

Copy the geo-referencing metadata to a new file using the listgeo function:

listgeo file.tif > meta.txt

Convert the background of the image to true transparent using the ImageMagik command:

convert -transparent "#ffffff" file.tif file_temp.tif

Add the geo-referencing metadata back into the converted file using the geotifcp command:

geotifcp -g meta.txt file_temp.tif final.tif

Appendix 4. XBT locations

Date/Time	Latitude	Longitude	Filename	Locality	Comment
07/02/2012 22:48	-52.4806	-57.1343	T5_00001.EDF	Falklands Plateau	
08/02/2012 20:51	-56.3308	-55.0958	T5_00002.EDF	W5 Spreading Centre	
10/02/2012 22:20	-59.8904	-45.8908	T5_00003.EDF	Scotia Sea, north of Orkneys	
13/02/2012 12:40	-60.1759	-23.1768	T5_00005.EDF	Herdman Bank	Mistake made with software meant that it was recorded to 0005 instead of 0004. Salinity was not updated before deployment. Should have been 33.37 but was still 34.0 from last deployment.
14/02/2012 19:52	-60.1759	-23.1768	T5_00006.EDF	Weddell Sea	
15/02/2012 11:21	-62.9412	-21.9766	T5_00007.EDF	Weddell Sea	
16/02/2012 12:07	-66.9823	-18.8933	T5_00008.EDF	Weddell Sea	Seawater pump turned off in the night so salinity taken as last recorded value of 33.00.
18/02/2012 11:41	-75.1071	-29.9544	T5_00009.EDF	Weddell Sea	Seawater probe turned back on before deployment so correct salinity was used, 33.81.
18/02/2012 18:23	-76.2845	-32.8487	T5_000010.EDF	East Filchner Trough	Metadata comment states that it was xbt9 as this was not changed from failed probe.
25/02/2012 13:34	-74.3434	-28.587	T5_00012.EDF	Weddell Shelf	Metadata states it is xbt010 as this was entered in wrong accidently after the software restart. The restart also caused the system to 'lose' drop number 11.
09/03/2012 19:30	-62.69	-37.208	T5_00013.EDF	South west of Signy	Metadata states this is xbt11 as it was entered wrong.
16/03/2012 14:12	-60.2865	-49.2573	T5_00014.EDF	West of Signy in Deeps	

Appendix 5. Sub-bottom Profiler (TOPAS) Log

Date/Time	Latitude	Longitude	Depth - EA600 (m)	Wind Speed (knots)	Heading (degrees)	Comment
19/02/2012 20:07	-77.3604	-35.3764	654.33	3.5	42.25	Started logging topas raw and segy data. Metadata calls it JR275 line 2 but it is actually the first topas data recorded for the cruise.
19/02/2012 20:38	-77.3546	-35.3496	649.73	2.7	41.73	Stopped logging both raw and segy data.
20/02/2012 14:59	-76.317	-32.8767	780	3.9	21.34	Started recording topas data raw and segy. JR275 line 3. Initial issues with display not resetting from last tops use but the system resolved itself after a few mins.
20/02/2012 15:49	-76.3123	-32.868	792.21	7.2	21.07	Stopped logging both raw and segy.
20/02/2012 18:28	-76.2	-31.8647	586.35	15.6	49.01	Started logging raw and segy. JR275 line 4.
20/02/2012 18:53	-76.1978	-31.8539	575.27	18.1	49.23	Stopped logging both raw and segy.
20/02/2012 19:32	-76.1965	-31.8472	577.47	15.3	57.91	Started logging raw and segy. JR275 line 4 continued.
20/02/2012 20:22	-76.1932	-31.8311	574.54	20.5	57.04	Stopped logging both raw and segy.
21/02/2012 10:34	-76.0118	-27.0737	290.22	22.4	101	Logging raw data only (NO SEGY) to line 5 as entering 600m basin within canyon.
21/02/2012 10:48	-76.0252	-26.9355	368.69	9.6	177.27	Stopped logging raw data for line 5.
21/02/2012 20:18	-76.1708	-27.7924	0	0.6	322.69	Started logging raw and segy to JR275 line 6.
21/02/2012 20:22	-76.1705	-27.7931	398.31	0.9	323.03	Stopped logging both raw and segy.
25/02/2012 00:12	-75.1797	-31.8658	286.14	14.7	161.24	Started logging both raw and segy to JR259 line 1. Survey of trough / iceberg scour.
25/02/2012 00:56	-75.1848	-31.838	665.39	4.2	88.07	Stopped logging raw and segy. Survey finished.

Appendix 6. Details of dredges

Table A6.1. Dredge log: shows the dredge event log as reported in the BAS Geological Database.

DREDGE TYPE	DREDGE NO	OBSERVER	OBS_DATE START	OBS_DATE END	LATITUDE	LONGITUDE	END LATITUDE	END LONGITUDE	POSITIONAL SOURCE	GAZETTEER NAME
DR	203	PTL	09/02/2012 14:33:51	09/02/2012 15:04:11	-56.50329	-53.60169	-56.50274	-53.60461	DGPS	West Scotia Ridge
DR	204	PTL	09/02/2012 18:22:20	09/02/2012 19:12:27	-56.47729	-53.58849	-56.47627	-53.5923	DGPS	West Scotia Ridge
DR	205	PTL	13/02/2012 11:34:00	13/02/2012 12:09:25	-59.94496	-31.76011	-59.94203	-31.76016	DGPS	Herdman Bank

DREDGE TYPE	DREDGE NO	LOC DESCRIPTION	CRUISE_ID	DREDGE STATUS	WATER DEPTH START	WATER DEPTH END	COMMENTS
DR	203	East slope of seamount in axis of extinct spreading centre segment W5	JR259	Good haul. In-situ.	3714	3682	Fresh vesicular basalt with glassy rinds
DR	204	East slope of seamount in axis of extinct spreading centre segment W5	JR259	Good haul. In-situ.	3392	3378	Fresh basalt with one ca 15 cm peridotite xenolith
DR	205	Steep south-facing faulted slope on east flank of Herdman Bank	JR259	Moderate Haul.	993	887	Variety of volcanic rocks and gneiss, with drop stones

Table A6.2. Specimen Register for dredges.

DREDGE TYPE	DREDGE NO	SPECIMEN DREDGE NO	COLLECTOR	SPECIMEN_DESCRIPTION	REMARKS
DR	203	1	PTL	Basalt lava. Vesicular pillow lava fragment with glassy rind, 23 cm across	
DR	203	2	PTL	Basalt lava. Fragments of vesicular lava, some glassy, ca. 35 fragments 2-7 cm across.	
DR	204	1	PTL	Peridotite xenolith. 3 fragments from one broken nodule. Fragments up to 9 cm across	Fragments fit together, and are from one broken nodule. Nodule broken during dredge. Nodule has basaltic rind.
DR	204	2	PTL	Peridotite.	Pot of small fragments and olivine crystals. Probably broken fragments from DR204.1
DR	204	3	PTL	Basalt lava. Vesicular lava with glassy patches. Ca. 50 fragments larger than 5 cm. Largest is 23 cm across.	More weathered than DR.203
DR	204	4	PTL	Variety of slaty and lava-like clasts.	3 clasts. Probable drop-stones.
DR	205	1	PTL	Variety of volcanic clasts. Angular to subangular.	Possibly in situ.
DR	205	2	PTL	Mafic to intermediate gneiss clasts.	In situ or drop stones
DR	205	3	PTL	Variety of slaty and rounded clasts.	Probably drop-stones.
DR	205	4	PTL	Clasts of various lithologies	Small clasts. Probably drop-stones.
DR	205	5	PTL	Gritty mud.	

Appendix 7. Box core log.

Core number	Area	Date	Start time UTC	At seafloor UTC	End UTC	Lat	Long	Water depth m	Wire out	max tension	Recovery m	subcores
BC640	Weddell Sea	24.2.2012 JD55	55/23.06	55/23.20	55/23.33	75°10.5795′S	31°52.319′W	675	685	1.15t	0.13	1