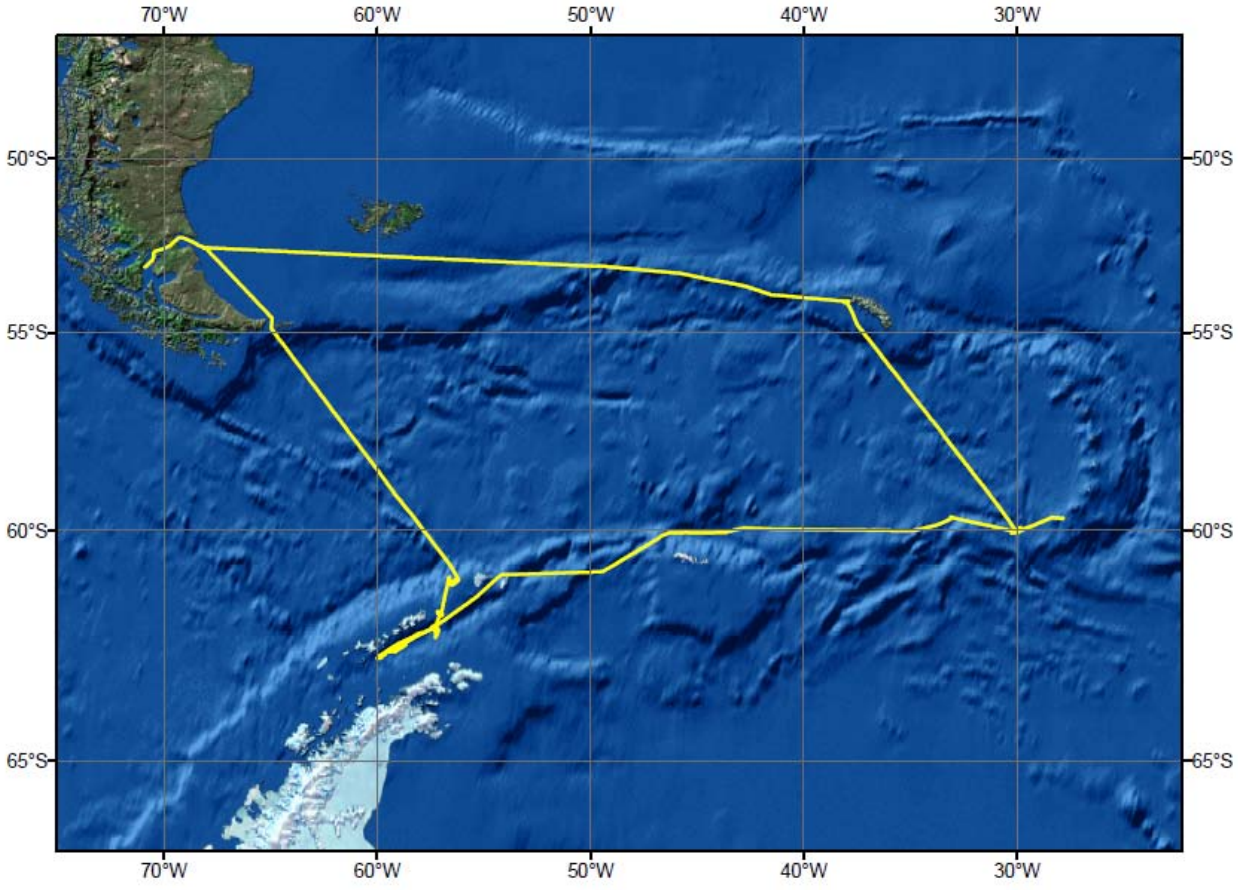
RRS *James Cook* Cruise JC55

Bransfield Strait, the East Scotia Ridge and the Kemp Seamount Calderas

Cruise 3 of the NERC Consortium Grant 'Chemosynthetically-driven ecosystems in the Southern ocean: Ecology and Biogeography' (ChEsSo)

13 January to 22nd February 2011



Contents

Abstract

The whole programme of JC55 changed with the extensive damage to the ROV *Isis* on day 5 of the 42-day cruise. As a result Plan B, an over-the-side science programme was put in place and sampling with CTD/SAPs, Megacore, gravity cores and SHRIMP. This limited a number of aspects of the sampling and visual observation of the seabed but resulted in a programme that achieved a remarkably high proportion of the objectives of the cruise. In the Bransfield St some hydrothermal activity was observed at Hook Ridge, together with areas of reducing sediment but no areas of extensive hydrothermal activity. A Middle Sister a small anomaly in the Eh readings on the CTD suggested hydrothermal release but visual observation of the seabed showed only sedimented and old areas of pillow lava. At the Axe (aka Edifice A), despite extensive CTDs, there was no evidence of any modern hydrothermal activity. At the three sites we did obtain excellent samples for geochemical and water analysis, as well as samples for microbial analysis, macrofaunal and isotope analysis. Megafauna and mosaic analysis was not possible because of the loss of use of *Isis*. On moving to the East Scotia Ridge at E9 we were able to use SHRIMP to locate the Twin Peaks area (first sighted in 2009) and obtain a third annual set of images over a specified area. Additional exploration did not find any additional vents to those found on JC42. Water column sampling in the plume for chemistry and microbiology was successful. At the Kemp seamount crater there were successful stations for water chemistry and microbiology. A long SHRIMP transect over the venting area within the caldera was particularly successful and this together with fine scale mosaicking gave a clear map of this venting field. Planned fine scale sampling and ROV swath could not be completed. A SHRIMP transect at the nearby recently-mapped Adventure caldera discovered a small vent site on the southern side of the crater. Lastly, we returned to the putative cold seep site off the southwestern end of South Georgia. High CH_4 levels in the water column and reduced sediment in cores suggested methane release but two SHRIMP surveys revealed no evidence of surface expression of a cold seep.

To summarise on the effects of the loss of use of *Isis* on JC55.

Despite the loss of use of *Isis* we were able to obtain very good samples for water column for chemistry and microbiology and complete our sampling programme. This completed the fieldwork for one of the PhD studentships. We were also able to get good sedimentary cores from surface deployment and this completed the field aspect for one of the tied studentships. We obtained good HD imagery of the seabed in some locations but this was not controlled as it would have been by the ROV.

However, the damage to *Isis* prevented us completing the following:

1. Collecting megafauna for molecular analysis, isotope and reproductive analysis
2. Deploying traps for larger species of megafauna and fish for isotope analysis
3. Collecting end member fluids for chemical analysis
4. Collecting diffuse flow fluids for chemical and microbial analysis
5. Completing ROV swath at fine scale over vent areas
6. Collecting cores in the crater for geochemical analysis
7. Continuing the fine-scale video mosaicking of the vent fields

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Acknowledgements

We wish to thank the Master, Ships officers and crew for all their support during JC55. We also thank the continuing support of the technical staff from NMF. This research cruise was part of the consortium grant ‘Chemosynthetic ecosystems south of the Polar Front: Ecology and Biogeography’ (NE/D01249X/1) from NERC which is gratefully acknowledged.

Executive Summary and Objectives of the 'ChEsSo' programme

Chemosynthetically-driven Ecosystems South of the Polar Front: Biogeography and Ecology (ChEsSo)

Executive Summary

We propose a consortium of UK marine scientists to investigate the chemosynthetic environments and associated ecosystems south of the Polar Front. Sites in the East Scotia Sea (East Scotia Ridge, South Sandwich Arc and forearc) will be compared with chemosynthetically-driven communities in the Bransfield Strait, and north of King George Island, Antarctica. The primary objective of this work is to evaluate whether these sites, collectively, represent a Southern Ocean "gateway" to enable gene-flow of chemosynthetic fauna from the Southern Pacific Ocean to the South Atlantic Ocean. To address this issue our consortium of PIs will collectively conduct a detailed investigation and analysis of four contrasting types of chemosynthetically-driven communities, together with their regional tectonic setting, and the specific hydrothermal vent and cold seep environments they inhabit. The communities chosen for our investigation comprise: those associated with high-temperature, bare-rock hydrothermal vents on the East Scotia Ridge, high-temperature, sediment-hosted hydrothermal activity (Bransfield Strait), mud volcanoes (South Sandwich forearc basin) and methane hydrates (north of King George Island). To achieve these aims, we propose a three-cruise (involving international collaboration) and laboratory-based programme. Cruise 1 will be to the East Scotia Sea where we will locate vent and seep sites, using existing evidence for active plumes, examine their tectonic setting and sample the discharge at hydrothermal and cold seep sites. This cruise will rely primarily on proven water-column survey techniques, combined with very high resolution bathymetric mapping and video/image capabilities provided by WHOI's ABE autonomous underwater vehicle. These methods will locate precisely and begin to characterise individual vent and seep environments on the deep sea-floor. Cruise 2 will be to the same area and will use the UK's Remotely Operated Vehicle (ROV) Isis to dive on, sample and thoroughly characterise the biological, chemical and physical environment surrounding vent and seep sites identified during Cruise 1. Cruise 3 will be a combined geophysical, chemical and biological cruise, using the ROV Isis to dive upon and examine hydrothermal vent and cold seep environments, at least some of which have been closely spatially-constrained already, both north and south of King George Island, Antarctic Peninsula. Subsequent analysis of geological, chemical and biological (both microbial and metazoan) samples will allow us to compare the hydrothermal and seep communities among these four sites. We will also use morphological, molecular, lipid and stable isotope analyses to determine the phylogeography of species, and understand their food web processes. In concert, our programme will determine whether colonisation of vents

and seeps, in these most isolated of chemosynthetically-driven ecosystems, is driven by oceanographic or geologic processes or, instead, whether any site has hosted completely isolated evolution.

Specific Objectives and Deliverables

*Our **single specific objective** is to investigate contrasting chemosynthetically-driven ecosystems south of the Polar Front, Antarctica and their relation to their geological, oceanographic and chemical environments. We will determine whether these ecosystems represent one or more unique biogeographic provinces, separated from the Global Ocean by the Polar Front or CDW, or instead are related to vent and seep ecosystems in the Pacific and Atlantic Oceans providing 'stepping stones' between the two. Detailed objectives include:*

1. *to locate individual vent and cold seep sites using a combination of the deep-tow vehicle BRIDGET and the Autonomous Benthic Explorer (ABE), and to use the sampling/deployment capabilities of ROV Isis to investigate these sites in detail (see subsequent objectives 2 to 6)*
2. *to sample and analyse focussed and diffuse vent fluid compositions (temperature, pH, sulphide, methane concentrations, metals and other redox-active elements) to evaluate the contribution of the reduced chemicals supplied to the overall energy budget within the chemosynthetic food-web, and to ascertain if there are any systematic geochemical differences in the detected chemosynthetically-driven ecosystems.*
3. *to sample the vent and seep sites for metazoan organisms, and for micro-organisms using standard techniques*
4. *to compare the biota of the examined vent and seep sites, using both morphology and molecular techniques, and determine their place in the global biogeographic context for both hydrothermal vent and cold-seeps.*
5. *to determine whether the fauna of any or all the four study sites are inter-related due to migration along the seafloor (eg via volcanic or tectonic links) or by hydrographic controls.*
6. *to elucidate food-web structures using state of the art techniques of stable isotope and lipid analyses, and to compare these chemosynthetic-community types and locations both within the chosen region and outside it.*

This report is a description of Cruise 3 of the ChEsSo programme

JC55 Cruise narrative

(All times Ship time GMT-3)

Station planning will be found in Appendix A; Station numbers in electronic Appendix B and Waypoints in electronic Appendix C

Daily narrative (see Figures 1 to 5)

January 12 All scientific party on board and ship has completed demob from JC54 and mobbing for JC55 underway. Social and political unrest has started in Punta Arenas over fuel prices and some roads are blocked causing delay in delivery of provisions.

January 13 Continue to mob JC55. Safety briefing

January 14 JC leaves berth and stands off Punta Arenas. Later in the morning agent's boat comes alongside with galley provisions for loading. JC then cleared for departure and leaves Punta Arenas at 17.00 steaming eastward down the Magellan St.

January 15 JC proceeding down Magellan St and out into South Atlantic to cross Mar Argentino towards Estrecho de la Maire and the Drake Passage (Fig. 1A)

January 16 Continued in a southeasterly direction across the Drake Passage in moderate seas

January 17 Passage continued with short hove to pay out 3000m of ROV tether at 10.00 to stream. Passage continued to WP1

January 18 On arriving over the BSR site we commenced EK60 survey and continued this for 20h but failed to recognise any flare patterns (JC55-001_EK60#1). On completion of the EK60 survey a CTD with SVP was deployed in 2200m water at 21.15 to obtain water samples for analysis and experimentation and conduct the sound velocity profile necessary for the position fixing of the ROV (JC55_002_CTD1). On completion JC steamed towards the ACES6 site arriving early on 19th January

January 19 *Isis* was prepared for deployment at 09.00 (JC55_003_Dive181). On deployment there was a serious incident in which *Isis* was drawn into the port propeller and very severely damaged. The rest of the day was spent ensuring recovery of the remains of the vehicle and the floating debris and reporting to NMF and starting an investigation into the causes of this disaster. All scientific activity was halted. At 15.00 the ACES6 whale bone lander was contacted by pinger and released but could not be found at the surface (JC55_004_ACES6). Late in the evening JC steamed to the Hook Ridge site

January 20 The PSO requested that we start the contingency plan for science and the CTD was deployed on tow-yo mode SE to NW over the Hook Ridge site locating the hydrothermal plume first discovered by Gary Klinkhammer 10 y ago. However, NMF were asking the STO Jez Evans, the Master and the ROV team leader

for copious amounts of information and the decision was taken to suspend all science so shipside and tech-side could concentrate on reporting to NMF.

January 21 In calm conditions the PSO requested that whilst we were stood down from active science we could use the ship's swath to get detailed charts of the Hook Ridge site (Fig. 1B). The Hook Ridge area was swathed by JC starting at 12.00 and completed at 20.00 (JC55_006_EM120#1). We then established a series of CTD tow-yo transects from SE to NW across the Hook Ridge site and occupied transects into 22nd January.

January 22 The transects completed over night showed evidence of light scattering and Eh values indicative of hydrothermal plumes south of the main ridge at Hook Ridge. CTD tow-yos continued throughout the day and were completed by 06.30 on January 23rd (JC55_007_CTD to JC55_010_CTD).

January 23 JC steams to station JC55_011_MC#1 on the shelf to the east of Hook Ridge that will act as a control station for experimental and macrofaunal studies. First megacore completed by 10.00 ship time (JC55_011_MC#1). Five additional megacores were taken for background macrofauna and chemical and isotope analysis (JC55_011to 16_MC#2 to 6). On completion of this series of cores (18.00), JC steamed back to Hook Ridge arriving about 19.30 and deploying SHRIMP on a grid pattern survey of part the main ridge at Hook Ridge (JC55_017_SHRIMP#1). This deployment continued overnight.

January 24 SHRIMP remained deployed and seabed video showed a thin later of sediment overlying a hard base with most obvious fauna being ophiuroids and holothurians. The lower slope showed no evidence of hydrothermal activity but at 62º11.858S; 57º 17.699W single 1m high chimney with very diffuse flow was found. SHRIMP deployment continued overnight

January 25 SHRIMPing continued until 07.00 by which time the weather had deteriorated rapidly and SHRIMP could not be safely recovered. Operations were suspended with SHRIMP being held at 1000m depth. Weather downtime 10 hrs. SHRIMP was retrieved at 17.00 after weather had moderated. In the evening and during the night a series of megacores (JC55_18 to 26_MC#) were taken over a reducing site to the SE of the crater area.

January 26. Megacoring continued until 0.900. JC then repositioned at the northern end of the next CTD tow-yo transect (JC55_027_CTD). The tow-yo continued throughout the day moving towards the SE and showing increasing evidence of a hydrothermal plume. Water samples were taken at 500m on retrieval. The CTD was back on deck at 17.30. At 18.10 the CTD was redeployed (JC55_028_CTD#192) over the putative vent seepage site and water samples for microbiology collected just above the seabed. On recovery of the CTD, the gravity core was prepared for deployment and lowered over the side at 20.45 and recovered 21.30. JC was then manoeuvred towards WP 60 for deployment of the megacores in the crater at Hook.

January 27 Megacoring continued throughout the night with at least five of the eight barrels in each core containing good cores of the seabed (JC55_30_MC#16 to JC55_35_#21). On completion of the megacores a spade box core was taken (JC55_036_SBC#1). The JC then moved to a track south of, and parallel to, Hook

Ridge and successfully completed an Agassiz Trawl between 12.00 and 17.00 at 1600m depth. The fauna collected was limited but contained bivalves and ophiuroids. The Hook Ridge programme was completed with a second spade box core (JC55_038_SBC#2) to ground truth the ophiuroid fauna seen in the SHRIMP video. JC was then programmed to steam overnight to Threes Sisters site stopping for CTDs in deep water (JC55_039_CTD) and at Orca volcano. The latter could not be completed at a very large iceberg was sat in the water column immediately above Orca volcano!

January 28 JC arrived at the Three Sisters (Fig. 2A) site early in the morning (06.00) and proceeded to swath in increasing fog (JC55_040_Swath#2). Speed was reduced to 2 knots and after a short time it was decided this was uneconomical with time and time would be better used conducting a tow yo CTD survey (JC55_041_CTD) over the three linear structures of the Three Sisters site. This was an 8 km long transect and took about 24h.

January 29 On completion of the tow yo transect it was apparent only a small section of the ridge was showing hydrothermal activity. The remainder of the day was spent completing the swath (JC55_042_Swath#3) in variable visibility conditions and at variable speeds. At 23.30 a second short tow-yo CTD transect across part of the Middle Sister was started (JC55_043_CTD). The tow yo continued overnight

January 30 Tow-yo (JC55_043_CTD) continued throughout the morning with very limited evidence of hydrothermal activity. At 19.30 an up and down CTD (JC55_046_CTD) was taken close to the area selected for survey. At 21.00 Shrimp was deployed to survey a box area and this continued overnight. The box was extended to cover part of the top of the ridge. Considerable heterogeneity of the seabed was found but no evidence of recent hydrothermal activity.

January 31 The SHRIMP deployment continued throughout the day until terminated on orders from the bridge because of an increase in wind speed and concerns over safe recovery. SHRIMP was on board by 19.50. At 21.00 the first of a series of four megacores was deployed (JC55_048_MC#22) in a sedimentary area near the crest of Middle Sister.

February 1 On completion of the megacores in early morning JC steamed towards the Axe as different speeds to allow the engineers to assess the vibration caused by the damaged port propeller. This was completed by midday and a series of CTDs and concomitant Swath was made along the axis of the Axe to look for hydrothermal activity. CTDs continued all day and through the night into the following morning (Fig. 2B)

February 2 CTDs continued until the last one, WP145, in the centre of the Axe (JC55_076_CTD) was completed by 13.00. JC moved to the north of the Axe to deploy the megacorer (JC55_077_MC#26) at a background site. A magnificent 8 cores were obtained. It was now apparent that there was no obvious hydrothermal activity that we could trace at the Axe. There had been no response to either lss or Eh probes and those changes observed in the CTD profiles could be attributed to water mass variation. The decision was

taken to return north, sampling in the Orca crater and again at Hook with the CTD. After discussions with the Master and NMF in Southampton it was agreed we could proceed to the East Scotia Ridge and South Sandwich Islands to continue our study at sites discovered there in 2009 and 2010. At 15.00 JC started to steam to Orca Crater.

February 3 JC steamed northward taking a CTD in the Orca crater (JC55_078_CTD) before steaming on to Hook Ridge and taking two CTDs (JC55_079/080_CTD) and a successful megacore (JC55_081_MC#27). This completed our work in Bransfield St and at 10.00h the JC set sail for the East Scotia Ridge passing the Elephant Island archipelago and the South Orkneys on the way.

February 4 and 5 Steaming to ESR

February 6 Steaming to ESR. En route we stopped at an off site station (WP181) to carry out a CTD (JC55_082_CTD) over 2500m water depth and collect water well off site to give background chemical and microbial data. The station was completed successfully and JC proceeded to station E9 on the East Scotia Ridge.

February 7 After steaming through rough seas and a strong headwind, JC arrived on station E9 on the East Scotia Ridge (~2500m depth)(Fig. 3) at 7.00h in decreasing wind speeds and a moderate swell. CTD (JC55_083_CTD) was deployed at E9 immediately. A very well structured hydrothermal plume was found ~300m above the seabed with low Eh values and high lss. The CTD was recovered and redeployed armed with a SAPs (JC55_083_SAPs#1). However the wind speed was increasing and after 25 mins deployment sampling at depth the Master called time and the CTD was recovered at 13.30. Weather deteriorated fast and ship work stopped until 03.00.

February 8 At 03.00 it was considered prudent to deploy the CTD again (JC55_086_CTD) followed by a CTD plus SAPs (JC55_087_CTD) at 06.00. The weather was improving slowly but no yet good enough to deploy SHRIMP. Two deployments of SAPs were made, one for chemical particles and one for vent/water column larvae (JC55_088_SAPs#3 and JC55_089_SAPs#4). These were completed by 14.30 and the decision was taken to deploy SHRIMP (JC55_090_shrimp#3) although there was still some swell running. The first part of the deployment over the Twin Peaks site was very successful but the second part that was more exploratory did not find evidence of additional venting. SHRIMP was recovered by 09.00 on 9th February

February 9 On completion of SHRIMP JC steamed towards the Kemp Seamount crater conducting shaft tests required by NMF on the way. JC arrived at the crater at 14.00 (Fig. 4A, B). Deployment was delayed to allow completion of the shaft tests. At 15.00 a CTD (JC55_091_CTD) was deployed that gave low Eh and high lss reading below the lip of the crater. Water samples collected at depth smelled of hydrogen sulphide. At 16.30 at megacore was deployed (JC55_092_MC#28) but retrieved only about 4cm of lithified crust. At 18.30 a second CTD was deployed (JC55_093_CTD). This had trouble finding the exact location for sampling the buoyant plume and was completed at 23.30

February 10 During the early hours there was a series of 3 megacores to try and obtain sediments from within the crater. Although some small sediment samples were recovered no decent cores were obtained. We attribute this to the very small patches of corable sediment in the crater and the inability to locate the megacore precisely. After damage to two cores coring was suspended at 05.00 and a sub-bottom profile run to try and locate patches of sediment (JC55_100_SBP#1). At 08.00 a CTD was deployed (JC55_101_CTD). Again there was difficulty finding the buoyant plume. On completion of this station (09.10) JC steamed to a newly-discovered crater, Adventure Crater, 17miles to the east (WP228)(Fig. 5A). We started a SHRIMP survey (JC55_102_SHRIMP#5) at 12.00 and found a typical Antarctic fauna from the deepest part of the crater up to 500m depth. As we modified the track of the SHRIMP we discovered a new small hydrothermal vent system at 538m. With very careful manoeuvring of the ship by the bridge we were able to spend an hour carefully video documenting this new site to the great delight of all on board. SHRIMP was recovered at 20.30. It was then decided to try and sample this hydrothermal fluid with a CTD rosette (JC55_104_CTD) and this was deployed and successfully sampled warm water above the vents site.

February 12 JC steamed back to the main caldera and deployed a CTD to sample the buoyant plume (JC55_105_CTD). After successful samples were retrieved the gravity corer was deployed 3 times (JC55_106/107/108) in the centre of the caldera WP 196-198) to try and obtain some samples of the sub-seabed, but with only limited success, although a small sample of siboglinid tubeworms was obtained. The CTD was again deployed over the main venting area (WP207) and samples recovered (JC55_109_CTD). A short delay occurred as the CTD was serviced and the bottles emptied and their contents treated before the CTD was lowered over the site at 10.30 (JC55_110_CTD). Once again the buoyant plume proved difficult to locate but samples were taken above the seabed and the CTD retrieved by 14.00. At this point the work at the crater was complete with the equipment available and the JC steamed for E9 on the East Scotia Ridge in worsening weather. JC arrived at E9 in very rough conditions and winds at almost 40knots. On the advice of the bridge no CTD was deployed and for potential medical reasons as well JC proceeded to South Georgia.

February 13 Steaming towards South Georgia in decreasing seas.

February 14 Arrived off South Georgia (WP237) at 19.00. Water depth ~250m. JC completed three successful megacores and two gravity cores at WPs 237, 238 and 239 (Fig. 5B).

February 15 At 00.00 started an EK60 survey looking for gas bubbles. This continued until 07.00 and putative sites of gas bubbling were observed. At 07.00 a megacore was deployed at WP 247 for geochemistry and microbiology (JC55_117_MC#35). 5 subsequent megacores were taken for macrofaunal and microbial analysis. At 12.00 Shrimp was deployed over a putative cold seep site, and at 18.00 redeployed over a second site. SHRIMP was recovered at 22.00 having observed only sedimentary surfaces. This completed the science programme of JC55. At 22.30 JC set steam towards Punta Arenas.

February 16 to 21 Steaming to Punta Areanas, arriving **February 22**nd

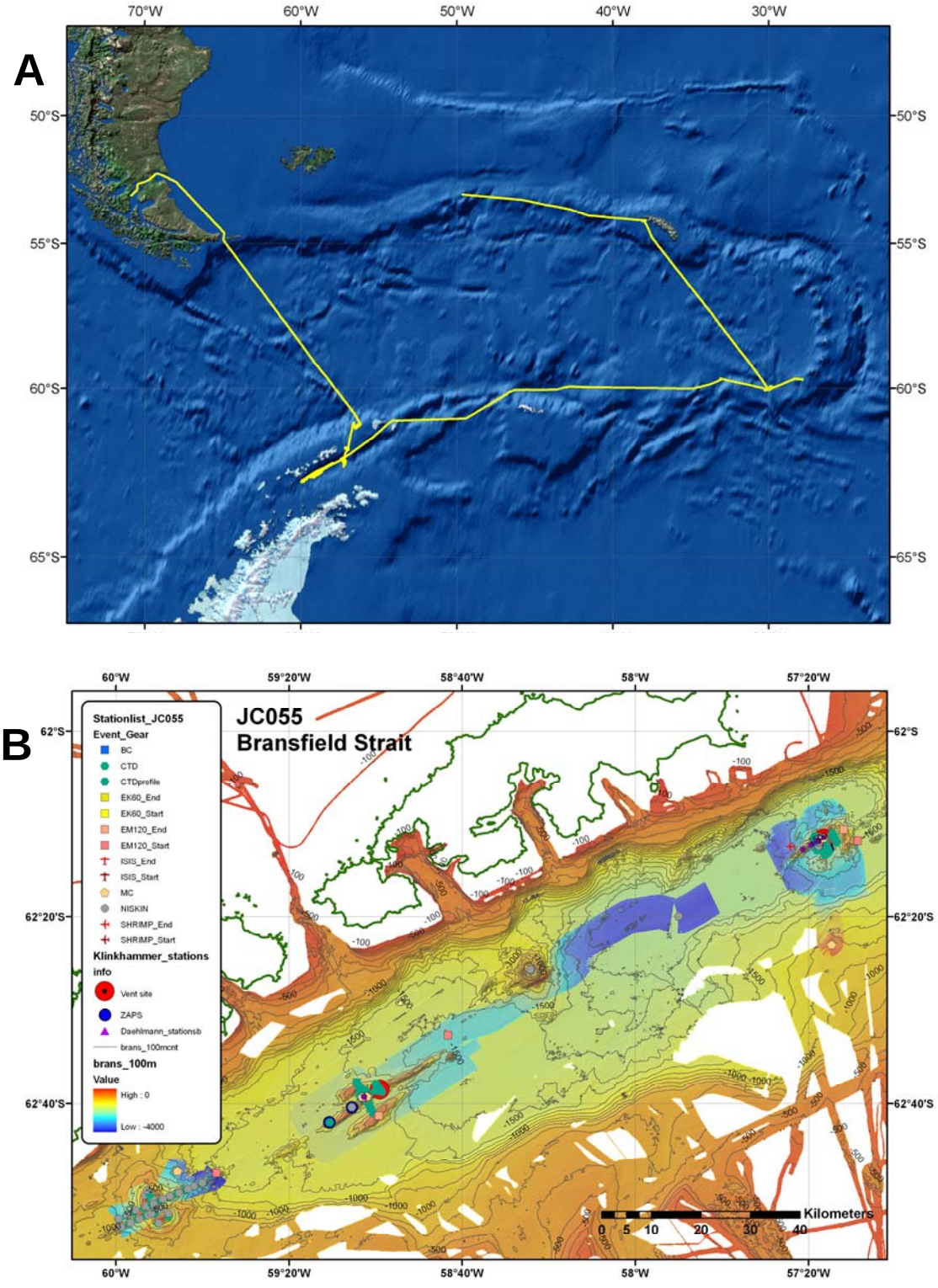


Fig. 1 A. JC55 Ship's track; B. Hook Ridge site in Bransfield St with sample locations

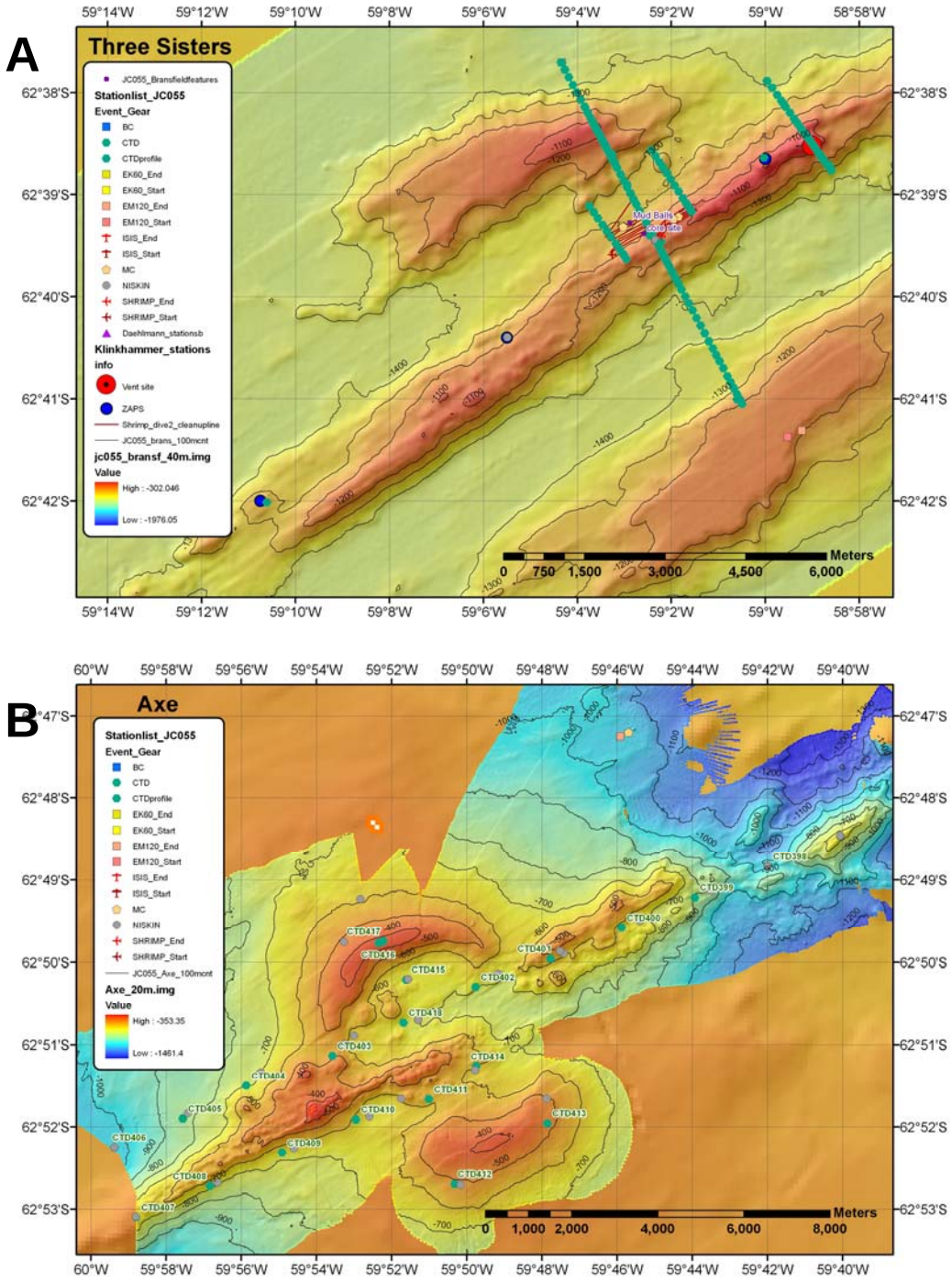


Fig. 2 A. Samples stations at Three Sisters, Bransfield St. B. Sample stations at the Axe, Bransfield St

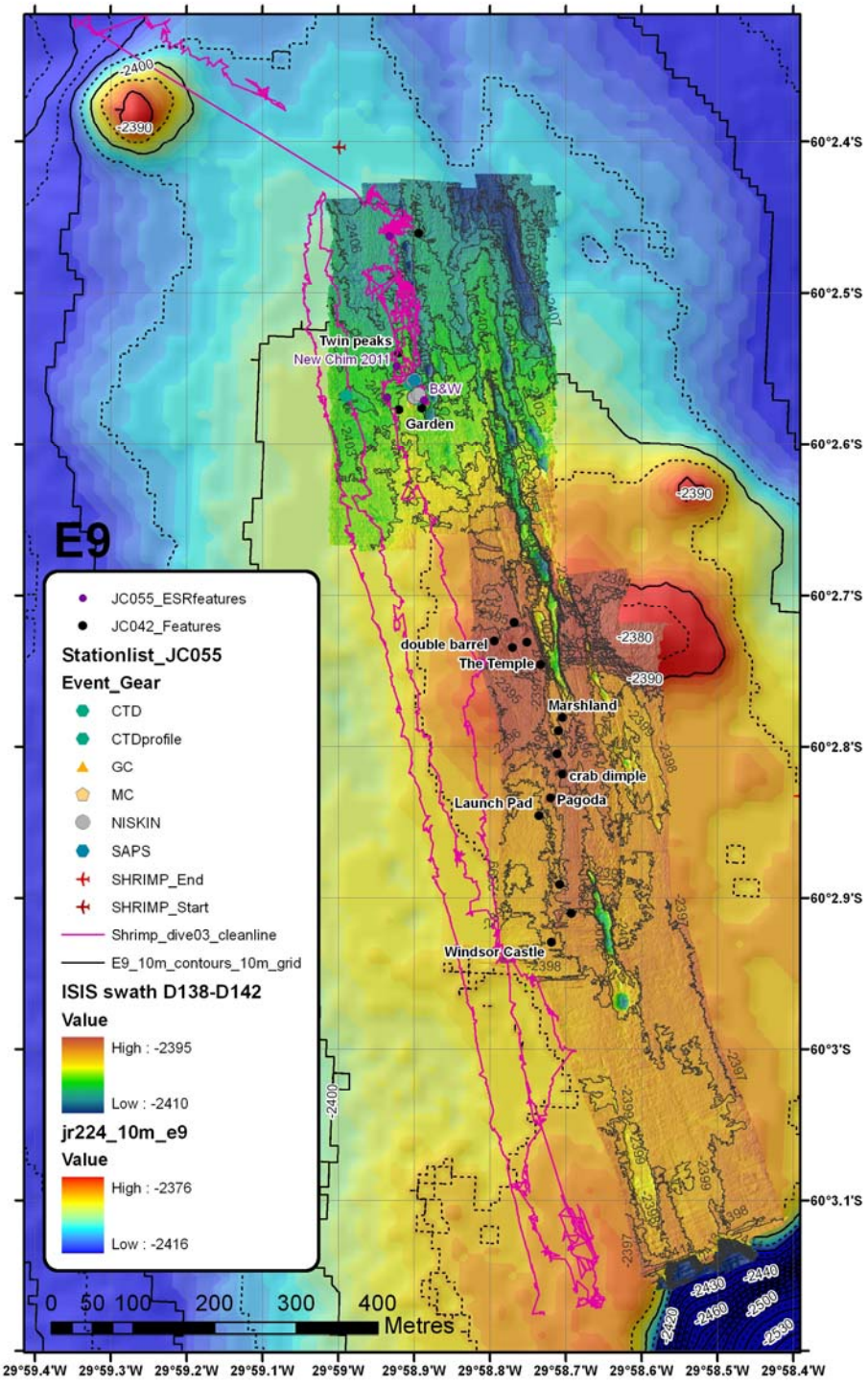


Fig. 3 Sampling stations at E9 on the southern East Scotia Ridge

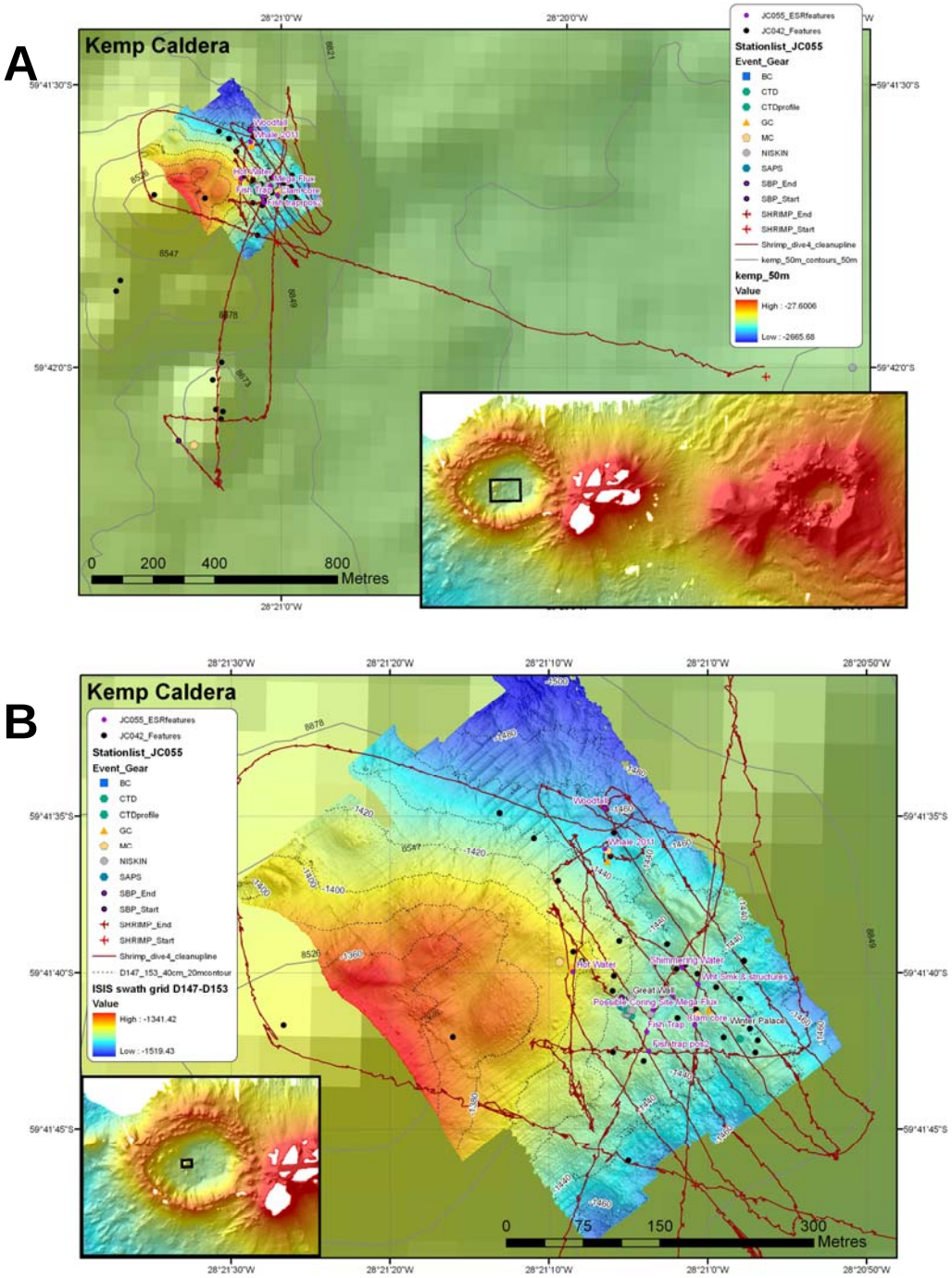


Fig. 4 Kemp Caldera. A. Main caldera. B. Details of sampling during JC55

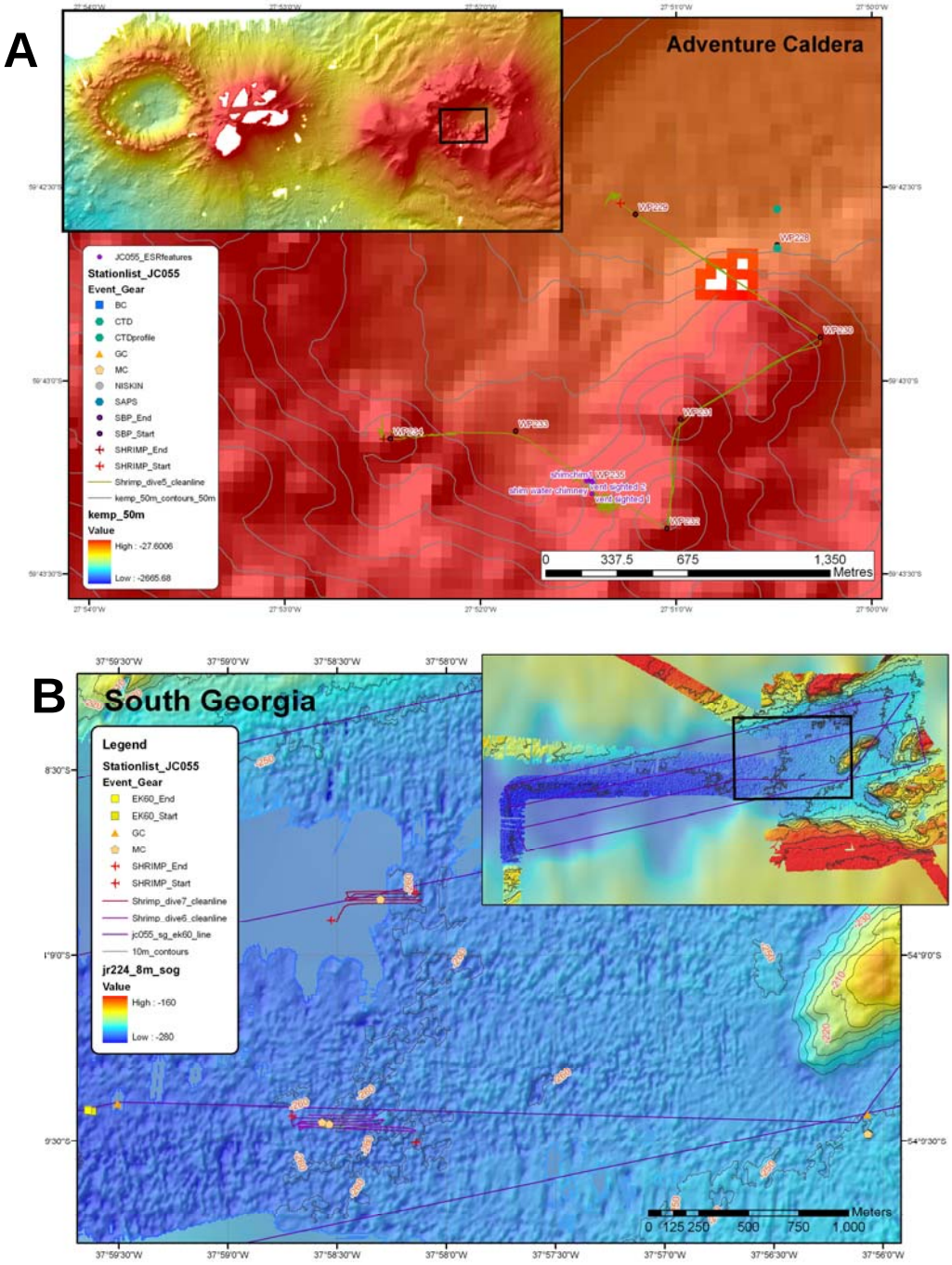


Fig. 5 A Adventure caldera showing SHRIMP track and location of new vent site. B. South Georgia putative ‘cold seep’ showing EK60 tracks, sampling stations and SHRIMP tracks

JC55 Scientific Reports

Water column Chemistry

Douglas Connelly , Jeff Hawkes, Cathy Cole and Darryl Green

Following the success of finding new vent sites in 2010 the first part of the work moved to looking for evidence of hydrothermal venting in the Bransfield Strait. There was prior evidence of hydrothermal activity here from work by Klinkhammer and others from a series of cruises in the late 1990s early 2000s. The areas are discussed earlier in this report of this cruise report, all of the locations and sampling data for the CTD sampling programme can be found in electronic Appendix D. The majority of the water samples collected were taken using a Seabird CTD. The CTD system used is a Seabird +911 on a titanium frame with up to 24 externally sprung Niskin bottles. This is a clean system, specifically designed for the sampling of waters with low levels of trace metals and nutrients. The bottles are Teflon lined, with Teflon taps and non-metallic parts, any metallic components are titanium or high quality stainless steel. In addition to the standard CTD sensors there was an addition light scattering sensor (LSS) and bespoke Eh sensor provided by Prof Koichi Nakamura a geologist at the National Institute of Advanced Industrial Science and Technology in Tsukuba, Japan.

There was previous evidence for the existence of a BSR (Bottom simulating reflector) in an area to the north of King George Island. Since these data often indicate the presence of not only free gas but also gas hydrate deposits a series of EK60 lines were run over the deeper areas and extended up onto the shelf to look for gas bubble streams in the water column, such as those found in the Arctic (Westbrook et al. 2009). This investigation proved fruitless with no sign of active gas venting in any of the areas studied over a period of 14 hours. All station data are in electronic file JC055_APPENDIX_D_geochemStations

We then proceeded to the Bransfield Strait and commenced work over the Hook Ridge, and area identified by Klinkhammer et al. (2001) as having sediments with temperatures in excess of 40°C. We performed a series of 5 TowYo's across Hook Ridge. There was unusual signals evidenced at a number of places across and along the ridge, these were mainly Eh (redox potential, negative signals indicate the presense of reducing species in the water column) signals and were unsupported by either LSS (Light Scattering Sensor) or the transmissometer. This indicates that the source of the Eh anomaly is not a classical black or white smoker vent site. We feel it is more likely to be a seep site with little buoyancy. The best area located was actually to the south of the Ridge and this was re-occupied later in the cruise and a series of samples collected. CTD 192 was the main sampling CTD for this stage of the survey.

Following from Hook Ridge we proceeded to the Three Sisters area in the Strait. At this site we deployed the CTD on 4 TowYos and 3 vertical casts, there was no evidence of a plume on any of these casts

indicating that the site is not active with regard to hydrothermal activity. We took samples for salinity checks to calibrate the CTD.

We the moved onto the most southerly of our sites, and area known as the Axe. This has not previously been explored for hydrothermal activity. Our plan involved a combined CTD survey with a swath survey to map the area. A series of 22 full ocean depth vertical CTD casts were performed; none of these produced any evidence of hydrothermal or seep activity. A single Niskin was fired at the bottom of each cast for a salinity measurement to check the CTD drift.

We went to the Orca Crater and dropped a CTD in the centre to determine if there was any hydrothermal activity, this showed that there was no activity. We completed our studies in the Bransfield Strait by a further 2 CTDs over the Hook Ridge in the area we had collected core samples that showed unusual chemical anomalies. The first CTD (CTD420) showed 3 large Eh anomalies in the water column and was sampled and sub-sampled for nutrients, metals, microbiology and methane. The second CTD in the series at Hook Ridge did not show an Eh anomaly and we departed the site.

After leaving the Bransfield Strait we proceeded back to our study areas from JC044, E9 on the East Scotia Ridge and the newly discovered site in the Kemp caldera to the west of the Kemp seamount.

Hydrothermal vent sites at E9

CTD casts were made over the 'Black and White' Smoker (at 60°02.557, 29°58.900) to sample the buoyant and neutrally buoyant plume. Five casts were undertaken, including one blank station at 59°40.898, 33°06.181.

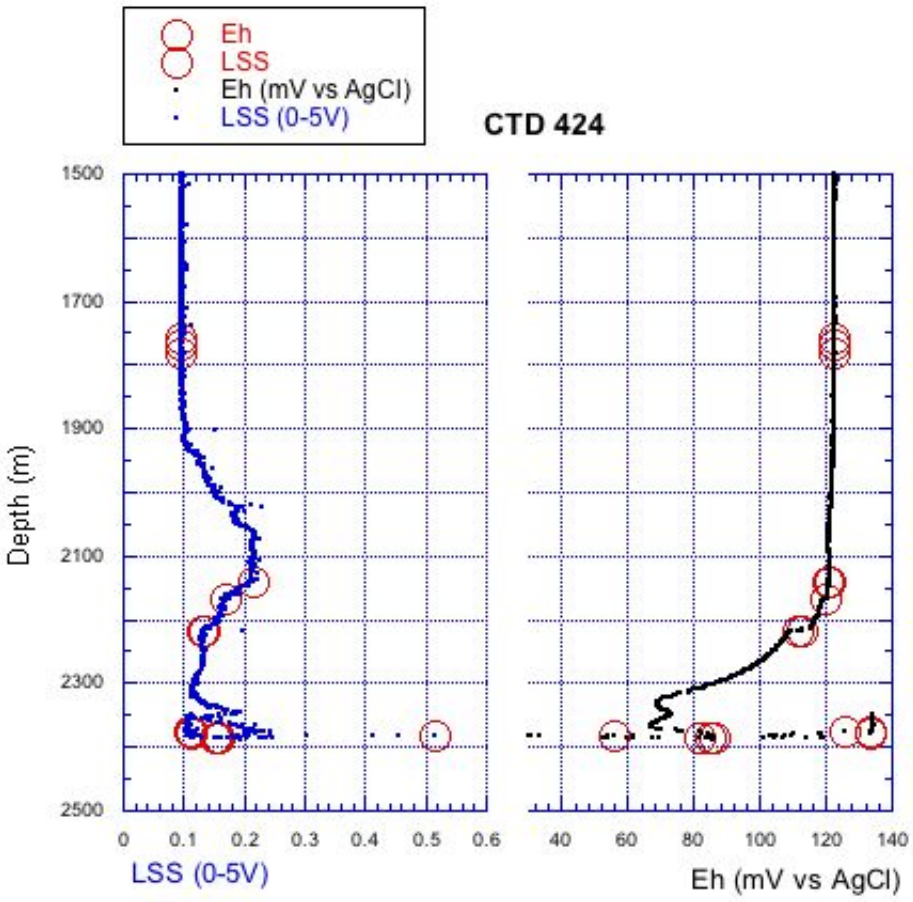


Fig. 6. - Example up-cast CTD cast at Black and White smoker. The neutrally buoyant plume is between 1900-2200m - as visible in the Light Scattering Sensor (LSS) signal. The buoyant plume occurs at ~2375m. Both LSS and Eh are activated here, and the Eh takes ~200m of clean water to equilibrate to background levels. Niskin firing positions are indicated by red circles.

The bottles were fired in groups of three or four at depths of interest, and each group was sampled for some or all of the following:

Methane, nutrients, dissolved inorganic carbon (DIC), dissolved and total organic carbon (DOC/TOC), dissolved and total metals, Rare earth elements (REEs), iron isotopes, metal speciation and metal particle analysis. Total numbers of samples can be found in Table.1. Additionally a series of samples were collected which then were left on the CTD carousel and sampled at various time intervals to provide a time-series study for both metals and REEs.

Kemp Caldera

CTD casts were made over the 'Great Wall', which is a diffusing system that appears to effuse sulphur-rich fluids. A neutrally buoyant plume was sometimes observed ~200m above the Great Wall, which is thought not to be associated with the Wall itself, as the fluids emanating from the Wall are only about 40°C (As

sampled in 2010 on JC042). These temperatures are not typically high enough to account for such a plume rise. An additional plume of particulate matter was often observed (to varying degrees) at ~950m depth. This is of unknown origin. Particle analysis should shed some light on the origin of both neutrally buoyant plumes.

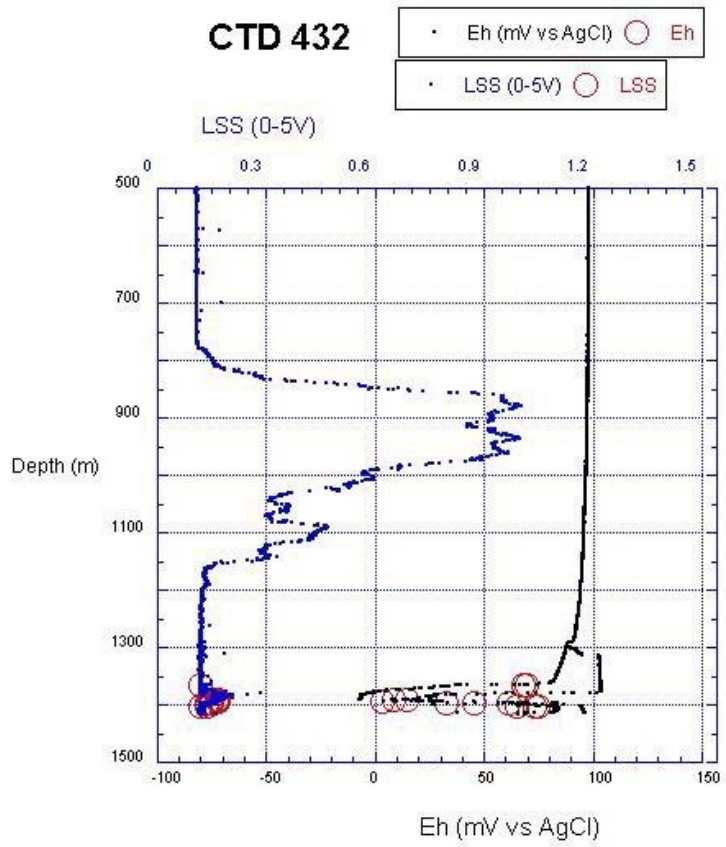


Fig. 7. - Example CTD up-cast at the Great Wall. The narrow plume at 1100m (visible in LSS) is thought to be associated with either the 'Winter Palace' or 'Toxic Castle' white smokers. The wide plume at ~950m is of unknown origin. It coincides with the height of the rim of the Kemp crater, so may be water mass related. The reducing fluids from the Great Wall are responsible for the low Eh signal between 1350-1400m. Niskin firing positions are indicated by red circles.

In total, six profiles were taken in the Kemp Caldera - five over the Wall and one background (59°42.000, 28°19.000). Total numbers of samples can be found in Table1.

In addition, two CTD casts were undertaken in the 'Adventure Crater', which was recently discovered on the Kemp Seamount. Neither cast detected any signals, though a chimney effusing shimmering water was observed with the SHRIMP camera system on the seafloor, at a shallow depth of ~500m.

CTD number	CH4	DIC	H2S	TOC	DOC	colloids	PPL	Nuts	500ml total metals	500ml diss. metals	500ml Fe isotopes	1L REEs	250ml CSV	REE filters	metal filters	DOC filters	SAPS
1	1			1	1			1	1								
192	3			3	3			3	3							3	
420	5			5	5				7					5		5	
422	2	2		6	6	2	2		2	6	5		6		6	6	
423									4								
424	5			5	5	5		5	5	5	5	8	5	8	5	5	
426		3		5	5	5			2	4		5	4	7	4	5	1
427																	1
428				4	4	4	4		4			5		5		4	
430	2			2	2	2		2	2	2	2	2	2	4	2	2	
432	4	4	4	4	4	4		4	4	4	4	4	4	4	4	4	
433	1			1	1	1			1	1	1	1	1	2	1	1	
434/5	2	2	2	2	2	2		2	2	2	2	2	2	2	2	2	
436									1								
437	3	3	3	3	3	3		3	3	3	3		3		3	3	
438	1	1	1	1	1	1		1	1	1	1	1	1	2	1	1	
439	2	2	2	2	2	2		2	2	2	2	7	2	7	2	2	

Table 1. list of samples collected on JC055 for Water Geochemistry.

Sediment Geochemistry

Bransfield Strait Geochemistry Coring Activity

Alfred Aquilina, Cathy Cole, Doug Connelly, Jeff Hawkes, Laura Hepburn, Darryl Green, Rachel Mills

The Bransfield Strait is a 400 km-long sedimented marginal basin between the South Shetland Arc and the Antarctic Peninsula. Hydrothermal activity in this basin has been inferred from water column anomalies and sulfidic deposits dredged from volcanic highs. Our working area was within the Central Basin between the two subaereal volcanic islands Bridgeman and Deception. Seafloor spreading rates in this basin are ~1cm yr^{-1} (Peterson et al., 2004). The volcanic highs within the Central Basin strike parallel to the South Shetland Arc.

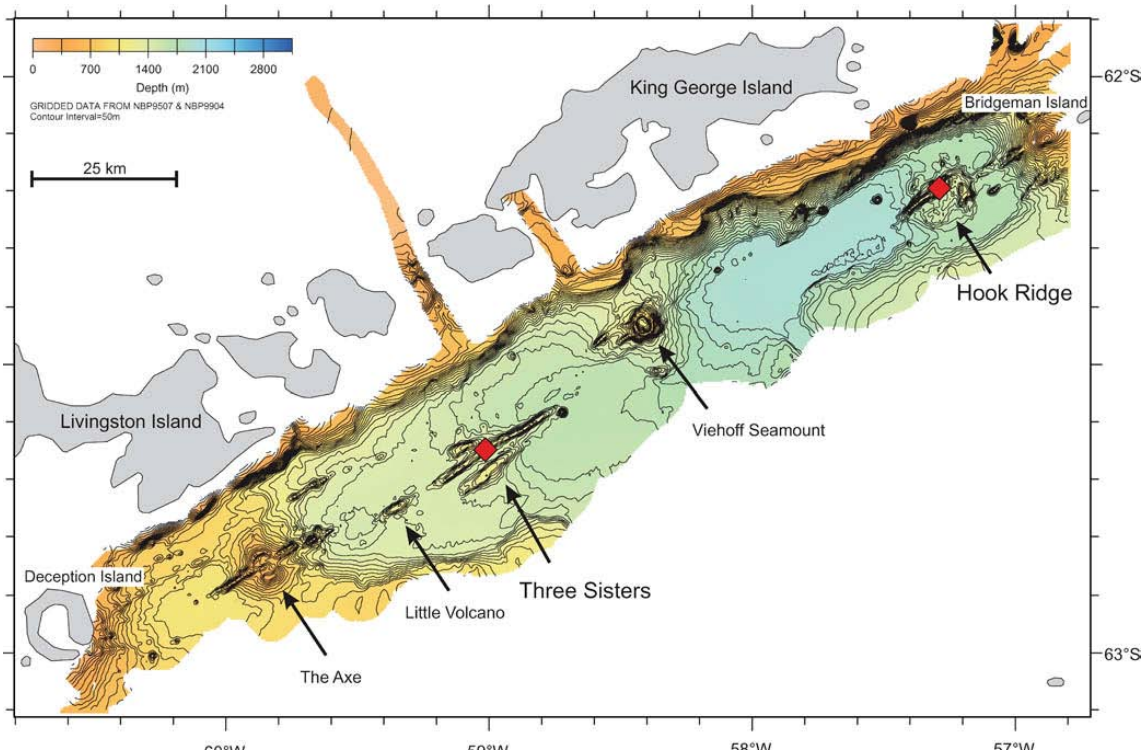


Fig. 8: Bathymetric map of Central Basin (from Peterson et al. 2004). Red diamonds indicate areas of known hydrothermal activity.

Hook Ridge

Plume distribution over the Hook Ridge has previously been used to identify likely locations of hydrothermal discharge (Klinkhammer et al. 2001) and hot sediments have been collected along the southeast side of the crest of the Ridge (Dahlmann et al. 2001). Pore fluids extracted from the hot (up to 50^{o}C) cores imply upwelling (18-40 cm/yr; Sahling et al. 2005) of low-pH, low-chlorinity, low-sulfate, high-sulfide, high-methane and high-ammonia fluids. The hydrothermal precipitates collected include polymetallic sulfides,

barite, pyrite, marcasite mixed with lithified diatomaceous and volcaniclastic sediment (Peterson et al. 2004). Native sulfur and opaline silica are common infilling minerals.

Coring locations

We identified two main coring targets at Hook Ridge (see Figure 9) which were occupied from JD23 to JD27 and on JD34 in 2011. SHRIMP survey indicated the presence of shimmering water, mineralized substrate and sediment cover suitable for core deployment.

	Statio	Long	Lat	Long	Water Depth
Mega Cores	11-1	25-4	62º23.04	57º14.63	1150*
Mega Cor	18	53-57	62° 11.81	57° 17.	1174
Mega Core	30	27-40	62° 11.54	57° 16.7	1040
Gravity Co	29	4.5 r	62° 11.84	57° 17.8	1150
Box Core	36	50 cı	62° 11.59	57° 17.7	1182
Mega Core	81	47-49	62° 11.51	57° 16.6	1053

Table 2 Coring loc

**Background Site*

The Background core site was on the adjacent shelf region at an equivalent depth (1150 m). Note that this site is ~3km from the wreck of the *MV Explorer* which sank in 2007 (62° 24'S, 57° 12'W in 1130 m water)

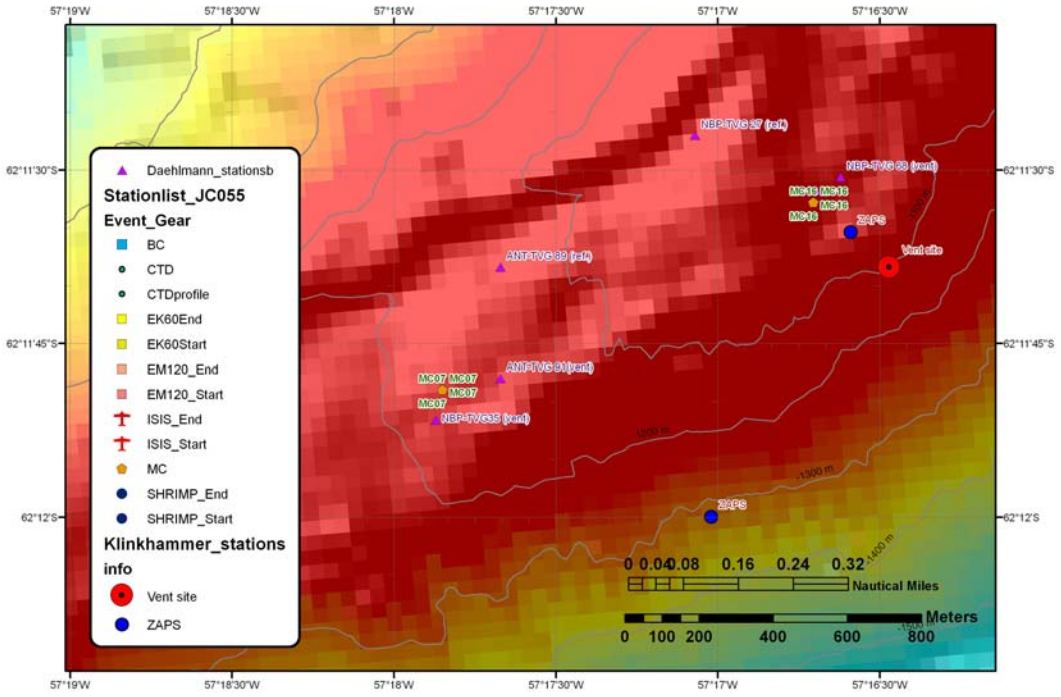


Figure 9: Map showing crest of Hook Ridge with coring sites from JC055. Klinkhammer et al. (2001) and Dahlmann et al. (2001) coring sites are shown for comparison.

Onboard Chemistry: Results

Stations 11-13: Background shelf site

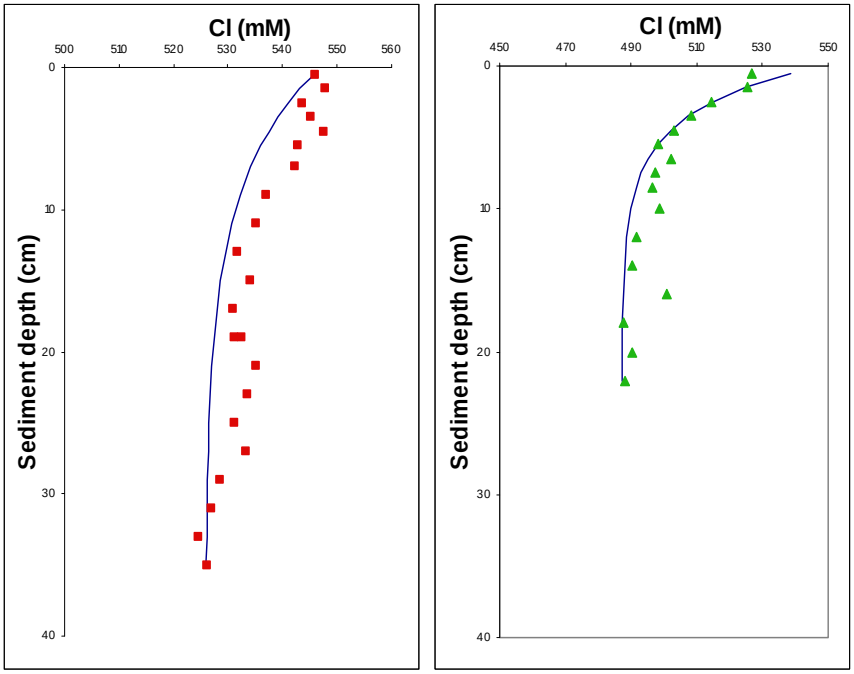
The oxygen penetration depth at this site is inferred to be ~2.5 cmbsf (based on extrapolation of oxygen probe data). Pore fluid ammonium is high in the oxygenated zone (up to ~285 µM), dropping sharply to values of 70-180 µM throughout the rest of the core (to 32 cmbsf). H_2S is below detection limit throughout the core and methane content is low (~0.15 µM) in the lower core (25-35 cmbsf). Alkalinity determinations indicate significantly enhanced values over seawater below 13 cmbsf (3-4 mM) and there is evidence for sulfate depletion below sea water values (sulfate reduction) at depth.

Stations 18 (MC7), 30 (MC16) and 81 (MC27): Hook Ridge

MC7 (and the replicate biology deployments) was collected close to TVG site 35 (Dahlmann et al. 2001). This area is characterized by pyrite/marcasite crusts with areas of silicified sediment (Peterson et al. 2004). 3 sub cores were taken from MC7, one for oxygen analysis, one for pore fluid extraction and solid phase storage (freeze dried on board) and one frozen at -20^{o}C for biomarker analysis. A 4.5 m Gravity Core was also collected from this site, sectioned, split, photographed, logged and stored on board.

MC16 (and the replicate biology deployments) was collected close to TVG site 68 (Dahlmann et al., 2001) where ~50^{o}C cores were collected (Klinkhammer et al., 2001). Solid phase samples from this region have been described as silica crusts, native sulfur and sulfide/sulfate talus (Peterson et al. 2004). 3 sub cores were taken from MC16, one for oxygen analysis, one for pore fluid extraction and solid phase storage (freeze dried on board) and one frozen at -20^{o}C for biomarker analysis. Two subcores from MC27 were collected from the TVG site 68 position.

Seawater anions (Cl, Br and SO_4) are all depleted relative to sea water below surface at both sites; core top values are close to seawater values. Advection rates at Hook Ridge can be modelled using the high-resolution pore water profiles by fitting a one-dimensional transport-reaction model. Chloride is chosen as it behaves conservatively in this environment and, therefore, the reaction term can be ignored (Dahlmann et al., 2001). The inferred hydrothermal end-member fluids are depleted in chloride due to phase separation at high temperatures and relatively low pressure (subcritical phase separation). The Br/Cl ratios are close to sea water values throughout indicating no fractionation of these two elements during phase separation.



MC7: v = 21 cm yr^{-1} MC16: v = 48 cm yr^{-1}

Fig.10: Downcore plots of pore water chloride at the two hydrothermal sites. Blue line is the modelled fit to the data indicating upward advection of low chlorinity fluids at rates of 20-50 cm yr^{-1}. Note the background core has seawater chloride content throughout.

Oxygen penetration depths over the Hook Ridge are 1.5-5.5 cmbsf. Ammonium increases with depth below the depth of oxygen penetration at both sites to values of 226 µM (MC7) and 400 µM (MC16) which are significantly higher than the background site but somewhat lower than published values. Ammonium increases are associated with organic matter remineralisation in suboxic sediments and upwards advection of hydrothermal fluids through these cores. Hydrogen sulfide increases from zero at 10 cmbsf to ~150 µM at 35 cmbsf in core MC7. H_2S in core MC16 remains close to zero throughout the core. Alkalinity increases to maximum values of 4-5.5 mM with depth and are significantly higher than background values in MC16.

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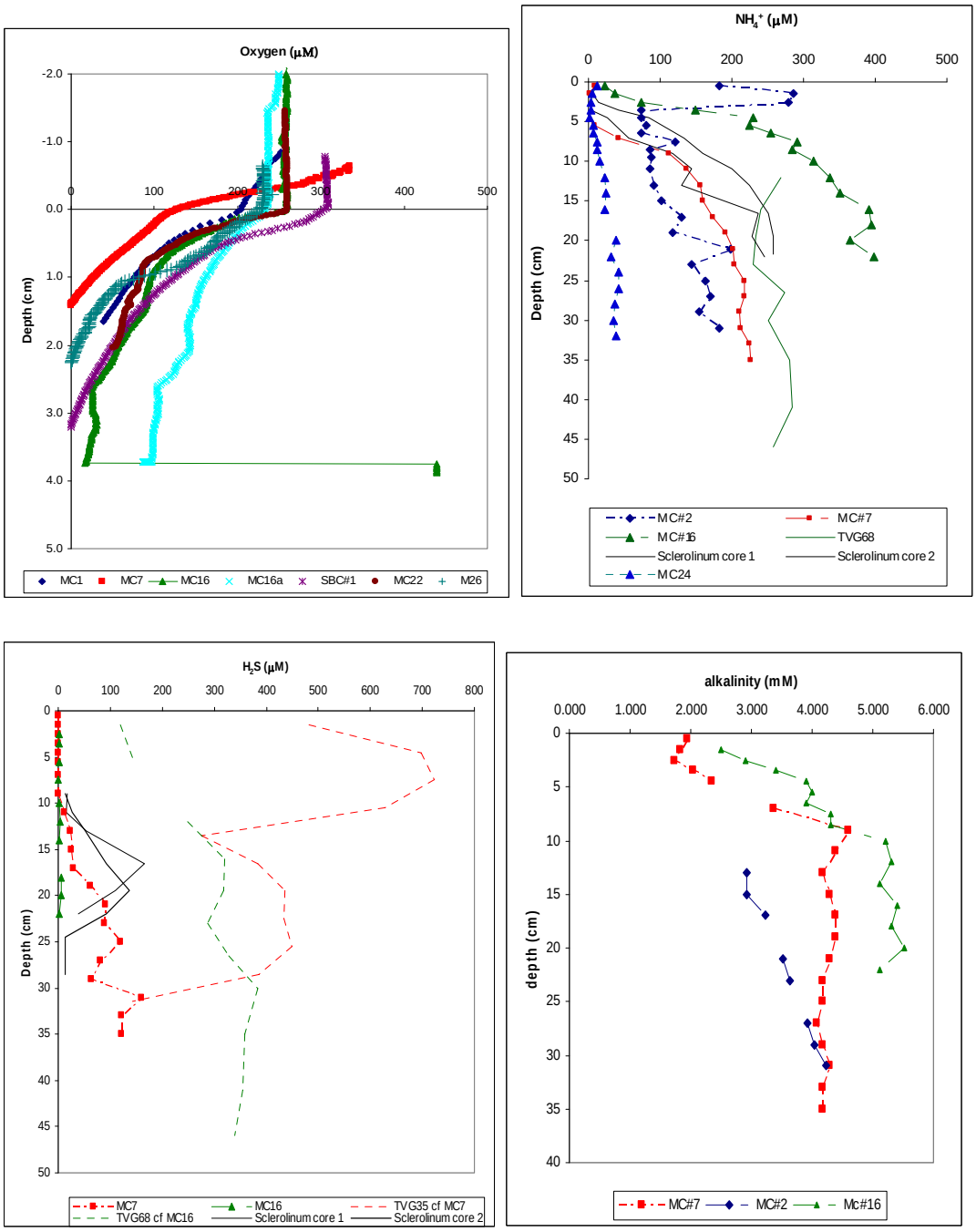


Fig. 11: Down core plots of (a) oxygen, (b) ammonium, (c) hydrogen sulfide and (d) alkalinity in pore fluids extracted from the sediments at the background and hydrothermal sites.

Chloride is inferred to behave conservatively within the hydrothermal sediments at Hook Ridge (Dahlmann et al., 2001). Sulfate shows slight depletion relative to the mixing line between the sea water end member and the inferred low salinity phase separated end member fluid. For MC7 core top values fall on the mixing line, whereas samples from deeper than 5.5 cmbsf show slight sulfate depletion (0.2 to 1.1 mM). Core MC16

shows sulfate depletions of 0.3-1.7mM. Sulfate reduction occurs either via oxidation of organic matter in sub/anoxic environments or via the anaerobic oxidation of methane (AOM).

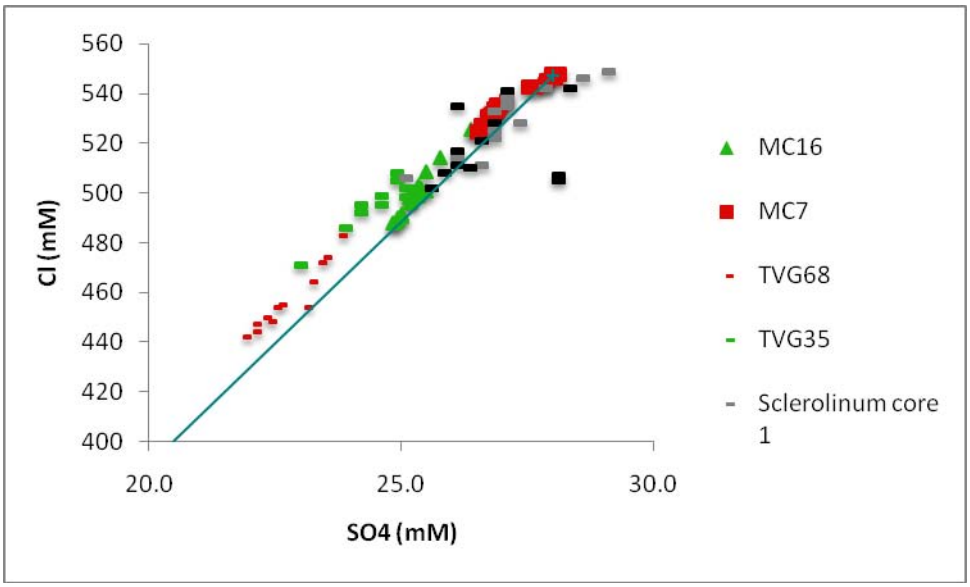
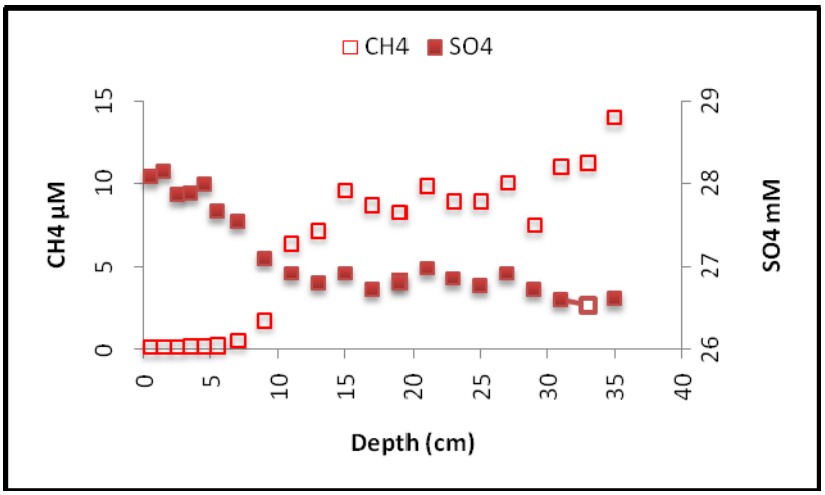


Fig. 12: Plot of chloride against sulfate content for Hook Ridge cores. The blue line indicates linear mixing of sea water with a fresh water vapour phase derived from subcritical phase separation at shallow depths.

Methane increases below the surface in both Hook Ridge cores with the highest values observed in MC7 (up to 15 µM; data need correcting for shore-based porosity measurements). In both cores, the increase in methane concentrations is concomitant with a decrease in sulfate, suggesting the occurrence of anaerobic oxidation of methane by sulfate (AOM). This is consistent with the occurrence of hydrogen sulfide at this depth. The occurrence of AOM will be assessed on-shore using stable isotope/organic geochemical techniques.



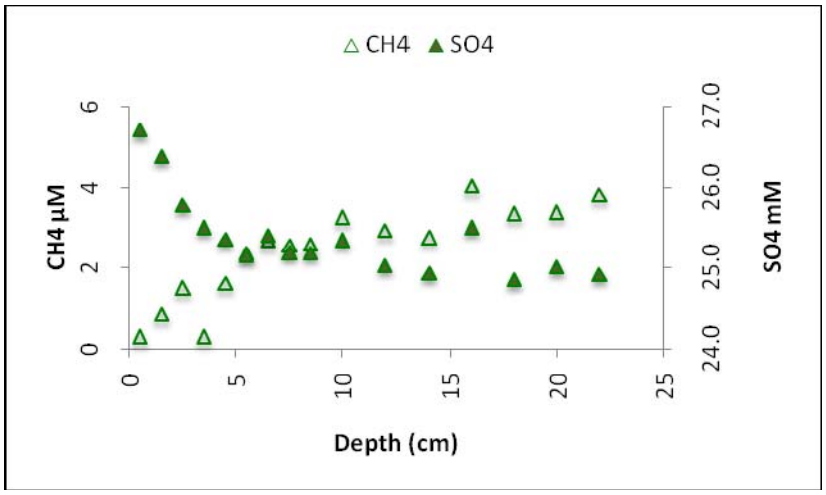


Fig. 13: Down core plots of (a) sulfate and methane in MC7 and (b) sulfate and methane in MC16 for Hook Ridge

Overall core MC7 shows close similarities to the *Sclerolinum* hosting sediments described by Sahling et al. (2005). The core base temperature was ~2^{o}C above the core top temperature on recovery indicating marginally warmer water was present at the seafloor (c.f. temperatures of ~4.5^{o}C measured by Sahling et al., 2005). The 4.5 m gravity core collected at this site is dominantly olive green diatomaceous ooze intermixed with coarse grained intervals of sulfide/sulfate debris. No significant or measurable temperature anomaly was observed during any of the replicate biology deployments at this site.

There is little detectable H_2S throughout MC16 though there is relatively rapid advection of low-chlorinity fluid through the sediment. There is significant alkalinity increase, and sulfate decrease with depth. No temperature anomalies were observed in this core deployment or any of the subsequent biology replicate coring deployments.

Three Sisters

Klinkhammer et al. (2001) described small dissolved Mn and particulate Fe anomalies above the Middle Sister ridge crest. Peterson et al. (2004) dredged hydrothermal crusts and other precipitates from the ridge crest.

We cored at two sites on the Middle Sister on JD31; one near the ridge crest, the second in deeper (1300 m) water between the volcanic edifices.

	Static	Leng	Lat	Long	Water Depth
Mega Core	48	15.5-17	62º 39.21	59º 01.8	1150
Mega Core	50	27-39	62º39.31	57º03.01	1311

The ridge crest core site (MC22) led to shallow core recovery. One subcore was analysed for oxygen (penetration depth ~2 cmbsf) and one subcore was frozen for biomarker analysis.

The deeper coring site (MC24) recovered longer sediment subcores (up to 40 cm) which were sampled for oxygen, pore fluid extraction and frozen for biomarker analysis.

The oxygen penetration depth at MC24 was similarly shallow (~2.5 cmbsf). Alkalinity was constant downcore and similar to seawater values. Ammonium was close to zero at the core top increasing to ~40 µM by 30 cmbsf. No hydrogen sulfide or methane measurements were made.

The Axe

The Axe volcanic edifice swath and sub-bottom profiling indicates that the sediment cover is negligible. One mega core deployment was made on the flanks of the edifice in 1024 m of water.

	Static	Leng	Lat	Long	Water Depth
Mega Core	78	36-38	62º 47.26	59º 45.9	1024

Three subcores were taken: one for oxygen measurements, one for pore fluid extrusion and one frozen for biomarker analysis. Ammonium shows little variation with depth and values of up to 45mM were observed at 33 cmbsf.

Kemp Caldera Coring Activity

Alfred Aquilina, Cathy Cole, Doug Connelly, Jeff Hawkes, Laura Hepburn, Darryl Green, Rachel Mills

Kemp Caldera is a submarine feature that lies to the west of Kemp seamount at the southern tip of the South Sandwich Island arc. In 2009, SHRIMP discovered the potential presence of hydrothermal activity during the *JCR224* cruise. This was confirmed in 2010 when *JC42* returned to the site with the ISIS ROV and discovered a number of different chemosynthetic habitats, including: white smoker vent fields, extensive areas of diffuse-flow, and a whale fall to the NE of a small sub-cone in the centre of the crater (see inset of Figure 1).

During *JC42*, ISIS-mounted push cores retrieved a total of 24 samples from each of these areas (19 of these were extruded successfully). The single successful 2 m gravity core (undertaken > 200 m to the east of the

surveyed sub-cone) sampled just 20 cm of sediment from the centre of the caldera. No megacores were taken from the crater.

This cruise revisited the whale fall and 2 diffuse-flow sites (Snowfield and Toxic Castle). Without ISIS we were unable to obtain push core samples, so these areas were sampled using the gravity core and megacore.

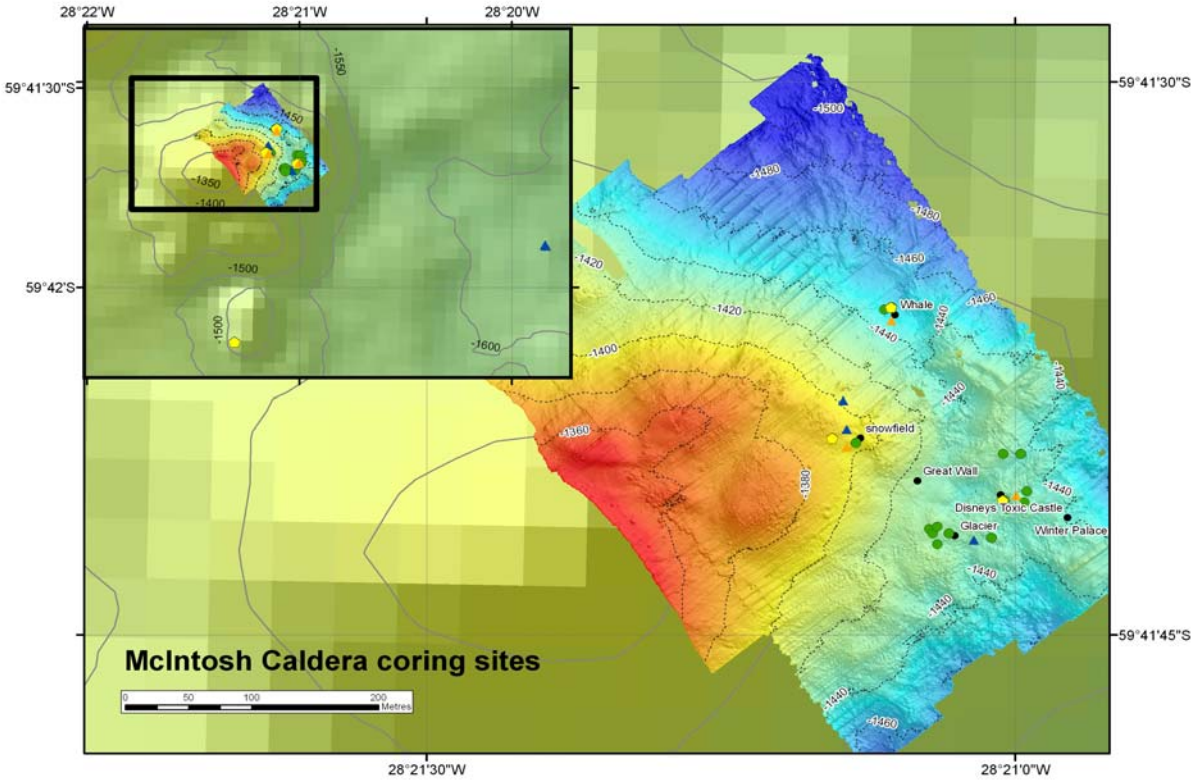


Fig. 14. Main coring activity on the Kemp (McIntosh) Caldera subcone during *JC42* and *JC55*. Inset frames the entire coring area to include a gravity core and megacore taken from the centre of the caldera. Gravity cores, megacores and push cores are represented by triangle, circle and pentagon icons respectively. Stations marked by dark blue and dark green icons were conducted during *JC42*, while those in orange and yellow were sampled on *JC55*. The southernmost megacore shown on the inset was taken for biological sampling only.

All JC42 and JC55 coring sites are shown in the SWATH diagram in Figure 14.

Sediment cover within the Kemp Caldera is thin and coring attempts at each of the hydrothermally-active sites yielded short cores comprised mainly of rubble and broken *Calyptogena* (clam) shells. A brief description of all sediment sampled via gravity coring and megacoring at the caldera for *JC55* is given in Table 3. All samples have been bagged and stored cold; they will be transported back to NOCS where they will be analysed for their geochemical and mineralogical composition.

Core ID	Length	Lat	Long	Comments
JC055_092_MC28	4 cm	59° 41.68915	28° 21.0102	Circular chunk of hard, light grey rock with thin, white layer of anhydrite / microbial mat
JC055_097_MC29		59° 41.6021	28° 21.1051	Basalt fragments with deep red, ultra-fine crusts of Fe
JC055_098_MC30		59° 41.661	28° 21.155	Sandy volcanics' - Basalt fragments with limpets attached, some grit and broken shell
JC055_106_GC2		59° 41.687	28° 20.999	Chips of basalt and brittle, yellow sulphur substrate
JC055_107_GC3	5 cm	59° 41.665	28° 21.143	Small fragments of basalt with broken shell
JC055_108_GC4	3 cm	59° 41.608	28° 21.105	Large fragments of basalt with broken shell

TABLE 3. Megacore (MC) and gravity core (GC) sediment description and location information. JC055_092_MC28 and JC055_106_GC2 are from Toxic Castle; JC055_097_MC29 and JC055_108_GC4 are from the Whale Fall; and JC055_098_MC30 and JC055_107_GC3 are from Snowfield (see Figure 14).

South Georgia coring activity

The continental shelf near South Georgia is characterised by substantial sediment cover. Relatively high methane concentrations have been measured in the water column (JR224) and in sediments (up to 1.5mM, JC42-GC02). Putative methane seeps were, however, not observed using visual surveying of the region during expeditions JC42 and JC55. EK60 echo-sounder surveys carried out during JC42 and JC55 suggested the potential presence of gas bubbles emanating from the seafloor on the continental shelf near South Georgia; subsequent SHRIMP surveys did not confirm the presence of gas plumes at the sea floor.

Coring locations

Coring activity near South Georgia was carried out during JD45 and JD46 (Figure 15; Table 4). Megacores were used to measure oxygen profiles (on-board), to extract pore fluids (on-board) and for lipid biomarker analysis (on-shore). Gravity cores were cut into sections and stored with no further processing. Note that coring stations 111,112 and 117 coincide with two of the three stations at which the EK-60 surveys suggested the potential presence of gas plumes.

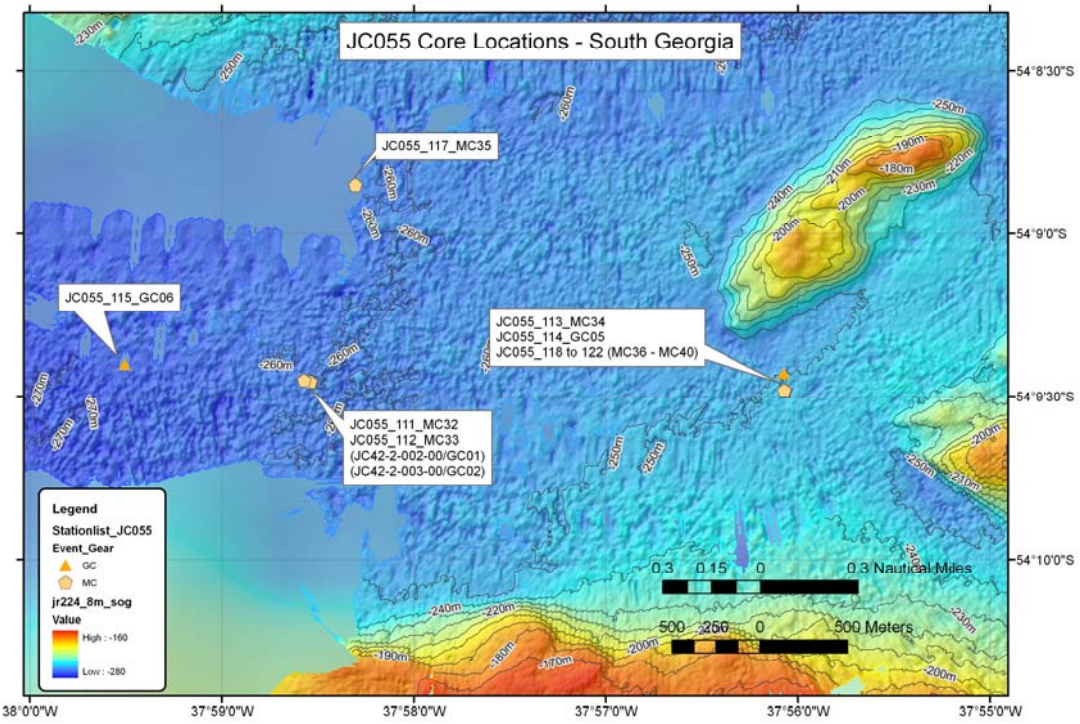


Fig. 15. Locations of cores collected from near South Georgia for geochemical analysis.

Table 4. List of megacores and gravity cores collected at South Georgia coring sites

	Sta	Ler	Lat	Long	Water D
JC55_111_M	1	20	54°9.45	37° 58.55	253
JC55_112_M	1	35	54° 9.4	37° 58.5	257
JC55_113_M	1	22	54° 9.4	37° 56.0	247
JC55_114_C	1	3.5	54° 9.4	37° 56.0	247
JC55_115_C	1	2.5	54° 9.4	37° 59.5	262
JC55_117_M	1	31-3	54° 8.8	37° 58.3	254
JC55_118_M	1	36	54° 9.4	37° 56.0	247

On board chemistry: Results

Station 112 (MC33)

The oxygen penetration depth at this site is approximately 1.5 cm (MC32). Pore fluid ammonium concentrations increase with depth to more than 700 µM at 27 cm depth. Concentrations of methane increase to 2µM in the top 20cm and further to 7µM at 27cm. Pore water sulphate concentrations decrease from 27.5

mM at the surface to 22.9mM at 27cm. H_2S concentrations of <2µM occurred in the top 13cm, these subsequently increased to 0.288mM at 27cm. Alkalinity increased from near seawater values (2.305mM) at the surface of the core to 10.508mM at 27cm. Chloride concentrations varied between 535mM at the core top to 531mM at the bottom.

Station 113 (MC34)

Down-core oxygen concentrations were not measured at this site. Pore fluid ammonium concentrations increased to >500µM in the deepest sample at 17.5cm. Concentrations of methane were low throughout the core, reaching 0.6µM at 18cm. Pore water sulphate concentrations decrease from 27.4mM to 25.8mM at 18cm. H_2S concentrations too were relatively low, and did not exceed 0.003mM. Alkalinity increased with depth from seawater values (2.325mM) at the top to 5.762mM at 18cm. Chloride concentrations varied between 531mM and 533mM.

Note: This coring location is the only one of the described in this section at which no putative gas signals were detected by the EK60-echosounder.

Station 117 (MC35)

The oxygen penetration depth at this site is approximately 2.0cm (MC35). Pore fluid ammonium concentrations increased to >800µM at 29cm depth. Concentrations of methane increased from 0.06µM at the surface to 9.8µM at 29cm. Pore water concentrations decrease from 27.3 to 21.2mM at 29cm. H_2S concentrations were low (<0.002mM) in the top 15cm. Alkalinity increased from 2.123mM at 0.5cm to 11.9mM at 29cm. Chloride concentrations varied between 530mM and 524mM.

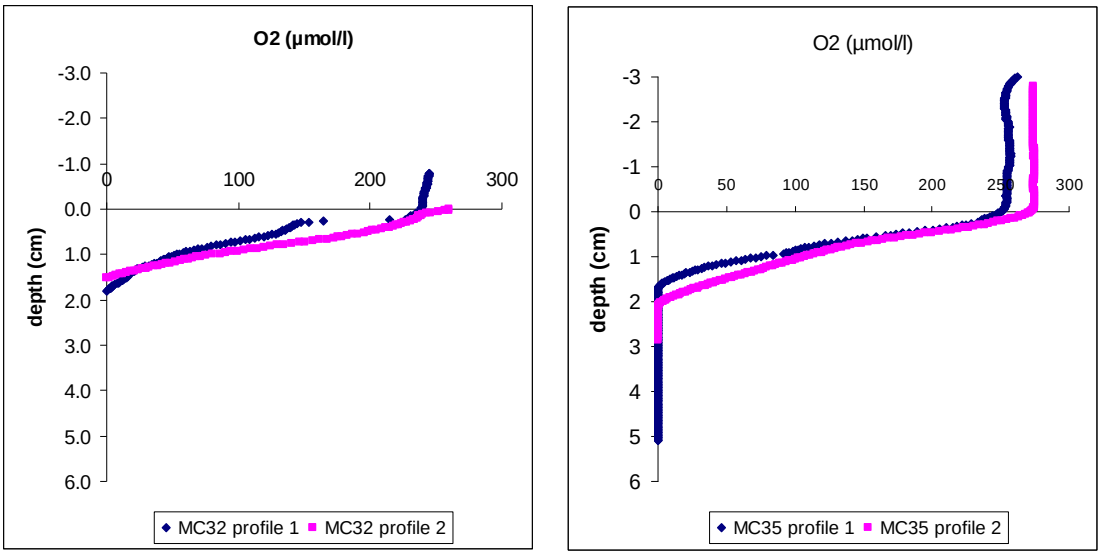
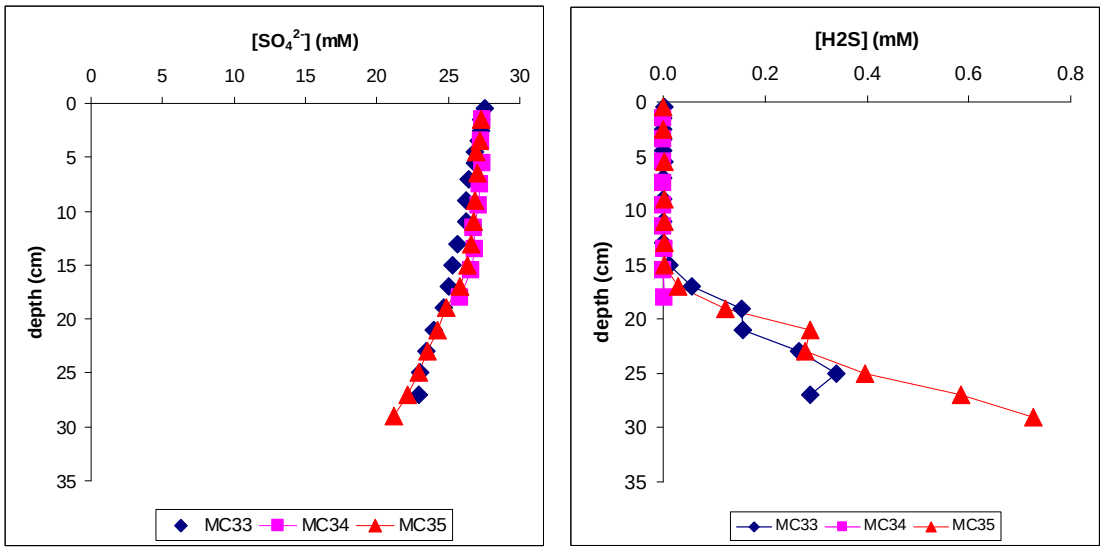


Fig. 16. Oxygen depth profiles for MC32 (station 111) and MC35 (station 117).



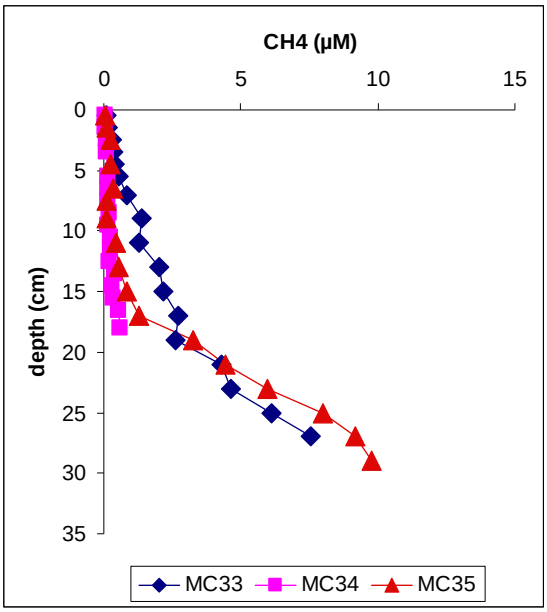


Fig. 17. Down-core pore water sulphate, sulphide and methane concentrations.

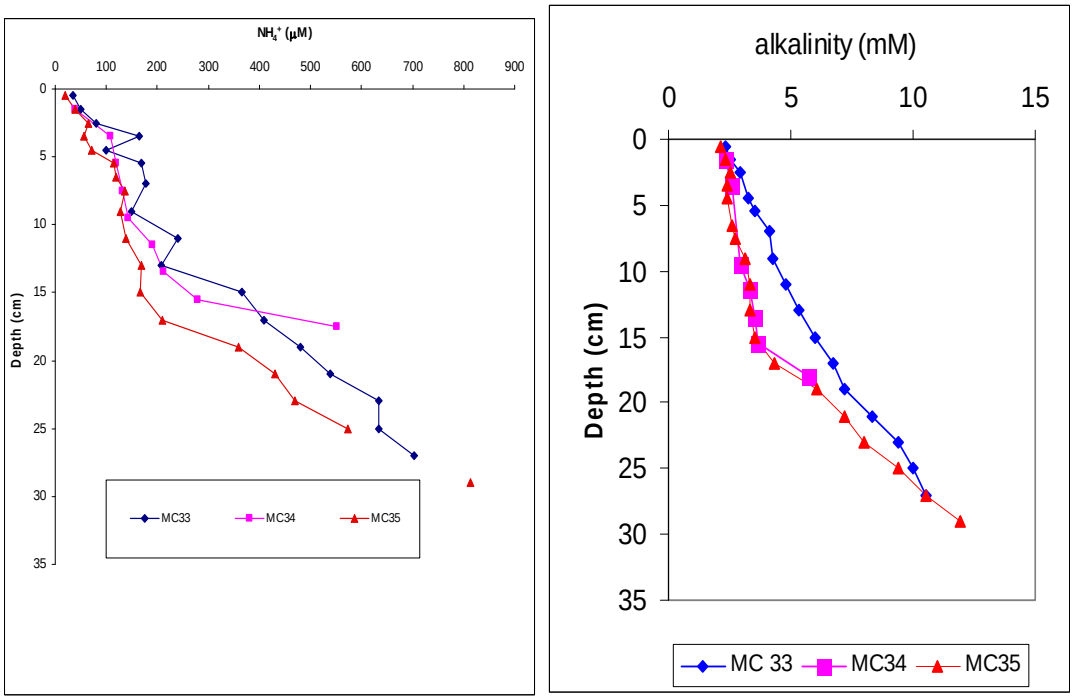


Fig. 18. Concentration depth profiles of ammonium and alkalinity

JC42 South Georgia gravity core GC02

Pore water profiles from gravity core GC02 (collected in 2010 during expedition JC42) are provided here to allow comparison with the megacore pore water profiles measured during JC55. Note that the coring location of JC42-GC02 coincides with JC55 coring stations 111 and 112.

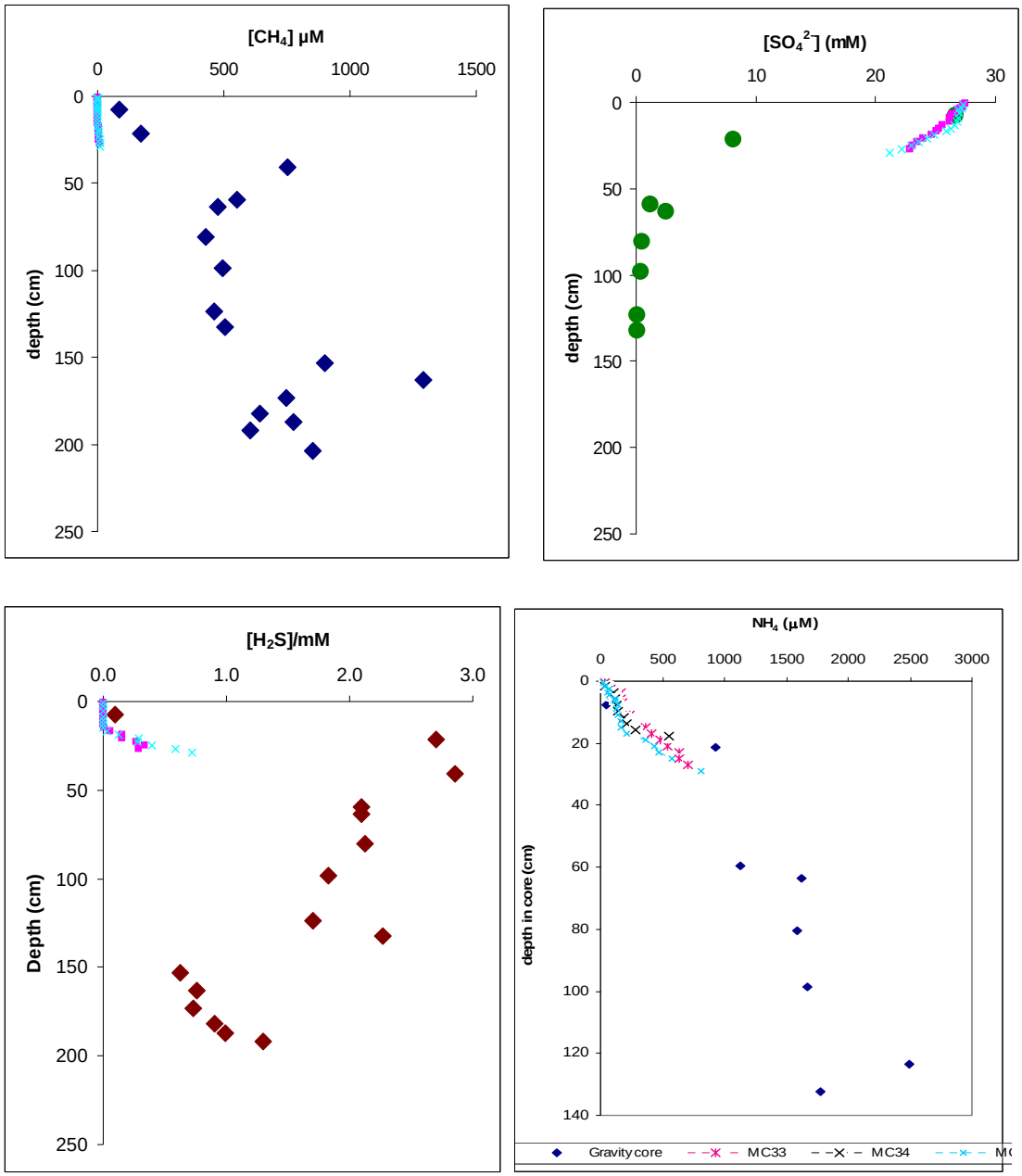


Fig. 19. Down-core concentrations of methane (blue diamonds), dissolved sulphate (green circles), sulphide (brown diamonds) and ammonium (blue diamonds) in gravity core JC42-GC02. Corresponding values for JC55 megacores 33 and 35 are included for reference.

The sulphate-methane transition occurs at around 50cm in GC02. At this depth sulphate concentrations <2.5mM occur, coinciding with an increase in methane content. Similarly, sulphide concentrations above 2 mM occur at this depth.

It must be noted that gravity cores (unlike megacores) are susceptible to significant (~50%) compression when extracted from the seafloor and, therefore, caution needs to be exercised when comparing depth profiles between the two types of cores.

Microbiology

Katrin Zwirglmaier, David Pearce

Hydrothermal vents provide a wide range of habitats for micororganisms and the diversity of microbial communities can vary from one or two species in the case of endo- or episymbionts to diverse communities of Archaea and bacteria and their viruses, as well as single cell eukaryotes. Organisms may be attached to substrata, form microbial mats, live as endo- or episymbionts, or occur as free cells in venting fluids, buoyant and neutrally buoyant plumes above the vents and in the sediment. The main aim of the microbial studies is to elucidate the diversity of a variety of biotopes in vents and compare this diversity to that known from comparable environments in the Pacific and Atlantic Oceans as well as non-venting areas near the sampling sites. This will include studies on both prokaryote and eukaryote microbial communities as well as bacteriophage.

Defining the microbial taxa that inhabit Southern Ocean chemosynthetic environments will help to determine what elements of primary production and carbon cycling are present and in which biotopes or habitats they are occurring. This work is directly linked to biomarker and isotope studies (Chris Sweeting/Will Reid, Newcastle, Clare Woulds, Leeds) and to the physical and geochemical background in which samples are taken (Doug Connelly/Jeff Hawkes/ Cathy Cole/Darryl Green/Rachel Mills/Alfred Aquilina/ Laura Hepburn, NOC).

On JC42 (2010), a range of vent fauna samples was collected at the ESR sites E2, E9 and the Kemp caldera. Analysis of the endo- and episymbionts of these samples is still ongoing. In addition, water samples from CTDs and ROV Niskins were collected at selected sites. Only one sediment sample (from South Georgia) was obtained, as the seafloor at the other sites proved to be unsuitable for coring.

On JC55, due to the loss of ROV ISIS, no vent fauna samples were obtained for microbiology. Instead, this provided the opportunity for extensive CTD sampling of the water column, as well as a large number of sediment samples. CTD samples were taken at five sites in the Bransfield Strait (BSR, Hook Ridge, Three Sisters, Orca, The Axe). At ESR, E9 and the Kemp caldera were re-visited and sampling there focussed on buoyant and neutrally buoyant plume the Black & White smoker (E9) and Great Wall (Kemp). Both Black & White and Great Wall had been sampled on JC42, therefore allowing comparison of microbial diversity in the 2010 (JC42) and 2011 (JC55) samples.

Transmission electron microscopy (TEM) of selected CTD samples from JC42 has revealed a number of bacteriophages with previously undescribed morphology. The literature on bacteriophage diversity in hydrothermal vents is still very limited and this presents the first study of this kind in Antarctic vent systems. Due to the limited number of CTD casts on JC42, the volume for most of these samples was not large enough

to allow DNA extraction and further analysis of the bacteriophage community. Therefore, on JC55 special emphasis was placed on obtaining larger volumes (>100L) and concentrating bacteriophage through tangential flow filtration.

1. Water samples

Sampling

Samples were taken with a CTD with 24 10L Niskin bottles. The sample volume varied between 80-220L (see sample list). The water was drained from the Niskin bottles into 50L plastic barrels that had been rinsed with MQ water. The samples were stored in the CTD hangar (ambient temperature <10°C) until processing.

Processing of samples

Water samples were processed for 5 different types of analysis: 1. Flow cytometry, 2. Fluorescence in situ hybridisation (FISH) filters, 3.phage counts, 4. DNA (bacterial, archaeal and eukaryotic) and 5. tangential flow filtration (TFF) to concentrate phage. Sample types 1-3 were processed immediately after the CTD came on deck, processing for DNA extraction, especially for volumes >100L, took up to 48h.

1. Flow cytometry

1ml sample was transferred to an Eppendorf tube and fixed with 0.5% glutaraldehyde. Samples (in triplicate) were stored at -80°C.

2. FISH filters

50ml sample was filtered onto a 0.2µm 25mm diameter black polycarbonate filter using a glass filtration unit and a hand pump. Filters were air-dried and then fixed in 4% paraformaldehyde for 1-6h at 4°C. After that, filters were briefly dipped in MQ water and then dehydrated in 50, 80 and 100% ethanol for 3min each. Filters were air-dried and stored at -80°C. For each sample 10 filters were used.

3. Phage counts

a) unfiltered sample was stored at 4°C in 4x50ml tubes

b) 0.2µm filtered sample was stored at 4°C in 4x50ml tubes

c) unfiltered sample was stored at -80°C in 4x50ml tubes

4. DNA extraction (bacterial, archaeal, eukaryotic)

The entire remaining volume of the sample (between 80-220L) was filtered onto 0.2um filters for DNA extraction. Filtration was done with a vacuum pump connected to a filtration manifold with 10 Sartorius filtration towers. Whatman GF-D glass fibre filters were used as support for the 0.2um, 47mm diameter cellulose nitrate filters (Whatman). The filters were frozen at -20C and then stored at -80C. The filtrate was

collected and used for the tangential flow filtration for bacteriophage/ virus concentration.

5. Tangential flow filtration

Bacteriophage and viruses in the 0.2um filtrate were concentrated using a peristalitic pump (Millipore Masterflex) and a Pellicon cross-flow filtration unit (Pellicon 2 cassette, Biomax-10, 0.5 m2 surface, 10kDa cut-off). The final sample volume after the concentration was 150-400ml, which was frozen at -80C.

Analysis

All analysis will be done back on land. The main focus will be on the DNA samples, i.e. pyrosequencing of 16S/18S rDNA PCR products to determine bacterial, archaeal and eukaryotic diversity, potentially metagenomic sequencing to determine functional capacities of the microbial population, as well as FISH analysis to complement and confirm the sequence data. For bacteriophage/viruses, further TEM will be done to compare phage morphology and abundance at different sites, as well as some pyrosequencing of structural phage genes to assess phage diversity.

2. Sediment samples

Aim: To assess the microbial biodiversity of previously identified Southern Ocean chemosynthetic communities and to use the biodiversity so obtained to conduct a biogeographic comparison with chemosynthetic communities described from other parts of the world. The hypothesis under investigation was that the chemosynthetic communities of the Southern Ocean harbour a unique microbial biodiversity, which differs significantly from those found elsewhere.

Methods: The microbial community will be accessed through direct culture on both selective and non-selective media, extraction of DNA from both seawater filtrate (see above) and sediment and direct sampling of microbial mats. General microbial biodiversity will be assessed through a combination of microscopy, community profiling and 454 sequencing. Specific groups / microorganisms will be targeted through FISH and using specific PCR primers. Comparison of selected common groups will be achieved through multi locus sequence typing (MLST) where a culture is obtained and sequence alignment for DNA only uncultivated samples. Specifically targeted groups are: bacterial mats, extremophiles (and in particular thermophiles) and the fungi. Samples collected will also be used to determine detection limits for the various techniques, for subsequent cross comparison with other sites.

Results: Sediment cores were obtained in triplicate with the mega-corer at Hook Ridge (both over the site of activity and a control site), at Three Sisters, and only one at the Axe in the Bransfield Strait, and three at South Georgia. Sections were cut at intervals of 0-1, 1-2, 2-3, 3-4, 4-5, 10-11, 15-16 and 20-21 cm. These sections were frozen at -80C in independently sealed plastic bags. Water samples were obtained from CTD drops as described by Katrin Zwirglmaier.

Discussion: We will not be in a position to extract and examine the samples until they are returned to the UK. It was not possible, without the use of an ROV to sample bacterial mats directly, take push cores in specific locations or select material that is likely to harbour extremophilic microorganisms. It was also only possible to sample vent water in the plume from a distance using a CTD. Although we have a large number of samples, it remains to be seen whether they can provide the basis for a comprehensive biodiversity / microbial biogeography assessment, and much reliance will have to be placed on samples returned from JC42.

Potential co-ordination opportunities: Sediment samples were taken to coincide with chemical / geological analyses. Sediment will be co-extracted for biodiversity and functional analysis studies. Sub-samples from stable isotope experiments could be analysed for the microbial contribution.

Samples sought but not obtained: Bacterial mat samples, high temperature porous rock fragments, push cores and pore fluids.

Table 5 Sample list Microbiology

station	location	operation	operation #	date	Latitiude	longitude	sampling de	total depth (r	sample label	sample vol	comment
JC55-2	BSR	CTD	CTD1	19.01.11	61° 05.21 S	56° 37.03 W	2240	2293	JC55-2	160L	clean bottom water
JC55-8	Hook Ridge	tow yo CTD	CTD113	22.01.11	62° 11.483 S	57° 17.881 W	995	1190	JC55-8	180L	plume ???
JC55-10	Hook Ridge	tow yo CTD	CTD146	23.01.11	62° 12.004 S	57° 16.955 W	972	1335	JC55-10	150L	plume
JC55-11	Hook Ridge	Mega core	MC1	23.01.11	62° 23.030 S	57° 14.645 W	1148	1148	sediment 1		
JC55-12	Hook Ridge	Mega core	MC2	23.01.11	62° 23.030 S	57° 14.645 W	1148	1148	sediment 2		
JC55-13	Hook Ridge	Mega core	MC3	23.01.11	62° 23.030 S	57° 14.645 W	1148	1148	sediment 3		
JC55-14	Hook Ridge	Mega core	MC4	23.01.11	62° 11.841 S	57° 17.877 W	1151	1151	sediment 4		
JC55-15	Hook Ridge	Mega core	MC5	23.01.11	62° 11.841 S	57° 17.877 W	1151	1151	sediment 5		
JC55-16	Hook Ridge	Mega core	MC6	23.01.11	62° 11.841 S	57° 17.877 W	1151	1151	sediment 6		
JC55-27	Hook Ridge	CTD	CTD191	26.01.11	62° 12.393 S	57° 17.630 W	500	1350	JC55-28	200L	clean background water
JC55-31	Hook Ridge	Mega core	MC17	27.01.12	62° 11.549 S	57° 16.700 W	1046	1046	sediment 7		
JC55-32	Hook Ridge	Mega core	MC18	27.01.13	62° 11.549 S	57° 16.700 W	1046	1046	sediment 8		
JC55-33	Hook Ridge	Mega core	MC19	27.01.14	62° 11.549 S	57° 16.700 W	1046	1046	sediment 9		
JC55-41	Three Sisters	tow yo CTD	CTD260	29.01.11	62° 39.499 S	59° 02.274 W	500 / 1000	1159	JC55-41A / 41	2 x 120L	clean background water, 2 depths
JC55-77	Axe	Megacore	MC26	02.02.11	62° 47.262 S	59° 45.971 W	1025	1025	sediment 10		
JC55-78	Orca crater	CTD	CTD419	02.02.11	62° 25.745 S	58° 24.241 W	500/1000	1091	JC55-78A/78E	2x120L	background, no Eh peak
JC55-79	Hook Ridge	CTD	CTD420	03.02.11	62° 11.942 S	57° 17.469 W	1191	1202	JC55-79	180L	plume
JC55-80	Hook Ridge	CTD	CTD421	03.02.11	62° 11.727 S	57° 17.657 W	500/1000	1130	JC55-80A/80E	2x120L	background, no Eh peak
JC55-83	E9	CTD	CTD423	07.02.11	60° 02.560 S	29° 58.906 W	2060-2360m	2403	JC55-83	220L	moving through plume over B&W smoker, El (Eh background 3.004), strong H2S smell
JC55-86	E9	CTD	CTD425	08.02.11	60° 02.569 S	29° 58.894 W	2381/1000	2400	JC55-86A/86E	110L/80L	plume 10m off bottom over B&W, Eh 2.374,

											temp 1.04 (+3C above ambient), very strong l
JC55-91	Kemp	CTD	CTD429	09.02.11	59° 41.688 S	28° 21.084 W	1368	1422	JC55-91A/93,	110L/80L,	plume over Great Wall, sample 91A combine (same spot)
JC55-92	Kemp	Megacore	MC28	09.02.11	59° 41.689 S	28° 21.010 W	1428	1428			consolidated sediment with possible biofilm, Castle, strong H2S smell
JC55-93	Kemp	CTD	CTD430	09.02.11	59° 41.688 S	28° 21.083 W	1391	1422	JC55-91A/93	110L/80L	bottom plume over Great Wall, sample 91A c 93 (same spot)
JC55-96	Kemp	CTD	CTD432	10.02.11	59° 41.684 S	28° 21.092 W	1296	1422	JC55-96	80L	neutrally buoyant plume over Great Wall (hig minimum)
JC55-102	Adventure crater	CTD	CTD434/435	11.02.11	59° 42.567 S	27° 50.484 W	500	758	JC55-102	120L	background
JC55-105	Kemp	CTD	CTD437	12.02.11	59° 42.000 S	28° 19.000 W	1296	1587	JC55-105	120L	background at depth of neutrally buoyant plu Wall
JC55-109	Kemp	CTD	CTD438	12.02.11	59° 41.686 S	28° 21.085 W	1066	1422	JC55-109	200L	neutrally buoyant plume over Great Wall, san sample 96
JC550113	South Georgia	Megacore	MC34	14.02.11	54° 9.481 S	37° 56.068 W	247	247			
JC55-118	South Georgia	Megacore	MC36	15.02.11	54° 9.481 S	37° 56.066 W	247	247			
JC55-119	South Georgia	Megacore	MC37	15.02.11	54° 9.481 S	37° 56.066 W	247	247			

Isotope tracing experiments: Clare Woulds

Introduction

Chemosynthetic ecosystems represent interesting and new setting for studies of benthic food webs, sedimentary carbon cycling, and microbiology. The presence of in situ carbon fixation, conducted by diverse assemblages of microbes, via unusual redox reactions, clearly has implications for ecosystem C sources and flow pathways. However, chemosynthetic settings have not yet been fully characterised, and questions remain regarding the functioning of many/most of the organisms found there. Specifically, it is not clear to what extent chemosynthetic ecosystems rely on in situ production, versus phytodetritus from the water column, nor which microbial processes are most active and important.

Therefore, this study aims to conduct isotope tracing experiments to characterise and quantify C and N flow through chemosynthetic ecosystems.

Objectives

1) To contrast in situ production and phytodetritus as C and N sources for chemosynthetic communities.
2) To identify the main bacterial groups responsible for in situ production.
3) To characterise and quantify the short-term fate of organic C and N in chemosynthetic sediments.
4) To establish the role of archaea in benthic C and N cycling in both chemosynthetic and regular sedimentary environments.

Approach

Experimental

Isotope tracing experiments were conducted at four sites: Hook Ridge (JC55_30), Middle Sister (JC55_51), South Georgia (JC55_111), and an off vent background site (JC55_11), in the Bransfield Strait. The experimental protocol at each site was as follows:

1) Four replicate megacores were collected from a single deployment.
2) Isotopically labelled substrate was added to each core. Two of th four cores received ^{13}C and ^{15}N labelled algal cells (dead), which were allowed to settle onto the sediment surface (dose = 435 mg C m^{-2}). The other two cores received ^{13}C bicarbonate (dose = sufficient to make surface 3 cm of porewater 1 mM labelled bicarbonate) and ^{15}N ammonium (dose = sufficient to make surface 3 m of porewater 7 M labelled ammonium). In this case the solutions were injected into the porewaters of the surface 3cm.
3) Cores were then left in a cold environment (in the hanger) for 2 hours for the algae to settle.

4) Cores were sealed using custom built core tops (Fig. 20), which are equipped with magnetic stirrers and sampling ports.
5) Cores were incubated at in situ temperature, with stirring of core top water, for ~48 hours.
6) Every 12 hours a sample of core top water was withdrawn. The samples were preserved for isotopic analysis of DIC (in crimp-cap vials, poisoned with $HgCl_2$) and NH_4^+(by freezing).
7) Experiments were terminated by extruding and sectioning the cores. Half of each slice was frozen (-80°C), and half was preserved in formalin for subsequent extraction of macro and meio fauna.

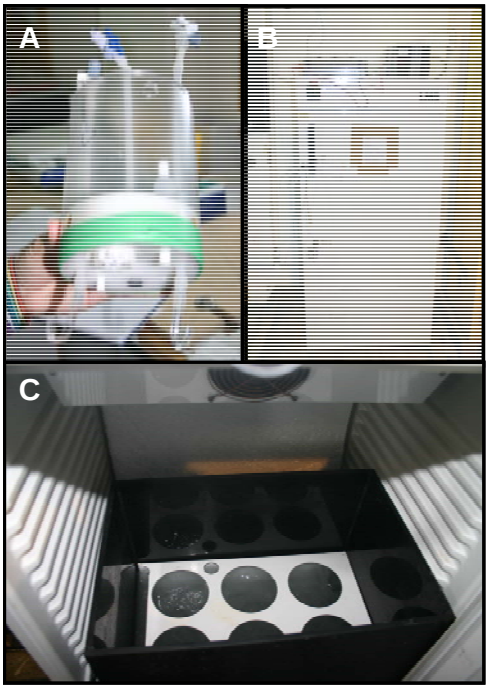


Fig. 20. A. Incubation core caps with sampling ports and magnetic stirrer. B. Refrigerated incubator. C. Incubator interior with water tank and core rack.

Sample processing

A significant proportion of the preserved sediment samples were sieved. Macrofauna was extracted from them as follows:

1) Sediments were wet sieved on a 250μm screen.
2) The fine fraction which passed through the sieve was sieved again to 63 μm, and the 63-250 μm fraction was preserved in formalin.
3) The >250μm fraction was picked through under x12 magnification.
4) Organisms were extracted, identified (to family level for polychaetes), and stored frozen in pre-weighed, ultra-clean silver boats.

Notes on Approach

- The relatively short experiment duration was chosen to limit re-cycling of fixed carbon in the cores labelled with bicarbonate. This would complicate interpretation of results. It also meant that cores

could be capped and sealed from the start without becoming significantly hypoxic. This eliminated the possibility of labelled bicarbonate leaking into the algae experiment, which could happen in an open bath setup.

- Glucose was not used due to reports of it being directly assimilated by metazoans, as well as a desire to label autotrophic bacteria rather than heterotrophic ones.

Observations

- The only site which showed visual evidence of chemosynthesis was Hook Ridge. At this site Siboglinid polychaetes were present, and the sediment exhibited an iron rich band, and sulphide deeper in the core.
- The off-vent site was also reported to host Siboglinid polychaetes, thus perhaps it was not completely free of chemosynthesis.
- The middle Sister site may not have been chemosynthetic, however the bioloy is still interesting. Mudballs were present on the sediment surface, and large (visible) polychaetes were also present.
- The South Georgia site features methane rich porewaters, and evidence of anaerobic oxidation of methane at 10-15 cm. It therefore seems likely that it will show evidence of chemosynthesis in isotope tracing experiments.

Analytical Plans

Fauna

Macrofaunal extraction will be completed when the samples arrive in Leeds. Samples will be analysed for ^{13}C and ^{15}N at the Macaulay Institute. It is hoped that meiofauna will be extracted, identified, and analysed by MRes students at NOC, in collaboration with John Copley.

Overlying Water

Time-series samples of overlying water will be analysed for ^{13}C in DIC, either at NERC LSMSF (Lancaster), following a NERC facility application, or at KU Leuven, Belgium (lab of Dr Stephen Bouillon). The decision will be driven by funding availability, and the methods used at the LSMSF.

Frozen water samples may also be analysed for ^{15}N in NH_4^+, in collaboration with Dr Dalsgaard (Denmark), or at NIOO (the Netherlands), depending on progress with method development.

Sediment

Phospholipid fatty acids will be extracted from sediment samples and subjected to compound-specific isotope (^{13}C) analysis, preferably at Bristol, following a NERC LSMSF application. The application will also include a proposal to conduct compound specific isotope analysis on a range of microbial biomarkers, including archaeal markers. This work will be in collaboration with Rich Pancost.

Sediment samples will also be subjected to DNA extractions, for tracing of ^{13}C into microbial DNA. This work will be in collaboration with David Pearce, and Colin Murrell at Warwick.

Table 6 Sample List

Sample Type	Number	Treatment
Experimental sediment	12 cores (6 half-sections per core)	Frozen
Experimental sediment	12 cores (6 half-sections per core)	Formalin
Overlying water DIC	59	$HgCl_2$ + refrigerated
Overlying water NH_4^+	59	Frozen
Experimental fauna	56	Frozen in Ag boats
Background sediment	2 cores (6 sections per core)	Frozen

Macrofauna

Sampling of macrobenthic fauna

Katrin Linse, Jon Copley, Adrian Glover, Santiago Herrera, Leigh Marsh, Will Reid, Nicolai Roterman, Chris Sweeting, Paul Tyler

One of the main objectives for the third ChEsSO cruise to the Bransfield Strait and East Scotia Ridge is to sample the macrofauna organisms from hydrothermally active sites (vents, seeps) and the neighbouring non-vent organisms for later taxonomic (morphological and molecular), biogeographic, phylogenetic and ecological studies. The macrofaunal collection and sample distribution protocol followed the one developed for JC42. During JC55 three areas had been planned for ISIS collection dives: the Bransfield Strait (Hook Ridge, Three Sisters, Edifice A), the East Scotia Ridge E9 and the crater near the Kemp seamount.

Work at sea:

After the loss of ISIS for macrofaunal sampling, the Hook Ridge site (Bransfield Strait) was sampled for macrofauna with a spate box core (SBC) and a 3-m wide Agassiz trawl (AT). The AT was “flown in” with 1kn and 2.2 times cable length to water depth to ensure that the AT had reached the seafloor as not signal was seen on the tension meter. The collected macrofauna was low in numbers and diversity (Table 7). The collected species were photographed and fixed for further studies.

Loss of science because ISIS damage:

The collection of macrofauna was severely hindered by the damage to ISIS. We were unable to collect any vent/seep site fauna as well as off-site hard-bottom fauna. The way the AT was deployed ("flown in" to avoid contact with ship's propellers) prevented the deployment of the AT in the craters to collect off-site fauna.

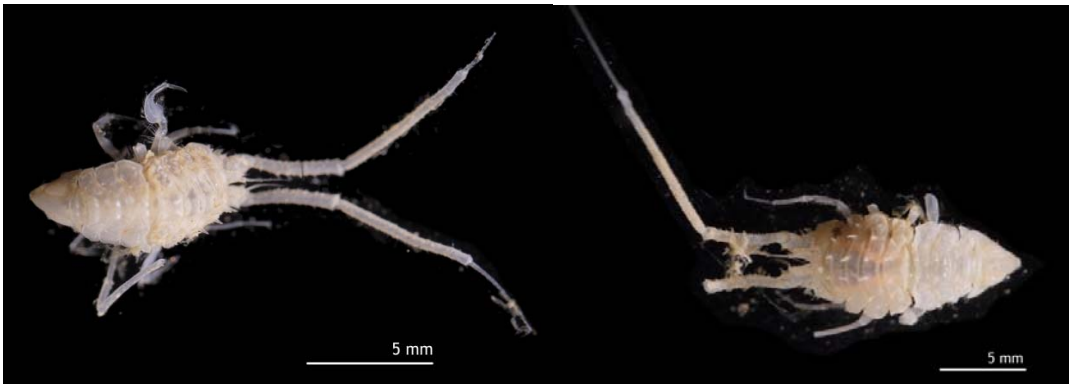
Table 7. Species and specimen numbers at Hook Ridge

Samp	Station		fixation
JC55-F-(	JC55_036_SBC#:	500um fraction	ETOH
JC55-F-(	JC55_036_SBC#:	300um fraction	ETOH
JC55-F-(	JC55_036_SBC#:	1000um fraction	ETOH
JC55-F-(	JC55_036_SBC#:	Isopoda, *Echinozone* sp	ETOH
JC55-F-(	JC55_036_SBC#:	Annelida, tubes	
JC55-F-(	JC55_037_AT#1	Amphipoda, *Cyphocaris* sp	ETOH
JC55-F-(	JC55_037_AT#1	Bivalvia, *Limatula* sp	ETOH
JC55-F-(	JC55_037_AT#1	Bivalvia, *Limatula* sp	Formaldehyde
JC55-F-(	JC55_037_AT#1	Bivalvia, *Limatula* sp	Isotope
JC55-F-(	JC55_037_AT#1	Bivalvia, *Limatula* sp	Frozen
JC55-F-(	JC55_037_AT#1	Bivalvia, *Limatula* sp	dry
JC55-F-(	JC55_037_AT#1	Isopoda, Munneurycone	ETOH
JC55-F-(	JC55_037_AT#1	Isopoda, *Echinozone* sp	ETOH
JC55-F-(	JC55_037_AT#1	Holothuria, *Peniagone vignoi*	ETOH
JC55-F-(	JC55_037_AT#1	Holothuria, *Peniagone vignoi*	Isotope
JC55-F-(	JC55_037_AT#1	Sipunculida	ETOH
JC55-F-(	JC55_037_AT#1	Sipunculida	Isotope
JC55-F-(	JC55_037_AT#1	Ophiuroidea, *Opioperla* ? *koehleri*	ETOH
JC55-F-(	JC55_037_AT#1	Ophiuroidea, *Opioperla* ? *koehleri*	Isotope
JC55-F-(	JC55_037_AT#1	Salps	ETOH
JC55-F-(	JC55_037_AT#1	Salps	Isotope
JC55-F-(	JC55_038_SBC#:	Ophiuroidea, *Ophionotus victoriae*	ETOH
JC55-F-(	JC55_038_SBC#:	Ophiuroidea, *Ophionotus victoriae*	Isotope
JC55-F-(	JC55_037_AT#1	Annelida, Onuphidae	
JC55-F-(	JC55_037_AT#1	Annelida, tubes	
JC55-F-(	JC55_037_AT#1	Annelida, tubes	
JC55-F-(	JC55_037_AT#1	Annelida, Terebellidae	
JC55-F-(	JC55_037_AT#1	Annelida, Terebellidae	
JC55-F-(	JC55_037_AT#1	Annelida, Chaetopteridae	
JC55-F-(	JC55_037_AT#1	Annelida, Chaetopteridae	

Fig. 21 Dominant fauna from the Agassiz Trawl at Hook Ridge (62° 13.22 S 57° 19.04 W 1647m) (Photos: Adrian Glover)

Mollusca, Bivalvia, Limidae, *Limatula* (*Antarctolima*) sp.

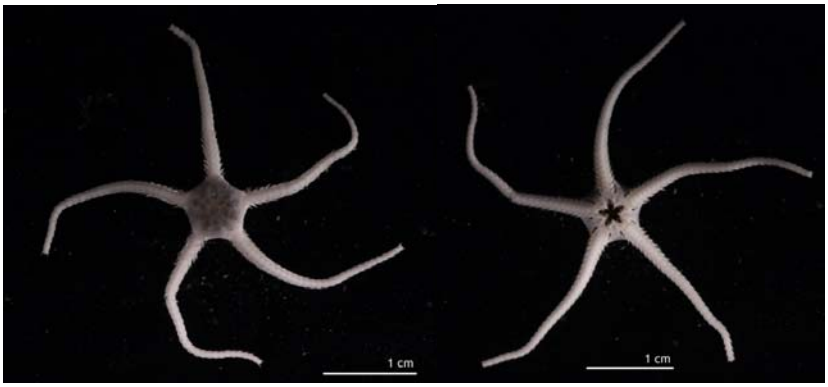
Crustacea, Peracarida, Isopoda, Munnopsidae, cf. *Munneurycope* sp.



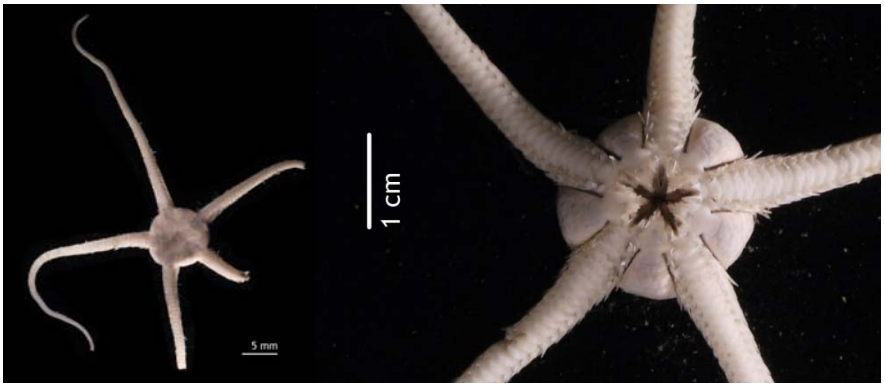
Crustacea, Peracarida, Isopoda, Munnopsidae, *Echinozone* sp.

Crustacea, Peracarida, Amphipoda, Lysianassidoidea, Cyphocaridae, *Cyphocaris* sp. Pelagic deep-sea amphipod with bioluminescence

Holothuroidae, *Peniagone* cf *vignoi*



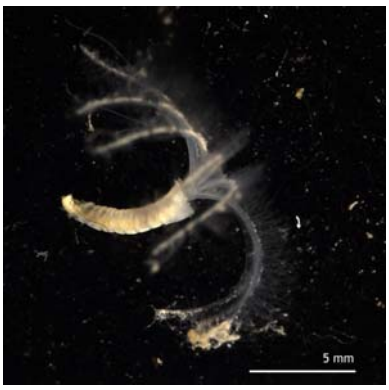
Ophiuroidea, *Opioperla* ? *koehleri*



Ophiuroidea, *Ophionotus victoriae*

Sipuncula

Annelida, Spionidae



Annelida, Sabellidae


Annelida, Phyllodocidae

Megacoring for quantitative macrofauna

Sediment macrofaunal biodiversity, taxonomy, food-web structure and carbon cycling

Adrian Glover, Chris Sweeting, Will Reid, Clare Woulds

With acknowledgement to Alex Tate, Leigh Marsh and Veerle Huvenne for assistance with sample processing, and in particular to Jez Evans and the deck team for their help and expertise with the megacore deployments.

Background

This collaborative project was developed during the JC55 cruise in response to the inability to sample using the ROV and the nature of the sedimented habitats of the Bransfield Strait. The overall aim was to collect quantitative infaunal sediment samples using the megacore from putative hydrothermal vent sites in the

Bransfield Strait, with control samples taken 'off-vent' for comparison. These would then be studied with the following objectives in mind:

1. A comparison of macrofaunal biodiversity and community structure at vent and off-vent settings (led by Adrian Glover)
2. A study of macrofaunal food-web structure at the species level (led by Chris Sweeting)
3. A study of carbon cycling in the benthic food-web at chemosynthetic ecosystems (led by Clare Woulds)
4. Taxonomy and molecular phylogenetics of novel annelid species (led by Adrian Glover)

Sampling

The sampling part of this project was highly successful. A total of 102 megacore tube samples were taken using quantitative methods (Table 8). An additional 7 tubes were taken, at least 1 from each site, and live-sorted on the ship to make an initial examination of macrofaunal community composition, as well as live-specimen photography (Figs. 22-25). This allowed us to adjust our sampling strategy as needed on the cruise. A number of interesting taxonomic discoveries were also made.

Table 8 Quantitative macrofaunal samples taken using megacores on JC55

Station or drop	Site	Lat	Long	Depth	# megacores per drop
JC055_012	Bransfield off-vent				
JC055_013	Bransfield off-vent				
JC055_014	Bransfield off-vent				
JC055_015	Bransfield off-vent				
JC055_016	Bransfield off-vent				
JC055_019	Hook Ridge site 1				
JC055_020	Hook Ridge site 1				
JC055_021	Hook Ridge site 1				
JC055_022	Hook Ridge site 1				
JC055_024	Hook Ridge site 1				
JC055_025	Hook Ridge site 1				
JC055_031	Hook Ridge site 1				
JC055_032	Hook Ridge site 2				
JC055_033	Hook Ridge site 2				
JC055_034	Hook Ridge site 2				
JC055_035	Hook Ridge site 2				
JC055_049	Three Sisters				
JC055_050	Three Sisters				
JC055_051	Three Sisters				
JC055_077	The Axe				
JC055_081	Hook Ridge site 2				
JC055_112	South Georgia				
JC055_117	South Georgia				
JC055_118	South Georgia				
JC055_119	South Georgia				

JC055_120	South Georgia
JC055_121	South Georgia
JC055_122	South Georgia
Grand Total	

At each site, replicate drops of the megacore were made, ideally a minimum of 5 separate drops, in some cases more and in some a little less. The Axe site was not sampled quantitatively but will be available for taxonomic comparison. From each drop, between 2 and 6 core tubes were taken and sliced into 0-5cm and 5-10cm layers using a core extruder. The top water was added to the 0-5cm fraction. Thus from each drop, two sample jars were created, one for the 0-5cm layer and one for the 5-10cm layer from a varying number of tubes. The combined cores, making up the individual sample, were then sieved on a 300 micron mesh held under the water to carefully prevent damage to the specimens. All sieving took place in ambient temperatures, of about 2-5ºC. Samples were fixed in both 99% ethanol (for DNA) and formaldehyde (4%).

Although the number of core tubes per sample varied, the data can be normalized to a unit area in later analyses as the samples were all treated quantitatively. This has become standard practice in many deep-sea studies of infaunal diversity.

For the cores treated for live sorting, a similar protocol was followed although in some cases residues with stones, gravel etc were discarded to enable rapid assessment and picking of individuals in cold temperatures while still alive. Picking was done under a dissecting microscope held in a tray of ice to keep specimens cool. Live specimens were observed from all samples and photographed using a Lumix G2 camera with Leica 45mm f2.8 Lumix macro lens held on a Benbo Mini-Trekker tripod. Specimens for imaging were illuminated with a fibre optic lamp (not strobes) and prior to imaging they were cleaned and relaxed in 7% Magnesium chloride solution. Black cotton fabric was placed under petri dishes and small tubs to create black backgrounds. Very small specimens (less than 3mm) were imaged using a Nikon Coolpix 4500 camera with Optem Instruments microscope eyepiece coupler and a Wild M5 dissecting microscope. Lighting was also with the fibre optic lamp.

Preliminary observations

At all sites, macrofaunal abundance was high and it is likely that subsequent analyses of these cores will reveal many thousands of individuals. We expect good statistical replication, possibly several hundred specimens per sample. Many months to years work will be required to sort and identify the specimens to species-level, but based on the live sorting we can provide some preliminary observations.

There was a reasonable degree of homogeneity between samples from a site, but a great deal of heterogeneity between sites.

The Bransfield off-vent site (Figure 22) was dominated by deposit feeders, in particular a very abundant species of oligochaete, preliminarily identified as *Torodrilus lowryi* by Christer Erseus of Göteborg University, an oligochaete expert. Samples will be provided to Christer Erseus for further taxonomic study. The site was also marked by the presence of patches of siboglinid polychaetes, a putative chemosynthetic species. The largest patch of specimens was recovered in the megacore tube-closing mechanism (non-quantitative sample), although specimens were also observed in the other cores. The specimens appear to be a species of *Siboglinum*, which are known to exist in sulfide or methane-rich sediments in shelf settings.

The Hook ridge putative vent site was dominated by patches of a different species of siboglinid chemosynthetic polychaete, *Sclerolinum* sp. (Figure 23). These animals have quite different tubes and internal morphology. Rather little is known about their biology but it is likely that they contain sulfophilic symbiotic bacteria. The animals were observed with parts of their tubes buried in red-coloured sediments presumed indicative of the presence of iron oxides. It will be extremely interesting to compare the geochemisty (led by Rachel Mills) of the Hook Ridge and off-vent sites with the presence/absence of these two species of siboglinid polychaete. At the Hook Ridge site, abundant deposit-feeding species were also observed, for example terebellid and chaetopterid tube-dwelling annelids living in the pelagic sediments that overlie the red layers. It is thus probable that this site represents a balance between chemosynthetic fauna living off enriched sediments, presumably quite patchy, and an upper layer of typical Antarctic shelf deposit-feeders.

The Three Sisters and Axe sites were dominated by typical deposit feeders, such as ampharetid and onuphid polychaetes (Figure 3). No chemosynthetic species were observed. Abundant mud-balls (Figure 24) were observed on the surface of the cores, and these were also noticed on SHRIMP survey tows. We are not yet sure which species is creating them, or if they are a protozoan such as a Foraminifera.

A final site off the south-west tip of South Georgia was sampled quantitatively for macrofauna towards the end of the cruise (Figure 25). The site was much shallower and thought from previous cruises to be the site of putative cold seeps. Two sites were initially selected as potential core sites (corresponding to JC55 stations 111 and 113). Site 111 was heavily dominated by capitellid polychaetes, deposit feeders in organic-rich settings. The second site (113) was more species-rich but still showed dominance, this time by cirratulid polychaetes. The abundance of the fauna was extraordinary, with all specimens observed having extremely full guts and ripe with gonads. It is probable that this corresponds with a strong seasonal phytoplankton

bloom. No chemosynthetic species were observed in the initial sort, although the sediments below about 10cm depth were blackened and sulfidic. The second site (around station 113) was sampled quantitatively (5 replicate drops) on the last science day of the cruise, with many hands helping to get the sieving done as the cores came quickly onto the deck from this shallow site.

Fig. 22 Fauna at the Bransfield off-vent site: (a) Annelida, Oligochaeta, *Torodrilus lowryi*, (b) and (c) Annelida, Siboglinidae, *Siboglinum* sp.

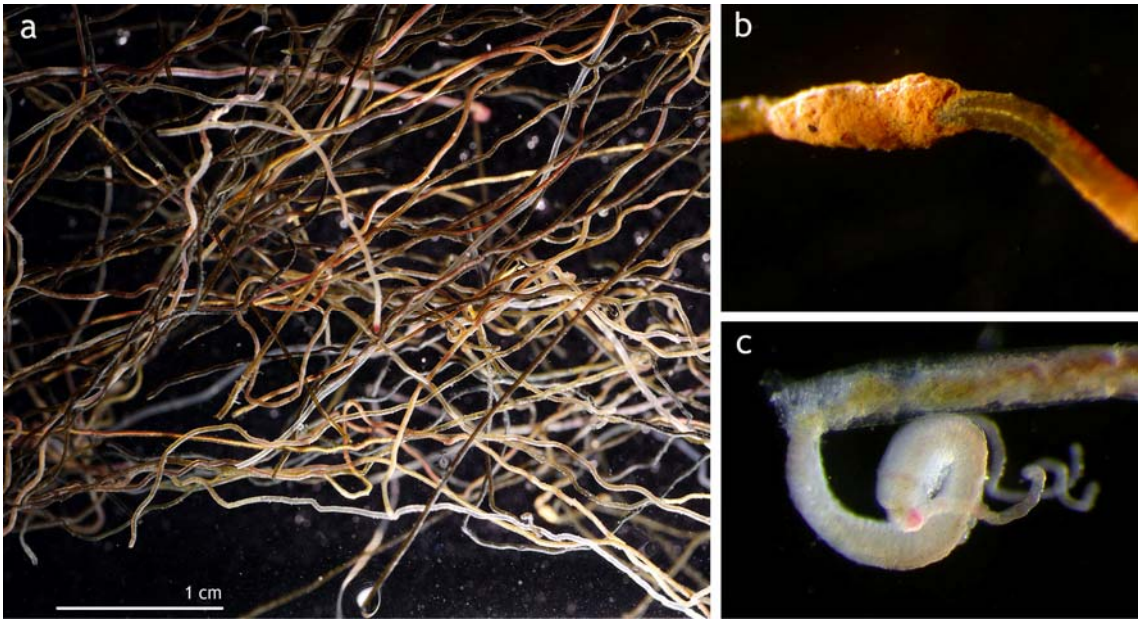


Fig. 23 Fauna at the Hook Ridge site, Annelida, Siboglinidae, *Sclerolinum* sp. polychaete: (a) tubes recovered from sediments, (b) red iron oxide attached to the tubes, (c) head of an individual showing tentacles.

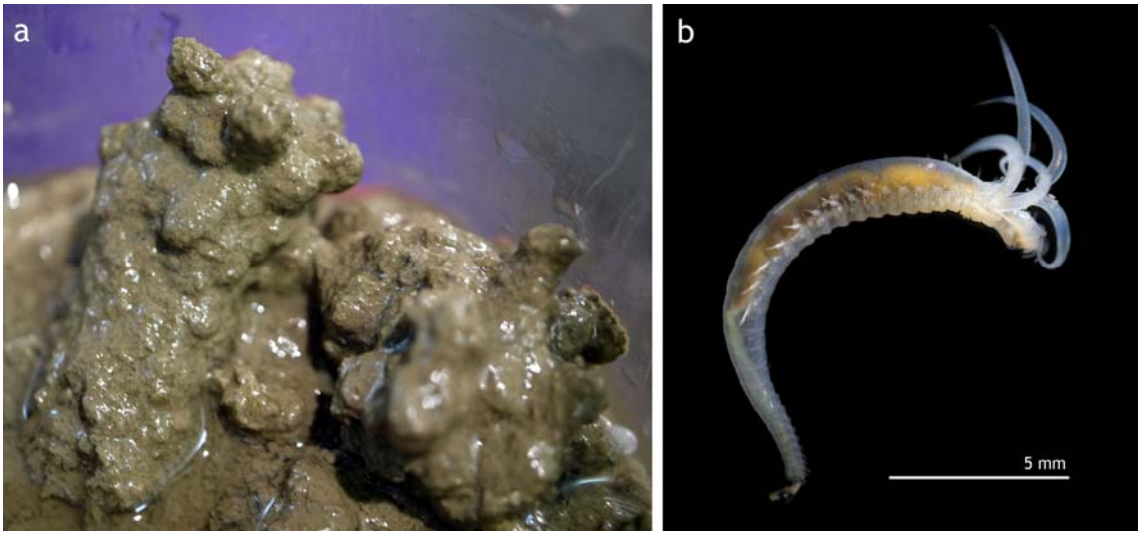


Fig. 24 Fauna at the Middle Sister site: (a) mud-balls on the surface of a recovered megacore, (b) Annelida, Ampharetidae.

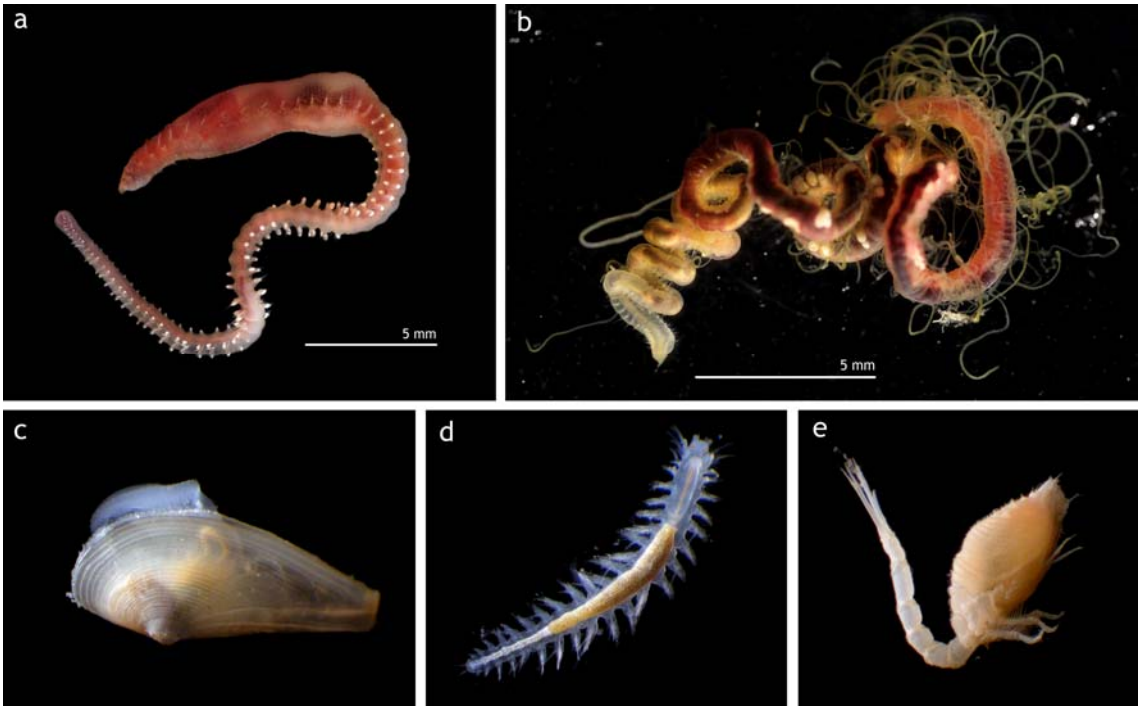


Fig. 25 Fauna at the South Georgia putative seep site: (a) Annelida, Scalibregmatidae, (b) Annelida, Cirratulidae, (c) Bivalvia, (d) Annelida, Syllidae, (e) Cumacea

Other interesting taxonomic finds

During the cruise visits were made to the E9 and Caldera sites sampled by ROV during JC42. Although these sites were not suitable for megacore work (being essentially hard-substrate), a remarkable discovery was made from a gravity core taken at the Caldera site.

The gravity core (JC55_106) had most likely toppled over on the seabed and during the recovery process, the lip of the upper weighted section had scraped over some of the seafloor. A small chunk of white matter was observed in this section and recovered by Rachel Mills and the deck crew on the deck.

The white matter appeared to be a lump of sulphurous sediment or even almost pure sulfur, and was riddled with black tube worms (Figure 26). It smelt very strongly of hydrogen sulfide. On examination, the tube worms were found to be alive and are most likely another species of siboglinid polychaete, quite different to those found at Hook Ridge and the Bransfield. The worms were extremely thin and showed very little internal morphology, DNA work will be carried out to determine them.

The find is significant as it shows the potential for a macrofauna to exist in areas of the white sulfurous Caldera perhaps previously thought to be too toxic for large metazoans (these animals were not observed on JC42). It will also be very interesting to study the general geochemical milieu of these various siboglinid species from the Antarctic.

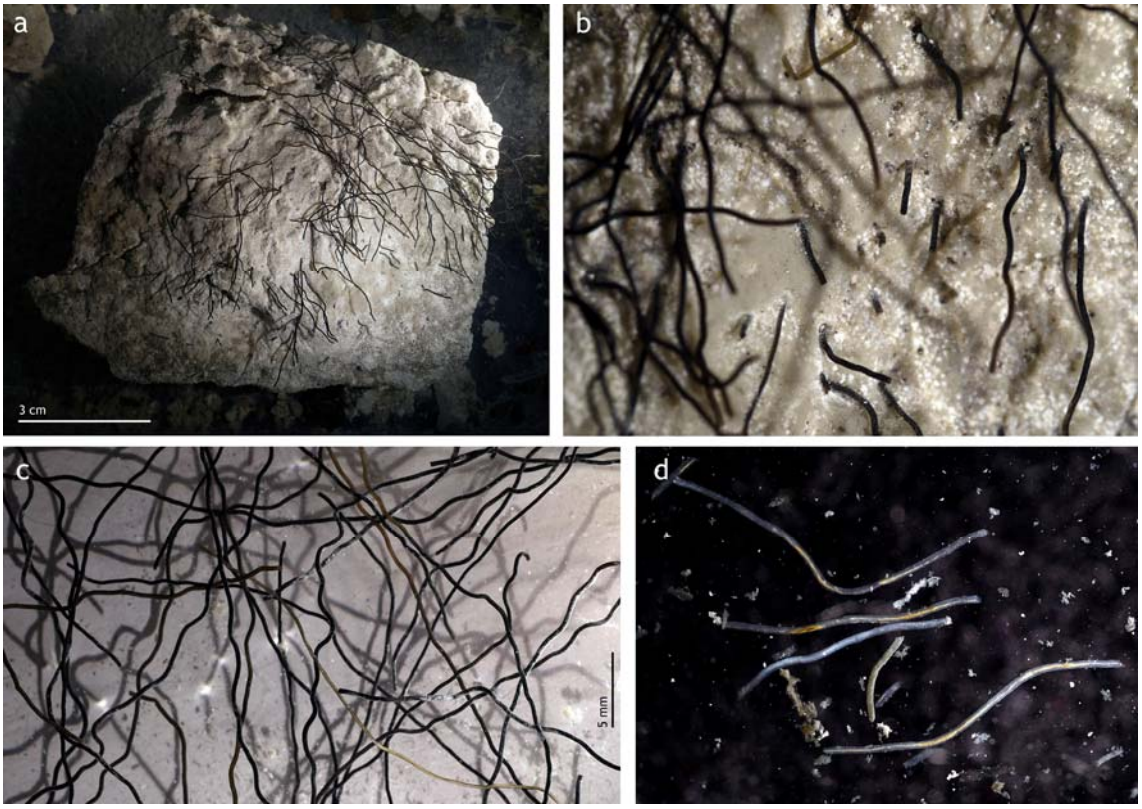


Fig. 26 Annelida, Siboglinidae recovered from a piece of white sulfurous matter at the Caldera site, South Sandwich Arc: (a) lump of white sulfurous matter with worm tubes, (b) detail of surface, (c) worm tubes after dissection from the soft white matter, (d) sections of live worms removed from inside tubes (with great difficulty).

Further work

The samples will be returned to the Natural History Museum, London for initial sorting and species-level ID subject to staff-time being available as no funding has yet been earmarked for this project. One possibility is that the entire sample set would make an excellent PhD project. Adrian Glover and Chris Sweeting will explore the possibility of a joint studentship.

The stable isotope work will potentially be carried out in Newcastle (Chris Sweeting to lead) on specimens identified to species level at the NHM London, and these data will then be fed into the project led by Clare Woulds.

For the siboglinid work, funding is available to undertake molecular analysis of the DNA and undertake taxonomic descriptions and phylogenetic analysis. This will be led by Adrian Glover and PDRA Dr Helena Wiklund funded under a recent EU Marie-Curie award.

Outside of the annelids, there is a wide range of material potentially available from these samples for taxonomic projects (including DNA-fixed material) and the PIs would welcome enquiries by those interested to study them.

Isotopic analysis

Sampling for Food Web Analyses

Chris Sweeting, Will Reid

Objectives

A primary objective for the third ChEsSo cruise to the Bransfield Strait and East Scotia Ridge was to sample the macrofauna organisms from hydrothermally active sites (vents, seeps) and the neighbouring non-vent organisms to understand the ecological structure and function of these systems. Within this, the food-web package had specific objectives to assess spatial and temporal variations in sources of production and trophic structure at these sites and to assess intra-population trophodynamics of the dominant macrofauna.

Work at Sea

We sought macrofaunal samples for stable isotope analysis of trophic structure and sediments for characterisation of bacterial communities via hopanoid and 16S DNA markers to identify potential bacterial food web production sources within and away from chemosynthetic sites.

Macrofauna

The loss of the ROV Isis was a severe impediment to macro- and mega-faunal collection. This was compounded by the inability to use Azimuth thrusters which impacted Agassiz trawling. Other gears such as box core or mega core did not yield adequate sample numbers for macrofaunal food web analyses such that no samples were collected from any chemosynthetic site. Limited macrofauna were collected from non-chemosynthetic sites through the single Agassiz trawl (off Hook Ridge, Bransfield Straight – included Table 9) and opportunistically from the CTD (Salps collected over Hook Ridge) and the ships water intake filters (mainly krill over E9 – East Scotia Ridge). Macrofaunal samples were freeze dried for return to the UK.

Bacterial communities

The revised sampling programme allowed for more extensive coring in Bransfield Strait and additional sampling off South Georgia. This achieved satisfactory sample numbers for analysis of bacterial production through DNA and hopanoid analyses to identify bacterial functional groups. Sediment samples were collected

in conjunction with the microbiology work package (16S DNA) and sediment geochemistry (hopanoids) and methodologies for collection and sample lists are detailed more comprehensively there.

Infaunal food webs

Coring allowed for the assessment of infaunal food web trophodynamics as an alternative objective in the absence of macrofaunal sampling. This work was conducted in collaboration with Dr Adrian Glover (Natural History Museum) and Dr Clare Woulds (University of Leeds). Methodologies for collection and sample lists are detailed in Macrofauna above. It has been agreed that A Glover will arrange for specimen identification, these will be passed to C. Sweeting for stable isotope analysis to construct infaunal food webs. Isotope data will then be given to C. Woulds for deduction from enrichment experiments for nutrient cycling modelling.

A summary of sampling sites and samples collected is given in Table 1 below. As all sampling required either coreable or trawlable sediment, no samples were taken from E9, Mackintosh crater or Adventure crater.

Table 9. Summary of samples collected on JC055 for food web analysis and associated gear, depth and habitat type. MC = mega core, AGT =Agassiz trawl, SIA = stable isotope analysis, HOP = bacterial hopanoids analysis, MIC = bacterial DNA analysis.

Site and location (Decimal lat/long)	Chemosynthetic / Depth	Gear	Sample Summary and analyses
Hook Ridge	Weak	MC	SIA - 5 drops of 3-6 cores each
-62.1924	1054m		HOP - 1 drop of 1 core
-57.2783			MIC – 3 drops of 1 core each
Hook Ridge	Weak	MC	SIA - 6 drops of 2-5 cores each
-62.1969	1174m		HOP - 1 drop of 1 core
-57.2975			MIC – 3 drops of 1 core each
Hook Ridge	None	AGT	SIA - 34 samples over 5 species of macrofauna
-62.2203	1647m		
-57.3173			
Bransfield Slope	None	MC	SIA - 5 drops of 2-4 cores each
-62.3842^{o}	1148m		HOP - 1 drop of 1 core
-57.2440^{o}			MIC – 3 drops with 1 core each
Three Sisters	None	MC	SIA - 2 drops of 3,5 cores respectively
-62.6552	1311m		HOP - 1 drop of 1 core
-59.0502			MIC – 1 drop of 1 core each
Three Sisters	None	MC	SIA - 1 drop of 2 cores
-62.6539	1121m		HOP - 1 drop of 1 core
-59.0326			MIC – 1 drop of 1 core
Edifice A	None	MC	SIA - 1 drop of 4 cores
-62.7866	1024m		HOP - 1 drop of 1 core
-59.7616			MIC – 1 drop of 1 core
South Georgia	None	MC	SIA - 2 drops of 2-4 cores each

-54.1575	243m		HOP - 1 drop of 1 core
-37.9756			MIC – 1 drop of 1 core
South Georgia	None	MC	SIA - 1 drop of 3 cores
-54.1475	254m		HOP - 1 drop of 1 core
-37.9717			MIC – 1 drop of 1 core
South Georgia	None	MC	SIA - 5 drops of 4 cores each
-54.1580	247m		HOP - 1 drop of 1 core
-37.9344			MIC – 1 drop of 1 core

Note: Samples of infauna for stable isotope analysis will initially be handled by A. Glover, those for Hopanoids will be the responsibility of Rachael Mill until transfer to Richard Pancost and samples for microbiology will be dealt with by David Pearce.

Shrimp dives

SHRIMP observations (Tables 10 and 11)
Jon Copley, Leigh Marsh, Paul Tyler

Hook Ridge, Bransfield Strait

Based on information from CTD tow-yos, SHRIMP dive #1 (JC55-017) surveyed the seafloor of the southern slope of Hook Ridge, and the central crest of the ridge. SHRIMP undertook a series of contour-parallel survey lines stepping upslope on the southern face of the ridge, and continued this pattern of lines across the ridge crest. These survey lines were followed by closer inspection of an area of venting at the western end of the survey area on the ridge crest, and a final line extending along the ridge crest further to the west.

The seafloor on the southern slope of the ridge was comprised of fine but possibly only shallow sediments, with occasional basalt outcrops forming slope-perpendicular fissures. The crest of the ridge is marked by a graben-like depression with sheer basalt walls. The seafloor within this crest feature is similarly comprised of areas of fine sediment and basalt outcrops.

Several apparent assemblage biotopes were observed during the dive. "General background fauna" in sedimented areas consisted of holothurians (including *Peniagone*-type), echinoids, enteropneusts, and *Umbellula* pennatulids. "Rich echinoderm fauna" areas contained a higher density of holothurians, echinoids, and asteroids. "Brittle star beds" were dominated by ophiuroids, with few other species present. Within the ridge crest depression, areas dominated by *Anthomastus*-type soft corals were present along northernmost survey lines. Patches of "burrow fields", and indeterminate polychaete tubes, and depauperate areas of sediment, were all present around the main area of hydrothermal venting (described below), along with areas dominated by

microbial mats. Rocky outcrops observed during the dive were occupied by anemones, octocorals, and solitary scleractinians.

Hydrothermal activity, in the form of shimmering water issuing from depressions in the seabed and also from some small (less than 2 m high) mineral chimneys, was observed in the SW corner of the survey area at the ridge crest (e.g. chimneys at 62º 11.8573' S, 57º 17.7628' W, depth ~1200 m). Mats of filamentous bacteria were observed around these sources, but no specialist vent fauna were observed. Microbial mats and shimmering water were also observed in a more limited area in the NE corner of the crest survey area (e.g. at 62º 11.549' S, 57º 16.708' W, depth ~1030m).

A whale skeleton (skull and vertebrae; Fig. 27A) was observed near the main ridge crest vent area, at 62º 11.8617' S, 57º 17.8910' W, depth ~1200 m. It was not possible to obtain close-up footage of the bones from SHRIMP to examine possible whale-fall fauna.

Three Sisters, Bransfield Strait

SHRIMP dive #2 (JC55-047) surveyed the northern slope of the central ridge in the Three Sisters feature, undertaking a series of contour-parallel lines moving downslope. SHRIMP then moved south to the crest of the ridge to undertake a further series of lines to the SE of the original survey box.

Exposed basalt, including eroded and sedimented pillows, characterise the crest and slope the ridge, giving way to sedimented seafloor to the north. Fauna occupying rock substratum was dominated by sponges and anemones on the slope of the ridge, with octocorals and solitary corals more abundant on the ridge crest. Sedimented seafloor to the north of the survey area was dominated by ophiuroids and 8-armed asteroids. "Mud balls" characterised the surface of the sediment on several survey lines.

No indications of any hydrothermal activity (e.g. shimmering water or bacterial mats) were observed during the dive.

E9 segment, East Scotia Ridge

SHRIMP dive #3 (JC55-090) began by repeating a survey line from the north of the E9 vent field, along which SHRIMP first observed the Twin Peaks area during January 2009. The ship was then manoeuvered to tow SHRIMP across the Twin Peaks area several times, to obtain imagery of

features observed in 2009 and 2010 (Fig. 27B). Some growth (~1 to 1.5 m) of vent chimneys was apparent at Twin Peaks compared with the ROV observations in 2010, but little change in faunal composition, apart from an apparent increase in the abundance of seven-armed asteroids in the periphery of the assemblage. The Black & White chimney structure was observed using the low-light pan-and-tilt camera, with no obvious gross change in morphology of its structure.

Having revisited the Twin Peaks area of the E9 vent field, SHRIMP then undertook a series of ridge-axis parallel survey lines south of the Twin Peaks and Garden area, examining seafloor not visited by the Isis ROV in 2010. No further active venting structures were discovered in this survey area, although extinct sulfides were observed towards the southern end of the survey lines, close to the edge of the "Devil's Punchbowl" caldera.

The fauna observed on the sheet basalts that characterised the majority of the substratum type along transects was dominated by brisingids on upstanding features, ophiuroids, holothurians, gorgonians, and enteropneusts.

Kemp Caldera, South Sandwich Islands

SHRIMP dive #4 (JC55-094) began by repeating the survey line undertaken by SHRIMP in 2009 from the centre of the caldera to the top of the volcanic knoll. Fauna observed here was very similar to that seen in 2009: holothurians dominating sedimented areas in the centre of the caldera, and abundant ophiuroids on basalt outcrops. The dominant type of holothurian also changed as depth decreased up the volcanic knoll, as observed previously.

SHRIMP then surveyed the northern slope of the knoll, traversing east across the area where wood and shell colonisation experiments were deployed by the ROV in 2010. No new areas of hydrothermal activity were encountered in this area. There were also no obvious signs of invertebrate colonisation on the experimental wood panels, although the view of them was limited from the SHRIMP cameras.

SHRIMP then crossed the main vent field on the eastern slope of the volcanic knoll, observing the same biotopes found in 2010, with little apparent change in faunal composition: clam beds in sedimented areas, anemones and limpets dominating on basalts, and an extensive sponge zone towards the periphery of the assemblage.

After transiting the main vent field, SHRIMP undertook a survey line south across the second small knoll to the south of the main knoll, passing over "Clam Road", in search of other loci of hydrothermal activity. None were found on the southern knoll, although sediments resembling oxidised sulfides were observed on the western slopes of the southern knoll during the west-east line across it.

SHRIMP then returned to the main vent field to repeat E-W and N-S transect lines undertaken by the ROV in 2010, followed by an extensive series of NW-SE lines to constrain the entire extent of the vent field (Figure 4B). These lines revealed abundant possible sipunculans beyond the "sponge zone" around the vents, particularly in the southern side of the vent field.

During these survey lines, SHRIMP also revisited the whalefall found in 2010, where the bones were observed to be undisturbed in the same orientation seen in the previous year (Fig. 27C)

Adventure Caldera, South Sandwich Islands

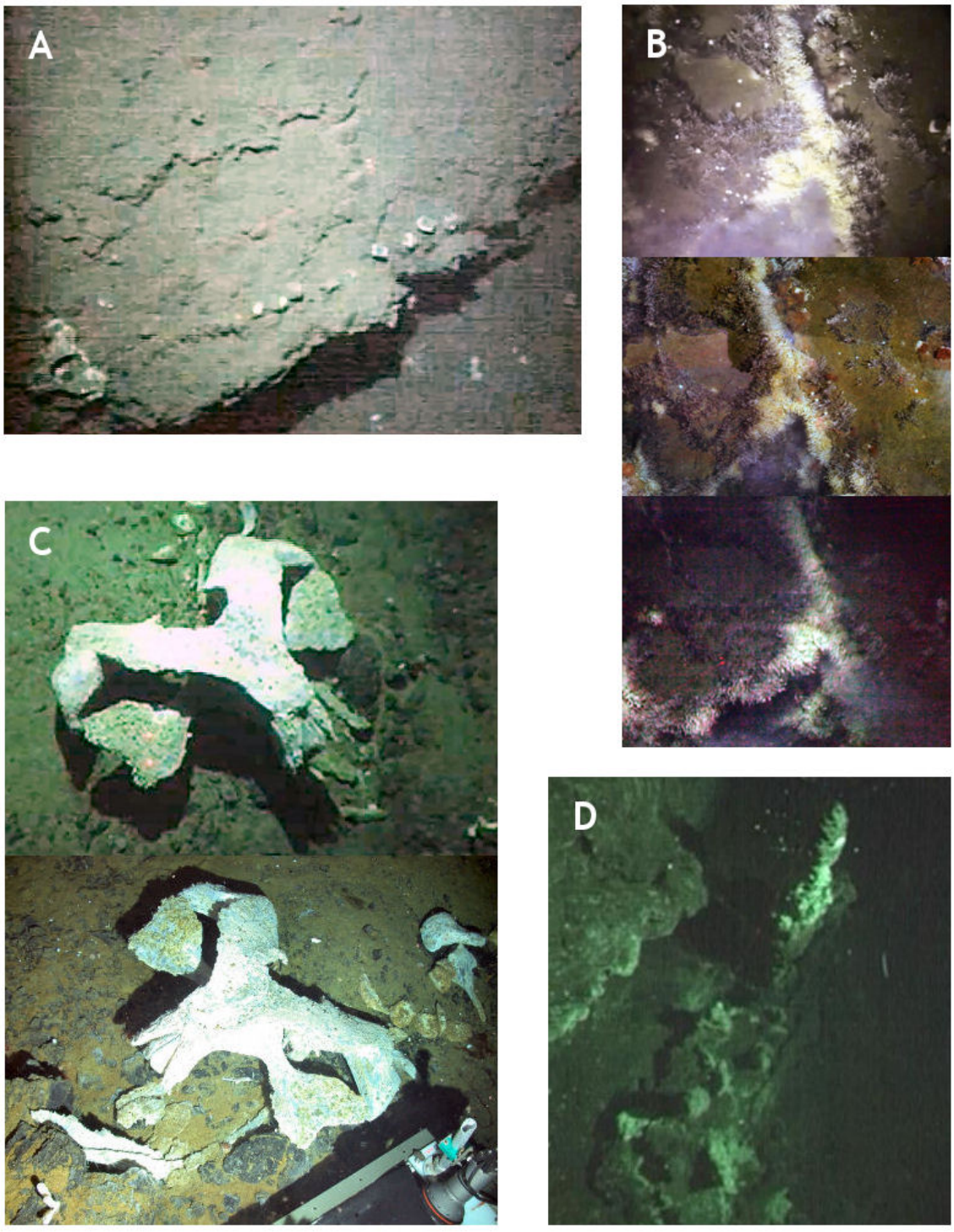
SHRIMP dive #5 (JC55-103) surveyed the seafloor of Adventure Caldera, conducting a transect from the centre of the caldera up volcanic knolls on its southern edge, and then back into deeper water to the west of those knolls.

Along the initial transect, the seafloor was dominated by bivalve shells (*Linopsis mariantatus*), with asteroids (e.g. *Labidiaster*), ophiuroids, holothurians, sponges, bryozoans, *Umbellula*, *Anthomastus*- and *Xenia*-type soft corals, and ophiuroids gave way to bivalve beds on the slopes of the knolls, with sponges and bryozoans also present towards the upper margin of the slope. Bivalve shells gave way to sedimented seafloor at the top of the first knoll, which was dominated by abundant comatulid crinoids and ophiuroids.

On the survey line west into deeper water, faunal abundance decreased as the seafloor changed to sulfide rubble. Sulfide chimney venting shimmering water were found at 59°43.262S, 27°51.428W (Fig. 27D). The chimneys were up to 3 metres high and surrounded by extensive microbial mats, but no specialist vent fauna were observed. However, ophiuroids were present in close proximity to active vent sources and on disturbance of microbial mats *Tomopteris* sp. (Tomopteridae) were observed in the water column.

South Georgia shelf

SHRIMP dives #6 and #7 (JC55-123 and JC55-124) examined the seafloor of the South Georgia shelf, where megacoring recovered hydrocarbon-smelling sediments and EK60 echosounder survey lines suggested possible methane bubble sources. Two areas approximately 1 km apart were surveyed in detail through closely-spaced SHRIMP lines. No evidence of focussed seepage or bubbling was observed in either area. The seabed was fine mud throughout, with occasional pits and hollows. Fauna included Scotia Sea Icefish, Marbled Rock Cod, anemones, and asteroids. Kelp detritus was also observed. On the northernmost line of dive 6 long and continuous net and roller marks as a result of trawling were observed.



Fig, 27: A - Whale skeleton encountered during SHRIMP dive #1 on Hook Ridge, Bransfield Strait; B - imagery of seafloor feature at Twin Peaks area of E9 vent field, East Scotia Ridge, visited in 2009 (top panel), 2010 (middle panel), and SHRIMP dive #3 (lower panel); C - skull of whalefall at Kemp Caldera, South Sandwich Islands, seen during SHRIMP dive #4 (top panel) and in 2010 (lower panel); D - vent chimney observed in Adventure Caldera, South Sandwich Islands, during SHRIMP dive #5.

Table 10 JC55 SHRIMP dive summary table

Station Number	Shrimp Dive Number	Julian Day	Start Position		End Position		Total Bottom time (hh:mm)	Maximum Bottom Depth (m) CTD
			Lat	Long	Lat	Long		
JC55_017	01	24/25	-62.2041	-57.2921	-62.20723	-57.4031	33:52	1271
JC55_047	02	31	-62.6598	-59.0543	-62.6568	-59.037	20:25	1296
JC55_090	03	40	-60.0401	-29.9833	-60.04722	-29.9732	09:54	2438
JC55_094	04	41	-59.7003	-28.3217	-59.69633	-28.3502	18:49	1550
JC55_103	05	42	-59.709	-27.8548	-59.71918	-27.8749	07:16	791
JC55_123	06	46	-54.1584	-37.969	-54.1572	-37.9784	04:23	254
JC55_124	07	46/47	-54.1484	-37.9755	-54.14713	-37.9691	03:08	255

Total Bottom Time: 97 hrs 47 mins

Table 11 JC55 SHRIMP dive media summary table

Station Number	Shrimp Dive Number	Julian Day	Media Number	Camera	Master or Slave?	Start Time (GMT)	End Time (GMT)
JC55_017	01	24	1	HD	Master	00:06	03:06
JC55_017	01	24	2	HD	Slave	00:06	03:06
JC55_017	01	24	3	Bowtech	Master	00:06	03:06
JC55_017	01	24	4	Kongsberg	Master	00:06	03:06
JC55_017	01	24	5	HD	Master	03:08	06:08
JC55_017	01	24	6	HD	Slave	03:08	06:08
JC55_017	01	24	7	Bowtech	Master	03:08	06:08
JC55_017	01	24	8	Kongsberg	Master	03:08	06:08
JC55_017	01	24	9	HD	Master	06:08	09:04
JC55_017	01	24	10	HD	Slave	06:08	09:04
JC55_017	01	24	11	Bowtech	Master	06:08	09:04
JC55_017	01	24	12	Kongsberg	Master	06:08	09:04
JC55_017	01	24	13	HD	Master	09:05	12:05
JC55_017	01	24	14	HD	Slave	09:05	12:05
JC55_017	01	24	15	Bowtech	Master	09:05	12:05
JC55_017	01	24	16	Kongsberg	Master	09:05	12:05
JC55_017	01	24	17	HD	Master	12:07	15:04
JC55_017	01	24	18	HD	Slave	12:07	15:04
JC55_017	01	24	19	Bowtech	Master	12:07	15:04
JC55_017	01	24	20	Kongsberg	Master	12:07	15:04
JC55_017	01	24	21	HD	Master	15:04	17:56
JC55_017	01	24	22	HD	Slave	15:04	17:56
JC55_017	01	24	23	Bowtech	Master	15:04	17:56
JC55_017	01	24	24	Kongsberg	Master	15:04	17:56
JC55_017	01	24	25	HD	Master	17:56	20:51
JC55_017	01	24	26	HD	Slave	17:56	20:51
JC55_017	01	24	27	Bowtech	Master	17:56	20:51
JC55_017	01	24	28	Kongsberg	Master	17:56	20:51
JC55_017	01	24	29	HD	Master	20:52	23:49
JC55_017	01	24	30	HD	Slave	20:52	23:49
JC55_017	01	24	31	Bowtech	Master	20:52	23:49
JC55_017	01	24	32	Kongsberg	Master	20:52	23:49
JC55_017	01	24/25	33	HD	Master	23:05	02:48
JC55_017	01	24/25	34	HD	Slave	23:05	02:48
JC55_017	01	24/25	35	Bowtech	Master	23:05	02:48
JC55_017	01	24/25	36	Kongsberg	Master	23:05	02:48
JC55_017	01	25	37	HD	Master	02:05	05:51
JC55_017	01	25	38	HD	Slave	02:05	05:51
JC55_017	01	25	39	Bowtech	Master	02:05	05:51
JC55_017	01	25	40	Kongsberg	Master	02:05	05:51
JC55_017	01	25	41	HD	Master	05:51	08:49
JC55_017	01	25	42	HD	Slave	05:51	08:49
JC55_017	01	25	43	Bowtech	Master	05:51	08:49

JC55_017	01	25	44	Kongsberg	Master	05:51	08:49
JC55_017	01	25	45	HD	Master	08:49	11:54
JC55_017	01	25	46	HD	Slave	08:49	11:54
JC55_017	01	25	47	Bowtech	Master	08:49	11:54
JC55_017	01	25	48	Kongsberg	Master	08:49	11:54

Station Number	Shrimp Dive Number	Julian Day	Media Number	Camera	Master or Slave?	Start Time (GMT)	End Time (GMT)
JC55_047	02	31	1	HD	Master	01:48	04:48
JC55_047	02	31	2	HD	Slave	01:48	04:48
JC55_047	02	31	3	Bowtech	Master	01:48	04:48
JC55_047	02	31	4	Kongsberg	Master	01:48	04:48
JC55_047	02	31	5	HD	Master	04:48	07:45
JC55_047	02	31	6	HD	Slave	04:48	07:45
JC55_047	02	31	7	Bowtech	Master	04:48	07:45
JC55_047	02	31	8	Kongsberg	Master	04:48	07:45
JC55_047	02	31	9	HD	Master	07:45	10:42
JC55_047	02	31	10	HD	Slave	07:45	10:42
JC55_047	02	31	11	Bowtech	Master	07:45	10:42
JC55_047	02	31	12	Kongsberg	Master	07:45	10:42
JC55_047	02	31	13	HD	Master	10:44	13:44
JC55_047	02	31	14	HD	Slave	10:44	13:44
JC55_047	02	31	15	Bowtech	Master	10:44	13:44
JC55_047	02	31	16	Kongsberg	Master	10:44	13:44
JC55_047	02	31	17	HD	Master	13:44	16:45
JC55_047	02	31	18	HD	Slave	13:44	16:45
JC55_047	02	31	19	Bowtech	Master	13:44	16:45
JC55_047	02	31	20	Kongsberg	Master	13:44	16:45
JC55_047	02	31	21	HD	Master	16:45	19:39
JC55_047	02	31	22	HD	Slave	16:45	19:39
JC55_047	02	31	23	Bowtech	Master	16:45	19:39
JC55_047	02	31	24	Kongsberg	Master	16:45	19:39
JC55_047	02	31	25	HD	Master	19:39	22:39
JC55_047	02	31	26	HD	Slave	19:39	22:39
JC55_047	02	31	27	Bowtech	Master	19:39	22:39
JC55_047	02	31	28	Kongsberg	Master	19:39	22:39

Station Number	Shrimp Dive Number	Julian Day	Media Number	Camera	Master or Slave?	Start Time (GMT)	End Time (GMT)
JC55_090	03	40	1	HD	Master	00:04	03:01
JC55_090	03	40	2	HD	Slave	00:04	03:01
JC55_090	03	40	3	Bowtech	Master	00:04	03:01
JC55_090	03	40	4	Kongsberg	Master	00:04	03:01
JC55_090	03	40	5	Low-Light	Master	00:04	03:01
JC55_090	03	40	6	HD	Master	03:02	06:01
JC55_090	03	40	7	HD	Slave	03:02	06:01
JC55_090	03	40	8	Bowtech	Master	03:02	06:01
JC55_090	03	40	9	Kongsberg	Master	03:02	06:01
JC55_090	03	40	10	Low-Light	Master	03:02	06:01
JC55_090	03	40	11	HD	Master	06:01	08:59
JC55_090	03	40	12	HD	Slave	06:01	08:59
JC55_090	03	40	13	Bowtech	Master	06:01	08:59
JC55_090	03	40	14	Kongsberg	Master	06:01	08:59
JC55_090	03	40	15	Low-Light	Master	06:01	08:59
JC55_090	03	40	16	HD	Master	09:01	11:01
JC55_090	03	40	17	HD	Slave	09:01	11:01
JC55_090	03	40	18	Bowtech	Master	09:01	11:01
JC55_090	03	40	19	Kongsberg	Master	09:01	11:01
JC55_090	03	40	20	Low-Light	Master	09:01	11:01

Station Number	Shrimp Dive Number	Julian Day	Media Number	Camera	Master or Slave?	Start Time (GMT)	End Time (GMT)
JC55_094	04	41	1	HD	Master	00:26	03:24
JC55_094	04	41	2	HD	Slave	00:26	03:24
JC55_094	04	41	3	Bowtech	Master	00:26	03:24

JC55_094	04	41	4	Kongsberg	Master	No Lights. Failed	
JC55_094	04	41	5	Low-light	Master	03:24	06:24
JC55_094	04	41	6	HD	Master	03:24	06:24
JC55_094	04	41	7	HD	Slave	03:24	06:24
JC55_094	04	41	8	Bowtech	Master	03:24	06:24
JC55_094	04	41	9	Low-light	Master	06:23	09:21
JC55_094	04	41	10	HD	Master	06:23	09:21
JC55_094	04	41	11	HD	Slave	06:23	09:21
JC55_094	04	41	12	Bowtech	Master	06:23	09:21
JC55_094	04	41	13	Low-light	Master	09:23	12:22
JC55_094	04	41	14	HD	Master	09:23	12:22
JC55_094	04	41	15	HD	Slave	09:23	12:22
JC55_094	04	41	16	Bowtech	Master	09:23	12:22
JC55_094	04	41	17	Low-light	Master	12:23	15:13
JC55_094	04	41	18	HD	Master	12:23	15:13
JC55_094	04	41	19	HD	Slave	12:23	15:13
JC55_094	04	41	20	Bowtech	Master	12:23	15:13
JC55_094	04	41	21	Low-light	Master	15:13	18:12
JC55_094	04	41	22	HD	Master	15:13	18:12
JC55_094	04	41	23	HD	Slave	15:13	18:12
JC55_094	04	41	24	Bowtech	Master	15:13	18:12
JC55_094	04	41	25	Low-light	Master	18:12	20:15
JC55_094	04	41	26	HD	Master	18:12	20:15
JC55_094	04	41	27	HD	Slave	18:12	20:15
JC55_094	04	41	28	Bowtech	Master	18:12	20:15
JC55_094	04	41	29	Low-light	Master	00:26	03:24

Station Number	Shrimp Dive Number	Julian Day	Media Number	Camera	Master or Slave?	Start Time (GMT)	End Time (GMT)
JC55_103	05	42	1	HD	Master	15:56	18:52
JC55_103	05	42	2	HD	Slave	15:56	18:52
JC55_103	05	42	3	Kongsberg	Master	15:56	18:52
JC55_103	05	42	4	Bowtech	Master	15:56	18:52
JC55_103	05	42	5	Low-Light	Master	15:56	18:52
JC55_103	05	42	6	HD	Master	18:56	21:42
JC55_103	05	42	7	HD	Slave	18:56	21:42
JC55_103	05	42	8	Kongsberg	Master	18:56	21:42
JC55_103	05	42	9	Bowtech	Master	18:56	21:42
JC55_103	05	42	10	Low-Light	Master	18:56	21:42
JC55_103	05	42	11	HD	Master	21:43	00:04
JC55_103	05	42	12	HD	Slave	21:43	00:04
JC55_103	05	42	13	Kongsberg	Master	21:43	00:04
JC55_103	05	42	14	Bowtech	Master	21:43	00:04
JC55_103	05	42	15	Low-Light	Master	21:43	00:04

Station Number	Shrimp Dive Number	Julian Day	Media Number	Camera	Master or Slave?	Start Time (GMT)	End Time (GMT)
JC55_123	06	46	1	HD	Master	15:44	18:38
JC55_123	06	46	2	HD	Slave	15:44	18:38
JC55_123	06	46	3	Kongsberg	Master	15:44	18:40
JC55_123	06	46	4	Bowtech	Master	15:44	18:40
JC55_123	06	46	5	Low-Light	Master	15:44	18:40
JC55_123	06	46	6	HD	Master	18:39	21:39
JC55_123	06	46	7	HD	Slave	18:39	21:39
JC55_123	06	46	8	Kongsberg	Master	18:41	21:41
JC55_123	06	46	9	Bowtech	Master	18:41	21:41
JC55_123	06	46	10	Low-Light	Master	18:41	21:41

Station Number	Shrimp Dive Number	Julian Day	Media Number	Camera	Master or Slave?	Start Time (GMT)	End Time (GMT)
JC55_124	07	46	1	HD	Master	21:04	23:49
JC55_124	07	46	2	HD	Slave	21:04	23:49
JC55_124	07	46	3	Kongsberg	Master	21:04	23:50
JC55_124	07	46	4	Bowtech	Master	21:04	23:50
JC55_124	07	46	5	Low-Light	Master	21:04	23:50

JC55_124	07	46/47	6	HD	Master	23:50	00:31
JC55_124	07	46/47	7	HD	Slave	23:50	00:31
JC55_124	07	46/47	8	Kongsberg	Master	23:50	00:31
JC55_124	07	46/47	9	Bowtech	Master	23:50	00:31
JC55_124	07	46/47	10	Low-Light	Master	23:50	00:31

Total Number of HD Tapes used: 74 (222Hrs)
Total Number of DV Tapes used: 85 (255Hrs)

Outreach

Public outreach during JC55

The programme of public engagement undertaken during the cruise included cruise blogs hosted on www.thesearethevoyages.net (produced by Jon Copley with contributions from Chris Sweeting, Jeff Hawkes, Clare Woulds and Cathy Cole), www.rrsjamescook.com (produced by Clare Woulds and Leighton Rolley) and noc.ac.uk (produced by Rachel Mills). Doug Connelly, Jon Copley, Rachel Mills and Clare Woulds also undertook microblogging during the cruise via Twitter.

Adrian Glover delivered two live links to public audiences in the David Attenborough studio at the Natural History Museum, and Clare Woulds undertook a live chat with Calder High school in West Yorkshire. We also received and answered questions from school pupils in Hampshire, Berkshire and Cambridgeshire via www.thesearethevoyages.net

On 14th February we issued a press release via the NOC press office, describing the discovery of vents in the Adventure Caldera. The story was covered by outlets including MSNBC, sciencedaily.com and in several blogs.

Webpage statistics for www.thesearethevoyages.net

Between 14th January and 16th February, there were 6964 unique visits to the www.thesearethevoyages.net website. Visitors came from at least 34 countries (top ten in rank order: US, UK, Germany, Canada, Cayman Islands, Sweden, Russia, Australia, Norway, France). Numbers of visitors to the site peaked after issuing the press release on 14th February, which carried a link to the website:

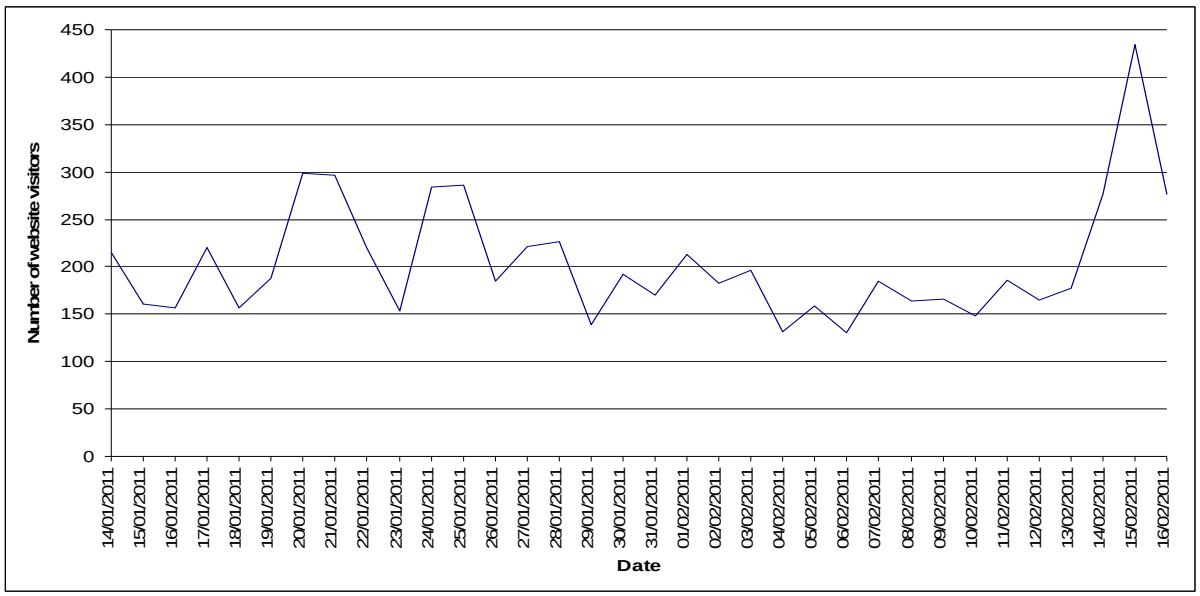


Fig. 28 Number of website visitors

Most of the trackable referrals to www.thesearethevoyages.net were received from the NOC webpages (22%), followed by Facebook (8%) and Twitter (7%), demonstrating the reach of those social media websites. Visitors also arrived at the webpages from the University of Southampton and University of Leeds webpages, following the posting of news items on those pages on 14th February. Coverage of our press release in physorg.com and seadiscovery.com also brought visitors to the site, as did social linksharing via stumbleupon.com

The most visited pages at www.thesearethevoyages.net were the daily diary page (12%) and the homepage (12%). The most popular individual blog entry was for 24th January, which contained excerpts from the dive log of the first SHRIMP dive, with seafloor photographs. Bandwidth limitations in the ship's internet link prevented publishing of video material for public engagement from the cruise.

Sampling equipment

The damage to Isis is being reported elsewhere as an independent enquiry and will not be addressed here. All other over the side equipment worked well including the megacorer, spade box corer, CTD and Agassiz trawl. The SHRIMP was not functioning when initially brought into use by the ROV team prepared a very acceptable SHRIMP capable of taking three different videos including HD and concomitant temperature.

References

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Appendices (all electronic)

JC055_APPENDIX A_DailySciencePlan

JC055_APPENDIX B_StationList

JC055_APPENDIX C_Waypoints

JC055_APPENDIX D_GeochemStations

yellow: missing information

green: entries not on Sample Log sheets - derived from Eventlog and USBL navigation

Cruise	Site	Station No	Gear Code	Gear No	Event No	Event Gear Code	Event Gear No	Final sample number	JDay (Start)	Start Date	Start Time GMT	Start Lat Degr S	Start Lat Min S	Start Long Degr W	Start Long Min W	Start Lat	Start Long	Start Waterdepth meter
JC055	BSR	1	EK60	EK60#01	0	EK60	EK60#01	JC055_001_EK60#01	18	18/01/2011	10:25:00	60	50.005	56	32.128	-60.833417	-56.535467	2305
JC055	BSR	2	CTD/SVP	CTD001	0	CTDprofile	CTD001	JC055_002_CTD001/p	19	19/01/2011	00:47:00	61	5.215	56	37.03	-61.086917	-56.617167	2291
					1	NISKIN	n01	JC055_002_CTD001/n01	19	19/01/2011	01:50:00	61	5.215	56	37.03	-61.086917	-56.617167	2291
					2	NISKIN	n02	JC055_002_CTD001/n02	19	19/01/2011	01:50:00	61	5.215	56	37.03	-61.086917	-56.617167	2291
					3	NISKIN	n03	JC055_002_CTD001/n03	19	19/01/2011	01:50:00	61	5.215	56	37.03	-61.086917	-56.617167	2291
					4	NISKIN	n04	JC055_002_CTD001/n04	19	19/01/2011	01:50:00	61	5.215	56	37.03	-61.086917	-56.617167	2291
					5	NISKIN	n05	JC055_002_CTD001/n05	19	19/01/2011	01:50:00	61	5.215	56	37.03	-61.086917	-56.617167	2291
					6	NISKIN	n06	JC055_002_CTD001/n06	19	19/01/2011	01:50:00	61	5.215	56	37.03	-61.086917	-56.617167	2291
					7	NISKIN	n07	JC055_002_CTD001/n07	19	19/01/2011	01:50:00	61	5.215	56	37.03	-61.086917	-56.617167	2291
					8	NISKIN	n08	JC055_002_CTD001/n08	19	19/01/2011	01:50:00	61	5.215	56	37.03	-61.086917	-56.617167	2291
					9	NISKIN	n09	JC055_002_CTD001/n09	19	19/01/2011	01:50:00	61	5.215	56	37.03	-61.086917	-56.617167	2291
					10	NISKIN	n10	JC055_002_CTD001/n10	19	19/01/2011	01:50:00	61	5.215	56	37.03	-61.086917	-56.617167	2291
					11	NISKIN	n11	JC055_002_CTD001/n11	19	19/01/2011	01:50:00	61	5.215	56	37.03	-61.086917	-56.617167	2291
					12	NISKIN	n12	JC055_002_CTD001/n12	19	19/01/2011	01:50:00	61	5.215	56	37.03	-61.086917	-56.617167	2291
					13	NISKIN	n13	JC055_002_CTD001/n13	19	19/01/2011	01:50:00	61	5.215	56	37.03	-61.086917	-56.617167	2291
					14	NISKIN	n14	JC055_002_CTD001/n14	19	19/01/2011	01:50:00	61	5.215	56	37.03	-61.086917	-56.617167	2291
					15	NISKIN	n15	JC055_002_CTD001/n15	19	19/01/2011	01:50:00	61	5.215	56	37.03	-61.086917	-56.617167	2291
					16	NISKIN	n16	JC055_002_CTD001/n16	19	19/01/2011	01:50:00	61	5.215	56	37.03	-61.086917	-56.617167	2291
					17	NISKIN	n17	JC055_002_CTD001/n17	19	19/01/2011	01:50:00	61	5.215	56	37.03	-61.086917	-56.617167	2291
					18	NISKIN	n18	JC055_002_CTD001/n18	19	19/01/2011	01:50:00	61	5.215	56	37.03	-61.086917	-56.617167	2291
					19	NISKIN	n19	JC055_002_CTD001/n19	19	19/01/2011	01:50:00	61	5.215	56	37.03	-61.086917	-56.617167	2291
					20	NISKIN	n20	JC055_002_CTD001/n20	19	19/01/2011	01:50:00	61	5.215	56	37.03	-61.086917	-56.617167	2291
					21	NISKIN	n21	JC055_002_CTD001/n21	19	19/01/2011	01:50:00	61	5.215	56	37.03	-61.086917	-56.617167	2291
					22	NISKIN	n22	JC055_002_CTD001/n22	19	19/01/2011	01:50:00	61	5.215	56	37.03	-61.086917	-56.617167	2291
					23	NISKIN	n23	JC055_002_CTD001/n23	19	19/01/2011	01:50:00	61	5.215	56	37.03	-61.086917	-56.617167	2291
					24	NISKIN	n24	JC055_002_CTD001/n24	19	19/01/2011	01:50:00	61	5.215	56	37.03	-61.086917	-56.617167	2291
JC055	Whale fall ACES6	3	ISIS	ISIS181	0	ISIS	ISIS181	JC055_003_ISIS181	19	19/01/2011	12:08:00	61	55.856	56	59.817	-61.93027	-56.99651	404
JC055	Whale fall ACES6	4	ACES	ACES6	0	ACES	ACES6	JC055_004_ACES6	19	19/01/2011	18:36:00	61	55.48	57	0.1	-61.924667	-57.001667	
JC055	Hook Ridge	5	CTD_TOW_YO	TOWYO#01	1	CTD	CTD002	JC55_005_CTD002	20	20/01/2011	04:54	62	12.9900	57	15.2800	-62.2165	-57.254667	1488
					2	CTD	CTD003	JC55_005_CTD003	20	20/01/2011	05:29:00	62	12.993	57	15.282	-62.21655	-57.2547	1486
					3	CTD	CTD004	JC55_005_CTD004	20	20/01/2011	05:49:00	62	12.904	57	15.36	-62.215067	-57.256	1493
					4	CTD	CTD005	JC55_005_CTD005	20	20/01/2011	06:04:00	62	12.904	57	15.359	-62.215067	-57.255983	1489
					5	CTD	CTD006	JC55_005_CTD006	20	20/01/2011	06:21:00	62	12.82	57	15.439	-62.213667	-57.257317	1497
					6	CTD	CTD007	JC55_005_CTD007	20	20/01/2011	06:37:00	62	12.819	57	15.442	-62.21365	-57.257367	1504
					7	CTD	CTD008	JC55_005_CTD008	20	20/01/2011	06:55:00	62	12.73	57	15.519	-62.212167	-57.25865	1466
					8	CTD	CTD009	JC55_005_CTD009	20	20/01/2011	07:11:00	62	12.73	57	15.525	-62.212167	-57.25875	1460
					9	CTD	CTD010	JC55_005_CTD010	20	20/01/2011	07:32:00	62	12.63	57	15.615	-62.2105	-57.26025	1497
					10	CTD	CTD011	JC55_005_CTD011	20	20/01/2011	07:47:00	62	12.63	57	15.616	-62.2105	-57.260267	1500
					11	CTD	CTD012	JC55_005_CTD012	20	20/01/2011	08:05:00	62	12.54	57	15.701	-62.209	-57.261683	1488
					12	CTD	CTD013	JC55_005_CTD013	20	20/01/2011	08:20:00	62	12.54	57	15.696	-62.209	-57.2616	1511
					13	CTD	CTD014	JC55_005_CTD014	20	20/01/2011	08:34:00	62	12.454	57	15.774	-62.207567	-57.2629	1542
					14	CTD	CTD015	JC55_005_CTD015	20	20/01/2011	08:49:00	62	12.452	57	15.773	-62.207533	-57.262883	1544
					15	CTD	CTD016	JC55_005_CTD016	20	20/01/2011	09:08:00	62	12.364	57	15.856	-62.206067	-57.264267	1535
					16	CTD	CTD017	JC55_005_CTD017	20	20/01/2011	09:24:00	62	12.364	57	15.862	-62.206067	-57.264367	1533
					17	CTD	CTD018	JC55_005_CTD018	20	20/01/2011	09:44	62	12.275	57	15.941	-62.204583	-57.265683	1535
					18	CTD	CTD019	JC55_005_CTD019	20	20/01/2011	10:00	62	12.265	57	15.953	-62.204417	-57.265883	1534
					19	CTD	CTD020	JC55_005_CTD020	20	20/01/2011	10:19:00	62	12.179	57	16.03	-62.202983	-57.267167	1537
					20	CTD	CTD021	JC55_005_CTD021	20	20/01/2011	10:36:00	62	12.178	57	16.028	-62.202967	-57.267133	1537
					21	CTD	CTD022	JC55_005_CTD022	20	20/01/2011	10:59:00	62	12.09	57	16.11	-62.2015	-57.2685	1514
					22	CTD	CTD023	JC55_005_CTD023	20	20/01/2011	11:06:00	62	12.091	57	16.108	-62.201517	-57.268467	1512
					23	CTD	CTD024	JC55_005_CTD024	20	20/01/2011	11:38:00	62	12.014	57	16.168	-62.200233	-57.269467	1462
					24	CTD	CTD025	JC55_005_CTD025	20	20/01/2011	11:56:00	62	12.016	57	16.166	-62.200267	-57.269433	1460
					25	CTD	CTD026	JC55_005_CTD026	20	20/01/2011	12:14:00	62	11.933	57	16.238	-62.198883	-57.270633	1410
					26	CTD	CTD027	JC55_005_CTD027	20	20/01/2011	12:31:00	62	11.938	57	16.237	-62.198967	-57.270617	1408
					27	CTD	CTD028	JC55_005_CTD028	20	20/01/2011	12:47:00	62	11.866	57	16.302	-62.197767	-57.2717	1348
					28	CTD	CTD029	JC55_005_CTD029	20	20/01/2011	13:11:00	62	11.863	57	16.302	-62.197717	-57.2717	1346

purple: entries that have been corrected and hence differ from the Sample Logs

blue: entries taken from bridge log

Equipment depth	End Date	End Time GMT	End Lat Degr	End Lat Min	End Long Degr	End Long Min	End Lat	End Long	End waterdepth meter	Comments	Recipient
	19/01/1900	00:12:00	61	5.14	56	37.09	-61.08567	-56.6182	2273	no convincing sightings of bubble plumes, 2 occasions of potential plumes	
2240	19/01/2011	02:42:00	61	5.0405	56	36.4257	-61.08401	-56.6071	2291	start: in water, end: on deck, at max depth: 01:50:00	
2240										Leaked, + CH4 sample	
2240										DPC + CC, CH4 + NUT	
2240											Care Woulds
2240											Care Woulds
2240											Care Woulds
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2240											Katrin Z
	19/01/2011	12:28	61	55.8162	56	-59.7906	-61.93027	-56.9965	390	test dive, ISIS severely damaged by ship's propellers, dive abandoned	
	20/01/2011	01:00	61	55.3	56	59.1	-61.92167	-56.985		transmission to lander release unsure, lander not sighted, operation a	Adrian Glover

Cruise	Site	Station No	Gear Code	Gear No	Event No	Event Gear Code	Event Gear No	Final sample number	JDay (Start)	Start Date	Start Time GMT	Start Lat Degr S	Start Lat Min S	Start Long Degr W	Start Long Min W	Start Lat	Start Long	Start Waterdepth meter
					29	CTD	CTD030	JC55_005_CTD030	20	20/01/2011	13:30:00	62	11.795	57	16.364	-62.196583	-57.272733	1289
					30	CTD	CTD031	JC55_005_CTD031	20	20/01/2011	13:44:00	62	11.794	57	16.363	-62.196567	-57.272717	1145
					31	CTD	CTD032	JC55_005_CTD032	20	20/01/2011	13:56:00	62	11.737	57	16.421	-62.195617	-57.273683	1249
					32	CTD	CTD033	JC55_005_CTD033	20	20/01/2011	14:09:00	62	11.737	57	16.42	-62.195617	-57.273667	1236
					33	CTD	CTD034	JC55_005_CTD034	20	20/01/2011	14:22:00	62	11.676	57	16.481	-62.1946	-57.274683	1157
					34	CTD	CTD035	JC55_005_CTD035	20	20/01/2011	14:35:00	62	11.676	57	16.482	-62.1946	-57.2747	1160
					35	CTD	CTD036	JC55_005_CTD036	20	20/01/2011	14:44:00	62	11.633	57	16.523	-62.193883	-57.275383	1102
					36	CTD	CTD037	JC55_005_CTD037	20	20/01/2011	14:56:00	62	11.633	57	16.523	-62.193883	-57.275383	1106
					37	CTD	CTD038	JC55_005_CTD038	20	20/01/2011	15:10:00	62	11.564	57	16.589	-62.192733	-57.276483	1062
					38	CTD	CTD039	JC55_005_CTD039	20	20/01/2011	15:21:00	62	11.56	57	16.574	-62.192667	-57.276233	1065
					39	CTD	CTD040	JC55_005_CTD040	20	20/01/2011	15:35:00	62	11.528	57	16.602	-62.192133	-57.2767	1068
					40	CTD	CTD041	JC55_005_CTD041	20	20/01/2011	15:47:00	62	11.518	57	16.561	-62.191967	-57.276017	1070
					41	CTD	CTD042	JC55_005_CTD042	20	20/01/2011	16:00:00	62	11.455	57	16.621	-62.190917	-57.277017	1064
					42	CTD	CTD043	JC55_005_CTD043	20	20/01/2011	16:15:00	62	11.453	57	16.616	-62.190883	-57.276933	1080
JC055	Hook Ridge	6	SWATH	SWATH#01	0	EM120	SWATH#01	JC55_006_SWATH#01	21	21/01/2011	12:00:00	62	11.82	57	8.58	-62.197	-57.143	1540
JC055	Hook Ridge	7	CTD_TOW_YO	TOWYO#02	1	CTD	CTD044	JC055_007_CTD044	21	21/01/2011	21:13:00	62	11.988	57	13.498	-62.1998	-57.224967	1433
					2	CTD	CTD045	JC055_007_CTD045	21	21/01/2011	21:44:00	62	11.963	57	13.498	-62.199383	-57.224967	1433
					3	CTD	CTD046	JC055_007_CTD046	21	21/01/2011	22:01:00	62	11.888	57	13.579	-62.198133	-57.226317	1341
					4	CTD	CTD047	JC055_007_CTD047	21	21/01/2011	22:14:00	62	11.884	57	13.5804	-62.198067	-57.22634	1342
					5	CTD	CTD048	JC055_007_CTD048	21	21/01/2011	22:29:00	62	11.8122	57	13.656	-62.19687	-57.2276	1344
					6	CTD	CTD049	JC055_007_CTD049	21	21/01/2011	22:45:00	62	11.8116	57	13.6542	-62.19686	-57.22757	1349
					7	CTD	CTD050	JC055_007_CTD050	21	21/01/2011	22:58:00	62	11.7384	57	13.7262	-62.19564	-57.22877	1391
					8	CTD	CTD051	JC055_007_CTD051	21	21/01/2011	23:17:00	62	11.739	57	13.73	-62.19565	-57.228833	1390
					9	CTD	CTD052	JC055_007_CTD052	21	21/01/2011	23:37:00	62	11.627	57	13.837	-62.193783	-57.230617	1435
					10	CTD	CTD053	JC055_007_CTD053	21	21/01/2011	23:54:00	62	11.623	57	13.844	-62.193717	-57.230733	1443
					11	CTD	CTD054	JC055_007_CTD054	22	22/01/2011	00:10:00	62	11.532	57	13.922	-62.1922	-57.232033	1439
					12	CTD	CTD055	JC055_007_CTD055	22	22/01/2011	00:32:00	62	11.533	57	13.922	-62.192217	-57.232033	1437
					13	CTD	CTD056	JC055_007_CTD056	22	22/01/2011	00:49:00	62	11.447	57	14.001	-62.190783	-57.23335	1426
					14	CTD	CTD057	JC055_007_CTD057	22	22/01/2011	01:08:00	62	11.447	57	14.004	-62.190783	-57.2334	1425
					15	CTD	CTD058	JC055_007_CTD058	22	22/01/2011	01:26:00	62	11.354	57	14.084	-62.189233	-57.234733	1399
					16	CTD	CTD059	JC055_007_CTD059	22	22/01/2011	01:44:00	62	11.355	57	14.089	-62.18925	-57.234817	1400
					17	CTD	CTD060	JC055_007_CTD060	22	22/01/2011	02:15:00	62	11.248	57	14.33	-62.187467	-57.238833	1350
					18	CTD	CTD061	JC055_007_CTD061	22	22/01/2011	02:29:00	62	11.239	57	14.368	-62.187317	-57.239467	1337
					19	CTD	CTD062	JC055_007_CTD062	22	22/01/2011	02:43:00	62	11.185	57	14.478	-62.186417	-57.2413	1295
					20	CTD	CTD063	JC055_007_CTD063	22	22/01/2011	03:03:00	62	11.16	57	14.504	-62.186	-57.241733	1287
					21	CTD	CTD064	JC055_007_CTD064	22	22/01/2011	03:20:00	62	11.089	57	14.483	-62.184817	-57.241383	1263
					22	CTD	CTD065	JC055_007_CTD065	22	22/01/2011	03:37:00	62	11.087	57	14.483	-62.184783	-57.241383	1264
					23	CTD	CTD066	JC055_007_CTD066	22	22/01/2011	03:52:00	62	11.033	57	14.404	-62.183883	-57.240067	1281
					24	CTD	CTD067	JC055_007_CTD067	22	22/01/2011	04:11:00	62	11.035	57	14.403	-62.183917	-57.24005	1271
JC055	Hook Ridge	8	CTD_TOW_YO	TOWYO#03	1	CTD	CTD068	JC055_008_CTD068	22	22/01/2011	05:47:00	62	13.376	57	16.185	-62.222933	-57.26975	1511
					2	CTD	CTD069	JC055_008_CTD069	22	22/01/2011	06:23:00	62	13.378	57	16.184	-62.222967	-57.269733	1571
					3	CTD	CTD070	JC055_008_CTD070	22	22/01/2011	06:40:00	62	13.29	57	16.267	-62.2215	-57.271117	1519
					4	CTD	CTD071	JC055_008_CTD071	22	22/01/2011	06:57:00	62	13.288	57	16.266	-62.221467	-57.2711	1517
					5	CTD	CTD072	JC055_008_CTD072	22	22/01/2011	07:15:00	62	13.203	57	16.341	-62.22005	-57.27235	1555
					6	CTD	CTD073	JC055_008_CTD073	22	22/01/2011	07:35:00	62	13.198	57	16.351	-62.219967	-57.272517	1541
					7	CTD	CTD074	JC055_008_CTD074	22	22/01/2011	07:53:00	62	13.115	57	16.421	-62.218583	-57.273683	1558
					8	CTD	CTD075	JC055_008_CTD075	22	22/01/2011	08:09:00	62	13.115	57	16.422	-62.218583	-57.2737	1558
					9	CTD	CTD076	JC055_008_CTD076	22	22/01/2011	08:27:00	62	13.019	57	16.508	-62.216983	-57.275133	1545
					10	CTD	CTD077	JC055_008_CTD077	22	22/01/2011	08:48:00	62	13.018	57	16.508	-62.216967	-57.275133	1544
					11	CTD	CTD078	JC055_008_CTD078	22	22/01/2011	09:06:00	62	12.923	57	16.593	-62.215383	-57.27655	1543
					12	CTD	CTD079	JC055_008_CTD079	22	22/01/2011	09:26:00	62	12.923	57	16.59	-62.215383	-57.2765	1544
					13	CTD	CTD080	JC055_008_CTD080	22	22/01/2011	09:46:00	62	12.83	57	16.675	-62.213833	-57.277917	1544
					14	CTD	CTD081	JC055_008_CTD081	22	22/01/2011	10:04:00	62	12.831	57	16.677	-62.21385	-57.27795	1544
					15	CTD	CTD082	JC055_008_CTD082	22	22/01/2011	10:23:00	62	12.739	57	16.759	-62.212317	-57.279317	1533
					16	CTD	CTD083	JC055_008_CTD083	22	22/01/2011	10:41:00	62	12.739	57	16.76	-62.212317	-57.279333	1554
					17	CTD	CTD084	JC055_008_CTD084	22	22/01/2011	11:00:00	62	12.644	57	16.844	-62.210733	-57.280733	1569
					18	CTD	CTD085	JC055_008_CTD085	22	22/01/2011	11:16:00	62	12.646	57	16.845	-62.210767	-57.28075	1568

Equipment depth	End Date	End Time GMT	End Lat Degr	End Lat Min	End Long Degr	End Long Min	End Lat	End Long	End waterdepth meter	Comments	Recipient
	20/01/2011	16:43:00	62	11.418	57	16.63	-62.1903	-57.2772	1080		
	21/01/2011	20:09:00	62	10.62	57	11.88	-62.177	-57.198	1400		
	22/01/2011	04:39:00	62	10.97	57	14.45	-62.177	-57.198		downcast	
										upcast	
										downcast	
										upcast	
										downcast	
										upcast	
										downcast	
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										upcast	
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										downcast	
										upcast	
										downcast	
										upcast	

Cruise	Site	Station No	Gear Code	Gear No	Event No	Event Gear Code	Event Gear No	Final sample number	JDay (Start)	Start Date	Start Time GMT	Start Lat Degr S	Start Lat Min S	Start Long Degr W	Start Long Min W	Start Lat	Start Long	Start Waterdepth meter
					19	CTD	CTD086	JC055_008_CTD086	22	22/01/2011	11:35:00	62	12.544	57	16.934	-62.209067	-57.282233	1576
					20	CTD	CTD087	JC055_008_CTD087	22	22/01/2011	11:55:00	62	12.52	57	16.962	-62.208667	-57.2827	1573
					21	CTD	CTD088	JC055_008_CTD088	22	22/01/2011	12:16:00	62	12.413	57	17.124	-62.206883	-57.2854	1564
					22	CTD	CTD089	JC055_008_CTD089	22	22/01/2011	12:33:00	62	12.411	57	17.123	-62.20685	-57.285383	1576
					23	CTD	CTD090	JC055_008_CTD090	22	22/01/2011	12:54:00	62	12.325	57	17.185	-62.205417	-57.286417	1545
					24	CTD	CTD091	JC055_008_CTD091	22	22/01/2011	13:08:00	62	12.324	57	17.182	-62.2054	-57.286367	1539
					25	CTD	CTD092	JC055_008_CTD092	22	22/01/2011	13:24:00	62	12.242	57	17.246	-62.204033	-57.287433	1493
					26	CTD	CTD093	JC055_008_CTD093	22	22/01/2011	13:39:00	62	12.242	57	17.244	-62.204033	-57.2874	1487
					27	CTD	CTD094	JC055_008_CTD094	22	22/01/2011	13:53:00	62	12.167	57	17.296	-62.202783	-57.288267	1402
					28	CTD	CTD095	JC055_008_CTD095	22	22/01/2011	14:08:00	62	12.164	57	17.294	-62.202733	-57.288233	1401
					29	CTD	CTD096	JC055_008_CTD096	22	22/01/2011	14:22:00	62	12.085	57	17.35	-62.201417	-57.289167	1325
					30	CTD	CTD097	JC055_008_CTD097	22	22/01/2011	14:39:00	62	12.082	57	17.352	-62.201367	-57.2892	1317
					31	CTD	CTD098	JC055_008_CTD098	22	22/01/2011	14:53:00	62	12.01	57	17.41	-62.200167	-57.290167	1267
					32	CTD	CTD099	JC055_008_CTD099	22	22/01/2011	15:06:00	62	12.007	57	17.413	-62.200117	-57.290217	1278
					33	CTD	CTD100	JC055_008_CTD100	22	22/01/2011	15:20:00	62	11.944	57	17.471	-62.199067	-57.291183	1220
					34	CTD	CTD101	JC055_008_CTD101	22	22/01/2011	15:32:00	62	11.944	57	17.47	-62.199067	-57.291167	1222
					35	NISKIN	n01	JC055_008_CTD101/n01	22	22/01/2011	15:32:00	62	11.944	57	17.47	-62.199067	-57.291167	1217
					36	NISKIN	n02	JC055_008_CTD101/n02	22	22/01/2011	15:32:00	62	11.944	57	17.47	-62.199067	-57.291167	1217
					37	CTD	CTD102	JC055_008_CTD102	22	22/01/2011	15:51:00	62	11.891	57	17.516	-62.198183	-57.291933	1170
					38	CTD	CTD103	JC055_008_CTD103	22	22/01/2011	16:03:00	62	11.891	57	17.515	-62.198183	-57.291917	1166
					39	CTD	CTD104	JC055_008_CTD104	22	22/01/2011	16:19:00	62	11.806	57	17.59	-62.196767	-57.293167	1133
					40	CTD	CTD105	JC055_008_CTD105	22	22/01/2011	16:31:00	62	11.806	57	17.59	-62.196767	-57.293167	1134
					41	CTD	CTD106	JC055_008_CTD106	22	22/01/2011	16:50:00	62	11.726	57	17.66	-62.195433	-57.294333	1136
					42	CTD	CTD107	JC055_008_CTD107	22	22/01/2011	17:15:00	62	11.724	57	17.659	-62.1954	-57.294317	1131
					43	CTD	CTD108	JC055_008_CTD108	22	22/01/2011	17:31:00	62	11.638	57	17.74	-62.193967	-57.295667	1153
					44	CTD	CTD109	JC055_008_CTD109	22	22/01/2011	17:47:00	62	11.636	57	17.738	-62.193933	-57.295633	1150
					45	CTD	CTD110	JC055_008_CTD110	22	22/01/2011	18:02:00	62	11.557	57	17.813	-62.192617	-57.296883	1117
					46	CTD	CTD111	JC055_008_CTD111	22	22/01/2011	18:17:00	62	11.558	57	17.813	-62.192633	-57.296883	1120
					47	CTD	CTD112	JC055_008_CTD112	22	22/01/2011	18:32:00	62	11.484	57	17.881	-62.1914	-57.298017	1180
					48	NISKIN	n03	JC055_008_CTD112/n03	22	22/01/2011	18:40:00	62	11.82	57	17.8	-62.197	-57.296667	1180
					49	NISKIN	n04	JC055_008_CTD112/n04	22	22/01/2011	18:40:00	62	11.82	57	17.8	-62.197	-57.296667	1180
					50	NISKIN	n05	JC055_008_CTD112/n05	22	22/01/2011	18:40:00	62	11.82	57	17.8	-62.197	-57.296667	1180
					51	NISKIN	n06	JC055_008_CTD112/n06	22	22/01/2011	18:40:00	62	11.82	57	17.8	-62.197	-57.296667	1180
					52	CTD	CTD113	JC055_008_CTD113	22	22/01/2011	18:57:00	62	11.482	57	17.879	-62.191367	-57.297983	1186
					53	NISKIN	n07	JC055_008_CTD113/n07	22	22/01/2011	18:59:00	62	11.483	57	17.881	-62.191383	-57.298017	1180
					54	NISKIN	n08	JC055_008_CTD113/n08	22	22/01/2011	18:59:00	62	11.483	57	17.881	-62.191383	-57.298017	1180
					55	NISKIN	n09	JC055_008_CTD113/n09	22	22/01/2011	18:59:00	62	11.483	57	17.881	-62.191383	-57.298017	1180
					56	NISKIN	n10	JC055_008_CTD113/n10	22	22/01/2011	18:59:00	62	11.483	57	17.881	-62.191383	-57.298017	1180
					57	NISKIN	n11	JC055_008_CTD113/n11	22	22/01/2011	18:59:00	62	11.483	57	17.881	-62.191383	-57.298017	1180
					58	NISKIN	n12	JC055_008_CTD113/n12	22	22/01/2011	18:59:00	62	11.483	57	17.881	-62.191383	-57.298017	1180
					59	NISKIN	n13	JC055_008_CTD113/n13	22	22/01/2011	18:59:00	62	11.483	57	17.881	-62.191383	-57.298017	1180
					60	NISKIN	n14	JC055_008_CTD113/n14	22	22/01/2011	18:59:00	62	11.483	57	17.881	-62.191383	-57.298017	1180
					61	NISKIN	n15	JC055_008_CTD113/n15	22	22/01/2011	18:59:00	62	11.483	57	17.881	-62.191383	-57.298017	1180
					62	NISKIN	n16	JC055_008_CTD113/n16	22	22/01/2011	18:59:00	62	11.483	57	17.881	-62.191383	-57.298017	1180
					63	NISKIN	n17	JC055_008_CTD113/n17	22	22/01/2011	18:59:00	62	11.483	57	17.881	-62.191383	-57.298017	1180
					64	NISKIN	n18	JC055_008_CTD113/n18	22	22/01/2011	18:59:00	62	11.483	57	17.881	-62.191383	-57.298017	1180
					65	NISKIN	n19	JC055_008_CTD113/n19	22	22/01/2011	18:59:00	62	11.483	57	17.881	-62.191383	-57.298017	1180
					66	NISKIN	n20	JC055_008_CTD113/n20	22	22/01/2011	18:59:00	62	11.483	57	17.881	-62.191383	-57.298017	1180
					67	NISKIN	n21	JC055_008_CTD113/n21	22	22/01/2011	18:59:00	62	11.483	57	17.881	-62.191383	-57.298017	1180
					68	NISKIN	n22	JC055_008_CTD113/n22	22	22/01/2011	18:59:00	62	11.483	57	17.881	-62.191383	-57.298017	1180
					69	NISKIN	n23	JC055_008_CTD113/n23	22	22/01/2011	18:59:00	62	11.483	57	17.881	-62.191383	-57.298017	1180
					70	NISKIN	n24	JC055_008_CTD113/n24	22	22/01/2011	18:59:00	62	11.483	57	17.881	-62.191383	-57.298017	1180
JC055	Hook Ridge	9	CTD_TOW_YO	TOWYO#04	1	CTD	CTD114	JC055_009_CTD114	22	22/01/2011	21:17:00	62	12.8	57	18	-62.213333	-57.3	1600
					2	CTD	CTD115	JC055_009_CTD115	22	22/01/2011	22:00:00	62	12.8	57	18	-62.213333	-57.3	1602
					3	CTD	CTD116	JC055_009_CTD116	22	22/01/2011	22:20:00	62	12.708	57	18.085	-62.2118	-57.30141	1583
					4	CTD	CTD117	JC055_009_CTD117	22	22/01/2011	22:31:00	62	12.708	57	18.085	-62.2118	-57.30141	1555
					5	CTD	CTD118	JC055_009_CTD118	22	22/01/2011	22:46:00	62	12.615	57	18.17	-62.21025	-57.30284	1532

Equipment depth	End Date	End Time GMT	End Lat Degr	End Lat Min	End Long Degr	End Long Min	End Lat	End Long	End waterdepth meter	Comments	Recipient
										downcast	
										upcast	
										downcast	
										upcast	
										downcast	
										upcast	
										downcast	
										upcast	
										downcast	
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										downcast	
										upcast	
										downcast	
										upcast	
										downcast	
										upcast	
										sample in plume	
										sample in plume	
										downcast	
										upcast	
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										downcast	
										upcast	
										downcast	
										upcast	
										downcast	
										upcast	
										downcast	
										upcast	
										downcast	
475											Clare Woulds
475											Clare Woulds
475											Clare Woulds
475											Clare Woulds
	22/01/2011	19:31:00	62	11.48	57	17.88	-62.19133	-57.298		upcast	
995											Katrin Z
995											Katrin Z
995											Katrin Z
995											Katrin Z
995											Katrin Z
995											Katrin Z
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995											Katrin Z
995											Katrin Z
										downcast. No Eh	
										upcast. No Eh	
										downcast. No Eh	
										upcast. No Eh	
										downcast. No Eh	

Cruise	Site	Station No	Gear Code	Gear No	Event No	Event Gear Code	Event Gear No	Final sample number	JDay (Start)	Start Date	Start Time GMT	Start Lat Degr S	Start Lat Min S	Start Long Degr W	Start Long Min W	Start Lat	Start Long	Start Waterdepth meter
					6	CTD	CTD119	JC055_009_CTD119	22	22/01/2011	23:03:00	62	12.615	57	18.17	-62.21025	-57.30284	1532
					7	CTD	CTD120	JC055_009_CTD120	22	22/01/2011	23:16:00	62	12.532	57	18.247	-62.20886	-57.30411	1503
					8	CTD	CTD121	JC055_009_CTD121	22	22/01/2011	23:35:00	62	12.532	57	18.247	-62.20886	-57.30411	1514
					9	CTD	CTD122	JC055_009_CTD122	22	22/01/2011	23:51:00	62	12.442	57	18.33	-62.20736	-57.3055	1268
					10	CTD	CTD123	JC055_009_CTD123	23	23/01/2011	00:01:00	62	12.442	57	18.33	-62.20736	-57.3055	1278
					11	CTD	CTD124	JC055_009_CTD124	23	23/01/2011	00:12:00	62	12.394	57	18.376	-62.20657	-57.30626	1198
					12	CTD	CTD125	JC055_009_CTD125	23	23/01/2011	00:21:00	62	12.394	57	18.376	-62.20657	-57.30626	1254
					13	CTD	CTD126	JC055_009_CTD126	23	23/01/2011	00:30:00	62	12.343	57	18.422	-62.20572	-57.30704	1303
					14	CTD	CTD127	JC055_009_CTD127	23	23/01/2011	00:45:00	62	12.343	57	18.422	-62.20572	-57.30704	1275
					15	CTD	CTD128	JC055_009_CTD128										
JC055	Hook Ridge	10	CTD_TOW_YO	TOWYO#05	1	CTD	CTD129	JC055_010_CTD129	23	23/01/2011	01:35:00	62	12.33048	57	18.42012	-62.205508	-57.307002	1428
					2	CTD	CTD130	JC055_010_CTD130	23	23/01/2011	01:50:00	62	12.3205	57	18.38003	-62.205342	-57.306334	1416
					3	CTD	CTD131	JC055_010_CTD131	23	23/01/2011	02:06:00	62	12.29547	57	18.27826	-62.204925	-57.304638	1372
					4	CTD	CTD132	JC055_010_CTD132	23	23/01/2011	02:19:00	62	12.29553	57	18.27934	-62.204926	-57.304656	1353
					5	CTD	CTD133	JC055_010_CTD133	23	23/01/2011	02:32:00	62	12.26357	57	18.13087	-62.204393	-57.302181	1328
					6	CTD	CTD134	JC055_010_CTD134	23	23/01/2011	02:51:00	62	12.26243	57	18.12938	-62.204374	-57.302156	1317
					7	CTD	CTD135	JC055_010_CTD135	23	23/01/2011	03:05:00	62	12.22637	57	17.97447	-62.203773	-57.299575	1297
					8	CTD	CTD136	JC055_010_CTD136	23	23/01/2011	03:17:00	62	12.22637	57	17.97728	-62.203773	-57.299621	1312
					9	CTD	CTD137	JC055_010_CTD137	23	23/01/2011	03:30:00	62	12.19958	57	17.84536	-62.203326	-57.297423	1277
					10	CTD	CTD138	JC055_010_CTD138	23	23/01/2011	03:42:00	62	12.19958	57	17.84536	-62.203326	-57.297423	1276
					11	CTD	CTD139	JC055_010_CTD139	23	23/01/2011	03:56:00	62	12.16724	57	17.69818	-62.202787	-57.29497	1300
					12	CTD	CTD140	JC055_010_CTD140	23	23/01/2011	04:08:00	62	12.16679	57	17.70057	-62.20278	-57.29501	1304
					13	CTD	CTD141	JC055_010_CTD141	23	23/01/2011	04:23:00	62	12.12998	57	17.53146	-62.202166	-57.292191	1313
					14	CTD	CTD142	JC055_010_CTD142	23	23/01/2011	04:45:00	62	12.12995	57	17.53214	-62.202166	-57.292202	1310
					15	CTD	CTD143	JC055_010_CTD143	23	23/01/2011	04:59:00	62	12.089	57	17.355	-62.201483	-57.28925	1280
					16	CTD	CTD144	JC055_010_CTD144	23	23/01/2011	05:22:00	62	12.0373	57	17.11	-62.200622	-57.285167	1338
					17	CTD	CTD145	JC055_010_CTD145	23	23/01/2011	05:37:00	62	12	57	16.949	-62.2	-57.282483	1330
					18	CTD	CTD146	JC055_010_CTD146	23	23/01/2011	05:53:00	62	12.004	57	16.955	-62.200067	-57.282583	1335
					19	NISKIN	n01	JC055_010_CTD146/n01	23	23/01/2011	06:01:00	62	12.004	57	16.955	-62.200067	-57.282583	1335
					20	NISKIN	n02	JC055_010_CTD146/n02	23	23/01/2011	06:02:00	62	12.004	57	16.955	-62.200067	-57.282583	1335
					21	NISKIN	n03	JC055_010_CTD146/n03	23	23/01/2011	06:02:00	62	12.004	57	16.955	-62.200067	-57.282583	1335
					22	NISKIN	n04	JC055_010_CTD146/n04	23	23/01/2011	06:02:00	62	12.004	57	16.955	-62.200067	-57.282583	1335
					23	NISKIN	n05	JC055_010_CTD146/n05	23	23/01/2011	06:02:00	62	12.004	57	16.955	-62.200067	-57.282583	1335
					24	NISKIN	n06	JC055_010_CTD146/n06	23	23/01/2011	06:02:00	62	12.004	57	16.955	-62.200067	-57.282583	1335
					25	NISKIN	n07	JC055_010_CTD146/n07	23	23/01/2011	06:02:00	62	12.004	57	16.955	-62.200067	-57.282583	1335
					26	NISKIN	n08	JC055_010_CTD146/n08	23	23/01/2011	06:02:00	62	12.004	57	16.955	-62.200067	-57.282583	1335
					27	NISKIN	n09	JC055_010_CTD146/n09	23	23/01/2011	06:03:00	62	12.004	57	16.955	-62.200067	-57.282583	1335
					28	NISKIN	n10	JC055_010_CTD146/n10	23	23/01/2011	06:03:00	62	12.004	57	16.955	-62.200067	-57.282583	1335
					29	NISKIN	n11	JC055_010_CTD146/n11	23	23/01/2011	06:03:00	62	12.004	57	16.955	-62.200067	-57.282583	1335
					30	NISKIN	n12	JC055_010_CTD146/n12	23	23/01/2011	06:03:00	62	12.004	57	16.955	-62.200067	-57.282583	1335
					31	NISKIN	n13	JC055_010_CTD146/n13	23	23/01/2011	06:03:00	62	12.004	57	16.955	-62.200067	-57.282583	1335
					32	NISKIN	n14	JC055_010_CTD146/n14	23	23/01/2011	06:04:00	62	12.004	57	16.955	-62.200067	-57.282583	1335
					33	NISKIN	n15	JC055_010_CTD146/n15	23	23/01/2011	06:04:00	62	12.004	57	16.955	-62.200067	-57.282583	1335
					34	NISKIN	n16	JC055_010_CTD146/n16	23	23/01/2011	06:04:00	62	12.004	57	16.955	-62.200067	-57.282583	1335
					35	NISKIN	n17	JC055_010_CTD146/n17	23	23/01/2011	06:04:00	62	12.004	57	16.955	-62.200067	-57.282583	1335
					36	NISKIN	n18	JC055_010_CTD146/n18	23	23/01/2011	06:04:00	62	12.004	57	16.955	-62.200067	-57.282583	1335
					37	NISKIN	n19	JC055_010_CTD146/n19	23	23/01/2011	06:05:00	62	12.004	57	16.955	-62.200067	-57.282583	1335
					38	NISKIN	n20	JC055_010_CTD146/n20	23	23/01/2011	06:05:00	62	12.004	57	16.955	-62.200067	-57.282583	1335
					39	NISKIN	n21	JC055_010_CTD146/n21	23	23/01/2011	06:05:00	62	12.004	57	16.955	-62.200067	-57.282583	1335
					40	NISKIN	n22	JC055_010_CTD146/n22	23	23/01/2011	06:05:00	62	12.004	57	16.955	-62.200067	-57.282583	1335
					41	NISKIN	n23	JC055_010_CTD146/n23	23	23/01/2011	06:05:00	62	12.004	57	16.955	-62.200067	-57.282583	1335
					42	NISKIN	n24	JC055_010_CTD146/n24	23	23/01/2011	06:06:00	62	12.004	57	16.955	-62.200067	-57.282583	1335
					43	CTD	CTD147	JC055_010_CTD147	23	23/01/2011	06:15:00	62	11.976	57	16.841	-62.1996	-57.280683	1327
					44	CTD	CTD148	JC055_010_CTD148	23	23/01/2011	06:35:00	62	11.976	57	16.833	-62.1996	-57.28055	1321
					45	CTD	CTD149	JC055_010_CTD149	23	23/01/2011	06:48:00	62	11.941	57	16.676	-62.199017	-57.277933	1312
					46	CTD	CTD150	JC055_010_CTD150	23	23/01/2011	07:04:00	62	11.942	57	16.667	-62.199033	-57.277783	1305
					47	CTD	CTD151	JC055_010_CTD151	23	23/01/2011	07:19:00	62	11.909	57	16.532	-62.198483	-57.275533	1305

Equipment depth	End Date	End Time GMT	End Lat Degr	End Lat Min	End Long Degr	End Long Min	End Lat	End Long	End waterdepth meter	Comments	Recipient
										upcast. No Eh	
										downcast. Transmissometer anomaly, No Eh. Fault on sensor	
										upcast. Transmissometer anomaly, No Eh. Fault on sensor	
										downcast. Transmissometer anomaly, No Eh. Fault on sensor	
										upcast	
										downcast	
										upcast	
										downcast	
	23/01/2011	00:58:00	62	12.2	57	18.4	-62.20333	-57.3067		upcast	
										Aborted	
										downcast	
										upcast	
										downcast	
										upcast	
										downcast	
										upcast	
										downcast	
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										downcast	
										upcast	
										downcast	
										upcast. No time recorded	
										downcast	

Cruise	Site	Station No	Gear Code	Gear No	Event No	Event Gear Code	Event Gear No	Final sample number	JDay (Start)	Start Date	Start Time GMT	Start Lat Degr S	Start Lat Min S	Start Long Degr W	Start Long Min W	Start Lat	Start Long	Start Waterdepth meter
					48	CTD	CTD152	JC055_010_CTD152	23	23/01/2011	07:32:00	62	11.911	57	16.579	-62.198517	-57.276317	1303
					49	CTD	CTD153	JC055_010_CTD153	23	23/01/2011	07:47:00	62	11.874	57	16.368	-62.1979	-57.2728	1318
					50	CTD	CTD154	JC055_010_CTD154	23	23/01/2011	08:00:00	62	11.875	57	16.369	-62.197917	-57.272817	1320
					51	CTD	CTD155	JC055_010_CTD155	23	23/01/2011	08:15:00	62	11.8398	57	16.20735	-62.19733	-57.270123	1340
					52	CTD	CTD156	JC055_010_CTD156	23	23/01/2011	08:28:00	62	11.84056	57	16.20671	-62.197343	-57.270112	1340
					53	CTD	CTD157	JC055_010_CTD157	23	23/01/2011	08:42:00	62	11.80665	57	16.0531	-62.196778	-57.267552	1350
					54	CTD	CTD158	JC055_010_CTD158	23	23/01/2011	08:56:00	62	11.80566	57	16.056	-62.196761	-57.2676	1355
JC055	Bransfield Slope	11	MC	MC01	1	MC	c01	JC055_011_MC01/c01	23	23/01/2011	12:16:00	62	23.049	57	14.638	-62.38415	-57.243967	1150
					2	MC	c02	JC055_011_MC01/c02	23	23/01/2011	12:16:00	62	23.049	57	14.638	-62.38415	-57.243967	1150
					3	MC	c03	JC055_011_MC01/c03	23	23/01/2011	12:16:00	62	23.049	57	14.638	-62.38415	-57.243967	1150
					4	MC	c04	JC055_011_MC01/c04	23	23/01/2011	12:16:00	62	23.049	57	14.638	-62.38415	-57.243967	1150
					5	MC	c05	JC055_011_MC01/c05	23	23/01/2011	12:16:00	62	23.049	57	14.638	-62.38415	-57.243967	1150
					6	MC	c06	JC055_011_MC01/c06	23	23/01/2011	12:16:00	62	23.049	57	14.638	-62.38415	-57.243967	1150
					7	MC	c07	JC055_011_MC01/c07	23	23/01/2011	12:16:00	62	23.049	57	14.638	-62.38415	-57.243967	1150
					8	MC	c08	JC055_011_MC01/c08	23	23/01/2011	12:16:00	62	23.049	57	14.638	-62.38415	-57.243967	1150
JC055	Bransfield Slope	12	MC	MC02	1	MC	c01	JC055_012_MC02/c01	23	23/01/2011	13:50:00	62	23.051	57	14.638	-62.384183	-57.243967	1150
					2	MC	c02	JC055_012_MC02/c02	23	23/01/2011	13:50:00	62	23.051	57	14.638	-62.384183	-57.243967	1150
					3	MC	c03	JC055_012_MC02/c03	23	23/01/2011	13:50:00	62	23.051	57	14.638	-62.384183	-57.243967	1150
					4	MC	c04	JC055_012_MC02/c04	23	23/01/2011	13:50:00	62	23.051	57	14.638	-62.384183	-57.243967	1150
					5	MC	c05	JC055_012_MC02/c05	23	23/01/2011	13:50:00	62	23.051	57	14.638	-62.384183	-57.243967	1150
					6	MC	c06	JC055_012_MC02/c06	23	23/01/2011	13:50:00	62	23.051	57	14.638	-62.384183	-57.243967	1150
					7	MC	c07	JC055_012_MC02/c07	23	23/01/2011	13:50:00	62	23.051	57	14.638	-62.384183	-57.243967	1150
					8	MC	c08	JC055_012_MC02/c08	23	23/01/2011	13:50:00	62	23.051	57	14.638	-62.384183	-57.243967	1150
JC055	Bransfield Slope	13	MC	MC03	1	MC	c01	JC055_013_MC03/c01	23	23/01/2011	15:34:00	62	23.05	57	14.645	-62.384167	-57.244083	1148
					2	MC	c02	JC055_013_MC03/c02	23	23/01/2011	15:34:00	62	23.05	57	14.645	-62.384167	-57.244083	1148
					3	MC	c03	JC055_013_MC03/c03	23	23/01/2011	15:34:00	62	23.05	57	14.645	-62.384167	-57.244083	1148
					4	MC	c04	JC055_013_MC03/c04	23	23/01/2011	15:34:00	62	23.05	57	14.645	-62.384167	-57.244083	1148
					5	MC	c05	JC055_013_MC03/c05	23	23/01/2011	15:34:00	62	23.05	57	14.645	-62.384167	-57.244083	1148
					6	MC	c06	JC055_013_MC03/c06	23	23/01/2011	15:34:00	62	23.05	57	14.645	-62.384167	-57.244083	1148
					7	MC	c07	JC055_013_MC03/c07	23	23/01/2011	15:34:00	62	23.05	57	14.645	-62.384167	-57.244083	1148
					8	MC	c08	JC055_013_MC03/c08	23	23/01/2011	15:34:00	62	23.05	57	14.645	-62.384167	-57.244083	1148
					9	MC	c09	JC055_013_MC03/c09	23	23/01/2011	15:34:00	62	23.05	57	14.645	-62.384167	-57.244083	1148
					10	MC	c10	JC055_013_MC03/c10	23	23/01/2011	15:34:00	62	23.05	57	14.645	-62.384167	-57.244083	1148
JC055	Bransfield Slope	14	MC	MC04	1	MC	c01	JC055_014_MC04/c01	23	23/01/2011	17:25:00	62	23.051	57	14.64	-62.384183	-57.244	1148
					2	MC	c02	JC055_014_MC04/c02	23	23/01/2011	17:25:00	62	23.051	57	14.64	-62.384183	-57.244	1148
					3	MC	c03	JC055_014_MC04/c03	23	23/01/2011	17:25:00	62	23.051	57	14.64	-62.384183	-57.244	1148
					4	MC	c04	JC055_014_MC04/c04	23	23/01/2011	17:25:00	62	23.051	57	14.64	-62.384183	-57.244	1148
					5	MC	c05	JC055_014_MC04/c05	23	23/01/2011	17:25:00	62	23.051	57	14.64	-62.384183	-57.244	1148
					6	MC	c06	JC055_014_MC04/c06	23	23/01/2011	17:25:00	62	23.051	57	14.64	-62.384183	-57.244	1148
					7	MC	c07	JC055_014_MC04/c07	23	23/01/2011	17:25:00	62	23.051	57	14.64	-62.384183	-57.244	1148
					8	MC	c08	JC055_014_MC04/c08	23	23/01/2011	17:25:00	62	23.051	57	14.64	-62.384183	-57.244	1148
JC055	Bransfield Slope	15	MC	MC05	1	MC	c01	JC055_015_MC05/c01	23	23/01/2011	18:52:00	62	23.05	57	14.64	-62.384167	-57.244	1146
					2	MC	c02	JC055_015_MC05/c02	23	23/01/2011	18:52:00	62	23.05	57	14.64	-62.384167	-57.244	1146
					3	MC	c03	JC055_015_MC05/c03	23	23/01/2011	18:52:00	62	23.05	57	14.64	-62.384167	-57.244	1146
					4	MC	c04	JC055_015_MC05/c04	23	23/01/2011	18:52:00	62	23.05	57	14.64	-62.384167	-57.244	1146
					5	MC	c05	JC055_015_MC05/c05	23	23/01/2011	18:52:00	62	23.05	57	14.64	-62.384167	-57.244	1146
					6	MC	c06	JC055_015_MC05/c06	23	23/01/2011	18:52:00	62	23.05	57	14.64	-62.384167	-57.244	1146
					7	MC	c07	JC055_015_MC05/c07	23	23/01/2011	18:52:00	62	23.05	57	14.64	-62.384167	-57.244	1146
					8	MC	c08	JC055_015_MC05/c08	23	23/01/2011	18:52:00	62	23.05	57	14.64	-62.384167	-57.244	1146
JC055	Bransfield Slope	16	MC	MC06	1	MC	c01	JC055_016_MC06/c01	23	23/01/2011	20:21:00	62	23.05	57	14.64	-62.384167	-57.244	1147
					2	MC	c02	JC055_016_MC06/c02	23	23/01/2011	20:21:00	62	23.05	57	14.64	-62.384167	-57.244	1147
					3	MC	c03	JC055_016_MC06/c03	23	23/01/2011	20:21:00	62	23.05	57	14.64	-62.384167	-57.244	1147
					4	MC	c04	JC055_016_MC06/c04	23	23/01/2011	20:21:00	62	23.05	57	14.64	-62.384167	-57.244	1147
					5	MC	c05	JC055_016_MC06/c05	23	23/01/2011	20:21:00	62	23.05	57	14.64	-62.384167	-57.244	1147
					6	MC	c06	JC055_016_MC06/c06	23	23/01/2011	20:21:00	62	23.05	57	14.64	-62.384167	-57.244	1147
					7	MC	c07	JC055_016_MC06/c07	23	23/01/2011	20:21:00	62	23.05	57	14.64	-62.384167	-57.244	1147
					8	MC	c08	JC055_016_MC06/c08	23	23/01/2011	20:21:00	62	23.05	57	14.64	-62.384167	-57.244	1147

Equipment depth	End Date	End Time GMT	End Lat Degr	End Lat Min	End Long Degr	End Long Min	End Lat	End Long	End waterdepth meter	Comments	Recipient
										upcast	
										downcast	
										upcast	
										downcast	
										upcast	
										downcast	
	23/01/2011	09:27:00	62	11.772	57	15.903	-62.1962	-57.2651	1370	upcast	
										time is time at seafloor. Wireout: 1140, Pull-out: 2.1t. 44.8cm	Clare Woulds
										time is time at seafloor. Wireout: 1140, Pull-out: 2.1t. 45.5cm	Clare Woulds
										time is time at seafloor. Wireout: 1140, Pull-out: 2.1t. 48.5cm	Clare Woulds
										time is time at seafloor. Wireout: 1140, Pull-out: 2.1t. 43.0cm	Clare Woulds
										time is time at seafloor. Wireout: 1140, Pull-out: 2.1t. ??cm	Laura Hepburn
										time is time at seafloor. Wireout: 1140, Pull-out: 2.1t. ??cm	Katrin Z
										failed	
										failed	
										time is atseafloor. Wireout: 1150m, Pull-out: 2.2t.	Rachel Mils
										time is atseafloor. Wireout: 1150m, Pull-out: 2.2t.	Clare Woulds
										time is atseafloor. Wireout: 1150m, Pull-out: 2.2t.	Rich Pancost
										time is atseafloor. Wireout: 1150m, Pull-out: 2.2t.	Katrin Z
										time is atseafloor. Wireout: 1150m, Pull-out: 2.2t.	Adrian G
										time is atseafloor. Wireout: 1150m, Pull-out: 2.2t.	Adrian G
										time is atseafloor. Wireout: 1150m, Pull-out: 2.2t.	Adrian G
										time is atseafloor. Wireout: 1150m, Pull-out: 2.2t.	Adrian G
										time is atseafloor. Wireout: 1149m, Pull-out: 2.21t.	Rachel Mils
										time is atseafloor. Wireout: 1149m, Pull-out: 2.21t.	Katrin Z
										time is atseafloor. Wireout: 1149m, Pull-out: 2.21t, 48cm	Adrian G
										time is atseafloor. Wireout: 1149m, Pull-out: 2.21t., 46cm	Adrian G
										time is atseafloor. Wireout: 1149m, Pull-out: 2.21t., 47.6cm	Adrian G
										time is atseafloor. Wireout: 1149m, Pull-out: 2.21t., 46cm	Adrian G
										time is atseafloor. Wireout: 1149m, Pull-out: 2.21t., 47.6cm	Adrian G
										time is atseafloor. Wireout: 1149m, Pull-out: 2.21t., 47.5cm	Adrian G
										time is atseafloor. Wireout: 1149m, Pull-out: 2.21t.	discarded
										time is atseafloor. Wireout: 1149m, Pull-out: 2.21t.	discarded
										time is atseafloor. Wireout: 1149m, Pull-out: 2.21t.	discarded
										time is atseafloor. Wireout: 1149m, Pull-out: 2.21t.	discarded
										time is at seafloor. Wireout: 1140m, Pull-out: 2.19t	Adrian G
										time is at seafloor. Wireout: 1140m, Pull-out: 2.19t	Adrian G
										time is at seafloor. Wireout: 1140m, Pull-out: 2.19t	Adrian G
										time is at seafloor. Wireout: 1140m, Pull-out: 2.19t	Adrian G
										time is at seafloor. Wireout: 1140m, Pull-out: 2.19t	discarded
										time is at seafloor. Wireout: 1140m, Pull-out: 2.19t	discarded
										time is at seafloor. Wireout: 1140m, Pull-out: 2.19t	discarded
										failed	
										time is at seafloor. Wireout: 1142m, Pull-out: 2.2t, 44cm	Adrian G
										time is at seafloor. Wireout: 1142m, Pull-out: 2.2t, 55cm	Adrian G
										time is at seafloor. Wireout: 1142m, Pull-out: 2.2t, 40cm	Adrian G
										time is at seafloor. Wireout: 1142m, Pull-out: 2.2t, 43cm	Adrian G
										time is at seafloor. Wireout: 1142m, Pull-out: 2.2t, 46cm	Adrian G
										time is at seafloor. Wireout: 1142m, Pull-out: 2.2t, 44cm	Katrin Z
										failed	
										failed	
										time is at seafloor. Wireout: 1140m, Pull-out: 2.2t, 38cm	Adrian G
										time is at seafloor. Wireout: 1140m, Pull-out: 2.2t, 41cm	Adrian G
										time is at seafloor. Wireout: 1140m, Pull-out: 2.2t, 44cm	Adrian G
										failed	
										failed	
										failed	
										failed	
										failed	

Cruise	Site	Station No	Gear Code	Gear No	Event No	Event Gear Code	Event Gear No	Final sample number	JDay (Start)	Start Date	Start Time GMT	Start Lat Degr S	Start Lat Min S	Start Long Degr W	Start Long Min W	Start Lat	Start Long	Start Waterdepth meter
JC055	Hook Ridge	17	SHRIMP	SHRIMP01	0	SHRIMP	SHRIMP01	JC055_017_SHRIMP01	23	23/01/2011	23:15:00	62	12.247	57	17.525	-62.204117	-57.292083	1386
JC055	Hook Ridge	18	MC	MC07	1	MC	c01	JC055_018_MC07/c01	25	25/01/2011	21:45:00	62	11.8165	57	17.85	-62.196942	-57.2975	1174
					2	MC	c02	JC055_018_MC07/c02	25	25/01/2011	21:45:00	62	11.8165	57	17.85	-62.196942	-57.2975	1174
					3	MC	c03	JC055_018_MC07/c03	25	25/01/2011	21:45:00	62	11.8165	57	17.85	-62.196942	-57.2975	1174
					4	MC	c04	JC055_018_MC07/c04	25	25/01/2011	21:45:00	62	11.8165	57	17.85	-62.196942	-57.2975	1174
JC055	Hook Ridge	19	MC	MC08	1	MC	c01	JC055_019_MC08/c01	25	25/01/2011	23:43:00	62	11.8165	57	17.85	-62.196942	-57.2975	1174
					2	MC	c02	JC055_019_MC08/c02	25	25/01/2011	23:43:00	62	11.8165	57	17.85	-62.196942	-57.2975	1174
					3	MC	c03	JC055_019_MC08/c03	25	25/01/2011	23:43:00	62	11.8165	57	17.85	-62.196942	-57.2975	1174
					4	MC	c04	JC055_019_MC08/c04	25	25/01/2011	23:43:00	62	11.8165	57	17.85	-62.196942	-57.2975	1174
					5	MC	c05	JC055_019_MC08/c05	25	25/01/2011	23:43:00	62	11.8165	57	17.85	-62.196942	-57.2975	1174
					6	MC	c06	JC055_019_MC08/c06	25	25/01/2011	23:43:00	62	11.8165	57	17.85	-62.196942	-57.2975	1174
					7	MC	c07	JC055_019_MC08/c07	25	25/01/2011	23:43:00	62	11.8165	57	17.85	-62.196942	-57.2975	1174
					8	MC	c08	JC055_019_MC08/c08	25	25/01/2011	23:43:00	62	11.8165	57	17.85	-62.196942	-57.2975	1174
JC055	Hook Ridge	20	MC	MC09	1	MC	c01	JC055_020_MC09/c01	26	26/01/2011	01:30:00	62	11.8165	57	17.85	-62.196942	-57.2975	1174
					2	MC	c02	JC055_020_MC09/c02	26	26/01/2011	01:30:00	62	11.8165	57	17.85	-62.196942	-57.2975	1174
					3	MC	c03	JC055_020_MC09/c03	26	26/01/2011	01:30:00	62	11.8165	57	17.85	-62.196942	-57.2975	1174
					4	MC	c04	JC055_020_MC09/c04	26	26/01/2011	01:30:00	62	11.8165	57	17.85	-62.196942	-57.2975	1174
					5	MC	c05	JC055_020_MC09/c05	26	26/01/2011	01:30:00	62	11.8165	57	17.85	-62.196942	-57.2975	1174
					6	MC	c06	JC055_020_MC09/c06	26	26/01/2011	01:30:00	62	11.8165	57	17.85	-62.196942	-57.2975	1174
					7	MC	c07	JC055_020_MC09/c07	26	26/01/2011	01:30:00	62	11.8165	57	17.85	-62.196942	-57.2975	1174
					8	MC	c08	JC055_020_MC09/c08	26	26/01/2011	01:30:00	62	11.8165	57	17.85	-62.196942	-57.2975	1174
JC055	Hook Ridge	21	MC	MC10	1	MC	c01	JC055_021_MC10/c01	26	26/01/2011	03:11:00	62	11.8436	57	17.8775	-62.197393	-57.297958	1151
					2	MC	c02	JC055_021_MC10/c02	26	26/01/2011	03:11:00	62	11.8436	57	17.8775	-62.197393	-57.297958	1151
					3	MC	c03	JC055_021_MC10/c03	26	26/01/2011	03:11:00	62	11.8436	57	17.8775	-62.197393	-57.297958	1151
					4	MC	c04	JC055_021_MC10/c04	26	26/01/2011	03:11:00	62	11.8436	57	17.8775	-62.197393	-57.297958	1151
					5	MC	c05	JC055_021_MC10/c05	26	26/01/2011	03:11:00	62	11.8436	57	17.8775	-62.197393	-57.297958	1151
					6	MC	c06	JC055_021_MC10/c06	26	26/01/2011	03:11:00	62	11.8436	57	17.8775	-62.197393	-57.297958	1151
					7	MC	c07	JC055_021_MC10/c07	26	26/01/2011	03:11:00	62	11.8436	57	17.8775	-62.197393	-57.297958	1151
					8	MC	c08	JC055_021_MC10/c08	26	26/01/2011	03:11:00	62	11.8436	57	17.8775	-62.197393	-57.297958	1151
JC055	Hook Ridge	22	MC	MC11	1	MC	c01	JC055_022_MC11/c01	26	26/01/2011	05:02:00	62	11.8435	57	17.8773	-62.197392	-57.297955	1150
					2	MC	c02	JC055_022_MC11/c02	26	26/01/2011	05:02:00	62	11.8435	57	17.8773	-62.197392	-57.297955	1150
					3	MC	c03	JC055_022_MC11/c03	26	26/01/2011	05:02:00	62	11.8435	57	17.8773	-62.197392	-57.297955	1150
					4	MC	c04	JC055_022_MC11/c04	26	26/01/2011	05:02:00	62	11.8435	57	17.8773	-62.197392	-57.297955	1150
					5	MC	c05	JC055_022_MC11/c05	26	26/01/2011	05:02:00	62	11.8435	57	17.8773	-62.197392	-57.297955	1150
					6	MC	c06	JC055_022_MC11/c06	26	26/01/2011	05:02:00	62	11.8435	57	17.8773	-62.197392	-57.297955	1150
					7	MC	c07	JC055_022_MC11/c07	26	26/01/2011	05:02:00	62	11.8435	57	17.8773	-62.197392	-57.297955	1150
					8	MC	c08	JC055_022_MC11/c08	26	26/01/2011	05:02:00	62	11.8435	57	17.8773	-62.197392	-57.297955	1150
JC055	Hook Ridge	23	MC	MC12	1	MC	c01	JC055_023_MC12/c01	26	26/01/2011	06:38:00	62	11.8429	57	17.8786	-62.197382	-57.297977	1150
					2	MC	c02	JC055_023_MC12/c02	26	26/01/2011	06:38:00	62	11.8429	57	17.8786	-62.197382	-57.297977	1150
					3	MC	c03	JC055_023_MC12/c03	26	26/01/2011	06:38:00	62	11.8429	57	17.8786	-62.197382	-57.297977	1150
					4	MC	c04	JC055_023_MC12/c04	26	26/01/2011	06:38:00	62	11.8429	57	17.8786	-62.197382	-57.297977	1150
					5	MC	c05	JC055_023_MC12/c05	26	26/01/2011	06:38:00	62	11.8429	57	17.8786	-62.197382	-57.297977	1150
					6	MC	c06	JC055_023_MC12/c06	26	26/01/2011	06:38:00	62	11.8429	57	17.8786	-62.197382	-57.297977	1150
					7	MC	c07	JC055_023_MC12/c07	26	26/01/2011	06:38:00	62	11.8429	57	17.8786	-62.197382	-57.297977	1150
					8	MC	c08	JC055_023_MC12/c08	26	26/01/2011	06:38:00	62	11.8429	57	17.8786	-62.197382	-57.297977	1150
JC055	Hook Ridge	24	MC	MC13	1	MC	c01	JC055_024_MC13/c01	26	26/01/2011	08:10:00	62	11.841	57	17.8761	-62.19735	-57.297935	1185
					2	MC	c02	JC055_024_MC13/c02	26	26/01/2011	08:10:00	62	11.841	57	17.8761	-62.19735	-57.297935	1185
					3	MC	c03	JC055_024_MC13/c03	26	26/01/2011	08:10:00	62	11.841	57	17.8761	-62.19735	-57.297935	1185
					4	MC	c04	JC055_024_MC13/c04	26	26/01/2011	08:10:00	62	11.841	57	17.8761	-62.19735	-57.297935	1185
					5	MC	c05	JC055_024_MC13/c05	26	26/01/2011	08:10:00	62	11.841	57	17.8761	-62.19735	-57.297935	1185
					6	MC	c06	JC055_024_MC13/c06	26	26/01/2011	08:10:00	62	11.841	57	17.8761	-62.19735	-57.297935	1185
					7	MC	c07	JC055_024_MC13/c07	26	26/01/2011	08:10:00	62	11.841	57	17.8761	-62.19735	-57.297935	1185
					8	MC	c08	JC055_024_MC13/c08	26	26/01/2011	08:10:00	62	11.841	57	17.8761	-62.19735	-57.297935	1185
JC055	Hook Ridge	25	MC	MC14	1	MC	c01	JC055_025_MC14/c01	26	26/01/2011	09:38:00	62	11.81631	57	17.84879	-62.196939	-57.29748	1145
					2	MC	c02	JC055_025_MC14/c02	26	26/01/2011	09:38:00	62	11.81631	57	17.84879	-62.196939	-57.29748	1145
					3	MC	c03	JC055_025_MC14/c03	26	26/01/2011	09:38:00	62	11.81631	57	17.84879	-62.196939	-57.29748	1145
					4	MC	c04	JC055_025_MC14/c04	26	26/01/2011	09:38:00	62	11.81631	57	17.84879	-62.196939	-57.29748	1145

Equipment depth	End Date	End Time GMT	End Lat Degr	End Lat Min	End Long Degr	End Long Min	End Lat	End Long	End waterdepth meter	Comments	Recipient
1386	25/01/2011	19:45:00	62	12.434	57	24.184	-62.20723	-57.4031		Start: time in water, end: time on deck. Dive was aborted at 10:00 and SHRIMP kept in mid-water due to weather.	
										time is at seafloor. Wireout: 1173m, Pull-out: 1.98t, 56cm	Laura Hepburn
										time is at seafloor. Wireout: 1173m, Pull-out: 1.98t, 53cm	Laura Hepburn
										time is at seafloor. Wireout: 1173m, Pull-out: 1.98t, 57cm	Rich Pancost
										failed	
										time is at seafloor. Wireout: 1174m, Pull-out: 1.9t, 31cm	David Pearce
										time is at seafloor. Wireout: 1174m, Pull-out: 1.9t, 49cm	Adrian G
										time is at seafloor. Wireout: 1174m, Pull-out: 1.9t, 37cm	Adrian G
										time is at seafloor. Wireout: 1174m, Pull-out: 1.9t, 49cm	Adrian G
										time is at seafloor. Wireout: 1174m, Pull-out: 1.9t, 37cm	Adrian G
										failed	
										failed	
										failed	
										time is at seafloor. Wireout: 1180m, Pull-out: 1.95t, 45cm	Adrian G
										time is at seafloor. Wireout: 1180m, Pull-out: 1.95t, 45cm	Adrian G
										time is at seafloor. Wireout: 1180m, Pull-out: 1.95t,505cm	Adrian G
										failed	
										time is at seafloor. Wireout: 1180m, Pull-out: 1.95t, 42cm	Katrin Z
										failed	
										failed	
										failed	
										time is at seafloor. Wireout: 1175m, Pull-out: 2.43t, 57cm	Adrian G
										time is at seafloor. Wireout: 1175m, Pull-out: 2.43t, 41cm	Adrian G
										time is at seafloor. Wireout: 1175m, Pull-out: 2.43t, 34cm	Adrian G
										time is at seafloor. Wireout: 1175m, Pull-out: 2.43t, 54cm	Adrian G
										failed	
										failed	
										failed	
										failed	
										failed	
										time is at seafloor. Wireout: 1175m, Pull-out: 2.43t, 51cm	Katrin Z
										time is at seafloor. Wireout: 1171m, Pull-out: 2.09t, 40cm	Adrian G
										time is at seafloor. Wireout: 1171m, Pull-out: 2.09t, 51cm	Adrian G
										time is at seafloor. Wireout: 1171m, Pull-out: 2.09t, 54cm	Adrian G
										failed	
										time is at seafloor. Wireout: 1171m, Pull-out: 2.09t, 39cm	Adrian G
										failed	
										time is at seafloor. Wireout: 1171m, Pull-out: 2.09t, 41cm	Adrian G
										time is at seafloor. Wireout: 1171m, Pull-out: 2.09t, 27cm	Adrian G
										failed	
										failed	
										failed	
										failed	
										failed	
										failed	
										failed	
										failed	
										failed	
										time is at seafloor. Wireout: 1166m, Pull-out: 1.81t, 49cm	Adrian G
										time is at seafloor. Wireout: 1166m, Pull-out: 1.81t, 47cm	Adrian G
										failed	
										failed	
										failed	
										failed	
										failed	
										time is at seafloor. Wireout: 1150m, Pull-out: 1.90t, 22cm	Adrian G
										time is at seafloor. Wireout: 1150m, Pull-out: 1.90t, 31cm	Adrian G
										failed	
										failed	

Cruise	Site	Station No	Gear Code	Gear No	Event No	Event Gear Code	Event Gear No	Final sample number	JDay (Start)	Start Date	Start Time GMT	Start Lat Degr S	Start Lat Min S	Start Long Degr W	Start Long Min W	Start Lat	Start Long	Start Waterdepth meter
					5	MC	c05	JC055_025_MC14/c05	26	26/01/2011	09:38:00	62	11.81631	57	17.84879	-62.196939	-57.29748	1145
					6	MC	c06	JC055_025_MC14/c06	26	26/01/2011	09:38:00	62	11.81631	57	17.84879	-62.196939	-57.29748	1145
					7	MC	c07	JC055_025_MC14/c07	26	26/01/2011	09:38:00	62	11.81631	57	17.84879	-62.196939	-57.29748	1145
					8	MC	c08	JC055_025_MC14/c08	26	26/01/2011	09:38:00	62	11.81631	57	17.84879	-62.196939	-57.29748	1145
JC055	Hook Ridge	26	MC	MC15	1	MC	c01	JC055_026_MC15/c01	26	26/01/2011	10:32:00	62	11.8159	57	17.8449	-62.196932	-57.297415	1145
					2	MC	c02	JC055_026_MC15/c02	26	26/01/2011	10:32:00	62	11.8159	57	17.8449	-62.196932	-57.297415	1145
					3	MC	c03	JC055_026_MC15/c03	26	26/01/2011	10:32:00	62	11.8159	57	17.8449	-62.196932	-57.297415	1145
					4	MC	c04	JC055_026_MC15/c04	26	26/01/2011	10:32:00	62	11.8159	57	17.8449	-62.196932	-57.297415	1145
					5	MC	c05	JC055_026_MC15/c05	26	26/01/2011	10:32:00	62	11.8159	57	17.8449	-62.196932	-57.297415	1145
					6	MC	c06	JC055_026_MC15/c06	26	26/01/2011	10:32:00	62	11.8159	57	17.8449	-62.196932	-57.297415	1145
					7	MC	c07	JC055_026_MC15/c07	26	26/01/2011	10:32:00	62	11.8159	57	17.8449	-62.196932	-57.297415	1145
					8	MC	c08	JC055_026_MC15/c08	26	26/01/2011	10:32:00	62	11.8159	57	17.8449	-62.196932	-57.297415	1145
JC055	Hook Ridge	27	CTD_TOW_YO	TOWYO#06	1	CTD	CTD159	JC055_027_CTD159	26	26/01/2011	12:29:00	62	11.3515	57	18.5967	-62.189192	-57.309945	1356
					2	CTD	CTD160	JC055_027_CTD160	26	26/01/2011	12:57:00	62	11.413	57	18.541	-62.190217	-57.309017	1395
					3	CTD	CTD161	JC055_027_CTD161	26	26/01/2011	13:11:00	62	11.42	57	18.535	-62.190333	-57.308917	1390
					4	CTD	CTD162	JC055_027_CTD162	26	26/01/2011	13:27:00	62	11.486	57	18.474	-62.191433	-57.3079	1378
					5	CTD	CTD163	JC055_027_CTD163	26	26/01/2011	13:40:00	62	11.49	57	18.47	-62.1915	-57.307833	1373
					6	CTD	CTD164	JC055_027_CTD164	26	26/01/2011	13:55:00	62	11.557	57	18.409	-62.192617	-57.306817	1315
					7	CTD	CTD165	JC055_027_CTD165	26	26/01/2011	14:10:00	62	11.561	57	18.407	-62.192683	-57.306783	1320
					8	CTD	CTD166	JC055_027_CTD166	26	26/01/2011	14:23:00	62	11.588	57	18.379	-62.193133	-57.306317	1287
					9	CTD	CTD167	JC055_027_CTD167	26	26/01/2011	14:36:00	62	11.63	57	18.241	-62.193833	-57.304017	1226
					10	CTD	CTD168	JC055_027_CTD168	26	26/01/2011	14:53:00	62	11.684	57	18.292	-62.194733	-57.304867	1215
					11	CTD	CTD169	JC055_027_CTD169	26	26/01/2011	15:01:00	62	11.688	57	18.288	-62.1948	-57.3048	1213
					12	CTD	CTD170	JC055_027_CTD170	26	26/01/2011	15:11:00	62	11.74	57	18.247	-62.195667	-57.304117	1236
					13	CTD	CTD171	JC055_027_CTD171	26	26/01/2011	15:23:00	62	11.742	57	18.238	-62.1957	-57.303967	1237
					14	CTD	CTD172	JC055_027_CTD172	26	26/01/2011	15:38:00	62	11.795	57	18.188	-62.196583	-57.303133	1222
					15	CTD	CTD173	JC055_027_CTD173	26	26/01/2011	15:51:00	62	11.798	57	18.185	-62.196633	-57.303083	1170
					16	CTD	CTD174	JC055_027_CTD174	26	26/01/2011	16:11:00	62	11.798	57	18.185	-62.196633	-57.303083	1225
					17	CTD	CTD175	JC055_027_CTD175	26	26/01/2011	16:39:00	62	11.86	57	18.128	-62.197667	-57.302133	1121
					18	CTD	CTD176	JC055_027_CTD176	26	26/01/2011	16:52:00	62	11.916	57	18.076	-62.1986	-57.301267	1212
					19	CTD	CTD177	JC055_027_CTD177	26	26/01/2011	17:08:00	62	11.92	57	18.072	-62.198667	-57.3012	1219
					20	CTD	CTD178	JC055_027_CTD178	26	26/01/2011	17:19:00	62	11.966	57	18.031	-62.199433	-57.300517	1222
					21	CTD	CTD179	JC055_027_CTD179	26	26/01/2011	17:35:00	62	11.97	57	18.028	-62.1995	-57.300467	1222
					22	CTD	CTD180	JC055_027_CTD180	26	26/01/2011	17:48:00	62	12.013	57	17.988	-62.200217	-57.2998	1230
					23	CTD	CTD181	JC055_027_CTD181	26	26/01/2011	18:04:00	62	12.022	57	17.977	-62.200367	-57.299617	1231
					24	CTD	CTD182	JC055_027_CTD182	26	26/01/2011	18:15:00	62	12.118	57	17.891	-62.201967	-57.298183	1269
					25	CTD	CTD183	JC055_027_CTD183	26	26/01/2011	18:35:00	62	12.133	57	17.875	-62.202217	-57.297917	1289
					26	CTD	CTD184	JC055_027_CTD184	26	26/01/2011	18:47:00	62	12.134	57	17.875	-62.202233	-57.297917	1289
					27	CTD	CTD185	JC055_027_CTD185	26	26/01/2011	18:48:00	62	12.197	57	17.818	-62.203283	-57.296967	1340
					28	CTD	CTD186	JC055_027_CTD186	26	26/01/2011	19:02:00	62	12.202	57	17.817	-62.203367	-57.29695	1275
					29	CTD	CTD187	JC055_027_CTD187	26	26/01/2011	19:14:00	62	12.261	57	17.957	-62.20435	-57.299283	1299
					30	CTD	CTD188	JC055_027_CTD188	26	26/01/2011	19:26:00	62	12.263	57	17.755	-62.204383	-57.295917	1313
					31	CTD	CTD189	JC055_027_CTD189	26	26/01/2011	19:38:00	62	12.328	57	17.696	-62.205467	-57.294933	1392
					32	CTD	CTD190	JC055_027_CTD190	26	26/01/2011	19:50:00	62	12.329	57	17.696	-62.205483	-57.294933	1392
					33	CTD	CTD191	JC055_027_CTD191	26	26/01/2011	20:03:00	62	12.392	57	17.631	-62.206533	-57.29385	1541
					34	NISKIN	n01	JC055_027_CTD191/n01	26	26/01/2011	20:03:00	62	12.392	57	17.631	-62.206533	-57.29385	1541
					35	NISKIN	n02	JC055_027_CTD191/n02	26	26/01/2011	20:03:00	62	12.392	57	17.631	-62.206533	-57.29385	1541
					36	NISKIN	n03	JC055_027_CTD191/n03	26	26/01/2011	20:03:00	62	12.392	57	17.631	-62.206533	-57.29385	1541
					37	NISKIN	n04	JC055_027_CTD191/n04	26	26/01/2011	20:03:00	62	12.392	57	17.631	-62.206533	-57.29385	1541
					38	NISKIN	n05	JC055_027_CTD191/n05	26	26/01/2011	20:03:00	62	12.392	57	17.631	-62.206533	-57.29385	1541
					39	NISKIN	n06	JC055_027_CTD191/n06	26	26/01/2011	20:03:00	62	12.392	57	17.631	-62.206533	-57.29385	1541
					40	NISKIN	n07	JC055_027_CTD191/n07	26	26/01/2011	20:03:00	62	12.392	57	17.631	-62.206533	-57.29385	1541
					41	NISKIN	n08	JC055_027_CTD191/n08	26	26/01/2011	20:03:00	62	12.392	57	17.631	-62.206533	-57.29385	1541
					42	NISKIN	n09	JC055_027_CTD191/n09	26	26/01/2011	20:03:00	62	12.392	57	17.631	-62.206533	-57.29385	1541
					43	NISKIN	n10	JC055_027_CTD191/n10	26	26/01/2011	20:03:00	62	12.392	57	17.631	-62.206533	-57.29385	1541
					44	NISKIN	n11	JC055_027_CTD191/n11	26	26/01/2011	20:03:00	62	12.392	57	17.631	-62.206533	-57.29385	1541
					45	NISKIN	n12	JC055_027_CTD191/n12	26	26/01/2011	20:03:00	62	12.392	57	17.631	-62.206533	-57.29385	1541

Equipment depth	End Date	End Time GMT	End Lat Degr	End Lat Min	End Long Degr	End Long Min	End Lat	End Long	End waterdepth meter	Comments	Recipient
										failed	
										failed	
										failed	
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										failed	
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	26/01/2011	20:23:00	62	12.39	57	17.63	-62.2065	-57.2938	1541	further upcast for sampling & recovery	
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Cruise	Site	Station No	Gear Code	Gear No	Event No	Event Gear Code	Event Gear No	Final sample number	JDay (Start)	Start Date	Start Time GMT	Start Lat Degr S	Start Lat Min S	Start Long Degr W	Start Long Min W	Start Lat	Start Long	Start Waterdepth meter
					46	NISKIN	n13	JC055_027_CTD191/n13	26	26/01/2011	20:03:00	62	12.392	57	17.631	-62.206533	-57.29385	1541
					47	NISKIN	n14	JC055_027_CTD191/n14	26	26/01/2011	20:03:00	62	12.392	57	17.631	-62.206533	-57.29385	1541
					48	NISKIN	n15	JC055_027_CTD191/n15	26	26/01/2011	20:03:00	62	12.392	57	17.631	-62.206533	-57.29385	1541
					49	NISKIN	n16	JC055_027_CTD191/n16	26	26/01/2011	20:03:00	62	12.392	57	17.631	-62.206533	-57.29385	1541
					50	NISKIN	n17	JC055_027_CTD191/n17	26	26/01/2011	20:03:00	62	12.392	57	17.631	-62.206533	-57.29385	1541
					51	NISKIN	n18	JC055_027_CTD191/n18	26	26/01/2011	20:03:00	62	12.392	57	17.631	-62.206533	-57.29385	1541
					52	NISKIN	n19	JC055_027_CTD191/n19	26	26/01/2011	20:03:00	62	12.392	57	17.631	-62.206533	-57.29385	1541
					53	NISKIN	n20	JC055_027_CTD191/n20	26	26/01/2011	20:03:00	62	12.392	57	17.631	-62.206533	-57.29385	1541
					54	NISKIN	n21	JC055_027_CTD191/n21	26	26/01/2011	20:03:00	62	12.392	57	17.631	-62.206533	-57.29385	1541
					55	NISKIN	n22	JC055_027_CTD191/n22	26	26/01/2011	20:03:00	62	12.392	57	17.631	-62.206533	-57.29385	1541
					56	NISKIN	n23	JC055_027_CTD191/n23	26	26/01/2011	20:03:00	62	12.392	57	17.631	-62.206533	-57.29385	1541
					57	NISKIN	n24	JC055_027_CTD191/n24	26	26/01/2011	20:03:00	62	12.392	57	17.631	-62.206533	-57.29385	1541
JC055	Hook Ridge	28	CTD	CTD192	0	CTDprofile	CTD192	JC055_028_CTD192/p	26	26/01/2011	21:15:00	62	11.86063	57	17.85879	-62.197677	-57.297647	1166
					1	NISKIN	n01	JC055_028_CTD192/n01	26	26/01/2011	21:54:00	62	11.859	57	17.86	-62.19765	-57.297667	1166
					2	NISKIN	n02	JC055_028_CTD192/n02	26	26/01/2011	21:54:00	62	11.859	57	17.86	-62.19765	-57.297667	1166
					3	NISKIN	n03	JC055_028_CTD192/n03	26	26/01/2011	21:54:00	62	11.859	57	17.86	-62.19765	-57.297667	1166
					4	NISKIN	n04	JC055_028_CTD192/n04	26	26/01/2011	21:54:00	62	11.859	57	17.86	-62.19765	-57.297667	1166
					5	NISKIN	n05	JC055_028_CTD192/n05	26	26/01/2011	21:54:00	62	11.859	57	17.86	-62.19765	-57.297667	1166
					6	NISKIN	n06	JC055_028_CTD192/n06	26	26/01/2011	21:54:00	62	11.859	57	17.86	-62.19765	-57.297667	1166
					7	NISKIN	n07	JC055_028_CTD192/n07	26	26/01/2011	21:54:00	62	11.859	57	17.86	-62.19765	-57.297667	1166
					8	NISKIN	n08	JC055_028_CTD192/n08	26	26/01/2011	21:54:00	62	11.859	57	17.86	-62.19765	-57.297667	1166
					9	NISKIN	n09	JC055_028_CTD192/n09	26	26/01/2011	21:54:00	62	11.859	57	17.86	-62.19765	-57.297667	1166
					10	NISKIN	n10	JC055_028_CTD192/n10	26	26/01/2011	21:57:00	62	11.859	57	17.86	-62.19765	-57.297667	1166
					11	NISKIN	n11	JC055_028_CTD192/n11	26	26/01/2011	21:59:00	62	11.859	57	17.856	-62.19765	-57.2976	1166
					12	NISKIN	n12	JC055_028_CTD192/n12	26	26/01/2011	21:59:00	62	11.859	57	17.856	-62.19765	-57.2976	1166
					13	NISKIN	n13	JC055_028_CTD192/n13	26	26/01/2011	21:59:00	62	11.859	57	17.856	-62.19765	-57.2976	1166
					14	NISKIN	n14	JC055_028_CTD192/n14	26	26/01/2011	21:59:00	62	11.859	57	17.856	-62.19765	-57.2976	1166
					15	NISKIN	n15	JC055_028_CTD192/n15	26	26/01/2011	22:01:00	62	11.859	57	17.861	-62.19765	-57.297683	1166
					16	NISKIN	n16	JC055_028_CTD192/n16	26	26/01/2011	22:04:00	62	11.859	57	17.858	-62.19765	-57.297633	1166
					17	NISKIN	n17	JC055_028_CTD192/n17	26	26/01/2011	22:04:00	62	11.859	57	17.858	-62.19765	-57.297633	1166
					18	NISKIN	n18	JC055_028_CTD192/n18	26	26/01/2011	22:04:00	62	11.859	57	17.858	-62.19765	-57.297633	1166
					19	NISKIN	n19	JC055_028_CTD192/n19	26	26/01/2011	22:04:00	62	11.859	57	17.858	-62.19765	-57.297633	1166
					20	NISKIN	n20	JC055_028_CTD192/n20	26	26/01/2011	22:04:00	62	11.859	57	17.858	-62.19765	-57.297633	1166
					21	NISKIN	n21	JC055_028_CTD192/n21	26	26/01/2011	22:04:00	62	11.859	57	17.858	-62.19765	-57.297633	1166
					22	NISKIN	n22	JC055_028_CTD192/n22	26	26/01/2011	22:04:00	62	11.859	57	17.858	-62.19765	-57.297633	1166
					23	NISKIN	n23	JC055_028_CTD192/n23	26	26/01/2011	22:04:00	62	11.859	57	17.858	-62.19765	-57.297633	1166
					24	NISKIN	n24	JC055_028_CTD192/n24	26	26/01/2011	22:05:00	62	11.859	57	17.858	-62.19765	-57.297633	1166
JC055	Hook Ridge	29	GC	GC01	1	GC	GC01	JC055_029_GC01	27	27/01/2011	00:11:00	62	11.84105	57	17.87369	-62.197351	-57.297895	1150
JC055	Hook Ridge	30	MC	MC16	1	MC	c01	JC055_030_MC16/c01	27	27/01/2011	02:06:00	62	11.5469	57	16.7044	-62.192448	-57.278407	1040
					2	MC	c02	JC055_030_MC16/c02	27	27/01/2011	02:06:00	62	11.5469	57	16.7044	-62.192448	-57.278407	1040
					3	MC	c03	JC055_030_MC16/c03	27	27/01/2011	02:06:00	62	11.5469	57	16.7044	-62.192448	-57.278407	1040
					4	MC	c04	JC055_030_MC16/c04	27	27/01/2011	02:06:00	62	11.5469	57	16.7044	-62.192448	-57.278407	1040
					5	MC	c05	JC055_030_MC16/c05	27	27/01/2011	02:06:00	62	11.5469	57	16.7044	-62.192448	-57.278407	1040
					6	MC	c06	JC055_030_MC16/c06	27	27/01/2011	02:06:00	62	11.5469	57	16.7044	-62.192448	-57.278407	1040
					7	MC	c07	JC055_030_MC16/c07	27	27/01/2011	02:06:00	62	11.5469	57	16.7044	-62.192448	-57.278407	1040
					8	MC	c08	JC055_030_MC16/c08	27	27/01/2011	02:06:00	62	11.5469	57	16.7044	-62.192448	-57.278407	1040
JC055	Hook Ridge	31	MC	MC17	1	MC	c01	JC055_031_MC17/c01	27	27/01/2011	03:40:00	62	11.5473	57	16.7001	-62.192455	-57.278335	1054
					2	MC	c02	JC055_031_MC17/c02	27	27/01/2011	03:40:00	62	11.5473	57	16.7001	-62.192455	-57.278335	1054
					3	MC	c03	JC055_031_MC17/c03	27	27/01/2011	03:40:00	62	11.5473	57	16.7001	-62.192455	-57.278335	1054
					4	MC	c04	JC055_031_MC17/c04	27	27/01/2011	03:40:00	62	11.5473	57	16.7001	-62.192455	-57.278335	1054
					5	MC	c05	JC055_031_MC17/c05	27	27/01/2011	03:40:00	62	11.5473	57	16.7001	-62.192455	-57.278335	1054
					6	MC	c06	JC055_031_MC17/c06	27	27/01/2011	03:40:00	62	11.5473	57	16.7001	-62.192455	-57.278335	1054
					7	MC	c07	JC055_031_MC17/c07	27	27/01/2011	03:40:00	62	11.5473	57	16.7001	-62.192455	-57.278335	1054
					8	MC	c08	JC055_031_MC17/c08	27	27/01/2011	03:40:00	62	11.5473	57	16.7001	-62.192455	-57.278335	1054
JC055	Hook Ridge	32	MC	MC18	1	MC	c01	JC055_032_MC18/c01	27	27/01/2011	05:16:00	62	11.5479	57	16.7048	-62.192465	-57.278413	1046
					2	MC	c02	JC055_032_MC18/c02	27	27/01/2011	05:16:00	62	11.5479	57	16.7048	-62.192465	-57.278413	1046
					3	MC	c03	JC055_032_MC18/c03	27	27/01/2011	05:16:00	62	11.5479	57	16.7048	-62.192465	-57.278413	1046

Equipment depth	End Date	End Time GMT	End Lat Degr	End Lat Min	End Long Degr	End Long Min	End Lat	End Long	End waterdepth meter	Comments	Recipient
500											
500											
500											
500											
500											
500											
500											
500											
500											
500											
500											
500											
	26/02/2011	22:32:00	62	11.86	57	17.85	-62.19767	-57.2975		start: in water, end: on deck, at max depth: 21:54:00	
1156										10m off bottom. Eh - 3.037, LSS - 0.61, Tx - 99.0	Clare Woulds
1156											Clare Woulds
1156											Clare Woulds
1156											Clare Woulds
1156											Clare Woulds
1156											Doug Connelly/Jeff Hawkes
1156											Doug Connelly/Jeff Hawkes
1156											Doug Connelly/Jeff Hawkes/Katrin Z
1156											Doug Connelly/Jeff Hawkes/Katrin Z
1156											Doug Connelly/Jeff Hawkes/Katrin Z
1107											Doug Connelly/Katrin Z
1107											Doug Connelly/Katrin Z
1107											Doug Connelly/Katrin Z
1107											Katrin Z
1107											Katrin Z
1107											Katrin Z
1053											Doug Connelly
1053											Doug Connelly
1053											Katrin Z
1053											Katrin Z
1053											Katrin Z
1053											Katrin Z
1053											Katrin Z
1053											Katrin Z
1053											Katrin Z
										time is at seafloor. 6m barrel. Wireout: 1168m, Pull-out: 3.2t, 450cm	Rachel Mills
										time is at seafloor. Wireout: 1159m, Pull-out: 2.14t, 36cm	Clare Woulds
										time is at seafloor. Wireout: 1159m, Pull-out: 2.14t, 38cm	Clare Woulds
										time is at seafloor. Wireout: 1159m, Pull-out: 2.14t, 35cm	Clare Woulds
										time is at seafloor. Wireout: 1159m, Pull-out: 2.14t, 38cm	Clare Woulds
										time is at seafloor. Wireout: 1159m, Pull-out: 2.14t, 27cm	Rachel Mills
										time is at seafloor. Wireout: 1159m, Pull-out: 2.14t, 38cm	Rachel Mills
										time is at seafloor. Wireout: 1159m, Pull-out: 2.14t, 40cm failed	Rachel Mills
										time is at seafloor. Wireout: 1156m, Pull-out: 1.91t, 33cm	Adrian G
										time is at seafloor. Wireout: 1156m, Pull-out: 1.91t, 36cm	Adrian G
										time is at seafloor. Wireout: 1156m, Pull-out: 1.91t, 38cm	Adrian G
										time is at seafloor. Wireout: 1156m, Pull-out: 1.91t, 43cm	Katrin Z
										time is at seafloor. Wireout: 1156m, Pull-out: 1.91t, 41cm	Adrian G
										time is at seafloor. Wireout: 1156m, Pull-out: 1.91t, 40cm failed	Adrian G
										time is at seafloor. Wireout: 1156m, Pull-out: 1.91t, 40cm	Adrian G
										time is at seafloor. Wireout: 1055m, Pull-out: 2.15t, 39cm	Adrian G
										time is at seafloor. Wireout: 1055m, Pull-out: 2.15t, 38cm	Katrin Z
										time is at seafloor. Wireout: 1055m, Pull-out: 2.15t, 45cm	Adrian G

Cruise	Site	Station No	Gear Code	Gear No	Event No	Event Gear Code	Event Gear No	Final sample number	JDay (Start)	Start Date	Start Time GMT	Start Lat Degr S	Start Lat Min S	Start Long Degr W	Start Long Min W	Start Lat	Start Long	Start Waterdepth meter
					4	MC	c04	JC055_032_MC18/c04	27	27/01/2011	05:16:00	62	11.5479	57	16.7048	-62.192465	-57.278413	1046
					5	MC	c05	JC055_032_MC18/c05	27	27/01/2011	05:16:00	62	11.5479	57	16.7048	-62.192465	-57.278413	1046
					6	MC	c06	JC055_032_MC18/c06	27	27/01/2011	05:16:00	62	11.5479	57	16.7048	-62.192465	-57.278413	1046
					7	MC	c07	JC055_032_MC18/c07	27	27/01/2011	05:16:00	62	11.5479	57	16.7048	-62.192465	-57.278413	1046
					8	MC	c08	JC055_032_MC18/c08	27	27/01/2011	05:16:00	62	11.5479	57	16.7048	-62.192465	-57.278413	1046
JC055	Hook Ridge	33	MC	MC19	1	MC	c01	JC055_033_MC19/c01	27	27/01/2011	07:15:00	62	11.5482	57	16.7066	-62.19247	-57.278443	1045
					2	MC	c02	JC055_033_MC19/c02	27	27/01/2011	07:15:00	62	11.5482	57	16.7066	-62.19247	-57.278443	1045
					3	MC	c03	JC055_033_MC19/c03	27	27/01/2011	07:15:00	62	11.5482	57	16.7066	-62.19247	-57.278443	1045
					4	MC	c04	JC055_033_MC19/c04	27	27/01/2011	07:15:00	62	11.5482	57	16.7066	-62.19247	-57.278443	1045
					5	MC	c05	JC055_033_MC19/c05	27	27/01/2011	07:15:00	62	11.5482	57	16.7066	-62.19247	-57.278443	1045
					6	MC	c06	JC055_033_MC19/c06	27	27/01/2011	07:15:00	62	11.5482	57	16.7066	-62.19247	-57.278443	1045
					7	MC	c07	JC055_033_MC19/c07	27	27/01/2011	07:15:00	62	11.5482	57	16.7066	-62.19247	-57.278443	1045
					8	MC	c08	JC055_033_MC19/c08	27	27/01/2011	07:15:00	62	11.5482	57	16.7066	-62.19247	-57.278443	1045
JC055	Hook Ridge	34	MC	MC20	1	MC	c01	JC055_034_MC20/c01	27	27/01/2011	09:05:00	62	11.549	57	16.703	-62.192483	-57.278383	1054
					2	MC	c02	JC055_034_MC20/c02	27	27/01/2011	09:05:00	62	11.549	57	16.703	-62.192483	-57.278383	1054
					3	MC	c03	JC055_034_MC20/c03	27	27/01/2011	09:05:00	62	11.549	57	16.703	-62.192483	-57.278383	1054
					4	MC	c04	JC055_034_MC20/c04	27	27/01/2011	09:05:00	62	11.549	57	16.703	-62.192483	-57.278383	1054
					5	MC	c05	JC055_034_MC20/c05	27	27/01/2011	09:05:00	62	11.549	57	16.703	-62.192483	-57.278383	1054
					6	MC	c06	JC055_034_MC20/c06	27	27/01/2011	09:05:00	62	11.549	57	16.703	-62.192483	-57.278383	1054
					7	MC	c07	JC055_034_MC20/c07	27	27/01/2011	09:05:00	62	11.549	57	16.703	-62.192483	-57.278383	1054
					8	MC	c08	JC055_034_MC20/c08	27	27/01/2011	09:05:00	62	11.549	57	16.703	-62.192483	-57.278383	1054
JC055	Hook Ridge	35	MC	MC21	1	MC	c01	JC055_035_MC21/c01	27	27/01/2011	10:28:00	62	11.548	57	16.7	-62.192467	-57.278333	1052
					2	MC	c02	JC055_035_MC21/c02	27	27/01/2011	10:28:00	62	11.548	57	16.7	-62.192467	-57.278333	1052
					3	MC	c03	JC055_035_MC21/c03	27	27/01/2011	10:28:00	62	11.548	57	16.7	-62.192467	-57.278333	1052
					4	MC	c04	JC055_035_MC21/c04	27	27/01/2011	10:28:00	62	11.548	57	16.7	-62.192467	-57.278333	1052
					5	MC	c05	JC055_035_MC21/c05	27	27/01/2011	10:28:00	62	11.548	57	16.7	-62.192467	-57.278333	1052
					6	MC	c06	JC055_035_MC21/c06	27	27/01/2011	10:28:00	62	11.548	57	16.7	-62.192467	-57.278333	1052
					7	MC	c07	JC055_035_MC21/c07	27	27/01/2011	10:28:00	62	11.548	57	16.7	-62.192467	-57.278333	1052
					8	MC	c08	JC055_035_MC21/c08	27	27/01/2011	10:28:00	62	11.548	57	16.7	-62.192467	-57.278333	1052
JC055	Hook Ridge	36	BC	BC01	1	BC	BC01	JC055_036_BC01	27	27/01/2011	12:54:00	62	11.5951	57	17.222	-62.193252	-57.287033	1021
JC055	Hook Ridge	37	Agassiz Trawl	AT01	1	AT	AT01	JC055_037_AT01	27	27/01/2011		62	13.08	57	18.28	-62.218	-57.304667	1627
JC055	Hook Ridge	38	BC	BC02	1	BC	BC02	JC055_038_BC02	27	27/01/2011	22:44:00	62	11.7884	57	17.9422	-62.196473	-57.299037	1193
JC055	Bransfield Strait	39	CTD	CTD193	0	CTDprofile	CTD193	JC055_039_CTD193/p	28	28/01/2011	02:44:00	62	19.98882	57	49.96343	-62.333147	-57.832724	1955
					1	NISKIN	n01	JC055_039_CTD193/n1	28	28/01/2011	03:28:00	62	19.99	57	49.96	-62.333167	-57.832667	1955
					2	NISKIN	n02	JC055_039_CTD193/n2	28	28/01/2011	03:54:00	62	19.9891	57	49.963	-62.333152	-57.832717	1955
					3	NISKIN	n03	JC055_039_CTD193/n3	28	28/01/2011	04:02:00	62	19.9894	57	49.9682	-62.333157	-57.832803	1955
					4	NISKIN	n04	JC055_039_CTD193/n4	28	28/01/2011	04:12:00	62	19.9904	57	49.9646	-62.333173	-57.832743	1955
JC055	Three sisters	40	SWATH	SWATH#02	1	EM120	SWATH#02	JC055_040_SWATH#02	28	28/01/2011	09:36:00	62	32.75	58	43.23	-62.545833	-58.7205	1648
JC055	Three sisters	41	CTD_TOW_YO	TOWYO#07	1	CTD	CTD194	JC055_041_CTD194	28	28/01/2011	16:22:00	62	37.705	59	4.327	-62.628417	-59.072117	1460
					2	CTD	CTD195	JC055_041_CTD195	28	28/01/2011	16:55:00	62	37.702	59	4.347	-62.628367	-59.07245	1460
					3	CTD	CTD196	JC055_041_CTD196	28	28/01/2011	17:11:00	62	37.774	59	4.263	-62.629567	-59.07105	1450
					4	CTD	CTD197	JC055_041_CTD197	28	28/01/2011	17:25:00	62	37.776	59	4.264	-62.6296	-59.071067	1450
					5	CTD	CTD198	JC055_041_CTD198	28	28/01/2011	17:41:00	62	37.848	59	4.177	-62.6308	-59.069617	1442
					6	CTD	CTD199	JC055_041_CTD199	28	28/01/2011	17:55:00	62	37.849	59	4.177	-62.630817	-59.069617	1445
					7	CTD	CTD200	JC055_041_CTD200	28	28/01/2011	18:10:00	62	37.925	59	4.09	-62.632083	-59.068167	1413
					8	CTD	CTD201	JC055_041_CTD201	28	28/01/2011	18:25:00	62	37.925	59	4.091	-62.632083	-59.068183	1413
					9	CTD	CTD202	JC055_041_CTD202	28	28/01/2011	18:39:00	62	37.996	59	4.009	-62.633267	-59.066817	1361
					10	CTD	CTD203	JC055_041_CTD203	28	28/01/2011	18:53:00	62	37.996	59	4.009	-62.633267	-59.066817	1378
					11	CTD	CTD204	JC055_041_CTD204	28	28/01/2011	19:07:00	62	38.066	59	3.926	-62.634433	-59.065433	
					12	CTD	CTD205	JC055_041_CTD205	28	28/01/2011	19:19:00	62	38.0699	59	3.9207	-62.634498	-59.065345	
					13	CTD	CTD206	JC055_041_CTD206	28	28/01/2011	19:31:00	62	38.1367	59	3.8444	-62.635612	-59.064073	1267
					14	CTD	CTD207	JC055_041_CTD207	28	28/01/2011	19:43:00	62	38.1407	59	3.8386	-62.635678	-59.063977	1256
					15	CTD	CTD208	JC055_041_CTD208	28	28/01/2011	19:54:00	62	38.1957	59	3.7759	-62.636595	-59.062932	1211
					16	CTD	CTD209	JC055_041_CTD209	28	28/01/2011	20:04:00	62	38.198	59	3.77208	-62.636633	-59.062868	1217
					17	CTD	CTD210	JC055_041_CTD210	28	28/01/2011	20:17:00	62	38.252	59	3.714	-62.637533	-59.0619	1172
					18	CTD	CTD211	JC055_041_CTD211	28	28/01/2011	20:27:00	62	38.252	59	3.713	-62.637533	-59.061883	1140
					19	CTD	CTD212	JC055_041_CTD212	28	28/01/2011	20:37:00	62	38.294	59	3.66	-62.638233	-59.061	1110

Equipment depth	End Date	End Time GMT	End Lat Degr	End Lat Min	End Long Degr	End Long Min	End Lat	End Long	End waterdepth meter	Comments	Recipient
										time is at seafloor. Wireout: 1055m, Pull-out: 2.15t, 38cm	Adrian G
										failed	
										time is at seafloor. Wireout: 1055m, Pull-out: 2.15t, 42cm	Adrian G
										time is at seafloor. Wireout: 1055m, Pull-out: 2.15t, 15cm	Adrian G
										time is at seafloor. Wireout: 1055m, Pull-out: 2.15t, 35cm	Adrian G
										time is at seafloor. Wireout: 1046m, Pull-out: 2.15t, 43cm	Adrian G
										time is at seafloor. Wireout: 1046m, Pull-out: 2.15t, 40cm	Adrian G
										time is at seafloor. Wireout: 1046m, Pull-out: 2.15t, 34cm	Adrian G
										time is at seafloor. Wireout: 1046m, Pull-out: 2.15t, 37cm	Adrian G
										time is at seafloor. Wireout: 1046m, Pull-out: 2.15t, 44cm	Adrian G
										time is at seafloor. Wireout: 1046m, Pull-out: 2.15t, 42cm	Adrian G
										time is at seafloor. Wireout: 1046m, Pull-out: 2.15t, 41cm	Adrian G
										failed	
										time is at seafloor. Wireout: 1046m, Pull-out: 1.71t, 31cm	Adrian G
										time is at seafloor. Wireout: 1046m, Pull-out: 1.71t, 29cm	Adrian G
										time is at seafloor. Wireout: 1046m, Pull-out: 1.71t, 29cm	Adrian G
										time is at seafloor. Wireout: 1046m, Pull-out: 1.71t, 33cm	Adrian G
										time is at seafloor. Wireout: 1046m, Pull-out: 1.71t, 26cm	David Pearce
										failed	
										failed	
										failed	
										time is at seafloor. Wireout: 1044m, Pull-out: 1.78t, 22cm	Adrian G
										time is at seafloor. Wireout: 1044m, Pull-out: 1.78t, 25cm	Adrian G
										time is at seafloor. Wireout: 1044m, Pull-out: 1.78t, 33cm	Adrian G
										time is at seafloor. Wireout: 1044m, Pull-out: 1.78t, 35cm	Adrian G
										time is at seafloor. Wireout: 1044m, Pull-out: 1.78t, 29cm	Adrian G
										failed	
										failed	
										failed	
										failed	
										time is at seafloor. Wireout: 1054m, Pull-out: 2.04t	
	27/01/2011	18:25:00	62	13.56	57	20.59	-62.226	-57.3432	1628	start is time on bottom, end is time off bottom. Both are uncertain. Cc	Katrin L
										time is at seafloor. Wireout: 1182m, Pull-out: 1.68t	15 cm recovery
	28/01/2011	04:21:00	62	19.9895	57	49.9646	-62.33316	-57.8327			
1930										no plume	
500										no plume	
200										no plume	
40										no plume	
	28/01/2011	16:20:00	62	37.703	59	4.3279	-62.62838	-59.0721		survey speed started at 8kn, reduced to 5kn at 10:31 and further to 2kn at 11:11 due to fog. Survey aborted in favour of Tow-yo CTD	
										downcast	
										upcast	
										downcast	
										upcast	
										downcast	
										upcast	
										downcast	
										upcast	
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										upcast	
										downcast	
										upcast	
										downcast	

Cruise	Site	Station No	Gear Code	Gear No	Event No	Event Gear Code	Event Gear No	Final sample number	JDay (Start)	Start Date	Start Time GMT	Start Lat Degr S	Start Lat Min S	Start Long Degr W	Start Long Min W	Start Lat	Start Long	Start Waterdepth meter
					20	CTD	CTD213	JC055_041_CTD213	28	28/01/2011	20:45:00	62	38.299	59	3.659	-62.638317	-59.060983	1094
					21	CTD	CTD214	JC055_041_CTD214	28	28/01/2011	20:55:00	62	38.339	59	3.6084	-62.638983	-59.06014	1073
					22	CTD	CTD215	JC055_041_CTD215	28	28/01/2011	21:03:00	62	38.34	59	3.61204	-62.639	-59.060201	1073
					23	CTD	CTD216	JC055_041_CTD216	28	28/01/2011	21:13:00	62	38.385	59	3.55709	-62.63975	-59.059285	1087
					24	CTD	CTD217	JC055_041_CTD217	28	28/01/2011	21:26:00	62	38.3877	59	3.55491	-62.639795	-59.059249	1086
					25	CTD	CTD218	JC055_041_CTD218	28	28/01/2011	21:33:00	62	38.4237	59	3.50968	-62.640395	-59.058495	1093
					26	CTD	CTD219	JC055_041_CTD219	28	28/01/2011	21:42:00	62	38.4293	59	3.50536	-62.640488	-59.058423	1097
					27	CTD	CTD220	JC055_041_CTD220	28	28/01/2011	21:50:00	62	38.4718	59	3.45586	-62.641197	-59.057598	1129
					28	CTD	CTD221	JC055_041_CTD221	28	28/01/2011	21:58:00	62	38.4712	59	3.45914	-62.641187	-59.057652	1129
					29	CTD	CTD222	JC055_041_CTD222	28	28/01/2011	22:06:00	62	38.5134	59	3.40829	-62.64189	-59.056805	1146
					30	CTD	CTD223	JC055_041_CTD223	28	28/01/2011	22:15:00	62	38.519	59	3.40097	-62.641983	-59.056683	1148
					31	CTD	CTD224	JC055_041_CTD224	28	28/01/2011	22:25:00	62	38.5576	59	3.36107	-62.642627	-59.056018	1158
					32	CTD	CTD225	JC055_041_CTD225	28	28/01/2011	22:34:00	62	38.5568	59	3.35877	-62.642613	-59.05598	1160
					33	CTD	CTD226	JC055_041_CTD226	28	28/01/2011	22:43:00	62	38.6046	59	3.30554	-62.64341	-59.055092	1165
					34	CTD	CTD227	JC055_041_CTD227	28	28/01/2011	22:53:00	62	38.6032	59	3.30842	-62.643387	-59.05514	1162
					35	CTD	CTD228	JC055_041_CTD228	28	28/01/2011	23:01:00	62	38.60525	59	3.25271	-62.643421	-59.054212	1200
					36	CTD	CTD229	JC055_041_CTD229	28	28/01/2011	23:11:00	62	38.6497	59	3.25449	-62.644162	-59.054242	1207
					37	CTD	CTD230	JC055_041_CTD230	28	28/01/2011	23:21:00	62	38.651	59	3.25466	-62.644183	-59.054244	1204
					38	CTD	CTD231	JC055_041_CTD231	28	28/01/2011	23:28:00	62	38.651	59	3.25463	-62.644183	-59.054244	1200
					39	CTD	CTD232	JC055_041_CTD232	28	28/01/2011	23:36:00	62	38.68	59	3.21	-62.644667	-59.0535	1258
					40	CTD	CTD233	JC055_041_CTD233	28	28/01/2011	23:45:00	62	38.688	59	3.207	-62.6448	-59.05345	1281
					41	CTD	CTD234	JC055_041_CTD234	28	28/01/2011	23:53:00	62	38.734	59	3.153	-62.645567	-59.05255	1279
					42	CTD	CTD235	JC055_041_CTD235	29	29/01/2011	00:02:00	62	38.735	59	3.1555	-62.645583	-59.052592	1279
					43	CTD	CTD236	JC055_041_CTD236	29	29/01/2011	00:17:00	62	38.8	59	3.079	-62.646667	-59.051317	1283
					44	CTD	CTD237	JC055_041_CTD237	29	29/01/2011	00:31:00	62	38.799	59	3.078	-62.64665	-59.0513	1287
					45	CTD	CTD238	JC055_041_CTD238	29	29/01/2011	00:43:00	62	38.862	59	3.007	-62.6477	-59.050117	1293
					46	CTD	CTD239	JC055_041_CTD239	29	29/01/2011	00:59:00	62	38.863	59	3.007	-62.647717	-59.050117	1302
					47	CTD	CTD240	JC055_041_CTD240	29	29/01/2011	01:10:00	62	38.925	59	2.939	-62.64875	-59.048983	1316
					48	CTD	CTD241	JC055_041_CTD241	29	29/01/2011	01:30:00	62	38.905	59	2.933	-62.648417	-59.048883	1316
					49	CTD	CTD242	JC055_041_CTD242	29	29/01/2011	01:41:00	62	38.986	59	2.867	-62.649767	-59.047783	1315
					50	CTD	CTD243	JC055_041_CTD243	29	29/01/2011	01:59:00	62	38.985	59	2.866	-62.64975	-59.047767	1315
					51	CTD	CTD244	JC055_041_CTD244	29	29/01/2011	02:10:00	62	39.043	59	2.803	-62.650717	-59.046717	1319
					52	CTD	CTD245	JC055_041_CTD245	29	29/01/2011	02:22:00	62	39.044	59	2.802	-62.650733	-59.0467	1319
					53	CTD	CTD246	JC055_041_CTD246	29	29/01/2011	02:35:00	62	39.096	59	2.741	-62.6516	-59.045683	1319
					54	CTD	CTD247	JC055_041_CTD247	29	29/01/2011	02:51:00	62	39.096	59	2.741	-62.6516	-59.045683	1319
					55	CTD	CTD248	JC055_041_CTD248	29	29/01/2011	03:01:00	62	39.157	59	2.678	-62.652617	-59.044633	1313
					56	CTD	CTD249	JC055_041_CTD249	29	29/01/2011	03:11:00	62	39.157	59	2.677	-62.652617	-59.044617	1312
					57	CTD	CTD250	JC055_041_CTD250	29	29/01/2011	03:29:00	62	39.211	59	2.605	-62.653517	-59.043417	1305
					58	CTD	CTD251	JC055_041_CTD251	29	29/01/2011	03:41:00	62	39.211	59	2.605	-62.653517	-59.043417	1294
					59	CTD	CTD252	JC055_041_CTD252	29	29/01/2011	03:55:00	62	39.272	59	2.533	-62.654533	-59.042217	1218
					60	CTD	CTD253	JC055_041_CTD253	29	29/01/2011	04:16:00	62	39.275	59	2.532	-62.654583	-59.0422	1200
					61	CTD	CTD254	JC055_041_CTD254	29	29/01/2011	04:29:00	62	39.341	59	2.457	-62.655683	-59.04095	1168
					62	CTD	CTD255	JC055_041_CTD255	29	29/01/2011	04:46:00	62	39.399	59	2.459	-62.65665	-59.040983	1174
					63	CTD	CTD256	JC055_041_CTD256	29	29/01/2011	04:56:00	62	39.392	59	2.398	-62.656533	-59.039967	1153
					64	CTD	CTD257	JC055_041_CTD257	29	29/01/2011	05:15:00	62	39.391	59	2.399	-62.656517	-59.039983	1140
					65	CTD	CTD258	JC055_041_CTD258	29	29/01/2011	05:24:00	62	39.438	59	2.344	-62.6573	-59.039067	1156
					66	CTD	CTD259	JC055_041_CTD259	29	29/01/2011	05:27:00	62	39.442	59	2.339	-62.657367	-59.038983	1161
					67	CTD	CTD260	JC055_041_CTD260	29	29/01/2011	05:42:00	62	39.442	59	2.343	-62.657367	-59.03905	1157
					68	NISKIN	n01	JC055_041_CTD260/n01	29	29/01/2011	05:42:00	62	39.442	59	2.343	-62.657367	-59.03905	1157
					69	NISKIN	n02	JC055_041_CTD260/n02	29	29/01/2011	05:42:00	62	39.442	59	2.343	-62.657367	-59.03905	1157
					70	NISKIN	n03	JC055_041_CTD260/n03	29	29/01/2011	05:42:00	62	39.442	59	2.343	-62.657367	-59.03905	1157
					71	NISKIN	n04	JC055_041_CTD260/n04	29	29/01/2011	05:42:00	62	39.442	59	2.343	-62.657367	-59.03905	1157
					72	NISKIN	n05	JC055_041_CTD260/n05	29	29/01/2011	05:42:00	62	39.442	59	2.343	-62.657367	-59.03905	1157
					73	NISKIN	n06	JC055_041_CTD260/n06	29	29/01/2011	05:42:00	62	39.442	59	2.343	-62.657367	-59.03905	1157
					74	NISKIN	n07	JC055_041_CTD260/n07	29	29/01/2011	05:42:00	62	39.442	59	2.343	-62.657367	-59.03905	1157
					75	NISKIN	n08	JC055_041_CTD260/n08	29	29/01/2011	05:42:00	62	39.442	59	2.343	-62.657367	-59.03905	1157
					76	NISKIN	n09	JC055_041_CTD260/n09	29	29/01/2011	05:42:00	62	39.442	59	2.343	-62.657367	-59.03905	1157

Equipment depth	End Date	End Time GMT	End Lat Degr	End Lat Min	End Long Degr	End Long Min	End Lat	End Long	End waterdepth meter	Comments	Recipient
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Cruise	Site	Station No	Gear Code	Gear No	Event No	Event Gear Code	Event Gear No	Final sample number	JDay (Start)	Start Date	Start Time GMT	Start Lat Degr S	Start Lat Min S	Start Long Degr W	Start Long Min W	Start Lat	Start Long	Start Waterdepth meter
					77	NISKIN	n10	JC055_041_CTD260/n10	29	29/01/2011	05:42:00	62	39.442	59	2.343	-62.657367	-59.03905	1157
					78	NISKIN	n11	JC055_041_CTD260/n11	29	29/01/2011	05:42:00	62	39.442	59	2.343	-62.657367	-59.03905	1157
					79	NISKIN	n12	JC055_041_CTD260/n12	29	29/01/2011	05:42:00	62	39.442	59	2.343	-62.657367	-59.03905	1157
					80	NISKIN	n13	JC055_041_CTD260/n13	29	29/01/2011	05:42:00	62	39.442	59	2.343	-62.657367	-59.03905	1157
					81	NISKIN	n14	JC055_041_CTD260/n14	29	29/01/2011	05:42:00	62	39.442	59	2.343	-62.657367	-59.03905	1157
					82	NISKIN	n15	JC055_041_CTD260/n15	29	29/01/2011	05:42:00	62	39.442	59	2.343	-62.657367	-59.03905	1157
					83	NISKIN	n16	JC055_041_CTD260/n16	29	29/01/2011	05:42:00	62	39.442	59	2.343	-62.657367	-59.03905	1157
					84	NISKIN	n17	JC055_041_CTD260/n17	29	29/01/2011	05:42:00	62	39.442	59	2.343	-62.657367	-59.03905	1157
					85	NISKIN	n18	JC055_041_CTD260/n18	29	29/01/2011	05:42:00	62	39.442	59	2.343	-62.657367	-59.03905	1157
					86	NISKIN	n19	JC055_041_CTD260/n19	29	29/01/2011	05:42:00	62	39.442	59	2.343	-62.657367	-59.03905	1157
					87	NISKIN	n20	JC055_041_CTD260/n20	29	29/01/2011	05:42:00	62	39.442	59	2.343	-62.657367	-59.03905	1157
					88	NISKIN	n21	JC055_041_CTD260/n21	29	29/01/2011	05:42:00	62	39.442	59	2.343	-62.657367	-59.03905	1157
					89	NISKIN	n22	JC055_041_CTD260/n22	29	29/01/2011	05:42:00	62	39.442	59	2.343	-62.657367	-59.03905	1157
					90	NISKIN	n23	JC055_041_CTD260/n23	29	29/01/2011	05:42:00	62	39.442	59	2.343	-62.657367	-59.03905	1157
					91	NISKIN	n24	JC055_041_CTD260/n24	29	29/01/2011	05:42:00	62	39.442	59	2.343	-62.657367	-59.03905	1157
					92	CTD	CTD261	JC055_041_CTD261	29	29/01/2011	06:30:00	62	39.5	59	2.271	-62.658333	-59.03785	1147
					93	CTD	CTD262	JC055_041_CTD262	29	29/01/2011	06:38:00	62	39.459	59	2.215	-62.65765	-59.036917	1160
					94	CTD	CTD263	JC055_041_CTD263	29	29/01/2011	06:52:00	62	39.555	59	2.209	-62.65925	-59.036817	1167
					95	CTD	CTD264	JC055_041_CTD264	29	29/01/2011	07:03:00	62	39.6	59	2.152	-62.66	-59.035867	1191
					96	CTD	CTD265	JC055_041_CTD265	29	29/01/2011	07:19:00	62	39.605	59	2.15	-62.660083	-59.035833	1185
					97	CTD	CTD266	JC055_041_CTD266	29	29/01/2011	07:30:00	62	39.6522	59	2.099	-62.66087	-59.034983	1213
					98	CTD	CTD267	JC055_041_CTD267	29	29/01/2011	07:42:00	62	39.6505	59	2.101	-62.660842	-59.035017	1226
					99	CTD	CTD268	JC055_041_CTD268	29	29/01/2011	07:51:00	62	39.701	59	2.043	-62.661683	-59.03405	1227
					100	CTD	CTD269	JC055_041_CTD269	29	29/01/2011	08:03:00	62	39.701	59	2.041	-62.661683	-59.034017	1226
					101	CTD	CTD270	JC055_041_CTD270	29	29/01/2011	08:14:00	62	39.753	59	1.983	-62.66255	-59.03305	1228
					102	CTD	CTD271	JC055_041_CTD271	29	29/01/2011	08:25:00	62	39.755	59	1.982	-62.662583	-59.033033	1216
					103	CTD	CTD272	JC055_041_CTD272	29	29/01/2011	08:35:00	62	39.813	59	1.916	-62.66355	-59.031933	1273
					104	CTD	CTD273	JC055_041_CTD273	29	29/01/2011	08:47:00	62	39.814	59	1.915	-62.663567	-59.031917	1268
					105	CTD	CTD274	JC055_041_CTD274	29	29/01/2011	09:00:00	62	39.8697	59	1.8469	-62.664495	-59.030782	1330
					106	CTD	CTD275	JC055_041_CTD275	29	29/01/2011	09:12:00	62	39.8702	59	1.8493	-62.664503	-59.030822	1337
					107	CTD	CTD276	JC055_041_CTD276	29	29/01/2011	09:24:00	62	39.9291	59	1.7799	-62.665485	-59.029665	1382
					108	CTD	CTD277	JC055_041_CTD277	29	29/01/2011	09:37:00	62	39.9297	59	1.779	-62.665495	-59.02965	1383
					109	CTD	CTD278	JC055_041_CTD278	29	29/01/2011	09:51:00	62	39.997	59	1.701	-62.666617	-59.02835	1389
					110	CTD	CTD279	JC055_041_CTD279	29	29/01/2011	10:03:00	62	39.997	59	1.7006	-62.666617	-59.028343	1385
					111	CTD	CTD280	JC055_041_CTD280	29	29/01/2011	10:15:00	62	40.063	59	1.626	-62.667717	-59.0271	1392
					112	CTD	CTD281	JC055_041_CTD281	29	29/01/2011	10:31:00	62	40.064	59	1.625	-62.667733	-59.027083	1389
					113	CTD	CTD282	JC055_041_CTD282	29	29/01/2011	10:44:00	62	40.133	59	1.543	-62.668883	-59.025717	1409
					114	CTD	CTD283	JC055_041_CTD283	29	29/01/2011	11:00:00	62	40.133	59	1.545	-62.668883	-59.02575	1410
					115	CTD	CTD284	JC055_041_CTD284	29	29/01/2011	11:15:00	62	40.207	59	1.461	-62.670117	-59.02435	1412
					116	CTD	CTD285	JC055_041_CTD285	29	29/01/2011	11:30:00	62	40.208	59	1.46	-62.670133	-59.024333	1412
					117	CTD	CTD286	JC055_041_CTD286	29	29/01/2011	11:45:00	62	40.281	59	1.374	-62.67135	-59.0229	1413
					118	CTD	CTD287	JC055_041_CTD287	29	29/01/2011	11:58:00	62	40.282	59	1.374	-62.671367	-59.0229	1414
					119	CTD	CTD288	JC055_041_CTD288	29	29/01/2011	12:11:00	62	40.3546	59	1.2885	-62.672577	-59.021475	1415
					120	CTD	CTD289	JC055_041_CTD289	29	29/01/2011	12:26:00	62	40.3578	59	1.2862	-62.67263	-59.021437	1416
					121	CTD	CTD290	JC055_041_CTD290	29	29/01/2011	12:41:00	62	40.4316	59	1.2014	-62.67386	-59.020023	1419
					122	CTD	CTD291	JC055_041_CTD291	29	29/01/2011	12:54:00	62	40.4374	59	1.2	-62.673957	-59.02	1419
					123	CTD	CTD292	JC055_041_CTD292	29	29/01/2011	13:09:00	62	40.506	59	1.114	-62.6751	-59.018567	1371
					124	CTD	CTD293	JC055_041_CTD293	29	29/01/2011	13:21:00	62	40.507	59	1.115	-62.675117	-59.018583	1372
					125	CTD	CTD294	JC055_041_CTD294	29	29/01/2011	13:35:00	62	40.568	59	1.044	-62.676133	-59.0174	1379
					126	CTD	CTD295	JC055_041_CTD295	29	29/01/2011	13:45:00	62	40.571	59	1.04	-62.676183	-59.017333	1376
					127	CTD	CTD296	JC055_041_CTD296	29	29/01/2011	13:57:00	62	40.631	59	0.971	-62.677183	-59.016183	1380
					128	CTD	CTD297	JC055_041_CTD297	29	29/01/2011	14:10:00	62	40.632	59	0.97	-62.6772	-59.016167	1382
					129	CTD	CTD298	JC055_041_CTD298	29	29/01/2011	14:22:00	62	40.698	59	0.894	-62.6783	-59.0149	1376
					130	CTD	CTD299	JC055_041_CTD299	29	29/01/2011	14:34:00	62	40.699	59	0.892	-62.678317	-59.014867	1375
					131	CTD	CTD300	JC055_041_CTD300	29	29/01/2011	14:48:00	62	40.777	59	0.803	-62.679617	-59.013383	1270
					132	CTD	CTD301	JC055_041_CTD301	29	29/01/2011	15:03:00	62	40.777	59	0.803	-62.679617	-59.013383	1372
					133	CTD	CTD302	JC055_041_CTD302	29	29/01/2011	15:15:00	62	40.837	59	0.733	-62.680617	-59.012217	1350

Equipment depth	End Date	End Time GMT	End Lat Degr	End Lat Min	End Long Degr	End Long Min	End Lat	End Long	End waterdepth meter	Comments	Recipient
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Cruise	Site	Station No	Gear Code	Gear No	Event No	Event Gear Code	Event Gear No	Final sample number	JDay (Start)	Start Date	Start Time GMT	Start Lat Degr S	Start Lat Min S	Start Long Degr W	Start Long Min W	Start Lat	Start Long	Start Waterdepth meter
					134	CTD	CTD303	JC055_041_CTD303	29	29/01/2011	15:27:00	62	40.837	59	0.733	-62.680617	-59.012217	1355
					135	CTD	CTD304	JC055_041_CTD304	29	29/01/2011	15:38:00	62	40.892	59	0.664	-62.681533	-59.011067	1322
					136	CTD	CTD305	JC055_041_CTD305	29	29/01/2011	15:50:00	62	40.897	59	0.664	-62.681617	-59.011067	1325
					137	CTD	CTD306	JC055_041_CTD306	29	29/01/2011	16:01:00	62	40.954	59	0.599	-62.682567	-59.009983	1270
					138	CTD	CTD307	JC055_041_CTD307	29	29/01/2011	16:12:00	62	40.955	59	0.598	-62.682583	-59.009967	1206
					139	CTD	CTD308	JC055_041_CTD308	29	29/01/2011	16:24:00	62	41.005	59	0.598	-62.683417	-59.009967	1209
					140	CTD	CTD309	JC055_041_CTD309	29	29/01/2011	16:35:00	62	41.006	59	0.539	-62.683433	-59.008983	1202
					141	CTD	CTD310	JC055_041_CTD310	29	29/01/2011	16:44:00	62	41.047	59	0.488	-62.684117	-59.008133	1189
					142	CTD	CTD311	JC055_041_CTD311	29	29/01/2011	16:56:00	62	41.048	59	0.488	-62.684133	-59.008133	1189
JC055	Three sisters	42	SWATH	SWATH#03	1	EM120	SWATH#03	JC055_042_SWATH#03	29	29/01/2011	17:34:00	62	41.3724	58	59.5226	-62.68954	-58.992043	1153
JC055	Three sisters	43	CTD_TOW_YO	TOWYO#08	1	CTD	CTD312	JC055_043_CTD312	30	30/01/2011	02:34:00	62	39.112	59	3.742	-62.651867	-59.062367	1253
					2	CTD	CTD313	JC055_043_CTD313	30	30/01/2011	03:07:00	62	39.112	59	3.741	-62.651867	-59.06235	1253
					3	CTD	CTD314	JC055_043_CTD314	30	30/01/2011	03:19:00	62	39.171	59	3.65	-62.65285	-59.060833	1320
					4	CTD	CTD315	JC055_043_CTD315	30	30/01/2011	03:36:00	62	39.173	59	3.652	-62.652883	-59.060867	1323
					5	CTD	CTD316	JC055_043_CTD316	30	30/01/2011	03:51:00	62	39.23	59	3.56	-62.653833	-59.059333	1317
					6	CTD	CTD317	JC055_043_CTD317	30	30/01/2011	04:07:00	62	39.232	59	3.563	-62.653867	-59.059383	1318
					7	CTD	CTD318	JC055_043_CTD318	30	30/01/2011	04:22:00	62	39.296	59	3.462	-62.654933	-59.0577	1310
					8	CTD	CTD319	JC055_043_CTD319	30	30/01/2011	04:41:00	62	39.296	59	3.458	-62.654933	-59.057633	1304
					9	CTD	CTD320	JC055_043_CTD320	30	30/01/2011	04:53:00	62	39.355	59	3.37	-62.655917	-59.056167	1303
					10	CTD	CTD321	JC055_043_CTD321	30	30/01/2011	05:08:00	62	39.357	59	3.368	-62.65595	-59.056133	1308
					11	CTD	CTD322	JC055_043_CTD322	30	30/01/2011	05:21:00	62	39.413	59	3.283	-62.656883	-59.054717	1293
					12	CTD	CTD323	JC055_043_CTD323	30	30/01/2011	05:37:00	62	39.414	59	3.281	-62.6569	-59.054683	1297
					13	CTD	CTD324	JC055_043_CTD324	30	30/01/2011	05:51:00	62	39.478	59	3.18	-62.657967	-59.053	1227
					14	CTD	CTD325	JC055_043_CTD325	30	30/01/2011	06:05:00	62	39.481	59	3.178	-62.658017	-59.052967	1269
					15	CTD	CTD326	JC055_043_CTD326	30	30/01/2011	06:16:00	62	39.534	59	3.096	-62.6589	-59.0516	1207
					16	CTD	CTD327	JC055_043_CTD327	30	30/01/2011	06:32:00	62	39.536	59	3.091	-62.658933	-59.051517	1211
					17	CTD	CTD328	JC055_043_CTD328	30	30/01/2011	06:44:00	62	39.586	59	3.018	-62.659767	-59.0503	1198
					18	CTD	CTD329	JC055_043_CTD329	30	30/01/2011	07:00:00	62	39.585	59	3.018	-62.65975	-59.0503	1198
					19	CTD	CTD330	JC055_043_CTD330	30	30/01/2011	07:10:00	62	39.629	59	2.955	-62.660483	-59.04925	1154
					20	CTD	CTD331	JC055_043_CTD331	30	30/01/2011	07:23:00	62	39.629	59	2.955	-62.660483	-59.04925	1152
JC055	Three sisters	44	CTD_TOW_YO	TOWYO#09	1	CTD	CTD332	JC055_044_CTD332	30	30/01/2011	08:48:00	62	38.562	59	2.42	-62.6427	-59.040333	1307
					2	CTD	CTD333	JC055_044_CTD333	30	30/01/2011	09:22:00	62	38.563	59	2.417	-62.642717	-59.040283	1309
					3	CTD	CTD334	JC055_044_CTD334	30	30/01/2011	09:37:00	62	38.623	59	2.337	-62.643717	-59.03895	1312
					4	CTD	CTD335	JC055_044_CTD335	30	30/01/2011	09:52:00	62	38.621	59	2.334	-62.643683	-59.0389	1311
					5	CTD	CTD336	JC055_044_CTD336	30	30/01/2011	10:04:00	62	38.679	59	2.253	-62.64465	-59.03755	1259
					6	CTD	CTD337	JC055_044_CTD337	30	30/01/2011	10:21:00	62	38.681	59	2.251	-62.644683	-59.037517	1258
					7	CTD	CTD338	JC055_044_CTD338	30	30/01/2011	10:32:00	62	38.732	59	2.178	-62.645533	-59.0363	1247
					8	CTD	CTD339	JC055_044_CTD339	30	30/01/2011	10:47:00	62	38.734	59	2.177	-62.645567	-59.036283	1248
					9	CTD	CTD340	JC055_044_CTD340	30	30/01/2011	10:59:00	62	38.791	59	2.084	-62.646517	-59.034733	1305
					10	CTD	CTD341	JC055_044_CTD341	30	30/01/2011	11:11:00	62	38.79	59	2.096	-62.6465	-59.034933	1306
					11	CTD	CTD342	JC055_044_CTD342	30	30/01/2011	11:22:00	62	38.848	59	2.014	-62.647467	-59.033567	1303
					12	CTD	CTD343	JC055_044_CTD343	30	30/01/2011	11:36:00	62	38.848	59	2.015	-62.647467	-59.033583	1302
					13	CTD	CTD344	JC055_044_CTD344	30	30/01/2011	11:48:00	62	38.909	59	1.928	-62.648483	-59.032133	1301
					14	CTD	CTD345	JC055_044_CTD345	30	30/01/2011	12:01:00	62	38.909	59	1.929	-62.648483	-59.03215	1300
					15	CTD	CTD346	JC055_044_CTD346	30	30/01/2011	12:14:00	62	38.969	59	1.84	-62.649483	-59.030667	1288
					16	CTD	CTD347	JC055_044_CTD347	30	30/01/2011	12:25:00	62	38.969	59	1.841	-62.649483	-59.030683	1285
					17	CTD	CTD348	JC055_044_CTD348	30	30/01/2011	12:40:00	62	39.033	59	1.752	-62.65055	-59.0292	1223
					18	CTD	CTD349	JC055_044_CTD349	30	30/01/2011	12:52:00	62	39.033	59	1.754	-62.65055	-59.029233	1222
					19	CTD	CTD350	JC055_044_CTD350	30	30/01/2011	13:00:00	62	39.084	59	1.681	-62.6514	-59.028017	1139
					20	CTD	CTD351	JC055_044_CTD351	30	30/01/2011	13:09:00	62	39.084	59	1.675	-62.6514	-59.027917	1142
					21	CTD	CTD352	JC055_044_CTD352	30	30/01/2011	13:18:00	62	39.126	59	1.62	-62.6521	-59.027	1077
					22	CTD	CTD353	JC055_044_CTD353	30	30/01/2011	13:29:00	62	39.126	59	1.62	-62.6521	-59.027	1067
					23	CTD	CTD354	JC055_044_CTD354	30	30/01/2011	13:37:00	62	39.163	59	1.567	-62.652717	-59.026117	1059
					24	CTD	CTD355	JC055_044_CTD355	30	30/01/2011	13:46:00	62	39.164	59	1.568	-62.652733	-59.026133	1060
JC055	Three sisters	45	CTD_TOW_YO	TOWYO#10	1	CTD	CTD356	JC055_045_CTD356	30	30/01/2011	14:46:00	62	37.884	58	59.969	-62.6314	-58.999483	1400
					2	CTD	CTD357	JC055_045_CTD357	30	30/01/2011	15:23:00	62	37.886	58	59.954	-62.631433	-58.999233	1405
					3	CTD	CTD358	JC055_045_CTD358	30	30/01/2011	15:38:00	62	37.952	58	59.852	-62.632533	-58.997533	1398

Equipment depth	End Date	End Time GMT	End Lat Degr	End Lat Min	End Long Degr	End Long Min	End Lat	End Long	End waterdepth meter	Comments	Recipient
										upcast	
										downcast	
										upcast	
										downcast	
										upcast	
										downcast	
										upcast	
										downcast	
	29/01/2011	17:20:00	62	41.048	59	0.488	-62.68413	-59.0081	1189	upcast	
	30/01/2011	01:40:00	62	41.31	58	59.22	-62.6885	-58.987	1203		
										downcast	
										upcast	
										downcast	
										upcast	
										downcast	
										upcast	
										downcast	
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										downcast	
										upcast	
										downcast	
										upcast	
										downcast	
	30/01/2011	07:47:00	62	39.6284	59	2.9592	-62.66047	-59.0493	1156	upcast	
										downcast	
										upcast	
										downcast	
										upcast	
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										downcast	
										upcast	
										downcast	
	30/01/2011	14:09:00	62	39.165	59	1.564	-62.65275	-59.0261	1108	upcast	
										downcast	
										upcast	
										downcast	

Cruise	Site	Station No	Gear Code	Gear No	Event No	Event Gear Code	Event Gear No	Final sample number	JDay (Start)	Start Date	Start Time GMT	Start Lat Degr S	Start Lat Min S	Start Long Degr W	Start Long Min W	Start Lat	Start Long	Start Waterdepth meter
					4	CTD	CTD359	JC055_045_CTD359	30	30/01/2011	15:52:00	62	37.951	58	59.854	-62.632517	-58.997567	1396
					5	CTD	CTD360	JC055_045_CTD360	30	30/01/2011	16:08:00	62	38.021	58	59.744	-62.633683	-58.995733	1370
					6	CTD	CTD361	JC055_045_CTD361	30	30/01/2011	16:20:00	62	38.022	58	59.746	-62.6337	-58.995767	1360
					7	CTD	CTD362	JC055_045_CTD362	30	30/01/2011	16:36:00	62	38.078	58	59.657	-62.634633	-58.994283	1319
					8	CTD	CTD363	JC055_045_CTD363	30	30/01/2011	16:55:00	62	38.108	58	59.609	-62.635133	-58.993483	1308
					9	CTD	CTD364	JC055_045_CTD364	30	30/01/2011	17:02:00	62	38.138	58	59.563	-62.635633	-58.992717	1290
					10	CTD	CTD365	JC055_045_CTD365	30	30/01/2011	17:15:00	62	38.138	58	59.562	-62.635633	-58.9927	1295
					11	CTD	CTD366	JC055_045_CTD366	30	30/01/2011	17:27:00	62	38.196	58	59.474	-62.6366	-58.991233	1256
					12	CTD	CTD367	JC055_045_CTD367	30	30/01/2011	17:38:00	62	38.196	58	59.474	-62.6366	-58.991233	1255
					13	CTD	CTD368	JC055_045_CTD368	30	30/01/2011	17:50:00	62	38.254	58	59.386	-62.637567	-58.989767	1060
					14	CTD	CTD369	JC055_045_CTD369	30	30/01/2011	18:02:00	62	38.254	58	59.386	-62.637567	-58.989767	1208
					15	CTD	CTD370	JC055_045_CTD370	30	30/01/2011	18:12:00	62	38.3	58	59.312	-62.638333	-58.988533	1174
					16	CTD	CTD371	JC055_045_CTD371	30	30/01/2011	18:23:00	62	38.3	58	59.312	-62.638333	-58.988533	1167
					17	CTD	CTD372	JC055_045_CTD372	30	30/01/2011	18:33:00	62	38.345	58	59.243	-62.639083	-58.987383	1091
					18	CTD	CTD373	JC055_045_CTD373	30	30/01/2011	18:43:00	62	38.345	58	59.243	-62.639083	-58.987383	1114
					19	CTD	CTD374	JC055_045_CTD374	30	30/01/2011	18:53:00	62	38.384	58	59.18	-62.639733	-58.986333	1073
					20	CTD	CTD375	JC055_045_CTD375	30	30/01/2011	19:00:00	62	38.384	58	59.18	-62.639733	-58.986333	1070
					21	CTD	CTD376	JC055_045_CTD376	30	30/01/2011	19:09:00	62	38.427	58	59.112	-62.64045	-58.9852	1080
					22	CTD	CTD377	JC055_045_CTD377	30	30/01/2011	19:17:00	62	38.427	58	59.116	-62.64045	-58.985267	1077
					23	CTD	CTD378	JC055_045_CTD378	30	30/01/2011	19:24:00	62	38.459	58	59.06	-62.640983	-58.984333	1017
					24	CTD	CTD379	JC055_045_CTD379	30	30/01/2011	19:31:00	62	38.458	58	59.066	-62.640967	-58.984433	1021
					25	CTD	CTD380	JC055_045_CTD380	30	30/01/2011	19:39:00	62	38.49	58	59.017	-62.6415	-58.983617	1006
					26	CTD	CTD381	JC055_045_CTD381	30	30/01/2011	19:46:00	62	38.491	58	59.012	-62.641517	-58.983533	1000
					27	CTD	CTD382	JC055_045_CTD382	30	30/01/2011	19:53:00	62	38.523	58	58.964	-62.64205	-58.982733	1039
					28	CTD	CTD383	JC055_045_CTD383	30	30/01/2011	20:02:00	62	38.531	58	58.949	-62.642183	-58.982483	1050
					29	CTD	CTD384	JC055_045_CTD384	30	30/01/2011	20:10:00	62	38.574	58	58.889	-62.6429	-58.981483	1101
					30	CTD	CTD385	JC055_045_CTD385	30	30/01/2011	20:21:00	62	38.5738	58	58.889	-62.642897	-58.981483	1103
					31	CTD	CTD386	JC055_045_CTD386	30	30/01/2011	20:29:00	62	38.616	58	58.816	-62.6436	-58.980267	1174
					32	CTD	CTD387	JC055_045_CTD387	30	30/01/2011	20:40:00	62	38.618	58	58.818	-62.643633	-58.9803	1172
					33	CTD	CTD388	JC055_045_CTD388	30	30/01/2011	20:51:00	62	38.663	58	58.748	-62.644383	-58.979133	1181
					34	CTD	CTD389	JC055_045_CTD389	30	30/01/2011	21:01:00	62	38.664	58	58.743	-62.6444	-58.97905	1187
					35	CTD	CTD390	JC055_045_CTD390	30	30/01/2011	21:11:00	62	38.711	58	58.642	-62.645183	-58.977367	1224
					36	CTD	CTD391	JC055_045_CTD391	30	30/01/2011	21:21:00	62	38.71	58	58.674	-62.645167	-58.9779	1231
					37	CTD	CTD392	JC055_045_CTD392	30	30/01/2011	21:30:00	62	38.756	58	58.597	-62.645933	-58.976617	1293
					38	CTD	CTD393	JC055_045_CTD393	30	30/01/2011	21:43:00	62	38.759	58	58.596	-62.645983	-58.9766	1289
JC055	Three sisters	46	CTD	CTD394	1	CTD	p01	JC055_046_CTD394/p01	30	30/01/2011	23:09:00	62	40.398	59	5.4951	-62.6733	-59.091585	1248
					2	NISKIN	n01	JC055_046_CTD394/n01	30	30/01/2011	23:40:00	62	40.398	59	5.4951	-62.6733	-59.091585	1234
					3	NISKIN	n02	JC055_046_CTD394/n02	31	31/01/2011	00:00:00	62	40.398	59	5.491	-62.6733	-59.091517	1254
JC055	Three sisters	47	SHRIMP	SHRIMP02	1	SHRIMP	SHRIMP02	JC055_047_SHRIMP02	31	31/01/2011	01:48:00	62	39.588	59	3.257	-62.6598	-59.054283	1223
JC055	Three sisters	48	MC	MC22	1	MC	c01	JC055_048_MC22/c01	32	01/02/2011	00:26:00	62	39.2167	59	1.8468	-62.653612	-59.03078	1150
					2	MC	c02	JC055_048_MC22/c02	32	01/02/2011	00:26:00	62	39.2167	59	1.8468	-62.653612	-59.03078	1150
					3	MC	c03	JC055_048_MC22/c03	32	01/02/2011	00:26:00	62	39.2167	59	1.8468	-62.653612	-59.03078	1150
					4	MC	c04	JC055_048_MC22/c04	32	01/02/2011	00:26:00	62	39.2167	59	1.8468	-62.653612	-59.03078	1150
					5	MC	c05	JC055_048_MC22/c05	32	01/02/2011	00:26:00	62	39.2167	59	1.8468	-62.653612	-59.03078	1150
					6	MC	c06	JC055_048_MC22/c06	32	01/02/2011	00:26:00	62	39.2167	59	1.8468	-62.653612	-59.03078	1150
					7	MC	c07	JC055_048_MC22/c07	32	01/02/2011	00:26:00	62	39.2167	59	1.8468	-62.653612	-59.03078	1150
					8	MC	c08	JC055_048_MC22/c08	32	01/02/2011	00:26:00	62	39.2167	59	1.8468	-62.653612	-59.03078	1150
JC055	Three sisters	49	MC	MC23	1	MC	c01	JC055_049_MC23/c01	32	01/02/2011	01:56:00	62	39.238	59	1.9577	-62.653967	-59.032628	1121
					2	MC	c02	JC055_049_MC23/c02	32	01/02/2011	01:56:00	62	39.238	59	1.9577	-62.653967	-59.032628	1121
					3	MC	c03	JC055_049_MC23/c03	32	01/02/2011	01:56:00	62	39.238	59	1.9577	-62.653967	-59.032628	1121
					4	MC	c04	JC055_049_MC23/c04	32	01/02/2011	01:56:00	62	39.238	59	1.9577	-62.653967	-59.032628	1121
					5	MC	c05	JC055_049_MC23/c05	32	01/02/2011	01:56:00	62	39.238	59	1.9577	-62.653967	-59.032628	1121
					6	MC	c06	JC055_049_MC23/c06	32	01/02/2011	01:56:00	62	39.238	59	1.9577	-62.653967	-59.032628	1121
					7	MC	c07	JC055_049_MC23/c07	32	01/02/2011	01:56:00	62	39.238	59	1.9577	-62.653967	-59.032628	1121
					8	MC	c08	JC055_049_MC23/c08	32	01/02/2011	01:56:00	62	39.238	59	1.9577	-62.653967	-59.032628	1121
JC055	Three sisters	50	MC	MC24	1	MC	c01	JC055_050_MC24/c01	32	01/02/2011	02:52:00	62	39.3127	59	3.0126	-62.655212	-59.05021	1311
					2	MC	c02	JC055_050_MC24/c02	32	01/02/2011	02:52:00	62	39.3127	59	3.0126	-62.655212	-59.05021	1311

Equipment depth	End Date	End Time GMT	End Lat Degr	End Lat Min	End Long Degr	End Long Min	End Lat	End Long	End waterdepth meter	Comments	Recipient
										upcast	
										downcast	
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										downcast	
	30/01/2011	22:08:00	62	38.82	58	49	-62.647	-58.8167	1375	upcast	
	31/01/2011	00:09:00	62	40.398	59	5.4951	-62.6733	-59.0916	1254	star: CTD in water, end: on deck.	
1210										salinity check only	
100										salinity check only	
	31/01/2011	22:13:00	62	39.408	59	2.219	-62.6568	-59.037	1144	start: SHRIMP on the seabed, end: leaving seabed	
										time is at seafloor. Wireout: 1087m, Pull-out: 1.64t, 17cm	Rachel Mills
										time is at seafloor. Wireout: 1087m, Pull-out: 1.64t, 15.5cm	Rachel Mills
										time is at seafloor. Wireout: 1087m, Pull-out: 1.64t, 11cm	Unused
										time is at seafloor. Wireout: 1087m, Pull-out: 1.64t, 8.5cm	Unused
										time is at seafloor. Wireout: 1087m, Pull-out: 1.64t, 13cm	Rachel Mills
										failed	
										failed	
										failed	
										time is at seafloor. Wireout: 1138m, Pull-out: 1.67t, No time given for megacorer to settle on seafloor. failed	
										failed	
										failed	
										failed	
										failed	
										failed	
										failed	
										failed	
										time is at seafloor. Wireout: 1323m, Pull-out: 2.25t, 35cm	Adrian G
										time is at seafloor. Wireout: 1323m, Pull-out: 2.25t, 27cm	Alfred

Cruise	Site	Station No	Gear Code	Gear No	Event No	Event Gear Code	Event Gear No	Final sample number	JDay (Start)	Start Date	Start Time GMT	Start Lat Degr S	Start Lat Min S	Start Long Degr W	Start Long Min W	Start Lat	Start Long	Start Waterdepth meter
					3	MC	c03	JC055_050_MC24/c03	32	01/02/2011	02:52:00	62	39.3127	59	3.0126	-62.655212	-59.05021	1311
					4	MC	c04	JC055_050_MC24/c04	32	01/02/2011	02:52:00	62	39.3127	59	3.0126	-62.655212	-59.05021	1311
					5	MC	c05	JC055_050_MC24/c05	32	01/02/2011	02:52:00	62	39.3127	59	3.0126	-62.655212	-59.05021	1311
					6	MC	c06	JC055_050_MC24/c06	32	01/02/2011	02:52:00	62	39.3127	59	3.0126	-62.655212	-59.05021	1311
					7	MC	c07	JC055_050_MC24/c07	32	01/02/2011	02:52:00	62	39.3127	59	3.0126	-62.655212	-59.05021	1311
					8	MC	c08	JC055_050_MC24/c08	32	01/02/2011	02:52:00	62	39.3127	59	3.0126	-62.655212	-59.05021	1311
JC055	Three sisters	51	MC	MC25	1	MC	c01	JC055_051_MC25/c01	32	01/02/2011	05:19:00	62	39.3132	59	3.0187	-62.65522	-59.050312	1310
					2	MC	c02	JC055_051_MC25/c02	32	01/02/2011	05:19:00	62	39.3132	59	3.0187	-62.65522	-59.050312	1310
					3	MC	c03	JC055_051_MC25/c03	32	01/02/2011	05:19:00	62	39.3132	59	3.0187	-62.65522	-59.050312	1310
					4	MC	c04	JC055_051_MC25/c04	32	01/02/2011	05:19:00	62	39.3132	59	3.0187	-62.65522	-59.050312	1310
					5	MC	c05	JC055_051_MC25/c05	32	01/02/2011	05:19:00	62	39.3132	59	3.0187	-62.65522	-59.050312	1310
					6	MC	c06	JC055_051_MC25/c06	32	01/02/2011	05:19:00	62	39.3132	59	3.0187	-62.65522	-59.050312	1310
					7	MC	c07	JC055_051_MC25/c07	32	01/02/2011	05:19:00	62	39.3132	59	3.0187	-62.65522	-59.050312	1310
					8	MC	c08	JC055_051_MC25/c08	32	01/02/2011	05:19:00	62	39.3132	59	3.0187	-62.65522	-59.050312	1310
JC055	Three sisters	52	CTD	CTD395	1	CTD	p01	JC055_052_CTD395/p01	32	01/02/2011	07:41:00	62	38.63802	59	0.022	-62.643967	-59.000367	1064
JC055	Three sisters	53	CTD	CTD396	1	CTD	p01	JC055_053_CTD396/p01	32	01/02/2001	09:57:00	62	42.012	59	10.60636	-62.7002	-59.176773	1273
JC055	Bransfield Strait	54	SWATH	SWATH#04	1	EM120	SWATH#04	JC055_054_SWATH04	32	01/02/2011	12:51:24	62	47.396	59	36.783	-62.789933	-59.61305	1277
JC055	Axe	55	CTD	CTD397	1	CTD	p01	JC055_055_CTD397	32	01/02/2011	13:29:00	62	48.457	59	40.058	-62.807617	-59.667633	658
					2	NISKIN	n01	JC055_055_CTD397/n01	32	01/02/2011	13:48:00	62	48.458	59	40.06	-62.807633	-59.667667	658
					3	NISKIN	n02	JC055_055_CTD397/n02	32	01/02/2011	14:04:00	62	48.458	59	40.06	-62.807633	-59.667667	659
JC055	Axe	56	CTD	CTD398	1	CTD	p01	JC055_056_CTD398	32	01/02/2011	14:42:00	62	48.827	59	41.988	-62.813783	-59.6998	990
					2	NISKIN	n01	JC055_056_CTD398/n01	32	01/02/2011	15:07:00	62	48.827	59	41.989	-62.813783	-59.699817	966
					3	NISKIN	n02	JC055_056_CTD398/n02	32	01/02/2011	15:23:00	62	48.826	59	41.99	-62.813767	-59.699833	968
JC055	Axe	57	CTD	CTD399	1	CTD	p01	JC055_057_CTD399	32	01/02/2011	16:00:00	62	49.2115	59	43.9322	-62.820192	-59.732203	781
					2	NISKIN	n03	JC055_057_CTD399/n03	32	01/02/2011	16:35:00	62	49.125	59	43.501	-62.81875	-59.725017	792
					3	NISKIN	n04	JC055_057_CTD339/n04	32	01/02/2011	16:41:00	62	49.092	59	43.332	-62.8182	-59.7222	792
JC055	Axe	58	CTD	CTD400	1	CTD	p01	JC055_058_CTD400	32	01/02/2011	17:15:00	62	49.579	59	45.877	-62.826317	-59.764617	590
					2	NISKIN	n06	JC055_058_CTD400/n06	32	01/02/2011	17:46:00	62	49.499	59	45.39	-62.824983	-59.7565	670
JC055	Axe	59	CTD	CTD401	1	CTD	p01	JC055_059_CTD401	32	01/02/2011	18:28:00	62	49.957	59	47.768	-62.832617	-59.796133	559
					2	NISKIN	n07	JC055_059_CTD401/n07	32	01/02/2011	18:51:00	62	49.895	59	47.419	-62.831583	-59.790317	573
					3	NISKIN	n08	JC055_059_CTD401/n08	32	01/02/2011	18:59:00	62	49.864	59	47.526	-62.831067	-59.7921	579
JC055	Axe	60	CTD	CTD402	1	CTD	p01	JC055_060_CTD402	32	01/02/2011	19:58:00	62	50.2947	59	49.7615	-62.838245	-59.829358	682
					2	NISKIN	n09	JC055_060_CTD402/n09	32	01/02/2011	20:20:00	62	50.166	59	49.291	-62.8361	-59.821517	681
					3	NISKIN	n10	JC055_060_CTD402/n10	32	01/02/2011	20:27:00	62	50.133	59	49.158	-62.83555	-59.8193	675
JC055	Axe	61	CTD	CTD403	1	CTD	p01	JC055_061_CTD403	32	01/02/2011	21:12:00	62	51.1317	59	53.5702	-62.852195	-59.892837	554
					2	NISKIN	n10	JC055_061_CTD403/n10	32	01/02/2011	21:35:00	62	50.995	59	53.2632	-62.849917	-59.88772	563
					3	NISKIN	n11	JC055_061_CTD403/n11	32	01/02/2011	21:47:00	62	50.891	59	53.0028	-62.848183	-59.88338	563
JC055	Axe	62	CTD	CTD404	1	CTD	p01	JC055_062_CTD404	32	01/02/2011	22:33:00	62	51.498	59	55.863	-62.8583	-59.93105	696
					2	NISKIN	n12	JC055_062_CTD404/n12	32	01/02/2011	22:56:00	62	51.365	59	55.543	-62.856083	-59.925717	702
					3	NISKIN	n13	JC055_062_CTD404/n13	32	01/02/2011	23:05:00	62	51.337	59	55.476	-62.855617	-59.9246	694
JC055	Axe	63	CTD	CTD405	1	CTD	p01	JC055_063_CTD405	32	01/02/2011	23:49:00	62	51.8996	59	57.5534	-62.864993	-59.959223	825
					2	NISKIN	n14	JC055_063_CTD405/n14	33	02/02/2011	00:10:00	62	51.836	59	57.423	-62.863933	-59.95705	825
JC055	Axe	64	CTD	CTD406	1	CTD	p01	JC055_064_CTD406	33	02/02/2011	01:10:00	62	52.24598	59	59.38115	-62.870766	-59.989686	1018
					2	NISKIN	n15	JC055_064_CTD406/n15	33	02/02/2011	01:27:00	62	52.248	59	59.381	-62.8708	-59.989683	1018
JC055	Axe	65	CTD	CTD407	1	CTD	p01	JC055_065_CTD407	33	02/02/2011	02:12:00	62	53.099	59	58.795	-62.884983	-59.979917	680
					2	NISKIN	n16	JC055_065_CTD407/n16	33	02/02/2011	02:32:00	62	53.091	59	58.801	-62.88485	-59.980017	680
JC055	Axe	66	CTD	CTD408	1	CTD	p01	JC055_066_CTD408	33	02/02/2011	03:28:00	62	52.723	59	56.835	-62.878717	-59.94725	673
					2	NISKIN	n17	JC055_066_CTD408/n17	33	02/02/2011	03:51:00	62	52.683	59	56.63	-62.87805	-59.943833	673
JC055	Axe	67	CTD	CTD409	1	CTD	p01	JC055_067_CTD409	33	02/02/2011	04:37:00	62	52.314	59	54.909	-62.8719	-59.91515	659
					2	NISKIN	n18	JC055_067_CTD409/n18	33	02/02/2011	04:50:00	62	52.26	59	54.6	-62.871	-59.91	659
JC055	Axe	68	CTD	CTD410	1	CTD	p01	JC055_068_CTD410	33	02/02/2011	05:58:00	62	51.911	59	52.946	-62.865183	-59.882433	660
					2	NISKIN	n19	JC055_068_CTD410/n19	33	02/02/2011	06:10:00	62	51.872	59	52.589	-62.864533	-59.876483	660
JC055	Axe	69	CTD	CTD411	1	CTD	p01	JC055_069_CTD411	33	02/02/2011	07:14:00	62	51.664	59	51.005	-62.861067	-59.850083	582
					2	NISKIN	n20	JC055_069_CTD411/n20	33	02/02/2011	07:28:00	62	51.6586	59	51.748	-62.860977	-59.862467	582
JC055	Axe	70	CTD	CTD412	1	CTD	p01	JC055_070_CTD412	33	02/02/2011	08:14:00	62	52.6975	59	50.314	-62.878292	-59.838567	510
					2	NISKIN	n21	JC055_070_CTD412/n21	33	02/02/2011	08:27:00	62	52.712	59	50.159	-62.878533	-59.835983	510
JC055	Axe	71	CTD	CTD413	1	CTD	p01	JC055_071_CTD413	33	02/02/2011	09:20:00	62	51.95559	59	47.85278	-62.865927	-59.797546	474

Equipment depth	End Date	End Time GMT	End Lat Degr	End Lat Min	End Long Degr	End Long Min	End Lat	End Long	End waterdepth meter	Comments	Recipient
										time is at seafloor. Wireout: 1323m, Pull-out: 2.25t, 38cm	Alfred
										time is at seafloor. Wireout: 1323m, Pull-out: 2.25t, 33cm	Adrian G
										time is at seafloor. Wireout: 1323m, Pull-out: 2.25t, 39cm	Alfred
										time is at seafloor. Wireout: 1323m, Pull-out: 2.25t, 39cm	Adrian G
										time is at seafloor. Wireout: 1323m, Pull-out: 2.25t, 36cm	Adrian G
										time is at seafloor. Wireout: 1323m, Pull-out: 2.25t, 34cm	Adrian G
										time is at seafloor. Wireout: 1323m, Pull-out: 2.38t, 37cm	Clare Woulds
										time is at seafloor. Wireout: 1323m, Pull-out: 2.38t, 35cm	Adrian G
										time is at seafloor. Wireout: 1323m, Pull-out: 2.38t, 37cm	Clare Woulds
										time is at seafloor. Wireout: 1323m, Pull-out: 2.38t, 36cm	Adrian G
										time is at seafloor. Wireout: 1323m, Pull-out: 2.38t, 36cm	Clare Woulds
										time is at seafloor. Wireout: 1323m, Pull-out: 2.38t, 39cm	Adrian G
										time is at seafloor. Wireout: 1323m, Pull-out: 2.38t, 36cm	Clare Woulds
										time is at seafloor. Wireout: 1323m, Pull-out: 2.38t, 35cm	Adrian G
	01/02/2011	08:31	62	38.6995	58	59.9949	-62.64499	-58.9999	1063	start: CTD in water, end: on deck.	
	01/02/2011	10:25:00	62	41.99316	59	10.73692	-62.69989	-59.1789	1275	start: CTD in water, end: on deck.	
	02/02/2001	16:40:00	62	47.247	59	45.9174	-62.78745	-59.7653	1024	carrying out swath survey between set of CTD stations	
609.5 30	01/02/2011	14:08:00	62	48.457	59	40.058	-62.80762	-59.6676	656	start: CTD in water, end: on deck.	
940 150	01/02/2011	15:32:00	62	48.826	59	41.986	-62.81377	-59.6998	968	start: CTD in water, end: on deck.	
301 100	01/02/2011	16:47:00	62	49.091	59	43.314	-62.81818	-59.7219	792	start: CTD in water, end: on deck.	
450	01/02/2011	17:59:00	62	49.454	59	45.162	-62.82423	-59.7527	670	start: CTD in water, end: on deck. Ship drifted during CTD	
499 150	01/02/2011	19:07:00	62	49.8314	59	47.0977	-62.83052	-59.785	579	start: CTD in water, end: on deck. Ship drifted during CTD	
450 150	01/02/2011	20:32:00	62	50.102	59	49.0504	-62.83503	-59.8175	675	start: CTD in water, end: on deck. Ship drifted during CTD	
547 20	01/02/2011	21:49:00	62	50.88	59	52.98	-62.848	-59.883	615	start: CTD in water, end: on deck. Ship drifted during CTD	
700 350	01/02/2011	23:15:00	62	51.304	59	55.39	-62.85507	-59.9232	694	start: CTD in water, end: on deck. Ship drifted during CTD	
820	02/02/2011	00:29:00	62	51.7943	59	57.3427	-62.86324	-59.9557	813	start: CTD in water, end: on deck. Ship drifted during CTD	
897	02/02/2011	01:48:00	62	52.24619	59	59.38178	-62.87077	-59.9897	1016	start: CTD in water, end: on deck. Ship drifted during CTD	
617	02/02/2011	02:43:00	62	53.09441	59	58.80086	-62.88491	-59.98	681	start: CTD in water, end: on deck. Ship drifted during CTD salinity test	
680	02/02/2011	04:07:00	62	52.646	59	56.462	-62.87743	-59.941		start: CTD in water, end: on deck. Ship drifted during CTD	
611	02/02/2011	05:20:00	62	52.22	59	54.36	-62.87033	-59.906		start: CTD in water, end: on deck. Ship drifted during CTD	
574	02/02/2011	06:24:00	62	51.841	59	52.332	-62.86402	-59.8722	661	start: CTD in water, end: on deck. Ship drifted during CTD	
522	02/02/2011	07:42:00	62	51.659	59	50.49215	-62.86098	-59.8415		start: CTD in water, end: on deck. Ship drifted during CTD	
461	02/02/2011	08:43:00	62	52.713	59	50.157	-62.87855	-59.836		start: CTD in water, end: on deck. Ship drifted during CTD	
	02/02/2011	09:43:00	62	51.97871	59	47.90296	-62.86631	-59.7984	468	start: CTD in water, end: on deck. Ship drifted during CTD	

Cruise	Site	Station No	Gear Code	Gear No	Event No	Event Gear Code	Event Gear No	Final sample number	JDay (Start)	Start Date	Start Time GMT	Start Lat Degr S	Start Lat Min S	Start Long Degr W	Start Long Min W	Start Lat	Start Long	Start Waterdepth meter
					2	NISKIN	n22	JC055_071_CTD413/n22	33	02/02/2011	09:33:00	62	51.66	59	47.88137	-62.861	-59.798023	474
JC055	Axe	72	CTD	CTD414	1	CTD	p01	JC055_072_CTD414	33	02/02/2011	10:12:00	62	51.259	59	49.751	-62.854317	-59.829183	597
					2	NISKIN	n23	JC055_072_CTD414/n23	33	02/02/2011	10:28:00	62	51.30616	59	49.77478	-62.855103	-59.82958	597
JC055	Axe	73	CTD	CTD415	1	CTD	p01	JC055_073_CTD415	33	02/02/2011	11:33:00	62	50.20579	59	51.60941	-62.836763	-59.860157	669
					2	NISKIN	n24	JC055_073_CTD415/n24	33	02/02/2011	11:52:00	62	50.20183	59	51.55726	-62.836697	-59.859288	669
JC055	Axe	74	CTD	CTD416	1	CTD	p01	JC055_074_CTD416	33	02/02/2011	12:35:00	62	49.7673	59	52.3361	-62.829455	-59.872268	384
					2	NISKIN	n01	JC055_074_CTD416/n01	33	02/02/2011	12:49:00	62	49.7543	59	53.2675	-62.829238	-59.887792	385
JC055	Axe	75	CTD	CTD417	1	CTD	p01	JC055_075_CTD417	33	02/02/2011	13:42:00	62	49.745	59	52.219	-62.829083	-59.870317	606
					2	NISKIN	n02	JC055_075_CTD417/n02	33	02/02/2011	13:59:00	62	49.23	59	52.832	-62.8205	-59.880533	606
JC055	Axe	76	CTD	CTD418	1	CTD	p01	JC055_076_CTD418	33	02/02/2011	15:16:00	62	50.732	59	51.68	-62.845533	-59.861333	687
					2	NISKIN	n21	JC055_076_CTD418/n21	33	02/02/2011	15:42:00	62	50.699	59	51.294	-62.844983	-59.8549	695
					3	NISKIN	n22	JC055_076_CTD418/n22	33	02/02/2011	15:42:00	62	50.699	59	51.294	-62.844983	-59.8549	695
JC055	Axe	77	MC	MC26	1	MC	c01	JC055_077_MC26/c01	33	02/02/2011	17:24:00	62	47.197	59	45.694	-62.786617	-59.761567	1024
					2	MC	c02	JC055_077_MC26/c02	33	02/02/2011	17:24:00	62	47.197	59	45.694	-62.786617	-59.761567	1024
					3	MC	c03	JC055_077_MC26/c03	33	02/02/2011	17:24:00	62	47.197	59	45.694	-62.786617	-59.761567	1024
					4	MC	c04	JC055_077_MC26/c04	33	02/02/2011	17:24:00	62	47.197	59	45.694	-62.786617	-59.761567	1024
					5	MC	c05	JC055_077_MC26/c05	33	02/02/2011	17:24:00	62	47.197	59	45.694	-62.786617	-59.761567	1024
					6	MC	c06	JC055_077_MC26/c06	33	02/02/2011	17:24:00	62	47.197	59	45.694	-62.786617	-59.761567	1024
					7	MC	c07	JC055_077_MC26/c07	33	02/02/2011	17:24:00	62	47.197	59	45.694	-62.786617	-59.761567	1024
					8	MC	c08	JC055_077_MC26/c08	33	02/02/2011	17:24:00	62	47.197	59	45.694	-62.786617	-59.761567	1024
JC055	Orca Crater	78	CTD	CTD419	1	CTD	p01	JC055_078_CTD419	33	02/02/2011	23:00:00	62	25.78359	58	24.16417	-62.429727	-58.402736	1087
					2	NISKIN	n01	JC055_078_CTD419/n01	33	02/02/2011	23:42:00	62	25.745	58	24.243	-62.429083	-58.40405	1087
					3	NISKIN	n02	JC055_078_CTD419/n02	33	02/02/2011	23:42:00	62	25.745	58	24.243	-62.429083	-58.40405	1087
					4	NISKIN	n03	JC055_078_CTD419/n03	33	02/02/2011	23:42:00	62	25.745	58	24.243	-62.429083	-58.40405	1087
					5	NISKIN	n04	JC055_078_CTD419/n04	33	02/02/2011	23:42:00	62	25.745	58	24.243	-62.429083	-58.40405	1087
					6	NISKIN	n05	JC055_078_CTD419/n05	33	02/02/2011	23:42:00	62	25.745	58	24.243	-62.429083	-58.40405	1087
					7	NISKIN	n06	JC055_078_CTD419/n06	33	02/02/2011	23:42:00	62	25.745	58	24.243	-62.429083	-58.40405	1087
					8	NISKIN	n07	JC055_078_CTD419/n07	33	02/02/2011	23:42:00	62	25.745	58	24.243	-62.429083	-58.40405	1087
					9	NISKIN	n08	JC055_078_CTD419/n08	33	02/02/2011	23:42:00	62	25.745	58	24.243	-62.429083	-58.40405	1087
					10	NISKIN	n09	JC055_078_CTD419/n09	33	02/02/2011	23:42:00	62	25.745	58	24.243	-62.429083	-58.40405	1087
					11	NISKIN	n10	JC055_078_CTD419/n10	33	02/02/2011	23:42:00	62	25.745	58	24.243	-62.429083	-58.40405	1087
					12	NISKIN	n11	JC055_078_CTD419/n11	33	02/02/2011	23:42:00	62	25.745	58	24.243	-62.429083	-58.40405	1087
					13	NISKIN	n12	JC055_078_CTD419/n12	33	02/02/2011	23:57:00	62	25.745	58	24.243	-62.429083	-58.40405	1087
					14	NISKIN	n13	JC055_078_CTD419/n13	33	02/02/2011	23:57:00	62	25.745	58	24.243	-62.429083	-58.40405	1087
					15	NISKIN	n14	JC055_078_CTD419/n14	33	02/02/2011	23:57:00	62	25.745	58	24.243	-62.429083	-58.40405	1087
					16	NISKIN	n15	JC055_078_CTD419/n15	33	02/02/2011	23:57:00	62	25.745	58	24.243	-62.429083	-58.40405	1087
					17	NISKIN	n16	JC055_078_CTD419/n16	33	02/02/2011	23:57:00	62	25.745	58	24.243	-62.429083	-58.40405	1087
					18	NISKIN	n17	JC055_078_CTD419/n17	33	02/02/2011	23:57:00	62	25.745	58	24.243	-62.429083	-58.40405	1087
					19	NISKIN	n18	JC055_078_CTD419/n18	33	02/02/2011	23:57:00	62	25.745	58	24.243	-62.429083	-58.40405	1087
					20	NISKIN	n19	JC055_078_CTD419/n19	33	02/02/2011	23:57:00	62	25.745	58	24.243	-62.429083	-58.40405	1087
					21	NISKIN	n20	JC055_078_CTD419/n20	33	02/02/2011	23:57:00	62	25.745	58	24.243	-62.429083	-58.40405	1087
					22	NISKIN	n21	JC055_078_CTD419/n21	33	02/02/2011	23:57:00	62	25.745	58	24.243	-62.429083	-58.40405	1087
					23	NISKIN	n22	JC055_078_CTD419/n22	33	02/02/2011	23:57:00	62	25.745	58	24.243	-62.429083	-58.40405	1087
					24	NISKIN	n23	JC055_078_CTD419/n23	33	02/02/2011	23:57:00	62	25.745	58	24.243	-62.429083	-58.40405	1087
					25	NISKIN	n24	JC055_078_CTD419/n24	33	02/02/2011	23:57:00	62	25.745	58	24.243	-62.429083	-58.40405	1087
JC055	Hook Ridge	79	CTD	CTD420	1	CTD	p01	JC055_079_CTD420	34	03/02/2011	04:19:00	62	11.964	57	17.468	-62.1994	-57.291133	1208
					2	NISKIN	n01	JC055_079_CTD420/n01	34	03/02/2011	05:02:00	62	11.9429	57	17.4693	-62.199048	-57.291155	1208
					3	NISKIN	n02	JC055_079_CTD420/n02	34	03/02/2011	05:02:00	62	11.9429	57	17.4693	-62.199048	-57.291155	1208
					4	NISKIN	n03	JC055_079_CTD420/n03	34	03/02/2011	05:02:00	62	11.9429	57	17.4693	-62.199048	-57.291155	1208
					5	NISKIN	n04	JC055_079_CTD420/n04	34	03/02/2011	05:02:00	62	11.9429	57	17.4693	-62.199048	-57.291155	1208
					6	NISKIN	n05	JC055_079_CTD420/n05	34	03/02/2011	05:02:00	62	11.9429	57	17.4693	-62.199048	-57.291155	1208
					7	NISKIN	n06	JC055_079_CTD420/n06	34	03/02/2011	05:02:00	62	11.9429	57	17.4693	-62.199048	-57.291155	1208
					8	NISKIN	n07	JC055_079_CTD420/n07	34	03/02/2011	05:02:00	62	11.9429	57	17.4693	-62.199048	-57.291155	1208
					9	NISKIN	n08	JC055_079_CTD420/n08	34	03/02/2011	05:02:00	62	11.9429	57	17.4693	-62.199048	-57.291155	1208
					10	NISKIN	n09	JC055_079_CTD420/n09	34	03/02/2011	05:02:00	62	11.9429	57	17.4693	-62.199048	-57.291155	1208
					11	NISKIN	n10	JC055_079_CTD420/n10	34	03/02/2011	05:02:00	62	11.9429	57	17.4693	-62.199048	-57.291155	1208
					12	NISKIN	n11	JC055_079_CTD420/n11	34	03/02/2011	05:02:00	62	11.9429	57	17.4693	-62.199048	-57.291155	1208

Equipment depth	End Date	End Time GMT	End Lat Degr	End Lat Min	End Long Degr	End Long Min	End Lat	End Long	End waterdepth meter	Comments	Recipient
421											
609	02/02/2011	10:45:00	62	51.363	59	49.815	-62.85605	-59.8303	620	start: CTD in water, end: on deck. Ship drifted during CTD	
620	02/02/2011	12:08:00	62	50.19989	59	51.53465	-62.83666	-59.8589	669	start: CTD in water, end: on deck. Ship drifted during CTD	
330	02/02/2011	13:03:00	62	49.745	59	52.229	-62.82908	-59.8705	384	start: CTD in water, end: on deck. Ship drifted during CTD	
550	02/02/2011	14:12:00	62	49.224	59	52.764	-62.8204	-59.8794	605	start: CTD in water, end: on deck. Ship drifted during CTD	
654	02/02/2011	15:57:00	62	50.64	59	51.141	-62.844	-59.8524		start: CTD in water, end: on deck. Ship drifted during CTD	
654										for salinity	
										for possible CH4?	
										time is at seafloor. Wireout: 1036m, Pull-out: 2.02t, 39.5cm	Adrian G
										time is at seafloor. Wireout: 1036m, Pull-out: 2.02t, 26cm	Adrian G
										time is at seafloor. Wireout: 1036m, Pull-out: 2.02t, 37.5cm	Rachel
										time is at seafloor. Wireout: 1036m, Pull-out: 2.02t, 36.5cm	Rachel
										time is at seafloor. Wireout: 1036m, Pull-out: 2.02t, 38.0cm	Rachel
										time is at seafloor. Wireout: 1036m, Pull-out: 2.02t, 37.5cm	Adrian G
										time is at seafloor. Wireout: 1036m, Pull-out: 2.02t, 35.5cm	Adrian G
										time is at seafloor. Wireout: 1036m, Pull-out: 2.02t, 38.0cm	David P
1000	03/02/2011	00:12:00	62	25.745	58	24.242	-62.42908	-58.404		start: CTD in water, end: on deck. Ship drifted during CTD	
1000											Katrin Z
1000											Katrin Z
1000											Katrin Z
1000											Katrin Z
1000											Katrin Z
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1000											Katrin Z
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500											Katrin Z
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500											Katrin Z
1191	03/02/2011	05:33:00	62	11.9414	57	17.4701	-62.19902	-57.2912	1196		
1191											Doug Connelly
1191											Katrin Z
1191											Katrin Z
1191											Katrin Z
1191											Katrin Z
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1191											Katrin Z

Cruise	Site	Station No	Gear Code	Gear No	Event No	Event Gear Code	Event Gear No	Final sample number	JDay (Start)	Start Date	Start Time GMT	Start Lat Degr S	Start Lat Min S	Start Long Degr W	Start Long Min W	Start Lat	Start Long	Start Waterdepth meter
					13	NISKIN	n12	JC055_079_CTD420/n12	34	03/02/2011	05:02:00	62	11.9429	57	17.4693	-62.199048	-57.291155	1208
					14	NISKIN	n13	JC055_079_CTD420/n13	34	03/02/2011	05:02:00	62	11.9429	57	17.4693	-62.199048	-57.291155	1208
					15	NISKIN	n14	JC055_079_CTD420/n14	34	03/02/2011	05:02:00	62	11.9429	57	17.4693	-62.199048	-57.291155	1208
					16	NISKIN	n15	JC055_079_CTD420/n15	34	03/02/2011	05:02:00	62	11.9429	57	17.4693	-62.199048	-57.291155	1208
					17	NISKIN	n16	JC055_079_CTD420/n16	34	03/02/2011	05:02:00	62	11.9429	57	17.4693	-62.199048	-57.291155	1208
					18	NISKIN	n17	JC055_079_CTD420/n17	34	03/02/2011	05:02:00	62	11.9429	57	17.4693	-62.199048	-57.291155	1208
					19	NISKIN	n18	JC055_079_CTD420/n18	34	03/02/2011	05:02:00	62	11.9429	57	17.4693	-62.199048	-57.291155	1208
					20	NISKIN	n19	JC055_079_CTD420/n19	34	03/02/2011	05:02:00	62	11.9429	57	17.4693	-62.199048	-57.291155	1208
					21	NISKIN	n20	JC055_079_CTD420/n20	34	03/02/2011	05:13:00	62	11.9429	57	17.4693	-62.199048	-57.291155	1208
					22	NISKIN	n21	JC055_079_CTD420/n21	34	03/02/2011	05:15:00	62	11.9429	57	17.4693	-62.199048	-57.291155	1208
					23	NISKIN	n22	JC055_079_CTD420/n22	34	03/02/2011	05:20:00	62	11.9429	57	17.4693	-62.199048	-57.291155	1208
					24	NISKIN	n23	JC055_079_CTD420/n23	34	03/02/2011	05:24:00	62	11.9429	57	17.4693	-62.199048	-57.291155	1208
					25	NISKIN	n24	JC055_079_CTD420/n24	34	03/02/2011	05:24:00	62	11.9429	57	17.4693	-62.199048	-57.291155	1208
JC055	Hook Ridge	80	CTD	CTD421	1	CTD	p01	JC055_080_CTD421	34	03/02/2011	09:48:00	62	11.727	57	17.657	-62.19545	-57.294283	1130
					2	NISKIN	n01	JC055_080_CTD421/n01	34	03/02/2011	10:25:00	62	11.727	57	17.657	-62.19545	-57.294283	1130
					3	NISKIN	n02	JC055_080_CTD421/n02	34	03/02/2011	10:25:00	62	11.727	57	17.657	-62.19545	-57.294283	1130
					4	NISKIN	n03	JC055_080_CTD421/n03	34	03/02/2011	10:26:00	62	11.727	57	17.657	-62.19545	-57.294283	1130
					5	NISKIN	n04	JC055_080_CTD421/n04	34	03/02/2011	10:26:00	62	11.727	57	17.657	-62.19545	-57.294283	1130
					6	NISKIN	n05	JC055_080_CTD421/n05	34	03/02/2011	10:27:00	62	11.727	57	17.657	-62.19545	-57.294283	1130
					7	NISKIN	n06	JC055_080_CTD421/n06	34	03/02/2011	10:27:00	62	11.727	57	17.657	-62.19545	-57.294283	1130
					8	NISKIN	n07	JC055_080_CTD421/n07	34	03/02/2011	10:28:00	62	11.727	57	17.657	-62.19545	-57.294283	1130
					9	NISKIN	n08	JC055_080_CTD421/n08	34	03/02/2011	10:28:00	62	11.727	57	17.657	-62.19545	-57.294283	1130
					10	NISKIN	n09	JC055_080_CTD421/n09	34	03/02/2011	10:29:00	62	11.727	57	17.657	-62.19545	-57.294283	1130
					11	NISKIN	n10	JC055_080_CTD421/n10	34	03/02/2011	10:29:00	62	11.727	57	17.657	-62.19545	-57.294283	1130
					12	NISKIN	n11	JC055_080_CTD421/n11	34	03/02/2011	10:30:00	62	11.727	57	17.657	-62.19545	-57.294283	1130
					13	NISKIN	n12	JC055_080_CTD421/n12	34	03/02/2011	10:30:00	62	11.727	57	17.657	-62.19545	-57.294283	1130
					14	NISKIN	n13	JC055_080_CTD421/n13	34	03/02/2011	10:40:00	62	11.72736	57	17.65521	-62.195456	-57.294254	1130
					15	NISKIN	n14	JC055_080_CTD421/n14	34	03/02/2011	10:41:00	62	11.72736	57	17.65521	-62.195456	-57.294254	1130
					16	NISKIN	n15	JC055_080_CTD421/n15	34	03/02/2011	10:41:00	62	11.72736	57	17.65521	-62.195456	-57.294254	1130
					17	NISKIN	n16	JC055_080_CTD421/n16	34	03/02/2011	10:42:00	62	11.72736	57	17.65521	-62.195456	-57.294254	1130
					18	NISKIN	n17	JC055_080_CTD421/n17	34	03/02/2011	10:42:00	62	11.72736	57	17.65521	-62.195456	-57.294254	1130
					19	NISKIN	n18	JC055_080_CTD421/n18	34	03/02/2011	10:43:00	62	11.72736	57	17.65521	-62.195456	-57.294254	1130
					20	NISKIN	n19	JC055_080_CTD421/n19	34	03/02/2011	10:43:00	62	11.72736	57	17.65521	-62.195456	-57.294254	1130
					21	NISKIN	n20	JC055_080_CTD421/n20	34	03/02/2011	10:44:00	62	11.72736	57	17.65521	-62.195456	-57.294254	1130
					22	NISKIN	n21	JC055_080_CTD421/n21	34	03/02/2011	10:44:00	62	11.72736	57	17.65521	-62.195456	-57.294254	1130
					23	NISKIN	n22	JC055_080_CTD421/n22	34	03/02/2011	10:45:00	62	11.72736	57	17.65521	-62.195456	-57.294254	1130
					24	NISKIN	n23	JC055_080_CTD421/n23	34	03/02/2011	10:45:00	62	11.72736	57	17.65521	-62.195456	-57.294254	1130
					25	NISKIN	n24	JC055_080_CTD421/n24	34	03/02/2011	10:46:00	62	11.72736	57	17.65521	-62.195456	-57.294254	1130
JC055	Hook Ridge	81	MC	MC27	1	MC	c01	JC055_081_MC/c01	34	03/02/2011	12:18:00	62	11.51363	57	16.60163	-62.191894	-57.276694	1053
					2	MC	c02	JC055_081_MC/c02	34	03/02/2011	12:18:00	62	11.51363	57	16.60163	-62.191894	-57.276694	1053
					3	MC	c03	JC055_081_MC/c03	34	03/02/2011	12:18:00	62	11.51363	57	16.60163	-62.191894	-57.276694	1053
					4	MC	c04	JC055_081_MC/c04	34	03/02/2011	12:18:00	62	11.51363	57	16.60163	-62.191894	-57.276694	1053
					5	MC	c05	JC055_081_MC/c05	34	03/02/2011	12:18:00	62	11.51363	57	16.60163	-62.191894	-57.276694	1053
					6	MC	c06	JC055_081_MC/c06	34	03/02/2011	12:18:00	62	11.51363	57	16.60163	-62.191894	-57.276694	1053
					7	MC	c07	JC055_081_MC/c07	34	03/02/2011	12:18:00	62	11.51363	57	16.60163	-62.191894	-57.276694	1053
					8	MC	c08	JC055_081_MC/c08	34	03/02/2011	12:18:00	62	11.51363	57	16.60163	-62.191894	-57.276694	1053
JC055	ESR	82	CTD	CTD422	1	CTD	p01	JC055_082_CTD422	37	06/02/2011	19:56:00	59	40.8981	33	6.1812	-59.681635	-33.10302	2584
					2	NISKIN	n01	JC055_082_CTD422/n01	37	06/02/2011	21:03:00	59	40.897	33	6.181	-59.681617	-33.103017	2590
					3	NISKIN	n02	JC055_082_CTD422/n02	37	06/02/2011	21:03:00	59	40.897	33	6.181	-59.681617	-33.103017	2590
					4	NISKIN	n03	JC055_082_CTD422/n03	37	06/02/2011	21:03:00	59	40.897	33	6.181	-59.681617	-33.103017	2590
					5	NISKIN	n04	JC055_082_CTD422/n04	37	06/02/2011	21:03:00	59	40.897	33	6.181	-59.681617	-33.103017	2590
					6	NISKIN	n05	JC055_082_CTD422/n05	37	06/02/2011	21:04:00	59	40.897	33	6.181	-59.681617	-33.103017	2590
					7	NISKIN	n06	JC055_082_CTD422/n06	37	06/02/2011	21:04:00	59	40.897	33	6.181	-59.681617	-33.103017	2590
					8	NISKIN	n07	JC055_082_CTD422/n07	37	06/02/2011	21:04:00	59	40.897	33	6.181	-59.681617	-33.103017	2590
					9	NISKIN	n08	JC055_082_CTD422/n08	37	06/02/2011	21:05:00	59	40.897	33	6.181	-59.681617	-33.103017	2590
					10	NISKIN	n09	JC055_082_CTD422/n09	37	06/02/2011	21:05:00	59	40.897	33	6.181	-59.681617	-33.103017	2590
					11	NISKIN	n10	JC055_082_CTD422/n10	37	06/02/2011	21:05:00	59	40.897	33	6.181	-59.681617	-33.103017	2590

Equipment depth	End Date	End Time GMT	End Lat Degr	End Lat Min	End Long Degr	End Long Min	End Lat	End Long	End waterdepth meter	Comments	Recipient
1191											Katrin Z
1191											Katrin Z
1191											Katrin Z
1191											Katrin Z
1191											Katrin Z
1191											Katrin Z
1191											Katrin Z
1191											Katrin Z
1161											Doug Connelly
1126											Doug Connelly
1048											Doug Connelly
950											Doug Connelly
950											Doug Connelly
	03/02/2011	11:00:00	62	11.726	57	17.659	-62.19543	-57.2943	1131	start: CTD in water, end: on deck. Ship drifted during CTD	
1001											Katrin Z
1001											Katrin Z
1001											Katrin Z
1001											Katrin Z
1001											Katrin Z
1001											Katrin Z
1001											Katrin Z
1001											Katrin Z
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1001											Katrin Z
1001											Katrin Z
1001											Katrin Z
497.6											Katrin Z
497.6											Katrin Z
497.6											Katrin Z
497.6											Katrin Z
497.6											Katrin Z
497.6											Katrin Z
497.6											Katrin Z
497.6											Katrin Z
497.6											Katrin Z
497.6											Katrin Z
										time is at seafloor. Wireout: 1064m, Pull-out: 1.97t, 47cm	
										time is at seafloor. Wireout: 1064m, Pull-out: 1.97t, 44cm	
										time is at seafloor. Wireout: 1064m, Pull-out: 1.97t, failed	
										time is at seafloor. Wireout: 1064m, Pull-out: 1.97t, 49 cm	
										time is at seafloor. Wireout: 1064m, Pull-out: 1.97t, 49cm	
										time is at seafloor. Wireout: 1064m, Pull-out: 1.97t, failed	
										time is at seafloor. Wireout: 1064m, Pull-out: 1.97t, failed	
										time is at seafloor. Wireout: 1064m, Pull-out: 1.97t, failed	
	06/02/2011	21:57:00	59	40.9	33	6.18	-59.68167	-33.103	2557	start: CTD in water, end: on deck.	
2350											
2350											
2350											
2350											
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2350											
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2350											
2350											

Cruise	Site	Station No	Gear Code	Gear No	Event No	Event Gear Code	Event Gear No	Final sample number	JDay (Start)	Start Date	Start Time GMT	Start Lat Degr S	Start Lat Min S	Start Long Degr W	Start Long Min W	Start Lat	Start Long	Start Waterdepth meter
					12	NISKIN	n11	JC055_082_CTD422/n11	37	06/02/2011	21:05:00	59	40.897	33	6.181	-59.681617	-33.103017	2590
					13	NISKIN	n12	JC055_082_CTD422/n12	37	06/02/2011	21:06:00	59	40.897	33	6.181	-59.681617	-33.103017	2590
					14	NISKIN	n13	JC055_082_CTD422/n13	37	06/02/2011	21:14:00	59	40.897	33	6.181	-59.681617	-33.103017	2590
					15	NISKIN	n14	JC055_082_CTD422/n14	37	06/02/2011	21:15:00	59	40.897	33	6.181	-59.681617	-33.103017	2590
					16	NISKIN	n15	JC055_082_CTD422/n15	37	06/02/2011	21:15:00	59	40.897	33	6.181	-59.681617	-33.103017	2590
					17	NISKIN	n16	JC055_082_CTD422/n16	37	06/02/2011	21:15:00	59	40.897	33	6.181	-59.681617	-33.103017	2590
					18	NISKIN	n17	JC055_082_CTD422/n17	37	06/02/2011	21:16:00	59	40.897	33	6.181	-59.681617	-33.103017	2590
					19	NISKIN	n18	JC055_082_CTD422/n18	37	06/02/2011	21:16:00	59	40.897	33	6.181	-59.681617	-33.103017	2590
					20	NISKIN	n19	JC055_082_CTD422/n19	37	06/02/2011	21:16:00	59	40.897	33	6.181	-59.681617	-33.103017	2590
					21	NISKIN	n20	JC055_082_CTD422/n20	37	06/02/2011	21:16:00	59	40.897	33	6.181	-59.681617	-33.103017	2590
					22	NISKIN	n21	JC055_082_CTD422/n21	37	06/02/2011	21:17:00	59	40.897	33	6.181	-59.681617	-33.103017	2590
					23	NISKIN	n22	JC055_082_CTD422/n22	37	06/02/2011	21:17:00	59	40.897	33	6.181	-59.681617	-33.103017	2590
					24	NISKIN	n23	JC055_082_CTD422/n23	37	06/02/2011	21:17:00	59	40.897	33	6.181	-59.681617	-33.103017	2590
					25	NISKIN	n24	JC055_082_CTD422/n24	37	06/02/2011	21:17:00	59	40.897	33	6.181	-59.681617	-33.103017	2590
JC055	E9	83	CTD	CTD423	1	CTD	p01	JC055_083_CTD423	38	07/02/2011	10:38:00	60	2.5603	29	58.9049	-60.042672	-29.981748	2403
					2	NISKIN	n01	JC055_083_CTD423/n01	38	07/02/2011	11:37:00	60	2.5578	29	58.9009	-60.04263	-29.981682	2403
					3	NISKIN	n02	JC055_083_CTD423/n02	38	07/02/2011	11:37:00	60	2.5578	29	58.9009	-60.04263	-29.981682	2403
					4	NISKIN	n03	JC055_083_CTD423/n03	38	07/02/2011	11:38:00	60	2.5578	29	58.9009	-60.04263	-29.981682	2403
					5	NISKIN	n04	JC055_083_CTD423/n04	38	07/02/2011	11:38:00	60	2.5578	29	58.9009	-60.04263	-29.981682	2403
					6	NISKIN	n05	JC055_083_CTD423/n05	38	07/02/2011	11:38:00	60	2.5578	29	58.9009	-60.04263	-29.981682	2403
					7	NISKIN	n06	JC055_083_CTD423/n06	38	07/02/2011	11:38:00	60	2.5578	29	58.9009	-60.04263	-29.981682	2403
					8	NISKIN	n07	JC055_083_CTD423/n07	38	07/02/2011	11:38:00	60	2.5578	29	58.9009	-60.04263	-29.981682	2403
					9	NISKIN	n08	JC055_083_CTD423/n08	38	07/02/2011	11:38:00	60	2.5578	29	58.9009	-60.04263	-29.981682	2403
					10	NISKIN	n09	JC055_083_CTD423/n09	38	07/02/2011	11:38:00	60	2.5578	29	58.9009	-60.04263	-29.981682	2403
					11	NISKIN	n10	JC055_083_CTD423/n10	38	07/02/2011	11:38:00	60	2.5578	29	58.9009	-60.04263	-29.981682	2403
					12	NISKIN	n11	JC055_083_CTD423/n11	38	07/02/2011	11:39:00	60	2.5578	29	58.9009	-60.04263	-29.981682	2403
					13	NISKIN	n12	JC055_083_CTD423/n12	38	07/02/2011	11:39:00	60	2.5578	29	58.9009	-60.04263	-29.981682	2403
					14	NISKIN	n13	JC055_083_CTD423/n13	38	07/02/2011	11:39:00	60	2.5578	29	58.9009	-60.04263	-29.981682	2403
					15	NISKIN	n14	JC055_083_CTD423/n14	38	07/02/2011	11:39:00	60	2.5578	29	58.9009	-60.04263	-29.981682	2403
					16	NISKIN	n15	JC055_083_CTD423/n15	38	07/02/2011	11:39:00	60	2.5578	29	58.9009	-60.04263	-29.981682	2403
					17	NISKIN	n16	JC055_083_CTD423/n16	38	07/02/2011	11:40:00	60	2.5578	29	58.9009	-60.04263	-29.981682	2403
					18	NISKIN	n17	JC055_083_CTD423/n17	38	07/02/2011	11:40:00	60	2.5578	29	58.9009	-60.04263	-29.981682	2403
					19	NISKIN	n18	JC055_083_CTD423/n18	38	07/02/2011	11:40:00	60	2.5578	29	58.9009	-60.04263	-29.981682	2403
					20	NISKIN	n19	JC055_083_CTD423/n19	38	07/02/2011	11:40:00	60	2.5578	29	58.9009	-60.04263	-29.981682	2403
					21	NISKIN	n20	JC055_083_CTD423/n20	38	07/02/2011	11:40:00	60	2.5578	29	58.9009	-60.04263	-29.981682	2403
					22	NISKIN	n21	JC055_083_CTD423/n21	38	07/02/2011	11:40:00	60	2.5578	29	58.9009	-60.04263	-29.981682	2403
					23	NISKIN	n22	JC055_083_CTD423/n22	38	07/02/2011	11:41:00	60	2.5578	29	58.9009	-60.04263	-29.981682	2403
					24	NISKIN	n23	JC055_083_CTD423/n23	38	07/02/2011	11:47:00	60	2.5578	29	58.9009	-60.04263	-29.981682	2403
					25	NISKIN	n24	JC055_083_CTD423/n24	38	07/02/2011	11:47:00	60	2.5578	29	58.9009	-60.04263	-29.981682	2403
JC055	E9	84	CTD/SAPS	CTD424	1	CTD	p01	JC055_084_CTD424	38	07/02/2011	14:00:00	60	2.5575	29	58.898	-60.042625	-29.981633	2401
					2	NISKIN	n01	JC055_084_CTD424/n01	38	07/02/2011	14:55:00	60	2.5575	29	58.899	-60.042625	-29.98165	2402
					3	NISKIN	n02	JC055_084_CTD424/n02	38	07/02/2011	14:55:52	60	2.5575	29	58.899	-60.042625	-29.98165	2402
					4	NISKIN	n03	JC055_084_CTD424/n03	38	07/02/2011	14:56:10	60	2.5575	29	58.899	-60.042625	-29.98165	2402
					5	NISKIN	n04	JC055_084_CTD424/n04	38	07/02/2011	14:58:45	60	2.5575	29	58.899	-60.042625	-29.98165	2402
					6	NISKIN	n05	JC055_084_CTD424/n05	38	07/02/2011	15:44:35	60	2.5575	29	58.899	-60.042625	-29.98165	2402
					7	NISKIN	n06	JC055_084_CTD424/n06	38	07/02/2011	15:45:00	60	2.5575	29	58.899	-60.042625	-29.98165	2402
					8	NISKIN	n07	JC055_084_CTD424/n07	38	07/02/2011	15:46:10	60	2.5575	29	58.899	-60.042625	-29.98165	2402
					9	NISKIN	n08	JC055_084_CTD424/n08	38	07/02/2011	15:51:22	60	2.5575	29	58.899	-60.042625	-29.98165	2402
					10	NISKIN	n09	JC055_084_CTD424/n09	38	07/02/2011	15:51:35	60	2.5575	29	58.899	-60.042625	-29.98165	2402
					11	NISKIN	n10	JC055_084_CTD424/n10	38	07/02/2011	15:57:25	60	2.5575	29	58.899	-60.042625	-29.98165	2402
					12	NISKIN	n11	JC055_084_CTD424/n11	38	07/02/2011	15:57:45	60	2.5575	29	58.899	-60.042625	-29.98165	2402
					13	NISKIN	n12	JC055_084_CTD424/n12	38	07/02/2011	15:58:00	60	2.5575	29	58.899	-60.042625	-29.98165	2402
					14	NISKIN	n13	JC055_084_CTD424/n13	38	07/02/2011	15:58:15	60	2.5575	29	58.899	-60.042625	-29.98165	2402
					15	NISKIN	n14	JC055_084_CTD424/n14	38	07/02/2011	16:01:52	60	2.5575	29	58.899	-60.042625	-29.98165	2402
					16	NISKIN	n19	JC055_084_CTD424/n19	38	07/02/2011	16:02:15	60	2.5575	29	58.899	-60.042625	-29.98165	2402
					17	NISKIN	n20	JC055_084_CTD424/n20	38	07/02/2011	16:02:33	60	2.5575	29	58.899	-60.042625	-29.98165	2402
					18	NISKIN	n21	JC055_084_CTD424/n21	38	07/02/2011	16:02:55	60	2.5575	29	58.899	-60.042625	-29.98165	2402
					19	NISKIN	n22	JC055_084_CTD424/n22	38	07/02/2011	16:14:20	60	2.5575	29	58.899	-60.042625	-29.98165	2402

Equipment depth	End Date	End Time GMT	End Lat Degr	End Lat Min	End Long Degr	End Long Min	End Lat	End Long	End waterdepth meter	Comments	Recipient
2350											
2350											
2000											
2000											
2000											
2000											
2000											
2000											
2000											
2000											
2000											
2000											
2000											
2000											
	07/02/2011	12:31:00	62	2.5577	29	58.901	-62.04263	-29.9817	2403		
2343											Katrin Z
2343											KatrinZ
2343											Katrin Z
2343											KatrinZ
2343											Katrin Z
2343											KatrinZ
2343											Katrin Z
2343											KatrinZ
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2343											KatrinZ
2343											Katrin Z
2343											KatrinZ
2343											Katrin Z
2343											KatrinZ
2343											Katrin Z
2343											KatrinZ
2343											Katrin Z
2343											KatrinZ
2146											Jeff
2146											Jeff
	07/02/2011	17:02:00	60	2.5572	29	58.898	-60.04262	-29.9816	2398	start: CTD in water, end: on deck. SAPS deployment given different station number even though on CTD424	
2378											
2378											
2378											
2382											
2385											
2385											
2385											
2218											
2218											
2169											
2169											
2169											
2169											
2146											
2146											
2146											
2146											
1775											

Cruise	Site	Station No	Gear Code	Gear No	Event No	Event Gear Code	Event Gear No	Final sample number	JDay (Start)	Start Date	Start Time GMT	Start Lat Degr S	Start Lat Min S	Start Long Degr W	Start Long Min W	Start Lat	Start Long	Start Waterdepth meter
					20	NISKIN	n23	JC055_084_CTD424/n23	38	07/02/2011	16:14:38	60	2.5575	29	58.899	-60.042625	-29.98165	2402
					21	NISKIN	n24	JC055_084_CTD424/n24	38	07/02/2011	16:14:52	60	2.5575	29	58.899	-60.042625	-29.98165	2402
					22	SAPS	SAPS01	JC055_084_CTD424/SAPS01	38	07/02/2011	15:20:00	60	2.5575	29	58.899	-60.042625	-29.98165	2402
JC055	E9	85																
JC055	E9	86	CTD	CTD425	1	CTD	p01	JC055_086_CTD425	39	08/02/2011	06:04:00	60	2.569	29	58.894	-60.042817	-29.981567	2400
					2	NISKIN	n01	JC055_086_CTD425/n01	39	08/02/2011	07:00:00	60	2.569	29	58.898	-60.042817	-29.981633	2400
					3	NISKIN	n02	JC055_086_CTD425/n02	39	08/02/2011	07:00:00	60	2.569	29	58.898	-60.042817	-29.981633	2400
					4	NISKIN	n03	JC055_086_CTD425/n03	39	08/02/2011	07:00:00	60	2.569	29	58.898	-60.042817	-29.981633	2400
					5	NISKIN	n04	JC055_086_CTD425/n04	39	08/02/2011	07:00:00	60	2.569	29	58.898	-60.042817	-29.981633	2400
					7	NISKIN	n05	JC055_086_CTD425/n06	39	08/02/2011	07:00:00	60	2.569	29	58.898	-60.042817	-29.981633	2400
					8	NISKIN	n07	JC055_086_CTD425/n07	39	08/02/2011	07:00:00	60	2.569	29	58.898	-60.042817	-29.981633	2400
					9	NISKIN	n08	JC055_086_CTD425/n08	39	08/02/2011	07:00:00	60	2.569	29	58.898	-60.042817	-29.981633	2400
					10	NISKIN	n09	JC055_086_CTD425/n09	39	08/02/2011	07:00:00	60	2.569	29	58.898	-60.042817	-29.981633	2400
					11	NISKIN	n10	JC055_086_CTD425/n10	39	08/02/2011	07:00:00	60	2.569	29	58.898	-60.042817	-29.981633	2400
					13	NISKIN	n12	JC055_086_CTD425/n12	39	08/02/2011	07:00:00	60	2.569	29	58.898	-60.042817	-29.981633	2400
					14	NISKIN	n13	JC055_086_CTD425/n13	39	08/02/2011	07:00:00	60	2.569	29	58.898	-60.042817	-29.981633	2400
					15	NISKIN	n14	JC055_086_CTD425/n14	39	08/02/2011	07:00:00	60	2.569	29	58.898	-60.042817	-29.981633	2400
					16	NISKIN	n15	JC055_086_CTD425/n15	39	08/02/2011	07:34:00	60	2.569	29	58.898	-60.042817	-29.981633	2400
					17	NISKIN	n16	JC055_086_CTD425/n16	39	08/02/2011	07:34:00	60	2.569	29	58.898	-60.042817	-29.981633	2400
					18	NISKIN	n17	JC055_086_CTD425/n17	39	08/02/2011	07:34:00	60	2.569	29	58.898	-60.042817	-29.981633	2400
					20	NISKIN	n19	JC055_086_CTD425/n19	39	08/02/2011	07:34:00	60	2.569	29	58.898	-60.042817	-29.981633	2400
					21	NISKIN	n20	JC055_086_CTD425/n20	39	08/02/2011	07:34:00	60	2.569	29	58.898	-60.042817	-29.981633	2400
					22	NISKIN	n21	JC055_086_CTD425/n21	39	08/02/2011	07:34:00	60	2.569	29	58.898	-60.042817	-29.981633	2400
					24	NISKIN	n23	JC055_086_CTD425/n23	39	08/02/2011	07:34:00	60	2.569	29	58.898	-60.042817	-29.981633	2400
					25	NISKIN	n24	JC055_086_CTD425/n24	39	08/02/2011	07:34:00	60	2.569	29	58.898	-60.042817	-29.981633	2400
JC055	E9	87	CTD/SAPS	CTD426	1	CTD	p01	JC055_087_CTD426	39	08/02/2011	08:53:00	60	62.568	29	58.894	-61.0428	-29.981567	2398
					2	NISKIN	n01	JC055_087_CTD426/n01	39	08/02/2011	11:32:00	60	2.5689	29	58.9	-60.042815	-29.981667	2402
					3	NISKIN	n02	JC055_087_CTD426/n02	39	08/02/2011	11:32:00	60	2.5689	29	58.9	-60.042815	-29.981667	2402
					4	NISKIN	n03	JC055_087_CTD426/n03	39	08/02/2011	11:32:00	60	2.5689	29	58.9	-60.042815	-29.981667	2402
					5	NISKIN	n04	JC055_087_CTD426/n04	39	08/02/2011	11:33:00	60	2.5689	29	58.9	-60.042815	-29.981667	2402
					7	NISKIN	n05	JC055_087_CTD426/n05	39	08/02/2011	11:33:00	60	2.5689	29	58.9	-60.042815	-29.981667	2402
					8	NISKIN	n06	JC055_087_CTD426/n06	39	08/02/2011	11:33:00	60	2.5689	29	58.9	-60.042815	-29.981667	2402
					9	NISKIN	n07	JC055_087_CTD426/n07	39	08/02/2011	11:34:00	60	2.5689	29	58.9	-60.042815	-29.981667	2402
					10	NISKIN	n08	JC055_087_CTD426/n08	39	08/02/2011	11:34:00	60	2.5689	29	58.9	-60.042815	-29.981667	2402
					11	NISKIN	n09	JC055_087_CTD426/n09	39	08/02/2011	11:34:00	60	2.5689	29	58.9	-60.042815	-29.981667	2402
					13	NISKIN	n10	JC055_087_CTD426/n10	39	08/02/2011	11:34:00	60	2.5689	29	58.9	-60.042815	-29.981667	2402
					14	NISKIN	n11	JC055_087_CTD426/n11	39	08/02/2011	11:34:00	60	2.5689	29	58.9	-60.042815	-29.981667	2402
					15	NISKIN	n12	JC055_087_CTD426/n12	39	08/02/2011	11:34:00	60	2.5689	29	58.9	-60.042815	-29.981667	2402
					16	NISKIN	n13	JC055_087_CTD426/n13	39	08/02/2011	11:34:00	60	2.5689	29	58.9	-60.042815	-29.981667	2402
					17	NISKIN	n14	JC055_087_CTD426/n14	39	08/02/2011	11:34:00	60	2.5689	29	58.9	-60.042815	-29.981667	2402
					18	NISKIN	n15	JC055_087_CTD426/n15	39	08/02/2011	11:35:00	60	2.5689	29	58.9	-60.042815	-29.981667	2402
					20	NISKIN	n20	JC055_087_CTD426/n20	39	08/02/2011	11:36:00	60	2.5689	29	58.9	-60.042815	-29.981667	2402
					21	NISKIN	n21	JC055_087_CTD426/n21	39	08/02/2011	11:36:00	60	2.5689	29	58.9	-60.042815	-29.981667	2402
					22	NISKIN	n22	JC055_087_CTD426/n22	39	08/02/2011	11:36:00	60	2.5689	29	58.9	-60.042815	-29.981667	2402
					24	NISKIN	n23	JC055_087_CTD426/n23	39	08/02/2011	11:36:00	60	2.5689	29	58.9	-60.042815	-29.981667	2402
					25	NISKIN	n24	JC055_087_CTD426/n24	39	08/02/2011	11:36:00	60	2.5689	29	58.9	-60.042815	-29.981667	2402
					26	SAPS	SAPS02	JC055_087_CTD426/SAPS02	39	08/02/2011	10:27:00	60	2.5689	29	58.9	-60.042815	-29.981667	2401
JC055	E9	88	CTD/SAPS	CTD427	1	CTD	CTD427	JC055_088_CTD427	39	08/02/2011	13:16:00	60	2.568	29	58.989	-60.0428	-29.98315	2401
					2	SAPS	SAPS03	JC055_088_CTD427/SAPS03	39	08/02/2011	14:50:00	60	2.569	29	58.897	-60.042817	-29.981617	2400
					3	SAPS	SAPS04	JC055_088_CTD427/SAPS04	39	08/02/2011	14:50:00	60	2.569	29	58.897	-60.042817	-29.981617	2400
JC055	E9	89	CTP/SAPS	CTD428	1	CTD	p01	JC055_089_CTD428	39	08/02/2011	17:45:00	60	2.57	29	58.896	-60.042833	-29.9816	2399
					2	SAPS	SAPS05	JC055_089_CTD428/SAPS05	39	08/02/2011	19:00:00	60	2.569	29	58.899	-60.042817	-29.98165	2380
					3	NISKIN	n18	JC055_089_CTD428/n18	39	08/02/2011	20:07:00	60	2.569	29	58.899	-60.042817	-29.98165	2380
					4	NISKIN	n19	JC055_089_CTD428/n19	39	08/02/2011	20:17:00	60	2.569	29	58.899	-60.042817	-29.98165	2380
					5	NISKIN	n20	JC055_089_CTD428/n20	39	08/02/2011	20:18:00	60	2.569	29	58.899	-60.042817	-29.98165	2380
					6	NISKIN	n21	JC055_089_CTD428/n21	39	08/02/2011	20:19:00	60	2.569	29	58.899	-60.042817	-29.98165	2380
					7	NISKIN	n22	JC055_089_CTD428/n22	39	08/02/2011	20:21:00	60	2.569	29	58.899	-60.042817	-29.98165	2380

Equipment depth	End Date	End Time GMT	End Lat Degr	End Lat Min	End Long Degr	End Long Min	End Lat	End Long	End waterdepth meter	Comments	Recipient
1764											
1753											
2385	07/02/2011	18:45:00	60	2.5572	29	58.898	-60.04262	-29.9816	2398	SAPS programmed to pump for 1h, however deployment was broken off due to bad weather	
										Station number wrongly assigned to SAPS	
	08/02/2011	07:52:00	60	2.57	29	58.891	-60.04283	-29.9815	2399	start: CTD in water, end: on deck.	Katrin Z
2381											Katrin Z
2381											Katrin Z
2381											Katrin Z
2381											Katrin Z
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	08/02/2011	12:36:00	60	2.569	29	58.896	-60.04282	-29.9816	2401	start: CTD in water, end: on deck.	
2224											
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2224	08/02/2011	11:27:00	60	2.5689	29	58.9	-60.04282	-29.9817	2402		
	08/02/2011	17:04:00	60	2.57	29	58.897	-60.04283	-29.9816	2397	start: CTD in water, end: on deck, no niskin bottles	Jeff H
2350	08/02/2011	15:50:00	60	2.569	29	58.897	-60.04282	-29.9816	2400		Jeff H
2350	08/02/2011	15:50:00	60	2.569	29	58.897	-60.04282	-29.9816	2400		Jeff H
	08/02/2011	21:17:00	60	2.567	29	58.894	-60.04278	-29.9816	2399	start: CTD in water, end: on deck	
2370	08/02/2011	20:00:00	60	2.569	29	58.899	-60.04282	-29.9817	2370	SAPS filter replaced by miner's bag	Santiago
2344											
2074											
2044											
2017											
1192											

Cruise	Site	Station No	Gear Code	Gear No	Event No	Event Gear Code	Event Gear No	Final sample number	JDay (Start)	Start Date	Start Time GMT	Start Lat Degr S	Start Lat Min S	Start Long Degr W	Start Long Min W	Start Lat	Start Long	Start Waterdepth meter
					8	NISKIN	n24	JC055_089_CTD428/n24	39	08/02/2011	20:21:00	60	2.567	29	58.894	-60.042783	-29.981567	2380
JC055	E9	90	SHRIMP	SHRIMP03	1	SHRIMP	SHRIIMP03	JC055_090_SHRIMP03	39	08/02/2011	22:30:00	60	2.404	29	58.999	-60.040067	-29.983317	2406
JC055	Kemp	91	CTD	CTD429	1	CTD	p01	JC055_091_CTD429	40	09/02/2011	17:47:00	59	41.68	28	21.08	-59.694667	-28.351333	1375
					2	NISKIN	n01	JC055_091_CTD429/n01	40	09/02/2011	18:36:00	59	41.69	28	21.082	-59.694833	-28.351367	1350
					3	NISKIN	n02	JC055_091_CTD429/n02	40	09/02/2011	18:36:00	59	41.69	28	21.082	-59.694833	-28.351367	1350
					4	NISKIN	n03	JC055_091_CTD429/n03	40	09/02/2011	18:36:00	59	41.69	28	21.082	-59.694833	-28.351367	1350
					5	NISKIN	n04	JC055_091_CTD429/n04	40	09/02/2011	18:37:00	59	41.69	28	21.082	-59.694833	-28.351367	1350
					6	NISKIN	n05	JC055_091_CTD429/n05	40	09/02/2011	18:37:00	59	41.69	28	21.082	-59.694833	-28.351367	1350
					7	NISKIN	n06	JC055_091_CTD429/n06	40	09/02/2011	18:37:00	59	41.69	28	21.082	-59.694833	-28.351367	1350
					8	NISKIN	n07	JC055_091_CTD429/n07	40	09/02/2011	18:38:00	59	41.69	28	21.082	-59.694833	-28.351367	1350
					9	NISKIN	n08	JC055_091_CTD429/n08	40	09/02/2011	18:38:00	59	41.69	28	21.082	-59.694833	-28.351367	1350
					10	NISKIN	n09	JC055_091_CTD429/n09	40	09/02/2011	18:38:00	59	41.69	28	21.082	-59.694833	-28.351367	1350
					11	NISKIN	n10	JC055_091_CTD429/n10	40	09/02/2011	18:38:00	59	41.69	28	21.082	-59.694833	-28.351367	1350
					12	NISKIN	n11	JC055_091_CTD429/n11	40	09/02/2011	18:38:00	59	41.69	28	21.082	-59.694833	-28.351367	1350
					13	NISKIN	n12	JC055_091_CTD429/n12	40	09/02/2011	19:06:00	59	41.69	28	21.082	-59.694833	-28.351367	1350
					14	NISKIN	n13	JC055_091_CTD429/n13	40	09/02/2011	19:07:00	59	41.689	28	21.086	-59.694817	-28.351433	1350
					15	NISKIN	n14	JC055_091_CTD429/n14	40	09/02/2011	19:07:00	59	41.689	28	21.086	-59.694817	-28.351433	1350
					16	NISKIN	n15	JC055_091_CTD429/n15	40	09/02/2011	19:07:00	59	41.689	28	21.086	-59.694817	-28.351433	1350
					17	NISKIN	n16	JC055_091_CTD429/n16	40	09/02/2011	19:07:00	59	41.689	28	21.086	-59.694817	-28.351433	1350
					18	NISKIN	n17	JC055_091_CTD429/n17	40	09/02/2011	19:07:00	59	41.689	28	21.086	-59.694817	-28.351433	1350
					19	NISKIN	n18	JC055_091_CTD429/n18	40	09/02/2011	19:07:00	59	41.689	28	21.086	-59.694817	-28.351433	1350
					20	NISKIN	n19	JC055_091_CTD429/n19	40	09/02/2011	19:08:00	59	41.689	28	21.086	-59.694817	-28.351433	1350
					21	NISKIN	n20	JC055_091_CTD429/n20	40	09/02/2011	19:08:00	59	41.689	28	21.086	-59.694817	-28.351433	1350
					22	NISKIN	n21	JC055_091_CTD429/n21	40	09/02/2011	19:08:00	59	41.689	28	21.086	-59.694817	-28.351433	1350
					23	NISKIN	n22	JC055_091_CTD429/n22	40	09/02/2011	19:08:00	59	41.689	28	21.086	-59.694817	-28.351433	1350
					24	NISKIN	n23	JC055_091_CTD429/n23	40	09/02/2011	19:08:00	59	41.689	28	21.086	-59.694817	-28.351433	1350
					25	NISKIN	n24	JC055_091_CTD429/n24	40	09/02/2011	19:08:00	59	41.689	28	21.086	-59.694817	-28.351433	1350
JC055	Kemp	92	MC	MC28	1	MC	c01	JC055_092_MC28/c01	40	09/02/2011	20:31:00	59	41.6892	28	21.0102	-59.69482	-28.35017	1428
					2	MC	c02	JC055_092_MC28/c02	40	09/02/2011	20:31:00	59	41.6892	28	21.0102	-59.69482	-28.35017	1428
					3	MC	c03	JC055_092_MC28/c03	40	09/02/2011	20:31:00	59	41.6892	28	21.0102	-59.69482	-28.35017	1428
					4	MC	c04	JC055_092_MC28/c04	40	09/02/2011	20:31:00	59	41.6892	28	21.0102	-59.69482	-28.35017	1428
					5	MC	c05	JC055_092_MC28/c05	40	09/02/2011	20:31:00	59	41.6892	28	21.0102	-59.69482	-28.35017	1428
					6	MC	c06	JC055_092_MC28/c06	40	09/02/2011	20:31:00	59	41.6892	28	21.0102	-59.69482	-28.35017	1428
					7	MC	c07	JC055_092_MC28/c07	40	09/02/2011	20:31:00	59	41.6892	28	21.0102	-59.69482	-28.35017	1428
					8	MC	c08	JC055_092_MC28/c08	40	09/02/2011	20:31:00	59	41.6892	28	21.0102	-59.69482	-28.35017	1428
JC055	Kemp	93	CTD	CTD430	1	CTD	p01	JC055_093_CTD430	40	09/02/2011	21:30:00	59	41.69	28	21.08	-59.694833	-28.351333	1422
					2	NISKIN	n01	JC055_093_CTD430/n01	40	09/02/2011	22:14:00	59	41.689	28	21.084	-59.694817	-28.3514	1422
					3	NISKIN	n02	JC055_093_CTD430/n02	40	09/02/2011	22:14:00	59	41.689	28	21.084	-59.694817	-28.3514	1422
					4	NISKIN	n03	JC055_093_CTD430/n03	40	09/02/2011	22:14:00	59	41.689	28	21.084	-59.694817	-28.3514	1422
					5	NISKIN	n04	JC055_093_CTD430/n04	40	09/02/2011	22:15:00	59	41.689	28	21.084	-59.694817	-28.3514	1422
					6	NISKIN	n05	JC055_093_CTD430/n05	40	09/02/2011	22:15:00	59	41.689	28	21.084	-59.694817	-28.3514	1422
					7	NISKIN	n06	JC055_093_CTD430/n06	40	09/02/2011	22:15:00	59	41.689	28	21.084	-59.694817	-28.3514	1422
					8	NISKIN	n07	JC055_093_CTD430/n07	40	09/02/2011	22:15:00	59	41.689	28	21.084	-59.694817	-28.3514	1422
					9	NISKIN	n08	JC055_093_CTD430/n08	40	09/02/2011	22:15:00	59	41.689	28	21.084	-59.694817	-28.3514	1422
					10	NISKIN	n09	JC055_093_CTD430/n09	40	09/02/2011	22:16:00	59	41.689	28	21.084	-59.694817	-28.3514	1422
					11	NISKIN	n10	JC055_093_CTD430/n10	40	09/02/2011	22:16:00	59	41.689	28	21.084	-59.694817	-28.3514	1422
					12	NISKIN	n11	JC055_093_CTD430/n11	40	09/02/2011	22:16:00	59	41.689	28	21.084	-59.694817	-28.3514	1422
					13	NISKIN	n12	JC055_093_CTD430/n12	40	09/02/2011	22:16:00	59	41.689	28	21.084	-59.694817	-28.3514	1422
					14	NISKIN	n13	JC055_093_CTD430/n13	40	09/02/2011	22:33:00	59	41.689	28	21.06	-59.694817	-28.351	1422
					15	NISKIN	n14	JC055_093_CTD430/n14	40	09/02/2011	22:33:00	59	41.689	28	21.06	-59.694817	-28.351	1422
					16	NISKIN	n15	JC055_093_CTD430/n15	40	09/02/2011	22:33:00	59	41.689	28	21.06	-59.694817	-28.351	1422
					17	NISKIN	n16	JC055_093_CTD430/n16	40	09/02/2011	22:33:00	59	41.689	28	21.06	-59.694817	-28.351	1422
JC055	Kemp	94	SHRIMP	SHRIMP04	1	SHRIMP	SHRIMP04	JC055_094_SHRIMP04	40	09/02/2011	23:53:00	59	42.017	28	19.304	-59.700283	-28.321733	1609
JC055	Kemp	95	CTD	CTD431	1	CTD	p01	JC055_095_CTD431	41	10/02/2011	21:12:00	59	41.702	28	20.966	-59.695033	-28.349433	1350
JC055	Kemp	96	CTD	CTD432	1	CTD	p01	JC055_096_CTD432	42	11/02/2011	00:17:00	59	41.684	28	21.092	-59.694733	-28.351533	1422
					2	NISKIN	n01	JC055_096_CTD432/n01	42	11/02/2011	01:00:00	59	41.685	28	21.09	-59.69475	-28.3515	1422
					3	NISKIN	n02	JC055_096_CTD432/n02	42	11/02/2011	01:00:00	59	41.685	28	21.09	-59.69475	-28.3515	1422

Equipment depth	End Date	End Time GMT	End Lat Degr	End Lat Min	End Long Degr	End Long Min	End Lat	End Long	End waterdepth meter	Comments	Recipient
96											
	09/02/2011	11:12:00	60	2.833	29	58.391	-60.04722	-29.9732	2393	start: Shrimp in water, end: shrimp on deck	
	09/02/2011	19:21:00	59	41.69	28	21.08	-59.69483	-28.3513	1422	start: CTD in water, end: on deck	
1367											
1366											
1367											
1365											
1368											
1367											
1366											
1366											
1367											
1368											
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498											
498											
498											
										time is at seafloor. Wireout: 1436m, Pull-out: 2.23t, 4cm	Geochem
										time is at seafloor. Wireout: 1436m, Pull-out: 2.23t, failed	
										time is at seafloor. Wireout: 1436m, Pull-out: 2.23t, failed	
										time is at seafloor. Wireout: 1436m, Pull-out: 2.23t, failed	
										time is at seafloor. Wireout: 1436m, Pull-out: 2.23t, failed	
										time is at seafloor. Wireout: 1436m, Pull-out: 2.23t, failed	
										time is at seafloor. Wireout: 1436m, Pull-out: 2.23t, failed	
										time is at seafloor. Wireout: 1436m, Pull-out: 2.23t, failed	
	09/02/2011	23:05:00	59	41.68	28	21.06	-59.69467	-28.351	1430	start: CTD in water, end: on deck - water depth from CTD operator log rather than scientist log	
1392											
1392											
1390											
1390											
1391											
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1177											
	10/02/2011	19:38:00	59	41.78	28	21.013	-59.69633	-28.3502	1446	Start: shrimp in water, end: shrimp leaving seabed	
	10/02/2011	23:26:00	59	41.691	28	20.949	-59.69485	-28.3492		start: CTD in water, end: on deck. No bottles fired as no plume seen.	
	11/02/2011	03:15:00	59	41.68	28	21.091	-59.69467	-28.3515	1411	start: CTD in water, end: on deck.	
1296											
1296											

Cruise	Site	Station No	Gear Code	Gear No	Event No	Event Gear Code	Event Gear No	Final sample number	JDay (Start)	Start Date	Start Time GMT	Start Lat Degr S	Start Lat Min S	Start Long Degr W	Start Long Min W	Start Lat	Start Long	Start Waterdepth meter
					4	NISKIN	n03	JC055_096_CTD432/n03	42	11/02/2011	01:00:00	59	41.685	28	21.09	-59.69475	-28.3515	1422
					5	NISKIN	n04	JC055_096_CTD432/n04	42	11/02/2011	01:00:00	59	41.685	28	21.09	-59.69475	-28.3515	1422
					6	NISKIN	n05	JC055_096_CTD432/n05	42	11/02/2011	01:00:00	59	41.685	28	21.09	-59.69475	-28.3515	1422
					7	NISKIN	n06	JC055_096_CTD432/n06	42	11/02/2011	01:00:00	59	41.685	28	21.09	-59.69475	-28.3515	1422
					8	NISKIN	n07	JC055_096_CTD432/n07	42	11/02/2011	01:00:00	59	41.685	28	21.09	-59.69475	-28.3515	1422
					9	NISKIN	n08	JC055_096_CTD432/n08	42	11/02/2011	01:00:00	59	41.685	28	21.09	-59.69475	-28.3515	1422
					10	NISKIN	n09	JC055_096_CTD432/n09	42	11/02/2011	02:25:00	59	41.685	28	21.09	-59.69475	-28.3515	1422
					11	NISKIN	n10	JC055_096_CTD432/n10	42	11/02/2011	02:25:00	59	41.685	28	21.09	-59.69475	-28.3515	1422
					12	NISKIN	n11	JC055_096_CTD432/n11	42	11/02/2011	02:25:00	59	41.685	28	21.09	-59.69475	-28.3515	1422
					13	NISKIN	n12	JC055_096_CTD432/n12	42	11/02/2011	02:27:00	59	41.685	28	21.09	-59.69475	-28.3515	1422
					14	NISKIN	n13	JC055_096_CTD432/n13	42	11/02/2011	02:27:00	59	41.685	28	21.09	-59.69475	-28.3515	1422
					15	NISKIN	n14	JC055_096_CTD432/n14	42	11/02/2011	02:27:00	59	41.685	28	21.09	-59.69475	-28.3515	1422
					16	NISKIN	n19	JC055_096_CTD432/n19	42	11/02/2011	02:29:00	59	41.685	28	21.09	-59.69475	-28.3515	1422
					17	NISKIN	n20	JC055_096_CTD432/n20	42	11/02/2011	02:29:00	59	41.685	28	21.09	-59.69475	-28.3515	1422
					18	NISKIN	n21	JC055_096_CTD432/n21	42	11/02/2011	02:29:00	59	41.685	28	21.09	-59.69475	-28.3515	1422
					19	NISKIN	n22	JC055_096_CTD432/n22	42	11/02/2011	02:34:00	59	41.685	28	21.09	-59.69475	-28.3515	1422
					20	NISKIN	n23	JC055_096_CTD432/n23	42	11/02/2011	02:34:00	59	41.685	28	21.09	-59.69475	-28.3515	1422
					21	NISKIN	n24	JC055_096_CTD432/n24	42	11/02/2011	03:08:00	59	41.68	28	21.091	-59.694667	-28.351517	1411
					22	SAPS	SAPS06	JC055_096_CTD432/SAPS06	42	11/02/2011	01:15:00	59	41.685	28	21.09	-59.69475	-28.3515	1422
JC055	Kemp	97	MC	MC29	1	MC	c01	JC055_097_MC29/c01	42	11/02/2011	04:44:00	59	41.6021	28	21.1051	-59.693368	-28.351752	1429
					2	MC	c02	JC055_097_MC29/c02	42	11/02/2011	04:44:00	59	41.6021	28	21.1051	-59.693368	-28.351752	1429
					3	MC	c03	JC055_097_MC29/c03	42	11/02/2011	04:44:00	59	41.6021	28	21.1051	-59.693368	-28.351752	1429
					4	MC	c04	JC055_097_MC29/c04	42	11/02/2011	04:44:00	59	41.6021	28	21.1051	-59.693368	-28.351752	1429
					5	MC	c05	JC055_097_MC29/c05	42	11/02/2011	04:44:00	59	41.6021	28	21.1051	-59.693368	-28.351752	1429
					6	MC	c06	JC055_097_MC29/c06	42	11/02/2011	04:44:00	59	41.6021	28	21.1051	-59.693368	-28.351752	1429
					7	MC	c07	JC055_097_MC29/c07	42	11/02/2011	04:44:00	59	41.6021	28	21.1051	-59.693368	-28.351752	1429
					8	MC	c08	JC055_097_MC29/c08	42	11/02/2011	04:44:00	59	41.6021	28	21.1051	-59.693368	-28.351752	1429
JC055	Kemp	98	MC	MC30	1	MC	c01	JC055_098_MC30/c01	42	11/02/2011	06:43:00	59	41.661	28	21.155	-59.69435	-28.352583	1356
					2	MC	c02	JC055_098_MC30/c02	42	11/02/2011	06:43:00	59	41.661	28	21.155	-59.69435	-28.352583	1356
					3	MC	c03	JC055_098_MC30/c03	42	11/02/2011	06:43:00	59	41.661	28	21.155	-59.69435	-28.352583	1356
					4	MC	c04	JC055_098_MC30/c04	42	11/02/2011	06:43:00	59	41.661	28	21.155	-59.69435	-28.352583	1356
					5	MC	c05	JC055_098_MC30/c05	42	11/02/2011	06:43:00	59	41.661	28	21.155	-59.69435	-28.352583	1356
					6	MC	c06	JC055_098_MC30/c06	42	11/02/2011	06:43:00	59	41.661	28	21.155	-59.69435	-28.352583	1356
					7	MC	c07	JC055_098_MC30/c07	42	11/02/2011	06:43:00	59	41.661	28	21.155	-59.69435	-28.352583	1356
					8	MC	c08	JC055_098_MC30/c08	42	11/02/2011	06:43:00	59	41.661	28	21.155	-59.69435	-28.352583	1356
JC055	Kemp	99	MC	MC31	1	MC	c01	JC055_099_MC31/c01	42	11/02/2011	08:38:00	59	42.1374	28	21.305	-59.70229	-28.355083	1492
					2	MC	c02	JC055_099_MC31/c02	42	11/02/2011	08:38:00	59	42.1374	28	21.305	-59.70229	-28.355083	1492
					3	MC	c03	JC055_099_MC31/c03	42	11/02/2011	08:38:00	59	42.1374	28	21.305	-59.70229	-28.355083	1492
					4	MC	c04	JC055_099_MC31/c04	42	11/02/2011	08:38:00	59	42.1374	28	21.305	-59.70229	-28.355083	1492
					5	MC	c05	JC055_099_MC31/c05	42	11/02/2011	08:38:00	59	42.1374	28	21.305	-59.70229	-28.355083	1492
					6	MC	c06	JC055_099_MC31/c06	42	11/02/2011	08:38:00	59	42.1374	28	21.305	-59.70229	-28.355083	1492
					7	MC	c07	JC055_099_MC31/c07	42	11/02/2011	08:38:00	59	42.1374	28	21.305	-59.70229	-28.355083	1492
					8	MC	c08	JC055_099_MC31/c08	42	11/02/2011	08:38:00	59	42.1374	28	21.305	-59.70229	-28.355083	1492
JC055	Kemp	100	SBP	SBP01	1	SBP	SBP01	JC055_100_SBP01	42	11/02/2011	09:38:00	59	42.13	28	21.36	-59.702167	-28.356	
JC055	Kemp	101	CTD	CTD433	1	CTD	p01	JC055_101_CTD433	42	11/02/2011	10:36:00	59	41.6828	28	21.104	-59.694713	-28.351733	1420
					2	NISKIN	n01	JC055_101_CTD433/n01	42	11/02/2011	11:57:00	59	41.678	28	21.047	-59.694633	-28.350783	1420
					3	NISKIN	n02	JC055_101_CTD433/n02	42	11/02/2011	11:57:00	59	41.678	28	21.047	-59.694633	-28.350783	1420
					4	NISKIN	n03	JC055_101_CTD433/n03	42	11/02/2011	11:57:00	59	41.678	28	21.047	-59.694633	-28.350783	1420
					5	NISKIN	n04	JC055_101_CTD433/n04	42	11/02/2011	11:57:00	59	41.678	28	21.047	-59.694633	-28.350783	1420
JC055	Adventure	102	CTD	CTD434	1	CTD	p01	JC055_102_CTD434	42	11/02/2011	14:22:00	59	42.557	27	50.484	-59.709283	-27.8414	758
					2	CTD	n02	JC055_102_CTD434/n02	42	11/02/2011	14:49:00	59	42.658	27	50.483	-59.710967	-27.841383	758
					3	CTD	n05	JC055_102_CTD434/n05	42	11/02/2011	14:49:00	59	42.658	27	50.483	-59.710967	-27.841383	758
					4	CTD	n06	JC055_102_CTD434/n06	42	11/02/2011	14:49:00	59	42.658	27	50.483	-59.710967	-27.841383	758
					5	CTD	n07	JC055_102_CTD434/n07	42	11/02/2011	14:49:00	59	42.658	27	50.483	-59.710967	-27.841383	758
					6	CTD	n08	JC055_102_CTD434/n08	42	11/02/2011	14:54:00	59	42.658	27	50.483	-59.710967	-27.841383	758
					7	CTD	n09	JC055_102_CTD434/n09	42	11/02/2011	14:54:00	59	42.658	27	50.483	-59.710967	-27.841383	758
					8	CTD	n10	JC055_102_CTD434/n10	42	11/02/2011	14:54:00	59	42.658	27	50.483	-59.710967	-27.841383	758

Equipment depth	End Date	End Time GMT	End Lat Degr	End Lat Min	End Long Degr	End Long Min	End Lat	End Long	End waterdepth meter	Comments	Recipient
1296											
1296											
1296											
1296											
1296											
1296											
1401											
1401											
1401											
1396											
1396											
1396											
1391											
1391											
1391											
1365											
1365											
98											
										time is at seafloor. Wireout: 1444m, Pull-out: 1.99t, brittlestar, worm plus basalt chips	
										time is at seafloor. Wireout: 1444m, Pull-out: 1.99t, failed and broke tube	
										time is at seafloor. Wireout: 1444m, Pull-out: 1.99t, failed	
										time is at seafloor. Wireout: 1444m, Pull-out: 1.99t, failed	
										time is at seafloor. Wireout: 1444m, Pull-out: 1.99t, failed	
										time is at seafloor. Wireout: 1444m, Pull-out: 1.99t, failed	
										time is at seafloor. Wireout: 1444m, Pull-out: 1.99t, failed	
										time is at seafloor. Wireout: 1444m, Pull-out: 1.99t, failed	
										time is at seafloor. Wireout: 1400m, Pull-out: 2.14t, failed, small amount of sandy volcanics	
										time is at seafloor. Wireout: 1400m, Pull-out: 2.14t, failed	
										time is at seafloor. Wireout: 1400m, Pull-out: 2.14t, failed	
										time is at seafloor. Wireout: 1400m, Pull-out: 2.14t, failed	
										time is at seafloor. Wireout: 1400m, Pull-out: 2.14t, failed	
										time is at seafloor. Wireout: 1400m, Pull-out: 2.14t, failed	
										time is at seafloor. Wireout: 1400m, Pull-out: 2.14t, failed	
										time is at seafloor. Wireout: 1400m, Pull-out: 2.14t, failed	
										time is at seafloor. Wireout: 1511m, Pull-out: 2.06t, failed, 1 broken barrel	
										time is at seafloor. Wireout: 1511m, Pull-out: 2.06t, failed	
										time is at seafloor. Wireout: 1511m, Pull-out: 2.06t, failed	
										time is at seafloor. Wireout: 1511m, Pull-out: 2.06t, failed	
										time is at seafloor. Wireout: 1511m, Pull-out: 2.06t, failed	
										time is at seafloor. Wireout: 1511m, Pull-out: 2.06t, failed	
										time is at seafloor. Wireout: 1511m, Pull-out: 2.06t, failed	
										time is at seafloor. Wireout: 1511m, Pull-out: 2.06t, failed	
	11/02/2011	10:28:00	59	41.68	28	21.09	-59.69467	-28.3515		survey to find good gravity coring site - nothing found	
	11/02/2011	12:25:00	59	41.678	28	21.043	-59.69463	-28.3507		start: CTD in water, end: on deck.	
986											
986											
986											
986											
	11/02/2011	15:16:00	59	42.657	27	50.484	-59.71095	-27.8414	759	start: CTD in water, end: on deck.Computer stalled during acquisition, second half of CTD has number 435	
661											
661											
661											
661											
558											
558											
558											

Cruise	Site	Station No	Gear Code	Gear No	Event No	Event Gear Code	Event Gear No	Final sample number	JDay (Start)	Start Date	Start Time GMT	Start Lat Degr S	Start Lat Min S	Start Long Degr W	Start Long Min W	Start Lat	Start Long	Start Waterdepth meter
					9	CTD	n11	JC055_102_CTD434/n11	42	11/02/2011	14:54:00	59	42.658	27	50.483	-59.710967	-27.841383	758
					10	CTD	n12	JC055_102_CTD434/n12	42	11/02/2011	14:58:00	59	42.658	27	50.483	-59.710967	-27.841383	758
					11	CTD	n13	JC055_102_CTD434/n13	42	11/02/2011	14:58:00	59	42.658	27	50.483	-59.710967	-27.841383	758
					12	CTD	n14	JC055_102_CTD434/n14	42	11/02/2011	14:58:00	59	42.658	27	50.483	-59.710967	-27.841383	758
					13	CTD	n15	JC055_102_CTD434/n15	42	11/02/2011	14:58:00	59	42.658	27	50.483	-59.710967	-27.841383	758
					14	CTD	n16	JC055_102_CTD434/n16	42	11/02/2011	14:58:00	59	42.658	27	50.483	-59.710967	-27.841383	758
					15	CTD	n17	JC055_102_CTD434/n17	42	11/02/2011	14:58:00	59	42.658	27	50.483	-59.710967	-27.841383	758
					16	CTD	n18	JC055_102_CTD434/n18	42	11/02/2011	14:58:00	59	42.658	27	50.483	-59.710967	-27.841383	758
					17	CTD	n19	JC055_102_CTD434/n19	42	11/02/2011	14:58:00	59	42.658	27	50.483	-59.710967	-27.841383	758
					18	CTD	n20	JC055_102_CTD434/n20	42	11/02/2011	14:58:00	59	42.658	27	50.483	-59.710967	-27.841383	758
					19	CTD	n21	JC055_102_CTD434/n21	42	11/02/2011	14:58:00	59	42.658	27	50.483	-59.710967	-27.841383	758
					20	CTD	n22	JC055_102_CTD434/n22	42	11/02/2011	14:58:00	59	42.658	27	50.483	-59.710967	-27.841383	758
					21	CTD	n24	JC055_102_CTD434/n24	42	11/02/2011	14:58:00	59	42.658	27	50.483	-59.710967	-27.841383	758
JC055	Adventure	103	SHRIMP	SHRIMP05	1	SHRIMP	SHRIMP05	JC055_103_SHRIMP05	42	11/02/2011	15:59:00	59	42.542	27	51.285	-59.709033	-27.85475	768
JC055	Adventure	104	CTD	CTD436	1	CTD	p01	JC055_104_CTD436	43	12/02/2011	00:47:00	59	43.27032	27	51.42629	-59.721172	-27.857105	536
					2	NISKIN	n01	JC055_104_CTD436/n01	43	12/02/2011	01:06:00	59	43.26	27	51.428	-59.721	-27.857133	536
					3	NISKIN	n02	JC055_104_CTD436/n02	43	12/02/2011	01:06:00	59	43.26	27	51.428	-59.721	-27.857133	536
					4	NISKIN	n03	JC055_104_CTD436/n03	43	12/02/2011	01:07:00	59	43.26	27	51.428	-59.721	-27.857133	536
					5	NISKIN	n04	JC055_104_CTD436/n04	43	12/02/2011	01:07:00	59	43.26	27	51.428	-59.721	-27.857133	536
JC055	Kemp	105	CTD	CTD437	1	CTD	p01	JC055_105_CTD437	43	12/02/2011	03:51:00	59	42	28	19	-59.7	-28.316667	1586
					2	NISKIN	n01	JC055_105_CTD437/n01	43	12/02/2011	04:41:00	59	42	28	19	-59.7	-28.316667	1586
					3	NISKIN	n02	JC055_105_CTD437/n02	43	12/02/2011	04:42:00	59	42	28	19	-59.7	-28.316667	1586
					4	NISKIN	n03	JC055_105_CTD437/n03	43	12/02/2011	04:42:00	59	42	28	19	-59.7	-28.316667	1586
					5	NISKIN	n04	JC055_105_CTD437/n04	43	12/02/2011	04:42:00	59	42	28	19	-59.7	-28.316667	1586
					6	NISKIN	n05	JC055_105_CTD437/n05	43	12/02/2011	04:42:00	59	42	28	19	-59.7	-28.316667	1586
					7	NISKIN	n06	JC055_105_CTD437/n06	43	12/02/2011	04:48:00	59	42	28	19	-59.7	-28.316667	1586
					8	NISKIN	n07	JC055_105_CTD437/n07	43	12/02/2011	04:48:00	59	42	28	19	-59.7	-28.316667	1586
					9	NISKIN	n08	JC055_105_CTD437/n08	43	12/02/2011	04:48:00	59	42	28	19	-59.7	-28.316667	1586
					10	NISKIN	n09	JC055_105_CTD437/n09	43	12/02/2011	04:48:00	59	42	28	19	-59.7	-28.316667	1586
					11	NISKIN	n10	JC055_105_CTD437/n10	43	12/02/2011	04:48:00	59	42	28	19	-59.7	-28.316667	1586
					12	NISKIN	n11	JC055_105_CTD437/n11	43	12/02/2011	04:48:00	59	42	28	19	-59.7	-28.316667	1586
					13	NISKIN	n12	JC055_105_CTD437/n12	43	12/02/2011	04:48:00	59	42	28	19	-59.7	-28.316667	1586
					14	NISKIN	n13	JC055_105_CTD437/n13	43	12/02/2011	04:48:00	59	42	28	19	-59.7	-28.316667	1586
					15	NISKIN	n14	JC055_105_CTD437/n14	43	12/02/2011	04:48:00	59	42	28	19	-59.7	-28.316667	1586
					16	NISKIN	n15	JC055_105_CTD437/n15	43	12/02/2011	04:48:00	59	42	28	19	-59.7	-28.316667	1586
					17	NISKIN	n16	JC055_105_CTD437/n16	43	12/02/2011	04:48:00	59	42	28	19	-59.7	-28.316667	1586
					18	NISKIN	n17	JC055_105_CTD437/n17	43	12/02/2011	04:48:00	59	42	28	19	-59.7	-28.316667	1586
					19	NISKIN	n18	JC055_105_CTD437/n18	43	12/02/2011	04:48:00	59	42	28	19	-59.7	-28.316667	1586
					20	NISKIN	n19	JC055_105_CTD437/n19	43	12/02/2011	04:48:00	59	42	28	19	-59.7	-28.316667	1586
					21	NISKIN	n20	JC055_105_CTD437/n20	43	12/02/2011	04:48:00	59	42	28	19	-59.7	-28.316667	1586
					22	NISKIN	n21	JC055_105_CTD437/n21	43	12/02/2011	04:51:00	59	42	28	19	-59.7	-28.316667	1586
					23	NISKIN	n22	JC055_105_CTD437/n22	43	12/02/2011	04:51:00	59	42	28	19	-59.7	-28.316667	1586
					24	NISKIN	n23	JC055_105_CTD437/n23	43	12/02/2011	04:51:00	59	42	28	19	-59.7	-28.316667	1586
					25	NISKIN	n24	JC055_105_CTD437/n24	43	12/02/2011	04:53:00	59	42	28	19	-59.7	-28.316667	1586
JC055	Kemp	106	GC	GC02	1	GC	GC02	JC055_106_GC02	43	12/02/2011	06:40:00	59	41.687	28	20.999	-59.694783	-28.349983	1432
JC055	Kemp	107	GC	GC03	1	GC	GC03	JC055_107_GC03	43	12/02/2011	07:30:00	59	41.665	28	21.143	-59.694417	-28.352383	1389
JC055	Kemp	108	GC	GC04	1	GC	GC04	JC055_108_GC04	43	12/02/2011	08:50:00	59	41.608	28	21.105	-59.693467	-28.35175	1415
JC055	Kemp	109	CTD	CTD438	1	CTD	CTD438	JC055_109_CTD438	43	12/02/2011	10:02:00	59	41.686	28	21.085	-59.694767	-28.351417	1420
					2	NISKIN	n01	JC055_109_CTD438/n01	43	12/02/2011	10:34:00	59	41.686	28	21.086	-59.694767	-28.351433	1420
					3	NISKIN	n02	JC055_109_CTD438/n02	43	12/02/2011	10:34:00	59	41.686	28	21.086	-59.694767	-28.351433	1420
					4	NISKIN	n03	JC055_109_CTD438/n03	43	12/02/2011	10:35:00	59	41.686	28	21.086	-59.694767	-28.351433	1420
					5	NISKIN	n04	JC055_109_CTD438/n04	43	12/02/2011	10:35:00	59	41.686	28	21.086	-59.694767	-28.351433	1420
					6	NISKIN	n05	JC055_109_CTD438/n05	43	12/02/2011	10:35:00	59	41.686	28	21.086	-59.694767	-28.351433	1420
					7	NISKIN	n06	JC055_109_CTD438/n06	43	12/02/2011	10:35:00	59	41.686	28	21.086	-59.694767	-28.351433	1420
					8	NISKIN	n07	JC055_109_CTD438/n07	43	12/02/2011	10:36:00	59	41.686	28	21.086	-59.694767	-28.351433	1420
					9	NISKIN	n08	JC055_109_CTD438/n08	43	12/02/2011	10:36:00	59	41.686	28	21.086	-59.694767	-28.351433	1420
					10	NISKIN	n09	JC055_109_CTD438/n09	43	12/02/2011	10:36:00	59	41.686	28	21.086	-59.694767	-28.351433	1420

Equipment depth	End Date	End Time GMT	End Lat Degr	End Lat Min	End Long Degr	End Long Min	End Lat	End Long	End waterdepth meter	Comments	Recipient
558											
500											
500											
500											
500											
500											
500											
500											
500											
500											
500											
500											
	11/02/2011	23:45:00	59	43.151	27	52.494	-59.71918	-27.8749	491		
	12/02/2011	01:23:00	59	43.26973	27	51.42666	-59.72116	-27.8571	528	start: CTD in water, end: on deck.	
528											
525											
528											
528											
	12/02/2011	05:21:00	59	42.007	28	18.988	-59.70012	-28.3165	1585	start: CTD in water, end: on deck.	Doug Connelly
1395											Doug Connelly
1395											Doug Connelly
1395											Doug Connelly
1395											Katrin Z
1291											Katrin Z
1291											Katrin Z
1291											Katrin Z
1291											Katrin Z
1291											Katrin Z
1291											Katrin Z
1291											Katrin Z
1291											Katrin Z
1291											Katrin Z
1291											Katrin Z
1291											Katrin Z
1291											Katrin Z
1291											Katrin Z
1291											Katrin Z
1291											Katrin Z
1172											Doug Connelly
1172											Doug Connelly
1172											Doug Connelly
1172											Doug Connelly
										time is at seafloor. 3m barrel. Wireout: 1443m, Pull-out: 3.08t, No sediment in core liner. Polychaete tubes plus sulphurous sediment found o	
										time is at seafloor. 3m barrel. Wireout: 1400m, Pull-out: 3.02t, 5cm of volcanic biogenic sand	
										time is at seafloor. 3m barrel. Wireout: 1438m, Pull-out: 2.98t, 3cm of sediment	
	12/02/2011	11:10:00	59	41.686	28	21.088	-59.69477	-28.3515		start: CTD in water, end: on deck.	
1066											Doug Connelly
1066											Doug Connelly
1066											Doug Connelly
1066											Doug Connelly
1066											Katrin Z
1066											Katrin Z
1066											Katrin Z
1066											Katrin Z
1066											Katrin Z

Cruise	Site	Station No	Gear Code	Gear No	Event No	Event Gear Code	Event Gear No	Final sample number	JDay (Start)	Start Date	Start Time GMT	Start Lat Degr S	Start Lat Min S	Start Long Degr W	Start Long Min W	Start Lat	Start Long	Start Waterdepth meter
					11	NISKIN	n10	JC055_109_CTD438/n10	43	12/02/2011	10:36:00	59	41.686	28	21.086	-59.694767	-28.351433	1420
					12	NISKIN	n11	JC055_109_CTD438/n11	43	12/02/2011	10:36:00	59	41.686	28	21.086	-59.694767	-28.351433	1420
					13	NISKIN	n12	JC055_109_CTD438/n12	43	12/02/2011	10:36:00	59	41.686	28	21.086	-59.694767	-28.351433	1420
					14	NISKIN	n13	JC055_109_CTD438/n13	43	12/02/2011	10:36:00	59	41.686	28	21.086	-59.694767	-28.351433	1420
					15	NISKIN	n14	JC055_109_CTD438/n14	43	12/02/2011	10:37:00	59	41.686	28	21.086	-59.694767	-28.351433	1420
					16	NISKIN	n15	JC055_109_CTD438/n15	43	12/02/2011	10:37:00	59	41.686	28	21.086	-59.694767	-28.351433	1420
					17	NISKIN	n16	JC055_109_CTD438/n16	43	12/02/2011	10:37:00	59	41.686	28	21.086	-59.694767	-28.351433	1420
					18	NISKIN	n17	JC055_109_CTD438/n17	43	12/02/2011	10:37:00	59	41.686	28	21.086	-59.694767	-28.351433	1420
					19	NISKIN	n18	JC055_109_CTD438/n18	43	12/02/2011	10:37:00	59	41.686	28	21.086	-59.694767	-28.351433	1420
					20	NISKIN	n19	JC055_109_CTD438/n19	43	12/02/2011	10:37:00	59	41.686	28	21.086	-59.694767	-28.351433	1420
					21	NISKIN	n20	JC055_109_CTD438/n20	43	12/02/2011	10:37:00	59	41.686	28	21.086	-59.694767	-28.351433	1420
					22	NISKIN	n21	JC055_109_CTD438/n21	43	12/02/2011	10:37:00	59	41.686	28	21.086	-59.694767	-28.351433	1420
					23	NISKIN	n22	JC055_109_CTD438/n22	43	12/02/2011	10:37:00	59	41.686	28	21.086	-59.694767	-28.351433	1420
					24	NISKIN	n23	JC055_109_CTD438/n23	43	12/02/2011	10:37:00	59	41.686	28	21.086	-59.694767	-28.351433	1420
					25	NISKIN	n24	JC055_109_CTD438/n24	43	12/02/2011	10:38:00	59	41.686	28	21.086	-59.694767	-28.351433	1420
JC055	Kemp	110	CTD	CTD439	1	CTD	p01	JC055_110_CTD439	43	12/02/2011	13:16:00	59	41.687	28	21.085	-59.694783	-28.351417	1421
					2	NISKIN	n01	JC055_110_CTD439/n01	43	12/02/2011	14:03:00	59	41.687	28	21.081	-59.694783	-28.35135	1425
					3	NISKIN	n02	JC055_110_CTD439/n02	43	12/02/2011	14:03:00	59	41.687	28	21.081	-59.694783	-28.35135	1425
					4	NISKIN	n03	JC055_110_CTD439/n03	43	12/02/2011	14:03:00	59	41.687	28	21.081	-59.694783	-28.35135	1425
					5	NISKIN	n04	JC055_110_CTD439/n04	43	12/02/2011	14:03:00	59	41.687	28	21.081	-59.694783	-28.35135	1425
					6	NISKIN	n05	JC055_110_CTD439/n05	43	12/02/2011	14:03:00	59	41.687	28	21.081	-59.694783	-28.35135	1425
					7	NISKIN	n06	JC055_110_CTD439/n06	43	12/02/2011	14:04:00	59	41.687	28	21.081	-59.694783	-28.35135	1425
					8	NISKIN	n07	JC055_110_CTD439/n07	43	12/02/2011	14:04:00	59	41.687	28	21.081	-59.694783	-28.35135	1425
					9	NISKIN	n08	JC055_110_CTD439/n08	43	12/02/2011	14:04:00	59	41.687	28	21.081	-59.694783	-28.35135	1425
					10	NISKIN	n09	JC055_110_CTD439/n09	43	12/02/2011	14:04:00	59	41.687	28	21.079	-59.694783	-28.351317	1425
					11	NISKIN	n10	JC055_110_CTD439/n10	43	12/02/2011	14:04:00	59	41.687	28	21.079	-59.694783	-28.351317	1425
					12	NISKIN	n11	JC055_110_CTD439/n11	43	12/02/2011	14:37:00	59	41.679	28	21.079	-59.69465	-28.351317	1425
					13	NISKIN	n12	JC055_110_CTD439/n12	43	12/02/2011	14:37:00	59	41.679	28	21.079	-59.69465	-28.351317	1425
					14	NISKIN	n13	JC055_110_CTD439/n13	43	12/02/2011	14:37:00	59	41.679	28	21.079	-59.69465	-28.351317	1425
					15	NISKIN	n14	JC055_110_CTD439/n14	43	12/02/2011	14:47:00	59	41.68	28	21.081	-59.694667	-28.35135	1425
					16	NISKIN	n15	JC055_110_CTD439/n15	43	12/02/2011	14:47:00	59	41.68	28	21.081	-59.694667	-28.35135	1425
					17	NISKIN	n16	JC055_110_CTD439/n16	43	12/02/2011	14:47:00	59	41.68	28	21.081	-59.694667	-28.35135	1425
JC055	South Georgia	111	MC	MC32	1	MC	c01	JC055_111_MC32/c01	45	14/02/2011	22:42:00	54	9.45397	37	58.53635	-54.157566	-37.975606	253
					2	MC	c02	JC055_111_MC32/c02	45	14/02/2011	22:42:00	54	9.45397	37	58.53635	-54.157566	-37.975606	253
					3	MC	c03	JC055_111_MC32/c03	45	14/02/2011	22:42:00	54	9.45397	37	58.53635	-54.157566	-37.975606	253
					4	MC	c04	JC055_111_MC32/c04	45	14/02/2011	22:42:00	54	9.45397	37	58.53635	-54.157566	-37.975606	253
					5	MC	c05	JC055_111_MC32/c05	45	14/02/2011	22:42:00	54	9.45397	37	58.53635	-54.157566	-37.975606	253
					6	MC	c06	JC055_111_MC32/c06	45	14/02/2011	22:42:00	54	9.45397	37	58.53635	-54.157566	-37.975606	253
					7	MC	c07	JC055_111_MC32/c07	45	14/02/2011	22:42:00	54	9.45397	37	58.53635	-54.157566	-37.975606	253
					8	MC	c08	JC055_111_MC32/c08	45	14/02/2011	22:42:00	54	9.45397	37	58.53635	-54.157566	-37.975606	253
JC055	South Georgia	112	MC	MC33	1	MC	c01	JC055_112_MC33/c01	45	14/02/2011	23:27:00	54	9.449	37	58.5686	-54.157483	-37.976143	257
					2	MC	c02	JC055_112_MC33/c02	45	14/02/2011	23:27:00	54	9.449	37	58.5686	-54.157483	-37.976143	257
					3	MC	c03	JC055_112_MC33/c03	45	14/02/2011	23:27:00	54	9.449	37	58.5686	-54.157483	-37.976143	257
					4	MC	c04	JC055_112_MC33/c04	45	14/02/2011	23:27:00	54	9.449	37	58.5686	-54.157483	-37.976143	257
					5	MC	c05	JC055_112_MC33/c05	45	14/02/2011	23:27:00	54	9.449	37	58.5686	-54.157483	-37.976143	257
					6	MC	c06	JC055_112_MC33/c06	45	14/02/2011	23:27:00	54	9.449	37	58.5686	-54.157483	-37.976143	257
					7	MC	c07	JC055_112_MC33/c07	45	14/02/2011	23:27:00	54	9.449	37	58.5686	-54.157483	-37.976143	257
					8	MC	c08	JC055_112_MC33/c08	45	14/02/2011	23:27:00	54	9.449	37	58.5686	-54.157483	-37.976143	257
JC055	South Georgia	113	MC	MC34	1	MC	c01	JC055_113_MC34/c01	46	15/02/2011	00:25:00	54	9.47916	37	56.06761	-54.157986	-37.93446	247
					2	MC	c02	JC055_113_MC34/c02	46	15/02/2011	00:25:00	54	9.47916	37	56.06761	-54.157986	-37.93446	247
					3	MC	c03	JC055_113_MC34/c03	46	15/02/2011	00:25:00	54	9.47916	37	56.06761	-54.157986	-37.93446	247
					4	MC	c04	JC055_113_MC34/c04	46	15/02/2011	00:25:00	54	9.47916	37	56.06761	-54.157986	-37.93446	247
					5	MC	c05	JC055_113_MC34/c05	46	15/02/2011	00:25:00	54	9.47916	37	56.06761	-54.157986	-37.93446	247
					6	MC	c06	JC055_113_MC34/c06	46	15/02/2011	00:25:00	54	9.47916	37	56.06761	-54.157986	-37.93446	247
JC055	South Georgia	114	GC	GC05	1	GC	GC05	JC055_114_GC05	46	15/02/2011	01:14:00	54	9.42875	37	56.0726	-54.157146	-37.934543	247
JC055	South Georgia	115	GC	GC06	1	GC	GC06	JC055_115_GC06	46	15/02/2011	02:23:00	54	9.400745	37	59.504741	-54.156679	-37.991746	262
JC055	South Georgia	116	EK60	EK60#02	1	EK60	EK60#02	JC055_116_EK60#02	46	15/02/2011	03:08:00	54	9.42	37	59.62	-54.157	-37.993667	274

Equipment depth	End Date	End Time GMT	End Lat Degr	End Lat Min	End Long Degr	End Long Min	End Lat	End Long	End waterdepth meter	Comments	Recipient
1066											Katrin Z
1066											Katrin Z
1066											Katrin Z
1066											Katrin Z
1066											Katrin Z
1066											Katrin Z
1066											Katrin Z
1066											Katrin Z
1066											Katrin Z
1066											Katrin Z
1066											Katrin Z
1066											Katrin Z
1066											Katrin Z
1066											Katrin Z
	12/02/2011	15:10:00	59	41.608	28	21.077	-59.69347	-28.3513	1417	start: CTD in water, end: on deck.	
1263											
1263											
1263											
1263											
1263											
1263											
1263											
1263											
1264											
1264											
1005											
1005											
1005											
1005											
1005											
1005											
912											
912											
912											
										time is at seafloor. Wireout: 256m, Pull-out: 1.21t, 22cm	
										time is at seafloor. Wireout: 256m, Pull-out: 1.21t, 19cm	
										time is at seafloor. Wireout: 256m, Pull-out: 1.21t, 24cm	
										time is at seafloor. Wireout: 256m, Pull-out: 1.21t, 19cm	
										time is at seafloor. Wireout: 256m, Pull-out: 1.21t, 17cm	
										time is at seafloor. Wireout: 256m, Pull-out: 1.21t, 18cm	
										time is at seafloor. Wireout: 256m, Pull-out: 1.21t, 19cm	
										time is at seafloor. Wireout: 256m, Pull-out: 1.21t, 16cm	
										time is at seafloor. Wireout: 256m, Pull-out: 1.77t, 33cm	
										time is at seafloor. Wireout: 256m, Pull-out: 1.77t, 24cm	
										time is at seafloor. Wireout: 256m, Pull-out: 1.77t, 31cm	
										time is at seafloor. Wireout: 256m, Pull-out: 1.77t, 29cm	
										time is at seafloor. Wireout: 256m, Pull-out: 1.77t, 35cm	
										time is at seafloor. Wireout: 256m, Pull-out: 1.77t, 31cm	
										time is at seafloor. Wireout: 256m, Pull-out: 1.77t, 31cm	
										time is at seafloor. Wireout: 256m, Pull-out: 1.77t, 11cm	
										time is at seafloor. Wireout: 247m, Pull-out: 1.05t, 7cm	
										time is at seafloor. Wireout: 247m, Pull-out: 1.05t, 8cm	
										time is at seafloor. Wireout: 247m, Pull-out: 1.05t, 11cm	
										time is at seafloor. Wireout: 247m, Pull-out: 1.05t, 9cm	
										time is at seafloor. Wireout: 247m, Pull-out: 1.05t, 22cm	
										time is at seafloor. Wireout: 247m, Pull-out: 1.05t, 11cm	
										time is at seafloor. 6m barrel. Wireout: 245m, Pull-out: 3.31t, Mud up to the top of the weight	
										time is at seafloor. 6m barrel. Wireout: 260m, Pull-out: 3.27t, Successful core	
	15/02/2011	10:00:00	54	9.417	37	59.641	-54.15695	-37.994	272	Three possible bubble sites noted.	

Cruise	Site	Station No	Gear Code	Gear No	Event No	Event Gear Code	Event Gear No	Final sample number	JDay (Start)	Start Date	Start Time GMT	Start Lat Degr S	Start Lat Min S	Start Long Degr W	Start Long Min W	Start Lat	Start Long	Start Waterdepth meter
JC055	South Georgia	117	MC	MC35	1	MC	c01	JC055_117_MC35/c01	46	15/02/2011	11:05:00	54	8.8489	37	58.3016	-54.147482	-37.971693	254
					2	MC	c02	JC055_117_MC35/c02	46	15/02/2011	11:05:00	54	8.8489	37	58.3016	-54.147482	-37.971693	254
					3	MC	c03	JC055_117_MC35/c03	46	15/02/2011	11:05:00	54	8.8489	37	58.3016	-54.147482	-37.971693	254
					4	MC	c04	JC055_117_MC35/c04	46	15/02/2011	11:05:00	54	8.8489	37	58.3016	-54.147482	-37.971693	254
					5	MC	c05	JC055_117_MC35/c05	46	15/02/2011	11:05:00	54	8.8489	37	58.3016	-54.147482	-37.971693	254
					6	MC	c06	JC055_117_MC35/c06	46	15/02/2011	11:05:00	54	8.8489	37	58.3016	-54.147482	-37.971693	254
					7	MC	c07	JC055_117_MC35/c07	46	15/02/2011	11:05:00	54	8.8489	37	58.3016	-54.147482	-37.971693	254
					8	MC	c08	JC055_117_MC35/c08	46	15/02/2011	11:05:00	54	8.8489	37	58.3016	-54.147482	-37.971693	254
JC055	South Georgia	118	MC	MC36	1	MC	c01	JC055_118_MC36/c01	46	15/02/2011	11:56:00	54	9.4809	37	56.0666	-54.158015	-37.934443	247
					2	MC	c02	JC055_118_MC36/c02	46	15/02/2011	11:56:00	54	9.4809	37	56.0666	-54.158015	-37.934443	247
					3	MC	c03	JC055_118_MC36/c03	46	15/02/2011	11:56:00	54	9.4809	37	56.0666	-54.158015	-37.934443	247
					4	MC	c04	JC055_118_MC36/c04	46	15/02/2011	11:56:00	54	9.4809	37	56.0666	-54.158015	-37.934443	247
					5	MC	c05	JC055_118_MC36/c05	46	15/02/2011	11:56:00	54	9.4809	37	56.0666	-54.158015	-37.934443	247
					6	MC	c06	JC055_118_MC36/c06	46	15/02/2011	11:56:00	54	9.4809	37	56.0666	-54.158015	-37.934443	247
					7	MC	c07	JC055_118_MC36/c07	46	15/02/2011	11:56:00	54	9.4809	37	56.0666	-54.158015	-37.934443	247
					8	MC	c08	JC055_118_MC36/c08	46	15/02/2011	11:56:00	54	9.4809	37	56.0666	-54.158015	-37.934443	247
JC055	South Georgia	119	MC	MC37	1	MC	c01	JC055_119_MC37/c01	46	15/02/2011	12:51:00	54	9.4809	37	56.0666	-54.158015	-37.934443	248
					2	MC	c02	JC055_119_MC37/c02	46	15/02/2011	12:51:00	54	9.4809	37	56.0666	-54.158015	-37.934443	248
					3	MC	c03	JC055_119_MC37/c03	46	15/02/2011	12:51:00	54	9.4809	37	56.0666	-54.158015	-37.934443	248
					4	MC	c04	JC055_119_MC37/c04	46	15/02/2011	12:51:00	54	9.4809	37	56.0666	-54.158015	-37.934443	248
					5	MC	c05	JC055_119_MC37/c05	46	15/02/2011	12:51:00	54	9.4809	37	56.0666	-54.158015	-37.934443	248
					6	MC	c06	JC055_119_MC37/c06	46	15/02/2011	12:51:00	54	9.4809	37	56.0666	-54.158015	-37.934443	248
					7	MC	c07	JC055_119_MC37/c07	46	15/02/2011	12:51:00	54	9.4809	37	56.0666	-54.158015	-37.934443	248
					8	MC	c08	JC055_119_MC37/c08	46	15/02/2011	12:51:00	54	9.4809	37	56.0666	-54.158015	-37.934443	248
JC055	South Georgia	120	MC	MC38	1	MC	c01	JC055_120_MC38/c01	46	15/02/2011	13:34:00	54	9.481	37	56.0665	-54.158017	-37.934442	247
					2	MC	c02	JC055_120_MC38/c02	46	15/02/2011	13:34:00	54	9.481	37	56.0665	-54.158017	-37.934442	247
					3	MC	c03	JC055_120_MC38/c03	46	15/02/2011	13:34:00	54	9.481	37	56.0665	-54.158017	-37.934442	247
					4	MC	c04	JC055_120_MC38/c04	46	15/02/2011	13:34:00	54	9.481	37	56.0665	-54.158017	-37.934442	247
					5	MC	c05	JC055_120_MC38/c05	46	15/02/2011	13:34:00	54	9.481	37	56.0665	-54.158017	-37.934442	247
					6	MC	c06	JC055_120_MC38/c06	46	15/02/2011	13:34:00	54	9.481	37	56.0665	-54.158017	-37.934442	247
JC055	South Georgia	121	MC	MC39	1	MC	c01	JC055_121_MC39/c01	46	15/02/2011	14:12:00	54	9.481	37	56.0666	-54.158017	-37.934443	247
					2	MC	c02	JC055_121_MC39/c02	46	15/02/2011	14:12:00	54	9.481	37	56.0666	-54.158017	-37.934443	247
					3	MC	c03	JC055_121_MC39/c03	46	15/02/2011	14:12:00	54	9.481	37	56.0666	-54.158017	-37.934443	247
					4	MC	c04	JC055_121_MC39/c04	46	15/02/2011	14:12:00	54	9.481	37	56.0666	-54.158017	-37.934443	247
					5	MC	c05	JC055_121_MC39/c05	46	15/02/2011	14:12:00	54	9.481	37	56.0666	-54.158017	-37.934443	247
					6	MC	c06	JC055_121_MC39/c06	46	15/02/2011	14:12:00	54	9.481	37	56.0666	-54.158017	-37.934443	247
JC055	South Georgia	122	MC	MC40	1	MC	c01	JC055_122_MC40/c01	46	15/02/2011	14:50:00	54	9.48	37	56.0698	-54.158	-37.934497	245
					2	MC	c02	JC055_122_MC40/c02	46	15/02/2011	14:50:00	54	9.48	37	56.0698	-54.158	-37.934497	245
					3	MC	c03	JC055_122_MC40/c03	46	15/02/2011	14:50:00	54	9.48	37	56.0698	-54.158	-37.934497	245
					4	MC	c04	JC055_122_MC40/c04	46	15/02/2011	14:50:00	54	9.48	37	56.0698	-54.158	-37.934497	245
					5	MC	c05	JC055_122_MC40/c05	46	15/02/2011	14:50:00	54	9.48	37	56.0698	-54.158	-37.934497	245
					6	MC	c06	JC055_122_MC40/c06	46	15/02/2011	14:50:00	54	9.48	37	56.0698	-54.158	-37.934497	245
JC055	South Georgia	123	SHRIMP	SHRIMP06	1	SHRIMP	SHRIMP06	JC055_123_SHRIMP06	46	15/02/2011	15:45:00	54	9.503	37	58.139	-54.158383	-37.968983	248
JC055	South Georgia	124	SHRIMP	SHRIMP07	1	SHRIMP	SHRIMP07	JC055_124_SHRIMP07	46	15/02/2011	21:02:00	54	8.905	37	58.529	-54.148417	-37.975483	252

Equipment depth	End Date	End Time GMT	End Lat Degr	End Lat Min	End Long Degr	End Long Min	End Lat	End Long	End waterdepth meter	Comments	Recipient
										time is at seafloor. Wireout: 252m, Pull-out: 1.24t, 28cm	Adrian Glover
										time is at seafloor. Wireout: 252m, Pull-out: 1.24t, 26cm	Adrian Glover
										time is at seafloor. Wireout: 252m, Pull-out: 1.24t, 30cm	Rachel Mills
										time is at seafloor. Wireout: 252m, Pull-out: 1.24t, 32cm	Adrian Glover
										time is at seafloor. Wireout: 252m, Pull-out: 1.24t, 31cm	Rachel Mills
										time is at seafloor. Wireout: 252m, Pull-out: 1.24t, 28cm	Adrian Glover
										time is at seafloor. Wireout: 252m, Pull-out: 1.24t, 20cm	Adrian Glover
										time is at seafloor. Wireout: 252m, Pull-out: 1.24t, 23cm	David Pearce
										time is at seafloor. Wireout: 244m, Pull-out: 1.34t, 28cm	David Pearce
										time is at seafloor. Wireout: 244m, Pull-out: 1.34t, 25.5cm	Adrian Glover
										time is at seafloor. Wireout: 244m, Pull-out: 1.34t, 38cm	Adrian Glover
										time is at seafloor. Wireout: 244m, Pull-out: 1.34t, 36cm	Adrian Glover
										time is at seafloor. Wireout: 244m, Pull-out: 1.34t, 36cm	Rachel Mills
										time is at seafloor. Wireout: 244m, Pull-out: 1.34t, 27cm	Adrian Glover
										time is at seafloor. Wireout: 244m, Pull-out: 1.34t, 36.5cm	Adrian Glover
										time is at seafloor. Wireout: 244m, Pull-out: 1.34t, 36cm	Adrian Glover
										time is at seafloor. Wireout: 244m, Pull-out: 1.25t, 35cm	Adrian Glover
										time is at seafloor. Wireout: 244m, Pull-out: 1.25t, 35cm	Adrian Glover
										time is at seafloor. Wireout: 244m, Pull-out: 1.25t, 35cm	Adrian Glover
										time is at seafloor. Wireout: 244m, Pull-out: 1.25t, 35cm	Adrian Glover
										time is at seafloor. Wireout: 244m, Pull-out: 1.25t, Discarded	
										time is at seafloor. Wireout: 244m, Pull-out: 1.25t, Discarded	
										time is at seafloor. Wireout: 244m, Pull-out: 1.25t, Discarded	
										time is at seafloor. Wireout: 244m, Pull-out: 1.25t, Discarded	
										time is at seafloor. Wireout: 245m, Pull-out: 1.21t, 32cm	Adrian Glover
										time is at seafloor. Wireout: 245m, Pull-out: 1.21t, 34cm	Adrian Glover
										time is at seafloor. Wireout: 245m, Pull-out: 1.21t, 30cm	Adrian Glover
										time is at seafloor. Wireout: 245m, Pull-out: 1.21t, 36cm	Adrian Glover
										time is at seafloor. Wireout: 245m, Pull-out: 1.21t, 30cm	Adrian Glover
										time is at seafloor. Wireout: 245m, Pull-out: 1.21t, 36cm	Adrian Glover
										time is at seafloor. Wireout: 244m, Pull-out: 1.21t, Discarded	
										time is at seafloor. Wireout: 244m, Pull-out: 1.21t, Discarded	
										time is at seafloor. Wireout: 247m, Pull-out: 1.31t, 30cm	Adrian Glover
										time is at seafloor. Wireout: 247m, Pull-out: 1.31t, 36cm	Adrian Glover
										time is at seafloor. Wireout: 247m, Pull-out: 1.31t, 37cm	Adrian Glover
										time is at seafloor. Wireout: 247m, Pull-out: 1.31t, 31cm	Adrian Glover
										time is at seafloor. Wireout: 247m, Pull-out: 1.31t, Discarded	
										time is at seafloor. Wireout: 247m, Pull-out: 1.31t, Discarded	
										time is at seafloor. Wireout: 248m, Pull-out: 1.21t, 25cm	
										time is at seafloor. Wireout: 248m, Pull-out: 1.21t, 30cm	
										time is at seafloor. Wireout: 248m, Pull-out: 1.21t, 33cm	
										time is at seafloor. Wireout: 248m, Pull-out: 1.21t, 32cm	
										time is at seafloor. Wireout: 248m, Pull-out: 1.21t, Discarded	Adrian Glover
										time is at seafloor. Wireout: 248m, Pull-out: 1.21t, Discarded	Adrian Glover
	15/02/2011	20:17:00	54	9.432	37	58.7065	-54.1572	-37.9784	248	start: shrimp in water, end: shrimp leaving seabed.	
	16/02/2011	00:23:00	54	8.828	37	58.148	-54.14713	-37.9691	248	start: shrimp in water, end: shrimp leaving seabed. On deck at 00:34	

number	lat_degr	lat_min		long_degr	long_min		description	decimal_lat	decimal_long	Comment	Shrimp line number
WP1	60	49.8249		56	32.4793		SVP, start of EK60 survey in BSR area	-60.83041547790	-56.54132151320		
WP2	61	7.7172		56	11.6293		ISIS test Dive, EK60 survey	-61.12861922620	-56.19382147020		
WP3	61	10.1957		56	20.1206		EK60 survey	-61.16992755420	-56.33534366550		
WP4	61	-2.9244		56	35.9263		EK60 survey	-60.95126045130	-56.59877111730		
WP5	61	0.3437		56	47.1920		EK60 survey	-61.00572909330	-56.78653323700		
WP6	61	9.7083		56	36.5988		EK60 survey	-61.16180560990	-56.60998079510		
WP7	61	4.9097		56	19.8684		EK60 survey	-61.08182801770	-56.33114003590		
WP8	61	6.2529		56	18.2710		EK60 survey	-61.10421508720	-56.30451704870		
WP9	61	11.0482		56	35.0015		EK60 survey	-61.18413590840	-56.58335780790		
WP10	61	12.4276		56	33.5722		EK60 survey	-61.20712629670	-56.55953724110		
WP11	61	7.9204		56	16.8418		EK60 survey	-61.13200719570	-56.28069648000		
WP12	61	8.9365		56	15.5807		EK60 survey	-61.14894157430	-56.25967833360		
WP13	61	13.5223		56	32.2271		EK60 survey	-61.22537138280	-56.53711788350		
WP14	61	55.856		56	59.817		ACES6	-61.93093333	-56.99695		
WP15	61	4.893		56	37.911		End of EK60 survey, CTD+SVP	-61.08155	-56.63185		
WP16	61	8.8045		56	10.2215		Alternative EK60 survey	-61.146742	-56.170359		
WP17	61	15.6844		56	29.3347		Alternative EK60 survey	-61.261407	-56.488911		
WP18	62	12.69		57	15.55		JOJO CTD @Hook Ridge	-62.2115	-57.25916667		
WP19	62	10.615		57	17.415		End JOJO CTD @Hook Ridge	-62.17691667	-57.29025		
WP20	62	13		57	15.3		Start JOJO CTD @Hook Ridge	-62.21666667	-57.255		
WP21	62	12.45		57	12.231		Start 2nd tow-yo CTD @Hook Ridge	-62.2075	-57.20385		
WP22	62	9.1459		57	14.8975		End 2nd tow-yo CTD @Hook Ridge	-62.152431	-57.248291		
WP23	62	11		57	12		End point swath survey	-62.18333333	-57.2		
WP24	62	12		57	13.5		Start Tow-yo CTD #2	-62.2	-57.225		
WP25	62	10.9		57	14.5		End Tow-yo CTD #2	-62.18166667	-57.24166667		
WP26	62	13.3780		57	16.1857		Start Tow-yo CTD #3	-62.22296606	-57.26976103		
WP27	62	11.7105		57	17.6749		End Tow-yo CTD #3	-62.19517553	-57.29458227		
WP28	62	10.93		57	16		Start Tow-yo CTD #4	-62.18216667	-57.26666667		
WP29	62	12.45		57	14.6		End Tow-yo CTD #4	-62.2075	-57.24333333		
WP30	62	11.6		57	19.1		New Start Tow-yo CTD #4	-62.19333333	-57.31833333		
WP31	62	12.8		57	18		New End of Tow-yo CTD #4	-62.21333333	-57.3		
WP32	62	12.32		57	18.4		Start Tow-yo CTD #5	-62.20533333	-57.30666667		
WP33	62	11.37		57	14.07		End Tow-yo CTD #5	-62.1895	-57.2345		
WP34	62	23		57	14.7		Megacore 1	-62.38333333	-57.245		
WP35	62	12.2274		57	17.52060		Start of SHRIMP survey #01	-62.20379	-57.29201		
WP36	62	11.9724		57	16.21020		SHRIMP survey #01	-62.19954	-57.27017		
WP37	62	11.9232		57	16.25400		SHRIMP survey #01	-62.19872	-57.27090		
WP38	62	12.1776		57	17.56440		SHRIMP survey #01	-62.20296	-57.29274		
WP39	62	12.1284		57	17.60880		SHRIMP survey #01	-62.20214	-57.29348		
WP40	62	11.874		57	16.29840		SHRIMP survey #01	-62.19790	-57.27164		
WP41	62	11.8242		57	16.34220		SHRIMP survey #01	-62.19707	-57.27237		
WP42	62	12.0792		57	17.65260		SHRIMP survey #01	-62.20132	-57.29421		
WP43	62	12.0294		57	17.69640		SHRIMP survey #01	-62.20049	-57.29494		

number	lat_degr	lat_min		long_degr	long_min		description	decimal_lat	decimal_long	Comment	Shrimp line number
WP44	62	11.775		57	16.38600		SHRIMP survey #01	-62.19625	-57.27310		
WP45	62	11.7258		57	16.42980		SHRIMP survey #01	-62.19543	-57.27383		
WP46	62	11.9802		57	17.74020		SHRIMP survey #01	-62.19967	-57.29567		
WP47	62	11.931		57	17.78460		SHRIMP survey #01	-62.19885	-57.29641		
WP48	62	11.6766		57	16.47420		SHRIMP survey #01	-62.19461	-57.27457		
WP49	62	11.6268		57	16.51800		SHRIMP survey #01	-62.19378	-57.27530		
WP50	62	11.8812		57	17.82840		SHRIMP survey #01	-62.19802	-57.29714		
WP51	62	11.832		57	17.87220		SHRIMP survey #01	-62.19720	-57.29787		
WP52	62	11.5776		57	16.56180		SHRIMP survey #01	-62.19296	-57.27603		
WP53	62	11.5284		57	16.60560		SHRIMP survey #01	-62.19214	-57.27676		
WP54	62	11.7828		57	17.91660		SHRIMP survey #01	-62.19638	-57.29861		
WP55	62	11.733		57	17.96040		SHRIMP survey #01	-62.19555	-57.29934		
WP56	62	11.4786		57	16.65000		SHRIMP survey #01	-62.19131	-57.27750		
WP57	62	11.4294		57	16.69380		SHRIMP survey #01	-62.19049	-57.27823		
WP58	62	11.6838		57	18.00420		End of SHRIMP survey #01	-62.19473	-57.30007		
WP59	62	11.844		57	17.87898		Megacore - Hook Ridge (and gravity core	-62.1974	-57.297983	Out of chronological sequence	
WP60	62	11.54904		57	16.70814		Megacore - Hook Ridge	-62.192484	-57.278469	Out of chronological sequence	
WP61	62	12.21456		57	19.23276	0.000000	SHRIMP survey #01	-62.203576	-57.320546		
WP62	62	12.765		57	21.39006	0.000000	SHRIMP survey #01	-62.212750	-57.356501		
WP63	62	12.37998		57	17.65002	0.000000	Start Tow-yo CTD #6	-62.206333	-57.294167		
WP64	62	11.35002		57	18.6	0.000000	End Tow-yo CTD #6	-62.189167	-57.310000		
WP65	62	11.857		57	17.871		downcast CTD	-62.19761667	-57.29785		
WP66	62	13.44		57	20		End Agassiz	-62.224	-57.33333333		
WP67	62	13.02		57	18		Start Agassiz	-62.217	-57.3		
WP68	62	11.587		57	17.224		Box Core 01	-62.19311667	-57.28706667		
WP69	62	20		57	50		CTD on passage to Orca	-62.33333333	-57.83333333		
WP70	62	12.84		57	17.111		New Start Agassiz	-62.214	-57.28518333		
WP71	62	11.8		57	17.96		Box Core 02	-62.19666667	-57.29933333		
WP72	62	25.748		58	24.248		CTD in Orca	-62.42913333	-58.40413333		
WP73	62	32.6190		58	42.8604		Start EM120 Three Sisters	-62.54365	-58.71434		
WP74	62	42.4812		59	15.3210		EM120 Three Sisters	-62.70802	-59.25535		
WP75	62	43.7970		59	13.4286		EM120 Three Sisters	-62.72995	-59.22381		
WP76	62	33.9426		58	40.9686		EM120 Three Sisters	-62.56571	-58.68281		
WP77	62	35.2650		58	39.0768		EM120 Three Sisters	-62.58775	-58.65128		
WP78	62	45.1122		59	11.5368		EM120 Three Sisters	-62.75187	-59.19228		
WP79	62	41.1642		59	17.2128		EM120 Three Sisters	-62.68607	-59.28688		
WP80	62	31.2948		58	44.7522		End EM120 Three Sisters	-62.52158	-58.74587		
WP81	62	41.3		59	0.2		Start Tow-yo CTD #7	-62.68833333	-59.00333333		
WP82	62	37.7		59	4.35		End Tow-yo CTD #7	-62.62833333	-59.0725		
WP83	62	39.6		59	3		Start Tow-yo CTD #8	-62.66	-59.05		
WP84	62	39.107		59	3.748		End Tow-yo CTD #8	-62.65178333	-59.06246667		
WP85	62	39.1585		59	1.5788		Start Tow-yo CTD #9	-62.652641	-59.026314		
WP86	62	38.5622		59	2.4223		End Tow-yo CTD #9	-62.642703	-59.040372		

number	lat_degr	lat_min		long_degr	long_min		description	decimal_lat	decimal_long	Comment	Shrimp line number
WP87	62	37.8820		58	59.9650		Start Tow-yo CTD #10	-62.631367	-58.999417		
WP88	62	38.7698		58	58.5872		End Tow-yo CTD #10	-62.646164	-58.976453		
WP89	62	40.4		59	5.5		CTD @Klinkhammer station 48	-62.67333333	-59.09166667		
WP90	62	42		59	10.75		CTD @Klinkhammer station 49	-62.7	-59.17916667		
WP91	62	38.65		59	0		CTD @Klinkhammer station 65	-62.64416667	-59		
WP92	62	39.05		59	2.3		CTD @SHRIMP area	-62.65083333	-59.03833333		
WP93	62	39.3756		59	2.42040		Start SHRIMP survey #02	-62.65626	-59.04034		
WP94	62	39.5634		59	3.17520		SHRIMP survey #02	-62.65939	-59.05292		
WP95	62	39.54		59	3.20220		SHRIMP survey #02	-62.65900	-59.05337		
WP96	62	39.3522		59	2.44800		SHRIMP survey #02	-62.65587	-59.04080		
WP97	62	39.3294		59	2.47500		SHRIMP survey #02	-62.65549	-59.04125		
WP98	62	39.5172		59	3.22980		SHRIMP survey #02	-62.65862	-59.05383		
WP99	62	39.4938		59	3.25680		SHRIMP survey #02	-62.65823	-59.05428		
WP100	62	39.306		59	2.50200		SHRIMP survey #02	-62.65510	-59.04170		
WP101	62	39.2832		59	2.52960		SHRIMP survey #02	-62.65472	-59.04216		
WP102	62	39.4704		59	3.28440		SHRIMP survey #02	-62.65784	-59.05474		
WP103	62	39.4476		59	3.31140		SHRIMP survey #02	-62.65746	-59.05519		
WP104	62	39.2598		59	2.55660		SHRIMP survey #02	-62.65433	-59.04261		
WP105	62	39.2364		59	2.58420		SHRIMP survey #02	-62.65394	-59.04307		
WP106	62	39.4242		59	3.33840		SHRIMP survey #02	-62.65707	-59.05564		
WP107	62	39.4014		59	3.36600		SHRIMP survey #02	-62.65669	-59.05610		
WP108	62	39.2136		59	2.61120		SHRIMP survey #02	-62.65356	-59.04352		
WP109	62	39.1902		59	2.63820		SHRIMP survey #02	-62.65317	-59.04397		
WP110	62	39.378		59	3.39300		SHRIMP survey #02	-62.65630	-59.05655		
WP111	62	39.3546		59	3.42060		SHRIMP survey #02	-62.65591	-59.05701		
WP112	62	39.1668		59	2.66580		SHRIMP survey #02	-62.65278	-59.04443		
WP113	62	39.144		59	2.69280		SHRIMP survey #02	-62.65240	-59.04488		
WP114	62	39.3318		59	3.44760		SHRIMP survey #02	-62.65553	-59.05746		
WP115	62	39.3084		59	3.47460		SHRIMP survey #02	-62.65514	-59.05791		
WP116	62	39.1206		59	2.72040		SHRIMP survey #02	-62.65201	-59.04534		
WP117	62	39.0978		59	2.74740		SHRIMP survey #02	-62.65163	-59.04579		
WP118	62	39.2856		59	3.50220		SHRIMP survey #02	-62.65476	-59.05837		
WP119	62	39.2622		59	3.52920		SHRIMP survey #02	-62.65437	-59.05882		
WP120	62	39.0744		59	2.77440		SHRIMP survey #02	-62.65124	-59.04624		
WP121	62	39.051		59	2.80200		SHRIMP survey #02	-62.65085	-59.04670		
WP122	62	39.2388		59	3.55680		SHRIMP survey #02	-62.65398	-59.05928		
WP123	62	39.216		59	3.58380		SHRIMP survey #02	-62.65360	-59.05973		
WP124	62	39.0282		59	2.82900		End SHRIMP survey #02	-62.65047	-59.04715		
WP125	62	39.3432		59	2.41260		Continue SHRIMP survey #02 new box	-62.65572	-59.04021		
WP126	62	39.1104		59	1.63680		SHRIMP survey #02	-62.65184	-59.02728		
WP127	62	39.1326		59	1.60500		SHRIMP survey #02	-62.65221	-59.02675		
WP128	62	39.3654		59	2.38140		SHRIMP survey #02	-62.65609	-59.03969		
WP129	62	39.387		59	2.35020		SHRIMP survey #02	-62.65645	-59.03917		

number	lat_degr	lat_min		long_degr	long_min		description	decimal_lat	decimal_long	Comment	Shrimp line number
WP130	62	39.1548		59	1.57380		SHRIMP survey #02	-62.65258	-59.02623		
WP131	62	39.177		59	1.54260		SHRIMP survey #02	-62.65295	-59.02571		
WP132	62	39.4092		59	2.31900		SHRIMP survey #02	-62.65682	-59.03865		
WP133	62	39.4314		59	2.28780		SHRIMP survey #02	-62.65719	-59.03813		
WP134	62	39.1986		59	1.51140		SHRIMP survey #02	-62.65331	-59.02519		
WP135	62	39.2208		59	1.48020		SHRIMP survey #02	-62.65368	-59.02467		
WP136	62	39.4536		59	2.25660		End SHRIMP survey #02	-62.65756	-59.03761		
WP137	62	39.2171		59	1.8474		Megacore 'site A'	-62.65361833	-59.03079		
WP138	62	39.3146		59	3.0222		Megacore site 'mud maltesers'	-62.655243	-59.05037		
WP91	62	38.65		59	0		CTD @Klinkhammer station 65	-62.64416667	-59		
WP90	62	42		59	10.75		CTD @Klinkhammer station 49	-62.7	-59.17916667		
WP139	62	48.4512		59	40.06560		First CTD station on line 1 across the Axe	-62.80752	-59.66776		
WP140	62	48.8316		59	42.00240		Axe CTD station	-62.81386	-59.70004		
WP141	62	49.2126		59	43.93860		Axe CTD station	-62.82021	-59.73231		
WP142	62	49.5930		59	45.87540		Axe CTD station	-62.82655	-59.76459		
WP143	62	49.9734		59	47.81160		Axe CTD station	-62.83289	-59.79686		
WP144	62	50.3538		59	49.74840		Axe CTD station	-62.83923	-59.82914		
WP145	62	50.7342		59	51.68460		Axe CTD station	-62.84557	-59.86141		
WP146	62	51.1146		59	53.62140		Axe CTD station	-62.85191	-59.89369		
WP147	62	51.4944		59	55.55760		Axe CTD station	-62.85824	-59.92596		
WP148	62	51.8748		59	57.49440		Axe CTD station	-62.86458	-59.95824		
WP149	62	52.2546		59	59.43060		Last CTD station on line 1 across the Axe	-62.87091	-59.99051		
WP150	62	53.1060		59	58.81200		First CTD station on line 2 across the Axe	-62.88510	-59.98020		
WP151	62	52.7178		59	56.87100		Axe CTD station	-62.87863	-59.94785		
WP152	62	52.3290		59	54.93000		Axe CTD station	-62.87215	-59.91550		
WP153	62	51.9408		59	52.98960		Axe CTD station	-62.86568	-59.88316		
WP154	62	51.6726		59	50.91600		Last CTD station on line 2 across the Axe	-62.86121	-59.84860		
WP155	62	52.5930		59	50.42040		Axe CTD station	-62.87655	-59.84034		
WP156	62	52.0050		59	47.97600		First CTD station on line 3 across the Axe	-62.86675	-59.79960		
WP157	62	51.3864		59	49.82580		Axe CTD station	-62.85644	-59.83043		
WP158	62	50.2086		59	51.61020		Axe CTD station	-62.83681	-59.86017		
WP159	62	49.7706		59	52.33680		Axe CTD station	-62.82951	-59.87228		
WP160	62	49.2414		59	52.89840		Last CTD station on line 3 across the Axe	-62.82069	-59.88164		
WP161	62	49.70052		59	55.2927		extra swath line for Survey #4	-62.82834	-59.92155		
WP162	62	50.68734		59	52.37304		extra swath line for Survey #4	-62.84479	-59.87288		
WP163	62	47.2340		59	45.97000		Megacore at 1050m, Axe	-62.78723333	-59.76616667		
WP164	62	11.944		57	17.471		CTD repeat at Hook Ridge (former CTD100)	-62.19906667	-57.29118333		
WP165	62	11.726		57	17.66		CTD repeat at Hook Ridge (former CTD106)	-62.19543333	-57.29433333		
WP166	62	11.54904		57	16.70814		Megacore - Hook Ridge - repeat of WP060	-62.192484	-57.278469		
WP167	61	60.5976		56	30.5646		Transit to E9	-62.00996	-56.50941		
WP168	61	45.0516		55	50.094		Transit to E9	-61.75086	-55.83490		
WP169	61	35.3172		55	21.3282		Transit to E9	-61.58862	-55.35547		
WP170	61	13.3224		55	2.9562		Transit to E9	-61.22204	-55.04927		

number	lat_degr	lat_min		long_degr	long_min		description	decimal_lat	decimal_long	Comment	Shrimp line number
WP171	61	10.9494		54	50.1702		Transit to E9	-61.18249	-54.83617		
WP172	61	6.909		54	16.2384		Transit to E9	-61.11515	-54.27064		
WP173	60	46.6596		50	48.9468		Transit to E9	-60.77766	-50.81578		
WP174	60	58.581		46	39.9942		Transit to E9	-60.97635	-46.66657		
WP175	60	68.829		45	24.834		Transit to E9	-61.14715	-45.41390		
WP176	60	45.7398		42	14.7378		Transit to E9	-60.76233	-42.24563		
WP177	60	26.346		38	58.9674		Transit to E9	-60.43910	-38.98279		
WP178	60	21.1008		37	34.1622		Transit to E9	-60.35168	-37.56937		
WP179	60	16.8942		36	6.1758		Transit to E9	-60.28157	-36.10293		
WP180	60	2.7036		29	58.938		Transit to E9	-60.04506	-29.98230		
WP181	59	40.956		33	6.31		Background value CTD	-59.6826	-33.10516667		
WP182	60	2.563		29	58.894		CTD & SAPS at E9	-60.04271667	-29.98156667		
WP183	60	2.46		29	58.9464		Start E9 Shrimp survey	-60.04100	-29.98244		
WP184	60	2.556		29	58.9038		E9 Shrimp survey	-60.04260	-29.98173		
WP185	60	2.5002		29	58.9554		E9 Shrimp survey	-60.04167	-29.98259		
WP186	60	3.1368		29	58.674		E9 Shrimp survey	-60.05228	-29.97790		
WP187	60	3.1392		29	58.7004		E9 Shrimp survey	-60.05232	-29.97834		
WP188	60	2.5032		29	58.9812		E9 Shrimp survey	-60.04172	-29.98302		
WP189	60	2.5062		29	59.0076		E9 Shrimp survey	-60.04177	-29.98346		
WP190	60	3.1422		29	58.7268		E9 Shrimp survey	-60.05237	-29.97878		
WP191	60	3.1452		29	58.7526		E9 Shrimp survey	-60.05242	-29.97921		
WP192	60	2.5086		29	59.034		End E9 Shrimp survey	-60.04181	-29.98390		
WP193	59	41.66		28	21.19		Kemp Caldera general waypoint	-59.69433333	-28.35316667		
WP194	59	41.683		28	21.088		Kemp - CTD on site of Great Wall	-59.69471667	-28.35146667		
WP195	59	41.69688		28	20.95536		Kemp - CTD site on Winter Palace	-59.694948	-28.349256		
WP196	59	41.68902		28	21.009		Kemp - Megacore site, equal to ISIS150/PUC03	-59.694817	-28.35015		
WP197	59	41.60202		28	21.105		Kemp - Megacore site equal to ISIS151/PUC01	-59.693367	-28.35175		
WP198	59	41.65698		28	21.14298		Kemp - Megacore site equal to JC42 - GC05	-59.694283	-28.352383		
WP199	59	41.9976		28	19.5168		Start Shrimp survey #04	-59.69996	-28.32528		4
WP200	59	41.7		28	21.5		Shrimp survey#04	-59.695	-28.35833333		4
WP201	59	41.55		28	21.5		Shrimp survey#04	-59.6925	-28.35833333		4
WP202	59	41.6		28	21		Shrimp survey#04	-59.69333333	-28.35		4
WP203	59	41.9		28	21.22		Shrimp survey#04	-59.69833333	-28.35366667		4
WP204	59	42.2		28	21.22		Shrimp survey#04	-59.70333333	-28.35366667		4
WP205	59	42.092		28	21.406		Shrimp survey#04	-59.70153333	-28.35676667		4
WP206	59	42.092		28	21.049		Shrimp survey#04	-59.70153333	-28.35081667		4
WP207	59	41.68		28	21.082		CTD over Great Wall site	-59.69466667	-28.35136667		
WP208	59	41.7048		28	20.89638		Shrimp survey#04	-59.69508	-28.348273		4
WP209	59	41.7048		28	21.1605		Shrimp survey#04	-59.69508	-28.352675		4
WP210	59	41.73456		28	21.13398		Shrimp survey#04	-59.695576	-28.352233		4
WP211	59	41.61084		28	21.13398		Shrimp survey#04	-59.693514	-28.352233		4
WP212	59	41.65158		28	21.04524		Shrimp survey#04	-59.694193	-28.350754		4
WP213	59	41.73684		28	20.9202		Shrimp survey#04	-59.695614	-28.34867		4

number	lat_degr	lat_min		long_degr	long_min		description	decimal_lat	decimal_long	Comment	Shrimp line number
WP214	59	41.7288		28	20.8986		Shrimp survey#04	-59.69548	-28.34831		4
WP215	59	41.598		28	21.09		Shrimp survey#04	-59.69330	-28.35150		4
WP216	59	41.5896		28	21.0684		Shrimp survey#04	-59.69316	-28.35114		4
WP217	59	41.721		28	20.877		Shrimp survey#04	-59.69535	-28.34795		4
WP218	59	41.745		28	20.9418		Shrimp survey#04	-59.69575	-28.34903		4
WP219	59	41.6112		28	21.1368		Shrimp survey#04	-59.69352	-28.35228		4
WP220	59	41.6196		28	21.1584		Shrimp survey#04	-59.69366	-28.35264		4
WP221	59	41.7528		28	20.9634		Shrimp survey#04	-59.69588	-28.34939		4
WP222	59	41.7612		28	20.985		Shrimp survey#04	-59.69602	-28.34975		4
WP223	59	41.6274		28	21.18		Shrimp survey#04	-59.69379	-28.35300		4
WP224	59	41.737		28	21.053		Shrimp survey#04	-59.69561667	-28.35088333		
WP225	59	41.682		28	21.134		Shrimp survey#04	-59.6947	-28.35223333		
WP226	59	42.134		28	21.353		Kemp - Megacore site, yellow sediment	-59.70223333	-28.35588333		
WP227	59	41.821		28	18.771		End point of short SBP line to determine GC deployment	-59.69701667	-28.31285		
WP228	59	42.65		27	50.484		CTD waypoint in centre of Adventure Caldera	-59.71083333	-27.8414		
WP229	59	42.5706		27	51.2076		Shrimp survey#05	-59.70951	-27.85346		
WP230	59	42.8874		27	50.2626		Shrimp survey#05	-59.71479	-27.83771		
WP231	59	43.0998		27	50.9778		Shrimp survey#05	-59.71833	-27.84963		
WP232	59	43.3818		27	51.0462		Shrimp survey#05	-59.72303	-27.85077		
WP233	59	43.13		27	51.82		extension of shrimp survey#05	-59.71883333	-27.86366667		
WP234	59	43.15		27	52.46		extension of shrimp survey#05	-59.71916667	-27.87433333		
WP235	59	43.262		27	51.428		CTD Vent site in Adventure crater	-59.72103333	-27.85713333		
WP236	59	42		28	19		background value CTD in Kemp crater	-59.7	-28.31666667		
WP237	54	9.45		37	58.55		Megacore site near SG. Equal to JC042/GC01	-54.1575	-37.97583333		
WP238	54	9.48		37	56.07		Mega plus Gravity core site near SG. Equal to start of JC042/ISIS125 dive (EK60 survey after WP246, see later points)	-54.158	-37.9345		
WP239	54	9.397		37	59.502		Gravity core site near SG and start of EK60 survey . Western end of JC042/ISIS125 dive line. (End EK60 survey, see later points)	-54.15661667	-37.9917		
WP240	54	10.2654		37	66.69		EK60 survey	-54.17109	-38.11150		
WP241	54	10.7028		37	66.4188		EK60 survey	-54.17838	-38.10698		
WP242	54	9.1116		37	53.5398		EK60 survey	-54.15186	-37.89233		
WP243	54	8.2956		37	53.8446		EK60 survey	-54.13826	-37.89741		
WP244	54	9.8676		37	66.8928		EK60 survey	-54.16446	-38.11488		
WP245	54	9.4698		37	67.0626		EK60 survey	-54.15783	-38.11771		
WP246	54	7.7982		37	54.048		EK60 survey	-54.12997	-37.90080		
WP247	54	8.843		37	58.293		Megacore at bubble site	-54.14738333	-37.97155		
WP248	54	9.4302		37	58.3572		Shrimp survey#06	-54.15717	-37.97262		
WP249	54	9.4302		37	58.632		Shrimp survey#06	-54.15717	-37.97720		
WP250	54	9.4386		37	58.632		Shrimp survey#06	-54.15731	-37.97720		
WP251	54	9.4386		37	58.3572		Shrimp survey#06	-54.15731	-37.97262		

number	lat_degr	lat_min		long_degr	long_min		description	decimal_lat	decimal_long	Comment	Shrimp line number
WP252	54	9.4464		37	58.3572		Shrimp survey#06	-54.15744	-37.97262		
WP253	54	9.4464		37	58.632		Shrimp survey#06	-54.15744	-37.97720		
WP254	54	9.4542		37	58.632		Shrimp survey#06	-54.15757	-37.97720		
WP255	54	9.4542		37	58.3572		Shrimp survey#06	-54.15757	-37.97262		
WP256	54	9.4626		37	58.3572		Shrimp survey#06	-54.15771	-37.97262		
WP257	54	9.4626		37	58.632		Shrimp survey#06	-54.15771	-37.97720		
WP258	54	8.8596		37	58.4334		Shrimp survey#07	-54.14766	-37.97389		
WP259	54	8.8596		37	58.1592		Shrimp survey#07	-54.14766	-37.96932		
WP260	54	8.8512		37	58.1592		Shrimp survey#07	-54.14752	-37.96932		
WP261	54	8.8512		37	58.4334		Shrimp survey#07	-54.14752	-37.97389		
WP262	54	8.8434		37	58.4334		Shrimp survey#07	-54.14739	-37.97389		
WP263	54	8.8434		37	58.1592		Shrimp survey#07	-54.14739	-37.96932		
WP264	54	8.835		37	58.1592		Shrimp survey#07	-54.14725	-37.96932		
WP265	54	8.835		37	58.4334		Shrimp survey#07	-54.14725	-37.97389		
WP266	54	8.8272		37	58.4334		Shrimp survey#07	-54.14712	-37.97389		
WP267	54	8.8272		37	58.1592		Shrimp survey#07	-54.14712	-37.96932		
WP268	53	69.4014		37	59.4096		Transit to Punta	-54.15669	-37.99016		
WP269	53	49.869		41	58.3548		Transit to Punta	-53.83115	-41.97258		
WP270	53	46.5294		42	28.7418		Transit to Punta	-53.77549	-42.47903		
WP271	53	43.5006		42	44.6592		Transit to Punta	-53.72501	-42.74432		
WP272	53	36.8838		43	38.7786		Transit to Punta	-53.61473	-43.64631		
WP273	53	33.4944		44	13.8804		Transit to Punta	-53.55824	-44.23134		
WP274	53	28.9008		44	50.1558		Transit to Punta	-53.48168	-44.83593		
WP275	53	21.5442		45	49.6362		Transit to Punta	-53.35907	-45.82727		
WP276	53	8.0058		50	0.0582		Transit to Punta	-53.13343	-50.00097		

Cruise	Site	Station No	Gear No	Type	JDay (Start)	Start Date	Start Time GMT	Start Lat Degr S	Start Lat Min S	Start Long Degr W	Start Long Min W	Start Lat	Start Long	Start Water depth (m)
JC055	BSR	2	CTD001	Vertical	19	20/01/2015	00:47:00	61	5.215	56	37.03	-61.08691667	-56.61716667	2291
JC055	Hook Ridge	5	CTD002	TowYo	20	21/01/2015	04:54	62	12.9900	57	15.2800	-62.2165	-57.25466667	1488
			CTD003		20	21/01/2015	05:29:00	62	12.993	57	15.282	-62.21655	-57.2547	1486
			CTD004		20	21/01/2015	05:49:00	62	12.904	57	15.36	-62.21506667	-57.256	1493
			CTD005		20	21/01/2015	06:04:00	62	12.904	57	15.359	-62.21506667	-57.25598333	1489
			CTD006		20	21/01/2015	06:21:00	62	12.82	57	15.439	-62.21366667	-57.25731667	1497
			CTD007		20	21/01/2015	06:37:00	62	12.819	57	15.442	-62.21365	-57.25736667	1504
			CTD008		20	21/01/2015	06:55:00	62	12.73	57	15.519	-62.21216667	-57.25865	1466
			CTD009		20	21/01/2015	07:11:00	62	12.73	57	15.525	-62.21216667	-57.25875	1460
			CTD010		20	21/01/2015	07:32:00	62	12.63	57	15.615	-62.2105	-57.26025	1497
			CTD011		20	21/01/2015	07:47:00	62	12.63	57	15.616	-62.2105	-57.26026667	1500
			CTD012		20	21/01/2015	08:05:00	62	12.54	57	15.701	-62.209	-57.26168333	1488
			CTD013		20	21/01/2015	08:20:00	62	12.54	57	15.696	-62.209	-57.2616	1511
			CTD014		20	21/01/2015	08:34:00	62	12.454	57	15.774	-62.20756667	-57.2629	1542
			CTD015		20	21/01/2015	08:49:00	62	12.452	57	15.773	-62.20753333	-57.26288333	1544
			CTD016		20	21/01/2015	09:08:00	62	12.364	57	15.856	-62.20606667	-57.26426667	1535
			CTD017		20	21/01/2015	09:24:00	62	12.364	57	15.862	-62.20606667	-57.26436667	1533
			CTD018		20	21/01/2015	09:44	62	12.275	57	15.941	-62.20458333	-57.26568333	1535
			CTD019		20	21/01/2015	10:00	62	12.265	57	15.953	-62.20441667	-57.26588333	1534
			CTD020		20	21/01/2015	10:19:00	62	12.179	57	16.03	-62.20298333	-57.26716667	1537
			CTD021		20	21/01/2015	10:36:00	62	12.178	57	16.028	-62.20296667	-57.26713333	1537
			CTD022		20	21/01/2015	10:59:00	62	12.09	57	16.11	-62.2015	-57.2685	1514
			CTD023		20	21/01/2015	11:06:00	62	12.091	57	16.108	-62.20151667	-57.26846667	1512
			CTD024		20	21/01/2015	11:38:00	62	12.014	57	16.168	-62.20023333	-57.26946667	1462
			CTD025		20	21/01/2015	11:56:00	62	12.016	57	16.166	-62.20026667	-57.26943333	1460
			CTD026		20	21/01/2015	12:14:00	62	11.933	57	16.238	-62.19888333	-57.27063333	1410
			CTD027		20	21/01/2015	12:31:00	62	11.938	57	16.237	-62.19896667	-57.27061667	1408
			CTD028		20	21/01/2015	12:47:00	62	11.866	57	16.302	-62.19776667	-57.2717	1348
			CTD029		20	21/01/2015	13:11:00	62	11.863	57	16.302	-62.19771667	-57.2717	1346
			CTD030		20	21/01/2015	13:30:00	62	11.795	57	16.364	-62.19658333	-57.27273333	1289
			CTD031		20	21/01/2015	13:44:00	62	11.794	57	16.363	-62.19656667	-57.27271667	1145
			CTD032		20	21/01/2015	13:56:00	62	11.737	57	16.421	-62.19561667	-57.27368333	1249
			CTD033		20	21/01/2015	14:09:00	62	11.737	57	16.42	-62.19561667	-57.27366667	1236
			CTD034		20	21/01/2015	14:22:00	62	11.676	57	16.481	-62.1946	-57.27468333	1157
			CTD035		20	21/01/2015	14:35:00	62	11.676	57	16.482	-62.1946	-57.2747	1160
			CTD036		20	21/01/2015	14:44:00	62	11.633	57	16.523	-62.19388333	-57.27538333	1102
			CTD037		20	21/01/2015	14:56:00	62	11.633	57	16.523	-62.19388333	-57.27538333	1106
			CTD038		20	21/01/2015	15:10:00	62	11.564	57	16.589	-62.19273333	-57.27648333	1062
			CTD039		20	21/01/2015	15:21:00	62	11.56	57	16.574	-62.19266667	-57.27623333	1065
			CTD040		20	21/01/2015	15:35:00	62	11.528	57	16.602	-62.19213333	-57.2767	1068
			CTD041		20	21/01/2015	15:47:00	62	11.518	57	16.561	-62.19196667	-57.27601667	1070
			CTD042		20	21/01/2015	16:00:00	62	11.455	57	16.621	-62.19091667	-57.27701667	1064
			CTD043		20	21/01/2015	16:15:00	62	11.453	57	16.616	-62.19088333	-57.27693333	1080

JC055	Hook Ridge	7	CTD044	TowYo	21	22/01/2015	21:13:00	62	11.988	57	13.498	-62.1998	-57.22496667	1433
			CTD045		21	22/01/2015	21:44:00	62	11.963	57	13.498	-62.19938333	-57.22496667	1433
			CTD046		21	22/01/2015	22:01:00	62	11.888	57	13.579	-62.19813333	-57.22631667	1341
			CTD047		21	22/01/2015	22:14:00	62	11.884	57	13.5804	-62.19806667	-57.22634	1342
			CTD048		21	22/01/2015	22:29:00	62	11.8122	57	13.656	-62.19687	-57.2276	1344
			CTD049		21	22/01/2015	22:45:00	62	11.8116	57	13.6542	-62.19686	-57.22757	1349
			CTD050		21	22/01/2015	22:58:00	62	11.7384	57	13.7262	-62.19564	-57.22877	1391
			CTD051		21	22/01/2015	23:17:00	62	11.739	57	13.73	-62.19565	-57.22883333	1390
			CTD052		21	22/01/2015	23:37:00	62	11.627	57	13.837	-62.19378333	-57.23061667	1435
			CTD053		21	22/01/2015	23:54:00	62	11.623	57	13.844	-62.19371667	-57.23073333	1443
			CTD054		22	23/01/2015	00:10:00	62	11.532	57	13.922	-62.1922	-57.23203333	1439
			CTD055		22	23/01/2015	00:32:00	62	11.533	57	13.922	-62.19221667	-57.23203333	1437
			CTD056		22	23/01/2015	00:49:00	62	11.447	57	14.001	-62.19078333	-57.23335	1426
			CTD057		22	23/01/2015	01:08:00	62	11.447	57	14.004	-62.19078333	-57.2334	1425
			CTD058		22	23/01/2015	01:26:00	62	11.354	57	14.084	-62.18923333	-57.23473333	1399
			CTD059		22	23/01/2015	01:44:00	62	11.355	57	14.089	-62.18925	-57.23481667	1400
			CTD060		22	23/01/2015	02:15:00	62	11.248	57	14.33	-62.18746667	-57.23883333	1350
			CTD061		22	23/01/2015	02:29:00	62	11.239	57	14.368	-62.18731667	-57.23946667	1337
			CTD062		22	23/01/2015	02:43:00	62	11.185	57	14.478	-62.18641667	-57.2413	1295
			CTD063		22	23/01/2015	03:03:00	62	11.16	57	14.504	-62.186	-57.24173333	1287
			CTD064		22	23/01/2015	03:20:00	62	11.089	57	14.483	-62.18481667	-57.24138333	1263
			CTD065		22	23/01/2015	03:37:00	62	11.087	57	14.483	-62.18478333	-57.24138333	1264
			CTD066		22	23/01/2015	03:52:00	62	11.033	57	14.404	-62.18388333	-57.24006667	1281
			CTD067		22	23/01/2015	04:11:00	62	11.035	57	14.403	-62.18391667	-57.24005	1271
JC055	Hook Ridge	8	CTD068	TowYo	22	23/01/2015	05:47:00	62	13.376	57	16.185	-62.22293333	-57.26975	1511
			CTD069		22	23/01/2015	06:23:00	62	13.378	57	16.184	-62.22296667	-57.26973333	1571
			CTD070		22	23/01/2015	06:40:00	62	13.29	57	16.267	-62.2215	-57.27111667	1519
			CTD071		22	23/01/2015	06:57:00	62	13.288	57	16.266	-62.22146667	-57.2711	1517
			CTD072		22	23/01/2015	07:15:00	62	13.203	57	16.341	-62.22005	-57.27235	1555
			CTD073		22	23/01/2015	07:35:00	62	13.198	57	16.351	-62.21996667	-57.27251667	1541
			CTD074		22	23/01/2015	07:53:00	62	13.115	57	16.421	-62.21858333	-57.27368333	1558
			CTD075		22	23/01/2015	08:09:00	62	13.115	57	16.422	-62.21858333	-57.2737	1558
			CTD076		22	23/01/2015	08:27:00	62	13.019	57	16.508	-62.21698333	-57.27513333	1545
			CTD077		22	23/01/2015	08:48:00	62	13.018	57	16.508	-62.21696667	-57.27513333	1544
			CTD078		22	23/01/2015	09:06:00	62	12.923	57	16.593	-62.21538333	-57.27655	1543
			CTD079		22	23/01/2015	09:26:00	62	12.923	57	16.59	-62.21538333	-57.2765	1544
			CTD080		22	23/01/2015	09:46:00	62	12.83	57	16.675	-62.21383333	-57.27791667	1544
			CTD081		22	23/01/2015	10:04:00	62	12.831	57	16.677	-62.21385	-57.27795	1544
			CTD082		22	23/01/2015	10:23:00	62	12.739	57	16.759	-62.21231667	-57.27931667	1533
			CTD083		22	23/01/2015	10:41:00	62	12.739	57	16.76	-62.21231667	-57.27933333	1554
			CTD084		22	23/01/2015	11:00:00	62	12.644	57	16.844	-62.21073333	-57.28073333	1569
			CTD085		22	23/01/2015	11:16:00	62	12.646	57	16.845	-62.21076667	-57.28075	1568
			CTD086		22	23/01/2015	11:35:00	62	12.544	57	16.934	-62.20906667	-57.28223333	1576
			CTD087		22	23/01/2015	11:55:00	62	12.52	57	16.962	-62.20866667	-57.2827	1573
			CTD088		22	23/01/2015	12:16:00	62	12.413	57	17.124	-62.20688333	-57.2854	1564
			CTD089		22	23/01/2015	12:33:00	62	12.411	57	17.123	-62.20685	-57.28538333	1576

			CTD090		22	23/01/2015	12:54:00	62	12.325	57	17.185	-62.20541667	-57.28641667	1545
			CTD091		22	23/01/2015	13:08:00	62	12.324	57	17.182	-62.2054	-57.28636667	1539
			CTD092		22	23/01/2015	13:24:00	62	12.242	57	17.246	-62.20403333	-57.28743333	1493
			CTD093		22	23/01/2015	13:39:00	62	12.242	57	17.244	-62.20403333	-57.2874	1487
			CTD094		22	23/01/2015	13:53:00	62	12.167	57	17.296	-62.20278333	-57.28826667	1402
			CTD095		22	23/01/2015	14:08:00	62	12.164	57	17.294	-62.20273333	-57.28823333	1401
			CTD096		22	23/01/2015	14:22:00	62	12.085	57	17.35	-62.20141667	-57.28916667	1325
			CTD097		22	23/01/2015	14:39:00	62	12.082	57	17.352	-62.20136667	-57.2892	1317
			CTD098		22	23/01/2015	14:53:00	62	12.01	57	17.41	-62.20016667	-57.29016667	1267
			CTD099		22	23/01/2015	15:06:00	62	12.007	57	17.413	-62.20011667	-57.29021667	1278
			CTD100		22	23/01/2015	15:20:00	62	11.944	57	17.471	-62.19906667	-57.29118333	1220
			CTD101		22	23/01/2015	15:32:00	62	11.944	57	17.47	-62.19906667	-57.29116667	1222
			CTD102		22	23/01/2015	15:51:00	62	11.891	57	17.516	-62.19818333	-57.29193333	1170
			CTD103		22	23/01/2015	16:03:00	62	11.891	57	17.515	-62.19818333	-57.29191667	1166
			CTD104		22	23/01/2015	16:19:00	62	11.806	57	17.59	-62.19676667	-57.29316667	1133
			CTD105		22	23/01/2015	16:31:00	62	11.806	57	17.59	-62.19676667	-57.29316667	1134
			CTD106		22	23/01/2015	16:50:00	62	11.726	57	17.66	-62.19543333	-57.29433333	1136
			CTD107		22	23/01/2015	17:15:00	62	11.724	57	17.659	-62.1954	-57.29431667	1131
			CTD108		22	23/01/2015	17:31:00	62	11.638	57	17.74	-62.19396667	-57.29566667	1153
			CTD109		22	23/01/2015	17:47:00	62	11.636	57	17.738	-62.19393333	-57.29563333	1150
			CTD110		22	23/01/2015	18:02:00	62	11.557	57	17.813	-62.19261667	-57.29688333	1117
			CTD111		22	23/01/2015	18:17:00	62	11.558	57	17.813	-62.19263333	-57.29688333	1120
			CTD112		22	23/01/2015	18:32:00	62	11.484	57	17.881	-62.1914	-57.29801667	1180
			CTD113		22	23/01/2015	18:57:00	62	11.482	57	17.879	-62.19136667	-57.29798333	1186
JC055	Hook Ridge	9	CTD114	TowYo	22	23/01/2015	21:17:00	62	12.8	57	18	-62.21333333	-57.3	1600
			CTD115		22	23/01/2015	22:00:00	62	12.8	57	18	-62.21333333	-57.3	1602
			CTD116		22	23/01/2015	22:20:00	62	12.708	57	18.085	-62.2118	-57.30141	1583
			CTD117		22	23/01/2015	22:31:00	62	12.708	57	18.085	-62.2118	-57.30141	1555
			CTD118		22	23/01/2015	22:46:00	62	12.615	57	18.17	-62.21025	-57.30284	1532
			CTD119		22	23/01/2015	23:03:00	62	12.615	57	18.17	-62.21025	-57.30284	1532
			CTD120		22	23/01/2015	23:16:00	62	12.532	57	18.247	-62.20886	-57.30411	1503
			CTD121		22	23/01/2015	23:35:00	62	12.532	57	18.247	-62.20886	-57.30411	1514
			CTD122		22	23/01/2015	23:51:00	62	12.442	57	18.33	-62.20736	-57.3055	1268
			CTD123		23	24/01/2015	00:01:00	62	12.442	57	18.33	-62.20736	-57.3055	1278
			CTD124		23	24/01/2015	00:12:00	62	12.394	57	18.376	-62.20657	-57.30626	1198
			CTD125		23	24/01/2015	00:21:00	62	12.394	57	18.376	-62.20657	-57.30626	1254
			CTD126		23	24/01/2015	00:30:00	62	12.343	57	18.422	-62.20572	-57.30704	1303
			CTD127		23	24/01/2015	00:45:00	62	12.343	57	18.422	-62.20572	-57.30704	1275
			CTD128											
JC055	Hook Ridge	10	CTD129	TowYo	23	24/01/2015	01:35:00	62	12.33048	57	18.42012	-62.205508	-57.307002	1428
			CTD130		23	24/01/2015	01:50:00	62	12.3205	57	18.38003	-62.20534167	-57.30633383	1416
			CTD131		23	24/01/2015	02:06:00	62	12.29547	57	18.27826	-62.2049245	-57.30463767	1372
			CTD132		23	24/01/2015	02:19:00	62	12.29553	57	18.27934	-62.2049255	-57.30465567	1353
			CTD133		23	24/01/2015	02:32:00	62	12.26357	57	18.13087	-62.20439283	-57.30218117	1328
			CTD134		23	24/01/2015	02:51:00	62	12.26243	57	18.12938	-62.20437383	-57.30215633	1317
			CTD135		23	24/01/2015	03:05:00	62	12.22637	57	17.97447	-62.20377283	-57.2995745	1297

			CTD136		23	24/01/2015	03:17:00	62	12.22637	57	17.97728	-62.20377283	-57.29962133	1312
			CTD137		23	24/01/2015	03:30:00	62	12.19958	57	17.84536	-62.20332633	-57.29742267	1277
			CTD138		23	24/01/2015	03:42:00	62	12.19958	57	17.84536	-62.20332633	-57.29742267	1276
			CTD139		23	24/01/2015	03:56:00	62	12.16724	57	17.69818	-62.20278733	-57.29496967	1300
			CTD140		23	24/01/2015	04:08:00	62	12.16679	57	17.70057	-62.20277983	-57.2950095	1304
			CTD141		23	24/01/2015	04:23:00	62	12.12998	57	17.53146	-62.20216633	-57.292191	1313
			CTD142		23	24/01/2015	04:45:00	62	12.12995	57	17.53214	-62.20216583	-57.29220233	1310
			CTD143		23	24/01/2015	04:59:00	62	12.089	57	17.355	-62.20148333	-57.28925	1280
			CTD144		23	24/01/2015	05:22:00	62	12.0373	57	17.11	-62.20062167	-57.28516667	1338
			CTD145		23	24/01/2015	05:37:00	62	12	57	16.949	-62.2	-57.28248333	1330
			CTD146		23	24/01/2015	05:53:00	62	12.004	57	16.955	-62.20006667	-57.28258333	1335
			CTD147		23	24/01/2015	06:15:00	62	11.976	57	16.841	-62.1996	-57.28068333	1327
			CTD148		23	24/01/2015	06:35:00	62	11.976	57	16.833	-62.1996	-57.28055	1321
			CTD149		23	24/01/2015	06:48:00	62	11.941	57	16.676	-62.19901667	-57.27793333	1312
			CTD150		23	24/01/2015		62	11.942	57	16.667	-62.19903333	-57.27778333	1305
			CTD151		23	24/01/2015	07:19:00	62	11.909	57	16.532	-62.19848333	-57.27553333	1305
			CTD152		23	24/01/2015	07:32:00	62	11.911	57	16.579	-62.19851667	-57.27631667	1303
			CTD153		23	24/01/2015	07:47:00	62	11.874	57	16.368	-62.1979	-57.2728	1318
			CTD154		23	24/01/2015	08:00:00	62	11.875	57	16.369	-62.19791667	-57.27281667	1320
			CTD155		23	24/01/2015	08:15:00	62	11.8398	57	16.20735	-62.19733	-57.2701225	1340
			CTD156		23	24/01/2015	08:28:00	62	11.84056	57	16.20671	-62.19734267	-57.27011183	1340
			CTD157		23	24/01/2015	08:42:00	62	11.80665	57	16.0531	-62.1967775	-57.26755167	1350
			CTD158		23	24/01/2015	08:56:00	62	11.80566	57	16.056	-62.196761	-57.2676	1355
JC055	Hook Ridge	27	CTD159	TowYo	26	27/01/2015	12:29:00	62	11.3515	57	18.5967	-62.18919167	-57.309945	1356
			CTD160		26	27/01/2015	12:57:00	62	11.413	57	18.541	-62.19021667	-57.30901667	1395
			CTD161		26	27/01/2015	13:11:00	62	11.42	57	18.535	-62.19033333	-57.30891667	1390
			CTD162		26	27/01/2015	13:27:00	62	11.486	57	18.474	-62.19143333	-57.3079	1378
			CTD163		26	27/01/2015	13:40:00	62	11.49	57	18.47	-62.1915	-57.30783333	1373
			CTD164		26	27/01/2015	13:55:00	62	11.557	57	18.409	-62.19261667	-57.30681667	1315
			CTD165		26	27/01/2015	14:10:00	62	11.561	57	18.407	-62.19268333	-57.30678333	1320
			CTD166		26	27/01/2015	14:23:00	62	11.588	57	18.379	-62.19313333	-57.30631667	1287
			CTD167		26	27/01/2015	14:36:00	62	11.63	57	18.241	-62.19383333	-57.30401667	1226
			CTD168		26	27/01/2015	14:53:00	62	11.684	57	18.292	-62.19473333	-57.30486667	1215
			CTD169		26	27/01/2015	15:01:00	62	11.688	57	18.288	-62.1948	-57.3048	1213
			CTD170		26	27/01/2015	15:11:00	62	11.74	57	18.247	-62.19566667	-57.30411667	1236
			CTD171		26	27/01/2015	15:23:00	62	11.742	57	18.238	-62.1957	-57.30396667	1237
			CTD172		26	27/01/2015	15:38:00	62	11.795	57	18.188	-62.19658333	-57.30313333	1222
			CTD173		26	27/01/2015	15:51:00	62	11.798	57	18.185	-62.19663333	-57.30308333	1170
			CTD174		26	27/01/2015	16:11:00	62	11.798	57	18.185	-62.19663333	-57.30308333	1225
			CTD175		26	27/01/2015	16:39:00	62	11.86	57	18.128	-62.19766667	-57.30213333	1121
			CTD176		26	27/01/2015	16:52:00	62	11.916	57	18.076	-62.1986	-57.30126667	1212
			CTD177		26	27/01/2015	17:08:00	62	11.92	57	18.072	-62.19866667	-57.3012	1219
			CTD178		26	27/01/2015	17:19:00	62	11.966	57	18.031	-62.19943333	-57.30051667	1222
			CTD179		26	27/01/2015	17:35:00	62	11.97	57	18.028	-62.1995	-57.30046667	1222
			CTD180		26	27/01/2015	17:48:00	62	12.013	57	17.988	-62.20021667	-57.2998	1230
			CTD181		26	27/01/2015	18:04:00	62	12.022	57	17.977	-62.20036667	-57.29961667	1231

			CTD182		26	27/01/2015	18:15:00	62	12.118	57	17.891	-62.20196667	-57.29818333	1269
			CTD183		26	27/01/2015	18:35:00	62	12.133	57	17.875	-62.20221667	-57.29791667	1289
			CTD184		26	27/01/2015	18:47:00	62	12.134	57	17.875	-62.20223333	-57.29791667	1289
			CTD185		26	27/01/2015	18:48:00	62	12.197	57	17.818	-62.20328333	-57.29696667	1340
			CTD186		26	27/01/2015	19:02:00	62	12.202	57	17.817	-62.20336667	-57.29695	1275
			CTD187		26	27/01/2015	19:14:00	62	12.261	57	17.957	-62.20435	-57.29928333	1299
			CTD188		26	27/01/2015	19:26:00	62	12.263	57	17.755	-62.20438333	-57.29591667	1313
			CTD189		26	27/01/2015	19:38:00	62	12.328	57	17.696	-62.20546667	-57.29493333	1392
			CTD190		26	27/01/2015	19:50:00	62	12.329	57	17.696	-62.20548333	-57.29493333	1392
			CTD191		26	27/01/2015	20:03:00	62	12.392	57	17.631	-62.20653333	-57.29385	1541
JC055	Hook Ridge	28	CTD192	Vertical	26	27/01/2015	21:15:00	62	11.86063	57	17.85879	-62.19767717	-57.2976465	1166
JC055	Bransfield Strait	39	CTD193	Vertical	28	29/01/2015	02:44:00	62	19.98882	57	49.96343	-62.333147	-57.83272383	1955
JC055	Three sisters	41	CTD194	TowYo	28	29/01/2015	16:22:00	62	37.705	59	4.327	-62.62841667	-59.07211667	1460
			CTD195		28	29/01/2015	16:55:00	62	37.702	59	4.347	-62.62836667	-59.07245	1460
			CTD196		28	29/01/2015	17:11:00	62	37.774	59	4.263	-62.62956667	-59.07105	1450
			CTD197		28	29/01/2015		62	37.776	59	4.264	-62.6296	-59.07106667	1450
			CTD198		28	29/01/2015	17:41:00	62	37.848	59	4.177	-62.6308	-59.06961667	1442
			CTD199		28	29/01/2015	17:55:00	62	37.849	59	4.177	-62.63081667	-59.06961667	1445
			CTD200		28	29/01/2015	18:10:00	62	37.925	59	4.09	-62.63208333	-59.06816667	1413
			CTD201		28	29/01/2015	18:25:00	62	37.925	59	4.091	-62.63208333	-59.06818333	1413
			CTD202		28	29/01/2015	18:39:00	62	37.996	59	4.009	-62.63326667	-59.06681667	1361
			CTD203		28	29/01/2015	18:53:00	62	37.996	59	4.009	-62.63326667	-59.06681667	1378
			CTD204		28	29/01/2015	19:07:00	62	38.066	59	3.926	-62.63443333	-59.06543333	
			CTD205		28	29/01/2015	19:19:00	62	38.0699	59	3.9207	-62.63449833	-59.065345	
			CTD206		28	29/01/2015		62	38.1367	59	3.8444	-62.63561167	-59.06407333	1267
			CTD207		28	29/01/2015		62	38.1407	59	3.8386	-62.63567833	-59.06397667	1256
			CTD208		28	29/01/2015		62	38.1957	59	3.7759	-62.636595	-59.06293167	1211
			CTD209		28	29/01/2015		62	38.198	59	3.77208	-62.63663333	-59.062868	1217
			CTD210		28	29/01/2015	20:17:00	62	38.252	59	3.714	-62.63753333	-59.0619	1172
			CTD211		28	29/01/2015	20:27:00	62	38.252	59	3.713	-62.63753333	-59.06188333	1140
			CTD212		28	29/01/2015	20:37:00	62	38.294	59	3.66	-62.63823333	-59.061	1110
			CTD213		28	29/01/2015	20:45:00	62	38.299	59	3.659	-62.63831667	-59.06098333	1094
			CTD214		28	29/01/2015	20:55:00	62	38.339	59	3.6084	-62.63898333	-59.06014	1073
			CTD215		28	29/01/2015	21:03:00	62	38.34	59	3.61204	-62.639	-59.06020067	1073
			CTD216		28	29/01/2015	21:13:00	62	38.385	59	3.55709	-62.63975	-59.05928483	1087
			CTD217		28	29/01/2015	21:26:00	62	38.3877	59	3.55491	-62.639795	-59.0592485	1086
			CTD218		28	29/01/2015	21:33:00	62	38.4237	59	3.50968	-62.640395	-59.05849467	1093
			CTD219		28	29/01/2015	21:42:00	62	38.4293	59	3.50536	-62.64048833	-59.05842267	1097
			CTD220		28	29/01/2015	21:50:00	62	38.4718	59	3.45586	-62.64119667	-59.05759767	1129
			CTD221		28	29/01/2015	21:58:00	62	38.4712	59	3.45914	-62.64118667	-59.05765233	1129
			CTD222		28	29/01/2015	22:06:00	62	38.5134	59	3.40829	-62.64189	-59.05680483	1146
			CTD223		28	29/01/2015	22:15:00	62	38.519	59	3.40097	-62.64198333	-59.05668283	1148
			CTD224		28	29/01/2015	22:25:00	62	38.5576	59	3.36107	-62.64262667	-59.05601783	1158
			CTD225		28	29/01/2015	22:34:00	62	38.5568	59	3.35877	-62.64261333	-59.0559795	1160
			CTD226		28	29/01/2015	22:43:00	62	38.6046	59	3.30554	-62.64341	-59.05509233	1165
			CTD227		28	29/01/2015	22:53:00	62	38.6032	59	3.30842	-62.64338667	-59.05514033	1162

CTD228	28	29/01/2015	23:01:00	62	38.60525	59	3.25271	-62.64342083	-59.05421183	1200
CTD229	28	29/01/2015	23:11:00	62	38.6497	59	3.25449	-62.64416167	-59.0542415	1207
CTD230	28	29/01/2015	23:21:00	62	38.651	59	3.25466	-62.64418333	-59.05424433	1204
CTD231	28	29/01/2015	23:28:00	62	38.651	59	3.25463	-62.64418333	-59.05424383	1200
CTD232	28	29/01/2015	23:36:00	62	38.68	59	3.21	-62.64466667	-59.0535	1258
CTD233	28	29/01/2015	23:45:00	62	38.688	59	3.207	-62.6448	-59.05345	1281
CTD234	28	29/01/2015	23:53:00	62	38.734	59	3.153	-62.64556667	-59.05255	1279
CTD235	29	30/01/2015	00:02:00	62	38.735	59	3.1555	-62.64558333	-59.05259167	1279
CTD236	29	30/01/2015	00:17:00	62	38.8	59	3.079	-62.64666667	-59.05131667	1283
CTD237	29	30/01/2015	00:31:00	62	38.799	59	3.078	-62.64665	-59.0513	1287
CTD238	29	30/01/2015	00:43:00	62	38.862	59	3.007	-62.6477	-59.05011667	1293
CTD239	29	30/01/2015	00:59:00	62	38.863	59	3.007	-62.64771667	-59.05011667	1302
CTD240	29	30/01/2015	01:10:00	62	38.925	59	2.939	-62.64875	-59.04898333	1316
CTD241	29	30/01/2015	01:30:00	62	38.905	59	2.933	-62.64841667	-59.04888333	1316
CTD242	29	30/01/2015	01:41:00	62	38.986	59	2.867	-62.64976667	-59.04778333	1315
CTD243	29	30/01/2015	01:59:00	62	38.985	59	2.866	-62.64975	-59.04776667	1315
CTD244	29	30/01/2015	02:10:00	62	39.043	59	2.803	-62.65071667	-59.04671667	1319
CTD245	29	30/01/2015	02:22:00	62	39.044	59	2.802	-62.65073333	-59.0467	1319
CTD246	29	30/01/2015	02:35:00	62	39.096	59	2.741	-62.6516	-59.04568333	1319
CTD247	29	30/01/2015	02:51:00	62	39.096	59	2.741	-62.6516	-59.04568333	1319
CTD248	29	30/01/2015	03:01:00	62	39.157	59	2.678	-62.65261667	-59.04463333	1313
CTD249	29	30/01/2015	03:11:00	62	39.157	59	2.677	-62.65261667	-59.04461667	1312
CTD250	29	30/01/2015	03:29:00	62	39.211	59	2.605	-62.65351667	-59.04341667	1305
CTD251	29	30/01/2015	03:41:00	62	39.211	59	2.605	-62.65351667	-59.04341667	1294
CTD252	29	30/01/2015	03:55:00	62	39.272	59	2.533	-62.65453333	-59.04221667	1218
CTD253	29	30/01/2015	04:16:00	62	39.275	59	2.532	-62.65458333	-59.0422	1200
CTD254	29	30/01/2015	04:29:00	62	39.341	59	2.457	-62.65568333	-59.04095	1168
CTD255	29	30/01/2015	04:46:00	62	39.399	59	2.459	-62.65665	-59.04098333	1174
CTD256	29	30/01/2015	04:56:00	62	39.392	59	2.398	-62.65653333	-59.03996667	1153
CTD257	29	30/01/2015	05:15:00	62	39.391	59	2.399	-62.65651667	-59.03998333	1140
CTD258	29	30/01/2015	05:24:00	62	39.438	59	2.344	-62.6573	-59.03906667	1156
CTD259	29	30/01/2015	05:27:00	62	39.442	59	2.339	-62.65736667	-59.03898333	1161
CTD260	29	30/01/2015	05:42:00	62	39.442	59	2.343	-62.65736667	-59.03905	1157
CTD261	29	30/01/2015	06:30:00	62	39.5	59	2.271	-62.65833333	-59.03785	1147
CTD262	29	30/01/2015	06:38:00	62	39.459	59	2.215	-62.65765	-59.03691667	1160
CTD263	29	30/01/2015	06:52:00	62	39.555	59	2.209	-62.65925	-59.03681667	1167
CTD264	29	30/01/2015	07:03:00	62	39.6	59	2.152	-62.66	-59.03586667	1191
CTD265	29	30/01/2015	07:19:00	62	39.605	59	2.15	-62.66008333	-59.03583333	1185
CTD266	29	30/01/2015	07:30:00	62	39.6522	59	2.099	-62.66087	-59.03498333	1213
CTD267	29	30/01/2015	07:42:00	62	39.6505	59	2.101	-62.66084167	-59.03501667	1226
CTD268	29	30/01/2015	07:51:00	62	39.701	59	2.043	-62.66168333	-59.03405	1227
CTD269	29	30/01/2015	08:03:00	62	39.701	59	2.041	-62.66168333	-59.03401667	1226
CTD270	29	30/01/2015	08:14:00	62	39.753	59	1.983	-62.66255	-59.03305	1228
CTD271	29	30/01/2015	08:25:00	62	39.755	59	1.982	-62.66258333	-59.03303333	1216
CTD272	29	30/01/2015		62	39.813	59	1.916	-62.66355	-59.03193333	1273
CTD273	29	30/01/2015	08:47:00	62	39.814	59	1.915	-62.66356667	-59.03191667	1268

			CTD274		29	30/01/2015	09:00:00	62	39.8697	59	1.8469	-62.664495	-59.03078167	1330
			CTD275		29	30/01/2015	09:12:00	62	39.8702	59	1.8493	-62.66450333	-59.03082167	1337
			CTD276		29	30/01/2015		62	39.9291	59	1.7799	-62.665485	-59.029665	1382
			CTD277		29	30/01/2015	09:37:00	62	39.9297	59	1.779	-62.665495	-59.02965	1383
			CTD278		29	30/01/2015	09:51:00	62	39.997	59	1.701	-62.66661667	-59.02835	1389
			CTD279		29	30/01/2015	10:03:00	62	39.997	59	1.7006	-62.66661667	-59.02834333	1385
			CTD280		29	30/01/2015	10:15:00	62	40.063	59	1.626	-62.66771667	-59.0271	1392
			CTD281		29	30/01/2015	10:31:00	62	40.064	59	1.625	-62.66773333	-59.02708333	1389
			CTD282		29	30/01/2015	10:44:00	62	40.133	59	1.543	-62.66888333	-59.02571667	1409
			CTD283		29	30/01/2015	11:00:00	62	40.133	59	1.545	-62.66888333	-59.02575	1410
			CTD284		29	30/01/2015	11:15:00	62	40.207	59	1.461	-62.67011667	-59.02435	1412
			CTD285		29	30/01/2015	11:30:00	62	40.208	59	1.46	-62.67013333	-59.02433333	1412
			CTD286		29	30/01/2015	11:45:00	62	40.281	59	1.374	-62.67135	-59.0229	1413
			CTD287		29	30/01/2015	11:58:00	62	40.282	59	1.374	-62.67136667	-59.0229	1414
			CTD288		29	30/01/2015	12:11:00	62	40.3546	59	1.2885	-62.67257667	-59.021475	1415
			CTD289		29	30/01/2015	12:26:00	62	40.3578	59	1.2862	-62.67263	-59.02143667	1416
			CTD290		29	30/01/2015	12:41:00	62	40.4316	59	1.2014	-62.67386	-59.02002333	1419
			CTD291		29	30/01/2015	12:54:00	62	40.4374	59	1.2	-62.67395667	-59.02	1419
			CTD292		29	30/01/2015	13:09:00	62	40.506	59	1.114	-62.6751	-59.01856667	1371
			CTD293		29	30/01/2015	13:21:00	62	40.507	59	1.115	-62.67511667	-59.01858333	1372
			CTD294		29	30/01/2015	13:35:00	62	40.568	59	1.044	-62.67613333	-59.0174	1379
			CTD295		29	30/01/2015	13:45:00	62	40.571	59	1.04	-62.67618333	-59.01733333	1376
			CTD296		29	30/01/2015	13:57:00	62	40.631	59	0.971	-62.67718333	-59.01618333	1380
			CTD297		29	30/01/2015	14:10:00	62	40.632	59	0.97	-62.6772	-59.01616667	1382
			CTD298		29	30/01/2015	14:22:00	62	40.698	59	0.894	-62.6783	-59.0149	1376
			CTD299		29	30/01/2015	14:34:00	62	40.699	59	0.892	-62.67831667	-59.01486667	1375
			CTD300		29	30/01/2015	14:48:00	62	40.777	59	0.803	-62.67961667	-59.01338333	1270
			CTD301		29	30/01/2015	15:03:00	62	40.777	59	0.803	-62.67961667	-59.01338333	1372
			CTD302		29	30/01/2015	15:15:00	62	40.837	59	0.733	-62.68061667	-59.01221667	1350
			CTD303		29	30/01/2015	15:27:00	62	40.837	59	0.733	-62.68061667	-59.01221667	1355
			CTD304		29	30/01/2015	15:38:00	62	40.892	59	0.664	-62.68153333	-59.01106667	1322
			CTD305		29	30/01/2015	15:50:00	62	40.897	59	0.664	-62.68161667	-59.01106667	1325
			CTD306		29	30/01/2015	16:01:00	62	40.954	59	0.599	-62.68256667	-59.00998333	1270
			CTD307		29	30/01/2015	16:12:00	62	40.955	59	0.598	-62.68258333	-59.00996667	1206
			CTD308		29	30/01/2015	16:24:00	62	41.005	59	0.598	-62.68341667	-59.00996667	1209
			CTD309		29	30/01/2015	16:35:00	62	41.006	59	0.539	-62.68343333	-59.00898333	1202
			CTD310		29	30/01/2015	16:44:00	62	41.047	59	0.488	-62.68411667	-59.00813333	1189
			CTD311		29	30/01/2015	16:56:00	62	41.048	59	0.488	-62.68413333	-59.00813333	1189
JC055	Three sisters	43	CTD312	TowYo	30	31/01/2015	02:34:00	62	39.112	59	3.742	-62.65186667	-59.06236667	1253
			CTD313		30	31/01/2015	03:07:00	62	39.112	59	3.741	-62.65186667	-59.06235	1253
			CTD314		30	31/01/2015	03:19:00	62	39.171	59	3.65	-62.65285	-59.06083333	1320
			CTD315		30	31/01/2015	03:36:00	62	39.173	59	3.652	-62.65288333	-59.06086667	1323
			CTD316		30	31/01/2015	03:51:00	62	39.23	59	3.56	-62.65383333	-59.05933333	1317
			CTD317		30	31/01/2015	04:07:00	62	39.232	59	3.563	-62.65386667	-59.05938333	1318
			CTD318		30	31/01/2015	04:22:00	62	39.296	59	3.462	-62.65493333	-59.0577	1310
			CTD319		30	31/01/2015	04:41:00	62	39.296	59	3.458	-62.65493333	-59.05763333	1304

			CTD320		30	31/01/2015	04:53:00	62	39.355	59	3.37	-62.65591667	-59.05616667	1303
			CTD321		30	31/01/2015	05:08:00	62	39.357	59	3.368	-62.65595	-59.05613333	1308
			CTD322		30	31/01/2015	05:21:00	62	39.413	59	3.283	-62.65688333	-59.05471667	1293
			CTD323		30	31/01/2015	05:37:00	62	39.414	59	3.281	-62.6569	-59.05468333	1297
			CTD324		30	31/01/2015	05:51:00	62	39.478	59	3.18	-62.65796667	-59.053	1227
			CTD325		30	31/01/2015	06:05:00	62	39.481	59	3.178	-62.65801667	-59.05296667	1269
			CTD326		30	31/01/2015	06:16:00	62	39.534	59	3.096	-62.6589	-59.0516	1207
			CTD327		30	31/01/2015	06:32:00	62	39.536	59	3.091	-62.65893333	-59.05151667	1211
			CTD328		30	31/01/2015	06:44:00	62	39.586	59	3.018	-62.65976667	-59.0503	1198
			CTD329		30	31/01/2015	07:00:00	62	39.585	59	3.018	-62.65975	-59.0503	1198
			CTD330		30	31/01/2015	07:10:00	62	39.629	59	2.955	-62.66048333	-59.04925	1154
			CTD331		30	31/01/2015	07:23:00	62	39.629	59	2.955	-62.66048333	-59.04925	1152
JC055	Three sisters	44	CTD332	TowYo	30	31/01/2015	08:48:00	62	38.562	59	2.42	-62.6427	-59.04033333	1307
			CTD333		30	31/01/2015	09:22:00	62	38.563	59	2.417	-62.64271667	-59.04028333	1309
			CTD334		30	31/01/2015	09:37:00	62	38.623	59	2.337	-62.64371667	-59.03895	1312
			CTD335		30	31/01/2015	09:52:00	62	38.621	59	2.334	-62.64368333	-59.0389	1311
			CTD336		30	31/01/2015	10:04:00	62	38.679	59	2.253	-62.64465	-59.03755	1259
			CTD337		30	31/01/2015	10:21:00	62	38.681	59	2.251	-62.64468333	-59.03751667	1258
			CTD338		30	31/01/2015		62	38.732	59	2.178	-62.64553333	-59.0363	1247
			CTD339		30	31/01/2015	10:47:00	62	38.734	59	2.177	-62.64556667	-59.03628333	1248
			CTD340		30	31/01/2015	10:59:00	62	38.791	59	2.084	-62.64651667	-59.03473333	1305
			CTD341		30	31/01/2015	11:11:00	62	38.79	59	2.096	-62.6465	-59.03493333	1306
			CTD342		30	31/01/2015	11:22:00	62	38.848	59	2.014	-62.64746667	-59.03356667	1303
			CTD343		30	31/01/2015	11:36:00	62	38.848	59	2.015	-62.64746667	-59.03358333	1302
			CTD344		30	31/01/2015	11:48:00	62	38.909	59	1.928	-62.64848333	-59.03213333	1301
			CTD345		30	31/01/2015	12:01:00	62	38.909	59	1.929	-62.64848333	-59.03215	1300
			CTD346		30	31/01/2015	12:14:00	62	38.969	59	1.84	-62.64948333	-59.03066667	1288
			CTD347		30	31/01/2015	12:25:00	62	38.969	59	1.841	-62.64948333	-59.03068333	1285
			CTD348		30	31/01/2015	12:40:00	62	39.033	59	1.752	-62.65055	-59.0292	1223
			CTD349		30	31/01/2015	12:52:00	62	39.033	59	1.754	-62.65055	-59.02923333	1222
			CTD350		30	31/01/2015	13:00:00	62	39.084	59	1.681	-62.6514	-59.02801667	1139
			CTD351		30	31/01/2015	13:09:00	62	39.084	59	1.675	-62.6514	-59.02791667	1142
			CTD352		30	31/01/2015	13:18:00	62	39.126	59	1.62	-62.6521	-59.027	1077
			CTD353		30	31/01/2015	13:29:00	62	39.126	59	1.62	-62.6521	-59.027	1067
			CTD354		30	31/01/2015	13:37:00	62	39.163	59	1.567	-62.65271667	-59.02611667	1059
			CTD355		30	31/01/2015	13:46:00	62	39.164	59	1.568	-62.65273333	-59.02613333	1060
JC055	Three sisters	45	CTD356	TowYo	30	31/01/2015	14:46:00	62	37.884	58	59.969	-62.6314	-58.99948333	1400
			CTD357		30	31/01/2015	15:23:00	62	37.886	58	59.954	-62.63143333	-58.99923333	1405
			CTD358		30	31/01/2015	15:38:00	62	37.952	58	59.852	-62.63253333	-58.99753333	1398
			CTD359		30	31/01/2015	15:52:00	62	37.951	58	59.854	-62.63251667	-58.99756667	1396
			CTD360		30	31/01/2015	16:08:00	62	38.021	58	59.744	-62.63368333	-58.99573333	1370
			CTD361		30	31/01/2015	16:20:00	62	38.022	58	59.746	-62.6337	-58.99576667	1360
			CTD362		30	31/01/2015	16:36:00	62	38.078	58	59.657	-62.63463333	-58.99428333	1319
			CTD363		30	31/01/2015	16:55:00	62	38.108	58	59.609	-62.63513333	-58.99348333	1308
			CTD364		30	31/01/2015	17:02:00	62	38.138	58	59.563	-62.63563333	-58.99271667	1290
			CTD365		30	31/01/2015	17:15:00	62	38.138	58	59.562	-62.63563333	-58.9927	1295

			CTD366		30	31/01/2015	17:27:00	62	38.196	58	59.474	-62.6366	-58.99123333	1256
			CTD367		30	31/01/2015	17:38:00	62	38.196	58	59.474	-62.6366	-58.99123333	1255
			CTD368		30	31/01/2015	17:50:00	62	38.254	58	59.386	-62.63756667	-58.98976667	1060
			CTD369		30	31/01/2015	18:02:00	62	38.254	58	59.386	-62.63756667	-58.98976667	1208
			CTD370		30	31/01/2015	18:12:00	62	38.3	58	59.312	-62.63833333	-58.98853333	1174
			CTD371		30	31/01/2015	18:23:00	62	38.3	58	59.312	-62.63833333	-58.98853333	1167
			CTD372		30	31/01/2015	18:33:00	62	38.345	58	59.243	-62.63908333	-58.98738333	1091
			CTD373		30	31/01/2015	18:43:00	62	38.345	58	59.243	-62.63908333	-58.98738333	1114
			CTD374		30	31/01/2015	18:53:00	62	38.384	58	59.18	-62.63973333	-58.98633333	1073
			CTD375		30	31/01/2015	19:00:00	62	38.384	58	59.18	-62.63973333	-58.98633333	1070
			CTD376		30	31/01/2015	19:09:00	62	38.427	58	59.112	-62.64045	-58.9852	1080
			CTD377		30	31/01/2015	19:17:00	62	38.427	58	59.116	-62.64045	-58.98526667	1077
			CTD378		30	31/01/2015	19:24:00	62	38.459	58	59.06	-62.64098333	-58.98433333	1017
			CTD379		30	31/01/2015	19:31:00	62	38.458	58	59.066	-62.64096667	-58.98443333	1021
			CTD380		30	31/01/2015	19:39:00	62	38.49	58	59.017	-62.6415	-58.98361667	1006
			CTD381		30	31/01/2015	19:46:00	62	38.491	58	59.012	-62.64151667	-58.98353333	1000
			CTD382		30	31/01/2015	19:53:00	62	38.523	58	58.964	-62.64205	-58.98273333	1039
			CTD383		30	31/01/2015	20:02:00	62	38.531	58	58.949	-62.64218333	-58.98248333	1050
			CTD384		30	31/01/2015	20:10:00	62	38.574	58	58.889	-62.6429	-58.98148333	1101
			CTD385		30	31/01/2015	20:21:00	62	38.5738	58	58.889	-62.64289667	-58.98148333	1103
			CTD386		30	31/01/2015	20:29:00	62	38.616	58	58.816	-62.6436	-58.98026667	1174
			CTD387		30	31/01/2015	20:40:00	62	38.618	58	58.818	-62.64363333	-58.9803	1172
			CTD388		30	31/01/2015	20:51:00	62	38.663	58	58.748	-62.64438333	-58.97913333	1181
			CTD389		30	31/01/2015	21:01:00	62	38.664	58	58.743	-62.6444	-58.97905	1187
			CTD390		30	31/01/2015	21:11:00	62	38.711	58	58.642	-62.64518333	-58.97736667	1224
			CTD391		30	31/01/2015	21:21:00	62	38.71	58	58.674	-62.64516667	-58.9779	1231
			CTD392		30	31/01/2015	21:30:00	62	38.756	58	58.597	-62.64593333	-58.97661667	1293
			CTD393		30	31/01/2015	21:43:00	62	38.759	58	58.596	-62.64598333	-58.9766	1289
JC055	Three sisters	46	CTD394	Vertical	30	31/01/2015	23:09:00	62	40.398	59	5.4951	-62.6733	-59.091585	1248
JC055	Three sisters	52	CTD395	Vertical	32	02/02/2015	07:41:00	62	38.63802	59	0.022	-62.643967	-59.00036667	1064
JC055	Three sisters	53	CTD396	Vertical	32	02/02/2005	09:57:00	62	42.012	59	10.60636	-62.7002	-59.17677267	1273
JC055	Axe	55	CTD397	Vertical	32	02/02/2015	13:29:00	62	48.457	59	40.058	-62.80761667	-59.66763333	658
JC055	Axe	56	CTD398	Vertical	32	02/02/2015	14:42:00	62	48.827	59	41.988	-62.81378333	-59.6998	990
JC055	Axe	57	CTD399	Vertical	32	02/02/2015	16:00:00	62	49.2115	59	43.9322	-62.82019167	-59.73220333	781
JC055	Axe	58	CTD400	Vertical	32	02/02/2015	17:15:00	62	49.579	59	45.877	-62.82631667	-59.76461667	590
JC055	Axe	59	CTD401	Vertical	32	02/02/2015	18:28:00	62	49.957	59	47.768	-62.83261667	-59.79613333	559
JC055	Axe	60	CTD402	Vertical	32	02/02/2015	19:58:00	62	50.2947	59	49.7615	-62.838245	-59.82935833	682
JC055	Axe	61	CTD403	Vertical	32	02/02/2015	21:12:00	62	51.1317	59	53.5702	-62.852195	-59.89283667	554
JC055	Axe	62	CTD404	Vertical	32	02/02/2015	22:33:00	62	51.498	59	55.863	-62.8583	-59.93105	696
JC055	Axe	63	CTD405	Vertical	32	02/02/2015	23:49:00	62	51.8996	59	57.5534	-62.86499333	-59.95922333	825
JC055	Axe	64	CTD406	Vertical	33	03/02/2015	01:10:00	62	52.24598	59	59.38115	-62.87076633	-59.98968583	1018
JC055	Axe	65	CTD407	Vertical	33	03/02/2015	02:12:00	62	53.099	59	58.795	-62.88498333	-59.97991667	680
JC055	Axe	66	CTD408	Vertical	33	03/02/2015	03:28:00	62	52.723	59	56.835	-62.87871667	-59.94725	673
JC055	Axe	67	CTD409	Vertical	33	03/02/2015	04:37:00	62	52.314	59	54.909	-62.8719	-59.91515	659
JC055	Axe	68	CTD410	Vertical	33	03/02/2015	05:58:00	62	51.911	59	52.946	-62.86518333	-59.88243333	660
JC055	Axe	69	CTD411	Vertical	33	03/02/2015	07:14:00	62	51.664	59	51.005	-62.86106667	-59.85008333	582

JC055	Axe	70	CTD412	Vertical	33	03/02/2015	08:14:00	62	52.6975	59	50.314	-62.87829167	-59.83856667	510
JC055	Axe	71	CTD413	Vertical	33	03/02/2015	09:20:00	62	51.95559	59	47.85278	-62.8659265	-59.79754633	474
JC055	Axe	72	CTD414	Vertical	33	03/02/2015	10:12:00	62	51.259	59	49.751	-62.85431667	-59.82918333	597
JC055	Axe	73	CTD415	Vertical	33	03/02/2015	11:33:00	62	50.20579	59	51.60941	-62.83676317	-59.86015683	669
JC055	Axe	74	CTD416	Vertical	33	03/02/2015	12:35:00	62	49.7673	59	52.3361	-62.829455	-59.87226833	384
JC055	Axe	75	CTD417	Vertical	33	03/02/2015	13:42:00	62	49.745	59	52.219	-62.82908333	-59.87031667	606
JC055	Axe	76	CTD418	Vertical	33	03/02/2015	15:16:00	62	50.732	59	51.68	-62.84553333	-59.86133333	687
JC055	Orca Crater	78	CTD419	Vertical	33	03/02/2015	23:00:00	62	25.78359	58	24.16417	-62.4297265	-58.40273617	1087
JC055	Hook Ridge	79	CTD420	Vertical	34	04/02/2015	04:19:00	62	11.964	57	17.468	-62.1994	-57.29113333	1208
JC055	Hook Ridge	80	CTD421	Vertical	34	04/02/2015	09:48:00	62	11.727	57	17.657	-62.19545	-57.29428333	1130
JC055	ESR	82	CTD422	Vertical	37	07/02/2015	19:56:00	59	40.8981	33	6.1812	-59.681635	-33.10302	2584
JC055	E9	83	CTD423	Vertical 1	38	08/02/2015	10:38:00	60	2.5603	29	58.9049	-60.04267167	-29.98174833	2403
JC055	E9	84	CTD424	Vertical 1	38	08/02/2015	14:00:00	60	2.5575	29	58.898	-60.042625	-29.98163333	2401
JC055	E9	85												
JC055	E9	86	CTD425	Vertical	39	09/02/2015	06:04:00	60	2.569	29	58.894	-60.04281667	-29.98156667	2400
JC055	E9	87	CTD426	Vertical	39	09/02/2015	08:53:00	60	62.568	29	58.894	-61.0428	-29.98156667	2398
JC055	E9	88	CTD427	Vertical	39	09/02/2015	13:16:00	60	2.568	29	58.989	-60.0428	-29.98315	2401
JC055	E9	89	CTD428	Vertical	39	09/02/2015	17:45:00	60	2.57	29	58.896	-60.04283333	-29.9816	2399
JC055	Kemp	91	CTD429	Vertical	40	10/02/2015	17:47:00	59	41.68	28	21.08	-59.69466667	-28.35133333	1375
JC055	Kemp	93	CTD430	Vertical	40	10/02/2015	21:30:00	59	41.69	28	21.08	-59.69483333	-28.35133333	1422
JC055	Kemp	95	CTD431	Vertical	41	11/02/2015	21:12:00	59	41.702	28	20.966	-59.69503333	-28.34943333	1350
JC055	Kemp	96	CTD432	Vertical	42	12/02/2015	00:17:00	59	41.684	28	21.092	-59.69473333	-28.35153333	1422
JC055	Kemp	101	CTD433	Vertical	42	12/02/2015	10:36:00	59	41.6828	28	21.104	-59.69471333	-28.35173333	1420
JC055	Adventure	102	CTD434	Vertical	42	12/02/2015	14:22:00	59	42.557	27	50.484	-59.70928333	-27.8414	758
JC055	Adventure	104	CTD436	Vertical	43	13/02/2015	00:47:00	59	43.27032	27	51.42629	-59.721172	-27.85710483	536
JC055	Kemp	105	CTD437	Vertical	43	13/02/2015	03:51:00	59	42	28	19	-59.7	-28.31666667	1586
JC055	Kemp	109	CTD438	Vertical	43	13/02/2015	10:02:00	59	41.686	28	21.085	-59.69476667	-28.35141667	1420
JC055	Kemp	110	CTD439	Vertical	43	13/02/2015	13:16:00	59	41.687	28	21.085	-59.69478333	-28.35141667	1421