JR72 Cruise Report

Late Season Western Core Box Acoustics

PSO – Sharon Grant

6th May 2002 to 19th May 2002

Contents

Introduction

Cruise JR72 was part of a series of Q3 cruises carried out bi-annually for the Variability in the Southern Ocean Project (VSOE) which forms part of the OED (Ocean Ecosystem Dynamics) DYNAMOE Programme. Together with the early season acoustic survey (JR66) its aim was to supplement biological and physical information gathered during the seasons major core programme cruise (JR70) and hence provide an intra-annual componant to the understanding of the South Georgia marine ecosystem. Data obtained by the Simrad EK500 scientific echo-sounder (3 transducers operating at 38, 120 and 200 kHz respectively) during the cruise will be used to calculate mean volume backscattering strength (MVBS) and to estimate zooplankton (primanly krill) biomass. A series of Conductivity Temperature Depth probe (CTD) casts and eXpendable BathyThermographs (XBT) will provide physical oceanography information.

In line with this, the specific aims of the late season acoustic survey were to

- To carry out an acoustic survey within the Biosciences Core Programme western survey area in the austral autumn.
- To carry out accompanying physical environmental measurements.

Additional aims

- To carry out a series of bathymetric surveys of potential bottom mooring sites, for deployment in the 2002/03 season.
- To survey the ER365 long transect.

Plan

Daytime activities

Four pairs of EK500 acoustic transects were carried out along transect lines which make up the western corebox of the major core programme. Each transect was 80 km long and orientated at right angles to the South Georgian shelf. The idealised transect lines can be seen in figure I transecting speed was 10knots, this speed was chosen to be the same as on major core programmes and is a compromise of acoustic and towed vehicle requirements. Because of the chosen ships speed, the length of the transects, the transducer position in the water (6m below the water line) and the diurnal migration patterns of Euphausia superba and other zooplankton, acoustic transects are usually run during daylight hours. Every effort to adhere to this principle was made during JR72, however, because there were only approximately 9 hours between civil dawn and dusk at the latitude of South Georgia at the time of year the survey was carried out, it was impossible to complete both transect pairs in daylight. It was therefore, decided to begin transecting 30 minutes before dawn, thereby being halfway around the pair at local midday and finishing 30 minutes after dusk. Transects were run from west to east against the flow of the prevailing current.

Because of the absence of the towed undulating oceanographic recorder (UOR) during the early and late acoustic surveys, expendable bathythermographs (XBT's) were deployed along each transect to give some idea of temperature structure.

Nighttime activities

Each pair of transects was complimented by a pair of oceanographic stations. These are usually carried out after the end of the corresponding EK00 transect, however, because of late departure from Stanley, the ship arrived at South Georgia during the hours of darkness and the first pair of stations were carried out on the night before the transects were run. Each pair of stations consisted of a shallow ctd cast on the shelf to near bottom (100 - 200m), and one deep, station off shelf to 1000m.

The EM120 swath system was used whenever we were not carrying out EK500 surveys, ie during the night and on passge. It was possible to run both the EM120 and EK500 systems together using the SSU, however, undisireable interference patterns have been seen on the EK500, and in deep water the ping rate of the EK500 is severely reduced so the EM120 was switched off during transects. The EM120 was used successfully to carry out 6 small surveys of bottom topography within the box for future mooring locations see Figure I for locations.

Additional actvities

Another componant of the major core programme cruise are 2 long transects run to the north of South Georgia to coincide with satellite passes. This usually consists of a series of intense biological and physical oceanographic stations and acoustic transects. Manpower constraints on short surveys reduces this run to a single long transect ascoustics run, with xbt deployments at the original station positions to provide physical information. The transect ER365 was chosen as the most interesting of the two carried out on JR70. Because of time constraints it was impossible to start and complete this transect within daylight hours.

Cruise JR72 Narrative

30th June

- Leave BAS HQat 17:00 for 23:59 flight from RAF Brize Norton to Mount Pleasant Falkland Islands

1st May)

- Arrive Ascension island for customary stopover,
- Depart Ascension Island
- Return Ascension Island due to faulty ait intake on Tristar.
- Arrive RAF Travellers Hill bunk-bed city facility.....

2nd May

- Still at Ascension Island - take trip up Green Moutain

3rd May

- Again still participating in the delights of Ascension Island - Walk to George Town to see the sights

4th May

- Surprisingly enough still at Ascension Island - Walk to Devils Riding school to collect devils eyeballs and obsidian

5th May

- 04:00 leave Acension Island, arrvive Stanley 10:00, 2 and a half days late. Hurried crew change Jerry Burgan's crew depart 17:00

6th May

- Sail from Port Stanley 12:00, after safety briefs and boat training for two new deck officers.
- CTD test off the Falklands shelf goes well, unlike XBT test which shows up a broken connection in cable. Fixed and good to go.

7th May

- On Passage to South Georgia past Shag rocks running EM120 and EK500. Saw a massive krill swarm just on the shelf edge to the east of Shag rocks and lo there where also shed loads of whales blowing and fishing boats.

8th May

- Arrive at South Georgia. Decided to try and do as much during the nights as possible in case of further bad weather
- First CTD station W1.2N at 22:30, carried out okay but weather worsening so have had to abandon the second planned ctd tonight and head to start of transect W1.1 at 4 knots.

9th May

- Began transect W1.1 at 06:40 local (09:40 GMT) weather still a little bouncy and so EK500 a little noisy, but completed fine
- CTD at W2.2N begun this evening but aborted during the upcast due a problem with the ctd cable. All sorted before next station

10th May

- Station W1.2S completed in early hours
- Swath passes for Doug Bone and the BSD moorings at D1 and D2 completed.
- CTD station W2.2S
- Transect pair W2.1 & W2.2 started at 09:41, fineshed at 19:14

11th May

- Moorings swath at S1 and S2 completed during early hours of the morning.
- CTD stations at W3.2S completed
- Transects W2.1 and W2.2 completed, saw South Georgia in all it's glory for the first time today
- CTD at W3.2N completed.
- Moorins swath at D3 and D4 done.

12th May

- Transects W4.1 & W4.2 completed today but speed fluctuated throughout the day due to the wind, so again EK500 data may be messy.
- Also started the long transect ER365 going northwards at 22:00. It's in the dark but have not got enough time to hang around and wait till daylight so continue on doing xbts at 15km spacings.

13th May

- ER365 transect completed at 14:30 ish now heading north to deploy the 3 POL GRACE moorings and onto Montevideo where we are due on the 19th. Only one day late despite the late start. This due to favourable weather allowing a little speed to gain on passage to South Georgia and between transect starts. Cheers Chris.

19th May

- Arrive Montevideo, return flight on the 20th May due to arrive Heathrow 13:00!

EK500 Methods Acoustic Report

Methods

Data was collected from all three hull mounted transducers (38, 120 and 200kHz). Setting were downloaded from the config file 270102.txt (See appendix I) as done on both JR66 and JR70. Due to restrictions of time no calibration was carried out, therefore it will be important to use oceanographic information collected at the time to extrapolate from calibrations that were carried out on JR70. The addition of data logged from the EA500 at 12 kHz will provide a powerful supplement to the data from this cruise. It was important to maintain the ship's speed at 10 knots and no faster during transecting to optimise distance between pings, this was generally achieved except where winds where very strong. The orientation of the transects perpendicular to the South Georgia shelf, tries to allow good comparison of on-shelf and off-shelf areas and the west-east occupation of the transects takes account of the direction of the prevailing currents (ie east-west).

Data logging

EK500 and WS_1 and WS_2 clocks were set manually with reference to the ship's master clock each morning.

Acoustic data were logged exclusively to a PC using Echolog_EK (version 2.00.21). Data were logged to EK500 Workstation 1 (EK500_WS_1, IP address 129.177.031.009, Internal IP port 2863, Ethernet address 00-01-02-a3-3d-27). The /Ethernet Com Menu settings needed to achieve this are given in Appendix 1. Data acquisition rate was maintained between 1.8 and 1.9 KB/s. Since the data was not being logged simultaneously to bsumlsb. EK500 settings were downloaded daily using Echoconfig_EK (version 2.01.07, listening for EK500_WS_1 IP port 2863, writing to EK500 IP port 2000) to, for example, D:\sonardata\settings dumps\January7_2001.txt and compared to a master setting using the *diff* command under Cygwin (could also use *fc* under dos) in order to check for setting changes (as always this procedure would fail to detect a change in sound speed).

While Workstation 1 was dedicated to logging/EK500 control, data were viewed live and post processed on Workstation 2 using Echoview (version 2.00.106). The D: directory on WS_1 was shared as G: on WS_2 to facilitate live viewing. Echolog_EK and Echoconfig_EK were installed on EK500_WS_2 so that in the event of a crash on EK500_WS_1 logging could be swapped to WS_2 quickly and data loss would be minimal. In this event the remote IP and ethernet addresses in the EK500 would have to be changed to those of WS_2 (IP address 129.177.031.010, Ethernet address 00-01-02-14-53-d6).

Data handling

Each morning .ek5 files from the previous day were copied to a day specific directory on D:/Log Data on EK500_WS_1 and also to D:\jr57\ek5 on EK500_WS_2. Once sufficient data had been accumulated (approx. 3 or 4 days) two duplicate CDs of these data were burnt.

Oceanographic Sampling

Conductivity-Temperature-Depth (CTD)

Introduction

For JR72, a Conductivity-Temperature-Depth (CTD) probe was used to vertically profile the temperature and salinity of the water column. Associated instrumentation profiled the light transmission and fluorescence of the water column, and captured up to twelve discrete samples.

Equipment:

- The CTD system used was the BAS Sea-Bird 911 plus (serial number 09P15759-0480). The CTD was fitted with seven scientific sensors:-
- Primary temperature (SBE 3 plus, serial number T32191, calibrated 22-6-2000)
- Primary conductivity (SBE 4C, serial number C41913, calibrated 22-6-2000)
- Pressure (series 410K-105 Digiquartz pressure transducer, serial no. 067241, calibrated 28-6-1999)
- Secondary temperature (SBE 3 plus, serial number T32307, calibrated 22-6-2000)
- Secondary conductivity (SBE 4C, serial number C41912, calibrated 22-6-2000)
- Transmissometer (serial number cdt-396dr, calibrated 17-10-2000)
- Fluorometer (Chelsea Instruments Aquatracka Mk.III, serial number 088216, calibrated 7-1-2000)
-

The temperature and conductivity sensors were connected to two SBE 5 T submersible pumps (serial numbers 051813 and 051807). The CTD was connected to an SBE 32, 12 position carousel water sampler carrying twelve 10 litre Niskins. In addition to these, an altimeter was fitted to permit accurate near-seabed approach.

Table I : List of CTD deployments.

Event No	*Station name*	*Date*	*Time (GMT)*	*Position*	*Bottle depths (m)*
001	Test	06 May 2002	19:22	51 43.94W; 56 54.07S	7 @ 350m ; 5 @ 200m
004	W1.2N	08 May 2002	22:33	53 29,66W; 39 14.69S	1000, 900, 800, 700, 600, 500, 400, 300, 200, 100, 50, 20
012	W2.2N	09 May 2002	22:13	53 25.91W; 38 41.74S	1000, 900, 800, 700, 600 (aborted after this)
013	W1.2S	10 May 2002	05:33	53 50.91W; 39 08.72S	270, 250, 200, 150, 100, 80, 70, 60, 50, 40, 20, 10
022	W2.2S	10 May 2002	21:11	53 47.09W; 38 35.03S	196, 175, 175, 150, 150, 100, 100, 80, 60, 40, 20, 10
023	W3.2S	11 May 2002	02:30	53 42.89W; 37 57.73S	125, 120, 120, 80, 80, 60, 60, 40, 40, 20, 20, 10
032	W3.2N	11 May 2002	21:01	53 21.67W; 38 04.98S	1000, 900, 800, 700, 600, 500, 400, 300, 200, 100, 50, 20

Data Acquisition and Initial Processing

SBE 911

During JR72, the CTD package was deployed in a similar fashion to that used on previous Biosciences cruises (see JR70 cruise report for full details) from the midship's gantry. For on shelf stations, the target depth was the bottom depth minus 10 m, and the off-shelf station target depth was 1000 m. The Niskin bottles were closed only during the upcast to allow a provide a continuous downcast profile for processing. Bottle closure depths are listed in Table I.

Data from the CTD system were logged via an SBE 11 plus deck unit to a 486 Viglen PC running version 4.226 of Seasoft Data Acquisition Software (Sea-Bird Electronics Inc.). The initial module used for data acquisition was the *Seasave* program. For JR72, the data average rate was set to 1, producing 24 Hz raw data (the maximum permitted with the system). Four files are generated by *Seasave* per CTD cast. These are as follows, where NNN is the event number of the cast:-

72ctdNNN.dat (raw data file)

72ctdNNN.con (configuration data, generally a copy of the input configuration file jr57.con)

72ctdNNN.hdr (header file containing sensor information)

72ctdNNN.bl (file with data cycle numbers for bottle closures)

Following *Seasave*, the SBE program *Datcnv* was run to calibrate the data, and convert to ASCII output. This file was named as 72ctdNNN.cnv. Subsequently, the SBE program *Celltm* was run, so as to correct for thermal mass effects in the measured conductivity. The resultant file was named as 72cnvNNN.cnv.

Following this initial processing, data were copied across to the network drive for backing up purposes. No further pstar/unix processing was carried out during JR72.

Discrete Salinity Samples

At each CTD station, all twelve Niskin bottles were closed and sampled for salinity analysis. The primary purpose of this is to calibrate the salinity measurements made by the CTD sensors. Samples were drawn into 200 ml medicine flats, each having been rinsed three times prior to filling. The bottles were filled to about three quarters of maximum, to allow expansion of the (cold) samples, and to allow effective mixing upon shaking of the samples prior to analysis. The rim of each bottle was wiped with a tissue to prevent salt crystals forming upon evaporation, and a plastic seal inserted into the bottle neck to prevent water loss. A bakelite cap was screwed down to keep the insert in place. The bottles and crates were numbered and colour coded for reference.

Once a crate of samples was full (every two CTD casts), the crate was moved into the *James Clark Ross*'s Chemistry lab, where the BAS Guildline Autosal was (model 8400B; serial number 63360) . The samples were left for a minimum of 24 hours to enable their temperatures to equalise with the laboratory temperature (around 19EC). The samples were then analysed on the 8400B, with measurements being made using Ocean Scientific standards P140 (K15 = 0.99991, date of preparation = 10 Nov 2000). One ampoule of standard was

used per twelve samples. The 8400B cell temperature was set to 21EC for the duration of JR72.

Problems / Recommendations

Because of the sensitive nature of the Autosal used by BAS it is very important to place it in a room where a constant temperature can be mantained to within at least a degree. To this end it is usually placed in either the Micro/Radiation lab or the Biology lab. For JR72 it was placed in the Chemistry lab, a site of contention between oceanographers. However, it was found on this cruise that if both the external rollar door and internal water tight doors to the water bottle annex remained shut during processing than a constant temperature could be maintained. Whilst this may not be practicable on longer cruises where ctd stops are frequent, it proves adequate for the purposes of JR72.
Potentially the most worrying problem with the AutoSal was that once a sample was being recorded the output value did not appear to settle and the value continued to drift considerably even after waiting a minute as protocol demands. For example:
Inital reading taken as soon as the machine was switched to read was: 1.99912, 1 minute later it was: 1.99963; 2 minutes later: 1.99966; 3 minutes later: 1.99963.
It therefore seems imperitive that all readings are taken at the same time after switching to Read. The ETS engineer was informed of this and has flagged it for discussion with the manufacturers.
It was also noted that there a few bubbles attached to the probes within the cell. Again this was mentioned the ETS engineer on board. Lastly with regard to the Autosal there, was a large amount of algae growing inside the case (not in the cell), whilst this may not be a problem, it may be wise to use an algaecide regularly as suggested in the manual.

Oceanlogger

Instrumentation

The oceanlogger system onboard the *James Clark Ross* was operated from leaving Stanley until the day after the end of transect ER365. See cruise report from JR70 for details of the system.

Salinity calibration

Discrete samples for salinity analysis were drawn every couple of hours during the transects from the outflow of the thermosalinograph in the prep. lab. These were taken in 200 ml medicine flats, sealed with plastic inserts, and stored for 24 hours to allow their temperatures to equalise with laboratory temperature. Subsequently, they were analysed following an identical procedure to samples drawn for CTD calibration (see CTD cruise report).
No unix processing was carried out during JR72.

The new oceanlogger worked reliable for time used, the only problems occured during rough weather when the pumps would switch off due to cavitation. This is unavoidable.

Depth Echosounding

Instumentation
The *James Clark Ross* has a hull-mounted Simrad EA500 Hydrographic Echosounder, was run continously throughout JR72.During transecting it was set to ping in active mode but it calculated it timing from the EK500. Whilst off transect it was set to passive mode and used the centre beam of the EM120 as it's return.This data stream features uncorrected depth, i.e. it produces bottom depth calculated assuming a mean vertical sound velocity of 1500 ms^{-1}, which needs to be corrected before use.

Expendable Bathythermographs (XBTs)

Introduction

XBTs where used in place of the UOR which is used on the main cruise (JR70) on the transects at roughly 1-2 hourly intervals and on the ER365 transect at 15km intervals (approx every 50 minutes at 10knots). We carried out 23 T7 drops and 37 T5 drops Table 2 shows details of these. There were a few bad/failed drops where excessive spiking or clearly unrealistic values were logged. These were generally identified mid-drop, with the drop aborted and restarted with a new probe. These were minimal.

Event no	*Date (JDAY)*	*Time*	*Lat*	*Lon*	*Failed?*
002	126	20:49	51 46.52	56 36.81	Y
	126				Y
	126	21:00	51 47.08	56 32.84	Y
	126	21:03	51 47.25	56 31.83	Y
	126	20:07			Y
003	127	00:00	51 55.204	55 28.219	N
005	129	09:47	53 22.39	39 35.68	N
006	129	11:57	53 42.88	39 26.18	N
007	129	13:04	53 54.25	39 23.54	N
008	129	13:59	54 03.1	39.23.54	N
009	129	15:16	54 01.03	39 05.45	N
010	129	16:10	53 51.33	39 08.39	N
011	129	19:49	53 17	38 18	N
014	130	09:41	53 59	38 49	N
015	130	11:30	53 42.22	38 54	N
016	130	14:08	53 16.79	39 2.33	Y
017	130	14:12	53 16.67	39 01.27	N
018	130	15:06	53 15.72	38 44.954	N
019	130	16:16	53 26.843	38 35.406	N
020	130	18:01	53 45.45	38 41.65	N
021	130	19:18	53 58.09	38 31.528	N
024	131	09:33	53 13.65	38 26.836	N
025	132	11:20	53 30.38	38 21.369	N
026	132	13:13	53 49.944	38 14.913	N

027	132	13:29	53 52.255	38 14.203	N
028	132	15:03	53 52.223	37 54.743	N
029	132	17:17	53 31.634	38 1.655	N
030	132	19:24	53 11.185	38 8.391	Y
031	132	19:32	53 10.115	38 8.706	N
033	133	10:56	53 41.69	37 47.22	Y
034	133	11:31	53 36.87	37 49.16	N
035	133	12:50	53 23.46	35 53.31	N
036	133	14:29	53 9.45	37 58.00	N
037	133	14:59	53 8.68	37 50.00	N
038	133	16:45	53 25.27	37 44.73	N
039	133	18:08	53 38.87	37 39.79	N
040	133	19:24	53 51.53	37 35.49	N
041	133	22:06	53 42.89	36 47.68	N
042	133	22:52	53 35.51	36 51.44	N
043	133	23:45	53 27.67	36 55.46	N
044	134	00:38	53 18.62	37 0.01	N
045	134	01:31	53 11.89	37 3.24	Y
046	134	01:43			Y
047	134	01:49	53 9.53	37 4.479	N
048	134	02:20	53 4.269	37 9.994	Y
049	134	02:28	53 2.635	37 7.894	N
050	134	03:17	52 55.807	37 11.096	N
051	134	04:07	52 48.248	37 14.959	N
052	134	04:14	52 47.212	37 15.475	N
053	134	04:59	52 40.72	37 18.514	N
054	134	05:50	52 33.354	37 22.002	N
055	134	06:44	52 25.479	37 25.797	Y
056	134	06:49	52 24.694	37 26.206	N
057	134	07:40	52 17.107	37 29.979	N
058	134	07:44	52 16.402	37 30.312	N
059	134	08:28	52 9.87	37 33.43	N
060	134	09:22	52 1.73	37 37.30	N
061	134	10:11	51 54.24	37 40.88	N
062	134	10:59	51 46.62	37 44.40	N
063	134	11:44	51 39.11	37 47.98	N

Instumentation

Sippican T5 and T7 probes were used, having been provided by the U.K. Hydrographic Office, Taunton. Data were logged by a Viglen IBM-type 486 PC running the Sippican WinMk12 software. Once a successful drop had been performed, data were transferred using a floppy disc to the network for backing-up.

Processing in Unix

No unix processing was carried out during JR72.

Problems / Recommendations

Generally the launcher is fixed to the port aft quater. Hoever, as was found on JR70 and JR72 this is sometimes not appropriate and it is necessary to deploy from the starboard aft quarter (froexample when there is a strong wind coming from the port side. Having a fixed launcher only on the port side makes this dificult and as was suggested 2 years ago a good idea would be to have two launchers and a moveable gun.

Navigation

Introduction

Data from five of the six scientific navigational instruments on RRS *JamesClarkRoss* were logged daily. The instruments used were:

- the Trimble 4000 GPS receiver,
- the Sperry Mk 37 Model D Gyrocompass
- the Ashtec ADU-2 GPS receiver
- the GLONASS GPS (Ashtech GG24) receiver,
- and the Chernikeeff Aquaprobe Mk V Electromagnetic log.

The Sperry SRD 421 Doppler log was not operational for the duration of the cruise. In addition to these instruments, a Racal Satcom received GPS SV range correction data via INMARSAT B: this was passed to the Trimble and other GPS receivers to allow them to operate in differential mode.

For problems and recommendations regarding these systems please refer to the JR70 report

ETS Report

Instruments

Misc.

Instrument	*Used?*	*Comments*
XBT(aft UIC)	Yes	On 6/5/02, intermittent connection noticed (probe away not starting logging, wiggling cable caused 'probe away' signal). Cable at launcher end cut back and re-wired. Braid corroded for long length of cable; need new cable.
Scintillation counter (in prep lab)	No	
Salinometer	Yes	Slow continuous drift on Lsdigit. Put back onto standby for a couple of minutes, reading has returned to original when read is selected again - indicates reading is invasive. Bubbles noticed to have formed on conductivity probe elements - de-polarisation problem?
DWNM	No	
Magnetometer STCM1	Yes	
Magnetometer STCM2	Yes	
ETS workshop PC	Yes	

GPS

Instrument	*Used?*	*Comments*
DGPSTrimble 4000 DS(bridge - port side)	Yes	
DGPSAshtec ADU2(bridge - port side)	Yes	Occasionally hangs - needs reset switch depressing.
DGPSAshtec Glonass GG24(bridge - starboard side)	Yes	

Acoustics

Instrument	*Used?*	*Comments*
ADCP	**Yes**	
PES	**No**	
EM120	**Yes**	**Ok. Various software bugs - see ITS**
Alden plotter		
TOPAS	**No**	
EPC plotter	**No**	
EK500	**Yes**	**Initial problems with logging PCs. Found most reliable setup is for workstation 1 on Echolog and workstation 2 on Echoview.**

HP deskjet1	**No**	
HP deskjet 2	**No**	**Coke found to have been spilled rather nicely all over paper tray (from some previous cruise) causing paper not to feed. Cleaned and ok now.**
SSU	**Yes**	**Wanted EM, EA and EK. In shallow waters, can put all in same group pinging at same time (with EK on a fixed interval of 2.5sec). In deeper water, EK was set to master (normal) with an interval of 2.5sec, and EM & EA in same group with calculated ping intervals. For important EK transects, EM was turned off to reduce interference and EA&EK put in same group (EK on 2.5sec interval).**
SVP S/N3298	**No**	
SVP S/N3314	**No**	
10KHz pinger	**No**	
MORS 10KHz transponder	**No**	

ITS report

SCS

Overview

The SCS data logging system has performed well throughout the entire cruise. During initial testing at FIPASS the machine locked up on several occasions, the problem was traced to a faulty digi I/O board. Following replacement of this with a spare, the system has been trouble free. Arrangements have been made with Cambridge to provide a replacement at the start of JR58 (Autosub cruise)

Configuration

The SCS instrument configuration file has been modified to allow the net Monitor to be logged.

Details are as follows:

- Sensor type = NMEA Parent Com port = COM 12
- Baud rate = 9600 Record Size = 255
- Termination = CR(13) Sentence Label = $NETMON
- Variables being logged are flow, flow2, depth, angle, cond, spare, par, fluor, alt, temp, net1, net2, cmd,type

The SCS system has been used to redistribute GPS signals to the EK500 and pc in the UIC room running RTMS (Real Time Mapping System).
This is the only change within the SCS system. For further information about the SCS system/ instrumentation setup and configuration please refer to the docu,ment "SCS System Documentation", BAS reference No. TS0018 (August 2000).

Unix Systems

Overview

JRUF the central UNIX box was unable to print, share or mount file systems after mains power failure on the 10th December.

The problem was traced to an incorrect startup script for the DNS (Domain Name Service) server. Modification to this and subsequent restrat of the script soon resolved the problems.

Netware Server & PC's

Overview

The netware server and GroupWise email system has functioned well throughout the entire cruise. Sigmaplot 2000 has been installed on all pc's in the dataprep room. Several users have

raised concerns about the reliability of Quattro pro, it seems to constantly crash. ITS will investigate to see if an update from Corel is available to hopefully resolve problems. Sophos antivirus has been installed on the Netware server to scan files on a daily basis. The Sophos client has been nstalled on all Windows NT machines throughout the vessel.

Data Management

Overview

As on previous Bioscience cruises data collected from underway systems is logged to the ships dedicated logging system (SCS). This data is stored on tape and backup daily by ITS in addition to this two other data systems are implemented. Data is written in the old ships data format (Level C) for in corporation in the system used as BAS HQ Cambridge as well as in pesto ASCII format for inclusion in the Biosciences divisional data storage area.
Data collected in this manner on JR72 includes; the oceanlogger, the ADCP, GPS and navigation data.

Cruise Data

The cruise data is held in a general Quattro Pro spreadsheet called Event Log. The event log contains information on station events in the following fields, and is updated daily from the ships scientific log. The scientific log is held on the bridge and only the bridge issue event numbers. This limits the chance of multiple numbers being issued to the same event.
The Excel event log also contains two pages, the first shows the event log and hte second the transect log.

Appendices

Event Log

Event number	*Event type*	*Start Jday*	*Start date (GMT)*	*Start time (GMT)*	*Start T2POS yydddhhmmss*	*End Jday*	*End date (GMT)*	*End time (GMT)*	*End T2POS yydddhhmmss*	*Local time difference*	*Station name*	*Comments*
1	CTD	126	06-May-02	19:25	020012619:2500					4	TEST	Test CTD
2	XBT	126	06-May-02	19:25	020012619:2500					4	TEST	Failed test XBT launcher malfunction
3	XBT	127	07-May-02	00:01	020012700:0100					4	TEST	Test XBT
4	CTD	128	08-May-02	22:33	020012822:3300	128	08-May-02	23:45	020012823:4500	4	W1.2N	
T1	EK5	129	09-May-02	09:40	020012909:4000	129	09-May-02	14:00	020012914:0000	4		
5	XBT	129	09-May-02	09:50	020012909:5000							
6	XBT	129	09-May-02	12:00	020012912:0000							
7	XBT	129	09-May-02	13:02	020012913:0200							
8	XBT	129	09-May-02	14:00	020012914:0000							
T2	EK5	129	09-May-02	15:00	020012915:0000	129	09-May-02	19:42	020012919:4200	4		
9	XBT	129	09-May-02	15:15	020012915:1500							
10	XBT	129	09-May-02	16:18	020012916:1800							
11	XBT	129	09-May-02	19:42	020012919:4200							
12	CTD	129	09-May-02	22:10	020012922:1000	129	09-May-02	23:11	020012923:1100	4	W2.2N	
13	CTD	130	10-May-02	05:28	020013005:2800	130	10-May-02	06:12	020013006:1200	4	W1.2S	
T3	EK5	130	10-May-02	09:41	020013009:4100	130	10-May-02	14:06	020013014:0600	4		
14	XBT	130	10-May-02	09:41	020013009:4100							
15	XBT	130	10-May-02	11:30	020013011:3000							
16	XBT	130	10-May-02	14:06	020013014:0600							
17	XBT	130	10-May-02	14:17	020013014:1700							
18	XBT	130	10-May-02	15:00	020013015:0000							
T4	EK5	130	10-May-02	15:00	020013015:0000	130	10-May-02	19:14	020013019:1400	4		
19	XBT	130	10-May-02	16:16	020013016:1600							
20	XBT	130	10-May-02	18:05	020013018:0500							
21	XBT	130	10-May-02	19:14	020013019:1400							
22	CTD	130	10-May-02	21:11	020013021:1100	130	10-May-02	21:42	020013021:4200	4	W2.2S	
23	CTD	131	11-May-02	02:20	020013102:2000	131	11-May-02	02:47	020013102:4700	4	W3.2S	
24	EK5	131	11-May-02	09:38	020013109:3800	131	11-May-02	19:28	020013119:2800	4		
25	XBT	131	11-May-02	11:20	020013111:2000							

26	XBT	131	11-May-02	13:16	020013113:1600							
27	XBT	131	11-May-02	13:30	020013113:3000							
28	XBT	131	11-May-02	15:05	020013115:0500							
29	XBT	131	11-May-02	17:17	020013117:1700							
30	XBT	131	11-May-02	19:28	020013119:2800							
31	XBT	131	11-May-02	10:56	020013110:5600							
32	CTD	131	11-May-02	21:02	020013121:0200	131	11-May-02	22:13	020013122:1300	4	W3.2N	
T5	EK5	132	12-May-02	09:40	020013209:4000	132	12-May-02	15:00	020013215:0000	4		
33	XBT	132	12-May-02	10:55	020013210:5500							
34	XBT	132	12-May-02	11:30	020013211:3000							
35	XBT	132	12-May-02	12:49	020013212:4900							
36	XBT	132	12-May-02	14:28	020013214:2800							
37	XBT	132	12-May-02	15:03	020013215:0300							
T6	EK5	132	12-May-02		020013200	132	12-May-02	19:25	020013219:2500	4		
38	XBT	132	12-May-02	16:42	020013216:4200							
39	XBT	132	12-May-02	18:09	020013218:0900							
40	XBT	132	12-May-02	19:24	020013219:2400							
41	XBT	132	12-May-02	22:07	020013222:0700						ERS365:1	
42	XBT	132	12-May-02	22:58	020013222:5800						ERS365:2	
43	XBT	132	12-May-02	23:45	020013223:4500						ERS365:3	
44	XBT	133	13-May-02	00:38	020013300:3800						ERS365:4	
45	XBT	133	13-May-02	01:30	020013301:3000						ERS365:5	
46	XBT	133	13-May-02	01:43	020013301:4300						ERS365:6	
47	XBT	133	13-May-02	02:23	020013302:2300						ERS365:7	
48	XBT	133	13-May-02	02:29	020013302:2900						ERS365:8	
49	XBT	133	13-May-02	02:42	020013302:4200						ERS365:9	
50	XBT	133	13-May-02	03:17	020013303:1700						ERS365:10	
51	XBT	133	13-May-02	04:08	020013304:0800						ERS365:11	
52	XBT	133	13-May-02	04:15	020013304:1500						ERS365:12	
53	XBT	133	13-May-02	05:00	020013305:0000						ERS365:13	
54	XBT	133	13-May-02	05:54	020013305:5400						ERS365:14	
55	XBT	133	13-May-02	06:50	020013306:5000						ERS365:15	
56	XBT	133	13-May-02	06:52	020013306:5200							
57	XBT	133	13-May-02	07:42	020013307:4200							
58	XBT	133	13-May-02	07:48	020013307:4800							
59	XBT	133	13-May-	08:34	020013308:3400							

			02									
60	XBT	133	13-May-02	09:24	020013309:2400							
61	XBT	133	13-May-02	10:14	020013310:1400							
62	XBT	133	13-May-02	11:05	020013311:0500							
63	XBT	133	13-May-02	11:49	020013311:4900							

Transect Log

Transect Number	*Start point (name)*	*Start date*	*Start time (GMT)*	*Start latitude decimal degrees*	*Start longitude decimal degrees*	*Heading*	*End point (name)*	*End date*	*End time (GMT)*	*End latitude decimal degrees*	*End longitude decimal degrees*	*Comments*
T1	CTD	05/05/1900	06-May-02	19:25	-37.80364					4	TEST	Test CTD
2	XBT	05/05/1900	06-May-02	19:25	-37.80364					4	TEST	Failed test XBT launcher malfunction
3	XBT	06/05/1900	07-May-02	00:01	-37.80364					4	TEST	start of first transect of cruise ! 10.0 - 11.0 knots
4	CTD	07/05/1900	08-May-02	22:33	-37.80364	07/05/1900	08-May-02	23:45	-37.80364	4	W1.2N	
T1	EK5	08/05/1900	09-May-02	09:40	-37.80364	129	09-May-02	14:00	-37.80364	4		
5	XBT	08/05/1900	09-May-02	09:50	-37.80364							
6	XBT	08/05/1900	09-May-02	12:00	-37.80364							
7	XBT	08/05/1900	09-May-02	13:02	-37.80364							
8	XBT	08/05/1900	09-May-02	14:00	-37.80364							
T2	EK5	08/05/1900	09-May-02	15:00	-37.80364	129	09-May-02	19:42	-37.80364	4		
9	XBT	08/05/1900	09-May-02	15:15	-37.80364							
10	XBT	08/05/1900	09-May-02	16:18	-37.80364							
11	XBT	08/05/1900	09-May-02	19:42	-37.80364							
12	CTD	08/05/1900	09-May-02	22:10	-37.80364	129	09-May-02	23:11	-37.80364	4	W2.2N	
13	CTD	09/05/1900	10-May-02	05:28	-37.80364	130	10-May-02	06:12	-37.80364	4	W1.2S	
T3	EK5	09/05/1900	10-May-02	09:41	-37.80364	130	10-May-02	14:06	-37.80364	4		
14	XBT	09/05/1900	10-May-02	09:41	-37.80364							
15	XBT	09/05/1900	10-May-02	11:30	-37.80364							
16	XBT	09/05/1900	10-May-02	14:06	-37.80364							
17	XBT	09/05/1900	10-May-02	14:17	-37.80364							
18	XBT	09/05/1900	10-May-02	15:00	-37.80364							
T4	EK5	09/05/1900	10-May-02	15:00	-37.80364	130	10-May-02	19:14	-37.80364	4		
19	XBT	09/05/1900	10-May-02	16:16	-37.80364							
20	XBT	09/05/1900	10-May-02	18:05	-37.80364							
21	XBT	09/05/1900	10-May-02	19:14	-37.80364							
22	CTD	09/05/1900	10-May-02	21:11	-37.80364	130	10-May-02	21:42	-37.80364	4	W2.2S	
23	CTD	10/05/1900	11-May-02	02:20	-37.80364	131	11-May-02	02:47	-37.80364	4	W3.2S	
24	EK5	10/05/1900	11-May-02	09:38	-37.80364	131	11-May-02	19:28	-37.80364	4		
25	XBT	10/05/1900	11-May-02	11:20	-37.80364							
26	XBT	10/05/1900	11-May-02	13:16	-37.80364							
27	XBT	10/05/1900	11-May-02	13:30	-37.80364							

28	XBT	10/05/1900	11-May-02	15:05	-37.80364							
29	XBT	10/05/1900	11-May-02	17:17	-37.80364							
30	XBT	10/05/1900	11-May-02	19:28	-37.80364							
31	XBT	10/05/1900	11-May-02	10:56	-37.80364							
32	CTD	10/05/1900	11-May-02	21:02	-37.80364	131	11-May-02	22:13	-37.803644		W3.2N	
T5	EK5	11/05/1900	12-May-02	09:40	-37.80364	132	12-May-02	15:00	-37.803644			
33	XBT	11/05/1900	12-May-02	10:55	-37.80364							
34	XBT	11/05/1900	12-May-02	11:30	-37.80364							
35	XBT	11/05/1900	12-May-02	12:49	-37.80364							
36	XBT	11/05/1900	12-May-02	14:28	-37.80364							
37	XBT	11/05/1900	12-May-02	15:03	-37.80364							
T6	EK5	11/05/1900	12-May-02		-37.80364	132	12-May-02	19:25	-37.803644			
38	XBT	11/05/1900	12-May-02	16:42	-37.80364							
39	XBT	11/05/1900	12-May-02	18:09	-37.80364							
40	XBT	11/05/1900	12-May-02	19:24	-37.80364							
41	XBT	11/05/1900	12-May-02	22:07	-37.80364						ERS365: 1	
42	XBT	11/05/1900	12-May-02	22:58	-37.80364						ERS365: 2	
43	XBT	11/05/1900	12-May-02	23:45	-37.80364						ERS365: 3	
44	XBT	12/05/1900	13-May-02	00:38	-37.80364						ERS365: 4	
45	XBT	12/05/1900	13-May-02	01:30	-37.80364						ERS365: 5	
46	XBT	12/05/1900	13-May-02	01:43	-37.80364						ERS365: 6	
47	XBT	12/05/1900	13-May-02	02:23	-37.80364						ERS365: 7	
48	XBT	12/05/1900	13-May-02	02:29	-37.80364						ERS365: 8	
49	XBT	12/05/1900	13-May-02	02:42	-37.80364						ERS365: 9	
50	XBT	12/05/1900	13-May-02	03:17	-37.80364						ERS365: 10	
51	XBT	12/05/1900	13-May-02	04:08	-37.80364						ERS365: 11	
52	XBT	12/05/1900	13-May-02	04:15	-37.80364						ERS365: 12	
53	XBT	12/05/1900	13-May-02	05:00	-37.80364						ERS365: 13	
54	XBT	12/05/1900	13-May-02	05:54	-37.80364						ERS365: 14	
55	XBT	12/05/1900	13-May-02	06:50	-37.80364						ERS365: 15	
56	XBT	12/05/1900	13-May-02	06:52	-37.80364							
57	XBT	12/05/1900	13-May-02	07:42	-37.80364							
58	XBT	12/05/1900	13-May-02	07:48	-37.80364							
59	XBT	12/05/1900	13-May-02	08:34	-37.80364							
60	XBT	12/05/1900	13-May-02	09:24	-37.80364							
61	XBT	12/05/1900	13-May-	10:14	-37.80364							

			02									
62	XBT	12/05/1900	13-May-02	11:05	-37.80364							
63	XBT	12/05/1900	13-May-02	11:49	-37.80364							

Waypoints

JR72 Cruise Waypoints

Stations along transect ER635 close to WCB (15km spacing)

Station	Decimal Lat	Decimal Lon	Minutes Lat	Minutes Lon
Stn1	-53.7141	-36.7960	53° 42.845' S	36° 47.757' W
Stn2	-53.5848	-36.8614	53° 35.087' S	36° 51.683' W
Stn3	-53.4554	-36.9265	53° 27.326' S	36° 55.589' W
Stn4	-53.3261	-36.9912	53° 19.564' S	36° 59.474' W
Stn5	-53.1967	-37.0557	53° 11.800' S	37° 3.339' W
Stn6	-53.0672	-37.1197	53° 4.034' S	37° 7.185' W
Stn7	-52.9378	-37.8614	52° 56.267' S	37° 51.683' W
Stn8	-52.8083	-37.2470	52° 48.497' S	37° 14.817' W
Stn9	-52.6788	-37.3101	52° 40.727' S	37° 18.605' W
Stn10	-52.5492	-37.3729	52° 32.954' S	37° 22.373' W
Stn11	-52.4197	-37.4354	52° 25.180' S	37° 26.123' W
Stn12	-52.2901	-37.4976	52° 17.404' S	37° 29.854' W
Stn13	-52.1604	-37.5594	52° 9.626' S	37° 33.566' W
Stn14	-52.0308	-37.6210	52° 1.847' S	37° 37.261' W
Stn15	-51.9011	-37.6823	51° 54.067' S	37° 40.937' W
Stn16	-51.7714	-37.7433	51° 46.284' S	37° 44.596' W
Stn17	-51.6417	-37.8039	51° 38.500' S	37° 48.236' W

WCB Transect Postions

Station	Decimal Lat	Decimal Lon	Minutes Lat	Minutes Lon
Transect.1.1.North	-53.3472	-39.6023	53° 20.832' S	39° 36.138' W
Transect.1.1.South	-54.0553	-39.3919	54° 3.318' S	39° 23.514' W
Transect.1.2.South	-54.0233	-39.0890	54° 1.398' S	39° 5.340' W
Transect.1.2.North	-53.3157	-39.3042	53° 18.942' S	39° 18.252' W
Transect.2.1.South	-53.9940	-38.8190	53° 59.640' S	38° 49.140' W
Transect.2.1.North	-53.2870	-39.0382	53° 17.220' S	39° 2.292' W
Transect.2.2.North	-53.2551	-38.7508	53° 15.306' S	38° 45.048' W
Transect.2.2.South	-53.9616	-38.5269	53° 57.696' S	38° 31.614' W
Transect.3.1.North	-53.2209	-38.4490	53° 13.254' S	38° 26.940' W
Transect.3.1.South	-53.9269	-38.2203	53° 55.614' S	38° 13.218' W
Transect.3.2.South	-53.8904	-37.9067	53° 53.424' S	37° 54.402' W
Transect.3.2.North	-53.1852	-38.1403	53° 11.112' S	38° 8.418' W
Transect.4.1.South	-53.8692	-37.7279	53° 52.152' S	37° 43.674' W
Transect.4.1.North	-53.1642	-37.9643	53° 9.852' S	37° 57.858' W
Transect.4.2.North	-53.1484	-37.8322	53° 8.904' S	37° 49.932' W
Transect.4.2.South	-53.8532	-37.5937	53° 51.192' S	37° 35.622' W

WCB Boundary Box CTD Postions

Station	Decimal Lat	Decimal Lon	Minutes Lat	Minutes Lon
1	-53.4870	-37.6060	53° 29.220' S	37° 36.360' W
2	-53.3090	-37.6610	53° 18.540' S	37° 39.660' W
3	-53.1400	-37.7380	53° 8.400' S	37° 44.280' W
4	-53.1760	-38.0670	53° 10.560' S	38° 4.020' W

5	-53.2130	-38.3960	53° 12.780' S	38° 23.760' W
6	-53.2500	-38.7250	53° 15.000' S	38° 43.500' W
7	-53.2860	-39.0540	53° 17.160' S	39° 3.240' W
8	-53.3220	-39.3830	53° 19.320' S	39° 22.980' W
9	-53.3590	-39.7120	53° 21.540' S	39° 42.720' W
10	-53.5370	-39.6560	53° 32.220' S	39° 39.360' W
11	-53.7150	-39.6010	53° 42.900' S	39° 36.060' W
12	-53.6680	-39.2500	53° 40.080' S	39° 15.000' W
13	-53.6320	-38.9210	53° 37.920' S	38° 55.260' W
14	-53.5960	-38.5920	53° 35.760' S	38° 35.520' W
15	-53.5600	-38.2640	53° 33.600' S	38° 15.840' W
16	-53.5240	-37.9350	53° 31.440' S	37° 56.100' W
17	-53.6650	-37.5500	53° 39.900' S	37° 33.000' W
18	-53.8420	-37.4950	53° 50.520' S	37° 29.700' W
19	-53.8780	-37.8240	53° 52.680' S	37° 49.440' W
20	-53.9140	-38.1530	53° 54.840' S	38° 9.180' W
21	-53.9500	-38.4820	53° 57.000' S	38° 28.920' W
22	-53.9850	-38.8110	53° 59.100' S	38° 48.660' W
23	-54.0210	-39.1400	54° 1.260' S	39° 8.400' W
24	-54.0670	-39.4910	54° 4.020' S	39° 29.460' W
25	-53.8910	-39.5460	53° 53.460' S	39° 32.760' W

WCB CTD Postions

Station	Decimal Lat	Decimal Lon	Minutes Lat	Minutes Lon
W.1.2N	-53.4930	-39.2510	53° 29.580' S	39° 15.060' W
W.1.2S	-53.8460	-39.1440	53° 50.760' S	39° 8.640' W
W.2.2N	-53.4320	-38.6950	53° 25.920' S	38° 41.700' W
W.2.2S	-53.7850	-38.5840	53° 47.100' S	38° 35.040' W
W.3.2N	-53.3610	-38.0830	53° 21.660' S	38° 4.980' W
W.3.2S	-53.7140	-37.9660	53° 42.840' S	37° 57.960' W

WCB Drifter Deployments

Station	Depth	Decimal Lat	Decimal Lon	Minutes Lat	Minutes Lon
20.Drf.WCB.1.2.S1	20	-53.4042	-39.2777	53° 24.249' S	39° 16.659' W
20.Drf.WCB.1.2.S2	20	-53.6695	-39.1973	53° 40.170' S	39° 11.838' W
20.Drf.WCB.1.2.S3	20	-53.9349	-39.1163	53° 56.091' S	39° 6.975' W
50.Drf.WCB.1.2.S3	50	-53.9349	-39.1163	53° 56.091' S	39° 6.975' W
20.Drf.WCB.2.2.S1	20	-53.8734	-38.5552	53° 52.401' S	38° 33.312' W
20.Drf.WCB.2.2.S2	20	-53.6086	-38.6393	53° 36.513' S	38° 38.355' W
50.Drf.WCB.2.2.S2	50	-53.6086	-38.6393	53° 36.513' S	38° 38.355' W
20.Drf.WCB.2.2.S3	20	-53.3436	-38.7229	53° 20.613' S	38° 43.374' W
20.Drf.WCB.3.2.S3	20	-53.2733	-38.1114	53° 16.398' S	38° 6.684' W
50.Drf.WCB.3.2.S3	50	-53.2733	-38.1114	53° 16.398' S	38° 6.684' W
20.Drf.WCB.3.2.S2	20	-53.5378	-38.0242	53° 32.265' S	38° 1.449' W
20.Drf.WCB.3.2.S1	20	-53.8023	-37.9363	53° 48.135' S	37° 56.175' W

Station Positions along TP0059 (ECB Long Transect) 15km spacing

Station	Decimal Lat	Decimal Lon	Minutes Lat	Minutes Lon
1 (0km)	-54.5886	-35.5802	54° 35.317' S	35° 34.811' W

2 (15km)	-54.4887	-35.4238	54° 29.319' S	35° 25.430' W
3 (30km)	-54.3884	-35.2683	54° 23.307' S	35° 16.097' W
4 (45km)	-54.2880	-35.1136	54° 17.281' S	35° 6.813' W
5 (60km)	-54.1874	-34.9596	54° 11.241' S	34° 57.578' W
6 (75km)	-54.0865	-34.8065	54° 5.188' S	34° 48.390' W
7 (90km)	-53.9854	-34.6542	53° 59.121' S	34° 39.249' W
9 (105km)	-53.8840	-34.5026	53° 53.041' S	34° 30.157' W
10(120km)	-53.7825	-34.3518	53° 46.948' S	34° 21.111' W
11(135km)	-53.6807	-34.2019	53° 40.841' S	34° 12.111' W
12(150km)	-53.5787	-34.0526	53° 34.722' S	34° 3.159' W
13(165km)	-53.4765	-33.9042	53° 28.589' S	33° 54.252' W
14(180km)	-53.3741	-33.7565	53° 22.444' S	33° 45.391' W
15(195km)	-53.2714	-33.6096	53° 16.286' S	33° 36.575' W
16(210km)	-53.1686	-33.4634	53° 10.116' S	33° 27.805' W
17(225km)	-53.0655	-33.3180	53° 3.933' S	33° 19.080' W
18(240km)	-52.9623	-33.1733	52° 57.737' S	33° 10.399' W

ECB Transect Stations

Station	Decimal Lat	Decimal Lon	Minutes Lat	Minutes Lon
Transect.1.1.South	-54.0965	-36.2634	54° 5.790' S	36° 15.804' W
Transect.1.1.North	-53.7416	-35.3882	53° 44.496' S	35° 23.292' W
Transect.2.1.South	-54.1748	-36.1758	54° 10.488' S	36° 10.548' W
Transect.2.1.North	-53.7722	-35.1610	53° 46.332' S	35° 9.660' W
Transect.2.2.North	-53.9438	-34.9592	53° 56.628' S	34° 57.552' W
Transect.2.2.South	-54.3465	-35.9783	54° 20.790' S	35° 58.698' W
Transect.3.1.North	-54.0893	-34.7890	54° 5.358' S	34° 47.340' W
Transect.3.1.South	-54.4920	-35.8117	54° 29.520' S	35° 48.702' W
Transect.3.2.South	-54.6375	-35.6448	54° 38.250' S	35° 38.688' W
Transect.3.2.North	-54.2348	-34.6184	54° 14.088' S	34° 37.104' W

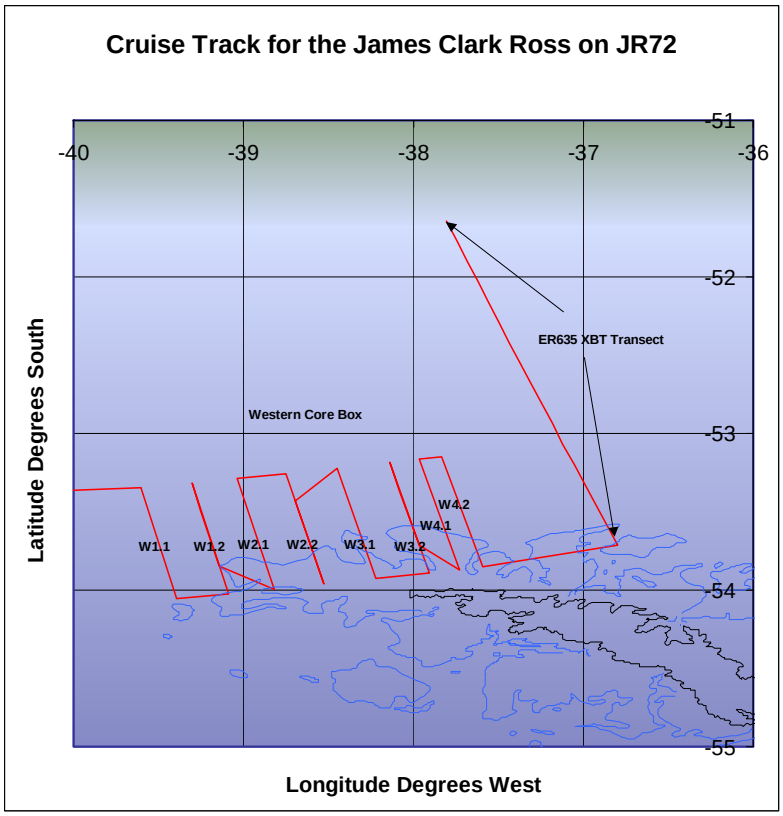
ECB Drifter Deployments

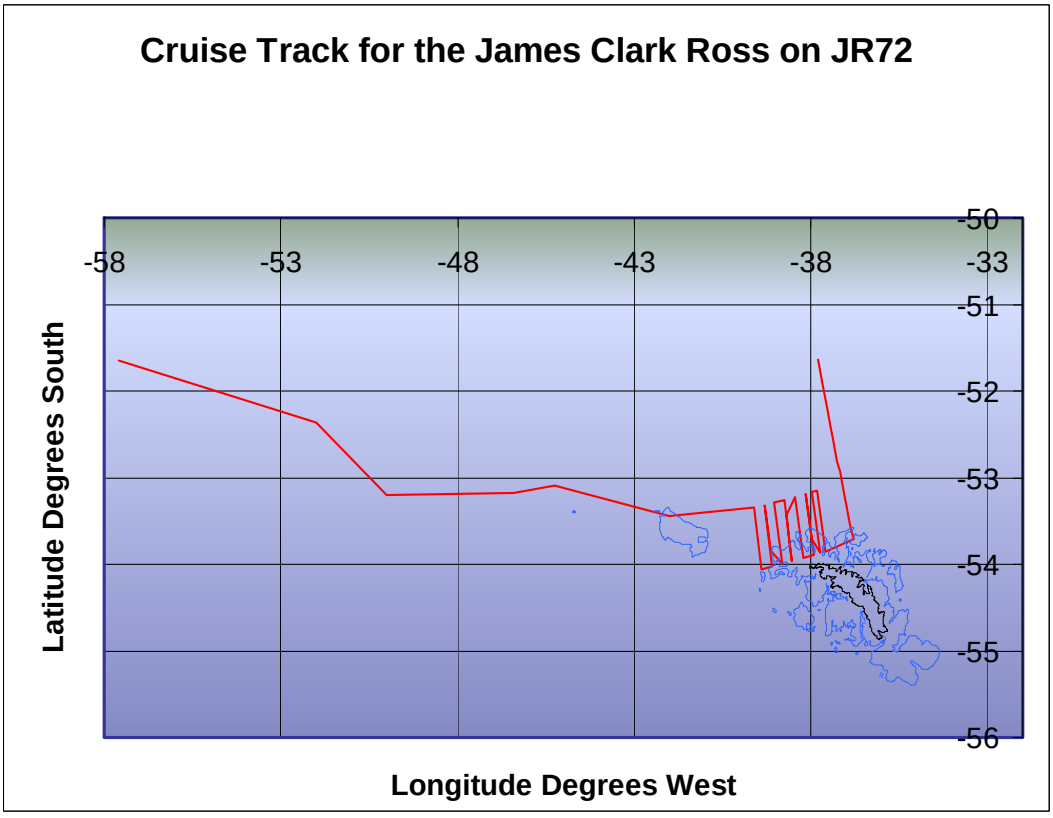
Station	Depth	Decimal Lat	Decimal Lon	Minutes Lat	Minutes Lon
On shelf 1	20	-54.5387	-35.5020	54° 32.319' S	35° 30.120' W
On shelf 2	20	-54.3382	-35.1910	54° 20.292' S	35° 11.457' W
Off shelf 3	20	-54.0868	-34.8066	54° 5.205' S	34° 48.397' W
Off shelf 4	50	-54.0868	-34.8066	54° 5.205' S	34° 48.397' W
Off shelf 1	20	-53.8333	-34.4272	53° 49.995' S	34° 25.632' W
Off shelf 2	50	-53.8333	-34.4272	53° 49.995' S	34° 25.632' W

South Shelf Break

Station	Depth	Decimal Lat	Decimal Lon	Minutes Lat	Minutes Lon
Shelf Break 1	20	-54.8747	-38.8839	54° 52.483' S	38° 53.033' W
Shelf Break 2	20	-54.6057	-40.1656	54° 36.343' S	40° 9.934' W

Cruise Track





Crew List

Scientific Party

Name	*Work*	*Position*
Pat Cooper	BAS	ETS
Jim Fox	BAS	ETS
Sharon Grant	BAS	BSD
Pete Lens	BAS	ETS
Mark Preston	BAS	ITS

Ship's Company

Name	*Position*	*Name*	*Position*
Chris Elliot	Master	George Stewart	Bosun
Robert Paterson	Chief Officer	Dave Williams	Bosun's Mate
		Derek Jenkins	ABS
Kim	2/O	Marc Blaby	ABS
Mike	3/O	John McGowan	ABS
Charlie Waddicor	R/O	Dave Rees	ABS
Dave Cutting	Chief Engineer	Jim Baker	ABS
Bill Kerswell	2/Eng	Mark Robinshaw	Motorman 1
Gerry Armour	3/Eng	Charlie Smith	Motorman 2
Steve Eadie	4/Eng	Richard	Chief Cook
Norman Thomas	Electrician	L. Baldwin-White	2/Cook
Simon Wright	Deck Eng	Cliff Pratley	2/Stwd
Ken Olley	Cat/Off	Jimmy Newall	Stwd
Sarah Hartop	Doctor	Kenneth Weston	Stwd
		Derek Lee	Stwd