NATURAL ENVIRONMENT RESEARCH COUNCIL

Pictures at an Exhibition

RRS Discovery 50 years

Discovery
50th Anniversary

Participants at the *Discovery* 50th celebration 2 July 2012

Discovery
50th Anniversary

Discovery Cruise 1

Study of upwelling off the South Arabian coast

Cruise 1 (I.I.O.E. 1) (Fig. 2)

South-east Arabian upwelling region:

1 June	Depart Plymouth
19–23 June	Aden
22–27 July	Karachi
10 August	Aden (emergency visit)
20 August	Arrive Aden

Stations 4994–5101:

R. I. Currie	N.I.O. (Principal Scientist)
J. C. Swallow	N.I.O.
P. M. David	N.I.O.
M. J. Tucker	N.I.O.
R. A. G. Nesbitt	Hydrographic Department, Admiralty
F. A. J. Armstrong	Marine Biological Association, Plymouth
D. H. Cushing	Fisheries Laboratory, Lowestoft
A. D. Mackintyre	Marine Laboratory, Aberdeen
A. de C. Baker	N.I.O.
Miss B. Kirtley	N.I.O.
N. D. Smith	N.I.O.
A. R. Stubbs	N.I.O.
A. F. Boxell	N.I.O.
T. Vertue	N.I.O.
R. S. Bailey	Edward Grey Institute of Field Ornithol[illegible]
P. G. Brewer	Department of Oceanography, Liverpool
G. Topping	Department of Oceanography, Liverpool
A. Prakash	Biological Station, St Andrews, Canada
B. Irwin	Marine Laboratory, Aberdeen
M. V. Angel	Department of Zoology, Bristol
P. Herring	Jesus College, Cambridge
C Alexander	Master

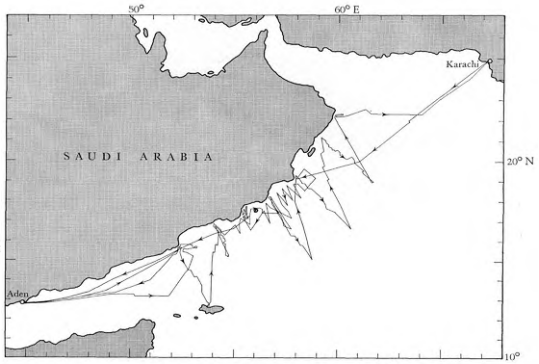


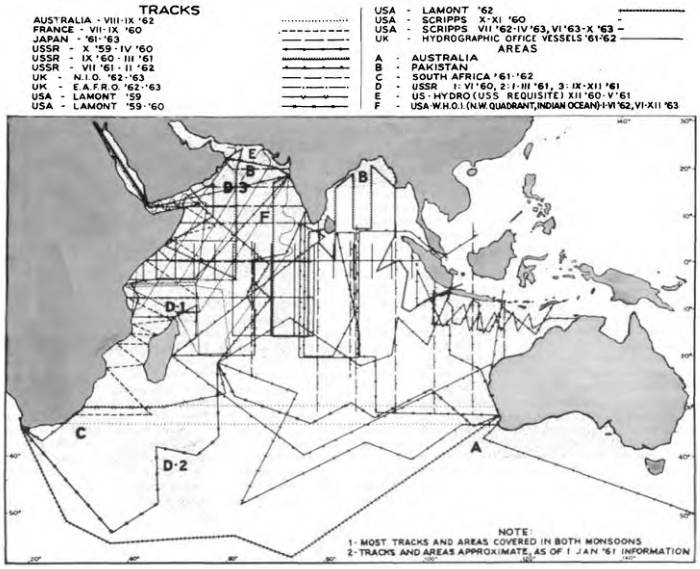
Fig. 2
Track chart of Cruise 1 (I.I.O.E. 1)

Discovery
50th Anniversary

RRS *Discovery* in June 1963 setting off for her first cruise as part of the International Indian Ocean Expedition.

Discovery
50th Anniversary

International Indian Ocean Expedition
Cruises Completed and Planned 1959-1963



Discovery
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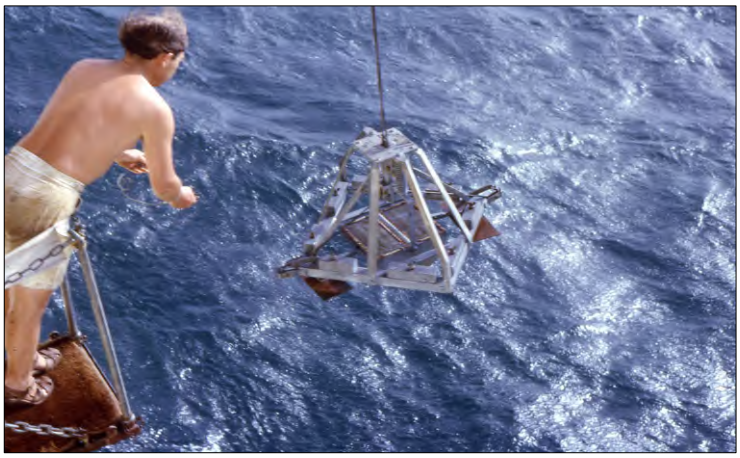
Scientists and ship's company at Aden, August 1963.

1 Tom Humphrey, Chief Engineer. 2 Cdr. Bob Nesbitt, Hydrographic Dept. 3 Peter Foxton, NIO. 4 F.A.J. Armstrong, MBA Plymouth. 5 Harry Moreton, Bosun. 6 Ron Currie, NIO. 7 Don McKay, Asst Elect Off. 8 Tom Tucker, NIO.
9 Bobby Forsyth, Junior Eng.
10 Andy Kaye, Junior Eng.
11. John Swallow, NIO. 12 Ken Douglas, 2nd Eng. 13 Brian Briggs (Asst Bosun).
14 Peter David, NIO. 15 Peter Herring, Cambridge Univ. 16 Betty Kirtley, NIO. 17 Tim Vertue, NIO. 18 Arthur de C Baker, NIO. 19 Andrew Bryce, Elec Off. 20 John Scott, 2nd Off (Grandson of R.F. Scott). 21 Roger Bailey, Ornithologist, Oxford Univ. 22 Capt Alexander, Master. 23 Eric Anstead 3/O. 24 Tony Champion R/O. 25 Graham Topping, Liverpool Univ. 26 Martin Angel, Bristol Univ. 27 A. Prakash, Bio Station, St Andrews, Canada. 28 Peter Brewer, Liverpool Univ. 29 Tony Green, Junior Eng. 30 Alec Redpath, Eng. 31 Mike Bretherton (Affil?). 32 Malcolm Kelly, Doctor. **Not included** Chief Officer, Chief Steward. **Scientists** D.H.Cushing, Lowestoft, A.D. Macintyre, Mar Lab Aberdeen, N.D. Smith A.R. Stubbs and A.F. Boxell NIO. With grateful thanks to Peter Herring .

Discovery
50th Anniversary



Peter Herring

The McIntyre grab, with Alistair McIntyre, who was at the Marine Laboratory, Aberdeen. This image from the Arabian Sea, August 1963. 18 samples were taken with this grab, in depths from 48 to 3500 m.

Discovery
50th Anniversary

Peter Herring

Tim Vertue and Bob Nesbitt, Arabian Sea, August 1963

Discovery
50th Anniversary

Discovery Cruise 2

Geology and Geophysics in the NW Indian Ocean

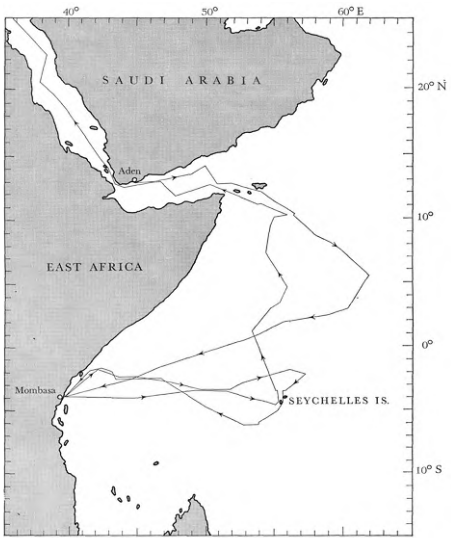
Cruise 2 (I.I.O.E. 2) (Fig. 3)
Geology and geophysics in north-west Indian Ocean:

23 August	Depart Aden
12–14 September	Mombasa
2–5 October	Port Victoria, Seychelles
23–26 October	Mombasa
14–16 November	Aden
4 December	Arrive Plymouth

Stations 5102–5238:

M. N. Hill	Cambridge* (Principal Scientist)
A. S. Laughton	N.I.O.
D. H. Matthews	Cambridge*
R. A. G. Nesbitt	Hydrographic Department, Admiralty
R. S. Bailey	Edward Grey Institute of Field Ornithology, Oxford University
R. Belderson	N.I.O.
P. G. Brewer	Department of Oceanography, Liverpool
J. C. Cleverly	Cambridge*
D. Davies	Cambridge*
T. J. G. Francis	Cambridge*
E. J. W. Jones	Cambridge*
J. M. Jopling	N.I.O.
J. G. Sclater	Cambridge*
J. M. Shorthouse	Cambridge*
G. Topping	Department of Oceanography, Liverpool
T. Vertue	N.I.O.
R. B. Whitmarsh	Cambridge*

C Alexander Master



Discovery
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Bob Whitmarsh

Sitting from left: Fred Vine (now UEA), John Sclater (now Scripps), John Jones (UCL) and Bob Belderson (NIO then IOS). The standing figure may be Dai (David) Davies. We were all (except Bob Belderson) at Cambridge at the time as PhDs or postdocs. Picture taken in Aden before setting off for the geophysical/geological cruise in August 1963.

Discovery
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Bob Whitmarsh

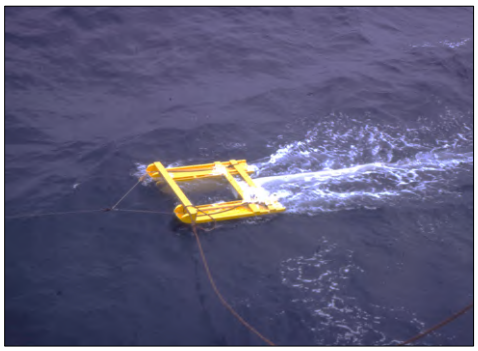
Bob Belderson at sea with water melon.

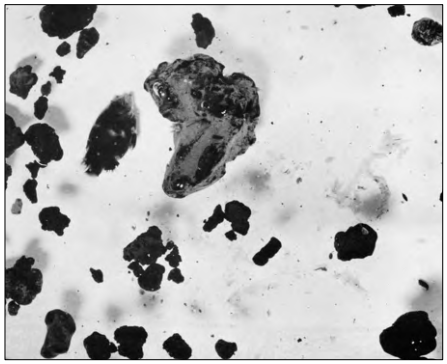
Discovery
50th Anniversary

NIO

Launching the underwater camera developed by Tony Laughton and colleagues (left) with an image of volcanic boulders about 1ft diameter on a slope at about 2000 m depth near the centre of the Carlsberg Ridge.

Discovery
50th Anniversary



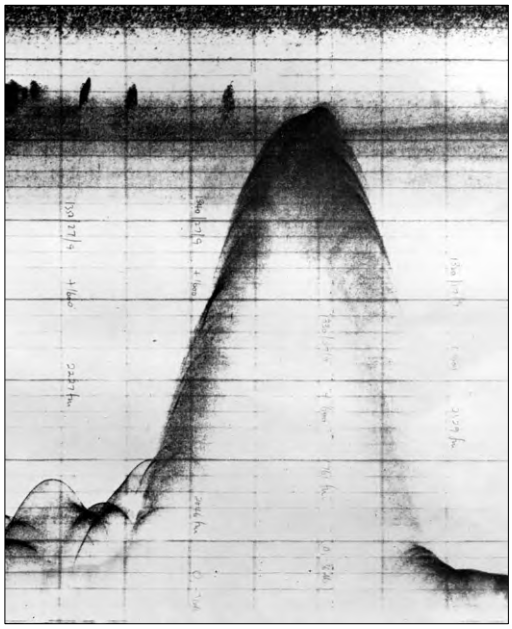


NIO

The Neuston net fishing in calm conditions with results from a haul showing lumps of oil fuel and a juvenile fish *Polyprion*. Towed through the upper 10 cm of the sea, and on a boom 11 m from *Discovery*, the Neuston net was used 113 times on this cruise. The routine hauls for 15 minutes were made at 5-6 kt. Catches included flying fish, fish larvae, myctophids, copepods, euphausiids and larval crabs.

Discovery
50th Anniversary

A 500 fathom-high seamount in the Somali Basin north of the Seychelles, with the top at a depth of 1760 fathoms. This record was taken with the NIO precision echo sounder Mk II. Displaced two phases (800 fm) from the seamount trace is a deep scattering layer at 200 fm, with strong biological scattering also present in the upper 60 fm.



NIO

Discovery
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Graham Topping and Peter Brewer taking water samples.

Bob Whitmarsh and Bob Belderson extruding sediment from a gravity corer

John Jones

Discovery
50th Anniversary

Principal Scientist
John Swallow

Master
R H A Davies

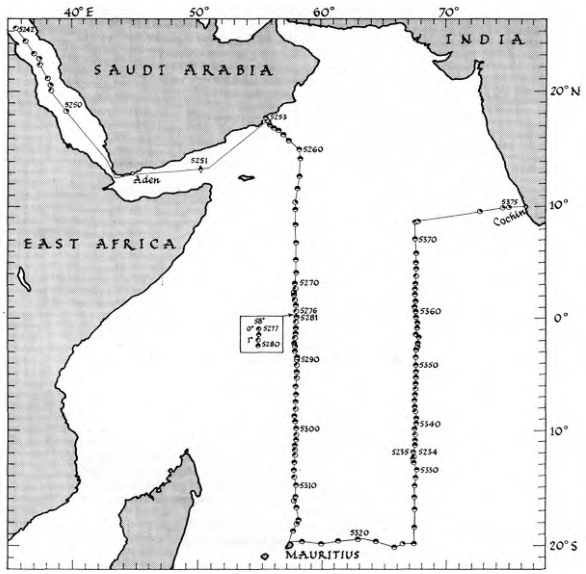
Departed Plymouth
15 February 1964

7 March to 5 April
Aden to Mauritius

10 April to 8 May
Mauritius to Cochin

Discovery Cruise 3

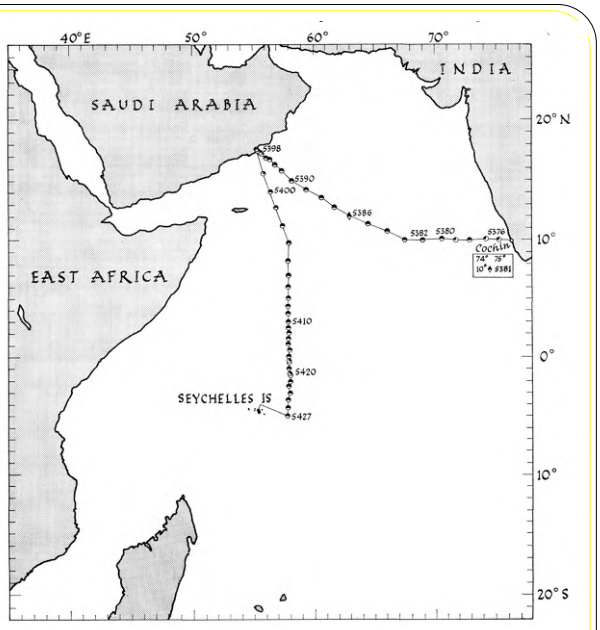
Oceanographic work in the Western Indian Ocean



Discovery
50th Anniversary

Principal Scientist
John Swallow

12 May to 9 June
Cochin to Seychelles



Discovery
50th Anniversary

Principal Scientist
John Swallow

12 June to 3 July
Seychelles to Mauritius

9 July to 28 July
Mauritius to Mombasa

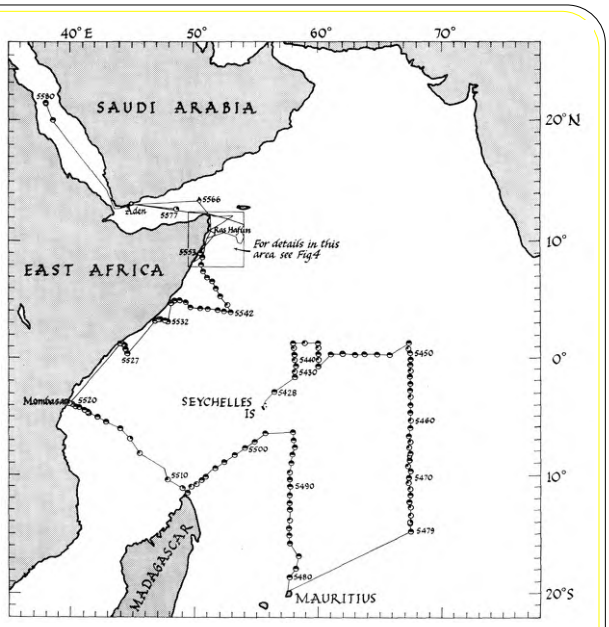
Principal Scientist
Ron Currie

2 August to 23 August
Mombasa to Aden

26 August to 7 September
Aden to Aden

Principal Scientist
John Swallow

7 September to 28 September
Aden to Plymouth



Discovery
50th Anniversary

Peter Herring

John Cox (back to camera), Arthur Fisher and Graham Topping with a Radiosonde balloon 12 July 1964, just after leaving the Seychelles. 139 ascents were made with such balloons during the cruise.

Discovery
50th Anniversary

Dan Buoy deployment, 26 March 1964, on station 5298. This buoy was anchored in 3385 m of water at 8˚ 53' S while lowered Direct Reading Current Meter measurements were made. The DRCM gave currents relative to the ship. The ship's motion over the ground was found from radar range and direction to this anchored buoy.

Peter Herring

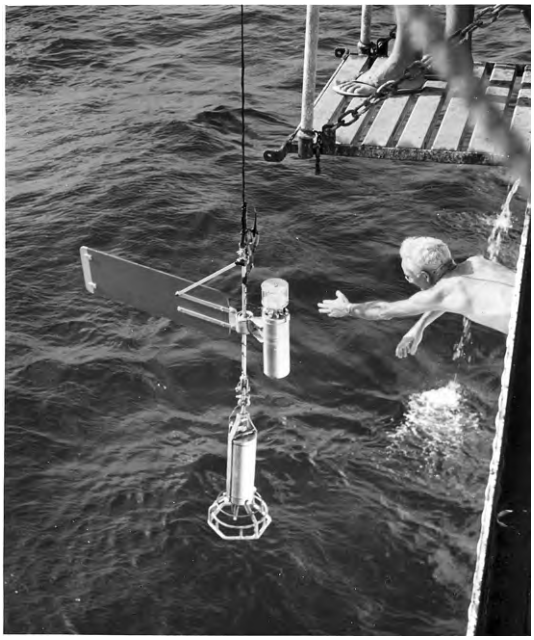
Discovery
50th Anniversary

Peter Herring

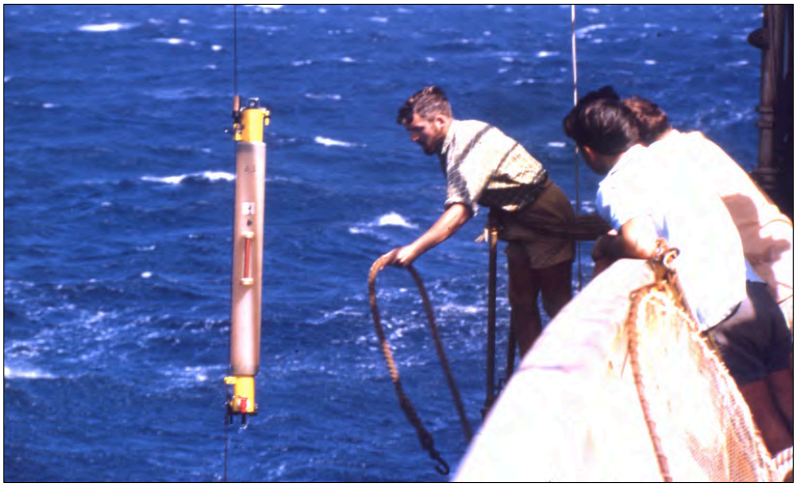
Graham Topping (Liverpool University) with an NIO water bottle. Over 8000 salinity samples were taken at 306 stations, with samples also analyzed for oxygen, phosphate, nitrate and silicate.

Discovery
50th Anniversary

Bruce Hamon of CSIRO, Australia, joined *Discovery* at Cochin in May 1963 with the new Temperature Salinity Depth recorder he had developed. This was based on his earlier work with Neil Brown. Above the instrument is a "telemetering current meter" on loan from the Geophysical Institute in Bergen (the fore-runner of the Aanderaa instrument). Both worked well on a 4-core conducting cable, the TSD being used on 94 stations. Mr Hamon left the ship at Mauritius, leaving his TSD on board. Unfortunately, after six stations, it was lost on station 5487 when its cable tangled with the deep-cast hydro wire. The ship was operating three wires simultaneously.



Discovery
50th Anniversary



Peter Herring

Chlorophyll sampling bottle on the hydro wire, 4 September 1964, on either station 5575 or 5576, on the last day of work before arriving at Aden on the return home. 954 chlorophyll measurements were made on the cruise.

Discovery
50th Anniversary

John Swallow with water bottles on the foredeck, Station 5578, 10 September 1964. This was the first station (of just six) on the homeward leg from Aden to Plymouth. The objective was to locate pools of hot salty water that had been observed previously. This station was "normal", but the third station observed bottom temperature of over 44˚C and salinity of 270 parts per thousand.

Peter Herring

Discovery
50th Anniversary

Discovery
50th Anniversary

Discovery
50th Anniversary

Discovery
50th Anniversary

Ron Currie's RPC approaching Aden at the end of Cruise 3, on 6 September.

Discovery
50th Anniversary

Discovery Cruise 15
Biology of Slope Areas

7 October 1966 to
28 November 1966

Plymouth to Funchal to
Casablanca to Plymouth

Principal Scientist
Malcolm Clarke

Master
R H A Davies

Contributor
Peter Herring

Peter Herring

A pop-up net, designed to sink down with a depressor weight, which was released at depth for the net to drifted through the water. Finding the net on surfacing could prove challenging.

Discovery
50th Anniversary

An Engels mid-water trawl, with a typical catch.

Peter Herring

Discovery
50th Anniversary

Discovery Cruise 38

Physical Oceanographic work on the Continental Slope and in the Mediterranean Outflow

22 January to
7 April 1971

Barry to Plymouth to Gibraltar to Barry

Principal Scientist
John Swallow

Master
Geoff Howe

Contributor
Raymond Pollard

Discovery at the quayside at Barry, and a view from on board across No. 1 Dock towards the Town Hall.

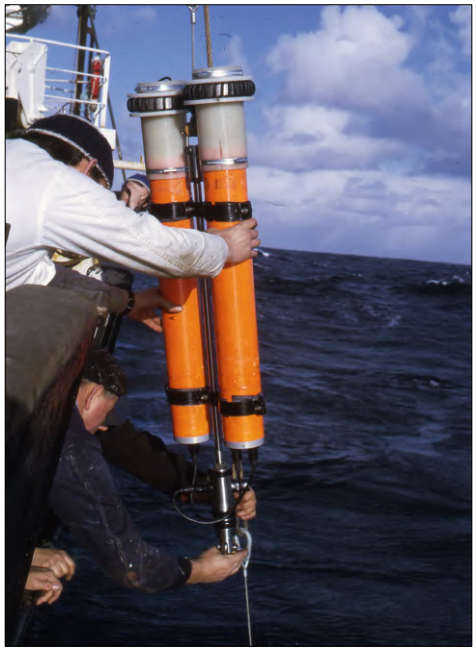
Discovery
50th Anniversary

Leaving the Lock of No. 1 Dock, Barry.

Discovery
50th Anniversary

John Swallow with the towed echo sounder fish with John Moorey's temperature and salinity sensors. To the left is Malcolm "Mac" Harris.

Discovery
50th Anniversary



Nickel scroll acoustic transducers atop a pair of acoustic releases.

Discovery
50th Anniversary

On the left a Braincon current meter that recorded its data by photographing luminous dots, and on the right an Aanderaa RCM4.

The current meter mooring array laid on this cruise was the most extensive to date by the National Institute of Oceanography, consisting of 4 moorings at the shelf break in the Western Approaches with 15 instruments in all.

Discovery
50th Anniversary

Sub-surface buoyancy was provided by either a 48" diameter steel sphere or by an aluminium cylinder, designed to stay vertical, to be visible to help recovery. It did not always survive.

Discovery
50th Anniversary

A Bissett Berman Temperature Salinity Depth recorder was used on the hydrographic casts. Two instruments were used a 9006 and a 9040. The first trials of a heave-compensating electric winch were on this cruise.

Discovery
50th Anniversary

Discovery at Millbay Dock, Plymouth at the end of the first leg of the cruise.

Discovery
50th Anniversary

Discovery Cruise 51

Physical Oceanography and Geology NE Atlantic and NW Mediterranean

15 November to
7 December 1972

Gibraltar to Gibraltar

Principal Scientist
James Crease

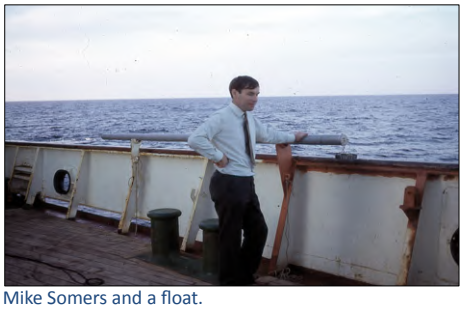
Master
Geoff Howe

Contributor
Norman Hamilton

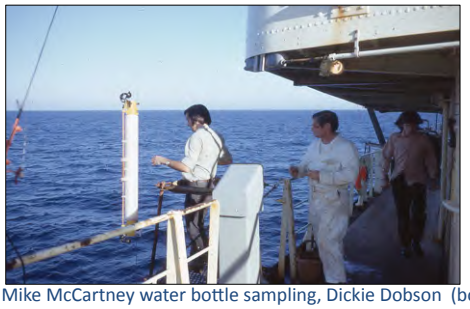
Richard Blow, David Frederick, & Douglas Cole.

Discovery
50th Anniversary

In autumn 1972, as a result of an invitation from Henry Charnock, the Geology Department at Southampton University had its first opportunity of ship-time aboard *Discovery* during Leg 2 of Cruise 51 in the Mediterranean. Our marine geological and geophysical research had as its primary objective a study of the movement of sediment from the continental borderland onto the central abyssal plain of the Tyrrhenian Sea.



Mike Somers and a float.



Mike McCartney water bottle sampling, Dickie Dobson (boiler suit) +?

Discovery
50th Anniversary

When in the Tyrrhenian Sea, we were able for the first time to utilize the air gun as the seismic profiler source for our investigations of the sub-bottom structure in the outer part of the Naples Canyon system. Our main objective was to sample the sub-bottom sediments by using a large diameter (10cm) oriented gravity corer in order to supplement earlier coring done in 1969.

Chris Flewellen guiding the airgun hose.

Trevor Sankey in the IBM 800 computer room.

Discovery
50th Anniversary

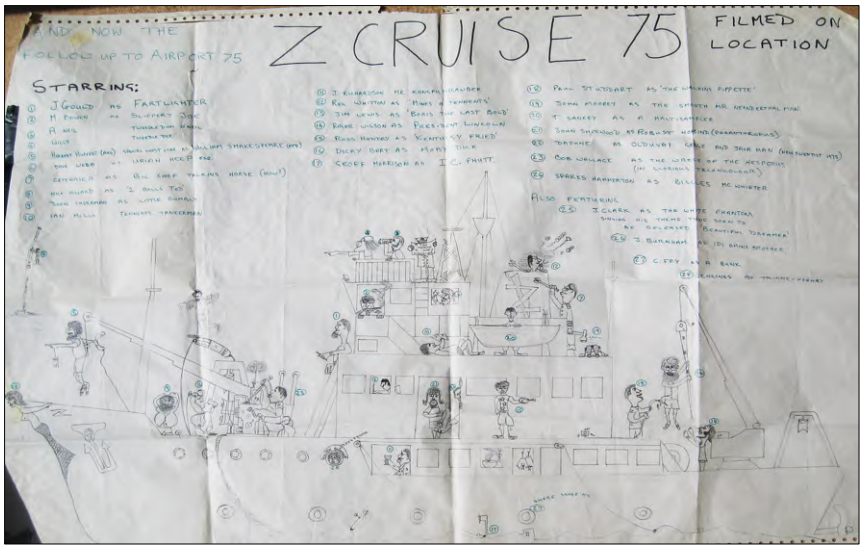
The sediments recovered in one core at *Discovery* station 8232 were later shown to contain a record of recent geo-magnetic secular variation and led to the development of a method for predicting relative sedimentation rates. Our studies in the Tyrrhenian Sea also included investigation of the marine magnetic field over the central seamount Mt. Vavilov. Unfortunately, an attempt to obtain a dredge haul for the top of this major seamount proved unsuccessful.

Doug Cole and David Frederick hosing down after successful core recovery

Jim Crease and main winch.

Discovery
50th Anniversary

Discovery Cruise 72
Cartoon by Ian Waddington



Discovery
50th Anniversary

Discovery Cruise 73
GLORIA and geophysical studies on the Mid- Atlantic Ridge and north of the Azores

3 July 1975 to
26 August 1975

Barry to Southampton

Principal Scientist
Tony Laughton

Master
Geoff Howe
Mike Harding

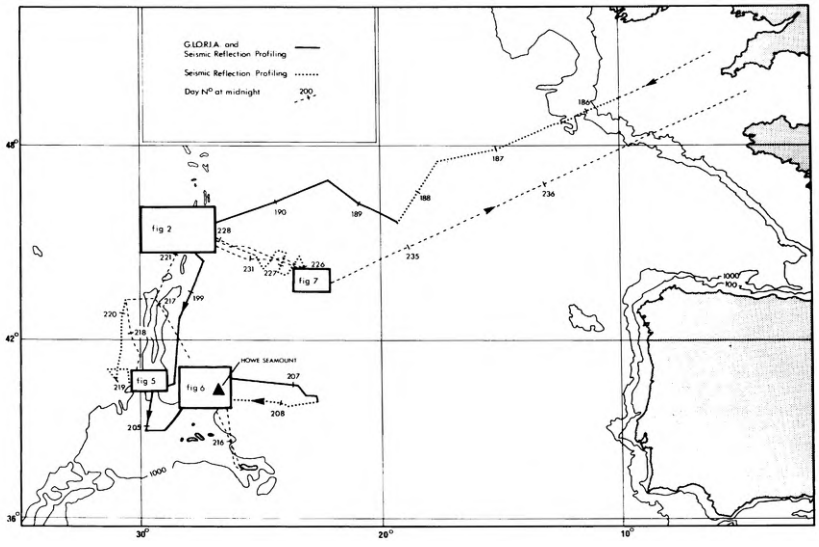
Contributor
Bob Kirk

Bob Kirk

RRS *Discovery* at Ponta Delgada, Azores, during the mid-cruise port call, with the Gloria vehicle mounted on the lifeboat davits aft.

Discovery
50th Anniversary

The Cruise Track



Discovery
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The main intention of the cruise was to survey three areas of the Mid-Atlantic Ridge with the GLORIA Mk1 long range side-scan sonar:

a) The axial zone, crestal mountains and plateau between 45˚ and 46˚N.
b) The Kurchatov Fracture Zone and
c) An area of faulting at 40˚N observed on cruise 68.

Bob Kirk

Swimmers preparing the Gloria vehicle and it flotation for deployment. David Hill and Bob Kirk in the Zodiac, Stuart Willis at the controls, Ray Peters sits on the flotation.

Discovery
50th Anniversary

Bob Kirk

Nose cone removed to show some of control and sensor pressure housings.

Discovery
50th Anniversary

Five Ocean Bottom Seismometers were deployed on the second leg of the cruise to record earthquakes along the Mid-Atlantic ridge and as receivers for the seismic work. All were fitted with Jelly Bottles with suspended magnets to record the instrument's orientation on arrival at the seabed.

Bob Kirk

Left: Len Cromwell (Carpenter), Tim Francis and Peter McKeith with an IOS Blacknest Ocean Bottom Seismograph; instrument-ation in the bottom sphere, the top sphere providing buoyancy

Discovery
50th Anniversary

Bob Kirk

Ship and science party picture on the occasion of Geoff Howe's last cruise.
Peter Hunter, Bob Kirk, Chris Spong
Stuart Willis, Alan Gray, David Hill, Guy Rothwell, Roger Searle
Derek Bishop, Jack Revie, Tim Hogarth, Bill Elford, Ian McGill, Phil Moran, Geoff Howe (Captain), Charlie Storrier (Chief Engineer), Tony Laughton far right.

Discovery
50th Anniversary

Discovery Cruise 75

Geochemical and biological sampling off north west Africa

22 October to
8 November 1975

Barry to Tenerife

Master
Mike Bowen

Chief Engineer
Charlie Storrier

Principal Scientist
Steve Calvert

Contributors
Tony Rice,
Robin Plumley,
Bob Aldred

At 2350 on 2 November 1975 a serious fire broke out in the Engine Room. The science party stood by on the after deck and after the fire was under control, were then confined over night to the Plotting Office.
Without power, science work ceased.

Discovery
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All on board gathered to pay respects to Mr. William Jones who lost his life in the fire.

Discovery
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Discovery was towed to Santa Cruz, Tenerife by the Wijsmuller salvage tug Friesland and eventually brought back to the UK for repairs by Vosper Thorneycroft in Southampton.

Discovery
50th Anniversary

Discovery on her return to Barry

Fire ship steams back to home port

Western Mail Reporter

THE BARRY-BASED survey vessel Discovery returned to the port yesterday from an £80,000 refit after the engine-room fire in which a crewman died.

Tomorrow the ship leaves for a "shakedown" cruise in the Eastern Atlantic and in the middle of next month steams back to the West African coast to continue the biological survey interrupted by last November's fire.

The blaze was caused by a fractured fuel lead which sprayed oil on to an engine exhaust. The man who died was 51-year-old engine-room greaser Mr. William Reginald Jones, of Constable Drive, Newport.

The 2,568-ton Discovery was towed back to Britain and has been refitted by Vosper Thornycroft, of Southampton.

Her master, Capt. Mike Bowen, aged 40, said, "We took the opportunity to make major modifications to the laboratories and accommodation at the same time so the ship is now completely up to modern standards."

Discovery
50th Anniversary

Discovery Cruise 86

Meteorological and oceanographic observations in the Rockall Trough (JASIN 1977)

This photograph was taken out somewhere in the Rockall area. The photographer was the late Captain Sam Mayle, he had been serving as Chief Officer with me. This was a preparatory cruise for JASIN which took place the following year. A test mooring was due to be recovered and the recovery line had become entangled and needed to be cleared in order for the ship to recover the mooring. Sam volunteered to be one of those in the inflatable dinghy, he took his camera with him and got this shot, with the ship half hidden behind one of the large swells that were rolling through the area. However, Sam did not enjoy the experience he was quite shaky when we got him back on board, but he did get this rather memorable shot. *Mike Harding.*

Discovery
50th Anniversary

Discovery Cruise 110

Geophysics and geochemistry in the East Pacific Ocean

22 April to
18 June 1980

Balboa to Callao to Balboa

Principal Scientist
Roger Searle

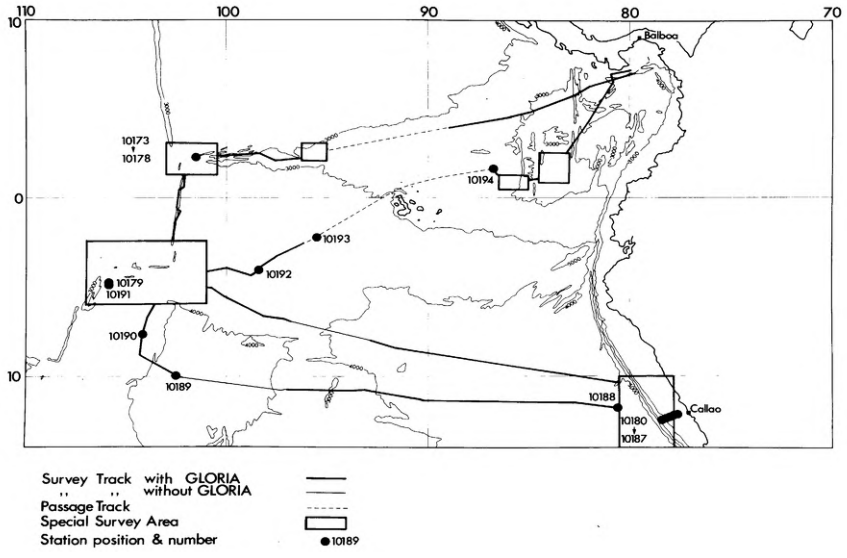
Master
Peter Maw

Contributor
Bob Kirk

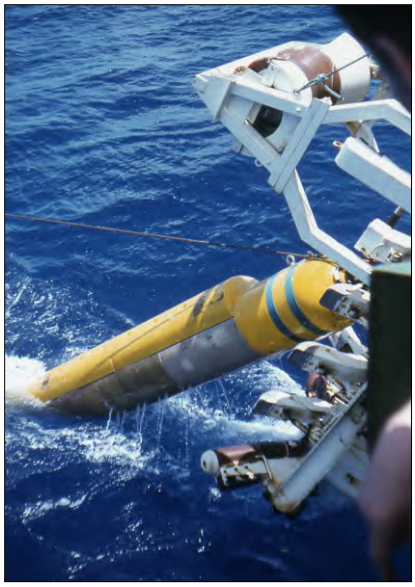
Bob Kirk

Captain Peter Maw presides as King Neptune at the 'Crossing The Line Ceremony' at sea. Identifiable are Derek Bishop and Tim Francis

Discovery
50th Anniversary



Discovery
50th Anniversary



Bob Kirk

Water streams from the Gloria vehicle as it is recovered. The line from the nose of the vehicle leads to a drogue to maintain tension on the tow cable during final stages of recovery. This prevents the vehicle surging forward and hitting the stern of the ship as it is raised out of the water.

Discovery
50th Anniversary

Bob Kirk

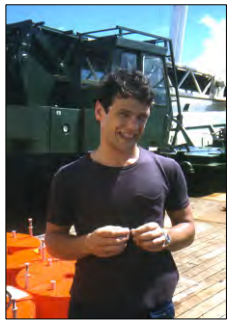
Recovery of the Gloria vehicle. Stuart Bicknell at the top of the gantry, with Mike Somers on deck at the gantry control panel. Also seen on deck are Derek Bishop, Tim Francis, Len Cromwell (Carpenter), Dick Burt (Netman) and members of the deck crew. Note the natty 'Dick Burt' sailcloth caps sported by the crew.

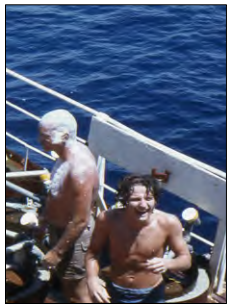
Discovery
50th Anniversary

Bob Kirk

Derek Bishop in the headband and Mike Somers at the gantry controls. Netman Dick Burt on "U-Boat watch" at the ship's rail.

Discovery
50th Anniversary





Clockwise from top left: Derek Bishop in headband, Martin Saunders,
Colin Jacobs at the 'Line Ceremony' before they caught up with him,
Tim Francis and Roger Searle (PSO).

Discovery
50th Anniversary

Discovery Cruise 118

Geophysics and sediment sampling in the NE Atlantic

11 February to
30 March 1981

Gibraltar to Funchal to Gibraltar

Principal Scientist
Tim Francis

Master
Peter Maw

Contributor
Bob Kirk

Bob Kirk

Ian Porter from IOS Blacknest checks clock synchronization on the Blacknest Ocean Bottom Seismometer.

Discovery
50th Anniversary

Deployment of the OBS. Orange syntactic buoyancy foam blocks (cheeses) sit on the top of the sphere. The upper mesh protects the acoustic transducer, the light, and radio recovery beacons. The sphere was released from the tubular ballast frame attached to the lower hemisphere of the instrument under acoustic command from the ship.

Bob Kirk

Ship's officer, Ian Porter and Roy Lilwall (IOS Blacknest) prepare the OBS for deployment.

Discovery
50th Anniversary

Bob Kirk

Acoustic navigation transponder ready to be deployed to the seabed. These beacons could be deployed and used to navigate sampling systems on the seafloor.

Discovery
50th Anniversary

Discovery **Cruise 119**

Physical oceanography of a frontal region SW of Azores

Discovery **Cruise 119**

7 April 1981 to
5 May 1981

Gibraltar to
Ponta Delgada, Azores

Principal Scientist
John Gould

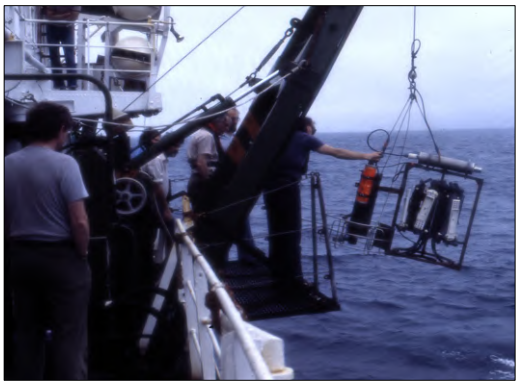
Master
Peter Maw

Contributor
Meric Srokosz

Meric Srokosz

Discovery docked in Gibraltar prior to sailing to study the Azores Front.

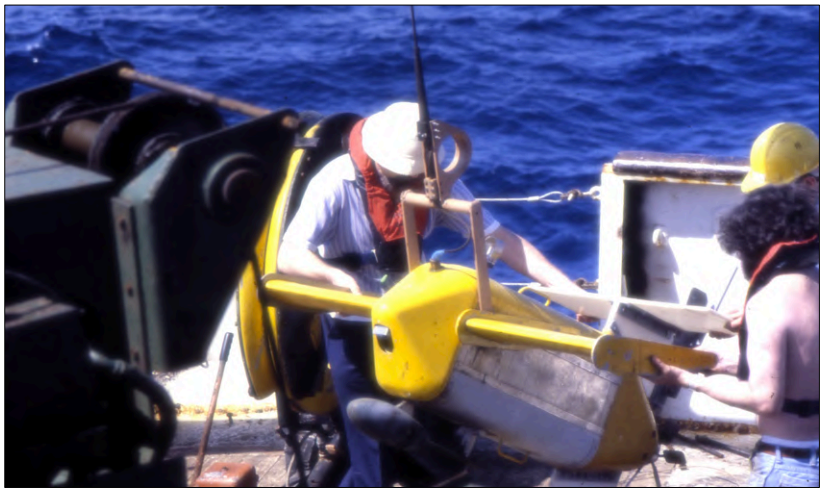
Discovery
50th Anniversary



Meric Srokosz

Vincent Lawford, John Gould and Mike Fasham with Neil Brown CTD (left) prior to deployment (above).

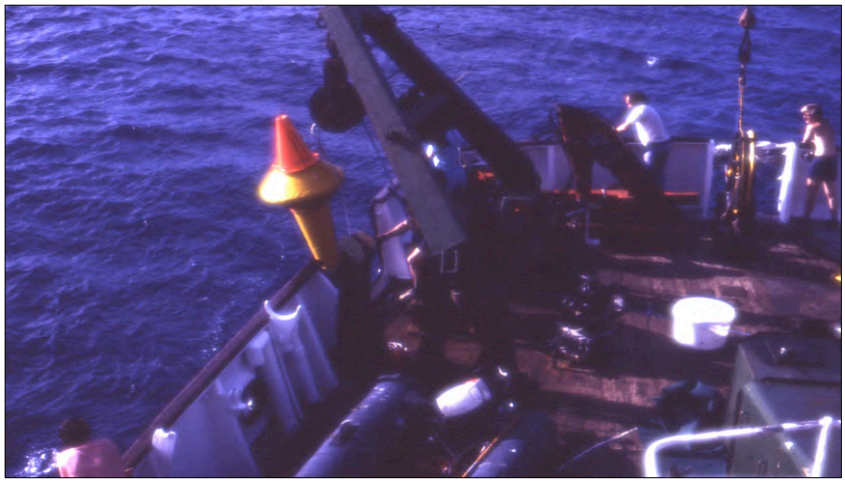
Discovery
50th Anniversary



Meric Srokosz

SeaSoar being prepared for deployment.

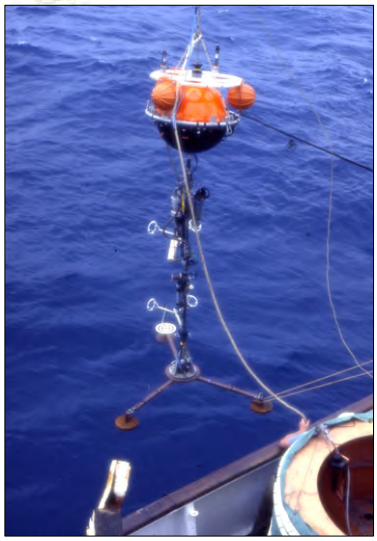
Discovery
50th Anniversary



Meric Srokosz

Launch of a satellite tracked drogued (FGGE) buoy.

Discovery
50th Anniversary



Meric Srokosz

BENCAT (Benthic Current and Temperature), designed by Charles Clayson, being deployed. The tripod legs sat on the sea floor, with buoyancy provided by the sphere. The white toroids were electromagnetic current meter heads. Unfortunately, BENCAT did not return.
John Gould in blue shirt at left.

Discovery
50th Anniversary

Discovery Cruise 130
Sound ranging trials and a study of Discovery Gap

25 June to
5 August 1982

Santa Cruz, Tenerife to Gibraltar

Principal Scientists
John Gould &
Peter Saunders

Master
Peter Maw

Contributor
Gwyn Griffiths

Gwyn Griffiths

Bob 'Ace' Wallace, John Gould, Peter Saunders and Alan Elliott

Discovery
50th Anniversary

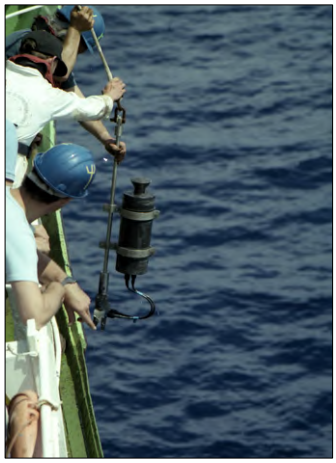
This cruise was one of a series carried out for the UK Department of the Environment as part of its programme on the disposal of radioactive waste. Moored current meters, neutrally buoyant drifting floats and CTD stations delineated the flows of abyssal water.

Gwyn Griffiths

John Swallow and Bob Wallace look on as John Cherriman In blue) and Ian Waddington (in white) handle the glass buoyancy spheres of a deep-sea mooring.

Discovery
50th Anniversary

The Aanderaa RCM4 rotor-vane current meter and the IOS designed and built CR200 acoustic release were the stalwarts of deep-sea moorings of the 1980s. Both could operate for over a year on their internal batteries.



Gwyn Griffiths

Ian Waddington, John Cherriman and (probably Len the Carpenter) bring an Aanderaa current meter onboard, followed by an IOS acoustic release (right).

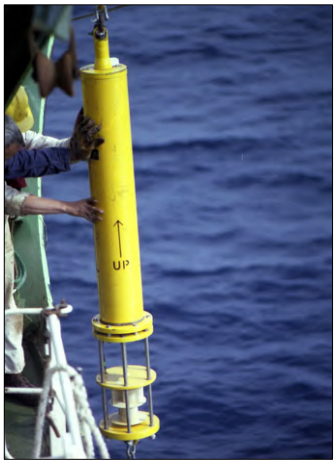
Discovery
50th Anniversary

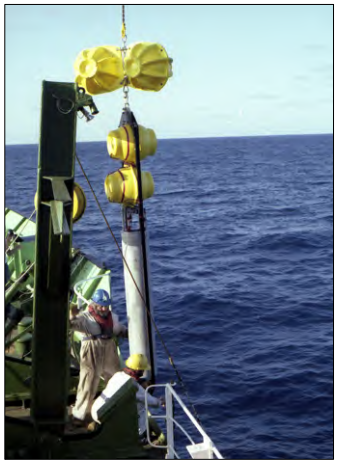
With a mid-cruise port call in Funchal, Madeira, a popular stroll along the front from the harbour took one to the flower and produce market and the fish market.

Gwyn Griffiths

Discovery
50th Anniversary

Long range sound propagation trials were conducted from moored sound sources out to 1000km by lowering a hydrophone into the SOFAR channel. Experience of glass sphere neutrally buoyant floats and digital correlators was also gained.



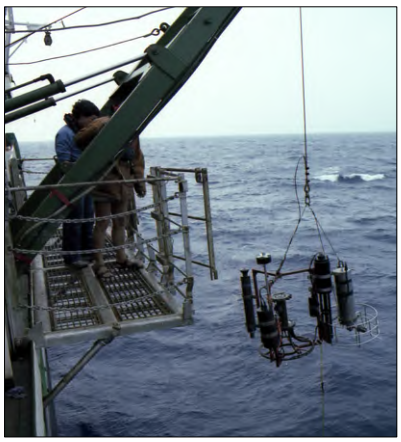


Gwyn Griffiths

An EG&G Vector Averaging Current Meter being brought on board, and (right) the organ pipe transducer of a Webb Research sound source for use with neutrally buoyant floats hangs beneath the instrument and buoyancy spheres.

Discovery
50th Anniversary

CTD stations were occupied along and across a narrow gap in the East Azores Fracture Zone at 37°N. Named *Discovery* Gap, it provided a channel for the exchange of bottom water between the Madeira and Iberian abyssal basins.



Gwyn Griffiths

The starboard-side mid-ships hydrographic winch with a Neil Brown CTD and an empty General Oceanics rosette water bottle carousel on the platform, and (right) being recovered. Also on the frame is a Sea Tech 1 m path length transmissometer, and an IOS near-bottom echo-sounder.

Discovery
50th Anniversary

Discovery Cruise 161

Portuguese ocean-continent boundary, plate boundaries west of Iberia and seismic structure of sediments off Madeira

15 August 1986 to
19 September 1986

Falmouth to Lisbon to Madeira

Principal Scientist
Bob Whitmarsh

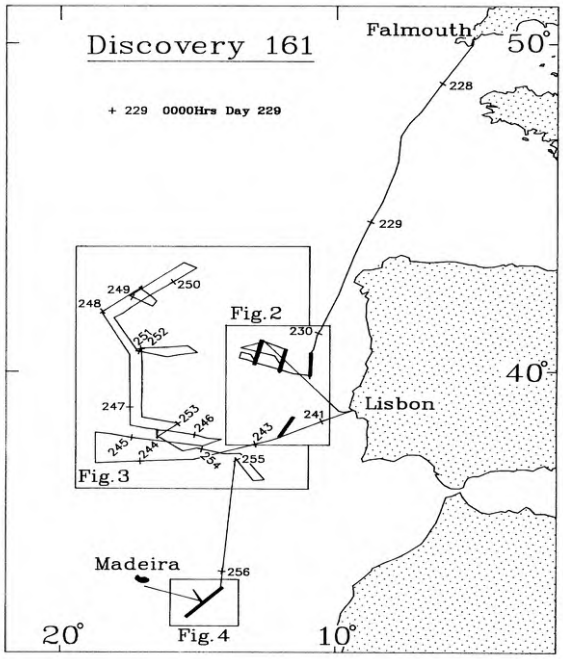
Master
Mike Harding

Contributor
Bob Kirk

Bob Kirk

Bob Whitmarsh with the Ocean Bottom Seismograph. The aluminium sphere housed the sensor and electronics and provided buoyancy. The sphere and yellow 'eggcup' would float to the surface when the concrete ballast weight was released on an acoustic signal from the ship.

Discovery
50th Anniversary

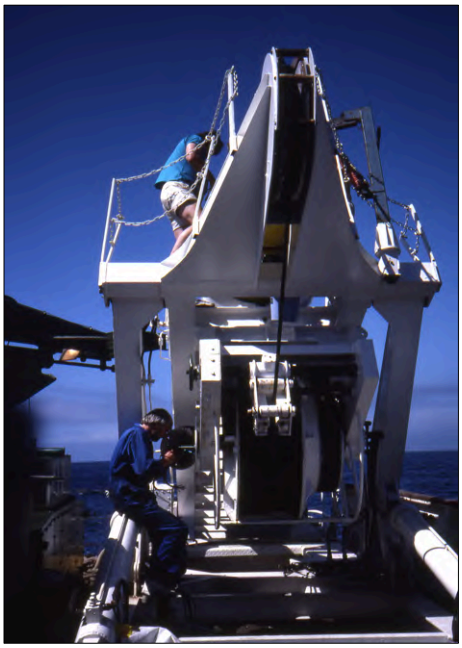


Discovery
50th Anniversary

Bob Kirk

Bosun Frank Smith ready to deploy the OBS from the foredeck 'A' frame. He holds the line to the 'no-load' release pin between the ship's lowering cable and the OBS rope bridle.

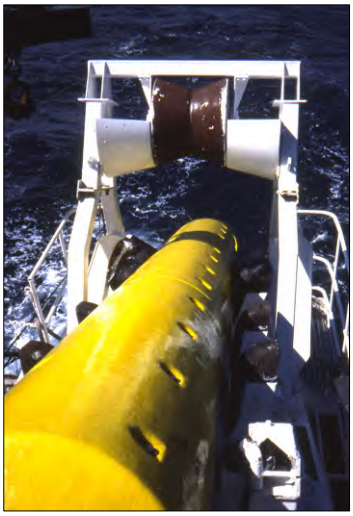
Discovery
50th Anniversary



Bob Kirk

Eric Darlington working on the Gloria gantry junction box, while Andy Harris stands on the upper gantry.

Discovery
50th Anniversary



Bob Kirk

Eric Darlington tests the connections to the vehicle.

Discovery
50th Anniversary

Discovery Cruise 164

SeaSoar and CTD sections in the SW Indian and Southern Oceans

19 December 1986
to 21 January 1987

Port Louis to Port Louis, Mauritius

Principal Scientist
Raymond Pollard

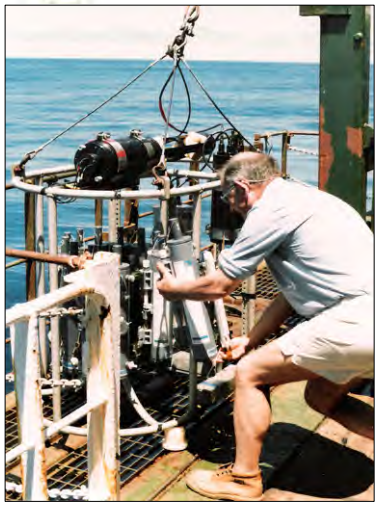
Master
Mike Harding

Contributors
Jane Read and
Gwyn Griffiths

Leaving Port Louis.

Gwyn Griffiths

Discovery
50th Anniversary



John Moorey unloading a General Oceanics water bottle from the rosette. More typical of the weather on the cruise, the CTD comes in board.

Jane Read

Gwyn Griffiths

Discovery
50th Anniversary

Above, from right, Raymond Pollard, Keith Goy and Martin Harrison (CPO Deck) raising the SeaSoar from its cradle.
Left: John Smithers, Gwyn Griffiths and Morag Stirling paying out the SeaSoar cable from its drum.

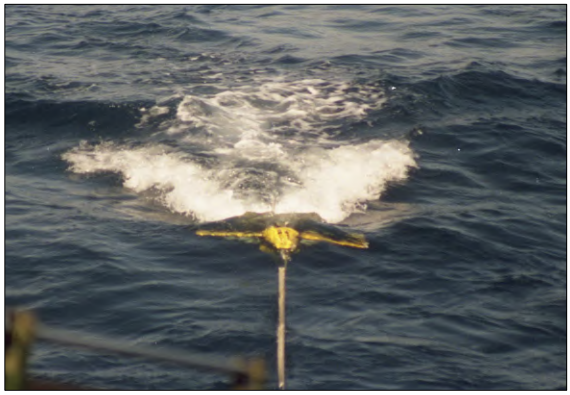
Jane Read

Discovery
50th Anniversary

Jane Read

Roy Wild atop the Schat Davit from which the towing block for the SeaSoar was hung.

Discovery
50th Anniversary



Jane Read

SeaSoar clear of the deck, and into the water.

Discovery
50th Anniversary

Jane Read

John Moorey fixing an oxygen sample in the hydro lab, while Morag Stirling draws the next sample.

Discovery
50th Anniversary

Gwyn Griffiths

An RD Instruments acoustic Doppler current profiler had been installed on *Discovery* earlier in the year, here the display shows the acoustic backscatter profile in white with the E/W, N/S current profiles in green and yellow.

Jane Read

In the Scientific Workshop, Roy Wild, Martin Harrison (CPO Deck), Nigel Hooker and Keith Goy.

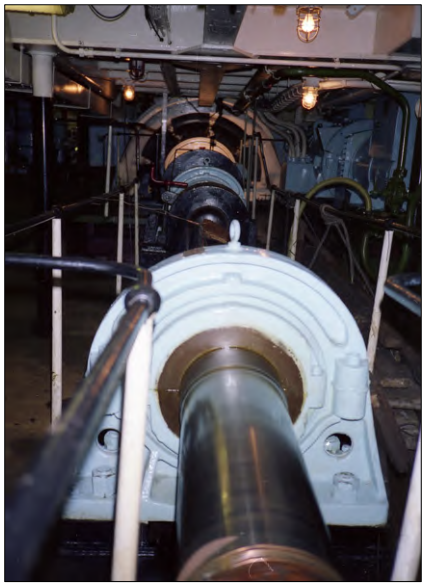
Discovery
50th Anniversary

Jane Read

Boat stations. From left, Raymond Pollard, Brian King, Derek Lewis (in white).
In far less congenial conditions, boat stations was called in the early hours of Christmas Day due to a fire within one of the generators in the Engine Room.

Discovery
50th Anniversary

"On Christmas Day at 0515 local time the generator for the port engine caught fire, putting it entirely out of commission. Prompt action by the engineers rapidly extinguished the fire …" Cruise Report.



Jane Read

Discovery
50th Anniversary

Discovery Cruise 168

Trophic and physiological studies over the North West African slope and in the eastern North Atlantic

23 June to
7 August 1987

Barry to Funchal to Falmouth

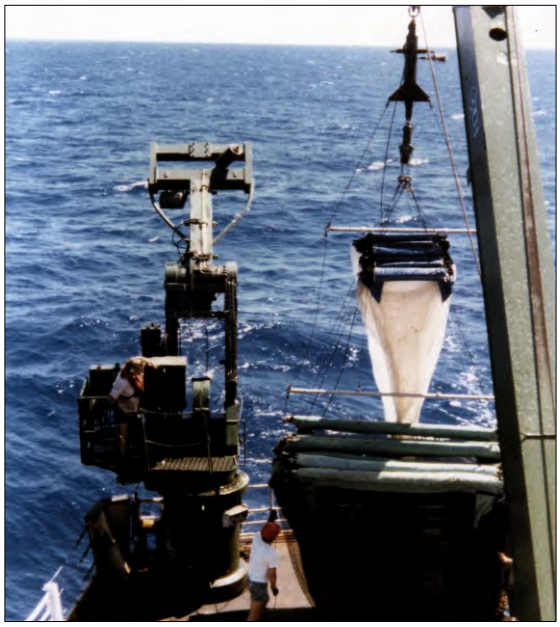
Principal Scientists
Peter Herring

Master
Patrick McDermott

Contributor
Andy Webb

Cheers! Bob Aldred, David Billett, Roland Dyer and ?

Discovery
50th Anniversary



RMT1+8 midwater net hung from the crane.

Discovery
50th Anniversary

David Billett at the Mufax echo sounder console setting the Deck Unit for the acoustic Net Monitor.

Discovery
50th Anniversary

RRS *Discovery* with a H-Class ship from the Royal Navy's Hydrographic Squadron at Funchal, Maderia.

Discovery
50th Anniversary

Discovery Cruise 175

Investigations of the flux of biogeochemical material and transformation by midwater biota at the BIOTRANS site

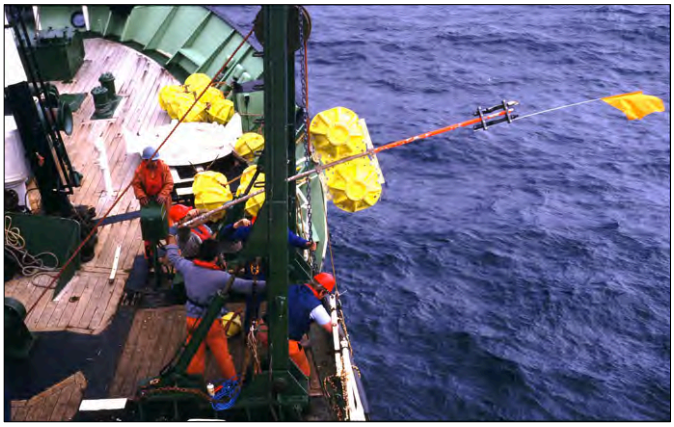
18 June to 15 July 1988

Barry to Lisbon

Principal Scientist
Phil Pugh

Master
Patrick McDermott

Contributor
David White



Launching the buoyancy for Giant Sediment Traps

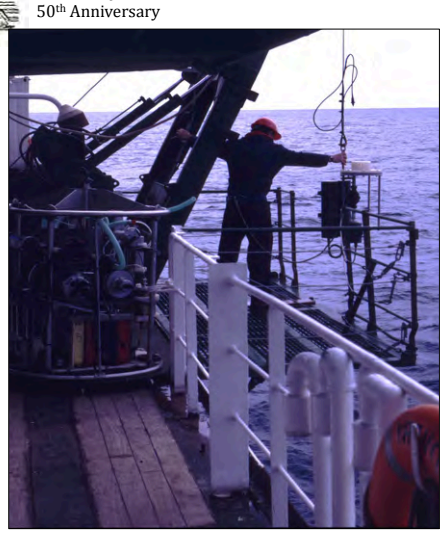
Discovery
50th Anniversary

David White with the …

Discovery
50th Anniversary

Simon Jackson, Chief Officer and Ceri Leather, Second Officer.

Discovery
50th Anniversary



Discovery
50th Anniversary

Discovery Cruise 195

Photobiology, physiology and distribution of oceanic animals in the tropical North Atlantic

5 September to
5 October 1990

Santa Cruz, Tenerife
to Barry

Principal Scientist
Peter Herring

Master
Mike Harding

Contributor
David White

This was RRS *Discovery's* final cruise before her conversion. On the bridge, Sam Moss, the Chief Engineer, with Andy Webb at the wheel.

Discovery
50th Anniversary

Martin Angel and * sorting the catch from a *.

Discovery
50th Anniversary

The Bio Lab, sometimes known as the Main Lab, on the shelter deck port side.

Discovery
50th Anniversary

The Electronics Lab, on the shelter deck, starboard side.

Discovery
50th Anniversary

The plot, from left, the EA500 echo sounder console

Discovery
50th Anniversary

Discovery
50th Anniversary

Discovery
50th Anniversary

Discovery
50th Anniversary

The Pilot Boat at Santa Cruz, Tenerife.

Discovery
50th Anniversary

Discovery Cruise 198

Sterna, the final expedition of the U.K. Biogeochemical Ocean Flux Study in the Bellingshausen Sea

11 November to
17 December 1992

Port Stanley, Falkland Islands to
Punta Arenas, Chile

Principal Scientist
David Turner

Master
Mike Harding

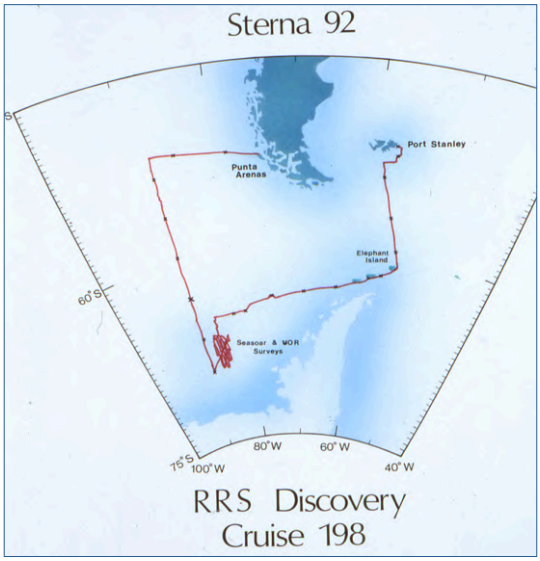
Contributor
Gwyn Griffiths

Anne Morrison

Discovery at anchor in Potter Cove, King George Island, Antarctica. While the EK400 scientific echosounder was calibrated a few of the ships' company went ashore to visit Jubany, the Argentine shore base.

Discovery
50th Anniversary

The final sea-going activity of the UK Biogeochemical Ocean Flux Study (BOFS) was a two-ship study comprising *Discovery* cruise 198 and *James Clark Ross* cruise 02. The study's objectives were to evaluate the magnitude and variability of biogeochemical fluxes during early summer in the Bellingshausen Sea, with emphasis on the marginal ice zone.



Polly Williamson

Towed undulator surveys were made across Drake Passage, and in the Bellingshausen Sea, with a deep CTD section north along 85˚W.

Discovery
50th Anniversary

As the cruise began in the Falkland Islands, the journey began with a late evening departure from Brize Norton on an RAF Lockheed Tristar. Early morning we landed at Ascension Island for refueling and a chance to stretch one's legs at the cafe, within a fenced-off compound. Arrival in the Falkland Islands would be in mid afternoon.

Gwyn Griffiths

Discovery
50th Anniversary

Discovery was delayed in her arrival from South Africa due to bad weather and several of the advance party stayed in B&B accommodation on the seafront. Local walks were plentiful, but the Minefield Map handed out on arrival was essential, and many of the beaches were off limits.

The foreshore of Port Stanley from Government Pier.

Gwyn Griffiths

Discovery
50th Anniversary

Sterna was *Discovery*'s first full science cruise after her conversion. While her bow and foremast were recognisable as original features, her superstructure, cranes and gantries gave her a very modern appearance.

Gwyn Griffiths

Discovery tied up alongside the Falklands Interim Port and Storage System, a floating wharf and warehouses.

Discovery
50th Anniversary

The SeaSoar track had followed that of the WOCE deep CTD repeat hydrography section SR1b, ending near Elephant Island. The UK has made repeated occupations of this section from 1993.

Gwyn Griffiths

Elephant Island. Before breakfast, as we approached the island on *Discovery*, fog obscured the view, but an hour later, before we rounded the island, it lifted.

Discovery
50th Anniversary

Discovery 198 was a truly multi-disciplinary and multi-institutional cruise. Alistair Murray and Doug Bone from the British Antarctic Survey brought expertise in the use of sonar to characterize and quantify krill swarms. The transducers were housed in a towed fish, and an essential task was their calibration. This was done by lowering standard target spheres on three line controlled by motorised fishing reels temporarily mounted to the top of the fish. This needed deep, calm water. Potter Cove on King George Island was ideal.

Gwyn Griffiths

Alison Weeks and Anne Morrison facing the camera, on entering Potter Cove.

Doug Bone (in white) and colleagues deploy the towfish carrying 38kHz and 120kHz transducers for the EK400 krill echosounder.

Discovery
50th Anniversary

Fine days were few and far between on this cruise. The norm was day after day of gales. *Discovery* had been fitted with roll stabilizing tanks during her conversion. However, the control settings were still being adjusted, and even on station, the damping was minimal. The sounds of the valves operating and the sloshing between the tanks became a feature of meals in the saloon.

Gwyn Griffiths

Our passage to the Bellingshausen Sea took us by Smith Island, South Shetlands (top), while icebergs were not uncommon.

Discovery
50th Anniversary

While the *Discovery* carried out large scale surveys using ship-board and towed instruments in ice-free waters, the *James Clark Ross* undertook the detailed process studies on a series of stations within the sea ice cover and also to the north of the ice.

Gwyn Griffiths

The scientific programme was hampered by two medical evacuations. *James Clark Ross*, being the faster vessel, took the invalids back to the Falkland Islands. One involved this boat transfer from the *Discovery*.

Discovery
50th Anniversary

The SeaSoar provided data from its CTD, light from a photosynthetically active radiation (PAR) sensor and dissolved oxygen using a Clark electrode. It was towed successfully across the Drake Passage, completed a 4-day survey at 85˚W, and partially completed a second before being lost. The remainder of the second survey was completed using an Undulating Oceanographic Recorder, although its depth range was much less than the 400m of the SeaSoar,

Gwyn Griffiths

Bill Miller (under the SeaSoar) oversees operations on deck with Phil Taylor in the lab.

Discovery
50th Anniversary

Continuous measurements of the carbon dioxide system were made using analyzers for pH and for pCO_2. These data were examined in relation to biological and physical measurements. Bellerby and Robertson found large mesoscale variability with physics as the strongest control, but by no means the only one. In the region of the Southern Polar Front, there was a strong influence from a phytoplankton bloom.

Gwyn Griffiths

Richard Bellerby monitoring the operation of his pH measuring analyzer and Jane Robertson with her apparatus for pCO_2 measurements.

Discovery
50th Anniversary

Surface samples taken from the pumped seawater supply as well as from the rosette sampler on the CTD were analyzed for dimethyl sulphide in both dissolved and particulate forms by Phil Nightingale from UEA. His apparatus consisted of a cryogenic purge and trap system followed by flame photometric gas chromatography.
Discovery was truly a floating laboratory

Gwyn Griffiths

Phil Nightingale (top) with his apparatus for measuring the biogenic gas dimethyl sulphide and Bob Head with the nutrient autoanalyzer.

Discovery
50th Anniversary

The surface seawater supply ("non-toxic") was available in the Hangar. On this cruise the Hanger was essentially a store, and negotiating the route from the deck laboratory to the sink could be difficult when *Discovery* was rolling.
The Chemistry laboratory was a quiet space, and with all of the real chemistry taking place in the deck laboratory, this is where the salinity samples were analyzed.

Gwyn Griffiths

Anne Morrison (top) takes a surface salinity sample in the Hangar. Alistair Murray, in addition to his main research on krill acoustics, was a stalwart with the salinometer.

Discovery
50th Anniversary

A close-spaced (9 km) CTD section of two full depth stations and eight stations to 1000 m was made at 85˚W across the Southern Polar Front to delineate its deep structure, complementing the upper ocean survey from SeaSoar.

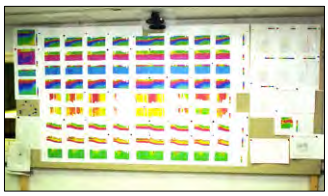
Gwyn Griffiths

Principal Scientist David Turner (left) and John Allen (right) log and take samples from the rosette. The steel roller door, behind John Allen was damaged in heavy weather, and temporary shuttering of timber baulks put in place.

Discovery
50th Anniversary

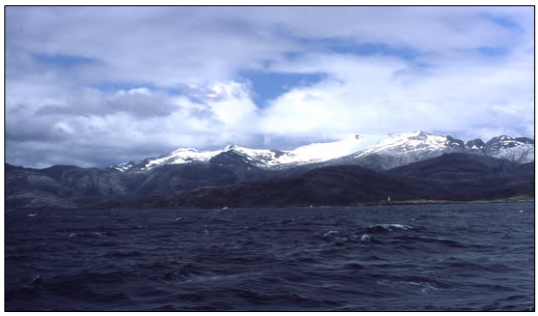
At the forward end of the main lab were the Simrad EA500 10 kHz echo sounder (left) and the 150kHz RD Instruments acoustic Doppler current profiler (right). Precision ship's heading for use with the ADCP was now available from an Ashtech carrier phase GPS receiver with its four antennas. Opposite the ADCP console on the bulkhead of the plot was a growing display of section plots from the Seasoar and other instruments.

Gwyn Griffiths



Discovery
50th Anniversary

After completing the CTD section along 85˚W at the latitude of 51˚S *Discovery* headed east to the northern entrance of the Strait of Magellan. We then sailed south with remarkable scenery on each side before arriving at Punta Arenas.



Gwyn Griffiths

Discovery
50th Anniversary

Discovery Cruise 201
South West Indian Ocean Experiment (SWINDEX)

23 March 1993 to
3 May 1993

Cape Town to
Cape Town

Principal Scientist
Raymond Pollard

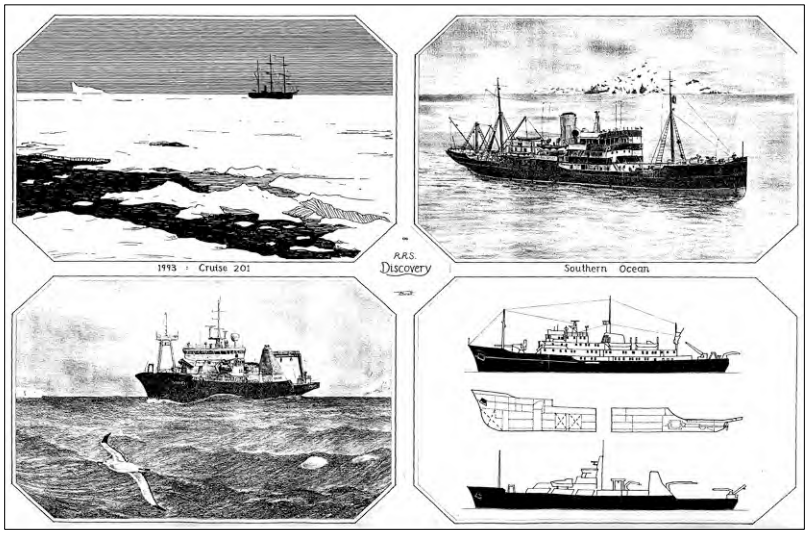
Master
Mike Harding

Contributor
Bob Kirk

Bob Kirk

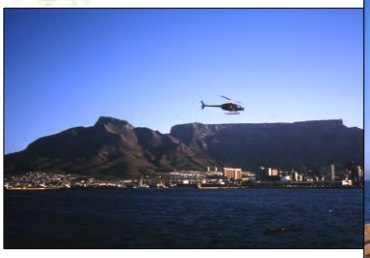
Discovery leaving Cape Town, South Africa.

Discovery
50th Anniversary



Trevor Bolt

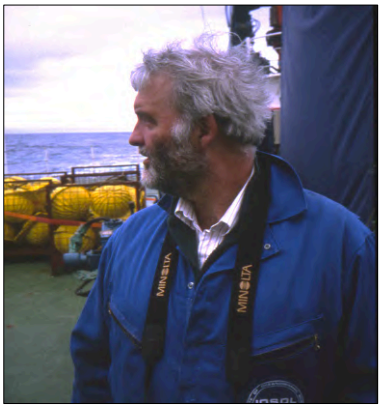
Discovery
50th Anniversary



Bob Kirk

The science party take a last look at land as the ship heads for the Southern Ocean. Near the camera are Ian Waddington, Steve Hall (looking at camera) and Rob Bonner.

Discovery
50th Anniversary



Bob Kirk

Left: John Smithers, the CTD expert. Sampling team collect seawater samples from the recovered multi-sampler bottles. Beverly de Cuevas in the yellow waterproof jacket.

Discovery
50th Anniversary

Discovery Cruise 223

Vivaldi '96: SeaSoar and CTD surveys as part of the UK contribution to the World Ocean Circulation Experiment

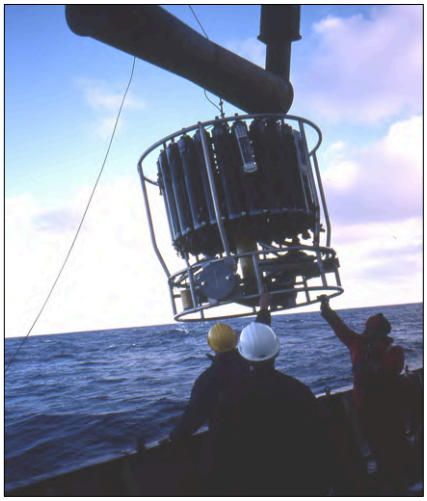
28 September 1995 to
19 November 1995

Falmouth to Reykjavik to Southampton

Principal Scientists
Harry Leach and Raymond Pollard

Master
Mike Harding

Contributor
Bob Kirk



Bob Kirk

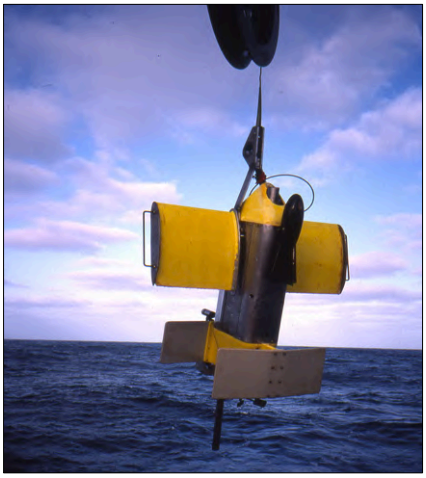
CTD and multisampler frame with rosette of 24x10 litre Niskin water sampling bottles and other instruments being recovered after a cast.

Discovery
50th Anniversary

Bob Kirk

Sampling team collecting water samples from the rosette. Miles Finch is happy he can keep his gloves on!

Discovery
50th Anniversary



Bob Kirk

Crew members ready to deploy the 'Seasoar' undulating towed vehicle. The vehicle carried a shallow Neil Brown CTD, a Focal Technologies Optical Plankton counter, a Chelsea Instruments Fluorometer and a PAR light sensor.

Discovery
50th Anniversary

Bob Kirk

Penny Holliday shows great delight at the never ending stream of data to process.

Discovery
50th Anniversary

12 to 4 team sampling tonic water in the *Discovery* bar, Penny Holliday, Chris Paulson, Miles Finch, ship's officer, Raymond Pollard and Bob Kirk.

Bob Kirk

12 to 4 team on deck. Miles Finch, Penny Holliday Penny and Bob Kirk with the recovered CTD system.

Discovery
50th Anniversary

Discovery Cruise 228

The Fluxes at AMAR Experiment: FLAME

21 May 1997 to
28 June 1997

Vigo to Ponta Delgada to Vigo

Principal Scientist
Chris German

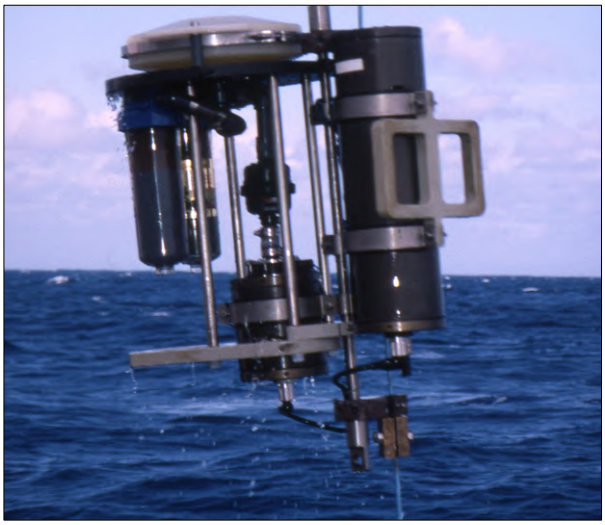
Master
Keith Avery

Contributor
Bob Kirk

John Wynar (left), Chris German and ? prepare a Stand Alone Pump for deployment. The pump was used to collect particulate samples from seawater pumped through filters.

Bob Kirk

Discovery
50th Anniversary



Bob Kirk

The Stand Alone Pump being recovered after a deployment.

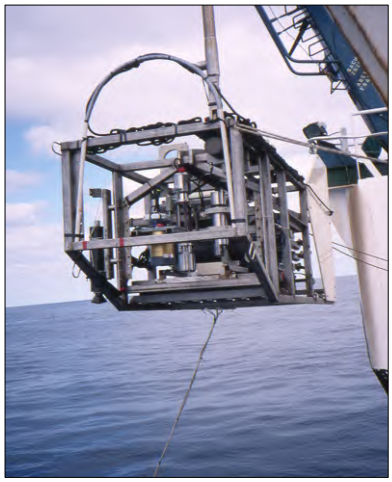
Discovery
50th Anniversary

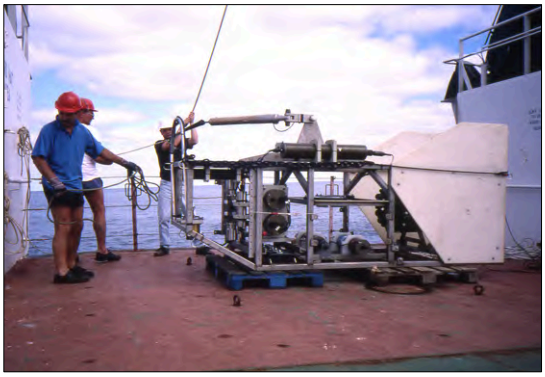
Phil Taylor stands next to the RVS multisampler system.

Bob Kirk

French scientists recover their own multisampler following a cast.

Discovery
50th Anniversary





Bob Kirk

'Bridget' deep-tow survey and multiple sensor vehicle being deployed over the ships stern. Bridget was designed to detect hydrothermal vent plumes and locate and map the vent sites on the seafloor.

Discovery
50th Anniversary

Discovery Cruise 232
Gibraltar exchange processes

4 – 21 April 1998

Southampton to Santa Cruz, Tenerife

Principal Scientist
Harry Bryden

Master
Keith Avery

Contributor
Gwyn Griffiths

Gwyn Griffiths

Discovery spent most of the cruise making observations in the Strait of Gibraltar. The three principal objectives were to carry out mooring operations for long-term monitoring of the exchange between Atlantic and the Mediterranean, to study non-linear processes resulting from the strong currents in the Strait and to measure biogeochemical fluxes of the layered flows.

Discovery
50th Anniversary

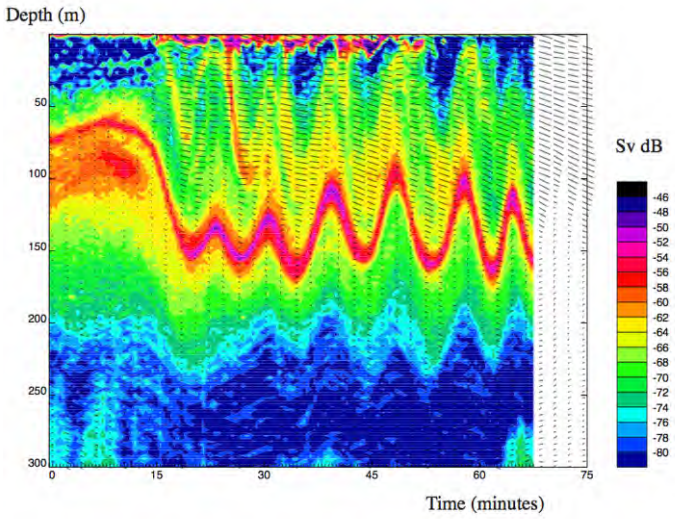
CTD observations were augmented with direct current measurements from a lowered acoustic Doppler current profiler. A towed multi-frequency sonar provided images of the internal waves from scattering by either turbulence or zoo-plankton carried by the vertical motions.

Gwyn Griffiths

The lowered Doppler profiler surrounded by a rosette of 24 ten litre bottles; the CTD lies horizontal. The tow-fish at right carried transducers at 38, 120 and 200 kHz for the EK500 echo-sounder.

Discovery
50th Anniversary

The main non-linear process studied was the internal bore on the outgoing tide near the sill. Propagating eastward past *Discovery* hove to, the shipboard acoustic instruments showed this dramatic image of the 100 m amplitude nonlinear wave train.



Gwyn Griffiths

This image is from the 38kHz EK500 echosounder, showing sound scattered from either zooplankton advected by the physical motions or from turbulence. Superimposed are the horizontal current vectors from the Doppler current profiler.

Discovery
50th Anniversary

Not a common sight on a physics cruise, the Longhurst Hardy Plank-ton Recorder was deployed twice. The intention was to take discrete biological samples in the Atlantic and Mediterranean water layers. Unfortunately it proved difficult to control the depth of the LHPR in the strong currents of the Strait.

Gwyn Griffiths

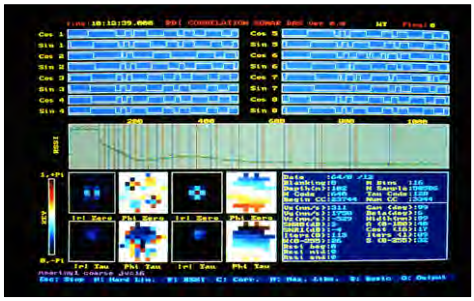
Discovery
50th Anniversary

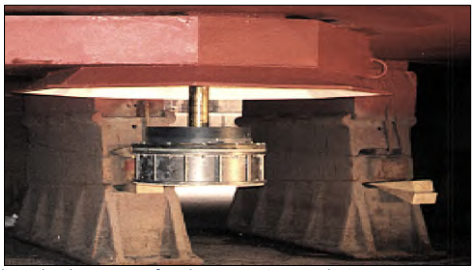
Moorings that had been laid in the Strait included a self-contained Doppler current profiler looking up, housed within a syntactic foam sphere. Bio-fouling proved to be a problem on the Aanderaa rotor-vane instruments.

Gwyn Griffiths

Discovery
50th Anniversary

A commercial pre-production Acoustic Correlation Current Profiler was fitted to *Discovery* in 1995. The intention was to be able to measure current profiles underway to depths of 1500 m. Sailing on this cruise was the inventor of the instrument and his assistant. Despite their best efforts, the performance remained disappointing. However, we did learn a great deal about the difficulties of operating this type of instrument on a research ship.
The device never made it into production, only three were ever built.





Gwyn Griffiths

The data display screen for the acoustic correlation current profiler, and the transducer beneath the hull, ready to be raised within the bubble shield.

Discovery
50th Anniversary

Discovery Cruise 245
A hydrographic section from Scotland to Iceland

27 January to
20 February 2000

Southampton to Southampt

Principal Scientists
Penny Holliday and
Colin Griffiths

Master
Keith Avery

Contributor
Penny Holliday

Back: David Hydes, Kenny Black, Rob Lloyd, Anne Jolly, John Allen, Phil Stanford, Martyn Harvey, Martin Bridger, Ciaran Cronin, Emmanuel Roussier,
Terry Edwards, John Smithers, Adrian Wright.
Middle: Titus Owoso, Colin Griffiths, Rob Bonner, Dave Stewart, Ivan Ezzy,
Penny Holliday, Mike Smithson, Louise Duncan, Jane Read, Ben Rabe, Ian McGill
Front: Clive Phillips, Jim Crosbie, Jet Jethwa, Phil Taylor

Discovery
50th Anniversary

This cruise was the 68th occupation of the Ellett Line, a repeat hydrography section in the Rockall Trough, and the aim was to collect rare winter data. Winter is a particularly interesting time from a physics perspective, with mixing down to 800m and a huge amount of heat released to the atmosphere from the ocean. We soon found out why this time series, which was started in 1975 by David Ellett, had so little winter data.

Discovery
50th Anniversary

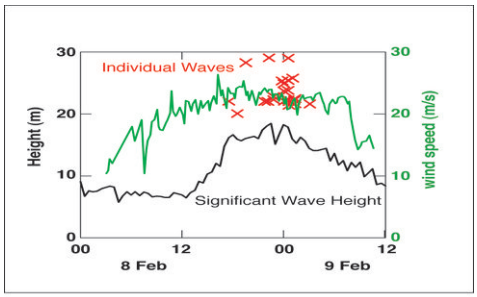
For most of the cruise we were battered by ferocious storms. Of the 25 days at sea, science work was possible on only 9. The science programme was in tatters, and so were people nerves. The storms were relentless and as the ship rolled and pitched, no-one got any sleep and ribs were broken. The ship's officers and crew worked continually to keep us safe and to try to salvage something of the science we had planned. But the sight of the Captain (Keith Avery) and often the Chief Engineer (Ian McGill) on the Bridge at all hours, looking very worried, and saying they had never seen weather so bad, is something I hope not to experience again.

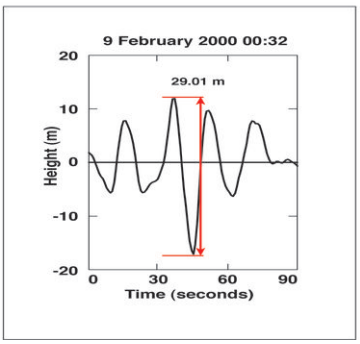
Ivan Ezzy, David Hydes and Penny Holliday in the main lab during a roll of about 25°.
Photo by Kenny Black.

Discovery
50th Anniversary

There was damage to the ship. An interior window between the main lab and the computer room shattered as the ship flexed. During a roll of 33° at 4am the starboard lifeboat came loose and was banging loudly against the side of the ship. Crew were dispatched to secure it, and watching them go out into the raging storm was the worst moment for me. They did the job though, and all came safely back inside.

During a 12-hour period on 8-9 Feb 2000, a total of 23 waves exceeded 20m (peak-to-trough height). The biggest wave was over 29m, and significant wave height reached 18.5m, the highest ever recorded.





Discovery
50th Anniversary

Discovery Cruise 276

German contribution to the international Climate Variability (CLIVAR) project.

8 December to
21 December 2004

Fortaleza to
Rio de Janeiro

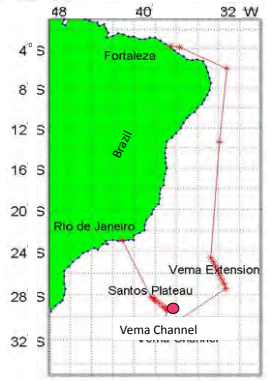
Principal Scientist
Walter Zenk
IfM-GEOMAR
Kiel, Germany

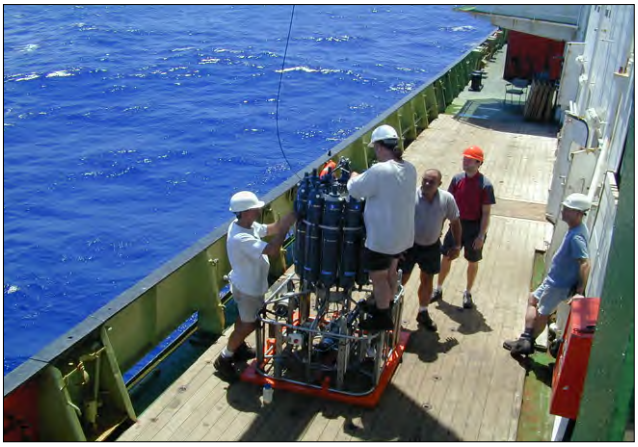
Master
Robin PLumley

Contributor
Walter Zenk

Discovery approaching Rio with the famous Sugarloaf in sight.

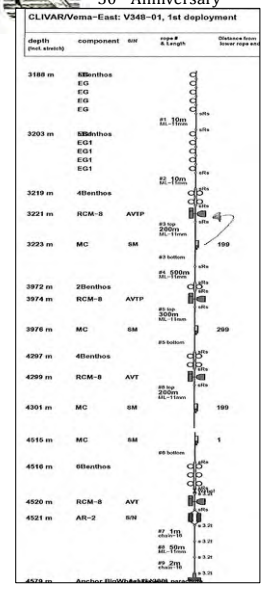
Discovery
50th Anniversary





The Vema Channel provides a natural choke point for property fluctuations and transports of Antarctic Bottom Water entering the Brazilian Basin. The prime objective of cruise was to install two near-bottom moorings on the sill of the Vema Channel. In continuation of a 30 year long abyssal temperature time series, supporting CTD casts were taken on the Santos Plateau and at the channel's entrance and exit (Vema Extension).

Discovery
50th Anniversary



Discovery's Master, Robin Plumley, and Reseach Specialist Gerd Niehus from Kiel discuss the impending launch of the first of two near-bottom current meter moorings (left) at the Vema Channel. Both rigs deployed from *Discovery* were completely recovered one year later by FS *Polarstern*.

Discovery
50th Anniversary

Discovery Cruise 298

Physical Oceanography at Cape Farewell and Eirik Ridge

23 August to
25 September 2005

Fairlie to
Govan, Scotland

Principal Scientist
Sheldon Bacon

Master
Roger Chamberlain

Contributor
Igor Shkvorets

Igor Shkvorets

Discovery alongside a quiet pier at Fairlie, Firth of Clyde.

Discovery
50th Anniversary

Igor Shkvorets

A Deep Western Boundary Current array of 7 moorings was deployed, 2 IFREMER moorings were recovered, serviced and redeployed and a mooring was recovered for the Woods Hole Oceanographic Institution.

Discovery
50th Anniversary

The two cranes working in tandem provide an excellent capability for mooring deployment and recovery.

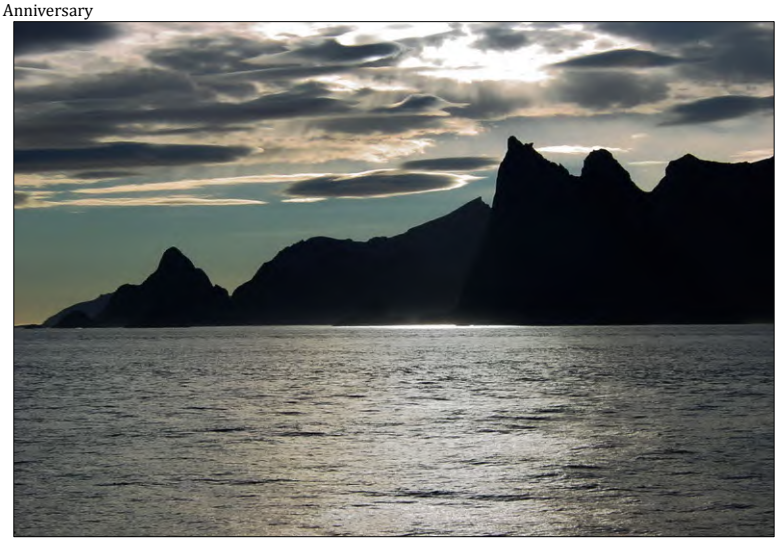
Igor Shkvorets

Discovery
50th Anniversary

63 CTD and lowered Doppler current profiler stations were completed using this package. The four small transducers of the upward-looking Doppler profiler can be seen on the left. Up to 24 water samples on each station were analyzed for salinity, dissolved oxygen, nutrients, CFCs (CFC-11, CFC-12, CFC-113 and CCl_4), and oxygen isotope fraction ($\delta^{18}O$).

Igor Shkvorets

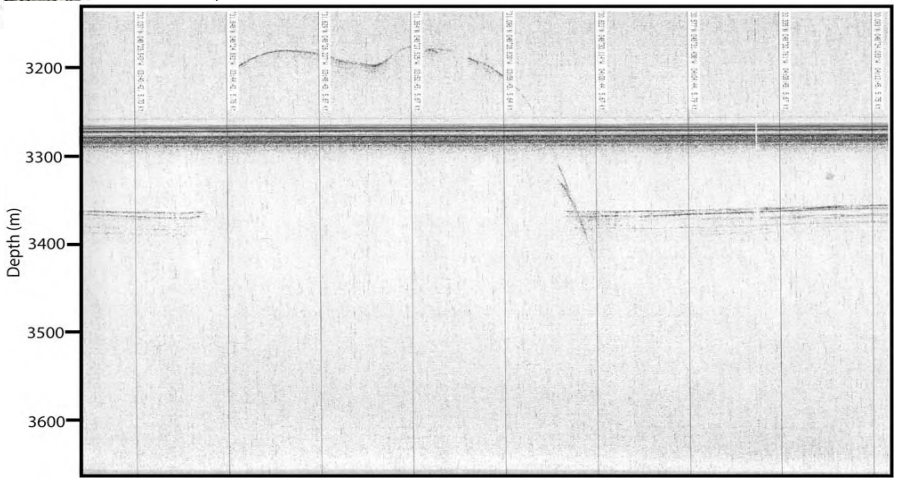
Discovery
50th Anniversary



Igor Shkvorets

It was important to complete the survey to near the coast, the final station being at 59˚ 57.7′ N 43˚ 6.7′ W in 160 m of water off the SW tip of Greenland.

Discovery
50th Anniversary



A seamount was discovered on the northern flank of the Eirik Drift that did not appear on any bathymetric chart of the area.

Discovery
50th Anniversary

Igor Shkvorets

The Principal Scientist, Sheldon Bacon, opened his cruise report thus, "We are most grateful to the Master (Roger Chamberlain), the officers and crew of RRS *Discovery*. D298 was a difficult cruise, carried out in rather foul weather …". But there were also sublime days to remember.

Discovery
50th Anniversary

Discovery Cruise 321A
Biophysical interactions in the Iceland Basin

24 July 2007 to
23 August 2007

Govan to Reykjavik

Principal Scientist
John Allen

Master
Roger Chamberlain

Contributor
Meric Srokosz

Meric Srokosz

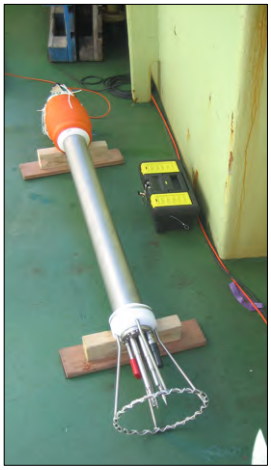
CTD deployment from the mid-ships gantry with second, titanium frame, CTD for clean sampling on deck.

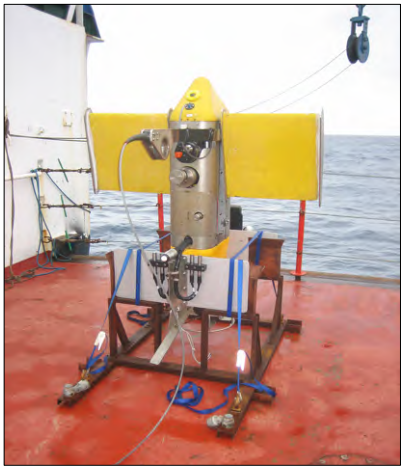
Discovery
50th Anniversary

Meric Srokosz

Night-time deployment of Stand-Alone Pumps (SAPS).

Discovery
50th Anniversary

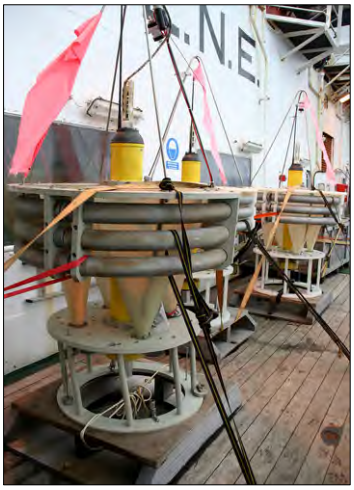


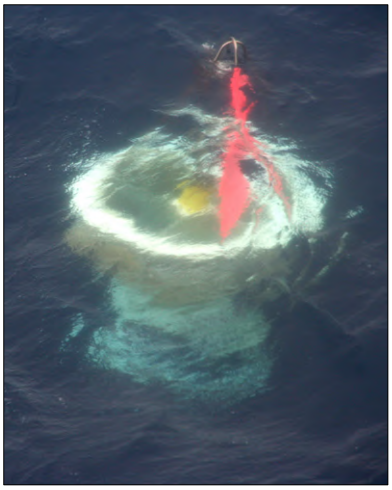


Meric Srokosz

Free-fall turbulence profiler, and a heavily instrumented SeaSoar towed undulator, including a Fast Repetition Rate Fluorometer, two dissolved oxygen sensors, an UV absorption nitrate sensor and a bioluminescence sensor.

Discovery
50th Anniversary

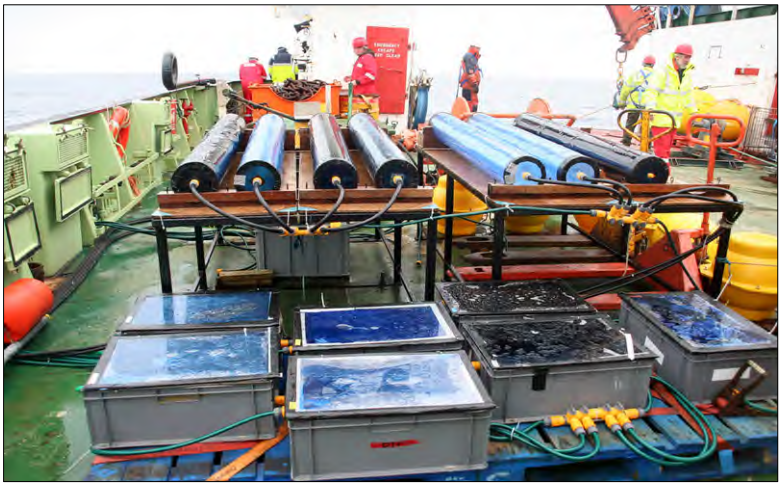




Meric Srokosz

The PELAGRA sediments trap, based on an ARGO float, that sink to pre-determined depths and drift with the current catching 'marine snow' particles.

Discovery
50th Anniversary



Meric Srokosz

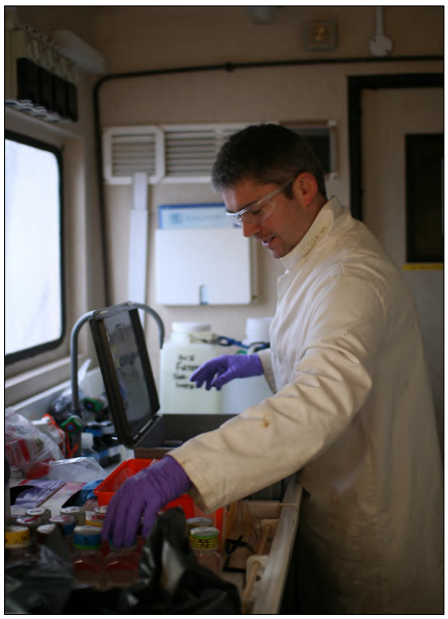
Phytoplankton primary productivity was measured of captured samples from different in these on-deck incubators, through the take up of radioactive labelled carbon 14.

Discovery
50th Anniversary

Meric Srokosz

Glassware in the Water-bottle Annex.

Discovery
50th Anniversary



Meric Srokosz

Alex Poulton working in the Container Laboratory.

Discovery
50th Anniversary

Meric Srokosz

At work in the Deck Laboratory.

Discovery
50th Anniversary

Meric Srokosz

Equipment to measure Dissolved Inorganic Carbon in the Deck Laboratory.

Discovery
50th Anniversary

Left: the salinometer in use in the Constant Temperature Laboratory. Above: the CTD control station in the Main Laboratory.

Meric Srokosz

Discovery
50th Anniversary

Ros Pidock, Stuart Painter and Meric Srokosz in the Main Laboratory.

Meric Srokosz

Discovery
50th Anniversary

Meric Srokosz

The Bridge.

Discovery
50th Anniversary

Meric Srokosz

The communications area to the aft port side of the Bridge. With the ship's callsign GLNE. Discovery's IMO number is 5090660.

Discovery
50th Anniversary

Meric Srokosz

Relaxing in the Bar prior to a science briefing.

Discovery
50th Anniversary

Discovery Cruise 323

First deep water trials of the Autosub6000 AUV.

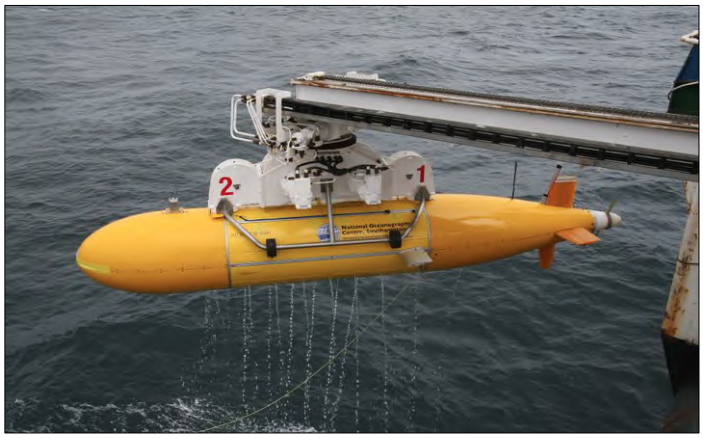
19 September to
3 October 2007

Falmouth to
Falmouth

Principal Scientist
Steve McPhail

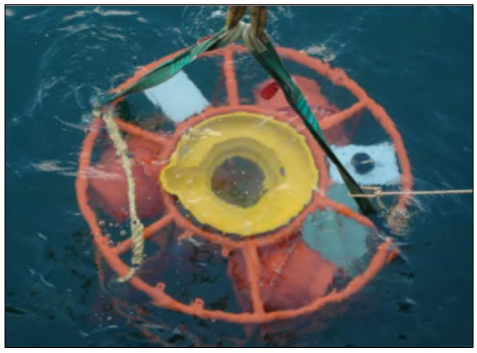
Master
Peter Sarjeant

Contributor
Cruise Participants



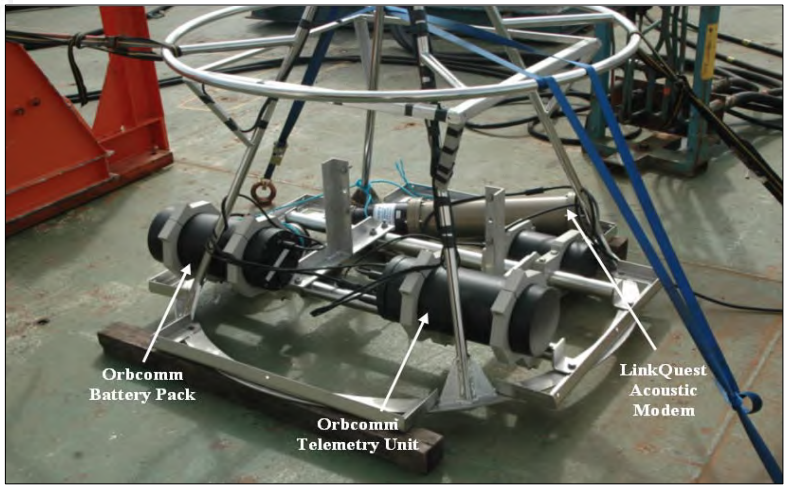
This was an instrument trial cruise as part of the NERC Oceans 2025 Technology theme. Engineers from Southampton, Liverpool and SAMS at Oban took part. The main purpose was to provide the first trials of the Autosub6000 deep-diving autonomous underwater vehicle.

Discovery
50th Anniversary



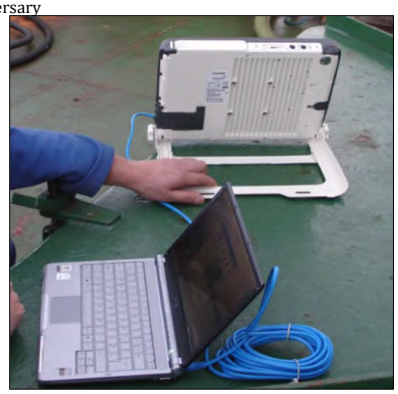
The MYRTLE Multi-Year Return Tide Level Equipment developed by the Remote Sea Level Group at Liverpool was tested by Steve Mack, Chris Balfour and Dave Jones.

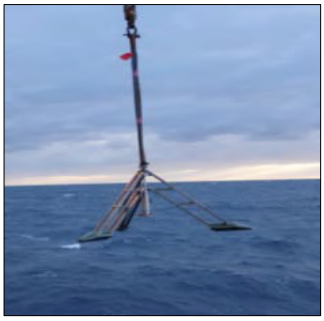
Discovery
50th Anniversary



The Liverpool team worked with colleagues from SAMS to test new LinkQuest UWM4000 long range acoustic modems from this deep sea lander frame.

Discovery
50th Anniversary





Above, next to the laptop is a satellite terminal for a Broadband Global Area Network (B-GAN) link. These are used from remote locations, such as the tide gauges on Atlantic islands, to send data to the UK. Right, a Liverpool Micro-Lander on the deck in its collapsed form, and over-the-side with its legs splayed out. The Micro Lander is designed as a rapid-deployment device.

Discovery
50th Anniversary

Discovery Cruise 326
Chasing Saharan Dust Storms II

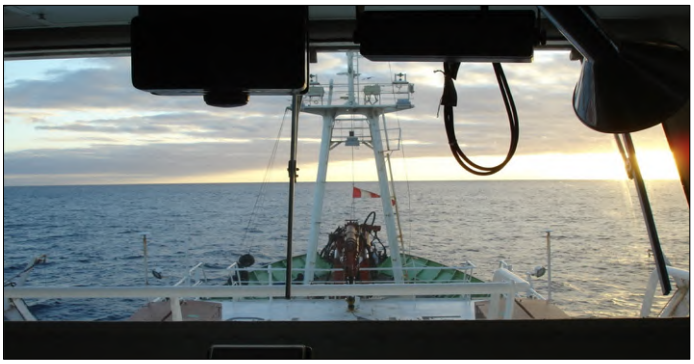
5 January to
4 February 2008

Santa Cruz to
Santa Cruz, Tenerife

Principal Scientist
Eric Achterberg

Master
Roger Chamberlain

Contributors
Cruise Participants



This cruise in the subtropical and tropical NE Atlantic was part of the UK Surface Ocean - Lower Atmosphere Study to improve our understanding of the atmospheric transport, cycling and
deposition of dust and nutrients, and the consequences of the nutrient inputs on surface water microbial communities.

Discovery
50th Anniversary

Discovery
50th Anniversary

Above, dust dissolution experiments; agitation of dust-containing seawater
samples. Right, the aerosol sampler on the Monkey Island. Aerosol dust was collected on filters for sampling periods of between 12 and 24 hours

Discovery
50th Anniversary

Discovery
50th Anniversary

Discovery Cruise 346

Hydrographic section across the Atlantic at latitude of 24.5°N.

5 January to
19 February 2010

Bahamas to Lisbon

Principal Scientist
Brian King

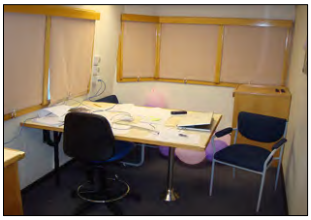
Master
Bill Richardson

Contributor
Brian King

Moving in.

Discovery
50th Anniversary

The Principal Scientist's Cabin.



Discovery
50th Anniversary

The phased array transducer for the acoustic Doppler current profiler in its transit case, and then in place on the inside of the ship's hull. After the transducer has been put in place, the blue frame is removed, and the green top hat, bottom right, is bolted over the top.

Discovery
50th Anniversary

Charts and data graphs laid out in the plot. Inset is the chart with the track and stations of the cruise thus far. The window to the right is to the Main Lab.

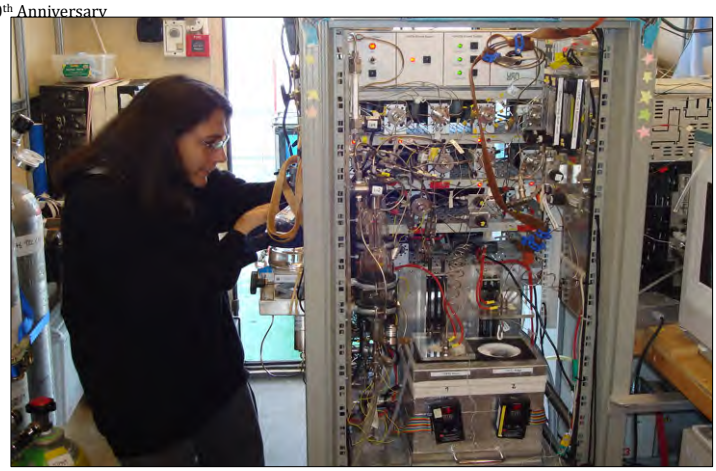
Discovery
50th Anniversary

The birthday party for Dennis Jakob auf der Stroht, the ship's Electrical and Technical Officer (right) with to his left, Gary Slater, John Leask (Master) and ?

Discovery
50th Anniversary

Alan Sherring in the workshop.

Discovery
50th Anniversary



Marie-Jose Messias from the University of East Anglia with her apparatus for measuring concentration of Chlorofluorocarbons (CFCs). This could also measure Sulphur Hexafluoride, a chemical used for deliberate tracer release experiments. Its detection limit is equivalent to one teaspoon per cubic kilometre.

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50th Anniversary

Barbecue on the after deck.

Discovery
50th Anniversary

Pictures through the years
John Moorey

1962

I am one of the few people still around and associated with the earliest days of *Discovery*. After her launch in Aberdeen she was on show in the Pool of London and I was one of the tour guides. The photo shows Tower Bridge opening to let us through. There were problems with pulling in the anchor and Captain Alexander was shouting to the crew that the bridge wasn't going to stay open for ever.

John Moorey

Discovery heading for Tower Bridge. Note the shoreside cranes – London was then a busy port.

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Pictures through the years
John Moorey

March-May 1964
International Indian Ocean Expedition

Top. Henry Charnock driving the winch and Graham Topping, (a John Murray fellow from Liverpool University) on the hydro platform attaching one of the new yellow plastic water bottles. The wicker basket stored the messengers that closed the bottles.

Bottom. Last night in the bar before arriving in Cochin, L-R Peter David (hiding), Engineeer with guitar, Peter Brewer (back view) Ron Currie, Graham Topping, Bob Munns (WHOI), Martin Angel.

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Pictures through the years
John Moorey

January - April 1979
Cruise 100
Southern Ocean

This cruise led by Jim Crease was Sir George Deacon's last on *Discovery*. It also marked station number 10,000.

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Pictures through the years
John Moorey

December 1986 - January 1987
Cruise 164
SW Indian Ocean

This cruise was led by Raymond Pollard. At 0600 on 25 December the alarms sounded but no-one took any notice, Keith Goy opened my cabin door & said "Lifeboat stations, fire in the engine room." There was a strong smell of smoke and we mustered on the foredeck. After 30 minutes the fire in a generator was out and the work continued without the generator. When RVB returned from Christmas holidays three days later they ordered us to abandon the cruise, but finally accepted our continuation.

L-R John Moorey, Raymond Pollard, Roy Wild, Jane Read, Laurie (steward).

Christmas dinner. Keith Goy nearest camera.

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Pictures through the years
John Moorey

Men at work (1)

Below. John Moorey putting a water bottle on the hydro wire.
Right. Dick Burt and Harry Moreton deploying a dhan buoy. John Swallow unreeling piano wire

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50th Anniversary
Pictures through the years
John Moorey

Men at work (2)

Below. Mending nets – Howard Roe, Malcolm Clarke and Julian Badcock .

Right. Roy Wild doing some repairs

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50th Anniversary

A Doctor's Pictures
Peter Rowan

Keep-Fit on Cruise 100. Left, Howard Roe, Peter Rowan in red.

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In the Crew Bar, cruise 100. On the sofa are Bob Overton, Peter Rowan and Phil Parker. Seated right is Laurie.

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Above: Howard Roe and Mac Harris grapple with a giant jellyfish.
Right: Squid and a young deckhand on the deck of the Biology Lab. Looking on, from left are John Cherriman, James Crease and Mac Harris.

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50th Anniversary

Outside the Chemistry Lab., from left, Phil Pugh and Howard Roe and …

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Discovery at anchor, Stanley, Falkland Islands, New Year's Eve 1984.

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Radio Officer and right, Peter Rowan, cruise 154.

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