Scottish Marine Biological Association

Dunstaffnage Marine Research Laboratory

Cruise Report

RRS CHALLENGER

Cruise 7/1983

11 May - 2 June

RRS CHALLENGER, CRUISE 7/1983

Duration: Leg A 1700h 11 May - 0856h 23 May 1983

Leg B 1600h 23 May - 1530h 2 June 1983

All times BST

Locality: Rockall Channel, 52°-60°N, Scottish continental slope and shelf.

Aims:

1) To service SMBA moorings L1 and L2 (Porcupine Bank Slope), F & M (central Rockall Channel) and Y (Tiree Passage).

2) To lay SMBA moorings A2 to A5 (Hebrides slope) and J (Sound of Jura) and MAFF moorings L3 and L4 (Porcupine Bank slope).

3) To deploy three satellite-tracked drogues at the southern entrance to the Rockall Channel.

4) To make Agassiz trawl, benthic sledge and RMT hauls at the benthos station in 54°N and in the vicinity of station M.

5) To make CTD lowerings and collect surface radiocaesium samples upon shelf transects between the Mull of Galloway and the Butt of Lewis.

6) To service mooring M2 and relay HS1 in the Sea of the Hebrides for the Marine Sciences Laboratory, Menai Bridge, and to lay a satellite-interrogated spar buoy for temperature and salinity measurements at A2 for the University of Dundee Dept. of Physics.

7) To sample chlorophyll and nutrients across the shelf and slope to the west of the Hebrides for the Marine Biology Station, Portaferry.

8) To lay IOS Bidston pressure gauges in the Porcupine Sea Bight and at station N, near Anton Dohrn Seamount.

9) To collect 30 litre surface samples for radiocaesium determination at ten standard positions between the shelf-edge and the Sound of Mull for MAFF, Lowestoft.

Leg A, 11-23 May 1983

Staff:

D.J. Ellett
Dr. J.D. Gage
D.T. Meldrum
Dr. D.A. Booth
Dr. J.M. Graham
R. Harvey
C. Griffiths
N. MacDougall
D. Ritchie
Miss J. Pietrzak (Univ. Coll. of Wales, Swansea)
A.J. Harrison (IOS, Bidston)

Narrative:

CHALLENGER sailed from Falmouth at 1700 11 May in force 6-7 south-westerly winds with a moderate swell. Course was set for the Porcupine Sea-Bight pressure gauge site, but at 1840h 12 May increasing wind and swell dictated a diversion to Bantry Bay for shelter overnight. At 1000h 13 May CHALLENGER sailed from Bantry with a better forecast and reached deep water for wire tests of acoustic releases at 0139h 14 May. Upon completion of these the ship proceeded to the site for the Bidston pressure gauge, which was successfully launched between 0644 and 0722h in force 3-4 northerly winds. At 1630h the position of current meter mooring L1 was passed without receiving any response from the acoustic release. L2 was located at 1821h and was recovered by 1906h, after which we returned to the site of L1 for a further search. Despite passing over the position and steaming along the 500m depth contour to the north and south, no contact was made with the release, and at 2244h the search was stopped in order to test releases for the replacement moorings. Mooring L1 was re-laid between 2314 and 2354h. CTD lowerings were made at L1 and L2 from 0613h 15 May and mooring L2 was re-set between 0928 and 1024h. MAFF moorings L3 and L4 were laid at 1145-1248h and 1436-1526h respectively and CTD lowerings were made at each. At 1656h course was set for the drogue launching position.

The first of the satellite-tracked drogues was released at 1824h 16 May, the ship having been slowed by beam winds of forces 6-7 from the north-east. All three drogues were deployed by 1925h, and after a CTD lowering the ship proceeded eastwards for the permanent benthos station in 54°40 N. Here an epibenthic sledge haul was successfully taken between 1220 and 1725h 17 May. The ship then steamed northwards for mooring F, which was located on approach at 1515h 18 May and was inboard by 1735h. After a short steam to dump the old wire and wind on the new mooring, F was re-laid by 2118h and after a CTD lowering the ship set course for mooring M. The winds continued to be northerly, but fell to forces 5-6 during the day.

M was reached at 0600h 19 May and the mooring was raised by 0750h. Re-laying and a CTD lowering occupied from 1045 to 1304h. The epibenthic sledge was shot 3 miles to the south-east of the mooring at 1424h and retrieved at 1834h and was followed by an Agassiz trawl at 1934h to 0002h 20 May. A short steam to the site for the second Bidston pressure gauge

followed and the gauge was dropped at 0154-0217h. Overnight CHALLENGER moved to the position for mooring A5, and the latter was laid at 0901-1048h. Mooring A4 followed at 1252-1353h. The ship steamed southward to deeper water and the rectangular mid-water trawl (RMT) was used between 1606 and 1858h

During 21 May the wind further decreased to force 4, though remaining northerly. At 0800h the first of nine stations on a shelf CTD section in towards Islay was begun, ending in Machir Bay at 1711h. Subsequent sections, all with radiocaesium sampling, were worked between Portpatrick and Copeland from 0221 to 0625h 22 May, between Cushenden and the Mull of Kintyre from 1035 to 1415h and between Glenacardoch Pt. and the Ardmore Is. from 1716 to 1941h. The ship set course for Oban through the Sound of Islay and berthed at the North Pier at 0856h 23 May.

Leg B, 23 May - 2 June 1983.

Staff:			
	R. Bowers	(to 31 May)	
	Dr. J.M. Graham	(" " ")	
	M.J. Picken	(" " ")	
	C. Griffiths	(to 2 June)	
	N.D. Pascoe	(to 31 May)	
	N. MacDougall	(" " ")	
	D. Ritchie	(" " ")	
	Miss H.J. Lennon	(to 1 June)	(Marine Biological Stn., Portaferry)
	P. Johnston	(" " ")	(" " " ")

Narrative: The ship sailed from Oban at 1600h 23 May and progressed up the Sound of Mull to station G1 at 1906h. The G section was then worked with CTD's at all stations and caesium and chlorophyll measurements at selected stations, and continued with the Anton Dohrn seamount section as far as station N. This station was completed at 0430h 24 May in spite of the digital readout showing 230m when the CTD broke surface. (This happened again at station L later in the cruise.) We then sailed for station A2 where two moorings were laid, one a U-shaped mooring with recording current meters and the other (for Prof. Cracknell of Dundee University) a spar buoy with an Argos transmitter for sea temperatures aboard. With this completed we proceeded to A3 where, after completing wire tests, a pop-up mooring was deployed. We then returned to the Anton Dohrn section and worked it as far as station F, which was completed at 1000h on 26 May. We then sailed eastward and did the B line of stations at which CTD's, fluorometer profiles and bottle samples were done at every station. When this was completed the J and K lines of stations were worked and caesium samples were taken at all stations. The K section was finished at 1015h 29 May and we proceeded to HS1 where a U-shaped mooring and spar buoy mooring were laid. We then sailed for mooring Y arriving at slack water before relaying it and so this was done at 0430h 30 May. Next work was the recovery of mooring M2 which was completed at 0915h 30 May. The rig had been interferred with but the data appeared intact. The spar buoy mooring was missing. M2 was relaid complete with Selco spar buoy mooring and, it being a beautiful day we set sail through the Sound of Islay and into the Sound of Jura where, after finding a suitable depth a U-shaped mooring was laid. With this completed at 2142h 30 May we set sail for Oban where we docked at 0900h on 31 May. SMBA gear and the majority of staff were landed, and the ship sailed at 1200, reaching Plymouth at 1500h 2 June.

The weather throughout the cruise was excellent which resulted in nearly all of the section being worked and only two rubbers of bridge completed. Biological fouling samples were recovered and preserved from all of the moorings recovered.

The scientists would like to thank the Officer and Crew for their help throughout the cruise and to Mr. Griffiths for his spell in control of the ship.

Results:

Aim 1). Mooring L1 was not located, but the remaining SMBA moorings, L2, F,M & Y, were serviced. Details of recoveries and deployments are given in Tables 1 & 2. Satisfactory records were obtained from 14 of the current meters recovered. Of the remaining two, the battery of the upper meter at mooring M had leaked, so that only 38% of the data were obtained and a mechanical fault in the lowest meter at the same mooring meant that no good data were obtained.

Aim 2). SMBA & MAFF Current meter moorings were laid on the Porcupine Bank slope, the Hebrides slope and in the Sound of Jura as shown in Table 2.

Aim 3). Three satellite-tracked drogues were successfully launched in latitude 54°50'N. Despite the large size of the drogues (5 x 12 metres), no problems were encountered and the minimum-windage surface buoys have transmitted without problems in the roughest conditions occurring subsequently.

Aim 4). The SMBA Permanent Benthos Station in 54°40'N was visited on 17 May and an epibenthic sledge haul was obtained to continue the long-term sampling series. A second sledge haul was made on 19 May in the vicinity of mooring M and was followed by an Agassiz trawl. An RMT haul on 20 May was made over the deep water to the west of the Hebrides continental slope.

Aim 5). CTD lowerings were made, and surface radiocaesium samples were collected for the Nuclear Geochemistry Unit, Glasgow University, upon seven transects over the continental shelf west of Scotland (see Table 3). It is hoped to repeat the sampling in August and November 1983.

Aim 6). Mooring M2 was serviced for the Marine Science Laboratories, Menai Bridge and mooring HS1 was re-laid. The University of Dundee buoy (KRAKSAT) with temperature and salinity sensors and satellite transmitter was moored next to mooring A2 on the outer shelf.

Aim 7). Chlorophyll and nutrients were sampled for the Portaferry laboratory at the majority of stations on four CTD sections. These are detailed in Table 3.

Aim 8). Two Bidston pressure gauges were deployed at sites in the Porcupine Sea Bight and near station N, the positions being given in Table 2.

Aim 9). Standard radiocaesium sampling for the Fisheries Laboratory, Lowestoft was carried out at ten positions on section G during 23-24 May.

D.J. Ellett & R. Bowers

8 August 1983.

Table 1. Moorings recovered during RRS CHALLENGER Cruise 7/1983.

Mooring	Owner	Depth m.	Lat. °	N. '	Long. °	W. '	Date moored	Date recovered 1983	No. of current meters	Remarks
L1	SMBA	484	51	42	14	40	25 Sept. '82	-	2	Not found
L2	SMBA	786	51	41	14	56	25 Sept. '82	14 May	2	Sub-surface
F	SMBA	1814	57	28	12	13	16 Feb. '83	18 May	4	Sub-surface
M	SMBA	2230	57	16	10	19	15 Feb. '83	19 May	4	Sub-surface
Y	SMBA	46	56	38	06	24	19 Feb. '83	30 May	1	Surface spar buoy
M2	MSL	67	56	09	06	55	19 Feb. '83	30 May	3	Surface toroid & spa

Abbreviations for Tables 1 & 2

Bidston	=	Institute of Oceanographic Sciences, Bidston	MAFF	=	Fisheries Laboratory, Lowestoft
U. Dundee	=	University of Dundee, Dept. of Physics	MSL	-	Marine Science Laboratories, Menai Bridge

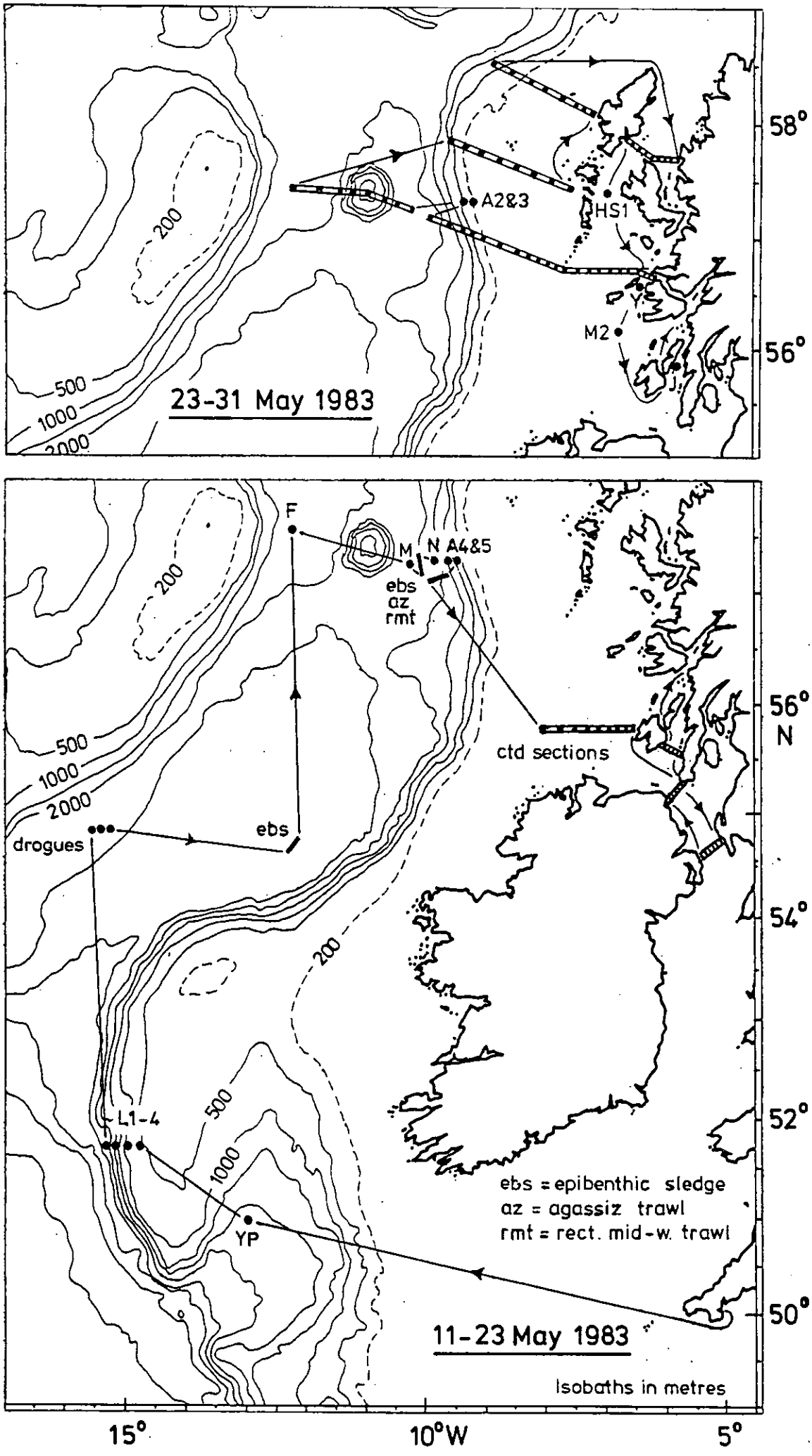
Table 2. Moorings and drogues deployed during RRS CHALLENGER Cruise 7/1983.

Mooring	Owner	Depth m	Lat. °	N. '	Long. °	W. '	Date deployed 1983	No. of current meters	Remarks
YP	Bidston	2080	50	59	13	00	14 May	pressure gauge	Deployed on sea-bed
L1	SMBA	500	51	41	14	44	14 May	2	Sub-surface
L2	SMBA	750	51	42	14	55	15 May	2	Sub-surface
L3	MAFF	1710	51	42	15	11	15 May	2	Sub-surface
L4	MAFF	2720	51	43	15	22	15 May	2	Sub-surface
3972	SMBA	2270	54	50	15	29	16 May	drogue at 16m	Satellite-tracked
3975	SMBA	2270	54	50	15	29	16 May	drogue at 66m	Satellite-tracked
3976	SMBA	2270	54	50	15	29	16 May	drogue at 166m	Satellite-tracked
F	SMBA	1814	57	32	12	13	18 May	4	Sub-surface
M	SMBA	2230	57	16	10	19	19 May	4	Sub-surface
N	Bidston	2030	57	19	09	54	20 May	pressure gauge	Deployed on sea-bed
A5	SMBA	1575	57	19	09	40	20 May	4	Sub-surface
A4	SMBA	995	57	20	09	33	20 May	4	Sub-surface
A2	SMBA	185	57	19	09	17	25 May	2	Surface spar buoy
KRAKSAT	U. Dundee	205	57	23	09	19	25 May	thermistors	Surface spar buoy
A3	SMBA	517	57	20	09	27	25 May	3	Sub-surface
MS1	MSL	148	57	27	07	01	29 May	3	Surface toroid & spar
Y	SMBA	46	56	38	06	24	30 May	1	Surface spar buoy
M2	MSL	67	56	09	06	55	30 May	3	Surface toroid & spar

Table 3. Sections worked during RRS CHALLENGER Cruise 7/1983

Stations	Location	Dates	Observations made
L1 - L4	W. Porcupine Bank slope	15 May	CTD
OD - 8D	West from Islay	21 May	CTD; surface Cs.
1Z - 6Z	Copeland-Portpatrick	22 May	CTD; surface Cs.
1A - 5A	Antrim-Kintyre	22 May	CTD; surface Cs.
1B - 5B	Gigha-Islay	22 May	CTD; surface Cs.
1G - 16G	Sound of Mull-Shelf edge	23-24 May	CTD; surface Cs (except 5 & 8); nutrients & fluorometer lowerings (4,6,7,9,11,13,15,16).
F - T	Anton Dohrn Seamount section	24-26 May	CTD; nutrients & fluorometer lowerings (M,O,P,Q,R,S,T).
BN1-BN8	St. Kilda shelf	26-27 May	CTD; nutrients & fluorometer lowerings (all stns.)
1J - 8J	Loch Resort-Shelf edge	27-28 May	CTD; surface Cs
1K - 9K	Loch Seaforth - Loch Gairloch	29 May	CTD; surface Cs, nutrients & fluorometer lowerings (1,3,5,7 & 9)

CTD lowerings also obtained at moorings F,M,A2,A3,HS1,Y,M2 & J, and at drogue deployment site



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