Scottish Marine Biological Association

Dunstaffnage Marine Research Laboratory

Cruise Report

RRS CHALLENGER

CRUISE 7/1982

26 April - 16 May

RRS CHALLENGER, CRUISE 7A/1982

Duration: 1000 h 26 April - 1100 h 5 May 1982

All times BST.

Locality: Scottish continental shelf and Rockall Channel

Staff:

R. Bowers	
D.T. Meldrum	
M.J. Picken	
Dr. D. Booth	
N.D. Pascoe	
N. MacDougall	
A. Harrison	(IOS, Bidston)
P. Johnston	(Marine Biology Station, Portaferry)
Miss H.J. Lennon	(Marine Biology Station, Portaferry)

Aims:

1. To service or lay SMBA current meter moorings:-

   F 57°30'N 12°15'W
   M 57°18'N 10°23'W
   P 57°06'N 09°24'W
   R 57°00'N 09°00'W
   Y 56°37'N 06°25'W
   Z 57°19'N 07°39'W

2. To lay a Bidston pressure gauge in the vicinity 57°20'N 09°54'W.

3. To work the Anton Dohrn Seamount CTD section and other sections across the slope as time permits.

4. To recover the toroidal buoy and fouling panels from the wave energy investigation site west of South Uist.

5. To collect 50 litre water samples for radiocaesium analysis at ten standard positions between the Sound of Mull and the shelf-edge with associated CTD profiling.

6. To measure chlorophyll concentrations over the shelf and shelf-edge to the west of the Outer Hebrides.

7. To work CTD sections in the Sea of the Hebrides as time permits.

Narrative:

Staff joined the ship in the late afternoon of 24 April and installed and connected up all of the gear ready for an early start on Sunday 25. We left Ardrossan at 1000 hrs and sailed for station C1 which we reached at 0400 hrs on 26 April. After completing C2, which was prolonged due to a broken strand on the CTD wire which had to be cropped and re-made, we sailed to mooring Y in the Tiree Passage arriving for slack water at 0730 hrs. The mooring was recovered and found to be missing the spar buoy anchor. The mooring was relaid by 1100 hrs and the C section recommenced, going on to station Q and then back, reaching station R at 0800 hrs 27 April. This mooring was recovered and relaid but unfortunately the spar buoy upper rim was damaged when it was released and so had to be recovered and replaced. After this was done satisfactorily we sailed for P and on the way found that the conductivity counter was reading incorrectly. This was due to a fault in the H-P coupler to the counter and so this coupler was moved onto the temperature counter where the fault would be less significant. It meant that the digital conductivity data obtained to that point was of doubtful value. On arrival at P to do a wire test we found that the acoustic release deck unit was not working. Fortunately Alan Harrison had a Bidston unit with him and so we used that for

the rest of the cruise. During the wire test the hydrographic wire jumped off the spooling gear sheave, for the second time this cruise, in spite of the jockey idler which is supposed to prevent it from so doing. This was due to the spooling gear being 18" out of alignment. Mooring P was laid and after completing station 0 we steamed N.W. to the tide gauge position where a wire test was done and the gauge laid by 0520 hrs 28 April. After that we did station N and then steamed down to $57^{\circ}10.6'N$, $10^{\circ}05.1'W$ to check that the other Bidston tide gauge was still alive and well. After that we steamed to station M arriving at 1115 hrs. This mooring was recovered and relaid by 1930 hrs and we then resumed the Anton Dohrn CTD section. However, by the time we reached station L1 the weather had deteriorated and we hove to until 0800 hrs 29 April when station L1 was completed and we continued the section.

It is worth noting here that at station L the RVS readout on the CTD wire was zeroed at the start of the dip, read 1661 m when the meter wheel read 1790 m and the CTD chart showed 1780 m, and read 150 m when the CTD was at the surface and recovered. I suppose it does have curio value but is very dangerous to people who think it might be there to show how much wire is out. Also at that time, the Munro davit readouts began to play up. The hydrowire readout had no hundreds pointer, the units shaft was broken and the tens gear was sliding in and out of engagement. On the CTD wire the tens gear was also dropping out occasionally. Mr. Rowlands, the chief engineer, was fixing these when we returned to Ardrossan but from appearances the amount of maintenance they had received since installation was minimal and they need refurbishing.

We finished station H in fairly rough conditions which continued to deteriorate and so we hove to at station G1. At 0800 hrs 30 April we steamed back onto station and completed it by 1106 hrs. However, conditions were somewhat marginal, Mr. Pascoe's wellies being filled three times during the station, and by the time we got to station G it was worse and so we hove to again. On 1 May the weather was even poorer but it improved in the afternoon and so we sailed for station F which we reached at 2030 hrs and popped up and recovered the mooring. The wire was then dumped and stations F and G completed, the idea being to return to station F at first light and re-lay the mooring. The weather again deteriorated during the night making the laying of the mooring impracticable, and so on 2 May we steamed NE to start a CTD section in to Wilsons Picket and mooring Z. The weather continued to deteriorate and so it was decided to seek shelter in the Minches east of Barra Head. At this point a forecast of N.E. hurricanes came over the wireless and so we sought shelter in the Sound of Mull where we anchored handily for Craignure until mid-day 4 May when we sailed for Ardrossan which we reached on the morning of 5 May.

Results:

Aim 1. Moorings M, P, R and Y were all successfully completed. Mooring F was recovered but not relaid and mooring Z was untouched due to wave conditions. All meters appeared to have worked satisfactorily except one meter on mooring F which had lost its rotor.

Aim 2. The Bidston pressure gauge was deployed successfully.

Aim 3. The Anton Dohrn seamount section was worked as far as station F but no other stations were done, due to the weather. Surface conductivity and temperature were logged throughout the cruise.

Aim 4. This was not done, due to the weather.

Aim 5. The caesium section was completed satisfactorily.

Aim 6. Chlorophyll profiles were taken at stations C4-C10 and Q, P, O, N, M, J and F. A slip-ring winch should have been supplied for the fluorimeter but a small Lebus winch with no slip-rings was supplied instead. This was used as a warping drum but was so noisy that it was discarded in favour of the Irish winch which ran well for the rest of the cruise. Surface chlorophyll was logged throughout the cruise.

Aim 7. No time was available for this section.

As Mr. Picken was aboard, he was able to look at the fouling on moorings R and M. Both moorings had been deployed for only a few months but the spar buoy, sub-surface buoy and surface ropes showed some early stages in fouling succession. These were:-

Diatoms, filamentous and leafy algae, hydroids and a few crustacea.

Generally the species were similar to those in fouling communities close to the Outer Hebrides. The species were:-

Mooring 'R'

Algae

Licmophora sp.	On buoy (surface)
Tabellaria sp.	
Ectocarpus sp.	
Petaloniafascia	
Scytosiphon lomentarias	
Ulva lactuca	

Coelenterata

Sarsia eximia	On rope and buoy

Mollusca

Unidentified cephalopod eggs from anchor

Arthropoda

Jassa falcata	On algae and hydroids.

Mooring 'M'

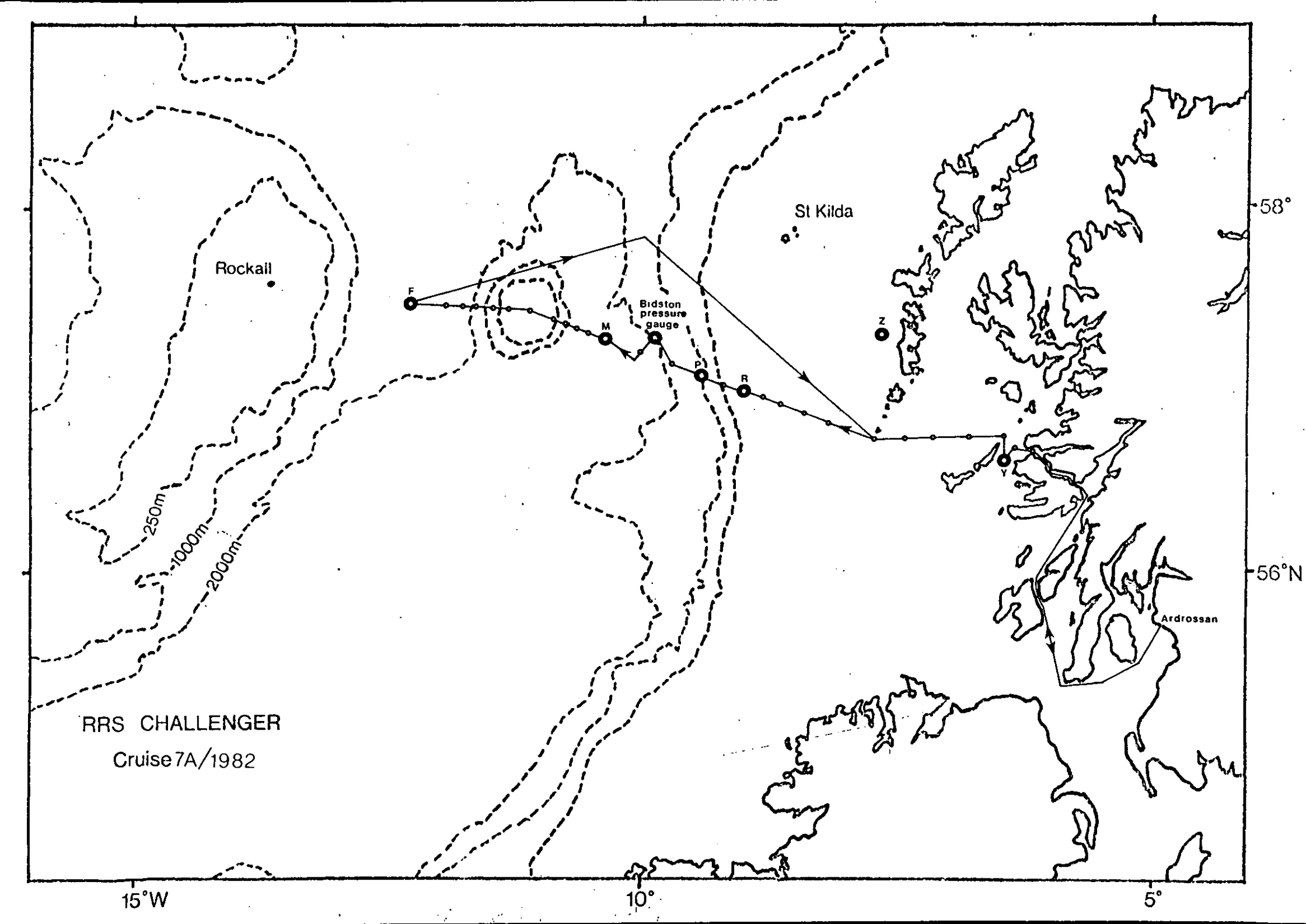
Arthropoda

A few specimens of sessile stalked barnacle Xenobalanus on acoustic release at 2000 m.

Acknowledgements

I should like to thank Captain Selby-Smith, his officers and crew for their help in making this cruise as profitable and educational as it was. (We all know a lot more about garage construction now).

R. BOWERS


Rockall
St Kilda
F
M
Bidston
pressure
gauge
P
R
Z
Y
Ardrossan
250m
1000m
2000m
RRS CHALLENGER
Cruise 7A/1982
58°
56°N
15°W
10°
5°

R.R.S. CHALLENGER, CRUISE 7B/1982

Duration: 1113 h 6 May - 0920 h 16 May 1982.

All times GMT

Locality: Scottish continental shelf and Rockall Channel

Staff: D.J. Ellett
Dr. J.D. Gage
Dr. J.M. Graham
N.D. Pascoe
N. MacDougall,
Mrs. C.M. Petre
Miss S. Pain (University College of Swansea)

Aims:

(1) To lay SMBA moorings F (57°30'N, 12°15'W) and Z (57°19'N, 07°39'W) and service moorings A1 and A2 (52°30'N, 14°46'W and 52°30'N, 14°56'W).

(2) To service MAFF moorings A3 and A4 (52°30'N, 15°16'W and 52°30'N, 15°26'W).

(3) To work the western half of the Anton Dohrn Seamount CTD section and additional sections as time permits.

(4) To recover a toroidal buoy and fouling experiments from the wave energy investigation site off South Uist and renew fouling panels on a second buoy.

(5) To make Agassiz trawl and benthic sledge hauls to the east of Anton Dohrn Seamount and at the permanent benthos site in 54°40'N.

(6) To work CTD sections in the Sea of the Hebrides as time permits.

Narrative:

CHALLENGER sailed from Ardrossan at 1113 h 6 May and with a forecast of bad weather it was decided to sail northwards by way of the Sounds of Islay and Mull. Winds did not exceed force 5 however, and we continued via the Sound of Mingulay to the wave energy site, which was reached at 1145 h 7 May. Mooring Z, carrying the corrosion potential current meter (CPCM) was laid between 1206 and 1229 h, following which the first toroid was raised, some of the fouling plates changed, and then re-laid between 1258 and 1349 h. The toroid which had been deployed for two years was subsequently raised by 1512 h and course was set for mooring F in fine weather.

The ship hove to at the site for mooring F at 0840 h 8 May and the mooring was laid by 1059 h, when course was set for Rockall. Station A of the CTD section was begun at 1634 h and lowerings continued eastwards, with additional stations across the slopes of Anton Dohrn Seamount, until station M was completed at 2144 h 9 May. The Agassiz trawl was shot to the north of station M at 2236 h and came inboard at 0238h 10 May and was followed by a benthic sledge haul between 0420 and 0832 h. Course was then set for a north-south CTD section across the Seamount, which was begun at 1140 h. The CTD recorder showed salinity spiking at the first station, J1, and the socket connection to the sea unit was changed between stations, but this appeared to increase the spiking. The original socket was replaced after the third station had been worked and subsequent lowerings were satisfactory. Station J8, south of the Seamount, was completed at 0149 h 11 May and a rectangular mid-water (RMT) trawl haul was made between 0224 and 0556 h.

Course was set for the permanent benthos station north of Porcupine Bank, where a benthic sledge haul was made from 2348 h to 0420 h 12 May. Winds, which had hitherto been light, strengthened to forces 6-7, easterly, on passage to mooring A1 during the day. The mooring was located within a few minutes of commencing an acoustic search at 0130 h 13 May and it was decided to locate moorings A2-A3 overnight. A2 was not found during a first pass over its position, but both A3 and A4 were spoken to and the ship returned via the A2 position to A1, which was retrieved between 1125 and 1257 h. The pulse synchronisation of the precision echo sounder became defective during the recovery, making it difficult to observe the sequence of release operations and to obtain bearings and soundings. It was decided to recover moorings A3 and A4 whilst the sounder was still operable and to defer a decision about re-laying until the fault had been investigated. A3 was raised between 1728 and 1813 h and A4 between 2001 and 2030 h. The south-easterly winds had reached 40 kts on occasion during the day, and as the echo-sounder fault had proved to be a mechanical one which was not remediable on board it was decided not to relay the moorings in view of the difficulties in carrying out release tests and locating the correct depths. Slow progress was made eastwards overnight to search for the missing mooring A2, but winds had dropped to force 5, southerly when the search along the 750 m contour began at 0515 h 14 May. Gales were, however, announced to be imminent, and in view of the request from RVS for a return to Falmouth by the morning of 17 May the search was terminated at 0830 h and course set for the Scillies. CHALLENGER kept ahead of the depression during 15 May, and making a good passage, reached Falmouth at 0920 h 16 May.

Results:

Aim (1): Mooring Z, off South Uist, was laid on 7 May and carried the CPCM for intended deployment until October. Mooring F was laid on 8 May, one week after its previous recovery. Mooring A1 in 500 m depth was recovered on 13 May. Both current meters had functioned correctly since the mooring was set on 10 October but the tapes had been filled. Mooring A2, in 750 m, was not located despite the three acoustic searches around the position. A1 and A2 were not relaid due to weather, echo-sounding faults and in view of the opportunity for laying during a CIROLANA cruise in June.

Aim (2): MAFF moorings A3 and A4 were recovered on 13 May. The meters had functioned correctly. The two moorings were not re-laid, as with A1 and A2.

Aim (3): Stations A to M of the Anton Dohrn Seamount section were worked on 8-9 May, providing an overlap with stations F to T worked on the first half of the cruise during 26 April - 1 May. Another CTD section was worked across the seamount from north to south on 10 May to provide information on the distribution of mass around the seamount.

Aim (4): The toroid carrying near-surface fouling panels was recovered at the wave energy investigation site off South Uist on 7 May, in its second year of deployment. Original plans were to re-anchor it in shallow water off Castlebay for collection by Mr. Picken, but it proved possible to dismantle the components sufficiently to clear the deck for other mooring activities. Material from this buoy was photographed and preserved, as were panels from the second toroid with sub-surface frames, which was

raised and replaced on the same day. The corrosion potential current meter was also laid at the site, as noted under Aim 1.

Aim (5): Agassiz and sledge hauls were made to the north-east of Anton Dohrn Seamount on 10 May and an RMT haul was taken south of the seamount on the following day. Satisfactory samples were obtained from all three.

A successful benthic sledge haul was made at the permanent benthos site in 54°40'N on 12 May.

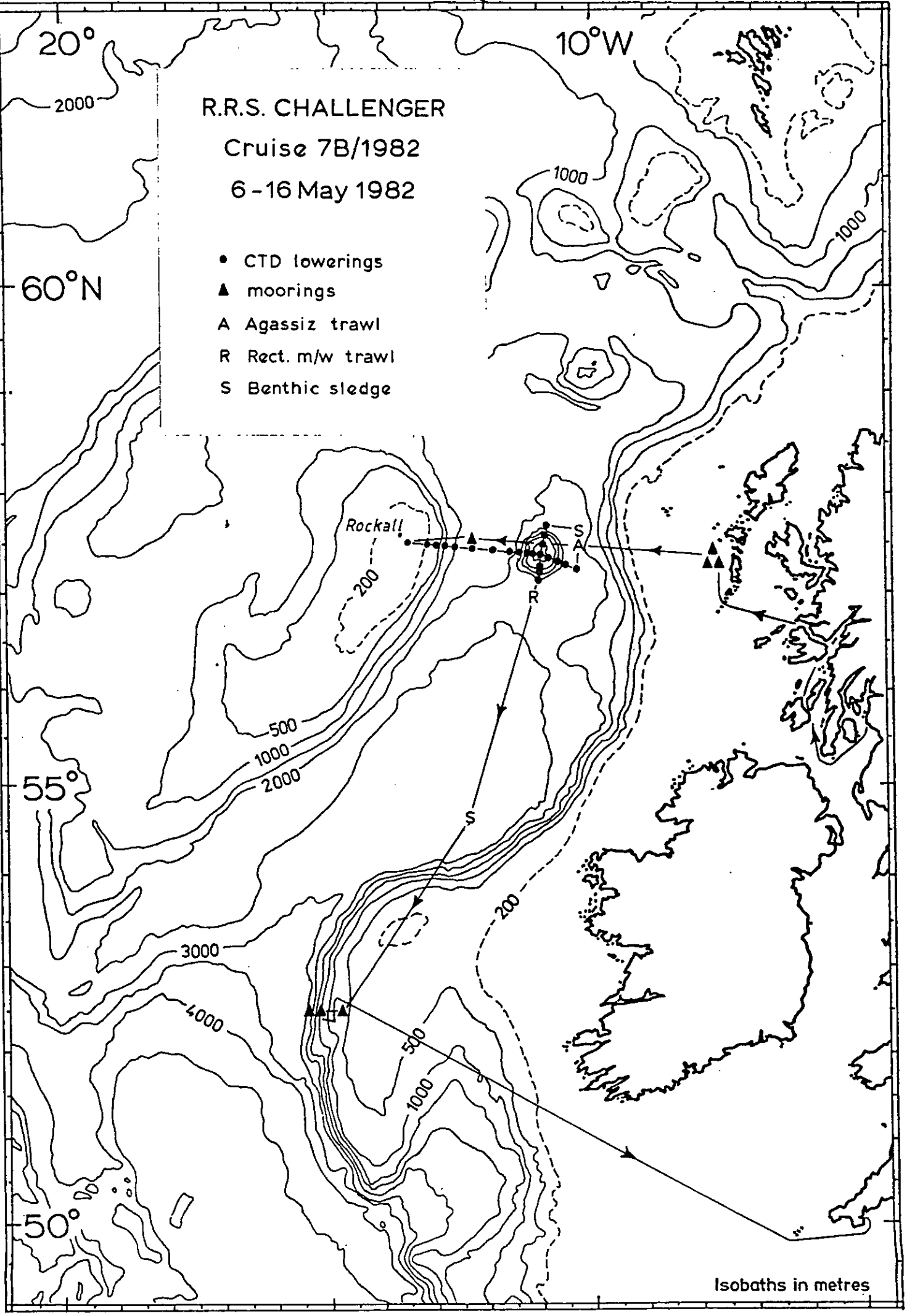
Aim (6): The threat of poor weather on the day we sailed from Ardrossan removed the best opportunity for working CTD sections in the Sea of the Hebrides and no further chance occurred.

Miscellaneous matters:

(1) The Chief Engineer, Mr. Rowlands, had mended the counters for the Munro meter blocks during the time in Ardrossan. As the 'primary standard' for warp measuring it should be worth carrying spares (e.g. Bowden cables, spare pointers and enamelled face-plates). The spooling gear for the CTD winch required re-alignment during the working of the sections.

(2) Ardrossan is losing the few attractions as a port which it had formerly. In addition to the general restrictions on loading and unloading by the workforce, the quality of the handling is poor. Six benthos sub-surface floats in hard polythene shells, designed to stand rough handling at sea, were broken during loading by the stevedores and replacements will cost over £2,000. Now that fuel is delivered from a distance by road to Ardrossan,other Clyde ports may be just as suitable, and the possibilities of obtaining fuel at Oban via the daily oil train from Bowling to the Railway Pier may be worth investigating.

D.J. ELLETT


20°
10°W
60°N
55°
50°
2000
1000
1000
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2000
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4000
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1000
Rockall
R.R.S. CHALLENGER
Cruise 7B/1982
6 - 16 May 1982
• CTD lowerings
▲ moorings
A Agassiz trawl
R Rect. m/w trawl
S Benthic sledge
S
A
R
S
Isobaths in metres