SCOTTISH MARINE BIOLOGICAL ASSOCIATION

Dunstaffnage Marine Research Laboratory

Cruise Report

R.R.S. CHALLENGER

Cruise 13/1979

11-16 September 1979.

RRS CHALLENGER, Cruise 13/1979.

Duration of cruise: 1130 h 11 September - 1450 h 16 September 1979.
All times BST.

Locality: Rockall Channel and Scottish Continental Shelf.

Staff: D.J. Ellett
R. Bowers
Dr D.A. Booth
Dr J. Graham
D.J. Edelsten
A.M. Souter

Aims:
1) To service the SMBA shelf current meter mooring in 57°N, 9°W and recover the slope mooring in 57°06'N, 09°24'W.
2) To work the eastern portion of the Anton Dohrn Seamount STD section.
3) To work shelf sections to the west of the Hebrides.
4) To collect 50 litre water samples and CTD profiles at standard positions between the shelf-edge and the Sound of Mull for radiocaesium studies.

Narrative: CHALLENGER sailed from Ardrossan at 1130 h 11 September in light north-westerly winds and set courses for the North Channel. In view of an approaching depression it was decided to begin work with the radiocaesium sampling, and the ship proceeded via the Firth of Lorne

and Sound of Mull to station C1. Southerly force 8 winds had materialised by 0800 h 12 September and the ship hove-to and dodged between Ardmore Point and Coll during the day. Winds gusted to 50 kt during the frontal passage at 2100-2200 h, and with continuing north-westerly gales the ship sheltered in the lee of Coll overnight.

Winds had decreased to forces 6-7 by the morning of 13 September, and at 0630 h course was set for station C1. CTD work and water sampling continued throughout the day to Barra Head and towards the shelf-edge in a moderate swell and winds which increased to forces 7-8 in the evening. The eastern stations of the Anton Dohrn Seamount CTD section were worked as far as station P, which was completed at 0809 h 14 September, and the ship steamed back to the shelf current meter mooring at R. Winds were north-westerly, force 7, but the replacement mooring was laid without incident between 1029 and 1055 h. Weather improved during retrieval of the previous mooring between 1340 and 1407 h and CHALLENGER steamed to the position of the sub-surface slope mooring in the vicinity of station P. The acoustic release was contacted at 1608 h and released at 1650 h. Recovery took place between 1726 and 1802 h, and CTD stations were resumed at 0 at 1955 h. Stations during the night were interupted by the need to remove sections of 'birdcaging' wire and to remake the CTD termination on two occasions.

The ship was en route for station J on the crest of Anton Dohrn Seamount when it was decided at 0735 h 15 September that it was necessary to set course for Ardrossan in view of worsening weather and the short time remaining. Surface salinity samples were taken at intervals during the passage onto the shelf, and after a passage into strong southerly winds CHALLENGER berthed in the outer harbour at Ardrossan at 1450 h 16 September.

Results:

Aim 1) The shelf current meter mooring was recovered and relaid on 14 September. The two current meters, at nominal depths of 40 and 110 m, appear to have functioned correctly and should provide records for 79 days. The sub-surface slope mooring raised on the same day carried four meters at depths of 90, 240, 490 and 890 m in a depth of 992 m. All had pressure and temperature sensors and appear to have recorded successfully at 20 minute intervals during the previous 117 days.

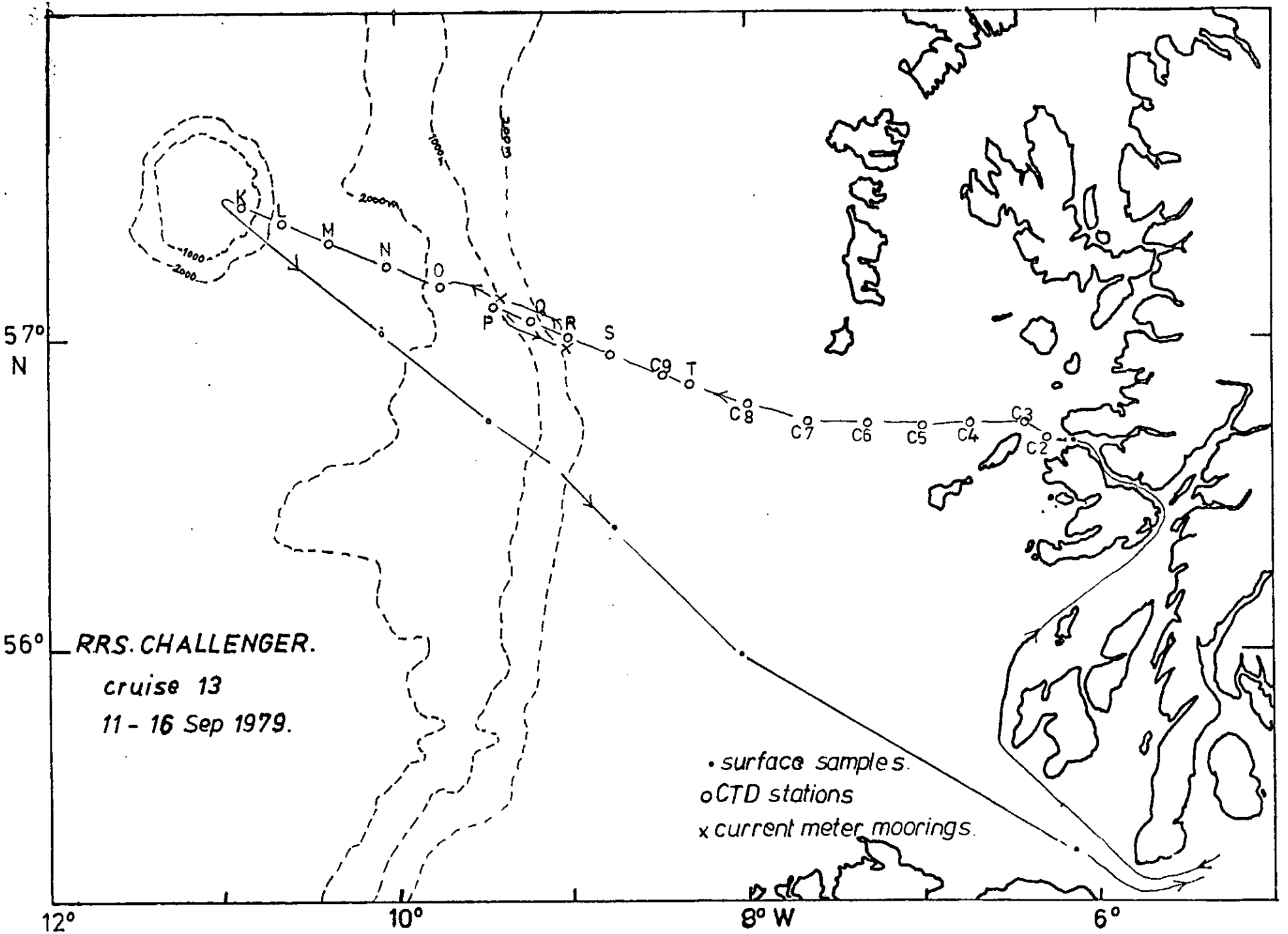
Aim 2) Stations K to T of the Anton Dohrn Seamount section were worked during 14-15 September, covering the region from the slope of the seamount to the outer Hebridean continental shelf. Surface temperatures were from 12.2°-12.8°C. The 9°C isotherm was notably deep at station P, over the lower slope, at ca. 830 m in contrast to a depth of 490-590 m at stations to the west, although t-s characteristics were very similar at all the deep stations.

Trouble was experienced at the final two stations by the CTD wire 'birdcaging', and in all,500 m of wire in poor condition were removed. Smooth spooling is again becoming difficult and as the outer strands are becoming brittle, it appears that the life of this wire, fitted in 1977, will be about the same as that of its predecessor, i.e., 3 years of good use.

Aim 3) Time and weather did not permit the working of shelf sections other than that of Aim 4, below.

Aim 4) 50 litre water samples for radiocaesium determination by the Fisheries Radiobiological Laboratory were collected at ten standard stations between Ardmore Point, Mull, and the shelf-edge mooring. CTD profiles were obtained at all positions except the first. The upper mixed layer was 60-70 m thick in the Sea of the Hebrides and 15-50 m thick westwards from Barra Head. Homogeneous bottom layers existed at the deeper stations, being up to 50 m thick in the centre of the Outer Hebridean Shelf, with temperatures of 9.0°-9.1°C, a rise of 1.0-1.5 deg. C since the stations were sampled on 21 May, at the end of an unusually cold winter. Surface temperatures were between 12.1° and 13.1°C.

D.J. Ellett.
16 September 1979.


57° N
56°
12°
10°
8° W
6°
K
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M
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C9
C8
C7
C6
C5
C4
C3
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2000m
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2000
RRS. CHALLENGER.
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• surface samples.
o CTD stations
x current meter moorings.