SCOTTISH MARINE BIOLOGICAL ASSOCIATION

Dunstaffnage Marine Research Laboratory

Cruise Report

R.R.S. CHALLENGER

Cruise 17/1977

5 - 12 November 1977

RRS CHALLENGER, Cruise 17/1977

Duration of cruise: 0958h 5 November to 0856h 12 November 1977.
All times GMT.

Locality: Scottish continental shelf and Rockall Channel.

Staff: D.J. Ellett
R. Bowers
D.J. Edelsten
N.D. Pascoe
A.M. Souter
Prof. S.C. Ling (Catholic Univ. of America)
R. Leon (Catholic Univ. of America)
Miss C. Maybury (Univ. Coll. of Wales, Aberystwyth)
Dr B. Heywood (Br. Antarctic Survey, Cambridge)
Dr T.A. Whittaker (Br. Antarctic Survey, Cambridge)

Aims:
1) To retrieve the SMBA shelf current meter mooring in 57°N, 9°W.
2) To work the Anton Dohrn Seamount CTD section, and additional sections between Rockall Bank and the Hebridean shelf as time permitted.
3) To make observations of droplet concentrations and sizes in sea spray with Professor Ling's equipment.
4) To work CTD sections on the shelf to the west of the Hebrides.
5) To obtain Shipek grab bottom samples for the Dept. of Geology, UCW, Aberystwyth.

6) To test acoustic command releases at their future operating depths.

7) To collect 50 litre surface water samples at standard positions on the Scottish shelf for radiocaesium determination by the Fisheries Radiobiological Laboratory, Lowestoft.

Narrative: Sailing from Ardrossan was postponed from the afternoon of 4 November to 0958h 5 November in order to complete the rigging of the A-frame extending over the bow to carry the spray droplet detector. In south-westerly force 7-8 winds CHALLENGER proceeded to the lee of Arran, where tests on the A-frame and counting system were carried out. Following a decrease of wind speed to force 6-7, course was set for the Mull of Kintyre at 1600 hrs, but conditions to the south of Arran remained unpleasant, and after steaming on reversed courses between 1800 and 2200h awaiting an improvement, the ship returned to the vicinity of Brodick Bay for the night in renewed force 8-9 winds. Gales continued during the following day, and during daylight hours runs were made into the wind, which had backed southerly, to obtain spray size and concentration measurements.

During the evening of 6 November concern was felt about the Captain's state of health, and after he had obtained medical advice by radio it was decided to return to harbour on the following morning. Winds overnight reached force 10, but it

was possible to berth at Ardrossan at 0922h 7 November. The doctor having deemed it necessary for Captain Bowen to stay ashore, CHALLENGER remained in port during 7 and 8 November awaiting the arrival of Captain Maw, whose rapid return from leave in south-west Britain enabled the ship to sail at 1044h 9 November.

Winds had fallen to force 5 and less in the col between two depressions, and a good passage was made through the North Channel towards the position of the current meter mooring. In the early hours of 10 November winds again increased, and on arrival at the buoy position at 0900h the ship hove-to in force 8-9 southwesterlies with an increasing swell. Force 9 winds, gusting occasionally up to 70 kt continued throughout the following 24hrs, and with no hope of improvement it was decided at 0730h 11 November to run for Ardrossan. South-westerly winds of force 8-9 with a very heavy south-westerly swell continued throughout the passage, the ship berthing at Ardrossan at 0856h 12 November.

Results Aim 1) The ship reached the vicinity of the current meter mooring on 10 November, but gales prevented a search for the surface markers. The spar buoy was reliably believed to have been sighted at a range of 1 mile or more, but the large swells prevented confirmation of this. After 24 hours hove-to close to this position in increasing swell, it became apparent that conditions for recovery would not be attained during the

remaining days of the cruise, and in view of the dry-docking schedule this aim had to be abandoned. It is hoped that recovery may be possible from R.V. SCOTIA in early December.

Aims 2 and 4) It was not possible to work any sections during the cruise.

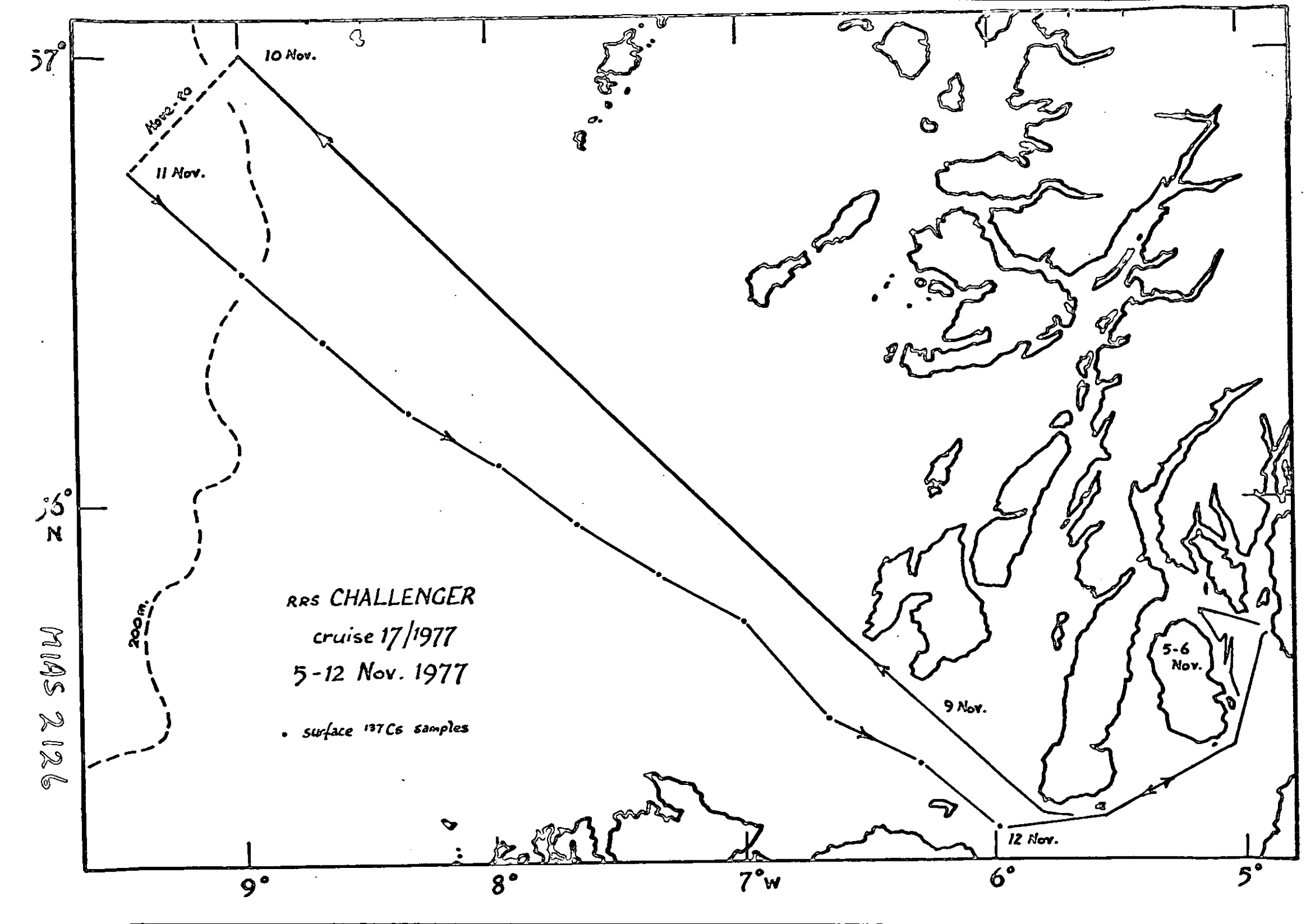
Aim 3) Observations of droplet size and concentration in the spray of breaking waves were made by Professor Ling in the Firth of Clyde during 6 November, and were successful in confirming that the spectrum of naturally formed droplet sizes corresponded closely to that produced in laboratory tests. Although it was not practical to lower the A-frame near to the sea surface during time spent dodging on 10 November, observations made above bow height were able to show the scarcity of large droplets at this height even in very rough conditions.

Aims 5 and 6) No Shipek grab bottom samples were obtained, and it was impossible to test the acoustic command releases in the conditions which prevailed.

Aim 7) Ten 50 litre surface water samples were obtained during the passage from the shelf-edge to the North Channel on 11-12 November. It was not possible to take these at the standard positions due to the direction of the wind and swell, and they were taken instead at 20' intervals of longitude between $9^{o}W$ and $6^{o}W$.

D.J. Ellett

15 November 1977


57°
56°N
9°
8°
7°W
6°
5°
10 Nov.
11 Nov.
200m.
9 Nov.
5-6 Nov.
12 Nov.
RRS CHALLENGER
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• surface 137Cs samples
MAFS 2126