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IN CONFIDENCE: Not to be quoted without reference to the Laboratory.

CRUISE REPORT

FRS "EXPLORER"

3 MAY-1 JUNE 1971

OBJECTIVES

1. To lay 2 current meter moorings at the continental shelf edge at 4°W.

2. To carry out a detailed environmental survey between Strathy Point and Faroe.

3. To re-establish the current meter position at Collieston at the end of the cruise.

4. Ornithological studies (Aberdeen University).

NARRATIVE

Explorer sailed from Aberdeen at 2130 on 5 May and reached the mooring area at 1000 on 7 May. After conducting a preliminary hydrographic survey of the area the current meter moorings were laid during 8 May. Detailed hydrographic sampling interspersed by drogue measurements were then made until 18 May when the ship made passage to Lerwick, where Messrs Martin and Shepherd left the ship. Explorer sailed from Lerwick during the afternoon of 19 May. An additional current meter mooring was laid on 20 May in a position selected during the first part of the cruise. Further detailed water sampling and frequent short term drogue measurements were then undertaken over a wide area between Noup Head and the Faroes. The 3 current meter moorings were recovered by 28 May. Attempts were then made to assess the vertical velocity gradient between 50 m and 700 m on the shelf edge using parachute drogues and by suspending current meters from the ship. A current meter mooring was laid off Collieston on 31 May and the ship docked at Aberdeen at 1930 on that date.

RESULTS

a. Current meters and moorings

Of the 5 current meters used, 3 functioned satisfactorily. There was one clock failure, resulting in no record being obtained and a partial clock failure, resulting in only 10 days of record.

Two 'guard' dans were anchored adjacent to the instrument line of each mooring and these made the existence of the mooring far more conspicuous than with the single 'Valentine' buoy.

b. Current measurements

The current meter and drogue results showed very large space and time variations of residual current flow in this area. Outwith the 200 m contour a persistent flow parallel to the shelf was apparent but this flow was subjected to large fluctuations in speed over fairly short intervals of time. Within the 200 m contour the difference in current pattern to that off the shelf edge was quite marked but changes in flow on and off the shelf were closely coupled. As shown in previous, similar surveys the time variations in current closely followed fluctuations in atmospheric circulation patterns.

c. Water sampling

There was very little variation in the horizontal distribution of temperature and salinity throughout the cruise. A core of water of high temperature and salinity persisted on the shelf edge from about the 800 m contour and covered the area occupied by the moorings. The boundaries of this water with the cooler, less saline water lying adjacent to it were quite marked. On the other hand the vertical distribution of temperature and salinity off the shelf edge varied considerably during the cruise.

d. Ornithological studies

Observations on sea birds were made continually during daylight hours by Dr Bourne and Mr Dixon of Aberdeen University.

H D Dooley
6 July 1971