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HYDROGRAPHIC CONDITIONS IN THE WESTERN ENGLISH CHANNEL, DECEMBER 1973

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INTRODUCTION

In the period 1-17 December 1973 R V CIROLANA of the Fisheries Laboratory, Lowestoft made a cruise at the western end of the English Channel. The aim was to provide background hydrographic data for subsequent biological cruises.

RESIDUAL CURRENT REGIME

A line of stations A-F was moored during the period 1-17 December across the western end of the Channel from Mounts Bay in the north to the Brittany coast. At each station was a near-surface (10 m down) and near-bottom (5 m up) Plessey recording current meter. Although 3 meters were lost after rigs C and E were extensively damaged by a seismic survey vessel, nevertheless a data return of 65% was achieved and in Figure 1 are plotted the near-surface and near-bottom daily residual current vectors for each station where data were obtained. Winds during this period were predominantly westerly and data from Scilly and Guernsey are plotted in Figure 2.

The current vector pattern indicates an anticyclonic motion of the water in this area with an inflow in the north and an outflow in a broad band extending from the French coast to station D at least. Such a circulation for the western Channel in winter was proposed by Dietrich (1951) from a consideration of changes in the geopotential topography of the sea surface in the area from summer to winter.

From the results obtained at station A some evidence is seen for the intermittent Lands End corner current postulated by Cooper, 1960. From the near-surface data we see residuals towards the northwest on 8 and 9 and also 14-15 December with this northwest-going motion reflected in the near-bottom record for 8-9 and continuing until 10 December. Unfortunately the latter meter stopped working on 13 December.

TEMPERATURE AND SALINITY DISTRIBUTIONS

A grid of water bottle stations was worked from 3-7 December. Temperatures were measured and salinity samples taken throughout the water column and Figures 3 (a) and 3 (b) give the distribution of surface temperature and salinity in the area covered. The water was well mixed and the surface and bottom distributions are very similar.

The main features are a core of warm water in the central part of the Channel, cooler less saline water along the English coast and in the Channel Islands - St Malo area and "Atlantic" water filling the region between Lands End and Brittany.

REFERENCES

DIETRICH, G., 1951. Influences of Tidal Streams on Oceanographic and Climatic Conditions in the sea as exemplified by the English Channel. Nature 168, 8-11.

COOPER, L. H. N., 1960. Exchanges of Water between the English and Bristol Channels around Lands End. J. mar. biol. Ass. U.K., 39, 637-658.

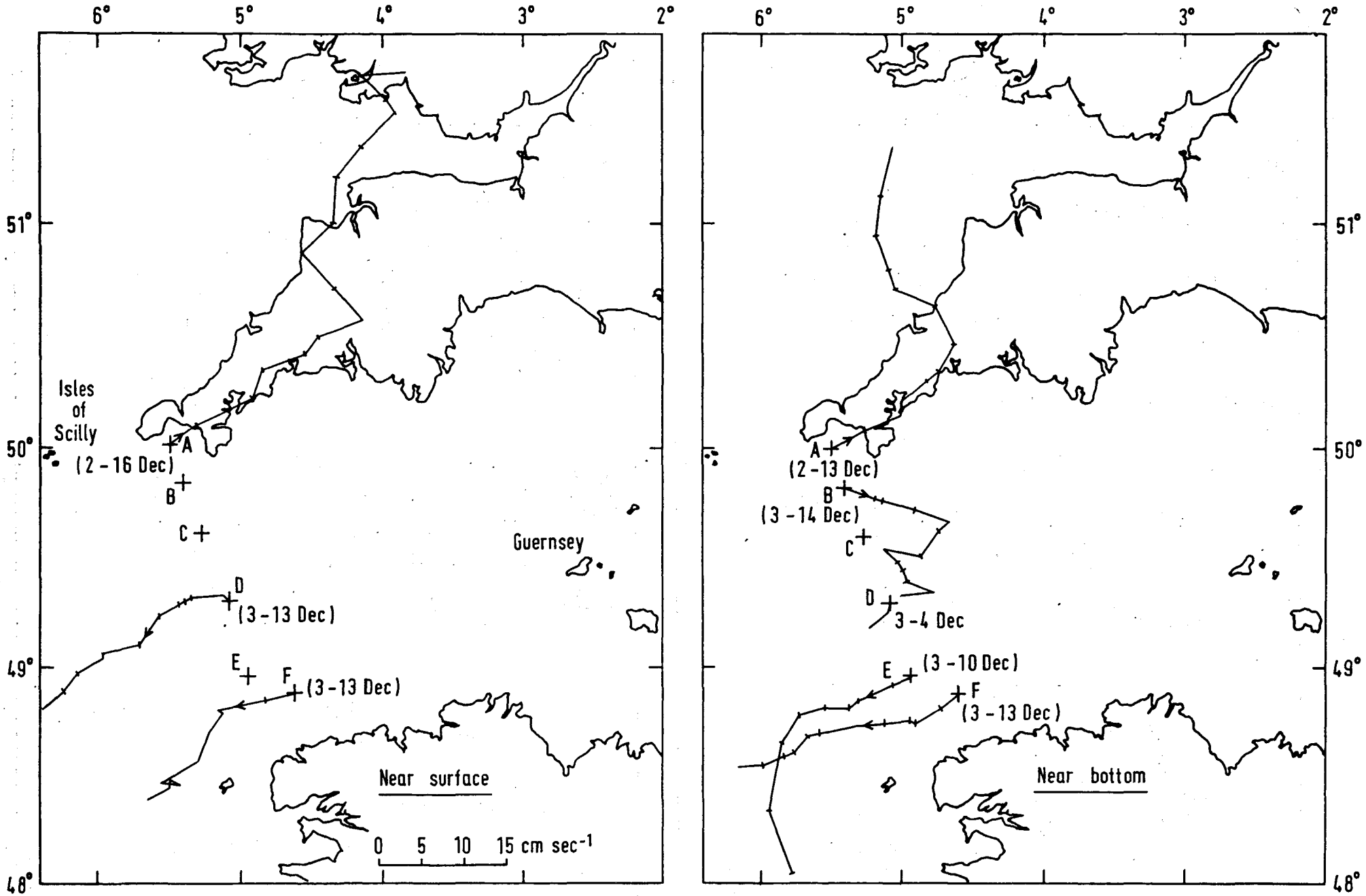

Fig 1. Daily residual current, near surface meters and near bottom meters

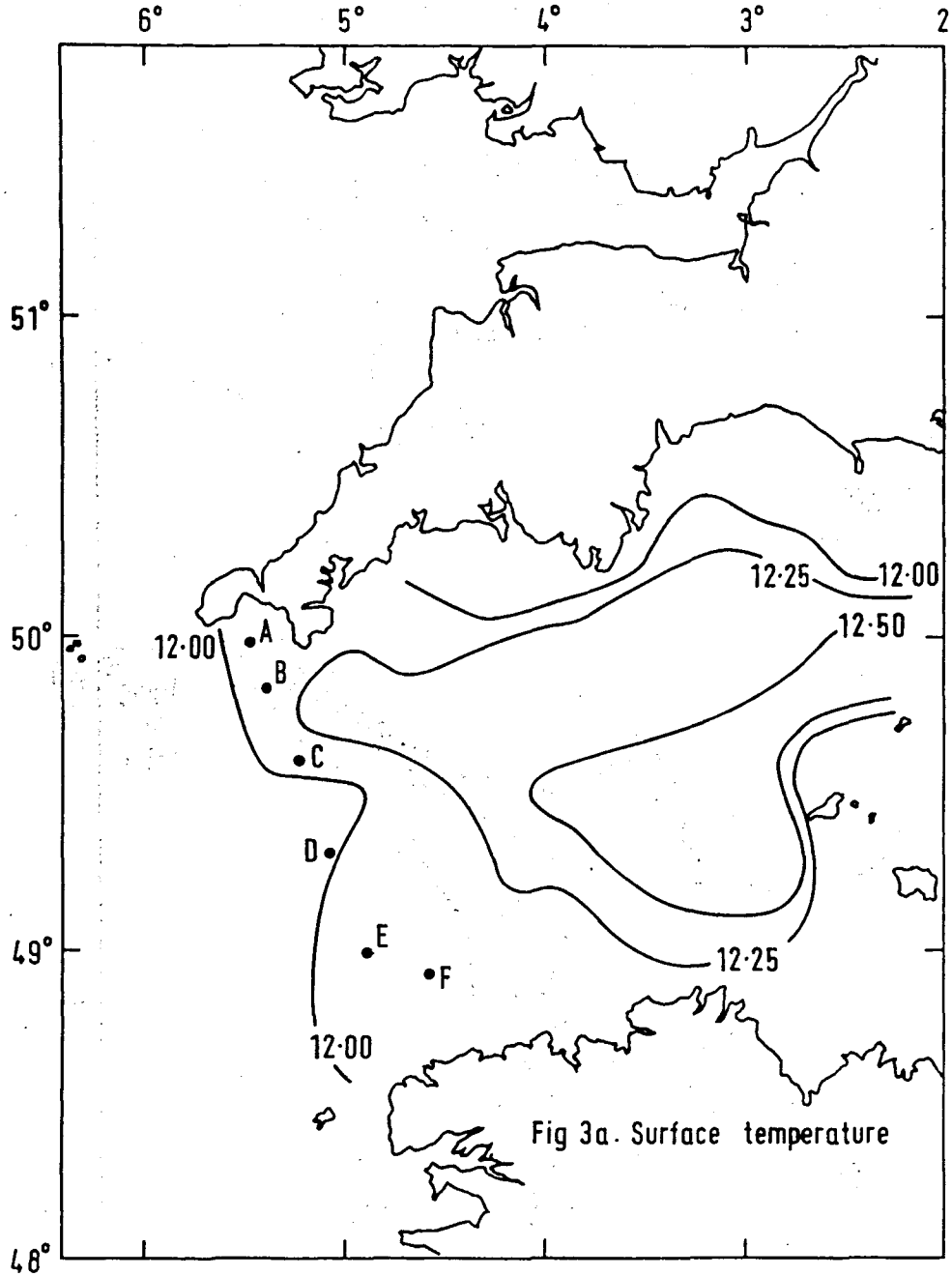

Fig 3a. Surface temperature

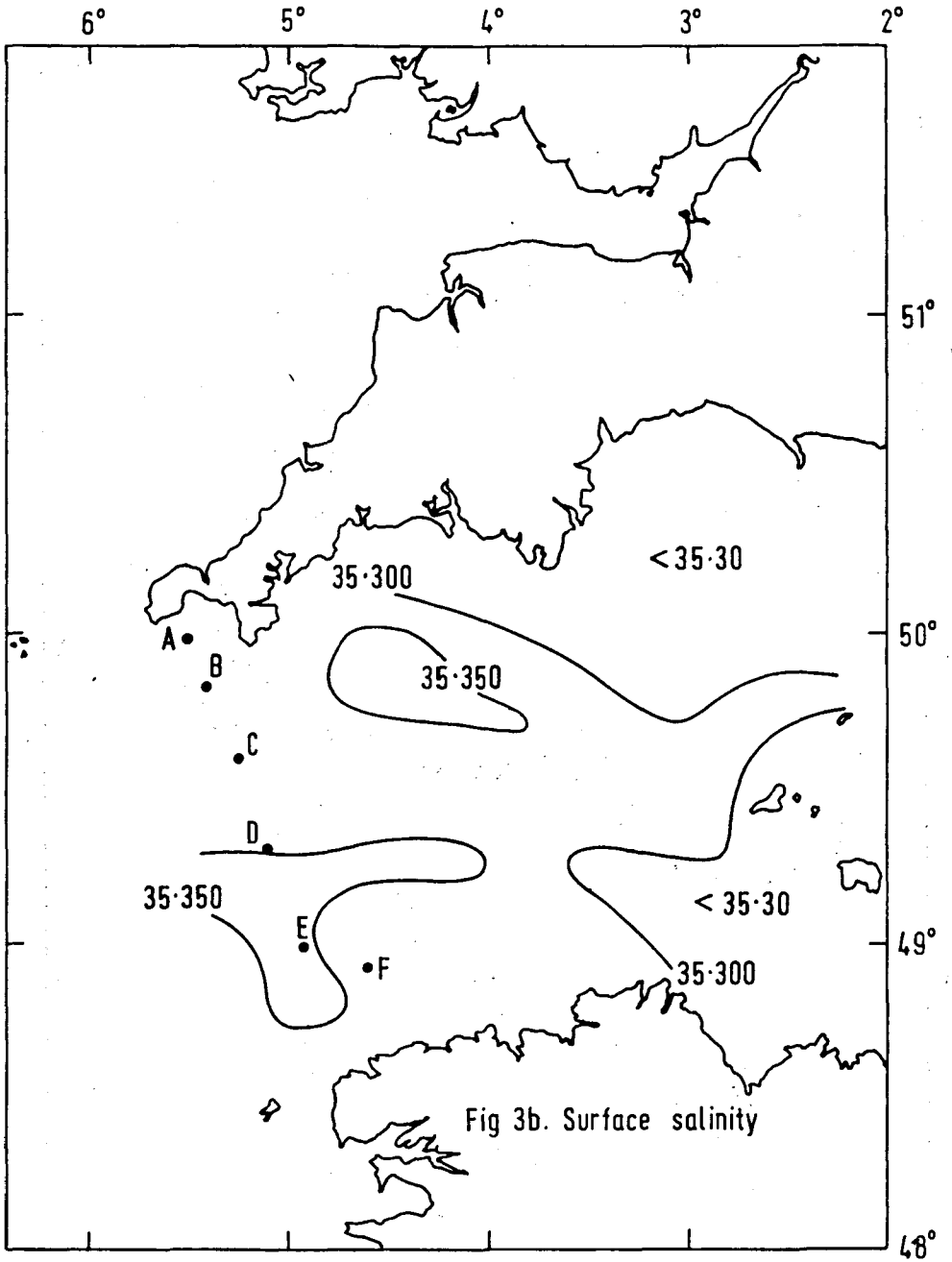

Fig 3b. Surface salinity

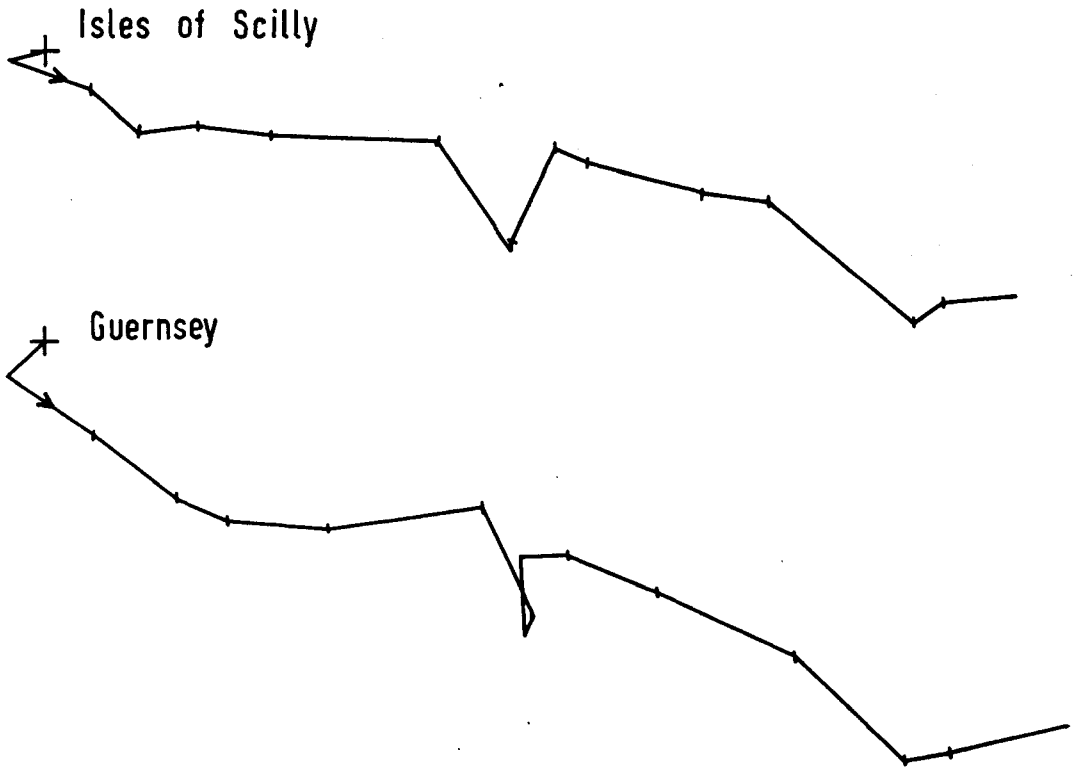

Fig 2. Mean daily winds 2 - 16 December 1973
1cm = 10 knots