Cruise Report of Proceedings MENAI BRIDGE

Ship RRS SHACKLETON Cruise 4/82 Cruise No P11/4/82

Cruise Dates (Inclusive, port to port) 12th.May.to.4th.June.1982

It is requested that the following aspects of the cruise may be covered in this report of proceedings for dispatch or delivery to the Director, Research Vessel Services immediately on return to port.

a) Main objectives of the cruise.
b) Geographical area. Reference stations or points in latitude and longitude.
c) Sea and weather conditions encountered.
d) Conduct of cruise, main problems encountered and success or otherwise of the programme
e) Equipment performance.
f) Ship performance.
g) Any recommendations.
h) Signature and date.

Brief comments are preferred but if necessary please continue on another sheet.

The broad aim of this programme was to undertake a wide ranging reconnaissance of the continental shelf sea to the West of Scotland (5 - 12°W, 54 - 59°N). Particular interest centred on (a) the distribution of phytoplankton biomass in relation to the physical structure, (b) the utilisation of CZCS imagery in the determination of such distributions and (c) the form and intensity of the Scottish coastal current.

A combination of mooring deployments and intensive survey methods were used to attain these objectives. Six current meter moorings, two of which carried thermistor chains, were layed in sections across the current, while 175 station positions were occupied. At each of these stations, CTD observations were made and in most cases pump sampling was undertaken for the determination of the vertical distribution of chlorophyll 'a', Seston and gelbstoff (yellow substance). At selected stations samples were obtained for nutrient analysis and assessment of phytoplankton species composition. During daylight hours, a newly-developed spectral irradiance meter was used to profile downwelling irradiance and to measure the surface leaving upwelling irradiance. Vertical net hauls were also undertaken to estimate Zooplankton distributions and, during the first half of the cruise, a continuous count of seabird numbers was maintained during daylight hours.

We experienced generally favourable weather with the wind reaching force 7 on only one day of the cruise. Fog occurred frequently but did not inhibit operations, apart from the photographing of the Hebridean islands. Happily it was clear when we passed St. Kilda.

Generally the complicated routine of sampling and profiling at stations went smoothly. Some difficulty was experienced with the winches. The CTD cable was damaged on three occasions, twice due to winch creep (when the brake was on) and once due to snagging in the fair lead to the deck. Each time this happened the cable had to be cut back by tens of metres and the termination reconstructed.

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Another irritating constraint in operation was the slow speed of the REXROTH winch (0.25m s^{-1}) used which wasted several minutes on each station. The problem was aggravated by the fact that the winch and fair lead arrangements do not allow for simultaneous operation of pump profiling and CTD measurements from opposite sides of the ship.

Apart from some initial troubles, all the primary scientific equipment functioned satisfactorily during the programme. Data logging and first stage processing on the Apple computer also proved entirely successful. On the other hand, difficulties were experienced with the 1134 computer system which proved of only limited utility.

On leaving South Shields it was discovered that the gyro interface was not functioning correctly. This trouble was not rectified until the ship called at Oban half way through the cruise and, even then, further difficulties were experienced in getting good data from the gyro. The fact that most of the requested plotting routines were not functional meant that extensive plotting by hand was necessary in order to provide the basis for updating of the scientific programme.

After "running in" of the engine on the passage north, we were able to exceed 9 knots between stations and we enjoyed generally excellent service in the navigation and operation of the ship. All the current meter moorings were recovered without loss or delay. Relations between the ship's personnel and the scientists were constructive and cordial throughout.

Overall, the cruise was, from the scientific viewpoint, a success. We were able to delineate fully the form of the coastal current and to map, more extensively than we had envisaged, the phytoplankton biomass on the shelf. We await the CZCS imagery for the last month with considerable interest.