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MB
CRUISE REPORT

FREDERICK RUSSELL 2/87

27 FEB - 13 MAR 1987

1. Personnel

R Easton	MBA
R Harris	MBA
G Mardell	MBA/IOS
D Pilgrim	Plymouth Polytechnic
R Pingree	MBA/IOS (Principal Scientist)
J Sleep	MBA
A Jones	RVS
K Goy	IOS Wormley

2. Aims

- (i) To deploy three short term and two long term current meter rigs.
- (ii) To complete a number of CTD sections across the slopes from 200 m to 2,500 m.
- (iii) To continuously measure the surface values of temperature, salinity, fluorescence, light transmission, inorganic nitrate, reactive silicate and to obtain samples for particle size, phytoplankton and zooplankton analyses.
- (iv) To deploy three satellite tracked drifting buoys.

3. Procedure and Scientific programme

The Frederick Russell sailed from Plymouth at 1100 GMT on 27.2.87 and steamed along the track shown in Fig. 1. The RVS CTD system was unfortunately not working so all measurements of temperature, salinity and depth were made using a 9006 STD. Permission to lay moorings in French waters was not granted so moorings 105, 106 and 107, originally planned for the Chapel Bank area, were laid on the slopes in the British sector at about 9°W on 28.3.87, 1.3.87 and 2.3.87 (Station positions and mooring positions are given in Tables 1 and 2).

The Frederick Russell then steamed to the original working area near Chapel Bank and completed 2 yoyo stations over a tidal period alongside a fixed data buoy in water depths of 500 m and 1,050 m. The water column in depths shallower than 300 m station was fairly uniformly mixed but at the 1050 m depth station (STD station 6) large amplitude internal tides were observed at depths of about 800 m (Fig. 2). The ship then

steamed to make a cut across the slopes at approximately right angles on 5.3.87 for a zooplankton section and then proceeded on to the Armorican shelf to examine the extent and the development of the spring bloom in the coastal waters near Isle de Groix on 6.3.87. The vessel steamed back into the central Biscay for a further yoyo station on 7.3.87 (STD station 7) in a water depth of 4,500 m about 175 km from the shelf break to examine internal tides propagating from the slope region. There was some evidence for internal tides in the upper 400 m of the water column with isotherm oscillations of about 100 m peak to trough amplitude.

On 8.3.87 the Frederick Russell steamed to 14°W to deploy Argos drifting buoys 1819, 1817 and 1816 and then returned to the mooring area to recover moorings 105, 106 and 107. These moorings were located with difficulty since there was no satellite navigator system on board and the Decca positions were often unreliable. However, all moorings were successfully recovered by 10.3.87 and a further mooring (108) was deployed in the same general region in a water depth of 530 m at the head of a small canyon. The vessel then proceeded to mooring position 109 and commenced a water depth survey of the area in order to lay mooring 109 in a water depth of about 500 m. Moorings 108 and 109 will be recovered in September on Challenger cruise 18/87.

The vessel then steamed to 50°N and made an STD section (stations 11, 12, 13, 14, 15 and 16) across the slope on 11.3.87 and 12.3.87 to examine the internal nepheloid layers. Turbid water was found close to the bottom on the upper slopes and samples were drawn for subsequent analysis. After a final STD station (17) on the shelf the Frederick Russell proceeded towards the Isles of Scilly and arrived in Millbay Docks, Plymouth at 1230 GMT on Friday 13 March.

4. Conclusions

This was a successful cruise, with the scientific work benefiting from the full cooperation of the ships' officers and crew. The main scientific objectives of the cruise were fully met.

TABLE 1

STD and Transmissometer Stations

Station No	Date	Time start finish	Lat	Long	Water depth (m)	Sampling
1	28/2	1913 1951	48°13'N	09°12'W Near mooring 105	517	
2	28/2	2309 2336	48°17.7'N	09°04'W Near mooring 105	340	
3	1/3	0849 0935	48°16.8'N	09°04'W Near mooring 107	630	
4	1/3	2029 2100	48°17'N	09°07'W Near mooring 106	420	
5	3/3 4/3	0839 0730	47°28.0'N	06°34.8'W	500	
6	4/3 5/3	0917 0400	47°34.5'N	07°05'W	1050	
7	6/3 7/3	1920 0940	46°10'N	07°39'W	4500	
8	10/3	0947 1011	48°13'N	09°16'W Mooring 107	610	
9	10/3	1248 1314	48°15.0'N	09°13.2'W Mooring 106	295	
10	11/3	1524 1314	49°33.7'N	11°24.5'W Mooring 109	530	
11	11/3	1916 1945	50°00'N	11°20'W	790	
12	11/3	2113 2156	50°00'N	11°13'W	574	
13	11/3	2214 2235	49°57.0'N	11°12.5'W	500	
14	11/3	2304 2327	49°57.5'N	11°07.5'W	395	
15	11/3 12/3	2352 0012	49°57'N	11°03'W	295	
16	12/3	0029 0044	49°59'N	10°58'W	207	
17	12/3	1317 1330	50°07'N	08°22'W	130	

TABLE 2

MOORINGS NO	Date		Position		Equipment
	deployed	recovered			
105	28.2.87	10.3.87	48°14.1'N	09°12.6'W	1CM/TC
106	2.3.87	10.3.87	48°15.0'N	09°13.2'W	4CM/TC
107	1.3.87	10.3.87	48°12.9'N	09°15.7'W	4CM/Bertha TC
108	10.3.87) to be recovered) on Challenger	48°15.9'N	09°14.4'W	3CM
109	11.3.87) cruise 18/87	49°33.7'N	11°24.5'W	3CM

CM Aanderaa Current Meter

TC Thermistor chain

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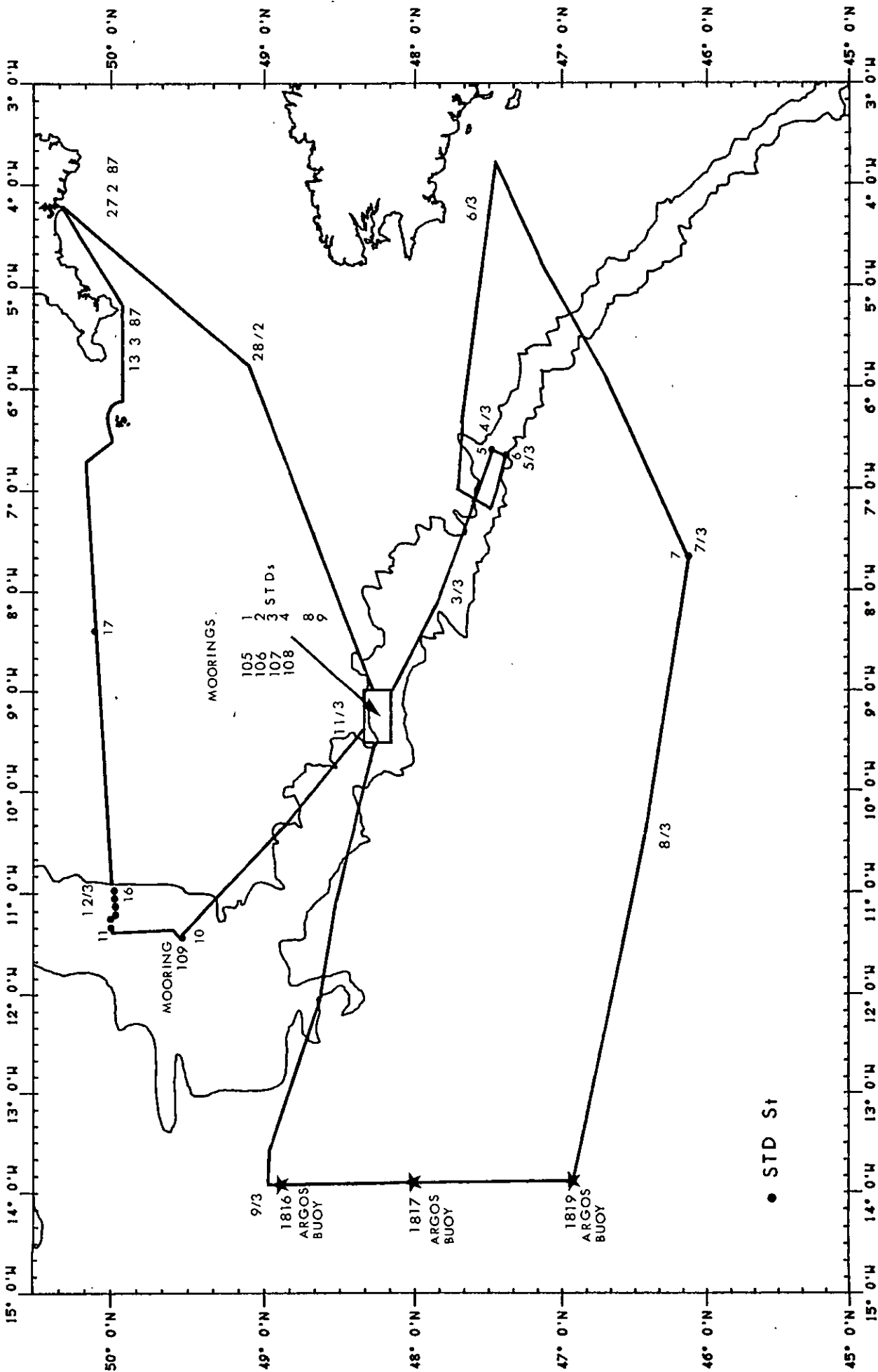


FIG 1

SCALE= 2.857E-07 AT LATITUDE= 22.500

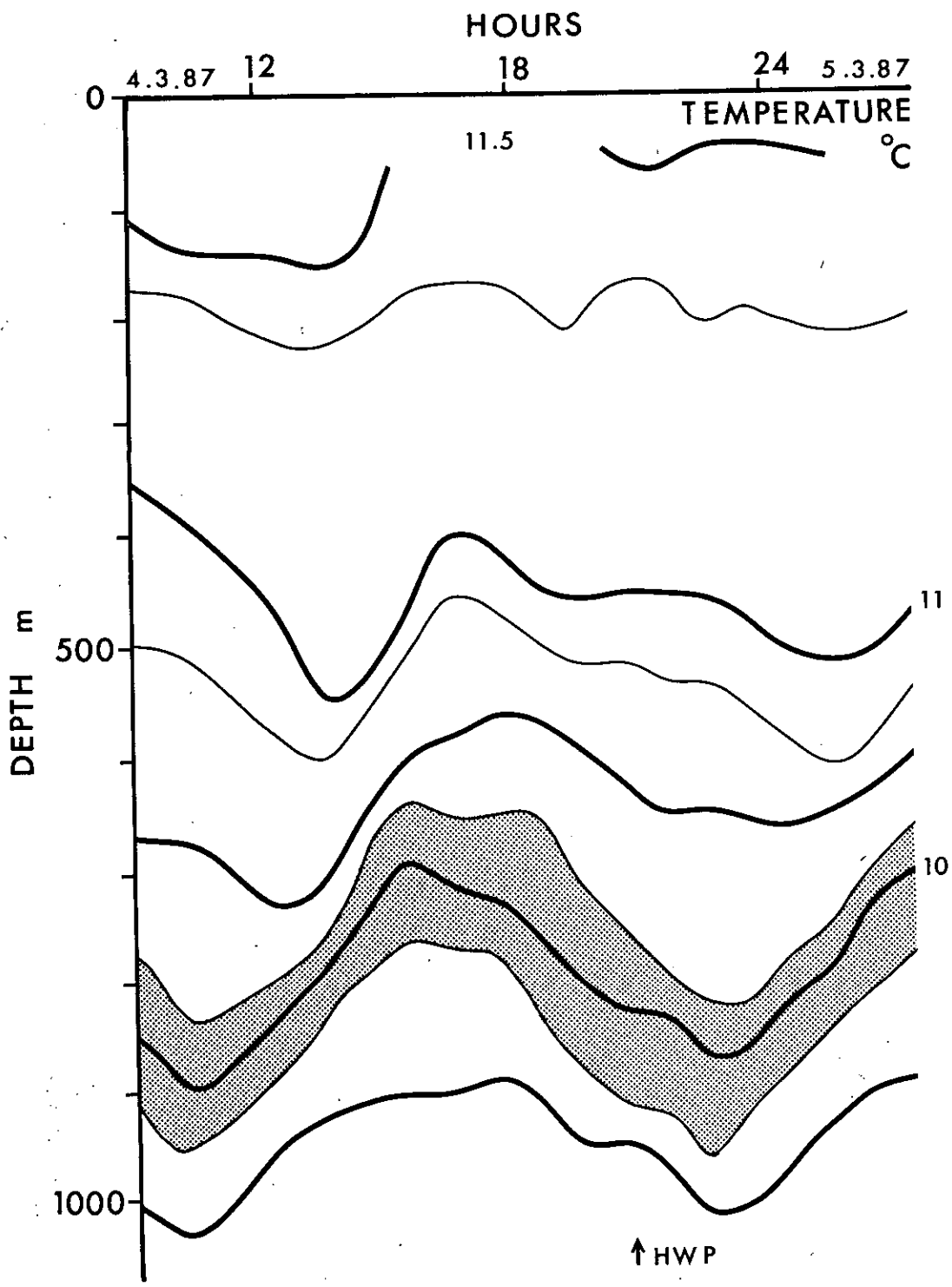


FIG 2