

R V Frederick Russell Cruise 12/83

12/7/83 - 1/8/83

Participants

Miss P Course	MBA	(2nd leg)
M. Fasham	IOS	(1st leg)
S. Fraga	Spanish Observer	(1st leg)
D. Griffiths	MBA	(2nd leg)
P. Holligan	MBA	
D. Lewis	RVS	
G. Mardell	IOS/MBA	
R. D. Pingree	IOS/MBA	Principle ^a Scientist
J. Smithers	IOS	

Aims

To investigate the nature of the internal tide propagating on shelf from the slopes in the high tidal energy region west of Ushant. To study phytoplankton growth in relation to physical stability of the water column.

Methods

Surface properties of temperature, salinity, chlorophyll 'a', turbidity, inorganic nitrate, nitrite and silicate were measured continuously, being pumped from a depth of 2m through the non-toxic supply.

At fixed (or drifting) station, all the above were measured through the water column, together with irradiance.

Batfish runs were made, with measurements down to 80m of temperature, salinity and fluorescence.

The data were logged together with navigation on the RVS computing system, and track charts and data presentation produced on the plotter.

Two moorings with 2 current meters and a thermistor chain were laid and recovered.

Procedure

R V Frederick Russell sailed from Plymouth at 2000 GMT on 12/7/83, arriving at the south west tip of Jersey at 0500 13/7/83. Two transects along the course 225° were completed before setting course for the moorings 072 and 073.

These rigs were deployed the previous month. Mooring 072 with 2 current meters and a thermistor chain was recovered by grappling the surface toroid. Recovery was completed by 0700 14/7/83 and a search made for mooring 073. There was no visible surface buoy, but an acoustic search pattern lasting 3 hours detected the acoustic release. A further 4 hours grappling succeeded in recovering only the acoustic release and chain clump.

The wire had been cleanly cut. A CTD dip made at the position for mooring 074 and the rig deployed in 164m of water.

A dahn bouy was laid at a position between position 073 and 074 as a reference for a CTD and pumped sample yoyo station. Between 0010 and 1600 15/7/83 32 dips were made, with the vessel steaming to regain position between dips. Mooring 075 was deployed sucessfully at 2100.

The Batfish was launched at 2200 15/7/83 and for the next 30 hours was towed on 5 transects across the shelf break in a rectangular mesh centred on the 200m contour at 7° 15'w. The batfish was recovered because of a lost fluorescence signal, but the shelf break survey continued with surface sampling and XBT launches.

At 1930 17/7/83 the Batfish was launched again and 4 more legs completed.

Starting 1920 18/7/83, CTD and pump sampling stations 5 to 10 were completed with several dips at each position. The vessel then steamed to start a Batfish leg across the area and on to La Rochelle. During this time the equipment had to be recovered twice to attend to faulty flourometer signals. The leg ended at La Rochelle, arriving at 0903 21/7/83.

The personnel exchange to place in La Rochelle and the vessel departed in the early hours of 23/7/83. When deeper water had been attained the Batfish was deployed and towed along the edge of the American shelf to the shelf break around 6° 15'w. Six legs were made across the shelf break in the vicinity of moorings 074 and 075.

During this two day period the Batfish had to be recovered several times due to faults with the fluorometer, damage to the wings and failed hydraulics. On each occasion, sucessful repairs were completed and the legs recommenced at the point where the problem first occurred. There were over 20 occasions when the ship passed through packets of internal waves. They were observed visually and on the ships radar enabling estimates of separation and alignment to be made. During the next two days 3 CTD tidal yoyo stations were made, using a fixed dahn as reference, followed by three more transects across the shelf break.

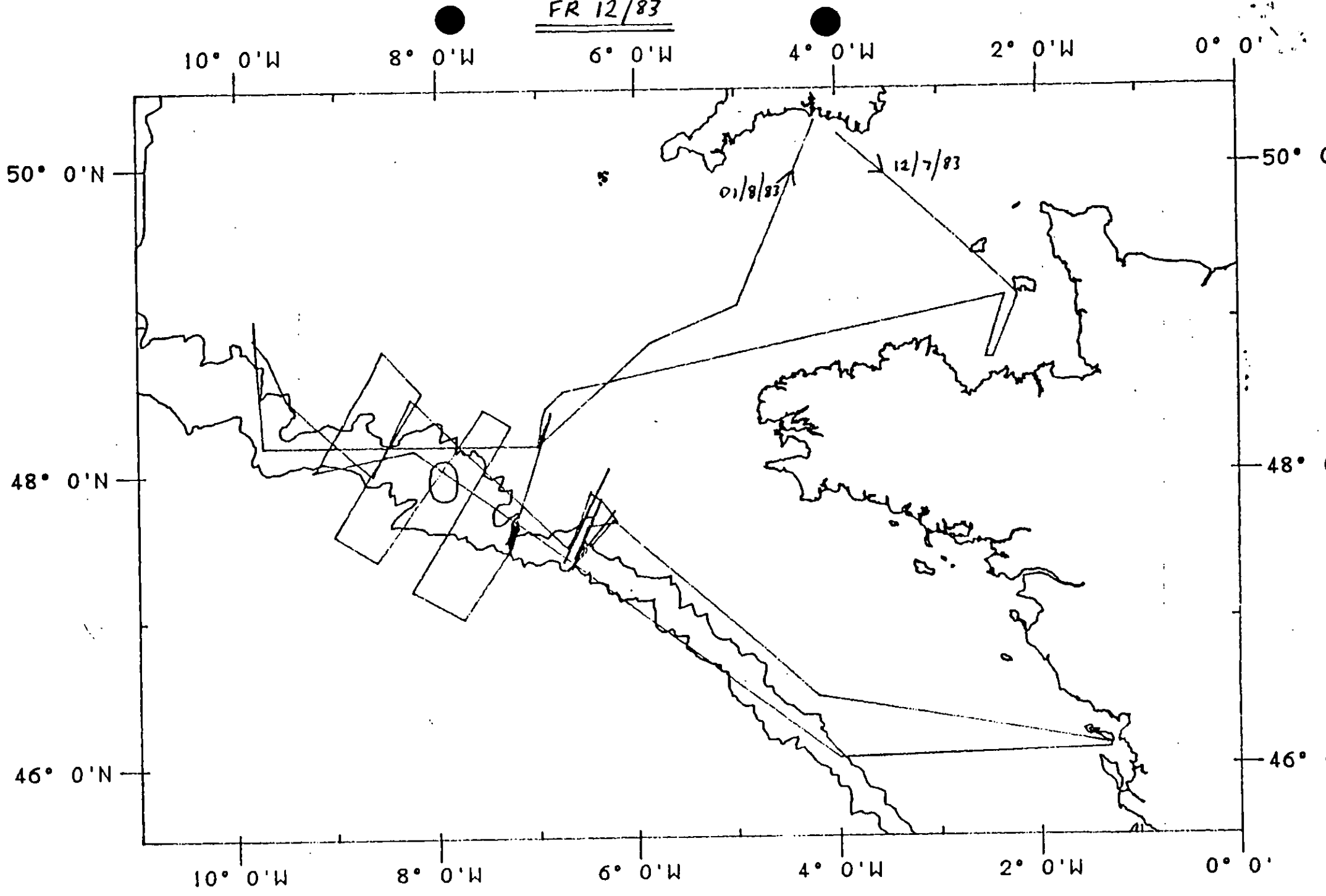
On 29/7/83 Argos buoys 1819 and then 1818 were located and recovered further to the west using positions radioed from MBA Plymouth, and a box search using direction finder. Buoy 1818 had lost its parachute drogue. The buoys were found at approximately 9° 40'w and more surface waves were observed at this position. A profile of a wave group was obtained by allowing the waves to pass the ship while doing a continuous CTD yoyo. On 30/7/83 Argos buoy 1817 was launched, then the vessel returned to recover moorings 074 and 075.

Initially rig 074 could not be located, but no extensive search was made in view of the little time remaining. Rig 075 was located and recovered without problem at 1620 30/7/83. An acoustic and grappling box search for 074 was made during the early hours of 31/7/83. The rig was recovered at 0600 but the thermistor chain and surface toroid were lost. On the return to Plymouth, position 075 was revisited to obtain pump samples and two further CTD dips completed before arriving at Plymouth at 0645 1/8/83.

FR 12/83 STATION POSITIONS

DATE	GMT	LAT	LON	STATION
14JUL83	0500	48 33.0N	6 45.6W	RIG072
14JUL83	0830	48 26.4N	6 56.2W	RIG073
14JUL83	2130	48 12.4N	6 59.2W	RIG074
15JUL83	2000	48 24.0N	6 52.3W	RIG075
14JUL83	2000	48 11.1N	7 01.0W	CTD1
14JUL83	2300	48 17.7N	6 57.1W	CTD2
18JUL83	1920	48 49.0N	8 32.6W	CTD5
18JUL83	2330	48 38.3W	8 40.3W	CTD6
19JUL83	0230	48 27.1N	8 51.2W	CTD7
19JUL83	0443	48 18.9N	8 57.7W	CTD8
19JUL83	0715	48 09.9N	9 06.0W	CTD9
19JUL83	1100	48 01.8N	9 12.9W	CTD10
25JUL83	1330	47 40.4N	6 11.5W	CTD11
26JUL83	0015	47 48.9N	6 21.9W	CTD12
26JUL83	1700	47 52.0N	6 28.8W	CTD13
29JUL83	1500	48 53.7N	9 50.4W	CTD14
31JUL83	1400	48 51.6N	5 51.4W	CTD16
31JUL83	1900	49 05.9N	4 58.9W	CTD17

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CURRENT METER MOORINGS

No of Mooring + Position	Sounding (Metres)	No + Type of Meter	Height off Bottom (Metres)	Date of Deployment and Recovery	Sample Time (Mins)	No of Days/ Records	
072 48 06	Western Approaches 33.0'N 45.6'W	145	CM 5908.1 CM 3311.1 TC 691.1/1075	129 70 2.5-77.5	3.6.83 - 14.7.83	10 10 10	41 41 41
073 48 06	Western Approaches 25'N 55'W	160	CM 5910.1 CM 4373.3	140 80	2.6.83 - -	10 10	Wire cut by Fishermen
074 48 06	Western Approaches 12.4'N 59.2'W	164	CM 5908.2 CM 3311.2	149 85	14.7.83 - 31.7.83	10 10	17 17
075 48 06	Western Approaches 24.5'N 52.8'W	160	CM 5915.1 CM 3924.1 TC 691.2	140 83 3 - 78	15.7.83 - 30.7.83	5 5 15	15 15 15