CRUISE REPORT 02/99

CONTENTS:

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R.V. Prince Madog:

S. Duckworth	Captain
A. Price	First Mate
A. Williams	Chief Engineer
H. Owen	Second Engineer
P. Jones	Bosun
T. Roberts	Able Seaman
P.D. Williams	Able Seaman/Steward

Time Breakdown:

Sailed from Fishguard	07.00	24.02.99
Arrived at first station	12.01	24.02.99
Left last station	09.35	25.02.99
Arrived at Menai Bridge	18.00	25.02.99

1. Abstract

The third in the series of cruises supporting the NERC funded 'Holocene palaeoceanography of shelf seas: long-term (10^3-10^4 years) seasonal stratification', the objectives of this cruise were to again sample at those sites in the Celtic Sea identified during the reconnaissance cruise, 7/98. The shipek grab-sampler and multicorer were deployed at 7 sites but sediment was successfully cored at just 6 of these. CTD data was also collected through the water column at these sites but unfortunately no bottom water samples could be taken due to an electronic failure in the rosette sampler system. The suitability of the sediments for multicoring was determined by examination of the contents of the shipek grab-sample. The longest multicore at each station was subsampled for foraminifera. A second core was sampled for foraminifera, organic carbon and grain size at the surface and a third for foraminifera and dinoflagellates, also at the surface.

2. Introduction

a. Scientific aims of project

This cruise was run as part of a NERC funded project entitled 'Holocene palaeoceanography of shelf seas: long-term (10^3 - 10^4 years) seasonal stratification dynamics. The aim of this project is to generate a record of environmental change relating to development of seasonally stratified water in the Celtic Sea during the Holocene.

b. Specific cruise objectives

The aim of this cruise was to collect a further, 'pre-bloom', set of multicores from the sites already identifed during cruise 7/98. These sites are to be examined for changes in the seasonal vertical distribution of benthic foraminifera and for seasonal variability in the environmental conditions at each site. An additional aim was to collect samples from the seabed at these sites for dinoflagellate analysis.

c. Narrative of cruise

The R.V. Prince Madog sailed from Menai Bridge at 07.00 on 24.02.99 in moderate conditions. The first site, site 8, was reached at 12.00 and the CTD was the first instrument deployed. The attached rosette water sampler system failed to trigger at this station despite being deployed for a second time and the rosette sampler did not function at any point during the cruise. The CTD successfully collected temperature, salinity and oxygen data from throughout the watercolumn. The grab sampler was deployed and the sample returned confirmed the suitability of sediment at this site for coring. However, though it was deployed four times no cores were extracted at this site and it was decided to move on.

The second site, site 6, was reached by 14.47. The CTD and grab sampler were successfully deployed as was the multicorer. The grab was subsampled for dinoflagellate analysis and the longest core was sampled at 0.5 cm then 1 cm intervals down to 20.5 cm for foraminiferal analysis. A second core was sampled at the surface for foraminifera, grainsize and organic carbon and a third for foraminifera and dinoflagellates. The foraminiferal samples were stained using rose Bengal and stored in ethanol while the dinoflagellate samples were simply kept cool. The grainsize samples were untreated and the organic carbon samples were frozen.

Sampling was carried out in this way at sites 5, 7, 4, 3 and 9, in that order, with the following differences:

- the grab had to be deployed twice at site 7 before a sample was returned
- The longest core at site 4 extended to 17.5 cm only
- Only one core was returned at site 3

The ship arrived back at Menai Bridge at 18.00 on the 25/02/99

3. CTD Operations

The CTD, a Neil Brown system, was used to collect data on salinity, temperature, pressure and oxygen. All the sensors appeared to work well. A total of 7 CTD casts were made. The CTD system was fitted with a rosette water sampling system but unfotunately this system failed to trigger during the cruise.

4. Sediment collection

Both a day-grab and a shipek grab were carried on board but only the shipek was used to collect surface samples. These samples were stored for dinoflagellate analysis. They were also examined visually for grain size to determined whether the site was sufficiently fine grained to deploy the multicorer.

The multicorer system consists of four core tube, core catchers and a hydraulic coring system mounted in a bell-shaped frame. After attaching the cores, catchers and additional weights and priming the system on deck, the core was winched overboard and dropped to the seabed where the cores slowly enter the sediment taking a relatively undisturbed core with a good sediment-water contact. Once the corer was back on deck the core catchers were removed and the cores bunged. The cores were taken out of their holds and placed in a cradle to await further sampling.

5. Equipment problems

The rosette sampler system failed to trigger at any point during this cruise and as a result it was not possible to do any of the water sampling. Some difficulties with the multicore were experienced initially but these resolved themselves quickly.

6. Station log (next page)

Station no.	Sampling	Date	Time	Latitude	Longitude	Depth	Comment
Site 8	CTD/grab	24.02.99	12.01	51 30.63	04 49.83	91	
	MultiC		12.09	51 30.70	04 49.81	92	N/S
	MultiC		12.20	51 30.71	04 49.81	92	N/S
	MultiC		20.40	51 30.72	04 49.81	92	N/S
	MultiC		20.50	51 30.70	04 49.82	92	N/S
Site 6	CTD	24.02.99	14.47	51 15.13	05 54.07	92	
	Grab			51 15.04	05 54.32	92	
	MultiC		15.15	51 15.01	05 54.55	92	
Site 5	CTD	24.02.99	16.29	51 13.23	06 09.23	102	
	Grab		16.40	51 13.17	06 09.46	102	
	MultiC		16.53	51 13.02	06 09.60	102	
Site 7	CTD		17.42	51 17.80	06 04.12	99	
	Grab		17.52	51 17.74	06 04.16	99	N/S
	Grab		18.14	51 17.59	06 04.35	99	
	MultiC		18.21	51 17.56	06 04.39	100	
Site 4	CTD		20.21	51 21.86	06 30.23	86	
	Grab		20.34	51 21.75	06 30.30	86	
	MultiC		20.41	51 21.63	06 30.42	87	
Site 3	CTD	24/2/99	23.11	51 38.15	06 12.52	102	
	Grab		23.20	51 38.09	06 12.68	102	
	MultiC		23.28	51 38.04	06 12.70	102	
Site 9	CTD	25/2/99	09.19	52 44.95	04 28.00	30	
	Grab		09.27	52 44.96	04 27.99	30	
	MultiC		09.32	52 44.98	04 27.92	30	