Cruise Report 22-25th September 2009

Cruise Personnel: Yueng-Djern Lenn (PSO), Ben Lincoln, Chris Old, Ben Powell, Louiza Norman, Charlotte Williams, Ray Wilton, Suzanne Jackson, Clare Davis (Liverpool University).

Cruise Objectives:

1) 50 hour time series of microstructure measurements using the VMP profiler next to mooring site in the seasonally stratified part of the Western Irish Sea.
2) CTD profiles and water samples for chemical analysis.
3) Retrieval of ADCP and thermistor moorings
4) A short series (5) Lowered-ADCP profiles to test different structure-function configurations

Report:

The cruise was initially set to depart at 1000 BST on the 21/09/2009, but was delayed until 1300 BST on the 22/09/2009 due to the forecast for stormy weather. Once we did arrive on station the microstructure time-series measurements and associated CTD/bottle profiles (every 6 hours) commenced without further delay at approximately 2005 BST, 22/09/2009.

Only one of the two moorings retained the surface buoy it was deployed with – this was the U-shaped mooring with solar panels, thermistors and mid-water ADCP, and had been observed with an overturned surface buoy a month earlier by the Macoma crew. The decision was taken to drag for the second L-shaped mooring with the bottom-mounted ADCP on the Thursday lunchtime (24/09/2009) in order to accommodate manpower requirements. The microstructure time-series was truncated at 36 hrs (0900 BST, 24/9/09) for this purpose.

The dragging operation was successful, with the buoy-less L-shaped mooring found on the opposite side of the buoyed-up mooring to Danny Buoy (Northern Ireland Fisheries mooring). Both moorings were successfully recovered.

Two issues with the mooring instruments caused loss of data:

1) 300KHz ADCP was covered in silt upon recovery, but still pinging. Recovered data show that the ADCP was turned upside down at the end of August, so we are missing useable data from the last 3 weeks of deployment.
2) An attempt was made to attach a new anemometer to the met-buoy at the end of August. Unfortunately the surface buoy was found overturned and the power supply box flooded. The surface buoy was righted at the time, but there were not the resources available to replace the power source and the new anemometer was not deployed. Therefore, no moored data was available for the entire 2009 field season.

Issues relating to chemical water samples being taken from the CTD:

1) No food was stored in the lab fridge/freezer this time, so there was no problems disrupted experiments.

Test structure-function L-ADCP casts were made on three occasions:

1) 1 profile during the time-series
2) 3 profiles between the end of the microstructure time-series andthe mooring recovery operations
3) 2 more profiles north of Holyhead, in 80 m water, on route to Menai Bridge following the mooring recovery.

Timetable (Times in UTC)

Tuesday 22 September 2009

1200: Depart Menai Bridge.
Shipboard-ADCP, flow through and PCO_2 switched on.
1905: Arrive at mooring site.
CTD #01: full profile with 12 bottle samples, 53N 47.06' 6W 36.85'
19:40: Microstructure profiling commences, 53N 47.11' 6W 37.07'

Wednesday 23 September 2009

00:45: 47th VMP profile to 95.9 m depth, 53N 46.46' 6W 37.15'
01:05: CTD #02 – profile to 95 m with 12 bottle samples, 53 N 46.939' 5W 37.242'
01:39: Recommence microstructure profiling, 53N 47.40' 6W 37.26'
06:20: 88th VMP profile to 87.9 m depth, 53N 46.46' 6W 40.06'
07:00: CTD #03 – profile with 12 bottles
07:35: Recommence microstructure profiling, 53N 47.53' 6W 36.64'
12:40: 123rd VMP profile to 92.3 m, 53N 46.88' 6W 39.58'
12:56: CTD #04 with 12 bottle samples to 91 m depth, 53N 46.739' 5W 39.645'
13:27: Recommence VMP profiling, 53N 47.47' 6W 38.38'
16:03: 163rd VMP profile to 87.9 m depth at 53N 45.80' 6W 40.97'
---------- reposition, 2 miles----------
17:10-17:35: CTD-ADCP structure function cast #05/S1
18:05: Recommence VMP profiling, 53N 46.98' 6W 38.23'
19:00: 175th VMP profile to 89.7 m depth, 53N 46.74' 6W 38.97'
19:10: CTD #06,#07, 12 bottle samples + more water for Clare
20:18: Recommence microstructure profiling, 53N 47.60' 6W 38.22'

Thursday 24 September 2009

00:42: 217th VMP profile, 53N 46.41' -6W 40.21'
01:04: CTD #08 profile to 91 m depth, 12 bottle samples, 53N 47.017' 5W 39.436'
01:40: Recommence microstructure profiling, 53N 47.94' -6W 38.48'
04:30: 244th VMP profile to 88.7 m, at 53N 45.41' -6W 40.43'
04:40: Reposition for CTD and watch change.
05:23: Recommence VMP profiling, 53N 48.03' -6W 38.60'
06:29: 257th VMP cast to 90.3 m depth, 53N 47.66' -6W 39.95'
06:40: CTD #09, 12 bottle samples, 53N 47.25' -6W 39.61'

07:21: Recommence microstructure profiling, 53N 47.25' -6W 39.61'
08:11: 268th VMP cast to 87.2 m depth at 53N 47.37' -6W 40.51'
08:17: Halt VMP time-series for structure-function profiles
08:19: CTD-ADCP #10/S2
08:45: CTD-ADCP #11/S3
09:15: CTD-ADCP #12/S4

MOORING RECOVERY
09:40: Preparations for mooring recovery
10:20: Begin dragging for L-shaped mooring.
12:16: L-mooring located and ADCP recovered.
13:07: Recovery of U-shaped mooring complete
13:36-43 All moored CTD/thermisters in sink and soaking in warm then cold water

14:00: Begin transit back to Menai Bridge

16:00: Stop on route to complete final 2 structure function casts in 80-m, water north of Anglesey
16:04-30: VMP profiles for structure-function calibration, 53N 35.30' -5W 50.21'
16:30-17:30: CTD-ADCP #13/S4, #14/S5, no bottles

17:34-18:00: VMP profiles for structure function calibration, 53N 34.00' -5W 52.51'

18:05: Steam to Menai Bridge
23:00: Arrive Menai Bridge.