**Agri-Food and Biosciences Institute**
Agriculture, Food and Environmental Science Division
Fisheries and Aquatic Ecosystems Branch

**Cruise Report:** CO 0909
**Vessel:** RV *Corystes*
**Date:** 22nd – 25th February 2009
**Area**: Irish Sea (north); ICES div. VIIa
**Survey Type**: Biological Oceanography & Mooring Service

**Personnel:**

| | | | |
|---|---|---|---|
| B Stewart | SSO | AFBI | 22- 25 February |
| R Gilmore | SO | AFBI | 22- 25 February |
| P Irvine | ASO | AFBI | 22- 25 February |
| A M Crooks | ASO | AFBI | 22- 25 February |
| C Scherer | Student | Napier | 22- 25 February |

**Objectives:**

i. To maintain an insitu monitoring programme at open Irish Sea station 38A.

ii. To investigate the distribution of dissolved nutrients along a grid of stations between the mooring site and Liverpool Bay.

iii. To investigate the distribution of dissolved nutrients and in the water column along a grid of stations at the Beaufort Dyke in the North Channel.

| **Circulation** | ✓ |
|---|---|
| **DCSO & CSO** | ✓ |
| **Ship Managers** | ✓ |
| **Fisheries Division** | |
| **ANIFPO** | |
| **NIFPO** | |
| | |

**Comments**

**Signed Head of Branch**

**Methods:**

- Stations were profiled using a Seabird SBE 32 water sampler and SBE 911 CTD
- Vertical zooplankton net hauls were taken using a 200 micron mesh bongo net with a 500mm diameter inlet.

**Cruise Narrative:**

Sunday 22 February 2009
Following a talk on ship's safety and a demonstration of personal life saving equipment, the RV Corystes departed Belfast at 2200 hrs and sailed overnight to the mooring station 38A.

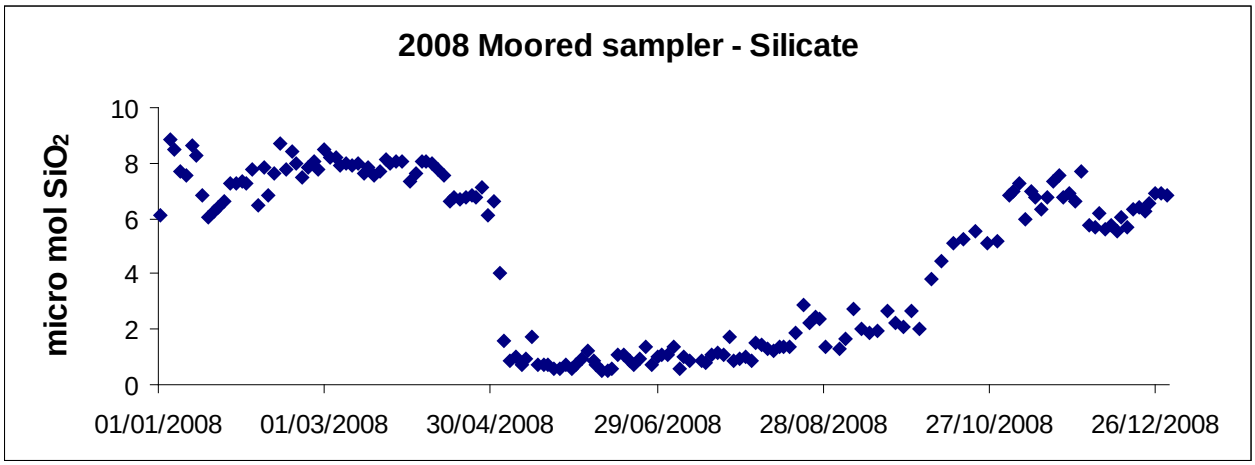
Monday 23 February 2009
The vessel arrived on station 38A at 0630 hrs. The weather was dry and bright with a light westerly wind when work commenced at 0800hrs with recovery of the instrument mooring to ship deck. Data from thermistors, CTD and water sampler were down loaded. Samples were removed from the water sampler and following a detailed inspection of mooring components, instruments were reprogrammed and mooring components reassembled. The instrument mooring was then successfully redeployed at 1245 hrs in depth 93 metres on position $53^0$ $46^l$ .758N $005^0$ $38^l$ .121W. Following deployment of the rosette water sampler and CTD the scientific crew worked a shift system to enable unimpaired sampling along the survey transects. The vessel sailed to sample stations 47D, 36, 37 and at stations 8, 7 and 6 along the "Liverpool Bay" transect.

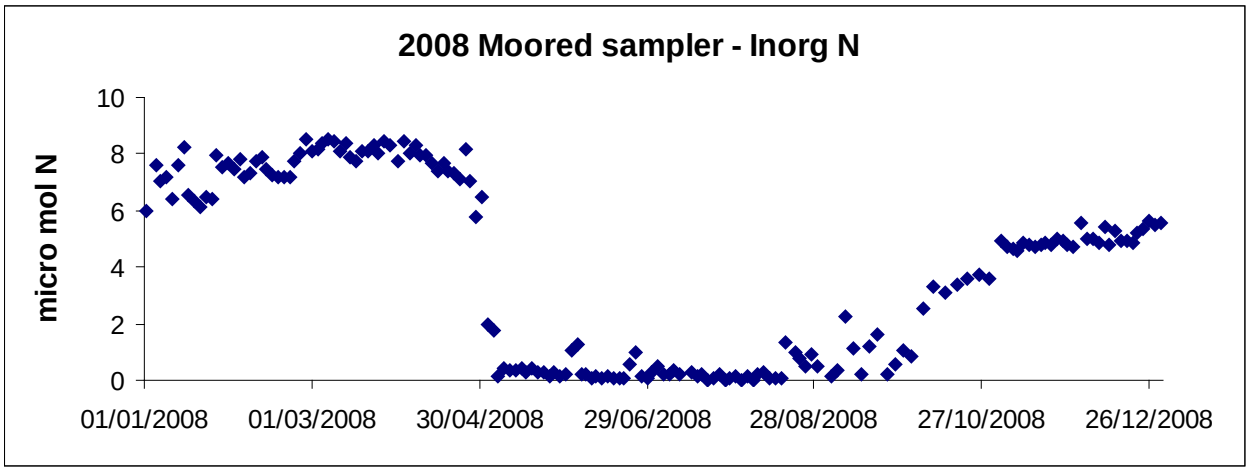
Tuesday 24 February 2009
Work continued throughout the night to complete the Liverpool transect at 0450 hrs. The vessel then sailed in a northerly direction to commence sampling along the "Isle of Man" transect and continued with sampling at the Beaufort Dyke before sailing to dock in Belfast at midnight.

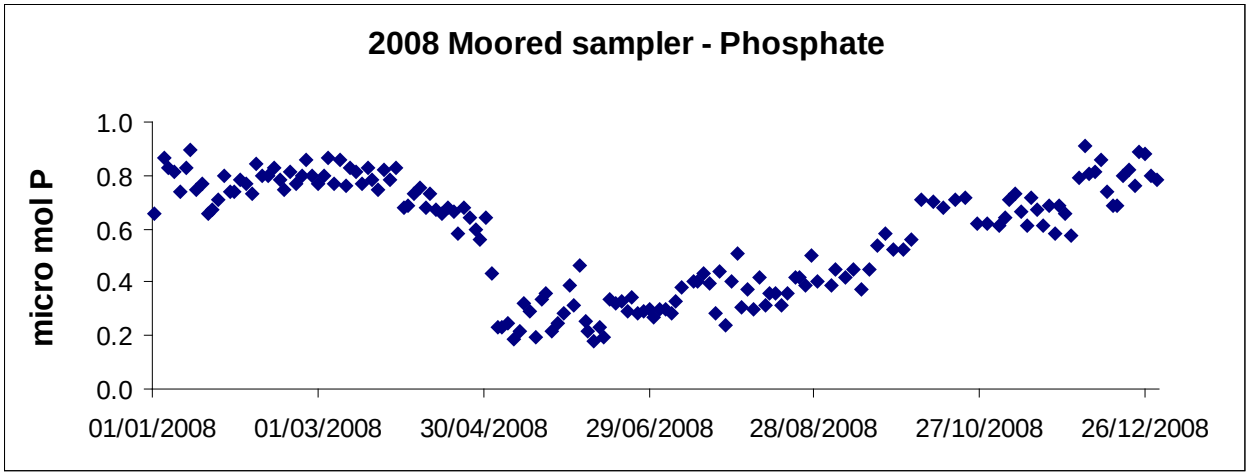
**Work Completed:**
Favourable weather conditions meant the survey was successfully completed ahead of schedule with all objectives achieved.

**Results:**
Detailed results of the hydrographic data collected during the cruise will be made available as the data is worked up and interpreted by the laboratory. Samples taken for nutrient analysis were returned to the laboratory and processed for ammoniacal nitrogen, phosphate, total oxidised nitrogen, silicate, nitrite and chlorophyll. Results will be available when the data is fully worked up by the laboratory.

However working up of analytical data from samples taken by the moored water sampler (mean depth 17 m) during 2008 has been completed and is detailed below.




The graphs illustrate the effects of stratification of the water column at the end of April, when nutrients become depleted in the upper layers as they fuel the spring bloom. Inorganic nitrogen concentrations are quickly reduced to trace levels as biomass levels increase. With nitrogen as the limiting factor, biomass production is halted leaving depleted levels of phosphate and silicate in the upper layer of the profile. A depleted nutrient surface layer continues throughout the summer until stratification breaks down in late summer. Surface layers become enriched as they mix with nutrient rich water from depth. As the year progresses nutrient levels are enhanced by remineralisation of organic material and "new" nutrients from the Atlantic flow. The annual cycle is complete when nutrient levels return a maximum towards the end of February.

**Operational Aspects of the Ship:**
During the cruise the A-frame, main trawl winches, both hydrographic winches and the ship's clean seawater supply were used. No problems were encountered with ship's equipment nor indeed with any of the scientific equipment. The hotel and catering service was of an acceptable standard and there was a good working relationship between the scientists and the ship's crew. Prior to the ship departing Belfast a comprehensive and detailed safety briefing was delivered to the scientific crew.

**Acknowledgements:**
I am indebted the deck crew of the RV Corystes for their co-operation and assistance during the mooring recovery and deployment operation. The ship's master, officers, engineers and catering staff are also thanked for their co-operation during this cruise.

*Scientist in Charge* *Master (seen in draft)*

Date: 11 March 2009