CEFAS LOWESTOFT LABORATORY, SUFFOLK

1997 RESEARCH VESSEL PROGRAMME

REPORT: RV CIROLANA: CRUISE 4

STAFF:

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DURATION: 14 April 1997 - 1 May 1997

LOCALITY: North Sea, Channel, Irish Sea

AIMS:

1. To undertake sampling and process measurements at sites in the Thames estuary, southern North Sea, Liverpool Bay and the Irish Sea to determine the impact of land derived nutrients on the marine ecosystem (A1208 and C956J168).
2. To deploy prototype SMART moorings in Liverpool Bay and in the western Irish Sea (A1108).
3. To undertake trial tows of U-Tow and CPR (SAHFOS/A1108)
4. To undertake bio-optical measurements at the key process sites in the Thames estuary, southern North Sea, Liverpool Bay and the Irish Sea.

NARRATIVE: [note all times in GMT]

Cirolana departed from Lowestoft on the early afternoon tide at 1400h on Monday 14 April 1997 and proceed directly to the Irish Sea. Trial tows of U-Tow and CPR samplers were

made during the passage. On arrival in the western Irish Sea on Wednesday 16 April 1997 Cirolana collected staff from DANI and UMiami via searider at Ardglass before taking up station in the western Irish Sea Gyre. The work programme commenced with water sampling using the CTD-rosette system and zoo plankton sampling to make measurements of primary production and respiration, bacterial turnover of nutrients and carbon and zooplankton grazing. Some additional sampling was conducted to support the DANI programme. Sediment samples were collected at the same site to measure nutrient turnover, recycling and loss. A two day cycle of sampling and experimentation then followed throughout the cruise at sites in Dundalk Bay, Liverpool Bay and at 3 sites in the Thames. Additional survey work was undertaken as required around ech site in order to describe the horizontal variability. The prototype smart moorings were deployed in the western Irish Sea next to existing DANI moorings and at two sites in Liverpool Bay. The moorings in Liverpool Bay have telemetry facilities which allow remote access to the data at Lowestoft via the Paknet system. Staff were transferred ashore at Llandudno and at Ardglass following completion of their work programmes. Aditional staff were brought on-board at Southend on arrival in the Thames. The cruise was characterised in the main for exceptional fine weather, both the passage to the Irish Sea and return were completed in excellant time and the full work programme was succesfully completed. Cirolana docked at Lowestoft on the late afternoon tide at xxxxh on Thursday 1 May 1997, one tide ahead of schedule.

RESULTS:

1. To undertake sampling and process measurements at sites in the Thames estuary, southern North Sea, Liverpool Bay and the Irish Sea to determine the impact of land derived nutrients on the marine ecosystem (A1208 and C956J168).

   Sampling was completed at each of the sites for size fractionated primary production, size fractionated biomass, phytoplankton species identification and enumeration, bacterial functional metabolism and controls on bacterial growth. Large volume incubation experiments were undertaken to determine the impact of nutrient enrichment on the phytoplankton and bacterial system. Zooplankton samples were collected and experiments and measurements undertaken to quanitfy gut fullness and evacuation, ingestion, egg production and chlorophyll degradation, as well as micrzooplankton grazing. Sediment samples were collected for characterisation and experiments conducted to measure nutrient fluxes, nitrification and denitrification using stable isotope tracers and oxygen uptake and penetration.
2. To deploy prototype SMART moorings in Liverpool Bay and in the western Irish Sea (A1108).

   Moorings were successfully deployed in the western Irish Sea (1) and Liverpool Bay (2). Deployment was aided by the good weather and the skill of the officers and crew. The telemetry systems on the moorings in Liverpool Bay were both functioning after deployment but one has since stopped transmitting. The data set will be stored on the mooring and interrogated when the mooring is serviced in May.

3. To undertake trial tows of U-Tow and CPR (SAHFOS/A1108)

   The U-TOW and CPR were towed through the Channel and Irish Sea and along transects between Dundalk Bay and Liverpool Bay s well as southward through the western Irish

Sea. Early problems with the logging system were resolved by sending the logger back to the manaufacturers (Valeport) for repair over a two day period. Final tows were completed in the Thames plume and along the existing ship-of-opportunity route from Harwich to the Hook of Holland, stopping short of Dutch waters. The U-TOW performed well and the comparison between CPR and U-TOW will speed the move towards modernisation of the SAHFOS survey.

4. To undertake bio-optical measurements at the key process sites in the Thames estuary, southern North Sea, Liverpool Bay and the Irish Sea.

   Bio-optical measurements were made at all sites to characterise the underwater light climate using a variety of instruments, PAR and colour sensors, and detailed pigment analysis undertaken. An intercomparison of the performance of 3 commercial fluorometers was undertaken which will lead to recommendations for the type of instruments to be used on moorings and towed instruments. A new relatively cheap instrument appears to perform as well as standard instruments, a note will be produced.

Finally, my thanks to the officers and crew for helping to make this a very successful cruise.

Stephen J Malcolm
1 May 1997

DISTRIBUTION:

Basic list +
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