CENTRE FOR ENVIRONMENT, FISHERIES AND AQUACULTURE SCIENCE, LOWESTOFT, SUFFOLK, ENGLAND

2007 RESEARCH VESSEL PROGRAMME

Report RV Cefas Endeavour: SURVEY 8/07

STAFF:

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Approx Sailing Time 21:00 BST
Approx Docking Time 0600 BST on 25th
LOCALITY: Southern Bight, Oyster grounds and Central North Sea, Dogger Bank region

Background: This is the 2nd cruise of a series of cruises that form an essential part of a project addressing the source, cycling and fate of nutrients (i.e. carbon, nitrogen, silicon, oxygen) in UK Shelf Seas, specifically the North Sea. It will examine the relative importance of the various ecosystem components, their degree of connectivity and their susceptibility to change due to environmental or human pressures. The project combines an intensive observational programme in the North Sea, with model development and operation. Three representative sites have been selected for detailed process studies (up to 5 cruises per year for 3 years) of pelagic (water column) and benthic (seabed) food webs, with horizontal and vertical spatial sampling over a broader area being achieved using a variety of towed instruments, and the temporal range being extended using autonomous buoys and bottom landers. *In situ* observations will be supplemented by satellite imagery and data from other sources, such as the continuous plankton recorder (CPR) and Ferryboxes™.
Overall aims of this series of cruises are to investigate:
1. Pelagic food webs, water column measurements
2. Hydrography and seawater chemistry
3 Community structure
4 Phytoplankton and microbial production
5 Grazing impacts
6 Mesozooplankton secondary production
7 Vertical flux and budgets of carbon
8 Benthic food webs, sediment processes, exchanges across the interface
9 Sediment Profile Imagery
10 Advection in coarse sediments
11 Resuspension events

**Specific cruise AIMS (not in priority order)**

1. Trial the use of the Plankton multinet.
2. Recover and redploy landers at the three sites and additionally the smart buoys at the north dogger site.
3. Perform scanfish tows to give the water column context.
4. Sampling at frequent intervals (approx hourly) using CTD rosette at the 3 sites with LISST
5. CTD casts for Primary productivity estimates and deck incubations using N15 uptake.
6. Underway measurements for isotopic ratio work from continuous supply.
7. Collect Plankton samples for species composition using vertical nets.
8. Deployment of SPI camera over a wide range of sites to characterize inter site variability
9. Undertake assessment of benthic flora/fauna assemblage using Jennings beam trawls
10. Collect samples for isotope analysis of fish, fauna and flora using 2m bean
11. Collect core profiles, of nutrients, oxygen, chl-a. (NIOZ corer) and sediment profiles.
12. Undertake experiments on productivity and grazing at the three sites.

**Cruise Narrative.**

Due to the problems with a crane which hindered loading, Endeavour departed at revised time of 20:30 with a pallet truck for moving the Nioz corer and other heavy gear around the starboard area. The ship continued to the gabbard where a CTD was undertaken with nets, further nets where taken uneventful, and subsequent nets were performed at the half way stage to the Sean gas field site.

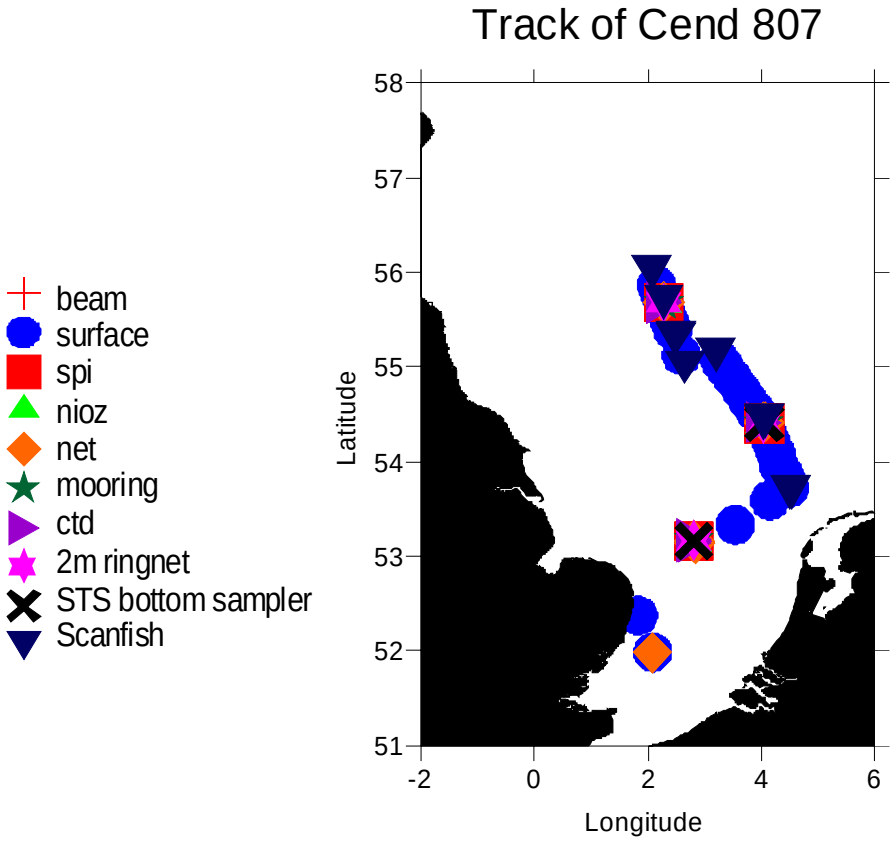
At the Sean gas field the recovery of the mooring was problematic. It is on position but after grappling it and retrieval the ground line and anchor it is clear that serious corrosion had occurred. Following this a CTD was taken to collect bottom waters and NIOZ coring was under taken until 20:00. There was problem with the CTD winch starting to haul in of its own accord. The emergency stop was pressed and worked. CTDs were then taken from 21:00. The cycle of hourly CTDs and Nets every 6 hours was undertaken until 0900, when further grappling took place for the mooring. This was ended without success at 13:30. A Spi camera was then under taken until 1600, followed by successful beam trawls. Small fish and crabs were quite abundant. The large 2m net was then tried and was very successful on the 2nd deployment. Following this 3m beam nets were then undertaken, which were less successful. After this in reasonable winds and strong tides, a bottom sampler was deployed and retrieved a bottom sample. There then followed departure for the Frisian front with samples and incubations occurring enroute. Prior to the scanfish line, the cable was wound off and reeled back in. On deployment of the scanfish the FSI ctd 1322 failed after a short time. The battery backup fuse blew and there were problems controlling the fish due to incorrect placement of the cable guard.

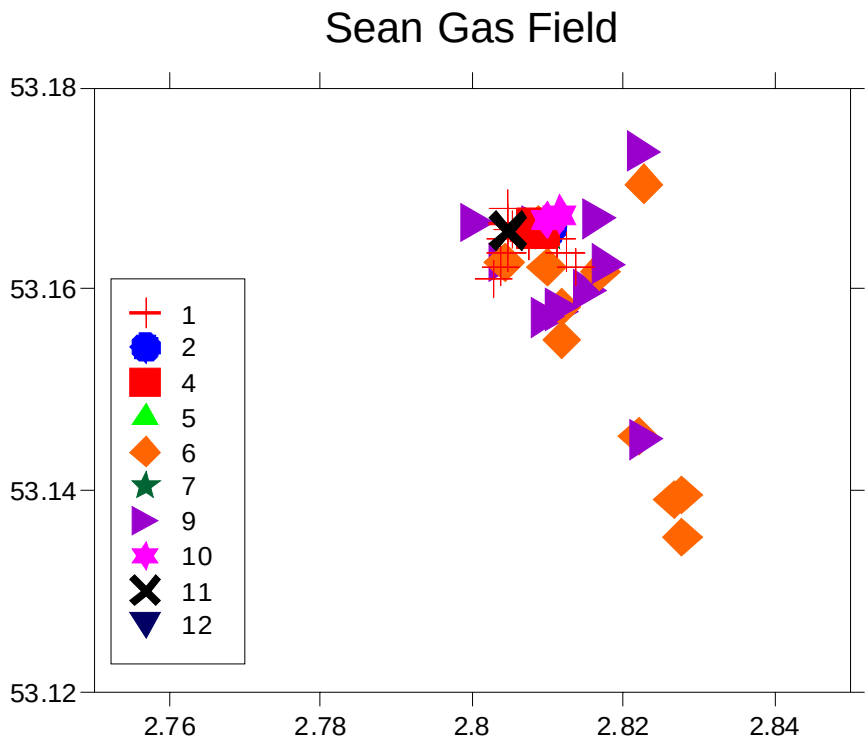
The fish was recovered, problems fixed and the fish redeployed. On redeployment a subsequent problem with the port flap was then found. After trying a possible fix another deployment was tried which was also unsuccessful. On arrival at the Oyster ground site, at 14:30. Spi camera were performed, followed by a CTD and Nets, and then after tea, NIOZ coring was performed. Following this CTDs and Nets were taken overnight until lunch. Following lunch the lander was recovered, although the release worked, the line was parted on recovery due to the excessive tow. Recovery was effected via the ground line. After this beam trawls were undertaken and the 2m ring net performed. The lander was then deployed and the long scanfish tow to the Dogger Bank commenced. The tows were successful and work started at the North

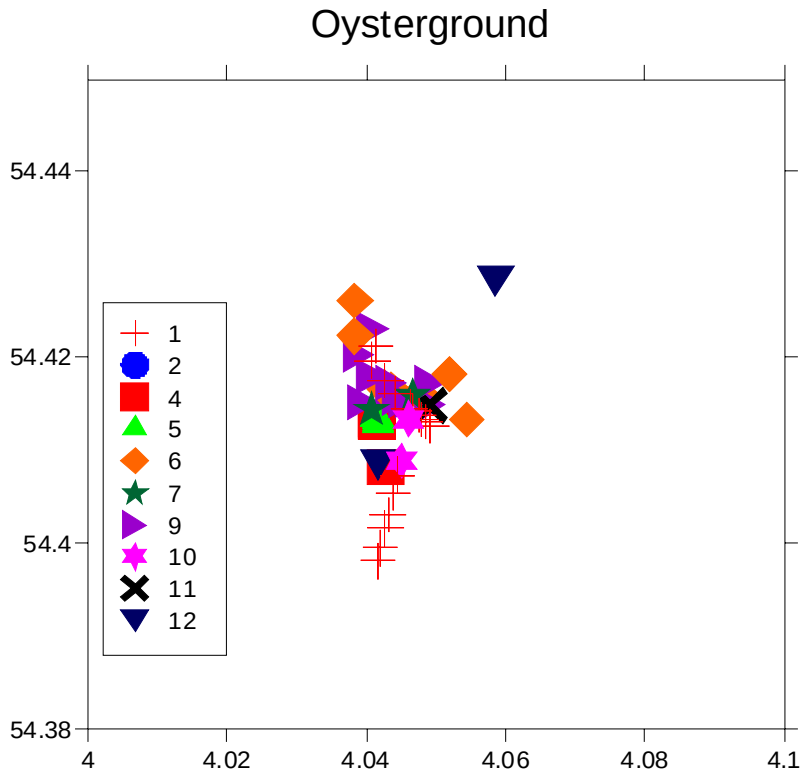
Dogger site at 19:00 on 22/4/07 with Nioz coring. CTDs were performed from 22:00 untill lunch on the 23rd. The mooring was successfully retrieved and the smart bouy recovered and turned around. Following the mooring deployments further CTds were undertaken until 02:30 when the Spi camera survey was completed. Following this the beam trawls performed, with the Endeavour departing for Lowestoft at 10:00

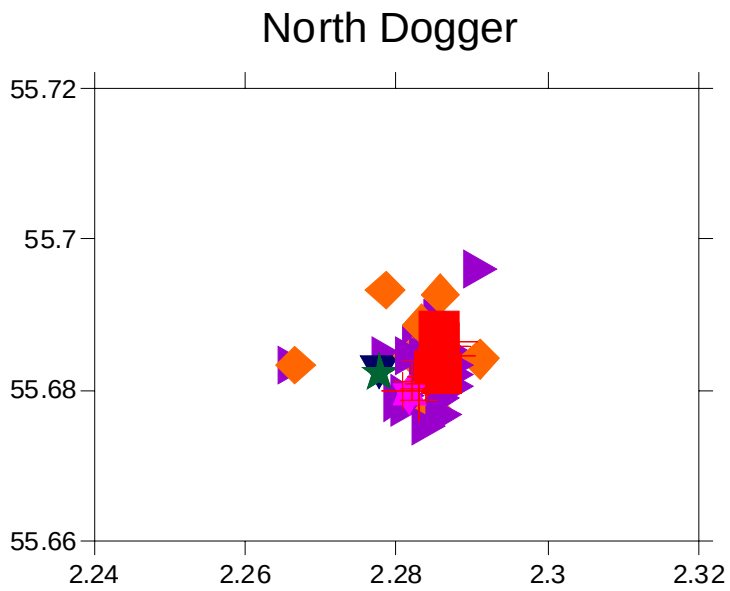
**Objectives and Preliminary Results.**

The objective of trials of the multi net was not met. In part due to the loss of 12 hours of ship time and in part due to not being ready.
All other primary objectives have been met either in part or in full.
In total 44 CTDs 42 net hauls, 58 NIOZ cores, 38 SPI camera drops, 21 beam trawls, 3 mooring sites and 3 scanfish lines were completed in 7 days. Preliminary results indicate excellent data has been collected.




Sean Gas Field
53.18
53.16
53.14
53.12
2.76
2.78
2.8
2.82
2.84
1
2
4
5
6
7
9
10
11
12


Oysterground
54.44
54.42
54.4
54.38
4
4.02
4.04
4.06
4.08
4.1
1
2
4
5
6
7
9
10
11
12


North Dogger
55.72
55.7
55.68
55.66
2.24
2.26
2.28
2.3
2.32