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FRV *Scotia*

Cruise 1805S

REPORT

10-22 December 2005

Personnel

J Dunn (In Charge)
J Hunter
N Collie
K Cook
J Rasmussen
J Beaton
M Rose
S Robinson
S Thompson
H Sun (Aberdeen University)
G Craig (CDL)

Project: AE11r – 13 days

Sampling gear: Hydro graphic CTD; Plankton nets ARIES, Dual Methot net, Digital holographic camera

Fishing gear: GOV Trawl, BT 137, Ground Gear C

Area: Northwestern North Sea-Faeroe Shetland Channel, North Sea (Fladen ground)

Objectives

1. To conduct routine hydro graphic sampling at stations along the standard JONSIS, Fair Isle-Munken and Nolso-Flugga survey lines.
2. To conduct plankton and hydro graphic sampling with ARIES in the Faeroe Shetland Channel.
3. To conduct plankton and hydro graphic sampling with ARIES and a Methot net on the Fladen ground.
4. To conduct fishing operations at selected areas on the Fladen ground.
5. To conduct trials of a digital holographic plankton camera system on ARIES.

Results

The survey was conducted in marginal weather conditions most of the time, with some very severe wind and sea conditions especially in the Faeroe –Shetland channel and the last day of the survey.

1. The JONSIS standard section in the northern North Sea was surveyed completely, and the Fair Isle-Munken section was sampled in full. The Nolso - Flugga line was partially surveyed due to severe weather conditions, with the priority stations sampled.
2. Plankton and water samples were collected using CTD, ARIES and a Dual Methot net in the Faeroe Shetland Channel.
3. Plankton and water samples were collected over a grid of stations on the Fladen ground using the CTD, ARIES and Dual Methot net systems.
4. A GOV trawl was deployed at four stations where fish were collected for analysis, of stomach contents back at the marine laboratory.
5. The Digital Holographic plankton camera was deployed at five stations on an ARIES system and produced a significant amount of high quality data.

Throughout the cruise surface temperature, salinity and fluorescence recordings were made using a Sea-bird SBE21 Thermosalinograph and a Sea Point Fluorometer.

A total of 48 stations were completed using the Seabird 911 + CTD.

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.

A total of 96 plankton samples were taken during the survey.

The ARIES plankton sampling system functioned 100% during the survey.

The digital holographic plankton camera worked extremely well and a significant amount of data will be analysed by Aberdeen University in the next year.

From each ARIES haul 20, C5 Calanus were picked out (if available) and were preserved in liquid nitrogen for DNA analysis.

The Bran and Luebbe auto analyser worked very efficiently, during the cruise, and easily kept pace with the number of samples being produced. A total of 750 samples were processed for total oxidised nitrogen, silicate and phosphate. Results will be available when data is fully worked up by the laboratory.

The ES60 and EK500 echo sounders were run continuously during the cruise and their output logged.

Narrative

Scotia sailed from Aberdeen at 1000 on Saturday 10 December in sunny weather to deep water about two hours distant from Aberdeen and commenced test deployment of the CTD system. Slight control problems with both the plankton and hydro winches were identified and quickly rectified. Due to technical difficulties *Scotia* had to sail without the holographic camera and the two staff to operate it, but with the intention that the system and staff should join the ship later in the programme.

Scotia made passage to the eastern most end of the Jonsis line, and commenced sampling at 2400 on Saturday 10 December. Sampling on the line was continued in poor weather and completed at 1226 on Sunday 11 December without incident.

Scotia set away for the Fair Isle – Munken stations in very poor weather, however by 2000 extremely heavy weather forced *Scotia* to dodge in a large swell and winds gusting in excess of 50 knots. This persisted into Monday 12 December until 1015 decreasing sufficiently to allow Fim 01 to be completed. *Scotia* continued sampling along the line of Fim stations in a heavy swell over the next 48 hours except for a break of about five hours due to bad weather. The Fim section was completed by 2355 on Tuesday 13 December, *Scotia* made passage to the Nolso end of the Nol section, where Nol 11 was completed in the early hours of Wednesday 14 December before gale force winds and high seas forced the vessel to seek shelter in the lee of Nolso Island. The winds and sea state increased steadily reaching speeds in excess of 85 knots at midday.

However by 0420 on Thursday morning the weather and sea state had moderated sufficiently to allow passage to Nol 9 which was completed by 0808. *Scotia* made steady progress sampling along the Nol section reaching Nol 9 by 1830.

A member of the scientific crew received news of a family bereavement and arrangements were made to land her at Lerwick and at the same time pick up Drs Hongyue Sun and Gary Craig with the holographic camera.

Scotia continued sampling along the Nol section reaching Nol 4 on Friday morning when 70 knot winds, heavy snow showers, and a four metre swell forced the ship to abandon the station and make a passage south to Lerwick.

Scotia made shelter on the east coast of Shetland south of Lerwick from gale force northerly winds at 1830. Contact was made with Holographic camera staff, travelling north on the ferry, and they informed us that the ferry would be late in arriving in Lerwick due to the severe weather.

Scotia landed a member of staff by small boat on Saturday morning to fly home and then proceeded to anchor in Braewick bay to await the arrival of the ferry. The pilot boat brought the two camera staff and the holographic camera to *Scotia* at 1435 and shortly there after *Scotia* left anchor.

However because of a large swell and poor weather to the north, *Scotia* made passage south to a grid of stations on the Fladen ground. Starting at Station 9 at 2230 on Sunday 18 December *Scotia* worked steadily east deploying the CTD, ARIES, and Dual Methot net at eight stations (completing station 16 by midnight).

After the initial grid of eight stations were completed, a further three stations, using the same sampling equipment, and completed by 0730 on Monday morning.

Scotia completed four trawls at stations 10, 11, 33 and 34. In each case the catch was sub sampled, identified and measured. Samples of pout were taken when available and frozen for further examination at FRS Marine Laboratory.

The Holographic camera was prepared and in the early hours of Tuesday morning 20 December and was deployed on an ARIES system at stations 35 34 and 33 where it acquired high quality holograms of plankton. The full impact of the data will not be available until the holograms are analysed more fully at Aberdeen University.

Scotia made passage to station eight and deployed a CTD, ARIES, and a Dual Methot net. Stations 7, 2, 1 and 32 were completed using the same gear, before trials of the Holographic camera continued. These were abandoned at 0545 after one tow when the weather deteriorated significantly and *Scotia* was forced to seek shelter off the Aberdeenshire coast.

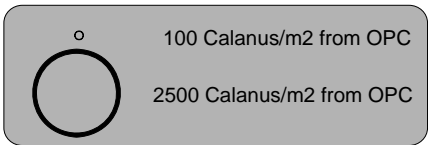
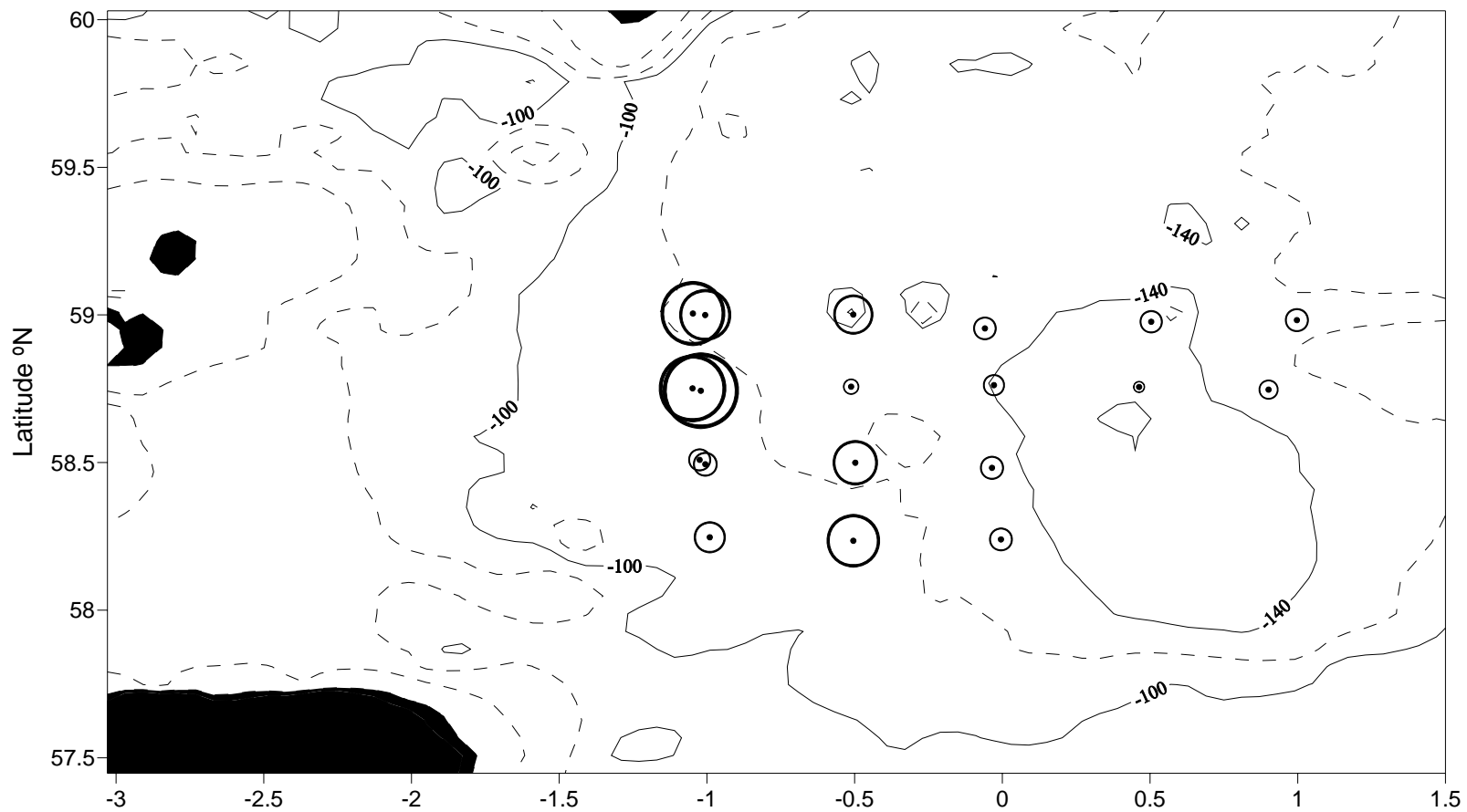
The holographic camera was checked over in shelter, but it was decided not practical to deploy it in such shallow depths.

Following this *Scotia* made passage to Aberdeen where she docked at 2000 on 21 December.

J Dunn
9 January 2006

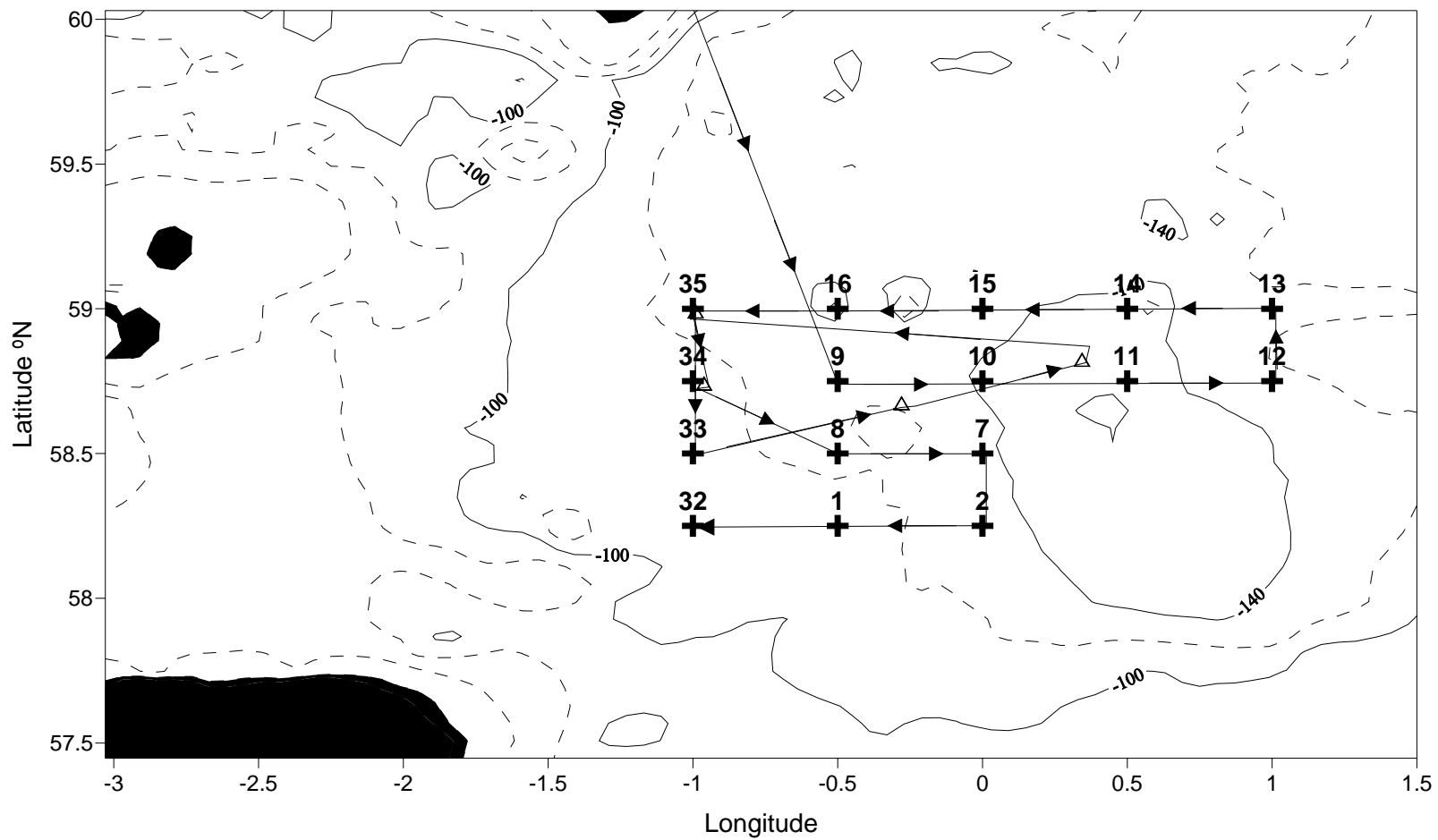
Seen in draft: Captain Peter Ramsay, OIC for FRV *Scotia*

Scotia Cruise 1805



Longitude

Scotia Cruise 1805



ARIES OPC Data Fair Isle - Munken Line
Calanus C5 Abundance/m3

