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Not to be sited without prior reference to the FRS Marine Laboratory, Aberdeen

FRV *Scotia*

Cruise 1802S

REPORT

7-21 December 2002

Personnel

J Dunn (In charge)
N Collie
S Hughes
I Gibb
M Burns
P Walsham
S Robinson
M Rose
M Hart (Visitor)

Project: AE11r – 14 days

Sampling gear: Hydrographic CTD; Plankton nets ARIES, Methot net

Area: North western North Sea-Faroe Shetland Channel, North Atlantic and Western shelf area.

Objectives

1. To conduct routine hydrographic sampling at stations along the standard JONSIS, Fair Isle-Munken and Nolso-Flugga survey lines.

2. To conduct plankton and hydrographic sampling with ARIES in the Faroe Shetland Channel.

3. To conduct plankton and hydrographic sampling with ARIES and a Methot net in the North Atlantic and the Western shelf area.

Results

The survey was conducted in generally good weather conditions.

1. The JONSIS standard section in the northern North Sea was surveyed, and the two standard Faroe Shetland Channel sections were surveyed completely.

2. Plankton and water samples were collected using ARIES and a Methot net in the Faroe Shetland Channel.

3. Plankton and hydrographic samples were collected at selected stations in the Northern North Sea, North Atlantic, and Western shelf area, using ARIES and a Methot net.

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

A total of 73 stations were completed using the 911 + CTD. The new mark2 cradle and buffer system on the end of the CTD crane worked very well under all conditions during the survey.

The seabird sealogger CTD suffered during the cruise from leaking underwater connectors. It was being deployed on ARIES and eventually had to be withdrawn from service as it was producing very badly corrupted data.

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 165 plankton samples were taken during the survey

The ARIES plankton sampling system functioned100% during the survey

From each ARIES haul seventy (if available), C5 Calanus were picked out. Twenty of them were preserved in liquid nitrogen for lipid analysis, twenty were frozen at –20°C for isotope ratios, and thirty were preserved in ethanol, for DNA analysis.

Euphausids were picked out from methot net samples and preserved as per the Calanus protocol. Target species were Meganictiphanes Norvegica and Thysanoessa Longicaudata (or in the absence of these) any other abundant euphausid species.

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 1,304 samples were processed for total oxidised nitrogen, silicate and phosphate. Results will be available when data is fully worked up by the laboratory.

The EA500 and EK500 echo sounders were run continuously during the cruise and their output logged.

Matthew Hart a Canadian journalist joined the cruise to obtain first hand information for an article on Dr W Turrell's work on the Greenland Pump, and the consequences of reduced salinity in the deepwater outflow. The article should be published in Granta in 2003.

Narrative

Scotia sailed from Aberdeen at 1200 hours on Saturday 4 December in choppy weather to deep water about two hours distant from Aberdeen and commenced test deployment of the CTD system. When these were completed *Scotia* made passage to the eastern most end of the Jonsis line.

Scotia commenced the Jonsis line sampling at 0200 hours on Sunday 8 December, but had to abandon the line for about an hour at 0345 as vessel was unable to hold station in sea state. Sampling on the line was continued and completed at 1400 hours without incident. *Scotia* commenced the Fair Isle – Munken stations at 1915 hours and had reached station four and the completed the first ARIES haul by 2400 hours.

Sampling along the Fair Isle-Munken line continued uninterrupted in improving weather conditions, but with a large sea swell during Monday 9 December, and completed in the early hours of Tuesday 10 December.

The Nolso-Flugga line was started, but an ARIES battery problem meant that it was decided to drop three ARIES stations (to conserve power) on the line and pick them on the way back west again.

The line of stations was completed by 1945 hours on Wednesday 11 December and *Scotia* set course back along the line to pick up the ARIES stations that had been omitted.

Scotia successfully completed the ARIES stations on the Nolso-Flugga line and set course for A3 the first Atlantic line station, arriving at 1945 hours Thursday 12 December.

The Atlantic stations were part of a bigger line of stations that were being sampled in the west by the Canadian vessel Hudson, mid Atlantic by RRS *Discovery*, and east end by *Scotia* hopefully simultaneously.

In consultation with the Marine Laboratory Aberdeen who were in contact with RRS *Discovery* (working in the Atlantic and experiencing difficulties due to severe weather) it was decided to drop some of the shallow stations to allow *Scotia* to complete the line of stations during a weather window.

Over the next three days all six of the Atlantic stations were completed using ARIES, a Methot net and CTD at selected stations.

Following completion of this Atlantic line of stations *Scotia* set course east again to pick up a series of shelf stations at number 27 on Sunday 15 December at 1230 hours.

Over the next three days a matrix of shelf stations along the West and North coast of Scotland were completed using ARIES and CTD with Methot nets being deployed at selected stations.

Scotia completed a series of stations to the east of Shetland on 18 and 19 December using the same equipment before having to break off and make passage for berdeen,arriving late on 20 December.

I would like to thank Captain Len Featherstone, the officers and crew of *Scotia* for the professional manner in which the cruise was conducted, which contributed significantly to the large amount of data which was collected.

J Dunn
8 January 2003

Seen in draft: L Featherstone (OIC, *Scotia*)

Figure 1

North Sea and Faroe-Shetland Channel stations,
Scotia 1802 (7/12/02 - 21/12/02)

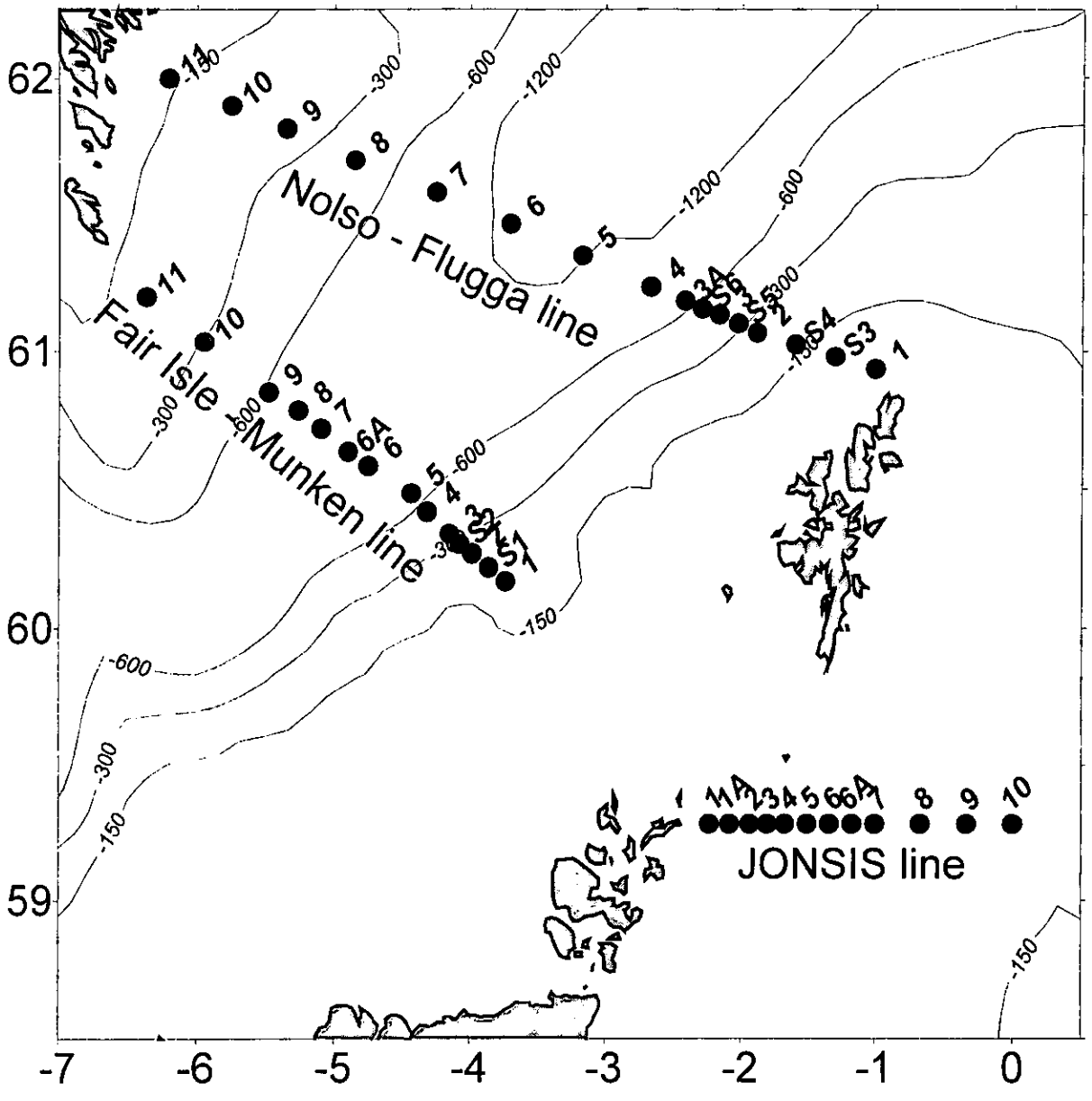

Figure 2

Locations of Atlantic sampling stations,
Scotia 1802 (7/12/02 - 21/12/02)

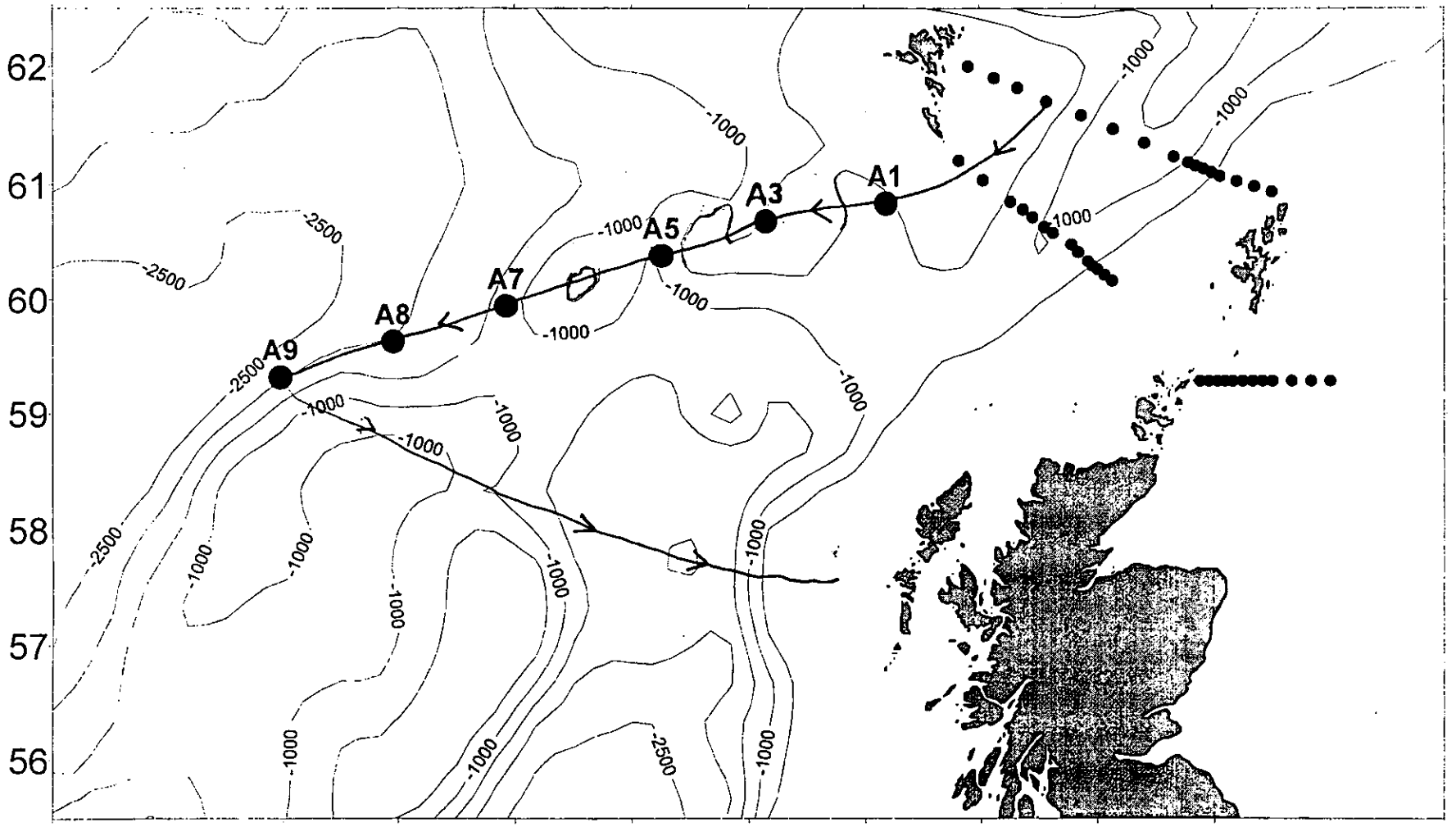

Figure 3

Locations of western shelf sampling stations,
Scotia 1802 (7/12/02 - 21/12/02)