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FRV *Scotia*

Cruise 0709S

REPORT

15 May – 2 June

Loading: Aberdeen
Unloading: Aberdeen

Personnel

G Slesser	SIC
B Berx	
M Geldart	
D Lichtman	
M Rose	
D Watson	
J Dunn	15-25 May
J Hunter	25 May – 2 June
K Cook	25 May – 2 June

Gear

SeaBird CTDs, ADCPs, Current Meters, Acoustic Releases, Recovery Trawl

Objectives

1. Replace the Waverider Buoy for the WaveNet network in the Moray Firth.

2. Recover two current meter moorings in the Fair Isle Channel.

3. Service two ADCP moorings in the Faroe Shetland Channel.

4. Deploy two additional ADCP moorings for the THOR project in the Faroe Shetland Channel.

5. Perform hydrographic surveys along the standard Faroe Shetland Channel sections.

6. To take samples for long term storage at Fair Isle – Munken stations FIM-01 and FIM-06.

7. Perform CTD surveys along the Shelf Edge as time allows.

8. Deploy two current meter moorings East of Shetland.

9. Perform a CTD survey East of Shetland.

10. Perform hydrographic surveys along the JONSIS standard section in the northern North Sea.

11. Perform biological sampling along the JONSIS standard section using the Ocean Sampler with additional positions to be sampled in the immediate area.

Out-Turn Days per Project: 19 days: Ae11r0

Narrative

Scotia sailed from Aberdeen at 1630 (all times are GMT) on Friday 15 May for the recovery of moorings in the Fair Isle Channel. Due to adverse weather conditions crew familiarisation of the CTD crane operation, usually carried out soon after leaving port, was cancelled till better conditions.

Scotia arrived on position (59° 28.29'N 002° 01.83'W) at 0800 on Saturday 16 May. Gale force weather conditions prevented recovery of the mooring at this time. As the forecast showed no immediate improvement the *Scotia* sailed for the West Shetland to allow crew familiarisation of the CTD crane operation. This was carried out at 1500. *Scotia* remained in this area until the weather improved.

Scotia sailed for the most northerly Fair Isle mooring position (59° 43.34'N 001° 41.48'W) at 0500 on Sunday 17 May. This mooring was recovered at 0745 and hence passage was made to the southerly Fair Isle mooring position at 0830. The southerly Fair Isle mooring was recovered on position (59° 28.29'N 002° 01.83'W) at 1100. Only the acoustic release and bottom current meter was recovered from this mooring. On investigation of the recovered mooring wires it is suspected that there had been trawling interference.

Passage was made to North Ronaldsay to commence a CTD section across the Fair Isle Channel. This section commenced at 1248 and finished at 1842 (Stns. 214-221). Given gale force winds forecast shelter was made west of Shetland till morning of 18 May when the *Scotia* sailed for the start of the Fair Isle – Munken section which was commenced at 1025. This section was worked till 1659 on Monday 18 May (Stns. 222-228) when a break was made to recover Nordic WOCE ADCP moorings, NWSD (60° 26.93'N 004° 22.45'W) and NWSE (60° 16.66'N 004° 20.13'W).

The following day, mooring NWSE, despite receiving and executing the release command failed to surface. Several attempts with the "recovery" trawl failed to budge the mooring from its anchor. This recovery work was abandoned at 2000 due to poor light conditions and the *Scotia* made passage to recommence the CTD sampling stations along the Fair Isle - Munken section commencing at 2110. At the first station the carousel water sampler failed to function. Work continued using the CTD machine only and stations were worked till 0134 on Wednesday 20 May (Stns. 229-231). On station 231 a fault developed in the 911 CTD and this was replaced by the back up CTD machine. CTD work ceased and passage was made to mooring NWSD for recovery. On route arrangements were made to have spare parts delivered to Lerwick to restore operation of the carousel water sampler after the mid cruise break.

At 0800 on Wednesday 20 May interrogation of the NWSD mooring failed to respond. Despite being positioned directly above this mooring the echo sounder also failed to show any trace. It was concluded that this mooring had been moved off position most probably due to fishing vessel interference. A series of hydrophone interrogations was carried out in a grid centered on the mooring position. This failed to produce any responses and the mooring recovery abandoned. Passage was made to return to mooring NWSE for further recovery attempts using the "recovery" trawl. On the first attempt at 1215 the "recovery" trawl dislodged mooring NWSE

from its anchor and floated to the surface. The mooring was subsequently recovered, data downloaded, refurbished and redeployed at 1714.

Scotia then made passage to the start of a CTD section running from off the shelf edge to south of the Faroe Islands. This section commenced at 0338 on Thursday 21 May and was completed at 0028 on Friday 22 May (Stns. 232-244). Following this the remaining Fair Isle – Munken stations were sampled and completed by 0708 (Stns. 245-248). Passage was then made to the start of the Nolso – Flugga section which was commenced at 1511 on Friday 22 May and completed at 1909 on Saturday 23 May (Stns 249-264). This was followed by working six CTD stations W Shetland (Stns 265-270) prior to making passage to E Shetland to deploy current meter moorings. Mooring E Shetland 1 (60° 18.67'N 000° 41.79'W) and mooring E Shetland 2 (60°09.99'N 000° 10.00'W) were deployed at 1255 and 1525 on Sunday 24 May respectively. Two CTD stations were worked by each mooring (Stns 271-272). Prior to making passage to Lerwick for the mid cruise break; six stations were worked along the E Shetland 1 CTD section (Stns 273-278).

Scotia entered Lerwick at 0700 on Monday May 25. A change of Marine Scotland staff was made, one personnel departed and two personnel arrived. Delivery was taken of the replacement parts for the carousel water sampler and these parts installed.

Scotia departed from Stornoway at 0700 on Tuesday 26 May for a section of CTD stations N Shetland followed by three CTD sections E Shetland. This work commenced at 1247 on Tuesday 26 May and ended 2243 Thursday 28 May (Stns 279-319).

Passage was made to mooring NWSD for further attempts to locate it. An extended search grid of the grid search carried out on the 20 May was made centered on the NWSD mooring without any success. Prior to leaving for the Fair Isle area the opportunity was taken to sample the Fair Isle – Munken section for the water samples (Stns 320-326) failed to be taken during the first part of the cruise due to the carousel water sampler failure.

On arrival in the Fair Isle area a repeat CTD section of the Fair Isle transect was carried out. This work commenced at 0331 and finished at 0851 on Sunday 31 May. This was followed by sampling the JONSIS standard section with the CTD/Carousel and Ocean Sampler and commenced at 1131 on Sunday 31 May and completed at 0255 on Monday 1 June (Stns. 334-345). Finally a series of six CTD stations and five Ocean Sampler stations on the East Coast standard section (Stns 346-351) were sampled prior to returning to Aberdeen. This work was completed at 1930 on Monday 1 June. The *Scotia* berthed in Aberdeen at 0600 on Tuesday 2 June.

Results

The weather conditions throughout the cruise were good apart from near to gale force conditions at the beginning of the cruise.

1. The Waverider Buoy was not replaced due to call off by CEFAS personnel and this work may be carried out during cruise 1309S.

2. The two moorings were recovered in the Fair Isle Channel. The southernmost morning was recovered without the sub surface buoy and current meter. The data recovered from the remaining three current meters will be edited, processed and analysed in the laboratory.

3. The Nordic WOCE ADCP mooring NWSE was recovered successfully, the data downloaded and redeployed. The Nordic ADCP mooring NWSD appears to have been

moved off site and several attempts were made to locate this mooring with no success. The recovered data from the NWSE mooring will be processed in the laboratory by in-house software.

4. Due to a delay in receiving the instrumentation for the THOR Project moorings this objective has been delayed until October.

5. The two standard Faroe Shetland Channel sections were surveyed.

6. Samples were taken for long term storage at Fair Isle – Munken stations FIM-01 and FIM-06 and additional water samples taken for Dan Mayor (Aberdeen University).

7. Several sections were sampled along the Shelf Edge.

8. The two current meter moorings E of Shetland were successfully deployed.

9. Three sections of CTD stations were sampled East of Shetland.

10. The JONSIS standard section in the northern North Sea was surveyed.

11. Biological sampling was conducted along the JONSIS standard section using the Ocean Sampler with additional stations sampled at the east end of the East Coast standard section.

Throughout the cruise, sea surface temperature, salinity and fluorescence recordings were made using a Sea-Bird SBE21 Thermosalinograph and Sea Point Fluorometer. Surface samples were taken throughout the cruise to calibrate these data. Detailed results of the data collected during the cruise will be made available as these data are worked up and interpreted in the laboratory. Calibrations were carried out on *Scotia* for both the thermosalinograph and CTD instrumentation. All hydrographic data are delivered to the ICES and BODC data centre in due course over the following year.

G Slesser
8 June 2009