



**Cruise Report:** CO 2108

**Vessel:** RV *Corystes*

**Date:** 27<sup>th</sup> May – 10<sup>th</sup> June 2008

**Area:** Irish Sea (north); ICES div. VIIa

**Survey Type:** Juvenile gadoid survey, Mooring Service & Biological Oceanography

**Personnel:**

S Beggs (SIC)	AFBI	27 May – 10 June
P McCorrison	AFBI	27 May – 31 May
I McCausland	AFBI	27 May – 10 June
E Warren	AFBI	27 May – 31 May
G Brady	AFBI	27 May – 31 May
J Peel	AFBI	27 May – 10 June
B Stewart	AFBI	1 June – 10 June
R Gilmore	AFBI	1 June – 10 June
C Smyth	AFBI	1 June – 10 June
C Scherer	Napier Uni	1 June – 10 June

**Objectives:**

- i. To investigate the distribution and abundance of juvenile gadoids in the Irish Sea VIIa(N).
- ii. To collect zooplankton, fish larvae and environmental data using the Gulf VII.
- iii. To carryout CTD and zooplankton sampling at fixed sites in the Irish Sea.
- iv. To maintain and service the Irish Sea insitu monitoring programme at open sea station 38A.

**Methods:**

During the hours of daylight a Gulf VII High Speed Plankton sampler was deployed at a series of fixed sampling stations (Figure.1). The sampler was towed at between 3 - 4 knots passing steadily through the water column in a 'V' shape, i.e. forming a double oblique tow, the lowest point being ~3 m above the sea bed. Fish larvae, ctenophores and jellyfish were removed from the fresh plankton samples at sea and recorded. Fish larvae were preserved in ethanol while the remaining plankton sample was bottled and preserved in a 4% formaldehyde solution. During the hours of darkness the MIK net was towed at 3 - 4 knots in a "V" shape i.e. forming a double oblique tow, the lowest point being ~5 m above the sea bed. Total catch was identified and enumerated while juvenile fish were identified, measured and preserved in ethanol. A thermosalinograph was run continuously to log surface temperature and salinity. A seabird 19plus CTD environmental sensor was employed to recorded vertical profiles of temperature and salinity at each Gulf VII station.

The rosette water sampler and zooplankton net were deployed at a series of fixed stations while the oceanographic mooring was recovered and serviced.

### **Cruise Narrative:**

Due to weather conditions the R.V. *Corystes* delayed departure until the morning of 27th May. The vessel headed directly to the western Irish Sea and began Gulf VII sampling at shortly after 12:30. R.V. *Corystes* remained in the western Irish Sea alternating between Gulf VII and MIK net sampling until a total of 46 Gulf VII and 28 MIK stations had been sampled. The R.V. *Corystes* returned to Belfast on the morning of the 31st May to take on scientific equipment and change personnel.

After a short cruise break the vessel left Belfast at 20:00 on Sunday 1<sup>st</sup> June and headed directly for the north eastern Irish Sea to immediately commence MIK net sampling. In ideal weather conditions the vessel completed sampling in the eastern Irish Sea on the 6<sup>th</sup> June and then proceeded along a series of oceanographic sampling stations to the offshore insitu mooring in the western Irish Sea. In flat calm conditions the mooring was brought onboard, serviced and returned in approx. 4 hours. The vessel immediately recommenced MIK net and Gulf VII sampling until the 10<sup>th</sup> June. Before returning to Belfast Dock a series of oceanographic stations in the Beaufort Dyke were successfully sampled.

### **Work Completed:**

This cruise saw the successful completion of an ambitious joint sampling programme, much aided by the excellent weather conditions throughout. In all 121 Gulf VII, 79 MIK net and 21 oceanographic stations were successfully sampled as well as the recovery and redeployment of the insitu mooring buoy. In total 2215 fish larvae were removed from Gulf VII samples while 378 whiting, 1 cod and 20 haddock juveniles were identified from the MIK net samples. In addition other fish species, ctenophores, jellyfish and crustaceans were identified to species, and recorded. Vertical depth profiles were collected at each Gulf VII station and zooplankton samples preserved for future analysis. The thermosalinograph was run continuously to log surface temperature and salinity. Marine cetaceans and basking sharks were observed during the survey and their positions noted.

### **Preliminary Results:**

The abundance of juvenile gadoids in the water column depends on the initial number that reach metamorphosis and individual growth and mortality rates. Due to the temporal variability in the settlement of both cod and haddock the series of abundance used to show likely year-class strength is constructed from the maximum estimate from that year (either May or June). This is not the case with whiting, which remain pelagic for much longer and therefore are estimated from the June survey abundance.

Similar to 2007 very low numbers of cod juveniles were recorded during the cruise (1 individual recorded). Considering the historical correlation between the MIK net and October groundfish survey 0-group cod abundance estimates, it is likely that cod recruitment has once again been poor. This is a worrying trend in terms of Irish Sea cod recovery which is reliant on good recruitment to build current spawning stock levels. Haddock numbers were also similar to those seen last year and well below the numbers caught in 2006. Whiting numbers were in line with previous years, with a relatively stable trend exhibited since the late 1990s (Figure 3). As with previous years the catches were dominated by whiting juveniles.

The eastern Irish Sea was dominated by whiting juveniles despite knowledge of extensive cod spawning in the southern region (Figure 2). The lack of cod juveniles caught in the eastern Irish Sea may represent poor recruitment success in this area or an earlier settlement period of the juveniles. Jellyfish and ctenophore numbers were recorded and jellyfish were abundant in the western Irish Sea during the 2<sup>nd</sup> part of the cruise to the point of being a problem during the MIK net sampling.

The surface temperature and salinity profiles highlighted a frontal area between the north of the Isle of Man and Liverpool Bay (Figure 4).

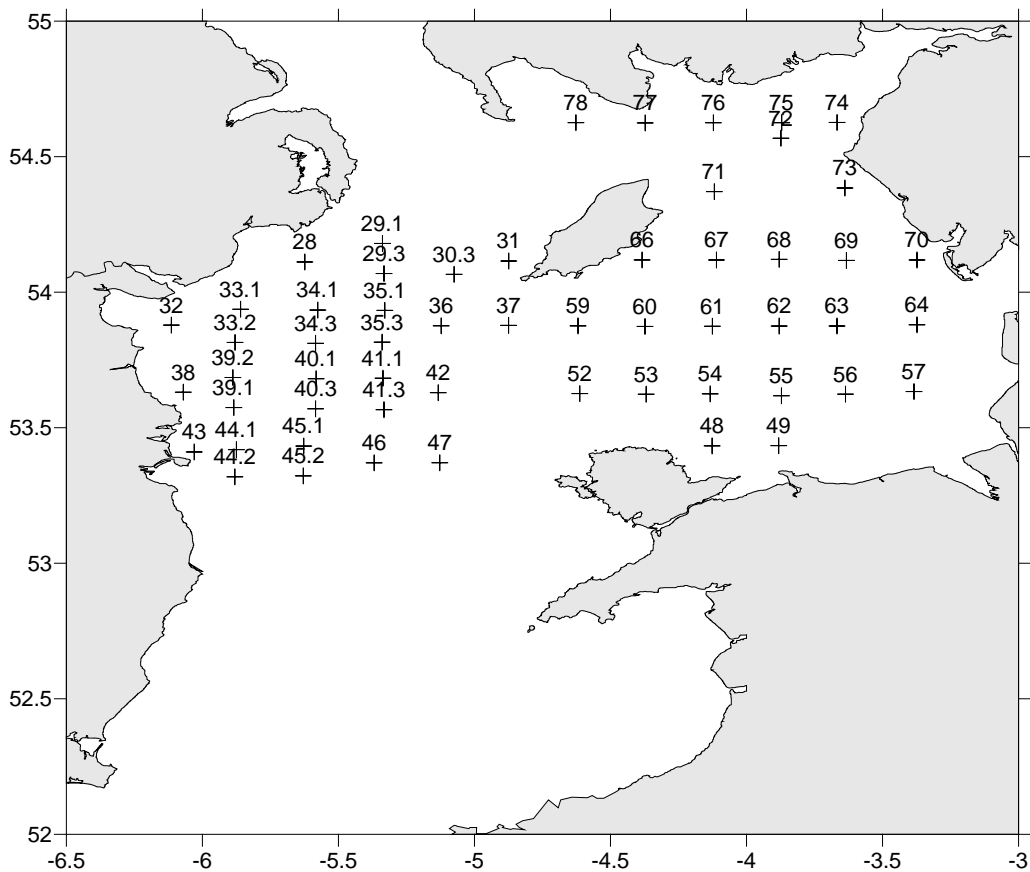
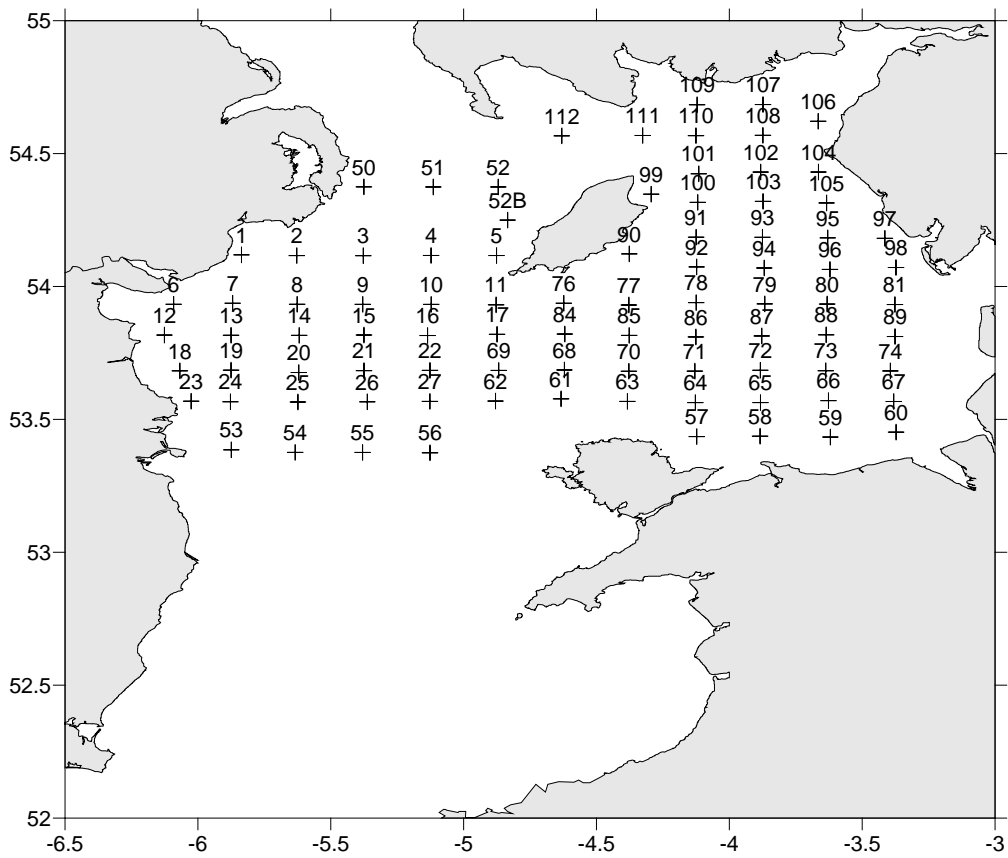


Figure 1. Sampling positions of Gulf VII (top) and MIK net (bottom) on cruise CO2108, 27 May – 10 June 2008 .

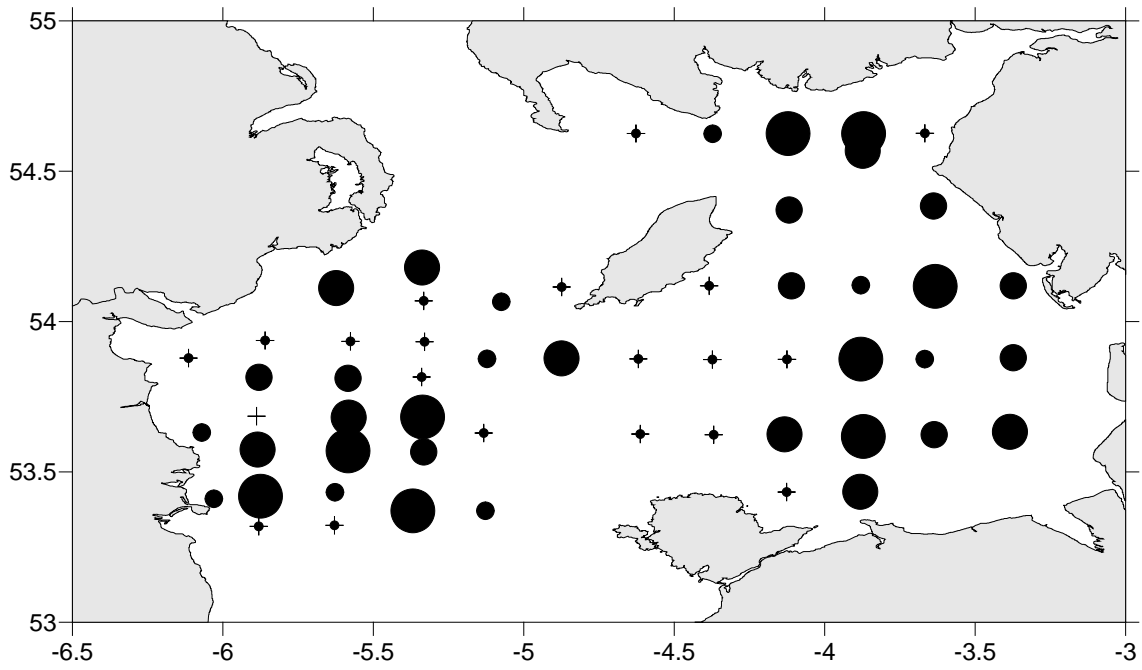
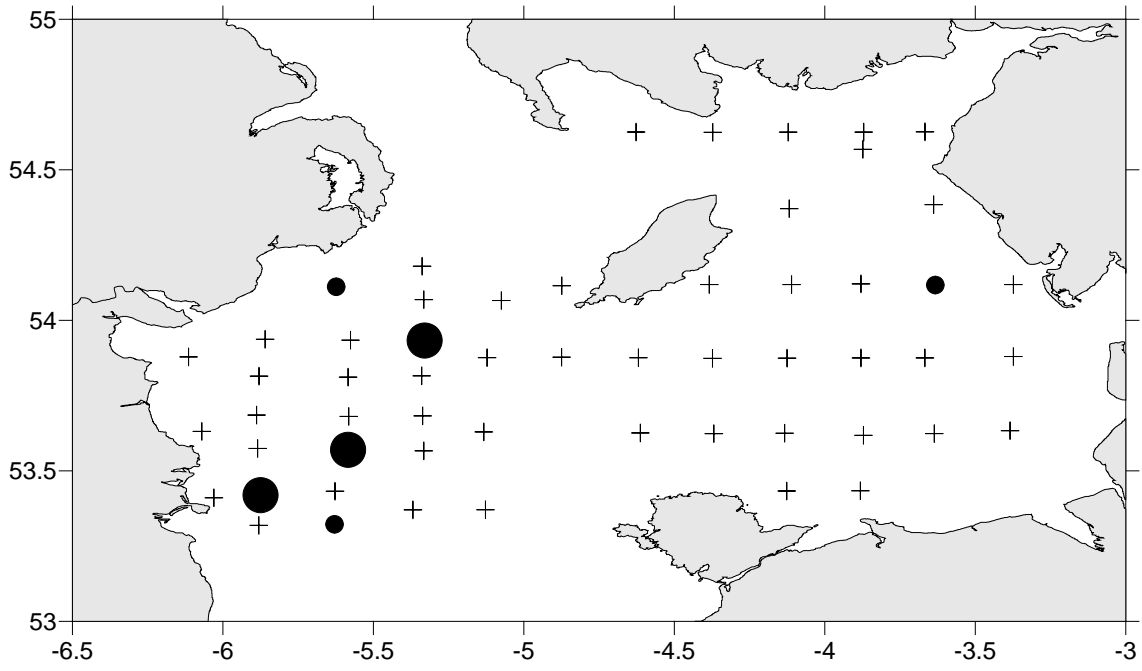


Figure 2. Spatial abundance of juvenile haddock (top) and whiting (bottom) identified in MIK net samples. Scale of points donate abundance whilst scale varies between species.

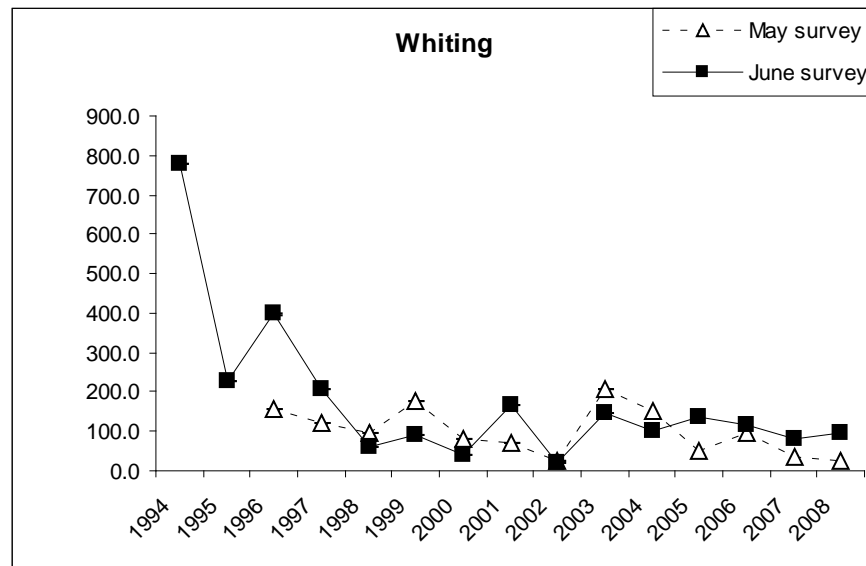
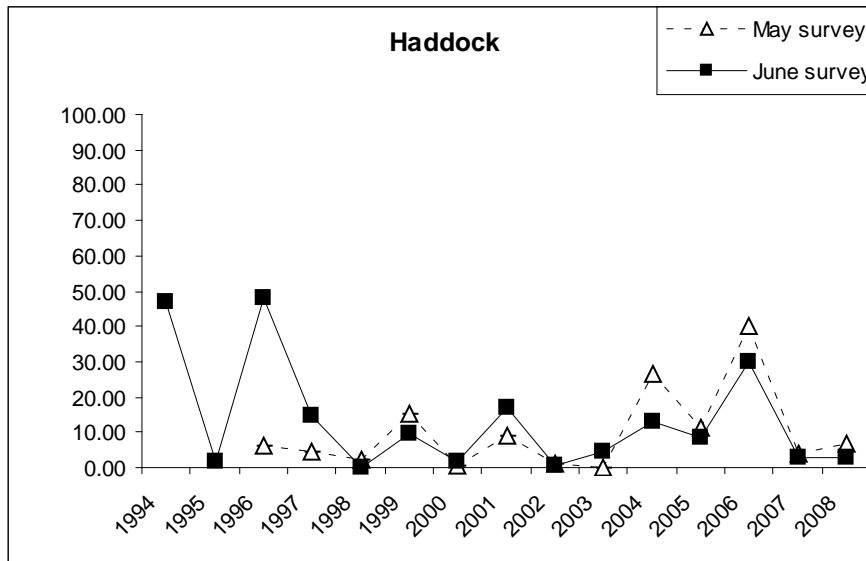
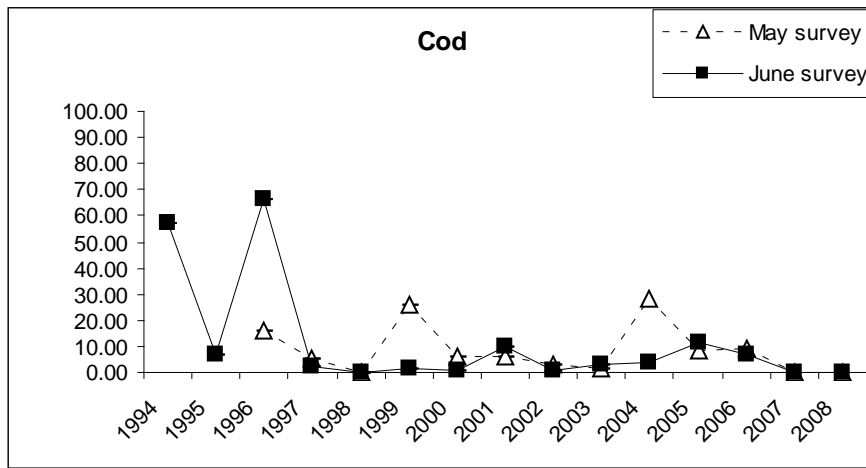


Figure 3. Time series of MIK net survey estimates of pelagic cod, haddock and whiting in the western Irish Sea from 1994 to 2008.

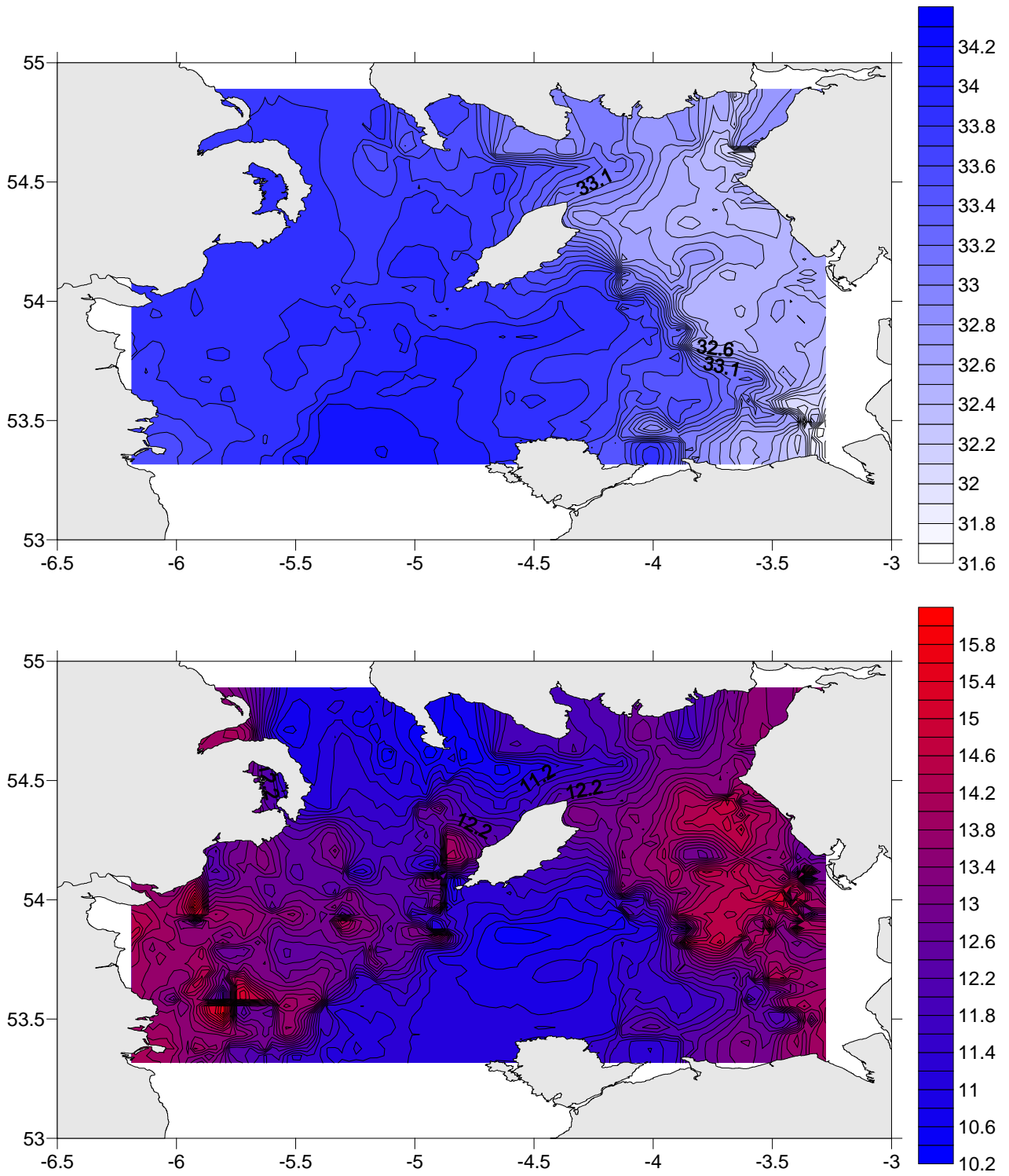


Figure 4. Spatial contours of seawater surface temperature °C (bottom) and salinity ppt. (top) recorded during cruise CO2108.

**Acknowledgements:**

The Master and Crew of *RV Corystes* are thanked for their assistance and cooperation in ensuring the successful completion of the survey. The scientific staff are commended for their thorough and efficient work throughout the survey and general good humour and teamwork which was crucial to the successful completion of the survey.

Signed:

Scientist in charge ( SIC ).....date .....

Head, AESD Aquatic Systems..... date .....

Master ( seen in draft ).....