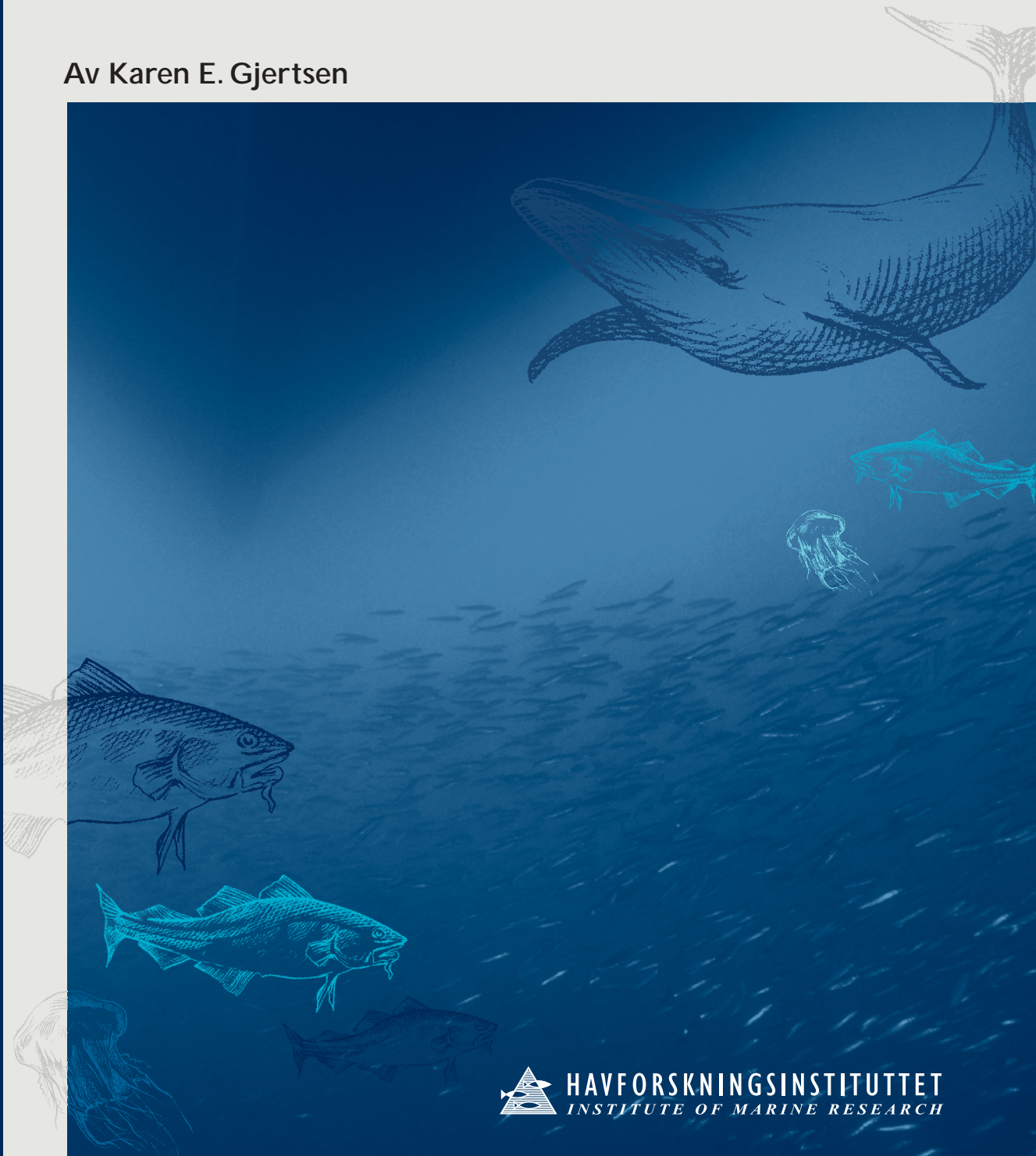


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Oversikt over tokt og faste oseanografiske stasjoner tatt i 2013

Report on cruises and fixed oceanographic data stations 2013

Av Karen E. Gjertsen



Report on cruises and fixed oceanographic data stations 2013

By
Karen E. Gjertsen



Photo: Kjartan Mæstad

PROSJEKTRAPPORT



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Oversikt over tokt og faste oseanografiske stasjoner tatt i 2013

Report on cruises and fixed oceanographic data stations, 2013

Forfatter(e):

Karen E. Gjertsen. Charts made by Karen E. Gjertsen and Svein Erik Enersen ("G. M. Dannevig")

Sammendrag (norsk): Rapporten gir en oversikt over tokt i 2013 i regi av Havforskningsinstituttet og Universitetet i Bergen med "G. O. Sars", "Johan Hjørt", "Håkon Mosby", "G. M. Dannevig", "Helmer Hanssen" samt noen innleide fartøyer. En kort beskrivelse av toktet samt kurs- og stasjonskart – hovedsakelig CTD, plankton og trålstasjoner er vist. Tabeller viser når de faste snittene er tatt, og antall observasjoner pr. måned for de faste stasjonene. Toktene er innrapporterte til Det internasjonale råd for havforskning (ICES) i skjemaet "Cruise Summary Report" : <http://www.seadatanet.org/Metadata/CSR>. Data fra toktene er tilgjengelig fra Norsk marint datasenter ved Havforskningsinstituttet. Kartene kan lastes ned fra instituttets intranettside/bildearkiv: <http://hinnsiden.imr.no/ressurser/bilder/bildearkiv>

Summary (English): The report gives an overview of cruises carried out in 2013, by the Institute of Marine Research and University of Bergen, on board research vessels "G. O. Sars", "Johan Hjørt", "G. M. Dannevig", "Helmer Hanssen", and some hired commercial vessels. A short description of the cruise, in addition to route- and station charts (mainly the CTD, plankton and trawl stations) are shown. Tables show timing of oseanographic sections, and number of observations per month for the stations. Cruises are reported to the International Council for the Exploration of the Sea (ICES) using the form "Cruise Summary report": <http://www.seadatanet.org/Metadata/CSR>. Cruise data are available from the Norwegian Marine Data Centre at Institute of Marine Research. Charts can be downloaded from the Institute Intranet/Archive: <http://hinnsiden.imr.no/ressurser/bilder/bildearkiv>

Emneord (norsk):

1. Kurskart
2. Stasjonskart
3. Toktmetadata

Subject heading (English):

1. Cruise track chart
2. Station chart
3. Cruise metadata


Prosjektleder


Faggrupeleder

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1 Cruises 2013

1.1 G. O. Sars (Ship code no 10)

CRUISE NO	PERIOD OF CRUISES		PURPOSE	AREA	CTD ST		TRAWL ST		PAGE OF CHART	COMMENT
	Start	End			Start	End	Start	End		
2013101	22 Jan	23 Feb	IBTS (<i>International Bottom Trawl Survey</i>) quarter 1 multispecies bottom trawl survey, coordinated by ICES. The IBTS survey covers the North Sea and Skagerrak (except kataggatt) and involves 7 countries surveying at the same time; this section covers the North east part of the North west and part of the Central East areas of the North Sea. On this survey: bottom trawling in water < or like 200m to create trawl indices for several demersal species, MIK trawls in water < or like 200m to provide an index of herring and sprat larvae, MIK-M trawls for fish eggs (along the Utsira-W), a process studies station (not run in 2013), and Utsira W (water profiles, nutrients, chlorophyll, oxygen, plankton, algae). Acoustic survey along a portion of the northeast shelf edge for saithe. Also taking place (not routine): seabird counts (JNC) and gadoid egg incubation experiment.	North Sea	1	95	1	60	33-34	
2013102	23 Feb	25 Feb	The marine geological survey is a training course for students within marine geology and marine geophysics: The GEOV231 marine geological field course aims to demonstrate how acquisition and processing of seismic data and sea bottom sample data takes place and give students practical experience in marine-geological/geophysical methods and laboratory investigations. It also aims to create an understanding of how field studies can be used to understand geological processes in marine environment.	Norwegian coast	96	97	-	-	34	
2013103	12 Mar	16 Mar	Monitoring of the environment and plankton at the Svinøy NW section.	Norwegian Sea	98	114	-	-	35	
2013104	17 Mar	26 Mar	Method development for school biomass estimation of herring schools with multibeam sonars.	North Sea, Norwegian Sea	115	-	61	64	35	

G. O. Sars (cont.)

CRUISE NO	PERIOD OF CRUISES		PURPOSE	AREA	CTD ST		TRAWL ST		PAGE OF CHART	COMMENT
	Start	End			Start	End	Start	End		
2013105	01 Apr	09 Apr	Monitoring of environment and plankton at the hydrographic sections Gimsøy-NW and Bear Island-W. Monitoring of radioactive pollution near the nuclear submarine wreck "Komsomolets".	Norwegian Sea Barents Sea	116	147	-	-	36	
2013106	10 Apr	24 Apr	The main objective of the cruise is to develop a more environmental friendly trawling technique for codfish than present bottom trawling technology. Methods to achieve this is to develop manoeuvrable off bottom trawl doors, development of in situ camera observation while trawling and instrumentation for monitoring of trawl performance. Tests of systems to regulate catches is also included in the cruise plan. A photographic system called Deep Vision designed to identify species and sizes of fish passing through a trawl is under development and full scale testing of a modified version of this system i part of the cruise plan. A new method to study horizontal herding of fish by sweeps when trawl doors are towed on and off (10 m) bottom will be evaluated. Another objective of the cruise is to develop technology which can separate cod and haddock in the trawling process. During the cruise behavior differences between the two species will be studied.	Barents Sea	148	151	65	97	36-37	
2013107	01 May	14 June	Trans-Atlantic ecosystem survey from the Norwegian Sea, through the Icelandic and Irminger Seas to the Labrador Sea aiming at a complete ecosystem mapping and inter comparison to fulfill Euro-BASIN goals.	Iceland Sea, Irminger Sea, Labrador Sea, Norwegian Sea	152	209	98	176	37-38	

G. O. Sars (cont.)

CRUISE NO	PERIOD OF CRUISES		PURPOSE	AREA	CTD ST		TRAWL ST		PAGE OF CHART	COMMENT
	Start	End			Start	End	Start	End		
2013108	16 June	15 July	<p>Leg 1 (16. - 24. June 2013) : The main objective of the cruise was to provide TOPAS seismic data and sediment cores from the Norwegian Channel and its flanks in order to increase our understanding of the last deglaciation of this region.</p> <p>Leg 2 (25. June -13. July 2013) : The main objective of the cruise was to explore the extent of known hydrothermal fields at the Jan Mayen spreading center and to explore for new vent fields along the Kolbeinsey Ridge and Mohns Ridge.</p> <p>Leg 3 (13. - 15. July 2013): The main objective of the cruise is to understand the processes involved in failure, including stratigraphy, lithology, and chronology from seismic and high-resolution core data. This will be achieved by collecting gravity cores from small scale submarine slides and provide a few Topas profiles to fill existing data gaps.</p>	North Sea, Norwegian Sea	210	278	-	-	39	
2013109	17 July	30 July	<p>The major aim of the scientific survey is to map the abundance and distribution of northeast Atlantic mackerel, by means of standardized pelagic trawling (0–50m depth) and hydro acoustic recordings from multibeam sonars and a multi frequency echosounder. We also aim to study abundance, spatial temporal distribution, aggregation and feeding ecology of Norwegian spring spawning herring, blue whiting and other pelagic species in relation to oceanographic conditions, prey communities and marine mammals. Sub goals include: Map concentration and distribution of non targeted species such as horse mackerel, Atlantic salmon and lumpsucker. Systematic marine mammal sightings for species identification, group size and behavior. Quantify migration speed and direction of traced herring and mackerel schools at different spatial scales on multibeam sonars (SH80 and SX 90) in the upper water masses (0–50 m). Ecological studies on predator prey interactions and avoidance behavior of pelagic fish, krill and marine mammals using acoustics, visual observations and sampling.</p>	Greenland Sea Norwegian Sea	279	358	-	-	40	

G. O. Sars (cont.)

CRUISE NO	PERIOD OF CRUISES		PURPOSE	AREA	CTD ST		TRAWL ST		PAGE OF CHART	COMMENT
	Start	End			Start	End	Start	End		
2013110	31 July	21 Aug	Sea bottom mapping with video-filming and sampling of benthic fauna and sediments at selected stations in the Barents Sea (south-east in the North European Zone, NEZ). With the main aim off mapping fauna, bio-diversity, habitat types, geological terrain-parameters and human impact factors like fishing and pollution. The mapping was performed using visual seabed observation and sampling of sediments and organisms using a variety of sampling tools (Campod video-rig, grab, box corer, multicorer, beam trawl and hyperbenthic sledge).	Barents Sea	359	377	-	-	40-43	
2013111	22 Aug	19 Sep	One of a series of ecosystem cruises in the Barents sea, with super stations and along the cruise track observations to: Map the distribution and abundance of commercial important fish stocks, investigate the biodiversity of the fish and benthic fauna, map the production of young-of-the-year fish of commercial important stocks, climatic observations, phyto- and zooplankton investigations, map the distribution of benthos, estimate the abundance of deep sea prawns, map sea birds and sea mammals along the cruise tracks, calibrate instruments, run outward communication and teaching. The cruise was carried out as a combination of along the cruise tracks investigations with the use of acoustic equipment to estimate the abundance of fish and zooplankton and super stations to make point observations of the ecosystem.	Barents Sea	378	460	177	358	43-44	
2013112	22 Sep	10 Oct	Sea bottom mapping with video-filming and sampling of benthic fauna and sediments at selected stations in the Barents Sea (south-east in the North European Zone, NEZ). With the main aim off mapping benthic fauna, bio-diversity, habitat types, geological terrain-parameters and chemical pollution. The mapping was performed using visual seabed observation and sampling of sediments and organisms using a variety of sampling tools (Campod video-rig, grab, box corer, multicorer, beam trawl and hyperbenthic sledge). Mareano.	Norwegian Sea	461	482	-	-	44-47	

G. O. Sars (cont.)

CRUISE NO	PERIOD OF CRUISES		PURPOSE	AREA	CTD ST		TRAWL ST		PAGE OF CHART	COMMENT
	Start	End			Start	End	Start	End		
2013113	15 Oct	02 Nov	Bottom trawl survey to collect data and samples for the assessment of deepwater fisheries resources at depths of 400-1500 along the continental shelf break between N 68 and N 80, included the Bear Island Channel. Bottom trawl stations primarily for biomass estimation of Greenland halibut, redfish (<i>S. mentella</i>) and other deep-water fish species. Continuation of a time series that started in 1994.	BarentsSea, Norwegian Sea	-	-	359	472	48	
2013114	05 Nov	05 Nov	TOPAS.							Cancelled
2013115	07 Nov	18 Nov	Developing of Methods for more exact measurements of herring schools in fishery sonar. Schools measured first measured with two sonars and caught by cooperating purse seiner. Equipment trials.	Fjords in Troms county, Northern Norway, Barents Sea	483	499	473	478	49	
2013116	23 Nov	28 Nov	A). Training cruise in BIO 240. Fisheries Ecology: Applying Demersal Campelen 1800 trawl, Harstad-Pelagic trawl (240 m) with Multisampler, Hydroacoustic biomass estimation. B). Hydrographic section Fedje–Shetland.	North Sea	500	525	479	489	50	

1.2 Johan Hjort (Ship code no 12)

CRUISE NO	PERIOD OF CRUISES		PURPOSE	AREA	CTD ST		TRAWL ST		PAGE OF CHART	COMMENT
	Start	End			Start	End	Start	End		
2013214	25 Jan	29 Jan	Deployment of instrumentation. Sample deployment location with CTDs and trawl.	Norwegian Sea	01	08	-	-	51	
2013201	01 Feb	14 Mar	The cruise leg is a part of a joint Norwegian-Russian ground fish survey called the "Barents Sea winter groundfish survey", which is carried out by three vessels (two Norwegian and one Russian). During this survey, data on physical oceanography, zooplankton and pelagic fish are collected in addition to the main purpose of the survey; to carry out a systematic survey with bottom trawl and acoustics to obtain swept-area and acoustic stock abundance indices for the demersal species cod and haddock. These indices are used by the Arctic Fisheries Working Group in ICES to tune the stock assessment models for the NEA cod and NEA haddock stocks.	Barents Sea	09	86	1	187	51-52	
2013202	15 Mar	27 Mar	Estimate the spawning stock number and biomass of Northeast Arctic cod in the area Malangsrunden-Røst and inside the Vestfjord, using hydroacoustic equipment and LSSS. In addition, collect temperature data in the same area.	Norwegian Sea	87	194	188	215	52-53	
2013203	08 Apr	23 Apr	Objectives: To collect data and samples on pre-selected stations as part of the IMR monitoring project "Climate and plankton in the North Sea and Skagerrak", 11974. To sample standard transects for physical oceanographic parameters (CTD casts, nutrients and chlorophyll) and phyto- and zooplankton (including fish eggs and larvae) in the Northern North Sea. In addition, to undertake two studies (northwestern North Sea and Skagerrak) to investigate the spatial, vertical and diel distribution of fish eggs and larvae and their potential predators and prey.	Northern North Sea and Western Skagerrak	195	310	216	-	53-54	

Johan Hjort (cont.)

CRUISE NO	PERIOD OF CRUISES		PURPOSE	AREA	CTD ST		TRAWL ST		PAGE OF CHART	COMMENT
	Start	End			Start	End	Start	End		
2013204	01 May	09 Jun	First part of the cruise (1-31 May) was part of a joint international collaboration to monitor acoustically the abundance and distribution of Norwegian Spring Spawning herring and blue whiting in the Norwegian Sea. Second part of the cruise (31 May-8 June) was a research effort to investigate overlap between herring larvae and mackerel and find out to which extent the larvae were important prey for mackerel.	Norwegian Sea	311	444	217	313	54-55	
2013205	12 Jun	28 Jun	Mapping of benthic fauna, seabed surface sediments, and sediment pollutants on the continental shelf and slope off mid Norway. The mapping was performed using visual seabed observation and sampling of sediments and organisms using a variety of sampling tools (grab, box corer, multicorer, beam trawl and hyperbenthic sled).	Norwegian Sea	445	466	-	-	56-58	
2013206	04 Jul	02 Aug	Combined herring acoustic (HERAS) and IBTS-3q, acoustic index saithe, hydrographic transect Utsira-Start Point, monitor pollution.	North Sea	467	600	314	429	59	
2013207	06 Aug	13 Aug	St. sections Svinøy NW, St. M and Gimsøy NW.	Norwegian Sea	601	628	-	-	60	
2013208	15 Aug	01 Oct	Annual ecosystem survey in the Barents Sea in autumn to: Map the acoustic distribution and do biological sampling of capelin, herring, polar cod and blue whiting. Map the distribution, do biological sampling and calculate estimate pelagic trawl abundances indices of 0-group fish. Map the distribution and estimate bottom trawl abundances indices, length and maturity state of shrimp. Map the distribution and estimate acoustic and bottom trawl abundances indices, length, weight and maturity at age of cod and haddock. Map distribution and abundance of by-catch (bentos and fish). Map the general hydrographic regime by using a CTD-sonde to monitor the temperature and salinity. Sampling of plankton for biomass indices, and species identification. Observations of sea mammals along the cruise tracks. Observation of sea birds along the cruise tracks (NINA). Survey gear standardization (pelagic trawls). Testing of multinet and moqnesc.	Barents Sea	629	793	430	641	60-61	

Johan Hjort (cont.)

CRUISE NO	PERIOD OF CRUISES		PURPOSE	AREA	CTD ST		TRAWL ST		PAGE OF CHART	COMMENT
	Start	End			Start	End	Start	End		
2013209	12 Sep	29 Sep	Standard sections:Fugløya–Bjørnøya, Bjørnøya W and Sørkapp W.							Cancelled
2013210	03 Oct	26 Oct	Annual combined acoustic and bottom trawl survey along the Norwegian coast north of 62°N. - map the distribution and estimate acoustic abundances indices, length, weight and maturity at age of cod, saithe and haddock - map the general hydrographical regime by using a CTD-sonde to monitor the temperature and salinity at one at bottom trawl stations and/or at fixed intervals (about 30 NM) - gonad sampling of saithe - sampling of plaice for genetic analysis (age, length, weight,sex, maturity and mussel tissue) - sampling of saithe for CEFAS for analysis of contamination - sampling of saithe and halibut for NIFES for analysis of contamination - sampling of sediments and seawater for analysis of contamination.	Main Norwegian fjords and coastal banks.	794	842	642	707	61-62	
2013211	29 Oct	01 Nov	This cruise is a part of the IMR monitoring project: "Climate and plankton in the North Sea and Skagerrak", and "Early life history dynamics of North Sea fisheries". The objective was to collect data and samples on pre-selected stations on the transect: Utsira W. The cruise programme included sampling for physical-chemical oceanographic parameters (CTD casts, nutrients and chlorophyll), phyto- and zooplankton (including fish larvae).	North Sea	843	874	-	-	63	
2013212	12 Nov	18 Nov	The objectives of this cruise were to investigate the abundance zooplankton and phytoplankton as well as measuring the water physics and collecting water samples for chemical analyses using a CTD probe, on two of our regular transects Svinøy NW and station M, N 66° E 02°.	Norwegian Sea	875	892	-	-	64	

Johan Hjort (cont.)

CRUISE NO	PERIOD OF CRUISES		PURPOSE	AREA	CTD ST		TRAWL ST		PAGE OF CHART	COMMENT
	Start	End			Start	End	Start	End		
2012213	19 Nov	24 Nov	The main objective of the marine geological cruise to Ranafjorden–Sørfjorden is a scientific contribution to the Seabed IV project “Assessing Offshore Geohazards: site surveying, sampling and comparison of shallow, submarine landslides in coastal and deepwater environments, Northern Norway” (C-DOG), where the main aim is to decipher the signature of slide planes through a geological, geotechnical and geophysical programme. The cruise on the R/V Johan Hjort was to perform in situ CPTu tests on sites studied the last years both in terms of geological, geotechnical (long cores and short CPTu) and geophysical settings and processes. Especially the area in the Sørfjorden has been a field of multidisciplinary scientific campaigns.	Norwegian coast	-	-	-	-	64	

1.3 Håkon Mosby (Ship code no 1)

CRUISE NO	PERIOD OF CRUISES		PURPOSE	AREA	CTD ST		TRAWL ST		PAGE OF CHART	COMMENT
	Start	End			Start	End	Start	End		
2013601	05 Jan	09 Jan	The objectives of this cruise were to investigate the abundance zooplankton and phytoplankton as well as measuring the water physics and collecting water samples for chemical analyses using a CTD probe, on one of our regular transects in the North Sea , Svinøy NW transect.	North Sea Norwegian Sea	1	17	-	-	65	
2013602	12 Jan	26 Jan	Annual shrimp survey. 1) Fixed trawl stations (bottom trawl) for deep water shrimp (<i>Pandalus borealis</i>) and fish. Data on shrimp biomass and recruitment. 2) Length and total weight of all fish species 3) Roundnose grenadier: individual weight, length, sex, age, maturity stages on one trawl station 4) sharks: individual length, weight, sex, maturity, age 5) skates : individual length, weight, sex, maturity, age 6) Nephrops : total weight, length, sex, maturity stages 7) CTD (temperature, salinity) on all trawl stations 8) Collection of genetic samples of <i>Nephrops</i> , sponges, sea pen, <i>Atlantopandalus propinquus</i> .	North Sea, Skagerrak	18	118	01	101	65-66	
2013603	01 Feb	04 Feb	Oceanographic investigations in Hardangerfjord to teach students how to run a scientific cruise.	Norwegian coast Hardangerfjord	119	208	-	-	66	
2013604	09 Feb	13 Feb	Oceanographic investigations in Hardangerfjord to teach students how to run a scientific cruise.	Norwegian coast Hardangerfjord	209	377	-	-	67	
2013605	14 Feb	17 Feb	Testing of 3D P-Cable seismic equipment and collection of 3D seismic profiles from Salhusfjorden, Bergen.	Norwegian coast Salhusfjorden, Bergen	-	-	-	-	67	
2013606	14 Mar	18 Mar	Recover station-M mooring at 66°N, 2°E, and perform supporting hydrographic measurements.	Norwegian Sea	378	385	-	-	68	
2013607	02 Apr	18 Apr	Estimate the distribution and abundance of herring larvae and on the Norwegian shelf from Bergen to Tromsø. Additional environmental sampling of hydrography, nutrients, chlorophyll and zooplankton.	Norwegian Sea Norwegian shelf	386	537	102	103	69	

Håkon Mosby (cont.)

CRUISE NO	PERIOD OF CRUISES		PURPOSE	AREA	CTD ST		TRAWL ST		PAGE OF CHART	COMMENT
	Start	End			Start	End	Start	End		
2013608	25 Apr	28 Apr	Perform the hydrographic and plankton measurement program and to recover/deploy the long-term current meter moorings in the Fugløya-Bjørnøya section.	Barents Sea	538	557	-	-	69	
2013609	30 Apr	08 May	A recent review concluded that trophic transfer of Phaeocystis (single cell and colony forming phytoplankton) blooms to zooplankton has been significantly overestimated, and may be regulated by little studied chemical signaling. This has major implications for understanding food webs that support the world's great fisheries and CO2 cycling. While methods to quantify species-specific trophic interactions involving zooplankton in situ, was not previously available, such tools have now been developed by the applicants to where they can be applied in the field. We used such tools during the cruise to investigate the fate of Phaeocystis in situ. The specific objectives were to: -Quantify feeding by micro- and mesozooplankton on Phaeocystis spp. as single cells or colonies and in different growth phases, with special emphasis on chemical signalling. -Investigate alternative trophic pathways by molecular gut content analysis and stable isotope (C, N) analysis (bulk, amino acid) of dominating mesozooplankton & seston. In order to reach our goals we looked for new and old Phaeocystis blooms in the Barents Sea following the Fugløya-Bjørnøya and went further into Arctic waters before we headed south to Porsangerfjorden and then sampled in Ulsfjorden before returning to Tromsø.	Barents Sea	558	586	-	-	70	
2013610	10 May	20 May	The objectives of this cruise were to investigate the abundance zooplankton and phytoplankton as well as measuring the water physics and collecting water samples for chemical analyses using a CTD probe, on two of our regular transects :Gimsøy-NW and Bjørnøya-W.	Norwegian Sea Barents Sea	587	627	-	-	70	
2013611	25 May	28 May	Population connectivity in deep Norwegian fjords.	Norwegian fjords	628	644	104	108	71	

Håkon Mosby (cont.)

CRUISE NO	PERIOD OF CRUISES		PURPOSE	AREA	CTD ST		TRAWL ST		PAGE OF CHART	COMMENT
	Start	End			Start	End	Start	End		
2013612	29 May	02 June	Deploy station-M surface and deep moorings at 66°N 2°E, and perform supporting hydrographic measurements. Recover deep mooring deployed by UIB in sept 2011.	Norwegian Sea	645	656	-	-	73	
2013613	03 June	07 June	The objective of the cruise was to recover nine subsurface moorings deployed during cruise HM2012610 in May, 2012. The moorings include temperature and salinity sensors, as well as current meters and currentprofilers (see attached drawings) and they were deployed in order to study mixing, secondary circulation and meso-scale variability in the Faroe Bank Channel Overflow plume. All nine moorings were recovered.	Atlantic Ocean	-	-	-	-	73	
2013614	08 June	10 June	Re-deployment of the Wavescan NACO-Buoy in position 62°49'N, 4°18'E for real time monitoring of the Norwegian Atlantic Current.	Norwegian Sea	-	-	-	-	74	
2012615	25 June	15 July	The objective of the cruise is to collect sightings information for estimating abundance of whales, especially minke whales, as part of a long-term survey program to cover the Northeast Atlantic over the years 2008-2013. The survey vessel has followed predetermined track lines on which observations of whales have been recorded by dedicated observers. Data collected for each observation include: Species, position, position relative to vessel, weather data and other covariates. We have also conducted experiments on whale observer's judgments of distance with the help of ordinary buoys at 1-2 nautical miles distance.	Barents Sea	-	-	-	-	74	

Håkon Mosby (cont.)

CRUISE NO	PERIOD OF CRUISES		PURPOSE	AREA	CTD ST		TRAWL ST		PAGE OF CHART	COMMENT
	Start	End			Start	End	Start	End		
2013616	18 July	31 July	The objective of the cruise is to investigate the origins of the overflow water from the Iceland Sea and the inflow of low salinity water from the Iceland Sea to the Norwegian Sea. In order to reach this goal we use acoustically tracked subsurface floats (RAFOS floats), current meter moorings and surface drifters. On this cruise we deployed 6 moored sound sources to facilitate tracking for the RAFOS floats and 26 RAFOS floats were deployed distributed over the central and southern parts of the Iceland Sea. Two current meter moorings were redeployed on the slope at the Langanes section north east off Iceland. About 30 surface drifters have been deployed in this experiment, 6 of them on this cruise.	Iceland Sea, Norwegian Sea	657	700	-	-	74	
2013617	06 Aug	08 Aug	Testing of compressor with one air-gun.		-	-	-	-	-	
2013618	14 Aug	25 Aug	SVALEX. Seismic acquisition field course for Norwegian students. Performed in Van Mijen fjorden and Isfjorden, Spitsbergen.	West Spitsbergen	-	-	-	-	74	
2013619	27 Aug	07 Sep	Student cruise for the course AGF-214 Polar Ocean Climate at the University Centre in Svalbard.	Fjords and west coast of Spitsbergen	703	1014	-	-	75	
2013620	14 Sep	19 Sep	To collect wide angle seismic data by Ocean Bottom Seismometers (OBS) and land stations, using an airgun array towed by the ship. The data will be used to construct a velocity-depth image of the crust from onshore Troms and into the deep oceanic basin. The experiment will constrain the crustal nature on this part of the margin, and processes leading to continental breakup when Greenland rifted from Norway 55-54 million years ago.	Norwegian Sea	-	-	-	-	75	
2013621	23 Sep	29 Sep	2013-KLO-002. Collection of sponges in west Norway area for lab based studies in Bergen and Austevoll.	Norwegian coast	1015	1019	-	-	76	

Håkon Mosby (cont.)

CRUISE NO	PERIOD OF CRUISES		PURPOSE	AREA	CTD ST		TRAWL ST		PAGE OF CHART	COMMENT
	Start	End			Start	End	Start	End		
2013622	01 Oct	06 Oct	Recovery of the Wavescan NACO-Buoy and ADCP in position 62o49N, 4o18E for real time monitoring of the Norwegian Atlantic Current. Recovery/redeployment of current meter mooring S1-N. Recovery and launching of Seaglider for a new Svinøy section mission.	Norwegian Sea	-	-	-	-	77	
2013623	10 Oct	02 Nov	Distribution and acoustic abundance of cod, saithe and haddock. Environmental stations (sediments and water samples) in four fjords. Fish samples for contamination analyses for NIFES, Norway and CEFAS, England.	Norwegian coast	1020	1083	102	181	77-78	
2013624	09 Nov	12 Nov	Field course in marine methods for master students.	Norwegian coast	1084	1087	182	213	78	
2013625	15 Nov	18 Nov	To use the videorig "Chimaera", which is equipped with a high-definition video cameras, to document the fauna of the sea floor from the deepest part of the fjord to just below the kelp belt in the sublittoral zone.							Cancelled
2013626	19 Nov	19 Nov	Educational cruise.	Norwegian coast	1088	1094			79	
2013627	22 Nov	29 Nov	A physical oceanography & meteorology cruise for atmospheric/oceanographic surface boundary layer studies over shallow water.	South of Bergen, Norway, off Marstein lighthouse	1095	1097			79	
2013628	04 Dec	13 Dec	2013-KLO-003 : Monitoring of long term effects of oil drilling activity to sponge grounds.	Norwegian coast	1098	1102			80	
2013629	13 Dec	15 Dec	Re-deployment of the WavescanBuoy For real time monitoring, ADCP mooring	Norwegian Sea	-	-			80	

1.4 Helmer Hanssen (Ship code no 19)

CRUISE NO	PERIOD OF CRUISES		PURPOSE	AREA	CTD ST		TRAWL ST		PAGE OF CHART	COMMENT
	Start	End			Start	End	Start	End		
2013843	19 Aug	01 Sep	Abundance and distribution of capelin, cod and juvenile fish. Sea mammal and bird observation. Temp and salt. Part of the Ecosystem survey in the Barents Sea.	Svalbard area Barents Sea	338	419	31	127	75	

1.5 G.M. Dannevig (Ship code no 16)

CRUISE NO	PERIOD OF CRUISES		PURPOSE	AREA	CTD ST		PAGE OF CHART	COMMENT
	Start	End			Start	End		
2013301	25 Jan	31 Jan	Hydrographic standard section "Torungen-Hirtshals", environmental investigation. Long-term environmental monitoring on a near-shore station outside Arendal and in the fjords along the Norwegian Skagerrak coast.	Skagerrak, Norwegian coast of Skagerrak	1	17	82	
2013302	08 Feb	14 Feb	Hydrographic standard section "Torungen-Hirtshals", environmental investigation. Long-term environmental monitoring on a near-shore station outside Arendal and in the fjords along the Norwegian Skagerrak coast.	Skagerrak, Norwegian coast of Skagerrak	18	45	83	
2013303	10 Mar	15 Mar	Hydrographic standard section "Torungen-Hirtshals", environmental investigation. Long-term environmental monitoring on a near-shore station outside Arendal and in the fjords along the Norwegian Skagerrak coast.	Skagerrak, Norwegian coast of Skagerrak	46	65	83	
2013304	17 Mar	29 Mar	Mapping distribution area of coastal cod.	Rogaland	-	-	84	
2013305	16 Apr	05 May	Environmental investigation in the eastern North Sea, the Skagerrak and Kattegat after the spring bloom. Long-term environmental monitoring on a near-shore station outside Arendal and in the fjords along the Norwegian Skagerrak coast.	Eastern North Sea/ Skagerrak/ Kattegat	66	169	84	
2013306	03 Jun	09 Jun	Hydrographic standard section "Torungen-Hirtshals", environmental investigation. Long-term environmental monitoring on a near-shore station outside Arendal and in the fjords along the Norwegian Skagerrak coast. Soft bottom benthic survey.	Skagerrak, Norwegian coast of Skagerrak	170	204	85	
2013307	29 Jun	06 Jul	Hydrographic standard section "Torungen-Hirtshals", environmental investigation. Long-term environmental monitoring on a near-shore station outside Arendal and in the fjords along the Norwegian Skagerrak coast.	Skagerrak, Norwegian coast of Skagerrak	205	239	85	
2013308	12 Aug	26 Aug	Hydrographic standard section "Torungen-Hirtshals", environmental investigation. Long-term environmental monitoring on a near-shore station outside Arendal and in the fjords along the Norwegian Skagerrak coast. Monitoring lobster/MPA.	Skagerrak, Norwegian coast of Skagerrak	240	277	86	

G.M. Dannevig (cont.)

CRUISE NO	PERIOD OF CRUISES		PURPOSE	AREA	CTD ST		PAGE OF CHART	COMMENT
	Start	End			Start	End		
2013309	09 Sep	11 Sep	The cruise examined hydrographic properties in the Norwegian Coastal Current off Kragerø by sampling STD-profiles in a square domain. The sampling domain is related to the position of the new monitoring buoy which will be deployed in 2014.	Skagerrak, Norwegian coast of Skagerrak	-	-	86	
2013310	12 Sep	13 Sep	Hydrographic standard section "Torungen-Hirtshals", environmental investigation. Long-term environmental monitoring on a near-shore station outside Arendal	Skagerrak, Norwegian coast of Skagerrak	278	289	87	
2013311	15 Sep	04 Oct	Long-term environmental monitoring on a near-shore station outside Arendal and in the fjords along the Norwegian Skagerrak coast. Beach seine studies.	Skagerrak, Norwegian coast of Skagerrak	290	349	87	
2013312	05 Oct	06 Oct	Hydrographic standard section "Torungen-Hirtshals", environmental investigation. Long-term environmental monitoring on a near-shore station outside Arendal.	Skagerrak, Norwegian coast of Skagerrak	350	361	88	
2013313	09 Nov	10 Nov	Hydrographic standard section "Torungen-Hirtshals", environmental investigation. Long-term environmental monitoring on a near-shore station outside Arendal	Skagerrak, Norwegian coast of Skagerrak	-	-		Cancelled
2012314	11 Nov	07 Dec	Fish community studies in marine protected area and resource studies in coastal cod. Long-term environmental monitoring on a near shore station outside Arendal and in the fjords along the Norwegian Skagerrak coast.	Skagerrak, Norwegian coast of Skagerrak	362	398	88	
2013315	07 Dec	10 Dec	Hydrographic standard section "Torungen-Hirtshals", environmental investigation. Long-term environmental monitoring on a near-shore station outside Arendal	Skagerrak, Norwegian coast of Skagerrak	399	410	89	

1.6 Selected cruises carried out by fishing vessels hired by IMR

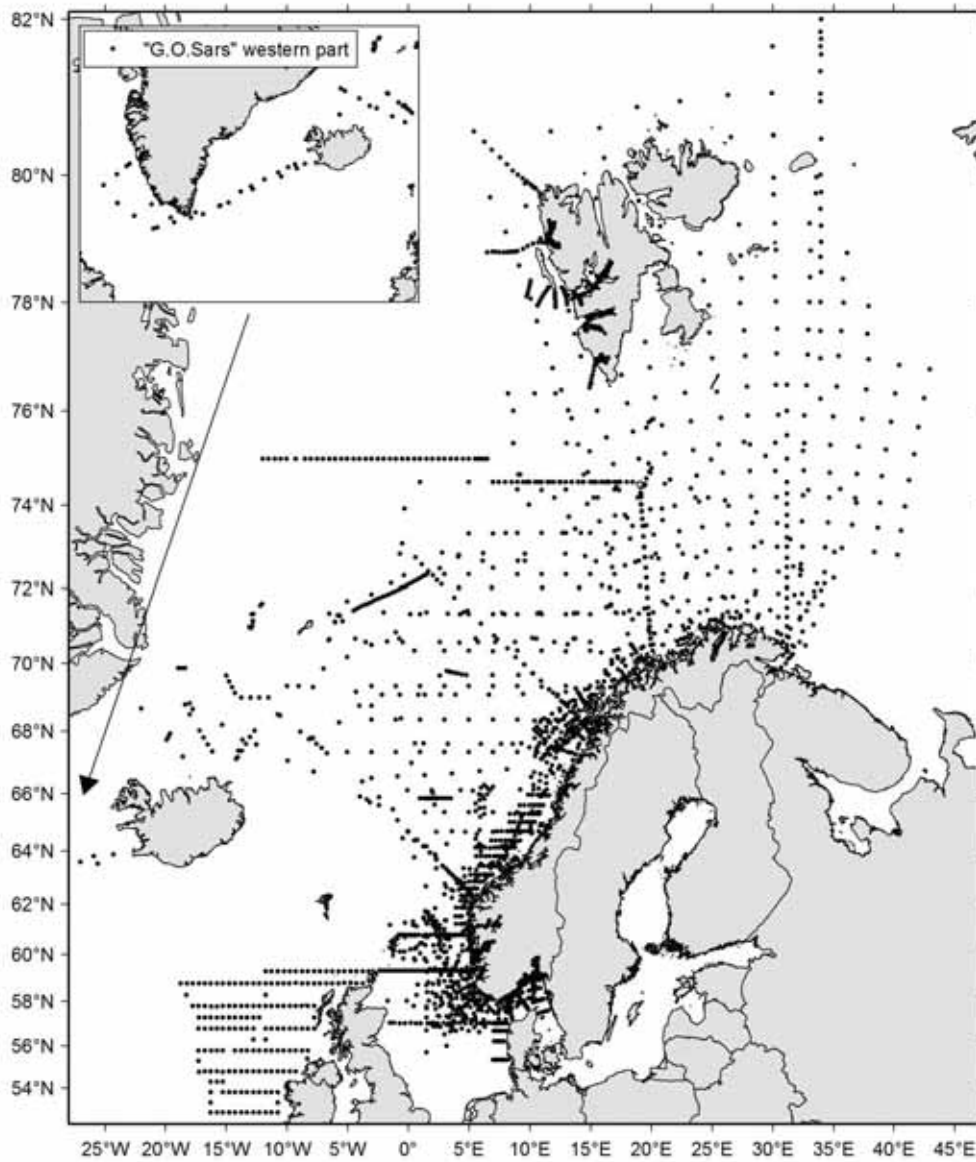
CRUISE NO	PERIOD OF CRUISES		VESSEL	PURPOSE	AREA	CTD ST		TRAWL ST		PAGE OF CHART	COMMENT
	Start	End				Start	End	Start	End		
2013842	25 Apr	13 May	Eros	Measuring the abundance, distribution and age composition of sandeel. Dredge sampling for burrowed sandeels, bottom trawls, pelagic trawls, echo sounder and sonar sampling, zooplankton sampling, fish larvae sampling (Krill trawl), mapping of hydrographical conditions.	North Sea	01	15	01	29	91	
2013831	13 May	06 June	Eros	Participate in the ICES coordinated mackerel and horse mackerel egg survey to estimate egg production and spawning stock size.	North Atlantic Ocean	16	186	30	42	92-93	
2013826	04 July	29 July	Eros	The main purpose of the survey are abundance estimation, estimation of spatial distribution, migration, feeding and aggregation of Northeast Atlantic mackerel based on standardized pelagic trawling, echosounders and sonars. There will also be parallel studies of herring and blue whiting. In addition there will be regular sampling of oceanographic conditions with CTD, zooplankton with a plankton net as well as visual observations of marine mammals.	North Sea, Norwegian Sea	01	74	01	84	93-94	
2013827	04 July	29 July	Libas	Ecosystem cruise with abundance estimation and biological sampling of Northeast Atlantic (NEA) mackerel, Norwegian spring-spawning (NSS) herring and blue whiting. Predetermined station net for systematic biological sampling with the standardized Multipelt 832 pelagic sampling trawl. Oceanographical measurements with CTD casts 0-500 m depth and continuous therosalinograph recordings at 6 m depth. Zooplankton sampling with WP2 vertical net hauls 0-200 m depth. Acoustic mapping of pelagic fish and plankton with multi-frequency echosounder and long-range+short range multibeam sonars. Current measurements with ADCP. Opportunistic marine mammal observations	North Sea, Norwegian Sea, Barents Sea	01	67	01	66	94-95	

1.6 Selected cruises carried out by fishing vessels hired by IMR (cont.)

CRUISE NO	PERIOD OF CRUISES		VESSEL	PURPOSE	AREA	CTD ST		TRAWL ST		PAGE OF CHART	COMMENT
	Start	End				Start	End	Start	End		
2013832	09 Sep	27 Sep	Atlant. Star	Map abundance of beaked redfish (<i>Sebastes mentella</i>) acoustically and by trawl in central part of the northern Norwegian Sea.	Norwegian Sea	01	32	01	32	95-96	
2013811	06 Nov	18 Nov	Artus	Collection of acoustic data from fisheries sonar for biomass estimation of individual herring schools • Purse seine catch of individual herring schools for comparison with sonar estimates.	Norwegian Coast Norwegian Sea	-	-	-	-	96	

2 Charts – overview

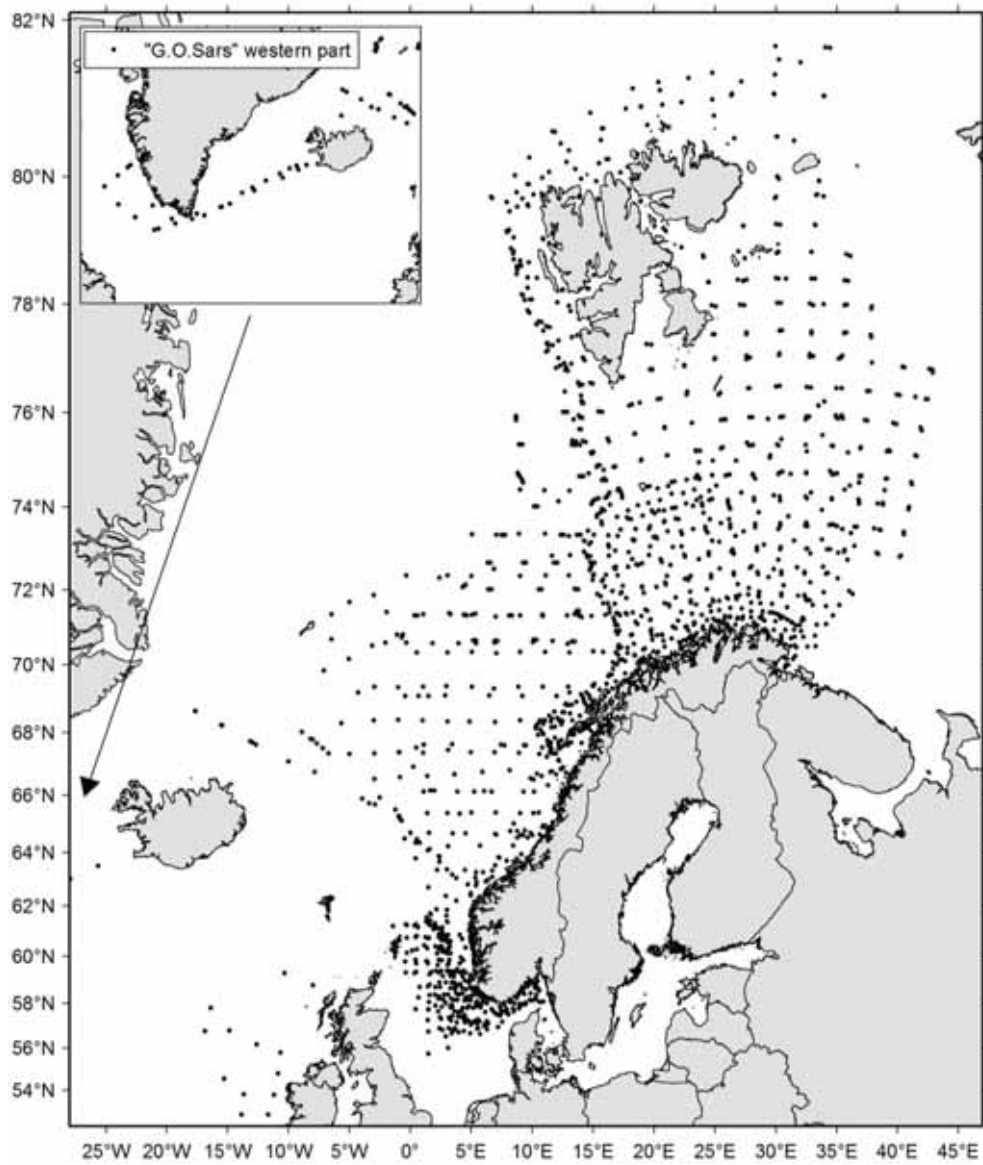
2.1 CTD stations 2013



• CTD stations

	Ship	Stations
Research vessels	G.O. Sars	525
	Johan Hjort	892
	Håkon Mosby	1.102
	Helmer Hanssen	82
	G. M. Dannevig	410
Hired fishing vessels	Eros	260
	Libas	67
	Atlantic Star	32
		3370

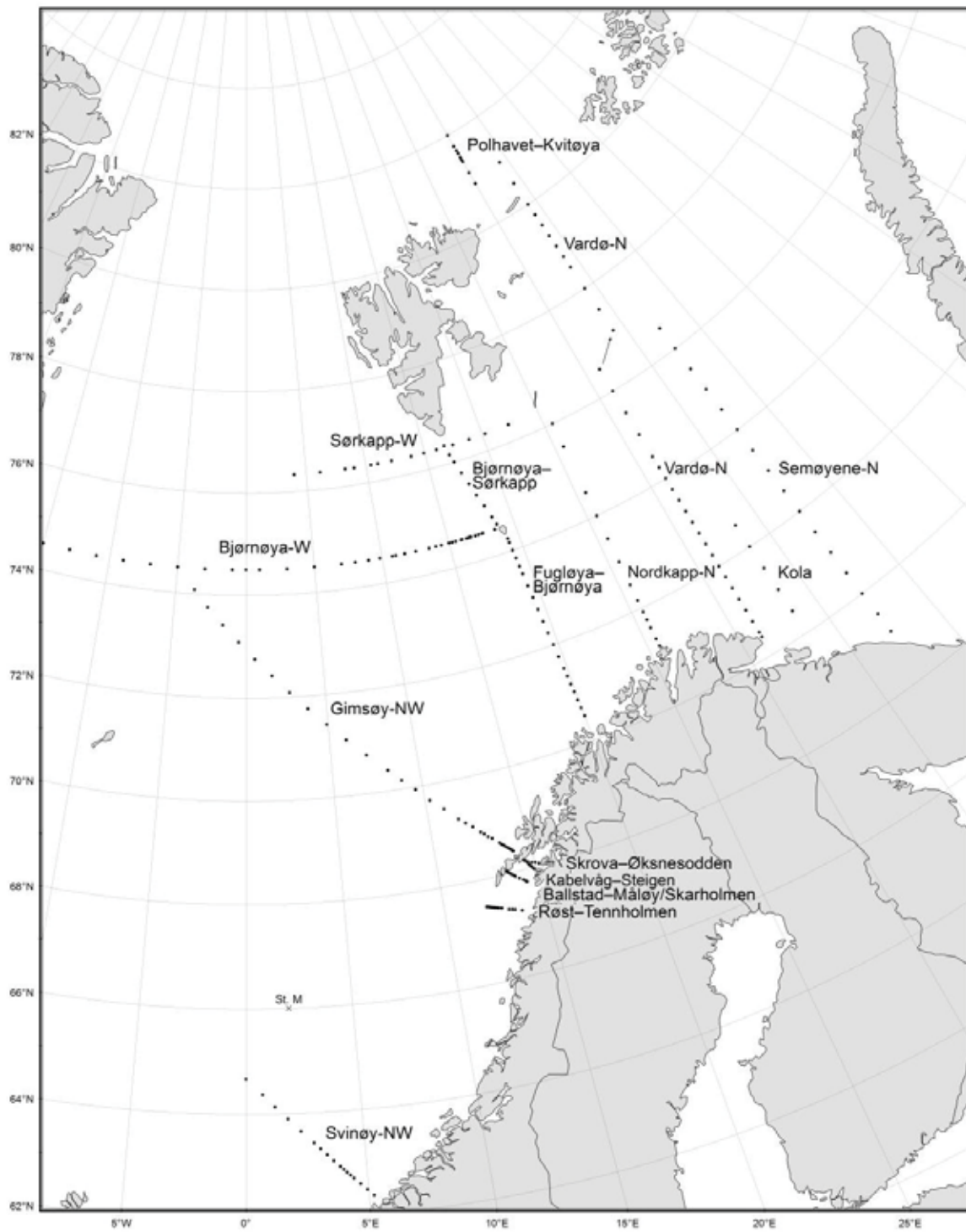
2.2 Trawl stations 2013



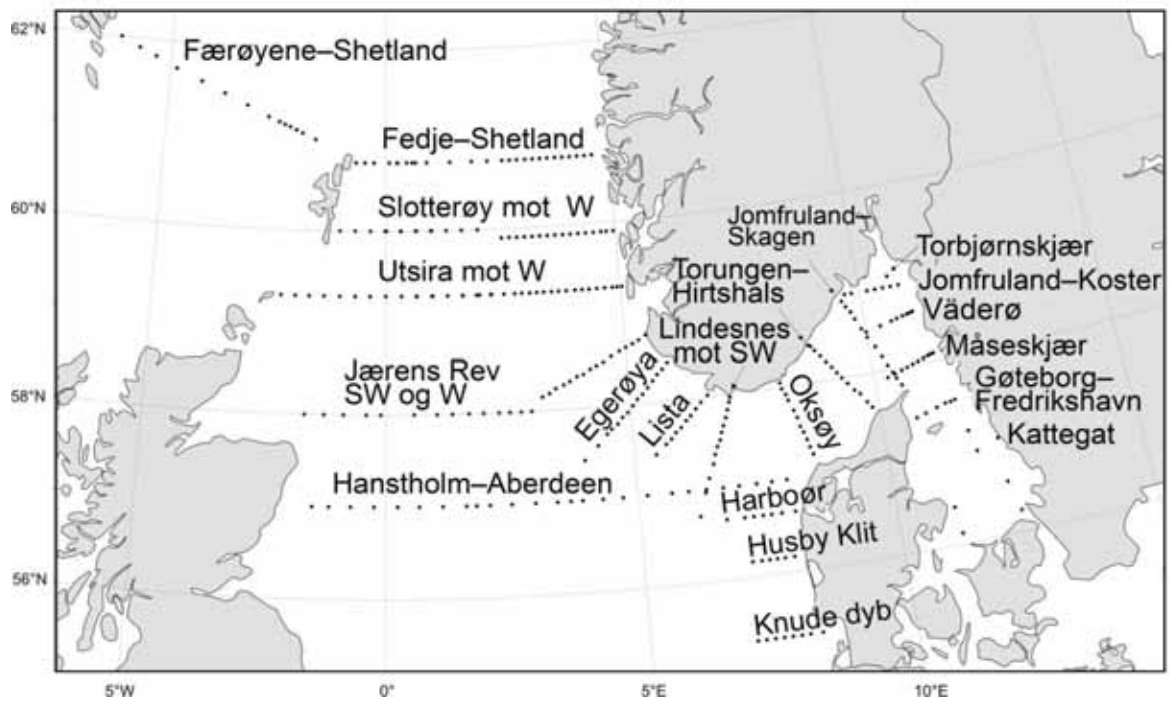
- Trawl stations

	Ship	Stations
Research vessels	G.O. Sars	489
	Johan Hjort	707
	Håkon Mosby	220
	Helmer Hanssen	97
Hired fishing vessels	Eros	126
	Libas	66
	Atlantic Star	94
		1.799

2.3 Oceanographic sections



Norwegian Sea and Barents Sea



North Sea, Skagerrak and Kattegat

2.4 Fixed oceanographic stations



3 Tables – Observations in 2013

3.1 Oceanographic sections 2013 (Cruise no/ship)

Area	Oceanogr. sec.	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
North Sea	Fedje–Shetland				2013203							2013116		
	Slotterøy–West													
	Utsira–West	2013101			2013203		2013206				2013211			
	Jærens Rev.-SW and W				2013203									
	Egerøya-SW				2013203									
	Lista-SW				2013203									
	Lindesnes-SSW													
	Hanstholm–Aberdeen				2013203									
	Harboør													
	Hysby Klit													
	Knude-Dybb													
	Torungen–Hirtshals	2013301	2013302	2013303	2013303	2013305	2013305	2013306	2013307	2013308	2013310	2013312		2013315
	Skagerrak and Kattegat	Oksøy–Hanstholm				2013203 2013305								
Jomfruland–Skagen														
Jomfruland–Koster						2013305								
Torbjørnskjær						2013305								
Väderø						2013305								
Måseskjær						2013305								
Gøteborg–Fredrikshavn						2013305								
Kattegat														

Area	Oceanogr. sec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
The Norwegian Sea and Vestfjorden	Svinøy-North/West	2013601		2013103		2013204			2013207			2013212	
	Gimsøy-North/West				2013105	2013610			2013207				
	Bjørnøya-West				2013105	2013610		2013109	2013208				
	Sørkapp-West												
	Færøyene-Shetland												
	Skrova – Øksnesodden												
	Kabelvåg–Steigen			2013202									
	Ballstad– Måløy/Skarholmen			2013202									
	Røst–Tennholmen			2013202									
	Fugløya–Bjørnøya		2013201		2013608				2013208				
	Vardø-North									2013208			
	Semøyene-North												
	Bjørnøya–Sørkapp												
Nordkapp-North													
Polhavet–Kvitøya													
Kola													

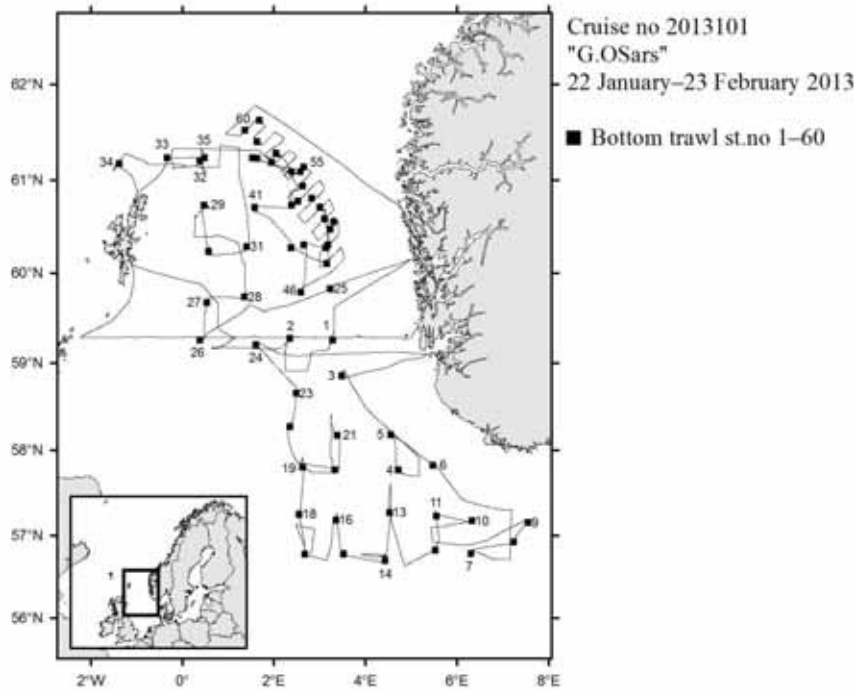
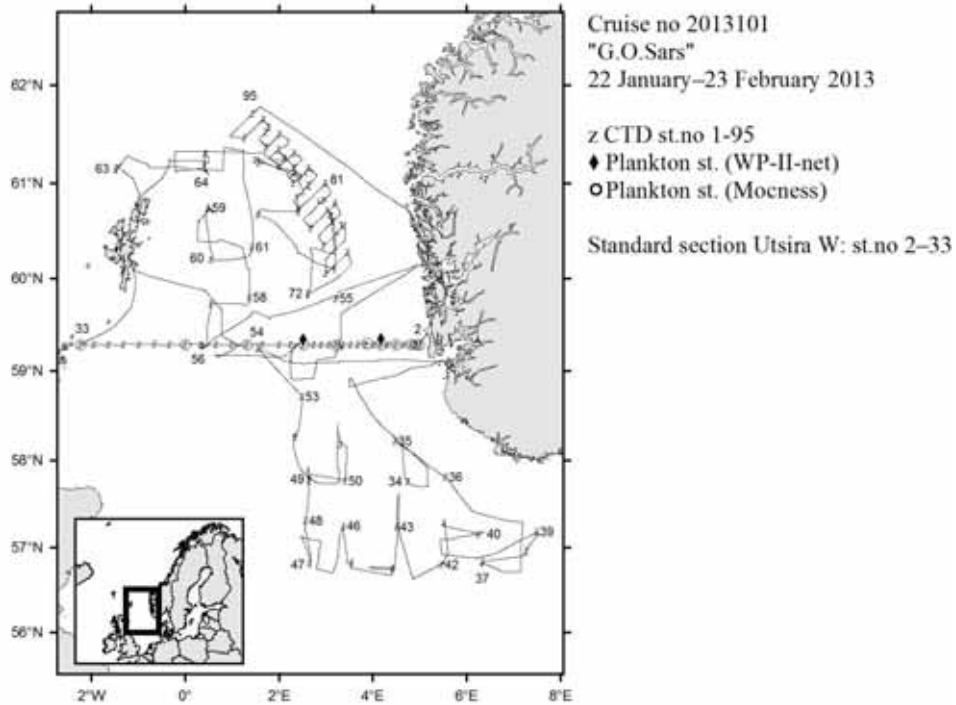
3.2 Fixed oceanographic stations 2013

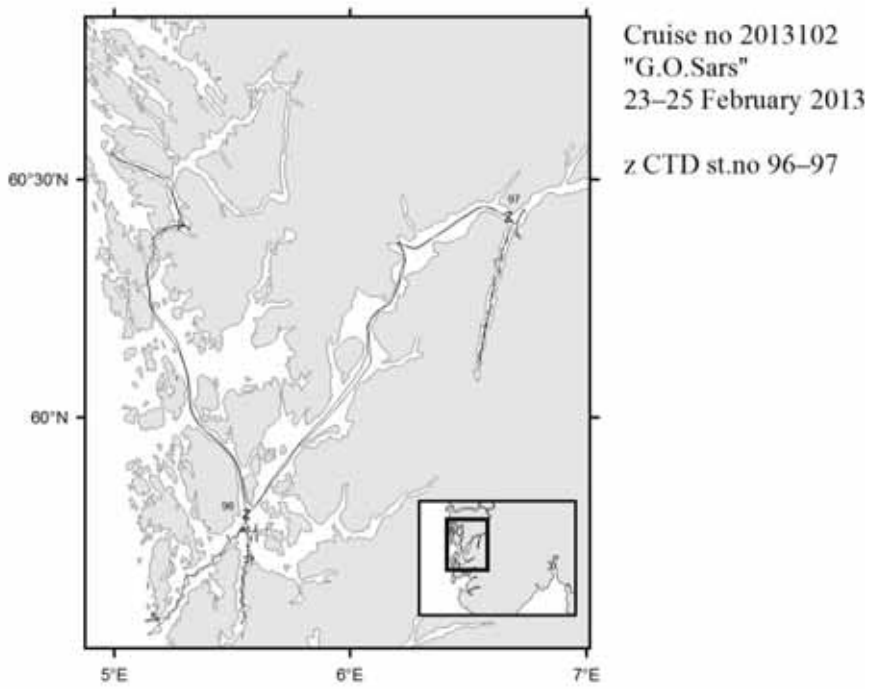
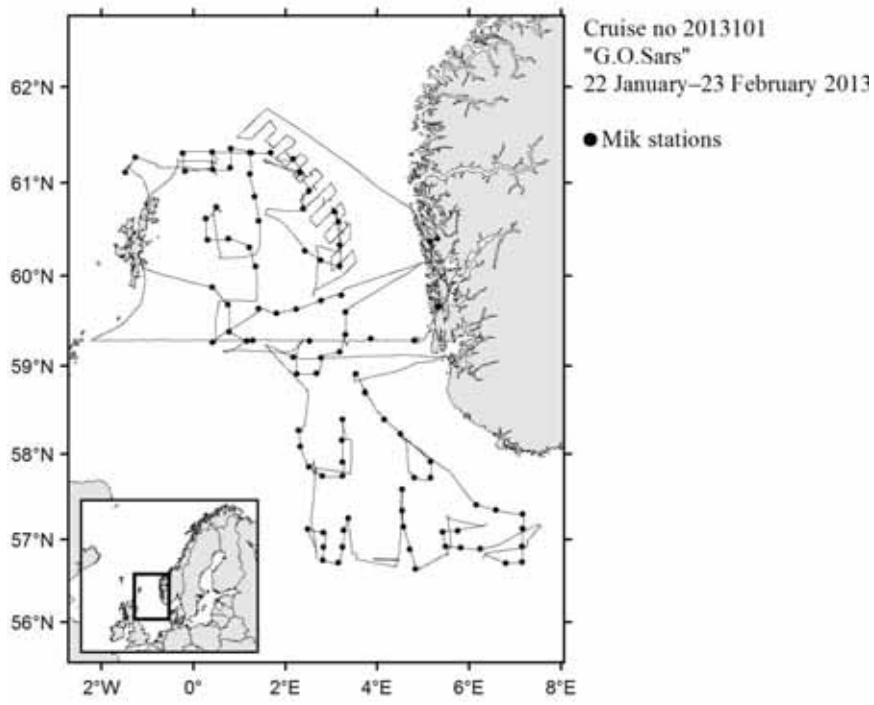
(No of observations)

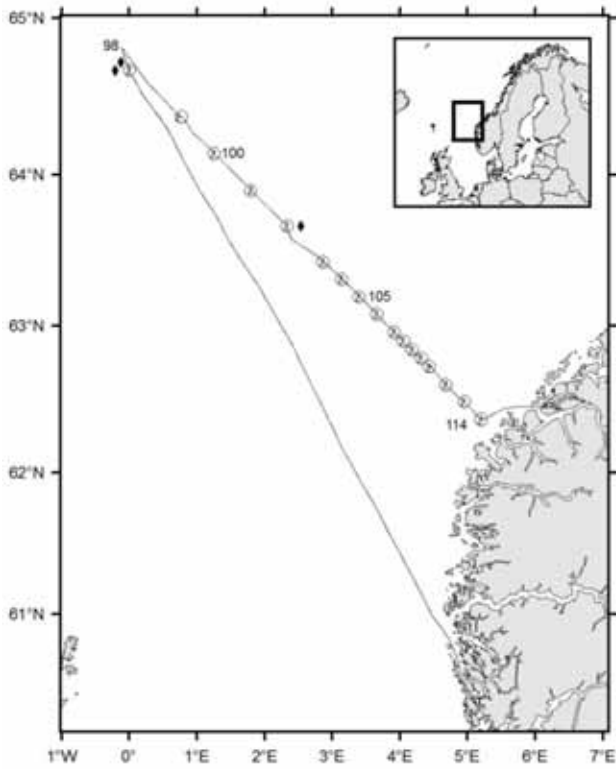
Fixed stations	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
LISTA N58° 05,1' E06° 32,5'	2	4	1	0	3	3	3	3	3	3	3	2	30
UTSIRA Y N59° 19' E04° 44'	-	-	-	-	-	-	-	-	-	-	-	-	0
UTSIRA I N59° 19' E04° 59'	-	-	-	-	-	-	-	-	-	-	-	-	0
SOGNESJØEN N61° 01' E04° 50'	1	1	1	3	2	3	2	2	2	2	2	1	22
BUD N62° 56' E06° 47'	1	1	1	1	1	1	0	0	0	0	0	0	6
SKROVA N68° 07' E14° 39'	1	3	2	3	4	4	5	4	4	5	4	2	41
EGGUM N68° 23' E13° 38'	2	2	1	3	1	3	3	1	2	2	2	2	24
INGØY N71° 08' E24° 01'	3	1	2	3	3	2	2	1	2	4	3	1	27

4 Charts for cruises 2013

4.1 G.O. Sars



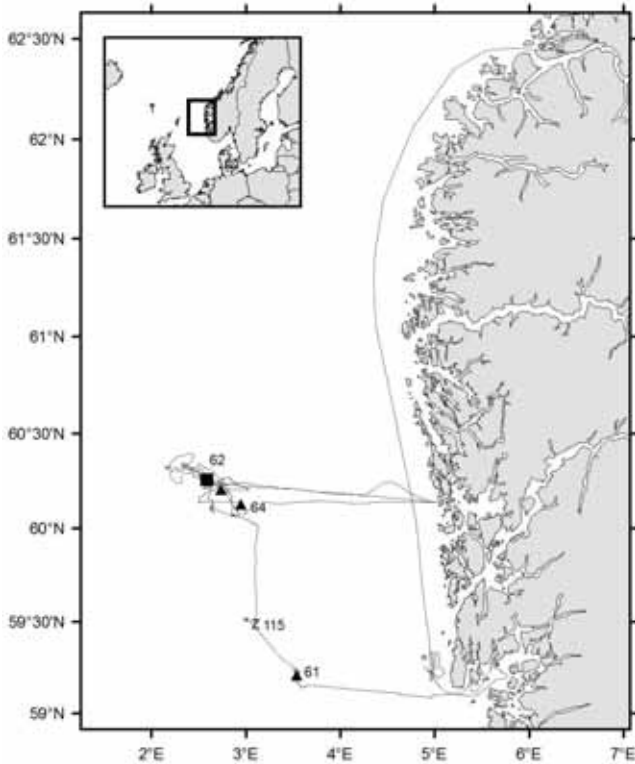




Cruise no 2013103
 "G.O.Sars"
 12–16 March 2013

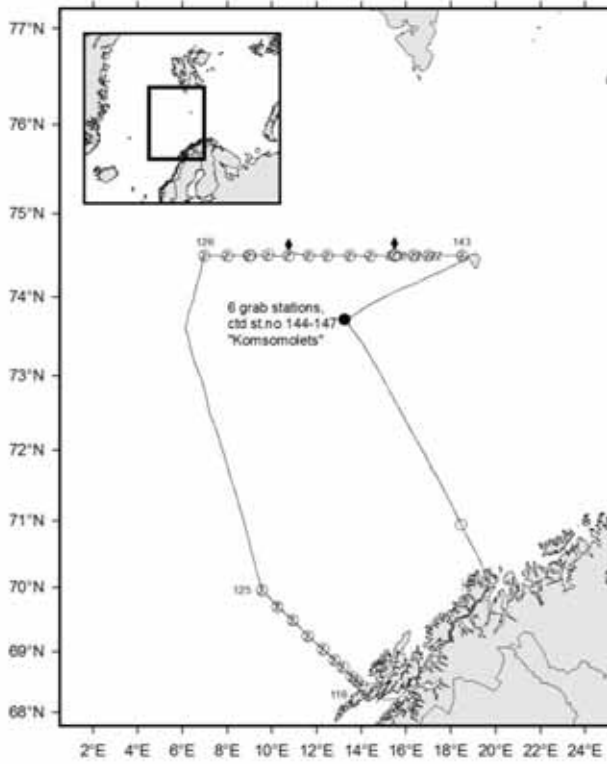
z CTD st.no 98-114
 ○ Plankton st. (WP-II-net)
 ◆ Plankton st. (Mocness)

Standard section Svinøy NW: st.no 98–114



Cruise no 2013104
 "G.O.Sars"
 17–26 March 2013

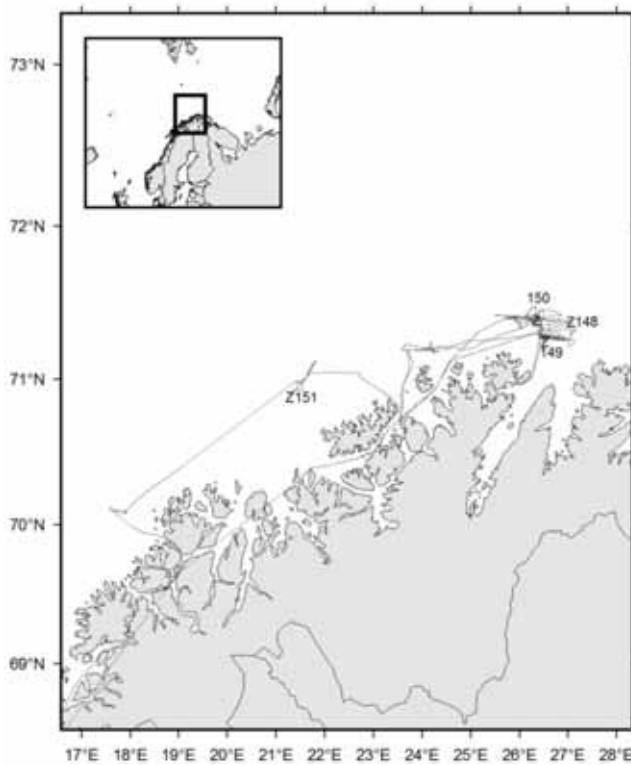
z CTD st.no 115
 ■ Bottom trawl st.no 62
 ▲ Pelagic trawl st.no 61, 63-64



Cruise no 2013105
 "G.O.Sars"
 1-9 April 2013

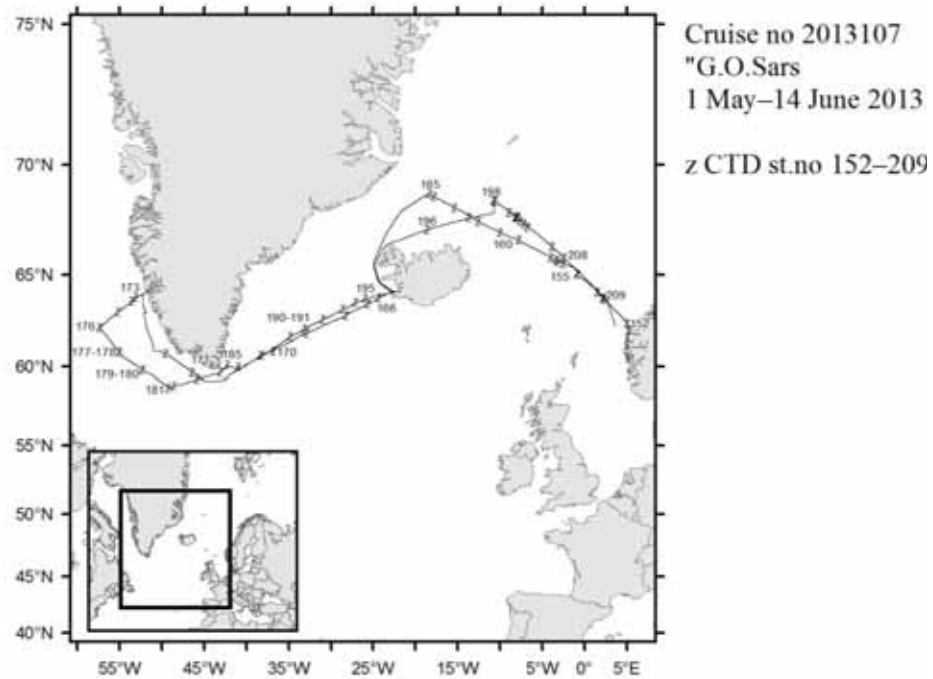
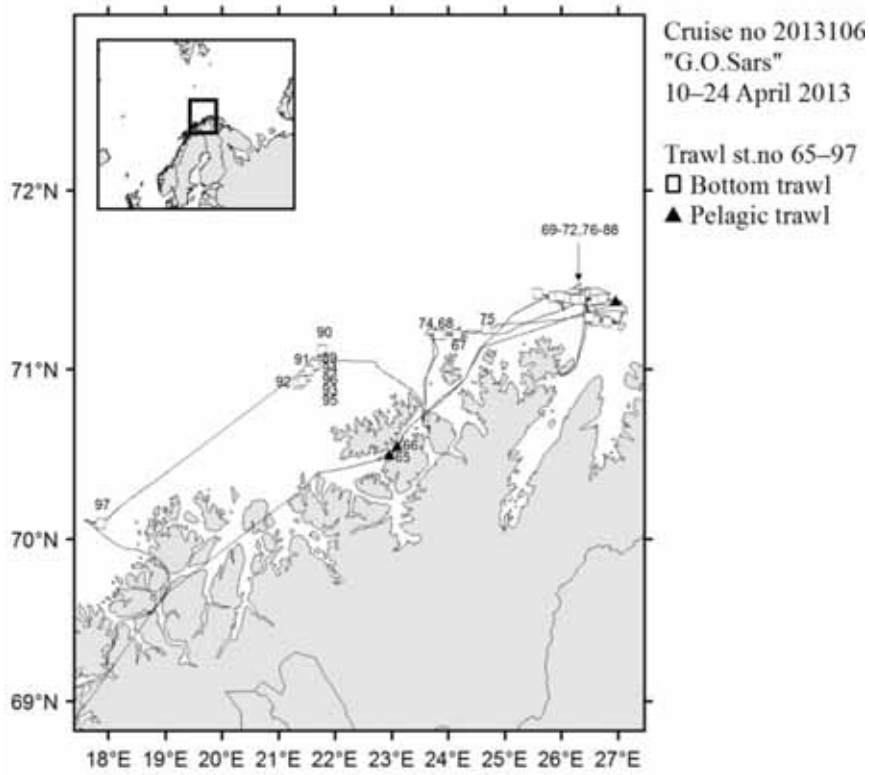
- z CTD st.no 116-147
- Plankton st. (WP-II-net)
- Plankton st. (Mocness)
- Grab st.

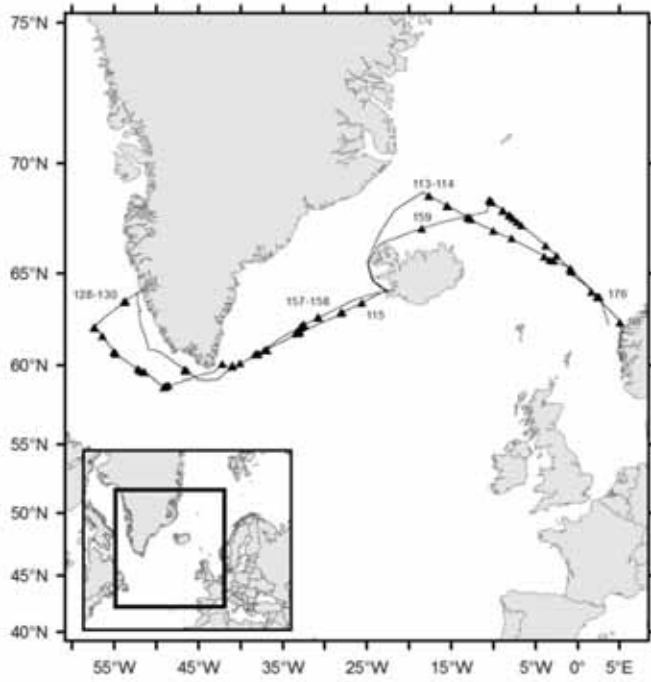
Standard sections Gimsøy-NW st.no 116-125
 Bear Island-W st.no 126-143



Cruise no 2013106
 "G.O.Sars"
 10-24 April 2013

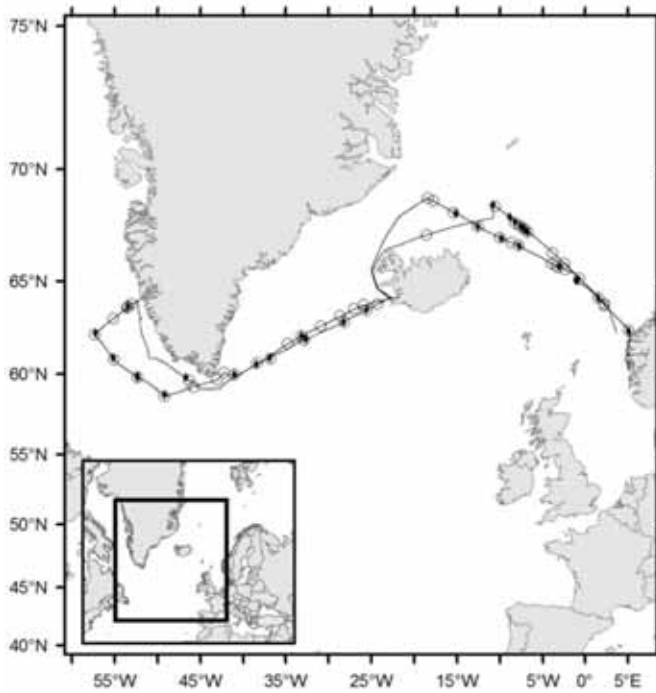
z CTD st.no 148-151





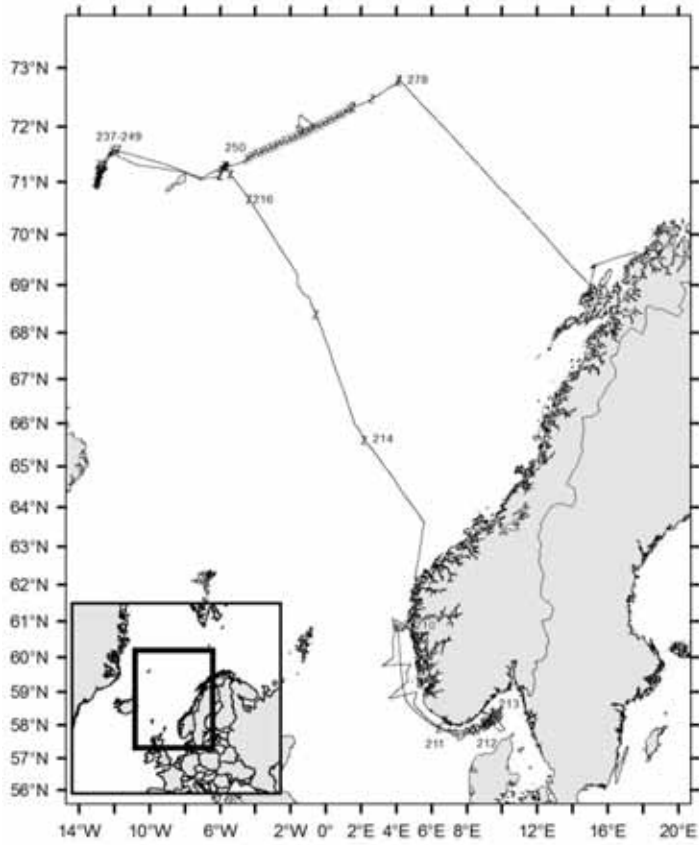
Cruise no 2013107
 "G.O.Sars"
 1 May–14 June 2013

▲ Pelagic trawl st.no 98–176

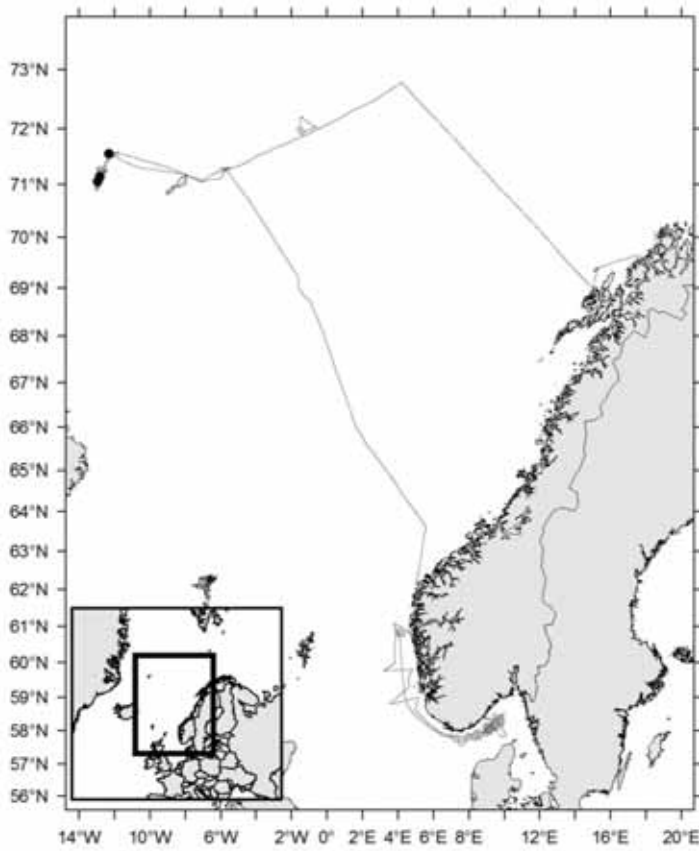


Cruise no 2013107
 "G.O.Sars"
 1 May–14 June 2013

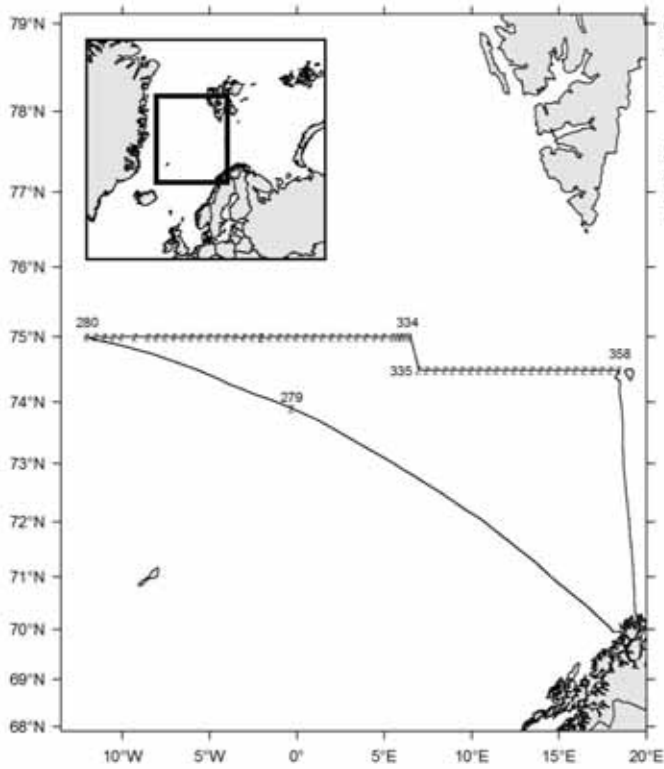
Plankton stations:
 ○ WPII-net
 ◆ Mocness



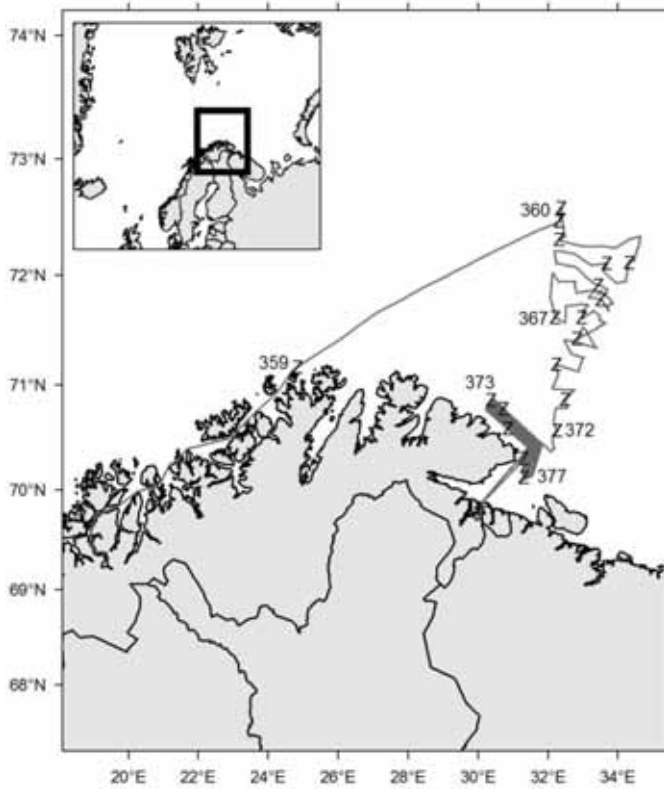
Cruise no 2013108
 "G.O.Sars"
 16 June–15 July 2013
 z CTD st.no 210–278



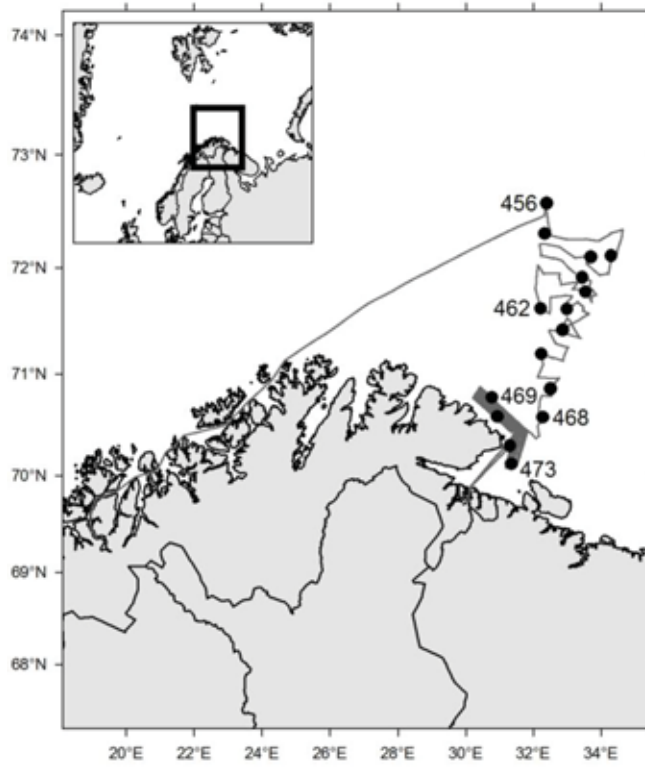
Cruise no 2013108
 "G.O.Sars"
 16 June–15 July 2013
 ● Agassiz trawl



Cruise no 2013109
 "G.O.Sars"
 17–30 July 2013
 z CTD st.no 279–358
 Standard section
 Bjornøya W st.no 335–358

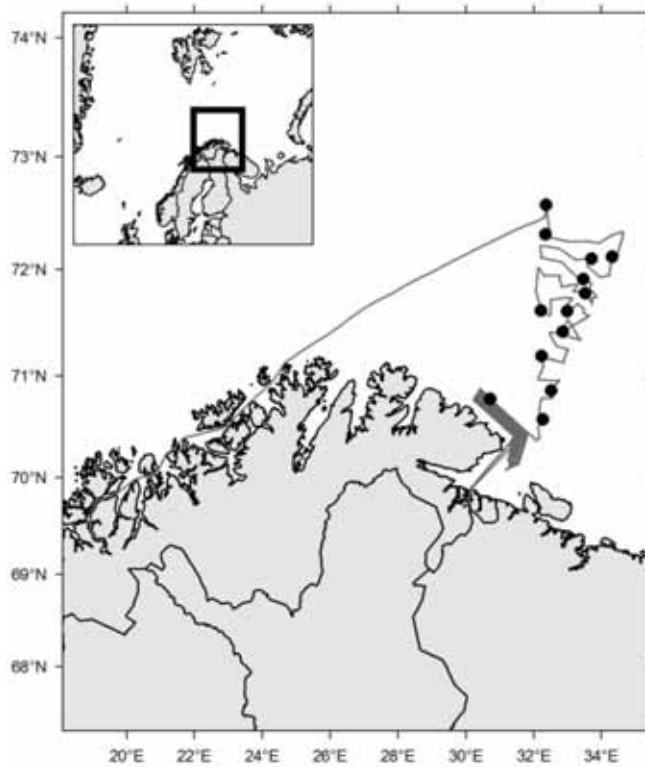


Cruise no 2013110
 "G.O.Sars"
 31 July–21 August 2013
 z CTD st.no 359–377



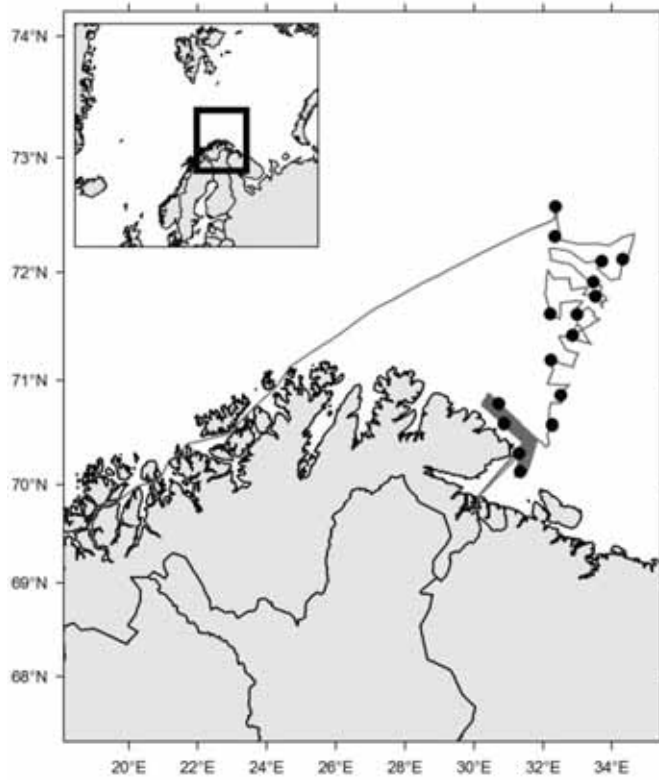
Cruise no 2013110
 "G.O.Sars"
 31 July–21 August 2013

● Beam trawl st. 456–473



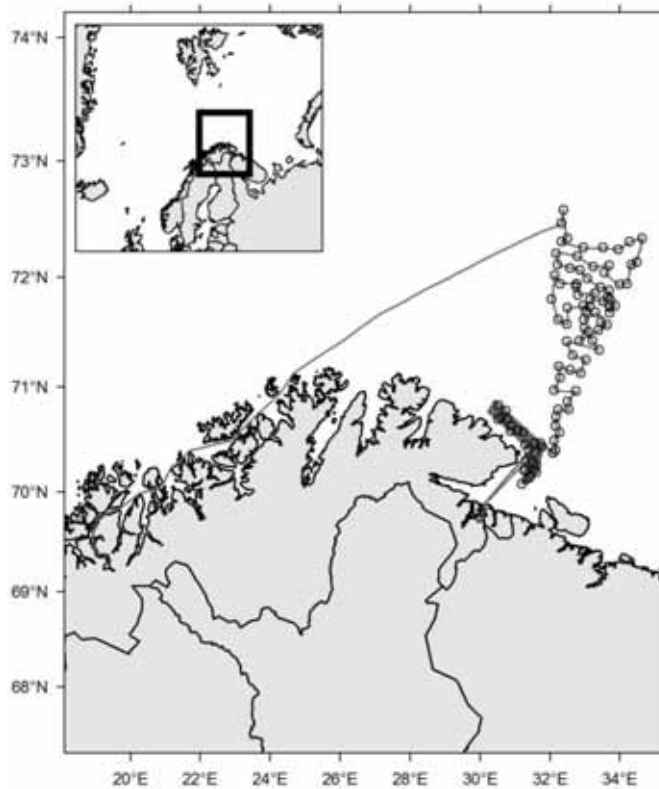
Cruise no 2013110
 "G.O.Sars"
 31 July–21 August 2013

● Box cores stations



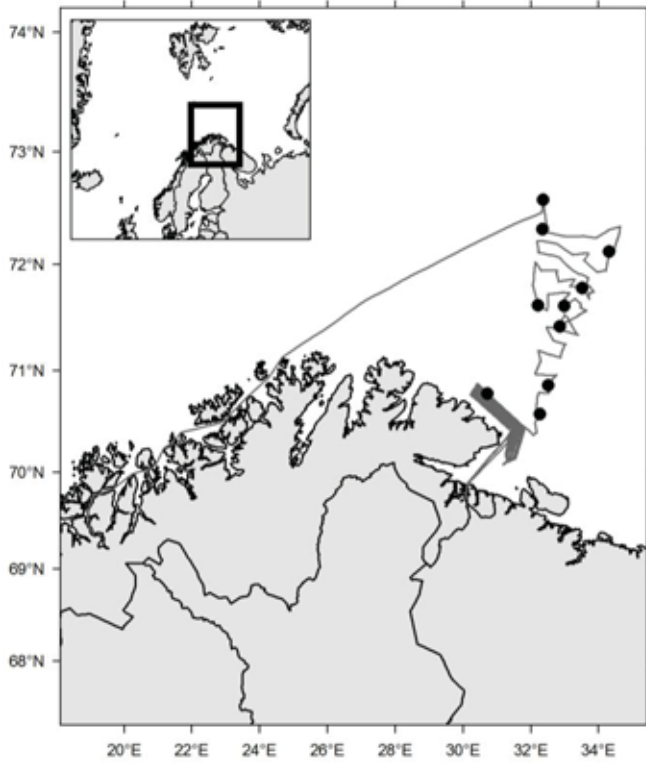
Cruise no 2013110
 "G.O.Sars"
 31 July–21 August 2013

● Grab stations



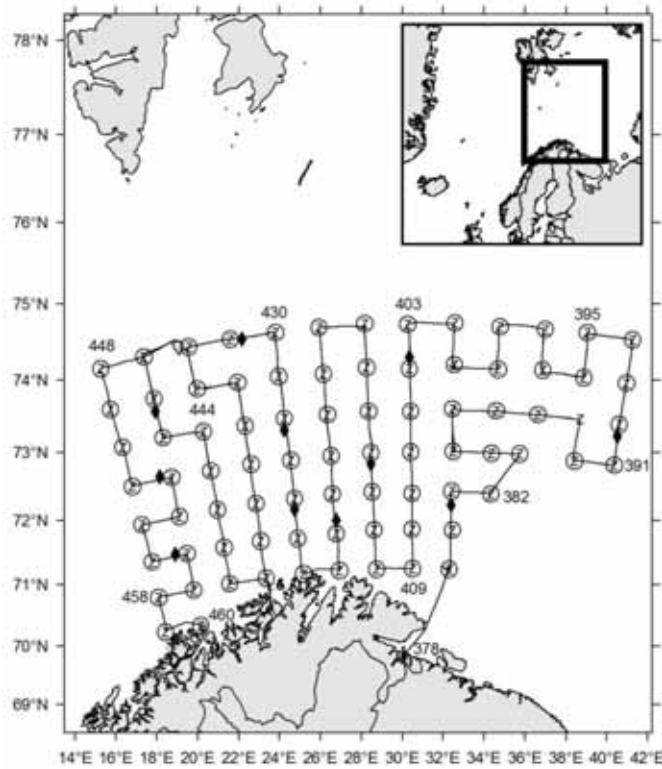
Cruise no 2013110
 "G.O.Sars"
 31 July–21 August 2013

○ Video stations



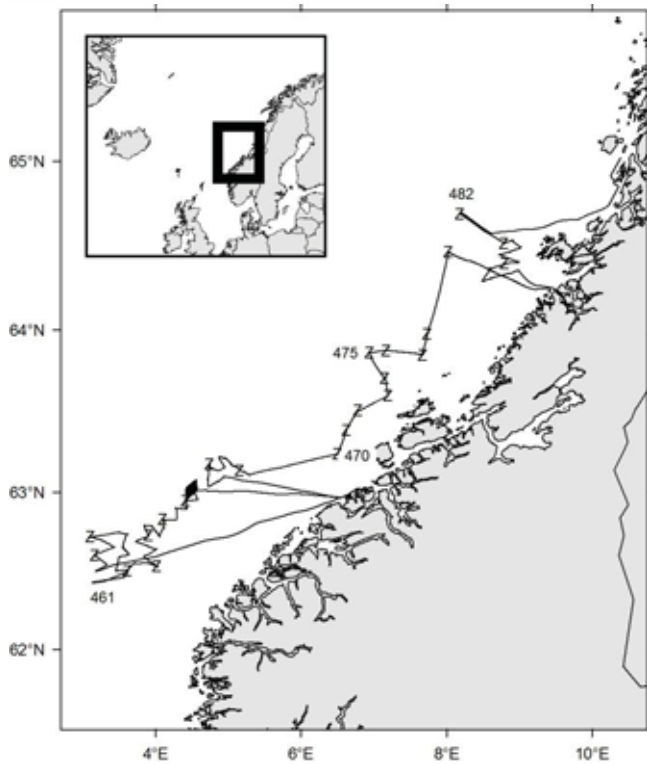
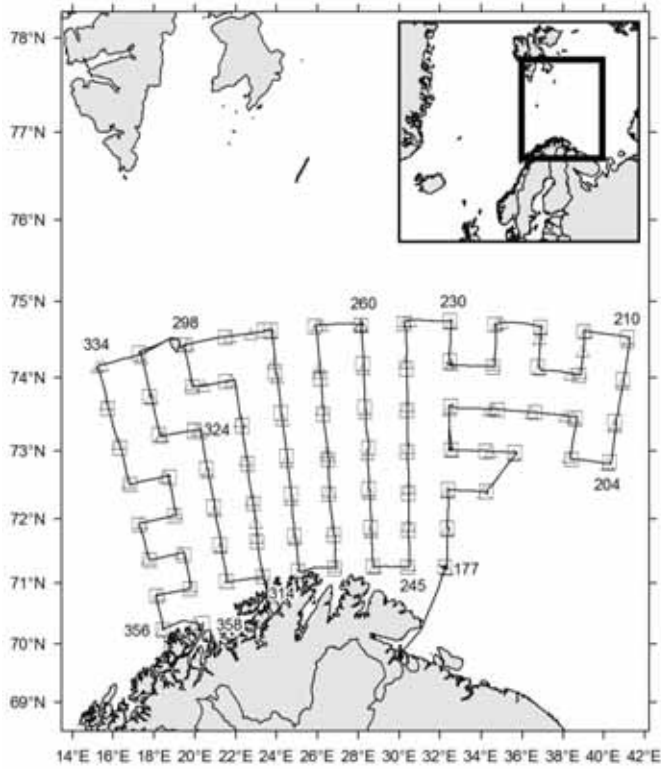
Cruise no 2013110
 "G.O.Sars"
 31 July–21 August 2013

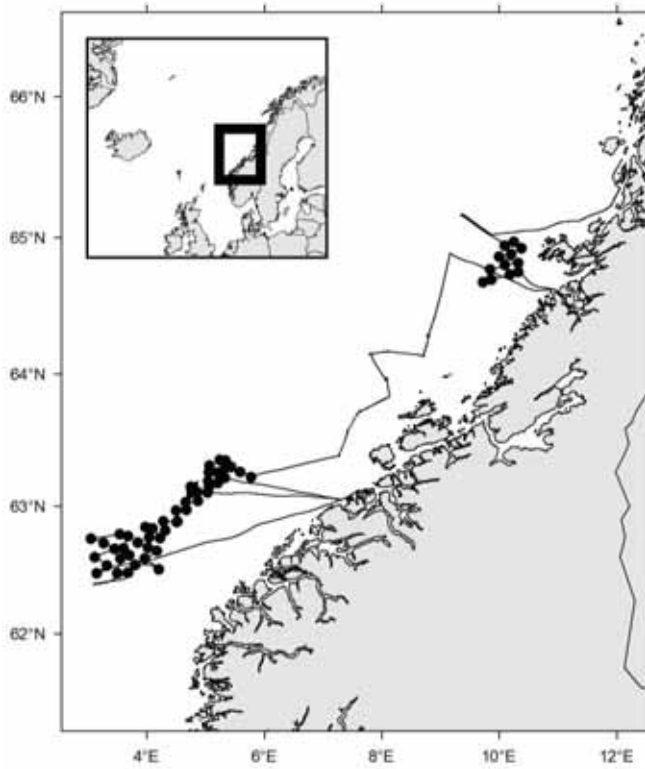
● Multicore stations



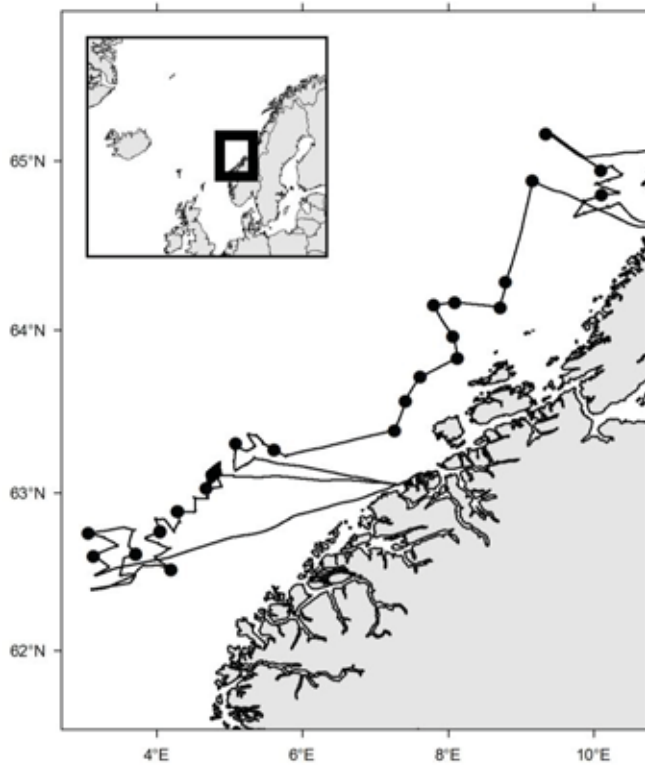
Cruise no 2013111
 "G.O.Sars"
 22 August–19 September 2013

z CTD st.no 378–460
 ○ Plankton st. (WP-II-net)
 ◆ Plankton st. (Mocness)

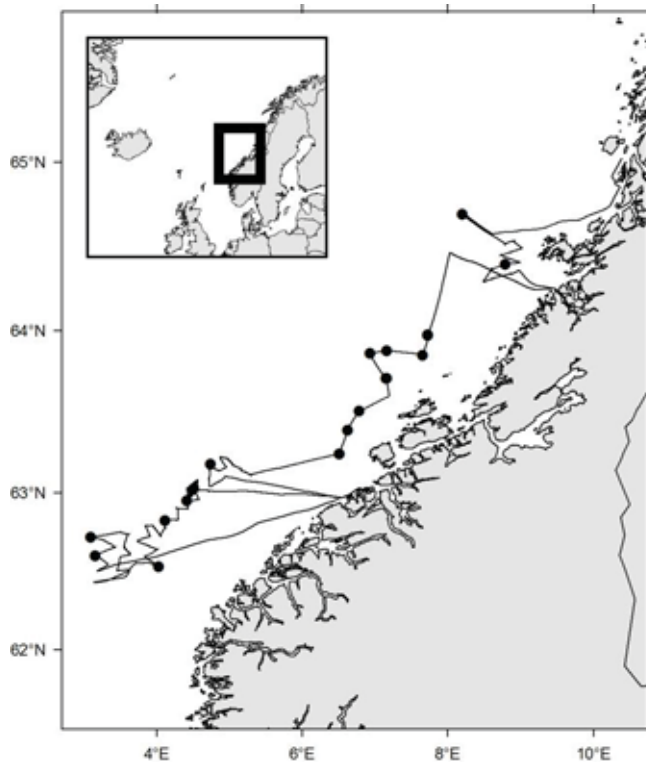




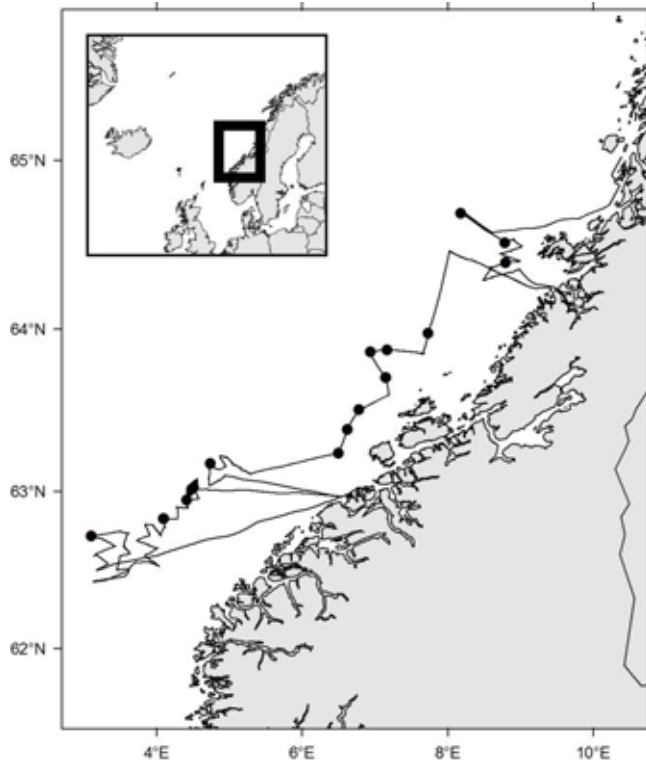
Cruise no 2013112
 "G.O.Sars"
 23 September–10 October 2013
 • Video st.no 1269–1329



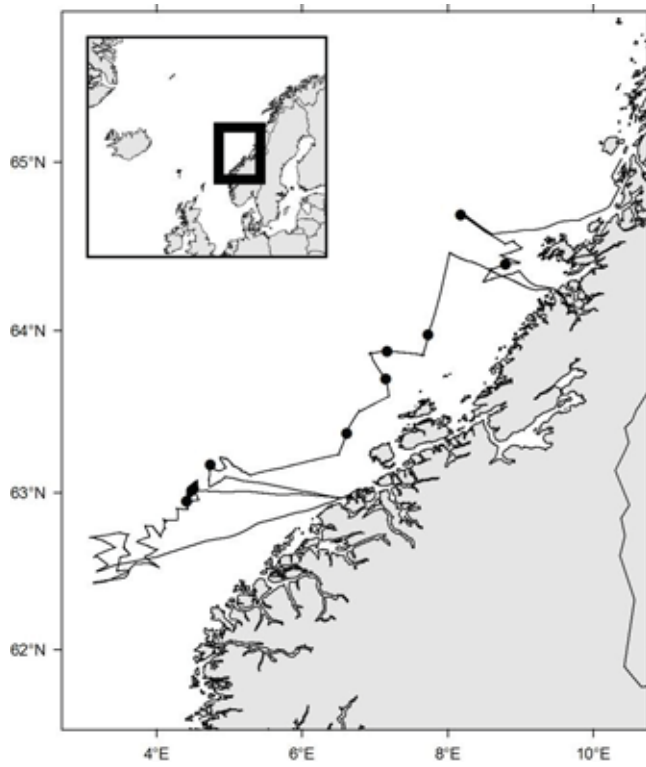
Cruise no 2013112
 "G.O.Sars"
 22 September–10 October 2013
 • Grab st.no 657–727



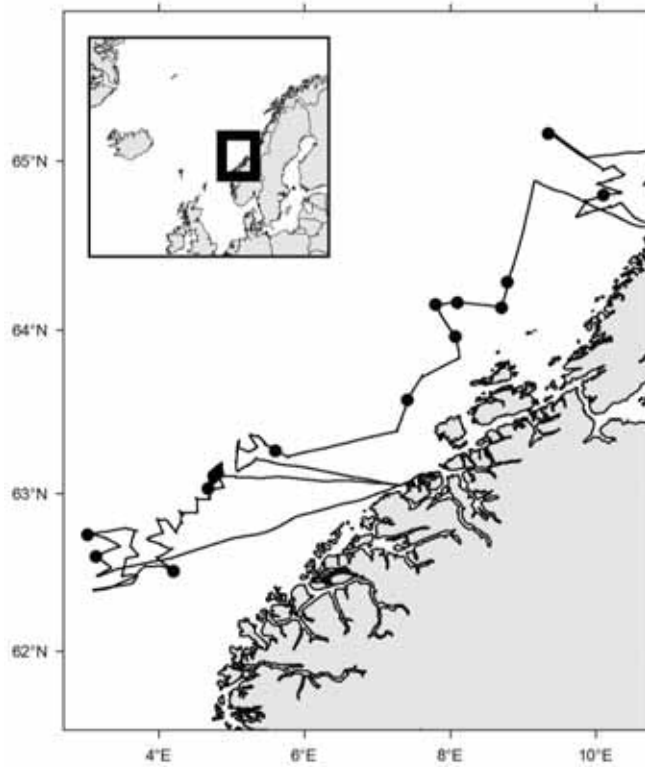
Cruise no 2013112
 "G.O.Sars"
 22 September–10 October 2013
 •Beam st.no 474–492



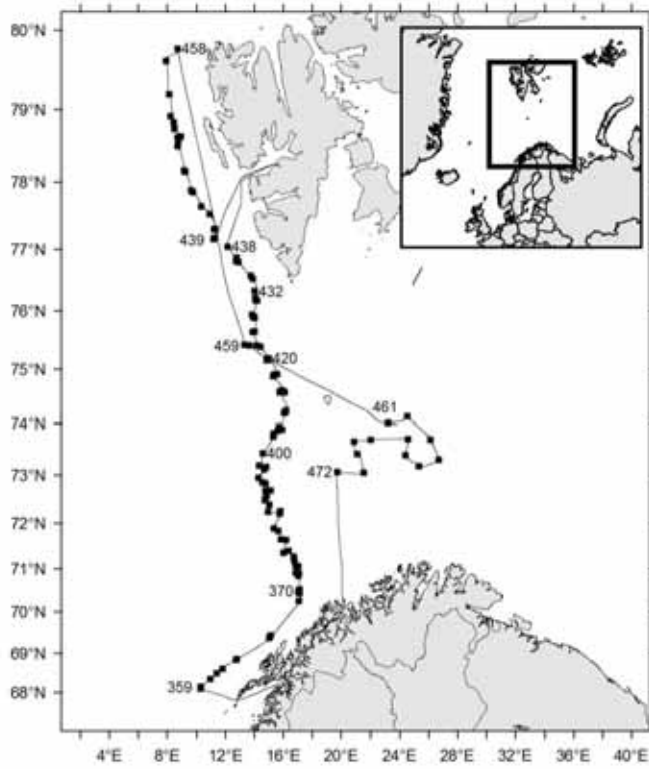
Cruise no 2013112
 "G.O.Sars"
 22 September–10 October 2013
 •Boxcorer st.no 45–62



Cruise no 2013112
 "G.O.Sars"
 22 September–10 October 2013
 • Multisampler st.no 19–28

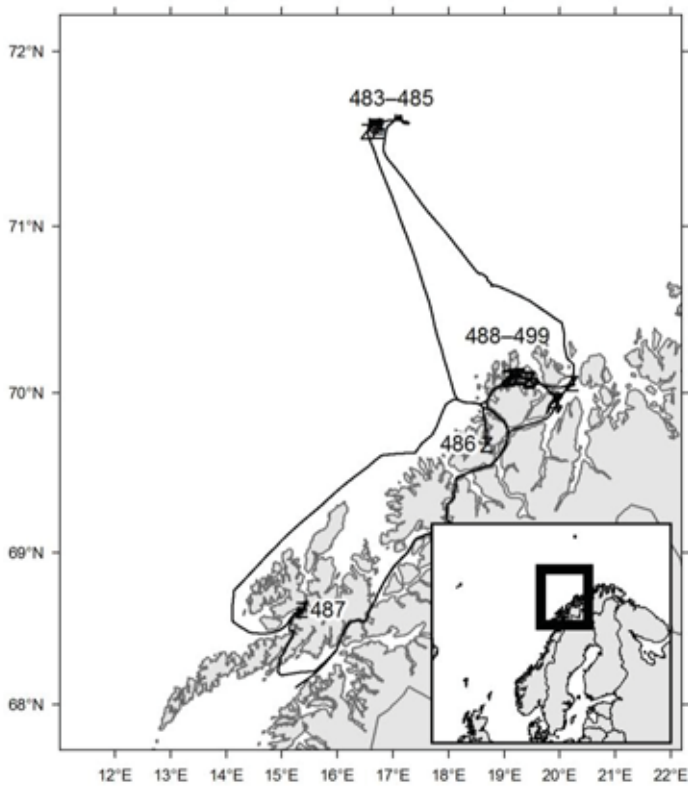


Cruise no 2013112
 "G.O.Sars"
 22 September–10 October 2013
 • Sledge st.no 96–108



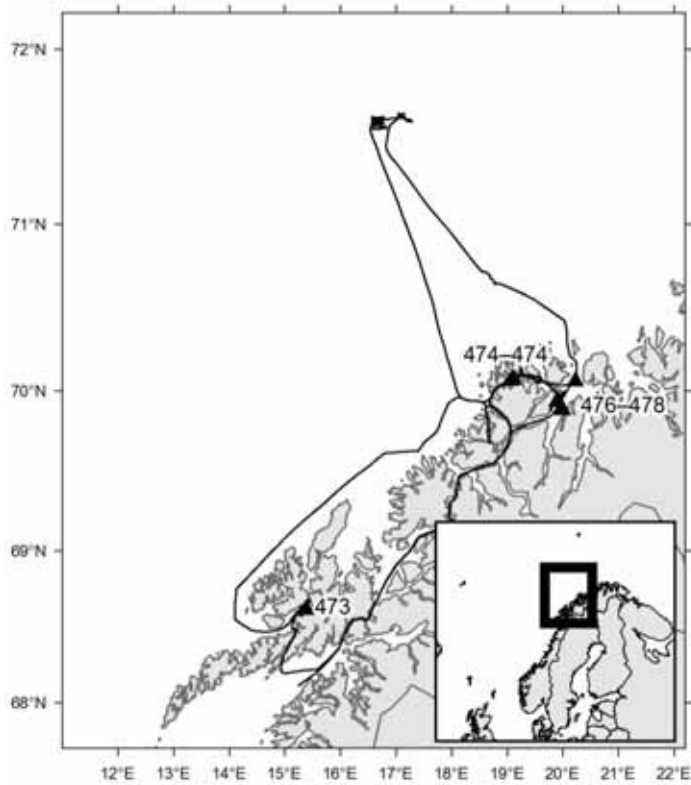
Cruise no 2013113
 "G.O.Sars"
 15 October–2 November 2013

- Bottom trawl st.no 359–472
- Trawl mounted CTD



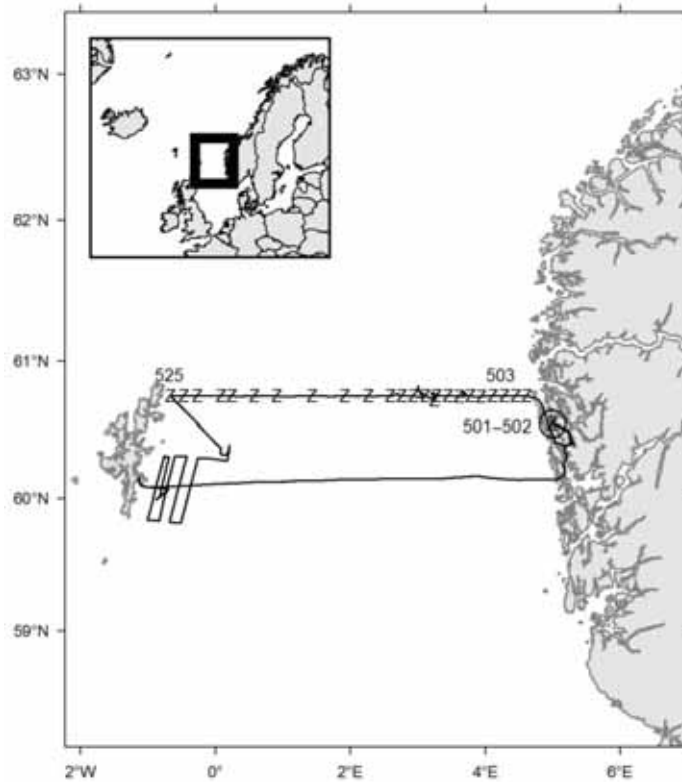
Cruise no 2013115
 "G.O.Sars"
 7–18 November 2013

z CTD st.no 483–499



Cruise no 2013115
 "G.O.Sars"
 7-18 November 2013

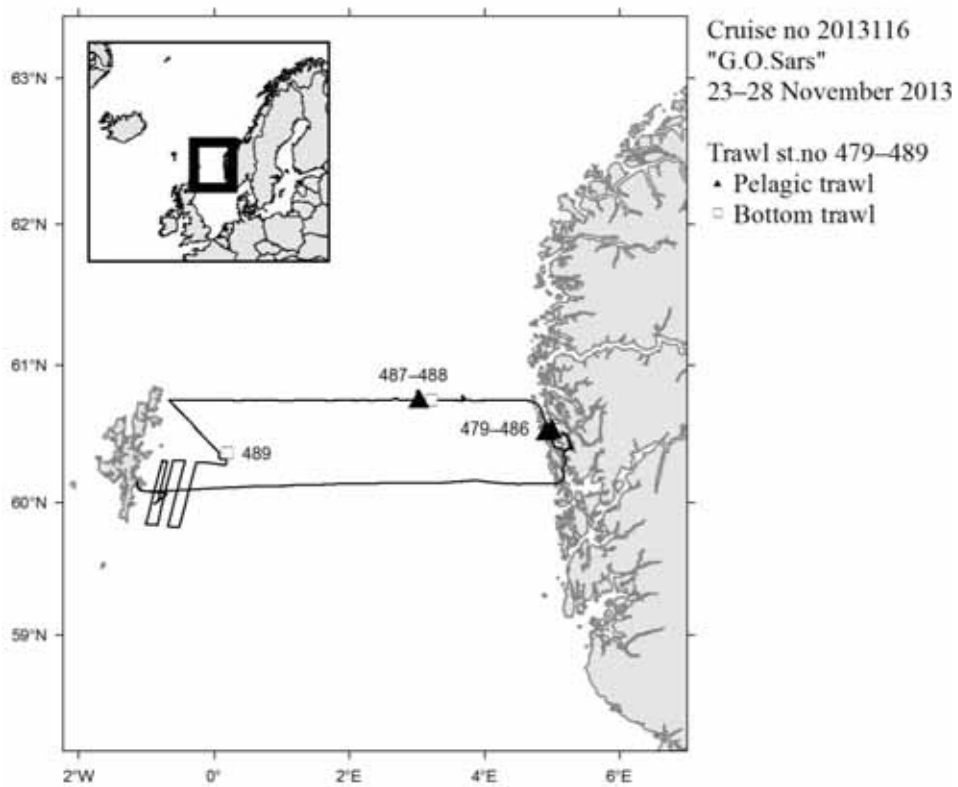
▲ Pelagic trawl st.no 473-478



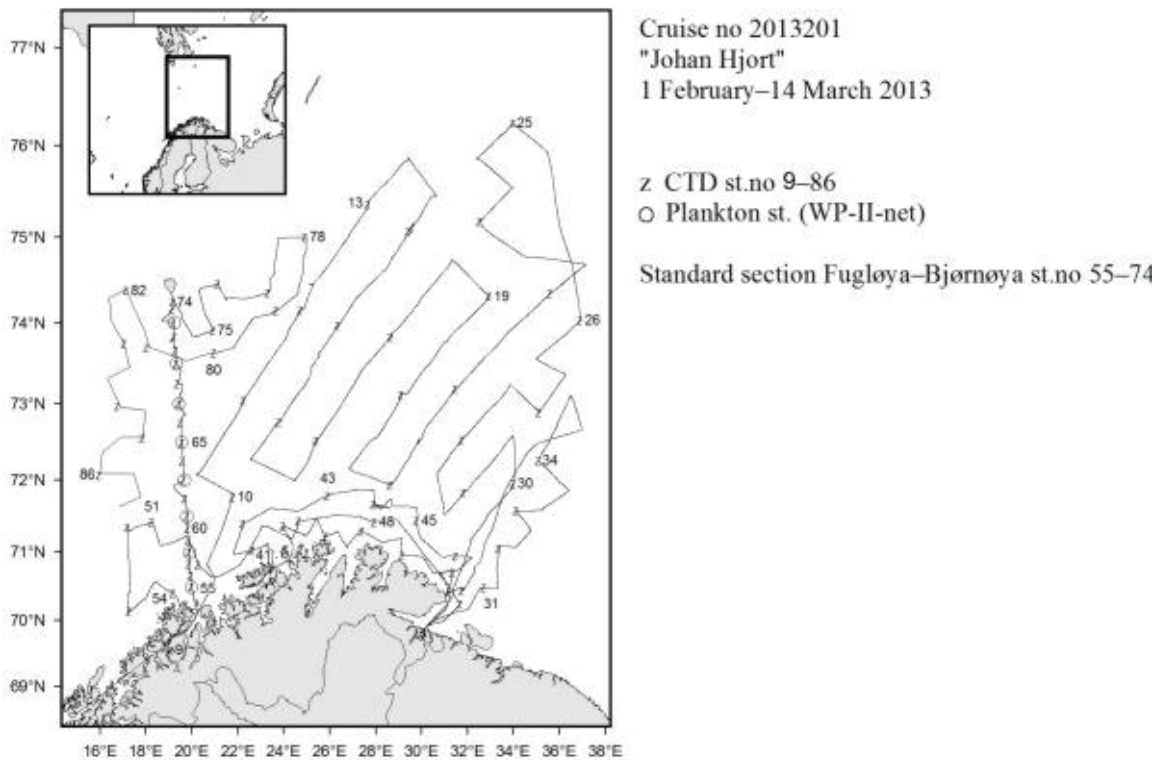
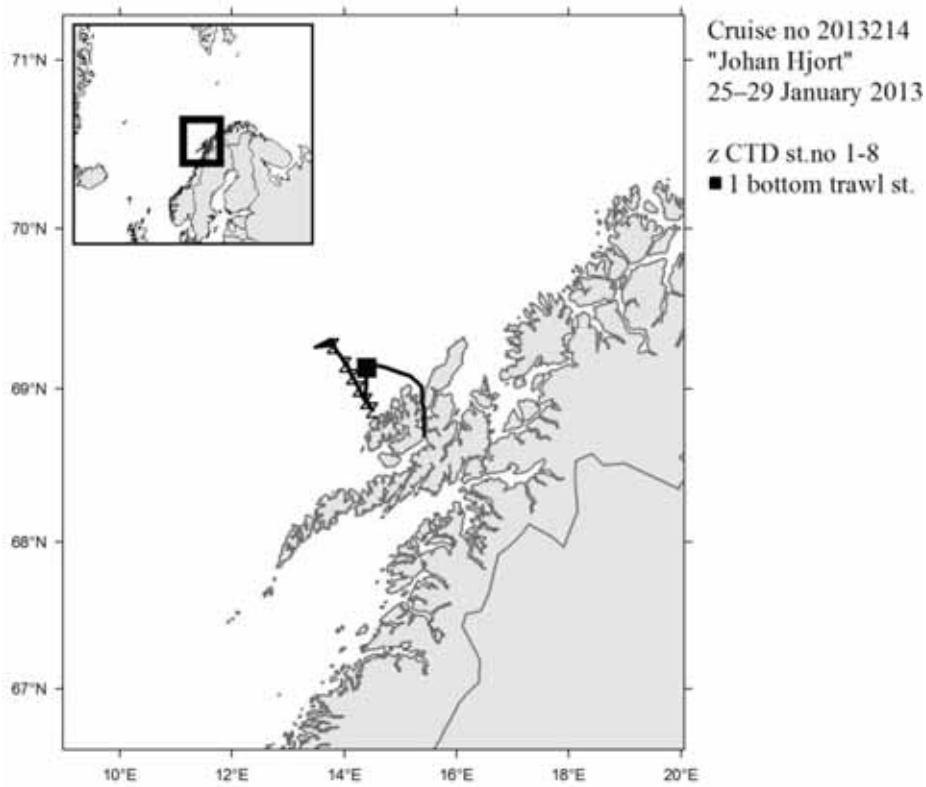
Cruise no 2013116
 "G.O.Sars"
 23-28 November 2013

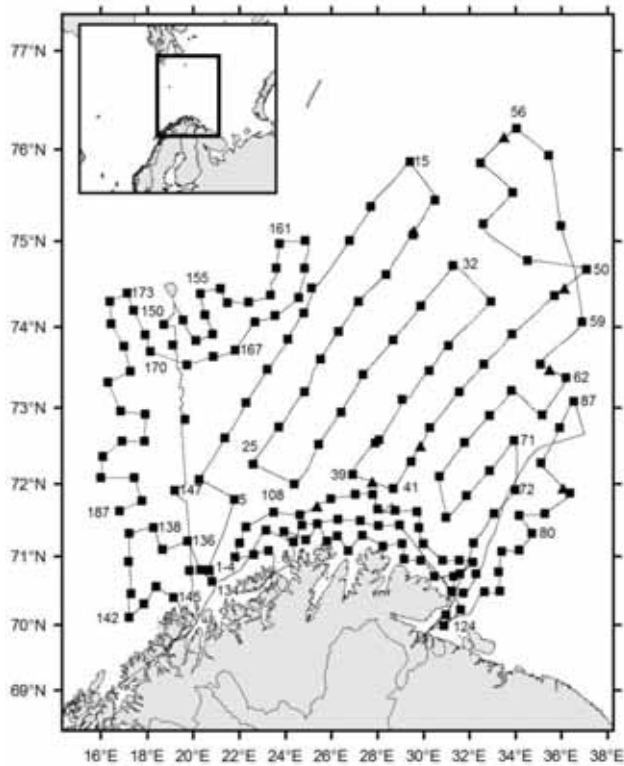
z CTD st.no 500-525
 ○ Multisampler st.

Standard section:
 Fedje-Shetland st.no 503-525



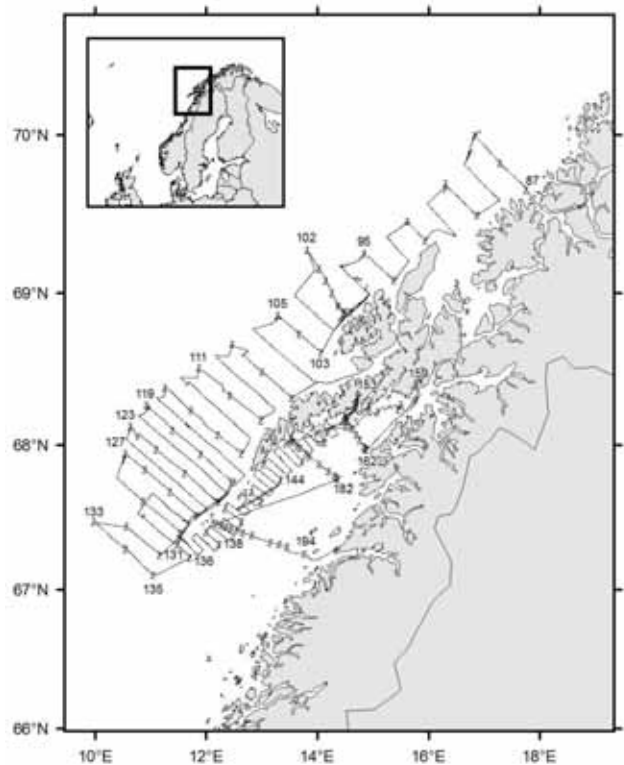
4.2 Johan Hjort





Cruise no 2013201
 "Johan Hjort"
 1 February–14 March 2013

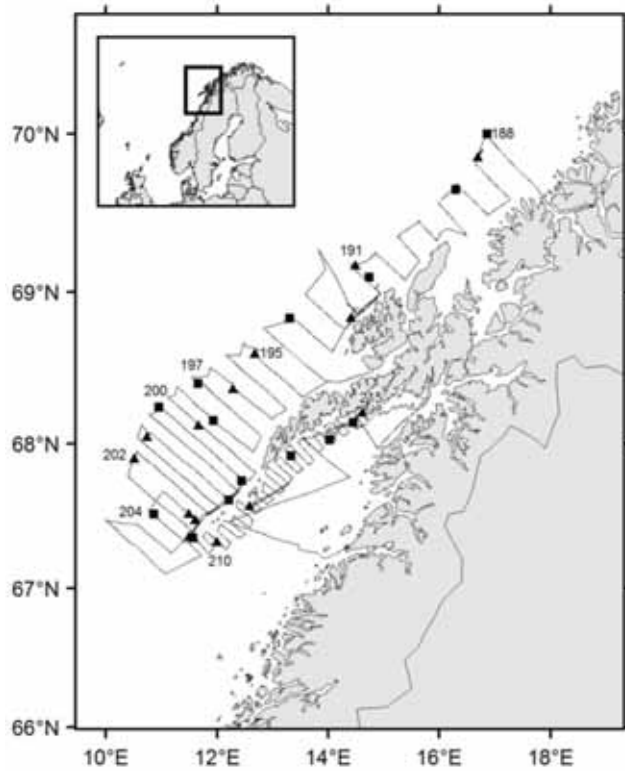
Trawl st.no 1–187
 ■ Bottom trawl
 ▲ Pelagic trawl



Cruise no 2013202
 "Johan Hjort"
 15–27 March 2013

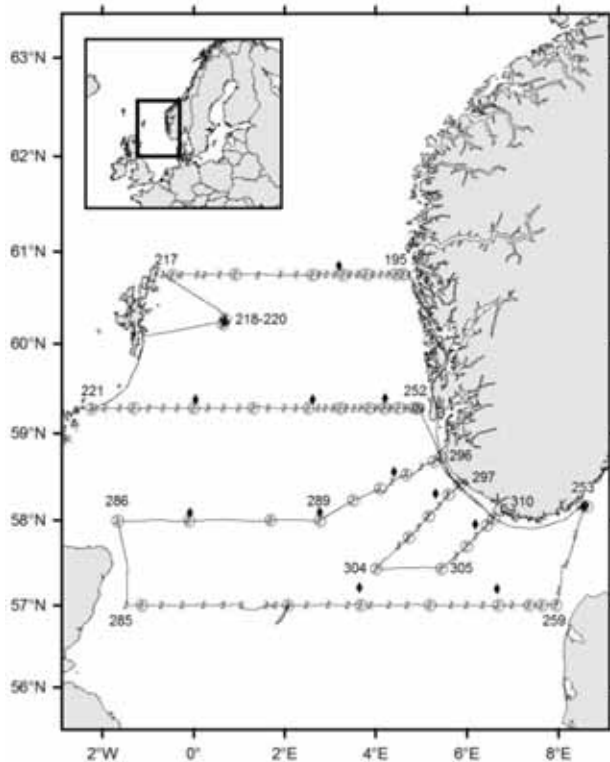
z CTD st.no 87–194

Standard sections:
 Tennholmen–Røst,
 Ballstad–Måløy/Skarholmen,
 Kabelvåg–Steigen



Cruise no 2013202
 "Johan Hjort"
 15–27 March 2013

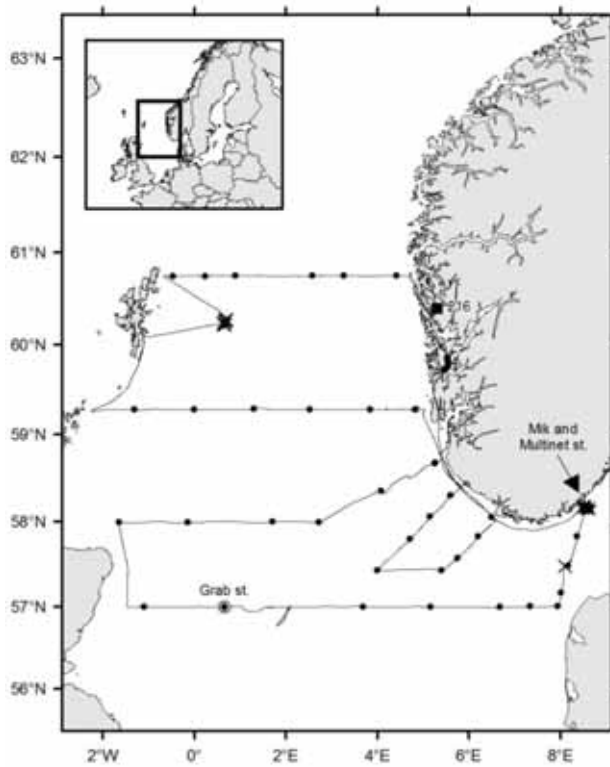
Trawl st.no 188–215
 ▲ Pelagic trawl
 ■ Bottom trawl



Cruise no 2013203
 "Johan Hjort"
 8–23 April 2013

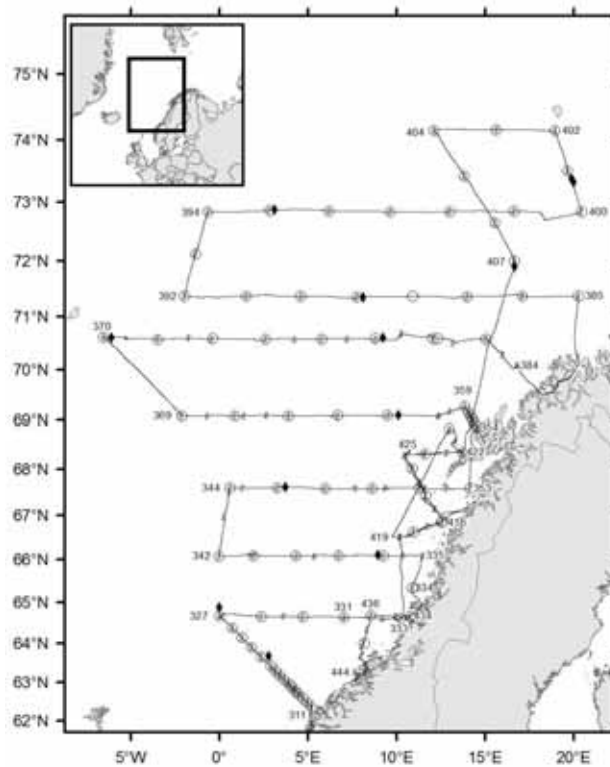
z CTD st.no 195–310
 ○ Plankton st. (WP-II-net)
 ◆ Plankton st. (Mocness)

Standard sections:
 Fedje-Shetland: st.no 195–217
 Utsira W: st.no 221–252
 Hanstholm–Aberdeen: st.no 285–259
 Jærens Rev: st.no 289–295
 Egerøya SW: st.no 297–304
 Lista SW: st.no 305–310
 Okøy–Hanstholm: st.no 253–259



Cruise no 2013203
 "Johan Hjort"
 8–23 April 2013

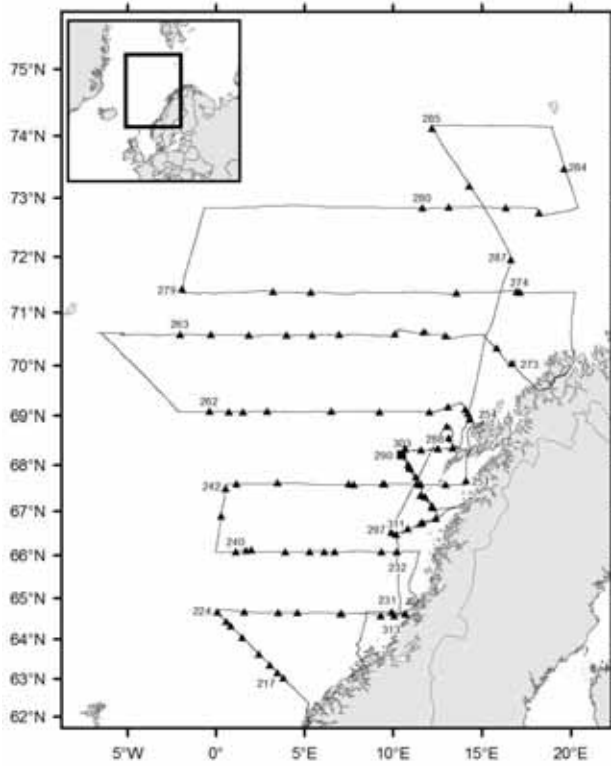
- Bottom trawl st.no 216
- Gulf III st.
- Grab st.
- × Multinet st.
- ★ Mik st.



Cruise no 2013204
 "Johan Hjort"
 1 May–9 June 2013

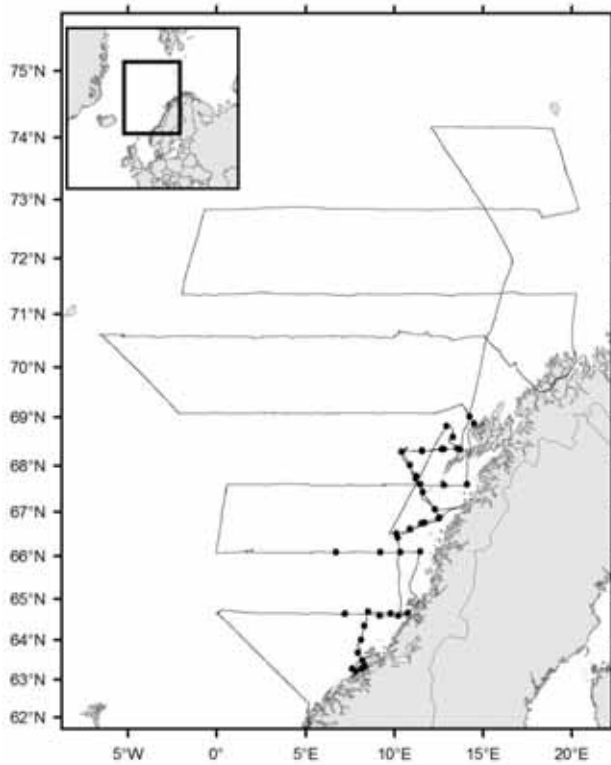
- z CTD st.no 311–444
- Plankton st. (WP-II-net)
- ◆ Plankton st. (Mocness)

Standard sections:
 Svinøy NW: st.no 311–327



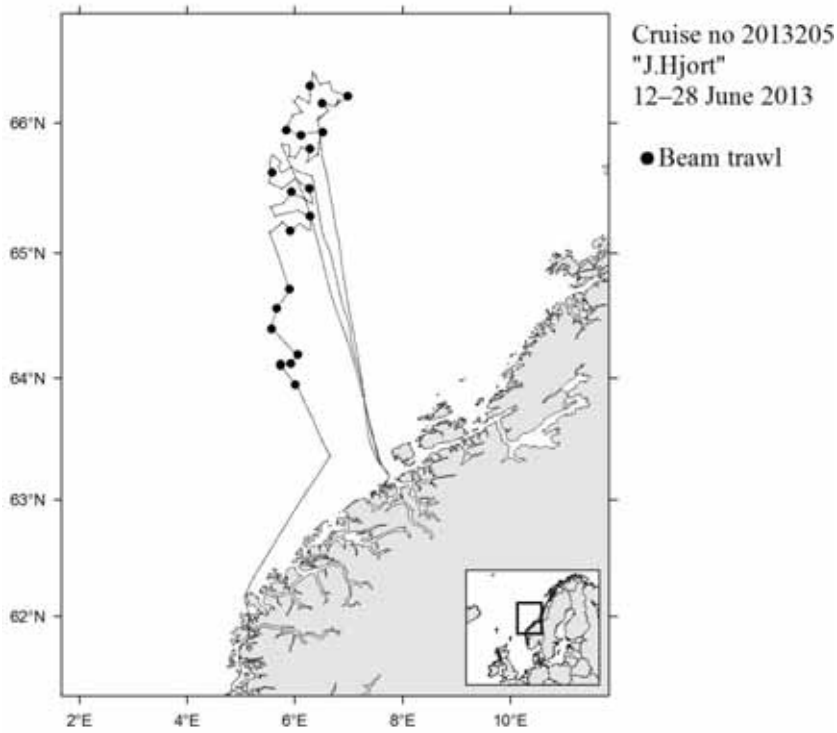
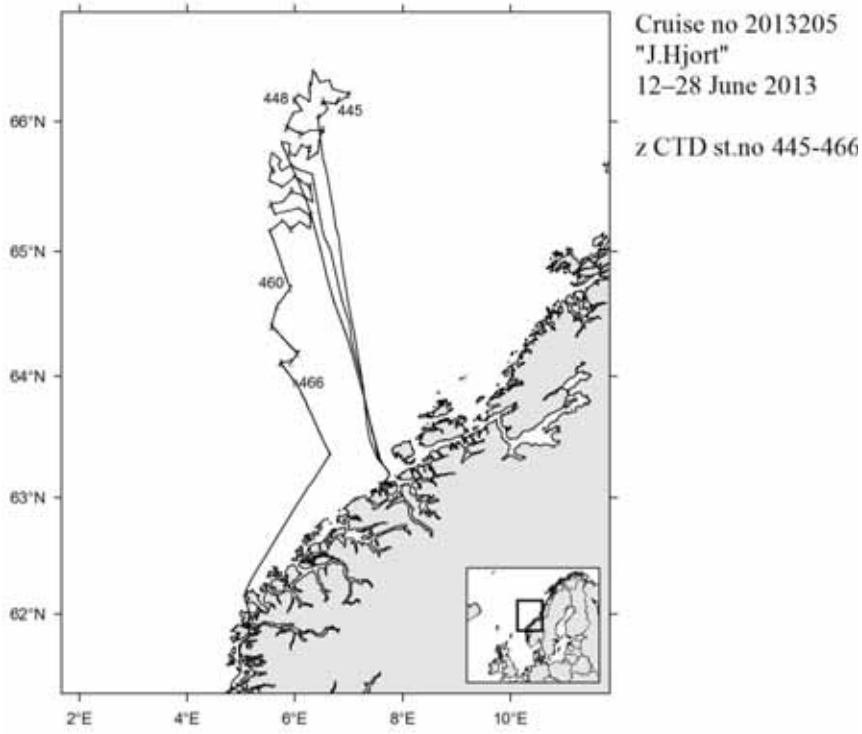
Cruise no 2013204
 "Johan Hjort"
 1 May–9 June 2013

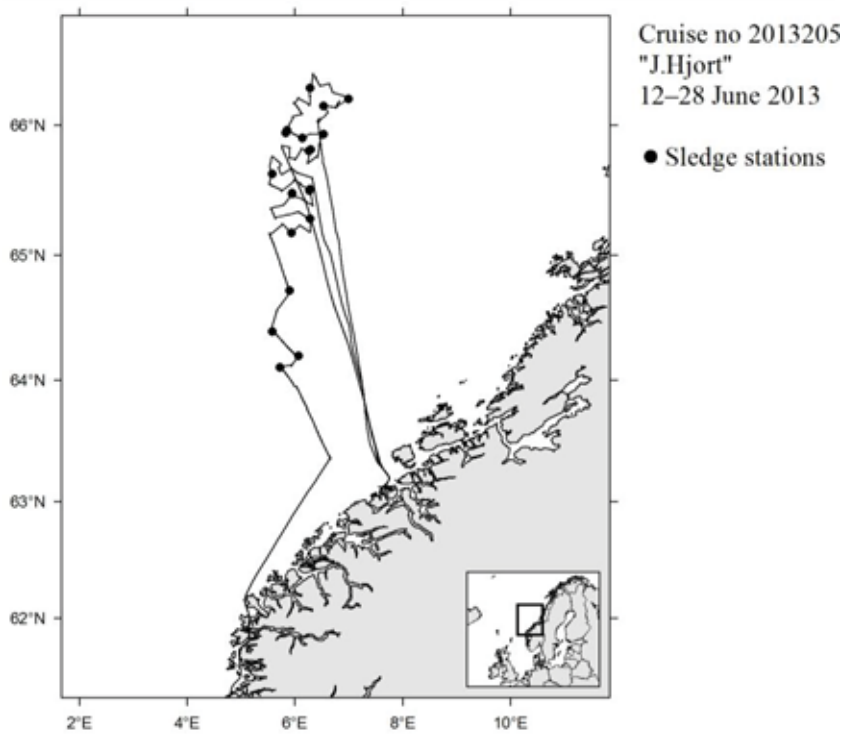
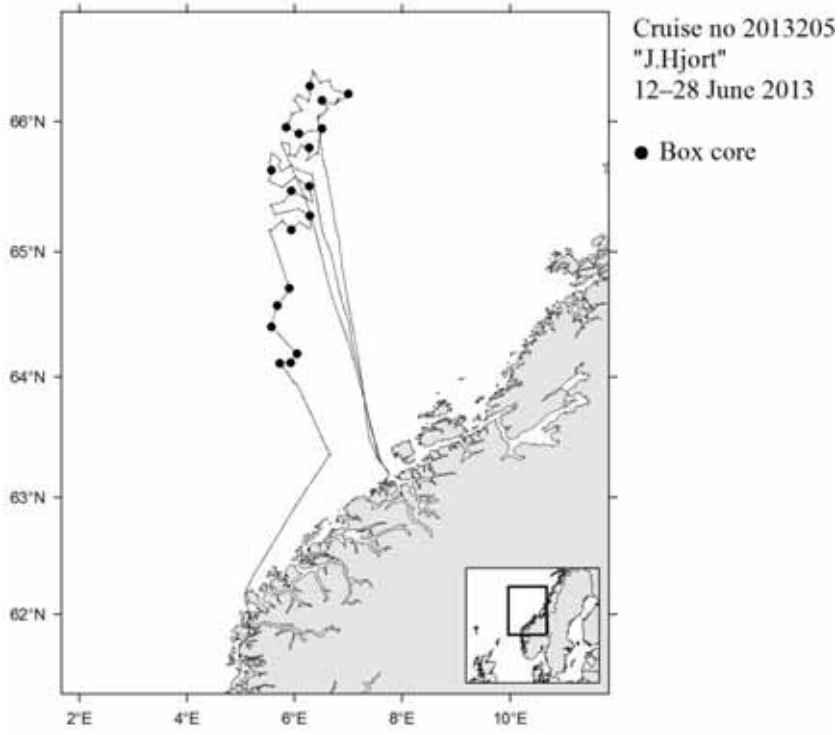
Trawl st.no 217–313
 ▲ Pelagic trawl
 ■ Bottom trawl (st.no 290)

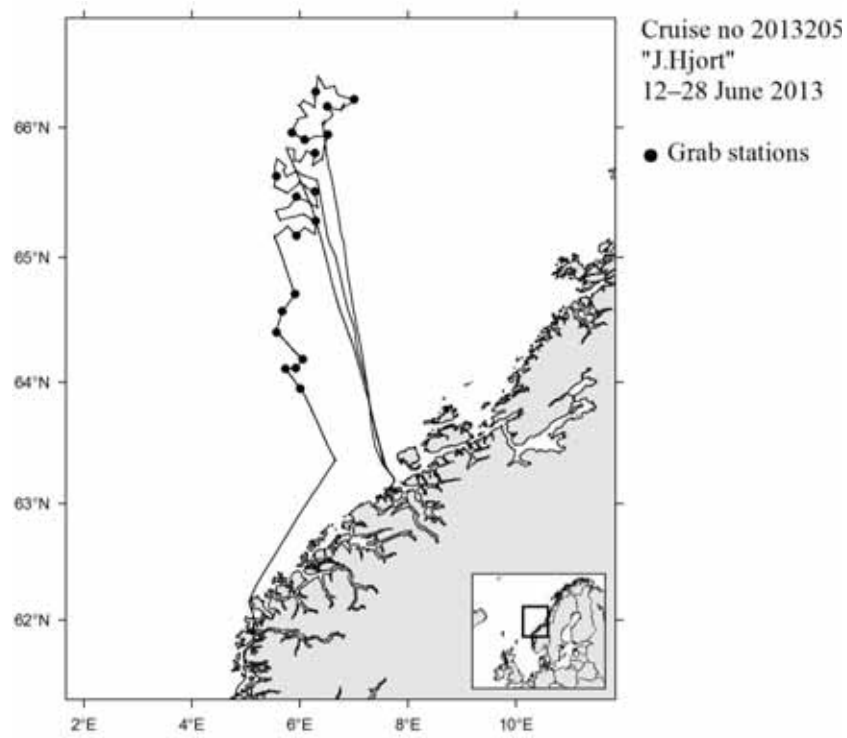
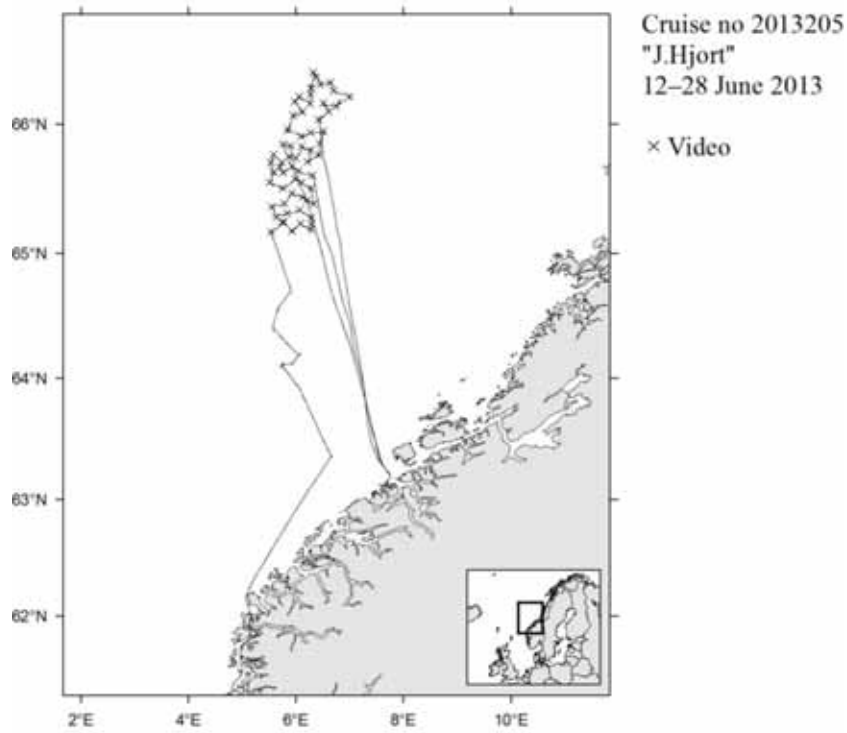


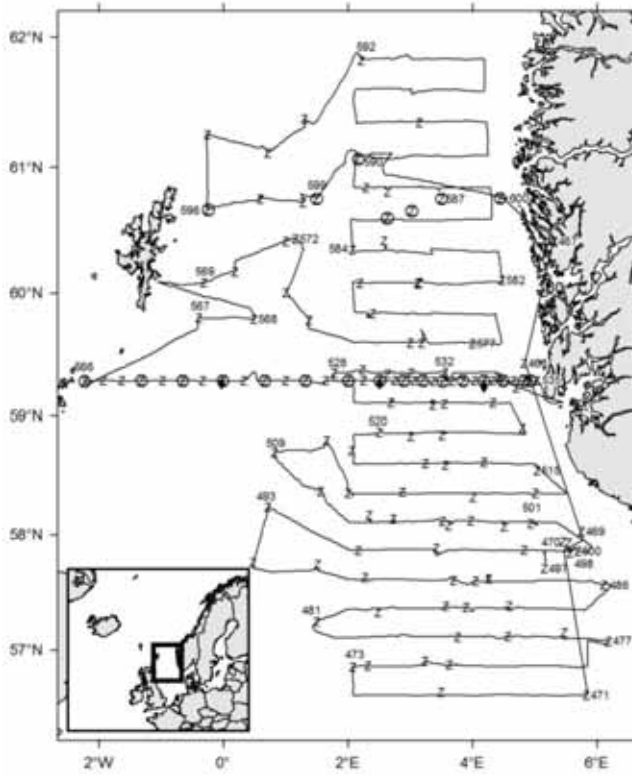
Cruise no 2013204
 "Johan Hjort"
 1 May–9 June 2013

● Mik stations





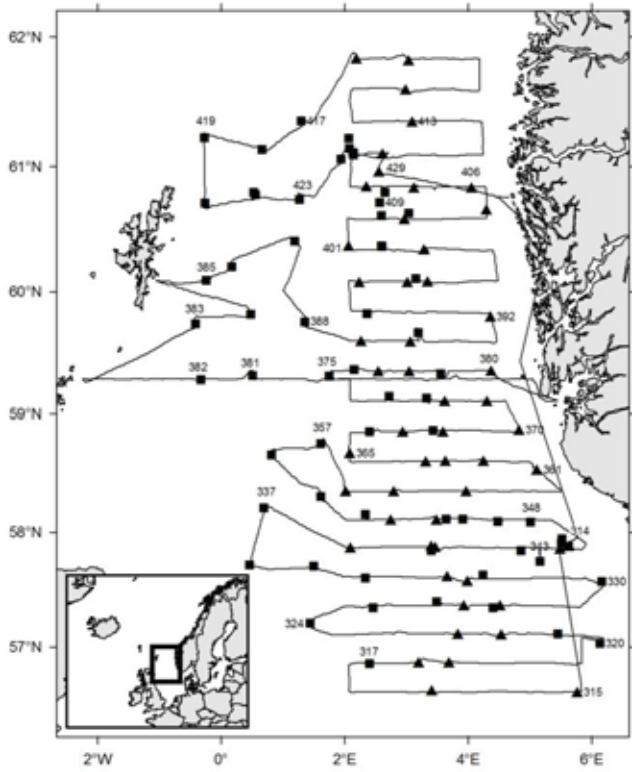




Cruise no 2013206
 "Johan Hjort"
 4 July–2 August 2013

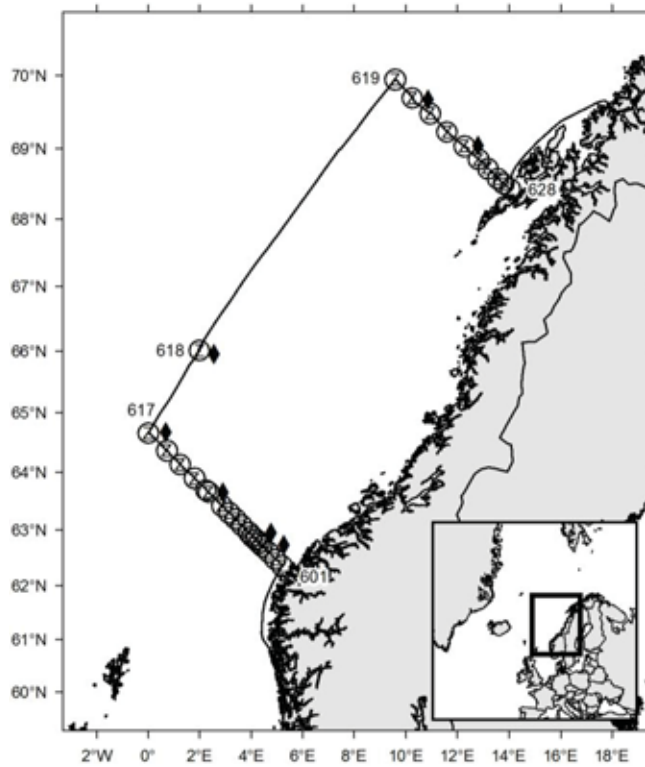
z CTD st.no 467–600
 ○ Plankton st. (WP-II-net)
 ◆ Plankton st. (Mocness)

Standard section:
 Utsira W st.no 535–566



Cruise no 2013206
 "Johan Hjort"
 4 July–2 August 2013

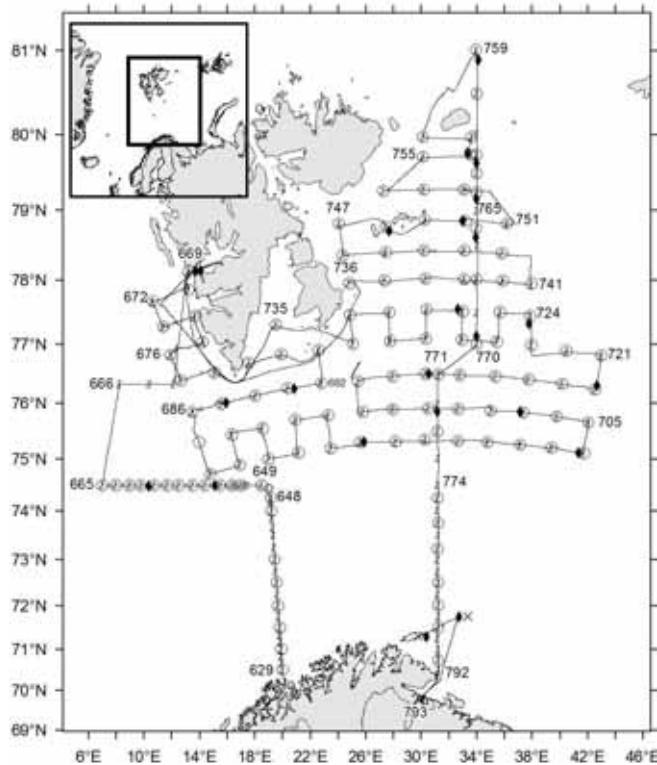
Trawl st.no 314–429
 ■ Bottom trawl
 ▲ Pelagic trawl



Cruise no 2013207
 "Johan Hjort"
 6–13 August 2013

z CTD st.no 601–628
 ○ Plankton st. (WP-II-net)
 ◆ Plankton st. (Mocness)

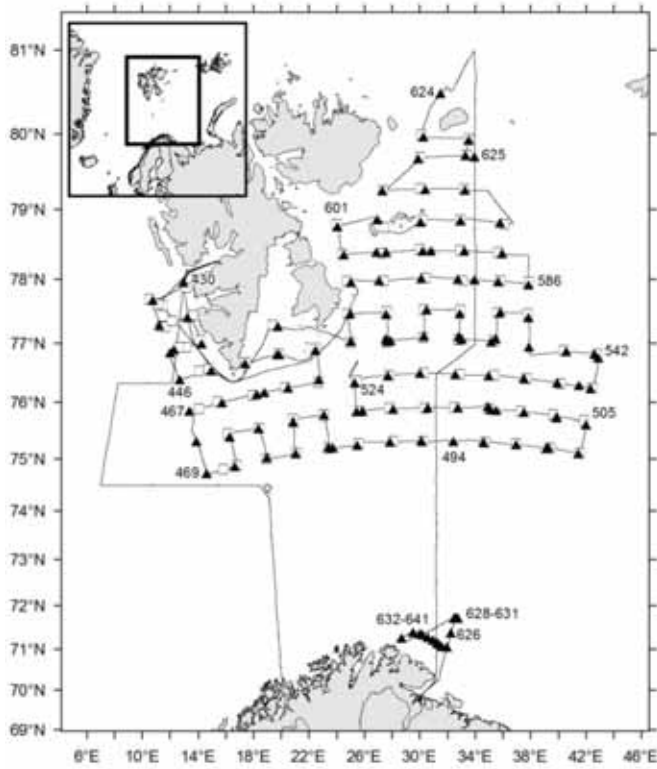
Standard sections:
 Svinøy NW st.no 601–617
 Gimsøy NW st.no 619–628



Cruise no 2013208
 "Johan Hjort"
 15 August–1 October 2013

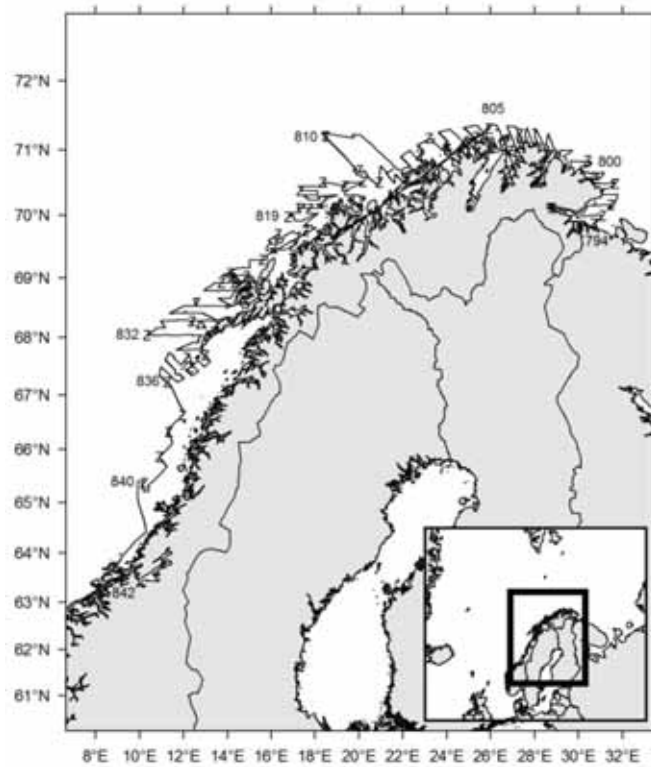
z CTD st.no 629–793
 ○ Plankton st. (WP-II-net)
 ◆ Plankton st. (Mocness)
 × Plankton st. (Multinet)

Standard sections:
 Fugløya-Bjørnøya st.no 629–648
 Bjørnøya W st.no 649–665
 Vardø N st.no 759–792



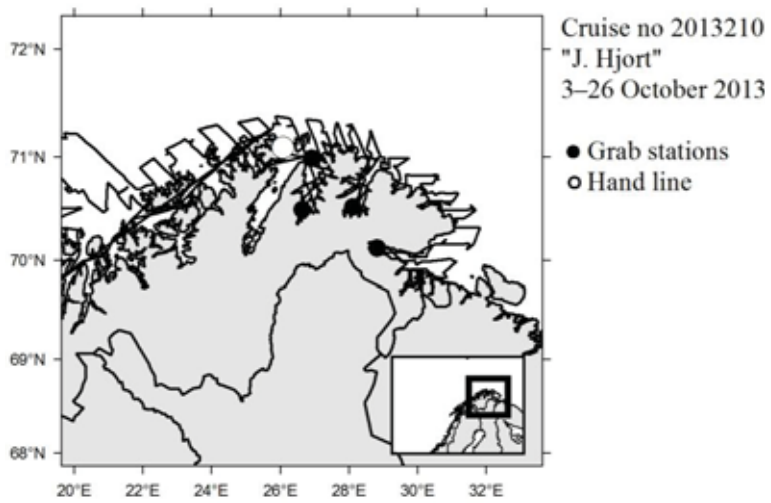
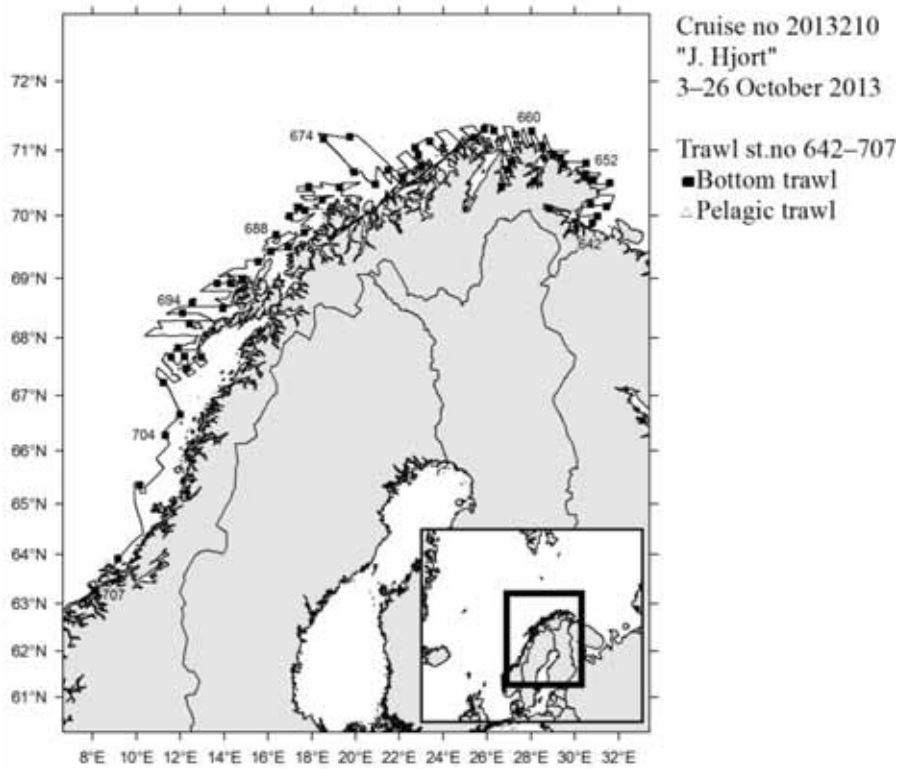
Cruise no 2013208
 "Johan Hjort"
 15 August–1 October 2013

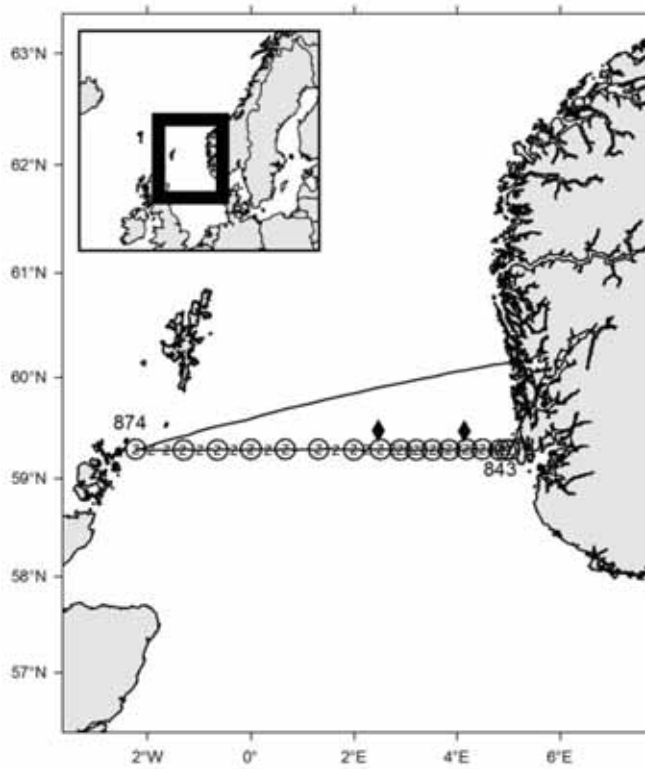
Trawl st.no 430–641
 ▲ Pelagic trawl
 □ Bottom trawl



Cruise no 2013210
 "J. Hjort"
 3–26 October 2013

z CTD st.no 794–842

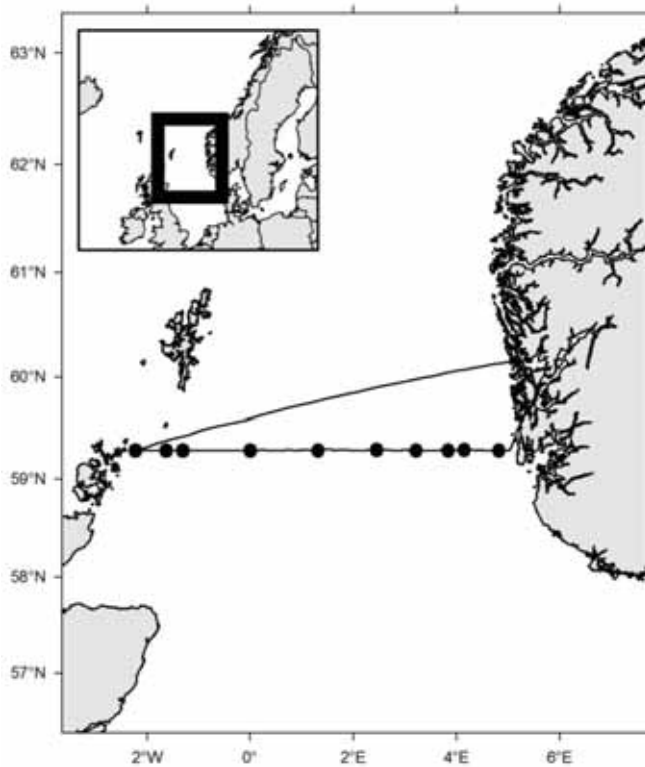




Cruise no 2013211
 "Johan Hjort"
 29 October-1 November 2013

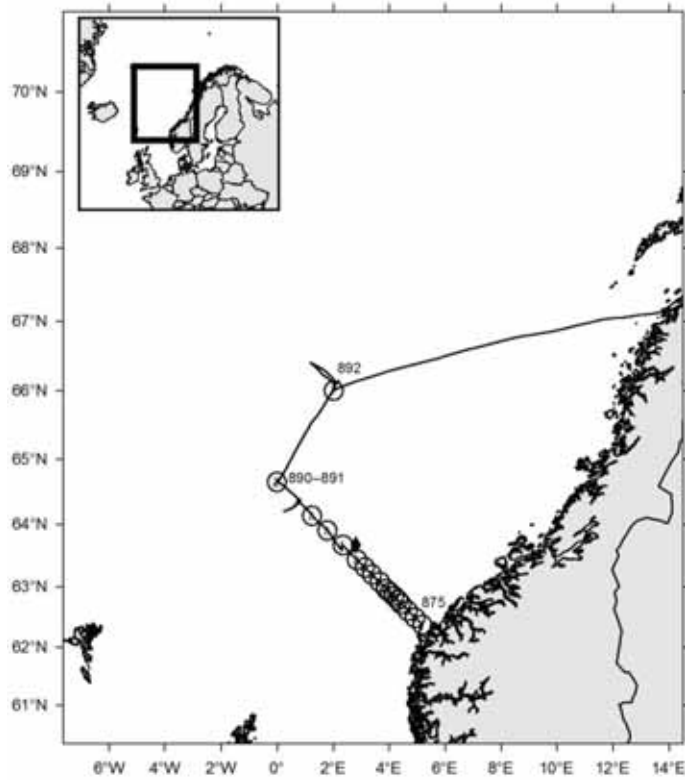
- z CTD st.no 843-874
- Plankton st. (WP-II-net, WP-III-net at st. 843-845)
- ◆ Plankton st. (Mocness st.)

Standard section Utsira W st.no 843-874



Cruise no 2013211
 "Johan Hjort"
 29 October-1 November 2013

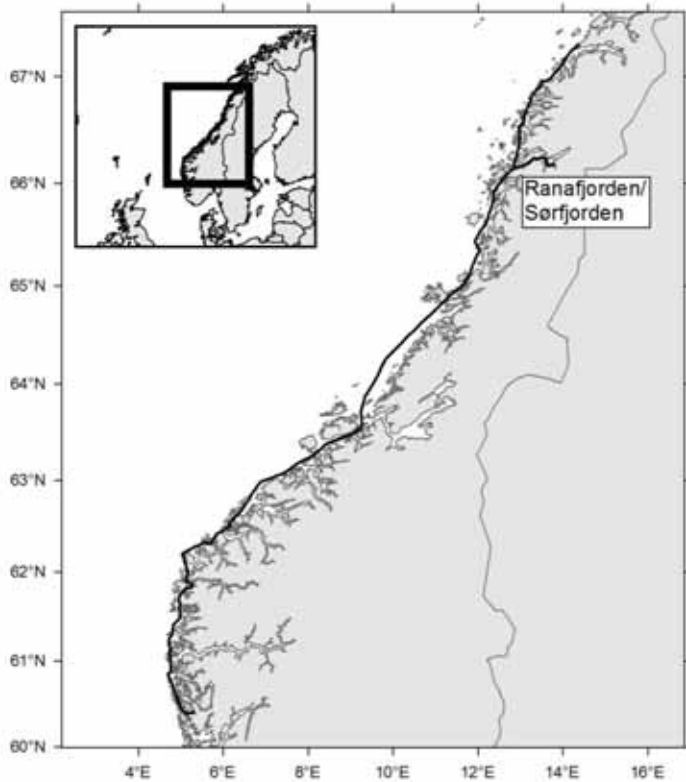
- Mik stations



Cruise no 2013212
 "Johan Hjort"
 12–18 November 2013

z CTD st.no 875–892
 ○ Plankton st. (WP-II-net)
 ◆ Plankton st. (Mocness)

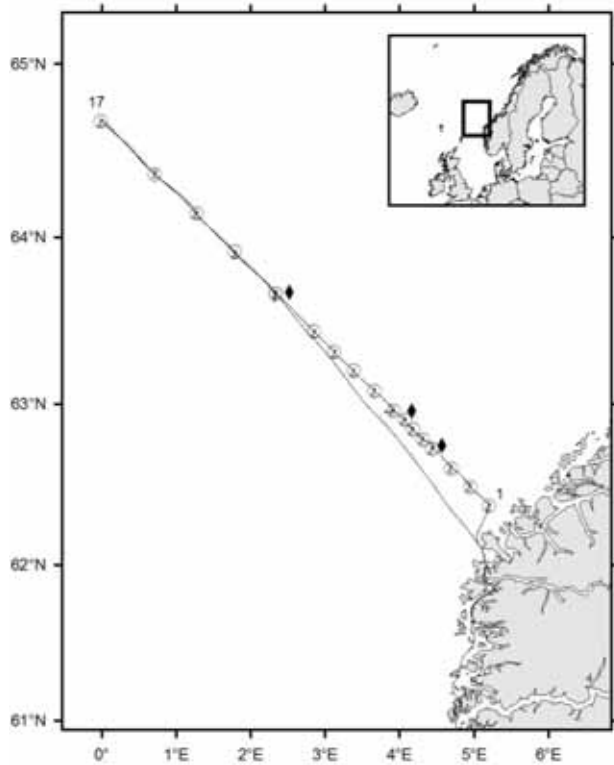
Standard section Svinøy NW st.no 875–891
 St.M st.no 892



Cruise no 2013213
 "Johan Hjort"
 19–24 November 2013

— Cruise track
 Geotechnical in situ measurements,
 using rod/probe with different
 sensors.

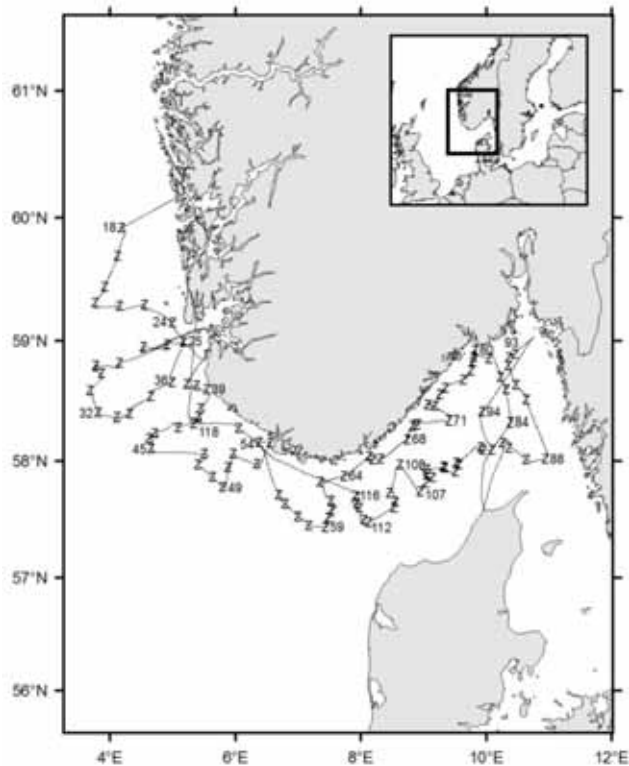
4.3 Håkon Mosby



Cruise no 2013601
"Håkon Mosby"
5-9 January 2013

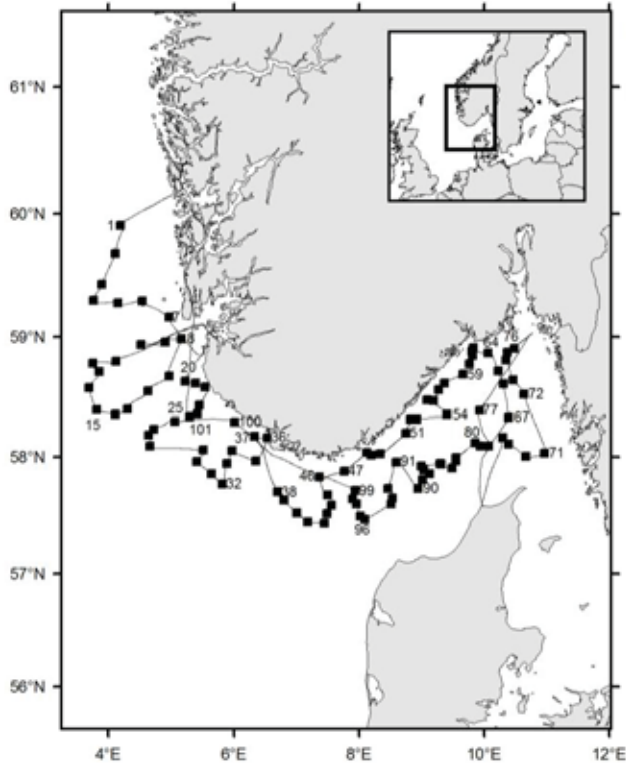
z CTD st.no 1-17
○ Plankton st. (WP-II-net)
◆ Plankton st. (Mocness)

Standard section Svinøy NW st.no 1-17



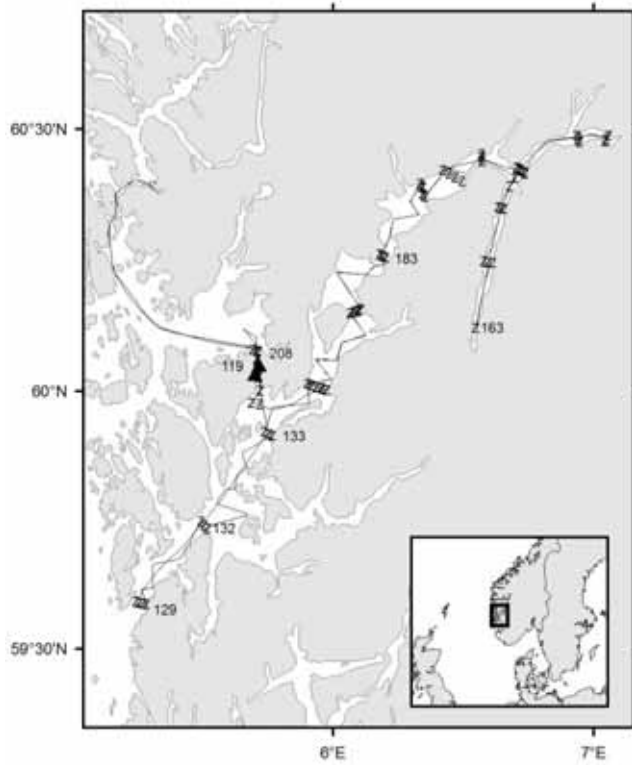
Cruise no 2013602
"Håkon Mosby"
12-26 January 2013

z CTD st.no 18-118



Cruise no 2013602
 "Håkon Mosby"
 12–26 January 2013

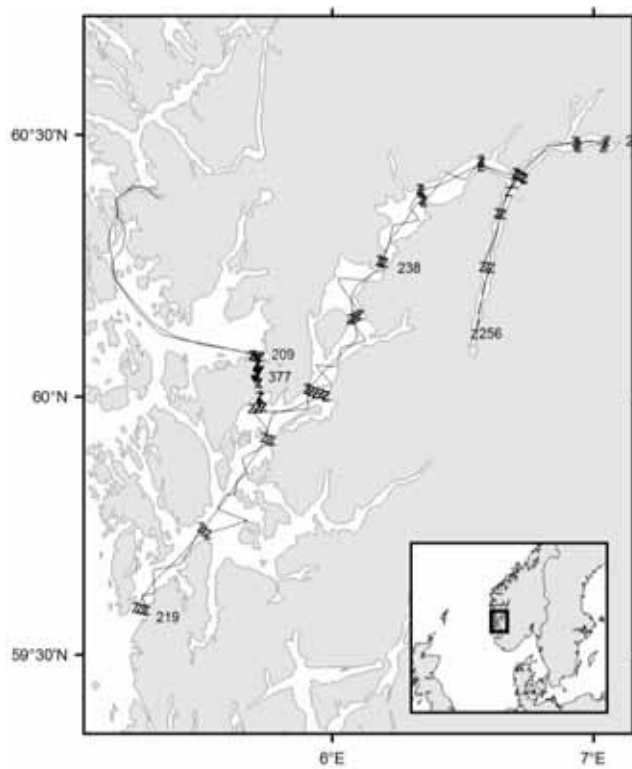
■ Bottom trawl st.no 1–101



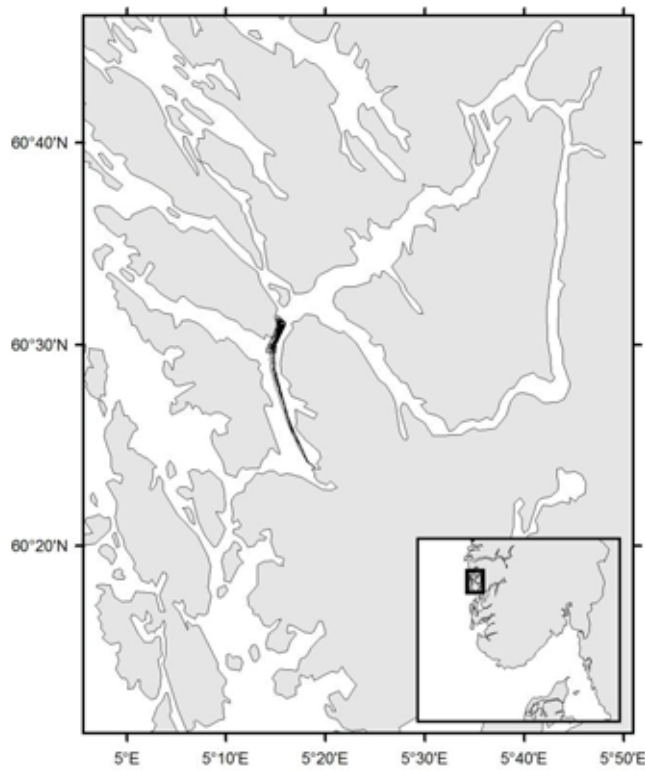
Cruise no 2013603
 "Håkon Mosby"
 1–4 February 2013

z CTD st.no 119–208

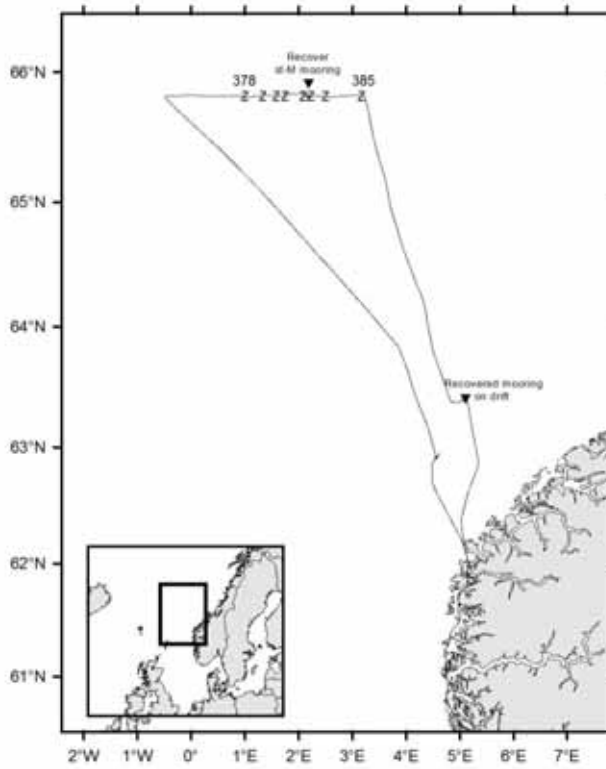
▼ Two current meter deployed



Cruise no 2013604
 "Håkon Mosby"
 9–13 February 2013
 z CTD st.no 209–377
 ▼ Two current meter recovered

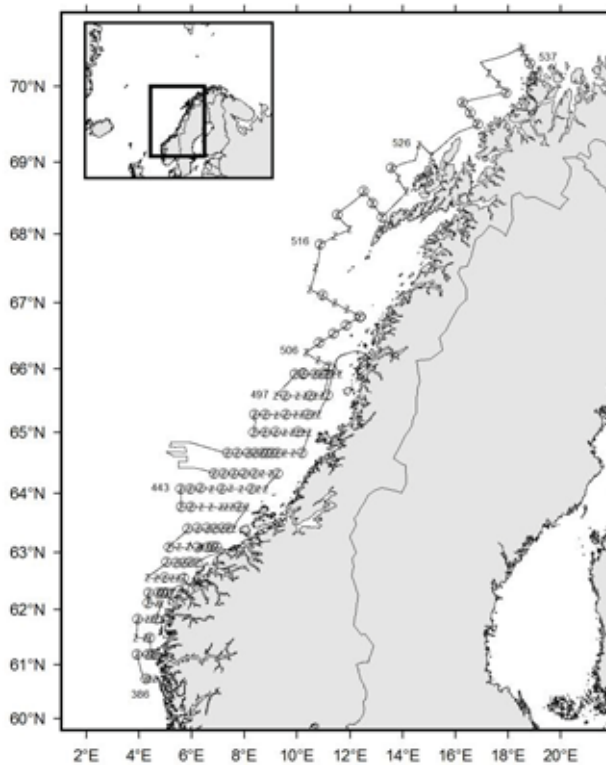


Cruise no 2013605
 "Håkon Mosby"
 14–17 February 2013
 — Cruise track



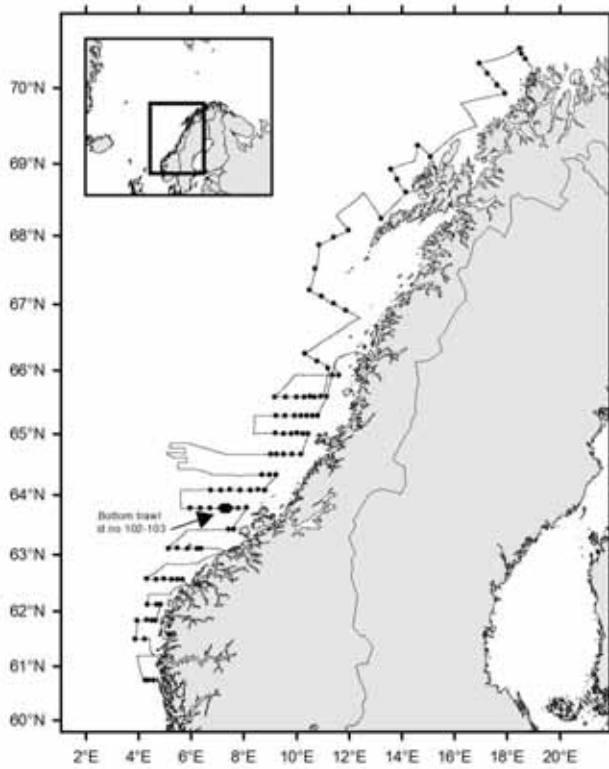
Cruise no 2013606
 "Håkon Mosby"
 14–18 March 2013

z CTD st.no 378–385
 ▼ Recover st.M mooring and NACO
 mooring on drift



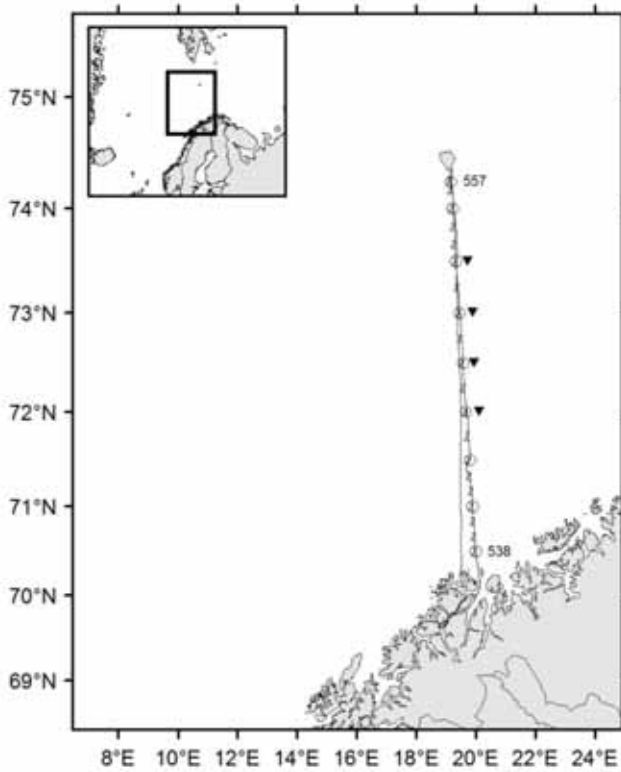
Cruise no 2013607
 "Håkon Mosby"
 2–18 April 2013

z CTD st.no 386–537
 ○ Plankton st. (WP-II-net)



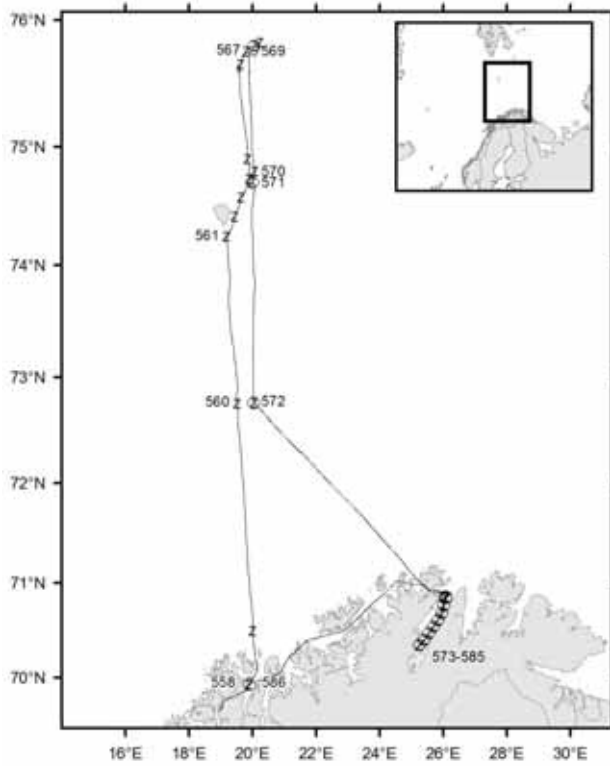
Cruise no 2013607
 "Håkon Mosby"
 2–18 April 2013

- Gulf III stations
- Bottom trawl st. 102–103



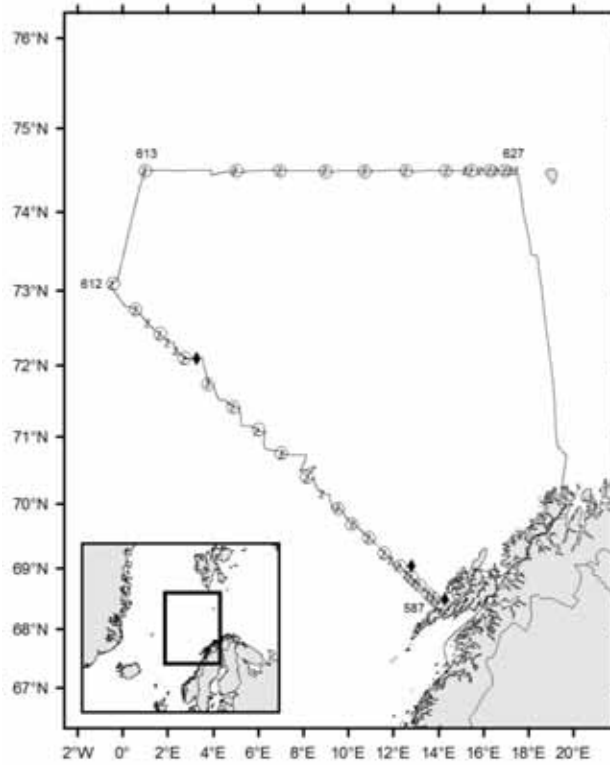
Cruise no 2013608
 "Håkon Mosby"
 25–28 April 2013

- Standard section Fugløya–Bjørnøya:
 z CTD st.no 538–557
- Plankton st. (WP-II-net)
 - ▼ Recovery and redeployment of mooring



Cruise no 2013609
 "Håkon Mosby"
 30 April–8 May 2013

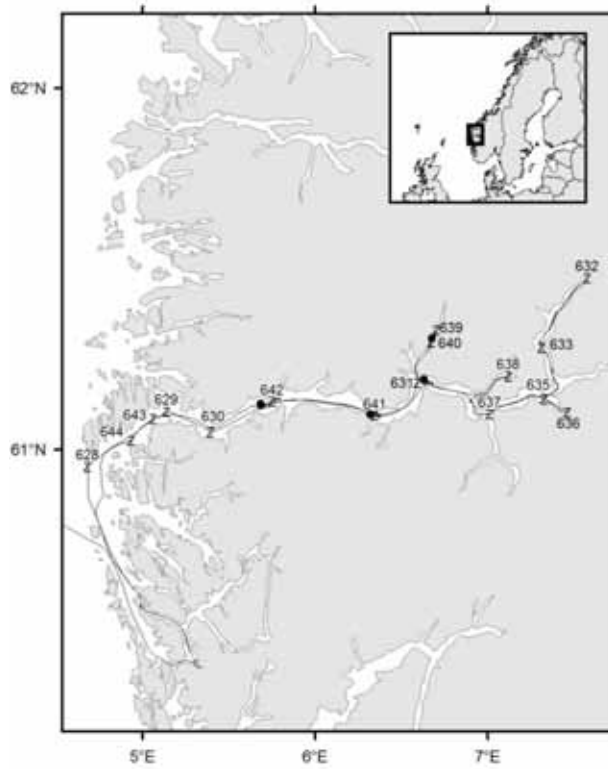
z CTD st.no 558–586
 o Plankton st.



Cruise no 2013610
 "Håkon Mosby"
 10–20 May 2013

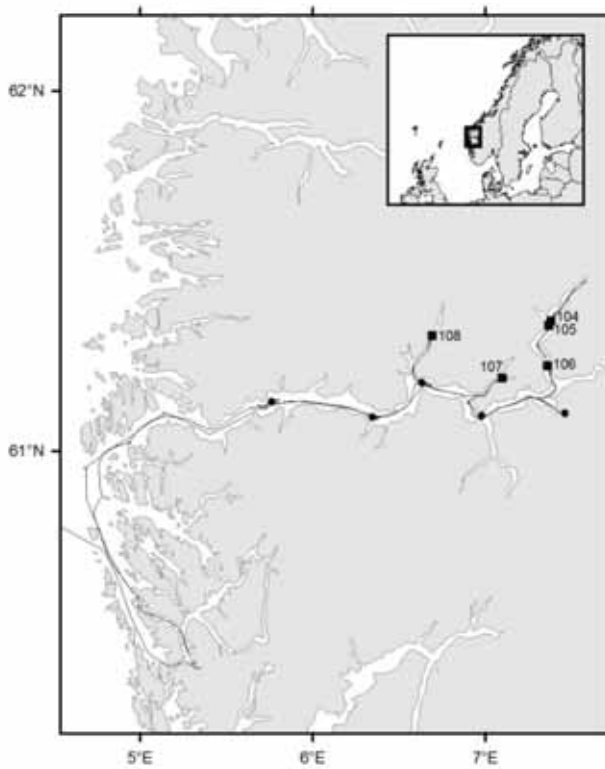
z CTD st.no 587–627
 o Plankton st. (WP-II-net)
 ♦ Plankton st. (Mocness)

Standard section Gimsøy NW st.no 587–612
 Bjørnøya W st.no 613–627



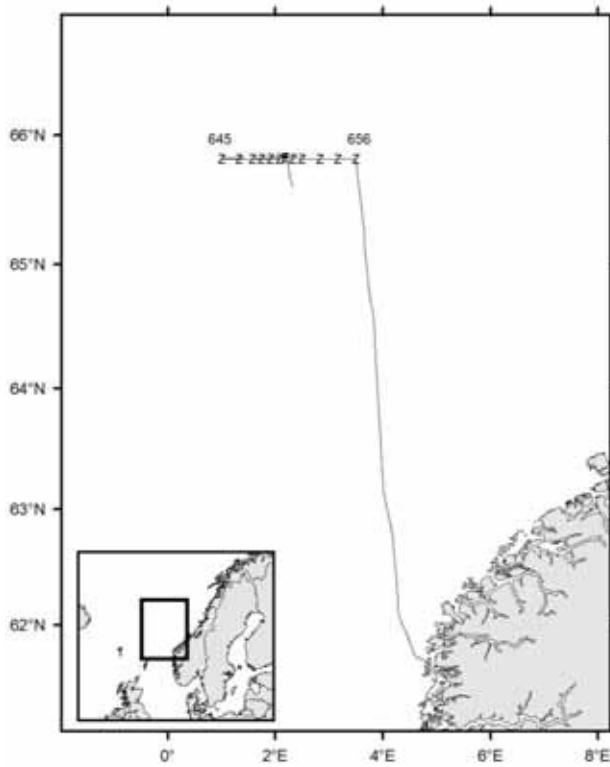
Cruise no 2013611
 "Håkon Mosby"
 25–28 May 2013

z CTD st.no 628–644
 ● Mik st.

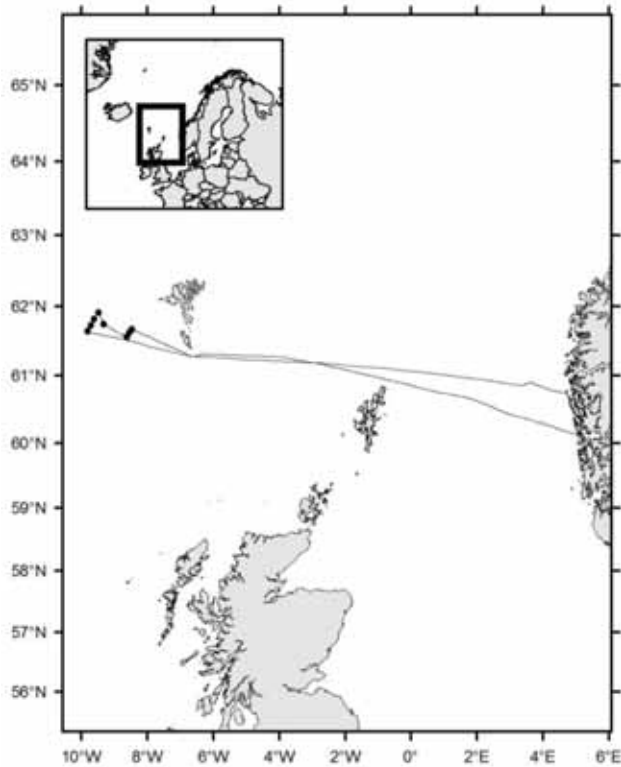


Cruise no 2013611
 "Håkon Mosby"
 25–28 May 2013

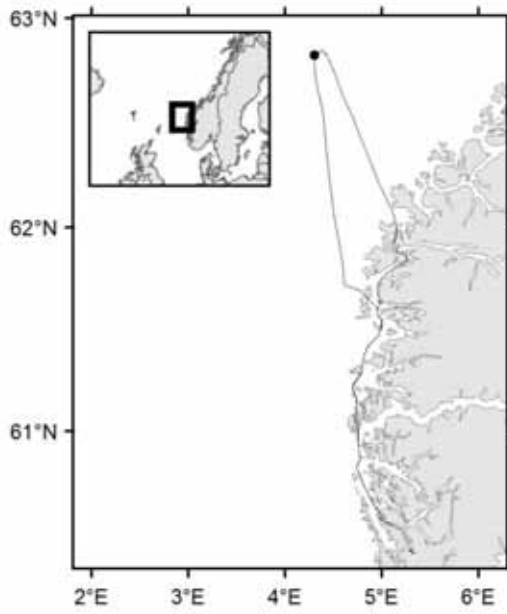
■ Bottom trawl st.no 104–108
 ● Agassis trawl



Cruise no 2013612
 "Håkon Mosby"
 29 May–2 June 2013
 z CTD st.no 645–656

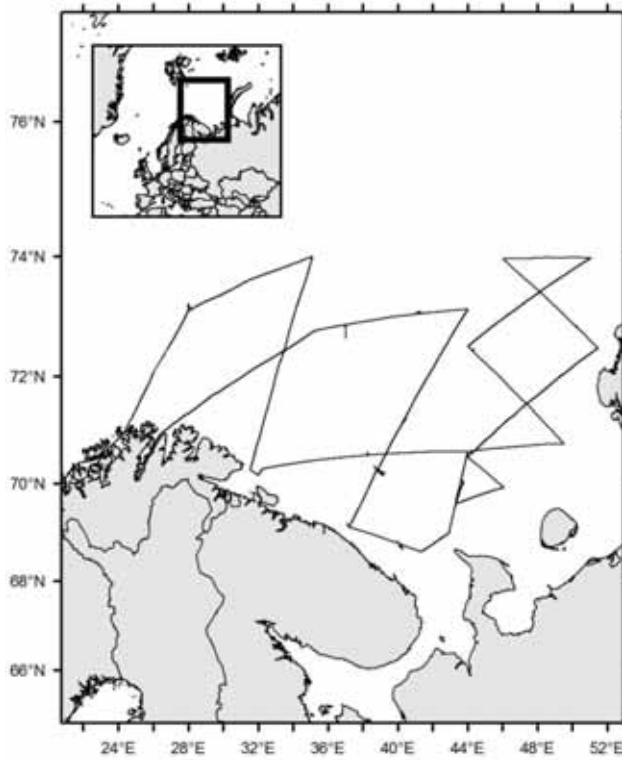


Cruise no 2013613
 "Håkon Mosby"
 3–7 June 2013
 ● Moorings recovered



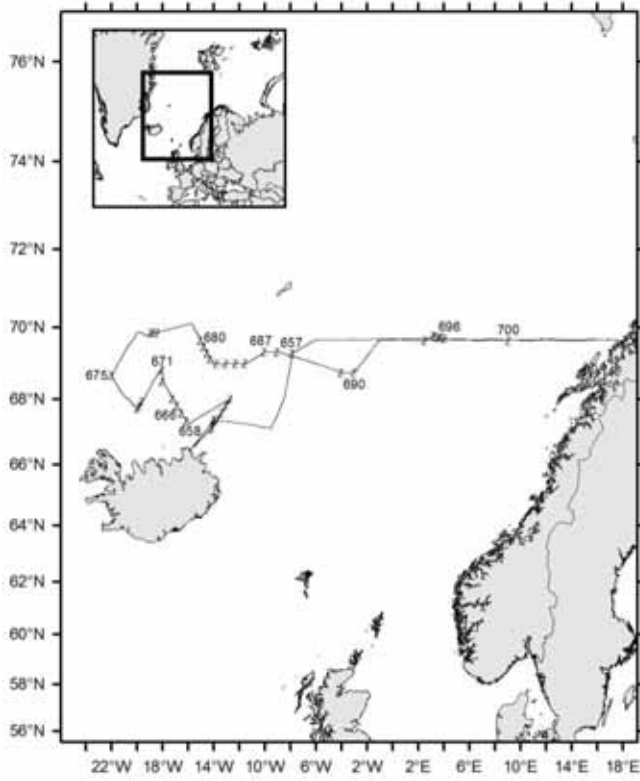
Cruise no 2013614
 "Håkon Mosby"
 8–10 June 2013

● Re-deployment of the Wavescan
 NACO-Buoy for real time monitoring.



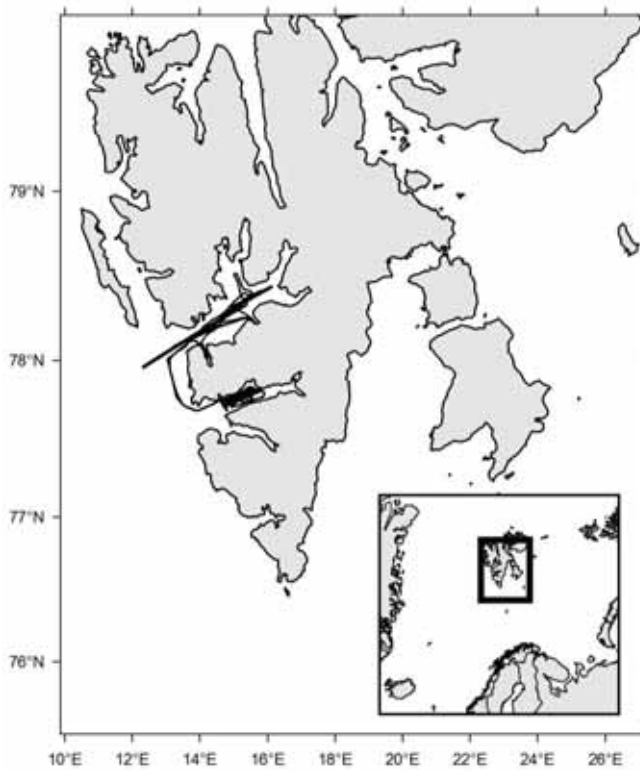
Cruise no 2013615
 "Håkon Mosby"
 25 June–15 July 2013

Collect sightings information for
 estimating abundance of whales.



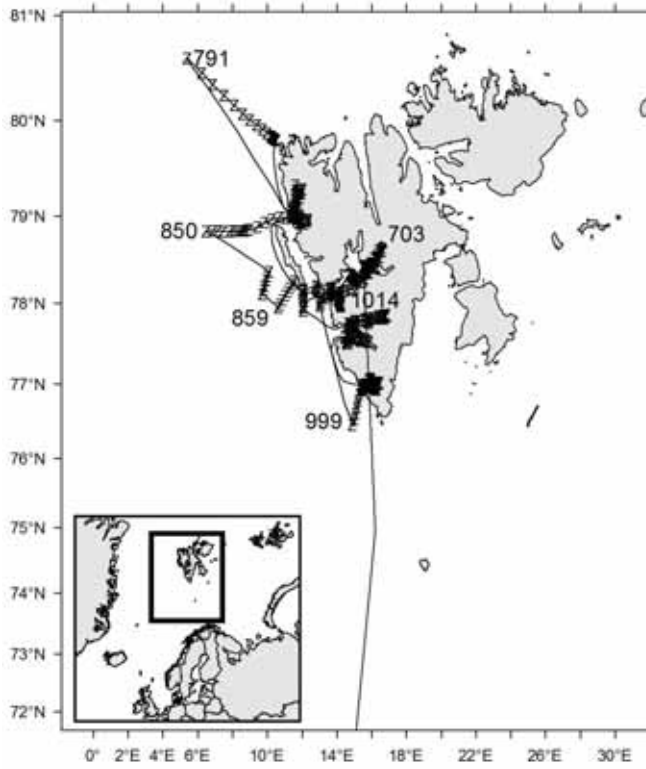
Cruise no 2013616
 "Håkon Mosby"
 18–31 July 2013

z CTD st.no 657–700

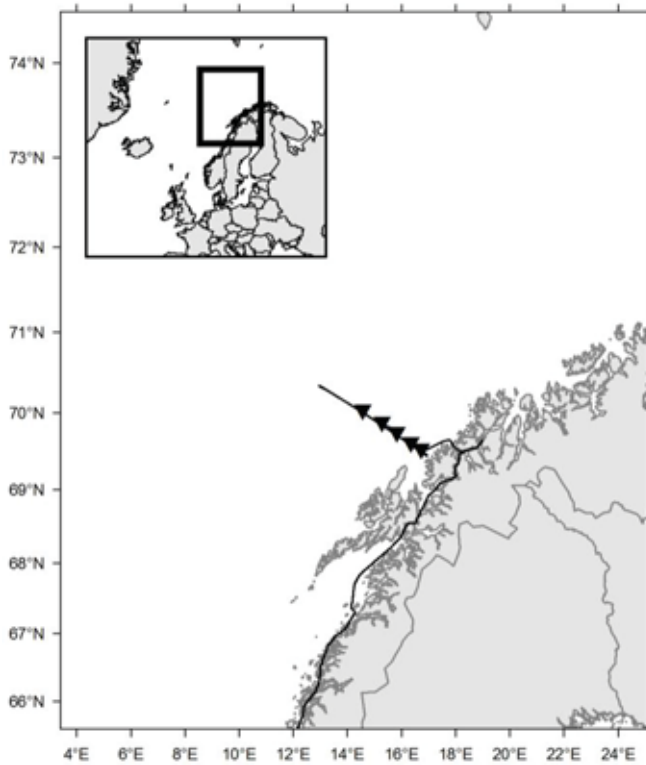


Cruise no 2013618
 "Håkon Mosby"
 14–25 August 2013

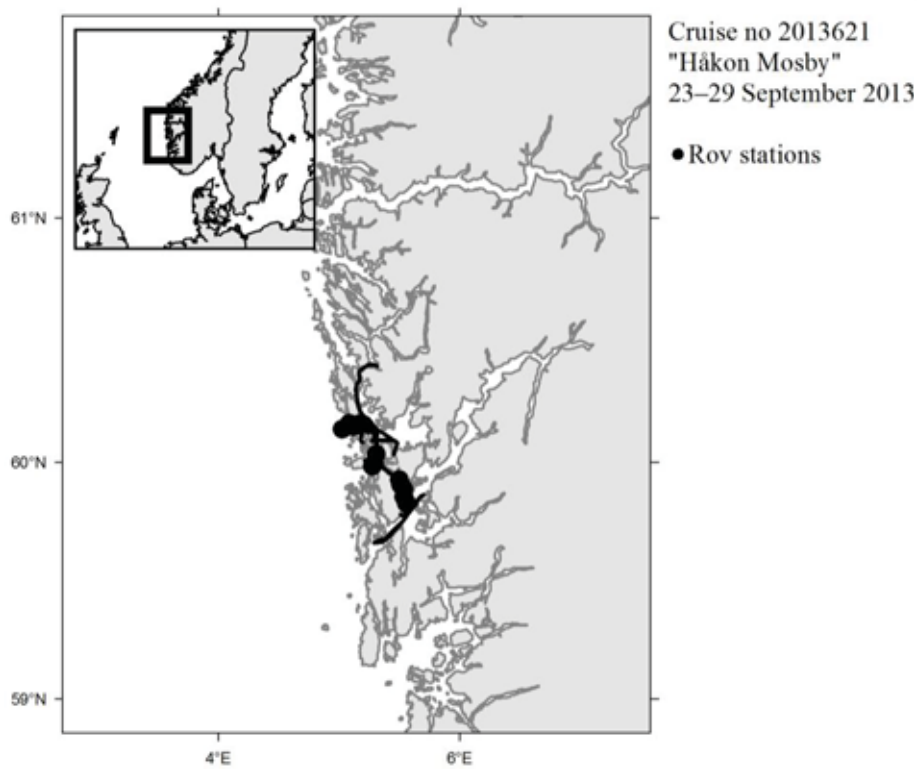
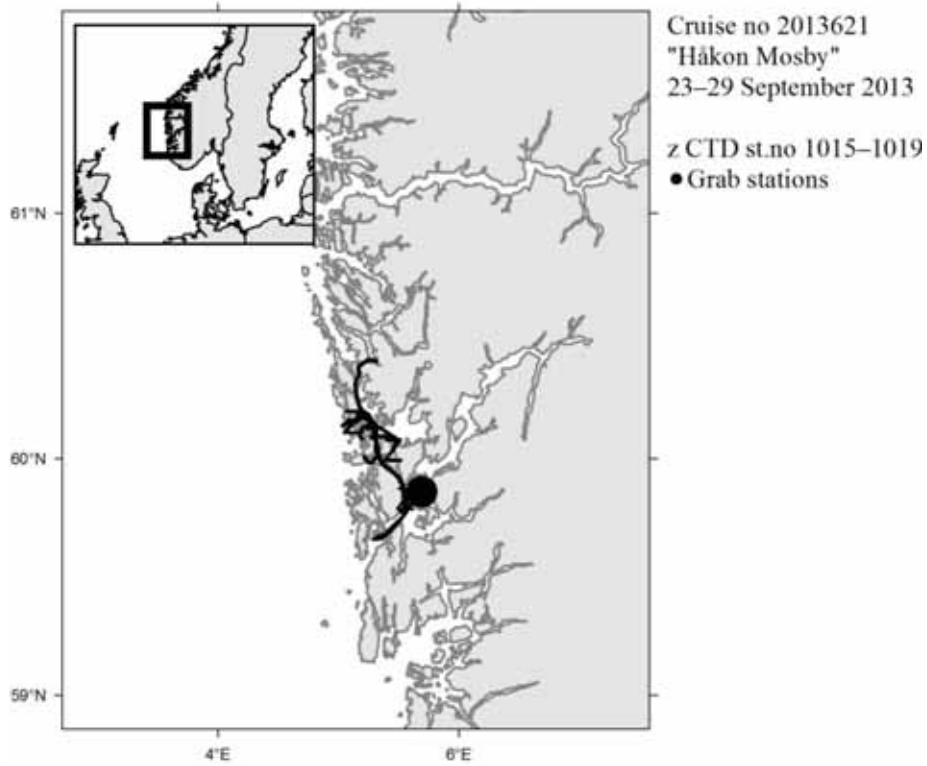
—Track line

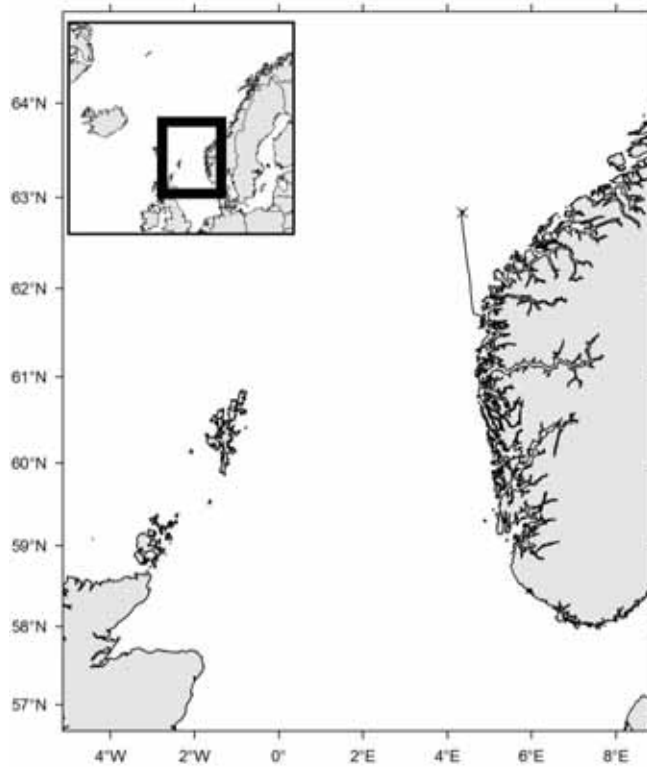


Cruise no 2013619
 "Håkon Mosby"
 27 August–7 September 2013
 z CTD st.no 703–1014

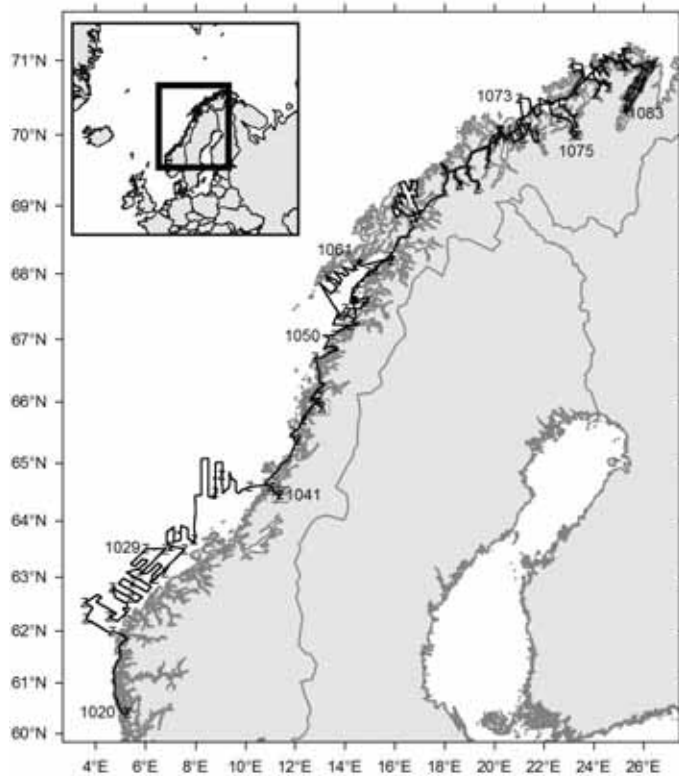


Cruise no 2013620
 "Håkon Mosby"
 14–19 September 2013
 ▼ OBS, deployed 14/09,
 retrieved 16/09

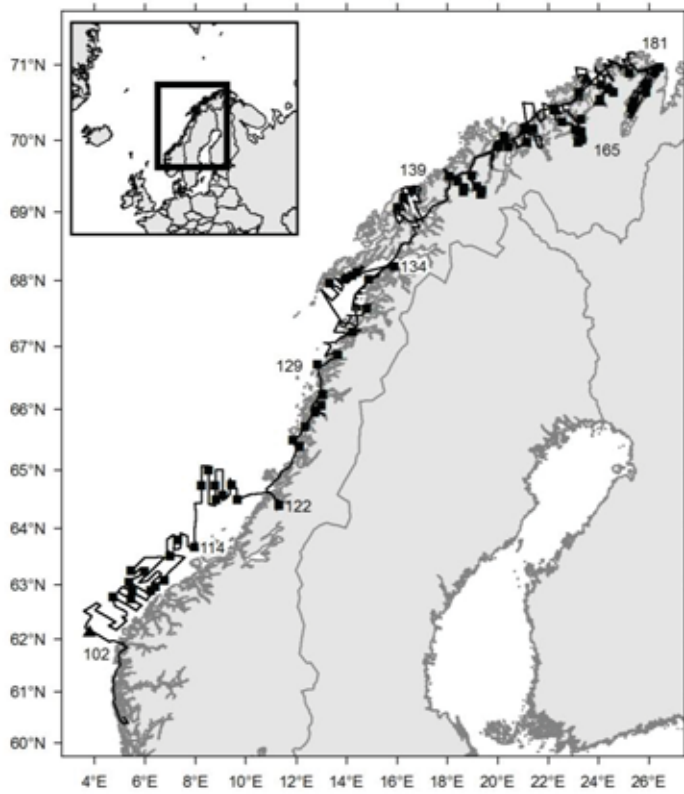




Cruise no 2013622
 "Håkon Mosby"
 1–6 October 2013
 × Recovery/redeployment of
 current meter mooring S1-N

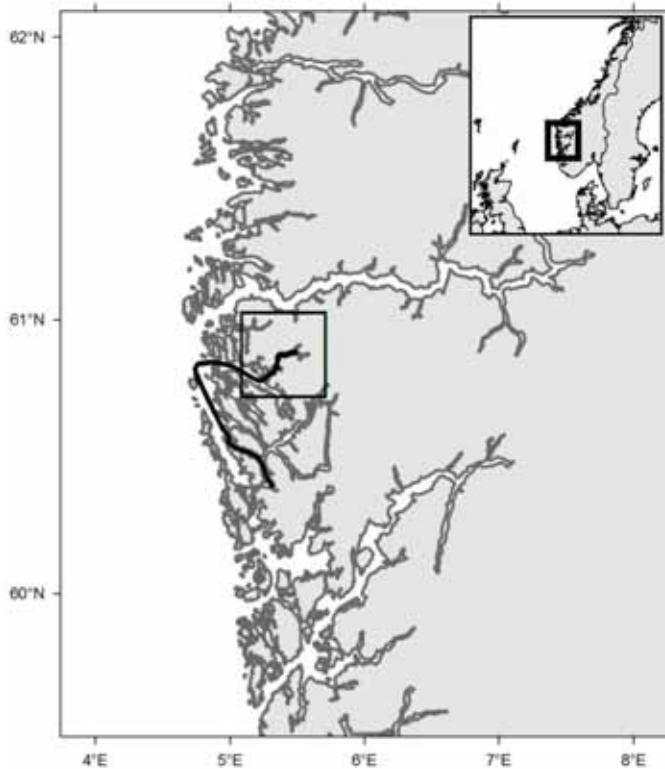


Cruise no 2013623
 "Håkon Mosby"
 10 October–2 November 2013
 z CTD st.no 1020–1083
 □ Box cores



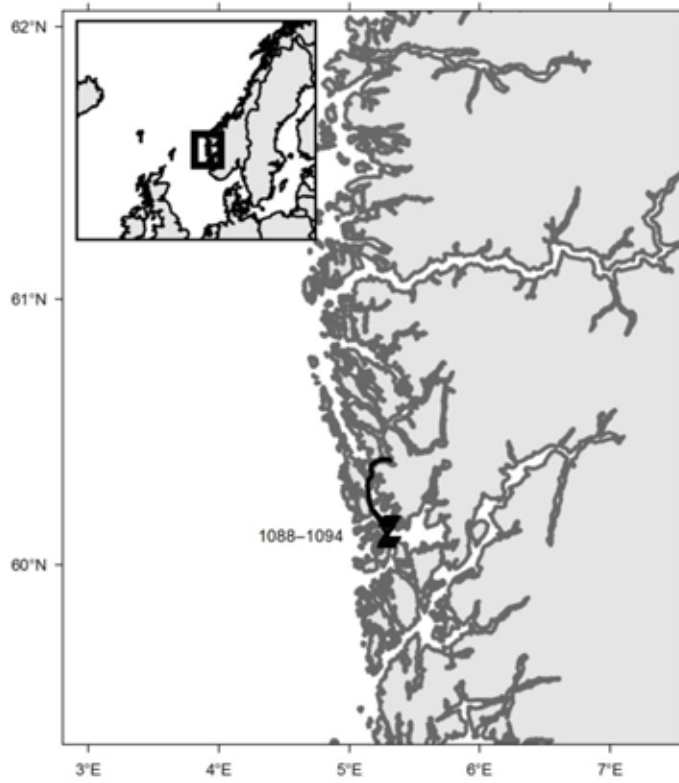
Cruise no 2013623
 "Håkon Mosby"
 10 October–2 November 2013

Trawl st.no 102–181
 ■ Bottom trawl
 ▲ Pelagic trawl

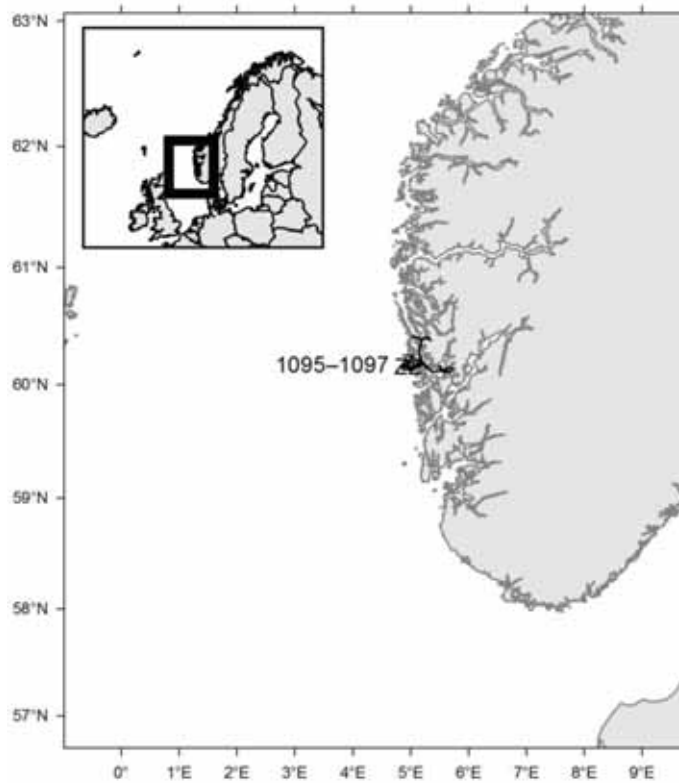


Cruise no 2013624
 "Håkon Mosby"
 9–12 November 2013
 (The last part was carried out by
 "G.O.Sars", cruise no 2013116)

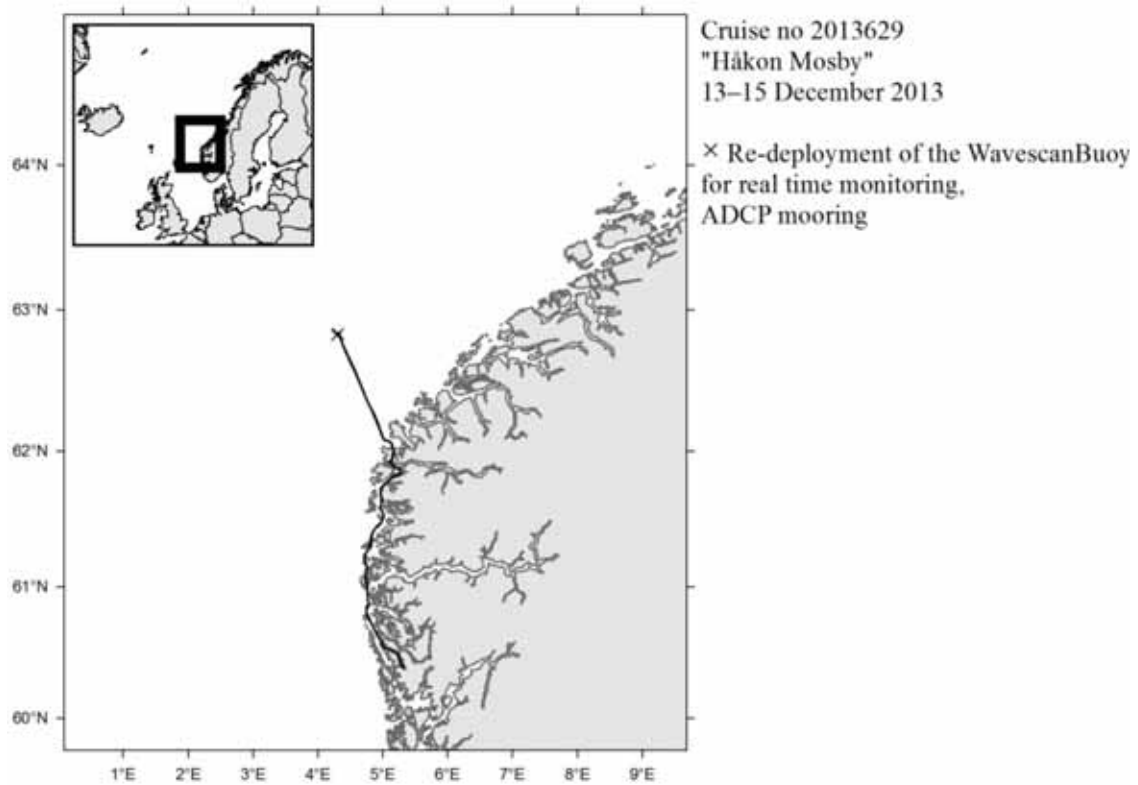
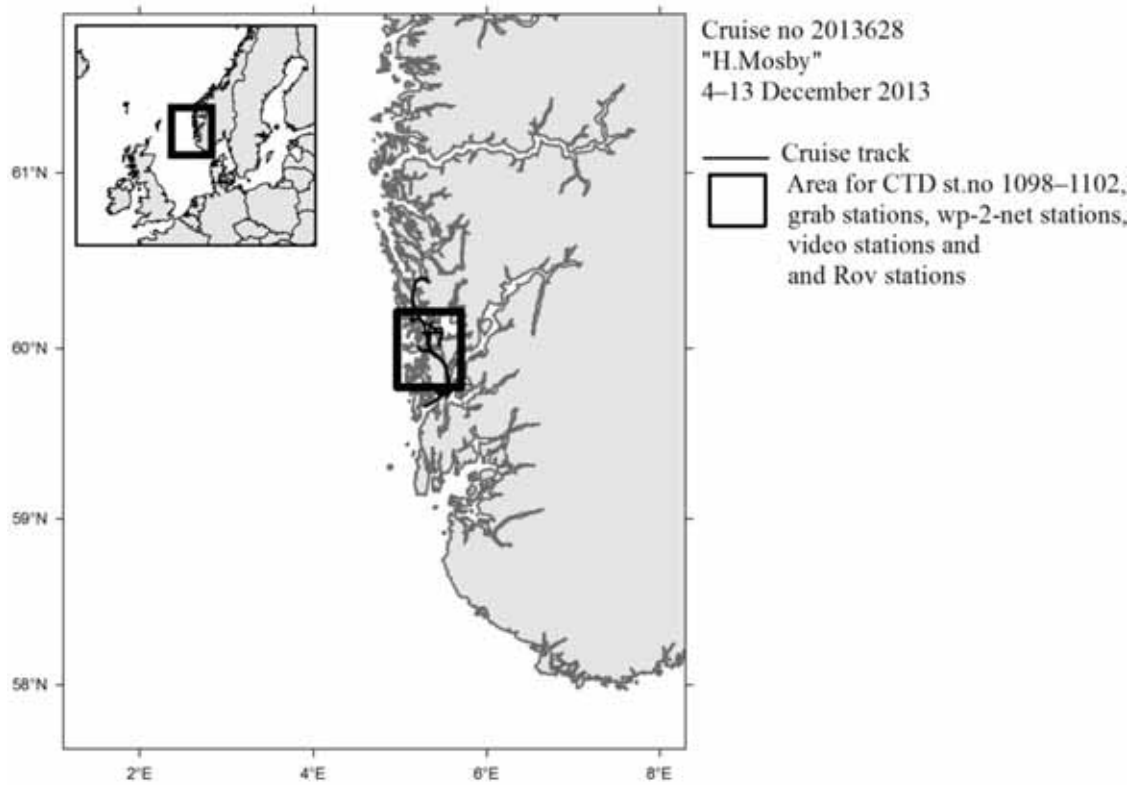
□ Area for
 CTD st.no 1084–1087
 Pelagic trawl st. 182–187, 189–197, 199–213
 Bottom trawl st. 188 and 198
 10 multinet st.



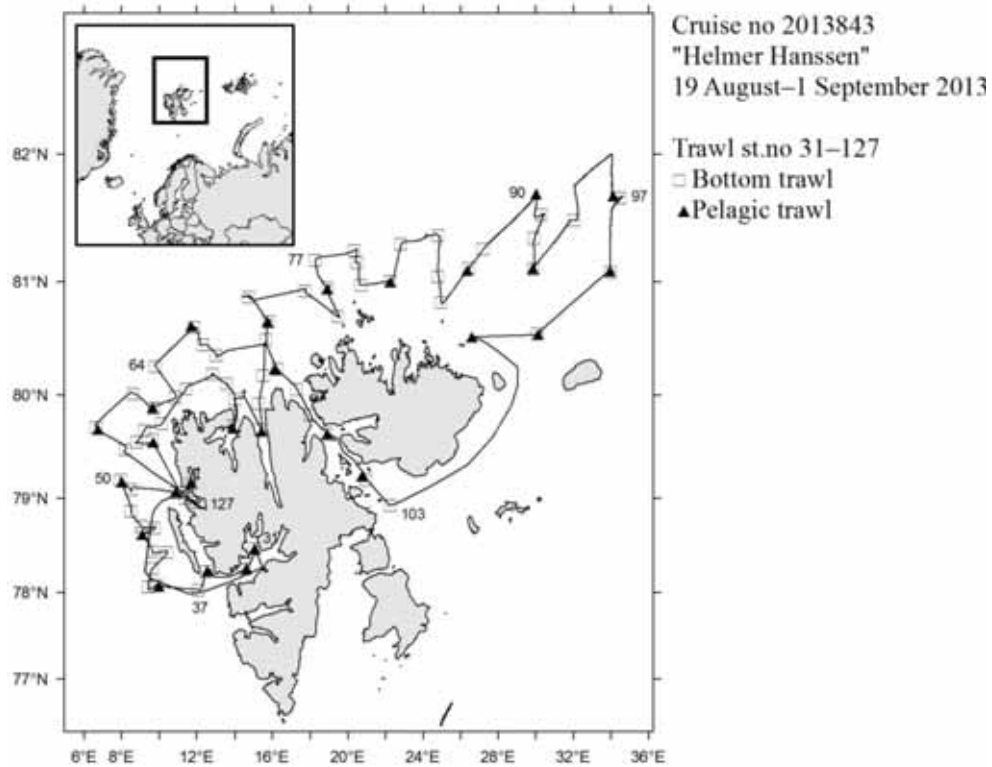
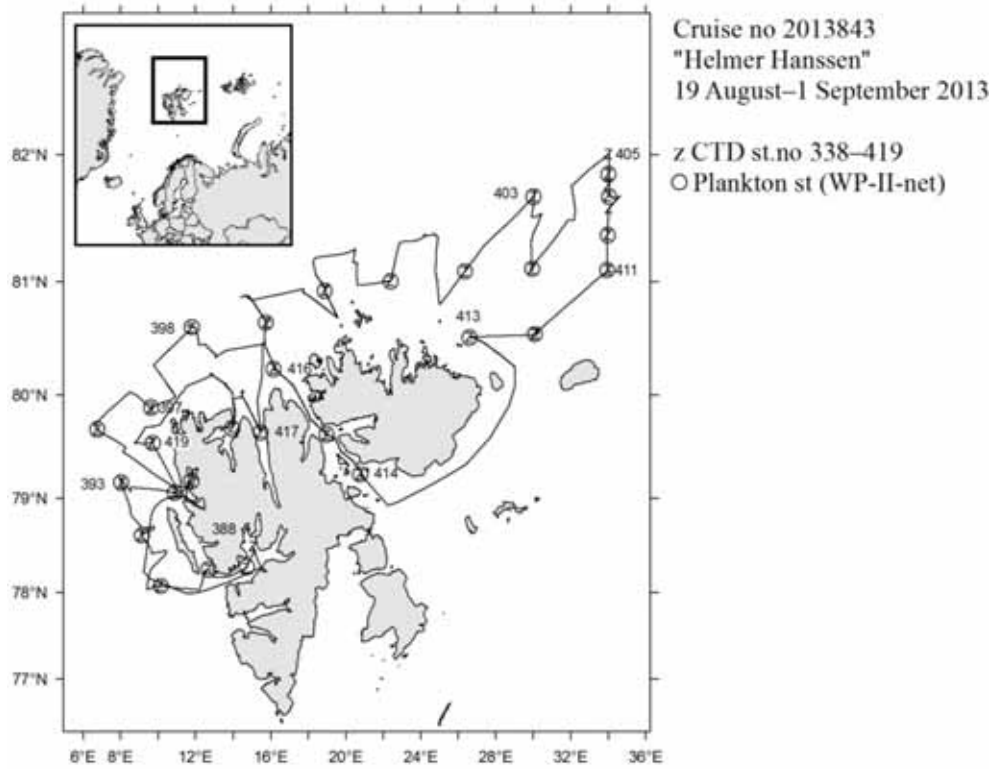
Cruise no 2013626
"Håkon Mosby"
19 November 2013
z CTD st.no 1088-1094



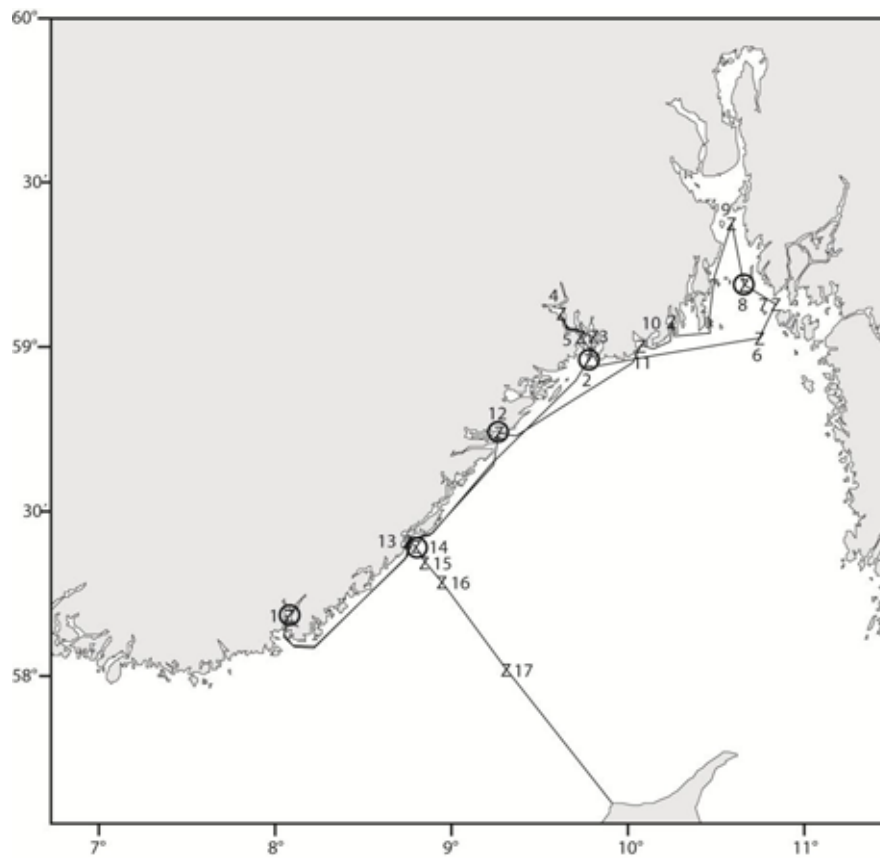
Cruise no 2013627
"Håkon Mosby"
22-29 November 2013
z CTD st.no 1095-1097



4.4 Helmer Hanssen

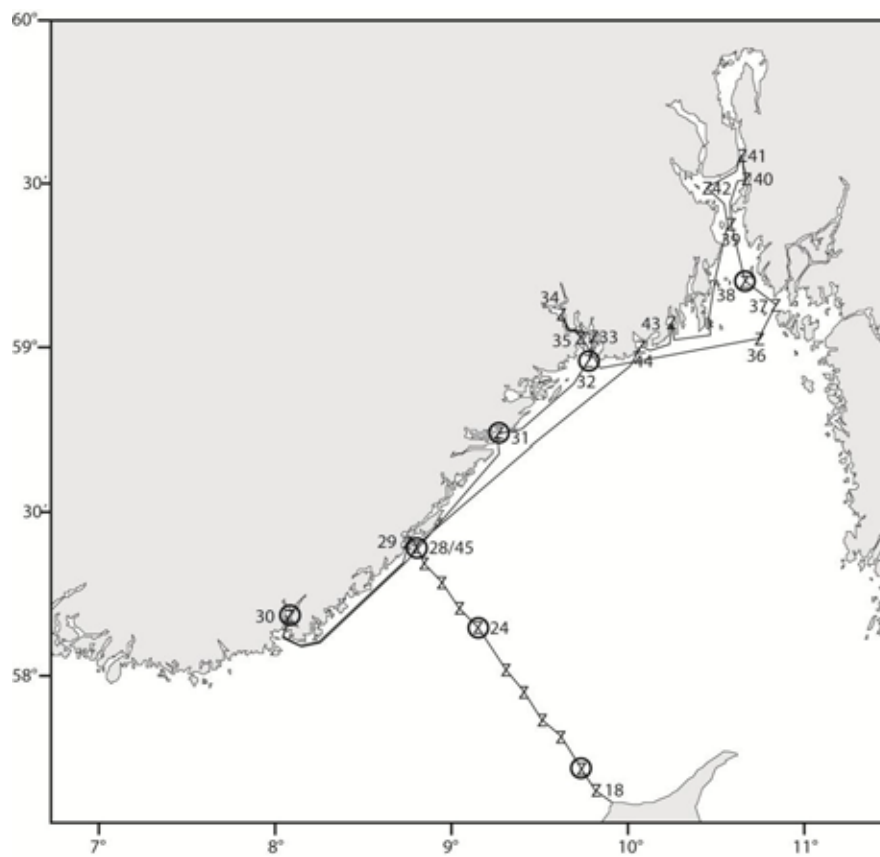


4.5 G.M. Dannevig



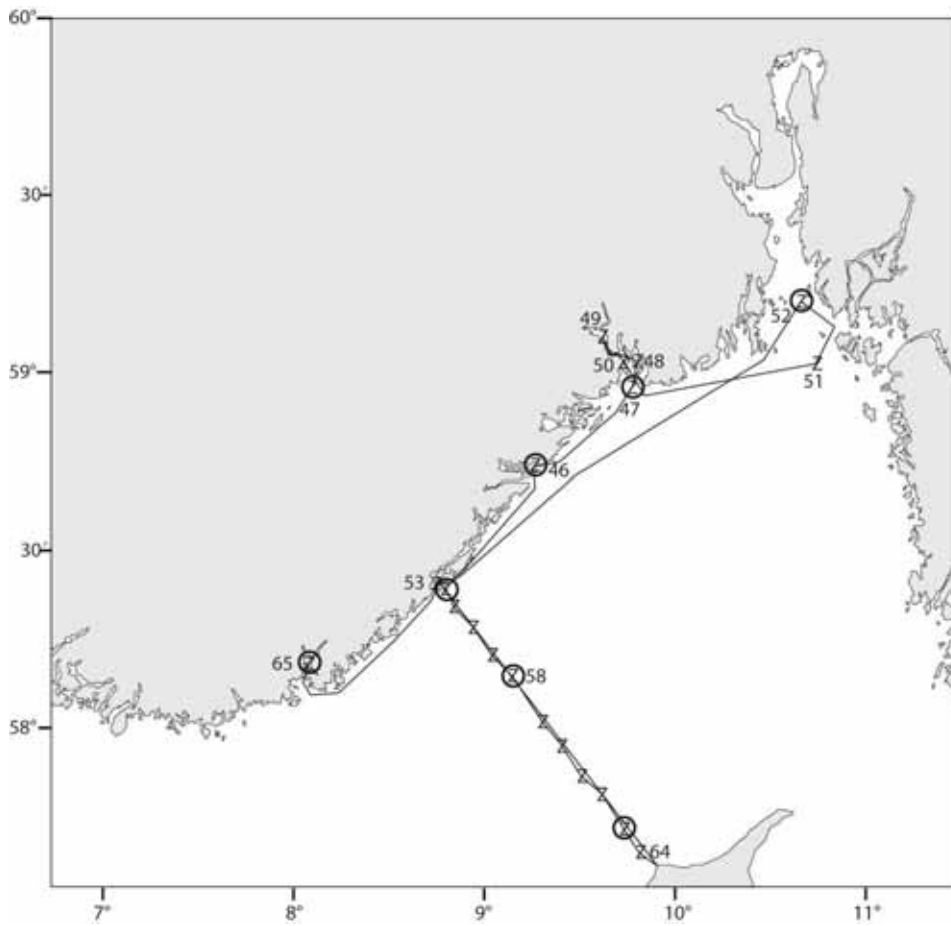
Cruise no 2013301
"G.M.Dannevig"
25 - 31 January 2013

z CTD st.no 1- 17
O Plankton st. (WP-II-net)



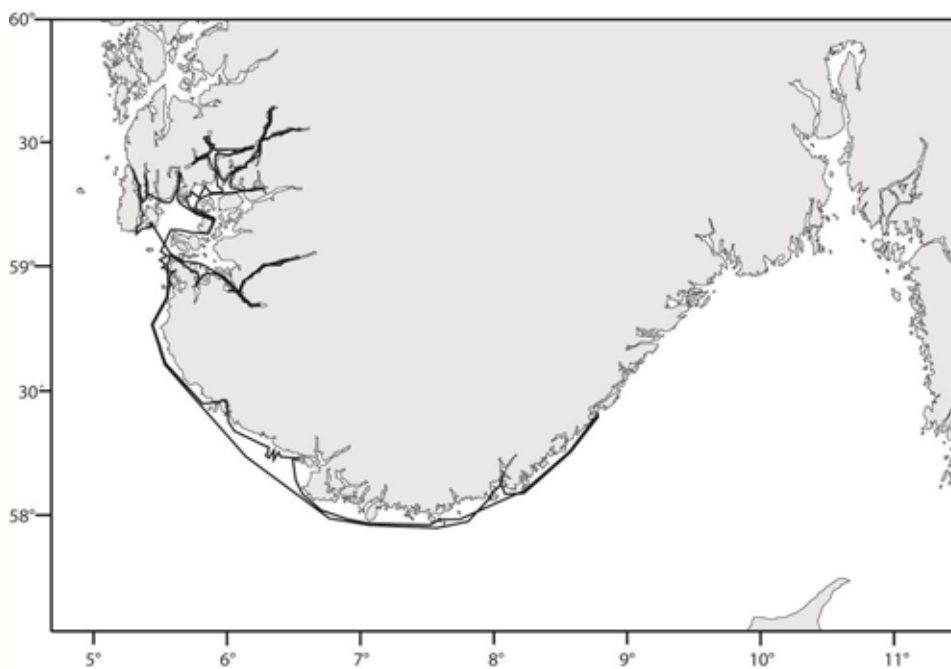
Cruise no 2013302
"G.M.Dannevig"
8 - 14 February 2013

z CTD st.no 18- 45
O Plankton st. (WP-II-net)

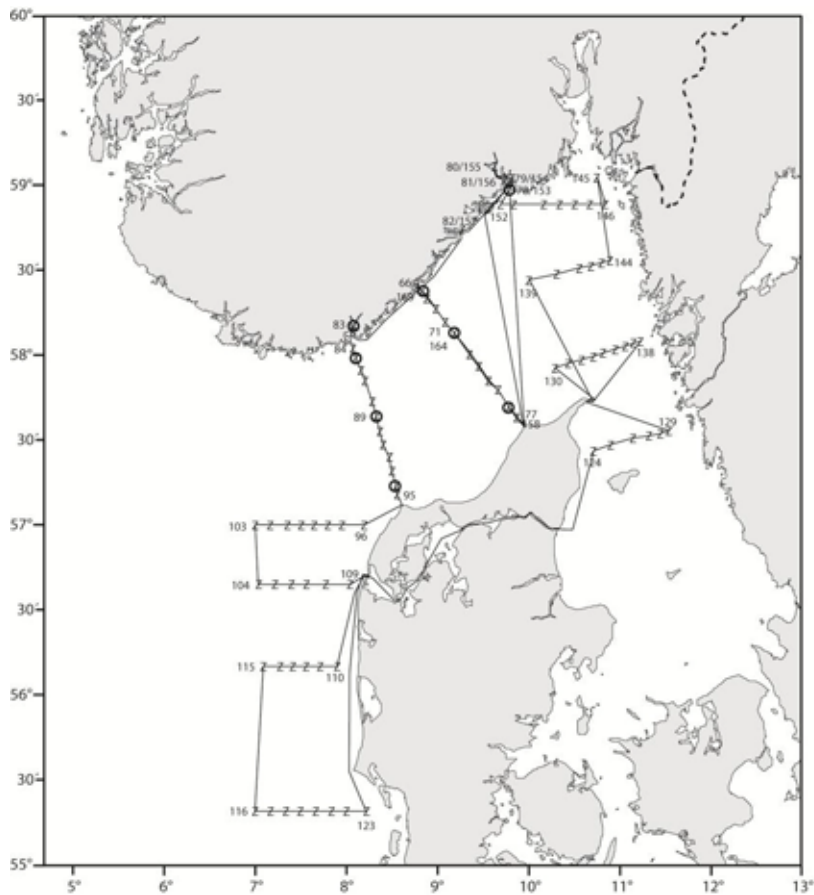


Cruise no 2013303
 "G.M.Dannevig"
 10 - 15 Mars 2013

z CTD st.no 46- 65
 O Plankton st. (WP-II-net)



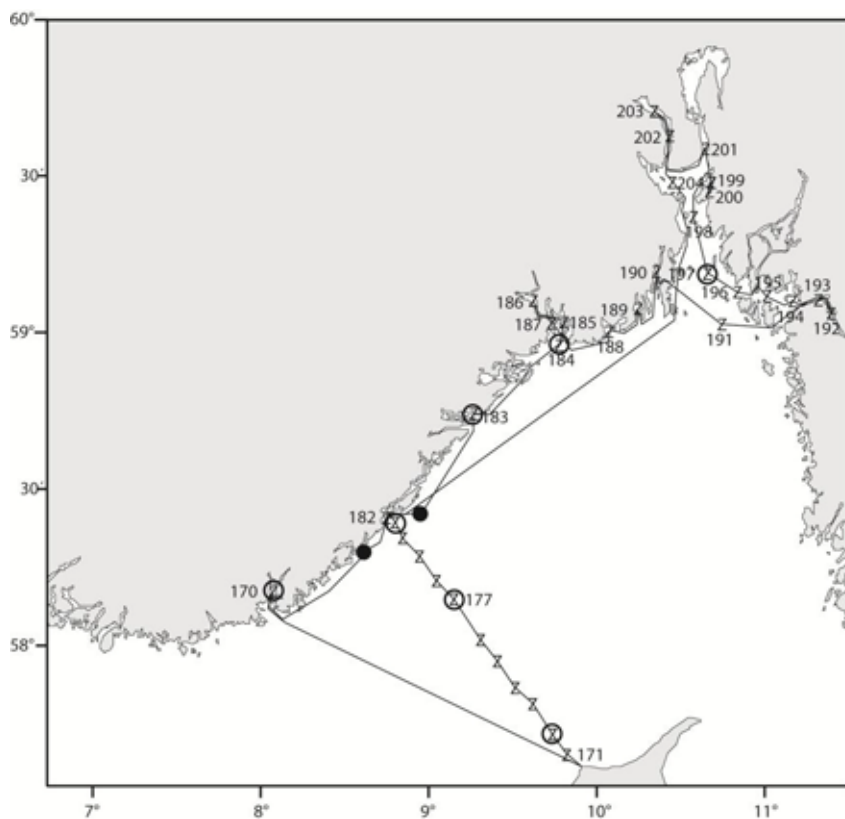
Cruise no 2013304
 "G.M.Dannevig"
 17 - 29 Mars 2013
 Cruiseline



Cruise no 2013305
 "G.M.Dannevig"
 16 April - 5 May 2013

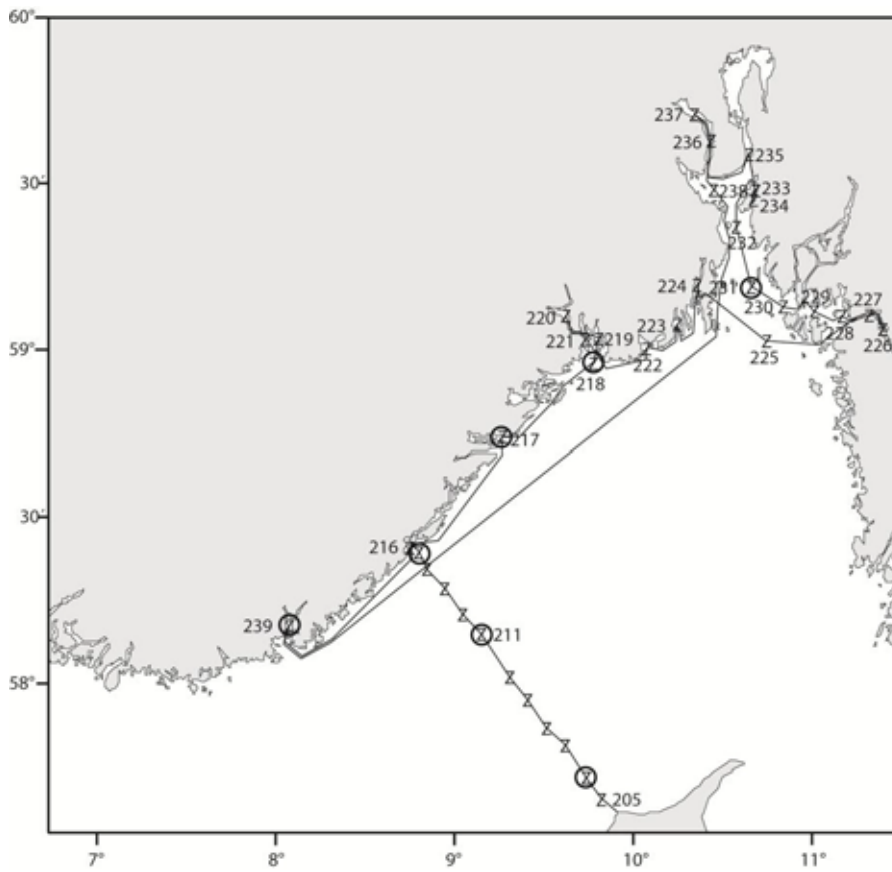
z CTD st.no 66 - 169
 o Plankton st. (WP-II-net)

Standard sections:
 Okso - Hanstholmen st.no 84 - 95
 Torungen - Hirtshals st.no 66 - 77,
 158 - 169
 Jomfruland - Koster st.no 146 - 152
 Torbjørnskjær st.no 145
 Vädero st.no 139 - 144
 Måseskjær st.no 130 - 130
 Goteborg - Fredrikshavn st.no 124 - 129



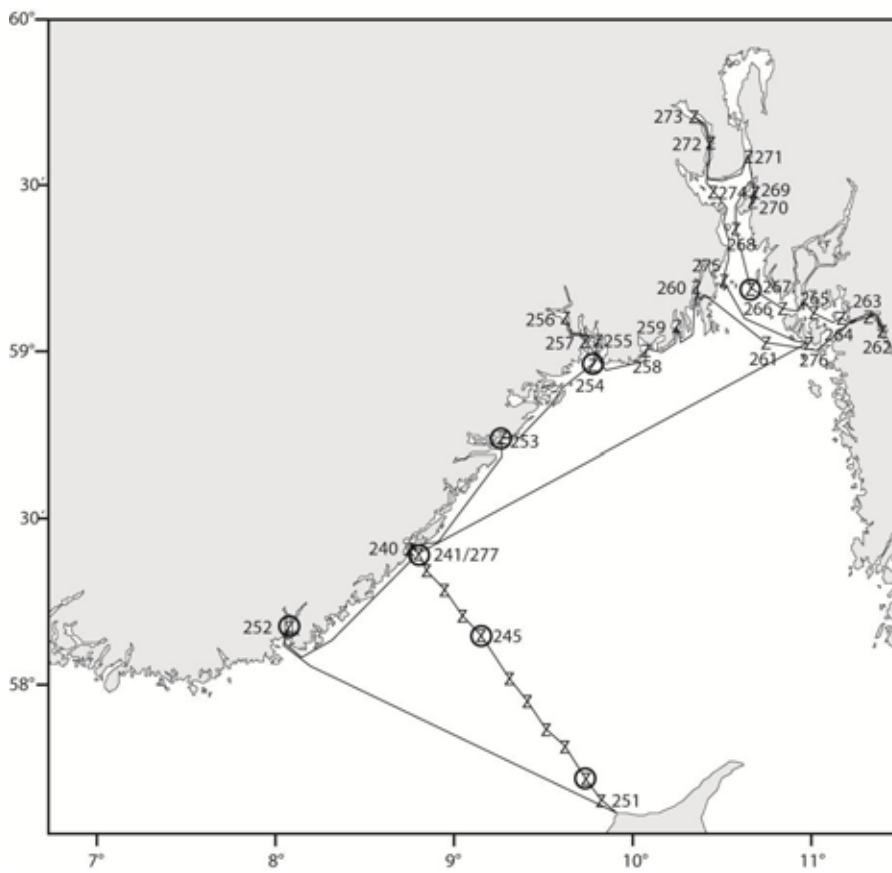
Cruise no 2013306
 "G.M.Dannevig"
 3 - 9 June 2013

z CTD st.no 170 - 204
 o Plankton st. (WP-II-net)
 ● Grab station



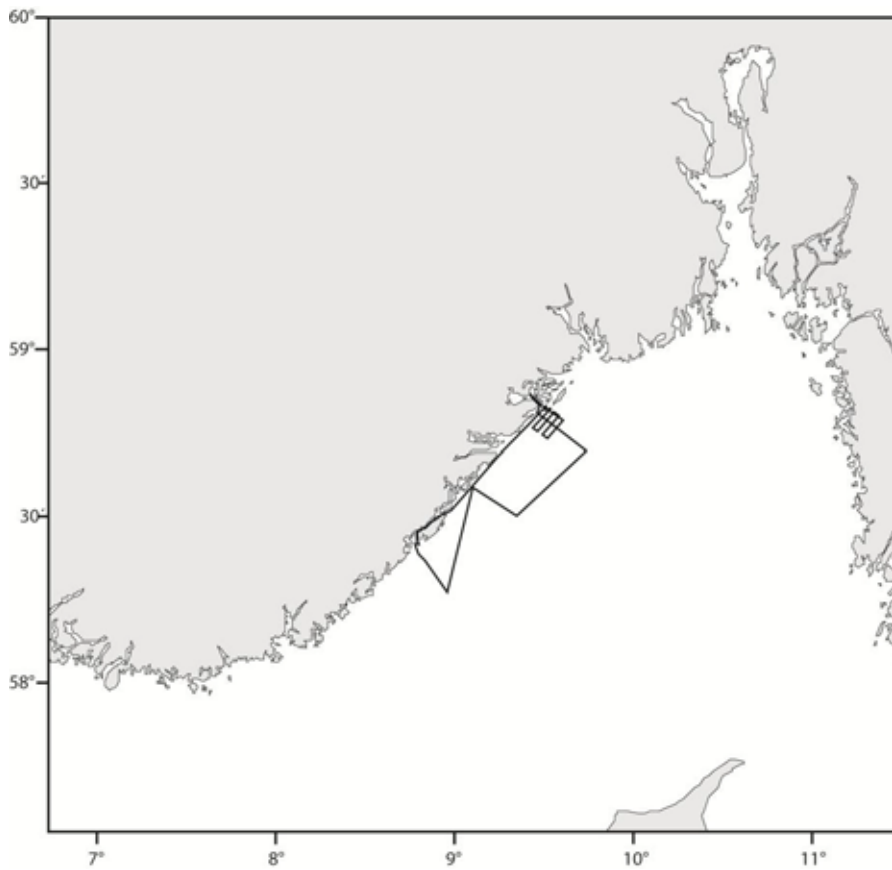
Cruise no 2013307
 "G.M.Dannevig"
 29 June - 6 July 2013

z CTD st.no 205 - 239
 O Plankton st. (WP-II-net)

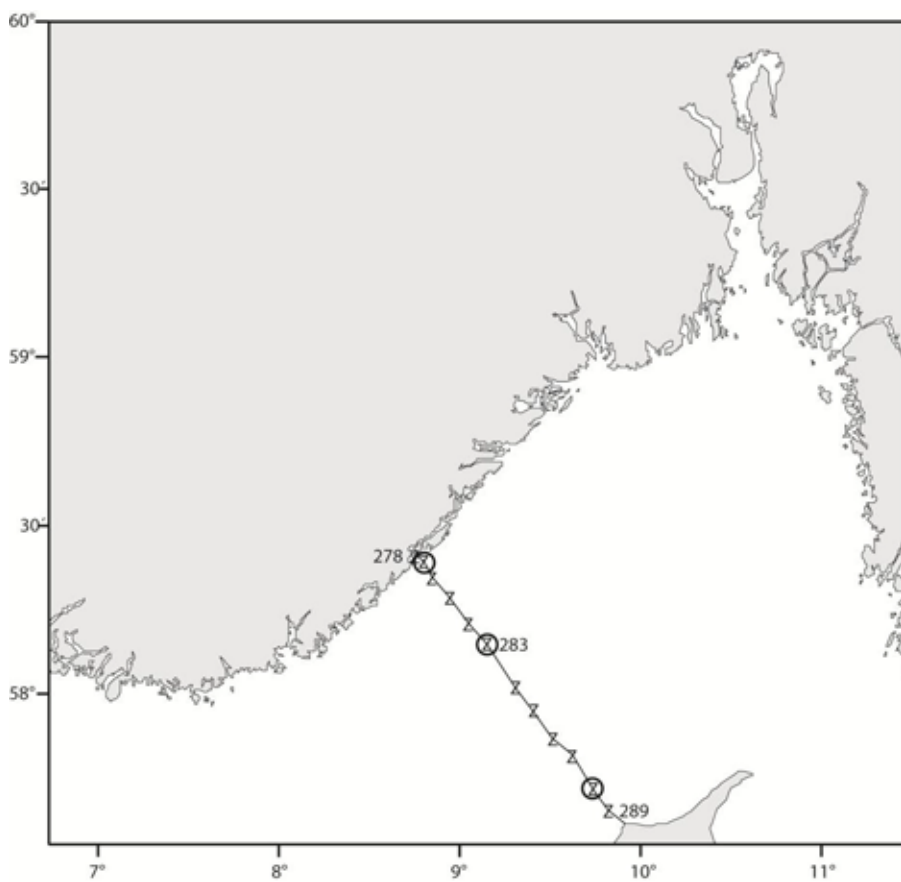


Cruise no 2013308
 "G.M.Dannevig"
 12 - 26 August 2013

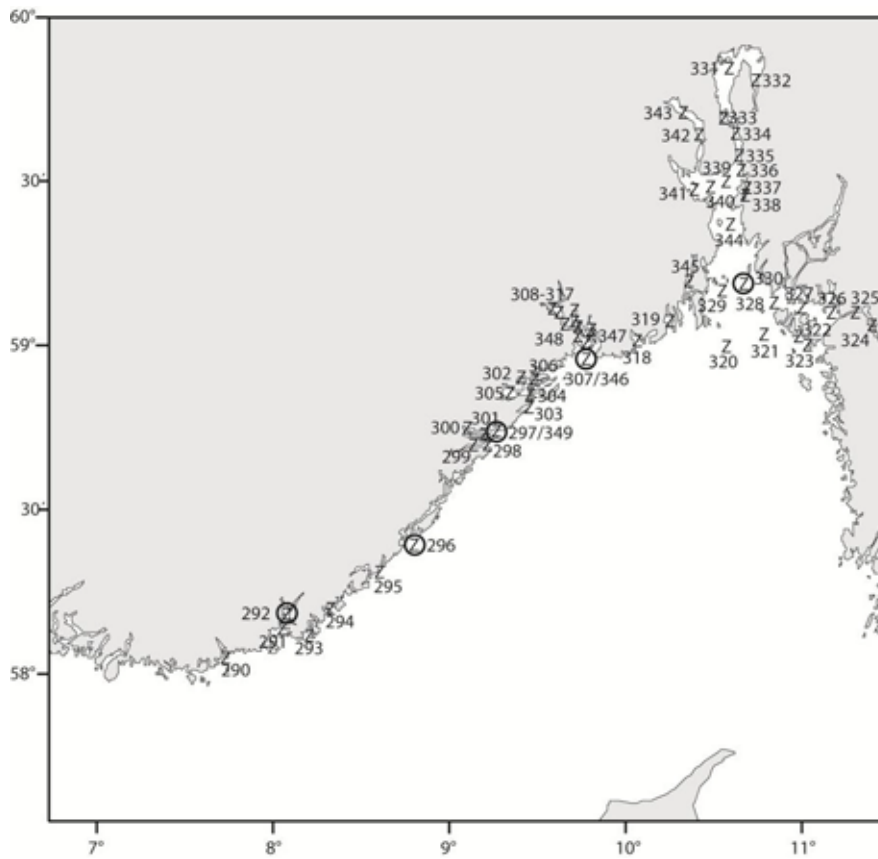
z CTD st.no 240 - 277
 O Plankton st. (WP-II-net)



Cruise no 2013309
 "G.M.Dannevig"
 9 - 11 September 2013
 Cruiseline

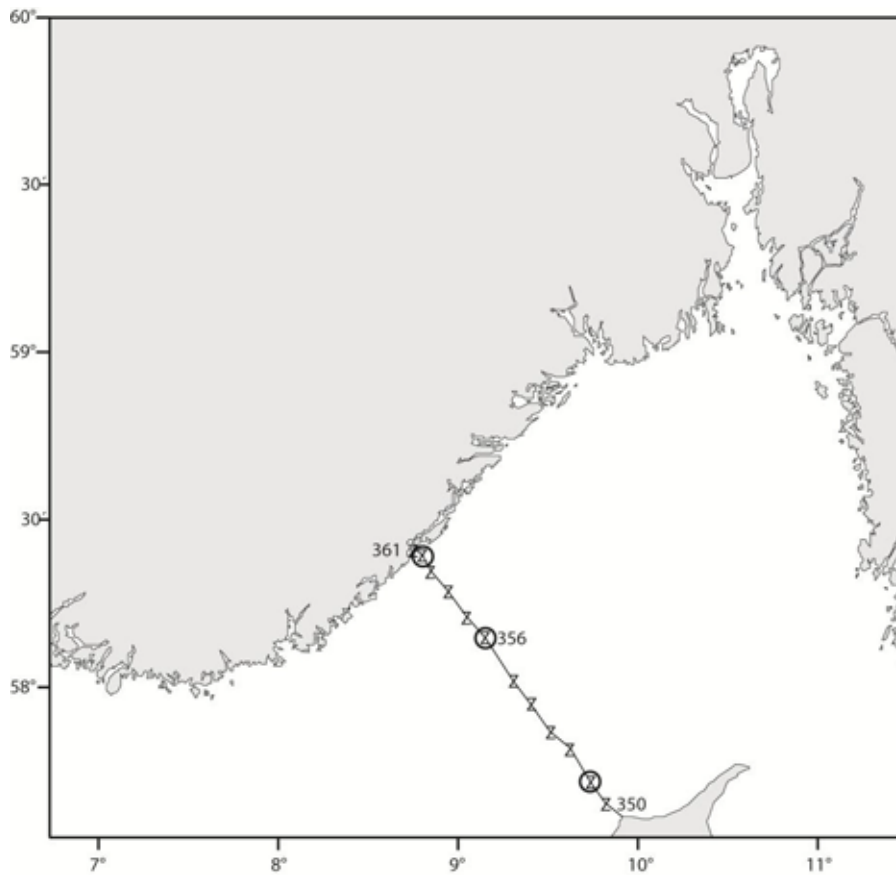


Cruise no 2013310
 "G.M.Dannevig"
 12 - 13 September 2013
 z CTD st.no 278 - 289
 O Plankton st. (WP-II-net)



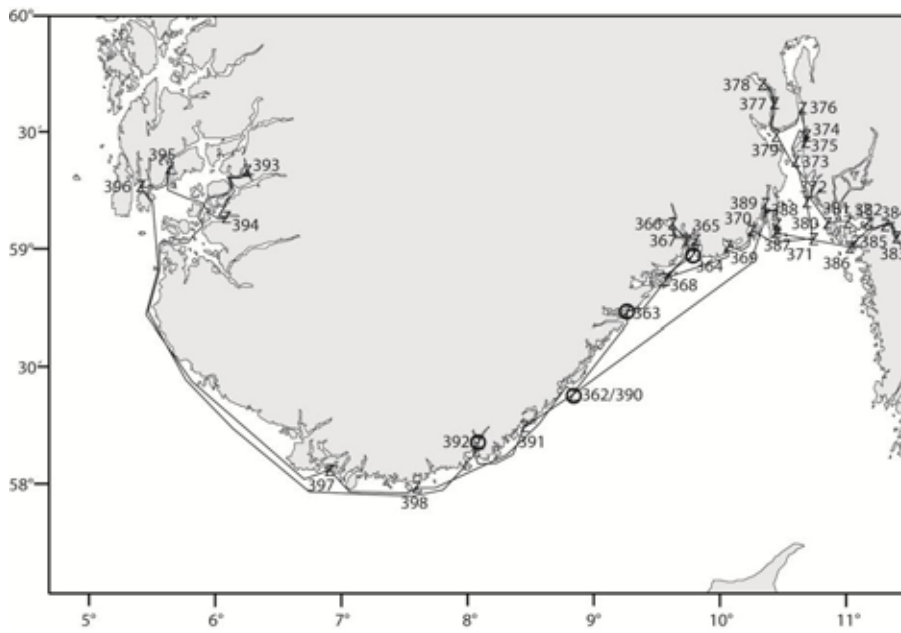
Cruise no 2013311
 "G.M.Dannevig"
 15 Sep - 4 Oct 2013

z CTD st.no 290 - 349
 O Plankton st. (WP-II-net)



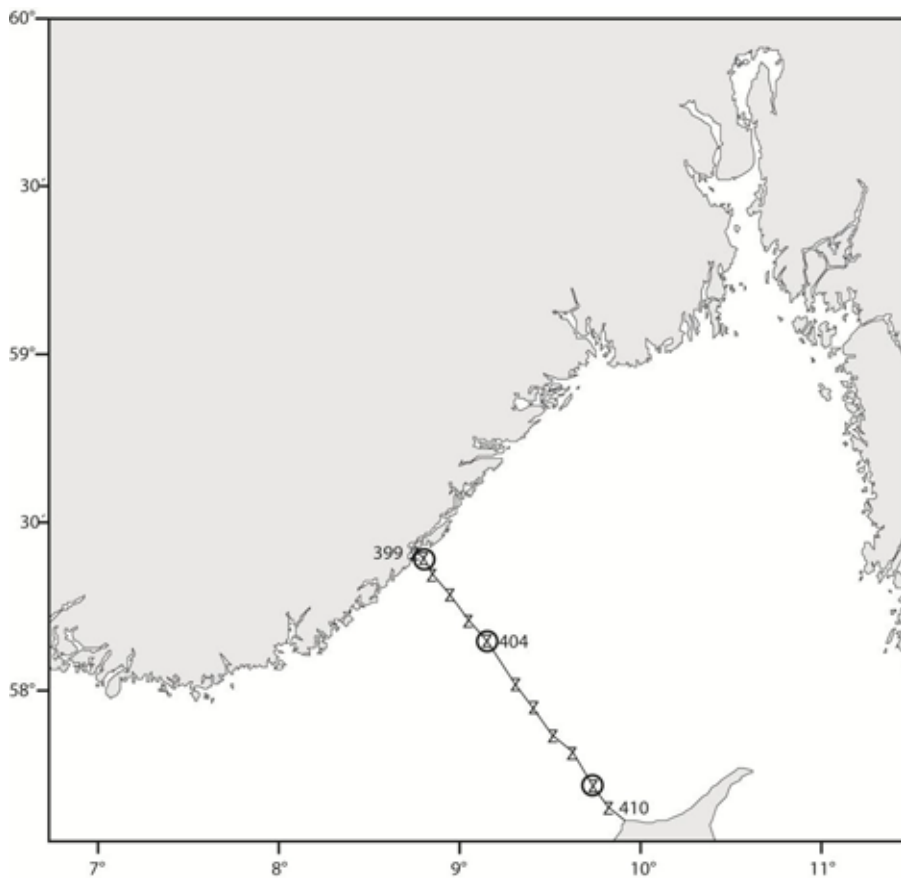
Cruise no 2013312
 "G.M.Dannevig"
 5 - 6 October 2013

z CTD st.no 350 - 361
 O Plankton st. (WP-II-net)



Cruise no 2013314
 "G.M.Dannevig"
 11 Nov - 7 Dec 2013

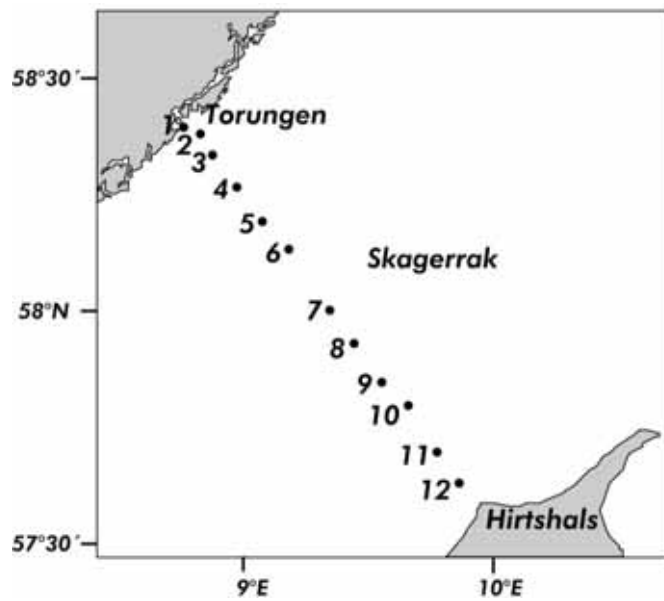
z CTD st.no 362 - 398
 o Plankton st. (WP-II-net)



Cruise no 2013315
 "G.M.Dannevig"
 7 - 10 December 2013

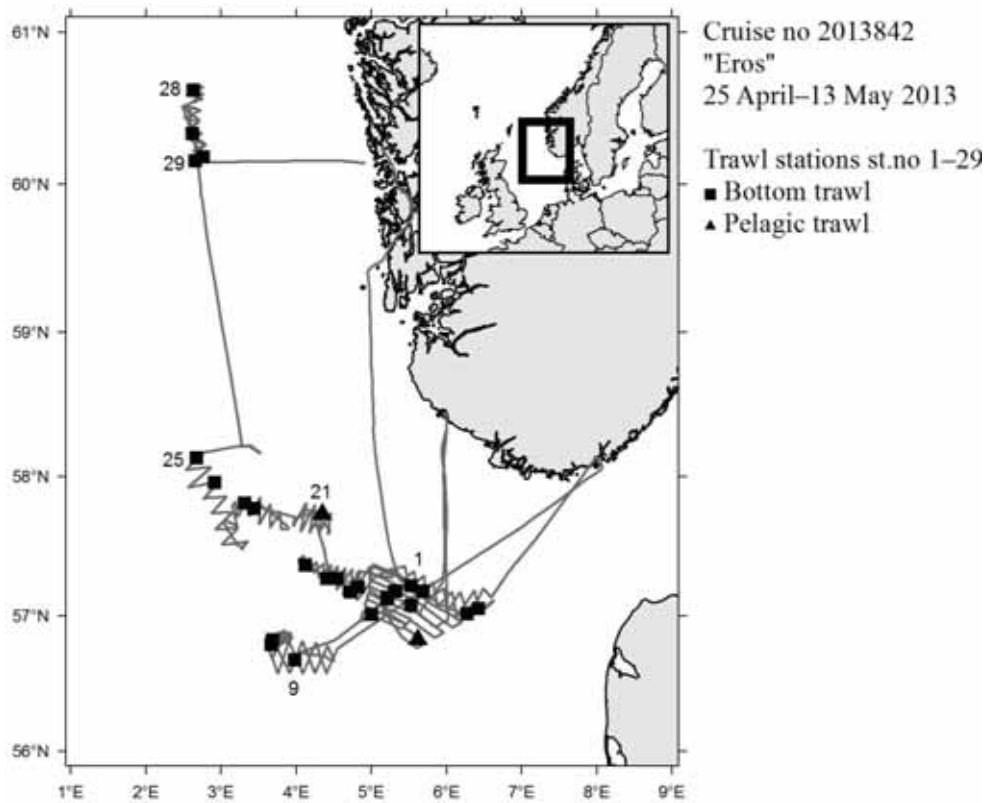
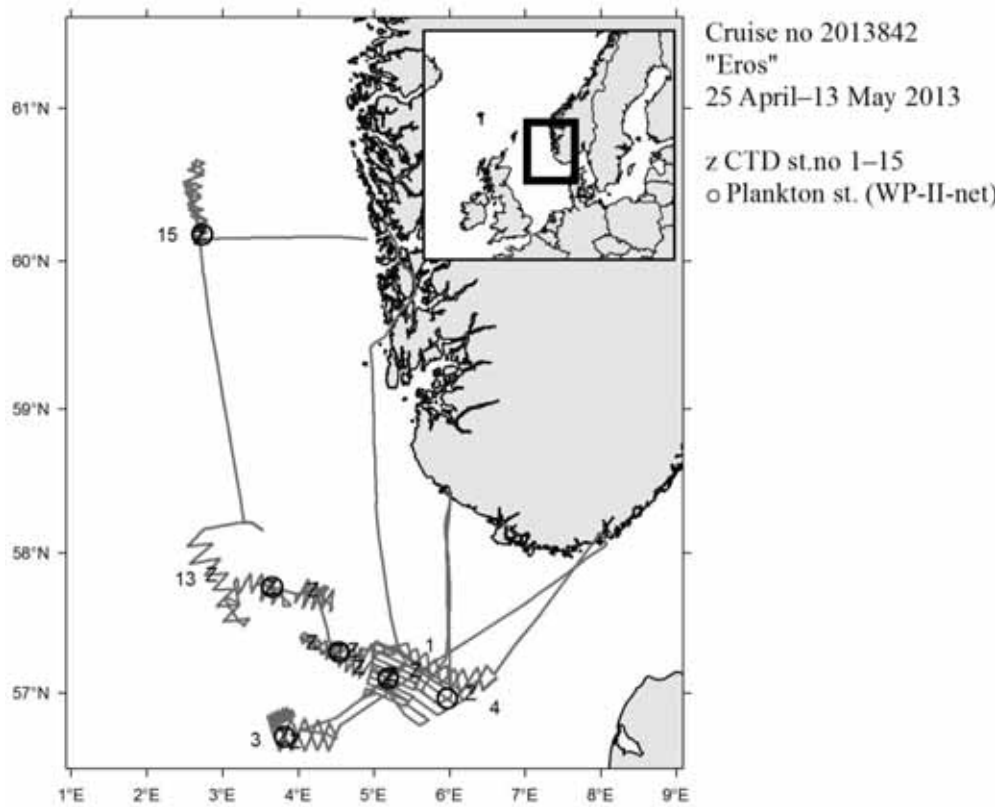
z CTD st.no 399 - 410
 O Plankton st. (WP-II-net)

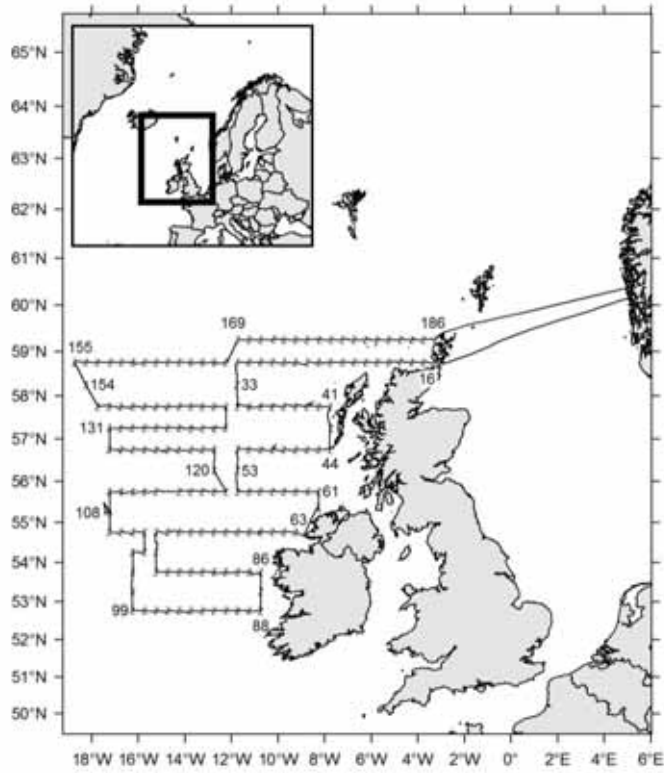
Standard section Torungen–Hirtshals 2013



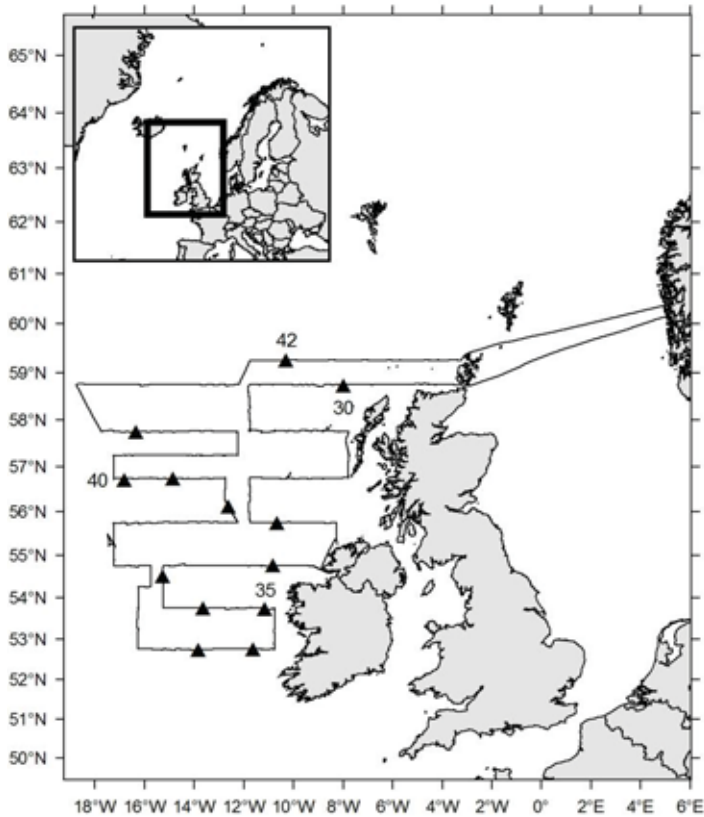
Month	Cruise no	CTD st. no	Comment
January	2013301	12 - 17	
February	2013302	18 - 29	
March	2013303	53 - 64	
April	2013305	66 - 77	
May	2013305	158 - 169	
June	2013306	171 - 182	
July	2013307	205 - 216	
August	2013308	240 - 251	
September	2013310	278 - 289	
October	2013312	350 - 361	
November	2013313	-	Cancelled
December	2013315	399 - 410	

4.6 Selected cruises carried out by fishing vessels hired by IMR

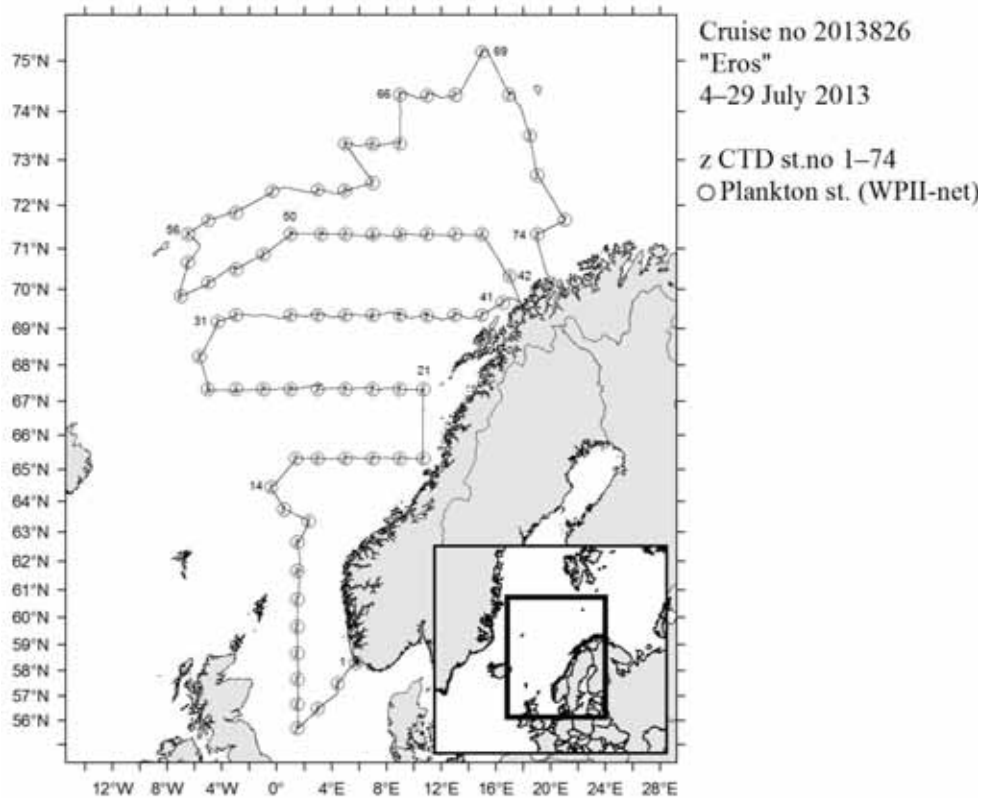
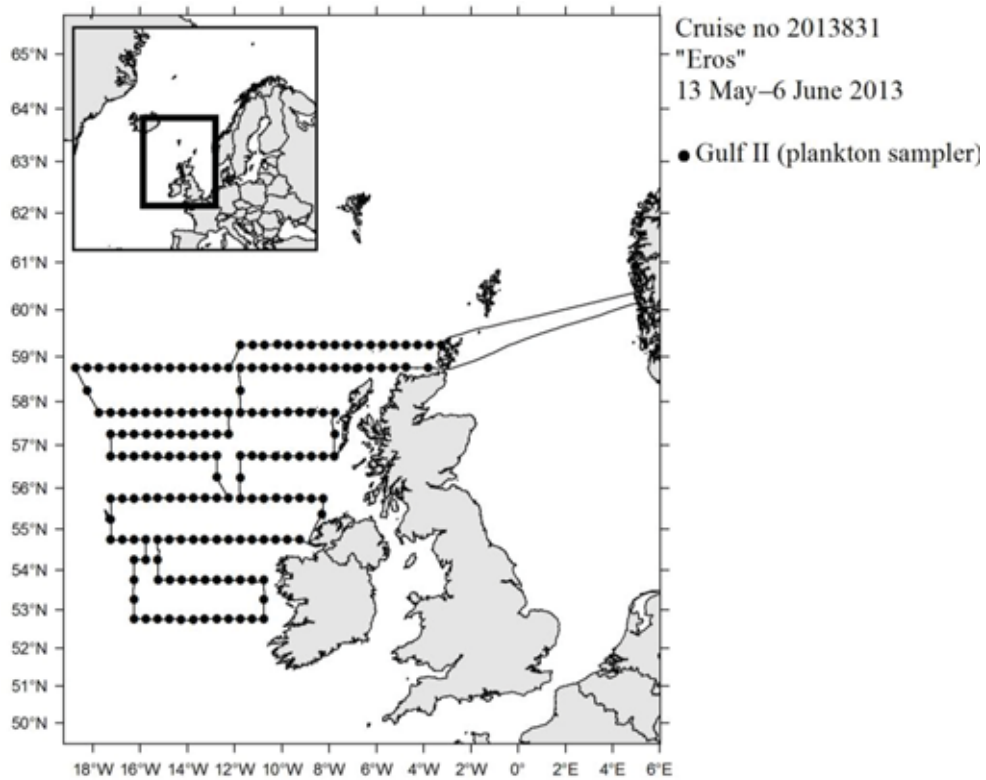


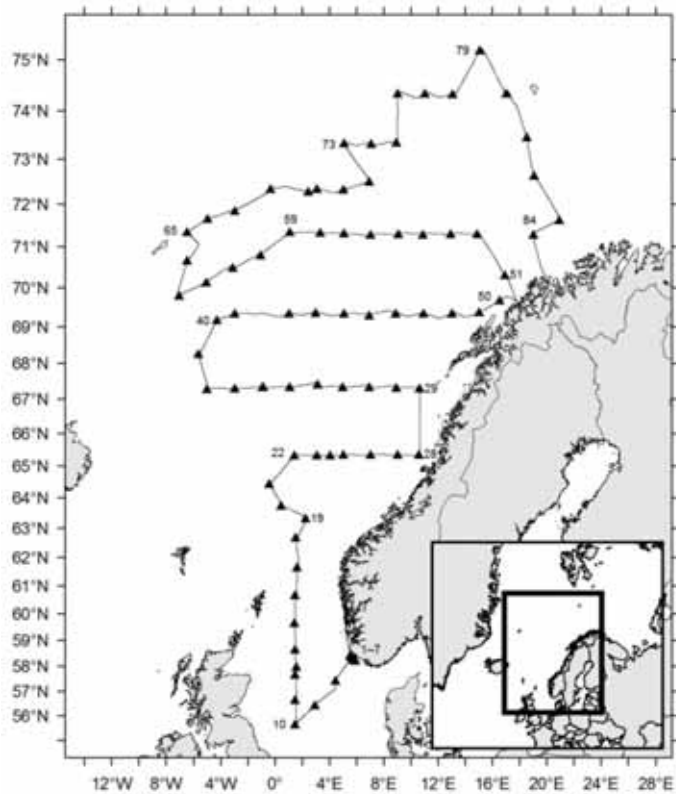


Cruise no 2013831
 "Eros"
 13 May–6 June 2013
 z CTD st.no 16–186



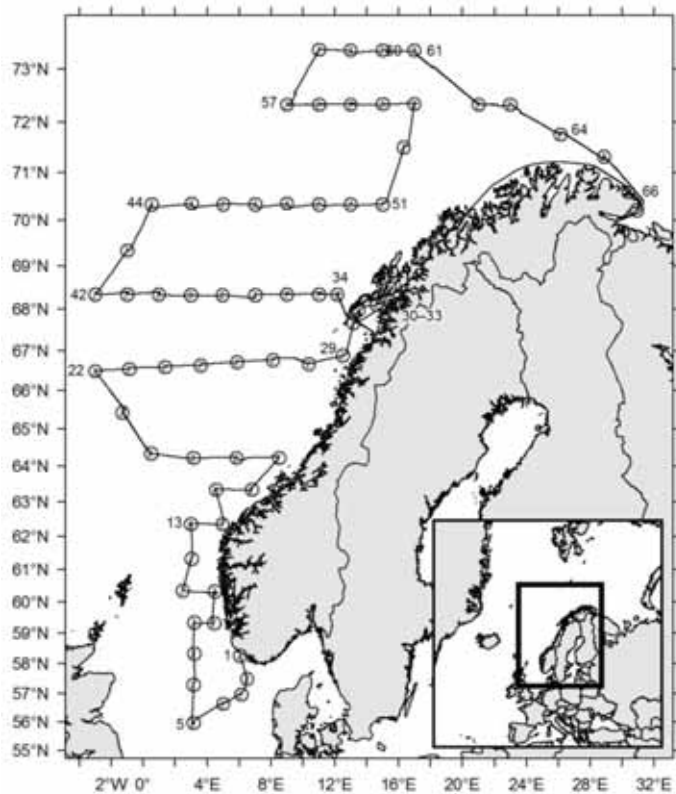
Cruise no 2013831
 "Eros"
 13 May–6 June 2013
 ▲ Pelagic trawl st.no 30–42





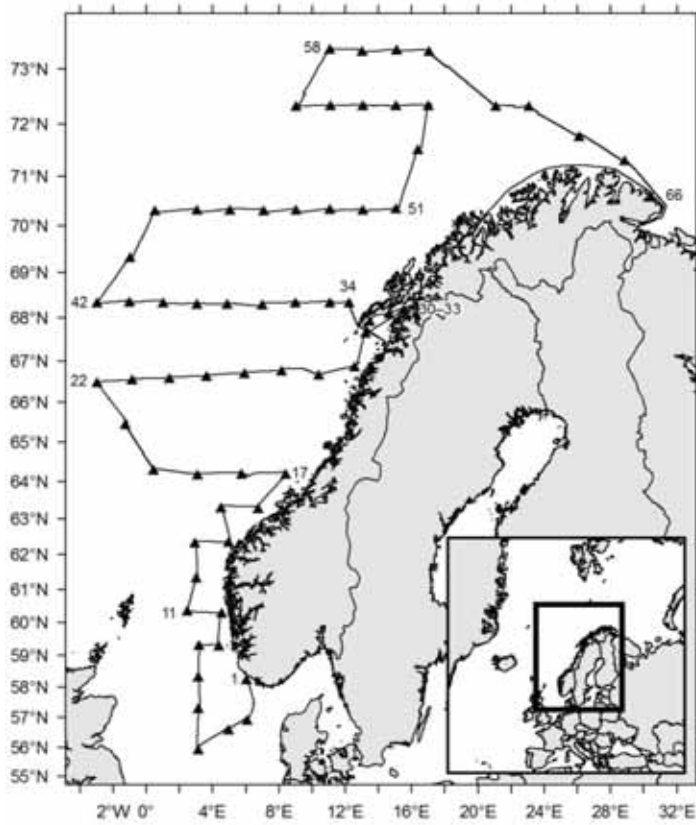
Cruise no 2013826
 "Eros"
 4-29 July 2013

▲ Pelagic trawl st.no 1-84

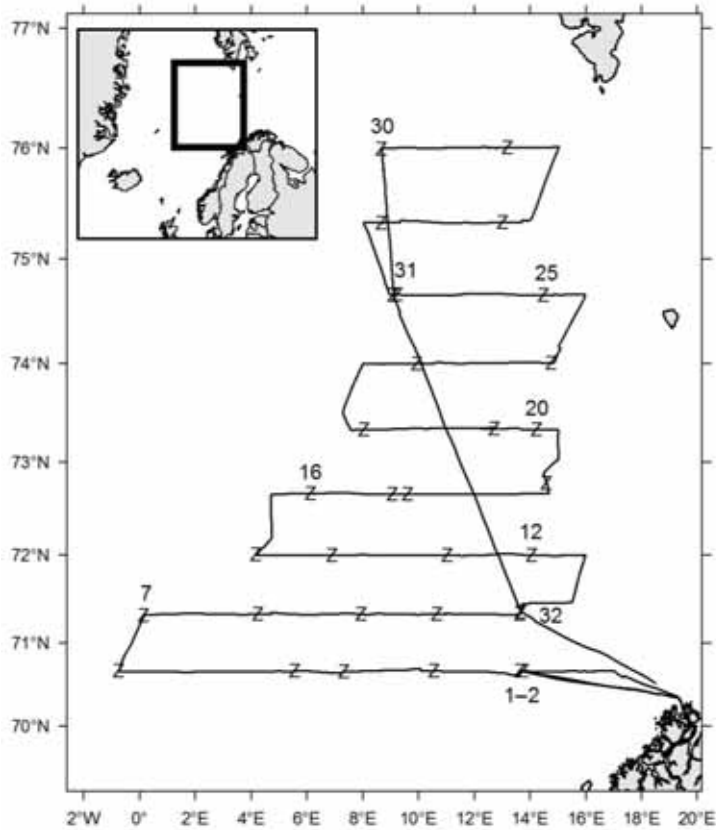


Cruise no 2013827
 "Libas"
 4-29 July 2013

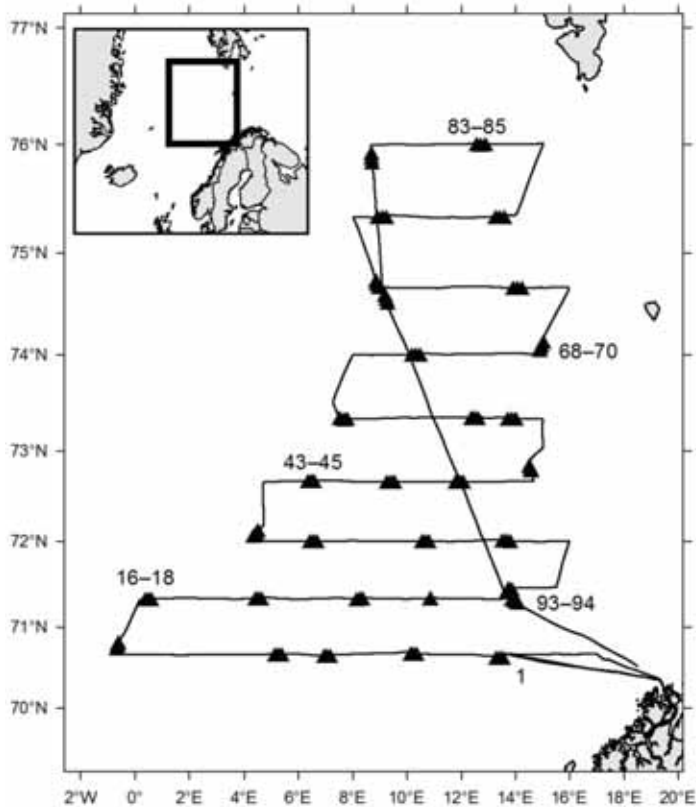
○ z CTD st.no 1-67
 ○ Plankton st. (WP-II-net)



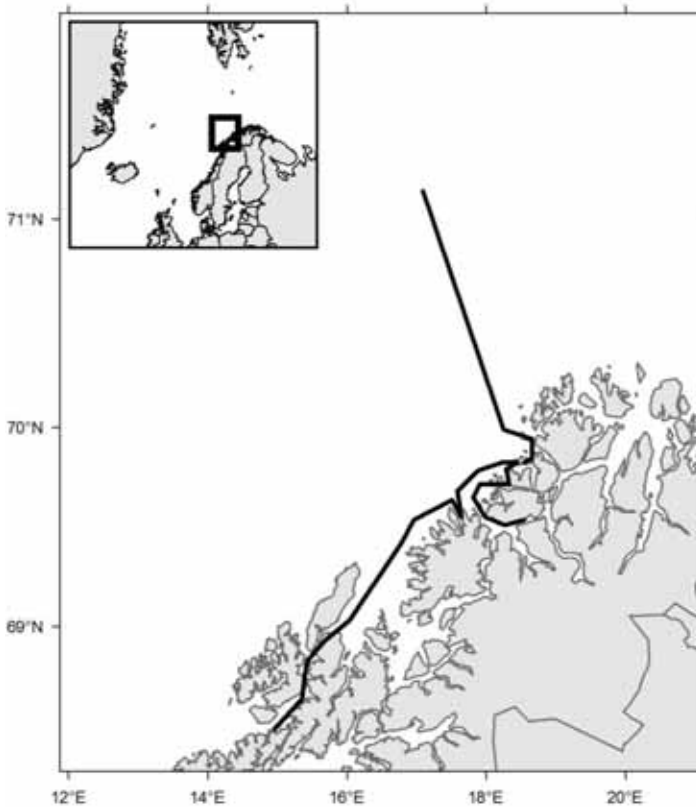
Cruise no 2013827
 "Libas"
 4-29 July 2013
 ▲ Pelagic trawl st.no 1-66



Cruise no 2013832
 "Atlantic Star"
 9-27 September 2013
 z CTD st.no 1-32



Cruise no 2013832
 "Atlantic Star"
 9–27 September 2013
 ▲ Pelagic trawl st.no 1–94



Cruise no 2013811
 "Artus"
 6–18 November 2013

Collection of acoustic data from fisheries sonar for biomass estimation of individual herring schools.
 Purse seine catch of individual herring schools for comparison with sonar estimates.

Retur: Havforskningsinstituttet, Postboks 1870 Nordnes, NO-5817 Bergen



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