FISKEN OG HAVET

no. **4-2018**
ISSN **0071-5638**

Report on cruises and data stations 2017

Oversikt over tokt og stasjoner tatt i 2017

Karen E. Gjertsen

Project Report

Report:
FISKEN OG HAVET

No. – Year:
4-2018

Date:
06.02.2018

Distribution: Open

Research group:
Norsk Marint Datasenter

Number of pages in total:
196

Title (Norwegian and English):
Oversikt over tokt og stasjoner tatt i 2017

Report on cruises and data stations 2017

Authors:
Karen E. Gjertsen

Summary (Norwegian):
Rapporten gir en oversikt over tokt i 2017 i regi av Havforskningsinstituttet og Universitetet i Bergen med egne og innleide fartøyer. Den gir en kort beskrivelse av toktet og viser kurs- og stasjonskart – hovedsakelig CTD, plankton og trålstasjoner. Tabeller viser når de faste snittene er tatt og antall observasjoner per måned for de faste stasjonene. Toktene er innrapportert ICES (Det internasjonale råd for havforskning) i skjemaet: "Cruise Summary Report": http://www.seadatanet.org/Metadata/CSR. Data fra toktene er tilgjengelig fra Norsk marint datasenter, Havforskningsinstituttet. Kartene kan internt lastes ned fra instituttets intranettside/mediearkiv: http://hinnsiden.imr.no/ressurser/bilder/mediearkiv. Kartene er laget av Karen E. Gjertsen. Sebastian Bosgraaf har laget kartene for "G.M. Dannevig".

Summary (English):
The report gives an overview of cruises in 2017, by the Institute of Marine Research and University of Bergen, on board our research vessels and hired commercial vessels. Each cruise is described by a short description and a track chart mainly showing CTD, plankton and trawl stations. The coverage of the oceanographic sections is listed in a table. Another table shows the number of observations per month for the fixed stations. Meta data about the 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 . Research data are available from the Norwegian Marine Data Centre at Institute of Marine Research. The charts can internally at IMR be downloaded from the Institute Intranet/Archive: http://hinnsiden.imr.no/ressurser/bilder/mediearkiv. . Charts are made by Karen E. Gjertsen. Sebastian Bosgraaf made charts for "G.M.Dannevig".

Emneord (norsk):
1. **Kurskart**
2. **Stasjonskart**
3. **Toktmetadata**

Subject heading (English):
1. **Cruise track chart**
2. **Station chart**
3. **Cruise metadata**

Helge Sagen

Project Manager

Helge Sagen

Research Group Manager

Content

1 Cruises 2017

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		
2017101	01 Feb	03 Feb	Training course for students within marine geology and marine geophysics.	Norwegian fjords	1	1	-	-	35	
2017102	07 Feb	25 Mar	Objectives of the groundfish survey was: A) to produce estimates of abundance by age class and describe the distribution of primarily of cod, haddock, greenland halibut and three rockfish species. B) register total catches of deep sea shrimps and snow crab. C) collect stomach samples of cod and haddock for dietary studies.	Barents Sea	2	67	1	181	36-37	
2017103	25 Mar	08 Apr	Mareano. Sea bottom mapping with video-filming and sampling of benthic fauna and sediments at selected stations in the Barents Sea. 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.	Barents Sea	68	87	-	-	38-40	
2017104	10 Apr	17 Apr	Maintenance of the Lofoten Vesterålen Cabled Observatory (LoVe). Running ROV transects for the extension of LoVe. Runing standard transect for observing marine life and oceanography along the LoVe transect. Retrieving test platform for incubated corals for project FATE. Collect cod larvae for isotop analysis.	Norwegian Sea, Lofoten area	88	99	182	184	41	
2017105	-	-	-	-	-	-	-	-	-	Cancelled
2017106	22 Apr	02 May	The main objective of the cruise was to provide TOPAS seismic data, bathymetric data and sediment cores from west Norwegian fjord systems and the North Sea in order to increase our understanding of the last deglaciation of this region.	North Sea	100	101	-	-	42	

1.1 "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		
2017107	03 May	06 Jun	Acoustic registrations of Norwegian Spring Spawning Herring and blue whiting at the feeding grounds in the Norwegian Sea. Trawling on registrations to obtain fish samples. Hydrographic measurements with CTD. Zooplankton.	Norwegian Sea	102	176	185	251	43-44	
2017108	16 Jun	20 Jun	On a previous cruise in 2016 on board "Håkon Mosby", 16 ocean bottom seismometers (obs) were deployed for a seismic refraction line at the Lototen continental margin. Due to instrument failures, 8 of these obs could not be retrieved. The objective of this cruise was to search and recover the missing 8 obs from the seafloor by using a remotely operated vehicle (ROV). The video footage displaying the seafloor was recorded. Data from the echosounder, salinothermograph and current profiler were recorded continuously during the cruise. In addition, a CTD measurement was carried out.	Norwegian Sea	177	177	-	-	45	
2017109	20 Jun	18 Jul	The main objectives of this cruise were: Deploy Ocean Bottom Seismometers (OBS) and other instruments at the Loki's Castle Vent field. Map and sample an axial volcanic ridge at the northern Knipovich Ridge. Map and sample the Loki's Castle Vent field (macro fauna, microbiology, hydrothermal fluids, mineral deposits). Map and sample the Soria Moria Vent field (macro fauna, microbiology, hydrothermal fluids, mineral deposits). Deploy and recover microbial incubators at the Loki's Castle and the Soria Moria vent fields.	Norwegian Sea, Barents Sea	178	180	-	-	46	
2017110	20 Jul	06 Aug	Studies of sponge grounds in the NE Atlantic in the frame of the EU-funded project SponGES.	Norwegian Sea, Barents Sea	181	205	-	-	47	

1.1 "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		
2017111	07 Aug	12 Aug	NORCRUST focuses on studies of methane-derived authigenic carbonate crusts and gas-impregnated sediments on various cold seep sites in the Norwegian-Barents Sea with the overall aim to improve the understanding of fluid flow systems including its sources and to constrain the timing of leakage. The "G.O. Sars" cruise in August will be directed to the canyons identified along the Lofoten margin. From previous Mareano cruises, we have identified typical features of cold seep sites in two depressions southwest of the most distinct canyon and will investigate them closer during this cruise.		206	208	-	-	48	
2017112	15 Aug	31 Aug	Mareano. Sea bottom mapping with video-filming and sampling of benthic fauna and sediments at selected stations in the Barents Sea. The main aim is mapping of 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 (video-rig, grab, box corer, multicorer, beam trawl and hyperbenthic sledge).		209	230	-	-	49-50	
2017113	01 Sep	28 Sep	Annual ecosystem survey to monitor the status and changes of the Barents Sea ecosystem to support scientific research and management advice.	Barents Sea	231	282	252	402	51-52	
2017114	02 Oct	17 Oct	A) Training cruise in BIO 325 – Ocean Science : Applying Demersal Campelen 1800 trawl, Harstad-Pelagic trawl (240 mtr) with Multisampler, MIK juvenile fish trawl (2 m diameter, 500 µm net). B) Hydroacoustic surveying for biomass estimation of pelagic and demersal fish.		283	301	403	439	53-54	

1.1 "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		
2017115	21 Oct	17 Nov	Mareano. 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). The main aim is mapping of 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 gears. In between the 2 cruise period 21.10-28.10 and 8.11.17.11, the ship was ordered by the Norwegian emergency authorities to take part in the rescue operation after an serioius helicopter accident in Isfjord, Svalbard, Oct 26. The ship was reliesed to IMR and for a continued Mareano-cruise Nov 7.		302	316	-	-	55-57	
2017116	19 Nov	04 Dec	Acoustic investigations on herring with sonars SU90 and MS70, TS probe and WBAT. Target strength measurements and instrument trials.		317	325	440	449	58-59	
2017118	07 Dec	13 Dec	ICES / IMR / UIB-International Course in Acoustic Measurement with WIDBAND Echo Sounder.		326	326	450	452	60	
2017119	15 Dec	17 Dec	The main objectives of the marine geological cruise to Bjørnafjorden, West Norway is to map out in detail the small submarine slides found along the planned bridge pathway across Bjørnafjorden and date the age of this failure. To achive these objectives a ROV-platform was used as a facility for multibeam system and for subbottom profiling with aid of a chirp. In addition a number of sediment cores were retrieved for dating the identified submarine slides.		327	327	-	-	61	

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		
2017204	20 Apr	12 May	This cruise is part of the IMR monitoring project "Climate and plankton in the North Sea and Skagerak". The cruise has been conducted each spring (April/May) since 2006 with the aim to provide one large coverage of the northern North Sea and Skagerrak each year. The cruise provides horizontal and vertical distributions of physical oceanographic parameters, chemistry, phytoplankton and zooplankton in the northern North Sea, Skagerrak and Kattegat. In addition the cruise collects additional information requested for 'case' areas e.g. areas where seismic work may be undertaken. Pre-selected stations along standard sections were sampled for hydrography (CTD), chemistry (nutrients and chlorophyll), phytoplankton (water samples and net tows) and zooplankton (net-tows and Multinet MIDI). The cruise also provided depth integrated distribution of fish eggs and larvae that can be related to the zooplankton and physical oceanographic data from the standard sections. In addition, studies were undertaken to investigate the vertical and diel distribution of fish eggs and larvae and their potential predators and prey.	North Sea, Skagerrak, Kattegat	01	129	-	-	62-63	
2017205	12May	29 May	Part 1. Environmental Monitoring of petroleum activities on the Norwegian continental shelf 2017. Part 2. Monitoring of organic pollutants and radioactive contamination in the Norwegian Sea and coastal areas between Bergen and Tromsø. The samples will be analysed for a range of pollutants in different laboratories following the cruise.	North Sea Norwegian Sea	130	155	01	61	64-66	
2017206	29May	08 Jun	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 3 of our regular sections Gimsøy NW, Bjørnøya W anf the Fugløya–Bjørnøya section.	Norwegian Sea Barents Sea	156	200	-	-	67	

1.2 "Johan Hjort" (Cont.)

CRUISE NO	PERIOD OF CRUISES		PURPOSE	AREA	CTD ST		TRAWL ST		PAGE OF CHART	COMMENT
	Start	End			Start	End	Start	End		
2017207	09 Jun	27 Jun	Sample herring larvae and their predators in the North eastern Norwegian Sea. Additional environmental sampling of hydrography, nutrients, chlorophyll and zooplankton.	Norwegian Sea, Barents Sea	201	271	62	107	68-70	
2017208	01 Jul	29 Jul	This survey combined the HERAS and NORACU surveys, which were acoustic surveys for North Sea herring and saithe. The survey took target and blind bottom and pelagic trawl tows for target registration and biological samples. Also included were CTD stations and profiles (CTD mounted on trawl) for temperature and salinity.	North Sea	272	329	108	259	71-72	
2017214	11Aug	21 Aug	The objective of the cruise was to collect data and samples on pre-selected stations as part of the IMR monitoring of physical and biological parametres in the North Sea, Norwegian Sea and Barents Sea. Sampling were made on the following standard sections: Svinøya NW, Gimsøya-SE and station M and Bjørnøya W, Fugløya–Bjørnøya. The cruise programme included sampling for physical-chemical oceanographic parameters (CTD casts, nutrients and chlorophyll) and phytoplankton and zooplankton with plankton net and the mocness.	North Atlantic Ocean, Norwegian Sea	330	368	-	-	73	
2017209	21Aug	03 Oct	The ecosystem survey in the Barents Sea has been conducted yearly in August/September since 2004. The aim of the ecosystem survey is to monitor the status and changes of the Barents Sea ecosystem to support scientific research and management advice. The task of the ecosystem survey: Sampling of physical oceanography, phytoplankton, zooplankton, fish, benthos, sea mammals, sea birds, and litter throughout the entire Barents Sea and around Svalbard. In addition, selected special scientific sampling and methodology research is conducted. The whole survey is a cooperation between Norwegian and Russian scientists. It is conducted with three Norwegian vessels in Norwegian waters and around Svalbard, and one Russian vessel in Russian waters.	Barents Sea, west and east of Svalbard	369	545	260	489	74-75	

1.2 “Johan Hjort” (cont.)

CRUISE NO	PERIOD OF CRUISES		PURPOSE	AREA	CTD ST		TRAWL ST		PAGE OF CHART	COMMENT
	Start	End			Start	End	Start	End		
2017210	05 Oct	14 Nov	Annual combined acoustic and bottom trawl survey along the Norwegian. • 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) • sampling of deep sea shrimps for genetic analyses • sampling of plaice for analysis of contamination (NIFES) • sampling of saithe gonads • sampling of jellyfish and mussels • sampling of blue ling gonads • fixed current measurement moorings • release of gliders • collection of broadband acoustic data	Main Norwegian fjords and coastal banks north of 62˚N.	546	611	490	606	76-77	
2017211	16 Nov	27 Nov	The objective of the cruise was to collect data and samples on pre-selected stations as part of the IMR monitoring of physical and biological parametres in the North Sea, Norwegian Sea and Barents Sea. Sampling were made on the following standard sections: Svinøya NW, Gimsøya NW,station M and BjørnøyaW, Fugløya-Bjørnøya. The cruise programme included sampling for physical-chemical oceanographic parameters (CTD casts, nutrients and chlorphyll) and phytoplankton and zooplankton with plankton net and the mocness.	North Sea Norwegian Sea Barents Sea	612	652	-	-	78	

1.2 “Johan Hjort” (cont.)

CRUISE NO	PERIOD OF CRUISES		PURPOSE	AREA	CTD ST		TRAWL ST		PAGE OF CHART	COMMENT
	Start	End			Start	End	Start	End		
2017212	28 Nov	05 Dec	This year’s Fjord i Nord cruise has 3 main objectives: 1. investigation into the status of the kelp forrest near Sommarøy outside Kvaløya 2. Kaldfjorden fjord system survey in connection with the 3 Fram Centre projects weShare, WHALE (both IMR-led) and EFFECTS (Apn-led) 3. Herring distribution survey on the shelf outside Troms in connection with the general herring stock surveys and the above Fram Centre projects.	Norwegian Sea	653	678	607	607	79-80	
2017213	07 Dec	19 Dec	Compared the catch efficiency of a small commercial trawl when fished in a demersal (with all components on the bottom) and semi-pelagc (doors and parts of the sweeps off the bottom) manner. Hauls with the doors on/off were made made as pairs and made along the same track and with the same towing direction. SIMRAD sensor mounted to the doors measred door heigh above the seabed and distance between tha doors. SIMRAD trawl symmetry sensors were also fitted along with sendsors measuring wing spread and vertical trawl opening. door spread.	Barents Sea	-	-	608	635	81	

1.3 "Kristine Bonnevie" (Ship code no 03)

CRUISE NO	PERIOD OF CRUISES		PURPOSE	AREA	CTD ST		TRAWL ST		PAGE OF CHART	COMMENT
	Start	End			Start	End	Start	End		
2017601	02 Jan	04 Jan	Seasonal sampling of water and fauna around cold water coral reefs with onboard incubations.	Norwegian fjords	01	15	-	-	82	
2017602	06 Jan	29 Jan	Annual shrimp survey.	North Sea, Skagerrak	16	126	1	136	83-84	
2017603	02 Feb	10 Feb	A physical oceanography cruise undertaken as a part of the GEOF337, Physical Oceanography of Fjords course offered at the Geophysical Institute (GFI), University of Bergen. The site of study was Førdefjorden, with special attention to sill-processes in Ålasundet. The data set collected aimed to address the processes including patterns of fjord circulation and hydrography, estuarine circulation, ocean-fjord exchange mechanisms, as well as mixing processes near a sill. The students become familiar with typical and state-of-the-art measurement systems, including ship-based measurements as well as moored instruments, and the processing and interpretation of data thereof. In total, 5 moorings were deployed consisting of current meters, current profilers, and temperature, salinity and pressure loggers, which will collect data for one-month duration.	Norwegian fjords	127	232	-	-	85	
2017604	11 Feb	02 Mar	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». To sample standard transects for physical oceanographic parameters (CTD casts, nutrients and chlorphyll) and phyto- and zooplankton (including fish eggs and larvae) in the Northern North Sea. 1. Utsira W section 2. MIK transect east of Scotland 3. Aberdeen Hanstholm section. Spawning saithe acoustic survey pilot + gear trials. Objectives were to determine the best way to capture large saithe (which trawl to use), test the use of a fish lock in the trawl and trawl performance, collect standard acoustic data + broadband from transects, and collect information on target identification and species compositions.	North Sea	233	323	-	-	86-87	

1.3 "Kristine Bonnevie" (Cont)

CRUISE NO	PERIOD OF CRUISES		PURPOSE	AREA	CTD ST		TRAWL ST		PAGE OF CHART	COMMENT
	Start	End			Start	End	Start	End		
2017605	04 Mar	6 Mar	Student training cruise as part of regular course in practical oceanography and meteorology.	Norwegian fjords	324	349	-	-	88	St 350-390 do not exist
2017606	10 Mar	24 Mar	Physical oceanographic process studies in the Lofoten Basin. Deploy gliders and RAFOS floats. Turbulence, current and CTD profiling in around the Lofoten Basin Eddy (eddy-following scheme) and in the frontal region near the Mohn Ridge.	Norwegian Sea	391	435			89-90	
2017625	25 Mar	11 Apr	The main survey objective is to estimate abundance indices at age of the spawning stock of North East Arctic cod using the trawl acoustic method. The survey area is the shelf area from Malangsgrunnen south to Røsttunga and the shelf are of Vestfjorden connected to the Lofoten islands. Additional observations included the use of CTD and T80 net for sampling density and stage distribution of spawned eggs.	Norwegian Sea	436	547	1	38	91-92	
2017626	12 Apr	16 Apr	Sample herring larvae and their predators on the Norwegian shelf from Bergen to Tromsø. Additional environmental sampling of hydrography, nutrients, chlorophyll and zooplankton.	Norwegian Sea	548	579	1	5	93-94	
2017609	17 Apr	24 Apr	Seasonal sampling of water and fauna around cold water coral reefs with onboard incubations. Recovery of 4 benthic landers at Nakken reef.	Norwegian Sea	580	598	-	-	95-96	
2017610	26 Apr	02 May	SponGES - Deep-sea Sponge Grounds Ecosystems of the North Atlantic - Coast/Fjord.	North Sea (coastal regions)	599	606	-	-	97-99	
2017612	03 May	07 May	The cruise was aimed to collect benthic organisms (sea cucumbers, starfish, squat lobsters, and especially the tiny shark Etmopterus spinax, "Svarthå") for barcoding, population genetic studies and behavioral studies of deep sea starfishes. We also conducted plankton sampling in the mesopelagic waters of Sognefjord. Stations for sampling where in Sognesjøen, at 1200 in the outer-, mid-, and inner parts of the Sognefjord basin, and mid part of the Lustrafjord.	Sognesjøen, Sognefjorden, Lustrafjorden	607	609			100-101	
2017613	22 Jun	26 Jun	Recovery and re-deployment of standard RCM-moorings S1-N and S1-S in the Svinøy section. Recovery of the PolarBuoy.	Norwegian Sea	610	613	-	-	102	

1.3 "Kristine Bonnevie" (Cont)

CRUISE NO	PERIOD OF CRUISES		PURPOSE	AREA	CTD ST		TRAWL ST		PAGE OF CHART	COMMENT
	Start	End			Start	End	Start	End		
2017614	05 Jul	21 Aug	International Bottom Trawl Survey (IBTS) of the North Sea where the whole arae is covered by a number of participating nations (Norway, England, Scotland, Germany, Sweden and Denmark). The survey provides biological data on fish and bentos. The cruise is coordinated by the ICES IBTSWG. The first part of the cruise includes sampling the hydrography, chemistry, zoo- and ichthyoplankton along the hydrographic transects, Utsira-Start Point, Hantholm-Aberdeen and Fair Isle-Pentland plus a number of additional stations on the western and eastern side of the northern North Sea. The cruise also entails registering marine litter.	North Sea	614	774	202	376	103-108	
2017615	22 Aug	24 Aug	Training cruise in BIO 102 – Organismal Biology.	Norwegian Sea	775	777	377	380	109	
2017616	25 Aug	28 Aug	-	-	-	-	-	-	-	Cancelled
2017617	29 Aug	31 Aug	Training cruise in BIO 102 (part 2)– Organism Biology.	Norwegian Sea	778	780	381	383	110	
2017618	02 Sep	15 Sep	A physical oceanography cruise with objectives to 1) recover all gear (oceanographic moorings, acoustic sound source moorings, one Seaglider) deployed in June 2016 during the cruise on board RV Håkon Mosby (HM2016611), 2) conduct ocean mixing and water transformation process studies in the Lofoten Basin Eddy of the Norwegian Sea, 3) deploy one Seaglider to work a transect from the central Lofoten Basin to the Greenland Sea. In the vicinity of the Lofoten Basin Eddy, vertical microstructure,hydrographic and current measurements were made. Samples were drawn for analysis of total carbon and nutrients. Additionally a Teledyne Webb Slocum glider equipped with microstructure sensors was deployed, and recovered after a 5-day mission. In total 16 CTD (conductivity temperature depth), 13 LADCP (lowered acoustic Doppler current profiler), and 9 microstructure profiles were collected. In addition, 4 oceanographic moorings, 5 moored acoustic sources, and one Seaglider were recovered.	Norwegian Sea	781	797	-	-	111-112	

1.3 "Kristine Bonnevie" (Cont)

CRUISE NO	PERIOD OF CRUISES		PURPOSE	AREA	CTD ST		TRAWL ST		PAGE OF CHART	COMMENT
	Start	End			Start	End	Start	End		
2017624	26 Sep	27 Sep	The purpose of the cruise was to introduce the students in our « Physics of the Atmosphere and Ocean » GEOF105, to oceanographic and atmospheric field work. The students are divided in two groups, and the two days are quite similar, with the one difference being that we did a CTD cross section of the Hjeltefjorden on two different locations. This year we also included meteorological horizontal surface observations along the ship track, and compared with the weather forecast.	Norwegian coast	798	821	-	-	113	
2017620	01 Oct	07 Nov	Acoustic estimation of the abundance of saithe, cod and haddock along the Norwegian coast from Grense Jakobselv to Stad.	Norwegian Sea Barents Sea	822	898	384	509	114-116	
2017621	10 Nov	19 Nov	Objectives: To collect data and samples on pre-selected stations as part of the IMR monitoring project «Climate and plankton in the North Sea. To sample standard transects for physical oceanographic parameters (CTD casts, nutrients and chlorphyll) and phyto- and zooplankton (including fish eggs and larvae) in the Northern North Sea.	North Sea	899	954	-	-	117-118	
2017622	20 Nov	24 Nov	Video documentation of the Sognefjord.	Norwegian Fjord	955	955	510	514	119	
2017623	25 Nov	06 Dec	Survey and map the distribution of herring and sprat acoustically in the fjords Nordfjord, Sognefjorden and Hardangerfjorden. Also survey the amount of zooplankton in the surveyed areas by plankton nets.	Norwegian Sea, North Sea	956	987	515	538	120-121	
2017627	09 Dec	19 Dec	Test trawls and towed body.	Norwegian Fjord	988	989	539	567	122-123	
2017628	20 Dec	21 Dec	Test equipment and software.	Norwegian Fjord	990	991	568	569	124	

1.4 "G.M. Dannevig" (Ship code no 16)

CRUISE NO	PERIOD OF CRUISES		PURPOSE	AREA	CTD NO		PAGE OF CHART	COMMENT
	Start	End			Start	End		
2017301	21 Jan	28 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	1	36	125	
2017302	01 Feb	08 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	37	73	126	
2017303	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	74	95	127	
2017304	22 Mar	01 Apr	Mapping distribution area of coastel cod.	Coast of Møre og Romsdal	-	-	-	No chart
2017305	24 Apr	30 Apr	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	96	119	128	
2017306	01 May	08 May	MPA cod.	Norwegian coast	-	-	-	No chart
2017307	09 May	13 May	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	120	141	129	
2017308	11 Jun	20 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.	Skagerrak	142	186	130	

1.4 "G.M. Dannevig" (cont.)

CRUISE NO	PERIOD OF CRUISES		PURPOSE	AREA	CTD NO		PAGE OF CHART	COMMENT
	Start	End			Start	End		
2017309	01 Jul	07 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	187	226	131	
2017310	09 Aug	15 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.	Skagerrak	227	264	132	
2017311	16 Aug	25 Aug	Monitoring lobster/MPA.	Norwegian coast	-	-	-	No chart
2017312	26 Aug	28 Aug	Validation of current models.	Norwegian coast	-	-	-	No chart
2017313	14 Sep	15 Sep	Hydrographic standard section "Torungen-Hirtshals".	Skagerrak	265	276	133	
2017314	16 Sep	05 Oct	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	277	338	134	
2017315	06 Oct	11 Oct	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	339	355	135	
2017316	15 Nov	20 Nov	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	356	383	136	
2017317	21 Nov	06 Dec	Resurce studies in coastel cod.	Skagerrak	-	-	-	No chart
2017318	07 Dec	12 Dec	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	384	393	137	

1.5 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		
2017849	18 Jan	23 Feb	"H. Hanssen"	Annual combined acoustic and bottom trawl survey in the Barents Sea in winter to: • map the distribution and estimate acoustic and bottom trawl abundances indices, length, weight and maturity at age of cod, haddock and redfish • stomach sampling of cod • map the general hydrographic regime by using a CTD-sonde to monitor the temperature and at about every second fixed bottom trawl stations. • environmental samples (salinity, temperature, oxygen, acidification, nutrients and plankton) along the Vardø N and Bjørnøya – Fugløya section.	Barents Sea	01	92	01	138	138-139	
2017850	21 Jan	16 Feb	"Cefas Endeavour"	The main objectives of the IBTS Q1 bottom trawl survey coordinated by ICES/IBTSWG are: to determine the distribution and relative abundance of pre-recruits of the main commercial species, to monitor changes in the stocks of commercial fish species independently of commercial fisheries data, to monitor the distribution and relative abundance of all fish species and selected invertebrates, to collect data for the determination of biological parameters for selected species, to collect hydrographical and environmental information and to determine the abundance and distribution of herring and other fish larvae as well as fish eggs.	Northern North Sea	01	123	01	55	140-141	

1.5 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		
2017858	07 Feb	11 Feb	«Vendla»	Environmental and planctonic sampling on the Svinøy-section and station M. In addition samples for ocean acidification on the Svinøy section, and Carbon on Station M. Acoustic mapping of potential herring.	Norwegian Sea	01	18	-	-	142	
2017840	13 Feb	25 Feb	«Vendla»	Acoustic registrations of Norwegian Spring Spawning Herring at the spawning locations along the Norwegian coast.	Norwegian Sea	19	66	01	18	143-144	
2017838	13 Feb	25 Feb	"Eros"	Collection of acoustic data from fisheries sonar for biomass estimation of herring.Collection of acoustic data from echo sounder for biomass estimation of herring. Collection of biological samples for estimation of species and size composistion in the acoustic observations. Collection of hydrographic data.	Norwegian Sea	01	42	01	17	145-146	
2017839	13 Feb	25 Feb	"Kings Bay"	This survey was carried out with 3 vessels, also participating was "Eros" and "Vendla".		-	-	1	17	147	
2017847	20 Mar	05 Apr	"Kings Bay"	International blue whiting spawning stock survey. Acoustic survey to monitor the spawning stock of blue whiting on the spawning grounds west of the British Isles.	Northwest of the British Isles	77	98	18	29	148-149	
2017859	29 Mar	14 Apr	"Christina E".	Monitoring of hydrography and plankton on the standard sections Fugløya-Bjørnøya, Bjørnøya-West, Vardø-N, Gimsøy W and Svinøy W, and station M. Recover and re-deploy current meter moorings on Fugløya-Bjørnøya.	Norwegian Sea Barents Sea	01	70	-	-	150	

1.5 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		
2017807	07 Apr	20 Apr	«J. Bergvoll»	1) Testing of a catch regulation device with and without sorting grid in a demersal trawl. 2) Comparing size selectivity of a Flex-grid to that of a four panel codend with short lastridge ropes in the trawl fisheries for gadoids. 3) Evaluating catch quality by applying a codend releaser to let fish into a 'snuggle bag' during haulback.	Barents Sea	-	-	01	10	151	
2017843	25 Apr	15 May	«Eros»	Measuring the abundance, distribution and age composition of sandeel. Dredge sampling for burrowed sandeels. Bottom trawls. Pelagic trawls. Echo sounder sampling. Zooplankton sampling. Mapping of hydrographical conditions.	North Sea	43	66	01	15	152-154	
2017810	02 May	14 May	«Ball-stadøy»	A) Investigate surface selection/escape of haddock in a demersal seine fishery by applying an automatic cod-end releaser. By the aid of the releaser, codend catch is released to a non selective, small mesh codend at 30m depth every other haul. Size distributions are then compared to assess length-related probability of surface selection B) Investigate the plausibility of catching haddock in a demersal seine for live storage.	Barents Sea	-	-	01	21	155	
2017837	02 May	02 Jun	"Fiskebas"	Tagging with RFID technology and biological sampling of mackerel in the spawning areas west of Ireland and Scotland.	Northwest of the British Isles	-	-	-	-	156	
2017836	10 May	24 May	"Vendla"	The survey was designed to investigate potential bias in the IESNS survey, including fish avoidance, vertical distribution, and dead zone. Develop techniques to use sonar for abundance estimation.	Norwegian Sea	67	74	18	37	157	

1.5 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		
2017826	06 Jun	18 Jun	«Fiskebas»	A. Examine the extent and strength of the echo of the air bubble noise occurring during the use of vessel thrusters and propeller B. Develop instruments and methods for monitoring individual fish behaviour and environmental variables (such as temperature, oxygen concentration, light levels) for pelagic fish schools in commercial purse-seine fisheries. C. Develop a prototype stereo camera system for the identification of species composition and size distribution.	Norwegian Sea North Sea	-	-	-	-	158	
2017853	12 Jun	18 Jun	"J. Ruud"	Study the spreading area for red king crab in Vest Finnmark. This is the area for a free fishing for red king crab and the further spreading is monitored.	Barents Sea	-	-	-	-	159	
2017823	20 Jun	14 Aug	«ACC Mosby»	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 2014-2019.	Barents Sea	-	-	-	-	-	No chart
2017833	03 Jul	06 Aug	«Kings Bay»	Part of the International Ecosystem Summer Survey of the Nordic Seas (IESSNS) where the objectives are 1) to measure the abundance of Northeast Atlantic mackerel using swept-area method, 2) measure the abundance of Norwegian spring-spawing herring and blue whiting using acoustics, 3) collect data on zooplankton, 4) measure the hydrographical conditions.	Norwegian Sea Barents Sea	01	76	01	94	160-161	
2017834	05 Jul	06 Aug	"Vendla"	Large-scale mapping and abundance estimation of Northeast Atlantic (NEA) mackerel, Norwegian Spring-Spawning (NSS) herring and blue whiting. Hydrography and mammals obsrvations.	Norwegian Sea	75	146	01	91	162-163	

1.5 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		
2017848	09 Aug	02 Sep	«Arni Fridriksson»	Bottom trawl survey for deep sea resources on depths 400-1500 along the continental slope of the eastern Norwegian Sea between, included Bear Island trench. Bottom trawl stations primarily for biomass estimation of Greenland halibut along with registrations on beaked redfish and other deep-sea fish species. Additionally, since 2009, acoustic registration for abundance estimation with beaked redfish as main target species supported by pelagic trawling on registrations.	Norwegian Sea Barents Sea	-	-	01	116	164	
2017821	10 Aug	02 Sep	«Arctic Salted»	Population counts of harbour seals in local areas in Rogaland County. Tagging of harbour seals using GPS phone tags in Telemark County.	Norwegian coast	-	-	-	-	No chart	
2017854	21 Aug	01 Sep	"J. Ruud"	Stock assessment study for red king crab in East Finnmark. This is the quota regulated area for red king crab. The cruise was conducted in the four main fjords; Varangerfjorden, Tanafjorden, Porsangerfjorden and Laksefjorden.	Barents Sea	-	-	-	-	165	
2017856	21 Aug	07 Sep	«Helmer Hanssen»	This survey was a combination survey of SI_ARCTIC and the Ecosystem survey in the Barents Sea. The main goal of the survey was: • To conduct baseline investigations of the marine ecosystem north of Svalbard (SI_ARCTIC) • Obtain data for evaluating inter-annual variations 2014-2018 (SI_ARCTIC) • to monitor the status and changes of the Barents Sea ecosystem to support scientific research and management advice (Ecosystem survey in the Barents Sea). The task of the survey: Sampling of physical oceanography, phytoplankton, zooplankton, fish, benthos, and sea mammals.	Barents Sea	93	128	139	207	166-167	

1.5 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		
2017855	11 Sep	22 Sep	"J. Ruud"	Stock assessment study for red king crab in East Finnmark. This is the quota regulated area for red king crab. This cruise went on between Vardø in east to North Cape in west, here we only fished with traps.	Barents Sea	-	-	-	-	168	
2017827	09 Oct	18 Oct	«Fiskebas»	Develop instruments and methods for monitoring individual fish behaviour and environmental variables (such as temperature, oxygen concentration, light levels) for pelagic fish schools in commercial purse-seine fisheries.	Norwegian Sea North Sea	-	-	-	-	169	
2017831	15 Oct	19 Oct	"Asbjørn Selsbane"	Collection of acoustic data from fisheries sonar for biomass estimation of individual mackerel schools. • Purse seine catch of individual mackerel schools for comparison with sonar estimates . • Dynamcis of school before, during and after the purse seine haul.	Norwegian Sea North Sea	-	-	-	-	170	
2017829	5 Nov	3 Dec	«Tempo »	1) Testing a shrimp trawl with short belly to improve size selectivity of shrimp, 50 mm lower 2) Testing a shrimp trawl with short belly to improve size selectivity of shrimp, 40 mm lower panel. 3) Evaluating size selectivity by using light in a shrimp trawl. All hauls taken as comparative hauls with a control trawl (twin trawling)	Skagerrak	-	-	01	12	171	
2017811	06 Nov	21 Nov	«Eros»	Collection of acoustic data from fisheries sonar for biomass estimation of individual nerring schools • Monitoring of school and net during comercial fishing operations • Purse seine catch of individual herring schools for comparison with sonar estimates • Test of lights and GPS signals from floatline • Video and oxygen measurements during purse seining.	Norwegian Sea	-	-			-	No chart

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

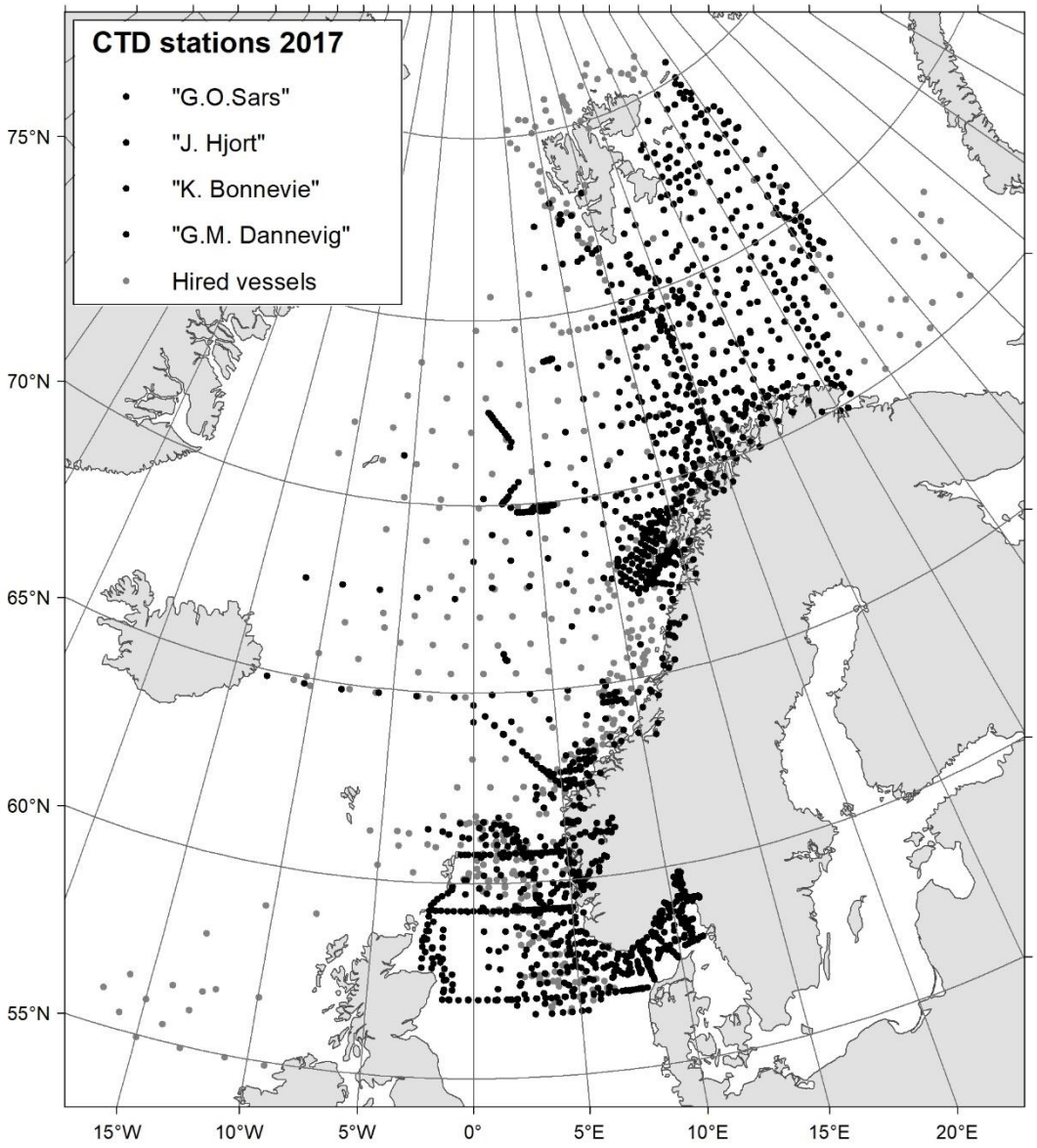
CRUISE NO	PERIOD OF CRUISES		VESSEL	PURPOSE	AREA	CTD ST		TRAWL ST		PAGE OF CHART	COMMENT
	Start	End				Start	End	Start	End		
2017865	13 Nov	26 Nov	«Katla»	To investigate size selectivity of different codend designs for shrimp (Pandalus borealis), cod (Gadus morhua) and haddock (Melanogrammus aeglefinus).	Barents Sea	-	-	01	20	172	
2017820	02 Des	10 Dec	«Arctic Salted»	Instrumentation, biopsies and photoidentification on humpback whales for studying habitat, migration and population.	Barents Sea					-	No chart

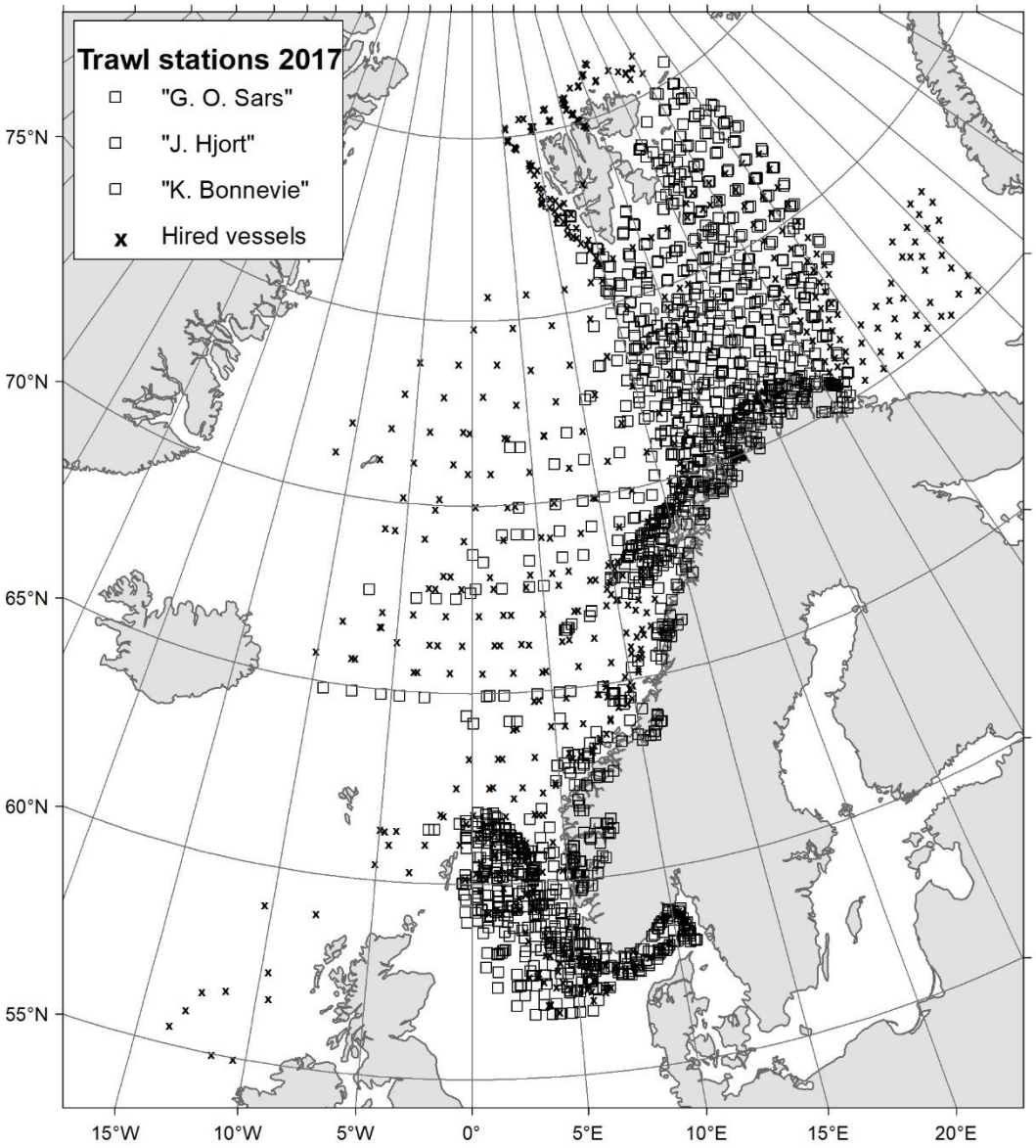
1.6 "Dr. Fridtjof Nansen" (Ship code no 14)

CRUISE NO	PERIOD OF CRUISES		PURPOSE	AREA	CTD ST		TRAWL ST		PAGE OF CHART	COMMENT
	Start	End			Start	End	Start	End		
2017400			**TESTING**		01	19	-	-	-	
2017401	07 May 06 Jun	26 May 27 Jun	Abundance estimation of pelagic fish. Mapping of oceano-graphic conditions, zooplankton, fish larvae and microplastic. Systematic sampling of fish for food safety analyses.	Atlantic Ocean	20 105	84 163	01	104	173-174	
2017402	27 May	05 Jun	Abundance estimation of pelagic fish. Mapping of oceano-graphic conditions, zooplankton, fish larvae and microplastic. Systematic sampling of fish for food safety analyses.	Atlantic Ocean	85	104	01	40	175-176	
2017403	27 Jun	08 Jul	Abundance estimation of pelagic fish. Mapping of oceano-graphic conditions, zooplankton, fish larvae and microplastic. Systematic sampling of fish for food safety analyses.	Atlantic Ocean	164	197	01	31	177-178	
2017404	09 Jul	18 Jul	Abundance estimation of pelagic fish. Mapping of oceano-graphic conditions, zooplankton, fish larvae and microplastic. Systematic sampling of fish for food safety analyses.	Atlantic Ocean	198	239	01	26	179-180	
2017405	21 Jul	20 Aug	Abundance estimation of pelagic fish. Mapping of oceano-graphic conditions, zooplankton, fish larvae and microplastic. Systematic sampling of fish for food safety analyses.	Atlantic Ocean	240	367	01	93	181-182	
2017406	24 Aug	12 Sep	Abundance estimation of pelagic fish. Mapping of oceano-graphic conditions, zooplankton, fish larvae and microplastic. Systematic sampling of fish for food safety analyses.	Atlantic Ocean	368	501	01	40	183-184	
2017407	21 Sep	01 Oct	Abundance estimation of pelagic fish. Mapping of oceano-graphic conditions, zooplankton, fish larvae and microplastic. Systematic sampling of fish for food safety analyses.	Atlantic Ocean	502	569	01	26	185-186	
2017408	14 Oct	12 Nov	Abundance estimation of pelagic fish. Mapping of oceano-graphic conditions, zooplankton, fish larvae and microplastic. Systematic sampling of fish for food safety analyses.	Atlantic Ocean	571	814	01	103	187-188	
2017409	16 Nov	12 Dec	Abundance estimation of pelagic fish. Mapping of oceano-graphic conditions, zooplankton, fish larvae and microplastic. Systematic sampling of fish for food safety analyses.	Atlantic Ocean	822	906	01	61	189-194	
2017110	12 Dec	17 Dec	Abundance estimation of pelagic fish. Mapping of oceano-graphic conditions, zooplankton, fish larvae and microplastic. Systematic sampling of fish for food safety analyses.	Atlantic Ocean	907	924	01	03	195	

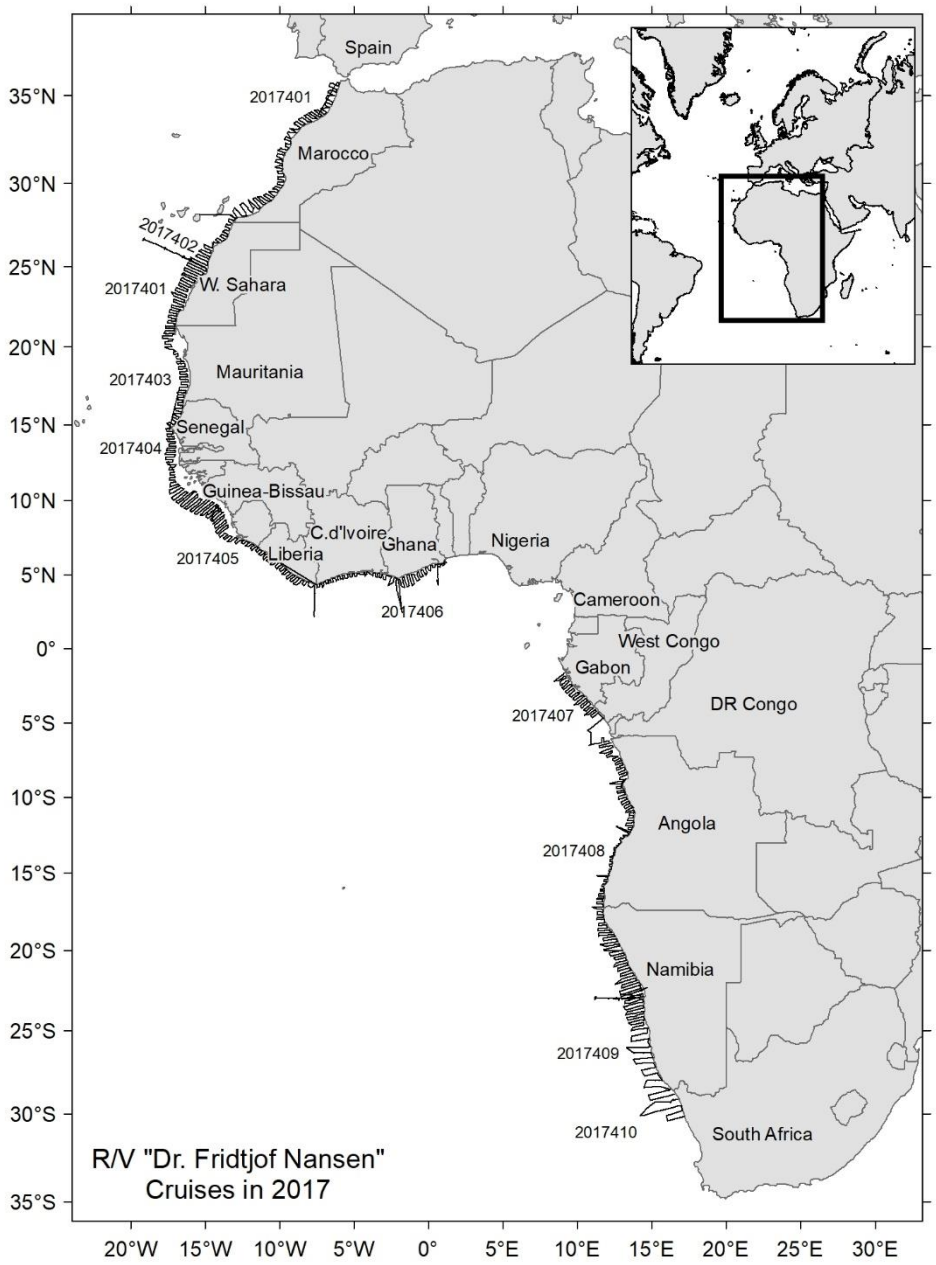
2 Charts – overview

2.1 CTD and trawlstations 2017

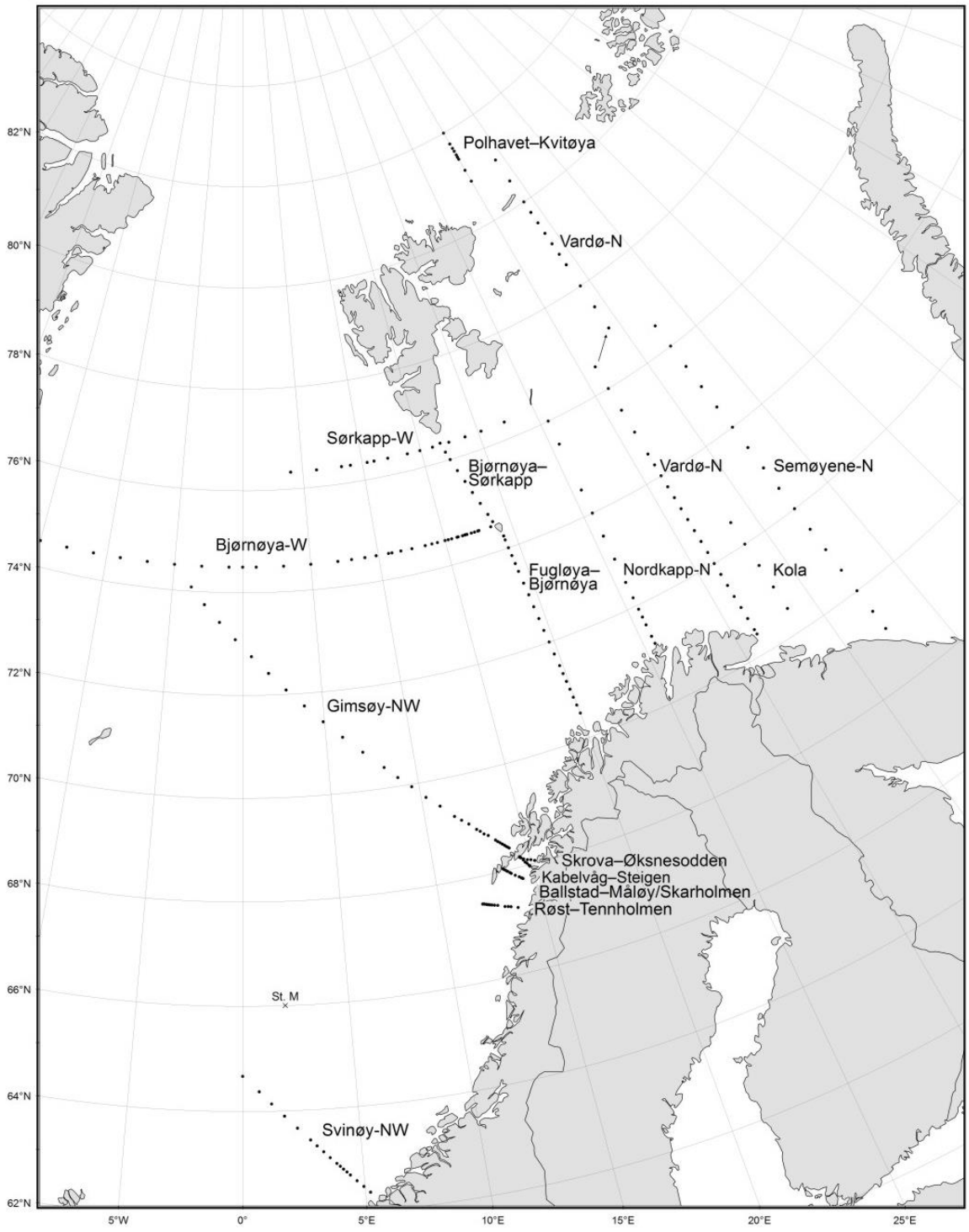



Trawl stations 2017
"G. O. Sars"
"J. Hjort"
"K. Bonnevie"
Hired vessels
75°N
70°N
65°N
60°N
55°N
15°W
10°W
5°W
0°
5°E
10°E
15°E
20°E

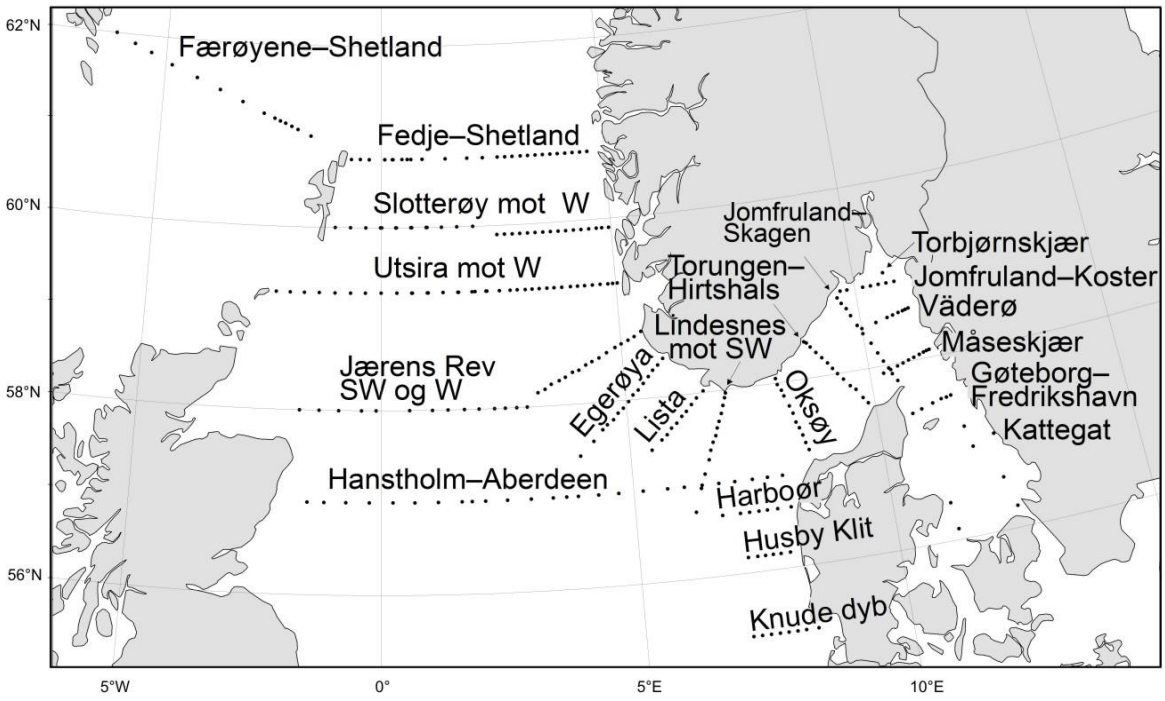
2.2 Cruiseline 2017 “Dr.Fridtjof Nansen”



2.3 Oceanographic sections

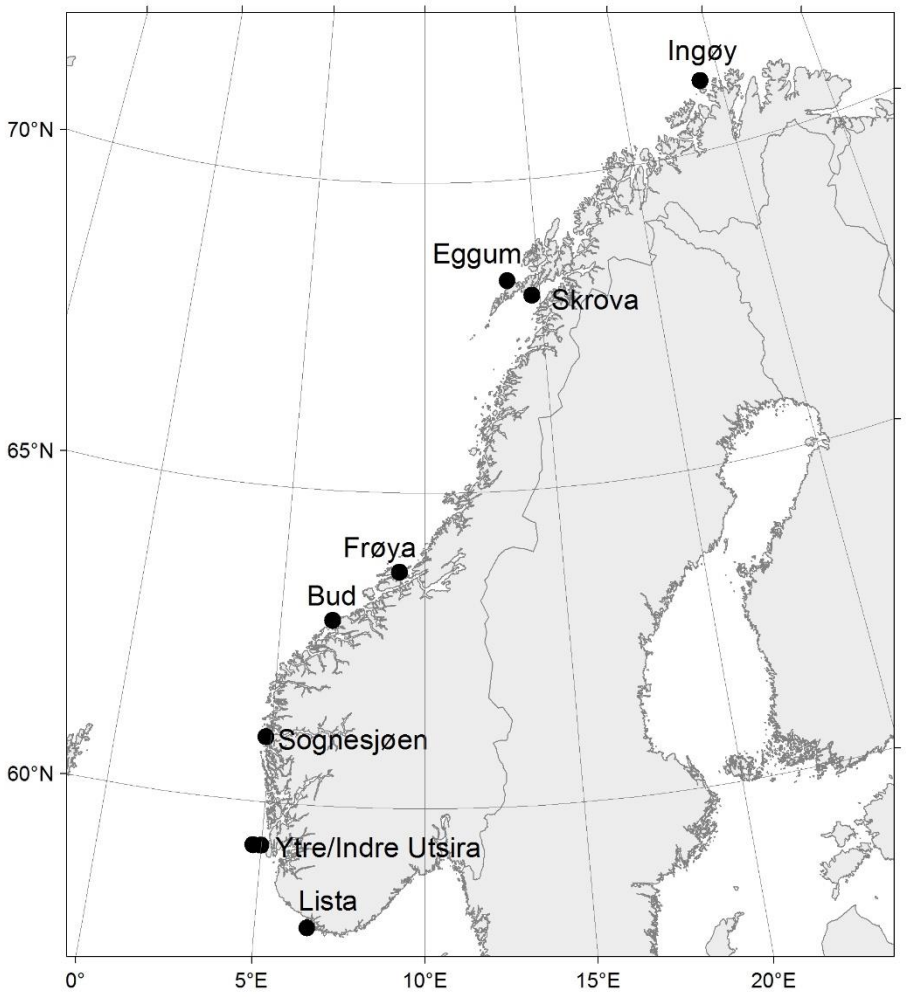


Norwegian Sea and Barents Sea



North Sea, Skagerrak and Kattegat

2.4 Fixed oceanographic stations



3 Tables – Observations in 2017

3.1 **Oceanographic sections 2017** (Cruise no)

Area	Oceanogr. sec.	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
North Sea	Fedje–Shetland					2017204							
	Slotterøy-West												
	Utsira-West		2017604		2017204			2017614				2017621	
	Jærens Rev-SW and W												
	Egerøya-SW												
	Lista-SW					2017204							
	Lindesnes-SSW												
	Hanstholm–Aberdeen		2017604		2017204			2017614				2017621	
	Harboør												
	Hysby Klit												
	Knude-Dyb												
Skagerrak and Kattegat	Torungen–Hirtshals	2017301	2017302	2017303	2017305	2017307	2017308	2017309	2017310	2017313	2017315	2017316	20173118
	Oksøy–Hanstholm					2017204							
	Jomfruland–Skagen												
	Jomfruland–Koster												
	Torbjørnskjær												
	Väderø					2017204							
	Måseskjær					2017204							
	Gøteborg–Fredrikshavn												
	Kattegat												

Area	Oceanogr. sec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
The Norwegian Sea and Vestfjorden	Svinøy-North/West		2017858		2017859	2017107			2017214			2017211	
	Gimsøy-North/West				2017859		2017206					2017211	
	Bjørnøya-West						2017206		2017209				
	Sørkapp-West								2017209				
	Færøyene–Shetland												
	Skrova–Øksnesodden												
	Kabelvåg–Steigen				2017625								
	Ballstad–Måløy/Skarholmen				2017625								
	Røst–Tennholmen				2017625								
The Barents Sea	Fugløya–Bjørnøya		2017849	2017859		2017206			2017214			2017211	
	Vardø-North		2017849							2017209			
	Semøyene-North												
	Bjørnøya–Sørkapp			2017206	2017859		2017206		2017209				
	Nordkapp-North												
	Polhavet–Kvitøya												
	Kola												

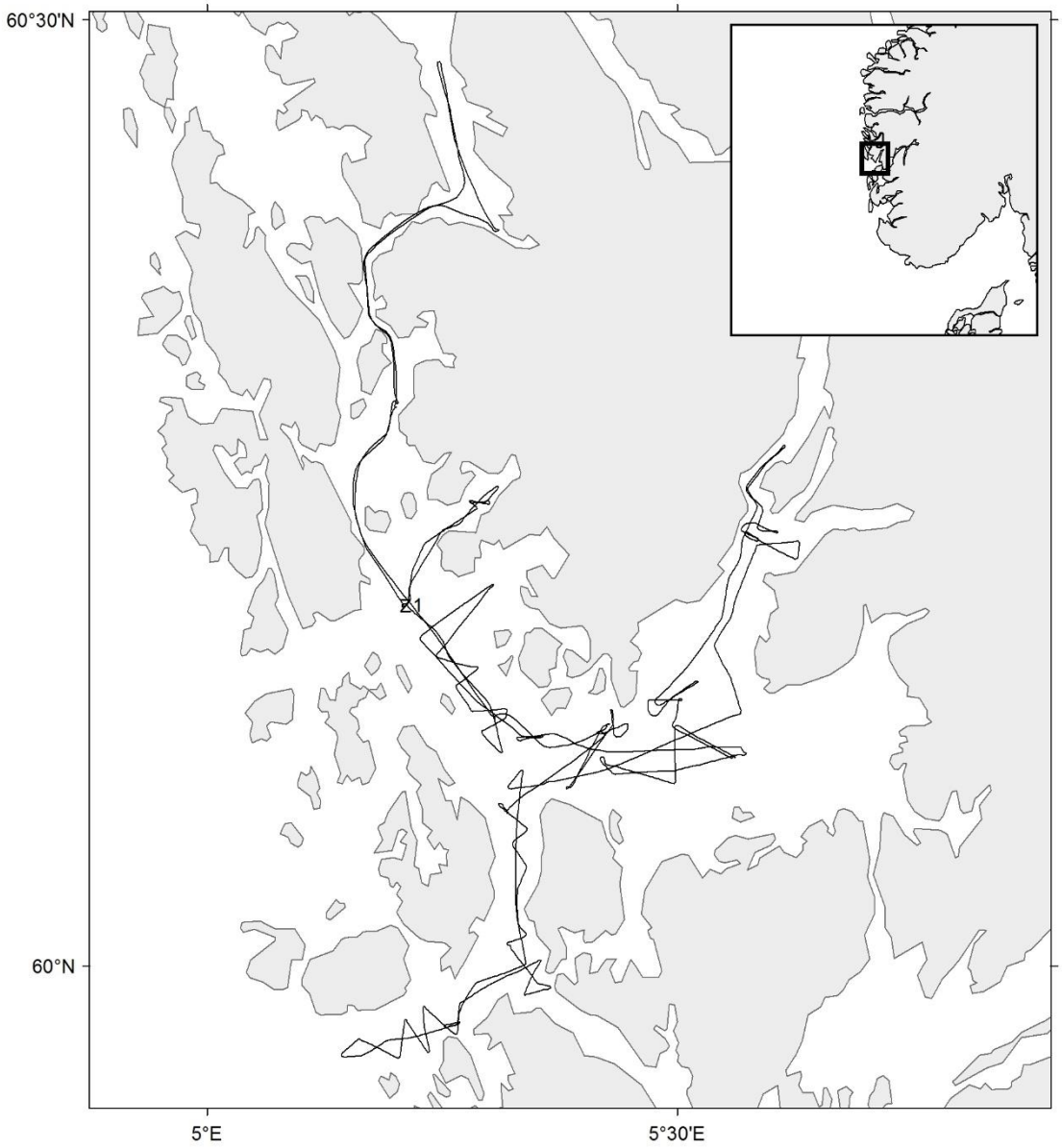
3.2 Fixed oceanographic stations 2017

(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	3	3	3	3	3	3	3	3	3	3	3	35
UTSIRA Y N59° 19′ E04° 44′	2	X	2	3	2	3	3	1	3	2	1	1	23
UTSIRA I N59° 19′ E04° 59′	2	x	2	3	2	3	3	1	3	2	1	1	23
SOGNESJØEN N61° 01′ E04° 50′	3	1	2	1	4	2	1	2	1	2	2	1	21
BUD N62° 56′ E06° 47′	x	x	x	x	x	x	x	x	x	x	x	x	0
SKROVA N68° 07′ E14° 39′	3	4	4	4	5	2	2	4	5	5	3	3	30
EGGUM N68° 23′ E13° 38′	1	3	3	1	2	2	2	1	2	1	1	2	21
INGØY N71° 08′ E24° 01′	2	3	3	x	2	x	2	1	2	2	5	1	23
Frøya N63° 44,6′ E09° 05,1′	x	x	x	1	1	x	1	x	1	1	x	x	5

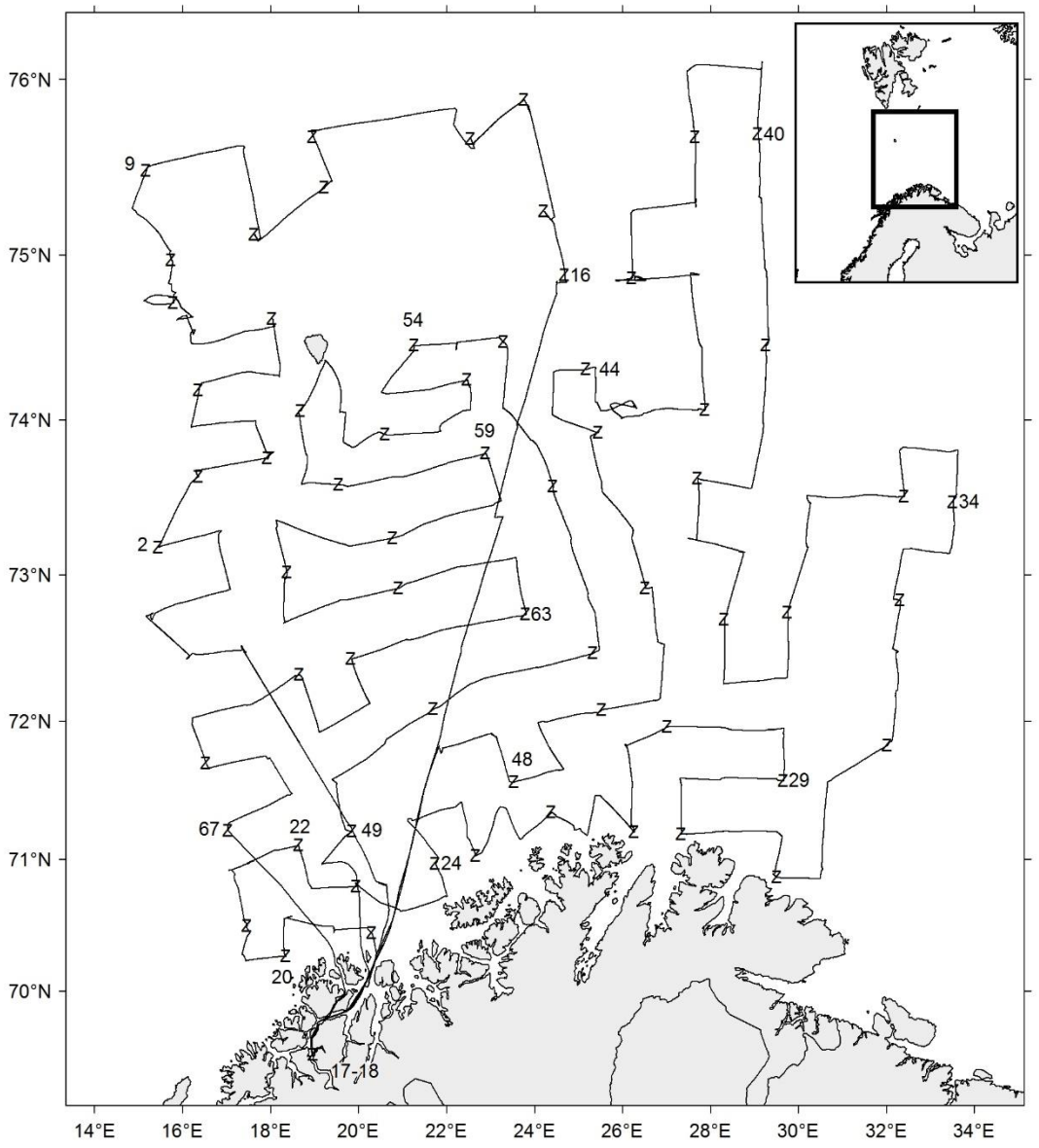
4 Charts for cruises 2017

4.1 “G.O. Sars”



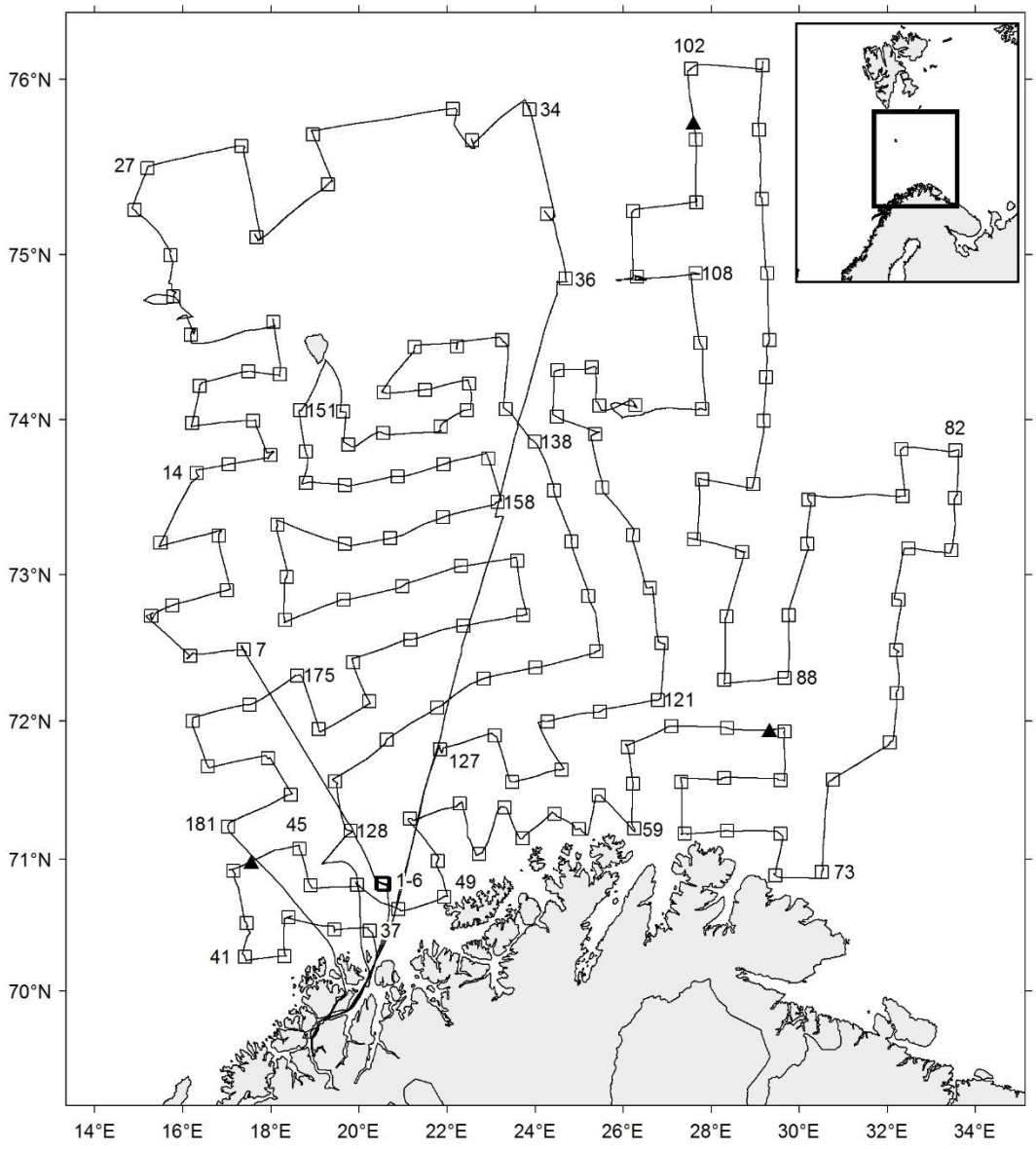
Cruise no 2017101 "G.O. Sars"
1–3 February 2017

z CTD st.no 1



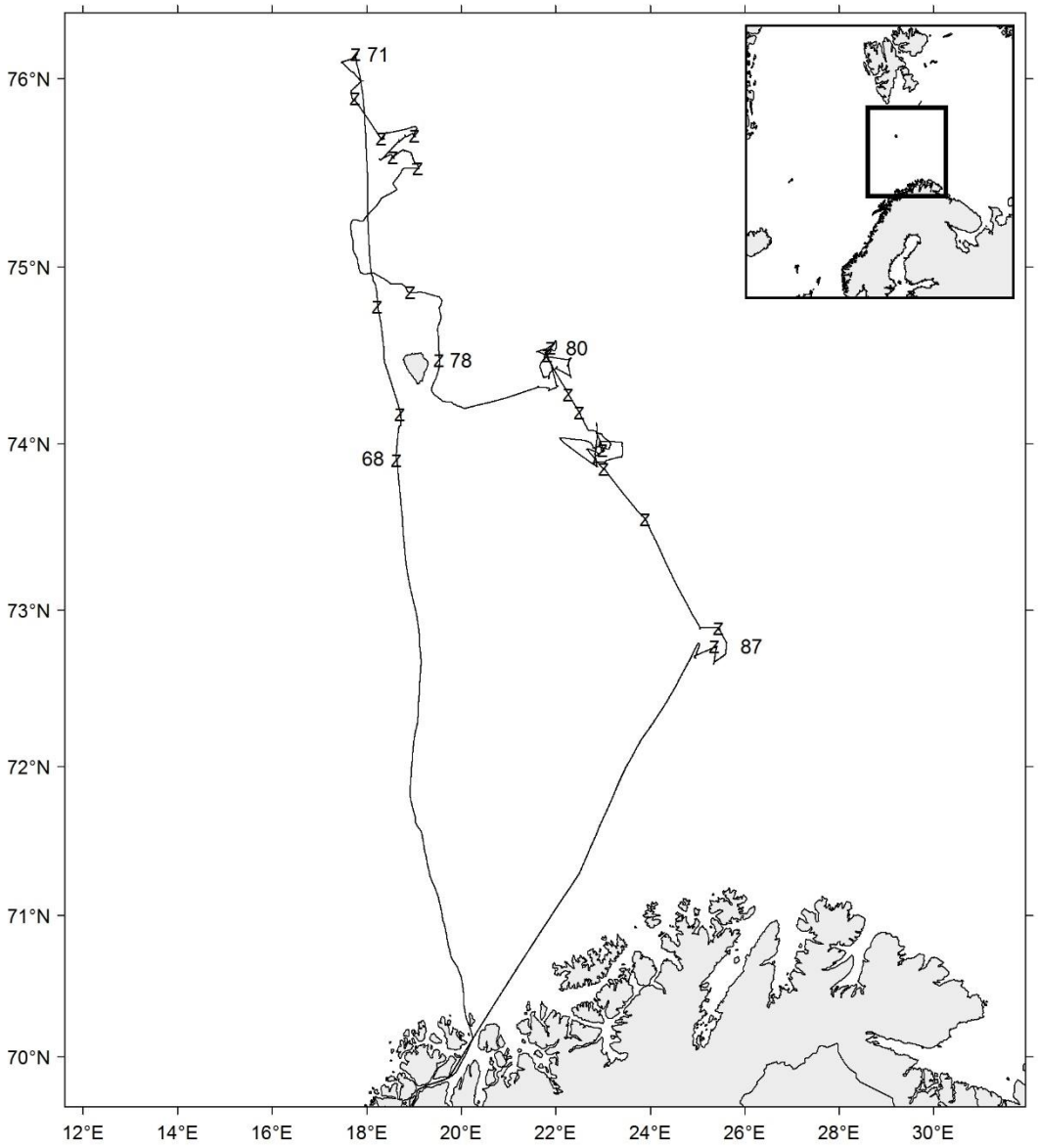
Cruise no 2017102 "G.O. Sars" (Chart 1)
7 Feb–25 Mar 2017

z CTD st.no 2-67



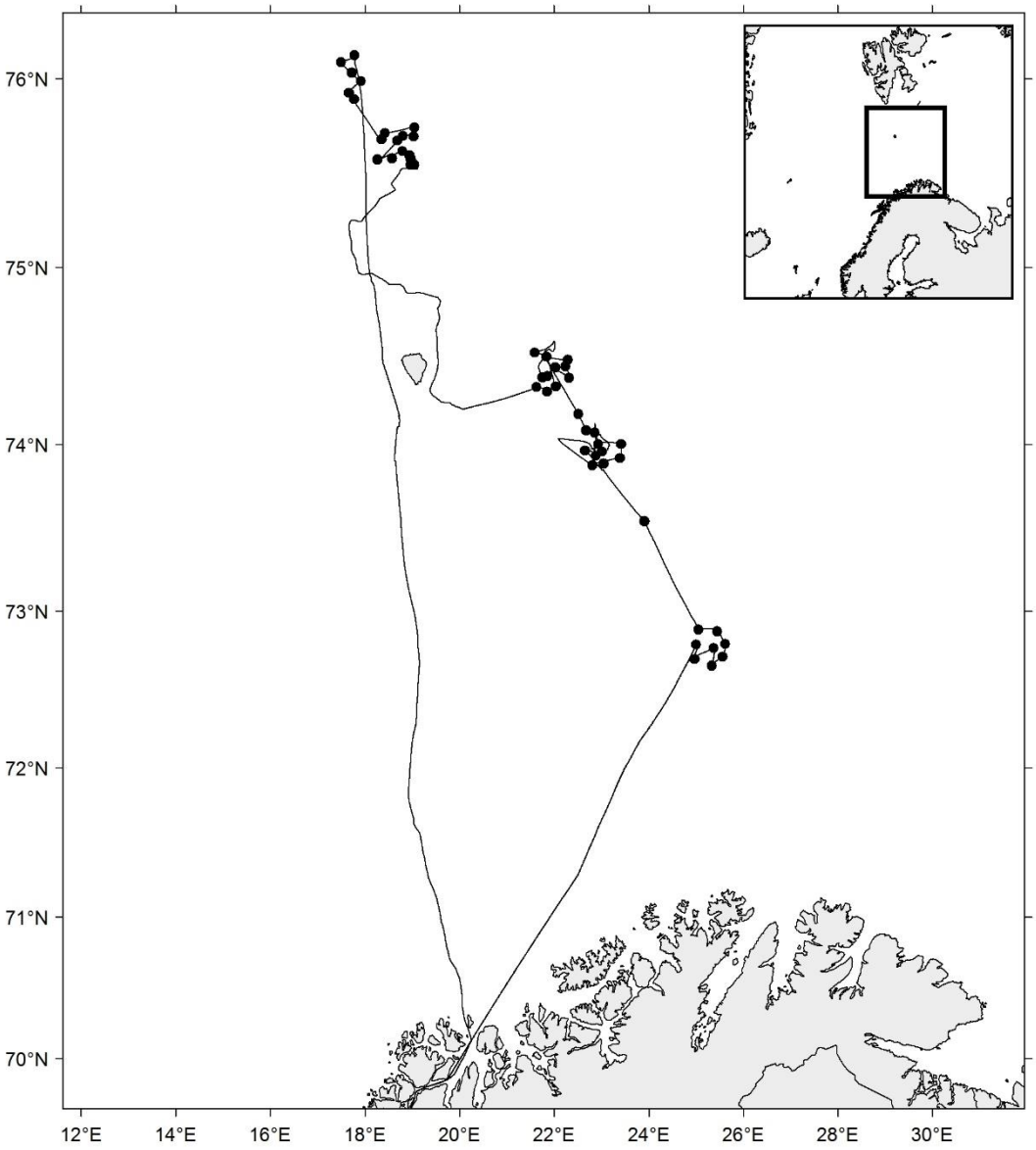
Cruise no 2017102 "G.O. Sars" (Chart 2)
7 Feb–25 Mar 2017

Trawl st.no 1-181
□ Bottom trawl
▲ Pelagic trawl



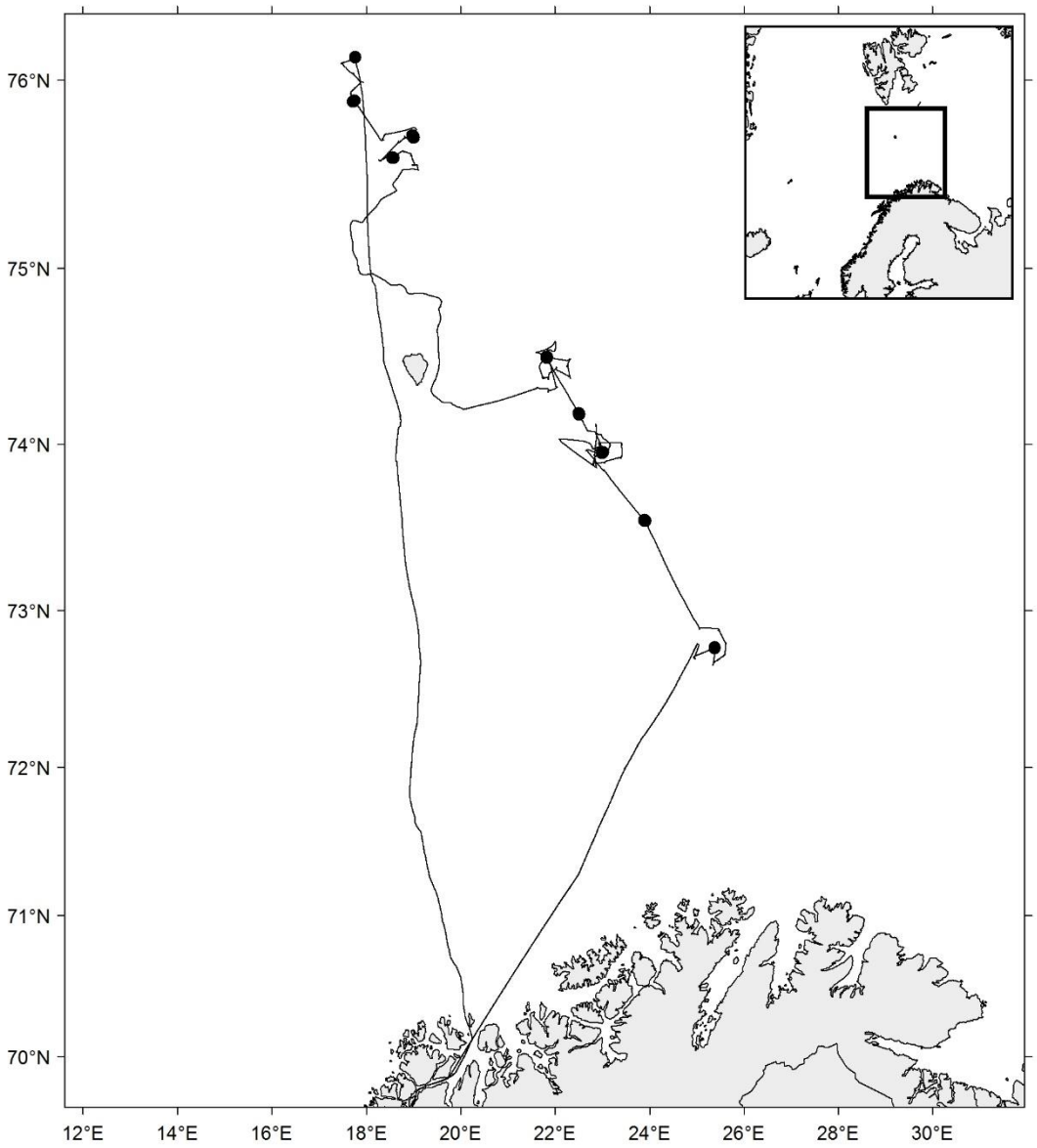
Cruise no 2017103 "G.O. Sars" (Chart 1)
25 Mar–8 April 2017

z CTD st.no 68-87



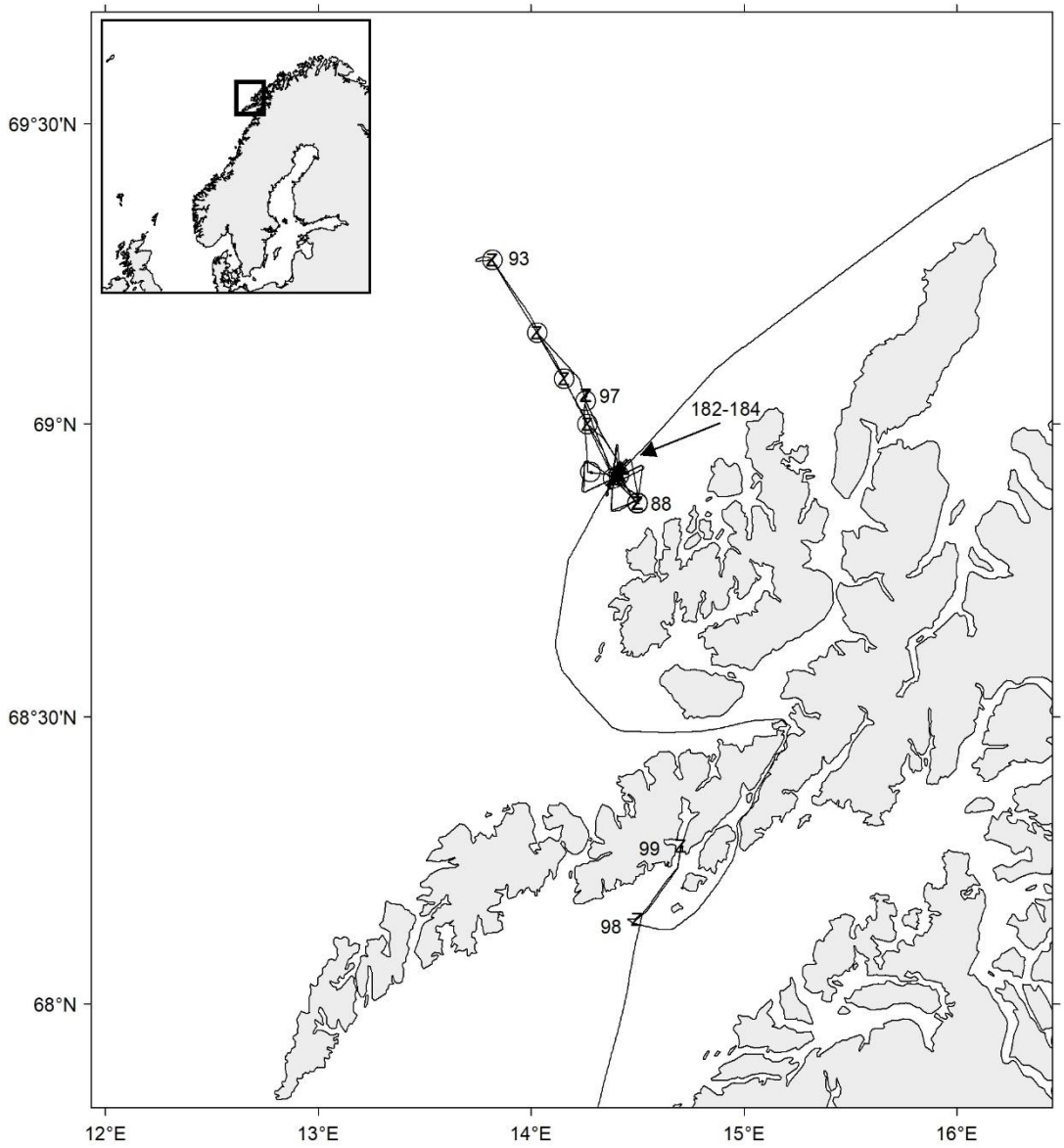
Cruise no 2017103 "G.O. Sars" (Chart 2)
25 Mar–8 April 2017

● Video stations



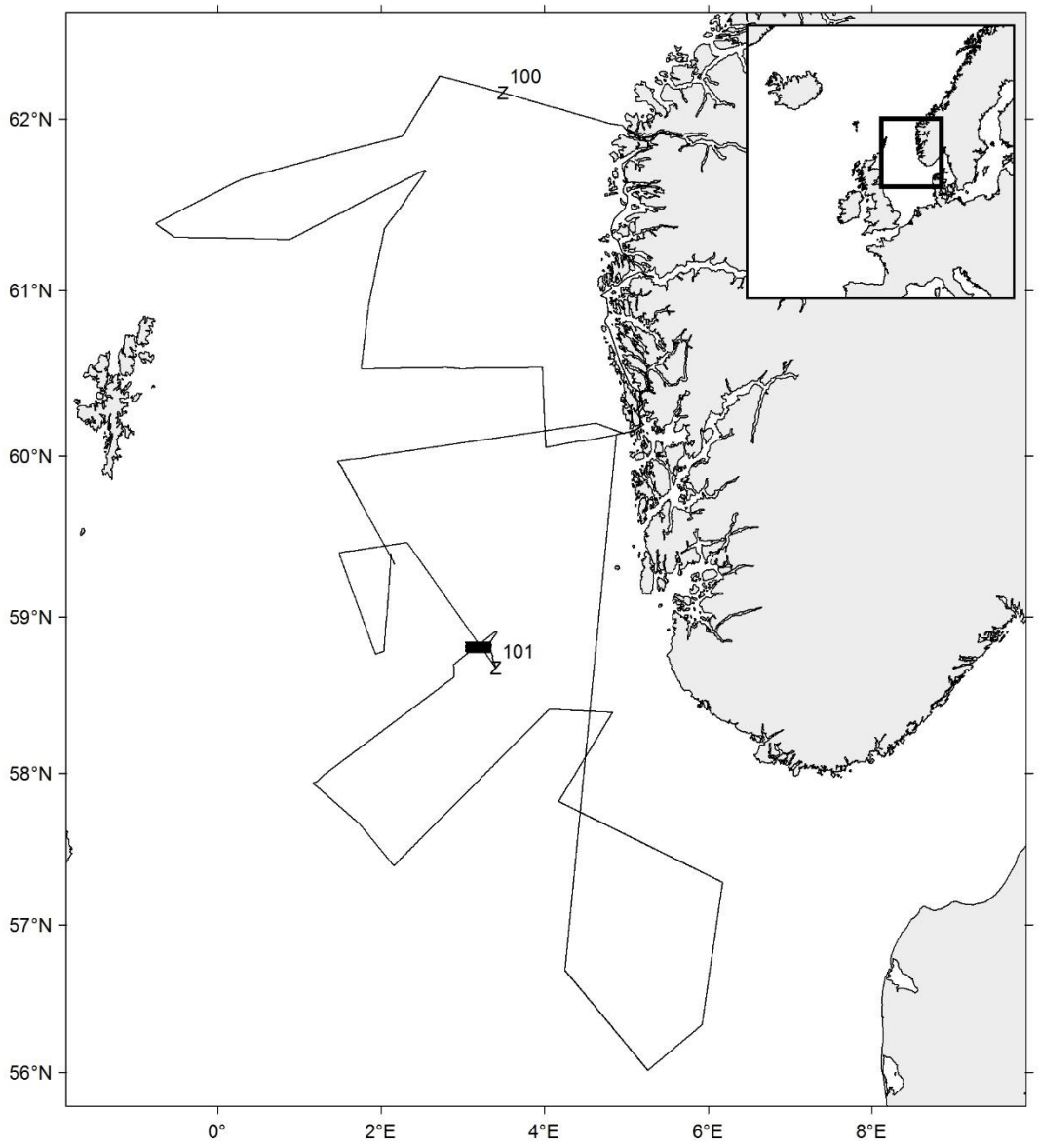
Cruise no 2017103 "G.O. Sars" (Chart 3)
25 Mar–8 April 2017

● Grab, sledge, box corer, multi corer and beam trawl st.



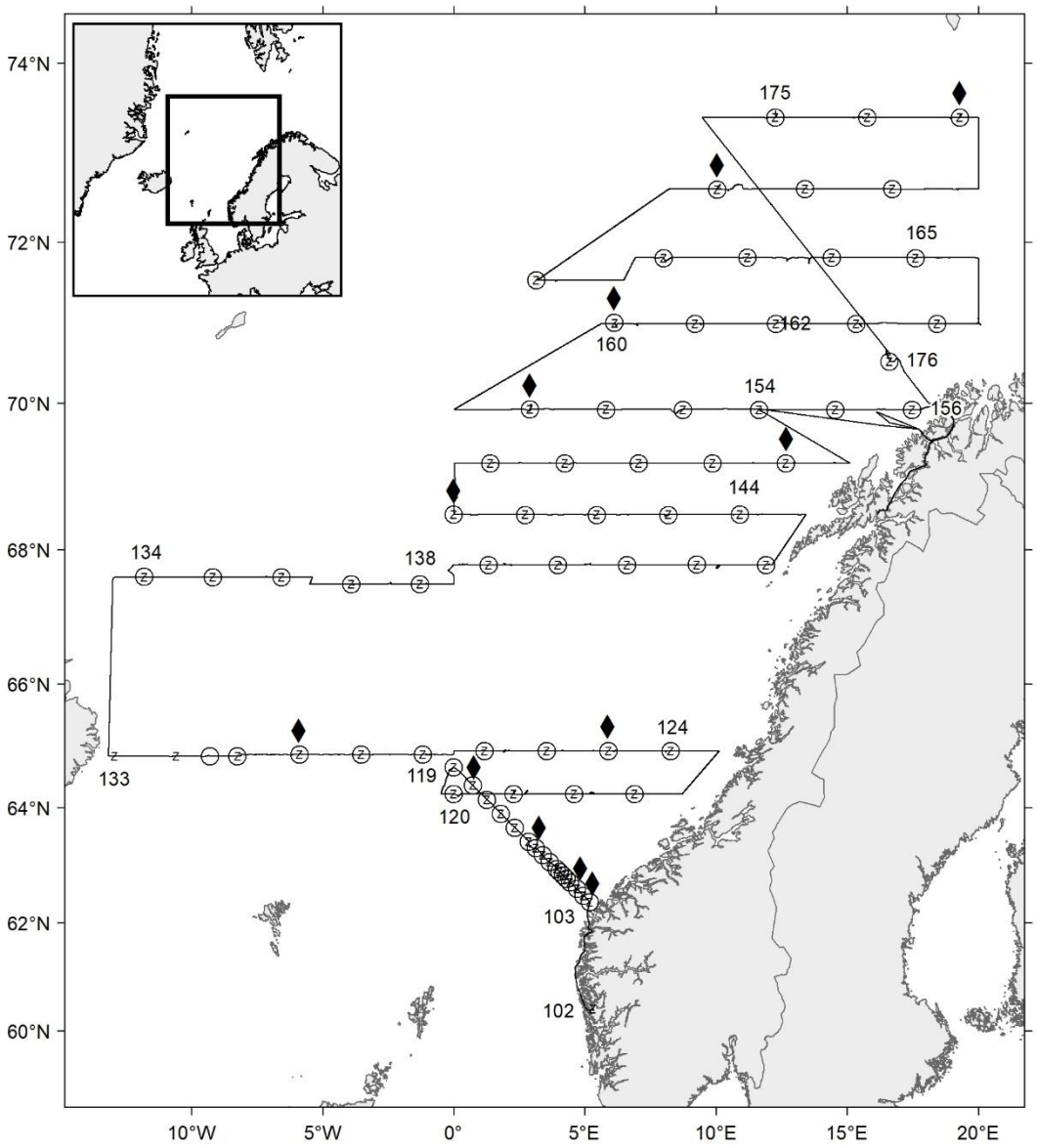
Cruise no 2017104 "G.O. Sars"
10–17 April 2017

z CTD st.no 88-99
○ Plankton st. (WP-II-net)
▲ Pelagic trawl st.no 182-184



Cruise no 2017106 "G.O. Sars"
22 April–2 May 2017

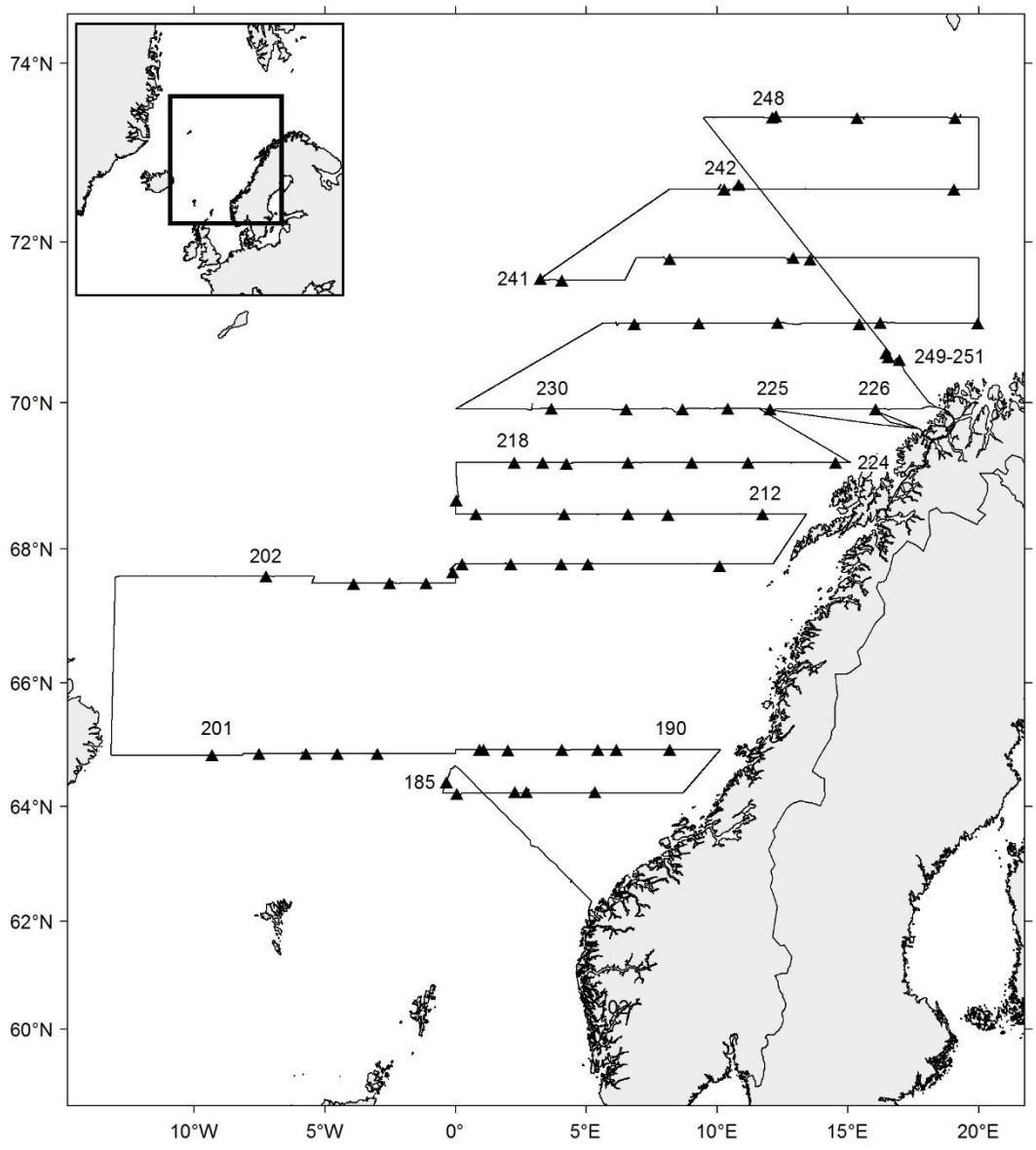
z CTD st.no 100-101



Cruise no 2017107 "G.O.Sars" (Chart 1)
3 May–6 June 2017

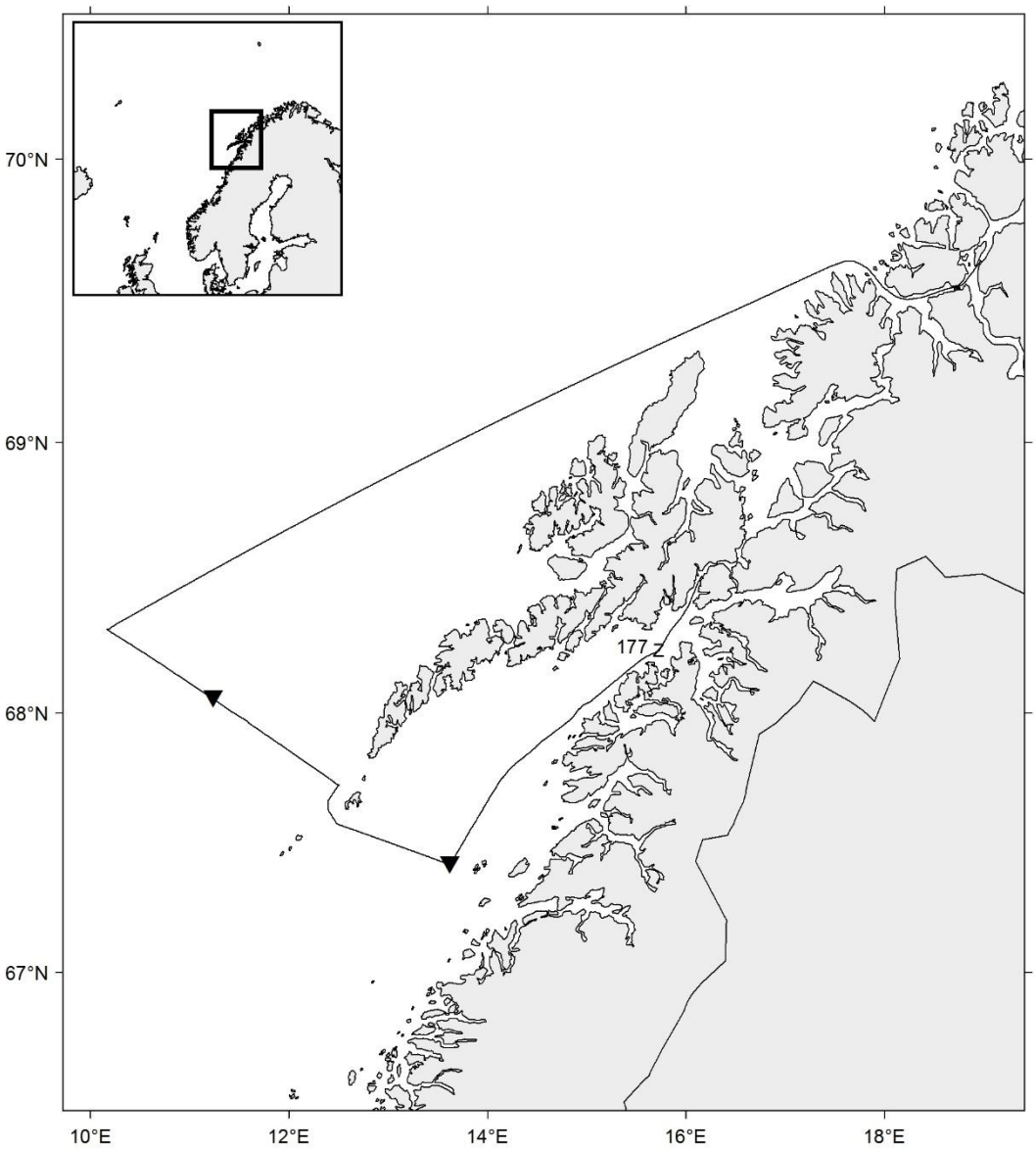
z CTD st.no 102-176
○ Plankton st. (WP-II-net)
♦ Plankton st. (Mocness)

Standard section Svinøy NW st.no 103-119



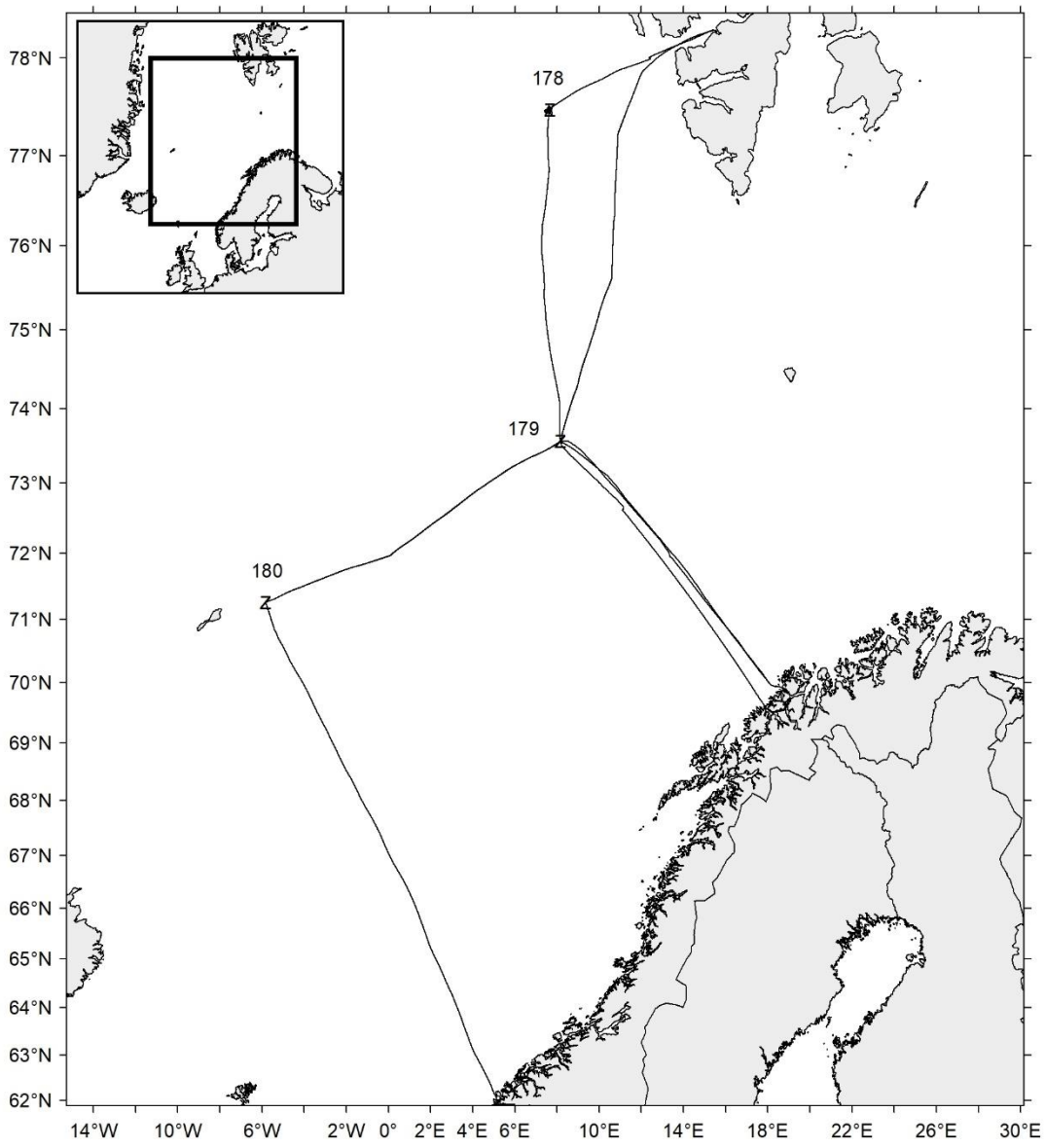
Cruise no 2017107 "G.O.Sars" (Chart 2)
3 May–6 June 2017

▲ Pelagic trawl st.no 185-251



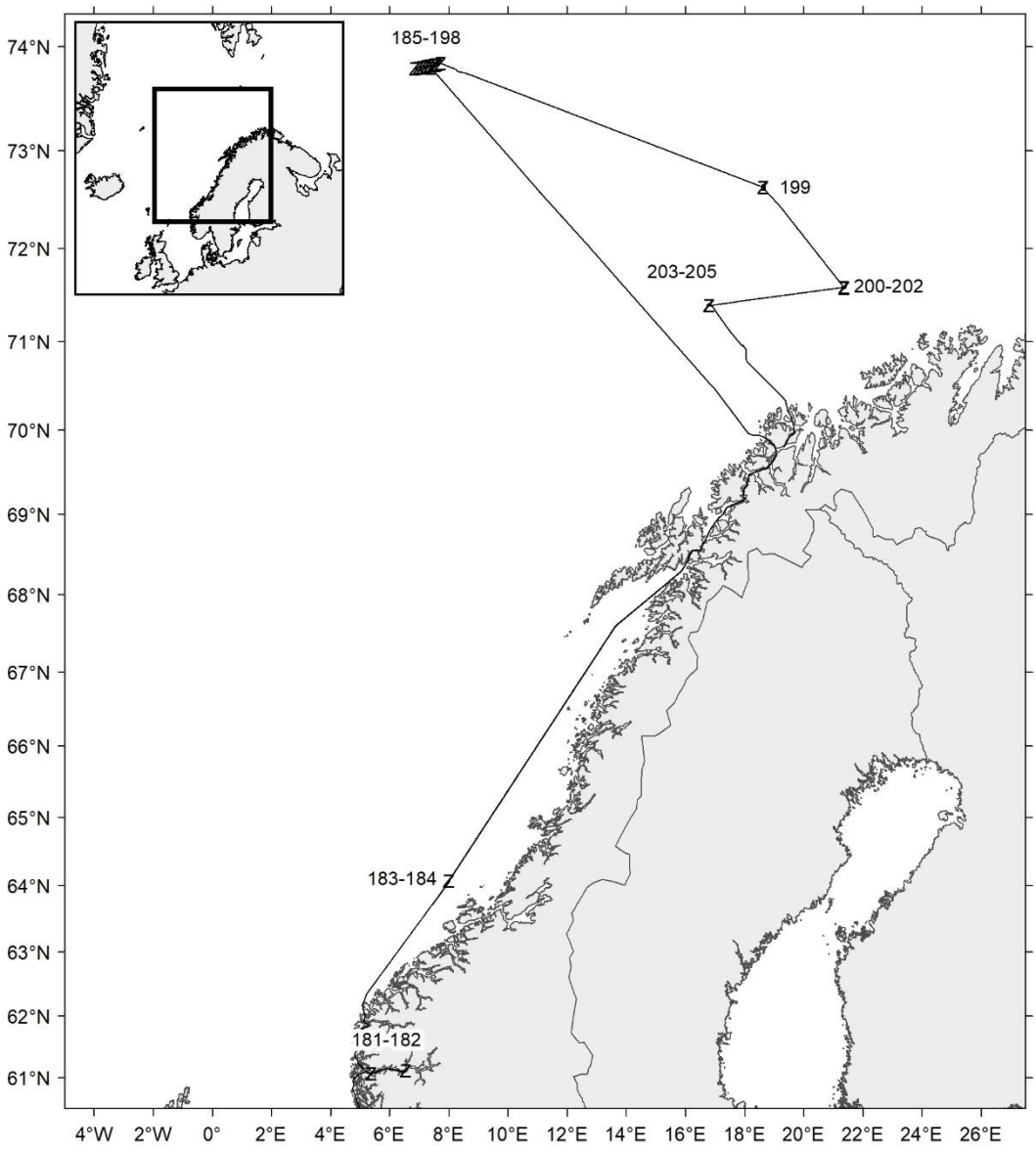
Cruise no 2017108 "G.O. Sars"
16–20 June 2017

z CTD st.no 177
▼ Recovered ocean bottom seismometer



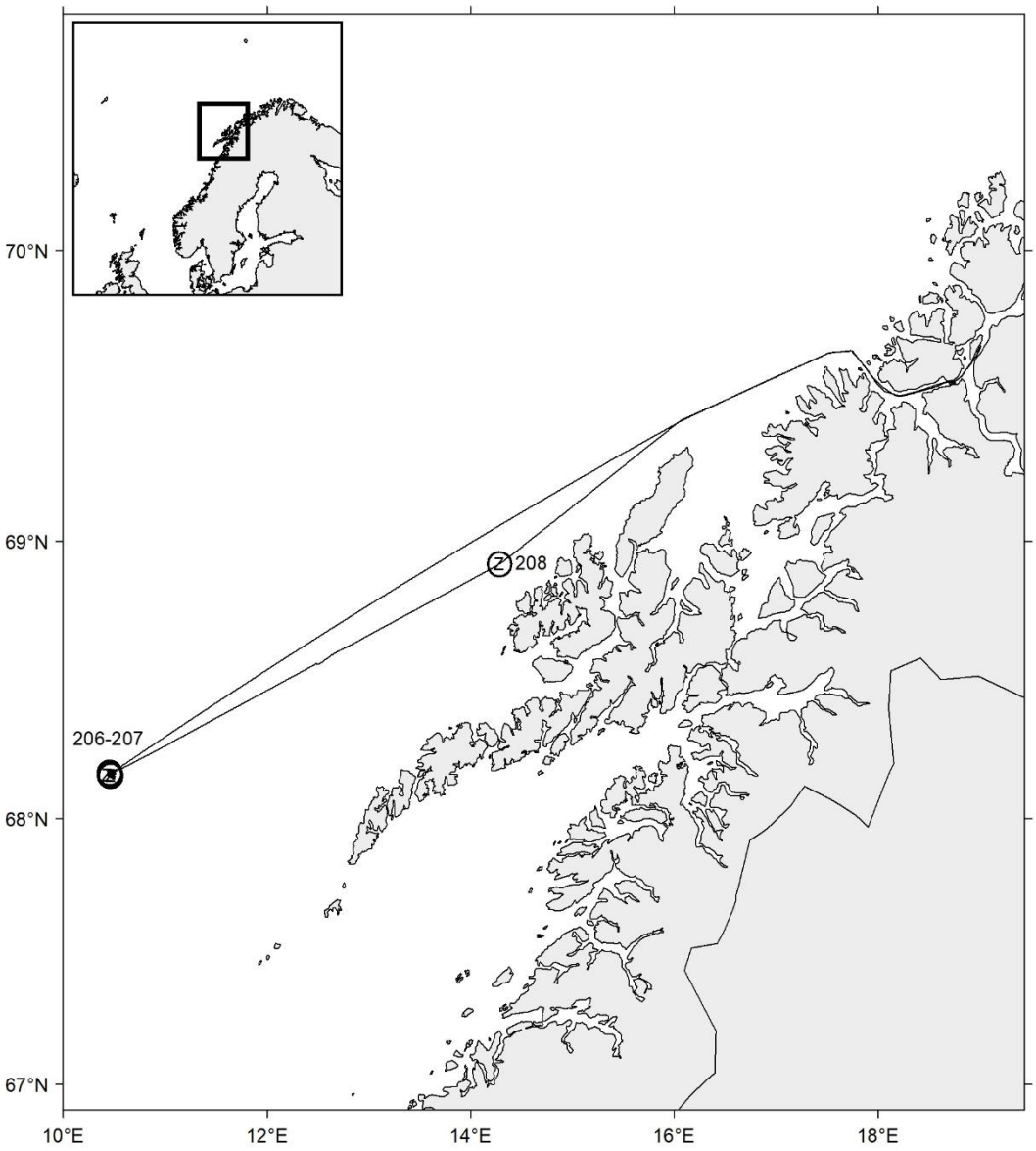
Cruise no 2017109 "G.O. Sars"
20 June–18 July 2017

z CTD st.no 178-180



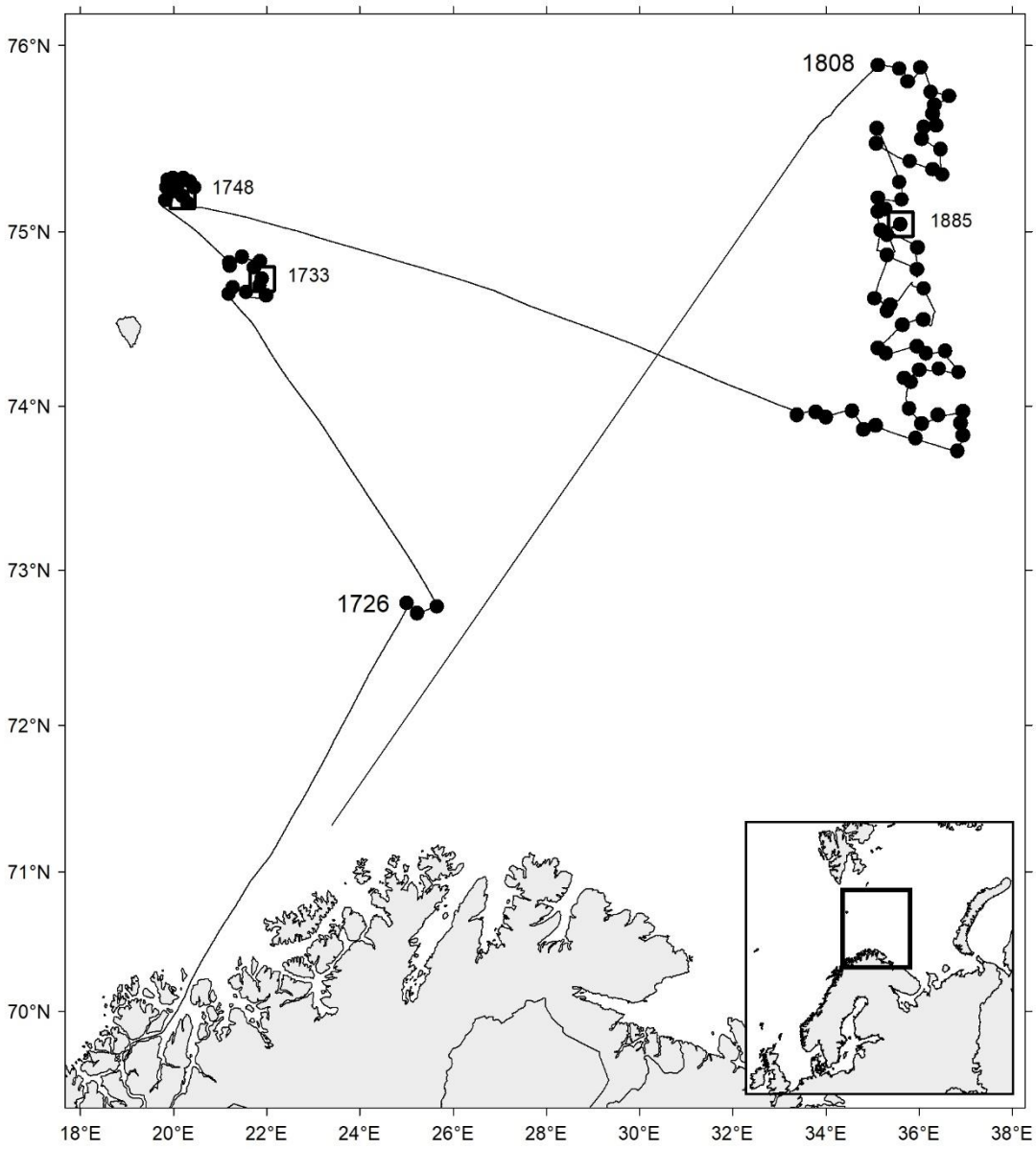
Cruise no 2017110 "G.O.Sars"
20 July 2017–6 August 2017

z CTD st.no 181-205



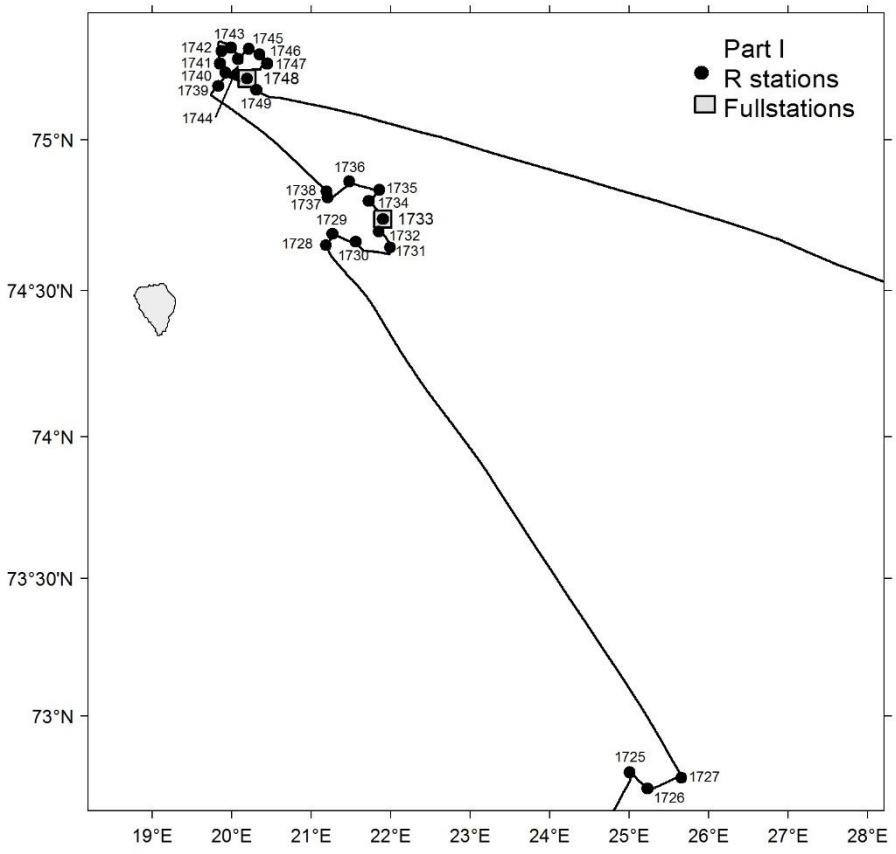
Cruise no 2017111 "G.O. Sars"
7–12 August 2017

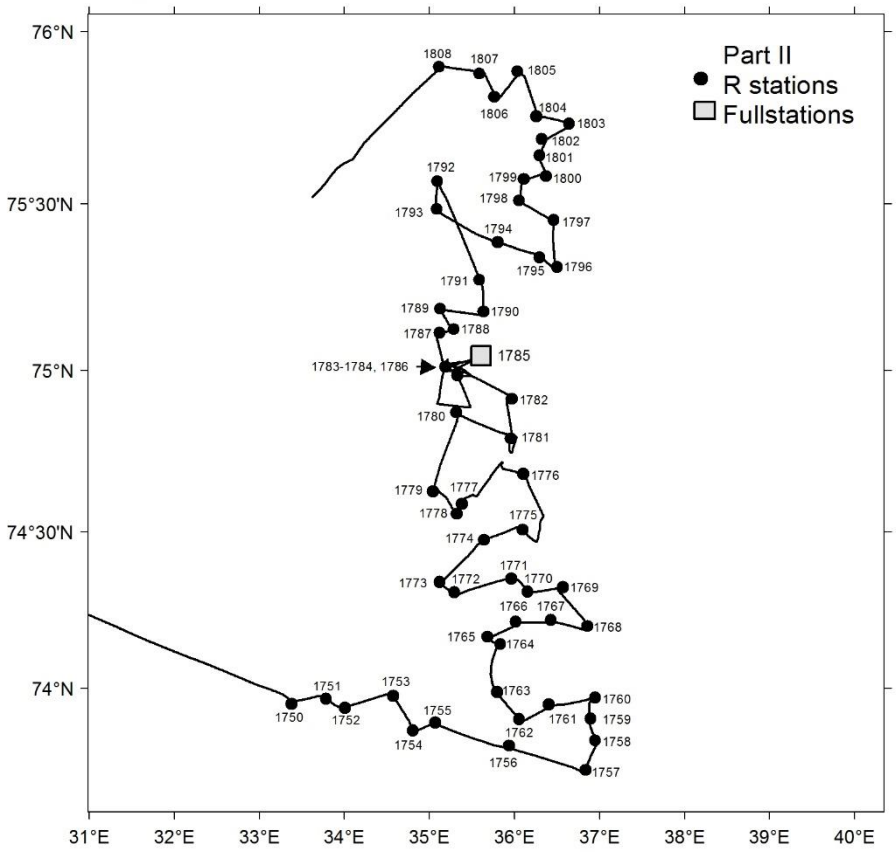
z CTD st.no 206-208
O ROV stations

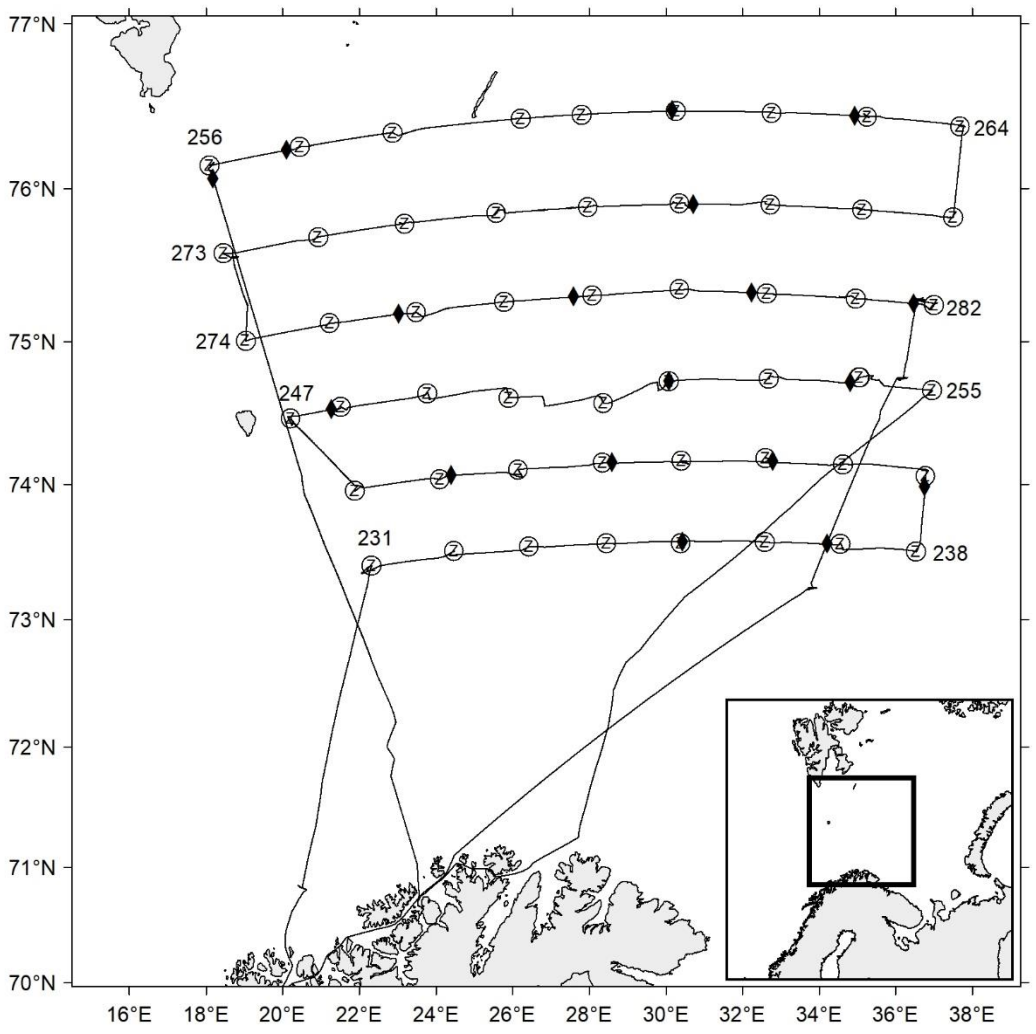


Cruise no 2017112 "G.O.Sars" (Chart 1)
15–31 August 2017

● Video stations: R1726-1808
□ Full stations R1733, R1748, R1785
CTD st.no 209-230

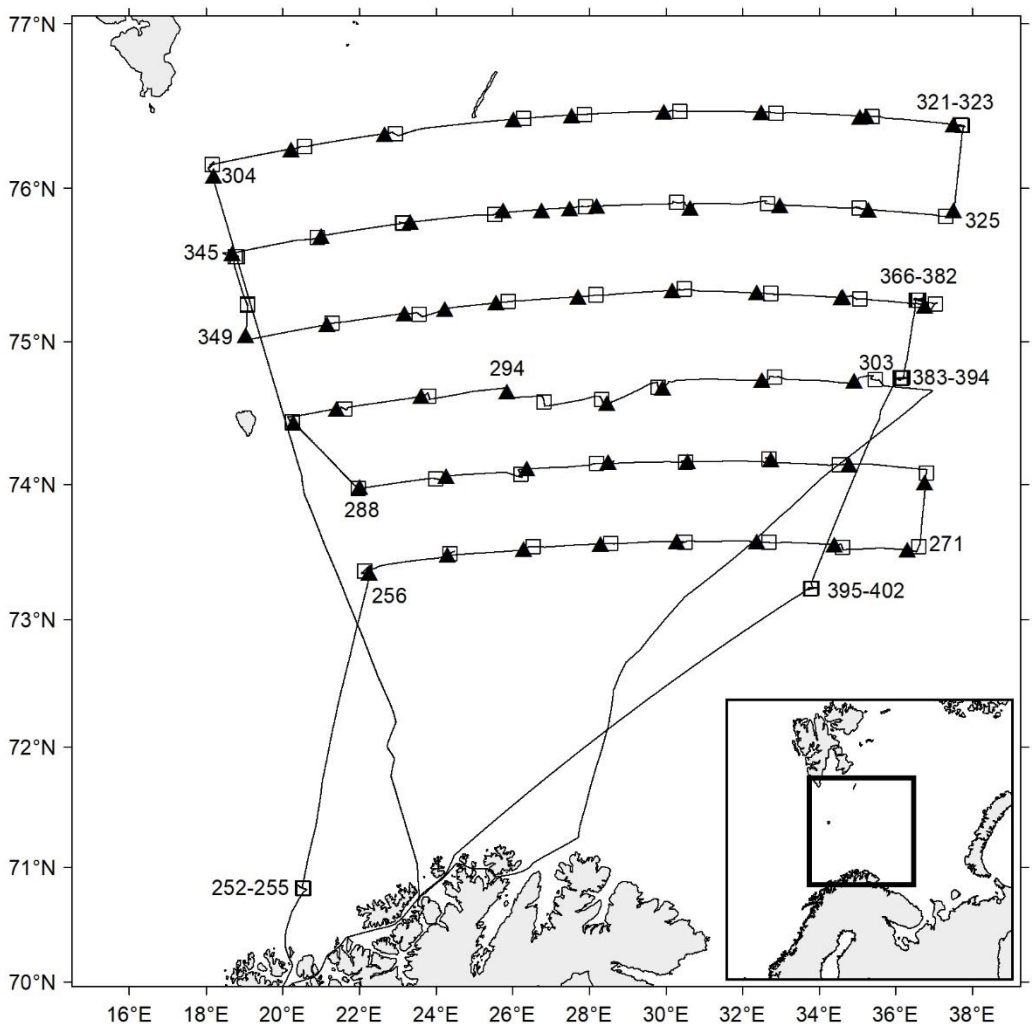

Part I
R stations
Fullstations
1743
1745
1742
1746
1741
1747
1740
1748
1739
1749
1744
1736
1738
1735
1737
1734
1729
1733
1732
1728
1730
1731
1725
1727
1726
75°N
74°30'N
74°N
73°30'N
73°N
19°E
20°E
21°E
22°E
23°E
24°E
25°E
26°E
27°E
28°E


Part II
R stations
Fullstations
1808
1807
1805
1806
1804
1803
1802
1801
1792
1799
1800
1798
1793
1797
1794
1795
1796
1791
1789
1790
1787
1788
1783-1784, 1786
1785
1782
1780
1781
1776
1779
1777
1778
1775
1774
1771
1773
1772
1770
1769
1766
1767
1768
1765
1764
1751
1753
1763
1760
1750
1752
1755
1761
1759
1762
1758
1754
1756
1757
76°N
75°30'N
75°N
74°30'N
74°N
31°E
32°E
33°E
34°E
35°E
36°E
37°E
38°E
39°E
40°E



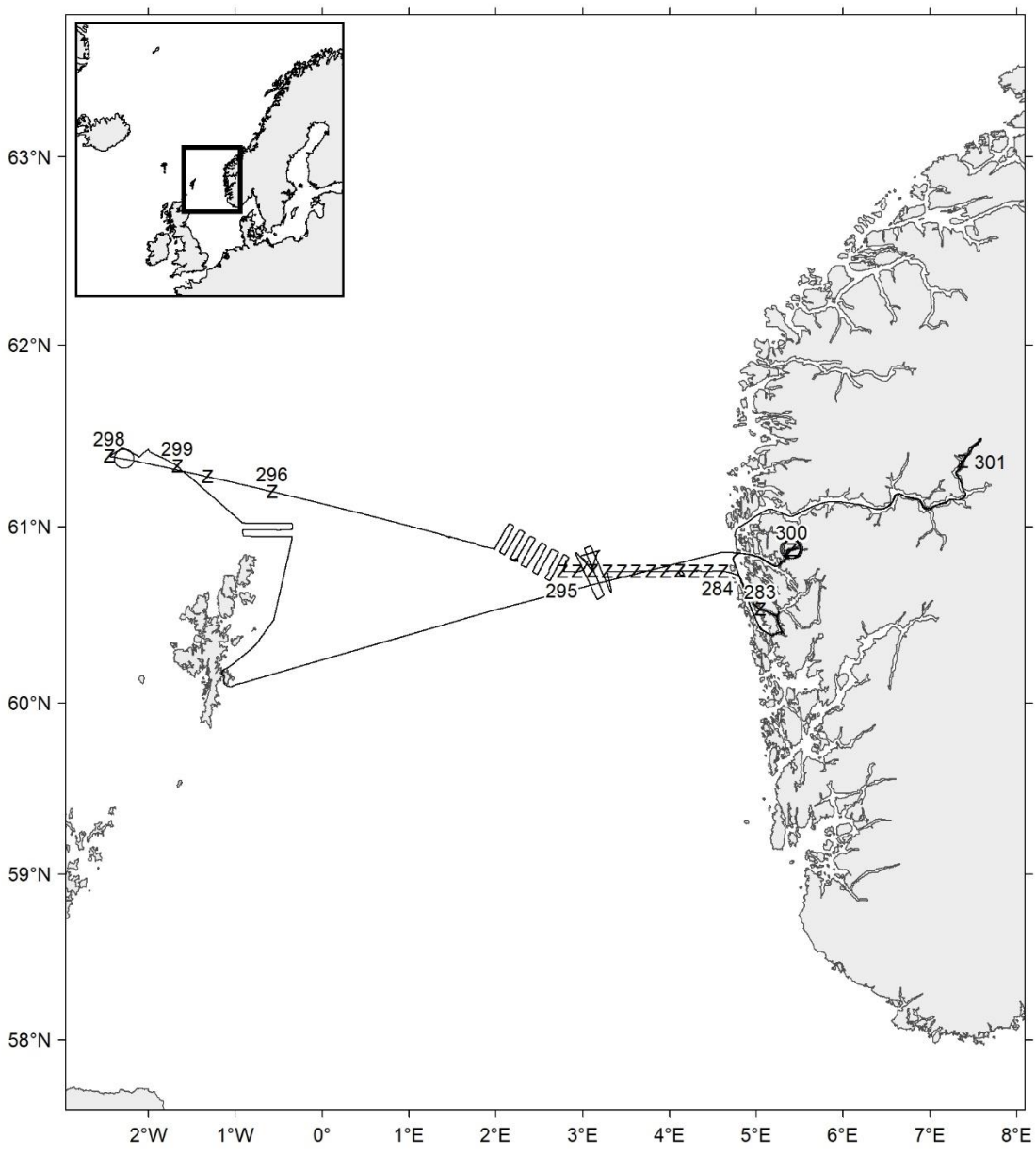
Cruise no 2017113 "G. O. Sars" (Chart 1)
1–28 September 2017

z CTD st.no 231-282
○ Plankton st. (WP-II-net)
♦ Plankton st. (Mocness)



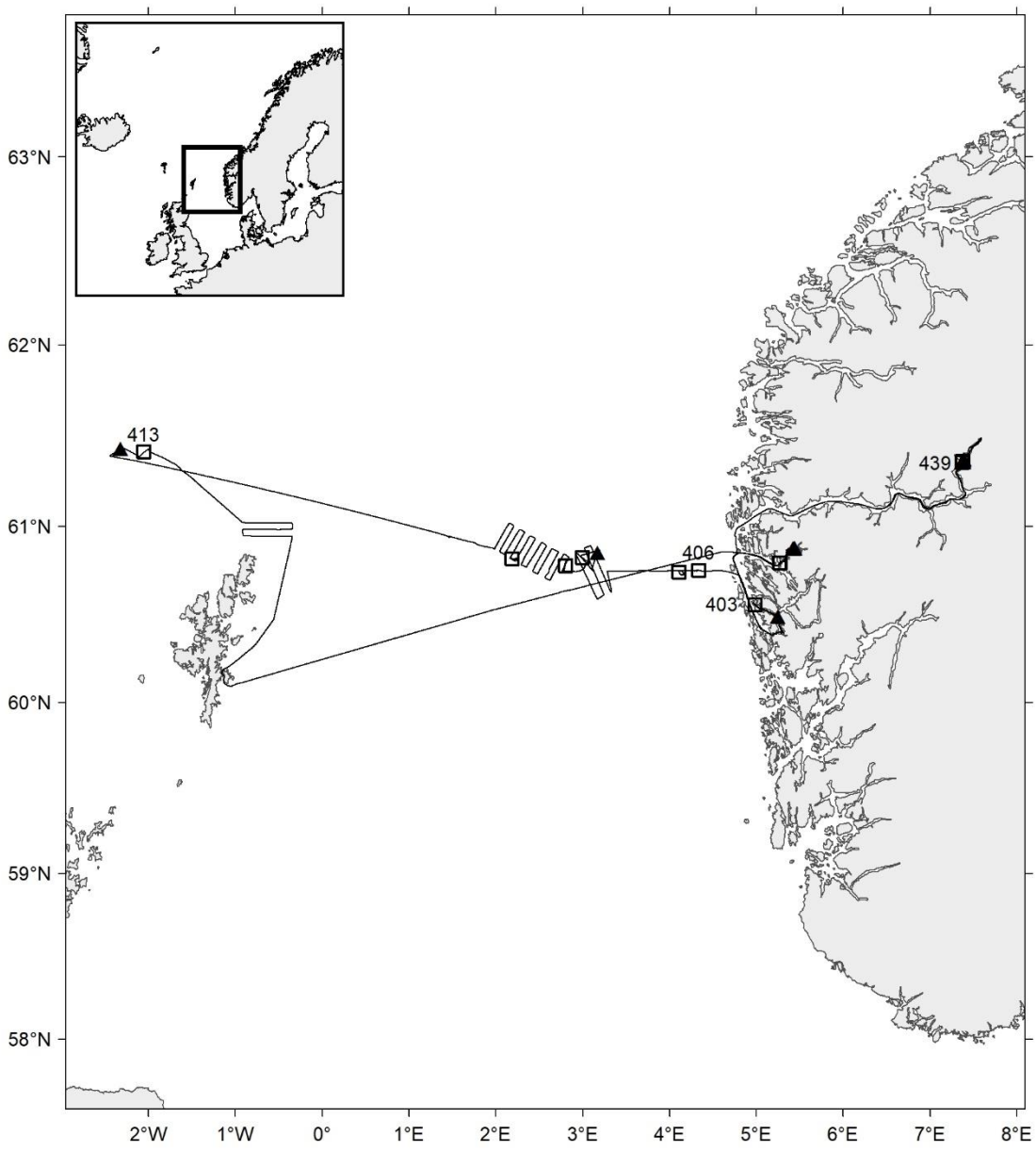
Cruise no 2017113 "G. O. Sars" (Chart 2)
1–28 September 2017

Trawl st.no 252-402
□ Bottom trawl
▲ Pelagic trawl



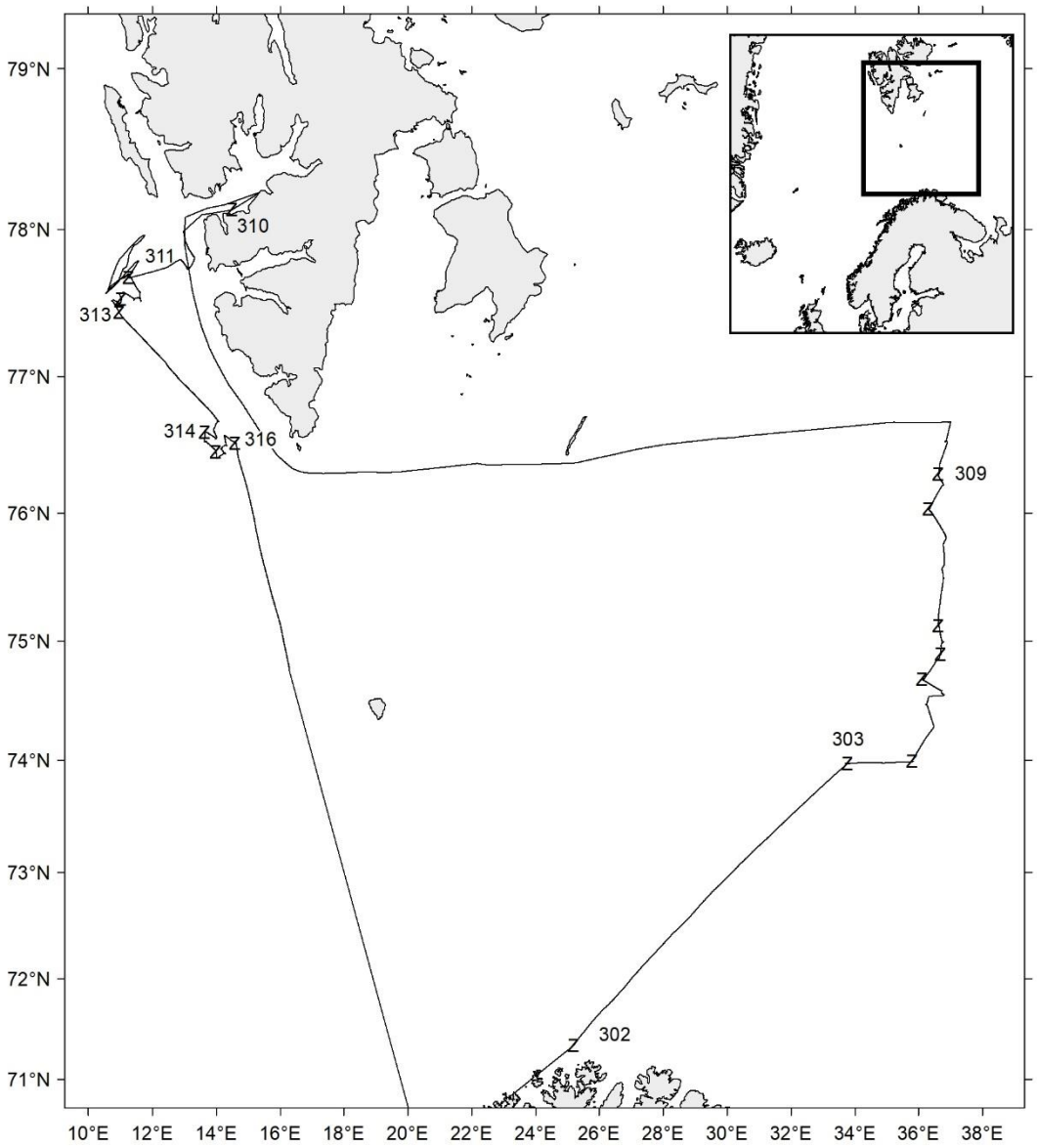
Cruise no 2017114 "G.O. Sars" (Chart 1)
2–17 October 2017

z CTD st.no 283-301
○ MIK st.



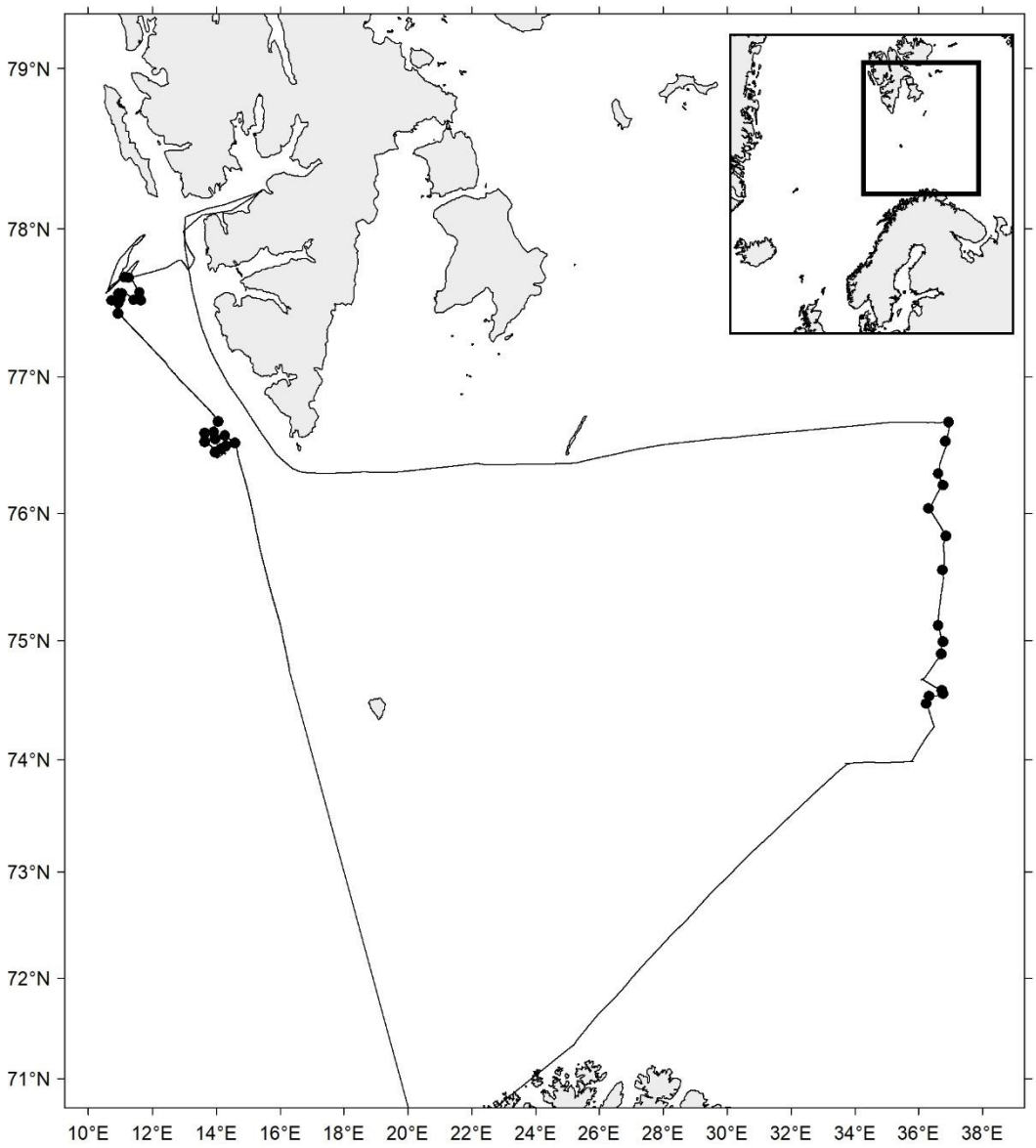
Cruise no 2017114 "G.O. Sars" (Chart 2)
2–17 October 2017

Trawl st.no 403-439
□ Bottom trawl
▲ Pelagic trawl



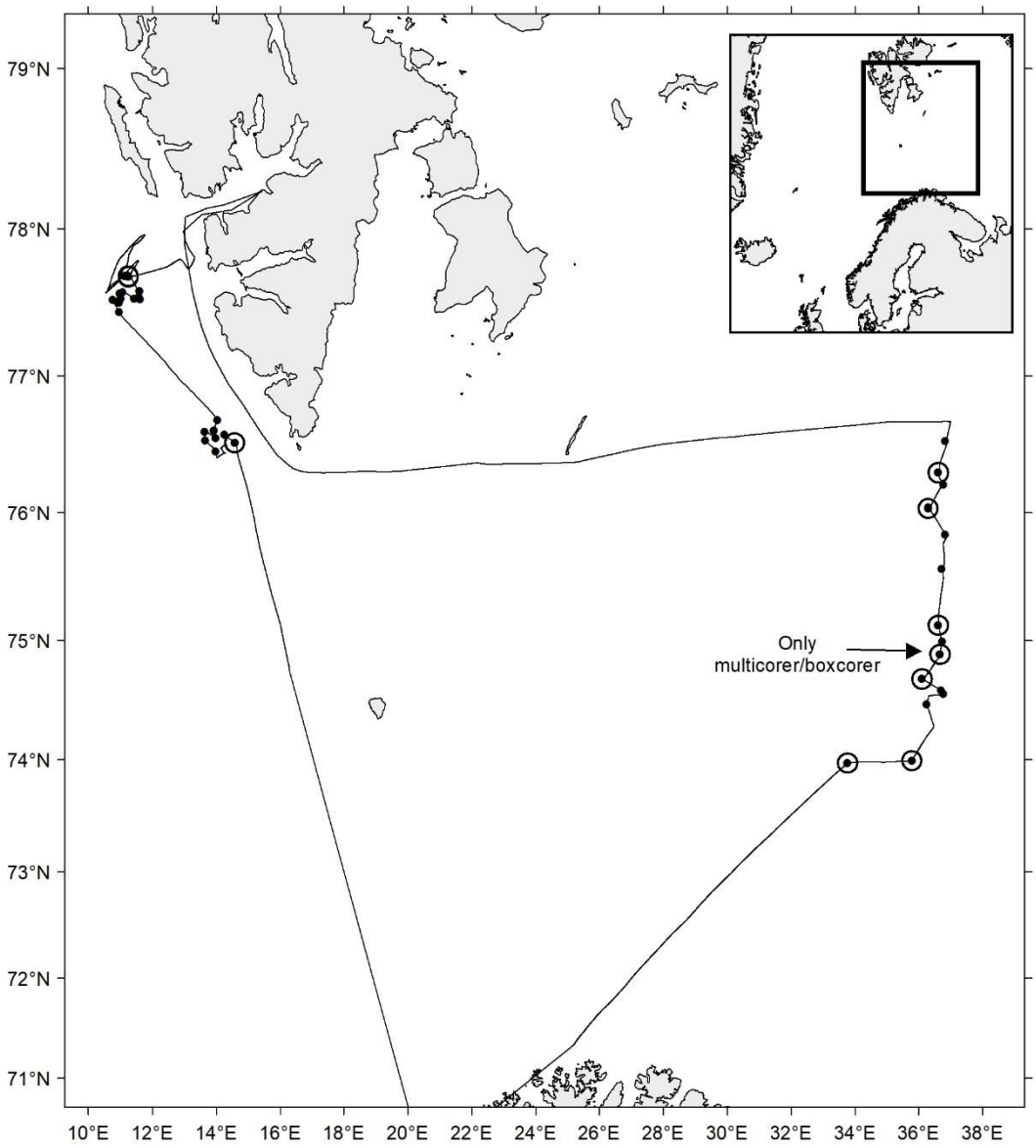
Cruise no 2017115 "G. O. Sars" (Chart 1)
21 October–17 November 2017
(In between the 2 cruise period 21.10-28.10 and 8.11-17.11, the ship was ordered by the Norwegian emergency authorities to take part in a rescue operation.)

z CTD st.no 302-316



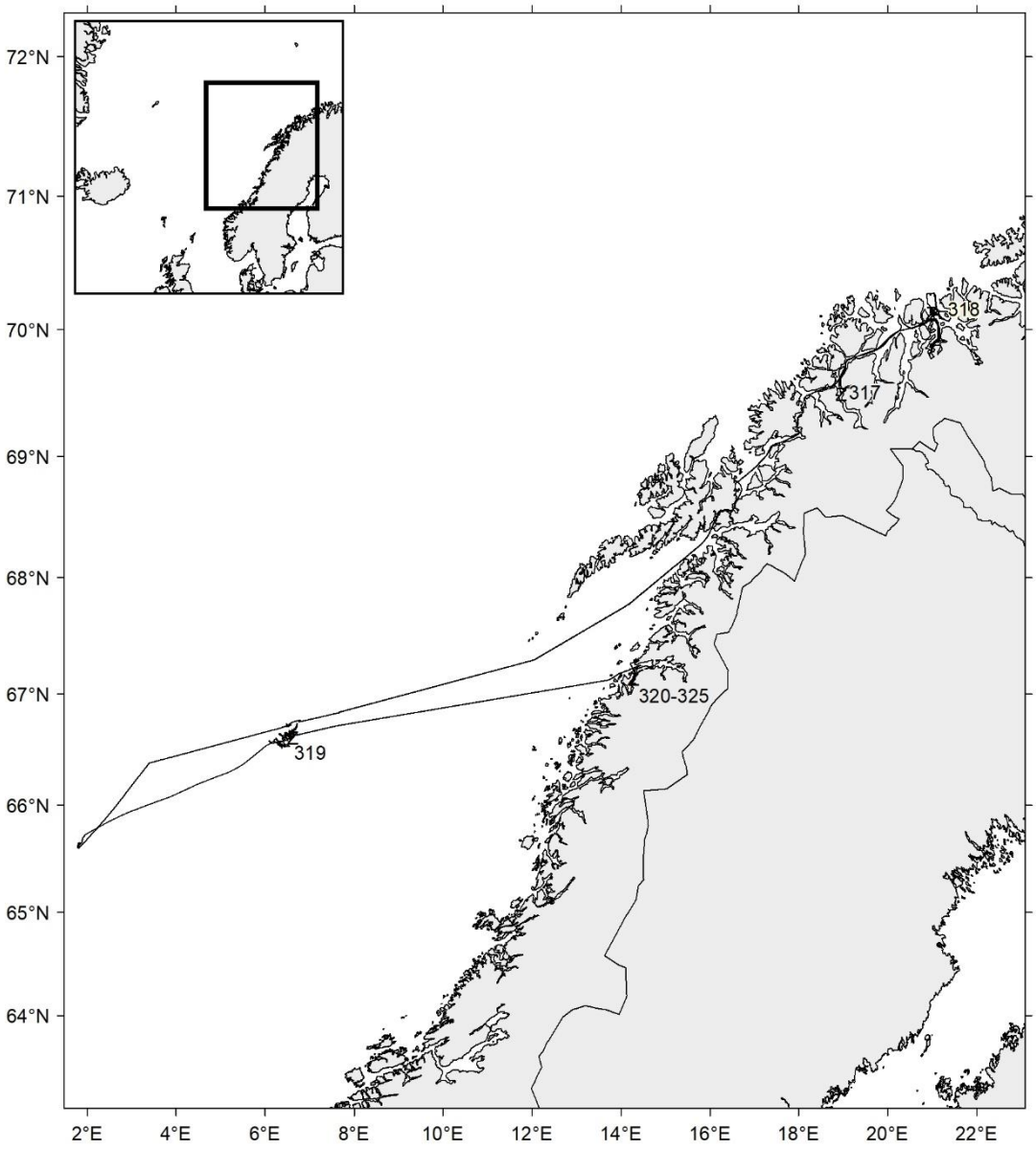
Cruise no 2017115 "G. O. Sars" (Chart 2)
21 October–17 November 2017

● Video stations



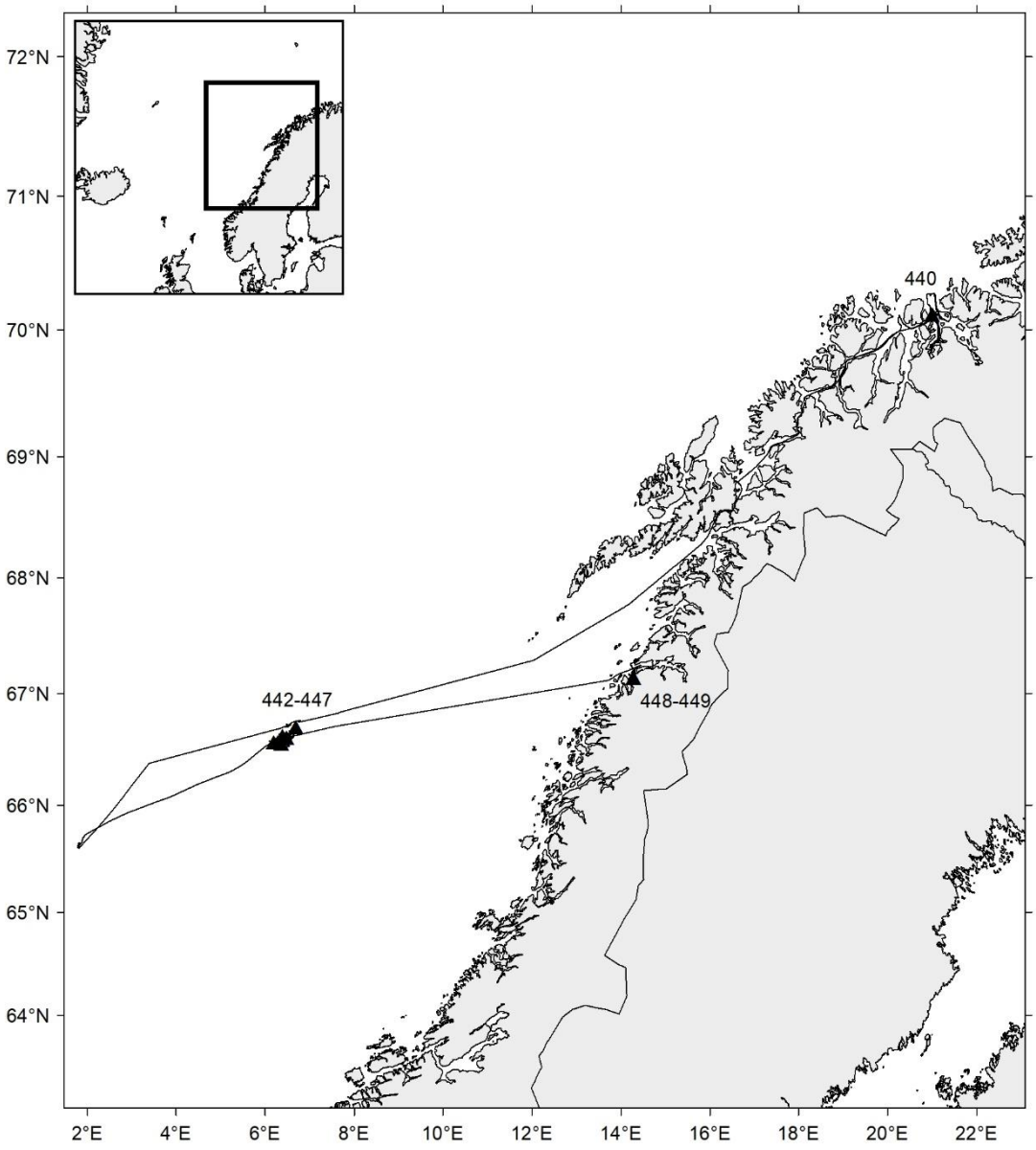
Cruise no 2017115 "G. O. Sars" (Chart 3)
21 October–17 November 2017

● Grab stations
○ Sledge, beam tr., box corer and multicorer



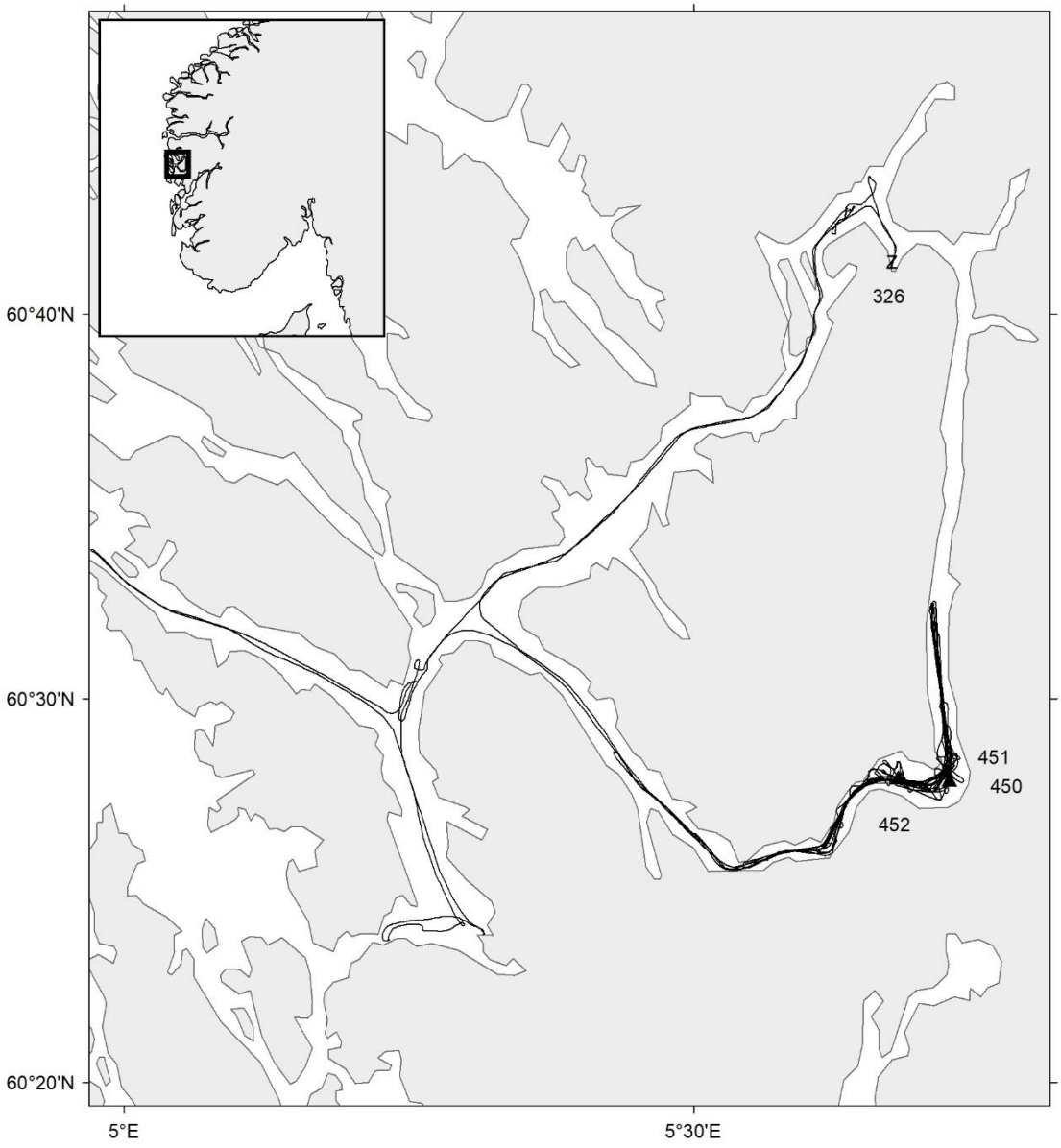
Cruise no 2017116 "G.O. Sars" (Chart 1)
19 November–4 December 2017

z CTD st.no 317-325



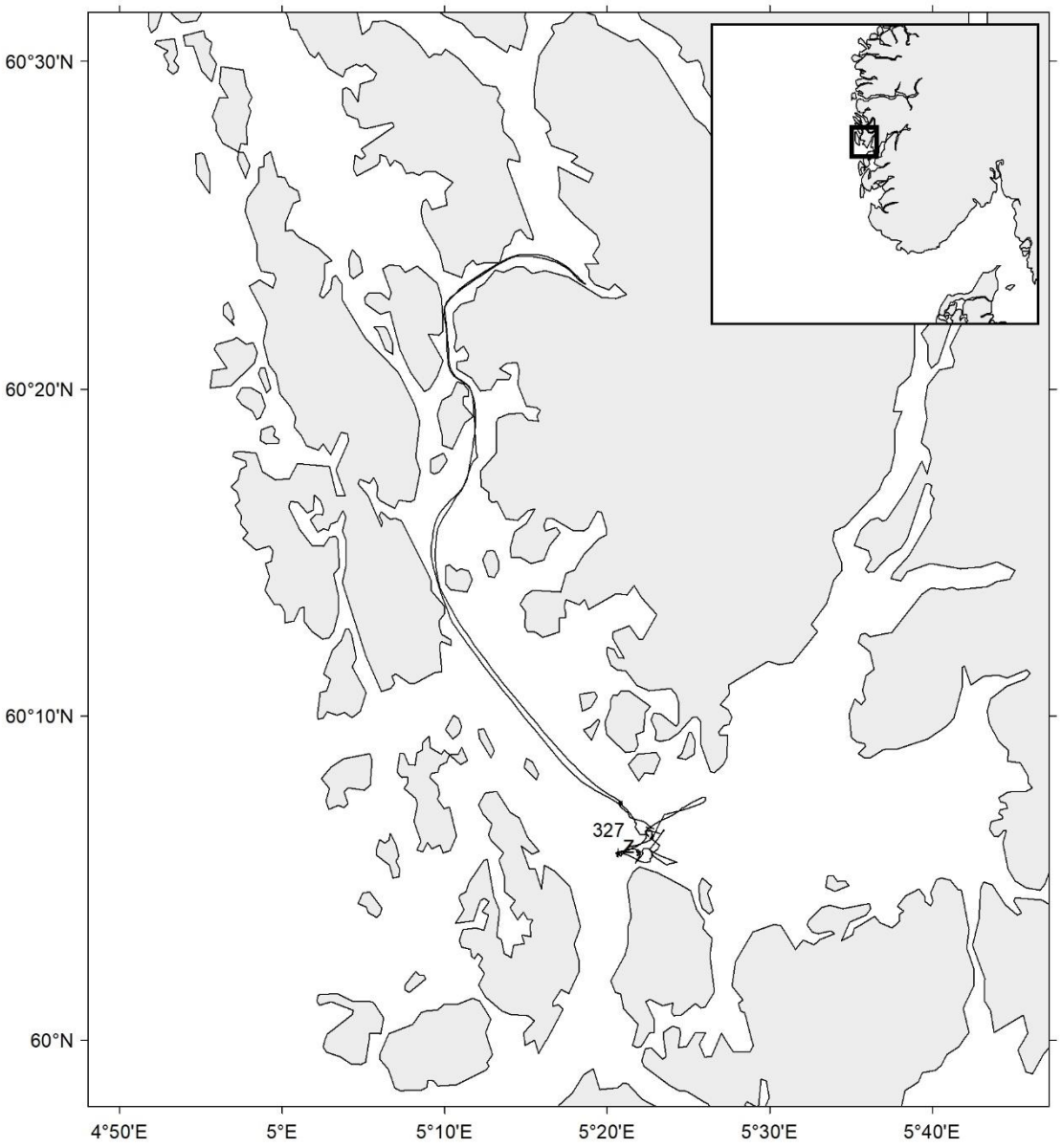
Cruise no 2017116 "G.O. Sars" (Chart 2)
19 November–4 December 2017

▲ Pelagic trawl st.no. 440-449



Cruise no 2017118 "G.O. Sars"
7–13 December 2017

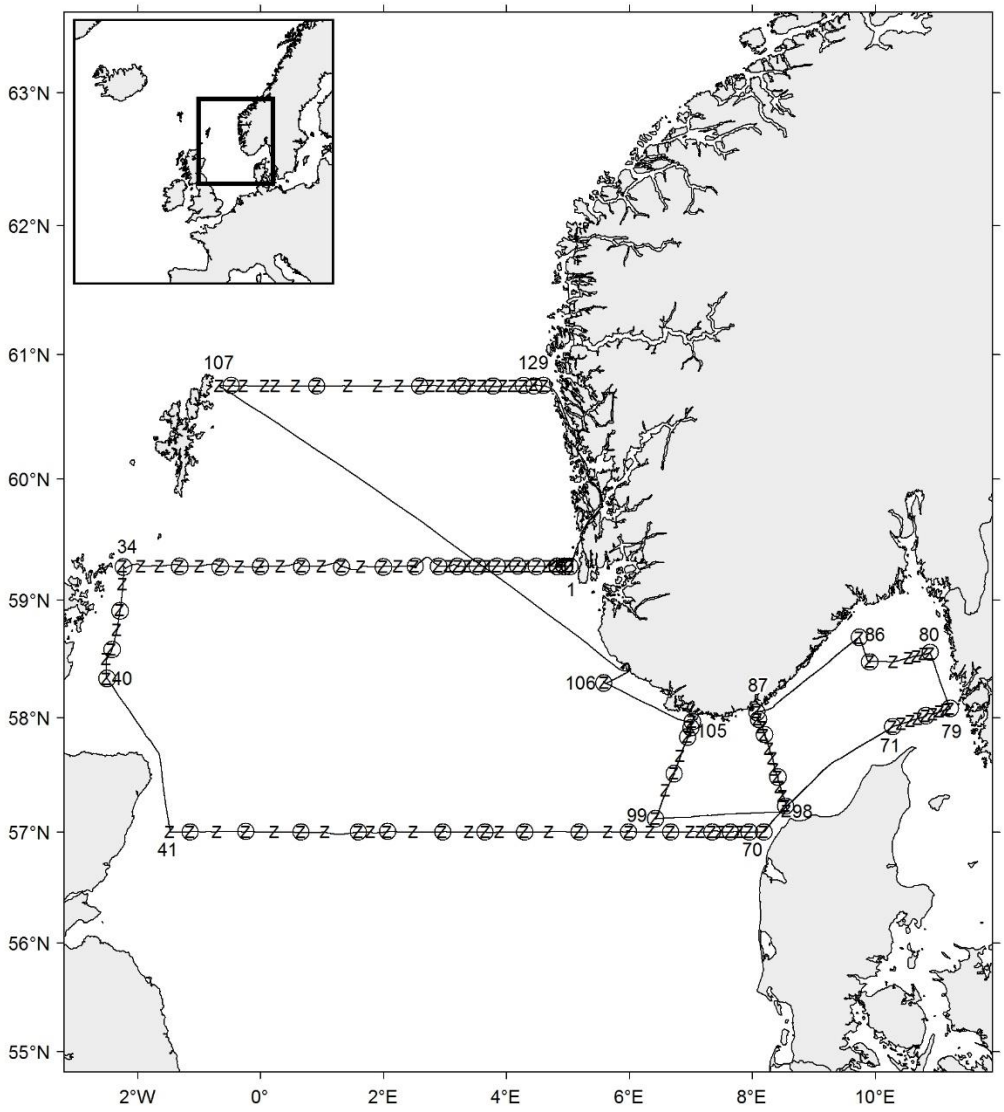
z CTD st.no 326
▲Pelagic trawl st.no 450-452



Cruise no 2017119 "G.O. Sars"
15–17 December 2017

z CTD st.no 327

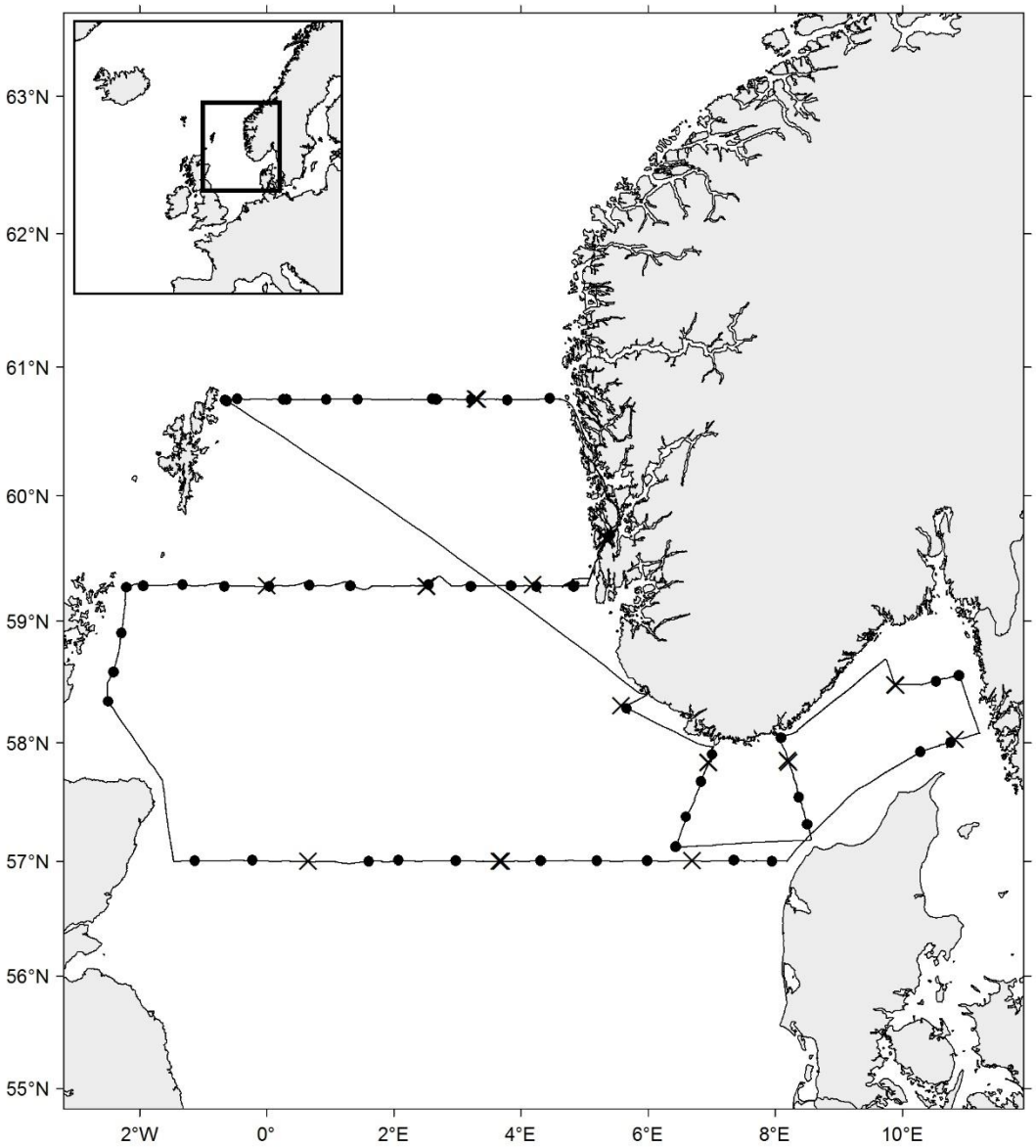
4.2 “Johan Hjort”



Cruise no 2017204 "Johan Hjort" (Chart 1)
20 April–12 May 2017

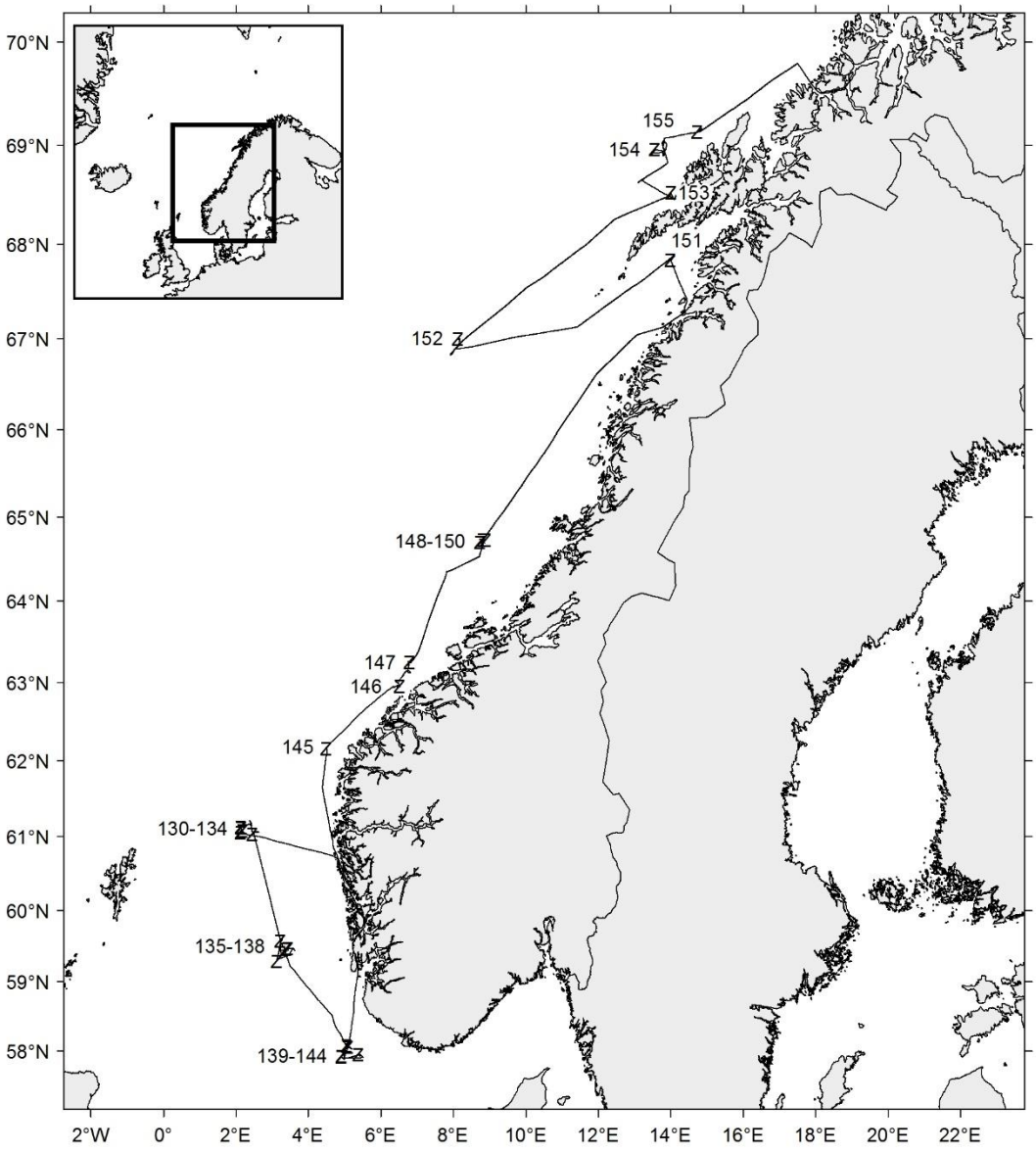
z CTD st.no 1–129
○ Plankton st. (WP-II-net)

Standard sections:
Utsira W st.no 1-34
Hanstholmen–Aberdeen st.no 41-70
Måseskjær st.no 71-79
Vaderø st.no 80-85
Oksøy st.no 87-98
Lista st.no st.no 99-105
Fedje-Shetland st.no 107-129



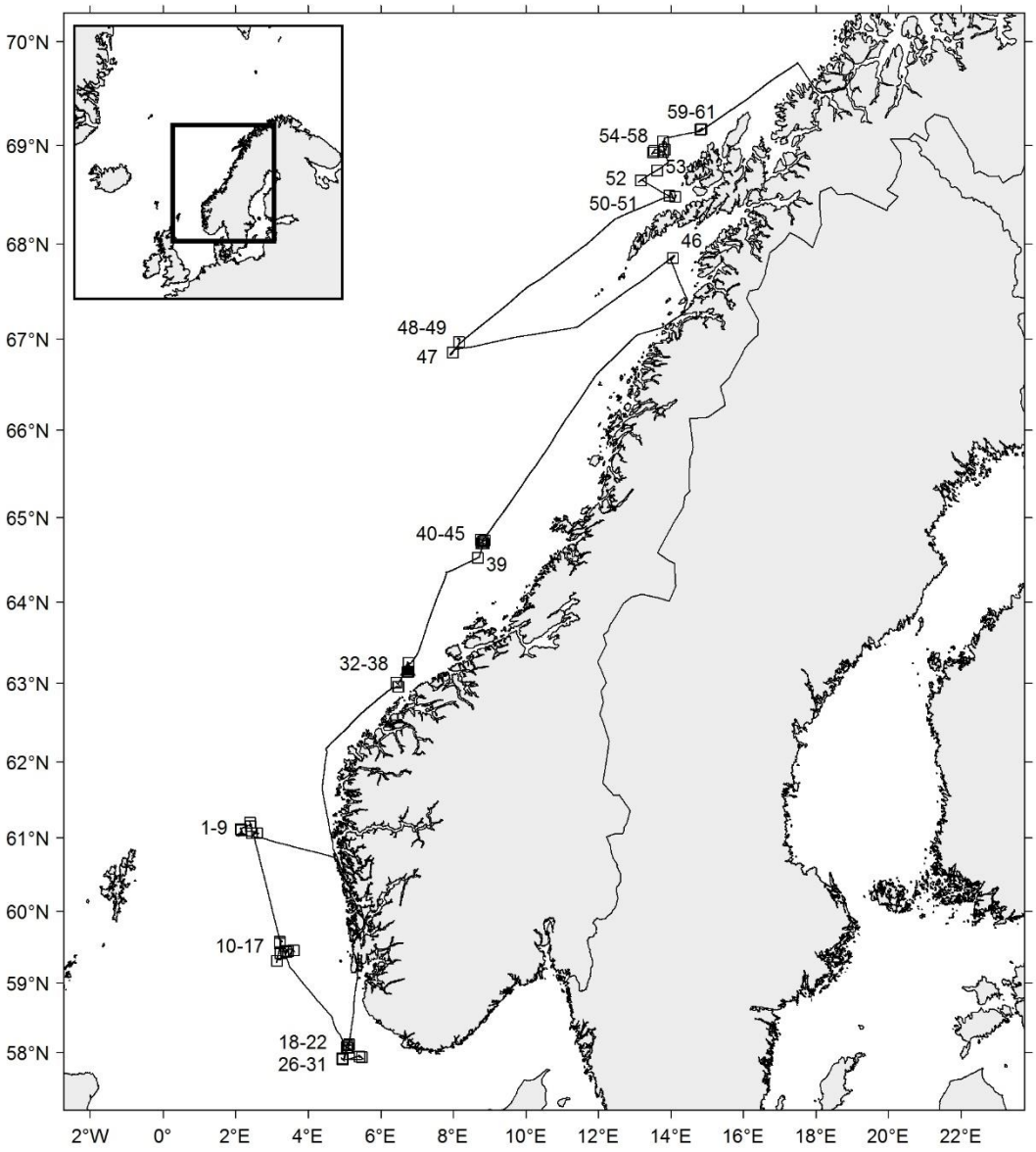
Cruise no 2017204 "Johan Hjort" (Chart 2)
20 April–12 May 2017

● Gulf III st.
× Multinet st.



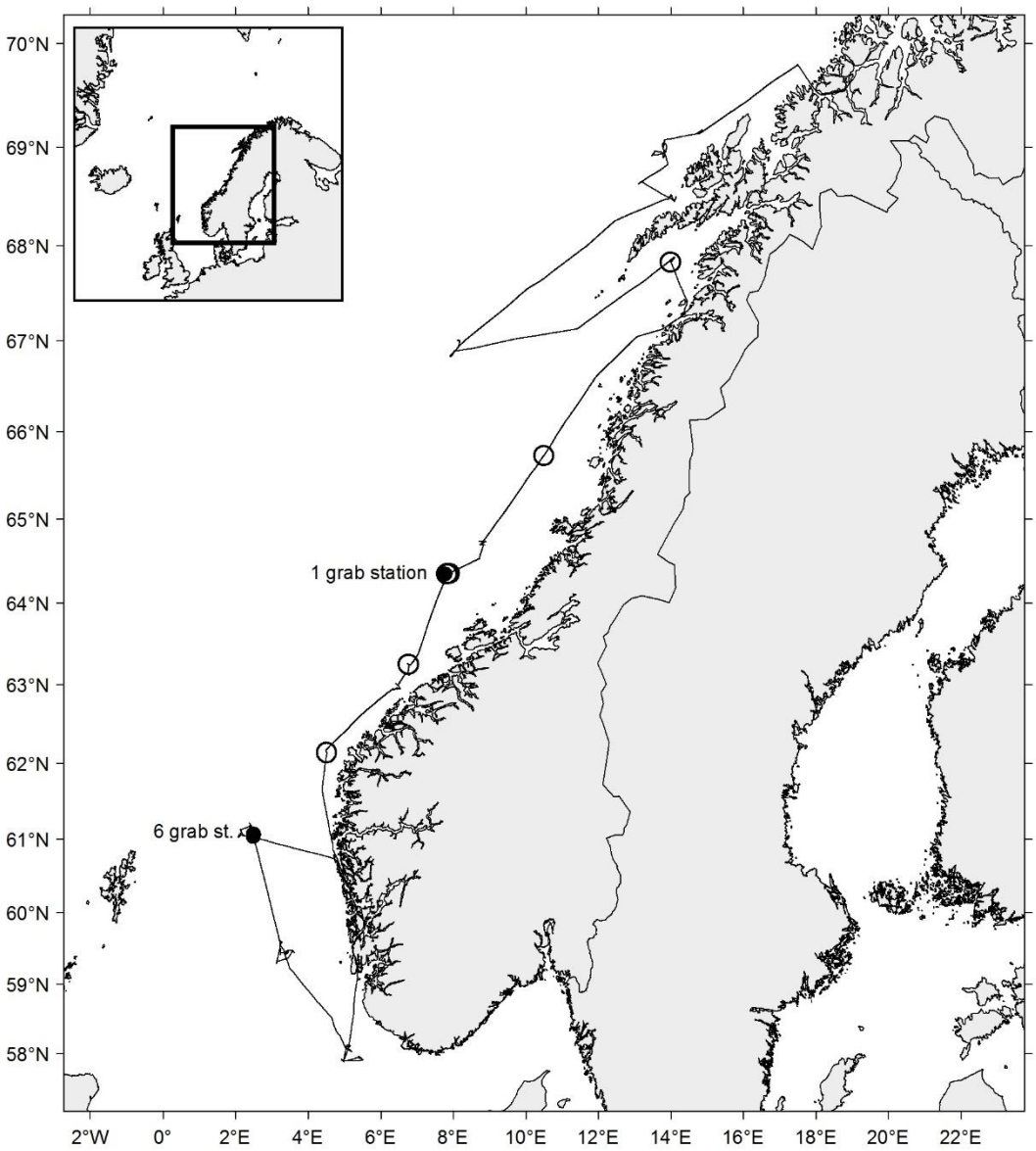
Cruise no 2017205 "Johan Hjort" (Chart 1)
12–29 May 2017

z CTD st.no 130-155



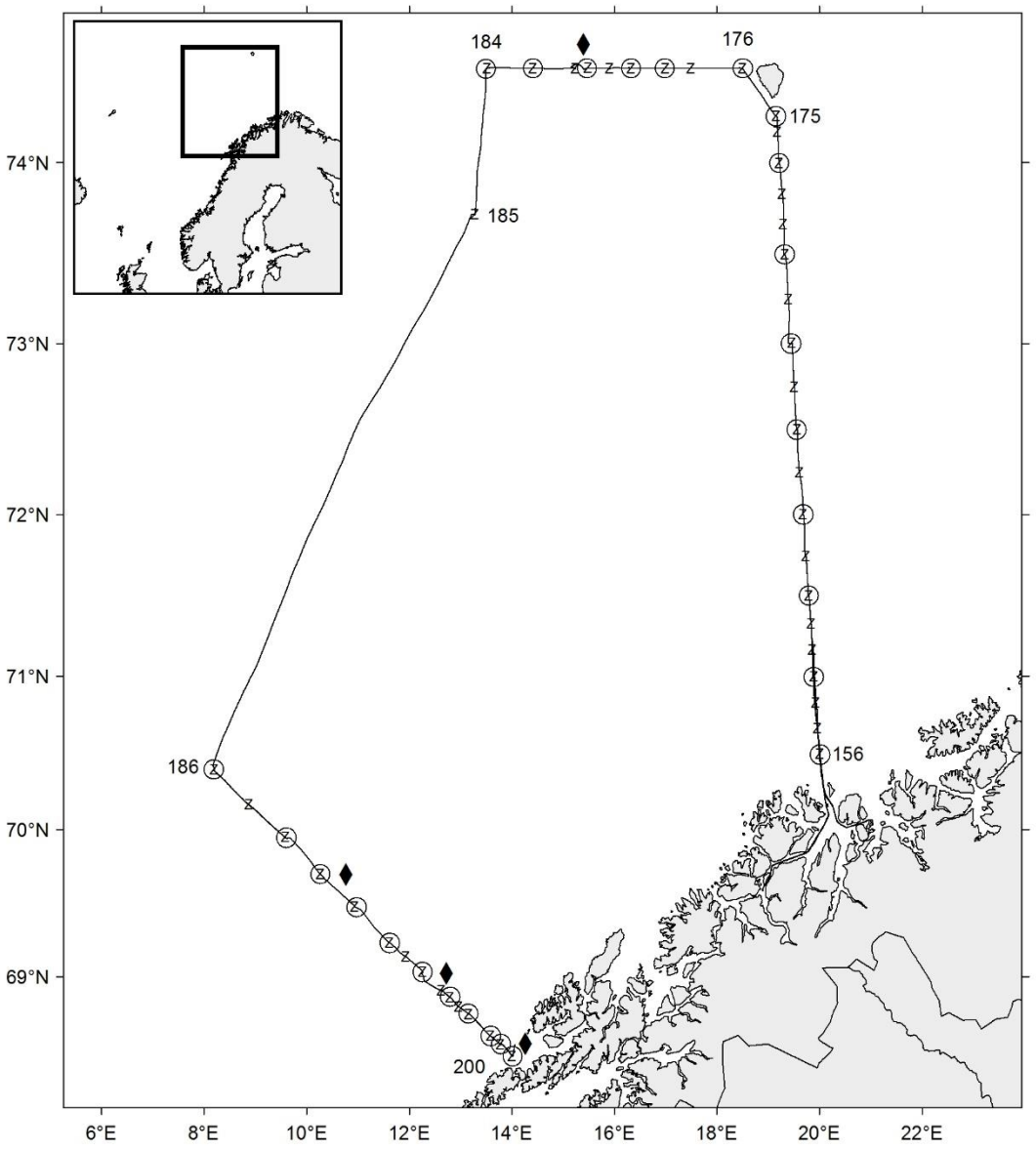
Cruise no 2017205 "Johan Hjort" (Chart 2)
12–29 May 2017

Trawl st.no 1–61
□ Bottom trawl
▲ Pelagic trawl (st.no 37)



Cruise no 2017205 "Johan Hjort" (Chart 3)
12–29 May 2017

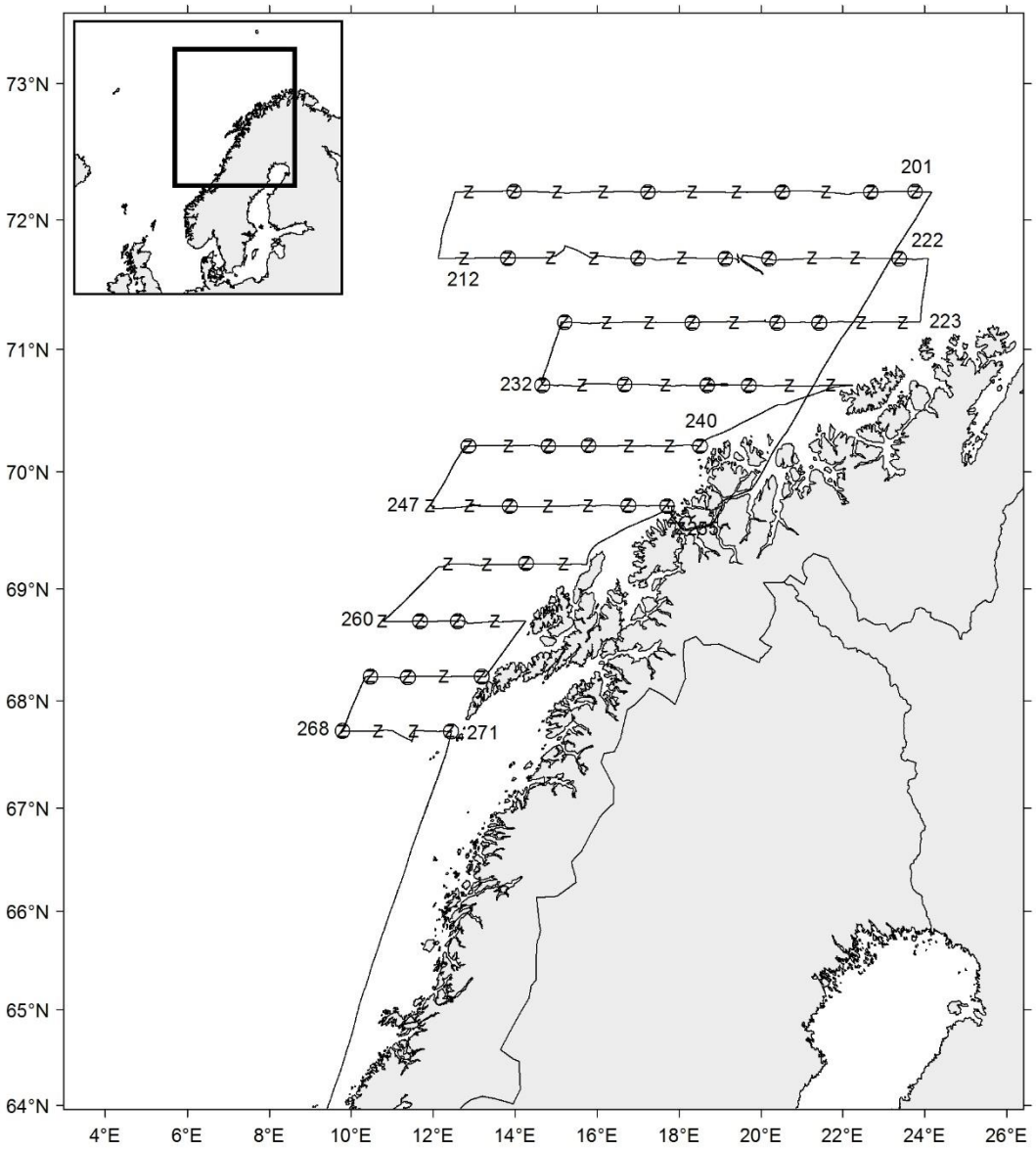
● Grab station
○ Box core station



Cruise no 2017206 "Johan Hjort"
29 May–8 June 2017

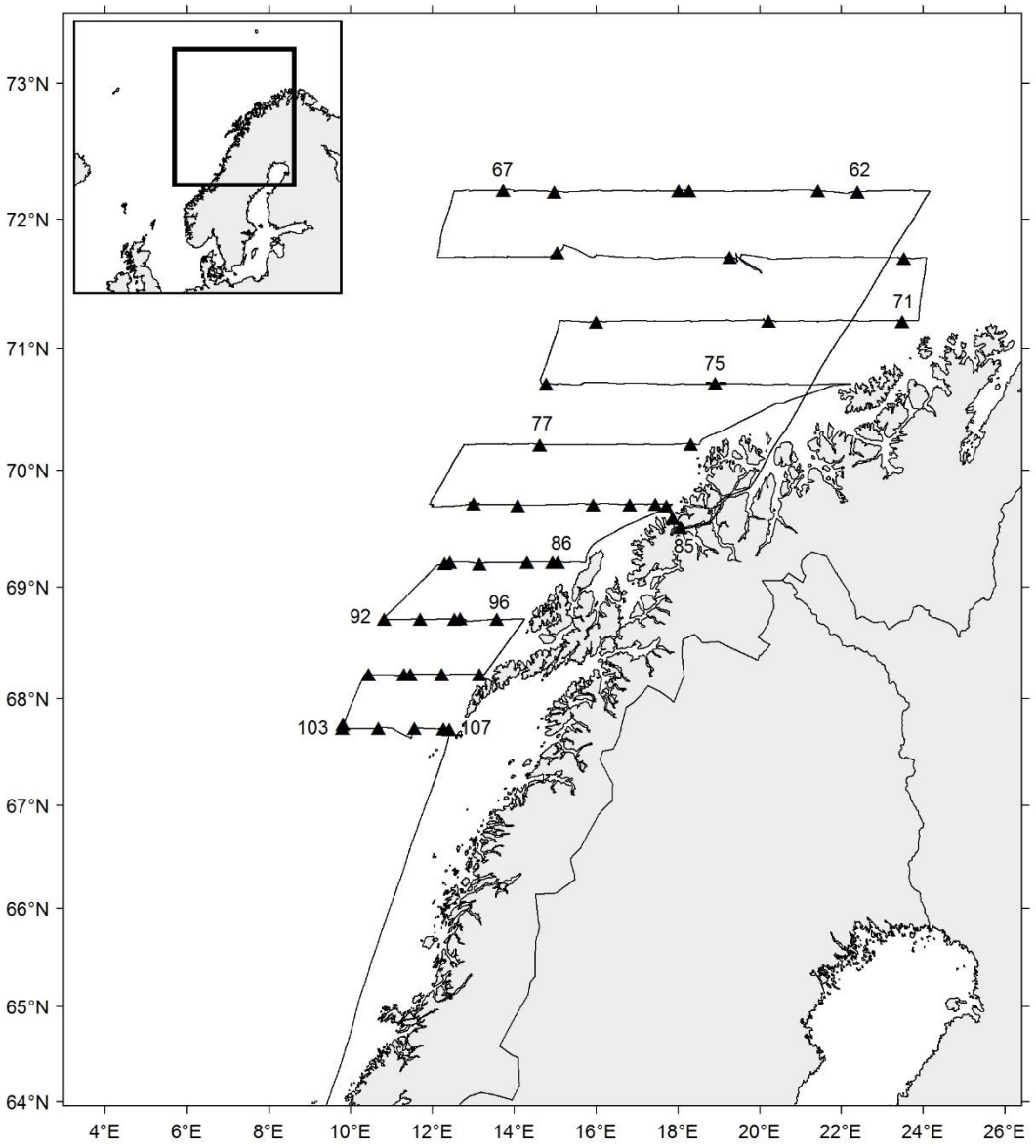
z CTD st.no 156-200
○ Plankton st. (WP-II-net)
♦ Plankton st. (Mocness)

Standard sections:
Fugløya–Bjørnøya st.no 156-175
Bjørnøya W st.no 176-184
Gimsøy NW st.no 186-200
St.M st.no 185



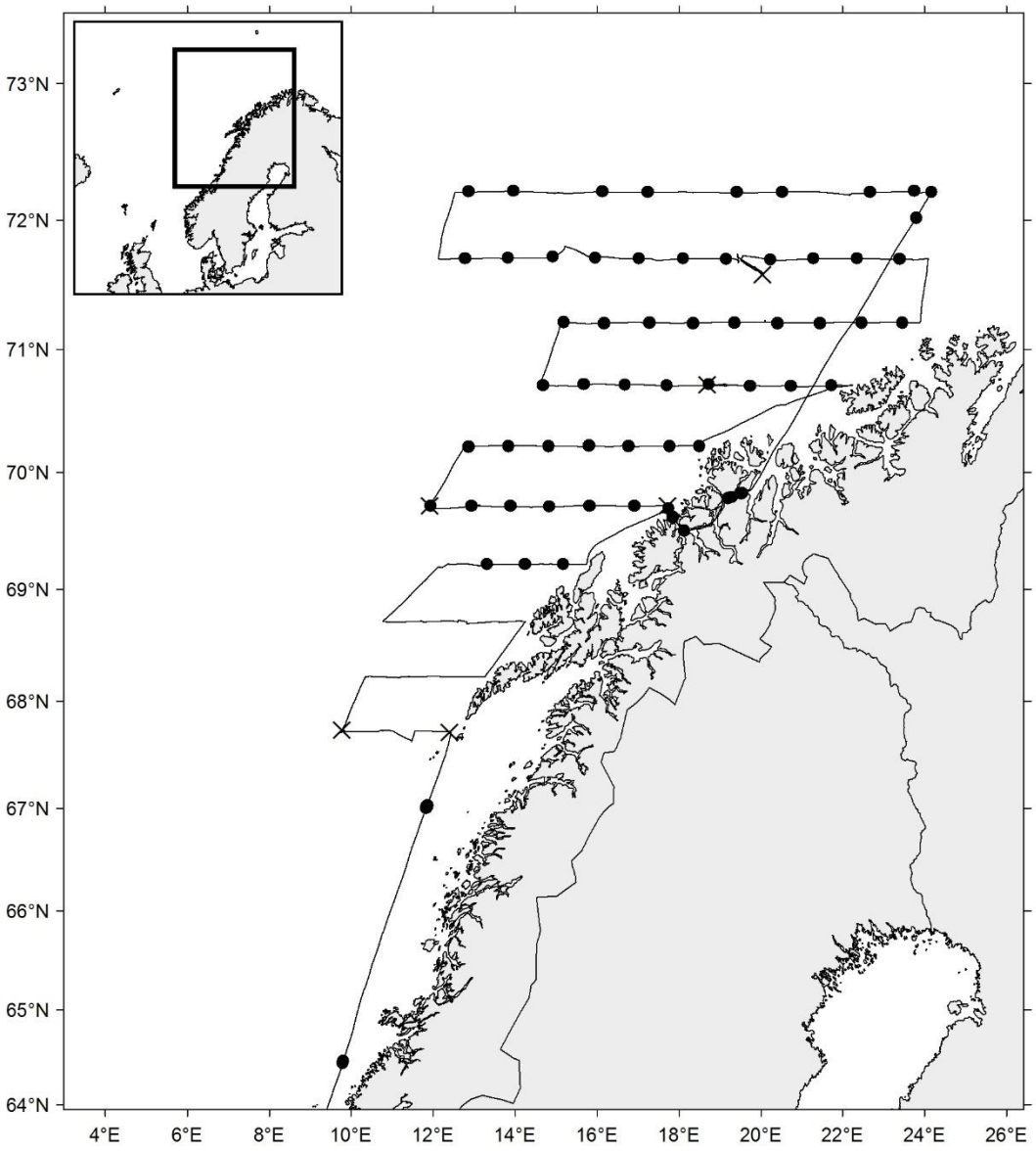
Cruise no 2017207 "Johan Hjort" (Chart 1)
9–27 June 2017

z CTD st.no 201-271
○ Plankton st. (WP-II-net)



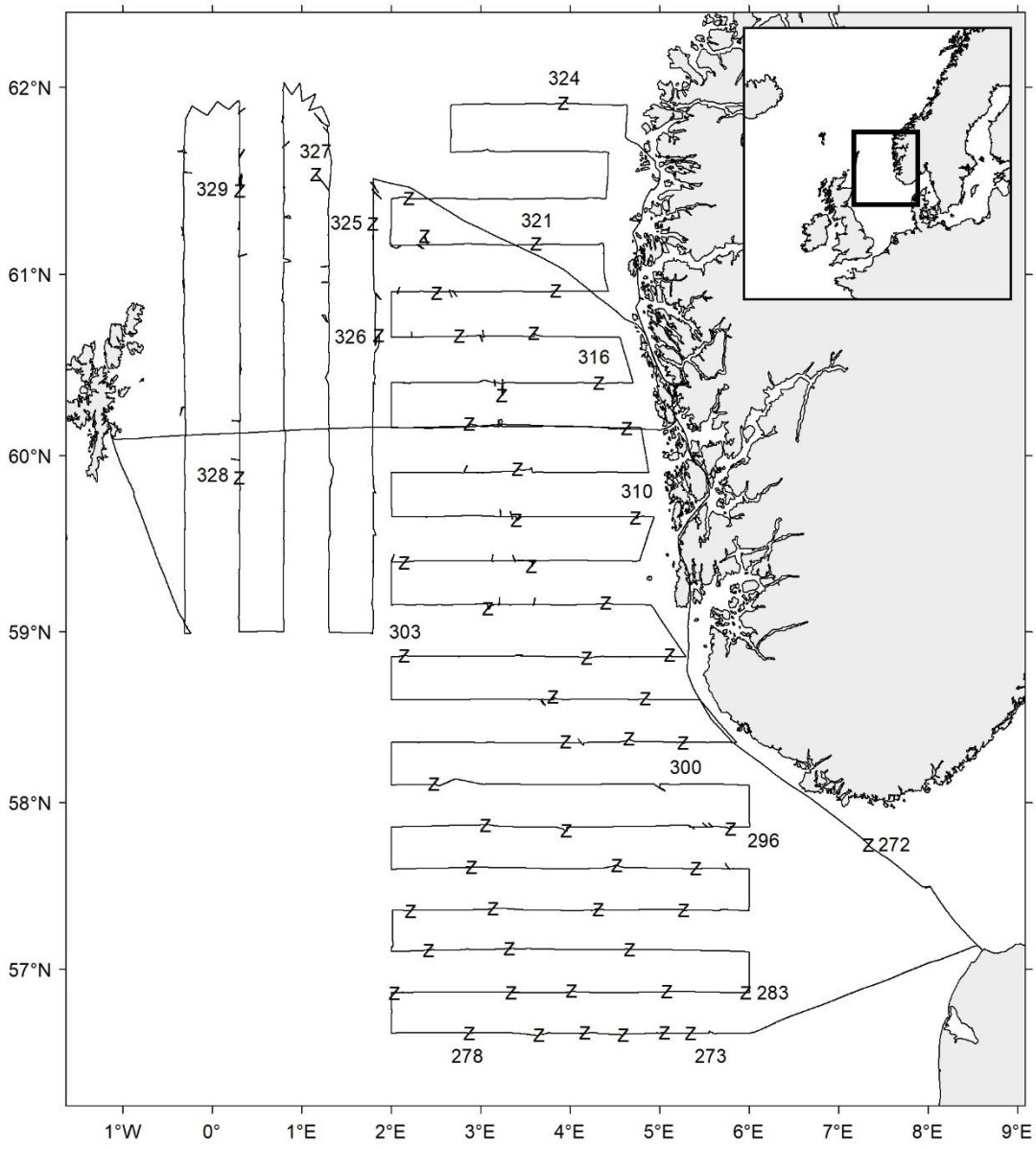
Cruise no 2017207 "Johan Hjort" (Chart 2)
9–27 June 2017

▲ Pelagic trawl st.no 62-107



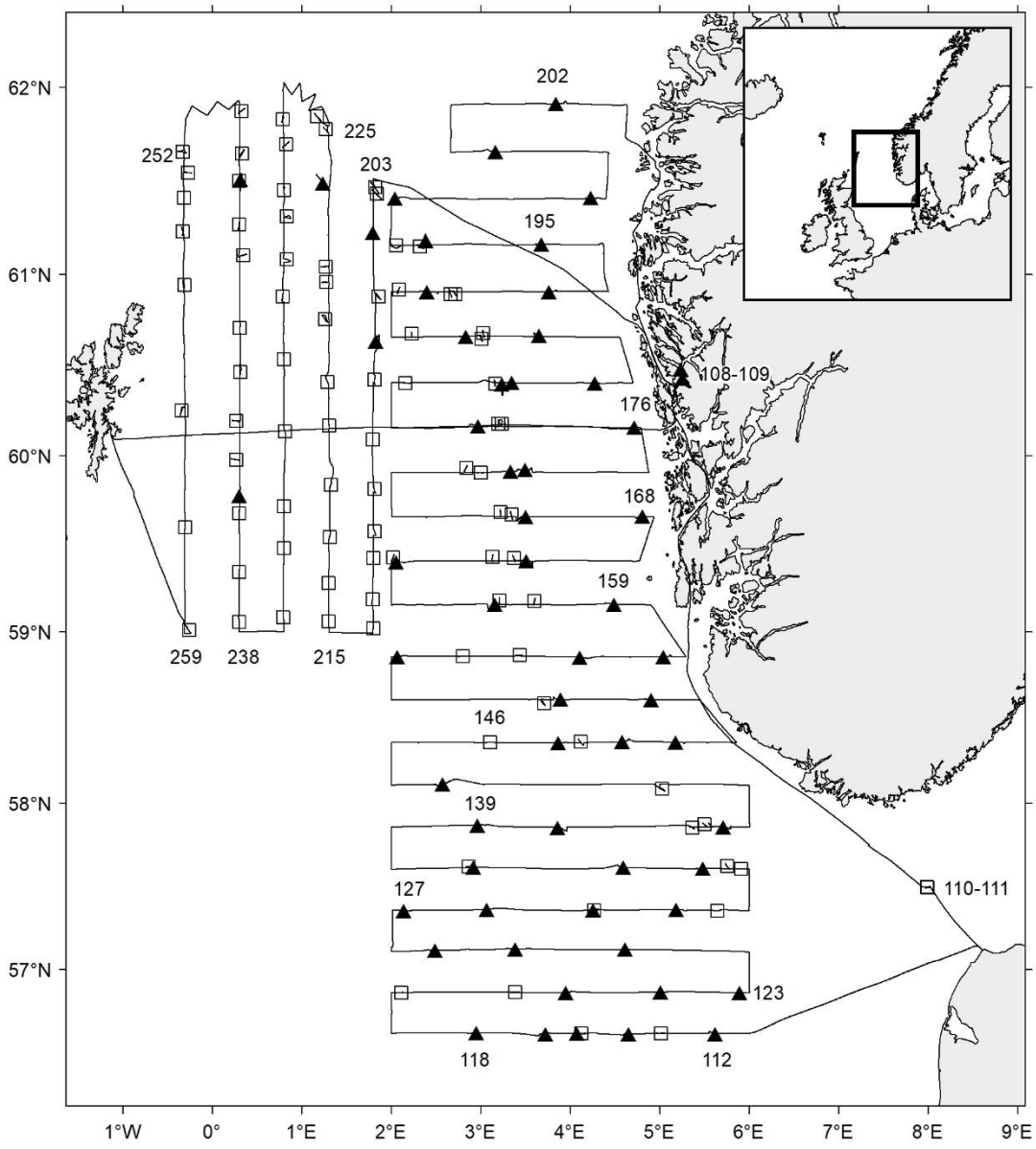
Cruise no 2017207 "Johan Hjort" (Chart 3)
9–27 June 2017

● Mik station
× Light measurement station



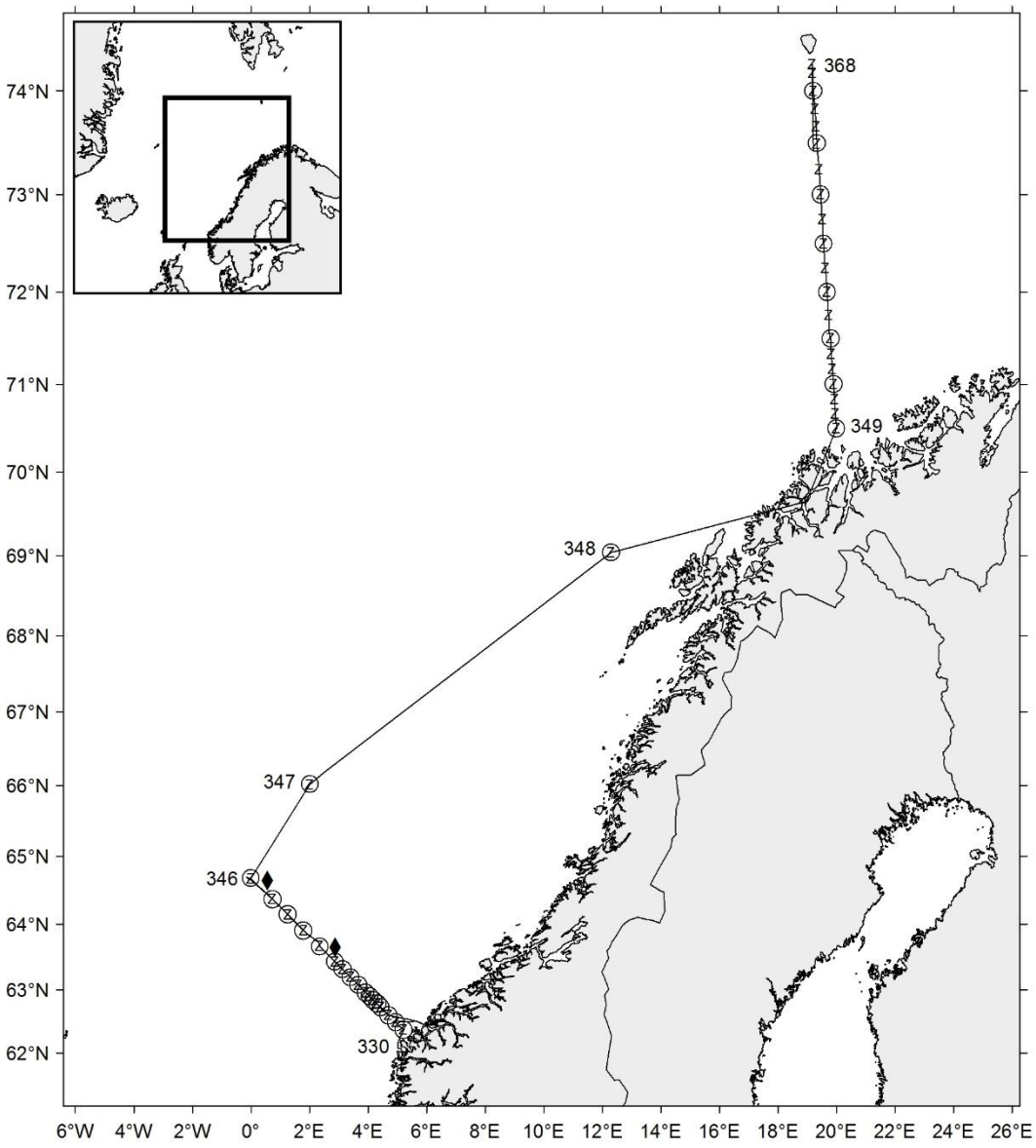
Cruise no 2017208 "Johan Hjort" (Chart 1)
1–29 July 2017

z CTD st.no 272–329



Cruise no 2017208 "Johan Hjort" (Chart 2)
1–29 July 2017

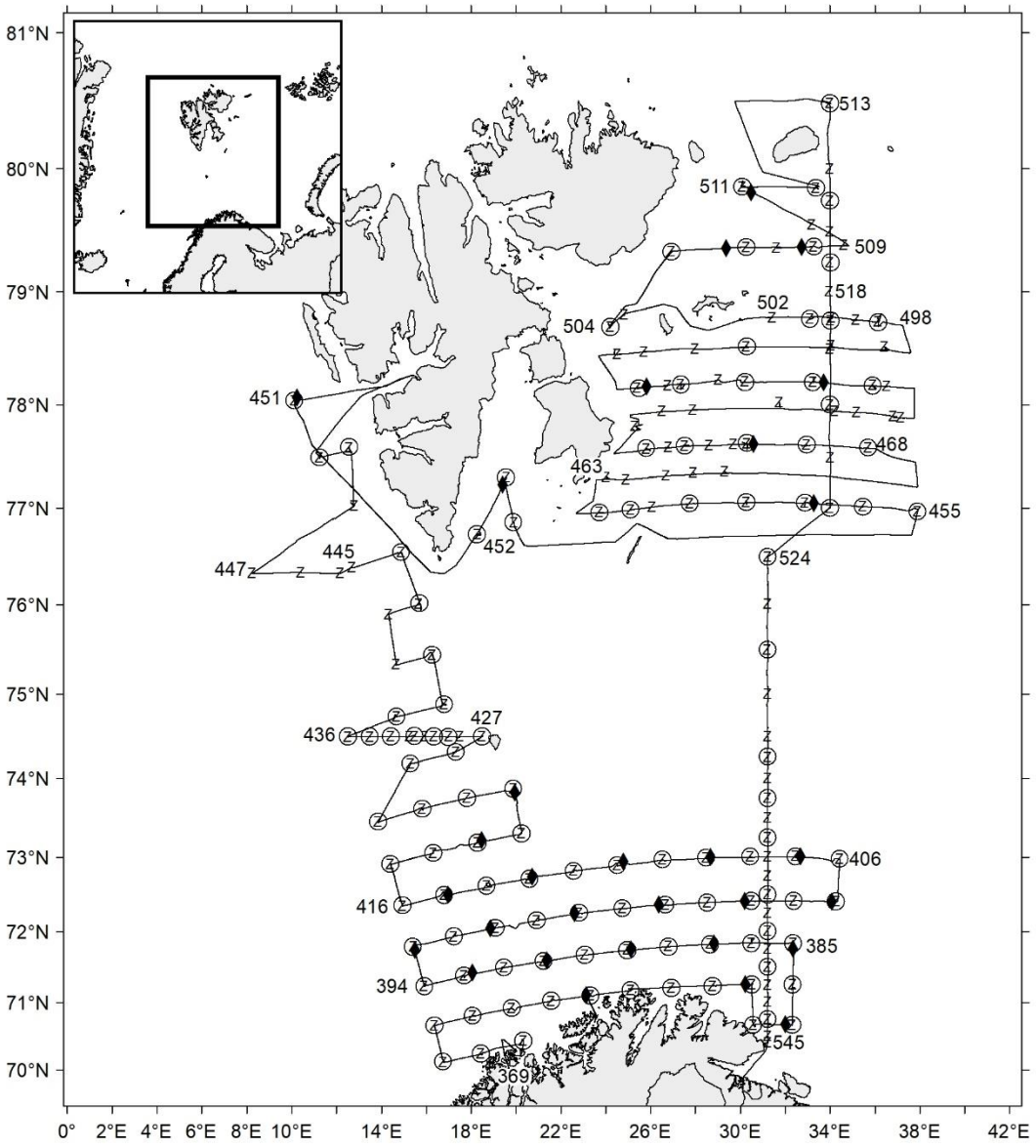
Trawl st.no 108–259
□ Bottom trawl
▲ Pelagic trawl



Cruise no 2017214 "Johan Hjort"
11–21 August 2017

z CTD st.no 330-368
○ Plankton st. (WP-II-net)
♦ Plankton st. (Mocness)

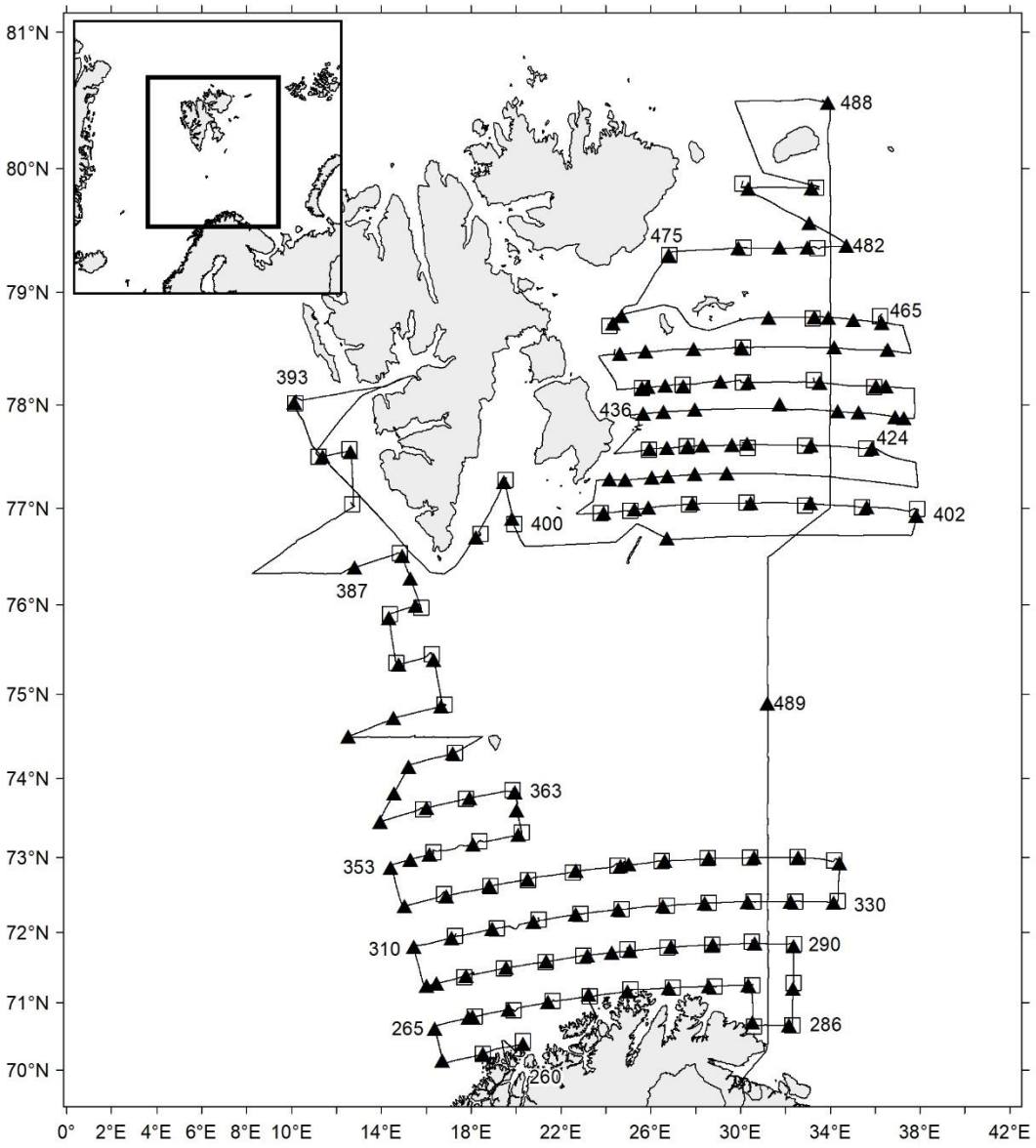
Standard sections:
Svinøy NW st.no 330-346
Fugløya Bjørnøya st.no 349-368
St. M st.no 347



Cruise no 2017209 "Johan Hjort" (Chart 1)
21 August–3 October 2017

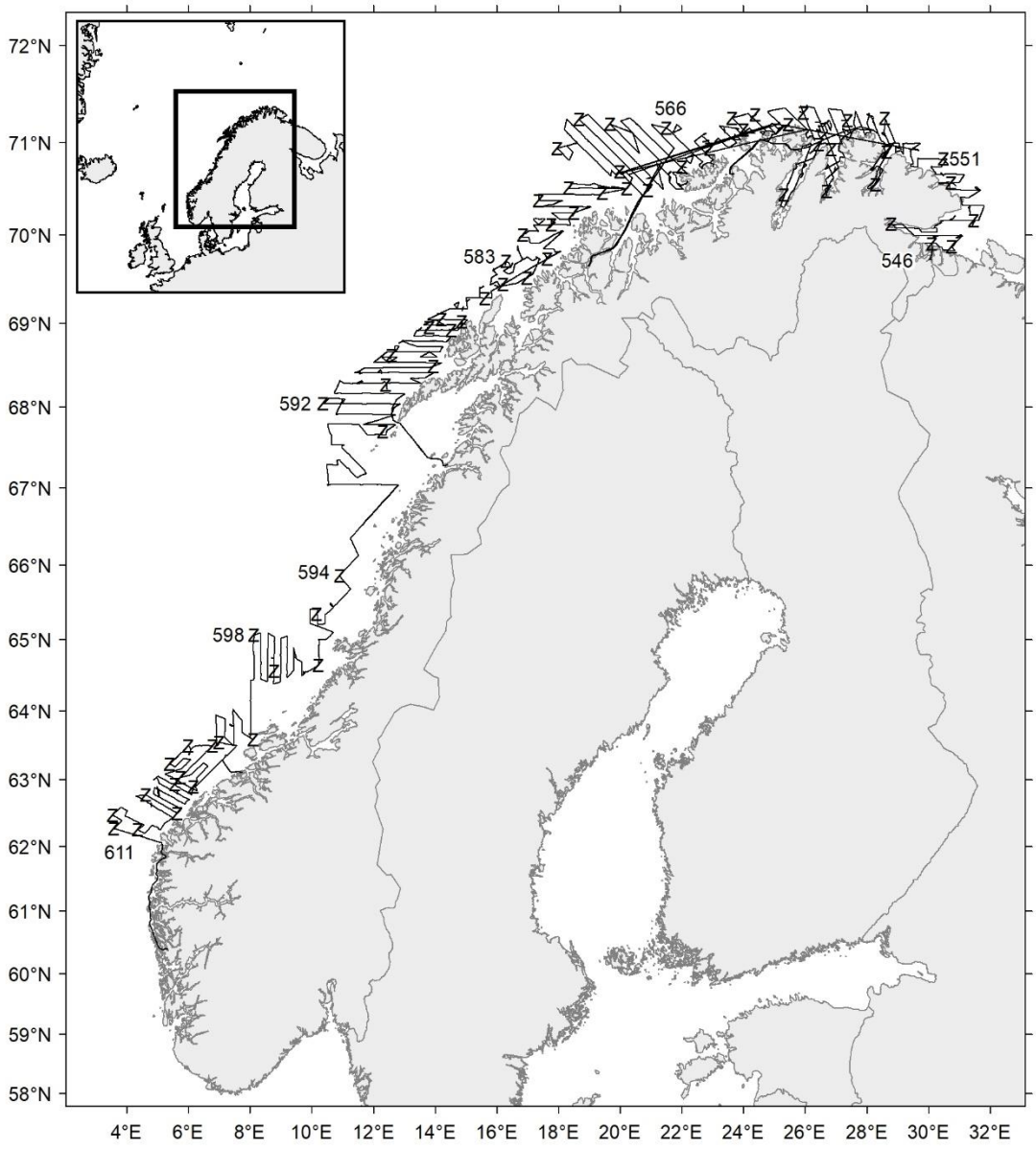
z CTD st.no 369-545
○ Plankton st. (WP-II-net)
♦ Plankton st. (Mocness)

Standard sections:
Bjørnøya W: st.no 427-436
Sørkapp W: st.no 445-447
Vardø N: st.no 513-545



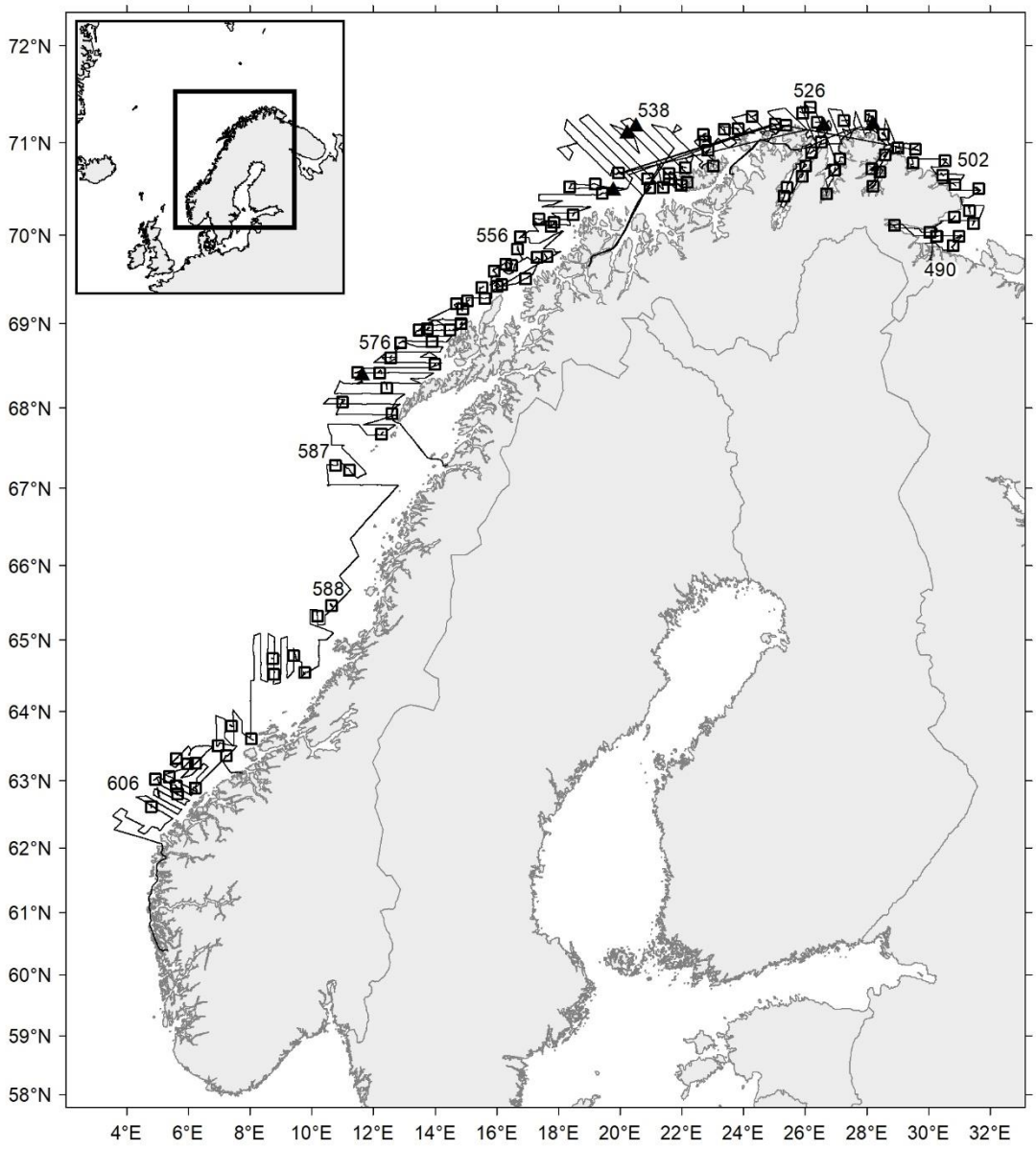
Cruise no 2017209 "Johan Hjort" (Chart 2)
21 August–3 October 2017

Trawl st.no 260-489
□ Bottom trawl
▲ Pelagic trawl



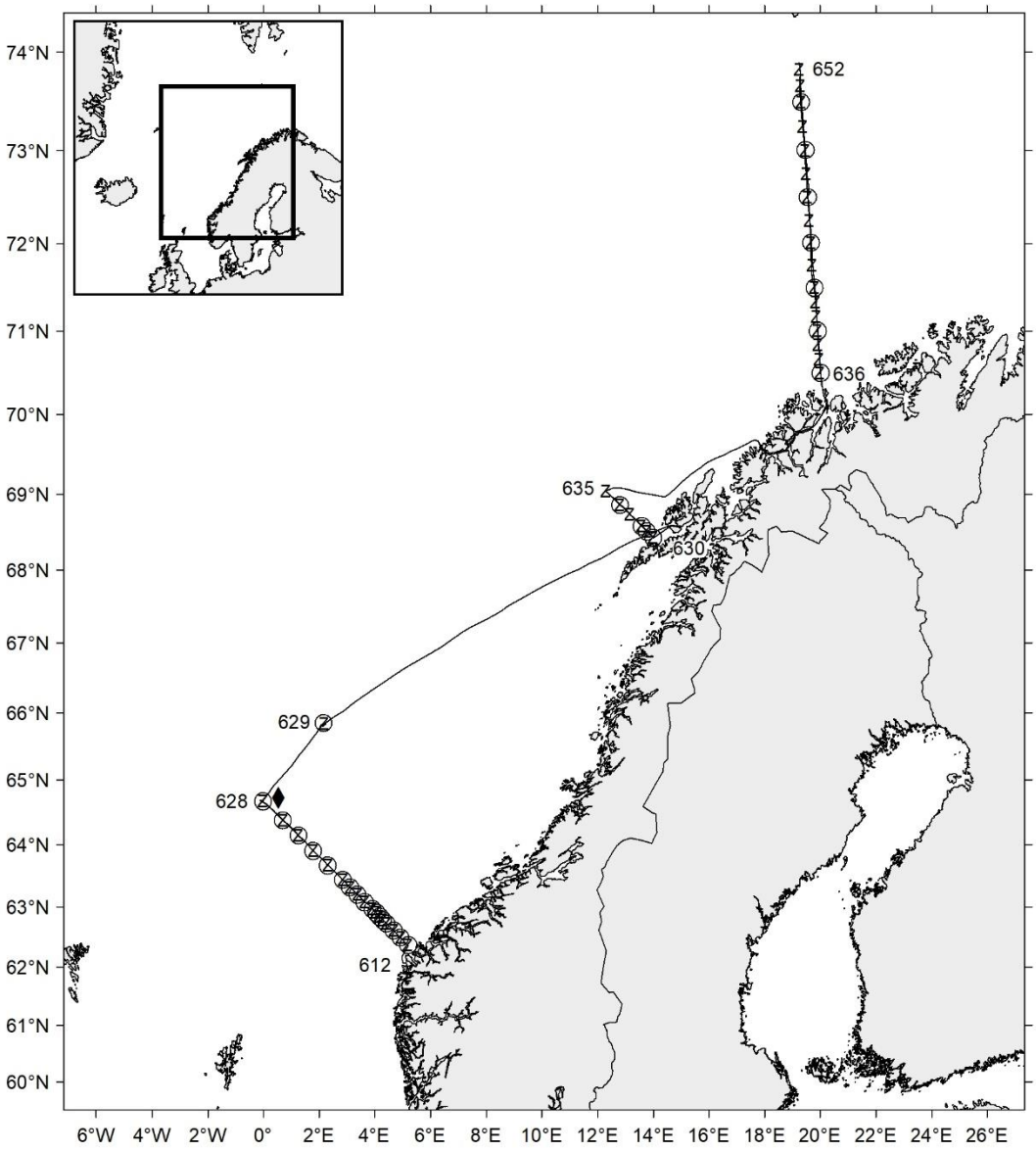
Cruise no 2017210 "Johan Hjort" (Chart 1)
5 October–14 November 2017

z CTD st.no 546-611



Cruise no 2017210 "Johan Hjort" (Chart 2)
5 October–14 November 2017

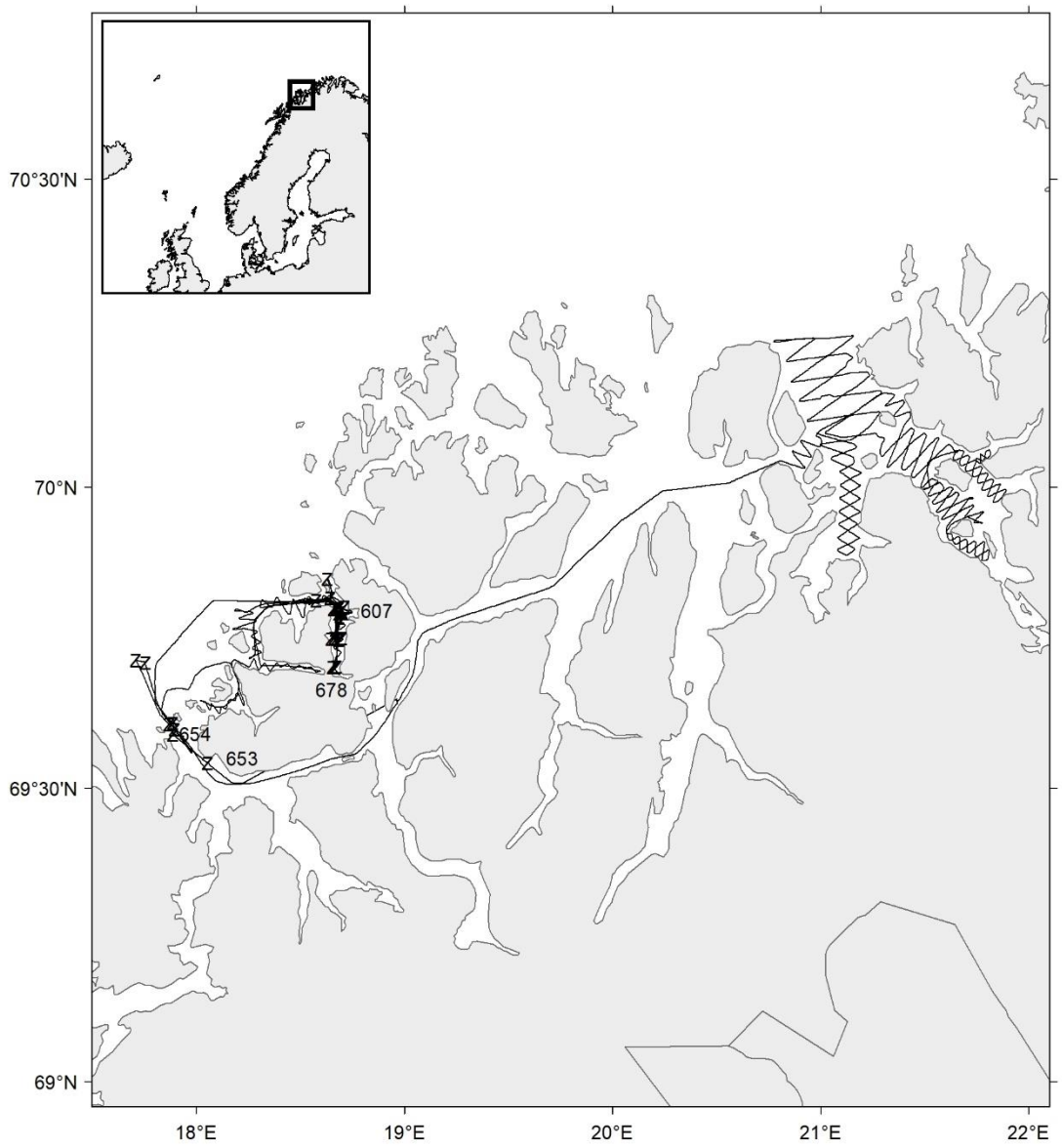
Trawl st.no 490-606
□ Bottom tr.
▲ Pelagic tr.



Cruise no 2017211 "Johan Hjort"
16–27 November 2017

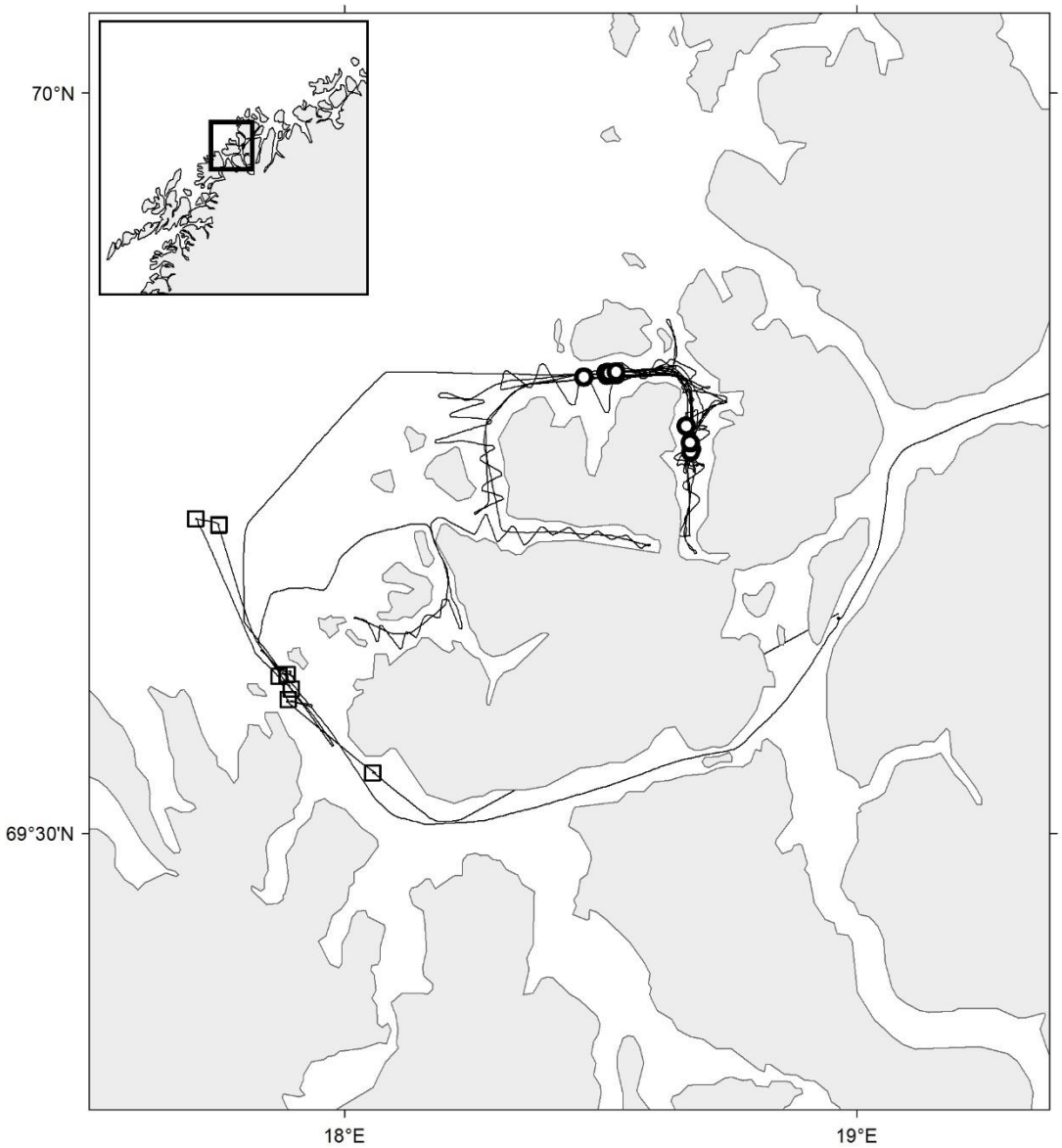
z CTD st.no 612-652
○ Plankton st. (WP-II-net)
♦ Plankton st. (Mocness)

Standard sections:
Svinøy NW: st.no 612-628
Gimsøy NW: st.no 630-635
Fugløya–Bjørnøya: st.no 636-652
St. M. 629



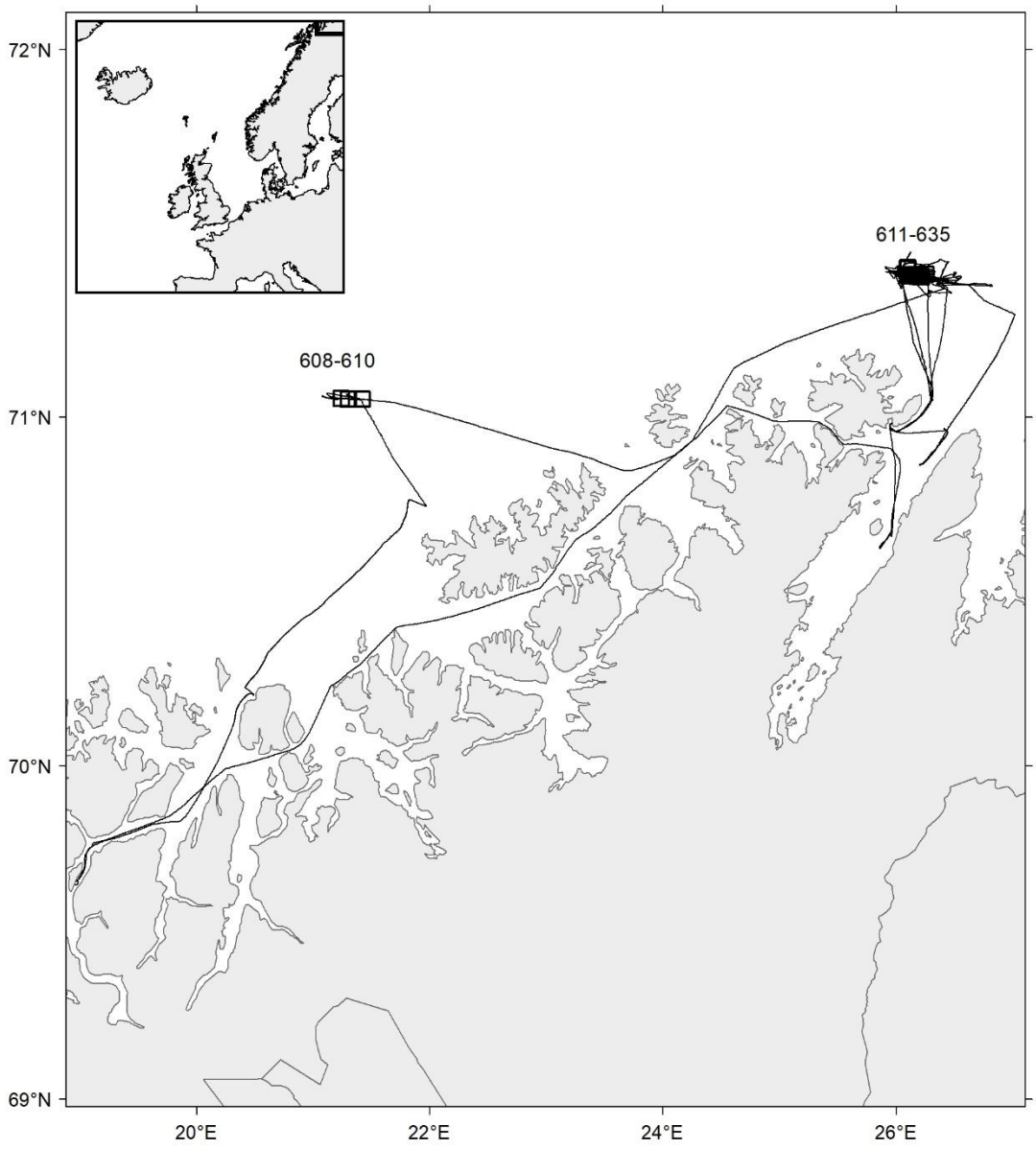
Cruise no 2017212 "J. Hjort" (Chart 1)
28 November–5 December 2017

z CTD st.no 653-678
▲Pelagic trawl st.no 607



Cruise no 2017212 "J. Hjort" (Chart 2)
28 November–5 December 2017

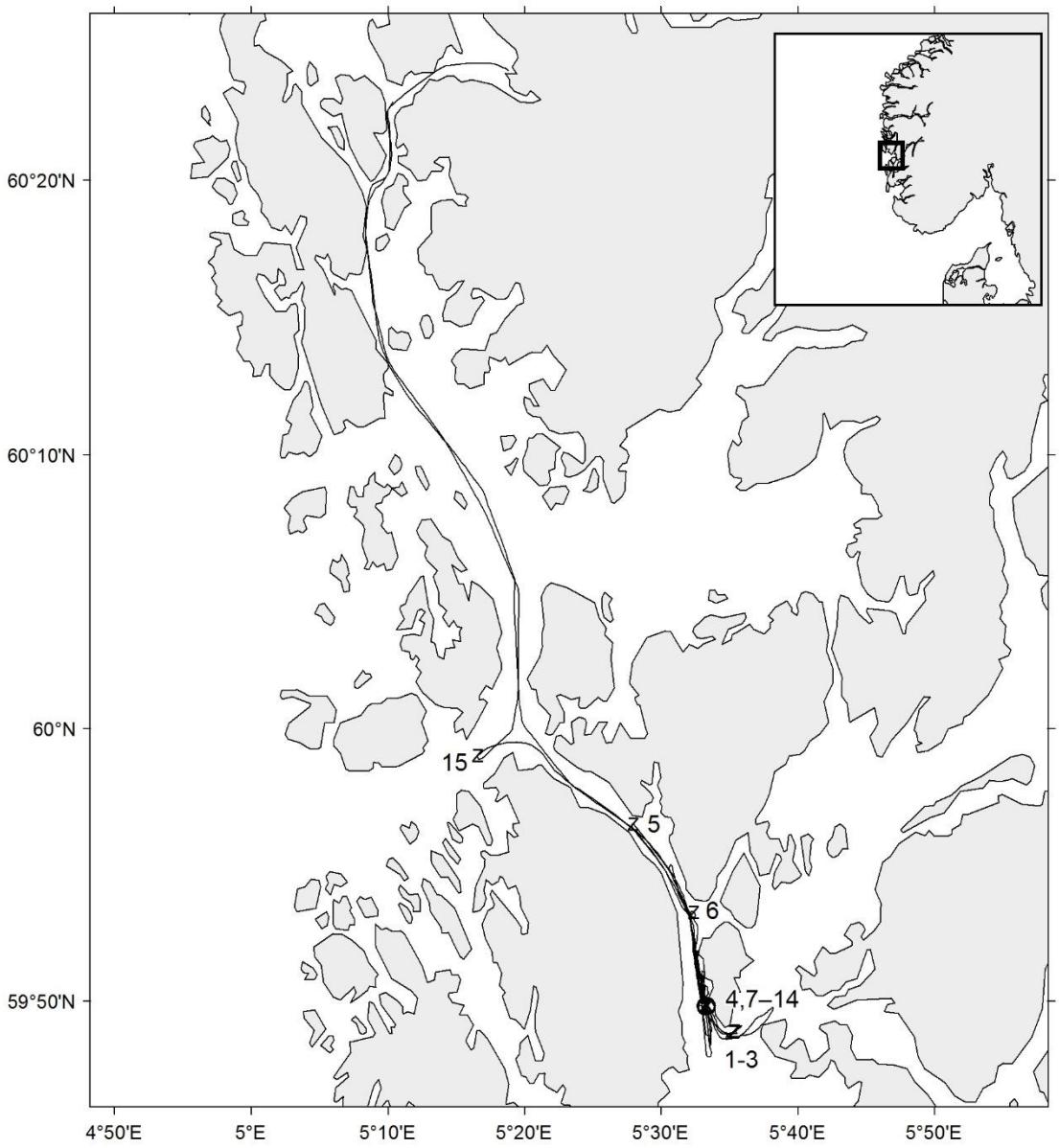
Video st.
Box corer st.



Cruise no 2017213 "J. Hjort"
7–19 December 2017

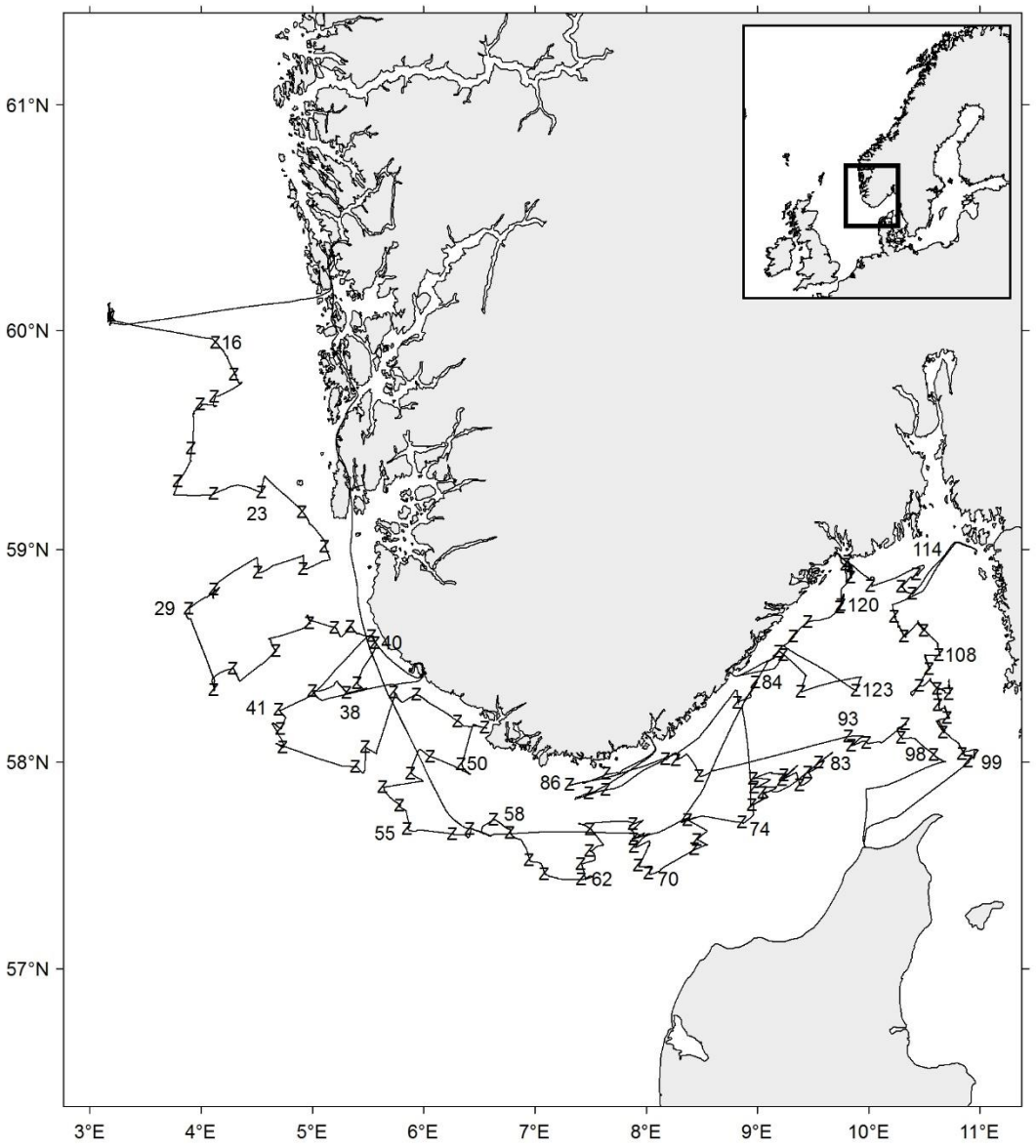
☐ Bottom trawl st.no 608-635

4.3 “Kristine Bonnevie”



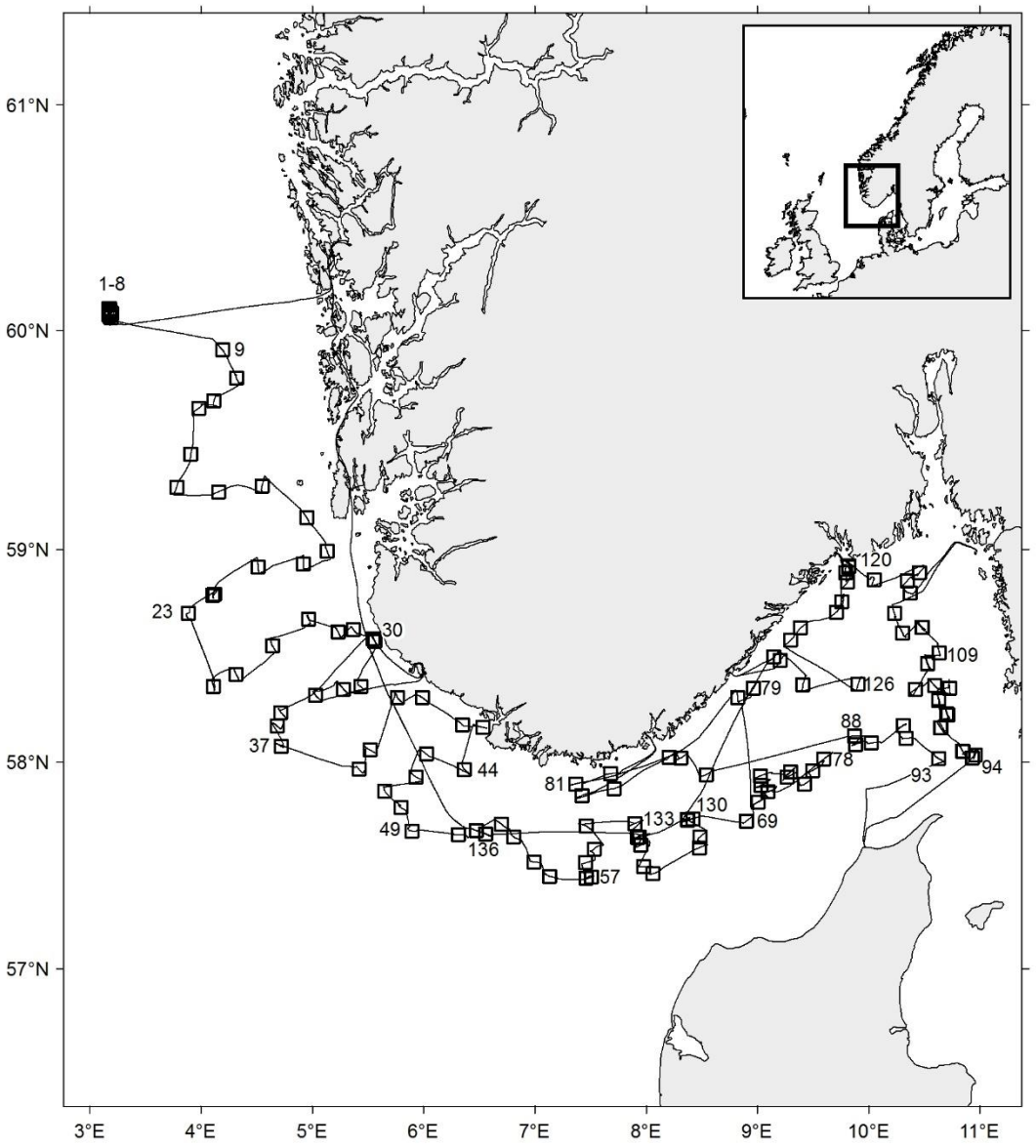
Cruise no 2017601 "Kristine Bonnevie"
2-4 January 2017

z CTD st.no 1–15
○ Plankton st. (WP-II-net)



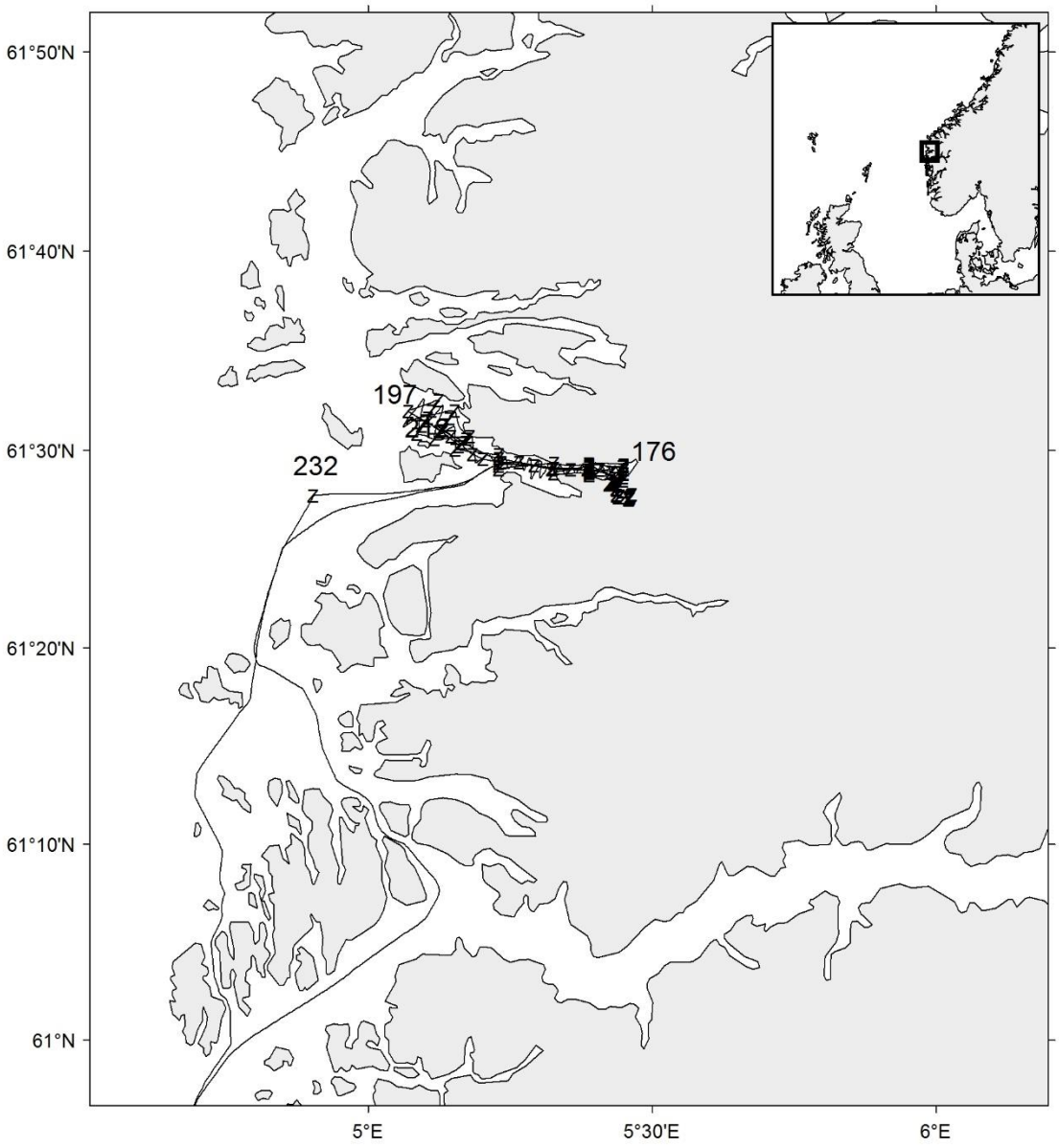
Cruise no 2017602 "Kristine Bonnevie" (Chart 1)
6–29 January 2017

z CTD st.no 16-126



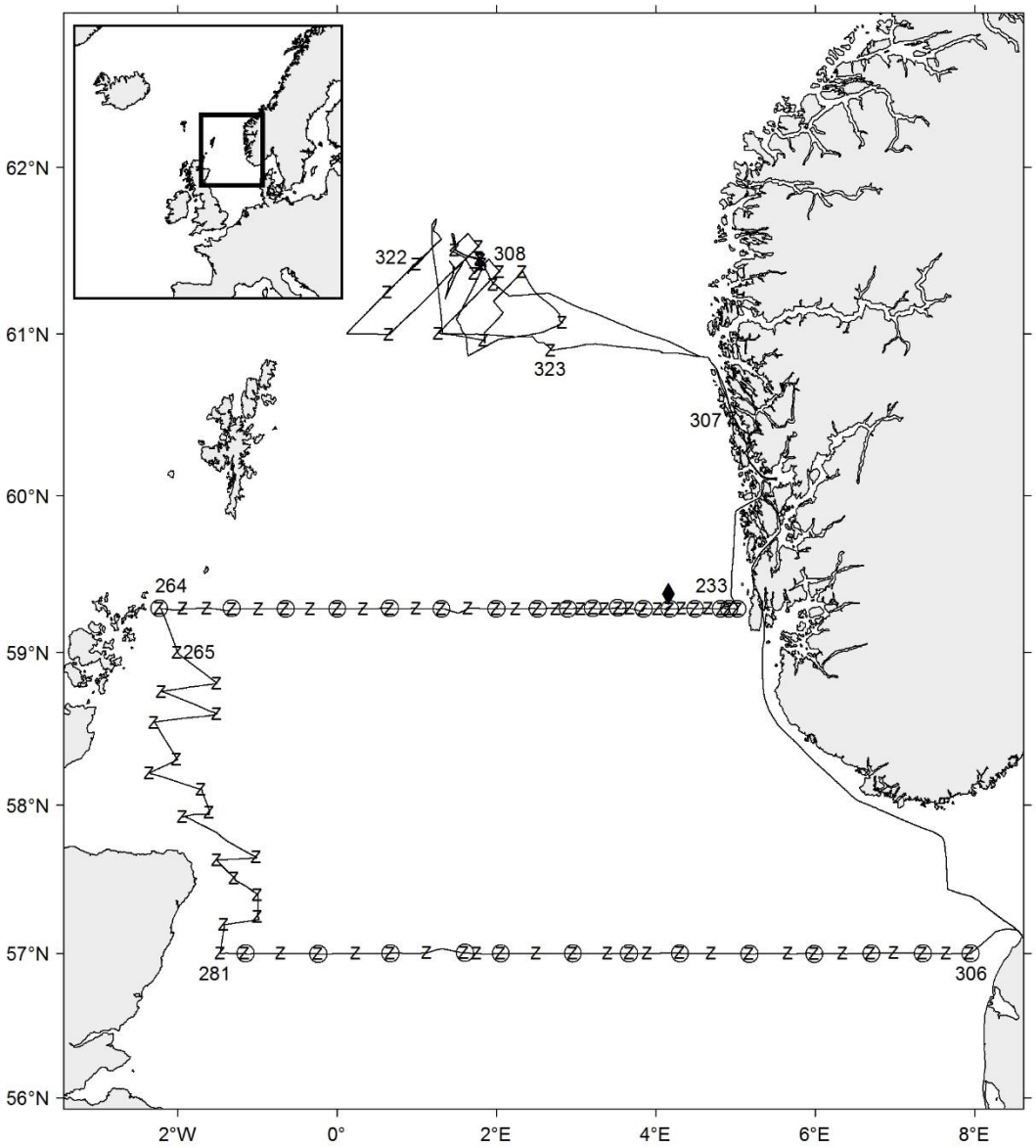
Cruise no 2017602 "Kristine Bonnevie" (Chart 2)
6–29 January 2017

□ Bottom trawl st.no 1-136



Cruise no 2017603 "Kristine Bonnevie"
2–10 February 2017

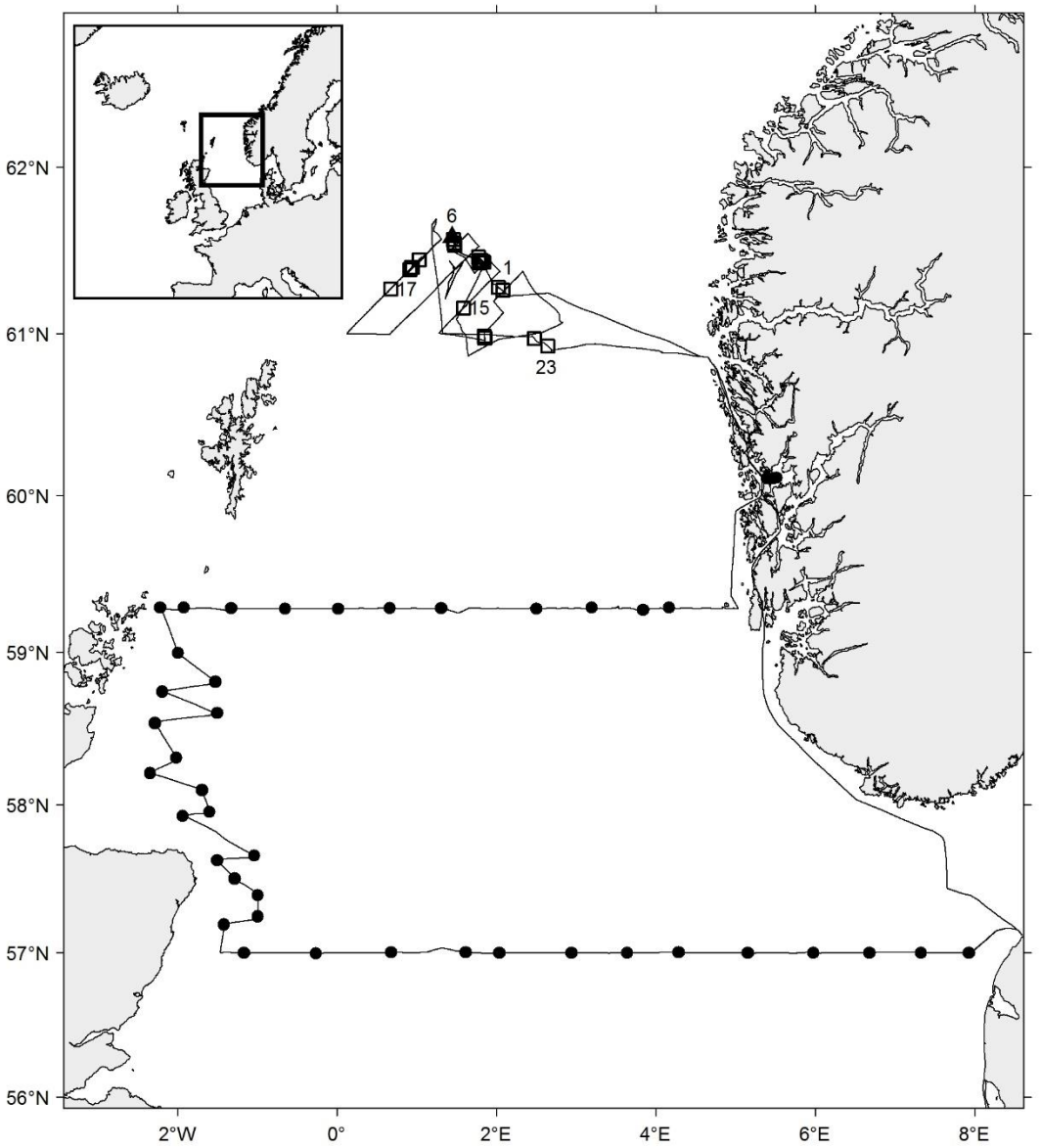
z CTD st.no 127-232



Cruise no 2017604 "Kristine Bonnevie" (Chart 1)
11 Feb-2 Mar 2017

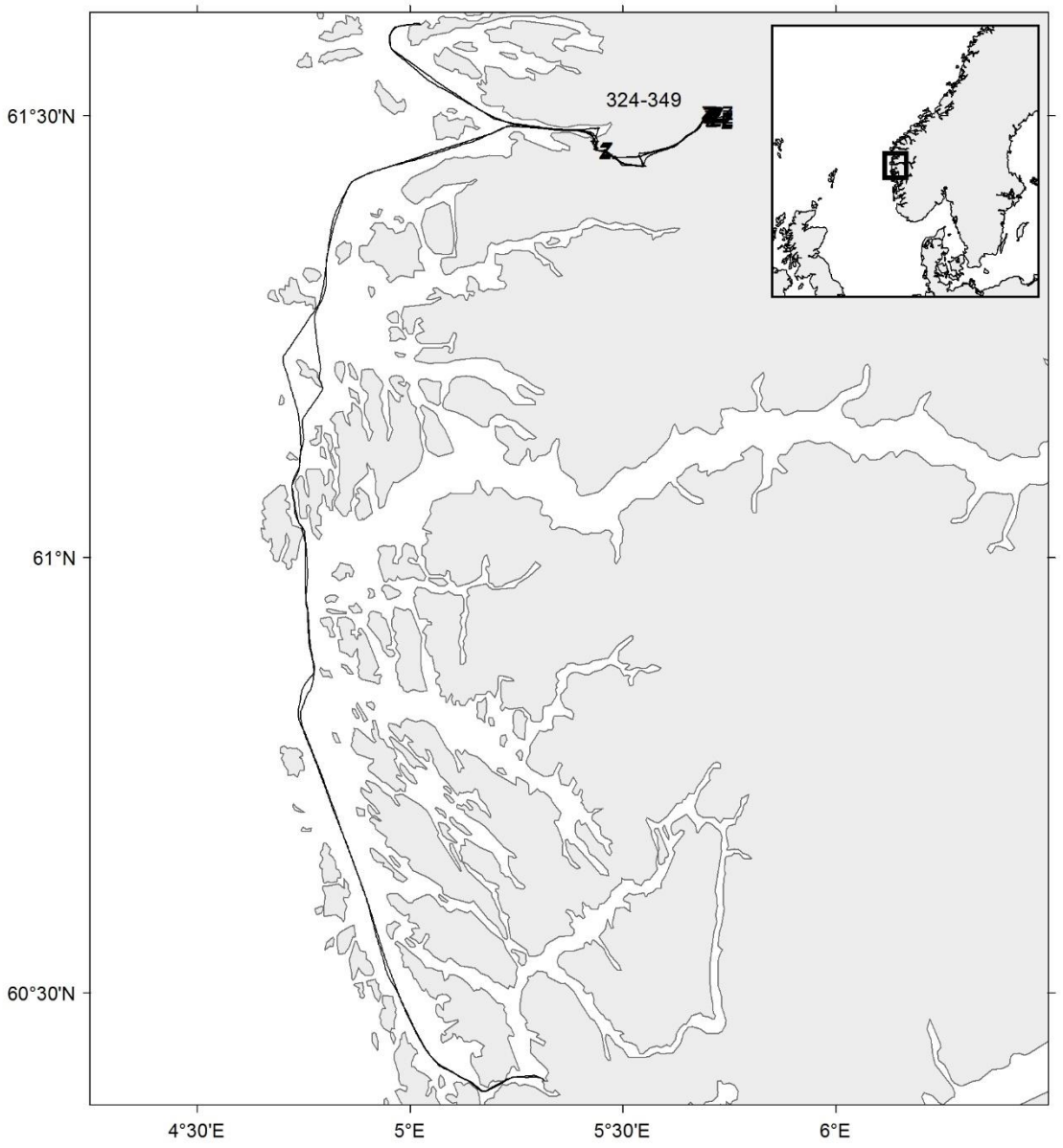
Standard sections:
Utsira West st.no 233-264
Hanstholm–Aberdeen st.no 281-306

z CTD st.no 233-323
○ Plankton st. (WP-II-net)
♦ Plankton st. (Mocness)



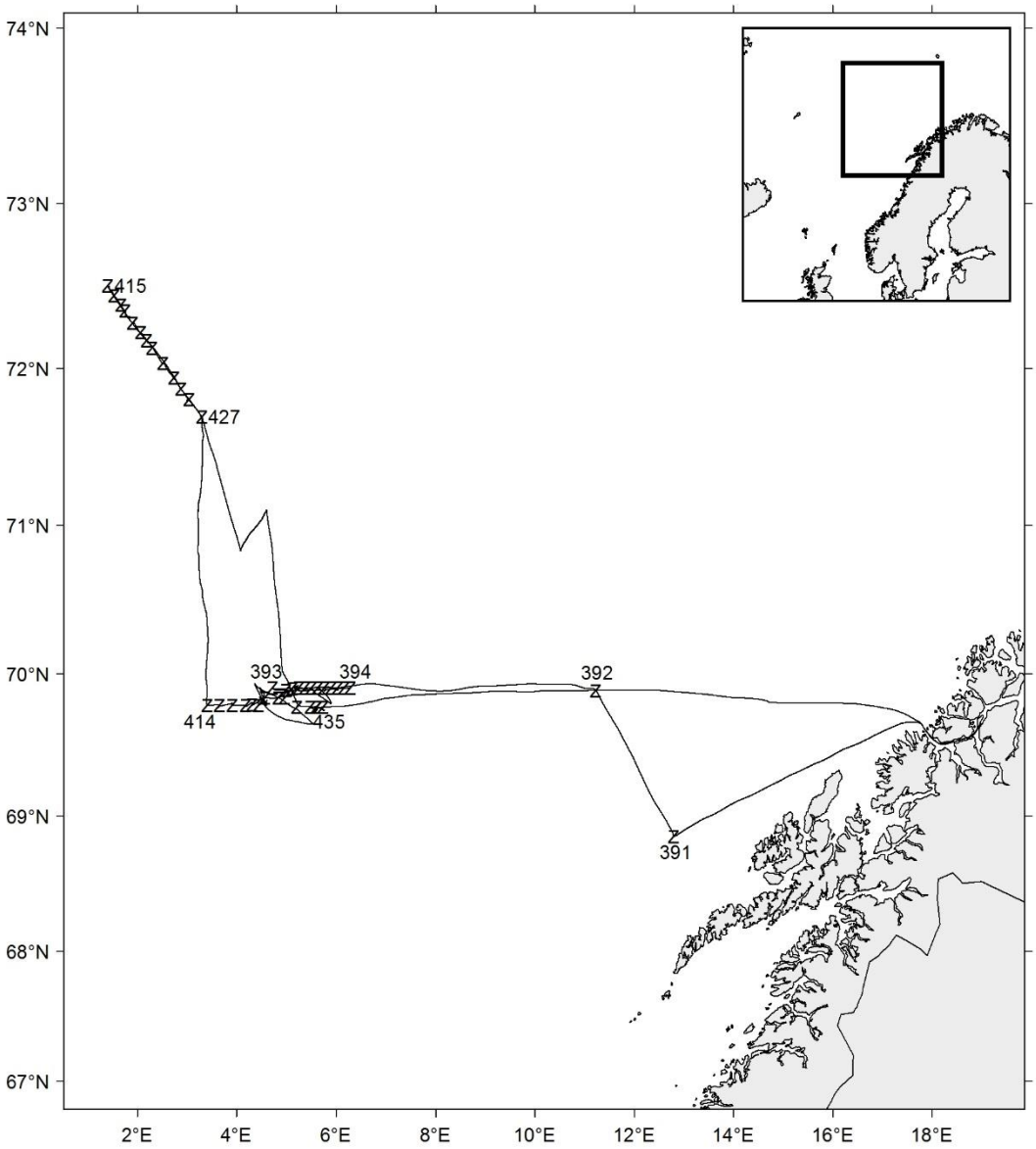
Cruise no 2017604 "Kristine Bonnevie" (Chart 2)
11 Feb–2 Mar 2017

Trawl st.no 1-23
□ Bottom trawl
▲ Pelagic trawl
● Mik stations



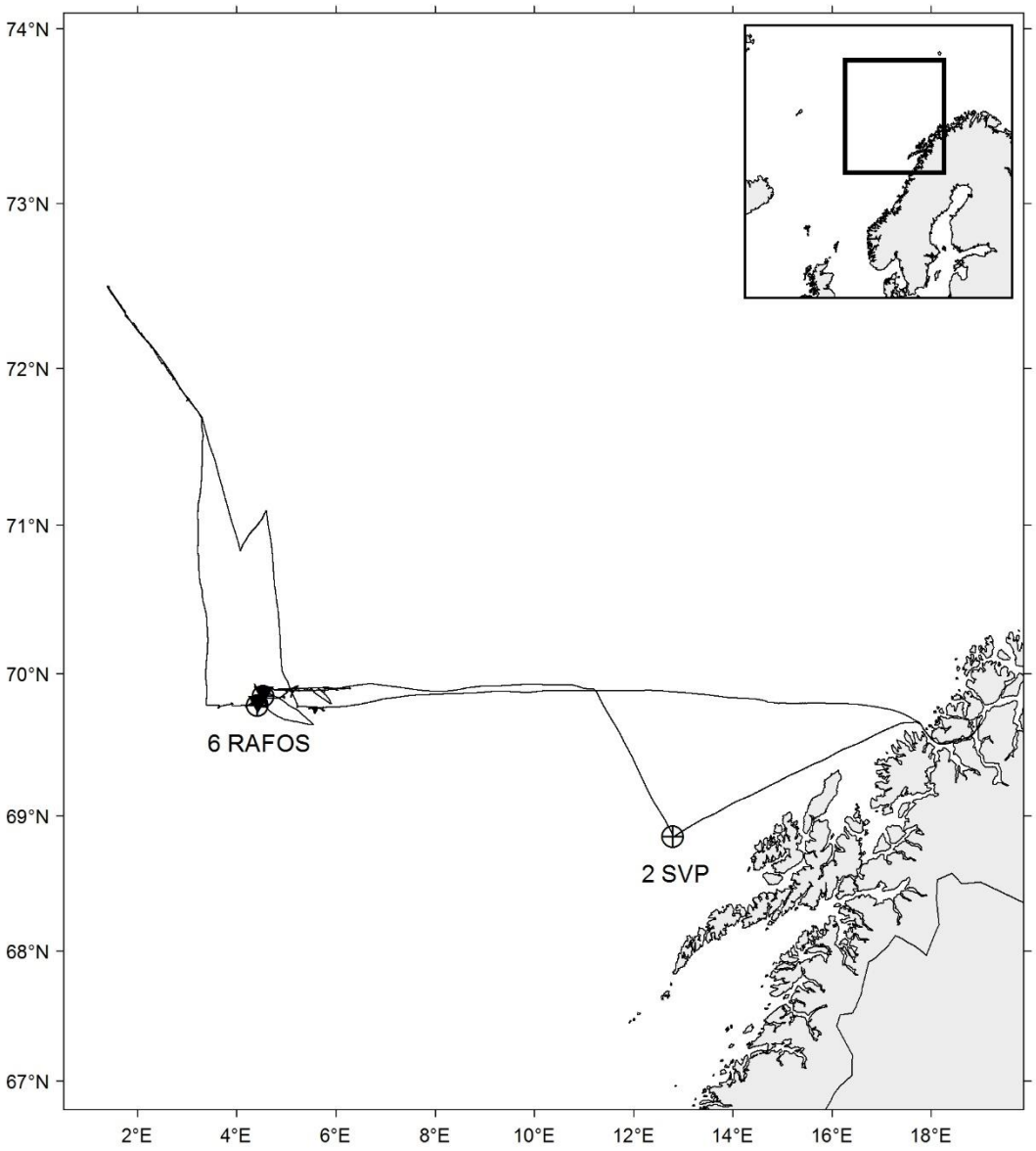
Cruise no 2017605 "K. Bonnevie"
4-6 March 2017

z CTD st.no 324-349



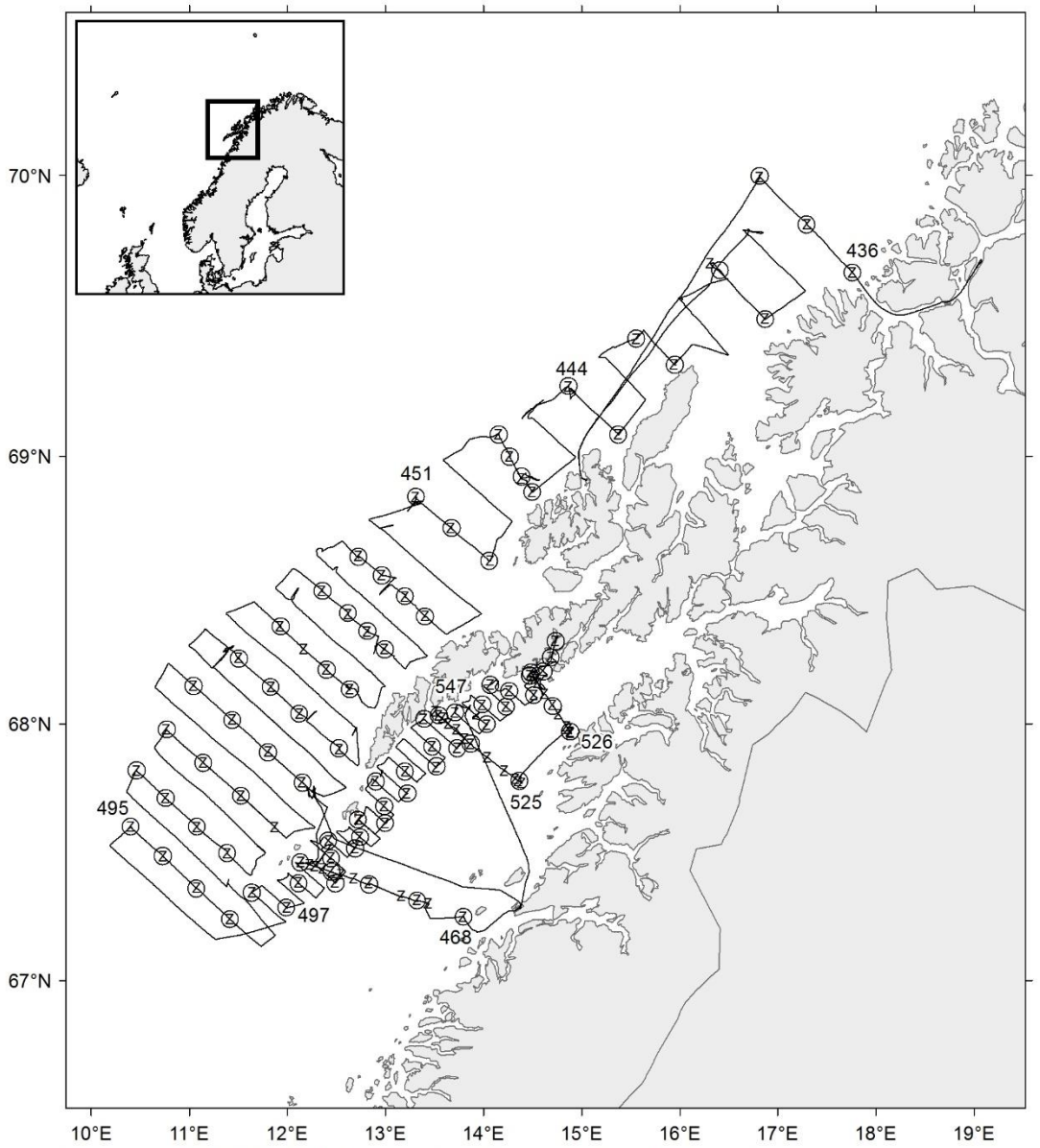
Cruise no 2017606 "K. Bonnevie" (Chart 1)
10–24 March 2017

z CTD st.no 391-435



Cruise no 2017606 "K. Bonnevie" (Chart 2)
10–24 March 2017

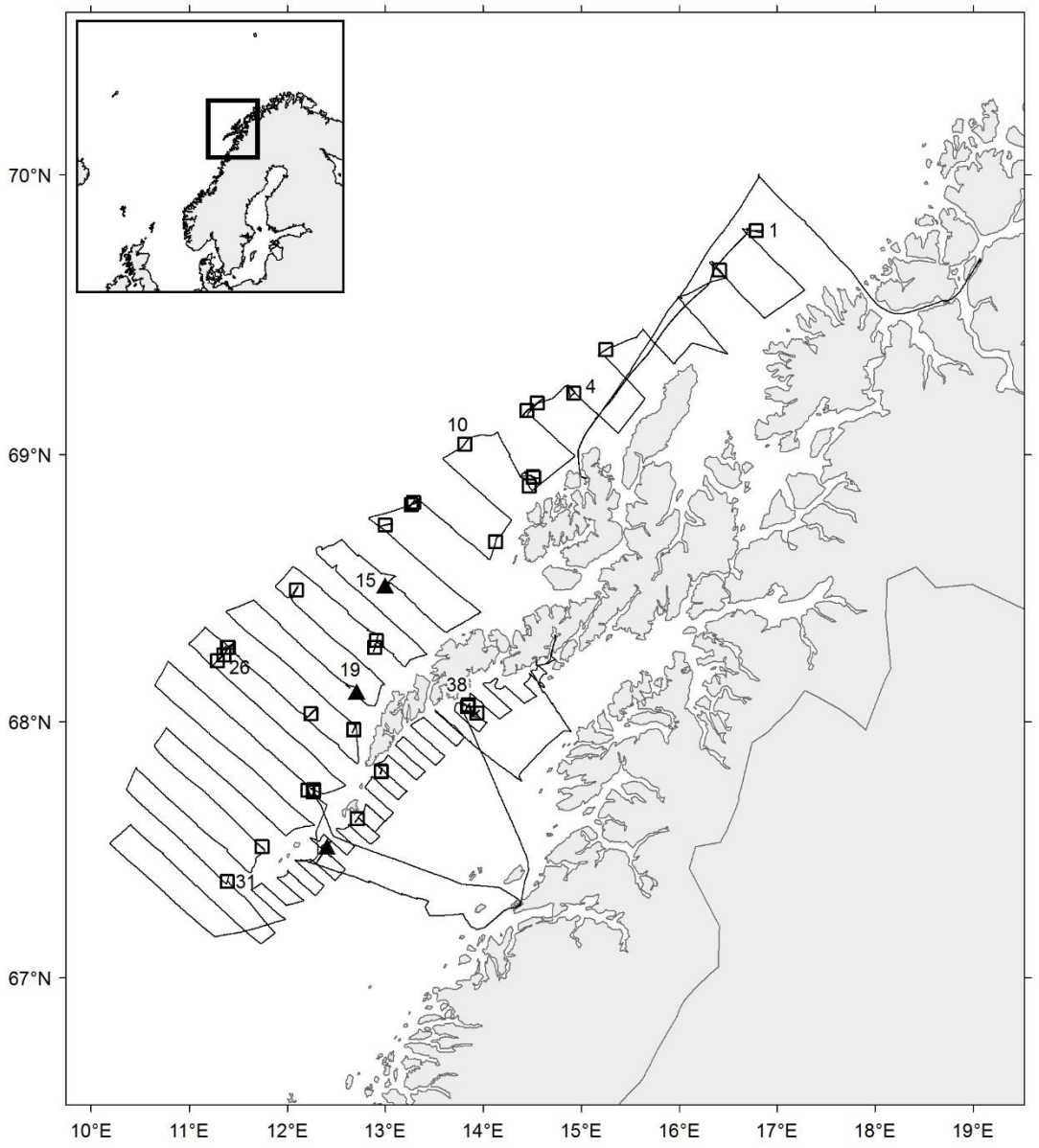
⊕ Surface drifters, SVP
▼ RAFOS – Neutrally buoyant, acoustically tracked subsurface drifter. Deployed.



Cruise no 2017625 "K. Bonnevie" (Chart 1)
25 March–11 April 2017

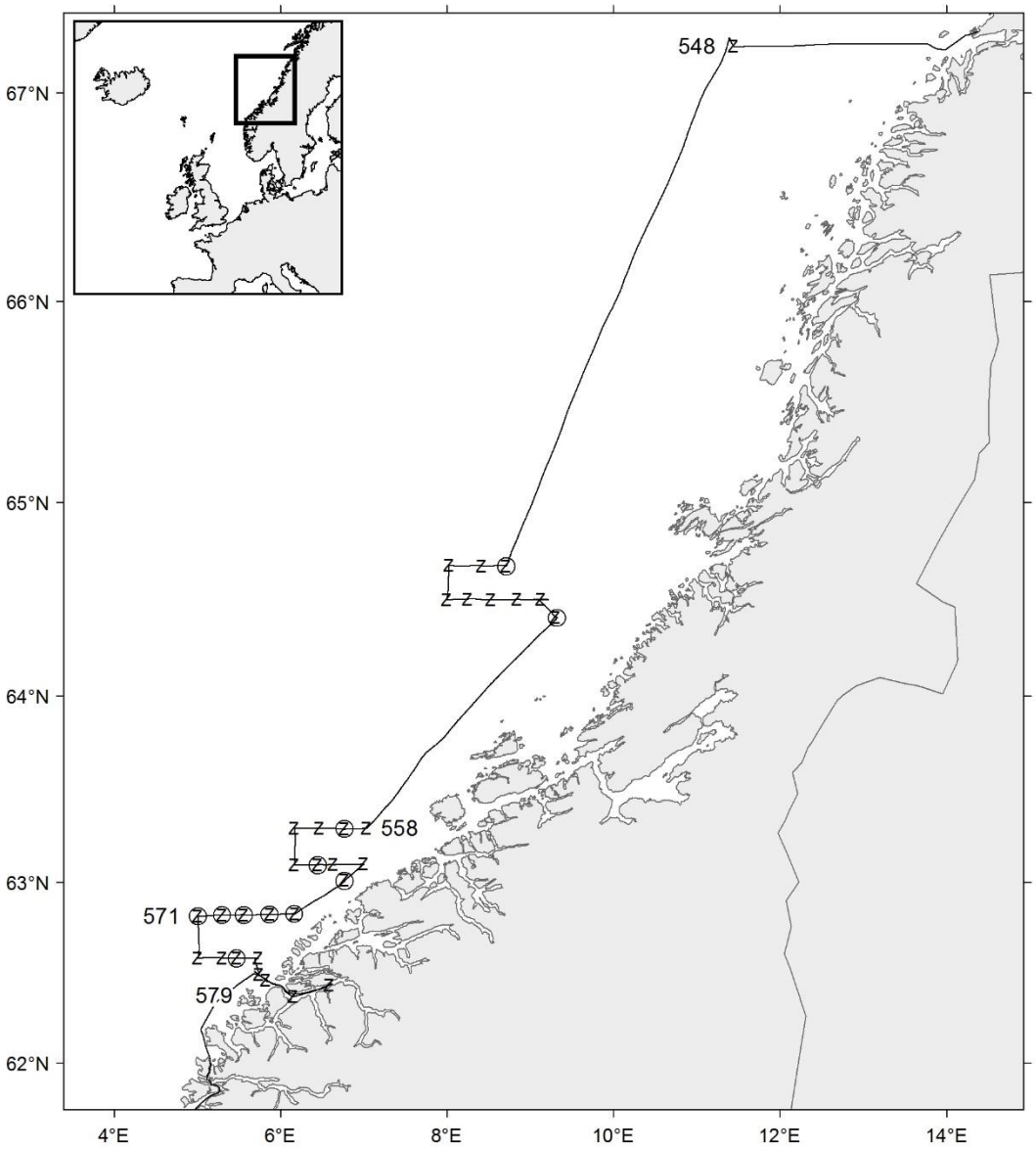
z CTD st.no 436-547
○ Plankton st. (WP-II-net)

Standard sections:
Tennholmen–Røst st.no 468-478
Ballstad–Måløy/Skarholmen st.no 514-525
Kabelvåg–Steigen st.no 526-536



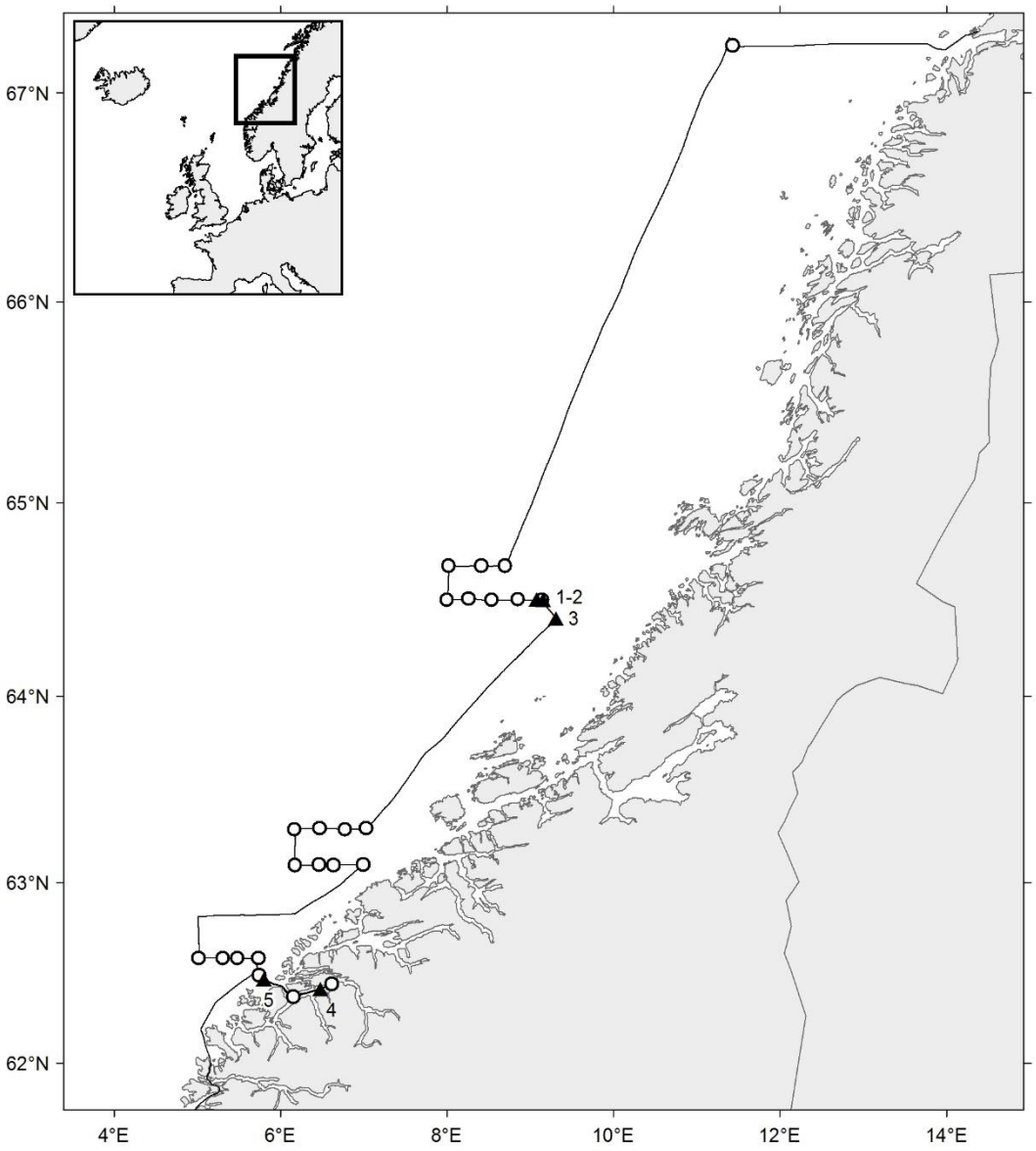
Cruise no 2017625 "K. Bonnevie" (Chart 2)
25 March–11 April 2017

Trawl st.no 1-38
□ Bottom tr.
▲ Pelagic tr.

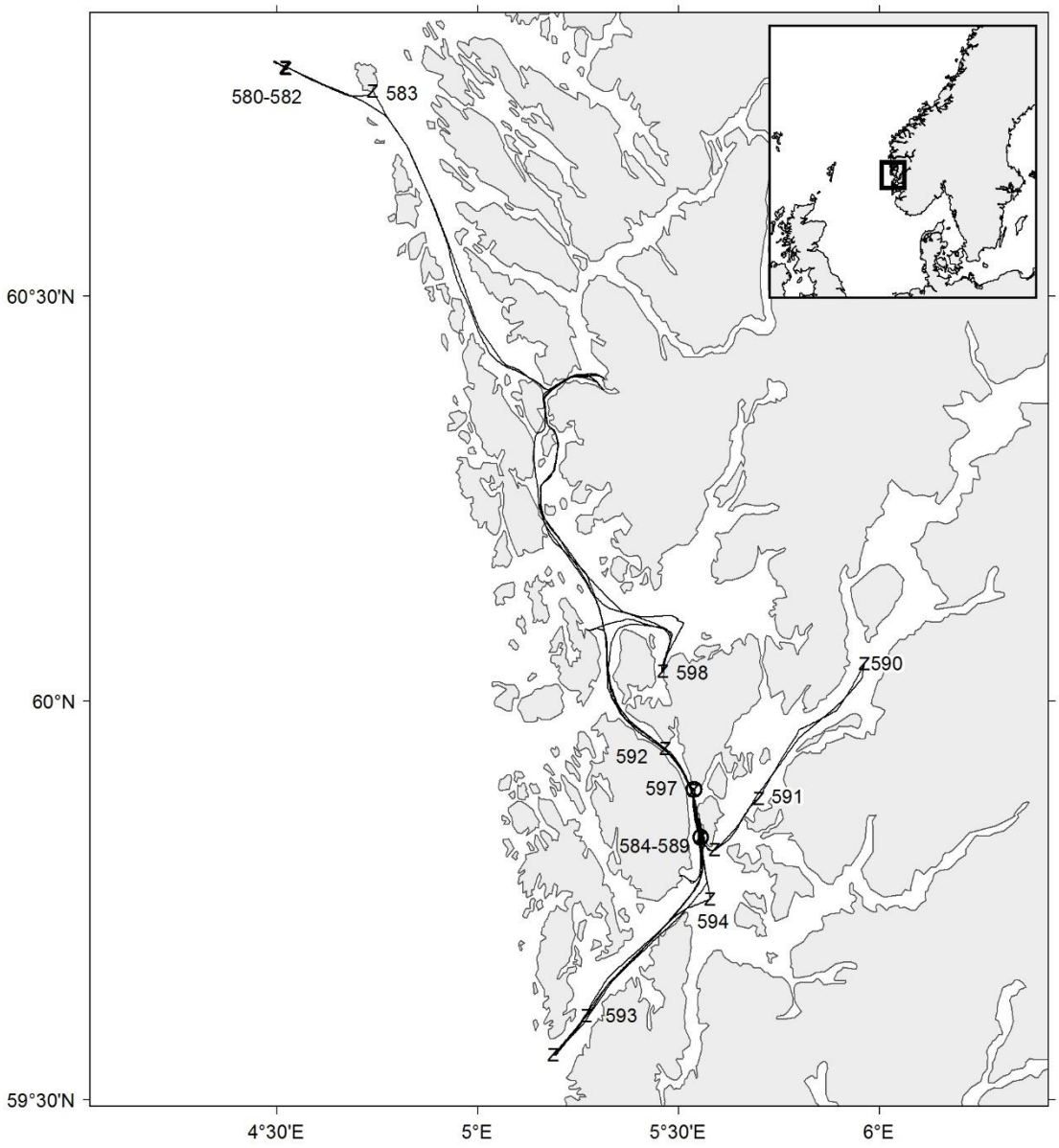


Cruise no 2017626 "K. Bonnevic" (Chart 1)
12-16 April 2017

z CTD st.no 548-579
○ Plankton st. (WP-II-net)

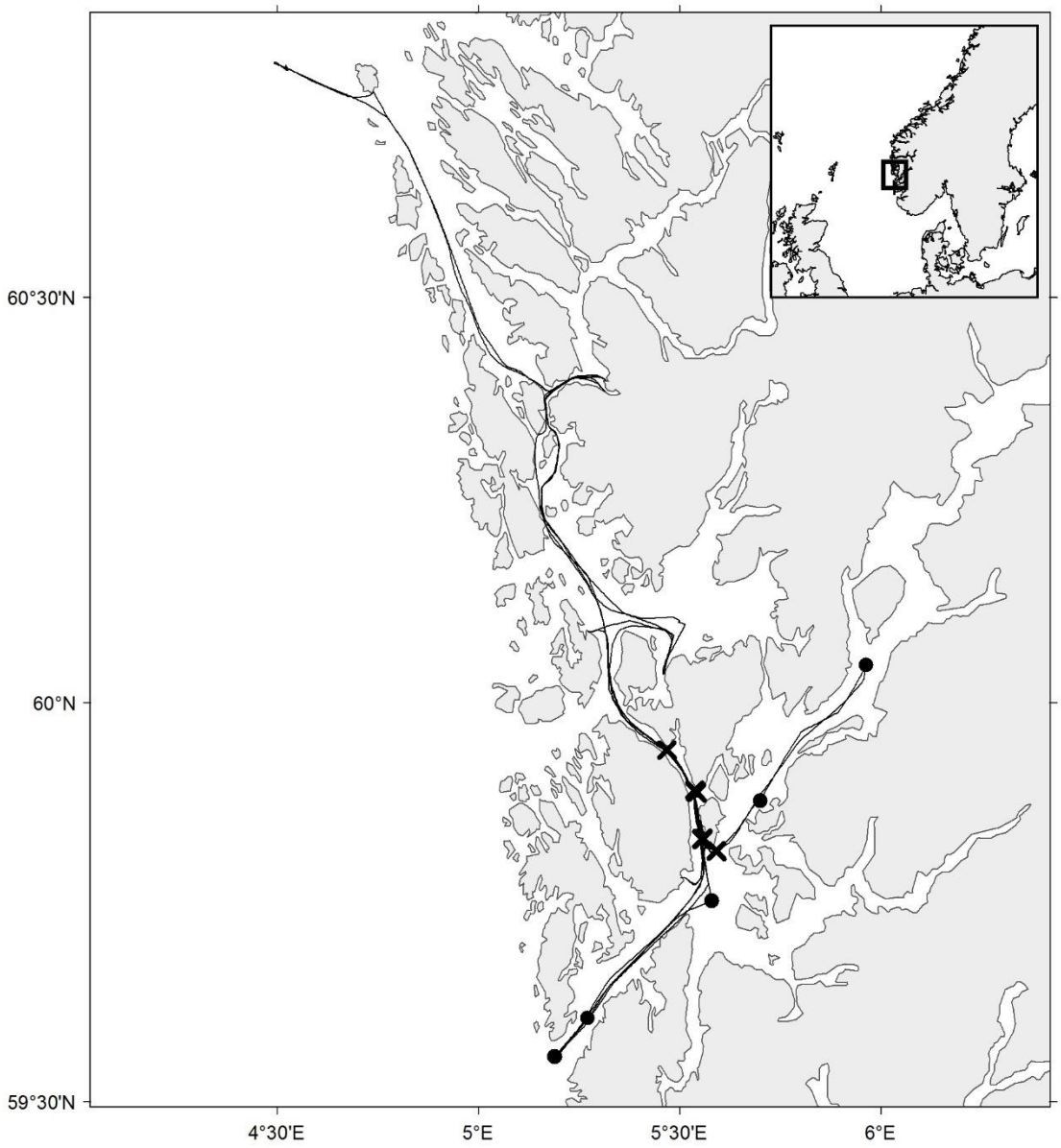


Cruise no 2017626 "K. Bonnevie" (Chart 2)
12-16 April 2017
▲ Trawl st.no 1-5
o Gulf III stations and T-80 stations



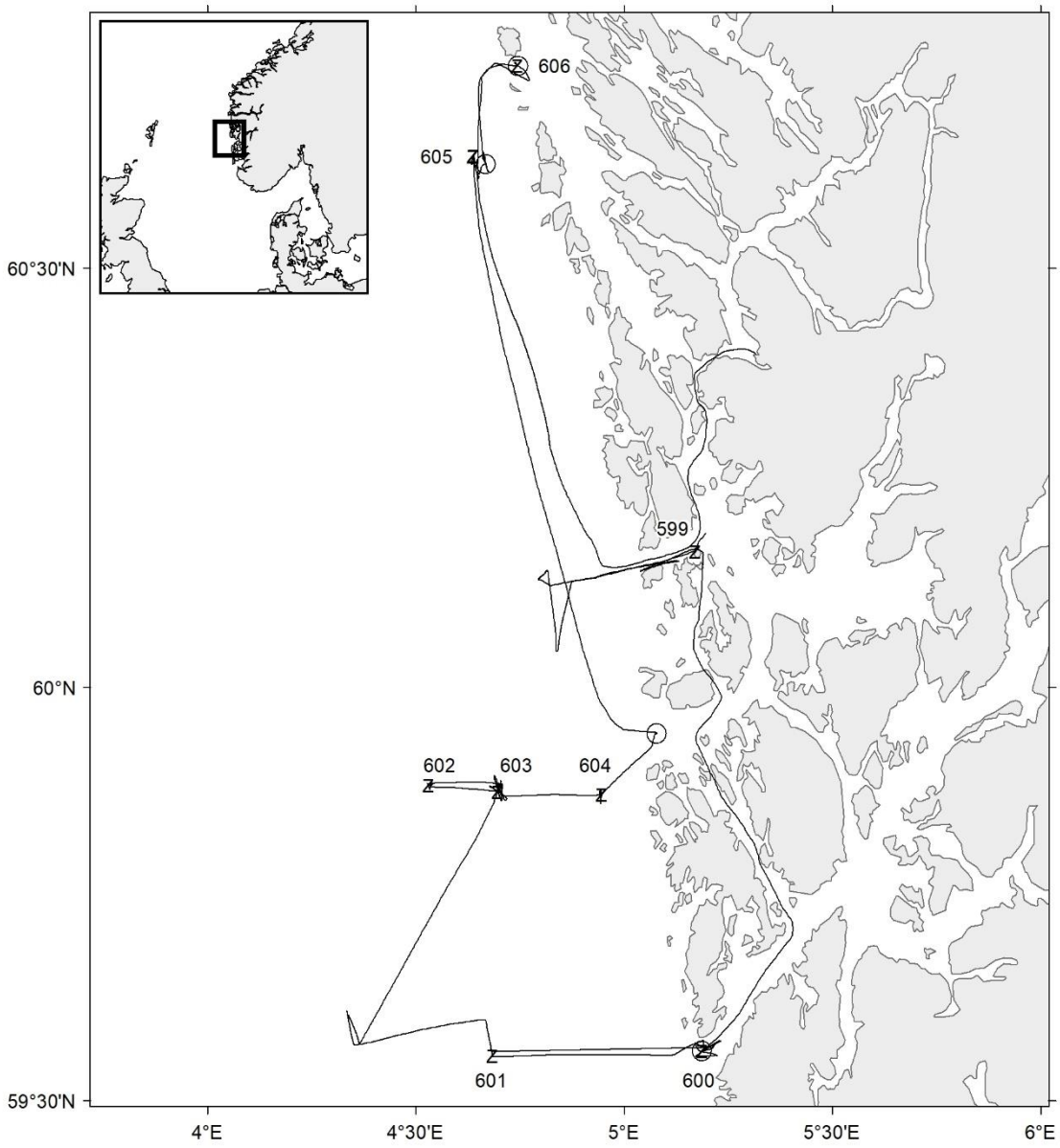
Cruise no 2017609 "K.Bonnevie" (Chart 1)
17–24 April 2017

z CTD st.no 580-598
o Plankton st. (WP-II-net)



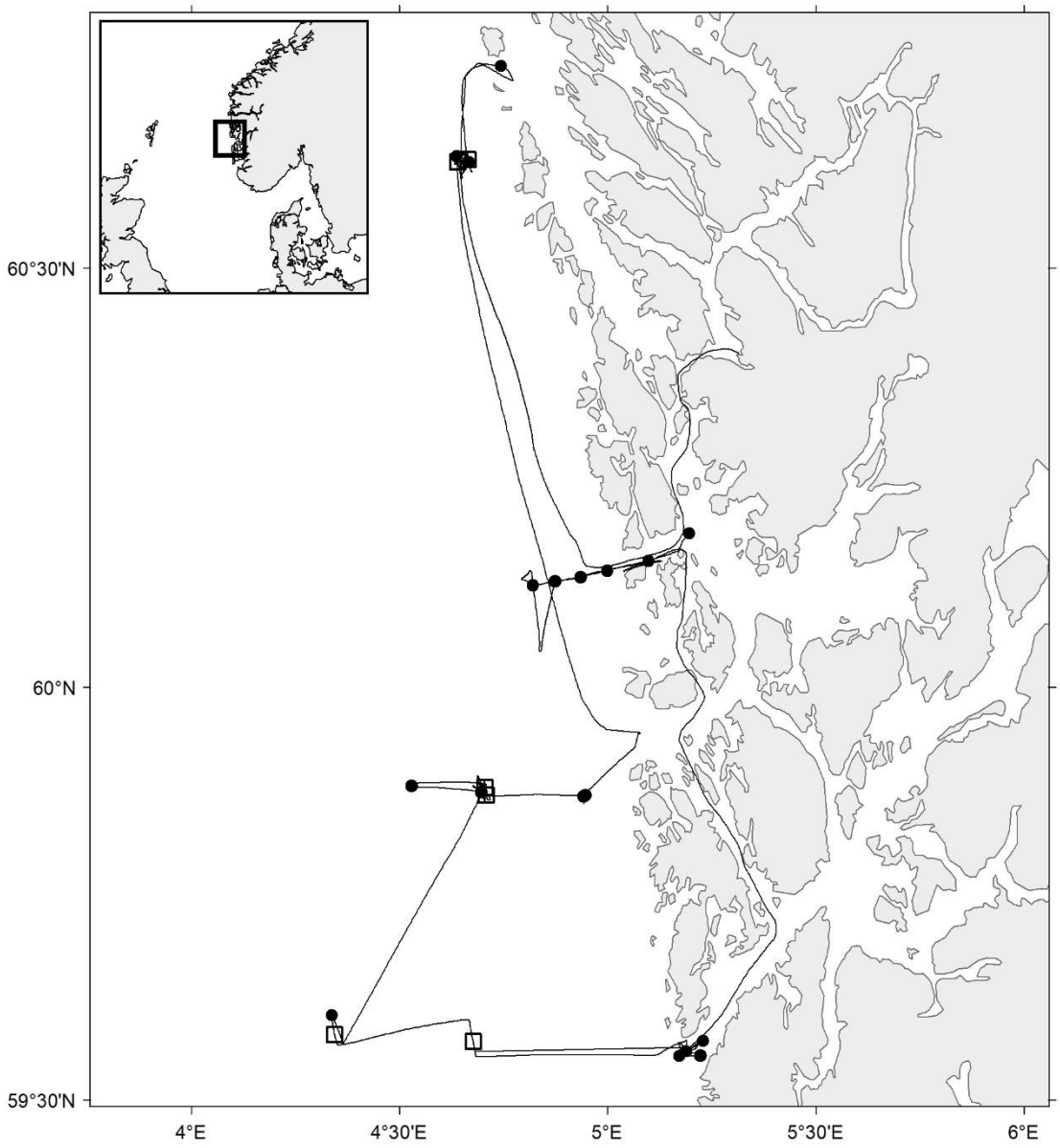
Cruise no 2017609 "K.Bonnevie" (Chart 2)
17–24 April 2017

● Grab st.
✖ Rov st.



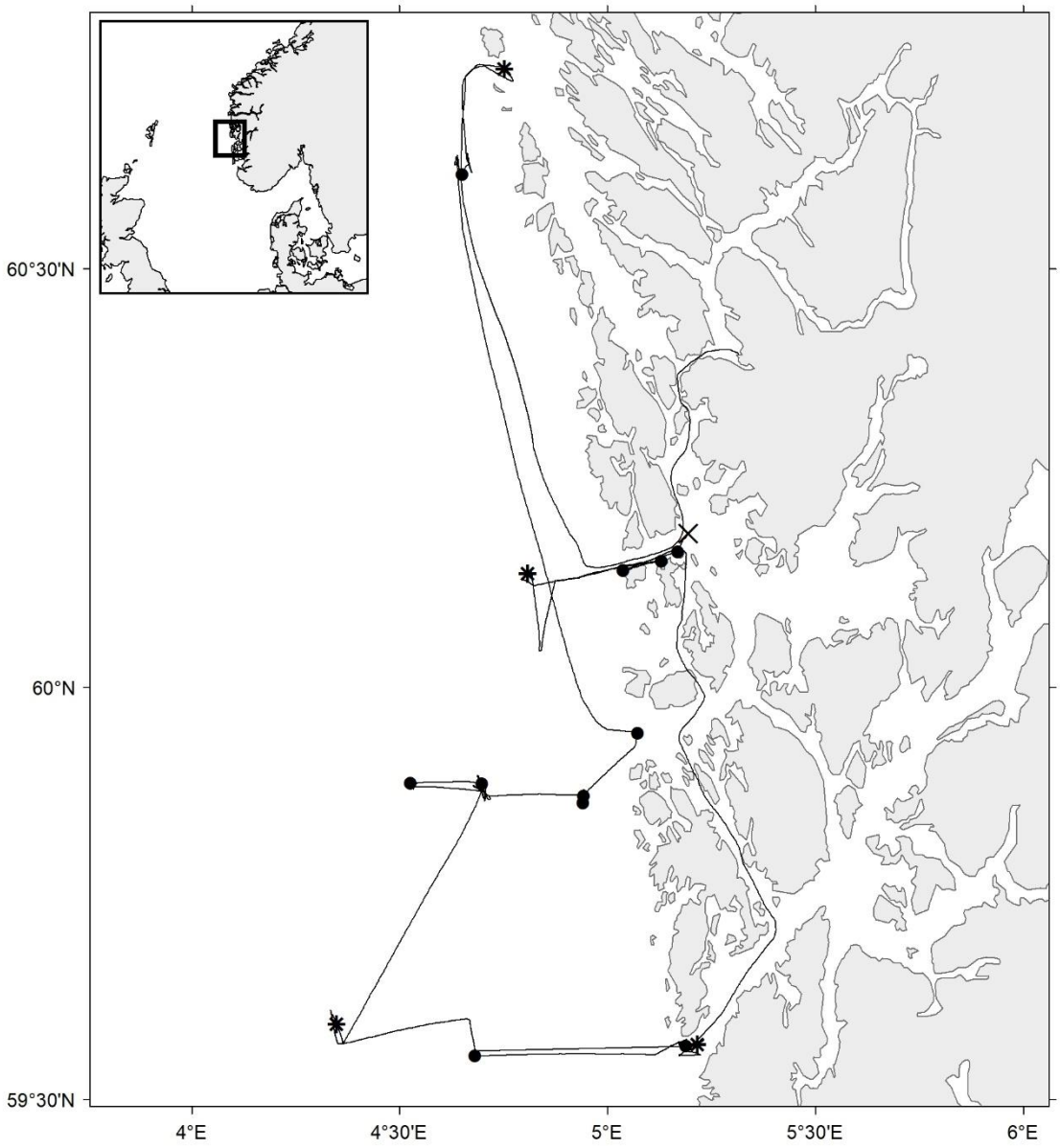
Cruise no 2017610 "K. Bonnevie" (Chart 1)
26 Apr–2 May 2017

z CTD st.no 599-606
○ Plankton st. (WP-II-net)



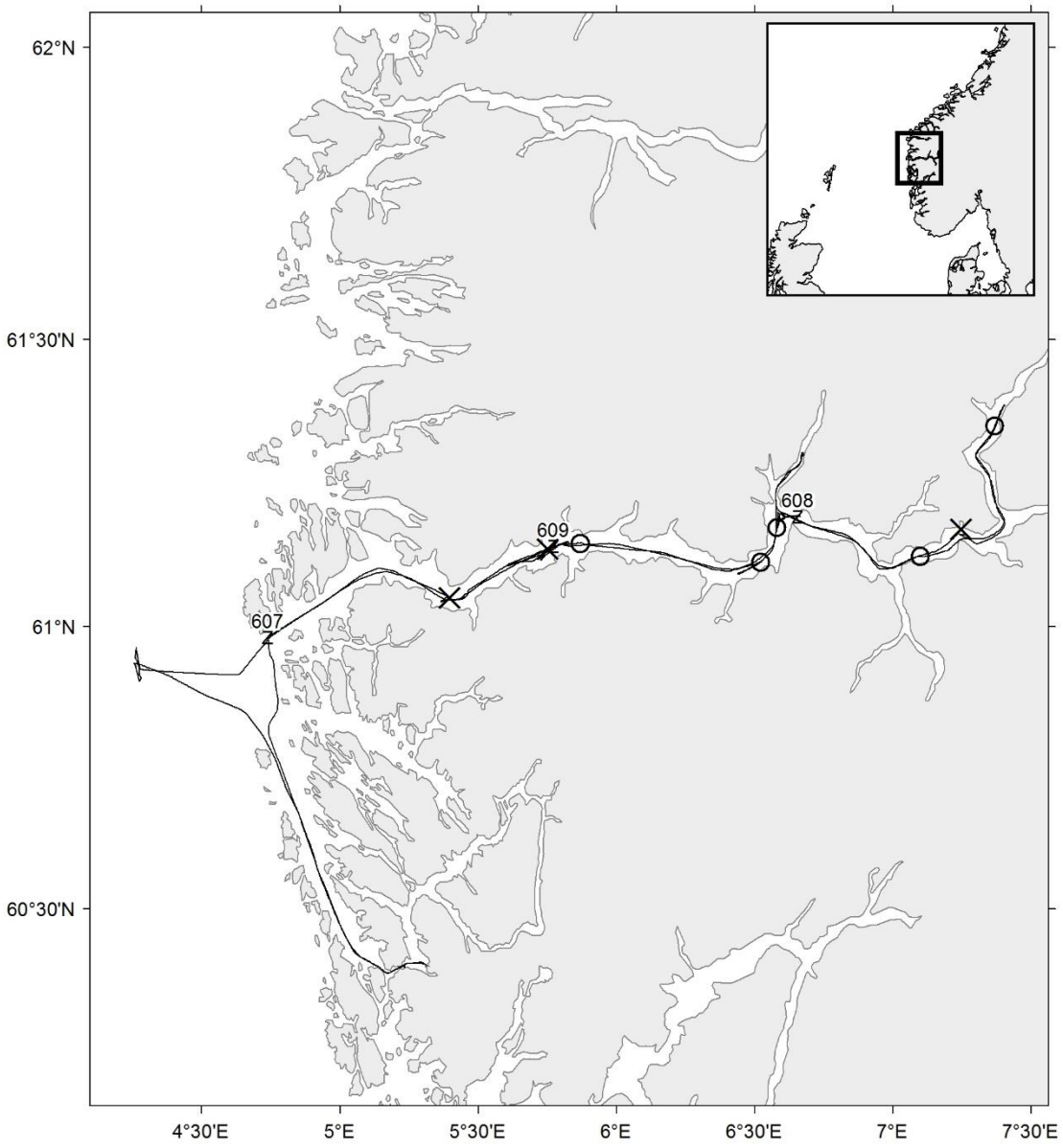
Cruise no 2017610 "K. Bonnevie" (Chart 2)
26 Apr–2 May 2017

● Grab st.
□ Agassis



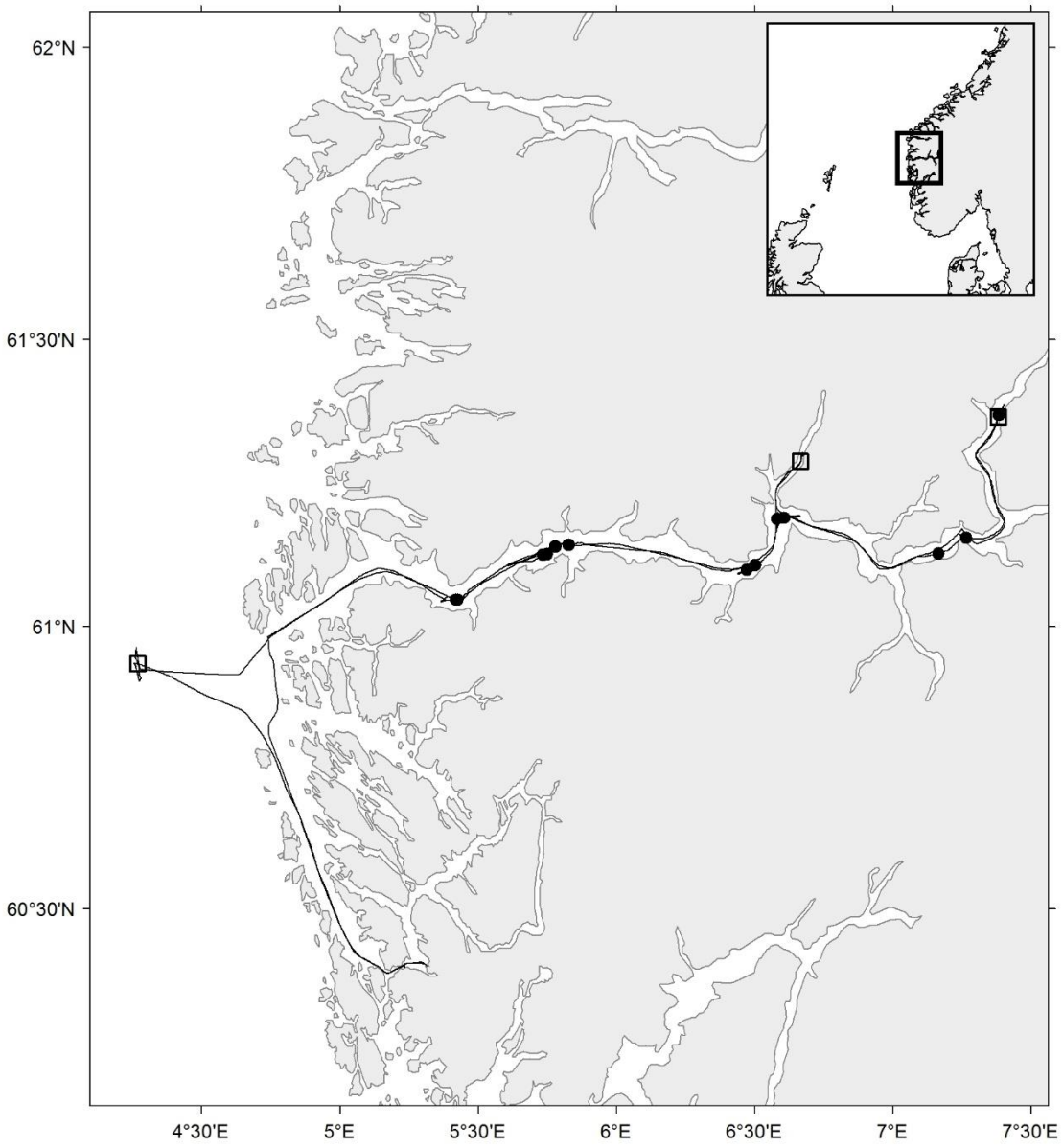
Cruise no 2017610 "K. Bonnevie" (Chart 3)
26 Apr–2 May 2017

● Rov station
✱ Slede station
× Box core station



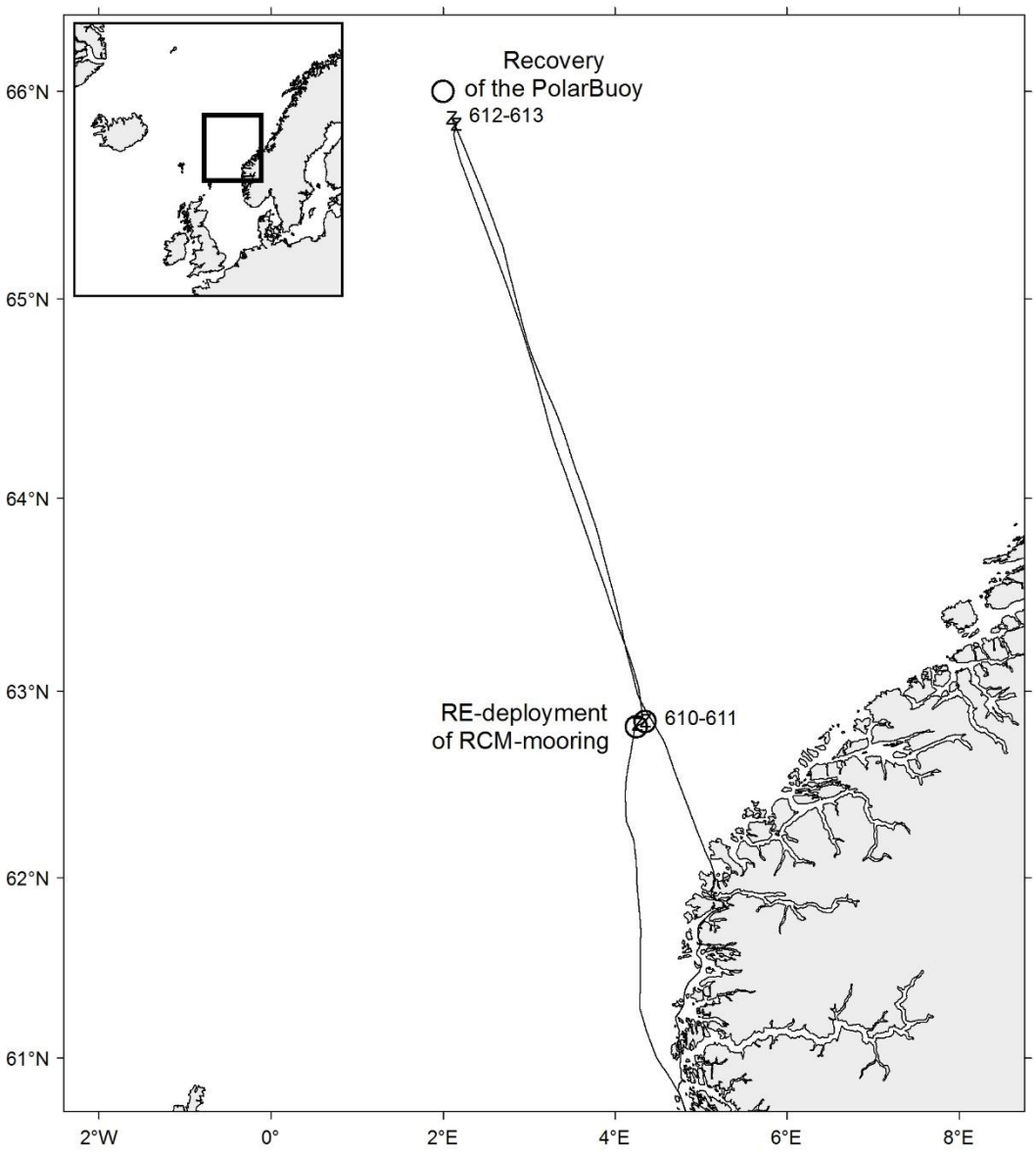
Cruise no 2017612 "K. Bonnevie" (Chart 1)
3–7 May 2017

z CTD st.no 607-609
○ Plankton st. (WP-II-net)
× Grab st.



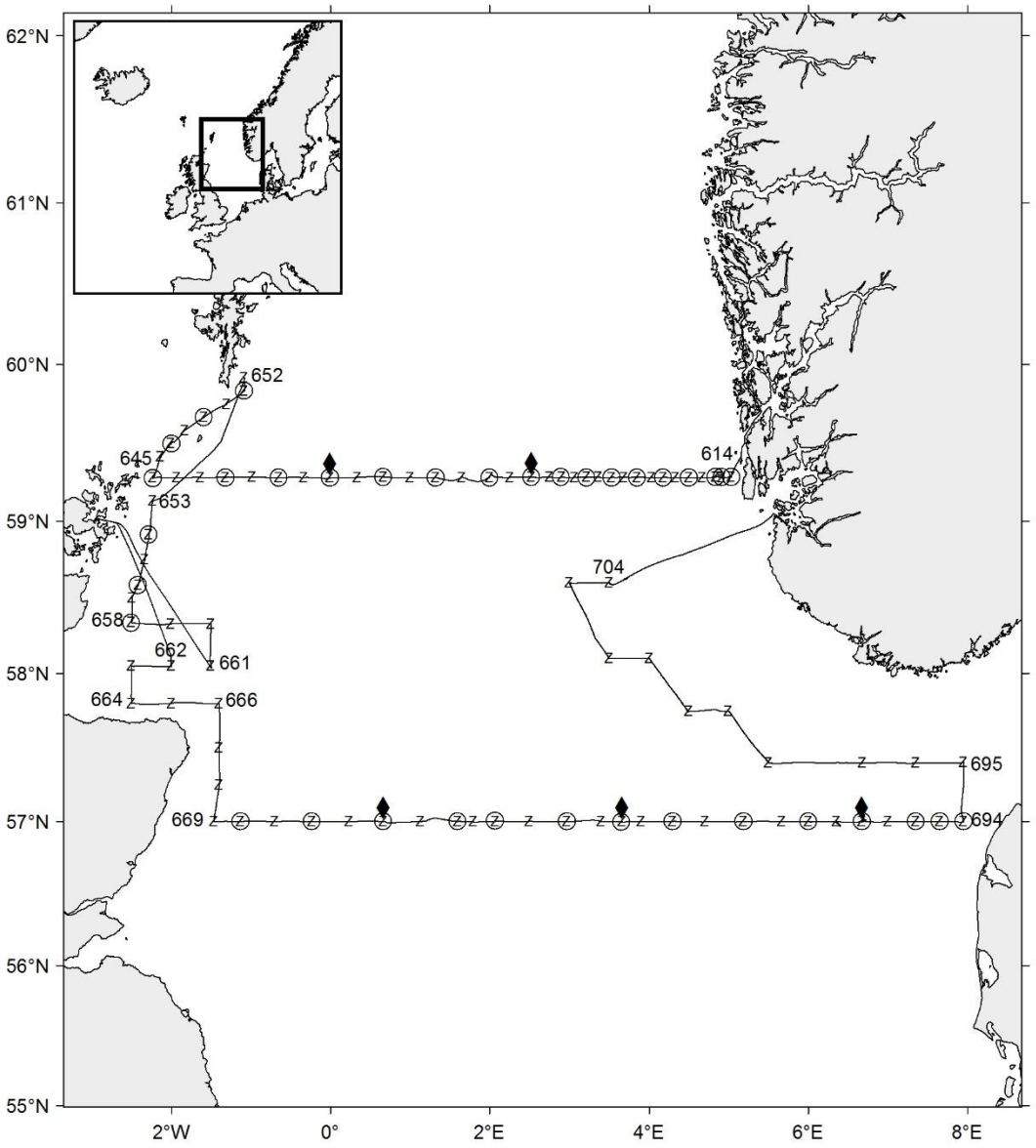
Cruise no 2017612 "K. Bonnevie" (Chart 2)
3–7 May 2017

□ Bottom trawl
● Sledge



Cruise no 2017613 "K. Bonnevie"
22–26 June 2017

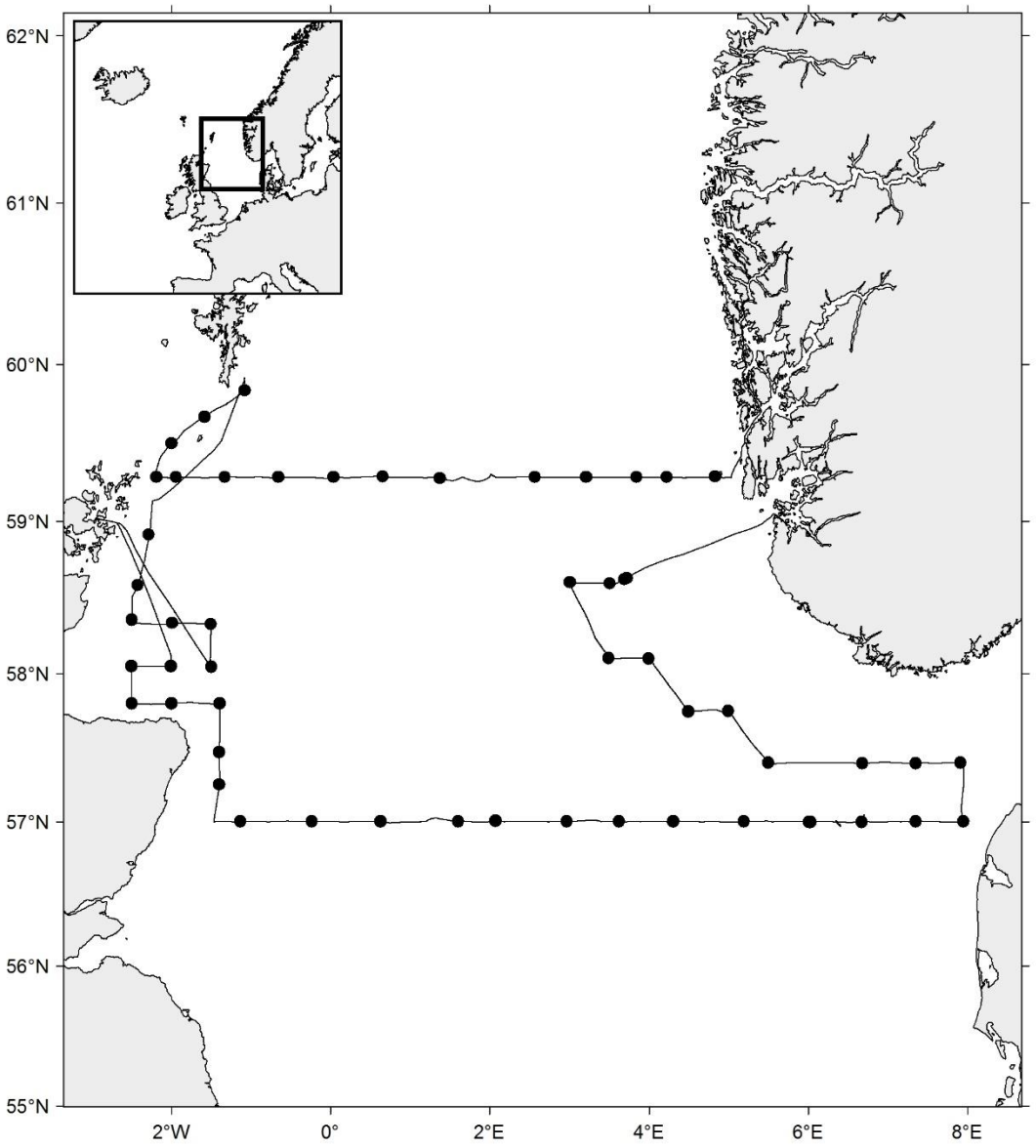
z CTD st.no 610-613
OMoorings and buoy



Cruise no 2017614 "K. Bonnevie" Part 1 (Chart 1)
5–15 July 2017

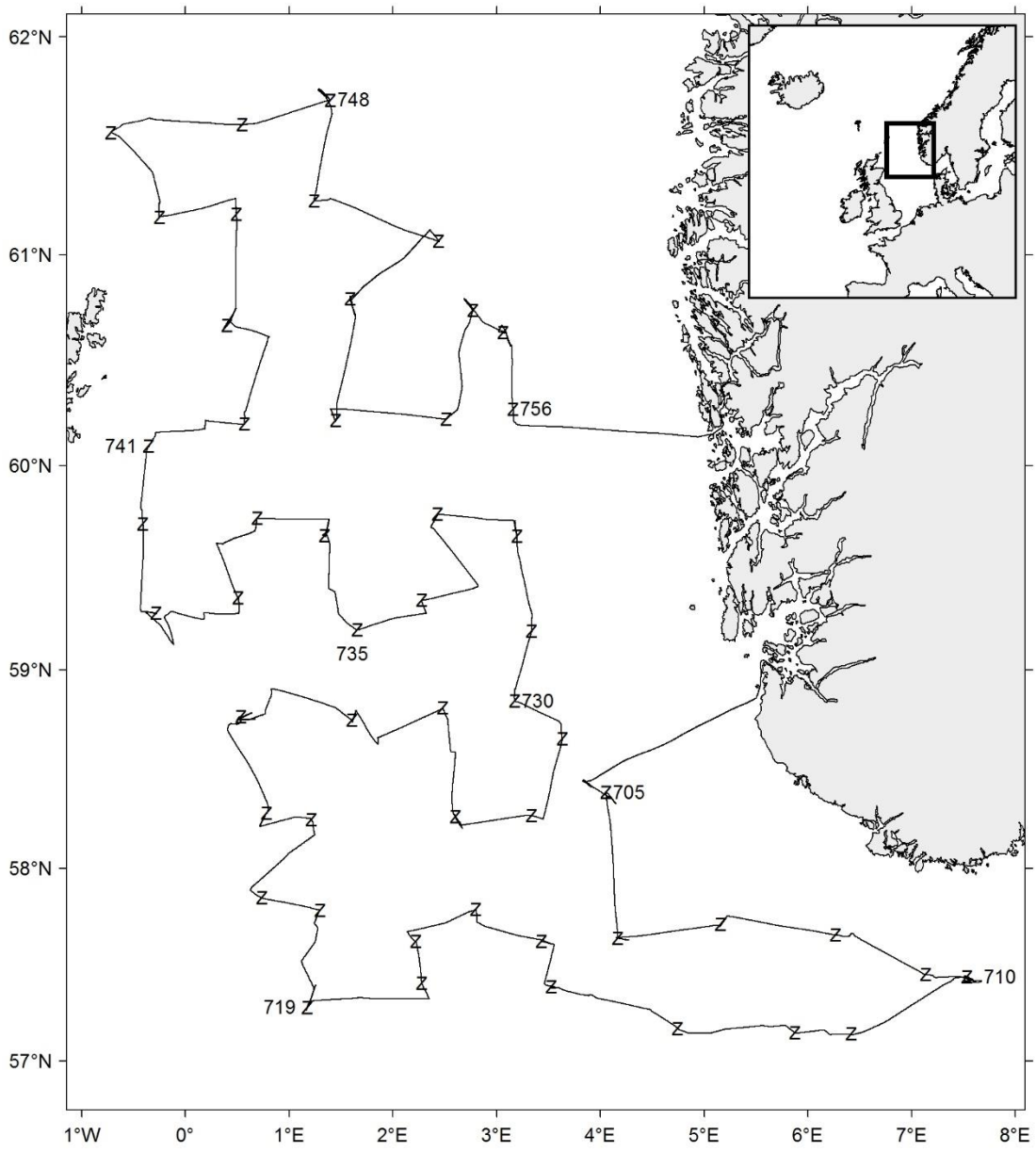
Standard sections:
Utsira W: st.no 614–645
Hanstholm–Aberdeen: st.no 669–694

z CTD st.no 614–704
○ Plankton st. (WP-II-net)
♦ Plankton st. (Mocness)



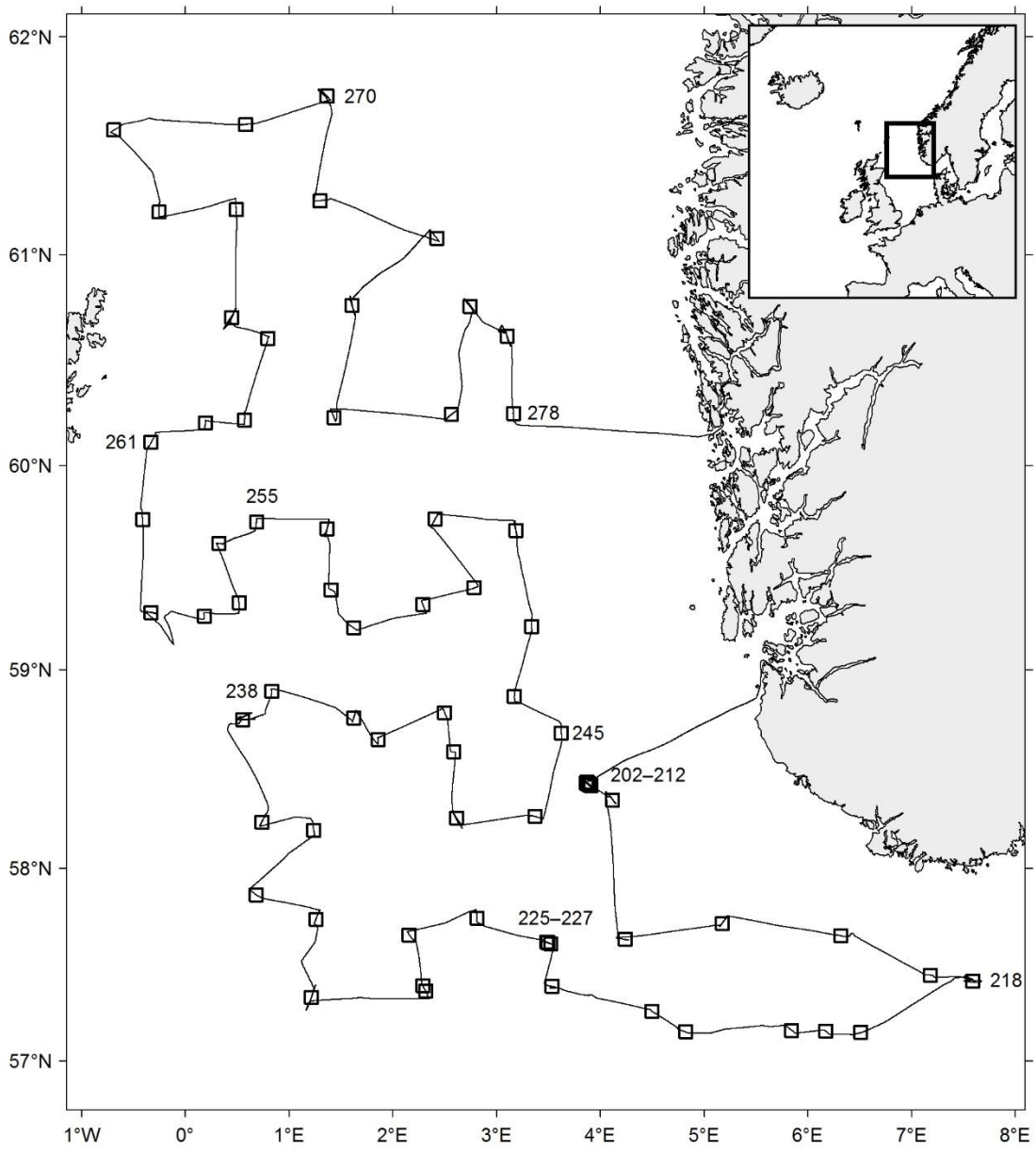
Cruise no 2017614 "K. Bonnevie" Part 1 (Chart 2)
5–15 July 2017

• Mik stations



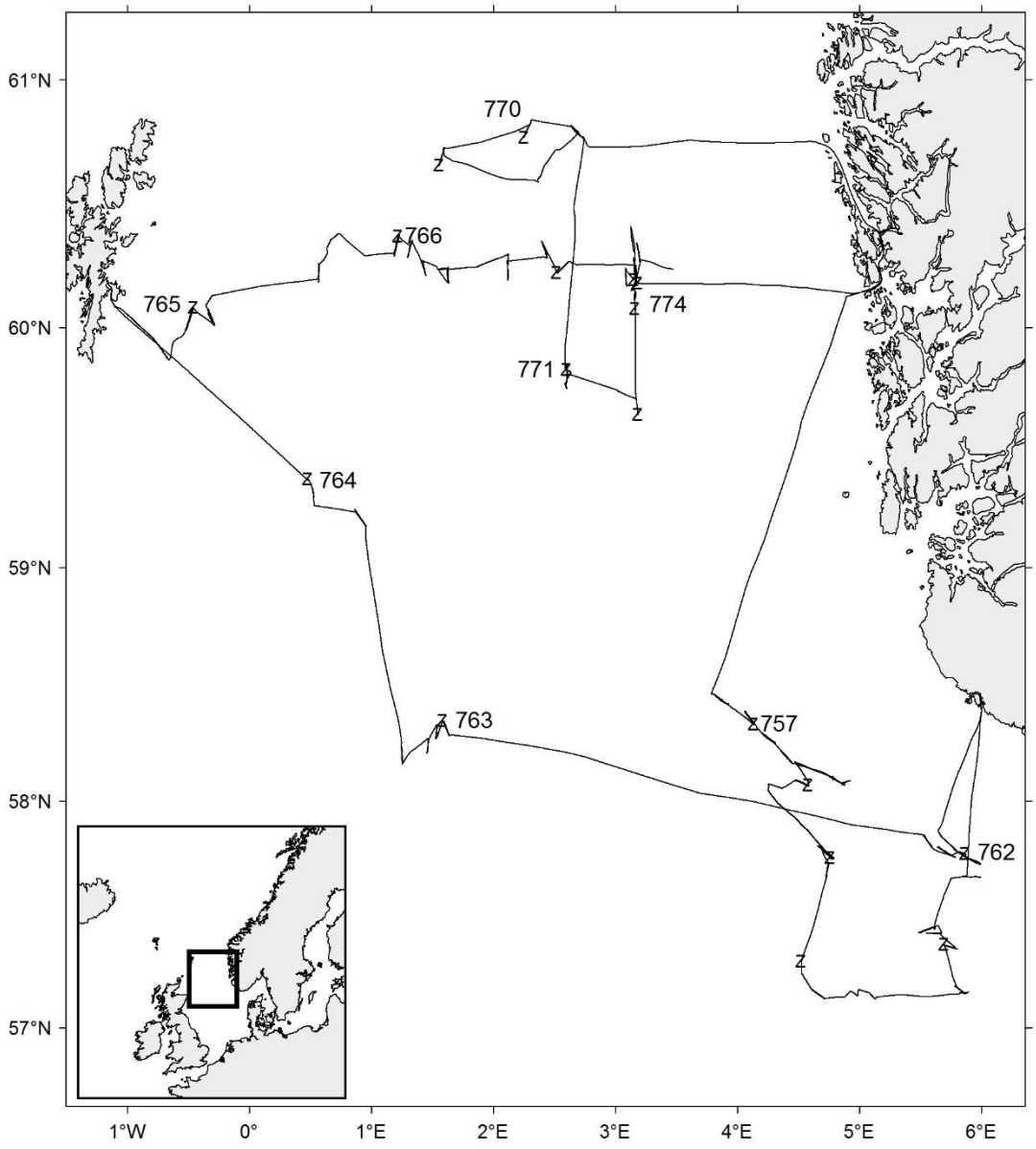
Cruise no 2017614 "K. Bonnevie" Part II (Chart 1)
17–31 July 2017

z CTD st.no 705–756



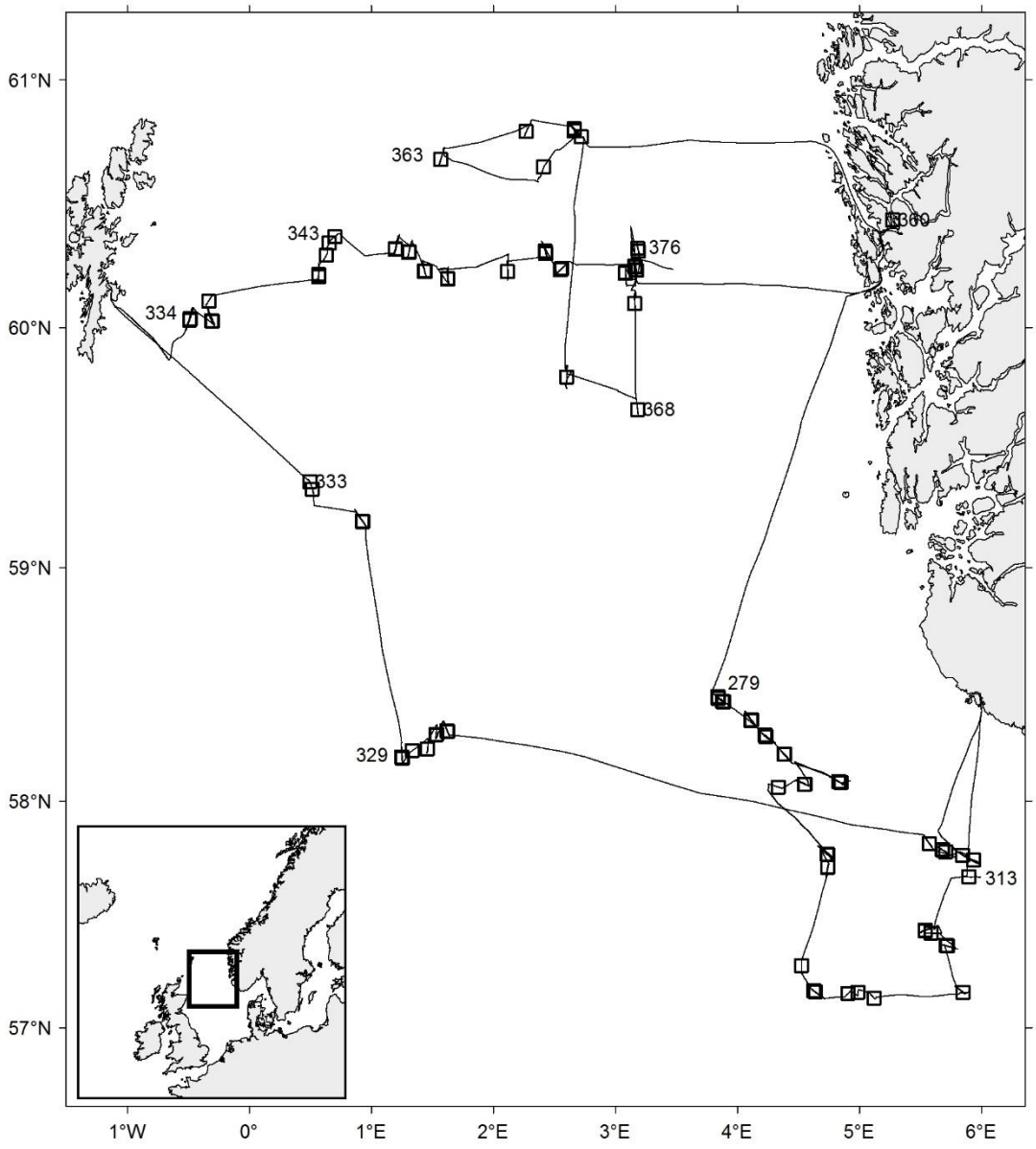
Cruise no 2017614 "K. Bonnevie" Part II (Chart 2)
17–31 July 2017

□ Bottom trawl st.no 202–278



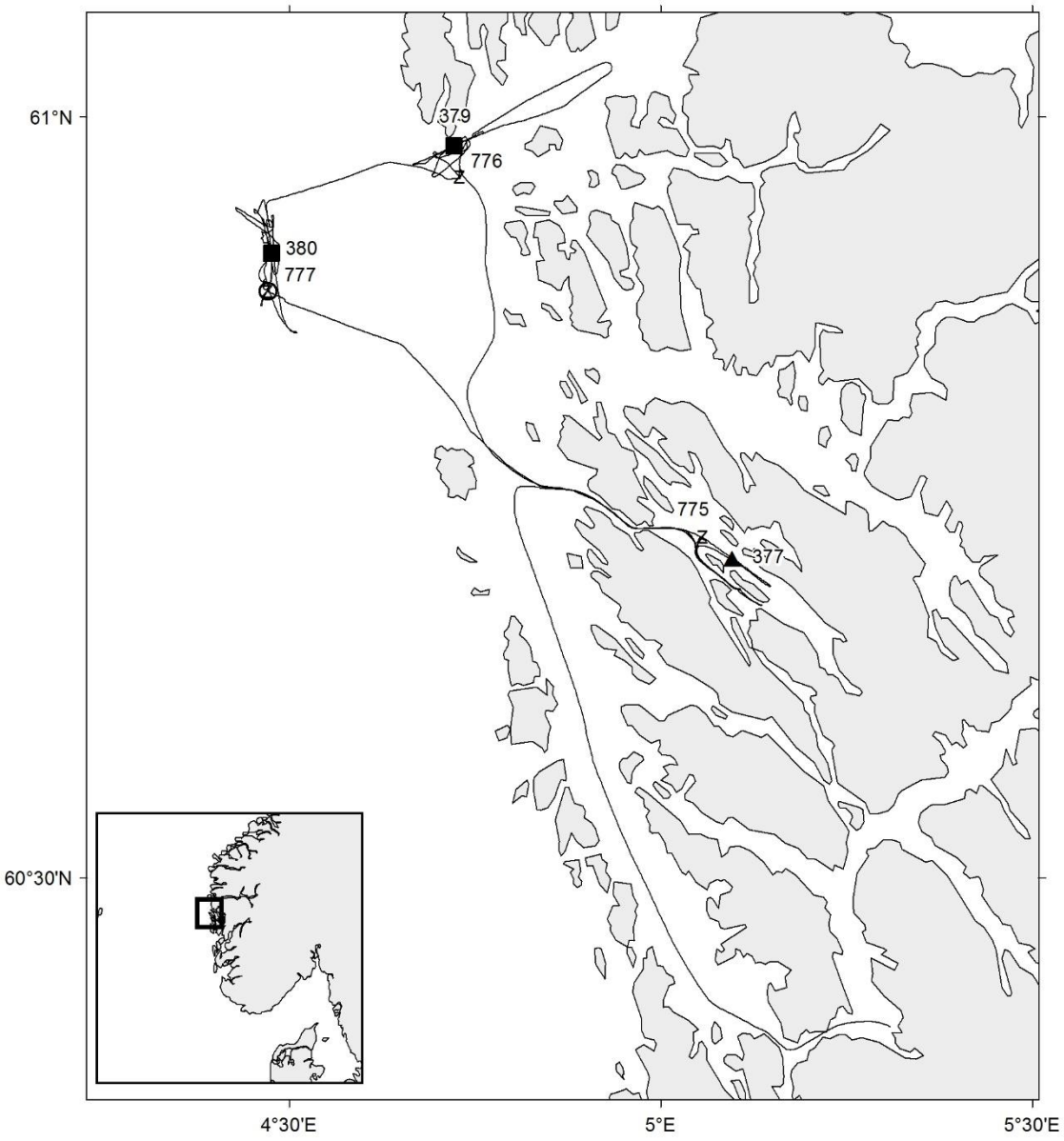
Cruise no 2017614 "K. Bonnevie" Part III (Chart 1)
1–21 August 2017

z CTD st.no 757–774



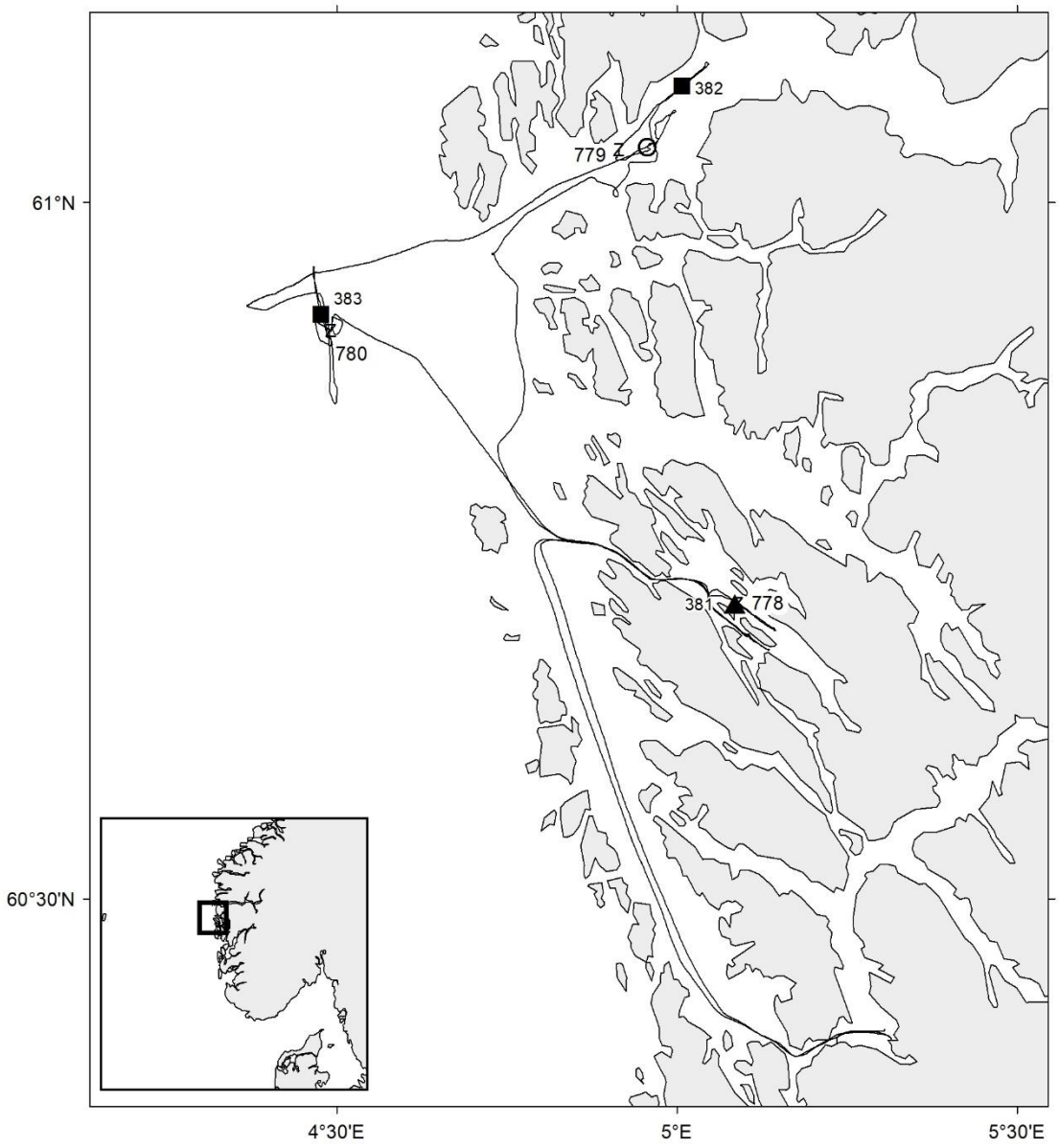
Cruise no 2017614 "K. Bonnevie" Part III (Chart 2)
1–21 August 2017

□ Bottom trawl st.no 279–376



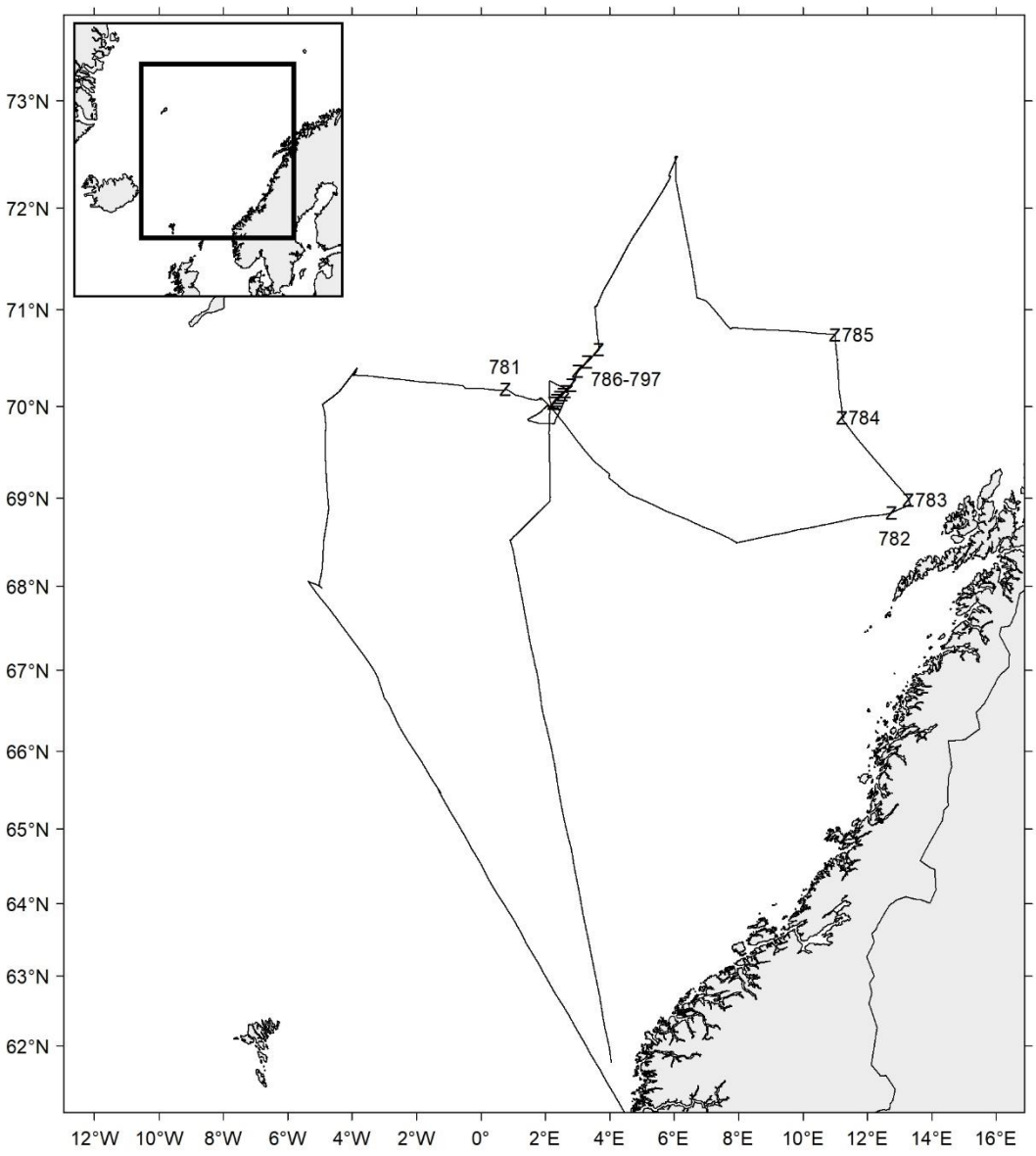
Cruise no 2017615 "K. Bonnevie"
22–24 August 2017

z CTD st.no 775–777
▲ Pelagic trawl st.no 377
■ Bottom trawl st.no 379–380
O Plankton st. (WP-II-net)



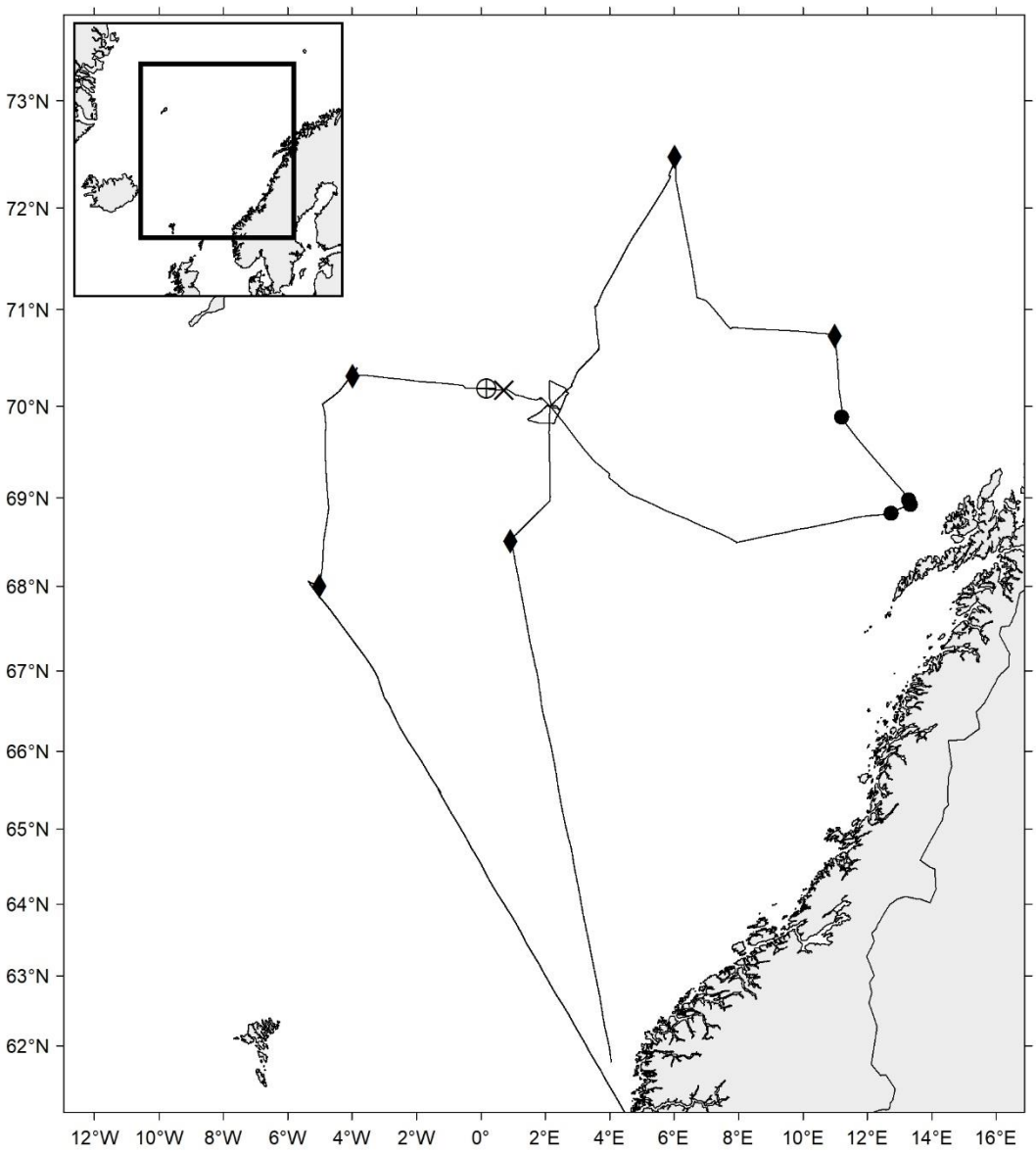
Cruise no 2017617 "K. Bonnevie"
29–31 August 2017

z CTD st.no 778-780
▲ Pelagic trawl st.no 381
■ Bottom trawl st.no 382-383
O Plankton st. (WP-II-net)



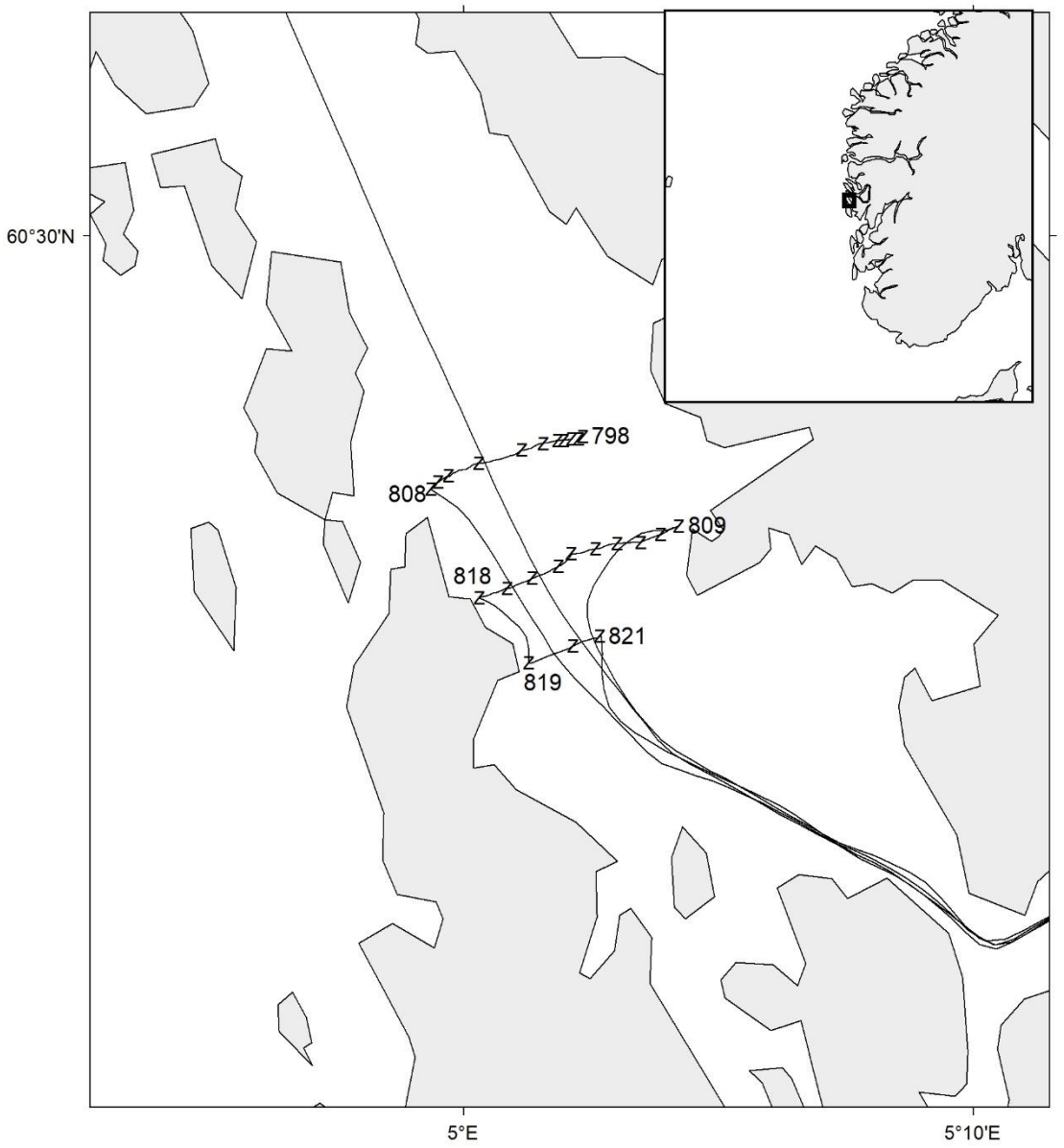
Cruise no 2017618 "K. Bonnevie" (Chart 1)
2–15 September 2017

z CTD st.no 781-797



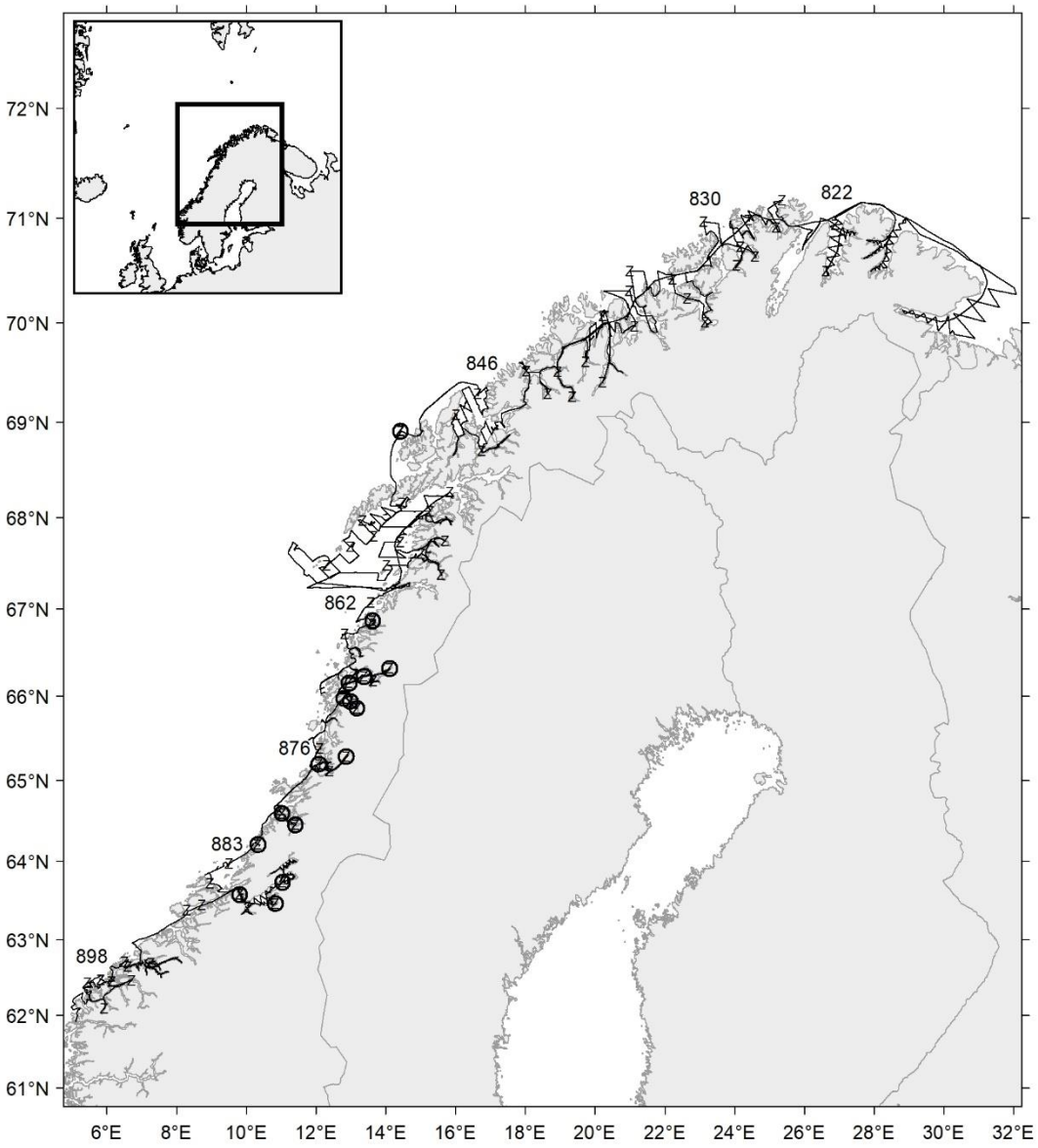
Cruise no 2017618 "K. Bonnevie" (Chart 2)
2–15 September 2017

● Mooring recovered
⊕ Deployed a Seaglider
× Deployed and recovered a Teledyne Webb Slocum glider
♦ RAFOS sound source mooring recovered



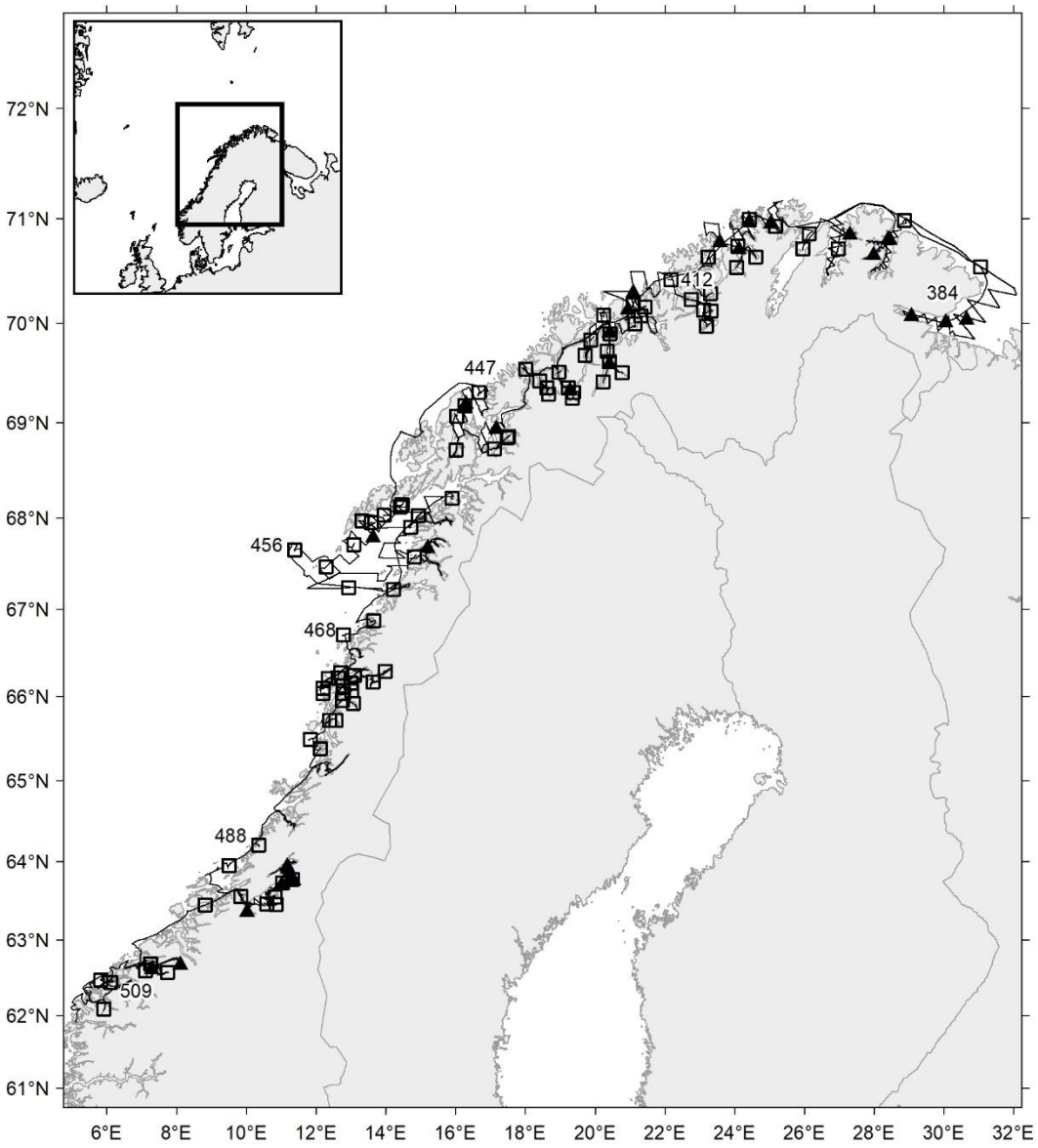
Cruise no 2017624 "K.Bonnevie"
26–27 September 2017

z CTD st.no 798-821



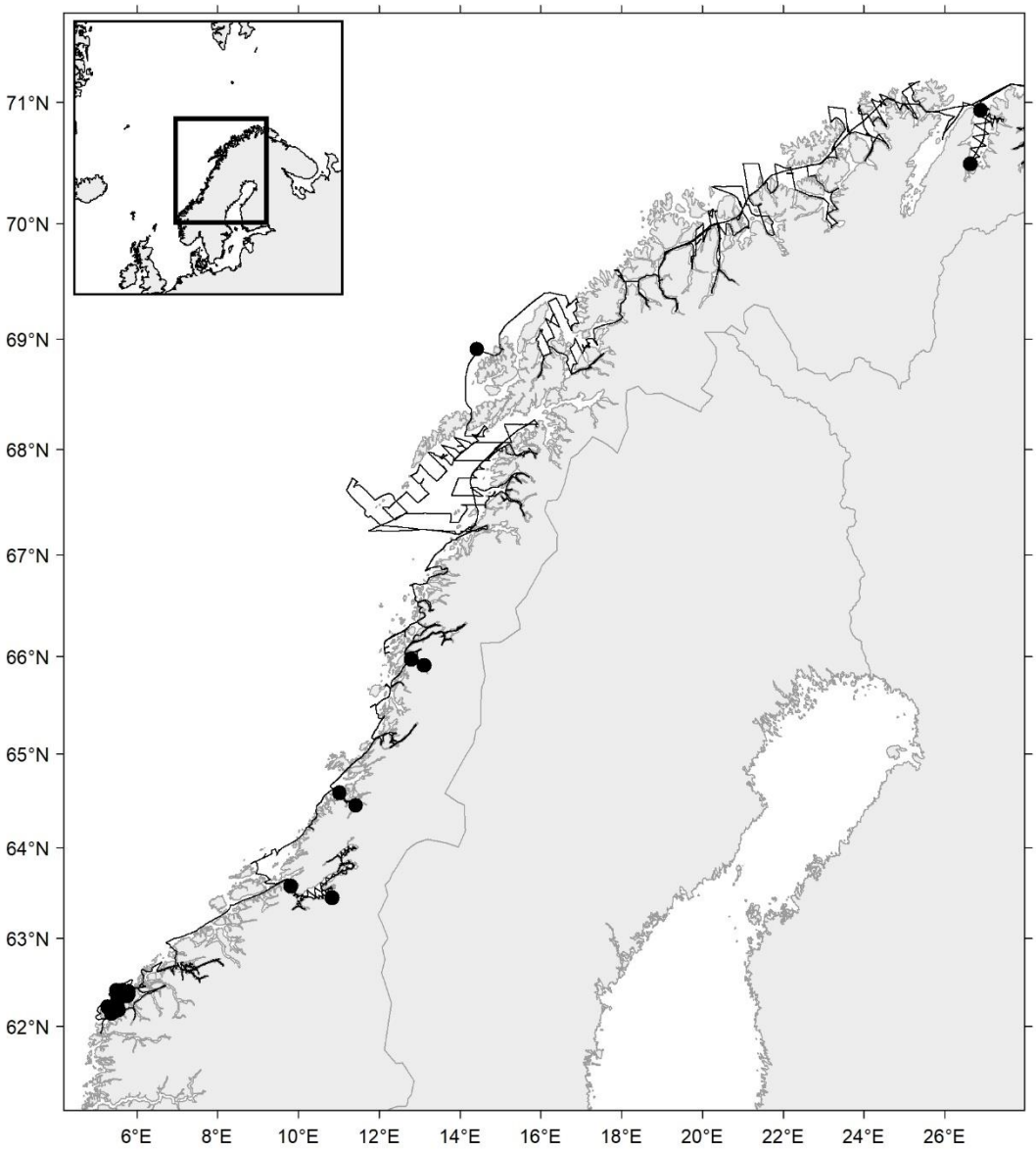
Cruise no 2017620 "K. Bonnevie" (Chart 1)
1 October–7 November 2017

z CTD st.no 822-898
○ Plankton st. (WP-II-net)



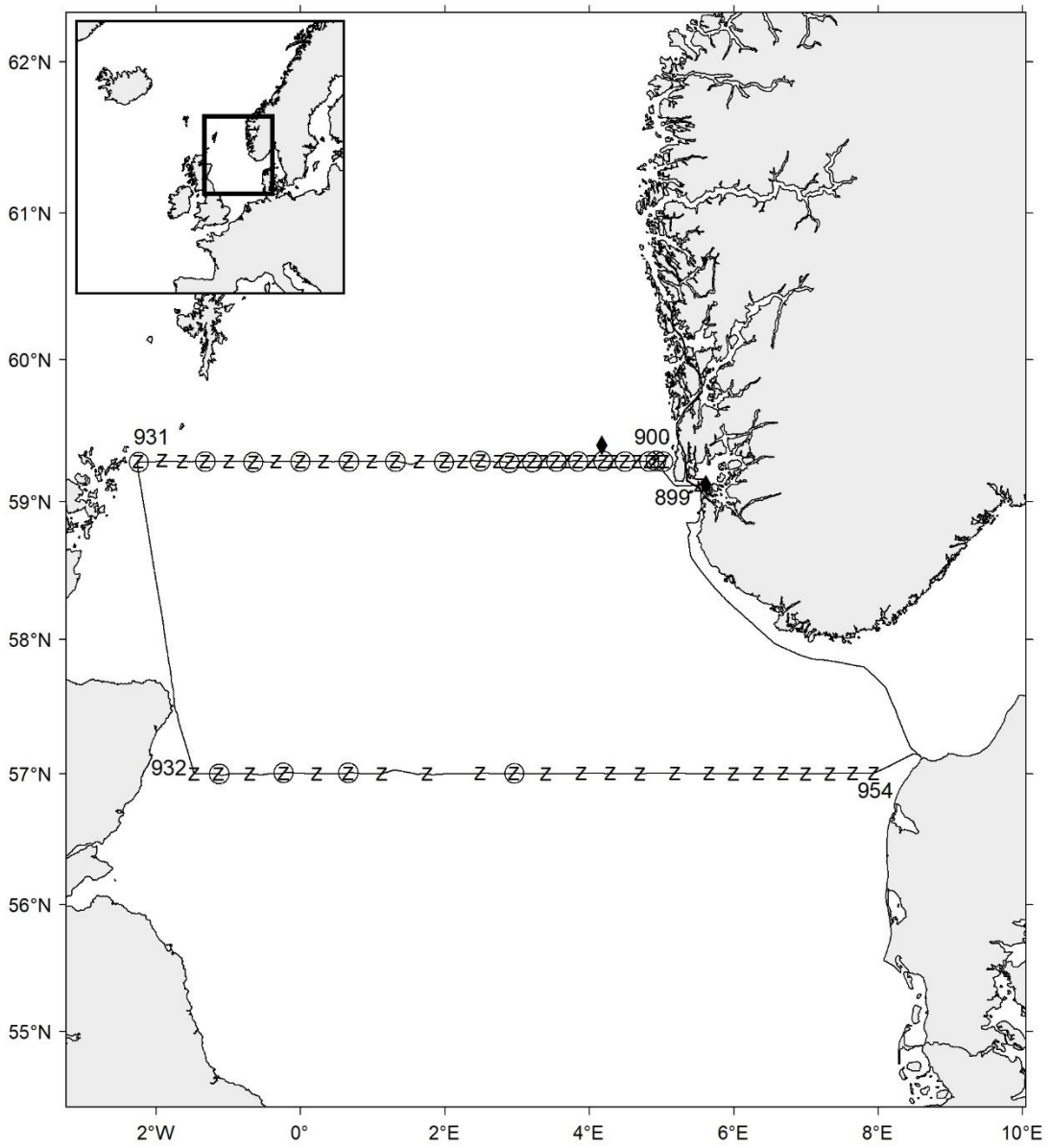
Cruise no 2017620 "K. Bonnevie" (Chart 2)
1 October–7 November 2017

Trawl st.no 384-509
□ Bottom trawl
▲ Pelagic trawl



Cruise no 2017620 "K. Bonnevie" (Chart 3)
1 October–7 November 2017

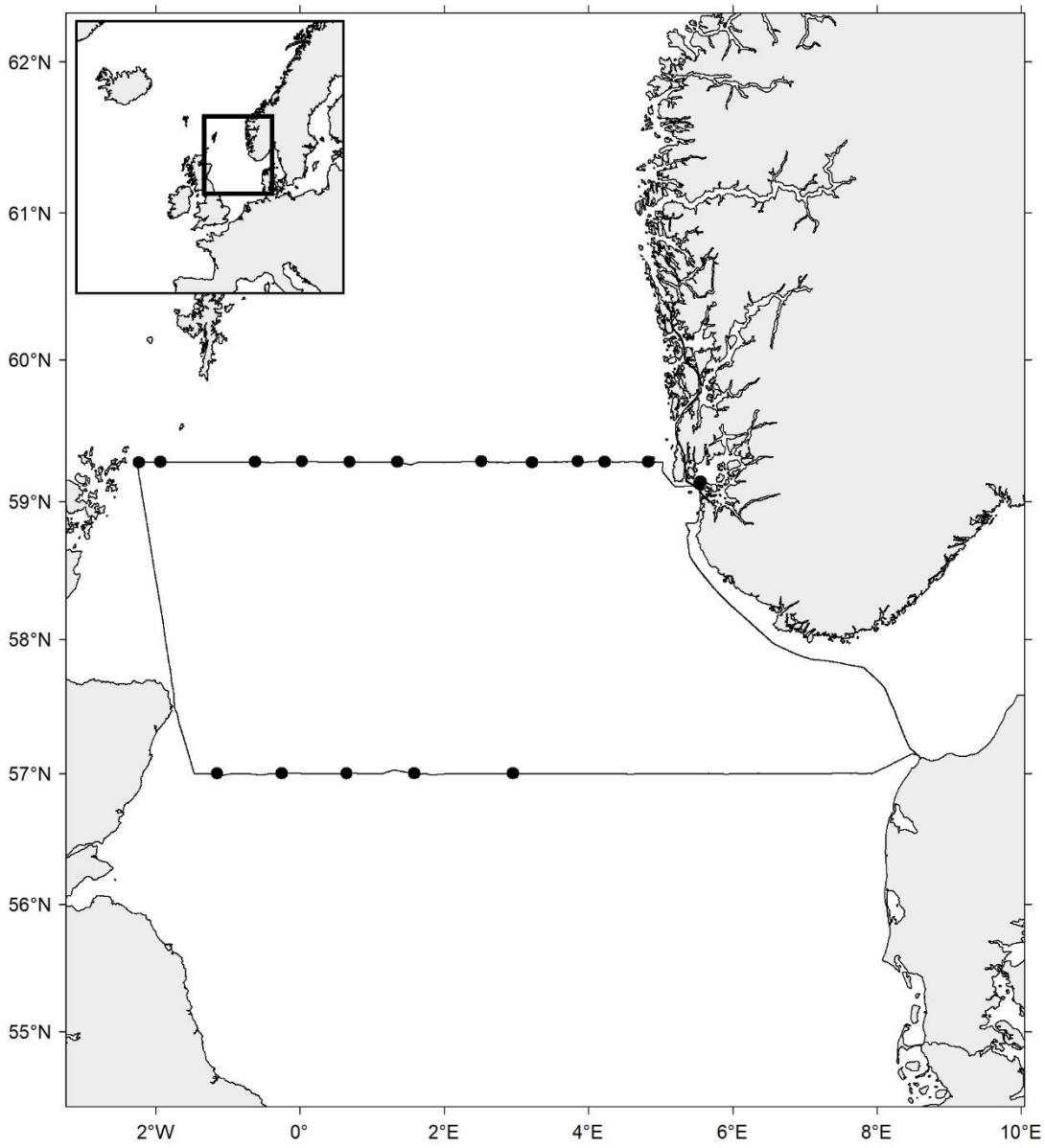
● Grab st.



Cruise no 2017621 "K. Bonnevie" (Chart 1)
10–19 October 2017

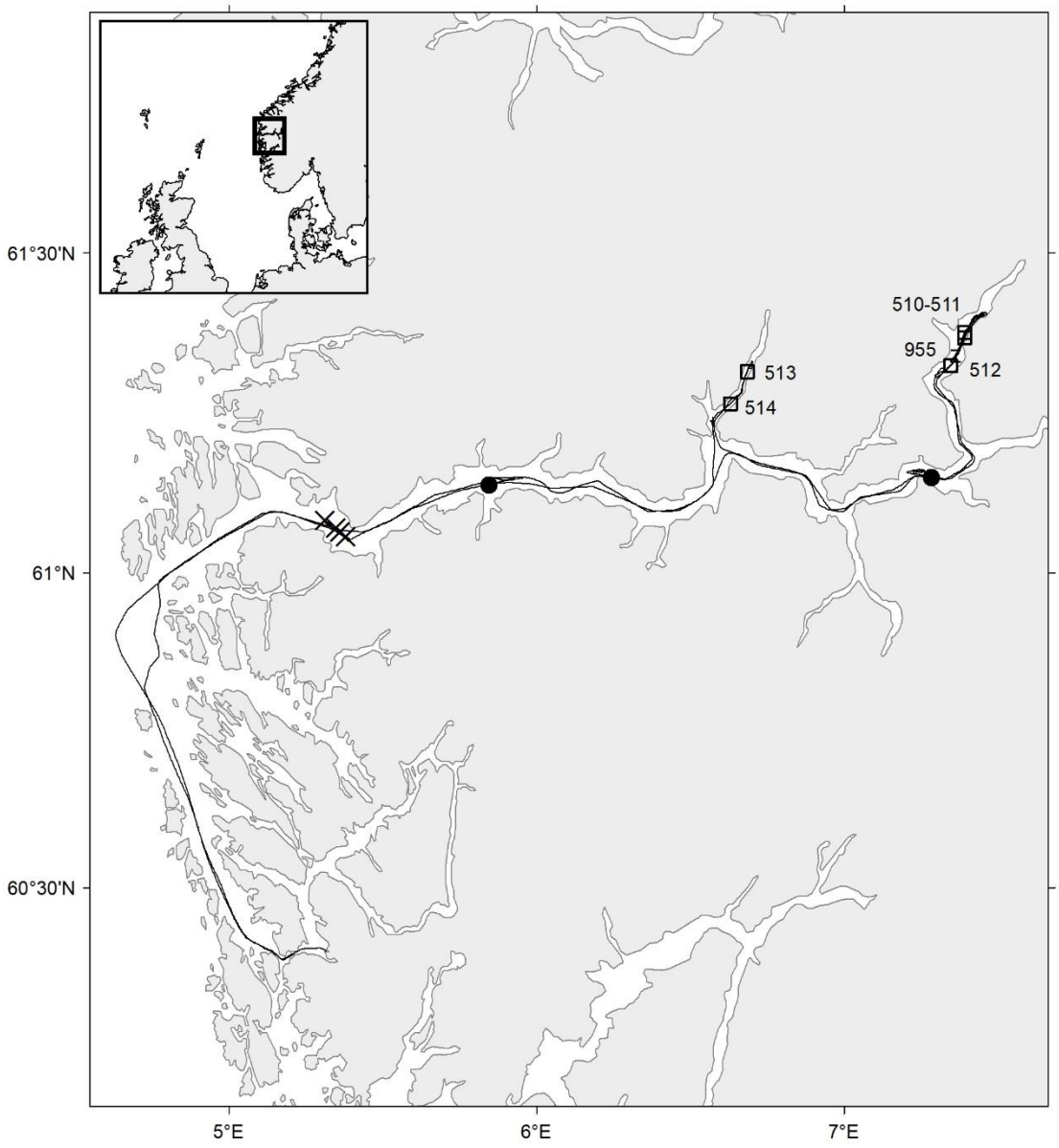
Standard sections:
Utsira W: st.no 900-931
Hanstholm–Aberdeen: st.no 932-954

z CTD st.no 899-954
○ Plankton st. (WP-II-net)
♦ Plankton st. (Mocness)



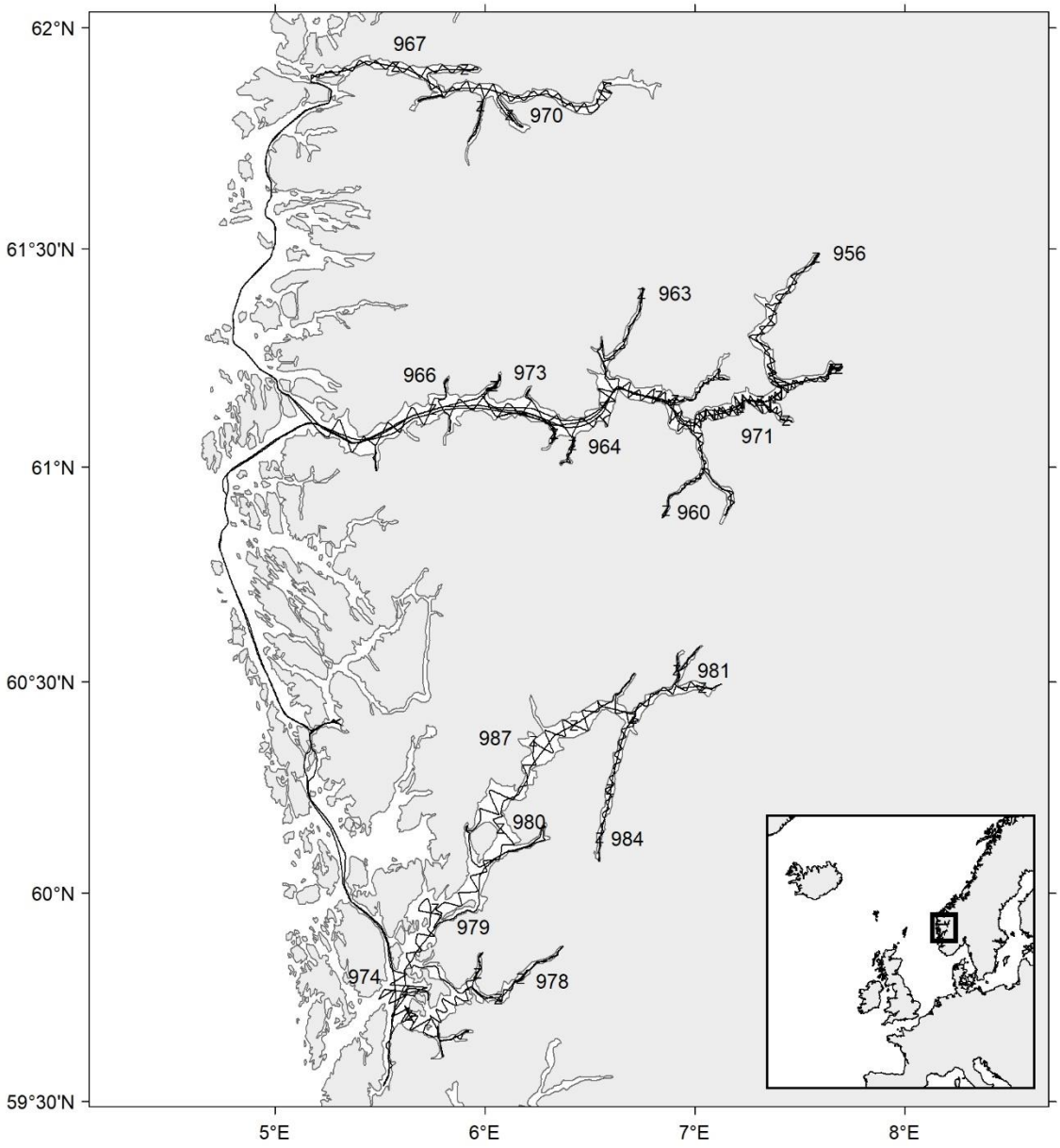
Cruise no 2017621 "K. Bonnevie" (Chart 2)
10–19 October 2017

● Mik stations



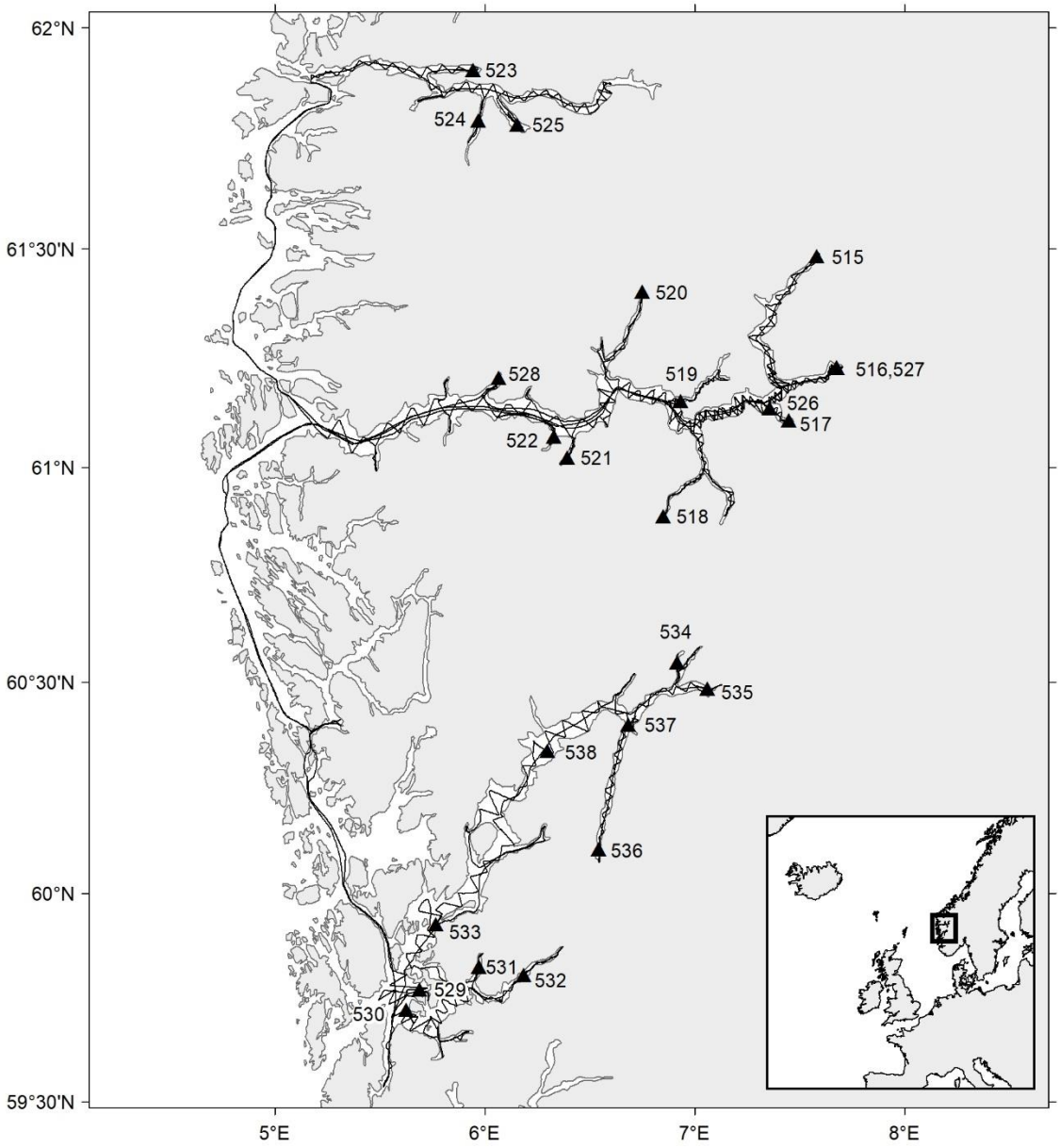
Cruise no 2017622 "K. Bonnevie"
20–24 November 2017

z CTD st.no 955
□ Bottom trawl st.no 510-514
● Grab stations
× Mik stations



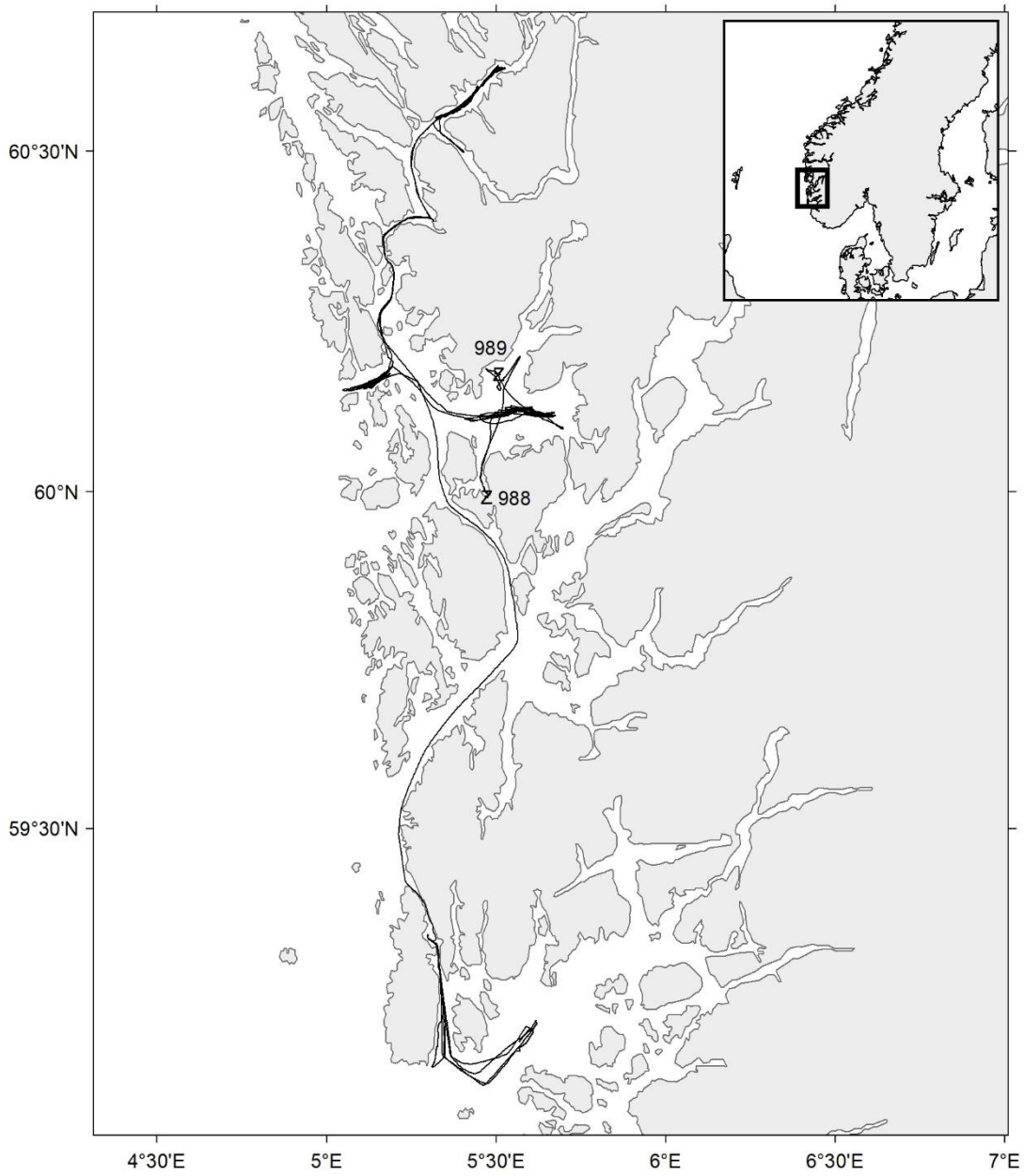
Cruise no 2017623 "K. Bonnevie"
25 November–6 December 2017

z CTD and plankton st (WP-II-net) st.no 956-987



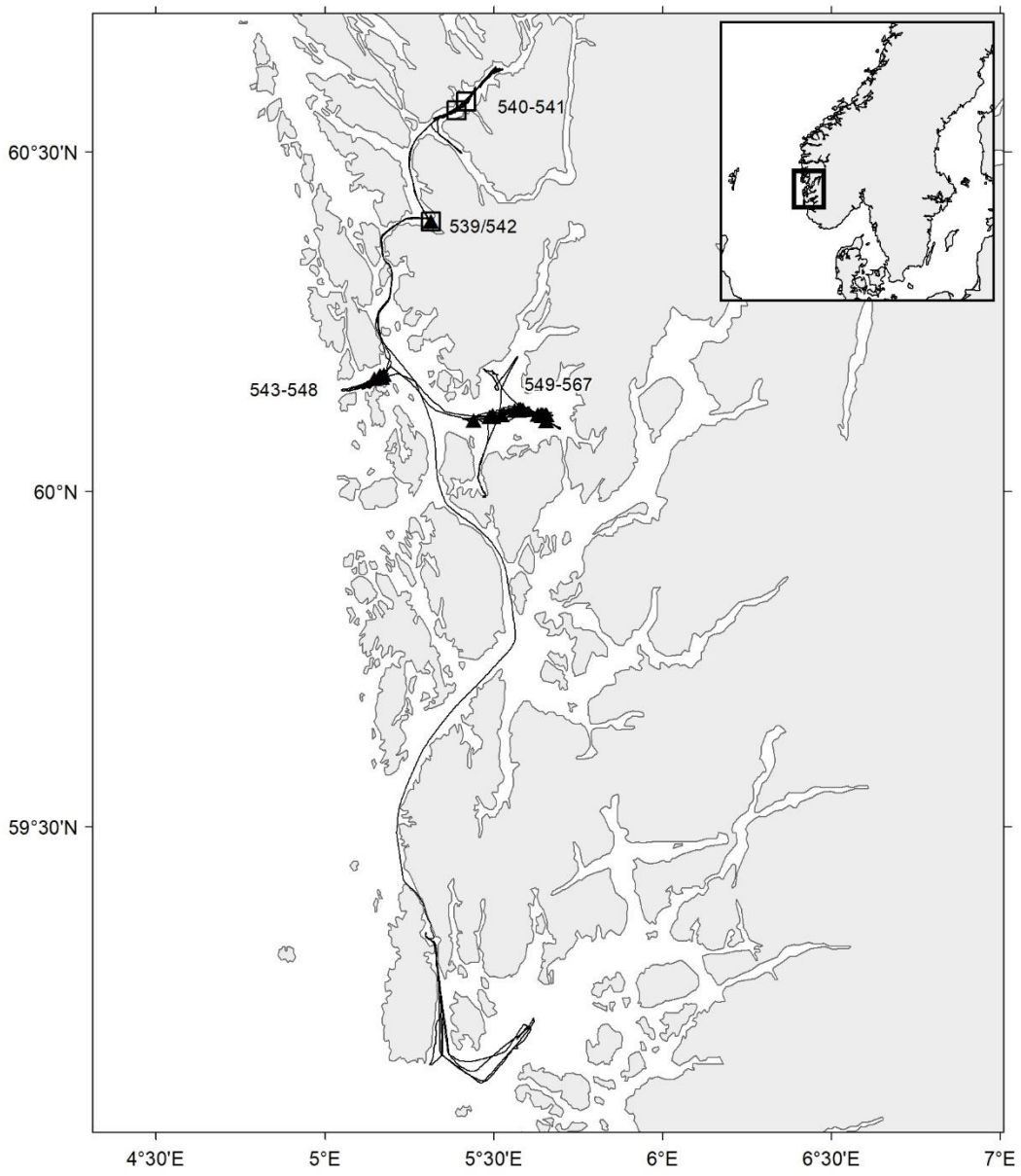
Cruise no 2017623 "K. Bonnevie"
25 November–6 December 2017

▲ Pelagic trawl st.no 515-538



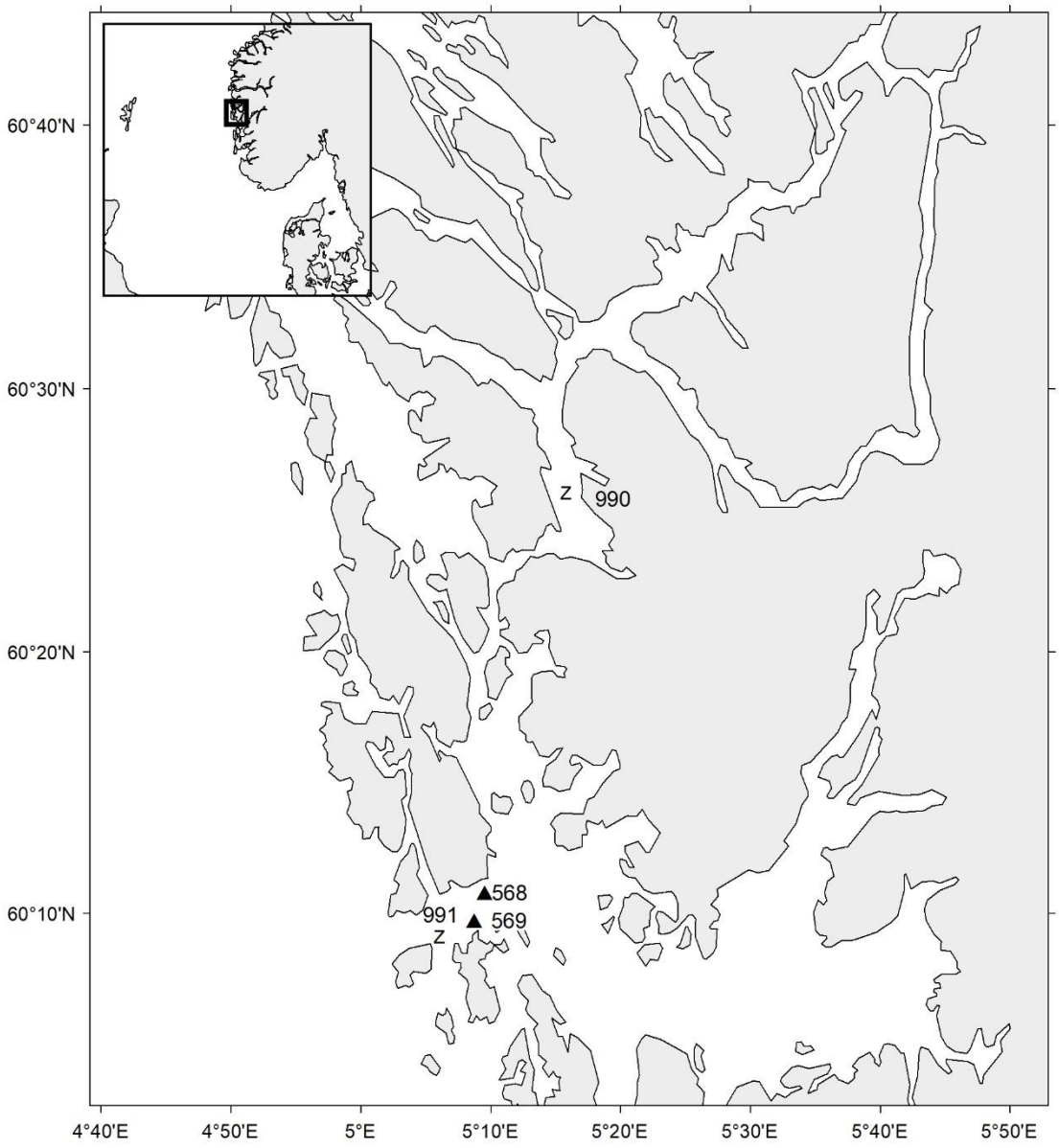
Cruise no 2017627 "K. Bonnevie" (Chart 1)
9–19 December 2017

z CTD st.no 988-989



Cruise no 2017627 "K. Bonnevie" (Chart 2)
9–19 December 2017

Trawl st.no539-567
▲ Pelagic tr.
□ Bottom tr.

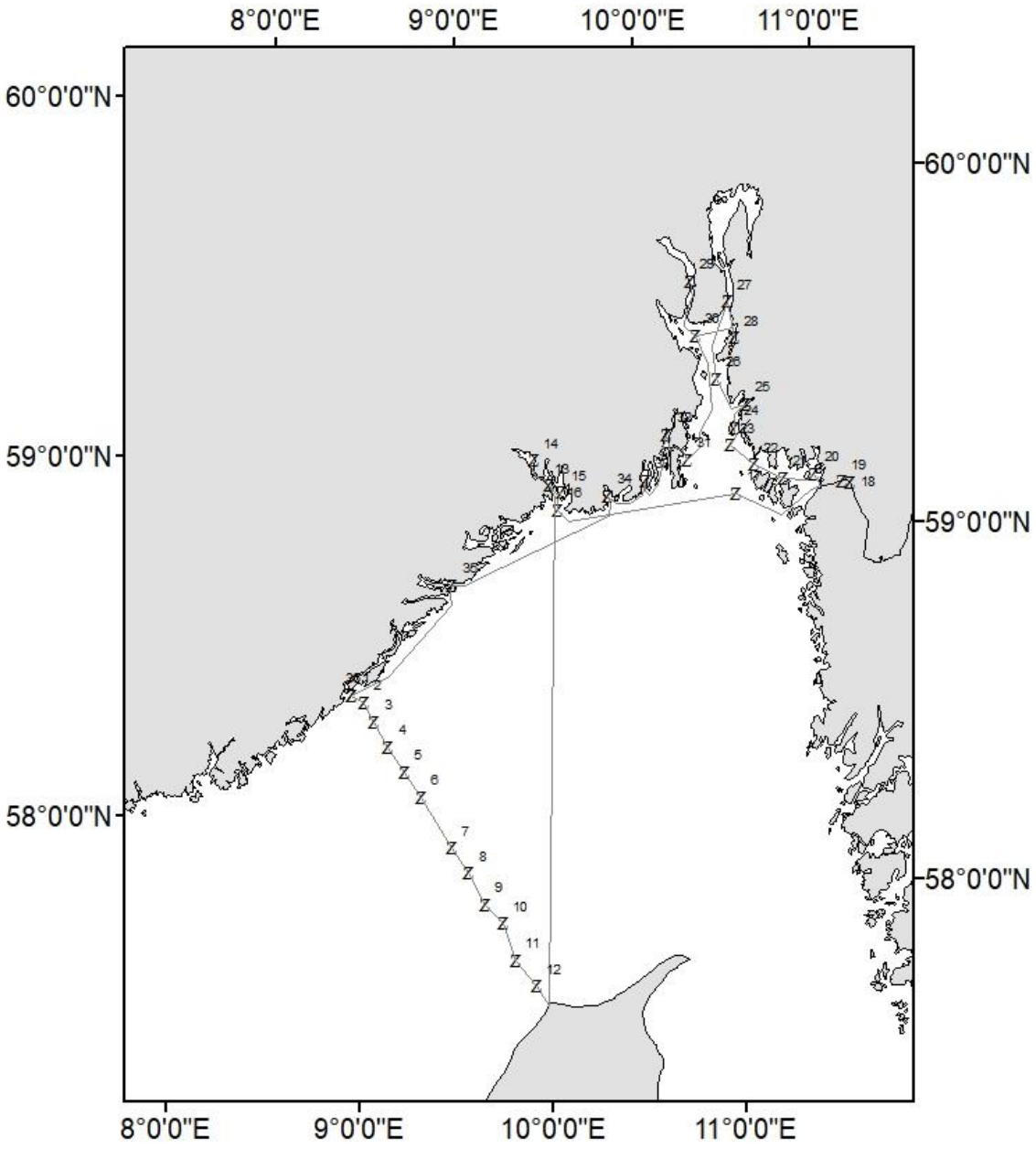


Cruise no 2017628 "K. Bonnevie"
20–21 December 2017

z Ctd st.no 990-991
▲ Pel trawl st.no 568-569
(Test equipment and software)

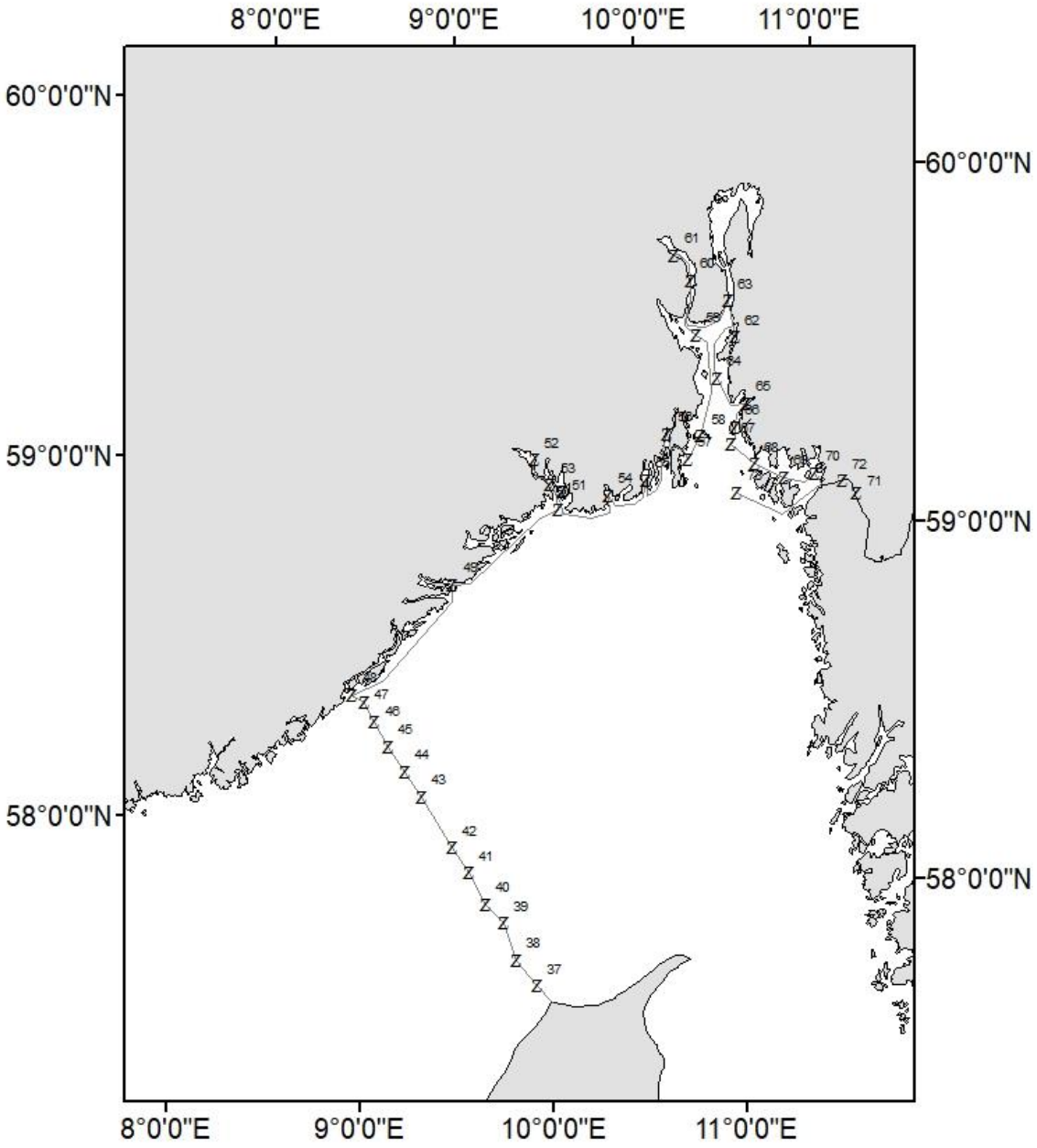
4.4 "G.M. Dannevig"

Charts made Sebastian Bosgraaf



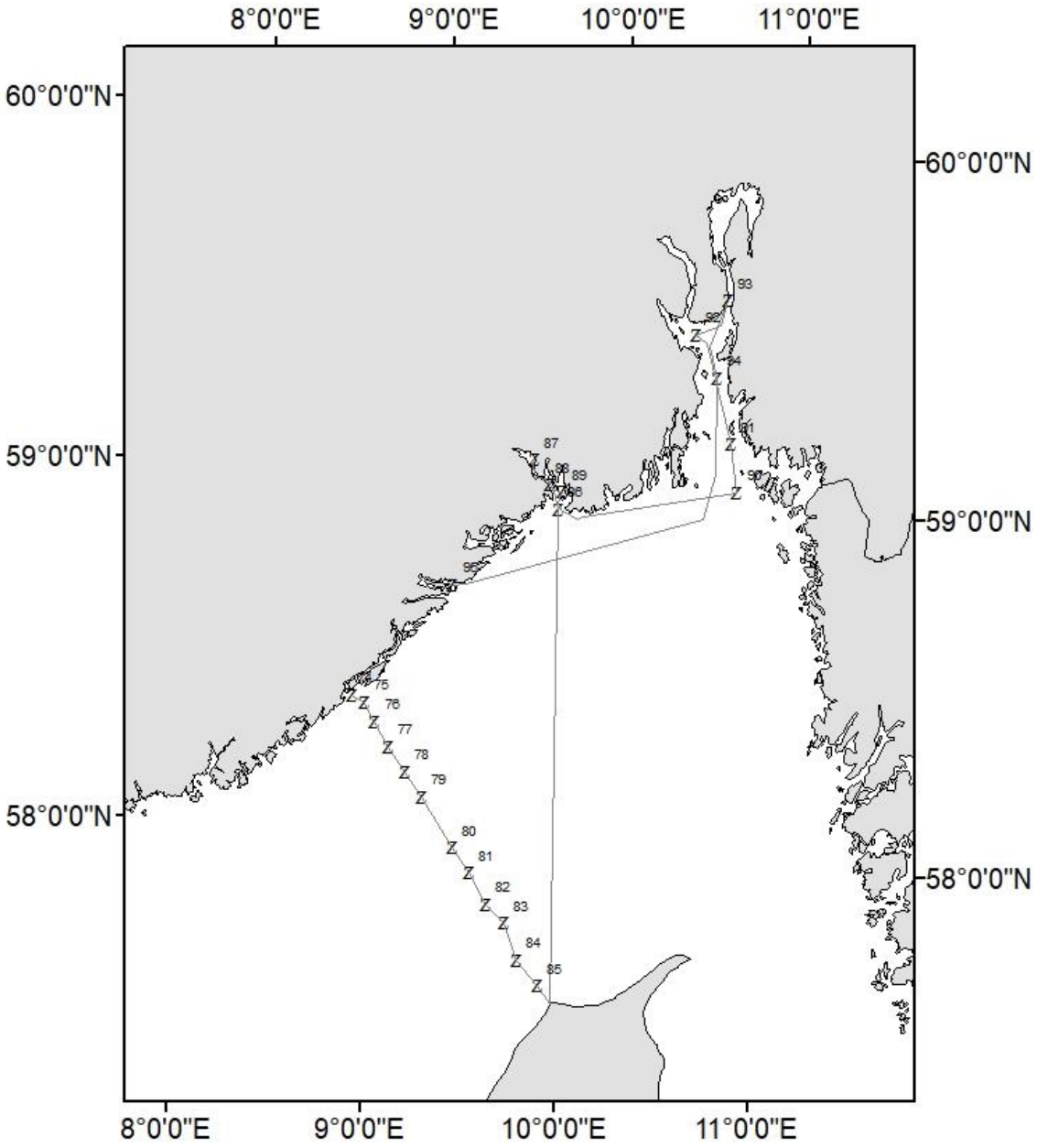
Cruise no 2017301
"G. M. Dannevig"
21. - 28. January 2017

Z CTD st.no. 1-36



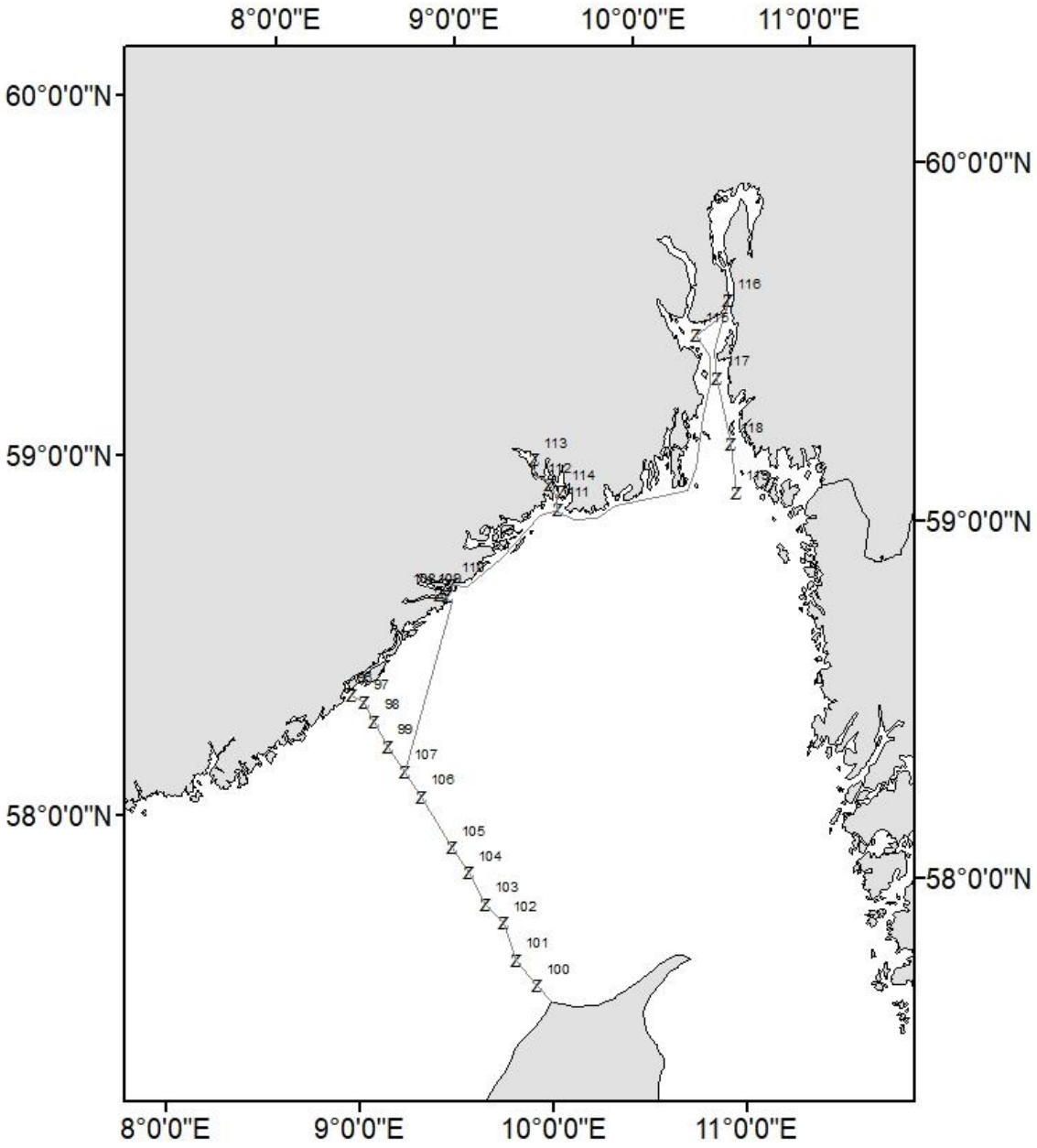
Cruise no 2017302
"G. M. Dannevig"
1. - 8. February 2017

Z CTD st.no. 37-73



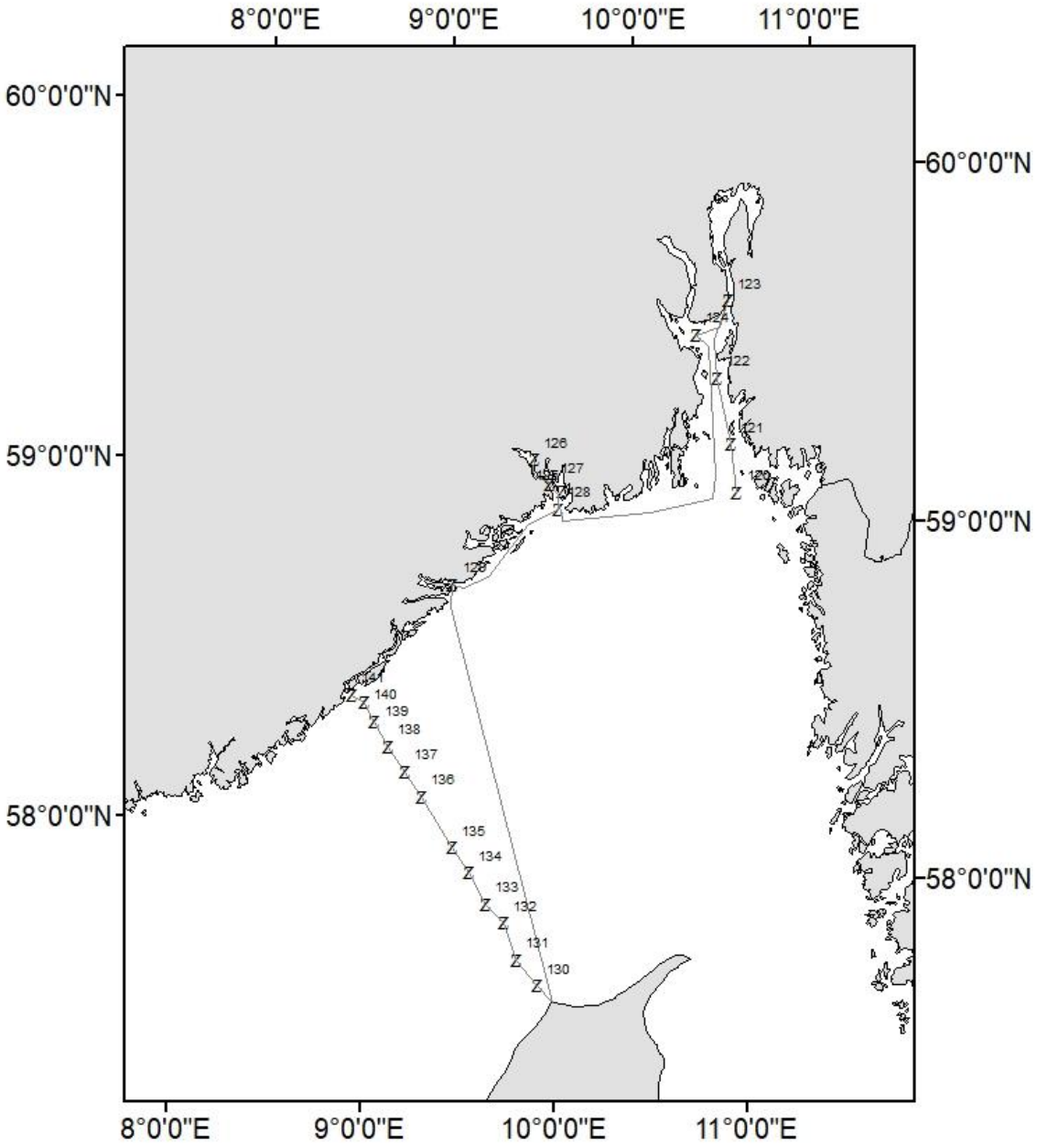
Cruise no 2017303
"G. M. Dannevig"
10. - 15. March 2017

Z CTD st.no. 74-95



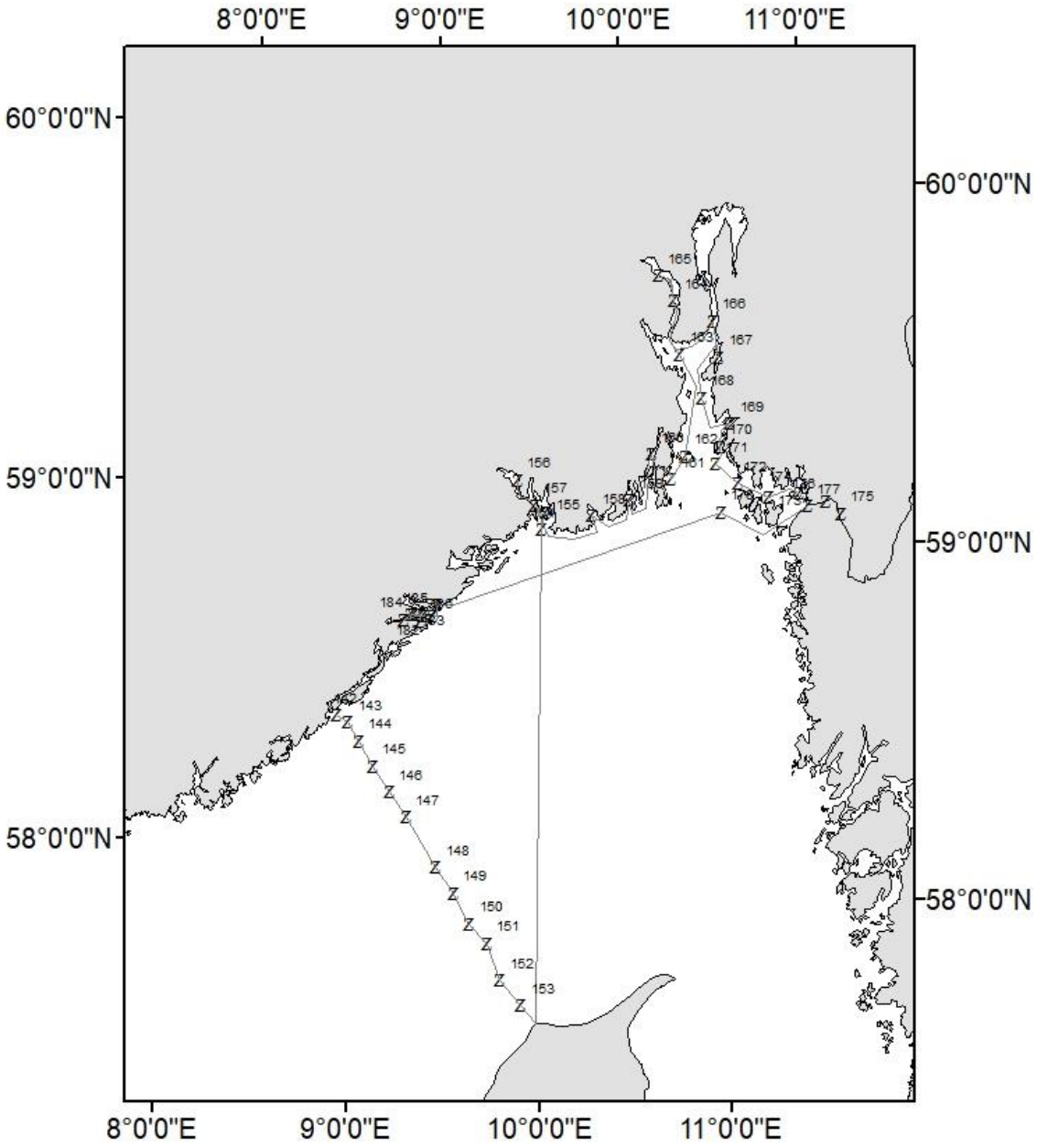
Cruise no 2017305
"G. M. Dannevig"
24. - 30. April 2017

Z CTD st.no. 96-119



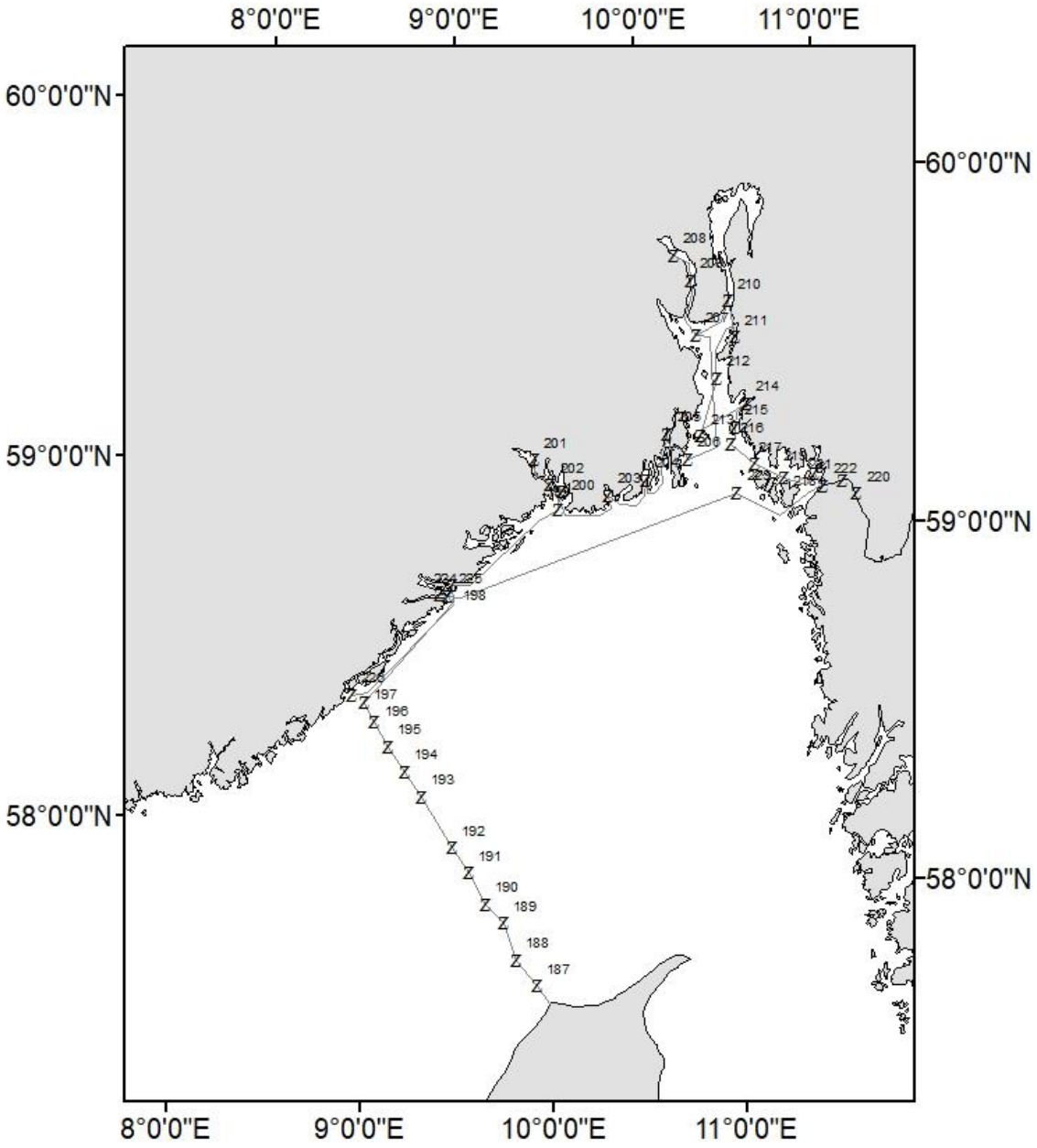
Cruise no 2017307
"G. M. Dannevig"
9. - 13. May 2017

Z CTD st.no. 120-141



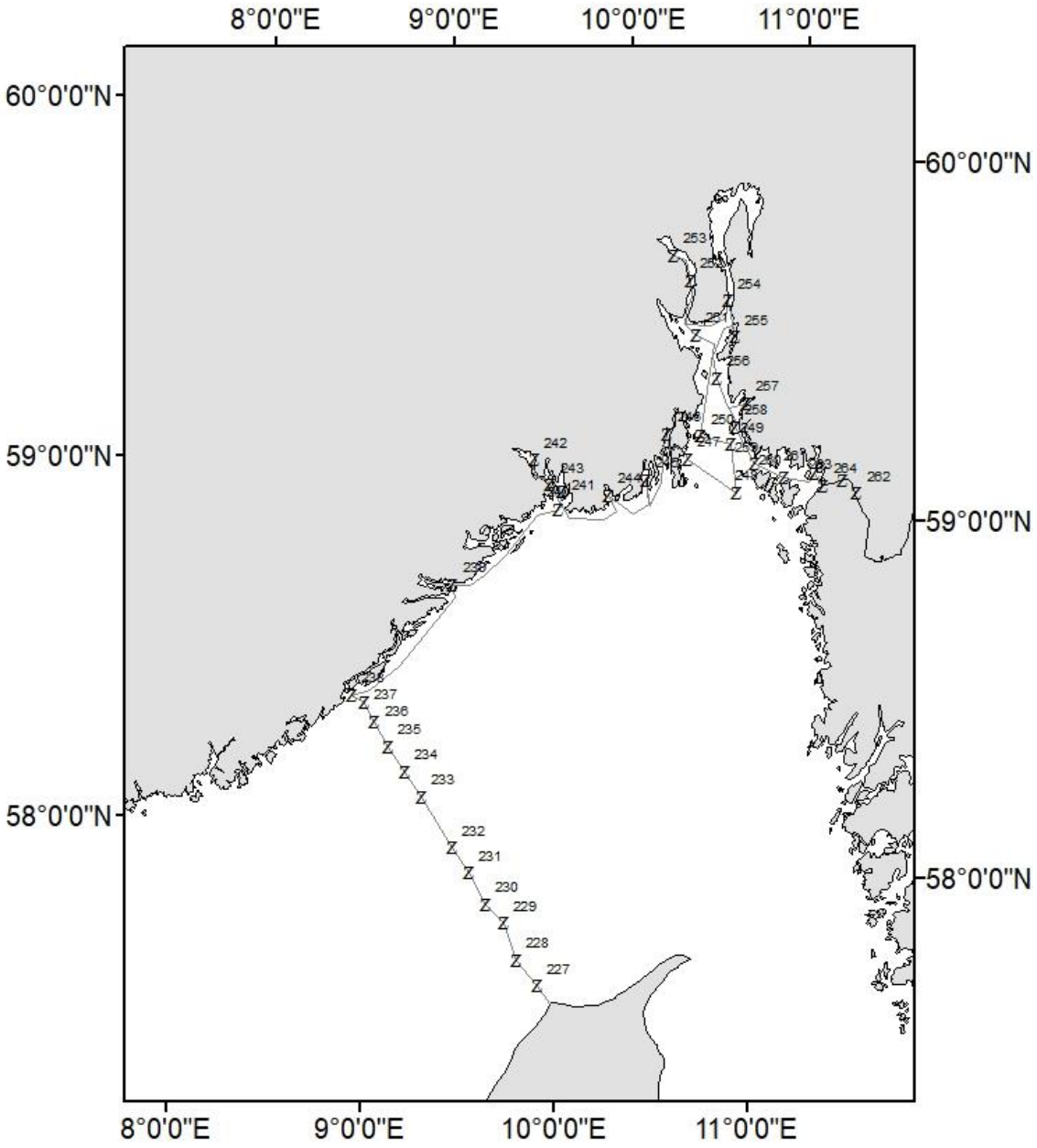
Cruise no 2017308
"G. M. Dannevig"
11. - 20. June 2017

Z CTD st.no. 142-186



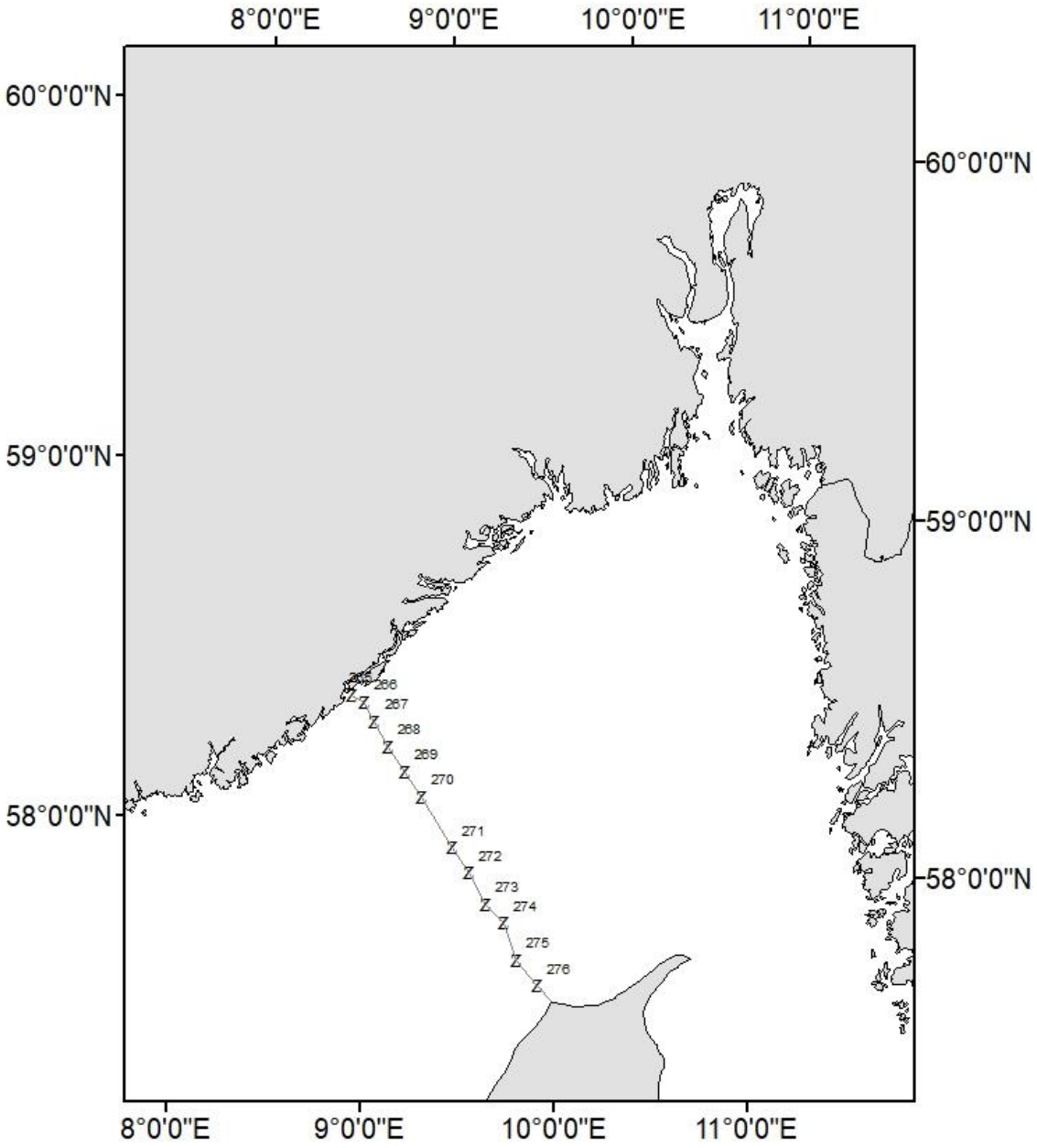
Cruise no 2017309
"G. M. Dannevig"
1. - 7. July 2017

Z CTD st.no. 187-226



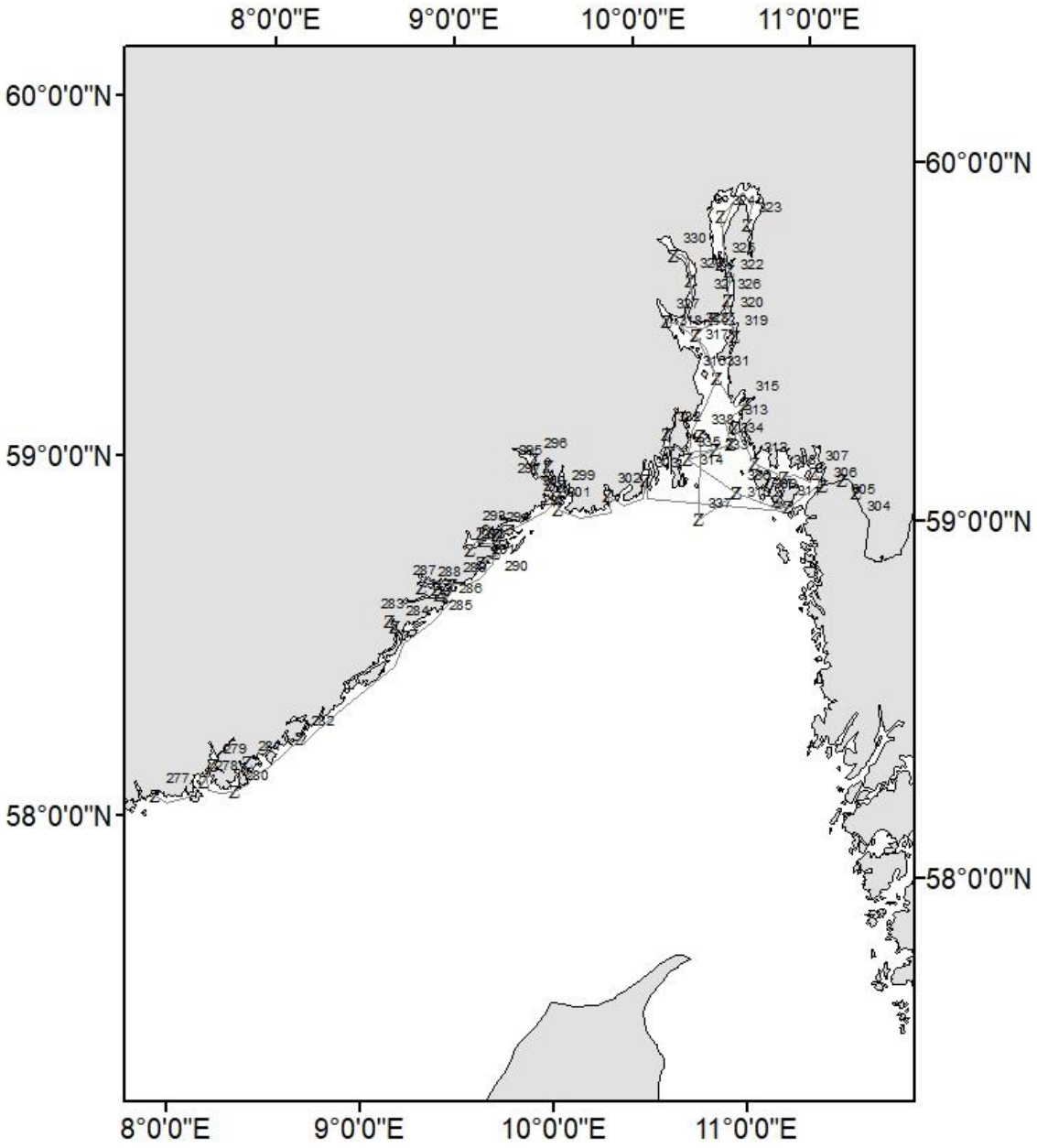
Cruise no 2017310
"G. M. Dannevig"
9. - 15. August 2017

Z CTD st.no. 227-264



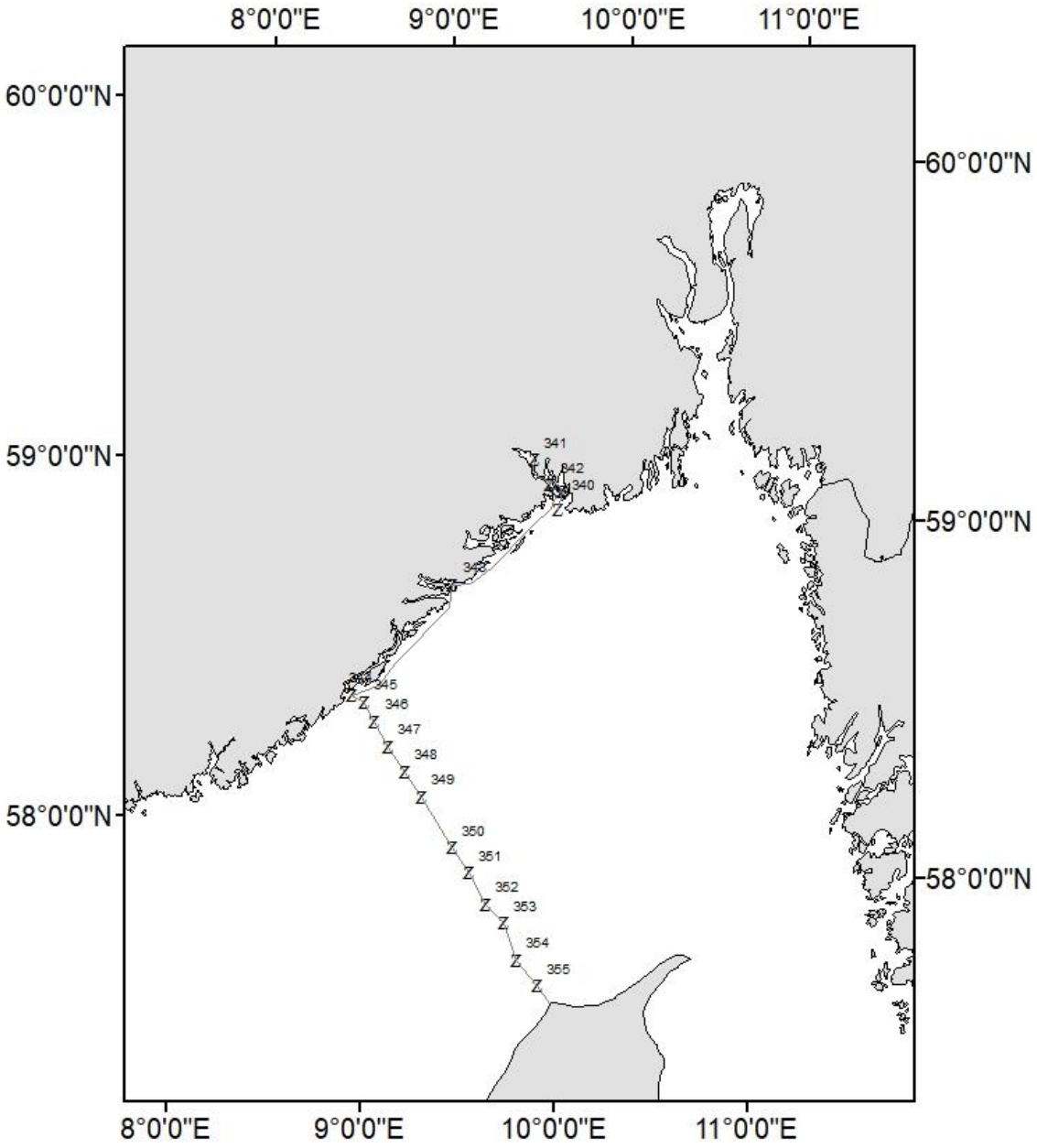
Cruise no 2017313
"G. M. Dannevig"
14. - 15. September 2017

Z CTD st.no. 265-276



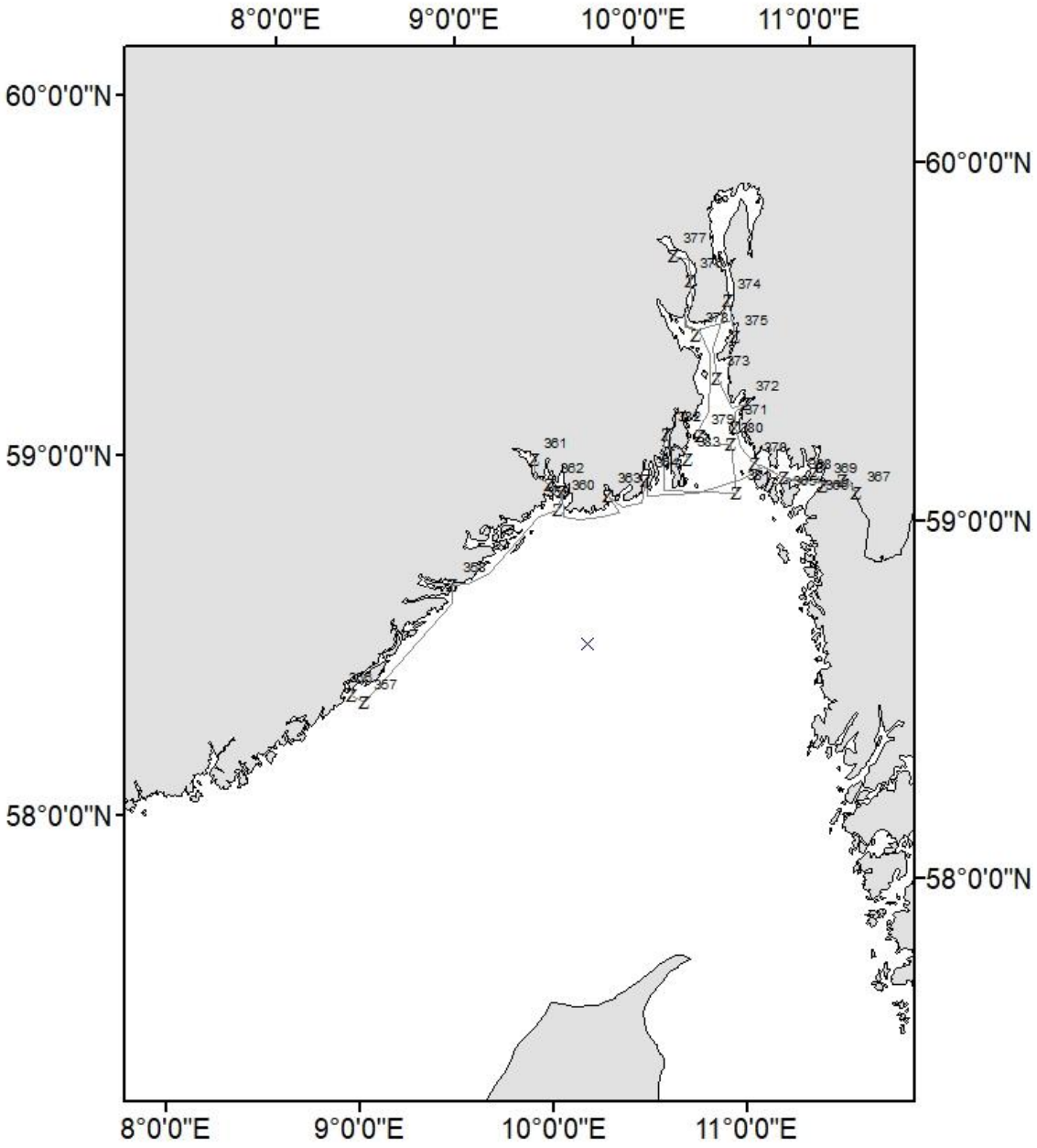
Cruise no 2017314
"G. M. Dannevig"
16. September - 5. October 2017

Z CTD st.no. 277-338



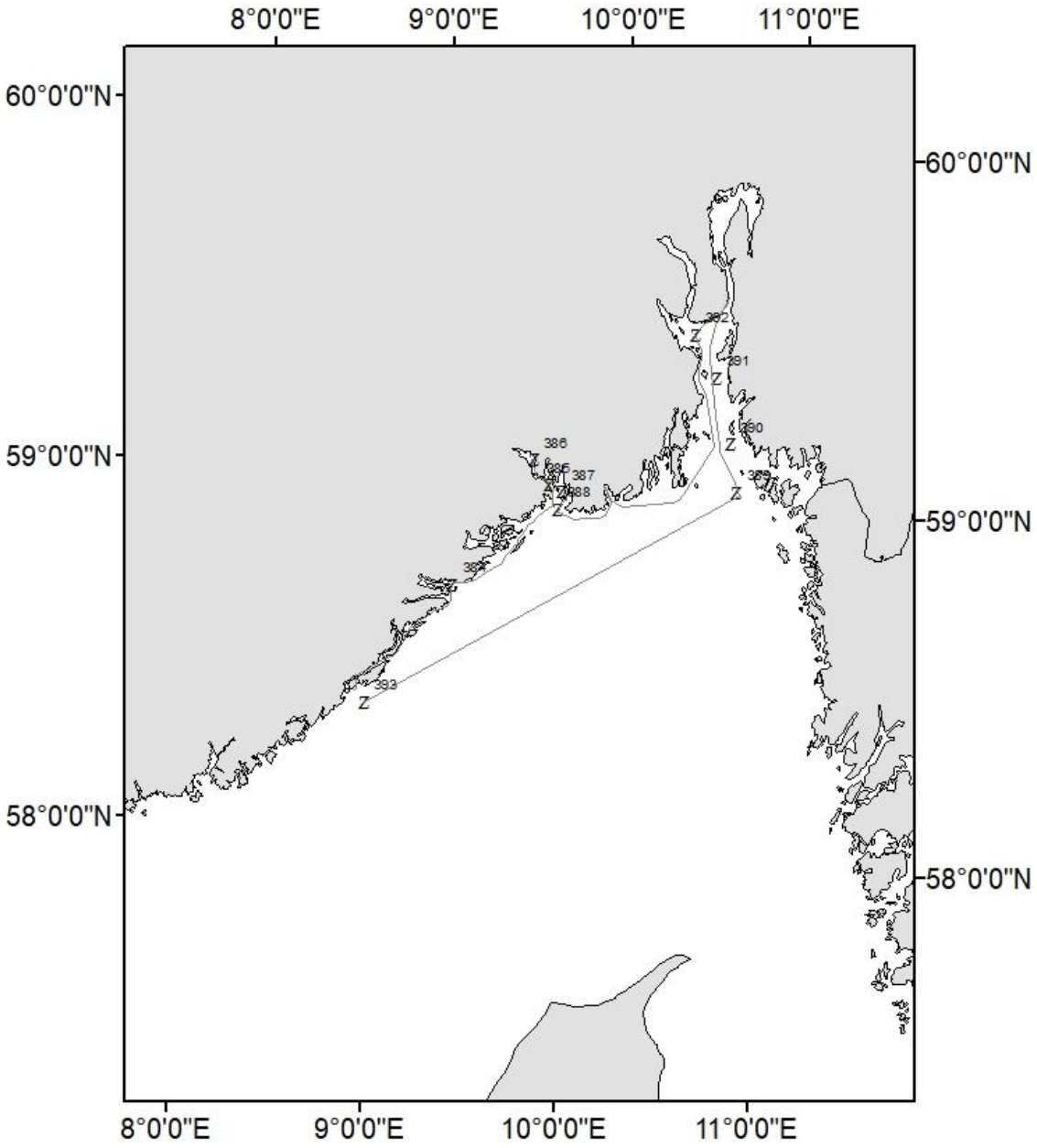
Cruise no 2017315
"G. M. Dannevig"
6. - 11. October 2017

Z CTD st.no. 339-355



Cruise no 2017316
"G. M. Dannevig"
15. - 20. November 2017

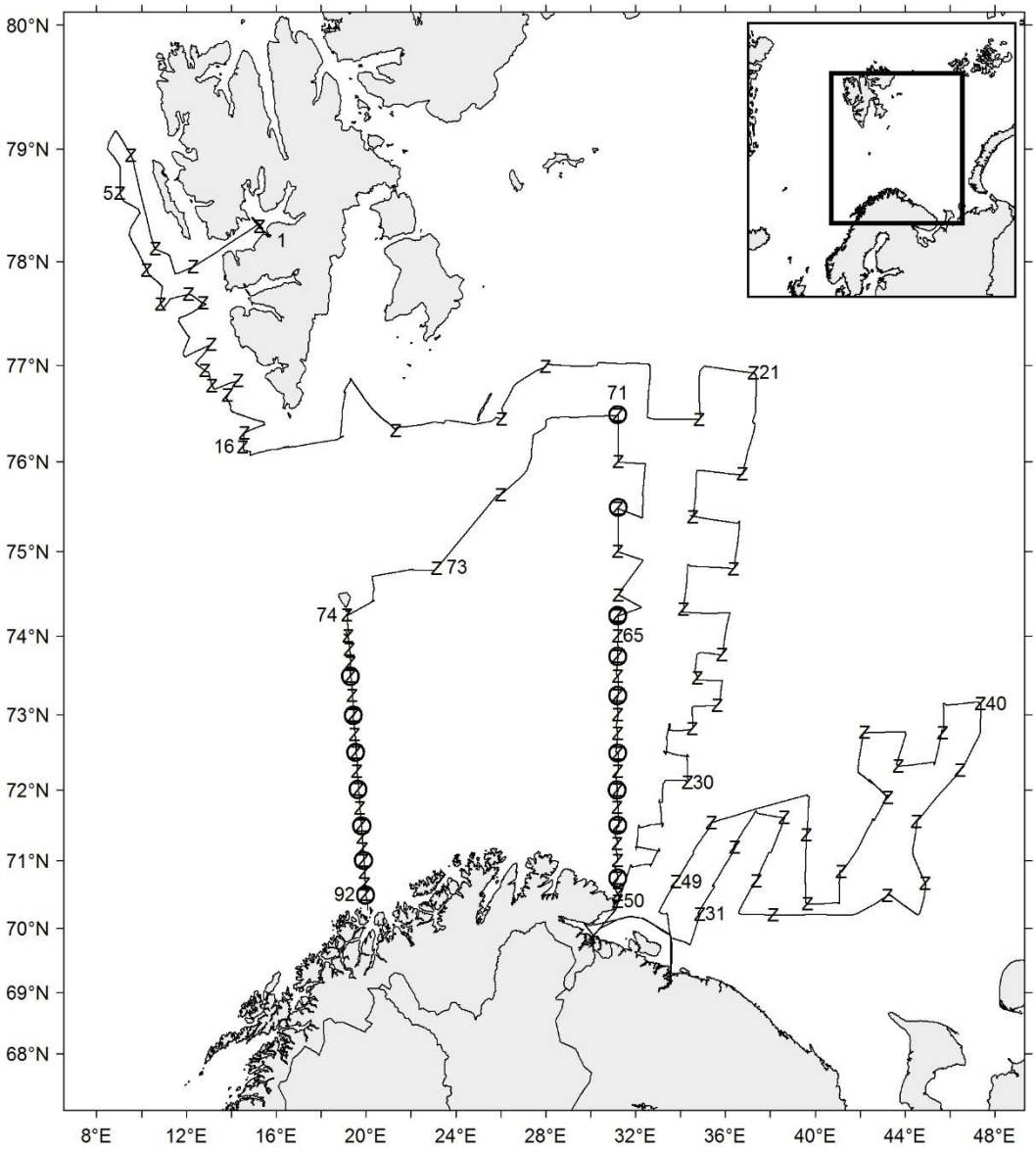
Z CTD st.no. 356-383



Cruise no 2017318
"G. M. Dannevig"
7. - 12. December 2017

Z CTD st.no. 384-393

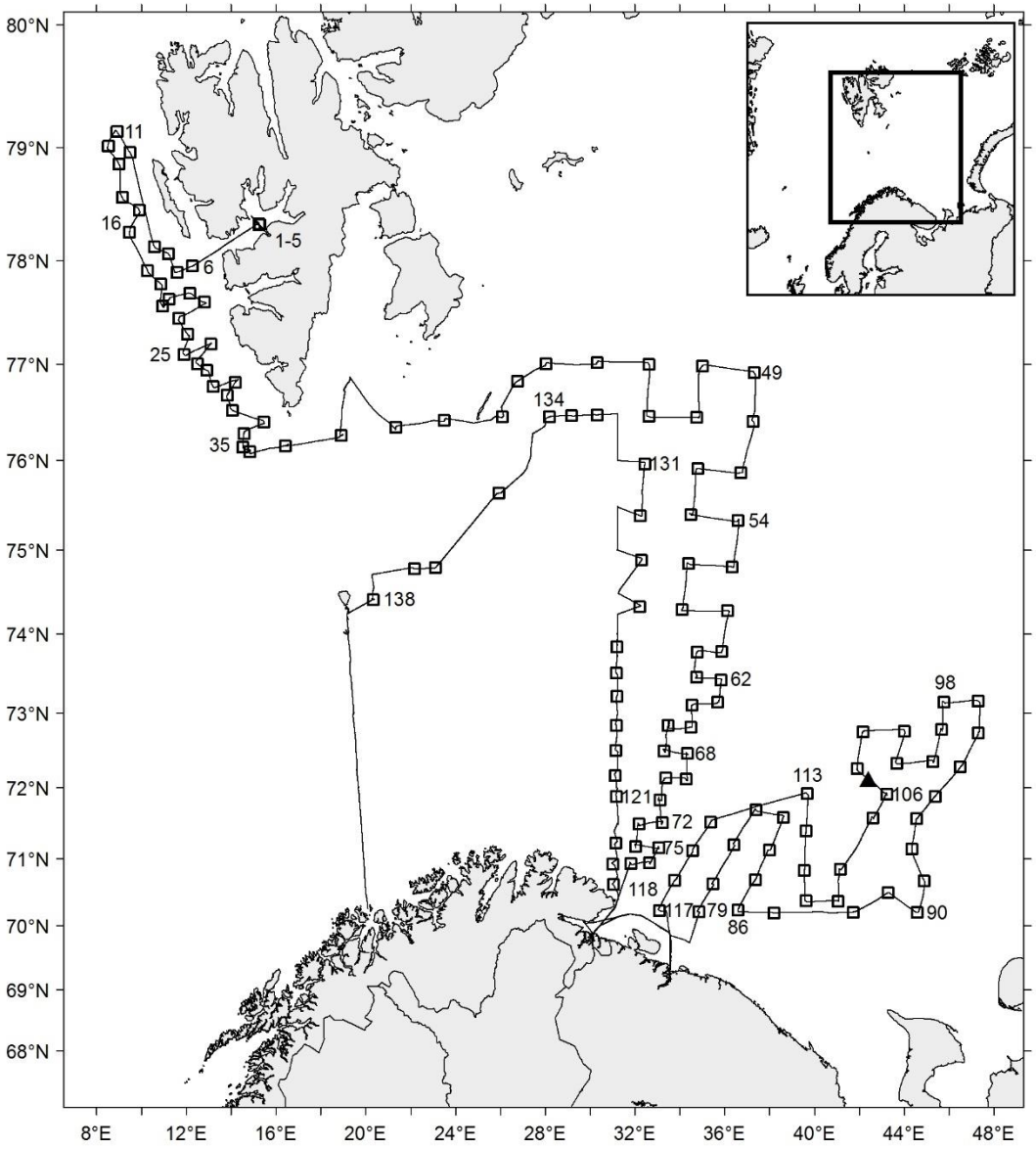
4.5 Selected cruises carried out by fishing vessels hired by IMR



Cruise no 2017849 "H. Hanssen" (Chart 1)
18 January–23 February 2017

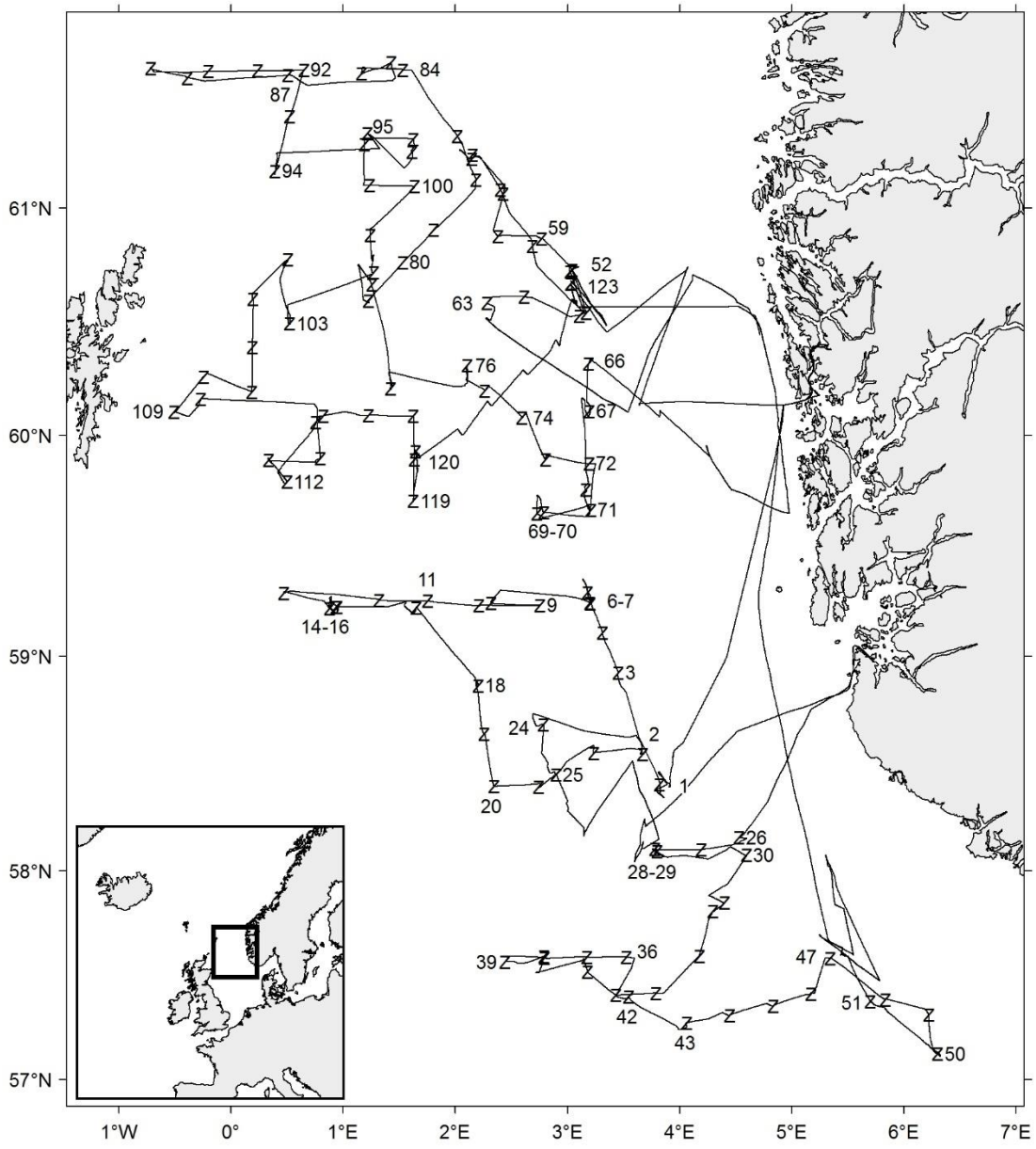
z CTD st.no 1-92
○ Plankton st. (WP-II-net)

Standard sections:
Vardø N st.no 50-71
Fugløya–Bjørnøya st.no 74-92



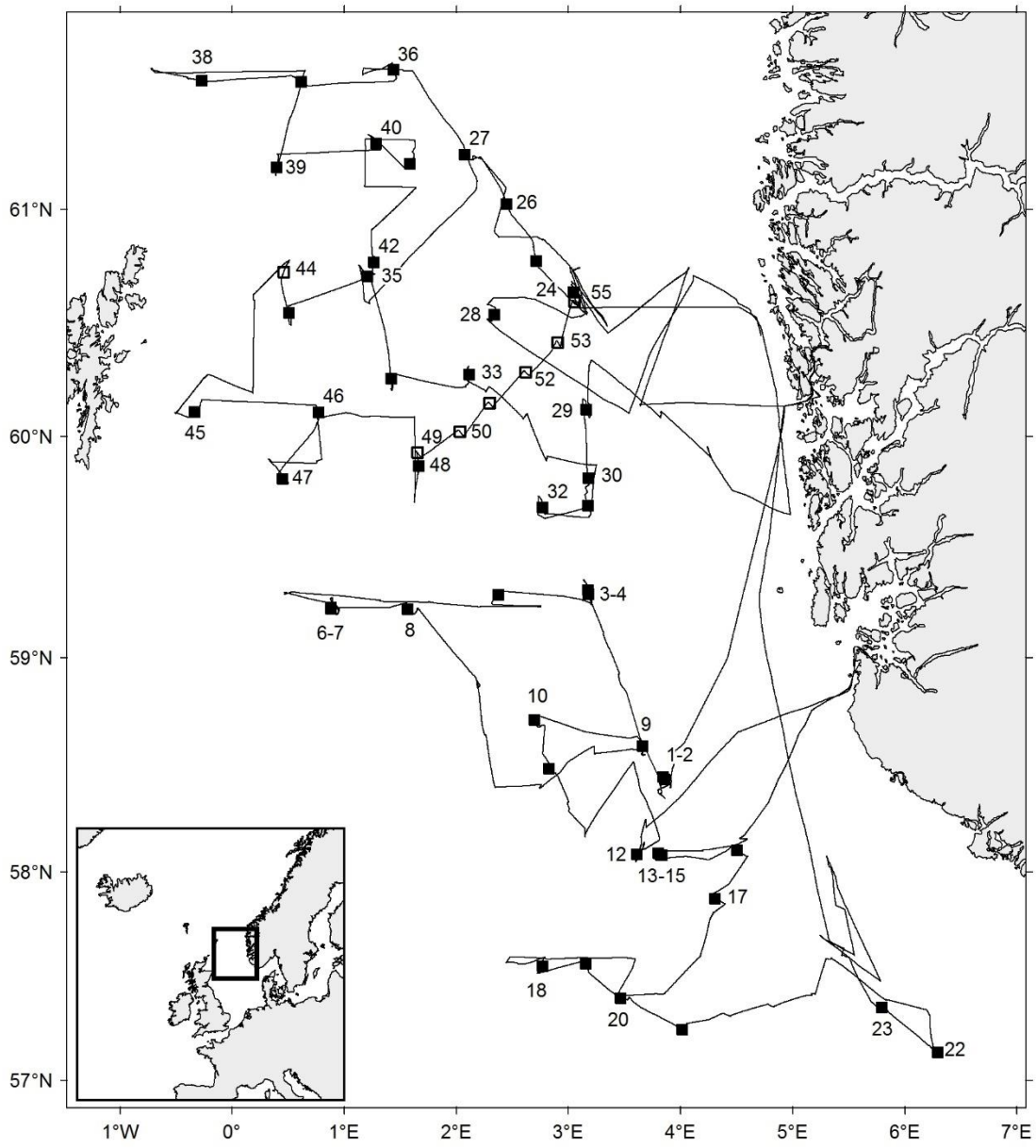
Cruise no 2017849 "H. Hanssen" (Chart 2)
18 January–23 February 2017

Trawl st.no 1-138
□ Bottom trawl
▲ Pelagic trawl (st.no 105)



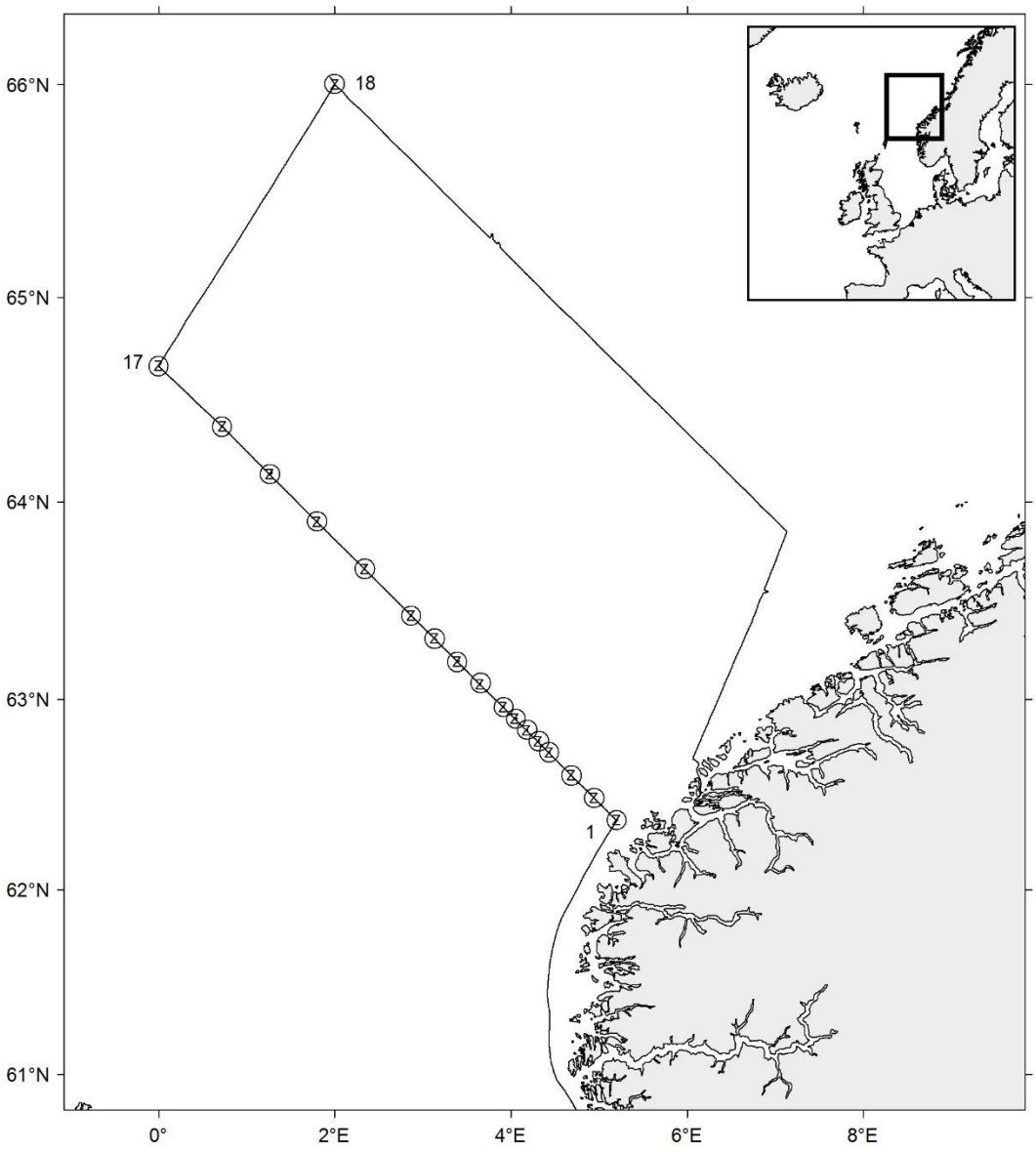
Cruise no 2017850 "Cefas Endeavour" (Chart 1)
21 January–16 February 2017

z CTD st.no 1-123



Cruise no 2017850 "Cefas Endeavour" (Chart 2)
21 January–16 February 2017

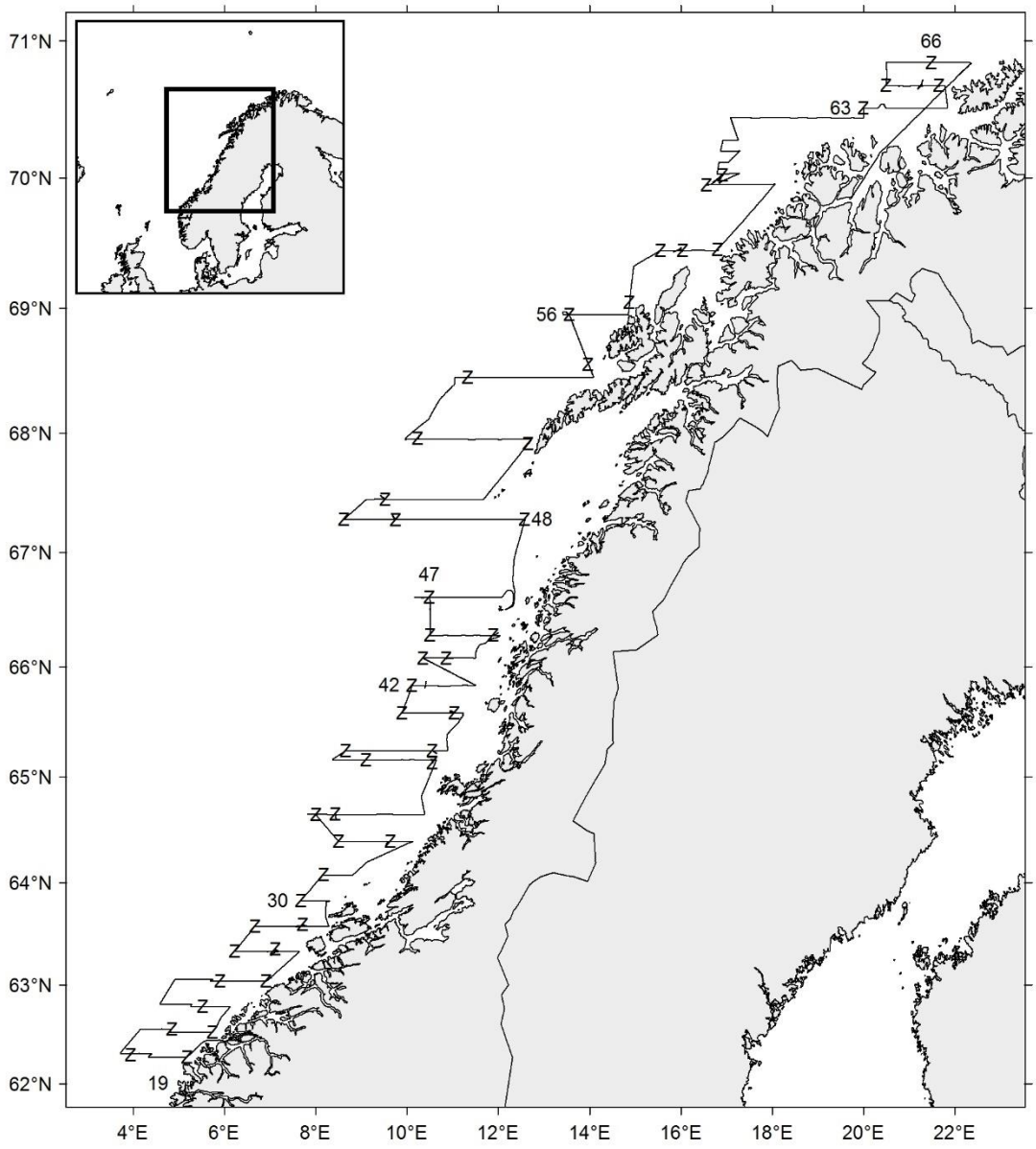
Trawl st.no 1-55
■ Bottom trawl st.no 1-43, 45-48, 55
□ Beam trawl: st.no 44,49-54



Cruise no 2017858 "Vendla"
7–11 February 2017

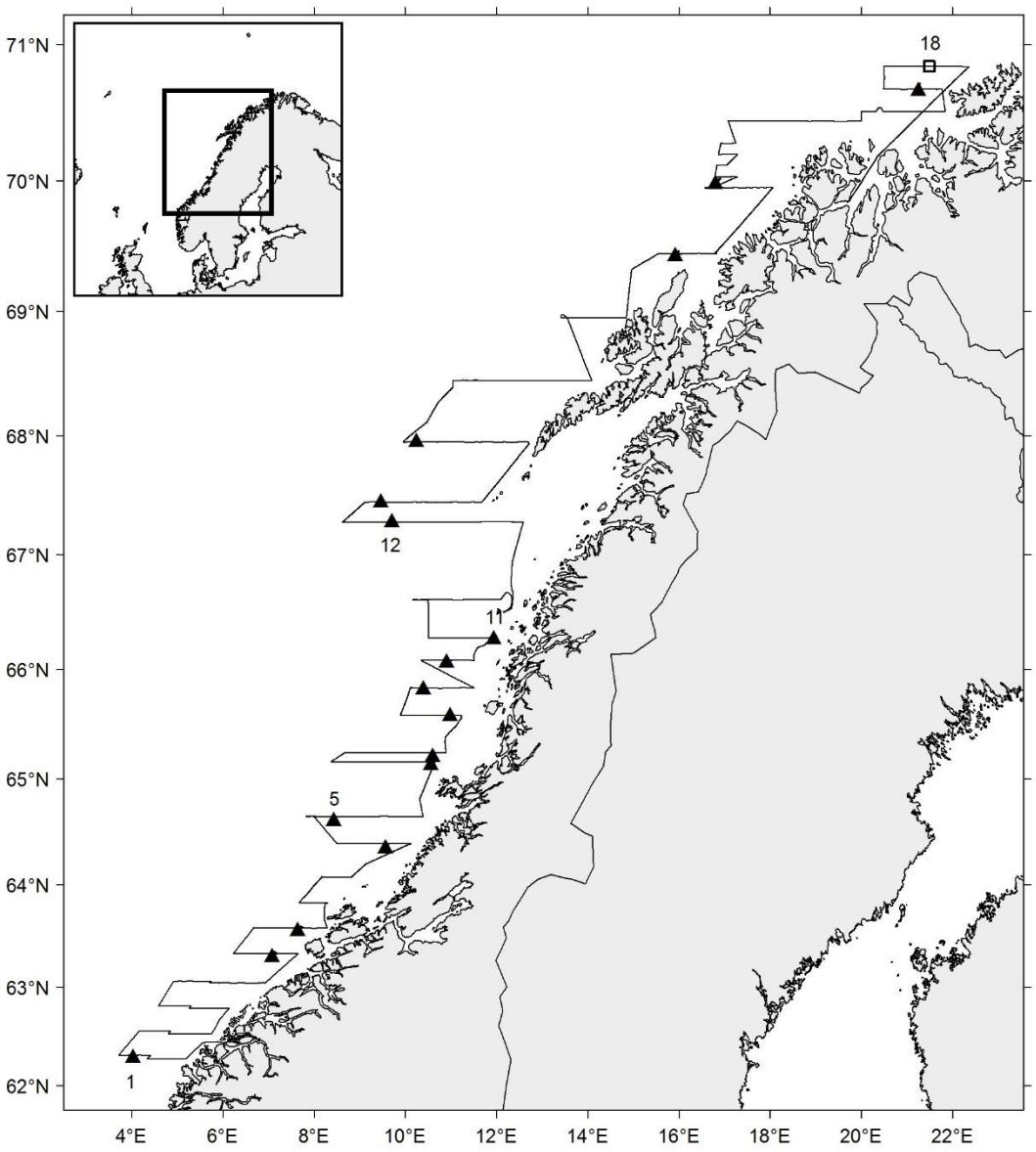
Standard section Svinøy NW st.no 1-17
St.M st.no 18

z CTD st.no 1-18
○ Plankton st. (WP-II-net)



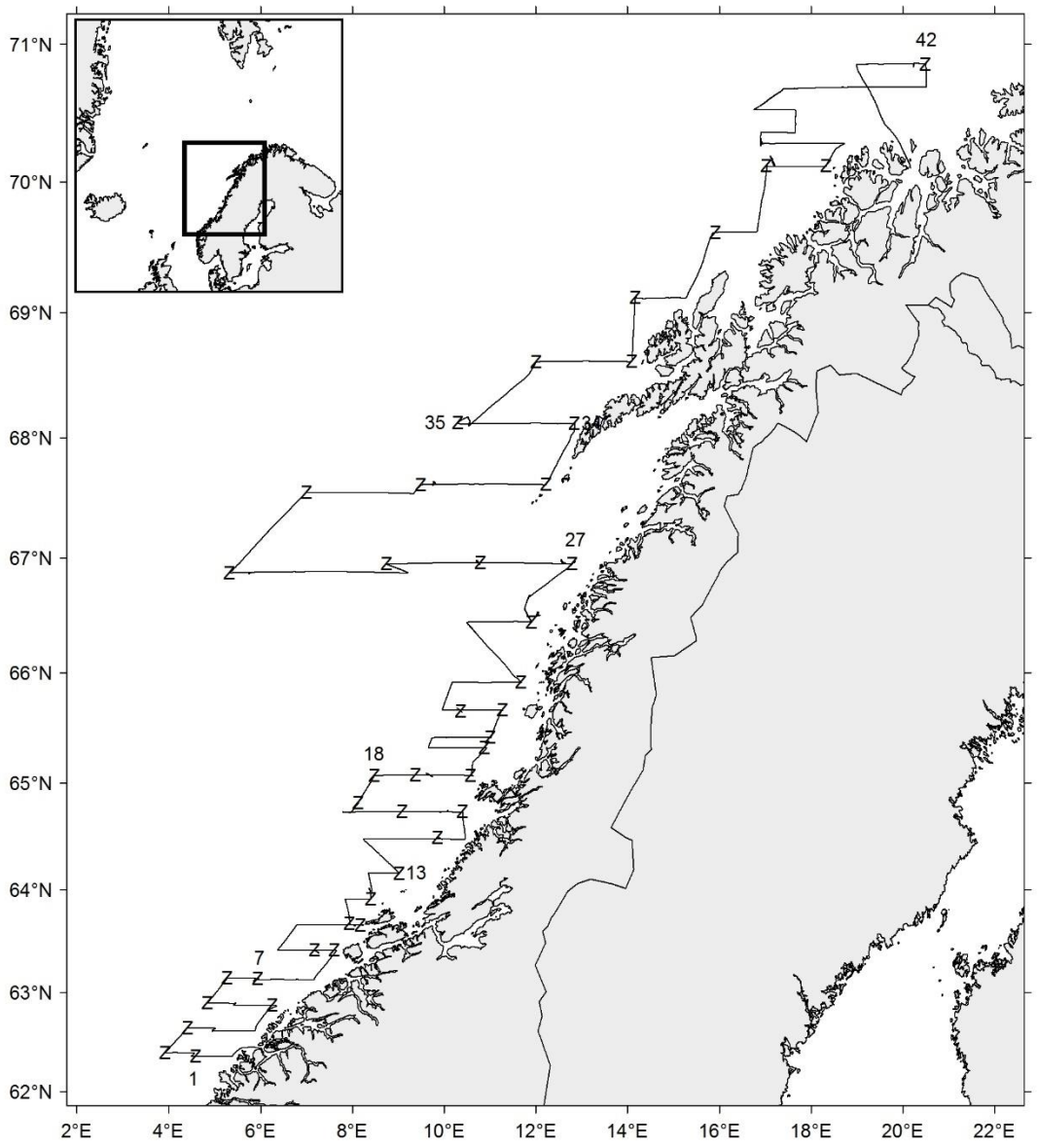
Cruise no 2017840 "Vendla" (Chart 1)
13–25 February 2017

z CTD st.no 19-66



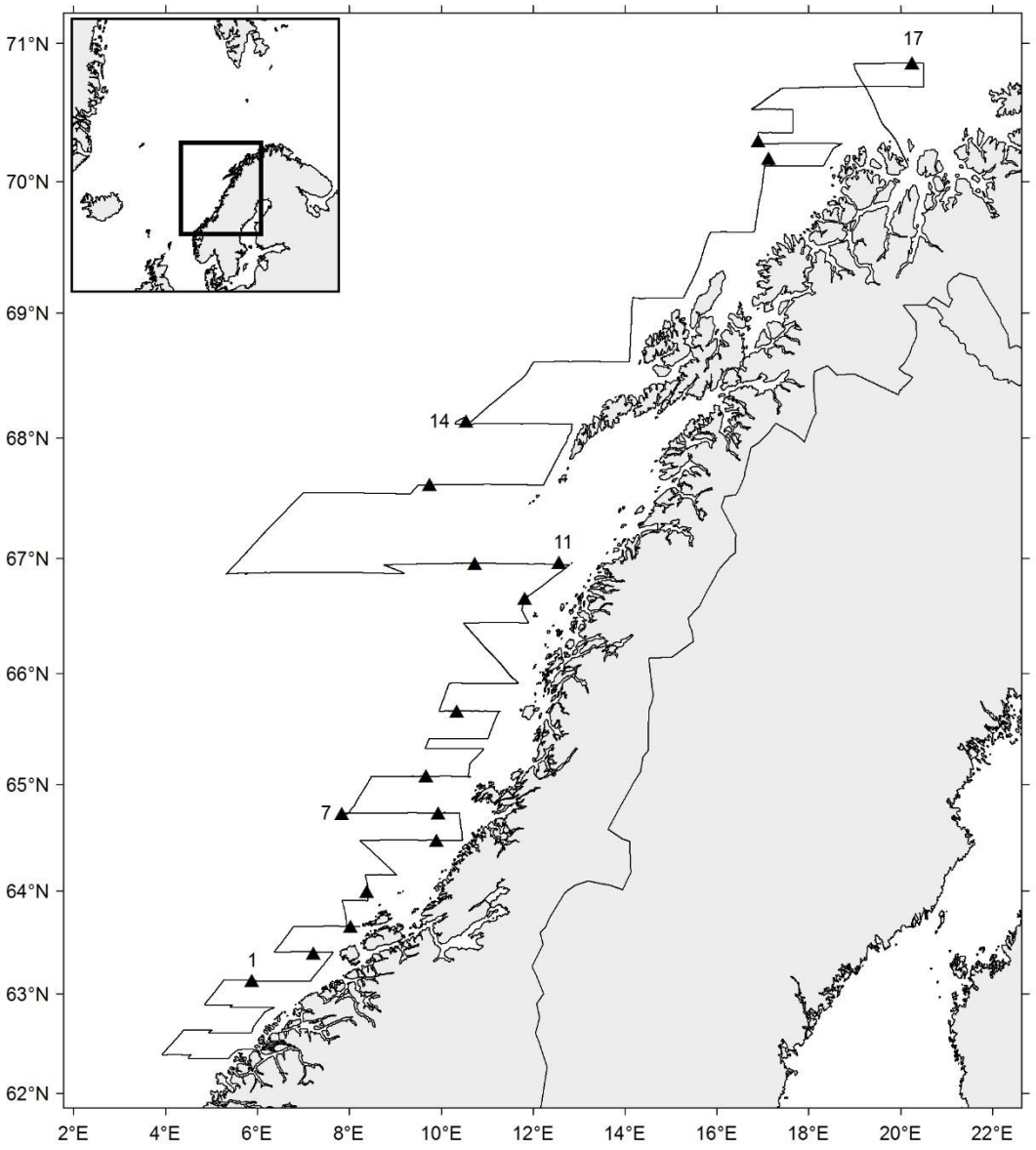
Cruise no 2017840 "Vendla" (Chart 2)
13–25 February 2017

Trawl st.no 1-18
▲ Pelagic trawl
▫ Bottom trawl



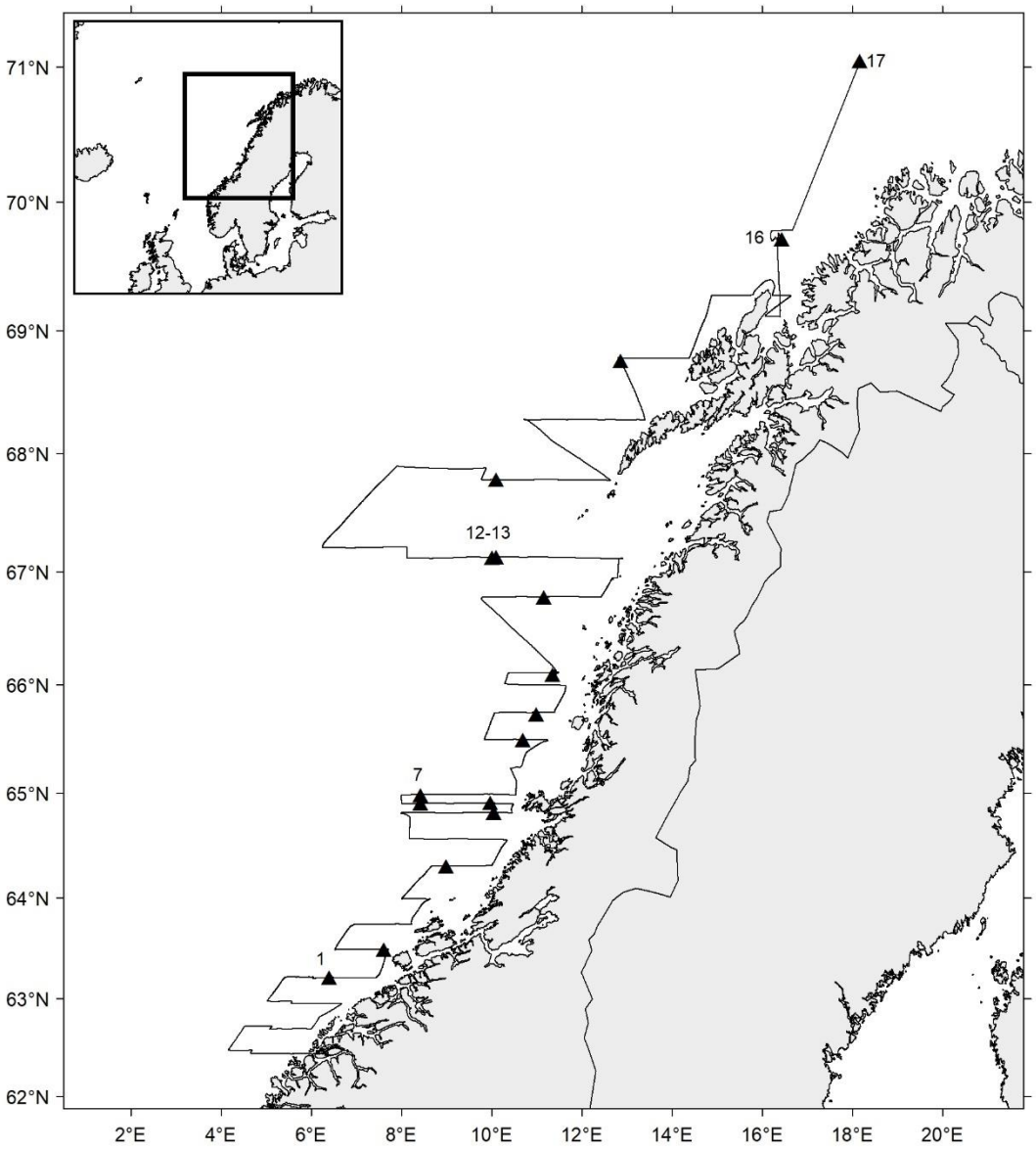
Cruise no 2017838 "Eros" (Chart 1)
13–25 February 2017

z CTD st.no 1-42



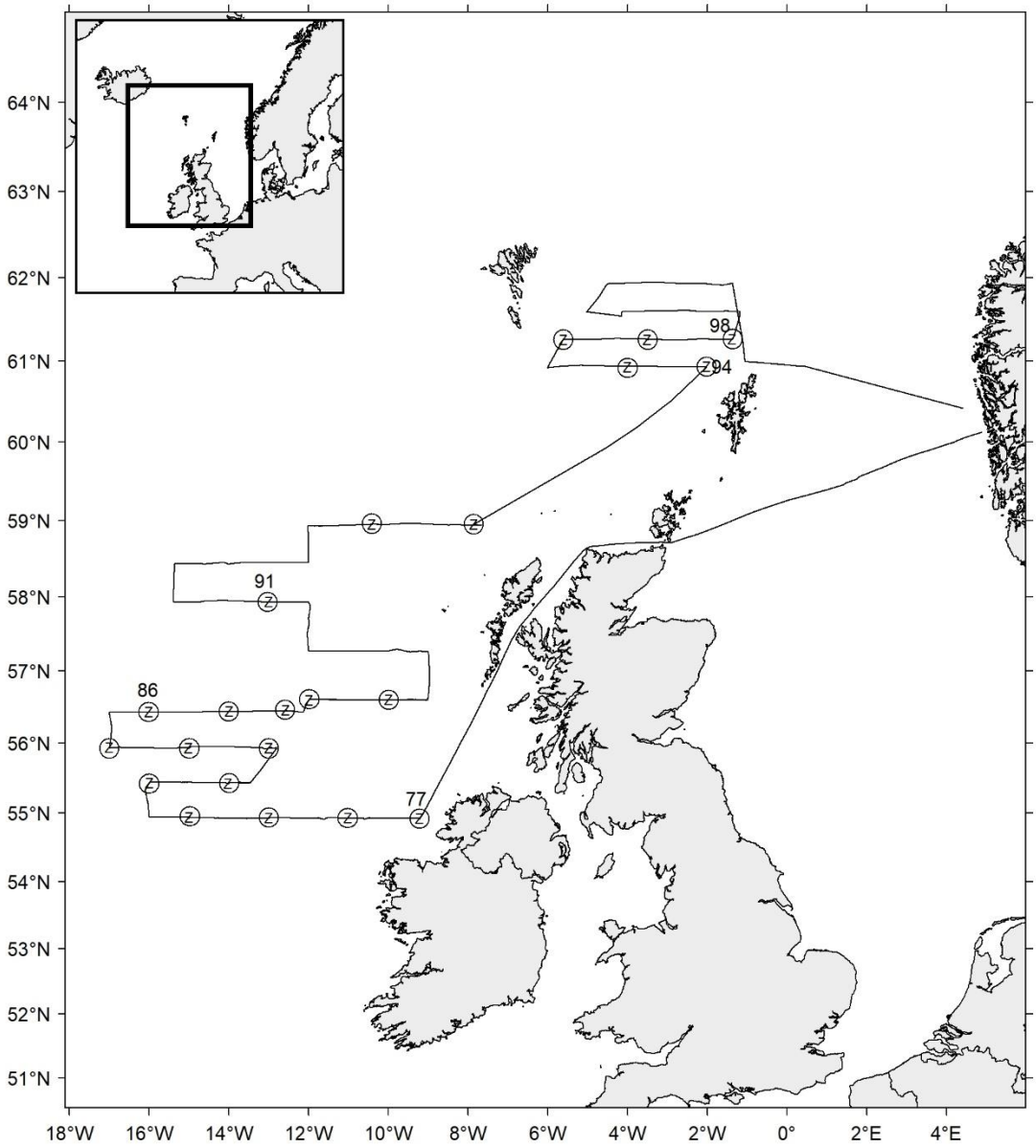
Cruise no 2017838 "Eros" (Chart 2)
13–25 February 2017

Pelagic trawl st.no 1-17



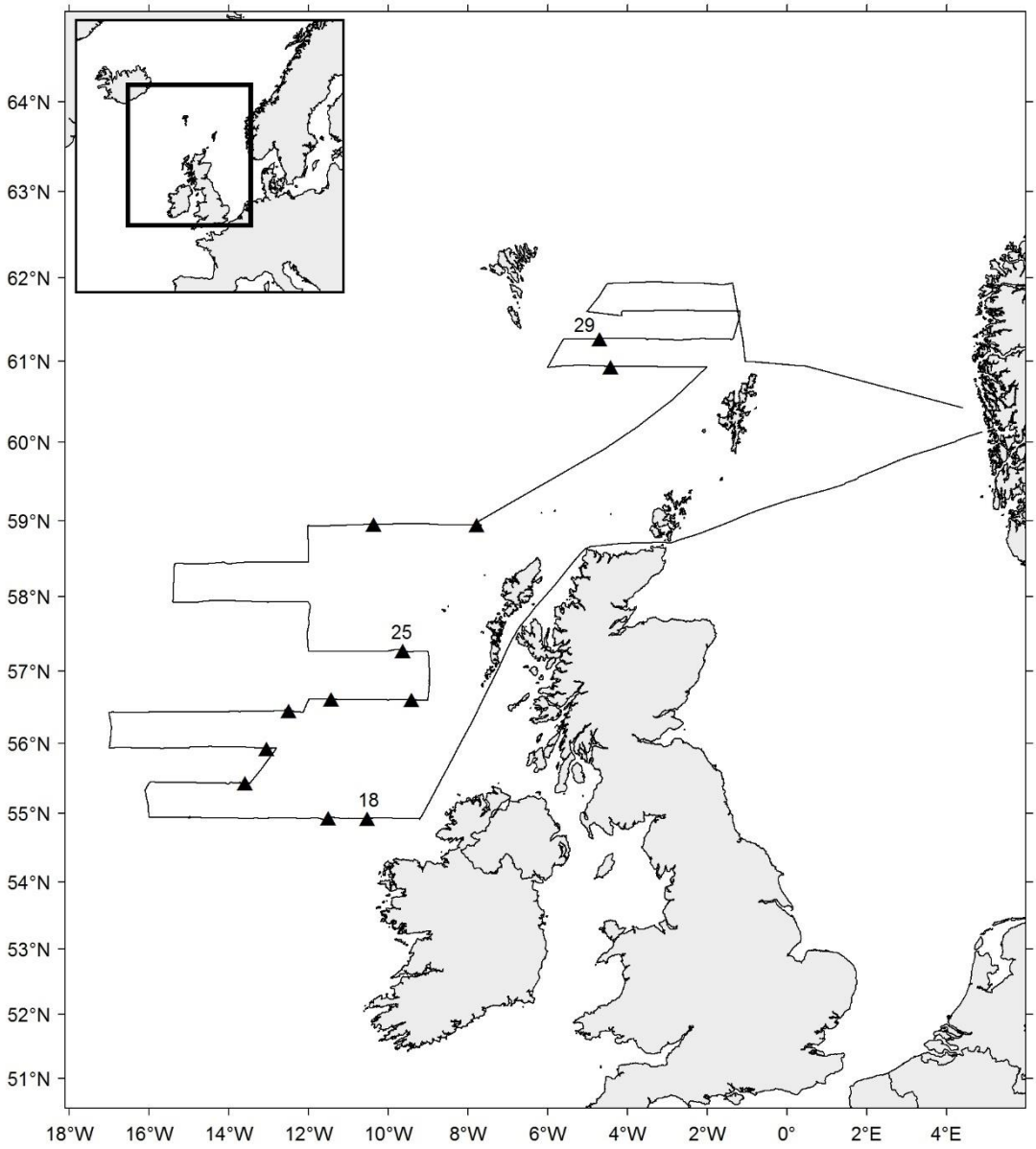
Cruise no 2017839 "Kings Bay"
13–25 February 2017

▲Pelagic trawl st.no 1-17



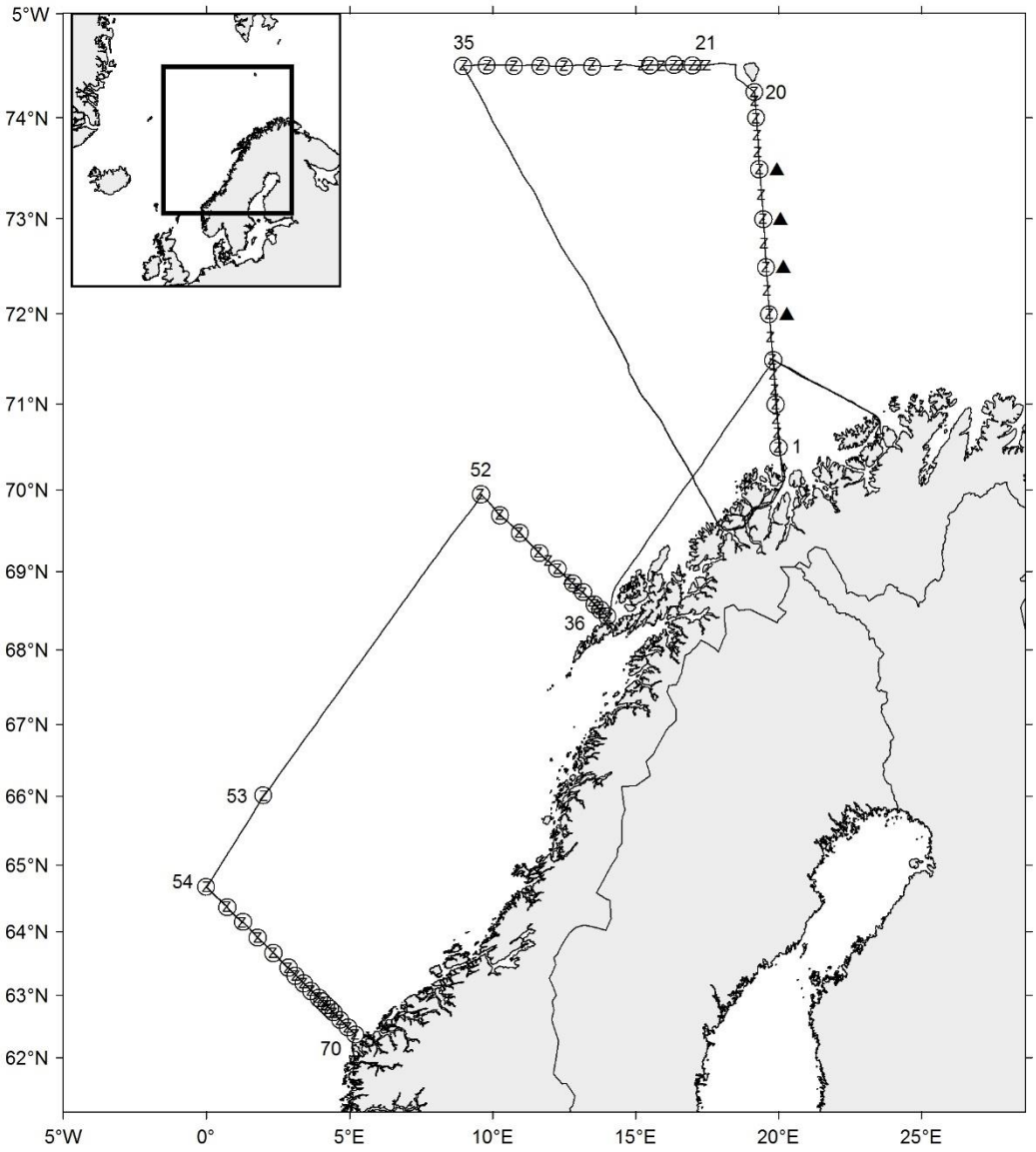
Cruise no 2017847 "Kings Bay" (Chart 1)
20 March–5 April 2017

z CTD st.no 77-98
○ Plankton st. (WP-II-net)



Cruise no 2017847 "Kings Bay" (Chart 2)
20 March–5 April 2017

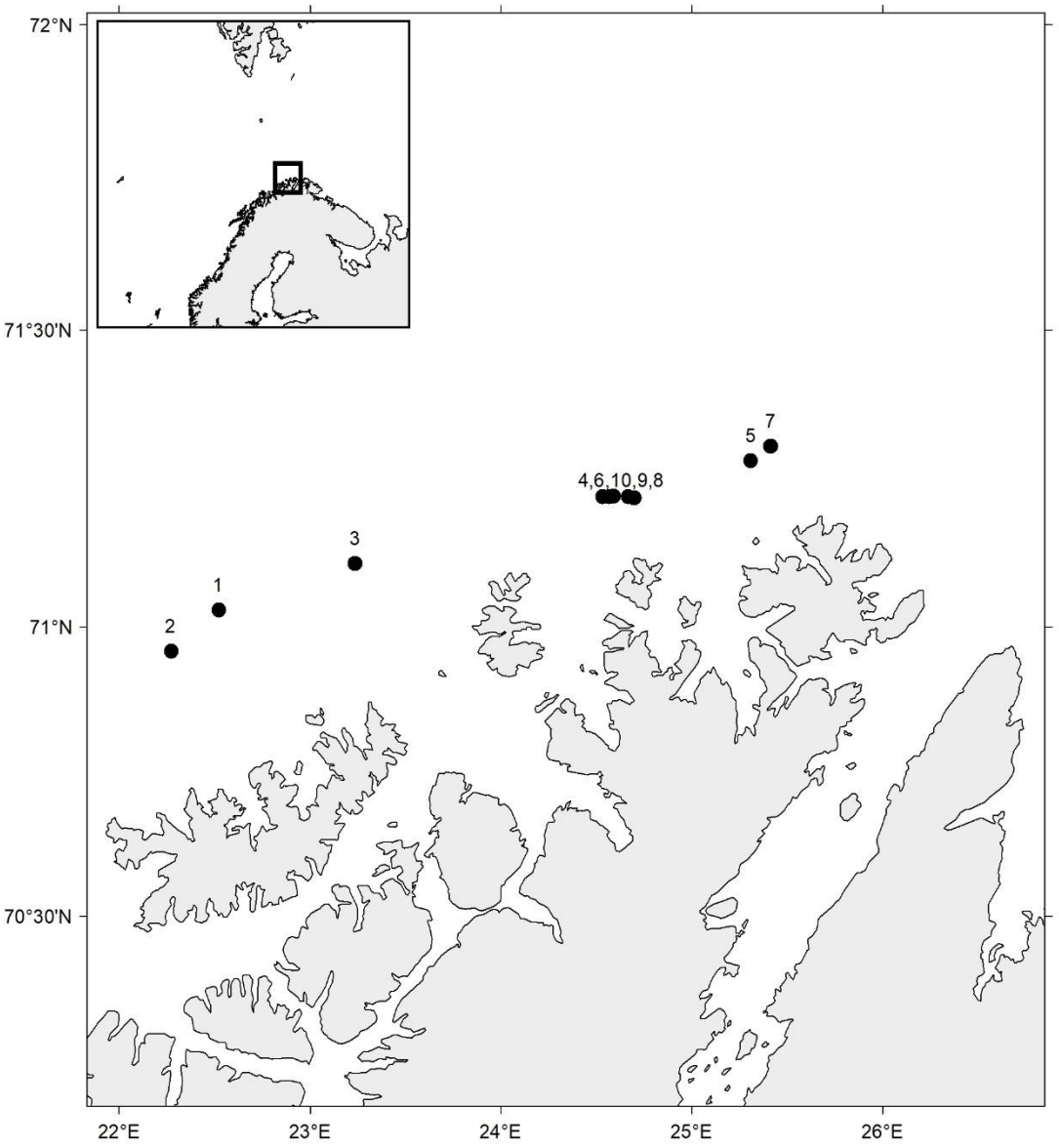
▲ Pelagic trawl st.no 18-29



Cruise no 2017859 "Christina E"
29 March–14 April 2017

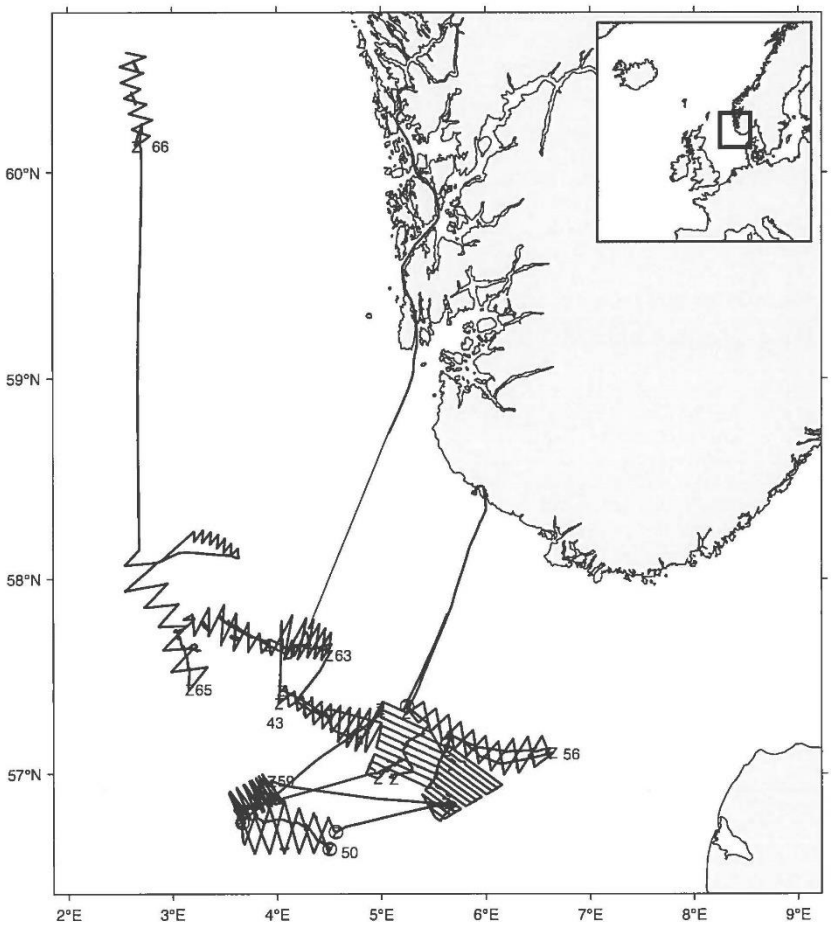
z CTD st.no 1-70
○ Plankton st. (WP-II-net)
▼ Moorings deployed

Standard sections:
Fugløya–Bjørnøya st.no1-20
Bjørnøya W st.no 21-35
Gimsøy NW st.no 36-52
Svinøy-NW st.no 54-70
St. M st.no 53



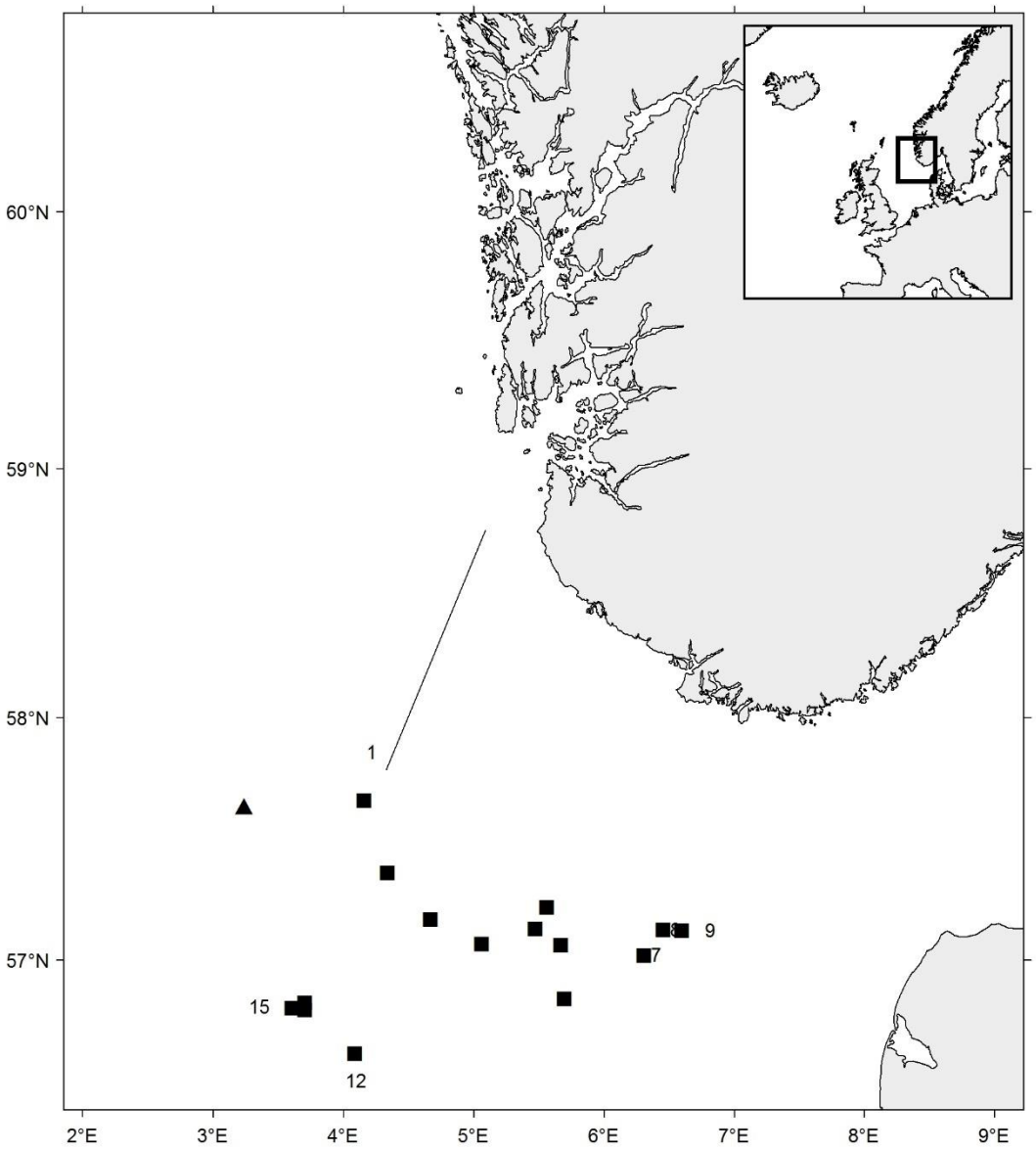
Cruise no 2017807 "J. Bergvoll"
7–20 April 2017

● Trawl st.no 1-10



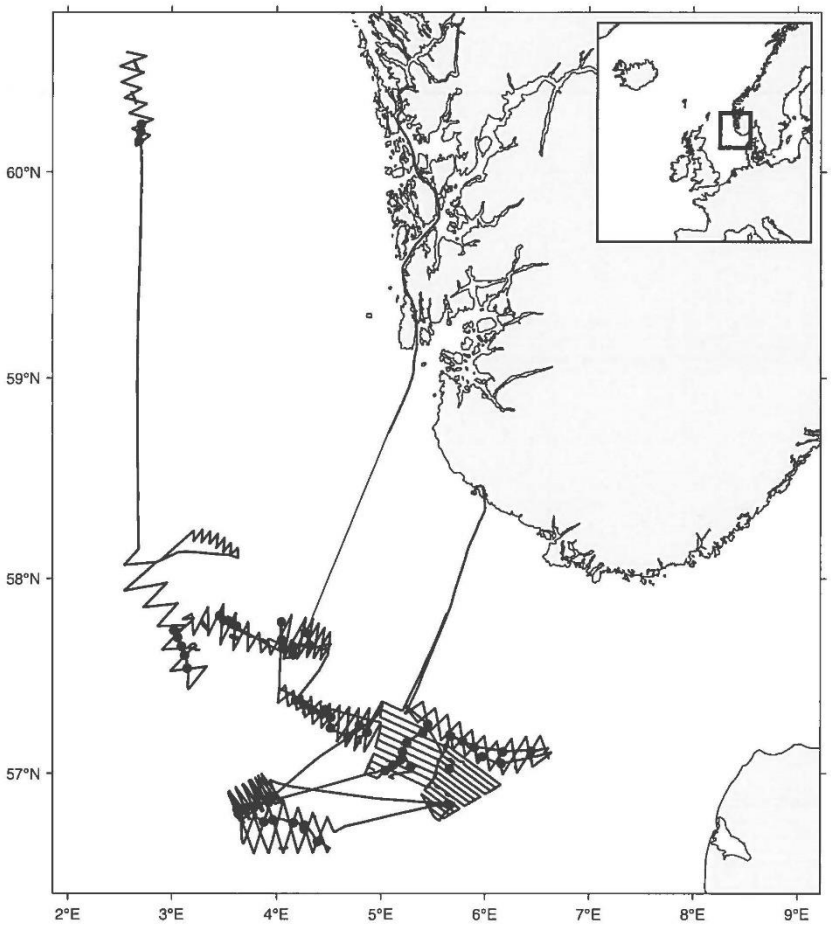
Cruise no 2017843 "Eros" (Chart 1)
25 April–15 May 2017

z CTD st.no 43-66
○ Plankton st. (WP-II-net)



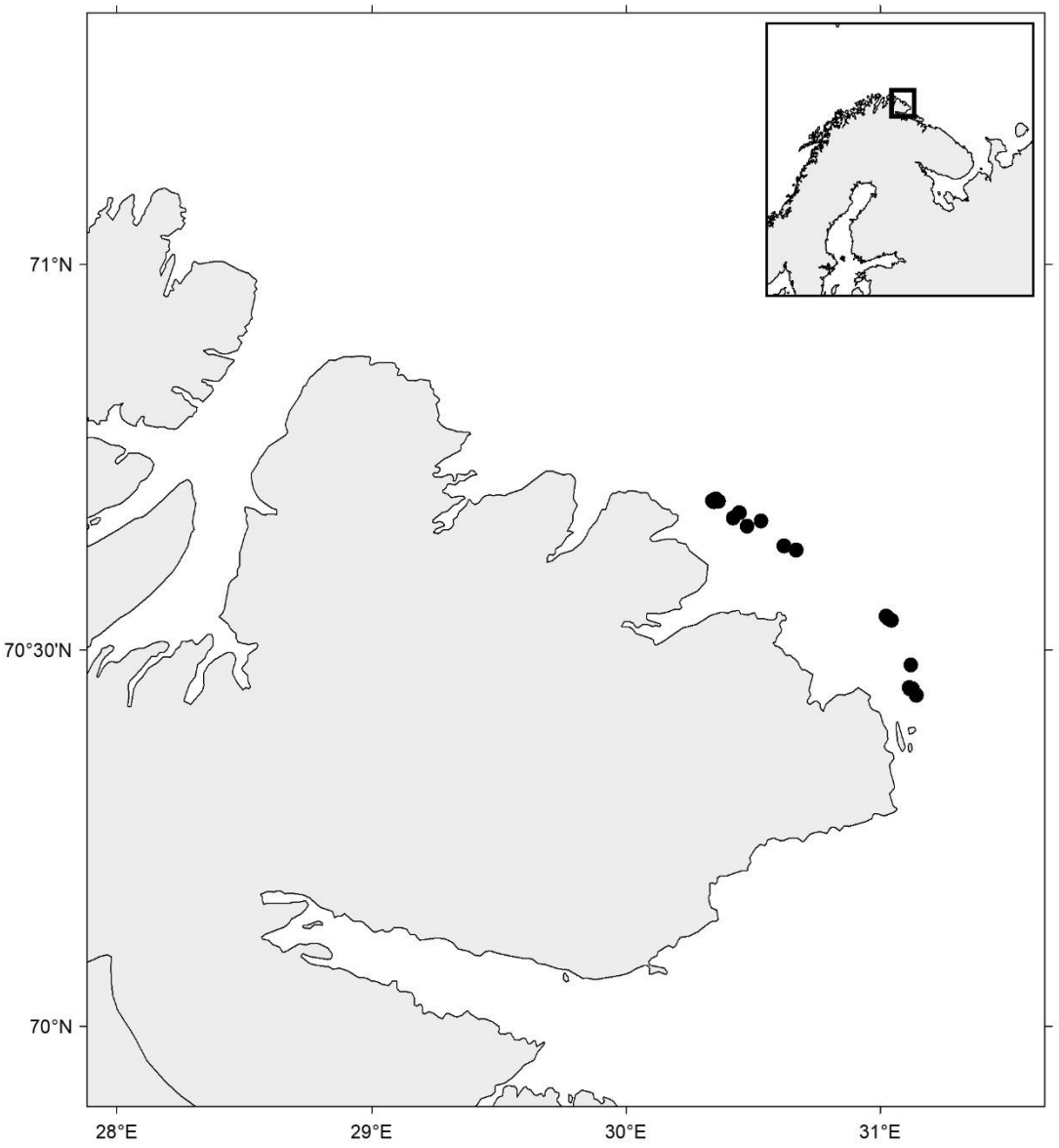
Cruise no 2017843 "Eros" (Chart 2)
25 April–15 May 2017

Trawl st.no 1-15
■ Bottom trawl st.
▲ Pelagic trawl st.



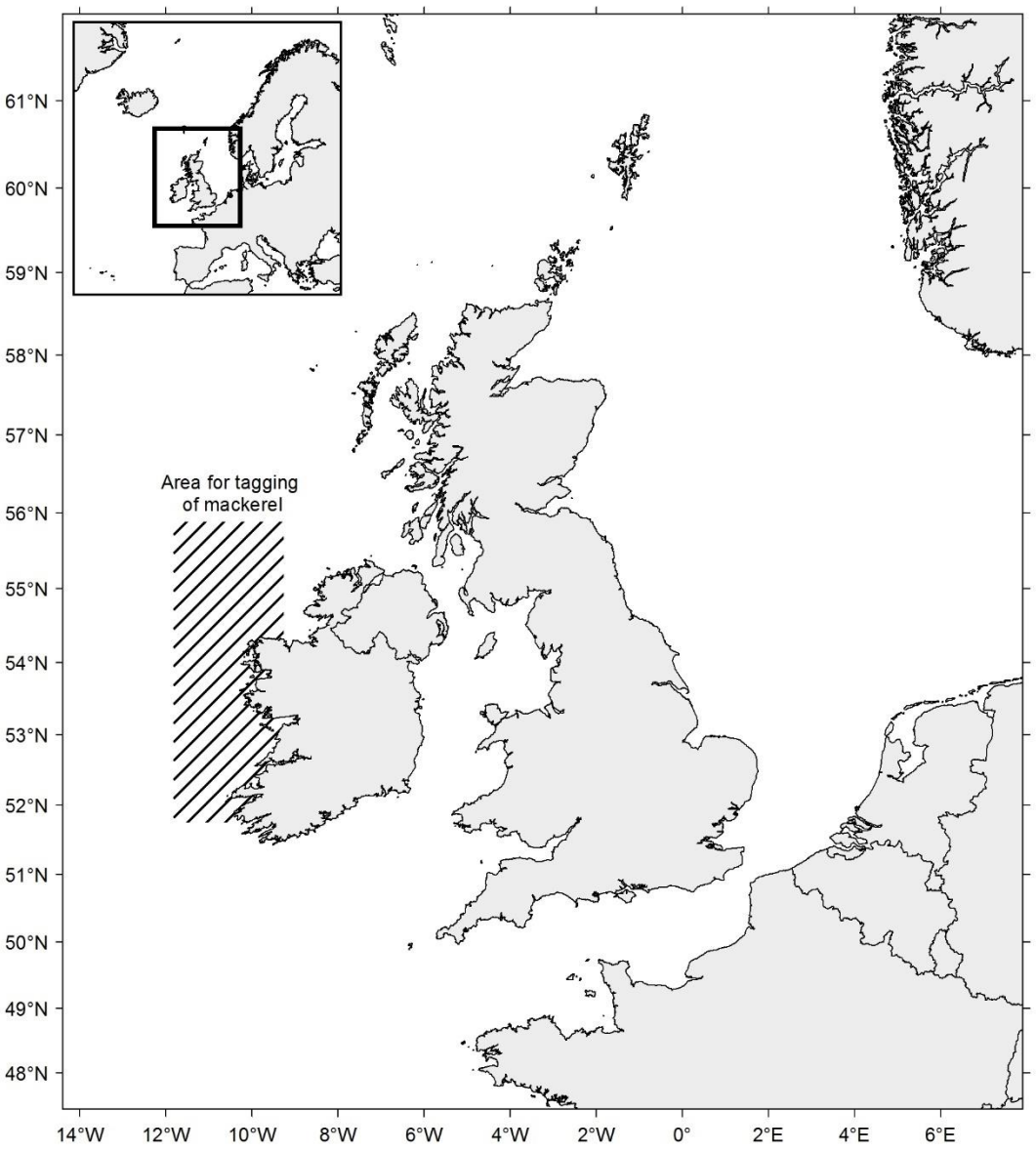
Cruise no 2017843 "Eros" (Chart 3)
25 April–15 May 2017

● Sledge/Dredge station



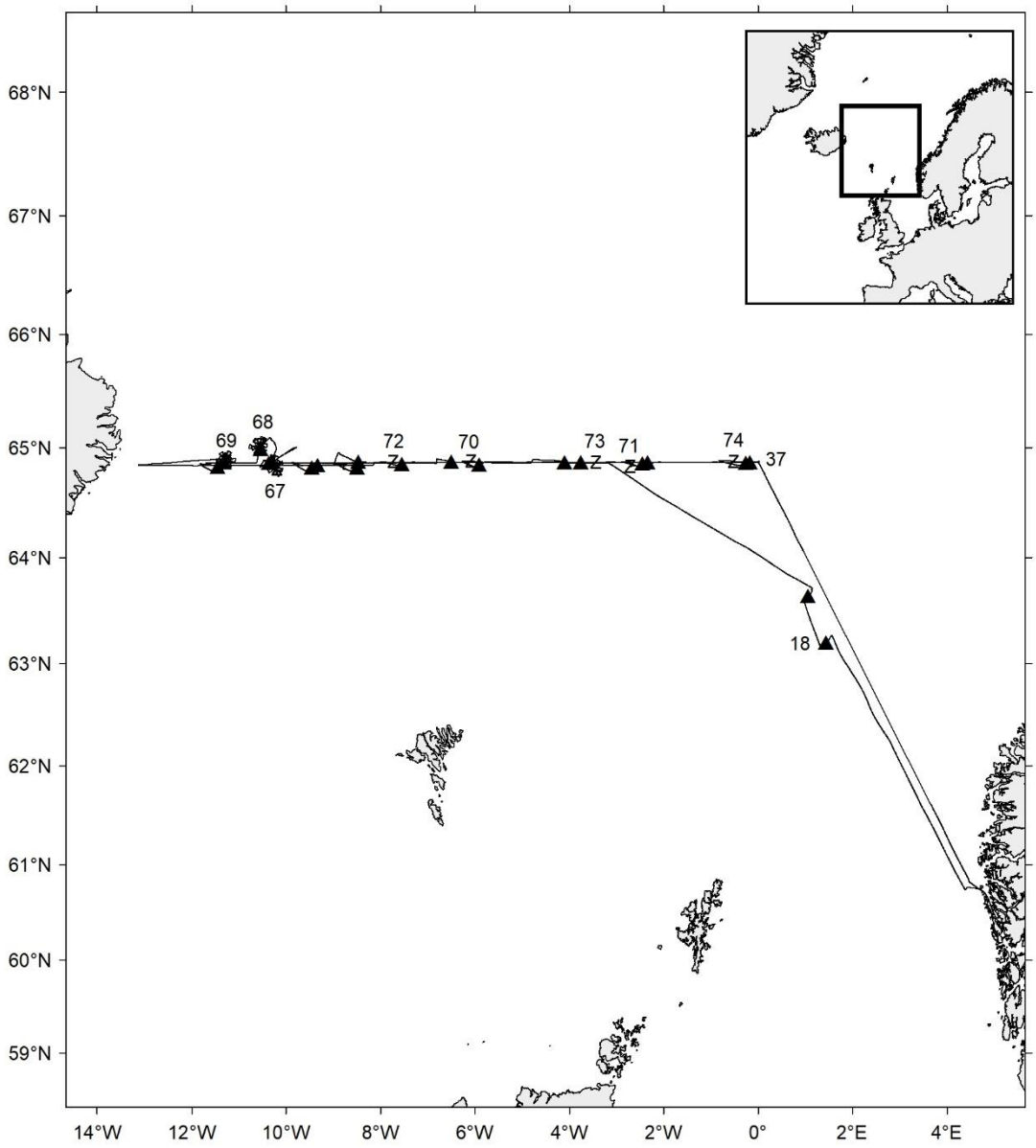
Cruise no 2017810 "Ballstadøy"
2–14 May 2017

● Trawl stations (Gear research)



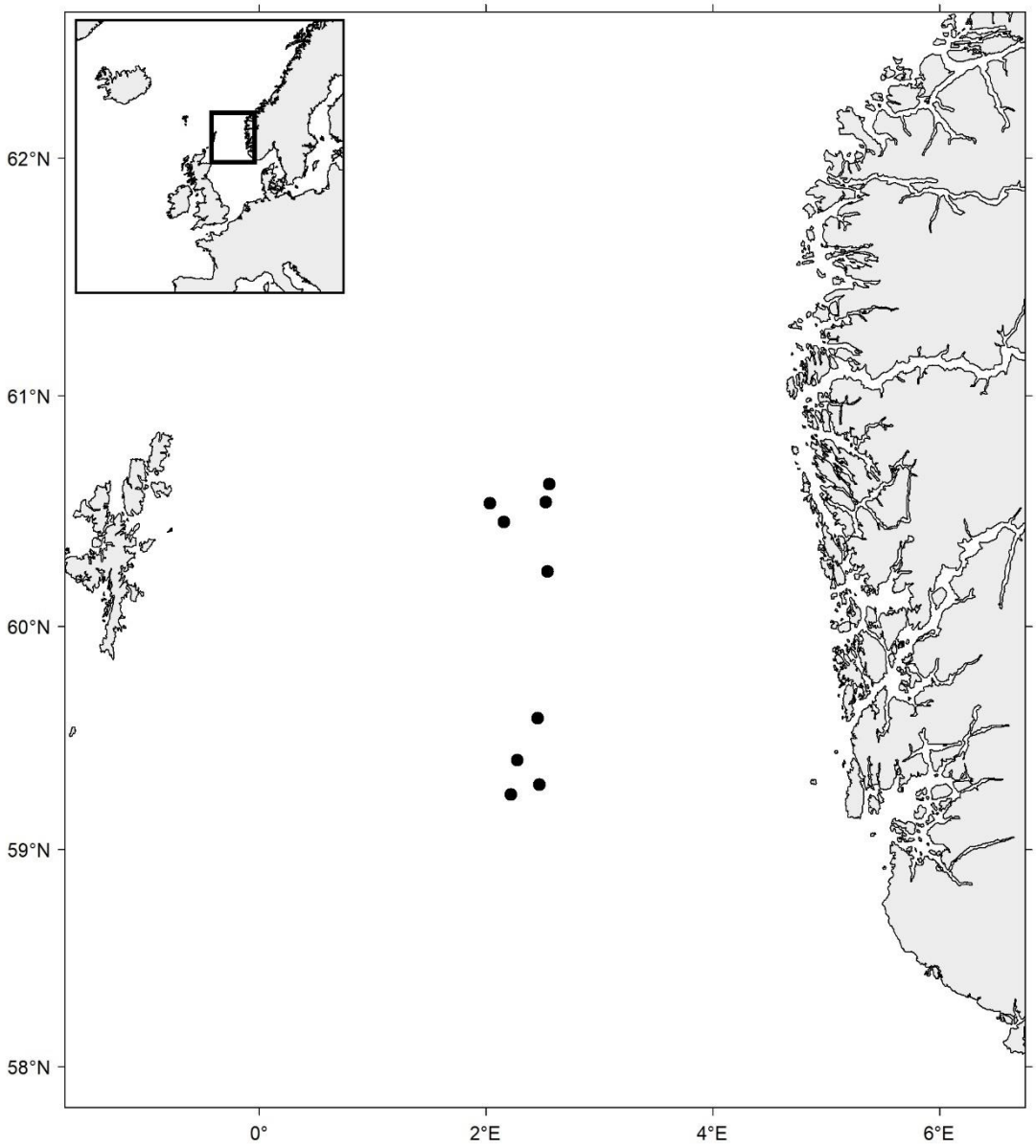
Cruise no 2017837 "Fiskebas"
2 May–2 June 2017

☐ Area for tagging of mackerel



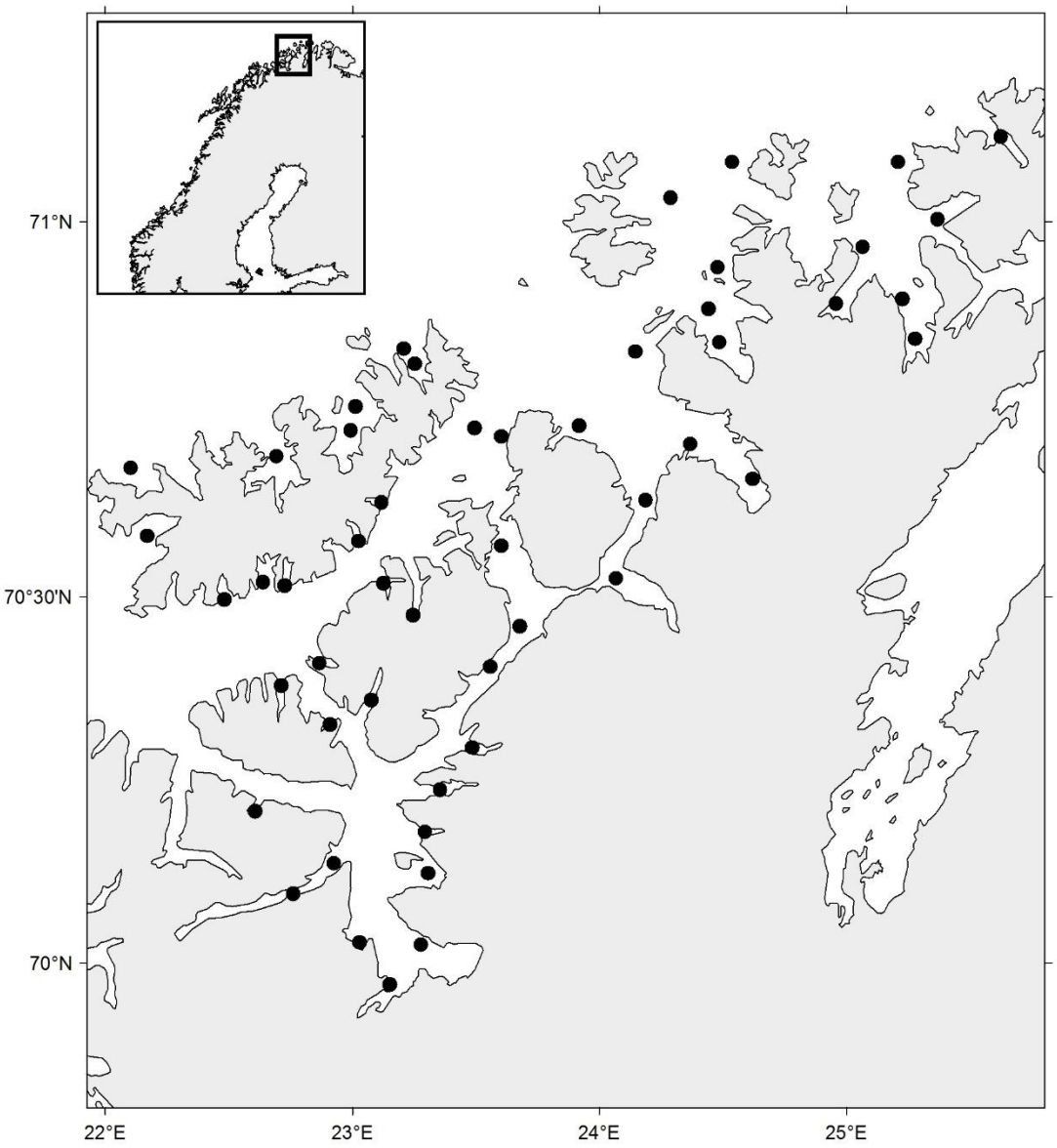
Cruise no 2017836 "Vendla"
10–24 May 2017

z CTD st.no 67-74
▲ Pelagic trawl st.no 18-37



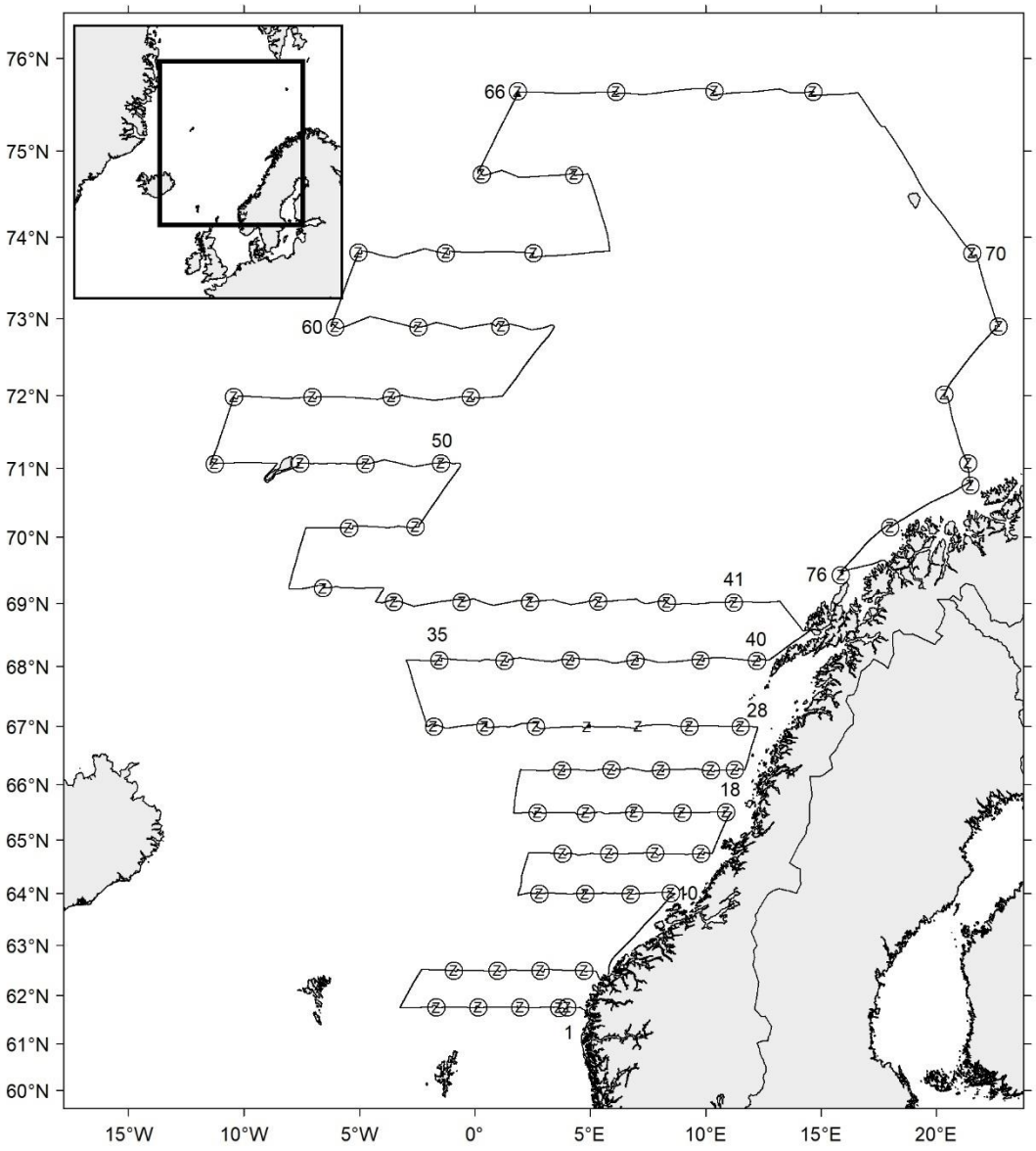
Cruise no 2017826 "Fiskebas"
6–18 June 2017

● CDT/oxygen, behavioural observations and individual weights for subsample of catch.



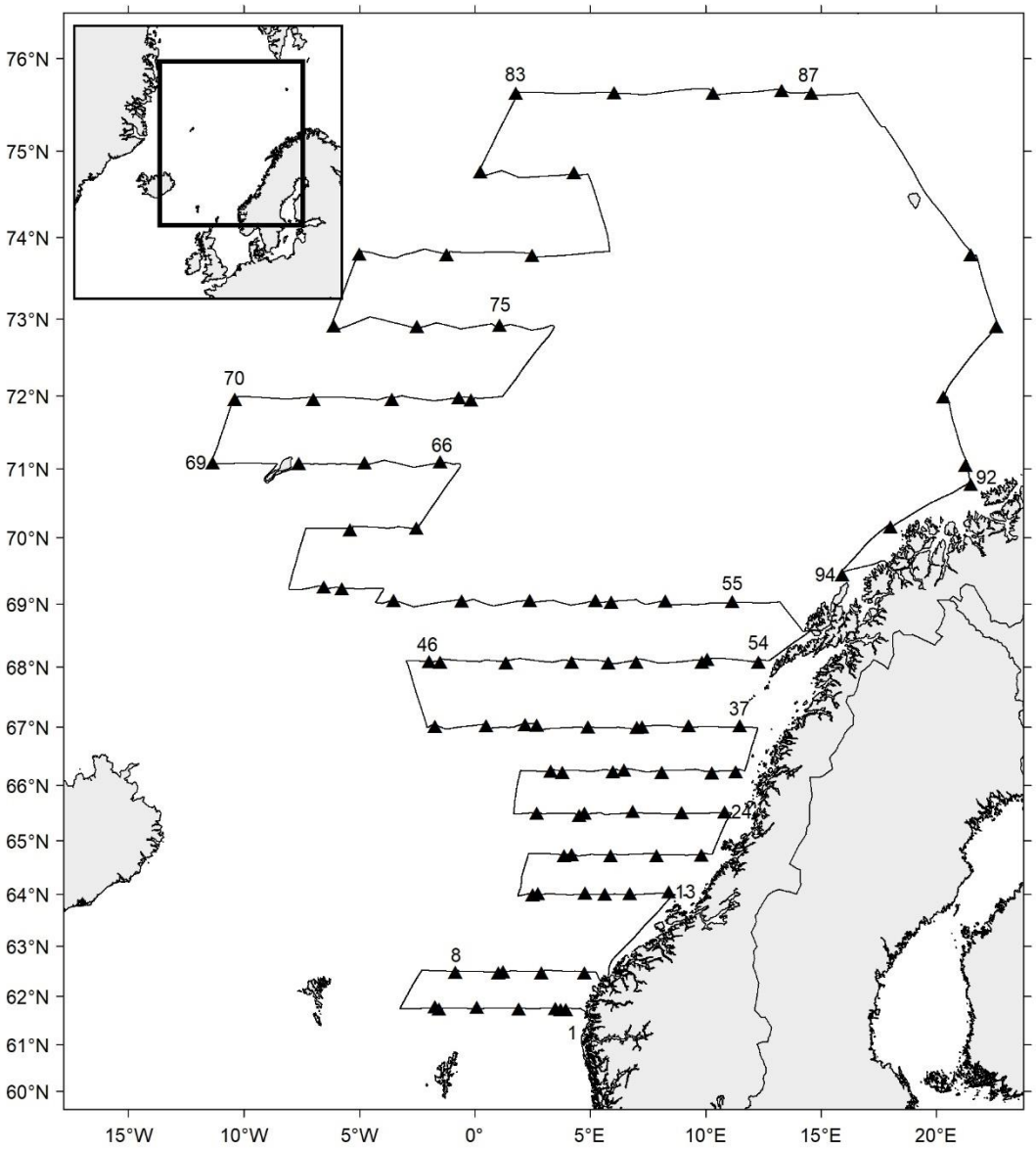
Cruise no 2017853 "J.Ruud"
12–18 June 2017

● Trap hauls



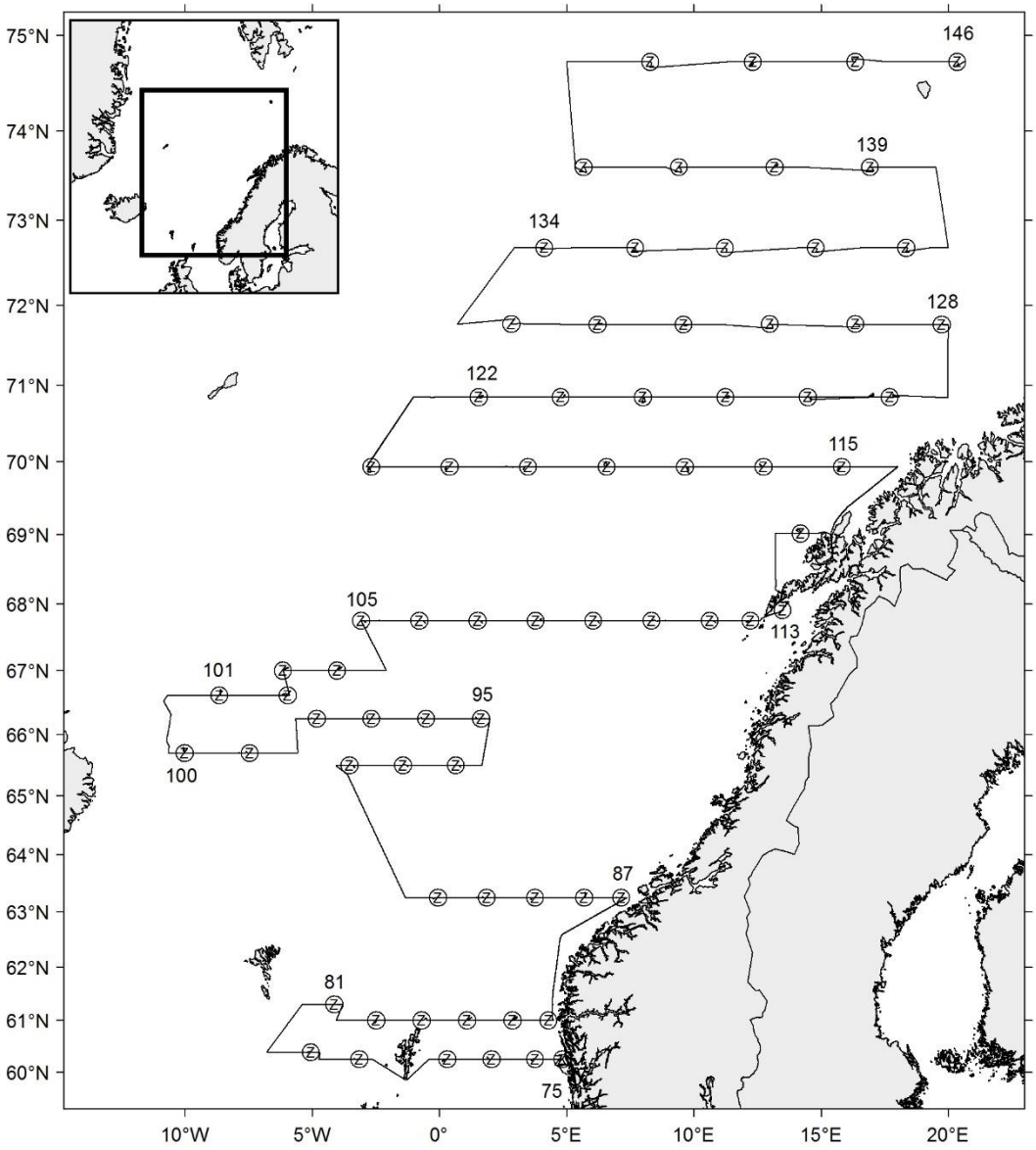
Cruise no 2017833 "Kings Bay" (Chart 1)
3 July–6 August 2017

z CTD st.no 1–76
○ Plankton st. (WP-II-net)



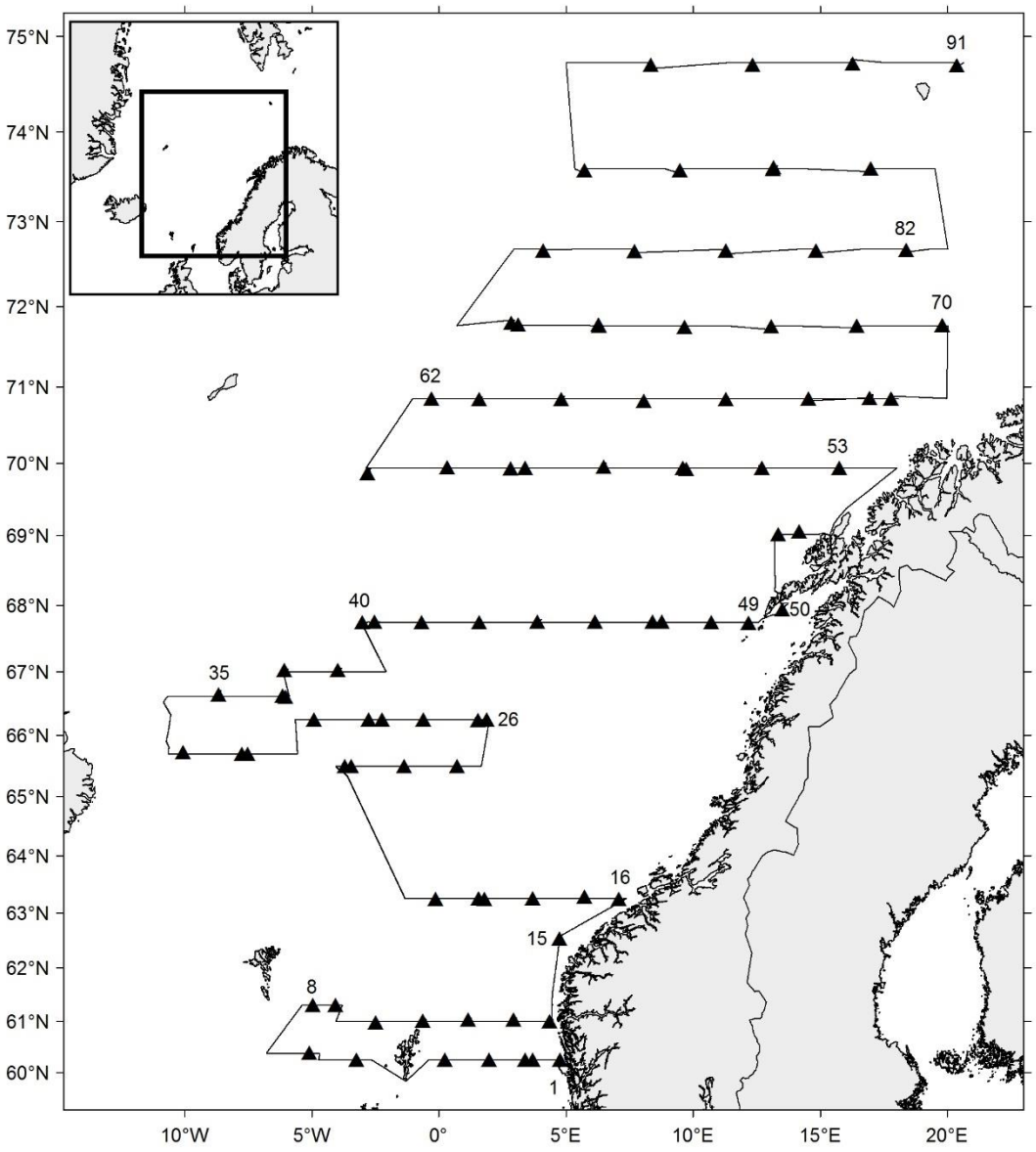
Cruise no 2017833 "Kings Bay" (Chart 2)
3 July–6 August 2017

▲ Pelagic trawl st.no 1–94



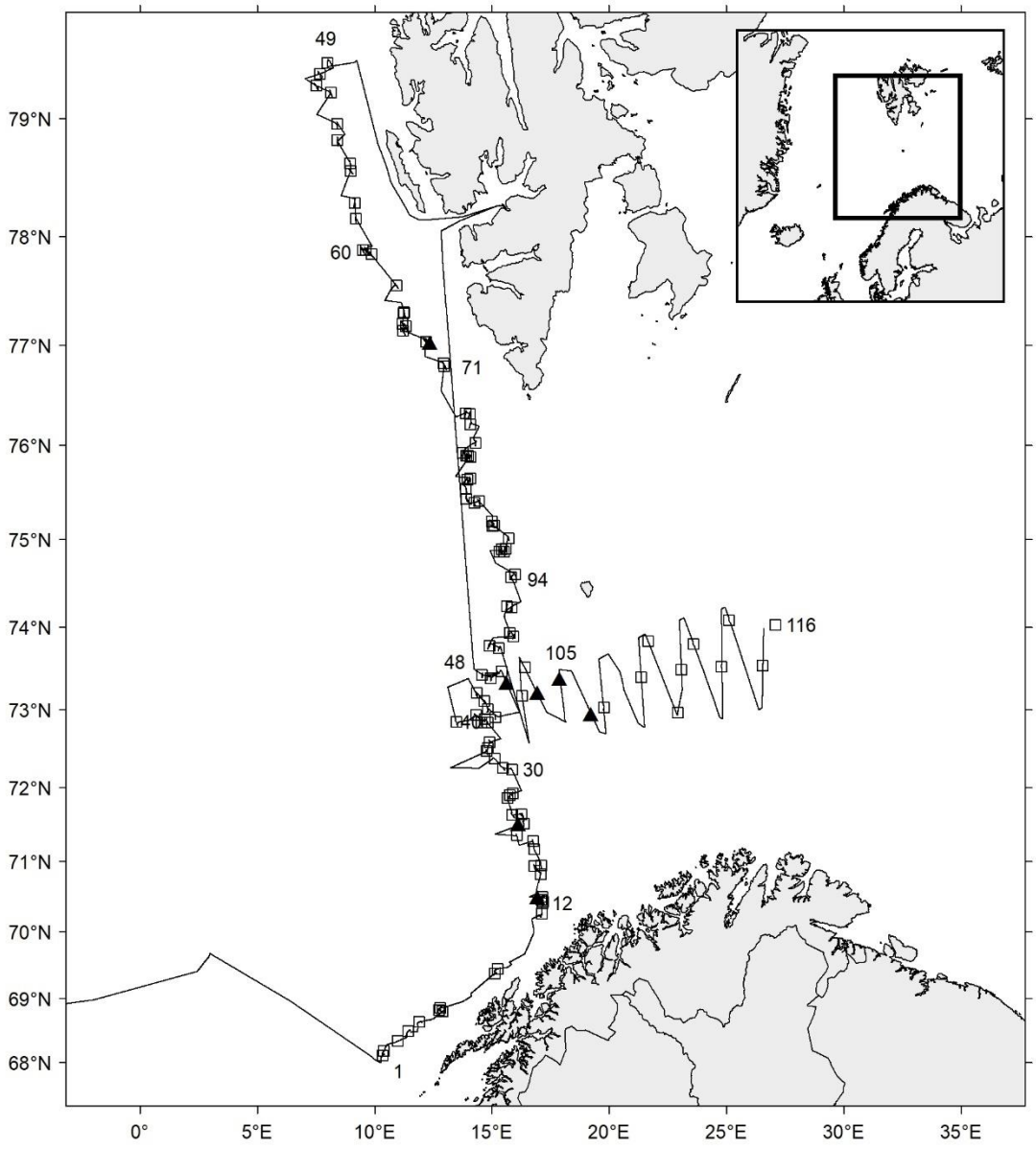
Cruise no 2017834 "Vendla" (Chart I)
5 July–6 August 2017

z CTD st.no 75–146
○ Plankton st. (WP-II-net)



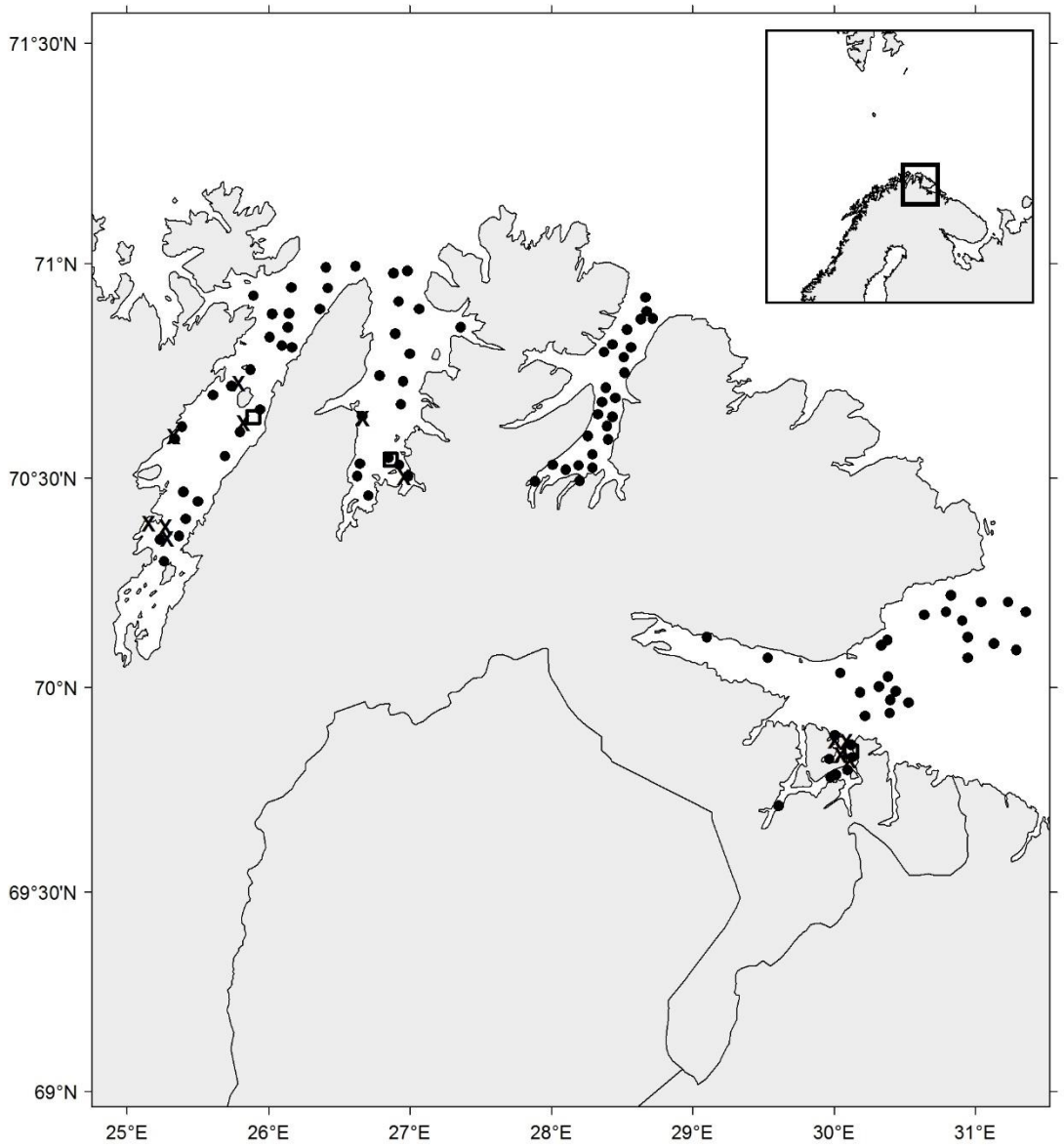
Cruise no 2017834 "Vendla" (Chart II)
5 July–6 August 2017

▲ Pelagic trawl st.no 1–91



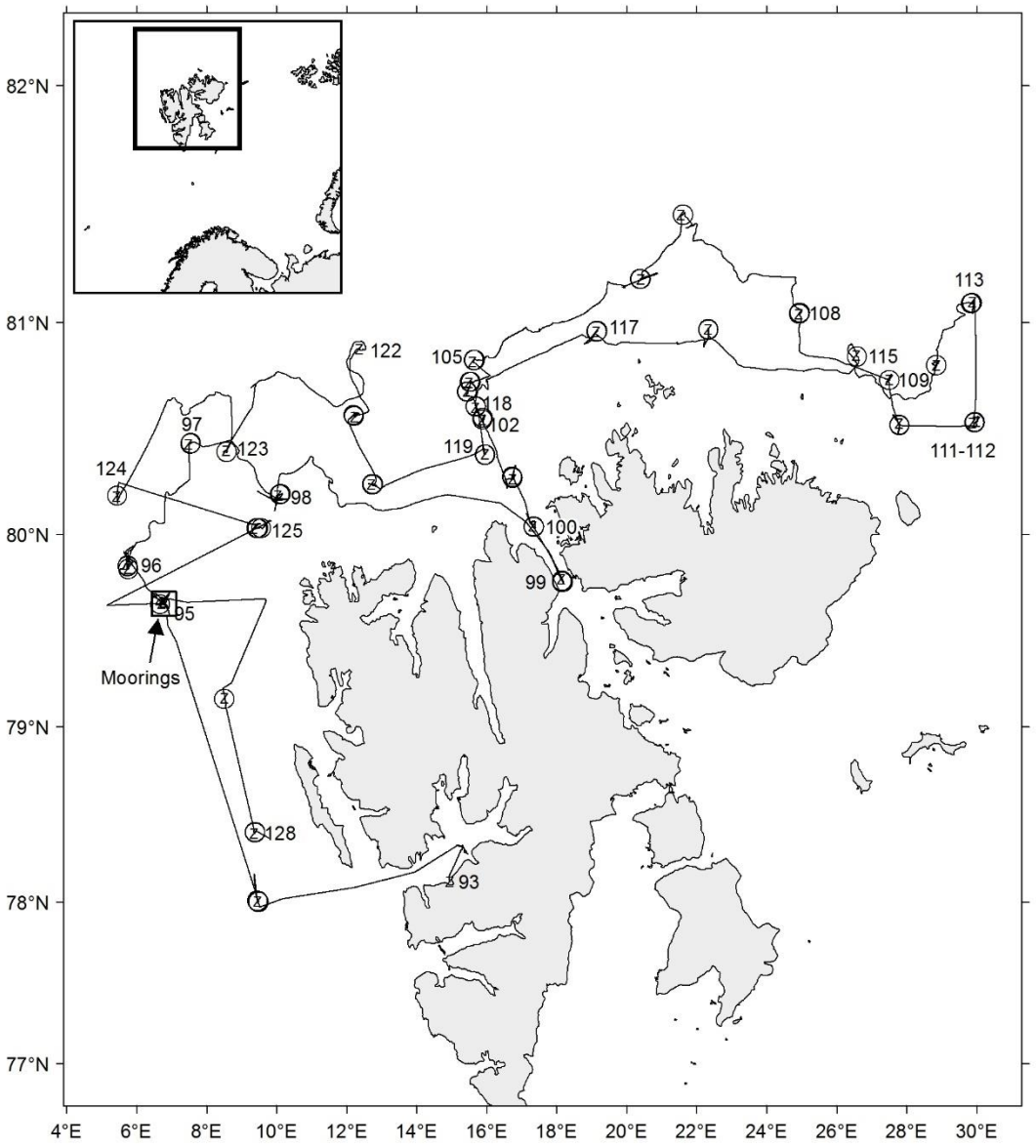
Cruise no 2017848 "Árni Friðriksson"
9 Aug–2 Sep 2017

Trawl st.no 1-116
□ Bottom trawl
▲ Pelagic trawl



Cruise no 2017854 "J. Ruud"
21 August –1 Sep 2017

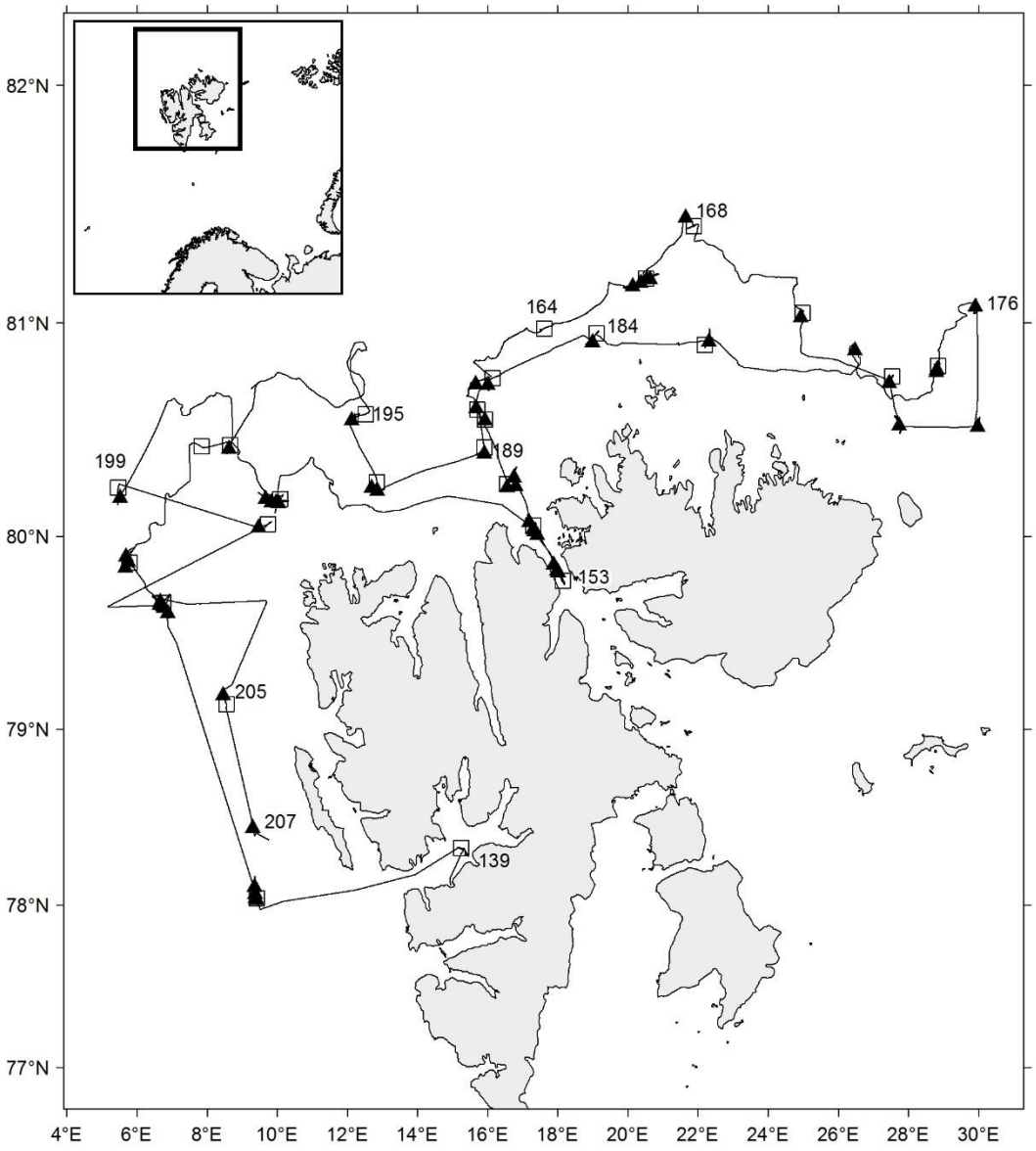
● Trawl st.
□ Beam trawl st.
x Trap st.



Cruise no 2017856 "Helmer Hanssen"
21 August–7 September 2017

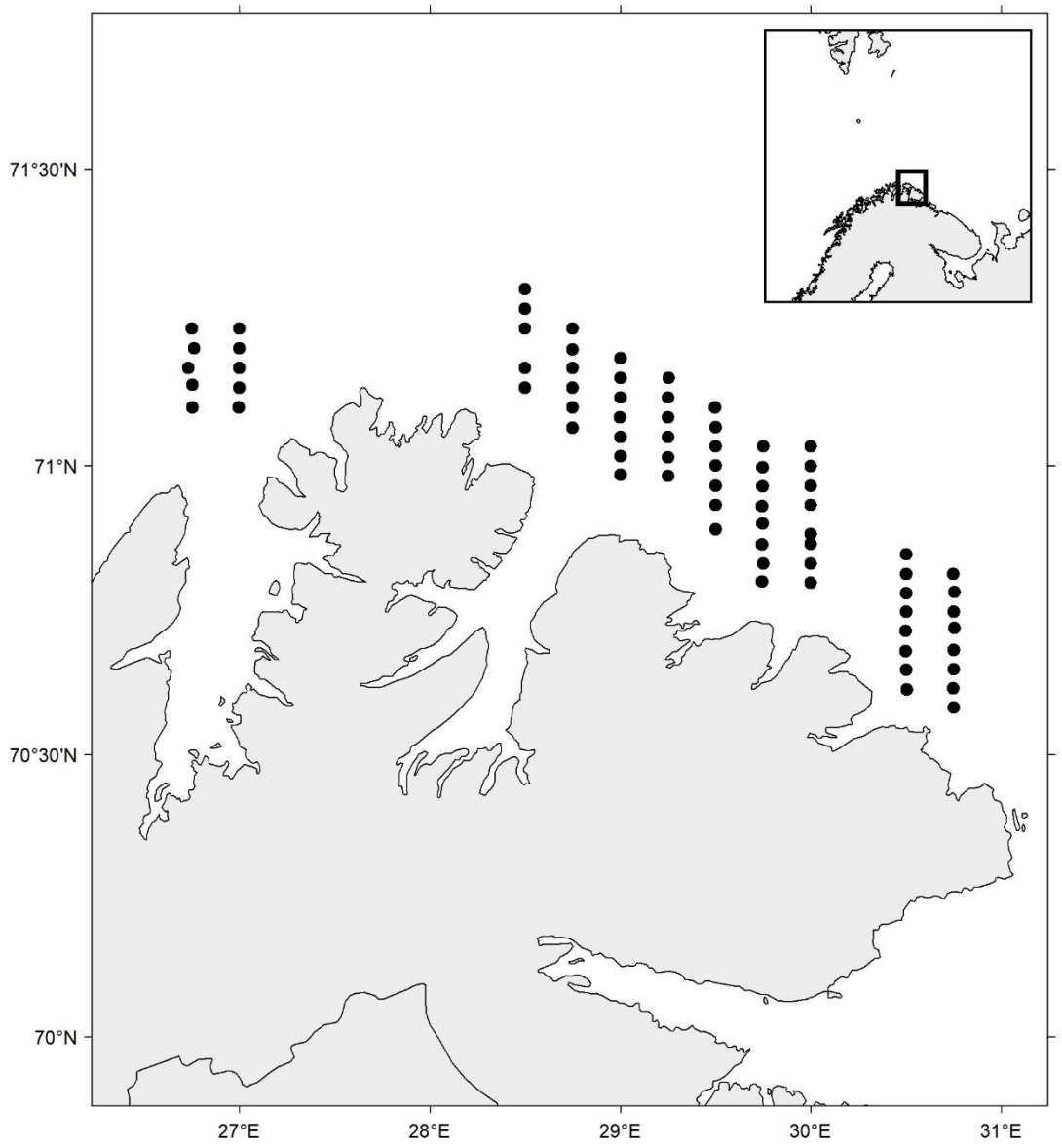
z CTD st.no 93–128. Light measurements on all CTD st.
○ Plankton st. (WP-II-net)

□ Two moorings deployed and recovered.



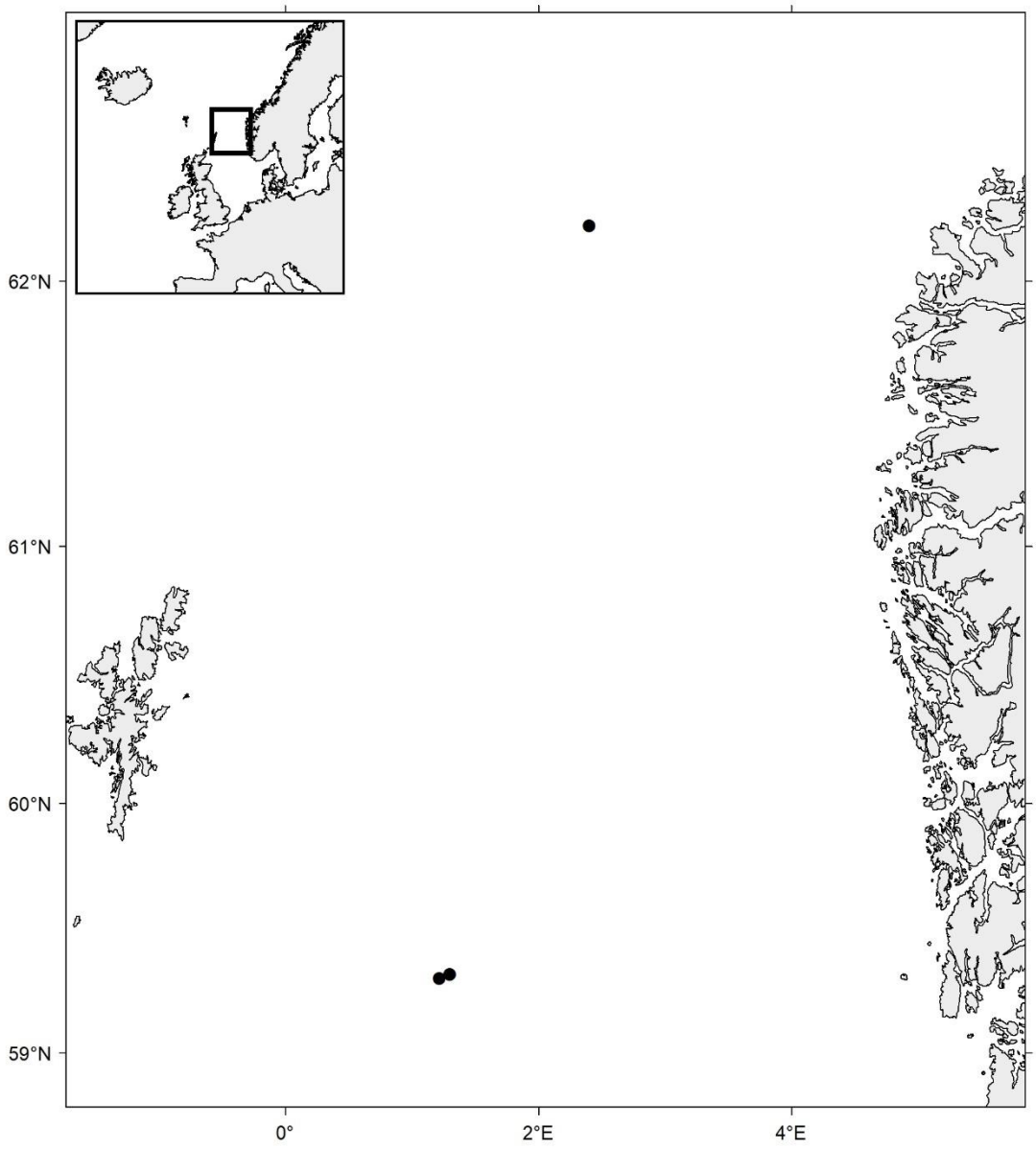
Cruise no 2017856 "Helmer Hanssen"
21 August–7 September 2017

Trawl st.no 139-207
□ Bottom tr.
▲ Pelagic tr.



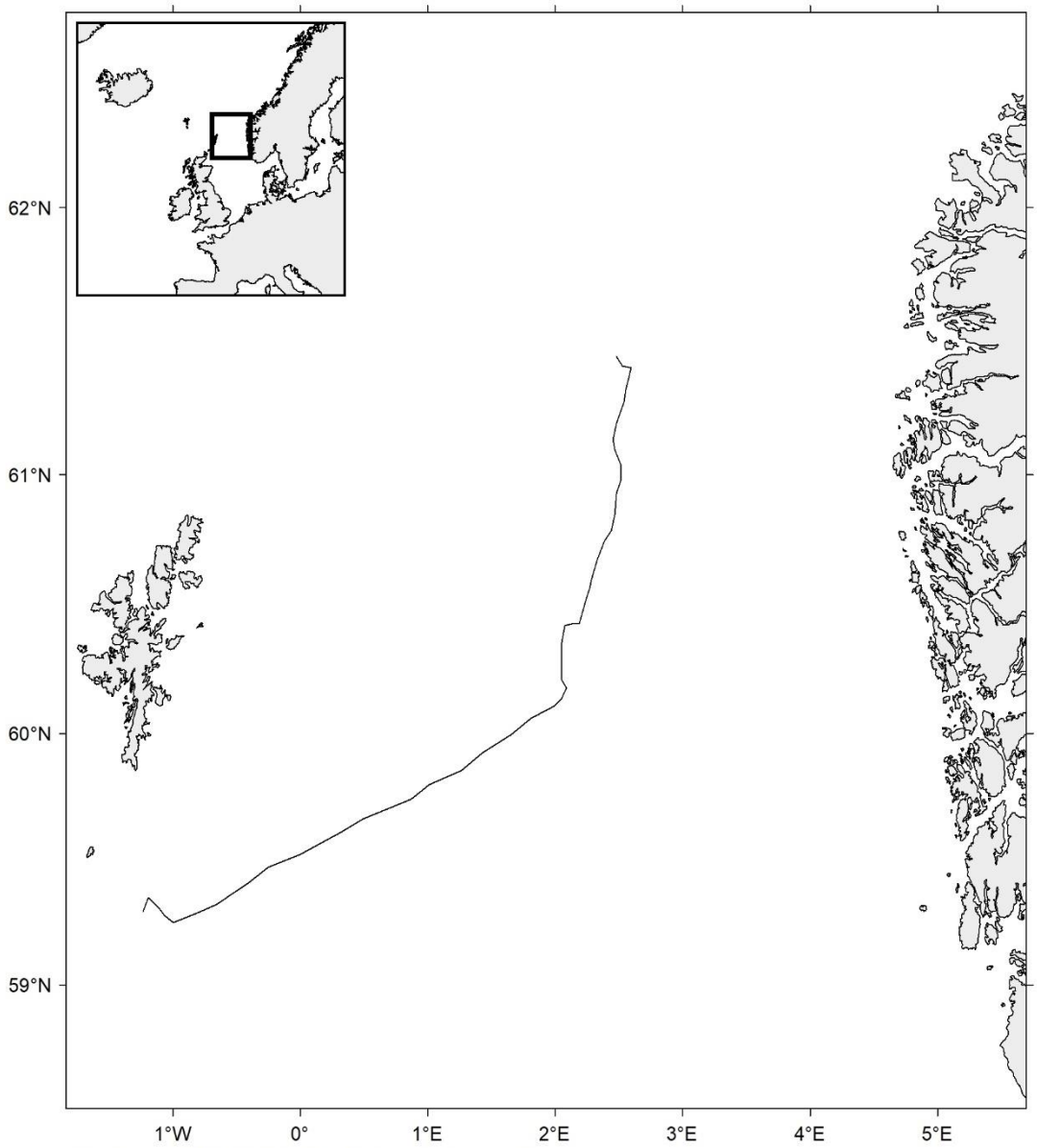
Cruise no 2017855 "J. Ruud"
11–22 September 2017

● Trap stations



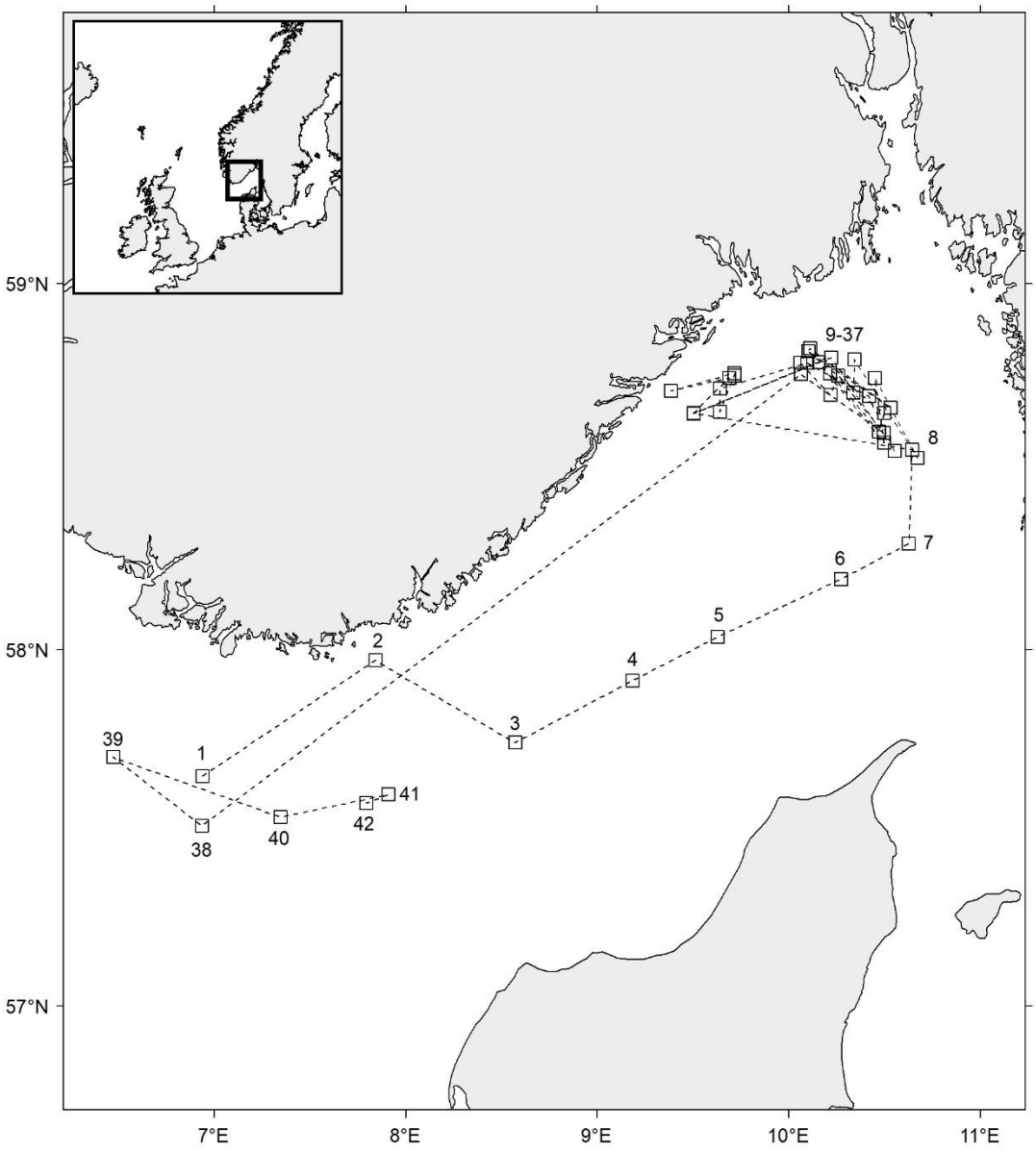
Cruise no 2017827 "Fiskebas"
9-18 October 2017

● CDT/oxygen, behavioural observations and individual weights for subsample of catch.



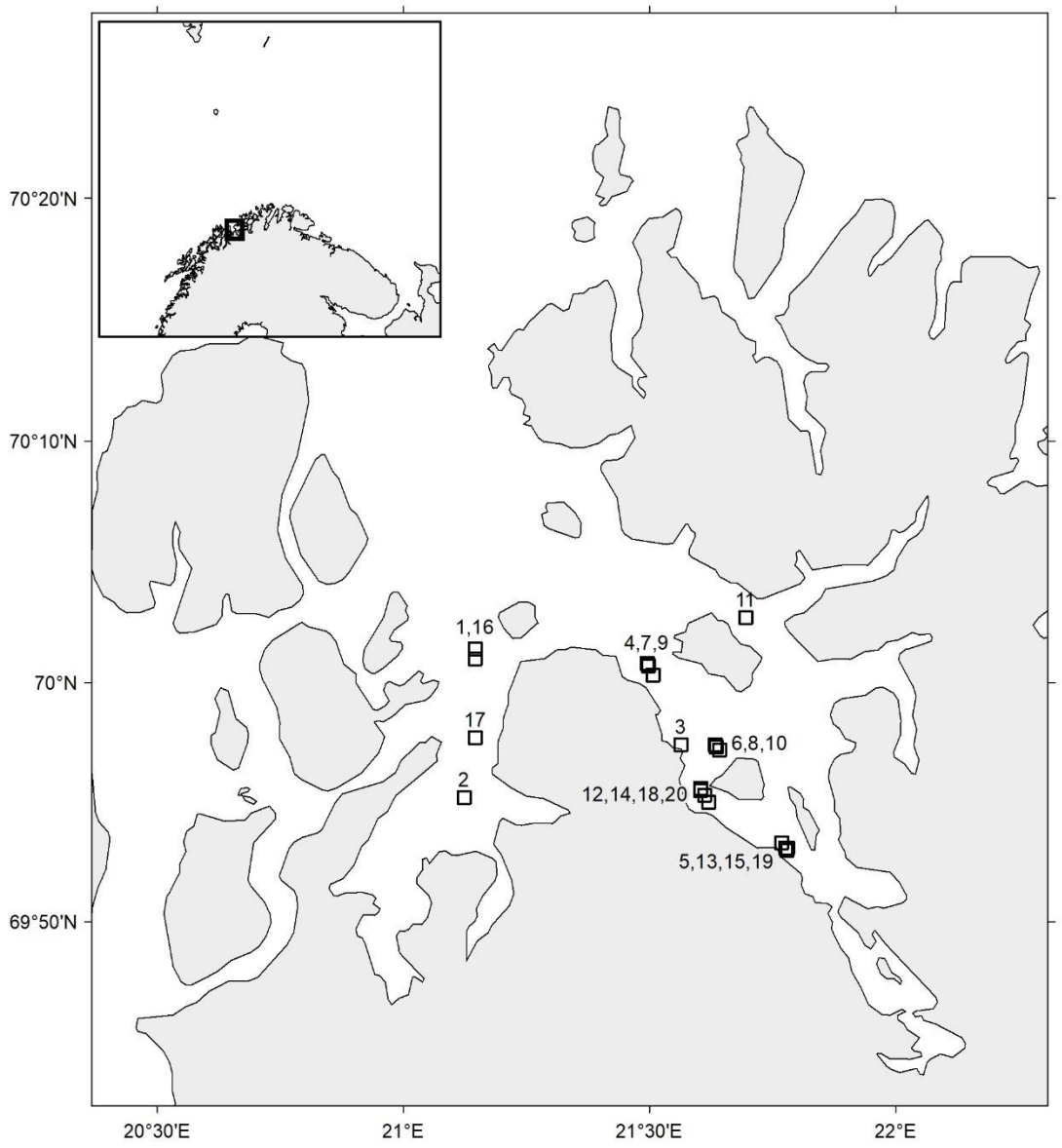
Cruise no 2017831 "Asbjørn Selsbane"
15–19 October 2017

—— Cruise line



Cruise no 2017829 "Tempo"
5 November–3 December 2017

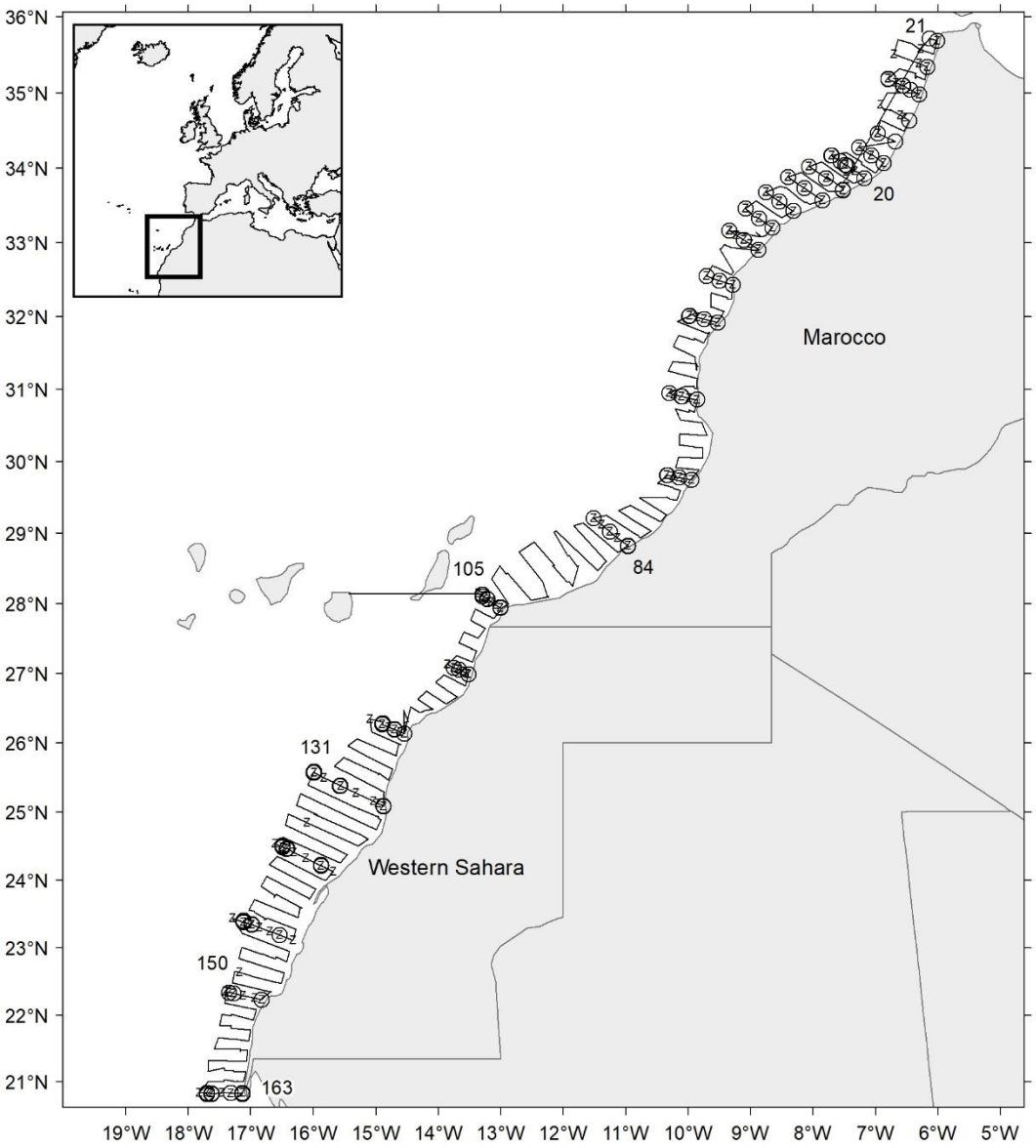
□ Trawl st.no 1-42



Cruise no 2017865 "Katla"
13–26 November 2017

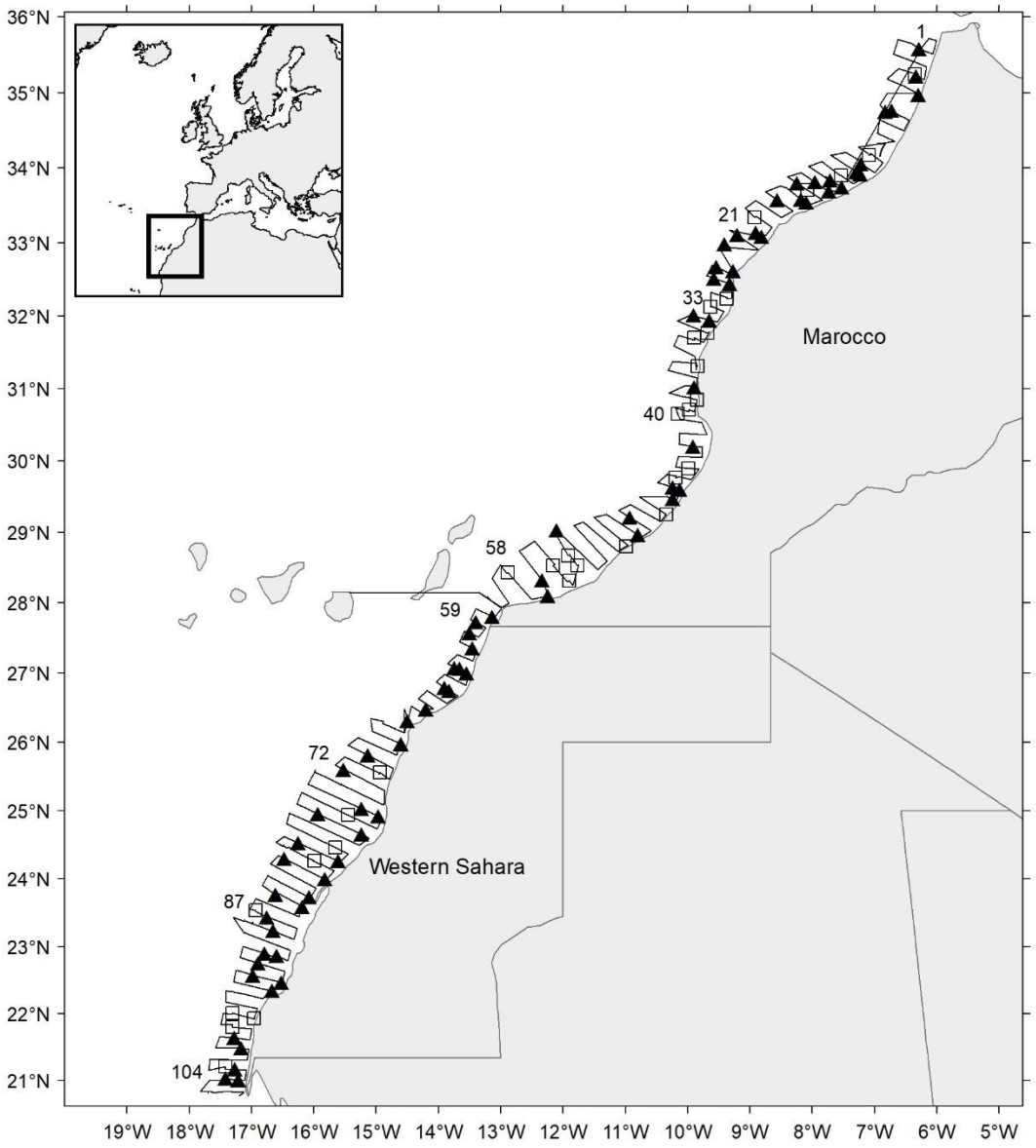
□ Trawl st.no 1-20

4.6 "Dr. Fridtjof Nansen"



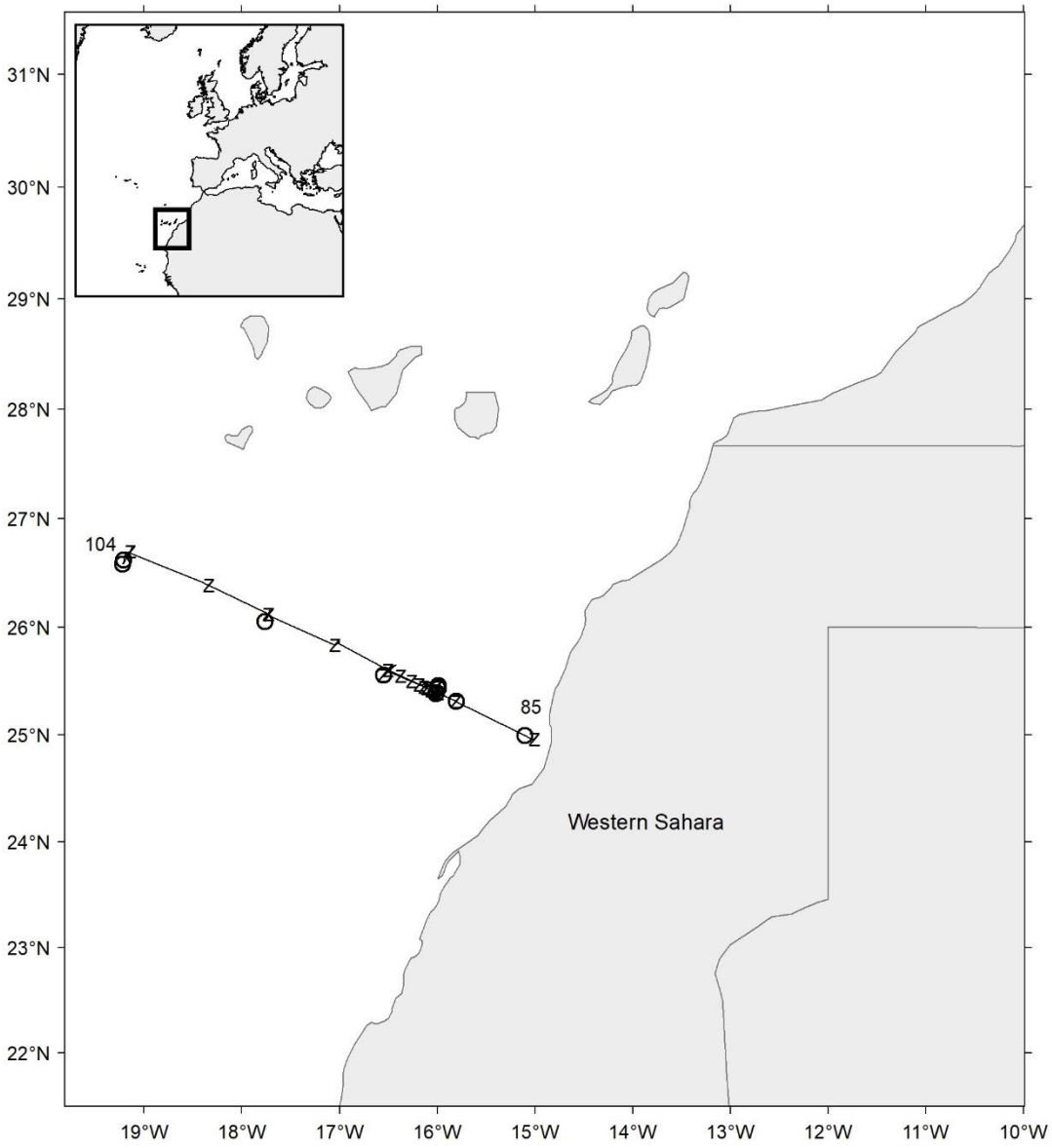
Cruise no 2017401 "Dr. Fridtjof Nansen" (Chart I)
7–26 May and 6–27 June 2017

z CTD st. 20-84 and 105-163
○ Plankton stations (several gears)



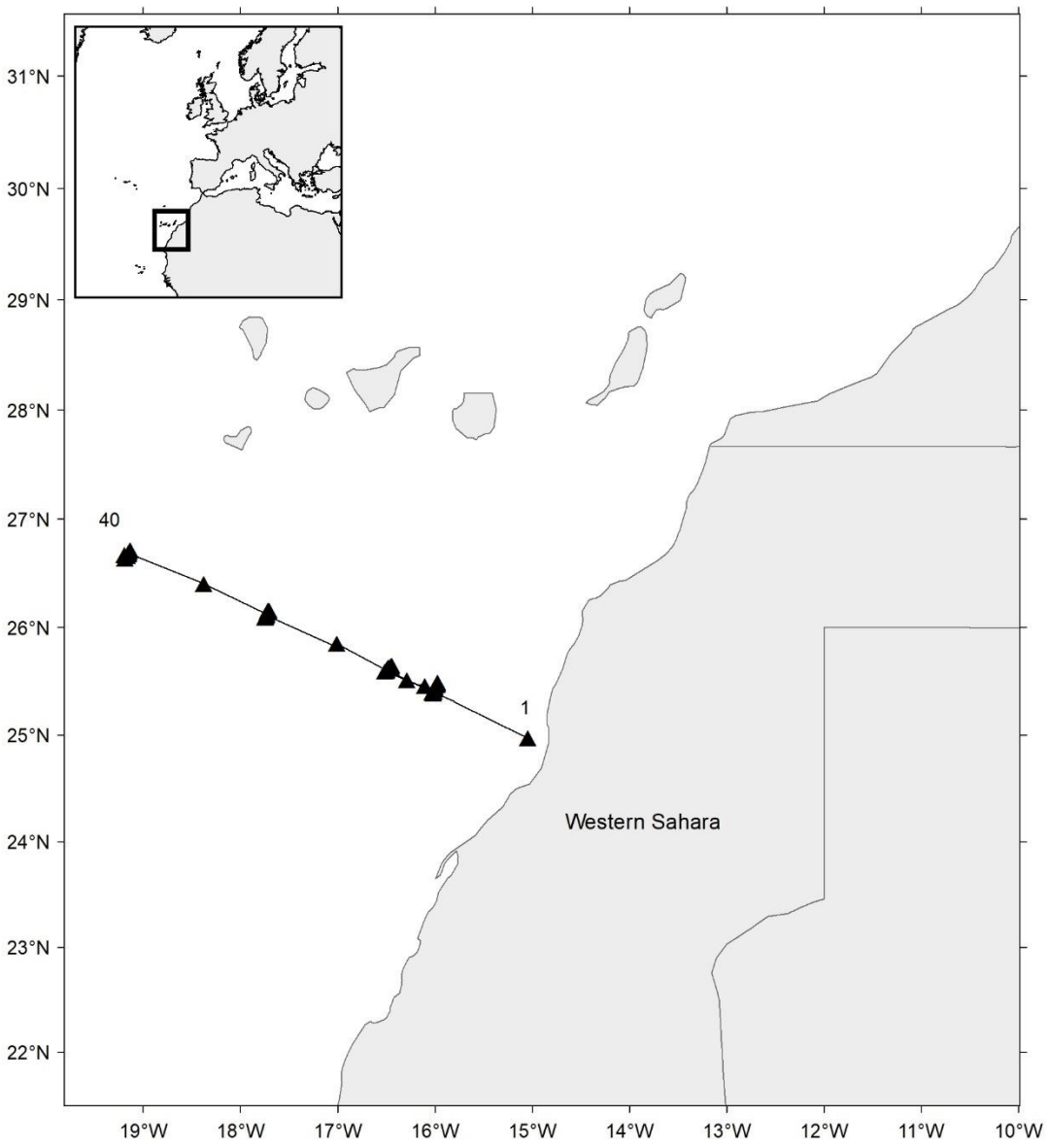
Cruise no 2017401 "Dr. Fridtjof Nansen" (Chart 2)
7–26 May and 6–27 June 2017

Trawl st.no 1-104
▲ Pelagic trawl
□ Bottom trawl



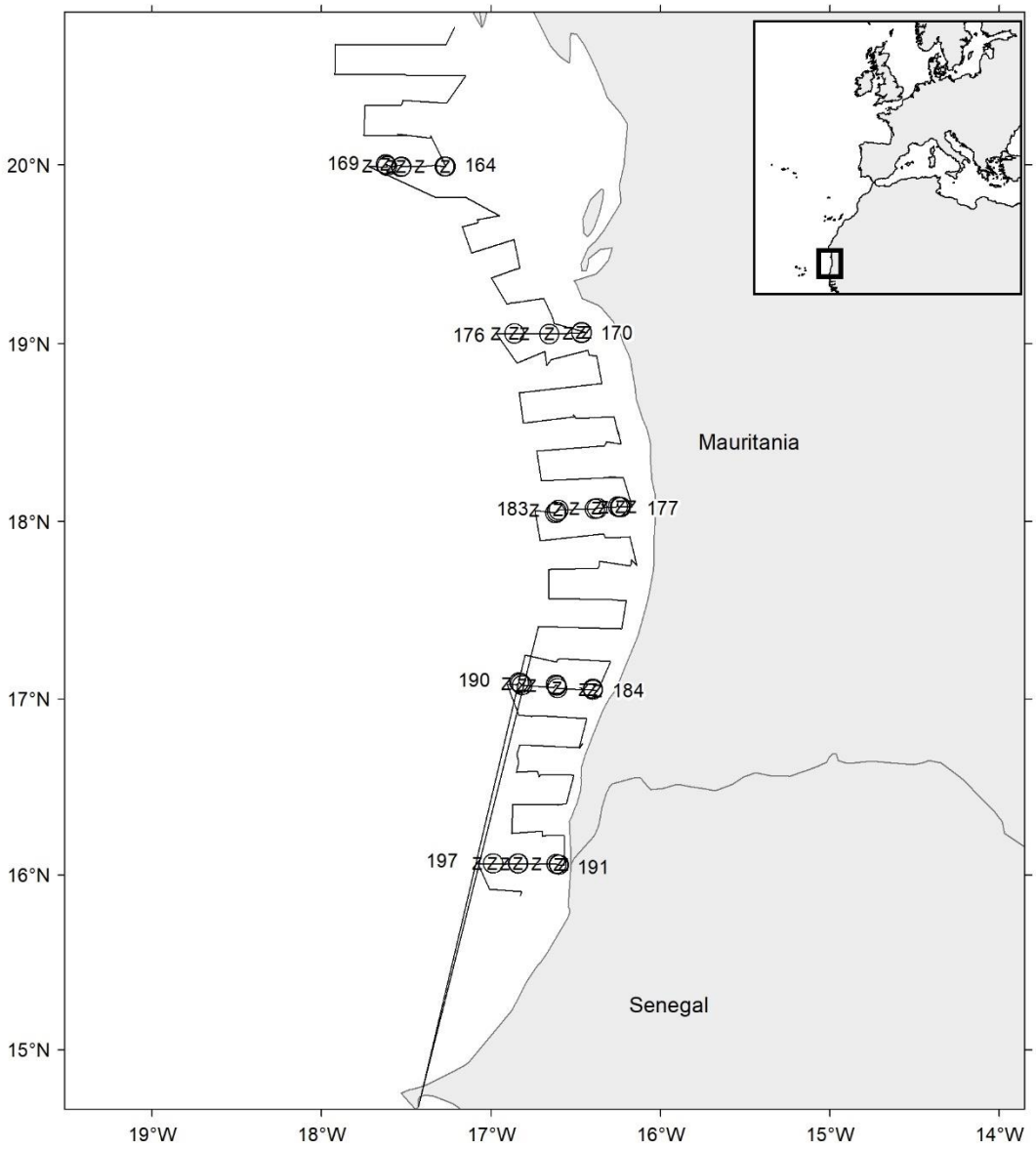
Cruise no 2017402 "Dr. Fridtjof Nansen" (Chart 1)
27 May–5 June 2017

z CTD st.no 85-104
○ Plankton st.



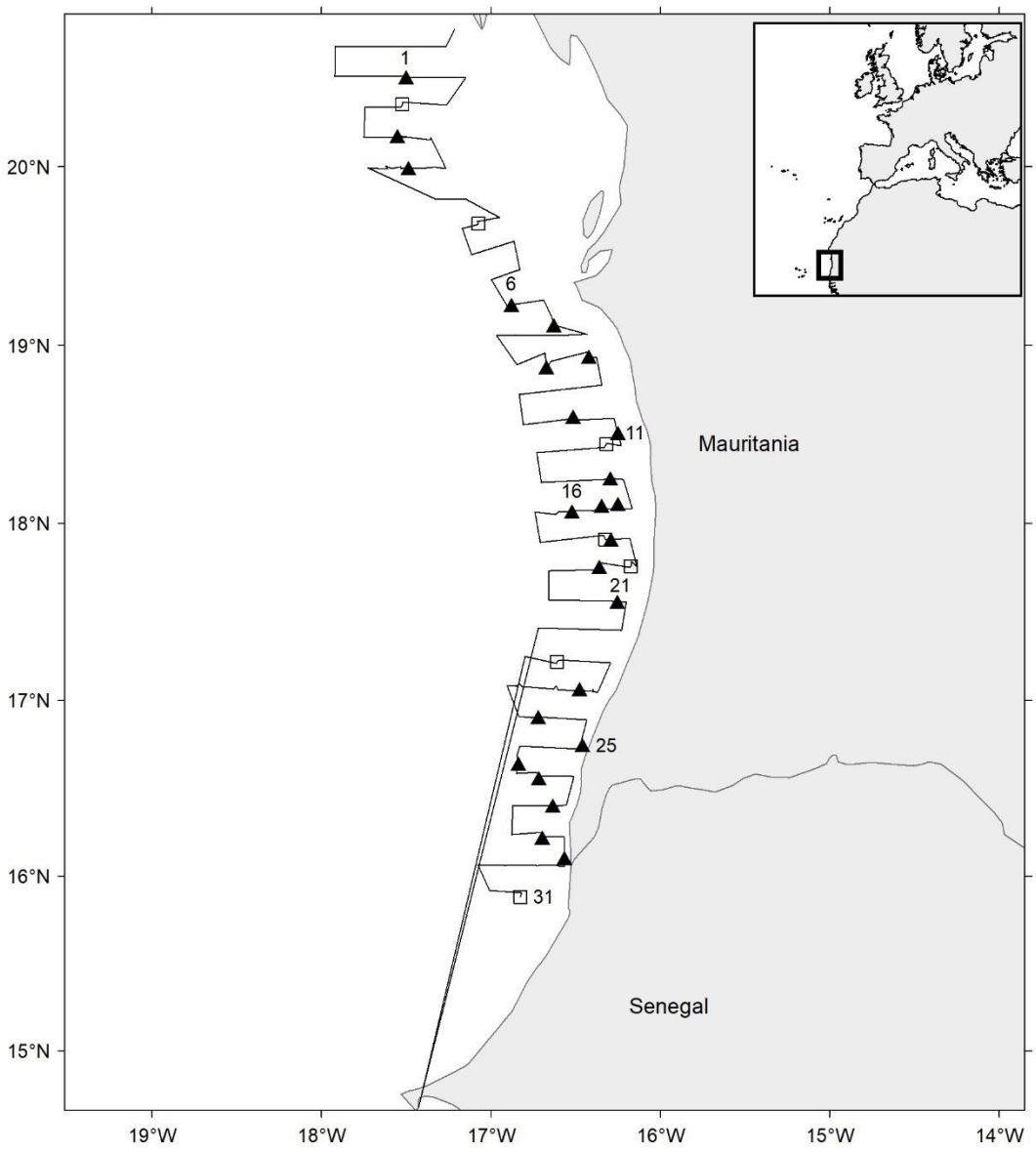
Cruise no 2017402 "Dr. Fridtjof Nansen" (Chart 2)
27 May–5 June 2017

▲ Pelagic trawl st.no 1-40



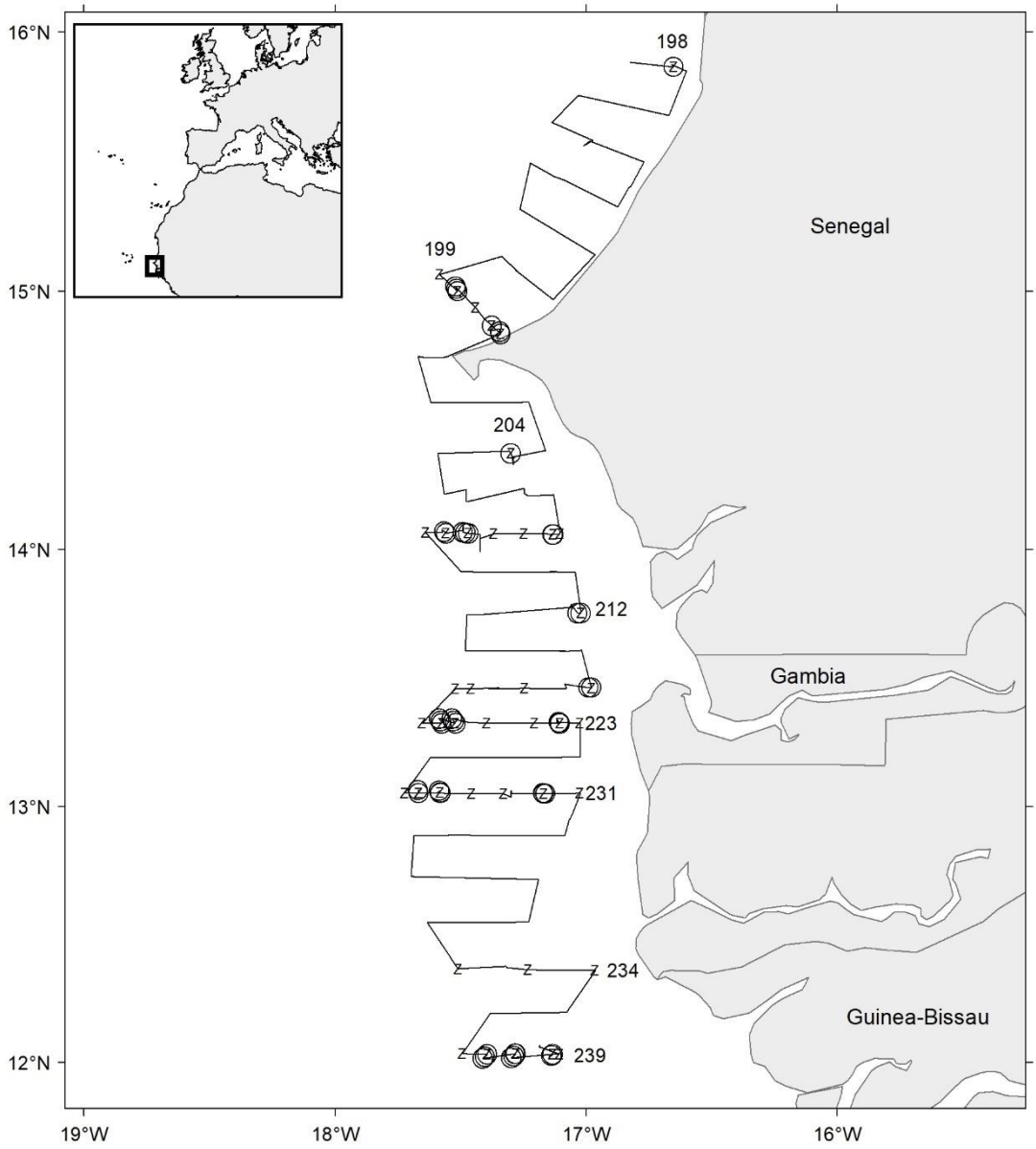
Cruise no 2017403 "Dr. Fridtjof Nansen" (Chart 1)
27 June–8 July 2017

z CTD st.no 164-197
○ Plankton st.



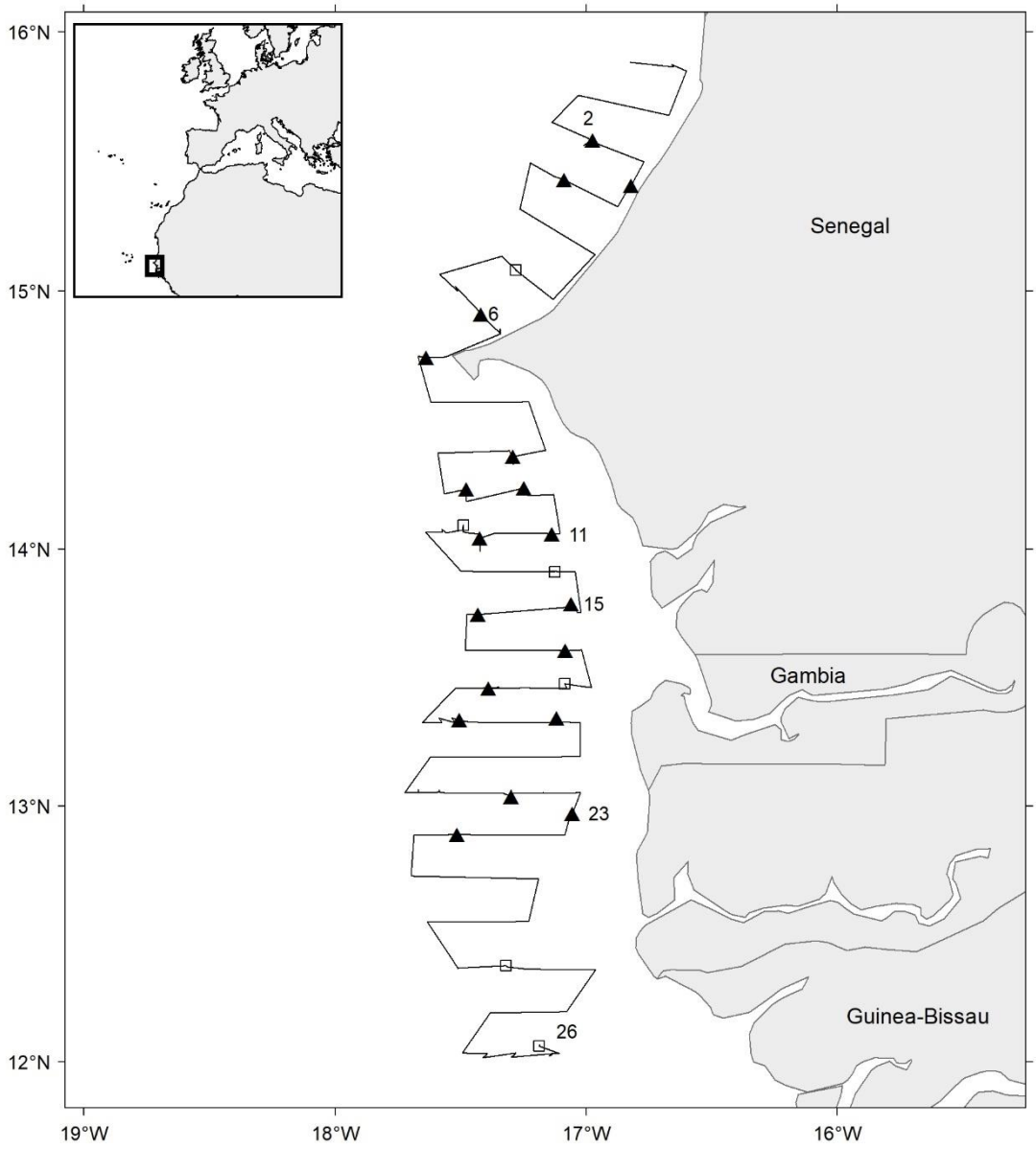
Cruise no 2017403 "Dr. Fridtjof Nansen" (Chart 2)
27 June–8 July 2017

Trawl st.no 1-31
▲ Pelagic trawl
☐ Bottom trawl



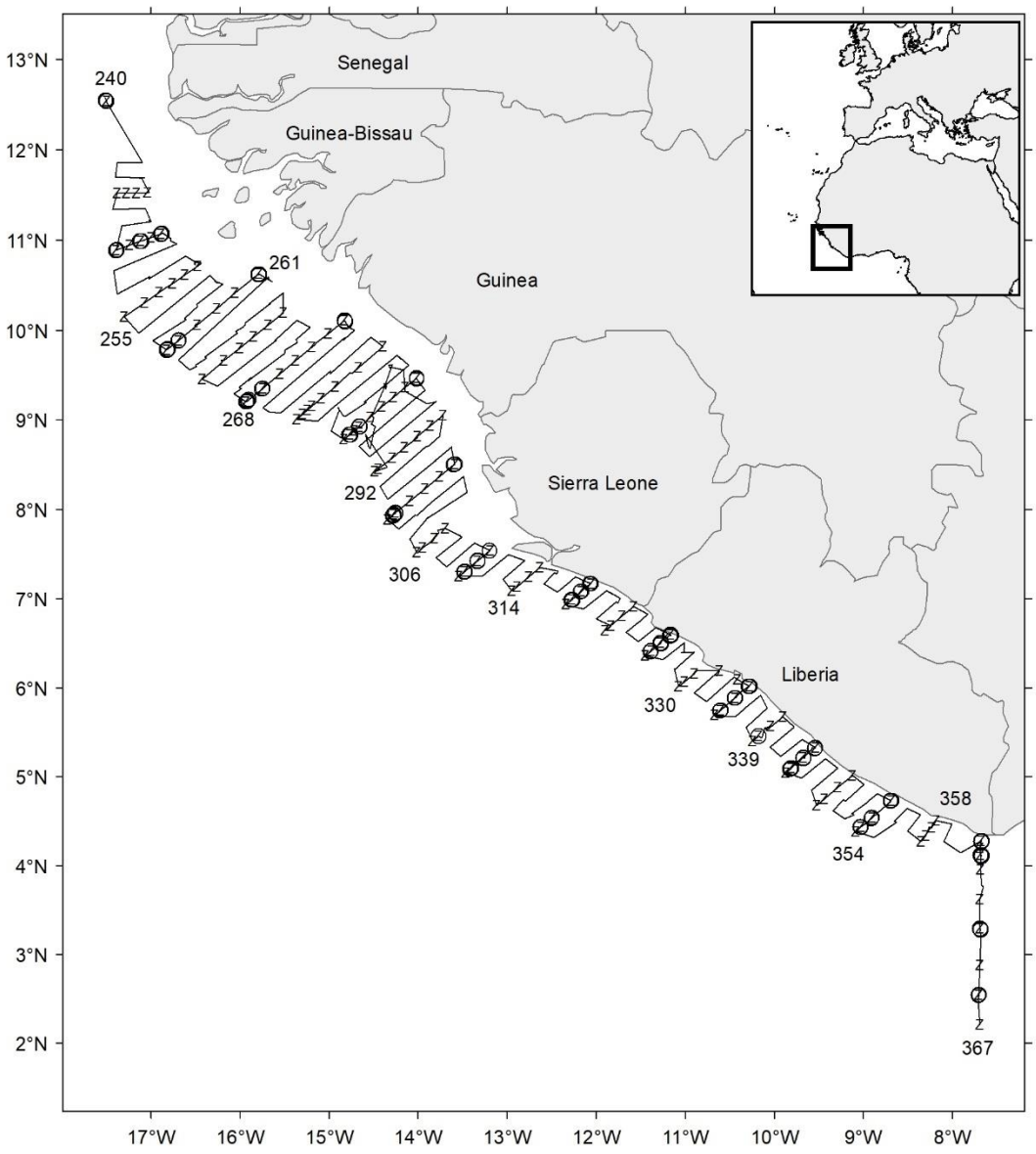
Cruise no 2017404 "Dr. Fridtjof Nansen" (Chart 1)
9–18 July 2017

z CTD st.no 198-239
○ Plankton st.



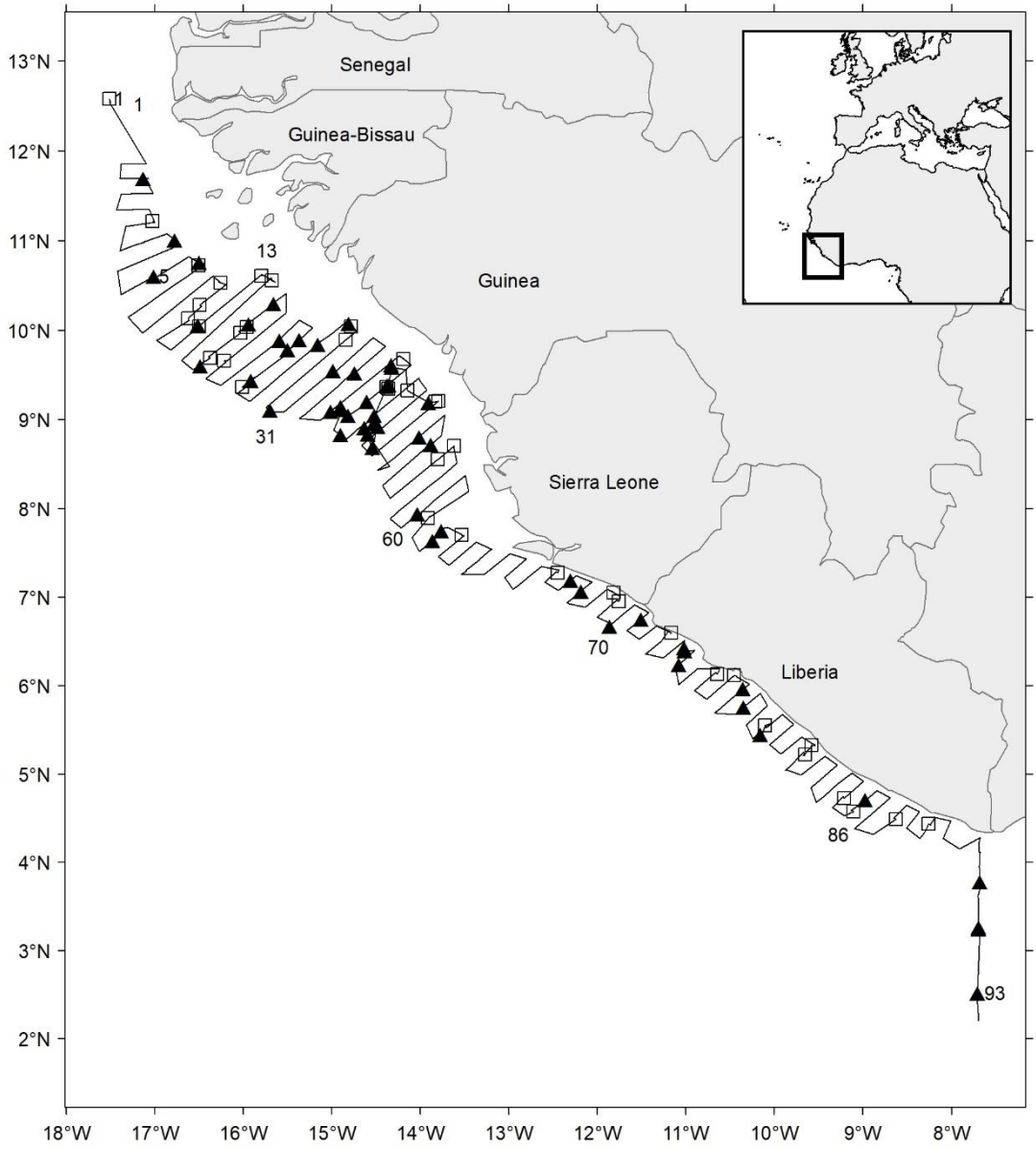
Cruise no 2017404 "Dr. Fridtjof Nansen" (Chart 2)
9–18 July 2017

Trawl st.no st.no 2-26
▲ Pelagic tr.
□ Bottom tr.



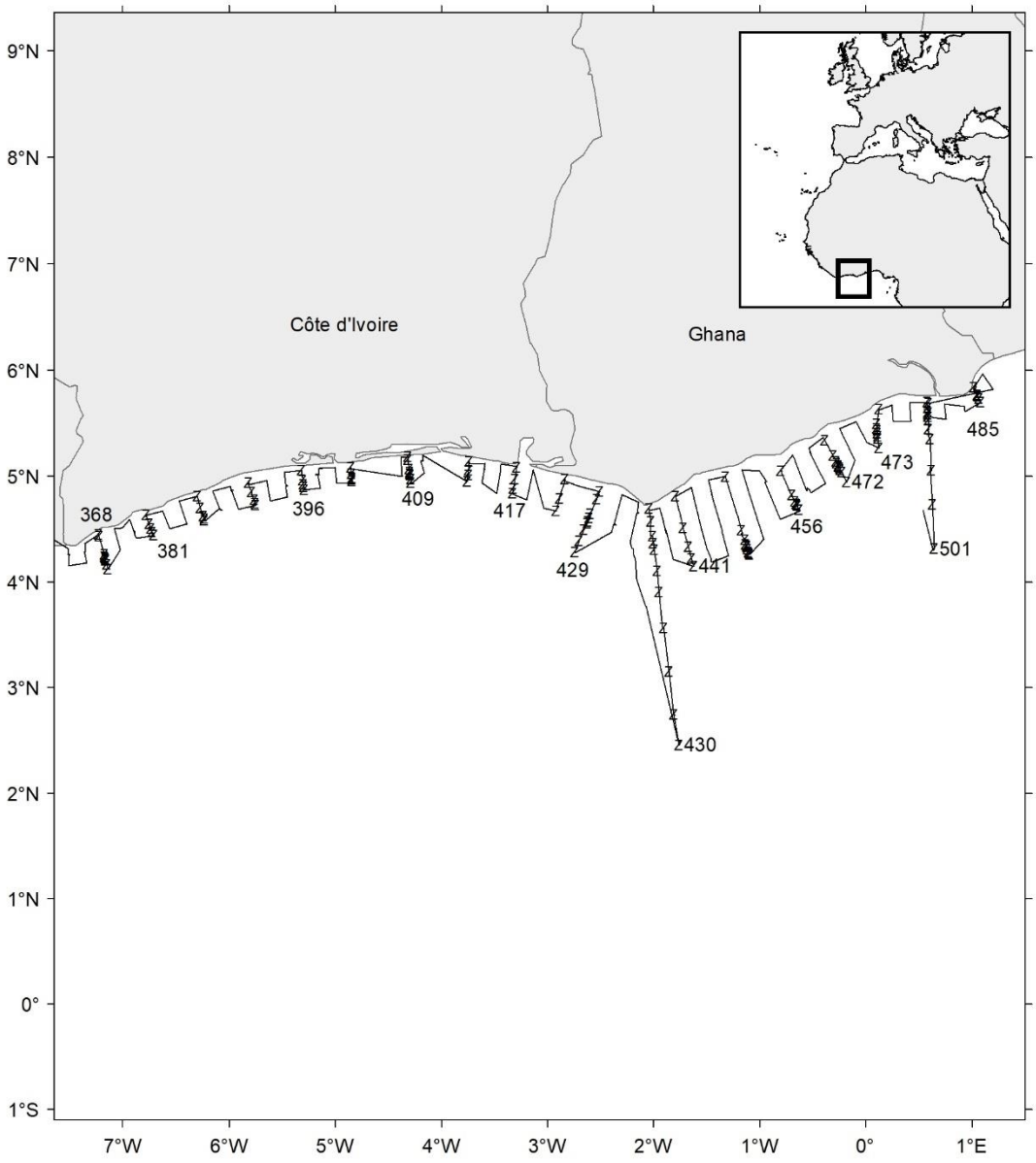
Cruise no 2017405 "Dr. Fridtjof Nansen" (Chart 1)
21 July–20 August 2017

z CTD st.no 240-367
○ Plankton st.



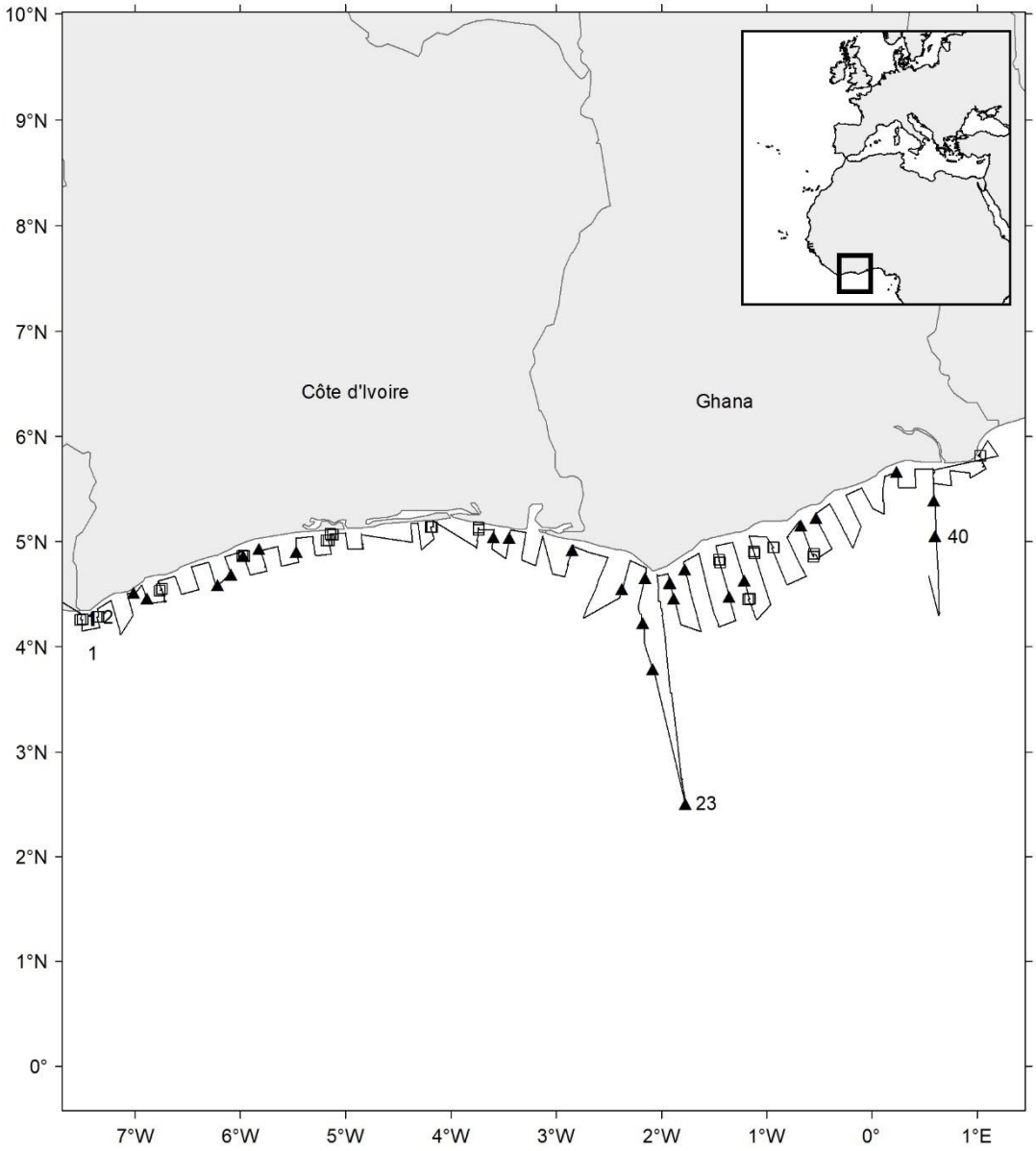
Cruise no 2017405 "Dr. Fridtjof Nansen" (Chart 2)
21 July–20 August 2017

Trawl st.no 1-93
▲ Pelagic tr.
□ Bottom tr.



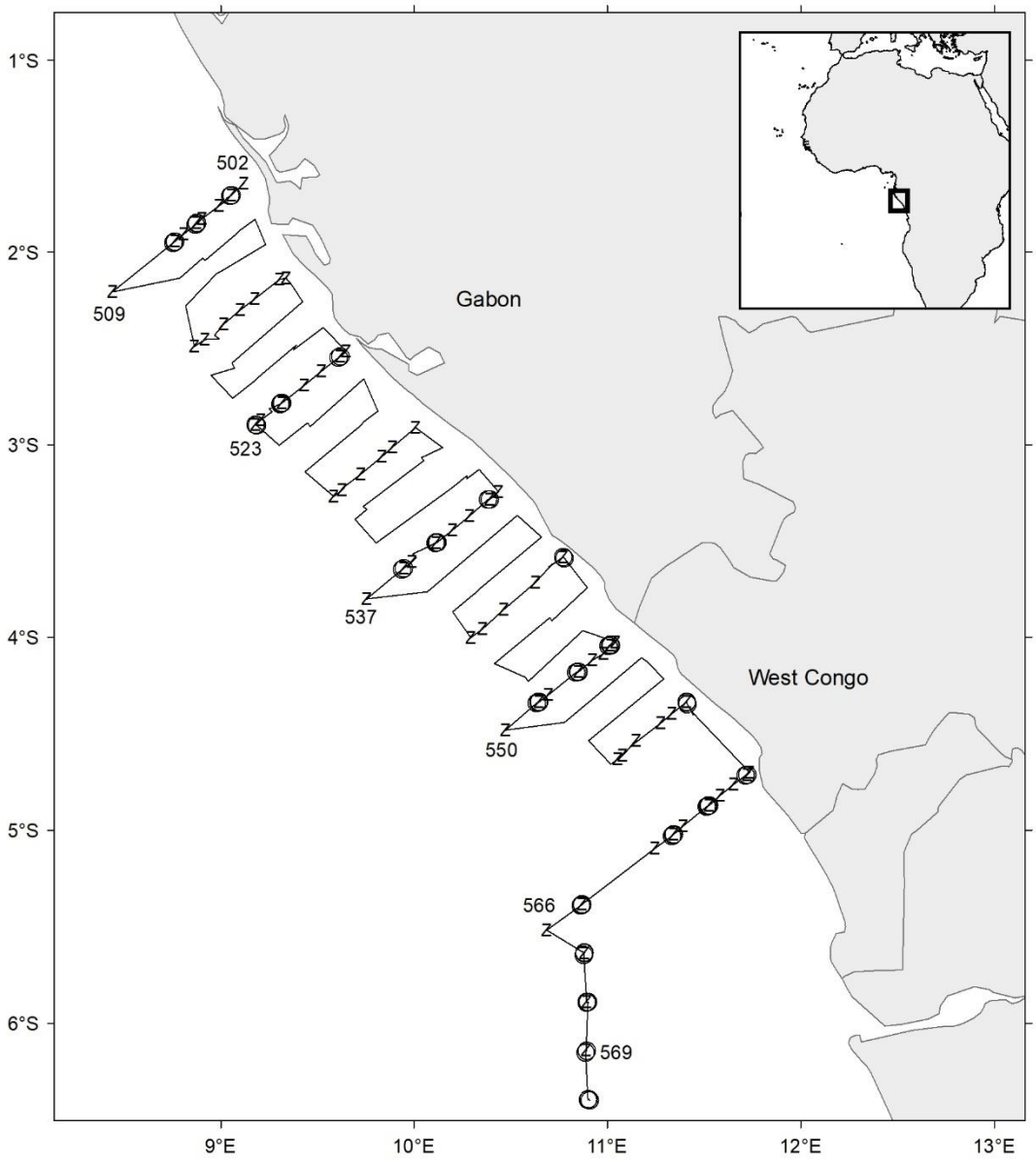
Cruise no 2017406 "Dr. Fridtjof Nansen" (Chart 1)
24 August–12 September 2017

z CTD st.no 368-501
○ Plankton st.



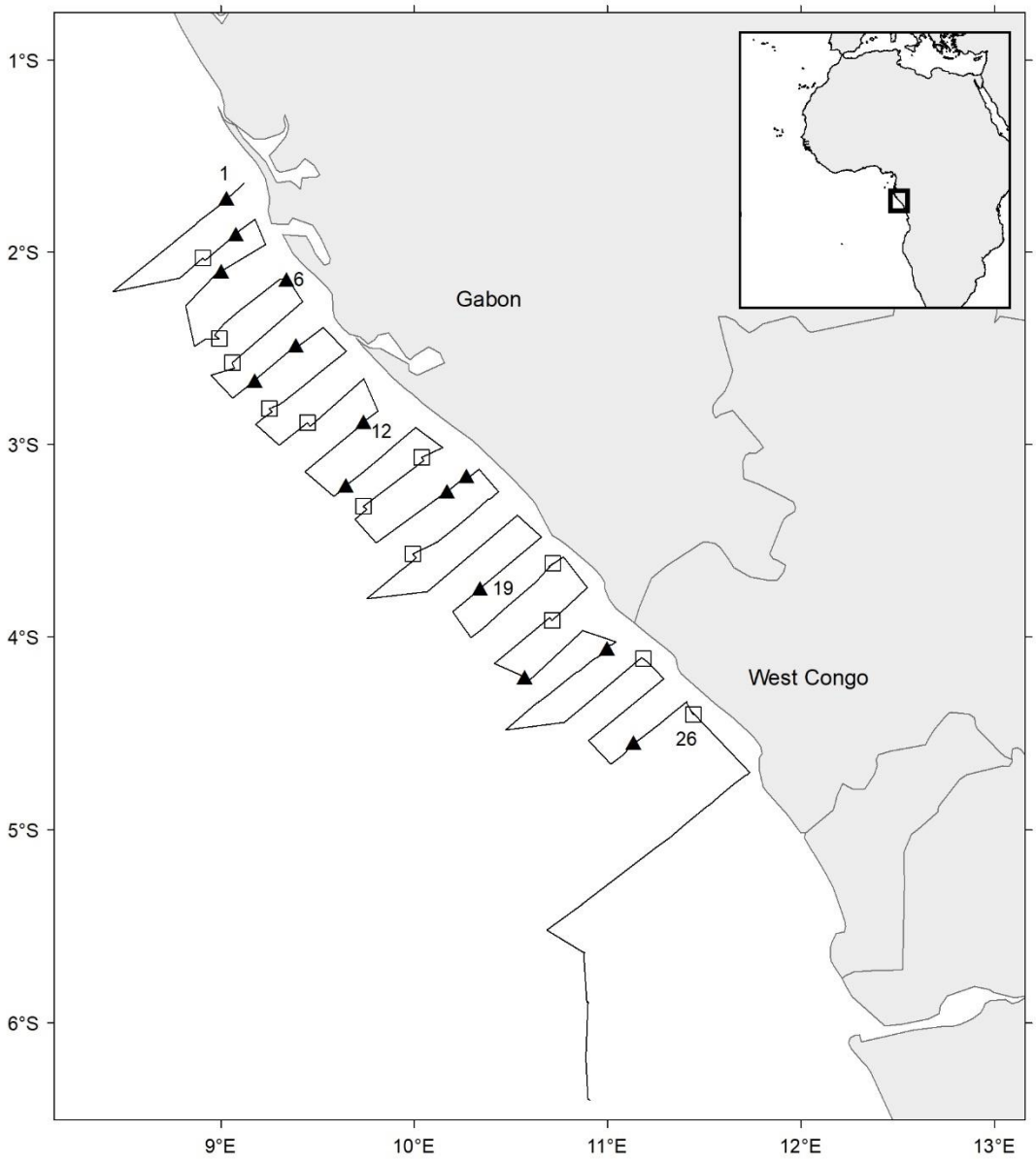
Cruise no 2017406 "Dr. Fridtjof Nansen" (Chart 2)
24 August–12 September 2017

Trawl st.no 1-40
▲ Pelagic tr.
□ Bottom tr.



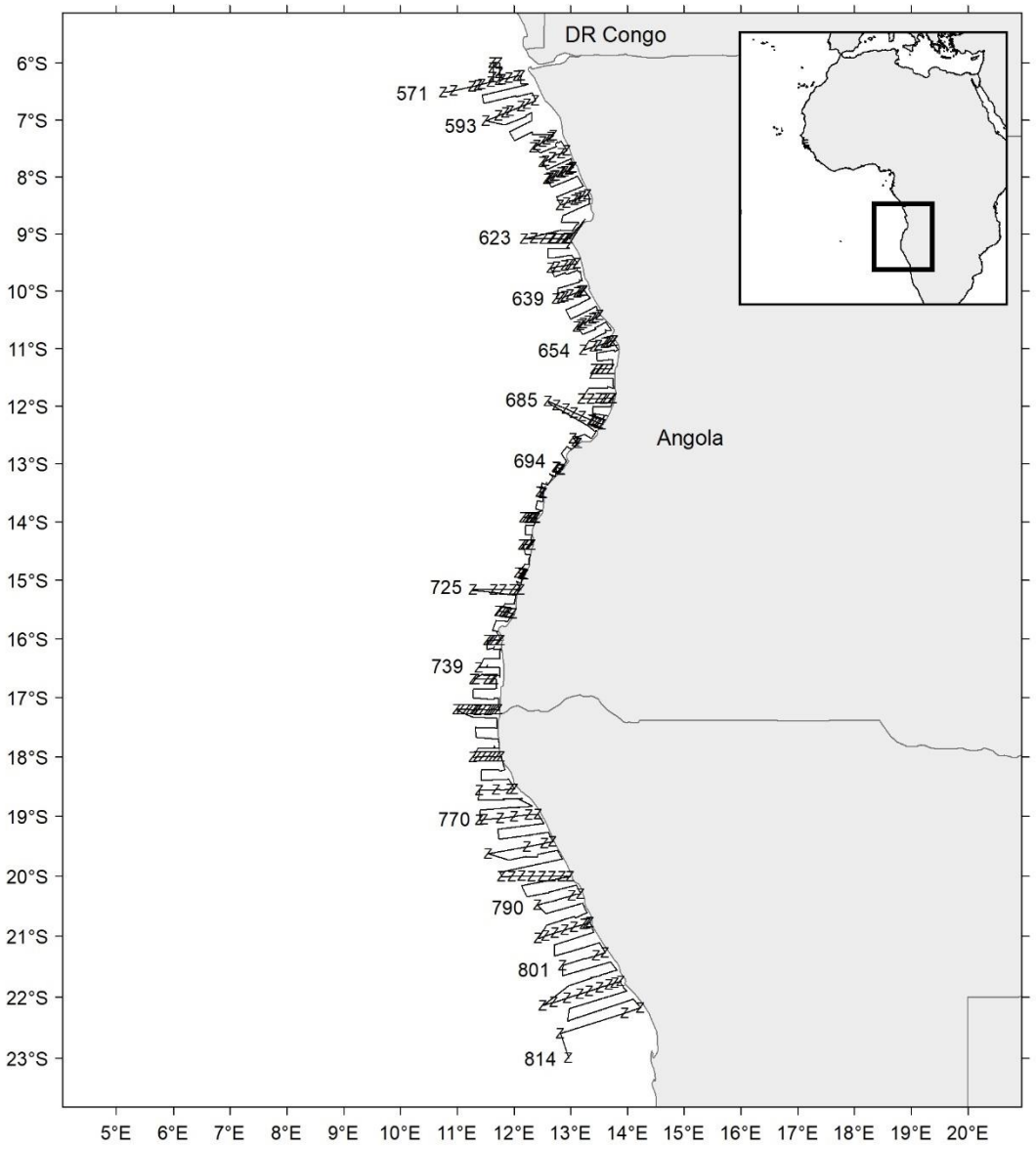
Cruise no 2017407 "Dr. Fridtjof Nansen" (Chart 1)
21 September–1 October 2017

z CTD st.no 502-569
○ Plankton st.



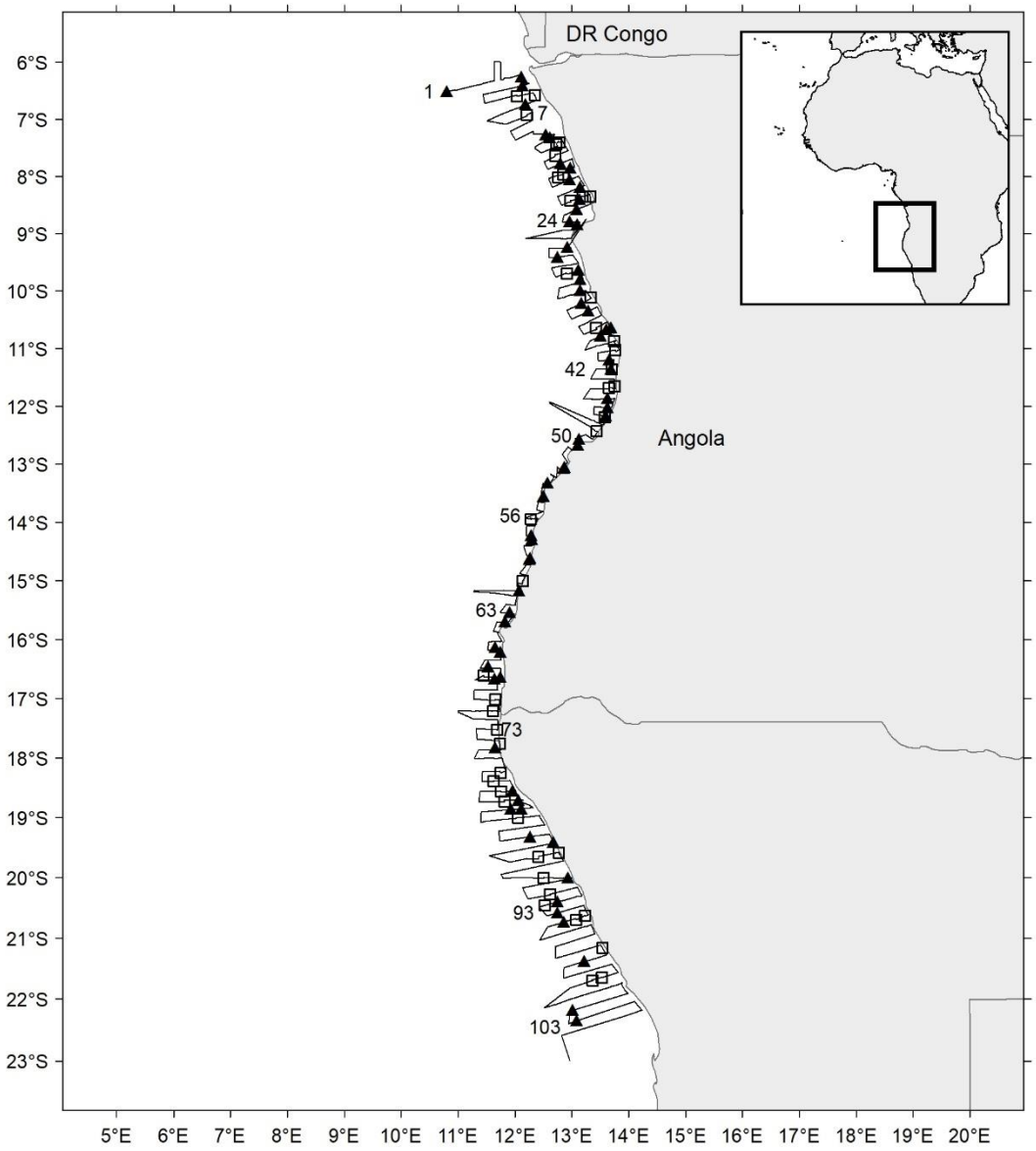
Cruise no 2017407 "Dr. Fridtjof Nansen" (Chart 2)
21 September–1 October 2017

Trawl st.no 1-26
▲ Pelagic tr.
□ Bottom tr.



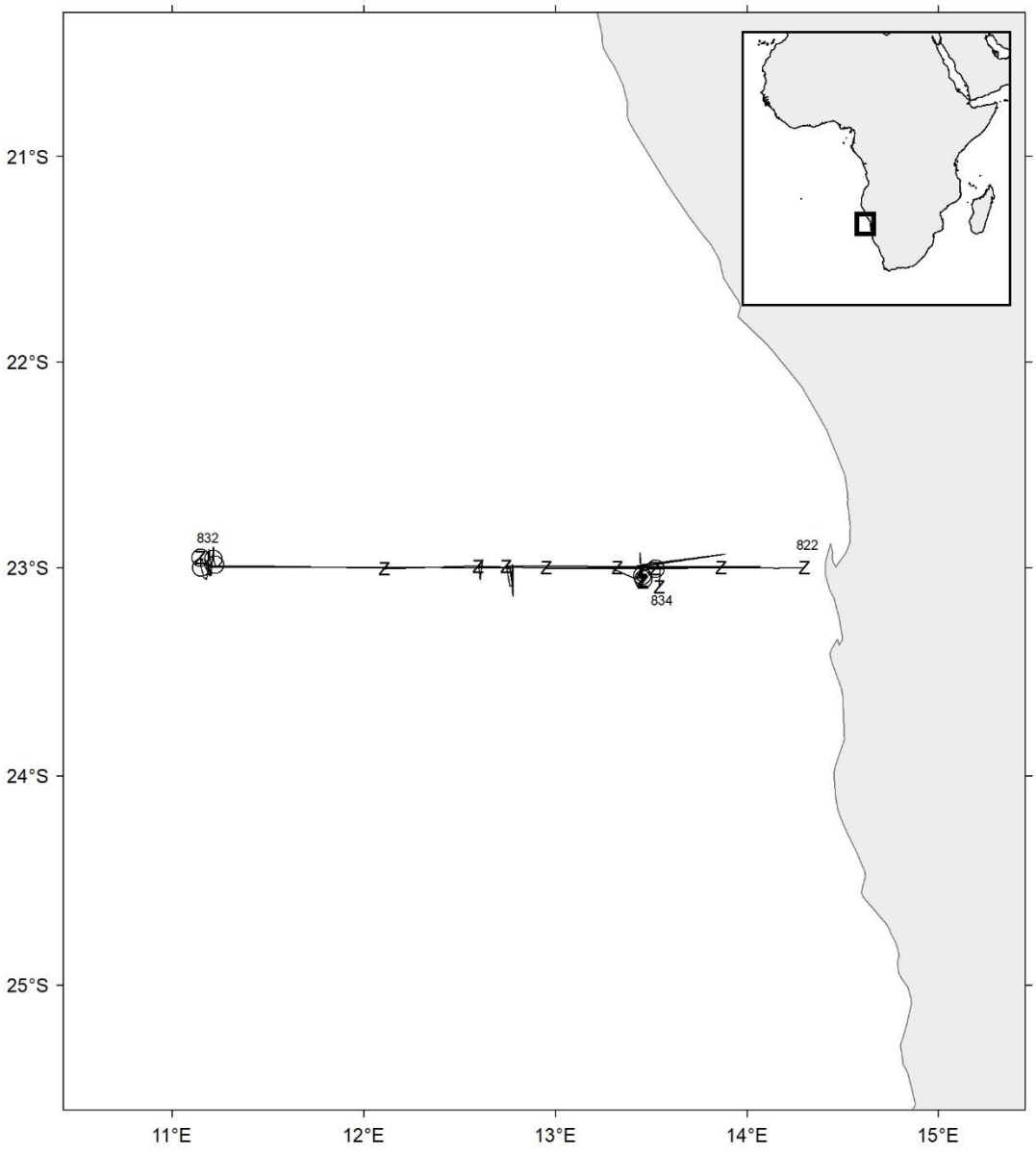
Cruise no 2017408 "Dr. Fridtjof Nansen" (Chart 1)
14 October–12 November 2017

z CTD st.no 571–814



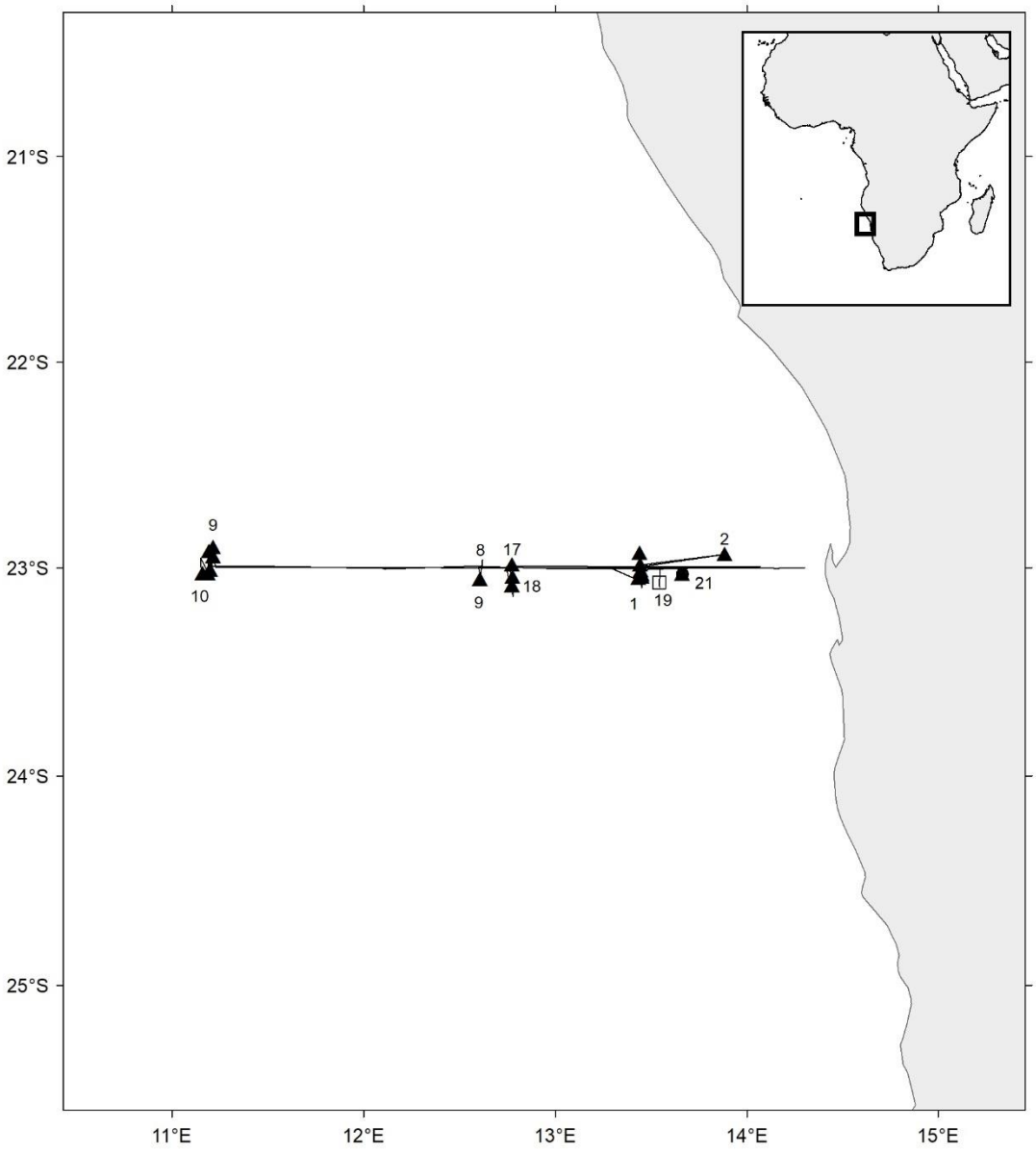
Cruise no 2017408 "Dr. Fridtjof Nansen" (Chart 2)
14 October–12 November 2017

Trawl st.no 1-103
▲ Pelagic tr.
□ Bottom tr.



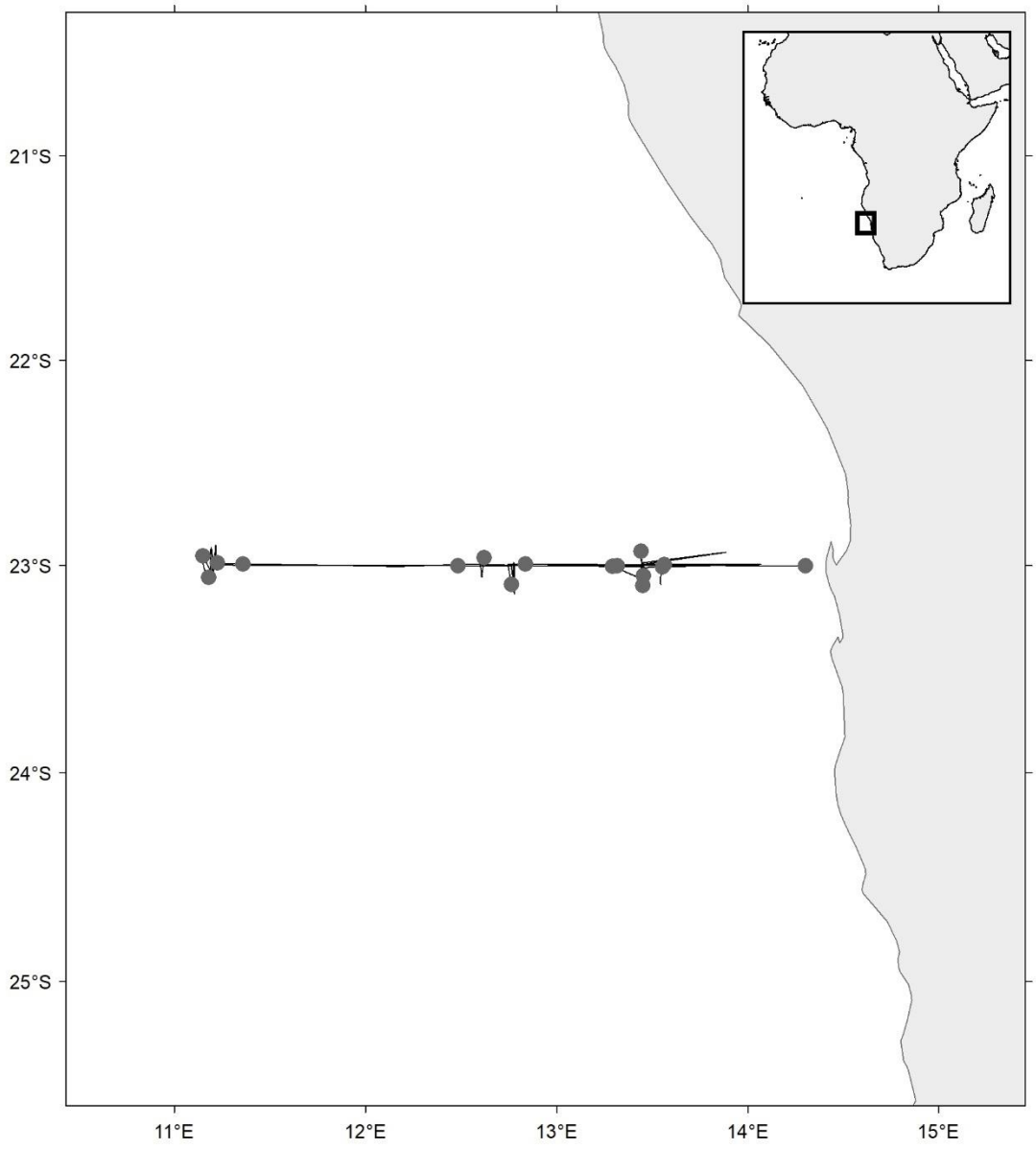
Cruise no 2017409 Part 1 "Dr. Fridtjof Nansen" (Chart 1)
16–22 November 2017

z CTD st.no 822-834
○ Plankton st.



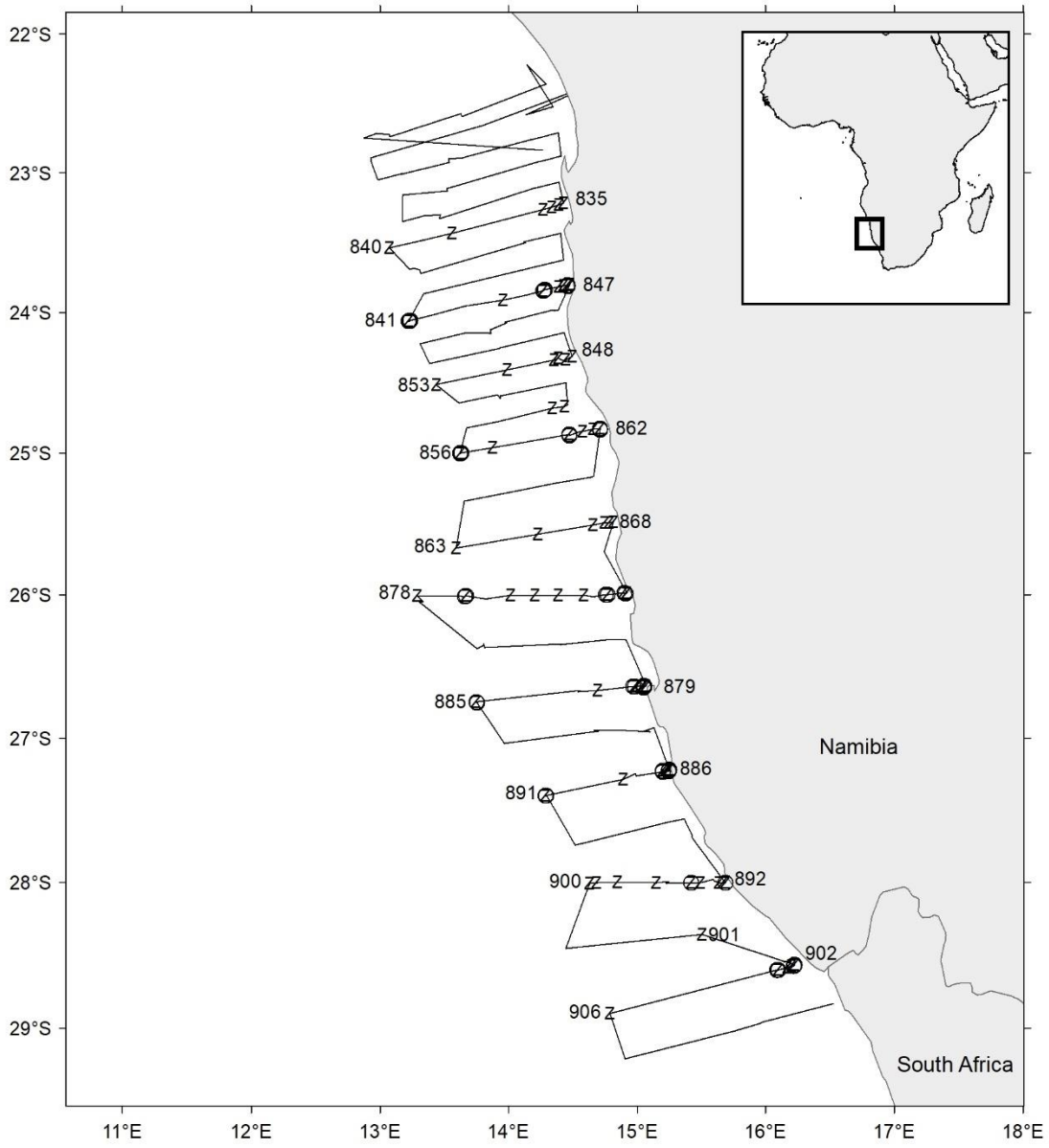
Cruise no 2017409 Part 1 "Dr. Fridtjof Nansen" (Chart 2)
16–22 November 2017

Trawl st.no 1-21
▲ Pelagic tr.
□ Bottom tr.



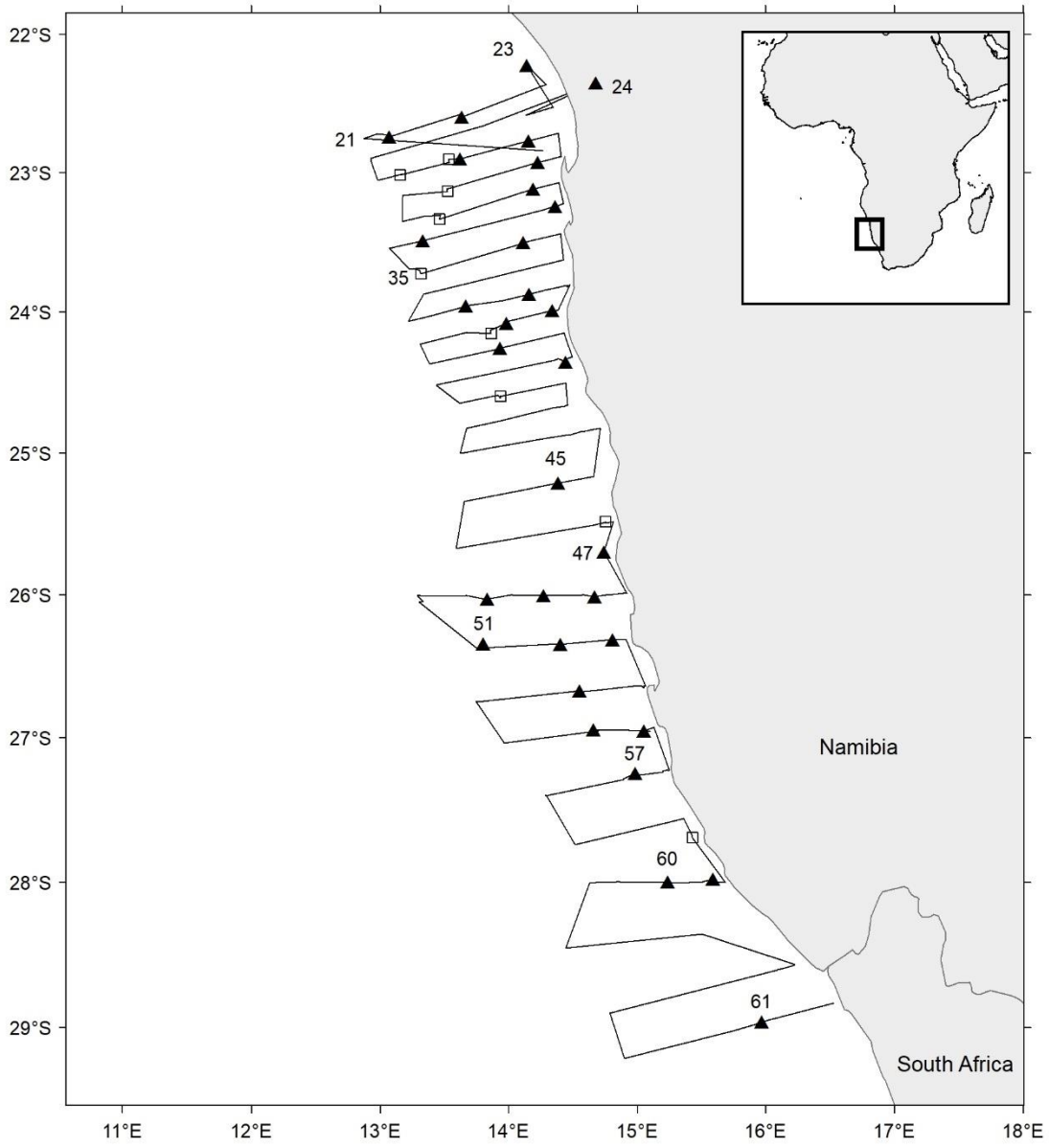
Cruise no 2017409 Part 1 "Dr. Fridtjof Nansen" (Chart 3)
16–22 November 2017

● Weather balloon release



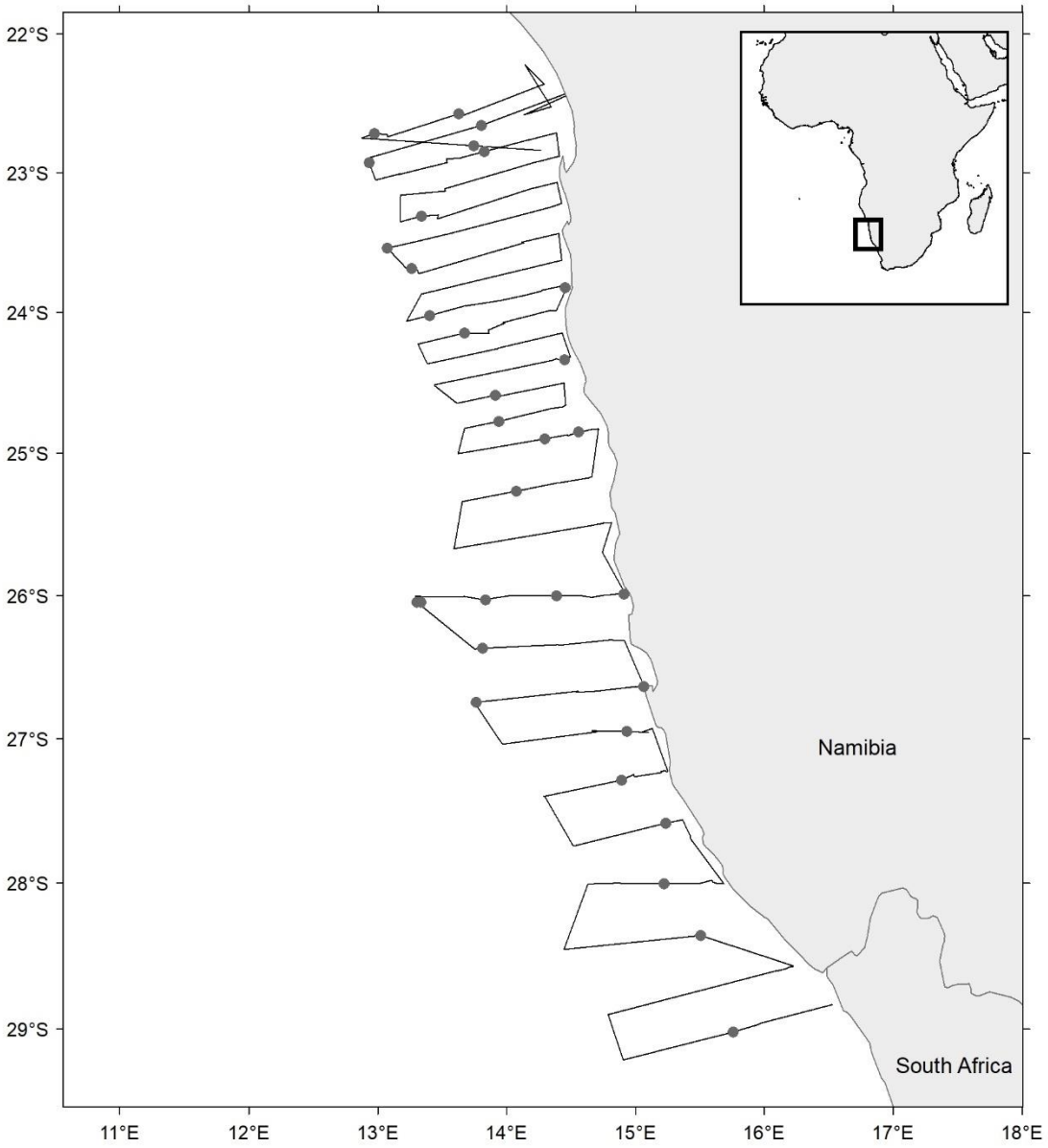
Cruise no 2017409 Part 2 "Dr. Fridtjof Nansen" (Chart 1)
22 November–12 December 2017

z CTD st.no 835-906
○ Plankton st.



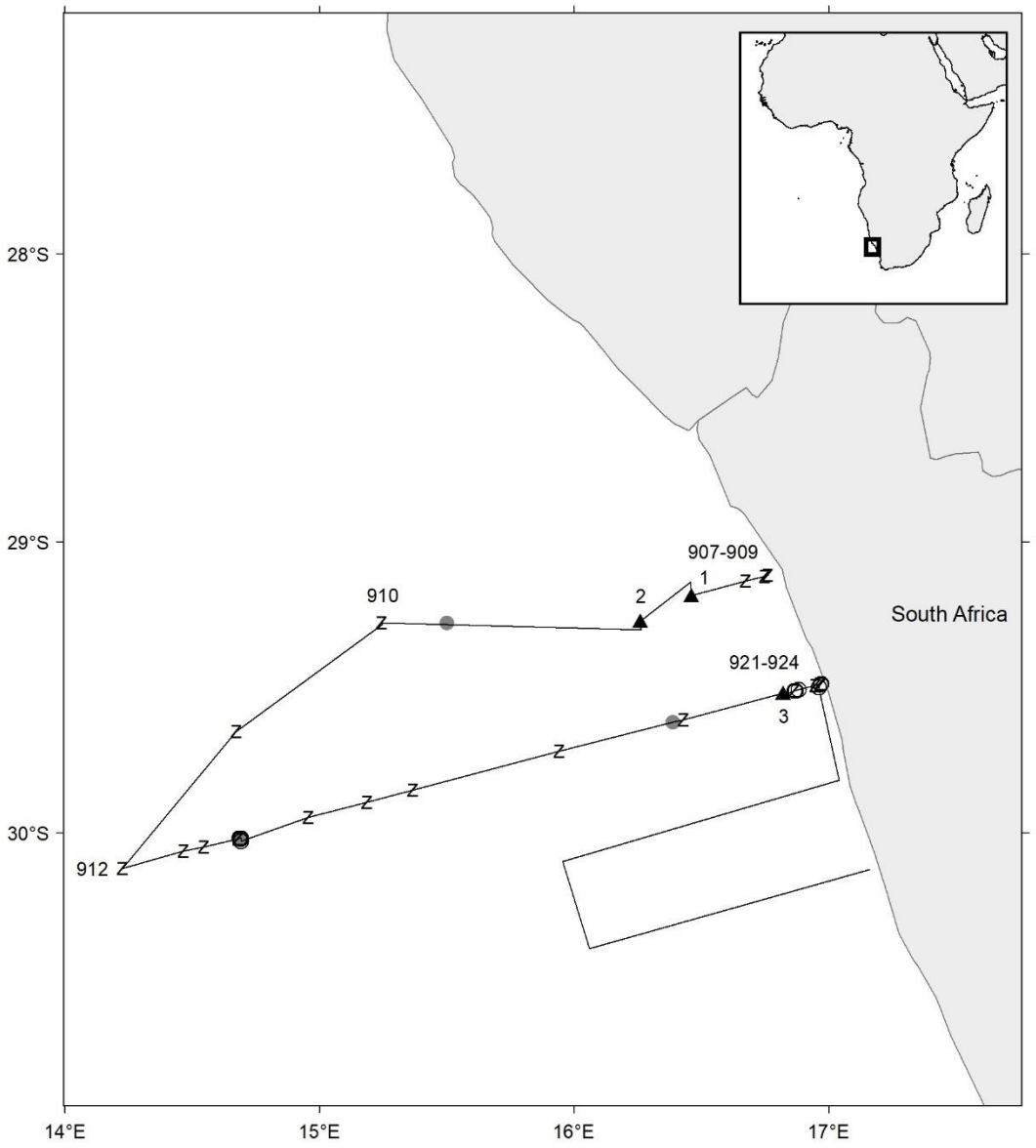
Cruise no 2017409 Part 2 "Dr. Fridtjof Nansen" (Chart 2)
22 November–12 December 2017

Trawl st.no 21-61
▲ Pelagic tr.
□ Bottom tr.



Cruise no 2017409 Part 2 "Dr. Fridtjof Nansen" (Chart 1)
22 November–12 December 2017

● Weather balloon release



Cruise no 2017410 "Dr. Fridtjof Nansen"
12–17 December 2017

z CTD st.no 907-924
○ Plankton st. (several gears)
▲ Pelagic trawl st.no 1-3
● Weather balloon release

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

HAVFORSKNINGSINSTITUTTET
Institute of Marine Research
Nordnesgaten 50 – Postboks 1870 Nordnes
NO-5817 Bergen
Tlf.: +47 55 23 85 00
E-post: post@hi.no

www.hi.no