Oversikt over tokt og stasjoner tatt i 2016
Report on cruises and data stations 2016

Karen E. Gjertsen, NMD
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Report on cruises and data stations 2016

By
Karen E. Gjertsen

Photo: Matteo Bernasconi: Mackerel in the trawl!

Bergen, 15.2.2017
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Summary (English): The report gives an overview of cruises in 2016, by the Institute of Marine Research and University of Bergen, on board research vessels: G.O. Sars, Johan Hjort, Håkon Mosby, K. Bonnevie and G.M. Dannevig and some 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/bildearkiv. Charts in Mercator projection.


Subject heading (English): 1. Cruise track chart 2. Station chart 3. Cruise metadata
### 1 Cruises 2016

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

<table>
<thead>
<tr>
<th>CRUISE NO</th>
<th>PERIOD OF CRUISES</th>
<th>PURPOSE</th>
<th>AREA</th>
<th>CTD ST</th>
<th>TRAWL ST</th>
<th>PAGE OF CHART</th>
<th>COMMENT</th>
</tr>
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<tbody>
<tr>
<td>201601</td>
<td>10 Jan – 12 Feb</td>
<td>The survey combines the IBTS Q1 bottom trawl survey and the Utsira W hydrographic section (hydrography, chemistry, plankton, fish eggs and larvae).</td>
<td>North Sea</td>
<td>1-179</td>
<td>1-69</td>
<td>30-32</td>
<td></td>
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<tr>
<td>201602</td>
<td>13 Feb – 15 Feb</td>
<td>The marine geological survey is a training course for students within marine geology and marine geophysics.</td>
<td>Norwegian fjords</td>
<td>180-181</td>
<td>-</td>
<td>-</td>
<td>33</td>
</tr>
<tr>
<td>201604</td>
<td>04 Mar – 10 Mar</td>
<td>Investigate biophysical environment and the spatial and temporal variation in acoustic backscattering near the LovE ocean observatory off Lofoten. Project: LoVe.</td>
<td>Norwegian Sea</td>
<td>195-220</td>
<td>110-120</td>
<td>36-37</td>
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</tr>
<tr>
<td>201605</td>
<td>12 Mar – 08 Apr</td>
<td>Primary objective: to assess the state of commercial deepwater fish stocks, with focus on redfish, Greater argentine and Greenland halibut. Secondary objective: to monitor the state of deepwater ecosystem along the Norwegian slope. In addition, the survey collected benthos at 2000-2500 m depth for bioprospecting.</td>
<td>Norwegian Sea, Barents Sea</td>
<td>-</td>
<td>121-175</td>
<td>38</td>
<td></td>
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<tr>
<td>201606</td>
<td>11 Apr – 09 May</td>
<td>This cruise is part of the IMR monitoring project «Climate and plankton in the North Sea and Skagerrak». 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.</td>
<td>North Sea, Skagerrak, Kattegat</td>
<td>221-454</td>
<td>-</td>
<td>39-41</td>
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<td>CRUISE NO</td>
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<tr>
<td>2016107</td>
<td>04 Jun - 09 Jun</td>
<td>Test methods for quantification of plankton biomass, abundances and production.</td>
<td>Norwegian fjord: Korsfjorden</td>
<td>42-43</td>
<td></td>
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<tr>
<td>2016108</td>
<td>14 Jun - 17 Jun</td>
<td>Collecting biological and physical data along LoVe transect. 2. Conduct ROV surveys of nodeloc. 3. Retrieval and release of LoVe platform.</td>
<td>Norwegian coast: Lofoten/Vesterålen</td>
<td>44</td>
<td></td>
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<tr>
<td>2016109</td>
<td>18 Jun - 19 Jul</td>
<td>AMOR 2016 + SponGES</td>
<td>Norwegian Sea</td>
<td>45-46</td>
<td></td>
<td></td>
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<tr>
<td>2016110</td>
<td>21 Jul - 29 Jul</td>
<td>The cruise will study how coral ecosystems may be affected by ocean acidification and increased ocean temperatures by natural variation in abiotic environment and how this affects the growth, production and energy storage in coral and sponge. Collect data for time series.</td>
<td>Norwegian Sea</td>
<td>47</td>
<td></td>
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<tr>
<td>2016111</td>
<td>02 Aug - 13 Aug</td>
<td>The cruise was a part of the Norwegian funded research project VENTILATE. The project focuses on the link between ventilation processes and the oceanic carbon cycle, and how this connection is affected by the anthropogenic climate change.</td>
<td>Greenland Sea</td>
<td>48</td>
<td></td>
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<tr>
<td>2016112</td>
<td>16 Aug - 05 Sep</td>
<td>2016 GEO 008: Sampling of sediment cores and water samples to document the rapid climate change in the Nordic Sea-North Atlantic. The cruise is a sequel to ice2ice expedition with G.O.Sars 2015.</td>
<td>Iceland Sea, Labrador Sea, Irminger Sea</td>
<td>49</td>
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<tr>
<td>2016113</td>
<td>13 Sep - 04 Oct</td>
<td>Mareano. Sea bottom mapping with video-filming and sampling of benthic fauna and sediments at selected stations.</td>
<td>Barents Sea</td>
<td>50-52</td>
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<tr>
<td>2016114</td>
<td>04 Oct - 12 Oct</td>
<td>Collect fine-scale acoustic, biological, and environmental data for assessing the functional response of cod to its target prey species, in particular capelin under various environmental conditions, as part of the NRC funded project CODFUN.</td>
<td>Barents Sea</td>
<td>53-54</td>
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<td>CRUISE NO.</td>
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<tr>
<td>2016116</td>
<td>28 Oct - 10 Nov</td>
<td>Collect in situ target strength data on mackerel in lateral aspect for conversion of sonar measurements of mean SV, CRISP project. Collect data on fish close to seabed with FM echo sounders EK80 at different pulse forms and frequencies. Instrument trials of sideways EK80, narrow beam. Instrument trials EK80, WBAT and TS probe. Catch trials on mackerel. Working mainly in the area close to Shetland - Orkneys in the main catching area for mackerel. Instrument trials in Norwegian Fjords close to Bergen.</td>
<td>North Sea</td>
<td>611 - 615</td>
<td>233 - 237</td>
<td>57-58</td>
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</tr>
<tr>
<td>2016117</td>
<td>12 Nov - 23 Nov</td>
<td>The objectives of this cruise were to investigate the abundance zooplankton and phytoplankton as well as measuring the water physics and collecting water samples for chemical analyses using a CTD probe, on two of our regular sections in the Norwegian Sea and Barents Sea.</td>
<td>Norwegian Sea, Barents Sea</td>
<td>616 - 663</td>
<td>- -</td>
<td>59</td>
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<tr>
<td>2016119</td>
<td>07 Dec - 14 Dec</td>
<td>ICES international course in broadband methods in Fisheries Acoustics. Teaching 20 scientists in broadband echo sounder methods. Project: ICES WB</td>
<td>Norwegian fjords</td>
<td>679 - 679</td>
<td>238 - 239</td>
<td>62</td>
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### 1.2 Johan Hjort (Ship code no 12)

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<th>TRAWL ST</th>
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<th>COMMENT</th>
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</thead>
<tbody>
<tr>
<td>2016201</td>
<td>11 Jan - 20 Jan</td>
<td>Monitoring of physical, chemical and biological parameters, on standard sections.</td>
<td>Barents Sea, Greenland Sea, Norwegian Sea</td>
<td>01 - 46</td>
<td>01 - 01</td>
<td>63</td>
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<tr>
<td>2016202</td>
<td>24 Jan - 10 Mar</td>
<td>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 • map the general hydrographic regime by using a CTD-sonde to monitor the temperature and at about every second-third fixed bottom trawl stations (for about every 40 NM) • stomach sampling of cod • sampling of cod, haddock, saithe, capelin, polar cod and shrimps for NIFES and CEFAS</td>
<td>Barents Sea</td>
<td>47 - 160</td>
<td>02 - 284</td>
<td>64-65</td>
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<tr>
<td>3332016203</td>
<td>21 Mar - 03 Apr</td>
<td>Acoustic survey targeting spawning cod off Lofoten and Vesterålen including an egg survey.</td>
<td>Norwegian Sea/coast Lofoten and Vesterålen</td>
<td>161 - 270</td>
<td>285 - 316</td>
<td>66-67</td>
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<tr>
<td>2016204</td>
<td>04 Apr - 07 Apr</td>
<td>This field campaign will investigate how turbulence, particularly wind-induced mixing, influences vertical distribution of plankton. We will apply a range of novel instrumentation for physics (meteorology and oceanography) and plankton to study the dynamical changes in vertical distribution. The result will for the basics for improved models on transport of fish eggs, larvae and pollutant substances like particulate oil. Relevance: Fish recruitment dynamics, oil pollution, marine plastics.</td>
<td>Norwegian Sea/coast Lofoten and Vesterålen</td>
<td>271 - 316</td>
<td>- -</td>
<td>68</td>
<td></td>
</tr>
<tr>
<td>2016205</td>
<td>02 May - 25 May</td>
<td>Part of the International Ecosystem Survey of the Nordic Seas (IESNS) where the objectives are (1) to measure the abundance of Norwegian spring-spawning herring and blue whiting using acoustics, (2) collect data on zoo- and phytoplankton, (3) measure the hydrographical conditions.</td>
<td>Norwegian Sea</td>
<td>317 - 381</td>
<td>317 - 361</td>
<td>69-70</td>
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<tr>
<td>2016206</td>
<td>- -</td>
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9
### 1.2 Johan Hjort (Cont.)

<table>
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<tr>
<td>2016207</td>
<td>27 Jun</td>
<td>14 Jul</td>
<td>HERAS is an international acoustic research cruise on herring and sprat in the North Sea, Skagerrak-Kattegat and West of Scotland. The survey is coordinated by ICES, and Norway covers the northeastern part of the North Sea. Other countries participating are Scotland, the Netherlands, Germany, Denmark and Ireland. Relative indices of abundance and biomass are calculated on an autumn meeting joined by all participating nations. The indices are used in the stock assessments of e.g. North Sea herring, sprat in the North Sea and sprat in the Skagerrak-Kattegat. NORACU is an acoustic research cruise on saithe in the North Sea, when saithe is on the North Sea shelf and slope towards the Norwegian Trench (ICES Subarea 4) during their feeding period in summer. The aim of the survey is to provide a relative abundance index. This index is used in the stock assessment of saithe in the North Sea.</td>
<td>North Sea</td>
<td>382</td>
<td>432</td>
<td>362</td>
</tr>
<tr>
<td>2016208</td>
<td>15 Jul</td>
<td>13 Aug</td>
<td>This survey combines the IBTS Q3 bottom trawl survey, coordinated by ICES/IBTSWG, NORACU acoustic survey for saithe, the Utsira-W transect with sampling for hydrography, chemistry, plankton, fish egg, and fish larvae, with pollution sampling for radioactivity, organic analyses (POPs), markers of contamination, and occurrence of micro plastics. The survey will take: the required GOV trawl stations; target and blind tows for saithe acoustic survey (bottom and pelagic); sediment grabs; micro plastic sampling from surface; water collections; CTDs/temp profiles for all tows + transect; MIK and Multinet tows for eggs and larval studies; MOCNESS tows for plankton/other organisms; collect water samples for nutrients, radioactivity, and pollution; collect algae information.</td>
<td>North Sea</td>
<td>433</td>
<td>558</td>
<td>432</td>
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### 1.2 Johan Hjort (cont.)

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<tbody>
<tr>
<td>2016209</td>
<td>20 Aug – 30 Sep</td>
<td>Map the distribution and estimate acoustic abundances of capelin, herring, polar cod and blue whiting. Map the distribution and estimate bottom trawl abundances indices of cod, haddock, redfish and Greenland halibut. Map the distribution and calculate pelagic trawl abundance indices of the main 0-group species. Stomach sampling of cod, capelin and polar cod. Benthos investigations from by-catch in the bottom trawl. Trawl experiments. Test two decontamination procedures for DNA-based diet studies of fish and crabs. Compare results from conventional diet studies and DNA-based diet studies of cod, beaked redfish and snowcrab. CTD-stations with measurement of temperature and salinity. Seabird observations along the cruise tracks.</td>
<td>Barents Sea</td>
<td>559</td>
<td>623</td>
<td>527</td>
<td>747</td>
</tr>
<tr>
<td>2016210</td>
<td>01 Oct – 30 Oct</td>
<td>Annual combined acoustic and bottom trawl survey. Map the distribution and estimate acoustic abundance 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). Map the distribution and estimate acoustic abundance indices of herring in Kalfjorden. Sampling of haddock and plaice for analysis of contamination (NIFES). Samples of Pandalus borealis for genetic analysis. Acoustic and hydrographical transect for the LoVe project.</td>
<td>Main Norwegian fjords and coastal banks</td>
<td>624</td>
<td>692</td>
<td>748</td>
<td>845</td>
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## 1.3 Håkon Mosby (Ship code no 1)

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<tbody>
<tr>
<td>2016601</td>
<td>08 Jan</td>
<td>28 Jan</td>
<td>Annual shrimp survey.</td>
<td>North Sea, Skagerrak</td>
<td>01</td>
<td>106</td>
<td>01</td>
<td>108</td>
<td>81-82</td>
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<tr>
<td>2016602</td>
<td>09 Feb</td>
<td>11 Feb</td>
<td>Student training cruise as part of regular course in practical oceanography and meteorology.</td>
<td>North Sea, Norwegian fjords</td>
<td>107</td>
<td>167</td>
<td>-</td>
<td>-</td>
<td>83</td>
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</tr>
<tr>
<td>2016603</td>
<td>15 Feb</td>
<td>19 Feb</td>
<td>Retrieve one fauna lander. Collect fauna for laboratory experiments. Collect water samples</td>
<td>Norwegian fjords</td>
<td>168</td>
<td>176</td>
<td>-</td>
<td>-</td>
<td>84</td>
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<tr>
<td>2016604</td>
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<td>-</td>
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<tr>
<td>2016605</td>
<td>01 Mar</td>
<td>13 Mar</td>
<td>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 parameters in the Norwegian Sea and Barents Sea. Sampling were made on standard sections and station M. 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.</td>
<td>Norwegian Sea, Barents Sea</td>
<td>177</td>
<td>221</td>
<td>-</td>
<td>-</td>
<td>85</td>
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<tr>
<td>2016606</td>
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<tr>
<td>2016607</td>
<td>01 Apr</td>
<td>14 Apr</td>
<td>Estimate the distribution and abundance of herring larvae. Additional environmental sampling of hydrography, nutrients, chlorophyll and zooplankton.</td>
<td>Norwegian Sea</td>
<td>222</td>
<td>399</td>
<td>-</td>
<td>-</td>
<td>86-87</td>
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<tr>
<td>2016608</td>
<td>17 Apr</td>
<td>25 Apr</td>
<td>The goal of the cruise is to collect fish eggs for mapping spawning areas in the project «National program for mapping of marine nature types». The primary targets for the mapping are local stock of coastal cod. The secondary goal is to visually determine all eggs and preserve these for further genetic studies. All eggs are photographed. Stations are located primarily in the inner fjord areas, with less emphasis on the outer coastal areas.</td>
<td>Barents Sea</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>88</td>
<td></td>
</tr>
<tr>
<td>2016609</td>
<td>27 Apr</td>
<td>08 May</td>
<td>Regular monitoring of physical oceanography/climate, nutrients and lower trophic levels in the standard sections: Fugloya-Bjørnøya; Bjørnøya West; Gimsøy NW.</td>
<td>Norwegian Sea, Barents Sea</td>
<td>400</td>
<td>459</td>
<td>-</td>
<td>-</td>
<td>89-90</td>
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<tr>
<td>2016625</td>
<td>09 May - 13 May</td>
<td>Deployment benthic lander (GEOMAR MoLab). Collect fauna for land based laboratory studies. Deployment fauna lander.</td>
<td>Norwegian fjords</td>
<td>460 - 466</td>
<td>- -</td>
<td>91</td>
<td>Cancelled</td>
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<tr>
<td>2016612</td>
<td>21 May - 25 May</td>
<td>Polar buoy deployment.</td>
<td>Norwegian Sea</td>
<td>467 - 467</td>
<td>- -</td>
<td>92</td>
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<tr>
<td>2016611</td>
<td>26 May - 15 Jun</td>
<td>A physical oceanography cruise for ocean mixing and water transformation process studies in the Lofoten Basin of the Norwegian Sea. The objectives include deployment of moorings, GPS-tracked drifters and acoustically-tracked RAFOS floats, ocean gliders, vertical microstructure sampling and hydrographic and current measurements with focus areas of Lofoten Basin vortex and the Mohn Ridge.</td>
<td>Norwegian Sea</td>
<td>468 - 513</td>
<td>- -</td>
<td>93-94</td>
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<tr>
<td>2016613</td>
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<td>Cancelled</td>
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<tr>
<td>2016628</td>
<td>03 Jul - 06 Jul</td>
<td>Cruise in „The LoVe Observatory Infrastructure“, „The Lofoten-Vesterålen Cabeled Ocean Observatory“.</td>
<td>Norwegian Sea</td>
<td>514 - 519</td>
<td>- -</td>
<td>95</td>
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<td></td>
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<tr>
<td>2016614</td>
<td>08 Jul - 14 Jul</td>
<td>Geophysical seismic survey, joint with land seismic experiment. Investigation of crustal and upper mantle structure of the ocean-continent transition around Lofoten. Main tasks: Ocean Bottom Seismometers. Multi-channel seismics, Gravity measurements</td>
<td>Vestfjorden, Lofoten area</td>
<td>- -</td>
<td>- -</td>
<td>96</td>
<td></td>
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<td></td>
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<tr>
<td>2016616</td>
<td>25 Jul - 06 Aug</td>
<td>Survey of environment and plankton on standard sections and on &quot;weather station M&quot;. Measurement of physical, chemical and biological parameters that are of importance to register changes in climate and environment at &quot;weather station M&quot; in the Norwegian Sea. Measure physical variables (ctd casts) on standard section &quot;Sørkapp-W&quot;. Take samples for radioactivity on wreck of &quot;Komsomolets&quot;.</td>
<td>Norwegian Sea, Barents Sea</td>
<td>520 - 590</td>
<td>- -</td>
<td>98</td>
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1.3 Håkon Mosby (Cont)

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<th>PURPOSE</th>
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<tbody>
<tr>
<td>2016617</td>
<td>12 Aug 20 Aug</td>
<td>Student cruise for the course AGF-214 Polar Ocean Climate at the University Center in Svalbard</td>
<td>Eastern Fram Strait, Fjords and west coast of Spitsbergen.</td>
<td>591 757</td>
<td>- -</td>
<td>99</td>
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<tr>
<td>2016618</td>
<td>21 Aug 6 Sep</td>
<td>The cruise is a part of a project with the objective to investigate modifications of water masses and thus the origins of the overflow water from the Iceland Sea and the inflow of low salinity water from the Iceland Sea to the Norwegian Sea.</td>
<td>Norwegian Sea, Greenland Sea</td>
<td>758 917</td>
<td>- -</td>
<td>100</td>
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<tr>
<td>2016627</td>
<td>28 Sep 29 Sep</td>
<td>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 fjord to the north of Osterøy on the first day (Osterfjorden), and to the south of Osterøy the second day (Sørøfjorden).</td>
<td>Norwegian coast, Osterfjorden and Sørøfjorden</td>
<td>959 974</td>
<td>- -</td>
<td>104</td>
<td></td>
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<tr>
<td>2016620</td>
<td>05 Oct 01 Nov</td>
<td>Distribution and acoustic abundance of cod, saithe and haddock. Environmental stations in main fjords.</td>
<td>Norwegian coast</td>
<td>975 1034 187 289</td>
<td>105-107</td>
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### 1.4 Kristine Bonnevie (Ship code no 1)

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<tbody>
<tr>
<td>2016623</td>
<td>25 Nov - 04 Dec</td>
<td>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 parameters in the North Sea. Sampling was undertaken on the following standard sections: Utsira W and Aberdeen-Hanstholm. In addition, a series of samplings were undertaken north and west of the Orkney Islands and along the Scottish east coast between the Orkneys and Aberdeen for an investigation of herring larval distributions. The cruise programme included sampling for physical-chemical oceanographic parameters (CTD casts, nutrients and chlorophyll) and phytoplankton and zooplankton with plankton nets and the MOCNESS. A larger plankton net was used to sample the fish larvae.</td>
<td>North Sea</td>
<td>1 - 71</td>
<td>-</td>
<td>108-109</td>
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<tr>
<td>2016624</td>
<td>06 Dec - 16 Dec</td>
<td>Survey and map the distribution of herring and sprat acoustically in the fjords Nordfjord, Sognefjorden and Hardangerfjorden. Also survey the amount of zooplankton (food for sprat and herring) in the surveyed areas by plankton nets.</td>
<td>North Sea</td>
<td>72 - 101</td>
<td>01 - 29</td>
<td>110-111</td>
<td></td>
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<tr>
<td>2016630</td>
<td>18 Dec - 20 Dec</td>
<td>Sea testing of all demersal trawls to be used during the annual shrimp survey that will be conducted by the IMR in January 2017.</td>
<td>North Sea</td>
<td>-</td>
<td>30 - 48</td>
<td>112</td>
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<tr>
<td>2016301</td>
<td>13 Jan - 19 Jan</td>
<td>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.</td>
<td>Skagerrak</td>
<td>1 - 30</td>
<td>113</td>
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<td>2016302</td>
<td>01 Feb - 07 Feb</td>
<td>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.</td>
<td>Skagerrak</td>
<td>31 - 67</td>
<td>114</td>
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<td>2016303</td>
<td>02 Mar - 08 Mar</td>
<td>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.</td>
<td>Skagerrak</td>
<td>68 - 103</td>
<td>115</td>
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<tr>
<td>2016304</td>
<td>14 Mar - 25 Mar</td>
<td>Mapping distribution area of coastal cod.</td>
<td>Møre og Romsdal</td>
<td>- -</td>
<td>-</td>
<td>No chart</td>
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<tr>
<td>2016305</td>
<td>13 Apr - 20 Apr</td>
<td>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.</td>
<td>Skagerrak</td>
<td>104 - 129</td>
<td>116</td>
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<tr>
<td>2016306</td>
<td>07 May - 13 May</td>
<td>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.</td>
<td>Skagerrak</td>
<td>130 - 155</td>
<td>117</td>
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<td>2016307</td>
<td>05 Jun - 14 Jun</td>
<td>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.</td>
<td>Skagerrak</td>
<td>156 - 193</td>
<td>118</td>
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<tr>
<td>2016308</td>
<td>01 Jul - 08 Jul</td>
<td>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.</td>
<td>Skagerrak</td>
<td>194 - 234</td>
<td>119</td>
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### CRUISE NO

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<tr>
<td>2016309/310</td>
<td>08 Aug - 24 Aug</td>
<td>Hydrographic standard section “Torungen-Hirtshals”, environmental investigation. Long-term environmental monitoring on a near-shore station outside Arendal and in the fjords along the Norwegian Skagerrak coast. Monitoring lobster/MPA.</td>
<td>Skagerrak</td>
<td>235 - 274</td>
<td>120</td>
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<tr>
<td>2016311</td>
<td>25 Aug - 26 Aug</td>
<td>Collecting background data for salmon lice monitoring.</td>
<td></td>
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<tr>
<td>2016312/2016613</td>
<td>13 Sep - 02 Oct</td>
<td>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. Beach seine studies to measure recruitment of coastal fish-species.</td>
<td>Skagerrak</td>
<td>275 - 347</td>
<td>121</td>
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<tr>
<td>2016314</td>
<td>03 Oct - 08 Oct</td>
<td>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.</td>
<td>Skagerrak</td>
<td>348 - 371</td>
<td>122</td>
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<tr>
<td>2016315</td>
<td>09 Nov - 14 Nov</td>
<td>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.</td>
<td>Skagerrak</td>
<td>372 - 410</td>
<td>123</td>
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<tr>
<td>2016316</td>
<td>15 Nov - 06 Dec</td>
<td>Resource studies in coastal cod.</td>
<td>Skagerrak</td>
<td>411 - 411</td>
<td>124</td>
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<tr>
<td>2016317</td>
<td>07 Dec - 13 Dec</td>
<td>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.</td>
<td>Skagerrak</td>
<td>412 - 434</td>
<td>124</td>
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### 1.6 Selected cruises carried out by fishing vessels hired by IMR

<table>
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<tbody>
<tr>
<td>2016838</td>
<td>02 Sep - 16 Sep</td>
<td>H. Hanssen</td>
<td>This survey was the third SI_ARCTIC survey. While the surveys in 2014 and 2015 were 3 weeks combination surveys of SI_ARCTIC and the Ecosystem survey, the 2016 survey was a two week SI_ARCTIC survey. The main goal of the survey was: • To conduct baseline investigations of the marine ecosystem north of Svalbard • Diet investigations of harp seals • Extend the investigations/sampling in the marginal ice zone on the Yermak Plateau and above the deeper basins (compared to 2014 and 2015) • Obtain data for evaluating inter-annual variations 2014-2018</td>
<td>Arctic Ocean</td>
<td>127-128</td>
<td></td>
</tr>
<tr>
<td>2016847</td>
<td>24 Sep - 05 Oct</td>
<td>H. Hanssen</td>
<td>The aim of the Arctic part of the ecosystem survey in the Barents Sea is to monitor the status and changes of the Arctic part of the Barents Sea Ecosystem to support scientific research and management advice. The survey covers the areas around Svalbard and monitoring includes physical properties, organisms from most trophic levels and habitats, pollution and acidification. The output of the survey is used in assessment of several commercial resources in the Barents Sea.</td>
<td>Svalbard area</td>
<td>129-130</td>
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1.6 Selected cruises carried out by fishing vessels hired by IMR (cont.)

<table>
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<th>CRUISE NO</th>
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<tbody>
<tr>
<td>2016851</td>
<td>02 Feb 14 Feb</td>
<td>Vendla</td>
<td>Acoustic registrations of Norwegian Spring Spawning Herring at the spawning locations.</td>
<td>Norwegian Sea</td>
<td>-</td>
<td>-</td>
<td>01 14</td>
<td>131</td>
</tr>
<tr>
<td>2016829</td>
<td>01 Jul 31 Jul</td>
<td>Vendla</td>
<td>Primary objective: Swept area trawling for mackerel. Secondary objective: Acoustic registrations and trawling for herring and blue whiting. Sampling of zooplankton and water temperature/salinity. Marine mammals observations.</td>
<td></td>
<td>01 70</td>
<td>15 105</td>
<td>132-133</td>
<td></td>
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<tr>
<td>2016833</td>
<td>02 Feb 12 Feb</td>
<td>M.Ytterstad</td>
<td>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 composition in the acoustic observations</td>
<td>Norwegian Sea</td>
<td>-</td>
<td>-</td>
<td>01 14</td>
<td>134</td>
</tr>
<tr>
<td>2016857</td>
<td>03 Jun 10 Jun</td>
<td>M.Ytterstad</td>
<td>The cruise was part of a joint annual international acoustic trawl survey to monitor the abundance and distribution of Norwegian Spring Spawning herring and blue whiting in the Norwegian Sea.</td>
<td>Norwegian Sea, Barents Sea</td>
<td>01 14</td>
<td>15 25</td>
<td>135-136</td>
<td></td>
</tr>
<tr>
<td>2016828</td>
<td>01 Jul 31 Jul</td>
<td>M.Ytterstad</td>
<td>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-spawning herring and blue whiting using acoustics, (2) collect data on zooplankton, (3) measure the hydrographical conditions.</td>
<td>Norwegian Sea</td>
<td>16 88</td>
<td>26 112</td>
<td>137-138</td>
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### 1.6 Selected cruises carried out by fishing vessels hired by IMR (cont.)

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<tbody>
<tr>
<td>2016834</td>
<td>03 Feb – 08 Feb</td>
<td>Libas</td>
<td>Acoustic estimation of Norwegian spring-spawning herring</td>
<td>Norwegian Sea</td>
<td>-</td>
<td>-</td>
<td>01 – 06</td>
<td>139</td>
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| 2016810   | 19 Sep – 02 Oct   | Brennholm | • 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  
 • Measure environmental parameters inside the purse seine during catches  
 • Test transponders mounted in the bottom line of the purse seine | Norwegian Sea | -      | -         | -        | 142     |
 • Dredge sampling for burrowed sandeels,  
 bottom trawls, pelagic trawls, echo sounder sampling, zooplankton sampling, mapping of hydrographical conditions. | North Sea | 01 – 34 | 01 – 40 | 143-145 |         |
| 2016842   | 17 Aug – 20 Sep   | Eros   | Collect acoustic and biological data for assessing the abundance and size structure of the Barents Sea capelin stock for stock advice. As far as possible, collect the same information for other pelagic stocks in the Barents Sea. Undertake standard trawl samples from fixed shallow depths for assessing 0-group abundance in the Barents Sea. In addition, collect data on zooplankton and phytoplankton abundance and composition, nutrients, hydrography and acidification, bird (quantitative) and whale (semi-quantitative) abundance. | Barents Sea | 35 – 149 | 41 – 160 | 146-147 |         |
1.6 Selected cruises carried out by fishing vessels hired by IMR (cont.)

<table>
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<th>CRUISE NO</th>
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<th>VESSEL</th>
<th>PURPOSE</th>
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<tbody>
<tr>
<td>2016826</td>
<td>26 Sep - 30 Sep</td>
<td>Eros</td>
<td>Collection of acoustic data from fisheries sonars for biomass estimation and behavioural studies of mackerel schools during commercial fishing. Monitoring of school and net during commercial fishing operations.</td>
</tr>
</tbody>
</table>
| 2016844   | 02 May - 15 May   | Kings Bay | • Investigate presence of NSS herring in the echo sounder acoustic blind zone.  
• Investigate NSS herring avoidance to approaching surveying vessel.  
• Species identification between NSS herring and blue whiting in deep layers. |
| 2016840   | 06 Oct - 17 Jun   | Kings Bay | • Collection of acoustic data from fisheries sonar for biomass estimation of individual North sea herring schools during normal commercial fishing  
• Purse seine catch of individual North sea herring schools for comparison with sonar estimates |
| 2016832   | 03 May - 02 Jun   | Fiskebas | Tagging with RFID technology and biological sampling of mackerel in the spawning areas west of Ireland and Scotland. |
| 2016852   | 06 Oct - 10 Oct   | Fiskebas | 1. To document the functionality of a suggested method for slipping (releasing) fish from a purse seine during fishing. This was done by physical measurements of the escape opening as well as studying fish behaviour during release.  
2. To test a prototype of float (for the floatline of the seine) equipped with LED light to improve the visibility of the seine during dark hours.  
3. To measure physical conditions (oxygene) inside a seine in the late phases of a seine cast. |
| 2016825   | 02 Jun - 13 Jun   | Reinebuen | Collecting samples from Minke whales, blubber, muscle, liver, eye and ovaries. Briefly checking stomach contents. |

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<th>CTD ST End</th>
<th>TRAWL ST Start</th>
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<td>01 - 24</td>
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<td>Northeast Atlantic Ocean</td>
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<td>No chart</td>
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### 1.6 Selected cruises carried out by fishing vessels hired by IMR (cont.)

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<tr>
<td>2016848</td>
<td>06 Jun - 12 Jun</td>
<td>Johan Ruud</td>
<td>Study the spreading area for red king crab in Vest Finnmark, Norway. This is the area for a free fishing for red king crab and the further spreading is monitored. Sampling eggs and hydrographical data in Repparfjorden and Revsbotn</td>
<td>Barents Sea, coastal area</td>
<td>-</td>
<td>-</td>
<td>152</td>
<td></td>
</tr>
<tr>
<td>2016849</td>
<td>22Aug - 09 Sep</td>
<td>Johan Ruud</td>
<td>Stock assessment study for red king crab in East Finnmark, Norway. This is the quota regulated area for red king crab. The first part of the cruise was conducted in the three selected fjords; Varangerfjorden, Porsangerfjorden and Laksefjorden. Thereafter the cruise went on between Vardø in east to Slettnes in west, an area called Østhavet, here we only used traps.</td>
<td>Barents Sea, coastal area</td>
<td>-</td>
<td>-</td>
<td>153</td>
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<tr>
<td>2016845</td>
<td>11 Aug - 01 Sep</td>
<td>Arni Fredriksson</td>
<td>To assess the stock of Sebastes mentella in the open Norwegian Sea. To collect biological and hydrological data in support to integrated ecosystem in the open Norwegian Sea, as part of the international deep pelagic ecosystem surveys (ICES-WGIDEEPS).</td>
<td>Norwegian Sea</td>
<td>-</td>
<td>-</td>
<td>No chart</td>
<td></td>
</tr>
<tr>
<td>2016827</td>
<td>10 Oct - 12 Oct</td>
<td>A.Selsbæne</td>
<td>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. Dynamics of school before, during and after the purse seine haul. Project: REDSLIP</td>
<td>Norwegian Sea</td>
<td>-</td>
<td>-</td>
<td>No chart</td>
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<tr>
<td>2016845</td>
<td>11 Aug - 01 Sep</td>
<td>Arni Fridriksson</td>
<td>To assess the stock of Sebastes mentella in the open Norwegian Sea. To collect biological and hydrological data in support to integrated ecosystem in the open Norwegian Sea, as part of the international deep pelagic ecosystem surveys (ICES-WGIDEEPS).</td>
<td>Norwegian Sea</td>
<td>-</td>
<td>-</td>
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2 Charts – overview

2.1 CTD and trawl stations 2016
2.2 Oceanographic sections

Norwegian Sea and Barents Sea
North Sea, Skagerrak and Kattegat
2.3 Fixed oceanographic stations
### 3 Tables – Observations in 2016

#### 3.1 Oceanographic sections 2016 (Cruise no)

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### 3.2 Fixed oceanographic stations 2016

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4 Charts for cruises 2016

4.1 G.O. Sars

Cruise no 2016101 "G.O. Sars"
10 January–12 February 2016

- CTD st.no 1–179
- Plankton st. (WP-II-net)
- Plankton st. (Moeness)

Standard section Utsira W st.no 103–130
Cruise no 2016101 "G.O.Sars"
10 January–12 February 2016

☐ Bottom trawl st.no 1-69
Cruise no 2016101 "G.O.Sars"
11 January–12 February 2016

● MIK stations
Cruise no 2016102 "G.O.Sars"
13–15 February 2016

z CTD st.no 180–181
X Box core
☐ Multicores
Cruise no 2016103 "G.O.Sars"
19 Feb–2 Mar 2016

z CTD st.no 182–194
Cruise no 2016103 "G.O.Sars"
19 Feb–2 Mar 2016

Trawl st.no 71–109
- Bottom trawl
- Pelagic trawl
Cruise no 2016104 "G.O.Sars"
4–11 March 2016

z CTD st.no 195–220
○ Plankton st. (WP-II-net)
Cruise no 2016104  "G.O.Sars"
4–11 March 2016

▲ Pelagic trawl st.no 110–120
Cruise no 2016105 "G.O.Sars"
12 Mar–8 Apr 2016

Trawl st.no 121–175
☐ Bottom trawl
▲ Pelagic trawl
○ Beam trawl
Cruise no 2016106  "G.O.Sars"
11 April—9 May 2016

z CTD st.no 221-454
⊙ Plankton st. (WP-II-net)
♦ Plankton st. (Moeness)

Standard sections:
Utsira W st.no 221-252
Hansholmen—Aberdeen st.no 253-282
Göteborg—Fr.havn st.no 283-287
Måseskjær st.no 288-295
Jomfruland—Koster st.no 298-303
Vadervø st.no 304-310
Oksøy st.no 314-325
Lindesnes st.no 343-349
Lista st.no st.no 350-355
Egerøy SW st.no 356-362
Jærns Rev SW/Wst.no 363-381, 436-440
Slotterøy W st.no 387-402, 426-435
Fedje-Shetland st.no 403-425
Cruise no 2016106 "G.O.Sars"
11 April–9 May 2016

- Gulf VII (280μm), Pup sampler (90μm)
Cruise no 2016106 "G.O.Sars"
11 April–9 May 2016

- MIK midwater ring trawl
- Multisampler
Cruise no 2016107  "G.O.Sars"
4–9 June 2016

- CTD st.no 455–469
- Plankton st. (WP-II-net)
- Plankton st. (Mocness)
Cruise no 2016107 "G.O.Sars"
4–9 June 2016

♦ Pelagic trawl st.no 176–191
Cruise no 2016108 "G.O.Sars"
14–17 June 2016

z CTD st.no 470–471
○ ROV stations
Cruise no 2016109 "G.O.Sars"
18 June–19 July 2016
z CTD st.no 472–490
Cruise no 2016109 "G.O Sars"
18 June–19 July 2016

- ROV stations
- Agassis tr.
Cruise no 20161110 "G.O.Sars"
21–29 Juli 2016

z CTD st.no 491–524
○ Plankton st. (WP-II-net)
Cruise no 2016111 "G.O.Sars"
2–13 August 2016

z CTD st.no 525–565
Cruise no 2016112 "G.O. Sars"
16 August–5 September 2016

- CTD st. no 566–575
- Sledge st.
- Plankton st. (WP-II-net)
- Multicore st.
Cruise no 2016113 "G.O.Sars"
13 September–4 October 2016
z CTD st.no 576–594
Cruise no 2016113 "G.O.Sars"
13 September–4 October 2016

● Video st.
Cruise no 2016113 "G.O.Sars"
13 September–4 October 2016

- Different stations like grab st., box core st., beam trawl st., sledge st. and multicore st.
Cruise no 2016114 "G.O.Sars"
4–12 October 2016

z CTD st.no 595–596
○ Plankton st. (WP-II-net)
Cruise no 20161114 "G.O.Sars"
4–12 October 2016

Trawl st. no 192-204
□ Bottom trawl
▲ Pelagic trawl
Cruise no 2016115 "G.O. Sars"
13–27 October 2016

z CTD st. no 597–610
○ Plankton st. (WP-II-net)
◇ Plankton st. (Mocness)
Cruise no 2016115 "G.O.Sars"
13–27 October 2016

▲ Pelagic trawl st.no 205–232
Cruise no 2016116 "G.O.Sars"
28 October–10 November 2016

z CTD st.no 611-615
Cruise no 2016116 "G.O.Sars"
28 October–10 November 2016

▲ Pelagic trawl st.no 233-237
Cruise no 2016117 "G.O.Sars"
12–23 November 2016

Standard sections:
Svinøy NW st.no 616-631
Gimsøy NW st.no 634-643
Fugløya–Bjørnøya st.no 644-663
St.M st.no 632-633

z CTD st.no 616-663
⊙ Plankton st. (WP-II-net)
◊ Plankton st. (Mocness)
⊙ Bouy deployed
Cruise no 2016118 "G.O.Sars"
24 Nov–1 Dec 2016
z CTD st.no 664-678
Cruise no 2016118 "G.O.Sars"
24 Nov–1 Dec 2016

☐ Beam trawl
× Grab st.
● ROV st.
Cruise no 2016119 "G.O.Sars"
7–14 December 2016

z CTD st.no 679
▲ Pelagic trawl st. 238-239
4.2 Johan Hjort

Cruise no 2016201 "Johan Hjort"
11–20 January 2016
z CTD st.no 1–46
○ Plankton st. (WP-II-net)
● Plankton st. (Mocness)
▲ Pelagic trawl st.no 1

Standard sections:
Svinøy-NW st.no 3–19
Fugløya–Bjørnøya st.no 27–46
St. M st.no 20
Project LoVe st.no 21–26
Cruise no 2016202  "Johan Hjort"
24 Jan–10 Mar 2016

z CTD st.no 47–160

Cruise no 2016203 "Johan Hjort"
21 Mar–3 Apr 2016

Standard sections:
Tennholmen–Røst st.no 206–217
Ballstad–Måløy/Skarholmen st.no 238–249
Kabelvåg–Steigen st.no 260–270

z CTD st.no 161–270
O Egg st. (WP-II-net)
Cruise no 2016203 "Johan Hjort"
21 Mar–3 Apr 2016

Trawl st.no 285–316
- Bottom trawl
- Pelagic trawl
Cruise no 2016204 "Johan Hjort"
4–7 April 2016

z CTD st.no 271–316
Egg st. (WP-II-net) at every ctd station
2016205 "Johan Hjort"
2–23 May 2016 (Part I)

▲ Pelagic trawl st.no 317–361
(some krill trawl)
Cruise no 2016207 "Johan Hjort"
27 June–14 July 2016

z CTD st.no 382–432
● Mik station
Cruise no 2016207 "Johan Hjort"
27 June–14 July 2016

Trawl st.no 362–431
☐ Bottom trawl
▲ Pelagic trawl
Cruise no 2016208 "Johan Hjort" Standard section Utsira W: st.no 527–558
15 July–13 August 2016

z CTD st.no 433-558
Cruise no 2016208 "Johan Hjort"
15 July–13 August 2016

Trawl st.no 432-526
□ Bottom trawl
▲ Pelagic trawl
Cruise no 2016208 "Johan Hjort"
15 July–13 August 2016

× Grab st.
■ Beam trawl st.
Cruise no 2016208 "Johan Hjort"
15 July–13 August 2016

○ WP-Il-net, Bongo and Otter st.
♦ Mocness st.
× Mik st.
☐ Multinet st.
Cruise no 2016209 "Johan Hjort"
20 August–30 September 2016

- CTD st.no 559–623
- Plankton st. (WP-II-net)
Cruise no 2016209 "Johan Hjort"
20 August–30 September 2016

Trawl st.no 527–747
☐ Bottom trawl
▲ Pelagic trawl
Cruise no 2016210 "Johan Hjort"
1–30 October 2016

z CTD st.no 624–692
Cruise no 2016210 "Johan Hjort"
1–30 October 2016

Trawl st.no 748–845
□ Bottom tr.
▲ Pelagic tr.
Cruise no 2016601 "H.Mosby"
8 – 28 January 2016
z CTD st.no 1 – 106
Cruise no 2016601 "H.Mosby"
8 – 28 January 2016

■ Bottom trawl st.no 1–108
Cruise no 2016602 "H.Mosby"
9–11 February 2016

z CTD st.no 107–167
■ Aanderaa Seaguard and Teledyne Sentinel ADCP deployed and recovered
Cruise no 2016603 "Håkon Mosby"
15–19 February 2016

CTD st.no 168–176, and 1 plankton st. (WP-II-net)
Cruise no 2016605 "Håkon Mosby"  
1–13 March 2016  
CTD st.no 177–221  
Plankton st. (WP-II-net)  
Plankton st. (Mocness)

Standard sections:  
Svinøy-NW st.no 178–194  
Gimsøy-NW st.no 195–204  
Fugløya–Bjørnøya st.no 205–221  
St. M st.no 177
Cruise no 2016607 "Håkon Mosby"
1–14 April 2016

z CTD st.no 222–399
○ WP II st. (plankton) / T-80 st. (larvae).
Cruise no 2016608 "Håkon Mosby"
17–25 April 2016

386 CTD casts and vertical WP2 egg net (500μm) hauls.
Cruise no 2016609 "Hákon Mosby"
27 April–8 May 2016

d CTD st.no 400–459
○ Plankton st. (WP-II-net)

Standard sections:
Fugløya-Bjørnøya: st.no 400–419
Bjørnøya W: st.no 420–440
Gimsoy NW: st.no 441–459
Cruise no 2016609 "Håkon Mosby"
27 April–8 May 2016

- Bottom mounted profiling ADCP
- Moored current meters recovered and re-deployed
- Deployment of seaglider
Cruise no 2016625 "Håkon Mosby"
9–13 May 2016

z CTD st.no 460-466
- Rov stations
▼ Sponge cultivation riggs
▼ Fauna landers and Geomar bentic lander
Cruise no 2016612 "Håkon Mosby"
21–25 May 2016

z CTD st.no 467
Cruise no 2016611 "Håkon Mosby"
26 May–15 June 2016

◇ Deployed mooring
▼ Deployed seaglider
□ RAFOS sound source mooring deployed
○ RAFOS – Neutrally buoyant deployed
● CODE – I Surface drifter deployed
★ SVP-Argos Surface drifter deployed
Cruise no 2016628  "H.Mosby"
3–6 July 2016

z CTD st.no 514–519
○ Plankton st. (WP-II-net)
▲ Pelagic trawl.st.
Cruise no 2016614 "Håkon Mosby"
8–14 July 2016

- Seismic refraction
  Geophysical seismic survey, joint with land seismic experiment.
Cruise no 2016615 "Håkon Mosby"
21–24 July 2016

☐ Rov st.
☐ Multinet
• Grab st.
■ Trawl st.
▲ Sledge st.
Cruise no 2016616 "Håkon Mosby"
25 July–6 August 2016

z CTD st.no 520-590
○ Plankton st. (WP-II-net)
★ Plankton st. (Mocness)

Standard sections:
Svinøy-NW st.no 520–536
Gimsoy NW st.no 538–547
Fugloya–Bjørnøya st.no 548–567
Bjørnøya W st.no 568–587
SørkappW st.no 588–590
St. M st.no 537
Cruise no 2016617 "Håkon Mosby"
12–20 August 2016

z CTD st.no 591-757
Cruise no 2016618  "Håkon Mosby"
21 August–6 September 2016

z CTD st.no 758–917
Cruise no 2016619 "Håkon Mosby"
12–28 September 2016

z CTD st.no 918-958

Standard section Fedje Shetland
Cruise no 2016619 "Håkon Mosby"
12–28 September 2016

Trawl st.no 109–186
△ Pelagic trawl (multisampler)
□ Bottom trawl
Cruise no 2016619 "Håkon Mosby"
12–28 September 2016

× Mik st.
● Multinet st.
Cruise no 2016627 "Håkon Mosby"
28–29 September 2016
z CTD st.no 959–974
Cruise no 2016620 "H. Mosby"
5 October–1 November 2016
z CTD st. no 975–1034
Cruise no 2016620 "H Mosby"
5 October–1 November 2016

Trawl st.no 187–289
☐ Bottom tr.
▲ Pelagic tr.
Cruise no 2016620 "H. Mosby"
5 October–1 November 2016

● Grab st.
Cruise no 2016623 "Kristine Bonnevie"
25 November – 4 December 2016

z CTD st.no 1–71
○ Plankton st. (WP-II-net)
❄ Plankton st. (Mocness)

Standard sections:
Utsira W st.no 1-29
Hansholm-Aberdeen st. 46-71
Cruise no 2016623 "Kristine Bonnevie"
25 November – 4 December 2016

- Mik st.
Cruise no 2016624 "Kristine Bonnevie"
6–16 December 2016

z CTD st.no 72–101
○ Plankton st. (WP-II-net)
Cruise no 2016624 "Kristine Bonnevie"  
6–16 December 2016  

▲ Pelagic trawl st.no 1–29
Cruise no 2016630 "Kristine Bonnevie"
18–20 December 2016

Demersal trawl st.no 30–48
4.5
G.M. Dannevig

Cruise no 2016301
"G. M. Dannevig"
13.01-19.01

Z CTD st.no. 1-30
Cruise no 2016302
"G. M. Dannevig"
01.02-07.02

Z CTD st.no. 31-67
Cruise no 2016305
"G. M. Dannevig"
13.04-20.04

Z CTD st.no. 104-129
Cruise no 2016306
"G. M. Dannevig"
07.05-13.05
Z CTD st.no. 130-155
Cruise no 2016307
"G. M. Dannevig"
05.06-14.06

Z CTD st.no. 156-193
Cruise no 2016309 & 2016310
"G. M. Dannevig"
08.08-24.08

Z CTD st.no. 235-274
Cruise no 2016312 & 2016313
"G. M. Dannevig"
13.09-02.10

Z CTD st.no. 275-347
Cruise no 2016314
"G. M. Dannewig"
03.10-08.10

Z CTD st.no. 348-371
Cruise no 2016315
"G. M. Dannevig"
09.11-14.11
Z CTD st.no. 372-410
Cruise no 2016316-17
"G. M. Dannevig"
15.11-13.12

Z CTD st.no. 411-434
1.6 Selected cruises carried out by fishing vessels hired by IMR

Cruise no 2016846 "Helmer Hanssen"
25 Jan–8 Feb 2016
z CTD st.no 1–31
Cruise no 2016846 "Helmer Hanssen"
25 Jan–8 Feb 2016

Trawl st.no 1–82
■ Bottom trawl
▲ Pelagic trawl (st.no 38)
Cruise no 2016838 "Helmer Hanssen"
2–16 September 2016

z CTD st.no 32-58
○ Plankton st. (WP-II-net)
Cruise no 2016838 "Helmer Hanssen"
2–16 September 2016

Trawl st. no 83–127
△ Pelagic trawl st.
□ Bottom trawl st.
● Mik st.
× Beam trawl st.
Cruise no 2016847 "Helmer Hanssen"
24 September–5 October 2016

z CTD st.no 62–110
○ Plankton st. (WP-II-net)
Cruise no 2016847 "Helmer Hanssen"
24 September–5 October 2016

Trawl st.no 81–148
△ Pelagic tr.
□ Bottom tr.
Cruise no 2016851 "Vendla"
2–14 February 2016

▲ Pelagic trawl st.no 1–14
Cruise no 2016829 "Vendla"
1–31 July 2016

z CTD st.no 1–70
〇 Plankton st. (WP-II-net)
Cruise no 2016829 "Vendla"
1–31 July 2016

▲ Pelagic trawl st.no 15–105
Cruise no 2016833 "M. Ytterstad"
2–12 February 2016

▲ Pelagic trawl st.no 1–14
Cruise no 2016857 "M. Ytterstad" 3–10 June 2016

(This is part 2 of the cruise 2016205 with "Johan Hjort")

z CTD st.no 1–14
○ Plankton st. (WP-II-net)
Cruise no 2016857 "M. Ytterstad" This is part 2 of the cruise 2016205 with "Johan Hjort"

▲ Pelagic trawl st.no 15–25
Cruise no 2016828 "M. Ytterstad"
1–31 July 2016

z CTD st.no 16–88
○ Plankton st. (WP-II-net)
Cruise no 2016828 "M. Ytterstad"
1–31 July 2016

▲ Pelagic trawl st.no 26–112
Cruise no 2016834 "Libas"
3–8 February 2016

▲ Pelagic trawl stations 1-6
Cruise no 2016843 "Brennholm"
21 Mar–6 Apr 2016

z CTD st.no 1–28
○ Plankton st. (WP-II-net)
Cruise no 2016843 "Brennholm"
21 Mar–6 Apr  2016

▲ Pelagic trawl st.no 1–15
Cruise no 2016837 "Eros"
25 Apr–15 May 2016

z CTD st.no 1–34
○ Plankton st. (WP-II-net)
Cruise no 2016837 "Eros"
25 Apr–15 May 2016

■ Bottom trawl st.no 1–40
Cruise no 2016837 "Eros"
25 Apr–15 May 2016

- Sledge st.
- Video st.
Cruise no 2016842 "Eros"
17 August–20 September 2016

⊙CTD st.no 35–149
○Plankton st. (WP-II-net)

Standard section Vardø N. st.no 35–62
Cruise no 2016842 "Eros"
17 August–20 September 2016

▲ Pelagic trawl st.no 41–160
Cruise no 2016844 "Kings Bay"
2–15 May 2016

z CTD st.no 1–6
Cruise no 2016844 "Kings Bay"
2–15 May 2016

▲ Pelagic trawl st.no 1–24
Cruise no 2016840 "Kings Bay"
6 October–17 June 2016

Cruise track and purse seine catch
Cruise no 2016852 "Fiskebas"
6–10 October 2016

- Purse seine cast.
Net equipped with depth sensors and cameras.
Cruise no 2016848 «Johan Ruud»
6–12 June 2016

- Trap hauls
+ Two areas for egg sampling and hydrographic st.
Cruise no 2016849 «Johan Ruud»
22 August–9 September 2016

In the fjords: light dots: trawl hauls. Dark dots: trap stations
Open sea: trap transects
Cruise no 2016845 "Arni Fridriksson"
11 August–1 September 2016

☐ 30 pelagic trawl stations with Gloria Trawl (multisampler).
  Towed CTD measurements. SAIV AS/SD204 attached to the pelagic fishing trawl.
  1 st. CTD profile